COURT MEETING: ***28.03.2024***
Appendix-V

AMENDMENTS TO ORDINANCES
AND
APPENDICES TO THE ORDINANCES

(Amendments approved by the Executive Council in its meetings dated 03.02.2023, 09.06.2023, 25.08.2023)

UNIVERSITY OF DELHI

INDEX

CONTENTS		
		Annexure No.
1. Amendment to Appendix -II-A to the Ordinance V (2-A) of the Ordinances of the University vide EC Resolution 60-1-8 dated 03.02.2023 regarding syllabi of B.Tech under CIC (Sem-3)	-	*Annexure-1*
2. Amendment to Appendix -II-A to the Ordinance V (2-A) of the Ordinances of the University vide EC Resolution 60-1-10 dated 03.02.2023 regarding syllabi under Department of Education (Semester-3)	-	*Annexure-2*
3. Amendment to Appendix -II-A to the Ordinance V (2-A) of the Ordinances of the University vide EC Resolution 60-1-7 dated 03.02.2023 regarding Syllabi under Faculty of Mathematical Sciences (Sem-3)	-	*Annexure-3*
4. Amendment to Appendix -II-A to the Ordinance V (2-A) of the Ordinances of the University vide EC Resolution 60-1-9 dated 03.02.2023 regarding Syllabi of 3rd Semester of Departments under Faculty of Applied Social Sciences & Humanities	-	*Annexure-4*
5. Amendment to Appendix -II-A to the Ordinance V (2-A) of the Ordinances of the University vide EC Resolution 60-1-2 dated 03.02.2023 regarding Syllabi of Semester-3 of Department of Commerce under Faculty of Commerce	-	*Annexure-5*
6. Amendment to Appendix -II-A to the Ordinance V (2-A) of the Ordinances of the University vide EC Resolution 60-1-3 dated 03.02.2023 regarding Syllabi of 3rd Semester of Departments under Faculty of Social Sciences	-	*Annexure-6*
7. Amendment to Appendix -II-A to the Ordinance V (2-A) of the Ordinances of the University vide EC Resolution 60-1-4 dated 03.02.2023 regarding Syllabi of 3rd Semester of Departments under Faculty of Interdisciplinary and Applied Sciences.	-	*Annexure-7*
8. Amendment to Appendix -II-A to the Ordinance V (2-A) of the Ordinances of the University vide EC Resolution 60-1-6 dated 03.02.2023 regarding Syllabi of 3rd Semester of Department of Home Science under Faculty of Science	-	*Annexure-8*
9. Amendment to Appendix -II-A to the Ordinance V (2-A) of the Ordinances of the University vide EC Resolution 60-1-1 dated 03.02.2023 regarding Syllabi of 3rd Semester of Departments under Faculty of Science.	-	*Annexure-9*
10. Amendment to Appendix -II-A to the Ordinance V (2-A) of the Ordinances of the University vide EC Resolution 60-1-11 dated 03.02.2023 regarding Syllabi of 3rd Semester of Five Year Integrated Programme in Journalism under Delhi School of Journalism.	-	*Annexure-10*
11. Amendment to Appendix -II-A to the Ordinance V (2-A) of the Ordinances of the University vide EC Resolution 14-1-3 dated 09.06.2023 regarding Syllabi of 3rd Semester of BA (Vocational Studies) under College of Vocational Studies.	-	*Annexure-11*
12. Amendment to Appendix -II-A to the Ordinance V (2-A) of the Ordinances of the University vide EC Resolution 14-1-1 dated 09.06.2023 regarding Syllabi of 3rd Semester of Department of Hindi	-	*Annexure-12*
13. Amendment to Appendix -II-A to the Ordinance V (2-A) of the Ordinances of the University vide EC Resolution 14-1-1 dated 09.06.2023 regarding pool of Discipline Specific Elective (DSE) in respect of Department of Persian.	-	*Annexure-13*

CONTENTS

		Annexure No.
14. Amendment to Appendix -II-A to the Ordinance V (2-A) of the Ordinances of the University vide EC Resolution 60-1-5 dated 03.02.2023 regarding Syllabi of 3rd Semester of Department of Music.	-	*Annexure-14*
15. Amendment to Appendix -II-A to the Ordinance V (2-A) of the Ordinances of the University vide EC Resolution 60-1-1 dated 03.02.2023 regarding Syllabi of 3rd Semester of Departments under Faculty of Arts	-	*Annexure-15*
16. Amendment to Appendix -II-A to the Ordinance V (2-A) of the Ordinances of the University vide EC Resolution 27-12 dated 25.08.2023 regarding guidelines for internship apprenticeship and community outreach applicable for students of Semester-3 to Semester-6 based on UGCF.	-	*Annexure-16*
17. Amendment to Appendix -II-A to the Ordinance V (2-A) of the Ordinances of the University vide EC Resolution 27-1-6/- dated 25.08.2023 regarding syllabi of Semester-III/IV of AEC-Language Pool.	-	*Annexure-17*
18. Amendment to Appendix -II-A to the Ordinance V (2-A) of the Ordinances of the University vide EC Resolution 27-1-11 dated 25.08.2023 regarding syllabi of Semester-III, IV, V & VI of B.Voc Courses	-	*Annexure-18*
19. Amendment to Appendix -II-A to the Ordinance V (2-A) of the Ordinances of the University vide EC Resolution 27-1-1(8) dated 25.08.2023 regarding paper titled "electronic instrumentation" offered as DSE in 3rd Semester of Department of Physics for BSc. Physical Sciences with Electronics as one of the Core Discipline.	-	*Annexure-19*
20. Amendment to Ordinance V (2) & VII. [EC. Res. 27-1-6/-(7) dated 25.08.2023] regarding syllabi of Compulsory Language Pool of Generic Elective (GEs) in Semester -I, II, III and IV offered by Department of MIL&LS.	-	*Annexure-20*
21. Amendment to Ordinance V (2) & VII. [EC. Res. 14-1-1/- dated 09.06.2023 & 27-1-6 dated 25.08.2023] regarding syllabi of Semester-IV, V and VI in respect of Department of Linguistics, Philosophy, Sanskrit, Psychology and Applied Psychology.	-	*Annexure-21*
22. Amendment to Ordinance V (2) & VII. [EC. Res. 14-1-1/- dated 09.06.2023] regarding syllabi of Semester-IV, V and VI in respect of Department of Arabic, English, English (Journalism), Urdu and Persian.	-	*Annexure-22*
23. Amendment to Ordinance V (2) & VII. [EC. Res. 14-1-4/- dated 09.06.2023] regarding syllabi of Semester-IV, V and VI in respect of Faculty of Interdisciplinary and Applied Sciences.	-	*Annexure-23*
24. Amendment to Ordinance V (2) & VII. [EC. Res. 27-1-13/- dated 25.08.2023] regarding addition of Value Addition Course (VAC) under UGCF.	-	*Annexure-24*
25. Amendment to Ordinance V (2) & VII. [EC. Res. 14-1-3/- dated 09.06.2023] regarding syllabi of Semester IV, V and VI in respect of Department of Political Science and Social Work.	-	*Annexure-25*
26. Amendment to Ordinance V (2) & VII. [EC. Res. 14-1-7/- dated 09.06.2023 and 27-1-2 dated 25.08.2023] regarding syllabi of Semester IV, V and VI in respect of Department of Mathematics, Statistics, Operational Research & Computer Science.	-	*Annexure-26*

CONTENTS

		Annexure No.
27. Amendment to Ordinance V (2) & VII. [EC. Res. 14-1-12/- dated 09.06.2023 and 27-1-14 dated 25.08.2023] regarding addition of Skill Enhancement Course (SEC) in the Pool of SEC courses.	-	*Annexure-27*
28. Amendment to Ordinance V (2) & VII. [EC. Res. 27-1-9/- dated 25.08.2023] regarding Syllabi of Pool of Generic Electives Courses offered by Delhi School for Skill Enhancement and Entrepreneurship Development (DSSEED) and Delhi School of Analytics.	-	*Annexure-28*
29. Amendment to Ordinance V (2) & VII. [EC. Res. 14-1-3/- dated 09.06.2023 and 27-1-5 dated 25.08.2023] regarding Syllabi of Semester IV, V and VI in respect of Department of History, Geography, Sociology and Economics.	-	*Annexure-29*
30. Amendment to Ordinance V (2) & VII. [EC. Res. 14-1-6/- dated 09.06.2023 and 27-1-1 dated 25.08.2023] regarding Syllabi of Semester IV in respect of Department of Physics & Astrophysics.	-	*Annexure-30*
31. Amendment to Ordinance V (2) & VII. [EC. Res. 14-1-6/-(6) dated 09.06.2023 and 27-1-1(7) dated 25.08.2023] regarding Syllabi of Semester IV, V & VI in respect of various Programmes under Department of Chemistry.	-	*Annexure-31*
32. Amendment to Ordinance V (2) & VII. [EC. Res. 14-1-6/- dated 09.06.2023 and 27-1-1 dated 25.08.2023] regarding Syllabi of Semester IV, V & VI in respect of Department of Botany, Geology, Zoology and BSc. Life Science (Zoology component).	-	*Annexure-32*
33. Amendment to Ordinance V (2) & VII. [EC. Res. 14-1-6/- dated 09.06.2023 and 27-1-1 dated 25.08.2023] regarding Syllabi of Semester IV, V & VI in respect of Department of Home Science.	-	*Annexure-33*
34. Amendment to Ordinance V (2) & VII. [EC. Res. 14-1-6/- dated 09.06.2023 and 27-1-1 dated 25.08.2023] regarding Syllabi of Semester IV, V & VI in respect of Department of Anthropology, Biological Sciences, Biomedical Science, Environmental Studies and Polymer Science.	-	*Annexure-34*
35. Amendment to Ordinance V (2) & VII. [EC. Res. 14-1-2/- dated 09.06.2023 and 27-1-7/- dated 25.08.2023] regarding Syllabi of Semester IV, V & VI in respect of Department of Commerce for B.Com (Hons.), B.Com (Prog.) and BA Commerce Based Papers.	-	*Annexure-35*
36. Amendment to Ordinance V (2) & VII. [EC. Res. 14-1-9/- dated 09.06.2023] regarding Syllabi of Semester IV, V & VI in respect of Department of Finance & Business Economics.	-	*Annexure-36*
37. Amendment to Ordinance V (2) & VII. [EC. Res. 14-1-1/- dated 09.06.2023 and 27-1-6/ dated 25.08.2023] regarding Syllabi of Semester IV, V & VI in respect of Department of Punjabi, Hindi and Hindi (Journalism)	-	*Annexure-37*
38. Amendment to Ordinance V (2) & VII. [EC. Res. 27-1-10/- dated 25.08.2023] regarding Syllabi of Semester IV of BSc. (Hons.) Physical Education, Health Education & Sports Sciences and Semester-IV, V & VI of BA (Prog.) Physical Education.	-	*Annexure-38*

CONTENTS

		Annexure No.
39. Amendment to Ordinance V (2) & VII. [EC. Res. 14-1-5/- dated 09.06.2023 and 27-1-8/ dated 25.08.2023] regarding Syllabi of Semester IV, V & VI Department of Music under Faculty of Music & Fine Arts	-	*Annexure-39*
40. Amendment to Appendix -II-A to the Ordinance V (2-A) of the Ordinances of the University regarding addition of Value Addition Course (VAC) – National Cadet Corps -IV.	-	*Annexure-40*
41. Amendment to Appendix -II-A to the Ordinance V (2-A) of the Ordinances of the University regarding Syllabi of Semester-IV of BA (Vocational Studies) under College of Vocational Studies.	-	*Annexure-41*
42. Amendment to Appendix -II-A to the Ordinance V (2-A) of the Ordinances of the University regarding Syllabi of Semester-IV, V and VI of BA (Prog.) in Department of Geography under Faculty of Social Sciences.	-	*Annexure-42*
43. Amendment to Ordinance XX. Colleges and Institutions Maintained by the University. (E.C Res. No. 14-2 dated 9th June, 2023) – Establishment to three centres under Ordinance-XX(Y), XX(Z) and XX(AA)	-	*Annexure-43*
44. Amendment to Appendix -II-A to the Ordinance V (2-A) of the Ordinances of the University vide EC Resolution 14-3 dated 09.06.2023 regarding introduction of Master of Arts in Hindu Studies	-	*Annexure-44*
45. Amendment to Appendix -II-A to the Ordinance V (2-A) of the Ordinances of the University vide EC Resolution 14-1-13 dated 09.06.2023 regarding syllabi alongwith course credit distribution of Semester-I and Semester-II of B.Tech in Computer Engineering, Electronics and Communication Engineering and Electrical Engineering under Faculty of Technology	-	*Annexure-45*
46. Amendment to Appendix -II-A to the Ordinance V (2-A) of the Ordinances of the University vide EC Resolution 60-1-14 dated 03.02.2023 regarding introduction of MBA (Business Analytics) Programme (2 years courses) from academic year 2023-24 under Faculty of Commerce & Business.	-	*Annexure-46*
47. Amendment to Ordinance-VIII (VIII-F) of the Ordinances of the University vide EC Resolution No. 60-1(60-1-13) dated 03.02.2023 regarding assessment pattern of courses based on UGCF-2022	-	*Annexure-47*
48. Amendment to Appendix-II to Ordinance V (2) & VII. [EC Res. No. 38-1-18 dated 08.12.2022] regarding 2-year MCA curriculum in the Department of Computer Science from the academic session 2022-23	-	*Annexure-48*
49. Amendment to Ordinance XXIV. [EC Res. No. 47/- dated 08.12.2022]	-	*Annexure-48*
50. Amendment to Ordinance -IV. [EC Res. No. 51-2/- dated 08.12.2022] regarding re-admission with effect from academic session 2022-2023	-	*Annexure-48*
51. Minor modifications in Course Credit Scheme of Open Elective papers under PG LOCF. (i) M.A. Psychology (ii) M.A. Applied Psychology		*Annexure-49*

CONTENTS

		Annexure No.
52. Adding options on Indian Languages in the Open Elective Course in Semester-III and Semester-IV for syllabus for M.A Comparative Indian Literature (CIL) under the Department of Modern Indian Languages and Literary Studies		*Annexure-49*
53. Minor change in course structure of M.A Programme in Linguistics for Semester-III and Semester-IV under the Department of Linguistics		*Annexure-49*
54. Minor modifications/ introduction in the syllabi under the Department of Slavonic & Finno-Ugrian Studies. (i) M.A Russian. (ii) Full time Intensive Advance Diploma in Russian. (iii) Part-time Certificate/ Diploma/ Advance Diploma Courses in Russian		*Annexure-49*
55. Change of nomenclature of GE Papers in B.A (H) French/ German/ Spanish/ Italian for Semester-I, II, III and IV of CBCS-LOCF Syllabus under the Department of Germanic & Romance Studies.		*Annexure-49*
56. Amendment to Regulation 16 (ii) [EC Resolution No. 49 dated 08.12.2022] regarding order of precedence		*Annexure-50*
57. Amendment to Regulation 16 (iii) [EC Resolution No. 49 dated 08.12.2022] regarding Academic Costumes.		*Annexure-50*
58. Amendment to Ordinance XX-K regarding Cluster Innovation Centre [EC Res. 38-2/]		*Annexure-51*
59. Amendment in Ordinance-VI regarding composition of Board of Research Studies (BRS), Faculty of Technology [EC Res 38-2/]		*Annexure-51*
60. Amendment in Ordinance-VI regarding composition of Board of Research Studies (BRS), Faculty of Technology [EC Res 38-2/]		*Annexure-51*
61. Amendment to Ordinance-V (EC Resolution No. 14-1-1/ dated 09.06.2023 and 27-1-6/ dated 25.08.2023) – BA (Hons.) GRS (German, Spanish, Italian, French)		*Annexure-52*
62. Amendment to Ordinance V (E.C Resolution No. 27-1-6/- dated 25.08.2023] – BA (Prog/ Hons) Bengali		*Annexure-53*
63. Amendment to Ordinance V (EC Resolution No. 14-1-1/ dated 09.06.2023 and 27-1-6/ dated 25.08.2023) – BA (Prog.) Tamil / Telugu		*Annexure-54*

Note : ***Notifications of all the above mentioned amendments are available on the website of the University. Further, notification of Amendment to Ordinance V i.e change in syllabi of courses under UGCF is available on the website under the link {****NEP: UGCF 2022 Syllabi - Delhi University (du.ac.in)****}.***

ANNEXURE-1

Sub: Amendment to Ordinance V

[E.C Resolution No. 60/ (60-1-8) dated 03.02.2023]

Following addition be made to Appendix-II-A to the Ordinance V (2-A) of the Ordinances of the University;

Add the following:

Syllabi of Semester-III of the B.Tech (Information Technology & Mathematical Innovations) under Cluster Innovation Centre based on Under Graduate Curriculum Framework -2022 implemented from the Academic Year 2022-23.

CLUSTER INNOVATION CENTRE

B.Tech. (Information Technology and Mathematical Innovations)

DISCIPLINE SPECIFIC CORE COURSE -7 (DSC-7): Modeling continuous changes through ordinary differential equations

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
DSC-7 Modeling continuous changes through ordinary differential equations	4	3	0	1	Class XII pass	Mathematics till XII

Learning Objectives

Differential equations have the remarkable ability to translate the real-world problems in mathematical language. This course enables students to study many engineering systems, population dynamics in ecology and biology, mechanics of particles in physics, planetary models etc. involving differential equations. The main objective of the paper is to first analyze and understand the real-world problem through a mathematical lens and then develop the corresponding mathematical model with differential equations in the most realistic sense. Once governing equations are obtained, students should be able to solve them analytically and analyze the solution in physical situations. Students will use MATHEMATICA software for the purpose of simulation.

Learning outcomes

After completing this course, student should be able to:

- explain the fundamental concepts of ordinary differential equations (ODEs).
- use MATHEMATICA software to solve problems and applications of ordinary differential equations (ODEs) and complex analysis.
- formulate real life problems as ODEs.
- use concepts of ordinary differential equations to solve physical models such as mass spring, pendulum, alternating current circuits, etc.
- Use knowledge of ODEs, the general and particular structure of solutions and different methods for solutions.

SYLLABUS

Unit I: Review of first order differential equations - Variable separable, homogeneous, linear, exact differential equation - Integrating factors - Existence and uniqueness of solution **[12 hours]**

Unit II: General solutions of second order differential equation - Homogeneous and non-homogeneous differential equations with constant coefficients - Method of variation of parameters - Method of undetermined coefficients, higher order differential equations with constant coefficients **[12 hours]**

Unit III: Planar autonomous linear systems with graphical representation - Determination of stability and classification of equilibrium of a planar nonlinear system by linearization **[9 hours]**

Unit IV: Power series solution about a regular point of an analytic ordinary differential equation - Power series solution of Legendre and Bessel's equation - Laplace transform and its application to differential equations **[12 hours]**

Practical component – The following explorations would be carried out on matrix based numerical mathematics software [30 hours]

- Plotting of slope fields and solution curves of first order and higher order differential equations

- Graphical analysis of solution of Population model, Pollution Model, Acceleration – Velocity Models
- Projectile motion, Mechanical Vibrations – Motion of Simple Pendulum, Free undamped and damped motion, Forced undamped and damped motion
- Plotting of phase plane diagrams for predator – prey model, competing species, epidemic model and their analysis
- Innovation project

Essential/recommended readings

1. *Elementary differential equations*, W. E. Boyce and R. DiPrima, John Wiley, 2005.
2. *Differential equations and boundary value problems: Computing and modeling*, C.H. Edwards and D.E. Penny, Pearson education (Singapore), Pte. Ltd., 2005.
3. *Advanced engineering mathematics*, E. Kreyszig, John Wiley, 1999.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE -8 (DSC-8): Operating Systems

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-8 Operating Systems	4	3	0	1	Class XII pass	DSC-3

Learning Objectives

The objective is to introduce students with basic concepts of Operating System, its functions and services and to familiarize the students with various views and management policies adopted by O.S.

as pertaining with processes, Deadlock, memory, File and I/O operations. To brief the students about the functionality of various OS like Unix, Linux and Windows XP as pertaining to resource management and to provide the knowledge of basic concepts towards process synchronization and related issues.

Learning outcomes

After completing this course, student should be able to;

- Analyze the structure of OS and basic architectural components involved in OS design.
- Analyze and design the applications to run in parallel either using process or thread models of different OS.
- Analyze the various device and resource management techniques for timesharing and distributed systems.
- Understand the Mutual exclusion, Deadlock detection and agreement protocols of Distributed operating system.
- Conceptualize the components involved in designing a contemporary OS.

SYLLABUS

Unit I: Overview: Operating systems – structure, operations, components, types, services, user interfaces. System calls, system programs, system boot**.** **[12 hours]**

Unit II: Process management - Processes: concept, scheduling, operations on processes, inter-process communications. Threads – single - and multi-threaded processes. CPU scheduling – criteria, algorithms, multiple-processor scheduling. **[12 hours]**

Unit III: Process synchronization – critical-section problem, semaphores, classic synchronization problems, monitors. Deadlocks – characterization, deadlock prevention, deadlock avoidance, deadlock detection, recovery from deadlock. **[12 hours]**

Unit IV: Memory management: Main memory – memory allocation schemes. **[9 hours]**

Practical component: **[30 hours]**

Engineering Kitchen Activity [Laboratory]:

- Write a program for implementation of Priority scheduling algorithms.
- Write a program for implementation of Round Robin scheduling algorithms.
- Write a program for implementation of FCFS scheduling algorithms.
- Write a program for implementation of SJF scheduling algorithms.
- Write a program to implement the producer – consumer problem using semaphores.
- Write a program to implement IPC using shared memory.
- Write a program to implement banker's algorithm for deadlock avoidance.
- Write a program to implement Threading and Synchronization Applications.
- Write a simple Unix commands.
- Innovation Projects

Essential/recommended readings

1. Operating System Concepts, 10th Edition, Abraham Silberschatz, Peter Baer Galvin, Greg Gagne, John Wiley & Sons, 2009.
2. Manish Kumar Singh, Sachin Kumar, Saibal Kumar Pal, Operating Systems: Concept Building & Problem Solving Approach, Cengage Publication, 2022.
3. John. Lions' Commentary on UNIX® 6th Edition with Source Code. John Lion, San Jose, CA: Peer-to-Peer Communications, 1996.
4. Exokernel: An Operating System Architecture for Application-Level Resource Management., Engler, Dawson R., M. Frans Kaashoek, and James O'Toole Jr., ACM Press, 1995.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE -9 (DSC-9): Computer Systems Architecture

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-9 Computer Systems Architecture	4	3	0	1	Class XII pass	Mathematics till XII

Learning Objectives

The objective is to introduce students with the basic concepts of Computer and the principles underlying systems organization, issues in computer system design, and contrasting implementations of modern systems and to familiarize the students with a fundamental knowledge of computer hardware and computer systems, with an emphasis on system design and performance.

Learning outcomes

After completing this course, student should be able to;

- have understanding of Computing Systems, Models & Logic, Organization & Architecture of Memory
- have understanding of CPU, I/O Devices

- have understanding of Distributed Computing, Parallel Architecture, Mobile Systems Architecture
- have understanding about Deconstructing Digital Architecture of a computing devices and study of components (Hardware/Software)
- have hands-on experience with Arduino/ARM Interface, Programming & interfacing with Sensors and Parallel Programming using OPENMP, OpenMPI & CUDA.

SYLLABUS

Unit I: Computer arithmetic: fixed point and floating-point representation and arithmetic, numbers conversion. Digitals circuits: Boolean algebra, logic gates, logical synthesis by minimization of Boolean functions **[12 hours]**

Unit II: Combinational circuits, sequential circuits (synchronous and asynchronous). Construction of the computer: Von Neumann Architecture **[12 hours]**

Unit III: Organization and architecture of memory systems, input/output systems **[12 hours]**

Unit IV: Construction of the simple processor. **[9 hours]**

Practical component: **[30 hours]**

Engineering Kitchen Activity [Laboratory]:

• Logic Gate Designs
• Deconstructing Digital Architecture of a computing devices and study of components (Hardware/Software)
• Hands on experiments with Arduino/ARM Interface
• Programming in Assembler: memory addressing, interrupts, operations on numbers bits and tables, conditional instructions, loops, input/output

Essential/recommended readings

1. Computer System Architecture, Morris Mano, Pearson Education, 2008
2. Computer Systems Architecture: a Networking Approach, Rob Williams, Pearson Education, 2006
3. Advanced Computer Architecture: Parallelism, Scalability, Programmability, K. Hwang, McGraw Hill, 2017.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

NOTE: The core papers offered in the B.Tech. Course at CIC are Mathematics and Information Technology. Therefore, the students will choose GE offered by Physics, Chemistry, Management and Computational Biology faculty members of CIC.

GENERIC ELECTIVES (GE-3.1): Economic Behaviour

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
GE 3.1: Economic Behaviour	4	3	1	0	Class XII pass	NIL	Management Faculty of CIC

Learning Objectives

The purpose of this course is to familiarize the student with the present day modern economics that is both intuitive and relevant to the students. The course introduces the generally accepted concepts of economics both at the micro and macro level. In addition to this, the purpose of this course is to analyse how individual decision-makers, both consumers and producers and the government policies, behave in a variety of economic environments.

Learning outcomes

After completing this course, student should be able to:

- Understand of the basic structure of the economic ecosystem.
- Conception, of how individuals and firms allocate resources and how market prices are determined.
- Able to understand shifts in supply and demand and their implications for price and quantity sold.
- Understand of how to analyse firms' decisions mathematically using a production function and calculate their optimal level of production, costs, and profits.

- Learn to model the decisions made by firm in a monopoly and an oligopoly, and the implications of these alternate structures for consumer welfare.
- Learn to perceive the nation's economy as a whole and compare the views of Keynes and the classical economists.
- Learn various techniques measuring and tracking macroeconomics using GDP and CPI.
- Analyse the model of full employment and use it to examine important macroeconomic issues, such as the extent to which taxes may depress economic activity and lower the level of GDP.

SYLLABUS

Unit I: The Economic Problem: Scarcity and Choice; Market economies and the price system; Variables, correlation and causation; Recommending appropriate policies **[9 hours]**

Unit II: The supply and demand model; Elasticity of supply and demand; Market equilibrium; Demand curve and behaviour of consumers; Supply curve and behaviour of firms **[12 hours]**

Unit III: Efficiency of markets; Rise and fall of industries; Monopoly; Antitrust policy; Taxes, transfers and income distributions **[12 hours]**

Unit IV: Unemployment, inflation and interest rates; Macroeconomic theory and policies; Measuring theoretical and actual GDP **[12 hours]**

Essential/recommended readings

1. Principles of Economics, J.B. Taylor and A. Weerapana, Flatworld, 9th Edition, 2021.
2. Principles of Economics, K. E. Case, R. C. Fair and S. C. Oster, Pearson Education, 13th Edition, 2019.
3. Principles of Economics, N. G. Mankiw, Cengage, 9th Edition, 2021.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-3.2): Electronic Circuit elements and innovation lab

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
GE 3.2: Electronic Circuit Elements and Innovation Lab	**4**	**2**	**0**	**2**	**Class XII pass**	**Mathematics till XII**	**Physics/ Electronics Faculty of CIC**

Learning Objectives

This module involves interactive learning of A.C. fundamentals. It helps to understand the basic network analysis of electronic circuits. It also provides the interface to understand the working of various electronic devices and its characteristics. Working of electronic instruments will also be understood.

Learning outcomes

- After completing this course, student should be able to;
- Concepts of AC fundamentals
- Good knowledge of Network Analysis
- Basics of Diodes and Transistor based devices
- Knowledge of instruments like CRO, Function Generator, Multimeter, etc.

SYLLABUS

Unit I: AC Fundamentals - Concept of voltage and current sources - KVL and KCL - Node voltage analysis and method of mesh currents - Network theorems **[8 hours]**

Unit II: PN Junction: variants and applications - Bipolar Junction Transistor (BJT) biasing and amplifier design - Field Effect Transistor (FET) variants – FET biasing and amplifier design **[6 hours]**

Unit III: Structure and working of SCR. Structure and operation of LDR, Photo voltaic cell, Photo diode, Photo transitors & LED **[8 hours]**

Unit IV: Operational Amplifiers basics and practical circuits - Feedback and oscillator circuits - Voltmeters-Multimeters-Function generator- Cathode ray oscilloscope - Cathode Ray Tube **[8 hours]**

Practical component – **[60 hours]**

- Engineering Kitchen Activity (matrix based numerical mathematics software) [Laboratory]
- Characteristics of PN junction and Zener diode filters
- Half wave rectifier.
- Full wave rectifier with 2 diodes.
- LC and Pi filters
- Full wave rectifier with 4 diodes (Bridge rectifier). Input, Output and Transfer characteristics of CE and CC Amplifier.
- Amplifiers and Oscillator characteristics.
- Characteristics of LDR, Photo-diode and Phototransistor.
- Transfer characteristics of JFET.
- Transfer characteristics of MOSFET (with depletion and enhancement mode)
- Characteristics of LED with three different wavelengths.
- Series voltage Regulator.
- Shunt voltage Regulator.
- Characteristics of Thermistor.

Essential/recommended readings

1. Circuits and Networks - A.Sudhakar & Shyammohan S. Palli ,TMH, 2010
2. Principles of Electronics- V.K. Mehta and Rohit Mehta, S Chand &Co,2009
3. Electronic Devices and Circuit Theory-R.L.Boylestad and L.Nashelsky, Pearson Education, 2009.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-3.3): Flow of information in Living Systems

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
GE 3.3 Flow of Information in Living Systems	**4**	**2**	**0**	**2**	**Class XII pass**	**NIL**	**Chemistry / Biology Faculty of CIC**

Learning Objectives

This module is designed to:

- Introduce students to nuclear events such as replication, transcription, translation, condensation, repair and recombination etc.
- Introduce gene regulation in prokaryotes and eukaryotes
- Introduce various biophysical and biochemical techniques related to these nuclear events

Learning Outcomes

Upon completion of the course the students will be able to:

- Understand the structure and function of DNA and RNA
- Build concept about the processes of the Central Dogma of the living systems (replication, transcription, translation, recombination etc.)
- Develop an understanding of prokaryotic and eukaryotic gene regulation

SYLLABUS

Unit I: Structure of the nucleic acids **[8 hours]**

Structure and biophysical properties of the DNA and RNA, forms of DNA and RNA, DNA binding domains, the evolution of DNA

Unit II: Replication, Transcription and Translation **[8 hours]**

DNA replication models, Enzymes of DNA replication, DNA replication in prokaryotes and eukaryotes, regulation of DNA replication;

RNA polymerases, Transcription in prokaryotes, Eukaryotic transcription, Regulation of transcription in Prokaryotes and Eukaryotes, Eukaryotic chromatin

Ribosomes, translation in prokaryotes, translation in eukaryotes

Unit III: DNA repair and recombination **[8 hours]**

Energetics and accuracy of information transfer, DNA damage and repair, Molecular recombination

Unit IV: DNA packaging and chromatin structure, regulation of gene expression in eukaryotes **[6 hours]**

Practical Component **[60 hours]**

- Agarose gel electrophoresis of DNA/ Proteins
- SDS-PAGE Electrophoresis
- Polymerase Chain Reaction (PCR)
- Primer design
- Spectrometry
- Modelling of DNA and RNA forms and motifs through computational tools

Essential/recommended readings

1 Biology, Raven et al. Tata Mc Graw –Hill, 2013

2. Biology: Global Approach. Reece et al., Pearson Educations, Global edition, 2014

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-3.4): Explorations in Living Systems

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
***GE 3.4 Explorations in Living Systems**	**4**	**2**	**0**	**2**	**Class XII pass**	**NIL**	**Chemistry / Biology Faculty of CIC**

***GE 3.4 can be opted by students in either 3rd or 4th semester.**

Learning Objectives

This module is designed to:

- Introduce students to the living system in terms of their hierarchal organization and their distinction from the nonliving.
- The specific objective of the module is to introduce biology even to students with no biology background and enable them to understand living systems.
- To enthuse students with tools and techniques for studying biology.
- Introduce students to the origin and evolution of living systems
- Introduce students to the essence of model organisms for studying biology

Learning outcomes

After studying this course, the students will be able to:

- Understand the diversity and complexity of living systems
- To comprehend different fields within Bio-Sciences
- To understand experimental processes undertaken in Biology
- Will develop a philosophical understanding of the origin and evolution of living systems, the nature of genetic materials etc.

SYLLABUS

Unit I: Introduction and organization of living systems [6 hours]

Introduction to living state: (living versus non-living), Hierarchy of organization of living systems and classification (cellular, multicellular and organismic and population levels), Cell as the unit of life.

Unit II: Origin and diversification of the living systems [8 hours]

Nature of the genetic material (DNA versus RNA), Introduction to molecular evolution, Origin of life, Evidence of evolution, Theories of evolution, Creating living systems (synthetic cell).

Unit III: Designing living systems [8 hours]

Nature of biological processes - Approaches to study Biology: Observational and Experimental, Physiology and Behaviour

Unit IV: Tools and materials for studying living systems [8 hours]

Observational, synthetic and reductionist approaches for studying living organisms, Microscopy, Centrifugation and separation techniques as basic tools for studying components of living systems, Model organisms.

Practical components [60 hours]

Basic equipment and techniques

a. Observation or permanent slides of pollens, microbes, hydra, Daphnia and bacteria under a microscope
b. Separation techniques:
    - Fraction of cell organelles through centrifugation
    - Separation of chlorophyll pigments by paper chromatography

Exploring different levels of organization (using model organisms)

a. Tissue organization and diversity in cell shapes: studying through plant and animal tissues sections
b. Inflorescence as a model of organization
c. Understanding parts of the flower

Studying cells:

a. Bacterial growth curve analysis
b. Genomic DNA isolation
c. Preparation of metaphase chromosome
d. Preparation of karyotypes using photographs of metaphase spreads
e. Demonstration of osmosis and plasmolysis

Essential/recommended readings

1. *Biology*, Raven et al., Tata McGraw-Hill, 2013.
2. *Biology: Global Approach*. Reece et al., Pearson Educations, Global edition, 2014.

SEMESTER – III
B.A. (Honors) Humanities & Social Sciences
Category II

B.A. (Honors) Humanities & Social Sciences is being run under the Meta-College concept wherein students go to constituent colleges of the University of Delhi to partly earn their credits in addition to earning their credits from the courses run at the Cluster Innovation Centre, towards completion of their degree.

In the 3rd semester the DSCs, VACs, SECs, AECs, will be chosen by the students in the constituent colleges/ centres/ departments of the University of Delhi. However, the students will be choosing the 3rd semester DSEs at CIC only. The purpose of offering these DSEs at the Centre is to encourage students to engage with diverse social problems and work towards their possible innovative solutions. The idea of introducing these modules is to make students work in the field with diverse stakeholders and various social groups. Following is the list of the DSE courses offered at the Centre.

DISCIPLINE SPECIFIC ELECTIVE (DSE-01A): Socially Engaging with the Human World

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Socially Engaging with the Human World (DSE-01A)	4	1	0	3	Class XII Pass	Knowledge of problem identification, community engagement, assessment techniques & ethics.

Learning Objectives

- To make students learn to identify a social problem
- To make students understand the complexity and contours of a social problem.
- To design strategies and solutions using a multi-pronged trans-disciplinary approach towards social interventions.

Learning Outcomes

On completion of the course, students will be able to –

- learn the complexity of a social problem.
- identify relevant social problems for study.
- design strategies to address the identified social problem using innovative means.

OUTLINE OF DSE-01A

It has become imperative for us as a society to engage with issues arising out of social formations and their interaction with social institutions. This approach is useful from an individual's as well as society's perspective, specially keeping in view its implications for public policy, governance and larger social wellbeing. This is an intervention-based module and therefore the students will be guided to identify a problem arising out of any social, cultural, economic, political issue which has larger implications for human society in general and Indian demography in particular. After identifying the problem, the students will be mentored to design a feasible strategy to address the identified problem by suggesting and practicing innovative means and tools such as organising: seminars and workshops, awareness campaigns, dialogue with communities, publishing research and newspaper articles, producing mass media programmes such as blogs, vlogs, documentaries/filmmaking, theatre interventions and interventions through translations, creative writing and other creative mediums. The students will be encouraged to involve various stakeholders, the concerting agencies and other communities pursuing similar goals.

Theoretical Component (01 Credit) **15 hours**

Theoretical concepts drawing from various strands of Humanities, Social Sciences, Science and Technology and Public Policy discussions related to the identified social problem will be introduced to the students through lectures, debates, seminars, workshops and classroom discussions, etc.

Practical component (if any) - 75 % **90 hours**

Indicative Themes:

- Understanding social formations
- Politics of identity
- Social Institutions: issues and challenges
- Public policy and the social groups
- Social and economic policies

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE (DSE-01B): Gender Issues and Challenges in India

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Gender Issues and Challenges in India (DSE-01B)	**4**	**1**	**0**	**3**	**Class XII Pass**	**Knowledge of problem identification, assessment techniques & ethics in gender studies.**

Learning Objectives

- To introduce students to the concept and issues of Gender and Gender Studies.
- To make students learn the issues around Gender and Gender Normativity.
- To make students learn to identify a social problem arising out of Gender issues.
- To train students to design strategies and solutions using a trans-disciplinary approach towards gender issues.

Learning Outcomes

On completion of the course, students will be able to –

- understand the concepts and issues around Gender and Gender Studies.
- critically analyze Gender Normativity.
- design strategies and solutions towards gender issues.

OUTLINE OF DSE-01B

As society it has become imperative for us to study the issues arising out of complexity of gender. To understand the complexity of gender the students not only need to engage with the recent debates related to gender but they are also required to practically examine the normative practices associated with the gender role. It is an intervention-based module and therefore the students will be guided to identify a problem arising out of the complexity of gender and its larger implications for the individual and society. After identifying the problem, the students will be mentored to design a feasible strategy to address the identified problem by suggesting and practicing innovative means and tools such as challenging stereotypes, organising seminars and workshops, sensitisation campaigns, dialogue with communities, publishing research and newspaper articles, producing mass media programmes such as blogs, vlogs, documentaries/ filmmaking, theatre interventions and interventions through translations, creative writing and other creative mediums. The students will be encouraged to involve various stakeholders, the concerting agencies and other communities pursuing similar goals.

Theoretical Component (01 Credit) **15 hours**

Theoretical concepts drawing from various strands of Humanities, Social Sciences, Science and Technology and Public Policy discussions related to the identified social problem will be introduced to the students through lectures, debates, seminars, workshops and classroom discussions, etc.

Practical component (if any) - 75 % **90 hours**

Indicative Themes:

- Normative gender roles
- Issues and challenges of LGBTQ communities
- Gender rights movements
- Gender as a discourse
- Sexual abuse and sexual harassment
- Gender and economics
- Gender Identity

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE (DSE-01C): Engaging with Emerging Human Rights Challenges

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Engaging with Emerging Human Rights Challenges (DSE-01C)	4	1	0	3	Class XII Pass	Knowledge of problem identification, human rights and challenges, assessment techniques and ethics.

Learning Objectives

- To make students learn the concepts and paradigms of Human Rights and Rights-based movements.
- To mentor students in identifying causes and concerns of Rights-based movements.

- To mentor students towards ideating and proposing solutions by involving key stakeholders in the process concerning the issue at hand.

Learning Outcomes

On completion of the course, students will be able to –

- understand the concepts and paradigms of Human Rights and Rights-based movements.
- identify the causes and concerns of Rights-based movements.
- ideate and propose solutions by involving key stakeholders.

OUTLINE OF DSE-01C

'Engaging with Emerging Human Rights Challenges' is an intervention-based paper. In this paper the students will be guided to identify a problem arising out of Human Rights issues such as social conflicts, human-nature conflicts, politics of rights-based movements, and movements of identity. After identifying the problem, the students will be mentored to design a feasible strategy to address the identified problem by suggesting and practicing innovative means and tools like challenging stereotypes, organising seminars and workshops, sensitisation campaigns, dialogue with communities, publishing research and newspaper articles, producing mass media programmes such as blogs, vlogs, documentaries/filmmaking, theatre interventions and interventions through translations, creative writing and other creative mediums. The students will be encouraged to involve various stakeholders, the concerting agencies and other communities pursuing similar goals.

Theoretical Component (01 Credit) **15 hours**

Theoretical concepts drawing from various strands of Humanities, Social Sciences, Science and Technology and Public Policy discussions related to the identified social problem will be introduced to the students through lectures, debates, seminars, workshops and classroom discussions, etc.

Practical component (if any) - 75 % **90 hours**

Indicative Themes:

- Paradigms of human rights-based movements
- Public policy and human rights
- The stateless people and the human rights issues

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE (DSE-01D): Social Challenges and Sensitizations Concerning Marginalised Communities

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Social Challenges and Sensitisations Concerning Marginalised Communities (DSE-01D)	**4**	**1**	**0**	**3**	**Class XII Pass**	**Knowledge of problem identification, rights of vulnerable groups, community engagement, assessment techniques & ethics.**

Learning Objectives

- To sensitize students about issues related to marginalized groups.
- To learn from the marginalized communities.
- To enable students to conceive and devise strategies and solutions using a trans-disciplinary approach towards issues of the marginalized.

Learning Outcomes

On completion of the course, students will be able to –

- understand the challenges faced by marginalized groups/ communities.
- understand the various traditions and socio-cultural practices that impact the well-being of marginalized communities.
- ideate and devise strategies and interventions aimed at achieving an inclusive society.

OUTLINE OF DSE-01D

To achieve the goal of social inclusion it is imperative for us to study the experiences of discrimination as well as the unequal power relationships of the society. This paper will introduce the students to not only the issues related to marginalised communities but they will also develop empathetic attitude towards such communities. It is an intervention-based module and therefore the students will be guided to identify a problem concerning marginalised communities such as the Scheduled Castes, Scheduled Tribes, Women, Persons with Disabilities, Gender-minorities, and the other subaltern groups. After identifying the problem, the students will be sensitised to understand the communication and other cultural barriers in order to establish a meaningful dialogue with the marginalised communities aimed at achieving a socially inclusive society. The students will be encouraged to involve various stakeholders, the concerting agencies and other communities pursuing similar goals.

Theoretical Component (01 Credit) **15 hours**

Theoretical concepts drawing from various strands of Humanities, Social Sciences, Science and Technology and Public Policy discussions related to the identified social problem will be introduced to the students through lectures, debates, seminars, workshops and classroom discussions, etc.

Practical component (if any) – 75 % **90 hours**

Indicative Themes:

- Issues and challenges of scheduled castes and scheduled tribes
- Issues and challenges of persons with disabilities
- Issues and challenges of religious minorities and the other subaltern groups
- Public policy and the marginalised groups

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE (DSE-01E): Promoting Linguistic Plurality and Cultural Diversity in India

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Promoting Linguistic Plurality and Cultural Diversity in India (DSE-01E)	4	1	0	3	Class XII Pass	Knowledge of problem identification, concepts relating to culture and cultural diversity, culture and identity, assessment techniques and ethics.

Learning Objectives

- To engage students with various cultural and linguistic traditions of India.
- To make students learn to appreciate the cultural and linguistic diversity of our country.
- To make students conceptualize strategies to preserve the lesser-known cultural, linguistic and traditional practices of India.

Learning Outcomes

On completion of the course, students will be able to –

- appreciate the cultural and linguistic diversity of our country.
- engage with various cultural and linguistic traditions of India.
- conceptualize strategies to preserve the lesser-known cultural, linguistic and traditional practices of India.

OUTLINE OF DSE-01E

India is a country of diverse traditions with myriad of languages. The aim of this paper is to make students able to appreciate this rich cultural heritage and linguistic heterogeneity of India. Through this paper students will also learn about the various tools, techniques and practices to preserve the lesser-known cultures, languages and traditions of our country. This is an intervention-based module and therefore the students will be guided to find solutions to preserve various cultural and linguistic traditions of India in order to achieve a culturally heterogeneous and linguistically plural society. The students will be mentored to design a feasible strategy to engage with the identified tradition by suggesting and practicing innovative means and tools such as organising workshops, seminars and talks, awareness campaigns, dialogue with communities, publishing research and newspaper articles, producing mass media programmes such as blogs, vlogs, documentaries/filmmaking, theatre interventions and interventions through translations, creative writing and other creative mediums. The students will be encouraged to involve various stakeholders, the concerting agencies and other communities pursuing similar goals.

Theoretical Component (01 Credit) **15 hours**

Theoretical concepts drawing from various strands of Humanities, Social Sciences, Science and Technology and Public Policy discussions related to the identified social problem will be introduced to the students through lectures, debates, seminars, workshops and classroom discussions, etc.

Practical component (if any) – 75% **90 hours**

Indicative Themes:

- Exploration and promotion of cultural festivals of India
- Preservation and practice of linguistic diversity of India
- Promotion of arts and crafts

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE (DSE-01F): Exploration and Promotion of Heritage of India

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Exploration and Promotion of Heritage of India (DSE-01F)	**4**	**1**	**0**	**3**	**Class XII Pass**	**Knowledge of problem identification and concepts relating to heritage of India.**

Learning Objectives

- To enable students explore the tangible and in-tangible Heritage of the Nation.
- To make students appreciate the rich heritage of India and its potential for our national growth.
- To mentor students-led intervention to restore, preserve and promote Heritage of India.

Learning Outcomes

On completion of the course, students will be able to –

- understand the tangible and in-tangible Heritage of India.
- gauge the possible role of our National Heritage in contributing towards our development and economy.
- design strategies that will aid in restoring, preserving and promoting Heritage of India.

OUTLINE OF DSE-01F

Through this paper the students will be able to appreciate the vast contours of our geographical, spiritual, religious, architectural, aesthetical, musical, culinary, handicraft, and folk traditions. This is an intervention-based module and therefore the students will be guided to explore the tangible and in-tangible heritage of India. They will work towards promotion of our rich heritage by designing and conducting events like Heritage Walks, Nature Walks, Curating Exhibitions, organising: workshops, seminars and talks, awareness campaigns, dialogue with communities, publishing research and newspaper articles, producing mass media programmes such as blogs, vlogs, documentaries/filmmaking, theatre interventions and interventions through translations, creative writing and other creative mediums. The students will be encouraged to involve various stakeholders, the concerting agencies and other communities pursuing similar goals.

Theoretical Component (01 Credit) **15 hours**

Theoretical concepts drawing from various strands of Humanities, Social Sciences, Science and Technology and Public Policy discussions related to the identified social problem will be introduced to the students through lectures, debates, seminars, workshops and classroom discussions, etc.

Indicative Themes:

- Promotion and preservation of lesser-known monuments
- Appreciating and promoting culinary traditions of India
- Exploration and awareness of folk arts and traditions
- Exploration and promotion of music and dance traditions of India
- Exploring biodiversity of India

Practical component (if any) - 75 % **90 hours**

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

ANNEXURE-2

Sub: Amendment to Ordinance V

[E.C Resolution No. 60/ (60-1-10) dated 03.02.2023]

Following addition be made to Appendix-II-A to the Ordinance V (2-A) of the Ordinances of the University;

Add the following:

Syllabi of Semester-III of Department of Education under Faculty of Education based on Under Graduate Curriculum Framework -2022 implemented from the Academic Year 2022-23.

FACULTY OF EDUCATION
DEPARTMENT OF EDUCATION

Category II

B.A Programme with Education as Major

DISCIPLINE SPECIFIC CORE COURSE – 5 (DSC-5): EDUCATION IN PLURAL SOCIETY

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
EDUCATION IN PLURAL SOCIETY DSC 5	4	3	1	0	• Class XIIth Pass	• No Pre-requisite

Learning Objectives

The Learning Objectives of this course are as follows:

- This paper attempts to introduce introduces the conceptual issues and concerns of education in a plural society.

- It engages with the idea of diversities as well as the challenges posed by inequalities and discrimination.
- It further initiates a critical reflection on the possibilities from education.
- It fosters the conceptual understanding of equality with reference to opportunity, marginalisation, pluralism, multilingualism and patriarchy.

Learning Outcomes

On completion of this course, learners will be able to:

- Make distinction between social diversity and inequalities in education.
- Analyse the special needs and basis for additional provisions of educational opportunities to social groups facing inequalities such as caste, class, gender, religion and disability.
- Explain Constitutional values and provisions that enable social diversity and limit inequality in education.
- Describe multilingualism in Indian context and critically discuss issues of language that are relevant for a learner, with specific focus on home language and school language.
- Locate provisions that enable linguistic diversity in education from the Constitution.
- Identify and critically evaluate the imbalances of gender in education and socialisation.
- Apply an empathetic understanding of diversity in educational institutions.

SYLLABUS OF DSC- 5

Unit 1 : Understanding Pluralism, Diversity and Inclusion (19 Hours)

- Pluralism and Diversity in Indian Society: Religion, Language, Ethnicity and Culture. The school-society interface and its representation in 'explicit' and 'hidden' curriculum.
- Inequalities and Social Exclusion: Differences in access to resources and opportunities among social groups.
- Social Mobility: Aspirations, Opportunities and Challenges.
- Social and Rights based approach to construction of disability and difference; Issues of inclusion.

Unit 2 : Language and the Learner (13 Hours)

- Child's home language; the language of school: Classroom, Textbooks.
- Issues related to mother tongue, standard language, medium of education.
- Understanding multilingualism.
- Provisions for linguistic minority groups in the Constitution.

Unit 3- Gender Concerns in Education (13 Hours)

- Gender as social category and gendered experiences of growing up.
- Gender Socialisation: Home, School and Society.
- Gender dynamics in educational contexts: Inter-sectionalities of gender, caste, class and religion.

Suggested Projects/ Assignments: Any two

- Discuss aspirations from education, and challenges faced by the marginalised group with reference to any of the following books/ chapters: Bhimayana or Jhoothan: A Dalit's Life Or 'Naja goes to school and Doesn't'.

- Critical discussion on the film 'Hindi Medium'.
- Talk to children of the middle school to understand how they express themselves differently in the first and the second languages. Ask children to write a paragraph or talk about their experiences. These narratives are to be analysed for expression, ideas and ease of communication.
- Discuss students' experiences of growing up as a boy/girl following a self-reading of Krishna Kumar's ' Growing up male'.

Note: On the basis of the above, the teacher may design his/her own relevant assignments and projects.

Readings

Essential Reading

- Agnihotri, R. (2008). Multilinguality for India. *Seminar*, (590).
- Beiteille, A. (1983). *Equality and Inequality: Theory and Practice.* New Delhi : OUP. [Chapter 6]
- Bhasin, K. (2000). *Understanding Gender*. New Delhi: Kali for Women.
- Bhatty, Z. (1988). Socialisation of the Female Muslim Child in Uttar Pradesh. In K. Chanana (Ed.), *Socialisation, Education and Women: Explorations in Gender Identity*. New Delhi: Orient Longman.
- Constitution of India. Retrieved from https://www.india.gov.in/my-government/constitution-india/constitution-india-full-text
- Dube, L. (1988). On the Construction of Gender: Hindu Girls in Patrilineal India. In K. Chanana (Ed.), *Socialisation, Education and Women: Explorations in Gender Identity*. New Delhi: Orient Longman.
- Dube, S. C. (1990). *Indian Society*. New Delhi: National Book Trust. [Chapters 1, 2, 3]
- Mohanty, A. K. (n.d.). *Language and Education*. Retrieved from http://www.nmrc-jnu.org/nmrc_img/NUEPA_MOHANTY_Lang&Ed.ppt
- Nambissan, G. B. (2004). Integrating Gender Concerns. *Seminar*, (536).
- Nambissan, G. B. (2009). Exclusion and Discrimination in Schools: Experiences of Dalit Children. *Children, Social Exclusion and Development*, *1*(1). Retrieved from http://dalitstudies.org.in/wp/wps0101.pdf

- *Position Paper: National Focus Group on Education of Children with Special Needs*. (n.d.). NCERT.

Additional Readings

- Kumar, K. (1992). Growing up Male. In *What Is Worth Teaching?* New Delhi: Orient Longman.
- Mohanty, A. K. (1990). Psychological Consequence of Mother-Tongue Maintenance and Multilingualism in India. In D. P. Pattanayak (Ed.), *Multilingualism in India*. Clevedon, UK: Multilingual Matters.
- *Position Paper: National Focus Group on Gender Issues in the Curriculum*. (2005). New Delhi: NCERT.
- *Position Paper: National Focus Group on Teaching of Indian Language*. (2005). New Delhi: NCERT.
- Talib, M. (1998). Educating the Oppressed: Observations from a School in a Working Class Settlement in Delhi. In S. Shukla & R. Kaul (Eds.), *Education, Development and Underdevelopment*. New Delhi: Sage Publications. [pp 199-209]
- Turner, B. S. (1986). *Equality*. Chichester: Ellis Horwood. [Chapter 6: Towards Equality]
- Valmiki, O. (2003). *Joothan: A Dalit's Life* (A. P. Mukherjee, Trans.). Kolkata: Bhatkal and Sen.
- Vyam, D., Vyam, S., Natarajan, S., & Anand, S. (2011). *Bhimayana: Experiences of Untouchability* (1st edition). New Delhi: Navayana.
- Winch, C. (2011). Civic Education, Pluralism and the Indispensable Role of the State. In K. N. Panikkar & M. B. Nair (Eds.), *Emerging Trends in Higher Education in India: Concepts and Practices*. New Delhi: Pearson Education.

Teaching Learning Process:

The Course will be taught through interactive pedagogic methods such as classroom discussion, debates, film discussions, critical media analysis. Collaborative learning tasks, enhancing reading comprehension of core writings in the area and developing innovative projects. Reflective expression and learning will be encouraged.

Assessment Method

The assessment will be formative in nature and will include student participation. Individual and group tasks and assignments will be given. Summative evaluation will be through end semester examination.

Key words

Education, Plural Society

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE-6 (DSC-6): Equality Perspective in Education

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Equality Perspective in Education DSC 6	4	3	1	0	• Class XIIth Pass	• No Pre-requisite

Learning Objectives

The Learning Objectives of this course are as follows:

- Understand the relationship between equality and education in a democratic society.
- Critical analysis of history of education in India with reference to equality perspective.
- Analysis of the contemporary education system and practices with reference to equality perspective
- Understand the importance of constitutional provisions in promoting equality.

Learning Outcomes

After completion of the course student will be able to:

- Conceptualize the relational position of society, equality and education
- Understand the historical trajectories of education systems in India.
- Identify and examine various concerns and challenges in achieving equality of education for all.
- Critically reflect and analyse different policy documents on education.
- Identify the ways to address different kinds of educational and social inequalities

SYLLABUS OF DSC- 6

Unit I: Understanding the Concept of Equality and Education (13 Hours)

- Understanding society, equality, system of education and their relational position

- Social, cultural, political, economic and linguistic dynamics of equality and education
- Understanding schooling, diversity and equal opportunity

Unit 2: Equality and Education: Historical Perspective and Emerging Concerns (19 Hours)

- Education and Equality- Socio historical perspectives
- Gender, Education and Society
- Education and economically disadvantaged
- Education and socially marginalized groups

Unit 3: Towards Equality Responsive Perspective (13 Hours)

- Constitution as a source of equality for all
- Democracy, Citizenship and Education
- Dalit and gender literature to address inequalities,
- Critical Pedagogy for equality and education.

Practicum/ Suggested Projects / Assignments (Any Two)

- Comparative study of national curriculum frameworks (NCF2000, NCF2005, NCF2022)
- Critical analysis of literature on marginalized groups.
- Understanding marginalised communities: Locate the communities and identify the issues and challenges they face regarding education
- Critical analysis of media to understand concerns of education, equality and diversity.

Note: On the basis of the above, the teacher may design his/her own relevant projects/ assignments.

Essential/ Recommended Readings

- Ambedkar, B. R. (Bhimrao Ramji), 1891-1956. (1990). *Annihilation of Caste : An Undelivered Speech.* New Delhi :Arnold Publishers,
- Bala R. & Prapanna R. (2014). *Shiksha ke Naam Par*. New Delhi: Yash Publication.
- Bernard, C. & Andrew, L. (2004). *Education for Democratic Citizenship: Issues of Theory and Practice*. UK: Ashgate Publishing Limited.
- Bhasin, K. (1994*).What is Patriarchy?* New Delhi: Kali for Women
- Chanana, K. (2001). *Interrogating Women's Education: Bounded Visions, Expanding Horizons*. Rawat: Jaipur and New Delhi.
- Chanana, K. (1988). *Socialization, Education and Women*. Nehru Memorial Museum and Library: New Delhi
- Dharampal, 1922-2006. (1983). *The Beautiful Tree : Indigenous Indian Education in the Eighteenth Century*. New Delhi: Biblia Impex.
- Dhillon, P. (2011). The Role of Education in the Freedom from Poverty as a Human Right.*Educational Philosophy and Theory*, 43(3).

- Freeman, James M. (1979). *Untouchable: An Indian Life History.* , London: George Allen and Unwin.
- Ghosh, S. C. (2007). *History of Education in India*. India: Rawat Publications.
- Gutmann, A. (1995). Civic Education and Social Diversity. *Ethics*, 105(3): 557–579. doi:10.1086/293727
- Hunter (1882). *Indian Education Commission.* India.
- Kumar, K. (1991). *Political Agenda of Education*. Delhi: Sage
- MHRD (1986).*National Policy on Education. India*. India: Ministry of Human Resource and Development.
- MHRD (1990). *Ramamurty Committee Report (1990)-Towards Enlightened and Humane Society.* India: Ministry of Human Resource and Development.
- MHRD (2020). *National Education Policy 2020*. India: Ministry of Human Resource and Development.
- Nambissan, B. G. (1996). Equity in Education? Schooling of Dalit Children in India. *Economic and Political Weekly.* (31), pg. no. 1011-1024.
- NCERT (2005). *National Curriculum Framework 2005 Position Paper no. 3.1 by National Focus Group on Problems of Scheduled Caste and Scheduled Tribe Children*. India: N.C.E.R.T.
- NCERT (2005). *National Curriculum Framework 2005 Position Paper no.3.2 by National Focus Group on Gender issues in Education.* India: N.C.E.R.T.
- Phule, M. J. (1996). *Kisan Ka Kora* (hindi translation by Prof Ved Kumar Vedalankar. Mumbai: Mahatma Jyotirao Sadhane Prakashan Samiti.
- Rassool, N. (2009). Equity and Social Justice Discourse in Education. In Daniel, H., Lauder, H, & Ports, J. (Eds*). Knowledge, Values and Educational Policy*. India: Routledge.
- Report of the Common School System Commission, Bihar (2007). India: Government of Bihar
- Sen. A. (1995). *Inequality Re-examined*. India: Oxford University Press.
- Srivastava, R. S. (2001). Inequality and Education Security. In Dev. S. M. (Eds). *Social and Economic Security in India.* India*: BPR Publishers.*

Audio Visual Material: Across Units

- Documentary: India untouched: stories of people apart. 2007. Directed by Stalin K.
- Karnan. (2021). Directed by Mari Selvaraj.
- He named me Malala (2015). Directed by Davis Guggenheim
- India's Forgotten Children (2014). Directed by Kumar Swamy and Ela Banerjee

Teaching Learning Process:

The course will be taught through interactive pedagogic methods such as classroom discussion, debates, film discussions, critical media analysis, collaborative learning tasks which enhance reading comprehension of core writings in the area and innovative projects. Reflective expression and learning will be encouraged.

Assessment Method

The assessment will be formative in nature and will factor in student's participation. Individual and group tasks and assignments will be given. Summative evaluation will be done through end- semester examination.

Key words: Equality, Education

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category III

B.A. Programme with Education as Non-Major

DISCIPLINE SPECIFIC CORE COURSE – 5 (DSC-5): EDUCATION IN PLURAL SOCIETY

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
EDUCATION IN PLURAL SOCIETY DSC 5	4	3	1	0	• Class XIIth Pass	• No Pre-requisite

Learning Objectives

The Learning Objectives of this course are as follows:

- This paper attempts to introduce introduces the conceptual issues and concerns of education in a plural society.
- It engages with the idea of diversities as well as the challenges posed by inequalities and discrimination.
- It further initiates a critical reflection on the possibilities from education.
- It fosters the conceptual understanding of equality with reference to opportunity, marginalisation, pluralism, multilingualism and patriarchy.

Learning Outcomes

On completion of this course, learners will be able to:

- Make distinction between social diversity and inequalities in education.
- Analyse the special needs and basis for additional provisions of educational opportunities to social groups facing inequalities such as caste, class, gender, religion and disability.
- Explain Constitutional values and provisions that enable social diversity and limit inequality in education.
- Describe multilingualism in Indian context and critically discuss issues of language that are relevant for a learner, with specific focus on home language and school language.
- Locate provisions that enable linguistic diversity in education from the Constitution.
- Identify and critically evaluate the imbalances of gender in education and socialisation.
- Apply an empathetic understanding of diversity in educational institutions.

SYLLABUS OF DSC- 5

Unit 1 : Understanding Pluralism, Diversity and Inclusion (19 Hours)

- Pluralism and Diversity in Indian Society: Religion, Language, Ethnicity and Culture. The school-society interface and its representation in 'explicit' and 'hidden' curriculum.
- Inequalities and Social Exclusion: Differences in access to resources and opportunities among social groups.
- Social Mobility: Aspirations, Opportunities and Challenges.
- Social and Rights based approach to construction of disability and difference; Issues of inclusion.

Unit 2 : Language and the Learner (13 Hours)

- Child's home language; the language of school: Classroom, Textbooks.
- Issues related to mother tongue, standard language , medium of education.
- Understanding multilingualism.
- Provisions for linguistic minority groups in the Constitution.

Unit 3- Gender Concerns in Education (13 Hours)

- Gender as social category and gendered experiences of growing up.
- Gender Socialisation: Home, School and Society.
- Gender dynamics in educational contexts: Inter-sectionalities of gender, caste, class and religion.

Suggested Projects/ Assignments: Any two

- Discuss aspirations from education, and challenges faced by the marginalised group with reference to any of the following books/ chapters: Bhimayana or Jhoothan: A Dalit's Life Or 'Naja goes to school and Doesn't'.
- Critical discussion on the film 'Hindi Medium'.

- Talk to children of the middle school to understand how they express themselves differently in the first and the second languages. Ask children to write a paragraph or talk about their experiences. These narratives are to be analysed for expression, ideas and ease of communication.
- Discuss students' experiences of growing up as a boy/girl following a self-reading of Krishna Kumar's ' Growing up male'.

Note: On the basis of the above, the teacher may design his/her own relevant assignments and projects.

Readings

Essential Reading

- Agnihotri, R. (2008). Multilinguality for India. *Seminar*, (590).
- Beiteille, A. (1983). *Equality and Inequality: Theory and Practice.* New Delhi : OUP. [Chapter 6]
- Bhasin, K. (2000). *Understanding Gender*. New Delhi: Kali for Women.
- Bhatty, Z. (1988). Socialisation of the Female Muslim Child in Uttar Pradesh. In K. Chanana (Ed.), *Socialisation, Education and Women: Explorations in Gender Identity*. New Delhi: Orient Longman.
- Constitution of India. Retrieved from https://www.india.gov.in/my-government/constitution-india/constitution-india-full-text
- Dube, L. (1988). On the Construction of Gender: Hindu Girls in Patrilineal India. In K. Chanana (Ed.), *Socialisation, Education and Women: Explorations in Gender Identity*. New Delhi: Orient Longman.
- Dube, S. C. (1990). *Indian Society*. New Delhi: National Book Trust. [Chapters 1, 2, 3]
- Mohanty, A. K. (n.d.). *Language and Education*. Retrieved from http://www.nmrc-jnu.org/nmrc_img/NUEPA_MOHANTY_Lang&Ed.ppt
- Nambissan, G. B. (2004). Integrating Gender Concerns. *Seminar*, (536).
- Nambissan, G. B. (2009). Exclusion and Discrimination in Schools: Experiences of Dalit Children. *Children, Social Exclusion and Development*, *1*(1). Retrieved from http://dalitstudies.org.in/wp/wps0101.pdf
- *Position Paper: National Focus Group on Education of Children with Special Needs*. (n.d.). NCERT.

Additional Readings

- Kumar, K. (1992). Growing up Male. In *What Is Worth Teaching?* New Delhi: Orient Longman.
- Mohanty, A. K. (1990). Psychological Consequence of Mother-Tongue Maintenance and Multilingualism in India. In D. P. Pattanayak (Ed.), *Multilingualism in India*. Clevedon, UK: Multilingual Matters.
- *Position Paper: National Focus Group on Gender Issues in the Curriculum*. (2005). New Delhi: NCERT.
- *Position Paper: National Focus Group on Teaching of Indian Language*. (2005). New Delhi: NCERT.
- Talib, M. (1998). Educating the Oppressed: Observations from a School in a Working Class Settlement in Delhi. In S. Shukla & R. Kaul (Eds.), *Education, Development and Underdevelopment*. New Delhi: Sage Publications. [pp 199-209]
- Turner, B. S. (1986). *Equality*. Chichester: Ellis Horwood. [Chapter 6: Towards Equality]
- Valmiki, O. (2003). *Joothan: A Dalit's Life* (A. P. Mukherjee, Trans.). Kolkata: Bhatkal and Sen.
- Vyam, D., Vyam, S., Natarajan, S., & Anand, S. (2011). *Bhimayana: Experiences of*

Untouchability (1st edition). New Delhi: Navayana.

- Winch, C. (2011). Civic Education, Pluralism and the Indispensable Role of the State. In K. N. Panikkar & M. B. Nair (Eds.), *Emerging Trends in Higher Education in India: Concepts and Practices*. New Delhi: Pearson Education.

Teaching Learning Process:

The Course will be taught through interactive pedagogic methods such as classroom discussion, debates, film discussions, critical media analysis. Collaborative learning tasks, enhancing reading comprehension of core writings in the area and developing innovative projects. Reflective expression and learning will be encouraged.

Assessment Method

The assessment will be formative in nature and will include student participation. Individual and group tasks and assignments will be given. Summative evaluation will be through end semester examination.

Key words

Education, Plural Society

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

ANNEXURE-3

Sub: Amendment to Ordinance V

[E.C Resolution No. 60/ (60-1-7/) dated 03.02.2023]

Following addition be made to Appendix-II-A to the Ordinance V (2-A) of the Ordinances of the University;

Add the following:

Syllabi of Semester-III of the following departments under Faculty of Mathematical Sciences based on Under Graduate Curriculum Framework -2022 implemented from the Academic Year 2022-23.

FACULTY OF MATHEMATICAL SCIENCES

DEPARTMENT OF COMPUTER SCIENCE

BSC. (HONS.) COMPUTER SCIENCE

DISCIPLINE SPECIFIC CORE COURSE -7 (DSC-7) : Data Structures

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC07 Data Structures	4	3	0	1	Passed 12th class with Mathematics	Programming using Python/Object Oriented Programming with C++

Learning Objectives

The course aims at developing the ability to use basic data structures like arrays, stacks, queues, lists, and trees to solve problems. C++ is chosen as the language to implement the implementation of these data structures.

Learning outcomes

On successful completion of the course, students will be able to:

- Compare two functions for their rates of growth.
- Understand abstract specification of data-structures and their implementation.
- Compute time and space complexity of operations on a data-structure.
- Identify the appropriate data structure(s) for a given application and understand the trade-offs involved in terms of time and space complexity.
- Apply recursive techniques to solve problems.

SYLLABUS OF DSC-7

Unit 1 (9 hours)

Growth of Functions, Recurrence Relations: Functions used in analysis, asymptotic notations, asymptotic analysis, solving recurrences using recursion trees, Master Theorem.

Unit 2 (16 hours)

Arrays, Linked Lists, Stacks, Queues: Arrays: array operations, applications, two-dimensional arrays, dynamic allocation of arrays; Linked Lists: singly linked lists, doubly linked lists, circularly linked lists, Stacks: stack as an ADT, implementing stacks using arrays, implementing stacks using linked lists, applications of stacks; Queues: queue as an ADT, implementing queues using arrays, implementing queues using linked lists,. Time complexity analysis.

Unit 3 (5 hours)

Recursion: Recursive functions, linear recursion, binary recursion.

Unit 4 (6 hours)

Trees, Binary Trees: Trees: definition and properties, tree traversal algorithms, and their time complexity analysis; binary trees: definition and properties, traversal of binary trees, and their time complexity analysis.

Unit 5 (7 hours)

Binary Search Trees, Balanced Search Trees: Binary Search Trees: insert, delete, search operations, time complexity analysis of these operations; Balanced Search Trees: insert, search operations, time complexity analysis of these operations. Time complexity analysis.

Unit 6 (2 hours)

Binary Heap: Binary Heaps: heaps, heap operations.

Essential/recommended readings

1. Goodrich, M.T., Tamassia, R., & Mount, D., *Data Structures and Algorithms Analysis in C++,* 2nd edition, Wiley, 2011.
2. Cormen, T.H., Leiserson, C.E., Rivest, R. L., Stein C. *Introduction to Algorithms*, 4th edition, Prentice Hall of India, 2022.

Additional references

1. Sahni, S. *Data Structures, Algorithms and applications in C++*, 2nd edition, Universities Press, 2011.
2. Langsam Y., Augenstein, M. J., & Tanenbaum, A. M. *Data Structures Using C and C++*, Pearson, 2009.

Practical List (If any): (30 Hours)

Practical exercises such as

1. Write a program to implement singly linked list as an ADT that supports the following operations:
   (i) Insert an element x at the beginning of the singly linked list
   (ii) Insert an element x at i^{th} position in the singly linked list
   (iii) Remove an element from the beginning of the singly linked list
   (iv) Remove an element from i^{th} position in the singly link
   (v) Search for an element x in the singly linked list and return its pointer
   (vi) Concatenate two singly linked lists

2. Write a program to implement doubly linked list as an ADT that supports the following operations:
   (i) Insert an element x at the beginning of the doubly linked list
   (ii) Insert an element x at i^{th} position in the doubly linked list
   (iii) Insert an element x at the end of the doubly linked list
   (iv) Remove an element from the beginning of the doubly linked list
   (v) Remove an element from i^{th} position in the doubly linked list.
   (vi) Remove an element from the end of the doubly linked list
   (vii) Search for an element x in the doubly linked list and return its pointer
   (viii) Concatenate two doubly linked lists

3. Write a program to implement circular linked list as an ADT which supports the following operations:
   (i) Insert an element x at the front of the circularly linked list
   (ii) Insert an element x after an element y in the circularly linked list
   (iii) Insert an element x at the back of the circularly linked list
   (iv) Remove an element from the back of the circularly linked list
   (v) Remove an element from the front of the circularly linked list
   (vi) Remove the element x from the circularly linked list
   (vii) Search for an element x in the circularly linked list and return its pointer

(viii) Concatenate two circularly linked lists

4. Implement a stack as an ADT using Arrays.

5. Implement a stack as an ADT using the Linked List ADT.

6. Write a program to evaluate a prefix/postfix expression using stacks.

7. Implement Queue as an ADT using the circular Arrays.

8. Implement Queue as an ADT using the Circular Linked List ADT.

9. Write a program to implement Binary Search Tree as an ADT which supports the following operations:
   (i) Insert an element x
   (ii) Delete an element x
   (iii) Search for an element x in the BST and change its value to y and then place the node with value y at its appropriate position in the BST
   (iv) Display the elements of the BST in preorder, inorder, and postorder traversal
   (v) Display the elements of the BST in level-by-level traversal
   (vi) Display the height of the BST

10. Write a program to implement a balanced search tree as an ADT.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 8 (DSC-8): Operating Systems

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 08 Operating Systems	**4**	**3**	**0**	**1**	**Passed 12th class with Mathematics**	Programming using Python/Object Oriented Programming with C++, Computer System Architecture

Learning Objectives

The course provides concepts that underlie all operating systems and are not tied to any particular operating system. The emphasis is on explaining the need and structure of an operating system using its common services such as process management (creation, termination etc.), CPU Scheduling, Process Synchronization, Handling Deadlocks, main memory management, virtual memory, secondary memory management. The course also introduces various scheduling algorithms, structures, and techniques used by operating systems to provide these services.

Learning outcomes

On successful completion of the course, students will be able to:

- Describe the need of an operating system and define multiprogramming and Multithreading concepts.
- Implement the process synchronization service (Critical Section, Semaphores), CPU scheduling service with various algorithms.
- Implement Main memory Management (Paging, Segmentation) algorithms, Handling of Deadlocks
- Identify and appreciate the File systems Services, Disk Scheduling service

SYLLABUS OF DSC-8

Unit 1 (6 hours)

Introduction: Operating Systems (OS) definition and its purpose, Multiprogrammed and Time Sharing Systems, OS Structure, OS Operations: Dual and Multi-mode, OS as resource manager.

Unit 2 (9 hours)

Operating System Structures: OS Services, System Calls: Process Control, File Management, Device Management, and Information Maintenance, Inter-process Communication, and Protection, System programs, OS structure- Simple, Layered, Microkernel, and Modular.

Unit 3 (10 hours)

Process Management: Process Concept, States, Process Control Block, Process Scheduling, Schedulers, Context Switch, Operation on processes, Threads, Multicore Programming, Multithreading Models, PThreads, Process Scheduling Algorithms: First Come First Served, Shortest-Job-First, Priority & Round-Robin, Process Synchronization: The critical-section problem and Peterson's Solution, Deadlock characterization, Deadlock handling.

Unit 4 (11 hours)

Memory Management: Physical and Logical address space, Swapping, Contiguous memory allocation strategies - fixed and variable partitions, Segmentation, Paging.
Virtual Memory Management: Demand Paging and Page Replacement algorithms: FIFO Page Replacement, Optimal Page replacement, LRU page replacement.

Unit 5 (9 hours)

File System: File Concepts, File Attributes, File Access Methods, Directory Structure: Single-Level, Two-Level, Tree-Structured, and Acyclic-Graph Directories.
Mass Storage Structure: Magnetic Disks, Solid-State Disks, Magnetic Tapes, Disk Scheduling algorithms: FCFS, SSTF, SCAN, C-SCAN, LOOK, and C-LOOk Scheduling.

Essential/recommended readings

1. Silberschatz, A., Galvin, P. B., Gagne G. *Operating System Concepts,* 9th edition, John Wiley Publications, 2016.
2. Tanenbaum, A. S. *Modern Operating Systems*, 3rd edition, Pearson Education, 2007.
3. Stallings, W. *Operating Systems: Internals and Design Principles,* 9th edition, Pearson Education, 2018.

Additional References

1. Dhamdhere, D. M., *Operating Systems: A Concept-based Approach,* 2nd edition, Tata McGraw-Hill Education, 2017.
2. Kernighan, B. W., Rob Pike, R. *The Unix Programming Environment*, Englewood Cliffs, NJ: Prentice-Hall, 1984.

Suggested Practical List (If any): (30 Hours)

Practical exercises such as

1. Execute various Linux commands for:
   i. Information Maintenance: wc, clear, cal, who, date, pwd
   ii. File Management: cat, cp, rm, mv, cmp, comm, diff, find, grep, awk
   iii. Directory Management : cd, mkdir, rmdir, ls
2. Execute various Linux commands for:
   i. Process Control: fork, getpid, ps, kill, sleep
   ii. Communication: Input-output redirection, Pipe
   iii. Protection Management: chmod, chown, chgrp
3. Write a programme (using fork() and/or exec() commands) where parent and child execute:
   i. same program, same code.
   ii. same program, different code.
   iii. Before terminating, the parent waits for the child to finish its task.
4. Write a program to to report behaviour of Linux kernel including kernel version, CPU type and model. (CPU information)

5. Write a program to report behaviour of Linux kernel including information on 19 configured memory, amount of free and used memory. (Memory information)
6. Write a program to copy files using system calls.
7. Use an operating system simulator to simulate operating system tasks.
8. Write a program to implement scheduling algorithms FCFS/ SJF/ SRTF/ non-preemptive scheduling algorithms.
9. Write a program to calculate the sum of n numbers using Pthreads. A list of n numbers is divided into two smaller lists of equal size, and two separate threads are used to sum the sublists.
10. Write a program to implement first-fit, best-fit and worst-fit allocation strategies.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE– 9 (DSC-9): Numerical Optimization

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC09 Numerical Optimization	**4**	**3**	**0**	**1**	**Passed 12th class with Mathematics**	Programming using Python/Object Oriented Programming with C++

Learning Objectives

The course aims to provide students with the experience of mathematically formulating a large variety of optimization/decision problems emerging out of various fields like data science, machine learning, business, and finance. The course focuses on learning techniques to optimize problems in order to obtain the best possible solution.

Learning outcomes

At the end of the course, students will be able to:

- Mathematically formulate the optimization problems using the required number of independent variables.
- Define constraint functions on a problem.
- Check the feasibility and optimality of a solution.
- Apply conjugate gradient method to solve the problem.

SYLLABUS OF DSC-9

Unit 1 (6 hours)

Introduction: Mathematical Formulation using example, Continuous versus Discrete Optimization, Constrained and Unconstrained Optimization, Global and Local Optimization, Stochastic and Deterministic Optimization, Convexity, Optimization Algorithms

Unit 2 (14 hours)

Fundamentals of Unconstrained Optimization: Concept of a Solution - Recognizing a Local Minimum, Nonsmooth Problems, Overview of Algorithms - Two Strategies: Line Search and Trust Region, Search Directions for Line Search Methods, Models for Trust-Region Methods, Scaling. Line Search - Convergence of Line Search Methods, Rate of Convergence - Convergence Rate of Steepest Descent; Newton's Method, Quasi-Newton Methods. Trust Region - The Cauchy Point Algorithm; Global Convergence - Reduction Obtained by the Cauchy Point; Convergence to Stationary Points.

Unit 3 (7 hours)

Conjugate Gradient Methods: Basic Properties of the Conjugate Gradient Method, A Practical Form of the Conjugate Gradient Method, and Rate of Convergence

Unit 4 (8 hours)

Calculating Derivatives: Finite-Difference Derivative Approximations, Approximating the Gradient, Approximating a Sparse Jacobian, Approximating the Hessian, Approximating a Sparse Hessian

Unit 5 (10 hours)

Theory of Constrained Optimization: Local and Global Solutions, Smoothness, Examples - A Single Equality Constraint, A Single Inequality Constraint, Two Inequality Constraints, Tangent Cone and Constraint Qualifications, First-Order Optimality Condition, Second-Order Conditions - Second-Order Conditions and Projected Hessians. Linear and non-linear constrained optimization, augmented Lagrangian Method

Essential/recommended readings

1. J. Nocedal and S.J. Wright, *Numerical Optimization*, 2nd edition, Springer Series in Operations Research, 2006.
2. A, Mehra, S Chandra, Jayadeva, *Numerical Optimization with Applications*, Narosa Publishing House, New Delhi, 2009,

Additional References

1. R. W. Hamming, *Numerical Methods for Scientists and Engineers,* 2nd edition, Dover Publications, 1986.
2. Q. Kong, T. Siauw, A. Bayen, *Python Programming and Numerical Methods: A Guide for Engineers and Scientists,* 1st edition, 2020.

Suggested Practical List (If any) :(30 Hours)

Practical exercises such as

Write a program to implement the following methods:

Constrained and Unconstrained Optimization, Global and Local Optimization, Line Search and Trust Region, Convergence of Line Search Methods, Rate of Convergence - Convergence Rate of Steepest Descent, Newton's Method, Quasi-Newton Methods, The Cauchy Point algorithm, Finite-Difference Derivative Approximations, Convergence to Stationary Points, Conjugate Gradient Method, Rate of Convergence, Approximating a Sparse Jacobian, Approximating the Hessian, Approximating a Sparse Hessian, First-Order Optimality Condition, Second-Order Conditions - Second-Order Conditions, and Projected Hessians. Linear and non-linear constrained optimization Augmented Lagrangian Methods.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Computer Science Courses for Undergraduate Programme of study with Computer Science discipline Elective

DISCIPLINE SPECIFIC ELECTIVE COURSE: Data Analysis and Visualization

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Data Analysis and Visualization (DAV)	**4**	**3**	**0**	**1**	**Pass in XII class**	Programming using Python/ Class XI-XII Computer Science/ Class XI-XII Informatics Practices

Learning Objectives

This course is designed to introduce the students to real-world data analysis problems, the use of statistics to get a deterministic view of data, and interpreting results in the field of exploratory data science using Python. This course is the first in the "Data Science" pathway and builds the foundation for three subsequent courses in the pathway.

Learning outcomes

On successful completion of the course, students will be able to:

1. Apply descriptive statistics to obtain a deterministic view of data
2. Perform data handling using Numpy arrays
3. Load, clean, transform, merge, and reshape data using Pandas
4. Visualize data using Pandas and matplot libraries
5. Solve real world data analysis problems

SYLLABUS OF DSE

Unit 1 (10 hours)

Introduction to basic statistics and analysis: Fundamentals of Data Analysis, Statistical foundations for Data Analysis, Types of data, Descriptive Statistics, Correlation and covariance, Linear Regression, Statistical Hypothesis Generation and Testing, Python Libraries: NumPy, Pandas, Matplotlib

Unit 2 (8 hours)

Array manipulation using Numpy: Numpy array: Creating Numpy arrays; various data types of Numpy arrays, indexing and slicing, swapping axes, transposing arrays, data processing using Numpy arrays.

Unit 3 (12 hours)

Data Manipulation using Pandas: Data Structures in Pandas: Series, DataFrame, Index objects, Loading data into Pandas data frame, Working with DataFrames: Arithmetics, Statistics, Binning, Indexing, Reindexing, Filtering, Handling missing data, Hierarchical indexing, Data wrangling: Data cleaning, transforming, merging and reshaping

Unit 4 (8 hours)

Plotting and Visualization: Using Matplotlib to plot data: figures, subplots, markings, color and line styles, labels and legends, Plotting functions in Pandas: Line, bar, Scatter plots, histograms, stacked bars, Heatmap

Unit 5 (7 hours)

Data Aggregation and Group operations: Group by mechanics, Data aggregation, General split-apply-combine, Pivot tables and cross tabulation

Essential/recommended readings

1. McKinney W. *Python for Data Analysis: Data Wrangling with Pandas, NumPy and IPython*, 2nd edition, O'Reilly Media, 2018.
2. Molin S. *Hands-On Data Analysis with Pandas*, Packt Publishing, 2019.
3. Gupta S.C., Kapoor V.K. *Fundamentals of Mathematical Statistics*,12th edition, Sultan Chand & Sons, 2020.

Additional References

1. Chen D. Y. *Pandas for Everyone: Python Data Analysis*, First edition, Pearson Education, 2018.
2. Miller J.D. *Statistics for Data Science,* Packt Publishing Limited, 2017.

Suggested Practical List (If any): (30 Hours)

Practical exercises such as

Use a dataset of your choice from Open Data Portal (https:// data.gov.in/, UCI repository) or load from scikit, seaborn library for the following exercises to practice the concepts learnt.

1. Load a Pandas dataframe with a selected dataset. Identify and count the missing values in a dataframe. Clean the data after removing noise as follows
   a) Drop duplicate rows.
   b) Detect the outliers and remove the rows having outliers
   c) Identify the most correlated positively correlated attributes and negatively correlated attributes

2. Import iris data using sklearn library or (Download IRIS data from: https://archive.ics.uci.edu/ml/datasets/iris or import it from sklearn.datasets)
    i. Compute mean, mode, median, standard deviation, confidence interval and standard error for each feature
    ii. Compute correlation coefficients between each pair of features and plot heatmap
    iii. Find covariance between length of sepal and petal
    iv. Build contingency table for class feature

3. Load Titanic data from sklearn library , plot the following with proper legend and axis labels:

    a. Plot bar chart to show the frequency of survivors and non-survivors for male and female passengers separately
    b. Draw a scatter plot for any two selected features
    c. Compare density distribution for features age and passenger fare
    d. Use a pair plot to show pairwise bivariate distribution

4. Using Titanic dataset, do the following
    a. Find total number of passengers with age less than 30
    b. Find total fare paid by passengers of first class
    c. Compare number of survivors of each passenger class

5. Download any dataset and do the following
    a. Count number of categorical and numeric features
    b. Remove one correlated attribute (if any)
    c. Display five-number summary of each attribute and show it visually

Project: Students are encouraged to work on a good dataset in consultation with their faculty and apply the concepts learned in the course.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE: Microprocessors

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Microprocessors	**4**	**3**	**0**	**1**	**Pass in XII class**	Computer System Architecture

Learning Objectives

This course introduces the internal architecture, programming models of Intel Microprocessors (8086 - Pentium) and assembly language programming. Students will also learn interfacing of memory and I/O devices with microprocessors.

Learning outcomes

On successful completion of the course, students will be able to:

- Describe the internal architecture of Intel microprocessors.
- Define and implement interfaces between the microprocessor and the devices.
- Write assembly language programs.

SYLLABUS OF DSE

Unit 1 (5 hours)

Microprocessor Architecture: Internal Architecture, Programming Model, Addressing Modes, Data Movement Instructions

Unit 2 (7 hours)

Microprocessor programming: Register Organization, instruction formats, Program control instructions, assembly language.

Unit 3 (10 hours)

Interfacing: Bus timings, Memory address decoding, cache memory and cache controllers, I/O interface, keyboard, timer, Interrupt controller, DMA controller, video controllers, communication interfaces.

Unit 4 (7 hours)

Data transfer schemes: Synchronous data transfer, asynchronous data transfer, interrupt driven data transfer, DMA mode data transfer.

Unit 5 (8 hours)

Microprocessor controllers: I/O controllers, interrupt controller, DMA controller, USART controller.

Unit 6 (8 hours)

Advanced microprocessor architecture: CISC architecture, RISC architecture, superscalar architecture, multicore architecture.

Essential/recommended readings

1. Brey, B.B. *The Intel Microprocessors: Architecture, Programming and Interfacing,* 8th edition, Pearson education, 2009.

2. Triebel, W.A., & Singh, A. *The 8088 and 8086 Microprocessors Programming, Interfacing, Software, Hardware and Applications*, 4th edition, Pearson education, 2002.

Additional References

1. Ramesh S Gaonkar *Microprocessor architecture, programming, and applications with the 8085,* 6th edition, Penram International Publishing, 2013.

Suggested Practical List (If any): (30 Hours)

Practical exercises such as

ASSEMBLY LANGUAGE PROGRAMMING

1. Write a program to print 'Hello World'.
2. Write a program to print two strings on two different lines.
3. Write a program to take a single digit number from the user and print that number on the console.
4. Write a program to compare two single digit numbers and check if they are equal or not.
5. Write a program for 8-bit addition of two single digit numbers. Show the result after ASCII adjust.
6. Write a program for 16-bit addition of two double digit numbers. Show the result after ASCII adjust.
7. Write a program for 16-bit BCD addition.
8. Write a program for 32-bit BCD addition and subtraction.
9. Write a program for 32-bit Binary addition,subtraction,multiplication and division.
10. Write a program for Binary to ASCII conversion.
11. Write a program for ASCII to Binary conversion.
12. Write a program to take input in an array and print it on the console.
13. Write a program to sort an array using bubble sort.
14. Write a program to perform linear search in an array.
15. Write a program to perform binary search in an array.
16. Write a program to add and subtract two arrays.
17. write programs to interface a microprocessor with external devices such as a keyboard and elevator.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

(Computer Science Courses for Undergraduate Programme of study with Computer Science discipline as one of the three Core Disciplines)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 01a PYTHON Programming for Data Handling	**4**	**3**	**0**	**1**	Pass in Class XII	NIL

Learning Objectives

The course introduces students to the concept of data handling using files and GUI designing. This would equip the students with knowledge to work on real world data from various applications and GUI development for effective data handling.

Learning outcomes

On successful completion of the course, students will be able to:

- Learn constructs of Python language
- Perform data handling with files using Python.
- Design and implement GUI applications using Tkinter.

SYLLABUS OF DSE 01a

Unit 1 (15 Hours)

Introduction to Python Programming, Basic Constructs, and Python Built-in Data Structures: Introduction to Python programming language, Basic syntax, variables, and data

types in Python, Functions and modular programming; Conditional statements (if, elif, else); Looping structures (for and while loops); Mutable and Immutable Data Structures, Strings-Indexing, slicing, traversal, operations; Lists-indexing, slicing, traversal, operations; tuples, dictionaries, and sets and their operations in Python

Unit 2 (5 Hours)

File Handling: Opening, reading, writing, and closing files; File modes and file object methods; Reading and writing text and binary files; Working with CSV files

Unit 3 (15 Hours)

Designing GUI Applications with Tkinter (15): What is Tkinter? Creating a Tkinter window, Layout managers, Tkinter widgets -Entry, Spinbox, Combobox, Checkbutton, Text, Button, LabelFrame; Implementing the application - LabelInput class, building of form, adding LabelFrame and other widgets, retrieving data from form, resetting form, building our application class.

Unit 4 (10 Hours)

Combining Python file handling and Tkinter: Creating a simple Tkinter application, Reading and writing to csv files in a Tkinter application

Essential/recommended readings

1. Taneja S., Kumar, N. Python Programming- A modular approach, 1st Edition, Pearson Education India, 2018,

2. Moore, Alan D. Python GUI Programming with Tkinter: Develop responsive and powerful GUI applications with Tkinter. Packt Publishing Ltd, 2021.

Additional References:

1. Guttag, J.V. Introduction to computation and programming using Python, 2nd edition, MIT

Online references/material:

1. https://docs.python.org/3/library/csv.html

Suggested Practical List (If any): (30 Hours)

Installing and setting up Python and relevant libraries; Python development environments (e.g., Anaconda, Jupyter Notebook)

1. Write a Python program to calculate the factorial of a number.
2. Write a Python program to generate prime numbers between 1 to n, where n is provided as input by the user.
3. Write a Python program to find the sum and average of numbers in a given list.
4. Given two sets, set1 and set2, write a Python program to find their union, intersection and difference.
5. Given a list of numbers, write a Python program to count the number of times an element occurs in a list and create a dictionary with *element:count* as *key:value* pairs.
6. Write a Python program to swap the first two and last two characters in a given string.
7. Write a Python program to create a text file having names of ten Indian cities.
8. Write a Python program to create a text file having atleast five lines about your college using `writelines()` function.
9. Write a Python program which reads the data from three input files having Employee Names and merges them into one output file.
10. Write a Python program to count the number of vowels in a file and write the *vowel : count* in a dictionary.
11. Write a Python program to create a CSV file having student data: RollNo, Enrollment No, Name, Course, Semester.
12. Write a Python program library to read the CSV file created in the above program and filter out records of II semester students.
13. Write a Python program using tkinter library to create a GUI to enter registration details for an event.
14. Write a Python program using tkinter library to create a calculator to perform addition, subtraction, multiplication and division of two numbers entered by the user.
15. Write a Python program using tkinter library to create an age calculator to calculate age when DOB is entered.
16. Write a Python program using tkinter library to read and write student data to and from a CSV file (refer question 11).

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Android Programming using Java	**4**	**3**	**0**	**1**	Pass in Class XII	NIL

Learning Objective

The course enables the students to understand Android architecture and its key features, making them competent to develop Android applications using Java.

Learning outcomes

On successful completion of the course, students will be able to:

- logically organize Java classes and interfaces using packages.
- understand the design of the Android operating system.
- design user interfaces using various dialog boxes, menus, etc.
- design Android applications with interaction among various activities/applications.

SYLLABUS OF DSE 01b

Unit 1 (15 hours)
Review of Object Oriented Programming and Java Fundamentals: Structure of Java programs, classes and objects, data types, type casting, looping constructs, inheritance.

Unit 2 (2 hours)
Interfaces: Interface basics, defining, implementing and extending interfaces.

Unit 3 (4 hours)
Packages: Basics of packages, creating and accessing packages.

Unit 4 (7 hours)
GUI Programming: AWT classes, event handling.

Unit 5 (5 hours)

Introduction to Android Programming: Introduction to Android Operating System, Android SDK, AVD, components of an Android Application, parcels, and bundles.

Unit 6 (6 hours)

User Interface Architecture: Android Architecture, Contexts in Android, Intents and Intent Filters, Activity Life Cycle, Activity Stack, Fragments, and Fragments Life Cycle.

Unit 7 (6 hours)

User Interface Design: Android Layouts, Views, Spinner, Menu, Toggle Buttons, Radio Buttons, Check Boxes, Alert Box, and Toasts.

Essential/recommended readings

1. Schildt H. Java: The Complete Reference. 12th edition. McGraw-Hill Education, 2021
2. Griffiths D. & Griffiths D. Head First Android Development. O'Reilly, 2017
3. Meier R. Professional AndroidTM 4 Application Development. John Wiley & Sons, Inc., 2012

Additional Resources:

1. Horstmann, C. S. Core Java - Vol. I – Fundamentals. 12th edition. Pearson Education, 2021
2. Murphy M. L. The Busy Coder's Guide to Android Development. CommonsWare, 2018
3. Phillips B., Stewart C., Hardy B. & Marsicano K. Android Programming: The Big Nerd Ranch Guide. Big Nerd Ranch, LLC, 2015
4. Sheusi J. C. Android Application Development for Java Programmers. Cengage Learning, 2013

Suggested Practical List (If any): (30 Hours)

1. Write a function to find whether a number is prime or not. Use this function to determine the nth prime number. Read n from the user.

2. Design a class Complex having a real part (x) and an imaginary part (y). Provide methods to perform the following on complex numbers:

    a. Add two complex numbers.

b. Multiply two complex numbers.

c. toString() method to display complex numbers in the form: x + i y

3. Create a class TwoDim which contains private members as x and y coordinates in package P1. Define the default constructor, a parameterized constructor and override toString() method to display the co-ordinates. Now reuse this class and in package P2 create another class ThreeDim, adding a new dimension as z as its private member. Define the constructors for the subclass and override toString() method in the subclass also. Write appropriate methods to show dynamic method dispatch. The main() function should be in a package P.

4. Write a program to create an Applet. Create a frame as a child of an applet. Implement mouseClicked( ), mouseEntered( ) and mouseExited( ) events for the applet. Frame is visible when mouse enters applet window and hidden when mouse exits from the applet window.

5. Write a program to display a string in a frame window with pink color as background.

6. Write a program to create an Applet that has two buttons named “Red” and “Blue”. When a button is pressed, the background color of the applet is set to the color named by the button’s label.

7. Create a “Hello World” application. That will display “Hello World” in the middle of the screen in the emulator. Also display “Hello World” in the middle of the screen in the Android Phone.

8. Create an Android application with a login module. (Check username and password).

9. Create a Spinner with strings taken from resource folder (res >> value folder) and on changing the spinner value, Image will change.

10. Create a Menu with 5 options and a selected option should appear in the text box.

11. Create an application with three option buttons, on selecting a button colour of the screen will change.

12. Create an Application to display various Activity and Fragment Life Cycle Methods.

13. Create an application with 2 fragments, one to set the background and other to set the fore-color of the text.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

GENERIC ELECTIVES : Database Management Systems

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Database Management Systems	**4**	**3**	**0**	**1**	**Pass in class XII**	NIL	**Computer Science**

Learning Objectives

The course introduces the students to the fundamentals of database management systems and their applications. Emphasis is given to the popular relational database system. Students will learn about the importance of database structure and its design using entity relationship diagrams and a formal approach using normalization. Basic concepts of file indexing and transaction processing will be taught. The course would give students hands-on practice with structured query language to create, manipulate, and implement a relational database.

Learning outcomes

On successful completion of the course, students will be able to:

- Use relational database management software to create and manipulate the database.
- Create conceptual data models using entity relationship diagrams for modeling real-life situations and map it to corresponding relational database schema.
- Use the concept of functional dependencies to remove redundancy and update anomalies.
- Apply normalization theory to get a normalized database scheme to get anomalies free databases.
- Write queries in relational algebra.
- Implement relational databases and formulate queries for data retrieval and data update problems using SQL.
- Learn the importance of index structures and concurrent execution of transactions in database systems.

SYLLABUS

Unit 1 (5 hours)

Introduction to Database: Database, characteristics of database approach, data models, database management system, three-schema architecture, components of DBMS, data independence, and file system approach vs. database system approach

Unit 2 (8 hours)

Entity Relationship Modeling: Conceptual data modeling - motivation, entities, entity types, attributes, relationships, relationship types, constraints on relationship, Entity Relationship diagram as conceptual data model.

Unit 3 (11 hours)

Relational Data Model: Data anomalies, Relational Data Model - Characteristics of a relation, schema-instance distinction, types of keys, relational integrity constraints. Relational algebra operators like selection, projection, cartesian product, join and write simple queries using them.

Unit 4 (10 hours)

Structured Query Language (SQL): DDL to create database and tables, table constraints, DML, Querying in SQL to retrieve data from the database, aggregation functions group by and having clauses, generate and query views.

Unit 5 (11 hours)

Database Design: Mapping an Entity Relationship diagram to corresponding relational database scheme, functional dependencies and Normal forms, 1NF, 2NF, and 3NF decompositions and desirable properties of them.

Essential/recommended readings

1. Elmasri, R., Navathe, B. S., *Fundamentals of Database Systems*, 7th Edition, Pearson Education, 2016.
2. Murach J., *Murach's MySQL,* 3th Edition, Pearson, 2019.

Additional References

1. Connolly T. M., Begg C. E. *Database Systems: A Practical Approach to Design, Implementation, and Management*, 6th edition, Pearson, 2019.
2. Ramakrishnan R., Gehrke J. *Database Management Systems*, 3rd Edition, McGraw-Hill, 2014.
3. Silberschatz A., Korth H.F., Sudarshan S. *Database System Concepts*, 7th Edition, McGraw Hill, 2019.

Suggested Practical List (if any): (30 hours)

Practical exercises based on a given schema.

Create and use the following student-course database schema for a college to answer the given queries using the standalone SQL editor.

STUDENT	**Roll No**	**Student Name**	**Course ID**	**DOB**
	Char(6)	Varchar(20)	Varchar(10)	Date

COURSE	**CID**	**Course Name**	**Course Type**	**Teacher-in-charge**	**Total Seats**	**Duration**
	Char(6)	Varchar (20)	Char (8)	Varchar (15)	Unsigned int	Unsigned int

ADMISSION	**Roll No**	**CID**	**Date of Admission**
	Char(6)	Char(6)	**Date**

Here, Rollno (ADMISSION) and SID (ADMISSION) are foreign keys. Note that course type may have two values viz. Fulltime and Parttime and a student may enroll in any number of courses

1. Retrieve names of students enrolled in any course.
2. Retrieve names of students enrolled in at least one part time course.
3. Retrieve students' names starting with letter 'A'.
4. Retrieve students' details studying in courses 'computer science' or 'chemistry'.
5. Retrieve students' names whose roll no either starts with 'X' or 'Z' and ends with '9'
6. Find course details with more than N students enrolled where N is to be input by the user.
7. Update student table for modifying a student name.
8. Find course names in which more than five students have enrolled
9. Find the name of youngest student enrolled in course 'BSc(P)CS'
10. Find the name of most popular society (on the basis of enrolled students)
11. Find the name of two popular part time courses (on the basis of enrolled students)
12. Find the student names who are admitted to full time courses only.
13. Find course names in which more than 30 students took admission
14. Find names of all students who took admission to any course and course names in which at least one student has enrolled
15. Find course names such that its teacher-in-charge has a name with 'Gupta' in it and the course is full time.
16. Find the course names in which the number of enrolled students is only 10% of its total seats.
17. Display the vacant seats for each course
18. Increment Total Seats of each course by 10%
19. Add enrollment fees paid ('yes'/'No') field in the enrollment table.
20. Update the date of admission for all the courses by 1 year.
21. Create a view to keep track of course names with the total number of students enrolled in it.

22. Count the number of courses with more than 5 students enrolled for each type of course.
23. Add column Mobile number in student table with default value '9999999999'
24. Find the total number of students whose age is > 18 years.
25. Find names of students who are born in 2001 and are admitted to at least one part time course.
26. Count all courses having 'science' in the name and starting with the word 'BSc'.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES : Java Programming

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
GE: Java Programming	**4**	**3**	**0**	**1**	**Pass in class XII**	NIL	**Computer Science**

Learning Objectives

This course is designed to develop understanding of object-oriented programming concepts like Classes, Objects, Inheritance and Polymorphism using Java. The course provides understanding of multithreading and exception handling in Java. It also introduces how to create Java applications with graphical user interface (GUI).

Learning outcomes

On completion of this course, the student will be able to:

- Understand the object-oriented concepts – Classes, Objects, Inheritance, Polymorphism– for problem solving.
- Create and handle multithreading.
- Handle program exceptions.
- Handle input/output through files.
- Create Java applications with a graphical user interface (GUI).

SYLLABUS OF GE

Unit 1 (6 hours)

Introductory Concepts: program, identifiers, variables, constants, primitive data types, expressions, Naming Conventions, Type casting, operators, control statements, structured data types, arrays, functions.

Unit 2 (13 hours)

Object Oriented Concepts: Abstraction, encapsulation, objects, classes, methods, constructors, inheritance, polymorphism, static and dynamic binding, Anonymous block, Static Data members, overloading and overriding, Usage of super and this keyword, Abstract classes, Interfaces and Packages, Access modifiers, Object class

Unit 3 (11 hours)

Multithreading: Creating Threads, Thread Priority, Blocked States, Extending Thread Class, Runnable Interface, Starting Threads, Thread Synchronization, Sync Code Block, Overriding Synced Methods, Thread Communication, wait, notify and notify all.

Unit 4 (8 hours)

Introduction to Exception handling: Exception and Error, Throw, try and catch Blocks, Exception handlers, java.lang Exceptions, Built-InExceptions.

Unit 5 (7 hours)

Introduction to File Handling: Byte Stream, Character Stream, File I/O Basics, File Operations, Serialization.

Essential/recommended readings

1. Cay S. Horstmann, *Core Java - Vol. I – Fundamentals*, 10th edition, Pearson, 2017.
2. James Gosling, Bill Joy, Guy L. Steele Jr, Gilad Bracha, Alex Buckley, *The Java Language Specification*, *Java SE* 7th edition, Addison-Wesley, 2011

Additional References

1. Herbert Schildt, *Java: The Complete Reference*, 10th edition, McGraw-Hill Education, 2018.

2 Richard Johnson, *An Introduction to Java Programming and Object-Oriented Application Development*, Thomson Learning, 2006.

3. Kathy Sierra and Bert Bates, *Head First Java*, 3rd edition, O'Reilly, 2022.

Suggested Practical List (If any): (30 Hours)

Practical exercises such as

1. Create a java program to implement stack and queue concepts.
2. Write a program to take input from command line arguments.
3. Write a java program to show static and dynamic polymorphism.
4. Write a java program to show multiple inheritance using interfaces.
5. Write a program in java to show the chaining of execution of construction.
6. Write a java program to show multithreaded producer and consumer applications.
7. write a program in java to synchronize the multithreaded application
8. Create a customized exception and also make use of all the exception keywords.
9. Write a program to show different ways to get input from user
10. Design a form using AWT components and the Frame container.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

(Computer Science Courses for Undergraduate Programme of study with Computer Science discipline as one of the three Core Disciplines)

DISCIPLINE SPECIFIC CORE COURSE (DSC-3): Computer System Architecture

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC03: Computer System Architecture	**4**	**3**	**0**	**1**	**Passed 12th class with Mathematics**	NIL

Learning Objectives

This course introduces students to the fundamental concepts of digital computer organization, design, and architecture. It aims to develop a basic understanding of the building blocks of a computer system and highlights how these blocks are organized together to architect a digital computer system.

Learning outcomes

On successful completion of the course, students will be able to:

- Design combinatorial circuits using basic building blocks. Simplify these circuits using Boolean algebra and Karnaugh maps. Differentiate between combinational circuits and sequential circuits.
- Represent data in binary form, convert numeric data between different number systems, and perform arithmetic operations in binary.
- Determine various stages of the instruction cycle and describe interrupts and their handling.
- Explain how the CPU communicates with memory and I/O devices.
- Simulate the design of a basic computer using a software tool.

SYLLABUS OF DSC-3

Unit 1 (9 hours)

Digital Logic Circuits: Digital Logic Gates, Flip flops and their characteristic table, Logic circuit simplification using Boolean algebra and Karnaugh map, Don't care conditions, Combinational circuits, Introduction to Sequential Circuits

Unit 2 (7 hours)

Digital Components: Decoders, Encoders, Multiplexers, Binary Adder, Binary Adder Subtractor, Binary Incrementor, Registers, and Memory Units

Unit 3 (13 hours)

Data Representation: Binary representation of both numeric and alphanumeric data, representation of numeric data in different number systems, (Binary, Octal, Decimal and Hexadecimal), conversion from one number system to another, complements, representation of signed and unsigned numbers, addition and subtraction of signed and unsigned numbers and overflow detection.

Unit 4 (9 hours)

Basic Computer Organization and Design: Stored program organization, Computer registers, Instruction set and their completeness, Instruction cycle, Memory reference instructions, Register reference instructions, Input- Output reference instructions, Interrupt cycle, Addressing modes.

Unit 5 (7 hours)

Input-Output Organization: I/O interface, I/O vs. Memory Bus, Isolated I/O, Memory Mapped I/O, Direct Memory Access.

Essential/recommended readings

1. M. Morris Mano, *Computer System Architecture*, 3rd edition, Pearson Education, 2017.
2. Linda Null, Julia Lobur, *Essentials of Computer Organization and Architecture*, 5th Edition, 2019.

Additional References

1. D. Comer, *Essentials of Computer Architecture,* 2nd edition, CRC Press, 2017.

Suggested Practical List (If any): (30 Hours)

Practical exercises such as

(Use Simulator – CPU Sim 3.6.9 or any higher version for the implementation)

1. Create a machine based on the following architecture:

Registers

IR	DR	AC	AR	PC	I	E
16 bits	16 bits	16 bits	12 bits	12 bits	1 bit	1 bit

Memory 4096 words	

16 bits per word	Instruction format 15 12 11 0 Opcode | Address

Basic Computer Instructions

Memory Reference			Register Reference	
Symbol	Hex		Symbol	Hex
AND	0xxx	Direct Addressing	CLA	7800
ADD	1xxx		CLE	7400
LDA	2xxx		CMA	7200
STA	3xxx		CME	7100
			HLT	7001

Refer to Chapter-5 for a description of the instructions.

Design the register set, the memory, and the instruction set. Use this machine for the assignments in this section.

1. Implement fetch sequence
2. Write an assembly program to simulate the addition of two numbers when one is stored in memory and another is entered by the user.
3. Write an assembly program to simulate addition of two numbers when both numbers are taken as inputs from user.
4. Write an assembly program to simulate subtraction of two numbers when one number is stored in memory and another is entered by the user.

5. Write an assembly program to simulate subtraction of two numbers when both numbers are taken as inputs from user

6. Write an assembly program to simulate the following logical operations on two user-entered numbers.

i.AND

ii.OR

iii.NOT

7. Write an assembly language program to simulate the machine for following register reference instructions and determine the contents of AC, E, PC, AR and IR registers in decimal after the execution:

i. CLE

ii. CLA

iii. CMA

iv. CME

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Computer Science Courses for Undergraduate Programme of study with Computer Science discipline as one of the two Core Disciplines
(For e.g. courses for B.A. Programmes with Computer Science as Major discipline)

DISCIPLINE SPECIFIC CORE COURSE (DSC-3): Computer System Architecture

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC03: Computer System Architecture	**4**	**3**	**0**	**1**	**Passed 12th class with Mathematics**	NIL

Learning Objectives

This course introduces students to the fundamental concepts of digital computer organization, design, and architecture. It aims to develop a basic understanding of the building blocks of a computer system and highlights how these blocks are organized together to architect a digital computer system.

Learning outcomes

On successful completion of the course, students will be able to:

- Design combinatorial circuits using basic building blocks. Simplify these circuits using Boolean algebra and Karnaugh maps. Differentiate between combinational circuits and sequential circuits.
- Represent data in binary form, convert numeric data between different number systems, and perform arithmetic operations in binary.
- Determine various stages of the instruction cycle and describe interrupts and their handling.
- Explain how the CPU communicates with memory and I/O devices.
- Simulate the design of a basic computer using a software tool.

SYLLABUS OF DSC-3

Unit 1 (9 hours)

Digital Logic Circuits: Digital Logic Gates, Flip flops and their characteristic table, Logic circuit simplification using Boolean algebra and Karnaugh map, Don't care conditions, Combinational circuits, Introduction to Sequential Circuits

Unit 2 (7 hours)

Digital Components: Decoders, Encoders, Multiplexers, Binary Adder, Binary Adder Subtractor, Binary Incrementor, Registers, and Memory Units

Unit 3 (13 hours)

Data Representation: Binary representation of both numeric and alphanumeric data, representation of numeric data in different number systems, (Binary, Octal, Decimal and Hexadecimal), conversion from one number system to another, complements, representation of signed and unsigned numbers, addition and subtraction of signed and unsigned numbers and overflow detection.

Unit 4 (9 hours)

Basic Computer Organization and Design: Stored program organization, Computer registers, Instruction set and their completeness, Instruction cycle, Memory reference instructions, Register reference instructions, Input- Output reference instructions, Interrupt cycle, Addressing modes.

Unit 5 (7 hours)

Input-Output Organization: I/O interface, I/O vs. Memory Bus, Isolated I/O, Memory Mapped I/O, Direct Memory Access.

Essential/recommended readings

1. M. Morris Mano, *Computer System Architecture*, 3rd edition, Pearson Education, 2017.
2. Linda Null, Julia Lobur, *Essentials of Computer Organization and Architecture*, 5th Edition, 2019.

Additional References

2. D. Comer, *Essentials of Computer Architecture,* 2nd edition, CRC Press, 2017.

Suggested Practical List (If any): (30 Hours)

Practical exercises such as

(Use Simulator – CPU Sim 3.6.9 or any higher version for the implementation)

1. Create a machine based on the following architecture:

Registers

IR	DR	AC	AR	PC	I	E
16 bits	16 bits	16 bits	12 bits	12 bits	1 bit	1 bit

Memory 4096 words	

16 bits per word	Instruction format 15 12 11 0 Opcode | Address

Basic Computer Instructions

Memory Reference			Register Reference	
Symbol	Hex		Symbol	Hex
AND	0xxx	Direct Addressing	CLA	7800
ADD	1xxx		CLE	7400
LDA	2xxx		CMA	7200
STA	3xxx		CME	7100
			HLT	7001

Refer to Chapter-5 for a description of the instructions.

Design the register set, the memory, and the instruction set. Use this machine for the assignments in this section.

1. Implement fetch sequence
2. Write an assembly program to simulate the addition of two numbers when one is stored in memory and another is entered by the user.
3. Write an assembly program to simulate addition of two numbers when both numbers are taken as inputs from user.
4. Write an assembly program to simulate subtraction of two numbers when one number is stored in memory and another is entered by the user.

5. Write an assembly program to simulate subtraction of two numbers when both numbers are taken as inputs from user

6. Write an assembly program to simulate the following logical operations on two user-entered numbers.

i.AND

ii.OR

iii.NOT

7. Write an assembly language program to simulate the machine for following register reference instructions and determine the contents of AC, E, PC, AR and IR registers in decimal after the execution:

i. CLE

ii. CLA

iii. CMA

iv. CME

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE : Data Mining-I

-

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Data Mining - I	4	3	0	1	Passed 12th class with Mathematics	Programming using Python

Learning Objectives

This course aims to introduce data mining techniques and their application on real-life datasets. The students will learn to pre-process the dataset and make it ready for application

of data mining techniques. The course will focus on three main techniques of data mining i.e. Classification, Clustering and Association Rule Mining. Different algorithms for these techniques will be discussed along with appropriate evaluation metrics to judge the performance of the results delivered.

Learning outcomes

On successful completion of the course, students will be able to:

- Pre-process the data for subsequent data mining tasks
- Apply a suitable classification algorithm to train the classifier and evaluate its performance.
- Apply appropriate clustering algorithm to cluster the data and evaluate clustering quality
- Use association rule mining algorithms and generate frequent item-sets and association rules

SYLLABUS

Unit 1 (8 hours)

Introduction to Data Mining: Motivation and Challenges for data mining, Types of data mining tasks, Applications of data mining, Data measurements, Data quality, Supervised vs. unsupervised techniques

Unit 2 (9 hours)

Data Pre-Processing: Data aggregation, sampling, dimensionality reduction, feature subset selection, feature creation, variable transformation.

Unit 3 (11 hours)

Cluster Analysis: Basic concepts of clustering, measure of similarity, types of clusters and clustering methods, K-means algorithm, measures for cluster validation, determine optimal number of clusters

Unit 4 (8 hours)

Association Rule Mining: Transaction data-set, frequent itemset, support measure, rule generation, confidence of association rule, Apriori algorithm, Apriori principle

Unit 5 (9 hours)

Classification: Naive Bayes classifier, Nearest Neighbour classifier, decision tree, overfitting, confusion matrix, evaluation metrics and model evaluation.

Essential/recommended readings

1. Tan P.N., Steinbach M, Karpatne A. and Kumar V. *Introduction to Data Mining,* 2nd edition, Pearson, 2021.
2. Han J., Kamber M. and Pei J. *Data Mining: Concepts and Techniques*, 3rd edition, 2011, Morgan Kaufmann Publishers.
3. Zaki M. J. and Meira J. Jr. *Data Mining and Machine Learning: Fundamental Concepts and Algorithms*, 2nd edition, Cambridge University Press, 2020.

Additional References

1. Aggarwal C. C. *Data Mining: The Textbook*, Springer, 2015.

2. Dunham M. *Data Mining: Introductory and Advanced Topics,* 1st edition, Pearson Education India, 2006.

Recommended Datasets for :

Classification: Abalone, Artificial Characters, Breast Cancer Wisconsin (Diagnostic)

Clustering: Grammatical Facial Expressions, HTRU2, Perfume data

Association Rule Mining: MovieLens, Titanics

Suggested Practicals List (If any): (30 Hours)

Practical exercise such as

1. Apply data cleaning techniques on any dataset (e,g, wine dataset). Techniques may include handling missing values, outliers, inconsistent values. A set of validation rules can be prepared based on the dataset and validations can be performed.
2. Apply data pre-processing techniques such as standardization/normalization, transformation, aggregation, discretization/binarization, sampling etc. on any dataset
3. Run Apriori algorithm to find frequent itemsets and association rules on 2 real datasets and use appropriate evaluation measures to compute correctness of obtained patterns
   a) Use minimum support as 50% and minimum confidence as 75%
   b) Use minimum support as 60% and minimum confidence as 60 %

4. Use Naive bayes, K-nearest, and Decision tree classification algorithms and build classifiers on any two datasets. Divide the data set into training and test set. Compare the accuracy of the different classifiers under the following situations:
   I. a) Training set = 75% Test set = 25% b) Training set = 66.6% (2/3rd of total), Test set = 33.3%
   II. Training set is chosen by i) hold out method ii) Random subsampling iii) Cross-Validation. Compare the accuracy of the classifiers obtained.

   Data is scaled to standard format.
5. Use Simple K-means algorithm for clustering on any dataset. Compare the performance of clusters by changing the parameters involved in the algorithm. Plot MSE computed after each iteration using a line plot for any set of parameters.

Project: Students should be promoted to take up one project on any UCI/kaggle/data.gov.in or a dataset verified by the teacher. Preprocessing steps and at least one data mining technique should be shown on the selected dataset. This will allow the students to have a practical knowledge of how to apply the various skills learnt in the subject for a single problem/project.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Computer Science Courses for Undergraduate Programme of study with Computer Science discipline as one of the two Core Disciplines
(For e.g. courses for B.A. Programmes with Computer Science as Non-major Discipline)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC03: Computer System Architecture	**4**	**3**	**0**	**1**	**Passed 12th class with Mathematics**	NIL

Learning Objectives

This course introduces students to the fundamental concepts of digital computer organization, design, and architecture. It aims to develop a basic understanding of the building blocks of a computer system and highlights how these blocks are organized together to architect a digital computer system.

Learning outcomes

On successful completion of the course, students will be able to:

- Design combinatorial circuits using basic building blocks. Simplify these circuits using Boolean algebra and Karnaugh maps. Differentiate between combinational circuits and sequential circuits.
- Represent data in binary form, convert numeric data between different number systems, and perform arithmetic operations in binary.
- Determine various stages of the instruction cycle and describe interrupts and their handling.
- Explain how the CPU communicates with memory and I/O devices.
- Simulate the design of a basic computer using a software tool.

SYLLABUS OF DSC-3

Unit 1 (9 hours)

Digital Logic Circuits: Digital Logic Gates, Flip flops and their characteristic table, Logic circuit simplification using Boolean algebra and Karnaugh map, Don't care conditions, Combinational circuits, Introduction to Sequential Circuits

Unit 2 (7 hours)

Digital Components: Decoders, Encoders, Multiplexers, Binary Adder, Binary Adder Subtractor, Binary Incrementor, Registers, and Memory Units

Unit 3 (13 hours)

Data Representation: Binary representation of both numeric and alphanumeric data, representation of numeric data in different number systems, (Binary, Octal, Decimal and Hexadecimal), conversion from one number system to another, complements, representation of signed and unsigned numbers, addition and subtraction of signed and unsigned numbers and overflow detection.

Unit 4 (9 hours)

Basic Computer Organization and Design: Stored program organization, Computer registers, Instruction set and their completeness, Instruction cycle, Memory reference instructions, Register reference instructions, Input- Output reference instructions, Interrupt cycle, Addressing modes.

Unit 5 (7 hours)

Input-Output Organization: I/O interface, I/O vs. Memory Bus, Isolated I/O, Memory Mapped I/O, Direct Memory Access.

Essential/recommended readings

1. M. Morris Mano, *Computer System Architecture*, 3rd edition, Pearson Education, 2017.
2. Linda Null, Julia Lobur, *Essentials of Computer Organization and Architecture*, 5th Edition, 2019.

Additional References

3. D. Comer, *Essentials of Computer Architecture,* 2nd edition, CRC Press, 2017.

Suggested Practical List (If any): (30 Hours)

Practical exercises such as

(Use Simulator – CPU Sim 3.6.9 or any higher version for the implementation)

1. Create a machine based on the following architecture:

Registers

IR	DR	AC	AR	PC	I	E
16 bits	16 bits	16 bits	12 bits	12 bits	1 bit	1 bit

Memory 4096 words 16 bits per word	Instruction format 15 12 11 0

	Opcode	Address

Basic Computer Instructions

Memory Reference			Register Reference	
Symbol	Hex		Symbol	Hex
AND	0xxx	Direct Addressing	CLA	7800
ADD	1xxx		CLE	7400
LDA	2xxx		CMA	7200
STA	3xxx		CME	7100
			HLT	7001

Refer to Chapter-5 for a description of the instructions.

Design the register set, the memory, and the instruction set. Use this machine for the assignments in this section.

1. Implement fetch sequence
2. Write an assembly program to simulate the addition of two numbers when one is stored in memory and another is entered by the user.
3. Write an assembly program to simulate addition of two numbers when both numbers are taken as inputs from user.
4. Write an assembly program to simulate subtraction of two numbers when one number is stored in memory and another is entered by the user.
5. Write an assembly program to simulate subtraction of two numbers when both numbers are taken as inputs from user
6. Write an assembly program to simulate the following logical operations on two user-entered numbers.

i.AND

ii.OR

iii.NOT

7. Write an assembly language program to simulate the machine for following register reference instructions and determine the contents of AC, E, PC, AR and IR registers in decimal after the execution:

i. CLE

ii. CLA

iii. CMA

iv. CME

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF OPERATIONAL RESEARCH

B.SC. (HONS) OPERATIONAL RESEARCH

Category I

DISCIPLINE SPECIFIC CORE COURSE – 7: CONVEX AND DISCRETE OPTIMIZATION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Convex and Discrete Optimization (DSC-7)	4	3	1	0	Passed 12th class with Mathematics	Linear Programming

Learning Objectives:

- To impart knowledge about the formulations and solution techniques of integer linear and multi-objective goal programming problems.

Learning Outcomes:

On successful completion of the course, students will be able to:

- Identify different types of optimization problems which occur in real life and their characteristics.
- Explain the theoretical concepts related to unconstrained optimization problems and demonstrate optimality conditions and solution approaches for them.
- Develop the concepts of a multi-objective programming problem and demonstrate its solution using goal programming.
- Formulate real-life problems as integer linear programming problems and solve them using Branch and Bound method.

SYLLABUS OF DSC-7

Unit I: Unconstrained Optimization **(8 Hours)**

Single and multiple variable problems, Necessary and sufficient conditions for finding extrema, Solution methods: Bisection, Newton, Golden section, Gradient search.

Unit II: **Convex Functions** **(12 Hours)**

Local and global maxima/minima for functions of one and two variables, inflection point, positive/negative definite and semi-definite matrices, convex/concave functions, and their properties, Verifying convexity/concavity through a Hessian matrix.

Unit III: Goal Programming **(12 Hours)**

Goal Programming: Basics of goal programming, Weighted and pre-emptive goal programming, Formulation of a goal programming problem, Graphical solution method, Modified Simplex method.

Unit IV: Integer Linear Programming **(13 Hours)**

Introduction to Integer linear programming problem (ILPP), Pure ILPP, Mixed ILPP, and 0-1 ILPP, Applications of ILPP: Capital budgeting, problem Fixed charge problem, Travelling salesman problem, Media allocation, Knapsack problem, Gomory's cutting plane method, Branch and bound method.

References:

1. Chandra, S., Jayadeva, & Mehra, A. (2013). *Numerical optimization with applications.* New Delhi: Narosa Publishing House.
2. Ravindran, A., Phillips, D. T., & Solberg, J. J. (2007). *Operations research- principles and practice* (2nd ed.). New Delhi: Wiley India (Indian print).
3. Sinha, S. M. (2006). *Mathematical programming- theory and methods* (1st ed.). New Delhi: Elsevier Science (Indian print).

Practical component (if any) – NIL

Essential Readings:

- Bazaraa, M. S., Sherali, H. D., & Shetty, C. M. (2006). *Nonlinear programming-Theory and algorithms (3rd ed.).* New Delhi: John Wiley & Sons (Indian print).
- Chandra, S., Jayadeva, & Mehra, A. (2009). *Numerical optimization with applications*. New Delhi: Narosa Publishing House.

Suggested Readings:

- Antoniou, A., & Lu, Wu-Sheng (2007). *Practical optimization- Algorithms and engineering applications*. New York: Springer.
- Hillier, F. S., & Lieberman, G. J. (2010). *Introduction to operations research- Concepts and cases (9th ed.).* New Delhi: Tata McGraw Hill (Indian print).

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 8: ADVANCED CALCULUS

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Advanced Calculus (DSC-8)	4	3	1	0	Passed 12th class with Mathematics	Calculus

Learning Objectives

The Learning Objectives of this course are as follows:

- To acquaint the students with the advanced concepts in Calculus
- To make the students learn effective methods of calculus
- To make the student understand the quantitative change in the behaviour of the variables and apply them on the problems related to Operational Research domain

Learning Outcomes

On successful completion of the course, students will be able to:

- Understand the concepts of function of one variable to functions of two or more variables.
- Evaluate double integral based problems
- Analyse integration based problems in real life cases.
- Understand Calculus.

SYLLABUS OF DSC-8

Unit I: Differential calculus **(15 Hours)**

Function of Two Variables, Limits and continuity, Partial differentiation, Total differential, Approximation, Higher order partial derivative, Homogeneous Function, Taylor's Theorem for

two variables, Maxima and Minima for functions of Two Variables, Lagrange Multiplier and Constrained optimization.

Unit II: Integral calculus **(10 Hours)**
Double Integral, Double Integration over rectangular and nonrectangular regions, Change of variables in integrals.

Unit III: Differential equations **(20 Hours)**
Order and degree of a differential equation, Exact differential equations, Differential equations of first order and first degree, Higher Order Differential Equations: Homogeneous linear differential equations of order n with constant coefficients, The Cauchy-Euler's equation of order n, Method of variation of parameters, Application of differential equations to operational research problems.

Practical component (if any) – Nil

Essential/recommended readings

- Strauss, M. J., Bradley, G. L., & Smith, K. J. (2007). *Calculus* (3rd Edition). Dorling Kindersley (India) Pvt. Ltd. (Pearson Education). Delhi. Sixth impression 2011.
- Ross, Shepley. L. (1984). Differential equations (3rd ed.). John Wiley & Sons.
- Kreyszig, E. (2007). *Advanced Engineering Mathematics* (9th Edition). Wiley Plus Set (p. 334). John Wiley & Sons.
- Marsden, J., & Weinstein, A. (1985). *Calculus I*. Springer Science & Business Media.
- Yamada, S. (2014). *Software Reliability Modeling: Fundamentals and Applications*. Tokyo: Springer.

Suggestive readings

- Shanti Narayan and P K Mittal (2018). *Differential Calculus. 15th Ed (Revised).*, S Chand Publication, New Delhi
- Shanti Narayan and P K Mittal (2016). *Integral Calculus. 11th Ed (Revised*), S Chand Publication, New Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 9: QUEUING THEORY

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Queuing Theory (DSC-9)	4	3	0	1	Passed 12th class with Mathematics	Probability and Statistics

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce queuing (waiting lines) models and their applications in real-life situations.
- To provide necessary mathematical support and confidence to the students to tackle real life problems.
- To make students learn both theory and applications of fundamental and advanced models in this field.

Learning outcomes

On successful completion of the course, students will be able to:

- Understand the concepts of stochastic processes, Markov processes, Markov chains and apply these in analysing queuing systems.
- Understand the concepts and analyse the mathematical theory related to queuing systems.
- Analyse and compute quantitative measures of performance for queuing systems.
- Apply and extend queuing models to analyse real world systems.

SYLLABUS OF DSC-9

Unit I: Queueing systems **(6 Hours)**

Basic characteristics, measures of performance and Kendall's notation. Little's formula, traffic intensity.

Unit II: Stochastic processes **(10 Hours)**

Definition and classification on the basis of state and parameter space. Markov chain: definition, transition probability matrix (TPM), classification of states. Continuous-time

Markov chains: Poisson process (definition and its relationship with exponential distribution), pure birth process and pure death process.

Unit III: Markovian queueing models **(20 Hours)**

General birth-death processes, single-server queue (M/M/1), multi-server queue (M/M/c), queue with finite capacity (M/M/c/K), Erlang's loss formula (M/M/c/c), queues with unlimited service (M/M/∞), finite-source queues, queues with impatience (M/M/1 with balking and M/M/1 with reneging).

Unit IV: Decision problems in queueing theory **(9 Hours)**

Descriptive and prescriptive modeling, performance measures of decision-making, queueing design problems, queueing control problems.

Practical component (if any) – **(30 Hours)**

- Finding measures of performance for deterministic queuing system.
- Finding measures of performance for M/M/1 queuing system with infinite capacity.
- Finding measures of performance for M/M/1 queuing system with finite capacity.
- Finding measures of performance for M/M/c queuing system with infinite capacity.
- Finding measures of performance for M/M/c queuing system with finite capacity.
- Finding measures of performance for any Markovian queuing system with multiple servers and with finite/infinite capacity.

Essential/recommended readings

- Cooper, R. B. (1981). *Introduction to Queueing Theory* (2nd Edition). North Holland.
- Kleinrock L. (1975). *Queueing Systems*, Volume 1: Theory, John Wiley.
- Gross, Donald, Shortle , John F., Thompson, James M., and Harris, Carl M. (2008). *Fundamentals of Queueing Theory* (5th Edition), John Wiley and Sons Inc. Pte. Ltd.
- Bhat, U. N. (2008). *An introduction to Queueing Theory: Modelling and Analysis in Applications (Statistics for Industry and Technology)*. Birkhauser Boston.
- Cox, D. R. and Smith ,W. L. (1991). *Queues*. Chapman and Hall/CRC.
- Medhi, J. (2002). *Stochastic Models in Queueing Theory* (2nd Edition), Academic Press.
- Satty, T. L. (1983). *Elements of Queueing Theory with Applications*, Dover Publications, NY.
- Prabhu, N. U. (2012). *Foundations of Queueing Theory (International Series in Operations Research & Management Science)*, Springer.

Suggestive readings-Nil

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category II

(B.A. Programme with Operational Research as Major discipline)

DISCIPLINE SPECIFIC CORE COURSE – 5: Mathematical Modelling for Business

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Mathematical Modelling for Business (DSC-5)	4	3	0	1	Passed 12th class with Mathematics	Linear Programming

Learning Objectives

To acquaint students with different mathematical modelling techniques applicable in various businesses viz., inventory control, marketing management, and network flow analysis.

Learning outcomes

On successful completion of the course, students will be able to:

- Explain the meaning of Inventory control, its various forms, and the functional role of Inventory.
- Calculate the Economic Order Quantity (EOQ) for various Deterministic Inventory models.
- Comprehend inventory models with All Units Quantity Discounts
- Gain an understanding of the basic concepts and issues in marketing and their application in business decisions.
- Gain an understanding of network analysis and related mathematical models.
- Use standard methodologies for solving network flow problems.

SYLLABUS OF DSC-5

Unit I: Introduction to Inventory Management **(18 Hours)**

Concept and significance of inventory management, Different types of costs in the inventory system. Deterministic continuous review models: Economic order quantity (EOQ) model with and without shortages, Finite replenishment rate Inventory models without and with planned shortages. Determination of reorder point for all the models. Inventory models with All Units Quantity Discounts.

Unit II: Fundamentals for Marketing Management **(15 Hours)**

Nature, Scope, and Importance of Marketing, Basic concepts, Marketing Environment, Consumer Behaviour, Market Classification based on Competitive Conditions, Product Mix, Pricing Strategies, Media allocation for advertisement, Brand switching analysis, Concept of Measurement of Elasticity of Demand, Factors Affecting Elasticity of Demand, Income Elasticity of Demand, Cross Elasticity of Demand, Advertising Elasticity of Demand.

Unit III: Network Analysis **(12 Hours)**

Understanding of network components, Construction of network diagram, Introduction to Network flow problems and their applications: Shortest path problem, Travelling salesman problem, minimum spanning tree.

Practical component (if any) - **(30 Hours)**

Practical/Lab to be performed on a computer using OR/Statistical packages

- To find optimal inventory policy for deterministic inventory models without shortages.
- To find optimal inventory policy for deterministic inventory models without shortages.
- To solve all units quantity discounts model.
- Finding shortest path in a network.
- Solving a travelling salesman problem.
- Finding minimum spanning tree in a network.
- Problems based on media allocation for advertisement.
- Problems based on Brand switching analysis.

Essential/recommended readings

- Bazaraa, M. S., Jarvis, J. J., & Sherali, H. D. (2011). Linear programming and network flows. John Wiley & Sons.
- Hadley, G., & Whitin, T. M. (1963). *Analysis of inventory systems*. Prentice-Hall.
- Waters, D. (2008). *Inventory control and management.* (2nd Edition). John Wiley & Sons.
- Kotler P., & Keller, K. L. (2008), *Marketing management* (13th ed.). New Delhi: Pearson Education, Ltd.

Suggestive readings Nil

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 6: Python Programming

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Python Programming (DSC-6)	4	3	0	1	Passed 12th class with Mathematics	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce the basic concepts of Python programming. The course will familiarize the students with Python's ability to handle different data formats such as numbers, strings, lists, dictionaries, sets, tuples, etc.
- The students will be made familiar with the concepts of loops. Modularization of code using inbuilt functions as well as user defined functions will also be explained.
- To introduce the basics for various useful libraries so as to equip the students with modern computing skills.

Learning outcomes

On successful completion of the course, students will be able to:

- Learn Python installation and configuration.
- Understand simple scripting using Python.
- Learn Syntax and Semantics of Python Programming.
- Understand different data types and arithmetical, logical and relational expressions in Python.
- Understand the control structures and functions in Python by writing codes for some real-world problems.
- Handle simple data structures, lists, dictionaries, sets and tuples.
- Modularize the code using inbuilt functions and user defined functions.
- Handle various managerial decision making related problems

SYLLABUS OF DSC-6

Unit I: Introduction **(6 Hours)**

Python installation, Basic Terminal Commands, interactive mode and script mode, Structure of a Program, Simple Python Script Writing, script execution, debugging errors and understanding simple programs in Python

Unit II: Understanding Control Statements **(6 Hours)**
Identifiers and keywords; literals, numbers, and strings; Operators and expressions; Input and Output statements; control structures (conditional statements, loop control statements, break, Continue and pass).

Unit III: Functions **(10 Hours)**
Introduction to Functions and its definition: Modules, built in and user-defined functions, passing arguments and returning values, default arguments, functions as data.

Unit IV: Data Structures **(10 Hours)**
Data Structures like; Strings, Lists, Tuples, Sets, Dictionaries, Analysing their functions and basic operations.

Unit V: Advance Libraries **(13 Hours)**
Introduction to Core Libraries in Python : Numpy Library for Arrays (Creating and accessing One and Multi-Dimensional Array), Pandas Library for Data Processing (Basics of DataFrame), Matplotlib Library for Visualization (Pie Chart, Scatter Plot, Histogram, Bar Chart)

Practical component (if any) – **(30 Hours)**

- Write a program to enter a name and display: "Hello, Name".
- Write a program to compute the roots of a quadratic equation.
- Write a program to print a pyramid **pattern** with 8 rows.
- Write a menu driven program to enter a number and print whether the number is odd or even.
- Write a program to build a **random number generator** that generates random numbers between 1 and 6 (simulates a dice).
- Write a program that takes two **lists** and returns "True" if they have at least one common member.
- Write a program to check if one **list** is reverse of another.
- Write a program to check if a given **array** is Monotonic.
- Write a program to find the maximum number out of 3 entered numbers. **(loop)**
- Write a program to build a menu driven **calculator** and perform basic arithmetic operations between two numbers. (Addition, Subtraction, Multiplication and Division)
- Write a program to create a **dictionary** and remove one key.
- Write a program to enter 5 subject's marks and print the grades A/B/C/D. **(loop)**
- Write a program to print a Fibonacci sequence. **(loop)**
- Write a program in python to plot a **graph** for the function $y = x^2$.
- Programmes related to creating and modifying List, Tuple and Dictionary.
- Programmes to find correlation between dependent and independent variables.
- Programme to develop a regression model on an existing data set.
- Programmes for data visualization (Charts using plot() function, Pie Chart, Scatter Plot, Histogram, Bar Chart)
- Solution to deterministic EOQ based models for Inventory Management

Essential/recommended readings

- Deitel, P. J. (2019). P*ython Fundamentals*. Pearson.

- Dierbach, C. (2012). *Introduction to computer science using python: a computational problem-solving focus.* Wiley Publishing.
- Guttag, J. V. (2013). *Introduction to computation and programming using Python*. MIT Press.
- Lambert, K. A. (2018*). Fundamentals of python: first programs*. Cengage Learning.
- Lutz, M., & Lutz, M. (1996). *Programming python* (volume 8). O'Reilly Media, Inc.
- Thareja, R. (2017). *Python programming using problem solving approach*. Oxford University Press.
- VanderPlas, J. (2016). *Python data science handbook: essential tools for working with data.* O'Reilly Media, Inc.

Suggestive readings:: NIL

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category III

(B.A Programme with Operational Research as non-Major or Minor discipline)

DISCIPLINE SPECIFIC CORE COURSE – 3: Mathematical Modelling for Business

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Mathematical Modelling for Business (DSC-3)	**4**	**3**	**0**	**1**	**Passed 12th class with Mathematics**	**Linear Programming**

Learning Objectives

To acquaint students with different mathematical modelling techniques applicable in various businesses viz., inventory control, marketing management, and network flow analysis.

Learning outcomes

On successful completion of the course, students will be able to:

- Explain the meaning of Inventory control, its various forms, and the functional role of Inventory.
- Calculate the Economic Order Quantity (EOQ) for various Deterministic Inventory models.
- Comprehend inventory models with All Units Quantity Discounts
- Gain an understanding of the basic concepts and issues in marketing and their application in business decisions.
- Gain an understanding of network analysis and related mathematical models.
- Use standard methodologies for solving network flow problems.

SYLLABUS OF DSC-5

Unit I: Introduction to Inventory Management **(18 Hours)**

Concept and significance of inventory management, Different types of costs in the inventory system. Deterministic continuous review models: Economic order quantity (EOQ) model with and without shortages, Finite replenishment rate Inventory models without and with planned shortages. Determination of reorder point for all the models. Inventory models with All Units Quantity Discounts.

Unit II: Fundamentals for Marketing Management **(15 Hours)**

Nature, Scope, and Importance of Marketing, Basic concepts, Marketing Environment, Consumer Behaviour, Market Classification based on Competitive Conditions, Product Mix, Pricing Strategies, Media allocation for advertisement, Brand switching analysis, Concept of Measurement of Elasticity of Demand, Factors Affecting Elasticity of Demand, Income Elasticity of Demand, Cross Elasticity of Demand, Advertising Elasticity of Demand.

Unit III: Network Analysis **(12 Hours)**

Understanding of network components, Construction of network diagram, Introduction to Network flow problems and their applications: Shortest path problem, Travelling salesman problem, minimum spanning tree.

Practical component (if any) - **(30 Hours)**

Practical/Lab to be performed on a computer using OR/Statistical packages

- To find optimal inventory policy for deterministic inventory models without shortages.
- To find optimal inventory policy for deterministic inventory models without shortages.
- To solve all units quantity discounts model.
- Finding shortest path in a network.
- Solving a travelling salesman problem.
- Finding minimum spanning tree in a network.
- Problems based on media allocation for advertisement.
- Problems based on Brand switching analysis.

Essential/recommended readings

- Bazaraa, M. S., Jarvis, J. J., & Sherali, H. D. (2011). Linear programming and network flows. John Wiley & Sons.
- Hadley, G., & Whitin, T. M. (1963). *Analysis of inventory systems*. Prentice-Hall.
- Waters, D. (2008). *Inventory control and management.* (2nd Edition). John Wiley & Sons.
- Kotler P., & Keller, K. L. (2008), *Marketing management* (13th ed.). New Delhi: Pearson Education, Ltd.

Suggestive readings: Nil

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category IV

BSc. Physical Sciences/ Mathematical Sciences with Operational Research as one of the three Core Disciplines
CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

DISCIPLINE SPECIFIC CORE COURSE – 3: MATHEMATICAL MODELLING FOR BUSINESS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Mathematical Modelling for Business (DSC-3)	4	3	0	1	Passed 12th class with Mathematics	Linear Programming

Learning Objectives

To acquaint students with different mathematical modelling techniques applicable in various businesses viz., inventory control, marketing management, and network flow analysis.

Learning outcomes

On successful completion of the course, students will be able to:

- Explain the meaning of Inventory control, its various forms, and the functional role of Inventory.
- Calculate the Economic Order Quantity (EOQ) for various Deterministic Inventory models.
- Comprehend inventory models with All Units Quantity Discounts
- Gain an understanding of the basic concepts and issues in marketing and their application in business decisions.
- Gain an understanding of network analysis and related mathematical models.
- Use standard methodologies for solving network flow problems.

SYLLABUS OF DSC-5

Unit I: Introduction to Inventory Management **(18 Hours)**

Concept and significance of inventory management, Different types of costs in the inventory system. Deterministic continuous review models: Economic order quantity (EOQ) model with

and without shortages, Finite replenishment rate Inventory models without and with planned shortages. Determination of reorder point for all the models. Inventory models with All Units Quantity Discounts.

Unit II: Fundamentals for Marketing Management (15 Hours)

Nature, Scope, and Importance of Marketing, Basic concepts, Marketing Environment, Consumer Behaviour, Market Classification based on Competitive Conditions, Product Mix, Pricing Strategies, Media allocation for advertisement, Brand switching analysis, Concept of Measurement of Elasticity of Demand, Factors Affecting Elasticity of Demand, Income Elasticity of Demand, Cross Elasticity of Demand, Advertising Elasticity of Demand.

Unit III: Network Analysis (12 Hours)

Understanding of network components, Construction of network diagram, Introduction to Network flow problems and their applications: Shortest path problem, Travelling salesman problem, minimum spanning tree.

Practical component (if any) - (30 Hours)

Practical/Lab to be performed on a computer using OR/Statistical packages

- To find optimal inventory policy for deterministic inventory models without shortages.
- To find optimal inventory policy for deterministic inventory models without shortages.
- To solve all units quantity discounts model.
- Finding shortest path in a network.
- Solving a travelling salesman problem.
- Finding minimum spanning tree in a network.
- Problems based on media allocation for advertisement.
- Problems based on Brand switching analysis.

Essential/recommended readings

- Bazaraa, M. S., Jarvis, J. J., & Sherali, H. D. (2011). Linear programming and network flows. John Wiley & Sons.
- Hadley, G., & Whitin, T. M. (1963). *Analysis of inventory systems*. Prentice-Hall.
- Waters, D. (2008). *Inventory control and management.* (2nd Edition). John Wiley & Sons.
- Kotler P., & Keller, K. L. (2008), *Marketing management* (13th ed.). New Delhi: Pearson Education, Ltd.

Suggestive readings: Nil

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

CATEGORY-V (a)

COMMON POOL OF DISCIPLINE SPECIFIC ELECTIVES (DSE) COURSES
BSc. Physical Sciences/ Mathematical Sciences with Operational Research as one of the three Core Disciplines

DISCIPLINE SPECIFIC ELECTIVE (DSE): SIMULATION MODELLING & APPLICATIONS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Simulation Modelling and Applications (DSE-1(a))	4	3	0	1	Passed 12th class with Mathematics	Probability and Statistics

Learning Objectives

The Learning Objectives of this course are as follows:

- To acquaint students with the fundamentals of Simulation modelling
- Develop the students' analytical skills
- Introduce simulation techniques applicable in different situations

Learning outcomes

On successful completion of the course, students will be able to:

- Know the basics of simulation modelling and its scope.
- Gain knowledge of Event Type Simulation and its applications in real life.
- Understand the various methods of random number generation.
- Understand and use Monte Carlo Simulation.
- Apply Simulation Technique in Inventory Control, Queuing Systems.
- Use Simulation in Finance and Investment, Maintenance Problems and Networks.

SYLLABUS OF DSE-1(a)

Unit I: Introduction to Simulation **(18 Hours)**

What is Simulation, Process of Simulation, Advantages and Limitations of Simulation, Classification of Simulation Models, Continuous Event Type Simulation, Discrete Event Simulation: Components and Organization, Application of discrete event simulation in single server queueing system, inventory model and insurance risk model.

Unit II : Random Number Generation **(12 Hours)**

Pseudo Random Number Generators – Mixed Congruence Method, Multiplicative Congruential Method, Additive Congruential Method, the inverse transform method, Discrete and Continuous Distributions, Box Muller Method.

Unit III: Applications in Inventory and Queuing **(9 Hours)**

Monte Carlo Simulation, Application of Simulation in Inventory Control, Simulation of Queueing Systems.

Unit IV: Applications in Project Management **(6 Hours)**

Simulation of Maintenance Problems, Applications of Simulation in Finance and Investment, Simulation of Job Sequencing, Simulation of Networks.

Practical component (if any) – **(30 Hours)**

Practical/Lab to be performed on a computer using OR/Statistical packages

- Modelling randomness in Excel: Pseudo Random Number generators
- Generation of U (0,1)
- Simulating M/M/1 Queues
- Monte Carlo Simulation
- Simulation in Inventory Control
- Forecasting using Simulation
- Simulation in Queueing System using Monte Carlo Simulation
- Simulation in Finance and Investment

Essential/recommended readings

- Fishman, G.S. (1996). *Monte Carlo-Concepts, Algorithms and Applications*, Springer
- Taha, H.A. (2018), *Operations Research, An Introduction, 10h Edition*, Pearson.
- Sheldon M. Ross (2008), *Simulation, 4thEd*, Elsevier.
- Averill M. Law and W. David Kelton (2003), *Simulation Modeling and Analysis*, 3rd Ed., Tata McGraw-Hill.

Suggestive readings: Nil

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE (DSE): PRODUCTION AND OPERATIONS MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Production and Operations Management (DSE-1(b))	4	3	1	0	Passed 12th class with Mathematics	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- To make students understand the strategic significance of Production and Operations Management in service and manufacturing organizations.
- To acquaint them with fundamental concepts, functions and applications of discipline, so as to deal with different types of problems faced by operations managers, and common decision-making approaches.

Learning Outcomes

On successful completion of the course, students will be able to:

- Gain an understanding of basic concepts of Production and Operations management and differentiate between them.
- Analyse the factors affecting Facility Capacity, Location, and Layout.
- Understand the Production planning and Material Requirement Planning techniques.
- Comprehend basic concepts in Just in time (JIT) Manufacturing System, Operations scheduling and Quality management.

SYLLABUS

Unit I: Introduction to Production and Operations Management (POM) (6 Hours)
Overview of Production System, Objectives of Operations Management, Scope of Operations Management, Types of Production Systems, Production Design Process and Process choices. Framework for Managing Operations; Strategic Operations Management.

Unit II: Facility Location, Layout and Capacity (12 Hours)
Factors Influencing Plant Location, Single Facility Location Problem, Multi Facility Location Problem, Models for Facility Location Problem. Facility Layout decision- importance and benefits of layout planning, different types of layouts. Capacity Planning – Measures of capacity, factors affecting demand forecasting and capacity planning, short and long-term capacity planning.

Unit III: Production Planning (12 Hours)
Aggregate planning, Master Production Schedule. Introduction to MRP and MRP II. Lot sizing in MRP systems – Lot for lot method, economic quantity method, periodic order quantity method, part period balancing, Wagner – Whitin approach. Introduction to modern productivity techniques – Just in Time (JIT), Kanban system. Inventory Control – basic concepts, Classification of Inventory System, EOQ Model.

Unit IV: Operations Scheduling and Quality Management (15 Hours)
Flow Shop Scheduling- Introduction, Single Machine Scheduling, n jobs m machines, Johnsons' rule. Quality Management: Introduction, Statistical process control, control charts, Total Quality Management (TQM), Six sigma, ISO 9000 and other ISO series.

Practical component (if any) –Nil

Essential/recommended readings

- Bedi, K. (2013). *Production & Operations Management.* 3rd edition. Oxford University Press.
- Everett E. Adam, Ronald J Ebert (1995). *Production and Operations Management: Concepts, Models, and Behavior*. Fifth edition. PHI Learning Pvt. Ltd
- Gaither, N., & Frazier, G. (2002). *Operations management*. South-Western/Thomson Learning.
- Heizer,J., Render, B., Munson, C., & Sachan, A. (2017). *Operations Management*. Twelfth edition. Pearson Education.

Suggestive readings:

Nil

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE : BUSINESS FORECASTING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Business Forecasting	4	3	0	1	Passed 12th class with Mathematics	Probability and Statistics

Learning Objectives

The objective of this course is to introduce both managerial and technical aspects of business forecasting to students and expose them to its practical applications.
The Learning Objectives of this course are as follows:

- To introduce both managerial aspect of business forecasting
- Develop the students' ability to understand the technical aspect for business forecasting and its applications
- Introduce various forecasting techniques helpful for better decision making

Learning outcomes

On successful completion of the course, students will be able to:

- Gain an understanding of key concepts of Business Forecasting and its applications.
- Develop analytical methodologies that make prediction of future events of interest to business and industry.
- Make well-informed decisions that require forecasting of relevant variables.
- Identify relevant information to support model selection in scenarios where issues of time series analysis are involved.
- Predict relationships among business and economic variables for supporting short-term and long-term planning.

SYLLABUS OF DSE-1(c)

Unit I: Introduction **(12 Hours)**

Introduction to Business Forecasting, Importance of forecasting, Different types of forecasting methods, Identification of appropriate technique for forecasting, Applications of forecasting methods in industry, Practical issues in forecasting.

Unit II: Time Series Modeling **(15 Hours)**

Time series and its components, modelling and forecasting trend, modelling and forecasting seasonality, characterising cycles in times series, forecasting cycles, Forecasting models with trend seasonality and cycle.

Unit III: Regression Modeling **(9 Hours)**

Simple linear regression and multiple linear regression models and their applications in business.

Unit IV: Some Related Concepts **(9 Hours)**

Stationary and non-stationary time series, Autoregressive (AR) Forecasting model, Moving average (MA) model, Autoregressive moving average model (ARMA), Autoregressive integrated moving average (ARIMA) model, Random walk model. Applications of these models in business.

Practical component (if any) – **(30 Hours)**

Practical/Lab to be performed on a computer using OR/Statistical packages

- Plot and visualize time series data.
- Fitting of trend by using Method of semi averages.
- Fitting of trend by Moving Average Method.
- Measurement of Seasonal indices using method of simple average.
- Measurement of Seasonal indices using Ratio-to-Trend method.
- Measurement of Seasonal indices using Ratio-to-Moving Average method.
- Measurement of seasonal indices using Link Relative method.
- To find cyclical variations using percentage of trend method and relative cyclical residual method.
- Fitting a simple linear regression model for forecasting.
- Fitting a multiple linear regression model for forecasting.

Essential/recommended readings

- Makridakis, S., Wheelwright, S. C., & Hyndman, R. J. (2008). *Forecasting methods and applications*. John wiley & sons.
- Pindyck, R. S., & Rubinfeld, D. L. (1976). *Econometric models and economic forecasts*. McGraw-Hill.
- Butler, W. F., Kavesh, R. A., & Platt, R. B. (Eds.). (1974). *Methods and techniques of business forecasting*. Prentice Hall.
- Diebold, F. X. (2004). *Elements of Forecasting*. Thompson: South Western. Ohio, USA.

Suggestive readings

- Hanke, J. E., & Wichern, D.W. (2014). *Business Forecasting.* Pearson.
- Gujarati, D. N. (2004). *Basic econometrics. (4th ed.),* McGraw-Hill.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

CATEGORY-V (b)

COMMON POOL OF DISCIPLINE SPECIFIC ELECTIVES (DSE) COURSES
BSc(Hons.) Operational Research

DISCIPLINE SPECIFIC ELECTIVE (DSE): SIMULATION MODELLING & APPLICATIONS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Simulation Modelling and Applications (DSE-1(a))	4	3	0	1	Passed 12th class with Mathematics	Probability and Statistics

Learning Objectives

The Learning Objectives of this course are as follows:

- To acquaint students with the fundamentals of Simulation modelling
- Develop the students' analytical skills
- Introduce simulation techniques applicable in different situations

Learning outcomes

On successful completion of the course, students will be able to:

- Know the basics of simulation modelling and its scope.
- Gain knowledge of Event Type Simulation and its applications in real life.
- Understand the various methods of random number generation.
- Understand and use Monte Carlo Simulation.
- Apply Simulation Technique in Inventory Control, Queuing Systems.
- Use Simulation in Finance and Investment, Maintenance Problems and Networks.

SYLLABUS

Unit I: Introduction to Simulation **(18 Hours)**
What is Simulation, Process of Simulation, Advantages and Limitations of Simulation, Classification of Simulation Models, Continuous Event Type Simulation, Discrete Event Simulation: Components and Organization, Application of discrete event simulation in single server queueing system, inventory model and insurance risk model.

Unit II : Random Number Generation **(12 Hours)**
Pseudo Random Number Generators – Mixed Congruence Method, Multiplicative Congruential Method, Additive Congruential Method, the inverse transform method, Discrete and Continuous Distributions, Box Muller Method.

Unit III: Applications in Inventory and Queuing **(9 Hours)**
Monte Carlo Simulation, Application of Simulation in Inventory Control, Simulation of Queueing Systems.

Unit IV: Applications in Project Management **(6 Hours)**
Simulation of Maintenance Problems, Applications of Simulation in Finance and Investment, Simulation of Job Sequencing, Simulation of Networks.

Practical component (if any) – **(30 Hours)**
Practical/Lab to be performed on a computer using OR/Statistical packages

- Modelling randomness in Excel: Pseudo Random Number generators
- Generation of U (0,1)
- Simulating M/M/1 Queues
- Monte Carlo Simulation
- Simulation in Inventory Control
- Forecasting using Simulation
- Simulation in Queueing System using Monte Carlo Simulation
- Simulation in Finance and Investment

Essential/recommended readings

- Fishman, G.S. (1996). *Monte Carlo-Concepts, Algorithms and Applications*, Springer
- Taha, H.A. (2018), *Operations Research, An Introduction, 10h Edition*, Pearson.
- Sheldon M. Ross (2008), *Simulation, 4thEd*, Elsevier.
- Averill M. Law and W. David Kelton (2003), *Simulation Modeling and Analysis*, 3rd Ed., Tata McGraw-Hill.

Suggestive readings: Nil

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE (DSE):

Numerical Analysis

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Numerical Analysis (DSE-1(b))	4	3	0	1	12th class with Mathematics	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- To acquaint students with the techniques that uses algorithms for approximation problems.
- Develop the students' ability to use various numerical method techniques
- To make the students formulate and apply appropriate strategy to solve real world problems.

Learning outcomes

On successful completion of the course, students will be able to:

- Know the basic elements of numerical methods and error analysis
- Learn Iterative methods for finding the roots of the algebraic and transcendental equations
- Apply the numerical methods to solve system of linear equations and understand the methods convergence analysis.
- Understand the concepts of finite differences, derive the interpolation formulae and understand its applications.

SYLLABUS OF DSE-1(b)

Unit I **(12 Hours)**

Errors: Relative Error, Absolute Error, Round off Error, Truncation Error. Transcendental and Polynomial equations: Bisection method, Newton-Raphson method, Secant method. Method of False Position, Fixed point iterative method, Order and rate of convergence of these methods.

Unit II **(9 Hours)**

System of linear equations: Gauss Elimination and Gauss Jordan methods. Gauss Jacobi method, Gauss Seidel method and their convergence analysis.

Unit III **(9 Hours)**

Interpolation: Lagrange Interpolating Polynomial, Newton's Gregory forward and backward difference interpolating polynomial, Newton's Divided Difference Interpolating Polynomial, Error analysis in each method.

Unit IV **(15 Hours)**

Numerical Integration: Trapezoidal rule, Composite Trapezoidal rule, Simpson's rule, Composite Simpson's rule, Simpsons 3/8th rule. Ordinary Differential Equations: Euler's method, Modified Euler's method, Runge-Kutta method

Practical component (if any) – **(30 Hours)**

Practical/Lab to be performed on a computer using OR/Statistical packages for developing the following numerical programs:

1. Bisection method
2. Newton Raphson method
3. Secant method
4. Regula Falsi method
5. LU decomposition method
6. Gauss-Jacobi method
7. Gauss-Seidel method
8. Lagrange interpolation
9. Newton interpolation
10. Trapezoidal rule
11. Simpson's rule
12. Euler's method

Essential/recommended readings

- Sastry, S. S. (2012). *Introductory methods of numerical analysis*. PHI Learning Pvt. Ltd..
- Gerald, C. F., & Wheatley, P. O. (2008). *Applied Numerical Analysis (7th ed.).* Pearson Education. India.
- Bradie, Brian. (2006). *A Friendly Introduction to Numerical Analysis*. Pearson Education, India. Dorling Kindersley (India) Pvt. Ltd. Third impression 2011.
- Mudge, M. R. (2003). *An introduction to numerical methods and analysis*,(Wiley).

Suggestive readings:

- Jain, M. K., Iyengar, S. R. K., & Jain, R. K. (2012). *Numerical Methods for Scientific and Engineering Computation. (6th ed.).* New Age International Publisher, India, 2016.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE (DSE): BUSINESS FORECASTING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Business Forecasting	4	3	0	1	Passed 12th class with Mathematics	Probability and Statistics

Learning Objectives

The objective of this course is to introduce both managerial and technical aspects of business forecasting to students and expose them to its practical applications.
The Learning Objectives of this course are as follows:

- To introduce both managerial aspect of business forecasting
- Develop the students' ability to understand the technical aspect for business forecasting and its applications
- Introduce various forecasting techniques helpful for better decision making

Learning outcomes

On successful completion of the course, students will be able to:

- Gain an understanding of key concepts of Business Forecasting and its applications.
- Develop analytical methodologies that make prediction of future events of interest to business and industry.
- Make well-informed decisions that require forecasting of relevant variables.
- Identify relevant information to support model selection in scenarios where issues of time series analysis are involved.
- Predict relationships among business and economic variables for supporting short-term and long-term planning.

SYLLABUS OF DSE-1(c)

Unit I: Introduction **(12 Hours)**

Introduction to Business Forecasting, Importance of forecasting, Different types of forecasting methods, Identification of appropriate technique for forecasting, Applications of forecasting methods in industry, Practical issues in forecasting.

Unit II: Time Series Modeling **(15 Hours)**

Time series and its components, modelling and forecasting trend, modelling and forecasting seasonality, characterising cycles in times series, forecasting cycles, Forecasting models with trend seasonality and cycle.

Unit III: Regression Modeling **(9 Hours)**

Simple linear regression and multiple linear regression models and their applications in business.

Unit IV: Some Related Concepts **(9 Hours)**

Stationary and non-stationary time series, Autoregressive (AR) Forecasting model, Moving average (MA) model, Autoregressive moving average model (ARMA), Autoregressive integrated moving average (ARIMA) model, Random walk model. Applications of these models in business.

Practical component (if any) – **(30 Hours)**

Practical/Lab to be performed on a computer using OR/Statistical packages

- Plot and visualize time series data.
- Fitting of trend by using Method of semi averages.
- Fitting of trend by Moving Average Method.
- Measurement of Seasonal indices using method of simple average.
- Measurement of Seasonal indices using Ratio-to-Trend method.
- Measurement of Seasonal indices using Ratio-to-Moving Average method.
- Measurement of seasonal indices using Link Relative method.
- To find cyclical variations using percentage of trend method and relative cyclical residual method.
- Fitting a simple linear regression model for forecasting.
- Fitting a multiple linear regression model for forecasting.

Essential/recommended readings

- Makridakis, S., Wheelwright, S. C., & Hyndman, R. J. (2008). *Forecasting methods and applications*. John wiley & sons.
- Pindyck, R. S., & Rubinfeld, D. L. (1976). *Econometric models and economic forecasts*. McGraw-Hill.
- Butler, W. F., Kavesh, R. A., & Platt, R. B. (Eds.). (1974). *Methods and techniques of business forecasting*. Prentice Hall.
- Diebold, F. X. (2004). *Elements of Forecasting*. Thompson: South Western. Ohio, USA.

Suggestive readings

- Hanke, J. E., & Wichern, D.W. (2014). *Business Forecasting.* Pearson.
- Gujarati, D. N. (2004). *Basic econometrics. (4th ed.),* McGraw-Hill.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

CATEGORY-VI

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

GENERIC ELECTIVES (GE): QUEUING AND RELIABILITY THEORY

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Queuing and Reliability Theory	4	3	0	1	Passed 12th class with Mathematics	Probability and Statistics

Learning Objectives

The Learning Objectives of this course are as follows:

- To make students understand the basic idea of random variables and their associated probability distributions as it is a prerequisite.
- To enrich students with the concept of stochastic processes and its applications in the field of queuing theory.
- To make students learn the mathematical theory of queuing systems.
- To introduce students with the concept of system reliability and make them learn to evaluate reliability of various system configurations.
- To provide students hands-on experience of the queuing and reliability models through practical sessions using certain software.

Learning outcomes

On successful completion of the course, students will be able to:

- Understand the concepts and mathematical theory related to queuing systems & system reliability required to understand, analyse and solve any real-world problem.

- Learn the concepts of stochastic processes, Markov processes, Markov chains and apply these mathematical models in real-life problems.
- Evaluate the performance metrics of any queuing system.
- Compute the system reliability of any type of system-configuration.
- Make use of software for problem analysis.

SYLLABUS

Unit I : Basic characteristics of a queueing system (12 Hours)
Kendall's notation, performance measures of a queueing system, Little's formula, Traffic intensity, Some general results for G/G/1 and G/G/c queueing models, Introduction to stochastic processes, Markov chain and Markov process, pure-birth process, pure-death process, birth-death process.

Unit II: Markovian queuing models (15 Hours)
single & multiple servers, finite & infinite system capacity, and finite & infinite population size, Cost analysis, Applications of queuing theory.

Unit III: Basic tools of Reliability (9 Hours)
Reliability function, and related concepts like hazard rate, mean time to failure (MTTF), classes of lifetime distributions, and hazard rate of Exponential and Weibull distributions.

Unit IV: System Reliability (9 Hours)
Reliability, hazard rate and MTTF of various system configurations- series, parallel, mixed configuration, k out of n system and stand-by system.

Practical component (if any) – (30 Hours)
Practical/Lab to be performed on a computer using OR/Statistical packages

- Finding measures of performance for deterministic queuing system.
- Finding measures of performance for M/M/1 queuing system with infinite capacity.
- Finding measures of performance for M/M/1 queuing system with finite capacity.
- Finding measures of performance for M/M/c queuing system with infinite capacity.
- Finding measures of performance for M/M/c queuing system with finite capacity.
- Finding measures of performance for any Markovian queuing system with multiple servers and with finite/infinite capacity.
- Measuring reliability of different types of system configuration.
- Measuring reliability, hazard rate and MTTF of different types of system configuration.

Essential/recommended readings

- Medhi J. (2009), *Stochastic Processes* (3rd Edition), New Delhi: New age science Ltd.
- Gross D., Shortle J. F, Thompson J. M., & Harris C. M. (2008), *Fundamentals of Queuing Theory* (4th edition), New Jersey: John Wiley & Sons, inc.
- Trivedi K. S. (2016), *Probability & Statistics with Reliability, Queuing & Computer Science applications*, New Jersey: John Wiley & Sons, Inc
- Srinath L. S., (2005), *Reliability Engineering*, New Delhi, East West Press.
- Rausand M. & Hoyland A. (2003), *System Reliability Theory: Models, Statistical Methods & Applications* (2nd ed.), New Jersey, John Wiley & Sons, Inc.

- Hiller F. S., Lieberman G. J., Nag B., Basu P. (2017). *Introduction to Operations Research- Concepts & Cases* (10th edition), New Delhi, Tata McGraw-Hill (Indian Print).
- Taha, H. A. (2019). *Operations Research-An Introduction* (10th ed.). New Delhi: Pearson Prentice Hall (Indian print).

Suggestive readings-Nil

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF STATISTICS
B. Sc. (H) Statistics
Category-I

DISCIPLINE SPECIFIC CORE COURSE-7: SAMPLE SURVEYS

CREDIT DISTRIBUTION, ELIGIBILITY, AND PRE-REQUISITES OF THE COURSE

Course title & code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Sample Surveys	4	3	0	1	Passed Class XII with Mathematics	Descriptive Statistics and probability theory

Learning Objectives:

The learning objectives of this course are to introduce:

- Tools and techniques for selecting a representative sample from a target population keeping in mind the objectives to be fulfilled.
- Obtain an estimator of the population parameter on the basis of the selected sample and study its properties.

Learning Outcomes:

After successful completion of this course, students should be able to:

- Understand the fundamental concepts of population and sample and the principles of sample survey
- Describe the value and methodologies for sample surveys versus other approaches to collecting information from populations.
- Determine the appropriate sample size and its allocation for nationwide sample surveys or for surveys to be conducted in a program area.
- Identify a proper sampling frame and select primary sample points.
- Apply steps involved in selecting a sample using Simple Random Sampling with or without replacement, Stratified Sampling, Systematic Sampling and Ratio and Regression Methods of Estimation

SYLLABUS OF DSC-7

Theory

UNIT I **(10 Hours)**

Basics of Survey Sampling

Concept of population and sample, complete enumeration versus sampling, sampling and non-sampling errors. Types of sampling: non-probability and probability sampling, basic principles of sample survey, Steps involved in survey sampling.

UNIT II **(8 Hours)**

Simple Random Sampling

Simple random sampling (SRS) with and without replacement, their properties, procedures of selecting a simple random sample, estimation of population mean and total, sampling for proportions, determination of sample size, bivariate population.

UNIT III **(10 Hours)**

Stratified Random Sampling

Stratified Random Sampling: Estimation of population mean and total, Allocation of sample in different strata using equal, proportional, optimum and Neyman allocations, comparison with SRS, practical difficulties in adopting Neyman allocation, estimation of gain in precision due to stratification.

UNIT IV **(7 Hours)**

Systematic Random Sampling

Systematic Random Sampling: Estimation of population mean and total, comparison with SRS and stratified sampling in the presence of linear trend, Yates' correction, definition of circular systematic sampling.

UNIT V **(10 Hours)**

Ratio and Regression Method of Estimation

Ratio method of estimation, first approximation to ratio estimator and its bias, first approximation to variance of ratio estimator, estimator of variance of ratio estimator, comparison of ratio with SRS.

Regression method of estimation, first approximation to linear regression estimator and its bias, first approximation to variance of the linear regression estimator, estimator of variance of the linear regression estimator, comparison with SRS and ratio estimator.

Practical -30 Hours

List of Practicals :

1. To select SRS with and without replacement.
2. For a population of size 5, estimate population mean, population mean square and population variance. Enumerate all possible samples of size 2 by WR and establish all properties relative to SRS.
3. For a population of size 5, estimate population mean, population mean square and population variance. Enumerate all possible samples of size 2 by WOR and establish all properties relative to SRS.
4. Estimate mean, standard error and the sample size for SRSWOR.
5. Stratified Sampling: allocation of sample to strata by proportional. Compare the efficiencies of above method relative to SRS.
6. Stratified Sampling: allocation of sample to strata by Neyman's methods. Compare the efficiencies of above method relative to SRS.
7. Estimation of gain in precision in stratified sampling.
8. Comparison of systematic sampling with stratified sampling and SRS in the presence of a linear trend and using end's correction.
9. Ratio estimation: Calculate the population mean or total of the population. Calculate mean squares. Compare the efficiency of ratio estimator relative to SRS.
10. Regression estimation: Calculate the population mean or total of the population.
11. Calculate mean squares. Compare the efficiency of regression estimator relative to SRS.

Practical work to be conducted using electronic spreadsheet / EXCEL/ Statistical Software Package/ SPSS/ calculators.

ESSENTIAL READINGS

- Goon A M, Gupta M K and Dasgupta B (2018): Fundamentals of Statistics, Volume II, 9th Edition and 4th reprint.
- Cochran, W.G. (2011): Sampling Techniques (3rd Ed.), Wiley Eastern John Wiley and Sons.
- Sukhatme, P. V., Sukhatme, B. V., Sukhatme, S., Asok, C.(1984). Sampling Theories of Survey with Application, IOWA State University Press and Indian Society of Agricultural Statistics.

SUGGESTIVE READINGS:

- Gupta, S.C. and Kapoor, V.K. (2007): Fundamentals of Applied Statistics, Sultan Chand and Sons.
- Singh, D. and Chaudhary, F. S. (2015): Theory and Analysis of Sample Survey Designs.
- Murthy M.N. (1977): Sampling Theory & Statistical Methods, Statistical Pub. Society, Calcutta.
- Des Raj and Chandhok P. (1998): Sample Survey Theory, Narosa Publishing House.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE-8: ADVANCED PROBABILITY DISTRIBUTIONS

CREDIT DISTRIBUTION, ELIGIBILITY, AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
Advanced Probability Distributions	4	3	0	1	Passed Class XII with Mathematics	Theory of probability distributions

Learning Objectives

The learning objectives of this course are as follows:

- The course introduces students to advanced discrete and continuous probability distributions, and their important characteristics.
- It will enable them to understand the applications of these distributions.

Learning Outcomes

After successful completion of this course, students should be able to:

- Understand important advanced discrete probability distributions and their properties.
- Understand and apply important advanced continuous probability distributions and their properties.
- Apply their understanding of these distributions in real-life problems related to different areas of statistics.

SYLLABUS OF DSC-8

Theory

UNIT I **(15 hours)**

Discrete Probability Distributions

Negative Binomial Distribution: Probability distribution, particular cases, moment generating function, cumulants, limiting case, derivation of moments from binomial distribution and recurrence relation for probabilities of negative binomial distribution. Examples and applications based on the distribution. Hypergeometric Distribution: Probability distribution, mean, variance, approximation to Binomial Distribution and recurrence relation. Examples and applications based on the distribution. Geometric Distribution: Probability distribution, lack of memory property, moments and moment generating function. Examples and applications based on the distribution. Multinomial Distribution: Probability distribution and practical application.

UNIT II **(15 hours)**

Continuous Probability Distributions

Rectangular or Uniform Distribution: Definition, probability distribution and cumulative probability distribution, moments, and moment generating function, characteristic function and mean deviation about mean. Examples and applications based on the distribution. Gamma Distribution: Definition and properties, probability distribution, mean, variance, moment generating function, cumulant generating function, additive property and limiting case. Examples and applications based on the distribution. Beta Distribution: Beta Distribution of the first kind: Definition, probability distribution and cumulative probability distribution, mean, variance and harmonic mean. Beta Distribution of the second kind: Definition, probability distribution, mean, variance and harmonic mean. Examples and applications based on the distributions.

UNIT III **(15 hours)**

Continuous Probability Distributions (contd.)

Exponential Distribution: Definition, probability distribution and cumulative probability distribution, moment generating function, mean, variance and lack of memory property. Examples and applications based on the distribution. Standard Laplace (Double Exponential) Distribution: Definition, probability distribution, characteristic function and moments. Two Parameter Laplace Distribution: Definition, probability distribution, characteristic function and moments. Examples and applications based on the distribution. Weibull Distribution: Probability distribution, moments and practical applications. Logistic Distributions: Probability distribution, moments and practical applications. Cauchy Distribution: Definition, probability distribution, characteristics function, additive property and moments. Examples and applications based on the distribution.

PRACTICAL – 30 Hours

List of Practicals:

Practicals based on:

1. Application of Negative Binomial Distribution.

2. Fitting of Negative Binomial Distribution.
3. Application of Hypergeometric Distribution
4. Fitting of Geometric Distribution.
5. Lack of memory property of Geometric Distribution
6. Applications of
   (a) Geometric Distribution.
   (b) Multinomial Distribution.
   (c) Rectangular Distribution
   (d) Gamma Distribution
   (e) Beta Distribution.
   (f) Exponential Distribution.
   (g) Weibull Distribution.
   (h) Logistic Distribution.
   (i) Cauchy Distribution.
7. Lack of memory property of Exponential Distribution.

Practical work to be conducted using electronic spreadsheet / EXCEL/ Statistical Software Package/ SPSS.

ESSENTIAL READINGS

- Gupta, S. C. and Kapoor, V. K. (2020). Fundamentals of Mathematical Statistics, Twelfth Edition, Sultan Chand and Sons, Delhi.
- Ross, Sheldon M. (2013): A First Course in Probability, Ninth Edition, Pearson.
- Miller, I. and Miller, M. (2006). John E. Freund's Mathematical Statistics with Applications, Eight Edition., Pearson Education, Asia.
- Mood, A.M. Graybill, F.A. and Boes, D.C. (2007). Introduction to the Theory of Statistics, Third Edition, (Reprint), Tata McGraw-Hill Pub. Co. Ltd.

SUGGESTED READINGS

- Rohatgi, V. K and Saleh M. E. (2015). An Introduction to Probability and Statistics, Third Edition, John Wiley and Sons, Inc., New Jersey.
- Hogg, R.V., Tanis, E.A. and Rao, J.M. (2009). Probability and Statistical Inference, 7th Ed., Pearson Education, New Delhi.
- Ross, Sheldon M.(2009). Introduction to Probability and Statistics for Engineers and Scientists, Fourth Edition, Academic Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 9: MATHEMATICAL ANALYSIS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Mathematical Analysis-DSC-09	4	3	0	1	**Passed Class XII with Mathematics**	Nil

Learning Objectives

The learning objectives include:

- To study Real Analysis, which deals with the analytical properties of real functions and sequences.
- To study Numerical Analysis, which is the study of algorithms that use numerical approximation for the problems of mathematical analysis.

Learning Outcomes:

After successful completion of this course, students should be able to:

· Understand the fundamental properties of real numbers and real-valued functions.
· Understand the Analytical properties of sequences.
· Apply Infinite series, their properties and different tests.
· Apply limits, continuity, differentiability, and mean value theorems.
· Use the fundamentals of numerical analysis, interpolation, numerical integration and difference equation.

SYLLABUS OF DSC-9

Theory

UNIT I **(10 hours)**

Set Theory and Sequences

Completeness: The Completeness property of R; Archimedean property in R; Neighbourhood and limit points: Neighbourhood, Open Set, Closed Set, Supremum and Infimum, Limit Point of a Set; Sequences: Definition of a Sequence, Convergent Sequence, Divergent Sequence, Oscillatory Sequence, Cauchy Sequence, Monotone Sequence.

UNIT II **(10 hours)**

Series

Infinite series, positive termed series and their convergence, Comparison test, D'Alembert's ratio test, Cauchy's n^{th} root test, Raabe's test. Gauss test, Cauchy's condensation test and integral test (Statements and Examples only). Absolute convergence of series, Conditional convergence.

UNIT III **(10 hours)**

Limit and Continuity

Review of limit, continuity and differentiability, uniform Continuity and boundedness of a function. Rolle's and Lagrange's Mean Value theorems. Taylor's theorem with Lagrange's and Cauchy's form of remainder (without proof). Taylor's and Maclaurin's series expansions of sin(x), cos(x), log (1+x).

UNIT IV (15 hours)

Numerical Methods

Factorial, finite differences and interpolation. Operators, E and divided difference. Newton's forward, backward and divided differences interpolation formulae. Lagrange's interpolation formulae. Gauss and Stirling interpolation formulae. Numerical integration. Trapezoidal rule, Simpson's one-third rule, three-eights rule, Stirling's approximation to factorial n. Solution of difference equations of first order, Euler Maclaurin's summation formula.

PRACTICAL/LAB WORK – (30 hours)

List of Practical:

Practicals based on:

1. Formation of difference table, fitting of polynomial and missing terms for equal interval of differencing.
2. Newton's Gregory forward difference interpolation formula.
3. Newton's backward difference interpolation formula.
4. Newton's divided difference and Lagrange's interpolation formula.
5. Gauss forward, Gauss backward central difference interpolation formula.
6. Stirling's central difference interpolation formula.
7. Lagrange's Inverse interpolation formula.
8. Method of successive approximation or iteration.
9. Method of reversion of series.
10. Trapezoidal Rule, Simpson's one-third rule, Simpson's three-eighth rule, Weddle's rule.
11. Euler-Maclaurin summation formula

Practical work to be conducted using electronic spreadsheet / EXCEL/ Statistical Software Package/ SPSS/ calculators.

ESSENTIAL READINGS

- Appostol, T.M. (1987). Mathematical Analysis, 2nd Ed., Narosa Publishing House,New Delhi
- Ghorpade, S.R. and Limaye, B.V. (2006). A Course in Calculus and Real Analysis, Undergraduate Texts in Mathematics, Springer (SIE), Indian reprint.
- Sastry, S.S. (2000). Introductory Methods of Numerical Analysis, 3rd Ed., Prentice Hall of India Pvt. Ltd., New Delhi.

SUGGESTIVE READINGS:

- Bartle, R.G. and Sherbert, D.R. (2002). Introduction to Real Analysis, (3rd Ed.,), John Wiley and Sons (Asia) Pte. Ltd., Singapore.
- Jain, M.K., Iyengar, S.R.K. and Jain, R.K. (2003). Numerical methods for scientific and engineering computation, New age International Publisher, India.
- Malik, S.C. and Arora, S. (1994). Mathematical Analysis, Second Edition, Wiley Eastern Limited, New Age International Limited, New Delhi.
- Mukherjee, Kr. Kalyan (1990). Numerical Analysis. New Central Book Agency.
- Narayan, S. (1987). A course of Mathematical Analysis, 12th revised Ed., S. Chand &Co. (Pvt.) Ltd., New Delhi.

● Somasundram, D. and Chaudhary, B. (1987). A First Course in Mathematical Analysis, Narosa Publishing House, New Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch University of Delhi, from time to time.

B.SC. (P)/B.A(P) WITH STATISTICS AS MAJOR

Category II

DISCIPLINE SPECIFIC CORE COURSE – 1: SAMPLING DISTRIBUTIONS

CREDIT DISTRIBUTION, ELIGIBILITY, AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Sampling Distributions	4	3	0	1	**Passed Passed Class XII with Mathematics**	Statistical Methods

Learning Objectives:

The learning objectives include:

- To understand the concept of sampling distributions and their applications in statistical inference.
- To understand the process of hypothesis testing.
- To have a clear understanding of when to apply various tests of hypothesis about population parameters using sample statistics and draw appropriate conclusions from the analysis.

Learning Outcomes:

After successful completion of this course, students should be able to:

- Understand the basic concepts of hypothesis testing, including framing of the null and alternative hypotheses.
- Apply hypothesis testing based on a single sample and two samples using both classical and p-value approaches.
- Understand the Chi-square distribution.
- Analyze categorical data by using Chi-square techniques.
- Apply t and F distributions

SYLLABUS OF DSC-5

Theory

Unit I **(15 hours)**

Large sample tests

Large sample tests: Definitions of a random sample, parameter, and statistic, sampling distribution of a statistic, sampling distribution of the sample mean, standard errors of the sample mean, and the sample proportion. Null and alternative hypotheses, level of significance, Type I and Type II errors, their probabilities and critical region. Large sample tests, use of CLT for testing single proportion, difference of two proportions, single mean, difference of two means, standard deviation and difference of standard deviations by classical and p-value approaches.

Unit II **(15 hours)**

Chi-square distribution

Chi-square distribution: Definition and derivation of $\chi 2$ distribution with n degrees of freedom (d.f.) using m.g.f., nature of probability curve for different degrees of freedom, mean, variance, m.g.f., cumulant generating function, mode, additive property and limiting form of $\chi 2$ distribution. Tests of significance and confidence intervals based on χ^2 distribution.

Unit III **(15 hours)**

Exact Sampling Distributions

t and F distributions: Student's t and Fishers t-distributions, Derivation of its p.d.f., nature of probability curve with different degrees of freedom, mean, variance, moments and limiting form of t distribution. Snedecore's F-distribution: Derivation of F distribution, nature of probability curve with different degrees of freedom, mean, variance and mode. Distribution of $1/F(n_1,n_2)$. Relationship between t, F and $\chi 2$ distributions. Test of significance and confidence intervals based on t and F distributions.

PRACTICAL/LAB WORK - 30 hours

List of Practicals

1. Large Sample Tests:
   a) Testing of significance and confidence intervals for single proportion and difference of two proportions.
   b) Testing of significance and confidence intervals for single mean and difference of two means.
   c) Testing of significance and confidence intervals for difference of two standard deviations.
2. Tests based on Chi-Square Distribution:
   a) To test if the population variance has a specific value and its confidence intervals.
   b) To test the goodness of fit.
   c) To test the independence of attributes.
   d) Test based on 2 x 2 contingency table without and with Yates' corrections.
3. Tests based on t- Distribution and F- Distribution:
   a) Testing of significance and confidence intervals for single mean and difference of two means and paired t – test.
   b) Testing of significance and confidence intervals of an observed sample correlation coefficient.
   c) Testing and confidence intervals of equality of two population variances.

Practical work to be conducted using electronic spreadsheet / EXCEL/ Statistical Software Package/ SPSS/ calculators.

ESSENTIAL READINGS :

● Gupta, S. C. and Kapoor, V. K. (2020). Fundamentals of Mathematical Statistics, 12th Ed., S. Chand and Sons. Delhi.

● Goon A M, Gupta M K and Dasgupta B (2018): Fundamentals of Statistics, Volume II, 9th Edition and 4th reprint.

● Rohatgi, V. K. and Saleh, A.K. Md. E. (2009). An Introduction to Probability and Statistics, 2nd Ed., (Reprint) John Wiley and Sons.

SUGGESTIVE READINGS:

● Hogg, R.V. and Tanis, E.A. (2009). A Brief Course in Mathematical Statistics. Pearson Education.

● Mood, M.A., Graybill, F.A. and Boes, C.D. (2007). Introduction to the Theory of Statistics, 3rd Ed., (Reprint).Tata McGraw-Hill Pub. Co. Ltd.
● Johnson, R.A. and Bhattacharya, G.K. (2001). Statistics-Principles and Methods, 4th Ed., John Wiley and Sons.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 6: STATISTICAL QUALITY CONTROL

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Statistical Quality Control	4	3	0	1	**Passed Class XII with Mathematics**	Statistical Methods

Learning Objectives

The learning objectives include:

- This course will help students to learn techniques and approaches of SQC being used in industry to manufacture goods and services of high quality at low cost.
- This course will also give exposure to sampling inspection plans.

Learning Outcomes:

After successful completion of this course, students should be able to:

- Comprehend the concept of Statistical Quality Control and its application in Industry.
- Apply Statistical process control tools- Control charts for variables, and attributes.
- Analyse different patterns of variation on Control charts
- Apply statistical product control tools- Sampling inspection plans.

SYLLABUS OF DSC-6

Theory

UNIT I: **(9 hours)**

Basics of Quality

Definition, dimensions of quality, its concept, application, and importance. Introduction to Process and Product Control. Statistical Process Control - Seven tools of SPC, Chance and Assignable Causes of quality variation.

UNIT II: **(21 hours)**

Statistical Control Charts

Construction and Statistical basis of 3-σ Control charts, Control charts for variables: $\underline{X}$& R-chart, $\underline{X}$ & s-chart. chart (for known and unknown parameters) Control charts for attributes:

np-chart, p-chart, c-chart (for known and unknown parameters). Revised control limits. Comparison between control charts for variables and control charts for attributes. Analysis of patterns on control chart. Differentiate between Control Limits, Specification Limits and Natural Tolerance Limits. Concept of process capability.

UNIT III: (15 hours)

Acceptance sampling plan

Principle of acceptance sampling plans. Single sampling plan its OC, AQL, LTPD, AOQ, AOQL, ASN, ATI functions with graphical interpretation. Introduction to Dodge and Romig's sampling inspection plan tables.

PRACTICAL/LAB WORK - (30 hours)

List of Practical:

1. Construction and interpretation of statistical control charts for
a) $\underline{X}$ and R-chart
b) $\underline{X}$ *and* s-chart
c) np-chart
d) p-chart
e) c-chart
2. Single sample inspection plan: Construction and interpretation of OC, AQL, LTPD, ASN, ATI, AOQ, AOQL curves.

Practical work to be conducted using electronic spreadsheet / EXCEL/ Statistical Software Package/ SPSS/ calculators.

ESSENTIAL READINGS

- Montgomery, D. C. (2009). Introduction to Statistical Quality Control, 6th Ed., Wiley India Pvt. Ltd.
- Goon, A.M., Gupta, M.K. and Dasgupta, B. (2002). Fundamentals of Statistics, Vol. I & II, 8th Ed., The World Press, Kolkata.

SUGGESTIVE READINGS:

- Gupta, S.C. and Kapoor, V.K. (2014). Fundamentals of Mathematical Statistics, 11th Ed., Sultan Chand.
- Mukhopadhyay, P (2011): Applied Statistics, 2nd edition revised reprint, Books and Allied(P) Ltd

Note: Examination scheme and mode shall be as prescribed by the Examination Branch University of Delhi, from time to time.

B.Sc. (P)/B.A(P) with Statistics as Non-Major
Category III

DISCIPLINE SPECIFIC CORE COURSE – 3: SAMPLING DISTRIBUTIONS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Sampling Distributions	4	3	0	1	**Passed Class XII with Mathematics**	Statistical Methods

Learning Objectives:

The learning objectives include:

- To understand the concept of sampling distributions and their applications in statistical inference.
- To understand the process of hypothesis testing.
- To have a clear understanding of when to apply various tests of hypothesis about population parameters using sample statistics and draw appropriate conclusions from the analysis.

Learning Outcomes:

After successful completion of this course, students should be able to:

- Understand the basic concepts of hypothesis testing, including framing of the null and alternative hypotheses.
- Apply hypothesis testing based on a single sample and two samples using both classical and p-value approaches.
- Understand the Chi-square distribution.
- Analyze categorical data by using Chi-square techniques.
- Apply t and F distributions

SYLLABUS OF DSC-3

Theory

Unit I **(15 hours)**

Large sample tests

Large sample tests: Definitions of random sample, parameter and statistic, sampling distribution of a statistic, sampling distribution of sample mean, standard errors of sample mean, and sample proportion. Null and alternative hypotheses, level of significance, Type I and Type II errors, their probabilities and critical region. Large sample tests, use of CLT for testing single proportion, difference of two proportions, single mean, difference of two means, standard deviation and difference of standard deviations by classical and p-value approaches.

Unit II **(15 hours)**

Chi square distribution

Chi square distribution: Definition and derivation of $\chi 2$ distribution with n degrees of freedom

(d.f.) using m.g.f., nature of probability curve for different degrees of freedom, mean, variance, m.g.f., cumulant generating function, mode, additive property and limiting form of $\chi 2$ distribution. Tests of significance and confidence intervals based on $\chi 2$ distribution.

Unit III **(15 hours)**

Exact Sampling Distributions

t and F distributions: Student's t and Fishers t-distributions, Derivation of its p.d.f., nature of probability curve with different degrees of freedom, mean, variance, moments and limiting form of t distribution. Snedecore's F-distribution: Derivation of F distribution, nature of probability curve with different degrees of freedom, mean, variance and mode. Distribution of $1/F(n_1,n_2)$. Relationship between t, F and $\chi 2$ distributions. Test of significance and confidence intervals based on t and F distributions.

PRACTICAL/LAB WORK - (30 hours)

List of Practicals

1. Large Sample Tests:

(i) Testing of significance and confidence intervals for single proportion and difference of two proportions.

(ii) Testing of significance and confidence intervals for single mean and difference of two means.

(iii) Testing of significance and confidence intervals for the difference of two standard deviations.

2. Tests based on Chi-Square Distribution:

(i) To test if the population variance has a specific value and its confidence intervals.

(ii) To test the goodness of fit.

(iii) To test the independence of attributes.

(iv) Test based on 2 x 2 contingency table without and with Yates' corrections.

3. Tests based on t- Distribution and F- Distribution:

(i) Testing of significance and confidence intervals for single mean and difference of two means and paired t – test.

(ii) Testing of significance and confidence intervals of an observed sample correlation coefficient.

(iii) Testing and confidence intervals of equality of two population variances.

ESSENTIAL READINGS :

- Gupta, S. C. and Kapoor, V. K. (2020). Fundamentals of Mathematical Statistics, 12th Ed., S. Chand and Sons. Delhi.
- Rohatgi, V. K. and Saleh, A.K. Md. E. (2009). An Introduction to Probability and Statistics, 2nd Ed., (Reprint) John Wiley and Sons.
- Goon, A.M., Gupta, M.K. and Dasgupta, B. (2003). An Outline of Statistical Theory, Vol. I, 4th Ed., World Press, Kolkata.

SUGGESTIVE READINGS:

- Hogg, R.V. and Tanis, E.A. (2009). A Brief Course in Mathematical Statistics. Pearson Education.
- Mood, M.A., Graybill, F.A. and Boes, C.D. (2007). Introduction to the Theory of Statistics, 3rd Ed., (Reprint).Tata McGraw-Hill Pub. Co. Ltd.
- Johnson, R.A. and Bhattacharya, G.K. (2001). Statistics-Principles and Methods, 4th Ed., John Wiley and Sons.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Discipline Specific Elective
Category-V
Discipline Specific Elective for B. Sc. (H) Statistics

DISCIPLINE SPECIFIC ELECTIVE COURSE-1A: Optimization Techniques

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Operational Research	4	3	0	1	**Passed Class XII with Mathematics**	**Nil**

Learning Objectives:

The learning objectives include:

- To create awareness about the term operational research (OR) and acquaint them with the methodologies, scope, limitations and applications of OR and
- To expose the students with the knowledge of formulation of real life problems using the linear programming method.
- To make the students understand about the theory and practical application of transportation problems and assignment problems
- To introduce 'Game Theory-the science of strategy' to the students, which makes possible the analysis of the decision making process of interdependent subjects.
- To provide a framework to develop mathematical models for different types inventory systems.

Learning Outcomes:

After successful completion of this course, students should be able to:

- Understand the fundamental concepts of Operational Research Techniques
- Apply Linear Programming.
- Solve the Transportation and assignment problems
- Understand the Game Theory
- Use the Inventory Models

SYLLABUS OF DSE-1A

Theory

UNIT I **(15 hours)**

Introduction to OR and LPP

Definition and phases of O.R. Model building, various types of O.R. problems. Linear Programming Problem (L.P.P.): Mathematical formulation of the L.P.P, graphical solutions of L.P.P. Simplex method for solving L.P.P. Charne's M-technique for solving L.P.P. involving artificial variables. Special cases of L.P.P. Concept of Duality in L.P.P. Economic interpretation of Duality. Dual simplex method.

UNIT II **(15 hours)**

Transportation and Assignment Problem

Transportation Problem: Initial solution by North West corner rule, Least cost method and Vogel's approximation method (VAM), MODI's method to find the optimal solution, special cases of transportation problem. Assignment problem: Hungarian method to find optimal assignment, special cases of assignment problem.

UNIT III **(15 hours)**

Game Theory and Inventory Management

Game theory: Rectangular game, minimax - maximin principle, solution to rectangular game using graphical method, dominance and modified dominance property to reduce the game matrix and solution to rectangular game with mixed strategy. Network flow problems and shortest route problem. Inventory Management: ABC inventory system, characteristics of inventory system. EOQ Model and its variations, with and without shortages.

PRACTICAL/LAB WORK – (30 hours)

List of Practical:

1. Mathematical formulation of L.P.P and solving the problem using graphical method.
2. Simplex technique and Charne's Big M method involving artificial variables.
3. Identifying Special cases by Graphical and Simplex method and interpretation:
   a) Degenerate solution
   b) Unbounded solution
   c) Alternate solution
   d) Infeasible solution
4. Allocation problem using Transportation model.
5. Allocation problem using Assignment model.
6. Graphical solution to $mx2$ / $2xn$ rectangular game
7. Mixed strategy
8. To find optimal inventory policy for EOQ models and its variations.

Practical work to be conducted using electronic spreadsheet / EXCEL/ Statistical Software Package/ SPSS/ calculators/ TORA/WINQSB/LINGO

ESSENTIAL READINGS:

- Swarup, K., Gupta, P.K. and Man Mohan (2013). Operations Research, 16th Ed., Sultan Chand and Sons.
- Taha, H. A. (2007). Operations Research: An Introduction, 8thEd., Prentice Hall of India.

SUGGESTIVE READINGS:

- F.S. Hillier. G.J. Lieberman (2010). Introduction to Operations Research- Concepts and Cases, 9th Edition, Tata McGraw Hill.
- Donald Waters (2010): Inventory Control and Management, John Wiley.
- A. Ravindran, D. T. Phillips and James J. Solberg(2005). Operations Research- Principles and Practice, John Wiley & Sons,
- G. Hadley (2002). Linear Programming, Reprint.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 1B: PSYCHOLOGICAL AND EDUCATIONAL STATISTICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Psychological and Educational Statistics	4	3	0	1	**Passed Class XII with Mathematics**	**Theory of Probability Distributions**

Learning Objectives:

The learning objectives include:

- To measure psychological traits and mental abilities
- To learn basic methods of test construction, item writing and item analysis
- To check the reliability and validity of test scores.

Learning Outcomes:

After successful completion of this course, students should be able to:

- Distinguish between Psychological measurement and physical measurement.
- Understand the meaning of Tests in Psychology and Education.
- Appreciate the uses and limitations of Psychological tests.
- Learn the meaning and purpose of Item writing and analysis.
- Understand concepts of reliability and validity of test scores and their differences.
- Convert raw scores into different transformed scores.
- Apply Scaling rankings and ratings in terms of the Normal Probability Curve.

SYLLABUS OF DSE-1B

Theory

Unit I **(15 hours)**

Basics of Educational Statistics

Introduction; need and importance of statistics in psychology and education. Measurements: Levels of measurements. Distinction between psychological and physical measurements; general problems, sources of errors. Tests: Meaning of tests in psychology and education; history of psychological measurement and testing, uses, limitations and varieties, characteristics of a good test, general steps of test construction. Test administration. Item writing - Meaning and types; Item analysis – meaning and purpose. Item difficulty (concepts only). Power tests and speed tests.

Unit II **(15 hours)**

Reliability and Validity

Reliability: Meaning, methods (or types); standard error of measurement, reliability of speed test, factors influencing reliability of test scores, factors for their improvement, estimation of true scores and index of reliability. Reliability of difference and composite scores. Validity:

Meaning; content, criterion related and construct validity. Statistical methods for calculating validity, factors influencing validity. Extra validity concerns, relation of validity to reliability.

Unit III **(15 hours)**

Psychological Statistics

Meaning of norm referencing and criterion referencing. Raw score transformations- percentile score, standard scores, normalized standard scores, T-scores, C-scores and Stanine scores. Intelligence: Definition. Types of intelligence test scores. Spearman's two-factor theory and Thomson group factors theory. Psychological scaling methods – Scaling of Individual test items in terms of difficulty, scaling of rankings & ratings in terms of the normal probability curve.

PRACTICAL/LAB WORK - 30 hours

List of Practical:

1. Computation of Reliability by Rulon and Kuder Richardson Formulas.
2. Finding reliability of a test whose length is increased/ decreased n times.
3. Finding index of reliability, standard error of measurement.
4. Finding validity/maximum validity when test length is increased n times/ indefinitely.
5. Finding relative difficulty of questions/ difference in difficulty between different tests.
6. Converting raw scores into Z-scores.
7. Converting raw scores into T-scores.
8. Calculation of T scores for a given frequency distribution.
9. Construction of C-scales and its diagrammatic representation.
10. Construction of Stanine-scales and its diagrammatic representation.
11. Calculation of percentile scores corresponding to rank of an individual among N individuals.
12. Finding numerical scores corresponding to grades or ratings by different judges.

Practical work to be conducted using electronic spreadsheet / EXCEL/ Statistical Software Package/ SPSS/ calculators.

ESSENTIAL READINGS:

- Garrett H. E. (2021). Statistics in psychology and education. Nation Press.
- Gregory R. J. (2016). Psychological testing: History Principles and Applications. (Updated seventh). Pearson.
- Singh, A. K. (2006). Tests, Measurements and Research in Behavioural Sciences. Bharati Bhavan.
- Anastasi A. & Urbina S. (1997). Psychological testing (7th ed.). Prentice Hall.

SUGGESTIVE READINGS:

- Gupta, S. C., & Kapoor, V. K. (2019). Fundamentals of applied statistics. Sultan Chand & Sons.
- Goon A M, Gupta M K and Dasgupta B (2018): Fundamentals of Statistics, Volume II, 9th Edition and 4th reprint.
- Mangal, S. K. (2016). Statistics in Psychology and Education. PHI Learning Pvt. Ltd..

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE FOR B. SC. (P)

DISCIPLINE SPECIFIC ELECTIVE COURSE – 1: TIME SERIES ANALYSIS AND INDEX NUMBERS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Time Series Analysis and Index Numbers	4	3	0	1	**Passed Class XII with Mathematics**	**Descriptive Statistics and Probability Theory**

Learning Objectives

The Learning Objectives of this course are as follows:

- Introduce the concept of time series, its components, and their estimation.
- Introduce the application of time series.
- Introduce the concept, formulation, and application of index numbers.

Learning outcomes

After completion of this course, the students will be able to:

- Understand the concepts of time series and index numbers.
- Formulate, solve, and analyse the use of time series and index numbers for real-world problems.

SYLLABUS OF DSE 1

Theory

Unit - 1 **(12 hours)**

Components of Time Series

Introduction to Time Series, Components of time series, Decomposition of time series- Additive and multiplicative model with their merits and demerits, Illustrations of time series, Measurement of trend by method of free-hand curve, method of semi-averages and method of least squares (linear, quadratic and exponential).

Unit - 2 **(15 hours)**

Trend and Seasonality

Fitting of modified exponential, Gompertz and logistic curve, Moving average method, Measurement of seasonal variations by method of simple averages, ratio to trend method, and ratio to moving average method.

Unit - III **(18 hours)**

Index Numbers

Introduction to Index numbers, Problems in the construction of index numbers, Construction of price and quantity index numbers: simple aggregate, weighted aggregate (Laspeyres, Paasche's, Drobish-Bowley, Marshall-Edgeworth's, Walsch and Fisher's Formula), simple and weighted

average of price relatives, and chain base method, Criteria for a good index number, Errors in the measurement of price and quantity index numbers, Consumer price index number, its construction and uses, Uses and limitations of index numbers.

Practical - 30 Hours
List of Practicals:

1. Fitting of linear trend
2. Fitting of quadratic trend
3. Fitting of an exponential curve
4. Fitting of modified exponential curve by the method of
    a. Three selected points
    b. Partial sums
5. Fitting of Gompertz curve by the method of
    a. Three selected points
    b. Partial sums
6. Fitting of logistic curve by the method of three selected points
7. Fitting of trend by moving average method (for n even and odd)
8. Measurement of seasonal indices by
    a. Method of simple averages
    b. Ratio-to-trend method
    c. Ratio-to-moving-average method
9. Construction of price and quantity index numbers by simple aggregate method.
10. Construction of price and quantity index numbers by Laspeyres, Paasche's, Drobish-Bowley, Marshall-Edgeworth, Walsch and Fisher's Formula.
11. Construction of price and quantity index numbers by simple and weighted average of price relatives.
12. Construction of index number by Chain base method.
13. Construction of consumer price index number by
    a. Family budget method
    b. Aggregate expenditure method
14. Time Reversal Test and Factor Reversal Test

Practical work to be conducted using electronic spreadsheet / EXCEL/ Statistical Software Package/ SPSS/ calculators.

ESSENTIAL READINGS

- Goon A M, Gupta M K and Dasgupta B (2018): Fundamentals of Statistics, Volume II, 9th Edition and 4th reprint.
- Gupta, S.C. and Kapoor, V.K. (2014). Fundamentals of Applied Statistics, 11th Ed., Sultan Chand.
- Croxton, Fredrick E, Cowden, Dudley J. and Klein, S. (1973): Applied General Statistics, 3rd edition, Prentice Hall of India Pvt. Ltd.

SUGGESTIVE READING

- Mukhopadhyay, P. (1999). Applied Statistics, New Central Book Agency, Calcutta.
- Allen R.G.D. (1975): Index Numbers in Theory and Practice, Macmillan

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES
OFFERED BY DEPARTMENT OF STATISTICS
CATEGORY-VI

GENERIC ELECTIVES – : SAMPLING DISTRIBUTIONS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Sampling Distributions	4	3	0	1	**Passed Class XII with Mathematics**	Introductory Probability

Learning Objectives:

The learning objectives include:

- To understand the concept of sampling distributions and their applications in statistical inference.
- To understand the process of hypothesis testing.
- To have a clear understanding of when to apply various tests of hypothesis about population parameters using sample statistics and draw appropriate conclusions from the analysis.

Learning Outcomes:

After successful completion of this course, students should be able to:

- Understand the basic concepts of hypothesis testing, including framing of the null and alternative hypotheses.
- Apply hypothesis testing based on a single sample and two samples using both classical and p-value approaches.
- Understand the Chi-square distribution.
- Analyze categorical data by using Chi-square techniques.
- Apply t and F distributions

SYLLABUS OF GE-3A

Theory

Unit I **(15 hours)**

Large sample tests

Large sample tests: Definitions of random sample, parameter and statistic, sampling distribution of a statistic, sampling distribution of sample mean, standard errors of sample mean, and sample proportion. Null and alternative hypotheses, level of significance, Type I

and Type II errors, their probabilities and critical region. Large sample tests, use of CLT for testing single proportion, difference of two proportions, single mean, difference of two means, standard deviation and difference of standard deviations by classical and p-value approaches.

Unit II **(15 hours)**

Chi square distribution

Chi square distribution: Definition and derivation of $\chi 2$ distribution with n degrees of freedom (d.f.) using m.g.f., nature of probability curve for different degrees of freedom, mean, variance, m.g.f., cumulant generating function, mode, additive property and limiting form of $\chi 2$ distribution. Tests of significance and confidence intervals based on $\chi 2$ distribution.

Unit III **(15 hours)**

Exact Sampling Distributions

t and F distributions: Student's t and Fishers t-distributions, Derivation of its p.d.f., nature of probability curve with different degrees of freedom, mean, variance, moments and limiting form of t distribution. Snedecore's F-distribution: Derivation of F distribution, nature of probability curve with different degrees of freedom, mean, variance and mode. Distribution of $1/F(n_1,n_2)$. Relationship between t, F and $\chi 2$ distributions. Test of significance and confidence intervals based on t and F distributions.

PRACTICAL/LAB WORK - 30 hours

List of Practicals

1. Large Sample Tests:

(i) Testing of significance and confidence intervals for single proportion and difference of two proportions.

(ii) Testing of significance and confidence intervals for single mean and difference of two means.

(iii) Testing of significance and confidence intervals for difference of two standard deviations.

2. Tests based on Chi-Square Distribution:

(i) To test if the population variance has a specific value and its confidence intervals.

(ii) To test the goodness of fit.

(iii) To test the independence of attributes.

(iv) Test based on 2 x 2 contingency table without and with Yates' corrections.

3. Tests based on t- Distribution and F- Distribution:

(i) Testing of significance and confidence intervals for single mean and difference of two means and paired t – test.

(ii) Testing of significance and confidence intervals of an observed sample correlation coefficient.

(iii) Testing and confidence intervals of equality of two population variances.

Practical work to be conducted using electronic spreadsheet / EXCEL/ Statistical Software Package/ SPSS/ calculators.

ESSENTIAL READINGS :

- Gupta, S. C. and Kapoor, V. K. (2020). Fundamentals of Mathematical Statistics, 12th Ed., S. Chand and Sons. Delhi.
- Goon, A.M., Gupta, M.K. and Dasgupta, B. (2003). An Outline of Statistical Theory, Vol. I, 4th Ed., World Press, Kolkata.

● Rohatgi, V. K. and Saleh, A.K. Md. E. (2009). An Introduction to Probability and Statistics, 2nd Ed., (Reprint) John Wiley and Sons.

SUGGESTIVE READINGS:

● Hogg, R.V. and Tanis, E.A. (2009). A Brief Course in Mathematical Statistics. Pearson Education.
● Mood, M.A., Graybill, F.A. and Boes, C.D. (2007). Introduction to the Theory of Statistics, 3rd Ed., (Reprint).Tata McGraw-Hill Pub. Co. Ltd.
● Johnson, R.A. and Bhattacharya, G.K. (2001). Statistics-Principles and Methods, 4th Ed., John Wiley and Sons.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Major 1/ Minor 1: Descriptive Statistics and Probability Theory
Major 3/ Minor 2: Statistical Methods
GE -2A: Introductory Probability

DEPARTMENT OF MATHEMATICS

B.Sc. (Hons) MATHEMATICS

Category-I

DISCIPLINE SPECIFIC CORE COURSE -7: GROUP THEORY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Group Theory	4	3	1	0	Class XII pass with Mathematics	Algebra

Learning Objectives

The primary objective of this course is to introduce:

- Symmetric groups, normal subgroups, factor groups, and direct products of groups.
- The notions of group homomorphism to study the isomorphism theorems with applications.
- Classification of groups with small order according to isomorphisms.

Learning Outcomes

This course will enable the students to:

- Analyse the structure of 'small' finite groups, and examine examples arising as groups of permutations of a set, symmetries of regular polygons.
- Understand the significance of the notion of cosets, Lagrange's theorem and its consequences.
- Know about group homomorphisms and isomorphisms and to relate groups using these mappings.
- Express a finite abelian group as the direct product of cyclic groups of prime power orders.
- Learn about external direct products and its applications to data security and electric circuits.

SYLLABUS OF DSC - 7

Unit – 1 **(18 hours)**

Permutation Groups, Lagrange's Theorem and Normal Subgroups

Permutation groups and group of symmetries, Cycle notation for permutations and properties, Even and odd permutations, Alternating groups; Cosets and its properties, Lagrange's theorem and consequences including Fermat's Little theorem, Number of elements in product of two finite subgroups; Normal subgroups, Factor groups, Cauchy's theorem for finite Abelian groups.

Unit – 2 **(15 hours)**

Group Homomorphisms and Automorphisms

Group homomorphisms, isomorphisms and properties, Cayley's theorem; First, Second and Third isomorphism theorems for groups; Automorphism, Inner automorphism, Automorphism

groups, Automorphism groups of cyclic groups, Applications of factor groups to automorphism groups.

Unit – 3 **(12 hours)**

Direct Products of Groups and Fundamental Theorem of Finite Abelian Groups

External direct products of groups and its properties, The group of units modulo n as an external direct product, Applications to data security and electric circuits; Internal direct products; Fundamental theorem of finite abelian groups and its isomorphism classes.

Essential Reading

1. Gallian, Joseph. A. (2017). Contemporary Abstract Algebra (9th ed.). Cengage Learning India Private Limited, Delhi. Indian Reprint 2021.

Suggestive Readings

- Artin, Michael. (1991). Algebra (2nd ed.). Pearson Education. Indian Reprint 2015.
- Dummit, David S., & Foote, Richard M. (2016). Abstract Algebra (3rd ed.). Student Edition. Wiley India.
- Herstein, I. N. (1975). Topics in Algebra (2nd ed.). Wiley India, Reprint 2022.
- Rotman, Joseph J. (1995). An Introduction to The Theory of Groups (4th ed.). Springer-Verlag, New York.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE -8: RIEMANN INTEGRATION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Riemann Integration	4	3	1	0	Class XII pass with Mathematics	Elementary Real Analysis, and Calculus

Learning Objectives

The primary objective of this course is to:

- Understand the integration of bounded functions on a closed and bounded interval and its extension to the cases where either the interval of integration is infinite, or the integrand has infinite limits at a finite number of points on the interval of integration.
- Learn some of the properties of Riemann integrable functions, its generalization and the applications of the fundamental theorems of integration.
- Get an exposure to the utility of integration for practical purposes.

Learning Outcomes

This course will enable the students to:

- Learn about some of the classes and properties of Riemann integrable functions, and the applications of the Riemann sums to the volume and surface of a solid of revolution.
- Get insight of integration by substitution and integration by parts.
- Know about convergence of improper integrals including, beta and gamma functions.

SYLLABUS OF DSC - 8

Unit – 1 **(18 hours)**

The Riemann Integral

Definition of upper and lower Darboux sums, Darboux integral, Inequalities for upper and lower Darboux sums, Necessary and sufficient conditions for the Darboux integrability; Riemann's definition of integrability by Riemann sum and the equivalence of Riemann's and Darboux's definitions of integrability; Definition and examples of the Riemann-Stieltjes integral.

Unit – 2 **(15 hours)**

Properties of The Riemann Integral and Fundamental Theorems

Riemann integrability of monotone functions and continuous functions, Properties of Riemann integrable functions; Definitions of piecewise continuous and piecewise monotone functions and their Riemann integrability; Intermediate value theorem for integrals, Fundamental Theorems of Calculus (I and II).

Unit – 3 **(12 hours)**

Applications of Integrals and Improper Integrals

Methods of integration: integration by substitution and integration by parts; Volume by slicing and cylindrical shells, Length of a curve in the plane and the area of surfaces of revolution. Improper integrals of Type-I, Type-II and mixed type, Convergence of improper integrals, The beta and gamma functions and their properties.

Essential Readings

1. Ross, Kenneth A. (2013). Elementary Analysis: The Theory of Calculus (2nd ed.). Undergraduate Texts in Mathematics, Springer.
2. Anton, Howard, Bivens Irl and Davis Stephens (2012). Calculus (10th edn.). John Wiley & Sons, Inc.
3. Denlinger, Charles G. (2011). Elements of Real Analysis, Jones & Bartlett India Pvt. Ltd., Indian Reprint.
4. Ghorpade, Sudhir R. and Limaye, B. V. (2006). A Course in Calculus and Real Analysis. Undergraduate Texts in Mathematics, Springer (SIE). Indian Reprint.

Suggestive Readings

- Bartle, Robert G., & Sherbert, Donald R. (2015). Introduction to Real Analysis (4th ed.). Wiley, Indian Edition.
- Kumar Ajit and Kumaresan S. (2014). A Basic Course in Real Analysis. CRC Press, Taylor & Francis Group, Special Indian Edition.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE– 9: DISCRETE MATHEMATICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Discrete Mathematics	4	3	0	1	Class XII pass with Mathematics	Algebra and Linear Algebra

Learning Objectives

The primary objective of the course is to:

- Make students embark upon a journey of enlightenment, starting from the abstract concepts in mathematics to practical applications of those concepts in real life.
- Make the students familiar with the notion of partially ordered set and a level up with the study of lattice, Boolean algebra and related concepts.
- Culminate the journey of learning with practical applications using the knowledge attained from the abstract concepts learnt in the course.

Learning Outcomes

This course will enable the students to:

- Understand the notion of partially ordered set, lattice, Boolean algebra with applications.
- Handle the practical aspect of minimization of switching circuits to a great extent with the methods discussed in this course.
- Apply the knowledge of Boolean algebras to logic, set theory and probability theory.

SYLLABUS OF DSC - 9

Unit – 1 **(15 hours)**

Cardinality and Partially Ordered Sets

The cardinality of a set; Definitions, examples and basic properties of partially ordered sets, Order-isomorphisms, Covering relations, Hasse diagrams, Dual of an ordered set, Duality principle, Bottom and top elements, Maximal and minimal elements, Zorn's lemma, Building new ordered sets, Maps between ordered sets.

Unit – 2 **(15 hours)**

Lattices

Lattices as ordered sets, Lattices as algebraic structures, Sublattices, Products, Lattice isomorphism; Definitions, examples and properties of modular and distributive lattices; The $M_3 - N_5$ theorem with applications, Complemented lattice, Relatively complemented lattice, Sectionally complemented lattice.

Unit – 3 **(15 hours)**

Boolean Algebras and Applications

Boolean algebras, De Morgan's laws, Boolean homomorphism, Representation theorem, Boolean polynomials, Boolean polynomial functions, Equivalence of Boolean polynomials, Disjunctive normal form and conjunctive normal form of Boolean polynomials; Minimal forms

of Boolean polynomials, Quine-McCluskey method, Karnaugh diagrams, Switching circuits and applications, Applications of Boolean algebras to logic, set theory and probability theory.

Practical (30 hours):

Practical/Lab work to be performed in a computer Lab using any of the Computer Algebra System Software such as Mathematica/MATLAB /Maple/Maxima/Scilab/SageMath etc., for the following problems based on:

1) Expressing relations as ordered pairs and creating relations.
2) Finding whether or not, a given relation is:
   i. Reflexive ii. Antisymmetric iii. Transitive iv. Partial order
3) Finding the following for a given partially ordered set
   i. Covering relations.
   ii. The corresponding Hasse diagram representation.
   iii. Minimal and maximal elements.
4) Finding the following for a subset S of a given partially ordered set P
   i. Whether a given element in P is an upper bound (lower bound) of S or not.
   ii. Set of all upper bounds (lower bounds) of S.
   iii. The least upper bound (greatest lower bound) of S, if it exists.
5) Creating lattices and determining whether or not, a given partially ordered set is a lattice.
6) Finding the following for a given Boolean polynomial function:
   i. Representation of Boolean polynomial function and finding its value when the Boolean variables in it take particular values over the Boolean algebra $\{0,1\}$.
   ii. Display in table form of all possible values of Boolean polynomial function over the Boolean algebra $\{0,1\}$.
7) Finding the following:
   i. Dual of a given Boolean polynomial/expression.
   ii. Whether or not two given Boolean polynomials are equivalent.
   iii. Disjunctive normal form (Conjunctive normal form) from a given Boolean expression.
   iv. Disjunctive normal form (Conjunctive normal form) when the given Boolean polynomial function is expressed by a table of values.
8) Representing a given circuit diagram (expressed using gates) in the form of Boolean expression.
9) Minimizing a given Boolean expression to find minimal expressions.

Essential Readings

1. Davey, B. A., & Priestley, H. A. (2002). Introduction to Lattices and Order (2nd ed.). Cambridge University press, Cambridge.
2. Goodaire, Edgar G., & Parmenter, Michael M. (2006). Discrete Mathematics with Graph Theory (3rd ed.). Pearson Education Pvt. Ltd. Indian Reprint.
3. Lidl, Rudolf & Pilz, Gunter. (2004). Applied Abstract Algebra (2nd ed.), Undergraduate Texts in Mathematics. Springer (SIE). Indian Reprint.

Suggested Readings

- Donnellan, Thomas. (1999). Lattice Theory (1st ed.). Khosla Pub. House. Indian Reprint.
- Rosen, Kenneth H. (2019). Discrete Mathematics and its Applications (8th ed.), Indian adaptation by Kamala Krithivasan. McGraw-Hill Education. Indian Reprint 2021.

B.Sc. (Hons) Mathematics, Semester-III, DSE-Courses

DISCIPLINE SPECIFIC ELECTIVE COURSE -1(i): GRAPH THEORY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Graph Theory	4	3	1	0	Class XII pass with Mathematics	Nil

Learning Objectives

The primary objective of this course is to introduce:

- Problem-solving techniques using various concepts of graph theory.
- Various properties like planarity and chromaticity of graphs.
- Several applications of these concepts in solving practical problems.

Learning Outcomes

This course will enable the students to:

- Learn modelling of real-world problems by graphs.
- Know characteristics of different classes of graphs.
- Learn representation of graphs in terms of matrices.
- Learn algorithms to optimize a solution.
- Understand some properties of graphs and their applications in different practical situations.

SYLLABUS OF DSE - 1(i)

Unit – 1 **(12 hours)**

Graphs, Paths and Circuits

Definition, Examples and basic properties of graphs, Subgraphs, Pseudographs, Complete graphs, Bipartite graphs, Isomorphism of graphs, Paths and circuits, Connected graphs, Eulerian circuits, Hamiltonian cycles, Adjacency matrix, Weighted graph, Travelling salesman problem, Shortest path, Dijkstra's algorithm.

Unit – 2 **(15 hours)**

Applications of Paths and Circuits, Trees

Applications of Path and Circuits: The Chinese Postman Problem, Digraphs, Bellman-Ford Algorithm, Tournaments, Scheduling Problem, Trees, Properties of Trees, Spanning Trees, Minimum Spanning Tree Algorithms.

Unit – 3 **(18 hours)**

Connectivity and Graph Coloring, Planar Graphs

Cut-vertices, Blocks and their Characterization, Connectivity and edge-connectivity, Planar graphs, Euler's formula, Kuratowski theorem, Graph coloring and applications, Matchings, Hall's theorem, Independent sets and covers.

Essential Readings

1. Goodaire, Edgar G., & Parmenter, Michael M. (2006). Discrete Mathematics with Graph Theory (3rd ed.). Pearson Education Pvt. Ltd. Indian Reprint.
2. Chartrand, Gary, & Zhang, Ping (2012). A First Course in Graph Theory. Dover Publications.

Suggestive Readings

- Bondy, J. A., and Murty, U.S.R. (2008). Graph Theory. Graduate Texts in Mathematics, Springer.
- Diestel, Reinhard (2017). Graph Theory (5th ed.). Graduate Texts in Mathematics, Springer.
- West, Douglas B. (2001). Introduction to Graph Theory (2nd ed.). Prentice Hall. Indian Reprint.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE– 1(ii): MATHEMATICAL PYTHON

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Mathematical Python	4	3	0	1	Class XII pass with Mathematics	Basic knowledge of Python

Learning Objectives

The Learning Objectives of this course are as follows:

- To be able to model and solve mathematical problems using Python Programs.
- To experience utility of open-source resources for numerical and symbolic mathematical software systems.

Learning Outcomes

This course will enable the students to use Python:

- For numerical and symbolic computation in mathematical problems from calculus, algebra, and geometry.
- To tabulate and plot diverse graphs of functions and understand tracing of shapes, geometries, and fractals.
- To prepare smart documents with LaTeX interface.

SYLLABUS OF DSE - 1(ii)

Theory

Unit – 1 **(15 hours)**

Drawing Shapes, Graphing and Visualization

Drawing diverse shapes using code and Turtle; Using matplotlib and NumPy for data organization, Structuring and plotting lines, bars, markers, contours and fields, managing subplots and axes; Pyplot and subplots, Animations of decay, Bayes update, Random walk.

Unit – 2 **(18 hours)**

Numerical and Symbolic Solutions of Mathematical Problems

NumPy for scalars and linear algebra on *n*-dimensional arrays; Computing eigenspace, Solving dynamical systems on coupled ordinary differential equations, Functional programming fundamentals using NumPy; Symbolic computation and SymPy: Differentiation and integration of functions, Limits, Solution of ordinary differential equations, Computation of eigenvalues, Solution of expressions at multiple points (lambdify), Simplification of expressions, Factorization, Collecting and canceling terms, Partial fraction decomposition, Trigonometric simplification, Exponential and logarithms, Series expansion and finite differences, Solvers, Recursive equations.

Unit – 3 **(12 hours)**

Document Generation with Python and LaTeX

Pretty printing using SymPy; Pandas API for IO tools: interfacing Python with text/csv, HTML, LaTeX, XML, MSExcel, OpenDocument, and other such formats; Pylatex and writing document files from Python with auto-computed values, Plots and visualizations.

Practical (30 hours): Software labs using IDE such as Spyder and Python Libraries.

- Installation, update, and maintenance of code, troubleshooting.
- Implementation of all methods learned in theory.
- Explore and explain API level integration and working of two problems with standard Python code.

Essential Readings

1. Farrell, Peter (2019). Math Adventures with Python. No Starch Press. ISBN Number: 978-1-59327-867-0.
2. Farrell, Peter and et al. (2020). The Statistics and Calculus with Python Workshop. Packet Publishing Ltd. ISBN: 978-1-80020-976-3.
3. Saha, Amit (2015). Doing Math with Python. No Starch Press. ISBN: 978-1-59327-640-9

Suggested Readings

- Morley, Sam (2022). Applying Math with Python (2nd ed.). Packet Publishing Ltd. ISBN: 978-1-80461-837-0
- Online resources and documentation on the libraries, such as:
  - https://matplotlib.org
  - https://sympy.org
  - https://pandas.pydata.org
  - https://numpy.org
  - https://pypi.org
  - https://patrickwalls.github.io/mathematicalpython/

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE-1(iii): NUMBER THEORY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Number Theory	4	3	1	0	Class XII pass with Mathematics	Algebra

Learning Objectives

The primary objective of this course is to introduce:

- The number theoretic techniques of computations with the flavour of abstraction.
- The Euclidean algorithm, linear Diophantine equations, congruence equations, arithmetic functions and their applications, Fermat's little, Euler's and Wilson's theorems.
- Primitive roots, quadratic residues and nonresidues, the Legendre symbol and the law of Quadratic Reciprocity.
- Introduction to cryptography, public-key cryptosystems and applications.

Learning Outcomes

This course will enable the students to:

- Use modular arithmetic in solving linear and system of linear congruence equations.
- Work with the number theoretic functions, their properties and their use.
- Learn the forms of positive integers that possess primitive roots and the Quadratic Reciprocity Law which deals with the solvability of quadratic congruences.
- Understand the public-key cryptosystems, in particular, RSA.

SYLLABUS OF DSE - 1(iii)

Unit – 1 **(12 hours)**

Linear Diophantine equation and Theory of Congruences

The Euclidean Algorithm and linear Diophantine equation; Least non-negative residues and complete set of residues modulo n; Linear congruences, The Chinese remainder theorem and system of linear congruences in two variables; Fermat's little theorem, Wilson's theorem and its converse, Application to solve quadratic congruence equation modulo odd prime p.

Unit – 2 **(21 hours)**

Number-Theoretic Functions and Primitive Roots

Number-theoretic functions for the sum and number of divisors, Multiplicative function, Möbius inversion formula and its properties; Greatest integer function with an application to the calendar; Euler's Phi-function, Euler's theorem and some properties of the Phi-function; The order of an integer modulo n and primitive roots for primes, Primitive roots of composite numbers n: when n is of the form 2^k, and when n is a product of two coprime numbers.

Unit – 3 **(12 hours)**

Quadratic Reciprocity Law and Public Key Cryptosystems

The quadratic residue and nonresidue of an odd prime and Euler's criterion, The Legendre symbol and its properties, Quadratic Reciprocity law and its application; Introduction to cryptography, Hill's cipher, Public-key cryptography and RSA.

Essential Reading

1. Burton, David M. (2011). Elementary Number Theory (7th ed.). McGraw-Hill Education Pvt. Ltd. Indian Reprint 2017.

Suggestive Readings

- Andrews, George E. (1994). Number Theory. Dover publications, Inc. New York.
- Robbins, Neville (2007). Beginning Number Theory (2nd ed.). Narosa Publishing House Pvt. Ltd. Delhi.
- Rosen, Kenneth H. (2011). Elementary Number Theory and its Applications (6th ed.). Pearson Education. Indian Reprint 2015.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.A. (Prog.) with Mathematics as Major

Category-II

DISCIPLINE SPECIFIC CORE COURSE – 3: THEORY OF EQUATIONS AND SYMMETRIES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Theory of Equations and Symmetries	4	3	1	0	Class X pass with Mathematics	Nil

Learning Objectives

The goal of this paper is to acquaint students with certain ideas about:

- Integral roots, rational roots, an upper bound on number of positive or negative roots of a polynomial.
- Finding roots of cubic and quartic equations in special cases using elementary symmetric functions.
- Using Cardon's and Descartes' methods, respectively.

Learning Outcomes

After completion of this paper, the students will be able to:

- Understand the nature of the roots of polynomial equations and their symmetries.
- Solve cubic and quartic polynomial equations with special condition on roots and in general.
- Find symmetric functions in terms of the elementary symmetric polynomials.

SYLLABUS OF DSC-3

Unit – 1 **(18 hours)**

Polynomial Equations and Properties

General properties of polynomials and equations; Fundamental theorem of algebra and its consequences; Theorems on imaginary, integral and rational roots; Descartes' rule of signs for positive and negative roots; Relations between the roots and coefficients of equations, Applications to solution of equations when an additional relation among the roots is given; De Moivre's theorem for rational indices, the nth roots of unity and symmetries of the solutions.

Unit – 2 **(12 hours)**

Cubic and Biquadratic (Quartic) Equations

Transformation of equations (multiplication, reciprocal, increase/diminish in the roots by a given quantity), Removal of terms; Cardon's method of solving cubic and Descartes' method of solving biquadratic equations.

Unit – 3 **(15 hours)**

Symmetric Functions

Elementary symmetric functions and symmetric functions of the roots of an equation; Newton's theorem on sums of the like powers of the roots; Computation of symmetric functions such as $\sum\alpha^2\beta,\ \sum\alpha^2\beta^2,\ \sum\alpha^2\beta\gamma,\ \sum\frac{1}{\alpha^2\beta\gamma},\ \sum\alpha^{-3},\ \sum(\beta+\gamma-\alpha)^2,\ \sum\frac{\alpha^2+\beta\gamma}{\beta+\gamma},\ldots$ of polynomial equations; Transformation of equations by symmetric functions and in general.

Essential Readings

1. Burnside, W.S., & Panton, A.W. (1979). The Theory of Equations (11th ed.). Vol. 1. Dover Publications, Inc. (4th Indian reprint. S. Chand & Co. New Delhi).
2. Dickson, Leonard Eugene (2009). First Course in the Theory of Equations. John Wiley & Sons, Inc. The Project Gutenberg eBook: http://www.gutenberg.org/ebooks/29785

Suggestive Readings

- Prasad, Chandrika (2017). Text Book of Algebra and Theory of Equations. Pothishala Pvt Ltd.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – A-3: DIFFERENTIAL EQUATIONS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Differential Equations	4	3	1	0	Class XII pass with Mathematics	Nil

Learning Objectives

The primary objective of this course is to introduce:

- Ordinary and partial differential equations.
- Basic theory of higher order linear differential equations, Wronskian and its properties.
- Various techniques to find the solutions of above differential equations which provide a basis to model complex real-world situations.

Learning Outcomes

This course will enable the students to:

- Solve the exact, linear, Bernoulli equations, find orthogonal trajectories and solve rate problems.

- Apply the method of undetermined coefficients and variation of parameters to solve linear differential equations.
- Solve Cauchy-Euler equations and system of linear differential equations.
- Formulate and solve various types of first and second order partial differential equations.

SYLLABUS OF DISCIPLINE A-3

Unit – 1 **(15 hours)**

Ordinary Differential Equations

First order ordinary differential equations: Basic concepts and ideas, First order Exact differential equations, Integrating factors and rules to find integrating factors, Linear equations and Bernoulli equations, Initial value problems, Applications of first order differential equations: Orthogonal trajectories and Rate problems; Basic theory of higher order linear differential equations, Wronskian and its properties.

Unit – 2 **(12 hours)**

Explicit Methods of Solving Higher-Order Linear Differential Equations

Linear homogeneous equations with constant coefficients, Linear non-homogeneous equations, Method of undetermined coefficients, Method of variation of parameters, Two-point boundary value problems, Cauchy-Euler equations, System of linear differential equations.

Unit – 3 **(18 hours)**

First and Second Order Partial Differential Equations

Classification and Construction of first-order partial differential equations, Method of characteristics and general solutions of first-order partial differential equations, Canonical forms and method of separation of variables for first order partial differential equations; Classification and reduction to canonical forms of second-order linear partial differential equations and their general solutions.

Essential Readings

1. Myint-U, Tyn and Debnath, Lokenath (2007). Linear Partial Differential Equations for Scientist and Engineers (4th ed.). Birkhäuser. Indian Reprint.
2. Ross, Shepley L. (1984). Differential Equations (3rd ed.). John Wiley & Sons.

Suggestive Readings

- Edwards, C. Henry, Penney, David E., & Calvis, David T. (2015). Differential Equations and Boundary Value Problems: Computing and Modeling (5th ed.). Pearson Education.
- Kreyszig, Erwin. (2011). Advanced Engineering Mathematics (10th ed.). Wiley India.
- Sneddon I. N. (2006). Elements of Partial Differential Equations. Dover Publications.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.A./B.Sc. (Prog.) with Mathematics as Non-Major

Category-III

DISCIPLINE SPECIFIC CORE COURSE – A-3: DIFFERENTIAL EQUATIONS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Differential Equations	4	3	1	0	Class XII pass with Mathematics	Nil

Learning Objectives

The primary objective of this course is to introduce:

- Ordinary and partial differential equations.
- Basic theory of higher order linear differential equations, Wronskian and its properties.
- Various techniques to find the solutions of above differential equations which provide a basis to model complex real-world situations.

Learning Outcomes

This course will enable the students to:

- Solve the exact, linear, Bernoulli equations, find orthogonal trajectories and solve rate problems.
- Apply the method of undetermined coefficients and variation of parameters to solve linear differential equations.
- Solve Cauchy-Euler equations and System of linear differential equations.
- Formulate and solve various types of first and second order partial differential equations.

SYLLABUS of Discipline A-3

Unit – 1 **(15 hours)**

Ordinary Differential Equations

First order ordinary differential equations: Basic concepts and ideas, First order Exact differential equations, Integrating factors and rules to find integrating factors, Linear equations and Bernoulli equations, Initial value problems, Applications of first order differential equations: Orthogonal trajectories and Rate problems; Basic theory of higher order linear differential equations, Wronskian and its properties.

Unit – 2 **(12 hours)**

Explicit Methods of Solving Higher-Order Linear Differential Equations

Linear homogeneous equations with constant coefficients, Linear non-homogeneous equations, Method of undetermined coefficients, Method of variation of parameters, Two-point boundary value problems, Cauchy-Euler equations, System of linear differential equations.

Unit – 3 **(18 hours)**

First and Second Order Partial Differential Equations

Classification and Construction of first-order partial differential equations, Method of characteristics and general solutions of first-order partial differential equations, Canonical forms and method of separation of variables for first order partial differential equations; Classification and reduction to canonical forms of second-order linear partial differential equations and their general solutions.

Essential Readings

1. Myint-U, Tyn and Debnath, Lokenath (2007). Linear Partial Differential Equations for Scientist and Engineers (4th ed.). Birkhäuser. Indian Reprint.
2. Ross, Shepley L. (1984). Differential Equations (3rd ed.). John Wiley & Sons.

Suggestive Readings

- Edwards, C. Henry, Penney, David E., & Calvis, David T. (2015). Differential Equations and Boundary Value Problems: Computing and Modeling (5th ed.). Pearson Education.
- Kreyszig, Erwin. (2011). Advanced Engineering Mathematics (10th ed.). Wiley India.
- Sneddon I. N. (2006). Elements of Partial Differential Equations. Dover Publications.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.Sc. (Physical Sciences/Mathematical Sciences) with Mathematics as one of the Core Discipline

Category-III

DISCIPLINE SPECIFIC CORE COURSE – A-3: DIFFERENTIAL EQUATIONS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Differential Equations	4	3	1	0	Class XII pass with Mathematics	Nil

Learning Objectives

The primary objective of this course is to introduce:

- Ordinary and partial differential equations.
- Basic theory of higher order linear differential equations, Wronskian and its properties.
- Various techniques to find the solutions of above differential equations which provide a basis to model complex real-world situations.

Learning Outcomes

This course will enable the students to:

- Solve the exact, linear, Bernoulli equations, find orthogonal trajectories and solve rate problems.
- Apply the method of undetermined coefficients and variation of parameters to solve linear differential equations.
- Solve Cauchy-Euler equations and System of linear differential equations.
- Formulate and solve various types of first and second order partial differential equations.

SYLLABUS of Discipline A-3

Unit – 1 **(15 hours)**

Ordinary Differential Equations

First order ordinary differential equations: Basic concepts and ideas, First order Exact differential equations, Integrating factors and rules to find integrating factors, Linear equations and Bernoulli equations, Initial value problems, Applications of first order differential equations: Orthogonal trajectories and Rate problems; Basic theory of higher order linear differential equations, Wronskian and its properties.

Unit – 2 **(12 hours)**

Explicit Methods of Solving Higher-Order Linear Differential Equations

Linear homogeneous equations with constant coefficients, Linear non-homogeneous equations, Method of undetermined coefficients, Method of variation of parameters, Two-point boundary value problems, Cauchy-Euler equations, System of linear differential equations.

Unit – 3 **(18 hours)**

First and Second Order Partial Differential Equations

Classification and Construction of first-order partial differential equations, Method of characteristics and general solutions of first-order partial differential equations, Canonical forms and method of separation of variables for first order partial differential equations; Classification and reduction to canonical forms of second-order linear partial differential equations and their general solutions.

Essential Readings

1. Myint-U, Tyn and Debnath, Lokenath (2007). Linear Partial Differential Equations for Scientist and Engineers (4th ed.). Birkhäuser. Indian Reprint.
2. Ross, Shepley L. (1984). Differential Equations (3rd ed.). John Wiley & Sons.

Suggestive Readings

- Edwards, C. Henry, Penney, David E., & Calvis, David T. (2015). Differential Equations and Boundary Value Problems: Computing and Modeling (5th ed.). Pearson Education.
- Kreyszig, Erwin. (2011). Advanced Engineering Mathematics (10th ed.). Wiley India.
- Sneddon I. N. (2006). Elements of Partial Differential Equations. Dover Publications.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE -1(i): COMBINATORICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Combinatorics	4	3	1	0	Class XII pass with Mathematics	Nil

Learning Objectives

The primary objective of this course is to:

- Introduce various techniques of permutations, combinations and inclusion-exclusion.
- Learn basic models of generating functions and recurrence relations in their application to the theory of integer partitions.

Learning Outcomes

After completing the course, student will:

- Enhance the mathematical logical skills by learning different enumeration techniques.
- Be able to apply these techniques in solving problems in other areas of mathematics.
- Be trained to provide reasoning and arguments to justify conclusions.

SYLLABUS OF DSE-1(i)

Unit - 1 **(15 hours)**

Basics of Combinatorics

Basic counting principles, Permutations and Combinations (with and without repetitions), Binomial coefficients, Multinomial coefficients, Counting subsets of size k; Set-partitions, The inclusion-exclusion principle and applications.

Unit - 2 **(18 hours)**

Generating Functions and Recurrence Relations

Generating functions: Generating function models, Calculating coefficients of generating functions, Polynomial expansions, Binomial identity, Exponential generating functions.
Recurrence relations: Recurrence relation models, Divide-and-conquer relations, Solution of linear recurrence relations, Solutions by generating functions.

Unit – 3 **(12 hours)**

Partition

Partition theory of integers: Ordered partition, Unordered partition, Ferrers diagram, Conjugate of partition, Self-conjugate partition, Durfee square, Euler's pentagonal theorem.

Essential Readings

1. Sane, Sharad S. (2013). Combinatorial Techniques. Hindustan Book Agency (India).
2. Tucker, Alan (2012). Applied Combinatorics (6th ed.). John Wiley & Sons, Inc.

Suggested Readings

- Brualdi, Richard A. (2009). Introductory Combinatorics (5th ed.). Pearson Education Inc.
- Cameron, Peter J. (1994). Combinatorics: Topics, Techniques, Algorithms. Cambridge University Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE-1(ii): ELEMENTS OF NUMBER THEORY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Elements of Number Theory	4	3	1	0	Class XII pass with Mathematics	Nil

Learning Objectives

The primary objective of this course is to introduce:

- The Euclidean algorithm and linear Diophantine equations, the Fundamental theorem of arithmetic and some of the open problems of number theory viz. the Goldbach conjecture.
- The modular arithmetic, linear congruence equations, system of linear congruence equations, arithmetic functions and multiplicative functions, e.g., Euler's Phi-function.
- Introduction of the simple encryption and decryption techniques, and the numbers of specific forms viz. Mersenne numbers, Fermat numbers etc.

Learning Outcomes

This course will enable the students to:

- Get familiar with the basic number-theoretic techniques.
- Comprehend some of the open problems in number theory.
- Learn the properties and use of number-theoretic functions and special types of numbers.
- Acquire knowledge about public-key cryptosystems, particularly RSA.

SYLLABUS OF DSE-1(ii)

Unit – 1 **(12 hours)**

Divisibility and Prime Numbers

Revisiting: The division algorithm, divisibility and the greatest common divisor. Euclid's lemma; The Euclidean algorithm, Linear Diophantine equations; The Fundamental theorem of Arithmetic, The sieve of Eratosthenes, Euclid theorem and the Goldbach conjecture; The Fibonacci sequence and its nature.

Unit – 2 **(21 hours)**

Theory of Congruences and Number-Theoretic Functions

Congruence relation and its basic properties, Linear congruences and the Chinese remainder theorem, System of linear congruences in two variables; Fermat's little theorem and its generalization, Wilson's theorem and its converse; Number-theoretic functions for sum and the number of divisors of a positive integer, Multiplicative functions, The greatest integer function; Euler's Phi-function and its properties.

Unit – 3 **(12 hours)**

Public Key Encryption and Numbers of Special Form

Basics of cryptography, Hill's cipher, Public-key cryptosystems and RSA encryption and decryption technique; Introduction to perfect numbers, Mersenne numbers and Fermat numbers.

Essential Reading

1. Burton, David M. (2011). Elementary Number Theory (7th ed.). McGraw-Hill Education Pvt. Ltd. Indian Reprint 2017.

Suggestive Readings

- Jones, G. A., & Jones, J. Mary. (2005). Elementary Number Theory. Springer Undergraduate Mathematics Series (SUMS). Indian Reprint.
- Robbins, Neville (2007). Beginning Number Theory (2nd ed.). Narosa Publishing House Pvt. Ltd. Delhi.
- Rosen, Kenneth H. (2011). Elementary Number Theory and its Applications (6th ed.). Pearson Education. Indian Reprint 2015.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE - DSE-1(iii): THEORY OF EQUATIONS AND SYMMETRIES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Theory of Equations and Symmetries	4	3	1	0	Class X pass with Mathematics	Nil

Learning Objectives

The goal of this paper is to acquaint students with certain ideas about:

- Integral roots, rational roots, an upper bound on number of positive or negative roots of a polynomial.
- Finding roots of cubic and quartic equations in special cases using elementary symmetric functions.
- Using Cardon's and Descartes' methods, respectively.

Learning Outcomes

After completion of this paper, the students will be able to:

- Understand the nature of the roots of polynomial equations and their symmetries.
- Solve cubic and quartic polynomial equations with special condition on roots and in general.
- Find symmetric functions in terms of the elementary symmetric polynomials.

SYLLABUS OF DSE-1(iii)

Unit – 1 **(18 hours)**

Polynomial Equations and Properties

General properties of polynomials and equations; Fundamental theorem of algebra and its consequences; Theorems on imaginary, integral and rational roots; Descartes' rule of signs for positive and negative roots; Relations between the roots and coefficients of equations, Applications to solution of equations when an additional relation among the roots is given; De Moivre's theorem for rational indices, the *n*th roots of unity and symmetries of the solutions.

Unit – 2 **(12 hours)**

Cubic and Biquadratic (Quartic) Equations

Transformation of equations (multiplication, reciprocal, increase/diminish in the roots by a given quantity), Removal of terms; Cardon's method of solving cubic and Descartes' method of solving biquadratic equations.

Unit – 3 **(15 hours)**

Symmetric Functions

Elementary symmetric functions and symmetric functions of the roots of an equation; Newton's theorem on sums of the like powers of the roots; Computation of symmetric functions such as $\sum\alpha^2\beta,\ \sum\alpha^2\beta^2, \sum\alpha^2\beta\gamma, \sum\frac{1}{\alpha^2\beta\gamma}, \sum\alpha^{-3}, \sum(\beta+\gamma-\alpha)^2,\ \sum\frac{\alpha^2+\beta\gamma}{\beta+\gamma},\ldots$ of polynomial equations; Transformation of equations by symmetric functions and in general.

Essential Readings

1. Burnside, W.S., & Panton, A.W. (1979). The Theory of Equations (11th ed.). Vol. 1. Dover Publications, Inc. (4th Indian reprint. S. Chand & Co. New Delhi).
2. Dickson, Leonard Eugene (2009). First Course in the Theory of Equations. John Wiley & Sons, Inc. The Project Gutenberg eBook: http://www.gutenberg.org/ebooks/29785

Suggestive Readings

- Prasad, Chandrika (2017). Text Book of Algebra and Theory of Equations. Pothishala Pvt Ltd.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES OFFERED BY DEPARTMENT OF MATHEMATICS
Category-IV

GENERIC ELECTIVES-GE-3(i): DIFFERENTIAL EQUATIONS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Differential Equations	4	3	1	0	Class XII pass with Mathematics	Nil

Learning Objectives

The primary objective of this course is to introduce:

- Ordinary and partial differential equations.
- Basic theory of higher order linear differential equations, Wronskian and its properties.
- Various techniques to find the solutions of above differential equations which provide a basis to model complex real-world situations.

Learning Outcomes

This course will enable the students to:

- Solve the exact, linear, Bernoulli equations, find orthogonal trajectories and solve rate problems.
- Apply the method of undetermined coefficients and variation of parameters to solve linear differential equations.
- Solve Cauchy-Euler equations and System of linear differential equations.
- Formulate and solve various types of first and second order partial differential equations.

SYLLABUS OF GE-3(i)

Unit – 1 **(15 hours)**

Ordinary Differential Equations

First order ordinary differential equations: Basic concepts and ideas, First order Exact differential equations, Integrating factors and rules to find integrating factors, Linear equations and Bernoulli equations, Initial value problems, Applications of first order differential equations: Orthogonal trajectories and Rate problems; Basic theory of higher order linear differential equations, Wronskian and its properties.

Unit – 2 **(12 hours)**

Explicit Methods of Solving Higher-Order Linear Differential Equations

Linear homogeneous equations with constant coefficients, Linear non-homogeneous equations, Method of undetermined coefficients, Method of variation of parameters, Two-point boundary value problems, Cauchy-Euler equations, System of linear differential equations.

Unit – 3 **(18 hours)**

First and Second Order Partial Differential Equations

Classification and Construction of first-order partial differential equations, Method of characteristics and general solutions of first-order partial differential equations, Canonical forms and method of separation of variables for first order partial differential equations; Classification and reduction to canonical forms of second-order linear partial differential equations and their general solutions.

Essential Readings

1. Myint-U, Tyn and Debnath, Lokenath (2007). Linear Partial Differential Equations for Scientist and Engineers (4th ed.). Birkhäuser. Indian Reprint.
2. Ross, Shepley L. (1984). Differential Equations (3rd ed.). John Wiley & Sons.

Suggestive Readings

- Edwards, C. Henry, Penney, David E., & Calvis, David T. (2015). Differential Equations and Boundary Value Problems: Computing and Modeling (5th ed.). Pearson Education.
- Kreyszig, Erwin. (2011). Advanced Engineering Mathematics (10th ed.). Wiley India.
- Sneddon I. N. (2006). Elements of Partial Differential Equations. Dover Publications.

GENERIC ELECTIVES-GE-3(ii): LATTICES AND NUMBER THEORY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Lattices and Number Theory	4	3	1	0	Class XII pass with Mathematics	Nil

Learning Objectives

The primary objective of this course is to introduce:

- The concepts of ordered sets, lattices, sublattices and homomorphisms between lattices.
- Distributive lattices along with Boolean algebra and their applications in the real-world.
- Divisibility theory of congruences along with some applications.
- The number-theoretic functions and quadratic reciprocity law.

Learning Outcomes

This course will enable the students to:

- Understand the notion of ordered sets. Learn about lattices, distributive lattices, sublattices and homomorphisms between lattices.
- Become familiar with Boolean algebra, Boolean polynomials, switching circuits and their applications.
- Learn the concept of Karnaugh diagrams and Quinn–McCluskey method which gives an aid to apply truth tables in real-world problems.

- Learn about some fascinating properties of prime numbers, and some of the open problems in number theory, viz., Goldbach conjecture etc.
- Know about modular arithmetic and number-theoretic functions like Euler's Phi-function.
- Find quadratic residues and nonresidues modulo primes using Gauss's Quadratic Reciprocity Law.

SYLLABUS OF GE-3(ii)

Unit – 1 **(21 hours)**

Partially Ordered Sets and Lattices

Definitions, Examples and basic properties of partially ordered sets, Order isomorphism, Hasse Diagram, Maximal and minimal elements, Dual of an ordered set, Duality principle; Statements of Well Ordering Principle and Zorn's Lemma; Lattices as ordered sets, Lattices as algebraic structures, Sublattices, Products and homomorphisms, Distributive lattices, Boolean algebras, Boolean polynomials, Minimal forms of Boolean polynomials, Quinn-McCluskey method, Karnaugh diagrams, Switching circuits and applications.

Unit – 2 **(12 hours)**

Divisibility and Theory of Congruences

The division algorithm: GCD, The Euclidean algorithm, Diophantine equation $ax + by = c$ Primes: The Fundamental Theorem of Arithmetic, Infinitude of primes, Twin primes and Goldbach conjecture.

The theory of congruences: Basic properties and applications, Linear congruences and the Chinese Remainder Theorem, Fermat's Little Theorem and Wilson's Theorem.

Unit – 3 **(12 hours)**

Number-Theoretic Functions, Primitive roots and Quadratic Reciprocity Law

Number-Theoretic Functions: Sum and number of divisors, Euler's Phi-function and Euler's generalization of Fermat's Little Theorem.

Primitive roots: The order of an integer modulo n, and primitive roots of an integer.

Quadratic Reciprocity Law: Quadratic residue and nonresidue, Euler's Criterion, The Legendre symbol and its properties and Quadratic Reciprocity Law.

Essential Readings

1. Davey, B A., & Priestley, H. A. (2002). Introduction to Lattices and Order (2nd ed.), Cambridge University Press, Cambridge.
2. Lidl, Rudolf & Pilz, Günter. (1998). Applied Abstract Algebra (2nd ed.), Undergraduate Texts in Mathematics, Springer (SIE), Indian Reprint 2004.
3. Burton, David M. (2012). Elementary Number Theory (7th ed.), Mc-Graw Hill Education Pvt. Ltd. Indian Reprint.

Suggestive Readings

- Rosen, Kenneth H. (2019). Discrete Mathematics and its Applications (8th ed.), Indian adaptation by Kamala Krithivasan. McGraw-Hill Education. Indian Reprint 2021.
- Goodaire, Edgar G., & Parmenter, Michael M. (2006). Discrete Mathematics with Graph Theory (3rd ed.). Pearson Education Pvt. Ltd. Indian Reprint 2018.
- Jones, G. A., & Jones, J. Mary. (2005). Elementary Number Theory. Springer Undergraduate Mathematics Series (SUMS). Indian Reprint.

REGISTRAR

ANNEXURE-4

Sub: Amendment to Ordinance V

[E.C Resolution No. 60/ (60-1-9) dated 03.02.2023]

Following addition be made to Appendix-II-A to the Ordinance V (2-A) of the Ordinances of the University;

Add the following:

Syllabi of Semester-III of the Department of Finance & Business Economics under Faculty of Applied Social Sciences & Humanities based on Under Graduate Curriculum Framework -2022 implemented from the Academic Year 2022-23.

Bachelor of Business Administration (Financial Investment Analysis) [BBA (FIA)]

(FASSH)

DSC 7: CORPORATE FINANCE

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 7: CORPORATE FINANCE	4	3	1	NIL	Class XII	NIL

Course Objectives:

- To provide an understanding of the essential elements of the financial environment in which the business firm operates.
- To acquaint students with the techniques of financial management and it's applications for business decision making.
- It aims to give and develop in the students the viewpoint of the CFO of a firm, though it will also be useful in developing relevant skills for various strategic finance roles in the modern business entities.

Learning Outcome:

After studying this course, the student will be able to:

- Understand the basic concepts of financial management.
- Understand how to coordinate various decisions to maximize wealth of an organisation in today`s financial environment.
- Equipped to arrive at strategic corporate finance decisions with the required accuracy which will be aided by using various excel functions.

Course Contents:

Unit 1 (8 Hours)

Nature of Financial Management: Finance and related disciplines; Scope of Financial Management; Profit Maximization, Wealth Maximization. Functions of Finance – Finance Decision, Investment Decision, Dividend Decision; Risk-Return Trade-off in Finance Functions. Organisation of finance function; Concept of Time Value of Money – present value, future value, annuity, growing annuity, perpetuity, growing perpetuity, excel functions of time value of money.

Unit 2 (16 Hours)

Strategic Investment Decisions: Capital Budgeting– Nature and meaning of capital budgeting; Principles and Process; Estimation of relevant cashflows and terminal value; Evaluation techniques– Payback period, Accounting Rate of Return, Payback Period, Net Present Value, Internal Rate of Return & MIRR, NPVvs.IRR, Net Terminal Value, Profitably Index Method, Risk analysis in Capital Budgeting-Sensitivity and Scenario analysis, Certainty Equivalent Approach, RADR, Real options, excel functions of capital budgeting techniques.
Cost of Capital: Meaning and concept, Measurement of cost of capital-Cost of debt; Cost of Equity Share; Cost of Preference Share; Cost of Retained Earning; Computation of over-all cost of capital based on Historical and Market weights(WACC); Adjusting cost of capital for risk.

Unit 3 (12 Hours)

Strategic Financing Decisions – Capital Structure, Theories and Value of the firm **–** NetIncome approach, Net Operating Income approach, Traditional approach, Modigliani Miller (MM) model, HAMADA model; Determining the optimal capital structure, Checklist for capital structure decisions, Costs of bankruptcy and Financial distress, Trade off models, Pecking Order Theory.
Leverage analysis and EBIT-EPS Analysis: Concept of leverage, Types of leverage: Operating leverage, Financial leverage, Combined leverage; EBIT-EPS Analysis, Guidelines for capital structure planning, Link between capital structure and capital budgeting
Dividend Decisions: Factors determining dividend policy, Theories of dividend – Gordon model, Walter model, MM Hypothesis, Signaling Theory, Forms of dividend–Cash dividend, Bonus shares, Stock split, Dividend policies in practice, Patterns observed in payout policies worldwide.

Unit 4 (9 Hours)

Working Capital Management

Working Capital Management: Determination of Working Capital. Determining financing mix of working capital. Receivables Management – Objectives; Credit Policy, Cash Discount, Debtors Outstanding and Ageing Analysis; Costs – Collection Cost, Capital Cost, Default Cost, Delinquency Cost. Management of Cash (Theory only) – Need for Cash, Cash Management Techniques (Lock box,Concentration Banking). Inventory Management (Theory only) – ABC Analysis; Minimum Level; Maximum Level; Reorder Level; Safety Stock; EOQ (Basic Model).

Essential Readings: (Latest editions of the following to be used)

1. Berk, J., & DeMarzo, P. (5th ed.).*Corporate Finance*, Pearson - Prentice Hall.
2. Horne, J. C. V., & Wachowicz, J. M., Jr. (13th ed.). *Fundamentals of Financial Management*. Prentice Hall, Pearson Education.
3. Pandey, I. M. (n.d.). *Financial Management*. Pearson.

Additional Readings:

1. Khan, M.Y. & Jain, P.K.(n.d.) *Financial Management Text Problem and Cases*, Tata Mc Graw Hill Publishing Co. Ltd.
2. Brealey, R.R., Myers.S., Allen, F.,&Mohanty, P.(n.d.)*Principles of Corporate Finance*. New Delhi: Tata Mc-Graw Hill.

Teaching – Learning Process

The teaching-learning process for this paper would include classroom lectures and tutorials; Case study discussions; class presentations; Workshops.

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

Key Words

Finance, Capital Budgeting, Wealth Maximization, Cost of Capital, Dividends, Leverage.

DSC 8: FINANCIAL MARKETS & INSTITUTIONS

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 8: FINANCIAL MARKETS & INSTITUTIONS	4	3	1	NIL	Class XII	NIL

Course Objectives:

- The objective of this paper is to introduce students to role and functioning of financialmarkets,financialproductsthataretradedinsuchfinancialmarketsandinstitutions associatedwithfinancialmarkets.
- It explains the role of financial system on economic development. Various conceptual issues related to risk and return, the role of regulatory bodies, mechanism of commercial banking, operations of insurance companies and mutual funds are discussed elaborately. This will enable them to take the rational decision in financial environment.

Learning Outcomes:

After studying this course, the student will be able to:

- Financial architecture of an economy and its keyplayers.
- The fabrication of Indian Financial markets.
- Working of Capital market, debt market, money market in India
- FunctioningofdifferentplayersinfinancialmarketincludingRegulators.

Course Contents:

Unit1: IndianFinancialSystemand majorInstitutions (12 Hours)

Structure of Indian Financial System: An overview of the Indian financial system, major reforms in the last decade: Payment banks, GST, innovative remittance services, Insolvency and Bankruptcy code. Regulatory Institutions in India: RBI, SEBI, IRDA, PFRDA. Commercial Banking: Role of Banks, NPA, Risk Management in Banks. Universal Banking: need and importance, Core banking solution (CBS), NBFCs and its types; comparison between Banks and NBFCs.

Unit 2: Financial Markets in India (9 Hours)

Introduction to Financial Markets in India: Role and Importance of Financial Markets, Types of Financial Markets: Money Market; Capital Market; Linkages Between Economy and Financial Markets, Integration of Indian Financial Markets with Global Financial Markets, Primary Market: Instruments, book building process (numerical). Merchant Bank: role and types, Mutual Fund: types of Mutual Funds and different types of schemes. Corporate

Listings:Listing and Delisting of Corporate Stocks, Foreign Exchange Market: Introductory, only Conceptual.

Unit 3: Capital Market in India (12 Hours)

Introduction to Stock Markets, Regional and Modern Stock Exchanges, International Stock Exchanges, Demutualization of exchanges, Indian Stock Indices and their construction. Major Instruments traded in stock markets: Equity Shares, Debentures, Exchange Traded Funds. Trading of securities on a stock exchange; Selection of broker, capital and margin requirementsofabroker,MTMandVARMargins(withnumerical),kindsofbrokers,openingofanaccounttotradeinsecurities,DEMATSystem,placinganorderforpurchase/sale of shares, contract note and settlementof contracts, Commodity Markets – Structure.

Unit4: MoneyMarkets&DebtMarketsinIndia (12 Hours)

MoneyMarket:Meaning,roleandparticipantsinmoney markets,Segmentsofmoneymarkets, Call Money Markets, Repos and reverse Repo concepts, Treasury Bill Markets, Certificateof Deposit and Commercial Paper (with numerical). Debt Market: Introduction and meaning, Primary Market for Corporate Securities in India:Issue of Corporate Securities, Secondarymarket for government/debt securities (NDS-OM), Auction process (with Numerical), CorporateBondsvs. Government Bonds. Retail Participation in Money and Debt Market-RBI Retail Direct platform.

Essential Readings

1. Bhole, L. M., & Mahakud, J. (2018). Financial Institutions and Markets: Structure, Growth and Innovations (6th Edition). McGraw Hill Education.
2. Saunders, A., & Cornett, M. M. (2007). Financial Markets and Institutions (3rd ed.). Tata McGraw Hill.
3. Pathak, B. V. (2008). Indian Financial System: Markets, Institutions and Services (2nd ed.). Pearson Education.
4. Khan, M. Y. (n.d.). Financial Services. McGraw Hill Education.

AdditionalReadings:

1. Madura, J. (2008). *Financial Institutions and Markets*. Cengage Learning EMEA.
2. Kohn, M. G. (2004). *Financial Institutions and Markets*. Oxford University Press.
3. Fabozzi, F. J., & Modigliani, F. (2005). *Capital Markets: Institutions and Markets* (3rd ed.). Prentice Hall of India.

Teaching Learning Process: Lecture, discussion, Power Point presentations, Course Contents: may be discussed in light of latest SEBI regulations and RBI guidelines.

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

Key Words: Indian Financial System, Financial Markets, Financial Institutions, Capital Market, Money Market, Debt Markets.

DSC 9: CORPORATE LAW

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 9: CORPORATE LAW	4	3	1	NIL	Class XII	NIL

Course Objective(s):

In view of increasing emphasis on adherence to norms of good corporate governance, Company Law assumes an added importance in the corporate legislative it deals with structure, management, administration and conduct of affairs of Companies and to understand the applications of company laws to practical commercial situations.

Learning Outcomes:

After studying this course, the student will be able to:

- Identify the different types of contracts and their characteristics.
- Analyze special contracts such as contract of indemnity and guarantee, bailment and pledge, and agency.
- Acquire theoretical and practical perspective on many aspects of Indian companies Act.
- Understand the concept of formation, functioning, meetings, directors and winding off of company.
- Develop critical thinking through the use of company law cases**.**
- Understand consequences of applicability of contract and Insolvency and bankruptcy laws in business situations.

Course Contents:

Unit 1 **(16 Hours)**

The Indian Contract Act 1872:Meaning and Essentials of contract; Kinds of contract; law relating to offer and acceptance, consideration, competency to contract, free consent, void agreements, performance of contracts, discharge of contracts, breach of contracts and quasi contract; Special contracts: contract of indemnity and guarantee, bailment and pledge, and agency.

Unit 2 **(12 Hours)**

The Companies Act 2013:Meaning and Nature of Company with Emphasis on its Advantages and Disadvantages over other forms of Business organizations, Comparison between Company

and Partnership and Company and Limited Liability Partnership, Kinds of Companies–Public, Private, Holding, Subsidiary, Limited and Unlimited Companies, Share-holding and Guarantee Companies, Small company, One person company, Government company and foreign company.

Unit 3 **(12 Hours)**

Incorporation and Documents of Company; Incorporation of Company, Procedure of registration, Certificate of Incorporation, Promoters and their position, Powers, Duties and Liabilities; Memorandum of Association (MOA), Articles of Association (AOA), Alteration of MOA and AOA; Prospectus and its Kinds, Directors: Duties of Directors and their Criminal and Civil liabilities.

Company meetings: Kinds of Meetings, Essential Conditions of a Valid Meeting, Procedure for Calling Company Meeting; Adjudicatory Bodies: National Company Law Tribunal; National Company Law Appellate Tribunal – Constitution, Powers, Jurisdiction, Procedure; Winding up of Companies.

Unit 4 **(5 Hours)**

Insolvency and Bankruptcy Code 2016: Introduction of Insolvency and Bankruptcy Code 2016 (IBC), purpose behind enactment of IBC, regulatory mechanism, Insolvency Process, Adjudicating authority, Committee of creditors, Reorganization, Liquidation.

Essential Readings:

1. Singh, A. (n.d.). *Principles of Mercantile Law. Eastern Book Company*.
2. Kapoor, G. (n.d.). *Business Law*. New Age International Pvt. Ltd Publishers.
3. Maheshwari, M., & Maheshwari, S. (n.d.). *Principles of Mercantile Law*. National Publishing Trust.
4. Aggarwal, R. (n.d.). *Mercantile & Commercial Law*. Taxmann.

Teaching – Learning Process: Lecture, Discussion, Presentations, Course contents shall be discussed in the light of relevant case laws.

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

Key Words: Indian Contract Act, Companies Act, Insolvency and Bankruptcycode.

DISCIPLINE SPECIFIC ELECTIVE (DSE) COURSES

DSE 1: PROJECT APPRAISAL AND FINANCING

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 1: PROJECT APPRAISAL AND FINANCING	4	3	1	NIL	Class XII	NIL

Course Objectives:

- To provide an understanding to the students about identification of a project, feasibility analysis, alternative project appraisal techniques, Project financing.

Learning Outcomes:

On successful completion of this course, the students will be able to:

- Apply various methods of project Appraisal.
- Use Capital Budgeting techniques for financial evaluation and selection of Projects.
- Understand the concept and application of Social Cost and Benefit Analysis.
- Carry out Risk Analysis for business projects and identify alternative sources of financing.
- Apply appraisal techniques for evaluating live projects.

Course Contents

Unit 1: Introduction to Projects and their Appraisal (9 Hours)

Project Definition, Project Identification, Project Life Cycle, Project Stakeholder Analysis, Feasibility study.Types of Project Appraisal (Brief Overview): Market and Demand Analysis, Technical Appraisal, Financial Appraisal, Economic Appraisal, Managerial Appraisal, and Social Appraisal.

Unit 2: Financial and Social Appraisal (15 Hours)

Project Cost and its components, Investment Evaluation Methods (Non-Discounting and Discounting Methods): Payback Period, Accounting Rate of Return, Discounted Payback Period,Net Present Value, Profitability Index, Internal Rate of Return (IRR), Modified Internal Rate of Return (MIRR). Suitability of Methods to different Projects, Investment Evaluation in Practice. Social Appraisal: Rationale for Social Cost Benefit Analysis, Approaches of SCBA

(UNIDO and Little-Mirrlees Approach), Environment Impact Assessment (EIA) and Social Impact Assessment (SIA) of Projects. Relevant Case Studies.

Unit 3: Project Risk Analysis (12 Hours)

Risk Analysis and Management: Sources and Measures of Risk. Methods of Assessing Risk – Sensitivity Analysis, Scenario Analysis, Break-Even Analysis, Simulation Analysis, Decision Tree Analysis, Project Selection under Risk – Judgmental Evaluation, Payback Period, Risk Adjusted Discount Rate Method, Certainty Equivalent Method, Strategies for Risk Management.

Unit 4: Project Financing (9 Hours)

Capital Structure; Choices of Financing; Sources of Financing – Internal Accruals, Equity Capital, Preference Capital, Debentures (or Bonds), Term Loans, Venture Capital, Private Equity, Venture Capital Vs Private Equity, Loan Syndication, Consortium Financing, Public Private Partnership (PPP), Securitization, Crowd Funding; Raising Capital from International Markets: Foreign Issue, Foreign Direct Investment (FDI), External Commercial Borrowings (ECB).

Essential Readings:

1. Chandra, P: *Projects – Planning, Analysis, Selection, Financing, Implementation, and Review*. 2019 Edition. McGraw Hill Education.

2. Agrawal, R., & Mehra, Y. S. (2017). *Project Appraisal and Management*. Taxman Publications.

Additional Readings:

1. Goodpasture, C.J*Quantitative Methods in Project Management*. J. Ross Publishing.
2. Chandra, P,*Financial Management: Theory and Practice*, McGraw Hill Publishing.

Teaching Learning Process:

Class room lecture, Numerical Problem solving, Case study discussion, Class presentationon the assigned topic by students individually or in group, Workshop, Tutorials, Role play.

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

Key Words

Project Appraisal, Market and Demand Analysis, Technical Appraisal, Financialand Investment Appraisal, Risk Analysis, Socio-Economic Appraisal, Project Financing.

DSE 2: DIGITAL FINANCE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture				
DSE 2: DIGITAL FINANCE	4	3	1	NIL	Class XII	NIL

Course Objective(s): The goal of the course is to get the students acquainted with the dramatic changes in the financial sector generated by the digital revolution.

Learning Outcomes:

After studying this course the student will get the:

- Understanding of the nature of digital revolution in finance.
- Knowledge of key digital technologies and products, and state reaction to the digital revolution.
- Knowledge of FinTech, big data analytics and new financial business models.

Course Contents:

Unit 1: Digital Transformation of Finance (4 Hours)

A Brief History of Financial Innovation, Digitization of Financial Services, Introduction to FinTech & Funds, FinTech Transformation, FinTech Typology, Collaboration between Financial Institutions and Start-ups. Introduction to Regulation and future of RegTech.

Crowdfunding- Role of finance in economy, the role of financial intermediaries, Types and functioning of crowdfunding markets, Differences between traditional funding models and crowdfunding markets, Informational problems in the crowdfunding model.

Unit 2: Payment Systems (9 Hours)

Digitalization of the payment system. The historical evolution of the payment system., Attributes of a well-functioning payment system., Banks as guarantors of the payment system, new entrants and new payment models: risks for the banking system. FinTech applications in Banking & Non-Banking Financial Companies (NBFCs); Insurance; payments; Lending; Audit; and Compliance. Electronic Clearing Service (ECS) ,Real Time Gross Settlement (RTGS), National Electronic Funds Transfer (NEFT), Immediate Payment Service (IMPS), Unified Payments Interface (UPI), Growth of Digital Payments in India, RBI guidelines on Digital Payments.

Unit 3: Crypto Assets and Blockchains (16 Hours)

Introduction: Crypto an asset for trade and Crypto-currency, Problems with issuerscredibility, Fin Tech & Securities Trading; Cryptocurrencies and its future as currency, blockchain as a registration mechanism, Functioning of the block chain system. The integration of digital

currency and blockchain and issuers incentive problems; Proptech: FinTech of Real Estate; Possible alternative uses of blockchain technology in the economy and difficulties in its implementation. Use of bitcoin in money laundering., The regulatory debate. Introduction of Central Bank Digital Currency (CBDC). Other Emerging Financial Technologies: Internet of things (IOT) & AR/VR applications.

Unit 4: FinTech, Big Data Analytics, and new Financial Business Models (16 Hours)
The use of data in traditional credit decisions, the combination of big data and machine learning to improve financing decisions., Smart accounts, customized financial products, risk management and fraud prevention., High frequency trading: opportunities and risks.
Digital security, Challenge of confidentiality, integrity and availability, Digital securities as a new systemic risk in the economy. Regulations on cybersecurity. Latest development in the field of Digital Finance.

Essential Readings:

1. Lynn, T., Mooney, J. G., Rosati, P., & Cummins, M. (2019). *Disrupting finance: FinTech and strategy in the 21st century*. Springer Nature.
2. Beaumont, P. H. (2019). *Digital Finance: Big Data, Start-ups, and the Future of Financial Services*. Routledge.

Additional Readings:

1. Phadke, S. (2020). *FinTech Future: The Digital DNA of Finance*. Sage Publications.
2. Maese, V. A., Avery, A. W., Naftalis, B. A., Wink, S. P., & Valdez, Y. D. (2016). *Cryptocurrency: A primer*. Banking LJ, 133, 468.

Teaching – Learning Process:
Lecture, discussion, Power Point presentations, Case Studies, Workshop, Tutorials.

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

Key Words
Crowdfunding, Bitcoin, Blockchain Technology, Fintech, Digital Security, Cryptocurrency.

DSE 3: INSURANCE MANAGEMENT

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture				
DSE 3: INSURANCE MANAGEMENT	4	3	1	NIL	Class XII	NIL

Course Objectives: To enable students to identify and manage different types of risks. They will be able to understand the concepts, types and principles of Insurance. Further, they will know the important aspects and technical components of management of Insurance business.

Learning Outcomes:

On successful completion of his course, the students will be able to:

- identify and analyze various types of risks faced by individuals and businesses, evaluate the role and importance of insurance in mitigating these risks, and differentiate between different types of insurance
- understand the principles of risk management, techniques for managing risks, and legal principles governing insurance contracts, and develop an understanding of real-world risk management scenarios.
- understand the legal Characteristics and components of insurance contracts, underwriting principles, claims settlement process, and the regulatory framework of the insurance industry in India.
- comprehend the different aspects of insurance business management, including reinsurance, alternative risk transfer, investments, rate-making, coinsurance, and important provisions of insurance policies.

Course Contents

Unit 1: Insurance and Risk (12 Hours)

Risk – Definitions of Risk, Chance of Loss, Peril and Hazard, Classification of Risk, Major Personal Risks and Commercial Risks, Burden of Risk on Economy and Society. Insurance – Definition of Insurance, Basic Characteristics of Insurance, Law of Large Numbers, Characteristics of an Ideally Insurable Risk, Benefits and Costs of Insurance to Society. Life and General Insurance: Types, Difference between Life and General insurance.

Unit 2: Insurance Principles & Risk Management (12 Hours)

Risk Management – Meaning of Risk Management, Objectives of Risk Management, Steps in the Risk Management Process, Techniques for Managing Risk, Benefits of Risk Management. Personal Risk Management. Enterprise Risk Management (briefly) – Concept & Benefits. Case Studies on Management of different Personal and Business Risk to be discussed. Fundamental

Legal Principles – Principle of Indemnity, Principle of Insurable Interest, Principle of Subrogation, Principle of Utmost Good Faith. Requirements of an Insurance Contract.

Unit 3: Insurance Company Operations (12 Hours)

Requirements of anInsurance Contract, Distinct Legal Characteristics of Insurance Contracts. Components of Insurance Contracts – Declarations, Definitions, Insuring agreement, Exclusions, Conditions, and Miscellaneous provisions. Underwriting – Underwriting Policy, Underwriting Principles, Sources of Underwriting Information. Sales and Marketing activities of Insurers. Claims Settlement – Basic Objective, Parties Involved & Steps in Settlement Process. Endorsements and Riders. Deductibles – Concepts and Purpose of Deductibles. Regulatory Framework of Insurance in India (briefly) – Insurance Legislation and IRDA.

Unit 4: Important Aspects of Insurance Business Management (9 Hours)

Reinsurance – Definitions, Reasons for Reinsurance, Types of Reinsurance – Facultative & Treaty Reinsurance, Methods of Sharing Losses (Numerical Qs). Alternatives to Traditional Reinsurance – Securitization of Risk and Catastrophe Bonds. Insurance and Investments – Life Insurance Investments, Property and Casualty Insurance Investments. Rate Making – Concept, Objectives, Rate Making Methods (Numerical Qs) – Judgement, Class and Merit Rating Method. Coinsurance – Nature, Purpose and Problems. Other Important Provisions – Pro Rata liability, Contribution by Equal Shares, and Primary and Excess Insurance.

Essential Readings:

1. Rejda, G. E., McNamara, M. J., & Rabel, W. H. (2021). *Principles of Risk Management and Insurance*. (14th ed.). Pearson Education.
2. Mishra, M. N., & Mishra, S. B. (2016). *Insurance Principles and Practice*. (14th ed.). S. Chand and Company.

Additional Readings:

1. Gupta, P. K. (2022). *Insurance and Risk Management* (2nd ed.). Himalaya Publishing House.
2. Institute of Chartered Accountants of India. (2021). *Diploma in Insurance and Risk Management* [Course modules].

Teaching Learning Process:

Class room lecture, Numerical Problem solving, Case study discussion, Class presentation on the assigned topic by students individually or in group, Workshop, Tutorials, Role play.

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

Key Words

Risk Management, Principles of Insurance, Insurance Contract, Underwriting, Reinsurance, Rate Making and Coinsurance.

DSE 4:INTERNATIONAL FINANCIAL ARCHITECTURE

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture				
DSE 4: INTERNATIONAL FINANCIAL ARCHITECTURE	4	3	1	NIL	Class XII	NIL

Course Objective: This paper will acquaint students with the latest developments in the international business relationships and agencies funding for country's development.

Learning Outcomes:

After completion of this paper:

- Students shall be aware of the latest development in the international business relationships which will enable them to make better decisions related to international business.
- Students shall have the knowledge of different international investment avenues and opportunities available.
- Students shall be aware of various regional trading blocks, international institutions and funding agencies.

Course Contents:

Unit 1(12 Hours)
Review of Economic Theory on International Trade: Basis for international trade; gains from trade; distributional issues, policy instruments and their impact, political economy. Importance, nature and scope of international relation, modes of entry into international business, internationalization process and managerial implications. Domestic, foreign and global environments and their impact on international business decision; Growing concern forgreen trades.

Unit 2(12 Hours)
International economic & trading environment: Regional integration and trade blocks, regionalism v/s. multilateralism, European Union.Integration of developing countries – BRICS, ASEAN, SAARC, SAFTA, NAFTA, G-20. World trade in goods and services – Major trends and developments; World trade and protectionism – Tariff and non-tariffbarriers; Counter trade, UNCTAD, WTO, GATT, GATS, TRIM, TRIPS; India's role in facilitating trade relations under BRICS, SAARC, SAFTA, ASEAN and to WTO.

Unit 3(9 Hours)
International investment: Types and significance of foreign investments, factors affecting international investment, growth and dispersion of FDI, Cross border mergers and acquisition, foreign investment in India-Impact of reforms on competitiveness of the Indian Firms, EURO/ADR issues, ECBs; current economic crises in US/Europe/Asia and its impact on economic growth in India.

Unit 4(12 Hours)
Economic institutions – International Monetary Funds (IMF), World Bank (IBRD, IDA, IFC), Asian Development Bank, BRICS Development Bank, European Bank for Reconstruction and Development, Bilateral funding arrangements with special reference to Japan International Cooperation Agencies (JICA), agencies of USA; Case studies on Bilateral financing arrangements of Indian projects like Delhi Metro, Dedicated Freight corridor, Nuclear Power Plant etc.

Essential Readings:
1. Radebaugh, L.H., Sullivan, D.P., Salwan, P., & Daniels, J.D. (n.d.). International Business Environments and Operations (15th ed). Pearson.
2. Hill, W. L., Charles, & Jain, A.K. (2008). International Business (6th ed). India: McGraw Hill.
Additional Readings:
1. Bennet, R. (1999). International Business. Financial Times. London: Pitman Publishing.

2. Vyuptakesh, S. (2003). International Business (2nd ed). India: Pearson Education.

3. Krueger, A. O. (2002). Economic Policy Reforms and the Indian Economy. OUP.

4. Velasquez, M. G. (2012). Business Ethics Concepts and Cases (7th ed.). New Delhi: PHI.

Teaching Learning Process:
Class room lecture, Case study discussion, Numerical Problem solving, Class presentation on the assigned topic by students individually or in group, Workshop, Tutorials, Role play.

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

Key Words

International Trade, Trade blocks, Foreign investments, ECBs, Bilateral financing, Multilateral Institutions.

GENERIC ELECTIVE (GE) COURSES

GE1: FUNDAMENTALS OF FINANCIAL MANAGEMENT

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
GE1: Fundamentals of Financial Management	4	3	1	NIL	Class XII	NIL

Course Objectives:

- To provide an understanding of the essential elements of the financial environment in which the business firm operates.
- To acquaint students with the techniques of financial management and their applications for business decision making.

Learning Outcome:

Upon completion of the course a learner shall be competent to:

- Understand the concept of time value of money, process of capital budgeting, concepts of cost of capital and other aspects of financing, dividend and working capital decisions
- Understand the process of making investments, raising finance for investment in fixed and current assets and distribution of surplus from business operations.
- Apply the techniques of time value of money in real life situations, techniques of capital budgeting in investment decisions, process to calculate the cost of capital and share price based on dividends along with the estimation of working capital and its components.
- Evaluate the investment opportunities available, the various financing mix that can be used to derive the maximum value from the investment opportunities, the optimal dividend payout and monitor the current asset requirements.
- Analyse the evaluation outcomes to choose the best investment opportunity at the lowest cost of financing and adopt the optimal dividend pay-out along with the optimal level of liquidity through the working capital route to derive maximum wealth.

Create a portfolio of investments at the best possible financing and dividend mix with the most appropriate working capital composition that will create maximum wealth under the given constraints.

Course Contents:

Unit 1 **(9 Hours)**

Nature of Financial Management: Finance and related disciplines; Scope of Financial Management; Functions of finance – Finance Decision, Investment Decision, Dividend Decision; Objectives of Financial Management; Organisation of finance function; Concept of Time Value of Money – present value, future value, annuity.

Unit 2 **(16 Hours)**

Strategic Investment Decisions: Capital Budgeting -; Nature and meaning of capital budgeting; Principles and Process; Estimation of relevant cash flows and terminal value; Evaluation techniques– Payback period, Accounting Rate of Return, Net Present Value, Internal Rate of Return, Net Terminal Value, Profitability Index Method.

Cost of Capital: Meaning and concept, Measurement of cost of capital – Cost of debt, Cost of Equity Share; Cost of Preference Share; Costof Retained Earning; Computation of over-all cost of capital based on Historical and Market weights (WACC).

Unit 3 **(12 Hours)**

Strategic Financing Decisions- Capital Structure, Theories and Value of the firm – Net Income approach, Net Operating Income approach, Traditional approach, Modigliani Miller (MM) model.Leverage analysis and EBIT-EPS Analysis: Concept of leverage, Types of leverage: Operating leverage, Financial leverage, Combined leverage; EBIT-EPS Analysis. Guidelines for capital structure planning, Link between capital structure and capital budgeting. Dividend Decisions: Factors determining dividend policy, Theories of dividend- Gordon model, Walter model, MM Hypothesis. Dividend policies in practice.

Unit 4 **(8 Hours)**

Working Capital Management: Determination of Working Capital. Determining financing mix of working capital. Receivables Management – Objectives; Credit Policy, Cash Discount, Debtors Outstanding and Ageing Analysis; Costs – Collection Cost, Capital Cost, Default Cost, Delinquency Cost. Management of Cash (Theory only) – Need for Cash, Cash Management Techniques (Lock box, Concentration Banking). Inventory Management (Theory only) – ABC Analysis; Minimum Level; Maximum Level; Reorder Level; Safety Stock; EOQ (Basic Model).

Essential Readings:

1. Berk, J., & DeMarzo, P. (n.d.). Corporate Finance (5th ed.). Pearson - Prentice Hall.
2. Horne, J. C. V., & Wachowicz, J. M. (n.d.). Fundamentals of Financial Management (13th ed.). FT Prentice Hall, Pearson Education.
3. Pandey, I. M. (n.d.). Financial Management. Pearson.

Additional Readings:

1. Khan, M. Y., & Jain, P. K. (n.d.). Financial Management Text, Problems, and Cases. Tata McGraw Hill Publishing Co. Ltd.
2. Brealey, R. R., Myers, S., Allen, F., & Mohanty, P. (n.d.). Principles of Corporate Finance. New Delhi: Tata Mc-Graw Hill.

Teaching – Learning Process:

The teaching-learning process for this paper would include classroom lectures and tutorials; Case study discussions; class presentations; Workshops.

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

Key Words

Finance, Capital Budgeting, Wealth Maximisation, Cost of Capital, Dividends, Leverage, Working Capital Management.

GE 3: FUNDAMENTALS OF STOCK TRADING

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
GE 3: FUNDAMENTALS OF STOCK TRADING	4	3	1	NIL	Class XII	NIL

Course Objectives:

The course will help the learner to:

- Understand the fundamentals of investment, investment environment, and the principles of sound investment.
- Gain knowledge of the Indian securities market, including primary and secondary markets, IPOs, stock exchanges, and stock indices.
- Learn about online security trading, including trading mechanisms, settlement processes, and different types of orders.
- Understand mutual funds, their structure, advantages, and limitations, as well as different types of schemes and plans.
- Gain knowledge of how to evaluate investment alternatives, including criteria for evaluating mutual funds, and performance evaluation of mutual funds.

Learning Outcomes:

The course will help the learner to:

- Understand the fundamentals of investment, investment environment and principles of sound investment, and evaluate different investment alternatives based on criteria such as risk and return.
- Analyze the Indian securities market, differentiate between capital and money markets, primary and secondary markets, and comprehend the role of market participants such as issuers, investors, and intermediaries.
- Explain the trading mechanism on exchanges, online trading mechanisms, and the types of orders and conditions associated with it.
- Evaluate mutual fund schemes, their structures, advantages, and limitations, and comprehend the factors affecting the choice of mutual funds.

- Analyze the performance evaluation of mutual funds and comprehend the ranking methodology used by CRISIL for mutual funds.

Course Contents

Unit 1: Basics of Investment & Investment Environment (9 Hours)

Fundamentals of Investment, Features of Investment, Investment Environment. Principles of sound Investment. The Investment Decision Process. Modes of Investment – Direct Investing and Indirect Investing, Approaches to Investing – Active Investing and Passive Investing. Risk Return Trade Off. Types of Securities – Equity Shares, Bonds and Debentures ,and Government Securities. Alternative Investments (Briefly) – Mutual Funds, Derivatives, Unit Linked Insurance Policy (ULIP), Exchange-traded funds (ETFs), Collective Investment Schemes (CIS), Real Estate Investment Trusts (REITs). Criteria for Evaluation of Investment Alternatives.

Unit 2: Indian Securities Market (12 Hours)

Securities Market – Capital Market and Money Market, Difference between Capital and Money Market, Primary and Secondary Market, Difference between Primary and Secondary Market. Over the Counter (OTC) and Exchange Traded market. Modes of offering Equity Shares – Initial Public Offering (IPO), Follow-on Public Offering (FPO), Difference between IPO and FPO, Difference between Offer for sale (OFS) and Public offer (IPO/FPO).Methods of IPO Pricing – Fixed Price Method and Book Building Method, The Book Building Process, Fixed Price method v/s Book building Method. Market Participants – Issuer of Securities, Investors, and Intermediaries. Role of Stock Exchange. Stock Exchanges in India. Securities (Stock) Indices – Broad Market Indices, Sectoral Indices and Thematic Indices.

Unit 3: Online Security Trading (12 Hours)

Trading Mechanism on Exchanges, Trading and Settlement at NSE – National Securities Clearing Corporation Limited (NSCCL), Clearing Mechanism, Clearing & Settlement (Equities).

Online Trading – Introduction, Online Trading Mechanism. Online Real Time Price Quotations – Bid Price, Ask Price, Bid-Ask Spread, Tick Size, LTP, ATP. Circuit Breakers – Upper Circuit, Lower Circuit, NSE rules regarding Circuit Breaks. Price Bands, Rules regarding Price Bands on NSE. Electronic Order Book. Types of Orders – Market Order, Limit Order, Stop Loss Order, Stop Loss (Limit) Order, Stop Loss (Market) Order, After Market Order (AMO). Order Conditions – Price related conditions, Time related conditions, Quantity related conditions. Placing an Order, View/Modify/Cancel an Order.

Unit 4: Investing in Mutual Funds (12 Hours)

Concept of Mutual Funds, Mutual Funds are an Indirect Mode of Investment, Evolution of Mutual Funds in India, Structure of Mutual Funds (Sponsor, Board of Trustees, AMC and Custodian). Advantages of Investing in Mutual Funds, Limitations of Investing in Mutual Funds. Types of Mutual Fund Schemes – Open ended, Close ended, and Interval funds;

Domestic Funds and Off-Shore funds; Growth funds, Income funds and Balanced funds; Equity Fund schemes, Debt fund schemes, Gilt Funds, Money Market Funds, Tax Saving or Equity Linked Savings Scheme (ELSS), Index schemes, Sectoral Funds, Ethical Funds, Load and No-Load Fund, Fund of Funds, Systematic Investment Plans (SIP), Systematic Withdrawal Plans (SWP), Systematic Transfer Plans (STP), and Exchange Traded Funds. Net Asset Value, Cost incurred and Return from Mutual funds, Types of Loads. Performance Evaluation of Mutual Funds. Factors affecting choice of Mutual funds. Mutual funds in India. CRISIL and their Rankings for mutual funds – Ranking Methodology and Usage of Mutual Fund Rankings.

Essential Readings:

- Bhalla, V.K. (2018). Investment Management: Security Analysis and Portfolio Management. S. Chand Publishing.
- Varshney, R.L., & Bhalla, V.K. (2017). Indian Financial System: Theory and Practice. S. Chand Publishing.
- Krishnan, R. (2016). Mutual Fund Industry in India: A Study of Investment Behaviour. Springer.
- Joshi, P.C. (2017). Online Trading: How to Trade Online for Beginners. Createspace Independent Publishing Platform.

Additional Readings:

- Bodie, Z., Kane, A., & Marcus, A. J. (2018). Investments. McGraw-Hill Education.
- Fabozzi, F. J., Neave, E. H., & Zhou, G. (2019). Investments: analysis and behavior. Cengage Learning.
- Kapoor, J. R., Dlabay, L. R., & Hughes, R. J. (2017). Personal finance. McGraw-Hill Education

Teaching Learning Process:

Class room lecture, Numerical Problem solving, Case study discussion, Class presentation on the assigned topic by students individually or in group, Workshop, Tutorials, Role play.

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

Key Words

Investments, Indian Securities Market, Initial Public Offer (IPO), Online Security Trading, and Investing in Mutual Funds.

GE5: ESSENTIALS OF FINANCIAL INVESTMENTS

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
GE5: ESSENTIALS OF FINANCIAL INVESTMENTS	4	3	1	NIL	Class XII	NIL

Course Objectives:

- Tofamiliarizestudentswiththeessentialconceptsandfundamentalsoffinancialinvestments.
- To enablestudentstounderstandandmakeinformedchoiceaboutthevariousavailablefinancial investment alternatives.

Learning Outcomes:

On successful completion of his course, the students will be able to:

- Understand the fundamentals of financial investments and the investment decision process.
- Able to compute various measures of risk and return, and understand their role for evaluating investments.
- Understand and carry out security analysis using different approaches.
- Understand basic approaches to valuation of securities and carry out portfolio analysis.

Course Contents

Unit 1: Investments – An Overview (9 Hours)

Concept of Investment, Financial Investment Vs. Real Investment, Investment Vs Speculation, Objectives or Features of Investment, Risk Return Trade Off, Investment Environment – Overview of Securities Market and Different Types of Financial Investment. Investment Decision Process, Direct Investing Vs Indirect Investing, Approaches to Investing – Active Vs Passive. Diversification, Hedging and Arbitrage.

Unit 2: Risk – Return Analysis (12 Hours)

Concepts of Return and Risk, Types of Return - their Calculation & Utility: Absolute Return, Average Return, Expected Return, Portfolio Return, Holding Period Return, Effective Annualized Return, Risk-Adjusted Return. Causes (or Sources) and Types of Risk – Systematic and Unsystematic Risk, Components of Systematic and Unsystematic Risk, Calculation of

Total, Systematic and Unsystematic Risk. Impact of Taxes and Inflation on Investment – Computation of Post Tax and Real Returns.

Unit 3: Security Analysis (12 Hours)

Approaches to Security Analysis – Fundamental Analysis, Technical Analysis, and Efficient Market Hypothesis (EMH). Fundamental Analysis – EIC Framework, Economic Analysis, Industry Analysis, and Company Analysis. Technical Analysis – Basic Tenets of Technical Analysis, Tool of Technical Analysis – Charts, and Technical Indicators, Limitations of Technical Analysis. Difference between Fundamental Analysis and Technical Analysis. Efficient Market Theory (EMH) – Concept, Forms of Market Efficiency, Weak Form Hypothesis, Semi Strong Form, and Strong Form of Market Efficiency. Implications of EMH.

Unit 4: Fundamentals of Valuation and Portfolio Analysis (12 Hours)

Valuation of Equity Shares – Peculiar features of Equity Shares, Dividend Discount Model, Earning Multiplier or Price-Earnings (P/E) Model, and Capital Asset Pricing Model (CAPM). Valuation of Fixed Income Securities – Bond Fundamentals, Types of Bonds, Bond Valuation. Portfolio Analysis – Portfolio Management Process, Portfolio Analysis – Markowitz Model, Portfolio Risk, Portfolio Return.

Essential Readings:

1. Tripathi, V. (n.d.). Security Analysis and Portfolio Management. Taxmann Publications.

2. Chandra, P. (n.d.). Investment Analysis and Portfolio Management. McGraw Hill Education.

Additional Readings:

1. Rustagi, R. P. (n.d.). Investment Management. Sultan Chand Publications.
2. Reilly, F. K., & Brown, K. C. (n.d.). Analysis of Investments and Management of Portfolios. Cengage India Pvt. Ltd.

Teaching Learning Process:

Class room lecture, Numerical Problem solving, Case study discussion, Class presentation on the assigned topic by students individually or in group, Workshop, Tutorials, Role play.

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

Key Words: Financial Investment, Risk and Return, Fundamental Analysis, Technical Analysis, Efficient Market Hypothesis, Portfolio Analysis, Valuation of Securities.

GE7: EMERGINGBANKINGANDFINANCIALSERVICES

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
GE7: EMERGING BANKING AND FINANCIAL SERVICES	4	3	1	NIL	Class XII	NIL

Course Objective:

- To familiarize students with banking reforms in the last decade, conceptof neo banks, rising issue of non-performing asset and its impact on day-to-day functioning.
- To make students learnaboutfinancialservicessuchasLeasing,HirePurchase,CreditRating,SecuritizationandVenture Capital Financing.

Learning Outcomes:

On successful completion of his course, the students will be able to:

- Understand the Indian banking system and latest developments in this sector.
- Analyse the implications of non-performing assets in the banking sector on the economy.
- Evaluate the implications of mergers and acquisitions in the banking system and appreciate the need for the same.
- Understanding various financial services and using the same in personal banking and non-banking activities.

Course Contents:

Unit1 (12 Hours) An overview of the Indian Banking system;Major Banking Reformsinthelastdecade:Paymentbanks,MonetaryPolicyCommittee,MCLRBasedLending,InnovativeRemittanceServices; Issues in financial reforms and restructuring; Future agenda of reforms: Assessing Non-Performing Assets in Indian Banking, Previous methodologies for recovery, Impact of Gross NPAsonabank'sbottomline–burningneedforbadbanks,FunctioningofBadBanks,Governmentbackingforbad banks-NationalAssetReconstruction CompanyLtd.(NARCL).

Unit 2 (12 Hours) Introductiontoneobanks,Functionsofneobanks,OperatingModelofneobanks,Regulatory requirements for setting up and running neobanks, Emerging need for neobanks, neo banks vstraditionalbanks.Merger&Acquisition:Introduction,Benefitsofmergers,Synergiesaccruingou

tofmergers, Regulatory mechanisms surrounding M&A in banking, Case-studies of recent bankingmergersandrelated outcomes.

Unit 3 (12 Hours) Leasing and Hire Purchase: Concepts of leasing, types of leasing – financial & operating lease, directleaseandsales&leaseback,advantagesandlimitationsofleasing,Leaserentaldetermination; Financelease evaluation problems Lessee's angle (PV and IRR methods) and Lessor's perspective, HirePurchase interest &Instalment, difference between Hire Purchase & Leasing, Choice criteria betweenLeasingand Hire Purchase,mathematics of HP.

Unit 4 (9 Hours) Venture Capital: Concept, history and evolution of VC, the venture investment process, various stepsinventurefinancing,incubationfinancing.CreditRatings:Introduction,typesofcreditrating,advantagesanddisadvantagesofcreditratings,Creditratingagenciesandtheirmethodology,International credit rating practices. Securitization: Concept and Process, Credit Enhancement partiesto a Securitization Transaction, Instruments of Securitization, Types of Securities, Securitization inIndia.

Essential Readings:

1. Pathak,B. (2018). *IndianFinancialSystem*. Pearson Publication. (5thed).
2. Khan,M.Y.(2017).*Financialservices*.McGrawHill Education. (6thed).
3. Machiraju,H.R.(2002).*IndianFinancial System*.VikasPublicationHouse. (5thed).

AdditionalReadings:

1. Verma, J. (1996).*Bharat'smanualofmerchantbanking:Concept,practicesandprocedureswith SEBIclarifications, guidelines,rules andregulations.* BharatLawHouse.
2. Sriram K. *HandBookofLeasing,HirePurchase&Factoring*. Institute of Chartered Financial Analysts of India.
3. Wright M., Watkins T. &Ennew C. (2016). *MarketingofFinancialServices*. Routledge

Teaching Learning Process:

Classroomlecture,NumericalProblemsolving,Casestudydiscussion,Classpresentationonthe assigned topic bystudentsindividuallyorin group,Workshop, Tutorials, Role play.

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

Key Words

Banking,MergerandAcquisition,Neobanks,NPA,Leasing,HirePurchase,CreditRatings,Securitization,Venture Capital.

GE9: ECONOMIC LEGISLATION

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
GE9: ECONOMIC LEGISLATION	4	3	1	NIL	Class XII	NIL

Course Objective(s):

- To familiarise students with various legislations in the areas of foreign trade, competition, bankruptcy and economic offences.
- To provide an overview of detailed provisions of various economic legislation.
- To enable students to understand the legal implications of unlawful practices and legal recourse available.

Learning Outcomes:

On successful completion of this course, the students will be able to:

- Understand the legal framework relating to foreign exchange, competition, insolvency and fugitive economic offenders.
- Recognise the legal issues in any business transaction and understand lawful way of conduct of economic activities.
- Analyse the legal implications of any economic decision.
- Evaluate legal remedies available in case of bankruptcy or any wrongdoing.

Course Contents:

Unit 1: Competition Act and Fugitive Economic Offenders Act (15 Hours)

The Competition Act, 2002: Introduction, Prohibition of certain agreements, abuse of dominant position and regulation of combinations, Competition Commission of India, Duties, Powers and Functions of Commission, Penalties, Appellate Tribunal.

The Fugitive Economic Offenders Act: Scope and applicability of Act, Confiscation of property, Powers of Directors, Power of Survey, Search and Seizure, notice, procedure for hearing application, Declaration of Fugitive Economic Offender, Power to disallow civil claims, Management of properties confiscated under this Act, Rules of evidence, Appeals.

Unit 2: The Insolvency and Bankruptcy Code (9 Hours)

The Insolvency and Bankruptcy Code, 2016: Introduction of Insolvency and bankruptcy code**,** Corporate Insolvency Resolution Process, Liquidation Process, Fast Track Insolvency Resolution for Corporate Persons, Voluntary Liquidation of Corporate Persons, Adjudicating

Authority for Corporate Persons, Offences and Penalties, Insolvency resolution and bankruptcy for individuals and partnership firms, Regulation of Insolvency professionals, agencies and information utilities.

Unit 3: The Prevention of Money Laundering Act (12 Hours)

The prevention of money laundering Act, 2002:Introduction and definitions, Punishment for the offence of Money Laundering, Attachment, Adjudication and Confiscation, Obligation of Banking Companies, Financial Institutions and Intermediaries, Summons, Searches And Seizures, Appellate Tribunal and Special Courts, Recovery of fine or penalty.

Unit 4: The Foreign Exchange Management Act (9 Hours)

The Foreign Exchange Management Act, 1999:Introduction of FEMA, Difference between FERA and FEMA, Application and Commencement of FEMA, Regulation and Management of Foreign Exchange, Authorised Person, Contraventions and Penalties, Compounding of Offences, Adjudication and Appeal, Directorate of Enforcement.

Essential Readings:

1. Maheshwari & Maheshwari. *Principle of Business Law.* Himalaya Publishing House

2. Aggarwal R. (2014). *Mercantile & Commercial Law*. Taxmann Publications
3. Kucchal M. &Kuchhal V. (2018). *Mercantile Law*. Vikas Publishing House (P) Ltd.

4. Kapoor N. D. (2018). *Elements of Mercantile Law*. Sultan Chand Publications

Teaching – Learning Process:

Lecture, Discussion, Power Point Presentations. Course contents shall be discussed in the light of relevant case laws.

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

Key Words

CCI, Prevention of Money Laundering, Insolvency and Bankruptcy Code, FEMA, Fugitive Economic Offenders Act.

SEMESTER-III
BACHELOR OF MANAGEMENT STUDIES

DEPARTMENT OF FINANCE AND BUSINESS ECONOMICS,
Faculty of Applied Social Sciences and Humanities
Category I

DISCIPLINE SPECIFIC CORE COURSE -7 (DSC-7) – : INTRODUCTION TO BUSINESS ANALYTICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Introduction to Business Analytics (DSC 7)	4	3	0	1	Class XII	Basics of Statistics

Learning Objectives

- Familiarise students with basics of predictive and prescriptive analytics in order to solve some business problems using different types of data
- Students should be able to solve business problems, analyse data sets using various relevant statistical software packages, and interpret and effectively communicate the results

Learning outcomes

On successful completion of the course the learner will be able to:

- Understand fundamental concepts in machine learning
- Build basic models in statistical software
- Interpret results
- Compare results of different models to select the best fit
- Drive business decisions using model output

SYLLABUS OF DSC-7

Unit 1: Introduction to Business Analytics and Descriptive Analytics (14 hours)

Introduction to Business Analytics: Role of Analytics for Data Driven Decision Making; Types: Descriptive Analytics, Predictive Analytics, and Prescriptive Analytics. Introduction to the concepts of Big Data Analytics, Web and Social Media Analytics. Overview of Machine Learning Algorithms. Introduction to relevant statistical software packages and carrying out descriptive analysis through it.

Unit 2: Predictive Analytics 1 **(9 hours)**

Simple Linear Regression: Estimation of Parameters, validation of simple linear regression model, Coefficient of determination, Significance tests, Residual analysis, Confidence and Prediction intervals.

Multiple Linear Regression: Interpretation of Partial regression coefficients, working with categorical variables, Multi-collinearity and VIF, Outlier Analysis, Auto-correlation, transformation of variables, variable selection in regression model building.

Unit 3: Predictive Analytics 2 **(9 hours)**

Logistic and Multinomial Regression: Logistic function, Estimation of probability using logistic regression, Omnibus Test, Wald Test, Hosmer Lemshow Test, Pseudo R Square. **Model Performance:** Classification table (sensitivity, specificity, accuracy paradox, precision, F score), Gini coefficient, ROC, AUC, methods for determining the optimal cutoff probability.

Unit 4: Machine Learning Models **(13 hours)**

Decision Trees: Introduction, Chi-Square Automatic Interaction Detection, Bonferroni Correction, Classification and Regression Tree, Gini Impurity Index, Entropy, Cost based splitting Criteria, Ensemble Methods, Random Forest.

Clustering: Introduction, Distance and Dissimilarity measures used in clustering, Quality and Optimal Number of clusters, Clustering Algorithms, K-Means clustering, Hierarchical Clustering.

Practical component (30 hours)

Practical Exercises:

1. Prepare and import data (financial data of companies, macroeconomic data, primary data collected through questionnaires). Calculate and interpret descriptive statistics on R/Python.
2. Perform simple OLS regression on R/Python and interpret the results obtained.
3. Test the assumptions of OLS (multicollinearity, autocorrelation, normality etc.) on R/Python.
4. Perform regression analysis with categorical/dummy/qualitative variables on R/Python.
5. Perform probabilistic regression models (logit and probit) along with validation tests and classification table on R/Python.
6. Apply and interpret the results of decision trees and clustering models on R and Python.

Essential/recommended readings

1. Business Analytics: The Science of Data Driven Decision Making, First Edition (2017), U Dinesh Kumar, Wiley India.

Suggestive readings

1. Introduction to Machine Learning with Python, Andreas C. Mueller and Sarah Guido, O'Reilly Media, Inc.
2. Data Mining or Business Analytics – Concepts, Techniques, and Applications in Python. GalitShmueli, Peter C. Bruce, Peter Gedeck, and Nitin R. Patel. Wiley.
3. Relevant Case Studies from different functional domains of business to be used while covering the Predictive Analytics and Machine Learning models. Following Case Studies may be taken up along with the course topics:
   - Merton Truck Company (HBS Case).

- Supply Chain Optimization at Madurai Aavin Milk Dairy (IIMB Case).
- Red Brand Canners (Stanford Case); Managing Linen at Apollo Hospitals (IIMB Case).

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 8 (DSC-8): MACROECONOMICS

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Macroeconomics (DSC 8)	4	3	1	0	Class XII	Basic Microeconomics

Learning Objectives

- Determination of and linkages between major economic variables; level of output and prices, inflation, interest rates and exchange rates.
- The course is designed to study the impact of monetary and fiscal policy on the aggregate behaviour of individuals.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand the determination of key macroeconomic variables.
- Describe models of determination of equilibrium outputs, prices and rate of interest.
- Analyse the role of the Government in an economy and examine how it uses its fiscal and monetary policy to influence macroeconomic variables.
- Explain the working of an open economy

SYLLABUS OF DSC- 8

Unit 1 **(6 hours)**

Basic understanding of Ancient Indian Economy, Wealth and its various aspects as per Vedic Philosophy; Kautilya's view on Ways of Financial Management and Economic Governance, Proposition of Welfare states and Good Governance by Kautilya as the foundation of strong Indian Economy; Relevance of Kautilya'sArthsashtra in making of modern and advanced India.

Unit 2 **(18 hours)**

Classical theory of income and employment: Quantity Theory of Money–Cambridge version, Classical aggregate demand curve, Classical theory of interest rate, effect of fiscal and monetary policy.

Simple Keynesian model: goods and money market equilibrium, changes in equilibrium, multiplier, effect of fiscal and monetary policy; IS-LM model: properties of IS-LM curves, factors affecting the position and slope of IS-LM curves, determination of equilibrium income and interest rates, effect of monetary and fiscal policy; slopes of IS-LM curves and effectiveness of fiscal and monetary policies.

Unit 3 **(9 hours)**

Inflation: meaning; demand and supply side factors; natural rate theory; monetary policy-output and inflation (monetarist view); Phillips curve: short run and long run.

Unit 4 **(12 hours)**

Brief introduction to Balance of Payment (BOP) account; market for foreign exchange and exchange rate; monetary and fiscal policy in open economy; Mundell Fleming model: perfect capital mobility and imperfect capital mobility under fixed and flexible exchange rate.

Essential/recommended readings

1. Froyen, R. P. (2011): Macroeconomics-theories and policies (8th Edition). Pearson.
2. Dornbusch and Fischer (2010): Macro economics (9th Edition).Tata McGraw Hill.N
3. Gregory Mankiw (2010). Macro economics (7th Edition).Worth Publishers
4. Kautilya'sArthashastra-The way of Financial management and economic governance (2012)(6th Edition) Jaico Publishing House

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE– 9 (DSC-9): ORGANISATIONAL BEHAVIOUR

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Organisational Behaviour (DSC 9)	4	3	1	0	Class XII	None

Learning Objectives

- Course presents an integrated view of human behaviour in organisations.
- Building understanding of individual and group behaviour at work for improving the effectiveness of organisations.

Learning outcomes

On successful completion of the course the learner will be able to:

- Understand the importance of Organisational Behaviour as a field of study.
- Understand the role of Perception, personality and learning in explaining Individual behaviour and to apply different motivational theories and leadership styles to increase the productivity and job satisfaction of employees.
- Understand the foundations of group behaviour and the framework for organisational change and development.
- Identify methods to enhance individual and Organisational wellbeing and resolve organisational problems.

SYLLABUS OF DSC-9

Unit 1: Core Concepts in OB in Managing Individual Behaviour (12 hours)

Conceptual Foundations and Importance of organizational Behaviour. Perception and Attribution: Concept, Factors affecting Perception, Attribution theory, Perceptual Organization and Errors in Perception. Personality: Concept, Factors affecting personality and Theories. Learning: Concept and Theories of Learning, Concept of Reinforcement, Schedules of Reinforcement.

Unit 2: Motivation at work, Interpersonal relations & Change Management (12 hours)

Motivation: Concepts and their application, Content theories (Maslow, McClelland and Herzberg's Theories); Process theories (Expectancy theory, Equity theory). Analysis of Interpersonal Relationship: Transactional Analysis, Johari Window. Organisational Change: Concept, Resistance to change, managing resistance to change, Kurt Lewin Theory of Change.

Unit 3: Leadership and Group Processes (9 hours)

Leadership: Trait Approach, Behavioural theories (Ohio and Michigan State Studies, and Blake & Mouton's Managerial grid), and Contingency theories (Fiedler's Contingency Model, Hersey & Blanchard's Situational Leadership Model) Contemporary Leadership issues: Charismatic, Transactional and Transformational Leadership. Groups and Teams: Definition, Stages of Group Development, Group Processes-Group Cohesiveness, Group Think, Group Shift.

Unit 4: Managing Conflict and Enhancing Wellbeing (12 hours)

Organisational Power and Politics: Concept, Sources of Power, Tactics to gain power in Organizations. Nature of organisational politics. Conflict: Concept, Sources, Types, Stages of conflict, Management of conflict. Well-being at Work: Importance and Impact of employee emotions and emotional intelligence in organisations. Work stress and its management.

Essential/recommended readings

1. Stephen P. Robbins, T. A. (2016). Organisational Behavior. Pearson.='
2. Aswathappa, K., & Reddy, G. S. (2009). Organisational behaviour (Vol. 20). Mumbai: Himalaya Publishing House
3. Luthans Fred, Organisational Behaviour, Tata Mc Graw Hill.

4. Singh Kavita, Organisational Behaviour, Pearson.

Suggestive readings

1. Greenberg Jerald and Baron Robert A.: Behavior in Organisations: Understanding and Managing Human side of work, Prentice Hall of India

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE – MARKETING (DSE-1)

DSE 1: RETAIL MANAGEMENT

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Retail Management (DSE 1)	4	3	1	0	Class XII	Basics of marketing

Learning Objectives

- Understand the concept and characteristics of retailing, emerging trends, and the evolution of the Indian retail industry.
- Gain knowledge about store location selection and store planning, including trading area analysis, site selection, store design and layout, and effective retail space management.
- Develop an understanding of retail marketing and merchandising, including retail marketing mix, advertising and sales promotion, CRM, buying organization formats and processes, merchandise planning, and pricing strategies.
- Acquire knowledge about the various elements/components of retail store operation, store administration, inventory management, customer service, store maintenance, and store security.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Describe the concept and characteristics of retailing and explain the emerging trends and evolution of the Indian retail industry.
- Analyze the characteristics of trading areas and evaluate different types of store locations based on the trading area analysis.

- Develop a retail marketing plan that includes the retail marketing mix, advertising and sales promotion strategies, store positioning, and CRM strategies.
- Formulate pricing objectives, strategies, and types of pricing based on external factors that impact a retail price strategy.
- Recognize and understand the operations-oriented policies, methods, and procedures used by successful retailers in today's global economy.

SYLLABUS OF DSE 1

Unit 1: Introduction to Retailing and Retail Formats (12 hours)

Introduction to Retailing: Definition, Characteristics, emerging trends in retailing, Evolution of retailing in India, Factors behind the change of Indian retail industry. Retail Formats: Retail institutions by ownership, Retail institutions by Store-Based Strategy Mix, Web, Non-store based, and other forms of Non-traditional Retailing.

Unit 2: Choosing a Store Location and Store Planning (12 hours)

Choosing a Store Location: Trading-Area analysis, characteristics of trading areas, Site selection, Types of locations, location and site evaluation. Store Planning: Design & Layout, Retail Image Mix, effective retail space management, floor space management.

Unit 3: Retail Marketing (12 hours)

Retail Marketing: Retail Marketing Mix, Advertising & Sales Promotion, Store Positioning, CRM. Retail Merchandising: Buying Organization Formats and Processes, Devising Merchandise Plans, Shrinkage in retail merchandise management, Markup & Markdown in merchandise management.

Unit 4: Merchandise Pricing and Retail Operations (9 hours)

Merchandise Pricing: Concept of Merchandise Pricing, Pricing Objectives, External factors affecting a retail price strategy, Pricing Strategies, Types of Pricing. Retail Operation: Elements/Components of Retail Store Operation, Store Administration, Store Manager – Responsibilities, Inventory Management, Customer Service, Management of Retail Outlet/Store, Store Maintenance, Store Security.

Essential/recommended Readings (latest edition of readings to be used)

1. Berman, B., & Evans, J. R. (2012). *Retail management.* Pearson Education.
2. Vedamani, G. G. (2010). *Retail management: Functional principles & practices*. Jaico Publishing House.

Suggested Readings (latest edition of readings to be used)

1. Cullen, P., & Newman, A. (2014). *Retailing: Environment & operations.* Cengage Learning

EMEA.
2. Bajaj, K., Tuli, G., & Srivastava, R. K. (2017). *Retail management.* Oxford University Press.
3. Singh, H. (2017). *Retail management.* S. Chand Publishing.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC ELECTIVE – MARKETING (DSE-2)

DSE 2: MARKETING OF SERVICES

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Marketing of Services (DSE 2)	4	3	1	0	Class XII	Basics of Marketing

Learning Objectives

- Understand the emerging service environment in India and the world. It emphasises the distinctive aspects of Services Marketing.
- Aims at equipping learners with concepts and techniques that help in taking decisions relating to various services marketing situations.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand the Concept and Importance of Services.
- Discuss the relevance of the services in the Indian economy.
- Examine the characteristics of the services in various industries.
- Analyse the role and relevance of Quality in Services.

SYLLABUS OF DSE 2

Unit 1: Introduction to Services Marketing (9 hours)

Defining a Service; Increasing Importance of Services; Nature of Services; Intangibility; Distinguishing Features of a Service; Managing Services; The Service Product; Relationship of Services and the organization; Services as an Opportunity; Service Industry across the world.

Unit 2: Relevance of Services (12 hours)

Emergence of The Service Economy; Outsourcing and Services; Overview of The Indian Economy; Services Sector in The Indian Economy, (Major players, Major services offered, Major centres; Circumstances that contributed to the Services boom in the Indian economy; Role and relevance of Services to the Indian economy; Classification of Services; Variety of Services offered by Indian organizations, Intangible and Tangible Services.

Unit 3: Differentiating Services (12 hours)

Distinguishing Features; The service; Promotion; Price; Place; People; Physical evidence; Process; Elements of Positioning; Service Differentiation; How Indian companies have been at the forefront of the Services industry; What do Indian companies offer to companies seeking Services support; Services as a source of competitive advantage; Increasing integration of Services with organizational plans and activities; Internal Services and External Services, Features, Relevance, Examples; Services Trainings and Hiring; Motivation and Employee Management in the Services sector; Factors affecting attempts of Services Differentiation.

Unit 4: Quality and Strategies (12 hours)

Defining Service Quality; Researching Service Quality; Service Quality Benchmarking (Servqual, TUV, ISO etc.); Setting Quality Standards; Managing the Marketing Mix for Quality; Organizing and Implementing Service Quality; Factors affecting Service Quality Management; Customer and Customer Value Proposition and Value Creation n Services; Managing the Service Encounter; Blueprinting; Managing Customer Demand, Frequency, Quality, Training, Content and Context; Developing Relationships with Customers; Distribution Strategy; Pricing of Services; Promoting Services;. Competitors of the Indian Services Industry; Future of Services Industry in India and elsewhere; Near-shoring and Reshoring; Services and the Gig Economy; Growth potential of the Services Industry.

Essential/recommended Readings (latest edition of readings to be used)

1. Zeithaml Valerie A, & Bitner Mary Jo., Gremler Dwayne D., Pandit Ajay. (2010). *Services Marketing* (5 edition). McGraw Hill.
2. Wirtz Jochen, Lovelock Christopher H, Chatterjee Jayanta., *Services Marketing*, (8e Edition), Pearson.

Suggested Readings (latest editions of readings to be used)

1. Woodruffe, Helen. (1998).*Service Marketing*. MacMillan India.
2. Zeithaml Valerie A, & Bitner Mary Jo., Gremler Dwayne D., Pandit Ajay. (2010). *Services Marketing* (5 edition). McGraw Hill.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE – MARKETING (DSE-3)

DSE 3: E COMMERCE

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
E-Commerce (DSE 3)	4	3	1	0	Class XII	Basics of Marketing

Learning Objectives

- To understand how electronic commerce is affecting business enterprises, governments, consumers and people in general.
- To understand the working of different types of e-commerce models
- To understand the transition of e-commerce in India
- To evaluate enabling technologies for e-commerce such as the internet, networks, search engines, software agents, and e-payment systems.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand traditional vs e-retailing and different models of e-retailing.
- Evaluate enabling technologies for e-commerce such as the internet, networks, search engines, software agents, and e-payment systems.
- Analyze website design, its role in B2C e-commerce, strategies, and goals.
- Analyze the security risks associated with e-commerce and discuss legal and ethical issues.

SYLLABUS OF DSE 3

Unit 1: Introduction to E-Commerce: Business Models and Concepts (12 Hours) E-Commerce: Meaning and Concept of e-Commerce, Brief history; Transition of e-Commerce in India; Advantages and Disadvantages of e-Commerce; IT act, 2000. E-Commerce models: B2B, B2C, C2C, C2B, G2C; Traditional vs e-retailing, Models of e-retailing; e-Services: Categories of e-services, Web-enabled services, matchmaking services.

Unit 2: Enabling Technologies for E-Commerce (9 Hours)

Technology in e-Commerce, the internet today and future, Networks and internets: communication switching, Internet protocol suite, IPv6, Search engines, software agents, Internet service provider, ISP policy in India, e-payment systems. Information selling on the web, E-

entertainment

Unit 3: Basic Techniques for E-Commerce (12 hours)

Web Hosting: Webhost-types, VPS-Domain for a website, DNS Information. Webhost: Bandwidth Control Panels- Statistics- uptime-Ecommerce. Website Design: Introduction, Role of Website in B2C Ecommerce, Website strategies and Goals. Search Engine Optimization (SEO): Introduction, Importance of SEO, History of Search Engines, how search Engines Operate, Crawling Techniques. Basic types of Search Tools, How People use search engines and portals, Page rank, Anatomy of Hyperlink, Keywords and Queries, how to conduct Keyword Research, Why site structure is important.

Unit 4: E-Marketing (12 Hours)

Concept, traditional marketing vs e-marketing, Browsing behaviour model, advantages of e-marketing, e-marketing strategies: permission-marketing, affiliate marketing, viral marketing, social media marketing, content marketing, m-commerce, e-commerce security risks, legal and ethical issues.

Essential/recommended Readings (latest editions of readings to be used)

1. Laudon, Kenneth C.: *E-Commerce: Business, Technology, Society,* 4th Edition, Pearson.
2. Joseph, S.J.: *E-Commerce: an Indian perspective,* Prentice-Hall of India.
3. Awad, Elias, *M.: Electronic Commerce,* Prentice-Hall of India.
4. Pandey, U.S. and Shukla, Saurabh: *E-Commerce and Mobile commerce Technologies,* S. Chand.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE – HUMAN RESOURCE MANAGEMENT (DSE-1)

DSE 1: INDUSTRIAL RELATIONS

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Industrial Relations (DSE 1)	4	3	1	0	Class XII	None

Learning Objectives

- To acquaint learners with concepts of industrial relations and related acts in Indian context.
- To familiarise the learners with the implications of law in the industrial environment.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Acquire theoretical and practical perspective on different aspects of industrial relations.
- Understand the key participants, institutions, relationships, and processes in industrial relations.
- Understand employer and employee relations and its management.
- Analyse the rights of labour class in the industrial environment

SYLLABUS OF DSE 1

Unit 1: Industrial Relations (12 hours)

Concept, Objectives of industrial relations, Parties in industrial relations, Aspects of industrial relations. Trade unions: Objectives, Historical perspective of unionism in India, functions, why workers join unions, importance, problems of trade unions, structure of trade unions, Trade union act 1926, Immunity granted to register trade unions, recognition of trade unions.

Unit 2: Industrial Disputes (9 hours)

Concept, Types of industrial disputes, Causes of industrial disputes, Machinery for settlement of industrial disputes, Industrial disputes act 1947. The industrial employment (standing orders act1946, coverage, modification, interpretation).

Unit 3: Labour Turnover (12 hours)

Concept, Rate of labour turnover, Costs of labour turnover, Causes of labour turnover, controlling labour turnover. Absenteeism: Concept, Rate of absenteeism, Causes of absenteeism, Effects of

absenteeism, Measures to control absenteeism.

Unit 4: Collective Bargaining **(12 hours)**

Concept, Essentials of collective bargaining, Problems of collective bargaining, Collective bargaining procedure. Workers' participation in Management: Modes of participation, Measures for successful workers' participation.

Essential/recommended Readings (latest edition of readings to be used)

1. Srivastav S. *Industrial relations and Labour laws*. Vikas Publishing House.
2. Mallik P. *Handbook of Industrial and Labour laws*. Eastern Book Company.
3. Saharay H.K. *Industrial and Labour Laws of India*. Prentice Hall International.
4. Chhabra T. *Industrial Relations and Labour Laws*. Dhanpat Rai Publishing House.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC ELECTIVE – FINANCE (DSE-1)

DSE 1: PROJECT APPRAISAL, FINANCING AND CONTROL

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Project Appraisal, Financing and Control (DSE 1)	4	3	1	0	Class XII	Basics of Accounting and Finance

Learning Objectives

- To familiarize learners about identification of a project and feasibility analysis,
- To equip them to apply project appraisal, control & management Techniques,
- To understand and appraise project risk analysis and financing

Learning Outcomes

On successful completion of his course, the learners will be able to:

- Understand the process of screening of ideas and carry out appraisal for Projects.
- Use Investment Evaluation Techniques for selection of Projects.
- Carry out Risk Analysis for business projects and identify alternative sources of financing.
- Understand the concept and application of Social Cost benefit Analysis
- Apply project control and management techniques for project success.

SYLLABUS OF DSE 1

Unit 1: Introduction to Projects and their Appraisal (9 hours)

Project Definition, Project Identification, Project Life Cycle, Project Stakeholder Analysis, Feasibility study. Types of Project Appraisal (Brief Overview): Market and Demand Analysis, Technical Appraisal, Financial Appraisal, Economic Appraisal, Managerial Appraisal, and Social Appraisal.

Unit 2: Financial Appraisal (9 hours)

Components of Project Cost, Investment Evaluation Techniques: Non-Discounting Methods (Payback Period, Accounting Rate of Return), Discounting Methods (Net Present Value, Profitability Index, Internal Rate of Return (IRR), Modified Internal Rate of Return (MIRR)). Comparative analysis of Investment Evaluation Techniques, Investment Evaluation in Practice.

Unit 3: Project Risk Analysis and Project Financing (15 hours)

Risk Analysis and Management: Sources and Measures of Risk. Methods of Assessing Risk – Sensitivity Analysis, Scenario Analysis, Break-Even Analysis, Simulation Analysis, Decision Tree Analysis. Strategies for Risk Management.

Sources of Financing – Internal Accruals, Equity Capital, Preference Capital, Debentures (or Bonds), Term Loans, Venture Capital, Private Equity, Venture Capital Vs Private Equity, Loan syndication.

Unit 4: Social Appraisal and Aspects of Project Management (12 hours)

Social Appraisal: Rationale for Social Cost Benefit Analysis (SCBA), Approaches of SCBA (UNIDO and Little-Mirrlees Approach Approach), Environment Impact Assessment (EIA) and Social Impact Assessment (SIA) of Projects. Relevant Case Studies. Network Techniques for Project Cost and Time Management (PERT & CPM) (theory only). Pre-Requisites for Successful Project Implementation. Essentials of a Project Report.

Essential/recommended readings (latest edition of readings to be used)

1. Chandra, Prasanna (2019). *Projects – Planning, Analysis, Selection, Financing, Implementation, and Review*. McGraw Hill Education.
2. Agrawal, R., & Mehra, Y. S. (2021).*Project Appraisal and Management*. TaxmannPublications.

Suggestive Readings (latest edition of readings to be used)

1. Goodpasture, J. C. (2003). *Quantitative methods in project management*. J. Ross Publishing.
2. Project Management Institute. (2021). *A guide to the Project Management Body of Knowledge (PMBOK guide)*. Project Management Institute.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC ELECTIVE – FINANCE (DSE-2)

DSE 2: INSURANCE

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Insurance (DSE 2)	4	3	1	0	Class XII	None

Learning Objectives

- To equip the learners with the basic characteristics of insurance, different kinds of insurance, and benefits and costs of insurance to society.
- To acquaint the learners with the core concepts of risk management and its objectives.
- To get deep insight into the regulatory environment of IRDA
- To examining the regulatory environment for insurance

Learning Outcomes

On successful completion of his course, the learners will be able to:

- Evaluate the different types of Risks and learn the concept and principles of Insurance.
- Understand Risk Management and learn the concept, principles and technical components of Insurance contracts.
- Comprehend the functioning of Insurance company operations.
- Learn various important and strategic aspects of management of Insurance business.

SYLLABUS OF DSE 2

Unit 1: Insurance and Risk (9 hours)

Risk – Definitions of Risk, Chance of Loss, Peril and Hazard, Classification of Risk, Major Personal Risks and Commercial Risks, Burden of Risk on Economy and Society.

Insurance – Definition of Insurance, Basic Characteristics of Insurance, Law of Large Numbers, Characteristics of an Ideally Insurable Risk, Benefits and Costs of Insurance to Society. Insurance Kinds (briefly) – Life and General Insurance, Difference between Life and General insurance.

Unit 2: Insurance Principles & Risk Management (12 hours)

Risk Management – Meaning of Risk Management, Objectives of Risk Management, Steps in the

Risk Management Process, Techniques for Managing Risk, Benefits of Risk Management. Personal Risk Management. Enterprise Risk Management (briefly) – Concept & Benefits. Case Studies on Management of different Personal and Business Risk to be discussed. Fundamental Legal Principles – Principle of Indemnity, Principle of Insurable Interest, Principle of Subrogation, Principle of Utmost Good Faith. Requirements of an Insurance Contract.

Unit 3: Insurance Company Operations (12 hours)

Requirements of an Insurance Contract, Distinct Legal Characteristics of Insurance Contracts. Components of Insurance Contracts – Declarations, Definitions, Insuring agreement, Exclusions, Conditions, and Miscellaneous provisions. Underwriting – Underwriting Policy, Underwriting Principles, Sources of Underwriting Information. Sales and Marketing activities of Insurers. Claims Settlement – Basic Objective, Parties Involved & Steps in Settlement Process. Endorsements and Riders. Deductibles – Concepts and Purpose of Deductibles. Regulatory Framework of Insurance in India (briefly) – Insurance Legislation and IRDA.

Unit 4: Important Aspects of Insurance Business Management (12 hours)

Reinsurance – Definitions, Reasons for Reinsurance, Types of Reinsurance – Facultative & Treaty Reinsurance, Methods of Sharing Losses (Numerical Qs). Alternatives to Traditional Reinsurance – Securitization of Risk and Catastrophe Bonds. Insurance and Investments – Life Insurance Investments, Property and Casualty Insurance Investments. Rate Making – Concept, Objectives, Rate Making Methods (Numerical Qs) – Judgement, Class and Merit Rating Method. Coinsurance – Nature, Purpose and Problems. Other Important Provisions – Pro Rata liability, Contribution by Equal Shares, and Primary and Excess Insurance.

Essential/recommended Readings (latest edition of readings to be used)

1. Rejda, G. E., McNamara, M. J., &Rabel, W. H. (2022). *Principles of risk management and insurance* (14th ed). Pearson Education.
2. Mishra, M. N., & Mishra, S. B. (2019). *Insurance principles and practice. S. Chand and company*.

Suggested Readings (latest edition of readings to be used)

1. Gupta, P. K. (2021). *Insurance and risk management*. Himalaya Publishing House.
2. Institute of Chartered Accountants of India, *Insurance and Risk Management.* https://resource.cdn.icai.org/59895clcmodule-6.pdf

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE – FINANCE (DSE-3)

DSE 3: FINANCIAL PLANNING

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical / Practice		
Financial Planning (DSE 3)	4	3	1	0	Class XII	Basics of Finance

Learning Objectives

- To equip learners with the knowledge and practical understanding of important dimensions of managing one's personal finance.
- To provide understanding and planning abilities for their tax liabilities, investments, insurance coverage, and retirement.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand the fundamentals of Personal Financial Planning
- Learn the basics of managing personal tax liabilities
- Learn the basic concepts and underlying principles for Retirement Planning.
- Ascertain and choose appropriate insurance policies for managing personal risks.
- Evaluate various asset classes on the basis of risk-return and personal investment goals
- Create, maintain and grow personal investment portfolio

SYLLABUS OF DSE 3

Unit 1: Basics of Personal Finance and Tax Planning (12 hours)

Understanding Personal Finance. Rewards of Sound Financial Planning. Personal Financial Planning Process. Personal Financial Planning Life Cycle. Making Plans to Achieve Your Financial Goals. Common Misconceptions about Financial Planning. Personal Tax Planning –Fundamental Objectives of Tax Planning, Tax Structure in India for Individuals, Common Tax Planning Strategies – Maximizing Deductions, Income Shifting, Tax-Free and Tax-Deferred Income.

Unit 2: Managing Insurance Need (12 hours)

Insuring Life – Benefits of Life Insurance, Evaluating need for Life Insurance, Determining the Right Amount of Life Insurance. Choosing the Right Life Insurance Policy – Term Life Insurance, Whole Life Insurance, Universal Life Insurance, Variable Life Insurance, Group Life Insurance, Other Special Purpose Life Policies. Buying Life Insurance – Compare Costs and Features, Select an

Insurance Company, and Choose an Agent. Life Insurance Contract Features. Insuring Health – Importance of Health Insurance Coverage. Making Health Insurance Decision – Evaluate Your Health Care Cost Risk, Determine Available Coverage and Resources, Choose a Health Insurance Plan. Types of Medical Expense Coverage. Policy Provisions of Medical Expense Plans. Property Insurance – Basic Principles, Types of Exposure, Principle of Indemnity, and Coinsurance.

Unit 3: Managing Investments (12 hours)

Role of Investing in Personal Financial Planning, Identifying the Investment Objectives, Different Investment Choices. The Risks of Investing, The Returns from Investing, The Risk-Return Trade- off. Managing Your Investment Holdings – Building a Portfolio of Securities, Asset Allocation and Portfolio Management, Keeping Track of Investments. Investing in Equity – Common Considerations, Key Measures of Performance, Types of Equity Stocks, Market Globalization and Foreign Stock, Making the Investment Decision. Investing in Bonds – Benefits of Investing in Bonds, Bonds Versus Stocks, Basic Issue Characteristics, The Bond Market, Bond Ratings. Investing in Mutual Funds and Exchange Traded Funds (ETFs) – Concept of Mutual Funds and ETFs, Benefits of Investing in Mutual Funds or ETFs, Some Important Cost Considerations, Services Offered by Mutual Funds, Selecting appropriate Mutual Fund and ETF investments, Evaluating the performance of Mutual Funds and ETF.

Unit 4: Investing in Real Estate and Retirement Planning. (9 hours)

Investing in Real Estate – Some Basic Considerations. Modes of Real Estate Investment – Raw Land, Commercial Properties, Residential Properties, Real Estate Investment Trusts (REITs).

Planning for Retirement – Role of Retirement Planning in Personal Financial Planning, Pitfalls to Sound Retirement Planning, Estimating Income Needs, Sources of Retirement Income.

Essential/recommended Readings (latest edition of readings to be used)

1. Billingsley R., Gitman L., &Joehnk M. (2017). *Personal Financial Planning*. Cengage Learning.
2. Tillery S., & Thomas N. Tillery. (2017). *Essentials of Personal Financial Planning*. Association of International Certified Professional Accountants.

Suggested Readings (latest edition of readings to be used)

1. Indian Institute of Banking & Finance. (2017). *Introduction to Financial Planning* (4th ed.).
2. Sinha, M. (2017). *Financial Planning: A Ready Reckoner*. Mc Graw Hill.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE - GLOBAL BUSINESS MANAGEMENT (DSE 1)

GLOBAL MARKETING

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Global Marketing (DSE 1)	4	3	1	0	Class XII	Basics of Marketing

Learning Objectives

- This course aims to bring to the fore various cultural and regional variables and their impact on businesses in the short-term and long-term future.
- It further aims to explore the nuances of international marketing related activities such as advertising, pricing, supply chain management, market entry, branding and customization etc. while attempting to bring practical elements into study.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Develop the basic understanding of the factors related to global marketing
- Articulate the various deciding factors at international level which have a significant impact on international trade and business.
- Identify the Fundamentals of sustainable (profitable) business growth with focus on international expansion, operating in multiple markets, new business opportunities and market analysis.
- Comprehend the critical roles of (international pricing, advertising and promotions, policies for export and international trade, global marketing strategies etc.) in developing a sound International business relations.

SYLLABUS FOR DSE 1

Unit 1: Introduction (9 Hours)

Reasons behind international expansion; types of MNCs; Expatriates and Inpatriates; Stages of International Exposure; Global Marketing, Using Social Media tools.

Unit 2: International Variables (12 Hours)

National-level variables, regional trading blocs; Physical variables, Geographic distance, Grouping of industries in specific areas/regions, Environment specific impacts, Distribution of Natural Resources; Cultural Variables, Impact on doing business (Distance, Power, Decision Making, People Management, Delegation, Corruption, Quality Benchmarks Etc.), Gender biases, Festivals, Buying

Behaviour; PESTEL; Porter's Diamond Model; Positioning; Protectionism and its impact on international trade.

Unit 3; International Expansion (12 Hours)

Porter's Five Forces Model; Ghemawat's CAGE framework; Globalisation; Demographics and Segmentation; Assessing Market Potential, How markets behave, Selling in specific markets (Developed, Developing, Post-Communist); "Right" Market to enter and "Right" Time to enter; What (mis-selling, outdated products), Where, Why, and How are we selling; Customer needs (of the new/foreign market); Location of manufacturing facilities; Labelling and Packaging (Export and Retail); Selling to and in emerging markets; Concerns and issues with available market analysis tools.

Unit 4: International Business (12 Hours)

Strategic (and global) Alliances; Global level of competition; Product Development; E- Commerce and Changing International Marketing Paradigms; Supply Chain as a source of International Advantages; Managing International Sales (Channels and Logistics); International Advertising and Promotions; Pricing for international markets, Pricing wars (War Chests), Approaches – Full-cost v/s Variable, Skimming v/s Penetration (non-numeric), factors influencing pricing; Implementing a Global Marketing Strategy; Support Mechanisms for Exports and International Trade, Export Infrastructure and Assistance in India, ITPO; International Payment Methods, Finance and Raising Funds, Taxation and Tax Havens, Marine and Cargo Insurance. Managing Risks in International Trade.

Essential/recommended Readings (latest editions of readings to be used)

1. Cateora, R. P., & Graham, L. John (2019). *International Marketing*.Tata McGraw Hill.
2. Joshi, R. M. (2014). *International marketing*. Oxford University Press.

Suggestive Readings (latest editions of readings to be used)

1. Keegan, W. J. (2017). *Global marketing management*. Pearson Education India.
2. Muhlbacher, Hans. *International Marketing-A Global Perspective*. Cengage Learning.
3. Bhattacharya, B. and Varshney, R.L. (2022). *International Marketing Management*. Sultan Chand & Sons.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, Universiy of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE - GLOBAL BUSINESS MANAGEMENT (DSE 2)

GEOPOLITICS AND INTERNATIONAL TRADE

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Geopolitics and International Trade (DSE 2)	4	3	1	0	Class XII	Basics of Marketing

Learning Objectives

- This paper aims at providing the learners with a greater understanding of geopolitics, how it works, and how it can be used to assess the existing capabilities and building of new plans in terms of foreign policy orientations focusing the deeper trading relations.
- The course covers the key concepts and ideas of geopolitics and engages with the current dynamics of building new trade partners and trade networks. It enhances the ability to use geopolitics for the analysis of the social, political and economic dimensions of international trade.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Recognise the concept of Geopolitics, Geostrategic and Geopolitical theories, various theories and their implications for and contemporary applications in the field of International Relations and trade.
- Interpret the linkages among International Relations, Political Science, National Security policies, History, Political, Geography and Economy.
- Recall some of the major geopolitical actors and activities in the global political and economic arena and analyse their impact in the distribution of power and wealth.
- Inspect, analyze and understand the political economy of trade and economic cooperation.

SYLLABUS FOR DSE 2

Unit 1: Introducing Geopolitics (9 Hours)

Introduction to roots and theories, Geopolitical theories of land (Mackinder), sea (Mahan), air (deSeversky) and their contemporary applications, Geopolitical Agency-The concept of Geopolitics codes, Territorial Geopolitics –Shaky Foundations of the World Political Map, Global Geopolitical structure-Framing Agency, International Political Economy-Economics Geography and

Globalisation. Network Geopolitics-Social Movements and Armed conflicts, Link between Geopolitics, economics and investments, Measuring Geopolitical risk.

Unit 2: Geopolitics and International Economic Cooperation (12 Hours)

Building a New World Order, IMF and WTO-Are Geopolitical tools?, Free Trade and WTO, Criticism of Free Trade Agreements, Economic Diplomacy as a Mean to Foster Growth, Globalisation- growth and inequality. IMF-Compliance, defiance, and the dependency trap: International Monetary Fund program interruptions and their impact on capital markets.

Unit 3: India & South Asia (12 Hours)

Untapped regional trade integration, political economy of trade. Fall of Kabul – Regional reset, Potential impact on India's future plan to reach Central Asian markets, Geopolitical importance of Iran for India, Trade Potential of Chabaar (Iran) port for India. Shifting trade focus from West to East-India's Look East Policy and Geopolitical Gravity in the Indo-Pacific region. India's Geopolitical ties with major trade partners-UAE, USA, Saudi Arabia. India and China-From armed conflict to $100 billion trade.

Unit 4: Geopolitics of trade routes (12 Hours)

The Ancient Silk Roads: Historical Perspectives, The Revival of the New Silk Roads by Modern China, Indo-Pacific and the Maritime Silk Road, China's Arctic Policy and Polar Silk Road, Geopolitical and Geo-Economic Patterns of the BRI's Implementation. Global Paradigm Shift: Towards a World-Land Bridge. South China Sea and its geostrategic importance for trade.

Essential/recommended Readings (latest editions of readings to be used)

1. Flint, Colin. (2016). *Introduction to Geopolitics.* (3rd edition). Routledge
2. Ahmed, Faisal & Lambert, Alexandre. (2021). *The Belt and Road Initiative: Geopolitical and Geoeconomics Aspects.* (1st edition). Routledge.

Suggestive Readings (latest edition of readings to be used)

1. Mi Park (2018). *The IMF and WTO: How does Geopolitics influence Global Finance and International Trade?*. (1st edition). Coal Harbour Publishing
2. Klement, Joachim. (2021). *Geo-Economics: The Interplay between Geopolitics, Economics, and Investments*. (1st edition). CFA Institute Research Foundation / Monograph.
3. Kumar, R. (2020). South Asia: Multilateral Trade Agreements and untapped regional trade integration. *International Journal of Finance & Economics*, 26(2), 2891–2903. doi:10.1002/ijfe.1941
4. Kumar, R. (2019). India & South Asia: Geopolitics, regional trade and economic growth spillovers. The Journal of International Trade & Economic Development, 29(1), 69–88. doi:10.1080/09638199.2019.1636121

5. Kumar, R. (2019b). India–china: Changing Bilateral Trade and its effect on economic growth. The Singapore Economic Review, 67(02), 567–586. doi:10.1142/s021759081950005x
6. Frandi, Nico. (2019). Paper prepared for the IstitutoAffariInternazionali (IAI), May 2019. "WTO and geopolitical changes. Multilateralism and coalitions of members between crisis, adaptation to change and rebirth", published in September 2018.
7. Reinsberg, B., Stubbs, T. &Kentikelenis, A. (2021). Compliance, Defiance, and the dependency trap: International monetary fund program interruptions and their impact on Capital Markets. Regulation & Governance, 16(4), 1022–1041. doi:10.1111/rego.12422
8. Iwanek, K. (2021, September). India Poised to Lose Influence in Afghanistan. The Diplomat. Retrieved from https://thediplomat.com/2021/09/india-poised-to-lose-influence-in-afghanistan/
9. Jamal, Umair. (2021, May). Treacherous Triangle: Afghanistan, India, and Pakistan After US Withdrawal. The Diplomat. Retrieved from https://thediplomat.com/2021/05/treacherous-triangle-afghanistan-india-and-pakistan-after-us-withdrawal/
10. Sood, Rakesh. (2021, November). Redefining India's role in Afghanistan. ORF. Retreived from https://www.orfonline.org/research/redefining-indias-role-in-afghanistan/
11. Chatterji, S. K. (2020, March 3). Afghanistan geo-strategically important for India; could be tapped for defence exportsS. Financial Express. Retrieved from https://www.financialexpress.com/defence/afghanistan-geo-strategically-important-for-india-could-be-tapped-for-defence-exports/1887297/
12. Kothari, Raj Kumar. (2020). India's Strategic Interests In Central Asia. World Affairs: The Journal of International Issues, Vol. 24, No. 1 , pp. 100-117.
13. Rowden, Rick. (2020, December 18). India's Strategic Interests in Central Asia and Afghanistan: Go through Iran. New Lines Institute. Retrieved from https://newlinesinstitute.org/iran/indias-strategic-interests-in-central-asia-and-afghanistan-go-through-iran/
14. Pant, H.V. and Deb, A. (2017). India-ASEAN Partnership at 25. Observer Research Foundation (ORF) Issue Brief, Issue No. 189. New Delhi, India

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi from time to time.

DISCIPLINE SPECIFIC ELECTIVE - GLOBAL BUSINESS MANAGEMENT (DSE-3)

INTERNATIONAL TRADE AND DOCUMENTATION

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
International Trade and Documentation (DSE 3)	4	3	1	0	Class XII	Understanding of international trade

Learning Objective

- The objective of this course is to acquaint the learners with the basic concepts of international trade, India's foreign trade policies, export assistance and promotion measures and various aspects of importing.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand the various theories of international trade, role of government in exchange control and tariff measures.
- Comprehend the current composition and direction of India's foreign trade.
- Evaluate the different measures of export promotion adopted and various schemes launched by the government of India.
- Demonstrate the documentation process under international trade as well use of information technology in international business.

SYLLABUS FOR DSE 3

Unit 1: Introduction to International Trade (9 Hours)

Theories of International Trade- Absolute and comparative Advantage theories- Heckscher- Ohlin theory- terms of trade- theory of international trade in services, Tariffs- Quotas- dumping- Antidumping/ countervailing- duties- technical standards- exchange control and other non tariff measures

Unit 2: India's Foreign Trade (12 Hours)

Composition and direction of India's foreign trade- India's foreign trade policy- export promotion infrastructure and institutional set up – deemed exports- rupee convertibility- policy on foreign collaborations and counter trade arrangements- India's joint ventures abroad- project and consulting exports; Balance of Payments.

Unit 3: Export Assistance in India (12 Hours)

Export assistance and promotion measures- ECGC- import facility- duty drawback- duty exemption schemes- tax concessions- MAI-MDA-100 percent EOUs SEZs, Export Promotion Councils (EPCS), Vishesh Krishi and Gram Udyog Yojana (Special Agriculture and Village Industry Scheme (VYGUY), Focus Market Schemes, Advance Authorisation scheme.

Unit 4: International Documentation (12 Hours)

Processing of an export order – methods of payment- negotiations of export bills- pre and post shipment export credit – Bank guarantees- types and characteristics of export documents, Procedure for procurement through imports- Import financing-customs clearance of imports- managing risks involved in importing, Information Technology in International Business - e procurement, e-marketing, e- logistics

Essential/recommendation Readings (latest editions of readings to be used)

1. Cherunilam, F. International Trade and Export Management. Himalaya Publishing House
2. Agarwal, O.P. & Chaudhuri, B.K. Foreign Trade and Foreign Exchange. Himalaya Publishing House.

Suggestive Readings (latest editions of readings to be used)

1. Rao, M.B. and Guru, Manjula: WTO and International Trade. Vikas Publishing House
2. Mahajan, V.S.: India's Foreign Trade and Balance of Payments. Deep & Deep Publications
3. Jeevanandam, C.: Foreign Exchange and Risk Management. Sultan Chand & Sons

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to tim

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

GENERIC ELECTIVES (GE-1): MANAGEMENT WISDOM FROM INDIA

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical / Practice		
Management Wisdom from India (GE 1)	4	3	1	0	Class XII	Concepts of management

Learning Objectives

- This course aims to bring management education and research in India in line with its needs to tackle contemporary challenges
- The course helps learners develop management models that are rooted in India's spiritual and cultural ethos.
- This course attempts to highlight innovative uses of Indian Management thought in the VUCA world of today.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Interpret the various theories, concepts and ideas that constitute 'received knowledge' of Indian Management.
- Learn how to compare and contrast Indian management thought with Western concepts.
- Illustrate ways of how to apply Indian management thought more effectively in an organisation setting.
- Judge how Indian thoughts help enable growth and development of the self, organisations, society and environment in the present as well as future context.

SYLLABUS OF GE-1

UNIT- 1: Indian Wisdom (9 hours)

Understand the principles of materialism (abhyudhaya), spiritualism (nisreyasa), nivṛtti (spiritual contemplation), pravṛtti (worldly duties), coexistence (lokasagraham), cohesion (samanva), arkashastra (Analysis, Reasoning, Argumentation), Diversity Management (Anekanthavada). Relevance of Gurukul concepts in modern corporate world - shadowing, mentoring and coaching;

Roots of Indian wisdom - welfare-oriented economy based on moral values. Using Indian wisdom to solve modern management problems.

UNIT- 2: Management Paradigms from Ancient Texts (12 hours)

Relevant concepts: Spiritual dimensions, Karma, Organisation tension, Positive thinking, Integrity, Leadership, Work Ethic. Management learnings from the Bhagavad Gita. Interpersonal Relations in Ramayana and Mahabharata. PauranicJagruti and Tourism Management. Management principles from the Guru Granth Sahib. Management learning and Organisational Policies from the Thirukural. Government administration from Kautilya'sArthasastra. Learnings from a study of Manusmriti.

UNIT- 3: Indian Management Practices (15 hours)

Uniquely Indian business scenarios – population density, crowd behaviour, role of the unorganised sector in trade and commerce, or cultural issues in business, infrastructure development, public private partnerships and regulation, how taxation drives business behaviour, logistics management, saving habits of Indians. Indian business practices- Community-based Business Management (Chettiars in Tamil Nadu, Marwaris of Rajasthan, Angadias of Gujarat), Indian family business management, community level success stories- Gupta empire, Gujarati, Marwari, Punjabi traders. Studying Indian business success stories such as Dabbawallas, Amul, Swachh Bharat, Atmanirbhar Bharat, PLI scheme initiatives, Indian corporates working abroad, success of Indians as individuals abroad in domains such as IT, Merchant Navy, Higher Education, Medicine.

UNIT-4: Future for Indian Management Thoughts (9 hours)

Indian models like OSHA, Theory K and Corporate Rishi Model. Management education should be based on four Ds (decision, direction, determination and dedication) and four Es (explore, experience, enjoy and excel) in learners. Indian perspectives on sustainability, creativity, interpersonal skills, business ethics, environment friendly.

Essential/recommended Readings (latest edition of readings to be used)

1. Srinivasan, V. (2006). *New Age Management Philosophy from Ancient India.* (1st edition). Lotus.
2. Peetham, Sri Sharada. (2016). *Ancient Wisdom for Modern Management.* (1st edition). Springer.
3. Bansal, Ipshita. (2003). *Management Concepts In Ancient Indian Psycho-Philosophic Thought.* (1st edition). Popular Book Depot.
4. Sharma, Subhash. (2020). *Indian Management.* (1st edition). New Age International.
5. Swami Ranganathananda. (2001). *Universal Message of the Bhagavad Gita.* (1st edition). Advaita Ashrama, Kolkata.
6. Swami Dayananda Saraswati, (2007). *The value of values.* (1st edition). Arsha Vidya Research & Publication Trust, Chennai.

Suggestive Readings (latest edition of readings to be used)

1. Mahadevan, B. (2019). *Writings on Gita & Management.* (1st edition). Kindle edition. (http://www.iimb.ernet.in/webpage/b-mahadevan/bhagavad-gita-amp-management)
2. Swami Chinmayananda, (2000). *Holy Geeta.* (1st edition). Chinmaya Prakashan.
3. Bhattathiri, M.P. (2004). Retrieved from http://vaikhari.org/downloads/Bhagavad%20Gita%20and%20Management.pdf
4. Houston, D.J. and Cartwright K.E. (2007). *Spirituality and Public Service.* Public Administration Review, Jan. – Feb., 2007, 88 – 102.
5. Poole, E. (2007). *Organisational Spirituality – A literature review.* Journal of Business Ethics, 84, pp. 577 – 588.
6. Mahadevan, B., (2013). *Inspirational Leadership: Perspectives from Gītā.* Chapter 13 in Sanskrit and Development of World Thought, Kutumba Sastry V. (Ed.), D K Print World, New Delhi, pp 199 - 210.
7. Ehrenfeld, J.R. (2005). *The Roots of Sustainability.* MIT Sloan Management Review, 46 (2), pp. 23-25.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-2:) FUNDAMENTALS OF ORGANISATION BEHAVIOR

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Fundamentals of Organisational Behaviour (GE 2)	4	3	1	0	Class XII	None

Learning Objectives

- Explain the concepts in organisational behaviour and discuss how individual differences—such as personalities, perceptions, and learning affect employee behaviour and performance.
- Gain practical insight into individual and interpersonal issues facing organizations by understanding theories and apply the underlying concepts in managing behaviour.

- Develop an understanding of group behaviour, group dynamics and leadership styles. Devise strategies for effective group management and leadership development.
- Apply the conceptual understanding of organizational level variables which impact behaviour in organizations in understanding as well as initiating change in organizations.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Comprehend the meaning and nature of organizational behaviour. Understand influences and factors impacting individual behaviour in organizations.
- Enhance understanding of various organizational and interpersonal processes like motivation, interpersonal transactions, level of trust etc. Compare and contrast various theories to develop an understanding of their relevance in different organizational situations.
  Develop and shape organizational strategies to manage these interpersonal processes.
- Analyse and develop greater insight into the behaviour of individuals in groups/teams in organizations and handle group behaviour and leadership issues in organizations.
- Apply the understanding of organizational dynamics in terms of power; conflict etc. in managing interpersonal behaviour. Evaluate organizational requirements and create interventions

SYLLABUS OF GE-2

UNIT- 1: Fundamental Concepts in OB (12 hours)

Importance and Key concepts in OB. Perception, Factors affecting Perception, Perceptual Process, and Errors in Perception. Personality: Concept and Factors affecting personality. Learning: Concept and Theories of Learning, Concept of Reinforcement.

UNIT- 2: Motivation and Interpersonal Relations (12 hours)

Motivation: Concepts and their application, Content theories (Maslow and Herzberg's Theories); Process theories (Expectancy theory). Managing Interpersonal Relationships; Transactional Analysis; Ego states, Types of Transactions, Importance of Transactional Analysis. Johari window.

UNIT- 3: Group Processes and Leadership at Work (12 hours)

Leadership: Trait Approach, Behavioural theories (Ohio and Michigan State Studies, and Blake & Mouton's Managerial grid), and Concept of Situational/Contingency approach to Leadership. Groups: Definition Stages of Group Development, Group Processes-Group Cohesiveness.

UNIT-4: Organisational Dynamics of Politics, Conflict and Change (9 hours)

Organisational Power: Concept, Sources of Power, Tactics to gain power in Organizations. Conflict: Concept, Sources, Types, Stages of conflict, Management of conflict. Organisational Change:

Concept, Resistance to change, managing resistance to change, Implementing Change.

Essential/recommended readings (latest edition of readings to be used)

1. Robbins, S. P., Judge, T. A. and Vohra N. (2019). *Organisational Behavior* (18th Edition). Pearson
2. Luthans, F., Luthans, K. W., & Luthans, B. C. (2015). *Organizational Behavior: An Evidence- based Approach* (13th Edition) Charlotte, North Carolina: Information Age
3. Mcshane, S.L., Von Glinow, M.A., and Sharma, R.R. (2009). *Organizational Behaviour*. New Delhi. McGraw-Hill (Special Indian Education).
4. Singh. K. (2010). *Organizational Behaviour-Text and Cases*. (3rd Edition) New Delhi. Pearson Education
5. Aswathappa, K. (2005). *Organizational Behaviour*.Himalaya Publishing House, Mumbai.
6. Moorhead, G. and Griffin, R.W. (2009). Organizational Behaviour-Managing People and Organizations (4th Edition). Houghton Miffin Company-New York.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

GENERIC ELECTIVES (GE-3): FINANCE FOR NON-FINANCE EXECUTIVES

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Finance for Non-Finance Executives (GE 3)	4	3	1	0	Class XII	None

Learning Objective

- To familiarise non finance executives with the essentials of finance and investments.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand Investment Environment and concept of Return & Risk.

- Analyse bond valuation & role of credit rating agencies.
- Examine equity analysis approaches.
- Understand two securities portfolios using the Harry Markowitz model and understand CAPM.
- Familiarise with Investors' protection framework.

SYLLABUS OF GE-3

Unit 1: Introduction to Finance (10 hours)

Introduction to Financial Management: Concept and Importance of Finance Function, Objectives of Financial Management, Financial Decisions and their Risk-Return Trade-off. Time Value of Money – Concept and Rationale, Compounding & Discounting to obtain Future and Present values. Types of Risks and Returns. Sources of Finance.

Unit 2: Investment Decisions (12 hours)

Concept and Importance of Capital Budgeting, Objectives and Problems in Capital Budgeting, Types of Investment Projects and kinds of Investment Decisions, Capital Budgeting Process. Investment Evaluation Techniques: Payback Period, Discounted Payback Period, Net Present Value, Profitability Index, Internal Rate of Return. Selection of suitable evaluation techniques.

Unit 3: Financing Decisions (12 hours)

Cost of Capital: Concept, Cost of Debt Capital, Cost of Preference Share Capital, Cost of Equity Share Capital, Weighted Average Cost of Capital (WACC). Leverage Analysis: Meaning of Leverage; Operating Leverage, Financial Leverage, and Combined Leverage. Capital Structure (Theory only): Concept, Factors affecting Capital Structure, Capital Structure Theories: Net Income Approach, Net Operating Income Approach, and Traditional Approach.

Unit 4: Dividend Decisions and Working Capital Management (11 hours)

Dividend Decisions: Concept, Relevance of Dividend Decisions: Walter's Model and Gordon's Model. Types of Dividends, Dividend Policies and factors determining the Dividend policy. Working Capital Management (Theory only): Concept and need for Working Capital, Types of Working Capital and factors affecting Working Capital requirements.

Essential/recommended Readings (latest edition of readings to be used)

1. Singh, S. & Kaur, R. (2020). *Fundamentals of Financial Management* (7th ed.). Scholar Tech Press.
2. Bhargav, B. K. (2022). *Finance For Non-Finance Managers.* Jaiko Publishing House.
3. Chandra, P. (2017). *Finance Sense: Finance For Non-Finance Executives* (5th ed.). Tata McGraw Hill.
4. Tripathi, V. (2021). *Basic Financial Management* (3rd ed.). Taxmann.

Suggestive Readings (latest edition of readings to be used)

1. Chandra, P. (2022). *Financial Management – Theory and Practice*. (11th ed.). Tata McGraw Hill.
2. Tripathi, V. (2023). *Fundamentals of Investments* (6th ed.). Taxmann.
3. Hawawini, G., &Viallet, C. (2008). *Finance for Non-Finance Managers*. Cengage Learning.
4. Siciliano, G. (2014). *Finance for Nonfinancial Managers*, 2nd ed. (Briefcase Books Series) . McGraw-Hill.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-4): WEALTH MANAGEMENT

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Wealth Management (GE 4)	4	3	1	0	Class XII	None

Learning Objective

- To familiarise learners with the essential concepts and fundamentals of financial investments. The course will enable them to understand and make informed choice about the various available financial investment alternatives.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Provide an overview of various aspects related to wealth management.
- Understand the fundamentals of financial investments and the investment decision process.
- Able to compute various measures of risk and return, and understand their role for evaluating investments.
- Understand and carry out security analysis using different approaches.
- Learn basic approaches to managing portfolios.

SYLLABUS OF GE-4

Unit 1: Basics of Wealth Management and Investments (9 hours)

Introduction to Wealth Management, Need for Wealth Management, Components of Wealth Management, Process of Wealth Management. Concept of Investment, Financial Investment Vs. Real Investment, Investment Vs. Speculation, Objectives or Features of Investment, Risk Return Trade Off, Investment Environment – Overview of Securities Market and Different Types of Financial Investment. Investment Decision Process, Direct Investing Vs Indirect Investing, Approaches to Investing – Active Vs Passive.

Unit 2: Risk – Return Analysis (12 hours)

Concepts of Return and Risk, Types of Return (their calculation & utility): Absolute Return, Average Return, Expected Return, Holding Period Return, Effective Annualised Return, Portfolio Return, Risk-Adjusted Return. Causes (or Sources) and Types of Risk – Systematic and Unsystematic Risk, Components of Systematic and Unsystematic Risk. Calculation of Total, Systematic and Unsystematic Risk. Impact of Taxes and Inflation on Investment – Computation of Post Tax and Real Returns.

Unit 3: Security Analysis (12 hours)

Approaches to Security Analysis – Fundamental Analysis, Technical Analysis, and Efficient Market Hypothesis (EMH). Fundamental Analysis – EIC Framework, Economic Analysis, Industry Analysis, and Company Analysis. Technical Analysis – Basic Tenets of Technical Analysis, Tool of Technical Analysis – Charts, and Technical Indicators, Limitations of Technical Analysis. Difference between Fundamental Analysis and Technical Analysis.

Unit 4: Portfolio Management & Estate Planning (12 hours)

Traditional portfolio management for individuals: Objectives, constraints, time horizon, current wealth, tax considerations, liquidity requirements, and anticipated inflation. Asset allocation: Asset allocation pyramid, investor life cycle approach. Portfolio management services: Passive – Index funds, systematic investment plans. Active – market timing, style investing. Portfolio Analysis – Portfolio Risk and Portfolio Return. Estate Planning – Fundamentals of Estate Planning, Impact of Property Ownership and Beneficiary Designations, Estate Planning Documents, and Executing Basic Estate Planning

Essential/recommended Readings (latest edition of readings to be used)

1. Tripathi, V. (2019). *Security Analysis and Portfolio Management: Text and Cases*. Taxmann Publications
2. Chandra, P. (2021). *Investment Analysis and Portfolio Management.* (6th ed.). McGraw Hill Education.

Suggestive Readings (latest edition of readings to be used)

1. Billingsley, R., Gitman, L. J., &Joehnk, M. D. (2020). *Personal Financial Planning*. (15th ed.). Cengage Learning.
2. Tillery, S., & Tillery, T. (2018). *Essentials of Personal Financial Planning* (1st ed.). Wiley.
3. Singh, R. (2017). *Security Analysis and Portfolio Management* (2nd ed.). Excel Books.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-5): FUNDAMENTALS OF MARKETING MANAGEMENT

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Fundamentals of Marketing Management (GE 5)	4	3	1	0	Class XII	None

Learning Objectives

- To introduce the nature, scope, and importance of marketing and its evolution over time.
- To explain the core marketing concepts and the various company orientations.
- To explain the various product decisions, including the product life cycle, product classification, product line decision, product mix decision, branding decisions, packaging and labeling.
- To understand the various pricing methods and determinants of price, as well as promotion decisions and marketing channel decisions.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Learners will be able to understand the nature, scope, and importance of marketing and its evolution over time.
- Learners will be able to explain the core marketing concepts and the various company orientations.
- Learners will be able to identify and analyse the various factors affecting the marketing environment in the Indian context.
- Learners will be able to apply the concepts of segmentation, targeting, and positioning to develop effective marketing strategies.

- Learners will be able to make informed decisions regarding product decisions, including the product life cycle, product classification, product line decision, product mix decision, branding decisions, packaging and labelling.
- Learners will be able to analyse the various pricing methods and determinants of price, as well as promotion decisions and marketing channel decisions, to develop effective marketing strategies.
- Learners will be able to develop marketing strategies for service firms based on an understanding of the unique characteristics of services.

SYLLABUS OF GE-5

Unit 1: Introduction and Marketing Environment (12 hours)

Introduction: Nature, Scope and Importance of Marketing, Evolution of Marketing; Core marketing concepts; Company orientation - Production concept, Product concept, Selling concept, Marketing concept, Holistic marketing concept. Marketing Environment: Demographic, Economic, Political, Legal, Socio cultural, Technological environment (Indian context); Portfolio approach – Boston Consulting Group (BCG) matrix.

Unit 2: Segmentation, Targeting and Positioning and Product Decisions (12 hours) Segmentation, Targeting and Positioning: Concept; Levels of Market Segmentation, Basis for Segmenting Consumer Markets; Product decisions: Concept of Product Life Cycle (PLC), PLC marketing strategies, Product Classification, Product Line Decision, Product Mix Decision, Branding Decisions, Packaging & Labelling.

Unit 3: Pricing, Promotion and Marketing Channel Decisions (12 hours)

Pricing Decisions: Determinants of Price, Pricing Methods (Non-mathematical treatment), Adapting Price. Promotion Decisions: Factors determining promotion mix, Promotional Tools – Fundamentals of advertisement, Sales Promotion, Public Relations & Publicity and Personal Selling. Marketing Channel Decision: Channel functions, Channel Levels, Types of Intermediaries: Wholesalers and Retailers.

Unit 4: Marketing of Services (9 hours)

Marketing of Services: unique characteristics of services, marketing strategies for service firms – 7Ps.

Essential/recommended Readings (latest edition of readings to be used)

- Kotler, P., Armstrong, G., Agnihotri, P. Y., &UlHaq, E. (2019). *Principles of marketing: A South Asian perspective.* Pearson.
- Kotler, P., & Keller, K. L. (2015). *Marketing management (15th ed.).* Pearson.

Suggestive Readings (latest edition of readings to be used)

- Ramaswamy, V.S. & Namakumari, S.: *Marketing Management: Global Perspective – Indian Context*, Macmillan Publishers India Limited.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-6): DYNAMICS OF START UPS

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Dynamics of Start Ups (GE 6)	4	3	1	0	Class XII	None

Learning Objectives

- Understand the concept of entrepreneurship, its different types, and the qualities required to become a successful entrepreneur.
- Explore the significance of innovation, creativity, and the role they play in the development and growth of new ventures, particularly in the Indian context.
- Identify and evaluate business opportunities, employing various techniques such as idea generation, selection, and implementation.
- Conduct feasibility analysis, encompassing marketing, technical, and financial aspects, to determine the viability of a new venture.
- Gain knowledge of resource mobilization strategies, including different types of resources and various sources of financing, for successful entrepreneurship. Additionally, comprehend the government initiatives and support available for entrepreneurs in India, along with the mechanisms for scaling up and exiting a business.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand the concept of entrepreneurship and differentiate between different types of entrepreneurs. (Knowledge)
- Apply innovative and creative thinking to identify and evaluate business opportunities for start-ups. (Application)

- Assess the feasibility of a new venture through comprehensive analysis of marketing, technical, and financial factors. (Analysis)
- Develop strategies for resource mobilization and financing options for entrepreneurship. (Synthesis)
- Evaluate the challenges, government initiatives, and support systems associated with scaling up and exiting a business. (Evaluation)

SYLLABUS OF GE-6

Unit 1: Entrepreneurship Journey (9 hours)

Meaning of entrepreneur, types of entrepreneurs, making of an entrepreneur, role of innovation and creativity for start-ups, start-up opportunities, creativity: role of creative thinking in development and growth of new venture in India. Challenges in starting start-ups.

Unit 2: Business Setup (12 hours)

Characteristics of opportunity, where to look for opportunities, from identification to evaluation, forms of ownership and suitability, different modes of generating ideas**,** identification of opportunities: idea generation, selection and implementation, search for new ideas: techniques for generating ideas: scamper, brainstorming, mind mapping, storyboarding, role playing. Entry strategies: new product, franchising, buying an existing firm.

Unit 3: Feasibility and Resource Mobilisation (15 hours)

Feasibility analysis: marketing, technical and financial feasibility analysis, industry and competition analysis, assessing new venture, economic environment and socio-economic feasibility of the venture. Resource mobilization for entrepreneurship: what is resource, resources mobilization, types of resources, process of resource mobilization, sources of financing.

Unit 4: Scaling-up of Business and Entrepreneurship Ecosystem (9 hours)

Scaling ventures – preparing for change, harvesting mechanism and exit strategies, managing growth, reasons for new venture failures, the entrepreneurial ecosystem, business incubators, entrepreneurship in India. Government initiatives, government grant and subsidies.

Essential/recommended Readings (latest edition of readings to be used)

1. Hisrich, R. D., Peters, M. P., & Shepherd, D. A. (2021). *Entrepreneurship* (11th ed.). McGraw-Hill Education.
2. Kuratko, D. F., & Hodgetts, R. M. (2020). *Entrepreneurship: Theory, process, and practice* (11th ed.). Cengage Learning.
3. Barringer, B. R., & Ireland, R. D. (2019). *Entrepreneurship: Successfully launching new ventures* (6th ed.). Pearson.

4. Spinelli, S., Adams, R. J., & Timmons, J. A. (2018). *New venture creation: Entrepreneurship for the 21st century* (11th ed.). McGraw-Hill Education.
5. Zimmerer, T. W., Scarborough, N. M., & Wilson, D. (2018). *Essentials of entrepreneurship and small business management* (9th ed.). Pearson.

Suggestive Readings (latest edition of readings to be used)

1. Barringer, B. R., & Ireland, R. D. (2019). *Entrepreneurship: Successfully Launching New Ventures* (6th ed.). Pearson.
2. Hisrich, R. D., Peters, M. P., & Shepherd, D. A. (2020). *Entrepreneurship* (11th ed.). McGraw-Hill Education.
3. Kuratko, D. F., & Hodgetts, R. M. (2017). *Entrepreneurship: Theory, Process, and Practice* (10th ed.). Cengage Learning.
4. Morris, M. H., Kuratko, D. F., &Covin, J. G. (2019). *Corporate Entrepreneurship & Innovation* (4th ed.). Cengage Learning.
5. Timmons, J. A., Spinelli, S., &Zacharakis, A. (2018). *New Venture Creation: Entrepreneurship for the 21st Century* (11th ed.). McGraw-Hill Education.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER -III
B.A (Hons) BUSINESS ECONOMICS
Category I

(B.A. Honours in Business Economics in three years)

DISCIPLINE SPECIFIC CORE COURSE – 7 (DSC-7): MICROECONOMICS-II

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Microeconomics-II (DSC 7)	4	3	1	0	Class 12	None

Learning Objectives

This course aims to provide to the student an understanding of:

- the concepts of a market structure and equilibrium in perfectly and imperfectly competitive market situations.
- the possible equilibria in factor markets
- equilibrium in all commodity and factor markets
- the concept of economic welfare and its properties.

Learning outcomes

By studying this course, the students will be able to:

- Identify different forms of market structure, their resource allocation and welfare implications.
- Express rational agent desires in a game theoretic framework.
- Analyse profit maximising strategies under different oligopoly models.
- Use a social welfare function to evaluate societal outcomes

SYLLABUS OF DSC-7

UNIT–I: Market Structure **(18 hours)**

Perfect Competition: Firm equilibrium in the short and long run. Short run supply curve for the firm and the market, long run industry supply; constant, increasing and decreasing cost industry; producer and consumer surplus. Monopoly: Profit Maximisation, multi-plant firm, monopoly power and its measurement, social costs of monopoly, price discrimination. Monopolistic Competition: product differentiation; equilibrium of the firm in the industry-with entry of new firms and with price competition, Comparisons. Oligopoly and Game Theory: Cournot model and reaction curves, Stackelberg's model, Bertrand model, Quantity leadership, Price leadership, Non collusive stable equilibrium,

Simultaneous quantity setting, Collusion, Cartels, Concepts of Game Theory: Dominant strategies and Nash Equilibrium, Mixed strategies, Prisoner's Dilemma.

UNIT – II: Factor Market (10 hours)

Factor pricing in the case of single and many variable factors, demand for labor in a product market with perfect competition and monopoly, monopsony, bilateral monopoly and role of labour unions. Economic rent and quasi rent.

UNIT – III: General Equilibrium (9 hours)

Equilibrium and efficiency under pure exchange and production; Edgeworth box; Pareto optimality conditions; market trade; Walras' law; existence of equilibrium and efficiency; Implications of the first and second welfare theorem.

UNIT – IV: Welfare (8 hours)

Social Welfare Function; welfare maximization, Fair allocation, Envy and equity, Arrow's Impossibility Theorem

Essential/recommended readings

1. Varian, H. R. (2020). Intermediate microeconomics: A modern approach. W. W. Norton.
2. Bernheim, B., Whinston, M. (2009). Microeconomics. Tata McGraw- Hill.
3. Snyder, C., Nicholson, W. (2010). Fundamentals of Microeconomics. Cengage Learning
4. Pindyck, Robert S. & Rubinfeld, Daniel L. (2017). Microeconomics. Pearson

Suggestive readings

1. Dr. Robert E. Hall and Dr. Marc Lieberman. (2009).Microeconomics - Principles and Applications. South Western Educational Publishing.
2. Bergstrom, T., Varian, H. (2014). Workouts in Intermediate Microeconomics. W. W. Norton.
3. Joseph E. Stiglitz and Carl E. Walsh. (2006). Principles of Microeconomics. W. W. Norton & Co.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 8 (DSC-8) MATHEMATICS FOR BUSINESS ECONOMICS - II

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Mathematics for Business Economics –II (DSC 8)	4	3	1	0	Class 12	None

Learning Objectives

This course aims to introduce to the student the understanding of

- real multivariate functions and their properties
- the optimisation conditions for real multivariate functions
- differential equations and their applications
- difference equations and applications

Learning outcomes

By studying this course, the students will able to:

- To be adept in the use of differential and integral calculus to examine the properties of functions used in economics and business
- To solve numerical problems of multivariable optimization and properties of the solutions.
- To model business and economic scenarios in mathematical terminology and to appreciate economic models by using formal mathematical methods.

SYLLABUS OF DSC-8

UNIT – I:Multivariable Functions (12 hours)

Geometric representations: graphs and level curves; differentiability: characterisations, properties with respect to various operations and applications; higher order derivatives: properties and applications; the implicit function theorem and application to comparative statics problems; homogeneous and homothetic functions: characterisations and applications

UNIT – II: Multivariable Optimization (15 hours)

Multivariate optimisation: Convex sets; geometric properties of functions: convex functions, their characterisations, properties and applications; further geometric properties of functions: quasiconvex functions, their characterisations, properties and applications; unconstrained optimisation: geometric characterisations, characterisations

using calculus and applications. Multivariate Optimization with constraints: Constrained optimisation with equality constraints: geometric characterisations, Lagrange characterisation using calculus and applications; properties of value function: envelope theorem and applications.

UNIT – III: Economic Dynamics -1 **(9 hours)**

First order differential equations, phase diagrams and stability.

UNIT – IV: Economic Dynamics -2 **(9 hours)**

First order difference equations, equilibrium and stability

Essential/recommended readings

1. Sydsaeter, K., Hammond, P. (2002). Mathematics for economic analysis. Pearson Educational.

Suggestive readings

1. Chiang, Alpha C., and Wainwright Kevin. Fundamental Methods of Mathematical Economics. Boston, Mass: McGraw-Hill/Irwin, 2005
2. Hoy, Michael, Livernois, John, McKenna, Chris, Rees, Ray and StengosThanasis (2011) Mathematics for Economics. Cambridge, Mass. : MIT Press

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 9 (DSC-9): CORPORATE FINANCE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Corporate Finance (DSC 9)	4	3	1	0	Class 12	None

Learning Objectives

This course aims to

- introduce the basic concepts of financial management and its objectives.
- provide an understanding of investment decisions and of working capital.
- introduce and discuss the issues in the cost of capital.
- examine the theories and analysis involved in financing decisions and dividend distribution.

Learning outcomes

By studying this course, students will be able to:

- To learn the role and objectives of financial management in business corporations.
- To acquire skills to analyse corporate behaviour during procurement and development of resources.
- To understand capital structure and discuss the factors that financial managers consider while determining a company's financing strategy
- To critically discuss the theories relating to dividends policies and cost of capital

SYLLABUS OF DSC-9

UNIT – I: Introduction (6 hours)

Nature and Scope of Financial Management. Traditional and Modern Approach to the concept of financial management. Functions of finance – Finance Decision, Investment Decision, Dividend Decision. Objectives of Financial Management - Profit Maximisation and Wealth Maximisation. Concept of Time Value of Money.

UNIT – II: Investment Decision (15 hours)

Capital Budgeting - Nature and meaning of capital budgeting; Types of decisions: - Accept-Reject, Replacement, Mutually Exclusive. Estimation of Relevant cash flows. Evaluation techniques - Accounting Rate of Return, Pay Back, Net Present Value, Internal Rate of Return, Profitability Index Method.

Concepts and Definition of working capital. Determining Financing Mix; Permanent and temporary working capital; Determinants of working capital; Computation of Working Capital.

UNIT – III: Cost of Capital (9 hours)

Concept and Measurement of Cost of Capital: Measurement of specific costs - Cost of debt:- perpetual debt and Redeemable debt; Cost of Preference Share; Cost of Equity Capital – Dividend valuation model and CAPM; Cost of Retained Earnings. Computation of Overall Cost of Capital based on book value weights and market value weights.

UNIT – IV: Financing Decision (15 hours)

Leverage Analysis - Operating, Financial, and Combined Leverage, Earning Before Interest and Tax (EBIT) – Earning Per Share (EPS) analysis, Indifference point. Capital structures theories - Net income approach; Net operating income approach; Modigliani-Miller (MM) approach. Factors affecting capital Structure.

Dividend Decision: Relevance and irrelevance of dividends. Residual theory of dividends; Modigliani and Miller hypothesis; Walter's model; Gordon's model. Factors affecting Dividend Policy.

Essential/recommended readings

1. Khan, M.Y., & Jain, P.K. Basic Financial Management. Tata McGraw Hill Education Private Limited.
2. Pandey,I.M. Financial Management. Vikas Publishing House Pvt. Ltd. New Delhi
3. Rustagi, R. P. Fundamentals of Financial Management, Taxmann publication(Pvt) Ltd,New Delhi.

Suggestive readings

1. Van Horne, J.C. Financial Management and Policy. Prentice Hall of India.
2. Levy, H. and Sarnat, M. Principles of Financial Management. Prentice Hall.
3. Brealey, Richard, A., & Myers, Stewart, C. Principles of Corporate Finance. Tata McGraw Hill Publishing Company Limited.
4. Chandra, Prasanna. Financial Management-Theory and Practice. Tata McGrawHill.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE 1 (DSE-1): INCOME TAX LAW AND PRACTICE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Income Tax Law and Practice (DSE 1)	4	3	1	0	Class 12	None

Learning Objectives

The course aims at

- Introducing basic definitions in Income Tax Act
- Computing taxable income under the heads Salaries and House Property
- Calculate Profits and Gains of Business or Profession, Capital Gains and Income from other sources
- Understand deductions from gross taxable income and filling of returns.

Learning outcomes

By studying this course, the students will be able to:

- To Understand the Process of determination of taxable income
- To apply the deductions to taxable income as per the latest provisions of Income-tax Act, 1961
- To Acquire the skill of Filling Basic Returns of Income Tax

SYLLABUS OF DSE-1

Unit 1: Introductory Concepts (3 hours)

Permanent Account Number (PAN), Assessment Year, Previous Year, Person, Assessee, Gross Total Income, Total income and its computation, Tax Rates, Residential status; Relationship between Residential Status and Incidence of Tax. Incomes Exempted under section 10.

Unit 2: Computation for "Salaries" and "Income from House Property" (15 hours)

Income under the head "Salaries": Meaning of Salary, basis of charge, Allowances, Perquisites, permissible deductions from salary income, Deduction under Section 80 C.

Income under the head "Income from House Property": Basis of charge, income from let out house property, income from self-occupied property.

Unit 3: Computation for 'Profits and Gains of Business or Profession', 'Capital Gains' and 'Income from other sources' (15 hours)

Profits and gains of business or profession: Basis of charge, important rules regarding assessment of PGBP, computation of Profits from Business or Profession, deductions expressly allowed, expenses expressly disallowed.

Capital gains: basis of charge, meaning of capital asset, cost of acquisition, improvement and indexation, exemptions for capital gains arising from transfer of Capital Assets, calculation of tax on short-term and long-term capital gains.

Income from other sources: basis of charge, dividend, winnings from lotteries, crossword puzzles, etc., interest on securities, advance money received for transfer of a capital asset, permissible deductions.

Unit 4: Computation of Total Income and Tax Liability (12 hours)

Computation of total income; Deductions from gross total income under section 80 C to 80 U; Rebates and reliefs; Set-off and carry forward of losses (Concept only), Concept of advance payment of Tax and Deduction of Tax at Source. Computation of Taxable Income and liability of Tax. e-Filing of Returns: ITR-1 (SAHAJ) and ITR-2

Essential/recommended readings

1. Ahuja, G. and Gupta, R. Simplified Approach to Income Tax. Flair Publications (P) Ltd.
2. Singhania, V.K. and Singhania, M. Students Guide to Income Tax. Taxmann Publications (P) Ltd.

Software to be used for teaching are:

1. 'Excel Utility' available at incometaxindiaefiling.gov.in
2. Vinod Kumar Singhania, e-filing of Income Tax Returns and Computation of Tax Taxmann Publication (P) Ltd, New Delhi. (Latest version)

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE 2 (DSE-3): ENTREPRENEURSHIP

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Entrepreneurship (DSE 3)	4	3	1	0	Class 12	None

Learning Objectives

The course aims at:

- To introduce the concept of entrepreneurship and its role in the economy
- To launch an Entrepreneurial Venture and writing a business plan
- To identify and explore legal and financial requirements of a business
- To understand the role and creativity in sustainable Business

Learning outcomes

By studying this course, the students will be able to:

- To develop critical thinking, problem solving skills and entrepreneurial mind-set in students.
- To enhance the understanding of the entrepreneurial process from idea generation, to concept development and creation of the venture.
- To enable the understanding of the business models, legal aspects of enterprise and writing a business plan.
- To apprise students with ways to finance and scale up the business.

SYLLABUS OF DSE-2

Unit 1: Introduction to Entrepreneurship (9 hours)

Concept of Entrepreneurship; Attributes of Entrepreneur; Distinction between entrepreneur and manager; Concept of corporate entrepreneurship/ intrapreneurship; Concept of social entrepreneurship; Role of entrepreneurship for an economy; Understanding business model strategy; Legal forms of enterprise; case study discussion on entrepreneurs, intrapreneurs, business models

Unit 2: Launching Entrepreneurial Venture (12 hours)

Identification of opportunities and Idea generation and screening methods- Brainstorming, mind-mapping, story-telling, SCAMPER, attribute listing, focus group

interviews, customer feedback; Feasibility studies- Marketing, Financial, Technical, Socio-economic Feasibility; Writing Business Plan

Unit 3: Legal and Financial Aspects (12 hours)

Legal requirements of business (Basic concept and relevance of patents, copyrights, and trademark); Financing- Start-up phase financing, growth stage financing, Maturity-phase financing; angel investment and venture capital, other forms of external financing; case study discussion on financing a venture

Unit 4: Sustaining and Scaling Up (12 hours)

Keeping the entrepreneurial spirit alive- Challenges and remedies, Role of creativity and innovation, Barriers to entrepreneurship, Concept of sustainability, Ethical Perspectives; Introducing Shared Innovation into the Business Model; Evolution of CSR from Compliance to Sustainable Entrepreneurship; How to Design CSR Strategies that Optimize Impact for Business and Society

Essential/recommended readings

·1. Harvard Business Review Entrepreneur's Handbook: Everything You Need to Launch and Grow Your New Business

2. Hisrich, R. D. International entrepreneurship: starting, developing, and managing a global venture. Sage Publications.

3. Sharma, S., Starik, M., & Wuebker, R. Sustainability, innovation and entrepreneurship: introduction to the volume.

Additional References:

1. Blank, S., Andreessen, M., Hoffman, R., & Sahlman, W. A. (2018). HBR's 10 Must Reads on Entrepreneurship and Startups (featuring Bonus Article "Why the Lean Startup Changes Everything" by Steve Blank). Harvard Business Press.

2. Drucker, P. (2014). Innovation and entrepreneurship. Routledge.

3. Hisrich, R.D., Manimala, M.J., Peters, M.P., Shepherd, D.A.: Entrepreneurship, Tata McGraw Hill.

4. Kuratko, D.F., and Rao, T. V., Entrepreneurship: A South-Asian Perspective, Cengage.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES OFFERED BY THE DEPARTMENTS

GENERIC ELECTIVES (GE-1): PRINCIPLES OF ECONOMICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Principles of Economics (GEC 1)	4	3	1	0	Class 12	None

Learning Objectives

This course aims

- To offer basic understanding of the basic principles of micro economics like problem of scarcity and choice, demand and supply, elasticity.
- To introduce students with basic consumer theory,
- To introduce students with production and cost concept
- to expose the student to the basic principles and concepts in Macroeconomic variables -- GDP, consumption, savings, investment, money and credit etc.
- To learn measurement of national income and related aggregates; nominal and real income
- To determine actual and potential GDP
- To understand the functioning of money market

Learning outcomes

By studying this course, students will be able to:

- To understand the principles of economics of the modern economy.
- To understand the consumer theory, production, and costs etc.
- To understand the basic principles of macroeconomics, national income accounting and determination of GDP.
- To understand the functioning of the money market.

SYLLABUS OF GEC-1

Unit 1: Introduction **(6 hours)**

Problem of scarcity and choice: scarcity, choice and opportunity cost; production possibility frontier; economic systems.

Demand and supply: law of demand, determinants of demand, shifts of demand versus movements along a demand curve, market demand, law of supply, determinants of supply, shifts of supply versus movements along a supply curve, market supply, market equilibrium.

Applications of demand and supply: price rationing, price floors, consumer surplus, producer surplus.Elasticity: price elasticity of demand, calculating elasticity, determinants of price elasticity, other elasticities.

Unit 2: Consumer Theory **(9 hours)**

Budget constraint, concept of utility, diminishing marginal utility, Diamond-water paradox, income and substitution effects; consumer choice: indifference curves, derivation of demand curve from indifference curve and budget constraint.

Unit 3: Production and Costs **(9 hours)**

Production: behaviour of profit maximising firms, production process, production functions, law of variable proportions, choice of technology, isoquant and isocost lines, cost minimizing equilibrium condition.

Costs: costs in the short run, costs in the long run, revenue and profit maximizations, minimizing losses, short run industry supply curve, economies and diseconomies of scale, long run adjustments.

Unit 4: Introduction to Macroeconomics **(6 hours)**

What is macroeconomics? Macroeconomic issues in an economy.

Unit 5: National Income Accounting **(6 hours)**

Concepts of GDP Aggregates and National Income; measurement of national income and related aggregates; nominal and real income; GDP and welfare and the limitations of the GDP concept.

Unit 6: Determination of GDP **(6 hours)**

Actual and potential GDP; aggregate expenditure; consumption function; investment function; equilibrium GDP; concepts of MPS, APS, MPC, APC; autonomous expenditure; Concept of multiplier.

Unit 7: **Money and Credit** **(3 hours)**

Money in a Modern Economy: Concept of money in a modern economy; monetary aggregates; demand for money; quantity theory of money; liquidity preference and rate of interest; money supply and credit creation; monetary policy

Essential/recommended readings

1. Case, K.E., Fair, R. C., and Oster, S. E. (2017). Principles of Economics (12th Ed.). Pearson.
2. Dornbusch, R., Fischer, S. and Startz. R. Macroeconomics (11th Edition). McGraw-Hill.
3. Mankiw, N.G. (2021). Principles of Economics, (9th Edition). Cengage Learning.
4. Acemoglu, D., Laibson, D., List J.A. (2016), Economics, Pearson

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-3): LEGAL ENVIRONMENT OF BUSINESS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Legal Environment of Business (GEC 3)	4	3	1	0	Class 12	None

Learning Objectives

The course intends:

- To familiarize the student with the concept and essentials of Indian Contract act which govern business for its efficient conduct and to apply them in real life situations.
- To explain the meaning, nature and incorporation of a company.
- To make students understand and apply the provisions of Sale of Goods Act and Consumer Protection Act.
- To recognize and articulate legal principles related to Limited Liability Partnership and Information Technology Act.

Learning outcomes

By studying this course, students will be able to:

- To understand the basic rules and provisions of Contract and Agreements.
- To know the provisions to Formation and functioning of company and LLP.
- To understand the significance and role of law of sale of goods act
- To have in- depth knowledge of Information Technology Act And legal framework of right to Privacy, Data Security and Data Protection.
- Apply the law correctly to different facts and in different contexts

SYLLABUS OF GEC-3

Unit 1: Indian Contract Act (12 hours)

Meaning and Essentials of a Contract; Valid, Void and Voidable Contract; Offer and Acceptance; Consideration; Capacity of Parties; Free Consent; Discharge of Contract and Remedies for Breach of a Contract.

Unit 2: Companies Act (12 hours)

Meaning and Nature of Company; Promotion and Incorporation of a Company; Memorandum of Association; Articles of Association; Misleading Prospectus and

remedies available to the parties; Board of Directors and their qualification, duties, powers. Company Meetings and Resolutions.

Unit 3: Sale of Goods Act and Consumer Protection Act (12 hours)

Essentials of a Contract of Sale; Sale and Agreement to Sell, Conditions and Warranties; Transfer of Title by Non-Owners; Doctrine of Caveat Emptor; Rights of Unpaid Seller.**Consumer Protection Act 2009**: Scope and Applicability of the Act. Rights of consumer. Procedure for complaints. Duties and power of Central Consumer Protection Authority.

Unit 4: Limited Liability Partnership Act and IT Act (9 hours)

Meaning and nature of LLP; LLP and Company; LLP Agreement, Partners and Designated Partners, Incorporation of LLP; Partners and their Relations, Extent and limitation of liability of LLP.

Information Technology Act 2000: Concept and role; Digital signature, Electronic governance, Attribution, Acknowledgement and dispatch of electronic records, Regulation of certifying authorities, Digital signatures certificates, Duties of subscribers, Penalties and adjudication, Appellate Tribunal , Offences.

Essential/recommended readings

1. Bansal, V & Arora, A. Corporate Laws. Vikas Publishing, House (P) Ltd. New Delhi.
2. Kuchhal M.C & Vivek K. Business Legislation for Management. VIKAS Publishing House (P) Ltd.
3. Kumar, A. Corporate Laws. International Book House (P) Ltd.
4. Bare Acts relating to the laws.

Suggestive readings

1. Chadha, R,. Chadha, S. Corporate Laws. Mayur Paperbacks. New Delhi.
2. Maheshwari & Maheshwari. Business Law. National Publishing House. New Delhi.
3. Singh, Avtar. The Principles of Mercantile Law. Eastern Book Company. Lucknow.
4. Tulsian, P.C. Business Law. Tata McGraw Hill. New Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-5): QUANTITATIVE TECHNIQUES IN

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Quantitative Techniques in Management (GEC 5)	4	3	1	0	Class 12	None

Learning Objectives

To apprise students:

- To understand the concepts, formulation and interpretation of linear programming methods and its application in diverse problems.
- To formulate and solve Transportation and Assignment problems
- To understand basic concept, construction of the Network diagram and Critical Path Analysis
- To introduce game theory and network analysis forms part of the course.

Learning outcomes

By studying this course, students will be able to:

- Identify and develop operational research models from the verbal description of the real system.
- Understand the mathematical tools that are needed to solve optimization problems.
- Develop critical thinking and use PERT and CPM techniques to improve decision making.

SYLLABUS OF GEC-5

UNIT – I: Introduction - Operations Research, Linear Programming (15 hours)

(i) Introduction to Operations Research, characteristics, Phases, Methodology, Applications and scope

(ii) Formulation of Linear Programming problems, Graphical Solutions (Special cases: Multiple optimal solution, infeasibility, unbounded solution); Simplex Method, Special cases, Big-M method and Two-phase method; Duality (emphasis on formulation & economic interpretation); Sensitivity Analysis. (Excel Solver application)

UNIT – II:Transportation and Assignment Problem (12 hours)

(i) Transportation Problem: Formulation, Solution by N.W. Corner Rule, Least Cost method, Vogel's Approximation Method (VAM), Modified Distribution Method; Special cases: Multiple Solutions, Maximization case, unbalanced case, prohibited routes.

(ii) Assignment Problem: Hungarian Method, Special cases: Multiple Solutions, Maximization case, Unbalanced case, Restrictions on assignment.

UNIT – III: Network Analysis (9 hours)

Basic Concept, Construction of the Network diagram, Critical Path Analysis, float and slack analysis (Total float, free float, independent float), probability consideration in PERT (Interface with Project Management open-source software)

UNIT – IV: Decision Theory (9 hours)

Decision making environment, Construction of Pay off Table, Opportunity Loss Table, Decision under uncertainty. Decision under Conflict: Game Theory, Two-person Zero-Sum games, Maximin Minimax Principle, Games without Saddle point - Mixed strategy, Dominance Rule.

Essential/recommended readings

1. Vohra, N.D., Quantitative Techniques in Management (5th ed.). Tata McGraw Hill
2. Swarup, K., Gupta, P.K. and Mohan, Man, Introduction to Management Science Operations Research (19th ed.). Sultan Chand & Sons.
3. Sharma, J.K., Operations Research: Theory and Applications (6th ed.). Trinity.
4. Taha, H.A., Operations Research: An Introduction (9th ed.). Pearson.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-7): ECONOMICS OF STARTUPS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Economics of Startups (GEC 7)	4	3	1	0	Class 12	None

Learning Objectives

To apprise students:

- To give an overview of startups and its types that would help students to understand basics of starting up new ventures.
- To build and create a successful Business Plan
- To understand various Business models and learn startups
- To familiarize with central and state level institutions supporting small business entreprises.

Learning outcomes

By studying this course, students will be able to:

. · Understand the process and working of a startup.

· Identify the different ways in which entrepreneurs manifest in start-ups.

· Know how to create one's own business venture and the various factors that influence successful set-up and sustainable operations.

· Explore the funding and other institutions supporting small business units.

SYLLABUS OF GEC-7

UNIT – I: Startup, Generation & Experimentation (9 hours)

Concept of Startup, Role of digital technologies, Startup ecosystems, the startup movement in India; Generating a value proposition, how valuable are new ideas, Design thinking principles; Experimenting with the prototype, Introduction to lean start-ups, Lean startup principles, Learning and failing fast.

UNIT – II: Building the Business Plan (15 hours)

Beginning Considerations: Building a competitive advantage. The strategic management processes. Conducting a feasibility analysis. Forms of Business ownership. Franchising and entrepreneurship. Buying an existing business, marketing and financial considerations: Building a powerful marketing plan. E-commerce and Entrepreneur. Pricing strategies. Creating a successful financial plan. Choosing the right location and layout.

UNIT – III: Crafting business models and Lean Start-ups (12 hours)

Introduction to business models; Creating value propositions-conventional industry logic, value innovation logic; customer focused innovation; building and analysing business models; Business model canvas, Business Pitching.

UNIT – IV: Institutions Supporting Small Business Enterprises and Ethics(9 hours)

Central level institutions. State level institutions. Other agencies. Industry Associations. Class exercise- discussions on current government schemes supporting entrepreneurship and finding out which scheme will most suit the business plan devised by the student. Importance of Ethical Entrepreneurship, value of ethics to an entrepreneur.

Essential/recommended readings

1. Scarborough, N. M., Cornwall, J. R., & Zimmerer, T. (2016). Essentials of entrepreneurship and small business management. Boston. Pearson Publications.
2. Hisrich, R.D., Manimala, M.J., Peters, M.P., Shepherd, D.A., Entrepreneurship, Tata McGraw Hill.
3. Shukla, M.B., Entrepreneurship and Small Business Management. Kitab Mahal Publishers.

Suggestive readings

1. Hishrich, R.D. and Peters, M. Entrepreneurship. Irwin Publications.
2. Barringer, B.R. and Ireland, R. Duane. Entrepreneurship: Successfully launching new ventures. (6th Edition) Pearson
3. Kuratko, D.F., and Rao, T.V., Entrepreneurship: A South-Asian Perspective. Cengage Publications.
4. Shankar, R., Entrepreneurship: Theory and Practice. Tata McGraw Hill.
5. Kathleen, R Allen. Launching New Ventures: An Entrepreneurial Approach. Cengage Learning.
6. Fisher, Steve and Duane, Ja-Nae. The Startup Equation - A Visual Guidebook for Building Your Startup. Mc Graw Hill Education India Pvt. Ltd.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

ANNEXURE-5

Sub: Amendment to Ordinance V

[E.C Resolution No. 60/ (60-1-2) dated 03.02.2023]

Following addition be made to Appendix-II-A to the Ordinance V (2-A) of the Ordinances of the University;

Add the following:

Syllabi of Semester-III of the Department of Commerce under Faculty of Commerce & Business based on Under Graduate Curriculum Framework -2022 implemented from the Academic Year 2022-23.

B.COM. (HONS.)

Discipline Specific Course- 3.1(DSC-3.1): Business Mathematics

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC -3.1: Business Mathematics	4	3	0	1	Pass in XII	NIL

Learning Objectives

The course aims to familiarize the learners with the basic mathematical tools with special emphasis on applications to business and economic situations.

Learning outcomes

After completion of the course, learners will be able to:

1. Assess the applicability of matrices as mathematical tools in representing a system of equations.
2. Apply differential calculus to solve simple business problems.
3. Evaluate business problems involving complex linear relationships between decision variables and their determining factors.
4. Explain mathematical formulation and solution of problems related to finance including different methods of interest calculation, future and present value of money.
5. Develop programming for business problems involving constrained optimisation.

SYLLABUS OF DSC-3.1

Unit 1: Matrices and Determinants (9 hours)

Overview of Matrices. Solution of a system of linear equations (having a unique solution and involving not more than three variables) using matrix inversion method and Cramer's Rule

Leontief Input Output Model (Open Model Only).

Unit 2: Calculus-I (6 hours)

Concepts and rules of differentiation. Concept of Marginal Analysis: Marginal Revenue, Marginal Cost. Concept of Elasticity of demand and supply.
Application of Maxima and Minima problems: Revenue, Cost, Profit, Economic Order Quantity, Optimal trade in time.

Unit 3: Calculus-II (12 hours)

Partial Differentiation: Partial derivatives up to second order. Homogeneity of a function and Euler's theorem. Production Function: Returns to factor, Returns to scale. MRTS and Elasticity of Substitution.

Application of Maxima and Minima problems involving two independent variables.

Integration: Nature of commodities and partial elasticity of demand, Applications of marginal analysis, Consumer Surplus and Producer Surplus.

Unit 4: Mathematics of Finance (9 hours)

Rates of interest: nominal, effective and their inter-relationships in different compounding situations.

Compounding a sum using different types of rates. Applications relating to Depreciation of assets and average due date.

Types of annuities: ordinary, due, and deferred - Discrete and continuous. Perpetuity. Determination of future and present values using different types of rates of interest. Applications relating to Capital Expenditure and Leasing.

Unit 5: Linear Programming (9 hours)

Formulation and Assumptions of LPP, Solution by Simplex Method- maximization and minimization cases. Shadow prices of the resources. Special Cases: Identification of unique and multiple optimal solutions, unbounded solution, infeasibility and degeneracy.

Practical Exercises: 30 hours

The learners are required to:

1. Assess the use of matrices in evaluating competing alternatives.
2. Apply differential calculus to solve hypothetical business problems.
3. Evaluate business problems as an application of linear programming.
4. Gather information about various deposit and loan schemes of banks to find out interest rate differentials, and compounded value.
5. Gather information about annuity schemes in the investment markets like periodic home mortgage payments, insurance payments and pension payments, life insurance products as an annuity.
6. Identify the decision-making variables and assess their functional relationship with other variables affecting the decision in a hypothetical business and economic situation.
7. Develop programming for hypothetical business problems involving constrained optimisation.

Suggested Readings:

- Anthony, M., & Biggs, N. (1996). *Mathematics for Economics and Finance*. Cambridge: Cambridge University Press.
- Ayres, F. J. (1963). *Theory and Problems of Mathematics of Finance*. New York: McGraw Hill Publishing.
- Budnick, P. (1986). *Applied Mathematics for Business, Economics, & Social Sciences*. New York: McGraw Hill Publishing.
- Dowling, E. (2011). *Introduction to Mathematical Economics*. New York: McGraw Hill Publishing Kapoor.
- Ghosh & Sinha (2018). *Business Mathematics and Statistics*. Oxford University Press.
- S.K. Sharma and Kaur, G. (2019). *Business Mathematics*. New Delhi: Sultan Chand & Sons (P) Ltd.
- Singh, J. K. (2017). *Business Mathematics*. New Delhi: Himalaya Publishing House.
- Thukral, J. K. (2009). *Mathematics For Business Studies*. New Delhi: Mayur Paperbacks.
- V. K., & Sancheti, D. C. (2014). *Business Mathematics, Theory & Applications*. Delhi: S. Chand Publishing.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Discipline Specific Course- 3.2(DSC-3.2): Financial Management

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-3.2: Financial Management	**4**	**3**	**0**	**1**	**Pass in XII**	**NIL**

Learning Objectives

The course aims to enable students to acquire knowledge of principles and practice of financial management.

Learning outcomes

After completion of the course, learners will be able to:

1. Analyse the conceptual framework of financial management and get an insight into the concept of time value of money, and risk and return.
2. Estimate cash flows for projects, and evaluate their profitability using capital budgeting techniques.
3. Estimate the cost of capital; and critically analyse different capital structure theories and factors affecting capital structure decision of a firm.
4. Analyse different theories of dividend and factors affecting dividend policy.
5. Estimate working capital requirements of a firm, and device optimum credit policy for a firm.

SYLLABUS OF DSC-3.2

Unit 1: Financial Management: An Overview (3 hours)

Nature, scope and objectives of financial management. An overview of time value of money and risk and return.

Unit 2: Capital Budgeting Decision (12 hours)

The Capital Budgeting Process, Cash Flow Estimation, Different techniques of Capital budgeting: Payback Period Method, Discounted Payback Period Method, Accounting Rate of Return, Net Present Value (NPV), Internal Rate of Return (IRR) and Profitability Index.

Unit 3: Cost of Capital and Financing Decision (15 hours)

Cost of Capital: Estimation of components of cost of capital: Method for calculating cost of equity, Cost of retained Earnings, Cost of Debt, Cost of Preference Capital, Weighted Average Cost of Capital (WACC) and Incremental (Marginal) Cost of Capital.

Capital Structure: Theories of Capital Structure (Net Income, Net Operating Income, MM Hypothesis, Traditional Approach). Operating, Financial and Combined Leverage. EBIT-EPS Analysis. Determinants of Capital Structure.

Unit 4: Dividend Decision (6 hours)

Theories for relevance and irrelevance of dividend decision for corporate valuation- MM Approach, Walter's Model, Gordon's Model. Determinants of Dividend policy.

Unit 5: Working Capital Decision (9 hours)

Concepts of Working Capital, Operating & Cash Cycles, Risk-return Trade off, working capital estimation, Receivables Management.

Note: Use of Spreadsheet should be encouraged for doing basic calculations for various topics in the course and giving students subject related assignments for their internal assessment purposes.

Practical Exercises **30 hours**

The learners are required to:

1. Compute risk and return of various investment alternatives using excel spreadsheet. 2. Estimate cash flows for a hypothetical Start-up. Using excel, evaluate the project's profitability by employing capital budgeting evaluation techniques.
2. Extract data from financial statements of different firms/financial databases and estimate the cost of capital using appropriate software.
3. Extract historical data and evaluate different dividend policies followed by companies of specific industries.
4. Estimate working capital requirements for any two companies belonging to different industries and compare them.

Suggested Readings:

- Brealey, R.A., Myers S.C., Allen F., & Mohanty P. (2020). *Principles of Corporate Finance*. McGraw Hills Education.
- Khan, M.Y. & Jain, P.K. (2011). *Financial Management: Text, Problems and Cases*. New Delhi: Tata McGraw Hills.
- Kothari, R. (2016). *Financial Management: A Contemporary Approach*. New Delhi: Sage Publications Pvt. Ltd.
- Maheshwari, S. N. (2019). *Elements of Financial Management.* Delhi: Sultan Chand & Sons.
- Maheshwari, S. N. (2019). *Financial Management – Principles & Practice.* Delhi: Sultan Chand & Sons.
- Pandey, I. M. (2022). *Essentials of Financial Management.* Pearson.

- Rustagi, R.P. (2022). *Fundamentals of Financial Management.* New Delhi: Taxmann. New Delhi.
- Sharma, S.K. & Sareen, R. (2019). *Fundamentals of Financial Management*. New Delhi: Sultan Chand & Sons (P) Ltd.
- Singh, J.K. (2016). *Financial Management: Theory and Practice.* New Delhi: Galgotia Publishing House.
- Singh, S. and Kaur, R. (2020). *Fundamentals of Financial Management.* New Delhi: SCHOLAR Tech Press.
- Tulsian, P.C. & Tulsian, B. (2017). *Financial Management*. New Delhi: S. Chand.

Additional Resources:

- Chandra, P. (2019). *Financial Management: Theory and Practice*. New Delhi: Tata McGraw Hills.
- Ross, S. A., Westerfield, R. & Jefferey, J. (2017). *Corporate Finance*. Tata McGraw Hills.
- Srivastava, R. and Mishra, A. (2011). *Financial Management.* U.K.: Oxford University Press.
- Van Horne, J. C, & John, W. (2008). *Fundamentals of Financial Management*. Pearson Education.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Discipline Specific Course- 3.3(DSC-3.3): Principles of Marketing

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 3.3 – Principles of Marketing	**4**	**3**	**1**	**0**	**Pass in XII**	**NIL**

Learning Objectives

The objective of this course is to provide basic knowledge of concepts, principles, tools and techniques of marketing and to

provide knowledge about various developments in the marketing.

Learning outcomes

After completion of the course, learners will be able to:

1. Discuss basic concepts of marketing, marketing philosophies and environmental conditions affecting marketing decisions of a firm.
2. Describe the dynamics of consumer Behaviour and process of market selection through STP.
3. Analyse the process of value creation through marketing decisions involving product development.
4. Analyse the process of value creation through marketing decisions involving product pricing and its distribution.
5. Explore marketing decisions involving product promotion, and draft promotion mix strategies.

SYLLABUS OF DSC-3.3

Unit 1: Introduction to Marketing and Marketing Environment (9 hours)

Introduction to Marketing: Scope and Importance; Core concepts of marketing; Marketing Philosophies; Services Marketing, Marketing Mix.
Marketing Environment: Need for studying marketing environment; Micro environmental factors- company, suppliers, marketing intermediaries, customers, competitors, publics; Macro environmental factors – demographic, economic, natural, technological, politico-legal and socio- cultural.

Unit 2: Consumer Behaviour and Market Selection (9 hours)

Consumer Behaviour: Need for studying consumer Behaviour; Stages in Consumer buying decision process; Factors influencing consumer buying decisions.

Market Selection: Choosing market value through STP. Market Segmentation- bases of segmenting consumer markets. Market Targeting, Product Positioning – concept and bases

Unit 3: Product Decisions and New Product Development (9 hours)

Product Decisions: Concept and classification; Levels of Product. Designing value: Product- mix, Branding- types, significance, and qualities of good brand name; Packaging and Labelling- types and functions; Product support services.

New Product Development: New product development process; Product life cycle – concept and marketing strategies.

Unit 4: Pricing Decisions and Distribution Decisions (9 hours)

Pricing Decisions: Objectives, Factors affecting price of a product, Pricing methods, Pricing strategies.

Distribution Decisions: Delivering Value: Channels of distribution- types and functions; Wholesaling and retailing; Factors affecting choice of distribution channel; Logistics decisions.

Unit 5: Promotion Decisions and Developments in Marketing (9 hours)

Promotion Decisions: Communicating Value: Communication process; Importance of Promotion. Promotion-mix tools advertising, personal selling, sales promotion, public relations, publicity and direct marketing; Integrated Marketing Communication.

Developments in Marketing: Sustainable Marketing- concept and issues. Rural marketing- characteristics and rural marketing mix. Social marketing- concept and issues. Digital marketing- concepts and tools.

Exercises:

The learners are required to:

1. Analyse the marketing environment of any firm of your choice.
2. Prepare a marketing mix for a product of your choice to be targeted to a rural market.
3. Select any product and analyse its segmentation strategy in comparison to its immediate competitive product.
4. Examine the marketing strategies followed by companies to prolong the maturity stage and defer its decline.
5. Suggest an appropriate distribution strategy of a product of your choice.
6. Draft promotion mix strategy for a hypothetical e-commerce firm.

Suggested Readings:

● Baines Et. AL. (2021). Fundamentals of Marketing. Oxford University Press.

● Etzel, M. J., Walker, B. J., Stanton, W. J., Pandit, A. (2010). Marketing. Mc Graw Hill.

● Jain, P & Singhal, N. (2021). Principles of Marketing. Scholar Tech Press, Delhi.

● Kapoor, N. (2021). Principles of Marketing. Prentice Hall of India.

● Kotler, P., Armstrong, G., Agnihotri, P. (2018). Principles of Marketing. Pearson Education. Indian edition.

● Kotler, P., Chernev, A., Keller, K. L. (2022). Marketing Management. United Kingdom: Pearson Education.

● Levy, M., Grewal, D. (2022). Marketing. United States: McGraw-Hill Education.

● Mamoria C.B., Bhatacahrya A.(2021). Marketing Management. Delhi: Kitab Mahal.

● Sharma, K., Aggarwal S. (2021). Principles of Marketing. Delhi: Taxmann Publications.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Discipline Specific Elective- 3.1(DSE-3.1): Organisational Behaviour

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE-3.1: Organisational Behaviour	**4**	**3**	**1**	**0**	**Pass in XII**	**NIL**

Learning Objectives

The objective is to develop an in-depth understanding of the concept of organisational behaviour and its relevance in modern organisations. It also aims to expand the knowledge about the complexities of human behaviour, competitiveness, and interpersonal group dynamics.

Learning outcomes

After completion of the course, learners will be able to:

1. Discuss basic concepts of organisational behaviour and their applicability in contemporary organisations.
2. Analyse various means of managing people at the workplace.
3. Recognise the importance of communication and motivation in an organisation.
4. Critically evaluate the different leadership styles and strategies.
5. Summarise the ways to build supportive organisational culture.

SYLLABUS OF DSE-3.1

Unit 1: Introduction (6 hours)

Organisational Behaviour: Concepts and Determinants; Relationship between Management and OB; Emergence of OB; Hawthorne Study; Contributing disciplines of OB; OB models.

Unit 2: Individual Behaviour (9 hours)

Foundations of Individual Behaviour; Personality - Type A/B, Big five personality types, factors influencing personality; Attitude – concept, components, job related attitudes; Learning- concept, theories and reinforcement; Perception and emotions- concept, perceptual process, factors influencing perception, perceptual errors and distortions; Beliefs and values -
concept and types: terminal values and instrumental values.

Unit 3: Communication and Motivation (12 hours)

Communication – Understanding Communication; Persuasive communication; Communication styles; Transactional Analysis (TA), Johari Window.

Motivation – Why people work; Need theories (Maslow's need hierarchy, ERG Theory, McClelland's Theory); Theory X and Theory Y, Two Factors Theory; Contemporary Theories of motivation (Self-Determination Theory, Goal-setting Theory, Reinforcement Theory, Self efficacy Theory).

Unit 4: Group Behaviour and Leadership (12 hours)

Formation of Groups; Group Behaviour - concepts, types- group norms, group roles, and group cohesiveness; Groups Vs Teams; Group decision making – process and types; Organisational conflict – nature, sources, and resolution strategies

Leadership - Concept and theories; Styles of leadership; Leadership continuum; Trait, Behavioural and Situational approach; Leadership grid; Contemporary leadership issue.

Unit 5: Dynamics of Organisational Behaviour (6 hours)

Organisational culture- concept and determinants; Organisational change- importance, types of change, resistance to change, managing change; Stress- individual and organisational factors, prevention and management of stress.

Exercises:

The learners are required to:

1. Analyse the determinants of organisational behaviour in different organisations. 2. Evaluate any personality type as a group activity.
3. Perform a role play on TA and Johari Window.
4. Conduct a primary survey to study leadership styles in different organisations.
5. Practice five different types of stress management techniques including meditation.

Suggested Readings:

● Greenberg, J. (2015). *Behaviour in organisations, 10th edn*. Pearson Education India. ● Hersey, P. K., Blanchard, D., & Johnson, D. (2013). *Management of organisational Behaviour*. Pearson.

● Luthans, F. (2017). *Organisational Behaviour-An evidence based approach*, 12th edn.. McGraw-Hill Education.

● Pareek, U. (2014). *Understanding Organisational Behaviour*. Oxford University Press.
● Robbins, S. T., Judge, T. A. (2019). *Essentials of organisational Behaviour*. Pearson. ● Singh, K. (2015). *Organisational Behaviour: Texts & Cases*, 3rd edn. India: Pearson. Additional Resources

Keywords: Organisational Theories, Personality, Values and Attitudes, Learning, Leadership, Conflict, Organisational Culture.

Note: Latest edition of readings may be used teaching Learning Process The course combines learning through analysis and discussion of case studies and active participation in experiential exercises and simulations. Assessment Methods Class tests/Assignments, Class participation, Presentations, End-semester examination

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Discipline Specific Elective- 3.2(DSE-3.2): Financial Markets and Institutions

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE-3.2: Financial Markets and Institutions	**4**	**3**	**1**	**0**	**Pass in XII**	**NIL**

Learning Objectives

The course aims to provide students an overview of the financial system to help them understand the role of financial institutions and the financial markets.

Learning outcomes

After completion of the course, learners will be able to:

1. Describe the components and functions of a financial system.
2. Analyse integration and linkages between different financial systems and describe how they operate.
3. Analyse the functioning and working of money and capital markets.
4. Describe the functioning and role of various financial institutions.
5. Assess global financial markets and institutions, and spill over of financial crisis across countries.

SYLLABUS OF DSE-3.2

Unit 1: Introduction (6 hours)

An introduction to financial system - components, inter-linkages between financial system and economic development, financial intermediation, indicators of financial development (World Bank); capital allocation-financial institutions vis-a-vis financial markets; evolution of Indian financial system since 1951; recent reforms and developments in Indian financial system.

Unit 2: Financial Markets I: Money Markets (9 hours)

Financial markets - integration of Indian financial markets with global financial markets; money market – functions, organisations and participants; money market instruments; role of central bank in money market; role of Reserve Bank of India in Indian money market; Fixed Income Money Market and Derivative Association of India (FIMMDA).

Unit 3: Financial Markets II: Capital Markets (9 hours)

Capital Markets - introduction, components, role and functions; equity market-methods of issue; debt market-concept, significance and classification; capital market instruments; raising funds from global financial markets; primary and secondary markets- concept, similarities, differences; stock exchanges in India - NSE, BSE; Stock Indices: concept and construction, Major stock indices - global (including Dow Jones and NASDAQ) and Indian (NIFTY and BSE-SENSEX); concept of DEMAT account and depositories (NSDL, CDSL); SEBI and investor protection.

Unit 4: Financial Institutions (12 hours)

Commercial banking - introduction, classification, role, asset liability management, non performing assets; role of technology in banking sector; financial inclusion, recent developments in banking including restructuring, privatisation, MUDRA financing; Insurance - life and non-life insurance companies in India: public and private; Mutual Funds – introduction and their role in capital market development, types of mutual fund schemes (open ended vs close ended, equity, debt, hybrid schemes and Exchange Traded Funds (ETFs); Non banking Financial Companies (NBFCs) – role and types; private equity, venture capital and hedge funds.

Unit 5: Financial Stability (9 hours)

Financial stability-importance and indicators (World Bank, IMF, RBI); understanding financial crisis - causes and policy response; global financial crisis (2008); emerging challenges to financial stability.

Exercises

The learners are required to:

1. Identify one Indian and one global financial conglomerate. Examine their genesis and evolution.
2. Compare the yield curve of India, any other developing country, and a developed country. Analyse the reasons for similarities and differences in them.
3. Pick two leading stock market indices in India. Analyse the method of their computation. Identify the reasons behind the differences and their implications. 4. Pick any three mutual funds and make a comparison based on their risk parameters, portfolio holdings and historical return.
5. Identify any International Financial crisis other than Sub-Prime crisis (2008) and evaluate its spill over on the rest of the world.

Suggested Readings:

●Balachandran, V. (2023). Securities Market & Regulations. Delhi, India: Sultan

Chand & Sons.

● Bhole L.M. & Mahakud J. (2017) *Financial Institutions and Markets: Structure, Growth and Innovations*. Chennai, India: McGraw Hill Education.
● Bhole, L.M., *Financial Markets and Institutions*. Tata McGraw Hill Publishing Company. ● Frederic S. M. & Stanley G. E. (2011). *Financial Markets and Institutions*. Prentice Hall
● Goel,S. (2018). *Financial Markets, Institutions and Services*. PHI learning
● Khan, M.Y. (2017). *Indian Financial System –Theory and Practice*. Vikas Publishing House.

● Kohn (2013). *Financial Institutions and Markets*. Oxford University Press. ● Madura, J. (2018). *Financial Markets and Institutions*. Cengage
● Pathak, B. V. (2018). *Indian Financial System: Markets, Institutions and Services*. New Delhi: Pearson education.

● Saunders, A. & Cornett, M. M. (2007). *Financial Markets and Institutions*. Tata McGraw Hill.

● Sharma, G. L. & Singh, Y. P. (1992). *Contemporary Issues in Finance and Taxation*, Delhi: Academic Foundation.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

Additional Readings

● Annual Reports of Major Financial Institutions in India.

● BSE website www.bseindia.com

● NSDL website

● CDSL website

● National Stock Exchange website www.nseindia.com.

● NIFM, Department of Economic Affairs

● SEBI website www.sebi.gov.in

● Reserve Bank of India website www. rbi.org.in

● FIMMDA website www.fimmda.org

● BIS website www.bis.org

● Economic Survey, www.indiabudget.gov.in

● Reports on Trends and Progress of Banking in India, RBI

● Reports on Currency and Finance, RBI

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Discipline Specific Elective- 3.3(DSE-3.3): Brand Management

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 3.3- Brand Management	**4**	**3**	**1**	**0**	**Pass in XII**	**NIL**

Learning Objectives

The course aims to make students aware of brands, their evolution, extensions, brand Management strategies and its practical implications for business. The course shall focus on developing skills to devise strategies for brand positioning and equity in the market.

Learning outcomes

After completion of the course, learners will be able to:

1. Comprehend the conceptual framework of brand management
2. Analyse brand positioning strategies of popular brands and explore their life cycle 3. Design and implement brand strategies
4. Discuss the concept of brand equity
5. Explore recent issues in branding

SYLLABUS OF DSE-3.3

Unit 1: Introduction (9 hours)
Introduction to Brands and Brand Management, Concept of a Brand, evolution of a Brand, Challenges and Opportunities, Brand Identity, Brands and Consumers, IMC: Evolution and Growth.

Unit 2: Brand Positioning (9 hours)
Brand Building, Identifying and Establishing Brand Positioning and values, Brand Repositioning, Life stages of a Brand, Brand Personality, Brand Image.

Unit 3: Designing Marketing Program (12 hours)
Strategic Brand Management Process, Designing and implementing brand strategies, Contemporary Strategies: storytelling, Internet and Social Media, Brand

Extensions, Brand reinforcement strategies, Brand Portfolio Management, Integrating Advertising with Brand Management.

Unit 4: Brand Equity (12 hours)

Customer based Brand Equity, Measuring and Interpreting Brand Performance: brand equity Management System, New Media Environment: Brands amplifiers, Growing and Sustaining Brand Equity.

Unit 5: Recent Issues in Branding (3 hours)

Managing Strong Brands, Brand Ladder, Country Branding, Global Brand Strategy, Managing Brands over time, Brand Audits, Managing Brands in the Digital Era. Legal and Ethical aspects in Brand Management.

Note: Case Studies may be discussed in every unit, where ever possible to supplement the subject matter.

Exercises:

The learners are required to:

1. Analyse the evolution of brands of various companies.
2. Take up popular brands and analyse the life cycle of select brands.
3. Discuss suggestive strategies for brand positioning.
4. Apply brand management strategies to real life products.
5. Use appeals for advertising and branding of products.
6. Understand the rationale behind a brand story.
7. Develop a brand story for a unique product idea.
8. Discuss case studies on 'Brand Equity' for select popular firms.
9. Participate in group discussions to discuss the recent issues in branding.

Suggested Readings:

- Aaker, D. (2009) *Brand Leadership*. UK: Simon & Schuster.
- Beverland, M. (2018). *Brand Management: Co-creating Meaningful Brands*. UK: SAGE Publications.
- Chernev, A. (2015). *Strategic Brand Management*. Illinois, USA: Cerebellum Press.
- Chitale, A. K. & Gupta, Ravi. (2013). *Product Policy and Brand Management: Text and Cases*, 4th ed. PHI Learning
- Cowley, D. (1991). *Understanding Brands*. India: Kogan Page Ltd.
- John, D. R (2018). *Strategic Brand Management: Lessons for Winning Brands in Globalized Markets.* New Delhi: Oxford University Press.
- Keller, K. L., Swaminathan V., Parameswaran, A. M G, and Jacob, I. C. (2021). *Strategic Brand Management: Building, Measuring and Managing Brand Equity*. India: Pearson Education.
- Miller, D. (2020). *Building a StoryBrand: Clarify Your Message So Customers Will Listen*, India: HarperCollins Publishers.
- Temporal, P. (2010). *Advanced Brand Management*. UK: Harriman House.
- Parameshwaran, M.G. (2006). *Building Brand Value*. India: McGraw Hill Education.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Discipline Specific Elective- 3.4(DSE-3.4): Financial Reporting Analysis & Valuation

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 3.4- Financial Reporting Analysis & Valuation	**4**	**3**	**1**	**0**	**Pass in XII**	**NIL**

Learning Objectives

The course aims to help the learners to understand, analyse and interpret the basic framework of financial reporting and information incorporated in the corporate annual reports.

Learning outcomes

After completion of the course, learners will be able to:

1. Analyse and interpret the information provided in the financial statements of a company. 2. Evaluate the results of financial statements and disclosures of corporate annual reports. 3. Apply principles valuation to tangible and intangible assets.
4. Identify the elements of financial statements.
5. Summarise the emerging areas in financial reporting.

SYLLABUS OF DSE-3.4

Unit 1: Introduction to Corporate Financial Reporting (3 hours)

Meaning of Financial Statement as per Companies Act, 2013; Corporate Financial Reporting - meaning, need and objectives; Users of financial reports, Conceptual Framework for financial reporting. Financial/Accounting information contained in the Financial Statements, their qualitative characteristics; Presentation of financial statements.

Unit 2: Financial Statements and Disclosures (9 hours)

Components and constituents of Basic Financial Statements; Relevant provisions of the Companies Act, 2013 for the preparation of Statement of Profit & loss and Balance Sheet. Contents of annual report, Mandatory and voluntary disclosures through annual report. Report of the Board of Directors and Auditor's Report as per Companies Act, 2013; Business Responsibility and sustainability reporting by listed entities.

Unit 3: Valuation (12 hours)

Valuation of Property Plant and Equipment: Asset valuation techniques : Historical, Fair Value, Net realisable value, Present value. Valuation of Intangible Assets. Valuation of Inventory.

Unit 4: Elements of Financial Statements (12 hours)

Select Elements of Financial Statements: Revenues- Identification and disclosures, Leases and Accounting for Tax.

Unit 5: Emerging Trends in Reporting (9 hours)

Accounting for E-commerce business – Introduction, elements of e-commerce transactions, business models, classification of e-commerce websites, revenue recognition and measurement of costs. Integrated Reporting – Meaning, Purpose, Salient features of framework. Value Added Statement.

Note: Any revision of relevant Accounting Standards/Indian Accounting Standards, which are covered above would become applicable.

Exercises:

The learners are required to:

1. Download annual reports of reputed companies and analyse the contents of financial statements.
2. Examine the voluntary and mandatory information contained in the annual report of the select companies.
3. Collect information regarding the method of valuation of property plant and equipment followed by select reputed companies.
4. Analyse and compare annual reports of ten companies regarding tax related information disclosure.
5. Collect and summarise information from business newspapers and periodicals related to latest developments in financial reporting and valuation.

Suggested Readings:

- Bhattacharjee, A. K. (2022). *Financial Accounting for Business Managers*. Delhi: PHI Learning Pvt. Ltd.
- Gibson, C. H. (2013). *Financial Statement Analysis*. Noida: Cengage Learning India Private Limited.

- Gupta, A. (2018). *Financial Accounting for Management: An Analytical Perspective.* Delhi: Pearson Education.
- Gupta, M., Kaur, H., & Gupta, R. (2019). *Financial Reporting and Analysis*. New Delhi: JSR Publishing House LLP.
- Lal, J., & Gauba, S. (2018). *Financial Reporting and Analysis*. Delhi: Himalaya Publishing House.
- Soffer, L. C., & Soffer, R. J. (2006). *Financial Statement Analysis: A Valuation Approach*. London: Pearson Education.
- Tulsian, P. C., Tulsian, B., & Tulsian, T. (2022). *Analysis of Financial Statements.* New Delhi/NCR: Tcom Prints.
- Tulsian, P. C., Tulsian, B., & Tulsian, T. (2022). *Corporate Accounting.* New Delhi: S. Chand Publication.
- Tulsian, P. C., Tulsian, B., & Tulsian, T. (2022). *Financial Management.* New Delhi: S. Chand Publication.
- Young, S. D., Cohen, J., & Bens, D. A. (2018). *Corporate Financial Reporting and Analysis : A Global Perspective.* USA: Wiley Publications.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Generic Elective- 3.1(GE-3.1): General Management

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE -3.1 – General Management	**4**	**3**	**1**	**0**	**Pass in XII**	**NIL**

Learning Objectives

The course aims to equip learners with essential management related knowledge and skills and their applicability in real world.

Learning outcomes

After completion of the course, learners will be able to:

1. Examine the evolution of management and its significance
2. Comprehend and analyse applicability of managerial functions
3. Recognise the role of decision-making in business.
4. Analyse the role of directing in management
5. Appraise the function of controlling and contemporary issues in management

SYLLABUS OF GE-3.1

Unit 1: Introduction to Management (9 hours)

Principles of management - concept, nature and significance; Evolution of Management thought: Classical (Fayol's principles of management; Taylor's scientific management), Neo classical (Hawthorne Experiments), Modern approach (Systems Approach; Contingency Approach).

Unit 2: Functions of Management (6 hours)

Management functions and their relationship- planning, organizing, staffing, directing and controlling; Functional areas of management – an overview; Coordination - concept, characteristics and importance.

Unit 3: Planning and Organising (12 hours)

Planning- meaning, strategic and operations planning; Decision-making- concept, importance and bounded rationality; Organizing- division of labour & specialization; Organisational structures; Factors affecting organisational design.

Unit 4: Directing and Staffing (9 hours)

Directing- concept and importance; Concept and theories of Motivation- Maslow's need hierarchy, Herzberg's two-factor theory, Theory X&Y; Leadership-meaning and importance; Communication- meaning and importance; Staffing- concept, importance and process.

Unit 5: Controlling and Contemporary Issues in Management (9 hours)

Principles of Controlling, performing controlling function; Management challenges of the 21st Century; Factors reshaping and redesigning management purpose, performance and reward perceptions- internationalisation; Digitalisation; Entrepreneurship & innovation; Workplace Diversity

Exercises:

The learners are required to:

1. Assess the applicability of managerial theories in today's corporate world.
2. Discuss the interrelationship between various managerial functions as a group discussion.
3. Perform a role play on bounded rationality or on any other aspect of decision-making.
4. Identify various techniques used by organisations to motivate employees.
5. Study and make a report to assess the impact of emerging issues in management.

Suggested Readings:

● Drucker, P. F. (1954). *The Practice of Management*. New York: Harper & Row.

● Drucker, P. F. (1999). *Management Challenges for the 21st Century*. Harper Collins Publishers Inc.

● Griffin. (2021). *Management Principles and Application*. Cengage.

● Koontz, H. & Weihrich, H. (2012). *Essentials of Management: An International and Leadership Perspective.* McGraw Hill Publications

● Kumar, P. (2019). *Management: Principles and Applications.* Delhi: JSR Publication House LP.

● Mahajan, J.P. & Mahajan, A. (2017). *Management Principles and Applications*. Vikas Publications

● Rao, V.S.P. (2022). *Management Principles and Applications*. Taxmann Publications.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Generic Elective- 3.2(GE-3.2): Basics of Advertising

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
GE 3.2- Basics of Advertising	4	3	1	0	Pass in XII	Studied MARKETING FOR BEGINNERS (GE- 1.3)

Learning Objectives

The objective of this paper is to familiarise the students with concepts and techniques of advertising used in marketing.

Learning outcomes

After completion of the course, learners will be able to:

1. Identify communication objectives behind advertising various products and services.
2. Evaluate the importance of advertising appeals.
3. Explain various media elements in the advertising decisions.
4. Examine the role of various advertising agencies.
5. Evaluate the effectiveness of advertising campaigns.

SYLLABUS OF GE-3.2

Unit 1: Introduction to Advertising (9 hours)

Marketing Communication Process; Advertising: Significance, Types and Objectives; Target audience selection- basis; DAGMAR Approach; Methods of setting of Advertising Budget.

Unit 2: Message (9 hours)

Advertising Appeals; Advertising Copy: Elements of Print Advertising Copy. **Unit 3: Media Decisions (9 hours)**

Types of Media: Merits and Demerits; Advertising through internet and interactive media issues and considerations.

Unit 4: Advertising Agency (9 hours)

Role, Types and Selection of advertising agency.

Unit 5: Advertising: Effectiveness and Institutional Framework (9 hours)

Rationale of Measuring Advertising Effectiveness: Evaluating Communication and Sales Effect; Pre and Post testing Techniques. Brief role of Advertising Standards Council of India (ASCI).

Exercises:

The learners are required to:

1. Analyse the marketing communication strategies of select firms.
2. Perform a content analysis of various advertising campaigns to:
   a. identify the objective of an advertisement forming part of an advertising campaign.
   b. find out the target audience of a campaign.
   c. prepare a report on various media options used in a campaign.
   d. prepare a report on message strategy and copy elements used in the campaign.
3. Select a product to develop an advertising campaign for it.
4. Evaluate the advertising appeals of certain top brands.
5. Assess the merits and demerits of different forms of media used in advertising.
6. Prepare a list of advertising agencies along with their strategies.
7. Analyse case studies on evaluating the effectiveness of advertising campaigns.

Suggested Readings:

- Belch, G. E., Belch, M. A., & Purani, K. (2009). *Advertising and Promotion: An Integrated Marketing Communications Perspective*. New York: McGraw Hill Education.
- Gupta, R. (2012). *Advertising Principles and Practice*. S. Chand
- Kapoor, Neeru. (2022). *Fundamentals of Advertising- IInd Edition.* New Delhi: Cengage Learning India Pvt. Ltd.
- Shah, K., & D' Souza, A. (2008). *Advertising and Promotions: An IMC Perspective.* New Delhi: Tata McGraw Hill Publishing Company Limited.
- Sharma, K. (2018). *Advertising: Planning and Decision Making*. New Delhi: Taxmann Publication.
- Sharma,S. & Singh,R. *Advertising: Planning and Implementation, 3rd ed.* PHI Learning

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Generic Elective- 3.3(GE-3.3): Investing in Stock Markets

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE 3.3- Investing in Stock Markets	**4**	**3**	**1**	**0**	**Pass in XII**	**NIL**

Learning Objectives

The course aims to familiarize the students with the skills required to operate in the stock market. They can learn the trading mechanism of the stock exchanges.

Learning outcomes

After completion of the course, learners will be able to:

1. Evaluate the investment environment as well as risk & return framework.

2. Conduct fundamental analysis to identify under-priced/overpriced securities.

3. Conduct technical analysis to make buy and hold decisions in the stock market. 4. Describe the functioning of Indian Stock Market.
5. Analyse mutual funds as an investment alternative.

SYLLABUS OF GE 3.3

Unit 1: Basics of Investing (9 hours)

Basics of investment & investment environment. Concept of risk and return, Risk and return trade-off, Types of investing and investors. Avenues of investments - Equity shares, Preference shares, Bonds & Debentures, Insurance schemes, Mutual funds, Index funds, ETF. Security markets - primary Market, secondary Market and derivative market. Responsible Investment.

Unit 2: Fundamental Analysis (9 hours)

Top-down and bottom-up approaches, Analysis of international & domestic economic scenario, industry analysis, company analysis (quality of management, financial analysis: both annual and quarterly, income statement analysis, position statement analysis including key financial ratios, cash flow statement analysis, EBIT,

capital gearing ratio, return on investment, return on equity, EPS and DPS analysis, Industry market ratios: operating profit ratio, net profit ratio, PE, PEG, price over sales, price over book value, dividend yield, earning yield, debt equity ratio, eva). Understanding the shareholding pattern of the company.

Unit 3: Technical Analysis (9 hours)

Trading rules (credit balance theory, confidence index, filter rules, market breadth, advances vs declines) and charting (use of historic prices, simple moving average and MACD, basic and advanced interactive charts). Do's & Don'ts of investing in markets.

Unit 4: Indian Stock Market (9 hours)

Primary Markets (IPO, FPO, Private placement, OFS), Secondary Markets (cash market and derivative market: Futures and Options), Market Participants: stock broker, investor, depositories, clearing house, stock exchanges. role of stock exchange, stock exchanges in india BSE, NSE and MCX. Security market indices: Nifty, Sensex and sectoral indices, Sources of financial information. Trading in securities: Demat trading, types of orders, using brokerage and analyst recommendations.

Unit 5: Investing in Mutual Funds (9 hours)

Concept and background of mutual funds: advantages, disadvantages of investing in mutual funds, types of mutual funds- open-ended, close-ended, equity, debt, hybrid, index funds, exchange traded funds and money market funds. Factors affecting the choice of mutual funds. CRISIL mutual fund ranking and its usage. Calculation and use of Net Asset Value.

Exercises:

The learners are required to:

1. Compute risk and return of various investment alternatives using excel spreadsheet.
2. Estimate the value of equity stocks of at least 2 listed companies by applying principles of fundamental analysis.
3. Extract historical prices and volumes of equity stocks of any two companies. Predict their price movements using appropriate methods of technical analysis.
4. Extract all the forms and documents required for listing of a public company on the Stock exchange. Prepare a report on the activities performed by a Merchant Banker for launching an Initial Public Offer.
5. Pick any three mutual funds and compare them on the basis of their risk parameters, portfolio holdings and historical return.

Suggested Readings:

- Chandra, P. (2017). Investment Analysis and Portfolio Management: Tata McGraw Hill Education, New Delhi.
- Chaturvedi S., Kaur G., Singh A. & Kaur J. (2021). *Investing in Stock Markets*. Scholar Trust Press.
- Kevin, S. (2022). Security Analysis and Portfolio Management: PHI Learning, Delhi.
- Kumar V., Kumar N., & Sethi R. (2021). *Investing in Stock Markets*. Ane Books.
- Pandian, P. (2012). *Security Analysis and Portfolio Management.* New Delhi: Vikas Publishing House.
- Ranganatham, M., & Madhumathi, R. (2012) Security Analysis and Portfolio Management: Pearson Education, India.
- Singh J. K. & Singh A. K. (2017). *Investing in Stock Markets.* Delhi: A. K. Publications, Delhi.
- Tripath V. & Pawar N. (2022). Investing in Stock Markets: Taxmann Publications.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Generic Elective- 3.4(GE-3.4): Financial Statement Analysis

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE 3.4 – Financial Statement Analysis	4	3	1	0	Pass in XII	NIL

Learning Objectives

The course aims to enable the student to analyse and interpret the financial statements and related footnotes of publicly traded companies.

Learning outcomes

After completion of the course, learners will be able to:

1. Describe the meaning of financial statements as per Companies Act, 2013. 2. Discuss the techniques of financial statements analysis.
3. Compute the financial ratios using spreadsheets.
4. Examine the cash position of companies using the cash flow statements. 5. Analyse the financial performance of companies using ratio analysis.

SYLLABUS OF GE-3.4

Unit 1: Introduction (9 hours)

Introduction to financial statements ,Uses & Limitations of Financial Statements, users of accounting information, an overview of Financial statements as per companies act,2013, Balance sheet, Statement of Profit and Loss, Cash Flow statement, Statement of changes in Equity, Notes to the accounts, Significant accounting policies,. Brief introduction of accounting standards.

Unit 2: Techniques of financial statements analysis (9 hours)

Comparative and common-size statements: horizontal and vertical analysis, trend analysis.

Unit 3: Ratio analysis (9 hours)

Ratio analysis and interpretation: liquidity, solvency, profitability, activity and market ratios; Du Pont analysis.

Unit 4: Cash Flow Analysis (9 hours)

Importance and objective of understanding a firm's cash flows, Structure of Cash flow statement: Financing, investing and operating activities, Preparation of Cash Flow statement as per AS 3 (revised) and Ind AS 7.

Unit 5: Financial Statement analysis – Real-life case work (9 hours)

Analysis of financial statements (Income Statement, Balance sheet, Cash flow statement) of any two listed companies of similar market capitalization from the same sector/industry using spreadsheets. Use Ratio analysis and Industry averages to draw inferences about the company's financial health.

Exercises:

The learners are required to:

1. Download soft copies of annual reports of public listed companies & analyse the financial statements.
2. Prepare the comparative & common size financial statements for three years of at least two listed companies.
3. Compute accounting ratios to analyse the operating efficiency, solvency, profitability and liquidity position of any company from its financial statements.
4. Analyse & interpret the cash position of companies using the cash flow statements. 5. Analysis & interpret the financial ratios of select companies on the basis of their financial statements.

Note: Students should be encouraged to use spreadsheets for practical exercises. Suggested Readings:

- Gupta, A. (2018). *Financial Accounting for Management - An Analytical Perspective*. Delhi: Pearson Education.
- Lal, J., & Gauba, S. (2018). *Financial Reporting and Analysis*. Delhi: Himalaya Publishing House.
- Myer, J. N. (1965). *Financial Statement Analysis*. USA: Prentice-Hall.
- Penman, S.H. (2013). *Financial Statement Analysis.* Singapore: Tata McGraw Hill.
- Subramanyam, K. R., & Wild, J. J. (2014). *Financial Accounting – A Managerial Perspective.* Delhi: Prentice Hall of India.
- Tulsian, P. C., Tulsian, B., & Tulsian, T. (2022). *Analysis of Financial Statements.* New Delhi/NCR: Tcom Prints.
- Tulsian, P. C., Tulsian, B., & Tulsian, T. (2022). *Corporate Accounting.* New Delhi: S. Chand Publication.
- Tulsian, P. C., Tulsian, B., & Tulsian, T. (2022). *Financial Management.* New Delhi: S. Chand Publication.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B. Com. (Prog.)

Discipline Specific Course- 3.1(DSC-3.1): Business Statistics

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC - 3.1: Business Statistics	4	3	0	1	Pass in XII	NIL

Learning Objectives

The course aims to develop amongst the learners the ability to summarize, analyse and interpret quantitative information for business decision making.

Learning outcomes

After completion of the course, learners will be able to:

1. Examine and interpret various descriptive properties of statistical data.
2. Identify probability rules and concepts relating to discrete and continuous random variables to answer questions within a business context.
3. Analyse the underlying relationship between variables and perform predictive analysis using regression models.
4. Analyse the trends and tendencies over a period through time series analysis.
5. Apply index numbers to real life situations.

SYLLABUS OF DSC-3.1

Unit 1: **Descriptive Statistics (9 hours)**

Measures of Central Tendency: Concept and properties of averages including Arithmetic mean, Median and Mode.
Measures of Dispersion: An overview of Range, Quartile Deviation and Mean Deviation; Standard deviation; Variance and Coefficient of variation.
Moments: Computation and significance; Skewness; Kurtosis.

Unit 2: Probability and Probability Distributions (15 hours)

Theory and approaches to probability; Probability Theorems: Addition and Multiplication; Conditional probability and Bayes' Theorem.
Expectation and variance of a random variable.
Discrete Probability distributions: Binomial and Poisson (Properties and Applications). Normal distribution: Properties of Normal curve; Computation of Probabilities and Applications.

Unit 3: Simple Correlation and Regression Analysis (12 hours)

Correlation Analysis: Meaning and types of Correlation; Correlation Vs Causation; Pearson's coefficient of correlation (computation and properties); Probable and standard errors; Rank correlation.
Regression Analysis: Principle of least squares and regression lines; Regression equations and estimation; Properties of regression coefficients; Relationship between Correlation and Regression coefficients; Standard Error of Estimate.

Unit 4: Time Series Analysis (6 hours)

Time Series Data; Components of time series; Additive and Multiplicative models.
Trend analysis; Fitting of trend using principle of least squares – linear and second-degree parabola.
Shifting of Origin and Conversion of annual linear trend equation to quarterly/monthly basis and vice-versa.

Unit 5: Index Numbers (3 hours)

Meaning and uses of index numbers.
Construction of Index numbers: Methods of Laspeyres, Paasche and Fisher's Ideal index. Construction and Utility of Consumer Price Indices; BSE SENSEX, and NSE NIFTY.

Practical Exercises: 30 hours

The learners are required to:

1. Observe and apply the concepts of descriptive statistics in real life situations.
2. Practice basic calculations in statistics using spreadsheets and try to use it for solving subject related assignments.
3. Conduct a small primary research/survey in groups and analyse the data using statistical tools discussed in the class (Examples: Buying behaviour, Motivation, Stress, Brand aspects, Sales Projections, Impact of advertisements etc).
4. Conduct a statistical experiment to estimate the probability of any event occurring in future.
5. Analyse the relationship between different factors affecting the demand for any product. Predict future demand of the product using regression analysis.
6. Analyse the past price movement in any equity stock using trend analysis.
7. Construct a hypothetical index that is representative of large cap stocks listed on NSE.

Suggested Readings:

- Anderson, D. R. (2019). *Statistics for learners of Economics and Business*. Boston: Cengage Learning.
- Douglas A. L., Robert D. M., & William G. M. (2022). *Basic Statistics for Business and Economics*. Mc-Graw-Hill International editions.
- Gupta, S. C. & Gupta, I. (2018). *Business Statistics*, Mumbai: Himalaya Publishing House.
- Gupta, S. P., & Gupta, A. (2018). *Business Statistics: Statistical Methods*. New Delhi: S. Chand Publishing.
- Hazarika, P. A. (2012). *Textbook of Business Statistics*. New Delhi: S. Chand Publishing.
- Levine, D. M., Krehbiel, C., & Berenson, L. (2009). *Viswanathan. Business Statistics – A First Course*. Pearson Education.
- Levin R., Rubin D. S., Rastogi S., & Siddqui M. H. (2017). *Statistics for Management.* London: Pearson Education.
- Mark L. B., Bernard M. B., David M. L., Kathryn A. S., & David F. S. (2020). *Basic Business Statistics.* Pearson.
- Murray R. S., Larry J. S. (2017). *Statistics*. Tata McGraw Hill edition.
- Siegel, O. F. (2016). *Practical Business Statistics*. Cambridge Academic Press.
- Thukral, J. K. (2021). *Business Statistics*, New Delhi: Taxman Publication.
- Tulsian, P.C., Jhunjhunwala B. (2020). *Business statistics*. S. Chand Publishing.
- Vohra, N. D. (2017). *Business Statistics*. New Delhi: McGraw-Hill Education India.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Discipline Specific Course- 3.2(DSC-3.2): Financial Management

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC -3.2: Financial Management	**4**	**3**	**0**	**1**	**Pass in XII**	**NIL**

Learning Objectives

The course aims to enable students to acquire knowledge of principles and practice of financial management.

Learning outcomes

After completion of the course, learners will be able to:

1. Analyse the conceptual framework of financial management and get an insight into the concept of time value of money, and risk and return.
2. Estimate cash flows for projects, and evaluate their profitability using capital budgeting techniques.
3. Estimate the cost of capital; and critically analyse different capital structure theories and factors affecting capital structure decision of a firm.
4. Analyse different theories of dividend and factors affecting dividend policy.
5. Estimate working capital requirements of a firm, and device optimum credit policy for a firm.

SYLLABUS OF DSC-3.2

Unit 1: Financial Management: An Overview (3 hours)

Nature, scope and objectives of financial management. An overview of time value of money, risk and return.

Unit 2: Capital Budgeting Decision (12 hours)

The Capital Budgeting Process, Cash Flow Estimation, Different techniques of capital budgeting: Payback Period Method, Discounted Payback Period Method, Accounting Rate of Return, Net Present Value (NPV), Internal Rate of Return (IRR), Profitability Index

Unit 3: Cost of Capital and Financing Decision (15 hours)

Cost of Capital: Estimation of components of cost of capital: Method for calculating cost of equity, cost of retained earnings, cost of debt and cost of preference capital, Weighted Average Cost of Capital (WACC). Incremental (Marginal) cost of capital.
Capital Structure- Theories of capital structure (Net Income, Net Operating Income, MM Hypothesis, Traditional Approach). Operating, Financial and Combined Leverage. EBIT-EPS Analysis. Determinants of Capital Structure

Unit 4: Dividend Decision (6 hours)

Theories for relevance and irrelevance of dividend decision for corporate valuation- MM Approach, Walter's Model, Gordon's Model, Determinants of dividend policy

Unit 5: Working Capital Decision (9 hours)

Concepts of working capital, operating & cash cycles, risk-return trade off, working capital estimation, receivables management.

Note: Use of Spreadsheet should be encouraged for doing basic calculations, quick understanding, problem solving and giving students subject related assignments for their internal assessment purposes.

Practical Exercises **30 hours**

The learners are required to:

1. Compute risk and return of various investment alternatives using excel spreadsheet.
2. Estimate cash flows for a hypothetical Start-up. Using excel, evaluate the project's profitability by employing capital budgeting evaluation techniques.
3. Extract data from financial statements of different firms/financial databases and estimate the cost of capital using appropriate software.
4. Extract historical data and evaluate different dividend policies followed by companies of specific industries.
5. Estimate working capital requirements for any two companies belonging to different industries and compare them.

Suggested Readings:

- Brealey, R. A., Myers S. C., Allen F., & Mohanty P. (2020). *Principles of Corporate Finance*. McGraw Hills Education.
- Khan, M. Y. & Jain, P. K. (2011). *Financial Management: Text, Problems and cases*. New Delhi: Tata McGraw Hills.
- Kothari, R. (2016). *Financial Management: A Contemporary Approach*. New Delhi: Sage Publications Pvt. Ltd.
- Maheshwari, S. N. (2019). *Elements of Financial Management*. Sultan Chand & Sons.
- Maheshwari, S. N. (2019). *Financial Management – Principles & Practice*. Sultan Chand & Sons.
- Pandey, I. M. (2022). *Essentials of Financial Management*. Pearson.
- Rustagi, R.P. (2022). *Fundamentals of Financial Management*. New Delhi: Taxmann Pub. Pvt. Ltd.
- Sharma, S. K. and Sareen, R. (2019). *Fundamentals of Financial Management*. New Delhi: Sultan Chand & Sons (P) Ltd.
- Singh, J. K. (2016). *Financial Management: Theory and Practice*. New Delhi: Galgotia Publishing House.
- Singh, S. & Kaur, R. (2020). *Fundamentals of Financial Management*. New Delhi: SCHOLAR Tech Press.
- Tulsian, P.C. & Tulsian, B. (2017). *Financial Management*. New Delhi: S. Chand.

Additional Resources:

- Chandra, P. (2019). *Financial Management: Theory and Practice*. New Delhi: Tata McGraw Hills.
- Ross, S. A., Westerfield, R. & Jefferey, J. (2017). *Corporate Finance*. Tata McGraw Hills.
- Srivastava, R. & Mishra, A. (2011). *Financial Management*. U.K.: Oxford University Press.
- Van Horne, J. C. & John, W. (2008). *Fundamentals of Financial Management*. Pearson Education.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Discipline Specific Course- 3.3(DSC-3.3): Principles of Marketing

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre requisite of the course (if any)
		Lecture	**Tutorial**	**Practical/ Practice**		
DSC -3.3: Principles of Marketing	**4**	**3**	**1**	**0**	**Pass in XII**	**NIL**

Learning Objectives

The objective of this course is to provide basic knowledge of concepts, principles, tools and techniques of marketing and to provide knowledge about various developments in the marketing.

Learning outcomes

After completion of the course, learners will be able to:

1. Discuss basic concepts of marketing, marketing philosophies and environmental conditions affecting marketing decisions of a firm.
2. Describe the dynamics of consumer behaviour and process of market selection through STP stages.
3. Analyse the process of value creation through marketing decisions involving product development.
4. Analyse the marketing decisions involving product pricing and its distribution.
5. Explore marketing decisions involving product promotion, and draft promotion mix strategies.

SYLLABUS OF DSC-3.2

Unit-1: Introduction to Marketing and Marketing Environment (9 hours)

Introduction to Marketing: Meaning, Scope and Importance; Marketing Philosophies; Marketing Mix for goods and services.

Marketing Environment: Need for studying marketing environment; Micro environmental factors- company, suppliers, marketing intermediaries, customers, competitors, publics; Macro environmental factors – demographic, economic, natural, technological, politico-legal and socio- cultural.

Unit-2: Consumer Behaviour and Market Selection (9 hours)

Consumer Behaviour: Need for studying consumer behaviour; Stages in Consumer buying decision process; Factors influencing consumer buying decisions.

Market Selection: Market Segmentation: Concept and Bases. Market Targeting, Product Positioning – concept and bases.

Unit-3: Product Decisions and New Product Development (9 hours)

Product Decisions: Concept and classification; Levels of Product. Product mix; Branding-concept, types, significance, qualities of good brand name; Packaging and Labeling-types and functions; Product support service; New product development process; Product life cycle – concept and marketing strategies.

Unit-4: Pricing Decisions and Distribution Decisions (9 hours)

Pricing Decisions: Objectives, Factors affecting price of a product; Pricing methods and strategies.

Distribution Decisions: Channels of distribution- types and functions. Factors affecting choice of distribution channel; Distribution logistics decisions.

Unit-5: Promotion Decisions and Developments in Marketing (9 hours)

Promotion Decisions: Communication process; Importance of Promotion. Promotion mix tools: Distinctive characteristics of advertising, personal selling, sales promotion, public relations, and direct marketing.

Developments in Marketing: Sustainable Marketing, Rural marketing, Social marketing Digital marketing – an overview.

Exercises:

The learners are required to:

1. Submit a report on any one marketing aspect of an organisation/group/cell/society/unit/department operating in your College/Institute.

2. Choose any company engaged in sustainable marketing and prepare a presentation of the analysis of its marketing mix. Propose changes to enhance its marketing mix.

3. Describe and analyse the STP strategy of a multinational company of your choice.

4. With reference to the concept of levels of a product examine the marketing strategy of any company which has customized the augmented product and has gained customer satisfaction.

5. Visit two bank branches (one being a public sector and the other being an international bank branch) and meet the PRO/ manager or a suitable staff member. Outline the key elements of the marketing strategy pursued by the branch managers and compare the implementation of the same. Prepare a report about these observations with a critical analysis of the same.

6. Analyse the distribution strategy of any product of your choice.

7. Draft promotion mix strategy for a hypothetical newly floated fine dining restaurant.

*Note: These are suggestive exercises.

Suggested Readings

- Baines et al. (2021). *Fundamentals of Marketing*. Oxford University Press
- Etzel, M. J., Walker, B. J., Stanton, W. J., & Pandit, A. (2010). *Marketing*. McGraw Hill.
- Jain, P & Singhal, N. (2021). *Principles of Marketing*. Delhi: Scholar Tech Press.
- Kapoor, N. (2021). *Principles of Marketing*. Prentice Hall of India.
- Kotler, P., Armstrong, G., & Agnihotri, P. (2018). *Principles of Marketing*. Pearson Education. Indian edition.
- Kotler, P., Chernev, A., & Keller, K. L. (2022). *Marketing Management*. United Kingdom: Pearson Education.
- Levy, M. & Grewal, D. (2022). *Marketing*. United States: McGraw-Hill Education.
- Mamoria C.B. & Bhatacahrya, A. (2022). *Marketing Management*. Delhi: Kitab Mahal.
- Sharma, K. & Aggarwal S. (2021). *Principles of Marketing*. Delhi: Taxmann Publications.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMERCE BASED B.A. (PROG.)

B.A. Programmes with Commerce (Entrepreneurship and Small Business)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
BAC: Discipline (ESB)-A3: Contemporary Policy and Institutional Frame work (Non-Major/Major)	**4**	**3**	**1**	**0**	**Pass in XII**	**Studied Fundamentals of Entrepreneurship (BAC: Discipline (ESB) – A2)**
BAC: DSC - 3: Business Laws (Major)	**4**	**3**	**1**	**0**	**Pass in XII**	**NIL**

Discipline Core- A3(BAC: Discipline (ESB)-A3): Contemporary Policy and Institutional Framework (Non-Major/Major)

Learning Objectives

The purpose of this paper is to acquaint students with various contemporary policies and institutional framework that support entrepreneurial promotion.

Learning outcomes

After completion of the course, learners will be able to:

1. Discuss the Micro, Small and Medium Enterprises Development Act, 2006
2. Summarize and be well-versed with the changing face of MSME in the light of liberalized economic policy.
3. Describe the legal framework governing MSMEs.
4. Discuss the government support system for entrepreneurial options, and describe the working of promotional programmes for SMEs
5. Evaluate the various marketing and financial support systems.

SYLLABUS OF BAC: Discipline (ESB)-A3

Unit I: Introduction (9 hours)

Micro, Small and Medium Enterprises Development Act (MSMEDA), 2006; Definitions of MSME, institutional support for SMEs; Provisions pertaining to the promotion and development of MSME.

Unit II: Policy Perspective Changes (9 hours)
Changing context of the MSMEs in the era of liberalization, privatization and globalization; Changing perception on competitiveness and quality issues; Changing face of marketing strategy of products of MSMEs; government schemes for SMEs in India.

Unit III: Legal Framework and SMEs (9 hours)

Provisions of various laws applicable to SMEs, (objectives, definition and salient provisions of industrial, commercial and labor laws applied to SMEs), need for a comprehensive legal framework for SME sector.

Unit IV: Support System and SMEs (9 hours)

Promotional programmes for SMEs, evaluation of institutional support system for SMEs operating in the country; Support for entrepreneurship through skill development programmes of government.

Unit V: Marketing and Financial Support System (9 hours)

Institutions for promoting entrepreneurial training and development- objectives, schemes of incentives- financial and non-financial incentives; Training needs of existing entrepreneurs (particularly First generation entrepreneurs); Support for enhancing marketing, production, and export performance.

Suggested Readings

- Nanda, K. C. (1999). *Credit and Banking: What Every Small Entrepreneur (and Banker) Must Know*. SAGE Publications Pvt. Limited.
- Verma, J. C., & Singh, G. (2002). *Small Business and Industry: A Handbook for Entrepreneurs*. Sage Publications..

Additional Resources

Peters, B. G., & Zittoun, P. (2016). Contemporary approaches to public policy. *Theories, Controversies and Perspectives. UK: Palgrave Macmillan*.

Exercises:
The learners are required to:

1. Identify the recent developments in Micro, Small and Medium Enterprises sector.
2. List down the latest government schemes for SMEs.
3. Describe and discuss the legal framework governing MSMEs.
4. Evaluate the institutional support system for SMEs.
5. Identify and evaluate different financial and non-financial incentives available for promotion of entrepreneurship.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE- 3.1(DSC-3.1): BUSINESS LAWS (MAJOR)

Learning Objectives

To impart basic knowledge of the important business laws relevant for the inception and conduct of general and business activities with relevant case laws.

Learning outcomes

After completion of the course, learners will be able to:

1. Understand and analyse basic aspects of contracts for the formation of the contracts
2. Explore various modes of discharge of contract.
3. Analyse the remedies available for breach of contract
4. Comprehend the provisions of the special contracts viz. Indemnity, guarantee, bailment, and pledge
5. Review various concepts of the contract of agency.

SYLLABUS OF BAC: DSC-3.1

Unit 1: Introduction to the Law of Contracts (18 hours)

Contract – meaning, characteristics and kinds. Essentials of a valid contract - Offer and acceptance, consideration, contractual capacity, free consent, the legality of objects. Void agreements, Quasi Contracts.

Unit 2: Discharge of Contracts (7 hours)

Meaning, Modes of discharge- performance, mutual consent, supervening impossibility, lapse of time, operation of law, breach of contract

Unit 3: Remedies for breach of contract (3 hours)

Rescission, damages, quantum meruit, suit for specific performance, suit for injunction.

Unit 4: Special Contracts-1 (9 hours)

Contract of Indemnity and Guarantee: Meaning of Indemnity, difference between indemnity and guarantee, nature and extent of surety's liability, rights of surety, discharge of surety, Contract of Bailment & Pledge: Pledge by non-owner.

Unit 5: Special Contracts-2 (8 hours)

Contract of Agency: Modes of creation of agency, extent of agent's authority, rights and duties of agents, personal liability of agent, termination of agency.

Exercises:

The learners are required to:

1. Enlist real-life examples to differentiate between offer and invitation to an offer and acceptance.
2. List out some recent cases of supervening impossibility and discharge of contract. 3. Enumerate different types of damages available under different breach of contract situations.
4. Prepare a list of gratuitous and non-gratuitous bailment contracts entered into daily life. 5. Observe from your environment how principal-agent relationships get created in different situations.

Suggested Readings:

- Dagar, I. and Agnihotri, A. (2020). *Business Law: Text and Problem*. 1st edn. India: SAGE Publications Pvt. Ltd.
- Singh, A. (2016). *Company law*. India: Eastern Book Company, Lucknow.
- Sharma, J.P. and Kanojia, S. (2018). *Business Laws. 1st edn*. Bharat Law House Pvt Ltd.
- Tulsian, P.C. (2006). *Business law. 3rd edn.* New Delhi: Tata McGraw-Hill Pub. Co.
- Jagota, R. (2022). *Business Law. 1st edn*. Scholar Tech Press.

Additional Resources

- Kuchhal, M.C. and Kuchhal, V. (2013). *Business law*. New Delhi: Vikas Publication Ltd.
- Arora, S. (2022). *Business Laws. 10th edn*. India: Taxmann Publications Private Limited.
- Sharma, J.P. and Kanojia, S. (2015). *Vyavsayik Sanniyam*. Hindi Madhyam Karyanvaya Nideshalaya, Delhi University. (For Hindi)

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

A. Programmes with Commerce (Accounting and Finance)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
BAC: Discipline (A&F)- A3: Investment Analysis and Business Valuation (Non-Major/Major)	**4**	**3**	**1**	**0**	**Pass in XII**	**Studied Fundamentals of Investment (BAC: Discipline (A&F) – A2)**
BAC: DSC -3: Business Laws (Major)	**4**	**3**	**1**	**0**	**Pass in XII**	**NIL**

Discipline Core- A3(BAC: Discipline (A&F)-A3): Investment Analysis and Business Valuation (Non-Major/Major)

Learning Objectives

The course aims to equip the student with valuation techniques for different financial instruments for investments.

Learning outcomes

After completion of the course, learners will be able to:

(1) Explain the basic concepts related to investment, risk and return.
(2) Understand the technique of fundamental analysis.
(3) Apply the technique of technical analysis.
(4) Estimate the bond pricing and equity valuation.
(5) Evaluate different approaches to valuation of an asset.

SYLLABUS OF BAC: Discipline (ESB)-A3

Unit 1: Introduction (9 hours)

Introduction to Investments; Objectives of Investments; Basics of Risk and Return: Concept and calculation of risk and returns, Application of standard deviation, coefficient of variation, the concept of beta; Systematic Vs Unsystematic risk (Inflation Risk, Interest Rate Risk, Credit Risk, Maturity Risk, Liquidity Risk, reinvestment risk); impact of taxes and inflation on returns; financial assets vs real assets; Market participants - Investors, Speculators, hedgers and arbitrageurs.

Unit 2: Fundamental Analysis (9 hours)

Top-down and bottom-up approaches, Analysis of international & domestic economic scenario, Industry analysis, Company analysis (Quality of management, financial analysis: Both Annual and Quarterly, Income statement analysis, position statement analysis including key financial ratios, Cash flow statement analysis, EBIT, Capital gearing ratio, Return on Investment, Return on Equity, EPS and DPS analysis, Industry market ratios: Operating Profit Ratio, Net Profit Ratio, PE, PEG, Price over sales, Price over book value, Dividend Yield, Earning Yield, Debt- Equity Ratio, EVA). Understanding the Shareholding pattern of the company.

Unit 3: Technical Analysis and Efficient Market Hypothesis (9 hours)

Introduction to Technical Analysis; Strengths and weakness of Technical Analysis; Dow Theory; Elliott Wave theory; Charting the historical prices (Bar Chart, Line Chart, Point and figure chart, candlestick charts, triangles); Price patterns; Support and resistance level; Weakness and shortcomings of Technical Analysis. Introduction to Efficient Market Hypothesis (EMH); Forms of efficient Markets (An Overview).

Unit 4: Basics of Equity & Bond Valuation and Portfolio Management (9 hours)

Bond fundamentals; bond valuation; estimation of bond yield; Investment in shares; Intrinsic value of shares; Valuation of shares – dividend discounting models, Price earning approach of equity valuation. Introduction to Portfolio, Portfolio diversification, calculation of portfolio risk and return (2 securities only).

Unit 5: Business Valuation (9 hours)

Introduction to Valuation: Approaches to Valuation, Discounted Cash Flow, Relative Valuation, Role of valuation; Discounted Cash-flow Valuation: Estimating discount rates, cost of equity, cost of equity to cost of capital; Valuation of an asset with guaranteed cash flows, introducing uncertainty into the valuation.

Exercises:

The learners are required to:

1. Calculate risk and return of an asset using the spreadsheet.

2. Conduct fundamental analysis of top five companies listed on the national stock exchange.
3. Use technical analysis tool in predicting price movements through line charts, bar charts, candle and stick charts, etc. of top five companies listed on the national stock exchange.
4. Estimate bond pricing of select five companies who have recently issued bonds in india.
5. Analyse financial instruments in case of select five companies listed in bombay stock exchange for overvaluation and undervaluation.

7

Suggested Readings:

- Bodie, Z., Kane, A., Marcus, A. J., & Mohanty, P. (2019). *Investment.* New Delhi: Tata McGraw Hill Education.
- Chandra, P. (2017). *Investment Analysis and Portfolio Management.* New Delhi: Tata McGraw Hill Education.
- Damodaran, A. (2006). *Valuation, Security Analysis for investment and Corporate Finance*. New Delhi: Wiley India Pvt. Ltd.
- Kevin, S. (2014). *Security Analysis and Portfolio Management.* New Delhi: PHI Learning.
- Koller, T., Goedhart, M., & Wessels, D. (2020). *Valuation: Measuring and Managing the Value of Companies.* USA: Mckinsey & Company.
- Kumar V., & Nangia, R. S. (2017). *Investing in Stock Markets.* Delhi: Ane Books.
- Pandian, P. (2012). *Security Analysis and Portfolio Management*. New Delhi: Vikas Publishing House.
- Ranganatham, M., & Madhumathi, R. (2012). *Security Analysis and Portfolio Management*. Delhi: Pearson Education.
- Singh J.K. and Singh A.K. (2017). *Investing in Stock Markets. Delhi:* A K Publications. ● Tulsian, P. C., Tulsian, B., & Tulsian, T. (2022). *Analysis of Financial Statements.* New Delhi/NCR: Tcom Prints.
- Tripathi V., & Pawar N. (2019). *Investing in Stock Markets.* Delhi: Taxmann Publications.

Additional Readings:

- Study Material of the Institute of Company Secretary of India for the Professional Programme Course on "Valuation and Business Modelling".
- Study Material of the Institute of Cost Accountants of India for the "Strategic Performance Management and Business Valuation".

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.A. Programmes with Commerce (BANKING AND INSURANCE)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
BAC: Discipline (B&I)-A3: Regulatory Framework of Insurance (Non-Major/Major)	4	3	1	0	Pass in XII	Studied Introduction to Banking (BAC: Discipline (B&I) – A2)
BAC: DSC - 3: Business Laws (Major)	4	3	1	0	Pass in XII	NIL

Discipline Core- A3(BAC: Discipline (B&I)-A3): Regulatory Framework of Insurance (Non-Major/Major)

Learning Objectives

The course aims to impart knowledge about the legal aspects and laws governing Insurance sector both life and non- life.

Learning outcomes

After completion of the course, learners will be able to:

1. Discuss The Indian Contract Act, 1872.
2. Discuss The Consumer Protection Act, 2019
3. Describe the main provisions of IRDA Act, 1999
4. Interpret LIC Act, 1956 and General Insurance Business (Nationalisation) Act, 1972.
5. Develop insights on Miscellaneous insurances; and discuss The Marine Insurance Act, 1963 and The Motor Vehicle Act, 1938.

SYLLABUS OF BAC: Discipline (B&I)-A3

Unit 1: The Indian Contract Act, 1872 (9 hours)

Nature of an agreement, essentials of a valid contract, classifications of contracts. Contract of Agency: Agent's duty towards Principal, Principal's duty towards Agent. Effect of Agency on contract with third party.

Unit 2: The Consumer Protection Act, 2019 (9 hours)

Important definitions, extent and coverage of the Act, objects of the Act, Protection of Consumer's interest, Consumer's Rights and Responsibilities, Machinery for consumer grievance redressal, Procedure for filing the complaint, Rights and Relief of Consumers, Insurance Ombudsman Scheme.

Unit 3: Insurance Regulatory and Development Authority Act,1999 (9 hours)

Definitions, coverage and objects of the Act; Salient features of IRDA,1999; Establishment and incorporation of Authority; Duties, power and functions of Authority, Composition of Fund, Power of Central Government under the Act, Protection of Consumer interest under IRDA,1999. Establishment of Insurance Advisory Committee.

Unit 4: Insurance Legislations (9 hours)

Salient provisions of Insurance Act, 1938; Life Insurance Corporation Act, 1956: establishment and incorporation, constitution and functions of the corporation; Constitution of Tribunals; The General Insurance Business (Nationalisation) Act, 1972, definitions and salient features. Brief introduction of Marine, fire, water, motor, health insurances etc.

Unit 5: Miscellaneous Insurances (9 hours)

The Marine Insurance Act 1963: definitions and scope, salient features, Motor Vehicle Act, 1938: features, definitions, policies and other provisions of the Act. Legal aspects of other miscellaneous insurances like crop, property, liability, annuities, commercial vehicle insurances etc.

Exercises:

The learners are required to:

1. Analyse the major provisions of The Indian Contract Act, 1872.
2. Analyse the major provisions of The Consumer Protection Act, 2019.
3. Analyse the major provisions of IRDA Act, 1999.
4. Spread awareness amongst consumers about the legal aspects of insurance by disseminating the knowledge and information learned in the course
5. Interpret the various case laws pertaining to the insurance- life and non-life.
6. Perform role play, group discussion, case study on various settlements of insurance claims.
7. Analyse the salient features of different insurance contracts offered in the market,

Suggested Readings:

- Bhatiya, N. (2018). *Insurance & Risk Management*, New Delhi: Pinnacle Learning.
- Chaturvedi D.D. & Mittal, A. (2021). *Banking and Insurance*, New Delhi: Scholar Tech Press.
- Farooqi, A.W. (2018). *Principle and Practice of Insurance*. New Delhi: Wisdom Publication.
- Gupta A. (2018). *Banking & Insurance*, New Delhi: A.K. Publications.
- Kumar, S. (2019). *Fundamentals of Insurance & Risk Management*. New Delhi: JSR Publication.
- Sethi, J. & Bhatiya, N. (2019). *Elements of Banking and Insurance*. New Delhi: PHI learning Pvt. Ltd..

Additional Resources:

● Banking and Insurance Law and Practice, The Institute of Company Secretaries of India, New Delhi, 2020.

● Imam, A. (2016). *Principles and Practice of Life Insurance in India.* New Delhi: Anmol Publications Pvt. Ltd.

● Singh, I. & Katyal, R. (2019). *Insurance Principles and Practice*. New Delhi: Kalyani Publishers.

● Loomba, J. (2017). *Risk Management and Insurance Planning*. New Delhi: PHI Learning Private Limited.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.A. Programmes with Commerce (ADVERTISING, SALES PROMOTION AND SALES MANAGEMENT)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
BAC: Discipline (ASPSM)-A3: Advertising (Non-Major/Major)	**4**	**3**	**1**	**0**	**Pass in XII**	**Studied Marketing Communication (BAC: Discipline (ASPSM) – A2)**
BAC: DSC - 3: Business Laws (Major)	**4**	**3**	**1**	**0**	**Pass in XII**	**NIL**

Discipline Core- A3(BAC: Discipline (ASPSM)-A3): Advertising (Non-Major/Major)

Learning Objectives

The objective of the course is to familiarize the students with the basic concepts of advertising. They will be able to learn the insights of advertising: preparing an advertising message, selecting an appropriate medium and evaluation of an advertising campaign.

Learning outcomes

After completion of the course, learners will be able to:

1. Describe the concepts, objectives and budgeting methods of advertising used in marketing.
2. Demonstrate advertising message using various advertising appeals and elements of advertising used by the marketers for promoting their brands in the market
3. Identify the major media decisions, media choice and scheduling.
4. Discover the role and types of advertising agency.
5. Describe the methods of measuring advertising effectiveness and role of ASCI in maintaining the ethical nature of advertising.

SYLLABUS OF BAC: Discipline (ASPSM)-A3

Unit 1: Introduction to Advertising (9 hours)

Nature and importance; Types of advertising; Setting of advertising objectives: communication and sales objectives, DAGMAR approach; Setting of advertising budget.

Unit 2: Advertising Message (9 hours)

Advertising Message- Advertising appeals; Elements of print and broadcast advertising copy.

Unit 3: Advertising Media (9 hours)

Types of Advertising Media- strengths and limitations; Factors influencing selection of advertising media; Media Scheduling.

Unit 4: Advertising Agency (9 hours)

Concept; Types of an Advertising Agency; Functions of an Advertising Agency; Compensation

Unit 5: Evaluating Advertising Effectiveness (9 hours)

Communication and Sales effects; Methods of measuring advertising effectiveness; Ethical Aspects of Advertising in India; Role of Advertising Standards Council of India (ASCI).

Exercises:

The learners are required to:

1. Create an advertising budget for a hypothetical advertising campaign.
2. Perform a content analysis of various advertising campaigns to:
    a. identify the objective of an advertisement forming part of an advertising campaign.
    b. find out the target audience of a campaign.
    c. prepare a report on various media options used in a campaign.
    d. prepare a report on message strategy and copy elements used in the campaign.
3. Select a product to develop an advertising campaign for it.
4. Evaluate the advertising appeals of certain top brands.
5. Assess the merits and demerits of different forms of media used in advertising.
6. Prepare a list of advertising agencies along with their strategies.
7. Analyse case studies on evaluating the effectiveness of advertising campaigns.

Suggested Readings:

● Belch, G. E., Belch, M.A., & Purani, K. (2009). *Advertising and Promotion: An Integrated Marketing Communications Perspective,* McGraw Hill Education.

● Gupta, R. (2018). *Advertising*, Scholar Tech Press.

● Sharma, K. (2018). *Advertising: Planning and Decision Making*, Delhi: Taxmann Publication Pvt. Ltd.

ADDITIONAL RESOURCES:

● Kapoor, N. (2008). *Advertising and Personal Selling*, Pinnacle.

● Shah, K. & D'Souza, A. (2008). *Advertising and Promotions: An IMC Perspective*, McGraw Hill Education.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.A. PROGRAMMES WITH COMMERCE (HUMAN RESOURCE MANAGEMENT)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
BAC: Discipline (HRD)-A3: Human Resource Development (Non-Major/Major)	4	3	1	0	Pass in XII	Studied Organizational Behavior (BAC: Discipline (HRM) – A2)
BAC: DSC - 3: Business Laws (Major)	4	3	1	0	Pass in XII	NIL

Discipline Core- A3(BAC: Discipline (HRM)-A3): Human Resource Development (Non-Major/Major)

Learning Objectives

The course aims to make students understand the various aspects of human resource development and its contribution in the organization.

Learning outcomes

After completion of the course, learners will be able to:

1. Discuss the evolution of HRD
2. Analyse the importance of HRD strategies in organisations
3. Interpret the relevance of HRD models
4. Assess the importance of training and development needs in the organisation.

SYLLABUS OF BAC: Discipline (HRM)-A3

Unit 1: Introduction (9 hours)

Human Resource Development (HRD) - concept, components, evolution, need and significance, difference between human resource management and human resource development, Role of HR manager, contemporary issues in HRD.

Unit 2: Strategies in HRD (13 hours)

Concept of Strategic HRD, HRD Interventions-Performance Appraisal, Potential Appraisal, Performance Coaching and Feedback, Career Planning, Training, Rewards, Employee Welfare schemes and Work Life balance, Roles of HR Developer.

Unit 3: Conceptual models for HRD (9 hours)
Learning and HRD, Models and Curriculum of HRD, Principles of Learning for an Individual and Group, Transactional Analysis (TA), Behavioural Modelling and Self Directed Learning.

Unit 4: Training and Development Methods for HRD (14 hours)
Concept and Importance, Assessing Training Needs, Designing and Evaluating Training & Development Programmes, On the job and off the job methods of Training and development such as lecture Method, apprenticeship, internship, special projects, committee assignments, Simulation techniques (Role Play, Business games, Case study), Vestibule Training, Programmed Instruction and Sensitivity Training.

Exercises:

The learners are required to:

1. Discuss the evolution and contemporary issues in HRD.
2. Analyse various HRD interventions used by firms.
3. Analyse different conceptual models for HRD.
4. Explore new ways of training and development.

Suggested Readings:

- Chabbra, T. N.(2016). *Human Resource Management: Concepts and Issues*. Dhanpat Rai and Co. Publications.
- Durai, P.(2016). *Human Resource Management* (2nd ed.). New Delhi. Pearson Education.
- Graig, R. L. & Bittel, L. (1976). *Training and Development Hand Book*, New Delhi: McGraw-Hill.
- ILO, *Teaching and Training Methods for Management Development Hand Book*, 1984, New York: McGraw-Hill.
- Kapur, S. (1999). *Human Resource Development and Training in Practice*. New Delhi: Beacon Books.
- Mondy, A., Wayne & Martocchio, J. J. (2016). *Human Resource Management* (14th Ed.). Pearson Education Publications.
- Nadler, L. (1980). *Corporate Human Resource Development*. New York: Van Nostrand Reinhold, ASTD .
- Padmalita R. & Kalyani, M. (2009). *Human Resource Development and Organisational Effectiveness*, New Delhi: Excel Books.
- Rao, T.V. (1995). *Human Resource Development*, New Delhi: Sage Publications.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.A. Programmes with Commerce (COMMERCIAL LAWS AND CORPORATE GOVERNANCE)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
BAC: Discipline (CLCG)- A3: Intellectual Property Rights-I (Non-Major/Major)	4	3	1	0	Pass in XII	Studied Cyber Crimes and Laws (BAC: Discipline (CLCG) – A2)
BAC: DSC - 3: Business Laws (Major)	4	3	1	0	Pass in XII	NIL

Discipline Core- A3(BAC: Discipline (CLCG)-A3): Intellectual Property Rights -I (Non-Major/Major)

Learning Objectives

The course aims to impart knowledge of intellectual property rights, IPR related issues and rationale behind IPR protection with a focus on Patent Law and Trademark Law and its role in new age business.

Learning outcomes

After completion of the course, learners will be able to:

1. Discuss the concept of intellectual property and IP rights.
2. Describe different types of intellectual properties.
3. Discuss Indian Patent Law.
4. Comprehend patent infringement and remedies thereof.
5. Discuss the concept of trademark and its registration procedure.

SYLLABUS OF BAC: Discipline (CLCG)-A3

Unit 1: Introduction to IP Rights (6 hours)

Concepts of property and Intellectual Properties; Meaning, Types and Theories of IPR, need for protection of IPR, Importance & Benefits of IPR, Financial value of IPRs, commercial transactions in the intellectual property sphere, IPR Concerns in Cyber Space, Issue of Piracy.

Unit 2: Types of Intellectual Properties (6 hours)

Different Types of Intellectual Properties - Copyrights, Trademarks, Patents, Designs, Utility, Models, Trade secrets & Geographical Indications.

Unit 3: Indian Patent Law (9 hours)

Meaning, Nature & Role of Patent, Objectives of Patenting; Duration of Patents, Conditions of Patent-ability, Types & Procedure of Patent Applications, Revocation of Patents, Surrender of Patents, Patent Search, Patent Agents- Qualification and Procedure of Registration.

Unit 4: Patent Infringement- Meaning and Remedies (9 hours)

Meaning & Classification; Exceptions to Infringement, Justification of Patent infringement, Compulsory Licensing, Parallel Imports, Revocation of patents, Civil and Criminal Remedies, Reliefs in Suits for Infringement, Patent Authorities, Controller General of Patents, Patent Examiners, IPAB-Intellectual Property Appellate Board)

Unit 5: Trademarks (15 hours)

Meaning & Need of Protection of Trademark, Concept of Well-Known Trademark and Permitted use, Difference from Collective Marks & Certification Mark; Trademark Search, Registration Procedure and Grounds of Refusal, Duration and Renewal of Trade Mark Registration, Infringement and exceptions to Infringement; Assignment and Transmission, Position of Unregistered Trademark. Domain Name and Cyber Squatting.

Exercises:

The learners are required to:

1. List out concerns of IPR in cyber space with contemporary examples
2. Discuss the importance of different types of intellectual properties.
3. Prepare a list of patentable and non-patentable items on the basis of conditions of patentability
4. Prepare a summary of at least five cases of patent infringement in India
5. Prepare a list of different fees charged for Trademark applications
6. Prepare a list of points which are required to be considered while adopting a Trademark.

Suggested Readings:

- Wadehra, B. L. (2011). *Law Relating to Intellectual Property.* Delhi: University law Publishing Co. Pvt. Ltd.
- Chakravarty, R., & Gogia, D. Chakravartys. (2014). *Intellectual property law: IPR*. New Delhi: Ashoka Law House.
- R. Radhakrishnan. (2018). *Intellectual Property Rights: Text and Cases*, Excel Books India.
- M. Venkataraman. (2015). *An Introduction to Intellectual Property Rights.*
- Aplin, T. & Davis, J. (2017). *Intellectual Property Law: Text, Cases and Materials*, Oxford University Press.
- Narayanan, P. (2022). *Intellectual Property Law,* Eastern Law House.
- N. Pandey & D. Khushdeep, (2014). *Intellectual Property Rights*, PHI Learning Pvt. Ltd.
- Ahuja, V.K. (2017). *Intellectual Property Rights in India*, LexisNexis.

Additional References

● Bentley, L., Sherman, B., Gangjee, D. & Johnson. P. (2022). *Intellectual Property Law*. Oxford University Press.

● *The Patents Act, 1970 with Latest Rules and Amendments*

● *Trade Marks Act, 1999 with Latest Rules and Amendments*

Intellectual Property Laws Bare Act (2022), Govt. of India

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.A. Programmes with Commerce (TAX PROCEDURES & PRACTICES)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
BAC: Discipline (TTP)-A3: Fundamentals of Personal Tax Planning (Non-Major/Major)	4	3	1	0	Pass in XII	Studied Income Tax Practice and Procedures (BAC: Discipline (TPP) – A2)
BAC: DSC - 3: Business Laws (Major)	4	3	1	0	Pass in XII	NIL

Discipline Core- A3(BAC: Discipline (TTP)-A3): Fundamentals of Personal Tax Planning (Non-Major/Major)

Learning Objectives

This paper aims to provide comprehensive knowledge for the tax planning of Individuals. It explains the relevance of tax planning and how systematically planned investments can lower the tax liability of an assessee.

Learning outcomes

After completion of the course, learners will be able to:

1. Recognise the difference between tax planning and tax evasion.
2. Determine the tax liability under the alternative tax regime structure.
3. Identify multiple avenues of investments for saving tax liability.
4. Engage in tax planning with reference to salary income.
5. Engage in tax planning with reference to house property income.

SYLLABUS OF BAC: Discipline (TTP)-A3

Unit 1: Tax Planning Concepts (9 hours)

Meaning, need, principles and objectives of tax planning; tax avoidance and tax evasion; legal thinking on tax planning; scope of tax planning; tax management-nature, concept; the relationship between residential status and scope of income.

Unit 2: Tax planning with reference to individuals (9 hours)

Tax planning with special reference to individuals; alternative tax regime under 115BAC; TDS obligations under section 192, 194-IA, 194-IB; advance payment of tax; return of income; interest payable under section 234A, 234B, 234C; fee for late filing of return.

Unit 3: Tax planning through savings and investments (9 hours)

Tax planning through various tax saving investment avenues available for individuals like mutual funds, unit-linked insurance plans, bonds, equity-linked savings schemes, post office savings schemes and others; tax deductions and exemptions under various provisions of Income Tax Act 1961; deductions from gross total income: 80C, 80CCD(1), 80CCD(1B), 80CCD(2), 80D, 80E and 80G.

Unit 4: Tax planning with respect to salary income (9 hours)

Tax planning for salary income: relative tax efficiency of allowances; perquisites; retirement benefits.

Unit 5: Tax planning with reference to house property income (9 hours)

Tax planning for house property income: deductions available under sections 24(a), 24(b); set off and carry forward of house property losses; deduction under section 80C, 80EE with reference to house property income.

Exercises:

The learners are required to

1. Prepare a case which explains the difference between tax planning and tax evasion.
2. Based on hypothetical income, compute tax liability of an individual under the old and new tax regime. Ascertain which is more beneficial.
3. Discuss how an assessee can claim the benefits of deduction under section 80 (C) to 80 (U) to reduce her/his tax liability.
4. Prepare a case study for an individual that explains remuneration planning.
5. Prepare a case study for an individual that explains tax planning with reference to house property income.

Suggested Readings:

- Ahuja, G., & Gupta, R. (2022). *Simplified Approach to Income Tax*. New Delhi: Flair Publications Pvt. Ltd.
- Mittal, N. (2022). *Concept Building Approach to Income Tax Law & Practice*. Delhi: Cengage Learning India Pvt. Ltd.
- Singhania, V. K., & Singhania, M. (2022). *Student's Guide to Income Tax*. New Delhi: Taxmann Publications Pvt. Ltd.

Additional Resources:

- Income-tax Act 1961 www.incometaxindia.gov.in

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.A. Programmes with Commerce (MODERN OFFICE MANAGEMENT)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
BAC: Discipline (MOM)-A3: stenography (English)-I (Non-Major/Major)	4	3	1	0	Pass in XII	Studied Modern Office Practices (BAC: Discipline (MOM) – A2)
BAC: DSC - 3: Business Laws (Major)	4	3	1	0	Pass in XII	NIL

Discipline Core- A3(BAC: Discipline (MOM)-A3): Stenography(English)-I (Non-Major/Major)

Learning Objectives

The course aims to orient the students to learn the need of writing accurately on the basis of phonic sound. In order to make them a good writer, it is necessary for them to master the fascinating art of good writing. As it is very important for a learner to write accurately, the knowledge of art of writing through spoken sounds with the help of principles of Sir Isaac pitman would help the students to take notes and carry out office work accurately.

Learning outcomes

After completion of the course, learners will be able to:

1. Demonstrate the basic concepts of stenography with grammalogues and logograms.
2. Analyse the basic concepts of alternatives and phraseography.
3. Interpret the use of stroke and circles.
4. Apply the concept of Loops.
5. Summarize the application of hooks in stenography.

SYLLABUS OF BAC: Discipline (MOM)-A3

Unit 1: Basics of Stenography (9 hours)

Stenography – Introduction, brief history of Pitman's shorthand, types of other writing methods.

Consonants – Definitions, types of consonants, consonant and consonant stroke, form of strokes, number, size and direction of strokes, joining of strokes.
Vowels – Its definition, long and short vowels, vowels signs and their places, position of outlines according to vowels, Intervening vowel, Short Forms – Definition, importance and use of logograms, grammalogues.

Unit 2 : Alternatives and Phraseography (9 hours)

Alternative forms of strokes: downward R & L strokes, downward and upward H, tick H and dot H, upward strokes, semi circle or abbreviated W and their use.

Diphthongs and Triphones, punctuation signs and their application and its positions.

The phraseography, the phraseograms, its essential qualities of facility, linearity and legibility.

Unit 3: Small and Large Circles (9 hours)

Circles 'S' & 'Z', use of small circles with straight and curved strokes, exceptions to the use of circle 'S'\'Z', Large Circles 'SW', 'SS or 'SZ', use of large circles with straight and curved strokes, use of different circles initially, medially and finally, Use of large circles in Phraseography. Use of stroke 'S' and 'Z ' with various rules.

Unit 4: Loops preceding initial hook (9 hours)

Loops 'ST' and 'STR', use of small and big loops with straight and curved strokes, initially use of small loops, medially use of small and large loops and final use of small and large loops, exceptions to the use of loops. Alternative forms with small hook for 'Fr', 'Vr' and Large hook for "Fl", "Vl" etc., use of intervening vowels with alternative forms. Circles and loops preceding initial hooks.

Unit 5: Initial and Final Hooks (9 hours)

"S" before straight strokes hooked for R, "S" before other hooked strokes, Small Hooks: 'R' and 'L, use of initial hooks with straight and curved strokes Small Final hooks: 'N','F\V', use of final hooks with straight and curved strokes, medial use of small final hooks, use of small final hooks in Phraseography, Exceptions to the use of small final hooks, circles and loops to final hooks.

Exercises:-

The learners are required to:

1. Apply the basic concepts of Stenography.
2. Practice Alternatives, Diphthongs and Phraseography.
3. Practice Small and Large Circles.

4. Use different Loops.
5. Use Initial and Final Hooks.

Suggested Readings:

- Bhatia, R. C. (2018). *Principles of Short-hand Theory*. India: G.Lal & Co.
- Kuthiala, O. P. (1974). *Shorthand Made Easy.* India: Pitman S.S.Publications.
- Pitman, I. (2002). Pitman's Shorthand Instrcutor , A.H. Wheeler Publications.(India) • Pitman, I. (2010) The New Phonographic : Phrase Book .
- Pitman, I. (2006). *Pitman Shorthand instructor and key*. India: Pearson Education.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

ANNEXURE-6

N O T I F I C A T I O N

Sub: Amendment to Ordinance V

[E.C Resolution No. 60/ (60-1-3) dated 03.02.2023]

Following addition be made to Appendix-II-A to the Ordinance V (2-A) of the Ordinances of the University;

Add the following:

Syllabi of Semester-III of the following departments under Faculty of Social Sciences based on Under Graduate Curriculum Framework -2022 implemented from the Academic Year 2022-23.

FACULTY OF SOCIAL SCIENCES

DEPARTMENT OF ECONOMICS

BA. (HONS.) ECONOMICS

DISCIPLINE SPECIFIC CORE COURSE -7 (DSC-7): Intermediate Microeconomics I: Behavioural foundations of Market Interactions

Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
Intermediate Microeconomics I: Behavioural foundations of Market Interactions – ECON007	4	3	1	0	Passed Class 12th	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- The course is designed to formally analyze the behaviour of individual agents like consumers and producers under certain conditions.
- Mathematical tools are used to facilitate understanding of the basic concepts.
- This course looks at the behaviour of the consumer and the choices of a competitive firm.

Learning outcomes

The Learning outcomes of this course are as follows:

- Students will learn the basic elements of consumption and production theories using various technical frameworks.
- This course provides them the behavioural foundations of market supply and demand.

Syllabus

UNIT I: Consumer behaviour (15 hours)
Preference and utility, Budget and choice, Income and substitution effect, Demand derivation, Labour supply, One-person welfare

UNIT II: Decision-making under uncertainty (15 hours)
Expected utility, Risk aversion, Insurance, Risk spreading

UNIT III: Producer behaviour and markets (15 hours)
Technology, Profit maximization, Cost minimization, Supply, Short and long run

Recommended readings

- Serrano, Roberto and Feldman, Alan (2012), *A short course in intermediate Microeconomics with Calculus*, Cambridge University Press
- Espinola-Arredondo, Ana and Muñoz-Garcia, Felix (2020), *Intermediate Microeconomic Theory*, MIT Press
- Osborne, M J and Rubinstein, A (2020), *Models in Microeconomic Theory*, Open Book Publishers
- Muñoz-Garcia, Felix (2017) Practice *Exercises for Advanced Microeconomic Theory*, MIT Press
- Dunaway, Eric; Strandholm, John C., Espinola-Arredondo, Ana and Munoz-Garcia, Felix (2020) *Practice Exercises for Intermediate Microeconomic Theory*, MIT press

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE -8 (DSC-8): Intermediate Macroeconomics I: Foundations of Aggregate Income Determination

Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
Intermediate Macroeconomics I: Foundations of Aggregate Income Determination – ECON008	**4**	**3**	**1**	**0**	**Class 12th Pass**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- This course builds upon the basic concepts of macroeconomics. It introduces labour markets and the aggregate supply (AS) curve.
- Aggregate Demand (AD) and Aggregate Supply (AS) are brought together to determine equilibrium prices and output examine the policy impacts.
- The course discusses Phillips curve and the alleged trade-off between inflation and unemployment. Both adaptive and rational expectations are introduced.
- A flavour of micro-foundations is introduced with respect to consumption and investment.

Learning outcomes

The Learning outcomes of this course are as follows:

- This course enables students to analyse the interaction of aggregate demand and supply and the effects of fiscal and monetary policy, trade-off between inflation and unemployment, and consumption and investment behaviour of the households.

Syllabus

UNIT I: Short-run and medium-run equilibrium (15 hours)
The labour market, Wage determination; wages, prices, and unemployment; natural rate of unemployment; from employment to output, Derivation of aggregate supply curve, Interaction of aggregate demand and supply to determine equilibrium output, price level and employment.

UNIT II: Philips Curve and Theory of Expectations (15 hours)
Inflation, unemployment and expectations, Phillips Curve; adaptive and rational expectations; policy ineffectiveness debate.

UNIT III: Microeconomic foundations of macroeconomic behaviours (15 hours)
Consumption: Keynesian consumption function; Fisher's theory of optimal intertemporal choice; life-cycle and permanent income hypotheses; other theories of consumption expenditure.
Investment: determinants of business fixed investment; residential investment and inventory investment.

Recommended readings

- Blanchard, O. (2006). *Macroeconomics*, 4th ed. Pearson Education.
- C.L.F. Attfield, D. Demery and N.W. Duck (1991). *Rational Expectations in Macroeconomics: an introduction to theory and evidence* 2nd Ed.
- Sheffrin, Steve (1996). *Rational Expectations*. 2nd ed., Cambridge University Press.
- Dornbusch, R., Fischer, S. (1994). *Macroeconomics*, 6th ed., McGraw-Hill.
- Branson, W. (2013). *Macroeconomics: Theory and policy*, 3rd ed, East West Press.
- Carlin, W and D Soskice (2007), *Macroeconomics: Imperfections, Institutions and Policies*, Indian Edition, OUP.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE -9 (DSC-9): Advanced Mathematical Methods for Economics

Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
Advanced Mathematical Methods for Economics – ECON009	**4**	**3**	**1**	**0**	**Passed Class 12th with Mathematics**	**NIL**

Learning Objectives

This is the last of a compulsory three-course sequence. The Learning Objectives of this course are as follows:

- To transmit the body of basic mathematics that enables the study of economic theory at the undergraduate level, specifically the courses on microeconomic theory, macroeconomic theory, statistics and econometrics set out in this syllabus.

- In this course, particular economic models are not the ends, but the means for illustrating the method of applying mathematical techniques to economic theory in general.

Learning outcomes

The Learning outcomes of this course are as follows:

- The course builds the skills for mathematical foundations necessary required further study of a variety of disciplines including postgraduate economics, statistics, computer science, finance and data analytics.
- The analytical tools introduced in this course have applications wherever optimization techniques especially constrained optimization are used in business decision-making for managers and entrepreneurs alike.
- These tools are necessary for anyone seeking employment as an analyst in the corporate world.

Syllabus

UNIT I: Multivariate Optimization with constraints (15 hours)
Constrained optimisation with equality and inequality constraints: geometric characterisation, Lagrange characterisation using calculus and applications; properties of value function: envelope theorem, applications.

UNIT II: Linear programming (15 hours)
Introduction, graphical solution, matrix formulation, duality, economic interpretation.

UNIT III: Integration, differential equations, and difference equations (15 hours)
Definite integrals, indefinite integrals and economic applications; first order and second order difference equations, equilibrium and its stability; first order differential equations, phase diagrams and stability; second order differential equations.

Recommended readings

- Sydsaeter, K., Hammond, P. (2002). *Mathematics for economic analysis*. Pearson Educational.
- Hoy, M., Livernois, J., McKenna, C., Rees, R., Stengos, T. (2001). *Mathematics for Economics*, Prentice-Hall India.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category II

B.A. Programmes with Economics as Major discipline

DISCIPLINE SPECIFIC CORE COURSE -5 (DSC-5): Intermediate Microeconomics I: Behavioural foundations of Market Interactions

Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
Intermediate Microeconomics I: Behavioural foundations of Market Interactions – ECON007	**4**	**3**	**1**	**0**	**Passed Class 12th**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- The course is designed to formally analyze the behaviour of individual agents like consumers and producers under certain conditions.
- Mathematical tools are used to facilitate understanding of the basic concepts.
- This course looks at the behaviour of the consumer and the choices of a competitive firm.

Learning outcomes

The Learning outcomes of this course are as follows:

- Students will learn the basic elements of consumption and production theories using various technical frameworks.
- This course provides them the behavioural foundations of market supply and demand.

Syllabus

UNIT I: Consumer behaviour (15 hours)
Preference and utility, Budget and choice, Income and substitution effect, Demand derivation, Labour supply, One-person welfare

UNIT II: Decision-making under uncertainty (15 hours)
Expected utility, Risk aversion, Insurance, Risk spreading

UNIT III: Producer behaviour and markets (15 hours)
Technology, Profit maximization, Cost minimization, Supply, Short and long run

Recommended readings

- Serrano, Roberto and Feldman, Alan (2012), *A short course in intermediate Microeconomics with Calculus*, Cambridge University Press
- Espinola-Arredondo, Ana and Muñoz-Garcia, Felix (2020), *Intermediate Microeconomic Theory*, MIT Press
- Osborne, M J and Rubinstein, A (2020), *Models in Microeconomic Theory*, Open Book Publishers
- Muñoz-Garcia, Felix (2017) Practice *Exercises for Advanced Microeconomic Theory*, MIT Press
- Dunaway, Eric; Strandholm, John C., Espinola-Arredondo, Ana and Munoz-Garcia, Felix (2020) *Practice Exercises for Intermediate Microeconomic Theory*, MIT press

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE -6 (DSC-6): Optimization Methods for Economic Analysis

Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
Optimization Methods for Economic Analysis – ECON023	**4**	**3**	**1**	**0**	**Passed Class 12th**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- This course covers mathematical techniques used for comparative-static analysis and optimisation problems under various circumstances.
- The objective of this course is to transmit the body of basic mathematics that enables the study of economic theory.
- This course, in particular, includes rules of differentiation and its application in comparative-statistic analysis, unconstrained and constrained optimisation problems.

Learning outcomes

The Learning outcomes of this course are as follows:

- The students will be able to solve optimal solution and policy impacts using comparative- static analysis and statistic optimisation techniques.
- This offers the mathematical foundations necessary for further study of a variety of disciplines including postgraduate economics, statistics, computer science, finance and data analytic.
- The analytical tools introduced in this course will help them to apply optimization techniques used in business decision-making for managers, entrepreneurs and policy makers alike.

Syllabus

UNIT I: Comparative-Static Analysis (15 hours)
Derivatives, Slopes, Limit Theorem

UNIT II: Differentials and its role in Comparative static analysis (15 hours)

UNIT III: Optimisation Problems (15 hours)
Unconstrained and constrained optimisation with single and multiple variables, Lagrangian functions, quasi-concavity and convexity, envelope theorem

Recommended readings

- Chiang, A and Wainwright, K. (2005). Fundamental methods of mathematical economics. Boston, Mass. McGraw-Hill/Irwin.
- Sydsaeter, K., Hammond, P. (2002). *Mathematics for economic analysis*, Pearson Educational.
- Hoy, M., Livernois, J., McKenna, C., Rees, R., Stengos, T. (2001). *Mathematics for Economics*, Prentice-Hall India.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category III

B.A. Programmes with Economics as non-Major or Minor discipline

DISCIPLINE SPECIFIC CORE COURSE -3 (DSC-3): Intermediate Microeconomics I: Behavioural foundations of Market Interactions

Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
Intermediate Microeconomics I: Behavioural foundations of Market Interactions – ECON007	**4**	**3**	**1**	**0**	**Passed Class 12th**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- The course is designed to formally analyze the behaviour of individual agents like consumers and producers under certain conditions.
- Mathematical tools are used to facilitate understanding of the basic concepts.
- This course looks at the behaviour of the consumer and the choices of a competitive firm.

Learning outcomes

The Learning outcomes of this course are as follows:

- Students will learn the basic elements of consumption and production theories using various technical frameworks.
- This course provides them the behavioural foundations of market supply and demand.

Syllabus

UNIT I: Consumer behaviour (15 hours)
Preference and utility, Budget and choice, Income and substitution effect, Demand derivation, Labour supply, One-person welfare

UNIT II: Decision-making under uncertainty (15 hours)
Expected utility, Risk aversion, Insurance, Risk spreading

UNIT III: Producer behaviour and markets (15 hours)
Technology, Profit maximization, Cost minimization, Supply, Short and long run

Recommended readings

- Serrano, Roberto and Feldman, Alan (2012), *A short course in intermediate Microeconomics with Calculus*, Cambridge University Press
- Espinola-Arredondo, Ana and Muñoz-Garcia, Felix (2020), *Intermediate Microeconomic Theory*, MIT Press
- Osborne, M J and Rubinstein, A (2020), *Models in Microeconomic Theory*, Open Book Publishers
- Muñoz-Garcia, Felix (2017) Practice *Exercises for Advanced Microeconomic Theory*, MIT Press
- Dunaway, Eric; Strandholm, John C., Espinola-Arredondo, Ana and Munoz-Garcia, Felix (2020) *Practice Exercises for Intermediate Microeconomic Theory*, MIT press

COMMON POOL OF DISCIPLINE SPECIFIC ELECTIVE (DSE) COURSES for 3rd, 5th and 7th Semester

Discipline Specific Elective 1 (DSE-1): Economic History of India

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
III/V/VII	Economic History of India – ECON031	4	3	1	0	Passed Class 12th	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- This course analyses the key aspects of Indian economic development from pre-colonial period to Independence of the country. This will cover the nature and characteristics of economy before colonial rule and its transition to the colonial regime.
- In doing so, it investigates the place of the Indian economy in the wider context of the regime changes, and the mechanisms that linked economic development in India to the compulsions of colonial rule.
- Key themes including the commercialization of agriculture, deindustrialisation hypothesis, mortality and famines and debates around the retreat of the Raj is discussed.

Learning outcomes

The Learning Outcomes of this course are as follows:

- The students develop and enhance critical analytical skills of Indian growth and development trajectories.
- It further exposes the students to understand the intricacies of India's economic, political and social developments in the past that may have relevance in the present times.
- It increases employability of students by enhancing their ability to deal with a variety of textual and statistical sources, appreciate their contexts, strengths and weaknesses, and draw upon them to construct a coherent argument.
- Besides strengthening the ability to pursue post-graduate studies these skills would be useful in a variety of careers in academics and business research, journalism as well as the government.

Syllabus

UNIT I: Economic changes from pre-colonial to colonial regimes - nature and characteristics; Colonialism and the Indian Economy (12 hours)

UNIT II: Population, Mortality and Famines (12 hours)

UNIT III: Agriculture, Industry and Railways (12 hours)

UNIT IV: The Economy and State in the Imperial Context: The Retreat of the Raj (09 hours)

Recommended readings

- Balachandran, Gopalan (2016), Colonial India and the World Economy. c. 1850- 1940, in L. Chaudhary, B. Gupta, T Roy and A. V. Swami (eds.), *A New Economic History of Colonial India*, Routledge, London and New York, Ch.6, pp. 84-99.
- Parthasarathy, P (2011), *Why Europe Grew Rich and Asia did not: Global Eco- nomic Divergence, 1600-1850*, CUP, Cambridge, Ch 2, 8.
- Bhattacharya, Sabyasachi (2005) 'Introduction' in the new edition of Kumar, Dharma (ed.) *Cambridge Economic History of India*. Vol 2. Orient Longman.
- Tirthankar Roy, 2011, *The Economic History of India 1857-1947*, 3rd edn, Oxford University Press, Delhi, Chapter 11 'Population and Labour'.
- Guha, Sumit (1991), Mortality decline in early 20th century India, *Indian Economic and Social History Review*, vol. 28, Issue 4, pp 371-87.
- Klein,Ira (1984), When Rains Fail: Famine relief and mortality in British India,
- *Indian Economic and Social History Review*, vol. 21, issue 2, pp. 185-214.
- Roy, Tirthankar 2011, *Agriculture, The Economic History of India 1857-1947*, 3rd Edn, Orient Longman, Delhi, Ch. 4, pp. 104-148.
- Gadgil, D R (1973) *The Industrial Evolution of India in Recent Times*. Chapters on Rural Credit.
- Behal, Rana P. (2010) 'Coolie Drivers or Benevolent Paternalists? British Tea Planters in Assam and Indenture Labour System in Assam', *Modern Asian Studies* 44, 1, 2010, pp. 29-51.
- Ray, Rajat K (ed.), 1994, *Introduction in Entrepreneurship and Industry in India*, OUP, Delhi, pp.1-69.
- Hurd, John (2005) Railways in Kumar, Dharma (ed)
- CEHI Vol II
- Morris, Morris, D (1965) *The Emergence of An Industrial Labour Force in India: A Study of the Bombay Cotton Mills 1854-1947*. OUP, Delhi, Concluding Chapter 11, pp.198-210.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Discipline Specific Elective 2 (DSE-2): Economics of Climate Change and Natural Resources

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
III/V/VII	Economics of Climate Change and Natural Resources– ECON032	4	3	1	0	Passed Class 12th	Introductory Microeconomics (ECON001)

Learning Objectives

The Learning Objectives of this course are as follows:

- The objective of this course is to provide knowledge on the principles of governing and managing natural resources.
- This course introduces the conceptual and theoretical foundations of Resource Economics. In particular, the efficiency concepts for evaluating natural resource use and policies and potential sources of inefficiency in the context of forestry, fisheries, and exhaustible energy resources will be studied.
- Further, the basics of Economics of Climate change, its implications and policies.

Learning outcomes

The Learning Outcomes of this course are as follows:

- The students get familiarise with basic issues of sustainable resources allocation and economics of climate change.
- It will familiarize students with the Cost-Benefit Analysis, Challenges in estimating costs and benefits of greenhouse gas policies, the Environmental Kuznets curve, and Mitigation of climate change.
- The course will familiarize students with Sustainable development Goals SDGs, History of Convention UNFCCC, India's Intended Nationally Determined Contribution.

Syllabus

UNIT I: Mathematical Prerequisites (12 hours)
Difference equations; differential equations; phase plane analysis; dynamic optimization
Optimal extraction of a non-renewable resource, Optimal management of renewable resources -Fishery and Forestry

UNIT II: Energy Economics, Energy Transition, and Energy Security (12 hours)
Introduction to Basics of supply, demand, and prices, income elasticities, the eco- nomics of depletable resources, world oil markets, Pathways of energy transition from conventional to renewable energy sources, Policy instruments, Energy security, accessibility and A definition, and Energy poverty

UNIT III: The Economics of Climate change, Implications, and Policies (12 hours)
Cost-Benefit Analysis, Challenges in estimating costs and benefits of greenhouse gas policies, Environmental Kuznets curve, Mitigation of climate change, Sectoral impact of Climate change, climate change, and inequality, Policy responses, and instruments

UNIT IV: Sustainable Development (09 hours)
Concepts and Measurement, Weak and strong sustainability, Sustainable development Goals SDGs, History of Convention UNFCCC, India's Intended Nationally Determined Contribution

Recommended readings

- Harris, J. M., Roach, B., & Environmental, J. M. H. (2007). *The economics of global climate change. Global Development and Environment* Institute Tufts University.
- Pelling, M. (2010). *Adaptation to climate change: from resilience to transformation*. Routledge.
- Callan, Scott, and Janet Thomas. *Environmental Economics and Management: Theory*, Policy and Applications. 4th ed. Florence, KY: South-Western, 2006, chapter 3. ISBN: 9780324320671.
- Barrett, S. (1990) *The problem of global environmental protection*, Oxford Review of Economic Policy 6(1): 68–79
- Stern, N.(2007) The Economics of Climate Change: The Stern Review, Cambridge University Press.
- Stern, D. I. (2004). *The rise and fall of the environmental Kuznets curve*. World Development, 32(8), 1419-1439.
- Babiker, Mustafa, John Reilly, and Henry Jacoby. "The Kyoto Protocol and Developing Countries." Energy Policy 28, no. 8 (2000): 525-36.
- IPCC Climate Change 2014: Mitigation of Climate Change (in the press); http://mitigation2014.or draft
- Arnell, N. W., Brown, S., Gosling, S. N., Gottschalk, P., Hinkel, J., Huntingford, C., ... & Zelazowski, P. (2016). *The impacts of climate change across the globe: a multi-sectoral assessment*. Climatic Change, 134(3), 457-474.
- Roberts, J. T. (2001). *Global inequality and climate change*. Society & Natural Resources, 14(6), 501-509.
- Geoffrey Heal (2012). "Reflections—Defining and Measuring Sustainability" Review of Environmental Economics and Policy Vol. 6, No. 1 (winter 2012), p. 147–163.
- The environment write, 2009. "Defining sustainability: weak sustainability".

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Discipline Specific Elective 4 (DSE-4): Fiscal Policy and Public Finance in India

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
III/V/VII	Fiscal Policy and Public Finance in India – ECON034	4	3	1	0	Class 12th	Intermediate Macroeconomics (ECON004)

Learning Objectives

The Learning Objectives of this course are as follows:

- Fiscal and Public Policy is the study of government policy and its role for achieving allocation and distribution objectives of the government.
- The course deals with the nature of public expenditures of the government on various social schemes; budgets, debt sustainability and fiscal management by governments; study of decentralization, theory of fiscal federalism, issues of equity and efficiency, designing equalization transfers, conditional and unconditional grants, fiscal federalism.
- The course analyses these concepts theoretically and also specifically looks at the Indian Final Examples.

Learning outcomes

The Learning Objectives of this course are as follows:

- The students would learn the needs and objectives of government expenditure on social schemes and critically evaluate them.
- The student will understand the new concepts of budgeting and analyze the fiscal and debt management policies of the government.
- They will also learn the vast mechanism of fiscal federalism in India and the role and contribution of Finance Commission in achieving equity and efficiency in resource allocation in multiple levels of government.

Syllabus

UNIT I: Income, Social Insurance and Redistribution (15 hours)
Redistribution and welfare policy, Universal Basic Income, Social Security, Health Insurance, Education, Pension Reforms

UNIT II: Public Expenditure and Fiscal Policy (15 hours)
Budget (Gender and Environment), Theories of Public Expenditure, Income and Employment Generation Policies, Public Debt; Sustainability and Debt Financing

UNIT III: Fiscal Federalism and Local Finance (15 hours)
Theory of Fiscal Federalism, Fiscal Federalism in India

Recommended readings

- Jonathan Gruber, (2011), Public Finance and Public Policy, 3rd edition, Worth Publishers. (Main Textbook)
- Hillman A. L., (2009), Public Finance and Public Policy: Responsibilities and Limitations of Government, 2nd edition, Cambridge University Press.
- Rosen, H. & Gayer, T. (2014). Public Finance (10th ed.). New York: McGraw-Hill.
- Rao, M. Govinda. "Central transfers to states in India: rewarding performance while ensuring equity." Final report submitted to NITI Aayog (2017).
- Fifteenth Finance Commission Report 2021-26.
- Report Summary, 15th Finance Commission, PRS India.
- Latest Finance Commission Reports
- Latest Economic Survey and Budget Documents

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Discipline Specific Elective 5 (DSE-5): Digital Economics

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
III/V/VII	Digital Economics – ECON035	4	3	1	0	Passed Class 12th	Introductory Microeconomics (ECON001)

Learning Objectives

The Learning Objectives of this course are as follows:

- The analysis of the impact of information and communication technologies (ICTs) on economies and societies is a growing field.
- This course will cover the role of ICT on productivity, market structure, information and network effects, and its differential impact across groups and regions (digital divide).
- This theoretical and methodological stance has inspired a rather inter-disciplinary approach to the study of the digital economy.

Learning outcomes

The Learning Outcomes of this course are as follows:

- The students would be able to get an idea how the information technology is changing the life and livelihood of individuals and economy.

Syllabus

UNIT I: Functions of ICTs using productivity function approach and productivity (09 hours)

UNIT II: The transformation of management practices; work and employment; social networks, trust and social capital in the digital economy; cultural and motivational aspects (09 hours)

UNIT III: ICTs, competition, intellectual property right and market (09 hours)

UNIT IV: ICTs and the political economy of inequality etc. (09 hours)

UNIT V: Automation and Jobs (06 hours)

UNIT VI: Digital India (03 hours)

Recommended readings

- Goldfarb, A., & Tucker, C. (2019). Digital economics. Journal of Economic Literature, 57(1), 3-43.
- Goldfarb, A., Greenstein, S. M., & Tucker, C. E. (Eds.). (2015). Economic analysis of the digital economy. University of Chicago Press.
- Acemoglu, D., & Restrepo, P. (2018). Artificial intelligence, automation, and work. In The economics of artificial intelligence: An agenda (pp. 197-236). University of Chicago Press.
- Varian, H. R. (2001). Economics of information technology. University of California, Berkeley.
- Maiti, D., Castellacci, F., & Melchior, A. (2020). Digitalisation and development: issues for India and beyond. In Digitalisation and Development (pp. 3-29). Springer, Singapore.
- Greenstein, S (2020) The Economics of Internet Infrastructure, https://www.aeaweb.org/articles?i

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES offered by Department of Economics for Semester- 3rd, 5th & 7th

GENERIC ELECTIVES (GE-1): PRINCIPLES OF MICROECONOMICS I

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Semester	Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
			Lecture	Tutorial	Practical/ Practice		
I/III/V/VII	Principles of Microeconomics I ECON025	4	3	1	0	Class XII pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- This course discusses the basic principles in Microeconomics and their applications. It includes consumer's problem, demand estimation, production function, cost functions and market analysis. It illustrates how the concepts of microeconomics can be applied to analyze real-life economic situations.

Learning outcomes

The Learning Outcomes of this course are as follows:

- The students learn some basic principles of microeconomics of consumer and producers, and interactions of supply and demand, characteristics of perfect competition, efficiency and welfare outcomes.

SYLLABUS OF GE-1

UNIT – I: Introduction (12 hours)
Problem of scarcity and choice: scarcity, choice and opportunity cost; production possibility frontier; economic systems. Demand and supply: law of demand, determinants of demand, shifts of demand versus movements along a demand curve, market demand,

law of supply, determinants of supply, shifts of supply versus movements along a supply curve, market supply, market equilibrium. Applications of demand and supply: price rationing, price floors, consumer sur- plus, producer surplus. Elasticity: price elasticity of demand, calculating elasticity, determinants of price elasticity, other elasticities

UNIT – II: Consumer Theory (12 hours)
Budget constraint, concept of utility, diminishing marginal utility, Diamond-water paradox, income and substitution effects; consumer choice: indifference curves, derivation of demand curve from indifference curve and budget constraint

UNIT – III: Production and Costs (12 hours)
Production: behaviour of profit maximising firms, production process, production functions, law of variable proportions, choice of technology, isoquant and isocost lines, cost minimizing equilibrium condition
Costs: costs in the short run, costs in the long run, revenue and profit maximization, minimizing losses, short run industry supply curve, economies and dis- economies of scale, long run adjustments

UNIT – IV: Perfect Competition (09 hours)
Assumptions: theory of a firm under perfect competition, demand and revenue; equilibrium of the firm in the short run and long run; Long run industry supply curve: increasing, decreasing and constant cost industries.
Welfare: allocative efficiency under perfect competition.

Practical component (if any) - NIL

Essential/recommended readings

- Mankiw, N. G. (2018). *Principles of Microeconomics* 8th ed.
- Frank, R. H., & Cartwright, E. (2010). *Microeconomics and behavior*. New York: McGraw-Hill.
- Bernheim, B., Whinston, M. (2009). *Microeconomics*. Tata McGraw-Hill.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-2): BASIC DEVELOPMENT ECONOMICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Semester	Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
			Lecture	Tutorial	Practical/ Practice		
I/III/V/VII	**Basic Development Economics ECON029**	**4**	**3**	**1**	**0**	**Class XII Pass**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- This course exposes students to some of the key ideas and concepts in the areas of economic growth, human development and globalisation building on the concept of growth and further links it up with alternative conceptions of development.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Students will develop a critical understanding of the contemporary issues in economic growth and development and their paths. Students will thus be better prepared to face the professional world and can use this knowledge base in a variety of jobs, including in the corporate, civil service and NGO sectors.

SYLLABUS OF GE-2

UNIT – I: Development and underdevelopment (12 hours)
Growth vs Development; Classic Approaches of Development; Contemporary theories of Development and Underdevelopment

UNIT – II: Development goals and indicators, measures of underdevelopment
Various concepts and measures of poverty and inequality, poverty lines using various national and international criteria. (12 hours)

UNIT – III: Capabilities, human development and sustainable development (12 hours)

UNIT – IV: Globalisation and development (09 hours)

Practical component (if any) - NIL

Essential/recommended readings

- Debraj Ray, *Development Economics*, (DE), Princeton University Press, 1998.
- Robinson, J. A., & Acemoglu, D. (2012). *Why nations fail: The origins of power, prosperity and poverty* (pp. 45-47). London: Profile.
- Abhijit Banerjee, Roland Benabou and Dilip Mookerjee (eds), *Understanding Poverty*
(UP), Oxford University Press, 2006.
- Angus Deaton, *The Great Escape: Health, Wealth and the Origins of Inequality*, Princeton University Press, 2013.
- Gustav Ranis et.al, Economic Growth and Human Development, *World Development* Vol. 28, No. 2, Elsevier Science Ltd., 2000
- Amartya Sen, *Development as Freedom*, OUP, 2000
- Thomas Piketty and Emmanuel Saez, 'Inequality in the Long Run', Science, 344 (838), 2014
- Piketty, Thomas, 2019, *Capital and Ideology*, Harvard University Press,
- Séverine Deneulin with Lila Shahani (ed.), *An Introduction to the Human Development and Capability Approach: Freedom and Agency*, Roultedge, 2009

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-3): ESSENTIALS OF ECONOMICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Semester	Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
			Lecture	Tutorial	Practical/ Practice		
I/III/V/VII	**Essentials of Economics ECON076**	**4**	**3**	**1**	**0**	**Class XII pass**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- This course will introduce the fundamental concepts of economics, the study of how people manage resources. It contains basic principles of microeconomics (the behaviour of consumers, firms and companies), macroeconomics (national production, employment, inflation and interest rates) and international economics (balance of payment, exchange rate and trade) with graphical illustration and contemporary examples.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, the students will learn to think like an economist and understand how a modern market economy function. They will learn about the factors that determine long-run growth and short-term fluctuations and role of government and financial institutions, so they can better understand how economics applies to the everyday life.

SYLLABUS OF GE-3

UNIT – I: Microeconomic Foundations (15 hours)
Foundations of economics, how market works, firms and market structures, markets for factor of production, role of government

UNIT – II: Macroeconomic Foundations (15 hours)
GDP (measuring total production, income and economic growth), unemployment and inflation; aggregate demand and aggregate supply analysis; monetary and fiscal policies

UNIT – III: Foundation of International Economics (15 hours)
Comparative advantage and the gains from trade, macroeconomics in an open economy

Practical component (if any) - NIL

Essential/recommended readings

– Hubbard, G., Garnett, A., & Lewis, P. (2019). Essentials of economics. 5th edition, Pearson Higher Education AU.

– Sloman, J., & Garratt, D. (2016). Essentials of Economics, 7th edition, Pearson

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Generic Elective (GE-7): Theory of Public Finance

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
III/V/VII	Theory of Public Finance – ECON061	4	3	1	0	Passed Class 12th	ECON001/ECON025

Learning Objectives

The Learning Objectives of this course are as follows:

- This course will look into the efficiency and equity aspect of market mechanism of allocating resources and also the design and implications of public sector policies including taxation and monetary policies.
- It will deal with efficiency, equity, public goods, externalities, taxation, subsidies, fiscal multiplier, money supply, interest rate and their interlinkages.

Learning outcomes

The Learning Outcomes of this course are as follows:

- This course aims to develop the broad conceptual frameworks which will enable students to learn economic issues efficiency, equity, public goods, externalities, taxation, subsidies, fiscal multiplier, money supply, interest rate and their interlinkages.
- It will also allow them to critically evaluate various micro and macro aspects of government policies and their effects on output, distribution, and welfare in the economy.
- The course will be useful for students aiming towards careers in the government sector, policy analysis, business and journalism.

Syllabus

UNIT I: Theories of Public Sector and Market Mechanism (12 hours)
Overview of Fiscal Functions; Tools of Normative Analysis; Pareto Efficiency; General Equilibrium Framework; Equity and the Social Welfare

UNIT II: Market Failure (12 hours)
Sources of Market failures; Public Goods; and Externalities.

UNIT III: Theories of Taxation (09 hours)
Product and Factor tax; Tax Burden; Tax Distortions; Tax Design

UNIT IV: Working of Fiscal and Monetary Policies (12 hours)
Fiscal policy; Banking system and creation of Money; Monetary Instruments and Policies; Fiscal and Monetary Management in Indian Context.

Recommended readings

- R.A. Musgrave and P.B. Musgrave , *Public Finance in Theory and Practice*, 5th Edition.
- Rosen, H. & Gayer, T. (2014). *Public finance* (10th ed.). New York: McGraw-Hill.
- Stiglitz, J E & Rosengard J K (2015), *Economics of the Public Sector*, 4th ed, W.W. Norton.
- Jonathan Gruber, (2011), Public Finance and Public Policy, 3rd edition, Worth Publishers. (Main

Textbook)

- Cullis, J., Jones, P. (1998). Public finance and public choice, 2nd ed. Oxford University Press.
- Hindriks, J., Myles, G. (2013). Intermediate public economics, 2nd ed. MIT Press.
- A. Bagchi (ed.): Readings in public finance. Oxford University Press.
- Stiglitz, J. (2009). Economics of the public sector, 3rd ed. W. W. Norton.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Generic Elective (GE-8): Money and Banking

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
III/V/VII	**Money and Banking – ECON062**	**4**	**3**	**1**	**0**	**Class 12th Pass**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- This course exposes students to the theory and functioning of the monetary and financial sectors of the economy.
- It highlights the organization, structure, and role of financial markets and institutions. It also discusses interest rates, monetary management, and instruments of monetary control.
- Financial and banking sector reforms and monetary policy with special reference to India are also covered.

Learning outcomes

The Learning Outcomes of this course are as follows:
This allows students to understand current monetary policies and financial market out- comes. It also enables them to critically evaluate policies.

Syllabus

UNIT I: Money (12 hours)
Understanding concept and functions of money, Measurement of money supply, Analytics and Methodology of computation of money supply, Theories of money supply determination

UNIT II: Financial markets: an Introduction (12 hours)
Role of financial markets and institutions; Problems of Asymmetric information, Financial Crises; Financial derivatives: Futures, Options and Swaps; Financial markets and Institutions in India: Organization, Structure and Reforms in India

UNIT III: Interest Rates (09 hours)
Determination of interest rates; Sources of interest rates differentials and risk; Theories of term structure of interest rates; Interest rates in India

UNIT IV: Central Banking and Monetary policy (12 hours)
Central Bank: Functions and Balance Sheet

Monetary Policy: Targets and instruments, Monetary management in an open economy
Monetary Policy Framework in India: Evolution and current scenario, critical evaluation
Digital currency: implications and emerging issues in Indian economy

Recommended readings

- F J Fabozzi et al: Foundations of Financial Markets and Institutions, Pearson
- F S Mishkin , S G Eakins, T Jayakumar, R K Pattnaik : Financial Markets and Institutions Pearson
- N Jadhav: Monetary Policy, Financial stability and Central Banking in India Macmilla
- M.R. Baye and D.W. Jansen Money, Banking and Financial Markets AITBS, 1996
- Report of the Working Group: Money Supply Analytics and Methodology of Compilation, 1998 Annual Report; Master Circular - Prudential Norms on Capital Adequacy - Basel I Framework - 2011; RBI Bulletin; Report of Currency and Finance (latest).
- Dua, P., "Monetary Policy Framework in India", Indian Economic Review, Vol. 55, Issue 1, June 2020
- Ghate, C., & Kletzer, K. M. (Eds.). (2016). Monetary policy in India: A modern macroeconomic perspective. Springer.
- Various publications of RBI and other agencies / institutions

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Generic Elective (GE-9): Digitalisation and Development

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
III/V/VII	**Digitalisation and Development – ECON063**	**4**	**3**	**1**	**0**	**Class 12th Pass**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- The analysis of the impact of information and communication technologies (ICTs) on economies and societies is a growing field. Technology is an enabling factor. Technological developments become relevant to the extent that they are economically and socially meaningful.
- This course aims to offers an overview of the understanding of economics of digitalisation and its impact on the life and livelihood with an interdisciplinary approach.

Learning outcomes

The Learning Outcomes of this course are as follows:
The students would understand the functions information technology and its socio- economic impact, wellbeing and progress on the contemporary world.

Syllabus

UNIT I: Digital development - India and the World (09 hours)

UNIT II: The transformation of management practices; work and employment; social net- works, trust and social capital in the digital economy; cultural and motivational aspects (12 hours)

UNIT III: Unit ICTs, Digital Divide and the political economy of inequality (12 hours)

UNIT IV: Access to ICT and poverty and wellbeing, work-life balance (12 hours)

Recommended readings

- Goldfarb, A., Gans, J.,& Agrawal, A. (2019). The Economics of Artificial Intelligence: An Agenda. University of Chicago Press.
- Agrawal, A., Gans, J., & Goldfarb, A. (2018). Prediction machines: the simple economics of artificial intelligence. Harvard Business Press.
- Goldfarb, A., & Tucker, C. (2019). Digital economics. Journal of Economic Literature, 57(1), 3-43.
- Goldfarb, A., Greenstein, S. M., & Tucker, C. E. (Eds.). (2015). Economic analysis of the digital economy. University of Chicago Press.
- Maiti, D., & Awasthi, A. (2020). ICT exposure and the level of wellbeing and progress: A cross country analysis. Social Indicators Research, 147(1), 311-343.
- Acemoglu, D., & Restrepo, P. (2018). Artificial intelligence, automation, and work. In The economics of artificial intelligence: An agenda (pp. 197-236). University of Chicago Press.
- Acemoglu, D., & Restrepo, P. (2018). The race between man and machine: Im- plications of technology for growth, factor shares, and employment. American Economic Review, 108(6), 1488-1542.
- Varian, H. R. (2001). Economics of information technology. University of California, Berkeley.
- Maiti, D., Castellacci, F., & Melchior, A. (2020). Digitalisation and development: issues for India and beyond. In Digitalisation and Development (pp. 3-29). Springer, Singapore.
- Singh, N. (2016). Information technology and its role in India's economic development: A review. Development in India, 283-312.
- Castellacci, F., & Tveito, V. (2016). The Effects of ICTs on Well-being: A Survey and a Theoretical Framework (No. 20161004). Centre for Technology, Innovation and Culture, University of Oslo.
- Huyer, S., & Mitter, S. (2003). ICTs, globalisation and poverty reduction: Gender dimensions of the knowledge society. Kampala (Uganda): http://gab. wigsat. org/policy. htm.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Generic Elective (GE-10): Introduction to Comparative Economic Development

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
III/V/VII	**Introduction to Comparative Economic Development – ECON064**	**4**	**3**	**1**	**0**	**Class 12th Pass**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- This course investigates selected issues in industrialization and development in comparative historical perspective.

- The course focuses on a set of countries which followed diverse trajectories and patterns of growth to achieve their industrial transition and compares the outcomes of these diverse trajectories on sectoral change, intersectoral relations, labour processes and industrial relations and compares the role of the state in facilitating the respective trajectories.

Learning outcomes

The Learning Outcomes of this course are as follows:

- The students will be able to visualise economic development in a historical perspective and assimilate material from diverse narratives.
- It will help them to understand the diverse paths of economic development in the advanced economies.

Syllabus

UNIT I: Introduction (09 hours)
Theoretical issues and comparative historical background.

UNIT II: Agricultural transformation and its role in industrialization (09 hours)
Agrarian and land relations, production and productivity, agrarian surplus in industrial development. Case studies: Britain, Japan and U.S.S.R.

UNIT III: The industrialization process of Britain, Japan and U.S.S.R. (09 hours)

UNIT IV: The factory system and making of the industrial working class. Case studies: Britain and Japan (09 hours)

UNIT V: The role of the state in industrial and developmental transitions. Case studies: Britain, Japan and U.S.S.R. (09 hours)

Recommended readings

- Davies, R. (1998). Soviet economic development from Lenin to Khrushchev. Cam- bridge University Press.
- Dobb, M. (1966). Soviet economic development since 1917. Routledge.
- Hughes, J., Cain, L. (1994). American economic history, 4th ed. Harper Collins College Publishers.
- Hayami, Y. (1975). A century of agricultural growth in pre-war Japan: Its relevance to Asian development. University of Minnesota Press.
- Hobsbawm, E. (1968). Industry and empire: An economic history of Britain since 1750. Weidenfeld & Nicholson.
- Hobsbawm, E. (1984). Worlds of labour: Further studies in the history of labour. Weidenfeld & Nicolson.
- Johnson, C. (1982). MITI and the Japanese miracle: The growth of industrial policy 1925-1975. Stanford University Press.
- Macpherson, W. (1995). The economic development of Japan 1868-1941. Cam- bridge University Press.
- Norman, E. (2007). Japan's emergence as a modern state: Political and economic problems of the Meiji period. University of British Columbia Press.
- Okochi, K., Karsh, B., Levine, S. (1974). Workers and employees in Japan: The Japanese employment relations system. Princeton University Press.
- Paul, G., Robert, C. (1990). Soviet economic structure and performance, 3rd ed. Harper and Row.
- Tauger, M. (2004). Soviet peasants and collectivization 1930-39: resistance and adaptation. Journal of Peasant Studies, 31: 3-4. 427-456.
- Angus Maddison (2001). The World Economy, Vol. 1: A Millennial Perspective. OECD.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Generic Elective (GE-11): Education and Development

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
III/V/VII	**Education and Development – ECON065**	**4**	**3**	**1**	**0**	**Class 12thPass**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:
This course discusses the role of education in development and policy analysis and formulation in the context of development; the impact of the globalisation on, and the role of international agencies in, education for development; human capital theory and human resource development; education and aid; research and consultancy strategies and ethics. he emphasis in this course is laid on understanding the theoretical aspects of education and linking it with the issues of education in a developing country like India.

Learning outcomes

The Learning Outcomes of this course are as follows:
This course will develop skills amongst the students to role of education and strategies to expand education in highly unequal societies. This will further help to conduct research and analysis the role of institutions for the outcome of education.

Syllabus

UNIT I: Introduction (08 hours)
Defining the educational problem

UNIT II: Human capital theory (08 hours)
The basic economic perspective on education

UNIT III: Early childhood education: How important? When did earnings become so dependent on education? Do our regression estimates overestimate the impact of education on earnings? The case of ability bias. (08 hours)

UNIT IV: Education as a signal of skill (08 hours)
If the return to education is real, does it reflect skills learned or is it a signal? Why has the rate of return to education increased? What skills are now rewarded in the workplace?

UNIT V: Schooling and Achievement (08 hours)
Do smaller classes raise achievement? School vouchers and parental choice; School accountability, standards and testing; Teacher quality and teacher training; Can technology complement what teachers do?

UNIT VI: Higher Education (05 hours)
Basic issues and structure; Higher education policy

Recommended readings

- Borjas, George. Labor Economics. Boston, MA: McGraw-Hill, 2005
- Lovenheim, M., & Turner, S. E. (2017). Economics of education. Macmillan Higher Education.
- Feinstein, Leon. "Inequality in the Early Cognitive Development of British Children in the 1970 Cohort." Economica 70, no. 277 (2003): 73-97.

- Duflo, Esther. "Schooling and Labor Market Consequences of School Construction in Indonesia: Evidence from an Unusual Policy Experiment." American Economic Review 91, no. 4 (2001): 795-800.
- Levy, Frank, and Richard J. Murnane. "Computers, Offshoring, and Skills." Working Paper. September 18, 2005..
- Hanushek, E. A., Machin, S. J., & Woessmann, L. (Eds.). (2016). Handbook of the economics of education. Elsevier.
- Bradley, S., & Green, C. (Eds.). (2020). The Economics of Education: A Com- prehensive Overview.
- Hanushek, Eric A., 2005, Economic Outcomes and School Quality, International Academy of Education and International Institute for Educational Planning.
- Goldin, C., & Katz, L. F. (2010). The race between education and technology. harvard university press.
- Haveman, R., & Smeeding, T. (2006). The role of higher education in social mobility. The Future of children, 125-150.
- Singh, A., Park, A., & Dercon, S. (2014). School meals as a safety net: an evaluation of the midday meal scheme in India. Economic Development and Cultural Change, 62(2), 275-306.
- Krueger, Alan B. "Experimental Estimates of Education Production Functions." Quarterly Journal of Economics 114, no. 2 (1999): 497-532.
- Loeb, Susanna, and Marianne E. Page. "Final Examinationining the Link between Teacher Wages and Student Outcomes: The Importance of Alternative Labor Market Opportunities and Non-pecuniary Variation." Review of Economics and Statis- tics 82, no. 3 (2000): 393-408.
- Winston, Gordon. "Subsidies, Hierarchy and Peers: The Awkward Economics of Higher Education." Journal of Economic Perspectives 13, no. 1 (1999): 13-36.
- Azam, M., & Kingdon, G. G. (2015). Assessing teacher quality in India. Journal of Development Economics, 117, 74-83.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Generic Elective (GE-12): Basic Resource and Energy Economics

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
III/V/VII	**Basic Resource and Energy Economics – ECON066**	**4**	**3**	**2**	**0**	**Passed Class 12th with Mathematics**	**ECON001/ECON025**

Learning Objectives

The Learning Objectives of this course are as follows:
This course will introduce the basics of Resource and Energy economics. The objective of this course is to provide theoretical and empirical topics on Resource economics, energy economics, energy transition, and energy security. This course introduces the conceptual and theoretical foundations of Resource Economics. In particular, the policies and potential sources are both renewable and non-renewable. The objective of this course is to provide knowledge on the principles of governing and managing natural resources.

Learning outcomes

The Learning outcomes of this course are as follows:
The students will learn some issues of resource economics relating to the basics of supply, demand, and prices, income elasticities, world oil markets, and depletable resources, pathways of energy transition from conventional to renewable energy sources.

Syllabus

UNIT I: Resource Economics (Renewable and non-renewable sources) (15 hours)
Optimal extraction of a non-renewable resource, Optimal management of renewable resources -Fishery and Forestry, Tom Tietenberg and Lynne Lewis, Environment and Natural Resource Economics, 9th edition, Chapter 5,6,12 and 13

UNIT II: Energy Economics (15 hours)
Types of energy sources, Introduction to Basics of supply, demand, and prices, energy supply and economics of depletable resources, world oil markets

UNIT III: Energy transition and energy security Pathways of energy transition from conventional to renewable energy sources, Policy instruments, Energy security, accessibility and 4 A definition, and Energy poverty (15 hours)

Recommended readings

- Tom Tietenberg and Lynne Lewis, Environment and Natural Resource Economics, 9th edition
- Review of the Basics of Supply, Demand and Price Formation in Competitive Markets Pindyck and Rubinfeld. 2005
- Fouquet, R. Historical energy transitions: speed, prices and system transformation. Energy Res. Soc. Sci. 22, 7–12 (2016).
- McGowan, J., and S. Conners. "Windpower: A Turn of the Century Review." Annual Review of Energy and the Environment 25 (2000): 147-197.
- Chen, B., Xiong, R., Li, H., Sun, Q., & Yang, J. (2019). Pathways for sustainable energy transition. Journal of Cleaner Production, 228, 1564-1571.

- Palmer, K., and D. Bullaw. "Cost-Effectiveness of Renewable Electricity Policies." Energy Economics 27 (2005): 873-894
- Deffeyes, K. Hubbert's Peak: The Impending World of Oil Shortage. Princeton, NJ: Princeton University Press, 2001, chapter 1. ISBN: 0691116253.
- Lynch M. "The Pessimism About Petroleum Resources: Debunking the Hubbert Model (and Hubbert Modelers)." Minerals and Energy - Raw Materials Report 18, no. 1 (2003): 1-18.
- Watkins, G. "Oil Scarcity: What Have the Past Three Decades Revealed?" Energy Policy 34 (2006): 508-514.
- Cherp, A., & Jewell, J. (2014). The concept of energy security: Beyond the four As. Energy policy, 75, 415-421.
- Carley, S., & Konisky, D. M. (2020). The justice and equity implications of the clean energy transition. Nature Energy, 5(8), 569-577.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Generic Elective (GE-13): Principles of Microeconomics II

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
III/V/VII	Principles of Microeconomics II – ECON027	4	3	1	0	Passed Class 12th with Mathematics	Introductory Microeconomics (ECON001) Principles of Microeconomics I (ECON025)

Learning Objectives

The Learning Objectives of this course are as follows:

- This course covers imperfect markets and equilibrium analysis, consumer and producer theories under various markets and its failure, and international trade.

Learning outcomes

The Learning outcomes of this course are as follows:

- This course helps the students to understand different forms of market imperfections and market failures observed in real life situations.
- The students learn about the environment where the standard market mechanism fails to generate the desirable outcomes.
- They develop a sense of how the production is distributed among the different factors of production and the demand for inputs.
- Some preliminary concepts of international trade are also covered in this course.

Syllabus

UNIT I: Market Structures (12 hours)
Theory of a Monopoly Firm: Concept of imperfect competition; short run and long run price and output decisions of a monopoly firm; concept of a supply curve under monopoly; comparison of perfect competition and monopoly, social cost of monopoly, price discrimination; remedies for monopoly: Antitrust laws, natural monopoly
Imperfect Competition: Monopolistic competition: Assumptions, SR and LR price and output

determinations under monopolistic competition, economic efficiency and resource allocation; oligopoly: assumptions, oligopoly models, game theory, contestable markets, role of government

UNIT II: Consumer and Producer Theory (12 hours)
Consumer and Producer Theory in Action: Externalities, marginal cost pricing, internalising externalities, public goods; imperfect information: adverse selection, moral hazard, social choice, government inefficiency.
Markets and Market Failure: Market adjustment to changes in demand, efficiency of perfect competition; sources of market failure: imperfect markets, public goods, externalities, imperfect information; evaluating the market mechanism.

UNIT III: Income Distribution and Factor pricing (12 hours)
Input markets: demand for inputs; labour markets, land markets, profit maximisation condition in input markets, input demand curves, distribution of Income.

UNIT IV: International Trade (09 hours)
Absolute advantage, comparative advantage, terms of trade, sources of comparative advantage, trade barriers, free trade/ protectionism.

Recommended readings

- Mankiw, N. G. (2018). *Principles of Microeconomics* 8th ed.
- Bernheim, B., Whinston, M. (2009). *Microeconomics*. Tata McGraw-Hill.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF GEOGRAPHY

CATEGORY -I
BA (HONS. GEOGRAPHY

DISCIPLINE SPECIFIC CORE COURSE – 07 (DSC-07): CLIMATOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
CLIMATOLOGY	4	3	1	0	12th pass	Nil

Learning Objectives

The Learning Outcomes of this course are as follows:

- Explaining various dimensions of climatology
- Analysing atmospheric moisture along with disturbances
- An understanding world climatic regions

Learning outcomes

The Learning Outcomes of this course are as follows:

- Detailed exposure to climatology.
- In-depth knowledge of atmospheric moisture and cyclonic features.
- Knowledge of the mechanism of monsoon and climatic classification.

SYLLABUS OF DSC-07

Unit-I: Introduction: **(2hrs)**

- Nature, Scope, and Application

Unit-II: Atmospheric Moisture (12hrs)

- Humidity-types, Evapotranspiration, Condensation- process and forms (a. clouds, and b. fog), Precipitation- forms and types, Atmospheric Stability and Instability.(10hrs)

Unit-III: Atmospheric Disturbances: (12hrs)

- Tropical Cyclones- Characteristics, Mechanism and Distribution.

- Temperate Cyclones- Characteristics, Mechanism (Polar Front Theory) and Distribution.(

Unit-IV: Monsoon (10hrs)

- Mechanism of monsoon.
- Global teleconnections in relation to monsoon in India, ENSO, Indian Ocean Dipole Effect.
- Jet Streams and Monsoon in India.

Unit-V: Climatic Classification (9hrs)

- Concept and Purpose of Classification.
- Koppen's Classification.

Suggestive Readings

1. Frederick K. Lutgens, Edward J. Tarbuck, Dennis G. Tasa (2015) The Atmosphere: An Introduction to Meteorology, Pearson Education

2. Barry R. G. and Carleton A. M. (2001) Synoptic and Dynamic Climatology, Routledge, UK. 2

3. Barry R. G. and Corley R. J. (2003) Atmosphere, Weather and Climate, Routledge, New York.

4. Critchfield H. J. (1987) General Climatology, Prentice-Hall of India, New Delhi

5. Lutgens F. K., Tarbuck E. J. and Tasa D. (2009) The Atmosphere: An Introduction to Meteorolog

6. Oliver J. E. and Hidore J.J. (2002) Climatology: An Atmospheric Science, Pearson

7. Trewartha G. T. and Horne L. H. (1980) An Introduction to Climate, McGraw-Hill.

8. Gupta S.L. (2000): Jalvayu Vigyan, Hindi Madhyam Karyanvay Nidishalya, Delhi Vishwa Vidhyalaya, Delhi

9. Lal, D. S. (2006): Jalvayu Vigyan, Prayag Pustak Bhavan, Allahabad

10. Vatal, M. (1986): Bhautik Bhugol, Central Book Depot, Allahabad

11. Singh, S. (2009): Jalvayu Vigyan, Prayag Pustak Bhawan, Allahabad

12. Malhotra, N. and Sen, S. (2018) Climatology, M K Books, New Delhi

Practical component (if any) - NIL

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 08 (DSC-08): URBAN GEOGRAPHY

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
URBAN GEOGRAPHY	4	3	1	0	12th pass	Nil

Learning Objectives

- To familiarize student with the nature and scope of urban geography.
- To understand the morphology and hierarchy in urban system.
- To learn about the importance of urban issues in mega- cities.
- To provide knowledge about urban planning and governance.
- To make students learn about the new perspectives of futuristic cities.

Learning outcomes

- Comprehend the fundamentals of urbanization, morphology and hierarchy theories that explain the process of urban development.
- Be conversant with the morphology of Indian cities.
- Be Aware about the issues faced in mega cities.
- Have insight into the master plans, renewal plans, UN-Habitat and urban local bodies
- Explore about the concepts of new urbanism, sustainable, smart and inclusive cities.

SYLLABUS OF DSC-08

Unit-1: Introduction (3hrs)

- Definition of urban; Nature and scope of urban geography; Theories of urban origin (reference Carter).

Unit-II: Urban Morphology and Hierarchy (12hrs)

- Concept and Theories of morphology (Kearsley modified Burgess, Harris & Ullman and White' model; Concept and Theories of Hierarchy-Christaller, and Rank size; Morphology of an Indian City (Madurai or Delhi or Jamshedpur) (ONLY ONE).

Unit-III: Urban Issues in Mega Cities of India (9hrs)

- Urban Basic Services (water in detail with reference to Chennai); Housing and slums (Mumbai).
- Heat island (suitable examples).

Unit-IV: Urban Planning and Governance (9hrs)

- Planning: Concept of Master Plans, AMRUT; Institutions: UN-Habitat, Urban local bodies in India.

Unit-V: Futuristic Cities (12hrs)

- Concept of New Urbanism; Concepts of futuristic cities: sustainable city, smart city, compact city, virtual city, network city, world class city, global city and inclusive city (no question on individual concept); Sustainable city or smart city concept in detail (ONLY ONE).

Suggestive Readings

1. Carter, H. (2010) The Study of Urban Geography, Arnold Publishers, London.
2. Pacione, M. (2009). Urban Geography: A Global Perspective. Taylor and Francis , UK
3. Fyfe, N. R. and Kenny, J. T. (2020). The Urban Geography Reader. London, UK: Routledge.
4. Kaplan, D. H., Wheeler, J. O. and Holloway, S. R. (2008). Urban Geography, John Wiley, New York
5. Ramachandran, R., (1992). Urbanisation and Urban Systems of India. New Delhi, India: Oxford University Press.
6. Singh, S and Saroha, J. (2021) Urban Geography, Pearson Education.
7. मंडल, आर.बी. (2012) नगरिय भुगोल, कॉन्सेप्ट पब्लिशिंग कंपनी, नई दिल्ली।
8. बंसल, एस.सी. (1997) नगरिय भुगोल, मीनाक्षी प्रकाशन, मेरठ।
9. Misra , R.P. (2013) Urbanisation in South Asia, Cambridge University Press, New Delhi
10. Knox, P. L., and McCarthy, L. (2005) Urbanization: An Introduction to Urban Geography, Pearson Prentice Hall, New York
11. Grant, J. (2005) Planning the Good Community: New Urbanism Theory and Practice, Routledge, London
12. Sharma, P. and Rajput, S. (Eds.) (2017). Sustainable Smart Cities in India; Challenges and Future Perspectives, Springer Nature AG, Switzeland
13. Palen, J.J. (2012) The Urban World. Paradigm Publishers, Boulder, USA
14. Graham H. and Colin H. (2003)Sustainable Cities, Routledge, London
15. Singh, R.B., (Ed.) (2015). Urban Development, challenges, risks and Resilience in Asian megacities, Springer

Practical Component (if any): NIL

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi

DISCIPLINE SPECIFIC CORE COURSE – 09 (DSC-09): FUNDAMENTALS OF REMOTE SENSING (PRACTICAL)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
FUNDAMENTALS OF REMOTE SENSING (PRACTICAL)	4	0	0	4	12th Pass	Nil

Note: one credit of practical is equal to two hours

Learning Objectives

The Learning Objectives of this course are as follows:

- To apprise the students with the relevance of Remote Sensing in Geography and the historical growth of Satellites in India and the world.
- To impart the knowledge of fundamentals of remote sensing and its applications.
- To facilitate the students to have hands on experience on different steps of visual interpretation of satellite images & photographs.
- To facilitate the students to have hands on experience on different steps of satellite image processing using one or more software for a geographical application.

Learning outcomes

On completion of this course, the student shall be able:

- To comprehend the concepts related to remote sensing and in understanding their relevance in geography discipline.
- To enhance their ability in describing the basic principles of image processing, visualization and analysis.
- To enrich their ability to conduct basic image processing of satellite multispectral imagery.

Practical Component (120)

SYLLABUS OF DSC-09

UNIT – I: Introduction to Remote Sensing

- Meaning and Definition
- Historical Evolution of Remote Sensing
  - (i) Platforms (Ground, Air, Space)
  - (ii) Types of Remote Sensing (Passive, Active).
  - (iii) Resolution Types (Spatial, Spectral, Radiometric, Temporal)
- Satellite data sources/Search engines: EARTHDATA, USGS, GLCF, LP-DAAC
- Software: QGIS, ARCGIS , ERDAS, IDRISI, TerrSet, ENVI, R, SAGA

UNIT – II: Aerial Photos: Geometry and Types of Aerial Photography, Stereoscope, Annotation, Interpretation Keys, and Interpretation

- Calculation of photo scale
- Orientation of Aerial Photo

- Annotation and Interpretation Keys

UNIT – III: Satellite Remote Sensing:

- Principles, Resolutions, EMR Interaction with Atmosphere and Earth Surface Features; Major Satellites and Sensors (LANDSAT, IRS, IKONOS, SPOT, MODIS, Sentinel, QUICKBIRD, any two)
- Downloading Bhuvan Data
- Downloading LANDSAT data (EARTHDATA)
- Band-wise reflection of EMR
- **UNIT–IV: Satellite Image Processing:**
- Pre-processing (Radiometric and Geometric Correction); Enhancement (Filtering); Classification Basics (Supervised and Un-supervised), DN to reflectance conversion
- Geometric Correction

UNIT – V Application of Remote Sensing :

- Land Use/Land Cover,
- Urban Sprawl,
- Vegetation Monitoring

Suggestive readings

1. Campbell, J. C., and Wynne, R. H. (2022) Introduction to Remote Sensing, 5th ed. The Guilford Press. New York 622p.
2. Jenson, J.R. (2000). Remote Sensing of the environment – An Earth Resource Perspective, Prentice Hall Inc.
3. Jensen, J.R. (2015) Introductory Digital Image Processing: A Remote Sensing Perspective, 4th Edition, Pearson India.
4. Joseph, G. and Jegganathan, C. (2017) Fundamentals of Remote Sensing, 3rd Edition, Universities Press..
5. Leshner, R.B. and Hogan, T. (2019) The View from Space : NASA'S evolving Struggle to understand our Planet, Lawrence, Kansas : University Press of Kansas, 249pp.
6. Lillisand, T. M. and Keifer, R. W. (2011)). Remote Sensing and Image interpretation', 3rd Edition John Willey and Sons, New York.
7. NASA (2018) EOSDIS Handbook, NASA, 52 pp.(https://www.earthdata.nasa.gov/s3fs-public/imported/EOSDIS_Handbook_1.5.pdf)
8. NRSC, ISRO (2015) Bhuvan : User Handbook, NRSC-DPPAWA-GWGSG,NRSC-ISRO, 92 pp.
9. Qihao, W.(2012)An Introduction to Contemporary Remote Sensing, McGraw Hill Pub, ISBN: 9780071740111
10. Sabins, F.F. (2007) Remote Sensing: Principles and Interpretation, 3rd Edition, Waveland Pr, Inc ,ISBN-13-978-1577665076
11. Toro, F.G. and Tsourdos, (2017) UAV OR Drones for Remote Sensing Applications, MDPI, 406 pp,
12. Tempfli, K., Kerle, N., Huurneman, G.C. and Janssen, L.L.F. (Eds) (2009) Principles of Remote Sensing : An Introductory Text Book, ITC: Enschede, The Netherlands.
13. Wegmann M., Leutner, B., Dech, S. (eds) 2016. Remote sensing and GIS for Ecologists. Pelagic Publishing, UK. 331pp.

Category II

Geography Courses for Undergraduate Programme of study with Geography as one of the Core Disciplines

(B.A. Programmes with Geography as Major discipline)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

DISCIPLINE SPECIFIC CORE COURSE – 3 (DSC-07): CLIMATOLOGY

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
CLIMATOLOGY	4	3	1	0	12th Pass	Nil

Learning Objectives

The Learning Outcomes of this course are as follows:

- Explaining various dimensions of climatology
- Analysing atmospheric moisture along with disturbances
- An understanding world climatic region

Learning outcomes

The Learning Outcomes of this course are as follows:

- Detailed exposure to climatology.
- In-depth knowledge of atmospheric moisture and cyclonic features.
- Knowledge of the mechanism of monsoon and climatic classification.

SYLLABUS OF DSC-07

Unit-I: Introduction (2hrs):

- Nature, Scope, and Application.

Unit-II: Atmospheric Moisture (12hrs):

- Humidity-types, Evapotranspiration, Condensation- process and forms (a. clouds, and b. fog), Precipitation- forms and types, Atmospheric Stability and Instability.

Unit-III: Atmospheric Disturbances (12hrs):

- Tropical Cyclones- Characteristics, Mechanism and Distribution.
- Temperate Cyclones- Characteristics, Mechanism (Polar Front Theory) and Distribution.

Unit-IV: Monsoon (10hrs):

- Mechanism of monsoon.
- Global teleconnections in relation to monsoon in India, ENSO, Indian Ocean Dipole Effect.
- Jet Streams and Monsoon in India.

Unit-V: Climatic Classification (9hrs):

- Concept and Purpose of Classification.
- Koppen's Classification.

Suggestive Readings

1. Frederick K. Lutgens, Edward J. Tarbuck, Dennis G. Tasa (2015) The Atmosphere: An Introduction to Meteorology, Pearson Education

2. Barry R. G. and Carleton A. M. (2001) Synoptic and Dynamic Climatology, Routledge, UK. 2

3. Barry R. G. and Corley R. J. (2003) Atmosphere, Weather and Climate, Routledge, New York.

4. Critchfield H. J. (1987) General Climatology, Prentice-Hall of India, New Delhi

5. Lutgens F. K., Tarbuck E. J. and Tasa D. (2009) The Atmosphere: An Introduction to Meteorolog

6. Oliver J. E. and Hidore J.J. (2002) Climatology: An Atmospheric Science, Pearson

7. Trewartha G. T. and Horne L. H. (1980) An Introduction to Climate, McGraw-Hill.

8. Gupta S.L. (2000): Jalvayu Vigyan, Hindi MadhyamKaryanvayNidishalya, Delhi Vishwa Vidhyalaya, Delhi

9. Lal, D. S. (2006): Jalvayu Vigyan, PrayagPustak Bhavan, Allahabad

10. Vatal, M. (1986): BhautikBhugol, Central Book Depot, Allahabad

11. Singh, S. (2009): Jalvayu Vigyan, PrayagPustak Bhawan, Allahabad

12. Malhotra, N. and Sen, S. (2018) Climatology, M K Books, New Delhi

Practical component (if any) - NIL

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 4 (DSC-08): URBAN GEOGRAPHY

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
URBAN GEOGRAPHY	4	3	1	0	12th Pass	Nil

Learning Objectives

- To familiarize student with the nature and scope of urban geography.
- To understand the morphology and hierarchy in urban system.
- To learn about the importance of urban issues in mega- cities.
- To provide knowledge about urban planning and governance.
- To make students learn about the new perspectives of futuristic cities.

Learning outcomes

- Comprehend the fundamentals of urbanization, morphology and hierarchy theories that explain the process of urban development.
- Be conversant with the morphology of Indian cities.
- Be Aware about the issues faced in mega cities.
- Have insight into the master plans, renewal plans, UN-Habitat and urban local bodies
- Explore about the concepts of new urbanism, sustainable, smart and inclusive cities.

SYLLABUS OF DSC-08

Unit-1: Introduction (3hrs):

Definition of urban; Nature and scope of urban geography; Theories of urban origin (reference Carter).

Unit-II: Urban Morphology and Hierarchy (12hrs):

Concept and Theories of morphology (Kearsley modified Burgess, Harris & Ullman and White' model; Concept and Theories of Hierarchy - Christaller and Rank size; Morphology of an Indian City (Madurai or Delhi or Jamshedpur) (ONLY ONE).

Unit-III: Urban Issues in Mega Cities of India (9hrs):

Urban Basic Services (water in detail with reference to Chennai); Housing and slums (Mumbai); Heat island (suitable examples).

Unit-IV: Urban Planning and Governance (9hrs):

Planning: Concept of Master Plans, AMRUT; Institutions: UN-Habitat, Urban local bodies in India.

Unit-V: Futuristic Cities (12hrs):

Concept of New Urbanism; Concepts of futuristic cities: sustainable city, smart city, compact city, virtual city, network city, world class city, global city and inclusive city (no question on individual concept); Sustainable city or smart city concept in detail (ONLY ONE).

Suggestive Readings

1. Carter, H. (2010) The Study of Urban Geography, Arnold Publishers, London.

2. Pacione, M. (2009). Urban Geography: A Global Perspective. Taylor and Francis, UK.

3. Fyfe, N. R. and Kenny, J. T. (2020). The Urban Geography Reader. London, UK: Routledge.

4. Kaplan, D. H., Wheeler, J. O. and Holloway, S. R. (2008). Urban Geography, John Wiley, New York

5. Ramachandran, R., (1992). Urbanisation and Urban Systems of India. New Delhi, India: Oxford University Press.

6. Singh, S and Saroha, J. (2021) Urban Geography, Pearson Education.

7. मंडल, आर.बी. (2012) नगरिय भुगोल, कॉन्सेप्ट पब्लिशिंग कंपनी, नई दिल्ली।

8. बंसल, एस.सी. (1997) नगरिय भुगोल, मीनाक्षी प्रकाशन, मेरठ।

9. Misra, R.P. (2013) Urbanisation in South Asia, Cambridge University Press, New Delhi

10. Knox, P. L., and McCarthy, L. (2005) Urbanization: An Introduction to Urban Geography, Pearson Prentice Hall, New York

11. Grant, J. (2005) Planning the Good Community: New Urbanism Theory and Practice, Routledge, London

12. Sharma, P. and Rajput, S. (Eds.) (2017). Sustainable Smart Cities in India; Challenges and Future Perspectives, Springer Nature AG, Switzeland

13. Palen, J.J. (2012) The Urban World. Paradigm Publishers, Boulder, USA

14. Graham H. and Colin H. (2003) Sustainable Cities, Routledge, London

15. Singh, R.B., (Ed.) (2015). Urban Development, challenges, risks and Resilience in Asian megacities, Springer

Practical Component (if any): NIL

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi

Category III

B.A. Programmes with Geography as non-Major or Minor discipline

DISCIPLINE SPECIFIC CORE COURSE – 5 (DSC-07): CLIMATOLOGY

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
CLIMATOLOGY	4	3	1	0	12th Pass	NIL

Learning Objectives

The Learning Outcomes of this course are as follows:

- Explaining various dimensions of climatology
- Analysing atmospheric moisture along with disturbances
- An understanding world climatic region

Learning outcomes

The Learning Outcomes of this course are as follows:

1. Detailed exposure to climatology.
2. In-depth knowledge of atmospheric moisture and cyclonic features.
3. Knowledge of the mechanism of monsoon and climatic classification.

SYLLABUS OF DSC-07

Unit-I: Introduction (2hrs):

- Nature, Scope, and Application.

Unit-II: Atmospheric Moisture (12hrs):

- Humidity-types, Evapotranspiration, Condensation- process and forms (a. clouds, and b. fog), Precipitation- forms and types, Atmospheric Stability and Instability.

Unit-III: Atmospheric Disturbances (12hrs):

- Tropical Cyclones- Characteristics, Mechanism and Distribution.
- Temperate Cyclones- Characteristics, Mechanism (Polar Front Theory) and Distribution.

Unit-IV: Monsoon (10hrs):

- Mechanism of monsoon.
- Global teleconnections in relation to monsoon in India, ENSO, Indian Ocean Dipole Effect.

- Jet Streams and Monsoon in India.

Unit-V: Climatic Classification (9hrs):

- Concept and Purpose of Classification.
- Koppen's Classification.

Suggestive Readings

1. Frederick K. Lutgens, Edward J. Tarbuck, Dennis G. Tasa (2015) The Atmosphere: An Introduction to Meteorology, Pearson Education

2. Barry R. G. and Carleton A. M. (2001) Synoptic and Dynamic Climatology, Routledge, UK. 2

3. Barry R. G. and Corley R. J. (2003) Atmosphere, Weather and Climate, Routledge, New York.

4. Critchfield H. J. (1987) General Climatology, Prentice-Hall of India, New Delhi

5. Lutgens F. K., Tarbuck E. J. and Tasa D. (2009) The Atmosphere: An Introduction to Meteorolog

6. Oliver J. E. and Hidore J.J. (2002) Climatology: An Atmospheric Science, Pearson

7. Trewartha G. T. and Horne L. H. (1980) An Introduction to Climate, McGraw-Hill.

8. Gupta S.L. (2000): Jalvayu Vigyan, Hindi Madhyam Karyanvay Nidishalya, Delhi Vishwa Vidhyalaya, Delhi

9. Lal, D. S. (2006): Jalvayu Vigyan, Prayag Pustak Bhavan, Allahabad

10. Vatal, M. (1986): Bhautik Bhugol, Central Book Depot, Allahabad

11. Singh, S. (2009): Jalvayu Vigyan, Prayag Pustak Bhawan, Allahabad

12. Malhotra, N. and Sen, S. (2018) Climatology, M K Books, New Delhi

Practical component (if any) - NIL

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF DISCIPLINE SPECIFIC ELECTIVE (DSE) COURSES OFFERED BY THE DEPARTMENT OF GEOGRAPHY

DISCIPLINE SPECIFIC ELECTIVE COURSE – 01 (DSE-01): BIOGEOGRAPHY

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
BIOGEOGRAPHY	4	3	1	0	12th Pass	Nil	GEOGRAPHY

Course Objectives:

- To understand various dimensions of biogeography.
- To get detailed analysis of energy cycles and their function.
- To understand the concept of ecological succession and various biogeographical processes.
- To identify geographical distribution of flora and flora of the world.
- To realize and understand the conservation of biodiversity.

Learning Outcome:

- Detailed exposure of biogeography and biodiversity.
- In-depth knowledge of circulation of biogeochemical cycles.
- Functionality of the biogeographical processes.
- Knowledge of Phytogeographical realms and Zoogeographical realms.
- Develop understanding of the global level efforts to conserve biodiversity.
-

SYLLABUS OF DSE-01

Unit-I: Introduction (2hrs):

- Nature, Approaches, significance and Scope.

Unit-II: Biogeographical Processes (12hrs):

- Dispersal, Speciation, Ecological Succession, Extinction.

Unit-III: Biogeochemical Cycles (12hrs):

- Oxygen, Carbon and Nitrogen.

Unit-IV: Geographical Distribution of flora and fauna (12hrs):

- Phytogeographical realms, Zoogeographical realms (with specific reference to Wallace and Weber line)- Basis and Classification.

Unit-V: Conservation (7hrs):

- In situ and ex situ, CBD (Convention on Biodiversity).

Suggestive Readings:

1. Bhattacharyya, N.N. (2003). Biogeography. New Delhi, India: Rajesh Publications.
2. Huggett, R.J. (1998). Fundamentals of Biogeography, USA: Routeldge
3. Lomolino, Mark. V., 2020, Biogeography: A Very Short Introduction, Oxford Publication, ISBN: 9780198850069
4. Cox, C.B, et.al, 2016, Biogeography: An Ecological and Evolutionary Approach, 9th Edition, Wiley-Blackwell.
5. Taylor, J.A., 2021, Themes in Biogeography, Routledge, Taylor and Francis publications, ISBN 9780367351106
6. Pielou, E.C., 1979, Biogeography, John Wiley & Sons, USA.
10: 0471058459ISBN 13: 9780471058458
7. L.C Aggarwal, 2018, Biogeography, Rawat publication Jaipur
8. Mathur, H.S. (1998). Essentials of Biogeography. Jaipur, India: Anuj Printers.
9. Singh,Savindra. (2015). Jaiv Bhoogol (Hindi). Allahabad, India: Prayag Pushtak Bhawan
10. Sivaperuman, Chandrakasan et al. (2018). Biodiversity and Climate Change Adaptation in Tropical Islands. London, UK: Academic Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVES (DSE-02): GEOGRAPHY OF ARID AND SEMI-ARID REGION

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
GEOGRAPHY OF ARID AND SEMI-ARID REGION	4	3	1	0	12th Pass	Nil	GEOGRAPHY

Course Objectives:

- To evolve the understanding of the regional dimensions of arid and semi-arid regions.
- To correlate the physical dimensions with human perspectives as population size and occupation of arid regions.
- To understand the challenges of aridity in global perspective and measures of sustainability.

Learning Outcome:

- Developing the skill to differentiate the geographical uniquities on space.
- Comprehend the regional knowledge of arid regions for the application of social welfare.
- Analysis and evaluation of regional geographical parameters of aridity related to its challenges and livelihood security.

SYLLABUS OF DSE-02

Unit-I: Introduction (5hrs):

- Extent, Characteristics and Determinants of arid and semi-arid regions of the world

Unit-II: Climate and Vegetation (10hrs):

- Types and characteristics.

Unit-III: Human Aspects (10hrs):

- Population distribution and major tribes.

Unit-IV: Economic Aspects (10hrs):

- Agriculture, Livestock rearing and tertiary activities.

Unit-V: Challenges and sustainability (10hrs):

- Desertification, land degradation, biodiversity loss and practices of livelihood security.

Suggestive Readings:

1. Hill, Michael, 2002, Arid and Semi-Arid Environments, Hodder Murray, London.
2. Campos-Lopez, Enrique and Anderson, Robert J. (eds), 2018, Natural Resources and Development in Arid Regions, Routledge, Newyork.
3. Goudie, Andrew, S., 2013, Arid and Semi-Arid Geomorphology, Cambridge University Press.
4. Ferguson, Gabriel, 2015, Arid and Semi-Arid Environments, NOVA.
5. Whitford, W.G. and Duval, B.D., 2019, Ecology of Desert Systems, Elsevier.
6. Laity. J., 2018, Deserts and Desert Environments, Wiley Blackwell.
7. Sharma, R.C., 1998, Thar: The Great Indian Deserts, Roli Books.
8. Warner, T., 2004, Desert Meteorology, Cambridge University Press.
9. Bhandari, M.M. and Vyas, S.P. 2019, Flora of The Indian Desert: Their Economic And Medicinal Value, Scientific Publishers.
10. Walton, Kenneth, 2009, The Arid Zones, Aldine Transactions, New Brunswick (UDA), London (UK).
11. Gritzner, Charles F., 2007, Geography of Extreme Environments: Deserts, Chelsea House, Newyork.
12. Aleshire, Peter, 2008, The Extreme Earth: Deserts, Chelsea House, Newyork.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-07): CONTEMPORARY ENVIRONMENTAL ISSUES

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
CONTEMPORARY ENVIRONMENTAL ISSUES	4	3	1	0	12th Pass	Nil	GEOGRAPHY

Learning Objectives

- To understand the basic concepts of human environment and the resultant impact.
- To evaluate the contemporary environmental issues world over.
- To assess each problem in detail along with a case study of the best practices in the world.
- To discuss the global level initiatives or policies related to these issues.

Learning Outcomes

- The changes that have taken place due to the human impact on nature.
- Recognize the concept of planetary boundaries and how humanity has already crossed the tipping point.
- Have an understanding of both the problems and some specific solutions.
- An in-depth understanding on the global policies and where the world stands today.
-

SYLLABUS OF GE-07

Unit-I: Introduction (5hrs):

- Understanding the human environment relationship and its historical progression, concept of planetary boundaries.

Unit-II: Biodiversity Loss (10hrs):

- Causes and impacts, Conservation and Global initiatives, Case study on best practices.

Unit-III: Pollution (12hrs):

- Air and Water (causes and impacts), Solid Waste (impact and management), Global initiatives, case Study on best practices.

Unit-IV: Land Degradation (10hrs):

- Causes and impacts, Global initiatives, Case Study on best practices.

Unit-V: Climate Change (8hrs):

- Concept, Adaptation and Mitigation.

Suggested Readings

1. Brusseau M L, Pepper I L and Gerba C P (2019) Environmental and Pollution Science, Academic Press, USA.
2. Cunninghum, WP and Cunninghum, M A (2004) *Principals of Environmental Science: Inquiry and Applications*, Delhi: Tata Macgraw Hill.
3. Goudie A (2001) *The Nature of the Environment*, Blackwell, Oxford, UK: Blackwell.
4. Haris F (Ed) (2004) *Global Environmental Issues*, John Wiley and Sons, W Sussex.
5. Kemp D D(1994)*Global Environmental Issues: A Climatological Approach*, Routledge London and NY.
6. Pickering K T and Owen L A (2017)*An Introduction to Global Environmental Issues,* Routledge London (eBook).
7. Raven P H, Berg L R, Hassenzehl D M et al. (2015) *Environment*, John Wiley and Sons, Jefferson City.
8. Rich Nathalien(2020) *Losing Earth: A Recent History*, Picador, New York.
9. Rockstrom J and Gaffney O (2021) *Breaking Boundaries: The Science of Our Planet*, Penguin Random House LLC.
10. Sivaperuman, Chandrakasan. et al. (2018) *Biodiversity and Climate Change Adaptation in Tropical Islands,* London, UK: Academic Press.
11. Tsing A Lowenhaupt et al. (Ed) (2017) Arts of Living on a Damaged Planet: Ghosts and Monsters of the Anthropocene, University of Minnesota Press, Minneapolis.
12. Wright RT and Boorse DF (2010) Towards a Sustainable Future, PHI Learning Pvt Ltd, New Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-08): GEOGRAPHY OF TOURISM

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
GEOGRPHY OF TOURISM	4	3	1	0	12th Pass	NIL	GEOGRAPHY

Course Objectives

- To be aware of the various dimensions of Geography of Tourism.
- To make the students aware about the growth and development of international and domestic tourism with its positive and negative impacts.
- To assess sustainable ecotourism and other contemporary forms of tourism with help of case study.
- To critically evaluate the infrastructure in tourism in India along with reviewing the tourism policy.

Learning Outcome:

- Equip with a basic understanding of nature and scope of geography of tourism and various types of tourists and tourism.
- Have sound knowledge of geographical, environmental, and socio-cultural aspects of tourism.
- Apply the principles of sustainable tourism and analyse the prospects and problems associated with unsustainable tourism activities

SYLLABUS OF GE-08

Unit-I: Introduction (5hrs):

- Nature and Scope; Tourism, Recreation and Leisure;
- Types of Tourism and Types of Tourists

Unit-II: Factors affecting Tourism (10hrs):

- Growth and Development of International and Domestic Tourism.

Unit-III: Significance of Tourism (10hrs):

- Impact on Environment, Economy, Society and Culture.

Unit-IV: Contemporary Forms of Tourism (12hrs):

- Sustainable - Ecotourism (Case Study), Geo-Heritage (Case Study), Space tourism, E-Tourism, MICE.

Unit-V: Tourism Infrastructure (8hrs):

- Infrastructure Development in India, National Tourism Policy of India.

Suggested Readings

1. Brian Boniface, Chris Cooper, Robyn Cooper., Worldwide Destinations: The Geography of Travel and Tourism (8th edition, 2020).

2. Douglas G. Pearce., Tourist Development (Topics in applied geography). 19813rd Edition.

3. Stephen Williams, Alan A. Lew., Tourism Geography- Critical Understandings of Place, Space and Experience.

4. Velvet Nelson., An Introduction to the Geography of Tourism, 3rd edition, 2021.

5. Maria Giaoutzi., Tourism and Regional Development - New pathways (economic geography series) 2017. Routledge.

5. Stephen Hall, C. Michael and J.Page., The Geography of Tourism and Recreation: Environment, Place and Space. 4th edition, 2014. Routledge.

6. Chaturbhuj Mamoria and Komal Singh. पर्यटन का भूगोल (Geography of Tourism)

7. पर्यटन भूगोल: प्रा.के.ए. खतीब, मेहता पब्लिशिंग हाऊस

8. Kapoor, B.K. (2008) Paryatan Bhugol, Vishwa Bharti Publication, Delhi.

9. E Book of India Tourism Statistics, 2022. Ministry of Tourism, Govt. of India.

10. UNWTO, 2022. Tourism Data Dashboard.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-09): SPATIAL INFORMATION TECHNOLOGY

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
SPATIAL INFORMATION TECHNOLOGY	4	3	1	0	12th Pass	NIL	GEOGRAPHY

Course Objectives:

1. The main objective of this course is to give students an insight on the concepts of spatial information technology.
2. The paper discusses the concept, historical developments, functioning and application of spatial information technology in detail.

Learning Outcome:

1. Will be familiar with the concept, components of SIT.
2. Will gained knowledge on various data sources, structures, and their interpolation and modeling.
3. Will acquire in-depth knowledge of various functions applied in SIT.
4. Will gather detailed information on the application of SIT in various fields of mapping.

SYLLABUS OF GE-09

Unit-I: Introduction (5hrs):

- Definitions, Concept, Components and Historical Development.

Unit-II: Spatial Information/Data (10hrs):

- Web data sources; Registration and projection; Data types structures; Data interpolation and modelling.

Unit-III: Working on Spatial Information System (12hrs):

- Data creation with GIS software, making layers, data editing and cleaning, spatial and non-spatial data linking, extracting information.

Unit-IV: Functions of Spatial Information System (12hrs):

- Overlay Analysis; Buffer Analysis, Network Analysis.

Unit-V: Application (6hrs):

- Application of Spatial Information Technology for sustainable development.

Suggested Readings

1. D. Tomlin. (1990). *Geographic Information Systems and Cartographic Modeling*.USA: Prentice-Hall, Englewood Cliffs, NJ, ISBN0-13-350927-3.
2. Esperança and Samet, H. (1997). *An overview of the spatial data base system, to appear in Communications of the ACM.* (http://www.cs.umd.edu/~hjs/pubs/sandprog.ps.gz)
3. Heywood, I., Comelius, S., and Carver, S. (1988). *An Introduction to Geographical Information Systems*. NewYork , USA: Addison Wiley Longmont.
4. Samet, H. (1990). *Applications of Spatial Data Structures: Computer Graphics, Image Processing, and GIS*. USA: Addison-Wesley, Reading, MA, ISBN 0-201- 50300-0.
5. Samet, H. (1990). *The Design and Analysis of Spatial Data Structures*. USA: Addison-Wesley, Reading, MA, ISBN0-201-50255-0.
6. Samet, H. (1995). *Spatial Data Structures in Modern Database Systems: The Object Model, Interoperability, and Beyond*, W. Kim, (Ed.,) USA: Addison-Wesley/ACM Press, 361.
7. http://www.cs.umd.edu/~hjs/pubs/kim.ps
8. http://www.cs.umd.edu/~hjs/pubs/kim2.ps

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Department of Social Work

Category I

Semester- III

BA((Honours) Social work

DISCIPLINE SPECIFIC CORE COURSE -7 (DSC-7) – : WORKING WITH INDIVIDUALS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
WORKING WITH INDIVIDUALS DSC 7 SW301	4	3	0	1	12th Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To learn to critically analyse problems of individuals & families and factors affecting them
- To develop understanding of the basic concepts, skills, tools, techniques and process of social case work as a method of social work
- To strengthen ability of establishing and sustaining a professional relationship with the client

Learning outcomes

At the end of the semester, the student will be able to

- Reflect the practical understanding of the process, tools, techniques required for working with individuals and families

- Demonstrate the skills sets required for working with individuals using social casework process
- Demonstrate critical assessment of the real-life situations and gain confidence to apply social casework method in the various settings

SYLLABUS OF DSC-7

Unit I: Introduction to Social Casework **Unit Description:** This unit will provide a conceptual understanding about social casework. The unit will also detail principles and process used in social casework.	**15 Hours**
Subtopics: ● Concept of social casework: meaning, evolution, nature and objectives ● Philosophical assumptions and principles of social casework ● Components of social casework: person, problem, place and process	
Unit II: Understanding Clients **Unit Description:** This unit will give an opportunity to the students to learn the human needs, problems, real-life dynamics. The unit discuss challenges in role performance and coping mechanisms.	**15 Hours**
Subtopics: ● Human needs and problems faced by individuals and families; individual differences, needs and coping-defense mechanisms ● Factors impacting personality development of individuals ● Concept of social role and factors affecting role performance	
Unit III: Tools, Techniques and Skills of Social Casework **Unit Description:** This unit will introduce the students to the various tools, techniques and skills of social casework. The unit will also cover the significance of worker-client relationship.	**15 Hours**
Subtopics: ● Worker-client relationship and use of authority ● Casework tools: listening, observation, interview and home visits, counselling. ● Skills of casework: communication, resource mobilization, rapport building, networking, referral and casework recording	
Unit IV: Application of Social Casework Process **Unit Description:** This unit will engage the students in various practice-learning activities related to approaches, phases and casework practice in different settings.	**30 Hours**

Subtopics: ● Approaches to casework: Psycho-social, Problem Solving, Ecological, crisis intervention, Behaviour Modification and Eclectic ● Phases of casework process: study, assessment, intervention, termination, follow-up and evaluation ● Casework practice in different settings: family, school, community (prepare any one case report)	

Practical component (if any) – Unit IV application based 30 hours

Essential Readings

- Mathew, G. (1992). *An Introduction to Social Casework.* Bombay: Tata Institute of Social Sciences.
- Singh, A. P. & Girotra, T. (2018). *Case Records in Social Work.* Lucknow, India: Rapid Book Service.
- Skidmore, R.A. & Thakhary, M.G. (1982). *Introduction to Social Work.* New Jersey: Prentice Hall.
- Upadhayay, R K. (2003). *Social Case Work: A Therapeutic Approach.* Jaipur: Rawat Publications.
- Robert, W. R. & Nee., R. H. (1970). *Theories of Social Casework*. University of Chicago Press

Suggested Readings

- Beistek, F.P. (1957). *The Casework Relationship.* Chicago: Loyola University Press.
- Hamilton, G. (1956). *Theory and Practice of Social Casework.* New York: Columbia University Press.
- Pearlman, H.H. (1957). *Social Casework: A Problem Solving Process.* Chicago: The University of Chicago Press.
- Timms, N. (1964): *Social Casework: Principles and Practice.* London: Routledge and Kegan Paul.
- Werner, H.D. (1965). *A Rational Approach to Social Casework.* New York: Association Press.
- Younghusband, E. (1966). *New Development in Casework.* London: George Allen and Unwin.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 8 (DSC-8): WORKING WITH GROUPS

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
WORKING WITH GROUPS DSC 8 SW302	4	3	0	1	12th Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To develop understanding of group work as a method of social work.
- To develop knowledge, skills and techniques to be used by the social worker in groups.
- To understand the significance of groups as an instrument of change

Learning outcomes

At the end of the semester the students will be able to

- Learn the basic concept of social group work and leaning to handle emerging dynamics.
- Demonstrate skills in group formation, development and techniques used by social workers with different groups.
- Gain confidence in application of various concept of social group work in field work settings

SYLLABUS OF DSC- 8

Unit I : Introduction to Social Group Work **Unit Description:** The unit will introduce the concept of social group work and its process. The unit will also cover various models used in group work practice.	**15 Hours**
Subtopics: • Groups in social work: types, characteristics and significance • Concept of group work: meaning, evolution, nature and principles • Models of group work practice: Remedial, Reciprocal, Social Goal, Mutual Support/Self-Help, Task and Treatment Group	
Unit II: Skills and Techniques of Social Group Work **Unit Description:** The unit will introduce skills and techniques used in social group work. The unit will also demonstrate the significance of programme planning and use of programme media in social group work.	**15 Hours**
Subtopics: • Skills in group work: facilitation, group communication, analytical thinking, leadership building and recording in group work • Techniques of group work: group counselling, group discussion, group decision-making, group therapy • Programme planning and use of program media in social group work	
Unit III: Group Behaviour and Dynamics **Unit Description:** This unit will introduce group behaviour and process of conflict resolution in group work setting. The unit will also focus on various stages of group development and associated dynamics.	**15 Hours**
Subtopics: • Group behaviour: Interaction patterns, emergence and resolution of conflict situations • Stages of group development: Planning, formation/beginning, middle/intervention, ending/termination • Group process and dynamics: determinants, indicators and outcomes, leadership and role of group worker	
Unit IV: Application of Social Group Work Practice **Unit Description:** This unit will give exposure to practical implementation of group formation and development in real life situations.	**30 Hours**

Subtopics: • Practical implementation of group development stages with one group in a social setting • Evaluation and Recording in group work practice • Application of group work with different groups: children, adolescents, women and persons with disability	

Practical component (if any) – Unit IV application based 30 Hours

Essential readings

- Crawford, K., Price,M. & Price,B.(2014). Group work Practice for Social Workers. London: Sage Publications.
- Douglas, T. (1972). Group Processes in Social Work: A Theoretical Synthesis.Chicester: Johan Wiley & Sons.
- Garvin, C. D. & Gutiérrez, L. M. & Galinsky, M. J. (2004). Handbook of social work with groups. New York :Guilford Press.
- Geoffrey, L.G. &Ephross, P.H. (1997).Group Work with Population at Risk. New York: Oxford University Press.
- Konopka, G. (1963).Social Group Work: A Helping Process. Eaglewood Cliffs: Prentice. 65
- Phillips, H.U.. (1957).Essentials of Social Group Work Skills. New York: Association Press.
- Siddiqui, H.Y. (2008).Group Work: Theories and Practices. Jaipur:Rawat Publications
- Trecker, H.B. (1972).Social Group Work: Principles and Practice. New York: Association Press.
- Toseland, R.W. & Rivas, R. (1984). An Introduction to Group Work Practice. New York: MacMillian.
- Trevithick,P.(2016). Group work: A Handbook of Effective Skills and Interventions.New York: McGraw-Hill Education • Wilson, G. & Ryland, G. (1949).Social Group Work Practice. Cambridge, Houghton: Mifflin Company.

Suggested Readings

- Balgopal, P.R.&Vassil, T.V. (1983).Groups in Social Work: An Ecological Perspective.New York: Macmillan.
- Benson, J.F. (1987). Working More Creatively with Groups. New York: Tavistock Publication.
- Brown, A.(1994).Group Work.Hamphshire:Ashgate.
- Chowdhary, R. (2013).SamajkaryaPrakiya. Delhi: The Bookline Publications.
- Lindsay,T. & Orton, S. (2014).Groupwork Practice in Social Work. Exetor: Sage Publications.
- Sondra B. & Camille P. R.(2016).Group Work: Skills and Strategies for Effective Interventions: Binghamton. NewYork: Haworth Press.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC CORE COURSE– 9 (DSC-9): FIELD WORK PRACTICUM- III

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
FIELD WORK PRACTICUM III **DSC 9 SW 303**	**4**	**0**	**0**	**4**	**12th Pass**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- To provide an opportunity to practice the methods of working with individuals, families and groups
- To learn to make use of professional relationship and referrals to deal with human problems and to embine the ethics and values of social work profession
- To develop an ability to narrate experience/learning, assessment of services & resources and participate in service delivery.

Course Outcomes:

At the end of the semester, the students will be able to:

- Develop learning plan of action and execute them in the field practice.

- Develop sensitivity towards the needs and problems of individuals, families and groups to work with them in the most efficient manner.
- Develop professional attitude conducive to deal with various problems by making use of supervisory guidance and strengthen skills of writing field work records

SYLLABUS OF DSC-9

Tasks/Activities: 120 hours

1. Perform the assigned tasks during scheduled concurrent field work. The field work agency will remain the same in an academic year. Every student will be assigned a College supervisor for personalized learning and mentoring throughout the academic year.
2. Field work includes- observation visits, orientation programmes, task-based field visits, individual conferences/ mentoring, group conference scientific or experienced based paper presentation, report writing, critical discussion of the reports, workshops, seminars and skill-oriented sessions. Direct field work hours have to be 120 hours in a semester.
3. Establish contact and develop rapport with the agency personnel& volunteers, individuals, families and groups and perform the assigned tasks during concurrent field work.
4. Work with individuals, families and groups alongwith volunteers, paraprofessionals/outreach workers in the agency and/or community and deal with cases (2-3), work with families (3-4) and form group/s.
5. Work with volunteers, para-professionals/outreach workers in the field work agency such as - non-governmental organisations (NGOs) or voluntary organisations (VOs) and governmental organisations (GOs); and/or community.
6. Student will perform the agency-based field work tasks assigned by the respective Agency Supervisor.
7. Regular reporting to all concerned persons (both at agency and college level) during scheduled field visits, meetings and supervisory/individual conferences to seek regular guidance. Minimum 80% of attendance is required in each components of field work.
8. Prepare daily report in prescribed format and submit to the college supervisor on weekly basis. Prepare learning plan, agency/community profile in a timely and appropriate

manner to both the College and Agency Supervisor. Students will engage in 3 hours of report writing per week.

9. The students must get the reports checked during the scheduled Individual Conference (IC) with the college supervisor on weekly basis. Attend Group conferences (GC), prepare group conference paper in consultation with college supervisor, thus learning the roles of presenter, chairperson, and recorder. The individual mentoring (IC & GC) to students by the college supervisor will include 1 hour per week.

10. Attend skill development workshops in which the values, principles, methods, techniques, tools etc. are translated into practice skills, i.e. "learning by doing". The skill workshop will target: (i) Role Plays; (ii) Use of motivational songs and other interactive visual media; (iii) Preparation for street plays including script writing/street theatre; (iv) Simulation exercises; (v) Films screening; (vi) Practice of counselling techniques; (vii) Practice of participative techniques; (viii) Communication; (ix) Mock interviews; and (x) Strategic planning for advocacy.

11. The students are required to submit self-evaluation report in the prescribed format for term end examination. Field work practicum follows continuous evaluation by the supervisor.

Practical component (if any) – 100% Field work

(Direct field work: 120 hours, field work mentoring & report writing: 60 hours)

Essential Readings

- Bhanti, R. (1996). *Field Work in Social Work Perspective*. Udaipur: Hiamanshu Publications
- Brown, S.C. & Gloyne, E.R. (1966). *The Field Training of Social Workers: A Survey*. London: George Allen and Unwin Ltd
- Dash, B.M. & Roy, S. (2020). *Field Work Training in Social Work*. London: Routledge
- Doel, M., Shardlow, S. M., & Johnson, P. G. (2011). *Contemporary Field Social Work: Integrating Field and Classroom Experience.* Thousand Oaks, CA: Sage.
- Garthwarf, E. (2005). *The Social Work Practicum*. Boston: Pearson Education.
- Roy, S. (2012). *Field Work in Social Work*. Jaipur: Rawat Publication
- Singh, R. R. (1985). *Field Work in Social Work Education*. New Delhi: Concept Publishing Company.
- Singh, A.P. & Girotra, T. (2018). *Case Records in Social Work*. Lucknow, India: Rapid Book Service.

- Singh, A.P. (2017). *Strengthening Field Work in Social Work Education*. Lucknow, India: Rapid Book Service.
- Subhedar, I. S. (2001). *Field Work Training in Social Work*. New Delhi: Rawat Publications.

Suggested Readings

- Verma, R.B.S. & Singh, A.P. (2013). *Standard Manual for Field Work Practicum in Social Work*. Lucknow, India: New Royal Book Company.
- Tsui, M. S. (2005). *Social Work Supervision: Contexts and Concepts*. New Delhi: Sage Publications.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

GENERIC ELECTIVES (GE-5): PERSONS WITH DISABILITY AND SOCIAL WORK

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
PERSONS WITH DISABILITY AND SOCIAL WORK GE 5 SW 311	**4**	**3**	**1**	**0**	**12th Pass**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- To understand the concept of disability, needs and challenges of persons with disability (PWDs)
- To familiarize students with various government departments and other non-profit organisations working with PWDs

- To develop understanding of various approaches, strategies and models for working with PWDs and promoting an inclusive society

Learning outcomes

At the end of the semester, the student will be able to:

- Develop theoretical perspective on disability, skills to identify and analysis the issues of persons with disability
- Learn about different international, government, civil society initiatives for PWDs
- Demonstrate the sensitivity and required skills for working with persons with disability.

SYLLABUS OF GE-5

Unit I: Understanding Disability **Unit Description:** The students will learn about various types of disability and be sensitized to the needs and concerns of persons with disability (PWD).	**15 Hours**
Subtopics: ● Disability, Impairment, Handicap,: Concept, Meaning, magnitude and Causes ● Categories of persons with disability - physical, sensory, neurological/mental, blood related disorders and, multiple disability ● Needs and challenges of persons with disability, genesis and categorization of PWDs	
Unit II: Models and programmes for PwDs **Unit Description:** This unit will introduce various models of disability and programmes for the benefit of PWDs. The learners will understand the process of inclusion through affirmative actions of persons with disability as a stakeholder in the development process.	**15 Hours**
Subtopics: ● Models of Disability: Biomedical, cultural, empowerment, moral, charity, economic, social, diversity ● Assistance to Disabled persons for purchasing / fitting of aids / appliances (ADIP) Scheme, Rehabilitation Centres, District	

primary education programme, Sarva Shiksha Abhiyan, Inclusive education and Higher education Service delivery: Disability certification, pension, travel concessions, employment/entrepreneurship for PWDs	
Unit III: Mainstreaming disability: National and International initiatives for PWDs **Unit Description:** Students will learn about national and international measures towards mainstreaming persons with disability and developing inclusive societies.	**15 Hours**
Subtopics: • UN Convention on the Rights of Persons with Disabilities, • Rights of the persons with Disability Act (RPWD Act 2016), Rehabilitation Council Act 1992, The Mental Health Act 2017 • Constitutional Provisions related with persons with disability, Legal Jurisprudence and relevant judgements to ensure the Rights of Persons with Disabilities	
Unit IV: Disability and Social Work Profession **Unit Description:** This unit will focus on the relevance of social work profession for the empowerment of persons with disabilities. The students will be introduced to the government departments and civil society organizations working with PWDs.	**15 Hours**
Subtopics: • Princples, ethics and practice of rehabilitation (social, economic, community based), Developing sensitivity: Communication and ethics of working with PWDs, Role of a Social worker in various settings related to disabilities, Formation of alliances, networks and advocacy groups of PWDs • Civil Society Organizations for PWDs: Functions and programmes, Equal opportunity cells: Roles & functions, barrier free physical infrastructures in institutions and public places	

• Department of Empowerment of Persons with Disability (Divyangjan), Ministry of Social Justice & Empowerment, The National Trust	

Practical component (if any) - NIL

Essential readings

- Albrecht, G.L., Seelman, K.D., & Bury, M (2001). Handbook of Disability Studies. California: Sage Publications
- Albrecht, G.L., Seelman, K.D., & Bury, M. (eds.) (2001). Handbook of Disability Studies. California: Sage Publications.
- Chavan, B.S., Ahmad, W., Gupta, R.K. (2022): Comprehensive Textbook on Disability. Jaypee Brothers Medical Publishers; New Delhi, India.
- Kundu C.L (ed) (2003).Disability status India, New Delhi, Rehabilitation Council of India.
- Oliver, M., & Sapey, B. (eds.) (1998).Social Work with Disabled People. London: Palgrave Macmillan.
- Puri, M. & Abraham, G. (eds.) (2004). Handbook of Inclusive Education for Educators, Administrators and Planners: Within Walls, Without Boundaries. New Delhi: Sage Publications.
- Sen, A. (1988).Psycho-Social Integration of the Handicapped: A Challenge for Society. New Delhi: Mittal Publishers.

Suggested readings

- Batra, S. (2004). Rehabilitation of the Disabled: Involvement of Social Work Professionals. New Delhi: RCI
- GOI (2018).The Rights of the Persons with Disabilities Act, BARE ACT 2016.
- GOI (2022): Ministry of Social Justice and Empowerment. National Institutes | Department of Empowerment of Persons with Disabilities | MSJE | Government of India (disabilityaffairs.gov.in)

- Karna, G.N.(1999).United Nations and the Rights of Disabled Persons: A Study In Indian Perspective. New Delhi: APH Publishing Corporation.
- The World Bank (2007). Disability in India: From Commitments to Outcomes. Available on People with disabilities in India: from commitments to outcomes (worldbank.org)
- World Health Organization (2011). World Report on Disability. Available on https://www.who.int/disabilities/world_report/2011/report.pdf

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-6): SOCIAL WORK WITH ELDERLY

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
SOCIAL WORK WITH ELDERLY GE 6 SW 312	4	3	1	0	12th Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To understand the basic needs and issues of elderly persons in contemporary society.
- Develop a critical understanding of the policies and programmes for the elderly at the national and international levels.
- Understand the implementations of social work interventions for the elderly in contemporary social situations.

Learning outcomes

At the end of the semester the students will be able to

- Learn the basic needs, and concerns of elderly persons in contemporary society.
- Understand and critically appraise the various Policies, Programmes and Initiatives for elder persons
- Demonstrate social work interventions to enhance the well-being and welfare of older persons

SYLLABUS OF GE-6

Unit- 1:Understanding Old Age **Unit Description:** This unit will provide a conceptual understanding of ageing, demography of ageing and theories of ageing	**15 Hours**
Subtopics: • Introduction to basic concepts: Elderly, ageing, greying population, Senior Citizen • Demography of the Ageing: National and international level Implications • Theories of ageing- biological/developmental, psychological, sociological	
Unit II: Issues, Policy, Programmes and Initiatives **Unit Description:** This unit will introduce the students to the basic needs and problems of elderly. This will also explain various social security and welfare measures for elderly in India.	**15 Hours**
Subtopics: • Needs and problems of elderly: physical, psychological, financial, social and environmental, Changing family norms, intergenerational gaps, Family relationships and caregiving issues • Social security measures, Welfare programmes/schemes for the elderly, The Maintenance and Welfare of Parents and Senior Citizens Act, 2007 • National Policy for older persons, International resolutions	
Unit III: Strategies for Active and Healthy Ageing **Unit Description:** This unit will discuss the intervention strategies to ensure healthy and active ageing. This will also discuss government, non-governmental and community-level interventions for the welfare of elder persons.	**15 Hours**
Subtopics: • Rights of older persons against neglect, abuse, violence and abandonment. • Managing chronic diseases and promoting well-being in old age, Programmes for Active ageing: day care centre, recreational centre, self-help/ support groups • Involvement of the elderly in community resource building; Finance management and wealth creation, planning for	

retirement life, Role of NGOs, police system, community groups, safe and group housing	
Unit IV: Social Work Interventions **Unit Description:** This unit will focus on the application and practice-based approach where students will learn various levels of intervention to enhance well-being and welfare of older persons.	**15 Hours**
Subtopics: • Empowering elderly: Counselling and guidance services for preparation of old age, lifestyle management, retirement plan, second career, grief and bereavement counselling, addressing spiritual concerns • Family Interventions and social support strategies; counselling services for caregivers, sensitizing children/families/ communities, creating favourable/safe environment for the elderly, emergency response systems: Helpline, peer counselling. Community living. • Interventions for enhancing well-being of the institutionalized elderly	

Practical component (if any) - NIL

Essential readings

- Bemoth, M. & Winkler, D. (2017). Healthy Ageing and Aged Care, UK: Oxford University Press
- Binstock, R.H., & George, L.K. (2001). Handbook of Aging and Social Science. New York :Academic Press.
- Cox, E.O., Kelchner, E.S., & Chapin, R.K. 2002 Gerontological Social Work Practice: Issues, Challenges and Potential, Haworth Social Work
- Marshall, M. (1983).Social Work with Old People. Noida: The Macmillan Press Ltd.
- Palta singh, T. & Tyagi, R. (Eds.)(2015) Caring for the elderly: Social Gerontology in Indian Context, New Delhi: Sage
- Rajan, S.I., Mishra, U.S., & Sarma, P.S. (eds.)1999 India's Elderly: Burden or Challenge. New Delhi: Sage Publications.
- Ramamurthi, P.V., Jamuna, D. (eds.) (2004). Handbook of Indian Gerontology. New Delhi : Serial Publication.
- Sears, J.T.(2009). Growing older. USA: Routledge, Tylor& Francis Group.

Suggested readings

- Atchley, R. (1997).Social forces and aging: an introduction to social gerontology, 8th ed. Belmont: Walsworth Publishing Co.,
- Bali, A.P. (ed.) 1999 Understanding Greying People of India. New Delhi: Inter India Publication.

- Birren, J.E., & Schaie, K.W. (eds.),2001 Handbook of the Psychology of Aging (5th ed.), San Diego: Academic Press.
- Dhillon, P.K. 1992 Psychosocial Aspects of Ageing in India. New Delhi: Concept

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 5 (DSE-1): RURAL AND URBAN COMMUNITY DEVELOPMENT(RUCD)

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
RURAL AND URBAN COMMUNITY DEVELOPMENT DSE 1 SW 321	4	3	0	1	12th Pass	NIL

Learning Objectives

The learning objectives of this course are as follows:

- To understand basic concepts, nature and characteristics of rural and urban communities.
- To understand the needs, social concerns and challenges in rural and urban communities
- To develop an insight about government measures, schemes/programmes, agencies of participative and democratic governance

Learning outcomes

At the end of the semester the students will be able to

- Develop a practical understanding of various concerns and challenges in rural and urban community development.
- Develop professional social work practice skills and competencies in addressing developmental concerns.
- Develop an in-depth understanding of the government measures designed for rural and urban communities.

SYLLABUS OF DSE- 1

Unit I: Understanding Basic Concepts **Unit Description:** This unit will provide a conceptual understanding of nature and development of rural and urban communities. The unit will also cover social work practice in rural and urban settings.	**15 Hours**
Subtopics: • Characteristics and Nature of Rural and Urban Societies, Rural and Urban Governance • Socio-economic & political structure of rural and urban communities, Rural and Urban Community development • Social work response to community development	
Unit II: Rural Development : Policies, Programmes and Advocacy **Unit Description:** This unit will introduce students to develop an critical understanding about various policies and programmes. This unit will also include use of policy advocacy, implementation of programmes for development of rural communities .	**15 Hours**
Subtopics: • Key Policies and Programmes – MGNREGA, PMAY-G, PMGSY, DDUGKY, MISSION ANTODYA, NSAP, SAGY, DAY-NRLM, SPMRM (RURBAN), Microfinance and Credit, Forest Rights Act, Agriculture related Policy and Panchayati Raj • Role of IT and ICT in rural development, Social Advocacy in Rural Sector, social entrepreneurship, Role of Social Work Professionals • Case Studies – Best Practices in rural development	
Unit III: Urban Community Development –Characteristics and Approaches **Unit Description:** This unit will focus on urban community development, its history and characteristics. Students will be oriented about the key concerns of urban societies and interventions by social workers and voluntary organisations.	**15 Hours**
Subtopics: • Urban Sites of Development – Slum Resettlements, J J Clusters, Authorised and Unauthorised Colonies, Gated Communities and Ghettoization, Key issues: Homeless, Public Health and Sanitation • Approaches – Urban Growth, Sustainable Development and Participatory Action Plan • Key Policy/Programme Initiatives - SMART City mission , AMRUT, PMAY (U), PMSAVNidhi, DAY-NULM, SBM, URBAN TRANSPORT, JAL SHAKTI, HRIDAY, JNNURM, NERUDP	

Unit IV: RUCD and Social Work Interventions **Unit Description:** This unit will engage students in learning by doing by preparing community profile and undertaking need asseement. The students will be introduced to best practices in community development.	**30 Hours**
Subtopics: • Community profile and mapping • Need Assessment: Community power structure, Sociogram, SWOC Analysis, Stakeholder Analysis, Problem tree, Digital and Technological Skills for Social Workers • Case Studies – Best Practices in rural and urban community development	

Practical component (if any) – Unit IV application based 30 hours

Essential Readings:

- Agarwal, Siddharth, and Shivani Taneja. "All Slums Are Not Equal: Child Health Conditions Among the Urban Poor." Indian Pediatrics 42 (2005): 233–244. Print.

- Buckley, R., Singh, M. and Kalarickal, J. (2015). *Strategizing Slum Improvement in India: A Method to Monitor and Refocus Slum Development Programs*. Global Urban Development.

- Chaudhary, A. (2004) Rural Sociology, Dominant Publishers and Distributors, India

- Datta, A. (2012).*The Illegal City: Space, Law and Gender in a Delhi Squatter Settlement*. Ashgate, Burlington

- Dhaliwal.S.S, 2004, *Good Governance in Local Self Government*. Deep and Deep Publications

- Desai, A.R.(2011). *Rural Sociology in India, 5th ed.* India: Sage Publication

- Gore, M.S.et.al (ed.) (1990) *Social Implications of Development: The Asian Experience,* Vindya Prakashan Pvt. Ltd, Allahabad.

- Gupta, A. K. (2016). *Grass Root Innovation: Minds on the margin are no marginal minds.* India: Penguin Random House

- Henderson, Jones and Thomas 1980 The Boundaries of Change in Community Work, George Allen and Unwin, London

- Hazell, P. & Rosegrant, M. (2000) Rural Asia: Beyond the Green Revolution.

OUP/ADB.

- Healey, P. (1997). *Collaborative Planning: Shaping Places in Fragmented Societies*. Macmillan, London.

- "India National Report": India: National Report Progress of Implementation of the Habitat Agenda (1996-2000), United Nations. Ministry of Urban Development and Poverty Alleviation, Government of India, 2001. Web. Sept.-Oct. 2015

- Jayapalan. N. (2002). *Urban Sociology*. Atlantic Publishers & Distributors, New Delhi

- Jha, Saumitra, Vijayendra Rao, and Michael Woolcock. "Governance in the Gullies: Democratic Responsiveness and Leadership in Delhi's Slums." World Development 35 (2007): 230-46.

- Joel S.G. (2003) NGOs And Rural Development Theory And Practical, Concept Publishing Company.India.

- Singh, K. & Shishodia, A. (2016). *Rural development, Principles, Policies & Management*. India: Sage Publication

- Lieten, G.K. (2003) Power And Politics And Rural Development, Monohar Publishers. India.

- Lipton, M. & Longhurst, R. (1989) New Seeds and Poor People. London, Routledge

- MahiPal (2020). *Rural Local Goverance & Development*. India: Sage Publication.

- Midagley, J and others,1986, Community Participation, Social Development and the State, Methuen and Co Limited, New York

- Ministry of Rural Develepment Website, GOI https://rural.nic.in/scheme-websites

- Ministry of Housing and Urban Affairs Website, GOI. https://mohua.gov.in/

- Ministry of Housing and Urban Affairs Website, GOI. Best Practices: Habitat Planning and Design for Urban Poor. https://smartnet.niua.org/sites/default/files/resources/04_Best_Practices_Habitat_Planning.pdf

- Payne, G. (2005). Getting ahead of the game: A twin-track approach to improving existing slums and reducing the need for future slums. Environment and Urbanization, 17: 135–145.

- Rao, G.S. 2000, Urban Development with Community Initiatives: Retrospect and Prospect, Atlantic Publishers and Distributor, New Delhi.

- Sahu, B.K. (2003) Rural Development In India, Anmol Publications Pvt. Ltd, India

- Singh, S.K., 2002, Rural Development: Policies and Programmes, Northern Book Centre, New Delhi

- Singh P.K., Nair A., Issac J. (2021), "Are Land Conflicts Documented Sufficiently in India?", International Journal of Rural Management
- Singh, K.N. and Singh, S.N. (1976). Effective Communication media for Rural Audiences, Dharamsi Morarji Chemical Company

- Vittal, N. Communication for Rural Development in India: some facts, NIRD, Hyderabad

Suggested Readings:

- Chambers, R. (1989) Farmer First. Intermediate Technology Publications.

- Indranil De (2020), "Sanitation and User Charges in Indian Slums - Who Pays and How does it Matter?", Economic and Political Weekly, 55, pp: 38-45

- Pugh, C. (1990). Housing and urbanisation. New Delhi: Sage

- Streeten, P. (1981) First Things First, Meeting Basic Human Needs in Developing Countries. Oxford University Press

- Thurow R (2013) The Last Hunger Season: A year in an African farm community on the brink of change. Public Affairs.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 2 (DSE-2): GENDER AND DEVELOPMENT

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GENDER AND DEVELOPMENT **DSE 2 SW322**	**4**	**3**	**0**	**1**	**12th Pass**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- To develop understanding of the gender related concepts, concerns and feminist perspectives
- To understand the approaches towards gender and development
- To develop insights about society, state and civil society initiatives for gender and development

Learning outcomes

At the end of the semester the students will be able to

- Understand the concept of gender and various gender related concerns
- Critically understand different approaches towards gender and development
- Learn various policies and programmes for gender mainstreaming

SYLLABUS OF DSE- 2

Unit I : Conceptual understanding of Gender **Unit Description:** This unit explains the concepts of gender, sex and feminist approaches. Students will learn and analyze various discriminatory processes and concerns related to gender.	**15 Hours**

Subtopics: • Concept of gender and sex, gender identities and disparities • Gender stereotyping, discrimination, violence in relationship, family and community • Feminist perspectives: critical reflections	
Unit II: Approaches on gender and development **Unit Description:** This unit will introduce different approaches towards gender and devlopment.	**15 Hours**
Subtopics: • Women in Development (WID),Women and Development (WAD) • Gender and Development (GAD) • Equality, Equity and Empowerment	
Unit III: Gender Inclusion **Unit Description:** This unit covers the concept and importance of gender inclusion. Students will learn and develop a critical insight on gender equality and empowerment.	**15 Hours**
Subtopics: • Understanding gender vulnerability and Sexual minority • Gender inclusion: Concept, approach and strategies • Understanding Gender based violence	
Unit IV: Policy and Programmes **Unit Description:** This unit will briefly introduce the various provisions for women under constitution and other legislative provisions. Students will learn about various policies, programmes and state mechanisms.	**30 Hours**
Subtopics: • Constitution and legislative safeguards for women • Preparation of a project report: National Policy and programmes for women, Institutional mechanisms: National and State Commissions, Rashtriya Mahila Kosh, Crime Against women Cell and Family Court • Case studies for gender and development and gender mainstreaming in field work settings	

Practical component (if any) – Unit IV application based

30 Hours

Essential readings

- Aggarwal, B.(ed.) 1988 Structure of Patriarchy. New Delhi: Kali for Women.
- Butler, J. (2002). Gender trouble. London: Routledge.
- Fergusons, C. (ed) (2010) Violent Crime, clinical and implications. California: Sage publications.
- Holmes, M. (2007). What is Gender. New Delhi, Sage Publications, pp 43-62,71-90
- Joseph, S. (2005). Social Work Practice and Men Who Have Sex With Men. New Delhi: Sage Publication.
- Nayar, S. (2010) Violence against Women in South Asian Communities: Issues for Policy and Practice. Delhi: Navyug Books International.
- Prabhakar, V. (2011) Gender Violence: Women Victims in Man's World. New Delhi: Wisdom Press.
- Talwar, R. (1999). The third sex and Human Rights. New Delhi: Gyan Publishing House.
- Wykes, M. and Welsh, K. (2009). Violence, Gender and Justice. London: Sage.

Suggested readings

- Bansal, D. K. (2006) Gender Violence. New Delhi: Mahaveer and Sons.
- Basu, A. &Jefferey, P.2004 Appropriating Gender. London: Routledge.
- Chaudri, M. (20036) Feminisms in India. New Delhi: Kali for Women.
- Momsen, J.2009 Gender and Development, London &New York: Routledge
- Wendt, S & Nicole M. 2016 Contemporary Feminisms in Social Work Practice, New York: Routledge.
- Dominelli L. (2002). Feminist social work: Theory and Practice , New York: Palgrave
- Rege, S. (Ed.). (2003). Sociology of gender: The challenge of feminist sociological thought. SAGE Publications India.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 3 (DSE-3): PROJECT FORMULATION AND IMPLEMENTATION

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
PROJECT FORMULATION AND IMPLEMENTATION DSE 3 SW 323	**4**	**3**	**0**	**1**	**12th Pass**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- To understand the techniques and procedures related to project formulation, project planning and implementation.
- To learn project identification, feasibility analysis, design, financing, implementation, monitoring and evaluation.
- To learn application of various tools for analyzing the problems in order to select the projects.

Learning outcomes

At the end of the semester the students will be able to

- Develop knowledge about the essential components of project formulation and project appraisal.
- Execute a project to achieve specific goals that will benefit the society.
- Apply appropriate approaches to plan a new project and develop project schedule.

SYLLABUS OF DSE- 3

Unit I: Introduction to Project Formulation and Planning **Unit Description:** This unit will give an opportunity to the students to understand the project formulation, planning and selection.	**15 Hours**

Subtopics • Project formulation: meaning, objectives, importance, types, project selection and formulation • Stages of project formulation • Project planning: Project scope, estimation, basic scheduling, resource levelling & allocation	
Unit II: Project Appraisals **Unit Description**: This unit will give an opportunity to the students to learn project appraisal and report writing.	**15 Hours**
Subtopics: • Feasibility study: Types and steps in feasibility study • Project appraisal techniques: Measures of project risk, Sensitivity Analysis, Scenario Analysis, Simulation Analysis • Limitation of project appraisal and report	
Unit III: Project Implementation and Monitoring **Unit Description**: This unit will give an opportunity to the students to gain an in-depth knowledge about project implementation and monitoring	**15 Hours**
Subtopics: • Project implementation: Prerequisites for successful project implementation, stages of implementation and teamwork • Project monitoring: meaning, objectives, needs and significance • Monitoring techniques and monitoring schedules	
Unit IV: Project Evaluation and Review **Unit Description**: The students will be engaged in various learning activities related to practical application of steps and techniques of project evaluation and review.	**30 Hours**
Subtopics: • Project evaluation: meaning, objectives, scope, stages, approach and steps • Techniques of project evaluation: Time estimation, PERT Model, CPM Model, Performance Audit, input analysis, financial cost-benefit analysis, social-cost benefit analysis • Environmental impact assessment, case studies of development projects.	

Practical component (if any) – Unit IV application based

30 Hours

Essential Readings:

- Arya, T.S. (2014). Illustrated Project Proposals for NGOs and Social Workers. Nabhi Publication, New Delhi.
- Blanchard, P.N., Thacker, J.W. (2005). Effective Training: Systems, Strategies and Practices. Prentice Hall, India.
- Goel, B.B. (2001). Project Management: A Development Perspective. Deep & Deep Publications. New Delhi.
- International Tropical Timber Organization (2009). Manual for Project Formulation (3rd ed.) GI Series 13.
- Jawahar Lal Nehru National Urban Renewal Mission, GOI. Detailed Project Report: Preparation Toolkit (Sub-mission for Urban Infrastructure and Governance), Government of India.
- Khanna, R. B. (2011). Project Management, PHI Learning Private Limited. New Delhi.
- Thakur, D. (1992). Project Formulation & Implementation. Deep & Deep Publications, New Delhi.
- Virendra, C.A., Pamecha, K. (2018). Guide to Project Reports, Project Appraisals and Project Finance (a Handbook on Project management). Xcess Informatics & Services.

Suggested Readings:

- Diwan P. (n.d.). Project Management, Deep & Deep Publications, New Delhi.
- Gautam, V., Shobhana G. (2008). Training and Development. Indian Society for Training and Development, New Delhi.
- Larson, E.W., Clifford, F. G., & Joshi, R. (2021). Project Management-The Managerial Process (8th ed.). Tata Mcgraw-Hill Publishing Co. Ltd.
- Meredith, J.R., Mantel Jr. S. J. (2009). Project Management- A Managerial Approach. John Wiley and Sons, USA.
- Steve Truelove (1997). Handbook of Training and Development. Wiley–Blackwell

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time,

Semester III
DEPARTMENT OF SOCIOLOGY
Category I
BA (Honors) Sociology

Discipline Specific Courses for BA (Honors) Sociology

*

B.A. (H) Sociology
Discipline Specific Core (DSC) 07
Sociology of India II

DISCIPLINE SPECIFIC CORE COURSE -07 : SOCIOLOGY OF INDIA II

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 07 Sociology of India II	4	3	1	0	12th Class Pass	Nil

Course Learning Objectives:

1. To introduce students to approaches and concepts in the sociological scholarship on the idea of India,
2. To familiarize students with some of the key debates and perspectives on the formation of India as a nation.
3. To acquaint students with the Indian Constitution as an embodiment of the formal idea of the nation.

Course Learning Outcomes:

1.*Demonstrate* conceptual complexity of the idea of India and debates surrounding it.

2. *Identify* the academic and public discourses on Indian society in the historical and social context.

3. *Analyse* the the Indian Constitution as a product of the multiple nuanced social positions and debates

4. *Develop* critical and analytical thinking about studying India.

SYLLABUS OF DSC-07

Unit I. Ideas of India in the Sociological Imagination (21 Hours)
This unit is designed to introduce students to the multiple sociological approaches to the study of Indian society and culture that have emerged in a transforming societal context.

a. Cultural Approach
b. Indological Approach
c. Subaltern Approach

Unit II. Nation in the Public Imagination (18 Hours)
This unit aims to demonstrate the diverse public imaginations of India as a Nation, as emanating in its formative years.

a. M.K Gandhi
b. B.R. Ambedkar
c. J. Nehru
d. V.D Savarkar

Unit III. The Nation and the Constitution (6 Hours)
This unit Sociologically examines how the Indian Constitution, which embodies a formal idea of the nation, results from a synthesis of various imaginations discussed in the earlier units.

Practical component (if any) - NIL

Essential/Recommended Readings:

Unit I. Ideas of India in the Sociological Imagination
a. Cultural Approach:

Cohn, B.S. (1990). *An Anthropologist among the Historians and other essays*. Oxford University Press. Pp. 136–171.

Madan, T.N. (1994). *Pathways: Approaches to the Study of Society in India.* Oxford University Press. Pp. 85-107.

b. Indological Approach

Dumont, L., & Pocock, D. (1957). For a Sociology of India. *Contributions to Indian Sociology (OS)*, 1. Pp. 7–22.

Bailey, F. G. (1959). For a Sociology of India? *Contributions to Indian Sociology (OS)*, 3. Pp. 88–101.

c. Subaltern Approach

Guha, R. (1982) *Subaltern Studies, Volume I*. Oxford University Press. Pp. 1–8.

Unit II. Nation in the Public Imagination

a. M. K. Gandhi
Gandhi, M.K. (1938). *Hind Swaraj.* Navjivan Publishing House.

Gandhi,M.K.(1947). *India of My Dreams.* Navjivan Mudranalaya. Pp. 11-21.

b. B. R Ambedkar
Ambedkar, B.R. (1971). *Annihilation of Caste*. Bheem Patrika.

Ambedkar, B.R. (1947). Who were the Shudras? Thacker and co. Pp. 21-36.

c. J. Nehru
Nehru, J. (1989). *The Discovery of India* (Centenary ed.). Oxford University Press. Chapter 3: The Quest. Pp. 49–68.

d. V. D. Savarkar
Savarkar, V. D. (1969). *Hindutva: Who is a Hindu?* (5th ed.). Veer Savarkar Prakashan. Pp. 102-116.

Unit III. The Nation and the Constitution

Srinivas, M. N. (1992). *On Living in a Revolution and Other Essays*, Delhi: OUP. Chap 2, Nation Building in Independent India. Pp. 30-75.

Suggested Readings:

Ambedkar, B.R. (1948). Speech Introducing the Draft constitution in the Constituent Assembly November 4, 1948 and Concluding remarks in the Constituent Assembly November 25, 1949.

Das, V. (2003). *The Oxford India Companion to Sociology and Social Anthropology*. Oxford University Press.

Gandhi, M., & Parel, A. J. (1997). *Gandhi: 'Hind Swaraj' and other writings*. Cambridge University Press.

Ghurye, G. S. (2016). *Caste and Race in India* (5th ed.). Sage

Srinivas, M.N. (2002). *Collected Works*. Oxford University Press. Pp. 388–413

Additional Resources:
Gandhi [1982; Dir. Richard Attenborough]
Bharat Ek Khoj [1988; Dir. Shyam Benegal]
Dr Babasaheb Ambedkar [2000; Dir. Jabbar Patel]

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B. A. (H) Sociology
Discipline Specific Core (DSC) 08
Political Sociology

DISCIPLINE SPECIFIC CORE COURSE -08: POLITICAL SOCIOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 08 Political Sociology	4	3	1	0	**12th Class Pass**	**Nil**

Learning Objectives:

1. To introduce the sub-field of political sociology
2. To provide students the basic conceptual tools for a sociological analysis of political phenomena.
3. To outline classical and contemporary sociological traditions that analyse political institutions and processes.
4. To discuss original sociological writing on interface between politics and society and their divergent theoretical and empirical contexts..
5. To locate the fundamental questions of politics and power in an age of global transformations through an engagement with the three cornerstones of contemporary societies- the state, nation and democracy.

Learning outcomes:

1. *Delineate* the history of sociological study of politics.
2. *Identify and compare* the different perspectives in the sociological study of politics.
3. *Analyse* how political phenomena are embedded in the social and historical contexts of societies.
4. *Apply* the concepts learnt to *formulate* problematics emerging out of their own situations and historical circumstances.

SYLLABUS OF DSC-08

Unit 1. Introducing Political Sociology (3 Hours)

This unit introduces students to the sub-discipline of political sociology, its origins and

analytical concerns.

Unit 2. Concepts, Institutions and Processes (42 Hours)

This unit teaches students the fundamental concepts in political sociology and enables them to understand the workings of political institutions and processes.

a. Power and Authority (18 Hours)

b. Classes, Elites, States and Nations (12 Hours)

c. Democracy, Citizenship and Local Politics (9 hours)

d. Politics, Identities and Technology (6 Hours)

Practical component (if any) – NIL

Essential/Recommended Readings:

Unit 1: Introducing Political Sociology

Bottomore, Tom. (1983). *Political Sociology*, Bombay: BI Publications, Introduction, pp. 7-19.

Unit 2. Concepts, Institutions and Processes

a. Power and Authority

Weber, Max. (1994). *Sociological Writings*. United Kingdom: Continuum. Pp. 9-13, 23-24,28-46, 59-67.

Piven, Frances Fox and Richard A. Cloward. (2005). Rule Making, Rule Breaking, and Power in Thomas Janoski (Ed.), *The Handbook of Political Sociology: States, Civil Societies, and Globalization*. United States: Cambridge University Press. Pp. 33-53.

Foucault, Michel. (2021).Two Lectures, in *Culture/Power/History*: *A Reader in Contemporary Social Theory*. United States: Princeton University Press. Pp. 200-221.

b. Classes, Elites, States and Nations

Miliband, Ralph. (1983). *Class Power and State Power*. United Kingdom: Verso. Chapter 4. State Power and Class Interests. Pp. 63-77.

Albertoni, Ettore A. (1987). *Mosca and the Theory of Elitism*. United Kingdom: B. Blackwell. Chapter 9. The Italian School of Elitism: Between Myth and Reality. Pp. 109-119.

Bourdieu, Pierre. (1994). Rethinking the State: Genesis and Structure of the Bureaucratic Field. *Sociological Theory* 12(1): 1-18.

Chatterjee, Partha. (2010). The State. In *The Oxford Companion to Politics in*

India. India: Oxford University Press. Pp. 3-14.

Smith, Anthony D. and John Hutchinson (Ed.) (1994). *Nationalism*. United Kingdom: Oxford University Press, 1994. Pp. 21-25, 29-35.

c. Democracy, Citizenship and Local Politics

Bobbio, Norberto. (1987) *Future of Democracy.* United Kingdom: Wiley. Chapter 1. The Future of Democracy. pp. 23-42

Marshall, T. H. (2014) Extracts from Citizenship and Social Class. In Richard Belamy etal. eds. *Citizenship: Volume I, what is Citizenship? Theories of Citizenship: Classic and Contemporary Debates*. London: Routledge. Pp.58-64.

Brass, P. R. (1984). National Power and Local Politics in India: A Twenty-year Perspective. *Modern Asian Studies*, 18(01). Pp.89-118.

d. Politics, Identities and Technology

Weiner, Myron. (2001), The Struggle for Equality: Caste in Indian Politics, in A. Kohli (ed.), *The Success of India's Democracy*, Cambridge: Cambridge University Press. Pp. 193-225.

Howard, P. N. (2005). Deep Democracy, Thin Citizenship: The Impact of Digital Media in Political Campaign Strategy. *The ANNALS of the American Academy of Political and Social Science*, 597(1), 153–170.

Suggested Readings:

Bailey, F. G. (2019). *Stratagems and Spoils: A Social Anthropology of Politics. United Kingdom*: Taylor & Francis Group.

Balibar, Étienne and Immanuel Wallerstein. (1991). *Race, Nation, Class: Ambiguous Identities*. United Kingdom: Verso.

Brown, Donald Mackenzie. (1953). *The White Umbrella: Indian Political Thought from Manu to Gandhi*. United States: University of California Press.

Chakravarti, Anand. (1975) *Contradiction and Change: Emerging Patterns of Authority in a Rajasthan Village*. India: Oxford University Press.

Gledhill, John. (2000), *Power and its Disguises: Anthropological Perspectives on Politics*, 2nd Ed., London: Pluto Press, 2000. Pp.1-22.

Habermas, Jürgen, Sara Lennox, and Frank Lennox. (1964). The Public Sphere: An Encyclopedia Article. *New German Critique*, no. 3 (1974): 49–55.

Macpherson, C. B. (1966). *The Real World of Democracy*, Oxford: Clarendon Press.

Marshall, T.H. (1950). *Citizenship and Social Class and Other Essays*. Cambridge:

Cambridge University Press.

Piven, Frances Fox., Cloward, Richard. (2012). *Poor People's Movements: Why They Succeed, How They Fail*. United States: Knopf Doubleday Publishing Group.

Rothermund, Dietmar. (2013). *Empires in Indian History and Other Essays.* India: Manohar Publishers & Distributors.

Rudolph, Lloyd I. (1992). The Media and Cultural Politics, *Economic and Political Weekly* Vol. 27, No. 28, pp. 1489-1495.

Spencer, Jonathan. (2007). *Anthropology, Politics, and the State: Democracy and Violence in South Asia*. United Kingdom: Cambridge University Press.

Steinmetz, George. (2014). The Sociology of Empires, Colonies, and Postcolonialism. *Annual Review of Sociology*, 40(1), Pp. 77–94.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.A. (H) Sociology
Discipline Specific Core (DSC) 09
Sociology of Religion

DISCIPLINE SPECIFIC CORE COURSE -09 : SOCIOLOGY OF RELIGION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 09 Sociology of Religion	4	3	1	0	**12th Class Pass**	Nil

Course Learning Objectives:

1. Introduce students to sociology of religion as distinct field from religious studes through classic and contemporary readings.
2. Examine the dialectics between religion and society through the study of religious practices, customs, beliefs, and rituals.
3. Outline the role of religious faith and beliefs in the modern world.

Course Learning Outcomes:

1. *Identify and distinguish* the sociological approach to religion.
2. *Apply knowledge* of religious practices, customs, beliefs, and rituals to analyse relation between religion and society..
3. *Analyse* the significance of religious faith and beliefs in the modern world.

SYLLABUS OF DSC-09

Unit I Thinking through Sociology of Religion (15 Hours)
This unit introduces students to certain key concepts in Sociology of religion in terms of their definitions, interrelations and trajectories of usage..

a. **Religion in Sociology**
b. **Magic, Science and Religion**
c. **Atheism**

Unit II Religion and Ritual (9 Hours)
This unit provides a sociological understanding of the relationship between religion and rituals and the contexts of ritual practice.

a. Rites of Passage
b. Ritual

Unit III. Sociological Engagements with Religion (15 Hours)
This unit illustrates how religious ideas, beliefs and values shape people's understanding of their world.

a. Hinduism
b. Islam
c. Christianity
d. Buddhism

Unit IV Religion, State and Society (6 Hours)
This section traces the dynamic relationship between religion, state and society in the modern world in context of historical continuities and changes .

Practical component (if any) - NIL

Essential/Recommended Readings

Unit I. Thinking through Sociology of Religion (15 Hours)

a. Religion in Sociology

Davie, G. (2003). The Evolution of the Sociology of Religion: Theme and Variations. In *Handbook of the Sociology of Religion*, ed. Michele Dillon, Cambridge University Press. Pp. 61-75.

Durkheim, E. (2001). *The Elementary Forms of Religious Life*. A new Translation by Carol Cosman, OUP: Oxford. Pp. 25-46.

b. Magic, Science and Religion

Malinowski, B. (1948). *Magic, Science & Religion and Other Essays*. The Free Press: U.S.A.

Pp. 35-70.

c. Atheism

Schaffner, C and R. T. Cragun. (2020). Non-Religion and Atheism, Chapter 20. In *Handbook of Leaving Religion* (Ed.), Daniel Enstedt, Göran Larsson, Teemu T. Mantsinen, Brill, pp. 242-252.

Unit II. Religion and Ritual (9 Hours)

a. Rites of Passage

Van Gennep, A. (1960).*The Rites of Passage*. Routledge & Kegan Paul: London, Introduction and pp1-14, 116-145.

b. Ritual

Parry, J. (1985). Death and Digestion: The Symbolism of Food and Eating in North Indian Mortuary Rites, *Man* , New Series, Vol. 20, No. 4 , pp. 612-630 Published by: Royal Anthropological Institute of Great Britain and Ireland.

Unit III. Sociological Engagements with World Religions (15 Hours)

a. Hinduism

Shah A.M. and. M.N. Srinivas. (1968), Hinduism. In International. Encyclopedia of the Social Sciences, Vol.6, pp358-66.

3.2. Islam

Gilsenan, M. (1982). *Recognising Islam: An Anthropologist's Introduction*. Croom Helm: London. Pp 9-37.

3.3. Christianity

Parsons, T. (1968). Christianity. In *International Encyclopedia of the Social Sciences* Vol. 2, pp 425-447.

3.4. Buddhism

Gethin, R. (1998). The Buddha: The Story of the Awakened One . In *The Foundations of Buddhism*, OUP:Oxford, Chapter 1, pp. 7-34.

Unit IV. Religion, State and Society (6 Hours)

Smith. D. E. (1963). *India as a Secular State*, Princeton University Press. Ch. 1, 2 pp. 3-54.

Suggested Readings:

Berger, P.L. (1990). *The Sacred Canopy: Elements of a Sociological Theory of Religion*, 2nd Edition, New York: Anchor.

Béteille, A. (2002). Religion as a Subject for Sociology. In *Sociology Essays on Approach and Method*. New Delhi: Oxford University Press. Pp 184-2.

Beyer, P. (2003). Social Forms of Religion and Religions in Contemporary Global Society,

Cannell, F. (2005). The Christianity of Anthropology, *The Journal of the Royal Anthropological Institute*, Vol. 11(2), 335-356.

Durkheim, E. (1995). The Elementary Forms of the Religious Life. Translated by Karen E. Fields. New York: The Free Press. Book One and Conclusion. Pp. 303-412, 418- 448.

Geertz, Clifford. (1973). Religion as a Cultural System. In *The Interpretation of Cultures: Selected Essays*. Basic Books: NY. Pp.87-125.

in *Handbook of the Sociology of Religion*, (Ed.), Michele Dillon, Cambridge University Press. pp. 45-60.

Marx, K. 2008/9 [1843]. On the Jewish Question. In *Deutsch-FranzösischeJahrbücher*. Proofed and Corrected: by Andy Blunden, Matthew Grant and Matthew Carmody. www. marxists. org.

Southwold, M. (1978). Buddhism and the Definition of Religion, *Man, New Series*, Vol 13(3), pp. 362-379.

Southwold. M. (1978). Buddhism and the definition of religion, *Man*, New Series, Vol 13(3), pp. 362-379.

Srinivas, M. N. (1952). *Religion and Society among the Coorgs of South India*. Clarendon: Oxford. Pp100-122.

Tambiah, S. J. (1990). *Magic, Science, Religion and the Scope of Rationality*. Cambridge: Cambridge University Press. Pp. 1-41.

Weber. M. (2001). *The Protestant Ethic and the Spirit of Capitalism*. Translated by Stephen Kalberg. England: Roxbury Publishing Press. Pp. 103-126.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category II

(BA Multidisciplinary Studies (Sociology), Courses for Undergraduate Programme of study with Sociology discipline as one of the Core Disciplines)
(DSC 05 (Required for Major and Minor in Sociology),
DSC 06 (Required for Major in Sociology))

B.A. (MDS) Sociology
Discipline Specific Core (DSC) 05
Classical Sociological Thinkers

DISCIPLINE SPECIFIC CORE COURSE -05 (DSC-05) : Classical Sociological Thinkers

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (If any)
		Lecture	Tutorial	Practical/ Practice		
DSC 05 Classical Sociological Thinkers	4	3	1	0	12th Pass	Nil

Learning Objectives

1. To familiarise students with the contribution of classical sociological thinkers.
2. To enable students to understand the theoretical concepts that laid the foundation of Sociology as a discipline.
3. To appreciate enduring relevance and contemporary relevance of classical Sociological thought.

Learning outcomes

1. To recognize interconnections between classical sociological theories and contemporary research.
2. To grasp the relevance of classical sociological theory in the development of the discipline.
3. To apply theoretical concepts to examine social issues and concerns.

SYLLABUS OF DSC-1

Unit I
Karl Marx: Materialist Conception of History (15 Hours)
This unit introduces students to one of the key conceptual contributions of Marx that examines the historical development of society.

Unit II
Emile Durkheim: Social Fact (15 Hours)
This unit explains Durkheim's definition of 'Social Fact' and its significance in establishing Sociology as a scientific discipline with a distinct methodology.

Unit III
Max Weber: Ideal Types and Types of Authority (15 Hours)
This unit introduces the concepts of Ideal Types, explaining one of Weber's key methodological tools for developing a sociological study of society. The section further illustrates Weber's use of the concept through his analysis of 'types of authority'.

Practical Component: NIL

Essential/Recommended Readings:

Unit I: Karl Marx

a. Materialist Conception of History

Marx, K. & F. Engels. (1969). *The German ideology.* Moscow: Progress Publishers. pp. 34-42.

Calhoun, J. Craig, (2007). *Classical Sociological Theory*. Malden: 2nd Edition Blackwell. pp. 73-130.

Unit II. Emile Durkheim

Social Fact

Durkheim, E. (1958). *The Rules of Sociological Method.* Glencoe: Free Press, Chapters 1 and 3. pp.50-59; 85-107.

Jones R.A. (1986). *Emile Durkheim: An Introduction to Four Major Works*. London: Sage Publications. Chapters 3 and 4. pp. (60-114).

Unit III. Max Weber

Ideal Types and Types of Authority

Weber, Max. (1947). *The Theory of Social and Economic Organization.* New York: The Free Press, pp. 324-386.

Giddens, Anthony. (1971). *Capitalism and Modern Social Theory: An Analysis of the Writings of Marx, Weber, and Durkheim.* Cambridge: Cambridge University Press. Ch 10.(pp 133-144).

Suggested Readings:

Freund, Julien. (1998). *The Sociology of Max Weber*. New Delhi: Routledge.

Giddens, Anthony. (1971). *Capitalism and Modern Social Theory: An Analysis of the Writings of Marx, Weber and Durkheim.* Edinburgh: Cambridge University Press.

Seidman, Steven. (1994). *Contested Knowledge*. Sussex: Blackwell Publishers.

Key Words:
Historical materialism, social fact, social action, ideal types.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

BA Multidisciplinary Studies (Sociology)
Discipline Specific Core (DSC) 06
Polity and Society

DISCIPLINE SPECIFIC CORE COURSE -06 (DSC-06) : Polity and Society

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 06 Polity and Society	4	3	1	0	12th Pass	Nil

Learning Objectives:

1. To familiarize students with the embeddedness of the political in the social.
2. To outline the theoretical and conceptual heritage of sociology to enable students to understand power, authority and their institutionalizations in modern societies.
3. To provide a sociological understanding of political processes and institutions of India in their historicity and complexity.

Learning outcomes:

Students will be able to:

1. Identify and explain the concepts that are integral to a sociological study of politics.
2. Illustrate the specific ways in which politics is shaped processually in particular historical contexts.
3. Examine the relationship between political institutions and other social and economic institutions and processes

SYLLABUS OF DSC-06:

Unit I On Studying Polity and Society (9 Hours)

This unit introduces students to the sociological study of political life and political institutions

Unit II Conceptual Foundations (16 Hours)
This unit familiarizes students with various perspectives on the sociological study of politics and their conceptual legacies.

Unit III: Themes in Politics and Society in India (20 Hours)
This unit maps the articulation of polity and society in the Indian context from a sociological perspective.

a. **State and the Political Economy**
b. **Democratic Processes and Local Politics**
c. **Political Identities**
d. **Mobilizations and Communications**

Practical Component: NIL

Essential/Recommended Readings:

Unit I. On Studying Polity and Society:

Clemens, Elisabeth S. (2016).*What is Political Sociology*? Polity Press. Chapters 1. Pp. 5-24.

Bottomore, T. B. (1972) *Sociology: A Guide to Problems and Literature*. United Kingdom: Vintage Books, . Chapters 9, Political Institutions. Pp. 151-167.

Unit II Conceptual Foundations

Nisbet, Robert. 1993. *The Sociological Tradition*. United Kingdom: Transaction Publishers. Chapter 4, Authority. Pp. 107-150.

Foucault, Michel. (2019). Power: The Essential Works of Michel Foucault 1954-1984. United Kingdom: Penguin Books Limited. Govermentality. Pp. 201-222

Unit III: Themes in Politics and Society in India

a. **State and the Political Economy**

Rothermund, Dietmar. (2013). *Empires in Indian History and Other Essays*. India: Manohar Publishers. Chapter 3. The State Society in India from Ancient Times to the Present. Pp. 63-82.

Chatterjee, Partha. (2011). *Lineages of Political Society: Studies in Postcolonial Democracy*. New York: Columbia University Press. Chapter 10. Democracy and Economic Transformation. Pp. 208-234.

b. Democratic Processes and Local Politics

Michelutti, Lucia. (2007), The Vernacularization of Democracy: Political Participation and Popular Politics in North India. *The Journal of the Royal Anthropological Institute*, Vol.13 (3), pp. 639-656.

Gould, H. A. (1971), Local Government roots of Contemporary Indian politics, *Economic and Political Weekly*, Vol.6 (7), pp.457-64.

c. Political Identities

Kaviraj, Sudipta. (2010). Nationalism. In Niraja G. Jayal (Ed.), *The Oxford Companion to Politics in India*. India: Oxford University Press. Pp. 317-331.

Weiner, Myron. (2001). The Struggle for Equality: Caste in Indian Politics. In A. Kohli (Ed.), *The Success of India's Democracy*, Cambridge: Cambridge University Press. Pp.193-225

d. Mobilizations and Communication

Shah, Ghanshyam. (1988). Grassroots Mobilizations in Indian Politics", in A. Kohli (ed.), *India's Democracy*, Princeton: Princeton University Press, pp. 262-304.

Rudolph, Lloyd I. (1992). The Media and Cultural Politics, *Economic and Political Weekly* Vol. 27, No. 28, pp. 1489-1495.

Suggested Readings:

Bottomore, Tom. (1964). *Elites and Society*, Harmondsworth: Penguin Books.

Dickey, Sara. (1993). The Politics of Adulation: Cinema and the Production of Politicians in South India, *The Journal of Asian Studies*, vol.52 (2), pp. 340-70.

Fernandes, Leela. (2006). *India's New Middle Class. Democratic Politics in an Era of Economic Reform*, Minneapolis: University of Minnesota Press.

Ghosh Partha et.al (Eds.). (2000). *Pluralism and Equality: Values in Indian Society and Politics*, Sage: New Delhi.

Jayal, N. G. (2007). The Role of Civil Society. In Ganguly, S. et. Al.(Eds.), *The State of India's*

Democracy, Baltimore: The Johns Hopkins University Press.

Kothari, Rajni. (1970). *Caste in Indian Politics*, Hyderabad: Orient Longman.

Loic Wacquant (Ed.). (2005). *Pierre Bourdieu and Democratic Politics: The Mystery of Ministry*. United Kingdom: Wiley.

Lukes, Steven. (2005). *Power: A Radical View*, 2nd Ed., Hampshire: Palgrave.

Manor, James. (1988). Parties and the Party System. In A. Kohli (Ed.), *India's Democracy*, Princeton: Princeton University Press, pp. 62-98.

Spencer, Jonathan. (2007). *Anthropology, Politics, and the State: Democracy and Violence in South Asia*. United Kingdom: Cambridge University Press.

Tarlo, Emma. (2003). *Unsettling Memories: Narratives of the Emergency in Delhi*, Los Angeles: University of California Press. Pp. 62-93.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category III

Sociology Courses for Undergraduate Programme of study with Sociology as one of the Core Disciplines

(Discipline Specific Core courses for B.A. (MDS) with Sociology as non-Major / Minor discipline)

B.A. (MDS) Sociology
Discipline Specific Core (DSC) 05
Classical Sociological Thinkers

DISCIPLINE SPECIFIC CORE COURSE -05 (DSC-05) : Classical Sociological Thinkers

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (If any)
		Lecture	Tutorial	Practical/ Practice		
DSC 05 Classical Sociological Thinkers	4	3	1	0	12th Pass	Nil

Learning Objectives

1. To familiarise students with the contribution of classical sociological thinkers.
2. To enable students to understand the theoretical concepts that laid the foundation of Sociology as a discipline.
3. To appreciate enduring relevance and contemporary relevance of classical Sociological thought.

Learning outcomes

1. To recognize interconnections between classical sociological theories and contemporary research.
2. To grasp the relevance of classical sociological theory in the development of the discipline.

3. To apply theoretical concepts to examine social issues and concerns.

SYLLABUS OF DSC-1

Unit I
Karl Marx: Materialist Conception of History (15 Hours)
This unit introduces students to one of the key conceptual contributions of Marx that examines the historical development of society.

Unit II
Emile Durkheim: Social Fact (15 Hours)
This unit explains Durkheim's definition of 'Social Fact' and its significance in establishing Sociology as a scientific discipline with a distinct methodology.

Unit III
Max Weber: Ideal Types and Types of Authority (15 Hours)
This unit introduces the concepts of Ideal Types, explaining one of Weber's key methodological tools for developing a sociological study of society. The section further illustrates Weber's use of the concept through his analysis of 'types of authority'.

Practical Component: NIL

Essential/Recommended Readings:

Unit I: Karl Marx

a. Materialist Conception of History

Marx, K. & F. Engels. (1969). *The German ideology.* Moscow: Progress Publishers. pp. 34-42.

Calhoun, J. Craig, (2007). *Classical Sociological Theory*. Malden: 2nd Edition Blackwell. pp. 73-130.

Unit II. Emile Durkheim

Social Fact

Durkheim, E. (1958). *The Rules of Sociological Method.* Glencoe: Free Press, Chapters 1 and 3. pp.50-59; 85-107.

Jones R.A. (1986). *Emile Durkheim: An Introduction to Four Major Works*. London: Sage Publications. Chapters 3 and 4. pp. (60-114).

Unit III. Max Weber

Ideal Types and Types of Authority

Weber, Max. (1947). *The Theory of Social and Economic Organization.* New York: The Free Press, pp. 324-386.

Giddens, Anthony. (1971). *Capitalism and Modern Social Theory: An Analysis of the Writings of Marx, Weber, and Durkheim.* Cambridge: Cambridge University Press. Ch 10.(pp 133-144).

Suggested Readings:

Freund, Julien. (1998). *The Sociology of Max Weber*. New Delhi: Routledge.

Giddens, Anthony. (1971). *Capitalism and Modern Social Theory: An Analysis of the Writings of Marx, Weber and Durkheim.* Edinburgh: Cambridge University Press.

Seidman, Steven. (1994). *Contested Knowledge*. Sussex: Blackwell Publishers.

Key Words:
Historical materialism, social fact, social action, ideal types.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF DISCIPLINE SPECIFIC ELECTIVES (DSE)

BA (H) Sociology
Discipline Specific Elective 01
Urban Sociology

DISCIPLINE SPECIFIC ELECTIVE COURSE -01 (DSE-01) : Urban Sociology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE-01 Urban Sociology	4	3	1	0	12th Pass	Nil

Learning Objectives:

1. To place the city in its historical and contemporary context.
2. To give an overview of key theoretical perspectives on city and urban phenomena.
3. To illustrate the complexity of urban realities with thematic case studies.

Learning outcomes

At the end of the course the students will be able to:

1. Comprehend the significance of concept of urbanism and process of urbanization in our times.
2. Understand and apply various theories of the city.
3. Analyze and evaluate key urban processes such as migration, displacement and urban slums.
4. Create sociologically informed solutions for contemporary urban issues such as resettlement and rehabilitation.

SYLLABUS OF DSE-01:

Unit 1: Introducing Urban Sociology: Urban, Urbanism and the City (9 Hours)

This unit introduces students to the constitutive elements of urban life as examined in anthropological and sociological writings.

Unit 2: Perspectives in Urban Sociology (15 Hours)
This unit examines the key theoretical perspectives that provide a sociological understanding of urban reality.

a. Ecological
b. Political Economy
c. Network
d. City as Culture

Unit 3: Movements and Settlements (6 Hours)
This unit enables an understanding of urban processes such as migration, displacement, resettlement, rehabilitation etc. and the factors that give rise to them.

Unit 4: Politics of Urban Space (15 Hours)
This unit examines the experience of urban spaces for individuals and communities based on their specific socio-political locations.

a. Caste, Class and Gender
b. Culture and Leisure

Practical Component: NIL

Essential/Recommended Readings:

Unit 1: Urban, Urbanism and the City

Southall, Aidan. 2000. *The City in Time and Space*. Cambridge University Press. Cambridge. Chapter 1. Writing the city under crisis. Pp. 3-22.

Weber, Max. 1978. The City. The Free Press: New York. Pp 65-89.

Unit 2: Perspectives in Urban Sociology

a. Ecological

Hannerz, Ulf. 1980. *Exploring the City: Toward an Urban Anthropology*, NY: Columbia University Press. Chapter 2. Chicago Ethnographers. Pp 19-58.

b. Political Economy

Harvey, David. 1985. The Urban Experience, Baltimore: Johns Hopkins University Press, Chapter 1. Money, Time, Space and the City. Pp. 1-35.

c. Network

Castells, Manuel. 2002, Local and Global: Cities in the Network Society. In The Royal Dutch Geographical Society KNAG, Vol. 93, No. 5, Blackwell Publishers. Pp. 548–558.

d. City as Culture

Simmel, Georg. 1903. Metropolis and the Mental Life. In Gary Bridge and Sophie Watson, (Eds.), *The Blackwell City Reader*. Oxford and Malden, MA: Wiley-Blackwell, 2002. Pp. 12-19

Unit 3: Movements and Settlements

Rao, M.S.A. 1981. Some aspects of the sociology of migration. Sociological Bulletin, Vol. 30, 1. Pp. 21-38.

Anand, Inbanathan. 2003. Migration and Adaptation: Lower Caste Tamils in a Delhi Resettlement Colony. In Ranvinder Singh Sandhu (Ed.), *Urbanization in India*. Sage: New Delhi. Pp. 232-246.

Unit 4: Politics of Urban Space:

a. Caste, Class and Gender

Kamath, Lalitha and Vijayabaskar, M. 2009. Limits and possibilities of middle-class associations as urban collective actors. *Economic & Political Weekly*, June 27, vol XLIV, No. 26 & 27, Pp. 368 -376.

Ayyar, Varsha. 2013. Caste and gender in a Mumbai resettlement site. *Economic & Political Weekly*, May 4, Vol. XLVIII, No 18, Pp. 44-55.

Castells, Manuel. 1983. Cultural Identity, Sexual Liberation and Urban Structure: The Gay Community in San Francisco. In *The City and the Grassroots*. Pp. 138-170.

b. Culture and Leisure

Grazian, David. 2009, Urban nightlife, social capital, and the public life of cities. *Sociological Forum*, Vol. 24, No. 4, Pp. 908-917.

Suggested Readings:

Gautam Bhan, Teresa Caldeira, Kelly Gillespie and AbdouMaliq Simone. 2020. The pandemic, southern urbanisms and collective life. Society and Space Vol 3.

https://www.societyandspace.org/articles/the-pandemic-southern-urbanisms-and-collective-life

Crawford, Margaret. "The World in a Shopping Mall," in Variations on a Theme Park: The New American City and the End of Public Space, ed., Michael Sorkin, (New York, NY: Hill and Wang, 1992). Pp. 3-30.

Mumford, Lewis 1961. *The City in History: its origins and transformations and its prospects*. New York:Mariner Books: Chapter 4. The Ancient City. Pp. 94-118

Oskar Verkaaik. 2008. Cosmopolistan: culture, cosmopolitanism and gender in Karachi, Pakistan. In Martina Reiker and Kamran Asdar Ali (Eds.), *Gendering Urban Space in the Middle East, South Asia and Africa*. Palgrave Macmillan. NY.

Audio Visual Material:

Whyte, William H. 1980. Social Life of Small Urban Spaces 2. Giovanni Vaz Del Bello. 2006.

A Convenient Truth: Urban Solutions from Curitiba, Brazil 3. Anand Patwardhan. 1985

Bombay: Our City 4. Sanjiv Shah. A Place To Live 5. Gouri Patwadhan. Bin Savlyanchya Gavat (In a Shadowless Town)

Key Words: Urban, Urbanism, Urbanisation, City, Migration, Settlement, Space, Ecology

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Sociology
Discipline Specific Elective (DSE) 02
Sociology of Work

DISCIPLINE SPECIFIC ELECTIVE COURSE 02: SOCIOLOGY OF WORK

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 02 Sociology of Work	4	3	1	0	12th Pass	Nil

Course Learning Objectives:

1. The course journeys into the socio-cultural aspects of work, known commonly by its economic character. It shows how being fundamental to humankind, work took various forms in pre-industrial times, but industrialization integrally changed its character with far-reaching social consequences. In this context, it also traces the evolution of the Sociology of Work as a sub-discipline, in the light of the ideas of the classical sociologists.
2. The course also examines sociological perspectives regarding the nature and socio-cultural consequences of industrialization, critically evaluating them in the context of non-western societies. The extent to which the information revolution has led to a social transformation comparable to that caused by industrialization is also examined in this context.
3. Further, the course addresses various work-related contemporary issues and concerns such as formal and informal sector work, unpaid and forced work, gender segregation and alienation in work and hazardous work.

Course Learning Outcomes

At the end of the course the students will be able to:

1. Learning about the socio-historical context of work, theoretical concerns and problems, and contemporary issues in the area of work and industry.
2. Understanding work in its important social aspects such as gendered work, unpaid work, and alienation as different from its better-known economic dimension.

3. Understanding work in its global dimensions including the mutual relation between work in underdeveloped societies and in developed ones.
4. Developing a comparative perspective in the study of work, focusing on the differences in the social impact of work in western and non-western contexts.
5. Understanding work in its various contexts such as formal and informal sectors, manufacturing and service sectors, home and work-place, etc.
6. Learning about the complexities, disparities and inequalities in the area of work.

SYLLABUS OF DSE-02

Unit 1: Work in Historical Perspective (9 Hours)

In this unit, work is traced through pre-industrial times in the form of gathering and hunting, pre-industrial agriculture and artisan work. Further, the conceptualization of work and its analysis in classical and contemporary sociological literature is reviewed.

a. Work in pre-industrial society
b. Sociology of Work: An Overview

Unit 2: Industrial Culture and Organisation (9 Hours)

This unit addresses work in industrial society, analyzing the social impact of industrialization through the theories of industrialization, industrialism, post-industrialism and information society.

a. Industrialization, Industrialism and post-industrialism
b. Information Society

Unit 3: Work in the Informal Sector (9 Hours)

In this unit, the focus is on the sociological analysis of the informal, unorganized sector of work, with a view to bringing out the many continuities that exist between it and the formal, organized sector.

Unit 4: Dimensions of Work (18 Hours)

This unit discusses various important dimensions of work, focusing on the way in which they have been theoretically conceptualized as well as on their manifestation in actual work contexts.

a. Alienation

b. Gender
c. Unpaid Work and Forced Labour
d. Risk, Hazard and Disaster

Practical component (if any) - NIL

Essential/Recommended Readings

Unit 1: Work in Historical Perspective:

a. Work in pre-industrial society.

Volti, Rudi. (2011)*An Introduction to the Sociology of Work and Occupations*. Sage Publications, Inc. (second edition). Chs. 1 and 2, Pp. 1-16 and 19-35.

b. Sociology of Work: An Overview

Strangleman, Tim. (2016).The Disciplinary Career of the Sociology of Work. In Edgell, Gottfried and Granter (Ed.), *The Sage Handbook of the Sociology of Work and Employment*. Los Angeles/London/New Delhi/Singapore/Washington DC, Sage Reference, Ch. 2.

Unit 2: Industrial Culture and Organization

a. Industrialisation, Industrialism and Post-industrialism

Ramaswamy E. A. and Uma Ramaswamy. (1981) *Industry and Labour*. New Delhi, Oxford University Press. Ch 3, Pp.33-65.

b. Information Society
Kumar, Krishan. (1999).*From Post-Industrial to Post-Modern Society*. Oxford, Blackwell Publishers Ltd. Ch 2, Pp 6-35.

Unit 3: Work in the Informal Sector

Breman, Jan. (2003). The Informal Sector in Veena Das (Ed.), *The Oxford India Companion to Sociology and Social Anthropology*, New Delhi, OUP. Pp. 1287-1312.

Kumar, Sanjay and Sharit Bhowmik. (2010). Street Vending in Delhi in Sharit Bhowmik (Ed.), *Street Vendors in the Urban Global Economy*. Routledge. Pp. 46-67.

Unit 4: Dimensions of Work

a. Alienation

Erikson, Kai. (1990). On Work and Alienation in Erikson, K. and S.P. Vallas (Eds.), *The Nature of Work: Sociological Perspectives*. New Haven and London, American Sociological Association Presidential Series and Yale University Press. Pp. 19-33.

Taylor, Steve. (1998). Emotional Labour and the new Workplace. In Thompson and Walhurst (Eds.), *Workplace of the Future*. London, Macmillan. Pp. 84-100.

c. Gender

Hynes, Kathryn and Kelly Chandler. (2008).Gender in the workplace. In Wethington, Elaine and Rachel Dunifon (Ed.), *Encyclopaedia of the Life Course and Human Development*, Gate Publishers. Pp.163-169.

Chowdhury, Prem. 1993. High Participation, Low Evaluation: Women and Work in Rural Haryana, in *Economic and Political Weekly*, December 25, Pp.136-148.

c. Unpaid Work and Forced Labour

Edgell, Stephen. Unpaid Work-Domestic and Voluntary work. In *The Sociology of Work: Continuity and Change in Unpaid Work*. New Delhi: Sage, 2012. Pp.153-181.

Coser, Lewis. (1990). Forced Labour in Concentration Camps. In Erikson, K. and S.P. Vallas (eds.) *The Nature of Work: Sociological Perspectives*. New Haven and London, American Sociological Association Presidential Series and Yale University Press, 2006. Pp. 162-69.

d. Risk, Hazard and Disaster

Visvanathan, Shiv. (1986)Bhopal: The Imagination of a Disaster, *Alternatives* XI, Pp. 147-165.

Zonabend, Francoise. The Nuclear Everyday in Massimiliano Mollona, Geert De Neve and Jonathan Parry (Ed.), *Industrial Work and Life: An Anthropological Reader*. London, Berg, 2009. Pp. 167-185.

Suggested Readings:

Bell, Daniel. *The Coming of Post-Industrial Society*. London, Heineman, 1976. Introduction, Pp.12-45.

Devine, Fiona. (1992). Gender Segregation in the Engineering and Science Professions: A case of continuity and change. In *Work, Employment and Society*, 6 (4). Pp.557-75.

Freeman, Carla. (2009) Femininity and Flexible Labour: Fashioning class through gender on the global assembly line. In Massimiliano Mollona, Geert De Neev and Jonathan Parry (Eds.), *Industrial Work and Life: An Anthropological Reader*. London, Berg,. Pp. 257-268.

Grint, Keith. (2005). Classical Approaches to Work: Marx, Durkheim and Weber. In *The Sociology of Work: An Introduction*. Polity Press, Cambridge,. Pp. 90-112.

Talib, Mohammad. (2010). *Writing Labour- Stone Quarry Workers in Delhi*. New Delhi, OUP. Chapter 1, Pp. 23-54.

Additional Resources:

Audio Visual Material:

1. Chaplin, Charlie 1936. 'Factory Scene'- 'Modern Times'
2. Cole, Nigel 2010. *"Made in Dagenham"*
3. Alux.com "15 Jobs that will disappear in the next 20 years due to AI"
4. NatGeo, 2014. "The Bhopal Disaster: India"

Key Words:

Pre-industrial Work**,** Industrialism, Scientific Management, Industrialization, Post-Industrialism, Information Society, Alienation, Emotional Labor, Gendered Work, Informal Sector, Unpaid Work, Hazardous Work, Industrial Disaster.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Sociology
Discipline Specific Elective (DSE) 03
Sociology of Health and Medicine

DISCIPLINE SPECIFIC ELECTIVE COURSE - (DSE-03) : Sociology of Health and Medicine

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 03 Sociology of Health and Medicine	4	3	1	0	12th Pass	Nil

Course Learning Objectives

1. To render health and medicine as a complex interaction between social and biological processes.
2. To introduce cultural dimension in the construction of illness and medical knowledge.
3. To outline different theoretical approaches in Sociology of Health and Medicine.
4. To illustrate social experiences of health and illness through case studies and health policies.

Course Learning Outcomes

At the end of the course the students will be able to:

1. Analyse the everyday experience of health and illness as an outcome of social, political, economic, cultural, and biological processes.
2. Apply the key concepts and approaches of sociology of health and medicine to understand the social embeddedness of medical ideas and practices.
3. Develop a critical understanding of modern biomedicine, medical pluralism and integration of different systems of medicine.
4. Identify and discuss the contemporary concerns and debates in medical sociology.

SYLLABUS OF DSE-03

Unit 1. Conceptualising Disease, Sickness, and Illness (9 Hours)
The section introduces students to the key concepts in Medical Sociology that define the field as being distinct from Medical Sciences.

Unit 2. Theoretical Orientations to Health and Illness (18 Hours)
This section situates the study of health and illness in the theoretical context of the discipline. It seeks to familiarize the students with the perspectives that have shaped the discourse on health and illness in Sociology.

a. **Systems Approach**
b. **Political Economy of Health**
c. **Health as a Power Discourse**
d. **Feminist Approaches**

Unit 3. Some Issues and Concerns in Medical Sociology (18 Hours)
This section focuses on issues of critical relevance in contemporary times. These issues not only alter the character of medical systems but also impinge on the dynamics of social relations.

a. **Medical Pluralism**
b. **Assisted Reproductive Technologies**
c. **Mental Health**
d. **Digital Technologies and Health**

Practical component (if any) - NIL

Essential/Recommended Readings

Unit 1. Conceptualising Disease, Sickness, and Illness

Turner, B. S. (1995). *Medical power and social knowledge.* Sage. Chapter 1, Pp. 1–17.

Freund, P. E. S., McGuire, M. B., & Podhurst, L. S. (2003). *Health illness and the social body: A critical sociology* (4th ed.). Prentice Hall. Chapter 9. Pp. 195–223.

Unit 2. Theoretical Orientations in Health and Illness

Lupton D. (2012). *Medicine as culture: Illness, disease and the body* (3rd ed.). Sage. Chapter 1. Pp. 1–19.

a. Systems Approach

Turner, B. S. (1995). *Medical power and social knowledge.* Sage. Chapter 3. Pp. 44–54.

b. **Political Economy of Health**

Morgan, L. (1987). Dependency theory and the political economy of health: An anthropological critique. *Medical Anthropology Quarterly* (New Series), 1(2), Pp. 131–154.

c. Health as a Power Discourse

Foucault, M. (1980). The politics of health in the eighteenth century. In M. Foucault, & C. Gordon (Ed.), *Power/knowledge: Selected interviews and other writings 1972–1977* Pantheon. Pp. 166–182.

d. Feminist Approaches

Lupton D. (2012). *Medicine as culture: Illness, disease and the body* (3rd ed.). Sage. Chapter 6. Pp. 149–172.

Unit 3. Some Issues and Concerns in Medical Sociology

a. Medical Pluralism

Baer, H. A., Singer, M., & Susser, I. (1994). *Medical anthropology and the world system*. Praeger. Chapter 10. Pp. 307–328.

Sujatha, V. (2011). What could "integrative" medicine mean? Social science perspectives on contemporary ayurveda. *Journal of Ayurveda and Integrative Medicine*, 2 (3). Pp. 115–23.

b. Assisted Reproductive Technologies

Marwah, V., & Naidu, S. (2011). Reinventing reproduction, re-conceiving challenges: An examination of assisted reproductive technologies in India. *Economic and Political Weekly*, 46(43), Pp. 104–111.

c. Mental Health

Horwitz, A. V. (2013). The sociological study of mental illness: A critique and synthesis of four perspectives. In C. S. Aneshensel, J. C. Phelan, & A. Bierman (Eds.), *Handbook of the sociology of mental health*, Springer Science. Pp. 95–112.

d. Digital Technologies and Health

Deborah L. (2013). *Digitized Health Promotion: Personal Responsibility for Health in the Web 2.0 Era* (Working Paper No. 5). Sydney Health & Society Group.

Suggested Readings:

Baer, H. A., Singer, M., & Susser, I. (1994). *Medical anthropology and the world system*. Praeger.

Denny, E. (1994). Liberation or oppression? Radical feminism and in vitro fertilisation. Sociology of Health and Illness, 16 (1). Pp. 62–80.

Gabe, J. & Monaghan, L. F. (Eds.), (2013). *Key concepts in medical sociology* (2nd ed). Sage.

Gupta J. A. (2000). *New reproductive technologies women's health and autonomy: Freedom or dependency*. Sage. [Chapter 2].

Inhorn, M. (2000). Defining women's health: Lessons from a dozen ethnographies. *Medical Anthropology Quarterly*, 20(3), 345–378.

International Consultation on Commercial Economic and Ethical Aspects of Assisted Reproductive Technologies, Sarojini, N. B., Marwah, V., & Sama—Resource Centre for Women and Health. (2014). *Reconfiguring reproduction: Feminist health perspectives on assisted reproductive technologies*. Zubaan Publishers, in collaboration with Sama—Resource Group for Women and Health.

Kleinman, A. (1998). *The illness narratives: Suffering, healing and the human condition*. Basic Books Inc. [Chapter 1, pp. 3–30].

Leslie, C. (1976). *Asian medical systems: A comparative study*. University of California Press. [Introduction, pp. 1–12].

Nichter, M. (1996). Popular perceptions of medicine: A south Indian case study. In M. Nichter & M. Nichter. *Anthropology and international health* (pp. 203–237). Gordon and Breach.

Pande, A. (2010). Commercial surrogacy in India: Manufacturing a perfect mother-worker. *Signs: Journal of women in culture and society*, 35(4), 969–992.

Patel, T. (2012). Global standards in childbirth practices. In V. Sujatha & L. Abraham (Eds.), *Medical pluralism in contemporary India* (pp. 232–254). Orient Blackswan.

Rao, M. (2009). 'Health for all' and neoliberal globalisation: An Indian rope trick. In L. Panitch, & C. Leys (Eds.), *Morbid symptoms: Health under capitalism* (pp. 262–278). Merlin.

Turner, B. S. (1995). *Medical power and social knowledge.* Sage.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE)

Sociology
Generic Elective 07
Social Inequalities

Generic Elective Course 07 (GE 07) : Social Inequalities

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE 07 Social Inequalities	4	3	1	0	12th Pass	Nil

Learning Objectives:

1. To provide an understanding of pervasive and persistent character of inequalities in social life.
2. To outline sociological concepts and theories that help us to comprehend social inequalities.
3. To elaborate multiple ways in which social inequalities manifest and draw out their consequences for the individuals, groups and communities.

Learning outcomes:

At the end of the course, the students will be able to:

1. Identify and recognize how social inequality manifests in different socio-cultural contexts.
2. Critically analyse the configurations and consequences of social inequalities,
3. Define, compare and contrast various theories of social inequality.
4. Apply theoretical knowledge to empirical contexts of inequality.

SYLLABUS OF GE 07

Unit I. Introduction to the study of Inequality (10 Hours)

This unit introduces students to the pervasive character of inequalities in social life and the ways in which it has been studied within the discipline. It also elaborates the concept of social inequality through different theoretical perspectives.

a. Understanding social inequality
b. Perspectives on Inequality

Unit II. Manifestations of inequality in social life (20 Hours)
This unit provides an analysis of the various manifestations and consequences of social inequality on individua lives. The instances of inequalities within family, caste, class, race and gender structure have been examined in this unit.

a. Family structure and inequality
b. Caste and higher education
c. Labour market inequality
d. Racial Inequality
e. Gender inequality

Unit III. Contemporary Issues in Global Inequality (15 Hours)
This unit provides an understanding of emerging issues in the study of social inequality across the globe as a result of cross border migration, tourism and global media.

a. Globalisation and inequality
b. Cross border Migration
c. Cinema and reproduction of inequality
d. Tourism

Practical component (if any) - NIL

Essential/Recommended Readings:

Unit 1: Introduction to the study of Inequality

a. Understanding Social Inequality

Béteille, A. (1969). *Social inequality*. Penguin Books. Pp. 1-14, 362-380.

b. Perspectives on Inequality

Marger, M. N. (1999). *Social Inequality. Patterns and Processes*. Mountain View. Chapter 2. Pp. 26-53.

Unit 2: Manifestations of Inequalities in Social life

a. Family Structure

McLanahan, S &Percheski,C (2008) Family structure and reproduction of inequalities: *Annual Review of Sociology*, 34. Pp. 257-74.

b. Caste and Higher Education

Deshpande, S. (2006). Exclusive Inequalities: Merit, Caste and Discrimination in Indian Higher Education Today. *Economic and Political Weekly*, 41(24). Pp. 2438–2444.

c. Labour Market Inequality

Kreckel, R. (1980). Unequal opportunity structure and labour market segmentation. *Sociology*, 14(4). Pp. 525-550.

d. Racial Inequality

Fang Gong, Jun Xu and David T. Takeuchi, 2017. Racial and Ethnic Differences in Perceptions of Everyday Discrimination. *Sociology of Race and Ethnicity*. 3 (4). Pp. 506-521.

e. Gender Inequalities

Ridgeway, C. L. (2009). Framed before we know it: How gender shapes social relations. *Gender & Society*, *23*(2). Pp. 145-160.

Unit 3: Contemporary Issues in inequality

a. Globalization

Milanovic, B. (2016). *Global inequality: A new approach for the age of globalization*. Harvard University Press. Introduction and Chapter 1. Pp. 1-45.

b. Migration

Faist, T. (2016). Cross-border migration and social inequalities. *Annual Review of Sociology*, 42. Pp 323-346.

c. Media

Denzin, N. K. (2005). Selling images of inequality: Hollywood cinema and the reproduction of racial and gender stereotypes. *The Blackwell companion to social inequalities.* Pp. 469-501.

d. Tourism

Bell, C. (2005). The nervous gaze: Backpacking in Africa. *The Blackwell companion to social inequalities.* Pp. 424-440.

Suggested Readings:

Rachel Sherman, 2017. *Uneasy Street: The Anxieties of Affluence*. Princeton: Princeton University Press.

Atkinson Anthony B. 2015 *Inequality: What Can be Done*? Cambridge: Harvard University Press. Pp. 241-308

Béteille, A. (1991). The Reproduction of Inequality: Occupation, Caste and Family. *Contributions to Indian Sociology* n.s., 25(1), 3–28.

Grusky, D. (2018). *The Inequality Reader: Contemporary and foundational readings in race, class, and gender*. Routledge.

Acker, J. (2006). Inequality regimes: Gender, class, and race in organizations. *Gender & Society*, *20*(4), 441-464. 23.

Priestley, M. (2005). Disability and social inequalities. *The Blackwell companion to social inequalities*, 372-395.

Tilly, C. (2005). Historical perspectives on inequality. *The Blackwell companion to social inequalities*, Pp. 15-30.

Audio Visual Materials:

A Girl in the River: The Price for Forgiveness (Pakistan): Dir. Sharmeen Obaid Chinoy: 40 mins

A Pinch of Skin (India): Dir. Priya Goswami: 28 mins

Kony 2012 (Uganda): Dir. Jason Russell: 30 mins

Sri Lanka's Killing Fields: Dir. Callum Macrae: 49 mins

Film "Park Avenue: Money, Power and the American Dream – Why Poverty." 59 Minutes https://www.youtube.com/watch?v=6niWzomA_So

Keywords:
Social Inequality, global inequality, caste, social class, gender inequality, labour market inequality.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Sociology
Generic Elective 08
Cities and Society

Generic Elective Course 08 (GE 08): Cities and Society

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE 08 Cities and Society	4	3	1	0	12th Pass	Nil

Learning Objectives

1. To present and examine some of the distinct issues that cities face in developing countries.
2. To provide a focused discussion on cities in the developing world, equipping students with the theoretical tools necessary to analyse these issues and the processes which underpin them.
3. To generate an understanding on the forms of social inclusion and exclusion in cities in terms of class, gender, ethnicity, and location (neighborhoods).

Learning outcomes

At the end of the course, the students will be able to:

1. Develop a sociological perspective on the nature of contemporary cities in the global south.
2. Assess the distinctiveness of cities in developing nations in terms of their issues and problems.
3. Analyze the processes of inclusion and exclusion that impinge upon the lives of the city dwellers in terms of their identities.
4. Apply a case study approach and arrive at cross cultural analysis of cities.

SYLLABUS OF DSC-1

Unit I: Conceptualising the City in the 21st Century (6 Hours)

In this unit, students will be introduced to the specific issues associated with urbanization in developing nations of 21st century.

Unit II: Experiences of Urban Life in Developing Societies (9 Hours)

This unit highlights the ways in which the social categories of class, gender and ethnicity impacts the individual and community experiences of the city.

a. Class
b. Gender
c. Ethnicity

Unit III Right to the City: The Processes of Claim-making (15 Hours)

This unit focuses on the cultures of resistance that groups and communities have come to adopt in their struggle to communicate issues around access to power and legitimacy.

a. Gender and Citizenship
b. Claims of Urban Poor
c. Cultures of Resistance

Unit IV. Future of Cities in the Developing World (15 Hours)

This unit examines the emerging challenges in the study of cities and highlights the cultural and political directions that further influence the wider context of city life in the developing world.

a. Challenges of Urban growth and Planning
b. Issues of Sustainability: Urban Housing
c. Uncertain cities in Emerging Economies

Practical component (if any) – NIL

Essential/Recommended Readings:

Unit I: Conceptualising the City in 21st Century

Sassen, S. (2010). The city: Its return as a lens for social theory. *City, Culture and Society*, 1(1). Pp.3–11.

Simone, Abdou Maliq. (2020). Cities of the Global South. *Annual Review of Sociology*, *46*. Pp .603-22

Unit II: Experiences of the Urban Life in Developing Societies

a. Class

Bayón, María Cristina, Saraví, Gonzalo A. and Breña, Mariana Ortega . 2013. The Cultural Dimensions of Urban Fragmentation: Segregation, Sociability, and Inequality in Mexico City *Latin American Perspectives* Vol. 40, No. 2. Pp. 35-52 .

b. Gender

Thieme,Susan, Muller-Boker,Ulrik. and Backhaus, Norman.2011. Women's Livelihoods in a Transnational Social Space: Labour Migration from Far West Nepal to Delhi, India in Saraswati Raju (Ed.), *Gendered Geographies. Space and Place in South Asia.* OUP. New Delhi. Pp. 62-78.

c. Ethnicity

McDuie-Ra, Duncan. 2013. Beyond the 'Exclusionary City'. *Urban Studies*, Vol 50, No. 8. Pp. 1625-1640.

Unit III Right to the City: Processes of Claim-making

a. Claims of Urban Poor

Simone, AbdouMaliq. 2015. The Urban Poor and Their Ambivalent Exceptionalities: Some Notes from Jakarta. *Current Anthropology*, Vol. 56. Pp.15-23.

Gupte, Jaideep. 2012. Linking Urban Vulnerability, Extralegal Security, and Civil Violence: The Case of the Urban Dispossessed in Mumbai in Renu Desai and Romola Sanyal (Eds.), *Urbanizing Citizenship. Contested Spaces in Indian Cities*. Sage. New Delhi. Pp. 90-210.

b. Gender and Citizenship

Fadaee, Simon and Schindler, Seth. 2017. Women Hawkers in Tehran's Metro: Everyday politics and the production of public space. *International Development Planning Review*, Vol. 39(1). Pp. 57-75.

Froystad, Kathinka. 2006. Anonymous Encounters: Class categorisation and social distancing in public places in Geert De Neve and Henrike Donner (Eds.), *The Meaning of the Local: Politics of Place in Urban India*. Routledge. London. Pp. 159-179.

c. Cultures of Resistance

Klaus, Enrique. 2014. Graffiti and Urban Revolt in Cairo. *Built Environment*,Vol. 40, No. 1, Arab Cities After 'The Spring'. Pp. 14-33.

4. Future of Cities in the Developing World

a. Challenges of Urban Growth and Planning

Shaw, Annapurna. 2005. Peri-Urban Interface of Indian Cities: Growth, Governance and Local Initiatives. *Economic and Political Weekly*, Vol. 40, No.2. Pp 129-136.

b. Issues of Sustainability: Urban Housing

Rademacher, Anne. 2009. When is Housing an Environmental Problem? Reforming Informality in Kathmandu. *Current Anthropology*, Vol. 50. No.4. Pp 513-33.

Roy, Souvanic. 2016. The Smart City Paradigm in India: Issues and Challenges of sustainability and Inclusiveness. *Social Scientist*, Vol. 44, No. 5/6. Pp. 29-48.

c. Uncertain cities in Emerging Economies

Yves Van Leynseele & Marco Bontje. 2019. Visionary cities or spaces of uncertainty? Satellite cities and new towns in emerging economies. *International Planning Studies,* Vol. 24. No. 3-4. Pp. 207-217.

Suggested Readings:

Vormann, Boris and Gina Caison. 2014. The Logics and Logistics of Urban Progress: Contradictions and Conceptual Challenges of the Global North-South Divide. *The Global South*, Vol 8, No. 2. The Global South and/in the Global North: Interdisciplinary Investigations Pp. 65-83.

Srivastava, Sanjay. 2009. Urban Spaces, Disney-Divinity and Moral Middle Classes in Delhi. *Economic and Political Weekly*,Vol. 44. No. 26/27. Pp. 338-345.

Saad, Moataz Moustafa. Ibrahim, Mohamed AbdelAll and Sayad, Zeyad M. El. 2017. Eco- City as Approach for Sustainable Development. *American Scientific Research Journal for Engineering, Technology, and Sciences*, Vol 28. No 1. Pp. 54-74.

Hyun Bang Shin and Soo-Hyun Kim. 2016. The developmental state, speculative urbanization and the politics of displacement in gentrifying Seoul. *Urban Studies*, Vol. 53, No. 3, Special issue: Locating gentrification in the Global East Pp. 540-559.

Keywords: City, global south, urban, peri-urban, megacities, global city

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Sociology
Generic Elective (GE) 09
Sociology of Climate Change

Generic Elective Course -09 (GE 09): Sociology of Climate Change

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE 09 Sociology of Climate Change	4	3	1	0	12th Pass	Nil

Learning Objectives:

1. To introduce students to the issue of climate change from a multidisciplinary perspective.
2. To examine various dimensions of climate change and the efforts at mitigating its effects from a sociological lens.
3. To examine issues sustainability and climate risks in face of climate change.

Learning Outcomes:

After doing this course, students will be able to:

1. Demonstrate an understanding of the various sociological dimensions of climate change and sustainability.
2. Generate sociological research on causes, course and consequences of climate change.
3. Obtain skills to advance and assess solutions for social issues arising out of climate change.

SYLLABUS OF GE 09:

Unit 1 Understanding Climate Change (15 Hours)

This unit attempts to locate the primary arguments related to sociology of climate change by contextualising how society and human activity have contributed to environmental transformations.

a. **Anthropocene**
b. **Population and Consumption**
c. **Development and Sustainability**

Unit 2 Governing Climate Change (15 Hours)

This unit looks at how climate change is not only a social and human issue, but political and legislative as well, with far reaching societal and environmental consequences.

a. Policy and Protocols
b. Disaster and Risk Management
c. Role of Civil Society

Unit 3 Experiencing Climate Change (15 Hours)

This unit highlights the interconnectedness of environment and society, highlighting a need to understand climate change by re-examining social and environmental events and processes.

a. Social Inequalities
b. Migration and Adaptation

Practical component (if any) – NIL

Essential/Recommended Readings:

Unit 1. Understanding Climate Change

a. Anthropocene

Dietz, T., Shwom, R. L., & Whitley, C. T. (2020). Climate change and society. *Annual Review of Sociology*, 46(1), Pp. 135-158.

Rosa, E. A., Et. Al. (2015). The human (anthropogenic) driving forces of global climate change. In R. E. Dunlap & R. J. Brulle. *Climate Change and Society: Sociological perspectives*. Oxford University Press. Pp. 32-60.

b. Population and Consumption

Chertkovskaya, E. (2019). Ecology of culture. In Kothari, A., Salleh, A. Escobar, A., Demaria, F., & Acosta, A. (Eds.), *Pluriverse: A post-development dictionary* Tulika Books. Pp. 166-168.

Ehrhardt-Martinez, K., Schor, Et. Al. (2015). Consumption and climate change. In R. E. Dunlap & R. J. Brulle. *Climate Change and Society: Sociological perspectives.* Oxford University Press. Pp. 93-126.

c. Development and Sustainability

Adger, W. N., Et. al. (2013). Cultural dimensions of climate change impacts and adaptation. *Nature Climate Change* 3(2). Pp. 112-117.

Kothari, A., Et. al. (Eds.), *Pluriverse: A post-development dictionary* (pp. 32-33). Tulika Books. Development – for the 1 per cent, Maldevelopment, Climate-smart agriculture, Sustainable development. Pp. 6-11, 32-33, 71-73.

Unit 2 Governing Climate Change

a. Policy and Protocols

Andharia, J. (2021). Disaster management: Institutionalising risk-informed planning. In R. Agarwal, and O. Goyal. (Eds.). *The Crisis of Climate Change: Weather report*. Routledge India Pp. 34-46.

b. Disaster and Risk Management

Beck, U. (2006) Living in the world Risk Society. *Economy and Society*,35(3). Pp.329-345.

Swyngedouw, E. (2010). Apocalypse forever? Post-political populism and the specter of climate change. *Theory, Culture and Society*, 27(2-3). Pp. 213-232.

Seed, J. (2019). Deep ecology. In Kothari, A., Salleh, A. Escobar, A., Demaria, F., & Acosta, A. (Eds.), *Pluriverse: A post-development dictionary* Tulika Books. Pp.145-147.

c. Role of Civil Society

Kothari, A., Et. al. (Eds.), *Pluriverse: A post-development dictionary* . Tulika Books. Commons, Environmental justice, Tribunal on the rights of nature, Ubuntu. Pp. 32-33, 124-126, 182-184, 320-325.

Dutta, S. (2021). From 'climate change' to 'climate justice': 'Civil society' movement(s). In R. Agarwal and O. Goyal (Eds.). *The Crisis of Climate Change: Weather report*. Routledge. Pp. 230-244.

Unit 3 Experiencing Climate Change:

a. Social Inequalities

Harlan, S. L., Et. al (2015). Climate justice and inequality. In R. E. Dunlap & R. J. Brulle. *Climate Change and Society: Sociological perspectives.* Oxford University Press. Pp. 127-163.

Terreblanche, C. (2019). Ecofeminism. In Kothari, A., Salleh, A. Escobar, A., Demaria, F., & Acosta, A. (Eds.), *Pluriverse: A post-development dictionary*, Tulika Books. Pp. 163-165.

b. Migration and Adaptation

Kothari, A., Et. al. (Eds.), Pluriverse: A post-development dictionary Transhumanism,. Earth spirituality, Nature rights, social ecology. . Tulika Books. Pp. 74-78, 157-159, 243-246, 308-310

Suggested Readings:

Ammar, N. (2019). Islamic ethics. In Kothari, A., Salleh, A. Escobar, A., Demaria, F., & Acosta, A. (Eds.), *Pluriverse: A post-development dictionary* (pp. 212-213). Tulika Books.

Damdul, G. D. (2019). Buddhism and wisdom-based compassion. In Kothari, A., Salleh, A. Escobar, A., Demaria, F., & Acosta, A. (Eds.), *Pluriverse: A post-development dictionary* (pp. 108-110). Tulika Books.

Ghazala, S. (2021). Forests and climate change in the anthropocene. In R. Agarwal & O. Goyal (Eds.). *The Crisis of Climate Change: Weather report* (1st ed., pp.69-77). Routledge India.

Halpin, H. (2019). Free software. In Kothari, A., Salleh, A. Escobar, A., Demaria, F., & Acosta, A. (Eds.), *Pluriverse: A post-development dictionary* (pp. 188-190). Tulika Books.

Handmer, J., Et. al. (2012). Changes in impacts of climate extremes: Human systems and ecosystems. In C. B. Field, Et. al. (Eds.) *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation* A Special Report of Working Groups I and II of the Intergovernmental Panel on Climate Change (IPCC). Cambridge University Press. Pp. 231-233, 237-266.

Hugu, S. (2019). Tao worldview. In Kothari, A., Salleh, A. Escobar, A., Demaria, F., & Acosta, A. (Eds.), *Pluriverse: A post-development dictionary* (pp. 314-316). Tulika Books.

Kumar, S. (2019). Jain ecology. In Kothari, A., Salleh, A. Escobar, A., Demaria, F., & Acosta, A. (Eds.), *Pluriverse: A post-development dictionary* (pp. 214-216). Tulika Books.

Mishra Anupam (2006).*Saf Mathey ka Samaj*,London ,Penguin Books

Mishra Anupam (2027).*Aaj Bhi Khare Hain Talab*, Delhi, Prabhat Prakashn.

Rao, N. (2021). Achieving gender equality in the face of a climate crisis. In R. Agarwal & O. Goyal (Eds.). *The Crisis of Climate Change: Weather report* (1st ed., pp.104-115). Routledge India.

Additional Resources

https://sdgs.un.org/goals

https://www.indiawaterportal.org/

Documentaries

1. *Kiss the ground: How we can reverse climate change* [YouTube channel]. YouTube: https://www.youtube.com/watch?v=uf8dF0agJEk&ab_channel=FactualAmericaPodcast
2. *Anote's Ark* (2018) [Film]. https://www.imdb.com/title/tt7689934/
3. *Welcome to the Anthropocene* [Video]. YouTube
4. https://www.youtube.com/watch?v=fvgG-pxlobk&ab_channel=ArlindBoshnjaku
5. *Wall-E* ,(2008), Directed by , Andrew Stantion, Walt Disney Studios Motion Pictures.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF HISTORY

COURSES OFFERED BY DEPARTMENT OF HISTORY

Category I

[UG Programme for Bachelor in History (Honours) degree in three years]

DISCIPLINE SPECIFIC CORE COURSE -1 (DSC-1) – : History of India – III: 750 – 1200

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
History of India – III: 750 – 1200	4	3	1	0	12 th Pass	Should have studied History of India- II Fourth century to 750

Learning Objectives

This course is designed to make students trace the patterns of change and continuities in the economic, political, social and cultural aspects of life during the 'early medieval period' (c. 750 – 1200 CE) of Indian history. With its focus on multiple historiographical approaches to various issues of historical significance during this period, the course will also apprise students of the divergent ways in which historians approach, read and interpret their sources.

Learning outcomes

Upon completion of this course the student shall be able to:

- Critically assess the major debates among scholars about various changes that took place with the onset of early medieval period in India.
- Explain, in an interconnected manner, the processes of state formation, agrarian expansion, proliferation of caste and urban as well as commercial processes.
- Discuss the major currents of developments in the cultural sphere, namely Bhakti movement, Puranic Hinduism, Tantricism, architecture and art.

SYLLABUS OF DSC-1

Unit I: Studying early medieval India

1. Sources: texts; inscriptions; coins
2. Perspectives on the early medieval

Unit II: Political structures and processes

1. Evolution of political structures: Rajput polities; Chola state; Odisha
2. Symbols of political power: Brahmanas and temples; courtly cultures
3. Issue of 'Foreign and Indian': Arabs and Ghazanavids in the north-west, Cholas in Southeast Asia

Unit III: Social and economic processes

1. Agricultural expansion and social changes
2. Trade and urbanization

Unit IV: Religious and visual cultures

1. Bhakti, Puranic Hinduism; Tantra; Buddhism and Jainism
2. Art and architecture: temples – regional styles

Practical component (if any) - NIL

Essential/recommended readings

Unit I. This unit seeks to familiarise students with the range of sources available for the early medieval period of Indian history. Most importantly, students will engage with the debates and varied scholarly views on the nature of early medieval Indian social formation and the most important aspects and factors of change therein. **(Teaching Time: 12 hrs. approx.)**

- Salomon, Richard. 1998. Indian Epigraphy: A Guide to the Study of Inscriptions in Sanskrit, Prakrit and, the Other Indo-Aryan Languages. New York: Oxford University Press. (The relevant portions are: Chapter I: 'The Scope and Significance of Epigraphy in Indological StudStudiesies', pp. 3-6; Chapter VII: 'Epigraphy as a Source for the Study of Indian Culture,' pp. 226-51.)
- Schwartzberg. J. 1993. Historical Atlas of South Asia. New York: Oxford University Press. (To be used mostly as a reference book)
- Jha, D.N. 2000. 'Introduction'. In The Feudal Order: State, Society and Ideology in Early Medieval India. Delhi: Manohar, pp. 1-60. [Also available in Hindi]
- Sharma, RS 1958. 'Origins of Feudalism in India (c. A.D. 400-650)'. Journal of the Economic and Social History of the Orient, vol. 1: 297-328.
- Mukhia, H. 1981. 'Was there Feudalism in Indian History?' The Journal of Peasant Studies vol. 8(3): 273-310. Also reproduced in Kulke, Hermann. (ed). 1995. The State in India, 1000-1700. New Delhi: Oxford University Press, pp. 86-133.
- Sharma, R.S. 1982. 'The Kali Age: A Period of Social Crisis'. In D.N. Jha (ed). The Feudal Order: State, Society and Ideology in Early Medieval India, Delhi: Manohar, pp. 61-77. (Originally published in S.N. Mukherjea, (ed). India: History and Thought. Essays in Honour of Professor A.L. Basham.)

- Chattopadhyaya, B.D. 1983. 'Political Processes and the Structure of Polity in Early Medieval India: Problems of Perspective'. Presidential Address, Ancient India Section, Indian History Congress, 44 Session. This is also reproduced in Kulke, Hermann. (ed). 1995. The State in India, 1000-1700. New Delhi: Oxford University Press, pp. 195-232.
- Kulke, Hermann and Bhairabi Prasad Sahu (eds). 2022. 'Introduction'. The Routledge Handbook of the State in Premodern India. London and New York: Routledge, pp. 1-43.
- र्सह, उर्पिर. 2017. प्राचीन एवं प व-मध्यकालीन भारत का इततहास: पाषाण-काल से 12वीं शताब्दी तक. नई र्िल्ली: र्पयसिन इर्ं डया एजुके शन. प्रासंर्गक भाग है, अध्याय 10: 'उभरता क्षेत्रीय र्वन्यास', पष्ठ संख्या 588-689.)
- झा, र्िजेंद्र नारायण (सं.). 2007. भारतीय सामतं वाद: राज्य, समाज और तवचारधारा. नई र्िल्ली: ग्रंथ शर्ल्पी.
- शमाि, रामशरण. 1993. भारतीय सामंतवाद. नई र्िल्ली: राजकमल प्रकाशन.
- मर्ु खया, हरबंस. 1998. 'क्या भारतीय इर्तहास में फ्यर्लज़्म रहा है?'. फ्यतलज़्म और गैर-यूरोपीय समाज. (सं.) हरबंस मुर्खया, नई र्िल्ली: ग्रंथ शर्ल्पी, पष्ठ सख्ं या 1-49.

Unit II. This unit aims to apprise students of the dynamic nature of political structures and the varied perspectives from which scholars study them. **(Teaching Time: 12 hrs. approx.)**

- Sharma, R.S. [1965] 2006. Indian Feudalism: c. AD 300-1200. 3rd edition, Delhi: Macmillan (Especially relevant are, pp. 67-95.).
- Chattopadhyaya, B.D. 1983. 'Political Processes and the Structure of Polity in Early Medieval India: Problems of Perspective', Presidential Address, Ancient India Section, Indian History Congress, 44th Session. This is also reproduced in Kulke, Hermann. (ed). 1995. The State in India, 1000-1700. New Delhi: Oxford University Press, pp. 195-232.
- Kulke, Hermann. 1995. 'The Early and the Imperial Kingdom: A Processural Model of Integrative State Formation in Early Medieval India'. In idem. (ed). The State in India, 1000-1700. New Delhi: Oxford University Press, pp. 233-62.
- Chattopadhyaya, B.D. 1976. 'Origin of the Rajputs: The Political, Economic and Social Processes in Early Medieval Rajasthan'. Indian Historical Review, vol. 3(1): 59-82. Also reproduced in B.D. Chattopadhyaya, The Making of Early Medieval India, Delhi: Oxford University Press, pp. 57-88. Paperback edition, 1997.
- Stein, Burton. 1977. 'The Segmentary State in South Indian History'. In Richard Fox (ed.). Realm and Region in Traditional India. New Delhi: Vikas, pp. 3-51. Stein's views might also be accessed in another article by him, more easily accessible: Stein, Burton. (1995). 'The Segmentary State: Interim Reflections'. In Hermann Kulke. (ed). 1995. The State in India, 1000-1700. New Delhi: Oxford University Press, pp. 134-61.
- Heitzman, James. 1987. 'State Formation in South India, 850-1280', Indian Economic and Social History Review, vol. 24 (1), pp. 35-61. Also reproduced in Hermann Kulke. (ed). 1995. The State in India, 1000-1700. New Delhi: Oxford University Press, pp. 162-94.

- Ali, Daud. 2006. 'Chapter 2: 'The Culture of the Court'. In idem. Courtly Culture and Political Life in Early Medieval India. New Delhi: Cambridge University Press, (Especially useful is, pp. 69-102.)
- Davis, Richard. 1999. Lives of Indian Images. New Delhi: Motilal Banarsidas Publishers, pp. 88-112 and pp. 186-221.
- Chattopadhyaya, B.D. 2017. 'The Concept of Bharatavarsha and Its Historiographical Implications'. In B. D. Chattopadhyaya The Concept of Bharatavarsha and Other Essays. New Delhi: Permanent Black, pp. 1-30.
- Maclean, Derryl N. 1989. Religion and Society in Arab Sind. Leiden: E.J. Brill. (Chapter II: 'Conquest and Conversion', pp. 22-82).
- Habib, Mohammad. [1927] 1981. 'Sultan Mahmud of Ghaznin'. In K.A. Nizami (ed.) Politics and Society during the Early Medieval Period, Collected Works of Professor Habib, vol. 2. New Delhi: People's Publishing House, pp. 36-104.
- Thapar, Romila. 2005. Somnath: The Many Voices of a History. Penguin.
- Chattopdhyaya, B.D. [1998] 2017. Representing the Other? Sanskrit Sources and the Muslims (eighth to fourteenth Century). Primus Books: Delhi.
- Kulke, Hermann, K. Kesavapany and Vijay Sakhuja (eds). 2009. Nagapattinam to Su-varnadvipa: Reflections on the Chola Naval Expeditions to Southeast Asia. Singapore: Institute of Southeast Asian Studies.
- शमाि, रामशरण. 1998. 'भारतीय सांमतवाि र्कतना सामंती?'. हरबंस मर्ु खया (सं.). फ्यूडतलज़्म और गैर-यूरोपीय समाज. नई र्िल्ली:ग्रंथर्शल्पी, पष्ठ सख्ं या 50-86.
- मर्ु खया, हरबंस. 1998 'कृ षक उत्पाि न और मध्यकालीन भारतीय समाज', हरबंस मर्ु खया (सं.). फ्य तलज़्म और गैर-यूरोपीय समाज. नई र्िल्ली: ग्रंथर्शल्पी, पष्ठ सख्ं या 310-339.
- चट्टोपाध्याय, बजिलाल. 1978. 'राजपतू ोंं की उत्पर्ि; पूव-ि मध्ययगु ीन राजस्थान में राजनैर्तक, आर्थिक एवं सामार्जक प्रर्क्रयाए',ं एच. डी. संकार्लया आर्ि (सं.). प्राचीन भारत. मैकर्मलन: नई र्िल्ली. पष्ठ सख्ं या,136-153.
- हबीब, मोहम्मि. 1992. 'महमि के कार्यों का चररत्र और मल्ू य', इरफान हबीब (स.)ं मध्यकालीन भारत, अकं -4. नई र्िल्ली: राजकमल प्रकाशन, पष्ठ सख्ं या 9-23.
- थापर, रोर्मला. 2000. 'सोमनाथ और महमि ू '. सहमत मक्तनाद वषि-2, अंक 1-2. पष्ठ संख्या 37-44.
- थापर, रोर्मला. 2015. सोमनाथ: इततहास एक, स्वर अनेक. नई र्िल्ली: ग्रंथर्शल्पी.
- हबीब, इरफान. 1999. 'भारतीय राष्र के र्नमाि ण की प्रर्क्रया और अवधारणा: ऐर्तहार्सक पररप्रेक्ष्य'. सहमत मक्तसंख्या 26-30. नाद वषि-1, अंक 3. पष्ठ
- चट्टोपाध्याय ,ब्रजिलाल. 2012. 'आक्रामकों और शासकों की छर्वयाँ', मीनाक्षी खन्ना (स.)ं मध्यकालीन भारत का सांस्कृ ततक इततहास. नई र्िल्ली: ओररएंट ब्लैकस्वान, पष्ठ संख्या 107-33.
- शास्त्री, नीलकं ठ. 1979. चोलवंश. नयी र्िल्ली: मैकर्मलन .

Unit III. This unit will familiarise students with social and economic processes of the early medieval period in Indian history. The diverse ways in which these have been studied will be the chief focus. **(Teaching Time: 9 hrs approx.)**

- Sharma, R.S. 1987. Urban Decay in India c. 300 – c. 1000. New Delhi: Munshiram Mnoharlal. (Especially important parts are, Chapter 2: 'Urban Growth and Decay in the North', pp. 10-27; Chapter 8: 'Explaining the Urban Eclipse', pp. 132-42; and Chapter 10: 'Agrarian Expansion', pp. 168-77.)
- Champakalakshmi, R. 1995. 'State and Economy: South India, Circa A.D. 400-1300'. In Romila Thapar (ed.). Recent Perspectives of Early Indian History. Bombay: Popular Prakashan, pp. 266- 301.
- Yadava, B.N.S. 1997. 'Immobility and Subjection of Indian Peasantry'. In Bhairabi Prasad Sahu (ed.). Land System and Rural Society in Early India. Delhi: Manohar, pp. 329-42.
- Sharma, R.S. 1969. Social Changes in Early Medieval India. The first Devraj Chanana Memorial Lecture. New Delhi: People's Publishing House. Also reproduced (with slight changes) as Sharma, R.S. 2001. 'Changes in Social Structure'. In idem. Early Medieval Indian Society: A Study in Feudalisation. Hyderabad: Orient Longman, pp. 186-213.
- Chattopadhyaya, B.D. 1994. The Making of Early Medieval India. Oxford: Oxford University Press. (Relevant parts are, Chapter 4: 'Markets and Merchants in Early Medieval Rajasthan', pp. 89-119; Chapter 6: 'Trade and Urban Centres in Early Medieval North India', pp. 130-54; Chapter 7: 'Urban Centres in Early Medieval India: An Overview', pp. 155-182).
- Bhandare, Shailendra. 2015. 'Evaluating the Paucity of Metallic Currency in Medieval India'. In Himanshu Prabha Ray (ed). Negotiating Cultural Identity: Landscapes in Early Medieval South Asian History. Delhi: Routledge, pp. 159-202.
- Chakravarti, Ranabir. 2004. 'Introduction'. In idem. (ed). Trade in Early India. Delhi: Oxford University Press, pp. 1-101.
- Malik, Anjali. 1998. Merchants and Merchandise in Early Medieval Northern India, A.D. 600-1000. Delhi: Manohar. Relevant sections are, 'Introduction', pp. 15-33; Chapter 4: 'The Changing Patterns of Trade', pp. 89-109.
- शमाि, रामशरण. 2000. भारत के प्राचीन नगरों का पतन. राजकमल प्रकाशन: नयी र्ि ल्ली. प्रासंर्गक हर्स्से इस प्रकार ह:ैं अध्याय-2 : 'उिर में शहरी र्वकास और पतन', पृष्ठ संख्या 25-47; अध्याय-8: 'शहरी पतन की व्याख्या', पष्ठ सखं् या 173-84; अध्याय 10: ' कृ र्ष का प्रसार', पष्ठ सखं् या 213-23.
- शमाि, रामशरण. 1995. पूवव-मध्यकालीन भारत में सामातजक पररवतवन, नई र्ि ल्ली. संशोर्धत संस्करण शमाि, रामशरण. 1996. प व- मध्यकालीन भारत का सामतं ी समाज और संस्कृ तत. नयी र्ि ल्ली : राजकमल प्रकाशन में प्रकार्शत है.
- याि व, बी.एन. एस. 1981. 'प्रारंर्भक-मध्यकालीन व्यवस्था में भारतीय र्कसान वर्ग की अगर्तशीलता और ि ासता', इरफान हबीब (सं.). मध्यकालीन भारत, अंक-1. नयी र्ि ल्ली: राजकमल प्रकाशन, पष्ठ सखं् या 3-12.

Unit IV. The focus of this unit will be on the religious and visual cultures of the early medieval period in the Indian subcontinent. Having done this unit, students will be able to trace the patterns of change in these spheres of life. **(Teaching Time: 12 hrs. approx.)**

- Champakalakshmi, R. 1996. 'From Devotion and Dissent to Dominance: The Bhakti of the Tamil Alvars and Nayanars'. In R. Champakalakshmi and S. Gopal (ed). Tradition, Dissent and Ideology. New Delhi: Oxford University Press, pp. 135-63.
- Narayanan, M.G.S. and K. Veluthat. 2000. 'Bhakti Movement in South India'. In Jha, D.N. (ed). The Feudal Order: State, Society and Ideology in Early Medieval India. New Delhi: Manohar, pp. 385-410. The essay was originally published in S.C. Malik. (ed.). 1978. Indian Movements: Some Aspects of Dissent, Protest and Reform. Simla: Indian Institute of Advanced Study, 1978. The same was also reproduced in D.N. Jha. (ed). 1987. Feudal Social Formation in Early India. Delhi: Chanakya Publications.
- Mahalakshmi, R. 2000. 'Outside the Norm, Within the Tradition: Karaikkal Ammaiyar and the Ideology of Tamil Bhakti', Studies in History, vol. 16(1): pp. 17-40.
- Chakrabarti, Kunal. 1996. 'Texts and Traditions: The Making of the Bengal Puranas'. In R. Champakalakshmi and S. Gopal (eds). Tradition, Dissent and Ideology. New Delhi: Oxford University Press, pp. 55-88.
- Desai, Devangana. 1989. 'Social Dimensions of Art in Early India'. Presidential Address (Ancient India Section). Proceeding of the Indian History Congress, 50th session, Gorakhpur: pp. 21-56.
- नंिी, रमेन्द्रनाथ. 1998. प्राचीन भारत में धमव के सामातजक आधार. नई र्िल्ली: ग्रंथर्शल्पी.
- र्सिंह, उर्पन्िर. 2017. प्राचीन एवं प व- मध्यकालीन भारत का इततहास: पाषाण काल से 12 वीं शताब्दी तक. नई र्िल्ली: र्पयसिन इर्ं डया एजुके शन. प्रासंर्गक भाग है, अध्याय 10: 'उभरता क्षेत्रीय वर्न्यास', पष्ठ संख्या 588-689.

Suggestive readings

- Bosworth, C.E. 1966. 'Mahmud of Ghazna in Contemporary Eyes and in Later Persian literature'. Iran. vol. 4, pp. 85-92. (Alternatively, see Mahmud B. Sebuktigin. in Encyclopaedia of Is-lam, ed. H.A.R. Gibb et al. Leiden: E.J. Brill.)
- Champakalakshmi, R. 1996. Trade, Ideology and Urbanization: South India 300 BC to AD 1300, New Delhi: Oxford University Press.
- Chattopadhyaya, B.D. 2003. 'The Study of Early India'. In idem. Studying Early India. Delhi: Permanent Black, pp. 3-25.
- Desai. Devangana. 1974. 'Art under Feudalism in India (c. A.D. 500-1300)'. The Indian Historical Review vol. 1(1): pp. 10-17. Reprinted in Jha, D.N. 1987. The Feudal Order: State, Society and Ideology in Early Medieval India. Delhi: Manohar, pp. 487-496.
- Deyell, J.S. 1990. Living Without Silver: The Monetary History of Early Medieval North India. Delhi: Oxford University Press.
- Eaton, Richard M. 2002. 'Temple Desecration and Indo-Muslim States'. In David Gil-martin and Bruce B. Lawrence (eds). Beyond Turk and Hindu: Rethinking

Religious Identities in Islamicate South Asia. New Delhi: India Research Press, pp. 246-81. The article can also be ac-cessed in Eaton, Richard M. 2000. Essays on Islam and Indian History, New Delhi: Oxford Univer-sity Press.

- Huntington, Susan. 1985. The Art of Ancient India: Buddhist, Hindu, Jain. New York and Tokyo: Weather Hill.
- Jha, D.N. 2000. The Feudal Order: State, Society and Ideology in Early Medieval India. Delhi: Manohar Publishers.
- Kulke, Hermann. 2001. 'Royal Temple Policy and the Structure of Medieval Hindu Kingdoms'. In idem. Kings and Cults: State Formation and Legitimation in India and Southeast Asia. Delhi: Manohar, pp. 1-16.
- Kulke, Hermann and B. P. Sahu. 2018. History of Precolonial India: Issues and Debates. Delhi: Oxford University Press, pp. 141-278.
- Pollock, Sheldon. 1998. 'India in the Vernacular Millennium: Literary Culture and Polity, 1000-1500'. Daedalus, vol. 127(3). 1998: pp. 41–74.
- Ramaswamy, Vijaya. 1982. 'Peasant, State and Society in Medieval South India: A Re-view Article', Studies in History, vol. 4, pp. 307-19.
- Sahu, B.P. (ed). 1997. 'Introduction'. In idem. Land System and Rural Society in Early India. Delhi: Manohar, pp. 1-58.
- Sharma, R.S. (1985). 'How Feudal was Indian Feudalism?'. The Journal of Peasant Studies, vol. 12 (2-3), pp. 19-43. A revised and updated version of this article is to be found in, Kulke, Hermann (ed). 1995. The State in India 1000-1700. New Delhi: Oxford University Press, pp. 48-85.
- Singh, Upinder. (2008). 'Chapter 10: Emerging Regional Configurations, c. 600-1200 CE'. In idem. A History of Ancient and Early Medieval India: From the Stone Age to the 12th Century. New Delhi: Pearson Education, pp. 546-643.
- Spencer, G.W. (1969). 'Religious Networks and Royal Influence in Eleventh Century South India'. Journal of the Economic and Social History of the Orient. vol. 12 (1): pp. 42- 56.
- Subbarayalu, Y. 2011. South India under the Cholas. New Delhi: Oxford University Press. (Especially important are chapters titled 'Introduction', 'The Chola State' and 'Characterizing the Chola State'.)
- Veluthat, Kesavan. 2000. 'The Role of Nadu in the Socio-Political Structure of South India (c. AD 600-1200)'. In D.N. Jha (ed). The Feudal Order: State, Society and Ideology in Early Medieval India. Delhi: Manohar, pp. 179-96.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC CORE COURSE – 2 (DSC-2): Rise of the Modern West – I

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course		

		Lecture	Tutorial	Practical/ Practice	Eligibility criteria	Pre-requisite of the course (if any)
Rise of the Modern West – I	**4**	**3**	**1**	**0**	**12 th Pass**	**NIL**

Learning Objectives

The focus of the course is on transition from feudalism to capitalism in Europe. The paper familiarizes the student with important transitions and transformations in the economy, polity, and socio-cultural life from mid fifteenth century to 1600 in various parts of Europe. The course shall critically examine the dynamics of economic and political power within Europe, and contacts with the New World. The processes by which Europe's economy benefited from colonial expansion and exploitation of indigenous and slave labour will be explained. Students shall also engage with continuities and changes in intellectual and artistic realms; the social and economic milieu which influenced developments in religion; trends in state formation; and the relation-ship between state and religion. Students will be introduced to the concept of Eurocentrism in our understanding of the Rise of the Modern West.

Learning outcomes

On completion of this course students will be able to:

- Outline important changes that took place in Europe from the mid fifteenth century.
- Acquire an integrated approach to the study of economic, social, political and cultural developments in Europe.
- Explain the processes by which major transitions unfolded in Europe's economy, state forms, social structure and cultural life. Examine elements of early modernity in these spheres.
- Critically analyse linkages between Europe's State system and trade and empire.

SYLLABUS OF DSC- 2

Unit 1: Transition from Feudalism to Capitalism

1. Issues and debates
2. Question of Eurocentricism

Unit II: Early colonial Expansion

1. Trade and Empire-Mines and Plantations
2. Labour Systems-Indigenous populations and African Slaves

Unit III: Renaissance

1. Origins
2. Humanism in Italy and its spread in Europe, Art

Unit IV: Origins, course and results of the European Reformation

Unit V: Economic development of the sixteenth century

1. Shift of economic balance from the Mediterranean to the Atlantic
2. Price Revolution

Unit VI: European State Systems: with any two case studies-Spain, France, England and Russia

Practical component (if any) - NIL

Essential/recommended readings

Unit 1: The Unit will give an overview to the paper through issues and debates related to transition from feudalism to capitalism in Europe. The concept of Eurocentrism will be introduced. **(Teaching Time: 9 hrs. approximately)**

- Aston, T.H. and C.H.E. Philpin, (Eds.). (2005). The Brenner Debate, Agrarian Class Structure and Economic Development in Pre-Industrial Europe. Cambridge/Delhi: Cambridge University Press, Ist South Asian Edition.
- Blaut, J.M., et.al. (1992). 1492 - The Debate on Colonialism, Eurocentrism, and History. Trenton, N J: Africa World Press, Inc.
- Hilton, Rodney, (Ed.). (1985). The Transition from Feudalism to Capitalism. London: Verso.
- Sinha, Arvind. (2009). Sankrantikaleen Europe. New Delhi: Granth Shilpi. [and English edition].
- Wallerstein, Immanuel. (1974). The Modern World System, Vol. I, Capitalist Agriculture and the Origins of the European World Economy in the Sixteenth Century. New York: Academic Press.

Unit II: The Unit discusses the process of early colonization, inter-linkages, and impact of trade and empire on Western Europe, the New World, West Africa and parts of Asia. **(Teaching Time: 6 hrs. approximately)**

- Braudel, Fernand. (1988). Civilization and Capitalism, 15th to 18th Centuries, Vols. I, II,
- III. London: Collins/Fontana Press.
- Burbank, Jane and Frederick Cooper. (2010). Empires in World History - Power and Politics of Difference. Princeton: Princeton University Press.
- Crosby, Alfred W. (2004). Ecological Imperialism: The Biological Expansion of Europe, 900-1900. Cambridge: Cambridge University Press (2nd edition).
- Davis, Ralph. (1973). The Rise of the Atlantic Economies. London: Weidenfield and Nicolson.
- Waites, Bernard. (1999) Europe and the Third World: From Colonisation to Decolonisation, c 1500-1998. London: Palgrave Macmillan.

Unit III: The Unit emphasizes social roots of Renaissance, elements of continuity and change in intellectual and cultural realms, and debates on Renaissance and Humanism. **(Teaching Time: 9 hrs. approximately)**

- Burke, Peter. (1999). The Italian Renaissance, Culture and Society in Italy. Princeton: Princeton University Press.
- Mac Kenny, Richard. (2005). Renaissances: The Cultures of Italy, 1300-1600. London/NewYork: Palgrave Macmillan.
- Winks, Robin W. and Lee Palmer Wandel. (2003). Europe in a Wider World, 1350-1650. New York: Oxford University Press.
- Woolfson, Jonathan. (Ed.). (2004). Palgrave Advances in Renaissance Historiography. London: Palgrave Macmillan.

Unit IV: The Unit outlines the economic, political, social and intellectual dimensions of Reformation, and Reformation's impact on different regions of Europe. **(Teaching Time: 6 hrs. approximately)**

- Dixon, C. Scott. (2002). The Reformation in Germany. Oxford: Blackwell Publishers Limited.
- Ferguson, Niall. (2011). Civilization: The West and the Rest. London: Allen Lane.
- Greengrass, Mark. (2015). Christendom Destroyed, Europe 1517-1648. London: Penguin Books.
- MacCulloch, Diarmaid. (2004). Reformation: Europe's House Divided, 1490-1700. London: Penguin Books Ltd.

Unit V: The Unit deals with European economy, decline of Mediterranean and rise of Atlantic regions, and the impact of Trans-Atlantic commerce on Europe. **(Teaching Time: 9 hrs. approximately)**

- Frankopan, Peter. (2015). The Silk Roads: A New History of the World. London: Bloomsbury.
- Heller, Henry. (2011). Birth of Capitalism: a 21st Century Perspective. London: Pluto Press.
- Hill, Christopher. (1969). Reformation to Industrial Revolution. London: Penguin Books.
- Kriedte, Peter. (1983). Peasants, Landlords and Merchant Capitalists: Europe and the World Economy, 1500-1800. Cambridge: Cambridge University Press.

Unit VI: The Unit emphasizes the nature of the European State system and interconnections between economy, society, religion, and polity with case studies. **(Teaching Time: 6 hrs.approximately)**

- Anderson, Perry. (1979). Lineages of the Absolutist State. London: Verso Edition.
- Cameron, Euan. (Ed). (2001). Early Modern Europe, An Oxford History. Oxford: Oxford University Press.
- Cuttica, Cesare and Glenn Burgess. (Eds). (2011). Monarchism and Absolutism in Early Modern Europe. London: Routledge.
- Kumin, Beat, (Ed.). (2013). The European World 1500-1800: An Introduction to Early Modern History. New York: Routledge.

Suggestive readings (if any)

- Cipolla, Carlo M., (ed). (1994), Before the Industrial Revolution: European Society and Economy1000-1700. New York: WW Norton & Co.
- Cipolla, Carlo M., (ed). (1976). Fontana Economic History of Europe, Vols. II, III. New York: Barnes and Noble.
- Dickens, A.G. (1974). German Nation and Martin Luther. London: Edward Arnold.
- Dobb, Maurice. (1963). Studies in the Development of Capitalism. London: Routledge and Kegan Paul.
- Findlen, Paula, (ed). (2002). The Italian Renaissance. The Essential Readings. Oxford: Blackwell Publishers Ltd.
- Hilton, Rodney. (2007) Samantvaad se Poonjivaad mein Sankraman. New Delhi. Granth Shilpi.
- Kamen, Henry. (1996). European Society, 1500-1700. London: Routledge.
- Lee, Stephen. (1984). Aspects of European History 1494-1789. London: Methuen & Co. Ltd. (2nd edition)
- Lynch, John. (1984). Spain under the Habsburgs, Vol. I, Empire and Absolutism,1516- 1598. New York: New York University Press.
- Parry, J. H. (1963). Age of Reconnaissance. London: Weidenfield & Nicolson.
- Scammell, G.V. (1989). The First Imperial Age: European Overseas Expansion 1400- 1715. London/New York: Routledge.
- Verma, Lal Bahadur. (2008). Europe ka Itihaas. Bhaag 9. (Delhi: Prakashan Sansthan)
- Wiesner-Hanks, Merry E. (2006). Early Modern Europe: 1450-1789. Cambridge: Cambridge University Press.
- Wood, E.M. (2002). The Origin of Capitalism: A Longer View. London: Verso, (rev. ed.).

DISCIPLINE SPECIFIC CORE COURSE– 3 (DSC-3): History of Modern China (1840 – 1950s)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
History of Modern China (1840 – 1950s)	4	3	1	0	12 th Pass	NIL

Learning Objectives

The course studies the transformation of China from an imperial power into a modern nation taking its place among a constellation of world powers. This transition has been studied in the context of the impact of a specific form of western imperialism on China and the country's numerous internal fissures and contradictions. This paper seeks to focus on a range of responses to the tumultuous changes taking place: various strands of reform (from liberal to authoritarian), popular movements, and revolutionary struggles. It facilitates an understanding of the multiple trajectories of China's political and cultural transition from a late imperial state, to a flawed Republic, to the Communist Revolution led by Mao Tse Tung. The paper shall expose students to historiographical debates pertaining to each of these themes, keeping in mind historical and contemporary concerns centred on such issues.

Learning outcomes

Upon the completion of this course the student shall be able to:

- Develop an in-depth understanding of China's engagement with the challenges posed by imperialism, and the trajectories of transition from feudalism to a bourgeois/ capitalist modernity.
- To locate these historical transitions in light of other contemporaneous trajectories into a global modernity, especially that of Japan.
- Analyse significant historiographical shifts in Chinese history, especially with reference to the dis-courses on nationalism, imperialism, and communism.
- Investigate the political, economic, social and cultural disruptions caused by the breakdown of the centuries old Chinese institutions and ideas, and the recasting of tradition to meet modernist challenges.
- Comprehend the genesis and unique trajectories of the Chinese Communist Revolution.
- Locate the rise of China and Japan in the spheres of Asian and world politics respectively.

SYLLABUS OF DSC-3

Unit I: Late Imperial China and Western Imperialism

1. Confucian Value System; Society, Economy, Polity
2. Opium Wars and the Unequal Treaty System (9 lectures)

Unit II: Popular Movements and Reforms in the 19th century

1. Taiping and Boxer Movements – Genesis, Ideology, Nature
2. Self-Strengthening Movement; Hundred Days Reforms of 1898 (13 lectures)

Unit III: Emergence of Nationalism

- The Revolution of 1911: Nature and Significance
- The May Fourth Movement of 1919 (10 lectures)

Unit IV: Communist Movement in China

1. 1921-1927: Formation of the CCP and the First United Front

2. 1928-1949: Evolution of Maoist Strategy and Revolutionary Measures in Kiangsi and Yenan ; Communist victory (13 lectures)

Practical component (if any) - NIL

Essential/recommended readings

Unit I: This unit will introduce the students to the salient features of Late Imperial China and its confrontation with Western Imperialism. As a backdrop, it will discuss Confucianism. **(Teaching Time: 9 hrs. approx.)**

- Chesneaux, J. (Ed.). (1972). Popular Movements and Secret Societies in China 1840-1950. Stanford: Stanford University.
- Fairbank, J.K. and Merle Goldman. (2006). China: A New History. Harvard: Harvard University Press, (Chapter 9).
- Hsu, C. Y. Immanuel, (1970) The Rise of Modern China, Oxford University Press.
- Sharma, K. R. (2022). The Third Birth of Confucius: Reconstructing the Ancient Chinese Philosophy in the Post-Mao China. New Delhi: Manohar. (Chapters 1-5).

Unit II: This unit examines the nature and consequences of popular movements and reforms attempted by the ruling elite. **(Teaching time: 12 hrs. approx.)**

- Peffer, N. (1994). The Far East- A Modern History. New Delhi: Surjeet Publications, (Chapter 6 &Chapter 7).
- Chung, Tan. (1978). China and the Brave New World: A Study of the Origins of the Opium War. New Delhi: Allied Publishers, (Chapter 2, Chapter 6 & Chapter 7).
- Vinacke, H.M. (1982). A History of the Far East in Modern Times. Delhi: Kalyani Publishers, (Chapter 2).
- Chesneaux, J. (1973). Peasant Revolts in China 1840-1949. London: Thames and Hudson, (Chapter 2).
- Cohen, P.A. (1997). History in Three Keys: The Boxer as Event, Experience and Myth. New York: Columbia University Press.
- Fairbank, J.K. and Merle Goldman. (2006). China: A New History. Harvard: Harvard University Press, (Chapter 10& Chapter 11).
- Gray, J. (1990 reprint). Rebellions and Revolutions: China from 1800s to the 1980s. Oxford: Oxford University Press, (Chapter 3& Chapter 6).
- Greenberg, M. (1951). British Trade and the Opening of China. Cambridge: Cambridge University Press.
- Michael, F.H. (1966-1971). The Taiping Rebellion: History and Documents. Seattle: University of Washington Press.
- Purcell, V. (1963). The Boxer Rebellion: A Background Study. Cambridge: Cambridge University Press, (Chapter 6, Chapters 9, Chapter 10 & Conclusion).
- Tan, Chester C. (1967). The Boxer Catastrophe, New York: Octagon Books.
- Teng, S.Y. (1971). The Taiping Rebellion and the Western Powers: A Comprehensive Survey. Oxford: Clarendon Press.
- Tan Chung. (1986). Triton and Dragon: Studies on the 19th Century China and Imperialism. New Delhi: Gian Publishing House.
- Shih, Vincent. (1967). Taiping Ideology: Its Sources, Interpretations and Influences. Seattle: University of Washington Press.

Unit III: This unit examines the history of the emergence of nationalism in China; nature, character and significance of the Revolution of 1911 and the May Fourth Movement. **(Teaching time: 12 hrs. approx..)**

- Wright, M. C. (Ed.). (1968). China in Revolution: the First Phase, 1900-1913. London: Yale University Press, (Introduction).
- Zarrow, P. (2005). China in War and Revolution 1895-1949. London: Routledge.
- Lazzerani, Edward J. (Ed.). (1999). The Chinese Revolution. Westport, Connecticut: Greenwood Press, pp 19-32.
- Bianco, L. (1967). Origins of the Chinese Revolution 1915-1949. Stanford: Stanford University Press, (Chapter 2).
- Chow, Tse-tung. (1960). The May Fourth Movement. Stanford: Stanford University Press, (Chapter 1, Chapter 14).
- Spence, J. (1999). The Search for Modern China. New York: W.W. Norton, (Chapters 11 and 13).
- Shinkichi, E. and H. Z. Schiffrin, (Ed.). (1984). The 1911 Revolution in China: Interpretive Essays. Tokyo: University of Tokyo Press, pp. 3-13.

Unit IV: This unit examines the emergence of Communism in China, the relations between the CCP and the KMT (Nationalist Party) and the evolution of the distinctive traits of Maoist Strategies of Revolution. **(Teaching Time: 12 hrs. approx.)**

- Bianco, L. (1967). Origins of the Chinese Revolution 1915-1949. Stanford: Stanford University Press, (Chapter 3 -4).
- Fairbank, J.K. (1987). The Great Chinese Revolution 1800-1985, Part Three. London: Chatto and Windus, (Chapters 12-14).
- Harrison, J.P. (1972). The Long March to Power: A History of the Chinese Communist Party, 1921- 1972, London: Macmillan, (Chapter 2-3 & Chapter 9).
- Isaacs, H. (1961).The Tragedy of the Chinese Revolution. Stanford: Stanford University Press, (Preface, Chapters 1-4 & Chapter 18).
- Johnson, Chalmers A. (1962). Peasant Nationalism and Communist Power: The Emergence of Revolutionary China, 1937-1945. Stanford: Stanford University Press, (Chapter I).
- Selden, M. (1971). The Yenan Way in Revolutionary China. Cambridge: Harvard University Press, (Chapter 1 & Chapter 6).
- Sheridan, J.E. (1975). China in Disintegration: The Republican Era in Chinese History 1912-1949. London: Free Press, Collier Macmillan Publishers, (Chapter 4).
- Snow, E. (1937). Red Star over China, Part Three. London: Victor Gollancz, (Chapter 2).
- Spence, J. (1999). The Search for Modern China. New York: W.W. Norton, (Chapter 16).
- Vohra, Ranbir. (1987). China's Path to Modernization: A Historical Review From 1800 to the Present. Englewood: New Jersey.: Prentice Hall.
- Waller, D. Kiangsi Soviets Republic: Mao and the National Congress of 1931 and 1934. Berkeley: University of California Press.

Suggested Readings:

- Bailey, Paul J. (2007). Gender and Education in China: Gender discourses and women's schooling in the early twentieth century. London: Routledge.
- Cameron, Meribeth H. (1931). The Reform Movement in China, 1898-1912, Stanford: Stanford University Press.
- Chen, J. (1965). Mao and the Chinese Revolution. London: Oxford University Press.
- Chesneaux, Jean et. al. (1976). China from the Opium Wars to the 1911 Revolution. New York: Random House, (Chapters 2-4, 7).
- Cohen, P. A. and John E. Schrecker. (1976). Reform in Nineteenth Century China, Cambridge: Harvard University Press.
- Duara, Prasenjit. (2009). The global and the regional in China's nation-formation. London: Routledge.
- Fairbank, J. K. (1953). Trade and Diplomacy on the China Coast: the opening of the treaty ports, 1842-54. Cambridge: Harvard University Press.
- Fairbank, J.K. (Ed.). (1983). Cambridge History of China: Volume XII: Republican China 1912-1949, Cambridge: Cambridge University Press
- Fairbank, J.K. and Merle Goldman. (2006). China: A New History. Harvard: Harvard University Press, (Chapter 12).
- Fairbank, J.K., E.O. Reischauer and A.M. Craig. (1998). East Asia: Tradition and Transformation. New Jersey: Houghton Mifflin.
- Fenby, J. (2009). The Penguin History of Modern China: The Fall and Rise of a Great Power 1850- 2009. London: Penguin Books, 2009.
- Franke, Wolfgang. (1980).A Century of Chinese Revolution, 1851-1949, Colombia: University of South Carolina Press.
- Goodman, Bryna and Wendy Larson (Ed.). (2005). Gender in Motion: Divisions of Labor and Cultural Change in Late Imperial and Modern China. Lanham: Rowman and Littlefield Publishers.
- Hsu, I.C.Y. (1985). The Rise of Modern China. Hong Kong: Oxford University Press, (Chapter 10).
- Hsu, I.C.Y. (Ed.). (1971). Readings in Modern Chinese History, Part Two. Hong Kong: Oxford University Press, (Chapter 2).
- Lovell, J. (2011). The Opium War: Drugs, Dreams, and the Making of China, London: Picador.
- Schram, S.R. (1963). The Politics and Thoughts of Mao Tse Tung. London: Pall Mall.
- Schurmann, F. and O. Schell (Ed.). (1968). China Reader Series: Vol. I– Imperial China, Vol. II– Republican China. Harmondsworth: Penguin Books.
- Schwartz, B. (Ed.). (1972). The Reflections on the May Fourth Movement: A Symposium. Cambridge: Harvard University Press.
- Sheng, Hu. (1981). Imperialism and Chinese Politics, Beijing: Foreign Languages Press.
- Spence, J.D. (1972). The Gate of Heavenly Peace. London: Faber and Faber Limited.
- Twitchett, D. and J.K. Fairbank. (1978). The Cambridge History of China. Cambridge: Cambridge University Press.
- Wasserstorm, Jeffrey N. (2003). Twentieth Century China: New Approaches (Rewriting Histories). London: Routledge.

- Wasserstorm, Jeffrey N. (2016). The Oxford Illustrated History of Modern China, Oxford: Oxford University Press.
- पुणतांबेकर, . ीकृ 1ण व3कटेश.(1967) ए>शया क@ Aवकासोăमुख एकता. लखनऊ : Kहăि N स>मOत, सच उUरVिेश. ना Aवभाग,
- Aवनाके , हरे ॅड, एम. (1974). पवZ ए>शया का आधOनक इOतहास. लखनऊ: Kहăि N स>मOत सच ना Aवभाग.
- ए^सटाइन, इजराइल.(1984). अफ@म युcध से मर्ु eततक.KािलN: अăतरर1fNय Vकाशन. चीन का भग ोल, (1985). Aविेशी भाषा Vकाशन गह, पेइचग
- पंत, शैला. (2005) आधुOनक चीन का उिय. KािलN : इmडप3ड3ट पnलके शन कं पनी
- >म.,कृ 1णकाăत.(2005).बीसवीं सिN का चीन: रा1fवाि और साpयवाि, qăथ>शॉपी.
- Aवcयालंकार, सsयके तु. (2015). ए>शया का आधOनक इOतहास, मसरू N: . ी सरtवती सिन. सराओ, के . टN. एस. (2015) आधO Oनिेशालय. नक चीन का इOतहास. Kािलन AवvवAवcयालय: Kहăि N माwयम कायाZăवय
- मोहतं ी, मनोरंजन.(2017) माओ sसे-तंुग का राजनीOतक ıचतन. Kािलन : qăथ>शॉपी.
- पांडेय, धनपOत. (2017). आधOनक ए>शया का इOतहास. Kािलन: मोतीलाल बनारसीिास.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE– 1 (DSE-1): Global Environmental History

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Global Environmental History	**4**	**3**	**1**	**0**	**12 th Pass**	**NIL**

Learning Objectives

The objective of this course is to introduce the students to the emerging field of global environmental history. It will explore the transformations in the relationship between society and nature in various places and various time periods around the world. Drawing on environmental, political ecology, and historical geography studies perspectives, the course will introduce the concepts, methods and ideas of global history. Moving beyond regional and national scales of analysing historical processes, the following units elaborate the global interconnectedness of socio-environmental histories. The course adopts a chronological approach to address issues such as human interactions with other living species, modes of resource use, technologies of energy harnessing, migration, modes of transportation, nature protection, pollution, use of fossil fuel and carbon emission, and global warming, among others. Each unit focuses on a general period in history, based on major patterns and large-scale changes in the relationship between societies and the natural world. The role of human agency and unequal power relations in organizing, exploiting, and transforming the natural world will be the central focus of the course. This will enable students to critically assess how historical experiences provide insights in understanding what is happening to human-nature interactions today and to explore ways to achieve socially inclusive ways of addressing climate crisis.

Learning outcomes

Upon the completion of this course the student shall be able to:

- Understand the interconnected histories of the relationship between social formations and environmental transformations around the globe from prehistory to the present.
- Critique an understanding of environmental concerns based on a narrow scientific/technological perspective
- Discuss environmental issues within a socio-political framework.

- Identify the historical roots of current climate crisis.
- Apply interdisciplinary methods of Humanities and Social Sciences to understand the past.
- Examine the role of social inequality, i.e., unequal distribution of and unequal access to environmental resources. This is critical in gaining an understanding of the environmental crisis of the world - from the global to the local
- Locate solutions to environmental problems within a framework of greater democratisation of resource use.
- Problematise the notion of a pristine past and of perfect balance between human societies and nature in pre-modern times.

SYLLABUS OF DSC-3

Unit I: Thinking Globally in the Era of Climate Crisis

1. What is Global Environmental History
2. Interdisciplinary Approaches: Archaeology, Anthropology, Historical-Geography, Political Ecology

Unit II: Ecologies of Subsistence in the Early Societies

1. Human-animal interactions
2. Pre-Industrial Prime Movers and Fuels

Unit III: Into the Early Modern Condition

1. Emergence of the European Empires as Ecological Process; The Columbian Exchange
2. Early Colonialism and Environmental Transformations of the small islands-St. Helena and Mauritius
3. Global Cooling and General Crisis in the Seventeenth Century.

Unit IV: Fossil Fuel, Capitalism, and Planetary Environmental Changes

1. Industrial Agriculture
2. Steam Ships and Hydraulic Engineering
3. Cities and Environment

Unit V: The Great Acceleration and the Anthropocene

1. Carbon Politics; the Middle East Crisis
2. Anthropogenic Natural Disasters; Fukushima
3. The Anthropocene Debate

Practical component (if any) - NIL

Essential/recommended readings

Unit I: This unit will introduce the important themes and perspectives within the emerging field of global environmental history. The readings and discussion will help

the students to understand the interdisciplinary methodologies developed by environmental historians to examine source materials. **(Teaching time: 9 hrs. approx.)**

- McNeil, J. R. and Mauldin, E. S. (2012), A Companion to Global Environmental History. Oxford: Wiley-Blackwell, Introduction pp. xvi-xxiv.
- Conrad, Sebastian (2016), What is Global History. Princeton: Princeton University Press, pp. 1-17, ["Introduction"].
- Corona, Gabriella (2008), "What is Global Environmental History?" Global Environment,
- No. 2, pp. 228-249.
- Bayly, C. A, et al., "AHR Conversation: On Transnational History," The American Historical Review, Vol. 111, No. 5, pp. 1440-64.
- Hughes, Donald J. (2001), An Environmental History of the World: Humankind's Changing Role in the Community of Life. London: Routledge, pp. 242-248 ["Bibliographical Essay: Writing on Global Environmental History"]

Unit II: This unit provides an overview on the nature and dynamics of human interactions with the environment in the pre-modern world. By focusing on the changing technologies and modes of energy harnessing, the themes discussed in this unit expects the students to explore how the relationship of humans with the animals, plants, landforms and water bodies in turn shaped social relationships, ideas and beliefs. **(Teaching time: 9 hrs. approx.)**

- Radkau, Joachim (2008), Nature and Power: A Global History of the Environment. Cambridge: Cambridge University Press, pp. 45-54 [Chapter 2.2; "Humans and Animals: Hunting and Domestication"].
- Smil, Vaclav (1994), Energy in World History. Colorado: Westview, 1994 [Chapter 2 "Energy in Prehistory", pp. 15-27; Chapter 3 "Traditional Agriculture," pp. 28-91; Chapter 4 "Pre-Industrial Prime Movers and Fuel, 92-156].
- Bulliet, Richard (2005), Hunters, Herders and Hamburgers: The Past and Future of Human-Animal Relationships. New York: Columbia University Press, pp. 205 -224.
- Edmund Burke III. "The Big Story: Human History, Energy Regime and the Environment" in Edmund Burke III and Kenneth Pomeranz, eds., the Environment and World History. Berkeley: University of California Press, 2009. pp. 33-53.

Unit III: The first rubric of this unit explores how Empires of the New World transferred flora and fauna across continents, affected the demography of local societies and completely transformed landscapes. The second rubric explores how the colonial plantations resulted in rapid socio- environmental changes on oceanic islands, with special focus on the small islands-St. Helena and Mauritius. The third rubric explores the social and cultural impacts of the "Little Ice Age", or the global cooling that continued from the thirteenth through the eighteenth century, with special focus on interlinking climate change and the intensification of famines, and spread of epidemics in the seventeenth century. **(Teaching time: 9 hrs. approx.)**

- Crosby, Alfred W. (1986). Ecological Imperialism: The Biological Expansion of Europe, 900-1900. New York. Cambridge University Press, pp.294-308.

- McNeill, J.R. (2012). “Biological Exchange in Global Environmental History”, in J. R. McNeill & E. S. Maudlin, eds., Companion to Global Environmental History. Oxford: Blackwell, pp. 433-452.
- Grove, Richard H. (1995), Green Imperialism: Colonial Expansion, Tropical Island Edens and the Origins of Environmentalism, 1600-1860. Cambridge: Cambridge University Press, pp. 16-72 [“Edens, Islands and Early Empires”].
- Brooke, John L. (2014), Climate Change and the Course of Global History: A Rough Journey. New York: Cambridge University Press, pp. 370-383 [“The Little Ice Age and the Black Death].
- Parker, Geoffrey (2013), Global Crisis: War, Climate Change and Catastrophe in the Seventeenth Century. New Haven: Yale University Press, pp. xxi-xxix [“Introduction: The ‘Little Ice Age’ and the ‘General Crisis’].

Unit IV: This unit studies the new energy regimes of the modern world, with a special focus on industrialization and a major shift towards fossil fuel. It offers a historical perspective on the increasing inequality of access to natural resources, especially in the context of industrialisation of agricultural production, hydraulic engineering, urbanization of natural resources, and industrial pollution. **(Teaching time: 9 hrs. approx.)**

- McKittrick, Meredith (2012), “Industrial Agriculture”, In J. R.McNeill & E. S. Maudlin , eds., Companion to Global Environmental History. Oxford: Blackwell, pp. 411-432.
- Carse, Ashley (2014), Beyond the Big Ditch: Politics, Ecology, and Infrastructure at the Panama Canal. Cambridge, MA: The MIT Press, [Chapter 3: Making the Panama Canal Watershed, pp. 37-58; Chapter 6: “Canal Construction and the Politics of Water, 93-120; Chapter 13: “A Demanding Environment, 129-222].
- Bauer Jordan and Melosi, Martin V. (2012). “Cities and the Environment” in J. R. McNeill and E. S. Maudlin, eds., Companion to Environmental History. Oxford: Blackwell, pp. 360-376.
- Culver, Lawrence. (2014). “Confluence of Nature and Culture: Cities in Environmental History”, in A. C. Isenberg (ed.), The Oxford Handbook of Environmental History. New York: OUP, pp. 553-572.
- McNeill, John R. (2000), Something New Under the Sun: An Environmental History of the Twentieth-Century World, New York, pp. 50-83 [Chapter 3: “The Atmosphere: Urban History”].

Unit V: This unit provides a critical historical perspective on contemporary environmental issues including the global-imperial competition to control oil resources, environmental issues created by nuclear plants, and issues related to carbon emission and global warming. This unit also introduces the concept of Anthropocene to discuss emergent concerns regarding the influence of humans on the planet’s history. **(Teaching time: 9 hrs. approx.)**

- Jones, Toby C. (2012), “America, Oil, and the War in the Middle East,” Journal of American History, Vol. 99, No. 1, pp. 208-218.
- Mitchell, Timothy. (2011). Carbon Democracy: Political Power in the Age of Oil. Lon-don: Verso, “Conclusion: No More Counting on Oil,” pp. 231-254.
- Smil, Vaclav (2005), “The Next 50 years: Unfolding Trends,” Population and Develop-ment Review, Vol 31, No. 4, pp. 605-643.

- Pritchard, Sara B. (2013), "An Envirotechnical Disaster: Negotiating Nature, Technolo-gy, and Politics at Fukushima," In Ian Jared Miller, et al. eds., Japan at Nature's Edge: The Envi-ronmental Context of a Global Power. Honolulu: University of Hawaii Press, 2013, pp. 255-279.
- Steffen, Will, Crutzen, Paul J and McNeill J. R. (2008). "The Anthropocene: Are Hu-mans Now Overwhelming the Great Forces of Nature", Ambio, Vol. 36, No.8, pp. 614-621.

Suggested Readings:

- Beinart William and Hughes Lotte. eds. (2007). Environment and Empire. Oxford: OUP, pp. 200-214 [Imperial Scientists, Ecology and Conservation]
- Beinart William and Middleton, Karen. (2004), "Plant Transfers in Historical Perspective: A Review Article". Environment and History, Vol. 10, No. 1, pp. 3-29.
- Bulliet, Richard. (2005). Hunters, Herders and Hamburgers: The Past and Future of Human-Animal Relationships. New York: Colombia University Press. pp. 205 -224.
- Chakrabarty, Dipesh (2021), The Climate of History in a Planetary Age. Chicago: The Univeristy of Chicago Press.
- Crist, Eileen. And Helen Kopina (2014), "Unsettling Anthropocentrism", Dialectical Anthropology, Vol. 38, No 4, pp. 387-396.
- Crosby, Alfred W. (2006). Children of the Sun: A History of Humanity's Unappeasable Appetite for Energy. New York: W. W. Norton. pp. 159-166 & pp. 117-158
- Dickinson, William. (2013). "Changing Times: The Holocene Legacy" in J. R. McNeil and Alan Roe, eds., Global Environmental History: An Introductory Reader. London: Routledge, pp 3-23.
- Fitzgerald, Amy J. (2015). Animals as Food Reconnecting Production, Processing and Impacts. Michigan: Michigan State University Press, pp 9-34.
- Freese, Barbara (2003), Coal: A Human History. Cambridge: Perseus Publishing, Chapter 8: "A Sort of Black Stone", pp. 199-232.
- Guha, Ramachandra. (2000). Environmentalism: A Global History. New York: Longman.
- Kalof, Linda. (2007). Looking at Animals in Human History. London: Reaktion Books. pp. 1-71
- Lewis, Simon L. and Maslin, Mark A. (2015). "Defining the Anthropocene", Nature,
- Vol.519(12March), 171-80.
- Malm, Andreas. (2016). The Rise of Steam Power and the Roots of Global Warming.
- London: Verso. pp.389-394
- McAfee, Kathleen. (2016). "The Politics of Nature in the Anthropocene" in "Whose Anthropocene? Revisiting Dipesh Chakrabarty's 'Four Theses,'" Robert Emmett and Thomas Lekan (eds.), RCC Perspectives: Transformations in Environment and Society No. 2, pp.65–72.
- McKenney Jason. (2002). Artificial Fertility: "The Environmental Costs of Industrial Age Fertilisers" In Andrew Kimbrell (ed.), The Fatal Harvest Reader: The Tragedy of Industrial Agriculture. London: Island Press, pp.121-129

- Moore, Jason W. (ed.) (2016) Anthropocene or Capitalocene?: Nature, History and the Crisis of Capitalism. Oakland: PM Press. pp. 173-195.
- Moore, Jason W. (2015), Capitalism in the Web of Life: Ecology and the Accumulation of Capital. London: Verso, pp. 241-290 ["The Long Green Revolution: The Life and Times of Cheap Food in the Long Twentieth Century"]
- Morrison, Kathleen D. (2015). "Provincializing the Anthropocene", Seminar, No. 673, 75- 80.
- Nunn, Nathan and Qian, Nancy (2010) "The Columbian Exchange: A History of Disease, Food, and Ideas", Journal of Economic Perspectives, Vol. 24, No.2, pp. 163–188.
- Radkau, Joachim (2008), Nature and Power: A Global History of the Environment.
- Cambridge: Cambridge University Press.
- Sayre, Nathan F. (2012). "The Politics of the Anthropogenic", Annual Review of Anthropology, Vol. 41, pp. 57-70.
- Urry, John. (2013) Societies Beyond Oil: Oil Dregs and Social Futures. London: Zed Books, pp. 202 -240.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE– 2 (DSE-2): History of South East Asia – I

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course	Eligibility criteria	

		Lecture	Tutorial	Practical/ Practice		Pre-requisite of the course (if any)
History of South East Asia – I	**4**	**3**	**1**	**0**	**12 th Pass**	**NIL**

Learning Objectives

This course offers an overview of pre-colonial Southeast Asian history. It seeks to familiarise students with historiographical debates involving the construction of Southeast Asia as a region. It analyses processes of state formations, the impact of maritime activity on society and polity in the mainland and the archipelago. It focuses on the development and localization of religious traditions across a linguistically and culturally diverse region. The paper will require students to engage with recent developments in the historiography especially with recent research on aspects of social and political history, external influences on the region, architecture, urban history and its local histories. Through this the student will develop a clear and comprehensive understanding of different aspects of pre modern Southeast Asian history.

Learning outcomes

Upon the completion of this course the student shall be able to:

- Explain the processes of state formation, the localization and spread of religious traditions like Islam and Buddhism
- Analyse the impact of the European presence on local society
- Examine the impact of maritime activity of local society and polity and the developments in the economic and architectural history of the region.
- Discern the history of Populist and Progressive movements along with introduction of New Deal in response to the Great Depression.
- Describe the historiographical trends to study history of Southeast Asia

SYLLABUS OF DSC-3

Unit I: Introducing maritime and mainland Southeast Asia

1. Environments, Language, Cultures and People; the macro region
2. Sources and the study of Southeast Asian History
3. Perceptions of the Region, historiographical trends

Unit II: Early State formations

1. The religion, architecture, economy and state formation: Pagan, Khmer
2. The maritime trade and political formations in Sea Asia: Champa, Srivijaya-Java

Unit III: Religion in Early Southeast Asia

1. Localisation of Buddhism and Hinduism; The Epics and Buddhist texts

Unit IV: Early modern in South East Asia

1. Majapahit Empire, regional formations

Unit V: Religion in Early Modern Southeast Asia

1. Localisation of Islam: The Hikayats
2. Christianity in Pre Colonial Southeast Asia

Practical component (if any) - NIL

Essential/recommended readings

Unit I: In this unit the student will better appreciate the region and its linguistic, ecological and ethnic diversity. She/he will become familiar with various aspects of the regions micro histories. Recent historiographical debates. In this unit the student will be introduced to the important aspects of the recent historiographical debates. She/he will be familiarised with the questions of social formations linked to the influence of India and China over the region. The student will also engage with recent debates that draw attention to local factors in the regions development. **(Teaching time: 9 hrs. approx.)**

- Tarling, N., ed. (2000). The Cambridge History of Southeast Asia (vol. 1, part 1: from earliest times to 1500 CE), Cambridge: Cambridge University Press. (A basic text book for the course).
- Wolters, O.W. (1999). History, Culture and Region in Southeast Asian Perspectives, Singapore: Institute of Southeast Asian Studies
- Andaya, Leonard Y. (2008). Leaves of the Same Tree: Trade and Ethnicity in the Straits of Melaka, Honolulu: University of Hawaii Press
- Monica L Smith. (1999). "'Indianization' from the Indian Point of View: Trade and Cultural Contacts with Southeast Asia in the Early First Millennium C.E", Journal of the Economic and Social History of the Orient, Vol. 42, No. 1, pp. 1-26
- Suarez, Thomas. (1999). Early Mapping of Southeast Asia: The Epic Story of Sea-farers, Adventurers and Cartographers who first mapped the regions between China and India, Singapore: Periplus.
- Hall, D.G.E. (eds.) (1961) Historians of South East Asia, Oxford University Press, London.
- Mabbet, I. W. The ' Indianization' of Southeast Asia, reflections on the Historical Sources, Journal of Southeast Asian Studies, Vol.8, No.2 9Sept., 1977), pp.143-161
- Coedes, George. (1968), The Indianized States of Southeast Asia, Hawaiian University Press, Honolulu.

Unit II: At the end of this rubric the students would be able to discuss the process of state formation in the region. They will develop a better understanding of the evolving social structures in the region and will be familiar with the important networks of trade and artistic patronage. **(Teaching time: 12 hrs. approx.)**

- Miksic, John N. and Geok Yian Goh. (2017). Ancient Southeast Asia, London: Routledge
- Kenneth R. Hall, (2011). A History of Early Southeast Asia: Maritime Trade and Societal Development, 100-1500, London: Rowman & Littlefield Publishers
- Kulke, H. (1993; 2001). Kings and Cults: State Formation and Legitimation in India and Southeast Asia, New Delhi: Manohar.
- Tarling, N., ed. (2000). The Cambridge History of Southeast Asia (vol. 1, part 1: from earliest times to 1500 CE), Cambridge: Cambridge University Press. (A basic text book for the course).
- Wolters, O.W. (1999). History, Culture and Region in Southeast Asian Perspectives, Singapore: Institute of Southeast Asian Studies
- Andaya, Leonard Y. (2008). Leaves of the Same Tree: Trade and Ethnicity in the Straits of Melaka, Honolulu: University of Hawaii Press
- Majumdar, R.C. (1927) Ancient Indian Colonies in the Far East, Vol. 01, Modern Greater India Society: Lahore
- Coedes, George, (1968), The Indianized States of Southeast Asia, Honolulu: University of Hawai Press
- Kulke, Hermann, (2016) Śrīvijaya Revisited: Reflections on State Formation of a Southeast Asian Thalassocracy, Bulletin de l'École française d'Extrême-Orient, Vol. 102, pp. 45-96
- Kumar, Bachchan, (2011) Art and Archaeology of Southeast Asia, Delhi: Aryan Book International

Unit III: The student will be expected to develop an understanding of local beliefs and ritual practices in both maritime and mainland southeast Asia. She/he will be able to demonstrate familiarity with the historical time line and local impact of the spread and localization of important religious traditions in the region. **(Teaching time 6 hrs. approx.)**

- Miksic, John N. and Geok Yian Goh. (2017). Ancient Southeast Asia, London: Rout- ledge
- Klokke, M., (Ed.) (2000). Narrative Sculpture and Literary Traditions in South and Southeast Asia. Leiden: Brill.
- Kulke, H. (1993; 2001). Kings and Cults: State Formation and Legitimation in India and Southeast Asia, New Delhi: Manohar.
- Girard-Geslan, M., M. Klokke, A. Le Bonheur, D.M. Stadtner, T. Zephir, (1998). Art of SoutheastAsia, London: Harry N. Abrams
- Guy, J., et al. (2014). Lost Kingdoms: Hindu-Buddhist Sculpture of South and Southeast Asia. New York: Metropolitan Museum of Art and Yale University Press.
- Acri, Andrea, Helen Creese and Arlo Griffiths (Eds.). (2011). From Lanka eastwards: The Ramayana in the Literature and Visual Arts of Indonesia, Leiden: Brill
- Klokke, M., (Ed.) (2000). Narrative Sculpture and Literary Traditions in South and Southeast Asia. Leiden: Brill.
- Majumdar, R.C. (1938), Ancient Indian Colonies in the Far East, Vol. 02, Calcutta: Modern Publishing.

Unit IV: By the end of this rubric the students will be able to trace the changing character of political formations and the establishment of a European presence in Southeast Asia. The student will learn about various dimensions of the maritime activity involving communities, commodities and port cities. The student will read about the beginnings of the European presence in the region and its impact on the local polities, patterns of trade and social networks. **(Teaching time: 12 hrs. approx.)**

- Andaya, Leonard Y. (2008). Leaves of the Same Tree: Trade and Ethnicity in the Straits of Melaka, Honolulu: University of Hawaii Press
- Pinto, Paulo Jorge de Sousa. (2012). The Portuguese and the Straits of Melaka, 1575-1619: Power Trade and Diplomacy, Singapore: National University of Singapore Press
- Reid, Anthony. (1988). Southeast Asia in the Age of Commerce, 1450-1680: The Lands Below the Winds, New Haven: Yale University Press
- Reid, Anthony (Ed.). (1993). Southeast Asia in the early modern era: Trade, power and belief, Ithaca, New York: Cornell University Press
- Bulbeck, David, Anthony Reid, Lay Cheng Tan and Yiqi Wu,(1998). Southeast Asian Exports since the 14th century: Cloves, Pepper, Coffee and Sugar, Singapore: Institute of Southeast Asian Studies

Unit V: The student will be expected to learn about the spread of Islam and Christianity in the region. She/he will develop an understanding of how practitioners of these monotheistic religious traditions interfaced with local beliefs and ritual practices in southeast Asia. She/he will be able to demonstrate familiarity with the historical time line and local impact of the spread and localization of important religious traditions in the region. **(Teaching time: 6 hrs. approx.)**

- Hill, A.H., (1963) The Coming of Islam to North Sumatra, Journal of Southeast Asian History, Vol.4, No.1, (Mar), pp.6-21
- Hussein, Ismail, (1966) The Study of Traditional Malay Literature, Journal of the Malaysian Branch of the Royal Asiatic Society, Vol 39, No 2 (210), December, pp.1-22
- Porath, Nathan, (2011) Hikayat Patani: The Kingdom of Patani in the Malay and Thai Political World, The Journal of the Malaysian Branch of the Royal Asiatic Society, Vol 84, No 2 (301), December, pp.45-65
- Morgan David O. and Anthony Reid. (2010). The New Cambridge history of Islam: The Eastern Islamic World eleventh to eighteenth centuries, Vol. 3, Cambridge: Cambridge University Press
- Aritonang, Jan Sihar and Karel Steenbrink (Eds.). (2008). A History of Christianity in Indonesia, Leiden: Brill
- Tara Albert. (2014). Conflict and Conversion: Catholicism in Southeast Asia, 1500- 1700, Oxford: Oxford University Press
- Reid, Anthony, (2006) Continuity and Change in. The Austronesian Transition to Islam and Christianity in Peter Bllwood, James J Fox and Darrell Tyron (eds.) The Austronesians, Historical and Comparative Perspectives, Perth: Australia National University Press.

Suggested Readings:

- Ahmad, Abu Talib and Tan Liok Ee, (2003). New Terrains in Southeast Asian History,
- Singapore: Singapore University Press
- Andrea, Acri, Helen Creese and Arlo Griffiths (eds.) (2011). From Lanka eastwards: The Ramayana in the Literature and Visual Arts of Indonesia, Leiden; Brill
- Borschnerg, Peter. (2010). The Singapore and Melaka Straits: Violence, Security and Diplomacy in the 17th century, Singapore: National University of Singapore
- Broese, Frank. (1997). Gateways of Asia: Port Cities of Asia in the 13th - 20th cen- turies, London: Routledge.
- Chaudhuri, K.N. (1985). Trade and Civilization in the Indian Ocean: An Economic History from the Rise of Islam to 1750, New Delhi: Munshiram Manoharlal.
- Goh, Robbie B.H. (2005). Christianity in Southeast Asia, Singapore: Institute of Southeast Asian Studies
- Hall, K. (1985). Maritime Trade and State Development in Early Southeast Asia. Honolulu: University of Hawaii Press.
- Hall, K.R. and Whitmore, J.K. (1976). Explorations in Early Southeast Asian Histo- ry: the origins of Southeast Asian Statecraft. Ann Arbor: Centre for Southeast Asian Studies, University of Michigan. Michigan Papers on South and Southeast Asia,
- Henley, David and Henk Schulte Nordholt (eds.). (2015). Environment, Trade and Society in Southeast Asia, Leiden: Brill
- Kulke, H, K. Kesavapany, and V. Sakhuja. (2009). Nagapattinam to Suvarnadwipa: Reflections on the Chola Expeditions to Southeast Asia. Singapore: Institute of Southeast Asian Studies.
- Kulke, H. ([1993] 2001). Kings and Cults: State Formation and Legitimation in India and Southeast Asia. New Delhi: Manohar.
- Lieberman, Victor. (2009), Strange Parallels: Southeast Asia in Global Context, c.800- 1830, Volume 2, Mainland Mirrors: Europe, Japan, China, South Asia and the Islands, Cambridge: Cambridge University Press
- Manguin, Pierre-Yves, A. Mani & Geoff Wade (eds.). (2012). Early Interactions be- tween South and Southeast Asia: Reflections on Cross Cultural Exchange, Singapore: Institute of Southeast Asian Studies.
- Morgan, David O. and Anthony Reid. (2010), The New Cambridge history of Islam: The Eastern Islamic World eleventh to eighteenth centuries, Vol. 3, Cambridge: Cambridge University Press
- Ray, H.P. (1994). The Winds of Change: Buddhism and the Maritime links of Early South Asia Delhi: Oxford University Press.
- Singh, Upinder and P. Dhar ed., (2014). Asian Encounters: exploring connected histories, New Delhi: Oxford
- Smith, R.B. and W. Watson. (1979). Early South East Asia: Essays in Archaeology, History and Historical Geography, New York and Kuala Lumpur: Oxford University Press.
- पुरी, बैधनाथ, सुरूि पूवि में भारतीय संस्कृ र्त और उसका इर्तहास, हिं ी सर्मर्त, सना र्वभाग उिर प्रिेश।
- Majumdar, R.C. Ancient Indian Colonies in the Far East, Vol. 02, Modern Publishing, Calcutta, 1938.

- Majumdar, R.C. Ancient Indian Colonies in the Far East, Vol. 01, Modern Greater India Society, Lahore, 1927
- Kumar, Bachchan, (2005) " The Devaraja Cult and Khmer Architecture", God and King, the Devaraja Cult in South Asian Art ad Architecture: Proceedings of the Seminar 2001, No.2, Delhi: Daya Books
- Kulke, Hermann, (2010) Nagapattinam to Suvarnadwipa: Reflections on the Chola Naval Expeditions to Southeast Asia, Delhi: Manohar
- Ray, Himanshu Prabha (2021) Coastal Shrines and Transnational Maritime Networks Across India and Southeast Asia, Delhi: Routledge.
- Coedes, George, (1966) The Making of Southeast Asia, translated in English by H. M. Wright, London: Routledge & Paul.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE (DSE -3): Environment in Indian History

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Environment in Indian History	**4**	**3**	**1**	**0**	12 th Pass	NIL

Learning Objectives:
This course aims to introduce the students to the major themes in the environmental history of the Indian subcontinent. A historically informed understanding on how the past societies shaped the natural world shall enable the students to critically situate the environmental issues that we encounter at present. The issues include global warming, contestation over natural resources, changing land use patterns, human interaction with other living species, impacts of agrarian expansion, ecological consequences of imperialism, impacts of mega infrastructure projects, urban pollution, emergence of environmental justice movements and environmental regulations, changing ideas about the natural world, and gendered dimension of environmental degradation. The course has the following broad objectives: a) to introduce the historical studies that explores the long-term trajectories of man-nature interactions and revises the political history-based periodization of the sub-continent's past as self-contained ancient, medieval, and modern periods; b) to introduce interdisciplinary approaches- cartographic, geological, zoological, ecological knowledges -that helps historians study the crucial role played by ecology in the shaping of the past societies; c) to familiarize the students to the methods of using archaeological, bio and geo-archival sources, artistic depictions and oral history sources to study the past relationship between humans and the natural world. By the end of this course, the students are expected to develop an in-depth understanding of the interdisciplinary approaches to historical thinking and the significance of the environment in human history.

Learning Outcomes:
After completing this course, students should be able to:

- Understand the historical methodologies and concepts to explain the environmental contexts of the past social and cultural transformations.
- Develop a historical perspective on the complex relationship between society and nature from prehistory to the present in the context of the Indian subcontinent.
- Discuss how societies developed technologies, sources of energy, and modes of organizing lives to adapt to varied ecological landscapes.
- Discuss environmental issues within a socio-cultural framework.
- Examine the social, political and economic contexts of creating inequalities in resource use, with reference to the case studies regarding water rights, forest rights, and the right to have livable cities.
- Locate solutions to environmental problems within a framework of greater democratization of resource use.

Course Content:
Unit I: What is Environmental History

1. Historiography and Sources
2. Interdisciplinarity

Unit II: Living with Nature

1. Environment and Early Urban Societies: Harappan Civilization
2. Beliefs, Practices and Natural Resources

Unit III: Era of Major Agrarian Expansion

1. Pastoralism, Agrarian Expansion
2. Forests and Tribal Groups
3. Irrigation and Canals

Unit IV: Colonialism and Transformation of Nature

1. Changing Land Use Patterns; Railway and Deforestation, Dams and Hydroelectric Power
2. Inland Waterbodies and Fisheries
3. Urbanization and Environment; Delhi

Unit V: Development, Environment, and Migration in Contemporary India
1. Big Dams and Displacement; Narmada and Tehri
2. Gender and Environmental Justice
3. Green Revolution; Biodiversity Loss; Species Extinction

Essential Readings and Unit Wise Teaching Outcomes:

Unit 1: This unit provides an overview of environmental historiography of the Indian subcontinent. The first rubric introduces the methods, theoretical concepts, sources, and the major sub-fields of environmental history. The second rubric explores how archeological records, literary sources, bio-mass, artistic depictions of nature, material cultural artifacts and oral history sources are integrated into environmental history narratives. **(Teaching time: 9 hrs. approx)**

- Hughes, Donald (2006), *What is Environmental History?* Cambridge: Polity Press. pp. 1-17 [Chapter 1: "Defining Environmental History]
- Mann, Michael (2013), "Environmental History and Historiography on South Asia: Context and some Recent Publications," *South Asia Chronicle,* Vol. 3, pp. 324-357.
- Rangarajan, Mahesh (2015), *Nature and Nation: Essay on Environmental History.* Ranikhet: Permanent Black, pp. 1-45 [Chapter 1: "Introduction: Issues in the Writing of Environmental History"]

Unit II: This unit gives a synoptic overview of human interaction with the animals, plants, and natural elements that sustained life. It shows how from the times of gathering, scavenging and hunting to the beginning of agriculture, humans adapted to the environment even as they tried to manipulate it, and maintained harmony with it and advocated conservation of earthly resources. **(Teaching time: 9 hrs. approx.)**

- Mishra, V. N. (2008), "Climate, a Factor in the Rise and Fall of the Indus Civilization: Evidence from Rajasthan and Beyond," In Mahesh Rangarajan, ed., *Environmental Issues in India: A Reader.* Delhi: Pearson,pp. 7-16.
- वी. एन मिश्रा (2010)जलवायु, सिंधुघाटीसभ्यताकेउथान - पतनमेंएकघटक: राजस्थानऔरपारकेतथ्य, महेशरंगाराजनसंपादितभारतमेंपर्यावरणकेमुददे, पियर्सन, दिल्ली.
- Allchin, Bridget (1998), "Early Man and Environment in South Asia," In Richard Grove, Vinita Damodaran, and Satpal Sangwan, *Nature and the Orient: The Environmental History of South and Southeast Asia.* Delhi: Oxford University Press, pp. 29-50.
- Lal, Makkhan, "Iron Tools, Forest Clearance and Urbanization in the Gangetic Plains," In Mahesh Rangarajan, ed., *Environmental Issues in India: A Reader.* Delhi: Pearson,pp. 18-32.
- मखनलाल, (2010), गंगाकेमैदानोंमेंलोहेकेउपकरण, वनोंकीसफाईऔरनगरीकरणकासंबंध, महेशरंगाराजनसंपादितभारतमेंपर्यावरणकेमुददे, पियर्सन, दिल्ली.
- Thapar, Romila (2008), "Forests and Settlements", In Mahesh Rangarajan, ed., *Environmental Issues in India: A Reader.* Delhi: Pearson,pp. 33-41.
- रोमिलाथापर, वनऔरबस्ती, महेशरंगाराजनसंपादितभारतमेंपर्यावरणकेमुददे, पियर्सन, दिल्ली, 2010

- Gosling, David L. (2001), *Religion and Ecology in India and Southeast Asia.* London: Routledge.
- Rangarajan, Mahesh (2008), "The Forest and the field in Ancient India," In Mahesh Rangarajan, ed., *Environmental Issues in India: A Reader.* Delhi: Pearson,pp. 42-48.
- महेशरंगाराजन (2010), प्राचीन भारत में वन और खेत, महेशरंगाराजन संपादित भारत में पर्यावरण के मुददे, पियर्सन, दिल्ली.
- Chakravarti, Ranabir, "The Creation and Expansion of Settlements and Managements of Hydraulic Resources in Ancient India," In Richard Grove, et al, eds, *Nature and the Orient: The Environmental History of South and Southeast Asia.* Oxford: Oxford University Press, 1998, pp. 87-105.

Unit III: This unit explores the patterns and processes of the expansion of agrarian landscapes, pastoralism and forest economies in India up to the eighteenth century. Providing an overview of the dynamics of human-nature interaction during the medieval times will help students to challenge the notions of considering pre-modern environments as a timeless continuum. **(Teaching time: 9 hrs. approx.)**

- Murty, M. L. K, (2012), "Sheep/Goat Pastoral Cultures in the South Decan: The Narrative as a Metaphor," In Rangarajan, Mahesh and K. Sivaramakrishanan, eds (2014), *India's Environmental History: A Reader.* Ranikhet: Permanent Black.
- Singh, Chetan (1995), "Forests, Pastoralists and Agrarian Society in Mughal India," In David Arnold & Ramachandra Guha, eds., *Nature, Culture, Imperialism: Essays on the Environmental History of South Asia.* Delhi: Oxford University Press, pp. 21-48.
- Guha, Sumit (2008), "A Historical Study of the Control of Grass and Fodder Resources in Eighteenth-Century Maharashtra," In Mahesh Rangarajan, *Environmental Issues in India: A Reader.* Delhi: Pearson,pp. 97-106.
- सुमितगुहा (2010) अठारहवींशताब्दीकेमहाराष्ट्रमेंघासऔरचारेपरनियंत्रण: एकऐतिहासिकअध्ययन, महेशरंगाराजनसंपादितभारतमेंपर्यावरणकेमुददे, पियर्सन, दिल्ली.
- Singh, Abha (2014), "Irrigating Haryana: The Pre-Modern History of the Western Yamuna Canal", in Habib, Irfan, *Medieval India 1: Researches in the History of India 1200-1750,* Delhi: Oxford University Press, pp.49-61.
- Sengupta, Nirmal (1985), "Irrigation: Traditional vs Modern", *Economic and Political Weekly,* Vol. 20, No.45-47, pp.1919-1938.

Unit IV: This unit explores how colonial capitalism as a powerful agent of environmental transformations made fundamental changes to the land use patterns and livelihood resources. The first rubric explores the environmental history of the colonial appropriation of forests as raw material for railways expansion and rivers as dams and other hydraulic infrastructures for industrial production and long-distance transportation. The second rubric elaborates how the colonial appropriation of water bodies and common lands through the new revenue policies, acts and regulations affected indigenous fishing and other livelihood patterns based on hydraulic resources.The third rubric elaborates the environmental problems of urbanization in the context of the colonial city of Delhi. **(Teaching time: 9 hrs. approx.)**

- Das, Pallavi (2013), "Railway fuel and its impact on the forests in colonial India: The case of the Punjab, 1860– 1884", *Modern Asian Studies*, Vol.47, No.4,pp.1283-1309.
- Morrison, Kathleen D. (2010), "Dharmic Projects, Imperial Reservoirs, and New Temples of India: An Historical Perspective on Dams in India," *Conservation and Society,* Vol. 8, No. 3, pp. 182-195.
- D'Souza, Rohan (2012), "Damming the Mahanadi River: The Emergence of Multi-Purpose River Valley Development in India (1943-946)," In Mahesh Rangarajan & K.

Sivaramakrishnan, eds., *India's Environmental History: Colonialism, Modernity, and the Nation.* Ranikhet: Permanent Black, pp. 550-583.

- Singh, Vipul (2018), *Speaking Rivers: Environmental History of a Mid-Ganga Flood Country, 1540-1885*. Delhi: Primus Books, pp. 122-158 [Chapter 6: "Decommonization of the River"].
- Reeves, Peter, (1995), "Inland Waters and Freshwater Fisheries: Some Issues of Control, Access and Conservation in Colonial India," In David Arnold & Ramachandra Guha, eds, *Nature, Culture, Imperialism: Essays on the Environmental History of South Asia.* Delhi: Oxford University Press, pp. 260-292.
- Gadgil, Madhav and Guha, Ramachandra. (1992). "Conquest and control." In Madhav Gadgil and Ramachandra Guha, eds., *This Fissured Land: An Ecological History of India*. Delhi: OUP, pp. 113- 145.
- Sharan, Awadhendra B. (2014), *In the City, Out of Place: Nuisance, Pollution, and Dwelling in Delhi, c. 1850-2000.* Delhi: Oxford University Press ["Introduction" and Chapter 4: "Pollution: Industrial Landscapes, 1936-2000].

Unit V: This unit explains how the issues of development such as the construction of big dams and other mega infrastructural projects are often associated with displacement, biodiversity loss, species extinction, and how the industrialization of agricultural production transforms livelihood patterns and cultural landscapes. It offers a historical perspective on increasing the inequality of access to natural resources for women and the poor **(Teaching time: 9 hrs. approx.)**

- Sangvai, Sanjay (2008), "The Tragedy of Displacement," In Mahesh Rangarajan, ed., *Environmental Issues in India: A Reader.* Delhi: Pearson,pp. 437-443.
- संजय संगवई(2010), विस्थापनाकाएकदर्दनाककिस्सा, महेशरंगाराजनसंपादितभारतमेंपर्यावरणकेमुददे, पियर्सन, दिल्ली.
- Asthana, Vandana (2012), "Forced Displacement: A Gendered Analysis of the Tehri Dam Project," *Economic and Political Weekly,* Vol. 47, No. 47/48, pp, 96-102.
- Singh, Satyajit K. (1990), "Evaluating Large Dams in India," *Economic and Political Weekly,* Vol. 25, No. 11, pp. 561-574.
- Agarwal, Bina. (1992). "The Gender and Environment Debate: Lessons from India", *Feminist Studies,* Vol. 18, No.1. pp. 119-158.
- Shiva, Vandana. (1988). "Women in the Food Chain" (Ch.5) in Vandana Shiva, *Staying Alive: Women, Ecology and Survival in* India. New Delhi: Kali for Women. pp.96-178.
- McNeill, J. R. (2008), "The Green Revolution," In Rangarajan, Mahesh, *Environmental Issues in India: A Reader.* Delhi: Pearson,pp. 184-194.
- Shiva, Vandana (2016), *Stolen Harvest: The Hijacking of the Global Food Supply.* Kentucky: The University Press of Kentucky, [Chapter 1: "The Hijacking of the Global Food Supply"] pp. 5-20.
- Shiva, Vandana (1993), *The Violence of the Green Revolution: Third World Agriculture, Ecology and Politics,* London and New Jersey: Zed Books,pp. 19-60; [Chapter 1: "Science and Politics in the Green Revolution"], pp. 61-102 [Chapter 2: "Miracle Seeds' and the destruction of Genetic Diversity"]; pp. 171-193 [Chapter 5: "The Political and Cultural Costs of the Green Revolution"].

Suggested Readings:

- Erdosy, George (1998), "Deforestation in Pre- and Proto Historic South Asia," In Richard Grove, Vinita Damodaran, and Satpal Sangwan, *Nature and the Orient: The*

Environmental History of South and Southeast Asia. Delhi: Oxford University Press, pp. 51-69.

- Adve, Nagraj (2022), *Global Warming in India: Science, Impacts, and Politics.* Bhopal: Eklavya Foundation.
- Agarwal, Ravi (2010), "Fight for a Forest," In *Seminar,* No. 613, pp. 48-52 (On Delhi Ridge)
- Bhattacharya, Neeladri (1992), 'Colonial State and Agrarian Society,' In Burton Stein, ed. *The Making of Agrarin Policy in British India, 1770-1900.* Delhi: Oxford University Press.
- Bulliet, Richard. (2005). *Hunters, Herders and Hamburgers: The Past and Future of Human-Animal Relationships.* New York: Colombia University Press. pp. 205 -224.
- D'souza, Rohan (2006), *Drowned and Dammed: Colonial Capitalism and Flood Control in Eastern India.* New Delhi: Oxford University Press.
- Dangwal, DhirendaraDatt (2009), *Himalayan Degradation: Colonial Forestry and Environmental Change in India.* New Delhi: Cambridge University Press.
- Gadgil, Madhav and Ramachandra Guha (2000), *The Use and Abuse of Nature.* Delhi: Oxford University Press.
- Grove, Richard (1997), *Ecology, Climate and Empire.* Delhi: Oxford University Press.
- Hardiman, David (1996), 'Small-dam Systems of the Sahyadris," in David and Ramachandra Guha, eds, *Nature, Culture, Imperialism: Essays on the Environmental History of South Asia.* Delhi: Oxford University Press, pp. 185-209.
- Kapur, Nandini Sinha (2011), *Environmental History of Early India: A Reader.* New Delhi: Oxford University Press.
- Malamoud, Charles (1998), *Village and Forest in Ancient India.* Delhi: Oxford University Press.
- Mann, Michael (2007), "Delhi's Belly: The Management of Water, Sewerage and Excreta in a Changing Urban environment during the Nineteenth Century, *Studies in History,* Vol. 23, No. 1, pp. 1-31.
- Meadow, R. H. (1981), "Early Animal Domestication in South Asia: A First Report of Faunal Remains from Mehrgarh, Pakistan," In H. Hartel, ed. *South Asian Archaeology.* Berlin: Dietrich Reimer Verlag, pp. 143-79.
- Murali, Atluri (1995), "Whose Trees? Forest Practices and Local Communities in Andhra, 1600-1922," In David Arnold & Ramachandra Guha, eds., *Nature, Culture, Imperialism: Essays on the Environmental History of South Asia.* Delhi: Oxford University Press, pp. 86-122.
- Rangarajan, Mahesh (2002), "Polity, Ecology and Landscape: Fresh Writing on South Asia's Past," *Studies in History,* Vol 17, No. 1, pp. 135-48.
- Rangarajan, Mahesh ed. (2008), *Environmental Issues in India.* Delhi: Pearson.
- Singh, Satyajit K. (1990), "Evaluating Large Dams in India," *Economic and Political Weekly,* Vol. 25, No. 11, pp. 561-574.
- Singh, Vipul (2018), *Speaking Rivers: Environmental History of a Mid-Ganga Flood Country, 1540-1885*. Delhi: Primus Books

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE (DSE -4): Cultures in Indian Subcontinent – I

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Cultures in Indian Subcontinent – I	**4**	**3**	**1**	**0**	12 th Pass	NIL

Learning Objectives

This course aims to provide an overview of Indian cultural traditions and cultural experience. It will help students to understand the meaning, perspectives and approaches to the study of culture. The section dealing with Indian languages and literature focuses upon the development of Sanskrit, Prakrit, vernacular, Indo-Persian and Urdu language and literature respectively. The content of performing arts will help one appreciate the traditions of music, dance and drama in Indian culture through the ages. This also explores the development of different forms of architecture in India since ancient period.

Learning outcomes

After the successful completion of this Course, the students will be able to:

- understand different perspectives and approaches to the study of culture,
- explain the plurality in Indian cultural traditions,
- learn the growth of Sanskrit, Prakrit, vernacular, Indo-Persian and Urdu language and literature,
- trace the evolution of and the distinction between the Hindustani and Carnatic music culture,
- identify Indian classical dance forms, musical and theatre cultures,
- explain the rich architectural traditions of India.

SYLLABUS OF DSC-1

Unit I: Definitions of Culture and its various aspects

1. Perspective on Cultures: Indian Cultural tradition: An overview.
2. Plurality of Cultures: Social Content of Culture

Unit II: Language and Literature

1. Sanskrit: Kavya – Kalidasa's Ritusamhara; Prakrit: Gatha Saptasati.
2. Development of Vernacular language and literature.
3. Indo-Persian literature: Amir Khusro's works; Urdu poetry and prose: Ghalib.

Unit III: Performing Arts

1. Music: Hindustani, Carnatic Classical Music, Devotional Music: Bhakti and Sufi
2. Dance: Classical and Folk
3. Theatre: Classical, Folk, Colonial and Modern

Unit IV: Architecture: Meanings, Forms and Functions

1. Rock-cut and structural temples: Mamallapuram or Ellora; Khajuraho complex and Tanjavur temple.
2. Fort – Daulatabad or Chittor forts; Palace–dargah at Fatehpur Sikri.
3. Colonial architecture– Lutyens' Delhi.

Practical component (if any) - NIL

Essential/recommended readings

Unit-I: This unit will enable students to understand the meaning of culture and its various perspectives. It will further help them to explain the plural characteristics of cultures in the Indian subcontinent and explore their content which conveys diverse ideas. **(Teaching Time: 9 hrs. approx.)**

- Basham, A.L. The Wonder That was India. Volume I, Rupa & Co., New Delhi, 1997. (in Hindi translation Adhbhut Bharat)

- Maxwell, T.S. Image: Text and Meaning: Gods of South Asia, Oxford University Press, Delhi, 1997.
- Thakaran, R.C, Sheo Dutt and Sanjay Kumar, ed. Bhartiya Upamahadvipa ki Sanskritiyan, (in Hindi), Directorate of Hindi Medium Implementation Board, University of Delhi, 2013.

Unit II: This unit will help students to understand the literary traditions of India since ancient times. The section deals with some of the important literary works of Sanskrit and Prakrit literature in ancient India. It also explores about the origin and development of vernacular literature in India along with the development of Indo-Persian literature in medieval times and, Urdu poetry and prose of modern period. **(Teaching Time: 12 hrs. approx.)**

- Basham, A.L. The Wonder That was India. Volume I, Rupa & Co., New Delhi, 1997. (in Hindi translation Adhbhut Bharat)
- Khanna, Meenakshi, Madhyakalin Bharat Ka Saanskritic Iihas, (translated in Hindi by Umashankar Sharma), Orient Blackswan, Delhi, 2012.
- Majumdar, R.C. ed. The History and Culture of the Indian People, Vol. 3 (The Classical Age), Bhartiya Vidya Bhawan, Bombay, 1954. (chapters XV, XIX) (in Hindi translation Shrenya Yug translated by Shivdaan Singh Chauhan, Motilal Banarsidass, 1984)
- Thakaran, R.C, Sheo Dutt and Sanjay Kumar, ed. Bhartiya Upamahadvipa ki Sanskritiyan, (in Hindi), Directorate of Hindi Medium Implementation Board, University of Delhi.

Unit III: This unit highlights various kinds of performing art forms practiced in India since our ancient past. These include music, dance and theatre. This part deals with the musical traditions of north and south India. The focus is also on the devotional music of the Bhakti and Sufi traditions. Classical and folk forms of dance and theatre are also dealt with. **(Teaching Time: 12 hrs. approx.)**

- Thakaran, R.C, Sheo Dutt and Sanjay Kumar, ed. Bhartiya Upamahadvipa ki Sanskritiyan, (in Hindi), Directorate of Hindi Medium Implementation Board, University of Delhi.
- Vatsyayan Kapila; Indian Classical Dance, Publications Divisions, New Delhi, 1974 (also in Hindi translation)
- Venkatasubramanian, T.K. Music as History in Tamil Nadu, Primus Books, Delhi, 2010.
- Zimmer, H. Myths and Symbolism in Indian Art and Civilization, Princeton Press, New Jersey, 1992.

Unit IV: This unit explains the different architectural forms in India through the ages. It deals with the rock-cut and structural temples of India, fort and palaces of medieval period and the colonial buildings of modern era with special reference to Lutyens' Delhi. **(Teaching Time: 12 hrs. approx.)**

- Agrawala, Vasudev Sharan, Bhartiya Kala (in Hindi), New Edition, Prithvi Prakashan, Delhi, 2020.

- Asher, Catherine. (ed.): Perceptions of India's Visual Past, American Institute of Indian Studies, Delhi, 1994
- Asher, Catherine, Architecture of Mughal India, Cambridge University Press, 1992.
- Brown, Percy. Indian Architecture, Buddhist Hindu and Islamic, Vol. I, II, Mumbai, 1956 Chandra Pramod, ed. Studies in Indian Temple Architecture, American Institute of Indian Studies, Delhi, 1975. (Chapter 1)
- Majumdar, R.C. ed. The History and Culture of the Indian People, Vol. 3 (The Classical Age), Bhartiya Vidya Bhawan, Bombay, 1954. (chapters XV, XIX) (in Hindi translation Shrenya Yug translated by Shivdaan Singh Chauhan, Motilal Banarsidass, 1984)
- Thakaran, R.C, Sheo Dutt and Sanjay Kumar, ed. Bhartiya Upamahadvipa ki Sanskritiyan, (in Hindi), Directorate of Hindi Medium Implementation Board, University of Delhi.
- Zimmer, H. Myths and Symbolism in Indian Art and Civilization, Princeton Press, New Jersey, 1992.

Suggestive readings

- Agrawala, Vasudev Sharan, Kala Aur Sanskriti (in Hindi), New Edition, Prabhat Prakashan, Delhi, 2019.
- Agrawala, Vasudev Sharan, Bhartiya Kala (in Hindi), New Edition, Prithvi Prakashan, Delhi, 2020.
- Asher, Catherine. (ed.): Perceptions of India's Visual Past, American Institute of Indian Studies, Delhi, 1994
- Asher, Catherine, Architecture of Mughal India, Cambridge University Press, 1992.
- Basham, A.L. The Wonder That was India. Volume I, Rupa & Co., New Delhi, 1997. (in Hindi translation Adhbhut Bharat)
- Brown, Percy. Indian Architecture, Buddhist Hindu and Islamic, Vol. I, II, Mumbai, 1956 Chandra Pramod, ed. Studies in Indian Temple Architecture, American Institute of Indian Studies, Delhi, 1975. (Chapter 1)
- Cohn. Bernard. India: The Social Anthropology of a Civilization in Bernard Cohn Omnibus, Oxford University Press, 2004
- Deva, B.C. An introduction to Indian Music, Delhi, 1973.
- Khanna, Meenakshi, Madhyakalin Bharat Ka Saanskritic Iihas, (translated in Hindi by Umashankar Sharma), Orient Blackswan, Delhi, 2012.
- Majumdar, R.C. ed. The History and Culture of the Indian People, Vol. 3 (The Classical Age), Bhartiya Vidya Bhawan, Bombay, 1954. (chapters XV, XIX) (in Hindi translation Shrenya Yug translated by Shivdaan Singh Chauhan, Motilal Banarsidass, 1984)
- Maxwell, T.S. Image: Text and Meaning: Gods of South Asia, Oxford Uuiversity Press, Delhi, 1997.
- Thakaran, R.C, Sheo Dutt and Sanjay Kumar, ed. Bhartiya Upamahadvipa ki Sanskritiyan, (in Hindi), Directorate of Hindi Medium Implementation Board, University of Delhi.
- Vatsyayan Kapila; Indian Classical Dance, Publications Divisions, New Delhi, 1974 (also in Hindi translation)

- Venkatasubramanian, T.K. Music as History in Tamil Nadu, Primus Books, Delhi, 2010.
- Zimmer, H. Myths and Symbolism in Indian Art and Civilization, Princeton Press, New Jersey, 1992.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category II

(Courses for Undergraduate Programme of study with Discipline as one of the Core Disciplines)

DISCIPLINE SPECIFIC CORE COURSE (DSC-1): History of India, 1200 – 1550

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
History of India 1200 – 1550	**4**	**3**	**1**	**0**	12 th Pass	Should have studied History of India 750-1200

Learning Objectives

This course provides an analytical study of the history of India from 1200 to 1550 CE. It introduces students to a thematic study of the main aspects of the period delineating major transitions, changes and developments that include the establishment of the Delhi Sultanate, Vijayanagara and Bahmani, encompassing political, administrative, cultural and economic aspects. Through selected regional case studies it also underlines the inter-connectedness of the sub continental region in its transition.

Learning outcomes

After the successful completion of this Course, the students will be able to:

- Identify the major political developments in the history of India during the period between the thirteenth and the first half of sixteenth century.
- Outline the changes and continuities in the field of culture, especially with regard to art, architecture, Bhakti movement and Sufi movement.
- Discuss the economic history of the period under study in India especially, where agrarian production and its implications are concerned.
- Delineate the development of trade and urban complexes during this period.

SYLLABUS OF DSC-1

Unit I: Foundation, expansion and consolidation of the Sultanates of Delhi c.13th to 15th century:
Expansion; Iqta system; nobility; North-Western frontier and the Mongols.

Unit II: Military, administrative and economic structure under the Khaljis and Tughlaqs.
Unit III: Regional political formations: Vijayanagara and Bahmanis.
Unit IV: Second Afghan Empire.
Unit V: Society, culture and religion: Bhakti -- Kabir and Mira Bai; Sufism – Chishti and Suhrawardy.
Unit VI: Art and architecture: Qutb complex; Vijaynagara (Hampi).
Unit VII: Trade and Commerce: Indian merchants in overseas trade, 12th -15th century.

Practical component (if any) - NIL

Essential/recommended readings
Unit I: This unit would have provided students an insight about foundation, expansion and process of consolidation under the various Sultanate regimes. (**Teaching Time: 9 hrs.** approx.)

- Jackson, P. (2003). The Delhi Sultanate: A Political and Military History. Cambridge: Cambridge University Press.
- Raychaudhuri, T and I. Habib (Ed.). (1982). The Cambridge Economic History of India, Vol.1: c1200-1750. Delhi: Orient Longman, pp. 45-101
- Habib, Irfan. (1992). 'Formation of Sultanate Ruling class during the thirteenth century', in Medieval India: Researches in the History of India 1200-1750, Vol.1, ed.by Irfan Habib, OUP, New Delhi, pp.1-21.
- Habib, I. (2003). Madhyakalin Bharat ka Arthik Itihas ek Sarvekshan. Delhi: Rajkamal.
- Habib, I. (Ed.). (1981-2003). Madhyakalin Bharat, 10 volumes. Delhi; Rajkamal.
- Verma, H.C. (ed.). (2003). Madhyakalin Bharat, Bhag 1, Delhi: Hindi Madhyam Karyanvan Nideshalaya, Delhi University.

Unit II: This unit would have imparted students an overview of military, political, economic and administrative structure under the Khaljis and Tughlaqs. (Teaching Time: 9 bhrs. approx.)

- Chandra, Satish. (2004). Medieval India: From Sultanate to the Mughals, Part 1, Haranand Publications, Delhi.
- Jackson, Peter. (2003). The Delhi Sultanate: A Political and Military History, University, Press, Cambridge.
- Habib, Irfan (1984), 'Price Regulations of Alauddin Khilji-A Defence of Zia Barani', Indian Economic and Social History Review, Vol. 21. No. 4. pp. 393-414. Also reprinted in Money and the Market in India: 1100-1700, ed., by Sanjay Subrahmanyam, OUP, New Delhi, 1994. Pp. 85-111.
- ----------, (1992), 'Alauddin Khilji ke mulya niyantaran ke upay: Zia Barani ke samarthan mein', Madhyakalin Bharat, Vol. 4 (ed.), Irfan Habib. Delhi. Rajkamal Prakashan, pp.24-46.
- Verma, H C. (ed.). Madhyakalin Bharat, Part 1, Hindi Madhyam Karyanvayan Nideshalaya, Delhi University.

Unit III: This unit would have taught students about the politics, society and economy of the southern kingdoms. They will also learn how recent studies have looked at the

representations in the Vijayanagara state in context to culture, rituals, etc. (Teaching Time: 6 hrs. approx.)

- Stein, Burton. (1989). The New Cambridge History of India I.1, Vijayanagara. Cambridge: Cambridge University Press.
- Fritz, John M. (1986). "Vijayanagara: Authority and Meaning of a South Indian Imperial Capital". American Anthropologist, New Series, vol. 88 no.1, pp. 44-55
- Sinopoli, Carla. (2003). Political Economy of Craft Production: Crafting empire in South India c.1350-1650. Cambridge: Cambridge University Press. ("The South Asian State" and "Vijayanagara: The Historical Setting")
- Wagoner, Phillip B. (1996). "Sultan among Hindu Kings: Dress, Titles, and the Islamicization of Hindu Culture at Vijayanagara". Journal of Asian Studies, vol.55 no.4, pp. 851-80.
- Sastri, K. A. Nilakanta. (1976). A History of South India from Prehistoric Times to the Fall of Vijayanagar. Madras. OUP.
- Ali, B Sheik. (2011). History of Bahmani and Adil Shahi Rulers. Mysore.

Unit IV: This unit would have taught students about politics, economy and administrative set up under the second Afghan empire. (Teaching Time: 6 hrs. approx.)

- Aquil, Raziuddin. (2007), Sufism, Culture and Politics, Afghans and Islam in Medieval North India. Delhi, OUP.
- Siddiqui, IH. (1996). Sher Shah Suri and his dynasty. Jaipur. Publication Scheme.
- ----------. (1969). Some Aspects of Afghan despotism. India. Aligarh. Three Men Publication.

Unit V: This unit would have taught students about the cultural and religious traditions in the medieval period with special reference to Kabir, Mirabai, Chishti and Suhrawardy silsilah. (Teaching Time: 9 hrs. approx.)

- Charlotte Vaudeville. (2007). A Weaver named Kabir. Delhi: Oxford University Press.
- Dwivedi, Hazari Prasad. (2019) Kabir. Delhi: Rajkamal Prakashan.
- Habib, Irfan. (2007), 'Kabir; The Historical Setting', in Irfan Habib (Ed.) Religion in Indian History, Tulika Books. New Delhi.
- Hawley, John Stratton. (2005). Three Bhakti Voices, Mira Bai, Kabir and Surdas in their Times. Delhi: Oxford University Press.
- Manushi (1989). Special Issue. Nos. 50-51-52 (Jan-June). (Madhu Kishwar, Ruth Vanita and Parita Mukta articles on Mirabai.)
- Pinto, Desiderio S.J. (1989). "The Mystery of the Nizamuddin Dargah: The Account of Pilgrims" in Christian W Troll (ed.) Muslim Shrines in India. Delhi: Oxford University Press, pp.112-124.
- Lawrence, Bruce B. (1986). "The Earliest Chishtiya and Shaikh Nizam al-Din Awliya." in R E Frykenberg, (Ed.). Delhi Through the Ages. Delhi: Oxford University Press, pp.104-128.
- Currie, P M (1989). The Shrine and Cult of Muin-al-Din Chisti of Ajmer. Delhi. OUP
- Rizvi, S A A (1978). A History of Sufism, Vol. 1. Delhi: Munshiram Manoharlal. (Chapters on Chishti and Suhrawardy).

Unit VI: This unit deals with the architectural traditions in the Sultanate period. The students will be able to appreciate the political and artistic complexities that played an important role during the period of study and for this as case study, Qutb Complex and Hampi, the imperial city of Vijayanagra has been taken up. (Teaching Time: 6 hrs approx.)

- Kumar, Sunil. (2002). 'Qutub and Modern Memory' in The Present in Delhi's, Delhi: The Three Essay Press, pp1-61.
- Spear, Percival. (1994). Delhi, Its Monuments and History, New Delhi, Oxford University Press.
- Verghese, Anila (2002). Hampi, Delhi: Oxford University Press.
- Fritz, M John and Michell. George. (2014). Hampi Vijaynagara, Delhi. Jaico Publishing House.

Unit VII: This unit will provide an overview about the trade and commerce from 12th to 15th century especially the Indian Ocean trade, the trading communities and its impact on the South Asian economy and beyond. (Teaching Time: 6 hrs. approx.)

- Raychaudhuri, T and I. Habib. (Eds.). (1982). The Cambridge Economic History of India, Vol.1: c1200-1750. Delhi: Orient Longman, pp. 214-434.
- Chandra, Satish. (2005). Religion, State and Society in Medieval India: Collected Works of Nurul Hasan. Delhi: Oxford University Press, pp. 173-278.
- Bhargava, Meena. (Ed.). (2010). Exploring Medieval India: sixteenth to the eighteenth centuries. Delhi: Orient Black Swan.
- Prakash, Om. (1998). The New Cambridge History of India: European Commercial Enterprise in Pre-Colonial India. Delhi: Cambridge University Press.
- Gupta, Ashin Das and M.N. Pearson. (1997) India and the Indian Ocean 1500-1800. Delhi: Oxford University Press.

Suggestive readings

- Asher, Catherine B. and Cynthia Talbot. (2006). India before Europe. Cambridge: Cambridge University Press.
- Aquil, Raziuddin. ed. (2010). Sufism and Society in Medieval India. Delhi: Oxford University Press.
- Bahuguna, RP (2009). Madhyakalin Bharat mein Bhakti aur Sufi Andolan. Delhi: Granth Shilpi.
- Brown, Percy. (1968). Indian Architecture: Islamic Period.Bombay.DB Taraporevala.
- Chandra, S. (2004). Medieval India: From Sultanate to the Mughals, Part 1. Delhi: Haranand Publications.
- Chandra, S. (2004). Madhyakalin Bharat: Sultanate se Mughal tak, Bhag 1. Delhi: Jawahar Publishers.
- Chandra, S. (2007). History of Medieval India (800-1700). Delhi: Orient Longman.
- Chandra, S. (2007). Madhyakalin Bharat: Rajniti, Samajaur Sanskriti, Aathwi se Satrahvis shtabditak. Delhi: Orient Black Swan.
- Digby, Simon. (2004). "Before Timur came: Provincialization of the Delhi Sultanate through the fourteenth century." Journal of the Economic and Social History of the Orient vol. 47no.3, pp. 298-356

- Ernst, Carl W. and Bruce Lawrence. (2002).” The Major Chishti Shrines” in Sufi Martyrs of Love in the Chishti Order in South Asia and Beyond. New York: Palgrave Macmillan, pp.85-104.
- Flood, Finbarr Barry (Ed.). (2008). Piety and Politics in the Early Indian Mosque. Delhi: Oxford University Press.
- Eaton, Richard M. (1996). The Sufis of Bijapur, 1300-1700: Social Roles of Sufis in Medieval India. Princeton: Princeton University Press.
- Green, Nile. (2002). Sufis and Settlers in the Early Modern Deccan, Delhi: Oxford University Press.
- Habib, I. (2003). Madhyakalin Bharat ka Arthik Itihas Ek Sarvekshan. Delhi: Rajkamal, 2003.
- Habib, I. (Ed.). (1981-2003). Madhyakalin Bharat. 10 volumes. Delhi; Rajkamal.
- Hess, Linda. (1983). "The Cow is Sucking at the Calf's Teat: Kabir's Upside-Down Language."History of Religions vol. 22, pp. 313-37.
- Khanna, M. (2007). Cultural History of Medieval India. Delhi: Social Science Press.
- Khanna, M. (2012). Madhyakalin Bharat Ka Sanskritik Itihas. Delhi: Orient Black Swan.
- Koch, E. (2013). Mughal Architecture: An Outline of its History and Development (1526-1858). Delhi: Primus.
- Kumar, S. (2007). The Emergence of the Delhi Sultanate. Delhi: Permanent Black Kumar, Sunil. (2014). “Bandagi and Naukari: Studying Transitions in Political Culture and Service under the North Indian Sultanates, 13th-16th centuries” in Francesca Orsini and Samira Sheikh, (Eds.), After Timur Left: Culture and Circulation in fifteenth century North India. Delhi: Oxford University Press, pp. 60-108.
- Moosvi, Shireen. (1987). The Economy of the Mughal Empire. Delhi: Oxford University Press.
- Sastri, K. A. Nilkanta. (1998). A History of South India. Delhi. OUP.
- Vaniana, Eugenia. (2004). Urban Crafts and Craftsmen in Medieval India (Thirteenth-Eighteenth Centuries). Delhi: Munshiram Manoharlal.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC CORE COURSE (DSC-2): Cultural Transformations in Early Modern Europe-I

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Cultural Transformations in Early Modern Europe – I	**4**	**3**	**1**	**0**	12 th Pass	NIL

Learning Objectives

The objective of the course is designed to make the students familiar with the essential transitions and transformations in early modern European economy, polity and socio-cultural life. The first unit aims to critically examine the dynamics of Europe that emerged from the Middle Age. The second unit dealing with the Renaissance focuses on the developments in art, literature, science and philosophy and also deals with Renaissance beyond Italy. The content in third unit will enable them to understand the spread of Reformation and Counter Reformation and it's economic and cultural impact. The last unit will explore the conquest of the New World with focus on: material, social and cultural aspects. The idea is to give them European perspective of cultural transformations in early modern Europe.

Learning outcomes

After completing this course, students will be able to:

- Understand the different perspectives of cultural developments in Europe.
- Explain the Renaissance in the realm of art, literature, science and philosophy and the processes by which major transformation unfolded in European society and culture.
- Trace the upheaval in Religion in the form of Protestant Reformation and Counter Reformation.
- Identify the material, social and cultural aspects after the conquest of the New World.

SYLLABUS OF DSC-1

Unit I. Key concepts and historical background

1. The idea of the early Modern; perspectives on culture in history
2. An overview of the classical and medieval legacy

Unit II. The Renaissance

1. Society and politics in Italian city-states
2. Humanism in Art and literature
3. Development in science and philosophy
4. Renaissance beyond Italy

Unit III. Upheaval in Religion

1. The papacy and its critics
2. The spread of Protestant sects in Northern Europe
3. Counter Reformation and Religious Strife
4. The economic and cultural impact of the Reformations

Unit IV. The Conquest of the New World: material, social and cultural aspects

1. A Case Study of Portugal or Spain

Practical component (if any) - NIL

Essential/recommended readings

Unit I: The Unit will give critical concepts for the understating of early modern and the perspective on culture in history. The idea of Early modern Europe will be introduced. **(Teaching Time: 9 hrs. approx.)**

- Anderson, M.S. Europe in the Eighteenth Century, 1713-1783. New York: Longman.
- Burke, Peter. Popular Culture in Early Modern Europe. UK: Ashgate, 2009.
- Davies, Norman, Europe: A History. New York: Harper Collins, 1998.

Unit II. This Unit imparts the understanding of the socio-cultural movements and progress in science and philosophy in medieval and early modern Europe. Renaissance artists and scholars celebrated the beauty of nature and the dignity of humanity, helping shape the intellectual and cultural history of the early modern world. **(Teaching Time: 12 hrs. approx.)**

- Burckhardt, Jacob. The Civilisation of the Renaissance in Italy. University of Virginia: Phaidon Press, 1965.
- Burke, Peter. (1999). The Italian Renaissance, Culture and Society in Italy. Princeton: Princeton University Press. (Chpts: Introduction, chpts:1, 2, 3, 4 & 6)
- Kaborycha, Lisa. (2011). A Short History of Renaissance Italy. New York: Pearson
- Nauert, C.G. (2006) Humanism and the culture of Renaissance Europe. Cambridge University Press.
- Kraye, J. and Jill, K. eds. (1996) The Cambridge companion to Renaissance humanism. Cambridge University Press.

Unit III. The Unit emphasizes different dimensions of Reformation and Counter-Reformation and helps in learning the challenges and changes in the religious sphere and their influences on the economic and socio-cultural lives of the people in various regions of Europe. **(Teaching Time: 12 hrs. approx.)**

- King, Margaret L. Western Civilisation: A Social and Cultural History. New York: Prentice- Hall, 1999
- Parish, Helen L. (2018). A Short History of the Reformation. London, New York: I. B. Tauris.
- Mac Culloch, Diarmaid. (2004). Reformation: Europe's House Divided, 1490-1700. London: Penguin Books Ltd.

- Cameron, E. (2012) The European Reformation. Oxford University Press.
- MacCulloch, D. (2005) The reformation. Penguin.

Unit IV. This Unit engages the students with the beginning of the explorations and conquests of the world beyond Europe and their socio-cultural and economic effects. **(Teaching Time: 12 hrs. approx.)**

- Anderson, M.S. Europe in the Eighteenth Century, 1713-1783. 2nd and. New York: Longman
- Burke, Peter. Popular Culture in Early Modern Europe. UK: Ashgate, 2009.
- Davies, Norman, Europe: A History. New York: Harper Collins, 1998
- Burns, E. M., Ralph, P. L., Lerner, R. E., & Meacham, S. (1986). World Civilisation, vol. AWW Norton & Co., New York, NY.
- McAlister, L.N. (1984) Spain and Portugal in the New World, 1492-1700 (Vol. 3). U of Minnesota Pre

Suggested Readings:

- Rosener, Werner. The Peasantry of Europe. England: Basil Blackwell, 1994 (translated from German).
- Anderson, Perry. Lineages of the Absolutist State. London: New Left books, 1974.
- Braudel, Ferdinand. Civilisation and Capitalism- 15th to 18th century Vol. I. California: University of California Press, 1992 (paperback).
- Burckhardt, Jacob. The Civilisation of the Renaissance in Italy. University of Virginia: Phaidon Press, 1965.
- Chartier, Roger. Arthur Goldhammer, Phillippe Aries and George Duby, eds. A History of Private Life, Vol III: Passions of the Renaissance. U.S.A.: Harvard University Press, 1988.
- Davis, Natalie Zemon. The Return of Martin Guerre, Massachusetts, London: Harvard University Press, 1983. • Gay, Peter. The Enlightenment: An Interpretation. New York: Alfred K. Knopf, 1966
- Ginsberg, Carlo. The Cheese and the Worms. U.S.A.: John Hopkins University Press (JHUP) 1983
- Huizinga, J. The Waning of the Middle Ages. New York: Dover Publications, 1999.
- Jacob, Margaret C. The Cultural Meaning of the Scientific Revolution, U.S.A.: Tem-ple University Press, 1988.
- Kearney, Hugh. Science and Social Change 1500 – 1700. University of Wisconsin-Madison: McGraw- Hill, 1971.
- Thomas, Keith. Religion and the Decline of Magic. England: Penguin Books, 1991.
- Ladurie, Emmanuel Le Roy. The Peasants of Languedoc. Urbana and Chicago: Universi-ty of Illinois Press, 1974.
- Merriman,J. (2009) A History of Modern Europe: from the Renaissance to the Present (Vol. 1). WW Norton & Company.
- Merriman, J. (2019) A History of Modern Europe: Volume 2 (Vol. 2). WW Norton & Company.
- संक्रांततकलीन र्ूरोप : अरतवंि तसन्हा , ग्रंथ तशल्पी प्राइवेट तलतमटेड, 2015.

- आधुतनक र्ूरोप का इततहास :आर्ाम एवं तिशाएँ : िेवेश तविर्, मीना भारद्वाि एवं वंिना चौधरी
- आधुतनक र्ूरोप का इततहास: आर्ाम एवम तिशाएं] (सह-संपाि्न), तहन्दी माध्यम कार्ाान्वर्न तनिेशालर् तिल्ली-7, 2010 (revised second edition, 2013)
- र्ूरोपीर् संस्कृ तत (1400-1800): िे वेश तविर्,संपातित, तहन्दी माध्यम कार्ाान्वर्न तनिेशालर्, तिल्ली- 7, 2006,2010.
- आधुतनक पतश्चम के उिर् का इततहास , मीनाक्षी फू कन, लक्ष्मी पम्मब्लके शन,2012.
- आधुतनक पतश्चम के उिर् , पाथासारतथ गुप्ता, तहन्दी माध्यम कार्ाान्वर्न तनिेशालर् ,तिल्ली- 7,2015(New Edition)

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

Category III

Courses for Undergraduate Programme of study with discipline as one of the Core Disciplines

(For e.g. courses for B.A. Programmes with (discipline's name) as non-Major or Minor discipline)

DISCIPLINE SPECIFIC CORE COURSE (DSC-1): History of India, 1200 – 1550

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
History of India 1200 – 1550	4	3	1	0	12 th Pass	Should have studied History of India 750-1200

Learning Objectives

This course provides an analytical study of the history of India from 1200 to 1550 CE. It introduces students to a thematic study of the main aspects of the period delineating major transitions, changes and developments that include the establishment of the Delhi Sultanate, Vijayanagara and Bahmani, encompassing political, administrative, cultural and economic aspects. Through selected regional case studies it also underlines the inter-connectedness of the sub continental region in its transition.

Learning outcomes

After the successful completion of this Course, the students will be able to:

- Identify the major political developments in the history of India during the period between the thirteenth and the first half of sixteenth century.
- Outline the changes and continuities in the field of culture, especially with regard to art, architecture, Bhakti movement and Sufi movement.
- Discuss the economic history of the period under study in India especially, where agrarian production and its implications are concerned.
- Delineate the development of trade and urban complexes during this period.

SYLLABUS OF DSC-1

Unit I: Foundation, expansion and consolidation of the Sultanates of Delhi c.13th to 15th century:
Expansion; Iqta system; nobility; North-Western frontier and the Mongols.
Unit II: Military, administrative and economic structure under the Khaljis and Tughlaqs.
Unit III: Regional political formations: Vijayanagara and Bahmanis.
Unit IV: Second Afghan Empire.
Unit V: Society, culture and religion: Bhakti -- Kabir and Mira Bai; Sufism – Chishti and Suhrawardy.
Unit VI: Art and architecture: Qutb complex; Vijaynagara (Hampi).
Unit VII: Trade and Commerce: Indian merchants in overseas trade, 12th -15th century.

Practical component (if any) - NIL

Essential/recommended readings
Unit I: This unit would have provided students an insight about foundation, expansion and process of consolidation under the various Sultanate regimes. **(Teaching Time: 9 hrs. approx.)**

- Jackson, P. (2003). The Delhi Sultanate: A Political and Military History. Cambridge: Cambridge University Press.
- Raychaudhuri, T and I. Habib (Ed.). (1982). The Cambridge Economic History of India, Vol.1: c1200-1750. Delhi: Orient Longman, pp. 45-101
- Habib, Irfan. (1992). 'Formation of Sultanate Ruling class during the thirteenth century', in Medieval India: Researches in the History of India 1200-1750, Vol.1, ed.by Irfan Habib, OUP, New Delhi, pp.1-21.
- Habib, I. (2003). Madhyakalin Bharat ka Arthik Itihas ek Sarvekshan. Delhi: Rajkamal.
- Habib, I. (Ed.). (1981-2003). Madhyakalin Bharat, 10 volumes. Delhi; Rajkamal.
- Verma, H.C. (ed.). (2003). Madhyakalin Bharat, Bhag 1, Delhi: Hindi Madhyam Karyanvan Nideshalaya, Delhi University.

Unit II: This unit would have imparted students an overview of military, political, economic and administrative structure under the Khaljis and Tughlaqs. **(Teaching Time: 9 hrs. approx.)**

- Chandra, Satish. (2004). Medieval India: From Sultanate to the Mughals, Part 1, Haranand Publications, Delhi.
- Jackson, Peter. (2003). The Delhi Sultanate: A Political and Military History, University, Press, Cambridge.
- Habib, Irfan (1984), 'Price Regulations of Alauddin Khilji-A Defence of Zia Barani', Indian Economic and Social History Review, Vol. 21. No. 4. pp. 393-414. Also reprinted in Money and the Market in India: 1100-1700, ed., by Sanjay Subrahmanyam, OUP, New Delhi, 1994. Pp. 85-111.
- ----------, (1992), 'Alauddin Khilji ke mulya niyantaran ke upay: Zia Barani ke samarthan mein', Madhyakalin Bharat, Vol. 4 (ed.), Irfan Habib. Delhi. Rajkamal Prakashan, pp.24-46.

- Verma, H C. (ed.). Madhyakalin Bharat, Part 1, Hindi Madhyam Karyanvayan Nideshalaya, Delhi University.

Unit III: This unit would have taught students about the politics, society and economy of the southern kingdoms. They will also learn how recent studies have looked at the representations in the Vijayanagara state in context to culture, rituals, etc. **(Teaching Time: 6 hrs. approx.)**

- Stein, Burton. (1989). The New Cambridge History of India I.1, Vijayanagara. Cambridge: Cambridge University Press.
- Fritz, John M. (1986). "Vijayanagara: Authority and Meaning of a South Indian Imperial Capital". American Anthropologist, New Series, vol. 88 no.1, pp. 44-55
- Sinopoli, Carla. (2003). Political Economy of Craft Production: Crafting empire in South India c.1350-1650. Cambridge: Cambridge University Press. ("The South Asian State" and "Vijayanagara: The Historical Setting")
- Wagoner, Phillip B. (1996). "Sultan among Hindu Kings: Dress, Titles, and the Islamicization of Hindu Culture at Vijayanagara". Journal of Asian Studies, vol.55 no.4, pp. 851-80.
- Sastri, K. A. Nilakanta. (1976). A History of South India from Prehistoric Times to the Fall of Vijayanagar. Madras. OUP.
- Ali, B Sheik. (2011). History of Bahmani and Adil Shahi Rulers. Mysore.

Unit IV: This unit would have taught students about politics, economy and administrative set up under the second Afghan empire. (**Teaching Time: 6 hrs. approx.)**

- Aquil, Raziuddin. (2007), Sufism, Culture and Politics, Afghans and Islam in Medieval North India. Delhi, OUP.
- Siddiqui, IH. (1996). Sher Shah Suri and his dynasty. Jaipur. Publication Scheme.
- ----------. (1969). Some Aspects of Afghan despotism. India. Aligarh. Three Men Publication.

Unit V: This unit would have taught students about the cultural and religious traditions in the medieval period with special reference to Kabir, Mirabai, Chishti and Suhrawardy silsilah**. (Teaching Time: 9 hrs. approx.)**

- Charlotte Vaudeville. (2007). A Weaver named Kabir. Delhi: Oxford University Press.
- Dwivedi, Hazari Prasad. (2019) Kabir. Delhi: Rajkamal Prakashan.
- Habib, Irfan. (2007), 'Kabir; The Historical Setting', in Irfan Habib (Ed.) Religion in Indian History, Tulika Books. New Delhi.
- Hawley, John Stratton. (2005). Three Bhakti Voices, Mira Bai, Kabir and Surdas in their Times. Delhi: Oxford University Press.
- Manushi (1989). Special Issue. Nos. 50-51-52 (Jan-June). (Madhu Kishwar, Ruth Vanita and Parita Mukta articles on Mirabai.)
- Pinto, Desiderio S.J. (1989). "The Mystery of the Nizamuddin Dargah: The Account of Pilgrims" in Christian W Troll (ed.) Muslim Shrines in India. Delhi: Oxford University Press, pp.112-124.

- Lawrence, Bruce B. (1986). "The Earliest Chishtiya and Shaikh Nizam al-Din Awliya." in R E Frykenberg, (Ed.). Delhi Through the Ages. Delhi: Oxford University Press, pp.104-128.
- Currie, P M (1989). The Shrine and Cult of Muin-al-Din Chisti of Ajmer. Delhi. OUP
- Rizvi, S A A (1978). A History of Sufism, Vol. 1. Delhi: Munshiram Manoharlal. (Chapters on Chishti and Suhrawardy).

Unit VI: This unit deals with the architectural traditions in the Sultanate period. The students will be able to appreciate the political and artistic complexities that played an important role during the period of study and for this as case study, Qutb Complex and Hampi, the imperial city of Vijayanagra has been taken up**. (Teaching Time: 6 hrs. approx.)**

- Kumar, Sunil. (2002). 'Qutub and Modern Memory' in The Present in Delhi's, Delhi: The Three Essay Press, pp1-61.
- Spear, Percival. (1994). Delhi, Its Monuments and History, New Delhi, Oxford University Press.
- Verghese, Anila (2002). Hampi, Delhi: Oxford University Press.
- Fritz, M John and Michell. George. (2014). Hampi Vijaynagara, Delhi. Jaico Publishing House.

Unit VII: This unit will provide an overview about the trade and commerce from 12th to 15th century especially the Indian Ocean trade, the trading communities and its impact on the South Asian economy and beyond. **(Teaching Time**: **6 hrs. approx.)**

- Raychaudhuri, T and I. Habib. (Eds.). (1982). The Cambridge Economic History of India, Vol.1: c1200-1750. Delhi: Orient Longman, pp. 214-434.
- Chandra, Satish. (2005). Religion, State and Society in Medieval India: Collected Works of Nurul Hasan. Delhi: Oxford University Press, pp. 173-278.
- Bhargava, Meena. (Ed.). (2010). Exploring Medieval India: sixteenth to the eighteenth centuries. Delhi: Orient Black Swan.
- Prakash, Om. (1998). The New Cambridge History of India: European Commercial Enterprise in Pre-Colonial India. Delhi: Cambridge University Press.
- Gupta, Ashin Das and M.N. Pearson. (1997) India and the Indian Ocean 1500-1800. Delhi: Oxford University Press.

Suggestive readings

- Asher, Catherine B. and Cynthia Talbot. (2006). India before Europe. Cambridge: Cambridge University Press.
- Aquil, Raziuddin. ed. (2010). Sufism and Society in Medieval India. Delhi: Oxford University Press.
- Bahuguna, RP (2009). Madhyakalin Bharat mein Bhakti aur Sufi Andolan. Delhi: Granth Shilpi.
- Brown, Percy. (1968). Indian Architecture: Islamic Period.Bombay.DB Taraporevala.
- Chandra, S. (2004). Medieval India: From Sultanate to the Mughals, Part 1. Delhi: Haranand Publications.

- Chandra, S. (2004). Madhyakalin Bharat: Sultanate se Mughal tak, Bhag 1. Delhi: Jawahar Publishers.
- Chandra, S. (2007). History of Medieval India (800-1700). Delhi: Orient Longman.
- Chandra, S. (2007). Madhyakalin Bharat: Rajniti, Samajaur Sanskriti, Aathwi se Satrahvis shtabditak. Delhi: Orient Black Swan.
- Digby, Simon. (2004). "Before Timur came: Provincialization of the Delhi Sultanate through the fourteenth century." Journal of the Economic and Social History of the Orient vol. 47no.3, pp. 298-356
- Ernst, Carl W. and Bruce Lawrence. (2002)." The Major Chishti Shrines" in Sufi Martyrs of Love in the Chishti Order in South Asia and Beyond. New York: Palgrave Macmillan, pp.85-104.
- Flood, Finbarr Barry (Ed.). (2008). Piety and Politics in the Early Indian Mosque. Delhi: Oxford University Press.
- Eaton, Richard M. (1996). The Sufis of Bijapur, 1300-1700: Social Roles of Sufis in Medieval India. Princeton: Princeton University Press.
- Green, Nile. (2002). Sufis and Settlers in the Early Modern Deccan, Delhi: Oxford University Press.
- Habib, I. (2003). Madhyakalin Bharat ka Arthik Itihas Ek Sarvekshan. Delhi: Rajkamal, 2003.
- Habib, I. (Ed.). (1981-2003). Madhyakalin Bharat. 10 volumes. Delhi; Rajkamal.
- Hess, Linda. (1983). "The Cow is Sucking at the Calf's Teat: Kabir's Upside-Down Language."History of Religions vol. 22, pp. 313-37.
- Khanna, M. (2007). Cultural History of Medieval India. Delhi: Social Science Press.
- Khanna, M. (2012). Madhyakalin Bharat Ka Sanskritik Itihas. Delhi: Orient Black Swan.
- Koch, E. (2013). Mughal Architecture: An Outline of its History and Development (1526-1858). Delhi: Primus.
- Kumar, S. (2007). The Emergence of the Delhi Sultanate. Delhi: Permanent Black Kumar, Sunil. (2014). "Bandagi and Naukari: Studying Transitions in Political Culture and Service under the North Indian Sultanates, 13th-16th centuries" in Francesca Orsini and Samira Sheikh, (Eds.), After Timur Left: Culture and Circulation in fifteenth century North India. Delhi: Oxford University Press, pp. 60-108.
- Moosvi, Shireen. (1987). The Economy of the Mughal Empire. Delhi: Oxford University Press.
- Sastri, K. A. Nilkanta. (1998). A History of South India. Delhi. OUP.
- Vaniana, Eugenia. (2004). Urban Crafts and Craftsmen in Medieval India (Thirteenth-Eighteenth Centuries). Delhi: Munshiram Manoharlal.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

GENERIC ELECTIVES (GE-1): Politics of Nature

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Politics of Nature	**4**	**3**	**1**	**0**	XII Pass	NIL

Learning Objectives

This introductory course familiarizes students with major themes in the history of human inter-action with nature. It studies the long-term transformations made by humans on their surround-ing environment and the reciprocal effects of nature on societies. The themes include the inter-actions between humans and other living species, link between imperialism and environmental transformations, profligate use of resources, population growth, increasing urbanisation, carbon emission, and climate crisis. By focusing on the planetary scale of ecological interconnected-ness, the course enables students to understand the social, political, and cultural roots of the cur-rent environmental crisis. The course will also elaborate how the interdisciplinary approach enabled the environmental historians to arrive at new methodology in critically understanding the past. It integrates concepts and insights from Anthropology, Historical-Geography, Climate Science, Political Ecology, and Economics. The paper explains the politics of nature in terms of an increasing inequality in access to natural resources and the social responses to the unequal distribution of the effects of environmental degradation. Discussions on the politics of nature on a planetary scale will encourage students to innovate and suggest policy changes at the national and international level.

Learning outcomes

Upon completion of this course the student shall be able to:

- Discuss environmental issues within a social and political framework.

- Examine the role of social inequality. How does unequal distribution of and unequal access to environmental resources help understand the environmental crisis of the world - from the global to the local.
- Critique an understanding of environmental concerns based on a narrow scientific/technological perspective.
- Analyse the historical agency of animals.
- Understand how ideas about the environment have evolved in various socio-ecological contexts.
- Examine the complexities of resource distribution and inequalities of resource use, locating these within specific social contexts, with reference to case studies regarding the urban-environmental problems, industrial hazards and the environmental impacts of the mega-infrastructure projects.
- Locate solutions to the contemporary environmental problems within a framework of greater democratisation of resource use.

SYLLABUS OF GE-1

Unit I: Doing Environmental History

1. The themes of Environmental History.
2. Interdisciplinarity; Historical-Geography, Anthropology, Archaeology, and Political Ecology

Unit II: Societies and Natural Resources in the Pre-Modern World

1. Human-animal interactions
2. Pre-Industrial Prime Movers and Fuels

Unit III: Ecology and Imperial Power in the Early Modern World

1. The Columbian Exchange; Diseases
2. Colonialism and Natural Resources; Ecological Imperialism

Unit IV: The Worlds of Fossil Energy

1. Industrial Agriculture Steam Ships and Hydraulic Engineering
2. Cities and Environment; Delhi and Bombay

Unit V: The Great Acceleration and the Future

1. Carbon Emission and Environmental Justice; Climate Change
2. The Anthropocene Debate

Essential Readings

Unit I. This unit provides an overview of the major themes of environmental history and elaborates the interdisciplinary approaches developed by the environmental historians to study the past. **(Teaching time: 9 Hours approx)**

- Hughes, Donald (2006), What is Environmental History?. Cambridge: Polity Press. Chapter 1, pp. 1-17 [“Defining Environmental History”]
- McNeil, J. R. and Mauldin, E. S. (2012). A Companion to Global Environmental History. Oxford: Wiley-Blackwell, Introduction pp. xvi-xxiv.
- Conrad, Sebastian (2016), What is Global History. Princeton: Princeton University Press, pp. 1-17 [“Introduction”].

- Bayly, C. A, et al., “AHR Conversation: On Transnational History,” The American Historical Review, Vol. 111, No. 5, pp. 1440-64.

Unit II. This unit examines human interactions with the environment in pre-modern societies. The two rubrics are aimed to explore how human interaction with animals and the development of energy harnessing technologies transformed social relationships, practices, and ideas. **(Teaching time: 9 Hours approx.)**

- Richard Bulliet. Hunters, Herders and Hamburgers: The Past and Future of Human- Animal Relationships. New York: Columbia University Press, 2005, pp. 205 -224.
- Edmund Burke III. “The Big Story: Human History, Energy Regime and the Environment” in Edmund Burke III and Kenneth Pomeranz, eds., the Environment and World History. Berkeley: University of California Press, 2009. pp. 33-53.
- Smil, Vaclav (1994), Energy in World History. Colorado: Westview, 1994 [Chapter 2 “Energy in Prehistory, pp. 15-27; Chapter 3 “Traditional Agriculture,” pp. 28-91; Chapter 4 “Pre-Industrial Prime Movers and Fuel, 92-156].
- Deloche, John (1993), Transport and Communication in India: Prior to Steam Locomotion. New Delhi: Oxford University Press, pp. 227-254.

Unit III. : This unit explores how Empires of the New World transferred flora and fauna across continents, affected the demography of local societies and completely transformed landscapes. The second rubric explains how colonialism generated new patterns of consumption by appropriating global resources and fossil fuels for industry, to produce an interconnected but unequal world. **(Teaching time: 9 Hours approx.)**

- Crosby, Alfred W. (1967). “Conquistadory Pestilencia: The First New World Pandemic and the Fall of the Great Indian Empires,” The Hispanic American Historical Review, Vol.47(No.3), pp. 321-337.
- Crosby, Alfred W. (1988), “Ecological Imperialism: The Overseas Migration of Western Europeans as a Biological Phenomenon,” In Donald Worster, ed., The Ends of the Earth. New York: Cambridge University Press. pp. 104-105.
- Cronon, William (1983), Changes in the Land: Indians, Colonists and the Ecology of New England. New York: Hill and Wang, pp.3-18.
- McNeill, J.R. (2012). “Biological Exchange in Global Environmental History,” In J. R. McNeill & E. S. Maudlin, eds., Companion to Global Environmental History. Oxford: Blackwell, pp. 433-452.

Unit IV. This unit studies the new energy regimes of the modern world, with a special focus on the histories of landscape transformations. It offers a historical perspective on the increasing inequality of access to natural resources, especially in the context of industrialisation of agricultural production, hydraulic engineering, and the urbanization of natural resources. **(Teaching time: 9 Hours approx.)**

- McKittrick, Meredith (2012), “Industrial Agriculture,” In J. R. McNeill & E. S. Maudlin, eds., Companion to Global Environmental History. Oxford: Blackwell, pp. 411-432.

- Carse, Ashley (2014), Beyond the Big Ditch: Politics, Ecology, and Infrastructure at the Panama Canal. Cambridge, MA: The MIT Press, [Chapter 3: "Making the Panama Canal Watershed", pp. 37-58; Chapter 6: "Canal Construction and the Politics of Water", pp. 93- 120; Chapter 13: "A Demanding Environment," pp. 129-222].
- Awadhendra B. Sharan. In the City, Out of Place: Nuisance, Pollution, and Dwelling in Delhi, c. 1850-2000. Delhi: Oxford University Press, 2014 [Introduction; Chapter 4: Pollution-page numbers to be added]
- Riding, Tim (2018), "'Making of Bombay Island': Land Reclamation and Geographical Conception of Bombay, 1661-1728," Journal of Historical Geography, Vol. 59, pp. 27-39.
- Klein, Ira (1986), "Urban Development and Death: Bombay City, 1870-1914", Modern Asian Studies, Vol.20, No.4, pp.725-754.

Unit V. This unit introduces the concept of Anthropocene to discuss emergent concerns regarding the influence of humans on the planet's history. This provides a long-term historical perspective on contemporary environmental issues including global warming and the need for innovation and policy change at the national and international levels. **(Teaching time: 9 Hours approx)**

- Carruthers, Jane, (2011), "Recapturing Justice and Passion in Environmental His-tory: A Future Path", RCC Perspectives, No. 3, pp. 57-59.
- White, Sam. (2012). "Climate Change in Global Environmental History," In J. R. McNeill and E. S. Maudlin, eds., Companion to Environmental History. Oxford: Blackwell, pp. 394-410.
- Lewis, Simon L. and Maslin, Mark A. (2015). "Defining the Anthropocene," Nature, Vol. 519, pp. 171-80.
- Moore Jason W. ed., (2016), Capitalism in the Web of Life: Ecology and the Accumula-tion of Capital. London: Verso, pp. 169-192 ["Anthropocene or Capitalocene?: On the Nature and Origins of Our Ecological Crisis,"].

Suggestive readings

- Agarwal, Ravi (2010), "Fight for a Forest," In Seminar, No. 613, pp. 48-52 (On Delhi Ridge)
- Bauer Jordan and Melosi, Martin V. (2012). "Cities and the Environment," In J. R. McNeill and E. S. Maudlin, eds., Companion to Environmental History. Oxford: Blackwell, pp. 360-376.
- Brooke, John L. (2014), Climate Change and the Course of Global History: A Rough Journey. New York: Cambridge University Press, pp. 370-383 ["The Little Ice Age and the Black Death].
- Bulliet, Richard. (2005), Hunters, Herders and Hamburgers: The Past and Future of Human-Animal Relationships. New York: Columbia University Press, pp. 205 -224.
- Byrne, John, Leigh Glover and Cecilia Martinez, eds. (2002), Environmental Justice: Discourses in International Political Economy. London: Routledge, pp. 261-291 ["The Production of Unequal Nature"]
- Corona, Gabriella (2008), "What is Global Environmental History?" Global Environment, No. 2, pp. 228-249.

- Culver, Lawrence. (2014). "Confluence of Nature and Culture: Cities in Environmental History," In A. C. Isenberg (ed.), The Oxford Handbook of Environmental History. New York: OUP, pp. 553-572.
- Fitzgerald, Amy J. (2015). Animals as Food Reconnecting Production, Processing and Impacts. Michigan: Michigan State University Press, pp 9-34.
- Grove, Richard H. (1995), Green Imperialism: Colonial Expansion, Tropical Island Edens and the Origins of Environmentalism, 1600-1860. Cambridge: Cambridge University Press, pp. 16-72 ["Edens, Islands and Early Empires"].
- Lewis, Simon L. and Maslin, Mark A. (2015). "Defining the Anthropocene", Nature, Vol.519(12March), 171-80.
- Malm, Andreas. (2016). The Rise of Steam Power and the Roots of Global Warming. London: Verso. pp.389-394
- McKenney Jason. (2002). Artificial Fertility: "The Environmental Costs of Industrial Age Fertilisers" In Andrew Kimbrell (ed.), The Fatal Harvest Reader: The Tragedy of Industrial Agriculture. London: Island Press, pp.121-129
- Mitchell, Timothy. (2011), Carbon Democracy: Political Power in the Age of Oil. London: Verso, "Conclusion: No More Counting on Oil," pp. 231-254.
- Moore Jason W. (ed.) (2016) Anthropocene or Capitalocene?: Nature, History and the Crisis of Capitalism. Oakland: PM Press. pp. 173-195
- Moore, Jason W (2015), Capitalism in the Web of Life: Ecology and the Accumulation of Capital. London: Verso, pp. 241-306 ["The Long Green Revolution: The Life and Times of Cheap Food in the Long Twentieth Century", and "Conclusion: The End of Cheap Nature?"]
- Moore, Jason W. (2014), "The Value of Everything? Work, Capital, and Historical Nature in the Capitalist Ecology," Review (Fernand Braudel Centre), Vol. 37, No. 3-4, pp. 245- 292.
- Morrison, Kathleen D. (2015), "Provincializing the Anthropocene", Seminar, No. 673, 75- 80.
- Moss, Jeremy (2015), Climate Change and Justice: Cambridge: Cambridge University Press, 2015, pp. 1-16 [Introduction: Climate Justice].
- Nunn, Nathan and Qian, Nancy. "The Columbian Exchange: A History of Disease, Food, and Ideas", Journal of Economic Perspectives, Vol. 24, No.2 (2010), 163–188.
- Steffen, Will, Crutzen, Paul J and McNeill J. R. (2008). "The Anthropocene: Are Humans Now Overwhelming the Great Forces of Nature," Ambio, Vol. 36, (No.8), 614-21.
- Sutter, Paul S. (2007), "Nature's Agents or Agents of Empire? Entomological Workers and Environmental Change during the Construction of the Panama Canal," Isis, Vol. 98, No. 4, pp. 724-753.
- White Jr, Lynn (1974), Medieval Technology and Social Change. London: Oxford University Press, pp. q-38.
- सुर्मत गुहा, (2010) "अठारहवीं शताब्ि ी के महाराष्र में घास और चारे पर र्नयंत्रण: एक ऐर्तहार्सक अध्ययन", महश भारत में पयाि वरण के मिु ि े, र्पयसिन, र्ि ल्ली.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

GENERIC ELECTIVES (GE-2): Making of Post-Colonial India

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Making of Post-Colonial India	**4**	**3**	**1**	**0**	XII Pass	NIL

Learning Objectives

This thematic course introduces the students to various perspectives on India's evolving political, economic, social and cultural conditions from the 1940s to the 2000. The course intends to familiarise the students with some select themes pertaining to the gradual historical transformation of political organizations, the emergence of new forms of socio-political mobilization, the patterns of economic development and cultural representation and peoples' movements in the period under study.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Draw a broad outline of the history of the early years of the Indian Republic, focusing on the framing of the Constitution, the integration of princely states, the reorganization of states and the features of our foreign policy.
- Examine critically patterns of economic development in the early years of Independence and the subsequent shifts and the persistent problems of uneven development.
- Trace a broad history of political organizations at the national level and political developments in the regional contexts.
- Examine issues of critical relevance with respect to the assertions and mobilization in the movements on the questions of caste, tribe and women.

SYLLABUS OF GE-2

Unit I: Laying the Foundation of the Nation State

1. Making of Indian Constitution and its salient features;
2. Integration of princely states, delineating provincial boundaries and the formation of newer states;

Unit II: Political Trajectories.

1. Politics and Political Parties: I. Congress hegemony and counter-hegemony, the rise of regional political parties; II. left political parties and Left wing political radicalism; III. J.P. movement / Nav Nirman movement, Emergency and Janta interregnum; and IV. Jansangh and Rise of the BJP.
2. Key features of the foreign policy of India.

Unit III: Socio-Economic Development and underdevelopment

1. Concept of planned economy and the key features of respective five year plans for agrarian, industrial and other sectors;
2. Shift from the model of mixed economy and public sectors to economic liberalization, privatization and globalisation;
3. Discontents amongst peasants and workers and the larger concerns of economic re-distribution, inequality, sustainability and environment.
4. Peoples' Movements for Rights, Liberation and Social Justice: Dalits, Adivasis and women.

Unit IV: Shaping a new public sphere and its discontents

1. Education, science and technology;
2. Language and Literature;
3. Cinema and visual art.

Practical component (if any) - NIL

Essential/recommended readings

Unit I: This unit deals with laying the foundations of the Indian republic by discussing key debates in the framing of the Constitution, some aspects of the finally adopted Constitution and amendments within it particularly focusing upon the questions of citizenship, language, fundamental rights, directive principles and the rights of the minorities. The unit also deals with the integration of princely states and the process of delineating or reorganizing the provincial boundaries. **(Teaching Time: 3 weeks approx.)**

- Agnihotri, Rama Kant (2015), Constituent Assembly Debates on Language, EPW, Feb 21, 2015, pp. 47-56.
- Bhargava Rajiv. (ed.), (2009), Politics and Ethics of the Indian Constitution. New Delhi: Oxford University Press.
- Khosla, Madhav. (2020), India's Founding Moment. HUP.
- Ahmad, Aijaz. (1992). "Three World Theory: End of the Debate". In Theory. London: Verso.
- Asha Sarangi, Sudha Pai. (2011), Interrogating Reorganisation of States: Culture, Identity and Politics in India, Routledge India
- Austin, Granville (1999). The Indian Constitution: Cornerstone of Nation, New Delhi: OUP [relevant sections].
- Damodaran, A.K (1987), "Roots of Indian Foreign Policy", India International Centre Quarterly. Vol.14. No. 3., pp. 53-65
- Dhavan, Rajeev. (2008). "Book Review: Sarbani Sen, Popular Sovereignty and Democratic Transformations: The Constitution if India," Indian Journal of Constitutional Law, Vol.8, pp.204-220.

- Markovits, Claude. (2004), A History of Modern India. Anthem Press. (Chapter 21)

Unit II: This unit traces the trends of the emergence of political parties and movements in post-independence India. This unit will also focus on the key features of India's foreign policy in the period under study, including the non-alignment. **(Teaching Time: 4 weeks approx.)**

- Bipan Chandra. In the name of Democracy: JP Movement and the Emergency. Penguin Random House India. [Relevant chapters].
- Chatterjee, Partha (ed.). (1997). State and Politics in India. Delhi: Oxford University Press. [pp. 92-124].
- Francine Frankel et al, (eds.). (2002), Transforming India: Social and Political Dynamics of Democracy. Delhi: Oxford Univeresity Press. [Relevant chapters].
- Hasan, Zoya. (2004). Parties and Party Politics in India. New Delhi: Oxford University Press. Chapters 9 and 10.
- Jaffrelot, Christophe. (1999). The Hindu Nationalist Movement and Indian Politics 1925 to 1990s. New Delhi: Penguin. Chapters 3, 5, 7, 11 to 13. Chhibber, Pradeep K (1999). State Policy, Party Politics, and the Rise of the BJP in Democracy without Associations: Transformation of the Party System and Social Cleavages in India. Ann Arbor: University of Michigan Press. (pp. 159-176).
- Kochanek, Stanley. (1968). The Congress Party of India: The Dynamics of One-Party Democracy. Princeton: Princeton University Press. Chapters 1 to 4, 13 and 16.
- Kumar, Ashutosh (ed). (2016), Rethinking State Politics in India: Regions within Regions. New Delhi: Routledge India. [Relevant chapters].
- Nirija Gopal Jayal and Pratap Bhanu Mehta (2011) Oxford Companion to Politics in IndiaOxford University Press
- Subhash C. Kashyap, Our Parliament (National Book Trust) (Chapter 15).
- Tarlo, Emma. (2003) Unsettling Memories: Narratives of the Emergency in Delhi, Berkeley: University of California Press. Introduction and C (2017), Chapte (2017), r 2.

Unit III. This unit deals with the history of economic developments from 1950s till 2000. It focuses on planning, agrarian issue and industrialisation in the first two decades of Independence and goes on to explore the subsequent liberalization of the Indian economy and the concomitant uneven development. It also links this history with the unrest amongst peasants and workers as well as with the issues of sustainability and environment. **(Teaching Time: 4 weeks approx.)**

- Bhalla, G.S. (2007). Indian Agriculture since Independence, New Delhi: National Book Trust
- Chadha, G.K. Khurana, M.R. (1989). Backward Agriculture, Unrewarded Labour and Economic Deprivation: Bihar's Contrast with Punjab. EPW, Nov 25, 1989, pp. 2617 - 2623
- Partha Chatterjee (ed.) (1997 State and Politics in India. Delhi: OUP) "Chapter-7: Development Planning and Indian State."

- Roy, Tirthankar. Indian Economy after Independence: Economic History of India 1857- 2010. [Chapter-13].

- Singh, Satyajit K. (2010).“State, Planning and Politics of Irrigation Development: A Critique of Large Dams”, in in Achin Vanaik and Rajeev Bhargava (eds.), Understanding Contemporary India: Critical Perspective (Hyderabad: Orient BlackSwan), pp. 105-148.
- Kohli, Atul (2006). Politics of Economic Growth in India, 1980-2005: Part I & 2 -- The 1980s. EPW, V 41, No 13, April 1-7, 2006, pp 1251-1259; and EPW, Vol. 41, No. 14 (Apr. 8-14, 2006), pp. 1361-1370.
- Frankel, Francine R. (2005). India’s Political Economy. New Delhi: OUP. Chapters 1, 3 and 4.
- Prasad, Archana (2003). Preface: Ecological Romanticism and Environmental History. In Against Ecological Romanticism Verrier Elwin and the Making of an Anti-Modern Tribal Identity.
- Sangeeta Dasgupta, Introduction: Reading the Archive, Reframing ‘Adivasi’ Histories. IESHR, 53, 1, 2016, pp 1-8.
- Gadgil, Madhav and Ramachandra Guha (1994), Ecological Conflicts and the Environmental Movement in India, Development and Change. Vol 25. pp.101-136.

Unit IV. Shaping a new public sphere and its discontents: This unit traces the official policies as well as their contestations and alternatives with regard to some key themes of public sphere in post-independence India, such as Education policy: issues of access and participation; role and nature of the intervention of science and technology; politics over Language; emerging trends in Literature; and representations in Cinema and visual art. **(Teaching Time: 4 weeks approx.)**

- Balaran, Rakhee., Mitter, Partha., Mukherji, Parul Dave. (2021) 20th Century Indian Art: Modern, Post- Independence, Contemporary. Thames & Hudson.
- Brass, Paul R. (2005), Language, Religion and Politics in North India. Cambridge University Press, 1974. (Specially Introduction pp 3-50 and Chapters 3-5 pp 119-275).
- Das Gupta, Jyotirindra. (2018), Language Conflict and National Development: Group Politics and National Language Policy in India. University of California Press. First published, 1970.
- Deshpande Anirudh. (2014), Class, Power and Consciousness in Indian Cinema.
- Dwyer, Rachel. (2002). Cinema India: The Visual Culture of Hindu Film. New Jersey: Rutgers University Press.
- Gupta, Vikas. (2014), ‘Changing Discourses on Inequality and Disparity: From Welfare State to Neoliberal Capitalism’, in Ravi Kumar, (Ed.), Education, State and Market: Anatomy of Neoliberal Impact, Aakaar, pp 19-57.
- Gupta, Vikas. Agnihotri, Rama Kant. and Panda Minati (Ed.), (2021). Education and Inequality: Historical and Contemporary Trajectories. Orient Blackswan. (Relevant Chapters)
- Hasan Zoya. (ed,), (2019), Forging Identities: Gender, Communities, And The State In India. Routledge. Relevant chapters.

- Qaiser, Rizwan. (2013), "Building Academic, Scientific and Cultural Institutions, 1947- 1958", in his Resisting Colonialism and Communal Politics, Delhi, Manohar, (First published 2011). Pp. 179-240.
- Raina, Dhruv. (2006), "Science Since Independence." India International Centre Quarterly 33, no. 3/4: 182–95, http://www.jstor.org/stable/23006080.
- Sahu, Sudhansubala. (2018). "Revisiting Television in India," Sociological Bulletin, Vol. 67 (2), August, pp. 204-219.
- Sinha Gayatri. (2009), Art and visual culture in India, 1857-2007. Relevant Chapters.
- Vasudevan, Ravi. (2011), The Melodramatic Public: Film Form and Spectatorship in Indian Cinema. Palgrave Macmillan.

Suggestive readings - NIL

- Chandra, Bipan. (2008). India Since Independence. Delhi: Penguin
- Guha, Ramachandra. (2008). India After Gandhi.
- रामचंद्र गुहा. (2016). भारत गांधी के बाि, र्िल्ली: पेंगुइन बुक्स

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-3): Indian Science and Technology

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Indian Science and Technology	**4**	**3**	**1**	**0**	XII Pass	NIL

Learning Objectives

This course proposes to examine the interlinkages between science and technology with respect to society in India and its historical relevance and evolution. This paper is thematically arranged and provides a historical overview of Indian Science and Technology and acquaints students with historiographical debates. Further this paper takes a brief survey of the material culture as it evolved in Indian history. The students will study the evolution of agriculture in relation to the environment and animals. This paper will also explore the Indian contribution to the development of astronomy and mathematics, medicine, military and warfare technologies.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Critically understand the evolution of science and technology in India.
- Understand the interrelationship between science, technology and society.

SYLLABUS OF GE-3

Unit I: Historiography of Science and Technology

Unit II: The Environment, Agriculture and Animals

Unit III: Mathematics and Astronomy: From Aryabhatta to Sawai Jai Singh

Unit IV: Patients, Doctors and Medicines

Unit V: Military and Warfare Technologies

Practical component (if any) - NIL

Essential/recommended readings

Unit I: In this unit students will understand the debates pertaining to the historiography of Science and Technology in India. They will also examine and explore the question why science did not flourish in India despite significant scientific developments. Factors like the prevalence of social inequality acting as a barrier to the development of scientific temperament and experimentation will be explored. **(Teaching Time: 3 weeks approx.)**

- Chattopadhyay, D.P. (1986). History of Science and Technology in Ancient India: The Beginnings, Calcutta: Farma KLM Pvt Ltd, pp. 1-54.
- मुले, गुणाकर. (२००५). भारतीतिइतहासमेंत वज्ञान. त िल्ली:र्ात्रीप्रकाशन. (अध्यार्:त वज्ञानऔरसमाि; पृष्ठ११-29, ज्योत तषकाआरिऔररवकास; पृष्ठ४१-49, वैत िकतगणतकीसमीक्षा; पृष्ठ५0--66).

Unit II: In this unit students will explore the process of human settlement, domestication of animals and transformation in the environment due to the advent of agriculture and introduction of new crops. **(Teaching Time: 2.5 weeks approx.)**

- Saxena, R.C. et al. (1994). A Textbook on Ancient History of Indian Agriculture. Secunderabad: Asian Agri-History Foundation (Chapter 5 Crop Domestication and Diffusion, pp. 29-36).

Unit III: This unit will trace the development of astronomical and mathematical sciences from Aryabhatta to Sawai Jai Singh. Students will be acquainted with the rich Indian heritage of astronomy and mathematics. **(Teaching Time: 3.5 weeks approx.)**

- Kochar, Rajesh and Jayant Narlikar. (1995). Astronomy in India: A Perspective, New Delhi: INSA, pp. 1-27.
- Bag, A.K. (1995). 'Mathematical and Astronomical Heritage of India' in D.P. Chattopadhyay et. al., Mathematics Astronomy and Biology in Indian Tradition: Some Conceptual Preliminaries, Delhi: Indian Council for Philosophical Research, pp. 110-128.

Unit IV: In this unit, students will delve into the diverse healing systems and practices in India. They will explore the emergence of a syncretic culture of health, healing practices and healers. **(Teaching Time: 3 weeks approx.)**

- Majumdar, R.C. (1971). 'Ayurveda: Origins and Antiquity', in D.M. Bose, Concise History of Science in India, New Delhi: Indian National Science Academy, pp. 213-216; 'Ayurveda and its Classical Division', pp. 227-234; 'Ayurveda in the Middle Ages', pp. 262-265.
- Arnold, David (2000). Science, Technology and Medicine in Colonial India, The New Cambridge History of India, Cambridge: Cambridge University Press, pp. 1-9.
- Nanda, Meera. (2016). Science in Saffron, Delhi: Three Essays (Chapter 3, 'Genetics, Plastic Surgery and other Wonders of Ancient Medicines', pp. 93-120).
- Alavi, Seema. (2008). Islam and Healing: Loss and Recovery of an Indo-Islamic Medical Tradition, 1600-1900. New Delhi: Permanent Black (Introduction).

Unit V: This unit will examine the emergence of new military technologies and how these changed the course of warfare techniques in medieval times. Further this unit will also explore the advance-ment of military technologies for colonial dominance in the Indian subcontinent. **(Teaching Time: 3 weeks approx.)**

- Khan, I.A. (2004). Gunpowder and Firearms: Warfare in Medieval India. New Delhi: Ox-ford University Press.
- Habib, Irfan. (2008). Technology in Medieval India 650-1750, New Delhi: Tulika, pp. 87- 98.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-4): Media in History

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Media in History	**4**	**3**	**1**	**0**	XII Pass	Nil

Print media – Radio Transmission – The Cinematic Turn – Television and Digital Media

Learning Objectives:
The course will apprise the students with the elementary outlines of the history of media in India, from its beginnings to contemporary times. The different forms of media – Print, Audio-Visual and Electronic – the modes and methods will be discussed, and the potent ways in which technology and larger socio-political and economic trends intersected will be highlighted.

Learning Outcomes:
Upon successful completion of the course, students will be able to:

- Delineate the historical context within which the beginnings of each media platform can be understood.
- Analyze the state's attempts to control and organize media output through laws and policies.
- Explain the conjunctures of technological breakthroughs, advances and larger socio-economic and political matrices.
- Better appreciate the trends in media production, and its efforts in engaging with current ideological and socio-political issues.

Course Content

Unit I: Forms and Contexts

1. Introduction – Types of media to be studied and their unique Indian context and adaptation
2. Significance and impact of media in history

Unit II: Press/Print media

1. Press censorship in British India; Vernacular Press Act
2. Role of the Indian press in the freedom movement; views of Leaders,
3. Press in India after independence: The Press Commissions, Contemporary Opportunities and Challenges

Unit III: Radio Transmission

1. Radio Transmission in Colonial India – Foundation, Inter-war years; AIR Programming, Expansion and broadening of listenership base
2. Establishment and Expansion of Akashvani after 1947 – The Keskar years; Classical vs. Popular; Radio Ceylon and Vividh Bharati
3. Government Policies and Bandwidth matters since the 1970s – end of License Raj; FM Radio Wave; Community Radio; Podcasts

Unit IV: The Cinematic Turn

1. Cinema during Colonial Period - Silent Era, Genres and Censorship
2. Post-Independence Cinema till 1980s- Nation Building, Mainstream cinema and Parallel Cinema
3. Era of Liberalization, Globalization and Privatization- Changes in Production, Distribution and Exhibition, Experimental Cinema

Unit V: Studying Television and Digital Media

1. Television in India-The Doordarshan era- Entertainment, Infotainment
2. Rise of the Satellite TV – Soap Operas and 24x7 News, Changes and Effects.
3. Digital Media - Effects of Digital Media-Privacy and Surveillance, Misinformation and Disinformation

Essential Readings and Unit-Wise Teaching Outcomes:

Unit I: As the introductory unit, the focus will be on types of media to be studied and their unique Indian context and adaptations. The cross-fertilization between the terrains of technology, circulation of ideas, means and methods of propagation, and patterns of patronage, production and consumption can be elucidated. **(Teaching time: 2 week approx.)**

- Sarkar, S. 2015. Modern Times: India 1880s to 1950s: Environment, Economy, Culture. New Delhi: Orient Blackswan.
- Khanna, A. 2019. Words. Sounds. Images: A History of Media and Entertainment in India. New Delhi: Harper Collins.
- Chatterjee, K, 2020. Media and Nation Building in Twentieth-Century India: Life and Times of Ramananda Chatterjee. New Delhi: Routledge.

Unit II This unit will give a broad historical overview of the coming of the printing press in the Indian Subcontinent, and discuss aspects of book production under colonial conditions.It aims to make a historical assessment of how Indian readers consume printed contents through well-chosen case studies. **(Teaching time: 3 weeks approx.)**

- Robert Darnton (2002) “Book Production in British India, 1850-1900” Book History, vol. 5, pp. 239-262.
- A.R. Venkatachalapathy (2012) The Province of the Book, Ranikhet: Permanent Black, “Readers, Reading practices, modes of reading” (chapter 7).
- Krishna Murthy, Nadig (1966) Journalism - Origin Growth and Development of Indian Journalism from Ashoka to Nehru, Prasaranga, University of Mysore.
- Rao, M. Chalapathi (1974) The Press. National Book Trust, New Delhi.
- Devika Sethi. 2016. War over Words : Censorship in India, 1930-1960.Cambridge: Cambridge University Press.
- रामशरण जोशी (2012), मीडिया, मिथ और समाज, Shilpayan; First edition.
- रत्नाकर पाण्डेय, हिंदी पत्रकारिता और समाचारों की दुनिया.

- बिपिन चंद्र, मृदुला मुखर्जी, आदित्य मुखर्जी, के एन पन्नीकर, सुचेता महाजन: भारत का स्वतंत्रता संघर्ष, अध्याय आठ- प्रेस की आज़ादी के लिए संघर्ष।

Unit III: The section on Radio will help the students to understand the complex trajectories of the beginnings and development of Radio transmission in India. With its establishment in the colonial period, radio has expanded its reach and remains the most widespread popular medium of entertainment, infotainment and news across the country. The shifts in government policies, technical and programming/content related matters reflect the changing socio-political and economic milieu, and this section will acquaint the students with the same. **(Teaching Time: 3 weeks approx.)**

- Malik, K.K. Mixed Signals: Radio Broadcasting Policy in India.
- Chatterjee, P.C. Broadcasting in India
- Bandopadhyay, P.K. 2015. The Genesis and Growth of Broadcasting in India: From Lionel Fielden to the Present Day. New Delhi: B.R.Publishing Corporation Ld
- Gupta, P.S. 2001. "Radio and the Raj." Power, Politics and the People: Studies in British Imperialism and Indian Nationalism. New Delhi: Permanent Black, pp 447-80.
- Pinkerton, A. 2008. "Radio and the Raj: Broadcasting in British India, 1920- 1940." Journal of the Royal Asiatic Society, Vol. 18, No. 2, pp 167-91.

Unit IV: The unit will focus on the development of Indian cinema during the colonial period and afterwards. The post-independence cinema and the changes brought about in 1990s and after will also be studied. **(Teaching time: 4 weeks approx.)**

- Rangoonwala, Firoze, 75 years of Indian Cinema, Indian Book Company, Delhi, 1975
- Rangoonwala, Firoze, Bhartiya Chalchitra Ka Itihas, Rajpal & Sons, Delhi, 1975
- Kaul, Gautam, Cinema and the Indian Freedom Struggle, Sterling Publishers Pvt. Ltd., Delhi, 1999
- Vasudev, Aruna, Liberty and Licence in the Indian Cinema, Vikas Publishing House Pvt. Ltd., Delhi, 1978
- Sharma, Manoj, National Movement and Currents of Social Reform in Hindi Cinema: 1931-1947, Proceedings of Indian History Congress, Vol. 66, (2005-2006), pp.492-498, JSTOR
- Chatterji, Shoma A. Subject: Cinema, Object: Women: A Study of the Portrayal of Women in Indian Cinema, Parumita Publications, Calcutta, 1998

Unit V: The unit will focus on the development of television and spread of its programming. It will also look into the arrival of 24x7 televisions programming and viewing. Digital media will also be discussed and analyzed**. (Teaching time: 3 weeks approx)**

- Conrad, P. (2016). Television: The medium and its manners. Routledge.
- Devi, S. (2022) Media Discourse in Contemporary India: A study of select news channels. Routledge.
- Fiske, J. (2004) Reading Television. Routledge.
- Ghose, B. (2005). Doordarshan Days. Penguin/Viking
- Gray, J., & Lotz, A. D. (2019). Television Studies. John Wiley & Sons

Suggested Readings:

- Finkelstein, D. & Peers, D.M. 2000. Negotiating India in Nineteenth Century Media. London: Palgrave Macmillan

- AS Iyengar. Role of Press and Indian Freedom Struggle
- Madan Gopal. Freedom Movement & The Press : The Role of Hindi Newspapers
- Mann, M. 2017. Wiring the Nation: Telecommunication, Newspaper-Reportage, and Nation Building in British India, 1850–1930. New Delhi: Oxford University Press
- Robert Darnton (2001) "Literary Surveillance in the British Raj: The Contradictions of Liberal Imperialism", Book History, Volume 4, 2001, pp. 133-176.
- Lelyveld, D. 1995. "Upon the Subdominant: Administering Music on All India Radio." Social Text, Vol. 39, pp 111-27
- Kripalani, C. 2018. "All India Radio's Glory Days and Its Search for Autonomy" in Economic and Political Weekly, Vol. 53, No. 37, pp 42-50.
- Jhingan, S. 2011. "Re-embodying the Classical: The Bombay Film Song in the 1950s" in Bioscope, Vol 2, No. 2, pp 157-79
- Vasudev, Aruna, New Indian Cinema, Delhi, MacMillan, 1986
- Thoravel, Yves, The Cinemas of India, Macmillan, Delhi, 2000
- Rini Bhattacharya Mehta & Rajeshwari V. Pandharipande ed, Bollywood and Globalisation; Indian Popular cinema: Nation and Diaspora, Anthem Press, London, 2010
- डॉ. परमवीर सिंह , भारतीय टेलिविज़न का इतिहास। एडुक्रीएशन पब्लिशिंग, (२०१७)

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF POLITICAL SCIENCE

SEMESTER-III

BA (Hons.) Political Science

DISCIPLINE SPECIFIC CORE COURSE – 7: Political Theory: Concepts and

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Political Theory: Concepts and Debates DSC-7	4	3	1	0	12th Pass	NIL

Learning Objectives

This course will familiarize students with the basic normative concepts in political theory and encourage them to understand how they manifest in social practices while engaging in relevant debates. The course will make use of these concepts, understood as values, in organizing our collective life in a political community. The course will develop a broader understanding of some of the key concepts of political practices which affects lives of people in a significant way. It gives a conceptual framework to further explore some of the important political processes and institutions. It aims to evaluate and analyse political issues, debates and arguments from their core value analysis through significant policy changes. It further endeavours to bring change in the very understanding of values and concepts to address issues of contemporary times.

Learning outcomes

After completing the course, the learner will be able to:

- Understand the dimensions of shared living through these political values and concepts.
- Appreciate how these values and concepts enrich the discourses of political life, sharpening their analytical skills in the process.
- Instigate further developments of these concepts in new ways
- Develop an insight to some of the core political issues
- Develop critical analytical skill to evaluate core political debates and issues.
- Brings conceptual understanding and clarity to social, political, economic and cultural issues.

SYLLABUS OF DSC-7

UNIT – I (9 Hours)
Freedom

a) Liberty: Negative and Positive
b) Freedom, Emancipation, *Swaraj*
Debate: Free speech, expression and dissent

UNIT – II (9 Hours)
Equality

a) Equality of opportunity and Equality of Outcome
b) Egalitarianism: Background inequalities and differential treatment
Debate: Affirmative action

UNIT – III (9 Hours)
Justice

a) Justice: Procedural and Substantive
b) Rawls and his critics
Debate: Scope of Justice – National vs Global

UNIT – IV (9 Hours)
Rights

a) Rights: Natural, Moral and Legal
b) Rights and Obligations
Debate: Human Rights - Universalism or Cultural Relativism

UNIT – V (9 Hours)
Democracy

a) Democracy: Idea and Practice
b) Liberal Democracy and its critics
c) Multiculturalism and Toleration
Debate: Representation vs participation

Essential/recommended readings

I. Freedom

Riley, J. (2008) 'Liberty', in McKinnon, C. (ed), *Issues in Political Theory*. New York: Oxford University Press, pp. 103-125.

Knowles, D. (2001) *Political Philosophy*. London: Routledge, pp. 69- 132.

Swift, A. (2001) *Political Philosophy: A Beginner's Guide for Students and Politicians*. Cambridge: Polity Press, pp. 51-88.

Carter, I. (2003) 'Liberty', in Bellamy, Richard and Mason, Andrew (eds), *Political Concepts*. Manchester: Manchester University Press, pp. 4-15.

Smits, K. (2009). 'Should Offensive Speech be Regulated?', In *Applying Political Theory: Issues and Debates*. Palgrave Macmillan, PP. 152-170.

Sethi, A. (2008) 'Freedom of Speech and the Question of Censorship', in R. Bhargava and A. Acharya (eds), *Political Theory: An Introduction.* New Delhi: Pearson Longman, pp. 308-319.

II. Equality

Swift, Adam. (2001) *Political Philosophy: A Beginner's Guide for Students and Politicians*. Cambridge: Polity Press, pp. 91-132.

Casal, P. and William, A. (2008) 'Equality', in McKinnon, C. (ed), *Issues in Political Theory*. New York: Oxford University Press, pp. 149-165.

Acharya, A. (2008) 'Affirmative Action', in Bhargava, R. and Acharya, A. (eds), *Political Theory: An Introduction.* New Delhi: Pearson Longman, pp. 298-307.

Smits, K. (2009). 'Is Affirmative Action Fair?', in *Applying Political Theory: Issues and Debates*. Palgrave Macmillan, pp. 65-85.

III. Justice

Menon, K. (2008) 'Justice', in Bhargava, R. and Acharya, A. (eds), *Political Theory: An Introduction.* New Delhi: Pearson Longman, pp. 74-86.

Wolf, J. (2008) 'Social Justice', in McKinnon, C. (ed), *Issues in Political Theory*. New York: Oxford University Press, pp. 172-193.

Brock, G. (2008) 'Global Justice', in McKinnon, C. (ed), *Issues in Political Theory*. New York: Oxford University Press, pp. 289-312.

IV. Rights

Talukdar, P.S. (2008) 'Rights', in Bhargava, R. and Acharya, A. (eds), *Political Theory: An Introduction.* New Delhi: Pearson Longman, pp. 88-104.

Mckinnon, C. (2003) 'Rights', in Bellamy, Richard and Mason, Andrew (eds), *Political Concepts*. Manchester: Manchester University Press, pp. 16-27.

Campbell, T. (2008) 'Human Rights', in McKinnon, C. (ed), *Issues in Political Theory*. New York: Oxford University Press, pp. 194-217.

V. Democracy

Srinivasan, J. (2008) 'Democracy', in Bhargava, R. and Acharya, A. (eds), *Political Theory: An Introduction.* New Delhi: Pearson Longman, pp. 106-128.

Owen, D. (2003) 'Democracy', in Bellamy, Richard and Mason, Andrew (eds), *Political Concepts*. Manchester: Manchester University Press, pp. 105-117.

Christiano, T. (2008) 'Democracy', in McKinnon, C. (ed), *Issues in Political Theory*. New York: Oxford University Press, pp. 80-102.

Mookherjee, M. (2008) 'Multiculturalism', in McKinnon, C. (ed), *Issues in Political Theory*. New York: Oxford University Press, pp. 218-240.

Seglow, J. (2003) 'Multiculturalism', in Bellamy, Richard and Mason, Andrew (eds), *Political Concepts*. Manchester: Manchester University Press, pp. 156-168.

Galeotti, A. E. (2008) 'Toleration', in McKinnon, C. (ed), *Issues in Political Theory*. New York: Oxford University Press, pp. 126-148.

Additional Resources:

Mill, J. S. (1991) *On Liberty and Other Essays*. ed. Jon Gray. Oxford: Oxford University Press.

Berlin, I. (1969) 'Two Concepts of Liberty', in *Four Essays on Liberty*. England: Oxford University Press, pp. 118-172.

Rawls, J. (1971) *A Theory of Justice.* Harvard: Harvard University Press.

Dworkin, R. (1981) 'What is equality? Part I: Equality of Welfare', *Philosophy and Public Affairs* 10 (3), pp. 185-246.

Dworkin, R. (1981) 'What is equality? Part II: Equality of Resources', *Philosophy and Public Affairs* 10 (3), pp. 185-243.

Dworkin, R. (1977) *Taking Rights Seriously*. London: Duckworth.

Dryzek, J. (2000) *Deliberative Democracy and Beyond*. Oxford: Oxford University Press.

Miller, D. (2006) *The Liberty Reader*. Edinburgh: University of Edinburgh Press.

Knowles, Dudley. (2001) *Political Philosophy*. London: Routledge.

Swift, Adam. (2001) *Political Philosophy: A Beginner's Guide for Students and Politicians*. Cambridge: Polity Press

Arblaster, A. (1994) *Democracy*. (2nd Edition). Buckingham: Open University Press.

Mendus, S. (ed.) (1999) *The Politics of Toleration*. Edinburgh: University of Edinburgh Press.

Readings in Hindi

भार्गव, र. औरअशोकआचार्या (सं), राजनीतिकसिधांत: एकपरिचय, दिल्ली: पिएर्सन, 2008.

कुमार, संजीव (सं.),राजनीतिसिधांतकीसमझ, दिल्ली: ओरिएंटब्लैकस्वान, 2019.

कुमार, संजीव (सं),राजनीतिसिधांत : अवधारणाएँऔरविमर्श, नईदिल्ली : सेजभाषा, 2021.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 8:Ancient and Medieval Indian Political Thought

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Ancient and Medieval Indian Political ThoughtDSC-8	4	3	1	0	12th Pass	NIL

Learning Objectives

The political thought which constitutes the dominant element of political Science is essentially euro genetic and Eurocentric. What we study in our universities are ones which evolved and developed with European and Anglo-American tradition. The conceptual framework and

discourses were product of societies and the forces amidst which they took birth and the shape. That does not mean that India had no tradition of political thinking. This paper seeks to critically engage with writers of ancient India who produced wonderful treatise on the statecraft and several elements of government and governance. This includes the concept of monarchy, the forms of government, the role of the state and state individual relationship.

Learning outcomes

After reading the course the students would be able to answer

- What were the major institutions of government in ancient India and how did they function?
- How thinkers like Manu, Shukra, Brihaspati and Kautilya perceived the role of statecraft in society?
- What was the Nitisar tradition? How did it mark a difference from the Arthashastra tradition?
- The students will be able to answer how Kabir epitomised the syncretic traditions of India.
- What was the political and economic ideas of Tiruvallur and what was his take on ethics?

SYLLABUS OF DSC- 8

UNIT – I (5 hours)

Foundations of Indian Political Thought:

- An Overview on Sources of Indian Political Thought
- Cultural and Territorial conception of India
- Distinctive Features of Indian Political Thought

UNIT – II (4 hours)

Manu:

- Authenticity of Manu smriti (Talking Point)
- Social Laws and Conception of Justice

UNIT – III (4 hours)

Brihaspati: Statecraft, Justice, Inter-state Relations

UNIT – IV (4 hours)

Shukra/Usana

- Talking Point: Debate on the authenticity of Shukra-Niti
- The Concept of Kingship and Statecraft in Shukra-Niti

UNIT – V (4 hours)

Kautilya: Theory of State

UNIT – VI (4 hours)

Aggannasutta (DighaNikaya): Theory of kingship

UNIT – VII (4 Hours)

Tiruvalluvar: Ethical Life and Politics

UNIT – VIII (4 Hours)

Basavanna

UNIT – IX (4 Hours)
Adi Shankracharya: Advaita

UNIT – X (4 Hours)
Kabir and Guru Nanak: Syncretism

UNIT – XI (4 Hours)
Abu'lFazl: Monarchy

Essential/recommended readings

Unit 1: Foundations of Indian Political Thought:

V. R. Mehta (1992) Introduction, in Foundation of Indian Political Thought, Delhi, Manohar, pp. 1-11.

Brown, D. M. (1953). The Premises of Indian Political Thought. The Western Political Quarterly, 6(2), 243–249.

Suda, J. P. (1970). Dharma: Its Nature and Role in Ancient India. The Indian Journal of Political Science, 31(4), 356–366.

Varma, Vishwanath Prasad (1953). Studies in Hindu Political Thought and its Metaphysical Foundations, Motilal Banarsidas, Delhi.

Flood, Gavin (2003). The Blackwell Companion to Hinduism. Blackwell Publishing Ltd, UK.

Unit 2: Manu

Manu (2006) 'Rules for Times of Adversity', in P. Olivelle (ed. & trans.) Manu's Code of Law: A Critical Edition and Translation of the Manava- Dharamsastra, New Delhi: OUP, pp.208-213.

V. Mehta (1992) 'The Cosmic Vision: Manu', in Foundations of Indian Political Thought, Delhi: Manohar, pp. 23- 39.

R. Sharma (1991) 'Varna in Relation to Law and Politics (c 600 BC-AD 500)', in Aspects of Political Ideas and Institutions in Ancient India, Delhi: Motilal Banarsidass, pp. 233- 251

P. Olivelle (2006) 'Introduction', in Manu's Code of Law: A Critical Edition and Translation of the Manava –Dharmasastra, Delhi: Oxford University Press, pp. 3- 50.

Unit 3: Brihaspati: Statecraft, Justice, Inter-state Relations

Vajpeyi, Raghavendra (1966) Barhaspatya Rajya-Vyavastha: Political and Legal System of Brhaspati. ChaukhambaVidyabhawan, Varanasi.

Chousalkar Ashok S. (2018). Revisiting the Political Thought of Ancient India: Pre-KautilyanArthashastra: SAGE Publications Pvt Ltd, Delhi.

Kane, P.V (1940). "Rajyashastras of Brihaspati, Usanas, Bhardwaj and Vishalaksh". Journal of the University of Bombay.

Unit 4: Shukra/Usana:

Nagar, Vandana (1985). Kingship in Shukra-Niti, Pushpa Prakashan, Delhi, India.

Varma, Vishwanath Prasad (December 1962). "Some Aspects of Public Administration in The Sukraniti". Indian Journal of Political Science. 23 (1/4): 302–308.

Puntambekar, S. V. (1948). Some Aspects of Sukra's Political Thought. The Indian Journal of Political Science, 9(2/3), 1–12.

Unit 5: Kautilya: Theory of State

Kautilya (1997) 'The Elements of Sovereignty' in R. Kangle (ed. and trns.), Arthasastra of Kautilya, New Delhi: Motilal Publishers, pp. 511- 514.

V. Mehta (1992) 'The Pragmatic Vision: Kautilya and His Successor', in Foundations of Indian Political Thought, Delhi: Manohar, pp. 88- 109.

R. Kangle (1997) Arthashastra of Kautilya-Part-III: A Study, Delhi: Motilal Banarsidass, pp. 116- 142.

Unit 6: Aggannasutta (DighaNikaya): Theory of kingship

S. Collins (ed) (2001) Agganna Sutta: An Annotated Translation, New Delhi: Sahitya Academy, pp. 44-49.

S. Collins (2001) 'General Introduction', in Agganna Sutta: The Discussion on What is Primary (An Annotated Translation from Pali), Delhi: Sahitya Akademi, pp. 1- 26.

B. Gokhale (1966) 'The Early Buddhist View of the State', in The Journal of Asian Studies, Vol. XXVI (1), pp. 15- 22.

Unit 7: Tiruvalluvar: Ethical Life and Politics

Maharajan, S. (2017), Makers of Indian Literature: Tiruvalluvar, Sahitya Akademi Publication, New Delhi.

K. V. Nagarajan Thiruvalluvar's Vision: Polity and Economy in Thirukkural, History of Political Economy 37:1, 2005 by Duke University Press.

C.S. Srinivasachari, The Political Ideology of the Kural, Indian Journal of Political Science, Oct-Dec 1949, pp 15-23

Norman Cutler, Interpreting Thirukural: The Role of the Commentary in the Creation of a Text, Journal of the American Oriental Society, October- December 1992, Vol 112, No 4, pp 549-556

Unit 8: Basavanna

H. Thipperudraswamy, Basaveshwara, Sahitya Akademi, 1975.

Julia Leslie, Understanding Basava; History, Historiography, and a Modern Kannada Drama, Bulletin of the School of Oriental and African Studies, university of London, 1998, Vol 61, No 2, pp 228-261.

M. P. Samartha, Basava's Spiritual Struggle, Religious Studies, Cambridge University Press, Sept 1977, Vol 13, No 3, pp 335-347.

Unit 9: Adi Shankracharya –Advaita

Koller, John, M. (2012) 'Shankara', in Chad Meister & Paul Copan (eds.), The Routledge Companion to Philosophy of Religion, pp. 99 - 108.

ManilalDvivedi, The Advaita Philosophy of Shankara, pp. 95-113. (Published by Department of Oriental Studies, University of Vienna).

Chatterjee and Dutta (2007), An Introduction to Indian Philosophy, New Delhi: Rupa Publications, pp 317 - 382.

Swami Mukhyananda (2006), Shri Shankaracharya: Life and Philosophy, Kolkata: Advaita Ashram, pp. 1 - 64.

Unit 10: Kabir and Guru Nanak: Syncretism

Kabir. (2002) The Bijak of Kabir (translated by L. Hess and S. Singh), Delhi: Oxford University Press, No. 30, 97, pp. 50- 51 & 69- 70.

V. Mehta (1992) Foundation of Indian Political Thought, Delhi: Manohar, pp. 157- 183.

G. Omvedt (2008) 'Kabir and Ravidas, Envisioning Begumpura', in Seeking Begumpura: The Social Vision of Anti Caste Intellectual, Delhi: Navayana, pp. 91- 107.

Unit 11: Abu'lFazl: Monarchy

A. Fazl (1873) The Ain-i Akbari (translated by H. Blochmann), Calcutta: G. H. Rouse, pp. 47-57.

V. Mehta (1992) 'The Imperial Vision: Barni and Fazal', in Foundations of Indian Political thought, Delhi: Manohar, pp. 134- 156.

Additional Readings:

V.R.Mehta, Foundations of Indian Political Thought. Delhi: 1992, Manohar

U.N.Ghoshal, A History of Indian Political Ideas: the ancient period and the period of transition to the middle ages . OUP, Bombay, 1959

Himanshu Roy &M.P.Singh (eds.), Indian Political Thought, Pearson, Second edition, 2017.

Ankit Tomar&Suratha K Malik (eds.), Ancient and Medieval Indian Thought: Themes and Traditions. Sage. 2020

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 9: Constitutional Government and Democracy in India

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Constitutional Government and Democracy in India DSC 9	**4**	**3**	**1**	**0**	**12th Pass**	**NIL**

Learning Objectives

The aim of this course is to enable students to know the constitutional design of government and political institutions in India. The purpose is to understand how liberty, equality and justice, territorial decentralization and federalism, development and democracy, serve as values on which constitutional democracy in India is premised. The course traces the contestations over how these values were incorporated in the Constitution, and demonstrates the manner in which they played out in practice. It encourages students to see how institutional practices and constitutional design are impacted by the political contexts within which they unfold. The relationship between emergency provisions, constitutionalism and democracy offers significant insights into these processes. The course helps develop an understanding of how the different organs of government exist in an institutional matrix which is characterised by conflict and cooperation, division of powers in an asymmetrical federal arrangement, protection of the vulnerable against discrimination on the grounds of cases, class, ethnicity and gender, and decentralisation of power to facilitate participatory governance at local levels. The course is expected to enable students to develop the ability to comprehend the r relationships between constitutionalism, democracy and governance by using concepts and analytical frameworks informed by the scholarly literature on the subject buttressed by empirical details.

Learning outcomes

On successful completion of the course, students will demonstrate:

- understanding the specificities of Indian constitutionalism through a reading of the Constituent Assembly debates
- familiarity with the debates around constitutional architecture, institutional design and practice, and constitutional democracy
- awareness of the manner in which government functions through its various organs
- understanding of the division of power between various organs of the government at different levels.

SYLLABUS OF DSC-9

UNIT – I (11 Hours)
The Constituent Assembly and the Constitution

a) Philosophy of the Constitution, the Preamble, and features of the Constitution.
b) Citizenship, Fundamental Rights, Directive Principles and Fundamental Duties

UNIT – II (11 Hours)

Organs of Government

a) The Legislature: Power and Functions of Parliament, Debates on Representation in Parliament.
b) The Executive: Election, Power, Functions and the changing role of President and Prime Minister.
c) The Judiciary: Appointment of Judges in High Courts and the Supreme Court, Power and Functions of High Courts and the Supreme Court.

UNIT – III (12 Hours)

Federalism and Decentralization

a) Centre-State Relations, Asymmetrical Federalism
b) The Panchayats and Municipalities

UNIT – IV (11 Hours)

Constitutional Provisions and National Security Laws

a) Emergency Provisions
b) Preventive Detention and National Security Laws

Essential/recommended readings

Classics

The Nehru Committee Report: An Anti-Separatist Manifesto (1928), The Committee Appointed by the All Parties' Conference, New Delhi: Michiko &Panjathan.

Shriman Narayan Agarwal (1946), *Gandhian Constitution for Free India*, Foreword by Mahatma Gandhi, Kitabistan, Allahabad.

Shiva Rao (1968), *The Framing of India's Constitution, A Study*, Indian Institute of Public Administration, New Delhi, printed by Government of India Press, Nasik, distributed by N.M. Tripathi Pvt. Ltd, Bombay.

Unit wise reading list

1. The Constituent Assembly and the Constitution

a. Philosophy of the Constitution, the Preamble, and Features of the Constitution

G. Austin (2010), 'The Constituent Assembly: Microcosm in Action', in *The Indian Constitution: Cornerstone of a Nation*, New Delhi: Oxford University Press, 15th print, pp.1-25.

R. Bhargava (2008), 'Introduction: Outline of a Political Theory of the Indian Constitution', in R. Bhargava (ed.) *Politics and Ethics of the Indian Constitution*, New Delhi: Oxford University Press, pp. 1-40.

A. Thiruvengadam (2017), The Constitution of India, A Contextual Analysis, Oxford: Bloomsbury, Ch. 'Origins and the Crafting of the Constitution', pp.11-38.

D.D. Basu (2012), *Introduction to the Constitution of India,* New Delhi: Lexis Nexis.

S.K. Chaube (2009), *The Making and Working of the Indian Constitution*, Delhi: National Book Trust [Ch.III: The Spirit of the Indian Constitution, pp.21-29].

Bipan Chandra, M Mukherjee, A Mukherjee (2000), India After Independence, 1947-2000, [Ch.4. The Evolution of the Constitution and Main Provisions, pp.31-48, Ch.5. The Architecture of the Constitution: Basic Features and Institutions, pp.49-67.]

b. Citizenship, Fundamental Rights, Directive Principles and Fundamental Duties

The Constitution of India, Part II, Part III, Part IV and Part IV A

S.K. Chaube (2010), *The Making and Working of the Indian Constitution*, New Delhi: National Book Trust [Chapter V: 'The Rights of the Indians', pp.33-61]

Madhav Khosla (2012), *The Indian Constitution*, New Delhi: Oxford University Press [Chapter 3: pp.87-148]

Subhash Kashyap (2017), *Our Constitution: An Introduction to India's Constitution and Constitutional Law*, New Delhi: National Book Trust.

V. Rodrigues (2008), 'Citizenship and the Indian Constitution', in R. Bhargava (ed.) *Politics and Ethics of the Indian Constitution*, New Delhi: Oxford University Press, pp.164-188.

A. Roy (2016), *Citizenship in India*, New Delhi: Oxford University Press, Ch.1 and Ch.2.

MHRD (1999), *Fundamental Duties of Citizens: Report of the Committee set up by the Government of India to Operationalize the Suggestions to Teach Fundamental Duties to the Citizens of the Country*, Volume I, Delhi: Government of India.

G. Austin (2010), *The Indian Constitution: Cornerstone of a Nation*, New Delhi: Oxford University Press, 15th print [Chapter 3: The Conscience of the Constitution: The Fundamental Rights and Directive Principles of State Policy – I, pp.50-83; Chapter 4: Fundamental Rights – II, pp.84-115].

2. Organs of Government

a. The Legislature

The Constitution of India, Part V, Chapter II

S. K. Chaube (2009), *The Making and Working of the Indian Constitution*, Delhi: National Book Trust [Ch. IX: The Union Government II: The Legislature, pp.132-161]

B. Shankar and V. Rodrigues (2011), 'The Changing Conception of Representation: Issues, Concerns and Institutions', in *The Indian Parliament: A Democracy at Work,* New Delhi: Oxford University Press, pp. 105-173.

M.R. Madhavan (2017), 'Parliament', in D. Kapur, P.B. Mehta and M Vaishnav (eds.) Rethinking Public Institutions in India, New Delhi: Oxford University Press, pp. 67-103.

A. Thiruvengadam (2017), *The Constitution of India, A Contextual Analysis, Oxford: Bloomsbury* [Ch.2 Parliament and the Executive, pp.39-70]

Shirin M. Rai and Carole Spary (2019), *Performing Representation: Women Members in the Indian Parliament*, New Delhi: Oxford University Press [Ch.4: Representative Women? Presence and Performance of Intersectionality, pp.123-167; Ch. 5: Women Members of Parliament: Presence and Participation in Parliamentary Debates, pp.168-209]

V. Hewitt and S. Rai (2010), 'Parliament', in P. Mehta and N. Jayal (eds.) *The Oxford Companion to Politics in India,* New Delhi: Oxford University Press, pp. 28-42.

G. Austin (2010),*The Indian Constitution: Cornerstone of a Nation*, New Delhi: Oxford University Press, 15th print [Chapter 6: The Legislature – Unity Through Popular Government, pp.144-163]

b. The Executive

The Constitution of India, Part V, Chapter I and III

S.K. Chaube (2009), *The Making and Working of the Indian Constitution*, Delhi: National Book Trust [Ch. VIII: The Union Government I: The Executive, pp.100-131].

James Manor (2017), 'The Presidency', in D. Kapur, P.B. Mehta and M Vaishnav (eds.) *Rethinking Public Institutions in India*, New Delhi: Oxford University Press, pp. 33-66.

J. Manor (1994), 'The Prime Minister and the President', in B. Dua and J. Manor (eds.) *Nehru to the Nineties: The Changing Office of the Prime Minister in India,* Vancouver: University of British Columbia Press, pp. 20-47.

H. Khare (2003), 'Prime Minister and the Parliament: Redefining Accountability in the Age of Coalition Government', in A. Mehra and G. Kueck (eds.) *The Indian Parliament: A Comparative Perspective,* New Delhi: Konark, pp. 350-368.

G. Austin (2010), *The Indian Constitution: Cornerstone of a Nation*, New Delhi: Oxford University Press, 15th print [Chapter 5: The Executiy: Strength With Democracy, pp.116-143]

c. The Judiciary

The Constitution of India, Part V, Chapter IV; Part VI, Chapter V

Arghya Sengupta (2019), *Independence and Accountability of the Indian Higher Judiciary*, New Delhi, Cambridge University Press, Ch.2 'Appointments to the Higher Judiciary', pp.13-62.

Upendra Baxi (1989), The Indian Supreme Court and Politics, The Eastern Book Company, Lucknow.

Madhav Khosla and Anant Padmanabhan (2017), 'The Supreme Court', in D. Kapur, P.B. Mehta and M Vaishnav (eds.) Rethinking Public Institutions in India, New Delhi: Oxford University Press, pp. 104-138.

R. Ramachandran (2006), 'The Supreme Court and the Basic Structure Doctrine' in B. Kirpal et.al (eds.) *Supreme but not Infallible: Essays in Honour of the Supreme Court of India*, New Delhi: Oxford University Press, pp. 107-133.

P. Khanna (2008) (second impression 2015), 'The Indian Judicial System' in Kamala Sankaran and U.K. Singh (ed.,) *Towards Legal Literacy: An Introduction to Law in India*, Oxford University Press, New Delhi.

B. Chakrabarty (2017), Indian Constitution, Text, Context and Interpretation, SAGE, New Delhi, Ch.17, Judiciary in India, pp.269-293.

U. Baxi (2010), 'The Judiciary as a Resource for Indian Democracy', *Seminar,* Issue 615, pp.61-67.

L. Rudolph and S. Rudolph (2008), 'Judicial Review Versus Parliamentary Sovereignty', in *Explaining Indian Institutions: A Fifty Year Perspective, 1956-2006: Volume 2: The Realm of Institutions: State Formation and Institutional Change.* New Delhi: Oxford University Press, pp. 183-210.

G. Austin (2010), *The Indian Constitution: Cornerstone of a Nation*, New Delhi: Oxford University Press, 15th print [Chapter 7: The Judiciary and the Social Revolution, pp.164-185]

3. Federalism and Decentralization

a. Federalism

The Constitution of India, Part XI

R. Dhawan and R. Saxena (2006), 'The Republic of India', in K. Roy, C. Saunders and J.Kincaid (eds.) *A Global Dialogue on Federalism*, Volume 3, Montreal: Queen's University Press, pp. 166-197

M.P. Singh and Rekha Saxena (2013), *Federalising India in the Age of Globalisation*, Primus New Delhi: Books [Ch.6: Asymmetrical Federalism, pp.79-93]

L. Tillin (2019), *Indian Federalism*, Oxford India Short Introduction series, Delhi: Oxford University Press.

Louise Tillin (2013) *Remapping India: New States and their Political Origins*, New Delhi: Oxford University Press [Ch.1: Introduction: The Compromise Politics of Statehood, pp.1-26; Ch.2: History of Territorial Design and Federal Thought in India, pp.27-66]

b. The Panchayats and Municipalities

The Constitution of India, Part IX and IXA

Kuldeep Mathur (2013), *Panchayati Raj*, Oxford India Short Introductions, New Delhi, Oxford University Press.

James Manor (2010), 'Local Governance' in P.B. Mehta and N.G. Jayal (eds.) *The Oxford Companion to Politics in India,* New Delhi: Oxford University Press, pp. 61-79.

P. deSouza (2002) 'Decentralization and Local Government: The Second Wind of Democracy in India', in Z. Hasan, E. Sridharan and R. Sudarshan (eds.) *India's Living Constitution: Ideas, Practices and Controversies,* New Delhi: Permanent Black, pp. 370-404.

M. John (2007) 'Women in Power? Gender, Caste and Politics of Local Urban Governance', in *Economic and Political Weekly*, Vol. 42(39), pp. 3986-3993.

4. Constitutional Provisions and National Security Laws

The Constitution of India, Article 22, Part XVIII

S. K. Chaube (2010),TheMakingandWorkingoftheIndianConstitution, NewDelhi: NationalBookTrust [Ch. VIV: TheEmergencies, pp.243-249]

V. Marwah (1995), 'Use and Abuse of Emergency Powers: The Indian Experience', in B. Arora and D. Verney (eds.) *Multiple Identities in a Single State: Indian Federalism in a Comparative Perspective,* Delhi: Konark, pp. 136-159.

A.G. Noorani (2011), *Challenges to Civil Rights Guarantees in India*, SAHRDC, New Delhi [Chapter 1: Preventive Detention in India, pp.1-34; Chapter 9: Armed Forces (Special Powers) Act, pp.265-276].

U.K. Singh (2015), 'Anti-terror laws and Human Rights' in Kamala Sankaran and Ujjwal Kumar Singh (ed.) *Towards Legal Literacy*, Oxford University Press, New Delhi.pp181-197.

G Haragopal, B Jagannatham (2009), 'Terrorism and Human Rights: Indian Experience with Repressive Laws', in *Economic and Political Weekly*, Vol. 44(28), pp. 76-85.

SAHRDC (2006), Oxford Handbook of Human Rights and Criminal Justice in India: The System and Procedure, Oxford University Press, New Delhi [Chapter 6: Detention, pp.72-84]

Venkat Iyer (2000), *States of Emergency: The Indian Experience*, Butterworths, New Delhi.

D.P. Jinks (2001) 'The Anatomy of an Institutionalized Emergency: Preventive Detention and Personal Liberty in India', *Michigan Journal of International Law*, Vol.22(2), pp.323-350

U K Singh (2011), 'Mapping Anti-terror Legal Regimes in India' in Victor Ramraj et.al (ed.), *Global Anti-Terrorism Law and Policy*, 2ndEdition, Cambridge, Cambridge University Press, pp.420-446.

HindiReadings:

अनुपमारॉय (2017). 'राष्ट्र, संविधानऔरनागरिकता',*नागरिकताकास्त्री-पक्ष (*अनु.) कमलनयनचौबे, नयीदिल्ली: वाणीप्रकाशन. पृष्ठ 186-237.

एस. के. चौबे (2011),भारतीयसंविधान, रचनाएवंकार्य, एनबीटी, दिल्ली

ग्रेनविलऑस्टिन (2017),भारतीयसंविधान: राष्ट्रकीआधारशिला, अनुवादक: नरेशगोस्वामी, नयीदिल्ली:वाणीप्रकाशन.

जॉर्जमैथ्यू, भारतमेंपंचायतीराज: परिप्रेक्ष्यऔरअनुभव, नईदिल्ली: वाणीप्रकाशन

डीडीबसु (1989),भारतकासंविधान: एकपरिचय (दसवांसंस्करण, 2013), लेक्सिसनेक्सिस.

महेंद्रप्रसादसिंहएवंहिमांशुरॉय (सं.) (2013),भारतीयराजनीतिकप्रणाली: सरंचना, नीतिएवंविकास, दिल्ली: हिन्दीमाध्यमकार्यान्वयननिदेशालय, दिल्लीविश्वविद्यालय.

माधवखोसला (2018). भारतकासंविधान,नयीदिल्ली: ऑक्सफर्डयूनिवर्सिटीप्रेस.

सुभाषकाश्यप (2016),संवैधानिक-राजनीतिकव्यवस्था: शासनप्रणालीऔरनिर्वाचनप्रक्रिया, नईदिल्ली: राजकमलप्रकाशन.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Discipline Specific Elective (DSE) Courses for Sem – III

DISCIPLINE SPECIFIC ELECTIVE COURSE – 1a: State Politics in India

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
State Politics in India DSE-1a	4	3	1	0	12 Pass	NIL

Learning Objectives

This course situates the study of state politics as one of the key domains of Indian politics. It aims to introduce the students to 'state politics' in India as a significant site where key idioms, processes and practices of democratic politics are produced. Discussing the relevance of the theme, the course focusses on various theories on state politics, the historical and constitutional context that shaped state reorganisation including linguistic demands and other recent demands for smaller states. The course also focuses on the rise of regional parties and movements as the means through which state politics unfolds. It subsequently looks at the political economy of development in the states through a detailed analysis of agrarian change, with specific focus on the rise of the agrarian capitalist class, rural markets, agrarian movements, regional business and economic reforms in the states.

Learning outcomes

On successful completion of the course, the students would demonstrate:

- Knowledge of the historical context and legal framework of the emergence of state politics in India
- Understanding of the phenomenon of state formation and reorganisation as part of both national and regional politics in India
- Awareness of the nature of agrarian politics in India and the political economy of states in India
- Knowledge of electoral politics and political leadership in states in India.

SYLLABUS OF DSE-1a

UNIT – I (9 hours)

State politics in India

Relevance and frameworks of analysis

UNIT – II (9 hours)

States reorganisation and formation of states

UNIT – III (9 hours)

Agrarian politics

Rise of an agrarian capitalist class, rural markets, land acquisition and farmers' movements

UNIT – IV (9 hours)

Political economy of development and reforms in the states

Policy, politics, and regional business.

UNIT – V (9 hours)

Electoral politics in states

Political parties, leadership, and mobilisation

Essential/recommended readings

State politics in India: relevance and frameworks of analysis

Kumar, A. (2016) Introduction, in *Rethinking State Politics in India-Regions Within Regions*, Taylor and Francis.

Pai, Sudha (1989) 'Towards a theoretical framework for the study of state politics in India: Some observations, *The Indian Journal of Political Science* , Jan. - March, Vol. 50, No. 1, pp. 94-109

Tillin, L. (2013) 'National and Subnational Comparative Politics: Why, What and How,' *Studies in Indian Politics*, Vol.1, No.02, pp.235-240.

Snyder, R. (2001) 'Scaling Down: The Subnational Comparative Method,' *Studies in Comparative International Development*, Spring 2001, Vol. 36, No. 1, pp. 93–110.

States reorganization and formation of states

Mawdsley, E. (2002). Redrawing the body politic: federalism, regionalism and the creation of new states in India. *Commonwealth & Comparative Politics*, Vol. 40, No.3, pp. 34-54.

Sarangi, A. and Pai, S. (2011), Introduction: ContextualisingReorganisation, in Sarangi, A. and Pai, S (eds) *Interrogating Reorganisation of States-Culture, Identity and Politics in India*, Routledge, New Delhi.

Tillin, Louise (2011), Reorganising the Hindi Heartland in 2000: The Deep Regional Politics of State Formation, in Sarangi, A. and Pai, S (eds) *Interrogating Reorganisation of States-Culture, Identity and Politics in India*, Routledge, New Delhi.

Singh, M.P. (2008) 'Reorganisation of States in India,' *Economic and Political Weekly*, Vol. 43, No.11 (March 15-21) pp.70-75.

Tillin, Louise (2013). *Remapping India: New states and their political origins*. Hurst Publishers.

Samaddar, R. (2020). Rule, Governmental Rationality and Reorganisation of States, in Sarangi, A. and Pai, S (eds) *Interrogating Reorganisation of States* (pp. 48-65). Routledge India.

Nag, Sajal (2011) 'Linguistic Provinces' to 'Homelands': Shifting Paradigms of State-making in Post-colonial India, in Sarangi, A. and Pai, S. (eds) *Interrogating Reorganisation of States-Culture, Identity and Politics in India*, Routledge, New Delhi.

Agrarian politics

Bhalla G.S. 1994 (ed.) *Economic Liberalisation and Indian Agriculture,* Institute for Studies in Industrial Development, New Delhi: 61107.

Brass, T. (1994) Introduction: The new farmers' movements in India, The Journal of Peasant Studies, 21:3-4, 3-26,DOI: 10.1080/03066159408438553

Frankel, F. and Rao, M.S.A. (1989 and 1990) (eds.) *Dominance and State Power in India* Oxford University Press, New Delhi 2 Vols. 198

Pai, S. (2009)'Agrarian Mobilization and Farmers' Movements in India' in *Oxford Companion to Indian Politics* (eds.) Pratap Bhanu Mehta and Niraja Gopal Jayal. Oxford: Oxford University Press.

Baviskar, A. and Levien, M. (2021) 'Farmers' protests in India: introduction to the JPS Forum,' *The Journal of Peasant Studies*, 48:7, DOI: 10.1080/03066150.2021.1998002

Political economy of development and reforms in the states

Ahluwalia, M. (2000) 'Economic Performance of States in Post-Reform Period,' *Economic and Political Weekly*, 6 May, pp.1637-1648

Jenkins, R. (2000). The evolution of economic reform in India. In Democratic Politics and Economic Reform in India (Contemporary South Asia, pp. 12-41). Cambridge: Cambridge University Press. doi:10.1017/CBO9780511605871.004

Kennedy, L., Robin, K. and Zamuner, D. (2013) 'Comparing State-level policy responses to economic reforms in India,' 13 | 1er semestre / Spring 2013: Économiepolitique de l'Asie (1)

Sinha, A. (2016) 'A Distinctive Indian Political Economy: New Concepts and a Synthesizing Framework', *Studies in Indian Politics*, Vol.4, No.02, pp. 266-273.

Electoral politics in states

Auerbach, A. M., Bussell, J., Chauchard, S., Jensenius, F. R., Nellis, G., Schneider, M.,& Ziegfeld, A. (2022). Rethinking the study of electoral politics in the developing world: Reflections on the Indian case. *Perspectives on Politics*, *20*(1), 250-264.

Kumar, A. (2003). State Electoral Politics: Looking for the Larger Picture. *Economic and Political Weekly*, *38*(30), 3145–3147

Yadav, Y. (1999). Electoral politics in the time of change: India's third electoral system, 1989-99. *Economic and political weekly*, 2393-2399.

Yadav, Yogendra, and Palshikar, S. (2006)'Party system and electoral politics in the Indian States, 1952-2002: From hegemony to convergence,' *India's political parties* 6: 73-116.

Additional Readings:

Roy, H., Singh, M.P. and Chouhan, A.P.S. (2017) *State Politics in India*, Primus Books.

Narain, I. (1965) (ed.) *State Politics in India* Meerut, Meenakshi Prakashan

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 1b: Indian Constitution: Key Debates

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Indian Constitution: Key Debates DSE-1b	4	3	1	0	12 Pass	NIL

Learning Objectives

The course has been designed with the aim to familiarise students with the key debates that went into the making of the Indian Constitution. The debates have been identified for their historical significance and contemporary relevance. The course is on the distinguishing features of the constitution, the modalities through which consensus on contentious matters were arrived in the Constituent Assembly, and the political contexts in which these debates have remained significant. The course takes the students back to the Constituent Assembly Debates to help them comprehend the principles that were articulated to resolve or defer a debate. While the Constituent Assembly Debates serve as resources for a historical and a contextual analysis of the Constitution, the forms in which the debates have resurfaced is also paid attention through recourse to debates in the Parliament. Alongside, scholarship produced by political theorists, historians and lawyers have been included to trace the contours of the debate and the constitutional values that emerge out of it.

Learning outcomes

On successful completion of the course, the students will demonstrate:

- Knowledge of the process of constitution making and familiarity with Constituent Assembly debates
- An understanding of the framing of debates in the Constituent Assembly and the forms in which they have remained significant
- An understating of the principles that undergirded the debates and the constitutional values that they sought to entrench

SYLLABUS OF DSE-1b

UNIT – I (7 Hours)

Citizenship

UNIT – II (7 Hours)
Religious Freedom (and Minority Rights)

UNIT – III (7 Hours)
Uniform Civil Code

UNIT – IV (7 Hours)
Asymmetrical Federalism

UNIT – V (7 Hours)
Emergency Provisions and Preventive Detention Laws

UNIT – VI (5 Hours)
Constitutional Amendment

UNIT – VII (5 Hours)
Language Question

Essential/recommended readings

Unit wise reading list

Constituent Assembly Debates (Proceedings), Volumes I- XII, available at http://164.100.47.194/Loksabhahindi/cadebatefiles/cadebates.html

1. Citizenship

Primary Text: Part II, The Constitution of India

Constituent Assembly Debates (Proceedings), On Citizenship, 10 August 1949 to 12 August 1949, Vol. IX, pp. 343-349, 353-357, 398-401 (Lok Sabha Secretariat, New Delhi, 4th edition, 2003). URL: http://loksabhaph.nic.in/writereaddata/cadebatefiles/vol9.html

Valerian Rodrigues, 2008, Citizenship and the Indian Constitution, in Rajiv Bhargava (ed), *Politics and Ethics of Indian Constitution,* Oxford University Press

Anupama Roy, 2016, We the People: Citizenship in the Indian Constitution, in *Citizenship in India (Oxford India Short Introductions)*, Oxford University Press.

Anupama Roy, 2019, The Citizenship (Amendment) Bill, 2016 and the Aporia of Citizenship, *Economic and Political Weekly*, Vol. 54, Issue No. 49.

2. Religious Freedom (and Minority Rights)

Primary Text: Art 25- 30, The Constitution of India

Constituent Assembly Debates (Proceedings),On Religious Conversion, 1st May 1947, Vol III (http://164.100.47.194/loksabha/writereaddata/cadebatefiles/C01051947.html) and 6th December 1948, Vol. VII (http://164.100.47.194/Loksabha/Debates/cadebatefiles/C06121948.html)

Rajeev Bhargava, 2002, India's Secular Constitution, in ZoyaHasan et al, *India's Living Constitution*, Permanent Black.

Gurpreet Mahajan, 2008, Religion and the Indian Constitution: Questions of Separation and Equality, in Rajiv Bhargava (ed), *Politics and Ethics of Indian Constitution,* Oxford University Press

ShibaniKinkarChaube, 2000, End of the Indian Problem II- Minority Rights, in *Constituent Assembly of India: Springboard of Revolution*, Manohar

3. Uniform Civil Code

Constituent Assembly Debates (Proceedings), On UCC, 23rd November 1948, Vol. VII URL: http://164.100.47.194/loksabha/writereaddata/cadebatefiles/C23111948.html

Peter Ronald deSouza, 2015, Politics of the Uniform Civil Code, *Economic and Political Weekly*, Vol. 50, Issue No. 48,

NiveditaMenon, 2014,A Uniform Civil Code in India: The State of the Debate in 2014. *Feminist Studies* 40(2), 480-486. doi:10.1353/fem.2014.0025.

4. Asymmetrical Federalism

Primary Texts: Article 370- 371 (J), Part XXI, The Constitution of India,

Primary Texts:Fifth Schedule and Sixth Schedule, Part XXII, Constitution of India

Constituent Assembly Debates (Proceedings), On Special Status to Jammu and Kashmir, 17th October 1949, Vol. X.
URL: http://164.100.47.194/loksabha/writereaddata/cadebatefiles/C17101949.html

Arun Thiruvengadam, 2018, Federalism and Local Government (pp. 71-92), *The Constitution of India, a Contextual Analysis*, Hart Publishing

Rekha Saxena, 2021, Constitutional Asymmetry in Indian Federalism, *Economic and Political Weekly*, Vol. 56, Issue No. 34.

M.P. Singh, 2016, The Federal Scheme, in Sujit Choudhry et al, *The Oxford Handbook of the Indian Constitution*, New Delhi: Oxford University Press.

Ashwani Kumar, 2019, The Constitutional Legitimacy of Abrogating Article 370, *Economic and Political Weekly*, Vol. 54, Issue No. 38

5. Emergency Provisions and Preventive Detention Laws

Primary Text: Articles 352, 353, 356, 358, 359, Part XVIII, The Constitution of India

Constituent Assembly Debates (Proceedings) on Draft Article 15-A, Personal Liberty and Procedure Established by Law (Article 22), September 15 and 16, 1949, Volume IX (http://164.100.47.194/loksabha/writereaddata/cadebatefiles/vol9.html)

Venkat Iyer, 2000, Emergency Law in India: the Background and the Development of the Law, in *States of Emergency, the Indian Experience*, Butterworths.

S.P. Mukherjee, 1990, Preventive Detention (Parliamentary Debates, 13 February, 1951), in *Eminent Parliamentarians Monograph Series*, LokSabha Secretariat, pp. 61- 81 (https://eparlib.nic.in/bitstream/123456789/58670/1/Eminent_Parliamentarians_Series_Syama_Prasad_Mookerjee.pdf)

Granville Austin, 1966, Fundamental Rights II, Social Reform and State Security versus 'Due Process' (pp. 128- 142), in *Indian Constitution, Cornerstone of a Nation*, OUP.

Granville Austin, 1999, Democracy Rescued or Constitution Subverted: Emergency and 42nd Amendment, in *Working a Democratic Constitution*, OUP

Arvind Narrain, 2022, Roots of the Emergency: Preventive Detention, in *India's Undeclared Emergency*, Context, Westland Publications.

6. Constitutional Amendment

Primary Text: Art 368, Part XX, The Constitution of India.

Constituent Assembly Debates (Proceedings), Excerpts on Amendment Procedure in B R Ambedkar's Final Speech on 25th November 1949 URL: http://164.100.47.194/loksabha/writereaddata/cadebatefiles/C25111949.html

D DBasu, 2011, Procedure for Amendment, in *Introduction to the Constitution of India* (20thed.). Lexis Nexis, India.

Arun Thiruvengadam, 2018, Constitutional Change, in *The Constitution of India, a Contextual Analysis*, Hart Publishing

Pratap Bhanu Mehta, 2002, The Inner Conflict of Constitutionalism: Judicial Review and the 'Basic Structure', in ZoyaHasan et al, *India's Living Constitution*, Permanent Black.

Sudhir Krishnaswamy, 2009, Amending Power: The Constitutional Basis for Basic Structure Review, in *Democracy and Constitutionalism in India, A Study of the Basic Structure Doctrine*, Oxford University Press.

7. Language Question

Primary Text: Art 343- 351, Part XVII, The Constitution of India.

Granville Austin, 1966, Language and the Constitution- The Half-Hearted Compromise, in *Indian Constitution, Cornerstone of a Nation*, OUP.

Paramjit S Judge, 2021, Fifteen Years that Never Ended: The Language Debate in *Making of Modern India*, Rawat

Paramjit S Judge, 2021, Language Issue in Constituent Assembly Debates, *Economic and Political Weekly*, Vol. 56, Issue No. 14

(On Assembly Debates) *Indian Express*, 24 Sep 2019, https://indianexpress.com/article/explained/amit-shah-on-hindi-language-status-constituent-assembly-national-launguage-6022271/

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category II

Political Science Courses for Undergraduate Programme of study with Political Science as one of the Core Disciplines

(B.A. Programmes with Political Science as Major discipline)

DISCIPLINE SPECIFIC CORE COURSE (DSC-3A): Ancient and Medieval Indian Political Thought

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Ancient and Medieval Indian Political Thought MDSC-3A	4	3	1	0	12 Pass	N*IL*

Learning Objectives

The political thought which constitutes the dominant element of political Science is essentially euro genetic and Eurocentric. What we study in our universities are ones which evolved and developed with European and Anglo-American tradition. The conceptual framework and discourses were product of societies and the forces amidst which they took birth and the shape. That does not mean that India had no tradition of political thinking. This paper seeks to critically engage with writers of ancient India who produced wonderful treatise on the statecraft and several elements of government and governance. This includes the concept of monarchy, the forms of government, the role of the state and state individual relationship.

Learning outcomes

After reading the course the students would be able to answer

- What were the major institutions of government in ancient India and how did they function?
- How thinkers like Manu, Shukra, Brihaspati and Kautilya perceived the role of statecraft in society?
- What was the Nitisar tradition? How did it mark a difference from the Arthashastra tradition?
- The students will be able to answer how Kabir epitomised the syncretic traditions of India.
- What was the political and economic ideas of Tiruvallur and what was his take on ethics?

SYLLABUS OF MDSC-3A

UNIT – I (5 Hours)
Foundations of Indian Political Thought:

- An Overview on Sources of Indian Political Thought
- Cultural and Territorial conception of India
- Distinctive Features of Indian Political Thought

UNIT – II (4 Hours)
Manu

- Authenticity of Manu smriti (Talking Point)
- Social Laws and Conception of Justice

UNIT – III (4 Hours)
Brihaspati: Statecraft, Justice, Inter-state Relations

UNIT – IV (4 Hours)
Shukra/Usana

- Talking Point: Debate on the authenticity of Shukra-Niti
- The Concept of Kingship and Statecraft in Shukra-Niti

UNIT – V (4 Hours)
Kautilya: Theory of State

UNIT – VI (4 Hours)
Aggannasutta (DighaNikaya): Theory of kingship

UNIT – VII (4 Hours)
Tiruvalluvar: Ethical Life and Politics

UNIT – VIII (4 Hours)
Basavanna

UNIT – IX (4 Hours)
Adi Shankracharya: Advaita

UNIT – X (4 Hours)
Kabir and Guru Nanak: Syncretism

UNIT – XI (4 Hours)
Abu'lFazl: Monarchy

Essential/recommended readings

Unit 1: Foundations of Indian Political Thought:

V. R. Mehta (1992) Introduction, in Foundation of Indian Political Thought, Delhi, Manohar, pp. 1-11.

Brown, D. M. (1953). The Premises of Indian Political Thought. The Western Political Quarterly, 6(2), 243–249.

Suda, J. P. (1970). Dharma: Its Nature and Role in Ancient India. The Indian Journal of Political Science, 31(4), 356–366.

Varma, Vishwanath Prasad (1953). Studies in Hindu Political Thought and its Metaphysical Foundations, Motilal Banarsidas, Delhi.

Flood, Gavin (2003). The Blackwell Companion to Hinduism. Blackwell Publishing Ltd, UK.

Unit 2: Manu

Manu (2006) 'Rules for Times of Adversity', in P. Olivelle (ed. & trans.) Manu's Code of Law: A Critical Edition and Translation of the Manava- Dharamsastra, New Delhi: OUP, pp.208-213.

V. Mehta (1992) 'The Cosmic Vision: Manu', in Foundations of Indian Political Thought, Delhi: Manohar, pp. 23- 39.

R. Sharma (1991) 'Varna in Relation to Law and Politics (c 600 BC-AD 500)', in Aspects of Political Ideas and Institutions in Ancient India, Delhi: Motilal Banarsidass, pp. 233- 251

P. Olivelle (2006) 'Introduction', in Manu's Code of Law: A Critical Edition and Translation of the Manava –Dharmasastra, Delhi: Oxford University Press, pp. 3- 50.

Unit 3: Brihaspati: Statecraft, Justice, Inter-state Relations

Vajpeyi, Raghavendra (1966) Barhaspatya Rajya-Vyavastha: Political and Legal System of Brhaspati. ChaukhambaVidyabhawan, Varanasi.

Chousalkar Ashok S. (2018). Revisiting the Political Thought of Ancient India: Pre-KautilyanArthashastra: SAGE Publications Pvt Ltd, Delhi.

Kane, P.V (1940). "Rajyashastras of Brihaspati, Usanas, Bhardwaj and Vishalaksh". Journal of the University of Bombay.

Unit 4: Shukra/Usana:

Nagar, Vandana (1985). Kingship in Shukra-Niti, Pushpa Prakashan, Delhi, India.

Varma, Vishwanath Prasad (December 1962). "Some Aspects of Public Administration in The Sukraniti". Indian Journal of Political Science. 23 (1/4): 302–308.

Puntambekar, S. V. (1948). Some Aspects of Sukra's Political Thought. The Indian Journal of Political Science, 9(2/3), 1–12.

Unit 5: Kautilya: Theory of State

Kautilya (1997) 'The Elements of Sovereignty' in R. Kangle (ed. and trns.), Arthasastra of Kautilya, New Delhi: Motilal Publishers, pp. 511- 514.

V. Mehta (1992) 'The Pragmatic Vision: Kautilya and His Successor', in Foundations of Indian Political Thought, Delhi: Manohar, pp. 88- 109.

R. Kangle (1997) Arthashastra of Kautilya-Part-III: A Study, Delhi: Motilal Banarsidass, pp. 116- 142.

Unit 6: Aggannasutta (DighaNikaya): Theory of kingship

S. Collins (ed) (2001) Agganna Sutta: An Annotated Translation, New Delhi: Sahitya Academy, pp. 44-49.

S. Collins (2001) 'General Introduction', in Agganna Sutta: The Discussion on What is Primary (An Annotated Translation from Pali), Delhi: Sahitya Akademi, pp. 1- 26.

B. Gokhale (1966) 'The Early Buddhist View of the State', in The Journal of Asian Studies, Vol. XXVI (1), pp. 15- 22.

Unit 7: Tiruvalluvar: Ethical Life and Politics

Maharajan, S. (2017), Makers of Indian Literature: Tiruvalluvar, Sahitya Akademi Publication, New Delhi.

K. V. Nagarajan Thiruvalluvar's Vision: Polity and Economy in Thirukkural, History of Political Economy 37:1, 2005 by Duke University Press.

C.S. Srinivasachari, The Political Ideology of the Kural, Indian Journal of Political Science, Oct-Dec 1949, pp 15-23

Norman Cutler, Interpreting Thirukural: The Role of the Commentary in the Creation of a Text, Journal of the American Oriental Society, October- December 1992, Vol 112, No 4, pp 549-556

Unit 8: Basavanna

H. Thipperudraswamy, Basaveshwara, Sahitya Akademi, 1975.

Julia Leslie, Understanding Basava; History, Historiography, and a Modern Kannada Drama, Bulletin of the School of Oriental and African Studies, university of London, 1998, Vol 61, No 2, pp 228-261.

M. P. Samartha, Basava's Spiritual Struggle, Religious Studies, Cambridge University Press, Sept 1977, Vol 13, No 3, pp 335-347.

Unit 9: Adi Shankracharya –Advaita

Koller, John, M. (2012) 'Shankara', in Chad Meister & Paul Copan (eds.), The Routledge Companion to Philosophy of Religion, pp. 99 - 108.

ManilalDvivedi, The Advaita Philosophy of Shankara, pp. 95-113. (Published by Department of Oriental Studies, University of Vienna).

Chatterjee and Dutta (2007), An Introduction to Indian Philosophy, New Delhi: Rupa Publications, pp 317 - 382.

Swami Mukhyananda (2006), Shri Shankaracharya: Life and Philosophy, Kolkata: Advaita Ashram, pp. 1 - 64.

Unit 10: Kabir and Guru Nanak: Syncretism

Kabir. (2002) The Bijak of Kabir (translated by L. Hess and S. Singh), Delhi: Oxford University Press, No. 30, 97, pp. 50- 51 & 69- 70.

V. Mehta (1992) Foundation of Indian Political Thought, Delhi: Manohar, pp. 157- 183.

G. Omvedt (2008) 'Kabir and Ravidas, Envisioning Begumpura', in Seeking Begumpura: The Social Vision of Anti Caste Intellectual, Delhi: Navayana, pp. 91- 107.

Unit 11: Abu'lFazl: Monarchy

A. Fazl (1873) The Ain-i Akbari (translated by H. Blochmann), Calcutta: G. H. Rouse, pp. 47-57.

V. Mehta (1992) 'The Imperial Vision: Barni and Fazal', in Foundations of Indian Political thought, Delhi: Manohar, pp. 134- 156.

Additional Readings:

V.R.Mehta, Foundations of Indian Political Thought. Delhi: 1992, Manohar

U.N.Ghoshal, A History of Indian Political Ideas: the ancient period and the period of transition to the middle ages . OUP, Bombay, 1959

Himanshu Roy &M.P.Singh (eds.), Indian Political Thought, Pearson, Second edition, 2017.

Ankit Tomar&Suratha K Malik (eds.), Ancient and Medieval Indian Thought: Themes and Traditions. Sage. 2020

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE (DSC-3B): Theory and Practice of D

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Theory and Practice of Democracy MDSC-3B	4	3	1	0	12 Pass	NIL

Learning Objectives

This course offers an introduction to the evolution, theories, and practices of democracy. The course will introduce debates in democratic theory and practices in the past, and their contested legacies in contemporary times. Students will learn to evaluate past practices, critically examine current practices, learn about recent innovations and discuss the future of democracy. This course will provide an overview of different theories of democracy, covering approaches such as civic republicanism, liberal constitutionalism, participatory and deliberative democracy. The course will engage in challenges and debates on diversity, citizenship, representation and globalization.

Learning outcomes

After completing this course students will be able to:

- Develop a broad historical, normative and empirical understanding of the idea and practice of democracy.
- Distinguish different models of democracy and their normative assumptions
- Understand different theories of democracy and how different theories led to waves of democratization over history.
- Understand/assess some of the major political challenges that democracy faces in the wake of globalization.
- Examine current problems and understand how different democratic crises have emerged in practice
- Apply democratic theories to critically assess political institutions and practices
- Engage in dialogue about the meaning and value of democracy
- Explain and defend how democratic theory might be used to respond to problems being faced by nation-states

SYLLABUS OF MDSC-3B

UNIT – I (11 Hours)

Origins of the idea

Ancient Greece and India
Modern developments
Procedural and substantive accounts
Contemporary innovations

UNIT – II (11 Hours)

Theory

Liberal Representative democracy
Participatory democracy
Deliberative democracy

UNIT – III (11 Hours)

Institutions

Constitutionalism
Legislatures and legislation
Political Parties
Media & the Civil Society

UNIT – IV (12 Hours)

Contemporary Debates

Diversity
Representation
Globalization & Global Issues

Essential/recommended readings

Unit wise reading list

Unit 1: Origins of the idea

Isakhan, Benjamin and Stephen Stockwell, *The Edinburgh Companion to the History of Democracy*, Edinburgh University Press, 2012. Ch. 3, 6, 7, 16, 17.

Dahl, Robert. *On Democracy*. Yale University Press, 1998.

Dunn, John (ed.), *Democracy: The Unfinished Journey*: *508 BC to AD 1993*, Oxford University Press, 1992. Ch. 1, 4, 6, 7, 8.

Schmitter, Philippe C. and Terry Lynn Karl, 'What Democracy is….and is not,' *Journal of Democracy*, Summer 1991: 3-16.

Arblaster, Anthony. *Democracy*. 3rd Edition. Open University Press, 2002.

Unit 2: Theory

Pateman, C, 'Rousseau, J. S. Mill, and G. D. H. Cole: A Participatory Theory of Democracy', in "Participation and Democratic Theory, Cambridge University Press, 1970.

Pateman, C, 'Participatory Democracy Revisited', *Perspectives on* Politics, March 2012, Vol. 10:17.

Saward, M. 'Representation and Democracy: Revisions and Possibilities', *Sociology Compass* 2/3 (2008): 1000–1013

Mansbridge, J. Clarifying the Concept of Representation, *American Political Science Review* Vol. 105, No. 3 August 2011

Gutman A, and Dennis Thompson, 'What Deliberative Democracy Means' in *Why Deliberative Democracy?* Princeton University Press, 2004.

Unit 3: Institutions

Manin, Bernard. *The Principles of Representative Government*. Cambridge: CambridgeUniversity Press, 1997.

Freeman, M. Constitutional Democracy and the Legitimacy of Judicial Review, *Law and Philosophy*, 9: 327-370, 1990-1991.*L*

Zurn, C. From Majoritarian to Deliberative Theories of Constitutional Democracy' (Ch – III), in *Deliberative Democracy and the Institutions of Judicial Review*, Cambridge University Press, 2007

Bark, A. 'Protecting the Constitution and Democracy' (Ch. 2) in *Judge in a Democracy* Princeton University Press, 2004.

Unit 4: Contemporary Debates

Birch, A. H. *The Concepts and Theories of Modern Democracy*, 3rd Edition. Routledge, 2007.

Dowding, Keith, James Hughes and Helen Margetts, *Challenges to Democracy: Ideas,Institutions and Involvement*. The PSA Yearbook 2000, Palgrave, 2001.

Held, David. *Models of Democracy*. 3rd Edition. Polity Press, 2007.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category III

Political Science Courses for Undergraduate Programme of study with Political Science as one of the Core Disciplines

(B.A. Programmes with Political Science as non-Major or Minor discipline)

DISCIPLINE SPECIFIC CORE COURSE (DSC-3A): Ancient and Medieval Indian Political Thought

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Ancient and Medieval Indian Political Thought MDSC-3A	4	3	1	0	12 Pass	NIL

Learning Objectives

The political thought which constitutes the dominant element of political Science is essentially euro genetic and Eurocentric. What we study in our universities are ones which evolved and developed with European and Anglo-American tradition. The conceptual framework and discourses were product of societies and the forces amidst which they took birth and the shape. That does not mean that India had no tradition of political thinking. This paper seeks to critically engage with writers of ancient India who produced wonderful treatise on the statecraft and several elements of government and governance. This includes the concept of monarchy, the forms of government, the role of the state and state individual relationship.

Learning outcomes

After reading the course the students would be able to answer

- What were the major institutions of government in ancient India and how did they function?
- How thinkers like Manu, Shukra, Brihaspati and Kautilya perceived the role of statecraft in society?
- What was the Nitisar tradition? How did it mark a difference from the Arthashastra tradition?
- The students will be able to answer how Kabir epitomised the syncretic traditions of India.
- What was the political and economic ideas of Tiruvallur and what was his take on ethics?

SYLLABUS OF MDSC-3A

UNIT – I (5 Hours)

Foundations of Indian Political Thought:

- An Overview on Sources of Indian Political Thought
- Cultural and Territorial conception of India
- Distinctive Features of Indian Political Thought

UNIT – II (4 Hours)
Manu

- Authenticity of Manu smriti (Talking Point)
- Social Laws and Conception of Justice

UNIT – III (4 Hours)
Brihaspati: Statecraft, Justice, Inter-state Relations

UNIT – IV (4 Hours)
Shukra/Usana

- Talking Point: Debate on the authenticity of Shukra-Niti
- The Concept of Kingship and Statecraft in Shukra-Niti

UNIT – V (4 Hours)
Kautilya: Theory of State

UNIT – VI (4 Hours)
Aggannasutta (DighaNikaya): Theory of kingship

UNIT – VII (4 Hours)
Tiruvalluvar: Ethical Life and Politics

UNIT – VIII (4 Hours)
Basavanna

UNIT – IX (4 Hours)
Adi Shankracharya: Advaita

UNIT – X (4 Hours)
Kabir and Guru Nanak: Syncretism

UNIT – XI (4 Hours)
Abu'lFazl: Monarchy

Essential/recommended readings

Unit 1: Foundations of Indian Political Thought:

V. R. Mehta (1992) Introduction, in Foundation of Indian Political Thought, Delhi, Manohar, pp. 1-11.

Brown, D. M. (1953). The Premises of Indian Political Thought. The Western Political Quarterly, 6(2), 243–249.

Suda, J. P. (1970). Dharma: Its Nature and Role in Ancient India. The Indian Journal of Political Science, 31(4), 356–366.

Varma, Vishwanath Prasad (1953). Studies in Hindu Political Thought and its Metaphysical Foundations, Motilal Banarsidas, Delhi.

Flood, Gavin (2003). The Blackwell Companion to Hinduism. Blackwell Publishing Ltd, UK.

Unit 2: Manu

Manu (2006) 'Rules for Times of Adversity', in P. Olivelle (ed. & trans.) Manu's Code of Law: A Critical Edition and Translation of the Manava- Dharamsastra, New Delhi: OUP, pp.208-213.

V. Mehta (1992) 'The Cosmic Vision: Manu', in Foundations of Indian Political Thought, Delhi: Manohar, pp. 23- 39.

R. Sharma (1991) 'Varna in Relation to Law and Politics (c 600 BC-AD 500)', in Aspects of Political Ideas and Institutions in Ancient India, Delhi: Motilal Banarsidass, pp. 233- 251

P. Olivelle (2006) 'Introduction', in Manu's Code of Law: A Critical Edition and Translation of the Manava –Dharmasastra, Delhi: Oxford University Press, pp. 3- 50.

Unit 3: Brihaspati: Statecraft, Justice, Inter-state Relations

Vajpeyi, Raghavendra (1966) Barhaspatya Rajya-Vyavastha: Political and Legal System of Brhaspati. ChaukhambaVidyabhawan, Varanasi.

Chousalkar Ashok S. (2018). Revisiting the Political Thought of Ancient India: Pre-KautilyanArthashastra: SAGE Publications Pvt Ltd, Delhi.

Kane, P.V (1940). "Rajyashastras of Brihaspati, Usanas, Bhardwaj and Vishalaksh". Journal of the University of Bombay.

Unit 4: Shukra/Usana:

Nagar, Vandana (1985). Kingship in Shukra-Niti, Pushpa Prakashan, Delhi, India.

Varma, Vishwanath Prasad (December 1962). "Some Aspects of Public Administration in The Sukraniti". Indian Journal of Political Science. 23 (1/4): 302–308.

Puntambekar, S. V. (1948). Some Aspects of Sukra's Political Thought. The Indian Journal of Political Science, 9(2/3), 1–12.

Unit 5: Kautilya: Theory of State

Kautilya (1997) 'The Elements of Sovereignty' in R. Kangle (ed. and trns.), Arthasastra of Kautilya, New Delhi: Motilal Publishers, pp. 511- 514.

V. Mehta (1992) 'The Pragmatic Vision: Kautilya and His Successor', in Foundations of Indian Political Thought, Delhi: Manohar, pp. 88- 109.

R. Kangle (1997) Arthashastra of Kautilya-Part-III: A Study, Delhi: Motilal Banarsidass, pp. 116- 142.

Unit 6: Aggannasutta (DighaNikaya): Theory of kingship

S. Collins (ed) (2001) Agganna Sutta: An Annotated Translation, New Delhi: Sahitya Academy, pp. 44-49.

S. Collins (2001) 'General Introduction', in Agganna Sutta: The Discussion on What is Primary (An Annotated Translation from Pali), Delhi: Sahitya Akademi, pp. 1- 26.

B. Gokhale (1966) 'The Early Buddhist View of the State', in The Journal of Asian Studies, Vol. XXVI (1), pp. 15- 22.

Unit 7: Tiruvalluvar: Ethical Life and Politics

Maharajan, S. (2017), Makers of Indian Literature: Tiruvalluvar, Sahitya Akademi Publication, New Delhi.

K. V. Nagarajan Thiruvalluvar's Vision: Polity and Economy in Thirukkural, History of Political Economy 37:1, 2005 by Duke University Press.

C.S. Srinivasachari, The Political Ideology of the Kural, Indian Journal of Political Science, Oct-Dec 1949, pp 15-23

Norman Cutler, Interpreting Thirukural: The Role of the Commentary in the Creation of a Text, Journal of the American Oriental Society, October- December 1992, Vol 112, No 4, pp 549-556

Unit 8: Basavanna

H. Thipperudraswamy, Basaveshwara, Sahitya Akademi, 1975.

Julia Leslie, Understanding Basava; History, Historiography, and a Modern Kannada Drama, Bulletin of the School of Oriental and African Studies, university of London, 1998, Vol 61, No 2, pp 228-261.

M. P. Samartha, Basava's Spiritual Struggle, Religious Studies, Cambridge University Press, Sept 1977, Vol 13, No 3, pp 335-347.

Unit 9: Adi Shankracharya –Advaita

Koller, John, M. (2012) 'Shankara', in Chad Meister & Paul Copan (eds.), The Routledge Companion to Philosophy of Religion, pp. 99 - 108.

ManilalDvivedi, The Advaita Philosophy of Shankara, pp. 95-113. (Published by Department of Oriental Studies, University of Vienna).

Chatterjee and Dutta (2007), An Introduction to Indian Philosophy, New Delhi: Rupa Publications, pp 317 - 382.

Swami Mukhyananda (2006), Shri Shankaracharya: Life and Philosophy, Kolkata: Advaita Ashram, pp. 1 - 64.

Unit 10: Kabir and Guru Nanak: Syncretism

Kabir. (2002) The Bijak of Kabir (translated by L. Hess and S. Singh), Delhi: Oxford University Press, No. 30, 97, pp. 50- 51 & 69- 70.

V. Mehta (1992) Foundation of Indian Political Thought, Delhi: Manohar, pp. 157- 183.

G. Omvedt (2008) 'Kabir and Ravidas, Envisioning Begumpura', in Seeking Begumpura: The Social Vision of Anti Caste Intellectual, Delhi: Navayana, pp. 91- 107.

Unit 11: Abu'lFazl: Monarchy

A. Fazl (1873) The Ain-i Akbari (translated by H. Blochmann), Calcutta: G. H. Rouse, pp. 47-57.

V. Mehta (1992) 'The Imperial Vision: Barni and Fazal', in Foundations of Indian Political thought, Delhi: Manohar, pp. 134- 156.

Additional Readings:

V.R.Mehta, Foundations of Indian Political Thought. Delhi: 1992, Manohar

U.N.Ghoshal, A History of Indian Political Ideas: the ancient period and the period of transition to the middle ages . OUP, Bombay, 1959

Himanshu Roy &M.P.Singh (eds.), Indian Political Thought, Pearson, Second edition, 2017.

Ankit Tomar&Suratha K Malik (eds.), Ancient and Medieval Indian Thought: Themes and Traditions. Sage. 2020

Discipline Specific Elective (DSE) Courses for Sem – III [Category II and III – Multidisciplinary]

DISCIPLINE SPECIFIC ELECTIVE COURSE – 1a: State Politics in India

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
State Politics in India MDSE-1a	4	3	1	0	12Pass	NIL

Learning Objectives

This course situates the study of state politics as one of the key domains of Indian politics. It aims to introduce the students to 'state politics' in India as a significant site where key idioms, processes and practices of democratic politics are produced. Discussing the relevance of the theme, the course focusses on various theories on state politics, the historical and constitutional context that shaped state reorganisation including linguistic demands and other recent demands for smaller states. The course also focuses on the rise of regional parties and movements as the means through which state politics unfolds. It subsequently looks at the political economy of development in the states through a detailed analysis of agrarian change, with specific focus on the rise of the agrarian capitalist class, rural markets, agrarian movements, regional business and economic reforms in the states.

Learning outcomes

On successful completion of the course, the students would demonstrate:

- Knowledge of the historical context and legal framework of the emergence of state politics in India
- Understanding of the phenomenon of state formation and reorganisation as part of both national and regional politics in India
- Awareness of the nature of agrarian politics in India and the political economy of states in India
- Knowledge of electoral politics and political leadership in states in India.

SYLLABUS OF MDSE-1a

UNIT – I (9 Hours)

State politics in India

Relevance and frameworks of analysis

UNIT – II (9 Hours)

States reorganisation and formation of states

UNIT – III (9 Hours)

Agrarian politics

Rise of an agrarian capitalist class, rural markets, land acquisition and farmers' movements

UNIT – IV (12 Hours)

Political economy of development and reforms in the states

Policy, politics, and regional business.

UNIT – V (9 Hours)

Electoral politics in states

Political parties, leadership, and mobilisation

Essential/recommended readings

State politics in India: relevance and frameworks of analysis

Kumar, A. (2016) Introduction, in *Rethinking State Politics in India-Regions Within Regions*, Taylor and Francis.

Pai, Sudha (1989) 'Towards a theoretical framework for the study of state politics in India: Some observations, *The Indian Journal of Political Science* , Jan. - March, Vol. 50, No. 1, pp. 94-109

Tillin, L. (2013) 'National and Subnational Comparative Politics: Why, What and How,' *Studies in Indian Politics*, Vol.1, No.02, pp.235-240.

Snyder, R. (2001) 'Scaling Down: The Subnational Comparative Method,' *Studies in Comparative International Development*, Spring 2001, Vol. 36, No. 1, pp. 93–110.

States reorganization and formation of states

Mawdsley, E. (2002). Redrawing the body politic: federalism, regionalism and the creation of new states in India. *Commonwealth & Comparative Politics*, Vol. 40, No.3, pp. 34-54.

Sarangi, A. and Pai, S. (2011), Introduction: ContextualisingReorganisation, in Sarangi, A. and Pai, S (eds) *Interrogating Reorganisation of States-Culture, Identity and Politics in India*, Routledge, New Delhi.

Tillin, Louise (2011), Reorganising the Hindi Heartland in 2000: The Deep Regional Politics of State Formation, in Sarangi, A. and Pai, S (eds) *Interrogating Reorganisation of States-Culture, Identity and Politics in India*, Routledge, New Delhi.

Singh, M.P. (2008) 'Reorganisation of States in India,' *Economic and Political Weekly*, Vol. 43, No.11 (March 15-21) pp.70-75.

Tillin, Louise (2013). *Remapping India: New states and their political origins*. Hurst Publishers.

Samaddar, R. (2020). Rule, Governmental Rationality and Reorganisation of States, in Sarangi, A. and Pai, S (eds) *Interrogating Reorganisation of States* (pp. 48-65). Routledge India.

Nag, Sajal (2011) 'Linguistic Provinces' to 'Homelands': Shifting Paradigms of State-making in Post-colonial India, in Sarangi, A. and Pai, S. (eds) *Interrogating Reorganisation of States-Culture, Identity and Politics in India*, Routledge, New Delhi.

Agrarian politics

Bhalla G.S. 1994 (ed.) *Economic Liberalisation and Indian Agriculture,* Institute for Studies in Industrial Development, New Delhi: 61107.

Brass, T. (1994) Introduction: The new farmers' movements in India, The Journal of Peasant Studies, 21:3-4, 3-26,DOI: 10.1080/03066159408438553

Frankel, F. and Rao, M.S.A. (1989 and 1990) (eds.) *Dominance and State Power in India* Oxford University Press, New Delhi 2 Vols. 198

Pai, S. (2009)'Agrarian Mobilization and Farmers' Movements in India' in *Oxford Companion to Indian Politics* (eds.) Pratap Bhanu Mehta and Niraja Gopal Jayal. Oxford: Oxford University Press.

Baviskar, A. and Levien, M. (2021) 'Farmers' protests in India: introduction to the JPS Forum,' *The Journal of Peasant Studies*, 48:7, DOI: 10.1080/03066150.2021.1998002

Political economy of development and reforms in the states

Ahluwalia, M. (2000) 'Economic Performance of States in Post-Reform Period,' *Economic and Political Weekly*, 6 May, pp.1637-1648

Jenkins, R. (2000). The evolution of economic reform in India. In Democratic Politics and Economic Reform in India (Contemporary South Asia, pp. 12-41). Cambridge: Cambridge University Press. doi:10.1017/CBO9780511605871.004

Kennedy, L., Robin, K. and Zamuner, D. (2013) 'Comparing State-level policy responses to economic reforms in India,' 13 | 1er semestre / Spring 2013: Économiepolitique de l'Asie (1)

Sinha, A. (2016) 'A Distinctive Indian Political Economy: New Concepts and a Synthesizing Framework', *Studies in Indian Politics*, Vol.4, No.02, pp. 266-273.

Electoral politics in states

Auerbach, A. M., Bussell, J., Chauchard, S., Jensenius, F. R., Nellis, G., Schneider, M.,& Ziegfeld, A. (2022). Rethinking the study of electoral politics in the developing world: Reflections on the Indian case. *Perspectives on Politics*, *20*(1), 250-264.

Kumar, A. (2003). State Electoral Politics: Looking for the Larger Picture. *Economic and Political Weekly*, *38*(30), 3145–3147

Yadav, Y. (1999). Electoral politics in the time of change: India's third electoral system, 1989-99. *Economic and political weekly*, 2393-2399.

Yadav, Yogendra, and Palshikar, S. (2006)'Party system and electoral politics in the Indian States, 1952-2002: From hegemony to convergence,' *India's political parties* 6: 73-116.

Additional Readings:

Roy, H., Singh, M.P. and Chouhan, A.P.S. (2017) *State Politics in India*, Primus Books.

Narain, I. (1965) (ed.) *State Politics in India* Meerut, Meenakshi Prakashan

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 1b: Indian Constitution: Key Debates

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Indian Constitution: Key Debates MDSE-1b	4	3	1	0	12Pass	NIL

Learning Objectives

The course has been designed with the aim to familiarise students with the key debates that went into the making of the Indian Constitution. The debates have been identified for their historical significance and contemporary relevance. The course is on the distinguishing features of the constitution, the modalities through which consensus on contentious matters were arrived in the Constituent Assembly, and the political contexts in which these debates have remained significant. The course takes the students back to the Constituent Assembly Debates to help them comprehend the principles that were articulated to resolve or defer a debate. While the Constituent Assembly Debates serve as resources for a historical and a contextual analysis of the Constitution, the forms in which the debates have resurfaced is also paid attention through recourse to debates in the Parliament. Alongside, scholarship produced by political theorists, historians and lawyers have been included to trace the contours of the debate and the constitutional values that emerge out of it.

Learning outcomes

On successful completion of the course, the students will demonstrate:

- Knowledge of the process of constitution making and familiarity with Constituent Assembly debates
- An understanding of the framing of debates in the Constituent Assembly and the forms in which they have remained significant
- An understating of the principles that undergirded the debates and the constitutional values that they sought to entrench

SYLLABUS OF MDSE-1b

UNIT – I (7 Hours)

Citizenship

UNIT – II (7 Hours)

Religious Freedom (and Minority Rights)

UNIT – III (7 Hours)

Uniform Civil Code

UNIT – IV (7 Hours)
Asymmetrical Federalism

UNIT – V (7 Hours)
Emergency Provisions and Preventive Detention Laws

UNIT – VI (5 Hours)
Constitutional Amendment

UNIT – VII (5 Hours)
Language Question

Essential/recommended readings

Unit wise reading list

Constituent Assembly Debates (Proceedings), Volumes I- XII, available at http://164.100.47.194/Loksabhahindi/cadebatefiles/cadebates.html

1. Citizenship

Primary Text: Part II, The Constitution of India

Constituent Assembly Debates (Proceedings), On Citizenship, 10 August 1949 to 12 August 1949, Vol. IX, pp. 343-349, 353-357, 398-401 (Lok Sabha Secretariat, New Delhi, 4th edition, 2003). URL: http://loksabhaph.nic.in/writereaddata/cadebatefiles/vol9.html

Valerian Rodrigues, 2008, Citizenship and the Indian Constitution, in Rajiv Bhargava (ed), *Politics and Ethics of Indian Constitution,* Oxford University Press

Anupama Roy, 2016, We the People: Citizenship in the Indian Constitution, in *Citizenship in India (Oxford India Short Introductions)*, Oxford University Press.

Anupama Roy, 2019, The Citizenship (Amendment) Bill, 2016 and the Aporia of Citizenship, *Economic and Political Weekly*, Vol. 54, Issue No. 49.

2. Religious Freedom (and Minority Rights)

Primary Text: Art 25- 30, The Constitution of India

Constituent Assembly Debates (Proceedings),On Religious Conversion, 1st May 1947, Vol III (http://164.100.47.194/loksabha/writereaddata/cadebatefiles/C01051947.html) and 6th Dec. 1948, Vol. VII (http://164.100.47.194/Loksabha/Debates/cadebatefiles/C06121948.html)

Rajeev Bhargava, 2002, India's Secular Constitution, in ZoyaHasan et al, *India's Living Constitution*, Permanent Black.

Gurpreet Mahajan, 2008, Religion and the Indian Constitution: Questions of Separation and Equality, in R. Bhargava (ed), *Politics and Ethics of Indian Constitution,* Oxford University Press

ShibaniKinkarChaube, 2000, End of the Indian Problem II- Minority Rights, in *Constituent Assembly of India: Springboard of Revolution*, Manohar

3. Uniform Civil Code

Constituent Assembly Debates (Proceedings), On UCC, 23rd November 1948, Vol. VII URL: http://164.100.47.194/loksabha/writereaddata/cadebatefiles/C23111948.html

Peter Ronald deSouza, 2015, Politics of the Uniform Civil Code, *Economic and Political Weekly*, Vol. 50, Issue No. 48,

NiveditaMenon, 2014,A Uniform Civil Code in India: The State of the Debate in 2014. *Feminist Studies* 40(2), 480-486. doi:10.1353/fem.2014.0025.

4. Asymmetrical Federalism

Primary Texts: Article 370- 371 (J), Part XXI, The Constitution of India,

Primary Texts:Fifth Schedule and Sixth Schedule, Part XXII, Constitution of India

Constituent Assembly Debates (Proceedings), On Special Status to Jammu and Kashmir, 17th October 1949, Vol. X.
URL: http://164.100.47.194/loksabha/writereaddata/cadebatefiles/C17101949.html

Arun Thiruvengadam, 2018, Federalism and Local Government (pp. 71-92), *The Constitution of India, a Contextual Analysis*, Hart Publishing

Rekha Saxena, 2021, Constitutional Asymmetry in Indian Federalism, *Economic and Political Weekly*, Vol. 56, Issue No. 34.

M.P. Singh, 2016, The Federal Scheme, in Sujit Choudhry et al, *The Oxford Handbook of the Indian Constitution*, New Delhi: Oxford University Press.

Ashwani Kumar, 2019, The Constitutional Legitimacy of Abrogating Article 370, *Economic and Political Weekly*, Vol. 54, Issue No. 38

5. Emergency Provisions and Preventive Detention Laws

Primary Text: Articles 352, 353, 356, 358, 359, Part XVIII, The Constitution of India

Constituent Assembly Debates (Proceedings) on Draft Article 15-A, Personal Liberty and Procedure Established by Law (Article 22), September 15 and 16, 1949, Volume IX (http://164.100.47.194/loksabha/writereaddata/cadebatefiles/vol9.html)

Venkat Iyer, 2000, Emergency Law in India: the Background and the Development of the Law, in *States of Emergency, the Indian Experience*, Butterworths.

S.P. Mukherjee, 1990, Preventive Detention (Parliamentary Debates, 13 February, 1951), in *Eminent Parliamentarians Monograph Series*, LokSabha Secretariat, pp. 61- 81 (https://eparlib.nic.in/bitstream/123456789/58670/1/Eminent_Parliamentarians_Series_Syama_Prasad_Mookerjee.pdf)

Granville Austin, 1966, Fundamental Rights II, Social Reform and State Security versus 'Due Process' (pp. 128- 142), in *Indian Constitution, Cornerstone of a Nation*, OUP.

Granville Austin, 1999, Democracy Rescued or Constitution Subverted: Emergency and 42nd Amendment, in *Working a Democratic Constitution*, OUP

Arvind Narrain, 2022, Roots of the Emergency: Preventive Detention, in *India's Undeclared Emergency*, Context, Westland Publications.

6. Constitutional Amendment

Primary Text: Art 368, Part XX, The Constitution of India.

Constituent Assembly Debates (Proceedings), Excerpts on Amendment Procedure in B R Ambedkar's Final Speech on 25th November 1949 URL: http://164.100.47.194/loksabha/writereaddata/cadebatefiles/C25111949.html

D DBasu, 2011, Procedure for Amendment, in *Introduction to the Constitution of India* (20thed.). Lexis Nexis, India.

Arun Thiruvengadam, 2018, Constitutional Change, in *The Constitution of India, a Contextual Analysis*, Hart Publishing

Pratap Bhanu Mehta, 2002, The Inner Conflict of Constitutionalism: Judicial Review and the 'Basic Structure', in ZoyaHasan et al, *India's Living Constitution*, Permanent Black.

Sudhir Krishnaswamy, 2009, Amending Power: The Constitutional Basis for Basic Structure Review, in *Democracy and Constitutionalism in India, A Study of the Basic Structure Doctrine*, Oxford University Press.

7. Language Question

Primary Text: Art 343- 351, Part XVII, The Constitution of India.

Granville Austin, 1966, Language and the Constitution- The Half-Hearted Compromise, in *Indian Constitution, Cornerstone of a Nation*, OUP.

Paramjit S Judge, 2021, Fifteen Years that Never Ended: The Language Debate in *Making of Modern India*, Rawat

Paramjit S Judge, 2021, Language Issue in Constituent Assembly Debates, *Economic and Political Weekly*, Vol. 56, Issue No. 14

(On Assembly Debates) *Indian Express*, 24 Sep 2019, https://indianexpress.com/article/explained/amit-shah-on-hindi-language-status-constituent-assembly-national-launguage-6022271/

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES OFFERED BY THE DEPARTMENT OF POLITICAL SCIENCE

GENERIC ELECTIVES (GE-1): Ideas in Indian Political Thought

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Ideas in Indian Political Thought GE-1	4	3	1	0	12 Pass	NIL

Learning Objectives

This paper is designed for students who are from other disciplines and wish to have a basic understanding of the various themes that has shaped Indian society and politics. It revolves around key concepts based on original texts which would help the students to critically engage with the ideas.

Learning outcomes

After completion of this course, students will be able to

- answer about the nature and form of statecraft that existed in Ancient India.
- explain how the texts in ancient India interpreted Dharma and Danda
- answer what were sources and mechanisms to practice Nyay in ancient India.
- make distinction between Rastra and Rajya.
- explain the meaning and foundations of Varna and how are they different from caste.

SYLLABUS OF GE-1

UNIT – I (7 Hours)

Dharma and Danda: Kautilya

UNIT – II (6 Hours)

Gender: Tarabai Shinde

UNIT – III (6 Hours)
Culture and Nationalism: Vivekananda

UNIT – IV (6 Hours)
Swaraj: Gandhi

UNIT – V (6 Hours)
Nyaya: Ambedkar

UNIT – VI (7 Hours)
Hindutva: Savarkar

UNIT – VII (7 Hours)
Integral Humanism: Deen Dayal Upadhyaya

Essential/recommended readings

1. Dharma and Danda: Kautilya

Mehta, V.R. (1992) 'The Pragmatic Vision: Kautilya and His Successor', in Foundations of Indian Political Thought, Delhi: Manohar, pp. 88- 109.

Sharma, R S (2005), Aspects of Political Ideas and Institutions in Ancient India, Motilal Banarsidass, New Delhi pp 143-164

2. Gender: Tarabai Shinde

O' Hanlon, Rosalind (2002) A comparison between women and men: Tarabai Shinde and the critique of Gender Relations in Colonial India. New Delhi: Oxford University Press.

Lele, Jayant (1998) Gender Consciousness in Mid-Nineteenth Century Maharashtra, in Anne Feldhaus*Images of women in Maharastrain Society*. The University of New York Press: New York

3. Culture and Nationalism: Vivekananda

Sen, Amiya P. (2011), 'Vivekanand: Cultural Nationalism', in M. P. Singh and Himanshu Roy (ed.), *Indian Political Thought: Themes and Thinkers* Delhi. Pearson

Kiggley, Dermot (1990) 'Vivekananda's western message from the East' in William Radice (ed) Swami Vivekananda and modernization of Hinduism, New Delhi: Oxford University Press.

4.Swaraj: Gandhi

Parel, A. (ed.) (2002), 'Introduction', in *Gandhi, freedom and Self Rule,* Delhi: Vistaar Publication.

Dalton, Denis (1982) Indian Idea of freedom, Gurgaon: Academic Press, pp 154-190

5. Nyaya: Ambedkar

Pantham, Thomas and Kenneth Deutsch (ed) (1986) Political Thought in Modern India, New Delhi: Sage, pp 161-175

Rodrigues, Valerian (2002) The Essential writings of B.R Ambedkar, Delhi: Oxford University Press, pp 1-44

6. Hindutva: Savarkar

Savarkar, Vinayak Damodar (1922-23) Essentials of Hindutva, 1922, available at: http://savarkar.org/en/encyc/2017/5/23/2_12_12_04_essentials_of_hindutva.v001.pdf_1.pdf

Sampath, Vikram (2021) Savarkar: A Contested Legacy, 1924-1966, Gurugram: Penguin Random House India

7. Integral Humanism: DeenDayal Upadhyaya

Upadhyaya, Deendayal. (1964), Integral Humanism, Delhi: Bharatiya Jan Sangh.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-2) :Introduction to the Indian Constitution

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Introduction to the Indian Constitution GE-2	4	3	1	0	12 Pass	NIL

Learning Objectives

The course aims to introduce the students to the foundational text of constitutional democracy in India - the Indian Constitution. By providing an overview of the socio-political context of its origin and its basic tenets, which provide the organizing framework for democracy in India, the course expects to bring historical insights in making the constitutional text comprehensible. The course traces the history of the Constitution both in the colonial legislations and in the declaration and reports produced in the course of the Indian National Movement. It focuses on the creation and the working of the Constituent Assembly as part of a transformative vision for independent India. The basic features of the Constitution form the core themes of the course introducing students to the philosophy behind them and the final form in which they were adopted in the Indian Constitution to make it a document for social revolution. The course aims at providing students with both a textual and a contextual introduction to the Indian Constitution.

Learning outcomes

On successful completion of the course, the students will demonstrate

- Knowledge of the origin and contents of the Indian Constitution
- Awareness of the rights and duties of the citizens and the obligations of the state

- Familiarity with the functioning of constitutional governance in India and the division of power between different tiers of the government.

SYLLABUS OF GE-2

UNIT – I (8 Hours)
Constitutional antecedents and the making of the Constitution of India

UNIT – II (7 Hours)
Basic features of the Indian Constitution

UNIT – III (8 Hours)
Fundamental Rights

UNIT – IV (7 Hours)
Obligations of State and Duties of Citizens

UNIT – V (7 Hours)
Organs of Constitutional Governance- Legislature, Executive and Judiciary

UNIT – VI (8 Hours)
Centre-State Relations and Decentralization

Essential/recommended readings
Readings:

1. Constitutional antecedents and the making of the Constitution of India
(a) Constitutional antecedents

ShibaniKinkarChaube, 2010, Pre History, in *The Making and Working of the Indian Constitution*, NBT, India.

Arun Thiruvengadam, 2018, Origin and Crafting of the Constitution (pp. 11 to 26), in *The Constitution of India, a Contextual Analysis*, Hart Publishing.

D DBasu, 2011, The Historical background,in*Introduction to the Constitution of India* (20thed.). Lexis Nexis, India.

(b) Making of the Constitution of India

ShibaniKinkarChaube, 2000, Birth of the Constituent Assembly, in *Constituent Assembly of India: Springboard of Revolution*, Manohar.

Granville Austin, 1966, The Constituent Assembly- Microcosm in Action, in *Indian Constitution, Cornerstone of a Nation*, OUP.

Subhash Kashyap, 1994, Making of the Constitution, in *Our Constitution: An Introduction to India's Constitution and Constitutional Law*, NBT, India.

2. Basic Features of the Indian Constitution

B R Ambedkar, 2010, Basic features of the Indian Constitution, in Valerian Rodrigues (ed), *The essential writings of BR Ambedkar*. Oxford University Press, India.

D DBasu, 2011, Outstanding Feature of Our Constitution,in*Introduction to the Constitution of India* (20thed.). Lexis Nexis, India.

Ivor Jennings, 1953, Introduction, in *Some Characteristics of Indian Constitution,* G Cumberlege and Oxford University Press.

3. Fundamental Rights

Primary text: Article 14- 32, Part III, The Constitution of India

Granville Austin, 1966, The Conscience of the Constitution- Fundamental Rights and Directive Principles of State Policy- I (pp. 63-94), in*Indian Constitution, Cornerstone of a Nation*, OUP

ShibaniKinkarChaube, 2010, Rights of Indians, in *The Making and Working of the Indian Constitution*, NBT, India.

D DBasu, 2011, Fundamental Rights and Duties (pp. 79- 142),in*Introduction to the Constitution of India* (20thed.). Lexis Nexis, India.

Arun Thiruvengadam, 2018, Fundamental rights, Directive Principles and the Judiciary (pp. 118-137), in *The Constitution of India, a Contextual Analysis*, Hart Publishing.

4. Obligations of State and Duties of Citizens

Primary text: Article 36- 51A, Part IV and IVA, The Constitution of India

ShibaniKinkarChaube, 2010, Duties of State and Citizens, in *The Making and Working of the Indian Constitution*, NBT, India.

D DBasu, 2011, Directive Principles of State Policy (pp. 79- 142), in *Introduction to the Constitution of India* (20th ed.). Lexis Nexis, India.

Gautam Bhatia, 2016, Directive Principles of State Policy, in Sujit Choudhry, *et al*, *The Oxford Handbook of the Indian Constitution*, New Delhi: OUP

Ivor Jennings, 1953, Directives of Social Policy, in *Some Characteristics of Indian Constitution,* G Cumberlege and Oxford University Press.

5. Organs of Constitutional Governance- Legislature, Executive and Judiciary

Primary Text: Part V, The Constitution of India

S.K. Chaube, Union Government- 1: The Executive, in *The Making and Working of Indian Constitution*, NBT, India

S.K. Chaube, Union Government 2: The Legislature, in *The Making and Working of Indian Constitution*, NBT, India

Granville Austin, 1966, *Indian Constitution, Cornerstone of a Nation*, OUP, pp. 145- 230.

Arun Thiruvengadam, 2018, The Executive and the Parliament, in *The Constitution of India, a Contextual Analysis*, Hart Publishing

M.R. Madhavan, 2017, Parliament, in D. Kapur, P.B. Mehta and M Vaishnav (eds.), *Rethinking Public Institutions in India*, Oxford University Press

D.D. Basu, 2011, The Judicature (pp. 299- 313), in *Introduction to the Constitution of India (*20thed.). Lexis Nexis, India.

Pratap Bhanu Mehta, 2005, India's Judiciary: the Promise of Uncertainty, in *Public Institutions in India: Performance and Design*, OUP, India.

Punam S Khanna, 2008, The Indian Judicial system, in K Sankaran and U K Singh (eds), *Towards Legal Literacy: An Introduction to Law in India*, OUP.

6. Centre-State Relations and Decentralization

D DBasu, 2011, Distribution of Legislative and Executive Powers, in *Introduction to the Constitution of India (*20thed.). Lexis Nexis, India.

M.P. Singh and Rekha Saxena, 2013, Asymmetrical Federalism, in *Federalising India in the Age of Globalisation,* Primus

Ivor Jennings, 1953, Indian Federalism, in *Some Characteristics of Indian Constitution,* G Cumberlege and Oxford University Press.

S.K. Chaube, Local Government, in *The Making and Working of Indian Constitution*, NBT, India.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-3): Nationalism in India

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Nationalism in India GE-3	4	3	1	0	12 Pass	NIL

Learning Objectives

The course aims to help students understand the national movement in India. It looks at the movement from different theoretical perspectives that highlight its varied dimensions. The course begins by looking at the Indian responses to colonial dominance in the nineteenth century, and traces the development of the anti-colonial struggle up to the mid-20th century. It successively focuses on the events leading to the Partition and the Independence in 1947. In the process, the course also tries to focus on the various tensions and debates within nationalism in India as it engaged with the questions of communalism, class struggle, caste and gender.

Learning outcomes

On successful completion of the course, students would:

- Gain an understanding of the different theoretical views on the emergence and development of nationalism in India and the tensions that existed between them
- Demonstrate knowledge of the historical trajectory of the development of the nationalist movement in India, with specific focus on its different phases
- Understand the contribution of various social movements in the anti-colonial struggle
- Demonstrate awareness of the history of partition and independence

SYLLABUS OF GE-3

UNIT – I (8 Hours)

Approaches to the Study of Nationalism in India: Nationalist, Imperialist, Marxist, and Subaltern

UNIT – II (8 Hours)

Reformism and Anti-Reformism in the Nineteenth Century: Major Social and Religious Movements in 19th century

UNIT – III (11 Hours)

Nationalist Politics and Expansion of its Social Base

a. Phases of Nationalist Movement: Liberal Constitutionalists; Swadeshi; Revolutionaries, Socialists and Communists; Beginning of Constitutionalism in India
b. Gandhi and Mass Mobilisation: Non-Cooperation Movement, Civil Disobedience Movement, and Quit India Movement
c. Socio-cultural Organizations and National Movement

UNIT – IV (9 Hours)

Social Movements

Peasants, Tribals, Workers, Women and anti-caste movements

UNIT – V (9 Hours)

Partition, Independence and Integration of states

Communalism in Indian Politics, The Two-Nation Theory and Partition, Independence and Integration of Indian States

Essential/recommended readings

Approaches to the Study of Nationalism in India

S. Bandopadhyay (2004) *From Plassey to Partition: A History of Modern India*, New Delhi: Orient Longman, pp. 184-191.

R. Thapar (2000) 'Interpretations of Colonial History: Colonial, Nationalist, Post-colonial', in P. DeSouza (ed.) *Contemporary India: Transitions*, New Delhi: Sage Publications, pp. 25-36.

Reformism and Anti-Reformism in the Nineteenth Century

S. Bandopadhyay (2004) From Plassey to Partition: A History of Modern India, New Delhi: Orient Longman, pp.139-158, 234-276.

A. Sen (2007) 'The idea of Social Reform and its Critique among Hindus of Nineteenth Century India', in S. Bhattacharya (ed.) *Development of Modern Indian Thought and the Social Sciences*, Vol. X. New Delhi: Oxford University Press.

Nationalist Politics and Expansion of its Social Base

S. Bandopadhyay (2004) *From Plassey to Partition: A History of Modern India*. New Delhi: Orient Longman, pp. 279-311.

S. Sarkar (1983*) Modern India (1885-1947)*, New Delhi: Macmillan,

P. Chatterjee (1993) 'The Nation and its Pasts', in P. Chatterjee, *The Nation and its Fragments: Colonial and Postcolonial Histories*. New Delhi: Oxford University Press, pp. 76-115.

Social Movements

S. Bandopadhyay (2004) *From Plassey to Partition: A history of Modern India*. New Delhi: Orient Longman, pp. 342-357, 369-381.

Desai, A.R. (2019, reprint- 6th edition) Crusade Against Caste System, in *Social Background of Indian Nationalism*, Sage.

Desai, A.R. (2019, reprint- 6th edition) Crusade Against Untouchability, in *Social Background of Indian Nationalism*, Sage.

Desai, A.R. (2019, reprint- 6th edition) Movement for the Emancipation of Women, in *Social Background of Indian Nationalism*, Sage.

G. Shah (2002) *Social Movements and the State*, New Delhi: Sage, pp. 13-31

Partition, Independence and Integration of States

A. Jalal, and S. Bose (1997) *Modern South Asia: History, Culture, and Political Economy*. New Delhi: Oxford University Press, pp. 135-156.

A. Nandy (2005) *RashtravadbanamDeshbhakti*Translated by A. Dubey, New Delhi: Vani Prakashan. pp. 23-33. (The original essay in English is from A. Nandy (1994) New Delhi: Oxford University Press, pp. 1-8.)

V P Menon (1956), CH I- Setting the Stage and Ch XXV- The Cost of Integration, in *The Story of the Integration of the Indian States*, Orient Longman.

Suggestive readings

B.Chakrabarty and R. Pandey (2010) *Modern Indian Political Thought,* New Delhi: Sage Publications.

P. Chatterjee (1993) *The Nation and its Fragments: Colonial and Postcolonial Histories*, New Delhi: Oxford University Press.

R. Pradhan (2008) *Raj to Swaraj*, New Delhi: Macmillan (Available in Hindi).

S. Islam (2006) *Bharat Mein AlgaovaadaurDharm*, New Delhi: Vani Prakashan.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-4): Understanding International Relations

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Understanding International Relations GE-4	4	3	1	0	12 Pass	NIL

Learning Objectives

This course aims to make students understand the intersections between politics, economics, culture and nature that shape human life in the contemporary world. These intersectional relations foreground the multiple interactions that constitute the reality of the group life of humans. The issues around which the course is designed consists of the role of state in international politics, cultural identities such as the nation and, issues such as global poverty and global inequalities. Additionally, the course dwells on the psycho-cultural and politico-economic causes of violence, oppression and injustices that make the world a contested space. It examines the ways in which information technology shapes the course of human life in the age of globalization and how the phenomenon of the international manifests both in the virtual and the material world. Going beyond the Westphalian conception of territoriality, the course looks at the ways in which IR manifests in the realm of art/cinema/museums.

Learning outcomes

On successful completion of the course, students would be able to:

- Understand the nature of the contemporary world in which we live through connected histories, economies and societies.
- Analyze the ways in which our world is shaped in both territorial and non-territorial forms leading to basic planetary understandings of both human and non-human relations.
- Enhance cognitive abilities to map out the multiple and complex interactions in international relations between peoples, histories and civilisations.
- To understand the role of the state and its interface with the market, probe into the cultural identities of a nation, analyse global poverty and climate change politics.
- To critically analyse the politics of ‘common yet differentiated responsibilities.’
- Think critically about issues of global inequalities, violence, and injustices in the age of globalization.
- Appreciate the ways in which aesthetic articulation(s) problematize and interrogate the international and our ways of being therein.

SYLLABUS OF GE-4

UNIT – I (7 Hours)

Making Sense of the World

1.1 What is International Relations?
1.2 Understanding Space: How do we sense our planet
1.3 Ways of knowing and being: - Peoples, Histories and Civilisations

UNIT – II (12 Hours)
States, Nations and Markets

2.1 State and Diffusion of authority/power
2.2 Nations and Nationalism
2.3 States and Markets

UNIT – III (12 Hours)
Inequalities

3.1 Politico-military inequalities: big states, small states
3.2 Economic inequalities: rich states, poor states
3.3 Climate Change: Global commons and differentiated responsibilities

UNIT – IV (7 Hours)
Sites of Conflict and Forms of Violence

4.1 Changing Landscape/ Nature of Conflict
4.2 Forms of Violence

UNIT – V (7 Hours)
Knowing our Virtual and Creative World: The Visual Turn in International Relations

5.1 Internet
5.2 Museums
5.3 Cinemas

Essential/recommended readings

1.1. What is IR?

David Blaney, “Where, When and What is IR?” in Arlene B, Tickner and Karen Smith (eds.), *International Relations from the Global South: World of Difference,* New York: Routledge, 2020, pp. 38-55.

1.2. Understanding Space: How can we understand our planet.

Simon Dalby, “What happens if we don’t take nature for granted,” in Jenny Edkins and Maja Zehfuss (eds.), *Global Politics: A New Introduction*, New York: Routledge, 2008, pp. 39-60. Dipesh Chakrabarty, ‘The Climate of History in a Planetary Age,’ London: University of Chicago Press, 2021, pp. 1-20.

1.3. Ways of knowing and being: - Peoples, Histories and Civilisations

Veronique Pin-Fat, “How do we begin to think about the world,” in Jenny Edkins and Maja Zehfuss (eds.), *Global Politics: A New Introduction*, New York: Routledge, 2008, pp. 20-38. Tamara A. Trownsell, Amaya Querejazu, Giorgio Shani, Navnita Chadha Behera, Jarrad Reddekop and Arlene B. Tickner Recrafting International Relations through Relationality,” *E-International Relations*, January 2019. https://www.e- ir.info/2019/01/08/recrafting-international-relations-through-relationality/.

Tamara A. Trownsell, Arlene B. Tickner, Amaya Querejazu, Jarrad Reddekop, Giorgio Shani, Kosuke Shimizu, Navnita Chadha Behera and Anahita Arian, 'Differing about difference: relational IR from around the world,' *International Studies Perspectives*, 22:1, February 2021, pp. 25-64.

Giorgio Shani, 'IR as inter-cosmological relations?' *International Politics Review,* 9 (2021) 306–312. https://doi.org/10.1057/s41312-021-00120-2.

Additional Readings:

MiljaKurki, "International Relations in a Relational Universe," *Oxford University Press* (2020) 1-16.

Arturo Escobar, 'Introduction: Another possible is possible,' and 'Theory and the un/real: Tools for rethinking "Reality" and the possible," in *Pluriversal Politics: The Real and the Possible,* Durham: Duke University Press, 2020, pp. 1-30.

Ashish Kothari, Ariel Salleh, Arturo Escobar, Federico Demaria, Albert Acosta, 'Introduction: Finding Pluriversal Paths', in Ariel Salleh, Arturo Escobar, Federico Demaria, Albert Acosta (eds.), '*Pluriverse: a post-development dictionary',* New Delhi: Tulika Books, 2019, pp. xxii-xl. Also, see, https://kalpavriksh.org/ourteam/ashish-kothari/

2.1 State and Diffusion of authority/power

Shibashish Chatterjee, 'Reconsidering the State in International Relations,' in Kanti and Siddharth Mallavarapu (eds.), *International Relations in India: Bringing Theory back home,* New Delhi: Orient Longman, 2005, pp. 451-489.

David Held, "The territorial State and Global Politics," in *Global Transformations: Politics, Economics and Culture*, USA: Stanford University Press, 1999, pp. 32-48.

Susan Strange, "The State of the State," in *The Retreat of the State: The Diffusion of Power in the World Economy*, Cambridge: Cambridge University Press, 1996, pp. 66- 88.

2.2 Nations and Nationalism

Andrew Heywood, "Nations and Nationalism" in *Politics*, China: Palgrave Macmillian, 2013, pp. 108-127.

Michael J. Shapiro, "Does the nation-state work?" in Jenny Edkins and Maja Zehfuss (eds.), *Global Politics: A New Introduction*, New York: Routledge, 2008, pp. 269- 287.

Elena Barabantseva, "How do people come to identify with nations?" in Jenny Edkins and Maja Zehfuss (eds.), *Global Politics: A New Introduction*, New York: Routledge, 2008, pp. 245-268.

Sanjay Chaturvedi, 'Indian Geo-politics: 'Nation-State and the Colonial Legacy' in Kanti Bajpai and Siddharth Mallavarapu (eds.), *International Relations in India: Theorising the Region and Nation*, New Delhi: Orient Longman, 2005, pp. 238-283.

2.3 States and Markets

Lavanya Rajamani,"The principle of common but differentiated responsibilities and respective capabilities in the international climate change regime" in Ludwig Kramer and Emanuela Orlando (eds.), *Principles of Environmental Law*, Sussex: Edward Elgar publishing, 2018, pp. 46-60.

David Held, Chapter five on "Corporate Power and Global Production Networks," in *Global Transformations: Politics, Economics and Culture*, Stanford: Stanford University Press, 1999, pp. 236-282.

Matthew Watson, 'Understanding the State within Modern Society' and 'Understanding the Market within Modern Society' in *Foundations of International Political Economy*, New York: Palgrave, 2005, pp. 161-196.

Additional Readings:

Thomas L. Friedman, *The World is Flat: A Brief History of the Twenty-First Century,* New York: Picador Publication, 2005, pp. 1-50.

Yuval Noah Harari, "Nationalism," in *21 Lessons for the 21st Century*, USA: Spiegel & Grau, Jonathan Cape, 2018, pp. 104-117.

Dr V. Basil Hans, 'State and the Market- Debate and Developments,' January 2014, http://dx.doi.org/10.2139/ssrn.2373827

Andrew Heywood, "Sovereignty, the Nation and Supranationalism," in *Political Ideas and Concept*, New York: St. Martin's Press,1994, pp. 48-77.

Stuart Elden, "Why the World Divided Territorially," in Jenny Edkins and Maja Zehfuss (eds.), *Global Politics: A New Introduction*, New York: Routledge, 2008, , pp. 220-244.

Robert Gilpin, "Nature of political economy," in *Global Political Economy: Understanding the International Economic Order*, Princeton: Princeton University Press, 2001, pp- 25-45.

Stephen D. Krasner, 'Sharing Sovereignty: New Institutions for Collapsed and Failing States,' *International Security*, 29: 2, 2004, pp. 85-120.

Susan Strange, Chapters 3-6, on 'The Security Structure', 'The Production Structure', 'The Financial Structure', 'The Knowledge Structure', in *States and Markets*, London: Bloomsbury, 2015,

Unit 3. Inequalities

Mohammad Ayoob, 'Inequality and Theorizing in International Relations: The Case for Subaltern Realism,' *International Studies review*, 4:3, 2002, pp. 27-48.

3.1 Mapping inequalities in IR

Joao Pontes Nogueira, "Inequality," in Arlene B, Tickner and Karen Smith (eds.), *International Relations from the Global South: World of Difference,* New York: Routledge, 2020, pp. 240-255.

Paul Cammack, "Why are Some People Better off than Others," in Jenny Edkins and Maja Zehfuss (eds.), *Global Politics: A New Introduction*, New York: Routledge, 2008, pp. 405-428.

3.2 Climate Change: Global commons and differentiated responsibilities

A. Damodaran, 'Encircling the Seamless- India, Climate Change, and the Global Commons,' Oxford University Press, 2010, India. Chapters 1 and 2.

Additional Readings:

Amartya Sen, "Capabilities and Resources," in *The Idea of Justice*, New York: Penguin Books, 2009, pp. 253-268.

Amartya Sen, "Measures of Inequality," in *On Economic Inequality*, New York: Clarendon Press Oxford, 1997, pp. 24-46.

Dipesh Chakrabarty, Chapter 7 on 'Anthropocene Time," in The Climate of History in a Planetary Age,' *University of Chicago Press London*, 2021, pp. 155-181.

Graham Thompson, “Global Inequality, Economic Globalization and Technological Change,” Chapter Eleven in ‘A World of Whose Making- Ordering the International: History, Change and Transformation’ by William Brown, Simon Bromley, and Suma Athreye. Pluto Press, 2004, pp. 377-415.

Unit 4. Sites of Conflict and Forms of Violence

Arlene B. Tickner, “War and Conflict,” in Arlene B, Tickner and Karen Smith (eds.), *International Relations from the Global South: World of Difference,* New York: Routledge, 2020, pp. 115-138.

4.1 Changing Landscape/ Nature of Conflict

Michael Dillon, “What makes the world dangerous,” in Jenny Edkins and Maja Zehfuss (eds.), *Global Politics: A New Introduction*, New York: Routledge, 2008, pp. 519-538

Mary Kaldor, ‘In Defense of New Wars’, *Stability: International Journal of Security and Development*, 2:1, 2013, 1-16. http://dx.doi.org/10.5334/sta.at.

4.2 Forms of Violence

Joanna Bourke, “Why Does Politics Turns into Violence?” in Jenny Edkins and Maja Zehfuss (eds.), *Global Politics: A New Introduction*, New York: Routledge, 2008, pp. 472-495.

Anuradha M. Chenoy, “Militarization, Conflict and Women in South Asia,” in Lois Ann Lorentzen and Jennifer Turpin (eds.), *The Women and War Reader*, New York: New York University Press, 1998, pp. 101-110.

Additional Readings:

Roland Bleiker, “Can we move beyond Conflict,” in Jenny Edkins and Maja Zehfuss (eds.), *Global Politics: A New Introduction*, New York: Routledge, 2008, pp. 564- 589.

David Held, “Expanding reach of organized violence,” in *Global Transformations: Politics, Economics and Culture*, Stanford: Stanford University Press, 1999, pp. 87- 92.

5.1 Internet

M. I. Franklin, “How does the way we use the Internet make a difference?” in Jenny Edkins and Maja Zehfuss (eds.), *Global Politics: A New Introduction*, New York: Routledge, 2008, pp. 176-199.

Jr. Harry M. Cleaver, ‘The Zapatista Effect: The Internet and the Rise of an Alternative Political Fabric,’ *Journal of International Affairs*, 51:2, 1998, pp. 621- 640.

5.2 Museums

Christine Sylvester, “Can International Relations and Art/Museums Come Together,” in *Art/Museums: International Relations Where We Least Expect it*, New York: Routledge, 2016, pp. 1-24.

https://www.ushmm.org/teach/teaching-materials/holocaust

https://www.partitionmuseum.org/event/remembering-the-jallianwala-bagh-massacre-100-years-later/

5.3 Cinemas

Cynthia Weber, “Culture, Ideology, and the Myth Function in IR Theory,” in *International Relations Theory: A Critical Introduction*, London: Routledge, 2013, pp. 1-12.

Cynthia Weber, “Case Study: Modernization and Development theory: is there a clash of civilizations? Movie analysis of East is East,” in *International Relations Theory: A Critical Introduction*, London: Routledge, 2013, pp. 173-202.

Additional Readings:

Maria Elena Martinez- Torres, ‘Civil Society, the Internet, and the Zapatistas,’ *Journal of Social Justice*, 13:3, 2001, pp. 347-355.

Lene Hansen, Rebecca Adler-Nissen and Katrine Emelie Andersen, ‘The visual international politics of the European refugee crisis: Tragedy, humanitarianism, borders,’ *Cooperation and Conflict*, 56:44, 2021, pp. 367-393.

Mirzoeff, Nicholas, “Global Visual Cultures” in *An Introduction to Visual Culture* 2nd Edition, London: Routledge, 2009, pp. 1-16.

Azmat Rasul and Mudassir Mukhtar, ‘Bollywoodization of foreign policy: How film discourse portrays tensions between states’ *Journal of Media Critiques,* 1:1, June 2015, pp. 11-27.

Roland Bleiker, *Visual Global Politics*, London and New York: Routledge, 2018, pp.1-29.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-5): Governance: Issues and Challenges

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Governance: Issues and Challenges GE-5	4	3	1	0	12Pass	NIL

Learning Objectives

This paper deals with concepts and different dimensions of governance highlighting the major debates in the contemporary times. There is a need to understand the importance of the concept of governance in the context of a globalising world, environment, administration, development. The essence of governance is explored through the various good governance initiatives introduced in India.

Learning outcomes

On successful completion of the course, the students will be

- acquainted with the changing nature of governance in the era of globalization.
- introduced to the most contemporary ideas of sustainable development and green governance.
- familiarised with a rigorous introduction to the best practices in India on good governance.

SYLLABUS OF GE-5

UNIT – I (10 Hours)

Government and Governance: Concepts

a) Role of State in The Era of Globalisation

b) State, Market and Civil Society

UNIT – II (8 Hours)

Governance and Development

Changing Dimensions of Development Strengthening Democracy through Good Governance

UNIT – III (8 Hours)

Environmental Governance

a) Human-Environment Interaction

b) Green Governance: Sustainable Human Development

UNIT – IV (9 Hours)

Local Governance

a) Democratic Decentralisation

b) People's Participation in Governance

UNIT – V (10 Hours)

Good Governance Initiatives in India: Best Practices

a) Public Service Delivery

b) Electronic Governance

c) Citizens Charter & Right to Information

d) Corporate Social Responsibility

Essential/recommended readings

Government and Governance: Concepts

B. Chakrabarty and M. Bhattacharya (eds.) The Governance Discourse. New Delhi: Oxford University Press,1998

Surendra Munshi and Biju Paul Abraham (eds.), Good Governance, Democratic Societies and Globalisation, Sage Publishers, 2004

United Nation Development Programme, Reconceptualising Governance, New York, 1997

Carlos Santiso, Good Governance and Aid Effectiveness: The World Bank and Conditionality, Johns Hopkins University, The Georgetown Public Policy Review, Volume VII, No.1, 2001

Vasudha Chotray and Gery Stroker, Governance Theory: A Cross Disciplinary Approach, Palgrave Macmillan, 2008

J. Rosenau, 'Governance, Order, and Change in World Politics', in J. Rosenau, and E. Czempiel (eds.) Governance without Government: Order and Change in World Politics, Cambridge: Cambridge University Press, 1992

B. Nayar (ed.), Globalization and Politics in India. Delhi: Oxford University Press, 2007 pp. 218-240.

Smita Mishra Panda, Engendering Governance Institutions: State, Market and Civil Society, Sage Publications, 2008

NeeraChandhoke, State and Civil Society Explorations in Political Theory, Sage Publishers, 1995

सिंह, अभयप्रसादएवंकृष्णमुरारी (2018),शासन: मुद्देएवंचुनौतियाँ, ओरियंटब्लैकस्वान, नईदिल्ली

चक्रबर्ती, बिद्युत, प्रकाशचंद (2018),वैश्वीकृतदुनियामेंलोकप्रशासन, सेजभाषा, नईदिल्ली

सिन्हा, मनोज (2010) प्रशासनएवंलोकनीति, ओरियंटब्लैकस्वान, नईदिल्ली

Governance and Development

B. C. Smith, Good Governance and Development, Palgrave, 2007

World Bank Report, Governance and Development, 1992

P. Bardhan, ‘Epilogue on the Political Economy of Reform in India’, in The Political Economy of Development in India. 6th edition, Delhi: Oxford University Press, 2005

J. Dreze and A. Sen, India: Economic Development and Social Opportunity. New Delhi: Oxford University Press, 1995

Niraja Gopal Jayal [ed.], Democracy in India, Oxford University Press, 2007

Environmental Governance

Ramachandra Guha, Environmentalism: A Global History, Longman Publishers, 1999
J.P. Evans, Environmental Governance, Routledge, 2012

Emilio F. Moran, Environmental Social Science: Human - Environment interactions and Sustainability, Wiley-Blackwell, 2010

Burns H Weston and David Bollier, Green Governance: Ecological Survival, Human Rights and the Law of the Commons, Cambridge University Press, 2013

Bina Agarwal, Gender And Green Governance, Oxford University Press, Oxford, 2013

J. Volger, ‘Environmental Issues’, in J. Baylis, S. Smith and P. Owens (eds.) Globalization of World Politics, New York: Oxford University Press, 2011, pp. 348-362.

A. Heywood, Global Politics, New York: Palgrave, 2011, pp. 383-411.

N. Carter, The Politics of Environment: Ideas, Activism, Policy, Cambridge: Cambridge University Press, 2007, pp. 13-81.

Local Governance

Pranab Bardhan and DilipMookherjee, Decentralization and Local Governance in Developing Countries: A Comparative Perspective, MIT Press, 2006

T.R. Raghunandan, Decentralization And Local Governments: The Indian Experience, Readings On The Economy, Polity And Society, Orient Blackswan, 2013

Pardeep Sachdeva, Local Government In India, Pearson Publishers, 2011

P. de Souza (2002) ‘Decentralization and Local Government: The Second Wind of Democracy in India’, in Z. Hasan, E. Sridharan and R. Sudarshan (eds.) India’s Living
Constitution: Ideas, Practices and Controversies, New Delhi: Permanent Black, 2002

Mary John, ‘Women in Power? Gender, Caste and Politics of Local Urban Governance’, *Economic and Political Weekly*, Vol. 42(39), 2007

Good Governance Initiatives in India: Best Practices

Niraja Gopal Jayal, Democracy and the State: Welfare, Secularism, and Development in Contemporary India, Oxford University Press, 1999

ReetikaKhera[ed.], The Battle for Employment Guarantee, Oxford University Press, 2011

Nalini Juneja, Primary Education for All in the City of Mumbai: The Challenge Set By Local Actors', International Institute For Educational Planning, UNESCO: Paris, 2001

Maxine Molyneux and ShahraRazavi, Gender, Justice, Development, and Rights, Oxford University Press, 2002

Jugal Kishore, National Health Programs of India: National Policies and Legislations, Century Publications, 2005

Jean Drèze and Amartya Sen, India, Economic Development and Social Opportunity, Oxford University Press, 1995

K. Lee and Mills, The Economic Of Health In Developing Countries, Oxford University Press, 1983

Marmar Mukhopadhyay and Madhu Parhar (eds.) Education in India: Dynamics of Development, Shipra Publications, 2007

K. Vijaya Kumar, Right to Education Act 2009: Its Implementation as to Social Development in India, Akansha Publishers, 2012

Amartya Sen and Jean Dreze, Omnibus: Poverty and Famines, Hunger and Public Action, India- Economic Development and Social Opportunity, Oxford University Press, 1998

Jean Dreze and Amartya Sen, An Uncertain Glory: India and Its Contradictions, Princeton University Press, 2013

ReetikaKhera, 'Rural Poverty and Public Distribution System', Economic and Political Weekly, Vol-XLVIII, No.45-46, Nov 2013

Pradeep Chaturvedi, Women and Food Security: Role Of Panchayats, Concept Publishing House, 2002

Bidyut Mohanty, "Women, Right to Food and Role of Panchayats", Mainstream, Vol. LII, No. 42, October 11, 2014

D. Crowther, Corporate Social Responsibility, Deep and Deep Publishers, 2008

Sanjay K. Agarwal, Corporate Social Responsibility in India, Sage Publishers, 2008

Pushpa Sundar, Business & Community: The Story of Corporate Social Responsibility in India, New Delhi: Sage Publications, 2013.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-6): Western Political Philosophy

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Western Political Philosophy GE-6	4	3	1	0	12 Pass	NIL

Learning Objectives

This course familiarizes the students with the manner in which the political questions are posed and answered normatively by select thinkers. The aim is to introduce to the students

the questions, ideas and values of political philosophy addressed by political thinkers and juxtapose the same to contemporary political thinking.

Learning outcomes

By the end of the course students would be able to:

- Understand how to read and decode the classics and use them to engage contemporary socio-political issues.
- Connect with historically written texts and their interpretations.
- Clearly present their own arguments and thoughts about contemporary issues and develop ideas to engage with the latter.

SYLLABUS OF GE-6

UNIT – I (15 Hours)

Classical Political Philosophy

a) Plato
b) Aristotle

UNIT – II (30 Hours)

Renaissance and Modern Political Philosophy

a) Machiavelli
b) Hobbes
c) Rousseau
d) Mill
e) Marx

Essential/recommended readings

Unit 1

R. Kraut (1996) 'Introduction to the study of Plato', in R. Kraut (ed.) *The Cambridge Companion to Plato*. Cambridge: Cambridge University Press, pp. 1-50.

D. Boucher and P. Kelly (eds) *Political Thinkers: From Socrates to the Present,* Oxford: Oxford University Press, pp. 62-80

A. Skoble and T. Machan (2007) *Political Philosophy: Essential Selections*. New Delhi: Pearson Education pp. 53-64.

J. Barnes (ed.), *The Cambridge Companion to Aristotle*. Cambridge: Cambridge University Press.

Q. Skinner (2000) *Machiavelli: A Very Short Introduction*, Oxford: Oxford University Press, pp. 23-53

Unit 2

C. Macpherson (1962) *The Political Theory of Possessive Individualism: Hobbes to Locke*. Oxford University Press.

D. Boucher and P. Kelly (eds) *Political Thinkers: From Socrates to the Present.* Oxford: Oxford University Press, pp. 207-224

J. Coleman (2000) ‘Introduction’, in *A History of Political Thought: From Ancient Greece to Early Christianity,* Oxford: Blackwell Publishers.

I. Hampsher-Monk (2001) *A History of Modern Political Thought: Major Political Thinkers from Hobbes to Marx,* Oxford: Blackwell Publishers.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-7): Politics of Globalisation

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Politics of Globalisation GE-7	4	3	1	0	12 Pass	NIL

Learning Objectives

This course examines the paradoxes of contemporary globalisation. It has been crafted in a manner as to introduce to the students from diverse disciplinary backgrounds the complex multifaceted nature of the contemporary phenomenon of globalization. Students will learn about the evolution of globalization by examining whether globalization is a mere historical process, or, it is also a socio-cultural, politico-economic and,psychological phenomenon and, understand these through different conceptual frames. It then makes the students understand the debates that have been put forth for and against globalization. The course introduces the discourse regarding the Eurocentric formulations of globalization and the ways in which the non-European voices have historically been marginalized in the shaping of Western modernity. Students will also learn about the political, economic and cultural facets of globalization. As a political phenomenon, the course seeks to understand as to how globalization has impacted upon the functioning of the sovereignty of nation-states. In the realm of economy, it introduces the impact of time/space compression upon the macroeconomic structures of trade and finance as well as the structural transformation that information and communications technology has brought in the working of the global political economy. As a cultural phenomenon, the course also discusses the new global mobilizations in the form of global social movements, movements of people across borders and the political and economic impact of global epidemics.

Learning outcomes

Upon successful completion of this course, students will have the knowledge and skills to:

- Understand the nature, significance, and principal debates in the literature on globalisation and the concept of globalization as both a historical process and, a socio-cultural phenomenon.
- Study various approaches which will augment student's knowledge on international political economy.
- Demonstrate basic knowledge of the interconnectedness of global issues, processes, and dynamics.
- Develop insight into the alternative understanding of globalisation and various critical aspects related to it like who are the beneficiaries in this process.
- Understand diverse global challenges like global migration and epidemics.
- Learn the ways in which globalization holds promise for a better world and a developed world and, at the same time, understand how it is laden with deep-seated tendencies to engender strands of inequalities and spur erosion of local cultures.

SYLLABUS OF GE-7

UNIT – I (9 Hours)

Conceptualizing Globalisation

1.1 Is Globalisation New? Historical Perspectives
1.2 Approaches to Understand globalisation
1.3 The Globalisation Debate

UNIT – II (9 Hours)

Globalization: A Eurocentric Project?

2.1 The Question of Post-Coloniality
2.2 Making Sense of Globalization for the People at the Margins

UNIT – III (9 Hours)

Sovereign State in a Globalised World

3.1 Political Dimensions
3.2 Shift from State to Market?

UNIT – IV (9 Hours)

Role of International Institutions: Multi-dimensionality of Globalisation

4.1 World Bank, International Monetary Fund, World Trade Organisation and, G-20
4.2 The Globalisation of Trade
4.3 Global Epidemics and Working of World Health Organization

UNIT – V (9 Hours)

Responses and Resistances to Globalization

5.1 Global Social Movements
5.2 International Migration

Essential/recommended readings

Unit 1. Conceptualizing Globalisation

Essential Readings

1.1 Is Globalisation New? Historical Perspectives

Hirst, Paul and Thompson, G. "*Globalisation in Question*" (Third Edition), UK: Polity Press, 2009, pp. 25-52.

Ritzer, George and Paul D. Paul, *Globalization: A Basic Text* (Second Edition), UK: Wiley Blackwell, 2015, pp. 14-53.

1.2 Approaches to Understand Globalisation

Held, D and et. al. "Rethinking Globalisation" in Held, David and Anthony McGrew (eds.) *The Global Transformations Reader: An Introduction to the Globalisation Debate,*(Second Edition). Cambridge: Polity Press, Blackwell Publishing, 2003, pp. 60-67.

Ritzer, G and Dean, P. *Globalisation: The Essentials,* UK: Wiley-Blackwell*,* 2019, pp. 55-92.

1.3 The Globalisation Debate

Bishop, Matthew Louis & Anthony, "The political economies of different Globalizations: Theorising Reglobalization", *Globalizations,* Vol. 18, June 2020, pp. 1- 21.

Keohane, Robert O. and Nye Jr, Joseph S., "What's New? What's Not? (And So What?), in Held, D and McGrew, A (ed.), *The Global Transformations Reader: An Introduction to the Globalisation Debate (*2nd edition). Cambridge: Polity Press, Blackwell Publishing, 2003, pp. 75-84.

Additional Readings

Held, David and Anthony McGrew (eds.) *The Global Transformations Reader: An Introduction to the Globalisation Debate (*Second Edition). Cambridge: Polity Press, Blackwell Publishing, 2000, pp 1-42.

Bhagwati, J. "*In Defence of Globalisation",* UK: Oxford University Press, 2007, pp. 3-36, 199-220.

Dwivedi, Sangit S., "Localisation vs Globalisation: A Conscious Vision of India" in Tyagi, R., S. Mangla and Giri (eds.), *Glocalization and Federal Governance in India,* Bloomsbury. 2019,pp. 141-154.

Michie, Jonathan. (eds.), "Globalisation in Questions?", *Handbook of Globalisation*, UK, Edward Elgar, 2003, pp: 17-79.

Mcgrew, A. "Globalisation and Global Politics" in Baylis J., Smith and Owens (eds.), *The Globalisation of World Politics: An Introduction to International Relations,* New York: Oxford University Press. 2017, pp. 15-31.

Unit 2. Globalization: A Eurocentric Project?

Essential Readings

2.1 The Question of Post-Coloniality

Chatterjee, P. *Our Modernity (*SEPHIS) and (CODESRIA), Rotterdam/Dakar. 1997 pp. 3-20.

Sanjeev Kumar H.M., "Contesting Modernity: Crisis of Democratization in South Asia," *India Quarterly*, LXIV (4), October-December 2008, pp. 124-155.

2.2 Making Sense of Globalization for the People at the Margins

Vandana Shiva, "Ecological Balance in an Era of Globalisation," in Frank J. Lechner and John Boli (eds.), *The Globalization Reader*, Oxford: Blackwell, 2004: pp. 422-429.

Kirsten Foot, "Actors and Activities in the Anti-Human Trafficking Movement," in Jorge Heine and Ramesh Thakur (eds)., *The Dark Side of Globalization*, Tokyo: UN University Press, 2011, pp. 249-265.

Additional Readings

Sen, A. "Introduction" and "The Perspective of Freedom" *Development as freedom* (2nd ed.). New York: Oxford University Press. 2001 pp.1- 34.

Hirst, P. and Thompson, G. "The Future of Globalization", *Cooperation and Conflict,* Vol. 37, No. 3, Special Issue on Globalization, *Cooperation and Conflict*, September 2002, pp. 247-265.

Appadurai, Arjun. *Modernity at Large: Cultural Dimensions of Globalisation.* Minneapolis: University of Minnesota Press, 1996, pp. 66-88.

Ashcroft, Bill, Gareth Griffiths, and Helen Tiffins, eds. *The Empire Writes Back: Theory and Practice in Post-Colonial Literature.* London: Routledge, 1989, pp.1-32; 193-220.

GustavaEsteva and Madhu Suri Prakash, “From Global to Local: Beyond Neo-liberalism to International Hope,” in Frank J. Lechner and John Boli (eds.), *The Globalization Reader*, Oxford: Blackwell, 2004: pp. 410-416.

Research Foundation for Science, Technology and Diversity, “Jaiv Panchayat: Biodiversity Protection at the Village Level,” in Robin Broad (ed.), *Global Backlash: Citizen Initiatives for a Just World Economy,* Boulder: Rowman and Littlefield, 2002, pp. 269-272.

Unit 3. Sovereign State in a Globalised World

Essential Readings

3.1 Political Dimensions

Bull, Hedley. “Beyond the state system?” in Held, David and Anthony McGrew (eds.) *The Global Transformations Reader: An Introduction to the Globalisation Debate (*Second Edition). Cambridge: Polity Press, Blackwell Publishing, 2000, pp 577-582.

Elizabeth, A. and Ozioko, M. V, *Effect of Globalisation on Sovereignty of States,* UN Document, 2000, pp. 256-270.

3.2 Shift from State to Market?

Susan Strange, “The Declining Authority of States,” in in Frank J. Lechner and John Boli (eds.), *The Globalization Reader*, Oxford: Blackwell, 2004: pp. 219-224.

Jessica T. Mathews, “Power Shift,” in David Held and Anthony McGrew (eds.), *The Global Transformations Reader: An Introduction to the Globalisation Debate*(Second Edition). Cambridge: Polity Press, Blackwell Publishing, 2003, pp. 204-212.

Unit 4. Role of International Institutions: Multi-dimensionality of Globalisation

Essential Readings

4.1 World Bank, International Monetary Fund, World Trade Organisation and, G-20

Coffey Peter, Riley, Robert, *Reform of the International Institutions - The IMF, World Bank and the WTO*, Part-2, Edward Elgar Publishing, 2006, pp. 12-84.

Dash, P., Shaw, Khandelwal, “Evolution of G20 Process: From Crisis Management toDevelopment Cooperation”, *G 20 Digest,* pp. 5-12. Available at: https://www.g20-insights.org/wp-content/uploads/2020/01/Dash_Shaw_Khandelwal_Evolution_G20.pdf

4.2 The Globalisation of Trade

Woods, N. “International Political Economy in an Age of Globalisation”, and Watson, M. “Global Trade and Global Finance”, in Baylis J., Smith and Owens (eds.) *The Globalisation of World Politics: An Introduction to International Relations,* New York: Oxford University Press. 2017, pp. 243-257, 417-428.

4.3.Global Epidemics and Working of World Health Organization

Editors, CFR. "What does the World Health Organisation do?" *Council on Foreign Relations*, 29 Jan. 2021, New York: 1-14.https://www.cfr.org/backgrounder/what-does-world-health-organization-do

Lee, Kelley and Julliane Piper, “The WHO and Covid-19 Pandemic”, *Global Governance and Review of Multilateral Organizations*, 2020. https://brill.com/view/journals/gg/gg-overview.xml

Additional Readings

Stiglitz, J. “The Promise of Global Institutions”*, Globalisation and its Discontents,* New York: Norton, 2002, pp. 3–22.

Cypher, J. and Dietz, J. “The International Monetary Fund, the World Bank and Foreign Aid”, *The Process of Economic Development.* New York: Routledge, 2009, pp. 555-591.

Oatley, Thomas, “Trade and Development: Import Substitution Industrialization”, *International Political Economy: Interests and Institutions in the Global Economy,* 2011. 5th ed, pp. 111-132.

Hoekman, B. and Kostecki, M, “The Trading System in Perspective”, *The Political Economy of the World Trading System: From GATT to WTO,* 3rd Ed, 2009, New York: OUP, pp. 7-57.

Friedman, T., *Lexus and the Olive Tree: Understanding Globalization,* 2000, New York: Anchor, pp. 101-142.

Gilpin, Robert, *The Challenge of Global Capitalism: The World Economy in the 21st Century,* USA: Princeton University Press, 2000, pp. 15-52, 293–324.

Charles, Clift. *The Role of the World Health Organisation in the International System*. London: Chatham House, 2013: 1-51.

Lorena, Barberia et.al. “The Political Science of Covid-19: An Introduction”, *Social Science Quarterly,* 2021. pp. 2045-2054.

Lebni Javed Y. and Abbas Jaffar et al., “How the COVID-19 pandemic affected economic, social, political, and cultural factors: A lesson from Iran”, *Journal of Social Psychiatry,* 2021, 63 (7). pp: 298-300

Unit 5. Responses and Resistances to Globalization

Essential Readings

5.1 Global Social Movements

Donatella della Porta, et al, “The Study of Social Movements: Recurring Questions” and “Social Movements and Democracy”, *Social Movements in a Globalising World,* UK: Macmillan, 1999, pp. 3-23; 223-248.

5.2 International Migration

Keeley, B. “International Migration: The Human Face of Globalisation”, OECD, 2009, pp: 9-40

Inglis Christine et al (edited), “Introduction,” in *The Handbook of International Migration,* New Delhi: Sage Publication, 2020, pp. 1-17

Additional Readings

Khagram, Sanjeev et al (ed.) “Women’s Rights are Human Rights”, and “Globalisation, Global Alliances, and the Narmada Movement”, *Restructuring World Politics: Transnational Social Movements: Social Movements, Protest, and Contention, Volume 14,* MN: University of Minnesota Press. 2002. pp. 96-122; pp. 231-244

Berger, S., “Globalisation and Politics”, *Annual Review of Political Science,* 2000, vol- 3, pp. 43-62.

Schaeffer, Robert K. *Social Movement and Global Social Change: The Rising Tide*, UK: Rowman & Littlefield, 2014, pp. 1-18.

Tarrow, S. “The Global in the Local: Global Framing”, *The New Transnational Activism,* New York: Cambridge University Press, 2005, pp 35-59.

Suggestive readings

Gottlieb, G. “*Nation against State: New Approach to Ethnic Conflicts and The Decline of Sovereignty*”, New York: Council on Foreign Press, 1993, pp: 6-47

Smith, G. and Naim, M. *Altered States: Globalization, Sovereignty and Governance,* IDRC, 2000. pp. 5-20.

Hardt, M. and Negri, A., “Passages of Sovereignty”, Empire, England: Harvard University Press, 2000 pp. 67-183.

Stiglitz, J. E., *Globalization and Its Discontents Revisited: Anti-Globalization in the Era of Trump,* New York: W.W. Norton & Company, 2018. pp. 89-132

कोर्ससेसम्बन्धितहिंदीमाध्यमकीपुस्तकें

दुबे, अभयकुमार (संपादक),*भारतकाभूमंडलीकरण, लोकचिंतनग्रंथमाला*, नईदिल्ली: वाणीप्रकाशन, २००३

पंत, पुष्पेश, *भूमंडलीकरणएवंभारत*, नईदिल्ली: एक्सेसपब्लिशिंग, २०१६

खन्ना, वीएन, *अंतराष्ट्रीयसम्बन्ध*, नॉएडा (उप्र): विकासपब्लिशिंगहाउस, २०२०

चक्रवर्ती, बिद्युतएवंप्रकाशचंदकंडपाल, *वैश्वीकृतदुनियामेंलोकप्रशासन: सिद्धांतऔरपद्धतियां*, २०१८

भार्गव, नरेश, *वैश्वीकरण: समाजशात्रीयपरिप्रेक्ष्य,* २०१४

पांडेय, ब्रजकुमार ,भूमंडलीकरणकीसमझ , महावीरप्रकाशनदिल्ली

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-8): Introduction to Public Policy

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Introduction to Public Policy GE-8	4	3	1	0	12 Pass	NIL

Learning Objectives

The paper seeks to provide an understanding to the concept of Public Policy. Public Policy is a proposed course of action of a government to realize its socio-economic objectives. The essence of public policy lies in its effectiveness in translating the governing philosophy into programmes and policies and making it a part of community living. This course will help to understand the complexities of public policy and its interaction with the socio-economic structure.

Learning outcomes

By the end of this course a student will acquire the following knowledge and skills.

a. Contextualization of knowledge;
b. Praxis and technique;
c. Critical Thinking;
d. Research and Communication

SYLLABUS OF GE-8

UNIT – I (10 Hours)

Public Policy

(a) Concept, Characteristics and Significance
(b) Determinants of Public Policy
(c) Policy Impact: Socio-Economic

UNIT – II (10 Hours)

Theoretical Approaches to Public Policy

(a) Elite Theory
(b) Group Theory
(c) Incremental Theory
(d) Rational Choice Theory

UNIT – III (10 Hours)

Process of Public Policy

(a) Policy Formulation
(b) Policy Implementation
(c) Policy Evaluation

UNIT – IV (15 Hours)

Public Policy: Case Studies

(a) Education – National Education Policy (NEP) 2020
(b) Health – National Health Mission (NHM)
(c) Employment – Mahatma Gandhi National Rural Employment Guarantee Act (MNREGA)
(d) Economic Empowerment – Pradhan Mantri Jan-Dhan Yogana (PMJDY), Direct Benefit Transfer (DBT)

Essential/recommended readings

Unit 1

Anderson, J. (1975) Public Policy making. New York: Thomas Nelson and Sons Ltd.

Dye, T. (2002) Understanding Public Policy. New Delhi: Pearson.

Unit 2

Henry, Nicholos (2019) Public Administration and Public Affairs. New York: Routledge.

Simon, Herbert A. (1997) Administrative Behavior. New York: MacMillan.

Unit 3

Sapru, R.K. (1996) Public Policy: Formulation, Implementation and Evaluation. New Delhi: Sterling.

Self, Peter (1972) Administrative Theories and Politics. London: Allen and Unwin.

Unit 4

National Education Policy (NEP) 2020, Ministry of Human Resource Development, Government of India.

National Health Mission, Ministry of Health, Government of India.

Mahatma Gandhi National Rural Employment Guarantee Act-2005, Ministry of Rural Development, Government of India.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-9): Women and Politics in India: Concepts and Debates

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Women and Politics in India: Concepts and DebatesGE-9	4	3	1	0	12 Pass	NIL

Learning Objectives

The course attempts to bring together feminist theory and praxis by focussing on conceptual categories theorized by feminism and the mobilization of the feminist epistemology to focus on key concerns surrounding the everyday existence of women. This course would serve as the fundament introduction to the history of women's movement with particular emphasis on the women's movement in India. The course opens up the question of women's agency, taking it beyond the question of women empowerment and locates women as radical social agents. It attempts to question the complicity of social structures and relations in preserving gender inequality. This is extended to cover new forms of precarious work and labour under the new economy.

Learning outcomes

After completing this course, the students will be able to:

- Understand the concept of patriarchy, feminism, gender, etc.
- Understand the intersection between family, community and state in feminist debates
- Demonstrate awareness of the history of the women's movement in India

- Show familiarity with and awareness of the key issues taken up by the women's movement

SYLLABUS OF GE-9

UNIT – I (8 Hours)

Patriarchy and Feminism

a. Sex-Gender Debates
b. Public and Private Dichotomy
c. Power

UNIT – II (7 Hours)

Family and Community

UNIT – III (7 Hours)

Law, State and Women

UNIT – IV (8 Hours)

History of the Women's Movement in India

UNIT – V (7 Hours)

Violence against women

UNIT – VI (8 Hours)

Women and Labour: Unpaid labour, Reproductive and care work, Sex work

Essential/recommended readings

Patriarchy and Feminism

N. Menon (2008) 'Gender', in R. Bhargava and A. Acharya (eds), *Political Theory: An Introduction,* Delhi: Pearson

V Geetha (2002) *Gender,* Kolkata, Stree, pp. 1-20.

M. Kosambi (2007) *Crossing the Threshold,* New Delhi, Permanent Black, pp. 3-10; 40-46**.**

N. Menon (2008) 'Power', in R. Bhargava and A. Acharya (eds), *Political Theory: An Introduction,* Delhi: Pearson*,* pp.148-157

B. Hooks (2010) 'Feminism: A Movement to End Sexism', in C. McCann and S. Kim (eds), *The Feminist Reader: Local and Global Perspectives,* New York: Routledge, pp. 51-57.

R. Delmar (2005) 'What is Feminism?', in W. Kolmar & F. Bartkowski (eds) *Feminist Theory:A Reader,* pp. 27-37

N. Menon (2015), Is Feminism about 'Women'? A Critical View on Intersectionality from India, *International Viewpoint*, http://www.internationalviewpoint.org/IMG/article_PDF/article_a4038.pdf.

T. Shinde (1993) 'Stree Purusha Tulna', in K. Lalitha and Susie Tharu (eds), *Women Writing in India,* New Delhi, Oxford University Press, pp. 221-234

U. Chakravarti (2001) 'Pitrasatta Par ek Note', in S. Arya, N. Menon & J. Lokneeta (eds.) *NaarivaadiRajneeti: Sangharsh evamMuddey,* University of Delhi: Hindi Medium Implementation Board, pp.1-7

Family and Community

R. Palriwala (2008) 'Economics and Patriliny: Consumption and Authority within the Household' in M. John. (ed) *Women's Studies in India,* New Delhi: Penguin, pp. 414-423

Saheli Women's Centre (2007) *Talking Marriage, Caste and Community: Women's Voices from Within,* New Delhi: monograph 114

U. Chakravarti (2003) *Gendering Caste through a Feminist Lens,* Kolkata, Stree, pp. 139- 159.

S. Rege (2005), A Dalit Feminist Standpoint, in Gender and Caste, in Anupama Rao (ed) *Gender and Caste*, Zed Books, pp. 90-101

Kumkum Sangari (1995) Politics of Diversity: Religious Communities and Multiple Patriarchies,*Economic and Political Weekly*, Vol. 30, No. 52,, pp. 3381-3389

Law, State and Women

C. MacKinnon, 'The Liberal State' from *Towards a Feminist Theory of State,* Available at http://fair-use.org/catharine-mackinnon/toward-a-feminist-theory-of-the-state/chapter-8

R. Kapur& B. Cossman (1999) 'On Women, Equality and the Constitution: Through the Looking Glass of Feminism' in Nivedita Menon (ed) *Gender and Politics in India*, Oxford University Press

C MacKinnon (2006) 'Sex Equality under the Constitution of India: Problems, Prospects and Personal Laws', *International Journal of Constitutional Law*, Volume 4, Issue 2, 181–202.

Ved Kumari (1999) 'Gender Analyses of Indian Penal Code' in AmitaDhanda, Archana Parashar(eds) *Engendering Law - Essays in Honour of Lotika Sarkar*, Eastern Book Company, 139-160

History of the Women's Movement in India

Radha Kumar (1993), The History of Doing: An Illustrated Account of Movements for Women's Rights and Feminism in India, 1800-1990, Zubaan

Anupama Roy (2010) Women's Movement in N.G. Jayal and P.B. Mehta (Ed.) *Oxford Companion to Indian Politics*, New Delhi, Oxford

I. Agnihotri and V. Mazumdar (1997) 'Changing the Terms of Political Discourse: Women's Movement in India, 1970s-1990s', *Economic and Political Weekly*, 30 (29), pp. 1869-1878.

R. Kapur (2012) 'Hecklers to Power? The Waning of Liberal Rights and Challenges to Feminism in India', in A. Loomba *South Asian Feminisms,* Durham and London: Duke University Press, pp. 333-355

Violence against women

N. Menon (2004) 'Sexual Violence: Escaping the Body', in *Recovering Subversion,* New Delhi: Permanent Black, pp. 106-165

F. Agnes (1992), Protecting Women Against Violence – Review of a Decade of Legislation 1980-89, *Economic and Political Weekly*, Vol. 27, Issue No. 17, Apr. 25.

Sunita V S Bandewar, AmitaPitre& Lakshmi Lingam (2018) Five Years Post Nirbhaya: Critical Insights into the Status of Response to Sexual Assault, *in Indian Journal Of Medical Ethics*, available at https://pubmed.ncbi.nlm.nih.gov/29650498/

A. Verma, H. Qureshi & J.Y. Kim (2017) Exploring the trend of violence against women in India, *International Journal of Comparative and Applied Criminal Justice*, 41:1-2, 3-18

Women and Labour

P Swaminathan (2014) Outside the Realm of Protective Legislation: The Saga of Unpaid Work in India, in *Women and Law: Critical Feminist Perspective*: New Delhi: Sage, pp. 115-143

P. Swaminathan (2012) 'Introduction', in *Women and Work,* Hyderabad: Orient Blackswan, pp.1-17

J. Tronto (1996) 'Care as a Political Concept', in N. Hirschmann and C. Stephano, *Revisioning the Political*, Boulder: Westview Press, pp. 139-156.

Darbar MahilaSamanwaya Committee, Kolkata (2011) 'Why the so-called Immoral Traffic (Preventive) Act of India Should be Repealed', in P. Kotiswaran, *Sex Work,* New Delhi, Women Unlimited, pp. 259-262

N. Jameela (2011) 'Autobiography of a Sex Worker', in P. Kotiswaran, *Sex Work,* New Delhi: Women Unlimited, pp. 225-241

Suggestive readings

K. Millet (1968) *Sexual Politics,* http://www.marxists.org/subject/women/authors/millett-kate/sexualpolitics.htm

S. de Beauvoir (1997) *Second Sex,* London: Vintage.

F. Engles, *Family, Private Property and State*, http://readingfromtheleft.com/PDF/EngelsOrigin.pdf

S. Brownmiller (1975) *Against our Wills,* New York: Ballantine.

R. Hussain (1988) 'Sultana's Dream', in *Sultana's Dream and Selections from the Secluded Ones – translated by Roushan Jahan,* New York: The Feminist Press.

S. Ray 'Understanding Patriarchy', http://www.du.ac.in/fileadmin/DU/Academics/course_material/hrge_06.pdf,

C. Zetkin, 'Proletarian Woman', http://www.marxists.org/archive/zetkin/1896/10/women.htm

J. Ghosh (2009) *Never Done and Poorly Paid: Women's Work in Globalising India,* Delhi: Women Unlimited

Justice Verma Committee Report, http://nlrd.org/womensrightsinitiative/justiceverma-committee-report-download-full-report

N. Gandhi and N. Shah (1992) *Issues at Stake – Theory and Practice in the Women's Movement,* New Delhi: Kali for Women.

V. Bryson (1992) *Feminist Political Theory,* London*:* Palgrave-MacMillan, pp. 175-180; 196-200

M. Mies (1986) 'Colonisation and Housewifisation', in *Patriarchy and Accumulation on a World Scale* London: Zed, pp. 74-111, http://caringlabor.wordpress.com/2010/12/29/maria-mies-colonizationand-housewifization/

R. Ghadially (2007) *Urban Women in Contemporary India,* Delhi: Sage Publications.

Saheli Women's Centre (2001) 'Reproductive Health and Women's Rights, Sex Selection and feminist response' in S Arya, N. Menon, J. Lokneeta (eds), *NariwadiRajneeti,* Delhi, pp. 284-306

V. Bryson (2007) *Gender and the Politics of Time,* Bristol: Polity Press

Readings in Hindi:

D. Mehrotra (2001) *Bhartiya MahilaAndolan: Kal, Aaj aur Kal,* Delhi: Books for Change

G. Joshi (2004) *Bharat Mein StreeAsmaanta: Ek Vimarsh,* University of Delhi: Hindi Medium Implementation Board

N. Menon (2008) 'Power', in R. Bhargava and A. Acharya (eds) *Political Theory: An Introduction*, New Delhi: Pearson

N. Menon (2008) 'Gender', in R. Bhargava and A. Acharya (eds) *Political Theory: An Introduction,* New Delhi, Pearson

R. Upadhyay and S. Upadhyay (eds.) (2004) *AajkaStreeAndolan,* Delhi: ShabdSandhan.

मेनन, निवेदिता, साधनाआर्याऔरजिनीलोकनीता (ed.) नारीवादीराजनीति: संघर्षएवंमुद्दे, दिल्ली: हिंदीमाध्यमकार्यन्वयनिदेशालय,2001.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-10): Digital Social Sciences

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Digital Social SciencesGE-10	4	3	1	0	12 pass	NIL

Learning Objectives

Digital technology in the discipline of Social Science cannot be viewed only as a tool for research but as something that transforms the nature of Social Science and the object of its study- the society- in course of researching about it. This very aspect of digital technology and its capacity for social transformation is the mainstay of the emerging field of Digital Social Sciences. The course aims to introduce students to this field of Digital Social Science sbyprimarily focussing on two intertwined aspects of the field- first, impact of digital technologies on the society and two, the role of digital technologies in the study of Social Sciences or the study of society. The intertwined aspect of the twin focus can be alternately formulated as the attempt of the course to understand social change taking place under the impact of digital technology while digital technology providing with the tools to map out these changes. The course begins with a basic introduction to digital literacy and its contribution to pedagogic Social Science and proceeds by way of foundational introduction to prominent technologies and digital spaces through which the aspects of the social can be understood.

The course throws light on how the digital turn has redefined the contours of debates surrounding personal identity and social identification through biometrical techniques having consequences both for social welfare and social surveillance; whether access to the digital spaces is impacting social cleavages, creating space for democracy or re-entrenching social inequality through the digital divide; is the digital economy offering new forms of employment or restructuring the vulnerability of the forms of labour; and how is algorithm driven digital space reformulating social choice and social classification. These are some of the illustrative questions through which the course intends to reflect upon the evolving relationship between digital technologies and social sciences.

Learning outcomes

On successful completion of the course, the students would demonstrate:

- An understanding of digital technology and the ways in which it shapes the society.
- An understanding into how digital tools are used as research and pedagogic devises to map out social changes
- Clarity on concepts of the digital world such as Big Data, Artificial Intelligence, Algorithm, etc.
- Familiarity with digital techniques such as the biometrics and digital spaces such as the Social Media in the sphere of communication or the Gig Economy in the market sphere

SYLLABUS OF GE-10

UNIT – I (6 Hours)

Digital Literacy in Social Sciences

UNIT – II (7 Hours)

Digital Information and Science of Society

UNIT – III (6 Hours)

Biometrics and identification

UNIT – IV (7 Hours)

Access to Technology and the Internet

UNIT – V (7 Hours)

Social Media and Public Sphere

UNIT – VI (6 Hours)

Labour in Digital Economy

UNIT – VII (6 Hours)

Artificial Intelligence and Algorithm

Essential/recommended readings

1. Digital Literacy in Social Sciences

Polizzi, Gianfranco, 'Information literacy in the digital age: why critical digital literacy matters for democracy.' In: Goldstein, Stéphane (ed.) *Informed societies: why information literacy matters for citizenship, participation and democracy*. Facet Publishing, London, UK (2020), 1-23.

Robert Todd Perdue & Joshua Sbicca (2013) "Public Access: For Socially Relevant. Knowledge Production and a Democratic Cybersphere", Fast Capitalism, Volume 10, Issue 1, 2013

2. Digital Information, Data and Society

Buckland, Michael. *Information and Society*. United Kingdom: MIT Press, 2017. (Chapter 1 and 2)

Sandeep Mertia (edited), Lives of Data: Essays on Computational Cultures from India. Netherlands: Institute of Network Cultures, 2020. (Introduction), pp. 9-25.

Holmes, Dawn E.. *Big Data: A Very Short Introduction*. United Kingdom: Oxford University Press, 2017.

Sinha, Amber (2019). "The Politics of India's Data Protection Ecosystem," *Economic and Political Weekly.* Vol. 54, Issue No. 49, 14 Dec, 2019.

3. Biometrics and identification

Fairhurst, Michael. *Biometrics: A Very Short Introduction*. United Kingdom: OUP Oxford, 2018.

Nayar, Pramod K., 'I Sing the Body Biometric': Surveillance and Biological Citizenship,' *Economic and Political Weekly*, Vol. 47, No. 32 (August 11, 2012)

Singh, P. 'Aadhaar: Platform over Troubled Waters.' In: Athique, A., Parthasarathi, V. (eds) *Platform Capitalism in India. Global Transformations in Media and Communication Research*, Palgrave Macmillan, 2020.

4. Access to Technology and the Internet

Agrawal, Ravi. 2018. *India Connected: How the Smartphone is Transforming the World's Largest Democracy*. New Delhi: Oxford University Press.

Jeffrey, Robin and AssaDoron. 2013. *Cell Phone Nation: How Mobile Phones Have Revolutionized Business, Politics and Ordinary Life in India*. Hachette India.

Narayanan Shalini and SunetraSen Narayan, *India Connected: Mapping the Impact of New Media*. India: SAGE Publications, 2016.

Venkatraman, Shriram. *Social Media in South India*. United Kingdom: UCL Press, 2017. (Chapter 6: *The Wider World: Social Media and Education in a Knowledge Economy*)

5. Social Mediaand Public Sphere

Sunstein, Cass R. *#Republic: Divided Democracy in the Age of Social Media*. United Kingdom: Princeton University Press, 2018.

Castells, Manuel. *Networks of Outrage and Hope: Social Movements in the Internet Age*. Germany: Polity Press, 2015. (Chapter 1)

Sinha, Amber. *The Networked Public: How Social Media Changed Democracy*. New Delhi: Rupa, 2019.

Philipose, Pamela. *Media's Shifting Terrain: Five Years that Transformed the Way India Communicates*. India: Orient BlackSwan, 2019.

Biju. P. R., *Political Internet: State and Politics in the Age of Social Media*. Taylor & Francis, 2016.

Rodrigues, U. (2020). Political Communication on Social Media Platforms. In: Athique, A., Parthasarathi, V. (eds) Platform Capitalism in India. Global Transformations in Media and Communication Research, Palgrave Macmillan, 2020.

6. Labour in Digital Economy

Chander, Anupam. *The Electronic Silk Road: How the Web Binds the World Together in Commerce*. United Kingdom: Yale University Press, 2013.

Dolber, Brian, ChenjeraiKumanyika, Michelle Rodino-Colocino, Todd Wolfson (edited*), The Gig Economy: Workers and Media in the Age of Convergence*. United Kingdom: Taylor & Francis, 2021. (Chapter 1 and 3)

Verma, Ravinder Kumar, P. Vigneswarallavarasan, and Arpan Kumar Kar, 'Inequalities in Ride-Hailing Platforms.' In: Athique, A., Parthasarathi, V. (eds) Platform Capitalism in India. Global Transformations in Media and Communication Research, Palgrave Macmillan, 2020.

7. **Artificial Intelligence and Algorithms**

Boden, Margaret A. *Artificial Intelligence: A Very Short Introduction*. London: Oxford University Press, 2018.

Frey, Carl Benedikt. *The Technology Trap: Capital, Labor, and Power in the Age of Automation*. United Kingdom: Princeton University Press, 2020. (Chapter 12: Artificial Intelligence)

Eubanks, Virginia. *Automating Inequality: How High-Tech Tools Profile, Police and Punish the Poor*. St Martin's Press. (2018) (Introduction: Red Flags)

Cheney-Lippold, J. *We Are Data: Algorithms and the Making of Our Digital Selves*. United States: NYU Press. (2017). (Introduction)

Pasquale, Frank. *The Black Box Society: The Secret Algorithms That Control Money and Information*. United States: Harvard University Press, 2015. (Introduction)

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

ANNEXURE-7

N O T I F I C A T I O N

Sub: Amendment to Ordinance V

[E.C Resolution No. 60/ (60-1-4) dated 03.02.2023]

Following addition be made to Appendix-II-A to the Ordinance V (2-A) of the Ordinances of the University;

Add the following:

Syllabi of Semester-III of the following departments under Faculty of Interdisciplinary and Applied Sciences based on Under Graduate Curriculum Framework -2022 implemented from the Academic Year 2022-23.

DEPARTMENT OF BIOCHEMISTRY

Category-I

BSc. (Hons.) Biochemistry

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Metabolism of Lipids	04	02	0	02	Class XII with Science	NIL

Learning Objectives

The aim of this course is to give students an exhaustive understanding of lipid metabolism, enzymes involved in various catabolic and anabolic pathways of lipids, and their regulation. The course will also discuss the significance of such pathways in the context of metabolic disorders.

Learning outcomes

On successful completion of the course students will be able to:

- Explain the concepts of metabolism of lipids, characteristics of metabolic pathways and strategies used to study these pathways.
- Apply the knowledge of various catabolic and anabolic pathways in lipid metabolism and their regulation.
- Describe the diseases caused by defects in metabolism with emphasis on metabolic control.

SYLLABUS OF DSC-7

2.2 Course Contents

Theory

Unit 1. Digestion absorption and transport of lipids (04 Hours)

Digestion and absorption of lipids, Structure, classification and biogenesis of lipoproteins, Endogenous and exogenous pathways, Lipoprotein cycle.

Unit 2. Degradation of lipids (10 Hours)

Fatty acid oxidation: Activation of fatty acids, transport to mitochondria, β oxidation of saturated, unsaturated, odd and branched chain fatty acids, regulation of fatty acid oxidation, peroxisomal β oxidation, ω oxidation and α oxidation. Ketone-body synthesis and utilization and its regulation. Ketone body metabolism in diabetes and starvation.

Unit 3. Synthesis of lipids (12 Hours)

Transport of mitochondrial Acetyl groups to cytosol, Fatty acyl synthase complex, Synthesis of saturated and unsaturated fatty acids, Regulation of fatty acid metabolism. Fatty acid elongation systems, role of mixed function oxidases in fatty acid desaturation. Synthesis of triacylglycerol, glycerophospholipids and sphingolipids.

Unit 4. Cholesterol metabolism (4 Hours)

Biosynthesis of cholesterol and its regulation. Fates of cholesterol, cholesterol transport. Familial Hypercholesterolemia, Dyslipidemia, and atherosclerosis.

2.3 Practical: 60 Hours

1. Isolation of lipids and determination of phospholipid/ cholesterol ratio from egg yolk
2. Separation of Phospholipids by TLC
3. Estimation of Ketone bodies in blood/urine
4. Total Cholesterol estimation and HDL-Cholesterol estimation
5. Triglyceride estimation and lipid profile
6. Case studies: Obesity, Dyslipidaemia, Metabolic syndrome, Fasting, Ketosis

2.4 Essential readings:

1. Nelson, D.L., Cox, M.M. (2021). Lehninger: Principles of Biochemistry (8th ed.). New York, WH: Freeman and Company. ISBN-10: : 1319381499 ISBN-13-978 1319381493
2. Devlin, T.M. (2011). Textbook of Biochemistry with Clinical Correlations (7th ed.). New York, John Wiley & Sons, Inc. ISBN:978-0-470-28173-4.
3. Voet, D., Voet. J. G. (2013). Biochemistry (4th ed.). New Jersey, John Wiley & Sons Asia Pvt. Ltd. ISBN:978-1-11809244-6.

Suggested readings:

1. Stryer, L., Berg, J., Tymoczko, J., Gatto, G. (2019). *Biochemistry* (9th ed.). New York, WH: Freeman ISBN-13: 9781319114671
2. Denise R Ferrier (2018) Lippincott Illustrated Reviews Biochemistry, 7th Edition Publisher. Wolter Kluwer; ISBN-10. 8184739141.

4. Keywords

Lipids, Lipoproteins, triacylglycerol, Fatty acid oxidation, multienzyme complex, desaturases, ketone bodies, cholesterol

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DSC-8 : BIOENERGETICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Bioenergetics	04	02	00	02	Class XII with Science	NIL

Learning Objectives

The objective of the course is to provide students with the basic understanding of thermodynamic principles, bioenergetics and the roles of high energy compounds in metabolism. The course will also provide an understanding of the biological oxidation reduction reactions. The course will introduce students to the detailed molecular mechanisms of oxidative phosphorylation and structural as well as functional aspects of ATP synthase. The course will provide an in-depth knowledge of photophosphorylation.

Learning outcomes

On successful completion of the course students will be able to:

- Describe the basic tenets of thermodynamics and energy transformations that are taking place in the cell
- Explain the biological oxidation-reduction reactions and the mechanisms of electron transfer by electron carriers.
- Appreciate the concept of chemiosmotic theory and the mechanism of oxidative phosphorylation and ATP synthesis.
- Elaborate the basic mechanisms photophosphorylation in plants and microbes.

SYLLABUS OF DSC-8

B.Sc. (HONOURS) BIOCHEMISTRY (NEP STRUCTURE)
BCH-DSC-302: BIOENERGETICS
Semester – III

Unit I: Principles of Thermodynamics **(6 Hours)**

Laws of thermodynamics, Thermodynamic quantities: Gibbs free energy, enthalpy, entropy, Free energy change. Standard free energy change, equilibrium constant, actual free energy change, coupled reactions, energy charge, phosphorylation potential, ATP cycle. Chemical

basis of high standard free energy change of hydrolysis of ATP, phosphoenolpyruvate, 1,3 bisphosphoglycerate, phosphocreatine and thioesters. Bioluminescence.

Unit II: Biological Oxidation-reductions (4 Hours)

Redox reactions, reduction potentials, standard reduction potential and its relationship with standard free energy change, Nernst equation. Universal electron carriers-NADH and $FADH_2$.

Unit III: Oxidative phosphorylation (10 Hours)

Mitochondria as the site of oxidative phosphorylation, electron carriers in mitochondria, structural and functional organization of the mitochondrial respiratory chain, proton motive force, chemiosmotic hypothesis, inhibitors and uncouplers of mitochondrial electron transport chain. Structure of FoF1 ATP synthase and mechanism of ATP synthesis. Shuttle systems in mitochondria: Malate-aspartate and Glycerol 3-phosphate. Regulation of oxidative phosphorylation. ROS production and antioxidant mechanisms. Thermogenesis Alternative respiratory pathways in plants.

Unit VI: Photophosphorylation (10 Hours)

Harvesting light energy. General features of photophosphorylation, historical background and Hill's reaction. Role of photosynthetic pigments and light harvesting systems in plants and microbes. Photophosphorylation in purple and Green sulfur bacteria. Photophosphorylation in plants. Molecular architecture of Photosystem I and Photosystem II. The Z-scheme of photosynthetic electron flow. Oxygen evolving complex, cyclic photophosphorylation and its significance, ATP synthesis by photophosphorylation, efficiency of photophosphorylation, Bacteriorhodopsin.

2.3 Practical: - 60 Hours

1. Study the photosynthetic O_2 evolution in hydrilla plant.
2. Isolation of chloroplast from spinach leaves.
3. Estimation of chlorophyll content.
3. Study the Hill reaction by using artificial electron acceptor.
4. Estimation of the activity of PS-II.
5. Separation of photosynthetic pigments by TLC.
6. Isolation of mitochondria from liver and assay of mitochondrial marker enzyme SDH.

2.4 Essential readings:

1. Nelson, D.L., Cox, M.M. (2021). Lehninger: Principles of Biochemistry (8^{th}ed.). New York, WH: Freeman and Company. ISBN: 13: 978-1319381493 / ISBN-10:1319381499.
2. Berg, J.M., Tymoczko, J.L., Gatto G.J., Stryer L. (2019) *W.H:* Freeman and Company, ISBN:10: 1319114679, ISBN:13:978-1319114671

3. Garret, R.H., Grisham, C.M. (2016). Biochemistry (6thed.). Boston, Cengage Learning. ISBN-10: 1305577205, ISBN-13: 978-1305577205

Suggested readings:

1. Lodish, H., Berk, A., Kaiser, C.A., Krieger, M., Bretscher, A., Ploegh, H., Martin, K.C., Yaffe, M., Amon, A. (2021). Molecular Cell Biology (9th ed.). New York, WH: Freeman & Company. ISBN-13: 978-1319208523, ISBN-10:1319208525.
2. Voet, D., Voet. J. G. (2013). Biochemistry (4th ed.). New Jersey, John Wiley & Sons Asia Pvt. Ltd. ISBN : 978-1-11809244-6.

3. Keywords

Thermodynamics, free energy, oxidative phosphorylation, ATP synthase, photophosphorylation

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DSC-9: MEMBRANE BIOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Membrane Biology	04	02	00	02	Class XII with Science	NIL

Learning Objectives

The objective of the course is to provide students with the basic understanding of membrane composition, structure-function relationship and properties of membranes. The course will also provide an understanding of the various types of membrane transporters and their molecular mechanisms. This course also provides understanding of molecular mechanisms involved in vesicular transport processes and membrane fusion.

Learning outcomes

On successful completion of the course students will be able to:

- Explain the general composition and structure of biomembranes.
- Describe the basic properties of membranes such as membrane fluidity.
- Elaborate various types of membrane transport mechanisms.
- Apply the knowledge gained about the molecular mechanism of vesicular transport and membrane fusion to understand the functioning of cells.

SYLLABUS OF DSC-9

Theory

Hours – 30 Hours

Unit I: Membrane composition and structure (10 Hours)

Composition of membranes: Lipids -Phospholipids, Glycolipids, sterols; Proteins - Peripheral Proteins, Integral Membrane Proteins and Lipid-Anchored proteins, and carbohydrates.

Historical background and various membrane models. Overview of membrane functions.

Comparison of the composition of various cellular and subcellular membranes. Lateral and transverse asymmetry in membranes. Role of Flippase, Floppase and Scramblase.

Model systems to study membranes - Lipid Monolayers, Planar Bilayer and Liposome, and their application. Polymorphic Lipid-Water Systems. The various determinants of polymorphic phases: CMC, lipid shape, critical packing parameter.

Unit II: Membrane dynamics (5 Hours)

Membrane fluidity: lateral, transverse and rotational motion of lipids and proteins. Factors affecting membrane fluidity- composition, barriers (tight junctions), cytoskeleton interactions,
microdomains – rafts, caveolae. Fence and gate model. Study of RBC membrane architecture.
Homeoviscous Adaptation. Techniques to study membrane dynamics: FRAP, TNBS, SPT.

Unit III: Membrane transport (9 Hours)

Thermodynamics of transport. Simple diffusion and facilitated diffusion. Passive transport glucose transporter and anion transporter. Primary active transporters- P-type ATPases, V-type ATPases, F-type ATPases. Secondary active transporters - lactose permease, Na+ - glucose symporter. ABC family of transporters – MDR and CFTR. Group translocation and bacteriorhodopsin. Ion channels: voltage-gated ion channels (Na+ and K+ channel) and ligand-gated ion channels (acetylcholine receptor), and aquaporins. Ionophores: valinomycin, gramicidin. Relationship of membrane transport and diseases.

Unit IV: Vesicular transport and membrane fusion (6 Hours)

Vesicular transport. Vesicles, Clathrin-Coated Vesicles and COP-Coated Vesicles (COPI and COPII). Molecular Mechanism of Vesicular Transport. Membrane Fusion (dynamin protein, Rab proteins, NSF/ SNAP complex, SNARE proteins). Receptor Mediated Endocytosis: LDL, Transferrin

2.3 Practical:

Total Hours : 60 Hours

1. Effect of lipid composition on the permeability of a lipid monolayer.
2. Isolation of membrane phospholipids and separation by TLC.
3. Effect of temperature, pH, detergents, and ionic strength on Tonoplast membrane of beetroot.
4. Determination of CMC of detergents, neutral and ionic
5. Preparation of RBC ghost cell.
6. Separation of RBC membrane proteins by SDS-PAGE.
7. Demonstration of Histidine uptake from the intestinal membrane.

2.4 Essential readings:

1. Garret, R.H., Grisham, C.M. (2016). Biochemistry (6thed.). Boston, Cengage Learning. ISBN-10: 1305577205, ISBN-13: 978-1305577205

2. Lodish, H., Berk, A., Kaiser, C.A., Krieger, M., Bretscher, A., Ploegh, H., Martin, K.C., Yaffe, M., Amon, A. (2021). Molecular Cell Biology (9thed.). New York, WH: Freeman & Company. ISBN-13: 978-1319208523, ISBN-10:1319208525.
3. Nelson, D.L., Cox, M.M. (2021). Lehninger: Principles of Biochemistry (8thed.). New York, WH: Freeman and Company. ISBN: 13: 978-1319381493 / ISBN-10:1319381499.
4. Voet, D., Voet. J. G. (2013). Biochemistry (4thed.). New Jersey, John Wiley & Sons Asia Pvt. Ltd. ISBN: 978-1-11809244-6.
5. Wardhan, R., Mudgal, P. (2017). Text Book on Membrane Biology (1sted.). Singapore, Springer. ISBN-10: 9811071004, ISBN-13: 978-9811071003

3. Keywords:

Membrane structure composition, membrane fluidity, membrane transport, vesicles, membrane fusion

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF DISCIPLINE SPECIFIC ELECTIVES (DSEs)

DISCIPLINE SPECIFIC ELECTIVE (DSE-1)

credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Environmental Biochemistry	**04**	**02**	**00**	**02**	**Class XII with Science**	**NIL**

Learning Objectives

This course will provide understanding of environment around and which pollutants are of concern to us. It will provide knowledge of sustainability and methods which can help to improve the sustainability. It will also make students understand how toxicity can be monitored in our body and how our body copes to detoxify its internal system. It will also introduce methods which can be used to monitor the pollutants in various samples.

Learning outcomes

On successful completion of the course students will be able to:

- Describe various components of the environment.
- Evaluate the local and global scale of environmental problem.
- Explain the biological, chemical and physical processes relevant to environmental problems.
- Apply the hands on experience of some quantitative and qualitative research tools gained to assess and analyse the environmental problems

Theory

Credits: 2 **Total Hours- 30**

Unit 1: Introduction to Environment and the Pollutants **(9 Hours)**

Components of Environment - Atmosphere, Hydrosphere, Lithosphere and Biosphere. Global Warming and Climate change. Ozone depletion. Normal Chemistry of - Air, Water, Soil. Environmental Toxins-Physical Pollutants- Noise, Light and Radiation and Air Pollutants- Carbon Monoxide, Lead, Nitrogen Oxides, Ozone, Particulate Matter, Sulphur Dioxide, Methane Volatile Organic Chemicals (VOC); Water Pollutants - Volatile Organic Chemicals (VOC), Heavy Metals, Insecticides, Herbicides/ Endocrine Disruptors; Soil Pollutants-

Heavy metals, Herbicides/pesticides, Polyaromatic Carbon (PAH), Microplastics; Source, Effect and Impact on Flora, Fauna including Human Beings. Definition of Terminologies: Air Quality Index (AQI) Suspended Particulate matter (SPM), Water Quality Index (WQI), Air Pollution Tolerance Index (APTI), Anticipated Performance Index (API).

Unit 2: Environment and Xenobiotics (7 Hours)

Understanding the principle of Toxicity. Concept of Dose and Response (LD50). Process of Bioaccumulation, Bioaugmentation and Biotransformation. Impact of pollutants on human health Mammalian Detoxification by Liver to Organic Chemicals (Heavy Metals, Endocrine Disruptors, Microplastics).

Unit 3: Sustainability and its Enhancement (8 Hours)

Concept of Sustainability and Enhancement of Sustainability, Waste Management (Refuse, Reduce, Reuse and Recycle), Sewage treatment and Industrial effluents (tanning and electroplating), Bioremediation- Introduction and Types of Bioremediations- Phytoremediation, Microbial Bioremediation, In-situ Remediation, Ex-situ Remediation.

Unit 4: Techniques to Analyse Pollutants (6 Hours)

Determination of pollutants in soil, water, air, blood by following Analytical Techniques: Flame Photometer; Atomic Absorption Spectroscopy (AAS); Inductive Coupled Plasma (ICP -OES & MS); Gas Liquid Chromatography (GC-MS); Ion Chromatography; High Performance Liquid Chromatography (HPLC); UV spectrophotometer; Biosensors and its application in pollution detection; Metagenomics.

2.3 Practical:

Credits: 2 Total Hours - 60

1. Evaluating APTI and API of Herbs/Shrubs/Trees
2. Evaluating seasonal variations of AQI and SPM
3. Evaluating C/N/P/K content of soil by Spectrophotometry/Titrimetric method
4. Detecting Microbial Contamination of water
5. Composting of waste (Leaf/Kitchen Waste/Cow dung) and Detecting Maturity by pH and Electric conductivity (EC) content changes
6. Studying Enzymatic Activity (amylase/urease) in the soil sample due to microbial activity
7. Student Environment Projects.

2.4 Essential readings:

- Basic Concepts on Environmental Chemistry by Des. W. Conwell (2005) 2nd edition, CRC press, ISBN 9781498770484
- Environmental Chemistry by Stanley E Manahan, 11th Edition, Taylor and Francis,2022, ISBN 9780367560546
- Biodegradation and Bioremediation by Alexander Martin, 2nd Edition, Academic Press, ISBN 978-0-12-049861-8

- Fundamentals of Ecology author Eugene Odum, Cary W. Barrett, 5th edition Cengage learning India. ISBN 9788131500200
- Environment and Ecology author P.D. Sharma, 12th Edition, Rastogi Publication. ISBN 978-93-5078-068-8

3. Keywords

Environment, Climate Change, ozone depletion, Waste Management, Bioremediation, Toxicity, Bioaccumulation, Bioaugmentation, Biotransformation, Detoxification, Biosensors.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE (DSE-2)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Biochemical Applications in Forensic Sciences	**04**	**02**	**00**	**02**	**Class XII with Science**	**NIL**

Learning Objectives

The course aims to provide an understanding of the applications of biochemistry in forensic sciences through analysis of evidence, which will help students develop analytical and problem-solving skills for real life situations. With a background of the DSC of Biochemistry, the students get an insight into a major area of application of Modern Biology. The course will keep abreast with all recent developments and emerging trends in forensic science like DNA fingerprinting, brain mapping and facial reconstruction; thus, helping interested students take up forensic science as a future course of study.

Learning outcomes

On successful completion of the course students will be able to:

- Describe the fundamental concepts and principles of forensic science and their significance.
- Explain how a forensic investigation is initiated through preservation of evidences, as well as chemical, physical and biological methods of their analysis
- Identity an individual by document evaluation, fingerprints, footprints and DNA analysis and identify the accurate age, sex and identity of an individual and identify time and cause of death in a forensic investigation.
- Explain the importance of precision, reproducibility and accuracy in identification of a biological sample.
- Elaborate the methods used to analyze samples for drug testing, ink and stain testing and document and handwriting verification.
- Describe the physiology and biochemistry behind tests like Narco Analysis, polygraphy, lie detection and facial reconstruction.
- Apply the knowledge gained from hands-on-experience in some of the basic biochemical processes involved in forensic investigation.

2.2 Course Contents

Theory

Unit I: Introduction to forensic science and application of biological sciences to forensic investigation (10 Hours)

History and Development of Forensic Science, Biochemical analysis of various biological evidences: blood, semen, viscera, bite marks, and hair. Establishment of identity of individuals: fingerprints, footprints, blood and DNA. Anthropology – skeletal remains, Odontology. Time of death - rigor mortis, liver mortis, algor mortis, forensic entomology. Biochemical basis for determination of cause of death. case studies

Unit II: Application of chemical sciences to forensic investigation (6 Hours)

Detection of drugs of abuse and narcotics in biological samples, Toxicological examination of viscera, detection of petroleum products and food adulteration. Analysis of inks and their use in questioned document identification. Blood spatter analysis, Case studies

Unit III: DNA Fingerprinting (6 Hours)

Introduction to DNA-and source of DNA in Forensic case work, Techniques of DNA fingerprinting-RFLP, STR, PCR, DNA fingerprinting in paternity disputes, mass disaster and other forensic case work, studying kinship by DNA profiling: Related individuals have similar DNA profiles, DNA profiling and the remains of the Romanovs. Sex identification by DNA analysis: PCRs directed at Y chromosome-specific sequences, Amelogenin gene typing. Case studies

Unit IV: Recent advances in forensics (8 Hours)

Narco analysis: theory, forensic significance, future prospect, *Brain mapping:* introduction, EEG, P-3000 wave, forensic applications, limitation of technique, *Polygraph*: Principle and technique, polygraph as forensic investigative tool, use of psychoactive drugs in forensic analysis. NHRC guidelines for polygraph test. *Facial reconstruction*: Method and technique, facial reconstruction in forensic identification, Case studies.

2.3 Practicals – 60 Hours

1. Definition, Identification and Mapping of Crime scene
2. Collection, Preservation, Packaging, and Labeling of biological evidence for their forensic investigation.
3. Preliminary and Confirmatory test for blood/semen/saliva
4. Examination of Micro Evidences: fiber, hair, pollen and soil
5. Fingerprint development from various surfaces and their microscopic and chemical examination
6. Handwriting identification based on class characteristic and individual characteristics
7. Identification of dyes, drugs and ink by TLC

8. Blood spatter analysis
9. DNA Fingerprinting: Sex determination through Y specific STRs and Maternal lineage identification through mitochondrial DNA comparisons.
10. Field trip to a forensic laboratory

2.4 Essential readings:

- James, S.H., Nordby, J.J. & Bell, S. (2014). *Forensic Science: An Introduction to Scientific and Investigative Techniques, Fourth Edition*: Taylor & Francis. ISBN 9781439853832
- Jones, P., & Williams, R.E. (2009). *Crime Scene Processing and Laboratory Workbook First Edition*: CRC Press. ISBN 9780429249976
- Saferstein, R. (2018). *Criminalistics: An Introduction to Forensic Science, Twelveth edition*: Pearson Education. ISBN 10:0134477596, ISBN 13: 9780134477596
- Veeraraghavan, V. (2009). *Handbook of Forensic Psychology, First Edition*: Selective & Scientific Books, ISBN 13: 9788189128166.

Suggested readings:

- Lee, H., Palmbach, T. & Miller, M. (2001). *Henry Lee's crime scene handbook, First Edition*: Academic Press ISBN 9780080507989
- Parikh, C.K. (2016). *Parikh's textbook of medical jurisprudence, forensic medicine and toxicology: for classrooms and courtrooms*, *Seventh Edition*: CBS Publishers and Distributors. ISBN 9788123926469

3. **Keywords**

Forensic biology; blood spatter analysis; toxicology; narco-analysis; DNA fingerprinting; polygraph; odontology; forensic entomology.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE (DSE-3)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Microbiology	04	02	00	02	Class XII with Science	NIL

Learning Objectives

The course aims to trace the history of development of the discipline of Microbiology and to emphasize the existence of the immense diversity in the microbial world and maintenance of microbes under laboratory conditions. Through this course students will be introduced to the concept of different modes of gene transfer in bacteria. Further, students will be made aware about the applications of microorganisms in food and industry.

Learning outcomes

On successful completion of the course students will be able to:

- Identify different types of microbes
- Perform routine microbiological practices including sterilization, media preparation, maintenance of microbial culture, microbial growth etc.
- Carry out basic research using microbes
- Describe varied applications of microbes

2.2 Course Contents

Theory

Unit I: History and Diversity of Microbial world (8 Hours)

Spontaneous generation versus biogenesis, contributions of Anton von Leeuwenhoek, Joseph Lister, Paul Ehrlich, Richard Petri, Charles Chamberland, Edward Jenner, Louis Pasteur, Robert Koch, Martinus W. Beijerinck, Sergei Winogradsky, Alexander Fleming, Elie Metchnikoff and Emil von Behring. General characteristics of different groups: Acellular microorganisms (Viruses, Viroids, Prions) and Cellular microorganisms (Bacteria, Archaea, Algae, Fungi and Protozoa. Cell-wall: Composition and detailed structure of Gram positive and Gram-negative cell walls, mechanism of Gram staining

Unit II: Microbial Nutrition, Growth and Control (6 Hours)

Nutritional types of microorganisms, growth factors, culture media- synthetic and complex, types of media; isolation of pure cultures, growth curves, mean growth rate constant, generation time; influence of environmental factors on growth of microbes: effect of pH,

temperature, solute, oxygen concentration, pressure and radiations. Sterilization, disinfection and antiseptics.

Unit III: Microbial Genetics **(6 Hours)**

Conjugation, Transformation and Transduction. Gene mapping in Bacteria

Unit IV: Application of Microbes **(10 Hours)**

Basic design of fermenter, continuous and discontinuous culture. Preparation of fermented food products such as curd and cheese. Preparation of alcoholic beverages like wine and beer. Treatment of waste-water (Municipal treatment plant) and sewage. Bioremediation and biodegradation. Human microbiome: Role in health and disease**.** Soil Microbiome: Role in plant health

2.3 Practical: 60 Hours

1. To prepare and sterilize the culture media for the growth of microorganisms
2. To perform various culture transfer techniques: Solid to solid (streaking), liquid to solid (spreading), liquid to liquid, solid to liquid and determine CFU/ml
3. To study growth curve of bacteria
4. To study the effect of pH/temperature on the growth of bacteria
5. To perform gram staining
6. To determine the effect of antibiotics using disc diffusion test
7. Study of different shapes of bacteria, fungi, algae, protozoa using permanent slides/pictographs

2.4 Essential readings:

1. Willey, J., Sherwood, L., Woolverton, C. (2017). Prescott's Microbiology (10th ed.). McGraw Hill international. ISBN 13: 9781259657573.
2. Chan, M. J., Krieg E. C. S., Pelczar, N. R. (2004) Microbiology (5th ed.). McGraw Hill International. ISBN 13: 9780094623206.
3. Pierce, B.A. (2012) Genetics - A Conceptual Approach, (6thed.), W.H. Freeman & Co. (New York), ISBN:13:978-1-4292-7606-1 / ISBN:10:1-4292-7606-1
4. Cappuccin, and Sherman N., Microbiology: A Laboratory manual (10th ed.). Benajamin/ Cummings. ISBN 1o J. G.3: 9780321840226. 86

Suggested readings:

1. Madigan, M. T., Martinko J. M., & Stahl D. A., (2010) Brock Biology of Microorganisms (13th ed.). Pearson Education International. ISBN 13: 9780321649638.
2. Snustad, D.P. and Simmons, M.J. (2012) Genetics (6th ed.), John Wiley & Sons. (Singapore), ISBN: 978-1-118-09242-2

4. Keywords

Microbiological Techniques, Media, Sterilization, Growth curve

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Common Pool of Generic Electives (GEs) offered by Department of Biochemistry

GENERIC ELECTIVES (GE-4)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Proteins and Enzymes	04	02	00	02	Class XII with Science	NIL

Learning Objectives

The objective of this course is to provide an overview of protein biochemistry to undergraduate students with diverse science backgrounds, since proteins are the most versatile functional entities in life with applications in various life sciences research as well as in industry and biomedicine. The biochemical, structural, functional and aspects of interaction of proteins will be introduced in this course. The course also aims to provide knowledge about enzyme kinetics, regulation of enzyme activity and diverse applications of enzymes in disease diagnosis and therapy as well as in industry.

Learning outcomes

On successful completion of the course students will be able to:

- Familiar with unique features and characteristics of proteins.
- Aware of the relationship between three-dimensional structure of proteins and their functions.
- Gain insight into the thermodynamic and molecular basis of catalysis by enzymes and the underlying basis of their specificity.
- Understand the kinetics of enzyme catalyzed reactions and clinical importance of enzyme inhibitors.
- Also learn to appreciate how enzymes are regulated and the physiological importance of enzyme regulation in the cell.
- Gain insight into the applications of enzymes in research and medicine.

B.Sc. (HONOURS) BIOCHEMISTRY (NEP STRUCTURE)
BCH-GE-4: PROTEINS AND ENZYMES
Semester – III

2.2 Course Contents

THEORY – Total 30 Hours

UNIT I: Introduction to proteins (8 Hours)

Amino acids and their properties. Peptides and their biological significance - hormones, antibiotics and growth factors. Diversity of proteins and their functions. Conjugated proteins, multimeric proteins and metalloproteins. Organization of protein structure - primary, secondary, tertiary and quaternary structures. Bonds in protein structures - covalent and non-covalent. Dihedral angles. Ramachandran map, Secondary structure - alpha-helices, beta-strands, beta-sheets and turns.

UNIT II: Three-dimensional structures and protein folding (7 Hours)

Characteristics of tertiary and quaternary structures. Structure-function relationship in proteins. 3D structures of globular and fibrous proteins – myoglobin, hemoglobin, collagen and keratin. Protein folding - denaturation and renaturation (Ribonuclease A). Role of chaperones. Protein misfolding diseases - Alzheimer's and Cruetzfeldt-Jakob disease.

UNIT III: Introduction to enzymes and enzyme kinetics (8 Hours)

General characteristics of enzymes; nature of enzymes - protein and non-protein. Cofactor and prosthetic group, apoenzyme, holoenzyme. Classification and nomenclature of enzymes. Catalytic power and specificity of enzymes (concept of active site), Fischer's lock and key hypothesis, Koshland's induced fit hypothesis. Relationship between initial velocity and substrate concentration, equilibrium constant, steady state kinetics. Michaelis-Menten equation, Km and Vmax, Lineweaver-Burk plot. Enzyme inhibition, reversible inhibition (competitive, uncompetitive, non-competitive and mixed) and irreversible inhibition. Examples - FdUMP and penicillin.

UNIT IV: Regulation of enzyme activity and applications of enzymes (7 Hours)

Control of activities of single enzymes and metabolic pathways: feedback inhibition, allosteric modulation (aspartate transcarbamoylase). Regulation by reversible covalent modification (glycogen phosphorylase). Zymogens (chymotrypsinogen).Enzymes as reagents (glucose oxidase), marker enzymes in diagnostics (SGPT, SGOT); Enzyme therapy (streptokinase); Enzymes in research (Taq polymerase, restriction endonucleases).

PRACTICALS – 60 Hours

1. Estimation of proteins by Biuret method.
2. Estimation of proteins by Lowry's method.
3. Determination of isoelectric pH of casein.
4. Determination of activity of an enzyme by continuous assay.
5. Determination of activity of an enzyme by discontinuous assay.
6. To plot a progress curve for an enzyme.
7. Determination of K_m and V_{max} of an enzyme using Lineweaver-Burk plot.

2.3 Essential Readings

1. Nelson, D.L., Cox, M.M. (2017). *Lehninger: Principles of Biochemistry* (7th ed.). New York, WH: Freeman and Company. ISBN13: 9781464126116, ISBN10: 1464126119
2. Stryer, L., Berg, J., Tymoczko, J., Gatto, G. (2019). *Biochemistry* (9th ed.). New York, WH: Freeman ISBN-13: 9781319114671
3. Voet. D., Voet. J.G. (2013) Bi*ochemistry* (4th ed.). New Jersey, John Wiley & Sons Asia Pvt. Ltd. ISBN : 978-1-11809244-6.
4. 2. Nicholas, C.P., Lewis, S. (1999). *Fundamentals of Enzymology* (3rd ed.). New York, Oxford University Press Inc. ISBN:0 19 850229 X.

Suggested Readings

1. Whitford, D. (2004). *Protein Structure and function*. Southern Gate, Chichester, West Sussex: John Wiley & Sons, Inc. ISBN-13: 978-047149894 ISBN-10: 0471498947.
2. Schulz**,** G.E., Schirmer**,** R.H. (1979). *Principles of protein structure*. Springer, ISBN 978-1-4612- 6137-7.

3. Keywords

Proteins, Enzymes, Protein structure, Protein folding, Enzyme kinetics, Enzyme regulation

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-5)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Nutrition and Food Science	**04**	**02**	**00**	**02**	**Class XII with Science**	**Nil**

Learning Objectives

The course aims to provide the basic knowledge of food and its importance in nutrition. The students will understand the importance of a balanced diet and the association of life style disorders with unhealthy food eating habits. They will be able to understand the concept of under and over nutrition and the deficiency diseases that result due to deficiency of micronutrients in diet.

Learning outcomes

On successful completion of the course students will be able to:

- Describe the importance of food in our life
- Explain how food is spoiled and learn about some common food borne diseases/ food allergies
- Elaborate the functions of macro and micronutrients in our body
- Apply the knowledge gained to rationalize the diseases associated with malnutrition/ overnutrition and deficiency diseases

2.2 Course Contents

Theory – 30 Hours

Unit 1 –Basics of Food Science and Nutrition (5 Hours)

Definition of Food, Nutrition, Nutrient, Nutritional status

Energy value of foods, determination, physiological fuel values, SDA of foods, BMR & RMR, factors influencing BMR. Recommended allowance-RDA for Indians, basis for requirement, energy allowance for different growth pattern of children, energy allowance for various activities and different age groups. Balanced diet, fad diets

Unit 2– Macronutrients **(10 Hours)**

Introduction to macronutrients and their function, digestion, absorption and assimilation of carbohydrates, lipids and proteins, Glycemic response and glycemic index of foods, dietary fiber- types, properties, sources and its role, importance of essential fatty acids, their requirements and deficiency, role & nutritional significance of PUFA, MUFA, SFA, omega-3/omega 6 fatty acid, essential amino acids, dietary protein quality- PER, NPU, BV, chemical score and PDCAAS. Factors affecting protein bio-availability including anti-nutritional factors, protein toxicity, amino acid complementation and Supplementation in foods

Unit 3 – Micronutrients **(10 Hours)**

Fat soluble vitamins: Sources, physiological importance and deficiency diseases. Water soluble vitamins: Sources, physiological importance and deficiency diseases. Minerals: Sources, physiological importance and diseases due to excess or deficiency of Ca, P, Na, K, Fe, Zn, S, Mg, Se, Cu.

Unit 4 – Food and Health **(5 Hours)**

Food as medicine: medicinal value of functional foods such as garlic, ginger, turmeric, tulsi, fenugreek, ajwain, aloe vera, moringa, role of Gut microbiome in maintaining health, pre and probiotics, various types of food additives: emulsifiers, preservatives and food colors, benefits and risks associated with these, food allergies, food spoilage, food poisoning, food borne diseases, Cholera, Hepatitis, Typhoid,Botulism

2.3 Practicals – 60 Hours

1. Analysis of food labels for the presence of nutrients and other additives.
2. Estimation of carbohydrate content in food
3. Degree of unsaturation of any three different oils using Bromine test
4. Acid value / peroxide value of oil
5. Estimation of vitamin E / vitamin C in food
6. Morphological identification of important yeast and mold in foods (slides and culture)-
7. Assessment of diet chart for the presence/absence of nutrients
8. Case studies: PEM (Marasmus and Kwashiorkor), Diabetes, Obesity, Vitamin and mineral deficiency

2.4 Essential readings:

1. Mahan, L.K., Strings, S. E., Raymond, J. (2012) *Krause's Food and Nutrition Care process.* Elsevier's Publications. ISBN: 978-1-4377-2233-8.
2. Rosalind Gibson (2005). *Principles of Nutritional Assessment.* Oxford University Press. ISBN: 978019517169
3. Nelson, D.L., Cox, M.M. (2017). *Lehninger: Principles of Biochemistry* (7th ed.). New York, WH: Freeman and Company. ISBN13: 9781464126116, ISBN10: 1464126119
4. Vasudevan, D.M., & Das, K.S. (2020). *Practical textbook of biochemistry for medical students* (3rd ed.). Jaypee Brothers Medical

Suggested readings:

1. Practical Biochemistry, Damodaran Geetha K, Jaypee Brothers Medical Publishers Private Limited; 1st edition (1 January 2011), ISBN: 9789350251416, 9789350251416
2. Plummer, D.T. (1998) *An Introduction to Practical Biochemistry* (3rd ed.), Tata McGraw Hill Education Pvt. Ltd. (New Delhi); ISBN: 13: 978-0-07-099487-4 / ISBN:10: 0-07-099487-0.
3. Malik, D., Narayanasamy, N., Vavilala, P., Takur, J., Sinha, N., (2022). Textbook of Nutritional Biochemistry. Springer Singapore, ISBN978-981-19-4149-8.
4. Coombs Jr. G.F., (2008). *The vitamins, Fundamental aspects in Nutrition and Health.* Elsevier's Publications. ISBN-13- 978-0-12- 183493-7.
5. Devlin, T. M., (2011). *Textbook of Biochemistry with Clinical Correlations.* John Wiley & Sons, Inc. (New York), ISBN: 978-0-4710-28173-4.

3. Keywords:

Food, Nutrition, macronutrients, micronutrients, food as medicine, food spoilage, food allergies

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-6)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Physiology of Sports and Exercise	**04**	**02**	**00**	**02**	**Class XII with Science**	**Nil**

Learning Objectives

To learn the changes in human body systems due to exercise and sporting activities in an integrated manner. To gain knowledge about sports training. Understanding the basic system physiology in sports. To understand the physiological adaptation and metabolic

changes during exercise at varying intensities. To gain skill in measurement of various physiological responses.

Learning outcomes

On successful completion of the course students will be able to:

- Explain the effect of exercise in detail and in application perspective.
- Measure the changes and interpret them in the context of sports.
- Describe the system concepts behind sports performance.
- Explain human body functioning during exercise and thus provide appropriate nutrition/fuel.

2.2 Course Contents

Theory – 30 Hours

Unit I: Introduction to Exercise Physiology (Total Hours 4)

Structure, types and Function of Skeletal Muscle. Fuel for Exercise: Aerobic and anaerobic muscle metabolism, Muscle Fatigue.

Unit II: Cardiovascular and Pulmonary control in Sports Performance (Total Hours : 10)

Heart rate and Blood Pressure. Electrophysiology of Heart, Introduction and interpretation of EKG/ECG, Pacemakers and its Rhythms. Mechanics of ventilation during exercise. Cardiorespiratory Responses to physical activities. Training of cardiorespiratory responses in different types of physical activities for maximising output.

Unit III: Hormonal Effects on Physical Activities (Total Hours : 8)

Role of epinephrine, cortisol, sex hormones, growth hormones and growth factors on physical endurance. Effect of aging on Sport performance.

Unit IV: Drugs and Doping in Sports (Total Hours :8)

History and evolution of Doping and Anti-doping in Sports, Prevalence of Doping in Sports, Doping Control in Sports, Role of Athlete Support Personnel in Preventing Deliberate and Inadvertent Use of Prohibited Substances, WADA Rules and Regulations.

2.3 Practical: 60 Hours

1. BMI Estimation with and without software - Techniques of taking various anthropometric measurements; Skinfold measurement and Body Fat Percentage calculations.
2. Aerobic Power Field Assessments; Cooper 1.5-Mile Run/Walk Test and 12-Minute Run/Walk Test/Rockport Fitness Walking Test.

3. Tests for anaerobic power; Wingate Test/Anaerobic Cycling Power
4. High-Intensity Fitness Testing/ AAHPER health related physical fitness test Léger 20 m Shuttle Run Test/ Margaria - Kalamen Stair Climb Test,
5. Pulmonary Function Testing: Ratio of Forced expiratory volume (FEV1/FEV6) by spirometry, Lung Volumes and Capacities
6. Determination of age by Radiography (Dry lab)
7. Blood Pressure Measurements: Effects of Body Position, Dynamic Exercise and Isometric Contractions on BP.
8. Determination of Physiological adaptation with training through Submaximal Exercise Testing; Submaximal Bench Step Test/Submaximal Cycle Ergometer Test

2.4 Essential readings:

1. Physiology of Sport and Exercise 6th Edition with Web Study Guide-Loose-Leaf Edition by W. Larry Kenney, Jack Wilmore, David Costill.
2. Endocrinology of Physical Activity and Sport, Second Edition Constantini, Naama, Hackney, Anthony C, 2013.
3. David R. Mottram, Neil Chester (2018) Drugs in Sports, Routledge, ISBN:1351838989. Portefield, Jason (2008) Doping: athletes and drugs, Rosenn Publishing, New York, ISBN:1-4042-1917-5.
4. Laboratory Manual for Exercise Physiology 2nd Edition. With Web Study Guide, Human Kinetics by G. Gregory Haff, Charles Dumke, 2018.
5. Physiological Tests for Elite Athletes 2nd Edition by Australian Institute of Sport Rebecca Tanner, Christopher Gore, 2012.

Suggested readings:

1. A Textbook of Sports & Exercise Physiology by Dey Swapan Kumar, Jaypee Publishers
2. Exercise Physiology: Theory and Application to Fitness and Performance 10th Edition by Scott Powers and Edward Howley 2018.
3. Exercise Physiology: Nutrition, Energy, and Human Performance 8th Edition by William D. McArdle, Frank I. Katch, Victor L. Katch
4. Practical ECG for Exercise Science and Sports Medicine by Greg Whyte, Sanjay Sharma, Human Kinetics, 2010
5. ACSM's Guidelines for Exercise Testing and Prescription, 10th Edition by American College of Sports Medicine. Wolters Kluwer, 2017.

3. Keywords

Muscle metabolism, Muscle Fatigue, Cardiorespiratory Responses, Sport performance, Prohibited Substances

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 7: BASIC CONCEPTS OF CELL BIOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
MICROB-DSC301: BASIC CONCEPTS OF CELL BIOLOGY	4	3	0	1	Class XII pass with Biology/ Biotechnology/ Biochemistry	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- The major objective of this course is to introduce the students to the essentials of eukaryotic cell biology. The students will gain knowledge about the physical and chemical architecture of cells as well as structural and functional details of different cell organelles.
- To familiarize the students with cell cycle events, and mechanisms of cell communication and cell death. They will be educated about the hallmarks, etiology and diagnosis of cancers. They will be introduced to the cutting-edge science of stem cell technology, their production and various applications

Learning outcomes

The Learning Outcomes of this course are as follows:

- Student will be able to describe the structure of the cell wall and cell membrane, membrane transport mechanisms, cell-matrix and cell-cell interactions, and the importance of the cytoskeleton.
- Student will be able to describe the organization and functioning of various cell organelles and gain insights into the internal organization of the nucleus.
- Student will be able to discuss the mechanisms of protein sorting, intracellular trafficking, and protein export.
- Student will be able to analyse the structure of the plant and animal cell by microscopic observation and the ultrastructure of cell organelles by electron microscopy.

- Student will be able to demonstrate the fractionation of cell components by ultracentrifugation and describe cell sorting by flow cytometry.

SYLLABUS OF DSC-7

UNIT – I (12 hours)

Cell envelope and cell interactions: Structure and composition of bacterial, fungal and plant cell walls. Composition of plasma membrane: phospholipid bilayer, membrane proteins, glycocalyx. Membrane transport mechanisms: passive diffusion, facilitated diffusion (carrier proteins and channel proteins), active transport (Na+-K+ ATPase, ABC transporters). Components of extracellular matrix: polysaccharides, structural proteins, adhesion proteins. Cell-matrix interactions: cell surface receptors, focal adhesions, hemi-desmosomes. Cell-cell interactions: adhesion junctions, tight junctions, gap junctions, plasmodesmata

UNIT – II (6 hours)

Cytoskeleton: structural organization of actin filaments, microtubule structure and dynamics, structure of centriole, cilia, flagella. Microtubule motor proteins: kinesins and dyneins.

UNIT – III (12 hours)

Structures and functions of nucleus and other cell organelles: Structure and function of nucleus and its components (nuclear envelope, nuclear lamina, nuclear pore complex). Internal organization of nucleus: heterochromatin, euchromatin, nucleolus. Structure and function of cell organelles: mitochondrion, chloroplast, ribosome, peroxisome, lysosome

UNIT – IV (15 hours)

Protein sorting and membrane trafficking: Structure of endoplasmic reticulum (smooth and rough, ER transmembrane proteins). Targeting and translocation of proteins across the endoplasmic reticulum, protein processing, folding and assembly. Brief overview of the role of endoplasmic reticulum in synthesis of lipids and assembly of phospholipid bilayers. Structure and organization of golgi apparatus. Protein glycosylation, protein sorting, and exocytosis. Signal sequences in transmembrane transport: nuclear localization signal, endoplasmic reticulum signal sequence

Practical component **30 Hours**

UNIT 1: (20 hours)

Cell and cell organelles: Use of light microscopy and electron microscopy in studying cells. Study of the structure and function of a plant cell and an animal cell through microscopy. Analysis of the ultrastructure of cell organelles through electron micrographs: nucleus, plasma membrane, mitochondrion, chloroplast, ribosome, endoplasmic reticulum, golgi bodies, lysosome, centriole

Unit 2: (10 hours)

Cell fractionation and sorting: Principle and working of cell fractionation by density gradient centrifugation using virtual lab. Principle and working of cell sorting by flow cytometry using virtual lab. Analysis of cell cycle stages using flow cytometry.

Essential/recommended readings

Theory:

1. Molecular Cell Biology by H. Lodish, A. Berk, C. Kaiser, M. Krieger, A. Bretscher, H.Ploegh, A. Amon and K.C. Martin. 9th edition. W.H. Freeman, UK. 2021.
2. Essential Cell Biology by B. Alberts, K. Hopkin, A.D. Johnson, D. Morgan, and M. Raff. 5th edition. W.W. Norton & Co, USA. 2019.
3. Karp's Cell and Molecular Biology by G. Karp, J. Iwasa and W. Marshall. 9th edition. Wiley, USA. 2019.
4. The Cell: A Molecular Approach by G.M. Cooper. 8th edition. Sinauer Associates, UK. 2018.
5. Cell Biology by T.D. Pollard, W.C. Earnshaw, J. Lippincott-Schwartz and G.T. Johnson. 3rd edition. Elsevier, USA. 2016.
6. Becker's World of the Cell by J. Hardin and G. Bertoni. 9th Edition. Pearson, USA. 2015.
7. Cell and Molecular Biology by E.D.P. De Robertis. 8th edition. Lippincott, Williams and Wilkins, USA. 2006.

Practicals:

1. A Cell Biology Manual by J. Francis. Kendall/Hunt Publishing Co, USA. 2022.
2. Practical Laboratory Manual- Cell Biology by A. Gupta, B.K. Sati. Lambert Academic Publishing, USA. 2019.
3. Cell Biology Practical Manual by R. Gupta, S. Makhija and R. Toteja. Prestige Publishers, India. 2018.
4. Laboratory Manual of Cell Biology by R. Majumdar, R. Sisodia. Prestige Publishers, India. 2018.
5. Essential Cell Biology Vol 1: Cell Structure- A Practical Approach by J. Davey and M.Lord. Oxford University Press, UK. 2003.
6. Essential Cell Biology Vol 2: Cell Function- A Practical Approach by J. Davey and M. Lord. Oxford University Press, UK. 2003.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE –8:
MICROBIAL PHYSIOLOGY AND METABOLISM- I

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
MICROB-DSC302: **MICROBIAL PHYSIOLOGY AND METABOLISM- I**	**4**	**3**	**0**	**1**	**Class XII pass with Biology/ Biotechnology/ Biochemistry**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- The main objective of this course is to enable students to understand the underlying mechanisms governing various physiological and metabolic features of prokaryotes. These include transport mechanisms for the uptake of nutrients, bacterial growth, and the diversity of prokaryotes due to (i) adaptations to the different habitats in which they grow and (ii) metabolic pathways for energy production and carbon and nitrogen assimilation.
- The course will build the strong foundation needed by the students for further studies in the advanced fields of microbiology including metabolic engineering.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Student will be able to discuss the diverse nutritional categories of bacteria/archaea and mechanisms of transport of nutrients across membranes of microbes.
- Student will be able to describe the physiology of bacterial growth, calculation of generation time and specific growth rate, and the effects of physicochemical factors on microbial growth.
- Student will be able to describe the metabolic pathways used by bacteria for energy generation and conservation during growth on glucose and other carbon sources under aerobic and anaerobic conditions.
- Student will be able to discuss energy production processes in microbes.

- Student will be able to analyse growth kinetics of bacteria, and evaluate the impact of external factors on bacterial growth kinetics.

SYLLABUS OF DSC-8

UNIT – I (10 hours)

Nutritional diversity amongst bacteria and mechanisms of nutrients transport: Classification of bacteria based on carbon, electron and energy sources. Nutrient transport across membrane: passive transport (diffusion- simple and facilitated), active transport (primary and secondary with suitable examples, concept of uniport, symport, antiport) and group translocation. Electrogenic and electroneutral transport. Transport of iron in bacteria through concerted action of primary and secondary active transport.

UNIT – II (12 hours)

Microbial growth patterns, kinetics and physiological adaptations: Batch, continuous, diauxic and synchronous growth. Bacterial growth kinetics: growth curve, generation time and specific growth rate. Physiological adaptations by microbes for growth under different environmental conditions: effect of temperature, pH, oxygen concentration, solute and water activity.

UNIT – III (12 hours)

Chemoheterotrophic metabolism under aerobic conditions: Concept of metabolism and energy production. Glucose degradation/catabolism by microbes via: glycolysis, Entner-Doudoroff (ED) pathway, Pentose phosphate pathway (PPP). The pyruvate dehydrogenase reaction, Krebs Cycle, anaplerotic reactions, Glyoxylate cycle. Utilization of fructose, lactose and pentose

UNIT – IV (11 hours)

Electron transport and energy production: Redox potentials of the electron carriers, organization of electron carriers in mitochondria, coupling sites, mechanisms of proton translocation, chemiosmotic hypothesis, oxidative phosphorylation and ATP generation, uncouplers and inhibitors of respiratory chain, comparison of mitochondrial and bacterial electron transport, branched respiratory chain in E. coli under high and low levels of O_2.

Practical component **30 Hours**

UNIT 1: (20 hours)

Microbial growth: Study of various methods of measurement of microbial growth. Collection of data and plotting of bacterial growth curve of E. coli using turbidometric method (using optical density as the indirect method of measurement of bacterial growth). Understanding bacterial growth kinetics by calculation of generation time and specific growth rate of bacteria from the graph. Study of radial growth of *Aspergillus niger* using point inoculation method

Unit 2: (10 hours)

Effect of environmental factors on microbial growth: Study of the effect of physicochemical factors like temperature and pH variations on the growth of *E.coli*. Understanding the physiological importance of catalase and oxidase in protecting bacteria from the harmful effects of oxidizing environment: detection and assay of their activity in bacteria.

Essential/recommended readings

Theory:

1. Lehninger Principles of Biochemistry by D.L. Nelson and M.M. Cox. 8th edition. W.H. Freeman Fundamentals of Bacterial Physiology and Metabolism by Rani Gupta and Namita Gupta. Springer Nature Singapore Pvt. Ltd., Singapore. 2021.
2. Lehninger Principles of Biochemistry by D.L. Nelson and M.M. Cox. 8th edition. W.H. Freeman and Company, UK. 2021.
3. Brock Biology of Microorganisms by M.T. Madigan,J. Aiyer,D. Buckley,W.Sattley and D. Stahl.16th edition. Pearson, USA. 2021.
4. Prescott's Microbiology by J. M. Willey, K. Sandman and D. Wood. 11th edition. McGrawHill Higher Education, USA. 2019.
5. Microbial Biochemistry by G.N. Cohen. 2nd edition. Springer, Germany. 2014.
6. The Physiology and Biochemistry of Prokaryotes by D. White, J. Drummond and C. Fuqua. 4th edition. Oxford University Press, UK. 2011.
7. Microbial Physiology by S.R. Reddy and S.M. Reddy. Scientific Publishers India. 2007.
8. Microbial Physiology by A.G. Moat, J.W. Foster and M.P. Spector. 4th edition. John Wiley& Sons, USA. 2002.

Practicals:

1. Essentials of Practical Microbiology by A. Sastry and S. Bhat. 2nd edition. Jaypee Brothers Medical Publishers, India. 2021.
2. Microbiology: A Laboratory Manual by J. Cappuccino and C.T. Welsh. 12th edition. Pearson Education, USA. 2020.
3. Laboratory Experiments in Microbiology by T. Johnson and C. Case. 12th Edition. Pearson Education, USA. 2019.
4. Microbiology Practical Manual edited by A. Jain, J. Agarwal, V. Venkatesh. Elsevier, India. 2018.
5. Applied Microbial Physiology: A Practical Approach by P. M. Rhodes and P. F. Stanbury. IRC Press. 1997.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 9: ENVIRONMENTAL MICROBIOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
MICROB-DSC303: ENVIRONMENTAL MICROBIOLOGY	**4**	**3**	**0**	**1**	**Class XII pass with Biology/ Biotechnology/ Biochemistry**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- The main objective of this paper is to provide students with in-depth knowledge of diverse microbial populations/ communities present in different habitats in the ecosystem.
- Students will become aware of the inter-microbial, microbe-plant and microbe-animal interactions and their benefits. The students will also learn about the management of solid and liquid waste and different strategies for microbial remediation of environment pollutants.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Student will be able to discuss natural habitats of diverse microbial populations and give an overview of the concept of metagenomics.
- Student will be able to analyse various positive and negative interactions amongst microbes and also between microbes and plants / animals.
- Student will be able to explain the importance of microorganisms in mineral cycling within an ecosystem, and their effects on the environment.
- Student will be able to discuss various methods involved in sewage treatment, how we can make water safe for drinking, and various methods for testing water potability.
- Student will be able to evaluate different waste management strategies using microorganisms.
- Student will be able to describe various methods of microbial remediation for treating pollutants present in our environment. Student will be able to determine the importance of quality control in the food industry and describe various indices being used to measure quality and safety in the food industry.

SYLLABUS OF DSC-9

UNIT – I (11 hours)

Natural habitats and their microbial communities: Concepts of habitat, niche. Autochthonous, allochthonous, zymogenous microorganisms. Colonization and succession. Lithosphere: Soil profile, soil characteristics: physical and chemical, soil microbial community. Hydrosphere: Freshwater habitat: stratification and microbial composition of lake. Marine habitat: stratification and microbial composition of ocean. Atmosphere: atmosphere as microbial habitat, dispersal of microorganisms/spores, bioaerosols, methods of air sampling (filtration and deposition). Extreme habitats with reference to temperature, hydrostatic pressure, salinity and low nutrient levels. Concept of metagenomics, use of metagenomics to profile microbial communities in natural habitats.

UNIT – II (9 hours)

Interactions of microbial populations: Microbe-microbe interactions. Positive interactions: mutualism, protocooperation, commensalism. Negative interactions: antagonism, competition, predation, parasitism. Microbe-plant interactions. Symbiotic association: microbes associated with roots and aerial plant surfaces, leguminous roots-rhizobium symbiosis, Anabaena-Azolla symbiosis, mycorrhizal and actinorhizal associations. Microbe- animal interactions. Microflora in ruminant gut, nematophagous fungi and symbiotic luminescent bacteria.

UNIT – III (9 hours)

Mineral cycling by microbes and their effects on the environment : Importance of biogeochemical cycles. Carbon cycle: microbial degradation of cellulose, lignin and chitin, Nitrogen cycle: nitrogen fixation, ammonification, nitrification, denitrification and nitrate reduction. Phosphorus cycle: solubilisation and immobilization. Sulphur cycle: oxidative and reductive sulphur transformation, metal corrosion, acid mining drainage, nitrate pollution

UNIT – IV (9 hours)

Wastewater treatment and water potability: Sources and composition of liquid waste. Sewage strength: BOD and COD. Primary, secondary (aerobic: trickling filter, activated sludge process; anaerobic: septic tank, anaerobic sludge digestor) and tertiary sewage treatment. Treatment and safety of drinking (potable) water, Methods to detect potability of water samples: standard qualitative procedure - presumptive test/MPN test, confirmed and completed tests for fecal coliforms; membrane filter technique and Presence/Absence tests for coliforms, Indicator microorganisms.

UNIT – V (7 hours)

Disposal of solid waste by microbes and microbial remediation of environment: Sources and types of solid waste. Methods of solid waste disposal: sanitary landfills, composting (static piles, aerated piles and continuous feed reactors). Concepts of xenobiotics, recalcitrant compounds and bioremediation. Biodegradation of pesticides (DDT and Propanil), oil spills, e-waste and plastics.

Practical component **30 Hours**

UNIT 1: (15 hours)

Soil microflora:

Study of the presence of microbial activity in soil by qualitative detection of enzyme activity: dehydrogenase, amylase, urease. Microbial interactions: Isolation and quantitation of bacteria from rhizosphere and root-free soil to determine the rhizosphere effect. Isolation of symbiotic and non-symbiotic nitrogen fixers: *Rhizobium* and *Azotobacter* or *Azospirillum*.

Unit 2: (15 hours)

Mineral cycling and waste management by microbial remediation: Demonstration of phosphate solubilization by plate isolation method. Student group project: Preparation of Winogradsky column mini aquatic ecosystem. Assessment of the microbiological quality of water by standard qualitative procedures. Determination of BOD of wastewater sample by Dissolved Oxygen Electrode method/ Winkler's method. **Student group project**: Sewage surveillance in the fight against COVID19.

Essential/recommended readings

Theory:

1. Brock Biology of Microorganisms by M.T. Madigan,J. Aiyer,D. Buckley,W.Sattley and D. Stahl.16th edition. Pearson, USA. 2021.
2. Microbial bioremediation by P. Rajendran and P. Gunasekaran. 1st edition, MJP Publishers, India. 2019.
3. Prescott's Microbiology by J. M. Willey, K. Sandman and D. Wood. 11th edition. McGrawHill Higher Education, USA. 2019.
4. Environmental microbiology by K.V. Ramesh. MJP Publisher. 2019.
5. Soil Microbiology by N.S. Subba Rao. 5th edition. Medtech, India. 2017.
6. Wastewater Microbiology by D.H. Bergey. Medtech, India. 2014.
7. Environmental Biotechnology by M. Jain. 1st Edition. Alpha Science International Ltd. 2014.
8. Environmental Microbiology edited by I.L. Pepper, C.P. Gerba, T.J. Gentry. 3rd edition.Academic Press, USA. 2014.
9. Microbial ecology by L.L. Barton and D.E. Northrup. 1st Edition. John Wiley & Sons. 2011.
10. Environmental Microbiology of Aquatic and Waste Systems by N. Okafor. Springer, USA.2011.
11. Environmental Biotechnology: Basic Concepts and Applications by I.S. Thakur. 2nd Edition. I K International Publishing House Pvt. Ltd. 2011.
12. Advances in Applied Bioremediation edited by A. Singh, R.C. Kuhad and O. P. Ward.Springer-Verlag, Germany. 2009.
13. Microbial Ecology: Fundamentals and Applications by R.M. Atlas, R. Bartha. 4th edition.Benjamin Cummings, USA. 2000.
14. Principles of Microbiology by R. M. Atlas. 2nd edition. W.M.T. Brown Publishers, USA.1997.

Practicals:

1. Benson's Microbiological Applications, Laboratory Manual in General Microbiology by A. Brown and H. Smith. 15th edition. McGraw-Hill Education, USA. 2022.
2. Microbiology: A Laboratory Manual by J. Cappuccino and C.T. Welsh. 12th edition. Pearson Education, USA. 2020.
3. Experiments in Microbiology, Plant Pathology and Biotechnology by K. R. Aneja. 5th edition. New Age International Publishers, India. 2017.
4. Manual of Environmental Microbiology by C. J., Hurst, R. L., Crawford, J. L., Garland and D. A. Lipson. American Society for Microbiology Press. USA. 2007.
5. Microbial Ecology: Fundamentals and Applications by R.M. Atlas and R. Bartha. 4th edition. Benjamin Cummings, USA. 2000.
6. Methods in Applied Soil Microbiology and Biochemistry by K. Alef and P. Nannipieri. Ist edition. Academic Press, USA. 1995.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 1:
EUKARYOTIC MICROBES: BIOLOGY AND BIOTECHNOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
MICROB-DSE1: **EUKARYOTIC MICROBES: BIOLOGY AND BIOTECHNOLOGY**	**4**	**2**	**0**	**2**	**Class XII pass with Biology/ Biotechnology/ Biochemistry**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- The main objective of the course is to make students familiar with eukaryotic microorganisms namely algae, protozoa and fungi. They will become aware of their characteristics and applications in various fields such as industry, food, environment and medical science.
- They will understand how eukaryotic microbes can be used to develop eco-friendly and sustainable solutions to problems we are encountering in various fields.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Student will be able to explain the characteristics of major algal types, the applications of micro and macro algae in different fields, and algae mass cultivation methods.
- Student will be able to describe different types of protozoa and their salient features, the significance of protozoa in medical, environmental and other fields.
- Student will be able to explain the characteristics of different types of fungi, their benefits and harmful effects, the biology and commercial importance of mushrooms.
- Student will be able to demonstrate the isolation and identification of green algae from pond water, the extraction and analysis of chlorophyll pigment. They will be able to discuss the thallus organization of different types of algae and the taxonomic position of Euglena.
- Student will be able to identify different types of protozoa and explain their major characteristics, the life cycles of some protozoa which cause diseases transmitted through insects or by contaminated food and water.

- Student will be able to describe different types of fungi and will be able to identify them based on their macroscopic and microscopic characteristics. They will be able to demonstrate fungal techniques, the difference between edible and poisonous mushrooms, steps of mushroom cultivation through visit to mushroom cultivation centre.

Theory component

Unit 1: (10 hours)

Algae structure, ecology and significance: General characteristics and brief account of habitat and thallus organization of major algal types: Chlorophyta, Bacillariophyta, Dinoflagellates, Xanthophyta, Phaeophyta and Rhodophyta. Applications of algae in wastewater treatment, biofuel and bioenergy products, pharmaceutical industries and food and feed sectors with reference to *Chlorella, Euglena, Dunaliella, Porphyra, Gracilaria,* diatoms*, Sargassum* and *Laminaria.* Mass cultivation of algae in open and closed photobioreactors.

Unit 2: (10 hours)

Protozoa structure, ecology and significance: An overview of habitat, cell structure, locomotion, and nutrition of different protozoa: *Entamoeba, Plasmodium, Giardia, Tetrahymena, Trypanosoma and Leishmania*. Disease causing protozoa: list of diseases, causative agent, mode of transmission, preventive measures currently in use (if any). Significance of protozoa in food web and water purification. Marine protozoa as source of filtering agents, chalk, abrasive and building material. Role of protozoa in symbiosis therapy and drug discovery. Role of *Tetrahymena* as model organism.

Unit 3: (10 hours)

Fungal structure, ecology and significance: An overview of habitat, thallus structure, nutrition and positive and negative importance (ecological, industrial, and medical) of different fungi: *Neocallimastix, Saccharomyces, Penicillium, Neurospora, Agaricus* and *Armillaria.* Detailed account of biology and commercial importance of Mushrooms: History, classification and distribution, life cycle, cultivation, nutrient and medicinal values; Edible and poisonous mushrooms.

Practical component **60 Hours**

Unit 1: (24 hours)

Isolation, identification and pigment analysis of algae: Study of the following algae by temporary mounts/permanent slides/photographs (at least one alga to be studied by making temporary mounts): *Chlorella, Porphyra, Gracilaria,* diatoms*, Sargassum, Dunaliella, Caulerpa, Ulva.* Comparison of the vegetative thallus organization. Isolation

of green algae from pond water and their identification by making temporary mounts. Recording of macroscopic and microscopic characterteristics of isolated algae. Extraction of pigment (chlorophyll) from algae and its analysis using chromatography or spectrophotometry. Study of the structure of *Euglena* cell highlighting its algal and protozoa characteristics discussion of its 'taxonomic enigma' status.

Unit 2: (16 hours)

Identification of protozoa and their importance: Study of different protozoa (*Entamoeba, Plasmodium, Giardia, Tetrahymena, Trypanosoma and Leishmania***)** with the help of permanent slides / photographs. Comparison of their structure and important characteristics. Study of the different stages of disease cycles of arthropod-borne protozoal diseases (*Plasmodium, Trypanosoma* and *Leishmania*) with the help of pictorial aids. **Student research study project**: Transmission, symptoms, prevention and cure of these diseases. Study of food and water-borne diseases caused by protozoa (*Entamoeba* and *Giardia*) in reference to life cycle, transmission, symptoms, prevention and cure. Comparison of the disease cycles of *Entamoeba* and *Giardia*.

Unit 3: (20 hours)

Identification of fungi and their importance: Study of fungi by temporary mounts/ permanent slides/photographs (at least one fungus to be studied by making temporary mounts): *Neocallimastix, Saccharomyces, Penicillium, Neurospora, Agaricus* and *Armillaria.* Observation of macroscopic and microscopic identifying characteristics. Preparation of spore suspension of fungus (*Aspergillus niger*) and counting of spores / ml using hemocytometer. Study of edible and poisonous mushrooms with the help of samples/photographs. Visit to mushroom cultivation center to learn various steps involved in mushroom cultivation.

Suggested Reading (Theory & Practical):

1. Brock Biology of Microorganisms by M.T. Madigan,J. Aiyer,D. Buckley,W.Sattley and D. Stahl.16th edition. Pearson, USA. 2021.
2. A Textbook on Mushroom Cultivation: Theory and Practice by A. Aggarwal, Y. P. Sharma, and E.Jangra.1st edition. Newrays Publishing House, India. 2021.
3. Prescott's Microbiology by J.M.Willey, K.Sandman and D. Wood. 11th edition. McGraw Hill Higher Education, USA. 2019.
4. Paniker's Textbook of Medical Parasitology by C.K. J. Paniker and S. Ghosh.8th edition. Jaypee Brothers Medical Publishers, India. 2018.
5. Laboratory Manual for Algae and Fungi by B.K.Chetri.1st edition.Lulu.com publisher.2018.
6. Textbook of Algae by O.P.Sharma. Tata McGraw Hill Publishing Co. Ltd, India. 2017.

7. Algae Biotechnology: Products and Processes by F.Bux, and Y. Chisti (Eds.) 1st edition. Springer International Publishing, USA. 2016.

8. Algae: Anatomy, Biochemistry, and Biotechnology by L. Barsanti and P.Gualtieri. 2nd edition.CRC Press, Taylor and Francis group,USA. 2014.

9. Introductory Mycology by C.J. Alexopoulos, C.W. Mims and M. Blackwell. 4th edition. John Wiley and Sons, New York. 2012 (reprint).

10. Manual of Soil Fungi by J.C. Gilman. 1st edition. Biotech Books, India. 2012 (Reprint).

11. Introduction to Fungi by J. Webster and R.W.S. Weber. 3rd edition. Cambridge University Press. USA. 2007.

12. The Fungi by G.Sumbali. 2nd edition. Narosa Publishing India House, India. 2005.

13. Protozoa by R.L. Kotpal. 12th edition. Rastogi Publication, India. 2006.

14. Manual of Phycology by G.M.Smith.1st edition. Scientific Publishers Journals, India.1994

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 2:
Applications of Statistics in Biology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
MICROB-DSE2: Applications of Statistics in Biology	4	2	0	2	Class XII pass with Biology/ Biotechnology/ Biochemistry	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- The main objective of this course is to enable the students to understand the basic concepts of statistics and how statistics helps in analysing biological data by using simple examples. Students will learn to handle biological data using statistical tools and to draw appropriate conclusions from the analysis.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Student will be able to explain the collection and analysis of data through descriptive statistics, measures of skewness and kurtosis, Discrete and Continuous Random variable; with emphasis on examples from biological sciences.
- Student will be able to describe correlation and regression, various Discrete and Continuous Distributions namely Binomial, Poisson, Exponential and Normal distribution.
- Student will be able to explain different statistical methods, principles of statistical analysis of biological data, sampling parameters.
- Student will be able to describe large sample test based on normal distribution, and small sample test based on t-test and F test

Contents:

Theory: **30 hours**

Unit 1: (10 hours)

Data collection and handling: Collection, Classification, Tabulation and Graphical representation of Data. Measure of central tendency and dispersion. Correlation and Regression analysis: Relation between two variables, curve fitting, two regression lines, Karl Pearson's coefficient of correlation.

Unit 2: (10 hours)

Probability, variables and types of distribution: Probability theory and concept of Random Variable (discrete and continuous), Standard distributions: Exponential distribution, Binomial distribution, Poisson distribution, Normal distributions.

Unit 3: (10 hours)

p-value and sample tests: Sampling Distributions, Testing of Hypothesis, Level of Significance and Degree of Freedom; Interpretation and significance of p-value. Large Sample Test based on Normal Distribution, small sample test based on t-test and F test.

Practicals: **60 hours**

Unit 1: (20 hours)

Handling of data, dispersion, Karl Pearson coefficient, and regression analysis using Excel: Handling of data using measures of central tendency; handling of data using measures of dispersion; finding Karl Pearson correlation coefficient and interpretation of result; Spearman rank correlation with and without ties; how to obtain regression lines.

Unit 2: (20 hours)

Distributions (Practical Using Excel): Fitting of binomial distributions for n and p = q = ½ given; fitting of Poisson distributions for given value of lambda; application problems based on binomial distribution; application problems based on Poisson distribution; problems based on area property of normal distribution; finding the ordinate for a given area for normal distribution; application based problems using normal distribution

Unit 3: (20 hours)

Sample tests and their applications (Practical Using Excel): Problems based on Large Sample Tests and interpretation of result; estimators of population mean when Population is large; Tests of hypotheses for the parameters of a normal distribution-Single Mean; Tests of hypotheses for the parameters of a normal distribution -Difference of Means; application of t-test- single mean, difference of means and Paired t-test; application of F- test and interpretation of result on given data set.

Suggested reading (Theory & Practical):

1. Introduction to the Theory of Statistics by A.M. Mood, F.A. Graybill and D. C. Boes. 3rd edition (Reprint). Tata McGraw-Hill, India. 2017.
2. An Introduction to Medical Statistics by M. Bland. 4th edition. Oxford University Press USA, 2015.
3. An Introduction to Biostatistics by N. Gurumani. 2nd edition. MJP publishers, India. 2014.
4. An introduction to Biostatistics and Research Methods by PSS Sunder Rao and J. Richard. 5th edition. PHI learning, India. 2012.
5. Fundamentals of Statistics (Vol. I & II) by A. M. Goon, M. K. Gupta and B. Dasgupta. 8th edition. The World Press, India. 2008.
6. Mathematical Statistics with Applications by I. Miller and M. Miller. 7th edition, Pearson Education, Asia. 2006.
7. Biostatistics: A Foundation for Analysis in the Health Sciences by Daniel, Wayne W. John Wiley, UK. 2005.
8. Fundamentals of Biostatistics by Irfan A Khan. Ukaaz Publications, India. 1994.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 3:
MICROBIAL QUALITY CONTROL IN FOOD AND PHARMACEUTICAL INDUSTRIES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
MICROB-DSE 3: MICROBIAL QUALITY CONTROL IN FOOD AND PHARMACEUTICAL INDUSTRIES	**4**	**2**	**0**	**2**	**Class XII pass with Biology/ Biotechnology / Biochemistry**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- The main objective of this course is for students to develop an understanding of the concept and implementation of microbial quality control in the food and pharmaceutical industries.
- Students will gain insights into how the final products obtained for human and animal consumption are consistent, certified as safe for human consumption, and compliant with microbial standards.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Student will be able to describe the parameters and techniques of Good Laboratory and Microbiological practices, sources of contamination, microbial monitoring of the environment and the concept of clean areas in the industry.
- Student will be able to explain the techniques of collecting and processing food, water and pharmaceutical samples for bioburden testing, various microscopic, culturing, biochemical, molecular and immunological testing techniques used for assessing the presence of microbes/pathogens as well as the toxic microbial products.
- Student will be able to describe Total Quality Management (TQM) system and Standard Operating Procedures (SOP) for fulfilling the requirements of Quality

Control (QC) are created, various microbiological standards and certifications by accrediting bodies for food and pharmaceutical industries.

- Student will be able to demonstrate the techniques for checking milk quality by performing rapid and standard laboratory tests, method of testing of microbiological quality of water samples (Most Probable Number).
- Student will be able to describe how the food sample is processed for the detection of microorganisms, various differential and selective media to detect and identify different microorganisms present in a food sample.
- Student will be able to demonstrate sterility testing of various food and pharmaceutical products under different conditions.
- Student will be able to develop HACCP flow charts for different products, the application of various standards in quality regulation in food and pharma products with the help of case studies.

Contents:

Theory: **30 hours**

Unit 1. (8 hours)

Microbiological safe practices for food and pharmaceutical industry: Laboratory practices for safety and quality (GLP and GMLP). Concept of Biosafety cabinets. Biosafety
levels (BSL-I to BSL-IV): designs, specifications and uses. Concept of Clean Area and its classification. Microbial monitoring of controlled environments (bioburden). Sources of contamination in food and pharmaceutical industries. Steps to avoid contamination. Food Safety, Sanitation Standard Operating Procedure (SSOP) and Personal Hygiene**.**

Unit 2: (14 hours)

Monitoring and analysis of microbiological quality of food and pharmaceutical samples: Types of products in food and pharmaceutical industries. Bioburden testing for food, beverages and medical devices. Collection and processing of samples for microbiological monitoring. Detection of microorganisms by microscopic method (fluorescence-based Direct Microscopic Count). Detection of microorganisms by cultural methods: enrichment technique, standard plate count, the concept of differential and selective media for detection of pathogens (XLD agar, Salmonella-Shigella agar, Mannitol salt agar, EMB agar, McConkey agar). Microbiological examination of non-sterile pharmaceutical products, concept of microbial limits, sterility testing (its objectives and significance). Molecular, biochemical and immunological methods for detection of microorganisms and their products (Nucleic acid probes, PCR, biosensors, Limulus lysate test, pyrogen testing). Significance of rapid detection methods (Clot on

Boiling Test, dye reduction test by Resazurin) in food industry.

Unit 3: (8 hours)

Microbial quality standards and management: Introduction and importance of quality standards. Concepts and approaches of Total Quality Management (TQM), Quality Management System, ISO 9001:2000, Quality Assurance and Quality Control. Development of Standard Operating Procedures. Hazard analysis of critical control point (HACCP): principles, applications and limitations. Concept of Codex Alimentarius and Codex Standards. Role of accredited certification bodies (BIS, Agmark, FSSAI, ISO) in maintaining product quality.

Practicals: **60 hours**

Unit 1: (20 hours)

Testing of quality of milk and water samples: Checking the effectiveness of pasteurization of milk: Alkaline phosphatase test. Detection of microbiological quality of milk sample through Triphenyltetrazolium chloride (TTC) test, Clot on boil (COB) test and dye reduction test (Resazurin). Determination of microbiological quality of water sample by MPN method.

Unit 2: (30 hours)

Microbiological quality of food and pharmaceutical products: Sample processing for detection of microorganisms in food (one solid: Bread/idli batter/cheese/ biscuits/ pizza base/salad/cake etc. and one liquid:juice/ butter milk/ energy drink etc. sample/s.) Detection and Identification of microorganisms present in processed food samples through different types of media (XLD agar/Salmonella-Shigella agar, Mannitol salt agar, EMB agar, McConkey agar). Sterility testing of food (canned food/tetrapak drink) and pharmaceutical products (eye drops/injection ampoule) for aerobic microbes using cultural methods. Demonstration to test the presence of anaerobic microbes by virtual lab/video .Principle and concept of Limulus lysate (LAL) test for detecting the presence of endotoxin in consumable products by virtual lab/video.

Unit 3: (10 hours)

Quality regulation of food and pharmaceutical products: Study of HACCP of milk/dairy product with the help of flow chart. **Student group project**: applications of various standards (BIS, Agmark, FSSAI, ISO) in quality regulation in food and pharma products: case studies involving at least one food and one pharma product.

Suggested Reading (Theory & Practical):

1. Analytical Food Microbiology: A Laboratory Manual by A.E. Yousef, J.G. Waite-Cusic and J.J. Perry. 2nd edition. Wiley Publishers, UK. 2022.
2. Essentials of Pharmaceutical Microbiology by A. Kar, 2nd edition. New Age International. India. 2020.
3. Food Safety and Quality Control by P. Mathur. 1st edition. The Orient Blackswan, India. 2018.
4. Pharmaceutical Biotechnology: Fundamentals and Applications by J.A.D. Crommelin, R. D. Sindelar, and B. Meibohm.(Eds.) 4th edition. Springer, Germany. 2016.
5. Manuals of methods of analysis of foods and water by Food Safety and Standards Authority of India, Ministry of health and family welfare, Government of India, 2016.
   https://old.fssai.gov.in/Portals/0/Pdf/Draft_Manuals/WATER.pdf
   https://old.fssai.gov.in/Portals/0/Pdf/Manual_Fruits_Veg_25_05_2016.pdf
6. Pharmaceutical Microbiology: Essentials for quality assurance and quality control by T. Sandle. 1st edition. Woodhead Publishing. UK. 2015.
7. Fundamentals of Food Microbiology by Bibek Ray and A. Bhunia. 5th edition. CRC Press UK. 2013.
8. Pharmaceutical Biotechnology: Concepts and Applications by G. Walsh. 1st edition. John Wiley & Sons Ltd. USA. 2011.
9. Modern Food Microbiology by J.M. Jay, M.J. Loessner and D.A. Golden. 7th edition. CBS Publishers and Distributors, India. 2006.
10. Handbook of Microbiological Quality control in Pharmaceutical and Medical Devices. R.M Baird, N.A Hodges, and S.P Denyer (Eds) 2nd edition. Taylor and Francis Inc., USA. 2005.
11. Hugo and Russell's Pharmaceutical Microbiology by S.P. Denyer, N.A. Hodges and S.P. Gorman. 7th edition. Blackwell Science. 2004.
12. Microbiological Analysis of Food and Water: Guidelines for Quality Assurance by N.F. Lightfoot and E.A. Maier. 1st edition. Elsevier Science. 1998.
13. Quality control in the Pharmaceutical Industry by M.S. Cooper (Ed). Vol.2. Academic Press,USA.1974.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 4: BIOTECHNIQUES AND INSTRUMENTATION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
MICROB-DSE 4: **BIOTECHNIQUES AND INSTRUMENTATION**	**4**	**2**	**0**	**2**	**Class XII pass with Biology/ Biotechnology / Biochemistry**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- The main objective of this paper is to develop a strong understanding of the principles and applications of some basic and advanced techniques frequently used in sciences dealing with biological systems. This will allow the students to relate the concepts of the various areas being taught to them with the working and applicability of the instruments and techniques involved.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Will have learnt about the main components, working principles, and applications of different types of microscopes. The student will also be familiarized with the preparation of samples and staining for microscopy.
- Will have gained knowledge of basic concepts, applications, merits and limitations of various bio separation techniques like chromatography, electrophoresis and centrifugation.
- Will be acquainted with the principles and applications of some analytical techniques like X-ray diffraction and UV-visible spectrophotometry. Will have been introduced to the concepts of advanced techniques like circular dichroism, NMR spectroscopy and mass spectrometry.
- Will be able to use the microscope to determine the size of microbial cells applying the technique of micrometry. Will also be able to separate biomolecules using planar (paper chromatography/ TLC) and column chromatography.

- Will have gained hands-on experience of separation of mixtures using gel electrophoresis techniques (PAGE/Agarose) and laboratory centrifuges. Will have gained knowledge of working of density gradient centrifugation with the help of virtual lab / videos.
- Will be able to determine the λmax for an unknown sample and be able to calculate its extinction coefficient using a spectrophotometer. Will get familiar with the technique of autoradiography and NMR spectroscopy with the help of virtual lab / videos.

Theory: **30 hours**

Unit 1: (10 hours)

Principles and applications of microscopy: Concept of resolving power and magnification. Principles, working, and applications of : Bright-field and dark-field microscopy, phase contrast microscopy, fluorescence microscopy, confocal microscopy, electron microscopy (scanning electron microscopy, transmission electron microscopy, and cryo- electron microscopy).

Unit 2: (12 hours)

Principles and applications of separation techniques: Partition chromatography: thin layer chromatography. Column chromatography: gel filtration, ion-exchange, affinity and HPLC. Differential and density gradient centrifugation, ultracentrifugation. Agarose gel electrophoresis. Polyacrylamide gel electrophoresis.

Unit 3: (8 hours)

Principles and applications of other analytical techniques: UV-Visual spectrophotometry (Beer and Lambert Law), X-ray diffraction, circular dichroism, nuclear magnetic resonance (NMR) spectroscopy, mass spectrometry.

Practicals: **60 hours**

Unit 1: (24 hours)

Micrometry and chromatography: Principle of micrometry. Determination of the sizes of different microbial cells by micrometry. Separation of complex mixtures of biomolecules by paper chromatography/ Thin Layer Chromatography. Group project: Packing and running column chromatography. Determination of molecular weight of a protein using gel filtration chromatography.

Unit 2: (20 hours)

Electrophoresis and centrifugation: Separation of DNA by agarose gel electrophoresis. Separation of proteins by SDS-PAGE. Separation of components of a given mixture using a laboratory scale centrifuge using various rotors. Understanding density gradient centrifugation with the help of virtual lab.

Unit 3: (16 hours)

Imaging and advanced analytical techniques: Using spectrophotometer to determine λ_{max} for an unknown sample and calculation of extinction coefficient. Principle and working of autoradiography. Demonstration of autoradiography using virtual lab / video. Understanding NMR spectroscopy with the help of virtual lab / video.

Suggested Reading (Theory & Practical):

1. Wilson and Walker's Principles and Techniques of Biochemistry and Molecular Biology edited by A. Hofmann and S. Clokie. 8th edition. Cambridge University Press, UK. 2018.
2. Prescott's Microbiology by J. M. Willey, K. Sandman and D. Wood. 11th edition. McGraw Hill Higher Education, USA. 2019.
3. The Cell: A Molecular Approach by G.M. Cooper. 8th edition. Sinauer Associates, UK. 2018.
4. Lehninger Principles of Biochemistry by D.L. Nelson and M.M. Cox. 7th edition. W.H. Freeman and Company, UK. 2017.
5. Biophysical Chemistry by D. Klostermeier and M.G. Rudolph. 1st edition. CRC press, UK. 2017.
6. Principles of Instrumental Analysis by D.A. Skoog, F.J. Holler and S.R. Crouch. 7th edition. Cengage Learning, USA. 2017.
7. Techniques and Methods in Biology. K. L. Ghatak. PHI Learning Private Limited, India. 2011.
8. Lab Manual in Biochemistry, Immunology and Biotechnology by A. Nigam and A. Ayyagari. Tata McGraw Hill, India. 2007.
9. Physical Biochemistry- Application to Biochemistry and Molecular Biology by D. Freifelder. 2nd edition. W.H. Freemen and Company, USA. 1982.
10. Systems Biology: A textbook by E. Klipp et al. 2nd edition. Wiley-VCH. 2016

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 5: PLANT-PATHOGEN INTERACTIONS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
MICROB-DSE 5: PLANT-PATHOGEN INTERACTIONS	4	2	0	2	Class XII pass with Biology/ Biotechnology/ Biochemistry	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- The main objective of this course is to provide the students with an overview of the interactions of pathogenic microbes with their host plants, and how these interactions lead to plant disease. The students will become aware of the biochemical basis of plant- pathogen interactions, the production of virulence factors by pathogens, and thei defence mechanisms induced in plants in response to infection.
- They will learn about the genetic basis of disease resistance. They will be able to identify plant pathogens from the symptoms and microscopic study of infected plant specimens.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Student will be able to explain the important terms related to plant diseases, the scientific contributions of prominent plant pathologists, how microbes attack plants using enzymes, toxins, growth regulators etc., thereby affecting their physiological processes.
- Student will be able to explain describe how plants defend themselves upon attack by pathogens with help of Case studies of some important plant diseases.
- Student will be able to describe the genetics of plant disease and resistance, and developing disease-resistant transgenic plants.

- Student will be able to identify plant pathogens by observing symptoms of diseased plants, cutting sections/ preparing whole mounts of diseased plant material, and observing microscopically.
- Student will be able to explain the etiology, symptoms and control measures of specific bacterial, phytoplasma, virus and viroid diseases with the help of photographs of diseased plants, common disease symptoms observed in locally grown plants during a field visit.
- Student will be able to explain the concept of Koch's postulates using pathogen-infected plant material.

Contents:

Theory: **30 hours**

Unit 1: (5 hours)

Introduction to plant pathology: Concepts and history: Concept of disease and pathogenesis. Causal organisms and symptoms associated with common plant diseases: rust, smut, blight, chlorosis, necrosis, gall, mosaic and wilt. Contributions of the following plant pathologists: E. J. Butler, Anton DeBary, Alexis Millardet, E. Smith, T. O. Diener, E. C. Stakman, J. E. Vanderplank, B. B. Mundkur, J. F. Dastur.

Unit 2: (19 hours)

Physiochemical basis of host-pathogen interactions: Virulence factors of pathogens - Enzymes: pectinases, cellulases. Toxins: host-specific (HV, T-toxin) and non-specific (tabtoxin, tentoxin). Growth regulators: auxin, gibberellin. Virulence factors in viruses: replicase, coat protein, silencing suppressors. Host physiological processes affected by pathogens - photosynthesis, respiration, cell membrane permeability, translocation of water and nutrients, plant growth and reproduction. Defense mechanisms in plants - Inducible structural defenses (histological: cork layer, abscission layer, tyloses,gums), inducible biochemical defenses (hypersensitive response (HR), systemic acquired resistance (SAR), phytoalexins, pathogenesis-related (PR) proteins). Study of some important diseases (etiology, epidemiology, symptoms and control measures): bacterial (crown gall), fungal (black stem rust of wheat), viral (Tobacco mosaic virus, Banana bunchy top).

Unit 3: (6 hours)

Genetics of plant disease resistance: Gene for gene hypothesis: concept of resistance (R) gene and avirulence (avr) gene, the gene for gene hypothesis. Types of plant resistance: true resistance– horizontal and vertical, apparent resistance-disease escape, disease tolerance. Genetic engineering for disease resistance in plants: with plant-derived genes and pathogen-derived genes.

Practicals: **Duration: 60 hours**

Unit 1: (24 hours)

Identification of plant pathogens examining infections microscopically: Principle and working method of lactophenol cotton blue staining. Preparation of whole mount of plant material, followed by staining with lactophenol cotton blue and microscopic observation for identification of the pathogen. Cutting fine transverse sections of infected plant material, staining with lactophenol cotton blue and observing the slide microscopically for identification of the pathogen. Any four from: *Albugo/ Puccinia/ Ustilago/ Phytophthora/ Fusarium/ Peronospora.*

Unit 2: (24 hours)

Study of plant diseases: Study of the etiology, symptoms and control measures of the following diseases. Bacterial: angular leaf spot of cotton, citrus canker. Phytoplasma: aster yellow, citrus stubborn. Viral: rice tungro disease, papaya ring spot, leaf curl of tomato. Viroid: potato spindle tuber, coconut cadang cadang disease. Field visit to a local park/college garden, to study common plant disease symptoms in plants. Recording observations in files with photographs of the diseased plants. **Study research study project**: History, etiology, symptoms, control measures, and economic impact if any, of any four rare plant diseases.

Unit 3: (12 hours)

Demonstration of Koch's postulates using a fruit/ vegetable infected with a plant pathogen: Observation of symptoms, isolation of pathogen by inoculation on potato dextrose agar plates, microscopic identification of the pathogen. Reinoculating it on a healthy fruit/vegetable to observe for similar symptoms, followed by reisolating it and observing microscopically in order to prove Koch's postulates.

Suggested Reading (Theory & Practical):

1. Fundamental of Plant Pathology Practical Manual by S. Singh, A. Kumar, A.K. Mishra. 1st edition. Deepika Book Agency, India. 2021.
2. Practical lab manual for Microbiology and Plant pathology by Huma Naaz, Hadi Husain Khan, Chandan Kumar Singh. 1st edition. AkiNik Publications, India. 2018.
3. Plant Diseases by R.S. Singh. 10th edition. MedTech, India. 2017.
4. Introduction to Principles of Plant Pathology by R.S. Singh. 5th edition. MedTech, India.2017.

5. Plant Pathology by R.S. Mehrotra and A. Aggarwal. 3rd edition. Tata McGraw-Hill Education, India. 2017.

6. Diseases of Crop Plants in India by G. Rangaswami and A. Mahadevan. 4th edition. Prentice Hall, India. 2005.

7. Plant Pathology by G. N. Agrios. 5th edition. Elsevier Academic Press, USA. 2005.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 6:
BIOSAFETY AND INTELLECTUAL PROPERTY RIGHTS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
MICROB-DSE 6: BIOSAFETY AND INTELLECTUAL PROPERTY RIGHTS	4	2	0	2	Class XII pass with Biology/ Biotechnology/ Biochemistry	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- The main objective of the course is to introduce students to the fundamental aspects of biosafety and Intellectual Property Rights (IPR) to enable them to understand concerns related to safety from biological hazards and to gain an overview of the biosafety regulatory framework.
- They will be introduced to the importance of protecting intellectual property and become familiar with all aspects of the IPR Acts. Through case studies in law and scientific research students will understand the applications of the legal concepts in the space of scientists, scientific discoveries and innovations.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Student will be able to describe how national and international biosafety regulations are formulated and implemented at the level of research institutes and laboratories locally, so as to safeguard the handlers as well as the environment from potential pathogens.
- Student will be able to describe the role of an IBSC in the biosafety regulatory framework and how to file an application seeking approval of a research proposal involving an LMO.

- Student will be able to explain the guidelines and precautions that need to be followed during the handling of radioisotopes, the concepts of Intellectual Property Rights, how they are protected through patents.
- Student will be able to demonstrate how to file a patent application. Student will be able to explain some International Agreements, Treaties and Acts governing protection of IPR.
- Student will be able to discuss the basic concepts of protection of IP through Copyright, Trademarks, Geographical indications, Industrial designs, Traditional Knowledge and New Plant Varieties along with specific biotechnological cases.

Contents:

Theory: **30 hours**

Unit 1: (12 hours)

Biosafety: Biosafety levels and risk groups. Role of Institutional Biosafety Committees (IBSC). GMOs/LMOs: Concerns and Challenges. GRAS microorganisms. Risk Analysis, and Assessment for Environmental release of GMOs, Cartagena Protocol. AERB/RSD/RES guidelines for using radioisotopes in laboratories and precautions to be taken.

Unit 2: (12 hours)

Intellectual Property Rights and its types: Introduction and need for intellectual property rights (IPR). Patents: Types of inventions protected by a patent. Prior art search, patent applications and its types, patenting process. Patent infringement, Rights and Duties of patent owner. Patent Publications. Trade secrets and know-how agreements. Budapest Treaty on international recognition of the deposit of microorganisms. Patenting life: legal protection of biotechnological inventions-World Intellectual Property Rights Organization (WIPO) TRIPS, compulsory licensing, Patent Co-operation Treaty (PCT)

Unit 3: (6 hours)

Copyrights, Trademarks, Geographical indications, Industrial designs and New Plant Varieties and Traditional knowledge: Concepts, need, coverage and duration. Commercializing Biotechnology Invention. Case studies of Biotechnology.

Practicals: **60 hours**

Unit 1: (24 hours)

Biosafety levels and guidelines: Study of the layout and design of BSL-1, BSL-2, BSL-3 and BSL-4 laboratories and precautions to be followed according to the level of containment. Filing applications for approval from the Institutional Biosafety Committee (IBSC). **Student group project**: the emergence of biotechnology as the most important tool used to combat the Covid19 pandemic, biosafety protocols in handling Sars-CoV2.

Unit 2: (16 hours)

Genetically Modified Organism: Designing a suitable strategy to protect a genetically modified organism. Case study of the release of GMO Bt Cotton. Status of Bt brinjal and GM mustard in India.

Unit 3: (20 hours)

Patent applications and related case studies: The procedure for filing a patent application. Case study of patenting of basmati rice (GI). Case study of turmeric/ neem (traditional knowledge). **Student group project**: Preparation of patent application

Suggested Reading (Theory & Practical):

1. Intellectual Property Rights in India by P. Saidaiah and K. Ravinder Reddy. International Books and Periodical Supply Service, India. 2020.
2. The Blessing and Curse of Biotechnology: A Primer on Biosafety and Biosecurity, article by R. Langer and S. Sharma. https://carnegieendowment.org/2020/11/20/blessing-and-curse-of-biotechnology- primer-on-biosafety-and-biosecurity-p. 2020.
3. Intellectual Property Rights at a Glance by P. Singh and R.Singh. Daya Publishing House, New Delhi. 2018.
4. Biological Safety: Principles and Practices by D.P. Wooley and K.B. Byers. 5th edition. ASM Press, USA. 2017.
5. Fundamentals of Intellectual Property Rights: For Students, Industrialist and Patent Lawyers by B. Ramakrishna and H.S. Anil Kumar. 1st edition. Notion Press, India. 2017.
6. Biotechnology and Intellectual Property Rights: Legal and Social Implications by K. K Singh. Springer, India. 2015.

7. IPR, Biosafety and Bioethics by D. Goel and S. Parashar. 1st edition. Pearson Education, India. 2013.

8. Law Relating to Patents, Trade Marks, Copyright, Designs and Geographical Indications by. B.L.Wadehra. Universal Law Publishing, India. 2004

9. Encyclopedia of Ethical, Legal and Policy issues in Biotechnology edited by T. M Murrayand M.J. Mehlman. John Wiley and Sons, UK. 2000.

10. http://shodhganga.inflibnet.ac.in/bitstream/10603/205165/7/chapter%20iii.pdf

11. https://dbtindia.gov.in/regulations-guidelines/regulations/biosafety-programme

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 7:
APPLICATIONS OF MICROBES IN BIOREMEDIATION AND PETROLEUM INDUSTRY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
MICROB-DSE 7: APPLICATIONS OF MICROBES IN BIOREMEDIATION AND PETROLEUM INDUSTRY	**4**	**2**	**0**	**2**	**Class XII pass with Biology/ Biotechnology/ Biochemistry**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- The main objective of this paper is to provide students with a comprehensive understanding of the process of bioremediation, its strategies, and the role played by microorganism in dealing with environmental pollutants of concern.
- This course highlights the applications of microbes in Microbial Enhanced Oil Recovery (MEOR), clean-up of oil spills, and the detoxification of heavy-metal contaminated environment. Students will acquire hands-on training in the above-mentioned areas.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Student will be able to explain the concepts of microbial bioremediation, its strategies and its applications, the microbiology of oil fields,Microbial Enhanced Oil Recovery (MEOR) and role of microbes in cleaning up of oil-spills.
- Student will be able to describe the use of biosensors in detection of heavy metals, explain heavy metal tolerance in microorganisms and the application of microbes in the detoxification of such contaminated sites.
- Student will be able to demonstrate the practical skills to isolate hydrocarbon-degrading microorganisms and assess their degradation potential.
- Student will be able to demonstrate how to detect and screen biosurfactant-producing microorganisms in the laboratory.

- Student will be able to demonstrate the isolation of heavy metal tolerant microorganisms, and discuss with case-studies on Microbial Enhanced Oil Recovery.

Contents:

Theory: **30 hours**

Unit 1: (12 hours)

Microbes and Bioremediation: Concept of bioremediation. Abiotic and biotic factors affecting bioremediation by microorganisms. *In-situ* bioremediation strategies: Biosparging, Bioventing, Bioslurping, Biostimulation, Bioaugmentation, and Bioattenuation. *Ex-situ* bioremediation techniques: Bioreactor, Biopiling, Landfarming, composting and Biofilters. Use of genetic engineered microorganisms (GEMs). Advantages, disadvantages and applications of bioremediation.

Unit 2: (12 hours)

Bioremediation of oil spills and microbial enhanced oil recovery: Microbiology of oil fields: introduction to oil fields, formation of oil reservoirs, oil production, indigenous microbial communities in oil fields. Hazards of petroleum hydrocarbon contamination. Microbial degradation of petroleum hydrocarbons (aliphatic, alicyclic, aromatic). Abiotic and biotic factors affecting the degradation of petroleum hydrocarbons. Strategies used to clean up oil spills using microorganisms. Applications of microbial consortia and oil-eating superbugs in bioremediation. Enhanced oil recovery (EOR) versus Microbial Enhanced Oil Recovery (MEOR) Microorganisms and microbial products used in MEOR (biomass, bio- surfactants, biopolymers, solvents, acids, and gases). Technologies used in *ex-situ and in - situ* MEOR applications.

Unit 3: (6 hours)

Heavy metal remediation by microbes: Sources and hazards of heavy metal pollution (As, Cu, Pb, Cd, Hg). Metal-microbes interaction and heavy metal tolerance by microorganisms. Applications of microbes in biosorption and detoxification of environment contaminated with heavy metal(s). Use of biosensors in detection of heavy metal contamination.

Practicals: **60 hours**

Unit 1: (20 hours)

Isolation and detection of hydrocarbon-degrading microorganisms: Sample collection from an oil - contamination site, enrichment, isolation on a suitable minimal medium containing petroleum hydrocarbon, identification of isolates by suitable staining and microscopic observation. Detection of hydrocarbon degradation by the isolates using the redox dye Dichlorophenol-indophenol (DCPIP)**.**

Unit 2: (20 hours)

Detection and screening of bio-surfactant producing microorganisms: Detection of biosurfactant production by hydrocarbon-degrading microorganisms using oil spread method. Screening and selection of the biosurfactant-producing microbes by the following hydrophobicity tests: (1) Drop-collapse method using positive control (Tween-80) and negative control (distilled water) (2) Toluene test (spectrophotometric measurement) and (3) by hydrophobic interaction column chromatography (using Octyl-Sepharose resin).

Unit 3: (20 hours)

Isolation of heavy metal-tolerant microorganisms and case-studies: Sample collection from potential heavy metal-contamination sites (soil/sewage/water bodies/mines), isolation on minimal medium with increasing concentrations of the heavy metal, identification of isolate by suitable staining and microscopic observation. Screening of the isolates for their metal tolerance in broth cultures containing heavy metals. Case studies on *ex-situ* and *in-situ* Microbial Enhanced Oil Recovery by discussions and with the help of visual aids.

Suggested Reading (Theory & Practical):

1. Brock Biology of Microorganisms by M. T. Madigan, K.S. Bender, D.H. Buckley, W.M. Sattele and D. A. Stahl 16th edition. Pearson, USA. 2021.
2. Microbiology: A Lab Manual by J. G. Cappuccino and C. T. Welson. 12th edition. Pearson. 2020.
3. Waste Water Microbiology by D. H. Bergey. 2nd edition. MedTech, India. 2019.
4. Practical Environmental Bioremediation: The Field Guide by R. B. King, J. K. Sheldon and G.M. Long. 2nd edition. CRC Press, USA. 2019.
5. Prescott's Microbiology by J.M. Willey, K. Sandman and D. Wood. 11th edition. McGraw Hill Higher Education. USA. 2019
6. Soil Microbiology by N. S. Subba Rao. 5th edition. MedTech, India. 2017
7. Environmental Microbiology by I. L. Pepper, C. P. Gerba and T.J. Gentry. (Ed). 3rd edition. Academic Press, USA. 2014.
8. Environmental Microbiology of Aquatic and Waste Systems by N. Okafor. Springer, USA. 2011.
9. Advances in Applied Bioremediation by A. Singh, R. C. Kuhad and O. P. Ward. Springer- Verlag,

Germany. 2009.

10. Environmental Microbiology: A Laboratory Manual by I. L. Pepper and C. P. Gerba 2nd edition. Elsevier Academic Press, USA. 2004.
11. Microbial Ecology: Fundamentals and Applications by R. M. Atlas and R. Bartha. 4th edition. Benjamin Cummings, USA. 2000.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 8: SCIENTIFIC WRITING AND COMMUNICATION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
MICROB-DSE 8: SCIENTIFIC WRITING AND COMMUNICATION	4	2	0	2	Class XII pass with Biology/ Biotechnology/ Biochemistry	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- The main objective of this course is to familiarize the students with the basic principles of science writing and communication. Students will become aware of databases and tools for effective writing and will be empowered to take up careers as research analysts, technical writers, editors of journals and books etc. They will gain insights into the process of scientific publication. They will learn to effectively communicate science to the masses.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Student will be able to demonstrate how to carry out a literature search, and explain various types of scientific writings, structure of scientific manuscript and study design.
- Student will be able to describe various types of journals, the concept of impact factors, steps in publication, and software to detect plagiarism.
- Student will be able to discuss the process of writing grant, and how to communicate effectively on scientific issues
- Student will be able to describe the process of writing research/review articles, the process of presenting scientific data through poster or oral presentation.

Contents:

Theory: **30 hours**

Unit 1: (10 hours)

Scientific literature and study design: Understanding research writing. Conducting literature search, scientific literature databases and gap analysis. Types of contemporary science writing (original research article, review, systematic review, meta-analysis, commentary, and opinion). Structure/outline of a research article. Survey study, questionnaire design, using common statistical tools/software for data analysis and presentation in research articles.

Unit 2: (13 hours)

Publication process: Identifying relevant journals through online tools. Impact factor, H-index, citations, Science Citation Index. Steps of the publication process: preparation of manuscript, textual and graphical abstracts, use of multimedia in scientific writing, editing and proofreading, referencing styles, authorship, ethical requirements in science publication, plagiarism detection tools (URKUND/Turnitin), peer review process, predatory publishers andjournals, open access publication.

Unit 3: (7 hours)

Generating funding for research and elements of communication: Introduction to national (DBT, SERB) and international funding agencies (NIH, Welcome Trust). Basics of grant- writing, and structuring a research proposal for extramural funding.

Practicals: **60 hours**

Unit 1: (15 hours)

Communicating scientific issues to the public: Drafting popular articles (newspaper/ magazines). Multimedia tools for effective writing and communication (creating stories using photos, illustrations, audio, video, animation). Publishing blogs.

Unit 2: (30 hours)

Writing original research / review articles: Drafting abstracts. Hands-on training in the preparation of manuscript text: methods, results, discussion, and conclusion. Presenting data in tables and figures: use of Microsoft Excel. Hands-on training in the use of Mendeley to insert references / citations in an article. Writing a review article based on 10 research papers in 1000 words.

Unit 3: (15 hours)

Presentation of scientific data in conferences/seminars: Designing posters. Training in oral presentations: use of Microsoft Powerpoint. Presenting the research and main findings of recent scientific articles through Journal Club**.**

Suggested Reading (Theory & Practical):

1. Research Methodology and Scientific Writing by C.G. Thomas. 2nd edition. Springer. 2021.
2. Scientific writing and communication by A. Hoffman. 4th edition. Oxford University Press. 2019.
3. Effective writing and publishing scientific papers - Part I: how to get started by D. Kotz and J.W. Cals. 2013. J Clin Epidemiol. 66(4):397.
4. Effective writing and publishing scientific papers - Part II: title and abstract by D. Kotz and J.W. Cals. 2013. J Clin Epidemiol. 66(6):585.
5. Effective writing and publishing scientific papers - Part III: introduction by D. Kotz and J.W. Cals. 2013. J Clin Epidemiol. 66(7):702.
6. Effective writing and publishing scientific papers - Part IV: methods by D. Kotz and J.W. Cals. 2013. J Clin Epidemiol. 66(8):817.
7. Effective writing and publishing scientific papers - Part V: results by D. Kotz and J.W. Cals. 2013. J Clin Epidemiol. 66(9):945.
8. Effective writing and publishing scientific papers - Part VI: discussion by D. Kotz and J.W. Cals. 2013. J Clin Epidemiol. 66(10):1064.
9. Effective writing and publishing scientific papers - Part VII: tables and figures by D. Kotz and J.W. Cals. 2013. J Clin Epidemiol. 66(11):1197.
10. Effective writing and publishing scientific papers - Part VIII: references by D. Kotz and J.W. Cals. 2013. J Clin Epidemiol. 66(11):1198.
11. Effective writing and publishing scientific papers - Part IX: authorship by D. Kotz and J.W. Cals. 2013. J Clin Epidemiol. 66(12):1319.
12. Effective writing and publishing scientific papers - Part X: choice of journal by D. Kotz and J.W. Cals. 2014. J Clin Epidemiol. 67(1):3.
13. Effective writing and publishing scientific papers - Part XI: submitting a paper by D. Kotz and J.W. Cals. 2014. J Clin Epidemiol. 67(2):123.
14. Effective writing and publishing scientific papers - Part XII: responding to reviewers by D. Kotz and J.W. Cals. 2014. J Clin Epidemiol. 67(3):243.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 9: AGRICULTURAL MICROBIOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
MICROB-DSE 9: AGRICULTURAL MICROBIOLOGY	**4**	**2**	**0**	**2**	**Class XII pass with Biology/ Biotechnology/ Biochemistry**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- The main objective of this paper is to enable students to develop a clear understanding of the importance of microbes in agriculture to enable them to find eco-friendly solutions to agricultural problems.
- Students will get an overview of soil characteristics and the role of microbes and plant-microbe interactions in soil fertility. Students will study about the production and application of different types of commercial biofertilizers, become familiar with microbial biocontrol agents, and gain knowledge of composting, and organic farming. They will gain insights into recent trends in agriculture including agrowaste management and transgenics

Learning outcomes

The Learning Outcomes of this course are as follows:

- Student will be able to explain types of soil and its characteristics, important microorganisms involved in mineralization of essential nutrients present in the soil and their significance in agriculture, plant-microbe interactions including symbiotic and asymbiotic associations, the commercial production of biofertilizers and method of composting.

- Student will be able to describe eco-friendly ways to control agricultural pests and pathogens, the mode of action, mass production and field applications of various biocontrol agents.
- Student will be able to discuss the recent trends in agricultural microbiology with reference to agrowaste management, organic farming and transgenic plants.
- Student will be able to demonstrate the isolation and screening of various microbes important in soil fertility (PGPR, VAM), the isolation of microorganisms from commercially available biofertilizers.
- Student will be able to explain the different stages of nodule development in leguminous plant roots and will observe nodule-forming bacteria under the microscope, the antagonistic potential of Trichoderma spp. as biological control agent against other fungi.
- Student will be able to describe composting as one of the ways of agrowaste management, the role of thermophiles in composting and the different enzymes involved in biodegradation, steps of mass production of blue green algae and application of microbes in organic farming/biogas production.

Theory: **30 hours**

Unit 1: (14 hours)

Soil fertility and Biofertilizers: Physical and chemical characteristics of different types of soil. Macro and micronutrients in soil. Role of NPK and biogeochemical cycles in soil fertility. Scope of microbes as biofertilizers and their advantages over chemical fertilizers. Isolation, characteristics, mass production and field applications of biofertilizers- Symbiotic: *Rhizobium, Frankia, Acetobacter diazotrophicus*, *Anabaena,* Mycorrhizal associations with special emphasis on VAM/AM fungi. Asymbiotic**:** Nitrogen-fixing bacteria (*Azospirillum, Azotobacter*), Plant growth promoting rhizobacteria (PGPR). Composting: types, methods, applications.

Unit 2: (8 hours)

Biocontrol agents and Biopesticides: Importance, potential and types of biocontrol agents. Microbes used as biopesticides, their mode of action, and advantages over chemical pesticides. Mass production and field applications of *Bacillus thuringiensis*, *Baculoviruses, Beauveria bassiana*, *Metarhizium anisopliae* and *Trichoderma spp*.

Unit 3: (8 hours)

Recent trends in Agriculture Microbiology: Agrowaste management and its significance: Biofuel, Bioenergy, Animal Feed. Organic farming: types, methods and advantages. Development of transgenic plants: *Agrobacterium*-mediated plant transformations with specific example of Bt cotton.

Practicals: **60 hours**

Unit 1: (28 hours)

Isolation of microbes important in soil fertility: Isolation and screening of plant growth promoting rhizobacteria (PGPR) from soil. Isolation of microbes from commercially available biofertilizers using solid media. Isolation of VAM spores from the soil sample using "Wet-sieving and decanting technique" for spores extraction and observing them under microscope. Study of VAM colonization using temporary slides/photographs.

Unit 2: (16 hours)

Study of microbe interactions in soil: Demonstration of stages of nodule formation in leguminous plant with the help of photographs. Slide preparation of crushed nodule to observe nodule forming bacteria. Study of antagonistic activity of *Trichoderma* sp. against different fungi (any 2) using dual culture plate technique. Test of antagonistic efficacy on potato dextrose agar: simultaneous inoculation of antagonist and test fungus at two extreme positions and recording of zone of inhibition after 5 days of incubation.

Unit 3: (16 hours)

Agrowaste management: Hands-on training in composting using a variety of plant/food waste. Isolation of thermophiles from compost and qualitative assay of any two enzymes (amylase/cellulase/xylanase) using compost sample. Visit to mass production facility of blue green algae/biogas plant/organic farm.

Suggested Reading (Theory & Practical):

1. Benson's Microbiological Applications, Laboratory Manual in General Microbiology by A. E. Brown and H. Smith.15th edition. McGraw-Hill Education, USA. 2022.
2. Biopesticides and Bioagents: Novel tools for pest management by M. A. Anwer. Ist edition. Apple Academic Press, USA. 2021.
3. Bioprocess Technology by P. T. Kalaichelvan and I. A. Pandi. 1st edition. MJP Publishers, India. 2021 (reprint).
4. Microbiology: A Laboratory Manual by J. Cappuccino and C.T. Welsh. 12th edition. Pearson Education, USA. 2020.
5. Soil Microbiology by N.S. Subba Rao. 5th edition. Oxford & Ibh Publishing, USA. 2020.
6. Prescott's Microbiology by J. M. Willey, K. Sandman and D. Wood. 11th edition. McGraw Hill Higher Education, USA. 2019.

7. Biofertilizers in Agriculture and Forestry by N.S. Subba Rao. 4th edition. Medtech. India. 2019.

8. Advances in soil microbiology: recent trends and future prospects by T.K. Adhya, B. Lal, B. Mohapatra, D. Paul and S. Das. Volume 2. Springer, Singapore. 2018.

9. Experiments in Microbiology, Plant Pathology and Biotechnology by K. R. Aneja. 5th Edition. New Age International Publishers, India. 2017.

10. Development of Bioinsecticides by F. Saleem A.R. Shakooori. Lap Lambert Academic Publishing, European Union. 2012.

11. Advanced Environmental Biotechnology by S.K. Aggarwal. 1st edition. APH publication, India. 2005.

12. Biotechnology of Biofertilizers edited by S. Kannaiyan. 1st edition. Springer, Netherlands. 2002.

13. Bioinoculants for Sustainable Agriculture and Forestry by S.M. Reddy. 1st edition Scientific Publishers, India. 2002.

14. Microbial Ecology: Fundamentals and Applications by R.M. Atlas and R. Bartha. 4th edition. Benjamin Cummings, USA. 2000.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 10:
PRINCIPLES OF GENETICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
MICROB-DSE 10: PRINCIPLES OF GENETICS	**4**	**2**	**0**	**2**	**Class XII pass with Biology/ Biotechnology/ Biochemistry**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- The main objective of this course is for students to gain knowledge of the major concepts of genetics. Students will build a foundation for understanding the basic principles of inheritance and heredity starting from classical genetics, and will gain insights into chromosomal behaviour, rearrangements and their consequences.
- Students will also learn about complex multifactorial quantitative genetics and population genetics in relation to survival and evolution. Through this course the students will develop a better understanding of life processes, survival and maintenance.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Student will be able to explain the laws of inheritance, linkage, crossing over and its application to gene mapping.
- Student will be able to describe the mechanisms for extranuclear inheritance, complex traits and population genetics principles, model organisms of genetic research.
- Student will be able to explain pedigree analysis, aberrations in chromosomal structure and number.
- Student will be able to demonstrate the techniques of karyotyping and chromosome banding, the giant chromosomes.

Theory: **30 hours**

Unit 1: (12 hours)

Introduction to basics of Genetics: History: A brief account of early genetic experiments: Mendel's work. Studying variation: phenotype and genotype. Single gene inheritance pattern: concept of alleles, allelic interactions, autosomal and X-linked inheritance. Concept of segregation, penetrance, expressivity. Test for allelism: complementation. Two- gene inheritance pattern: independent assortment versus linkage. Molecular basis of phenotypic variation and inheritance patterns. Introduction to genetic maps: three point test crosses.

Unit 2: (9 hours)

Extra-nuclear inheritance and epigenetics: Introduction and rules of extra-nuclear inheritance. Organelle heredity: chloroplast mutations in *Chlamydomonas* and *Mirabilis jalapa.* Maternal effect: shell coiling in *Limnaea peregra.* Infectious heredity: Kappa particles in *Paramecium.*

Unit 3: (9 hours)

Quantitative and Population Genetics: Polygenic inheritance, Johannsen pure-line theory, multiple factor hypothesis. Types of quantitative traits, heritability and its measurements. Genetic structure of populations, gene pool, genotype frequencies, allele frequencies. Hardy–Weinberg Law: Assumptions and Predictions.

Practicals: **60 hours**

Unit 1: (30 hours)

A review of model organisms for genetic analysis: **Student group research study**: Organisms for genetic research: *Escherichia coli, Saccharomyces cerevisiae, Neurospora crassa, Drosophila melanogaster, Caenorhabditis elegans, Arabidopsis thaliana, Tetrahymena thermophila*. Case studies highlighting one major biological finding from studies with each of these organisms. Understanding genetic analysis through problem solving: statistical analysis of given genetic data by Chi-Square Analysis.

Unit 2: (20 hours)

Studying inheritance in humans: Pedigree analysis: chromosomes and aberrations through karyotyping and chromosome banding techniques.

Unit 3: (10 hours)

Study of Giant Chromosomes: Polytene and Lampbrush chromosomes. Preparation of temporary mounts of salivary glands of *Chironomus* / *Drosophila* larvae, and their visualization by bright field microscopy. Study of lampbrush chromosomes through permanent mounts.

Suggested Reading (Theory & Practical):

1. Introduction to genetic analysis by A. Griffiths, J. Doebley, C. Peichel and D. Wassarman. 12th edition. Macmillan Learning. 2020.
2. Laboratory Manual for Principles of Genetics by W. Mhiret. Lap Lambert Academic Publishing. 2020.
3. Concepts of Genetics by W.S. Klug, M.R. Cummings, C. Spencer and M. Palladino. 12thedition. Pearson Education, USA. 2019.
4. Genetics: A Conceptual Approach By B. Pierce. 7th edition. W.H. Freeman and Co. 2019.
5. Genetics: Analysis of Genes and Genomes by D. Hartl and B. Cochrane. 9th edition. Jones and Bartlett Learning, USA. 2017.
6. Introducing Epigenetics : A graphic guide by C. Ennis. Icon Books Ltd, India. 2017.
7. iGenetics- A Molecular Approach by P.J. Russell. 3rd edition. Pearson Education India. 2016.
8. Principles of Genetics by D. Snustad and M. Simmons. 7th edition. Wiley and Sons, UK. 2015.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 11: MICROBIAL BIOTECHNOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
MICROB-DSE 11: **MICROBIAL BIOTECHNOLOGY**	**4**	**2**	**0**	**2**	**Class XII pass with Biology/ Biotechnology/ Biochemistry**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- The main objective of this course is to give students an overview of the beneficial role of microbial biotechnology in the welfare of humankind. They will learn about harnessing the power of microorganisms to manufacture medicinal, industrial, and agricultural products.
- Students will be acquainted with the large-scale culturing of microorganisms to produce various metabolites at a commercial scale. Students will gain hands-on experience in screening samples for enzyme and pigment producers and dye degrading microorganisms. They will learn to immobilise enzymes and cells and use enzyme-based biosensors for analytical purposes.
- The students will get conversant with applications of bioremediation and the protection of intellectual property rights.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Student will be able to describe the emerging biotechnology industries at the national and international level, use of microbe-based technologies and innovations for the benefit of mankind.
- Student will be able to explain the potential use of high-yielding microorganisms to commercially produce human therapeutics and industrial products, biosensors and steroid biotransformation.

- Student will be able to describe how microorganisms are utilized for the industrial production of biofertilizers and biopesticides, their potential use in environmental pollution management.
- Student will be able to demonstrate immobilization of biocatalysts (whole cells/enzymes) and explain how this technology can find applications in large-scale enzymatic reactions, bioremediation and designing of biosensor-based kits.
- Student will be able to explain the screening of environmental samples to isolate organisms with desired properties (enzyme production, pigment production, dye degradation).
- Student will be able to describe the research work involving GMOs and approvals required thereof and will appreciate the importance of protecting Intellectual Property Rights.

Theory: **30 hours**

Unit 1: (4 hours)

Microbial Biotechnology as an emerging Industry: Global Biotechnology industries and their products. Biotechnology trends in India with particular reference to our country's premier biotechnology institutes and industries and their products : Biocon, Serum Institute of India, Bharat Biotech and Hindustan Antibiotics Ltd. Innovations and Startups based on Microbial Biotechnology. Biotechnology in mass production of valuable products using microorganisms and advantages of using microorganisms (Laboratory, pilot and industrial- scale bioreactors).

Unit 2: (14 hours)

Microbial Biotechnology in the development of human therapeutics and industrial products: Prokaryotes and eukaryotes as expression hosts for heterologous proteins. Microbial production of therapeutic recombinant products: hormones (insulin, human growth hormone), thrombolytic agents (streptokinase and tPA) and vaccines (Hepatitis B and Covid-19 vaccines). Industrial bulk products: Production of microbial polysaccharides (xanthan gum and agar-agar), bioplastics (PHB), food-grade pigments/colorants (phycocyanin and Beta-carotene/lycopene), high fructose corn syrup. Development and functioning of enzyme- based biosensors (GOD and cholesterol oxidase). Microbial transformation of steroids**.**

Unit 3: (12 hours)

Role of Microbial Biotechnology in agriculture and environment management: Biofertilizers: liquid and carrier-based biofertilizers. Mass production of *Rhizobium, Acetobacter diazotrophicus, Azotobacter sp*. Commercial production of Biocontrol agents (*Bacillus thuringiensis* & *Trichoderma harzianum*). Development of transgenic crops with particular emphasis on insect resistance, viral resistance and nutritional quality enhancement (Bt-brinjal, Roundup-ready crops and golden rice). RNAi and its application in crop improvement. Edible vaccines, synthetic meat and Single Cell Protein (*Spirulina* & *Fusarium graminearum*), biodiesel production (algal biofuel).

Microbial bioremediation of oil spills using genetically modified organisms (GMOs) and microbial consortia. Microorganisms in the removal of heavy metals from aqueous effluents and copper bioleaching.

Practicals: **60 hours**

Unit 1: (18 hours)

Immobilization of enzymes, cells and biosensors: Immobilization of yeast cells (*Saccharomyces cerevisiae*) by entrapment using calcium alginate beads/agarose/agar and determination of the invertase activity of the immobilized cells by carrying out an invertase assay. Immobilization of an enzyme (amylase/urease/invertase) using calcium alginate/ agarose/ agar and study of its long term storage stability using enzyme assays. Use of an enzyme-based biosensor (glucose oxidase/glucose-1-dehydrogenase based devices to monitor glucose uptake/consumption during a fermentation; cholesterol oxidase/beta- hydroxybutyrate dehydrogenase-based kits to monitor changes in levels of the substrate over a period of time).

Unit 2: (30 hours)

Screening for enzymes and pigment-producer / dye-degrading microorganisms, and expression of a cloned gene: Primary screening of soil samples to isolate microorganisms that produce hydrolytic enzymes (any one): amylase, protease, lipase, CM cellulase, xylanase. Isolation of pigment-producing microorganisms from the environment and laboratory-scale production of any pigment using the shake-flask technique OR Screening for dye-degrading (methylene blue/ methyl orange/ Rhodamine B, etc.) microorganisms from the environment using plate assays and study of the absorption spectra of any dye. Transformation and expression studies of a given plasmid (expressing Green Fluorescent Protein) in the BL21 strain of *E coli,* analysis of protein expression using SDS-PAGE.

Unit 3: (12 hours)

An orientation to the biosafety regulatory framework for Genetically Modified Organisms (GMOs) in India: An introduction to different methods of protecting Intellectual Property in India (Patents, Copyrights, Trademarks, Geographical Indications, Industrial Design and New Plant Varieties). Filing applications for approval of research proposals by the concerned regulatory bodies. Filing of a patent application to the regulator for the protection of a GMO. **Student group research project:** Case study of any microbial consortium available in India for environmental bioremediation.

Suggested Reading (Theory & Practical):

1. Industrial Microbiology by A.H. Patel. 2nd edition. Laxmi publication Pvt Ltd/Trinity Press. 2022.

2. Microbiology: A Laboratory Manual by J. Cappuccino and C.T. Welsh. 12th edition.

Pearson Education, USA. 2020.

3. Industrial Microbiology by L.E. Casida. 2nd edition. New Age International Publisher. 2019.

4. Intellectual Property Rights in India. Pidigam Saidaiah and K. Ravinder Reddy. International Books and Periodical Supply Service. 2020.

5. Prescott's Microbiology by J. M. Willey, K. Sandman and D. Wood. 11th edition. McGrawHill Higher Education, USA. 2019.

6. Crueger's Biotechnology: A Textbook of Industrial Microbiology by W. Crueger, A. Crueger and K.R.Aneja. 3rd edition. Medtech Publisher, India. 2017.

7. Principles of Fermentation Technology by P.F. Stanbury, A.Whitaker and S.J. Hall. 3rd edition. Elsevier Science Ltd, Netherlands. 2016.

8. Benson's Microbiological Applications: Laboratory Manual in General Microbiology by A.E. Brown and H. Smith. 15th edition. Mc-Graw Hill Education, USA. 2022.

9. Manual of Industrial Microbiology and Biotechnology by R.H. Baltz, A.L.Domain, and J.E. Davies. 3rd edition. American Society for Microbiology. 2010.

10. Molecular Biotechnology by B.R. Glick, J.J. Pasternak and C.L. Patten. 4th edition, ASM Press, USA. 2009.

11. Microbial Biotechnology: Fundamentals of Applied Microbiology by A.N. Glazer and H. Nikaido. 2nd edition. W.H. Freeman and Company, UK. 2007.

12. Manual of Industrial Microbiology and Biotechnology by A.L. Demain, J.E. Davies and R.M. Atlas. 2nd edition. ASM Press, USA. 1999.

13. The DBT portal: https://dbtindia.gov.in/regulations-uidelines/regulations/biosafety- programme

14. Intellectual Property Rights: Chapter III on the INFLIBNET portal: http://shodhganga.inflibnet.ac.in/bitstream/10603/205165/7/chapter%20iii.pdf

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 12: RESEARCH METHODOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
MICROB-DSE 12: RESEARCH METHODOLOGY	4	2	0	2	Class XII pass with Biology/ Biotechnology/ Biochemistry	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- The main objective of the course is to give the students a broad understanding about research approaches and tools, and importantly, an ability to deploy them in their degree programme.
- This will impart skills for critical reading of research literature, various research methods, including theory of scientific research and qualitative and quantitative methods and for developing a research proposal. The course will outline all the fundamentals of carrying out research in an ethical manner.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Student will be able to explain the basics of research and hypothesis formulation, the different approaches of doing research, acquiring data, and performing data analysis.
- Student will be able to describe the process of scientific writing and presenting of research data.
- Student will be able to demonstrate the process of effective literature search and writing a review.
- Student will be able to analyse datasets and present them through tables, charts and graphs.
- Student will be able to describe the process of writing proposals for research grants.

Contents:

Theory **30 hours**

Unit 1: (8 hours)

Foundation of research and research ethics: What is research, benefits of research. Selection of research topic. Effective literature search. Problem identification and hypothesis building. Qualities of a good hypothesis, hypothesis testing, null hypothesis and alternative hypothesis, logic and importance. Ethics in research: indices for scientific rigor, honesty and integrity, respect for intellectual property, responsible publication of data.

Unit 2: (14 hours)

Approaches to research and research methods: Basic and applied research, descriptive and analytical research, quantitative and qualitative research, experimental and non-experimental research. Good laboratory practices (GLP): Standard Operating Procedures, Biosafety, Radiation safety. Experimental Design. Concept of Experiment Controls. Concept of independent and dependent variables. Recording experimental protocol and data in lab notebooks, preparation for experiments. Field experiments: sampling, types of sampling studies, characteristics of a good sample, sampling frame, sample size, sampling error, scales of measurement, double blind studies. Data analysis and representation: Use of Excel for tables and charts, Common statistical tests (hypothesis of association, student t test) and introducing popular

statistical packages.

Unit 3: (8 hours)

Research Communication: Knowledge dissemination. Effective presentation in scientific conferences (Poster/oral). Structure of research paper. Structure of a thesis/dissertation. Software for scientific paper formatting (LaTeX/MS Office). Software for management of references (Mendeley/Endnote). Software for image processing. Choosing a journal for publication. Impact factor of journals. Ethical issues related to publishing, plagiarism, software for detection of plagiarism.

Practicals: **60 hours**

Unit 1: (20 hours)

Literature Search and Review: General Search Engines, Bibliographic Databases, Digital Libraries, Types of publications, literature search on a given topic and writing a review.

Unit 2: (20 hours)

Analysis and presentation of given dataset: Training in the use of Microsoft Excel for data presentations in tables, graphs and charts. Training in the use of Microsoft Powerpoint for presenting scientific findings at meetings/conferences. Writing an Abstract for paper/conference based on given data.

Unit 3: (20 hours)

Planning and writing a research proposal: General considerations, finding a research problem. Major Funding agencies in India. Mandate of the call for proposals. How to write a proposal. **Student group project**: writing a research proposal on a given topic

Suggested Reading (Theory & Practical):

1. Research Methodology for Natural Sciences by S. Banerjee. I.I.Sc. Press, India. 2022.
2. Research Methodology and Scientific Writing by C.G. Thomas. 2nd edition. Ane Books, India. 2019.
3. Scientific writing and communication by A. Hoffman. 4th edition. Oxford University Press. 2019.
4. Research Methodology: Methods and Techniques by C.R. Kothari. 4th edition. New Age International Publishers, India. 2019.
5. Testing treatments: Better research for better healthcare by I. Evans, H. Thornton, I. Chalmers and P. Glasziou. 2nd edition. Pinter & Martin Ltd, UK. 2013.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 13:
Applications of Informatics in Biology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
MICROB-DSE 13: **Applications of Informatics in Biology**	**4**	**2**	**0**	**2**	**Class XII pass with Biology/ Biotechnology/ Biochemistry**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- The main objective of this paper is to enable the students to develop a clear understanding of the various concepts and applications of bioinformatics, a field which encompasses diverse applied disciplines such as molecular biology, genomics, proteomics, transcriptomics and systems biology. Students will also learn applications of artificial intelligence in bioinformatics.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Student will be able to explain the goals of bioinformatics and its applications, diverse types of biological databases, concept and significance of sequence alignment, phylogeny, types of phylogenetic trees.
- Student will be able to describe the diversity of viral, prokaryotic, eukaryotic genomes and their organization, proteomics along with the details of structure of proteins, protein structure prediction, and energy minimizations.
- Student will be able to explain the significance of artificial intelligence and machine learning in various biological applications, computer-aided drug discovery, epitope prediction and its significance in vaccine development and allergen prediction.
- Student will be able to demonstrate how to work with biological databases, similarity searches, sequence alignments and phylogenetic analysis.

- Student will be able to demonstrate working with databases and analysis, gene prediction and other features, and primer designing.
- Student will be able to demonstrate how to identifying secondary structural features of proteins, prediction of protein structure models from amino acid sequences, molecular docking and epitope prediction.

Contents:

Theory: **30 hours**

Unit 1: (10 hours)

Fundamentals of bioinformatics, sequence alignment and phylogeny: Aims and scope of bioinformatics. Concepts of genome, transcriptome, proteome, systems biology, metabolome, interactome and neural network. Biological databases and types. Sequence similarity and Sequence alignment (Local and Global Sequence alignment), pairwise and multiple sequence alignment. Phylogeny, rooted and unrooted trees.

Unit 2: (10 hours)

Genomics and Proteomics: Features of the viral, prokaryotic (*E. coli*) and eukaryotic (human) genomes. Gene Ontology, Hierarchy, and features of protein structure, Structural classes, motifs, folds and domains. Homology modelling of tertiary structure of protein, Molecular dynamic simulations and energy minimizations, Evaluation by Ramachandran plot.

Unit 3: (10 hours)

Artificial Intelligence in bioinformatics: Role of AI and machine learning in biology (proteomics, structural biology, disease management, drug discovery and genomics). Computer-aided drug discovery and design. Bioinformatics in epitope mapping for vaccine design and allergen prediction.

Practicals: **60 hours**

Unit 1: (24 hours)

Biological Databases, similarity search, sequence alignments and phylogenetic analysis: Study of bioinformatics databases, File formats: FASTA, GenBank. Sequence submission tools: NCBI, PDB. Sequence retrieval and similarity search using BLAST, Multiple sequence (DNA/Protein) alignment using CLUSTAL omega. Phylogenetic analysis using MEGA.

Unit 2: (16 hours)

Identification and analysis of genome features: Picking out a given gene from genomes using

GENSCAN or other software (promoter region identification, repeats in the genome, ORF prediction, Gene finding tools), Genome browsing using Ensemble/Genome Data Viewer (NCBI) for features of E. coli and Human Genome (Search a genomic assembly to display a region annotated with a particular gene), Design and analysis of PCR primers using PRIMER BLAST or any other tool.

Unit 3: (20 hours)

Protein structure prediction and evaluation, molecular docking, epitope prediction: Primary structure analysis. Secondary structure prediction using psi-pred. Molecular visualization using JMOL/PyMOL, protein structure model evaluation, virtual screening of drugs using AUTODOC-VINA/ any other software, Demonstration of IEDB (https://www.iedb.org) server for the prediction of HLA class I and II binding epitopes.

Suggested Reading (Theory & Practical):

1. Bioinformatics: Tools and Techniques edited by L. Baker. 1st edition. Callisto. 2018.
2. Applied Bioinformatics: An Introduction by P. Selzer, R. Marhöfer and O. Koch. 2nd edition. Springer, USA. 2018.
3. Bioinformatics Techniques for Drug Discovery: Applications for Complex Diseases by A. Kaushik, A. Kumar, S. Bharadwaj and R. Chaudhary. 1st edition. Springer International, UK. 2018.
4. Foundations of Computing by P. Sinha and P.K. Sinha. 6th edition. BPB Publications, India. 2017.
5. Basic Applied Bioinformatics by C. Mukhopadhyay, R. Choudhary and M.A. Iquebal. 1st edition. Wiley-Blackwell, USA. 2017.
6. Bioinformatics: Principles and Applications by Z. Ghosh and V. Mallick. 1st edition. Oxford University Press, India. 2015.
7. Introduction to Bioinformatics by M.Lesk. 4th edition. Oxford Publication, UK. 2014.
8. Bioinformatics: methods and applications, genomic, proteomics and drug discovery by S. Rastogi, N. Mendiratta and P. Rastogi. 4th edition. Prentice Hall India Publication. 2007.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 14: ADVANCES IN MICROBIOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
MICROB-DSE 14: ADVANCES IN MICROBIOLOGY	**4**	**2**	**0**	**2**	**Class XII pass with Biology/ Biotechnology/ Biochemistry**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- The main objective of this course is to educate students about the latest developments in the field of microbiology and apprise them of the cutting-edge technologies being used for research and development.
- They will learn the uses of omics approaches, meta-omics, systems biology, and synthetic biology. They will become familiar with the development and applications of CRISPR-Cas technology and will gain insights into the versatile field of microbial nanotechnology.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Student will be able to discuss the host-microbe arms race, newer methods to combat challenges of antimicrobial resistance and biofilms, the use of meta-omics approaches in research, latest cutting-edge technology of CRISPR-Cas and its applications.
- Student will be able to explain the Systems and Synthetic Biology and their applications; the principles, techniques, and applications of the versatile field of nanobiotechnology.
- Student will be able to demonstrate soil metagenomics and PCR-based taxonomy analysis, and describe major metagenomics projects worldwide through case studies.
- Student will be able to demonstrate synthesis and testing of silver nanoparticles with antimicrobial properties from plant, fungal/bacterial

extracts; and explain about the analytical research tools to characterize the nanoparticles.

- Student will be able to describe Poliovirus synthesis, mRNA vaccine synthesis and Genome synthesis of mycoplasma through case studies.

Contents:

Theory: 30 hours

Unit 1: (10 hours)

Host- microbe interactions and use of microbes in healthcare: Host-Microbe arms race, genome- pathogenicity islands, Type Three Secretion System (T3SS), Quorum Sensing, and Biofilm formation in bacteria. Viral zoonosis and pandemics. Gene for Gene hypothesis, hypersensitive response, plant resistance genes, and signal transduction mechanism. Addressing the challenges of Anti-Microbial Resistance (AMR) and biofilms by phages, and of cancer through oncolytic viruses.

Unit 2: (10 hours)

Modern molecular techniques in Microbiology: Meta-Omics technology (Metagenomics, Metatranscriptomics, Metaproteomics, and Metabolomics): Principles, techniques deployed, and applications. CRISPR-Cas technology- History, mechanism, applications (in Health, Agriculture and other Industries) and limitations of this technology.

Unit 3: (10 hours)

Systems biology, Synthetic biology, and Nanobiotechnological Approaches in Microbiology: Systems biology approach for holistic perspectives and better outcomes. Types of Biological Networks. Cell signaling and interaction networks. Synthetic biology: principles and applications. Concept, methodology, and applications of Microbial Nanotechnology in health, agriculture, and food industry. Applications of Viral and Viral-like Nanoparticles.

Practicals: 60 hours

Unit 1: (20 hours)

Metagenomic technique to study soil microorganisms: Hands-on training in extraction of DNA from soil, and PCR amplification of metagenomic DNA using universal16S ribosomal gene primers. **Student group project:** Research and review on major metagenomic projects (Sargasso Sea Project, Viral Metagenomics and Human Microbiome Project)

Unit 2: (25 hours)

Synthesis and analysis of silver nanoparticles from plants extracts and microbes (fungi/bacteria). Hands-on training in synthesis of silver nanoparticles by any one method. Testing of antimicrobial properties of synthesized silver nanoparticles. Characterization of nanoparticles by UV-vis Spectroscopy, X-ray Diffraction (XRD), Scanning and Transmission Electron Microscopy (SEM and TEM) through virtual labs / videos. Visit to Sophisticated Instrumentation Facility of a research institution.

Unit 3: (15 hours)

Student research study project: Poliovirus Synthesis: a case study to understand how the poliovirus was synthesized in the laboratory. mRNA-Vaccine Synthesis: a case study of the steps involved in synthesis of mRNA vaccine and testing its efficacy. **Student group project**: Covid19 mRNA vaccines in the market in India and overseas. Genome synthesis of mycoplasma: a case study to develop a synthetic genome of mycoplasma.

Suggested Reading (Theory & Practical):

1. Brock Biology of Microorganisms by M.T. Madigan, and J.M. Martinko. 16th edition. Pearson., USA. 2021.
2. Microbiomes: Current Knowledge and unanswered Questions by E. Rosenberg. Springer Nature, Switzerland. 2021.
3. An Introduction to Systems Biology: Design, Principles of Biological Circuits by Uri Alon, 2nd edition. CRC Press. 2020.
4. Antimicrobial Resistance: Global Challenges and Future Interventions edited by Sabu Thomas. Springer. 2020.
5. Biological Synthesis of Nanoparticles and Their Applications, by L. Karthik, A. Vishnu Kirthi, S. Ranjan, V. M. Srinivasan. CRC Press, Taylor and Francis, USA. 2020
6. Genomic Engineering via CRISPR-Cas 9 system edited by Vijay Singh and Pawan K. Dhar. Academic Press. 2020
7. Microbial Nanotechnology edited by M. Rai and Golinsky P. CRC Press. 2020
8. Bacterial Pathogenesis: A Molecular Approach by B.A. Wilson, A.A. Salyers, D. D. Whitt, and M.E. Winkler. 4th edition. ASM Press, USA. 2019.
9. Implications of Quorum Sensing and Biofilm formation in Medicine, Agriculture and Food Industry by P. V. Bramhachari. Springer. 2019.
10. Nanotechnology in Food: Concepts, Applications, and Perspective by H.J. Malmiri. Springer. 2019.
11. Quorum Sensing: Molecular Mechanism and Biotechnological Applications by G. Tommonaro. Academic Press, USA. 2019.
12. Agricultural Nanobiotechnology: Modern Agriculture for a Sustainable Future by F. Lopez-Valdez and F. Fernandez-Luqueno. Springer. 2018.

13. Implications of Quorum Sensing System in Biofilm Formation and Virulence by Bramhachari. Springer. 2018.
14. Nanobiotechnology: Human Health and the Environment by A. Dhawan, S. Singh, A. Kumar, and R. Shanker (editors). CRC Press, USA. 2018.
15. Synthetic Biology: Omics Tools and their Applications by Shailza Singh. Springer. 2018
16. Viral Metagenomics: Methods and Protocol by V. Pantaleo and M. Chiumenti. Springer Protocols. Humana Press. 2018.
17. Virus Derived Nanoparticles for Advanced Technologies-Methods and Protocols by C. Wege and G. Lomonsoff. Humana Press, Springer, USA. 2018.
18. Microbial Biofilms: Omics Biology, Antimicrobials and Clinical Implications by C. J. Seneviratne. CRC Press. 2017.
19. Precision Medicine, CRISPR, and Genome Engineering: Moving from Association to Biology and Therapeutics by S. H. Tsang. Springer. 2017.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 15: MICROBIOME IN HEALTH AND DISEASE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
MICROB-DSE 15: MICROBIOME IN HEALTH AND DISEASE	4	2	0	2	Class XII pass with Biology/ Biotechnology/ Biochemistry	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- The main objective of this course is to introduce the human microbiome to students and give them an understanding of its dynamics and function in maintaining homeostasis.
- Students will gain an understanding of the diversity of microbial communities present in various organs in humans. They will gain insights into our current understanding of the impact of microbiome alterations on host health and disease. Students will become aware of techniques used to analyze large omics data sets in investigating microbial communities colonizing humans.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Student will be able to explain about human microbiome and methods to study microbiomes, the link between human microbiome and diseases
- Student will be able to describe microbiome-based therapeutic approaches and their challenges, human microbiome project and various databases and software for microbiome analysis
- Student will be able to discuss the basic workflow in a typical microbiome study and analyze microbiome data

- Student will be able to describe current knowledge on the role of microbiome in various diseases

Contents:

Theory **30 hours**

Unit 1: (14 hours)

The human microbiome: Understanding microbiome, importance of microbiome research, development of the microbiome. Vertical and horizontal transfer of human microbiomes, source of the organisms in the human microbiome. Diversity in oral, gut, respiratory and skin microbiome. Microbiome-Gut-Brain Axis. Methods to study the human microbiome: DNA-based analysis of microbial communities, 16S rDNA gene amplicon sequencing and whole metagenome shotgun sequencing methods. Data pre-processing and quality control. Microbiome data analysis: clustering and OTU picking, taxonomic analysis, alpha and beta-diversity. Comparing microbial communities: phylogenetic trees, UniFrac, principal coordinate analysis, Venn diagrams, heat maps. Functional and comparative analysis: metatranscriptome, metabolome, metaproteome.

Unit 2: (10 hours)

Microbiome and its relation to health and disease: Dysbiosis, correlation of dysbiosis with disturbance in microenvironment. Dysbiosis in progression of non-communicable diseases such as cancer, Inflammatory Bowel Disease (IBD), obesity, diabetes, Alzheimer's, and incommunicable diseases such as COVID-19, tuberculosis and typhoid. Nutritional modulation of the gut microbiome. Prakriti and gut bacteria: perspective of traditional ayurveda. Microbiome and host immune system interaction. Effect of antibiotics on microbiota, oral dysbiosis and oral diseases, skin microbiome alterations and cutaneous allergic diseases.

Unit 3: (6 hours)

Microbiome-based therapeutic approaches: Maintaining and restoring a healthy microbiome. Additive, subtractive, and modulatory microbiome-based therapies. Health benefits of prebiotics and probiotics. Fecal transplant and its applications. Challenges in the field of microbiome therapeutics. Microbiome-based diagnostics.

Practicals **60 hours**

Unit 1: (20 hours)

Tools and techniques to study microbiome: Human Microbiome project. Hands-on exposure to various databases (NCBI, HOMD) and opensource software related to microbiome analysis (microbiome analyst, QIIME 2.1, galaxy).

Unit 2: (20 hours)

Research strategy and experimental design in a typical microbiome study: Sample collection, DNA extraction, library preparation and DNA sequencing through virtual lab. Data analysis. Comparison of alpha and beta diversity in given data sets. Interpretations of given heat maps.

Unit 3: (20 hours)

Student group research study projects: Current knowledge on the role of microbiome in respiratory health, the impact of the human microbiome on auto-immune diseases, the interplay of bacteria and eukaryotic microbes in the human gut: presentation of the findings and submission of research study report.

Suggested reading (Theory & Practical):

1. Recent Advances in Understanding the Structure and Function of the Human Microbiome by W. Mousa, F. Chehadeh, and S. Husband. *Frontiers In Microbiology*, *13*. doi: 10.3389/fmicb.2022.825338. 2022.

2. *Microbiome-Gut-Brain Axis* by R. Sayyed and M. Khan. Springer, Singapore. 2022.

3. Targeting the Gut Microbiota for Remediating Obesity and Related Metabolic Disorders by B. Wang et al. J Nutr. 151:1703-1716. http://doi: 10.1093/jn/nxab103. 2021.

4. The human microbiome and COVID-19: A systematic review by S. Yamamota. *PloS One* 16;6. doi:10.1371/journal.pone.0253293. 2021.

5. Metagenomics: Techniques, Applications, Challenges and Opportunities by R.S. Chopra, C. Chopra and N.R. Sharma. Springer. 2020.

6. Gut-Brain Axis: Role of Gut Microbiota on Neurological Disorders and How Probiotics/Prebiotics Beneficially Modulate Microbial and Immune Pathways to Improve Brain Functions by K. Uganya and B.S. Koo. *International journal of molecular sciences*, *21*(20), 7551. 2020.

7. The Influence of the Gut Microbiome on Obesity in Adults and the Role of Probiotics, Prebiotics, and Synbiotics for Weight Loss by A. Aoun, F. Darwish and N. Hamod. Prev Nutr Food Sci., 25(2):113-123. doi: 10.3746/pnf.2020.25.2.113. 2020.
8. The gut microbiome in tuberculosis susceptibility and treatment response: guilty or not guilty? by Eribo, O. A., du Plessis, N., Ozturk, M., Guler, R., Walzl, G. and Chegou, N.N. *Cellular and molecular life sciences : CMLS*, *77*(8), 1497–1509. https://doi.org/10.1007/s00018-019-03370-4. 2020.
9. The influence of the microbiome on respiratory health by T.P. Wypych, L. Wickramasinghe and B. Marsland. *Nature Immunology*, *20* (10), 1279–1290. https://doi.org/10.1038/s41590-019-0451-9. 2019.
10. The microbiome, cancer, and cancer therapy by Helmink *et al*. *Nat Med* 25, 377–388. https://doi.org/10.1038/s41591-019-0377-7. 2019.
11. *Metagenomics* by M. Nagarajan. London: Academic Press. 2018.
12. The human skin microbiome by A.L. Byrd, Y. Belkaid, and J.A. Segre. *Nature reviews in Microbiology*, *16*(3), 143–155. https://doi.org/10.1038/nrmicro.2017.157. 2018.
13. Insights into the human oral microbiome by D. Verma, P.K. Garg and A.K. Dubey. *Archives of microbiology*, *200* (4), 525–540. https://doi.org/10.1007/s00203-018-1505-3. 2018.
14. Human Gut Microbiome: Function Matters by A. Heintz-Buschart and P. Wilmes. *Trends in microbiology*, *26*(7), 563–574. https://doi.org/10.1016/j.tim.2017.11.002. 2018.
15. *Functional Metagenomics: Tools and Applications* by T. Charles, M. Liles, A. Sessitsch, Springer. 2017.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 16:
MICROBIAL DIAGNOSIS AND PUBLIC HEALTH MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
MICROB-DSE 16: MICROBIAL DIAGNOSIS AND PUBLIC HEALTH MANAGEMENT	4	2	0	2	Class XII pass with Biology/ Biotechnology/ Biochemistry	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- The main objective of this course is to introduce the students to diagnostic microbiology and public health management. Students will be exposed to various methods of sampling of specimens for laboratory diagnosis.
- Student will be introduced to various automated systems and methods of pathogen identification and microbial typing. Students will develop an understanding of basic concepts of epidemiology. They will be introduced to the role of environment in human health and key aspects of disaster management.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Student will be able to explain the methods of collection and transport of clinical specimens, the automated systems for pathogen identification and various methods of microbial typing.
- Student will be able to describe epidemiology, types of epidemics and pandemics, the epidemiology of infectious diseases, the reservoirs of infectious agents and modes of transmission of various diseases.

- Student will be able to explain the concept of one health, various types of zoonoses, overview of air and water pollution and its impact on human health, the key aspects of disaster management.
- Student will be able to describe the significance of various parameters determining health, the methods of blood sampling used for various animals, and demonstrate rapid diagnostic techniques.
- Student will be able to analyze epidemiological data to calculate mortality and morbidity rates, explain about epidemics through case studies.
- Student will be able to describe various disease control regulatory agencies (National and International), genome and disease surveillance.

Contents:

Theory: **30 hours**

Unit 1: (10 hours)

General principles of diagnosis and microbial typing methods: Challenges of diagnosis. General principles of specimen collection. Choice of clinical samples and methods of collection. Transportation of clinical samples. Evaluation of a diagnostic test based on specificity, sensitivity, positive predictive value, negative predictive value. Automated systems of pathogen identification: a brief outline of BACTEC, MALDI-TOF, VITEK, and their advantages and disadvantages. Microbial typing: phage typing, bacteriocin typing, serotyping, antibiogram typing, plasmid profile analysis.

Unit 2: (12 hours)

Basic concepts of epidemiology: Definitions: health, epidemiology, prevalence, birth rate, morbidity, mortality, sero-prevalence, genome surveillance, R^o value, quarantine, endemic, epidemics and types (common source, propagated/progressive, mixed), pandemic, travel notice, public health guidelines. Uses of epidemiology. Infectious disease epidemiology. Modes of transmission of disease and its dynamics, human reservoirs, animal reservoirs, carriers. Investigation of an epidemic. Role of immunization in public health. Clinical trials: randomized control trials (multiple treatment arms, factorial design, cluster design), nonrandomized trials.

Unit 3: (8 hours)

Environment and Health: The concept of one health. Definition, history and socio-economic impact of zoonotic diseases. Classification of zoonoses with examples (based on transmission cycle: orthozoonoses, cyclozoonoses, metazoonoses, saprozoonoses;

based on reservoir hosts: anthrapozoonoses, zooanthroponoses, amphixenoses). Air pollution and its effects. Water pollution and its effect. Disaster management: key aspects.

Practicals: **60 hours**

Unit 1: (30 hours)

Health indicators, blood sampling methods and diagnostic methods: Student individual project: preparation of a short report on indicators of health. Guidelines and collection sites for sampling of blood from humans, cattle, sheep and goat. **Student group study project:** preparation of a flow chart for detection of microbial pathogens for two diseases prevalent in India. Principles and working of rapid antibody detection test using COVID-19 as example. Principles and working of antigen and antibody detection kits for HIV. Principle and working of slide agglutination test for typhoid. Principles and working of quantitative real time PCR test for COVID-19 through virtual lab.

Unit 2: (15 hours)

Epidemiological Data Analysis: Student group research study: Case studies of a common source epidemic (Cholera outbreak, London, 1854) and progressive epidemic (SARS 2002, MERS 2012, and COVID-19). **Student group research project**: Measurement of disease: determination of morbidity and mortality rates/ratios. Generation of epidemiological protocols and reports.

Unit 3: (15 hours)

Case Studies through student group research projects: INSACOG: role in SARS- CoV-2 genome surveillance, Role of WHO and National Centre for Disease Control in disease management, AMR stewardship and National Action Plan, CDC –EOC levels (www.cdc.gov).

Suggested Reading (Theory & Practical):

1. Park's Textbook of Preventive and Social Medicine by K. Park. 26th edition. Banarsidas Bhanot Publishers, India. 2021.

2. Brock Biology of Microorganisms by M.T. Madigan, K.S. Bender, D.H. Buckley, W.M.Sattley and D.A. Stahl. 16th edition. Pearson Education, USA. 2021.

3. Microbiology: A Laboratory Manual by J. Cappuccino and C.T. Welsh. 12th edition.

Pearson Education, USA. 2020.

4. Prescott's Microbiology by J. M. Willey, K. Sandman and D. Wood. 11th edition. McGrawHill Higher Education, USA. 2019.
5. National Centre for Disease Control: Anti-Microbial Resistance and COVID National Action plan: https://ncdc.gov.in/index1.php?lang=1&level=2&sublinkid=389&lid=347
6. Microbiology: An Introduction by G.J. Tortora, B.R. Funke,and C.L. Case. 13th edition. Pearson, USA. 2018.
7. Textbook of Microbiology by R. Ananthanarayan and C.K.J. Paniker. 10th edition.Universities Press, India. 2017.
8. Veterinary Microbiology by D. Scott McVey, Melissa Kennedy and M.M. Chengappa. 3rd edition. Wiley – Blackwell, USA. 2013.
9. An Introduction to Public Health and Epidemiology by S. Carr, N. Unwin and T. Pless-Mulloli. 2nd edition. Open University Press, UK. 2007.
10. Handbook of Good Dairy Husbandry Practices. National Dairy Development Board (NDDB). https://www.nddb.coop/sites/default/files/handbook_of_good_dairy_husbandry_practices_low.pdf
11. Mackie and McCartney Practical Medical Microbiology by J. Collee, A. Fraser, B. Marmion and A. Simmons. 14th edition. Elsevier. 1996.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 7: Engineering Mathematics

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Engineering Mathematics ELDSC-7	**4**	**3**	**00**	**1**	**Course Admission Eligibility**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- To provide the students with the skill and knowledge to perform calculations for solutions to the problems related to various topics that they would be taught during the course of this programme.
- To prepare the students with the mathematical tools they would require while studying and analysing problems in electronics networks, electronic and optical communications, semiconductor devices such as transistors, diodes, transient circuits in power devices, and problem solving in Electromagnetic theory, waveguides, and antennas.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Use mathematical tools to solve/model the problems related to Electronics
- Solve linear differential equations using a variety of techniques, power series method and special functions
- Understand to solve N coupled equations using matrices, concept of Eigen values and Eigen vectors
- Familiarize with the concept of sequences and series, convergence and divergence
- Appreciate the complex variables and perform operations with complex numbers

SYLLABUS OF ELDSC-7 Total Hours- Theory: 45 Hours, Practicals: 30 Hours

UNIT – I (12 Hours)

Ordinary Differential Equations(ODE): Introduction to First Order Ordinary Differential Equations, Separable Ordinary Differential Equations, Exact Ordinary Differential Equations, Linear Ordinary Differential Equations.

Series Solutions of ODE: Power Series method, Legendre Polynomials, Bessel's equations and Frobenius method.

Special functions: Beta and gamma functions, error functions

UNIT – II (11 Hours)

Matrices: Introduction to Matrices, System of Linear Algebraic Equations, Solution of a system of Linear equations by LU decomposition, Gauss Jordan and Gauss-Seidel Method. Symmetric and Skew Symmetric Matrices, Hermitian and Skew Hermitian Matrices. Real and Complex Matrices.

Matrix Eigen Value Problems: Linear transformation, Eigen values and Eigen vectors, Properties of Eigen values and Eigen vectors.

UNIT – III (11 Hours)

Sequences and Series: Sequences and its kind, Limits of a sequence, Convergent, Divergent and oscillatory sequences.

Convergence of Infinite series, Tests of Convergence: Cauchy's Integral Test, D'Alembert's Ratio Test, Cauchy's nth Root Test, Alternating Series Test.

UNIT – IV (11 Hours)

Complex Variables Analysis: Complex Variables, Complex functions, Continuity, Differentiability, Analyticity, Cauchy-Riemann (C-R) Equations, Harmonic and Conjugate Harmonic Functions, Exponential Functions, Trigonometric Functions, Hyperbolic Functions.

Complex Integration: Line integral in Complex Plane, Cauchy's Integral Theorem, Cauchy's Integral Formula. Taylor series-exponential, logarithmic and trigonometric functions.

Practical component (if any) – Engineering Mathematics

(Scilab/MATLAB/ any other Mathematical Simulation software)

Learning outcomes

The Learning Outcomes of this course are as follows:

- Perform operations with various forms of complex numbers to solve equations
- Use mathematics as a tool for solving/modeling systems in electronics
- Prepare the technical report on the experiments carried.

LIST OF PRACTICALS (Total Practical Hours- 30 Hours)

1. Solution of First Order Differential Equations
2. To test convergence of a given series.
3. To test divergence of a given series.
4. Solution of linear system of equations using Gauss Elimination method.
5. Solution of linear system of equations using Gauss – Seidel method.
6. Solution of linear system of equations using L-U decomposition method.
7. Plots of the exponential, logarithmic and trigonometric functions and comparison with the plots of their Taylor series expansion till first 10 terms

Note: Students shall sincerely work towards completing all the above listed practicals for this course. In any circumstance, the completed number of practicals shall not be less than six.

Essential/recommended readings

1. E. Kreyszig, Advanced Engineering Mathematics, Wiley India (2010), 10th Edition
2. Murray Spiegel, Seymour Lipschutz, John Schiller, Outline of Complex Variables, Schaum Outline Series, Tata McGraw Hill (2009), 2nd Edition
3. C .R. Wylie and L. C. Barrett, Advanced Engineering Mathematics, Tata McGraw-Hill (2004)
4. B. V. Ramana, Higher Engineering Mathematics, Tata McGraw Hill (2006)

Suggestive readings

1. R. K. Jain, and S.R.K. Iyengar, Advanced Engineering Mathematics, Narosa Publishing House (2007).

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 8: Analog Electronics-II

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Analog Electronics-II ELDSC-8	4	3	0	1	Course Admission Eligibility	Basic knowledge of BJT based circuits

Learning Objectives

The Learning Objectives of this course are as follows:

- To develop understanding of Analog Devices starting with ideal Op Amp model and assessing the practical device limitations and learning importance of the Data Sheets.
- Design linear applications but also design of non-linear application without feedback (voltage comparators), with positive feedback (Schmitt Trigger), and the negative feedback but using non- linear elements such as diodes and switches (sample and hold circuits)
- Study of Oscillators and other Signal Generators
- Study Multivibrators and its applications using IC 555 Timer

Learning outcomes

The Learning Outcomes of this course are as follows:

- Understand basic building blocks of an op-amp and its parameters for various applications design.
- Elucidate and design the linear and non-linear applications of an op-amp.
- Understanding and Designing of various Signal Generators
- Understand the working of multivibrators using IC 555 timer

SYLLABUS OF ELDSC-8 Total Hours- Theory: 45 Hours, Practicals: 30 Hours

UNIT – I (12 Hours)

Basic Operational Amplifier: Concept of differential amplifiers (Dual Input Balanced and Unbalanced Output), Block Diagram of an Operational Amplifier, Characteristics of an Ideal Op-Amp.

Open and Closed Loop Configurations: Inverting, Non-Inverting and Differential Amplifier

Op-Amp Parameters (IC741): Differential Input Resistance, Output Resistance, Input Capacitance, Input Voltage Range, Large Signal Voltage Gain, Offset Voltage Adjustment Range, Input Offset Voltage, Input Offset Current, Input Bias Current,

Common Mode Rejection Ratio, Supply Voltage Rejection Ratio, Bandwidth, Gain Bandwidth Product, Slew Rate.

UNIT – II (11 Hours)

Frequency Response of an Op-Amp.: High Frequency Op-Amp Equivalent Circuit, Open Loop Voltage Gain as a function of Frequency, Closed Loop Frequency Response, Effect of Slew Rate in Applications.

Linear Applications of an Op-Amp: Summing, Scaling and Averaging Amplifiers, Subtractor, Integrator, Differentiator, Current to voltage converter.

UNIT – III (11 Hours)

Active Filters: First Order Low Pass and High Pass Butterworth Filter, Concept of Higher Order Butterworth Filters, Band Pass Filter, Band Reject Filter, All Pass Filter.

Non-Linear Applications of an Op-Amp: Basic Comparator, Level Detectors, Schmitt Trigger, Characteristics of Comparator, Voltage Limiters, Sample and Hold circuit.

UNIT – IV (11 Hours)

Signal Generators: Phase Shift Oscillator, Wien Bridge Oscillator, Square Wave Generator, Triangle Wave Generator, Saw Tooth Wave Generator

IC 555 Timer: Block Diagram, Astable and Monostable Multivibrator Circuit, Applications of Monostable and Astable Multivibrator.

Practical component (if any) – Analog Electronics- II
(Hardware and Circuit Simulation Software)

Learning outcomes

The Learning Outcomes of this course are as follows:

- Understand the non-ideal behaviour by parameter measurement of Op-amp.
- Design application oriented circuits using Op-amp ICs.
- Generate square wave using different modes of 555 timer IC.
- Prepare the technical report on the experiments carried.

LIST OF PRACTICALS (Total Practical Hours- 30 Hours)

1. Study of op-amp characteristics: CMRR and Slew rate.
2. Designing of an amplifier of given gain for an inverting and non-inverting configuration using an Op-Amp.
3. Designing of an Integrator using op-amp for a given specification.
4. Designing of a Differentiator using op-amp for a given specification.
5. Designing of analog adder/subtractor circuit.
6. Designing of a First Order Low-pass / High Pass Filter using op-amp and study its frequency response.
7. Designing of a RC Phase Shift Oscillator using Op-Amp.
8. Study of IC 555 as an astable multivibrator.

Note: Students shall sincerely work towards completing all the above listed practicals for this course. In any circumstance, the completed number of practicals shall not be less than seven.

Essential/recommended readings

1. R. A. Gayakwad, Op-Amps and Linear Integrated Circuits , Pearson Education
2. R. F. Coughlin and F. F. Driscoll, Operational amplifiers and Linear Integrated circuits, Pearson Education
3. Nutan Kala Joshi and Swati Nagpal, Basic Electronics, Khanna Publishers

Suggestive readings

1. D.Roy Choudhary and Shail B. Jain, Linear Integrated Circuits, New Age International Publishers
2. A.P.Malvino, Electronic Principals, Tata McGraw-Hill

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 9: Signals and Systems

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Signals and Systems ELDSC-9	**4**	**3**	**0**	**1**	**Course Admission Eligibility**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- Understand mathematical description and representation of continuous and discrete time signals and systems.
- Develop input-output relationship for linear shift invariant system and understand the convolution operator for continuous and discrete time system.
- Understand and resolve the signals in frequency domain using Fourier series and Fourier transforms.
- Understand the limitations of Fourier transform and need for Laplace transform and develop the ability to analyze the system in *s*- domain.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Represent various types of continuous-time and discrete-time signals and their convolution.
- Understand concept of convolution, LTI systems and classify them based on their properties and determine the response of LTI system.
- Determine Fourier series of periodic signals.
- Analyze various systems using Fourier and Laplace transformations.

SYLLABUS OF ELDSC-9 Total Hours- Theory: 45 Hours, Practicals: 30 Hours

UNIT – I (11 Hours)

Signals and Systems: Continuous and discrete time signals, time domain operations (shifting, scaling, reflection, *etc.*) with precedence rules. Exponential and sinusoidal signals, impulse and unit step functions, continuous-time and discrete-time systems and their basic properties.

UNIT – II (11 Hours)

Linear Time -Invariant Systems (LTI): Discrete time LTI systems, the Convolution Sum, Continuous time LTI systems, the Convolution integral. Properties of LTI systems, Commutative, Distributive, Associative. LTI systems with and without

memory, invariability, causality, stability, unit step response. Differential and Difference equation formulation. Block diagram representation of first order systems.

UNIT – III (12 Hours)

Fourier series Representation of Periodic Signals: Fourier series representation of periodic continuous and discrete signals. Convergence of the Fourier series (Dirichlet conditions).

Fourier Transform: Aperiodic signals, Periodic signals, Properties of Continuous-time Fourier transform, Convolution and multiplication Properties, Properties of Fourier transform and basic Fourier transform Pairs.

UNIT – IV (11 Hours)

Laplace Transforms: Unilateral Laplace transform, inverse Laplace transform, properties of the Laplace transform, Laplace transform pairs, Laplace transform for signals. Solutions of first and second order differential equations with initial conditions.

Practical component (if any) – Signals and Systems
(Scilab/MATLAB/ OCTAVE/Other Mathematical Simulation software)

Learning outcomes

The Learning Outcomes of this course are as follows:

- Generate/plot various signals, there transformation and compute convolution
- Generate/plot Fourier series of periodic signals.
- Compute Fourier transform
- Learn the use of simulation tools and design skills.

LIST OF PRACTICALS (Total Practical Hours- 30 Hours)

1. Plotting/generation of signals: continuous time
2. Plotting/generation of signals: discrete time
3. Time shifting and time scaling of signals.
4. Convolution of signals
5. Fourier series representation of continuous time signals.
6. Fourier series representation of discrete time signals.
7. Computation of Fourier transform of continuous time signals.
8. Laplace transform of continuous time signals.

Note: Students shall sincerely work towards completing all the above listed practicals for this course. In any circumstance, the completed number of practicals shall not be less than seven.

Essential/recommended readings

1. V. Oppenheim, A. S. Wilsky and S. H. Nawab, Signals and Systems, Pearson Education (2007)
2. H. P. Hsu, Signals and Systems, Tata McGraw Hill (2007).

Suggestive readings

1. S. Haykin and B. V. Veen, Signals and Systems, John Wiley & Sons (2004).

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVES (DSE) COURSES OFFERED BY THE DEPARTMENT

DISCIPLINE SPECIFIC ELECTIVES (DSE-1)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Artificial Intelligence and Machine Learning ELDSE-1A	**4**	**3**	**-0**	**1**	**Course Admission Eligibility**	**Basic knowledge of Python language**

Learning Objectives

The Learning Objectives of this course are as follows:
Artificial Intelligence and Machine Learning has emerged as one of the most rapidly growing technology sector in today's time. This fascinating technology area which deals with designing 'machines which can think' is finding widespread application in almost every industrial and domestic sector. Advancement in the field of AI and ML has also led to complete revolution in the other technology areas including Robotics, embedded systems and Internet of Things. AI and ML is considered to be one of the major contributor to the paradigm shift in technology which has taken place over the past few decades, which is very similar in scale to past events such as the industrial revolution, the computer age, and the smart phone revolution.
This course will give an opportunity to gain expertise in one of the most fascinating areas of science and technology through a well-structured classroom program that covers almost all the topics related to designing machines which can replicate human intelligence and its applications in industry, defence, healthcare, agriculture and many other areas. This course will give the students a rigorous, advanced and professional graduate-level foundation in Artificial Intelligence and Machine Learning.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Build intelligent agents for search and games
- Solve AI problems through programming with Python
- Learning optimization and inference algorithms for model learning

- Design and develop programs for an agent to learn and act in a structured environment
- To study different supervised and unsupervised learning algorithms.
- To understand the application development process using ML

.

SYLLABUS OF ELDSE-1A Total Hours- Theory: 45 Hours, Practicals: 30 Hours

UNIT – I (11 Hours)

Introduction: Concept of AI, history, current status, scope, Modeling Techniques: Turing Test Approach, Cognitive Modeling Approach, Rational Agent Approach and Laws of Thought Approach, AI System Architecture: Concept of Agent & Environment, Types of Agents: Reactive Agent, Model based Reflex Agent, Omniscient Agent, Goal Based Agent, Utility based Agent and Learning Agent, Knowledge based Agents and Knowledge Representation Techniques. Types of Environment, PEAS representation of Intelligent Agents, Problem Solving Agents, AI Problem Formulation, State space representation

UNIT – II (11 Hours)

Search Algorithms: Uninformed Search Algorithms: Breadth first search, Depth First Search, Depth Limited Search, Uniform Cost Search and Bidirectional Search, Heuristic Search Algorithms: concept of Heuristic Function, Greedy Best First Search, A* search algorithm, Game Search Algorithms: Minimax Search Algorithm and Alpha-Beta Pruning.

Simple AI problems (such as Water Jug Problem, Maze Problem, 8-Tile Puzzle problem, Traveling Salesman Problem).

UNIT – III (11 Hours)

Probabilistic Reasoning Model: Probability, conditional probability, Bayes Rule, Bayesian Networks- representation, construction and inference, Temporal model: concept of Transition probability, Markov Model and Hidden Markov model.

Markov Decision Process Model: MDP formulation, Elements of MDP Model, concept of Sequential Decision Processing, Example of MDP Problem: Agent in a grid world

UNIT – IV (12 Hours)

Machine Learning: Types of Machine Learning: Supervised Learning, Unsupervised Learning and Reinforcement Learning. Supervised Learning Vs. Unsupervised Learning **Supervised Learning Techniques:** Regression Analysis, Linear Regression, Classification Algorithm, Logistic Regression, K-NN Algorithm, Classification Vs. Regression, Linear Regression Vs. Logistic Regression, Decision Tree Classification Algorithm, Random Forest Algorithm, Clustering in Machine Learning, Hierarchical Clustering in Machine Learning, K-Means Clustering Algorithm

Practical component (if any) – Artificial Intelligence and Machine Learning
(Python software)

Learning outcomes

The Learning Outcomes of this course are as follows:

- Implement various search algorithms
- Implement Bayesian network
- Demonstrate classification and clustering
- Make a small project

LIST OF PRACTICALS (Total Practical Hours- 30 Hours)

1. Write a program to solve the given search tree using Breadth First Search
2. Write a program to solve the given search tree using Depth First Search and Depth Limited Search
3. Write a program to solve the given search tree using Uniform Cost Search
4. Write a program to solve the given search tree using Greedy Best First Search
5. Write a program to solve the given game search tree using Minimax Search
6. Program for construction and inference of a Bayesian network
7. Write a Program to perform Regression on given data sets
8. Write a Program to demonstrate Classification
9. Write a Program to demonstrate Clustering
10. Mini Project work

Note: Students shall sincerely work towards completing all the above listed practicals for this course. In any circumstance, the completed number of practicals shall not be less than eight.

Essential/recommended readings

1. Stuart Russell and Peter Norvig, —Artificial Intelligence: A Modern Approach‖ , 3rd Edition, Prentice Hall
2. Elaine Rich and Kevin Knight, —Artificial Intelligence‖, Tata McGraw Hill
3. Trivedi, M.C., —A Classical Approach to Artificial Intelligence‖, Khanna Publishing House, Delhi.
4. Saroj Kaushik, —Artificial Intelligence , Cengage Learning India, 2011
5. Introduction to Machine Learning with Python, by Andreas C. Müller, Sarah Guido, O'Reilly Media, Inc., 2016

Suggestive readings

1. David Poole and Alan Mackworth, —Artificial Intelligence: Foundations for Computational Agents, Cambridge University Press 2010
2. Machine Learning by Tom. M. Mitchell, Tata McGraw Hill
3. Introduction to Machine Learning by Nils. J. Nillson

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC ELECTIVES (DSE-2)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Algorithm Design and Analysis ELDSE-1B	**4**	**3**	**0**	**1**	**Course Admission Eligibility**	**Basic Knowledge of Python language**

Learning Objectives

The Learning Objectives of this course are as follows:

- To develop the understanding of usage of basic data structures like stack, queue, linked list, trees
- To introduce the students to design and analyse algorithms
- To highlight the differences between various problem-solving techniques for an efficient algorithm design
- To provide an understanding of algorithm design through a survey of the common algorithm design paradigms of Iterative techniques, Divide and Conquer, Dynamic Programming, Greedy Optimization
- To develop proficiency in Problem Solving and Programming
- To provide an understanding of time and space complexities of algorithms designed to solve computational problems
- To familiarize with various Searching and Sorting techniques

Learning outcomes

The Learning Outcomes of this course are as follows:

- Implement data structures like Stacks, Queues. Linked List, trees
- Use an appropriate algorithm using the algorithm design techniques, namely,
- Iterative, Divide and Conquer, Greedy, Dynamic Programming for a series of
- computational problems
- Apply various Searching and Sorting techniques
- Solve computational problems with an understanding of time and space complexities of algorithms

SYLLABUS OF ELDSE-1B Total Hours- Theory: 45 Hours, Practicals: 30 Hours

UNIT – I (11 Hours)

Data Structures: Stacks, array implementation of stack, operation on stacks, application of stacks-conversion of infix expression to prefix and postfix, evaluation

of expression; Queues, array implementation of queues, operation on queues, Linked List and its implementation of stack and queue.

UNIT – II (11 Hours)

Trees: Introduction to trees, Binary search tree, preorder, postorder and inorder traversal (recursive)

Searching Techniques: Linear and Binary Search, Hashing techniques

UNIT – III (12 Hours)

Algorithm Design Techniques: Iterative techniques-Insertion Sort, Divide and Conquer-Merge Sort, Dynamic Programming-Weighted Interval Scheduling, 0-1 Knapsack Problem

UNIT – IV (11 Hours)

Greedy Algorithm- Interval Scheduling, Fractional Knapsack problem, Dijkstra's shortest path problem. Comparison between Dynamic programming and Greedy algorithm

Sorting Techniques: Quick Sort, Heap sort, Sorting in Linear Time - Bucket Sort, Radix Sort and Count Sort, Time and Space complexity

Practical component (if any) – Algorithm Design and Analysis
(Python/MATLAB software)

Learning outcomes

The Learning Outcomes of this course are as follows:

- Implement Data Structures
- Develop algorithms and write programs in Python language
- Write programs based on Algorithm design techniques
- Implement various Sorting techniques
- Prepare a Technical Report on the experiments carried

LIST OF PRACTICALS (Total Practical Hours – 30 Hours)

1. Program to create a stack and perform Pop, Push, traverse operations on the stack using Linear Linked List
2. Program to create a linear queue using Linked List and implement insertion, deletion and display of the queue elements
3. Program to create a Binary Tree to perform traversals (Preorder, Postorder, Inorder) using the concept of recursion.
4. Program to solve the Interval Scheduling problem
5. Program to solve the Weighted Interval Scheduling problem
6. Program to solve the 0-1 Knapsack problem
7. Program to implement Insertion Sort
8. Program to implement Merge Sort
9. Program to implement Heap Sort
10. Program to implement Quick Sort

11. Program to implement Bucket Sort
12. Program to implement Radix Sort
13. Program to implement Binary Search

Note: Students shall sincerely work towards completing all the above listed practicals for this course. In any circumstance, the completed number of practicals shall not be less than eleven.

Essential/recommended readings

1. M.T.Goodrich, R.Tamassia, M.H.Goldwasser, Data Structures & Algorithms, Wiley
2. T.H. Cormen, C.E. Leiserson, R.L. Rivest and C. Stein, Introduction to Algorithms, Prentice Hall India. Third edition (2015).
3. J. Kleinberg and E. Tardos, Algorithm Design, Pearson Education India, First Edition (2013).
4. S. Lipschutz, Data Structures with C, Schaum's Outlines Series, Tata McGraw Hill
5. A.M.Tenenbaum, Y.Langsam, M.J. Augenstein, Data Structures using C, Pearson/PHI

Suggestive readings

1. Sarabasse and A.V. Gleder, Computer Algorithm-Introduction to Design and Analysis, Pearson Education, Third Edition (1999).

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVES (DSE-3)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Mathematics Foundation for Computing ELDSE-1C	**4**	**3**	**0**	**1**	**Course Admission Eligibility**	**Basic Knowledge of Python language**

Learning Objectives

The Learning Objectives of this course are as follows:

- The aims is to introduce to students of electronics new mathematics such as Boolean algebra, relations, and graph theory which though look abstract concepts can be used effectively to design and analyze electronic circuits.
- To apply mathematical techniques for real world and engineering problems and expose students to some front-line techniques used in industry and academics.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Formulate recurrence relations to solve problems involving an unknown sequence. Student should see the significance in light of the Forbenius method they learn.
- Use Boolean algebra to design and analyze digital switching circuitry, such as found in personal computers, pocket calculators, CD players, cellular telephones, and a host of other electronic products.
- Appreciate circuit analysis in terms of topology.

SYLLABUS OF ELDSE-1C Total Hours- Theory: 45 Hours, Practicals: 30 Hours

UNIT – I (12 Hours)

Elementary Combinatorics: Basic counting principles, Permutations and Combinations (with and without repetitions), Binomial theorem, Multinomial theorem, Counting subsets, Set-partitions, Stirling numbers Principle of Inclusion and Exclusion, Derangements, Inversion formula.

Generating functions: Algebra of formal power series, Generating function models, Calculating generating functions, Exponential generating functions.

UNIT – II (10 Hours)

Recurrence Relations: Recurrence Relations, generating functions, iteration and induction, Linear Recurrence Relations with constant coefficients and their solution, Substitution Method, Divide and conquer relations, Solution of recurrence relations, Solutions by generating functions.

UNIT – III (11 Hours)

Boolean Algebras and Switching Circuits: Axioms of Boolean Algebra, De Morgan's law, Simplification of Boolean Expressions, Representation theorem, Boolean polynomials, Boolean polynomial functions, Disjunctive normal form and conjunctive normal form, Minimal forms of Boolean polynomial,3, 4 and 5 variable Karnaugh diagrams, Quine-McCluskey method, Switching circuits and applications of switching circuits.

UNIT – IV (12 Hours)

Graph Theory: Introduction to Graph Theory with emphasis on DC circuit analysis, Representing circuital network as a graph, identification of branches, nodes, Tree branch/ twig. Formulation of incidence matrix. Usage of incidence matrix to solve for node voltage in two loop DC circuits with voltage and/ or current sources.

Practical component (if any) – Mathematics Foundation for Computing
(Python software)

Learning outcomes

The Learning Outcomes of this course are as follows:

- Implement python programs to calculate permutation and combinations.
- Write python programs based on Boolean Algebra and Minimize Karnaugh diagrams
- Should be able to do node analysis using incidence matrix/ Graph Theory.

LIST OF PRACTICALS (Total Practical Hours – 30 Hours)

1. Write a program that generates all the permutations of a given set of digits (with or without repetitions).
2. Write a program to generate Fibonacci Series using recursion.
3. Write a program to implement binary search using recursion.
4. Write a Program to accept the truth values of variables x and y, and print the truth table of the following logical operations:
    a. Conjunction
    b. Disjunction
    c. NAND
    d. NOR
    e. Exclusive OR
    f. Exclusive NOR
    g. Negation

5. Determine node voltages of given two loop circuits using given incidence matrix.

Essential/recommended readings

1. V. Krishnamurthy, Combinatorics, Theory and Application, Affiliated East-West Press 1985.
2. C.L. Liu & Mahopatra, Elements of Discrete mathematics, 2nd Sub Edition 1985, Tata McGraw Hill
3. G. Langholz, A. Kandel and J. Mott, Foundations of Digital Logic Design, World Scientific, Singapore, 1998.
4. Kenneth H. Rosen. Discrete Mathematics and Its Application. McGraw-Hill Education, Pennsylvania, U.S.A, 2011.
5. M.O. Albertson and J.P. Hutchinson, Discrete Mathematics with Algorithms, John Wiley and Sons (USA, 1988).

Suggestive readings

1. T.H. Coremen, C.E. Leiserson, R. L. Rivest, Introduction to Algorithms, Prentice Hall India (3rd edition 2009)

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES OFFERED BY THE DEPARTMENT

GENERIC ELECTIVES (GE-1)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Electronic Circuits and Interfacing ELGE-3A	**4**	**3**	**0**	**1**	**-**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- To understand the basics of operational amplifier and it's linear and nonlinear applications.
- To familiarize IC 555 Timer and its application
- Understand the working of multivibrators
- To understand working of various types of transducers.
- To introduce concept of embedded systems using Arduino.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Familiarize with design of the linear and non-linear applications of an op-amp.
- Understand the working of multivibrators
- Understand working of various types of transducers.
- Understand working of Arduino

SYLLABUS OF ELGE-3A Total Hours- Theory: 45 Hours, Practicals: 30 Hours

UNIT – I (12 Hours)

Basic Operational amplifiers: Block diagram, symbol, op- amp parameters (IC 741).

Op -Amp Circuits: Closed loop Inverting, Non-inverting, Summing and difference amplifier, Integrator, differentiator, Instrumentation Amplifier, Audio Amplifier (LM386) Voltage to current converter.

Comparators: Basic comparator, Schmitt Trigger.

UNIT – II (11 Hours)

Signal Conditioning Circuits: Active filters: First order Butterworth low pass and high pass filter, Wide Band -Pass filter, Wide Band-Reject filter, All-Pass filter (Designing with Circuit diagrams and formulas only for all filter)

Signal Generators: Phase shift oscillator, Wein Bridge oscillator (Designing with Circuit diagrams and formulas)

Multivibrators (IC 555): Block diagram, Astable and Monostable circuit. Applications of Astable and Monostable multivibrators.

UNIT – III (11 Hours)

Transducers (Basic Working): Displacement transducers - Resistive (Potentiometric, Strain Gauges – Types, Gauge Factor, bridge circuits, Semi-conductor strain gauge),Capacitive (diaphragm), Hall effect sensors, Microphone, Touch Switch, Piezoelectric sensors, light (photoconductive, photo emissive, photo voltaic, semiconductor, LDR), Temperature (electrical and non-electrical), Pressure sensor.

UNIT – IV (11 Hours)

A-D and D-A Conversion: D-A conversion: 4-bit binary weighted resistor type, circuit and working. Circuit of R-2R ladder- Basic concept. A-D conversion characteristics (Number of channels, resolution), successive approximation ADC. (Mention the relevant ICs for all).

Data Acquisition using Arduino: Arduino: Birth, Open-Source community, Functional Block Diagram, Functions of each Pin, Applications of Arduino, IDE, Basic Interfacing and I/O Concept, Interfacing LED, Switch,7seg LED.

Practical component (if any) – Electronic Circuits and Interfacing
(Hardware and Circuit Simulation Software)

Learning outcomes

The Learning Outcomes of this course are as follows:

- Design application-oriented circuits using Op-amp.
- Design application-oriented circuits using timer IC
- Familiarization with different specifications of arduino boards.
- Interfacing of various sensors with arduino.

LIST OF PRACTICALS (Total Practical Hours – 30 Hours)

1. Study of inverting and non-inverting amplifier.
2. Study of analog adder/ subtractor circuit.
3. Study of basic integrator circuit/ basic differentiator circuit.
4. Design of first order LPF / first order HPF.
5. Study of basic astable multivibrator / monostable multivibrator.
6. 555 Timer-Rain alarm /Motor control by PWM /LED flasher circuit.

7. To determine the Characteristics of resistance transducer - Strain Gauge (Measurement Strain using half and full bridge.)/ To determine the Characteristics of LVDT.
8. To determine the Characteristics of Thermistors and RTD.
9. Test the different Arduino Boards, Open-Source and Arduino Shields and install Arduino IDE and its development tool.
10. Develop a program to Blink LED for 1second when switch is pressed.

Note: Students shall sincerely work towards completing all the above listed practicals for this course. In any circumstance, the completed number of practicals shall not be less than eight.

Essential/recommended readings

1. Measurement Systems, 4/e, Doeblin McGraw Hill, New York, 1992.
2. Electrical Measurements & Electronic Measurements by A.K. Sawhney
3. Electronic Instrumentation by H.S Kalsi, McGraw Hill
4. R. A. Gayakwad, Op-Amps and Linear IC_s, Pearson Education (2003)
5. Electronic Sensor Circuits and Projects, III Volume, Forrest M Mims, Master Publishing Inc.
6. Beginning Arduino Programming, Brian Evans, Technology in Action

Suggestive readings

1. Instrumentation- Devices and Systems by Rangan, Sarma, and Mani, Tata-McGraw Hill
2. Instrumentation measurements and analysis by Nakra & Choudhary
3. Measurement & Instrumentation- DVS Murthy
4. Timer, Op Amp, and Optoelectronic Circuits & Projects, Forrest M Mims, Master Publishing Inc.
5. Exploring Arduino, Jeremy Blum, Wiley
6. Beginning Arduino, Michael McRobetrs, Technology in Action
7. Practical Arduino Engineering, Harold Timmis, Technology in Action
8. Practical Arduino: Cool Projects for open-source hardware, Jonathan Oxer, Hugh Blemings, Technology in Action

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-2)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Modelling and Simulation ELGE-3B	**4**	**3**	**0**	**1**	**12th Pass**	**Basic Knowledge of Python language**

Learning Objectives

The Learning Objectives of this course are as follows:
It covers modeling and simulation principles as applied to engineering and social sciences. It discusses the techniques for modeling a simple to slightly complex system and perform statistical analysis. It covers about the steps involved in developing models for static, continuous and discrete systems. It also offers the introduction to number of latest models and simulation tools being used in industry with a set of examples. Examples may include modeling and analysis of manufacturing systems, computer-communication networks, operating system and various utilities and logistic systems.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Enable to perform simulations for developing models in order to solve problems in static and dynamic systems.
- Evaluate simulation models and do the analysis of a number of systems existing in real life.
- Synthesize queuing theory, random numbers generators and their application to modeling and simulation.

SYLLABUS OF ELGE-3B Total Hours- Theory: 45 Hours, Practicals: 30 Hours

UNIT – I (12 Hours)

Introduction to Modeling and Simulation: Introduction and historical development in Modeling and Simulation. System, Model and Simulation. Real system vs. Model of the system. Analytical solution vs. Simulation. Static vs. Dynamic Simulation Models. Continuous time vs. Discrete time modeling system. Hybrid systems, Feedback systems, Iterative systems Modeling. Random numbers in Simulation, random variables with discrete and continuous probability distribution. Deterministic and Stochastic Modeling System. Mathematical Modeling & Mathematical Tools.

UNIT – II (11 Hours)

Modeling Techniques and Design Steps: Discrete Event Simulation Models. System Models and Events. State variables, Entities and Attributes. Steps of Model Designs, Verification, validation and calibration of the Model.
Single server Queuing system, Database server as Queuing System.
Monte Carlo Method for static System.
Discrete and continuous Markov Models.

UNIT – III (11 Hours)
Simulation Techniques and Specifications: Advantages and disadvantages, Limitations, Steps in Simulation Study.
Differential Equation System Specification DESS, Discrete Event System Specification DEVS, Discrete Time System Specification DTSS.
Random numbers in Simulation. Random numbers generation and testing, Random variables with Discrete and continuous probability distribution. Simulation with Mathematical Models, Stochastic Models

UNIT – IV (11 Hours)
Modeling and Simulation Tools with Applications: System development, Project planning, System definition, Model formulation, input data collection and analysis, Model translation, verification and validation, experimentation and Analysis.
Different Applications domain of Modeling and Simulation.
Case Studies: Simulation of DEVS in a Bank, School, Hospital, or any such system. Modeling and analysis of a manufacturing systems, grocery store, computer-communication network or CPU scheduling.

Importance of different Modeling and Simulation softwares and their selection.
Brief overview and usefulness of Modeling and Simulation softwares- Scilab, SPICE, VHDL, Freemat, IMODELER, platform JModelica.org, Statistical Analysis Software SAS, MS- Excel.

Practical component (if any) – Modelling and Simulation
(Python or any Simulation Software)

Learning outcomes

The Learning Outcomes of this course are as follows:

- Program for implementation, testing of random numbers
- Simulation of gaming dice
- Different Models implementation- GPSS, DEVS
- Implementation of DESS, Monte Carlo Method, Markov Chain
- Simulation of real time problems

LIST OF PRACTICALS (Total Practical Hours- 30 Hours)

1. Implement different methods of random number generation
2. Simulating games of dice that generate discrete random variate, using random number generation

3. GPSS models - queue, storage, facility, multi-server queue, decision making problems
4. Perform an experiment on Testing of random numbers.
5. Write a simulator for any DEVS model that has scalar real values for its inputs, states and outputs.
6. Define a DEVS counter that counts the number of non-zero input events received since initialization and outputs this number when queried by a zero valued input.
7. Formulate a causal simulator for multi-component DESS.
8. Implementing an application of Monte Carlo methods.
9. Implement an application of Markov's chain.
10. Simulation of single queue server system.
11. Study of an implemented goal programming system and on decision making tools.
12. Study of a Game theory problem and solution.

Note: Students shall sincerely work towards completing all the above listed practicals for this course. In any circumstance, the completed number of practicals shall not be less than ten.

Essential/recommended readings

1. Bernard P. Zeigler, Alexandre Muzy, Ernesto Kofman, 3ed, Theory of Modeling and Simulation, Academic Press : Elsevier 1985.
2. Narsingh Deo, System Simulation with Digital Computers, Prentice Hall of India, 1979.
3. Geoffrey Gordon, System Simulation, 2ndEd., PHI, 1987
4. Averill M. Law and W. David Kelton, Simulation Modeling and Analysis, 3rdEd., Tata McGraw Hill, 2003

Suggestive readings

1. Raj Jain, Art of Computer Systems Performance Analysis, John Wiley and Sons, Inc,1991
2. Sheldon M. Ross, Simulation, 4thEd., Elsevier 2008
3. Jerry Banks and John S. Carson, Barry L Nelson, Discrete-Event System Simulation, 5thEd., Prentice Hall, 2010

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 7: Analytical Instrumentation I (INDSC3A)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Analytical Instrumentation I (INDSC3A)	**04**	**02**	**0**	**02**	**Course admission eligibility**	**Basic knowledge of chemistry**

Learning Objectives

The Learning Objectives of this course are as follows:

- To familiarize with the classification of analytical methods
- To understand the fundamentals of qualitative and quantitative analysis concepts.
- To categorize and understand the principle behind various separation techniques (planar and columns) and their instrumentation.
- To understand the principle, instrumentation and applications of visible and ultraviolet molecular spectroscopy

Learning outcomes

The Learning Outcomes of this course are as follows:

- Understand the classification of analytical methods
- Comprehend fundamentals of qualitative and quantitative analysis
- Differentiate between principle, instrumentation and operation of PaperChromatography and Thin layer chromatography
- Identify various Column Chromatographic techniques and their instrumentation
- Understand the concept of UV-Visible spectroscopy

SYLLABUS OF DSC-7

UNIT – I **(8 hours)**

Introduction to Analytical methods: Classification of Analytical Methods: Classical and Instrumental, Types of Instrumental Methods, Various sample extraction techniques. Instruments for analysis, Calibration of instrumental methods, Selecting an analytical method

UNIT – II **(7 hours)**

Chromatographic Separation methods: Planar Chromatographic methods: Principle and applications of Paper Chromatography, Thin layer chromatography (TLC) and High-Performance Thin Layer Chromatography (HPTLC).

UNIT – III **(8 hours)**

Column Chromatography: General Description of column chromatography, Classification of Chromatographic Methods, Elution in Column Chromatography, Migration rate of solutes, Band Broadening and column efficiency, Optimization of Column Performance.
Gel Permeation Chromatography (GPC): Principle, Instrumentation and Applications.

UNIT – IV **(7 hours)**

Molecular Spectro-analytical Methods of Analysis: Colorimetry and Spectrophotometry: Introduction, theory: molecular energy levels, types of molecular transitions, Lambert-Beer's Law and limitations, Instrumentation of single beam and double beam instrument.

Practical component: **(60 hours)**

1. Preparation of solutions and buffers.
2. Introduction to the use of Analytical Equipment (Analytical Balance, Volumetric Glassware, pH meter).
3. To extract the spinach pigments using liquid-liquid extraction.
4. Separation of plant pigments by paper chromatography.
5. Separation of food colours by paper chromatography.
6. Separation of pharmaceutical sample mixture using thin layer chromatography.
7. Separation of amino acids/sugar/carbohydrates by Thin Layer Chromatography.
8. Separation of cobalt chloride and Blue Dextran mixture by Gel Permeation Chromatography.
9. To study the effect of various solvents on membrane permeability of beetroot using visible spectroscopy
10. Determination of pKa value for a dye using visible spectroscopy.
11. Spectrometric determination of iron in water samples using double beam spectrophotometer.
12. To identify the given unknown colourless samples using UV spectrophotometer.

Essential/recommended readings

1. H.H. Willard, L.L Merrit, J.A. Dean, F. A. Settle, Instrumental Methods of Analysis, CBS Publishers, 7th edition, 2004.
2. Skoog, Holler and Crouch, Principles of Instrumental Analysis, Cengage Learning, 7th edition, 2016.
3. James W. Robinson, Eileen Skelly Frame, George M. Frame II, Undergraduate Instrumental Analysis, CRC Press, 7th edition, 2014
4. Vogel's Textbook of Qualitative Chemical Analysis, ELBS, 6th edition 2009.

Suggestive readings

1. W. Kemp, Organic Spectroscopy, ELBS, 3rd Edition, 2019.
2. R.S Khandpur, Handbook of Analytical Instruments, Tata McGraw-Hill, 3rd Edition 2015.
3. B.K Sharma, Instrumental Methods of Chemical Analysis, Krishna Prakashan Media, 1st Edition, 2011

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC CORE COURSE – 8: Operational Amplifiers and Applications (INDSC3B)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Operational Amplifiers and Applications (INDSC3B)	04	03	0	01	Course admission eligibility	Basics of Analog Electronics- BJT circuits

Learning Objectives

The Learning Objectives of this course are as follows:

- To provide understanding of DC and AC characteristics of operational amplifiers (op-amp)
- Design various filters and oscillators circuits using op-amps
- Study linear and non-linear applications of op-amp
- Design multivibrators and other circuits using op-amp.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Understand the DC and AC characteristics of operational amplifiers (op-amp) and its effect on output, significance of op-amp parameters, and compensation techniques
- Elucidate and design circuits to study linear and non-linear applications of op-amps and special application ICs
- Explain the working of signal generators using op-amp
- Explain and compare the working of multivibrators using general purpose op-amp

SYLLABUS OF DSC- 8

UNIT – I **(11 hours)**

Basic Operational Amplifier: Concept of differential amplifiers (Dual input balanced and unbalanced output, Single input balanced and unbalanced output), constant current bias, current mirror, cascaded differential amplifier stages with concept of level translator, block diagram of an operational amplifier (IC 741).

UNIT – II **(12 hours)**

Op-Amp parameters: input offset voltage, input offset current, input bias current, differential input resistance, input capacitance, offset voltage adjustment range, input voltage range, common mode rejection ratio, slew rate, supply voltage rejection ratio.

Op-Amp Circuits: Open and closed loop configuration, Limitations of open loop, characteristics of ideal op-amp, frequency response of op-amp in open loop and closed loop. Non-Inverting & Inverting amplifiers, Summing & Difference amplifiers, Log & antilog amplifiers, Instrumentation Amplifier, Integrator & Differentiator circuit, Voltage to current converter, Current to voltage converter.

UNIT – III **(11 hours)**

Comparators: Basic comparator, Level detector, Schmitt Trigger. Voltage limiters, Signal **Generators:** Phase shift oscillator, Wein bridge oscillator, square wave generator, triangle wave generator, saw tooth wave generator, and Multivibrators using opamp.

UNIT – IV **(11 hours)**

Signal conditioning circuits: Sample and hold systems, Active filters: Low pass and high pass Butterworth filter (first and second order), Band pass filter, Band reject filter, and All pass filter.

Practical component: **(30 hours)**

1. Study of op-amp characteristics: CMRR and Slew rate.
2. Designing of an amplifier of given gain for an inverting and non-inverting configuration using an op-amp.
3. Designing of analog adder and subtractor circuit.
4. Designing of an integrator using op-amp for a given specification and study its frequency response.
5. Designing of a differentiator using op-amp for a given specification and study its frequency response.
6. Designing of a first order low-pass filter using op-amp and study its frequency response.
7. Designing of a first order high-pass filter using op-amp and study its frequency response.
8. Designing of a RC phase shift oscillator using op-amp.
9. Design an astable multivibrator using opamp.
10. Design a schmitt trigger circuit using op-amp and study its hysteresis loop.

Essential/recommended readings

1. R. A. Gayakwad, Op-Amps and Linear Integrated circuits, Pearson Education, 4th Edition, May 2015.
2. R. F. Coughlin and F. F. Driscoll, Operational amplifiers and Linear Integrated circuits, 6th Edition, Aug 2000, Pearson,
3. Pearson Education (2001).J. Millman and C.C. Halkias, Integrated Electronics, Tata McGraw-Hill, (2001).

Suggestive readings

1. A.P.Malvino, David J Bates, Electronic Principals, 7th Edition, Tata McGraw-Hil Education, (July 2017).

DISCIPLINE SPECIFIC CORE COURSE – 9: Mathematical Techniques for Instrumentation (INDSC3C)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Mathematical Techniques for Instrumentation (INDSC3C)	**04**	**03**	**0**	**01**	**Course admission eligibility**	**Basic knowledge of mathematics**

Learning Objectives

The Learning Objectives of this course are as follows:

- To give an ability to apply knowledge of mathematics to engineering problems.
- To introduce the basic concepts required to understand, construct, solve and interpret
- differential equations.
- To teach methods to solve differential equations of various types.
- To teach students to understand the Laplace transform method to solve ordinary differential equations.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Recognize ODEs of varying order and use these to solve engineering problems.
- Derive mathematical models of physical systems.
- Solve the most common PDEs, recurrent in engineering using standard techniques.
- Demonstrate the utility of Laplace transform in solving the ordinary differential equations

SYLLABUS OF DSC-8

UNIT – I **(12 hours)**

Ordinary Differential Equations: First Order Ordinary Differential Equations, Separable Ordinary Differential Equations, Exact and Non-Exact Differential Equations, Linear Ordinary Differential Equations. Linear Independence and Dependence, Linear Differential Equations of Second Order with Constant Coefficients and Variable Coefficients: Homogeneous and non-homogeneous.

Method of Variation of Parameters, Electric Circuits (RL, RC and RLC circuits).

UNIT – II **(11 hours)**

Partial Differential Equations: Formation of Partial Differential Equation, Partial Differential Equation of First Order: Linear and Non-linear. Method of Separation of Variables. Classification of Partial Differential Equations of Second Order, One-dimensional Heat equation, Modeling a Vibrating string and the Wave Equation.

UNIT – III **(11 hours)**

Laplace Transform: Laplace Transform and its properties, Convolution theorem, Laplace Transform of Periodic function, Inverse Laplace transforms and its properties. Application of Laplace Transform to Differential Equations with Constant Coefficients, Solution to System of Simultaneous Differential Equations.

UNIT – IV **(11 hours)**

Fourier series and Transforms: Fourier Series: Even and Odd functions, Half range expansions, Fourier Integral, Fourier Transforms: Fourier Sine and Cosine Transforms, Forced Oscillations.

Practical component: **(30 hours)**

1. Plot the trigonometric functions like sin (x), cos(x), tan(x).
2. Plot the following algebraic expressions log(x), exp(x), x^2, x^3, $x+x^2+\exp(x)$.
3. Plot the following unit step functions u(t), u(t-4) and u(t+2).
4. Solve the first-order ordinary differential equations.
5. Solve the linear differential equation of second order with constant coefficients.
6. Solve the linear differential equation of second order with variable coefficients.
7. Evaluate the Laplace Transform of a given function.
8. Evaluate the inverse Laplace transform of a given function.
9. Evaluate the Fourier series coefficients of a given function.
10. Computing the Fourier Transform of a given signals.

Essential/recommended readings

1. E. Kreyszig, Advanced Engineering Mathematics, John Wiley & Sons, 10th Edition (2020).
2. B. V. Ramana, Higher Engineering Mathematics, Tata McGraw Hill Publishing ,7th Edition.
3. B.S. Grewal, Higher Engineering Mathematics, Khanna Publisher, 43rd Edition (2017).
4. HK Dass, Higher Engineering Mathematics, S.Chand Publishing,22nd Edition.

Suggestive readings

1. Dennis G.Zill,Advanced Engineering Mathematics, Jones & Bartlett Publishers,6th Edition (2016).
2. John Bird**,** Higher Engineering Mathematics,2017

DISCIPLINE SPECIFIC ELECTIVE COURSE – 1: Signal and Systems (INDSE3A)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Signal and Systems (INDSE3A)	04	03	0-	01	Course admission eligibility	Basic knowledge of mathematics

Learning Objectives

The Learning Objectives of this course are as follows:

- To give information about signals and systems mathematically and perform mathematical operations on signals.
- To teach the properties and the response of the LTI system using convolution.
- To give knowledge about Laplace transform, Fourier Transform and Z-transform for analysing continuous-time and discrete-time signals and systems.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Understand the basic concept and types of signals and systems and their properties which is useful to learn digital tele-communication
- Classify systems based on their properties and determine the response of LTI system using convolution
- Understand how to apply the Laplace transform, Fourier Transform and Z-transform for analyzing continuous-time and discrete-time signals and systems

SYLLABUS OF DSE-1

UNIT – I **(12 hours)**

Signals and Systems: Continuous and discrete time signals, Transformation of the independent variable, Exponential and sinusoidal signals, Impulse and Unit step functions, Continuous-Time and Discrete-Time Systems.

UNIT – II **(11 hours)**

Linear Time-Invariant Systems (LTI): Continuous & discrete time LTI systems, Convolution Sum, Convolution integral, Properties of LTI Systems: Commutative, Distributive and Associative. LTI systems with and without memory, Invariability, Causality, Stability.Unit Step response of System, Differential and Difference equation formulation, Block diagram representation of first order systems.

UNIT – III **(11 hours)**

Sampling: The Sampling Theorem and its implications. Spectra of sampled signals.
Laplace Transform: Laplace Transform Methods in Circuit Analysis, Impulse and Step response of RL, RC and RLC circuits.

UNIT – IV **(11 hours)**

Fourier Transform (FT): Complex exponential form of Fourier series, Fourier integral theorem, Fourier Sine & Cosine integrals, Fourier transform, Fourier Sine & Cosine transforms and their inverses.
Z-transform: properties, transfer function representation, inverse Z transform of rational functions- transform of input/output difference equation, stability of discrete time systems- frequency response of discrete time systems.

Practical component: **(30 hours)**

Learning Scilab/MATLAB (Experiments based on available systems).
Exploration of Signals and Systems using Scilab/MATLAB.

1. Generation of Signals: continuous time
2. Generation of Signals: discrete time
3. Addition, multiplication, folding and reversal of signals.
4. Convolution of Signals.
5. Solution of Difference equations.
6. Introduction to SIMULINK and calculation of output of systems represented by block diagrams.
7. Determination of Fourier Series coefficients of the given signals.
8. Determination of Fourier transform of the given signals.
9. Determination of Z transform of the given signals

Essential/recommended readings

1. H. P. Hsu, Signals and Systems, 4th Edition Tata McGraw Hill (2019).
2. S. T. Karris, Signal and Systems: with MATLAB Computing and Simulink Modelling, 4th EditionOrchard Publications (2008).
3. W. Y. Young, Signals and Systems with MATLAB, Springer (2014).
4. M. Roberts, Fundamentals of Signals and Systems, Tata McGraw Hill (2010).

Suggestive readings

1. Alan V. Oppenheim, Alan S. Willsky with S. Hamid, Signals and Systems, 2nd edition, Pearson, Inc. (2022).

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 2: VHDL Programming(INDSE3B)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
VHDL Programming (INDSE3B)	04	02	0	02	Course admission eligibility	Understanding of Digital Electronics

Learning Objectives

The Learning Objectives of this course are as follows:

- To develop the basic understanding of VHDL Modules, entity and architectures.
- To familiarize with different VHDL elements, Keywords and Identifiers
- To describe hardware in VHDL using different Modeling styles.
- To understand concurrent and sequential assignments.
- To introduce built in primitive gates and understand Gate level Modelling

Learning outcomes

The Learning Outcomes of this course are as follows:

- Learn about HDL Modules and simulation tools.
- Apply the knowledge of entity, architectures, VHDL Modules to describe hardware.
- Write and analyze various VHDL codes for combinational and sequential logic circuits
- describe hardware using multiple modeling styles.

SYLLABUS OF DSE-2

UNIT – I **(8 hours)**

Introduction to VHDL: A Brief History of HDL, Structure of HDL Module, Comparison of VHDL and Verilog, Introduction to Simulation and Synthesis Tools, VHDL requirements, VHDL basic language elements, Keywords, Identifiers, White Space Characters, Comments, format, VHDL operators.

VHDL Modeling: Describing hardware in VHDL, entity, architectures, VHDL Modules, Delays, data flow style, behavioural style, structural style, mixed design style, simulating design.

UNIT – II **(8 hours)**

BehavioralModeling: Introduction to behavioural modelling, Signal assignment,

Concurrent and sequential assignments., Entity Declaration, Architecture Body, BehavioralModeling, Process statement, Loop control statements, Multiple Processes, Delay Models, inertial delay model, transport delay model, transport vs inertial delay, Signal Drivers.

UNIT – III **(7 hours)**

Dataflow and Structural Modeling: Data flow Modeling, Concurrent Assignment statements, Block statements, Structural Modeling, Component declaration and Instantiation, generate statements, Process, IF, CASE, LOOP, NEXT, EXIT and ASSERT statements.

UNIT – IV **(7 hours)**

Gate level modeling: Introduction, built in Primitive Gates, multiple input gates, Tri-state gates, pull gates, MOS switches, bidirectional switches, gate delay, array instances, implicit nets, Illustrative Examples (both combinational and sequential logic circuits).

Practical component: **(60 hours)**

Learning Scilab/MATLAB (Experiments based on available systems).
Exploration of Signals and Systems using Scilab/MATLAB.

1. Write code to realize basic and derived logic gates.
2. Half adder, Full Adder using basic and derived gates.
3. Half subtractor and Full Subtractor using basic and derived gates.
4. Clocked D FF, T FF and JK FF (with Reset inputs).
5. Multiplexer (4x1, 8x1) and Demultiplexer using logic gates.
6. Decoder (2x4, 3x8), Encoders and Priority Encoders.
7. Design and simulation of a 4-bit Adder.
8. Code converters (Binary to Gray and vice versa).
9. 3-bit Ripple counter.

Essential/recommended readings

1. J. Bhasker, VHDL Primer, Pearson, 3rd edition ,2015.
2. Volnei. A.Pedroni, Circuit Design with VHDL, MIT Press; Third edition, 2020
3. Sudhakar Yalamanchili, Introductory VHDL-From Simulation to Synthesis, Pearson Education India. First Edition, 2000

Suggestive readings

1. Douglas Perry, VHDL, McGraw-Hill Education; 4th edition, 2002
2. Charles.H.Roth, Digital system Design using VHDL, Cengage; 2nd edition, 2012

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 3: Programming using MATLAB(INDSE3C)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Programming Using MATLAB (INDSE3C)	04	02	0	02	Course admission eligibility	Basic knowledge of mathematics

Learning Objectives

The Learning Objectives of this course are as follows:

- To familiarize the student with MATLAB software.
- The objective of this lab is to introduce students to the basic operations of MATLAB.
- To enable the student on how to approach solving Engineering problems using simulation tools.
- To prepare the students to use MATLAB in their project works.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Use MATLAB for interactive computations
- Generate plots and exports them for use in reports
- Familiar with inbuilt MATLAB functions and will be able to generate user defined functions for various applications
- Understands fundamental of digital image and signal processing

SYLLABUS OF DSE-3

UNIT – I **(8 hours)**

Introduction to MATLAB: MATLAB Features, MATLAB Windows, defining variables, variable naming, checking existence, different Operations on variables, clear Operations, data type, precedence, scalar, vectors and Arrays.

UNIT – II **(7 hours)**

Data and Data Flow in MATLAB: Operators in MATLAB, Matrix operations, Reshaping Matrices, Importing & Exporting of Data, Arrays, Data types, File Input-Output, Communication with External Devices.

Character and Strings: Defining character and string, accessing character or substring

from string, string concatenation and comparing, conversion between strings and number. Defining and working with Multidimensional Array and Cell arrays.

UNIT – III **(7 hours)**

Programming: Writing Script Files and Functions files, Error Correction, M-Lint Automatic Code Analyzer, Saving Files. Flow control statement: Conditional or selection, error handling, loop control, program termination. Solution of simultaneous linear equations.

UNIT – IV **(8 hours)**

MATLAB Graphics: Simple Graphics, Graphic Types, Plotting Functions, Creating Plot & Editing Plot, multiple plots, labeling graph, line colors, style and Marker. Introduction of Graphical User Interface (GUI), Generation and implementation of various functions on image.

Practical component: **(60 hours)**

1. Define variables, create a matrix of any size with all possible methods and perform various mathematical operations.
2. Create a multidimensional array and delete any Row/Column from it and create a new array.
3. Plot and label trigonometric functions using subplot command.
4. Generate various kinds of continuous and discrete time signals. Perform time scaling, time shifting and amplitude scaling on them.
5. Generate the (i) square wave and (ii) triangular wave of a specific amplitude and time period and plot it on a single graph.
6. Create a function which compares any two strings of equal length and return 'M' for matched character and 'U' for unmatched Character. Also display the number of characters matched.
7. Generate the (i) square wave and (ii) triangular wave of a specific amplitude and time period and plot it on a single graph.
8. Write a script to test whether a user defined no. is Prime or not.
9. Write a script which can evaluate the percentage (%) and grade of the student when subject marks are entered by the user.
10. Create a function which compares any two strings of equal length and return 'M' for matched character and 'U' for unmatched Character. Also display the number of characters matched.
11. Write a function to generate the AP series.
12. Write a function to generate the GP series.
13. Write a function to generate the Fibonacci series.
14. Write a function to generate the amplitude and frequency modulated signal.

Essential/recommended readings

1. Khanna, M., Bhatt, G. and Kumar, P., MATLAB Essentials for Problem Solving, (2019) PHI Learning, New Delhi.
2. Fausett, L. V., Applied Numerical Analysis Using MATLAB, (2005) Prentice Hall, Upper Saddle River, New Jersey.
3. Linfield, G. & Penny, J., Numerical methods using MATLAB, (2019) Ellis-Horwood.

Suggestive readings

1. Nakamura, S., Numerical Analysis and Graphic Visualization with MATLAB - Second Edition, Prentice Hall PTR, Upper Saddle River, New Jersey

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES OFFERED BY THE DEPARTMENTS

GENERIC ELECTIVES (GE-3):

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Virtual Instrumentation (INGE3A)	04	02	0	02	Course admission eligibility	Basic knowledge Electronics

Learning Objectives

The Learning Objectives of this course are as follows:

- To study the basic structure of virtual instrumentation
- To learn the basic programming concepts in LabVIEW
- To understand the basics of data acquisition for designing a Virtual Instrument

Learning outcomes

The Learning Outcomes of this course are as follows:

- Understand the importance and applications of Virtual Instrumentation
- Learn the basic programming concepts in LabVIEW
- Recognize the components of Virtual instrumentation and use them for PC Based measurement

SYLLABUS OF GE-3

UNIT – I **(8 hours)**

Graphical System Design: Graphical system design model, Design flow with GSD,

Virtual Instrumentation, Virtual instrument, and traditional instrument, Hardware and software in virtual instrumentation, Virtual instrumentation for Test, control & design, Graphical system design using LABVIEW, Graphical programming & textual programming.

UNIT – II **(7 hours)**

LabVIEW Basics: Introduction, advantages of LABVIEW software environment, palettes, front panel controls & indicators, Block diagram, Data flow program. Repetition and Loops: For loops, while loops, structure tunnels, terminals inside or outside loops, shift registers, feed-back nodes, control timing, case structure.

UNIT – III **(8 hours)**

Arrays and Clusters: Arrays, Introduction, arrays in LABVIEW, creating one – dimensional array controls, indicators, and constants, creating two-dimensional arrays, creating multidimensional arrays, initializing array, deleting, inserting, and replacing elements, rows, columns, and pages within arrays, arrays functions. Clusters: Cluster controls and indicator, order of cluster elements, Cluster operations.

Plotting Data: Types of waveforms, waveform graphs, waveform charts, XY graphs, Intensity graphs & charts, Digital waveform graphs, 3D graphs, customizing graphs & charts, configuring a graph or chart, Displaying special planners on the XY graph.

UNIT – IV **(7 hours)**

File Input/ Output: File formats, file write &read, generating filenames automatically, String handling,string functions, LABVIEW string formats, parsing of strings. Instrument Control: Introduction, GPIB communication, Hardware specification, software architecture, Instrument I/O assistant, VISA, Instrument drivers, serial port communications, using other interfaces.

Practical component: **(60 hours)**

1. Build a VI to compute the expressions Y = (A*B*C) + (D*E) and Y = mx + c.
2. Split an input string into two outputs with reference to a separating character. Find the length of the input string and reverse the string.
3. Build a VI to perform various Boolean Operations (AND, OR, NAND, NOR, XOR).
4. Write a program in LabVIEW to find whether the given number is odd or even.
5. Create a VI to find the sum of first n natural numbers using a While Loop with a feedback node.
6. Create a VI to compute full adder logic using half adder logic as subVI.
7. Write a program in LabVIEW to find the square of the numbers from 1 to 100 using (a) a For Loop and (b) a While Loop.
8. Create a VI to compare the element of two clusters if the value of the corresponding elements are the same switch on LED in the output cluster.
9. Create a VI to compare clusters and Switch ON an LED in the output cluster if the nth element of cluster 1 is greater than the nth element of cluster 2.
10. Create a 2D numeric array (5 x 5) containing random numbers and find its transpose.
11. Create a VI to read a two-dimensional array and find the sum of the elements

in the row-wise and column-wise separately and display the sums of the rows and columns.

12. Create a 1D array and find its reverse.
13. Build a VI to plot a circle in the XY graph using a For Loop.
14. Build a VI that generates a 1D array of random numbers and sort the ascending descending array and also find the max. and min. value array element.
15. Build a cluster control that consists of a seven-segment LED display, a switch, a string control, and numeric control. Split the cluster elements using the Unbundle function and alter the values of some of the cluster controls. Bundle them again and display in a cluster indicator.
16. Using For loop determine the number of odd numbers between a range of numbers entered by the user.
17. Build a VI to plot different colors in an intensity graph using an array.
18. Create a VI to check whether the cluster elements are in range or not. Specify the upper and lower limits. Display the coerced output and a cluster of LEDs to indicate whether a particular cluster element is in the range or not.
19. Write a program to solve x2+bx+c=0.
20. Build a VI to generate two waveforms of different amplitude and frequencies add the signal to find the resultant and plot it on a separate waveform graph.
21. Create a VI to read a two-dimensional array and find the sum of the elements in the row-wise and column-wise separately and display the sums of the rows and columns.

Essential/recommended readings

1. Jovitha Jerome,Virtual Instrumentation Using Labview,PHI Learning Pvt. Ltd. (2010)
2. John Essick, Hands-on Introduction to LabVIEW for Scientists and Engineers, 3rd Edition, 2015.
3. Gupta, Virtual Instrumentation Using Labview 2E, McGraw Hill. (2010)

Suggestive readings

1. Jeffrey Travis, LabVIEW for everyone, Prentice-Hall PTR,2007.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-3): Industrial and environmental techniques (INGE3B)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/		

				Practice		
Industrial and environmental techniques (INGE3B)	**04**	**02**	**0**	**02**	**Course admission eligibility**	**Basic knowledge of chemistry or analytical chemistry**

Learning Objectives

The Learning Objectives of this course are as follows:

- Demonstration of a clear and exhaustive understanding of the basic concepts of Industrial analysis of different industrial products.
- Impart theoretical and practical knowledge of Analysis of food and food products
- Learn analysis of various pharmaceutical drugs as per the standard pharmacopeia
  To expose to different types of Environmental pollutants and their analysis:

Learning outcomes

The Learning Outcomes of this course are as follows:

- Identify the key environmental factors shaping an industry
- Demonstrate ability to use tools and methodologies for performing analysis for various types of industries
- Develop a detailed professional report of Industry Analysis conducted.

SYLLABUS OF GE-3

UNIT – I **(8 hours)**

Industrial analysis

Paints: Definition, constituents and their functions, flash point of paints, separation of pigments, binder and thinner. Analysis of vehicle and thinner.

Pigments: General outline of identification and analysis of pigments -organic and inorganic pigments, their qualitative chemical test, analysis of white and tinted pigments.

Pesticides: Definition and classification of pesticides, analysis of the following in outline – DDT, Malathion, Diagionon.

Alloys: Composition and estimation of main constituents in in the following – Stainless steel, Brass, Solder and Gun metal

Rubber and Polymers: Mechanical, Thermal, Electrical and Optical properties, Analysis and Characterization.

UNIT – II **(8 hours)**

Analysis of food and food products

Composition and analysis of the following: Milk- Specific gravity, total solid, fat, proteins, lactose, contaminants in milk (QAS, artificial color and antibiotic), Wheat flour- Moisture, ash, oil, fat, protein, fiber, acidity, starch and maltose. Beverages-

Alcohol contents. Tea- Moisture, ash, tannin and caffeine. cyclamate. Honey- Moisture, HMF, Free acid, pH and carbohydrate.

UNIT – III **(7 hours)**

Pharmaceutical analysis

Drug, classification of drugs, introduction to Indian pharmacopoeia. Analysis of following drugs as per IP and BP (monograms) - Amoxycillin, Analgin, Proponolol, Pilocarbine nitrate, Rifampicin, Paracetamol, Nimuselide, Ranitidine.

UNIT – IV **(7 hours)**

Environmental analysis

Analysis of water- color, Odor, pH, taste, conductivity, dissolved solid, hardness, DO, COD, BOD, chlorides, sulphates, nitrites and phosphates.

Analysis of air- Sampling, particulate matter, gaseous pollutants-SOX, NOX, COX and organic pollutant

Practical component: **(60 hours)**

1. Determination of physical parameters of wastewater: pH, color, conductivity and Oxidation reduction potential.
2. Determination of dissolved oxygen in given water sample.
3. Estimation of phosphorous in fertilizer
4. Determination of calcium in cement sample (Titrimetry)
5. Estimation of calcium and Magnesium in dolomite ore.
6. Analysis of water for COD.
7. Colorimetric estimation of trace of nitrogen in the given water sample using Nessler's reagent.
8. Analysis of tea and coffee.
9. Determination of refractive index of given edible oil/solvents and determine its percentage purity.
10. Determination of Ascorbic acid.
11. Colorimetric estimation of Rifampicin (IP 1996)
12. Assay of Aspirin.
13. Estimation of specific gravity and total solids present in milk samples.
14. Estimation of lactose content of milk.
15. Determination of glucose in honey.
16. Quality assessment of Rubber/polypropylene/polyethylene samples

Essential/recommended readings

1. Analytical chemistry: an introduction: D. A. Skoog, D. M. West and F. J. Holler, Saunders the College publishers, 6th edition.
2. Vogel's Textbook of Qualitative Chemical Analysis, ELBS, 6th edition 2009.
3. Indian Pharmacopeia (2018)
4. A.B. Mathur and I.S. Bhardwaj, Testing and Evaluation of Plastics, Allied Publishers Pvt Limited, 2003
5. Rao, E. S. (2013). Food Quality Evaluation (I ed.). New Delhi: Variety Book Publishers.
6. DeMan. (2007). Principles of Food Chemistry. Springer, 3rdedition.

Suggestive readings

1. Rao, E. S. (2013). Food Quality Evaluation (I ed.). New Delhi: Variety Book Publishers.
2. DeMan. (2007). Principles of Food Chemistry. Springer, 3rd edition.
1.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Semester-III

Department of Physical Education & Sports Sciences

BSc. (Hons.) Physical Education, Health Education and Sports

B.Sc.-PE- DSC-7 (4) Kinesiology

Sl. No.	Course Title &Code	Credits	Credit Distribution of the Course			Eligibility Criteria	pre- Requisite ofthe Course (if any)
			Lecture	Tutorial	Practical/Practice		
1.	Kinesiology	04	3	0	1	XII Passed	NIL

Objective: To impart the knowledge, practices, Applications and analyses related to Kinesiology.

Learning Outcome: Students will learn the science of movement for better sports performance and the basic knowledge practices, Applications and skills of Kinesiology will help to create a strong foundation for Physical Education and Sports to engage human subjects of all ages, sex, and ability.

The student will learn the concepts and applications meaning, aim & objectives, importance of kinesiology for physical education and sports, Fundamental concepts and Applications Centre of gravity, line of gravity, axis and planes of motion, fundamental starting positions, terminology of fundamental movements, and classification of muscles.

The student will develop the understanding skill and practices about Location & Action of Muscles at Various Joints:- a) Upper extremity – shoulder girdle, shoulder joints, elbow joint, b) Neck, trunk (Lumboth oracic region and c) Lower extremity – Hip joint, knee joint, ankle joint and Muscular analysis of fundamental movements:- Walking, running, jumping, throwing, catching, pulling, pushing, striking, hanging.

The student will gain knowledge and Applications of Structure of Motor Actions: - Structure of cyclic and acyclic motoraction and movement combination, functional relationship of different phases of motor action.

The student will gain knowledge and applications of Qualities & Physiological Principles of Movements such as movement rhythm, movement coupling movement flow, movement precision and movement amplitude.

The Student will be able to analyze (Muscular) the Fundamental, Sports Skills, as their innovative applications.

THEORY SYLLABUS (45 hours/Lectures)

UNIT-I **(11 Hours/lectures)**

Meaning, aim & objectives, importance of kinesiology for physical education and sports
Fundamental concepts: Centre of gravity, line of gravity, axis and planes of motion, fundamental starting positions, terminology of fundamental movements, and classification of muscles

UNIT-II **(11 Hours/lectures)**

Location & Action of Muscles at Various Joints:-
a) Upper extremity – shoulder girdle, shoulder joints, elbow joint
b) Neck, trunk (Lumboth oracic region)
c) Lower extremity – Hip joint, knee joint, ankle joint Muscular analysis of fundamental movements:- Walking, running, jumping, throwing, catching, pulling, pushing,striking, hanging

UNIT-III **(12 hours/lectures)**

Structure of Motor Actions: - Structure of cyclic and acyclic motor action and movement combination, functional relationship of different phases of motor action.

UNIT-IV **(11 hours/lectures)**

Qualities & Physiological Principles Of Movements:- Movement rhythm, movement coupling movement flow, movement precision and movement amplitude.

Practical **(30 hours/lectures)**

1. Demonstration of planes & axes of a given movement.
2. Determination of the location of muscles at various joints:
   - i. Shoulder girdle
   - ii. Shoulder joints
   - iii. Elbow joint
   - iv. Hip joint
   - v. Knee joint
   - vi. Ankle joint
3. Muscular analysis of the techniques of game of your specialization
4. Measurement Demonstration of qualities of movement.

SUGGESTED READINGS

1. Bartlett, R. (2007). Introduction to Sports Biomechanics. Routledge Publishers, USA.
2. Blazevich, A. (2007). Sports Biomechanics. A & C Black Publishers, USA.
3. Breer & Zarnicks (1979). Efficiency of human movement. WIB Sounders Co. USA.
4. Hamill, J. and Knutzen, K.M. (2003). Biomechanical Basis of Human Movement. Lippincott Williams and Wilkins, USA.
5. Hay (1993). The biomechanics of sports techniques. Prentice Hall Inc. New Jersey.
6. McGinnis, P. (2004). Biomechanics of Sports & Exercise. Human Kinetics, USA.
7. Oatis, C.A. (2008). Kinesiology.2nd Ed. Lippincott, Williams & Wilkins, USA.
8. Lakshmi, V. (2005), Biomechanics of Body Movement in Sports. Khel Sahitya Kendra: New Delhi
9. Shaw, D. (2014). Mechanical Basis of Biomechanics. Sports Publication: New Delhi
10. Margaria, R. (1979). Biomechanics and Energetics of Muscular Exercise. University Press, Oxford: Great Britain
11. Rai, R. (2003). Biomechanics Mechanics Aspects of Human Motion. Agrim Publication: Mohali
12. Uppal, A.K., Kumar, V.L.G. & Panda, M.M. (2004). Biomechanics in Physical Education and Exercise Science. Friends Publication: New Delhi
13. Shaw, D (2018). Pedagogic Kinesiology. Sports Publication: Delhi
14. Wells, K.F. & Luttgens, K. (1976). Kinesiology: Scientific Basic of Human Motion (6th Ed.) Saunders College Publishing. Philadelphia
15. Robertson, D.G.E. Caldwell, G.E., Hamil, J. Kamen G., & Whittlesey, S.N. (2014). Research Methods in Biomechanics. (2nd ed.) Edwards Brothers Malloy: USA
16. Shaw , D (2003). Sports Biomechanics. Khel Sahitya Kendra: New Delhi.
17. Shaw, D (1998). Biomechanics and Kinesiology of human motion. Khel Sahitya Kendra: New Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Semester III

DSC-8 (4) EXERCISE & SPORTS PSYCHOLOGY

Sr. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite of the Course (if any)
			Lecture	Tutorial	Practical/Practice		
1	Exercise & Sports Psychology	4	3	0	1	XII Pass	NIL

Objective: - The student is provided with the knowledge Practices Applications and Innovative of psychological aspects of sports performance.

Learning Outcome: - The student learns the psychological aspects to apply to improve the performance in sports. Such core knowledge and skills helps to create a strong foundation to engage human subject of all ages, sex, and ability

The student will learn about Sports and Exercise Psychology and understanding Practices and Applications, motivation, arousal and anxiety and personality.

The student will gain knowledge applications and practices of about the Group, Dynamic, aggression, psychological preparation and performance enhancement.

The learner will able to create data and its interpretation

THEORY SYLLABUS (45 Hours/Lectures)

Unit-I (i) Sports and Exercise Psychology (ii) Concept, Scope, role of sports and exercise psychologist (iii) Importance of Sports and exercise psychology. (iv) Historical development and future of Sports and Exercise Psychology, **(12 Hours/Lectures)**

Unit-II (i) Motivation: guidelines for building motivation, achievement motivation.
(ii) Arousal and Anxiety: Types, phenomena of Anxiety in relation to performance – Drive Theory, Inverted U Theory and IZOF. **(11 Hours/Lectures)**

Unit-III (i) Personality: approaches to personality – Trait, types and psychodynamic theories, determinants of personality, assessment of personality.
(ii) Team Cohesion: a conceptual model of Cohesion, assessment of Cohesion, relationship of Cohesion with performance. **(11 Hours/Lectures)**

Unit-IV (i) Aggression in sports: types, phenomena of Aggression – Instinct Theory and Social Learning Theory, Assessment of Aggression and Leadership in Sports
(ii) Psychological preparation – Long term and short term psychological preparation, Goal setting and self-confidence **(11 Hours/Lectures)**

Practical Syllabus (30 Hours/ Lectures)

1. Measurement of Motivation
2. Measurement of Anxiety
3. Measurement of Personality
4. Measurement of Team Cohesion
5. Measurement of Aggression

SUGGESTED READINGS:

1. Coaklay, J.J. (2009). Sporting Sociology, Issues and controversies, Mcgraw Hill International (Uint-1,3,4&5) Dixit S (2006). Khel- Manovigyan. Sports Publications. Delhi
2. Cohen RJ and Swerdlik ME (2002). .Psychological testing and Assessment: An Introduction to Tests and Measurement. McGraw Hill. New York. U.S.A.
3. Cox RH (2002). Sport Psychology. McGraw Hill. London.
4. Liukkonen JED (2007). Psychology for Physical Educators. Human Kinetics. U.S.A. Mortin GL (2003). Sports Psychology, Sports Science. Press. USA.
5. Sahni SP (2005). Psychology and Its Application in Sports. D.V.S. Delhi. Shaw D and Other (2005). Sport & Exercise Psychology. Bios. U.K.
6. Verma V (1999). Sport Psychology & All Round Development. Sport Pub. New Delhi.
7. Wann DL (1997). Sport Psychology. Prentice Hall. New Jerey.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Semester-III
BSc-PE-DSC-9(4)-101: ATHLETICS

Sr. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite of the Course (if any)
			Lecture	Tutorial	Practical/Practice		
1	Athletics	04	2	0	2	XII Pass	NIL

Objective: - The Students will acquire knowledge and understanding of a specific sport in which an individual wishes to excel.
Learning Outcome:-The student will attain knowledge, understanding, interpreting and analyzing proficiency in a game of one's choice.

After the Completion of First Month:

The student will be able to gain knowledge with respect to Historical Development, Organizational Structure and Playfield Technology of the respective sport/game.

After the Completion of Second Month:

A student will be able to understand and interpret the rules of game as well as game knowledge in the areas of psychological basis of Warming up and technical aspects of coaching.

After the Completion of Third Month:

A student will be able to learn and acquire various skills of sports, gain knowledge about different tests of fitness andskill evaluation as well as the evaluation of player's performance. The technical practice of sprint races, middle and long distance races, hurdles races, jumping event- long jump, throwing events- shot put, hammer throw.

After the Completion of Fourth Month:

A student will be learning about various fitness components and its forms. Further, the student will be able to practice and improve performance on the basis of knowledge gained in understanding various fitness components. Track marking and marking of different arenas for selected events in unit-III.

THEORY SYLLABUS (60 hrs lectures)

Unit-I **(08 hrs lectures)**

- Historical Development and Modern Trends (National and International Level)
- Organisational Structure (State, National and International Level)
- Playfield Technology – Marking and Construction of the playfields.

Unit-II **(08 hrs lectures)**

- Rules and their interpretation of the sport.
- Warming up and psychological basis of Warming up.
- Cooling down and its effect.
- Techniques of Coaching – Pep talk, Pre, during and Post match competition Coaching.

Unit-III **(07 hrs lectures)**

- Basic skills and techniques of the Sports/Game- – sprint races, middle and long distance races, hurdles races, jumping event- long jump, throwing events- shot put, hammer throw.
- Motor Fitness Components Testing
- Skill/Technique Evaluation
- Evaluation of Player's Performance.

Unit-IV **(07 hrs lectures)**

- Introduction to Physical and Motor Fitness components related to sport: Strength, Speed, Endurance, Coordinative Abilities and Flexibility.

- Track marking and marking of different arenas for selected events in unit-III.

Practical - **(60 hrs.)**

1. Learning and demonstrating various skills/techniques of sports- sprint races, middle and long distanceraces, hurdles races, jumping event- long jump, throwing events- shot put.
2. Learning to demonstrate various tests to evaluate motor components as listed in unit IV above.
3. Track marking and marking of different arenas for selected events in unit-III.

SUGGESTED READINGS:

- Chauhan VS (1999). Khel Jagat Mein Athletics. A.P. Pub, Jalandhar.
- Bompa O. Tudor and Halff G. Gregory. (2009) "Periodization Theory and Methodology of Training" Human kinetics. NY.
- Evans DA (1984). Teaching Athletics. Hodder, London.
- Fox EL (1998). Physiological Basis of Physical Education and Athletics Brown Pub.
- Gothi E (2004). Teaching & Coaching Athletics. Sport Pub., New Delhi.
- Gupta R. (2004). Layout & Marking of Track & Field. Friends Publications. India. New Delhi.
- Handbook-Rules and Regulation. International Athletic Federation (2010).
- Herb Amato, DA ATC et al (2002). Practical Exam Preparation Guide of Clinical Skills of Athletic Training. Slack Incorporated. 1st ed., USA.
- Kumar, Pardeep. (2008). Historical Development of Track & Field. Friends Publication. New Delhi
- Maughan, R. and Gluson, M. (2004). The Biomechanical Basics of Athletic Performance. Oxford University Press, U.K.
- Prentice, W. and Arnheim, D. (2005). Arnheim"s Principles of Athletic Training 12th Ed. McGraw Hill. in place of Knight (1988).
- Renwick GR (2001). Play Better Athletics. Sports Pub, Delhi.
- Singh, Hardayal. (1919). Science of Sports Training. DVS Publication, N. Delhi.
- Vanaik A. (2017). Officiating and Coaching, Friends Publication. New Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Semester III

BSc-PE-DSC-9 (4)-102: BADMINTON

Sr. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite of the Course (if any)
			Lecture	Tutorial	Practical/Practice		
1	Badminton	04	2	0	2	XII Pass	NIL

Objective: - The Students will acquire knowledge and understanding of a specific sport in which an individualwishes to excel.

Learning Outcome:-The student attains knowledge, understanding, interpreting and analyzing proficiency in agame of one"s choice.

After the Completion of First Month:

A student will be able to gain knowledge with respect to Historical Development, Organisational Structure and Playfield Technology of a sport/game.

After the Completion of Second Month:

A student will be able to understand and interpret the rules of game as well as game knowledge in the areas of physiological basis of Warming up and technical aspects of coaching.

After the Completion of Third Month:

A student will be able to learn and acquire various skills of sports/game, gain knowledge about different techniques evaluation as well as the evaluation of player's performance.

After the Completion of Fourth Month:

A student will be learning about various fitness components and its forms. Further, the student will be able to practice and improve performance on the basis of knowledge gained in understanding various fitness components and its testing.

THEORY SYLLABUS **(30 hrs lectures)**

Unit-I **(08 hrs lectures)**

- Historical Development and Modern Trends (National and International Level)
- organizational Structure (State, National and International Level)
- Playfield Technology – Marking and Construction of the playfields.

Unit-II **(08 hrs lectures)**

- Rules and their interpretation.
- Warming up and physiological basis of Warming up and its effect on performance.
- Cooling down and its effect.
- Techniques of Coaching – Pep talk, Pre, during and Post match coaching.

Unit-III **(07 hrs lectures)**

- Basic skills and techniques of the Sports/Game.
- Skill/Technique Evaluation
- Evaluation of Player's Performance.

Unit-IV

(07 hrs lectures)

- Introduction to Physical and Motor Fitness components: Strength, Speed, Endurance, Coordinative Abilities and Flexibility.
- Motor Fitness Components Testing of above components.

Practical - **(60 hrs.)**

Learning and demonstrating various skills/techniques of sports.
Learning to demonstrate various tests to evaluate motor components as listed in unit IV above.

SUGGESTED READINGS:

1. Bloss, M.V. et al (2000). Badminton. McGraw Hill,USA.
2. Bompa O Tudor and Halff G. Gregory. (2009) "Periodization Theory and Methodology ofTraining" Human kinetics. NY.
3. Brahms Bernd-Voler. (2010). Badmnton Handbook. Mayer & Mayer Sports: UK. Unt-II, III &IV-p-9-14.
4. Daris Pal. (1988). Badminton-The complete practical guide. Dairs & Charles Inc.: USA. Unit-IIp-1-28 III- p-29-88, 109-152 & IV-p-97-108
5. Downey J (1990). How to Coach Badminton. Collins Pub.London.
6. Golds, M. (2002). Badminton: Skills of the Game. Growood Press,USA.
7. Grice, T. (2007). Badminton: Steps to Success. 2nd Ed. Human Kinetics,USA.
8. GuptaR.KumarP.andTyagiS.(2008).TextbookonTeachingSkillandProwess(Part-I&II). FriendsPublication. New Delhi.
9. Hoeger, W.W. Kand & Hoeger, S.A. (1997). Principles and Labs for physical fitness. (2nd Edi.).Morton Publishing Company. USA. Unit- II- p-127, 178-187, Unit- p-10-194.
10. Singh, Hardayal. (1991). Science of Sport Training. D.V.S Pub. Delhi.
11. Singh, MK. (2007). Comprehensive Badminton. Friends Pub. New Delhi.
12. Vanaik A. (2005). Playfield Manual, Friends Publication. New Delhi.
13. Vanaik A. (2017). Officiating and Coaching, Friends Publication. New Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Semester III
BSc-PE-DSC-9 (4)-103: BASKETBALL

Sr. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite of the Course (if any)
			Lecture	Tutorial	Practical/Practice		
1	Basketball	04	2	0	2	XII Pass	NIL

Objective: - The Students will acquire knowledge and understanding of a specific sport in which an individualwishes to excel.
Learning Outcome:-The student attains knowledge, understanding, interpreting and analyzing proficiency in agame of one‟s choice.

After the Completion of First Month:

A student will be able to gain knowledge with respect to Historical Development, Organisational Structure and Playfield Technology of a sport/game.

After the Completion of Second Month:

A student will be able to understand and interpret the rules of game as well as game knowledge in the areas of physiological basis of Warming up and technical aspects of coaching.

After the Completion of Third Month:

A student will be able to learn and acquire various skills of sports/game, gain knowledge about different techniques evaluation as well as the evaluation of player‟s performance.

After the Completion of Fourth Month:

A student will be learning about various fitness components and its forms. Further, the student will be able to practice and improve performance on the basis of knowledge gained in understanding various fitness components and it‟s testing.

THEORY SYLLABUS **(30 hrs lectures)**

Unit-I **(07 hrs lectures)**

- Historical Development and Modern Trends (National and International Level)
- Organisational Structure (State, National and International Level)
- Playfield Technology – Marking and Construction of the playfields.

Unit-II **(08 hrs lectures)**

- Rules and their interpretation.
- Warming up and physiological basis of Warming up and its effect on performance.
- Cooling down and its effect.
- Techniques of Coaching – Pep talk, Pre, during and Post match coaching.

Unit-III **(07 hrs lectures)**

- Basic skills and techniques of the Sports/Game.
- Skill/Technique Evaluation
- Evaluation of Player‟s Performance.

Unit-IV **(08 hrs lectures)**

- Introduction to Physical and Motor Fitness components: Strength, Speed, Endurance, Coordinative Abilities and Flexibility.
- Motor Fitness Components Testing of above components.

Practical - **(60 hrs.)**

Learning and demonstrating various skills/techniques of sports.

Learning to demonstrate various tests to evaluate motor components as listed in unit IV above.

SUGGESTED READINGS

- Bompa O. Tudor and Halff G. Gregory. (2009) "Periodization Theory and Methodology of Training" Human kinetics. NY.
- Drewett, J. (2007). How to Improve at Basketball. Crabtree Publishing Co., USA.
- Goldstein, S. (1998). Basketball Fundamentals. 2nd Ed. Golden Aura Publishing,USA.
- Jain Naveen (2003). Play and Learn Basket Ball. Khel Sahitya Kendra. NewDelhi.
- Nat BB (1997). Conditioning Coaches Association. NBA Power Conditioning. Human Kinetics.
- Sharma OP (2003). Basket Ball Skills and Rules. Khel Sahitya Kendra, Delhi.
- Singh, Hardayal. (1919). Science of Sports Training. DVS Publication, N. Delhi.
- Wilmore & Costill (2004).Physiology of Sports &Exercise. Human Kinetics, US

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Semester III

BSc-PE-DSC-9 (4)-104: CRICKET

Sr. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite of the Course (if any)
			Lecture	Tutorial	Practical/Practice		
1	Cricket	04	2	0	2	XII Pass	NIL

Objective: - The Students will acquire knowledge and understanding of a specific sport in which an individualwishes to excel.

Learning Outcome:-The student attains knowledge, understanding, interpreting and analyzing proficiency in agame of one‟s choice.

After the Completion of First Month:

A student will be able to gain knowledge with respect to Historical Development, Organisational Structure and Playfield Technology of a sport/game.

After the Completion of Second Month:

A student will be able to understand and interpret the rules of game as well as game knowledge in the areas of physiological basis of Warming up and technical aspects of coaching.

After the Completion of Third Month:

A student will be able to learn and acquire various skills of sports/game, gain knowledge about different techniques evaluation as well as the evaluation of player‟s performance.

After the Completion of Fourth Month:

A student will be learning about various fitness components and its forms. Further, the student will beable to practice and improve performance on the basis of knowledge gained in understanding various fitness components and it‟s testing.

THEORY SYLLABUS

Unit-I **(07 hrs lectures)**

- Historical Development and Modern Trends (National and International Level)
- Organisational Structure (State, National and International Level)
- Playfield Technology – Marking and Construction of the playfields.

Unit-II **(08 hrs lectures)**

- Rules and their interpretation.
- Warming up and physiological basis of Warming up and it‟s effect on performance.
- Cooling down and its effect.
- Techniques of Coaching – Pep talk, Pre, during and Post match coaching.

Unit-III **(07 hrs lectures)**

- Basic skills and techniques of the Sports/Game.
- Skill/Technique Evaluation
- Evaluation of Player‟s Performance.

Unit-IV **(08 hrs lectures)**

- Introduction to Physical and Motor Fitness components: Strength, Speed, Endurance, Coordinative Abilities and Flexibility.
- Motor Fitness Components Testing of above components.

Practical - **(60 hrs.)**

Learning and demonstrating various skills/techniques of sports.

Learning to demonstrate various tests to evaluate motor components as listed in unit IV above.

SUGGESTED READINGS

1. Amarnath M. (1996). Learn to Play Good Cricket. UBS Publishers. New Delhi.
2. Bompa O. Tudor and Halff G. Gregory. (2009) "Periodization Theory and Methodology of Training" Human kinetics. NY.
3. Boycott, G. (2010). Play Cricket the Right Way. Great Northern Books Limited, U.K.
4. Cricket (2008). Sports Skills: Cricket Fielding (Know the Game). A & C Black Publishers.
5. Gupta, K. (2006). How to Play Cricket. Goodwill Publishing House, New Delhi.
6. Hobls, J. (2008). The Game of Cricket As it should be played. Jepson Press, USA.
7. Jain R. (2003). Fielding Drills in Cricket. Khel Sahitya Kendra. New Delhi.
8. Rachna (2002). Coaching Successfully: Cricket. Khel Sahitya Kendra. New Delhi.
9. Singh, Hardayal. (1919). Science of Sports Training. DVS Publication, N. Delhi.
10. Sharma P. (2003). Cricket.Shyam Parkashan.Jaipur.
11. Vanaik A. (2017). Officiating and Coaching, Friends Publication. New Delhi

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Semester III

BSc-PE-DSC-9(4)-105: FOOTBALL

Sr. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite of the Course (if any)
			Lecture	Tutorial	Practical/Practice		
1	Football	04	2	0	2	XII Pass	NIL

Objective: - The Students will acquire knowledge and understanding of a specific sport in which an individualwishes to excel.

Learning Outcome:-The student attains knowledge, understanding, interpreting and analyzing proficiency in agame of one‟s choice.

After the Completion of First Month:

A student will be able to gain knowledge with respect to Historical Development, Organisational Structure and Playfield Technology of a sport/game.

After the Completion of Second Month:

A student will be able to understand and interpret the rules of game as well as game knowledge in the areas of physiological basis of Warming up and technical aspects of coaching.

After the Completion of Third Month:

A student will be able to learn and acquire various skills of sports/game, gain knowledge about different techniques evaluation as well as the evaluation of player‟s performance.

After the Completion of Fourth Month:

A student will be learning about various fitness components and its forms. Further, the student will beable to practice and improve performance on the basis of knowledge gained in understanding various fitness components and it‟s testing.

THEORY SYLLABUS

Unit-I **(08 hrs lectures)**

- Historical Development and Modern Trends (National and International Level)
- Organisational Structure (State, National and International Level)
- Playfield Technology – Marking and Construction of the playfields.

Unit-II **(08 hrs lectures)**

- Rules and their interpretation.
- Warming up and physiological basis of Warming up and its effect on performance.
- Cooling down and its effect.
- Techniques of Coaching – Pep talk, Pre, during and Post match coaching.

Unit-III **(07 hrs lectures)**

- Basic skills and techniques of the Sports/Game.
- Skill/Technique Evaluation
- Evaluation of Player‟s Performance.

Unit-IV **(07 hrs lectures)**

- Introduction to Physical and Motor Fitness components: Strength, Speed, Endurance, Coordinative Abilities and Flexibility.
- Motor Fitness Components Testing of above components.

Practical – **(60 hrs.)**

Learning and demonstrating various skills/techniques of sports.

Learning to demonstrate various tests to evaluate motor components as listed in unit IV above.

SUGGESTED READINGS

1. American Football Coaches Association (2002). The Football Coaching Bible. 1st Ed., Human Kinetics, USA.
2. Bompa O. Tudor and Halff G. Gregory. (2009) "Periodization Theory and Methodology of Training" Human kinetics. NY.
3. Carling, C., Williams, M. and Reilling, T. (2006). Handbook of Soccer Match Analysis: A Systematic Approach to Improving Performance. Routledge Publishers, USA.
4. Long, H. and Czarnecki, J. (2007). Football for Dummies. For Dummies Publisher, USA.
5. N Kumar (2003). Play and Learn Football. K.S.K. New Delhi.
6. Reilly, T. (2006). The Science Training Soccer: A Scientific Approach to Developing Strength, Speed and Endurance. Routledge Publisher, USA.
7. Reilly, T. and J.C.D. Arau (2008). Science and Football V: The Proceedings of the 5th World Congress on Sports Science and Football, Volume5.
8. Singh, Hardayal. (1919). Science of Sports Training. DVS Publication, N. Delhi.
9. Sharma OP (2001). Teaching and Coaching –Football. Khel S.K.Delhi.
10. Vanaik A. (2017). Officiating and Coaching, Friends Publication. New Delhi

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Semester III

BSc-PE-DSC-9 (4)-106: GYMNASTICS

Sr. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite of the Course (if any)
			Lecture	Tutorial	Practical/Practice		
1	Gymnastics	04	2	0	2	XII Pass	NIL

Objective:-The Students will acquire knowledge and understanding of a specific sport in which an individual wishes to excel.

Learning Outcome:-The student attains knowledge, understanding, interpreting and analyzing proficiency in a game of one‟s choice.

After the Completion of First Month:

A student will be able to gain knowledge with respect to Historical Development, Organisational Structure and Playfield Technology of Gymnastics.

After the Completion of Second Month:

A student will be able to understand and interpret the rules of game as well as game knowledge in the areas of physiological basis of Warming up and technical aspects of coaching.

After the Completion of Third Month:

A student will be able to learn and acquire various skills of Gymnastics, gain knowledge about different tests of fitness and skill evaluation as well as the evaluation of player‟s performance.

After the Completion of Fourth Month:

A student will be learning about various fitness components and its forms. Further, the student will beable to practice and improve performance on the basis of knowledge gained in understanding various fitness components.

THEORY SYLLABUS

Unit-I **(07 hrs lectures)**

- Historical Development and Modern Trends (National and International Level)
- Organisational Structure (State, National and International Level)
- Playfield Technology – Marking and Construction of the playfields.

Unit-II **(08 hrs lectures)**

- Rules and their interpretation of the sport.
- Warming up and psychological basis of Warming up.
- Cooling down and its effect.
- Techniques of Coaching – Pep talk, Pre, during and Post match coaching.

Unit-III **(08 hrs lectures)**

- Basic skills and techniques of the Artistic Gymnastics, trampoline, parko and rhythmic
- Motor Fitness Components Testing
- Skill/Technique Evaluation
- Evaluation of Player‟s Performance.

Unit-IV **(07 hrs lectures)**

- Introduction to Physical and Motor Fitness components related to sport: Strength, Speed, Endurance, Coordinative Abilities and Flexibility.

- Practical - (60 hrs.)
  - Learning and demonstrating various skills/techniques of Artistic Gymnastics, trampoline, parko and rhythmic.
  - Learning to demonstrate various tests to evaluate motor components as listed in unit IV above.

SUGGESTED READINGS

1. Bompa O. Tudor and Halff G. Gregory. (2009) "Periodization Theory and Methodology of Training" Human kinetics. NY.
2. Brown (2009). How to Improve at Gymnastics. Crabtree Publishing Co., USA.
3. Chakraborty S and Sharma L (1995). Fundamental of Gymnastics. D.V.S. Pub. New Delhi.
4. Chakraborty S (1995). Fundamental of Gymnastics. DVS Pub. New Delhi.
5. Chakraborty S (1998). Women's Gymnastics. Friends Pub.Delhi.
6. Code of Points Trampoline Gymnastics (2005). Federation Int. DE Gymnastics
7. Federation International Gymnastics (2006). Federation Int. DE Gymnastics
8. Harvey FJ (1998). Physical Exercises & Gymnastics. Khel Sahitya. New Delhi.
9. Jain R (2005). Play and Learn Gymnastics. Khel SahitayaKendra
10. Mitchell, D., Davis, B. and Lopez, R. (2002). Teaching Fundamental Gymnastics Skills. Human Kinetics, USA.
11. Price, R.G. (2006). The Ultimate Guide to Weight Training for Gymnastics. 2nd Ed. Sportsworkout.com.
12. Schlegel, E. and Dunn, CR. (2001). The Gymnastics Book: The Young Performer"s Guide to Gymnastics. Firefly Books, USA.
13. Smither Graham (1980). Behing the Science of Gymnastics. London.
14. Singh, Hardayal. (1919). Science of Sports Training. DVS Publication, N. Delhi.
15. Stickland, L.R. (2008). Gender Gymnastics. Trans Pacific Press, Japan.
16. Vanaik A. (2017). Officiating and Coaching, Friends Publication. New Delhi

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Semester III

BSc-PE-DSC-9 (4)-107: HANDBALL

Credit = 4 (2 THz + 2 P)

Max. Marks=100 30 hrs Theory + 60 hrs Practical

Sr. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite of the Course (if any)
			Lecture	Tutorial	Practical/Practice		
1	Handball	04	2	0	2	XII Pass	NIL

Objective: - The Students will acquire knowledge and understanding of a specific sport in which an individual wishes to excel.

Learning Outcome:-The student attains knowledge, understanding, interpreting and analyzing proficiency in a game of one‟s choice.

After the Completion of First Month:

A student will be able to gain knowledge with respect to Historical Development, Organisational Structure and Playfield Technology of a sport/game.

After the Completion of Second Month:

A student will be able to understand and interpret the rules of game as well as game knowledge in the areas of physiological basis of Warming up and technical aspects of coaching.

After the Completion of Third Month:

A student will be able to learn and acquire various skills of sports/game, gain knowledge about different techniques evaluation as well as the evaluation of player‟s performance.

After the Completion of Fourth Month:

A student will be learning about various fitness components and its forms. Further, the student will beable to practice and improve performance on the basis of knowledge gained in understanding various fitness components and it‟s testing.

THEORY SYLLABUS

Unit-I **(08 hrs lectures)**

- Historical Development and Modern Trends (National and International Level)
- Organisational Structure (State, National and International Level)
- Playfield Technology – Marking and Construction of the playfields.

Unit-II **(08 hrs lectures)**

- Rules and their interpretation.
- Warming up and physiological basis of Warming up and its effect on performance.
- Cooling down and its effect.
- Techniques of Coaching – Pep talk, Pre, during and Post match coaching.

Unit-III (07 hrs lectures)

- Basic skills and techniques of the Sports/Game.
- Skill/Technique Evaluation
- Evaluation of Player‟s Performance.

Unit-IV **(07 hrs lectures)**

- Introduction to Physical and Motor Fitness components: Strength, Speed, Endurance, Coordinative Abilities and Flexibility.
- Motor Fitness Components Testing of above components.

Practical - (60 hrs.)

Learning and demonstrating various skills/techniques of sports.

Learning to demonstrate various tests to evaluate motor components as listed in unit IV above.

SUGGESTED READINGS

1. Bompa O. Tudor and Halff G. Gregory. (2009) "Periodization Theory and Methodology of Training" Human kinetics. NY.
2. Jain D (2003). Play & Learn Handball. Khel Sahitya Kendra. New Delhi.
3. Kleinman, I. (2009). Complete Physical Education Plans. 2nd Ed. Human Kinetics, USA.
4. Page, J. (2000). Ball Games. Lerner Sports Publisher, USA.
5. Phillips, B.E. (2009). Fundamental Handball. Kessinger Publishers, USA.
6. Schmottlach N Mcmanama J (1997). Physical Education Handbook. 9th Edition. Allyn & Bacon.London.
7. Schmottlach, N. and McManama (2005). Physical Education Activity Handbook. Benjamin Cummings, USA.
8. Singh, Hardayal. (1919). Science of Sports Training. DVS Publication, N. Delhi.
9. Surhone, L.M. et al (2010). Team Handball. Betascript Publishing,USA
10. Vanaik A. (2005). Playfield Manual, Friends Publication. New Delhi
11. Vanaik A. (2017). Officiating and Coaching, Friends Publication. New Delhi

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Semester III

BSc-PE-DSC-9 (4)-108: HOCKEY

Credit = 4 (2 THz + 2 P)

Max. Marks=100 30 hrs Theory + 60 hrs Practical

Sr. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite of the Course (if any)
			Lecture	Tutorial	Practical/Practice		
1	Hockey	04	2	0	2	XII Pass	NIL

Objective: - The Students will acquire knowledge and understanding of a specific sport in which an individual wishes to excel.
Learning Outcome:-The student attains knowledge, understanding, interpreting and analyzing proficiency in a game of one‟s choice.

After the Completion of First Month:

A student will be able to gain knowledge with respect to Historical Development, Organisational Structure and Playfield Technology of a sport/game.

After the Completion of Second Month:

A student will be able to understand and interpret the rules of game as well as game knowledge in the areas of physiological basis of Warming up and technical aspects of coaching.

After the Completion of Third Month:

A student will be able to learn and acquire various skills of sports/game, gain knowledge about different techniques evaluation as well as the evaluation of player‟s performance.

After the Completion of Fourth Month:

A student will be learning about various fitness components and its forms. Further, the student will be able to practice and improve performance on the basis of knowledge gained in understanding various fitness components and it‟s testing.

THEORY SYLLABUS

Unit-I **(08 hrs lectures)**

- Historical Development and Modern Trends (National and International Level)
- Organisational Structure (State, National and International Level)
- Playfield Technology – Marking and Construction of the playfields.

Unit-II

(08 hrs lectures)

- Rules and their interpretation.
- Warming up and physiological basis of Warming up and it‟s effect on performance.
- Cooling down and its effect.
- Techniques of Coaching – Pep talk, Pre, during and Post match coaching.

Unit-III (07 hrs lectures)

- Basic skills and techniques of the Sports/Game.
- Skill/Technique Evaluation
- Evaluation of Player‟s Performance.

Unit-IV **(07 hrs lectures)**

- Introduction to Physical and Motor Fitness components: Strength, Speed, Endurance, Coordinative Abilities and Flexibility.
- Motor Fitness Components Testing of above components.

Practical - (60 hrs)

Learning and demonstrating various skills/techniques of sports.
Learning to demonstrate various tests to evaluate motor components as listed in unit IV above.

SUGGESTED READINGS

1. Bompa O. Tudor and Halff G. Gregory. (2009) "Periodization Theory and Methodology of Training" Human kinetics. NY.
2. International Hockey Federation, Rules of the Game of Hockey with Guidance for Players and Umpires. International Hockey Federation.
3. Jain D (2003). Hockey Skills & Rules. khel Sahitya Kendra . New Delhi.
4. Narang P (2003). Play & Learn Hockey. Khel Sahitya Kendra. New Delhi.
5. Pecknold, R. and Foeste, A. (2009). Hockey : Essential Skills. McGraw Hills,USA.
6. Rossiter, S. (2003). Hockey the NHL Way : Goaltending Illustrated Edition. Sterling Publishers,USA.
7. Singh, Hardayal. (1919). Science of Sports Training. DVS Publication, N. Delhi.
8. Walter, R. and Johnson, M. (2009). Hockey Plays and Strategies. Human Kinetics,USA.
9. Weekes, D. (2003). The Biggest Book of Hockey Trivia. Greystone Books,USA.
10. Wukovits, J.F. (2000). History of Hockey 1st Ed. Lucent Books,USA.
11. Vanaik A. (2005). Playfield Manual, Friends Publication. New Delhi
12. Vanaik A. (2017). Officiating and Coaching, Friends Publication. New Delhi

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Semester III

BSc-PE-DSC-9(4)-109: JUDO

Credit = 4 (2 THz + 2 P)

Max. Marks=100 30 hrs Theory + 60 hrs Practical

Sr. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite of the Course (if any)
			Lecture	Tutorial	Practical/Practice		
1	Judo	04	2	0	2	XII Pass	NIL

Objective: - The Students will acquire knowledge and understanding of a specific sport in which an individual wishes to excel.

Learning Outcome:-The student will attain knowledge, understanding, interpreting and analyzing proficiency ina game of one‟s choice.

After the Completion of First Month:

A student will be able to gain knowledge with respect to Historical Development, Organisational Structure and Playfield Technology of a sport/game.

After the Completion of Second Month:

A student will be able to understand and interpret the rules of game as well as game knowledge in the areas of physiological basis of Warming up and technical aspects of coaching.

After the Completion of Third Month:

A student will be able to learn and acquire various skills of sports/game, gain knowledge about different techniques evaluation as well as the evaluation of player‟s performance.

After the Completion of Fourth Month:

A student will be learning about various fitness components and its forms. Further, the student will beable to practice and improve performance on the basis of knowledge gained in understanding various fitness components and it‟s testing.

THEORY SYLLABUS

Unit-I **(08 hrs lectures)**

- Historical Development and Modern Trends (National and International Level)
- Organisational Structure (State, National and International Level)
- Playfield Technology – Marking and Construction of the playfields.

Unit-II **(08 hrs lectures)**

- Rules and their interpretation.
- Warming up and physiological basis of Warming up and it‟s effect on performance.
- Cooling down and its effect.
- Techniques of Coaching – Pep talk, Pre, During and Post match Coaching.

Unit-III **(07 hrs lectures)**

- Basic skills and techniques of the Sports/Game.
- Skill/Technique Evaluation
- Evaluation of Player‟s Performance.

Unit-IV **(07 hrs lectures)**

- Introduction to Physical and Motor Fitness components: Strength, Speed, Endurance, Coordinative Abilities and Flexibility.
- Motor Fitness Components Testing of above components.

Practical - (60 hrs.)

Learning and demonstrating various skills/techniques of sports.
Learning to demonstrate various tests to evaluate motor components as listed in unit IV above.

SUGGESTED READINGS

1. Bompa O. Tudor and Halff G. Gregory. (2009) "Periodization Theory and Methodology of Training" Human kinetics. NY.
2. Diago, T. (2005). Kodokan Judo Throwing Techniques. Kodansha International Publishers,Japan.
3. Harrison EJ (2002). Coaching Successfully Judo. Sports.Delhi.
4. Jain D (2003). Play and Learn Judo. Khel Sahitaya Kendra. New Delhi.
5. Law, M. (2009). Falling Hard : A Journey into the World of Judo. Trumpeter Publisher,Japan.
6. Putin, V., Shestakov, V. ad Levitsky, A. (2004). Judo : History, Theory and Practice. Blue Snake Books, Moscow.
7. Singh, Hardayal. (1919). Science of Sports Training. DVS Publication, N. Delhi.
8. Takahashi, M. (2005). Mastering Judo. Human Kinetics,USA.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SemesterIII

BSc-PE-DSC-9 (4)-110: KABADDI

Credit = 4(2 THz + 2 P)

Max. Marks=100 30 hrs Theory + 60 hrs Practical

Sr. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite of the Course (if any)
			Lecture	Tutorial	Practical/Practice		
1	Kabaddi	04	2	0	2	XII Pass	NIL

Objective: - The Students will acquire knowledge and understanding of a specific sport in which an individualwishes to excel.

Learning Outcome:-The student will attain knowledge, understanding, interpreting and analyzing proficiency ina game of one"s choice.

After the Completion of First Month:

A student will be able to gain knowledge with respect to Historical Development, Organisational Structure and Playfield Technology of a sport/game.

After the Completion of Second Month:

A student will be able to understand and interpret the rules of game as well as game knowledge in the areas of physiological basis of Warming up and technical aspects of coaching.

After the Completion of Third Month:

A student will be able to learn and acquire various skills of sports/game, gain knowledge about different techniques evaluation as well as the evaluation of player"s performance.

After the Completion of Fourth Month:

A student will be learning about various fitness components and its forms. Further, the student will beable to practice and improve performance on the basis of knowledge gained in understanding various fitness components and it"s testing.

THEORY SYLLABUS

Unit-I

- Historical Development and Modern Trends (National and International Level) **(08 hrs lectures)**
- Organisational Structure (State, National and International Level)
- Playfield Technology – Marking and Construction of the playfields.

Unit-II

- Rules and their interpretation. **(08 hrs lectures)**
- Warming up and physiological basis of Warming up and it"s effect on performance.
- Cooling down and its effect.
- Techniques of Coaching – Pep talk, Pre, During and Post match Coaching.

Unit-III

- Basic skills and techniques of the Sports/Game. **(07 hrs lectures)**
- Skill/Technique Evaluation
- Evaluation of Player"s Performance.

Unit-IV (07 hrs lectures)

- Introduction to Physical and Motor Fitness components: Strength, Speed, Endurance, Coordinative Abilities and Flexibility.
- Motor Fitness Components Testing of above components.

Practical - **(60 hrs.)**

Learning and demonstrating various skills/techniques of sports.
Learning to demonstrate various tests to evaluate motor components as listed in unit IV above.

SUGGESTED READINGS

- Bompa O. Tudor and Halff G. Gregory. (2009) "Periodization Theory and Methodology of Training" Human kinetics. NY.
- Kumar, Dharmander. (2018). Kabaddi and It"s Playing Techniques. Writers Choice, New Delhi.
- Mishra , S.C. (2007). Teach Yourself Kabaddi. Sports Publications, New Delhi.
- Rao CV (1983). Kabaddi. Native Indian Sports. NSNIS. Patiala Publisher
- Rao EP (1994). Modern Coaching in Kabaddi.D.V.S.Pub
- Singh, Hardayal. (1919). Science of Sports Training. DVS Publication, N. Delhi.
- Syal, M. (2004). Kabaddi Teaching. Prerna Parkashan, New Delhi.
- Vanaik A. (2017). Officiating and Coaching, Friends Publication. New Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Semester III

BSc-PE-DSC-9(4)-111: KHO-KHO

Credit = 4(2 THz + 2 P)

Max. Marks=100 30 hrs Theory + 60 hrs Practical

Sr. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite of the Course (if any)
			Lecture	Tutorial	Practical/Practice		
1	Kho-Kho	04	2	0	2	XII Pass	NIL

Objective: - The Students will acquire knowledge and understanding of a specific sport in which an individualwishes to excel.

Learning Outcome:-The student will attain knowledge, understanding, interpreting and analyzing proficiency ina game of one‟s choice.

After the Completion of First Month:

A student will be able to gain knowledge with respect to Historical Development, Organisational Structure and Playfield Technology of a sport/game.

After the Completion of Second Month:

A student will be able to understand and interpret the rules of game as well as game knowledge in the areas of physiological basis of Warming up and technical aspects of coaching.

After the Completion of Third Month:

A student will be able to learn and acquire various skills of sports/game, gain knowledge about different techniques evaluation as well as the evaluation of player‟s performance.

After the Completion of Fourth Month:

A student will be learning about various fitness components and its forms. Further, the student will beable to practice and improve performance on the basis of knowledge gained in understanding various fitness components and it‟s testing.

THEORY SYLLABUS

Unit-I

- Historical Development and Modern Trends (National and International Level) **(08 hrs lectures)**
- Organisational Structure (State, National and International Level)
- Playfield Technology – Marking and Construction of the playfields.

Unit-II

- Rules and their interpretation. **(08 hrs lectures)**
- Warming up and physiological basis of Warming up and it‟s effect on performance.
- Cooling down and its effect.
- Techniques of Coaching – Pep talk, Pre, During and Post match Coaching.

Unit-III

- Basic skills and techniques of the Sports/Game. **(07 hrs lectures)**
- Skill/Technique Evaluation
- Evaluation of Player‟s Performance.

Unit-IV (07 **hrs** lectures)

- Introduction to Physical and Motor Fitness components: Strength, Speed, Endurance, Coordinative Abilities and Flexibility.
- Motor Fitness Components Testing of above components.

Practical - (60 hrs.)

Learning and demonstrating various skills/techniques of sports.
Learning to demonstrate various tests to evaluate motor components as listed in unit IV above.

SUGGESTED READINGS

1. Bompa O. Tudor and Halff G. Gregory. (2009) "Periodization Theory and Methodology of Training" Human kinetics. NY.
2. Chakrabarty G (2002). Kho - Kho Aveloken. Khel Sahitya Kendra.Delhi.
3. Panday L (1982). Kho - Kho Sarvaswa. Metropolitan. New Delhi
4. Singh, Hardayal. (1919). Science of Sports Training. DVS Publication, N. Delhi.
5. Vanaik A. (2005). Playfield Manual, Friends Publication. New Delhi
6. Vanaik A. (2017). Officiating and Coaching, Friends Publication. New Delhi

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Semester III

BSc-PE-DSC-9 (4)-112: VOLLEYBALL

Credit = 4(2 THz + 2 P)

Max. Marks=100 30 hrs Theory + 60 hrs Practical

Sr. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite of the Course (if any)
			Lecture	Tutorial	Practical/Practice		
1	Volleyball	04	2	0	2	XII Pass	NIL

Objective: - The Students will acquire knowledge and understanding of a specific sport in which an individualwishes to excel.
Learning Outcome:-The student will attain knowledge, understanding, interpreting and analyzing proficiency ina game of one‟s choice.

After the Completion of First Month:

A student will be able to gain knowledge with respect to Historical Development, Organisational Structure and Playfield Technology of a sport/game.

After the Completion of Second Month:

A student will be able to understand and interpret the rules of game as well as game knowledge in the areas of physiological basis of Warming up and technical aspects of coaching.

After the Completion of Third Month:

A student will be able to learn and acquire various skills of sports/game, gain knowledge about different techniques evaluation as well as the evaluation of player‟s performance.

After the Completion of Fourth Month:

A student will be learning about various fitness components and its forms. Further, the student will beable to practice and improve performance on the basis of knowledge gained in understanding various fitness components and it‟s testing.

THEORY SYLLABUS

Unit-I

- Historical Development and Modern Trends (National and International Level) **(08 hrs lectures)**
- Organisational Structure (State, National and International Level)
- Playfield Technology – Marking and Construction of the playfields.

Unit-II

- Rules and their interpretation. **(08 hrs lectures)**
- Warming up and physiological basis of Warming up and it‟s effect on performance.
- Cooling down and its effect.
- Techniques of Coaching – Pep talk, Pre, During and Post match Coaching.

Unit-III (07 hrs lectures)

- Basic skills and techniques of the Sports/Game.
- Skill/Technique Evaluation
- Evaluation of Player‟s Performance.

Unit-IV (07 hrs lectures)

- Introduction to Physical and Motor Fitness components: Strength, Speed, Endurance, Coordinative Abilities and Flexibility.
- Motor Fitness Components Testing of above components.

Practical - (60 hrs.)

Learning and demonstrating various skills/techniques of sports.

Learning to demonstrate various tests to evaluate motor components as listed in unit IV above.

SUGGESTED READINGS

1. American Volleyball Coaches Association (2005). Volleyball : Skills & Drills. Human Kinetics,USA.
2. Bompa O. Tudor and Halff G. Gregory. (2009) "Periodization Theory and Methodology of Training" Human kinetics. NY.
3. FIVB (1996). Backcourt Spiking in Modern Volley Ball. FIVB.Chennai.
4. Kenny, B. and Gregory, C. (2006). Volleyball : Steps to Success. Human Kinetics,USA.
5. Saggar SK (1994). Cosco Skills Statics - Volley Ball. Sport Publication. Delhi.
6. Scates AE (1993). Winning Volley Ball. WC Brown.USA.
7. Scates, A. and Linn, M. (2002). Complete Conditioning for Volleyball. Human Kinetics,USA.
8. Shondell, D. and Reynaud, C. (2002). The Volleyball Coaching Bible. Human Kinetics,USA.
9. Singh, Hardayal. (1919). Science of Sports Training. DVS Publication, N. Delhi.
10. The National Alliance for Youth Sports (2009). Coaching Volleyball. For Dummies Publishers,USA.
11. Volleyball, USA (2009). Volleyball : Systems and Strategies. Human Kinetics,USA.
12. Vanaik A. (2017). Officiating and Coaching, Friends Publication. New Delhi

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Semester III

BSc-PE-DSC-9 (4)-113: YOGA Credit = 4 (2 THz + 2 P)

Max. Marks=100 30 hrs Theory + 60 hrs Practical

Sr. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite of the Course (if any)
			Lecture	Tutorial	Practical/Practice		
1	Yoga	04	2	0	2	XII Pass	NIL

Objective:-The Students will acquire knowledge and understanding of a specific sport in which an individualwishes to excel.
Learning Outcome:-The student will attain knowledge, understanding, interpreting and analyzing proficiency ina game of one"s choice.

After the Completion of First Month:

The Students will develop the understanding and knowledge of Origin of yoga, definition and scope of yoga, limitations and misconceptions, importance of yoga in physical education and other fields, Yoga asana completion at:- State, National, International, SGFI, AIU etc. Philosophical aspects of Yog. Pre-Vedic, Vedic period; Buddhism, Upanishad period, Jainism & tantra, qualifications, qualities and responsibilities of a coach, Duties/responsibilities of technical official, Scoring system and judgment criteria, Protocols for referees, judges and officials.

The student will learn about the prayer.

After the Completion of Second Month:

The Students will develop the understanding and knowledge of Meaning, techniques, precautions & effects of the following:-Asanas : padmasana, vajrasana, sidhasana, paschimottanasa, halasana, sarvangasana, shalabhasana, ardh-matsyendrasana, bhujangasana, tadasana, vrikshasana, matsyasana, gomukhasana, ushtrasana, shavasana, makarasana, vrishchikasana, dhanurasana, purna matsyendrasana, chakrasana, ek pad sikandasana, bakasana, mayurasana, shirshasanaPranayama : anulom-vilom, bhastrika, suryabhedhen pranayama, sheetali, sheetkari, bhramari, ujjayiShatkarma : neti, dhauti, nauli, basti, kunjal, kapal bhati, shankh prakshalanaBandhas : jalandhar, uddyana, mool bandha.

The student will be able to perform Asanas, pranayama, shatkarma, bandha.

After the Completion of Third Month:

The Students will gain knowledge of Disease wise treatment through yoga therapy- Asthma, high & lowB.P, diabetes, obesity, heart disease, insomania, arthritis, backache & female disease.

The student will learn Yoga-nidra/relaxation techniques

After the Completion of Fourth Month:

The Students will gain knowledge of Diet & constitution, components of nutrition, water, natural diet,balanced diet, fasting-its benefits, types & preparation. Importance of vegetarianism in yogic diet.

The student will learn Visit to yoga centers/institutes

THEORY SYLLABUS

UNIT-I **(07 hrs lectures)**

- Origin of yoga, definition and scope of yoga, limitations and misconceptions of Yoga
- Importance of yoga in physical education and other fields
- Yoga asana competition at:- State, National, International, SGFI, AIU etc.

UNIT-II **(07 hrs lectures)**

- Philosophical aspects of yoga-Pre-Vedic, Vedic period; Buddhism, Upanishad period, Jainism & tantra
- Qualifications, qualities and responsibilities of a coach,
- Duties/responsibilities of technical official, Scoring system and judgment criteria,

- Protocols for referees, judges and officials.

UNIT-III **(09 hrs lectures)**

- Meaning, techniques, precautions & effects of the following:-
- Asanas : padmasana, vajrasana, sidhasana, paschimottanasa, halasana, sarvangasana, shalabhasana, ardh-matsyendrasana, bhujangasana, tadasana, vrikshasana, matsyasana, gomukhasana, ushtrasana, shavasana, makarasana, vrishchikasana, dhanurasana, purna matsyendrasana, chakrasana, ek pad sikandasana, bakasana, mayurasana, shirshasana
- Pranayama : anulom-vilom, bhastrika, suryabhedhen pranayama, sheetali, sheetkari, bhramari, ujjayi
- Shatkarma : neti, dhauti, nauli, basti, kunjal, kapal bhati, shankh prakshalana
- Bandhas : jalandhar, uddyana, mool bandha

UNIT-IV **(07 hrs lectures)**

- Disease wise treatment through yoga therapy- Asthma, high & low B.P, diabetes, obesity, heart disease, insomania, arthritis, backache & female disease
- Diet & Nutrition, components of nutrition, water, natural diet, balanced diet, fasting-its benefits, types & preparation, importance of vegetarianism in yogic diet.

PRACTICALS (60 hrs.)

1. Prayer
2. Asanas, pranayama, shatkarma, bandha (as mentioned in theory)
3. Yoga-nidra/relaxation techniques
4. Visit to yoga centers/institutes

SUGGESTED READINGS

- Anand Omprarkash (2001). Yog Dawra Kaya Kalp, Kanpur. Sewasth Sahitya Perkashan
- Iyengar, B.K.S. (1995). Light on Yoga : The Bible of Modern Yoga. Schocken Publishers, USA.
- Kaminoff, L. et al (2007). Yoga Anatomy. Human Kinetics, USA.
- Kirk, M. (2005). The Hatha Yoga Illustrated. Human Kinetics, USA.
- Sharma JP and Ganesh S(2007). Yog Kala Ek Prichya. Friends Publication. New Delhi
- Sharma J. P. (2007). Manav jeevan evam yoga. Friends Publication. New Delhi.
- Sharma Jai Prakash And Sehgal Madhu(2006). Yog-Shiksha. Friends Publication. Delhi.
- Sharma Jai Prakash and Rathore Bhupender Singh (2007). Yoga Ke Tatva. Friends Publication. Delhi
- Mukerji, A.P. (2010). The Doctorine and Practice of Yoga. General Books, LLC, New Delhi.
- Norton, W.W. (2010). Yoga for Osteoporosis : The Complete Guide. W.W. Norton & Company, USA.
- Sarin N (2003). Yoga Dawara Rogoon Ka Upchhar. Khel Sahitya Kendra
- Sri Swami Rama, (2001). Breathing. Rishikesh Sadhana Mandir Trust.
- Swami Ram (2000). Yoga & Married Life. Rishikesh Sadhana Mandir Trust
- Swami Swatma Ram: Patanjali Yoga Sutra
- Swami Veda Bharti (2000). Yoga Polity. Economy and Family. Rishikesh Sadhana Mandir Trust
- Text Book Hath Yoga Pradipika
- Text Book Patanjali Yoga Sutra

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Pool of Generic Electives

Semester III

GE-3(4)-301 Olympic Education

GE-3(4)-301
4 Credits (3 THz+1Tutorial)

Sr. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite of the Course (if any)
			Lecture	Tutorial	Practical/Practice		
1	Olympic Education	4	3	1	0	XII	---

Objective: To impart the knowledge, practices and applications about the Olympism its functions through the various International sportsfederation, National committees and IOC commissions.

Learning Outcome: Students will learn the deep knowledge about ancient and modern Olympics, administration,organisation of Olympics Games and functions of IOC.

After the Completion of First Month:

The students will develop the understanding practices, applications and knowledge of Concept of Olympics movement, the ancient Olympic Games and the Modern Olympic Games and its movement. It also helps to know about the aims and symbols of the Olympic movement and International Olympic Committee (IOC).

After the Completion of Second Month:

The students will develop the understanding practices, applications and knowledge of The National Olympic Committee (NOC), International Sports Federations (IFs), National Sports Federations (NFs), Volunteerism and Olympics games.

After the Completion of Third Month:

The students will gain understanding practices, applications and knowledge of the Organization of Olympics games, international bid process for selecting sites / city for the games, Participation in Olympic Games and about Women & sports.

After the Completion of Fourth Month:

The students will gain knowledge, practices, applications and understanding of the Olympic museum, Olympic academy and Olympic solidarity programme, Paralympics games and concept of Sports for all. It also helps to know about Culture, Olympism, winning, participation and universality of the games, drug abuse and doping in sports and games.

THEORY SYLLABUS: (60 Hours/Lectures)

UNIT-I THE OLYMPIC MOVEMENT (15 Hours/Lectures)

1 Concept of Olympics movement, the ancient Olympic games and the Modern Olympic games and itsmovement.
2 Aims and symbols of the Olympic movement.
3 The International Olympic Committee (IOC).

UNIT-II STRUCTURE OF THE OLYMPIC MOVEMENT (15 Hours/Lectures)

1. The National Olympic Committee (NOC).
2 The International Sports Federations (IFs).
3 The National Sports Federations (NFs).
4 Volunteerism and Olympics games.

UNIT-III THE OLYMPIC GAME (15 Hours/Lectures)

1 Organization of Olympics games.
2. The international bid process for selecting sites / city for the games.
3. Participation in Olympic Games.
4. Women and sports.

UNIT-IV IOC PROGRAMMES (15 Hours/Lectures)

1. Olympic museum, Olympic academy and Olympic solidarity program.
2. Paralympics games and concept of Sports for all.
3. Culture, Olympism, winning, participation and universality of the games.
4 Drug abuse and doping.

SUGGESTED READING:

- Carto, J.E.L. And Calif, S.D. (1984). Medicine & Sport Science: Physical Structure of OlympicAthletes. London: Karger.
- Cliw, Gifford, (2004). Summer Olympic.
- Daw, Anderson. (2008). The Story of the Olympics.
- Kumar, Pardeep. (2008). Historical Development of Track & Field. Friends Publication. New Delhi.
- Maranirs David, Rome 1960: The Olympics that changed the world, 2008.
- Osbome, Manpope, Ancient Greece and the Olympic, 2004.
- Oxlade, chris., Olympic, 1999.
- Perrottet, tony, The Naked Olympics: the true story of the Ancient Games, 2004.
- Toropove, Brandon., The Olympic for Beginners, 2008.
- Wallechineley, Davi, The Complete Book of the Olympic, 1992.

BA(PROG.) WITH PHYSICAL EDUCATION & SPORTS AS NON-MAJOR
SEMESTER-3
B.A.-PE-DSC-3 (MINOR)
HEALTH EDUCATION

DSC

Sl. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite of the Course (if any)
			Lecture	Tutorial	Practical/Practice		
1.	Health Education	04	3	0	1	XII	--

Objective: To acquaint the students with basic aspects and practices with application to health, health education and various health agencies.

Learning Outcomes of the Paper:

1. The learners will learn the basic concepts of developing the practices of health along with the dimensions, spectrum and determinant of health.
2. The learners will develop the ability to apply the scope and principles of health education in life.
3. The learners will be able to comprehend the role of personal and occupational hygiene for better health practices.
4. The learners will be able to understand and apply the causes and preventive measures of various communicable and non-communicable diseases.
5. The learners will gain knowledge and practices about the role and schemes of various health promoting agencies like WHO, UNICEF, UNDP, MHFW, Red Cross etc.
6. The learners will be able to change their behavioural aspects related to personal health.
7. The learners will be able to create the databases related to health and hygiene.

SYLLABUS

M.M.: 100
No. of Credits: 04 (Lecture-03, Practical-1)
Theory: 45 hours, Practical: 30 hours

Unit-1: Introduction to Health

1. Meaning, Definition & Importance of Health
2. Dimensions of Health
3. Spectrum of Health
4. Determinants of Health

Unit-2: Introduction to Health Education

1. Meaning and Definition of Health Education
2. Aim and Objectives of Health Education
3. Importance and Scope of Health Education
4. Principles of Health Education

Unit-3: Hygiene and Health Issues

1. Personal Hygiene
2. Occupational Hygiene
3. Communicable Diseases : Meaning, Spread and Prevention
4. Non-Communicable Diseases: Meaning, Spread and Prevention

Unit-4: Health Agencies

1. Introduction to International Health Agencies: WHO (World Health Organization), UNICEF (United Nations International Children's Fund), UNDP (United Nations Development Programme)
2. Introduction to National Health Agencies: Ministry of Health and Family Welfare; Indian Red Cross Society, Hind Kushth Nivaran Sangh, Indian Council for Child Welfare, Tuberculosis Association of India, Bharat Sevak Samaj, Central Social Welfare Board

PRACTICAL

1. Conduct a survey on personal hygiene Habits of your college students.
2. Visit to any one national health agency and preparation of a report.
3. Conduct a Survey on anyone of the following:
    a. Communicable Disease
    b. Non-Communicable Disease

SUGGESTED READINGS

1. Anspaugh, D.J.; Ezell, G. andGoodman, K.N. (2006).Teaching Today's Health.Mosby Publishers. Chicago, USA.
2. Balayan, D. (2007). Swasthya Shiksha Evam Prathmik Chikitsa. Khel Sahitya. Delhi.
3. Chopra,D. and Simon, D. (2001). Grow Younger, Live Longer: 10 Steps to Reverse Aging. Three Rivers Press. New York. USA.
4. Dewan, A.P. (1996). School Health Manual. Nature Cure and Yoga Health Centre. New Delhi.
5. Dixit, S. (2006). Swasthya Shiksha. Sports Publication. Delhi.
6. Donatelle, R.J. (2005). Health the Basics. Sixth Edition. Oregon State University.
7. Floyd, P. M. and Yeilding, C. (2003). Personal Health: Perspectives and Lifestyles. Thomson Wads Worth. Belmont. California. USA.
8. Hales, D. (2005). An Invitation to Health. Thomson-Wadsworth, Belmont. California.USA.
9. Park, K. (2007). Park‟s Text Book of Preventive & Social Medicine. Banarsi Das Bhanot & Company. Delhi.
10. Snehlata (2006). Shareer,Vigyan Evam Swasthya Raksha. Discovery Pub. Houses. New Delhi.
11. Uppal, A.K. & Gautam, G.P. (2008). Health & Physical Education. Friends Publication. New Delhi.

BA(PROG.) WITH PHYSICAL EDUCATION & SPORTS AS MAJOR
SEMESTER-3
B.A.-PE-DSC-3 (MAJOR)
SPORTS NUTRITION AND ERGOGENIC AIDS

DSC

Sl. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite of the Course (if any)
			Lecture	Tutorial	Practical/Practice		
1.	Sports Nutrition and Ergogenic Aids	04	3	0	1	XII	--

Objective: To acquaint the students with basic concepts, application and creativity related to sports nutrition and ergogenic aids.

Learning Outcomes of the Paper:

1. The learners will understand the basic concept and practices of Nutrition and its importance in the field of Sports.
2. The learners will be able to describe the functions of different types of Nutrients and their sources.
3. The learners will gain knowledge of application of nutrient-supplementation and nutrition guidelines.
4. The learners will understand the concept of Ergogenic Aids and their role in sports.
5. The learners will identify the list of prohibited substances to control doping.
6. The learners will be able to create / construct the diet chart/ plan as per individual needs.
7. The learners will be acquainted to the role of World Anti -Doping Agency (WADA) and National Anti-Doping Agency.

SYLLABUS

M.M.: 100
No. of Credits: 04 (Lecture-03, Practical-1)
Theory: 45 hours, Practical: 30 hours

Unit-1: Nutrition

1. Meaning, Definition & Importance of Nutrition
2. Nutrients: Classification, Function, Source
3. Balanced Diet, Dietary Aids, Dietary Gimmicks
4. Achieving a Healthy and Balanced Diet

Unit-2: Sports Nutrition

1. Role of Nutrition in Sports
2. Basic Nutrition Guidelines
3. Energy Balance Equations
4. Pre- and Post-performance Nutrition to athletes

Unit-3: Ergogenic Aids

1. Meaning and Definition of Ergogenic Aids
2. Types of Ergogenic Aids
3. Role of Ergogenic Aids in Sports
4. Nutrition and Ergogenic Aids

Unit-4: Doping and Sports

1. Meaning and Definition of Doping
2. Disadvantages of Doping in Sports
3. Introduction to WADA (World Anti-Doping Agency) and NADA (National Anti-Doping Agency)
4. List of prohibited substances by WADA (World Anti-Doping Agency)

PRACTICAL

1. Preparation of a regular Diet Chart/ Plan for Sportspersons.
2. Preparation of Diet Schedule for Competitive performance (before and after the competition)
3. Visit to Nutritional/ Medical institution and preparation of report.
4. Conduct survey on nutritional practices of sportspersons.

SUGGESTED READINGS

1. Anspaugh, D.J.; Ezell, G. and Goodman, K.N. (2006). Teaching Today's Health. Mosby Publishers. Chicago, USA.
2. Balayan, D. (2007). Swasthya Shiksha Evam Prathmik Chikitsa. Khel Sahitya. Delhi.
3. Chopra, D. and Simon, D. (2001). Grow Younger, Live Longer: 10 Steps to Reverse Aging. Three Rivers Press. New York. USA.
4. Dewan, A.P. (1996). School Health Manual. Nature Cure and Yoga Health Centre. New Delhi.
5. Dixit, S. (2006). Swasthya Shiksha. Sports Publication. Delhi.
6. Donatelle, R.J. (2005). Health the Basics. Sixth Edition. Oregon State University.
7. Floyd, P. M. and Yeilding, C. (2003). Personal Health: Perspectives and Lifestyles. Thomson Wads Worth. Belmont. California. USA.
8. Hales, D. (2005). An Invitation to Health. Thomson- Wadsworth, Belmont. California. USA.
9. Park, K. (2007). Park‟s Text Book of Preventive & Social Medicine. Banarsi Das Bhanot & Company. Delhi.
10. Snehlata (2006). Shareer, Vigyan Evam Swasthya Raksha. Discovery Pub. Houses. New Delhi.
11. Uppal, A.K. &. Gautam, G.P. (2008). Health & Physical Education. Friends Publication. New Delhi.

SEMESTER- III
BSc-PE-DSE-1(4)-101: (DSE)
ADAPTED PHYSICAL EDUCATION
DSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite of the Course (if any)
		Lecture	Tutorial	Practical		
ADAPTED PHYSICAL EDUCATION	04	03	0	01	XII	NA

Objective:

The objective of this course is to provide an understanding and practices to the learners about adapted physical education in order to let them realize that Divyang student also are the part of active education system as well.

Learning Outcomes:

At the end of the course the student will be able to-

1. Acquire the knowledge of meaning definition and components of adapted physical educational in suitable modern aspects.
2. Understand the General educational styles, strategies, teaching style and adapted physical education.
3. Recognize suitable general and specific activities for early childhood adapted physical education.
4. Apply the knowledge of measuring & assessing students, Criteria for eligibility for adapted physical education.

PART – A Theory Syllabus

UNIT I - **(09 Hours)**

1.1 Definition of Adapted Physical Education and components of Individualized education Programme (IEP)
1.2 Measuring & Assessing students, Criteria for eligibility for adapted physical education, Alternative instructions in physical education and teaching in inclusive setting

UNIT II **(09 Hours)**

2.1 General educational styles and strategies,

2.2 Teaching style and adapted physical education
2.3 Ways of facilitating skill acquisition and behaviour management approaches emphasized in adapted physical education

UNIT III **(09 Hours)**

3.1 Children and youth with unique needs:-Intellectual disabilities
3.2 Learning disabilities and attention defects
3.3 behavior disorder
3.4 Visual impairment, Deafness, Cerebral palsy, shock
3.5 spinal cord disabilities and amputation
3.6 Students without disabilities with unique needs

UNIT IV **(09 Hours)**

4.1 Development Areas: -
- 4.1.1 Physical fitness
- 4.1.2 Motor Development
- 4.1.3 Perceptual- motor development

4.2 Early childhood adapted physical education

UNIT V **(09 Hours)**

5.1 Activity Areas and adapted physical education:
- 5.1.1 Team sports
- 5.1.2 Individual sports
- 5.1.3 Dual sports
- 5.1.4 Gymnastics
- 5.1.5 Aquatics

5.3 Adventure Sport, Dance, Rhythmic movements

PART – B Practical Syllabus **(30 Hours)**

To prepare Individual Education Programme of different challenged population.
1. To measure and Assess the degree of Help/Need
2. To facilitate special skill acquisitions
3. To prepare programme for: Visual impairment and Deafness
4. To prepare programme for: Spinal cord disability and Amputation
5. Development Areas: Physical Fitness & Motor Development

Note: Evaluation will be done on the basis of practical examination of the activities taught.

References:

1. Bhandani, R.K., An Overview of Natural and Man Made Disaster their Reduction CSIR New Delhi
2. Gupta, H.K. Disaster Management University Press India 2003
3. Gupta, MC Manuals on Natural Disaster Management in India, National Centre for Disaster Management IIPA, New Delhi 2001.
4. Singh, M.K., 'A to Z Badminton', Friends Publication, New Delhi

5. Arora S., Agarwal M Gupta B. (2018), “Fitness; Wellness And Nutrition”, Vivechan Publications (INDIA) ISBN: 978-93-83914-89-0.
6. Morris L R, Schulz L, (1989) “Creative play activities for children with disabilities” Human Kinetics books, campaign Illinois.
7. Davis RW, (2002) “Teaching Disability Sports.” Human Kinetics.
8. Mishra, S.C, (2007) “Viklang aur Khel”, Sports Publications.
9. Shaw D. (2018) “Fundamental Statistics in Physical Education and Sports Sciences” Sports Publication, ISBN: 81-86190-57-0.
10. Shaw D. (2020) “Physical Education Practical Manual for Class XI” Prachi Publication, ISBN : 978-8193-7698-0-5.
11. Shaw D. (2020) “Physical Education for Class XII” Prachi Publication, ISBN : 978-81-7730-848-8.
12. Shaw D. (2020) “Physical Education for Class XI” Prachi Publication, ISBN : 978-81-7730-847-1.
13. Shaw D. (2020) “Physical Education Practical Manual for Class XII” Prachi Publication, ISBN : 978-81-937698-1-2.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER- III
BSc-PE-DSE-1(4)-102 (DSE)
PERSONALITY DEVELOPMENT
DSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite of the Course (if any)
		Lecture	Tutorial	Practical		
PERSONALITY DEVELOPMENT	04	03	0	01	XII	NA

Objective:

The objective of this course is to provide an understanding and practices to the learners about Personality development.

Learning Outcomes:

At the end of the course the student will be able to-

5. Acquire the knowledge of meaning, definition and importance of Personality Development.
6. Understand the Components of Physical Personality, Physical Fitness, Self- Responsibility for Health & Personality Development.
7. Use the components of personality and its applications of self-evaluation for one's personality
8. Apply the knowledge of nutrition to enhance personality.

Theory Syllabus

UNIT I INTRODUCTION **(09 Hours)**

1.1 Definition, Meaning and Description of Personality, Components of Personality – Physical, Emotional, Cognitive, Social, Mental, Vital and Spiritual; Role of Physical Personality as Foundation of Personality.
1.2 Components of Physical Personality: Growth & Development; Nutrition, Exercise, Physical Fitness, Self- Responsibility for Health & Personality Development.

UNIT II PHYSICAL GROWTH & DEVELOPMENT **(09 Hours)**

2.1 Meaning and Definition – Physical Growth, Development, Differences between Growth and Development; Growth and Development patterns in various body systems. Role in Promoting Personality Development
2.2 Growth Patterns: Magnitude and Rate of Physical Growth, Distance and Velocity Curves, Classification of Human Growth Cycle – Baby, Child, Adolescent, Post-Adolescent, Adult and Old age.

UNIT III NUTRITION & PERSONALITY DEVELOPMENT **(09 Hours)**

3.1 Meaning & Definitions, Nutrients, Balanced diet for Health Needs and Personality Development, Micro & Macronutrients relation to Personality Development.

3.2 Nutritional Requirements: Nutritional requirements for Growing Age, Physical Activities, Sports, Sports Training, Food Groups: Classification of Food into various groups based on their nutrients, daily intake of various food groups, Nutrients of common foods

UNIT IV PHYSICAL FITNESS & PERSONALITY (09 Hours)

4.1 Meaning & Definition of Physical Fitness and its components. PAR-Q, Health Related Physical Fitness & Personality; Physical Performance components of Fitness, Personal needs and Personality Development

4.2 Personal Physical Fitness: Personal strengths and weaknesses in components of Physical Fitness, Development of weak components, Role of Behaviour changes for developing personal fitness strengths.

UNIT V SELF RESPONSIBILITY (09 Hours)

5.1 Meaning & concept of Self Responsibility

5.1.1Daily Schedules (DS) Awareness and Logbooks for practice of DS.

5.2 Physical Education: Role of Physical Education in promoting Self Responsibility

5.2.1 Self-Responsibility and Behaviour change, PE for Personality Development.

5.2.2 Foundations of Personality Development & Personal Strengths through Physical Education as the basis of self-responsibility

5.2.3 Principles of Self-Responsibility & their relation to art & science of health

5.2.4 Fitness & wellness promotion

PART- B Practical (30 Hours)

1. To demonstrate the components of personality with examples.
2. To demonstrate stages of behaviour change.
3. To demonstrate PAR-Q
4. To demonstrate daily physical log and methods its activities.
5. To demonstrate balanced nutrition with food items and quantity required
6. To demonstrate the application of self-evaluation of one's personality
7. To demonstrate different methods of meditation (At least two)

REFERENCES:

1. Allen, B.P. Personality Theories: Development, Growth and Diversity. Allyn & Bacon, New York, USA., 2005.
2. Anspaugh, D.J., M. H. Hamrick and F.D. Rosato, Wellness: Concepts and Applications, McGraw Hill, Boston, USA
3. Deepak. C. and D. Simon. Grow Younger Live Longer: 10 Steps to Reverse Aging. Three Rivess Press, New York, USA, 2001.
4. Hales, D. An Invitation to Health, Thomson Wads worth, Texas, USA, 2005.
5. Herron, W.G. Personality Development and Psychotherapy in our Diverse Society: A Sourcebook. Jason Aronson, Boston, USA, 1998
6. Hogger, W.W.K., and S.R. Hogger, Fitness & Wellness, Wads worth Publishing, Belmont, USA, 2007.
7. Jelliffe, D.B. and Jelliffe, E.F.P.,Growth Monitoring and Promotion in young Children,

Oxford University Press, Oxford, U.K. (1990).
8. Kansal, D.K..Applied Measurement, Evaluation & Sports Selection, Sports & Spiritual Science Publications, Delhi (2008).
9. Olsen, L.K., Redican, K.J. and Baffi,C.R., Health Today, Ginn Pr. Publishers, (2002).
10. Robbins, G., D. Powers and S. Burgess. A Wellness Way of Life. McGraw Hill, Boston, USA, 2002.
11. Schwartz, D.J. The Magic of Thinking Big. Simon. & Schuster, New York, USA.
12. Shoffer, D.R. Social and Personality Development. Wads worth Publishing, Belmont, USA, 2004.
13. Shukla, A. The Mother on Education: From Reflections to Action, National Council for Teacher Education (NCTE), 2004.
14. Steven, C., The 8th Habit: From Effectiveness Greatness, Franklin Covey Co., New York, USA, 2004.
15. Tortora, G.J. & Grabowski,S.R., Principles of Anatomy and Physiology, John-Wiley & Sons, New York, USA (1996).
16. Vivekananda, S., Personality Development, Advaita Ashrama, Kolkata (2003).
17. Wrightsman, L.S. Jr., Adult Personality Development, Sage Publications Inc.
18. Wuest, D.A. and Bucher, C.A. Foundations of Physical Education, Exercise Science and Sports by McGraw Hill, (2006)

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER- 3
BSc-PE-DSE-1(4)-103 (DSE)
EXERCISE PRESCRIPTION FOR HEALTH AND FITNESS
DSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite of the Course (if any)
		Lecture	Tutorial	Practical		
EXERCISE PRESCRIPTION FOR HEALTH AND FITNESS	04	03	0	01	XII	NA

Objective:

The objective of this course is to provide an understanding, skill and practices to the learners about exercise prescription for health and fitness.

Learning Outcomes:

At the end of the course the student will be able to-

9. Acquire the knowledge and practices of exercise prescription on the behalf of health status.
10. Deal with differentiation and relation between exercise & physical activity.
11. Understand and demonstrate the direct and indirect health benefits of the exercise
12. Get understanding and applications of acronyms FITT (Frequency, Intensity, Time (duration), type (Mode of Exercise) (Training principles for batter training)

Theory Syllabus

UNIT I - (09 Hours)

1.1 Background of exercise prescription to non-sports person, basis of exercise prescription and measurement of motivation for physical exercise/activity health status
1.2 Physical personality in relation to physique, attitude, interests.
1.3 Exercise for recreation, health, fitness, wellness and competition.

UNIT II - (09 Hours)

2.1 Meaning and definition of exercise & physical activity
2.1.1Differences between exercise & physical activity (chronic and acute effect for adaptation)
2.1.2 Relation between exercise & physical activity

UNIT III - (09 Hours)

3.1 Health benefits of exercise, exercise as pro-active health care.
3.2 Exercise for prevention of heart disease, osteoporosis, diabetes type-II, hypertension, obesity etc.

UNIT IV - (09 Hours)

4.1 Necessity of exercise prescription
4.1.1 Sedentary population
4.1.2 Different-population
4.1.3 Self-responsibilities and behaviour change stages for exercise regularity

UNIT V - (09 Hours)

5.1 Steps for exercise prescription.
5.2 Exercise, stress test, physical fitness test,
5.3 Understanding acronyms FITT (Frequency, Intensity, Time (duration), Type (Mode of Exercise).
5.4 Principles of fitness training

PART- B Practical Syllabus (30 Hours)

1. Assessment of fitness (At least three)
2. Assessment of physical activity readiness of a person
3. Measurement of health status
4. Prescribing exercise / Programme
5. Evaluation of an exercise Programme

References:

1. American College of Sports Medicine (2000). ACSM's Guidelines for Exercise Testing and Prescription. Lippincott Williams & Wilkines. Philadelphia. USA.
2. Corbin C G Welk W Corbin & K Welk (2005). Concepts of Fitness and Wellness. McGraw Hill Company. New York. USA.
3. Goldberg L and DL Elliot (2002). The Power of Exercise. National Health & Wellness Club. USA.
4. Hales D (2006). An Invitation to Health. Thomson Wadsworth. Belmont. California. USA.
5. Harrison GA, Weiner JS Tanner JM and. Barnicot NA (1984). Human Biology. Oxford University Press. Oxford. U.K.
6. Howley ET and BD Franks (2003). Health Fitness Instructors Handbook, Human Kinetics. Champaign. Illinois. USA
7. Kolecki JE and DQ Thomas (2007). Activities and Assessment Manual. Jones and Barlett Publishers. Sandburg. Massachusetts. USA.
8. Powers S and E Howley (2006). Exercise Physiology- Theory and Applications. McGraw Hill Co. New York. USA.
9. Thomas DQ and JE Kotecki (2007). Physical Activity and Health –An Interactive Approach. Jones and Bartlett Publishers. Sndbury. Masschusett. USA.

10. USDHHS (2000) Healthy People 2010: National Health Services (USDHHS). Washingtons D.C. USA.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER- 3
BSc-PE-DSE-1(4)-104.1 (DSE)
FUNDAMENTALS OF BASKETBALL
DSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite of the Course (if any)
		Lecture	Tutorial	Practical		
FUNDAMENTALS OF BASKETBALL	04	02	0	02	XII	--

Objective:

The learner will be able to understand and comprehend the fundamentals of Basketball game with its practices and skill for better pedagogy and performance in Basketball.

Learning Outcomes:

1. The learner will attain basic knowledge of Basketball for different applications.
2. The learner will be able to gain knowledge with respect to historical development, organizational structure and playfield technology of Basketball.
3. The learner will be able to perform the marking/ drawing/ material organizing for Basketball.
4. The learner will be able to understand, analyze and interpret the fundamental methods and score
5. The learner will be able to learn and acquire fundamental skills (offensive and defensive) of game/sports (Basketball).
6. The students will also be able to demonstrate their knowledge of skills in both part and whole.

SYLLABUS

PART-A: THEORY **(30 hours)**

Unit-1 Court, marking and General Rules **(8 hours)**

1.1 Court Layout (mention each and every specification)
1.2 Dimensions of court (male and female)
1.3 Start and Restart of Play, Duration, Time-out, Suspensions
1.4 Referee Signals, fouls and misconduct
1.5 Technical Officials
1.6 Scoresheet

Unit-2: Demonstrate (By part and whole) Fundamental Skills **(7 hours)**

2.1 Dribble
2.2 Passing
2.3 Shooting
2.4 Rebounding
2.5 Faking

Unit-3: Fundamental Defensive Skills **(8 hours)**

3.1 German drill and suicide drill
3.2 Lay-up shot
3.3 Zone-defence
3.4 Man to man technique
3.5 Attacking skills

Unit-4 Different tests in Basketball **(7 hours)**

4.1 Johnson Basketball Test
4.2 Knox Basketball test
4.3 Harrision Basketball test

PART-B: PRACTICAL **(60 hours)**

1. Court marking on paper and on the playfield as well.
2. General rules and their application and implementation in game situations.
3. Learning and demonstrating various fundamental skills mention in unit 2 and 3.
4. Evaluation / testing of fundamental skills (performance analysis).

References:

1. Pratap, V., Yadav, A., Sing, K. S., Shaw, D. (2023) ***"Physical education key learning for competitive exams".*** Iterative International Publishers.
2. Bompa O. Tudor and Halff G. Gregory. (2009) **"Periodization Theory and Methodology of Training"** Human kinetics. NY.
3. Drewett, J. (2007). **How to Improve at Basketball.** Crabtree Publishing Co., USA.
4. Goldstein, S. (1998). **Basketball Fundamentals.** 2 nd Ed. Golden Aura Publishing,USA.
5. Jain Naveen (2003). **Play and Learn Basket Ball. Khel Sahitya Kendra.** NewDelhi.
6. Nat BB (1997). **Conditioning Coaches Association.** NBA Power Conditioning. Human Kinetics.
7. Sharma OP (2003). **Basket Ball Skills and Rules.** Khel Sahitya Kendra, Delhi.
8. https://assets.website-files.com/5d24fc966ad064837947a33b/5fbf0802c279828240ffa81f_CBOC%20-%20FIBAOfficialBasketballRules2020_v1.0.pdf

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER- 3

BSc-PE-DSE-1(4)-104.2 (DSE)

FUNDAMENTALS OF CRICKET

DSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite of the Course (if any)
		Lecture	Tutorial	Practical		
FUNDAMENTALS OF CRICKET	04	02	0	02	XII	NIL

Objective:

The learner will be able to understand and comprehend the fundamentals of Cricket game with its practices and skill for better pedagogy and performance in Cricket.

Learning Outcomes:

1. The learner will attain basic knowledge of Cricket for different applications.
2. The learner will be able to gain knowledge with respect to historical development, organizational structure and playfield technology of Cricket.
3. The learner will be able to perform the marking/ drawing/ material organizing for Cricket.
4. The learner will be able to understand, analyze and interpret the fundamental methods and score
5. The learner will be able to learn and acquire fundamental skills (offensive and defensive) of game/sports (Cricket).
6. The students will also be able to demonstrate their knowledge of skills in both part and whole.

SYLLABUS

PART-A: THEORY Syllabus (30 hours)

Unit-1 Ground, marking and General Rules (8 hours)

1.1 Ground Layout (mention each and every specification)
1.2 Dimensions of court (male and female)
1.3 Start and Restart of Play, Duration, Time-out, Suspensions
1.4 Umpire, Referee Signals, soft signals, fouls and misconduct penalty.
1.5 Technical Officials
1.6 Scoresheet

Unit-2: Demonstrate (By part and whole) Fundamental Batting Skills (7 hours)

2.1 Block
2.2 Cut
2.3 Drive

2.4 Hook
2.5 Leg Glance
2.6 Paddle Sweep
2.7 Pull
2.8 Sweep
2.9 Reverse Sweep
2.10 Slog Sweep
2.11 Slog

Unit-3: Demonstrate (By part and whole) Fundamental Bowling Skills (8 hours)

3.1 Fast bowling
3.1.1 Seam Bowling
3.1.2 Swing Bowling
3.1.3 Bouncer, Beamer & Full toss
3.1.4 In dipper
3.1.5 In swinger
3.1.6 Leg Cutter
3.1.7 Off Cutter
3.1.8 Slow Ball
3.1.9 Reverse

3.2 Spin Bowling

3.2.1 Off-Spin
3.2.2 Leg-Spin
3.2.3 Chinaman
3.2.4 Doosra
3.2.5 Googles
3.2.6 Leg Break
3.2.7 Teesra
3.2.8 Arm Ball

Unit-4 Fundamental Wicket keeping & fielding Skills (7 hours)

4.1 Wicket keeping (Stumping, runout & caught behind)
4.2 Fielding skills
4.2.1 Catching grip Indian style and Australian style
4.2.2 High & Low catch
4.2.3 Dive

PART-B: Practical Syllabus (60 hours)

1. Court marking on paper and on the playfield as well.
2. General rules and their application and implementation in game situations.
3. Learning and demonstrating various fundamental skills mention in unit 2 and 3.
4. Evaluation / testing of fundamental skills (performance analysis).

References:

1. Pratap, V., Yadav, A., Sing, K. S., Shaw, D. (2023) ***"Physical education key learning for competitive exams".*** Iterative International Publishers.
2. https://www.cricketbio.com/cricket/fundamental-skills-cricket/ [date of access 30-05-2023]
3. Shaw,D. (2020) ***Physical education practical manual.*** Prachi [India] Pvt. L.td Inder Lok Delhi.
4. https://www.icc-cricket.com/about/cricket/rules-and-regulations/playing-conditions

[date of access 30-05-2023]
5. Jain.,R.(2005) *Play & Learn Cricket* Khel Sahitya Kendra
6. Rachna.,(2002) *Coaching Successfully Cricket* Sports Publications
7. Amarnath.,M.(1996) *Learn to Play Good Cricket* UBS Publishers Distributors Ltd.
8. Amonkar.,S.(2000) *Fundamentals of Cricket Technology* The Marine Sports
9. Thani.,V.(2003) *Cricket Skills & Rules* Khel Sahitya Kendra

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER- 3
BSc-PE-DSE-1(4)-104.3 (DSE)
FUNDAMENTALS OF KABADDI
DSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite of the Course (if any)
		Lecture	Tutorial	Practical		
FUNDAMENTALS OF KABADDI	04	02	0	02	XII	NIL

Objective:

The learner will be able to understand and comprehend the fundamentals of kabaddi game with its practices and skill for better pedagogy and performance in kabaddi.

Learning Outcomes:

7. The learner will attain basic knowledge of Kabaddi for different applications.
8. The learner will be able to gain knowledge with respect to historical development, organizational structure and playfield technology of Kabaddi.
9. The learner will be able to perform the marking/ drawing/ material organizing for Kabaddi.
10. The learner will be able to understand, analyze and interpret the fundamental methods and score
11. The learner will be able to learn and acquire fundamental skills (offensive and defensive) of game/sports (Kabaddi).
12. The students will also be able to demonstrate their knowledge of skills in both part and whole.

SYLLABUS

PART-A: THEORY **(30 hours)**

Unit-1 Court, marking and General Rules **(8 hours)**

1.1 Court Layout (Mid line, Baulk line, Bonus line, Boundary line, Lobbies)
1.2 Dimensions of court (male and female)
1.3 Start and Restart of Play, Duration, Time-out, Suspensions
1.4 Referee Signals, fouls and misconduct
1.5 Technical Officials
1.6 Scoresheet (Scoring- Bonus, Lonna and all out points)

Unit-2: Demonstrate (By part and whole) Fundamental Offensive Skills **(8 hours)**

2.1 Hand Touch
2.2 Toe Touch

2.3 Side Kick
2.4 Back Kick
2.5 Mule Kick
2.6 Leg Thrust

Unit-3: Fundamental Defensive Skills **(7 hours)**

3.1 Ankle Hold
3.2 Thigh Hold
3.3 Knee Hold/Double Knee Hold
3.4 Waist/Back/Trunk Hold
3.5 Block Tackle
3.6 Wrist Hold

Unit-4 Different tests in Kabaddi **(7 hours)**

4.1 Johnson Kabaddi Test
4.2 Knox Kabaddi test
4.3 Harrision Kabaddi test

PART-B: PRACTICAL **(60 hours)**

5. Court marking on paper and on the playfield as well.
6. General rules and their application and implementation in game situations.
7. Learning and demonstrating various fundamental skills mention in unit 2 and 3.
8. Evaluation / testing of fundamental skills (performance analysis).

References:

1. Bompa O. Tudor and Halff G. Gregory. (2009) "Periodization Theory and Methodology of Training" Human kinetics. NY.
2. Kumar, Dharmander. (2018). Kabaddi and It"s Playing Techniques. Writers Choice, New Delhi.
3. Mishra , S.C. (2007). Teach Yourself Kabaddi. Sports Publications, New Delhi.
4. Rao CV (1983). Kabaddi. Native Indian Sports. NSNIS. Patiala Publisher
5. Rao EP (1994). Modern Coaching in Kabaddi.D.V.S.Pub
6. Singh, Hardayal. (1919). Science of Sports Training. DVS Publication, N. Delhi.
7. Syal, M. (2004). Kabaddi Teaching. Prerna Parkashan, New Delhi.
8. Vanaik A. (2017). Officiating and Coaching, Friends Publication. New Delhi.
9.http://www.indiankabaddi.org/administrator/components/com_rules/rules/d2fa88d827bea5fc12073bf9db1f10fb-Rulebook-Downloadedon08Nov2017-19MB.pdf

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER- 3
BSc-PE-DSE-1(4)-104.5 (DSE)
FUNDAMENTALS OF HANDBALL
DSE

Sl. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite of the Course (if any)
			Lecture	Tutorial	Practical		
9.	**FUNDAMENTALS OF HANDBALL**	04	02	0	02	XII	NIL

Objective:

The learner will be able to understand and comprehend the fundamentals of Handball game with its practices and skill for better pedagogy and performance in Handball.

Learning Outcomes:

13. The learner will attain basic knowledge of Handball for different applications.
14. The learner will be able to gain knowledge and practices with respect to historical development, organizational structure and playfield technology of Handball.
15. The learner will be able to demonstrate the marking/ drawing/ material organizing for Handball.
16. The learner will be able to understand, analyze and interpret the fundamental methods and score.
17. The learner will be able to learn, demonstrate and acquire fundamental skills (offensive and defensive) of game/sports (Handball).
18. The students will also be able to demonstrate their knowledge of skills in both part and whole.

SYLLABUS

PART-A: THEORY **(30 hours)**

Unit-1 Ground marking and General Rules **(8 hours)**

1.1 Ground Layout (mention each and every specification)
1.2 Dimensions of ground (male and female)
1.3 Start and Restart of Play, Duration, Time-out, Suspensions
1.4 Referee Signals, fouls and misconduct
1.5 Technical Officials
1.6 Scoresheet

Unit-2: Demonstrate (By part and whole) Attacking Fundamental Skills **(7 hours)**

2.1 Attacker with the ball
2.1.1 Creating space
2.1.2 Passing & Catching

2.1.3 Faking
2.1.4 Shooting
2.1.5 Dribbling/ bouncing

2.2 Attacker without the ball
2.2.1 Receiving the ball
2.2.2 Available for teammate
2.2.3 Move without ball
2.2.4 Creating space

Unit-3: Demonstrate (By part and whole) Fundamental defensive Skills (7 hours)

3.1 Defending position
3.2 Intercepting the ball
3.3 Blocking

Unit-4 Different Offensive & Defensive skills of goal keeper (8 hours)

4.1 Offensive skills of goal keeper
4.1.1. Movement in the goal
4.1.2 Offensive posture, positioning
4.1.3 Passing to initiate fast break, attack, throws.
4.1.4 Execution of free throw, goalkeeper throw, throw-in.

4.2 Defensive skills of goal keeper
4.2.1. Defensive posture, positioning
4.2.2 Using hands, legs and torso for saves
4.2.3 Catching, deflecting and knocking down shots

PART- B Practical Syllabus (60 hours)

9. Court marking on paper and on the playfield as well.
10. General rules and their application and implementation in game situations.
11. Learning and demonstrating various fundamental skills mention in unit 2 and 3.
12. Evaluation / testing of fundamental skills (performance analysis).

References:

1. Shaw,D. (2020) ***Physical education practical manual.*** Prachi [India] Pvt. L.td Inder Lok Delhi.
2. Pratap, V., Yadav, A., Sing, K. S., Shaw, D. (2023) ***Physical education key learning for competitive exams.*** Iterative International Publishers.
3. Bana, P., Späte, D., Lund, A., Strub, P., & Khalifa, A. (2011). Teaching Handball at school, Introduction to handball for students aged 5 to 11. International Handball Federation.
4. Buchheit, M. The 30-15 Intermittent Fitness Test: accuracy for individualizing interval training of young intermittent sport players. J Strength Cond. Res., 22: 365-374, 2008.
5. Bunker, B. & R. Thorpe. The curriculum model. Rethinking games teaching. R. Thorpe, Bunker, D., & Almond, L. Loughborough, University of Technology, Loughborough: 7-10, 1986.
6. Czerwinski, J., & Táborský, F. (1997). Basic Handball: Methods, Tactics, Technique. European Handball Federation.
7. Estriga, L. (2019). Teaching and learning handball: step-by-step. A teacher ‘s guide.
8. Hapkova, I. (2009). Handball does not always mean Handball. European Handball Federation. Lund, J., & Tannehill, D. (2010). Standards-based physical education curriculum development. Burlington, MA: Jones and Bartlett Publishers. Marczinka, Z. (2016). Playing Handball: A Comprehensive Study of the Game. Hungarian Handball Federation.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

SEMESTER- 3
BSc-PE-DSE-1(4)-104.6 (DSE)
FUNDAMENTALS OF HOCKEY
DSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite of the Course (if any)
		Lecture	Tutorial	Practical		
FUNDAMENTALS OF HOCKEY	04	02	0	02	XII	NIL

Objective:

The learner will be able to understand and comprehend the fundamentals of Hockey game with its practices and skill for better pedagogy and performance in Hockey.

Learning Outcomes:

19. The learner will attain basic knowledge of Hockey for different applications.
20. The learner will be able to gain knowledge with respect to historical development, organizational structure and playfield technology of Hockey.
21. The learner will be able to perform the marking/ drawing/ material organizing for Hockey.
22. The learner will be able to understand, analyze and interpret the fundamental methods and score
23. The learner will be able to learn and acquire fundamental skills (offensive and defensive) of game/sports (Hockey).
24. The students will also be able to demonstrate their knowledge of skills in both part and whole.

SYLLABUS

PART-A: THEORY **(30 hours)**

Unit-1 Ground marking and General Rules **(8 hours)**

1.1 Ground Layout (mention each and every specification)
1.2 Dimensions of ground (male and female)
1.3 Start and Restart of Play, Duration, Time-out, Suspensions
1.4 Referee Signals, fouls and misconduct
1.5 Technical Officials
1.6 Scoresheet

Unit-2: Demonstrate (By part and whole) Fundamental Skills **(7 hours)**

2.1 Holding of stick
2.2 Ball carrying and elimination
    2.2.1 Running / rolling the ball
    2.2.2 Dribbling (Indian dribble)
    2.2.3 Jinking
2.3 Distribution
    2.3.1 Pushing
    2.3.2 Hit & Slap Hit
    2.3.3 Reverse Push and Reverse slide
2.5 Tomahawk and Overhead

Unit-3: Fundamental Receiving & Blocking Skills **(8 hours)**

3.1 Fore stick receive
3.2 Reverse stick receive
3.3 Receive with deception
3.4 Receive Arial balls
3.5 Tackling (Block & reverse block)
3.6 Penalty corner skills (Drag out & Trap)

Unit-4 Different tests in Hockey **(7 hours)**

4.1 SAI Hockey Skill Test
4.2 Harbans Singh Field Hockey Test
4.3 Fridel Field Hockey test

PART-B: PRACTICAL SYLLABUS **(60 hours)**

13. Court marking on paper and on the playfield as well.
14. General rules and their application and implementation in game situations.
15. Learning and demonstrating various fundamental skills mention in unit 2 and 3.
16. Evaluation / testing of fundamental skills (performance analysis).

References:

9. International Hockey Federation (2003). ***Rules of the Game of Hockey with Guidance for Players and Umpires***. International Hockey Federation. India.
10. Pratap, V., Yadav, A., Sing, K. S., Shaw, D. (2023) ***Physical education key learning for competitive exams.*** Iterative International Publishers.
11. Pecknold, R. and Foeste, A. (2009). Hockey: Essential Skills. McGraw Hills,USA.
12. https://www.nios.ac.in/media/documents/Physical_Education_and_Yog_373/practical/15.pdf [access date 30-05-2023].
13. https://www.sportzyogi.com/friedel-field-hockey-test/[access date 30-05-2023].
14. https://fih.wildapricot.org/resources/Documents/Skills_of_hockey_tiers.pdf [access date 30-05-2023].
15. Shaw,D. (2020) ***Physical education practical manual.*** Prachi [India] Pvt. L.td Inder Lok Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER- 3
BSc-PE-DSE-1(4)-104.4 (DSE)
FUNDAMENTALS OF KHO-KHO
DSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite of the Course (if any)
		Lecture	Tutorial	Practical		
FUNDAMENTALS OF KHO-KHO	04	02	0	02	XII	NIL

Objective:

The learner will be able to understand and comprehend the fundamentals of Kho-Kho game with its practices and skill for better pedagogy and performance in Kho-Kho.

Learning Outcomes:

25. The learner will attain basic knowledge of Kho-Kho for different applications.
26. The learner will be able to gain knowledge with respect to historical development, organizational structure and playfield technology of Handball.
27. The learner will be able to perform the marking/ drawing/ material organizing for Handball.
28. The learner will be able to understand, analyze and interpret the fundamental methods and score
29. The learner will be able to learn and acquire fundamental skills (offensive and defensive) of game/sports (Handball).
30. The students will also be able to demonstrate their knowledge of skills in both part and whole.

SYLLABUS

PART-A: THEORY **(30 hours)**

Unit-1 Ground marking and General Rules **(8 hours)**

1.1 Ground Layout (mention each and every specification)
1.2 Dimensions of ground (male and female)
1.3 Start and Restart of Play, Duration, Time-out, Suspensions
1.4 Referee Signals, fouls and misconduct
1.5 Technical Officials
1.6 Scoresheet

Unit-2: Demonstrate (By part and whole) Chasing Fundamental Skills **(7 hours)**

2.1 Giving Kho
2.2 Sudden change
2.3. Turning round the post
2.4 Diving
2.5 Late Kho
2.6 Taking direction
2.7 Taping
2.8 Trapping
2.9

Unit-3: Demonstrate (By part and whole) Fundamental running Skills **(8 hours)**

3.1 Position on court
3.2 Running
3.3 Avoiding trapping
3.4 Positioning near the post

Unit-4 Tactical fundamental skills **(7 hours)**

4.1 Fake Kho
4.2 Dodging
4.2.1 Front dodge
4.2.2 Back dodge
4.2.3 Round the post dodge

PART-B: PRACTICAL **(60 hours)**

17. Court marking on paper and on the playfield as well.
18. General rules and their application and implementation in game situations.
19. Learning and demonstrating various fundamental skills mention in unit 2 and 3.
20. Evaluation / testing of fundamental skills (performance analysis).

References:

16. Shaw,D. (2020) ***Physical education practical manual.*** Prachi [India] Pvt. L.td Inder Lok Delhi.
17. Pratap, V., Yadav, A., Sing, K. S., Shaw, D. (2023) ***Physical education key learning for competitive exams.*** Iterative International Publishers.
18. https://www.ultimatekhokho.com/static-assets/pdf/rules-season1.pdf [date of access 30-05-2023]
19. Kishore.,N.(2016) *How to Play Kho-Kho* Prerna Prakashan

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

ANNEXURE-8

Sub: Amendment to Ordinance V

[E.C Resolution No. 60-1/(60-1-6) dated 03.02.2023]

Following addition be made to Appendix-II-A to the Ordinance V (2-A) of the Ordinances of the University;

Add the following:

Syllabi of Semester-III of the department of Home Science under Faculty of Science based on Under Graduate Curriculum Framework -2022 implemented from the Academic Year 2022-23.

FACULTY OF SCIENCE

DEPARTMENT OF HOME SCIENCE
BSc. Hons. (Home Science)

DISCIPLINE SPECIFIC CORE COURSE – 7

DSC HH 307 : Human Development II: Middle Childhood and Adolescence

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Human Development II: Middle Childhood and Adolescence	**4**	**3**	**0**	**1**	**XII Pass**	**Pass in DSC HH 101** Human Development 1: The Early Years

Learning Objectives

1. To learn about the progression and domains of development during middle

childhood years and adolescence.
2. To understand context specific cultural practices of development during middle childhood years and adolescence.
3. To familiarize students with the use of different techniques of studying development during middle childhood and adolescence.

Learning Outcomes

After completing this course, students will be able to:

1. Acquire a detailed understanding of development across domains from middle childhood through adolescence.
2. Gain insight on context specific cultural practices of development during middle childhood and adolescence.
3. Develop skills of using various techniques to study development during middle childhood and adolescence.

SYLLABUS OF DSC 7

THEORY
(Credits 3; Hours 45)

UNIT I: Middle Childhood Years **12 Hours**

This unit traces the progression of development across domains from 7-12 years of life.
Subtopics:

- Physical-motor development
- Cognitive and language development
- Moral development

UNIT II: Middle Childhood Years: The Social Context **10 Hours**

This unit focuses on the social context of development during the middle childhood years. The role of school, family, community and media is explored here.
Subtopics:

- Social and emotional development
- Role of family and peers
- Significance of School, community and media

UNIT III: Introduction to Adolescence **12 Hours**

This unit describes the transition from childhood to adolescence with a focus on physical development and puberty and its impact on socio-emotional development.

- Theoretical perspectives on adolescence
- Puberty, sexual maturity, nutrition, health and psychological wellbeing
- Self and identity
- Family and peer relationships, interface with media

UNIT IV: Adolescence: Cognitive, Language and Moral development **11 Hours**

This unit describes the progression in cognitive, language and moral development during adolescence.

- Perspectives on cognitive development
- Intelligence and creativity
- Adolescent language
- Adolescent morality

PRACTICAL
(Credits 1; Hours 30)

- Methods of studying in Human Development
- Interview and Questionnaire
- Role of Family and peers during middle childhood
- Physical and sexual changes during puberty
- Sociometry
- Audiovisual resources to study middle childhood and adolescence
- Case profile of an adolescent
- Psychological tests

Essential readings

1. Berk, L. (2013). Child development (9th ed.). Boston: Pearson.
2. Santrock, J. W. (2011). Life-span development. New York: McGraw-Hill.
3. Singh, A. (Ed.) (2015). Foundations of Human Development. New Delhi: Tata McGraw-Hill.

Suggested readings

1. Bee, H., & Boyd, D. (2012). The Developing Child (13th ed.). Pearson
2. Journal of Developmental Psychology.
3. Papalia, D. E., & Martorell, G. (2015). Experience Human development.
4. McGraw Hill Education.
5. Rice, F. P. (2000). Human Development: A Life-span Approach. New Jersey: Prentice Hall
6. Sharma, N. (1999). Understanding Adolescence. National Book Trust
7. शर्मा, नी. (2009). किशोरावस्थाः उलझाव -सुलझाव. अनुवाद रेणु चौहान. नेशनल बुक ट्रस्ट.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 8
DSC HH 308: Nutrition: A Life Cycle Approach

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title& Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Nutrition: A Life Cycle Approach	**4**	**3**	**0**	**1**	**XII Pass**	**Pass in DSC HH 102** Food Science and Nutrition

Learning Objectives

1. To acquire knowledge about the nutritional needs and concerns of an individual throughout the life cycle.
2. To enable students in understanding the principles of planning nutritionally adequate diets.
3. To make them exercise food choices consonant with good health based on sound knowledge of principles of nutrition.

Learning Outcomes

After completing this course, students will be able to:

1. Acquire knowledge about the nutritional needs and concerns of an individual throughout the life cycle.
2. Comprehend the principles of planning nutritionally adequate diets.
3. Exercise food choices consonant with good health based on sound knowledge of principles of nutrition.

SYLLABUS OF DSC 8

THEORY
(Credits 3; Hours 45)

UNIT I: Basics of nutrient requirements and meal planning **12 Hours**

Unit Description: Concepts of food groups and food exchange lists for meal planning, factors affecting meal planning will be dealt with. Students will also be introduced to dietary guidelines for Indians. The concept of estimated average requirements, recommended allowances and methods of assessing nutrient requirements in general for Indians will be explained.

Subtopics:

- Food groups
- Food exchange list
- Factors affecting meal planning and food related behaviour, diet diversity
- Dietary guidelines for Indians
- Concept of EAR, RDA, AI and TUL
- Basic concepts of assessment of nutrient requirements

UNIT II: Nutrition during adulthood and old age

12 Hours

- Unit Description: Physiological influence on nutrient requirements during adulthood and old age (EAR/RDA), energy balance, nutritional concerns and changes in requirements during adulthood and old age, concept of healthy food choices, processed and ultra-processed food consumption and factors contributing to longevity will be dealt with.

Subtopics:

- Adult men and women
- Elderly

UNIT III: Nutrition during pregnancy and lactation

9 Hours

Unit Description: Physiological changes in pregnancy and lactation, EAR/RDA during pregnancy and lactation, nutritional guidelines, effect of nutritional status on pregnancy outcome, optimal weight gain and its components during pregnancy, nutrition related problems in pregnancy, importance of nutrition for successful lactation will be dealt with.

Subtopics:

- Pregnant women
- Lactating mothers

UNIT IV: Nutrition during childhood

12 Hours

- Unit Description: Physiological changes during infancy, childhood and adolescence – growth and development; nutrient requirements (EAR/RDA) during these age groups, guidelines on infant and young child feeding, nutrition concerns keeping in mind the changing food habits and importance of physical activity will be dealt with.

Subtopics:

- Infants
- Preschool children
- School children
- Adolescents

PRACTICAL
(Credits 1; Hours 30)

I Introduction to meal planning:

- Rich sources of nutrients
- Use of food exchange lists

II Planning nutritious diets for:

- Adult (Male and Female)

- Pregnant and Lactating woman
- Pre-schooler
- Adolescent girl
- Elderly

III Planning and cooking of nutrient rich snacks/dishes for:

- Infants (Freshly prepared complementary foods)
- Packed tiffin adults, adolescent and school going children (any one)
- Pregnancy/Lactation

Essential readings

1. Chadha R and Mathur P eds. (2015). Nutrition: A Lifecycle Approach. Orient Blackswan, New Delhi
2. ICMR-NIN Expert Group on Nutrient Requirements for Indians, Recommended Dietary Allowances (RDA) and Estimated Average Requirements (EAR)-2020
3. Khanna K, Gupta S, Seth R, Passi SJ, Mahna R, Puri S (2013). Textbook of Nutrition and Dietetics. Delhi: Elite Publishing House Pvt. Ltd.
4. NIN (2011). Dietary Guidelines for Indians-A manual. Second Edition. National Institute of Nutrition, Indian Council of Medical Research, Hyderabad.

Suggested readings

1. Byrd-Bredbenner C, Berning J, Kelly D, Abbot JM (2021). Wardlaw‟s Perspectives in Nutrition, McGraw- Hill International Edition, 12th edition
2. B Srilakshmi Eighth Edition (2019). Nutrition Science. New Age International Publishers.
3. Longvah T, Ananthan R, Bhaskarachary K and Venkaiah K (2017). Indian Food Composition Tables. National Institute of Nutrition, Indian Council of Medical Research, Department of Health Research, Ministry of Health and Family Welfare, Government of India, Hyderabad.
4. Sethi P, Lakra P (2015). Aahar Vigyan Suraksha evam Poshan.Delhi: Elite Publishing House Pvt.Ltd
5. Puri S, Bhagat A, Aeri, BT, Sharma A (2019). Food Exchange List: A Tool for meal Planning. Elite Publishing House. New Delhi.
6. Siddhu, A, Bhatia, N, Singh, K, Gupta, S (2017). Compilation of Food Exchange List, Technical Series 6, Lady Irwin College, University of Delhi Publ. Global Books Organisation, Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 9

DSC HH 309: Communication Systems and Social Change

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Communication Systems and Social Change	**4**	**3**	**0**	**1**	**XII Pass**	**Pass DSC HH 103** Communication Concepts and Theories

Learning Objectives

1. To gain understanding of various Communication Systems and their applications in personal and professional life.
2. To learn about the applications of communication transactions in the field of Development Communication.
3. To recognize the importance of understanding self through concepts of self-concept, self-esteem and self-disclosure.
4. To understand the nuances of different levels of communication ranging from intra personal communication to organizational as well as intercultural communication.
5. To understand how communication transactions helps in persuading, influencing and bring out desired changes in individuals and groups.

Learning Outcomes

The students would be able to:

1. Develop a clear understanding of various communication systems and their relevance.
2. Comprehend the various levels of communication transactions and their applications in Development Communication approaches.
3. Gain understanding of self through self-concept, self-awareness and self-esteem.
4. Recognize and appreciate various communication networks in personal and professional spheres.
5. Understand how mass communication and media impact society through mass communication theories and models and their significance.

SYLLABUS OF DSC 9

THEORY
(Credits 3; Hours 45)

UNIT I: Intrapersonal and Interpersonal Communication **9 Hours**

Elucidate upon the various levels of communication transactions. This Unit in particular lays thrust on the Intrapersonal and Interpersonal Communication Systems and processes.

Subtopics:

- Overview of communication transactions
- Intrapersonal Communication - Self Development, Looking Glass Self Theory, Self-concept and
- self-esteem, Awareness of Self & Johari's Window, Self-Disclosure.
- Interpersonal Communication - Functions, Types of relationships- friendship, families, other relationships, Stages of relationship development, Interpersonal Competence
- Theories of Relationship Development - Social Exchange Theory, Uncertainty Reductions
- Theory, Interpersonal Relationships Model.

UNIT II: Small Group and Organizational Communication **12 Hours**

This Unit highlights the small group communication characteristics, functions and power of group conformity. It emphasizes organizational communication with focus on culture and leadership.

Subtopics:

- Small group communication: Characteristics, Functions & Types
- Small Groups & Social Influence, Power in small group Conformity, Group Think &
  Polarization, Social Loafing
- Theories of group formation - Functional Theory, Structuration Theory, Symbolic Convergence
- Theory, Participatory theory
- Small Group Processes: Culture, Structure, Roles & Leadership
- Organization - concept, types and relationship in organization
- Organizational communication: Types: Formal Informal, Internal External, Direction &
- Networks, Functions, Tools used by organizations, challenges
- Organizational Culture and Leadership.

UNIT III: Public, Intercultural and Mass Communication **12 Hours**

This Unit highlights the Communication networks in professional and public spaces. It provides insight into the dynamics of intercultural communication. It also highlights the various theories and models of mass communication and emphasizes the significance and characteristics of various mass media.

Subtopics:

- Public communication - Concept, types, techniques and skills in public speaking, qualities of an effective public speaker, overcoming speaker apprehension
- Intercultural communication-concept, importance and relevance, stages and barriers
- Mass Communication - concept, significance, functions and elements
- Models and theories of mass communication
- Mass Media - Characteristics, classification, Evolution, significance of print, electronic and web- based media in contemporary society.

UNIT IV: Scope of Levels of Transactions in Communication 12 Hours

This Unit emphasizes role of communication transactions in facilitating change. How communication helps in persuading, influencing and bring out desired changes in individuals groups and organization's It strives to give conceptual clarity about use of communication in addressing conflict and strengthening personal and professional relationships.

Subtopics:

- What is Social Change?, Social change in individuals, communities and organizations Application of communication transactions for Persuasion, influencing ideas and Attitudes of individuals and groups
- Communications and building Self-Confidence, Self-development, identity and personal branding
- Communication in conflict management, relationship development & repair
- Business communication and strengthening organizational processes and efficacy
- Social and Behaviour Change Communication

PRACTICAL
(Credits 1; Hours 30)

- Self-Awareness & Analysis of Communication with self
- Small Group dynamics
- Inter personal conflict resolution
- Media design and production for group and mass communication
- Evaluating & Designing communications for changing attitudes
- Evaluation of various communication strategies for social change

Essential readings

1. Anand, S. & Kumar, A. (2016). *Dynamics of Human Communication*. New Delhi: Orient Black Swan. ISBN: 9788125063254
2. Barker, L. (1990). "Communication", New Jersey: Prentice Hall, Inc; 171.
3. Devito, J. (2012). *Human Communication*. New York: Harper & Row.
4. Vivian, J. & Maurin, P. (2006) The Media of Mass Communication (4th Canadian). Pearson Allyn and Bacon.

Suggested readings

1. Baran, S. (2014) Mass Communication Theory. Wadsworth Publishing
2. McQuail, D. (2000) *Mass Communication Theories*. London: Sage Publications.
3. Patri, V. R. and Patri, N.(2002); Essentials of Communication. Greenspan Publications
4. Stevenson, D. (2002) Understanding Media Studies: Social Theory and Mass Communication, Sage Publications
5. Zeuschner, R. (1997). Communicating Today. California State University, USA

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE
DSE HH 3A1 : Organization and Management of Children Ñ Institutions

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Organization and Management of Children's Institutions	**4**	**2**	**0**	**2**	**XII Pass**	**Pass in DSC HH 101** Human Development 1: The Early Years

Learning Objectives

1. To comprehend the importance of services, institutions and programmes needed for children
2. To understand the aspects involved in management of children institutions and programmes
3. To develop sensitivity towards the individual needs of children
4. To develop an orientation towards planning developmentally and contextually appropriate activities for children

Learning Outcomes

The students would be able to:

1. Recognize the importance of providing services, programmes and institutions for children.
2. Describe the aspects involved in the management of children's institutions
3. Demonstrate an understanding of individual children's needs and develop appropriate activities for them
4. Identify challenges and opportunities while working in children's institutions

SYLLABUS OF HH 3A1

THEORY
(Credits 2; Hours 30)

UNIT I: Importance of children's institutions **6 Hours**

Students will understand the purpose of setting up children's institutions, the types of institutions and how to conduct need assessment for such institutions.
Subtopics:

- Need/purpose for institutions for children
- Types of children's institutions- based on philosophy, context, and funds and resources in the country
- Significance of developmentally and contextually appropriate programmes for children
- Need Assessment- Situational Analysis, Baseline surveys, Resource Mapping

UNIT II: Management of children's institutions 12 Hours

Students will be able to develop an understanding of the process involved in the management of children's institutions.
Subtopics:

- Planning and Organizing: Philosophy, concept, nature, goals and characteristics, steps in planning, services to be offered, organizing infrastructure and layout, maintenance, and emergency measures
- Developing the resources and services for the set-up - finance and budgeting, personnel- both managerial and staff (hiring, salary, creating supportive work environments, capacity building), infrastructure and equipment), enrolment of children.
- Supervision and monitoring: Types, factors, steps and requirements of effective supervision and monitoring
- Assessment and evaluation: Importance, types and steps; evaluation of the programme, curriculum, staff, and facilities according to the developed standards.
- Challenges in managing children's institutions and how to overcome them

.

UNIT III: Organizing programmes for children 12 Hours

- Approaches to programme planning through selected case studies
- Using indigenous and local knowledge for planning and creating developmentally and contextually appropriate activities for children
- Ensuring and creating safe and productive spaces for children, importance of play
- Monitoring, assessment and evaluation of programmes and children (records and registers)
- Partnering with community and parents

PRACTICAL
(Credits 2; Hours 60)

- Visit to selected institutions working with children
- Needs assessment: Survey of locality and community (questionnaire)
- Community–baseline survey for programme development (interview/questionnaire)
- Developing checklists: Developmental norms for children, requisites of a good institution
- Case study of a private/government/non government children's institutions
- Placement/internship: Identifying needs and developing activities for all domains of development and undertaking developmentally appropriate activities within existing organisations
- Programme planning and assessment with the help of an organization

- Envisage a small project working in a group in collaboration with an existing organisation Execute the project with special emphasis on individual/ group empowerment
- Plan an outline/layout of setting up an institution on the basis of internship or fieldwork done

Essential readings

1. Chandra, P. (1995). Projects – Planning, Analysis, Selection, Implementation and Review. New Delhi: Tata McGraw
2. Hart, R.A. (1997). Children's Participation: The Theory and Practice of Involving Young Children in Community Development and Environmental Care.
3. Hildebrand, V. (1984). Management of Child Development Centres, New York: Collier Macmillan
4. Jayakaran, R.L. (1996). Participatory Learning and Action: Users' Guide and Manual. Madras: World Vision India
5. Montgomery, H. (Ed.). (2013).Local childhood, global issues. UK: The Policy Press.

Suggested readings

1. Kretzmann, J.P. & McKnight, J.L. (1993). Building Communities from the Inside Out: A Path Toward Finding and Mobilizing a Community's Assets Paperback ACTA Publications
2. Sriram, R. (2014). Engaging in Social Intervention (For Learners) Volume I. New Delhi: Concept Publishing.
3. Sriram, R. (2014). Engaging in Social Intervention (For Mentors) Volume II. New Delhi: Concept Publishing
4. Udayan Care (2017). Standard of Care in Child Care Institutions, A Series on Alternative Care. https://www.udayancare.org/sites/default/files/Standards_of_Care.pdf)
5. IGNOU. (2017). Unit-3 Organizations for Children, Block-1 Theory and Practice in Early Childhood Care and Education. http://hdl.handle.net/123456789/34219
6. IGNOU. (2017). Unit-4 Procedure for Establishing and Running Social Service Organisation, Block II Social welfare administration. http://egyankosh.ac.in//handle/123456789/17235
7. Vikaspedia. (n.d). Objectives and approaches to Child Care institutions, https://vikaspedia.in/education/child-rights/living-conditions-in-institutions-for-children-in-conflict-with-law/objectives-and-approach-of-child-care-institutions
8. Vikaspedia. (n.d). Roles and Responsibilities of Staff in CCI. https://vikaspedia.in/education/child-rights/living-conditions-in-institutions-for-children-in-conflict-with-law/roles-and-responsibilities-of-staff

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE
DSE HH 3B1 : Fundamentals of Human Anatomy and Physiology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Fundamentals of Human Anatomy and Physiology	**4**	**2**	**0**	**2**	**XII Pass**	**NIL**

Learning Objectives

1. To learn about the structural organization of the human body.
2. To understand the normal functioning of the organ systems and their interactions.
3. To correlate physiological changes with major disorders and their pathogenesis.
4. To understand and interpret common medical diagnostic tests and reports.

Learning Outcomes

The students would be able to:

1. Understand the knowledge about the functional organization of the human body.
2. Develop insight of normal functioning of all the organ systems of the body and their interactions
3. Correlate physiology with various disorders and their pathogenesis.
4. Understand and interpret common medical diagnostic tests and reports.

SYLLABUS OF HH 3B1

THEORY
(Credits 2; Hours 30)

UNIT I: Introduction to General Human Anatomy and Physiology. 4 Hours

The unit presents the student with an overview of the general concepts of human anatomy and human physiology.

Subtopics:

General terms: Anatomy, Physiology, symmetrical arrangement, anatomical position, Median plane/ lateral plane, Internal/external, Superficial/ deep, Superior/ Inferior, Anterior/ posterior.

Introduction to various systems of the body:

- Animal Cell: structure, functions of each component (organelle) of the cell.
- Tissues: Structure and functions of various types of tissues.
- Various types, functions, structure of bone, cartilage & muscle
- Joints: Classification and movements of various joints.

UNIT II: Fundamentals of Human Anatomy 14 Hours

The unit presents the student with the understanding of the gross and microscopic structure of the major organs of the human body.

Subtopics:

- Heart and its structure
- Arteries, Veins and lymphatic system
- Structure of nose, larynx, trachea, bronchi and lungs
- Digestive system: Mouth, pharynx, oesophagus, stomach, liver, gall bladder, pancreas, spleen, intestines and glands associated with gastrointestinal tract.
- Urinary system structure of kidney, ureters, bladder, and urethra
- Endocrine system Structure and functions of Pituitary, Thyroid, Pancreas, Ovary and Testes
- Structure of uterus, fallopian tubes & mammary gland
- Overview of organization and functions of the Nervous System (cerebrum, cerebellum, spinal cord, sympathetic and parasympathetic system)

UNIT III: Fundamentals of Human Physiology 12 Hours

The unit presents the student with the understanding of the functioning of the major systems of the human body and its correlation with the pathogenesis of disease condition.

Subtopics:

- Cardiovascular System: circulations (systemic, pulmonary and portal), cardiac cycle, Cardiac Output (definition and factors affecting)
- Respiratory System: General overview of the respiratory functions Lung Volume and Capacities
- Digestive System: functions of: Stomach, Liver, Gallbladder, Pancreas and Intestines. Digestion and absorption of carbohydrates, fats and proteins Nervous and hormonal control of digestion (in brief)
- Excretory System: functions of Kidney and Nephron, non-excretory functions of kidneys Mechanism of urine formation,
- Endocrine System: Feedback mechanism/cascade functions of Pituitary, Thyroid, Pancreas, Ovary and Testes
- Reproductive System: Physiology of menstruation, lactation and menopause

PRACTICAL
(Credits 2; Hours 60)

1. Basic concept of blood groups, types, importance, and Rh incompatibility
2. Clinical significance of RBC, WBC and Platelet counting (Slides and videos)

3. Demonstration of haemoglobin estimation methods with help of videos, and its significance. Discussion about different types of anaemias and their aetiology
4. Pulse rate measurement by at least two methods – a) at rest b) after physical activity and c) of a child and an elderly person. Comparative analysis.
5. Recording of BP by using a Sphygmomanometer in Standing, sitting and recumbent position
6. Use of Pulse Oximeter and its significance.
7. Clinical significance of liver function tests and Jaundice
8. Ten histological slides- description, diagrams, and correlation with respective theoretical understanding
    a. Muscle: smooth, skeletal and cardiac
    b. Thyroid
    c. Parathyroid
    d. Kidney and nephron
    e. Small intestine
    f. Liver
    g. Pancreas
    h. Stomach
    i. Testes
    j. Ovaries
9. Clinical significance of variations in blood glucose and Diabetes mellitus. Use of Glucometer
10. Project Report on Birth control Methods

Essential readings

1. Chaudhari S K (2016) Concise Medical Physiology.7rd Edition. Central.
2. Ganong W.F. (2019)-Review of Medical Physiology.26th ed. McGraw Hill.
3. Guyton A.C. and Hall J.E. (2015) Textbook of Medical Physiology.13th ed. India:Harcourt Asia..
4. Tortora G.J and Grabowski S.R. (2020) Principles of Anatomy and Physiology.16th ed. John Wiley and Sons.Inc.

Suggested readings

1. Jain A. K (2019) Human Physiology for BDS (6th Edition), Publisher: Avichal Publishing Company; ISBN: 9788177394337.
2. Marieb E.N(2014) Human Anatomy and Physiology (10th ed)Pearson Education ,Inc, publishing as Benjamin Cummings.
3. West J.B. (1996): Physiological Basis of Medical Practice.12th Edition. B. I. Waverly Pvt. Ltd.
4. Vander's Human Physiology (2016) (WCB APPLIED BIOLOGY). 13th ed.
5. Human Physiology: From Cells to Systems (2012) (Mindtap Course List) 8th ed.
6. Comprehensive Textbook of Medical Physiology (Volume 2), 2017 by Gopal Krushna Pal, Pravati Pal, Nivedita Nanda.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE
DSE HH 3C1: Media and Cultural Studies

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Media and Cultural Studies	**4**	**2**	**0**	**2**	**XII Pass**	**Pass DSC HH 103** Communication Concepts and Theories

Learning Objectives

1. To appraise the importance of culture, cultural transmission and cultural influences on human interactions.
2. To gain knowledge of key theories, concepts, models and perspectives in the study of communication & media.
3. To understand the relevance and roles of communication media in individual lives as well as in the larger context of culture & society.
4. To analyze the relationships, dynamics, and trends within communication media, culture & society.

Learning Outcomes

The students would be able to:

1. Assess the significance of culture, cultural transmission and cultural influences on human interactions.
2. Enhance their awareness on the concepts, models and perspectives in the study of communication & media.
3. Comprehend the relevance and roles of communication media in individual lives as well as in larger context of culture & society.
4. Critically analyse the relationships, dynamics, and trends within communication media, culture & society.

SYLLABUS OF HH 3C1

THEORY
(Credits 2; Hours 30)

UNIT I: Understanding Culture **6 Hours**

This unit explores the different dimensions of culture and its types. It also highlights the concepts of hegemony and ideology along with cultural influences and role of media. It touches upon the essence of folk culture and the relation between media, society and popular culture.

Subtopics:

- Concept of cultures, subcultures and counter culture
- Popular, folk and mass culture
- Role of Ideology and hegemony
- Commercialization of folk culture
- Culture in perspective of communities

UNIT II: Media & Media Audience
8 Hours

Unit II highlights the importance of mass media in our lives and the types of media audiences. It elaborates on the processes of media audience analysis

Subtopics:

- Role of Mass Media in society
- Media Audience
- Types of Audience
- Foucault's Notion of Knowledge and Power
- Queer Studies and Representations of Gender in Media

UNIT III: Ideologies in media and culture **8 Hours**

This unit highlights the relation between media, society and ideologies. It explains the concept of Habermas Public sphere and cultural industry

Subtopics:

- Frankfurt school
- Culture and consumption: cultural 'goods', structure and movement of cultural meaning.
- Cultural industry
- Public Sphere

UNIT IV: Media Realism and Technologies **8 Hours**

This particular unit critically acclaims the notion of media and realism along with gaining insights into postcolonial theory. It further elaborates upon the Indian Context to Media, Culture & Society

Subtopics:

- Introduction to Postcolonial Theory
- Indian Context to relationship between Media, Culture & Society
- Postcolonial from Indian perspective
- Digital media and culture

PRACTICAL
(Credits 2; Hours 60)

- Media Critiquing- Choose a movie or television series and apply some of the concepts and techniques about interpretation, ideology, or gender/class/race.

- Audience perceptions about media; audience preferences listenership/ viewership
- Assessing the prevalence of cultural stereotypes in the society and depiction of the same via media

Essential Readings

- Grossberg, Lawrence et al. (1998). *Media-Making: Mass Media in a popular culture.* Sage Publications
- Bannerjee, P. (2021). *Cultural Studies: Texts and Contexts.* India: Dattsons. ISBN: 8171922007
- Nayar, P. (2016). *An Introduction to Cultural Studies.* India: Viva Books. ISBN: 8130933985
- Achebe, Chinua. (2010). *The African Trilogy: Things Fall Apart; No Longer At Ease; Arrow of God.* Alfred A. Knopf
- Ghosh, Amitav. (2008). *Sea of Poppies*. Viking Canada
- Habermas, J. (2006). '*The Public Sphere: An Encyclopaedia Article'* in Media and Cultural Studies- Key Works by Meenakshi Gigi, et.al. (Eds). Oxford: Blackwell Publishing
- Williams, Raymond. (1997). *Marxism and Literature,* Oxford UP
- Butler, Judith. (1990). *Gender Trouble: Feminism and the Subversion of Identity*. Routledge

Suggested Readings

- Butler, Judith.(1993). *Bodies That Matter: On the Discursive Limits of Sex*. Routledge
- Woolf, Virginia. (1925). *Mrs Dalloway.* Harcourt, Brace, and Co
- Despande, Shashi. (1989). *That Long Silence.* Penguin
- Berger, Asa Authur (1998). *Media Analysis Technique*. Sage Publications
- Stevenson, N (2002). U*nderstanding Media Studies: Social Theory And Mass Communication*, 2nd edition, Sage publications
- Walder, Dennis. (1998). *Post-Colonial Literatures in English: History, Language, Theory.* Blackwell Publishers
- Loomba, Ania. (2005). *Colonialism/Postcolonialism*. 2nd Edition, Routledge
- Mambrol, Nasrullah. (2018). P*ostcolonialism* Literary Theory and Criticism Notes, literariness.org/2016/04/06/postcolonialism/
- Watson, Katherine. (2005). *Queer Theory* The Group-Analytic Society, Vol 38, no. 1, pp. 81-85.D01:10.1177/0533316405049370
- Duncan, Margaret Carlisle and Michael Messer. (1993). *Separating the Men from the Girls: The GenderedLanguage of Televised Sports.* Gender and Society 7 1, pp. 121-137
- Michel Foucault. (1997). What Is Enlightenment? in Paul Rabinow, ed., *Ethics: Subjectivity and Truth*, The Essential Works of Foucault 1954-1984, Volume I, New Press

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE
DSE HH 3D1: Apparel Design and Construction Techniques

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
Apparel Design and Construction Techniques	**4**	**2**	**0**	**2**	**XII Pass**	**Pass in DSC HH 204** Fashion Studies

Learning Objectives

1. To impart knowledge regarding the basics of apparel design.
2. To make students understand various terminologies used in relation to garment components and their application in designing garments.
3. To develop a level of proficiency in making patterns for simple garments
4. To be able to independently lay patterns, cut fabric and sew a garment

Learning Outcomes

The students would be able to:

1. Develop basic knowledge of apparel design and describe its terminology.
2. Apply the knowledge of fabrics and fabric terminology to follow preparatory steps before garment cutting
3. Use and apply the concept and techniques of pattern making, laying out and cutting
4. Judicious application of knowledge for producing quality in patterns, and processes in garment assembly
5. Have basic skill in pattern making for women's clothes
6. Use and apply the concept and techniques of various seams and edge finishes

SYLLABUS OF HH 3D1

THEORY
(Credits 2; Hours 30)

UNIT I: Apparel Design with Garment Components **8 Hours**

Unit Description: This unit will acquaint students with different types of garment components.
Subtopics: Garment Components: Types

- Bodices and yokes
- Necklines
- Collars
- Sleeves and cuffs
- Plackets and fasteners

- Pockets

UNIT II: Introduction to Body measurements and pattern making 6 Hours

This unit will delve into the concept, significance and techniques of body measurements, basic block and patterns.
Subtopics:

- Measurement on body – importance, procedure and precautions
- Basic Blocks and patterns – importance, types and pattern information
- Pattern making technique – Slash and spread for added fullness: gathers, pleats, flare and tucks

UNIT III: Preparation for garment construction 8 Hours

This unit provides an insight into the concepts and processes of fabric selection, terms, preparatory steps, fabric layouts, pinning, marking and cutting.
Subtopics:

- Fabric selection: characteristics, construction, drape, weights, widths and trade name
- Fabric Grain – types, identification and importance
- Preparatory steps- preshrinking, straightening and truing
- Layouts for patterns-general guidelines, basic layouts- lengthwise, partial lengthwise,
  crosswise, double fold, open, combination fold
- Layouts for special fabrics- Unidirectional, bold and large prints, plaids, stripes and checks, various widths of fabrics
- Pinning, marking, cutting - Tools and processes

UNIT IV: Sewing, Seams and finishing of raw edges 8 Hours

This unit offers information on sewing machines, appropriate stitching guidelines, seams and various additional techniques required for finishing seams and garment edges.
Subtopics:

- Sewing machines - types, basic parts and their function, basic operations, seam defects and remedies
- Relationship between needle, thread, stitch length & fabric weight
- Seam classification - super imposed seam, enclosed, lapped seam, bound seam, flat seam and decorative seam
- Additional techniques for straight, curved and cornered seams: clipping, notching, grading, seam balancing, trimming, under stitching, stay stitching, trimming a corner, handling unequal seams (easing)
- Edge treatments of straight & curved edges- self finish, bias strip and its importance, bias facing, bias binding, shaped facing, self-finishing, casings and finishing
  with trims

PRACTICAL
(Credits 2; Hours 60)

1. Designing for Children's garments

- Drafting of child's basic bodice and sleeve block

- Adaptation of three bodice-short waist, standard waist and low waist
- Adaptation of sleeves- puffed and its variations, flared
- Developing collars- peter pan and its variations
- Adapting bodice to various frocks - A-line, yoked, short bodice, elongated bodice with gathers, pleats and flares

2. Sewing techniques

- Introduction to a sewing machine – Practice sewing
- Seam – Plain seam - straight and curved, cornered, French seam, Flat Felled seam
- Edge Finishing – Straight and curved (Facing and Binding)
- Construction of plackets with suitable fastener- even hem with button and button hole, continuous wrap
- Construction of any one frock with sleeve and collar

Essential readings

1. Armstrong, H.J., 2009, Pattern Making for Fashion Design, Harper Collins Publishers Inc., New York.
2. Stamper, A.A., S. H. Sharp and L.B. Donnell, 1986, Evaluating Apparel Quality, Fairchild Publications, America
3. Liechty, E.G., Potterberg, D.N., Rasband, J.A., 2010, Fitting and Pattern Alteration: A Multimethod Approach, Fairchild Publications, New York.

Suggested readings

1. Carr H. & Latham B. (1994), The Technology of Clothing Manufacture, 2nd edition, Blackwell SC.
2. Cooklin, G. (1991), Introduction to clothing manufacture, Blackwell publishing.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE
DSE HH 3E1: Human Resource Management

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Human Resource Management	**4**	**2**	**0**	**2**	**XII Pass**	**Pass in DSC HH 205** Fundamentals of Resource Management

Learning Objectives

1. To familiarise the students with the importance of human resources and their effective management in organisations.
2. To comprehend functions of human resource management.
3. To sensitize students towards the emerging trends and modern practices in the field of human resource management to meet the changing needs of business environment.

Learning Outcomes

The students would be able to:

1. Develop an understanding about the discipline of human resource management.
2. Aquire knowledge about the functions of human resource management.
3. Gain insight into emerging trends and modern practices in the field of human resource management.

SYLLABUS OF HH 3E1

THEORY
(Credits 2; Hours 30)

UNIT I: Human Resources Management **6 Hours**

The focus of this unit would be on developing the fundamental concepts of human resource management and its applicability in changing business environment.

Subtopics:

- Concept, functions, roles, skills and competencies
- Changing environment of HRM- Globalization, corporate downsizing, cultural environment, work force diversity, changing skill requirement, technological changes.

- HRM support for improvement programs -re engineering processes, contingent workforce, decentralized work sites.

UNIT II: Functions of HRM **10 Hours**

This unit attempts to acquaint the students in understanding the functions of human resource management.

Subtopics:

- Manpower planning
- Job Analysis – job description and job specification
- Recruitment and selection
- Placement and Induction
- Performance appraisal and development
- Compensation and Benefits
- Training and Development
- Motivation

UNIT III: Human Resources Audit **8 Hours**

This unit will help students to gain insights about the components of HR system used in an organization for auditing purposes to check its effectiveness.

Subtopics:

- Concept, significance, components and process
- HRM as a strategic partner
- Work life balance.

UNIT IV: Industrial Relations **6 Hours**

This unit will help students to understand the role of HR in industrial relationship management.

Subtopics:

- Introduction to Industrial Relations and Industrial disputes
- Employee grievances and Discipline
- Collective bargaining

PRACTICAL
(Credits 2; Hours 60)

- Analysis of human resource management environment and HR audit in an organization through case-studies.
- Simulations/Presentations:
    - Human Resource Planning
    - Job Analysis: job description and job specification and Design (levels)
    - Recruitment, selection, and placement Strategies
    - Interview techniques and skills (mock interview)
    - Performance appraisal and management (methods)
- Developing Matrix for skill and talent acquisition

Essential readings

1. Aswathappa K. (2021). Human Resource Management Text and Cases (9th Ed.) McGraw Hill Education India.

2. Dessler G. (2020). Human Resource Management, Prentice Hall of India Pvt. Ltd, New Delhi.
3. Decenzo, D. A., & Robbins, S. P. (2011). Fundamentals of Human Resource Management. India: Wiley.
4. Rao, V.S.P. (2010). Human Resource Management, 3rd Edition, Excel Books.

Suggested readings

1. Noe, R.A., Hollenbeck, Gerhart and Wright (2012). Fundamentals of Human Resource Management, 3rd Edition, McGrawHill Education Ltd.
2. Ivanecevich, J.M.(2010). Human Resource Management, 10th Edition, Tata McGraw Hill Education Pvt. Ltd.
3. Vance, C.M. and Paik, Y. (2009). Managing a Global Workforce: Challenges and Opportunities in International Human Resource Management, PHI Learning.
4. Subbaroo, R. (2007). Personnel and HRM – Text and Cases, Himalaya Publishing House, New Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

GENERIC ELECTIVE (GE HS 003) : CHALLENGES IN CONTEMPORARY CHILDHOOD

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Challenges in Contemporary Childhood	**4**	**3**	**0**	**1**	**XII Pass**	**NIL**

Learning Objectives

1. To understand the social construction of childhood
2. To understand depiction of childhood experiences in India
3. To know and learn about diverse contexts of childhood
4. To appreciate contemporary themes and challenges of Indian childhood

Learning Outcomes

The students will be able to:

1. Learn the concepts related to multiple childhood
2. Study children's experiences of ethnicity, class, caste, religion and gender
3. Learn about children in difficult circumstances
4. Get sensitized to appreciate diverse contexts of children

SYLLABUS OF GE HS 003

THEORY
(Credits 3; Periods 45)

UNIT I: Influences on Indian Childhood **12 Hours**

Unit Description: This unit presents an overview by revisiting central themes and concerns related to childhood in India

Subtopics:

- Sociology of childhood
- Disadvantaged childhood
- Caste and childhood

- Gender and children

UNIT II: Multiple contexts of Childhood 12 Hours

Unit Description: This unit will focus on understanding children in multiple settings and contexts

Subtopics:

- Childhood in urban, semi-urban, rural and tribal context
- Socialization and growing in diverse families
- Children in foster and institutional settings
- School as a context of development - Educational inequity and learning diversity

UNIT III: Children in Difficult Circumstances 12 Hours

Unit Description: This unit will help us to develop understanding of children in difficult circumstances and the challenges

Subtopics:

- Street and Working children
- Trafficked children and children of sex workers
- Children of migrant and refugee families
- Children in conflict with law and children in contact with law
- Children in war and other disaster situations

UNIT IV: Contemporary Challenges and Childhood 9 Hours

Unit Description: This unit will focus on the various challenges faced by children in different contexts.

Subtopics:

- Childhood in digital era/cyberbullying/child pornography/violence in schools like bullying
- Gender concerns and safety, Body boundaries and consent
- Supporting childhood in India

PRACTICAL
(Credit 1; Periods 30)

- Exploring and analysis of diverse childhood context and challenges through audio-visual materials/social media/print media.
- Interview Street children/working children/ children with disabilities to understand their circumstances
- Profile organisations working for children in difficult circumstances
- Conduct workshop/webinars to understand the various vulnerabilities related to Indian children like cyberbullying, Bodyboundaries, inclusion & diversity

Essential readings

1. Chopra, G. (2016). Child rights in India: challenges and social action. S.l.: Springer, India, private.
2. Sachdeva ,P.,Murmu,D.F. & Sakshi.(2020).Basic Sociology. Delhi . Elite Publishing
3. Saraswathi, T.S. (Ed.) (1999). Culture, Socialization and Human Development: Theory, Research and Applications in India. Sage Publications Chapter 4: Theoretical Frameworks in Cross-cultural Psychology, Chapter 6: Individualism in a Collective Culture: A Case of Co-existence of Opposites

4. Vasanta, D. (2004). Childhood, Work and Schooling: Some Reflections. Contemporary Education Dialogue, Vol. 2(1), 5-29

Suggested readings

1. Balmès, T. (Director), & Chabat, A., Billot, A., & Rouxel, C. (Producers). (2010). Babies [Motion picture on DVD]. Universal Studios Home Entertainment.
2. Nissani, M. (1997). Ten cheers for interdisciplinarity: The case for interdisciplinary knowledge and research. Social Science Journal, 34(2), 201.
3. Mukunda, K. V. (2009). What Did You Ask in School Today? A Handbook on Child Learning. Noida: Harper Collins. Chapter 4: Child Development, 79-96
4. Sandra, L. Bem (1987). Gender Schema Theory and its Implications for Child Development: raising gender schematic children in a gender schematic society, in M.R. Walsh, (ed). The Psychology of Women Harvard University Press Cambridge, 206-226

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVE (GE HS 007) : CURRENT CONCERNS IN PUBLIC HEALTH NUTRITION

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical / Practice			
Current Concerns in Public Health Nutrition	4	3	0	1	XII Pass	NIL	Home Science

Learning Objectives

1. To understand the multi-faceted nature of nutritional problems and the various interventions that can be adopted at community level for improving the nutritional status.
2. To learn about the policy and intervention programmes operating in India to overcome malnutrition.
3. To understand the concept and determinants of food and nutrition security.

Learning Outcomes

The student will be able to:

1. Understand the multi-faceted nature of nutritional problems.
2. Aware of the various interventions that can be adopted at community level for improving the nutritional status.
3. Familiar with the policy and intervention programmes operating in India to overcome malnutrition.
4. Understand the concept and determinants of food and nutrition security

SYLLABUS OF GE HS 007

THEORY

(Credits 3; Periods 45)

UNIT I: Nutritional Problems Affecting the Community **12**

Unit Description: Students will be explained about the existing nutritional problems in the community in the present scenario.

Subtopics:

Etiology, prevalence, clinical features and preventive strategies for-

- Undernutrition - Protein energy malnutrition, Moderate Acute Malnutrition, Severe Acute Malnutrition, Nutritional Anaemias, Vitamin A Deficiency, Iodine Deficiency Disorders
- Obesity, Metabolic Syndrome
- Coronary heart disease, Diabetes
- Fluorosis

UNIT II: Strategies for Improving Nutrition and Health Status of the Community 9

Unit Description: Students will be taught about the different approaches and strategies that could help alleviate the nutrition and health status of the community.

Subtopics:

- Appropriate interventions involving different sectors such as Food, Health, and Education –
  diet diversification, food fortification, supplementation, genetic modification, improved water and sanitation, immunization, promotion of optimal infant and young child feeding practices, growth monitoring and promotion (GMP), diarrhoea management and prevention

UNIT III: Nutrition Policy and Programmes 12

Unit Description: Students will be introduced to all the major ongoing national level interventions and strategies and goals to combat malnutrition in the nation.

Subtopics:

- Sustainable Development Goals – Introduction, and relevance to nutritional problems in India
- National Nutrition Policy
- Ongoing nutrition programmes – Integrated Child Development Services (ICDS) Scheme, Mid-day Meal Programme (MDMP), National programmesfor prevention of Anaemia, Vitamin A deficiency, Iodine Deficiency Disorders, National Programme for Prevention and Control of Cancers, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS), POSHAN Abhiyaan

UNIT IV: Food and Nutrition Security 12

Unit Description: Students will be taught the concept of food and nutrition security and the associated national level intervention and programs. Subtopics:

- Concept, components, determinants
- Overview of the ongoing public sector programmes for improving food and nutrition security

PRACTICAL
(Credit 1; Periods 30)

Planning of low cost nutritious recipes for preschoolers, school age children, adolescents, pregnant and nursing women.

- Planning of nutritious recipes for an obese and an underweight adult.
- Visit to on-going nutrition programmes.

Essential readings:

1. Bamji, MS, Krishnaswamy, K. & Brahmam, G N(Eds.). (2017). Textbook of Human Nutrition (4th ed.). New Delhi, India: Oxford and IBH Publishing Co. Pvt. Ltd.
2. Longvah, T, Ananthan, R, Bhaskarachary, K & Venkaiah, K (2017). Indian Food Composition Tables. National Institute of Nutrition, ICMR, Hyderabad.
3. Park, K (2017). Park's Textbook of Preventive and Social Medicine (24th ed.). Jabalpur, India: Banarasidas Bhanot Publishers.
4. Vir, S (2011). Public Health Nutrition in Developing Countries (Vol 1 & 2). New Delhi, India: Woodhead Publishing India.

Suggested readings:

1. Gibney, M J, Margetts, B M, Kearney, J M & Arab, L (Eds.). (2005). Public Health Nutrition. Oxford, UK: Blackwell Science.
2. ICMR (2011) Dietary Guidelines for Indians – A Manual. National Institute of Nutrition, Indian Council of Medical Research, Hyderabad.
3. Kishore, J (2016). National Health Programs of India (12th ed.). New Delhi, India: Century Publications.
4. Chadha, R and Mathur, P (eds.) (2015). Nutrition A Lifecycle Approach. New Delhi, India: Orient Blackswan Pvt. Ltd.
5. Ministry of Women and Child Development (MWCD), Government of India. (2019). POSHAN Abhiyaan [online]. Available at: https://icds-wcd.nic.in/nnm/home.htm (Accessed: July 12, 2019).
6. Relevant and ongoing public sector programmes for food and nutrition security from Government of India websites (including Ministry of Agriculture and Farmers Welfare, Ministry of Consumer Affairs, Food and Public Distribution, Ministry of Human Resource Development, and other ministries working for food and nutrition security).

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVE (GE HS 010) : PARTICIPATORY DEVELOPMENT AND COMMUNICATION

Credit distribution, Eligibility and Pre-requisites of the Course

Course title &Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering thecourse
		Lecture	Tutorial	Practical/ Practice			
Participatory Development and Communication	4	3	0	1	XII Pass	NIL	Home Science

Learning Objectives

1. To understand the concept of participation, Participatory Development and Participatory Communication.
2. To appreciate the role of facilitation for meaningful participation.
3. To develop an understanding of the interplay between the indigenous practices and theoretical concepts of participation.
4. To critically reflect on the role of civil society organizations in promoting participatory approach across sectors and levels of development.
5. To critically examine the use of participatory approach and tools across sectors and regions and relevance to the Indian context.

Learning Outcomes

1. The student will be able to understand the notion of participation and the dimensions of Participatory Communication
2. The student will be able to apply the principles and approaches of Participatory Communication in community research
3. The student will be able to appreciate and use the different tools and methods of Participatory Learning & Appraisal.
4. The student will be able to reflect on the role of civil society organizations in promoting participatory approach across sectors and levels of development
5. The student will be able to explore the nuances of designing and applying Participatory Media.

SYLLABUS OF GE HS 010

THEORY

(Credits 3; Periods 45)

UNIT I: Understanding Participatory Approach 12 Hours

Unit Description: Unit I delves into the core concept and nature of Participation and its relation with development. It highlights the principles and levels of participation. The Unit also asserts the importance and channels of Participatory Communication and how effective facilitation is and essential for participation of marginalized groups.

Subtopics:

- Concepts of Participation and Participatory Development
- Participation, Power, Voice and Marginalization
- History & Theoretical perspectives on Participatory Development
- Principles & Levels of Participation
- Process of Participation: Dialogue, Reflection & Consensus
- Reflective Practice, Empowerment & Social Change

Civil Society Organizations & Participatory Development

UNIT II: Participatory Approach & Methods 9 Hours

Unit Description: Unit II explores the concept, principles, advantages of Participatory Learning & Appraisal with its plethora of tools and their applications.

Subtopics:

- Participatory Learning & Appraisal: Principles and practices
- Scope and Application of PLA Tools
- Classification of PLA Tools: Relationship, Space & Time Related PLA
- Innovative PLA Tools

Participatory Research methodology: approach and praxis

UNIT III: Participatory Learning & Action 12 Hours

Unit Description: This Unit discusses the application of the Participatory Approach in different contexts such as local governance, NGOs and CSOs, M&E .

Subtopics:

- Participatory Approaches & Local Governance
- People's Participation in community development and Development Programs
- Participatory approaches in management of Disasters & Pandemics
- Role of Traditional & Indigenous knowledge in Participatory Approaches

UNIT IV: Participatory Media 12 Hours

Unit Description: The last Unit touches upon the concept, significance, functions and elements of the various Participatory Media.

Subtopics:

- Participatory Communication, Right to Communicate, development & empowerment
- Community Media concept, significance, functions and elements
- Growth, types, characteristics, policy & programing:
    - Community Radio
    - Participatory Video
    - Participatory Print media
    - Participatory New Media
- Alternative Theater and the performing arts

PRACTICAL
(Credit 1; Periods 30)

- Analysis of case studies in Participatory Development
- Situation Analysis using PLA techniques
- Time Related PLA: Daily Activity Chart
- Space Related PLA: Social Mapping, Resource Map, Transect Walk, Facility Assessment
- Relationship Related PLA: Venn Diagram, Spider Web Diagram
- Ranking Methods: Seed Ranking
- Qualitative PLA Research Tools: Interview, Focused Group Discussion, Case Study
- Participatory Media Analysis & Production

Essential readings:

1. Mikkelsen, Britha, (2002). Methods for Development Work and Research. New Delhi: Sage Publications.
2. Robert Chambers. ÎWhat Works and Why?" and ÎPoor PeoplesÒReality" in Whose Reality Counts? Putting the First Last (Intermediate Technology Publications, London, 1997): pp. 130-187.
3. Bhatnagar. O.P & Dahama, O.P. (2009). Education and Communication for Development 2ed. New Delhi: Oxford & IBH Publishing Co. Pvt Ltd. ISBN-13: 978-8120400306.
4. Kumar, S (2002). Methods for Community Participation: A Complete Guide for Practitioners. New Delhi: Vistaar Publications.

Suggested readings:

1. Ferguson (1994), The Anti-Political Machine: Development," Depoliticization, and Bureaucratic. Cambridge University Press pp. 1-167.
2. Ilan Kapoor (2002) ÎThe devilÒ in the theory: a critical assessment of Robert ChambersÒwork on participatory development" Third World Quarterly. Vol. 23, No. 1, p. 101-117. Cornwall A (2003). Whose Voices? Whose Choices? Reflections on Gender and Participatory Development World Development.Vol. 31, No. 8, pp. 1325–1342.
3. McIntyre (2008) Participatory Action Research Sage University Papers pp.1-60.
4. Dale R, (2004). Evaluating Development Programmes and Projects. New Delhi: Sage Publications.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVE (GE HS 017) : FASHION ACCESSORIES

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre- requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Fashion Accessories	4	3	0	1	XII Pass	NIL

Learning Objectives

1. To impart knowledge of fashion accessories
2. To familiarize the students with leading accessory designers
3. To provide knowledge of the basics of common accessories viz., handbag, footwear and hats
4. To help students in understanding design methodology, materials, production process and market dynamics of fashion accessories

Learning Outcomes

The student will be able to

1. Recognize the role and importance of fashion accessories in the apparel industry
2. Describe the various categories, history, styles and production methods of fashion accessories
3. Restyle and coordinate accessories with apparel using creative ideas
4. Understand forecast, trends, and process of accessory designing
5. Develop skills in range planning and creating fashion accessory

SYLLABUS OF GE HS 017

THEORY
(Credits 3; Periods 45)

UNIT I: Overview of Fashion Accessories **12 Hours**

This unit traces the history and importance of fashion accessories. It discusses the fashion cycle, role of an accessory designer and leading accessory brands and designers around the world.

Subtopics:

- History of accessories from ancient times to present

- Importance of fashion accessories in apparel industry
- Fashion cycle of fashion accessories
- Role of an accessory designer
- Leading accessory brands and designers

UNIT II: Categories, Styles and Production Methods of Selected Fashion Accessories 12 Hours

The unit brings forth the categories, styles and production methods of fashion accessories. It also helps to understand the coordination of fashion accessories with apparel.

Subtopics:

- Brief history, components, styles, materials and production methods of accessories: Handbags, Footwear, Hats, Belts, Ties, Scarves, etc.
- Coordinating accessories with apparel

UNIT III: Concept to Creation: Overview of Fashion Accessories Industry 9 Hours

This unit provides an insight into marketing and promotional aspects of fashion accessories.

Subtopics:

- Inspiration and research for design development
- Trend analysis and forecasting process
- Spec-sheets and Tech Packs
- Sourcing of material
- Costing
- Developing a range
- Care and maintenance

UNIT IV: Marketing and Promotion 12 Hours

Ways to increase the life of garments to reduce waste generation.

Subtopics:

- Marketing of fashion accessories
- Window concepts and displays
- Promotional practices

PRACTICAL
(Credit 1; Periods 30)

- Study of materials for fashion accessories
- Sketching of fashion accessories – Handbags and Footwear
- Sketching and rendering of life-size handbag and footwear (One each)
- Reporting of national and international accessory brand/ designer (One each)
- Theme based accessory designing - Mood boards, designing and construction (Any one product)
- Restyling project – Restyle plain accessories using any surface ornamentation technique

Essential readings:

1. Genova Aneta (2011), Accessory Design, Fairchild Publications; 1 edition
2. Know Your Fashion Accessories, Celia Stall- Meadows, Fairchild Books; Student ed. Edition (25 August 2003), ISBN-13: 978-1563672453
3. Lau John (2012), Basics Fashion Design 09: Designing Accessories: Exploring the design and construction of bags, shoes, hats and jewellery, A Publishing; 1

edition
4. Schaffer Jane, Saunders Sue (2012), Fashion Design Course: Accessories: Design Practice and Processes for Creating Hats, Bags, Shoes, and Other Fashion Accessories, Barron's Educational Series
5. Stephens Frings Gini, (2007), Fashion: From Concept to Consumer (9th Edition), Prentice Hall

Suggested readings:

1. Abling Bina (2005), marker rendering for Fashion, Accessories, and Home Fashion, Bloomsbury Academic, Illustrated Edition, ISBN 1563673606, 9781563673603.
2. Gerval Olivier (2009), Fashion Accessories, A&C Black, Illustrated edition, ISBN 140811058X, 9781408110584.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVE (GE HS 019) : CORPORATE SOCIAL RESPONSIBILITY

Credit distribution, Eligibility and Pre-requisites of the Course

Course title &Code	Credits	Credit distribution of the course			Eligibility criteria	Pre- requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Corporate Social Responsibility	4	3	0	1	XII Pass	NIL

Learning Objectives

1. To understand the meaning, scope and importance of Corporate Social Responsibility (CSR)
2. To understand CSR projects with respect to SDGs
3. To understand the Indian legislations for CSR
4. To learn about the implementation and monitoring of CSR activities
5. To understand the need, process and tools of communicating CSR projects
6. To understand CSR reporting guidelines

Learning Outcomes

The student will be able to:

1. Understand the meaning, scope and importance of Corporate Social Responsibility (CSR)
2. Assess the role of CSR projects with respect to SDGs
3. Understand Indian legislations for CSR
4. Understand implementation and monitoring of CSR projects through case studies
5. Develop material/tools for CSR communication
6. Understand and evaluate CSR reports as per standard reporting guidelines

SYLLABUS OF GE HS 019

THEORY

(Credits 3; Periods 45)

UNIT I: Introduction to Corporate Social Responsibility (CSR) 9 Hours

Unit Description:

This Unit aims at orienting the students towards the concept and importance of Corporate Social Responsibility (CSR), triple bottom line, and ESG

Subtopics:

- Meaning, definition and importance

- History and evolution of CSR
- Sustainable businesses, triple bottom line, ESG (Environmental, Social and Governance)

UNIT II: International framework for Corporate Social Responsibility 12

Unit Description:

This Unit aims to create an understanding on Indian legislations for CSR, UN guiding principles and SDGs.

Subtopics:

- Indian legislations for CSR; Companies Act, 2013 and Amendments
- UN guiding principles on business and human rights.
- SDGs and CSR

UNIT III: Design, implementation and Monitoring of CSR activities 12

Unit Description:

This Unit aims to create an understanding towards design, implementation and monitoring of CSR activities, CSR funding and audit

Subtopics:

- CSR design, implementation and monitoring
- Role of Stakeholders in CSR
- Funding for CSR activities
- CSR Audit; issues related to CSR Audit
- Globalization and CSR

UNIT IV: CSR Communications 12 Hours

Unit Description: This Unit aims to create an understanding towards the need, process and tools of CSR communication and CSR reporting guidelines Selection of materials

Subtopics:

- Need, process and tools of communicating CSR projects
- Brand building through CSR communications
- CSR Reporting Guidelines

PRACTICAL
(Credit 1; Periods 30)

I: Understanding CSR initiatives

Activities:

- Need Assessment for CSR activities by corporates
- Case studies on CSR initiatives taken by corporates
- Case studies on Foundation/Trust/Section 8 Companies etc. implementing CSR initiatives

II: Planning CSR activities and Communications

Activities:

- Planning innovative CSR Projects/Programmes in context of SDGs
- CSR communications: Presentations, Websites, Print Media, Social media etc.
- Evaluation of CSR reports

Essential readings:

1. Garg, K. (2021). Corporate Social Responsibility (3rd edition). Bharat Law House Pvt. Ltd.

2. Institute of Directors India. (2020). A Handbook on Corporate Social Responsibility, A Condensed Guide for Corporate Directors & Senior Executive. Institute of Directors, New Delhi, India.Antonaras, A., & Dekoulou, P. (2019). Cases on Corporate Social Responsibility and Contemporary Issues in Organizations (Advances in Business Strategy and Competitive Advantage) 1st Edition. IGI Global.
3. Paleri, P. (2019). Corporate Social Responsibility: Concept, Cases and Trends. Cengage Learning India Pvt. Ltd. ISBN-10: 9353501601, ISBN-13: 978-9353501600.
4. Lumde, N. (2018). Corporate Social Responsibility in India: A Practitioner's Perspective. Notion Press. ISBN-10: 1644295431, ISBN-13: 978-1644295434.

Suggested readings:

1. Mitra, N., & Schmidpeter, R. (2016). Corporate Social Responsibility in India: Cases and Development after the Legal Mandate. Springer International Publishing, Switzerland.
2. Reddy, V. R., & Dheeraja, C. (2016). The Six Essential Steps in Implementing CSR. Studera Press, New Delhi.
3. Chakrabarty, B. (2015). CSR in India. Routledge.
4. Agarwal, S. (2013). CSR in India. SAGE Publications.
5. Chatterji, M. (2011). Corporate Social Responsibility. Oxford University Press India; Reprint edition. ISBN-10: 0198069839 ,ISBN-13 : 978-0198069836.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.SC. HOME SCIENCE (PROG.)

DISCIPLINE SPECIFIC CORE COURSE
DSC HP 307 : Fundamentals of Textiles

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Fundamentals of Textiles	**4**	**3**	**0**	**1**	**XII Pass**	**Pass in DSC HP 102** Fashion Concepts

Learning Objectives

1. To impart knowledge regarding production, properties and usage of textile fibres and yarns
2. To create awareness regarding various techniques of fabric production and their properties
3. To give an overview of dyeing, printing and finishing of textiles

Learning Outcomes

After completing this course, students will be able to:

1. Describe textile fibres in terms of their production and properties
2. Understand production techniques and properties of yarns
3. Explain various methods of fabric construction and relate them to specific uses keeping in mind fabric properties
4. Recall various dyeing, printing and finishing techniques

SYLLABUS OF DSC HP 307

THEORY
(Credits 3; Hours 45)

UNIT I: Introduction to Textile Fibres **6 Hours**

This unit will deal with the key concepts of textile polymers, morphology of textile fibers, primary, secondary properties and classification of textile fibers.

- Morphology of textile fibers: Monomer, Polymer, Degree of Polymerization, Crystalline and Amorphous Regions, Orientation
- Primary and secondary properties
- Fiber classification

UNIT II: Production, Chemistry, Properties and Usage of Fibers **12 Hours**

This unit will introduce the student to selected commercially significant cellulosic, protein and man-made fibers, their production, chemistry, properties and usage

- Natural fibers: Cotton, Flax, Silk, and Wool
- Man-made fibers: Rayon, Nylon, Polyester, Acrylic, and Elastomeric fibers

UNIT III: **Production and Properties of Yarns** **8 Hours**

This unit will discuss the techniques of yarn production, types of yarns and their properties.

- Yarn construction:
  - Mechanical spinning (Cotton system, Wool system, Worsted system)
  - Chemical spinning (Wet, Dry, Melt)
- Types of yarns: Staple and Filament yarns, Simple and Complex yarns
- Yarn Properties: Yarn Twist and Balance, Yarn Count

UNIT IV: Techniques of Fabric Construction

11 Hours

This unit will apprise the students about different fabric construction techniques. Students will learn basic principles of weaving, knitting and non-woven fabrics.

- **Weaving**
  - Parts of a loom
  - Operations and motions of the loom
  - Classification of weaves- construction, characteristics, usage
- **Knitting**
  - Classification of knits
  - Construction and properties of warp and weft knits
- **Non-wovens**
  - Types
  - Construction
  - Properties and usage

UNIT V: Basics of Wet Processing **8 Hours**

This unit help students gain insight to the fundamentals of textile processing, viz. dyeing, printing and finishing.

- **Dyeing**
  - Fundamentals of dyeing- Dyes and Pigments
  - Stages of dyeing- Advantages and Disadvantages
- **Printing**
  - Fundamentals of printing
  - Difference between dyeing and printing,
  - Methods of printing: Block, Screen
  - Styles of printing: Direct, Resist, Discharge
- **Finishes**
  - Classification of finishes
  - Routine finishes

PRACTICAL
(Credit 1; Hours 30)

- Fibre Identification tests –Visual, burning, microscopic and chemical
- Yarn Identification – Single, ply, cord, textured, elastic, monofilament, multifilament and spun yarn
- Thread count and balance
- Fabric identification (woven, knitted, non-woven)
- Identification of basic weaves
- Tie-Dye

Essential Readings

1. Rastogi, D. & Chopra, S. (Eds.) (2017). *Textile Science*. New Delhi, India: Orient Black Swan Publishing Limited.
2. Rastogi, D, Chopra, S., Arora, C. & Chanchal (Eds.). (2016). *Textile Science-A Practical Manual*. New Delhi, India: Elite Publishing House Private Limited.
3. Sekhri S. (2022). *Textbook of Fabric Science: Fundamentals to Finishing*. IV Edition, Delhi, India: PHI Learning.
4. Joseph, M. L. (1988). *Essentials of Textiles.* (6th Edition). Florida: Holt, Rinehart and Winston Inc.
5. Corbman, P.B. (1983). *Textiles- Fiber to Fabric.* (6th Edition). USA: McGraw Hill.

Suggested Readings

1. Collier B. &Tortora G. Phyllis. (1997). *Understanding Textiles*. USA: Merrill.
2. Hollen, N. and Saddler, J. (1979). *Textile*. New York: Mcmillan.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE

DSC HP 308 : Personal Finance and Consumer Education

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Personal Finance and Consumer Education	**4**	**3**	**0**	**1**	**XII Pass**	**Pass in DSC HP 101** Introduction to Resource Management

Learning Objectives

1. To provide students' an understanding of income, saving and investment management in the changing socio-economic environment.
2. To acquaint students with the concept of consumers' role in an economy, consumer problems, education and empowerment.
3. To comprehend issues related to consumer protection, legislative measures and redressal mechanisms.
4. To provide insights and practical knowledge of critically evaluating and designing various consumer aids.

Learning Outcomes

1. After completing this course, students will be able to:
2. Gain knowledge of income, saving and investment management in the changing socio-economic environment.
3. Understand the role of consumer in the economy, consumer problems, education and empowerment.
4. Comprehend issues related to consumer protection, legislative measures and redressal mechanisms.
5. Gain practical knowledge of critically evaluating and designing various consumer aids.

SYLLABUS OF DSC HP 308

THEORY
(Credits 3; Hours 45)

UNIT I: Income and Expenditure **15 Hours**

The unit focuses on developing the fundamental concepts of income, savings and investment management and its applicability in changing socio-economic environment.

Subtopics:

- Household Income – Types, Sources, Supplementation of family income
- Income management – significance of budgeting, steps of making a budget, household accounts
- Factors influencing expenditure pattern
- Family savings and investments- need, principles, channels of investment, tax implications
- Consumer credit

UNIT II: Consumer in India: Consumer problems and education **12 Hours**

This unit attempts to acquaint the students in understanding the consumer problems faced, role of consumer education and empowerment in today's context.

Subtopics:

- Definition of a consumer
- Role of consumers in the economy
- Types of consumer problems – products and service related, causes and remedies
- Guidelines for wise buying practices
- Consumer education and empowerment, sustainable consumption
- Changing nature of the business world –e-commerce, e-business

UNIT III: Consumer Protection **9 Hours**

This unit will orient the students in understanding the need for consumer protection, rights and responsibilities available for safeguarding consumers' interest.

Subtopics:

- Consumer protection
- Consumer rights and responsibilities
- Consumer organizations and their role in consumer protection

UNIT IV: Legislative framework for consumers protection **9 Hours**

The unit focuses on the legislative frameworks, acts and redressal mechanisms available for consumers for their protection.

Subtopics:

- Basic legislative framework for consumer protection in India
- Consumer Protection Act (COPRA) and its amendment
- Alternative redressal mechanisms
- Standardization and quality control measures

PRACTICAL
(Credit 1; Hours 30)

- Understanding and designing standardization marks.

- Evaluation and designing of informative and attractive labels of different types of products.
- Evaluation and designing of advertisements in the print media including products, services and social ads.
- Case study of banks and post offices to understand their services and products.
- Learning to fill different bank forms.
- Analysis of consumer redressal through case study approach.
- Food adulteration tests.

Essential readings

1. Mital, M., Sawhney, H. K. (2015). *Family Finance and Consumer Studies*. New Delhi: Elite Publishing House Pvt. Ltd.
2. Mital M., Jain, S., & Mehta, C. (2015). *Family finance and Consumer Studies: A Practical Manual, Second Edition.* New Delhi: Elite Publishing House Pvt. Ltd.
3. Seetharaman, P. and Sethi, M. (2001). *Consumerism: Strength and Tactics*. New Delhi: CBS Publishers.

Suggested readings

1. Khanna, S. R., Hanspal S., Kapoor S. & Awasthi H.K. (2007). *Consumer Affairs*. Universities Press India Pvt. Ltd.
2. Arora, R. *Consumer Grievances Redressal*. New Delhi: Manak Publications.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE

DSC HP 309 : Introductory Physical Science For Home Science

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title& Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Introductory Physical Science for Home Science	4	2	0	2	XII Pass	NIL

Learning Objectives

1. To develop basic understanding of different chemical and physical concepts and to relate them with everyday life.
2. To enhance skills of students in handling different equipment.

Learning Outcomes

The students would be able to:

1. Study about different chemicals/compounds, their reactions and applications in everyday life.
2. Correlate structures of compounds with their properties and functions.
3. Develop understanding of the basic principles, theories and laws of physics and correlate them with real life situations.
4. Acquire ability to demonstrate basic experimental skills, handling different equipment and understand their working principles.
5. Apply the basic knowledge to different fields of home science.

SYLLABUS OF DSC HP 309

THEORY
(Credits 2; Hours 30)

Section A-Chemistry

UNIT I: Basic Concepts of Chemistry **10 Hours**

Fundamental concepts like solutions, nature of substances and organic chemistry
Subtopics:

- Solutions- Properties of water, types of solutions, ways of expressing concentrations
  of solutions (normality, molarity, strength), colloids (types, properties and applications of colloids)
- Acids and bases – Definition (Arrhenius, Lewis and Bronsted), examples and applications in daily life, pH, pH scale, buffer solutions and pH measurement
- Oxidising and reducing agents - Oxidation and reduction, antioxidants, examples and applications
- Organic Chemistry – Tetravalency of carbon, catenation, functional groups, types of organic compounds and their importance, nomenclature (examples- alkanes, alkenes, alkynes, alcohols, alkyl halides, aldehydes, ketones, amines, acids and esters).

UNIT II: Important Chemical Compounds 6 Hours

Cleaning agents and biomolecules

Subtopics:

- Surfactants – Soaps and synthetic detergents (structure, cleansing action and their applications)
- Disinfectants – Commonly used disinfectants and their hazards, eco-friendly disinfectants
- Dyes- Classification of dyes, natural dyes
- Biomolecules - Importance of carbohydrates, lipids, proteins and nucleic acids.

Section B-Physics

UNIT III: Mechanics and electricity 10 Hours

Basics of mechanics and electricity

Subtopics:

- Measurements of Physical Quantities- Units and dimensions
- Different types of motions- Translational motion, Circular motion, rotational motion, oscillatory motion and their applications
- Elasticity, stress, strain, elastic limit, Hooke's law, stress-strain diagram, Young's modulus, Shear modulus and Bulk modulus
- Concept of current, voltage and Ohm's law. Heating and magnetic effect of current
- Alternating Current, AC motor, comparison between alternating current and direct current
- Electrical Protection: Fuses and disconnect switches, circuit breakers, Earthing
- Estimation of electrical energy used and concept of star rating of household equipment
- Renewable energy- Solar energy, Wind energy, hydro energy, geothermal energy

UNIT IV: Heat, Optics and Sound 4 Hours

Basics of heat, optics and sound

Subtopics:

- Temperature and its measurements
- Calorimetry, change of state with applications
- Heat transfers and thermal conductivity
- Sound waves, production and properties
- Spectrum of light, basics of diffraction and interference

PRACTICAL

(Credits 2; Hours 60)

Section A- Chemistry

- Safe handling and disposal of chemicals generally used in chemical laboratories
- Calculation and preparation of standard solutions (Sodium chloride, sodium bicarbonate)
- Determination of pH of different solutions
- Experiments using Analytical techniques:
    - Acid-base titrations
    - Redox titrations
    - Estimation of salinity in saline water
    - Determination of hardness of water using complexometric titration

Detection of functional groups- Acids, Alcohols, Aldehydes and Ketones
Qualitative tests for carbohydrates

Section B- Physics

- Basic mathematical concepts and study of different types of experimental errors, their reporting and graphing techniques
- Study of least count of different measuring instruments and familiarization of multimeter
- Measurement of volume of the given cylinder using Vernier calliper
- Measurement of area of cross section of a rod and a wire using screw gauge
- Determination of elastic constants of a wire by Searle's method
- Comparison of thermometric scales of temperature using graph method and verification of Newton's law of cooling
- Study of different types of lenses and determination of focal length of double convex lens by one pin method
- Setting up of two way lighting circuit and calculation of cost of electricity consumed
- Verification of Ohm's law and to determine the resistance of a conductor using graph method.
- Study of the voltage and current of the solar cells.
- Demonstration of colour measurement using colorimeter.

Essential readings

1. Ahluwalia V. K. Dhingra, S. and Gulati, A. (2005). College Practical Chemistry, University Press (India) Pvt. Ltd., New Delhi.
2. Bahl A. and Bahl B.S. (2016). A textbook of Organic Chemistry. S. Chand and Sons, New Delhi.
3. Boyle G. (2012). Renewable Energy, Power for a sustainable future 3rd Ed. Oxford University Press, U.S.A.
4. Gomber K.L., Gogia K.L. (2015). Fundamental Physics. Pradeep publications, Jalandhar.
5. Sharma P. and Pathania. (2016). Principles of Physical Chemistry. Vishal Publishing Company, New Delhi.
6. Sukhatme, S.P. and Nayak, J. K. (2017). Solar energy. Tata McGraw - Hill Publishing Company Ltd., India.
7. Walker, J., Resnick, R., Halliday, D. (2013). Fundamentals of Physics. Wiley, United States.

Suggested readings

1. Bahl A. and Bahl B.S. (2012). Advanced Organic Chemistry. S. Chand and Sons, New Delhi.
2. Jacob T. (1979). Textbook of Applied Chemistry. McMillan India Ltd., Noida.
3. Lal S. (1995). Fundamental Physics. Pradeep Publication, Delhi.
4. Morrison and Boyd. (2011). Organic Chemistry. Pearson Education, New Delhi.
5. Singh H. (2001). B.Sc. Practical Physics. S. Chand and Co., New Delhi.
6. Vogel (2009). Quantitative Chemical analysis. Pearson Education, New Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE
DSE HP 3A1 : Developmental Diversity across Ecological Settings

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
Developmental Diversity across Ecological Settings	**4**	**2**	**0**	**2**	**XII Pass**	**Pass in DSC HP 204** Lifespan Development I: Prenatal and Early Years

Learning Objectives

1. To learn about the concepts, features and theoretical approaches to ecological settings
2. To know about various ecological settings and diversities and how it shapes development
3. To understand relationship between ecological settings and diversity

Learning outcomes

The students would be able to:

1. Acquire an understanding of basic concepts, salient characteristics and theoretical perspectives of ecological settings
2. Demonstrate knowledge of different ecological settings and diversities
3. Be able to identify relationship between ecology, diversity and development

SYLLABUS OF DSE HP 3A1

THEORY
(Credits 2; Hours 30)

UNIT I: Concepts and theoretical foundations **7 Hours**

- Basic concepts and key terms: ecology, diversity and features of human ecology
- Theoretical approaches and perspectives to understanding ecological systems
- Historical and demographic attributes of ecological settings

UNIT II: Diverse ecological landscapes **12 Hours**

- Diverse settings: urban, rural and tribal ecologies, conflict zones, medical settings, post-disaster contexts
- Socio-cultural and individual variables: caste and class, cultural variations, religion, poverty livelihood, gender, education, health and disability.

- Local and global understanding of human geographies

UNIT III: Developmental diversity across settings **11 Hours**

- Experiences of growing up in India: working children, migrant children, sibling caregivers, growing up with disability
- Contemporary issues and themes addressing ecological diversities – poverty and disability/ gender and disability/ immigration/ refugee status/ environmental changes/ mobility
- Diversity, disadvantage, disability: influence on development

PRACTICAL
(Credits 2; Hours 60)

- Visit a locality and write about the physical and social features of the ecology
- Develop a checklist to understand the ecological setting (with reference to children)
- Using a checklist to study daily schedule of a child with special needs/ child from a disadvantaged group and highlight significant factors in the setting
- Exploring different ecological settings using mental mapping and photo elicitation
- Observe and interview children on the street, working children, a child with special needs and map their ecologies
- Using a theoretical framework, analyze oneÑ own ecological setting and reflect on various diversities
- Case profile to understand the ecological setting of any one of the following:
    - A slum
    - A shelter home
    - A village
    - An institutional care setting
- Representing lived experiences of growing up in diverse ecologies through role play technique
- Analyze and understand the changes in demographic characteristics of your city/town/village using secondary sources
- Understanding diversities of childhood ecologies through audio-visual analysis

  Film: Babies/ Traffic signal/ Documentary by UNICEF

Essential readings

1. Anandalakshmy, S., & Bajaj, M. (1981). Childhood in the weavers Ñommunity in Varanasi: Socialization for adult roles. In D. Sinha (Ed.), *Socialisation of the Indian child* (pp. 31-38). Concept.
2. Dyson, J. (2006). Respite and Rupees: The Impact of a new market opportunity on everyday lives of children and young people in Indian Himalayas. In D, Behera (Ed.). *Childhoods in South Asia* (pp. 29-42). Pearson.
3. Ghazoul, J. (2020). *Ecology: A very short introduction.* Oxford University Press. https://doi.org/10.1093/actrade/9780198831013.001.0001
4. Hutterer, K. L., Terry Rambo, A., & Lovelace, G. (2020). *Cultural values and human ecology in Southeast Asia*. University of Michigan Press.
5. King, R, & Maholmes, V. (2012). *The Oxford Handbook of Poverty and Child Development.* Oxford University Press
6. Lerner, R. M., Schiamberg, L. B., & Anderson, P. M. (2003). *Encyclopedia of Human Ecology: AH* (Vol. 1). ABC-CLIO.

7. Saraswathi, T. S. (Ed.) (1999). Culture, Socialization and Human Development: Theory, Research and Applications in India. Sage Publications Chapter 4: Theoretical Frameworks in Cross-cultural Psychology, Chapter 6: Individualism in a Collective Culture: A Case of Co-existence of Opposites.
8. Saraswathi, T. S., Menon, S., & Madan, A. (2019). *Childhoods in India*. Routledge India.
9. Dakshayani, B. & Gangadhar, M.R. (2016). *Child development among the scheduled tribes of India.* Aayu Publications.
10. Shelton, L. (2018) The Bronfenbrenner Primer: A Guide to Develecology. Routledge

Suggested readings

1. Desai, A. (1982). *The village by the sea: An Indian family story*. Heinermann
2. Devi, M. (2003). *Kyun Kyun Ladki*. Tulika Publishers.
3. Harkness, S., & Super, C. (1996). Parents Cultural Belief Systems: Their Origins, Expressions and Consequences. New York: The Guilford Press.
4. Shingnapure, V. J. (2007). *Tribal Children: Education, health and labour.* Dattsons.
5. Vasanta, D. (2004). Childhood, Work and Schooling: Some Reflections. Contemporary Education Dialogue, Vol. 2(1), 5-29.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE
DSE HP 3B1 : Food Science

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Food Science	**4**	**2**	**0**	**2**	**XII Pass**	**Pass in DSC HP 205** Foundation of Food Science and Nutrition

Learning Objectives

1. To enable students to understand how food is produced, processed, prepared and preserved.
2. To impart systematic knowledge of sensory & objective evaluation, food laws and their applications in processing of food to meet quality standards.
3. To acquire knowledge about the role of microorganisms in food processing, preservation and spoilage.

Learning outcomes

The students would be able to:

1. Students learn the principles and working of various techniques in order to preserve food, to provide safe food for consumption and produce nutritious food.
2. Gain knowledge of methods of food quality evaluation and applications of food laws essential for maintaining food quality and safety.

SYLLABUS OF 3B1

THEORY
(Credits 2; Hours 30)

UNIT I: Understanding of Food Science and chemistry **12 Hours**

The unit will provide an understanding of the basic terms used in food science, its interdisciplinary approach and applications. The unit will also provide knowledge of the food sources, chemistry and functional properties of important components of the food. Concept of how colloidal systems are formed and their applications in the food industry will be discussed.

Subtopics:

- Introduction to food science: Definition, importance, applications and scope of food science.
- Food Chemistry- Sources, chemistry and functional properties of Carbohydrates, Lipids and Proteins.
- Colloidal Chemistry-Definition, classification, properties and applications of sols, gels, foams and emulsions.

UNIT II: Basic Food Microbiology **8 Hours**

The unit will introduce types of food microorganisms, and their role in spoilage

Subtopics:

- Introduction to microbes in food - Characteristics of predominant micro-organisms in food (yeast, mold and bacteria), bacterial growth curve, factors influencing growth of microorganisms.
- Role of microorganisms in spoilage - Important food spoilage micro-organisms (psychotrophic, thermophilic, osmophilic microbes), spoilage in specific food groups (raw meat, fruits & vegetables), role of microorganisms in food fermentation.

UNIT III: Food Preservation Techniques **5 Hours**

The unit provides an understanding of different food preservation techniques, and their applications in extending shelf life of different food product.

- Low temperature: Freezing, refrigeration
- High temperature: Drying and dehydration, canning, pasteurization
- Irradiation and use of additives

UNIT IV: Sensory Science **5 Hours**

The unit will help in understanding the sensory quality attributes and sensory evaluation of food.

Subtopics:

- Physiological basis of sensory evaluation
- Subjective and objective methods of sensory evaluation

PRACTICAL

(Credits 2; Hours 60)

- Food analysis: Moisture, pH, acidity, Total soluble solids using standard methods of FSSAI.
- Assessment of surface sanitation by swab/rinse method.
- Implementation of GHP, HACCP, ISO 22000 using suitable example.
- Slide preparation and identification of micro-organisms.
- Application of colloidal chemistry to food preparation.
- Preservation of food using different methods (Blanching, Dehydration, Freezing).
- Sol /gel formation and factors affecting gel formation
- Recognition and threshold for basic tastes.
- Evaluation of food labels in accordance with FSSAI rules and regulations on Food labeling and Packaging.

Essential readings

1. Frazier WC and Westhoff DC (2014). Food Microbiology, Fifth Edition. TMH Publication, New Delhi.
2. Manay NS and Shadaksharaswamy M (2008). Food-Facts and Principles, Third Edition.New Age International (P) Ltd. Publishers, New Delhi.
3. Mathur P. (2018). Food Safety and Quality Control. Orient BlackSwan Pvt. Ltd., Hyderabad.
4. Potter NN and Hotchkiss H J (1996). Food Science, Fifth Edition.CBS Publication, New Delhi.
5. Suri, S. and Malhotra, A. (2014). Food Science Nutrition and Safety. Delhi: Pearson India Ltd.

Suggested readings:

1. Mohini Sethi, Eram Rao (2011). Food science- Experiments and applications, Second Edition. CBSpublishers & Distributors Pvt Ltd.
2. Raina U, Kashyap S, Narula V, Thomas S, Suvira, Vir S, Chopra S (2010). Basic Food
3. Preparation: A Complete Manual, Fourth Edition. Orient Black Swan Ltd.
4. Sivashankar. B (2002). Food Processing and Preservation. PHI learning Pvt. Ltd.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE
DSE HP 3C1: Media, Culture and Society

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Media, Culture and Society	**4**	**2**	**0**	**2**	**XII Pass**	**NIL**

Learning Objectives

1. To appraise the importance of culture, cultural transmission and cultural influences on human interactions
2. To gain knowledge of key theories, concepts, models and perspectives in the study of communication & media
3. To understand the relevance and roles of communication media in individual lives as well as in the larger context of culture & society
4. To analyze the relationships, dynamics, and trends within communication media, culture & society

Learning Outcomes

The students would be able to:

1. Assess the significance of culture, cultural transmission and cultural influences on human interactions
2. Enhance their awareness on the concepts, models and perspectives in the study of communication & media
3. Comprehend the relevance and roles of communication media in individual lives as well as in larger context of culture & society
4. Critically analyse the relationships, dynamics, and trends within communication media, culture & society

SYLLABUS OF DSE HP 3C1

THEORY
(Credits 2; Hours 30)

UNIT I: Understanding Culture **6 Hours**

This unit explores the different dimensions of culture and its types. It also highlights the concepts of hegemony and ideology along with cultural influences and role of media. It touches upon the

essence of folk culture and the relation between media, society and popular culture. It revisits the work of Raymond Williams and Stuart Hall in explaining the concepts of culture and further provides diverse perspectives on popular culture

Subtopics:

- Concept of cultures, subcultures and counter culture
- Popular, folk and mass culture
- Role of Ideology and hegemony

UNIT II: Media & Media Audience **8 Hours**

Unit II highlights the importance of mass media in our lives and the types of media audiences. It elaborates on the processes of media audience analysis

Subtopics:

- Role of Mass Media in society
- Media Audience
- Media Audience analysis (segmentation)
- Types of Audience
- Foucault's Notion of Knowledge and Power
- Queer Studies and Representations of Gender in Media

UNIT III: Media and Popular Culture **8 Hours**

This unit highlights the relation between media, society and popular culture. It revisits the work of Raymond Williams and Stuart Hall in explaining the concepts of culture and further provides diverse perspectives on popular culture

Subtopics:

- High Culture and Popular Culture
- Relation between Media, Society and Popular culture
- Perspectives of Critical Theorists, Functionalists & Interactionists Raymond Williams, Stuart Hall
- Perspectives of Critical theorists: Culture Industry and Mass Deception; Walter Benjamin

UNIT IV: Media Realism and Technologies **8 Hours**

This particular unit critically acclaims the notion of media and realism along with gaining insights into postcolonial theory. It further elaborates upon the Indian Context to Media, Culture & Society

Subtopics:

- Introduction to Postcolonial Theory
- Indian Context to relationship between Media, Culture & Society
- Interconnections between Literature, media, Culture and Identity
- Postcolonial from Indian perspective
- Digital media and culture

PRACTICAL

(Credits 2; Hours 60)

- Media Critiquing- Choose a movie or television series and apply some of the concepts and techniques about interpretation, ideology, or gender/class/race.
- Audience perceptions about media; audience preferences listenership/ viewership
- Assessing the prevalence of cultural stereotypes in the society and depiction of the same via media

Essential readings

1. Grossberg, Lawrence et al (1998) Media-Making: Mass Media in a popular culture. Sage Publications
2. Mc Quail, Denis. (2000). Mass Communication Theory. London, Thousand Oaks, New Delhi: Sage Publications.
3. Potter, James W (1998) Media Literacy. Sage Publications
4. Bannerjee, P. (2021). Cultural Studies: Texts and Contexts. India: Dattsons. ISBN: 8171922007
5. Nayar, P. (2016). An Introduction to Cultural Studies. India: Viva Books. ISBN: 8130933985
6. Achebe, Chinua. (2010) The African Trilogy: Things Fall Apart; No Longer At Ease;Arrow of God. Alfred A. Knopf
7. Ghosh, Amitav. (2008), Sea of Poppies, Viking Canada
8. Ghosh, Amitav.(2011). River of Smoke. Penguin India
9. Ghosh, Amitav. (2016). Flood of Fire. Penguin India
10. Habermas, J. 2006. 'The Public Sphere: An Encyclopaedia Article' in Media and Cultural Studies- Key Works by Meenakshi Gigi, et.al. (Eds). Oxford: Blackwell Publishing.
11. Williams, Raymond. (1977) Marxism and Literature, Oxford UP
12. Butler, Judith. (1990). Gender Trouble: Feminism and the Subversion of Identity. Routledge

Suggested readings

1. Berger, Asa Authur (1998). Media Analysis Technique. Sage Publications
2. Stevenson, N (2002). Understanding Media Studies: Social Theory And Mass Communication, 2nd edition, Sage publications
3. Walder, Dennis. (1998). Post-Colonial Literatures in English: History, Language, Theory. Blackwell Publishers
4. Loomba, Ania. (2005) Colonialism/Postcolonialism. 2nd Edition, Routledge
5. Mambrol, Nasrullah. (2018) "Postcolonialism." Literary Theory and Criticism Notes,22 Jan. 2018,literariness.org/2016/04/06/postcolonialism/.
6. Watson, Katherine. (2005) "Queer Theory". The Group-Analytic Society, Vol 38, no. 1, 2005, pp. 81-85.D01:10.1177/0533316405049370
7. Duncan, Margaret Carlisle and Michael Messer. (1993) "Separating the Men from the Girls: The GenderedLanguage of Televised Sports.. Gender and Society 7 1, pp. 121-137
8. Michel Foucault, (1997) "What Is Enlightenment?" in Paul Rabinow, ed., Ethics: Subjectivity and Truth, The Essential Works of Foucault 1954-1984, Volume I, New Press,

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE
DSE HP 3D1: Pattern Making for Fashion Design

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Pattern Making for Fashion Design	**4**	**2**	**0**	**2**	**XII Pass**	**Pass in DSC HP 102** Fashion Concepts

Learning Objectives

1. To impart knowledge regarding the basics of apparel design.
2. To make students understand various terminologies used in relation to garment components and their application in designing garments.
3. To develop a level of proficiency in making patterns for simple garments.
4. To be able to independently lay patterns, cut fabric and sew a garment.
5. To teach the students the fundamentals of fit and enable them to design for different figure types.

Learning outcomes

The students would be able to:

1. Develop basic knowledge of apparel design and describe its terminology.
2. Apply the knowledge of fabrics and fabric terminology to follow preparatory steps before garment cutting
3. Use and apply the concept and techniques of pattern making, laying out and cutting
4. Judicious application of knowledge for producing quality in patterns, and processes in garment assembly
5. Use and apply the concept and techniques of various seams and edge finishes

SYLLABUS OF DSE HP 3D1

THEORY
(Credits 2; Hours 30)

UNIT I: Introduction to pattern making **8 Hours**

This unit will delve into the concept, significance and techniques of body measurements, basic block and patterns.

Subtopics:

- Measurement on body and dress form: importance, precautions, landmarks and procedure of taking measurement
- Importance of patterns and pattern information
- Methods of pattern making
- Rules of pattern making
- Shaping methods, dart and dart equivalents

UNIT II: Preparatory steps for garment construction 6 Hours

This unit provides an insight into the concepts and processes of fabric selection, terms, preparatory steps, fabric layouts, pinning, marking and cutting.

Subtopics:

- Fabric types: weights and widths, fabric terms
- Preparatory steps- preshrinking, straightening and truing
- Layouts for patterns- general guidelines, basic layouts- lengthwise, partial lengthwise, crosswise, double fold, open, combination fold
- Layouts for special fabrics- Unidirectional, bold and large prints, plaids, stripes and checks
- Pinning, marking and cutting

UNIT III: Seams and finishing of raw edges 6 Hours

This unit offers information on sewing machines, appropriate stitching guidelines, seams and various additional techniques required for finishing seams and garment edges.

Subtopics:

- Sewing machine and components of sewing machine, basic operations (upper and lower threading, needle insertion, bobbin winding)
- Relationship between needle, thread, stitch length and fabric weight
- Seam defects and remedies
- Seam classification - super imposed seam, enclosed seam, lapped seam, bound seam, flat seam and decorative seam

UNIT IV: Design & Fit 10 Hours

This unit will acquaint students with different types of garment components and fundamental of fitting. **(5 weeks)**

Subtopics:

- Designing for different figure types- Triangular, Inverted triangular, Hourglass, Rectangular
- Garment Components:
  - Bodices and yokes
  - Necklines
  - Collars
  - Sleeves and cuffs
  - Plackets and fasteners
  - Pockets
- Factors affecting fit
- Evaluating fit for a basic garment and its components

PRACTICAL
(Credits 2; Hours 60)

1. Designing garments for self

This unit will provide hands-on skill for making basic slopers and its adaptation to create style variations.

- Development of bodice, Sleeve and skirt for self
- Develop style variations in sleeves and collars for self
- Adaptation of standard skirt block (A-line, Flared, pleated, gathered)
- Adaptation of standard women's bodice block using dart manipulation (single and double dart and dart-tuck)
-

2. Sewing techniques

This unit will train the students in operating a sewing machine efficiently and perform basic sewing processes required for garment assembly. As a result, student will be able to stitch a simple garment for self.

- Introduction to sewing machine and basic sewing exercises
- Development and identification of seams with emphasis on Additional techniques for straight, curved and cornered seams: clipping, notching, grading, seam balancing, trimming, under stitching, stay stitching, trimming a corner, handling unequal seams (easing)
- Plackets and fasteners
- Edge finishing (binding, facing)
- Handling Fullness- dart, dart-tuck, gathers, pleats
- Construction of skirt for self
- Construction of skirt top/ kurta for self

Essential readings

1. Armstrong, H.J., (2009), *Pattern Making for Fashion Design*, Harper Collins Publishers Inc., New York.
2. Liechty, E.G., Potterberg, D.N., Rasband, J.A., (2010), *Fitting and Pattern Alteration: A Multimethod Approach,* Fairchild Publications, New York.
3. Stamper, A.A., S. H. Sharp and L.B. Donnell, (1986), *Evaluating Apparel Quality*, Fairchild Publications,
4. Brown, Patty and Rice Janett (1998) Ready to Wear Apparel Analysis (2nd Edition), Prentice Hall.

Suggested readings

1. Jennifer Lynne & Matthews-Fairbanks, (2018), *Pattern Design: Fundamentals*, Fairbanks Publishing LLC.
2. Reader's Digest (Eds.). (2002), New Complete Guide to Sewing, Reader's Digest Association (Canada) Ltd. Montreal.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE
DSE HP 3E1: Basics of Design Application

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Basics of Design Application	**4**	**2**	**0**	**2**	**XII Pass**	**NIL**

Learning Objectives

1. To comprehend the concept of design as applicable to interior spaces.
2. To develop proficiency in making working and presentation drawings to be used by interior space design professional.
3. To understand the application of materials and finishing for creating an aesthetic and sustainable interior

Learning Outcomes

The students would be able to:

1. Students will be able to comprehend the concept of design applicable to interior spaces.
2. Students will gain proficiency in preparing presentation drawings to be used in design profession.
3. Students will understand the application of materials and finishes for designing interior spaces

SYLLABUS OF DSE HP 3E1

THEORY
(Credits 2; Hours 30)

UNIT I: Design Fundamentals **6 Hours**

This unit will develop understanding regarding basics of design.

Subtopics:

- Objectives of design
- Types of design: structural & decorative
- Elements of design
- Principles of design

UNIT II: Design Application in Interiors **8 Hours**

This unit will acquaint students with the concept & application of color, lighting & furnishes in interior spaces.
Subtopics:

- Color in design
- Lighting for interiors
- Surface finishes – wall, floor, ceilings (types and usage)

UNIT III: Furniture & Furnishings **8 Hours**

This unit will help students learn about furniture, furnishings and accessories in interiors.
Subtopics:

- Furniture – styles, types, construction, selection and purchase, arrangement, care and maintenance
- Furnishings – types & selection
- Accessories

UNIT IV: Contemporary trends **8 Hours**

This unit will acquaint students with the contemporary trends in interiors.
Subtopics:

● Recent trends in design: Bio-Mimicry, Bio-philic
● Sustainable design & materials

PRACTICAL
(Credits 2; Hours 60)

1. Introduction to drawing interiors:
- ● Basic drawing techniques
- ● Concept of scale
- ● Lettering

2. Presentation drawings:
- ● Drawing & identification of common symbols
- ● Drawing 1 BHK floor plans & elevations

3. Rendering:
- ● Rendering Techniques
- ● Application of rendering in plans

Essential readings:

1. Chris Grimley,Universal principles of Interior Design , (2022), Rockport publishers .
2. Frida Ramstedt ,(2020)Interior Design Handbook ,Random House publishers
3. S. Goel, P.Seetharaman ,A.Kakkar, Manual on Interior space designing (2015) (ISBN No: 81-88901-44-X),Elite publishers, Delhi
4. M.Pratap Rao (2000), Interior Design Principles and Practice, Standard Publishers Distribution, Delhi.
5. S.K Duggal,(2017) , Building Materials, CRC Press, Delhi.
6. Joseph De Chiara, J. Panero, M. Zelnik(2001), Time Saver Standards for Interior Design and Space Planning , second edition McGraw Hill.
7. Premavathy, Seetharam. & Pannu, Parveen (2005). Interior Design and Decoration. CBS Publishers & Distributers, New Delhi

Suggested readings:

1. CPWD, Manual on Door and Window Details for Residential Building
2. CPWD, Manual on Accessible Built Environment Faulkner, S. and Faulkner,R, Inside Today's Home, Rinehart Publishing company, New York.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVE (GE HS 003) : CHALLENGES IN CONTEMPORARY CHILDHOOD

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Challenges in Contemporary Childhood	**4**	**3**	**0**	**1**	**XII Pass**	**NIL**

Learning Objectives

1. To understand the social construction of childhood
2. To understand depiction of childhood experiences in India
3. To know and learn about diverse contexts of childhood
4. To appreciate contemporary themes and challenges of Indian childhood

Learning Outcomes

The students will be able to:

1. Learn the concepts related to multiple childhood
2. Study children's experiences of ethnicity, class, caste, religion and gender
3. Learn about children in difficult circumstances
4. Get sensitized to appreciate diverse contexts of children

SYLLABUS OF GE HS 003

THEORY
(Credits 3; Periods 45)

UNIT I: Influences on Indian Childhood **12 Hours**

Unit Description: This unit presents an overview by revisiting central themes and concerns related to childhood in India

Subtopics:

- Sociology of childhood
- Disadvantaged childhood
- Caste and childhood
- Gender and children

UNIT II: Multiple contexts of Childhood 12 Hours

Unit Description: This unit will focus on understanding children in multiple settings and contexts

Subtopics:

- Childhood in urban, semi-urban, rural and tribal context
- Socialization and growing in diverse families
- Children in foster and institutional settings
- School as a context of development - Educational inequity and learning diversity

UNIT III: Children in Difficult Circumstances 12 Hours

Unit Description: This unit will help us to develop understanding of children in difficult circumstances and the challenges

Subtopics:

- Street and Working children
- Trafficked children and children of sex workers
- Children of migrant and refugee families
- Children in conflict with law and children in contact with law
- Children in war and other disaster situations

UNIT IV: Contemporary Challenges and Childhood 9 Hours

Unit Description: This unit will focus on the various challenges faced by children in different contexts.

Subtopics:

- Childhood in digital era/cyberbullying/child pornography/violence in schools like bullying
- Gender concerns and safety, Body boundaries and consent
- Supporting childhood in India

PRACTICAL
(Credit 1; Periods 30)

- Exploring and analysis of diverse childhood context and challenges through audio-visual materials/social media/print media.
- Interview Street children/working children/ children with disabilities to understand their circumstances
- Profile organisations working for children in difficult circumstances
- Conduct workshop/webinars to understand the various vulnerabilities related to Indian children like cyberbullying, Body boundaries, inclusion & diversity

Essential readings

1. Chopra, G. (2016). Child rights in India: challenges and social action. S.l.: Springer, India, private.
2. Sachdeva ,P.,Murmu,D.F. & Sakshi.(2020).Basic Sociology. Delhi . Elite Publishing
3. Saraswathi, T.S. (Ed.) (1999). Culture, Socialization and Human Development: Theory, Research and Applications in India. Sage Publications Chapter 4: Theoretical Frameworks in Cross-cultural Psychology, Chapter 6: Individualism in a Collective Culture: A Case of Co-existence of Opposites
4. Vasanta, D. (2004). Childhood, Work and Schooling: Some Reflections. Contemporary

Education Dialogue, Vol. 2(1), 5-29

Suggested readings

1. Balmès, T. (Director), & Chabat, A., Billot, A., & Rouxel, C. (Producers). (2010). Babies [Motion picture on DVD]. Universal Studios Home Entertainment.
2. Nissani, M. (1997). Ten cheers for interdisciplinarity: The case for interdisciplinary knowledge and research. Social Science Journal, 34(2), 201.
3. Mukunda, K. V. (2009). What Did You Ask in School Today? A Handbook on Child Learning. Noida: Harper Collins. Chapter 4: Child Development, 79-96
4. Sandra, L. Bem (1987). Gender Schema Theory and its Implications for Child Development: raising gender schematic children in a gender schematic society, in M.R. Walsh, (ed). The Psychology of Women Harvard University Press Cambridge, 206-226

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVE (GE HS 007) : CURRENT CONCERNS IN PUBLIC HEALTH NUTRITION

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisiteof the course
		Lecture	Tutorial	Practical/ Practice		
Current Concerns in Public Health Nutrition	4	3	0	1	XII Pass	NIL

Learning Objectives

1. To understand the multi-faceted nature of nutritional problems and the various interventions that can be adopted at community level for improving the nutritional status.
2. To learn about the policy and intervention programmes operating in India to overcome malnutrition.
3. To understand the concept and determinants of food and nutrition security.

Learning Outcomes

The student will be able to:

1. Understand the multi-faceted nature of nutritional problems.
2. Aware of the various interventions that can be adopted at community level for improving the nutritional status.
3. Familiar with the policy and intervention programmes operating in India to overcome malnutrition.
4. Understand the concept and determinants of food and nutrition security

SYLLABUS OF GE HS 007

THEORY

(Credits 3; Periods 45)

UNIT I: Nutritional Problems Affecting the Community **12 Hours**

Unit Description: Students will be explained about the existing nutritional problems in the community in the present scenario.

Subtopics:

Etiology, prevalence, clinical features and preventive strategies for-

- Undernutrition - Protein energy malnutrition, Moderate Acute Malnutrition, Severe Acute

Malnutrition, Nutritional Anaemias, Vitamin A Deficiency, Iodine Deficiency Disorders
- Obesity, Metabolic Syndrome
- Coronary heart disease, Diabetes
- Fluorosis

UNIT II: Strategies for Improving Nutrition and Health Status of the Community 9 Hours

Unit Description: Students will be taught about the different approaches and strategies that could help alleviate the nutrition and health status of the community.

Subtopics:

- Appropriate interventions involving different sectors such as Food, Health, and Education – diet diversification, food fortification, supplementation, genetic modification, improved water and sanitation, immunization, promotion of optimal infant and young child feeding practices, growth monitoring and promotion (GMP), diarrhoea management and prevention

UNIT III: Nutrition Policy and Programmes 12 Hours

Unit Description: Students will be introduced to all the major ongoing national level interventions and strategies and goals to combat malnutrition in the nation.

Subtopics:

- Sustainable Development Goals – Introduction, and relevance to nutritional problems in India
- National Nutrition Policy
- Ongoing nutrition programmes – Integrated Child Development Services (ICDS) Scheme, Mid-day Meal Programme (MDMP), National programmes for prevention of Anaemia, Vitamin A deficiency, Iodine Deficiency Disorders, National Programme for Prevention and Control of Cancers, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS), POSHAN Abhiyaan

UNIT IV: Food and Nutrition Security 12 Hours

Unit Description: Students will be taught the concept of food and nutrition security and the associated national level intervention and programs. Subtopics:

- Concept, components, determinants
- Overview of the ongoing public sector programmes for improving food and nutrition security

PRACTICAL
(Credit 1; Periods 30)

Planning of low cost nutritious recipes for preschoolers, school age children, adolescents, pregnant and nursing women.

- Planning of nutritious recipes for an obese and an underweight adult.
- Visit to on-going nutrition programmes.

Essential readings:

1. Bamji, MS, Krishnaswamy, K. & Brahmam, G N(Eds.). (2017). Textbook of Human Nutrition (4th ed.). New Delhi, India: Oxford and IBH Publishing Co. Pvt. Ltd.
2. Longvah, T, Ananthan, R, Bhaskarachary, K & Venkaiah, K (2017). Indian Food Composition Tables. National Institute of Nutrition, ICMR, Hyderabad.
3. Park, K (2017). Park's Textbook of Preventive and Social Medicine (24th ed.). Jabalpur, India: Banarasidas Bhanot Publishers.
4. Vir, S (2011). Public Health Nutrition in Developing Countries (Vol 1 & 2). New Delhi,

India: Woodhead Publishing India.

Suggested readings:

1. Gibney, M J, Margetts, B M, Kearney, J M & Arab, L (Eds.). (2005). Public Health Nutrition. Oxford, UK: Blackwell Science.
2. ICMR (2011) Dietary Guidelines for Indians – A Manual. National Institute of Nutrition, Indian Council of Medical Research, Hyderabad.
3. Kishore, J (2016). National Health Programs of India (12th ed.). New Delhi, India: Century Publications.
4. Chadha, R and Mathur, P (eds.) (2015). Nutrition A Lifecycle Approach. New Delhi, India: Orient Blackswan Pvt. Ltd.
5. Ministry of Women and Child Development (MWCD), Government of India. (2019). POSHAN Abhiyaan [online]. Available at: https://icds-wcd.nic.in/nnm/home.htm (Accessed: July 12, 2019).
6. Relevant and ongoing public sector programmes for food and nutrition security from Government of India websites (including Ministry of Agriculture and Farmers Welfare, Ministry of Consumer Affairs, Food and Public Distribution, Ministry of Human Resource Development, and other ministries working for food and nutrition security).

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVE (GE HS 010) : PARTICIPATORY DEVELOPMENT AND COMMUNICATION

Credit distribution, Eligibility and Pre-requisites of the Course

Course title &Code	Credits	Credit distribution of the course			Eligibility criteria	Pre- requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Participatory Development and Communication	**4**	**3**	**0**	**1**	**XII Pass**	**NIL**

Learning Objectives

1. To understand the concept of participation, Participatory Development and Participatory Communication.
2. To appreciate the role of facilitation for meaningful participation.
3. To develop an understanding of the interplay between the indigenous practices and theoretical concepts of participation.
4. To critically reflect on the role of civil society organizations in promoting participatory approach across sectors and levels of development.
5. To critically examine the use of participatory approach and tools across sectors and regions and relevance to the Indian context.

Learning Outcomes

1. The student will be able to understand the notion of participation and the dimensions of Participatory Communication
2. The student will be able to apply the principles and approaches of Participatory Communication in community research
3. The student will be able to appreciate and use the different tools and methods of Participatory Learning & Appraisal.
4. The student will be able to reflect on the role of civil society organizations in promoting participatory approach across sectors and levels of development
5. The student will be able to explore the nuances of designing and applying Participatory Media.

SYLLABUS OF GE HS 010

THEORY

(Credits 3; Periods 45)

UNIT I: Understanding Participatory Approach **12 Hours**

Unit Description: Unit I delves into the core concept and nature of Participation and its relation with development. It highlights the principles and levels of participation. The Unit also asserts the importance and channels of Participatory Communication and how effective facilitation is and essential for participation of marginalized groups.
Subtopics:

- Concepts of Participation and Participatory Development
- Participation, Power, Voice and Marginalization
- History & Theoretical perspectives on Participatory Development
- Principles & Levels of Participation
- Process of Participation: Dialogue, Reflection & Consensus
- Reflective Practice, Empowerment & Social Change

Civil Society Organizations & Participatory Development

UNIT II: Participatory Approach & Methods 9 Hours

Unit Description: Unit II explores the concept, principles, advantages of Participatory Learning & Appraisal with its plethora of tools and their applications.

Subtopics:

- Participatory Learning & Appraisal: Principles and practices
- Scope and Application of PLA Tools
- Classification of PLA Tools: Relationship, Space & Time Related PLA
- Innovative PLA Tools

Participatory Research methodology: approach and praxis

UNIT III: Participatory Learning & Action 12 Hours

Unit Description: This Unit discusses the application of the Participatory Approach in different contexts such as local governance, NGOs and CSOs, M&E .
Subtopics:

- Participatory Approaches & Local Governance
- People's Participation in community development and Development Programs
- Participatory approaches in management of Disasters & Pandemics
- Role of Traditional & Indigenous knowledge in Participatory Approaches

UNIT IV: Participatory Media 12 Hours

Unit Description: The last Unit touches upon the concept, significance, functions and elements of the various Participatory Media.
Subtopics:

- Participatory Communication, Right to Communicate, development & empowerment
- Community Media concept, significance, functions and elements
- Growth, types, characteristics, policy & programing:
    - Community Radio
    - Participatory Video
    - Participatory Print media
    - Participatory New Media

Alternative Theater and the performing arts

PRACTICAL
(Credit 1; Periods 30)

- Analysis of case studies in Participatory Development
- Situation Analysis using PLA techniques

- Time Related PLA: Daily Activity Chart
- Space Related PLA: Social Mapping, Resource Map, Transect Walk, Facility Assessment
- Relationship Related PLA: Venn Diagram, Spider Web Diagram
- Ranking Methods: Seed Ranking
- Qualitative PLA Research Tools: Interview, Focused Group Discussion, Case Study
- Participatory Media Analysis & Production

Essential readings:

1. Mikkelsen, Britha, (2002). Methods for Development Work and Research. New Delhi: Sage Publications.
2. Robert Chambers. ÎWhat Works and Why?" and ÎPoor Peoples' Reality" in Whose Reality Counts? Putting the First Last (Intermediate Technology Publications, London, 1997): pp. 130-187.
3. Bhatnagar. O.P & Dahama, O.P. (2009). Education and Communication for Development 2ed. New Delhi: Oxford & IBH Publishing Co. Pvt Ltd. ISBN-13: 978-8120400306.
4. Kumar, S (2002). Methods for Community Participation: A Complete Guide for Practitioners. New Delhi: Vistaar Publications.

Suggested readings:

1. Ferguson (1994), The Anti-Political Machine: Development," Depoliticization, and Bureaucratic. Cambridge University Press pp. 1-167.
2. Ilan Kapoor (2002) ÎThe devil's in the theory: a critical assessment of Robert Chambers' work on participatory development" Third World Quarterly. Vol. 23, No. 1, p. 101-117. Cornwall A (2003). Whose Voices? Whose Choices? Reflections on Gender and Participatory Development World Development.Vol. 31, No. 8, pp. 1325–1342.
3. McIntyre (2008) Participatory Action Research Sage University Papers pp.1-60.
4. Dale R, (2004). Evaluating Development Programmes and Projects. New Delhi: Sage Publications.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVE (GE HS 017) : FASHION ACCESSORIES

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Fashion Accessories	4	3	0	1	XII Pass	NIL	Home Science

Learning Objectives

1. To impart knowledge of fashion accessories
2. To familiarize the students with leading accessory designers
3. To provide knowledge of the basics of common accessories viz., handbag, footwear and hats
4. To help students in understanding design methodology, materials, production process and market dynamics of fashion accessories

Learning Outcomes

The student will be able to

1. Recognize the role and importance of fashion accessories in the apparel industry
2. Describe the various categories, history, styles and production methods of fashion accessories
3. Restyle and coordinate accessories with apparel using creative ideas
4. Understand forecast, trends, and process of accessory designing
5. Develop skills in range planning and creating fashion accessory

SYLLABUS OF GE HS 017

THEORY
(Credits 3; Periods 45)

UNIT I: Overview of Fashion Accessories **12 Hours**

This unit traces the history and importance of fashion accessories. It discusses the fashion cycle, role of an accessory designer and leading accessory brands and designers around the world.

Subtopics:

- History of accessories from ancient times to present
- Importance of fashion accessories in apparel industry
- Fashion cycle of fashion accessories
- Role of an accessory designer

- Leading accessory brands and designers

UNIT II: Categories, Styles and Production Methods of Selected Fashion Accessories 12 Hours

The unit brings forth the categories, styles and production methods of fashion accessories. It also helps to understand the coordination of fashion accessories with apparel.

Subtopics:

- Brief history, components, styles, materials and production methods of accessories: Handbags, Footwear, Hats, Belts, Ties, Scarves, etc.
- Coordinating accessories with apparel

UNIT III: Concept to Creation: Overview of Fashion Accessories Industry 9 Hours

This unit provides an insight into marketing and promotional aspects of fashion accessories.

Subtopics:

- Inspiration and research for design development
- Trend analysis and forecasting process
- Spec-sheets and Tech Packs
- Sourcing of material
- Costing
- Developing a range
- Care and maintenance

UNIT IV: Marketing and Promotion 12 Hours

Ways to increase the life of garments to reduce waste generation.

Subtopics:

- Marketing of fashion accessories
- Window concepts and displays
- Promotional practices

PRACTICAL

(Credit 1; Periods 30)

- Study of materials for fashion accessories
- Sketching of fashion accessories – Handbags and Footwear
- Sketching and rendering of life-size handbag and footwear (One each)
- Reporting of national and international accessory brand/ designer (One each)
- Theme based accessory designing - Mood boards, designing and construction (Any one product)
- Restyling project – Restyle plain accessories using any surface ornamentation technique

Essential readings:

1. Genova Aneta 2011, Accessory Design, Fairchild Publications; 1 edition
2. Know Your Fashion Accessories, Celia Stall- Meadows, Fairchild Books; Student ed. Edition (25 August 2003), ISBN-13: 978-1563672453
3. Lau John 2012, Basics Fashion Design 09: Designing Accessories: Exploring the design and construction of bags, shoes, hats and jewellery, A Publishing; 1 edition
4. Schaffer Jane, Saunders Sue 2012, Fashion Design Course: Accessories: Design Practice and Processes for Creating Hats, Bags, Shoes, and Other Fashion Accessories, Barron's Educational Series
5. Stephens Frings Gini, 2007, Fashion: From Concept to Consumer (9th Edition), Prentice Hall

Suggested readings:

1. Abling Bina 2005, marker rendering for Fashion, Accessories, and Home Fashion, Bloomsbury Academic, Illustrated Edition, ISBN 1563673606, 9781563673603.

2. Gerval Olivier 2009, Fashion Accessories, A&C Black, Illustrated edition, ISBN 140811058X, 9781408110584.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVE (GE HS 019) : CORPORATE SOCIAL RESPONSIBILITY

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Corporate Social Responsibility	4	3	0	1	XII Pass	NIL

Learning Objectives

1. To understand the meaning, scope and importance of Corporate Social Responsibility (CSR)
2. To understand CSR projects with respect to SDGs
3. To understand the Indian legislations for CSR
4. To learn about the implementation and monitoring of CSR activities
5. To understand the need, process and tools of communicating CSR projects
6. To understand CSR reporting guidelines

Learning Outcomes

The student will be able to:

1. Understand the meaning, scope and importance of Corporate Social Responsibility (CSR)
2. Assess the role of CSR projects with respect to SDGs
3. Understand Indian legislations for CSR
4. Understand implementation and monitoring of CSR projects through case studies
5. Develop material/tools for CSR communication
6. Understand and evaluate CSR reports as per standard reporting guidelines

SYLLABUS OF GE HS 019

THEORY

(Credits 3; Periods 45)

UNIT I: Introduction to Corporate Social Responsibility (CSR) **9 Hours**

Unit Description:

This Unit aims at orienting the students towards the concept and importance of Corporate Social Responsibility (CSR), triple bottom line, and ESG

Subtopics:

- Meaning, definition and importance
- History and evolution of CSR
- Sustainable businesses, triple bottom line, ESG (Environmental, Social and Governance)

UNIT II: International framework for Corporate Social Responsibility 12 Hours

Unit Description:

This Unit aims to create an understanding on Indian legislations for CSR, UN guiding principles and SDGs.

Subtopics:

- Indian legislations for CSR; Companies Act, 2013 and Amendments
- UN guiding principles on business and human rights.
- SDGs and CSR

UNIT III: Design, implémentation and Monitoring of CSR activities 12 Hours

Unit Description:

This Unit aims to create an understanding towards design, implémentation and monitoring of CSR activities, CSR funding and audit

Subtopics:

- CSR design, implémentation and monitoring
- Role of Stakeholders in CSR
- Funding for CSR activities
- CSR Audit; issues related to CSR Audit
- Globalization and CSR

UNIT IV: CSR Communications 12 Hours

Unit Description: This Unit aims to create an understanding towards the need, process and tools of CSR communication and CSR reporting guidelines Selection of materials

Subtopics:

- Need, process and tools of communicating CSR projects
- Brand building through CSR communications
- CSR Reporting Guidelines

PRACTICAL

(Credit 1; Periods 30)

I: Understanding CSR initiatives

Activities:

- Need Assessment for CSR activities by corporates
- Case studies on CSR initiatives taken by corporates
- Case studies on Foundation/Trust/Section 8 Companies etc. implementing CSR initiatives

II: Planning CSR activities and Communications

Activities:

- Planning innovative CSR Projects/Programmes in context of SDGs
- CSR communications: Presentations, Websites, Print Media, Social media etc.
- Evaluation of CSR reports

Essential readings:

1. Garg, K. (2021). Corporate Social Responsibility (3rd edition). Bharat Law House Pvt. Ltd.
2. Institute of Directors India. (2020). A Handbook on Corporate Social Responsibility, A Condensed Guide for Corporate Directors & Senior Executive. Institute of Directors, New Delhi, India.

3. Antonaras, A., & Dekoulou, P. (2019). Cases on Corporate Social Responsibility and Contemporary Issues in Organizations (Advances in Business Strategy and Competitive Advantage) 1st Edition. IGI Global.
4. Paleri, P. (2019). Corporate Social Responsibility: Concept, Cases and Trends. Cengage Learning India Pvt. Ltd. ISBN-10: 9353501601, ISBN-13: 978-9353501600.
5. Lumde, N. (2018). Corporate Social Responsibility in India: A Practitioner's Perspective. Notion Press. ISBN-10: 1644295431, ISBN-13: 978-1644295434.

Suggested readings:

1. Mitra, N., & Schmidpeter, R. (2016). Corporate Social Responsibility in India: Cases and Development after the Legal Mandate. Springer International Publishing, Switzerland.
2. Reddy, V. R., & Dheeraja, C. (2016). The Six Essential Steps in Implementing CSR. Studera Press, New Delhi.
3. Chakrabarty, B. (2015). CSR in India. Routledge.
4. Agarwal, S. (2013). CSR in India. SAGE Publications.
5. Chatterji, M. (2011). Corporate Social Responsibility. Oxford University Press India; Reprint edition. ISBN-10: 0198069839 ,ISBN-13 : 978-0198069836.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

BSc. (Hons.) Food Technology

DISCIPLINE SPECIFIC CORE COURSE
DSC FT07: Meat and Fish Processing Technology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITE OF THE COURSE

Course title & code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Theory	Tutorial	Practical/Practice		
Meat and Fish Processing Technology	4	3	0	1	XII Pass	DSC FT01, DSC FT02, DSC FT03, DSC FT04, DSC FT05, DSC FT06

Learning Objectives

1. To comprehend the meat quality and slaughter processes for meat animals.
2. To understand the concept and methods of processing and preservation of animal foods and by-product utilization.
3. To acquire the knowledge of fish preservation and value-added fish products.

Learning Outcomes

After completing this course, students will be able to:

1. Understand the need and importance of livestock industry.
2. Comprehend the structure, composition and nutritional quality of animal products.
3. Acquire the concept and methods of processing and preservation of animal foods.
4. Know the technology behind preparation of various animal food products and by-product utilization.
5. Apprehend the importance of fishery industry, the techniques that can be used for preservation of fish and manufacturing of various value-added fish products

SYLLABUS OF DSC FT07

THEORY
Credits 3 (45 Hrs.)

UNIT I: Introduction, meat quality, Slaughter process and By-products

Unit Description: The unit will provide information on the status and development of livestock industry, meat quality, ante-mortem and post-mortem examination, and by-products
Subtopics:

- Status of livestock industry in India, Development of meat industry in India and its need in nation's economy
- Effects of feed breed and stress on production of meat animals and their quality.
- Meat Quality-color, flavor, texture, Water-Holding Capacity (WHC), Emulsification capacity of meat.
- Layout of abbatoir, Slaughter, Antemortem examination of meat animals, slaughter of buffalo, sheep/ goat.
- Post-mortem examination of meat, Grading, Post-mortem changes of meat.
- Importance of by-products utilization, classification and uses of by-products, Manufacture of Natural casings

UNIT II: Preservation of meat

Unit Description: The unit will provide knowledge of different meat preservation techniques.

Subtopics:

- Refrigeration and freezing, thermal processing- canning of meat, retort pouch, dehydration, irradiation, meat curing, Sausages-processing, types and defects, Packaging of meat

UNIT III: Introduction, Chilling and Freezing of fish

Unit Description: The unit will provide an understanding of the status of fishery industry in India. Fish chilling, storage, freezing will also be covered.

Subtopics:

- Status of fishery industry in India. Relationship between chilling and storage life, MAP, general aspects of freezing, freezing systems (air blast freezing, plate or contact freezing 36 spray or immersion freezing, freezing on board, onshore processing, changes in quality in chilled and frozen storage, thawing.

UNIT IV: Fish Curing, Smoking and Canning, By-products, fermented fish and concept of other seafoods

Unit Description: The unit will provide an knowledge of the different fish products processing and preservation techniques.

Subtopics:

- Drying and salting of fish, water activity and shelf-life , salting process, salting methods (brining, pickling, kench curing, gaspe curing), types of salts, dried and
- Salted fish products- pindang, fishwood, dried shrimp. Preservation by smoking, smoke production , smoke components, quality, safety and nutritive value of
- Smoked fish, processing and equipment, pre-smoking processes, smoking process control. Traditional chimney kiln, modern mechanical fish smoking kiln, examples of smoked and dried products. Principles of canning, classification based on pH groupings, effect of heat processing on fish, storage of canned fish, pre-process operations, post process operations, cannery operations for specific canned products.(Tuna, Mackerel, Sardine).
- Surimi- Introduction, fish muscle proteins, the surimi process, traditional and modern surimi production lines, quality of surimi products, comparison of surimi and fish mince products.
- Fish protein concentrates (FPC), fish protein extracts (FPE), fish protein hydrolysis (FPH) Flowchart of Indigenous products- Fish sauce and Paste
- Crabs, lobsters, prawns, shrimps.

PRACTICAL

1 Credits (30 Hrs)

- Estimation of moisture content of meat.

- Cut out analysis of canned meat/retort pouches (external parameters).
- Cut out analysis of canned meat/retort pouches (internal parameters).
- Analysis of frozen meat/meat emulsion product.
- Meat/fish product formulation (Ideation/development of product).
- Quality evaluation of fish/prawn.
- Subjective evaluation of Fresh Fish.
- Cut out analysis of canned fish (Sardine/Mackerel/Tuna) (external parameters).
- Cut out analysis of canned fish (Sardine/Mackerel/Tuna) (internal parameters).

Essential Readings

1. Lawrie, R. A. (2017). Lawrie's meat science. 8th ed. England: Woodhead Publishing Ltd.
2. Sen, D.P. (2005). Advances in Fish Processing Technology. Allied Publishers Pvt.Limited.
3. Hall, G.M. (1997). Fish Processing Technology. 2nd edition NY: VCH

Suggested Readings

1. Paul D. Warriss. (2010). Meat Science: An introductory text. 2nd Edition. CABI Publishers, Wallingford, UK (2010)
2. Borda D., Nicolau. A. I and Raspor P (2017). Trends in Fish Processing Technology (Contemporary Food Engineering). 1st edition CRC Press

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE
DSC FT08 : Nutrition Science

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITE OF THE COURSE

Course title & code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Theory	Tutorial	Practical/Practice		
Nutrition Science	4	3	0	1	XII Pass	DSC FT01, DSC FT02, DSC FT03, DSC FT04, DSC FT05, DSC FT06

Learning Objectives:

1. To understand the relationship between food, nutrition and health.
2. To learn the digestion, absorption, functions and food sources of various nutrients.
3. To comprehend the concept of balanced diet.
4. To know the different methods of cooking and ways to prevent nutrient losses.
5. To plan and prepare nutritious dishes for various age groups.
6. To assess nutritional status of adults.

Learning Outcomes:

After completing this course, students will be able to:

1. Students will be able to interpret and apply nutrition concepts to evaluate and improve nutritional health of individuals and communities
2. Comprehend the role of digestion, absorption, functions and food sources of various nutrients.
3. Understand the concept of balanced diet and exchange system.
4. Describe different methods of cooking and ways to prevent nutrient losses.
5. Plan and prepare nutritious dishes for various age groups.
6. Assess nutritional status of adults.

SYLLABUS OF DSC FT08

THEORY
Credits 3 (45 Hrs.)

UNIT 1: Introduction to Food and Nutrition **6 hrs**

Unit Description: This unit will introduce the basic knowledge of food and nutrition, its functions. It will also help in understanding the inter-relationship between food, nutrition and health.

Subtopics:

- Basic terms used in study of food and nutrition
- Methods of assessment of nutritional status
- Functions of food-physiological, psychological and social
- Understanding relationship between food, nutrition and health

UNIT II: Nutrients 20 hrs

Unit Description: This unit will provide an understanding on functions, dietary sources and clinical manifestations of deficiency/excess of the following nutrients

Subtopics:

- Classification, digestion, absorption, functions, dietary sources, RDA, clinical manifestations of deficiency and excess of the following in brief:
- Energy
- Carbohydrates, lipids and proteins
- Fat soluble vitamins-A, D, E and K
- Water soluble vitamins – thiamine, riboflavin, niacin, folate, vitamin B12 and vitamin C
- Minerals – calcium, iron, iodine, fluorine, sodium, potassium, and zinc

Unit III: Planning Balanced Meals and Selection of Healthy Foods 6 hrs

Unit Description: This unit will help in understanding the concepts of food groups and balanced diet.

Subtopics:

- Food Groups
- Concept of Balanced Diets
- Understanding Nutrition labelling of foods

UNIT IV: Methods of Cooking and Nutrient Retention 13 hrs

Unit Description: This unit will help in developing know-how of different methods of cooking and ways to prevent nutrient losses

Subtopics:

- Dry, moist, frying and microwave cooking - Advantages, disadvantages
- Effect of various methods of cooking on foods and nutrients.
- Preventing nutrient losses

PRACTICAL
1 Credits (30 Hrs)

- Assessment of nutritional status using BMI and waist circumference.
- Identification of food sources for various nutrients using food composition tables.
- Introduction to meal planning, concept of food exchange system.
- Planning and preparation of nutritious snacks for adults using different methods of cooking.
- Planning and preparation of nutritious snacks for pregnant women.
- Planning and preparation of nutritious snacks for lactating women
- Planning and preparation of nutritious snacks for pre-schoolers.

- Planning and preparation of nutritious snacks for adolescents.
- Critical analysis of nutritional labelling of food products.

Essential Readings

1. Byrd-Bredbenner, C., Moe, G., Beshgetoor, D. & Berning, J. (2022). Wardlaw's Perspectives in Nutrition, International Edition, 12th edition, New York: McGraw- Hill 29
2. Chadha, R. and Mathur, P. eds. (2015). Nutrition: A Lifecycle Approach. Hyderabad: Orient Blackswan.
3. Longvah, T., Ananthan, R., Bhaskarachary, K. and Venkaiah, K. (2017). Indian Food Composition Tables. Hyderabad: National Institute of Nutrition, Indian Council of Medical Research, Department of Health Research, Ministry of Health and Family Welfare, Government of India.
4. Seth, V., Singh, K. &Mathur, P. (2018). Diet Planning Through the Lifecycle Part I: Normal Nutrition- A Practical Manual. 6th Edition. Delhi: Elite Publishing House.

Suggested Readings

1. Manay NS and Shadaksharaswamy M (2008). Food-Facts and Principles, Third Edition.New Age International (P) Ltd. Publishers, New Delhi.
2. Srilakshmi, B. (2021). *Nutrition Science*. 7th edition. New Age International.
3. Rekhi T and Yadav H (2014). Fundamentals of Food and Nutrition. New Delhi: Elite Publishing House Pvt Ltd.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE
DSC FT09: Cereals, Pulses & Oilseed Processing Technology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITE OF THE COURSE

Course title & code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Theory	Tutorial	Practical/Practice		
Cereals, Pulses & Oilseed Processing Technology	4	3	0	1	XII Pass	DSC FT01, DSC FT02, DSC FT03, DSC FT04, DSC FT05, DSC FT06

Learning Objectives

1. To impart knowledge of different methods of Cereal, Pulse & Oilseed processing.
2. To learn about processing of various products & by-products.

Learning Outcomes

After completing this course, students will be able to:

1. Understand the concept of quality (composition & types) of Cereals, Pulses & oilseeds for developing good quality end products.
2. Comprehend the processing and preservation of Cereals, Pulses & Oilseeds using various techniques.
3. Comprehend the processing of by-products.

SYLLABUS OF DSC FT09

THEORY
(Credits 3; Hours 45)

UNIT I: Introduction of Cereals

Subtopics:

Cereal Processing Technology

Introduction & chemical composition of cereals

- Wheat—Types, milling, flour grade, flour treatments (bleaching, maturing), flour for various purposes
- Rice: Types, Physicochemical properties, milling (mechanical & solvent extraction), parboiling, ageing of rice, utilization of by- products
- Corn: Milling (wet & dry), cornflakes, corn flakes, corn flour
- Barley: Milling (pearl barley, barley flakes
- Oats: Milling (oatmeal, oatflour & oatflakes), By-products of oat processing
- Rye & Triticate: Milling (flour), uses

UNIT II: : Processing of Coarse Grains
Subtopics:

- Sorghum and Millets (Traditional & commercial milling)

UNIT III: Pulse Processing Technology
Subtopics:

- Introduction to pulses
- Milling of pulses
- Dry milling
- Wet milling
- Improved milling method

UNIT IV: Oilseed Processing Technology

Unit Description: The unit will provide an knowledge of the different fish products processing and preservation techniques.
Subtopics:

- Introduction
- Extraction of oil (Mechanical & Solvent Extraction Milling)
- Refining of oil
- Sources of protein (defatted flour, protein concentrates and isolates, properties and uses)
- Protein texturization, fibre spinning

PRACTICAL
1 Credits (30 Hrs)

- Physical characteristics of Wheat.
- Estimation of Gluten Content of flour.
- Estimation of Pelenske Value of flour.
- Fermenting power of yeast.
- Physical Characteristics of Rice and paddy.
- Cooking characteristics of rice.
- Determination of sedimentation power of flour
- Preparation of Dairy Analogue (Soymilk from Soybeans)

Essential readings:

1. Kent, N.L. 2003. Technology of Cereal, 5th Ed. Pergamon Press.
2. Chakraverty. 1988. Post Harvest Technology of Cereals, Pulses and Oilseeds, revised Ed., Oxford & IBH Publishing Co. Pvt Ltd.

Recommended readings:

1. Marshall, Rice Science and Technology. 1994. Wadsworth Ed., Marcel Dekker, New York.
2. Manay, S. and Sharaswamy, M. 1987. Food Facts and Priniciples.Wiley Eastern Limited.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE
DSE FT01: Novel Food Processing Technologies

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITE OF THE COURSE

Course title & code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Theory	Tutorial	Practical/Practice		
Novel Food Processing Technologies	4	2	0	2	XII Pass	NIL

Learning Objectives

1. To enable students to learn the basics of novel processing techniques.
2. To impart knowledge about the mechanism of microbial inactivation by various processing techniques.
3. To acquire knowledge about the effects of various novel processing techniques on food quality.

Learning Outcomes

After completing this course, students will be able to:

1. Understand the principles and mechanism of microbial inactivation by various techniques in order to preserve food and provide safe food for consumption.
2. Comprehend the effects of various novel processing techniques on the food quality.

SYLLABUS OF DSE FT01 THEORY

Credits 2 (30 Hrs.)

Unit I: High pressure processing and Hurdle technology (10 hrs)

Unit Description: The unit will provide an understanding of the High-pressure processing used in food industries. The unit will deal with its principle and effects on food quality. The unit will also provide knowledge of the hurdle technology and its use in food preservation.

Subtopics:

- **High Pressure Processing:** Definition, principles of high-pressure processing and effects of high pressure on food quality.
- **Hurdle Technology:** Concept and effect on preservation of food.

UNIT II: Pulsed electric fields processing (8 hrs)

Unit Description: The unit will introduce fundamentals of puled electric field processing. It also deals with concept of e-beam.

Subtopics:

- **Pulsed electric fields processing:** Definition, PEF treatment systems, main processing parameters, mechanisms of microbial inactivation.
- **Concept of E-beam**

UNIT III: Ultrasound and radiofrequency processing (6 hrs)

Unit Description: The unit will help in understanding the use of ultrasound and radiofrequency processing in food industry.

Subtopics:

- Ultrasound as a food preservation and processing aid, effects of ultrasound on food properties
- Radio-frequency processing.

UNIT IV: (6 hrs)

Unit Description: The unit will provide and insight to various other novel processing techniques such as microwave heating, dielectric heating, ohmic heating, irradiation that aids in food preservation.

Subtopics:

- Microwave heating
- Dielectric heating
- Ohmic heating
- Irradiation
- UV-C radiation
- Ozone
- Plasma technology

PRACTICAL
(2 Credits, 60 Hrs)

- Market survey of novel processed foods available
- Concept of hurdle technology
- Blanching using UV light
- Ultrasonication
- Setting up of Ohmic heater
- Applications of Microwave processing
- Layout of irradiation unit
- Ohmic heating process calculations
- Quality analysis of novel processed foods vs conventionally processed foods

Essential readings:

1. P J Fellows (2009). Food Processing Technology: Principles and Practice. Third edition. Wood Head Publishing in Food Science, Technology and Nutrition.
2. Howard Q. Zhang, Gustavo V. Barbosa-Cánovas, V. M. Bala Balasubramaniam, C. Patrick Dunne, Daniel F. Farkas, James T. C. Yuan (2011). Nonthermal Processing Technologies for Food. Wiley-Blackwell.
3. Ortega-Rivas, Enrique (2012). Non-thermal Food Engineering Operations. Springer.
4. Chauhan, O. P. (Ed.). (2019). *Non-thermal processing of foods*. CRC Press.
5. Potter NN and Hotchkiss H J (1996). Food Science, Fifth Edition.CBS Publication, New Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

GENERIC ELECTIVE (GE FT 03) : SENSORY EVALUATION OF FOOD

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Sensory Evaluation of Food	4	3	0	1	Class XII	NIL	Home Science

Learning Objectives:

1. To understand sensory organs and their role in sensory evaluation
2. To obtain a basic knowledge of objective and subjective evaluation of food
3. To know the importance of sensory panels and testing methods.
4. Understanding the application of sensory evaluation in food industry.

Learning Outcomes:

Students will be able to:

1. Recognize basic tastes and derived tastes in food.
2. Describe flavours, colours and texture in foods.
3. Comprehend concept of sensory panels and various instruments used in assessing the quality parameters of food.

SYLLABUS OF GE FT01

THEORY
(Credits 3; Periods 45)

UNIT I: Taste **12 Hours**

Unit Description: Chemistry of five basic taste and their perception through tongue

Subtopics:

- Introduction and importance of taste
- Structure and physiology of taste organs- tongue, papillae, tastebuds, salivary glands
- Mechanism of taste perception

- Chemical dimensions of basic tastes- sweet, salt, sour, bitter andumami
- Factors affecting taste quality, reaction time, tastemodification, absolute and recognition threshold
- Taste measurement-Electronic Tongue.
- Taste abnormalities

UNIT II: **Odour** **11 Hours**

Unit Description: Identification of various types of odour's their perception and measurement.

Subtopics:

- Introduction, definition and importance of odour and flavour
- Anatomy of nose, physiology of odour perception
- Mechanism of odour perception
- Odour classification.
- Odour measurement-GC-MS, Electronic Nose,
- Olfactory abnormalities

UNIT III: **Colour** **11 Hours**

Unit Description: Various attributes of colour and their objective measurement in foods.

Subtopics:

- Introduction and importance of colour
- Dimensions and attributes of colour, appearance factors, glossetc.
- Perception of colour
- Colour abnormalities
- Measurement of colour; Munsell colour system,Tintometer, CIE colour system, Hunter colour system.

UNIT IV: **Texture** **11 Hours**

Unit Description: Concept of texture and its objective assessment. Rheology of all foodgroups and instruments used.

Subtopics:

- Introduction, definition and importance of texture
- Phases of oral processing
- Texture perception, receptors involved in texture perception
- Texture classification
- Texture measurement – basic rheological models, forces involvedin texture measurement
- Some objective methods of texture evaluation offoods- TPA, mixograph, Extensiograph, amylograph, spreadimeter, compressimeter etc.

PRACTICAL

(Credit 1; Periods 30)

- Training of sensory panel.
- To perform recognition and sensitivity tests for four basic tastes.
- To perform analytical tests of sensory evaluation.
- Recognition tests for various food flavours.
- Flavour defects in milk.
- Sensory evaluation of dairy products-milk/cheese/butter/ice cream.
- Extraction of pigments from various fruits and vegetables and study the effect oftemperature and pH.
- Texture Profile Analysis of any food product- cookies/ biscuits/chips/fruits.
- Measurement of colour by using Tintometer/ Hunter Colour Lab etc.

Essential readings:

1. Rao, E. S. (2013). Food Quality Evaluation, Variety Books, New Delhi
2. DeMan, J. (2007). Principles of Food Chemistry, 3rd ed., Springer.
3. Meilgard. (1999). Sensory Evaluation Techniques, 3rd ed. CRC Press LLC.

Suggested readings:

1. Amerine, Pangborn, & Roessler. (1965). *Principles of Sensory Evaluation of food*. London:Academic Press.
2. Harry, T., Lawless, Barbara. & Klien, P. (1991). *Sensory Science Theory and Applications inFood*. Marcel Dekker Network.
3. Rao, E.S. (2014). *Food Quality Testing and Evaluation- Sensory Test Instrumental Techniques*.New Delhi: Variety Book Publishers Distributors

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.A (Prog) with Nutrition and Health Education (NHE) as Major

Category-II

DISCIPLINE SPECIFIC CORE COURSE – DSC-5-NHE: FOOD REPORTING AND WRITING

CREDIT DISTRIBUTION, ELIGIBILITY AND PREREQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Food Reporting and Writing	4	3	0	1	Class XII	Nil

LEARNING OBJECTIVES:

1. To introduce students to the concept and prospects of food reporting.
2. To make the students learn to creatively write their own food stories for different forms of food media.
3. To help students gain an understanding of the wide-ranging and pervasive nature of food reporting and writing.
4. To make the students understand the importance of food reporting and writing for creating a sustainable food future.

LEARNING OUTCOMES:

After completion of the course, the students will be able to:

1. Hone food reporting skills and critical analysis of different forms of food media.
2. Create original food writing appraising the sustainable essence of food.
3. Articulate how food writing and reporting can be used as a medium for attaining a sustainable food future.

SYLLABUS OF DSC-5

THEORY
(Credits 3: 45 Hours)

Unit 1: Food Reporting **(10 Hours)**

- *Unit Description*: This unit will introduce the concept of food reporting, different steps involved, skills required to become a good food reporter and the future prospects of food reporting.

- *Subtopics:*
  - Concept of food reporting
  - Steps of reporting
  - Skills of a good food reporter
  - Prospects of food reporting

Unit 2: Food Writing **(15 Hours)**

- *Unit Description:* This unit will train the students to become a good café/restaurant critic as well as help in developing their writing skills for different forms of food media.

- *Subtopics:*
  - Guidelines to write a good food review
  - How to become a good café/restaurant critic
  - Recipe writing
  - Food writing in newspapers, magazines, social media, food blogs

Unit 3: Food Reporting and Writing on Sustainability Issues **(20 Hours)**

- *Unit Description:* This unit will lay emphasis on food reporting and writing on sustainablility issues for achieving nutrition security and a sustainable food future.

- *Subtopics:*
  - Importance of food reporting and writing on sustainability issues
  - Food writing and reporting on sustainability issues:
    - Shifting to healthier and more sustainable foods/diets
    - Reduce food loss and waste
    - Consumption of millets for sustainable agriculture and attaining nutrition security
    - Smart farming – the next green revolution
    - Going green – demand for organic food
    - Growing local – going global

PRACTICAL
(Credits 1: 30 Hours)

Unit 1: Food Reporting **(15 Hours)**

- *Subtopics:*
  - Interview a cook/chef
  - Critical reporting of food related information across various forms of media

Unit 2: Food Writing **(15 Hours)**

- *Subtopics:*
  - Visiting a café/restaurant and writing a review
  - Authentic ethnic food essay
  - Crafting food memoir
  - Travel related food story
  - Food blog on sustainability issues

ESSENTIAL/RECOMMENDED READINGS:

1. Jacob, D. (2010) Will Write for Food. 2nd edition. Cambridge: Da Capo Press.
2. Hughes,H. (2017) Best food writing. 1st edition. New York, NY, Da Capo Lifelong.
3. Siniauer, P. (2015) Writing about Food – a guide to good food journalism. Freie Universität Berlin Helsingin Sanomat Foundation. https://www.hssaatio.fi/wp-content/uploads/2015/07/Siniauer_WRITE-ABOUT-FOOD-a-guide-to-good-food-journalism.pdf
4. Gilbert, S. & Porter, R. (Eds). (2015). Eating Words: The Norton Anthology of Food Writing. New York: W. W. Norton & Company.

SUGGESTED READINGS:

1. Fusté-Forné, Francesc & Masip, Pere. (2019). *Food and journalism*. 10.4324/9781351123389-11.
2. Searchinger, T., Waite, R., & Hanson, C., & Ranganathan, J. (2019). World Resources Institute. World Resources Report. Creating a sustainable food future – a menu of solutions to feed nearly 10 billion people by 2050. Matthews, E (Ed.). https://research.wri.org/sites/default/files/2019-07/WRR_Food_Full_Report_0.pdf
3. Cox, A. M., & Blake, M. K. (2011). Information and food blogging as serious leisure. Aslib Proceedings, 63 (2/3). pp. 204-220. ISSN 0001-253X http://dx.doi.org/10.1108/00012531111135664
4. David, B., Branigin H, Beurle, C. The future of food feeding the world – the coming food revolution. Future IQ. https://future-iq.com/wp-content/uploads/2016/03/Future-iQ-Partners-Future-of-Food.pdf

DISCIPLINE SPECIFIC CORE COURSE – DSC-6-NHE: BASICS OF FOOD SAFETY

CREDIT DISTRIBUTION, ELIGIBILITY AND PREREQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Basics of Food Safety	4	3	1	0	Class XII	Nil

LEARNING OBJECTIVES:

1. To introduce students to the basic concepts of food safety, hygiene, and types of microorganisms associated with food.
2. To equip them with the knowledge of food adulteration and contamination, food borne diseases, and role of microbes in food spoilage.

LEARNING OUTCOMES:

After completion of the course students will be able to:

1. Understand the important genera of microorganisms associated with food and their characteristics.
2. Explain the role of microbes in food spoilage and food borne diseases.
3. Describe food safety and hygiene, types of hazards associated with food.
4. Understand current food safety and standard regulations.

SYLLABUS OF DSC-6

THEORY
(Credits 3: 45 Hours)

Unit 1: Introduction to Food Safety (7 Hours)

- *Unit Description:* This unit will introduce the concept of food safety, hazards and factors affecting food safety.

- *Subtopics*
  - Definitions
  - Importance of food safety
  - Factors affecting food safety
  - Types of hazards
  - Safe-Unsafe food for consumption

Unit 2: Microorganisms in Food (16 Hours)

- *Unit Description:* This unit will introduce the important genera of microorganisms associated with food, their characteristics and factors affecting it.

- *Subtopics:*
  - Bacteria, yeast, mold and virus
  - Role of microbes in food spoilage
  - Food infection and intoxication
  - Food poisoning

Unit 3: Food Safety and Quality Assurance (12 Hours)

- *Unit Description:* This unit will introduce the food additives, adulteration and food regulations.

- *Subtopics:*
  - Food additives
  - Food adulteration
  - Nutritional labelling
  - Food safety and standard regulation
  - HACCP, GMP, GHP

Unit 4: Recent Concerns of Food Safety **(10 Hours)**

- *Unit Description:* This unit will introduce the emerging concerns and new challenges to food safety.

- *Subtopics:*
  - Emerging concerns for food safety
  - Street food safety
  - New challenges to food safety

ESSENTIAL/RECOMMENDED READINGS:

1. Forsythe, S J. (1987) Microbiology of Safe Food.USA: Blackwell Science, Oxford.
2. Frazier, William C. and Westhoff, Dennis C. (2004). Food Microbiology. New Delhi: TMH.
3. Garbutt, John. (1997). Essentials of Food Microbiology. London: Arnold.
4. Jay, James M. (2000). Modern Food Microbiology. New Delhi: CBS Publication.
5. Mathur, P. (2018). Food Safety and Quality Control. Hyderabad: Orient Black Swan Pvt. Ltd.
6. Sethi, P., & Lakra P. (2015). Aahaar Vigyaan, Poshan evam Suruksha, Elite Publishing House.
7. Suri, S., & Malhotra A. (2014). Food Science, Nutrition and Safety. Delhi: Pearson.

SUGGESTED READINGS:

1. De Vries. (1997). Food Safety and Toxicity. New York: CRC.
2. Lawley, R., Curtis L. & Davis, J. (2004). The Food Safety Hazard Guidebook. RSC
3. Publishing.
4. Marriott, Norman G. (1985). Principles of Food Sanitation. New York: AVI.
5. Pelczar, M.J., Chan E.C.S & Krieg, Noel. R. (1993) Microbiology, 5th Ed. New Delhi: TMH.

B.A (Prog) with Nutrition and Health Education (NHE) as Non-Major

Category-III

DISCIPLINE SPECIFIC CORE COURSE – DSC-6-NHE: BASICS OF FOOD SAFETY

CREDIT DISTRIBUTION, ELIGIBILITY AND PREREQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Basics of Food Safety	4	3	1	0	Class XII	Nil

LEARNING OBJECTIVES:

1. To introduce students to the basic concepts of food safety, hygiene, and types of microorganisms associated with food.
2. To equip them with the knowledge of food adulteration and contamination, food borne diseases, and role of microbes in food spoilage.

LEARNING OUTCOMES:

After completion of the course students will be able to:

1. Understand the important genera of microorganisms associated with food and their characteristics.
2. Explain the role of microbes in food spoilage and food borne diseases.
3. Describe food safety and hygiene, types of hazards associated with food.
4. Understand current food safety and standard regulations.

SYLLABUS OF DSC-6

THEORY
(Credits 3: 45 Hours)

Unit 1: Introduction to Food Safety **(7 Hours)**

- *Unit Description:* This unit will introduce the concept of food safety, hazards and factors affecting food safety.

- *Subtopics:*
  - Definitions
  - Importance of food safety
  - Factors affecting food safety
  - Types of hazards

- Safe-Unsafe food for consumption

Unit 2: Microorganisms in Food (16 Hours)

- *Unit Description:* This unit will introduce the important genera of microorganisms associated with food, their characteristics and factors affecting it.

- *Subtopics:*
  - Bacteria, yeast, mold and virus
  - Role of microbes in food spoilage
  - Food infection and intoxication
  - Food poisoning

Unit 3: Food Safety and Quality Assurance (12 Hours)

- *Unit Description:* This unit will introduce the food additives, adulteration and food regulations.

- *Subtopics:*
  - Food additives
  - Food adulteration
  - Nutritional labelling
  - Food safety and standard regulation
  - HACCP, GMP, GHP

Unit 4: Recent Concerns of Food Safety (10 Hours)

- *Unit Description:* This unit will introduce the emerging concerns and new challenges to food safety.

- *Subtopics:*
  - Emerging concerns for food safety
  - Street food safety
  - New challenges to food safety

ESSENTIAL/RECOMMENDED READINGS:

1. Forsythe, S J. (1987) Microbiology of Safe Food.USA: Blackwell Science, Oxford.
2. Frazier, William C. and Westhoff, Dennis C. (2004). Food Microbiology. New Delhi: TMH.
3. Garbutt, John. (1997). Essentials of Food Microbiology. London: Arnold.
4. Jay, James M. (2000). Modern Food Microbiology. New Delhi: CBS Publication.
5. Mathur, P. (2018). Food Safety and Quality Control. Hyderabad: Orient Black Swan Pvt. Ltd.
6. Sethi, P., & Lakra, P. (2015). Aahaar Vigyaan, Poshan evam Suruksha, Elite Publishing House.
7. Suri, S., & Malhotra A. (2014). Food Science, Nutrition and Safety. Delhi: Pearson.

SUGGESTED READINGS:

1. De Vries. (1997). Food Safety and Toxicity. New York: CRC.
2. Lawley, R., Curtis L. & Davis, J. (2004). The Food Safety Hazard Guidebook. RSC
3. Publishing.
4. Marriott, Norman G. (1985). Principles of Food Sanitation. New York: AVI.
5. Pelczar, M.J., Chan E.C.S & Krieg, Noel. R. (1993) Microbiology, 5th Ed. New Delhi: TMH.

B.A (Prog) with Apparel Design and Construction (ADC) as Major

Category-II

DISCIPLINE SPECIFIC CORE COURSE – DSC-5-ADC: INDIAN AND WORLD COSTUMES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Indian and World Costumes	4	3	1	0	Class XII	Nil

LEARNING OBJECTIVES:

- To give the learners insights into the various styles of Indian and World costumes from ancient times onwards.
- To provide sources of inspiration for the students for their creations and collections.

LEARNING OUTCOMES:

After completing this course, the learner will be able to:

- Compare and contrast the features of salient ancient and historical Indian costumes
- Appreciate the various styles of traditional Indian costumes
- Identify and differentiate the various costumes of different countries/ regions of the World
- Use the knowledge of traditional and Historical costumes in creating contemporary fashion collections.

SYLLABUS OF DSC-5

THEORY
(Credits 3: 45 Hours)

UNIT I: Ancient and Historical Indian Costumes (10 Hours)

- *Unit Description:* This unit provides an understanding of the costumes worn during Ancient India and different periods in the history starting from Mauryan Empire to Mughal Empire.

- *Sub Topics:*
  - Ancient Indian Costumes - Indus valley civilization, Vedic period
  - Overview of Historic Indian Costumes - Maurya period, Gupta, Mughal period.

Unit II: Traditional Costumes of India (15 Hours)

- *Unit Description:* This unit provides basic understanding of diverse traditional costumes of different regions of India.

- *Sub Topics:*
    - Common Traditional Indian Garments and their regional variations – Kurta and Dhoti/ Pyjama, Lehnga-choli, Salwar/Chudidar and Kameez, Bandgala, Pheran, Angrakha.
    - Saree draping styles of different regions of India.
    - Salient Traditional Costumes of Southern and North-Eastern States of India.

Unit III: Costumes of the World **(20 Hours)**

- *Unit Description:* This unit introduces the learners to the diverse ancient and traditional costumes popular in different regions/ countries of the world.

- *Sub Topics:*
    - Overview of Ancient Costumes - Egyptian, Greek, Roman
    - Characteristic features of salient Historic European costumes
    - Salient Traditional Costumes – Middle East, Africa
    - Traditional World Costumes: Kilt (Scotland), Gho and Kira (Bhutan), Tracht (Germany), Flamenco Dress (Spain), Kimono (Japan), Cheongsam, Hanfu and Tang Suit (China), Ao Dai (Vietnam), Sarafan (Russia), Greek Fustanella, Hanbok (South Korea), Bunad (Norway), Barong Tagalog and Baro at Saya (Philippines), Charro suit (Mexico)
    - Project: Study of the traditional/ historic costume of a specific country or region.
    - Visit to Dolls Museum, Textile Museum and Exhibitions

ESSENTIAL READINGS:

1. Alkazi Roshen, (2011), Ancient Indian Costume, National Book Trust.
2. Bhatnagar Parul, (2009), Traditional Indian Costumes and Textiles, Abhishek Publication
3. Black J. Anderson, Garland Madge, (1990), A History Of Fashion, Black Cat Publication.
4. N.N. Mahapatra, (2016), Sarees of India, Woodhead Publishing India Pvt Ltd
5. Peacock John, (2010), The Chronicle of Western Costume: From The Ancient World To The Late Twentieth Century, Thames & Hudson.
6. Welters Linda, Lillethun Abby, (2018), Fashion History: A Global View (Dress, Body, Culture), Bloomsbury Visual Arts.

SUGGESTED READINGS:

1. A Biswas, (2017), Indian Costumes (Second Edition), Publication Division, India.
2. Dorris Flyn, (1971), Costumes of India, Oxford & IBH Publishing Co, Delhi.
3. Jamila Brij Bhushan, (1958), The costumes and textiles of India, D B Taraporevala Sons & Co.
4. Lester, Katherine M, (1967), Historic Costume, Chas A Bennett Co Inc.

DISCIPLINE SPECIFIC CORE COURSE – DSC-6-ADC: TEXTILE DESIGN TECHNIQUES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Textile Design Techniques	4	2	0	2	Class XII	Nil

LEARNING OBJECTIVES:

- To introduce the learners to the various applied textile design techniques.
- To provide comprehensive knowledge about the concepts of dyeing and printing.
- To create an understanding of the various traditional Indian embroideries and textiles.

LEARNING OUTCOMES:

After completion of the course, the students will be able to:

- Identify and describe the various methods of applied textile design techniques
- Classify and select dyes based on suitability and fastness for different fabrics.
- Explain the importance and methods of testing colour-fastness of dyes.
- Differentiate between and explain the styles and methods of printing.
- Identify the common dyeing and printing defects.
- Identify and describe the special features of select Indian hand embroideries and traditional Indian textiles
- Apply dyeing and printing techniques such as tie and dye, block printing, screen printing and batik on fabrics
- Apply creative fabric manipulation/ embellishment techniques in apparel design projects.

SYLLABUS OF DSC-6

THEORY
(Credits 2: 30 Hours)

UNIT – 1: Introduction to Textile Design Techniques (3 Hours)

- *Unit Description:* This unit introduces the learners to the various applied textile design techniques.

- *Sub Topics:*
  - Introduction to the various applied textile design techniques - Dyeing and printing, Hand and machine embroidery, Fabric manipulation, Surface embellishment.

- Project: Collection and compilation of Fabric swatches/ images of the various methods of textile design techniques.

UNIT – 2: Dyeing and Printing (12 Hours)

- *Unit Description:* This unit provides an understanding of the various concepts and methods related to dyeing and printing.

- *Sub Topics:*
  - Classification of Dyes - Natural dyes and Synthetic dyes
  - Dye classes: their suitability and fastness on different fabrics-direct, reactive, acid, vat, disperse dyes, pigments; Dyeing procedures: Direct, Reactive, Acid dyes
  - Methods of dyeing: Solution dyeing, Fibre dyeing. Yarn dyeing, Fabric dyeing, Garment dyeing - their effect on finished fabric.
  - Colour-fastness, Testing Wash fastness and Light fastness
  - Styles of printing – Direct, Discharge, Dyed (Mordant), Resist – Tie and Dye, Batik, Mud resist
  - Methods of printing – Stencil, Block, Roller, Screen, Rotary screen, Heat Transfer, Digital, Flock; Newer methods of printing
  - Common dyeing and printing defects

Unit - 3: Traditional Indian Embroideries and Textiles (15 Hours)

- *Unit Description:* This unit creates an understanding and appreciation of the various traditional Indian embroideries and textiles.

- *Sub Topics:*
  - Indian Hand Embroideries with reference to Motifs, Color combination, Types and Stitches used: Kantha, Phulkari, Kasuti, Kashida, Mirrorwork (Gujarat), Chikankari
  - Traditional Indian Textiles with reference to History, production centres, techniques, designs and colours: Brocades, Baluchari, Jamdani, Bandhni, Ikat and patola

PRACTICAL
(Credits 2: 60 Hours)

1. Tie and dye technique
2. Block and Screen printing
3. Batik technique
4. Preparation of samples using creative fabric surface manipulation/ embellishment techniques
5. Preparation of an article/garment using a combination of techniques learnt above.

ESSENTIAL READINGS:

1. Corbman, P.B. (1985). *Textiles-Fibre to Fabric*. USA: McGraw Hill Book Co.
2. Das S. (1992). *Fabric Art- Heritage of India*. New Delhi: Abhinav Publications
3. Dhamija J., Jyotindra J. (1989). *Hand-woven Fabrics of India*. Ahmedabad: Mapin Publishing Pvt. Ltd.
4. Jerstorp Karin, Eva Kohlmark, (2000), The Fabric Design Book: Understanding and Creating Patterns Using Texture, Shape and Color, A & C Black Publishers Ltd

5. Joseph M.L. (1988). *Essentials of Textiles* (5th Edition). Florida: Rinehart and Winston Inc.
6. N.N. Mahapatra, (2016), Sarees of India, Woodhead Publishing India Pvt Ltd

SUGGESTED READINGS:

1. Bhatnagar P. (2004). *Traditional Indian costumes and Textiles*. Chandigarh: Abhishek Publication.
2. Singer, Ruth, (2013), Fabric Manipulation: 150 Creative Sewing Techniques, David & Charles
3. Storey, J. (1992). *Manual of Textile Printing*. London: Thames and Hudson publication
4. Verma P. *(2003). Vastra Vigyan Evam Paridhan*. Bhopal: Hindi Granth Akademy
5. Wolff, Colette, (1996), The Art of Manipulating Fabric, Krause Publications

B.A (Prog) with Apparel Design and Construction (ADC) as Non-Major

Category-III

DISCIPLINE SPECIFIC CORE COURSE – DSC-6-ADC: TEXTILE DESIGN TECHNIQUES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Textile Design Techniques	4	2	0	2	Class XII	Nil

LEARNING OBJECTIVES:

- To introduce the learners to the various applied textile design techniques.
- To provide comprehensive knowledge about the concepts of dyeing and printing.
- To create an understanding of the various traditional Indian embroideries and textiles.

LEARNING OUTCOMES:

After completion of the course, the students will be able to:

- Identify and describe the various methods of applied textile design techniques
- Classify and select dyes based on suitability and fastness for different fabrics.
- Explain the importance and methods of testing colour-fastness of dyes.
- Differentiate between and explain the styles and methods of printing.
- Identify the common dyeing and printing defects.
- Identify and describe the special features of select Indian hand embroideries and traditional Indian textiles

- Apply dyeing and printing techniques such as tie and dye, block printing, screen printing and batik on fabrics
- Apply creative fabric manipulation/ embellishment techniques in apparel design projects.

SYLLABUS OF DSC-6

THEORY
(Credits 2: 30 Hours)

UNIT – 1: Introduction to Textile Design Techniques (3 Hours)

- *Unit Description:* This unit introduces the learners to the various applied textile design techniques.

- *Sub Topics:*
  - Introduction to the various applied textile design techniques - Dyeing and printing, Hand and machine embroidery, Fabric manipulation, Surface embellishment.
  - Project: Collection and compilation of Fabric swatches/ images of the various methods of textile design techniques.

UNIT – 2: Dyeing and Printing (12 Hours)

- *Unit Description:* This unit provides an understanding of the various concepts and methods related to dyeing and printing.

- *Sub Topics:*
  - Classification of Dyes - Natural dyes and Synthetic dyes
  - Dye classes: their suitability and fastness on different fabrics-direct, reactive, acid, vat, disperse dyes, pigments; Dyeing procedures: Direct, Reactive, Acid dyes
  - Methods of dyeing: Solution dyeing, Fibre dyeing. Yarn dyeing, Fabric dyeing, Garment dyeing - their effect on finished fabric.
  - Colour-fastness, Testing Wash fastness and Light fastness
  - Styles of printing – Direct, Discharge, Dyed (Mordant), Resist – Tie and Dye, Batik, Mud resist
  - Methods of printing – Stencil, Block, Roller, Screen, Rotary screen, Heat Transfer, Digital, Flock; Newer methods of printing
  - Common dyeing and printing defects

Unit - 3: Traditional Indian Embroideries and Textiles (15 Hours)

- *Unit Description:* This unit creates an understanding and appreciation of the various traditional Indian embroideries and textiles.

- *Sub Topics*:
  - Indian Hand Embroideries with reference to Motifs, Color combination, Types and Stitches used: Kantha, Phulkari, Kasuti, Kashida, Mirrorwork (Gujarat), Chikankari
  - Traditional Indian Textiles with reference to History, production centres, techniques, designs and colours: Brocades, Baluchari, Jamdani, Bandhni, Ikat and patola

PRACTICAL

(Credits 2: 60 Hours)

1. Tie and dye technique
2. Block and Screen printing
3. Batik technique
4. Preparation of samples using creative fabric surface manipulation/ embellishment techniques
5. Preparation of an article/garment using a combination of techniques learnt above.

ESSENTIAL READINGS:

1. Corbman, P.B. (1985). *Textiles-Fibre to Fabric*. USA: McGraw Hill Book Co.
2. Das S. (1992). *Fabric Art- Heritage of India*. New Delhi: Abhinav Publications
3. Dhamija J., Jyotindra J. (1989). *Hand-woven Fabrics of India*. Ahmedabad: Mapin Publishing Pvt. Ltd.
4. Jerstorp Karin, Eva Kohlmark, (2000), The Fabric Design Book: Understanding and Creating Patterns Using Texture, Shape and Color, A & C Black Publishers Ltd
5. Joseph M.L. (1988). *Essentials of Textiles* (5th Edition). Florida: Rinehart and Winston Inc.
6. N.N. Mahapatra, (2016), Sarees of India, Woodhead Publishing India Pvt Ltd

SUGGESTED READINGS:

1. Bhatnagar P. (2004). *Traditional Indian costumes and Textiles*. Chandigarh: Abhishek Publication.
2. Singer, Ruth, (2013), Fabric Manipulation: 150 Creative Sewing Techniques, David & Charles
3. Storey, J. (1992). *Manual of Textile Printing*. London: Thames and Hudson publication
4. Verma P. *(2003). Vastra Vigyan Evam Paridhan*. Bhopal: Hindi Granth Akademy
5. Wolff, Colette, (1996), The Art of Manipulating Fabric, Krause Publications

B.A (Prog.) with Human Development and Family Empowerment (HDFE) as Major
Category-II

DISCIPLINE SPECIFIC CORE COURSE – DSC-5-HDFE: GENDER AND SOCIAL JUSTICE IN INDIA

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITE OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Gender and Social Justice in India	4	2	0	2	Class XII	Nil

LEARNING OBJECTIVES:

- To understand the different terms used to discuss gender.
- To understand about the social construction of gender.
- To understand the situation of gender justice in India.

LEARNING OUTCOMES:

After completion of the course, the students will be able to:

- Understand the different terms used to discuss gender.
- Understand about the social construction of gender
- Understand the situation of gender justice in India.

THEORY
(Credits 2: 30 Hours)

Unit 1: Understanding Gender **(10 Hours)**

- *Unit Description:* Student will get aware about different terms related to gender

- *Subtopics:*
  - Defining terms- Sex and Gender, Masculinity v/s Femininity, Feminism
  - Gender Identity and Gender Fluidity: LGBTQ+ Communities

Unit 2: Social Construction of Gender **(10 Hours)**

- *Unit Description:* The emphasis of this unit will be on patriarchy and violence against women and children.

- *Subtopics:*
    - Gender Stereotypes and Patriarchy
    - Violence against girl child and women

Unit 3: Gender Justice in India **(10 Hours)**

- *Unit Description:* This unit will introduce regarding Constitutional provisions for Women

- *Subtopics:*
    - Constitutional provisions for Women
    - Laws and policies for Women

PRACTICAL
(Credits 2: 60 Hours)

Unit 1: Visit to any one organisation working in the area of Women's Rights

Unit 2: Seminar / Webinar/ Talk by professional working in the area of Women empowerment and the girl child.

Unit 3: Initiatives by the Government in the area of Gender Justice in the last 5 years- Discussion and Documentation.

ESSENTIAL / RECOMMENDED READINGS:

1. Bhasin, Kamla (2000). Understanding Gender. New Delhi. Kaali for Women.
2. Goel, A, Kaur, A and Sultana, A (2006). Violence against women: Issues and Perspectives. New Delhi, Deep & Deep Publishers.
3. Kataria, K. and Parihar, M. (2017) Women Empowerment Gender Equality and Social Justice. Books Treasure.
4. Monica, C. (2022). Gender Justice: Women and Law in India. Deep & Deep Publications.

SUGGESTED READINGS:

1. Seidman, Steven 1996, (ed), 'Queer Theory/Sociology', Blackwell ϖ V. Geetha, 2007, Patriarchy, Stree Publications, Calcutta
2. Lips, Hilary M., 2015, Gender the basics, Routledge, London
3. Pernau, Margrit, Imtiaz Ahmad and Helmut Reifeld, 2003, Family and Gender, Sage, New Delhi
4. Oberoi, Patricia, 2006, Freedom and Destiny: Gender, Family and Popular Culture in India, Oxford University Press
5. Rege, Sharmila.2003. Sociology of Gender, New Delhi: Sage.

DISCIPLINE SPECIFIC CORE COURSE – DSC-6-HDFE: EMPOWERMENT OF WOMEN AND CHILDREN

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITE OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Empowerment of Women and Children	4	2	0	2	Class XII	Nil

LEARNING OBJECTIVES:

- To develop an understanding about the status of women and children in India.
- To gain awareness about programmes and services for women and children in India.
- To gain understanding about the importance of maternal health and education.

LEARNING OUTCOMES:

After completion of the course, the students will be able to:

- Understand the status of women and children in India.
- Evaluate various programmes and services for women and children in India.
- Understand the importance of maternal health and education.

THEORY
(Credits 2: 30 Hours)

Unit 1: Status of Women and Children in India (08 hours)

- *Unit Description*: This unit focuses on the demographic profile of women and children and important issues concerning them.

- *Subtopics:*
  - Demographic profile of women and children.
  - Issues related to women and children.

Unit 2: Programmes and Services for Women Empowerment (12 hours)

- *Unit Description*: This unit focuses on various programmes and services for women and children in the country.

- *Subtopics:*
  - Women Empowerment: Definition, Need and Importance

- Programmes for Women: Any two
- Programmes for Children: Any Two

Unit 3: Maternal Health and Education (10 hours)

- *Unit Description*: This unit focuses on the importance of maternal health and education and its impact on child development.

- *Subtopics:*
  - Importance of Maternal Health and Education
  - Impact of Maternal Health and Education on Child Development
  - Maternal Mortality: Statistics, Causes and Prevention

PRACTICAL
(Credits 2: 60 Hours)

Unit 1: Visit to one organization working for children.

Unit 2: Visit to one organization working for women.

Unit 3: Review of one movie/ documentary/ video/ book based on children.

Unit 4: Interview of a mother to understand the importance of education and awareness in raising healthy children.

ESSENTIAL / RECOMMENDED READINGS:

1. Sobti, S (2009). *Women and children: Issues & suggestions*. New Delhi: Rajiv Publishers.
2. Vasudev, K. (2009). Welfare programme. New Delhi: Vishva Bharti Publications.
3. Verma, S.B. and Soni, M. L. (2005). *Mahila jagrute aur sashaktikaran*. Jaipur: Aaveeskar Publishers.
4. Women Rights are Human Rights (2014). Geneva and New York: United Nations Publications
   Retrieved:
   https://www.ohchr.org/sites/default/files/Documents/Events/WHRD/WomenRightsAreHR.pdf
5. Women's Rights in India (2021). National Human Rights Commission, India
   Retrieved:
   https://nhrc.nic.in/sites/default/files/Women%E2%80%99s%20Rights%20in%20India%20complete_compressed.pdf

SUGGESTED READINGS:

1. Bose, A.B. (2003). *The status of children in India: Promises to keep*. New Delhi: Manohar Publications
2. *National plan of action of children* (2016). Ministry of HRD, Department of WCD, GOI.
3. Vipin, K. (2009). *Vaisveekran evam mahila sashaktikaran vividha aayam.* New Delhi: Aeyal Publications

B.A (Prog.) with Human Development and Family Empowerment (HDFE) as Non-Major
B.A (Prog.) with Human Development and Family Empowerment (HDFE) as Non-Major

DISCIPLINE SPECIFIC CORE COURSE – DSC-6-HDFE: EMPOWERMENT OF WOMEN AND CHILDREN

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITE OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Empowerment of Women and Children	4	2	0	2	Class XII	Nil

LEARNING OBJECTIVES:

- To develop an understanding about the status of women and children in India.
- To gain awareness about programmes and services for women and children in India.
- To gain understanding about the importance of maternal health and education.

LEARNING OUTCOMES:

After completion of the course, the students will be able to:

- Understand the status of women and children in India.
- Evaluate various programmes and services for women and children in India.
- Understand the importance of maternal health and education.

THEORY
(Credits 2: 30 Hours)

Unit 1: Status of Women and Children in India (08 hours)

- *Unit Description*: This unit focuses on the demographic profile of women and children and important issues concerning them.

- *Subtopics:*
  - Demographic profile of women and children.
  - Issues related to women and children.

Unit 2: Programmes and Services for Women Empowerment (12 hours)

- *Unit Description*: This unit focuses on various programmes and services for women and children

in the country.

- *Subtopics:*
    1. Women Empowerment: Definition, Need and Importance
    2. Programmes for Women: Any two
    3. Programmes for Children: Any Two

Unit 3: Maternal Health and Education (10 hours)

- *Unit Description***:** This unit focuses on the importance of maternal health and education and its impact on child development.

- *Subtopics:*
    - Importance of Maternal Health and Education
    - Impact of Maternal Health and Education on Child Development
    - Maternal Mortality: Statistics, Causes and Prevention

PRACTICAL
(Credits 2: 60 Hours)

Unit 1: Visit to one organization working for children.

Unit 2: Visit to one organization working for women.

Unit 3: Review of one movie/ documentary/ video/ book based on children.

Unit 4: Interview of a mother to understand the importance of education and awareness in raising healthy children.

ESSENTIAL / RECOMMENDED READINGS:

1. Sobti, S (2009). *Women and children: Issues & suggestions*. New Delhi: Rajiv Publishers.
2. Vasudev, K. (2009). Welfare programme. New Delhi: Vishva Bharti Publications.
3. Verma, S.B. and Soni, M. L. (2005). *Mahila jagrute aur sashaktikaran*. Jaipur: Aaveeskar Publishers.
4. Women Rights are Human Rights (2014). Geneva and New York: United Nations Publications
    i. Retrieved: https://www.ohchr.org/sites/default/files/Documents/Events/WHRD/WomenRightsAreHR.pdf
5. Women's Rights in India (2021). National Human Rights Commission, India
    i. Retrieved: https://nhrc.nic.in/sites/default/files/Women%E2%80%99s%20Rights%20in%20India%20complete_compressed.pdf

SUGGESTED READINGS:

1. Bose, A.B. (2003). *The status of children in India: Promises to keep*. New Delhi: Manohar Publications
2. *National plan of action of children* (2016). Ministry of HRD, Department of WCD, GOI.

3. Vipin, K. (2009). *Vaisveekran evam mahila sashaktikaran vividha aayam.* New Delhi: Aeyal Publications.

B.A. (Prog) with Food Technology (FT) as Major
Category-II

DISCIPLINE SPECIFIC CORE COURSE – DSC-5-FT:

FOOD BUSINESS OPERATIONS AND ENTREPRENEURSHIP

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Food Business Operations and Entrepreneurship	4	3	0	1	Class XII	Nil

LEARNING OBJECTIVES:

1. To familiarize students with various food business operations.
2. To make students understand the principles of managing food business
3. To introduce students with the concept of entrepreneurship and commercial food handling.

LEARNING OUTCOMES:

After completion of the course, the students will be able to:
1. Gain theoretical and practical knowledge related to management of food business
2. Lead team or be team members in executing salient unit operations in food processing plant
3. Plan the layouts and designs of commercial kitchen
4. Initiate the entrepreneurial journey in the field food production and processing.

SYLLABUS OF DSC-5-FT

THEORY
(Credits 3: 45 Hours)

UNIT I: Unit I: Food Business Operations **(14 Hours)**

- *Unit Description:* This introductory chapter shall appraise the students about the myriad opportunities associated with food business industry in India. It will also help them understand about the significance and principles of salient unit operations carried out in food processing units.

- *Subtopics:*
  - Scope and Trends of food business in Indian Scenario
  - Salient unit operations in food processing plant – purchase, storage and inventory, grading, sorting, pre-preparation techniques, salient processing operations (Thermal and Non-thermal Processing), marketing and distribution.

UNIT II: Management of Food Business (12 Hours)

- *Unit Description:* This unit will help students understand the principles of managing a food business unit. The important concepts necessary for establishing and running a food business shall also be covered.

- *Subtopics:*
  - FSSAI regulations related to registration and licensing
  - Principles of management
  - Innovative food start-ups
  - Scheduling and forecasting
  - IT Applications and MIS in operations management.

UNIT III: Entrepreneurship (9 Hours)

- *Unit Description:* The chapter shall help student understand the scope and nuances of being an entrepreneur.

- *Subtopics:*
  - Definition and characteristics of an entrepreneur
  - Objectives and phases in entrepreneurship development
  - Types and traits of entrepreneurship
  - Case studies on small scale to large scale food entrepreneurs (Indian traditional family food business).

Unit IV: Commercial Food Production Layout (10 Hours)

- *Unit Description:* Food processing area plays a crucial role in processing food thus, this unit will help students understand the need for different types of kitchens for different types of foods/ food catering units.

- *Subtopics:*
  - Introduction to the concept of commercial kitchen
  - Types of commercial kitchens
  - Principles of commercial kitchens
  - Layouts and designs

PRACTICAL
(Credits 1: 30 Hours)

No. of Students per Practical Class Group: 10-15

1. Prepare presentation on Case study of traditional and contemporary food business (4 Hours)

2. Developing standard operating procedures (SOP) for the pre-preparation of a processed food product (2 Hours)
3. Developing an SOP for the processing of a processed food product (2 Hours)
4. Prepare a checklist for food safety management for any food production unit (4 Hours)
5. Prepare a layout for a commercial/ cloud kitchen (4 Hours)
6. Prepare a presentation on opportunities for raising funds such as bank loans, government schemes, CSR (6 Hours)
7. Developing an SOP for the sale and distribution of a perishable commodity (4 Hours)
8. Plan and implement a food product sale in college premises (4 Hours)

ESSENTIAL/ RECOMMENDED READINGS (Theory and Practical):

1. Bali, P.S. (2009). Food: Production Operations. First Edition. Oxford University Press, New Delhi.
2. Sethi, M. (2015). Catering Management: An Integrated Approach. New Age International Pvt. Ltd. New Delhi.
3. Reynolds, D. (2013). Food Service Management Fundamentals. Wiley Publications, New Jersey.
4. Powers, T.F. (2018). Food Service Operations: Planning and Control. Wiley Publications, New Jersey.
5. Payne, P.J. & Theis, M. (2016). Food Service Management: Principles and Practices. Pearson Publications.
6. Sudheer, K.P., & Indira, V. (Eds.). (2021). Entrepreneurship Development in Food Processing (1st ed.). CRC Press.

SUGGESTED READINGS:

1. Tuli, K.K. (2009). Fundamentals of Food Production. Anne Books Publications, New Delhi.
2. Hansen, H.O. (2015). Food Economics: Industry and Markets. Routledge Press, London.
3. Cavichhi, A. & Santini, S. (2017). Case Studies in the Traditional Food Sector. Woodhead Publishing, London.
4. Fisher, W.P. (2018). Case Studies in Food Service Management: Business Perspectives. Amer Hotel and Motel Association, USA.
5. Bonder, S., Inamdar, N. & Bhatija, M. (2017). The Indian Business Box Set (Stories of How Gujaratis, Baniyas and Sindhis do Business). Penguin Random House India Pvt. Ltd. New Delhi
6. Modlin, R.A. (2009). Commercial Kitchens : A Guide to Those Who Design, Recommend and Consult on Facilities for the Production, Processing and Finishing of Food for Volume Feeding Operations. American Gas Association Pvt. Ltd. USA.
7. Knight, J. B. & Kotschevar, L.H. (2000). Quantity Food Production Planning and Management. 3rd edition. New York:John Wiley & Sons.
8. Rameshwari, P. (2016). Skill Development & Entrepreneurship in India. Delhi: New Century Publications.
9. Umesh, S. & Vaibhav, M. (2009). Entrepreneurship Development & Management. Chandigarh: Abhishek Publications.

DISCIPLINE SPECIFIC CORE COURSE – DSC-6-FT: BASIC BAKING TECHNOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Basic Baking Technology	4	3	0	1	Class XII	Nil

LEARNING OBJECTIVES:

- To impart students' basic knowledge related to the principles of baking
- To introduce the concept of proximate analysis and quality assessment of wheat flour
- To introduce them to the techniques and skills of cake and pastry making.

LEARNING OUTCOMES:

After completion of the course, the students will be able to:

- Describe the present and future trends of the bakery industry.
- Illustrate the basic ingredients and equipment used for baking along with their significance
- Develop and demonstrate the skills of preparing variety of cakes and pastries.
- Evaluate the quality of baked products
- Test wheat flour and conduct labeling, packaging and costing of prepared bakery products.
- Initiate the entrepreneurial journey in the field of bakery.

SYLLABUS OF DSC-6-FT

THEORY
(Credits 3: 45 Hours)

UNIT I: Baking Industry **(10 Hours)**

- *Unit Description:* This unit will introduce the students to the field of Food Bakery Science. It will also give information on nutrition facts of Bakery products.

- *Subtopics:*

- History of bakery - present trends and prospects
- Nutrition facts about bakery products
- Food safety aspects of baked products

UNIT II: Wheat Grain, Baking Ingredients and Equipment (18 Hours)

- *Unit Description:* The unit will focus on various aspects of structure and composition wheat grain and flour. It will also give information on bakery equipments.

- *Subtopics:*
  - Wheat grain– its structure
  - Milling of wheat, types of refined wheat flour; composition of refined wheat flour (gluten, amylose/ amylopectin, enzyme activity, moisture) and its storage
  - Bakery Equipments- oven, mixing tools and accessories

UNIT III: Cake Processing (12 Hours)

- *Unit Description:* The unit is about processing of various types of cakes, their labelling, packaging and evaluation.

- *Subtopics:*
  - Preparation of cakes - types of cakes, methods of batter preparation, steps in cake making, balancing of cake formula, evaluation of the baked cake, operational faults in cake processing and the remedial measures.
  - Packaging, labelling, and costing

UNIT IV: Pastry Technology (5 Hours)

- *Unit Description:* The unit is about processing of various types of pastries, and their evaluation.

- *Subtopics:*
  - Preparation of pastry - types of pastries (short crust, puff/flaky and choux pastry), processing and evaluation, faults and remedies.

PRACTICAL
(Credits 1: 30 Hours)

No. of Students per Practical Class Group: 10-15

1. Quality Testing of Flour: Determination of water absorption power (WAP) of refined wheat flour and whole wheat flour (2 Hours)
2. Determination of moisture content of refined wheat flour (2 Hours)
3. Preparation of Sensory evaluation card (Hedonic scale) for various baked products (2 Hours)
4. Preparation, labelling and sensory evaluation of cakes (12 Hours)
   -Fatless sponge (pineapple sponge, chocolate sponge and Swiss roll)
   -Shortened cake (plain tea cake, Dundee cake, marble cake, fruit cake and innovative nutritious cakes)
   -Eggless cake

5. Preparation and sensory evaluation of pastry (8 Hours)
   -Short crust (jam tarts)
   -Puff/flaky (Bombay khari, vegetable patties/ puff)
   -Choux pastry (chocolate éclairs)
6. Market survey of innovative nutritious bakery products (4 Hours)

ESSENTIAL/ RECOMMENDED READINGS (Theory and Practical):

1. Dubey, S. C. (2016*). Basic Baking-Science and Craft.* Delhi: Society of Indian Bakers.
2. Dubey, S. C. (2009*). Bakery Vighan.* Delhi: Society of Indian Bakers.
3. Ketrapaul, N., Grewal, R.B., & Jood, S. (2005). *Bakery Science and Cereal Technology*. Delhi: Daya Publishing House.
4. Potter, N., & Hotchkiss, J.H. (2006). *Food Science.* Delhi: CBS Publishers.
5. Srilakshmi, B. (2018*). Food Science*. Delhi: New Age International Publishers.

SUGGESTED READINGS:

1. Cornell, Hugh, J. & Hoveling, Alber. W. (1998). *Wheat Chemistry and Utilization*, Delhi: CRC Press.
2. Edward, W. P. (2007). *The Science of Bakery Products*. Cambridge: RSC Publishing.
3. Kent, N.L. (2004). *Technology of Cereals*. London: Pergamon Press.
4. Khanna, K., Gupta, S., Seth, R., Mahana, R., & Rekhi, T. (2004). *The Art and Science of Cooking.* Delhi: Phoenix Publishing House Private Limited.
5. Matz A. (2004). *The Chemistry and Technology of Cereals as Food and Feed*. Delhi: CBS Publishers.
6. Matz, A. (1998*). Bakery Technology and Engineering.* Delhi: CBS Publishers.
7. Raina, U., Kashyap, S., Narula,V., Thomas, S., Suvira, Vir, S., & Chopra, S. (2005). *Basic Food Preparation* – A Complete Manual. Delhi: Orient Longman.

B.A. (Prog.) with Food Technology (FT) as Non-Major
Category-III

DISCIPLINE SPECIFIC CORE COURSE – DSC-6-FT:
BASIC BAKING TECHNOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Basic Baking Technology	4	3	0	1	Class XII	Nil

-

LEARNING OBJECTIVES:

- To impart students' basic knowledge related to the principles of baking
- To introduce the concept of proximate analysis and quality assessment of wheat flour
- To introduce them to the techniques and skills of cake and pastry making.

LEARNING OUTCOMES:

After completion of the course, the students will be able to:

- Describe the present and future trends of the bakery industry.
- Illustrate the basic ingredients and equipment used for baking along with their significance
- Develop and demonstrate the skills of preparing variety of cakes and pastries.
- Evaluate the quality of baked products
- Test wheat flour and conduct labeling, packaging and costing of prepared bakery products.
- Initiate the entrepreneurial journey in the field of bakery.

SYLLABUS OF DSC-6-FT

THEORY
(Credits 3: 45 Hours)

UNIT I: Baking Industry **(10 Hours)**

- *Unit Description:* This unit will introduce the students to the field of Food Bakery Science. It will also give information on nutrition facts of Bakery products.
- *Subtopics:*
  - History of bakery - present trends and prospects
  - Nutrition facts about bakery products

- Food safety aspects of baked products

UNIT II: Wheat Grain, Baking Ingredients and Equipment (18 Hours)

- *Unit Description:* The unit will focus on various aspects of structure and composition wheat grain and flour. It will also give information on bakery equipments.

- *Subtopics:*
  - Wheat grain– its structure
  - Milling of wheat, types of refined wheat flour; composition of refined wheat flour (gluten, amylose/ amylopectin, enzyme activity, moisture) and its storage
  - Bakery Equipments- oven, mixing tools and accessories

UNIT III: Cake Processing (12 Hours)

- *Unit Description:* The unit is about processing of various types of cakes, their labelling, packaging and evaluation.

- *Subtopics:*
  - Preparation of cakes - types of cakes, methods of batter preparation, steps in cake making, balancing of cake formula, evaluation of the baked cake, operational faults in cake processing and the remedial measures.
  - Packaging, labelling, and costing

UNIT IV: Pastry Technology (5 Hours)

- *Unit Description:* The unit is about processing of various types of pastries, and their evaluation.

- *Subtopics:*
  - Preparation of pastry - types of pastries (short crust, puff/flaky and choux pastry), processing and evaluation, faults and remedies.

PRACTICAL
(Credits 1: 30 Hours)

No. of Students per Practical Class Group: 10-15

1. Quality Testing of Flour: Determination of water absorption power (WAP) of refined wheat flour and whole wheat flour (2 Hours)
2. Determination of moisture content of refined wheat flour (2 Hours)
3. Preparation of Sensory evaluation card (Hedonic scale) for various baked products (2 Hours)
4. Preparation, labelling and sensory evaluation of cakes (12 Hours)
   -Fatless sponge (pineapple sponge, chocolate sponge and Swiss roll)
   -Shortened cake (plain tea cake, Dundee cake, marble cake, fruit cake and innovative nutritious cakes)
   -Eggless cake
5. Preparation and sensory evaluation of pastry (8 Hours)
   -Short crust (jam tarts)

-Puff/flaky (Bombay khari, vegetable patties/ puff)
-Choux pastry (chocolate éclairs)

6. Market survey of innovative nutritious bakery products (4 Hours)

ESSENTIAL/ RECOMMENDED READINGS (Theory and Practical):

1. Dubey, S. C. (2016). *Basic Baking-Science and Craft.* Delhi: Society of Indian Bakers.
2. Dubey, S. C. (2009). *Bakery Vighan.* Delhi: Society of Indian Bakers.
3. Ketrapaul, N., Grewal, R.B., & Jood, S. (2005). *Bakery Science and Cereal Technology.* Delhi: Daya Publishing House.
4. Potter, N., & Hotchkiss, J.H. (2006). *Food Science.* Delhi: CBS Publishers.
5. Srilakshmi, B. (2018). *Food Science.* Delhi: New Age International Publishers.

SUGGESTED READINGS:

1. Cornell, Hugh, J. & Hoveling, Alber. W. (1998). *Wheat Chemistry and Utilization*, Delhi: CRC Press.
2. Edward, W. P. (2007). *The Science of Bakery Products.* Cambridge: RSC Publishing.
3. Kent, N.L. (2004). *Technology of Cereals.* London: Pergamon Press.
4. Khanna, K., Gupta, S., Seth, R., Mahana, R., & Rekhi, T. (2004). *The Art and Science of Cooking.* Delhi: Phoenix Publishing House Private Limited.
5. Matz A. (2004). *The Chemistry and Technology of Cereals as Food and Feed.* Delhi: CBS Publishers.
6. Matz, A. (1998). *Bakery Technology and Engineering.* Delhi: CBS Publishers.
7. Raina, U., Kashyap, S., Narula,V., Thomas, S., Suvira, Vir, S., & Chopra, S. (2005). *Basic Food Preparation* – A Complete Manual. Delhi: Orient Longman.

ANNEXURE-9

N O T I F I C A T I O N

Sub: Amendment to Ordinance V

[E.C Resolution No. 60-1/(60-1-6/-) dated 03.02.2023]

Following addition be made to Appendix-II-A to the Ordinance V (2-A) of the Ordinances of the University;

Add the following:

Syllabi of Semester-III of the following departments under Faculty of Science based on Under Graduate Curriculum Framework -2022 implemented from the Academic Year 2022-23.

FACULTY OF SCIENCE

DEPARTMENT OF ANTHROPOLOGY

BSC. (HONS.) ANTHROPOLOGY

DISCIPLINE SPECIFIC CORE COURSE -7 (DSC-7)
Fundamentals of Human growth and development

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Fundamentals of Human growth and development - DSC-7	04	03	Nil	01	Passed 10+2 with Science	NIL

Learning objectives

- Students will be able to learn about various stages and environmental factors involved in human growth and development which help them in understanding growth monitoring of a child.
- They will understand the role played by balance diet in leading a healthy life.

Learning outcomes

By studying this course, students will be able to

- Differentiate the term- growth, maturation and development.
- Understand the basic principles of human growth and development
- Comprehend the significance of growth studies

Syllabus of DSC-7

Unit 1: Introduction to Human growth and development (6 hours)

Concept of human growth, development, differentiation and maturation. Evolutionary perspective of human growth (including living primates and fossil hominid ancestors)

Unit 2 : Stages and process involved in growth and development (9 hours)

Prenatal (conception till birth) and postnatal (birth till senescence) periods of growth, physical, cognitive and psycho-social development from conception through adulthood, patterns of normal growth curves, variation from normal growth (canalization, catch-up growth and catch-down growth), secular trend

Unit 3 : Factors and Methods related to growth and development (8 hours)

Bio-cultural factors (genetic, socio-cultural and ecological factors) influencing patterns of human growth and variation, methods and techniques to study growth, significance/ applicability of growth studies; Impact of life-changing health parameters on development of infants, children, adolescents and adults

Unit 4: Relevance of Nutrition in growth studies (7 hours)

Importance of Nutrition in various stages of growth and development, Balanced diet, Malnutrition, Assessment of Nutritional status

Unit 5: Role of body physique and composition in growth process (9 hours)

Human physique and body composition - models and techniques; bisexual and endogamous group differences; Somatotyping and human physique with reference to Sheldon, Parnell, Heath and Carter methods

Unit 6: Adaptation in growth and development (6 hours)

Impact of bio-cultural adaptation to environmental stresses on human growth. Homeostasis and thermoregulation

Practical (30 Hours)

Somatometry:

Stature, Body weight, Mid upper arm circumference, Minimum waist circumference, Maximum hip circumference, Upper extremity length, Lower extremity length, Biacromial breadth, Bicristal breadth), Assessment of chronological age, Percentile, z-score, height for age, weight for age, BMI for age

Obesity assessment

General adiposity indices: BMI, body fat %, Conicity index,

Regional adiposity indices: WC, WHR, WHtR

Assessment of body composition with skinfold thickness and bioelectric impedance

References

Growth, maturation & physical activity (2004) Malina, Robert M; Bouchard, Claude, Bar-Or, Oded. Human Kinetics.

Human growth and development by Cameron Noel (2002). St. Louis, Academic Press.

Patterns of human growth by Bogin, Barry (1999). Cambridge University Press.

Human biology: An introduction to human evolution, variation, growth & adaptability by Harrison, GA; Tanner, JM; Pilbeam, DR; Baker PT (1988). Oxford, England, Oxford University Press.

Proceeding on Human Physical Growth and Maturation by eds. Johnson, FE, Roche, AF, Susanne, C, (1980). Plenum Publishing Corporation.

Applied body Composition Assessment (2009) Heyward, VH; Wagner DR. Human Kinetic.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

ANTHROPOLOGICAL THEORIES

DISCIPLINE SPECIFIC CORE COURSE -8 (DSC-8) – Anthropological Theories

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Anthropological theories- DSC-8	**04**	**03**	**Nil**	**01**	Passed 12	**NIL**

Course Objective

- This is an introductory course on the main theoretical approaches which historically and traditionally guided anthropological research and understanding of society and culture.
- The course would involve theory as well as practical.
- The practical will skill the students to apply the approaches critically to study of actual social issues and problems.

Course Learning Outcomes

- The students will be able to explain the major theoretical paradigms in anthropology and link it with the social, political and economic contexts in which they have emerged.
- They should also be able to explain clearly how these ideas have contributed to the process, structure, pattern and search for meanings by human beings.

Syllabus of DSC-8

Unit 1 (15 Hours)

Anthropological Paradigms, Nature of Anthropological Knowledge, Interface with evolutionary theory and colonialism, changing perspectives on Evolutionism, Diffusionism and Culture area theories.

Unit 2 (10 Hours)

Durkheim and social integration, Functionalism and Structural-functionalism and British Social Anthropology; Culture and Psychology

Unit 3 (10 Hours)

Structuralism: Claude Levi-Strauss and Edmund Leach

Unit 4 (10 Hours)

Symbolic and Interpretative approaches; Decolonization and Antistructure, and Contemporary anthropology

Practical (30 Hours)

Practical would focus upon developing skills wherein following exercises will be undertaken by the students so as to enable them to connect the anthropological theories to the empirical world of living.

1. Identify a topic relating to contemporary issue and formulate research questions and clearly identify the theoretical perspectives from which they are derived.
2. Identification of variables of a study.
3. Various types of hypothesis ; Formulation of hypothesis; hypothesis testing and exploratory research
4. Identification of universe and unit of study with justifications.
5. Choice of appropriate research technique and method in the context of theoretical framework. Data collection and analysis

References

Applebaum H.A. (1987) Perspectives in Cultural Anthropology. Albany: State University of New York.
Barnard A. (2000). History and Theory in Anthropology. Cambridge: Cambridge University.
Bernard, H. R. (2017). Research methods in anthropology: Qualitative and quantitative approaches. Rowman & Littlefield.
Mark Moberg (2013). Engaging Anthropological Theory : London and NY: Routledge McGee
Pelto, P. J., & Pelto, G. H. (1978). Anthropological research: The structure of inquiry. Cambridge University Press.
R.J. and Warms R.L. (1996) Anthropological Theories: An Introductory History.

Additional Readings

Geertz, Clifford. 1973. The Interpretation of Cultures. New York: Basic Books

Moore M. and Sanders T. (2006). Anthropology in Theory: Issues in Epistemology, Malden, MA: Blackwell Publishing.

Teaching Learning Process

The students will be encouraged to reflect and apply the ideas introduced to them. Case studies and ethnographies will be read and students will be taught to how to analyze the theoretical perspectives used therein. Wherever possible documentaries and short ethnographic movies will also be shown and discussed in the class

Keywords: Evolutionism, Diffusionism, Durkheim and social integration, Functionalism and Structural- functionalism and British Social Anthropology Durkheim and social integration, Functionalism and Structural-functionalism and British Social Anthropology, Symbolic and Interpretative approaches.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

INDIAN PREHISTORY

DISCIPLINE SPECIFIC CORE COURSE -9 (DSC-9) – Indian Prehistory

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Indian Prehistory-DSC-9	**04**	**03**	**Nil**	**01**	**Passed 12th**	**NIL**

Learning Objectives

The learning objectives of this course are as follows:

- The course aims to understand the evolutionary perspective of human prehistoric society in India with the help of archaeological cultural remains.
- To learn tool typology and its classification for the reconstruction of prehistoric societies.

Learning Outcomes

By studying this course, students will be able to:

- Understand the landscape of Indian archaeological sites and their relevance in studying prehistoric Indian societies.
- Identify the tools, appreciate the tool typology and classify it appropriately

Syllabus of DSC-9

Unit-1: Understanding culture (12 Hours)

Technique of tool manufacture and estimation of their relative efficiency; Classification of tools: primary and combination fabrication techniques; Typology and cultural nomenclature

Unit-2: Methods of climatic reconstruction (8 Hours)

palynology, paleontology, soil pH estimation.

Unit-3: Prehistoric India (10 Hours)

Pleistocene chronology of India: A critical assessment

Unit-4: Character, distribution and interpretation of habitat and economy of (15 Hours)

Lower Palaeolithic; Middle Palaeolithic; Upper Palaeolithic; Mesolithic culture; Art, ritual and belief

Practical (30 Hours)

Identification of tools:

(a) Handaxe varieties, chopper/chopping tools

(b) Cleaver varieties

(c) Side scraper varieties

(d) Knives

(e) Burins

Identification of lithic technology:

(f) End scrapers

(g) Borers

(h) Microlithic tools

(i) Bone tools

References

Renfrew Colin and Bahn Paul, Archaeology: Theories, Methods and Practice. New York:Thames & Hudson, 6th Edition, 2012.

Fagan Brian M. and Nadia Durrani, In the Beginning: An Introduction to Archaeology, London: Routledge, 14th Edition 2014.

Chakrabarati, Dilip K. India - An Archaeological History: Paleolithic Beginnings to Early History. Oxford: Oxford University Press, 2009.

Additional Resources:

Allchin, Bridget and Allchin, Raymond F. The Rise of Civilization in India and Pakistan. Cambridge: Cambridge University Press, 2003.

Odell, G.H. Stone Tools: Theoretical Insights into Human Prehistory, New York: Plenum press, 1996.

Moloney and Shott, M.J. Lithic Analysis at the Millennium, New York: Routledge, 2016.

Teaching Learning Process

The process of learning will involve acquisition of domain knowledge and understanding of skills required for conducting research in Indian archaeology. Process will involve lectures,

assignments, class-room discussions, practicals and appropriate inference of results and practical file preparation.

Keywords: Geochronology, India archaeology, Cave paintings

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

POOL OF DSE

Palaeoanthropology

DISCIPLINE SPECIFIC ELECTIVE COURSE -1 (DSE-1) – Palaeoanthropology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Palaeoanthropology - DSE-1	04	03	Nil	01	Passed 12th with Science	NIL

Learning Objectives

The learning objectives of this course are as follows:

- To understand the fundamentals of palaeoanthropology
- To understand the evolutionary process, assessment of skeletal variability of fossil remains, and modern humans.
- To learn the role of palaeodemography and paleopathology in studying human origins

Learning Outcomes

- Student should understand the fundamental of palaeoanthropology
- Should understand the evolutionary journey of early to modern humans
- Student should learn the role of palaeodemography and paleopathology in studying human origins

Syllabus of

DSE-1 Unit 1

(08 Hours)

Dating methods, geological time scale, taphonomy and interpretation of the paleontological and archaeological records, taxonomic and chronological problems of fossils records.

Unit 2 (08 Hours)

Primate speciation and extinctions: adaptive primate radiation

Unit 3 (10 Hours)

Evolutionary biology: Human origins: Development, distribution and fossilized evidence of Australopithecines, Paranthropus (Zinjanthropus), Homo habilis, Homo erectus, Archaic H. sapiens.

Unit 4 (07 Hours)

Primate and Non-Primate Models for Early Hominid Behaviour; hominization process- Evolution of hominid-human bipedalism

Unit 5 (06 Hours)

Palaeodemography- reconstruction of population patterns from skeletal analysis, determination of demographic variables in prehistoric populations and post-Neolithic population growth.

Unit 6 (06 Hours)

Palaeopathology- bioarchaeological approach of disease; effects of agriculture, urbanization and slavery on health and disease; colonization and disease with special emphasis on the New World.

Practical (30 Hours)

1. Comparative primate osteology

2. Description and identification of the disarticulated skeleton of non-human primates

3. Identification and description of fossil casts

References

CS Larson (2016). Essentials of Physical Anthropology. W. W. Norton & Company. [Unit-1: Page- 165-190; Unit-2: Page-124-143; Unit-3: Page-223-230, 234-240, 253- 268, 274-291]

Craig Stanford et al. (2013). Biological Anthropology. Pearson, New York. [Unit-4: Page-197-220; Unit-5: Page-1-11; Unit-6: Page-318-330]

Tattersall I. (2009). The Fossil Trail: How We Know What We Think We Know about Human Evolution. New York: Oxford University Press.

Additional Resources:

Waldron T. (2008): Palaeopathology. Cambridge University Press

Cela-conde CJ and Frisancho J. (2007). Human Evolution: Trails from the past. Ayala Oxford University Press.

Barnes E. Diseases and Human Evolution. (2005). University of New Mexico Press.

Pinhasi R and Mays S (2008). Advances in Human Palaeopathology. Chichester: John Wiley & Sons, Inc. (PM).

Hoppa RD and Vaupel JW. (2002). Paleodemography: Age Distributions from Skeletal Samples. Cambridge University Press.

Lansen CS, Matter RM and Gebo DL. (1998). Human Origin: The fossil Record.

Teaching Learning Process

The process of learning will involve acquisition of subject knowledge and understanding of skills required for a paleoanthropologist. Process will involve lectures, class-room discussion, assignments and practicals.

Keywords

palaeoanthropology, paleopathology, anthropology, and evolution

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Anthropology of Tourism

DISCIPLINE SPECIFIC ELECTIVE COURSE -2 (DSE-2) – Anthropology of Tourism

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Anthropology of Tourism - DSE-2	04	03	Nil	01	Passed 12th	NIL

Learning Objectives

- Tourism is an important industry in India, valued and promoted by most of the states. Anthropologists have a close association to tourism, with an understanding of both the guest as well as the host community.
- The anthropology of tourism introduces the various aspects of tourism and anthropological approaches to it. It looks at the impact of tourism on the host community, its economy, culture, identity and ecology as well as how the experience of a culture can be transformative for the tourists also.
- Some of the key issues dealt in this paper are cultural aspects of tourism economy, cultural promotion and cultural preservation and its impact on authenticity and commodification of culture, fair and its management, ecotourism and sustainability.
- Types of tourism as well as well as leisure, culture learning, communication and promotion are explored in this paper.

Learning Outcomes:

The students should be able to

- explain the various aspects of tourism and the relationship between culture and tourism economy.
- place anthropology of tourism in relationship to other sub-disciplines within anthropology and allied disciplines like tourism management.
- identify those aspects of culture which can draw in the tourists, as well as allow the communities to express itself and promote their culture.
- use their skills to identify the best practices for sustainable ecotourism, mutually beneficial for the host as well the guest.

UNIT 1: Tourism and Leisure: Theoretical overview (10 Hours)

Anthropology of Tourism: Historical roots, objectives and scope. Interconnections between tourism history and the rise of the socio-cultural study of tourism; Concept of leisure and recreation.

UNIT 2: Types of Tourism (12 Hours)

Pilgrimage, medical tourism, education and tourism, recreational visits, heritage tourism, nature visits, wildlife tourism, visiting relatives, fairs and festival in tribal and rural India., Tourism industry in India : Recent trends and challenges.

UNIT 3: Tourism and Consuming Culture (13 Hours)

Tourism and cross-cultural communication and interaction; role of symbolism, semiotics, and the imagination in tourism; tourism and the commodification of culture or cultural degradation, Issues of staged authenticity

UNIT 4: Society, Tourism and Sustainability (10 Hours)

Ecotourism and sustainable development; tourism policy, applied aspects of anthropology in tourism development and planning

Practical (30 Hours)

1. Identification of three important tourist destinations including heritage, historical, religious, educational (Museum) and recreation spots and understand the historical, cultural, economic, religious and ecological aspects of tourism.

2. Case studies of any two ethnic fairs (frequented by tourists) to understand the representation of culture and culture as an industry. Case studies should focus upon the cultural creators (local people) and cultural consumers (visitors) to understand concepts like souvenir, commodification and cross- cultural communication.

References

Chambers E. (2000). Native Tours: The Anthropology of Travel and Tourism. Prospect Heights: Waveland.

Crick M. (1995). The Anthropologist as Tourist: An Identity in Question. In Lanfant MF, Allcock JB, Bruner EM (eds.)International Tourism: Identity and Change. London: Sage. pp. 205-223.

Dann GMS, Nash D and Pearce PL. (1988). Methodology in Tourism Research. Annals of Tourism Research. 15:1-28.

Gmelch SB. (2004). Tourists and Tourism: A Reader. Long Grove: Waveland.

Graburn NHH. (1977). Tourism: The Sacred Journey. Hosts and Guests: The Anthropology of Tourism. Valene L. Smith, ed. Philadelphia: University of Pennsylvania Press. Pp. 33-47.

Dann G. (2002). The Tourist as a Metaphor of the Social World. Wallingford: CAB International.

Nash D. (1996). Anthropology of Tourism. New York: Pergamon

Additional Resources:

Picard M and Wood R. (1997). Tourism, Ethnicity, and the State in Asian and Pacific Societies. University of Hawaii Press. 88

Crick M. (1994). Anthropology and the Study of Tourism: Theoretical and Personal Reflections. In Crick M (eds.). Resplendent Sites, Discordant Voices: Sri Lankans and International Tourism. Chur, Switzerland: Harwood Publishers.

Wood R. (1997). Tourism and the State: Ethnic Options and the Construction of Otherness. In Picard and Wood Tourism, Ethnicity and the State in Asian and Pacific Societies. University of Hawaii Press

Keywords: Tourist and traveller, Leisure Pilgrimage, Health tourisms, Ecotourism, Heritage, Culture industry, Commodification of Culture. Cross cultural communication.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Forensic Anthropology

DISCIPLINE SPECIFIC ELECTIVE COURSE -3 (DSE-3) – Forensic Anthropology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Forensic Anthropology - DSE-3	04	03	00	01	Passed 12th with Science	NIL

Learning Objectives

- To understand the basic tenets and applications of forensic anthropology
- To learn the methods and techniques involved in solving the criminal cases
- To appreciate the recent developments in the field of forensic anthropology

Learning Outcomes

- Student should be able to identify and collect the biological materials found at crime scenes
- Student should be able to use the methods and techniques in forensic anthropology
- Student should have the understanding of current knowledge of latest developments in forensic anthropology

Syllabus of DSE-3

Unit 1 (08 hours)

Introduction to Forensic Anthropology: Definition, Brief History, Scope, Applications and relationship with other sciences

Unit 2 (09 hours)

Basic Human Skeletal Biology, Identification of Human and Non-Human Skeletal Remains, Ancestry, age, sex and stature estimation from bones.

Unit 3 (11 hours)

Personal Identification, Complete and Partial Identification, Methods of Identification in Living Persons: Somatometry, Somatoscopy, Occupational Marks, Scars, Bite Marks, Tattoo Marks, hair, fingerprints, footprints, lip prints, nails, handwriting, deformities.

Unit 4 (08 hours)

Serology: Identification and Individualization of bloodstains, urine, semen and saliva strains.

Unit 5 (09 hours)

Individualization: Forensic Odontology-Tooth Structure and Growth, Bite Marks, Facial Reconstruction. DNA Profiling.

Practical (30 Hours)

1. Study of human long bones. Estimation of age, sex and stature from bones.
2. Somatometric and Somatoscopic Observation on living persons.
3. Identification of bloodstain, urine, semen and saliva.
4. Examination of Fingerprints and Handwriting.

References

A M Christensen et al. (2014). Forensic Anthropology: Current methods and Practice. Elsevier, New York. [Unit-1: Page-1-10; Unit-2: Page- 25-50; 199-216, 243-274]

ARW Jackson and JM Jackson (2011). Forensic Science, 3rd edition. Pearson, New York. [Unit-3: Page-61-65; 107-126; 254-260]

Bass W.M. (1971). Human Osteology: A Laboratory and Field manual of the Human Skeleton. Columbia: Special Publications Missouri Archaeological Society.

Black S. and Ferguson E. (2011). Forensic Anthropology 2000 to 2010. CRC Press, London. Byers, S.

N. (2008). Forensic Anthropology. Boston: Pearson Education LTD.

Gunn A. (2009) Essential Forensic Biology (2nd ed). Chichester: Wiley-Blackwell. [Unit-4: Page-45-82; Unit-5: Page-85-97]

Modi, R. B. J. P. (2013). A Textbook of Medical Jurisprudence and Toxicology. Elsevier. Reddy V. R.

(1985). Dental Anthropology, Inter-India Publication, New Delhi.

Spencer, C. (2004). Genetic Testimony: A Guide to Forensic DNA Profiling, Pearson, New Delhi.

Vats Y., Dhall J.K. and Kapoor A.K. (2011). Gender Variation in Morphological Patterns of Lip Prints among some North Indian Population. J. Forensic Odontology, 4: 11-15.

Wilkinson, C. (2004). Forensic facial reconstruction. Cambridge University Press. Klepinger LL (2006).

Fundamentals of Forensic Anthropology. Wiley-Liss Publications

Forensic Anthropology Laboratory Manual 4Th Edition 2016 Edition by Steven N. Byers, T&F India.

Forensic Anthropology: A Comprehensive Introduction 2Ed (Hb 2017) by Langley N.R., Taylor & Francis.

Additional Resources:

Modi, R. B. J. P. (2013). A Textbook of Medical Jurisprudence and Toxicology. Elsevier. 6. Reddy V.

R. (1985). Dental Anthropology, Inter-India Publication, New Delhi.

Spencer, C. (2004). Genetic Testimony: A Guide to Forensic DNA Profiling, Pearson, New Delhi.

Wilkinson, C. (2004). Forensic facial reconstruction. Cambridge University Press.

Black S. and Ferguson E. (2011). Forensic Anthropology 2000 to 2010. CRC Press, London.

Teaching Learning Process

The process of learning will involve the acquisition of subject knowledge and understanding of the skills required for a forensic anthropologist. The learning process will involve lectures, submission of assignments, classroom discussions, reliably conducting the experiments and inferring the results.

Assessment Methods

The theoretical understanding of the student will be assessed using time constrained examination. The assessment of the practicals will be based on conducting the experiment and presenting the results in appropriate manner.

Keywords

forensic, personal identification, DNA profiling, fingerprints

Note: Examination scheme and mode shall be as prescribed by the Examination Branch,

University of Delhi, from time to time.

.

Environmental Anthropology

DISCIPLINE SPECIFIC ELECTIVE COURSE -4 (DSE-4) – Environmental Anthropology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Environmental Anthropology - DSE-4	04	03	Nil	01	Passed 12th	NIL

Learning Objectives:

The objective of the paper is to understand about the importance of environment, the problems due to environmental degradations, etc

Learning Outcomes:

By studying the paper, the students will be able to:

- understand the nature and scope of studying environmental anthropology, basic concepts in it etc.
- know the importance of traditional ecological knowledge in conserving environment
- analyze the problems of contemporary environmental issues in the society.

Syllabus of

DSE-4 Unit 1

(13 Hours)

Concepts and Approaches: Environmental Determinism and Possibilism, Ecosystem, Cultural Ecology, Deep Ecology and Political ecology

Unit 2 (12 Hours)

Environment and Women: Nature and Culture debate, Eco-Feminism; Indigenous Knowledge and Gender

Unit 3 (10 Hours)

Issues of Climate Change in Anthropocene, Mobilization of Resource, Green Ecology & the idea of sustainability

Unit 4 (10 Hours)

Community response to recent environmental challenges: Mining, Dam, and other mega projects; resettlement and rehabilitation issues

Practical (30 Hours)

1. Prepare an evaluative study/ a project based on any contemporary environmental issues in India by employing various sources viz. books, journals, magazines, government reports newspaper articles, etc.

2. Presentation of the project and group discussion

References

Ellen, Roy, Peter Parkes, Alan Bicker (ed). 2000. Indigenous Environmental Knowledge and its Transformation: Critical Anthropological perspectives. Harwood Academic Publishers.

Descola, P., and Gisli P. (eds) 1997. Nature and Society: Anthropological Perspectives. London: Routledge

Dove, M. R., and Carol C. (eds) 2008. Environmental Anthropology: A historical reader, Blackwell Publication

Hardesty, D. 1977. Ecological Anthropology. John Wiley. New York

Inglis, Julian, T(ed). (1993). Traditional Ecological Knowledge: Concepts and Cases. Canada. International Program on Traditional Ecological Knowledge and International Development Research Centre

Orlove, B. 1980. Ecological Anthropology. Annual Review of Anthropology. Vol.9.pp.235-73

Mathur, Hari Mohan. 2005. Managing Resettlement in India: Approaches, Issues and Experiences. OUP

Merchant, Carolyn. 1994. Key Concepts in Critical Ecology. Humanity Press. New Jersey

Ramakrishnan, PS., 2001 (2015). Ecology and Sustainable Development: Working with Knowledge systems.New Delhi. National Book Trust, India

Schulkowski, H. 2006. Human Ecology: Biocultural Adaptation in Human Communities. Springer

Suggested Readings

Cohen, Yehudi A. 1968. Man in Adaptation: The cultural Present. Chicago: Aldine

Pub. Co. Harris, M. 1971. Culture, Man and Nature, New York: Thomas Y

Cormbell.

Kopnina, H. and Eleanor Shoreman-Ouimet. 2011. Environmental Anthropology Today, London: Routledge.

Palmer, Joy A (ed). 2004. Fifty Great Thinkers on the Environment. Routledge. New York

Mukherjee Neela.1997. Participatory Appraisal of Natural Resources. New Delhi. Concept Publishing House Company.

Rappaport, Roy A. 1967. Pigs for the Ancestors: Rituals in the Ecology of a New Guinea People. New Haven: Yale University Press.

Steward, J. 1955. Theory of Culture Change, Illinois: University of Illinois Press.

Teaching Learning Process

Classroom teachings

Presentations and group

discussion Practical classes

Keywords: Environment, Ecology, Sustainable Development, Resource, Political ecology

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

POOL OF GENERIC ELECTIVE (GE) COURSES FOR ODD SEMESTERS

Forensic and Criminal investigations

GENERIC ELECTIVE -1 (GE-1)

Forensic and Criminal investigations

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Forensic and Criminal investigations – GE-1	04	03	Nil	01	Passed 12th with Science	NIL

Course Objectives:

- Give exposure of Forensic Science to students which focuses on the investigation process of a crime.
- Enhance understanding of forensic applications and criminal investigations by teaching and research.
- Develop skills in forensic identification and problem-solving methods.
- Keep up to date knowledge about all recent developments and emerging trends in Forensic science and criminal investigation.

Course Learning Outcomes:

- Understand the aim, concept and significance of Forensic Science and Criminal Investigation.
- To make aware about recent techniques and developments of Forensic Science and Criminal Investigation.

Unit 1: Forensic Science, Crime Scene Management and criminal investigation (10 Hours)

Introduction, history, development, laws and branches of Forensic Science.

Organizational set-up of Forensic science laboratories.

Crime scene protection, isolation, documentation, sketching, field notes and photography.

Definition, concept, types and scope of crime, various control and prevention methods of crime.

Criminology, criminal anthropology and criminal law

Unit 2: Forensic Ballistics and Explosives (5 Hours)

History, background, classification and characteristics of Firearms

Internal, External, Terminal (wound) ballistics

Classification, synthesis and characteristics of explosives.

Examination and identification of firearms and explosives evidences.

Unit 3: Forensic Chemistry and toxicology (10 Hours)

Introduction, sampling, presumptive, screening and analytical techniques in Forensic Chemistry.

Definition, classification and extraction of poisons.

Toxicological techniques used in poisoning cases.

Classification of drugs, Field and laboratory tests of drugs of abuse.

Unit 4: Questioned Documents and fingerprint examination (10 Hours)

Classification of forensic documents, importance of natural variation and disguised writing

Class and individual characteristics of handwriting and documents examination.

History and classification of fingerprints, Conventional and modern methods of developing latent fingerprint.

Automated Fingerprint Identification System (AFIS).

Unit 5: Forensic anthropology, Serology and DNA profiling (10 Hours)

Personal identification of living and non- living individual through various anthropological techniques.

Forensic morphometric techniques of skeleton remains, Human and non-human identification.

Sex determination, stature and age estimation from skeleton remains

History, biochemistry and genetics of ABO, Rh, MN and other blood systems. Blood pattern analysis and blood stains ageing.

DNA profiling and its application in criminal and civil investigations.

Practical (30 Hours)

1. Descriptive study of organizational structure of a forensic science laboratory.
2. Interpretation of crime scene notes, photos, sketches, crime scene reconstruction and mock crime scene investigation.
3. Linkage of suspected bullet and cartridge case with the class and individual characteristics of firearms.
4. TLC and spot test for different toxic and drugs substances
5. Forensic identification of class and individual characteristics of handwriting
6. Examination of passports and currency notes
7. Various powder and chemical methods used for latent fingerprints.
8. Ridge characteristics, counting, and fingerprint comparison
9. Morphometric examination of skeleton remains
10. Sex determination, age and stature estimation from skeleton remains.
11. Examination of blood groups from fresh and dried blood stains
12. Preliminary and confirmatory tests for blood stains.

References

Sharma, B.R; Forensic Science in Criminal Investigation & Trials, Universal Publishing Co., New Delhi, 2003

Saferstein; Criminalistics- An Introduction of Forensic Science, Prentice Hall Inc, USA,2007.

Swansson, C.R, Chamelin, N.C, &Territ, L; Criminal Investigator, McGraw hHll, New York, 2000.

The Indian Evidence Act (1872), Amendment Act (2002); Universal Law Publishing Co., 2003.

The Code of Criminal Procedure (1973) Amendment Act, (2001); Universal Law Publishing Co., 2002.

Rattan Lal & DhirajLal; The Indian Penal Code, 28th Ed. Wadhwa & Co. Nagpur, 2002.

Clark E.G.C; Isolation and Identification of drugs, Academic Press, London, 1986

Feigl, F; Spot Test in Inorganic Analysis, Elsevier Publ. New Delhi, 2002

Sharma, B.R.; Firearms in Criminal Investigation & Trials, 4th Ed, Universal Law Publishing Co Pvt Ltd, New Delhi, 2011.

Hilton, O; Scientific Examination of Questioned Documents. Revised Edition, Elsevier, New York, 1982.

Singh, I.P. & Bhasin M.K; A manual of biological Anthropology, Kamla Raj Enterprises, New Delhi, 2004.

Eveleth, P.B. & Tanner, J.M; Worldwide Variation in Human Growth, Cambridge University Press, London, 1976.

Seigel, J.A, Sukoo, R.J, & Knupfer, G.L; Encyclopaedia of Forensic Science, Academic Press, London, 2000.

Pickering, R. & Bachman D; The use of Forensic Anthropology, CRC Press, Costa Rica, 2009.

Butler, J; Advanced Topics in Forensic DNA Typing: Methodology, 1st Ed., Academic Press, London, 2009.

Cummins, H., & Midlo, C. (1961). Finger Prints, Palms and Soles. New York: Dover Publications.

Teaching Learning Process:

1. Class room teaching
2. Presentation and assignment
3. Practical classes
4. Workshops

Keywords: Forensic, Crime scene, Fingerprint, Anthropology, Serology and DNA Profiling

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Anthropology of Sustainable Development

GENERIC ELECTIVE -2 (GE-2)
Anthropology of Sustainable Development

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Anthropology of Sustainable Development - GE-2	04	03	Nil	01	Passed 12th	NIL

Course Objectives:

The objective of the paper is to understand the discourse around the idea of sustainable environment along with relevant issues and emerging challenges in managing the planetary crisis and the problems due to environmental degradations.

Course Learning Outcomes:

By studying the paper, the students will be able to:

- Understand the nature and scope of sustainable development, basic concepts in it.
- Know the importance of traditional ecological knowledge in sustainable development
- Contemporary issues and challenges in sustainable development and environmental degradation, biodiversity and conservation.

Unit 1 (10 Hours)

Notion of Sustainable Development, Genesis and Approaches; Economy, Equity and Environment: Idea of Triple Bottom-line

Unit 2 (15 Hours)

United Nation's Sustainable Development Goals, Interconnections and Integration, Cultural diversity and Execution of SDG: Ethnographic Cases, Frameworks of Assessment

Unit 3 (10 Hours)

Issues of planetary Crisis and idea of sustainable livelihood, Alternative and Sustainable use of natural resources: water, energy, mines and materials

Unit 4 (10 Hours)

Environmental Issue: Biodiversity, Indigenous Knowledge, Traditional Practices associated with sustainable nature

Practical (30 Hours)

Prepare an evaluative study/ a project based on any contemporary issue in India by employing various sources viz. books, journals, magazines, government reports newspaper articles, etc.

1. Presentation of the project and group discussion

References

- Brightman, Marc. and Lewis, Jerome. (2021). Anthropology of Sustainability: Beyond development and progress. Palgrave Macmillan.
- Carroll, Bryce. (2017). An Introduction to Sustainable Development. Larsen & Keller Education.
- Corsi, Patrick. (2017). Going Past Limits to Growth: A Report to the Club of Rome EU-Chapter. John Willey & Sons Inc.
- Elliott, Jennifer A. (2013). An introduction to sustainable development. New York: Routledge.
- Eversole, Robyn. (2018). Anthropology for Development: From Theory to Practice. Routledge.
- Meadows, Donella H; Meadows, Dennis L; Randers, Jorgen; and William, W. Behrens III. (1972). The Limits to growth: A report for the Club of Rome's project on the predicament of mankind. New York: Universe Books.
- Sachs, Jeffrey. D. (2015). The age of sustainable development. New York. Columbia University Press

Teaching Learning Process

Classroom teachings
Presentations and group discussion
Practical classes

Keywords

Sustainable development, natural resources, livelihood, biodiversity, Economy

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Biodiversity and Indigenous Knowledge

GENERIC ELECTIVE -3 (GE-3)

Biodiversity and Indigenous Knowledge

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Biodiversity and Indigenous Knowledge – GE-3	04	03	Nil	01	Passed 12th	NIL

Course Objective

- The course will help the students in understanding how indigenous knowledge and biodiversity are complementary phenomena essential to human development.
- Students will recognize indigenous knowledge as an important national resource and understand the collective knowledge of biodiversity and its use.

Course Learning Outcomes

- Students will learn basic concepts of biodiversity and indigenous knowledge along with the rich traditional resources in management and conservation of biological diversity.
- The course will help students to understand concepts pertaining to conservation of biodiversity and protection of indigenous knowledge including the indigenous management strategies of farmers.
- They will also learn policies and laws relating to biodiversity conservation including protection of intellectual property rights relating to indigenous knowledge.

Unit 1 (10 Hours)

Biodiversity: basic concept, UN Convention on biodiversity, health implications of biological diversity; conservation of biological diversity- policies and law.

Unit 2 (10 Hours)

Human-animal interface- interface between human and animal world; Zoonotic diseases- types, etiology and prevention, biodiversity and genetic resources.

Unit 3 (12 Hours)

Indigenous Knowledge: basic concept, critique of western scientific knowledge, historical context of the emergence of indigenous knowledge, contemporary relevance of indigenous knowledge, indigenous knowledge in biodiversity conservation.

Unit 4 (13 Hours)

Problems of Indigenous Knowledge: issues pertaining to transfer of indigenous knowledge, debates for making indigenous knowledge universal, politics of indigenous knowledge, notion of identity and property; Intellectual Property Rights related to biodiversity and indigenous knowledge, protection of plant varieties.

Practical (30 Hours)

Project Report on Indian Cases pertaining to Indigenous Knowledge, Intellectual Property Rights and Biodiversity

References

Antweiler, C. (2004). Local Knowledge Theory and Methods: An Urban Model from Indonesia. In Investigating Local Knowledge: New Directions, New Approaches (eds.) Alan Bicker, Paul Sillitoe & John Pottier. Ashgate. 1-34

Ellen, R. (2003). Variation and Uniformity in the Construction of Biological Knowledge across Cultures. In Nature Across Cultures: Views of Nature and Environment I Non Western Cultures (eds.) H. Selin, Great Britain: Kluwer Academic Press.

Eldredge, N. (2002). What Is Biodiversity? In Life on Earth: An Encyclopedia of Biodiversity, Ecology, and Evolution Volume 1 A–G. ABC-CLIO, Inc. Santa Barbara, California. 1-30

Gadgil, M., Berkes, F & Folke, C. (1993). Indigenous Knowledge for Biodiversity Conservation. AMBIO, Springer, 22 (2/3): 152-156

Leveque, C. & Mounolou, J. (2003). Brief History of a Concept: Why be concerned by Biological Diversity? In Biodiversity. John Wiley & Sons Ltd. 5-12

Leveque, C. & Mounolou, J. (2003). The Dynamics of Biological Diversity and the Consequences of Human Activities. In Biodiversity. John Wiley & Sons Ltd. 131-164

Leveque, C. & Mounolou, J. (2003). The Dynamics of Biological Diversity and Implications for Human Health. In Biodiversity. John Wiley & Sons Ltd. 165-184

Leveque, C. & Mounolou, J. (2003). Genetic Resources and Biotechnology. In Biodiversity. John Wiley & Sons Ltd. 185-206

Leveque, C. & Mounolou, J. (2003). The Conservation of Biodiversity. In Biodiversity. John Wiley & Sons Ltd. 225-248

Mandal, M. (2009). Internal Displacement in India: Status, Condition & Prospects of Return. Refugee Watch, 33: 33-47

Marselle, M. R. (2021). Pathways linking biodiversity to human health: A conceptual framework. Environment International, Elsevier. 150: 106420

Murray Li, T. (2007). Articulating Indigenous Identity in Indonesia: Resource Politics and Tribal Slot. In Environmental Anthropology: A Historical Reader (eds.) Michael Dove & Carol Carpenter. Blackwell.

Palsson, G. (2007). Bio-value: Appropriating Genomes. In Anthropology and the New Genetics. Cambridge University Press. ¬¬

Posey, D. (2008). Indigenous Management of Tropical Forest Ecosystem: The Case of the Kayapo Indians of the Brazilian Amazon. In Environmental Anthropology: A Historical Reader (eds.) Michael Dove & Carol Carpenter. Blackwell.

Sillitoe, P. (1988). The Development of Indigenous knowledge: A New Applied Anthropology. Current Anthropology 19 (2):

United Nations, (1992). Convention on Biological Diversity (1992). 1-17

Wadehra, B.L. (2012). Protection of Plant Varieties and Farmers' Rights. In Law Relating to Intellectual Property 5 (eds.) Universal Law Publishing Co. New Delhi. 517-528

Vayda, A. P., Walters, B.B. & Setyawati, I. (2004). Doing and Knowing: Questions about Studies of Local Knowledge. In Investigating Local Knowledge: New Directions, New Approaches (eds.) Alan Bicker, Paul Sillitoe & John Pottier. Ashgate. 35-58.

Teaching Learning Process
Lectures and Discussions
Seminars and Presentations

Keywords:
Indigenous Knowledge, Biodiversity, Intellectual Property Rights, Scientific Knowledge

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVE -4 (GE-4)
Health Systems, Promotion and Management

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Health Systems, Promotion and Management – GE-4	04	03	Nil	01	Passed 12th	NIL

Course Objectives

- To understand basic idea of health systems, health promotion
- To assess the health care management strategies
- To understand the public health value of health promotion in different health systems

Course Learning Outcomes

The students will learn the basic concepts of health system research, creatively design health promotion strategies and understand various challenges of health care management.

Unit 1 (10 Hours)

Introduction to the basic concepts of health systems, health promotions and health management

Unit 2 (10 Hours)

Models, Contexts and Agents of health promotion; practice framework of health promotion: lifestyle, diet, and physical activity

Unit 3 (12 Hours)

Health system of (India vs International), health system framework: private and state functioning, health system spending and financing

Unit 4 (13 Hours)

Health care institutes/centre management: health care resource, clinical and technological challenges, cost containment, hospital waste management, health care emergency management

Practical (30 Hours)

Project report based on activity related health promotion, or data collection related to health

systems or management

References

Josep Figueras, Martin McKee, Jennifer Cain &; Suszy Lessof. Health Systems in Transition: Learning from Experience. World Health Organization, 2003.

Bruce R. Schatz, Richard B. Berlin Jr. (auth.). Healthcare Infrastructure: Health Systems for Individuals and Populations [1 ed.]. Springer-Verlag London, 2011

Pruss, E. Giroult, Philip Rushbrook. Safe management of wastes from health-care activities. World Health Organization, 1999

Michael J. Reilly, David S. Markenson. Health Care Emergency Management: Principles and Practice [1 ed.], 2010

Teaching Learning Process

The process of learning will involve acquisition of domain knowledge and understanding of skills required for conducting research in health systems, promotion and management. Process will involve lectures and presentations and report submission.

Keywords

Health, Promotion, Health system, health management

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVE -5 (GE-5)
Anthropology and Fieldwork

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Anthropology and Fieldwork – GE-5	04	03	Nil	01	Passed 12th	NIL

Course Objectives

- The objective of the course is to introduce the students to the technique of fieldwork, a highly sophisticated qualitative research method developed in the discipline over a century.
- The students shall learn the innovative ways of designing and doing fieldwork in different anthropological settings.

Course Learning Outcomes

- The students will learn how to design and undertake fieldwork using anthropological tools of research.
- They will also learn the intellectual trajectory of the field work tradition affecting various disciplines.

Unit 1 (10 Hours)

Fieldwork Tradition in Anthropology:

The Beginning: Reports of travellers, administrators and missionaries; Invention of the 'non western others' and the colonial agenda

Unit 2 (12 Hours)

Designing Field Research:

Conceiving the universe of study; Identifying techniques of data collection; Pre-testing and Pilot study; Community immersion and researchers' identity

Unit 3 (10 Hours)

The Changing notion of Anthropological Field:

Anthropological field in the era of globalisation; Mobility and interconnection: multi-sited ethnography

Unit 4 (13 Hours)

Data Analysis and Report Writing:

Qualitative and thematic analysis, content analysis; Analysis of metaphors and narratives; Language of representation and persuasion

Practical (30 Hours)

The students shall prepare a project report using fieldwork as a method of data collection. Practical exercises will include task such as identification of units and universal study, designing tools of field research and to pre-test it for ensuring reliability and validity.

References

Madan & Beteille. (1975). Encounter and Experience: Personal Accounts of Fieldwork. University Press of Hawaii.

Brewer, D. John. (2000). Ethnography. McGraw Hill Companies.

Malinowski, B. (1922). Argonauts of Western Pacific: An Account of Native Enterprise and Adventure in the Archipelagos of Melanesian New Guinea. London: Routledge & Kegan Paul Ltd.

Oakley, J. (2012). Anthropological Practice: Fieldwork and Ethnographic Method. Routledge.

Spradley, J. P. (2016). Participant observation. Waveland Press.

Evans- Pritchard, E.E. (1994). Social Anthropology. New Delhi: Universal Book Stall

Srivastava, V. K. Edited (2005). Methodology and Fieldwork. New Delhi: Qxford University Press.

Patnaik, S. M. (2011). Culture, Identity and Development: An Account of Team Ethnography among the Bhil of Jhabau. Jaipur: Rawat Publications.

Teaching Learning Process Lectures and Discussion Seminars and presentation

Keywords

Fieldwork, universe of the study, research design, data analysis, report writing

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Genetic Research in Anthropology

GENERIC ELECTIVE -6 (GE-6)

Genetic Research in Anthropology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Genetic Research in Anthropology – GE-6	04	03	Nil	01	Passed 12th with Science	NIL

Course Objectives

To introduce human genetics through anthropological perspectives where impetus will be laid on building an understanding of biochemical and molecular markers and their relevance in anthropology.

The course focuses on application of anthropological genetics in mendelian populations and molecular basis of complex diseases.

The course also focuses on aspects of field work, data collection, ethical, legal and social issues in genetic research in anthropology.

Course Learning Outcomes

The students will be trained to use biochemical markers with respect to disease profile.

The students can be better equipped to understand the importance of mendelian populations in genetic research that can be applied to disease genetics.

The students will be skilled with basic laboratory techniques for molecular markers.

The students will be better equipped to comprehend fieldwork and data collection along with an understanding of ethical and legal aspects of genetic research.

Unit 1 (08 Hours)

Basic concepts

History and relevance of genetic research in anthropology, evolution of genetic markers as a tool in human research, concept of Hardy-Weinberg Equilibrium principle.

Unit 2 (12 Hours)

Methods of genetic research in anthropology

Twin studies, genetic linkage studies, pedigree analysis, candidate gene studies, cohort studies, cross-sectional studies, hypothesis and technology driven research

Unit 3 (08 Hours)

Data collection in human genetic studies

Field work and data collection strategies, quantitative and qualitative data collection in field

Unit 4 (08 Hours)

Techniques in human genetics

Agglutination, electrophoresis, PCR, sequencing techniques

Unit 5 (09 Hours)

Ethical, legal and social issues in genetic research

Ethical guidelines and practices in genetic research, legal and social issues in genetic research, Indian national guidelines for collaborative research in genetics.

Practical (30 Hours)

1. Pedigree analysis
2. ABO blood group
3. DNA extraction
4. Identification of genetic mutation through specific technique

References

Speicher, M. R., Motulsky, A. G., & Antonarakis, S. E. (Eds.). (2010). Vogel and Motulsky's human genetics. Berlin, Heidelberg: Springer Berlin Heidelberg.

Crawford, M. H. (Ed.). (2007). Anthropological genetics: theory, methods and applications. Cambridge University Press.

Mange, E. J., & Mange, A. P. (1999). Basic human genetics. Sinauer Associates Inc.,U.S.

Reich, D., Thangaraj, K., Patterson, N., Price, A. L., & Singh, L. (2009). Reconstructing Indian population history. Nature, 461(7263), 489-494.

DePristo, M. A. (2010). The $1,000 genome: The revolution in DNA sequencing and the new era of personalized medicine. The American Journal of Human Genetics, 87(6), 742.

Jaworski, E., Routh, A., Head, S. R., Ordoukhanian, P., & Salomon, D. R. (2018). Next Generation Sequencing: Methods and Protocols. Springer New York.

Indian Council of Medical Research. (2017). National ethical guidelines for biomedical and health research involving human participants. National Ethics Guidelines for Biomedical and Health Research involving Human Participants.

Kumar, M., Sandhu, H., & Roshan, R. (2020). Indian Council of Medical Research's International Collaboration & Partnerships; Health Ministry's Screening Committee: Facts, figures & procedures. The Indian Journal of Medical Research, 151(6), 550.

Teaching Learning Process

Theoretical concepts will be covered through classroom/online lectures and presentations. Hands-on training on various laboratory techniques pertaining to biochemical and molecular techniques will be provided in the scheduled practical classes.

Keywords

Anthropological genetic research, pedigree analysis, fieldwork and data collection, PCR and sequencing techniques

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF GEOLOGY
BSc (H) Geology

Category I

Geology Courses offered for UG Programme of study with Geology as single core discipline

(B.Sc. Honours in Geology in three years)

DISCIPLINE SPECIFIC CORE COURSE -7 (DSC-7) – : Palaeontology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Palaeontology (DSC-7)	4	3	0	1	Class 12th with Science	Studied Stratigraphy, Sedimentology, and Earth System Science (or equivalent)

Learning Objectives

To learn about the life forms of the geological past. To understand the diversity and evolution of past life. To know the evolutionary transitions and functional adaptations in different groups of animals and plants.

Learning outcomes

On successful completion of the course, the student will be able to: Appreciate how fossils get preserved in rocks, the nature of fossil record and how fossils are named in a taxonomic framework. Get to know different invertebrate fossil groups, their palaeobiology, and how they can be used in relative dating of rocks. Learn how vertebrates originated and their evolution through time. Understand important floral changes over time and the flora of the Indian coal-bearing sedimentary basins. Analyse the indirect evidences preserved in the rocks for the past existence of life. Critically analyse the role of fossils in relative dating of rocks, in interpreting past environments, past distribution of land and sea, and changes in ecosystems over time.

SYLLABUS OF DSC-7

UNIT – I (9 hours)

Detailed content

Fossilization processes and modes of preservation; nature and importance of fossil record

UNIT – II (9 hours)

Detailed contents

Brief introduction to important invertebrate groups (Bivalvia, Gastropoda, Brachiopoda, Graptolites, Trilobites) and their biostratigraphic significance. Significance of ammonites in Mesozoic biostratigraphy and their palaeobiogeographic implications. Functional adaptation in trilobites and ammonoids.

UNIT – III (9 hours)

Detailed contents

Vertebrates: Origin of vertebrates and major steps in vertebrate evolution; Vertebrate evolution in the Palaeozoic Era; Mesozoic reptiles with special reference to origin diversity and extinction of dinosaurs

UNIT – IV (9 hours))

Detailed contents

Introduction to Palaeobotany; fossil record of plants through time; Gondwana Flora.

UNIT – V (9 hours)

Detailed contents

Introduction to Ichnology; Application of fossils in Stratigraphy, Fossils and paleobiogeography; Fossils as a window to the evolution of ecosystems.

Practical Component- (30 Hours)

Study of fossils showing various modes of preservation. Study of diagnostic morphological characters, systematic position, stratigraphic position and age of various invertebrate, vertebrate and plant fossils.

Essential/recommended readings

Raup, D. M. & Stanley, S.M. (1985). Principles of Paleontology, W.H.Freeman & Company
Clarkson, E. N.K. (2012) Invertebrate Paleontology and evolution 4th Edition by Blackwell

Suggestive readings

Raup, D. M. & Stanley, S.M. (1985). Principles of Paleontology, W.H.Freeman & Company
Clarkson, E. N.K. (2012) Invertebrate Paleontology and evolution 4th Edition by Blackwell.
Foote, M. & Miller, A. I. (2006). Principles of Paleontology, third edition.
Benton, M. (2014). Vertebrate Palaeontology, fourth edition.
Jones, R.W. (2011). Applications of Palaeontology - Techniques and Case Studies
.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 8 (DSC-8): Sedimentary Geology

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Sedimentary Geology (DSC-8)	4	3	0	1	Class 12th with Science	Studied Stratigraphy, Earth System Science (or equivalent)

Learning Objectives

Main objective of the course is to provide basic and advance knowledge to students about sediments origin, transport, and depositions and formation of the sedimentary rocks and their distribution in space and time.

Learning outcomes

Students will learn and appreciate the concepts of weathering and sedimentary flux, the basic concepts of sediment transport and formation of sedimentary structures. Grain size scales and analysis. Students will be able to appreciate sedimentary facies, classification of sedimentary rocks, sedimentary environments and provenance.

SYLLABUS OF DSC- 8

UNIT – I (9 hours)

Detailed contents

Introduction to Sedimentary Geology. Chemistry of weathering processes. Sediments: origin, transportation, deposition, consolidation and diagenesis

.

UNIT – II (9 hours)

Detailed contents

Sediment granulometry: Grain size scales Udden-Wentworth and Krumbein (phi) scale, particle size distribution; mean, median, mode, standard deviation, skewness. Environmental connotation.

UNIT – III (9 hours)

Detailed contents

Sedimentary fabric, textures, Porosity and permeability. Sedimentary structures: Syn-sedimentary, Penecontemporaneous

UNIT – IV (9 hours)

Detailed contents

Ichnofossils: Sediment-organism interaction. classification of sedimentary rocks. Tectonics and Climate Diagenesis of terrigenous and chemical sediments

UNIT – V (9 hours)

Detailed contents

Concept of sedimentary facies, paleoenvironment and paleocurrent analyses. Introduction to sedimentary environment: aeolian, glacial, fluvial, near-shore and deep-marine environments. Introduction to carbonate rocks: classification

Practical Component- (30 Hours)

Study of megascopic characters of major sedimentary rocks:
Sketching of primary sedimentary structures in laboratory and museum specimen: ripple marks, cross beddings, sole marks, biogenic structures.
Microscopic study of textures and diagenetic features in sedimentary rocks:

Essential/recommended readings

Prothero, D.R., and Schwab, F. 2003. Sedimentary Geology. Freeman & Co.
Boggs Sam Jr. 1995. Principles of Sedimentology and Stratigraphy, Prentice Hall

Suggestive readings (if any)

Prothero, D.R., and Schwab, F. 2003. Sedimentary Geology. Freeman &Co.
Boggs Sam Jr. 1995. Principles of Sedimentology and Stratigraphy, Prentice Hall.
Stanley, S. M. 1985. Earth and Life through time. Freeman & Co.
Tucker, M., 1988 Techniques in sedimentology Blackwell scientific publications
Nicols, G., 2009 Sedimentology and Stratigraphy Wiley-Blackwell

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE– 9 (DSC-9): Metamorphic Geology

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Metamorphic Geology (DSC-9)	4	3	0	1	Class 12th with Science	Studied Earth System Science, Structural Geology, and Mineralogy (or equivalent)

Learning Objectives

This course focuses on teaching about mineralogical and textural transformations in solid state. The main aim is to learn estimating natural state variables at the time of transformation as well as inferring the geodynamic settings of such changes.

Learning outcomes

This course will enable students to identify the mineral assemblages in hand specimen and through microscopic studies utilizing the concept of textural equilibrium, teach them to consider the rocks as chemical systems and apply the principle of phase rule as the major tool for the study of metamorphic rocks. Students will specially learn to infer orogenic processes through metamorphic assemblages and textures.

SYLLABUS OF DSC-9

UNIT – I (9 hours)

Detailed contents

Metamorphism: Definition of metamorphism. Factors controlling metamorphism, Types of metamorphism. Structure and textures of metamorphic rocks, Relationship between metamorphism and deformation

UNIT – II (12 hours)

Detailed contents

Phase rule and Goldschmidt mineralogical phase rule. Chemographic projections, concept of compatible and incompatible assemblages, bulk composition influence on metamorphic assemblages.

UNIT – III (12 hours)

Detailed contents

Metamorphic zones, index minerals and isograds. Continuous and discontinuous reactions, basics of geothermobarometry.

UNIT – IV (12 hours)

Detailed contents

Metamorphism of various protoliths, metamorphic rock associations-schists, gneisses, charnockites and eclogites. Melting and migmatites. Tectonic setting of metamorphic rocks, paired metamorphic belts, concept of P-T-t path.

Practical Component- (30 Hours)

Hand specimen study of metamorphic rocks.
Textural and mineralogical study of metamorphic rocks in thin sections.
Inferring mineral growth versus deformation in metamorphic rocks
Graphical plots of metamorphic mineral assemblages using chemographic projections.
Application of mineral formula calculations in metamorphic rocks

.

Essential/recommended readings

Winter, J. D. (2014).Principles of igneous and metamorphic petrology, Pearson.
Yardley, Bruce, and Clare Warren. (2021). An introduction to metamorphic petrology. Cambridge University Press.

Suggestive readings

Winter, J. D. (2014).Principles of igneous and metamorphic petrology, Pearson.
Yardley, Bruce, and Clare Warren. (2021). An introduction to metamorphic petrology. Cambridge University Press.
Philpotts, A. R., and Ague, J. J. (2022). Principles of igneous and metamorphic petrology. Cambridge University Press.
Metamorphic Phase Equilibria And Presure-Temperature-Time-Paths
Frank S. Spear (reprinted 1995)

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Discipline Specific Elective: **DSE-1: Earth Surface Processes (L3, P1) *or* DSE-2: Surveying Techniques (L3, P1)**

Or

One GE from GE pool (GE-3): Fossils and Applications (L3, P1)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE-1 Earth Surface Processes (L3, P1)	4	3	0	1	Class 12th with Science	Studied Earth System Science and Structural Geology or Equivalent

Learning Objectives

The course "Earth Surface Processes" is intended to provide a holistic approach to study the surficial features and the processes with emphasis on links and feedbacks between its components. The subject will serve as a dynamic and physical based account of the processes at planets surface with an integrated approach involving the principles of geomorphology and sedimentology.

Learning outcomes

After going through this course students will have sound idea about the Earth's Energy Balance, Hydrological cycle, Topography and bathymetry. This will enable them to learn about the sedimentary flux: origin, transport and deposition and the geomorphic and sedimentological processes related to fluvial, coastal, aeolian, and glacial regimes. Students will also appreciate about the environmental changes and its impact on surface processes and landforms.

SYLLABUS OF DSE-1

UNIT – I (9 Hours)

Detailed contents

Introduction to Earth Surface System. Earth's energy balance, hydrological cycle, carbon cycles, heat transfer, topography and bathymetry.

UNIT – II (9 Hours)

Detailed contents

Earth's critical zone, weathering and formation of soils, sediment routing systems, sediment and solute in drainage basins, importance and impact of climate change and tectonics on sediment yield and transport.

UNIT – III (9 Hours)

Detailed contents

Fluid and sediment dynamics and transport: Natural substances, settling of grains, types of flows and boundary separation layers, sediment continuity, modes of sediment transport, bedforms and stratification.

UNIT – IV (12 Hours)

Detailed contents

Sediment transport and deposition associated with fluvial, aeolian, glacial, coastal and marine regimes.

UNIT – V (6 Hours)

Detailed contents

Impact of environmental changes on Earth Surface processes.

Practical Component- (30 Hours)

Exercises on flexural isostasy.

Exercises related to settling of sediments.

Sediment flux exercises.

Preparation of river profiles (Hack Profile, calculation of SL index, Ksn).

Exercises related to fluvial geomorphology.

Exercises on rate of uplift and incision.

Essential/recommended readings

P. A. Allen, 2009, Earth Surface Processes. Wiley

John Bridge and Robert Demicco: Earth Surface Processes and Landforms and Sediment Deposits

Suggestive readings

P. A. Allen, 2009, Earth Surface Processes. Wiley

John Bridge and Robert Demicco: Earth Surface Processes and Landforms and Sediment Deposits

Bloom, A.L., 1998. Geomorphology: A Systematic Analysis of Late Cenozoic Landforms, Pearson Education

Summerfield, M.A., 1991. Global Geomorphology, Prentice Hall.

Jon D.Pelletier.2008. Quantitative Modelling of Earth Surface Processes. Cambridge University Press

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE-2 Surveying Techniques (L3, P1)	4	3	0	1	Class 12th with Science	Studied Earth System Science and Structural Geology (or equivalent)

Learning Objectives

The course "Surveying Techniques" is intended to teach the students basic techniques to operate modern surveying instruments and develop skill to carry out topographic mapping.

Learning outcomes

After going through this course students will have sound idea about the Surveying Method and various types mapping skills. For examples: (i) Principles of surveying techniques, (ii) Operate modern surveying instruments, (iii) Prepare maps

SYLLABUS OF DSE-11

UNIT – I (9 Hours)

Basics of Surveying: Fundamental concepts and principles; Types of surveys; Classes of surveys; Surveying Instrumentation; Units of measurement; Locating position; Errors.

UNIT – II (12 Hours)

Levelling – Theory and Methods: Coordinate system; Geoid; Datum; Curvature and refraction; Categories of levels; Traversing; Differential levelling; sources of error in levelling; Distance measurement; Angles, azimuth and bearings.

UNIT – III (12 Hours)

Surveying Techniques: Principles and use of – Chain survey, Plane Table survey, Compass survey, Dumpy level survey, Theodolite survey, Total Station survey, Global Positioning System (GPS)

UNIT – IV (12 Hours)

Map Preparation: Introduction to QGIS; Map design; Map layout; Basic map plotting procedures; Plotting contours; Lettering; Cartographic map elements; Sources of error in mapping.

Practical Component- (30 Hours)
Chain survey
Plane Table survey
Total Station survey
Survey using GPS
Survey using Drone (if drone is available)
Map making

Essential/recommended readings

Surveying – Vol – I – By S.K.Duggal, Tata McGraw Hill Book Co.
Surveying – Vol – II – By S.K. Duggal, Tata McGraw Hill Book Co

Suggestive readings

Surveying – Vol – I – By S.K.Duggal, Tata McGraw Hill Book Co.
Surveying – Vol – II – By S.K. Duggal, Tata McGraw Hill Book Co

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE-3 Fossils and Applications (L3, P1)	4	3	0	1	12th Pass (with science stream)	Nil

Learning Objectives

To provide some basic knowledge on fossils, their preservation in rocks and different groups of invertebrate, vertebrate and plant fossils. To impart knowledge on the utility of some of these fossils in determining the relative age of sedimentary rocks and implication in palaeoecological, palaeoenvironmental, palaeobiogeographical reconstruction. To equip the student with basic understanding of the role of fossils in hydrocarbon exploration.

Learning outcomes

Student will learn about different types of life forms that existed in the geological past. Students will learn about the evolutionary rates of certain important fossil groups and their role in dividing the rocks into distinctive units based on their stratigraphic ranges. Learn how fossils can be used in understanding the past environments, ecosystems, climate and distribution of land and sea. Student will also learn about the role of fossils in the exploration of fossil fuels.

.

SYLLABUS OF GE-3

UNIT – I 9 hours)

Detailed contents

Introduction to fossils: Definition of fossil, fossilization processes (taphonomy), taphonomic attributes and their implications, modes of fossil preservation, role of fossils in development of geological time scale and fossil sampling techniques.

UNIT – II (9 Hours)

Detailed contents

Species concept: Definition of species, species problem in palaeontology, speciation, methods of description and naming of fossils, code of nomenclature.

UNIT – III (9 hours)

Detailed contents

Introduction to various fossils groups: Brief introduction of important fossils groups: invertebrate, vertebrate, microfossils, spore, pollens and plant remains. Important fossiliferous horizons of India

UNIT – IV (9 Hours)

Detailed contents

Application of fossils: Principles and methods of paleoecology, application of fossils in the study of paleoecology, paleobiogeography and paleoclimate; Role of fossils in palaeoenvironmental reconstructions.

UNIT – V (9 Hours)

Detailed contents

Societal importance of fossils: Implication of larger benthic and microfossil in hydrocarbon exploration: identification of reservoirs and their correlation. Application of spore and pollens in correlation of coal seams, spore and pollens as indicator of thermal maturity of hydrocarbons reservoirs, fossils associated with coal deposits, fossils as indicators of pollution.

Practical Component- (30 Hours)

Exercises on flexural isostasy.

Exercises related to settling of sediments.

Sediment flux exercises.

Preparation of river profiles (Hack Profile, calculation of SL index, Ksn).

Exercises related to fluvial geomorphology.

Exercises on rate of uplift and incision.

Essential/recommended readings

Clarkson, E.N.K.1998. Invertebrate Paleontology and Evolution, George Allen &Unwin

Prothero, D.R. 1998. Bringing fossils to life - An introduction to Paleobiology, McGraw Hill.

Suggestive readings

Clarkson, E.N.K.1998. Invertebrate Paleontology and Evolution, George Allen &Unwin

Prothero, D.R. 1998. Bringing fossils to life - An introduction to Paleobiology, McGraw Hill.

Benton, M.J. 2005. Vertebrate Palaeontology (3rd edition), Blackwell Scientific, Oxford.

Colbert's Evolution of the Vertebrates: A History of the Backboned Animals Through Time, Edwin H. Colbert, Michael Morales, Eli C. Minkoff, John Wiley & Sons, 1991.

Benton, M.J. & Harper, D.A.T. (2016). Introduction to Palaeobiology and the fossil record. Wiley.

Jones, R.W. (2011). Applications of Palaeontology - Techniques and Case Studies

Raup, D.M. & Stanley, S.M. (1985), Principles of Paleontology, W.H. Freeman and Company

Shukla, A. C. & Mishra, S.P. (1982). Essentials of Palaeobotany

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SRI VENKATESWARA COLLEGE

Biological Science

B.Sc. (HONOURS) BIOLOGICAL SCIENCE

DISCIPLINE SPECIFIC CORE COURSE – 7:

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Physics for Biologists (BS-DSC-301)	**4**	**2**	**0**	**2**	Class XII pass with Biology and chemistry, as one of the papers in Class XII	**NA**

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce the students to the basic concepts of physics and their applications in biology.
- To empower the students to develop a basic understanding about the principles and concepts of Physics
- To enable the students to develop quantitative approaches to solve physical/biological problems
- Provide a better understanding of various biophysical processes

Learning outcomes

On successful completion of course, the student will:

- Learn about various aspects of mechanics, centrifugal forces, mechanical forces with examples.
- Understand and explain molecular theory, Gauss's law, medical significance and applications of the dielectric properties of biological materials.
- Describe simple harmonic motion, diffraction, lasers and its applications in medical science.
- Appreciate the Doppler effect and the effects of vibrations in humans with respect to physics of hearing, heartbeat etc.
- Learn to investigate the light absorption properties of molecules through spectrophotometry, for qualitative and quantitative analysis of biomolecules

SYLLABUS OF DSC-7

Unit 1: Mechanics **6 Hours**

Conservation of momentum and energy, work energy theorem, Angular momentum, Torque, motion of a particle in the central force field. Influence of mechanical forces (Pressure, shear or elongation) on bone. Viscosity and viscous force, surface tension and viscoelasticity with examples such as, biopolymers, human tissues etc.

Unit 2: Dielectrics **6 Hours**

Dielectrics: Non polar/Polar dielectrics, Molecular theory of Dielectrics, Dielectric Constant, Gauss's Law in presence of dielectric, Three electric vectors and their relations, Electric susceptibility, Energy stored in dielectrics. Behaviour of dielectric in alternating field. Medical significance and applications of the dielectric properties of biological materials.

Unit 3: Waves and Optics **14 Hours**

Simple harmonic motion, Linearity and superposition Principle. Lissajous figures with equal and unequal frequencies and their uses. Effects of vibrations in humans: physics of hearing, heartbeat. Modern Optics: Superposition of waves: Young's double slit interference, Fraunhofer diffraction: diffraction through a single slit/double slit and grating, Resolving power, Resolution of the eye, Lasers: Principle, Population inversion, He-Ne Laser, characteristics of laser, Applications of lasers in medical science, Polarization by double refraction, Nicol prism. Doppler effect.

Unit 4: Spectroscopic techniques **4 Hours**

Beer-Lambert law, light absorption and its transmittance. UV and visible spectrophotometry-principles, instrumentation and applications. Fluorescence spectroscopy, static & dynamic quenching. light scattering in biology.

PRACTICALS

TOTAL HOURS: 60 **CREDIT: 2**

1. Determination of acceleration due to gravity using Kater's pendulum.
2. Determination of the acceleration due to gravity using bar pendulum.
3. Study of Lissajous figures using CRO.
4. Determination of the frequency of an electrically maintained tuning fork by Melde's Experiment.
5. Determination of the wavelength of laser source by through diffraction of (1) Single slit (2) Double slit.
6. Comparison of capacitances using De'Sautty's bridge.
7. Determination of the coefficient of Viscosity of water by capillary flow method (Poiseuille's method).
8. To determine wavelength of sodium light using Newton's Rings.
9. To determine the wavelength of sodium/mercury light using diffraction grating.
10. Verification of Beer Law.
11. Determination of Molar Extinction coefficient.

REFERENCES

1. D. Kleppner, R. J. Kolenkow (1973). An introduction to Mechanics. McGraw Hill.
2. N. K. Bajaj (2008). The Physics of Waves and Oscillations. 5th edition. Tata McGraw Hill.
3. Fundamentals of Optics, F.A Jenkins and H.E White, 1976, McGraw-Hill.
4. David Freifelder (1982). Physical Biochemistry: Applications to Biochemistry and Molecular Bioogy. 2nd edition. W.H. freeman and Company.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Protein Structure and Enzymology (BS-DSC-302)	**4**	**2**	**0**	**2**	Class XII pass with Biology and chemistry, as one of the papers in Class XII	**Should have studied Chemistry of Biomolecules**

Learning Objectives

The Learning Objectives of this course are as follows:

- Designed with an aim to introduce the students to proteins, most remarkable biomolecules in terms of diversity of structure and function
- Impart knowledge regarding various techniques employed to purify and characterize proteins
- Introduce them to the world of enzymes, biological catalysts with remarkable properties
- Enable them to understand important aspects of enzyme kinetics, mechanism of enzyme action and their regulatory properties
- Introduce the role of proteins and enzymes in medicine

Learning outcomes

Upon completion of the course, the students will be able to:

- Describe the functional diversity of proteins and the different levels of structural organization of proteins
- Explain the relationship between protein structure and function.
- Appreciate and analyse the data from techniques used to purify and characterise proteins.
- Explain enzyme classification, activity, kinetics, inhibition, regulation and mechanism of action of different classes of enzymes
- Acquire knowledge about the application of enzymes in medicine and industry.

SYLLABUS OF DSC- 8

Theory

Unit I: Protein structure and folding 11 Hours

Amino acids: structure and their properties; Peptides and proteins; Diversity of proteins; Organization of protein structure- primary, secondary, tertiary and quaternary structures; Protein sequencing- Edman degradation. Peptide bond- dihedral angles; Ramachandran plot; Secondary structure elements: Helices, sheets and turns. Motifs and domains; Structures of myoglobin and Hemoglobin. Oxygen binding curves of myoglobin and hemoglobin Influence of 2,3-BPG, CO_2. Denaturation and renaturation of proteins and introduction to thermodynamics of folding. Role of chaperones in protein folding.

Unit II: Purification and analysis of proteins 4 Hours

Ammonium sulphate fractionation, dialysis. Chromatographic techniques: Ion exchange chromatography, molecular sieve chromatography. Gel electrophoresis: SDS-PAGE.

Unit III: Introduction to Enzymes and enzyme kinetics 8 Hours

Protein and non-protein nature of enzymes. Cofactor and prosthetic groups. Classification of enzymes; Fischer's lock & key and Koshland's induced fit hypothesis. Enzyme activity and specificity. Enzyme Kinetics-Michaelis-Menten equation and Lineweaver-Burk plot. Determination of Km, Vmax, Kcat. Types of enzyme inhibitions- competitive, uncompetitive, non-competitive, mixed.

Unit IV: Mechanisms of enzyme action and regulation 7 Hours

Acid-base and covalent catalysis (chymotrypsin); Allosteric regulation and feedback inhibition (ATCase); reversible covalent modification (glycogen phosphorylase); Zymogen; Multi-enzyme complex (PDH). Isoenzymes. Applications of enzymes in medicine, industry and research

PRACTICALS (60 Hours)

1. Introduction to spectrophotometer and verification of Beer law.
2. Estimation of proteins by Biuret method.
3. Estimation of proteins by Lowry's method.
4. Ammonium sulphate fractionation of crude homogenate from germinated mung beans.

5. Assay for acid phosphatase activity and specific activity.
6. Progress curve of enzyme
7. Effect of pH on enzyme activity.
8. Determination of Km and Vmax using Lineweaver-Burk plot.
9. Calculation of Ki for an enzyme

REFERENCES

1. Nelson, D.L., Cox, M.M. (2021). Lehninger: Principles of Biochemistry (8th ed.). New York, WH: Freeman and Company. ISBN: 13: 978-1319381493 / ISBN-10:1319381499.
2. Voet, D., Voet. J. G. (2013). Biochemistry (4th ed.). New Jersey, John Wiley & Sons Asia Pvt. Ltd. ISBN: 978-1-11809244-6.
3. Cooper, T. G. (2011) The Tools of Biochemistry (2nd ed.), Wiley-Interscience Publication (New Delhi); ISBN13: 9788126530168.
4. Price, N. C. and Stevens, L. (1999). Fundamentals of enzymology (3rd ed). Oxford: Oxford University Press; ISBN13: 978-0198502296

Additional Resources

1. Sheehan, D. (2013). Physical biochemistry: Principles and applications (2nd ed). Chichester: Wiley-Blackwell; ISBN13: 978-0470856024

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE –9 :

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Functional Ecology (BS-DSC-303)	**4**	**2**	**0**	**2**	Class XII pass with Biology and chemistry, as one of the papers in Class XII	**NA**

Learning Objectives

The Learning Objectives of this course are as follows:

- To understand the basic concepts in ecology and levels of organization in an ecosystem
- Obtain a basic understanding of the various aspects of a 'population' and interactions among individuals of the same as well as different species.
- To understand the structure and functions of the community and its processes.
- To comprehend the components of an ecosystem, energy flow and nutrient cycling.
- To appreciate the applied aspects required in restoration of degraded ecosystems.
- To understand trade-offs in life history characteristics of organisms and various behaviors shownby organisms.

Learning outcomes

By the end of the course, the student will be able to:

- To comprehend the principles and applications of ecology and ecosystem.
- Know about the importance of ecosystem in general and the effects of changes inecosystem.
- Understand the techniques used for the quantitative and qualitative estimation of bioticand abiotic components of an ecosystem.
- Gain knowledge about the density, frequency and diversity of species in an ecosystem.
- Understand about key interactions between organisms like competition , predation ,parasitism etc.
- Participate in citizen science initiatives from an ecological perspective

SYLLABUS OF DSC-9

Theory

Unit 1: Introduction to Ecology **03 Hours**

History of ecology, Autecology and synecology, levels of Organisation, Laws of limiting factors (Liebig's law of minimum, Shelford's law of tolerance), ecological range (Eury and Steno).

Unit 2: Population Ecology **12 Hours**

Population: Unitary and Modular populations; Metapopulation: Density, natality, mortality, life tables, fecundity tables, survivorship curves, sex ratio, age pyramids, dispersal and dispersion; carrying capacity, population dynamics (exponential and logistic growth equation and patterns), r and K selection, density-dependent and independent population regulation; Niche concept, Population interactions: Positive and negative interactions; Competition, Gause's Principle for competition with laboratory and field examples, Lotka-Volterra equation for predation.

Unit 3: Community Ecology 08 Hours

Community structure: Dominance, diversity, species richness, abundance, stratification; Diversity indices; Ecotone and edge effect; Community dynamics (succession): Primary and secondary succession, Succession on a bare rock. Climax: monoclimax and polyclimax concepts (preclimax, postclimax, disclimax etc.). Concept of keystone, indicator and flagship species with plant and animal examples.

Unit 4: Ecosystem Ecology 07 Hours

Concept, components, and types of ecosystems (example of Pond ecosystem in detail showing abiotic and biotic components), BOD, eutrophication. Energy flow (Grazing and Detritus food chain), linear and Y-shaped energy flow model, black box model, food web. Ecological pyramids and Ecological efficiencies.

PRACTICALS

CREDITS: 2 **Total weeks: 60 Hours**

1. To understand the principle and working of ecological instruments such as Anemometer, Hygrometer, Luxmeter, Rain gauge, turbidity meter, pH meter, Soil thermometer, Min-Max thermometer.
2. To study biotic interactions using specimens/ photographs/ permanent slides of Parasitic angiosperms, Saprophytic angiosperms, root nodules, velamen roots, lichens , corals
3. 3.To study plant-microbe interactions by preparing temporary stained mounts of VAM fungi / mycorrhizal roots/ root nodules.
4. Mark recapture method for determining population density of animals
5. 5.To determine a minimal quadrat area for sampling
6. To determine density, frequency and abundance of herbaceous vegetation by quadrat method
7. To estimate dissolved oxygen content of a given water sample using Winkler's method.
8. Plotting of survivorship curves from hypothetical life table data.

REFERENCES

1. Barrick, M., Odum, E. P., Barrett, G. W., (2005).*Fundamentals of Ecology*.5th Edition.Cengage Learning.
2. Smith, T. M..& Smith, R. L.(2012). *Elements of Ecology* 8th Edition. Pearson.
3. Ricklefs, R. E., & Miller, G. L., (2000).*Ecology*, 4thEdition W.H. Freeman.
4. Sharma, P. D. (2017). *Ecology and Environment*.13th Edition. Meerut: Rastogi Publications.

MOOCs

1. 'Ecology: Ecosystem Dynamics and Conservation from American Museum of Natural History on Coursera https://www.classcentral.com/course/coursera-ecology- ecosystem-dynamics-and- conservation-10618
2. https://alison.com/course/diploma-in-ecology-studies
3. https://swayam.gov.in/ Any ecology based online course that may be available during the semester, depending on its relevance to the present syllabus

POOL OF DISCIPLINE SPECIFIC ELECTIVES (DSEs)

DISCIPLINE SPECIFIC ELECTIVE COURSE –DSE-1 :

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Medicinal And Ethnobotany (BS-DSE-1)	**4**	**2**	**0**	**2**	Class XII pass with Biology and chemistry, as one of the papers in Class XII	**NA**

Learning Objectives:

Plants are imperative to mankind with almost all plants known to possess medicinal values. There is an increased emphasis on indigenous system of medicine which has lent prime focus on medicinal plants. Keeping the therapeutic importance of medicinal plants in mind this course is designed to provide education and training on diverse perspectives of medicinal plants. The course also offers comprehensive knowledge about understanding the difference between ancient wisdom and the modern system of medicine.

Learning Outcomes:

On successful completion of the course, a student will:

- Be able to identify the common medicinal plants in their vicinity.
- Learn about the traditional healing sciences namely Ayurveda, Siddha and Unani, which have been used since the ancient times.
- Appreciate the importance of conservation strategies for medicinal plants.
- Be able to understand the importance of medicinal plants, significance of ethnobotany, role of ethnic groups in the conservation of medicinal plants.

Course Contents - Theory

Unit 1: History, Scope and Importance of Medicinal Plants

10 Hours

Introduction to indigenous systems of medicines- Ayurveda, Unani and Siddha

system of medicine)- Ayurveda: History, origin, Panchamahabhutas, Saptadhatu and Tridosha concepts, Siddha: Origin of Siddha medicinal systems, Basis of Siddha system. Unani: History, concept: Umoor-e- tabiya. Plants used in Ayurveda, Siddha and Unani medicine with special reference to *Carum carvi, Plantago ovata, Allium sativum, Asparagus racemosus, Vitis vinifera, Linum usitatissimum, Amaranthus paniculatus.* Polyherbal formulations (with special reference to Safi, Chyawanprash, Trifala, Swalin, Amukkara Choorna, Gandhak rasayana). Natural products – Compounds responsible for biological activity of medicinal plants: their biology, and pharmacology (*Curcumin, Vinblastine, Vincristine, Ecliptine, Cinchonine, Azadirachtin, Artemisinin*).

Unit 2: Conservation of Endangered and Endemic Medicinal Plants

08 Hours

Definition: endemic and endangered medicinal plants, Red list criteria; In situ conservation: Biosphere reserves, sacred groves, National Parks; Ex situ conservation: Botanical Gardens, herbal gardens, Ethnomedicinal plant gardens. Germplasm conservation, cryopreservation (Cryo banks and DNA banks), Role of NBPGR and JNTBGRI in conservation of plants, Propagation of Medicinal Plants: *In vitro* and *In vivo* strategies. Adulteration of Herbal drugs. Organoleptic, microscopic and phytochemical evaluation of plant drugs.

Unit 3: Ethnobotany and Folk Medicines **12 Hours**

Introduction, concept, scope and objectives; Ethnobotany in India: Methods to study ethnobotany; Folk medicines of ethnobotany, Role of ethnobotany in modern medicine with special reference to *Rauvolfia serpentina*, *Trichopus zeylanicus*, *Artemisia*, *Withania.* Major and minor ethnic groups of India and their lifestyles. Application of natural products to certain diseases- Jaundice, cardiac, infertility, diabetics, blood pressure and skin diseases. Role of ethnic groups in conservation of plant genetic resources; Brief account of biopiracy and IPR.

PRACTICAL

Credit: 2 **Total 60 Hours**

1. Identification of any ten common medicinal plants in the surrounding area and study their characteristic features.
2. Collection, identification and preparation of herbarium of any five medicinal plants.
3. Extraction and qualitative estimation of active principle compounds (alkaloids, tanins, saponins and flavanoids) from any four medicinal plants. (*Aloe vera, Ocimum, Azadirachta, Catharanthus, Adhatoda, Withania*)
4. Study of components and medicinal uses of common polyherbal formulations used in the traditional system of medicine (Ayurveda, Unani and Siddha).
5. Study of organoleptic, macroscopic and microscopic parameters of any two medicinal plants.
6. To compare the total phenolic content of few locally available medicinal plants

7. Field trip: Industries/Institutes/herbal garden/ medicinal gardens/ nurseries/tribal museum.
8. e-presentations (System of medicine, Conservation strategies, propagation of medicinal plants, folk medicines, application of natural products to certain diseases listed in the syllabus)

Essential readings:

1. Abdin, M. Z. and Abrol, Y. P., (2006). *Traditional Systems of Medicine.* Narosa Publishing House, New Delhi.
2. Kumar, S., (2018). *Ethnobotany*. Kojo press, New Delhi.
3. Purohit and Vyas, (2008). *Medicinal Plant Cultivation: A Scientific Approach,* Agrobios.
4. Trivedi, P. C. (2006). *Medicinal Plants: Ethnobotanical Approach.* Agrobios.

Additional Readigs

1. Colton, C. M., (1997). *Ethnobotany: Principles and Applications*. John Wiley and Sons.
2. Jain, S. K., (1990). *Contributions to Indian Ethnobotany*. Scientific publishers, Jodhpur.
3. Jain, S. K., (1995). *Manual of Ethnobotany.* Scientific Publishers, Jodhpur.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE –DSE-2

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Hormone biochemistry (BS-DSE-2)	**4**	**2**		**2**	Class XII pass with Biology and chemistry, as one of the papers in Class XII	**NA**

Learning Objectives:

The course is designed to enable the students to understand and appreciate the delicate network and balance of hormones required for the healthy functioning of the human body. The course emphasizes on studying the different types of hormones along with their physiological action.

The students will be taught the consequences of any hormonal imbalances (over and underproduction of hormones) with special emphasis on human diseases. It provides an understanding of the different endocrine factors that regulate metabolism, growth, electrolyte and mineral homeostasis, glucose homeostasis, stress physiology and reproductive function. It also prepares a student for postgraduate studies in any course related to molecular medicine.

Learning Outcomes:

On successful completion of the course, a student will:

- Understand the role of endocrine system in maintaining ionic and glucose homeostasis
- Should be able to describe molecular, biochemical and physiological effects of all hormones and factors on cells and tissues.
- Understand the integrative communications that regulate, growth, appetite, metabolism and reproduction
- Prepares the student for interpreting clinical parameters in a real-life situation.

Course Contents -Theory

Unit 1: Introduction to hormones and Hypothalamic-hypophyseal system : 5 Hours

Introduction to hormones; Hypothalamic - pituitary axis- anatomy, histology, vasculature, and secretions. Physiological and biochemical actions of hypothalamic hormones and Anterior pituitary hormones; Hormone feed- back regulatory cascade. Posterior pituitary hormones –structure, physiology and biochemical actions of AVP and Oxytocin; Diabetes insipidus

Unit 2: Hormones regulating growth, energy metabolism and calcium homeostasis 10 Hours

Regulation of Growth: growth hormone and somatomedin, Endocrine disorders - gigantism, acromegaly, dwarfism, pygmies. Thyroid gland- Biosynthesis of thyroid hormone and its regulation: Role of TRH, TSH in T_4 synthesis and response. Physiological and biochemical action of Thyroxine. Pathophysiology of thyroxine secretion: Goiter, Graves' disease, cretinism, myxedema.
Regulation of calcium homeostasis: PTH, Vitamin D and calcitonin. Mechanism of Ca^{2+} regulation involving bone, skin, liver, gut and kidneys. Pathophysiology - rickets, osteomalacia, osteoporosis.

Unit 3: Hormones regulating glucose homeostasis, stress physiology and electrolyte balance: 10 Hours

Hormones of the Pancreas: structure, synthesis, regulation of release, incretins, physiology and biochemical actions of insulin and glucagon. Role of these hormones in blood glucose homeostasis; Pathophysiology - diabetes type I and type II. GIT hormones: Secretin, gastrin and incretins.
Physiology and action of Aldosterone; the Renin Angiotensin System. Physiology and Biochemical actions of Cortisol; Role of POMC and CRH in cortisol synthesis;

Adrenal medullary hormones: epinephrine and norepinephrine. The Fight or flight response; Dual receptor hypothesis. General adaptation syndrome: acute and chronic stress response. Pathophysiology – Addison's disease, Conn's syndrome, Cushing syndrome.

Unit 4: Reproductive hormones: **5 Hours**

Male and female sex hormones. Role of testosterone in male secondary sexual characteristics. Interplay of hormones during ovarian and uterine phases of menstrual cycle; Placental hormones; role of hormones during parturition and lactation. Hormone based Contraceptives.

PRACTICAL

Credit: 2 **Total Hours- 60**

1. Glucose tolerance test.
2. Estimation of serum Ca^{2+} by o-CPC method
3. Determining the thyroid profile by estimating T_4 and TSH under normal and pathophysiological conditions.
4. Estimation of estrogen during different days of the menstrual cycle.
5. HCG based pregnancy test.
6. Estimation of serum electrolytes.
7. Presentation on GI Tract hormones and Adipokines
8. Case studies: Diabetes Insipidus, Acromegaly and dwarfism, Diabetes Mellitus, Rickets, Osteoporosis, Cushing syndrome

Essential readings:

1. Vander's Human Physiology (2008) 11th ed.,Widmaier, E.P., Raff, H. and Strang, K.T. McGraw Hill International Publications, ISBN: 978-0-07-128366-3.
2. Sherwood, L. (2012) Introduction to Human Physiology 8th edition; Brooks/Cole, Cengage Learning. ISBN-13: 978-1133104544.
3. Victor Rodwell, David Bender, et al. (2018) ISE Harper's Illustrated Biochemistry Thirty-First Edition, McGraw Hill (A and L Lange series), ISBN-10. 1259837939 ; ISBN-13. 978-1259837937

Suggested readings:

1. Endocrinology (2007) 6th ed., Hadley, M.C. and Levine, J.E. Pearson Education (New Delhi), Inc. ISBN: 978-81-317-2610-5.
2. Guyton, A.C. and Hall, J.E., (2016) Reed Textbook of Medical Physiology 13th ed., Elseviers India Pvt. Ltd. (New Delhi). ISBN: 978-1455770052

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE –DSE-3 :

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Applied entomology (BS-DSE-3)	**4**	**2**	**0**	**2**	Class XII pass with Biology and chemistry, as one of the papers in Class XII	**NA**

Learning Objectives:

The study of Applied Entomology provides an insight about the role of insects as powerful competitors of man as they cause enormous injury to crops and animals and also act as vectors of many diseases. This course will help the students to understand the concept of insect pests and their population dynamics in relation to changing environmental conditions as well as the role of economically important insects in tremendous commercial benefits to humans. The students will learn about various types of pests, their distinguishing features, life cycle, damage to crops and human health by them. This will be of help in choosing the appropriate control measures to manage the pest population in nature and to avoid heavy economic losses.

Learning Outcomes:

Upon completion of the course, students will be able to:

- Learn about the concept of pest and pest status.
- Understand the difference between various types of pests and Crop losses and extent of damage caused by them.
- Gain knowledge about economically important insects; important pests of crops, fruits, vegetables, stored grains and also about medically important insects.
- Analysis of varied types of control measures for management of pest populations and list suitable control measures- specific for every pest.

Course Contents- Theory

Unit 1: Pests and Economically important Insects (05 Hours)

Introduction, Factors responsible for emergence of pest, Pest status, Pest population dynamics. Economically important Insects; Honey Bee and Silkworm

Unit 2: Bionomics and Control of Crop pests (07 Hours)

Rice pest (*Leptocorisa acuta*); Wheat pest (*Sesamia inferens*); Pulse pest (*Helicoverpa armigera*); Cotton pests (*Pectinophora gossypiella*); Vegetable pest (*Raphidopalpa foveic*

Unit 3: Stored Grain Pests (6 Hours)

Bionomics and strategies for the management of stored grain pests; *Sitophilus oryzae*, *Corcyra cephalonica*, *Trogoderma granarium*, *Callosobruchus chinensis*.

Unit 4: Medically Important Pest (05 Hours)

Bionomics and Management of the Medically Important pests; Fleas, Mosquitoes, Housefly.

Unit 5: Pest Management Tactics (7 Hours)

Methods of Physical, Mechanical, Cultural, Biological, Genetic control of insects; Chemical controls. Integrated Pest Management (IPM).

PRACTICAL (Total Hours 60)

1. Identification of Agricultural Pests and Damage caused by them: *Leptocorisa acuta, Sesamia inferens, Helicoverpa armigera, Raphidopalpa foveicollis*.
2. Identification of Stored Grain Pests and Damage caused by them: *Sitophilus oryzae, Corcyra cephalonica, Trogoderma granarium, Callosobruchus chinensis.*
3. Study of the Morphological Features of Rat flea, Mosquitoes, Housefly and their Medical Importance.
4. Determination of LD50 or LC50 of Insecticides based on the data provided.
5. Instruments used in chemical control of pests.
6. Project report on any one economically important insect/ rearing of a pest.
7. Field Trips to Entomological Institutes/Museums/Laboratories

3.3 Essential Readings:

1. Atwal, A.S. (1993) Agricultural Pests of India and South East Asia. Kalyani Publishers, New Delhi.
2. Dennis, S. Hill (2005) Agricultural Insect Pests of the Tropics and Their Management, Cambridge University press. Suggested Readings:
3. S. Pradhan. Insect Pest of Crops. National Book Trust, New Delhi.

Suggested Readings:

1. Pedigo, L.P. (1996) Entomology and Pest Management. Prentice Hall, New Delhi.

Online Tools and Web Resources:

- https://swayam.gov/appliedentomology
- http://mesamalaria.org/updates/mooc-medical-entomology-organized-institut-pasteur
- https://www.pasteur.fr/en/mooc-medical-entomology-insect-vectors-andtransmission-pathogens
- https://www.entsoc.org/resources/education/online-courses

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF ENVIRONMENTAL SCIENCE

Category-I

BSC (H) ENVIRONMENTAL SCIENCE

DISCIPLINE SPECIFIC CORE COURSE – 7 (DSC-EVS-7): ENVIRONMENTAL BIOTECHNOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-EVS-7: ENVIRONMENTAL BIOTECHNOLOGY	4	2	0	2	Class XII pass	NA

Learning objectives

The Learning Objectives of this course are as follows:

- Provide theoretical and practical biotechnological skills for environmental goals
- Evolve ecological foundations of using microorganisms in biodiversity assessment, ecosystems restoration, and environmental remediation
- Relate the microbial ecophysiology with biogeochemical cycles that govern the terrestrial ecosphere
- Emphasize the relevance of biotechnological processes in environmental applications and sustainable development

Learning outcomes

After this course, students will be able to learn the following skills.

- Apply the biotechnological methods to improve environmental management
- Perform comparative protein and DNA sequence analyses to elucidate the phylogenetic relationship
- Analyze non-culturable microbial diversity in the environment and classify microbes based on energy and carbon metabolism
- Plan methods for combined biological nutrient removal (BNR), treat wastewater, and remedify soils and water contaminated with organic and inorganic pollutants

SYLLABUS OF DSC-EVS-7

UNIT – I The Structure and Function of DNA, RNA and Protein (7 Hours)

DNA: structural forms and their characteristics (B, A, C, D, T, Z); physical properties: UV absorption spectra, denaturation, and renaturation kinetics; biological significance of different forms; Synthesis.

RNA: structural forms and their characteristics (rRNA, mRNA, tRNA; SnRNA, Si RNA, miRNA, hnRNA); biological significance of different types of RNA; synthesis.

Protein: hierarchical structure (primary, secondary, tertiary, quaternary), types of amino acids; post-translational modifications and their significance; synthesis; types and their role: structural, functional (enzymes).

Central dogma of biology; genetic material prokaryotes, viruses, eukaryotes and organelles; mobile DNA; chromosomal organization (euchromatin, heterochromatin - constitutive and facultative heterochromatin).

UNIT – II Recombinant DNA Technology (7 Hours)

Recombinant DNA: origin and current status; steps of preparation; toolkit of enzymes for manipulation of DNA: restriction enzymes, polymerases (DNA/RNA polymerases, transferase, reverse transcriptase), other DNA modifying enzymes (nucleases, ligase, phosphatases, polynucleotide kinase); genomic and cDNA libraries: construction, screening and uses; cloning and expression vectors (plasmids, bacteriophage, phagmids, cosmids, artificial chromosomes; nucleic acid microarrays

UNIT – III Ecological restoration and bioremediation (10 Hours)

Wastewater treatment: anaerobic, aerobic process, methanogenesis, bioreactors, cell and protein (enzyme) immobilization techniques; treatment schemes for wastewater: dairy, distillery, tannery, sugar, antibiotic industries; solid waste treatment: sources and management (composting, vermiculture and methane production, landfill. hazardous waste treatment); specific bioremediation technologies: land farming, prepared beds, biopiles, composting, bioventing, biosparging, pump and treat method, constructed wetlands, use of bioreactors for bioremediation; phytoremediation; remediation of degraded ecosystems; advantages and disadvantages; degradation of xenobiotics in the environment, decay behavior and degradative plasmids, hydrocarbons, substituted hydrocarbons, oil pollution, surfactants, pesticides, heavy metals degradative pathways.

UNIT – IV Ecologically safe products and processes (6 Hours)

PGPR bacteria: biofertilizers, microbial insecticides, and pesticides; bio-control of the plant pathogen, Integrated pest management; development of stress-tolerant plants, biofuel; mining and metal biotechnology: microbial transformation, accumulation, and concentration of metals, metal leaching, extraction; exploitation of microbes in copper and uranium extraction.

Practicals/Hands-on Exercises – based on theory (02 Credits: 60 hours)

1. Undertake comparative analyses of the ultrastructure of cells and cellular organelles of prokaryotes and eukaryotes.

2. Analyze UV absorption spectra of DNA, RNA and protein
3. Determine denaturation and renaturation of dsDNA
4-5. Estimate contents of DNA and protein in the given samples
6. Visit contaminated or degraded habitats and analyze their vegetation characteristics and compare them with pristine habitat
7. Characterize and analyze plants documented in practical 6 to identify species having the potential for phytoremediation
8-10. Isolate phosphate-solubilizing bacteria from different soils and assess morphological and functional variations in phosphate-solubilizing bacteria
11. Determine bacterial density in soils sampled from contaminated and pristine habitat
12. Visit and analyze various steps of Sewage/Wastewater treatment processes (STP/WTP).
13-15. Explore and use different molecular databases for application in environmental science

Teaching and learning interface for theoretical concepts

To achieve the course objectives and match with the contents, a wide range of teaching and learning tools will be employed, including (a) Formal lectures; (b) Interactive sessions using visual aid; (c) Case study analyses; (d) Hypothetical scenario building; (e) Group discussion on key topics; and (f) documentary screening and critical analyses.

Essential/recommended readings

- Furlong, J. and Evans, G.G., 2011. Environmental Biotechnology: Theory and Application. John Wiley & Sons.
- Jordening, H.J. & Winter J. 2005. Environmental Biotechnology: Concepts and Applications. John Wiley& Sons.
- Nelson, D.L. & Cox, M.M. 2013. Lehninger's Principles of Biochemistry. W.H. Freeman.
- Rittman, B.E. & McCarty, P.L. 2020. Environmental Biotechnology. Principles and Applications. McGraw-Hill, New York.
- Snustad, D.P. & Simmons, M.J. 2011. Principles of Genetics (6th edition). John Wiley& Sons.
- Vallero, D., 2015. Environmental Biotechnology: A Biosystems Approach. Academic Press.
- Wainwright, M., 2012. An introduction to Environmental Biotechnology. Springer Science & Business Media.

Suggestive readings

- Lodish, H., Berk, A., Kaiser, C.A., Kaiser, C., Krieger, M., Scott, M.P., Bretscher, A., Ploegh, H. and Matsudaira, P., 2008. Molecular Cell Biology. Macmillan.
- Moo-Young, M., Anderson, W.A. and Chakrabarty, A.M. eds., 2013. Environmental Biotechnology: Principles and Applications. Springer Science & Business Media.
- Petre, M. ed., 2013. Environmental Biotechnology: New Approaches and Prospective Applications. InTech, Crotia.
- Scagg, A.H. 2005. Environmental Biotechnology. Oxford University Press.
- Souvorov, A.V. 1999. *Marine Ecologonomics: The Ecology and Economics of Marine Natural Resource Management*. Elsevier Publications.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 8 (DSC-EVS-8): ATMOSPHERE & GLOBAL CLIMATE CHANGE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
ATMOSPHERE & GLOBAL CLIMATE CHANGE	4	2	0	2	Class XII pass	NA

Learning objectives

The Learning Objectives of this course are as follows:

- Analyze dynamics of atmospheric processes, which include their composition, meteorological phenomena, and atmospheric chemistry.
- Gain knowledge on the development of the Earth's atmosphere, its dynamic nature, and variability in turns of the global energy balance.
- Describe air masses and formation and impacts fronts and how they affect local weather patterns,
- Develop a better understanding of the elements of the climate and climate change and human impacts on climate initiative policies.
- Train on different methods to understand the functioning of atmospheric processes and their importance in supporting life on Earth

Learning outcomes

After this course, students will be able to

- understand the underlying physical and chemical basis of the natural and anthropogenic greenhouse effect
- develop pathway analysis to develop linkages between various human-induced emissions of natural greenhouse gases and the formation of aerosols
- appreciate the variability in the Earth's climate and correlate the changing climate with different human activity
- critically evaluate the complexities and uncertainties about scientific evidence for climate change
- analyze Earth's past and Anthropocene and global climate
- correlate effects of global climate changes on human communities and impacts of policy and technology initiatives taken at global and regional levels to combat the climate change

SYLLABUS OF DSC-EVS-8

Theory (02 Credits: 30 lectures)

UNIT – I Introduction and Global Energy Balance (4 Hours)

Evolution and development of Earth's atmosphere; atmospheric structure and composition; significance of atmosphere in making the Earth, the only biosphere; Milankovitch cycles. Earth's energy balance; energy transfers in the atmosphere; Earth's radiation budget; greenhouse gases (GHGs); greenhouse effect; global conveyor belt.

UNIT –II Atmospheric circulation (5 Hours)

Movement of air masses; atmosphere and climate; air and sea interaction; southern oscillation; western disturbances; *El Nino* and *La Nina*; tropical cyclone; Indian monsoon and its development, changing monsoon in Holocene in the Indian subcontinent, its impact on agriculture and Indus valley civilization; effect of urbanization on microclimate; Asian brown clouds.

UNIT –III Meteorology and atmospheric stability (4 Hours)

Meteorological parameters (temperature, relative humidity, wind speed and direction, precipitation); atmospheric stability and mixing heights; temperature inversion; plume behavior; Gaussian plume model.

UNIT –IV Atmospheric chemistry (4 Hours)

Chemistry of atmospheric particles and gases; smog – types and processes; photochemical processes; ions and radicals in atmosphere; acid-base reactions in atmosphere; atmospheric water; roles of hydroxyl and hydroperoxyl radicals in atmosphere.

UNIT –V Global warming and climate change (5 Hours))

Earth's climate through ages; trends of global warming and climate change; drivers of global warming and the potential of different greenhouse gases (GHGs) causing the climate change; atmospheric windows; impacts of climate change on atmosphere, weather patterns, sea level rise, agricultural productivity and biological responses - range shift of species, CO_2 fertilization and agriculture; impact on the economy and spread of human diseases.

UNIT –VI Ozone layer depletion (5 Hours)

Ozone layer or ozone shield; Importance of ozone layer; Ozone layer depletion and causes; Chapman cycle; Orocess of springtime ozone depletion over Antarctica; Ozone-depleting substances (ODS); effects of ozone depletion; mitigation measures and international protocols.

UNIT –VII Climate change and policy (3 Hours)

Environmental policy debate; International agreements; Montreal protocol 1987; Kyoto

protocol 1997; Convention on Climate Change; carbon credit and carbon trading; Clean development mechanism.

Teaching and learning interface for theoretical concepts

To achieve the course objectives and match with the contents, a wide range of teaching and learning tools will be employed, including (a) Formal lectures; (b) Interactive sessions using visual aid; (c) Case study analyses; (d) Hypothetical scenario building; (e) Group discussion on key topics; and (f) documentary screening and critical analyses.

Practicals/Hands-on Exercises – based on theory (02 Credits: 60 hours)

1. Analyze the atmospheric chemistry of a given area with respect to target greenhouse gas(es) and its changes over time
2. Identify weather patterns and climate of the given region
3. Calculate the carbon footprint of the given institution (homes and/or college)
4. Evaluate the perception of climate change in developed and developing countries
5. Identify the critical factors governing global climate change and relate with the goals of different international governmental and non-governmental organizations

6-7. Compare the targets and achievements in global efforts to combat global climate change during the past three decades

8-9. Estimate the difference in carbon stock between soil and trees of a given area

10. Understand and correlate annual tree ring data with a historical account of climate
11. Identify the critical factors governing global climate change and relate them with the goals of different international governmental and non-governmental organizations
12. Compare climate change policies of selected developed and developing countries

Teaching and learning interface for practical skills

To impart training on technical and analytical skills related to the course objectives, a wide range of learning methods will be used, including (a) laboratory practicals; (b) field-work exercises; (c) customized exercises based on available data; (d) survey analyses; and (e) developing case studies; (f) demonstration and critical analyses; and (h) experiential learning individually and collectively.

Essential/recommended readings

- Barry, R. G. 2003. Atmosphere, Weather and Climate. Routledge Press, UK.
- Hardy, J.T. 2003. Climate Change: Causes, Effects and Solutions. John Wiley & Sons.
- Hoffman, S., Eriksen, T.H. and Mendes, P. eds., 2022. Cooling Down: Local Responses to Global Climate Change. Berghahn Books.
- Manahan, S.E. 2010. Environmental Chemistry. CRC Press, Taylor and Francis Group.
- Maslin, M. 2014. Climate Change: A Very Short Introduction. Oxford Publications.

- Mathez, E.A. 2009. Climate Change: The Science of Global Warming and our Energy Future. Columbia University Press.
- Salby, M.L., 2012. Physics of the Atmosphere and Climate. Cambridge University Press.
- Speight, J.G., 2019. Global Climate Change Demystified. John Wiley & Sons.
- Wang, Y (2020). Atmosphere and Climate, 2nd Edition, Handbook of Natural Resources Vol VI, CRC Press.

Suggestive readings

- Crate, S.A. and Nuttall, M., 2016. Anthropology and Climate Change: From Actions to Transformations. Routledge.
- Gillespie, A. 2006. Climate Change, Ozone Depletion and Air Pollution: Legal Commentaries with Policy and Science Considerations. Martinus Nijhoff Publishers.
- Harvey, D. 2000. Climate and Global Climate Change. Prentice Hall.
- Hering, E., 2010. Atmosphere and Climate: Studies by Occultation Methods. Springer.
- Philander, S.G. 2012. Encyclopedia of Global Warming and Climate Change (2nd edition). Sage Publications.
- Sauer, T.J. and Norman, J.M. eds., 2011. Sustaining Soil Productivity in Response to Global Climate Change. Wiley-Blackwell.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 9 (DSC-EVS-9): MARINE ECOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
MARINE ECOLOGY	4	2	0	2	Class XII pass	NA

Learning objectives

The Learning Objectives of this course are as follows:

- Gain insights into the dynamic processes that affect oceans, i.e., water, seafloor, and abundant life forms
- Identify the role being played by ocean-atmosphere interaction in the climate processes.
- Investigate the role of ocean processes in coastal and marine landform creation.

Learning outcomes

After this course, students will be able to

- Analyze the role of physical processes in the dynamic process of ocean circulation.
- Formulate solutions ailing the current state of the coastal and marine environment in terms of chemical and biological interactions.
- Implement the knowledge base to promote ocean awareness in light of human exploitation of its resources.
- Assess the impacts of environmental and anthropogenic variables on marine ecosystems and biodiversity with time and space
- Use ecological data to predict the impact of a given factor on marine biodiversity and ecology

SYLLABUS OF DSC-9

Theory (02 Credits: 30 lectures)

UNIT – I Introduction (4 Hours)

A short history of the oceans and continents, History of marine ecology, Morphologic and tectonic domains of the ocean floor; Ocean basins, Ocean sediments; Composition of seawater, carbon dioxide-carbonate system; Atmospheric circulation, Ocean circulation, Life in the ocean, Pelagic communities, Benthic communities, Uses and abuses of the ocean.

UNIT – II Geography and physical forcing of Marine Ecosystems: (4 Hours)

Climate and Circulation of the World Ocean, Geostrophic flow and the central ocean gyres, Convergence zones and fronts, Thermohaline circulation and the origins of deep-water coasts, shallows, and their consequences; Global distribution of ocean productivity, Vertical structure of the pelagic water column, The spring bloom, High-nitrogen low-chlorophyll (HNLC) regions

UNIT – III Biodiversity and biogeography of Ocean (6 Hours)

Magnitude of Biodiversity; Biodiversity on Land and Sea, Phylogenetic Classification of Marine Biodiversity, Functional Organization of Pelagic and Benthic Life, Major Patterns in the Distribution of Marine Life (Spatial, latitudinal, longitudinal, depth, bottom type); Biogeography of Functional Traits, Evidence for Island Biogeography, Integrative Models of Marine Diversification, Biogeographic Classifications of the Ocean, Biogeography of the Anthropocene Ocean.

UNIT – IV Macro- and trait-based ecology of marine organisms (6 Hours)

Species Interactions, Functional groups of phytoplankton, benthic macrophytes, and grazers; Pelagic food webs, microbial loop, Metabolic scaling and life history, Abundance and the energetic equivalence rule, Macroecology of range size Specialization and resource partitioning, Nonequilibrium dynamics; Biological pump and the global carbon cycle, Trophic control in pelagic ecosystems.

UNIT – V Anthropocene Ocean (5 Hours)

Marine populations in the Anthropocene, Marine defaunation and trophic skew, Empirical evidence for regime shifts in marine ecosystems, Mechanisms of marine regime shifts, Ocean Warming and its effects on community and sea level rise, Ocean Acidification and its effects on organisms and communities, Ecological stoichiometry, Climate change and redistribution of global marine fauna, Tropicalization, The Arctic opening

UNIT – VI Ocean Conservation and Management (5 Hours)

Maximum sustainable yield in fisheries, Strategic conservation of vulnerable life stages, Life history and the effectiveness of marine reserves, Organismal Fitness and Adaptation to the Environment, Dispersal, Recruitment, and Metapopulations, Tagging and tracking, Geochemical tags.

Teaching and learning interface for theoretical concepts

To achieve the course objectives and match with the contents, a wide range of teaching and learning tools will be employed, including (a) Formal lectures; (b) Interactive sessions using visual aid; (c) Case study analyses; (d) Hypothetical scenario building; (e) Group discussion on key topics; and (f) documentary screening and critical analyses.

Practicals/Hands-on Exercises – based on theory (02 Credits: 60 hours)

1. Construct microcosm for marine ecology studies
2-3. Determine environmental partitioning of target chemicals in the constructed microcosm
4-5. Determine physico-chemical properties of given sediment sample
6-7. Examine methods to analyze phytoplankton and zooplanktons in the given water samples and its application in analyzing marine ecology
8. Analyze relationships between soil particle characteristics and biological properties of sediment
9. Analyze oceanographic data by GIS and identify ecologically-relevant oceanographic data using remote sensing
10. Isolate bacteria from the freshwater river and estimate their growth in

seawater

11. Determine microbial density in a given marine water sample
12. Compare the biodiversity of freshwater bodies and marine ecosystems by examining a review/research paper
13. Analyze plate tectonic theory and understand the variations in global marine ecosystems
14. Evaluate merit and demerits of ocean acidification manipulation experiments conducted globally
15. Compare and contrast the benefits of using a storage tank, mixing tank, header tank and experimental tank to understand marine ecology

Teaching and learning interface for practical skills

To impart training on technical and analytical skills related to the course objectives, a wide range of learning methods will be used, including (a) laboratory practicals; (b) field-work exercises; (c) customized exercises based on available data; (d) survey analyses; and (e) developing case studies; (f) demonstration and critical analyses; and (h) experiential learning individually and collectively.

Essential/recommended readings

- Arias, A.H. and Menendez, M.C. eds., 2013. Marine Ecology in a Changing World. CRC Press.
- Garrison, T.S., 2014. Essentials of Oceanography. Cengage Learning.
- Kennish, M.J., 2019. Practical Handbook of Marine Science. CRC Press.
- Kaiser, M.J., Jennings, S., Thomas, D.N. and Barnes, D.K., 2011. Marine Ecology: Processes, Systems, and Impacts. Oxford University Press.
- Mann, K.H. and Lazier, J.R., 2013. Dynamics of Marine Ecosystems: Biological-Physical Interactions in the Oceans. John Wiley & Sons.
- Speight, M.R. and Henderson, P.A., 2013. Marine Ecology: Concepts and Applications.
- Thrush, S., Hewitt, J., Pilditch, C. and Norkko, A., 2021. Ecology of Coastal Marine Sediments: Form, Function, and Change in the Anthropocene. Oxford University Press.

Suggestive readings

- Gray, J.S. and Elliott, M., 2009. Ecology of Marine Sediments: from Science to Management. Oxford University Press.
- Miller, C.B., 2009. Biological Oceanography. John Wiley & Sons.
- Pittman, S.J. ed., 2017. Seascape Ecology. John Wiley & Sons.
- Riley, J.P. and Chester, R. eds., 2016. Chemical Oceanography. Elsevier.
- Talley, L.D., 2011. Descriptive Physical Oceanography: An Introduction. Academic press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE (DSE-EVS-01): ENVIRONMENTAL ECONOMICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSE-EVS-01: ENVIRONMENTAL ECONOMICS	4	2	0	2	Class XII pass	NA

Learning objectives

The Learning Objectives of this course are as follows:

- Appreciate critical linkages between fundamentals of environmental economics and environmental conservation
- Evaluate five megatrends involving climate, development, ecology, economy, and technology
- Inculcate market-based instruments in designing sustainable development approaches
- Gain insights into intricacies of economic valuation of biodiversity and ecosystems for making evidence-based conservation and development priorities
- Empower with the integrated use of economics & ecology in decision-making and law-making processes.

Learning outcomes

After the course, the students will be able to

- Use cost-benefit analysis and valuation techniques for environmental economics and natural resource management
- Implement economic and ecological concepts to influence society and policymakers for environmental and biodiversity conservation
- Act as a consultant to industries and government ministries aiming for sustainability
- Serve as a catalyst for developing ecoliterate industry and evolving sustainable policies
- Evolve ideas and economics-based techniques to design policy instruments for pollution control and management

SYLLABUS OF DSE-EVS-01

Theory (02 Credits: 30 lectures)

UNIT – I Introduction to microeconomics (7 Hours)

Definition and scope of environmental economics; environmental economics versus traditional economics; brief introduction to major components of economy: consumer, firm and their interaction in the market, producer and consumer surplus, market failure, law of demand and supply, tangible and non-tangible goods; utilitariasm; Pareto optimality; compensation principle.

UNIT – II Environmental economics (8 Hours)

Main characteristics of environmental goods; marginal analysis; markets and market failure; social benefit, costs and welfare functions; meaning and types of environmental values; measures of economic values; tangible and intangible benefits; Pareto principle or criterion; Hardin's Thesis of 'The Tragedy of Commons'; Prisoner's dilemma game; methods of abatement of externalities; social cost-benefit analysis; cost-effectiveness analysis.

UNIT – III Economic solutions to environmental problems (7 Hours)

Social costs and benefits of environmental programmes: marginal social benefit of abatement, marginal social cost of abatement; pollution control: policies for controlling air and water pollution, disposal of toxic and hazardous waste- standards vs. emissions charges, environmental subsidies, modelling and emission charges; polluter pay principles; pollution permit trading system.

UNIT – IV Natural resource economics (3 Hours)

Economics of non-renewable resources; economics of fuels and minerals; Hotelling's rule and extensions; taxation; economics of renewable resources; economics of water use, management of fisheries and forests; introduction to natural resource accounting.

UNIT –V Tools for environmental-economic policy (5 Hours)

Growth and environment; environmental audit and accounting, Kuznets curve, environmental risk analysis, assessing benefits and cost for environmental decision making; cost-benefit analysis and valuation: discounting, principles of Cost-Benefit Analysis, estimation of costs and benefits, techniques of valuation, adjusting and comparing environmental benefits and costs.

Teaching and learning interface for theoretical concepts

To achieve the course objectives and match with the contents, a wide range of teaching and learning tools will be employed, including (a) Formal lectures; (b) Interactive sessions using visual aid; (c) Case study analyses; (d) Hypothetical scenario building; (e) Group discussion on key topics; and (f) documentary screening and critical analyses.

Practicals/Hands-on Exercises – based on theory (02 Credits: 60 hours)

1. Conduct cost-benefit analysis of any developmental project
2. Investigate underlying pattern of behavioural economics of selected environmental problem and suggest appropriate solution
3. Calculate energy requirements for decent living in a given country in the background of climate change
4. Determine the potential economic challenges of decarbonization policies and practices being adopted by a country of your choice
5. Apply LCA tools to calculate the energy of construction and manufacturing for appliances, buildings and infrastructure and assess sustainability of the given country
6. Analyze demand and supply curve using
7. Use demand or supply concept and provide empirical evidence on the effects of climate change on the macroeconomy
8. Compare and contrast the demand for and supply of EQ in developed and developing countries
9. Use Marginal Curve Analysis for a given pollution and determine the efficient level of pollution to maximize the net benefits of pollution
10. Determine the social cost of carbon (SCC) to minimize the climate change damages in the cost-benefit analysis of a given project that increase or reduce carbon emission
11. Calculate the value of damages incurred due to release of an additional tonne of carbon into the atmosphere
12. Use Demand for and supply of environmental quality (EQ) in the Environmental Kuznets Curve (EKC) hypothesis
13. Show the usefulness of (a) utility curve analysis, (b) indifference curve analysis, (c) production possibility frontier, (d) market failure or market equilibrium, and (e) Prisoners' dilemma game
14. Conduct an environmental audit of your institution and suggest strategies to improve its sustainability status

Teaching and learning interface for practical skills

To impart training on technical and analytical skills related to the course objectives, a wide range of learning methods will be used, including (a) laboratory practicals; (b) field-work exercises; (c) customized exercises based on available data; (d) survey analyses; and (e) developing case studies; (f) demonstration and critical analyses; and (h) experiential learning individually and collectively.

Essential/recommended readings

- Callan, S.J. and Thomas, J.M., 2013. Environmental economics and management: Theory, policy, and applications. Cengage learning.
- Hanley, N., Shogren, J.F. and White, B., 2016. Environmental economics: in theory and practice. Macmillan International.
- Hawken, P., Lovins, A.B. and Lovins, L.H., 2013. *Natural Capitalism: The Next Industrial Revolution*. Routledge.
- Kolstad, C.D. 2010. Environmental Economics. Oxford University Press.
- Thomas, J.M. & Callan, S.J. 2007.Environmental Economics. Thomson Learning Inc.
- Thampapillai, D.J. and Ruth, M., 2019. Environmental Economics: Concepts, Methods and Policies. Routledge.
- Tietenberg, T. and Lewis, L., 2018. Environmental and Natural Resource Economics. Routledge.

Suggestive readings

- Stahel, W.R. and MacArthur, E., 2019. The Circular Economy: A User's Guide. Routledge, NY, USA.
- Frodermann, L., 2018. *Exploratory Study on Circular Economy Approaches*. Springer, Fachmedien Wiesbaden.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVES (DSE-EVS-2): SOLID WASTE MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSE-EVS-2: SOLID WASTE MANAGEMENT	4	2	0	2	Class XII pass	NA

Learning objectives

The Learning Objectives of this course are as follows:

- Understand physical and chemical processes for classifying, segregating, and managing solid wastes
- Characterize the different solid waste types and apply interdisciplinary knowledge for effective solid waste collection and processing of solid waste
- Compare methods of collection, transfer, storage, treatment, disposal, and use of solid waste in developed and developing nations
- Management, construction, and operations of landfill and other solid waste management facilities

Learning outcomes

After successful completion of this course, students will be able to:

- Conduct the life cycle assessment of solid waste and its impact on the urban metabolisms
- Identify and select landfill sites using GIS and other analytical techniques
- Examine and apply technical and legal solutions for sustainable management of solid waste
- Plan and design waste recycling programmes, compost and incineration facilities, and landfills
- Mine and analyze the relevant data and apply multiple criteria decision-making systems for a sustainable integrated solid waste management plan

SYLLABUS OF DSE-EVS-02

Theory (02 Credits: 30 lectures)

UNIT – I Effect of solid waste disposal on the environment (6 Hours)

Sources and generation of solid waste, their classification and chemical composition; characterization of municipal solid waste; hazardous waste and biomedical waste. Impact of solid waste on environment, human and plant health; effect of solid waste and industrial effluent discharge on water quality and aquatic life; mining waste and land degradation; effects of landfill leachate on soil characteristics and groundwater pollution.

UNIT – II Common methods to manage solid waste (4 Hours)

Different techniques used in the collection, storage, transportation and disposal of solid waste (municipal, hazardous and biomedical waste); landfill (traditional and sanitary landfill design); thermal treatment (pyrolysis and incineration) of waste material; drawbacks in waste management techniques.

UNIT – III Industrial waste management and resource recovery (8 Hours)

Types of industrial waste: hazardous and non-hazardous; effect of industrial waste on air, water and soil; industrial waste management and its importance; stack emission control and emission monitoring; effluent treatment plant and sewage treatment plant. 4R- reduce, reuse, recycle and recover; biological processing - composting, anaerobic digestion, aerobic treatment; reductive dehalogenation; mechanical biological treatment; green techniques for waste treatment.

UNIT – IV Integrated waste management and waste-to-energy (8 Hours)

Concept of Integrated waste management; waste management hierarchy; methods and importance of Integrated waste management. Concept of energy recovery from waste; refuse-derived fuel (RDF); different WTE processes: combustion, pyrolysis, landfill gas (LFG) recovery; anaerobic digestion; gasification. Life-cycle assessment (LCA): Cradle to grave approach; lifecycle inventory of solid waste; role of LCA in waste management; advantage and limitation of LCA; case study on LCA of a product.

UNIT – V Policies for solid waste management (4 Hours)

Municipal Solid Wastes (Management and Handling) Rules 2000; Hazardous Wastes Management and Handling Rules 1989; Bio-Medical Waste (Management and Handling) Rules 1998; Ecofriendly or green products.

Teaching and learning interface for theoretical concepts

To achieve the course objectives and match with the contents, a wide range of teaching and learning tools will be employed, including (a) Formal lectures; (b) Interactive sessions using visual aid; (c) Case study analyses; (d) Hypothetical scenario building; (e) Group discussion on key topics; and (f) documentary screening and critical analyses.

Practicals/Hands-on Exercises – based on theory (02 Credits: 60 hours)

1. Conduct life cycle assessment of solid waste generated in your institute/residential area/city
2. Design a composting pit for solid waste management in your institute or its nearby area
3. Conduct geotechnical characterization of the selected solid waste generated in the given area
4. Determine microbial density in the given solid waste collected from your institute
5. Estimate environmental impacts of greenhouse gases released and energy recovery from solid waste being collected in a given landfill
6. Assess cost-benefit analysis of various processing options of the given solid waste being managed in your city
7. Field survey of solid waste dumping site of your city, document the quantum of waste being collected and stored, and identify the hidden environmental issues
8. Analyze the site plan of the waste dumping site visited in 7, and compare and contrast it with the most successful design being used in the given developed country
9. Screen a documentary on solid waste management of national or international relevance. Identify and analyze socio-economic impacts and suggest scientific solutions to address the concerned environmental challenges.
10. Critically evaluate the recent plastic management policy of your country and make specific recommendations for immediate amendment aiming for environmental sustainability
11. Select a type of solid waste and prepare a documentary of its management in your city highlighting the merit/demerit of current practices, associated socio-economic and environmental issues and possible solutions suggested by experts
12. Compare and contrast solid waste management practices being adopted in two areas of your city with photographic and videographic evidence

Teaching and learning interface for practical skills

To impart training on technical and analytical skills related to the course objectives, a wide range of learning methods will be used, including (a) laboratory practicals; (b) field-work exercises; (c) customized exercises based on available data; (d) survey analyses; and (e) developing case studies; (f) demonstration and critical analyses; and (h) experiential learning individually and collectively.

Essential/recommended readings

- Bagchi, A. 2004. Design of Landfills and Integrated Solid Waste Management. John Wiley & Sons.
- Blackman Jr, W.C., 2016. Basic Hazardous Waste Management. CRC press.
- Chang, N.B. and Pires, A., 2015. Sustainable Solid Waste Management: A Systems Engineering Approach. John Wiley & Sons.

- Kaza, S., Yao, L., Bhada-Tata, P. and Van Woerden, F., 2018. What A Waste 2.0: A Global Snapshot of Solid Waste Management to 2050. World Bank Publications.
- McDougall, F. R., White, P. R., Franke, M., & Hindle, P. 2008. Integrated Solid Waste Management: A Life Cycle Inventory. John Wiley & Sons.
- Rada, E.C. ed., 2016. Solid Waste Management: Policy and Planning for a Sustainable Society. CRC Press.

Suggestive readings

- Asnani, P.U. and Zurbrugg, C., 2007. Improving Municipal Solid Waste Management in India: A Sourcebook for Policymakers and Practitioners. World Bank Publications.
- Christensen, T. ed., 2011. Solid Waste Technology and Management. John Wiley & Sons.
- Tchobanoglous, G. and Kreith, F., 2002. Handbook of Solid Waste Management. McGraw-Hill Education.
- Vanatta, B., 2000. Guide for Industrial Waste Management. Diane Publishing.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE (DSE-EVS-3): ENVIRONMENTAL MODELLING

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSE-EVS-3: ENVIRONMENTAL MODELLING	4	2	0	2	Class XII pass	NA

Learning objectives

The Learning Objectives of this course are as follows:

- Gain insights into the concepts, methods, tools and application of environmental modelling
- Appreciate modelling approach with a clear understanding of its scope, limitations and complexity
- Improve knowledge of fate and transport of pollutants and important natural processes and events
- Empower with the application of modelling in ecosystem management via better environmental management, decision making and policy development

Learning outcomes

After the course, students will be able to:

- Choose the appropriate model for a given ecological question or environmental concern
- Overcome the common challenges of model building for improved predictability
- Evolve a better plan to implement and validate model outputs
- Apply models while keeping in view the strength and weaknesses of different model types
- Practice sustainability management, implement cleaner technologies, and argue in favour of environmental protection.

SYLLABUS OF DSE-EVS-3

Theory (02 Credits: 30 lectures)

UNIT – I Working with models (8 Hours)

Goals, objectives, scope and process of modelling in the environment. Modelling approach: deterministic, stochastic and physical. How to choose, construct and interpret statistical models, Statistical frameworks, Philosophy of statistical modeling, Fitting models to real-world data, Techniques–from simple (distribution fitting) to complex (state-space modeling), Techniques for data manipulation and display. Uncertainties in model development: Design,

analysis, documentation, and communication; Data availability and optimal modelling, Reliability of ecological models

UNIT – II Modelling in Science and Environment (12 Hours)

Science models: Visual models, Mathematical models, and Computer models. Model types: Conceptual, Mathematical, and Computational Models; Individual- or agent-based models, Unstructured population models, and Stage-structured matrix models, Single-, two-, and three-state variable models. Environmental models: Fate and transport models, Emissions and activities models, Exposure models, and Impact models; Models of common ecosystems (aquatic, terrestrial, and man-managed) for biodiversity conservation and ecosystem management; Model of the socio-ecological system.

UNIT – III Models for "out of balance" or environmental problems (10 Hours)

Acidification models in water pollution, Eutrophication models, Models of oxygen depletion, Fire and the spread of fire, Air pollution, Toxic substance pollution, Climate, weather and global warming, Environmental/ecological modeling for regulatory risk assessments and hazard predictions.

Teaching and learning interface for theoretical concepts

To achieve the course objectives and match with the contents, a wide range of teaching and learning tools will be employed, including (a) Formal lectures; (b) Interactive sessions using visual aid; (c) Case study analyses; (d) Hypothetical scenario building; (e) Group discussion on key topics; and (f) documentary screening and critical analyses.

Practicals/Hands-on Exercises – based on theory (02 Credits: 60 hours)

1. Test and practice different steps of model development
2. Validate the functioning of the model developed at 1
3. Apply the model to predict outcomes of different environmental scenarios
4. Formulate mathematical and computational models to visualize solar radiance on Earth
5. Develop model wind speed at a given area for establishing wind energy and power plant
6. Evaluate the given multiple leaf-layer model
7. Formulate, implement and evaluate the discrete model for population dynamics
8. Develop a model to predict predator-prey dynamics
9. Analyze competition between different species using an appropriate model
10. Model hydrological networks of the given area
11. Visualize digital elevation data for hydrological network analysis
12. Compare and contrast commonly used software for environmental and ecological modelling

Teaching and learning interface for practical skills

To impart training on technical and analytical skills related to the course objectives, a wide range of learning methods will be used, including (a) laboratory practicals; (b) field-work exercises; (c) customized exercises based on available data; (d) survey analyses; and (e) developing case studies; (f) demonstration and critical analyses; and (h) experiential learning individually and collectively.

Essential/recommended readings

- Beven, K., 2018. Environmental modelling: an uncertain future? CRC press.
- Essington, T.E., 2021. Introduction to Quantitative Ecology: Mathematical and Statistical Modelling for Beginners. Oxford University Press.
- Holzbecher, E., 2012. Environmental Modelling: Using MATLAB. Springer Science & Business Media.
- Jørgensen, S.E., 2009. Ecological Modelling: An Introduction. WIT press.
- Kelly, R.E., Drake, N.A. and Barr, S.L. eds., 2004. Spatial Modelling of the terrestrial environment. John Wiley & Sons.
- Sang, N. ed., 2020. Modelling Nature-Based Solutions: Integrating Computational and Participatory Scenario Modelling for Environmental Management and Planning. Cambridge University Press.
- Skidmore, A., 2017. Environmental Modelling with GIS and Remote Sensing. CRC Press.
- Wainwright, J. and Mulligan, M. eds., 2013. Environmental Modelling: Finding Simplicity in Complexity. John Wiley & Sons.

Suggestive readings

- Clark, J.S. and Gelfand, A.E. eds., 2006. Hierarchical modelling for the environmental sciences: statistical methods and applications. OUP Oxford.
- Emetere, M.E., 2019. Environmental Modeling Using Satellite Imaging and Dataset Re-processing. Springer International Publishing.
- Fort, H., 2020. Ecological Modelling and Ecophysics: Agricultural and Environmental Applications. IOP Publishing.
- Parnis, J.M. and Mackay, D., 2020. Multimedia Environmental Models: The Fugacity Approach. CRC Press.
- Soetaert, K. and Herman, P.M., 2009. A Practical Guide to Ecological Modelling: Using R as a Simulation Platform (Vol. 7, No. 7). New York: Springer.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE (DSE-EVS-4): BIOPROSPECTING

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSE-EVS-4: BIOPROSPECTING	4	2	0	2	Class XII pass	NA

Learning objectives

The Learning Objectives of this course are as follows:

- Learning the concepts and practices of bioprospecting.
- Empower with traditional and modern knowledge related to bioprospecting
- Gain insights into the discovery of novel chemicals of industrial and ecological significance
- Link between the traditional knowledge and the current state of development
- Approaches being used for bioprospecting and regulations relevant to safeguard biodiversity and traditional knowledge

Learning outcomes:

After the course, students will be able to

- Inventorize and monitor biodiversity in different agro-ecological regions
- Act as a catalyst in the discovery of novel compounds from biodiversity across the ecosystems
- Identify alternative sources of chemicals/genes relevant to industry and society
- Evolve combinatorial approaches for screening and isolation of targeted compounds/genes
- Implement relevant policies and laws for safeguarding biodiversity and ancient knowledge

SYLLABUS OF DSE-EVS-4

Theory (02 Credits: 30 lectures)

UNIT – I Concept and Scope (4 Hours)

Definition, Types, and Current practices; Relevance for society, industry, environment, ecosystems, biodiversity and policy; Global status and national efforts

UNIT – II Targets of Bioprospecting (6 Hours)

Novel chemicals, genes, genotypes, population, idea, and design. Plants, microbes, animals, bioactive compounds, and chemicals. Relevant case studies focusing on different target; Success and failure of bioprospecting in sustainable development

UNIT – III Approaches and Methods of Bioprospecting (10 Hours)

Traditional knowledge, ehnopharmaceutical, ecological, and phylogenetic; Biosynthesis and chemical modification, Genetic engineering, Expression of the target gene, Cultivation and mass propagation of target organism; Choice of approach and its limitations or strength. Tools and techniques to practice bioprospecting; Biochemical, physiological, molecular, and chemical assays; Genomic, proteomic, Computational biology and combinatorial.

UNIT – IV Application of Bioprospecting (6 Hours)

Novel drug development, Species and genetic resource conservation, Sustainable use and conservation of biodiversity, Ecosystem management, Industrial sustainability, Agriculture sustainability, Sustainable health, Disease regulation, and culture conservation, Bridge between ancient knowledge to a modern approach to sustainable development.

UNIT – V Laws and Policies Relevant to Bioprospecting (4 Hours)

Convention on biodiversity; Benefit-sharing, Biodiversity Act, Intellectual Property Rights, Biopiracy; Case studies on neem, turmeric, and basmati rice;

Teaching and learning interface for theoretical concepts

To achieve the course objectives and match with the contents, a wide range of teaching and learning tools will be employed, including (a) Formal lectures; (b) Interactive sessions using visual aid; (c) Case study analyses; (d) Hypothetical scenario building; (e) Group discussion on key topics; and (f) documentary screening and critical analyses.

Practicals/Hands-on Exercises – based on theory (02 Credits: 60 hours)

1. Field visit to a local nursery and document medicinal plants having importance in pharmaceutical industry nationally and globally and identify the bioactive compounds
2. Isolate alkaloids from target species using differential solvent fractionation techniques
3. Analyze the separated bioactive compound from 2 using wavelength spectra and chromatographic technique
4. Determine the antimicrobial activity of the given compound or compound fractionated in 2
5. Screen microbes and plants for their ability to produce different glycosides of ecological and economic significance
6. Isolate and prospect microbes of ecological significance, especially for promoting plant growth
7. Test the given plant extract or microbial culture for their ability to control phytodiseases causing organism
8. Fractionate pigments from targeted plants and microbes and determine their potential industrial use

9. Apply computational biology and phylogenetic approach to identify the novel source of targeted compound/gene/protein or enzyme
10. Screen plants for their antioxidant potential and reduce the oxidative stress
11. Visit laboratories / Industries / Institutes engaged in bioprospecting and submit the report in a prescribed format
12. Analyze policies related to bioprospecting and identify the areas for amendments to improve their applicability

Teaching and learning interface for practical skills

To impart training on technical and analytical skills related to the course objectives, a wide range of learning methods will be used, including (a) laboratory practicals; (b) field-work exercises; (c) customized exercises based on available data; (d) survey analyses; and (e) developing case studies; (f) demonstration and critical analyses; and (h) experiential learning individually and collectively.

Essential/recommended readings

- Bull, A.T., 2004. Microbial Diversity and Bioprospecting. ASM Press.
- Hayden, C. 2020. When Nature Goes Public: The Making and Unmaking of Bioprospecting in Mexico (Vol. 1). Princeton University Press.
- Paterson, R. and Lima, N. eds., 2016. Bioprospecting: Success, Potential and Constraints (Vol. 16). Springer.
- Sampath, P.G., 2005. Regulating Bioprospecting: Institutions for Drug Research, Access, and Benefit-Sharing. United Nations University Press.
- Harvey, A.L. and Gericke, N., 2011. Bioprospecting: creating a value for biodiversity. Research in Biodiversity–Models and Applications, InTech Open, pp.323-338.

Suggested readings

- Hewlett, J., 2000. Bioprospecting: Purifying Protein by Design. Hofstra University, New York State Education Department
- Hsu, E. and Harris, S. eds., 2010. Plants, Health and Healing: On the Interface of Ethnobotany and Medical Anthropology (Vol. 6). Berghahn Books.
- Pavlinov, I. ed., 2011. Research in Biodiversity: Models and Applications. BoD–Books on Demand. InTech Open.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF CHEMISTRY
Category-I
B Sc. (Hons) Chemistry

DISCIPLINE SPECIFIC CORE COURSE -7 (DSC-7): Chemistry of d- and f-block Elements & Quantitative Inorganic Analysis

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Chemistry of d- and f- Elements & quantitative Inorganic Analysis (DSC-7)	**04**	**02**	**0**	**02**	Passed Class 12th with Physics, Chemistry, Mathematics	**NIL**

Learning Objectives

The Objectives of this course are as follows:

- To provide thorough knowledge about the d- and f- block elements with respect to the general group trends, physical and chemical properties of these elements.
- To familiarize the students with the d- and f-block elements and get an idea about horizontal similarity in a period in addition to vertical similarity in a group.
- To impart the knowledge about inorganic polymer
- To give an idea about the principles of gravimetric analysis.

Learning outcomes

By studying this course, the students will be able to:

- List the important properties of transition metals, lanthanoids, and actinoids
- Use Latimer diagrams to predict and identify species which are reducing, oxidizing and tend to disproportionate and calculate skip step potentials.
- Describe the classification, structure and applications of Inorganic Polymers.
- List and use the principles of gravimetric analysis for quantitative analysis

SYLLABUS OF DSC-7

UNIT – 1: Transition Elements **(12 Hours)**

General group trends with special reference to electronic configuration, colour, variable valency, magnetic properties, catalytic properties, and ability to form complexes. Stability of various oxidation states and e.m.f. (Latimer diagrams), Frost diagrams of Mn and Cr.

A brief discussion of differences between the first, second and third transition series

UNIT – 2: Lanthanoids and Actinoids (8 Hours)

A brief discussion of electronic configuration, oxidation states, colour, spectral and magnetic properties. Lanthanoid contraction (causes and effects) separation of lanthanoids by ion exchange method.

UNIT – 3: Inorganic Polymer (8 Hours)

Comparison with organic polymers, classification, structure and applications of following inorganic polymers:

- Borates
- Silicates, silicones
- Phosphates
- Phosphazenes (for cyclic polymers, only trimer is to be discussed)

UNIT – 4: Principles of gravimetric analysis (2 Hours)

Particle size, Precipitation, Coagulation, Peptization, Co-precipitation, Digestion, Filtration and washing the precipitate, Drying and ignition the precipitate

Practical component (60 Hours)

(Laboratory periods:15 classes of 4 hours each)

(A) Gravimetry

1. Estimation of Ni(II) using dimethylglyoxime (DMG).
2. Estimation of copper as CuSCN.
3. Estimation of iron as Fe_2O_3 by precipitating iron as $Fe(OH)_3$. (by homogeneous and heterogeneous method)
4. Estimation of Al(III) by precipitating with oxime and weighing as $Al(oxime)_3$ (aluminiumoxinate).

(B) Inorganic Preparations

1. Potassium aluminium sulphate $KAl(SO_4)_2.12H_2O$ (potash alum) or Potassium chromium sulphate $KCr(SO_4)_2.12H_2O$ (chrome alum).
2. Manganese phosphate and
3. Sodium peroxoborate

(C) Paper chromatographic separation of following metal ions (minimum two should be done):

1. Ni(II) and Co(II)

2. Cu(II) and Cd(II)
3. Fe(III) and Al(III)

Essential/recommended readings

Theory:

1. Lee, J.D.(2010),**ConciseInorganicChemistry**,WileyIndia.
2. Huheey,J.E.;Keiter,E.A.;Keiter;R.L.;Medhi,O.K.(2009),**InorganicChemistry-PrinciplesofStructureandReactivity**,PearsonEducation.
3. Atkins, P.W.; Overton, T.L.; Rourke, J.P.; Weller, M.T.; Armstrong, F.A. (2010), **Shriver and Atkins Inorganic Chemistry**, 5th Edition, Oxford University Press.
4. Miessler, G.L.; Fischer P.J.; Tarr, D. A. (2014), **Inorganic Chemistry**, 5th Edition, Pearson.
5. Pfennig, B. W. (2015), **Principles of Inorganic Chemistry**. John Wiley & Sons.
6. Cotton, F.A.; Wilkinson, G. (1999), **Advanced Inorganic Chemistry,** Wiley-VCH.
7. Das, A. K.; Das, M. (2014), **Fundamental Concepts of Inorganic Chemistry**, 1st Edition, Volume 1-3, CBS Publishers & Distributors Pvt. Ltd.
8. Chandrashekhar,V. (2005), **Inorganic and Organometallic Polymers** , 5th Edition, Springer Publications

Practical:

1. Jeffery, G.H.; Bassett, J.; Mendham, J.; Denney, R.C. (1989), **Vogel's Textbook of Quantitative Chemical Analysis,** John Wiley and Sons,
2. Harris, D. C.; Lucy,C. A.(2016), **Quantitative Chemical Analysis,** 9th Edition, Freeman and Company.
3. Day, R. A.; Underwood, A. L. (2012), **Quantitative Analysis**, Sixth Edition, PHI Learning Private Limited.
4. Marr, G.; Rockett, B.W. (1972), **Practical Inorganic Chemistry**, Van Nostrand Reinhold.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE -8 (DSC-8): Carbonyls, Carboxylic acids, Amines, Nitro compounds, Nitriles, Isonitriles and Diazonium salts

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Carbonyls, Carboxylic Acids, Amines, Nitro Compounds, Nitriles, Isonitriles and Diazonium salts (DSC-8)	04	03	0	01	Passed Class 12th with Physics, Chemistry, Mathematics	NIL

Learning objectives

The objectives of this course are as follows:

- To infuse students with the details of the chemistry of aldehydes, ketones, carboxylic acids and their derivatives, nitro, amines and diazonium salts.
- To make students aware of the chemical synthesis, properties, reactions and key applications of the listed classes of compounds and develop understanding of detailed mechanistic pathways for each functional group to unravel the spectrum of organic chemistry and the extent of organic transformations.
- To aid in the paramount learning of the concepts and their applications.

Learning outcomes

By studying this course, students will be able to:

- Explain the chemistry of oxygen and nitrogen containing compounds.
- Use the synthetic chemistry learnt in this course to do functional group transformations.
- Propose plausible mechanisms for the reactions under study.

SYLLABUS OF DSC-8

UNIT – 1: Carbonyls, Carboxylic acid & their derivatives (27 Hours)

Carbonyl Compounds: Reaction of carbonyl compounds with ammonia derivatives, Aldol and Benzoin condensation, Knoevenagel condensation, Claisen-Schmidt, Perkin, Cannizzaro and

Wittig reaction, Beckmann and Benzil-Benzilic acid rearrangements, haloform reaction and Baeyer Villiger oxidation, α-substitution reactions, oxidations and reductions (Clemmensen, Wolff Kishner, $LiAlH_4$, $NaBH_4$, MPV, PDC), addition reactions of α,β-unsaturated carbonyl compounds: Michael addition.
Carboxylic acids and derivatives: Effect of substituents on acidic strength on carboxylic acids, HVZ reaction, typical reactions of dicarboxylic acids and hydroxy acids. Comparative study of nucleophilic acyl substitution for acid chlorides, anhydrides, esters and amides, Mechanism of acidic and alkaline hydrolysis of esters, Dieckmann and Reformatsky reactions, Hoffmann-bromamide degradation and Curtius rearrangement.
Active methylene compounds: Keto-enol tautomerism. Preparation and synthetic applications of diethyl malonate and ethyl acetoacetate.

UNIT – 2: **Nitro Compounds, Amines, Diazonium salts, Nitriles and Isonitriles (18 Hours)**

Nitro compounds: General methods of preparation: from alkyl halides, alkanes, oxidation of amines and oximes. Henry reaction, Nef reaction, Reduction-electrolytic reduction, reaction with nitrous acid, reduction in acidic, basic and neutral medium (for aromatic compounds)

Amines: Preparation**,** chirality in amines (pyramidal inversion), Basicity of amines: Effect of substituents, solvent and steric effects, distinction between Primary, secondary and tertiary amines using Hinsberg's method and nitrous acid, Gabriel Phthalimide synthesis, Carbylamine reaction, Mannich reaction, Hoffmann's exhaustive methylation, Hofmann-elimination reaction and Cope elimination.

Diazonium Salts**:** Synthetic applications of diazonium salts including preparation of arenes, haloarenes, phenols, cyano and nitro compounds; Coupling reactions of diazonium salts (preparation of azo dyes).

Nitriles: Preparation using following reactions: Dehydration of amides and aldoximes, substitution reaction in alkyl halides and tosylates, from Grignard reagents and from dehydrogenation of primary amines. Properties: Physical properties, discussion on the following reactions with mechanism: Reaction with Grignard reagent, hydrolysis, addition reaction with HX, NH_3, reaction with aqueous ROH, Reduction reactions-catalytic reduction and Stephen's reaction, Condensation reactions-Thorpe Nitrile Condensation.

Isonitriles: Preparation from the following reactions: Carbylamine reaction, substitution in alkyl halides and dehydrogenation of N-substituted formamides. Properties: Physical properties, discussion on the following reactions with mechanism: Hydrolysis, reduction, addition of– HX, X_2 and sulphur, Grignard reaction, oxidation and rearrangement.

Practical component (30 Hours)
(Laboratory periods:15 classes of 2 hours each)

1. Preparation of oximes for aldehydes/ketones (like benzaldehyde, ethyl methyl ketone, cyclohexanone etc.)
2. Preparation of semicarbazone derivatives for aldehydes/ketones (like benzaldehyde, ethyl methyl ketone, cyclohexanone etc.)
3. Hydrolysis of amides/esters.
4. Selective reduction of *m*-dinitrobenzene to *m*-nitroaniline.
5. Preparation of S-benzylisothiouronium salts for water soluble and water insoluble carboxylic acids.
6. Systematic qualitative analysis of the given organic compounds containing monofunctional groups (aromatic hydrocarbons, alcohols, phenol) and preparation of one suitable derivative.

Students should be exposed to preparative routes for the synthesis of 3,5-dinitrobenzoate, benzoates, acetate derivatives.

Note: The above derivatives should be prepared using 0.5-1.0 g of the organic compound. The solid samples must be collected and may be used for recrystallization, melting point and compound analysis**.**

Essential/recommended readings

Theory:

1. Morrison, R. N., Boyd, R. N., Bhattacharjee, S.K. (2010), **Organic Chemistry**, 7th Edition, Dorling Kindersley (India) Pvt. Ltd., Pearson Education.
2. Finar, I.L. **Organic Chemistry** Volume 1, Dorling Kindersley (India) Pvt. Ltd., Pearson Education.
3. Finar, I.L. **Organic Chemistry** Volume 2, Dorling Kindersley (India) Pvt. Ltd., Pearson Education.
4. Solomons, T.W.G., Fryhle, C.B.; Snyder, S.A. (2017), **Organic Chemistry**, 12th Edition, Wiley.

Practical:

1. Vogel, A.I. (2012), **Quantitative Organic Analysis**, Part 3, Pearson Education.
2. Mann, F.G., Saunders, B.C. (2009), **Practical Organic Chemistry**, Pearson Education.
3. Furniss, B.S., Hannaford, A.J., Smith, P.W.G., Tatchell, A.R. (2012), **Vogel's Textbook of Practical Organic Chemistry**, 5th Edition, Pearson.
4. Ahluwalia, V.K., Dhingra, S. (2004), **Comprehensive Practical Organic Chemistry: Qualitative Analysis**, University Press.
5. Ahluwalia, V.K., Aggarwal, R. (2004), **Comprehensive Practical Organic Chemistry: Preparation and Quantitative Analysis**, University Press.
6. Pasricha, S., Chaudhary, A. (2021), **Practical Organic Chemistry: Volume–I**, I K International Publishing house Pvt. Ltd, New Delhi.
7. Pasricha, S., Chaudhary, A. (2021), **Practical Organic Chemistry: Volume–II**, I K International Publishing house Pvt. Ltd, New Delhi.

Suggestive Readings

1. Mukherji, S.M., Singh, S.P. (2017), **Reaction Mechanism in Organic Chemistry**, Trinity Press.
2. Singh,J., Awasthi, S. K., Singh, Jaya, **Fundamentals of Organic Chemistry-III**, Pragati Prakashan (2023)
3. Carey, F.A., Sundberg, R. J. (2008), **Advanced Organic Chemistry: Part B: Reaction and Synthesis**, Springer.
4. Bruice, P.Y. (2015), **Organic Chemistry,** 3rd Edition, Pearson.
5. Patrick, G. (2003), **BIOS Instant Notes in Organic Chemistry**, Viva Books.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 9 (DSC-9): Chemical equilibrium, Ionic equilibrium, conductance and solid state

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Chemical equilibrium, Ionic equilibrium, conductance and solid state (DSC-9)	**04**	**03**	**0**	**01**	**Passed Class XII with Physics, Chemistry and Mathematics**	**NIL**

Learning Objectives:

The Learning Objectives of this course are as follows:

- To make students understand the concept of chemical equilibrium and ionic equilibrium.
- To introduce the concept of electrolytes, ionization of various electrolytes, pH.
- To explain the applications of ionization in buffer, hydrolysis, acid-base titrations and indicators.
- To introduce the concept of electrolytic conductance with respect to strong and weak electrolytes and then extend it to understand concepts like ionic mobility, transference and related properties.
- To develop the advance concept of solid state with emphasis on crystal structures in general and cubic crystals in details.

Learning Outcomes:

By studying this course, students will be able to:

- Apply the concept of equilibrium to various physical and chemical processes.
- Derive and express the equilibrium constant for various reactions at equilibrium.
- Use Le Chatelier's principle to predict the thermodynamic conditions required to get maximum yield of a reaction
- Apply the concept of equilibrium to various ionic reactions.
- List different types of electrolytes and their properties related to conductance in aqueous solutions.
- Use conductance measurements for calculating many properties of the electrolytes.

- Prepare buffer solutions of appropriate pH.
- Explain the crystal properties and predict the crystal structures of cubic systems form the XRD.
- Use the instruments like pH-meter and conductivity meters.

SYLLABUS OF DSC-9

UNIT – 1: Chemical Equilibrium (6 Hours)

Criteria of thermodynamic equilibrium, degree of advancement of reaction, Chemical equilibria in ideal gases, Thermodynamic derivation of relation between Gibbs free energy of a reaction and reaction quotient, Equilibrium constants and their dependence on temperature, pressure and concentration, Le Chatelier's Principle (Quantitative treatment), Free energy of mixing and spontaneity (qualitative discussion).

UNIT – 2: Ionic equilibrium (12 Hours)

Strong, moderate and weak electrolytes, Arrhenius theory of electrolytic dissociation, degree of ionization, factors affecting degree of ionization, ionization constant and ionic product of water. Ionization of weak acids and bases, pH scale, common ion effect; dissociation constants of mono and diprotic acids. Salt hydrolysis-calculation of hydrolysis constant, degree of hydrolysis and pH for different salts. Buffer solutions; derivation of Henderson equation and its applications. Solubility and solubility product of sparingly soluble salts – applications of solubility product principle. Qualitative treatment of acid – base titration curves. Theory of acid–base indicators; selection of indicators and their limitations.

UNIT – 3: Conductance (12 Hours)

Quantitative aspects of Faraday's laws of electrolysis, Conductivity, equivalent and molar conductivity and their variation with dilution for weak and strong electrolytes. Molar conductivity at infinite dilution. Kohlrausch's law of independent migration of ions. Debye-Huckel-Onsager equation, Wien effect, Debye-Falkenhagen effect, Walden's rule. Ionic velocity, mobility and their determination, transference number and its relation to ionic mobility, determination of transference number using Moving Boundary methods. Applications of conductance measurement: (i) degree of dissociation of weak electrolytes, (ii) ionic product of water (iii) solubility and solubility product of sparingly soluble salts, (iv) conductometric titrations (v) hydrolysis constants of salts.

UNIT – 4: Solid state (15 Hours)

Nature of the solid state, law of constancy of interfacial angles, law of rational indices, Miller indices, elementary idea of symmetry, seven crystal systems and fourteen Bravais lattices; X-ray diffraction, Bragg's law, a simple account of rotating crystal method and powder pattern method. Analysis of powder diffraction patterns of NaCl, CsCl and KCl.

Practical component (30 Hours)

(Laboratory periods: 15 classes of 2 hours each)

pH metry:

1. Study the effect of addition of HCl/NaOH on pH to the solutions of acetic acid, sodium acetate and their mixtures.
2. Preparation of buffer solutions of different pH values
   a. Sodium acetate-acetic acid
   b. Ammonium chloride-ammonium hydroxide
3. pH metric titration of
   a. Strong acid with strong base
   b. Weak acid with strong base. Determination of dissociation constant of a weak acid.

Conductometry:

1. Determination of cell constant
2. Determination of conductivity, molar conductivity, degree of dissociation and dissociation constant of a weak acid.
3. Perform the following conductometric titrations:
   a. Strong acid vs. strong base
   b. Weak acid vs. strong base
   c. Mixture of strong acid and weak acid vs. strong base
   d. Strong acid vs. weak base

p-XRD *(p-XRD crystal pattern to be provided to the students)*

1. Differentiate and classify the given set of the diffraction pattern as crystalline materials or amorphous (Glass) substance.
2. Carry out analysis of a given set of p-XRD and determine the type of the cubic crystal structure
   a. NaCl
   b. CsCl
   c. KCl
3. Determination of approximate crystal size from a given set of p-XRD

Essential/recommended readings

Theory

1. Peter, A.; Paula, J. de. (2011), **Physical Chemistry**, 9th Edition, Oxford University Press.
2. Castellan, G. W. (2004), **Physical Chemistry**, 4th Edition, Narosa.
3. Kapoor, K.L. (2015), **A Textbook of Physical Chemistry**, Vol 2, 6th Edition, McGraw Hill Education.
4. McQuarrie, D. A.; Simon, J. D. (2004), **Molecular Thermodynamics**, Viva Books Pvt. Ltd.
5. Kapoor, K.L. (2015),**A Textbook of Physical Chemistry**, Vol 1, 6th Edition, McGraw Hill Education.

Practical:

1. Khosla, B.D.; Garg, V.C.; Gulati, A. (2015), **Senior Practical Physical Chemistry**, R. Chand & Co, New Delhi.
2. Kapoor, K.L. (2019), **A Textbook of Physical Chemistry**, Vol.7, 1st Edition, McGraw Hill Education.
3. Garland, C. W.; Nibler, J. W.; Shoemaker, D. P. (2003), **Experiments in Physical Chemistry**, 8th Edition, McGraw-Hill, New York.

Suggestive readings

1. Levine, I.N. (2010), **Physical Chemistry**, Tata Mc Graw Hill.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

POOL OF DISCIPLINE SPECIFIC ELECTIVE COURSE

DISCIPLINE SPECIFIC ELECTIVE COURSE -1 (DSE-1): Nuclear and Environmental Chemistry

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Nuclear and Environmental Chemistry (DSE-1)	**04**	**03**	**0**	**01**	Passed Class 12th with Physics, Chemistry	**NIL**

Learning Objectives

The Objectives of this course are as follows:

- To make students know more about nuclear chemistry
- To familiarise the students about environmental chemistry, especially with respect to air and water

Learning outcomes

By studying this course, the students will be able to:

- Gain knowledge about Nuclear chemistry, radioactive decay, nuclear disasters, and nuclear waste and their disposal.
- Describe the composition of air, various air pollutants, effects and control measures of air pollutants.
- List different sources of water, water quality parameters, impacts of water pollution, water treatment.
- Identify different industrial effluents and their treatment methods.

SYLLABUS OF DSE-1

Unit-1 : Nuclear Chemistry **(21 Hours)**

The nucleus: subatomic particles, e liquid drop model; forces in nucleus-mesons; stability of nucleus-n/p ratio, binding energy; radioactive elements.
Radioactive decay- α-decay, β-decay, γ-decay; neutron emission, positron emission; unit of radioactivity (curie); half life period; radioactive displacement law, radioactive series.
Measurement of radioactivity: ionization chamber, Geiger Counters, Scintillation counters.
Nuclear reactions: Nuclear fission-theory of nuclear fission; chain reaction; nuclear fusion; nuclear reactors-fast breeder reactors, fuels used in nuclear reactors, separation of isotopes, moderators, coolants; nuclear reactors in India.
Applications: Dating of rocks and minerals, carbon dating, neutron activation analysis, isotopic labeling studies, nuclear medicine- ^{99m}Tc radio pharmaceuticals.
Nuclear disasters – Chernobyl disaster, Three Mile Island Disaster, Disposal of nuclear waste and its management.

UNIT – 2: Air Pollution **(12 Hours)**

Major regions of atmosphere, chemical and photochemical reactions in atmosphere. Air pollutants: types, sources, particle size and chemical nature, Major sources of air pollution, Pollution by SO_2, CO_2, CO, NO_x, H_2S and other foul-smelling gases, methods of estimation of CO, NO_x, SO_x and control procedures.

Chemistry and environment impact of the following: Photochemical smog, Greenhouse effect, Ozone depletion

Air pollution control, Settling Chambers, Venturi Scrubbers, Electrostatic Precipitators (ESPs).

UNIT – 3 : Water Pollution: **(12 Hours)**

Hydrological cycle, water resources, aquatic ecosystems, Sources and nature of water pollutants, Techniques for measuring water pollution, Impacts of water pollution on hydrological cycle and ecosystems. Water purification methods. Effluent treatment plants (primary, secondary and tertiary treatment).

Sludge disposal. Industrial waste management, incineration of waste. Water treatment and purification (reverse osmosis, electro dialysis, ion-exchange). Water quality parameters for wastewater, industrial water and domestic water.

Practical component (30 Hours)
(Laboratory periods:15 classes of 2 hours each)
(At least four experiments to be performed)

1. Determination of dissolved oxygen in a given sample of water.
2. Determination of Chemical Oxygen Demand (COD) in a given sample of water.
3. Determination of Biological Oxygen Demand (BOD) in a given sample of water.

4. Measurement of chloride, sulphate and salinity of water samples by simple titration method ($AgNO_3$ and potassium chromate).
5. Estimation of total alkalinity of water samples (CO_3^{2-}, HCO_3^-) using double titration method.
6. Measurement of dissolved CO_2 in a given sample of water.
7. Determination of hexavalent Chromium Cr(VI) concentration in tannery wastes/ waste water sample using UV-Vis spectrophotometry technique.

Essential/recommended readings

Theory:

1. Stanley E. Manahan, 10th edition, **Environmental chemistry,** CRC Press, Taylor and Francis Group, US, 2017
2. Baird, C. and Cann,M., **Environmental Chemistry,(**2012), Fifth Edition, W. H. Freemann & Company, New York, US.
3. VanLoon, G.W. and Duffy, J.S.(2018) **Environmental Chemistry - A global perspective**, Fourth Edition, Oxford University Press
4. Brusseau, M.L.; Pepper,I.L. and Gerba, C., (2019) **Environmental and Pollution Science**, Third Edition, Academic Press.
5. Masters, G.M., (1974) **Introduction to Environmental Science and Technology**, John Wiley & Sons.
6. Masters, G.M., (2015) **Introduction to Environmental Engineering and Science.** JPrentice Hall India Learning Private Limited.
1. 7.Arnikar, H.J., (1987), Second Edition, **Essentials of Nuclear Chemistry,** Wiley Blackwell Publishers
7. Arnikar, H.J.; Rajurkar, N. S.,(2016) **Nuclear Chemistry through Problems,** New Age International Pvt. Ltd.
8. De, A.K.(2012), **Environmental Chemistry,** New Age International Pvt., Ltd.
9. Khopkar, S.M.(2010), **Environmental Pollution Analysis**, New Age International Publisher.
10. Das, A. K. (2010), ***Fundamentals of Inorganic Chemistry***, Volume 1, Second Edition, CBS Publishers & Distributors Pvt Ltd.
11. Das, A. K. (2012), ***Environment Chemistry with Green chemistry***, Books and Allied (P) Ltd.

Practical:

1. Vowles, P.D.; Connell, D.W. (1980),**Experiments in Environmental Chemistry: A Laboratory Manual**, Vol.4, Pergamon Series in Environmental Science.
2. Gopalan, R.; Anand, A.; Sugumar R.W. (2008),**A Laboratory Manual for Environmental Chemistry**, I. K. International.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE - 2 (DSE-2): Inorganic materials of industrial importance

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Inorganic Materials of Industrial Importance (DSE-2)	**04**	**03**	**0**	**01**	Passed Class 12th with Physics, Chemistry	**NIL**

Learning Objectives

The objectives of this course are as follows:

- To make students understand the diverse roles of inorganic materials in the industry and to give an insight into how these raw materials are converted into products used in day-to-day life.
- To make students learn about silicates, fertilizers, surface coatings, batteries, engineering materials for mechanical construction.
- To develop the interest of students in the frontier areas of inorganic and material chemistry.

Learning outcomes

By studying this course, the students will be able to:

- State the composition and applications of the different kinds of glass.
- State the composition of cement and discuss the mechanism of setting of cement.
- Defend the suitability of fertilizers for different kinds of crops and soil.
- Explain the process of formulation of paints and the basic principle behind the protection offered by the surface coatings.
- Describe the principle, working and applications of different batteries.
- Evaluate the synthesis and properties of nano-dimensional materials, various semiconductor and superconductor oxides.

SYLLABUS OF DSE-2

Unit 1: Silicate Industries (6 Hours)

Glass: Glassy state and its properties, classification (silicate and non-silicate glasses). Manufacture and processing of glass. Composition and properties of the following types of

glasses: Soda lime glass, lead glass, armoured glass, different types of safety glass, borosilicate glass, fluorosilicate glass, coloured glass, photosensitive glass, photochromic glass, glass wool and optical fibre.

Cement: Manufacture of Portland cement and the setting process, Different types of cements: quick setting cements, eco-friendly cement (slag cement), pozzolana cement.

Unit 2: Fertilizers **(6 Hours)**

Different types of fertilizers (N, P and K). Importance of fertilizers, chemistry involved in the manufacture of the following fertilizers: urea, calcium ammonium nitrate, ammonium phosphates, superphosphate of lime and potassium nitrate.

Unit 3: Surface Coatings **(18 Hours)**

Brief introduction to and classification of surface coatings, paints and pigments: formulation, composition and related properties, pigment volume concentration (PVC)and critical pigment volume concentration (CPVC), fillers, thinners, enamels and emulsifying agents. Special paints: heat retardant, fire retardant, eco-friendly paints, plastic paints, water and oil paints. Preliminary methods for surface preparation, metallic coatings (electrolytic and electroless with reference to chrome plating and nickel plating), metal spraying and anodizing.

Contemporary surface coating methods like physical vapor deposition, chemical vapor deposition, galvanising, carburizing, sherardising, boriding, nitriding and cementation.

Unit 4: Batteries **(9 Hours)**

Primary and secondary batteries, characteristics of an Ideal Battery, principle, working, applications and comparison of the following batteries: Pb- acid battery, Li-metal batteries, Li-ion batteries, Li-polymer batteries, solid state electrolyte batteries, fuel cells, solar cells and polymer cells.

Unit 5: Nano dimensional materials **(6 Hours)**

Introduction to zero, one and two-dimensional nanomaterial: Synthesis, properties and applications of fullerenes, carbon nanotubes, carbon fibres, semiconducting and superconducting oxides.

Practical component (30 Hours)

(Laboratory periods:15 classes of 2 hours each)

(At least four experiments to be performed)

1. Detection of constituents of Ammonium Sulphate fertilizer (Ammonium and Sulphate ions) by qualitative analysis and determine its free acidity.

2. Detection of constituents of CAN fertilizer (Calcium, Ammonium and Nitrate ions) fertilizer and estimation of Calcium content.

3. Detection of constituents of Superphosphate fertilizer (Calcium and Phosphate ions) and estimation of phosphoric acid content.

4. Analysis of (Cu, Ni) in alloy or synthetic samples (methods involving Gravimetry and Spectrophotometry).

5. Analysis of (Cu, Zn) in alloy or synthetic samples (Multiple methods involving Iodometry, and Potentiometry).

6. Synthesis of pure ZnO and Cu doped ZnO nanoparticles.

7. Synthesis of silver nanoparticles by green and chemical approach methods and its characterization using UV-visible spectrophotometer

Essential/recommended readings

Theory:

1. West, A. R. (2014),**Solid State Chemistry and Its Application**, Wiley
2. Smart, L. E.; Moore, E. A. (2012),**Solid State Chemistry An Introduction**, CRC Press Taylor & Francis.
3. Atkins, P.W.; Overton, T.L.; Rourke, J.P.; Weller, M.T.; Armstrong, F.A.(2010),**Shriver and Atkins Inorganic Chemistry**, W. H. Freeman and Company.
4. Kent, J. A. (ed**)** (1997), **Riegel's Handbook of Industrial Chemistry**, CBS Publishers, New Delhi.
5. Poole Jr.; Charles P.; Owens, Frank J.(2003), **Introduction to Nanotechnology**, John Wiley and Sons.

Practical:

1. Svehla, G.(1996),**Vogel's Qualitative Inorganic Analysis**, Prentice Hall.
2. Banewicz, J. J.; Kenner, C.T. **Determination of Calcium and Magnesium in Limestones and Dolomites**, Anal. Chem., 1952, 24 (7), 1186–1187.
3. Ghorbani, H. R.; Mehr, F.P.; Pazoki, H.; Rahmani B. M. **Synthesis of ZnO Nanoparticles by Precipitation Method.** Orient J Chem 2015;31(2).
4. Orbaek, W.; McHale, M.M.; Barron, A.R. **Synthesis and characterization of silver nanoparticles for an undergraduate laboratory**, J. Chem. Educ. 2015, 92, 339−344.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 3 (DSE-3): Green Chemistry in Organic Synthesis

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Green Chemistry in Organic Synthesis (DSE-3)	04	03	0	01	Passed Class 12th with Physics, Chemistry	Basic knowledge of organic reactions

Learning objectives

The objectives of this course are as follows:

- To create awareness about the chemistry that is not harmful for human health and the environment.
- To provide thorough knowledge of the green chemistry principles that can be used to develop chemistry in greener way.
- To familiarize students with new remediation technologies for the cleaning up of hazardous substances.
- To use green chemistry for boosting profits, increase productivity and ensure sustainability with absolute zero waste.
- To learn about innovations and applications of green chemistry in education that helps companies to gain environmental benefits as well as to achieve economic and societal goals also
- The objective of the practical component is to develop basic skills to be able to design, develop and run chemical processes in a sustainable way.

Learning outcomes

By studying this course, students will be able to:

- List the twelve principles of green chemistry and build the basic understanding of toxicity, hazard and risk related to chemical substances.
- Calculate atom economy, E-factor and relate them in all organic synthesis
- State the uses of catalyst over stoichiometric reagents
- Debate and use green solvents, renewable feedstock, and renewable energy sources for carrying out safer chemistry
- Use green chemistry for problem solving, innovation and finding solutions to environmental problems.
- Design safer processes, chemicals, and products through understanding of inherently safer design (ISD)

- Discuss the success stories and use real-world cases to practice green chemistry

SYLLABUS OF DSE-3

UNIT – 1: Introduction **(3 Hours)**

Introduction to Green Chemistry, some important environmental laws, pollution prevention Act of 1990, emergence of green chemistry, need for Green Chemistry. Goals of Green Chemistry. Limitations/ Obstacles in the pursuit of the goals of Green Chemistry. Green chemistry in sustainable development.

UNIT – 2: **Application of Green Chemistry Principles** **(36 Hours)**

Principles of Green Chemistry and designing a chemical synthesis
Concept familiarization and application of green chemistry principles using specific examples

1. Prevention of waste/ by products; waste or pollution prevention hierarchy
2. Green metrics to assess greenness of a reaction: Calculation of atom economy of the rearrangement, addition, substitution, and elimination reactions; calculation of E-factor for industrial processes
3. Prevention/ minimization of hazardous/ toxic products
4. Safer Solvent and Auxiliaries: Problems associated with conventional reaction media Some Common Green solvents: Introduction, application, advantages, and disadvantages of green solvents in organic synthesis (taking suitable examples). Special emphasis on the following:
   i. Super Critical Fluids (with special reference to carbon dioxide)
   ii. Water: Concept of In-water, and on-water reactions (with special reference to synthesis of terpinol and linalool in water, Benzoin condensation, Heck reaction)
   iii. Ionic Liquids: Physical properties and classification of Ionic Liquids (with special reference to Diels Alder reaction and Coumarin synthesis in ionic liquids)
   iv. Biomass derived Solvents: Physicochemical properties, Use of glycerol and its derivatives (Mizoroki–Heck reaction) and 2-methyltetrahydrofuran (Suzuki–Miyaura reaction).
5. Design for energy efficiency: Phenomenon of accelerating organic reactions by using the following Green Chemistry tools (taking suitable examples) and its advantages:
   i. Mechanochemistry
   ii. Ultrasound assisted reactions: Taking examples like Simmons Smith reaction, Diels–Alder reaction,
   iii. Microwave assisted reactions: Special emphasis on solvent-free synthesis- copper phthalocyanine and aspirin, In-water reactions-Hofmann Elimination, methyl benzoate to benzoic acid and Decarboxylation reaction;
   iv. Electrocatalysis: Taking examples like adiponitrile synthesis, synthesis of 3-bromothiophene.
   v. Visible light induced Reactions: with examples such as, syntheses of caprolactam and vitamin D_3, cis-trans isomerization of alkenes
6. Use of renewable starting materials: Illustrate with few examples such as biodiesel, bioethanol, polymers from renewable resources (PLA from corn), Synthesis and properties of 2-Methyltetrahydrofuran, furfural and 5-Aminolevulinic acid (DALA) from levulinic acid

7. Avoidance of unnecessary derivatization – careful use of blocking/protecting groups (taking specific examples like selective oxidation of aldehydic group and synthesis of 6-Aminopenicillanic Acid (6-APA) from penicillin G
8. Catalysis and green chemistry
   Introduction to Catalysis (including concept of selectivity, turnover frequency and turnover number), Types of Catalysts: Heterogeneous catalysis and homogeneous catalysis (H-beta and zeolites in organic synthesis), General catalytic cycle for heterogeneous catalysis; Asymmetric catalysis (Monsanto route to L-dopa via asymmetric hydrogenation, synthesis of carbapenhem via Asymmetric reduction); Photocatalysis (with special reference to TiO2); Biocatalysis (Synthesis of adipic acid/catechol using biocatalyst) and Nanocatalysis (oxazole synthesis using nanocatalyst)
9. Design for degradation: (Illustrate with the help of examples: soaps and detergents, pesticides, polymers)
10. Real Time monitoring of chemical processes using inline, offline, and online techniques
11. Inherently safer design/chemistry:
    Principle and subdivision of ISD, Bhopal Gas Tragedy (safer route to carbaryl) and Flixiborough accident (safer route to cyclohexanol, Asahi Process)

UNIT – 3: Industrial Applications and Success Stories (6 Hours)

- Vitamin C Synthesis using enzymes (Hoffman La Roche)
- Zoloft -Presidential Chemistry Award Winning Innovation (Pfizer)
- Methyl Methacrylate syngas process (Eastman Chemicals)
- Synthesis of herbicide disodium iminodiacetate
- Rightfit pigments azo dyes synthesis and their applications
- Healthier Fats and oils by Green Chemistry: Enzymatic Interesterification for production of No Trans-Fats and Oils.
- Synthesis of anti-tuberculosis drug Paramycin from waste water stream

Practical component (30 Hours) (Laboratory periods:15 classes of 2 hours each)

Note: Characterization by melting point, UV-Visible spectroscopy, IR spectroscopy and any other specific method should be done (wherever applicable).

1. Preparation and characterization of nanoparticles of gold using tea leaves/silver nanoparticles using plant extracts.
2. Preparation of biodiesel from waste cooking oil and characterization (TLC, pH, solubility, combustion test, density, viscosity, gel formation at low temperature and IR can be provided).
3. Benzoin condensation using thiamine hydrochloride as a catalyst instead of cyanide.
4. Extraction of D-limonene from orange peel using liquid CO2 prepared from dry ice.
5. Mechanochemical solvent free, solid-solid synthesis of azomethine using p-toluidine and o-vanillin/p-vanillin.
6. Microwave-assisted Knoevenagel reaction using anisaldehyde, ethylcyanoacetate and ammonium formate.
7. Photoreduction of benzophenone to benzopinacol in the presence of sunlight.
8. Photochemical conversion of dimethyl maleate to dimethyl fumarate (cis-trans isomerisation)

9. Benzil- Benzilic acid rearrangement: Preparation of benzilic acid in solid state under solvent-free condition.
10. Preparation of dibenzalacetone by cross aldol condensation reaction using base catalysed green method.

Essential/recommended readings

Theory:

1. Anastas, P.T., Warner, J.C. (2014), **Green Chemistry, Theory and Practice**, Oxford University Press.
2. Lancaster, M. (2016), **Green Chemistry: An Introductory Text**, 3rd Edition, RSC Publishing.
3. Cann, M. C., Connely, M.E. (2000), **Real-World cases in Green Chemistry, American Chemical Society**, Washington.
4. Matlack, A.S. (2010), **Introduction to Green Chemistry**, 2nd Edition, Boca Raton: CRC Press/Taylor & Francis Group publisher.
5. Alhuwalia,V.K., Kidwai, M.R. (2005), **New Trends in Green chemistry**, Anamalaya Publishers.
6. Sidhwani, I.T, Sharma, R.K. (2020), **An Introductory Text on Green Chemistry**, Wiley India Pvt Ltd.

Practicals:

1. Kirchoff, M.; Ryan, M.A. (2002), **Greener approaches to undergraduate chemistry experiment**, American Chemical Society, Washington DC.
2. Sharma, R.K.; Sidhwani, I.T.; Chaudhari, M.K. (2013), **Green Chemistry Experiments: A monograph**, I.K. International Publishing House Pvt Ltd. New Delhi.
3. Pavia, D.L.; Lamponam, G.H.; Kriz, G.S.W. B. (2012), **Introduction to organic Laboratory Technique- A Microscale approach**, 4th Edition, Brooks-Cole Laboratory Series for Organic chemistry.
4. Sidhwani I.T. (2015), Wealth from Waste: A green method to produce biodiesel from waste cooking oil and generation of useful products from waste further generated. **DU Journal of Undergraduate Research and Innovation**, 1(1),131-151. ISSN: 2395-2334.
5. Sidhwani, I.T; Sharma, R.K. (2020), **An Introductory Text on Green Chemistry**, Wiley India Pvt Ltd.
6. **Monograph on Green Chemistry Laboratory Experiments**, Green Chemistry Task Force Committee, Department of Science and Technology, Government of India.
7. Pasricha, S., Chaudhary, A. (2021), **Practical Organic Chemistry: Volume–I**, I K International Publishing house Pvt. Ltd, New Delhi
8. Pasricha, S., Chaudhary, A. (2021), **Practical Organic Chemistry: Volume–II**, I K International Publishing house Pvt. Ltd, New Delhi

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 4 (DSE-4): Reactions, Reagents and Chemical Process

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Reactions, Reagents and Chemical Process (DSE-4)	04	03	0	01	Passed Class 12th with Physics, Chemistry	Basic knowledge of organic reactions

Learning objectives

The objectives of this course are as follows:

- To study the important organic name and rearrangement reactions that are crucial for the synthesis of valuable organic compounds.
- To give the knowledge belonging to the role of reagents in organic reactions for the synthesis of chemo-, diastereo- and enantio-selective products.
- To impart the knowledge of process chemistry that is a key part of the large-scale synthesis of chemical products essential for day-to-day life

Learning outcomes

By studying this course, students will be able to:

- Explain the reaction mechanism of various name and rearrangement reactions
- Discuss the role of the reagents in organic synthesis and apply these reagents for the bulk chemical synthesis
- Debate and use oxidizing and reducing reagents for selective synthesis organic products
- Apply the learnt techniques to chemical processes
- Acquire skills for human resource building especially in the chemical industry.

SYLLABUS OF DSE-4

UNIT – 1: Name Reactions **(15 Hours)**

Application, scope and mechanism of following reactions: Prevost Reaction, Chugaev Reaction, Maukaiyama Aldol Reaction, Mozingo Reaction, Ramberg Backlund Reaction, Shapiro Reaction, Barbier Reaction, Clark- Eschweiler Reaction, Darzen's Reaction, Julia-Olifination Reaction, Tiffeneaus Damjanov Reaction, Darkin West Reaction, Bischler-Napieralaski Reaction, Birch reduction of aromatic compounds, Appel Reaction, Mitsunobu Reaction, Corey Kim Oxidation, Azide-alkyne 1,3-dipolar cycloaddition reaction, Olefin metathesis: Grubbs reaction, Heck Reaction, Suzuki coupling and Wittig reaction.

UNIT – 2: **Reducing Reagents** **(9 Hours)**

Reactions, mechanism and applications of following reducing agents: Sodium borohydride, Lithium aluminium hydride, $NaBH_3CN$, DIBALH, lithium-tri-*tert*-butoxyaluminum hydride, Red-Al $Na[AlH_2(OCH_2OCH_2OCH_3)_2]$, Zinc borohydride, L and K selectrides, $LiBHEt_3$ and $KBHEt_3$, Luche Reagent $NaBH_4$-$CeCl_3$, $K[BH(OAc)_3]$, *bis*-Boric Acid (BBA), Catecholborane, DEMS (Diethoxymethylsilane), 3-Mercapto propionic acid, Polymethylhydrosiloxane (PMHS), Schwartz's Reagent (Zirconocene chloride hydride).

UNIT – 3: Oxidizing Reagents **(9 Hours)**

Reactions, mechanism and applications of following oxidizing agents: Jones Reagent (CrO_3, H_2SO_4, H_2O), Swern Reagent (DMSO, oxalyl chloride), Dess Martin, TEMPO, TPAP (Tetrapropyl ammonium perruthenate), Fetizon's Reagent, Fenton's Reagent [H_2O_2 + Fe(II) ion], Sodium perborate NaH_2BO_4, Sodium Bismuthate $NaBiO_3$, ABNO (9-Azabicyclo[3.3.1]nonane N-oxyl), DEAP (Diethyl allyl phosphate,

), AZADO (2-Azaadamantane N-oxyl], Wacker oxidation.

UNIT – 4: Process Chemistry **(12 Hours)**

1. Process chemistry a) Introduction, stages of scale up process: Bench, pilot, and large-scale process with at least two examples of scale up process of API. b) In-process control and validation of large-scale process.
2. Unit Processes: The following unit processes should be studied with mechanism and one example of each process Nitration: Nitrating agents, process equipment for technical nitration. Halogenation: Types of halogenations, catalytic halogenations. Reduction: Catalytic hydrogenation, hydrogen transfer reactions, metal hydrides. Oxidation: Types of oxidative reactions, and non-metallic oxidizing agents such as H, sodium hypochlorite, oxygen gas, ozonolysis.

Practical component (30 Hours)

(Laboratory periods:15 classes of 2 hours each)

1. Oxidation of alcohols to acid using Jones reagent.
2. Reduction of acetophenone and its derivatives to 1-phenyl ethanol derivatives by $NaBH_4$.
3. Reduction of 4-tert-butyl-cyclohexanone to cis and trans 4-tert-butyl-cyclohexanol.
4. Synthesis of 2,5-dimethyl-2,5-hexanediol from tert-butanol using Fenton's reagents.
5. Wittig reaction of benzyltriphenylphosphonium chloride and 4-bromobenzaldehyde using potassium phosphate (tribasic).
6. Substitution (S_N2) reaction of 1-iodobutane and 2-naphthol.
7. Aldol condensation reaction: solventless synthesis of chalcones.
9. Borohydride reduction of a ketone: hydrobenzoin from benzil.
10. Visit to chemical industry for the demonstration of pilot scale.

Essential/recommended readings

Theory:

1. Clayden, J. Greeves, N., Warren, S. **Organic Chemistry**, South Asian Edition, Oxford University Press, USA
2. Gadamasetti K., **Process Chemistry in the Pharmaceutical Industry: Challenges in an Ever- Changing Climate-An Overview**, Vol-2, CRC Press, London.
3. Murphy R.M., **Introduction to Chemical Processes: Principles, Analysis, Synthesis**, McGraw-Hill Education, New York.
4. Harrington P. J., **Pharmaceutical Process Chemistry for Synthesis: Rethinking the Routes to Scale up**, John Wiley and Sons, Inc, New Jersey.
5. Parashar, R.K.; Ahluwalia, V.K. (2018), **Organic Reaction Mechanism,** 4th Edition, Narosa Publishing House.
6. Singh J., S. K. Awasthi, Singh Jaya (2023) Fundamental of Organic Chemistry, Paper III, Pragati Prakashan.

Practical:

1. Mann F.G, Saunders, B.C., **Practical Organic Chemistry**, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education Ltd.), Singapore.
2. Vogel A.I., **Elementary Practical Organic Chemistry**, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education Ltd.), Singapore.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE -5(DSE-5): Solutions, Colligative properties, Phase Equilibria and adsorption

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Solutions, Colligative properties, Phase Equilibria and adsorption (DSE-5)	**04**	**03**	**0**	**01**	Class 12th with Physics, Chemistry	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- To make the students understand the various properties of dilute solutions.

- To make the students understand the thermodynamic basis of colligative properties.
- To explain the concept of phase, co-existence of phases, phase diagram for various types of system, CST and distribution law.
- To introduce the concept of adsorption, its dependence on various conditions and applications

Learning outcomes

By studying this course, students will be able to:

- Explain different types of phase equilibrium, draw a well labelled phase diagram.
- Predict the existence of a substance in a given phase under different conditions of temperature and pressure
- Apply the concepts of phase, solutions and distribution law while studying other chemistry courses and every-day life processes.
- Explain the type of adsorption that can take place in different systems and predict the conditions to get maximum adsorption.

SYLLABUS OF DSE-5

UNIT-1: Solutions and Colligative Properties (12 Hours)

Dilute solutions; lowering of vapour pressure, Raoult's law, Henry's law. Thermodynamic basis of the colligative properties - lowering of vapour pressure, elevation of Boiling Point, Depression of Freezing point and Osmotic pressure and derivation of expressions for these using chemical potential. Application of colligative properties in calculating molar masses of normal, dissociated and associated solutes in solutions, van't Hoff factor and its applications. Concept of activity and activity coefficients.

UNIT-2: Phase Equilibria (24 Hours)

Concept of phases, components and degrees of freedom, derivation of Gibbs Phase Rule for nonreactive and reactive systems; Clausius-Clapeyron equation and its applications to solid-liquid, liquid-vapour and solid-vapour equilibria, phase diagram for one component systems (H_2O and S), with applications. A comparison between the phase diagram of CO_2 and H_2O. Phase diagrams for systems of solid-liquid equilibria involving eutectic, congruent and incongruent melting points, solid solutions (excluding partial miscibility). Binary solutions: Gibbs-Duhem-Margules equation, its derivation and applications to fractional distillation of binary miscible liquids (ideal and non-ideal), Konovalov's laws, azeotropes, lever rule, partial miscibility of liquids, CST, miscible pairs, steam distillation. Nernst distribution law: its derivation and applications.
Three component systems, water-chloroform-acetic acid system, triangular plots.

UNIT-3: Surface chemistry (9 Hours)

Physical adsorption, chemisorption, adsorption isotherms (Langmuir and Freundlich). Nature of adsorbed state. Multilayer adsorption, BET equation derivation, thermodynamic treatment of adsorption-Gibbs equation.

Practical component (30 Hours)
(Laboratory periods: 15 classes of 2 hours each)

Practical

Phase Equilibrium

1. Determination of critical solution temperature and composition at CST of the phenol water system
2. To study the effect of impurities of sodium chloride and succinic acid on the CST of phenol-water system.
3. To study the cooling curves for the following systems:
   (i) simple eutectic
   (ii) congruently melting systems.

Adsorption

Verify the Freundlich and Langmuir isotherms for adsorption of acetic acid on activated charcoal.

Essential/recommended readings
Theory:

1. Peter, A.; Paula, J. de. (2011), **Physical Chemistry**, 9th Edition, Oxford University Press.
2. Castellan, G. W. (2004), **Physical Chemistry**, 4th Edition, Narosa.
3. Kapoor, K.L. (2015), **A Textbook of Physical Chemistry**, Vol 3, 6th Edition, McGraw Hill Education.
4. Kapoor, K.L. (2015),**A Textbook of Physical Chemistry**, Vol 5, 6th Edition, McGraw Hill Education.
5. Ball, D. W. (2017), **Physical Chemistry,** 2nd Edition, Cengage Learning, India.

Practical:

4. Khosla, B.D.; Garg, V.C.; Gulati, A. (2015), **Senior Practical Physical Chemistry**, R. Chand & Co, New Delhi.
5. Garland, C. W.; Nibler, J. W.; Shoemaker, D. P. (2003), **Experiments in Physical Chemistry**, 8th Edition, McGraw-Hill, New York.

Suggestive readings

1. Levine, I.N. (2010), **Physical Chemistry**, Tata Mc Graw Hill.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE- 6 (DSE-6): Applications of computers in Chemistry

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Applications of computers in Chemistry (DSE 6)	**04**	**03**	**0**	**01**	Class 12th with Physics, Chemistry	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:
To make the students learn the working of computer and its applications in chemistry *via* programming language, C language and use of software as a tool to understand chemistry and solve chemistry-based problems.

Learning outcomes

By studying this course, students will be able to:

- Use commands and library functions in programming in C language.
- Develop algorithm to solve problems and write corresponding programs in C language for performing calculations involved in laboratory experiments.
- Use various spreadsheet software to perform theoretical calculations and plot graphs

SYLLABUS OF DSE-6

UNIT 1: Introduction to Basic Computer System (6 Hours)

Hardware and Software; Input devices, Storage devices, Output devices, Central Processing Unit (Control Unit and Arithmetic Logic Unit); Number system (Binary, Octal and Hexadecimal Operating System); Computer Codes (BCD and ASCII); Numeric/String constants and variables. Operating Systems (DOS, WINDOWS, and Linux); Software languages: Low level and High-Level languages (Machine language, Assembly language; QBASIC, C, C++, FORTRAN 90&95); Compiled versus interpreted languages. Debugging Software Products (Office, chemsketch, scilab, matlab, and hyperchem), internet application

UNIT 2: Commands and Library functions in C language (18 Hours)

C language for solving some of the basic and complicated chemistry problems). QB4 version of C language can be used.

Numeric constants, variables & its declaration, Arithmetic expressions, hierarchy of operations, inbuilt functions and header files. Syntax and use of the following commands in C language: scanf, printf, fscanf and fprintf; goto, relational operators, *if-else* statement; *while*, *for* and *do while* loops, *switch-break* statements; header files (<stdio.h>, <stdlib.h>, <math.h>, <ctype.h>, <malloc.h>, <string.h>), arrays & pointers, library functions (abs & fabs, int, float, double, ceil, char, exp, log, rand, sqrt, \t, \v, \n and trigonometric Functions), defining and accessing functions, gnuplot- syntax and commands

Simple programs using C commands, Matrix addition and multiplication

UNIT 3: Use of C language for solving problems in Chemistry (21 Hours)

Solution of quadratic equation, polynomial equations (formula, iteration, Newton – Raphson methods and binary bisection) with examples of polynomial equations used in chemistry; Numerical differential, Numerical integration (Trapezoidal and Simpson's rule), Calculation of area under the curves for chemistry problems, e.g., entropy calculations, Simultaneous equations, Statistical analysis-mean, variance, standard deviation, error, least square method.

Plotting linear graphs using experimental data, plotting (i)trigonometric functions-particle in a one-dimensional box(ii) exponential function (iii) Ideal gas isotherms. Plotting van der Waals Isotherms, and observe whether van der Waal gas equation is valid at temperatures lower than critical temperature where we require to solve a cubic equation.

Practical Component (30 Hours)
(Laboratory periods: 15 classes of 2 hours each)

Computer programs using C language based on numerical methods

1. Simple programs to calculate numerical values of chemistry problems.
2. Roots of equations: (e.g. volume of gas using Van der Waals equation and comparison with ideal gas, pH of a weak acid).
3. Solving polynomial equation using iterative method. (Van der Waal's equation of state, pH of a weak acid using exact expression)
4. Solving polynomial equation using Newton-Raphson's method. (Van der Waal's equation of state, pH of a weak acid using exact expression)
5. Matrix operations: addition, multiplication and transpose
6. Numerical differentiation (e.g., change in pressure for small change in volume of a van der Waals gas, potentiometric titrations).
7. Numerical integration using trapezoidal method. (e.g. entropy/ enthalpy change from heat capacity data).

8. Numerical integration using Simpson's rule
9. Mean, standard deviation
10. Least square curve fitting method for linear equation.
11. Calculate the relative intensities of peaks of a proton obtained after spin-spin coupling with 4 equivalent neighbouring protons in a high-resolution NMR spectrum using GOSUB RETURN.

Computer programs using C language for plotting graphs

1. Van der Waals isotherm
2. Compressibility versus pressure curves
3. Maxwell distribution curves
4. Concentration-time graph using kinetics data
5. pH metric titration curve
6. Conductometric titration curves for strong acid-strong base titrations.
7. Calibration curve using Lambert Beer's law
8. Particle in a one-dimensional box.

Note: Minimum 12 exercises is to be performed relating to C language

Plotting graphs using spreadsheet

1. Particle in a one-dimensional box.
2. van der Waals isotherms below critical temperature, at critical temperature and above critical temperature.
3. Radial plots and radial distribution functions for orbitals of hydrogen atom.
4. Plotting characteristics graphs of zero, first and second order reactions using concentration time data and determine the order of the reaction.

Essential/recommended readings

Theory:

1. McQuarrie, D. A**.** (2008), **Mathematics for Physical Chemistry,** University Science Books.
2. Mortimer, R**.** (2005), **Mathematics for Physical Chemistry**,3rd Edition, Elsevier.
3. Steiner, E. (1996), **The Chemical Maths Book,** Oxford University Press.
4. Yates, P. (2007), **Chemical Calculations**, CRC Press.
5. Harris, D. C. (2007), **Quantitative Chemical Analysis**,6th Edition, Freeman, Chapters 3-5.
6. Rajaraman, V., **Computer Programming in C**, PHI Learning Private Limited.
7. Gottfried, B., **Programming with C,** Tata McGraw Hills Education Pvt. Ltd., 3rd Edition.

Practical:

1. Levie, R.D. (2001), **How to use Excel in analytical chemistry and in general scientific data analysis**, Cambridge University Press.
2. Kapoor, K.L. (2019), **A Textbook of Physical Chemistry**, Vol.7, 1st Edition, McGraw Hill Education.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Bachelor of Sciences in Industrial Chemistry

Category II

Industrial Chemistry Course for Undergraduate Programme of study with Industrial Chemistry as one of the Core Disciplines

DISCIPLINE SPECIFIC CORE COURSE – 7: (DSC-7) Industrially important Inorganic Materials

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Industrially important Inorganic Materials (DSC-7: Industrial Chemistry -III)	04	02	0	02	Class XII Pass with Physics, Chemistry, Mathematics	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To imparts basic knowledge of chemistry of inorganic materials such as silicates, non-silicates, ceramics, and cement.
- To enrich students with the knowledge of various types of batteries like Pb acid Battery, Li-ion Battery, Fuel Cells and Solar cell.
- To impart the theoretical and practical knowledge of estimation and determination of various industrially important chemicals.

Learning outcomes

By the end of this course, students will be able to:

- Establish an appreciation of the role of inorganic chemistry in the chemical sciences.
- Analyse inorganic materials like silicates, ceramics and cement.

- Familiarized with scientific method of planning, developing, conducting, reviewing and reporting experiments.
- Draw various concepts of industrial metallurgy which will help them to explore new innovative areas of research.
- Explain scientific methods employed in inorganic chemistry.

SYLLABUS OF DSC-7

Unit 1: Silicate Industries **14 Hours**

(a) *Glass*: Glassy state and its properties, Classification (silicate and non-silicate glasses). Manufacture and processing of glass. Composition and properties of the following: Soda lime glass, lead glass, armoured glass, safety glass, borosilicate glass, and photosensitive glass.
(b) *Ceramics*: Ceramic, their types and manufacture. High technology ceramics and their applications, super conducting and semiconducting oxides, fullerenes carbon nanotubes and carbon fiber, clays and feldspar.
(c) *Cement*: Classification of cement, ingredients and their role. Manufacture of cement and the setting process, quick setting cements.

Unit 2: Batteries **8 Hours**

Primary and secondary batteries, battery components and their role and characteristics of battery. Working of following batteries: Pb acid Battery, Li-ion Battery, Fuel Cells, and Solar cell

Unit 3: Fertilizers **8 Hours**

Different types of fertilizers (N, P and K). Importance of fertilizers, chemistry involved in the manufacture of the following fertilizers: urea, ammonium nitrate, calcium ammonium nitrate, ammonium phosphates, superphosphate of lime, potassium chloride and potassium nitrate.

Practical components **(Laboratory periods: 60)**

1. Detection of constituents of Dolomite (Calcium, Magnesium and carbonate ions) by qualitative analysis.
2. Determination of composition of Dolomite using complexometric titration.
3. Detection of constituents of Ammonium Sulphate fertilizer (Ammonium and Sulphate ions) by qualitative analysis.
4. Determine its free acidity in Ammonium Sulphate fertilizer.
5. Detection of constituents of CAN fertilizer (Calcium, Ammonium and Nitrate ions) by qualitative analysis.
6. Estimation of Calcium content in CAN fertilizer.

7. Detection of constituents of Superphosphate fertilizer (Calcium and Phosphate ions) by qualitative analysis.
8. Estimation of phosphoric acid content in Superphosphate fertilizer.
9. To determine the total insoluble residue in the cement sample.
10. To determine the amount of lime (CaO) in the given sample of cement.
11. To determine the silica content in the given sample of cement.
12. To determine the Oxides (Sesquioxides Fe_2O_3 + Al_2O_3) in the given sample of cement.

Essential/recommended readings

Theory:

1. Felder, R. M.; Rousseau, R. W. (2015), **Elementary Principles of Chemical Processes**, Wiley Publishers, New Delhi.
2. Stocchi, E. (1990), **Industrial Chemistry**, Vol -I, Ellis Horwood Ltd. UK.
3. Kingery, W. D.;Bowen, H. K.;Uhlmann, D. R. (1976), **Introduction to Ceramics**, Wiley Publishers, New Delhi.
4. Kent, J. A. (ed**)** (1997), **Riegel's Handbook of Industrial Chemistry**, CBS Publishers, New Delhi.
5. Jain, P. C.; Jain, M. (2013), **Engineering Chemistry**, Dhanpat Rai & Sons, Delhi.
6. Sharma, B. K. (2014), **Engineering Chemistry**, Goel Publishing House, Meerut

Practical:

1. Jeffery, G.H.; Bassett, J.; Mendham, J.; Denney, R.C. (1989), **Vogel's Textbook of Quantitative Chemical Analysis,** John Wiley and Sons.
2. Svehla, G.(1996),**Vogel's Qualitative Inorganic Analysis**, Prentice Hall.
3. Banewicz, J. J.; Kenner, C.T. **Determination of Calcium and Magnesium in Limestones and Dolomites**, Anal. Chem., 1952, 24 (7), 1186–1187.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE –DSC 8: Chemical Energetics and Equilibria

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Chemical Energetics and Equilibria (DSC-8: Chemistry -III)	04	02	0	02	Class XII Pass with Physics, Chemistry, Mathematics	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To develop basic understanding of the chemical energetics, laws of thermodynamics and ionic equilibrium.
- To provide basic understanding of the behaviour of electrolytes and their solutions.
- To give an overview of the properties of ideal and real gases and deviation from ideal behaviour.

Learning outcomes

By the end of the course, the students will be able to:

- Explain the laws of thermodynamics, thermochemistry and equilibria.
- Illustrate the concept of pH and its effect on the various physical and chemical properties of the compounds.
- Explain and draw the concepts to predict feasibility of chemical reactions and to study the behaviour of reactions in equilibrium.

SYLLABUS OF DSC-8

Unit 1: Chemical Energetics **16 Hours**

Recapitulation of Intensive and extensive variables; state and path functions; isolated, closed and open systems, concept of heat, Q, work, W, internal energy, U, and enthalpy, H.

First law

Concept of heat, Q, work, W, internal energy, U, and statement of first law; enthalpy, H, relation between heat capacities for ideal gas, Joule's experiment, calculations of Q, W, ΔU and ΔH for reversible expansion of ideal gases under isothermal conditions.

Thermochemistry

Enthalpy of reactions: standard states; enthalpy of neutralization, enthalpy of ionization enthalpy of hydration, enthalpy of formation and enthalpy of combustion, Integral enthalpy of solution, bond dissociation energy and bond enthalpy; Hess's law, Born Haber's cycle (NaCl/ KCl).

Second Law

Concept of entropy; statements of the second law of thermodynamics (Kelvin and Clausius). Calculation of entropy change for reversible processes (for ideal gases). Free Energy Functions: Gibbs and Helmholtz energy (Non-PV work and the work function); Free energy change and concept of spontaneity (for ideal gases).

Third Law

Statement of third law, qualitative treatment of absolute entropy of molecules (examples of NO, CO), concept of residual entropy

Unit 2: Chemical Equilibrium **4 Hours**

Criteria of thermodynamic equilibrium. Free energy change in a chemical reaction and equilibrium constant, exergonic and endergonic reactions with examples such conversion of ATP to ADP or vice versa,, Le Chatelier's principle, relationship between Kp, Kc and Kx for reactions involving ideal gases.

Unit 3: Ionic Equilibria **10 Hours**

Strong, moderate and weak electrolytes, degree of ionization, factors affecting degree of ionization, Ostwald's dilution law, ionization constant and ionic product of water, ionization of weak acids and bases, Degree of ionization, pH scale, common ion effect, Buffer solutions, Henderson-Hasselbach equation. Solubility and solubility product of sparingly soluble salts – applications of solubility product principle

Practicals components **(Laboratory periods: 60)**

Chemical Energetics:

1. Determination of heat capacity of calorimeter.
2. Determination of enthalpy of neutralization of hydrochloric acid with sodium hydroxide.
3. Determination of the enthalpy of ionization of acetic acid.
4. Determination of enthalpy of neutralization of acetic acid and ammonium hydroxide using Hess's law.
5. Determination of integral enthalpy of solution (both endothermic and exothermic)

of salts.

6. Determination of enthalpy of hydration of Copper sulphate.

Ionic equilibria:

7. Preparation of buffer solutions: (i) Sodium acetate-acetic acid or (ii) Ammonium chloride-ammonium acetate. Measurement of the pH of buffer solutions and comparison of the values with theoretical values.
8. Study the effect of addition of HCl/NaOH on pH of the buffer solutions (acetic acid, and sodium acetate).
9. Titration of strong acid with strong base using pH meter.

Essential/recommended readings

Theory:

1. Castellan, G. W. (2004), **Physical Chemistry**, Narosa.
2. Kapoor, K. L. (2015), **A Textbook of Physical Chemistry**, Vol 1, 6th Edition, McGraw Hill Education.
3. Kapoor, K. L. (2015), **A Textbook of Physical Chemistry**, Vol 2, 6thEdition, McGraw Hill Education.
4. Puri, B. R., Sharma, L. R. and Pathania M. S. (2020), **Principles of Physical Chemistry**, Vishal Publishing Co.

Practical:

1. Khosla, B. D.; Garg, V. C.; Gulati, A. (2015), **Senior Practical Physical Chemistry**, R. Chand & Co.
2. Kapoor, K. L. (2019), **A Textbook of Physical Chemistry**, Vol 7, 1st Edition, McGraw Hill Education.
3. Batra, S. K., Kapoor, V and Gulati, S. (2017) 1st Edition, **Experiments in Physical Chemistry,** Book Age series.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – DSC 9: Elementary Linear Algebra

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Elementary Linear Algebra	4	3	1	0	Class XII pass with Mathematics	NIL

Learning Objectives: The objective of the course is:

- To introduce the concept of vectors in R^n.
- Understanding the nature of solution of system of linear equations.
- To view the $m \times n$ matrices as a linear function from R^n to R^m and vice versa.
- To introduce the concepts of linear independence and dependence, rank and linear transformations has been explained through matrices.

Learning Outcomes: This course will enable the students to:

- Visualize the space R^n in terms of vectors and the interrelation of vectors with matrices.
- Familiarize with concepts of bases, dimension and minimal spanning sets in vector spaces.
- Learn about linear transformation and its corresponding matrix.

SYLLABUS OF DSC-2

UNIT – I: Euclidean Space R^n and Matrices (18 hours)

Fundamental operations with vectors in Euclidean space R^n, Linear combinations of vectors, Dot product and their properties, Cauchy-Schwarz inequality, Triangle inequality, Solving system of linear equations using Gaussian elimination, Application: Curve Fitting, Gauss-Jordan row reduction, Reduced row echelon form, Application: Solving several systems simultaneously, Equivalent systems, Rank and row space of a matrix, Eigenvalues, Eigenvectors, Eigenspace, Diagonalization, Characteristic polynomial of a matrix.

UNIT – II: Introduction to Vector Spaces (12 hours)

Definition, Examples and some elementary properties of vector spaces, Subspaces, Span, Linear independence and linear dependence of vectors, Basis and dimension of a vector space, Maximal linearly independent sets, Minimal spanning sets.

UNIT – II: Linear Transformations (15 hours)

Linear transformations**:** Definition, Examples and elementary properties, The matrix of a linear transformation, Kernel and range of a linear transformation, The dimension theorem, one-to-one and onto linear transformations, Invertible linear transformations, Isomorphic vector spaces.

Essential Reading

1. Andrilli, S., & Hecker, D. (2016). *Elementary Linear Algebr*a (5th ed.). Elsevier India.

Suggestive Readings

- Lay, David C., Lay, Steven R., & McDonald, Judi J. (2016). *Linear Algebra and its Applications* (5th ed.). Pearson Education.
- Kolman, Bernard, & Hill, David R. (2001). *Introductory Linear Algebra with Applications* (7th ed.). Pearson Education, Delhi. First Indian Reprint 2003.

DISCIPLINE SPECIFIC ELECTIVE COURSE – DSE 1: GREEN CHEMISTRY

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Green Chemistry (DSE-1)	04	02	--	02	12th Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- Huge rise in environmental pollution, depleting resources, climate change, ozone depletion, heaps and heaps of landfills piling up has forced the society to become more and more environmentally conscious.
- It is not a new branch of chemistry but helps to improve the creative and innovative thinking in undergraduate students. Green chemistry is a way to boost profits, increase productivity and ensure sustainability with absolute zero waste. Innovations and applications of green chemistry in education have helped companies to gain environmental benefits as well as to achieve economic and societal goals also. Undergraduate students are the ultimate scientific community of tomorrow.
- Training them to practice chemistry in the safest way possible is key towards safe working conditions in the laboratories as well as the chemical industry and extends to society in a sustainable future for the planet.
- To develop basic understanding of the chemical energetics, laws of thermodynamics and ionic equilibrium.

Learning outcomes

By the end of the course, the students will be able to:

- Understand the twelve principles of green chemistry and also build the basic understanding of toxicity, hazard and risk related to chemical substances.
- Calculate atom economy, E-factor and relate them in all organic synthesis
- Appreciate the use of catalyst over stoichiometric reagents
- Learn to use green solvents, renewable feedstock and renewable energy sources for carrying out safer chemistry
- Appreciate the use of green chemistry in problem solving skills and critical thinking to innovate and find solutions to environmental problems.

- Learn to design safer processes, chemicals and products through understanding of inherently safer design (ISD)
- Appreciate the success stories and real-world cases as motivation for them to practice green chemistry

SYLLABUS OF DSE-1

Unit :1 Introduction **08 Hours**

Definition of green chemistry and how it is different from conventional chemistry and environmental chemistry.

• Need of green chemistry

• Importance of green chemistry in- daily life, Industries and solving human health problems (four examples each).

• A brief study of Green Chemistry Challenge Awards (Introduction, award categories and study about five last recent awards).

Unit 2: Twelve Principles of Green Chemistry **12 Hours**

The twelve principles of the Green Chemistry with their explanations, Special emphasis on the following:

• Prevention of waste / byproducts, pollution prevention hierarchy.

• Green metrics to assess greenness of a reaction: environmental impact factor, atom economy and calculation of atom economy.

• Green solvents-supercritical fluids, water as a solvent for organic reactions, ionic liquids, solvent less reactions, solvents obtained from renewable sources.

• Catalysis and green chemistry- comparison of heterogeneous and homogeneous catalysis, biocatalysts, asymmetric catalysis and photocatalysis.

• Green energy and sustainability.

• Real-time analysis for pollution prevention.

• Prevention of chemical accidents, designing greener processes, inherent safer design, principle of ISD "What you don't have cannot harm you", greener alternative to Bhopal Gas Tragedy (safer route to carcarbaryl) and Flixiborough accident (safer route to cyclohexanol) subdivision of ISD, minimization, simplification, substitution, moderation and limitation

Unit 3: **10 Hours**

The following Real-world Cases in green chemistry should be discussed: Surfactants for carbon dioxide – replacing smog producing and ozone depleting solvents with CO_2 for precision cleaning and dry cleaning of garments. Designing of environmentally safe

marine antifoulant. Rightfit pigment: Synthetic azo pigments to replace toxic organic and inorganic pigments. An efficient, green synthesis of a compostable and widely applicable plastic (polylactic acid) made from corn.

Practical components: Credit:02, Laboratory periods: 60)

Characterization by melting point, UV-Visible spectroscopy, IR spectroscopy and any other specific method should be done (wherever applicable).

1. Preparation and characterization of nanoparticles of gold using tea leaves/silver nanoparticles using plant extracts.
2. Preparation of biodiesel from waste cooking oil and characterization (TLC, pH, solubility, combustion test, density, viscosity, gel formation at low temperature and IR can be provided).
4. Benzoin condensation using thiamine hydrochloride as a catalyst instead of cyanide.
5. Extraction of D-limonene from orange peel using liquid CO2 prepared from dry ice.
6. Mechanochemical solvent free, solid-solid synthesis of azomethine using p-toluidine and o-vanillin/p-vanillin.
9. 6 Microwave-assisted Knoevenagel reaction using anisaldehyde, ethylcyanoacetate and ammonium formate.
7. Photoreduction of benzophenone to benzopinacol in the presence of sunlight.
8. Photochemical conversion of dimethyl maleate to dimethyl fumarate (cis-trans isomerisation)
9. Benzil- Benzilic acid rearrangement: Preparation of benzilic acid in solid state under solvent-free condition.

Essential/recommended readings

Theory:

7. Anastas, P.T., Warner, J.C. (2014), **Green Chemistry, Theory and Practice**, Oxford University Press.
8. Lancaster, M. (2016), **Green Chemistry: An Introductory Text**, 3rd Edition, RSC Publishing.
9. Cann, M. C., Connely, M.E. (2000), **Real-World cases in Green Chemistry, American Chemical Society**, Washington.
10. Matlack, A.S. (2010), **Introduction to Green Chemistry**, 2nd Edition, Boca Raton: CRC Press/Taylor & Francis Group publisher.
11. Alhuwalia, V.K., Kidwai, M.R. (2005), **New Trends in Green chemistry**, Anamalaya Publishers.
12. Sidhwani, I.T, Sharma, R.K. (2020), **An Introductory Text on Green Chemistry**, Wiley India Pvt Ltd.

Practical:

11. Kirchoff, M.; Ryan, M.A. (2002), **Greener approaches to undergraduate chemistry experiment**, American Chemical Society, Washington DC.
12. Sharma, R.K.; Sidhwani, I.T.; Chaudhari, M.K. (2013), **Green Chemistry Experiments: A monograph**, I.K. International Publishing House Pvt Ltd. New Delhi.
13. Pavia, D.L.; Lamponam, G.H.; Kriz, G.S.W. B. (2012), **Introduction to organic Laboratory Technique- A Microscale approach**, 4th Edition, Brooks-Cole Laboratory Series for Organic chemistry.
14. Sidhwani I.T. (2015), Wealth from Waste: A green method to produce biodiesel from waste cooking oil and generation of useful products from waste further generated. **DU Journal of Undergraduate Research and Innovation**, 1(1),131-151. ISSN: 2395-2334.
15. Sidhwani, I.T; Sharma, R.K. (2020), **An Introductory Text on Green Chemistry**, Wiley India Pvt Ltd.
16. **Monograph on Green Chemistry Laboratory Experiments**, Green Chemistry Task Force Committee, Department of Science and Technology, Government of India.

Category II

B.SC. (H) ANALYTICAL CHEMISTRY

DISCIPLINE SPECIFIC CORE COURSE – 7: DSC-7:AC-3

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Course Title: Quantitative Methods of Analysis **Course Code:** Analytical Chemistry-3 (DSC7:AC-3)	04	02	00	02	Class XII Pass with Physics, Chemistry and Mathematics	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To acquire knowledge about the basic principles underlying gravimetric and volumetric analysis, different types of titration curves, equilibria principles and environmental analysis

Learning outcomes

By the end of this course, students will be able to:

- By the end of this course, students will be able to:
- Know the concept of volumetric and gravimetric analysis and deducing the conversion factor for determination
- Understand the various titration curves
- Stability of complexes
- Know and analyse various pollutants present in the environment.

SYLLABUS OF Analytical Chemistry-2 (DSC-7: AC-3)

Theory Component

UNIT – I: Gravimetric Analysis (08 Hours)

Requisites of precipitation, Nucleation, precipitation, and growth of precipitates; Particle size and filterability of precipitates; Factors influencing precipitation, Co-precipitation, post-precipitation. Super saturation, digestion, precipitation from homogeneous solution, washing of precipitate and ignition of precipitate, Brief idea about method of filtration and drying of precipitate, Use of reagents used in gravimetry (8-hydroxy quinoline (oxine) and dimethyl glyoxime (DMG).

UNIT – II: Basic principles underlying titrimetric analysis (12 Hours)

- **Acid-base:** pH of strong and weak acid solutions. Buffer solutions. Henderson equations. Preparation of acidic and basic buffers. Relative strength of acids and bases from Ka and Kb values. Neutralisation-titration curve, theory of indicators, choice of indicators.
- **Theory of redox indicator**s: Principle and detection of equivalence point by visual & potentiometric methods
- **Precipitation titrations** Argentometric titrations, indicators for precipitation titrations involving silver nitrate- Volhard's method., Mohr's method, Adsorption indicators.
- **Complexometric titrations:** Stability of complexes, titration involving EDTA: . direct, back, displacement and indirect determinations, Metal ion indicators and characteristics. Application-determination of hardness of water

UNIT – III: Introduction to Environmental Analysis (10 Hours)

- Environmental analysis of water: colour, odour, taste, conductivity, dissolved solids, hardness, DO, COD, BOD, chlorides, sulphates, nitrates and phosphates
- Environmental analysis of air: Sampling, particulate matter, gaseous pollutants-SOx, NOx, COx, and organic pollutants
- Environmental analysis of industrial effluents-estimation of toxic metals Hg, Cd, Pb, As, radiochemical wastes

Practical component - 60 Hours

1. Determination of the pK_a of a weak acid by potentiometric and pH metric titrations.
2. Determination of the strength of the given ferric chloride solution by titrating it against EDTA.
3. Estimation of chloride in water by precipitation method.
4. Estimation of amount of nickel present in given solution as *bis*(dimethylglyoximato)nickel (II) /Aluminium as oxinate.
5. Draw the absorbance curve of bromophenol blue using a colorimeter.
6. Determination of the composition of the Fe^{3+}-salicylic acid complex in solution by Job's method (*Plot curve using excel also*).
7. Determination of the formula of the chelate formed between iron (III) and Tiron.
8. Determination of dissolved oxygen (DO) /biological oxygen demand (BOD),/chemical oxygen demand (COD) (*Use at least two water samples from different sources*)

Essential/recommended readings

- Willard, Merritt, Dean, Settle (2004), Instrumental Methods of Analysis, CBS Publishers & Distributors.
- Skoog, D.A.; West, D.M.; Holler, F.J.; Crouch, S.R. (2014), Fundamentals of Analytical Chemistry, Cengage Learning.
- Harris, D.C. (2015),Quantitative Chemical Analysis, W.H. Freeman & Company.
- Mendham, J., Denney, R.C., Barnes, J.D.; Thomas, M.J.K. (2000); Vogel's Quantitative Chemical Analysis, Prentice Hall.
- Manahan, S.E. (2017)Environmental Chemistry, CRC Press
- De, A.K. (2012)Environmental Chemistry, New Age International Pvt. Lt

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 8: DSC8:C3

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Course Title: CHEMICAL ENERGETICS AND EQUILIBRIA **Course Code:** CHEMISTRY-3 (DSC8-C3)	**04**	**02**	**00**	**02**	**Class XII pass with Physics, Chemistry and Mathematics**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- The objective of this paper is to develop basic understanding of the chemical energetics, laws of thermodynamics and ionic equilibrium. It provides basic understanding of the behaviour of electrolytes and their solutions.
- The students will also learn about the properties of ideal and real gases and deviation from ideal behaviour.

Learning outcomes

By the end of this course, students will be able to:

- Understand the laws of thermodynamics, thermochemistry and equilibria.
- Understand concept of pH and its effect on the various physical and chemical properties of the compounds.
- Use the concepts learnt to predict feasibility of chemical reactions and to study the behaviour of reactions in equilibrium.

SYLLABUS OF Chemistry-3 (DSC-8:C3)

Theory Component

UNIT – I: Chemical Energetics (14 Hours)

Review of Intensive and extensive variables; state and path functions; isolated, closed and open systems, concept of heat, Q, work, W, internal energy, U, and enthalpy, H.

First law

Concept of heat, Q, work, W, internal energy, U, and statement of first law; enthalpy, H, relation between heat capacities, Joule Thompson Porous Plug experiment, Nature of Joule Thompson coefficient, calculations of Q, W, ΔU and ΔH for reversible, irreversible and free expansion of ideal gases under isothermal conditions.

Thermochemistry

Enthalpy of reactions: standard states; enthalpy of neutralization, enthalpy of hydration, enthalpy of formation and enthalpy of combustion and its applications, bond dissociation energy and bond enthalpy; effect of temperature (Kirchhoff's equations) on enthalpy of reactions.

Second Law

Concept of entropy; statement of the second law of thermodynamics. Calculation of entropy change for reversible processes and irreversible processes (for ideal gases). Free Energy Functions: Gibbs and Helmholtz energy; variation of S, G, A with T, V, P; Free energy change and spontaneity (for ideal gases), Gibbs-Helmholtz equation.

Third Law

Statement of third law, unattainability of absolute zero, calculation of absolute entropy of molecules, concept of residual entropy, calculation of absolute entropy of solid, liquid and gases.

UNIT – II: Chemical Equilibrium (4 Hours)

Criteria of thermodynamic equilibrium, chemical equilibrium in ideal gases. Thermodynamic derivation of relation between Gibbs free energy of reaction and reaction quotient. Equilibrium constants and their qualitative dependence on T, P and concentration (Le Chatelier's principle). Free energy of mixing and spontaneity.

UNIT – III: Ionic Equilibria (12 Hours)

Strong, moderate and weak electrolytes, degree of ionization, factors affecting degree of ionization, Ostwald's dilution law, ionization constant and ionic product of water, ionization of weak acids and bases, pH scale, common ion effect, salt hydrolysis-calculation of hydrolysis constant, degree of hydrolysis and pH for different salts. Buffer solutions, Henderson-Hasselbach equation. Solubility and solubility product of sparingly soluble salts – applications of solubility product principle.

Practical component – 60 Hours

Chemical Energetics:

1. Determination of heat capacity of calorimeter.
2. Determination of enthalpy of neutralization of hydrochloric acid with sodium hydroxide.
3. Determination of the enthalpy of ionization of ethanoic acid.

4. Determination of basicity of a dibasic acid by thermochemical method.
5. Determination of integral enthalpy of solution of salts (KNO_3 or NH_4Cl).
6. Determination of enthalpy of hydration of copper sulphate.

Ionic equilibria:

7. Preparation of buffer solutions: (i) Sodium acetate-acetic acid or (ii) Ammonium chloride-ammonium acetate. Measurement of the pH of buffer solutions and comparison of the values with theoretical values.
8. Study the effect of addition of HCl/NaOH on pH of the buffer solutions (acetic acid, and sodium acetate).
9. pH metric titration of (i) strong acid with strong base, (ii) weak acid with strong base

Essential/recommended readings

- Castellan, G. W. (2004), Physical Chemistry, Narosa.
- Kapoor, K. L. (2015), A Textbook of Physical Chemistry, Vol 1, 6th Edition, McGraw Hill Education.
- Kapoor, K. L. (2015), A Textbook of Physical Chemistry, Vol 2, 6thEdition, McGraw Hill Education.
- Puri, B. R., Sharma, L. R. and Pathania M. S. (2020), Principles of Physical Chemistry, Vishal Publishing Co.
- Khosla, B. D.; Garg, V. C.; Gulati, A. (2015), Senior Practical Physical Chemistry, R. Chand & Co.
- Kapoor, K. L. (2019), A Textbook of Physical Chemistry, Vol 7, 1st Edition, McGraw Hill Education.
- Batra, S. K., Kapoor, V and Gulati, S. (2017) 1st Edition, Experiments in Physical Chemistry, Book Age series.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVES (DSE)

DISCIPLINE SPECIFIC ELECTIVE COURSE – DSE-1

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Course Title: ANALYTICAL BIOCHEMISTRY **Course Code:** (DSE-1)	**04**	**02**	**00**	**02**	**Class XII Pass with Physics, Chemistry and Mathematics**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- Students will learn about proteins, enzymes, nucleic acids and lipids, using suitable examples, drug-receptor interaction and Structure-Activity Relation (SAR) relationship.
- Students will also learn about the genetic code and concept of heredity.

Learning outcomes

By the end of this course, students will be able to:

- Learn about the structures of carbohydrates and Proteins
- Learn about the molecules, macromolecules, polymers and their formations
- Learn about the metabolism of a few biomolecules.
- Know basic principles of drug-receptor interaction and strucstructure-activitytionship (SAR).
- Know the biochemistry of diseases.

SYLLABUS OF DSE-1

Theory Component

UNIT – I: Carbohydrates and Proteins (16 Hours)

Basic understanding of the structures and properties of carbohydrates, biological importance of Carbohydrates.
Monosaccharides: Constitution and absolute configuration of glucose and fructose, epimers and anomers, mutarotation, Haworth projections and conformational structures; Structure elucidation of glucose and fructose (Fischer's proof), Interconversions of aldoses and ketoses; Killiani-Fischer synthesis and Ruff degradation;
Disaccharides – Structure elucidation of maltose, lactose and sucrose.
Polysaccharides – Elementary treatment of starch, cellulose and glycogen.
Amino Acids, Peptides and Proteins:
α-Amino Acids - Classification and characterization, Zwitterions, pKa values, isoelectric point and electrophoresis;
Proteins: Classification, Primary, secondary and tertiary structures of proteins, test for proteins, isolation, characterization, biological importance; denaturation of proteins.
Enzymes: Introduction, classification and characteristics of enzymes. Salient features of active site of enzymes. Mechanism of enzyme action (taking trypsin as an example), factors affecting enzyme action, coenzymes and cofactors (ATP, NAD, FAD), specificity of enzyme action (including stereospecificity).

UNIT – II: Lipids (6 Hours)
Introduction to oils and fats; common fatty acids present in oils and fats, Hydrogenation of fats and oils, Classification. Biological importance of triglycerides and phosphoglycerides and cholesterol; Liposomes and their biological functions and underlying applications. Lipoproteins. Properties, functions and biochemical functions of steroid hormones and peptide hormones.

UNIT – III: Biochemistry of Diseases (8 Hours)
A diagnostic approach by blood/ urine analysis. **Blood:** Composition and functions of blood, blood coagulation. Blood collection and preservation of samples. Causes and symptoms of Anemia.
Urine: Collection and preservation of samples. Formation of urine. Composition and estimation of constituents of normal and pathological urine. Regulation, estimation and interpretation of data for blood sugar, urea, creatinine, cholesterol and bilirubin.

Practical component - 60 Hours

1. Carbohydrate- qualitative and quantitative both.
2. Proteins-qualitative tests
4. Determination of the iodine number of oil.
5. Determination of the saponification value of an oil.
6. Determination of acid value of fats and oils.
7. Determination of cholesterol using Liebermann- Burchard reaction.
8. Estimation of DNA by diphenylamine reaction
9. Isolation and characterization of DNA from Onion/cauliflower.
10. Determination of amount of protein using Lowry's method/ Biuret method.
11. To study the activity of ⟨-amylase.
12. To study the effect of temperature and pH on the activity of ⟨-amylase.

Essential/recommended readings

- Devlin, T. M. (2010), Textbook of Biochemistry with Clinical Correlations, John Wiley & Sons.
- Berg, J.M., Tymoczko, J.L.; Stryer, L. (2010), Loose-leaf Version for Biochemistry, W.H.Freeman.
- Lehninger, A.L., Nelson, D.L.;Cox, M. (2004), Principle of Biochemistry, W.H.Freeman.
- Morrison, R. N.; Boyd, R. N. (2016) Organic Chemistry, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
- Finar, I. L. (2015) Organic Chemistry (Volume 1& 2), Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
- Swahney, S.K.; Singh, R. (2001), Introductory Practical Biochemistry, Narosa Publishing House.
- Cooper, T.G. (2011),The Tools of Biochemistry, Wiley India Pvt Ltd.
- Wilson, K.; Walker, J. (2000), Principles and Techniques of Practical Biochemistry, Cambridge University Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – DSE-2

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Course Title: Green Chemistry **Course Code:** (DSE-2)	04	02	00	02	Class XII Pass with Physics, Chemistry and Mathematics	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- Huge rise in environmental pollution, depleting resources, climate change, ozone depletion, heaps and heaps of landfills piling up has forced the society to become more and more environmentally conscious. Future chemists and innovators are compelled to work towards sustainable practices. Green chemistry has arisen from these concerns. It is not a new branch of chemistry but helps to improve the creative and innovative thinking in undergraduate students. Green chemistry is a way to boost profits, increase productivity and ensure sustainability with absolute zero waste. Innovations and applications of green chemistry in education have helped companies to gain environmental benefits as well as to achieve economic and societal goals also.
- Undergraduate students are the ultimate scientific community of tomorrow. Training them to practice chemistry in the safest way possible is key towards safe working conditions in the laboratories as well as the chemical industry and extends to society in a sustainable future for the planet.

Learning Outcomes:

By the end of this course, students will be able to:

- Understand the twelve principles of green chemistry and also build the basic understanding of toxicity, hazard and risk related to chemical substances.
- Calculate atom economy, E-factor and relate them in all organic synthesis.
- Appreciate the use of catalyst over stoichiometric reagents.
- Learn to use green solvents, renewable feedstock and renewable energy sources for carrying out safer chemistry.
- Appreciate the use of green chemistry in problem solving skills and critical thinking to innovate and find solutions to environmental problems.

- Learn to design safer processes, chemicals and products through understanding of inherently safer design (ISD).
- Appreciate the success stories and real-world cases as motivation for them to practice green chemistry.

SYLLABUS OF DSE-2

Theory Component

Unit-I: Introduction (8 Hours)

Definition of green chemistry and how it is different from conventional chemistry and environmental chemistry.

• Need of green chemistry

• Importance of green chemistry in- daily life, Industries and solving human health problems (four examples each).

• A brief study of Green Chemistry Challenge Awards (Introduction, award categories and study about five last recent awards).

Unit-II: Twelve Principles of Green Chemistry (12 Hours)

The twelve principles of the Green Chemistry with their explanation's. Special emphasis on the following:

• Prevention of waste / byproducts, pollution prevention hierarchy.

• Green metrics to assess greenness of a reaction: environmental impact factor, atom economy and calculation of atom economy.

• Green solvents-supercritical fluids, water as a solvent for organic reactions, ionic liquids, solvent less reactions, solvents obtained from renewable sources.

• Catalysis and green chemistry- comparison of heterogeneous and homogeneous catalysis, biocatalysis, asymmetric catalysis and photocatalysis.

• Green energy and sustainability.

• Real-time analysis for pollution prevention.

• Prevention of chemical accidents, designing greener processes, inherent safer design, principle of ISD "What you don't have cannot harm you", greener alternative to Bhopal Gas Tragedy (safer route to carcarbaryl) and Flixiborough accident (safer route to cyclohexanol) subdivision of ISD, minimization, simplification, substitution, moderation and limitation

Unit-III: Real-World Cases (10 Hours)

The following Real-world Cases in green chemistry should be discussed: Surfactants for carbon dioxide – replacing smog producing and ozone depleting solvents with CO_2 for precision cleaning and dry cleaning of garments. Designing of environmentally safe marine antifoulant. Rightfit pigment: Synthetic azo pigments to replace toxic organic and inorganic pigments. An

efficient, green synthesis of a compostable and widely applicable plastic (polylactic acid) made from corn.

Practical Component – 60 Hours

Characterization by melting point, UV-Visible spectroscopy, IR spectroscopy and any other specific method should be done (wherever applicable).

1. Preparation and characterization of nanoparticles of gold using tea leaves/silver nanoparticles using plant extracts.
2. Preparation of biodiesel from waste cooking oil and characterization (TLC, pH, solubility, combustion test, density, viscosity, gel formation at low temperature and IR can be provided).
3. Benzoin condensation using thiamine hydrochloride as a catalyst instead of cyanide.
4. Extraction of D-limonene from orange peel using liquid CO_2 prepared from dry ice.
5. Mechanochemical solvent free, solid-solid synthesis of azomethine using *p*-toluidine and *o*-vanillin/*p*-vanillin.
6 Microwave-assisted Knoevenagel reaction using anisaldehyde, ethylcyanoacetate and ammonium formate.
7. Photoreduction of benzophenone to benzopinacol in the presence of sunlight.
8. Photochemical conversion of dimethyl maleate to dimethyl fumarate (*cis-trans* isomerisation)
9. Benzil- Benzilic acid rearrangement: Preparation of benzilic acid in solid state under solvent-free condition.

Essential/recommended readings

1. Anastas, P.T., Warner, J.C. (2014), Green Chemistry, Theory and Practice, Oxford University Press.
2. Lancaster, M. (2016), Green Chemistry: An Introductory Text, 3rd Edition, RSC Publishing.
3. Cann, M. C., Connely, M.E. (2000), Real-World cases in Green Chemistry, American Chemical Society, Washington.
4. Matlack, A.S. (2010), Introduction to Green Chemistry, 2nd Edition, Boca Raton: CRC Press/Taylor & Francis Group publisher.
5. Alhuwalia, V.K., Kidwai, M.R. (2005), New Trends in Green chemistry, Anamalaya Publishers.
6. Sidhwani, I.T, Sharma, R.K. (2020), An Introductory Text on Green Chemistry, Wiley India Pvt Ltd.
7. Kirchoff, M.; Ryan, M.A. (2002), Greener approaches to undergraduate chemistry experiment, American Chemical Society, Washington DC.
8. Sharma, R.K.; Sidhwani, I.T.; Chaudhari, M.K. (2013), Green Chemistry Experiments: A monograph, I.K. International Publishing House Pvt Ltd. New Delhi.
9. Pavia, D.L.; Lamponam, G.H.; Kriz, G.S.W. B. (2012), Introduction to organic Laboratory Technique- A Microscale approach, 4th Edition, Brooks-Cole Laboratory Series for Organic chemistry.
10. Sidhwani I.T. (2015), Wealth from Waste: A green method to produce biodiesel from waste cooking oil and generation of useful products from waste further generated.

DU Journal of Undergraduate Research and Innovation, 1(1),131-151. ISSN: 2395-2334.
11. Sidhwani, I.T; Sharma, R.K. (2020), An Introductory Text on Green Chemistry, Wiley India Pvt Ltd.
12. Monograph on Green Chemistry Laboratory Experiments, Green Chemistry Task Force Committee, Department of Science and Technology, Government of India.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Bachelor of Sciences (Life Sciences)

Category II

BSc (Life Sciences) with Chemistry as one of the Core Discipline

DISCIPLINE SPECIFIC CORE COURSE -7: Chemistry -III Chemical Energetics and Equilibria

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Chemical Energetics and Equilibria (DSC-7: Chemistry 03:	04	02	00	02	Passed Class 12th with Physics, Chemistry, Mathematics	NIL

Learning objectives

The objectives of this course are as follows:

- To develop basic understanding of the chemical energetics, laws of thermodynamics and ionic equilibrium.
- to provides basic understanding of the behaviour of electrolytes and their solutions.
- To make students learn about the properties of ideal and real gases and deviation from ideal behavior

Learning outcomes

By studying this course, students will be able to:

- Explain the laws of thermodynamics, thermochemistry and equilibria.
- Use the concept of pH and its effect on the various physical and chemical properties of the compounds.
- Use the concepts learnt to predict feasibility of chemical reactions and to study the behaviour of reactions in equilibrium

SYLLABUS

UNIT-1: Chemical Energetics **(16 Hours)**

Recapitulation of Intensive and extensive variables; state and path functions; Isolated, closed and open systems

First law

Concept of heat (Q), work (W), internal energy (U), and statement of first law; enthalpy (H), relation between heat capacities for ideal gas, Joule's experiment, calculations of Q, W, ΔU and ΔH for reversible expansion of ideal gases under isothermal conditions.

Thermochemistry

Enthalpy of reactions: standard states; enthalpy of neutralization, enthalpy of ionization enthalpy of hydration, enthalpy of formation and enthalpy of combustion, Integral enthalpy of solution, bond dissociation energy and bond enthalpy; Hess's law, Born Haber's cycle (NaCl/ KCl).

Second Law

Concept of entropy; statements of the second law of thermodynamics (Kelvin and Clausius). Calculation of entropy change for reversible processes (for ideal gases). Free Energy Functions: Gibbs and Helmholtz energy (Non-PV work and the work function); Free energy change and concept of spontaneity (for ideal gases).

Third Law

Statement of third law, qualitative treatment of absolute entropy of molecules (examples of NO, CO), concept of residual entropy

UNIT-2: Chemical Equilibrium (4 Hours)

Criteria of thermodynamic equilibrium. Free energy change in a chemical reaction and equilibrium constant, exergenic and endergenic reactions with examples such conversion of ATP to ADP or vice verca,, Le Chatelier's principle, relationship between Kp, Kc and Kx for reactions involving ideal gases.

UNIT-3: Ionic Equilibria (10 Hours)

Strong, moderate and weak electrolytes, degree of ionization, factors affecting degree of ionization, Ostwald's dilution law, ionization constant and ionic product of water, ionization of weak acids and bases, Degree of ionization, pH scale, common ion effect, Buffer solutions, Henderson-Hasselbach equation. Solubility and solubility product of sparingly soluble salts – applications of solubility product principle

Practical Component: 60 Hours

(Laboratory periods: 15 classes of 4 hours each)

Chemical Energetics:

1. Determination of heat capacity of calorimeter.
2. Determination of enthalpy of neutralization of hydrochloric acid with sodiumhydroxide.
3. Determination of the enthalpy of ionization of acetic acid.
4. Determination of enthalpy of neutralization of acetic acid and ammonium hydroxide using Hess's law.

5. Determination of integral enthalpy of solution (both endothermic and exothermic) of salts.
6. Determination of enthalpy of hydration of Copper sulphate.

Ionic equilibria:

7. Preparation of buffer solutions: (i) Sodium acetate-acetic acid or (ii) Ammonium chloride-ammonium acetate. Measurement of the pH of buffer solutions and comparison of the values with theoretical values.
8. Study the effect of addition of HCl/NaOH on pH of the buffer solutions (acetic acid, and sodium acetate).
9. pH metric titration of strong acid with strong base,
10. pH metric titration of weak acid with strong base

References:

Theory:

1. Castellan, G. W. (2004),**Physical Chemistry**,Narosa.
2. Kapoor, K. L. (2015),**A Textbook of Physical Chemistry**,Vol 1, 6th Edition, McGraw Hill Education.
3. Kapoor, K. L. (2015), **A Textbook of Physical Chemistry**, Vol 2, 6thEdition, McGraw Hill Education.
4. Puri, B. R., Sharma, L. R. and Pathania M. S. (2020), **Principles of Physical Chemistry**, Vishal PublishingCo.

Practical:

1. Khosla,B. D.;Garg,V. C.; Gulati,A.(2015), **SeniorPracticalPhysicalChemistry**,R.Chand&Co.
2. Kapoor, K. L. (2019), **A Textbook of Physical Chemistry**, Vol 7, 1st Edition, McGraw Hill Education.
3. Batra, S. K., Kapoor, V and Gulati, S. (2017) 1st Edition, **Experiments in Physical Chemistry,** Book Age series.

Additional Resources:

1. Mahan, B. H.(2013), **University Chemistry**,Narosa.
2. Barrow, G. M. (2006), **Physical Chemistry**, 5thEdition, McGrawHill.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Pool of DISCIPLINE SPECIFIC ELECTIVES (DSEs) for BSc. Life Science

DISCIPLINE SPECIFIC ELECTIVE COURSE CHEM-DSE -1:

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Chem-DSE-1: Chemistry of Major and Minor Biogenic Elements	**04**	**02**	**00**	**02**	**Passed Class XII with Science**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- To review periodic properties of main group elements and their role in the biological systems.
- To discuss the patterns and trends exhibited by main group elements and their compounds with emphasis on synthesis, structure, bonding and their diverse applications in the environment, industry and in the biological system.
- To get an insight into how these compounds such as oxides of N and S affect our day-to-day life.
- To learn about inorganic polymeric compounds borazine, silicates, silicones, phosphonitrilic compounds and their applications.
- To develop the interest of students in the frontier areas of inorganic and material chemistry.

Learning outcomes

By studying this course, students will be able to:

- Explain the periodicity in atomic and ionic radii, electronegativity, ionization enthalpy, electron gain enthalpy of elements of the periodic table.
- Explain oxidation states with reference to the existence of elements in unusual and rare oxidation states in alkalides, carbides and nitrides.
- Explain vital role of sodium, potassium, calcium and magnesium ions etc. in biological systems and the role of oxides of N and S in our environment.
- Predict distribution of major and minor biogenic elements in human beings

SYLLABUS OF CHEM-DSE 1

UNIT-1: Periodic Properties (6 Hours)

Electronic configurations of the atoms. Stability of half-filled and completely filled orbitals, the concept of exchange energy, inert pair effect.
General group trends of main group elements with special reference to size (atomic and ionic), Ionization Enthalpy, Electron Gain Enthalpy, Electronegativity, oxidation states (including rare oxidation states of alkali metals, carbides and nitrides), melting and boiling points, flame colour, metallic character and complex formation tendency (crown ethers and cryptates), Alkali metal solutions in liquid ammonia
Distribution of major and minor biogenic elements in human beings

UNIT 2: Structure, Bonding and Properties (16 Hours)

Structure, bonding and properties: Acidic/Basic nature, stability, ionic/covalent nature, oxidation/reduction, hydrolysis, thermal stability of the following:
Hydrides: hydrides of Group 13 (only diborane), Group 14, Group 15 (EH_3 where E = N, P, As, Sb, Bi), Group 16 and Group 17.
Oxides: Oxides of nitrogen, phosphorus and sulphur
Oxoacids: oxoacids of phosphorus, sulphur and chlorine
Halides of phosphorus

Relevance of above compounds in industrial/environmental/biological systems wherever applicable

UNIT 3: Preparation, Properties, Structure and Uses (8 Hours)

Preparation, properties, structure and uses of the following compounds: Borazine, Silicates, silicones, Phosphonitrilic halides $\{(PNCl_2)_n$ where n = 3 and 4$\}$

Practical component 60 Hours
(Laboratory periods: 15 classes of 4 hours each)

Qualitative semi-micro analysis of mixtures containing 2 anions and 2 cations (preferably 7-8 mixtures). Emphasis should be given to the understanding of the chemistry of different reactions. The following radicals are suggested: CO_3^{2-}, NO_2^- , S^{2-}, SO_3^{2-}, SO_4^{2-} , $S_2O_3^{2-}$, CH_3COO^-, F, Cl^- , Br^- , I^- ,
NO_3^- , BO_3^{3-}, $C_2O_4^{2-}$, PO_4^{3-}, NH_4^+, K^+, Pb^{2+} , Cu^{2+}, Cd^{2+}, Bi^{3+}, Sn^{2+}, Sb^{3+}, Fe^{3+}, Al^{3+}, Cr^{3+}, Zn^{2+}, Mn^{2+}, Co^{2+}, Ni^{2+}, Ba^{2+}, Sr^{2+}, Ca^{2+}, Mg^{2+}.
The mixtures may contain combination of anions/one interfering anion.
Spot tests should be preferred wherever applicable.

References:

Theory:

1. Lee, J.D.; (2010), Concise Inorganic Chemistry, Wiley India.
2. Huheey, J.E.; Keiter, E.A.; Keiter; R. L.; Medhi, O.K. (2009), **Inorganic Chemistry-Principles of Structure and Reactivity**, Pearson Education.
3. Douglas, B.E.; McDaniel, D.H.; Alexander, J.J. (1994), **Concepts and Models of Inorganic Chemistry,** John Wiley & Sons.

4. Atkins, P.W.; Overton, T.L.; Rourke, J.P.; Weller, M.T.; Armstrong, F.A. (2010), **Shriver and Atkins, Inorganic Chemistry**, 5th Edition, Oxford University Press.
5. Housecraft, E. H.; Sharpe, A.G. (2018), **Inorganic Chemistry**, 5th Edition, Pearson.

Practicals:

1. Vogel, A.I. (1972), **Qualitative Inorganic Analysis**, Longman.
2. Svehla, G. (1996), **Vogel's Qualitative Inorganic Analysis**, Prentice Hall

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE CHEM-DSE -2:

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Chem-DSE-2: Polynuclear Hydrocarbons, Pharmaceutical Compounds, UV- Visible & IR Spectroscopy	**04**	**02**	**00**	**02**	**Passed Class XII with Science**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce the chemistry and applications of polynuclear hydrocarbons and heterocyclic compounds.
- Introduction to spectroscopy, an important analytical tool which allows identification of organic compounds by correlating their spectra to structure.

Learning outcomes

By studying this course, students will be able to:

- Understand the fundamentals of polynuclear hydrocarbons and heterocyclic compounds through the study of methods of preparation, properties and chemical reactions with underlying mechanism.
- Gain insight into the basic fundamental principles of IR and UV-Vis spectroscopic techniques.
- Use basic theoretical principles underlying UV-visible and IR spectroscopy as a tool for functional group identification in organic molecules.

SYLLABUS OF CHEM-DSE-2

UNIT-1: Polynuclear Hydrocarbons (6 Hours)

Introduction, classification, uses, aromaticity of polynuclear compounds, Structure elucidation of naphthalene, preparation and properties of naphthalene and anthracene.

UNIT-2: Pharmaceutical Compounds (12 Hours)

Introduction, classification, general mode of action of antipyretics and analgesics, aspirin; Synthesis, uses and side effects of the following drugs:
Antipyretics - Paracetamol (with synthesis and mode of action); Analgesics- Ibuprofen (with synthesis and overview of the mode of action); Antimalarials - Chloroquine (synthesis and mode of action).
An elementary treatment of Antibiotics and detailed study of chloramphenicol including mode of action. Medicinal values of curcumin (haldi), azadirachtin (neem), vitamin C and antacid (ranitidine)**.**

UNIT-3: UV-Visible and IR Spectroscopy (12 Hours)

UV-Visible and IR Spectroscopy and their application to simple organic molecules. Electromagnetic radiations and their properties; double bond equivalence and hydrogen deficiency. UV-Visible spectroscopy (electronic spectroscopy): General electronic transitions, λ_{max} & ε_{max}, chromophores &auxochromes, bathochromic & hypsochromic shifts. Application of Woodward rules for the calculation of λ_{max} for the following systems: conjugated dienes - alicyclic, homoannular and heteroannular; α, β-unsaturated aldehydes and ketones, charge transfer complex.

Infrared (IR) Spectroscopy: Infrared radiation and types of molecular vibrations, the significance of functional group & fingerprint region. IR spectra of alkanes, alkenes, aromatic hydrocarbons (effect of conjugation and resonance on IR absorptions), simple alcohols (inter and intramolecular hydrogen bonding and IR absorptions), phenol, carbonyl compounds, carboxylic acids and their derivatives (effect of substitution on >C=O stretching absorptions).

Practical component 60 Hours

(Laboratory periods: 15 classes of 4 hours each)

1. Isolation and estimation of the amount of aspirin in a commercial tablet.
2. Preparation of Aspirin.
3. Synthesis of ibuprofen.
4. Systematic qualitative identification and derivative preparation of organic compounds (Aromatic hydrocarbons, Aryl halides)
5. Detection of simple functional groups through examination of IR spectra (spectra to be provided). IR spectra of simple compounds like phenols, aldehydes, ketones, carboxylic acids may be given.
6. Differentiation between of o-/p-hydroxybenzaldehyde by IR spectroscopy (Spectra to be provided).
7. Differentiation between benzoic acid and cinnamic acid by UV spectroscopy.
8. Diel's Alder reaction using Anthracene and Maleic anhydride.

9. Partial Reduction of m-dinitrobenzene to m-nitroaniline and then analysing the IR spectra of reactant and Product.
10. Laboratory preparation of Paraacetamol.

References:

Theory:

1. Finar, I. L. **Organic Chemistry** (Volume 1 & 2), Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
2. Morrison, R. N.; Boyd, R. N. **Organic Chemistry,** Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
3. Bahl, A; Bahl, B. S. (2012), **Advanced Organic Chemistry**, S. Chand.
4. Pavia, D.L. **Introduction to Spectroscopy**, Cengage learning (India) Pvt. Ltd.
2. Kemp, W. (1991), **Organic Spectroscopy**, Palgrave Macmillan.

Practicals:

1. Ahluwalia, V.K.; Dhingra, S.; Gulati, A. (2005), **College Practical Chemistry,** University Press (India) Ltd.
2. Ahluwalia, V.K.; Dhingra, S. (2004), **Comprehensive Practical Organic Chemistry: Qualitative Analysis**, University Press.
3. Vogel, A.I. (1972), **Textbook of Practical Organic Chemistry**, Prentice-Hall.
4. Pasricha, S., Chaudhary, A. (2021), **Practical Organic Chemistry: Volume I**, I K International Publishing House Pvt. Ltd., New Delhi.
5. Pasricha, S., Chaudhary, A. (2021), **Practical Organic Chemistry: Volume I**, I K International Publishing House Pvt. Ltd., New Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE CHEM-DSE 3:

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Chem-DSE 3: Computer Applications in Chemistry	**04**	**02**	**0**	**02**	**Passed Class XII with Science**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce the students to basic computer skills that will help them in solving chemistry problems using spreadsheets and BASIC language.
- To acquaint the students with different software for data tabulation, calculation, graph plotting, data analysis and document preparation.
- To expose the students to the concept of molecular modelling, its applications to various molecular systems, energy minimization techniques, analysis of Mulliken Charge and ESP Plots.

Learning outcomes

By studying this course, students will be able to:

- Have knowledge of most commonly used commands and library functions used in programming in C language.
- Develop algorithm to solve problems and write corresponding programs in C language for performing calculations involved in laboratory experiments.
- Use various spreadsheet software to perform theoretical calculations and plot graphs

SYLLABUS OF CHEM-DSE-3

UNIT-1: Programming using BASIC **(20 Hours)**

Programming Language – Elements of BASIC language, Numeric and string Constants and Variables, arithmetic expressions, hierarchy of operations, inbuilt functions. Syntax and use of the various QBASIC commands: REM, CLS, INPUT, PRINT, GOTO, IF, IF…THEN, IF..THEN..ELSE, IF and END IF, FOR and NEXT etc., DIM, READ, DATA, GOSUB,

RETURN, RESTORE, DEF FNR and Library Functions, Simple programs based on usage of the commands mentioned above.

Statistical analysis using BASIC: Mean, Least square fit - Linear regression, variance, standard deviation.

UNIT-2: Handling of Numerical Data (4 Hours)

Spreadsheet software: MS Excel. Creating a spreadsheet, entering and formatting information, applying basic functions and formulae to the data, drawing charts, tables and graphs, displaying the equation of graph along with the R^2 value, incorporating tables and graphs in Word files, graphical solution of equations, plotting pressure-volume curves of van der Waals gases, Maxwell-Boltzmann distribution, concentration versus time graphs, spectral data, titration curves, etc.

UNIT-3: Molecular Modelling (6 Hours)

Introduction to molecular modelling, overview of classical and quantum mechanical methods (molecular mechanics, semi empirical, ab initio and DFT), general considerations and comparison of these methods.

Practical component 60 Hours
(Laboratory periods: 15 classes of 4 hours each)

Exercises of Programing

1. Calculate pressure of a real gas using Van der Waal's Equation.
2. Calculate the most probable speed, average speed and root men square velocity of an ideal gas.
3. Roots of quadratic equations
4. Binomial coefficient using GOSUB statement.
5. Mean, standard deviation
6. Least square curve fitting method for linear equation.

Plotting graphs using a spreadsheet

1. van der Waals isotherms
2. Maxwell-Boltzmann distribution curves as function of temperature and molecular weight
3. Plot the conductometric titration curve for

   a) strong acid vs strong base and b) weak acid vs strong base

0. Plot the pH metric titration curve for

   a) strong acid vs strong base and b) weak acid vs strong base and determine the pK_a of the weak acid

0. Plot the graphs for the kinetics of first order reaction and determine the rate constant
1. Plot the UV-vis absorbance spectra and determine the molar absorption coefficient.

Molecular Modelling

1. Optimize and compare the geometry parameters of H_2O and H_2S using Argus Lab.
2. Compare the basicities of N atom in ammonia, methylamine, dimethylamine and trimethylamine using Argus Lab by comparing Mulliken charges and ESP map in Argus Lab.
3. Compare C-C bond lengths and bond order in ethane, ethene and ethyne using Argus Lab.
4. Determine enthalpy of isomerization of cis and trans-2-butene in Argus Lab.
5. Compare the HAH bond angles for the second row hydrides (BeH_2, CH_4, NH_3, H_2O) and compare with the results from qualitative MO theory.

References:

Theory:

1. Levie, R. de. (2001), **How to use Excel in analytical chemistry and in general scientific data analysis**, Cambridge Univ. Press.
2. Venit, S.M. (1996),**Programming in BASIC: Problem solving with structure and style**. Jaico Publishing House.
3. Lewars, E. (2003), **Computational Chemistry,** Kluwer academic Publisher.
4. Cramer, C.J.(2004), **Essentials of Computational Chemistry,** John Wiley & Sons.
5. Hinchcliffe, A. (1996), **Modelling Molecular Structures,** John Wiley & Sons.
6. Leach, A.R.(2001), **Molecular Modelling,** Prentice-Hall.

Practicals:

1. Lewars, E. **(2003), Computational Chemistry,** Kluwer academic Publisher.
2. Cramer, C.J. **(2004), Essentials of Computational Chemistry,** John Wiley & Sons.
3. Hinchcliffe, A. **(1996), Modelling Molecular Structures,** John Wiley & Sons.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Bachelor of Sciences (Physical Sciences)

Category II

BSc (Physical Sciences) with Chemistry as one of the Core Discipline

DISCIPLINE SPECIFIC CORE COURSE -7: Chemistry -III Chemical Energetics and Equilibria

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Chemical Energetics and Equilibria (DSC-7: Chemistry 03:	04	02	0	02	Passed Class 12th with Physics, Chemistry, Mathematics	NIL

Learning objectives

The objectives of this course are as follows:

- To develop basic understanding of the chemical energetics, laws of thermodynamics and ionic equilibrium.
- to provides basic understanding of the behaviour of electrolytes and their solutions.
- To make students learn about the properties of ideal and real gases and deviation from ideal behavior

Learning outcomes

By studying this course, students will be able to:

- Explain the laws of thermodynamics, thermochemistry and equilibria.
- Use the concept of pH and its effect on the various physical and chemical properties of the compounds.
- Use the concepts learnt to predict feasibility of chemical reactions and to study the behaviour of reactions in equilibrium

SYLLABUS

UNIT-1: Chemical Energetics **(16 Hours)**

Recapitulation of Intensive and extensive variables; state and path functions; Isolated, closed and open systems

First law

Concept of heat (Q), work (W), internal energy (U), and statement of first law; enthalpy (H), relation between heat capacities for ideal gas, Joule's experiment, calculations of Q, W, ΔU and ΔH for reversible expansion of ideal gases under isothermal conditions.

Thermochemistry

Enthalpy of reactions: standard states; enthalpy of neutralization, enthalpy of ionization enthalpy of hydration, enthalpy of formation and enthalpy of combustion, Integral enthalpy of solution, bond dissociation energy and bond enthalpy; Hess's law, Born Haber's cycle (NaCl/ KCl).

Second Law

Concept of entropy; statements of the second law of thermodynamics (Kelvin and Clausius). Calculation of entropy change for reversible processes (for ideal gases). Free Energy Functions: Gibbs and Helmholtz energy (Non-PV work and the work function); Free energy change and concept of spontaneity (for ideal gases).

Third Law

Statement of third law, qualitative treatment of absolute entropy of molecules (examples of NO, CO), concept of residual entropy

UNIT-2: Chemical Equilibrium (4 Hours)

Criteria of thermodynamic equilibrium. Free energy change in a chemical reaction and equilibrium constant, exergenic and endergenic reactions with examples such conversion of ATP to ADP or vice verca,, Le Chatelier's principle, relationship between Kp, Kc and Kx for reactions involving ideal gases.

UNIT-3: Ionic Equilibria (10 Hours)

Strong, moderate and weak electrolytes, degree of ionization, factors affecting degree of ionization, Ostwald's dilution law, ionization constant and ionic product of water, ionization of weak acids and bases, Degree of ionization, pH scale, common ion effect, Buffer solutions, Henderson-Hasselbach equation. Solubility and solubility product of sparingly soluble salts – applications of solubility product principle

Practical Component: 60 Hours

(Laboratory periods: 15 classes of 4 hours each)

Chemical Energetics:

1. Determination of heat capacity ofcalorimeter.
2. Determination of enthalpy of neutralization of hydrochloric acid with sodiumhydroxide.
3. Determination of the enthalpy of ionization of acetic acid.

4. Determination of enthalpy of neutralization of acetic acid and ammonium hydroxide using Hess's law.
5. Determination of integral enthalpy of solution (both endothermic and exothermic) of salts.
6. Determination of enthalpy of hydration of Copper sulphate.

Ionic equilibria:

7. Preparation of buffer solutions: (i) Sodium acetate-acetic acid or (ii) Ammonium chloride-ammonium acetate. Measurement of the pH of buffer solutions and comparison of the values with theoretical values.
8. Study the effect of addition of HCl/NaOH on pH of the buffer solutions (acetic acid, and sodium acetate).
9. pH metric titration of strong acid with strong base,
10. pH metric titration of weak acid with strong base

References:

Theory:

1. Castellan, G. W. (2004),**Physical Chemistry**,Narosa.
2. Kapoor, K. L. (2015),**A Textbook of Physical Chemistry**,Vol 1, 6th Edition, McGraw Hill Education.
3. Kapoor, K. L. (2015), **A Textbook of Physical Chemistry**, Vol 2, 6thEdition, McGraw Hill Education.
4. Puri, B. R., Sharma, L. R. and Pathania M. S. (2020), **Principles of Physical Chemistry**, Vishal PublishingCo.

Practical:

1. Khosla,B. D.;Garg,V. C.; Gulati,A.(2015), **SeniorPracticalPhysicalChemistry**,R.Chand&Co.
2. Kapoor, K. L. (2019), **A Textbook of Physical Chemistry**, Vol 7, 1st Edition, McGraw Hill Education.
3. Batra, S. K., Kapoor, V and Gulati, S. (2017) 1st Edition, **Experiments in Physical Chemistry,** Book Age series.

Additional Resources:

1. Mahan, B. H.(2013), **University Chemistry**,Narosa.
2. Barrow, G. M. (2006), **Physical Chemistry**, 5thEdition, McGrawHill.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Pool of DISCIPLINE SPECIFIC ELECTIVES (DSEs) for BSC (Physical Science)

DISCIPLINE SPECIFIC ELECTIVE COURSE CHEM-DSE -1:

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Chem-DSE-1: Main Group Chemistry	**04**	**02**	**0**	**02**	**Passed Class XII with Science**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- To provide basic understanding of the fundamental principles of metallurgy through study of the different methods of extraction and refining of metals.
- To illustrate the diversity and fascination of inorganic chemistry through the study of structure, properties and utilities of s- and p-block elements and their compounds.

Learning outcomes

By studying this course, students will be able to:

- Understand the basis of occurrence of metals in nature and the methods that can be applied on minerals to extract the metals from them.
- Explain the importance of free energy of formation of oxides with the choice of reducing agent for extracting the metals.
- Understand and explain the importance of refining of metals and the choice of a refining procedure
- Explain the group trends observed for different properties of s and p block elements
- Explain the structures and the bonding basis of compounds of s- and p- block elements
- Explain the uniqueness observed in alkali metals and some other main group elements
- Understand and explain the polymerization of inorganic ions to generate inorganic polymers and the difference between organic and inorganic polymers.

Syllabus

Unit 1: General Principles of Metallurgy **(6 Hours)**

Chief modes of occurrence of metals based on standard electrode potentials. Ellingham diagrams for reduction of metal oxides using carbon and carbon monoxide as reducing agent. Electrolytic Reduction, Hydrometallurgy with reference to cyanide process for silver and gold. Methods of purification of metals: Electrolytic process, Van Arkel-De Boer process, Zone refining.

Unit 2: General Properties **(4 Hours)**

General group trends of s- and p-block elements with special reference to melting and boiling points, flame colour, metallic character and complex formation tendency, diagonal relationship and anomalous behaviour of first member of each group, Alkali metal solutions in liquid ammonia

Unit 3: Structure, Bonding, Properties and Applications **(16 Hours)**

Structure, bonding, properties (Acidic/Basic nature, stability, ionic/covalent nature, oxidation/reduction, hydrolysis, thermal stability) and applications of the following:

Crown Ethers and cryptates of Alkali metals

Hydrides: hydrides of Group 13 (only diborane), Group 14, Group 15 (EH_3 where E = N, P, As, Sb, Bi), Group 16 and Group 17.

Oxides: Oxides of nitrogen, phosphorus and sulphur.

Oxoacids: oxoacids of phosphorus, sulphur and chlorine

Halides of phosphorus

Unit 4: Inorganic Polymers **(4 Hours)**

Preparation, properties, structure and uses of the following:

Borazine, Silicates and Silicones

Practicals **(60 Hours)**

(Laboratory periods:60)

Qualitative semi-micro analysis of mixtures containing 2 anions and 2 cations (preferably 7-8 mixtures). Emphasis should be given to the understanding of the chemistry of different reactions. The following radicals are suggested:

CO_3^{2-}, NO_2^- , S^{2-}, SO_3^{2-}, SO_4^{2-} , $S_2O_3^{2-}$, CH_3COO^-, F^-, Cl^-, Br^-, I^- , NO_3^- , BO_3^{3-}, $C_2O_4^{2-}$, PO_4^{3-},

NH_4^+, K^+, Pb^{2+} , Cu^{2+}, Cd^{2+}, Bi^{3+}, Sn^{2+}, Sb^{3+}, Fe^{3+}, Al^{3+}, Cr^{3+}, Zn^{2+}, Mn^{2+}, Co^{2+}, Ni^{2+}, Ba^{2+}, Sr^{2+}, Ca^{2+}, Mg^{2+}

The mixtures may contain combination of anions/one interfering anion.

Spot tests should be preferred wherever applicable.

References:

Theory:

1. Lee, J.D.; (2010), Concise Inorganic Chemistry, Wiley India.
2. Huheey, J.E.; Keiter, E.A.; Keiter; R. L.; Medhi, O.K. (2009), Inorganic Chemistry- Principles of Structure and Reactivity, Pearson Education.
3. Douglas, B.E.; McDaniel, D.H.; Alexander, J.J. (1994), Concepts and Models of Inorganic Chemistry, John Wiley & Sons.
4. Atkins, P.W.; Overton, T.L.; Rourke, J.P.; Weller, M.T.; Armstrong, F.A. (2010), Shriver and Atkins Inorganic Chemistry, 5th Edition, Oxford University Press.
5. Housecraft, E. H.; Sharpe, A.G. (2018), Inorganic Chemistry, 5th Edition, Pearson.
6. F.A. Cotton & G. Wilkinson (1999), Advanced Inorganic Chemistry, 6th Edition, John Wiley & Sons.

Practicals:

1. Vogel, A.I. (1972), Qualitative Inorganic Analysis, Longman.
2. Svehla, G. (1996), Vogel's Qualitative Inorganic Analysis, Prentice Hall.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE CHEM-DSE -2:

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Chem-DSE-2: Polynuclear Hydrocarbons, Pharmaceutical Compounds, UV- Visible & IR Spectroscopy	**04**	**02**	**0**	**02**	**Passed Class XII with Science**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce the chemistry and applications of polynuclear hydrocarbons and heterocyclic compounds.
- Introduction to spectroscopy, an important analytical tool which allows identification of organic compounds by correlating their spectra to structure.

Learning outcomes

By studying this course, students will be able to:

- Understand the fundamentals of polynuclear hydrocarbons and heterocyclic compounds through the study of methods of preparation, properties and chemical reactions with underlying mechanism.
- Gain insight into the basic fundamental principles of IR and UV-Vis spectroscopic techniques.
- Use basic theoretical principles underlying UV-visible and IR spectroscopy as a tool for functional group identification in organic molecules.

SYLLABUS OF CHEM-DSE-2

UNIT-1: Polynuclear Hydrocarbons **(6 Hours)**

Introduction, classification, uses, aromaticity of polynuclear compounds, Structure elucidation of naphthalene, preparation and properties of naphthalene and anthracene.

UNIT-2: Pharmaceutical Compounds (12 Hours)

Introduction, classification, general mode of action of antipyretics and analgesics, aspirin; Synthesis, uses and side effects of the following drugs:
Antipyretics - Paracetamol (with synthesis and mode of action); Analgesics- Ibuprofen (with synthesis and overview of the mode of action); Antimalarials - Chloroquine (synthesis and mode of action).
An elementary treatment of Antibiotics and detailed study of chloramphenicol including mode of action. Medicinal values of curcumin (haldi), azadirachtin (neem), vitamin C and antacid (ranitidine)**.**

UNIT-3: UV-Visible and IR Spectroscopy (12 Hours)

UV-Visible and IR Spectroscopy and their application to simple organic molecules. Electromagnetic radiations and their properties; double bond equivalence and hydrogen deficiency. UV-Visible spectroscopy (electronic spectroscopy): General electronic transitions, λ_{max} & ε_{max}, chromophores &auxochromes, bathochromic & hypsochromic shifts. Application of Woodward rules for the calculation of λ_{max} for the following systems: conjugated dienes - alicyclic, homoannular and heteroannular; α, β-unsaturated aldehydes and ketones, charge transfer complex.

Infrared (IR) Spectroscopy: Infrared radiation and types of molecular vibrations, the significance of functional group & fingerprint region. IR spectra of alkanes, alkenes, aromatic hydrocarbons (effect of conjugation and resonance on IR absorptions), simple alcohols (inter and intramolecular hydrogen bonding and IR absorptions), phenol, carbonyl compounds, carboxylic acids and their derivatives (effect of substitution on >C=O stretching absorptions).

Practical component 60 Hours

(Laboratory periods: 15 classes of 4 hours each)

1. Isolation and estimation of the amount of aspirin in a commercial tablet.
2. Preparation of Aspirin.
3. Synthesis of ibuprofen.
4. Systematic qualitative identification and derivative preparation of organic compounds (Aromatic hydrocarbons, Aryl halides)
5. Detection of simple functional groups through examination of IR spectra (spectra to be provided). IR spectra of simple compounds like phenols, aldehydes, ketones, carboxylic acids may be given.
6. Differentiation between of o-/p-hydroxybenzaldehyde by IR spectroscopy (Spectra to be provided).
7. Differentiation between benzoic acid and cinnamic acid by UV spectroscopy.
8. Diel's Alder reaction using Anthracene and Maleic anhydride.
9. Partial Reduction of m-dinitrobenzene to m-nitroaniline and then analysing the IR spectra of reactant and Product.
10. Laboratory preparation of Paraacetamol.

References:

Theory:

1. Finar, I. L. **Organic Chemistry** (Volume 1 & 2), Dorling Kindersley (India) Pvt. Ltd.

(Pearson Education).
2. Morrison, R. N.; Boyd, R. N. **Organic Chemistry,** Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
3. Bahl, A; Bahl, B. S. (2012), **Advanced Organic Chemistry**, S. Chand.
4. Pavia, D.L. **Introduction to Spectroscopy**, Cengage learning (India) Pvt. Ltd.
3. Kemp, W. (1991), **Organic Spectroscopy**, Palgrave Macmillan.

Practicals:

1. Ahluwalia, V.K.; Dhingra, S.; Gulati, A. (2005), **College Practical Chemistry,** University Press (India) Ltd.
2. Ahluwalia, V.K.; Dhingra, S. (2004), **Comprehensive Practical Organic Chemistry: Qualitative Analysis**, University Press.
3. Vogel, A.I. (1972), **Textbook of Practical Organic Chemistry**, Prentice-Hall.
4. Pasricha, S., Chaudhary, A. (2021), **Practical Organic Chemistry: Volume I**, I K International Publishing House Pvt. Ltd., New Delhi.
5. Pasricha, S., Chaudhary, A. (2021), **Practical Organic Chemistry: Volume I**, I K International Publishing House Pvt. Ltd., New Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE CHEM-DSE 3:

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Chem-DSE 3: Computer Applications in Chemistry	**04**	**02**	**0**	**02**	**Passed Class XII with Science**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce the students to basic computer skills that will help them in solving chemistry problems using spreadsheets and BASIC language.
- To acquaint the students with different software for data tabulation, calculation, graph plotting, data analysis and document preparation.
- To expose the students to the concept of molecular modelling, its applications to various molecular systems, energy minimization techniques, analysis of Mulliken Charge and ESP Plots.

Learning outcomes

By studying this course, students will be able to:

- Have knowledge of most commonly used commands and library functions used in programming in C language.
- Develop algorithm to solve problems and write corresponding programs in C language for performing calculations involved in laboratory experiments.
- Use various spreadsheet software to perform theoretical calculations and plot graphs

SYLLABUS OF CHEM-DSE-3

UNIT-1: Programming using BASIC **(20 Hours)**

Programming Language – Elements of BASIC language, Numeric and string Constants and Variables, arithmetic expressions, hierarchy of operations, inbuilt functions. Syntax and use of the various QBASIC commands: REM, CLS, INPUT, PRINT, GOTO, IF, IF…THEN, IF..THEN..ELSE, IF and END IF, FOR and NEXT etc., DIM, READ, DATA, GOSUB,

RETURN, RESTORE, DEF FNR and Library Functions, Simple programs based on usage of the commands mentioned above.

Statistical analysis using BASIC: Mean, Least square fit - Linear regression, variance, standard deviation.

UNIT-2: Handling of Numerical Data (4 Hours)

Spreadsheet software: MS Excel. Creating a spreadsheet, entering and formatting information, applying basic functions and formulae to the data, drawing charts, tables and graphs, displaying the equation of graph along with the R^2 value, incorporating tables and graphs in Word files, graphical solution of equations, plotting pressure-volume curves of van der Waals gases, Maxwell-Boltzmann distribution, concentration versus time graphs, spectral data, titration curves, etc.

UNIT-3: Molecular Modelling (6 Hours)

Introduction to molecular modelling, overview of classical and quantum mechanical methods (molecular mechanics, semi empirical, ab initio and DFT), general considerations and comparison of these methods.

Practical component 60 Hours

(Laboratory periods: 15 classes of 4 hours each)

Exercises of Programing

1. Calculate pressure of a real gas using Van der Waal's Equation.
2. Calculate the most probable speed, average speed and root men square velocity of an ideal gas.
3. Roots of quadratic equations
4. Binomial coefficient using GOSUB statement.
5. Mean, standard deviation
6. Least square curve fitting method for linear equation.

Plotting graphs using a spreadsheet

1. van der Waals isotherms
2. Maxwell-Boltzmann distribution curves as function of temperature and molecular weight
3. Plot the conductometric titration curve for

   a) strong acid vs strong base and b) weak acid vs strong base
4. Plot the pH metric titration curve for

   a) strong acid vs strong base and b) weak acid vs strong base and determine the pK_a of the weak acid
5. Plot the graphs for the kinetics of first order reaction and determine the rate constant
6. Plot the UV-vis absorbance spectra and determine the molar absorption coefficient.

Molecular Modelling

1. Optimize and compare the geometry parameters of H_2O and H_2S using Argus Lab.
2. Compare the basicities of N atom in ammonia, methylamine, dimethylamine and trimethylamine using Argus Lab by comparing Mulliken charges and ESP map in Argus Lab.
3. Compare C-C bond lengths and bond order in ethane, ethene and ethyne using Argus Lab.
4. Determine enthalpy of isomerization of cis and trans-2-butene in Argus Lab.
5. Compare the HAH bond angles for the second row hydrides (BeH_2, CH_4, NH_3, H_2O) and compare with the results from qualitative MO theory.

References:

Theory:

1. Levie, R. de. (2001), **How to use Excel in analytical chemistry and in general scientific data analysis**, Cambridge Univ. Press.
2. Venit, S.M. (1996),**Programming in BASIC: Problem solving with structure and style**. Jaico Publishing House.
3. Lewars, E. (2003), **Computational Chemistry,** Kluwer academic Publisher.
4. Cramer, C.J.(2004), **Essentials of Computational Chemistry,** John Wiley & Sons.
5. Hinchcliffe, A. (1996), **Modelling Molecular Structures,** John Wiley & Sons.
6. Leach, A.R.(2001), **Molecular Modelling,** Prentice-Hall.

Practicals:

1. Lewars, E. **(2003), Computational Chemistry,** Kluwer academic Publisher.
2. Cramer, C.J. **(2004), Essentials of Computational Chemistry,** John Wiley & Sons.
3. Hinchcliffe, A. **(1996), Modelling Molecular Structures,** John Wiley & Sons.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Bhaskaracharya College of Applied Science

B.Sc. (Honours) Polymer Science

Category I

DISCIPLINE SPECIFIC CORE COURSE – 7:

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
RUBBER ADDITIVES (DSC-7-RA)	4	3	0	1	Passed Class XII with Physics, Chemistry, Maths	NIL

LEARNING OBJECTIVES

The Learning Objectives of this course are as follows:

- To enable the students to know about need for additives in compounding of rubber
- To understand the different types of ingredients in compounding.
- To know about property modification by vulcanization
- To enrich knowledge on testing of compounded rubber

LEARNING OUTCOMES

The Learning Outcomes of this course are as follows:

After completing the course, the students

- Will understand concept of rubber compounding.
- Will modify the properties of rubber by incorporation of additives.
- Will develop rubber compound for required end use application.
- Will modify the strength by varying vulcanizing agents.
- Will do testing of rubber and asses quality of rubber compound.

SYLLABUS OF DSC-7

THEORY COMPONENT-

UNIT – I **(09 Hours)**

FILLERS AND PROCESSING AIDS

Fillers: Carbon black, Non carbon black, Colors and Pigments,Plasticizers, Process aids, Softeners and Extenders.

UNIT – II (9 Hours)

OTHER ADDITIVES FOR RUBBERS

Vulcanizing agents (sulphur, peroxide and metal oxide, phenolic curatives, benzoquinone derivatives, bismaleimides), accelerators (benzothiazoles, benzothiazolesulfenamide, dithiocarbamates, amines), lubricants, retarders (pre-vulcanized inhibitor), activators,

UNIT – III (06 Hours)

ANTIDEGRADATION AND MISCELLEOUS ADDITIVES

Uv stabilizers, Heat stablizers, Antioxidants, Antiozonants- Mechanism of degradation – Mechanism of ozone attack. Special purpose additives: Chemical blowing agents – Flame retardants – Antistatic agent – Abrasives -Integral bonding additives – stiffening agents. antioxidants, thermal), softners, tackifying agents, blowing agents, surface property modifiers etc.

UNIT – IV (06 Hours)

INDIVIDUAL RUBBER FORMULATIONS

Formulating for natural and synthetic rubbers and typical recipes for a few rubber products, Implications of FDA Regulations - Toxicity and environmental issues.

UNIT – V (12 Hours)

FORMULATION FOR PERFORMANCE REQUIREMENTS

Compounding to meet different Hardness requirements – Iow compression set – For damping application – Compounding to meet bonding requirements with metals and textiles– Compounding to meet processing – Economics of compounding – Cost estimation.

PRACTICAL COMPONENT- 60 Hours

- Mastication of NR on two roll mill
- Mixing of rubber compounds
- Compression moulding of rubber compounds
- Preparation of dry rubber products – play ball
- Preparation of dry rubber products – Hawaii sheet
- Preparation of dry rubber products – M.C Sheet
- Preparation of dispersions for compounding of latex
- Preparation of latex products: i. Hand Gloves ii. Balloon iii. Rubber band iv. Thread
- Compression moulding of fabric/rubber composite
- Preparation of rubber blends

ESSENTIAL/RECOMMENDED READINGS

- John S Dick, Rubber Technology- Compounding and Testing for Performance Hanser Publishers, 2001.
- C. Hepburn, Rubber Technology and Manufacturing, Butterworth-Heinemann, 2009
- Brendon Rodgers, Rubber Compounding- Chemistry and Applications, Taylor and Francies, 2016.

SUGGESTIVE READINGS

- Brydson J.A., (2016) Plastics Materials, Butterworth Heinemann, 8th Edition.
- Roger Brown, Physical Testing of Rubber, Chapman and Hall, 3rd Edition, 1996.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 8

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
PLASTIC ADDITIVES (DSC-8-PA)	4	3	0	1	Passed Class XII with Physics, Chemistry and Mathematics	NIL

LEARNING OBJECTIVES

The Learning Objectives of this course are as follows:

- **To introduce the basics of polymer additives and their significance**
- **To study different additives and their representative formulations**

LEARNING OUTCOMES

The Learning Outcomes of this course are as follows:

After studying this paper, students will be able to

- Understand the role of various compounding additives used for plastics and rubbers
- Describe various steps & variables for mixing and blending of additives
- Utilize understanding of compounding additives and methods for modification of polymer properties

SYLLABUS OF DSC- 8

THEORY COMPONENT-

UNIT – I (12 Hours)

INTRODUCTION TO ADDITIVES AND COMPOUNDING

Importance of additives and their selection criteria for commercial polymers and technical requirements of additives, limitation of polymer additives, physical behavior of polymer additives (solubility etc.), limitation of polymer compounding, two roll mill, high speed mixer, internal batch mixer, single screw & twin screw extruders

UNIT – II (15 Hours)

ADDITIVES FOR PLASTICS

Plasticizers, theories of plasticization, types of plasticizer (phthalate, polymeric, hydrocarbon oil, vegetable oil, phosphates trimellitic etc.), methods of incorporation, fillers, introduction, classification, selection criteria (particle size, shape & geometry, packing fraction, hardness and abrasiveness, optical properties), impact of fillers on properties (mechanical properties, thermal properties, moisture content and electrical properties), Foaming agents, blowing agents, stabilizers (UV, heat, antioxidants and light), metal deactivators, Colorants (Dyes and pigments, coloring properties, classification of pigments, inorganic and organic pigments, method of incorporation (dispersion, pre mixing, agglomerate breakdown, compaction and wetting)

UNIT – III (09 Hours)

ADDITIVES FOR SPECIAL NEEDS

Flame retardants (halogen based, metal oxides, hydrated salts etc.), impact modifiers, lubricants & flow promoters, dry bonding agent and antistatic agents, conductive additives, biodegradation additives

UNIT – IV (09 Hours)

CASE STUDY

Compounding techniques with illustration of few formulations like:

- Rigid PVC pipes
- Clear bags and flexible films
- Acrylic sheet and display board
- Rubber sole
- Air water hose
- Conveyor belt

PRACTICAL COMPONENT- 30 Hours

- Determination of bulk density of fillers.
- Determination of pore size and net size of fillers.
- Determination of thermal stability of polymer stabilized by heat stabilizer.
- Measurement of flash point of a plasticizer.
- Identification of additives using chromatography.
- Determination of the plasticizer and filler content in plastic materials.
- Evaluate the bleeding and blooming properties of an additive.
- Evaluate the effect of fillers/plasticizers on the properties of a plastic/rubber.
- To prepare a PVC masterbatch.
- Identification of a pigment by spot test.
- Estimation of Iodine value of Castor oil
- Determination of DBP value and sieve analysis of Carbon black.

ESSENTIAL/RECOMMENDED READINGS

- Lutz J.T., (2001), Polymer Modifiers and Additives, Marcel Dekker.
- Zweifel H., Amos S.E., (2001) Plastics Additives Handbook, Hanser.
- Gachter R., Muller H., (1987) Plastics Additive Handbook, Hanser Publishers.

SUGGESTIVE READINGS

- Mascia L., (1974) The Role of Additives in Plastics, Edward Arnold Publishers Ltd., U.K.
- Murphy J., (2001) Additives for Plastics Handbook, Second Edition, Elsevier Advanced Technology, Oxford.
- Gerard J. F., (2001) Fillers and Filled Polymers, Wiley-VCH verlag GmbH

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 9:

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
POLYMER DEGRADATION (DSC-09-PD)	**4**	**3**	**0**	**1**	**Passed Class XII with Physics, Chemistry and Mathematics**	**NIL**

LEARNING OBJECTIVES

The Learning Objectives of this course are as follows:

- To familiarize with the utility and importance of polymer degradation
- To learn about the conditions and the reactions of degradation of polymers

LEARNING OUTCOMES

The Learning Outcomes of this course are as follows:

After studying this paper, students will be able to

- Explain the factors responsible for degradation
- Understand the handling of various polymers without affecting the properties
- Evaluate degradation of polymers by various methods

SYLLABUS OF DSC-9

THEORY COMPONENT-

UNIT – I (12 Hours)

CONCEPT OF DEGRADATION

Introduction to degradation, classification of degradation based on

a. Pattern of degradation:
   i. Random degradation
   ii. Side chain degradation
   iii. Chain end degradation

b. Cause of degradation (mechanism, factors affecting thermal degradation, example)

i. Thermal degradation
ii. Oxidative degradation
iii. Degradation by radiation
iv. Mechanical degradation
v. Chemical degradation
vi. Biological degradation

UNIT – II (21 Hours)

DEGRADATION OF A FEW THERMOPLASTICS

Different types of degradation patterns with mechanism of the polymers:

- Polyolefins (PE and PP)
- PVC
- Polyamides
- PMMA
- Cellulose
- Polyacrylonitrile (PAN)
- Polystyrene (PS)
- PET

UNIT – III (6 Hours)

DEGRADATION OF ELASTOMERS

i. PU **ii.** Natural rubber **iii.** SBR

UNIT – IV (6 Hours)

QUANTITATIVE AND QUALITATIVE EVALUATION OF DEGRADATION

Degradation studies using DSC, TGA

PRACTICAL COMPONENT- 30 Hours

- To study biodegradation of polymers.
- To study mechanical degradation of polymers and its effect on properties.
- To study thermal degradation of polymers under various conditions.
- To study thermal analysis of a given polymer by DSC/ TGA.
- To study photo-degradation of PVC.
- To evaluate chemical degradation of PET.
- To determine environmental stress cracking resistance of polymers.
- To evaluate chemical degradation of Nylon 66.
- To study epoxidation of Natural Rubber Latex.
- To study the effect of degradation on properties like: Mechanical strength, hardness, solubility, viscosity etc.

ESSENTIAL/RECOMMENDED READINGS

- Pesce W.J., (2007) Encyclopaedia of Polymer Science and Technology, Wiley.
- Turi E.A., (1997) Thermal Characterization of Polymeric Materials, Academic Press.
- Glaser, J. A. (2019). Biological degradation of polymers in the environment (Vol. 1, p. 13). London, UK: IntechOpen.
- Gilbert, M. (2017). Cellulose plastics. In Brydson's Plastics Materials (pp. 617-630). Butterworth-Heinemann.

- Krasowska, K., Heimowska, A., & Rutkowska, M. (2015). Environmental degradability of polyurethanes. Thermoplastic Elastomers—Synthesis and Applications; IntechOpen: London, UK, 75-94.

SUGGESTIVE READINGS

- Hamid S.H., Amin M.B., (1992) Handbook of Polymer Degradation, Marcel Dekker.
- Ehrenstein G.W., Riedel G., Trawiel P., (2004) Thermal analysis of plastics, Hanser.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSES (DSE-1)

Credit distribution, Eligibility and Pre-requisites of the Course

COMMON POOL OF DISCIPLINE SPECIFIC ELECTIVE COURSES (DSE) COURSES OFFERED IN ODD SEMESTERS BY THE DEPARTMENTS

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
ADVANCED ANALYTICAL TECHNIQUES (DSE-01-AAT)	**4**	**2**	**0**	**2**	**Passed 12Th with Science**	**NIL**

LEARNING OBJECTIVES

The Learning Objectives of this course are as follows:

- **To acquaint the students with the modern instrumental techniques and their applications in characterization of polymeric materials**
- **Students will be able to determine a chemical property and identify a chemical substance in a polymer.**

LEARNING OUTCOMES

The Learning Outcomes of this course are as follows:

After studying this paper, students will be able to

- Interpret NMR, raman, mass and IR–spectra for characterization of molecular structure of polymeric materials

- Elucidate the morphology of various polymers
- Acquire the knowledge about separation of components from polymer mixture

SYLLABUS OF DSE-1

THEORY COMPONENT-

UNIT 1 (14 Hours)

SPECTROSCOPIC TECHNIQUES

Principles and applications of structural determination of polymers (functional group, tacticity, molecular structure, purity, unsaturation etc.) using FT-IR, electron spin resonance, raman, nuclear magnetic resonance (^{1}H NMR, ^{13}C NMR).

Mass Spectroscopy: introduction, basic principles, instrumentation, fragmentation patterns, nitrogen rule, McLafferty rearrangement, interpretation of mass spectra and applications, MALDI-TOF, ESI-MS and methods for determination of molecular mass (principles and applications in polymer characterization).

UNIT 2 (08 Hours)

CHROMATOGRAPHY TECHNIQUES

Introduction to chromatographic methods: TLC, column and gas chromatography, principles, instrumentation, GC column, detectors and stationary phases and applications, hyphenated techniques (GC-MS). Liquid chromatography LC/HPLC, gel permeation chromatography (GPC)

UNIT 3 (08 Hours)

MICROSCOPIC AND MISCELLANEOUS TECHNIQUES

Optical microscopy, electron microscopy (SEM, TEM, AFM) and XRD: basics and applications (size, morphology, crystallinity etc.) for polymers characterization. Particle size analyzer, zeta potential, etc.

PRACTICAL COMPONENT- (60 Hours)

- To identify the functional groups in various polymers using FTIR.
- To analyze the NMR spectra of a given polymer.
- To analyze the raman spectra of given polymers.
- Evaluate percentage crystallinity of polymeric samples by XRD.
- To separate additives in a given polymeric sample by chromatography.
- To separate a polymeric mixture by TLC.
- To analyze film morphology by compound/electron/Atomic Force microscope.
- To determine the size of polymer/additives particles by particle size analyzer.
- To study the polymers tacticity using NMR.
- Visit to an analytical laboratory.

ESSENTIAL/RECOMMENDED READINGS

- Willard H.H., Merritt L.L., Dean J.A. (1988) Instrumental method of analysis, Wads worth Publishing Company.
- Skoog D.A, (1997) Principle of Instrumental Analysis, Harcourt College Pub.
- Shah V., (2007) Handbook of Plastic Testing, Technology, Wiley-Inter science.

- Banwell C.N., McCash E.M., (2008) Fundamentals of Molecular Spectroscopy, Fourth Edition, Tata McGraw-Hill.

SUGGESTIVE READINGS

- Tanaka T., (1999) Experimental Methods in Polymer Sciences, Academic Press.
- Silverstein R.M., (1991) Spectrometric identification of organic compounds, John Wiley.
- Macomber R.S., (2008) A complete introduction to NMR spectroscopy, Wiley-inter science.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSES (DSE-2)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
FIBRE MANUFACTURING TECHNOLOGY (DSE-02-FMT)	4	2	0	2	Passed 12Th with Science	NIL

LEARNING OBJECTIVES

The Learning Objectives of this course are as follows:

- To learn about the basic concepts of spinning including melt and solution spinning.
- To understand various parameters affecting spinning, drawing and heat setting of fibre structure and properties

LEARNING OUTCOMES

The Learning Outcomes of this course are as follows:

After studying this paper, students will be able to

- Manufacture fibre with desired properties.
- Understand the various spinning variables.

SYLLABUS OF DSE-2

THEORY COMPONENT-

UNIT 1(06 Hours)

INTRODUCTION TO FIBRES

Manmade fibres: definition of man-made fibres, brief history of manmade fibres, relative merits and demerits of manmade and natural fibres

UNIT 2: (12 Hours)

MELT SPINNING

Melt spinning process: Crystallization in spin line, stress induced crystallization, melt spinning of PP, polyester and nylon-6 and nylon -66, effect of process parameters on structure and properties of melt spun filament.

UNIT 3 (12 Hours)

SOLUTION DRY & WET SPINNING

Dry spinning of cellulose acetate, acetylation of cellulose, dope preparation and spinning of cellulose diacetate and triacetate, dry spinning of acrylic, significance and types of co-monomers used during polymerization of acrylonitrile (PAN)

Wet spinning of acrylic fibre and viscose rayon, formation of structure in viscose, influence of various additives and temperature of the regeneration bath on the process and properties of viscose rayon

PRACTICAL COMPONENT- 60 Hours

- To prepare polypropylene fibre by melt spinning.
- Melt spinning of Nylon 6/66.
- To prepare polyester fibre by melt spinning
- Solution spinning of acrylic fibre.
- Dry spinning of PAN fibre.
- To characterize a woven fabric with respect to its dimensional properties: thread density , yarn number, yarn crimp, weave, cover factor, areal density, skewness, thickness
- Identification of dyestuff on different substrates
- To determine the crease recovery of fabric and observe the effect of loading time and recovery time on crease recovery.
- Drawing and heat setting of fibres.
- Chemical modification of fibres.

ESSENTIAL/RECOMMENDED READINGS

- Gupta V.B., Kothari V.K., (1997) Manufactured Fibre Technology, 1st Ed Chapman and Hall.
- NPTEL course material on Manufactured fibre Technology.
- Macintyre J.E., (2005) Synthetic Fibres: Nylon, Polyester, Acrylic, Polyolefin, Elsevier Science.

SUGGESTIVE READINGS

- Vaidya A.A., (1988) Production of Synthetic Fibres, First Edition, Prentice Hall of India.
- Kothari V.K., (2000), Textile Fibres: Developments and Innovations, IAFL Publications.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSES (DSE-3)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
TYRE TECHNOLOGY (DSE-03-TT)	**4**	**2**	**0**	**2**	**Passed 12Th with science**	**NIL**

LEARNING OBJECTIVES

The Learning Objectives of this course are as follows:

- Familiarizing various types of tyres and their components
- Developing the knowledge of manufacturing techniques of various tyres

LEARNING OUTCOMES

The Learning Outcomes of this course are as follows:

After studying this paper, students will be able to

- Apply knowledge of basic concept of manufacturing technology of tyre
- Understand designing and compounding of various tyre components
- Evaluate testing and quality assessment of tyre

SYLLABUS OF DSE-3

THEORY COMPONENT-

UNIT 1 (08 Hours)

INTRODUCTION AND TYRE MANUFACTURING

Classification: based on construction (pneumatic, radial, bias, cross ply, tube, tubeless, solid), Mixing (Mixing instruments: two roll mill, kneader, internal mixers), processing (extrusion, calendaring, bead winding), building drum, curing (molding machines etc.), mold

UNIT 2 (12 Hours)

TYRE DESIGN

Compound design (selection of chemical ingredients); process design (process parameters correlating with properties); product design (constructions), latest advances in materials and technologies

UNIT 3 (10 Hours)

TYRE TESTING

Endurance, groove crack test, plunger test, traction: dry, wet and snow, air permeation, noise test, rolling resistance, drivability, road test, wet braking test, fuel economy test, tread to ply pull out, bead seating test

PRACTICAL COMPONENT- 60 Hours

- To identify the type of rubber by reverse engineering.
- To prepare fabric- rubber coated ply.
- To test mechanical and physical properties of vulcanized rubber.
- To perform air aging properties of rubber and rubber to fabric ply.
- To determine bonding strength of rubber to fabric.
- To calculate abrasion losses of tyre tread.
- To calculate rebound resilience of a rubber.
- Tyre indexing and cut section analysis.
- To evaluate the compression set of a rubber.
- To determine rolling resistance test
- Industrial Visit of Tyre Industry/ R&D

ESSENTIAL/RECOMMENDED READINGS

- Clark S.K., (1971) Mechanics of Pneumatic Tires, National Bureau of Standards, Monograph, US Govt. printing office.
- French T., (1989) Tyre Technology, Adam Hilger, New York.

SUGGESTIVE READINGS

- Ford T.L., Charles F.S., (1988) Heavy Duty Truck TIRE Engineering SAE's 34th L. Ray Buckingdale Lecture, SP729.
- Gent A.N., Walter J.D., (2006) The Pneumatic TIRE, U.S. Department of Transportation, National Highway Traffic Safety Administration.
- Mark J.E., Erman B., Eirich F.R., (2005) The Science and Technology of Rubber, Elsevier.
- Koutny F., Zling, (2007) Geometry and Mechanics of Pneumatic TIRE, CZE.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSES (DSE-4)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
POLYMER PRODUCT DESIGN (DSE-04-PPD)	**4**	**2**	**0**	**2**	**Passed 12Th with science**	**NIL**

LEARNING OBJECTIVES

The Learning Objectives of this course are as follows:

- To learn physical properties of polymers required for product design

- To design plastic parts such as static and dynamic loaded parts for electrical, optical and mechanical applications (gears, bearings, pipes, seals, couplings and vibration dampers)

LEARNING OUTCOMES

The Learning Outcomes of this course are as follows:

After studying this paper, students will be able to

- Demonstrate the response of polymers for various loads.
- Apply the knowledge to develop plastic products.
- Develop the design for polymer products in engineering applications.

SYLLABUS OF DSE-4

THEORY COMPONENT-

UNIT-1 (5 Weeks)

INTRODUCTION

Introduction to structure and physical properties of polymers, stress – strain behaviour of polymers, effect of fillers on properties of polymers, stress analysis of polymers, structural design of beams, plates and other structural members.

UNIT 2 (10 Hours)

CHARACTERISTICS OF PRODUCT DESIGN

Dynamic load response of polymers, effects of cyclic loading, other forms of stress applied to polymer parts, design for stiffness, processing limitations on polymers product design. Material and process interaction and the effects on the performance of plastic parts and the resulting design limitations, performance in service and environmental exposure.

UNIT 3 (10 Hours)

PRODUCT DESIGN TECHNIQUES

Design procedure for plastic parts- basic principles-shrinkage-flash lines-undercuts-suggested wall thickness-draft-tolerance-moulded holes-threads radius- moulded hinges-integral hinge-snap fits – product design thumb rules – case studies and product design. design of plastic structural parts for static loads, design of dynamically loaded plastic parts, design of plastic parts for electrical applications, design of plastic parts for optical applications.

PRACTICAL COMPONENT- (60 Hours)

- To prepare a poly styrene sheet with in-situ polymerization.
- To prepare open and closed cell foam.
- To prepare laminates such as epoxy, polyester and epoxy-polyester.
- To prepare a PMMA sheet using bulk polymerizations.
- To join polymer products by molding.
- Preparation of polymer products by different processing techniques.
- To study the post curing of rubber
- To prepare a composite mouse pad
- To prepare rubber - metal composite products
- To determine mechanical properties of designed products

ESSENTIAL/RECOMMENDED READINGS

- Levy S. & Dubois J.H., (1977) Plastic Product Design Engineering Hand Book, Van Nostrand Reinhold Co., New York.
- Miller E., Plastics Products Design Hand Book, Marcel Dekker,

SUGGESTIVE READINGS

- Malloy R. A., (1994) Plastic Part Design for Injection Moulding, Hanser Pub., Munich Vienna NY.
- Belofsky H., (1995) Plastics Product Design and Process Engineering, SPE, Hanser Publication, Munich Vienna NY.
- Freekly P.K. & Payne A. R., Theory and Practice of Engineering with Rubber.
- Hepburn B. and Raynolds R.J.W. , Elastomers, Criteria for Engineering Design.
- Beck R.D., Plastic Product Design, Van Nostrand Reinhold Co.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSES (DSE-5)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
POLYMERS IN BIOMEDICAL APPLICATIONS (DSE-05-PBA)	**4**	**2**	**0**	**2**	**Passed 12Th with science**	**NIL**

LEARNING OBJECTIVES

The Learning Objectives of this course are as follows:

- To acquire knowledge of biocompatibility and biodegradation
- To learn about applications and testing of bio-compatible polymer in tissue engineering

LEARNING OUTCOMES

The Learning Outcomes of this course are as follows:

After studying this paper, students will be able to

- Understand the basic concepts and requirement of biomedical applications and biocompatibility
- Apply the knowledge of various polymers in biomedical application

SYLLABUS OF DSE-5

THEORY COMPONENT-

UNIT 1 (8 Hours)

BASICS OF BIOMATERIALS

Concept of biocompatibility and biodegradability, responsiveness, estimations of degradation and biocompatibility. Importance of biomaterials: hydrogel, fibres, bio-ceramics, bio-elastomers and membrane

UNIT 2 (10 Hours)
POLYMERS AS BIOMATERIALS

Sources, properties and applications: polyamides, polyesters, carbohydrates, natural gums, polyurethanes, polylactic acid, alginates, silicone.

UNIT 3 (12 Hours)
BIOMATERIALS FOR ORGAN TRANSPLANTS & DRUG DELIVERY

Properties and uses of polymers for organ transplant e.g. dental cement, orthopedic, skin, artificial kidney etc., basic concept of tissue engineering, uses of cellulose, chitosan and alginate

Introduction to drug delivery, polymers in controlled drug delivery, dressing strips, polymer drug vessels, core shell and nanogels

PRACTICAL COMPONENT- (60 Hours)

- Evaluate the biocompatibility of polymeric samples.
- Determination of the degradation behavior of polymers such as thermal, hydrolytic etc.
- Preparation of membranes and measurement of their absorption behavior.
- Preparation and characterization of dental cement.
- Prepare a hydrogel and characterization.
- Prepare jaw by powdered silicone rubber
- To find out biocompatibility of polymer products by enigmatic test
- Determination of mechanical strength of polymers.
- To find out hydro degradation of artificial bone.
- To prepare porous membranes.

ESSENTIAL/RECOMMENDED READINGS

- Tiwari A., Tiwari A., (2013) Nanomaterials in drug delivery, Imaging and Tissue Engineering, Wiley.
- Pilla S., (2011) Handbook of Bioplastics and Biocomposites Engineering Applications, Wiley.

SUGGESTIVE READINGS

- Ratner B.D., Hoffman A.S., (1996) An Introduction to Materials in Medicine, Academic Press.
- Saltzman W.M., (2001) Drug delivery: Engineering principles for drug therapy, Oxford University Press.
- Kalia S., Averous L., (2011) Biopolymers: Biomedical and Environmental Applications, John Wiley & Sons.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSES (DSE-6)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
CONDUCTING POLYMERS (DSE-06-CP)	**4**	**2**	**0**	**2**	**Passed 12Th with science**	**NIL**

LEARNING OBJECTIVES

The Learning Objectives of this course are as follows:

- **To impart knowledge of structure and electrical properties of conducting polymers.**
- **To learn about applications of conducting polymers.**

LEARNING OUTCOMES

The Learning Outcomes of this course are as follows:

After studying this paper, students will be able to

- Understand synthesis and requirement of doping in polymers.
- Analyze properties of conducting polymers

SYLLABUS OF DSE-6

THEORY COMPONENT-

UNIT 1(8 Hours)

BASIC ASPECTS OF CONDUCTING POLYMERS

Historical background, band structure, band alignment, conduction mechanism, theory of electrical conduction in conducting polymers

UNIT 2 (10 Hours)

SYNTHESIS OF CONDUCTING POLYMERS

Chemical and electrochemical polymerizations: polyaniline, polypyrrole, polythiophene etc.; doping and its effects on properties of conducting polymers

UNIT 3(12 Hours)

PROPERTIES & APPLICATIONS OF CONDUCTING POLYMERS

Electrical properties, resistance, impedance, capacitance, magnetic properties and optical properties

Electronic devices, sensors, rechargeable batteries, solar cells, light emitting devices, biomedical devices, bio-system, organ transplant, artificial mussels and EMI shielding etc.

PRACTICAL COMPONENT- (60 Hours)

- Synthesis of polyaniline, polypyrrole and polythiophene by chemical polymerizations.
- Synthesis of conducting polymers by electro chemical polymerizations.

- To improve electrical conductivity of PANI by doping
- Evaluation of mechanical properties of conducting polymer films/sheets.
- Determination of the thermal properties of conducting polymers.
- To prepare a molded sheet of conducting polymers.
- To Manufacture molded conducting device
- To study the effect of doping of Polypyrrole
- To measure the electrical conductivity and resistivity of conducting polymer films/sheets.
- To design light emitting devices for conducting applications.

ESSENTIAL/RECOMMENDED READINGS

- Chandrasekhar P., (1999) Conducting Polymers, fundamentals and applications: A practical approach, Springer.
- Nalwa H.S., (1997) Handbook of Organic Conductive Molecules and Polymers: Conductive polymers: synthesis and electrical properties, Vol. 2, Wiley.
- Skotheim T.A., Elsenbaumer R.L., Reynolds J.R., (2007) Handbook of Conducting Polymers, CRC Press.
- Batrinescu, G., Constantin, L. A., Cuciureanu, A., & Constantin, M. A. (2016). Conductive polymer-based membranes. Conducting Polymers.
- Fernandez O.T., (2015) Conducting Polymers, Royal Society of Chemistry.
- Almeida L.C., (2013) Conducting Polymers: Synthesis, Properties & Applications, Nova Publishers.

SUGGESTIVE READINGS

- Dyson, R. W., (1982) Speciality polymers Chapman and Hall publications.
- Brydson J.A., (2016) Plastics Materials, Butterworth Heinemann, 8th Edition.
- Sołoducho, J., & Cabaj, J. (2016). Conducting polymers in sensor design. Conducting Polymers. Rijeka: Intech, 27-48.
- Otero, T. F. (2016). Conducting Polymers: Bioinspired Intelligent Materials and Devices. Royal Society of Chemistry.
- Gupta, R. K. (Ed.). (2022). Conducting Polymers: Chemistries, Properties and Biomedical Applications. CRC Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSES (DSE-7)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
BIO-BASED AND BIODEGRADABLE POLYMERS (DSE-07-BBP)	4	2	0	2	Passed 12Th with science	NIL

LEARNING OBJECTIVES

The Learning Objectives of this course are as follows:

- To gain knowledge of biopolymers and their isolations
- To acquire knowledge on structure and properties of biopolymers
- To understand the basic applications of various biopolymers

COURSE LEARNING OUTCOMES:

After studying this paper, students will be able to

- Gain knowledge of biopolymers applications
- Characterize and analyze biopolymers

SYLLABUS OF DSE-7

THEORY COMPONENT-

UNIT 1 (12 Hours)

BASICS TO BIOPOLYMERS & NATURAL MACROMOLECULES

Significance, classifications, properties and applications of biopolymers and natural polymers such as Starch, cellulose, chitosan, gelatine, protein, fatty acids, lipids, aliphatic polyesters (PLA, PHB), cellulose

UNIT 2

PROCESSING (8 Hours)

Isolation, processing of biopolymers: composite formation, blending and solvent casting

UNIT 3 (10 Hours)

APPLICATIONS

Applications of biopolymers in packaging, biomedical testing and devices, agriculture: soil conditioning and micro-nutrient delivery

PRACTICAL COMPONENT- (60 Hours

- To determine the molecular weight of biopolymers.
- Isolation of starch from wheat/rice/potato
- Isolation of gelatin from natural resources
- To prepare Poly lactic acid
- To prepare a chitosan based composite for biomedical applications.
- To prepare blends of natural polymers and find out miscibility
- Develop a biodegradable film by solution casting of biopolymers.
- Estimate the biodegradability by soil burial test.
- Evaluate swelling index, porosity, hardness of a film.
- Estimate the water vapor transmission rate of a biopolymeric film.

ESSENTIAL/RECOMMENDED READINGS

- Byrom D., (1991) Biomaterials: Novel Materials from Biological Sources, First Edition, Macmillan Publishers Ltd.
- Bastioli C., (1987) HandBook of Biodegradable polymers, Rapra Technology.
- Niaounakis M., (2015) Biopolymers: Processing and Products, First Edition, Elsevier Inc.

SUGGESTIVE READINGS

- Johnson R.M., Mwaikambo L.Y., Tucker N., (2003) Biopolymers, Rapra Technology.
- Pilla S., (2011) Hand Book of Bioplastics & Biocomposites for Engineering Applications, Wiley.
- Alexander S., (2003) Biopolymers, Vol. 1, Wiley.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER -III
BSc. (Life Science) – Zoology Component

DISCIPLINE SPECIFIC CORE COURSE-9 (Zoo-LS-DSC-9):– Biochemistry: Basic concepts of

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical		
Biochemistry: Basic concepts of metabolism Zoo-LS-DSC-09	**04**	**02**	**00**	**02**	**Passed Class XII**	**NIL**

Learning Objectives

The learning objectives of this course are as follows:

- to learn and develop an understanding of the various metabolic pathways in humans.
- to acquire knowledge of the tissue specific metabolism and its regulation.
- to get acquainted with the concept of enzyme specificity for important metabolic pathways and how the body adjusts to variations in the demand for energy.

Learning Outcomes

By studying this course, students will be able to:

- better understand the properties of carbohydrates, proteins, lipids, and their importance in biological systems.
- explain the biological mechanisms, such as the processes and control of bioenergetics and metabolism, as chemical reactions
- comprehend the concept of enzyme, its mechanism of action and regulation.
- appreciate the importance of high energy compounds, electron transport chain, synthesis of ATP under aerobic and anaerobic conditions.
- acquire knowledge related to the role of TCA cycle in central carbon metabolism, importance of anaplerotic reactions and redox balance.

SYLLABUS OF DSC- 09

UNIT-1: Metabolism of Carbohydrates **8 hrs**

Basic structure and physiological significance of mono-saccharides, disaccharides, homo and hetero-polysaccharides. Glycolysis: Preparatory and Payoff phases, regulation, fates of pyruvate, Pentose phosphate pathway: oxidative and non-oxidative Phases; Gluconeogenesis: Bypass reactions, regulation and reciprocal coordination of glycolysis

and gluconeogenesis; Glycogen Metabolism: Glycogenolysis, Glycogenesis and its coordinated regulation, Kreb's Cycle (formation of Acetyl CoA, reactions of cycle, regulation),

UNIT- 2: Lipid Metabolism **6 hrs**

Basic structure and physiological significance of fatty acids, structure and significance of storage and structural lipids; Biosynthesis: FAS and synthesis reactions, regulation; β oxidation of palmitic acid: activation of fatty acids and oxidation with bioenergetics, regulation.

UNIT- 3: Protein metabolism **6 hrs**

Structure, classification and properties of amino acids, basics of protein structure; Transamination, Deamination, Glutamine formation, Glucose alanine cycle and Urea Cycle

UNIT- 4: Enzyme **6 hrs**

Enzymes and their classification, Introduction (basics of classification, properties and functions), Mechanism of action (understanding of basic concepts, Induced Fit Theory).

UNIT- 5: Oxidative Phosphorylation **4 hrs**

Review of Electron Transport Chain: Basics of electron transfer reactions, Universal Electron Acceptors without detailed structures, electron flow through complexes, Chemiosmotic theory, basics of ATP synthesis.

Practical **60 hrs**

(Laboratory periods: 15 classes of 4 hours each)

1. Qualitative tests to identify functional groups of carbohydrates, amino acids and lipids.
2. Estimation of total protein in given solutions by Lowry's method.
3. Study effect of temperature, pH, and inhibitor on enzymatic activity of salivary amylase.
4. Biological oxidation of goat liver.
5. Identification of normal and abnormal constituents of urine.
6. To study the enzymatic activity of Lipase.
7. Dry Lab: To trace the labelled 'C' atoms of Acetyl-CoA till they evolve as CO_2 in the TCA cycle through models.

Essential/recommended readings

1. Nelson, D.L., Cox, M.M. (2017). Lehninger: Principles of Biochemistry (7th ed.). New York, WH: Freeman Company.
2. Murray, R.K., Bender, D.A., Botham, K.M., Kennelly, P.J., Rodwell, V.W. and Well,, P.A. (2009). Harper's Illustrated Biochemistry. XXVIII Edition, International Edition, The McGraw- Hill Companies Inc.

Suggestive readings

1. Stryer, L., Berg, J., Tymoczko, J., Gatto, G. (2019). Biochemistry (9 th ed.). New York, WH: Freeman.
2. Voet, D., Voet. J. G. (2013). Biochemistry (4th ed.). New Jersey, John Wiley & Sons Asia Pvt. Ltd.

SEMESTER -III
DEPARTMENT OF ZOOLOGY
Category I

(B.Sc. Honours in Zoology in three years)

DISCIPLINE SPECIFIC CORE COURSE -7 –:
Diversity of Chordates
Zoo-DSC-7

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Diversity of Chordates Zoo-DSC-7	**04**	**02**	**Nil**	**02**	**Passed Class XII**	**NIL**

Learning Objectives

The learning objectives of this course are as follows:

- The course aims to impart in-depth knowledge about the diverse life forms from the taxonomic positions of Protochordates and Agnatha to Mammalia.
- It will help the students to identify the body plan types of complex chordates and their systematic organization based on evolutionary relationships, structural and functional affinities.
- The course will help the students to understand the characteristic morphological, adaptive and anatomical features of diverse animals.
- The course will help students to understand the economic and ecological significance of various animals in human life.
- The course will create interest among them to explore and appreciate the animal diversity in nature.

Learning Outcomes

By studying this course, students will be able to

- Correlate the importance of systematics, taxonomy, and structural organization of chordates.
- Recognize the diversity of chordates living in varied ecological habitats.
- critically analyse the organization, complexity and characteristic features of chordates.
- comprehend the economic importance of chordates, their interaction with the

environment and their role in the ecosystem.

- enhance collaborative learning and communication skills through practical sessions, teamwork, group discussions, assignments, and projects.

SYLLABUS OF DSC-7

UNIT-I: Introduction to Chordates **2 hrs**

General characteristics and outline classification.

UNIT-2: Protochordata **3hrs**

General characteristics of Hemichordata, Urochordata and Cephalochordata; Study of Tornaria and Ascidian larval forms in protochordates.

UNIT-3: Origin of Chordates **2 hrs**

Theories of Origin of chordates with detailed concept of Dipleurula and the Echinoderm theory.

UNIT-4: Agnatha **2 hrs**

General characteristics and classification of cyclostomes up to Class.

UNIT- 5: Pisces

3 hrs

General characteristics of Chondrichthyes and Osteichthyes; Classification up to order; Osmoregulation; Swimbladder in fishes

UNIT- 6: Amphibia

4 hrs

General characteristics and classification up to order; Origin of Tetrapods (Evolution of terrestrial ectotherms); Parental care in Amphibians.

UNIT-7: Reptilia

4 hrs

General characteristics and classification up to order; Affinities and evolutionary significance of *Sphenodon*; Poison apparatus and biting mechanism in snakes.

UNIT- 8: Aves

4 hrs

General characteristics and classification up to order; Flight adaptations; Migration in birds.

UNIT- 9: Mammalia **4 hrs**

General characteristics and classification up to order; Adaptive radiation with reference to locomotory appendages.

UNIT- 10: Zoogeography **2 hrs**

Zoogeographical realms, Platetectonics and Continental drift theory.

Practical **60 hrs**

(Laboratory periods: 15 classes of 4 hours each)

1. **Protochordata**: *Balanoglossus, Herdmania, Branchiostoma,* Colonial Urochordata, Sections of *Balanoglossus* through proboscis and branchio-genital regions, Sections of *Amphioxus* through pharyngeal, intestinal and caudal regions. Permanent slide of *Herdmania* spicules.
2. **Agnatha**: *Petromyzon, Myxine.*
3. **Pisces**: *Scoliodon, Sphyrna, Pristis, Torpedo, Chimaera, Mystus, Heteropneustes, Labeo, Exocoetus, Echeneis, Anguilla, Hippocampus, Tetrodon/Diodon, Anabas*, Flatfish. Permanent slides of Placoid and Cycloid Scales.
4. **Amphibia**: *Ichthyophis/Ureotyphlus, Necturus, Bufo, Hyla, Alytes, Salamandra.*
5. **Reptilia**: *Chelone, Trionyx, Hemidactylus, Varanus, Uromastix, Chamaeleon, Ophiosaurus, Draco, Bungarus, Vipera, Naja, Hydrophis, Zamenis, Crocodylus*; Key for Identification of poisonous and non-poisonous snakes.
6. **Aves**: Study of six common birds from different orders. Types of beaks and claws.
7. **Mammalia**: *Sorex,* Bat (Insectivorous and Frugivorous), *Funambulus, Loris, Herpestes*, *Erinaceous.*
8. **Student Presentation**: Power point presentation on any two animals from two different classes.

**__Note__: Refer Young, J.Z. (2004) for the classification of Protochordates and Tetrapods, and Parker T.J. and Haswell W.A. (1972) for the classification of Agnatha and Pisces.*

Essential/recommended readings

1. Young, J.Z. (2004). **The Life of Vertebrates**. III Edition, Oxford University Press.

2. Parker T.J. and Haswell W.A. (1972).**Text book of Zoology Vertebrates**.VII Edition, Volume II.

Suggestive readings

1. Pough H. (2018). **Vertebrate Life**. X Edition, Pearson International.
2. Darlington P.J. (1966).**The Geographical Distribution of Animals**. R.E. Krieger Pub. Co.

NOTE: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE -8 – :
Biochemistry: Metabolic Processes
Zoo-DSC-8

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Biochemistry: Metabolic Processes **Zoo-DSC-8**	**04**	**02**	**Nil**	**02**	Passed 12th Class	**NIL**

Learning Objectives

The learning objectives of this course are as follows:

- To provide fundamental and precise knowledge of the metabolic processes that play a crucial role in all processes of life and the development of diseases.
- To apprise the students of the various functions of the molecules like providing structural integrity to the tissue-engineered constructs.
- Through this course, the students would be able to understand myriads of health, potential treatments of diseases and solve several industrial problems
- The enzymatic study would enable them to understand the various metabolic pathways and physiological reactions.

Learning Outcomes

By studying this course, students will be able to

- Interpret the structure-functional relationships of carbohydrates, proteins, lipids and nucleic acids.
- Understand the clinical knowledge and importance of antioxidants.
- Understand the process of biological oxidation crucial to generation of energy for a living cell.
- Appreciate the action of various types of enzymes under variety of conditions.

Syllabus of DSC-8

UNIT- 1: Carbohydrate Metabolism **9 hrs**

Glycolysis, Citric acid cycle, Phosphate pentose pathway, Gluconeogenesis, Glycogenolysis and Glycogenesis.

UNIT- 2: Lipid Metabolism **7 hrs**

β-oxidation and omega-oxidation of saturated fatty acids with even number of carbon atoms; Biosynthesis of palmitic acid; Ketogenesis.

UNIT- 3: Protein Metabolism **4 hrs**

Catabolism of amino acids: Transamination, Deamination, Urea cycle.

UNIT- 4: Oxidative Phosphorylation **7 hrs**

Redox systems; review of mitochondrial respiratory chain: electron carriers, sites of ATP production, Oxidative phosphorylation; Chemiosmotic hypothesis, mitochondrial shuttle system.

UNIT- 5: Liver as a Major Metabolic Hub **3 hrs**

Inter-connection of glucose-6-phosphate, pyruvate and acetyl-CoA; fates of amino acids, fatty acids and glucose in liver cells; cascade of metabolic events in fasting and starvation.

Practical **60 hrs**

(Laboratory periods: 15 classes of 4 hours each)

1. Estimation of total protein in given solutions by Lowry's method.
2. Detection of SGOT and SGPT in serum/ tissue.
3. Estimation of GST and GSH in serum/ tissue.
4. To study the enzymatic activity of Lipase.
5. Study of biological oxidation (SDH) [goat liver].
6. To perform the Acid and Alkaline phosphatase assay from serum/ tissue.
7. Dry Lab: To trace the labelled 'C' atoms of Acetyl-CoA till they evolve as CO_2in the TCA cycle through models.

Essential/recommended readings

3. Nelson, D.L., Cox, M.M. (2017). Lehninger: Principles of Biochemistry (7th ed.). New York, WH: Freeman Company.
4. Murray, R.K., Bender, D.A., Botham, K.M., Kennelly, P.J., Rodwell, V.W. and Well, P.A. (2009). Harper's Illustrated Biochemistry. XXVIII Edition, International Edition, The McGraw- Hill Companies Inc.

Suggestive readings

1. Stryer, L., Berg, J., Tymoczko, J., Gatto, G. (2019). Biochemistry (9th ed.), NewYork,WH: Freeman.
2. Voet, D., Voet. J. G. (2013). Biochemistry (4th ed.). New Jersey, John Wiley & Sons Asia Pvt. Ltd.

DISCIPLINE SPECIFIC CORE COURSE– 9:
Human Physiology- Life Sustaining Systems
Zoo-DSC-9

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Human Physiology- Life Sustaining Systems **Zoo-DSC-9**	**04**	**02**	**Nil**	**02**	Passed 12th Class	**NIL**

Learning Objectives

The learning objectives of this course are as follows:

- The course will provide a thorough understanding of the normal body function and helps to determine the cause of disease.
- It will enable the development of new and more effective treatments and guidelines for maintaining good health.
- It will equip the students with an ability to pursue career in medical and healthcare sector, pharmaceuticals and other related areas.
- It will help in understanding how these systems interact among themselves to maintain stability or homeostasis.

Learning Outcomes

By studying this course, students will be able to:

- Appreciate human physiology and have its enhanced knowledge.
- Recognize and identify principal and physiology of digestion.
- Understand the functions of important physiological systems including the digestive, circulatory, renal and respiratory system.
- Learn an integrative approach to understand how these separate systems interact to yield integrated physiological responses to maintain homeostasis in the body along with feedback mechanisms.
- Amalgamate ideas to make the connection between knowledge of physiology and real-world situations, including healthy lifestyle decisions and problems faced due to homeostatic imbalances.
- Perform, analyze and report on experiments and observations in physiology.
- Know the fundamentals and understand advanced concepts so as to develop a strong foundation that will help them to acquire skills and knowledge to pursue an advanced degree.

SYLLABUS OF DSC-9

UNIT- I Physiology of Digestion 7 hrs

Overview of gastrointestinal tract and its associated glands; digestion; Absorption of carbohydrates, lipids, proteins; Hormonal control of secretion of enzymes in gastrointestinal tract.

UNIT- 2 Blood 4 hrs

Structure and functions of haemoglobin; Blood clotting system, Fibrinolytic system.

UNIT- 3: Physiology of Heart 7 hrs

Structure of heart; Coronary circulation; Origin and conduction of cardiac impulses; Cardiac cycle; Cardiac output and its regulation; nervous and chemical regulation of heart rate.

UNIT- 4: Physiology of Respiration 6 hrs

Overview of respiratory system; Mechanism of respiration, Respiratory volumes and capacities; Transport of oxygen and carbon dioxide in blood; Dissociation curves and the factors influencing it; regulation of respiration.

UNIT- 5: Renal Physiology 6 hrs

Structure of kidney and its functional unit; Mechanism of urine formation; Regulation of water balance; Regulation of acid-base balance.

Practical 60 hrs

(Laboratory periods: 15 classes of 4 hours each)

1. To understand the components of blood, their functions and Hematopoiesis.
2. To study whole blood hemolysis with ammonium chloride solution.
3. Preparation of haemin and haemochromogen crystals.
4. Measurement and statistical analysis of variations observed in the student population in the class for the following parameters:
   a) White blood cells using haemocytometer
   b) Red blood cells using haemocytometer
   c) Hemoglobin
   d) Blood pressure
5. Examination of histological sections of mammalian oesophagus, stomach, duodenum, ileum, rectum, liver, trachea, lung, kidney.
6. Study of Electrocardiogram; Analysis of ECG records and calculation of heart rate.
7. Detection of abnormal constituents in urine and their physiological significance.

Essential/recommended readings

1. Tortora, G.J. and Derrickson, B.H. (2017). Principles of Anatomy and Physiology. XV Edition, John Wiley and Sons, Inc.
2. Ganong W.F. (2019). Review of Medical Physiology 26th ed. Mc Graw-Hill.
3. Widmaier E, Raff H and Strang K. (2013) Vander's Human Physiology: The Mechanism of Body Functions. XIII Edition, McGraw-Hill Education.
4. Guyton, A.C. and Hall, J.E. (2011) Textbook of Medical Physiology. XII Edition, Harcourt Asia Pvt. Ltd/ W.B. Saunders Company.
5. Eroschenko, Victor P. (2012) Di Fiore's Atlas of Histology with Functional Correlations; 12th edition, CBS Publishers and Distributors Pvt. Ltd.

Suggestive readings

1. Chatterjee, C.C. (2021) Human Physiology, 14th Edition, Volume 1 & Volume II, CBS Publishers and Distributors Pvt. Ltd.
2. Vander A, Sherman J, and Luciano D (2014). Vander's Human Physiology

POOL OF DISCIPLINE SPECIFIC ELECTIVES (DSE) COURSES

DISCIPLINE SPECIFIC ELECTIVES (DSE-1): Aquatic Biology
Zoo-DSE-1

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Aquatic Biology **Zoo-DSE-1**	**04**	**03**	**00**	**01**	Passed 12th Class	**NIL**	**Zoology**

Learning Objectives
The learning objectives of this course are as follows:

- This course offers a comprehensive knowledge on life in freshwater and marine environments; lakes; stream and their characteristics, adaptations of organisms, water resource management; nutrient cycling; major threats to aquatic systems, pollution and eutrophication.
- To impart knowledge and understanding of basic laboratory equipment and practice of water quality analysis, to study of aquatic plants.
- To introduce various freshwater and marine ecosystems and its components.
- To understand the biodiversity and productivity of freshwater and marine environments.
- To impart knowledge on various threats and conservation strategies.

Learning Outcomes
By studying this course, students will be able to

- Be acquainted with the physico-chemical environment, and its role in aquatic ecosystem.
- Learn about adaptations unveiled by organisms to survive in these distinctive conditions.
- well-versed with the laws governing the use of freshwater systems, as well as the local, state, federal, and international agencies that enforce these laws to protect endangered and vulnerable species.
- Understand and apply relevant scientific principles in the area of aquatic biology and educate others or work to conserve our natural resources.
- Realize impact of human activities on aquatic organisms.

SYLLABUS OF DSE-1

UNIT-I: Aquatic Biomes **6 hrs**

Brief introduction of the aquatic biomes: Freshwater ecosystem (lakes, wetlands, streams and rivers), Estuaries, Intertidal zones, Oceanic pelagic zone, Marine benthic zone and Coral reefs.

UNIT-2: Lakes **9 hrs**

Lakes: Origin and classification (Glacial, Tectonic, Volcanic and Fluvial Lakes), Lake as an Ecosystem, Lake morphometry, Physico–Chemical Characteristics: Thermal stratification, Vertical distribution of oxygen in lakes, Dissolved Nitrates and Phosphates, Turbidity.

UNIT- 3: Streams and Rivers **9 hrs**

Streams: Different stages of stream development, Physico-chemical environment, Stream flora and fauna. Adaptations of hill stream fishes. Rivers: Origin and characteristics of river. Functions. Concept of watershed management. Ramsar Convention.

UNIT-4: Marine Biology **12 hrs**

Continental shelf, Salinity and density of sea water, Light attenuation in water: Photic, dysphotic and aphotic zones. Adaptations of deep-sea organisms. Marine mammals and their adaptations. Coral reefs: Formation, distribution, fauna and effect of climate change. Physico-chemical characteristics of estuaries, estuarine ecosystem.

UNIT-5: Management of Aquatic Resources **9 hrs**

Major threats to freshwater systems, including pollution and sand mining. Impact of large dams and fragmentation on river ecology and fishery. Thermal pollution and oil spills; Sewage treatment, Water quality assessment- BOD and COD.

Practical **30 hrs**

(Laboratory periods: 15 classes of 2 hours each)

1. Determine the area of a lake using graphimetric and gravimetric method.
2. Identification of following present in a lake ecosystem (3-5 each):
   a) Macrophytes
   b) Phytoplankton
   c) Zooplankton

3. Estimation of pH, dissolved oxygen, alkalinity, free carbondioxide, carbonates and bicarbonates in water collected from a nearby lake/ water body.

4. Estimation of Biochemical oxygen demand of water sample.
5. To demonstrate the following instruments used in limnology and discuss its significance:
   a) Secchi disc
   b) Van Dorn Bottle
   c) Conductivity meter
   d) Turbidity meter
   e) PONAR grab sampler
6. Project Report on a visit to a Sewage treatment plant/Freshwater ecosystem (wetland, lake, river side etc.)/Marine bio-reserve/Fisheries Institutes.

Essential/recommended readings

1. Sullivan O.P. and Reynolds C.S. (2004) The lakes hand book, Limnology and limnetic ecology. Wiley Blockwell.
2. Brian R. Moss (2018) Ecology of Freshwaters: Earth's Blood stream (5thedition). Wiley.
3. Dodds W.K. and Whiles M.R. (2019). Freshwater Ecology: Concepts and Environmental Applications of Limnology (3rd edition). Academic Press.
4. Barrick, M., Odum, E.P., Barrett, G.W., (2005). Fundamentals of Ecology. 5thEdition. Cengage Learning.

Suggested readings:

1. Robert G. Wetzel. (2001)Limnology: Lake and River Ecosystems. 3rdedition.
2. Castro and Huber. MarineBiology.11th Edition, Mc Graw and Hill.

DISCIPLINE SPECIFIC ELECTIVES (DSE-2): Agrochemicals & Pest Management
Zoo-DSE-2

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Agrochemicals & Pest Management Zoo-DSE-2	04	03	00	01	Passed 12th Class	NIL

Learning Objectives

The learning objectives of this course are as follows:

- This course offers an insight about the role of insects as powerful competitors of man as they cause enormous injury to crops and animals and also act as vectors of many diseases.
- To impart knowledge about various types of pests, their distinguishing features, life cycle, symptoms of infestation and/or damage to crops and human health.
- This course will help the students to understand the concept of insect pests and their population dynamics in relation to changing environmental conditions.
- The students will learn about the various methods used in pest management with *pros* and *cons* of each, and how they could be integrated for effective, economical and eco-friendly pest management programs (IPM).
- To enthuse the students to become entomologists.

Learning Outcomes

By studying this course, students will be able to:

- create awareness about adverse effects of insecticides on the environment and the need for an environment-friendly approach to the management of insect pests.
- gain knowledge about the concepts and tools of pest management.
- Understand the planning of agricultural ecosystem, tolerance of pest damage, and timing of different pest control tactics to effectively manage the pest population.
- learn about the use of different pest control techniques in a harmonious manner.
- understand the role of IPM in sustainable agriculture as the future of modern plant protection and pest control strategy.

SYLLABUS OF DSE-2

UNIT- I: Diversity of insects **6 hrs**

Salient features of insects and reasons for their diversity; Outlines of insect classification up to orders. Significance of insects in the ecosystem.

UNIT-2: Insect morphology and development **9 hrs**

Overview of insect morphology: Distinction between prognathous, hypognathous and opisthognathous head, types of antennae, mouth parts and legs. Insect development and types of metamorphosis.

UNIT-3: Insect crop pests and their management **12 hrs**

Introduction to different types of pests and their status, Factors responsible for emergence of pest, Pest population dynamics.

Bionomics and Control of Crop pests: *Leptocorisa acuta*, *Sesamia inferens*, *Helicoverpa armigera*, *Pyrilla perpusilla*, *Earias vitella*, *Raphidopalpa faveicollis, Papilio demoleus.*

Bionomics and strategies for the management of stored grain pests: *Sitophilus oryzae, Callosobruchus chinensis, Trogoderma granarium* and *Corcyra cephalonica*.

UNIT-4: Medically Important and Household Pests **6 hrs**

Bionomics and management of cockroach, rat flea, mosquitoes, house fly, sand fly, human louse and termites.

UNIT-5: Insect Pest Management **12 hrs**

Overview of pest management tactics: physical, mechanical, cultural, biological, microbial, botanical and genetic control (SIT/SIRM).

Chemical control: Chlorinated hydrocarbons (BHC, Aldrin) organophosphates (Malathion Parathion), carbamates (Carbaryl, Propoxur) and synthetic pyrethroids (Allethrin and Cypermethrin).

Integrated pest management (IPM): Definition, principle, components of IPM and advantages.

Practical **30 hrs**

(Laboratory periods: 15 classes of 2 hours each)

1. Study of the morphology of insects with the help of museum specimens/ slides/ photographs: types of antennae, mouthparts, and legs of insects.
2. Study of two economically important insects representing different orders: Dictyoptera, Hemiptera, Orthoptera, Isoptera, Anoplura (Siphunculata), Diptera, Coleoptera, Hymenoptera and Lepidoptera.
3. Elementary knowledge of collection, preservation and rearing techniques of

insects: Submission of life cycle stages of any two insect pests.

4. Determination of LD_{50}/ LC_{50} of insecticides based on the data provided.
5. Study of Instruments used for chemical control through specimens/videos/photographs.
6. Submission of report based on field trips to entomological institutes, museums, laboratories.

Essential/recommended readings

1. Borror, D.J., Triplehorn, C.A., and Johnson, N.F. (2005) Introduction to the Study of Insects. M Saunders College Publication, USA.
2. Chapman, R.F. (1998) The Insects: Structure and Function. Cambridge University Press, UK.
3. Imms, A. D. (1923) A General Text Book of Entomology. Chapman &Hall, UK.
4. Snodgrass, R. E. (1935) Principles of Insect Morphology. Cornell Univ. Press, USA.
5. Dennis, S. Hill. (2005) Agricultural Insect Pests of the Tropics and Their Management. Cambridge University Press.
6. David, B. V. and Ananthakrishnan, T.N. (2004) General and Applied Entomology. Tata-McGraw Hill, New Delhi.

Suggested readings

1. Duntson, P.A. (2004) The Insects: Structure, Function and Biodiversity. Kalyani Publishers, New Delhi.
2. Atwal, A.S. (1993) Agricultural Pests of India and South East Asia. Kalyani Publishers, New Delhi.
3. Wigglesworth, V.B. (1984) Insect Physiology. VIII Edition, Chapman & Hall, New York.

DISCIPLINE SPECIFIC ELECTIVES (DSE-3): Medical Zoology
Zoo-DSE-3

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Medical Zoology **Zoo-DSE-3**	**04**	**03**	**00**	**01**	Passed 12th Class	**NIL**

Learning Objectives

The learning objectives of this course are as follows:

- This course offers an insight about the various types of human diseases.
- The students will understand the concepts of pathogenic and pathological basis of diseases including infectious diseases caused by viruses, prokaryotes, protozoans, helminthes, vector borne and zoonotic diseases.
- Learn about nutritional deficiencies and lifestyle diseases, endocrine diseases and cancer.

Learning Outcomes

By studying this course, students will be able to:

- understand various types of human diseases.
- clarify the concepts of pathogenic and pathological basis of diseases.
- Recognize deficiencies and lifestyle diseases, endocrine diseases and cancer.
- broaden the understanding of medical importance of studying Zoology.

SYLLABUS OF DSE-3

UNIT-1: Introduction to Infectious diseases **6 hrs**

Concept of Epidemiology, Incidence, Prevalence, Virulence, Pathogenicity, Transmission, Definitive host, Intermediate host, Parasitism, Symbiosis, Commensalism, Reservoir, Zoonosis.

UNIT- 2: Transmission, prevention and control of Viral infection **6 hrs**

Dengue, Polio, Measles, Mumps, influenza, SARS, HIV.

UNIT-3: Bacterial infections **6 hrs**

Tetanus, Diphtheria, Tuberculosis, Typhoid, Cholera; brief account of *Rickettsia, Borellia, Treponema* and *Leptospira*.

UNIT- 4 Protozoan and Helminthic infection **6 hrs**

Life history and pathogenicity of *Entamoeba histolytica, Plasmodium vivax, Trypanosoma gambiense; Wuchereria bancrofti, Faciolopsis buski, Ancylostoma duodenale.*

UNIT-5: Nutritional deficiency and lifestyle-based diseases. 6 hrs

Kwashiorkar, Marasmus, Beri-beri, Scurvy, Pellagra, Anaemia, Night blindness, Rickets, Osteoporosis, Obesity, Cardiovascular diseases (CVD), Atherosclerosis, Diabetes mellitus, Inflammatory Bowel Disease (IBD).

UNIT-6: Endocrine Diseases 9 hrs

Hormonal imbalances leading to diseases: Diabetes insipidus, Acromegaly, Gigantism, Dwarfism, Goitre, Cretinism, Cushing and Crohn's syndrome, Addison's disease.

UNIT-7: Cancer 6 hrs

Definitions, Nomenclature, characteristics of benign and malignant neoplasms, grading and staging of cancer, biology of tumor growth, invasion and metastasis, carcinogens and cancer.

Practical 30 hrs

(Laboratory periods: 15 classes of 2 hours each)

1. Study of Disease specific bacteria and viruses through pictures/micrographs/Videos.
2. Performing of gram staining and study of Acid Fast staining through permanent slides.
3. Urine analysis for abnormal constituents: protein, blood, bile salts and glucose.
4. Study of arthropod vectors associated with human diseases: *Anopheles, Aedes, Culex, Phlebotomus, Xenopsylla*.
5. Study of permanent slides and specimens of *Plasmodium sp, Entamoeba histolytica, Trypanosoma gambiense, Schistosoma haematobium* and *Wuchereria bancrofti.*
6. Study of endocrine diseases through case studies (any 2).
7. Identification and study of cancer cells- Slides/Photomicrographs/Videos.
8. Project work/report: field visit to a research institute/laboratory to study some of the pathological and diagnostic techniques.

Essential/recommended readings

1. Park, K. (2017) Textbook of Preventive and social medicine. 23rdEdition. B.B Publisher.
2. Robbins, Basic Pathology, 9th edition (2012), Kumar, Abbas, Fausto and Mitchell; Saunders Publication, ISBN-13: 978-1437717815
3. Ramnik. Sood (2009) Medical Laboratory Technology Methods and Interpretations, 6th edition; Jaypee Brothers Medical Publishers, ISBN-13: 978-8184484496.

Suggested readings

1. Robbins and Cotran. Pathologic Basis of Disease, 8th edition (2009), Vinay Kumar, Abul. K. Abbas, Jon C. Aster, Nelson Fausto; Saunders Publishers, ISBN-13: 978-1416031215
2. Arora, D.R and Arora, B. (2001) Medical Parasitology. II Edition. CBS Publications

DISCIPLINE SPECIFIC ELECTIVES (DSE-4): Wildlife Conservation & Management

Zoo-DSE-4

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITESOF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Wildlife Conservation &Management **Zoo-DSE-4**	**04**	**03**	**00**	**01**	Passed 12^{th} Class	**NIL**

Learning Objectives

The learning objectives of this course are as follows:

- To acquaint the students with varied aspects of wildlife conservation, including its importance, major threats, and management of their habitats and populations.
- The emphasis will be on developing interest and invoking a sense of responsibility among students towards wildlife conservation.
- The course also explores different techniques, perspectives, and approaches to both identify and achieve wildlife management goals.
- To motivate students to pursue a career in the field of wildlife conservation and management.

Learning Outcomes

By studying this course, students will be able to:

- Appreciate wildlife in general and realize its conservation and management in particular.
- Better understand the application of the principles of ecology and animal behaviour to formulate strategies for the management of wildlife populations and their habitats.
- Understand the management practices required to achieve a healthy ecosystem for wildlife population along with emphasis on conservation and restoration.
- comprehend the key factors for loss of wildlife and important strategies for their in situ and ex situ conservation.
- recognize the techniques for estimation, remote sensing and Global Position Tracking for wildlife.
- gain knowledge about the wildlife diseases and the quarantine policies.
- know about the Protected Area Networks and Ecotourism in India.
- Perform critical thinking, literature review; scientific writing as well as presentations; and participation in citizen science initiatives with reference to wildlife.

SYLLABUS OF DSE-4

UNIT-1: Introduction to Wildlife **3 hrs**

Values of wildlife - positive and negative; Conservation ethics; Importance of conservation; Causes of depletion.

UNIT-2: Evaluation and Management of Wildlife **9 hrs**

Habitat analysis: a) Physical parameters: Topography, Geology, Soil and water; b) Biological Parameters: food, cover, forage; Standard evaluation procedures: Bio-telemetry, Remotesensing and GIS.

UNIT- 3: Management of Habitats **9 hrs**

Setting back succession: Grazing, prescribed fire, mechanical treatment and selective herbicide application; Advancing the successional process and cover construction; Preservation of genetic diversity; Restoration of degraded habitats.

UNIT- 4: Population Estimation **6 hrs**

Faecal analysis of ungulates and carnivores: Faecal samples, slide preparation and hair identification; Pug marks and census methods.

UNIT- 5: Wildlife Health and Rehabilitation **9 hrs**

Care of injured and diseased animal; Quarantine; Common diseases of wild animals: Zoonosis (*Ebola* and S*almonella*), Rabies, Foot and Mouth Disease, *Mycobacterium* TB, Bovine and Avian Flu (Any 3 in detail).

UNIT- 6: Protected Areas and their management **9 hrs**

National parks and Sanctuaries; Biosphere reserves; Conservation and Community reserve; Important features of Protected Areas in India; Project Tiger- conservation and management challenges in Tiger reserves; Human-wildlife conflict; Eco-tourism.

Practical **30 hrs**

(Laboratory periods: 15 classes of 2 hours each)

1. Demonstration of basic equipment needed in wildlife studies- use, care and maintenance (Compass, Binoculars, Spottings cope, Range Finders, Global Positioning System, Various types of Cameras and lenses).
2. Familiarization and study of animal evidences in the field: Identification of animals through pugmarks, hoof marks and scats.
3. Trail/ transect monitoring for abundance and diversity estimation of mammals and bird (direct and indirect evidences).
4. Identification of Big cats: Lion, Tiger, Cheetah, Leopard and Jaguar.
5. Project Report: Identification of mammalian fauna, avian fauna, herpeto-fauna through direct and indirect evidences seen on a field trip to a National Park/Wildlife

Sanctuary/Biodiversity Park or any other wildlife conservation site.

Essential/recommended readings:

1. Hudson, P.J., Rizzoli, A., Grenfell, B.T. Heestrbeek, H. and Dobson, A.P. (2002) The Ecology of Wildlife Diseases. Oxford University Press, Oxford.
2. Banerjee, K. (2002) Biodiversity Conservation in Managed and Protected Areas. Agrobios, India.
3. Kenneth Anderson (2000) The Kenneth Anderson Omnibus Vol I. Rupa Publications.
4. Jim Corbett. (2017) Man Eaters of Kumaon. Om Books International.
5. Saha, G.K. and Mazumdar, S. (2017) Wildlife Biology: An Indian Perspective. PH Ilearning Pvt. Ltd. ISBN: 8120353137, 978-812035313.
6. Sinclair, A.R.E., Fryxell, J.M. and Caughley, G. (2006) Wildlife Ecology, Conservation and Management. Wiley-Blackwell, Oxford, UK.
7. Singh, S.K. (2005) Text Book of Wildlife Management. IBDC, Lucknow.

Suggested readings:

1. Primack, R.B. (1998). Essentials of Conservation Biology. Sinauer Associates, Inc. Sunderland, MA.
2. Hossetti, B.B. (1997). Concepts in Wildlife Management. Daya Publishing House, Delhi.
3. Sharma, B.D. (1999) Indian Wildlife Resources Ecology and Development. Daya Publishing House, Delhi.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

GENERIC ELECTIVES (GE-5): Food, Nutrition & Health
Zoo-GE-5

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Food Nutrition & Health Zoo-GE-5	04	02	00	02	Passed 12th Class	NIL

Learning Objectives

The learning objectives of this course are as follows:

- This course offers an overview of the concepts of normal food and nutrition required by the human body to maintain good health.
- To understand physiology, biochemistry, pathology, immunology, medicine, food science, and other fields with context to nutrition.
- Learn the concept of malnutrition, lifestyle-related disorders, addiction-related social health problems and eating disorders will be introduced.
- Appreciate knowledge that can be applied in everyday life.
- Learn the role of macronutrients and micronutrients, their nutritional requirements for different age groups during various health conditions.
- The students will be encouraged to pursue further studies in nutrition and health.

Learning Outcomes

By studying this course, students will be able to

- have an in-depth understanding of the dietary sources and role of nutrients in forming a balanced diet.
- appreciate the concept of nutritional requirements for different age groups and in pregnancy and lactation.
- know about the various food allergens and the body's hypersensitivity towards it.
- understand the concept of health and role of various nutrients in mitigating several deficiency disorders.
- identify and analyse the causes of malnutrition, lifestyle-related disorders, addiction-related social health problems and eating disorders.

- appreciate the various techniques from identification of adulterants, estimation of essential nutrients in food products, to measurement of vital anthropometric indicators of health, as widely used by practitioners.

SYLLABUS OF GE-5

UNIT-1: Basic concept of food and nutrition **2 hrs**

Components of nutrients (Macronutrients and Micronutrients).

UNIT-2: Dietary sources and physiological functions **6 hrs**

Carbohydrates, Proteins, Lipids Vitamins and Minerals (Iron, Iodine, Calcium, Selenium, Zinc); beneficial effects of dietary fibres; elementary idea of Probiotics, Prebiotics, Organic Food.

UNIT-3: Nutritional requirements **4 hrs**

Study of different age groups (infants, preschool children, school children, adolescents, adults, elderly) and in pregnant women and lactating mother.

UNIT-4: Concept of a balanced diet **4 hrs**

Food groups, Food Pyramid, Food and Culture; Food Hypersensitivity: Food allergy (nuts and seafood) and Food intolerance (lactose and gluten).

UNIT-5: Health **2 hrs**

Definition and concept of health. Indicators of metabolic health.

UNIT-6: Nutritional deficiencies and disorders **9 hrs**

Symptoms and prevention of the following: Protein Energy Malnutrition (Kwashiorkor and Marasmus), Vitamin deficiency (A, D, B1, B3 B12, C) Mineral deficiency (Iron, Iodine, Calcium, Selenium, Zinc).

Lifestyle-related diseases: Causes, Symptoms and Complications of Hypertension, Diabetes mellitus and Obesity. Role of dietary and lifestyle modifications for the prevention of these diseases.

Eating Disorders: Complications and Management of Anorexia nervosa and Bulimia nervosa.

UNIT-7: Social health problems **3 hrs**

Deleterious effects of addiction-related social health problems: Smoking, alcoholism, and drug dependence.

Practical **60 hrs**

(Laboratory periods: 15 classes of 4 hours each)

1. To detect adulteration in (a) Ghee (b) Sugar (c) Tea Leaves (d) Turmeric.
2. Study of nutrition labelling of any 5 popular packaged foods.
3. Study and comparison of food pyramids of any 3 popular diet trends with focus on their pros and cons.
4. Ascorbic acid estimation in food by titrimetry.
5. Estimation of calcium in food by titrimetry.
6. Measurement of anthropometric indicators of health (BMI, Waist to hip ratio, Skin fold test).
7. Plan the diet chart of any three different age groups using RDA values (infants, preschool children, school children, adolescents, adults and elderly).
8. An exercise based on 24-hour food recall of students for quantification and analysis of the macronutrients' and micronutrients' uptake based on the current RDA values (with focus on nutritional status and risk factors).
9. Project Work on the Indian government initiatives focused on nourishment of school children/ expectant mothers.

   OR

   A small-scale questionnaire-based survey on the knowledge and usage of available resources for quitting smoking and its success/relapse rates.

Essential/recommended readings

1. Gibney MJ et al (2009) Introduction to Human Nutrition, 2nd edition, Wiley-Blackwell, Hoboken
2. ICMR-NIN (2020) Expert Group on Nutrient Requirement for Indians, Recommended Dietary Allowances (RDA) and Estimated Average Requirement (EAR)
3. Elia M et al (2013) Clinical Nutrition, 2nd edition, Wiley-Blackwell, Hoboken

Suggested readings:

1. Mann J and Truswell AS (2017) Essentials of Human Nutrition, 5th edition, Oxford University Press. Oxford
2. Kaveri Chakrabarty and A.S. Chakrabarty (2020) Textbook of Nutrition in Health and Disease, 1st edition, Springer Nature Singapore Pte Ltd

GENERIC ELECTIVES (GE-6): Introduction to Biology
Zoo-GE-6

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Introduction to Biology Zoo-GE-6	04	02	00	02	Passed 12th Class	NIL

Learning Objectives

The learning objectives of this course are as follows:

- The course is designed to acquaint students with the basic concepts of modern biology including processes in cell biology, genetics and variation, process of evolution and also the physic chemical aspects of life.
- It emphasizes on exploring different techniques, perspectives in the fields of biology from microscopy to computational biology.
- The course has been designed keeping in mind the fact that biology helps to understand ourselves and our place and role in the living world.
- It will motivate the students to pursue careers in the field of technology.

Learning Outcomes

By studying this course, students will be able to

- learn the importance of Biology in everyday life, understand the conditions and processes that led to biochemical origin of life on earth.
- compare and contrast evolutionary theory and their application to populations.
- appreciate the different cell types and cellular processes.
- know the basic structure and functioning of cell such as division, processes of information transfer from DNA to proteins.
- have an in-depth understanding of the role and importance various biomolecules like nucleic acids, proteins, lipids and carbohydrates.
- demonstrate practical knowledge of using basic laboratory instrumentation such as microscopes, micropipettes and their applications.
- learn the diverse techniques taught in practical like chromatography, biochemical test, spectrophotometric analysis and also computational biology will hone their analytical skills.

SYLLABUS OF GE-6

UNIT-1: Introduction to concepts of biology **2 hrs**

Themes in the study of biology; a closer look at ecosystem; a closer look at cell; process of science, biology and everyday life.

UNIT-2: Evolutionary history of biological diversity **4 hrs**

Early earth and the origin of life; major events in the history of life; classifying the diversity of various Kingdoms of Life.

UNIT-3: Darwinian view of life and origin of species **9 hrs**

Darwin's theory of evolution; evolution of populations (Hardy-Weinberg principle); Concepts of species; mechanism of speciation.

UNIT-4: Genetic approach to Biology **7 hrs**

Cell and organelles; cell cycle: Mitosis and meiosis; Mendel's laws and variations; model organisms for the genetic analysis.

UNIT-5: Chemical context of living systems **8 hrs**

Structure and function of biomolecules: carbohydrate, protein, lipid, and nucleic acid.

Practical **60 hrs**

(Laboratory periods: 15 classes of 4 hours each)

1. To learn use of microscope and other common instruments used in laboratory.
2. Preparation of normal, molar, and standard solutions, phosphate buffers.
3. Separation of amino acids (*any three*) by paper chromatography.
4. To perform gram staining of bacteria.
5. To prepare temporary mount of human cheek epithelial cells and to study its characteristics.
6. To perform quantitative estimation of protein using the Lowry's method.
7. To perform biochemical test and identify two functional groups of carbohydrates.
8. To retrieve sequence from database and perform Multiple Sequence Alignment.
9. Visit to a cell culture and tissue culture facility and submission of project report.

Essential/recommended readings

1. Campbell, N.A. and Reece, J. B. (2008) Biology 8th edition, Pearson Benjamin Cummings, San Francisco.
2. Raven, P. Hetal (2006) Biology 7th edition Tata McGraw Hill Publications, New Delhi

3. Karp, G. (2010). Cell & Molecular Biology: Concepts & Experiments. VI edition, John Wiley& Sons Inc.

4. De Roberties, E.D.P. & De Roberties. E.M.F. (2009). The cell & Molecular Biology, Lippincott Williams, Wilkins, Philadelphia.
5. Snustad, D.P., Simmons, M.J. (2009). Principles of Genetics. V Edition, John Wiley & Sons Inc.

Suggestive readings

1. Sheeler, P and Bianchi, D.E. (2006). Cell and Molecular Biology, 3rd edition, John Wiley & sons NY.
2. Rideley, M. (2004). Evolution. III Edition, Blackwell publishing.

GENERIC ELECTIVES (GE-7): Water-borne Diseases: Understanding and Management
Zoo-GE-7

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Water-borne Diseases: Understanding and Management Zoo-GE-7	**04**	**02**	**00**	**02**	Passed 12th Class	**NIL**

Learning Objectives

The learning objectives of this course are as follows:

- It deals with interactions between microbial water quality and human health.
- It includes appreciating how the quality of water can be affected by natural, seasonal, accidental, intentional, and man-made activities,
- It will help the students learn how the contaminated water increases the burden of human diseases with particular emphasis on infectious diseases,
- It will help understand the environmental pressures caused by contaminated water and how it drives the emergence and re-emergence of infectious diseases with increased/altered virulence, antibiotic resistance.
- It will motivate students to pursue a career in Health Management

Learning Outcomes

By studying this course, students will be able to

- know the sources of microbial water contamination and its impact on human health.
- understand the relationship between human behaviour and water quality.
- learn remediation strategies for several types of microbial water quality contamination.
- understand epidemiological studies related to water quality and public health.
- be able to grasp the concepts of various water sources and transmission mechanisms of infectious agents from those sources to humans.
- organize and present well-synthesized scientific discussions on topics relevant to waterborne disease and public health.
- develop a critical understanding of the contribution of organisms tothe welfare of society.

- examine the multiple water-borne pathogens, their modes of transport and transmission, their public health effects, and existing methods for disease prevention and remediation.

SYLLABUS OF GE-7

UNIT-1: Introduction to Public Health 4 hrs

Definition, scope, concept, and importance of public health microbiology; Roles of microbiologists in public health; Concept of health and disease; Indicators of health; Basic concept of water pollution and public health hazard in the community.

UNIT- 2: Introduction to Water Quality 8 hrs

Common terms and definitions in water quality, aquatic resources of the world and sources of drinking water; Water, sanitation, and hygiene (WASH) – fact sheets, WHO guidelines and resolutions; common contaminants of drinking water and linkages to disease; Water pollution (water quality properties, types of water pollution, point and non-point sources of water pollution); Types of contaminants influencing water quality; Water Treatment, Control of Water Borne Diseases.

UNIT- 3: Microbiology of Water 3 hrs

Microbiological quality of drinking; water as a causing factor of infectious diseases; water-borne pathogens (types, sources, and transmission); microbial testing of Water; monitoring and surveillance of water quality.

UNIT- 4: Water-Borne Diseases 10 hrs

Source of infection, transmission, symptoms, mitigation, prevention and treatment (with reference to the role of agencies/NGO).

-Bacterial infections- Cholera, Typhoid fever, Botulism, *E. coli* infection, Campylobacteriosis, Dysentery, Typhoid fever.

-Viral infections: Rotavirus, Hepatitis A and E, Poliomyelitis, Polyomavirus infection.

-Protozoal infections: Acanthamoeba keratitis, Amoebiasis, Cryptosporidiosis, Cyclosporiasis, Giardiasis.

- Parasitic worms: Schistosomiasis, Fascioliasis, Strongyloidiasis, Hookworm infections, Giardiasis.

-Vector-borne infections: Malaria, Dengue, Chikungunya, Onchocerciasis, Leishmaniasis, Japanese encephalitis, Dracunculiasis, Lymphatic filariasis,

UNIT- 5: Waterborne Pathogens: Detection Methods 5 hrs

Polymerase chain reaction (PCR) -Multiplex PCR; Quantitative PCR (qPCR), Real-time PCR; Microarrays; Pyro-sequencing; Biosensors; Fluorescence *in situ* hybridization

(FISH); Immunology-based methods.

Practical **(60 hrs)**

(Laboratory periods: 15 classes of 4 hours each)

1. To determine dissolved oxygen in water samples collected from different water bodies by Winkler's Method.
2. To determine temperature, pH, conductivity, total solids, and total dissolved solids in water samples from different locations.
3. To measure the COD of water samples from various sources.
4. Isolation and identification of microorganisms from different water samples.
5. Project report on water quality monitoring system.
6. Visit to WASH Institute (Water Sanitation and Hygiene Institute)/ Shri Ram Institute for Industrial Research.

Essential/recommended readings

1. Aquatic Pollution: An Introductory Text, 3rd Edition, Edward A. Laws, ISBN 9780471348757.
2. Waterborne Disease, 1st edition (January 15, 1997), Paul Hunter, ISBN 0125515707.

Suggestive readings

1. Microbiology of Waterborne Diseases, Steven Percival, Rachel Chalmers, Martha Embrey, Paul Hunter, Jane Sellwood and Peter Wyn-Jones, ISBN 978012551570-2.

DEPARTMENT OF BOTANY
B.Sc. (H) Botany
Category-I

DISCIPLINE SPECIFIC CORE COURSE - 7: Phycology - The World of Algae

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Phycology - The World of Algae DSC-7	4	**2**	**0**	**2**	Class XII pass	Nil

Learning Objective:
To provide students with in-depth knowledge of the unique group of algae that are the primary photosynthetic organisms.

Learning Outcomes:

By studying this course students will gain basic knowledge on algae, with reference to:
- the diversity and general characteristics.
- distinguishing features of taxa belonging to different families.
- the various ecological and economic benefits.

Unit 1: Introduction to Algal World **6 hours**
Relevance of studying algae – Industrial (food, feed, fodder), Environmental (climate change, biofuel, acidification of oceans), Evolutionary (range of thallus organization); General characteristics; Ecology, diversity and distribution; Range of thallus organization; Cell structure; Criteria for classification (cell wall, pigment system, reserve food, flagella); Reproduction and life cycle patterns; Classification by Fritsch; Evolutionary classification of Lee (only up to groups); Significant contributions of eminent Phycologists.

Unit 2: Cyanophyceae (Blue-Green Algae) **3 hours**
General characteristics; Occurrence; Cell structure; Heterocyst (structure and function); Morphology, reproduction and life-cycle of *Nostoc*, economic importance.

Unit 3: Chlorophyceae (Green Algae) **6 hours**
General characteristics; Occurrence; Cell structure; Morphology, reproduction and life-cycle of *Chlamydomonas*, *Volvox*, *Chlorella, Ulva*, *Oedogonium*, *Coleochaete*; *Chara*; Structure and evolutionary significance of *Prochloron*, economic importance.

Unit 4: Xanthophyceae (Yellow-Green Algae) 2 hours
General characteristics; Occurrence; Morphology, reproduction, and life-cycle of *Vaucheria*, economic importance.

Unit 5: Bacillariophyceae (Diatoms) and Dinophyceae (Dinoflagellates) 3 hours

General characteristics, Occurrence, morphology, unique features**,** economic importance.

Unit 6: Phaeophyceae (Brown Algae) 4 hours
General characteristics; Occurrence; Morphology, reproduction, and life-cycle of *Ectocarpus* and *Sargassum*, economic importance.

Unit 7: Rhodophyceae (Red Algae) 4 hours
General characteristics; Occurrence; Morphology, reproduction, and life-cycle of *Gracilaria*, economic importance.

Unit 8: Recent advances in algal studies 2 hours
Model systems and their applications in genetic, molecular and evolutionary studies.

Practicals 60 hours

1. Study of algal diversity in different habitats through botanical excursion and submission of digital catalogue/report of various species observed.
2. ***Nostoc***: Study of vegetative, reproductive structures from temporary mounts and permanent slides; Ultrastructure of Heterocyst through Electron Micrographs.
3. ***Chlorella***: Study of vegetative, reproductive structures from temporary mounts. Study of ultrastructure through Electron Micrographs.
4. ***Volvox***: Study of vegetative, reproductive structures from temporary mounts and permanent slides.
5. ***Oedogonium***: Study of vegetative, reproductive structures from temporary mounts and permanent slides.
6. ***Coleochaete***: Study of vegetative, reproductive structures from temporary mounts and permanent slides.
7. ***Chara***: Study of vegetative, reproductive structures from temporary mounts, specimens and permanent slides.
8. ***Vaucheria***: Study of vegetative, reproductive structures from temporary mounts and permanent slides.
9. **Diatoms** and **Dinoflagellates**: Study vegetative, reproductive structures of at least two taxa from water bodies.
10. ***Ectocarpus***: Study of vegetative, reproductive structures from temporary mounts and permanent slides.
11. ***Sargassum***: Study of vegetative, reproductive structures from temporary mounts, specimens and permanent slides.
12. ***Polysiphonia/ Gracilaria***: Study of vegetative, reproductive structures from temporary mounts and permanent slides.

Suggested Readings:

1. Bold, H.C. and Wynne, M.J. (1985). Introduction to the Algae: Structure and Reproduction, 2nd edition. Prentice-Hall International INC.
2. Kumar, H.D. (1999). Introductory Phycology, 2nd edition. Affiliated East-West Press, New Delhi.
3. Lee, R.E. (2018). Phycology, 4th edition: Cambridge University Press, Cambridge.
4. Sahoo, D. and Seckbach, J. (2015). The Algae World. Springer, Dordrecht.
5. Sahoo, D. (2000).Farming the Ocean: Seaweed Cultivation and Utilization. Aravali Book International, New Delhi.

Additional Resources:

1. Van den Hoek, C., Mann, D.G., Jahans H.M. (1995). Algae: An Introduction to Phycology. Cambridge University Press.
2. Sharma, O.P. (2011). Algae. Tata Mc Graw Hill Education Private Limited, New Delhi.
3. Smith, G.M. (1955). Cryptogamic Botany. Vol.1.Algae and Fungi. McGraw-Hill Book Company, New York.
4. Vashishta, B.R., Singh, V.P. and Sinha, A.K. (2012). Botany for Degree Students: Algae. S Chand Publishing, New Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 8: Bryophytes, Pteridophytes and Gymnosperms

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Bryophytes, Pteridophytes and Gymnosperms DSC – 8	**4**	**2**	**0**	**2**	Class XII pass	**Nil**

Learning Objectives:

- Provide a deep understanding of morphology, anatomy, reproduction and developmental biology of these unique groups of non-flowering plants.
- Enhance understanding of diversity, economic value, taxonomy in representative members of phylogenetically important groups.

Learning Outcomes:

At the end of this course students will be able to:

- identify and describe the group of plants that have given rise to land habit and the flowering plants.
- comprehend various phenological stages of the plants belonging to the sub-groups – bryophytes, pteridophytes and gymnosperms.

Unit 1: Bryophytes **9 hours**

Origin of bryophytes through green algal ancestor; Morphology and Reproduction of *Marchantia*, *Anthoceros* and *Funaria* with fertilization & spore dispersal mechanism (excluding developmental stages). Progressive sterilization of sporogenous tissue; Ecological and economic importance of bryophytes with special reference to *Sphagnum*.

Unit 2: Pteridophytes **9 hours**

Fossil pteridophytes (*Rhynia*). Morphology and Reproduction *of Selaginella*, *Equisetum* and *Pteris* (excluding developmental stages). Apogamy and apospory; Heterospory and seed habit; Stelar evolution. Economic importance.

Unit 3: Gymnosperms **9 hours**

Morphology, Sstem anatomy (significance of transfusion tissue) and Reproduction of *Cycas*, *Pinus* and *Gnetum*(excluding developmental stages and secondary growth). Economic importance.

Unit 4: Recent Advances **3 hours**

Model systems (*Physcomitrella*, *Ceratopteris*, *Ephedra*) and their applications in genetic, molecular and evolutionary studies.

Practicals: **60 hours**

1. *Riccia* – Morphology: Vegetative and reproductive structures (Specimen).

2. *Marchantia* - Morphology; V.S. of thallus through Gemma cup, whole mount of Gemmae (temporary slides); V.S. of Vegetative thallus, Antheridiophore, Archegoniophore, L.S. of Sporophyte (permanent slides).

3. *Pellia* - Morphological details through specimens/permanent slides; L.S. Sporophyte (permanent slide).

4. *Porella* - Vegetative Morphological details through specimens/permanent slides.

5. *Anthoceros* – Morphology; Dissection of sporophyte (to show stomata, spores, pseudoelaters, columella) (temporary slide), V.S. of thallus (permanent slide).

6. *Funaria* - Morphology; T.S. Stem (temporary and permanent slides both); Sporophyte: operculum, peristome, spores (temporary slides); Antheridial and archegonial heads, L.S. of capsule, W.M. of protonema (Permanent slides).

5. *Psilotum* – Morphology (specimen); T.S. of rhizome, stem and synangium (permanent slides).

6. *Selaginella* – Morphology (specimen); W.M. of leaf with ligule, T.S. of stem, L.S. of strobilus, W.M. of microsporophyll, megasporophyll (temporary slides); T.S. of rhizophore (permanent slide).

7. *Equisetum* – Morphology (specimen), T.S. of internode, L.S. of strobilus, T.S. of strobilus, W.M. of sporangiophore, W.M. of spores (wet and dry) (temporary slide).

8. *Pteris* - Morphology, T.S. of rachis, V.S. of sporophyll (temporary slides), T.S. of rhizome, W.M. of prothallus with sex organs and young sporophyte (permanent slide).

9. *Cycas* – Morphology, T.S. of coralloid root, T.S. of rachis, V.S. of leaflet, V.S. of microsporophyll, W.M. of spores (temporary slides); T.S. of stem, T.S. of root, L.S. of ovule (permanent slide).

10. *Pinus* - Morphology, T.S. of Needle, L.S. and T.S. of male cone, W.M. of microsporophyll (temporary slides); T.S. of stem, R.L.S. and T.L.S. of stem, L.S. of female cone (permanent slide).

11. *Gnetum* - Morphology (stem, male & female cones); T.S. of stem, L.S. of ovule (permanent slide).

12. Botanical Excursion and submission of digital catalogue/report of various species observed.

Suggested readings:

1. Bhatnagar, S.P., Moitra, A. (2023). Gymnosperms. 2nd edition, New Delhi, Delhi: New Age International (P) Ltd Publishers.
2. Kaur I.D., Uniyal P.L. (2019). Text Book of Gymnosperms. New Delhi, Delhi: Daya Publishing House.
3. Kaur I.D., Uniyal P.L. (2019). Text Book of Bryophytes. New Delhi, Delhi: Daya Publishing House.
4. Kaur I.D. (2023). Text Book of Pteridophytes. New Delhi, Delhi: Daya Publishing House.
5. Parihar, N.S. (2019). An Introduction to Embryophyta. Vol. II: Pteridophyta. Surjeet Publications.

Additional Resources:

1. Campbell, N.A., Reece J.B., Urry L.A., Cain M.L., Wasserman S.A., Minorsky P.V., Jackson, R.B. (2020). Biology. San Francisco, SF: Pearson Benjamin Cummings.
2. Raven, P.H., Johnson, G.B., Losos, J.B., Singer, S.R., (latest edition). Biology. New Delhi, Delhi: Tata McGraw Hill.
3. Singh, H. (1978). Embryology of Gymnosperms. Berlin, Germany. GebruderBorntraeger.
4. Vashishta, P.C., Sinha, A.K., Kumar, A. (2022). Botany For Degree Students Pteridophyta, New Delhi, Delhi: S. Chand Publication. Delhi, India.
5. Vashistha, B.R., Sinha, A.K., Kumar, A. (2010). Botany For Degree Students, Bryophyta. New Delhi, Delhi: S Chand Publication.
6. Parihar, N.S. (1965). An Introduction to Embryophyta. Vol. I: Bryophyta. Allahabad, UP: Central Book Depot.
7. Puri, P. (1973). Bryophytes. New Delhi, Delhi, Atma Ram and Sons.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 9: Genetics and Plant Breeding

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Genetics & Plant Breeding **DSC-9**	**4**	**2**	**0**	**2**	Class XII pass	**Nil**

Learning Objectives:

- To apprise students with the basic principles of Genetics
- To enhance the applications of genetics in plant breeding and agriculture.

Learning Outcomes:

On completion of the course the students will be able to:

- understand the fundamentals of Mendelian inheritance and its deviation in gene interactions.
- describe the concepts of linkage and crossing over and their usage in constructing gene maps.
- become familiar with pedigree analysis.
- learn about principles of population genetics
- gain knowledge about gene mutations and inherited disorders
- learn about various plant breeding techniques / methods

Unit 1. Mendelian Genetics **6 hours**

Mendelism: History; Principles of inheritance, deviations (Incomplete dominance and co-dominance); Chromosome theory of inheritance; Multiple allelism; lethal alleles; Epistasis; Pleiotropy; Penetrance and expressivity; Polygenic inheritance; brief introduction to sex determination.

Unit 2. Extra-Nuclear Inheritance **4 hours**

Chloroplast and mitochondrial genomes; Chloroplast Inheritance: Variegation in Four O` clock plant; Mitochondrial inheritance in yeast; Maternal effect (Shell coiling in Snails).

Unit 3. Linkage, crossing over and chromosome mapping **5 hours**

Linkage and crossing over, Cytological basis of crossing over (Creighton and McClintock experiment in Maize); three factor crosses; interference and coincidence; Sex linkage (*Drosophila*)

Unit 4. Variation in Chromosome number and structure **4 hours**

Deletion; Duplication; Inversion; Translocation; Euploidy and aneuploidy (In Brief).

Unit 5. Mutations **4 hours**

Mutation types; Muller's CIB method, Molecular basis of mutations; Chemical mutagens (Base analogs, deaminating, hydroxylating, alkylating and intercalating agents) and Physical mutagens (Ionising and Non ionising radiations); Transposable genetic elements and their significance (Basic concept).

Unit 6. Population and evolutionary genetics **3 hours**

Hardy Weinberg law (Allele frequencies, genotype frequencies); speciation (modes of speciation and genetics of speciation).

Unit 7. Plant Breeding **4 hours**

Plant breeding- Principle and Practices, domestication and plant introduction (primary and secondary introduction), selection and its types: pure line selection, mass selection and clonal selection; hybridizations (inter-specific and intra-specific), heterosis and its significance.

Practicals: **60 hours**

1. To study meiosis in *Allium cepa* through squash preparation of anthers.
2. To study mitosis in *Allium cepa* through squash preparation of root tips.
3. To understand the deviations of Mendelian dihybrid ratios (12:3:1, 9:3:4, 9:7, 15:1, 13:3, 9:6:1) involved using the seed mixture given. Genetic ratio to be calculated using Chi square analysis.
4. Human Genetics:
   a) Study of autosomal & sex-linked dominant & recessive inheritance through pedigree analyses.
   b) ABO blood group testing using kits,
   c) To study the syndromes (Down's, Klinefelter's, Turner's, Edward's & Patau) through karyotypes
5. To calculate allelic and genotypic frequencies of human dominant and recessive traits using Hardy- Weinberg's principle.
6. To study Xeroderma pigmentosum, Sickle cell anaemia, albinism, haemophilia and colour blindness (Ishihara charts may be used to study colour blindness)
7. To study chromosomal aberrations:
   a) Quadrivalents, lagging chromosomes, dicentric/inversion bridge through photographs/permanent slides
   b) Reciprocal translocation through squash preparations of *Rhoeo* anthers.
8. Demonstration of basic methods of plant breeding (hybridizations): Emasculation, bagging and tagging using available plant material in pots/gardens/field.

Suggested Readings:

1. Gardner, E.J., Simmons, M.J., Snustad, D.P. (1991). Principles of Genetics, 8th edition. New Delhi, Delhi: John Wiley & sons.
2. Griffiths, A.J.F., Doebley,J., Peichel, C, Wassarman D (2020). Introduction to Genetic Analysis, 12th edition. New York, NY: W.H. Freeman and Co.
3. Klug, W.S., Cummings, M.R., Spencer, C.A. (2020). Concepts of Genetics, 12th edition. San Francisco, California: Benjamin Cummings.
4. Pierce, B. A. (2020). Genetics: A Conceptual Approach, 7th Edition, Macmillan

5. Campbell, N.A., Reece J.B., Urry L.A., Cain M.L., Wasserman S.A., Minorsky P.V., Jackson, R.B. (2020). Biology. San Francisco, SF: Pearson Benjamin Cummings.
6. Singh, B.D., (2022). Plant Breeding: Principles and Methods. New Delhi, Medtech Publishers

Additional Resources:

1. Russell, P. J. (2010). Genetics- A Molecular Approach. 3rd Edition. Benjamin Cummings
2. Snustad, D.P., Simmons, M.J. (2016). Principles of Genetics, 7th Edition. New Delhi, Delhi: John Wiley & sons
3. Hartl, D.L., Ruvolo, M. (2019). Genetics: Analysis of Genes and Genomes, 9th edition, Jones and Bartlett Learning.
4. Singh, B. D. (2023). Fundamentals of Genetics, 6th edition. MedTech.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

POOL OF DISCIPLINE SPECIFIC ELECTIVES

DISCIPLINE SPECIFIC ELECTIVE COURSE (DSE -1): Evolutionary Biology of Plants

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Evolutionary Biology of Plants **DSE-1**	**4**	**2**	**0**	**2**	Class XII pass	**Nil**

Learning Objectives:

- This course builds on the fundamental points introduced in the core course on Plant Diversity and Evolution and presents a synthesis of various theories, concepts, evidence and methods to study evolution.

Learning Outcomes:

At the end of this course the students will be able to:

- understand the essential theories in evolution
- differentiate between micro and macroevolution and the forces shaping evolution
- construct phylogenetic trees based on morphological and molecular data
- understand evolution of life.

Unit 1: Historical Perspective of Eevolutionary Cconcepts **4 hours**

Pre-Darwinian ideas, Lamarckism, Darwinism, Post-Darwinian era – Modern synthetic theory, Neo-Darwinism

Unit 2: Origin of Life **3 hours**

Chemogeny – An overview of pre-biotic conditions and events; experimental proofs to abiotic origin of micro- and macro-molecules. Current concept of chemogeny – RNA first hypothesis. Biogeny – Cellular evolution based on proto-cell models (coacervates and proteinoid micro-spheres). Evolution of eukaryotes from pprokaryotes

Unit 3: Evidences of Evolution **4 hours**

Paleobiological– Concept of Stratigraphy and geological timescale; fossil study
Anatomical & Embryological – Vestigial organs; homologous and analogous organs (concept of parallelism and convergence in evolution)
Taxonomic –Transitional forms/evolutionary intermediates, living fossils
Phylogenetic – morphology, protein (Cytochrome C) and gene (Globin gene family) based

Unit 4: Microevolution and Macroevolution **8 hours**

Hardy Weinberg equilibrium; Founder effect, Natural and artificial selection. Levels of selection.

Inferring phylogenies- Gene trees, species trees; Patterns of evolutionary change; Adaptive radiation, Evolution and development (evo-devo); Biodiversity- Estimating changes in biodiversity; Taxonomic diversity through the Phanerozoic era.

Unit 5. Forces of Evolution **3 hours**

Mutation, Geneflow, Selection, Genetic Drift, Co-adaptation and co-evolution, Anthropogenic activities, Extinction (in brief)**-** Periodic and Mass-scale – Causes and events.

Unit 6. Speciation **4 hours**

Species concept, Modes of speciation – Allopatric; sympatric; peripatric; Patterns of speciation – Anagenesis and Cladogenesis; Phyletic gradualism and Punctuated eequilibrium (Quantum evolution); Basis of speciation – Isolating mechanisms.

Unit 7. Evolution of Land Plants **4 hours**

Origin of land plants – Terrestrial algae and Bryophytes; alternation of generations. Early vascular plants – Stelar evolution; Sporangium evolution; seed habit and evolution of seed. Angiosperms – Phylogeny of major groups.

Practicals **60 hours**

1. Study of different types of fossils, connecting links/transitional forms and Living fossils (Specimens/slides/photographs)
2. Sampling of quantitative characters (continuous and discontinuous) in a population(height, weight, number of nodes etc)
3. Study of adaptive strategies (colouration, co-adaptation and co-evolution); (Specimens/photographs)
4. Calculations of genotypic, phenotypic and allelic frequencies from the data provided
5. Simulation experiments using coloured beads/playing cards to understand the effects of Selection and Genetic drift on gene frequencies
6. To study and interpret Phylogenetic trees (reading and using trees) - minimum of three examples.

Suggested Readings:

1. Campbell, N.A., Reece J.B., Urry L.A., Cain M.L., Wasserman S.A., Minorsky P.V., Jackson, R.B. (2020). Biology. San Francisco, SF: Pearson Benjamin Cummings.
2. Ridley, M. (2004). Evolution. III Edn. Blackwell Pub., Oxford.
3. Hall, B. K., Hallgrimson, B. (2008) Strickberger's Evolution. IV Edn. Jones and Barlett.
4. Zimmer, C., Emlen, D. J. (2013). Evolution: Making Sense of Life. Roberts & Co.
5. Futuyma, D. (1998). Evolutionary Biology. III Edn. Sinauer Assoc. Inc.
6. Barton, Briggs, Eisen, Goldstein and Patel. (2007). Evolution. Cold Spring Harbor Laboratory Press.
7. Nei, M., Kumar S. (2000). Molecular Evolution and Phylogenetics. Oxford University Press, New York.
8. Futuyma, J. D., Kirkpatrick, M. (2017). Evolution, 4th Ed. Sinauer, Sunderland, MA: Sinauer Associates.

DISCIPLINE SPECIFIC ELECTIVE COURSE (DSE -2): Biostatistics & Bioinformatics for Plant Sciences

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Biostatistics & Bioinformatics for Plant Sciences **DSE-2**	**4**	**2**	**0**	**2**	Class XII pass	**Nil**

Learning Objective:

- To train students in using computational and mathematical tools to solve biological problems.

Learning Outcomes:

At the end of this course students will be able to:

- use the various online databases and resources for accessing biological data.
- use the different methods of alignment of DNA, RNA and protein sequences and interpret the significance of the same.
- understand the descriptive and inferential statistical tests for interpretation of experimental data.

Unit 1- Introduction to Bioinformatics **3 hours**

Historical background; Aims and scope; Bioinformatics in Genomics, Transcriptomics, Proteomics, Metabolomics; Applications of bioinformatics in crop improvement

Unit 2- Biological databases **4 hours**

Introduction to biological databases - Primary, secondary and composite databases. Study of following databases: NCBI (GenBank, PubChem, PubMed and its tools (only BLAST)), introduction to UniProt, PDB, PlantPepDB.

Unit 3- Basic concepts of Sequence alignment **4 hours**

Similarity, identity and homology. Concepts of alignment (gaps and penalty); Alignment – pairwise and multiple sequence alignments

Unit 4- Molecular Phylogeny **4 hours**

Introduction, methods of construction of phylogenetic trees: maximum parsimony (MP), maximum likelihood (ML) and distance (Neighbour-joining) methods.

Unit 5- Introduction to Biostatistics **2 hours**

Definition, Basics of descriptive and inferential statistics; Limitations and applications.

Unit 6- Data and sampling methods **3 hours**
Primary and secondary data; Sampling methods (in brief); tabulation and presentation of data.

Unit 7- Measures and deviations of central tendencies **4 hours**
Dispersion - range, standard deviation, mean deviation, standard error, skewness and kurtosis, quartile deviation –merits and demerits; Coefficient of variation.

Unit 8-Correlation and Regression **3 hours**
Correlation - types and methods of correlation (I. E. Karl Pearson and Spearman Rank method), Introduction to simple regression equation; similarities and dissimilarities between correlation and regression.

Unit 9- Statistical tests **3 hours**
Statistical inference - hypothesis – (simple hypothesis), student's t test, chi-square test.

(Note: Numerical based questions of unit 7, 8 and 9 should be covered only in practical)

Practicals **60 hours**

1. Biological databases (NCBI, UniProt, PlantPepDB)
2. Literature retrieval from PubMed
3. Sequence retrieval (protein and gene) from NCBI (formats - FASTA, GenBank and GenPept formats)
4. Protein Structure retrieval from PDB (in pdb format) and visualization by viewing tools (Ras Mol/ J mol/Mol*/Swiss 3D Viewer/Pymol)
5. Multiple sequence alignment (MEGA/Clustal omega)
6. Construction of phylogenetic tree (PHYLIP/ MEGA/ Clustal omega).
7. Calculation of standard deviation and coefficient of variation through manual calculation and using Microsoft Excel, using only ungrouped data)
8. Calculation of correlation coefficient values by Karl Pearson's /Spearman Rank methods (through manual calculation and using Microsoft Excel)
9. Student's t-test (using Microsoft Excel), chi square test (Manual and using Microsoft Excel)

Suggested Readings:

1. Ghosh, Z., Mallick, B. (2008). Bioinformatics – *Principles and Applications*, 1st edition. New Delhi, Delhi: Oxford University Press.
2. Baxevanis, A.D., Ouellette, B.F., John (2005). Bioinformatics: A Practical Guide to the Analysis of Genes and Proteins, 3rd edition. New Jersey, U.S.: Wiley & Sons, Inc.
3. Roy, D. (2009). Bioinformatics, 1st edition. New Delhi, Delhi: Narosa Publishing House.
4. Zar, J.H. (2012). Biostatistical Analysis, 4th edition. London, London: Pearson Publication.
5. Campbell, R.C. (1998). Statistics for Biologists. Cambridge, U.S.A.: Cambridge University Press

Additional Resources:

1. Pevsner J. (2009). Bioinformatics and Functional Genomics, 2nd edition. New Jersey, U.S.: Wiley Blackwell.
2. Xiong J. (2006). Essential Bioinformatics, 1st edition. Cambridge, U.K.: Cambridge University Press.
3. Mount, D.W. (2004). Bioinformatics: Sequence and Genome analysis 2nd edition, Cold Spring Harbor Laboratory Press, USA.
4. Pandey, M. (2015). Biostatistics Basic and Advanced. New Delhi, Delhi: M V Learning.
5. Khan, I.A., Khanum, A., Khan S., (2020). Fundamentals of Biostatistics, 6th edition. Ukaaz Publications, Hyderabad, India.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category II

Botany Courses for Undergraduate Programme of study with Botany as one of the Core Disciplines

DISCIPLINE SPECIFIC CORE COURSE (DSC-.....): Plant Cell and Developmental Biology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Plant Cell and Developmental Biology DSC	**4**	**2**	**0**	**2**	Class XII pass	**Nil**

Learning objectives:
To understand the basics of plant cell structure, development, growth and organisation of plant body.

Learning outcomes:
On completion of the course, the students will

- become familiar with the structure and functions of various components of plant cell
- understand the processes of cell growth and its regulation
- comprehend the structure, organization and functions of various tissues of the plant organs
- get acquainted with the reproductive processes in the life cycle of angiosperms
- appreciate the interactions between the developmental pathways resulting in the differentiation of plant body
- recognise the importance of plant developmental biology in the improvement and conservation of plants

Unit 1. Introduction to Plant Cell: structure and function **5 hour**
Cell as the basic unit of life; differences between plant and animal cell, prokaryotic and eukaryotic cell; Cell Theory.
Structure and functions of cell wall; cell membrane; cell organelles- nucleus, chloroplast, mitochondria, dictyosomes, endoplasmic reticulum, microbodies, cytoskeleton.

Unit 2: **Cell growth** **3 hours**

Cell cycle, regulation (in brief) and significance; mitosis and meiosis; cytokinesis.

Unit 3. **Polarity in plant growth** **3 hours**
Plant body as a bipolar structure; apical, basal and radial patterns of body plan; growth through primary and secondary meristems; organisation of shoot and root apices.

Unit 4. **Differentiation of tissues: vegetative organs** **6 hours**
Structure and functions of tissues (simple and complex); structure of stem, root, and leaf (dicot and monocot); principles of organ differentiation: role of transcription factors in cell, tissue, organ identity and development, cell fate determination by position, and cell-cell signalling; hormones involved in organ differentiation (very briefly).

Unit 5. Differentiation of tissues: reproductive organs **6 hours**
Anther, microsporogenesis and microgametogenesis, general structure of pollen grains and male gametes, male germ unit; ovule, megasporogenesis (monosporic, bisporic, tetrasporic) and megagametogenesis (Polygonum type), ultrastructure and significance of female germ unit; Flower development (ABC model).

Unit 6. Pollination and Fertilization **3 hours**
Pollination types, agents and adaptation; pollen germination; path of pollen tube in pistil; double fertilization

Unit 7. **Development of Embryo and Seed** **4 hours**
Endosperm types, functions; development of embryo from zygote, establishment of apical-basal and radial organisation; development of seed, modes of seed dispersal.

Practicals (60 hours)
1. Study of plant cell - through peel mount (*Tradescantia,* or any other); whole mount (*Hydrilla*) - cytoplasmic streaming.
2. Study of cell components - nucleus (Feulgen/acetocarmine staining); mitochondria (Janus green B staining); cell wall (PAS staining).
3. To study mitotic index. (pictures or permanent slides -24h-period or under different temperatures/environmental conditions may be used).
4. Study tissues and organs structure through temporary preparations of macerated material and sections - T.S. of dicot stem- *Helianthus/ Cucurbita*, *Hydrilla/ Nympaea petiole, Casuarina,* stem with secondary growth - *Helianthus, Salvadora/ Bignonia;* T.S. of monocot stem - *Zea mays*, *Dracaena;* T.S. of dicot root with and without secondary growth- *Cicer*, monocot root - *Zea mays*, V.S. of dicot leaf- *Vernonia/Hamelia*etc., *Nerium, Hydrilla;* V.S. of monocot leaf- *Zea mays, Triticum/Dracaena/Crinum;* peel mountstostudy epidermal structures - types of stomata, trichomes, laticifers; Shoot apex and root apex through micrographs.
5. Study Reproductive structures (i) Anther - T.S. of anther of any large flower like *Datura/ Hamelia/ Kigelia*); whole mounts of pollen grains; ii) pollen development through micrographs of T.S. anther at different stages of development (with secretory, amoeboid tapetum); (iii) types of ovule through permanent slides/specimens/ micrographs; (iv) Polygonum type of embryo sac development through micrographs; (v) ultrastructure of egg apparatus and central cell through micrographs.
6. Study (i) pollen viability (TTC/FDA); (ii) pollen germination; (iii) growth of pollen tube in cleared pistil.

7. Study (i) dicot and monocot embryo development (through permanent slides); (ii) structure of seed (L.S. of seed)

Suggested Readings:

1. Beck, C.B. (2010). An Introduction to Plant Structure and Development. Second edition. Cambridge University Press, Cambridge, UK.
2. Dickison, W.C. (2000). Integrative Plant Anatomy. Harcourt Academic Press, USA
3. Fahn, A. (1974). Plant Anatomy. Pergamon Press, USA
4. Mauseth, J.D. (1988). Plant Anatomy. The Benjammin/Cummings Publisher, USA
5. Esau, K. (1977). Anatomy of Seed Plants. John Wiley & Sons, Inc., Delhi.
6. Taiz, L., Zeiger, E., Moller, I.M., Murphy, A. (2015). Plant Physiology. 6th edition. Sinauer Associates, Sunderland. USA.
7. Hopkins, W.G., Huner, N.P.A. (2009). Introduction to Plant Physiology. Fourth edition, John Wiley & Sons, Inc. USA.
8. Bhojwani, S.S., Bhatnagar, S.P., Dantu, P.K. (2015). The Embryology of Angiosperms, 6th edition. New Delhi, Delhi: Vikas Publishing House.
9. Johri, B.M. (1984). Embryology of Angiosperms. Netherlands: Springer-Verlag.
10. Raghavan, V. (2000). Developmental Biology of Flowering plants. Netherlands: Springer.
11. Shivanna, K.R. (2003). Pollen Biology and Biotechnology. New Delhi, Delhi: Oxford and IBH Publishing Co. Pvt. Ltd.

Additional Resources:

1. Cutler, D.F., Botha, T., Stevenson, D.W. (2007). Plant Anatomy - An Applied Aspect. Blackwell Publishing, USA
2. Bahadur, B. Rajam, M.V., Sahijram, L., Krishnamurthy, K.V. (2015). Plant Biology and Biotechnology. Volume 1: Plant Diversity, Organization, Function and Improvement. Springer (India) Pvt. Ltd. New Delhi, Heidelberg, New York, Dordrecht, London.
3. Shivanna, K.R., Tandon, R. (2014). Reproductive Ecology of Flowering Plants: A Manual. Springer (India) Pvt. Ltd. New Delhi, Heidelberg, New York, Dordrecht, London
4. Moza M. K., Bhatnagar A.K. (2007). Plant reproductive biology studies crucial for conservation. Current Science 92:1907.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category III:

B.Sc. programme in Applied Life Sciences with Agrochemicals and Pest Management Botany (H) Courses for Undergraduate Programme of study with Botany as a Single Core Discipline

DISCIPLINE SPECIFIC CORE COURSE (DSC 03)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the core course			Eligibility criteria	Pre-requisite of the course (If any)
		Lecture	Tutorial	Practical/ Practice		
Genetics and Molecular Biology ALSBOTDSC03	**4**	**2**	**0**	**2**	**XII pass with Science with Biology/ Biotechnology**	**NIL**

Learning Objectives:

The learning objectives of this course are as follows:

- To understand the basic concept of Mendelian genetics and comprehensive study of Mendelian extensions.
- To provide adequate knowledge about Linkage, Crossing over and Mutations.
- To provide brief knowledge of population and evolutionary genetics.
- To impart detailed understanding about the structureof nucleic acids and their types. .
- To understand key events of Molecular biology comprising mechanism of DNA Replication, Transcription and Translation in Prokaryotes and Eukaryotes.
- To give comprehensive explanation of Transcriptional Regulation with examples of lac operon and tryptophan operon in prokaryotic as well as eukaryotic organisms along with the key concept of Gene Silencing.

Learning Outcomes:

By studying this course, students will be able to:

- Analyse the basic concepts of Mendelian genetics and its extension, Linkage and Crossing over, Mutations and population genetics.

- Explicate the mechanism of replication, transcription, translation in prokaryotes and eukaryotes.
- Comprehend the mechanism of gene regulation and gene silencing.

Unit 1: Mendelian Genetics and Extensions (3 Hours)
Mendel's work on transmission of traits, Co-dominance, Incomplete dominance, Multiple alleles, Lethal Genes, Epistasis, Pleiotropy, Polygenic inheritance, Pedigree analysis.

Unit 2: Extra-chromosomal Inheritance (2 Hours)
Cytoplasmic inheritance: Chloroplast variegation in Four 'O clock plant, Kappa particles in *Paramecium*, Maternal effect-shell coiling pattern in snail.

Unit 3: Linkage, Crossing over and Chromosomal Mapping (3 Hours)
Linkage and crossing over, Recombination mapping - two point and three points.

Unit 4: Mutations (3 Hours)
Chromosomal mutations, Deletion, Duplication, Inversion, Translocation, Aneuploidy and Polyploidy, Gene mutations.

Unit 5: Population and Evolutionary Genetics (2 Hours)
Allelic frequencies, Genotypic frequencies, Gene pool, Hardy-Weinberg Law.

Unit 6: The Genetic Material: DNA and RNA (4 Hours)
DNA structure: Salient features of double helix, Types of DNA, DNA denaturation and renaturation, Nucleosome, Chromatin structure- Euchromatin, Heterochromatin (Constitutive and Facultative), RNA structure and its types.

Unit 7: Replication of DNA (3 Hours)
Mechanism of prokaryotic DNA replication, Chemistry of DNA synthesis, Enzymes and proteins involved in DNA replication, Comparison of replication in prokaryotes and eukaryotes.

Unit 8: Transcription and Processing of RNA (4 Hours)
Mechanism of transcription in prokaryotes and eukaryotes, Split genes: concept of introns and exons, Removal of introns, Spliceosome machinery group I & group II intron splicing, alternative splicing, eukaryotic mRNA processing (5' cap, 3' poly A tail).

Unit 9: Translation (3 Hours)
Mechanism of translation in prokaryotes and eukaryotes: initiation, elongation and termination of polypeptides,Proteins and enzymes involved in translation.

Unit 10: Regulation of transcription in prokaryotes and eukaryotes (3 Hours)
Prokaryotes: Regulation of lactose metabolism and tryptophan synthesis in *E. coli*, Eukaryotes: Transcription factors, Heat shock proteins, Gene silencing.

PRACTICAL (Credit: 02)
(Laboratory practical- 15 classes of 4 hours each)

1. To study Mendelian and Non- Mendelian gene interaction ratios (9:7, 9:6:1, 13:3, 15:1, 12:3:1, 9:3:4) through seeds.
2. To study linkage, recombination, gene mapping using marker-based data from *Drosophila*.

3. Karyotype and Idiogram preparation through photographs.
4. PTC testing in a population and calculation of allelic and genotypic frequencies.
5. Study of abnormal human karyotype and pedigrees.
6. Isolation of genomic DNA from Cauliflower curd.
7. Qualitative analysis of DNA using gel electrophoresis.
8. Estimation of DNA by Diphenylamine method.
9. Separation of nucleotide bases by paper chromatography.
10. Purity and quantitative estimation of isolated DNA by UV-VIS spectrophotometer.
11. Study of Molecular techniques: PCR, Southern, Northern and Western Blotting and PAGE.

Essential/ Recommended readings:

1. Snustad D.P. and Simmon M.J. (2012) *Genetics* 6 th Ed., John Wiley & Sons. (Singapore)
2. PierceB.A, (2012) *Genetics - A Conceptual Approach*, 4 th Ed., W.H. Freeman & Co. (New York)
3. Griffiths A.J.F., Wessler S. R, Carroll S. B and Doebley J. (2010) *An Introduction to Genetic Analysis*, 10th Ed., W.H. Freeman & Company (New York).
4. Watson J.D., Baker, T.A., Bell, S.P., Gann, A., Levine, M. and Losick, R. (2007) *Molecular Biology of the Gene*, 6th Ed. Pearson Benjamin Cummings, CSHL Press, New York, U.S.A.

Suggestive readings:

1. Klug, W.S., Cummings, M.R. and Spencer, C.A. (2009)*Concepts of Genetics*. 9th Ed. Benjamin Cummings. U.S.A.
2. Russell, P. J. (2010) *Genetics- A Molecular Approach*. 3rd Ed. Benjamin Cummings, U.S.A.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE (DSE01)

Course title & Code	Credits	Credit distribution of the core course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Ecology, Conservation and Restoration ALS BOT DSE 01	**4**	**2**	**0**	**2**	**XII pass with Science with Biology/ Biotechnology**	**NIL**

Learning Objectives:

- To develop a scientific understanding of the diverse aspects of ecology.
- To familiarize students with the interactions between the organisms and their physical environment.
- To understand various attributes of populations and communities with the help of theoretical concepts and field studies.
- To make students understand various factors that lead to variations among populations of a species.
- To familiarize students about the concepts of conservation and restoration.

Learning Outcomes:

By studying this course,students will be able to:

- Gain knowledge aboutthebasic concepts of ecology.
- Comprehend the characteristics of the community, ecosystem development and climax theories.
- Explicate the relationship of evolution of various species and their environment.
- Analyse the basic field studies including data collection and its interpretation.
- Explicate the Conservation and Restoration methods.

Unit 1: Introduction to Ecology (3 Hours)

Autecology and Synecology, Laws of limiting factors, Study of physical factors: Temperature and Light.

Unit 2: Population (4 Hours)

Unitary and Modular populations, Unique and group attributes of population: density, natality, mortality, Life tables, Fecundity table, Survivorship curves, Intraspecific population regulation: density-dependent and independent factors.

Unit 3: Species Interactions (5 Hours)

Types of species interactions, Interspecific competition: Lotka-Volterra model of competition, Gause's Principle, Niche concept, Predation, Predator defence mechanisms.

Unit 4: Community (4 Hours)

Community characteristics: species richness, dominance, diversity, abundance, guilds, ecotone and edge effect, Ecological succession with examples and types.

Unit 5: Ecosystem (5 Hours)

Types of Ecosystems: terrestrial and aquatic ecosystems, Vertical stratification in tropical forest, Food chain: detritus and grazing food chains, linear and Y-shaped food chains, Food web, Energy flow through the ecosystem: Ecological pyramids and Ecological efficiencies, Biogeochemical cycles: Nitrogen cycle.

Unit 6: Conservation (5 Hours)

Ecology in wildlife conservation and management: In-situ conservation (Biosphere Reserves, National Parks, Wildlife Sanctuaries), Ex-situ conservation (botanical gardens, gene banks, seed and seedling banks, DNA banks),Principles of Environmental impact assessment.

Unit 7: Restoration (4 Hours)

Restoration ecology: Afforestation, Social forestry, Agro-forestry, Joint Forest management, Role of remote sensing in management of natural resources.

PRACTICAL (Credit: 02)

(Laboratory practical- 15 classes of 4 hours each)

1. Study of life tables and plotting of survivorship curves of different types from hypothetical/real data.
2. Determination of population density and abundance in a natural or a hypothetical community by quadrat method.
3. Quantitative analysis of herbaceous vegetation in the college campus and comparison with Raunkiaer's Frequency distribution law.
4. Study of morphological features of hydrophytes and xerophytes in the ecosystems.
5. Measurement of temperature, turbidity/penetration of light and pH of any two water samples.
6. Comparison of Dissolved oxygen content in different water samples using Winkler's titration method.
7. Comparison of organic carbon of two soil samples using Walkley and Black's rapid titration method.
8. Comparison of CO_2 and alkalinity in two different water samples.
9. Estimation of Total Dissolved Solids (TDS) in water samples.
10. Perform Rapid field tests to detect the presence of Carbonates, Nitrate, Sulphate, Chloride, Organic matter and Base deficiency in two soil samples.
11. A visit to a National Park/Biodiversity Park/Wildlife Sanctuary/Urban Forest.

Essential/Recommended readings:

1. Sharma, P.D. (2012). *Ecology and Environment*. Rastogi Publications.
2. Singh J.S., Singh S.P., and Gupta S. R. (2014) *Ecology, Environment Science and Conservation*. S. Chand and Company Limited.
3. Odum, E.P. and Barrett G. W. (2004) *Fundamentals of Ecology*. Indian Edition (5th)Brooks/Cole Publishers.

Suggestive readings:

1. Smith T. M. and Smith R. L. (2015). *Elements of Ecology*. 9th International Edition, Publisher: Benjamin Cummings.
2. Saha G.K. and Mazumdar S. (2020) *Wildlife Biology*, An Indian Perspective. Publisher: PHI Learning Private Limited
3. Futuyma, Douglas and Mark, Kirkpatrick (2017). *Evolutionary Biology* (3rd Edition), Oxford University Press

Category IV:
B.Sc. Biological Sciences (Hons)for Undergraduate Programme of study with Botany as a Single Core Discipline

DISCIPLINE SPECIFIC CORE COURSE –9 :

Course title & Code	Credits	Credit distribution of the core course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Functional Ecology (BS-DSC303)	4	2	-----	2	Class XII pass with Biology and chemistry, as one of the papers in Class XII	Nil

Learning Objectives

• To understand the basic concepts in ecology and levels of organization in an ecosystem
• Obtain a basic understanding of the various aspects of a 'population' and interactions among individuals of the same as well as different species.
• To understand the structure and functions of the community and its processes.
• To comprehend the components of an ecosystem, energy flow and nutrient cycling.
• To appreciate the applied aspects required in restoration of degraded ecosystems.
• To understand trade-offs in life history characteristics of organisms and various behaviors shownby organisms.

Learning outcomes
By the end of the course, the student will be able to:
• To comprehend the principles and applications of ecology and ecosystem.
• Know about the importance of ecosystem in general and the effects of changes inecosystem.
• Understand the techniques used for the quantitative and qualitative estimation of bioticand abiotic components of an ecosystem.
• Gain knowledge about the density, frequency and diversity of species in an ecosystem.
• Understand about key interactions between organisms like competition , predation ,parasitism etc.
• Participate in citizen science initiatives from an ecological perspective

DISCIPLINE SPECIFIC CORE COURSE –9 :XXX
SYLLABUS OF DSC-9
Theory
Unit 1: Introduction to Ecology **3 Hours**
History of ecology, Autecology and synecology, levels of Organisation, Laws of limiting factors (Liebig's law of minimum, Shelford's law of tolerance), ecological range (Eury and Steno).
Unit 2: Population Ecology **12 Hours**
Population: Unitary and Modular populations; Metapopulation: Density, natality, mortality, life tables, fecundity tables, survivorship curves, sex ratio, age pyramids, dispersal and

dispersion; carrying capacity, population dynamics (exponential and logistic growth equation and patterns), r and K selection, density-dependent and independent population regulation; Niche concept, Population interactions: Positive and negative interactions; Competition, Gause's Principle for competition with laboratory and field examples, Lotka-Volterra equation for predation.

Unit 3: Community Ecology **8 Hours**

Community structure: Dominance, diversity, species richness, abundance, stratification; Diversity indices; Ecotone and edge effect; Community dynamics (succession): Primary and secondary succession, Succession on a bare rock. Climax: monoclimax and polyclimax concepts (preclimax, postclimax, disclimax etc.). Concept of keystone, indicator and flagship species with plant and animal examples.

Unit 4: Ecosystem Ecology **7 Hours**

Concept, components, and types of ecosystems (example of Pond ecosystem in detail showing abiotic and biotic components), BOD, eutrophication. Energy flow (Grazing and Detritus food chain), linear and Y-shaped energy flow model, black box model, food web. Ecological pyramids and Ecological efficiencies.

PRACTICALS CREDITS: 2 **Total 60 Hours**

1. To understand the principle and working of ecological instruments such as Anemometer, Hygrometer, Luxmeter, Rain gauge, turbidity meter, pH meter, Soil thermometer, MinMax thermometer.
2. To study biotic interactions using specimens/ photographs/ permanent slides of Parasitic angiosperms, Saprophytic angiosperms, root nodules, velamen roots, lichens , corals .
3. To study plant-microbe interactions by preparing temporary stained mounts of VAM fungi / mycorrhizal roots/ root nodules.
4. Mark recapture method for determining population density of animals
5. To determine a minimal quadrat area for sampling
6. To determine density, frequency and abundance of herbaceous vegetation by quadrat method
7. To estimate dissolved oxygen content of a given water sample using Winkler's method.
8. Plotting of survivorship curves from hypothetical life table data.XXX

REFERENCES

1. Barrick, M., Odum, E. P., Barrett, G. W., (2005) Fundamentals of Ecology.5th Edition. Cengage Learning.
2. Smith, T. M..& Smith, R. L.(2012). Elements of Ecology 8th Edition. Pearson.
3. Ricklefs, R. E., & Miller, G. L., (2000) Ecology, 4th Edition W.H. Freeman.
4. Sharma, P. D. (2017). Ecology and Environment.13th Edition. Meerut: Rastogi Publications.

MOOCs

1. 'Ecology: Ecosystem Dynamics and Conservation from American Museum of Natural History on Coursera https://www.classcentral.com/course/coursera-ecology- ecosystem-dynamics-andconservation-10618
2. https://alison.com/course/diploma-in-ecology-studies
3. https://swayam.gov.in/ Any ecology based online course that may be available during the semester, depending on its relevance to the present syllabusXXX

DISCIPLINE SPECIFIC Elective –DSE-1 :

Course title & Code	Credits	Credit distribution of the core course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Medicinal and Ethnobotany (BS-DSE-1)	4	2	-----	2	Class XII pass with Biology and NA chemistry, as one of the papers in Class XII	Nil

Learning Objectives:
Plants are imperative to mankind with almost all plants known to possess medicinal values. There is an increased emphasis on indigenous system of medicine which has lent prime focus on medicinal plants. Keeping the therapeutic importance of medicinal plants in mind this course is designed to provide education and training on diverse perspectives of medicinal plants. The course also offers comprehensive knowledge about understanding the difference between ancient wisdom and themodern system of medicine.

Learning Outcomes:
On successful completion of the course, a student will:
• Be able to identify the common medicinal plants in their vicinity.
• Learn about the traditional healing sciences namely Ayurveda, Siddha and Unani, which have been used since the ancient times.
• Appreciate the importance of conservation strategies for medicinal plants.
• Be able to understand the importance of medicinal plants, significance of ethnobotany, role of ethnic groups in the conservation of medicinal plants.
Course Contents - Theory

Unit 1: History, Scope and Importance of Medicinal Plants No. of Hours-10

Introduction to indigenous systems of medicines- Ayurveda, Unani and Siddha system of medicine)- Ayurveda: History, origin, Panchamahabhutas, Saptadhatu and Tridosha concepts, Siddha: Origin of Siddha medicinal systems, Basis of Siddha system. Unani: History, concept: Umoor-e- tabiya. Plants used in Ayurveda, Siddha and Unani medicine with special reference to Carum carvi, Plantago ovata, Allium sativum, Asparagus racemosus, Vitis vinifera, Linum usitatissimum, Amaranthus paniculatus. Polyherbal formulations (with special reference to Safi, Chyawanprash, Trifala, Swalin, Amukkara Choorna, Gandhak rasayana). Natural products – Compounds responsible for biological activity of medicinal plants: their biology, and pharmacology (Curcumin, Vinblastine, Vincristine, Ecliptine, Cinchonine, Azadirachtin, Artemisinin).

Unit 2: Conservation of Endangered and Endemic Medicinal Plants No. of Hours -8

Definition: endemic and endangered medicinal plants, Red list criteria; In situ conservation: Biosphere reserves, sacred groves, National Parks; Ex situ conservation: Botanical Gardens,

herbal gardens, Ethnomedicinal plant gardens. Germplasm conservation, cryopreservation (Cryo banks and DNA banks), Role of NBPGR and JNTBGRI in conservation of plants, Propagation of Medicinal Plants: In vitro and In vivo strategies. Adulteration of Herbal drugs. Organoleptic, microscopic and phytochemical evaluation of plant drugs.

Unit 3: Ethnobotany and Folk Medicines **No. of Hours :12**

Introduction, concept, scope and objectives; Ethnobotany in India: Methods to study ethnobotany; Folk medicines of ethnobotany, Role of ethnobotany in modern medicine with special reference to *Rauvolfia serpentina*, *Trichopus zeylanicus*, *Artemisia, Withania*. Major and minor ethnic groups of India and their lifestyles. Application of natural products to certain diseases- Jaundice, cardiac, infertility, diabetics, blood pressure and skin diseases. Role of ethnic groups in conservation of plant genetic resources; Brief account of biopiracy and IPR.

PRACTICAL
Credit: 2 **Total Hours - 60**

1. Identification of any ten common medicinal plants in the surrounding area and study their characteristic features.
2. Collection, identification and preparation of herbarium of any five medicinal plants.
3. Extraction and qualitative estimation of active principle compounds (alkaloids, tannins, saponins and flavanoids) from any four medicinal plants. (*Aloe vera, Ocimum* sp*, Azadirachta , Catharanthus, Adhatoda, Withania*)
4. Study of components and medicinal uses of common polyherbal formulations used in the traditional system of medicine (Ayurveda, Unani and Siddha).
5. Study of organoleptic, macroscopic and microscopic parameters of any two medicinal plants.
6. To compare the total phenolic content of few locally available medicinal plants
7. Field trip: Industries/Institutes/herbal garden/ medicinal gardens/ nurseries/tribal museum.
8. e-presentations (System of medicine, Conservation strategies, propagation of medicinal plants, folk medicines, application of natural products to certain diseases listed in the syllabus)

Essential readings:

1. Abdin, M. Z. and Abrol, Y. P., (2006). Traditional Systems of Medicine. Narosa Publishing House, New Delhi.
2. Kumar, S., (2018). Ethnobotany. Kojo press, New Delhi.
3. Purohit and Vyas, (2008). Medicinal Plant Cultivation: A Scientific Approach, Agrobios.
4. Trivedi, P. C. (2006). Medicinal Plants: Ethnobotanical Approach. Agrobios.

Additional Readigs

1. Colton, C. M., (1997). Ethnobotany: Principles and Applications. John Wiley and Sons.
2. Jain, S. K., (1990). Contributions to Indian Ethnobotany. Scientific publishers, Jodhpur.
3. Jain, S. K., (1995). Manual of Ethnobotany. Scientific Publishers, Jodhpur.

COMMON POOL OF GENERIC ELECTIVES (GE)

GENERIC ELECTIVES (GE-11): Industrial and Environmental Microbiology

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical / Practice		
Industrial and Environmental Microbiology **GE-11**	4	2	0	2	Class XII pass	Nil

Learning Objectives:

- To introduce students to understand the uses of microbes in industry: concepts, principles, scope and applications.
- To introduce students to the role of microbes in the environment: concepts, principles, scope and application.

Learning Outcomes:

Upon successful completion of the course, students will be able to:

- understand how microorganisms are involved in the manufacture of industrial products.
- know about design of bioreactors, factors affecting growth and production of bioproducts.
- understand the rationale in medium formulation & design for microbial fermentation, sterilization of medium and air.
- comprehend the different types of fermentation processes and the underlying principles in upstream and down- stream processing.
- learn the occurrence, abundance, distributionandrole of microorganisms in the environment.Also, learn different methods for microbial isolation and detection from different habitats.
- understand the basic principles of environmental microbiology and their application in waste water treatment, bioremediation and role of microbes in agriculture.

Unit 1: Introduction **4 hours**

Scope and importance of microbes in Industry and Environment (Institutes of microbial research). Bioremediation. Distribution and isolation of microbes in the air, soil and water.

Unit 2: Bioreactors/ Fermenters and Fermentation process **4 hours**

Solid-state and liquid state (stationary and submerged) fermentations; batch and continuous fermentations; components of a typical bioreactor, types of bioreactors.

Unit 3: Microbial production of industrial importance **12 hours**

Microorganisms generally regarded as safe (GRAS), types of media, conditions necessary for the growth and production of industrially important products, downstream processing and uses; filtration, centrifugation, cell disruption, solvent extraction, precipitation and ultrafiltration, lyophilization, spray drying.

Production of enzyme (amylase); organic acid (citric acid); alcohol (ethanol); antibiotic (penicillin).

Unit 4: Enzyme immobilization **3 hours**

Definition, Methods of immobilization, their advantages and applications, large scale production and application of penicillin acylase.

Unit 5: Microbial flora of water **4 hours**

Microorganisms as indicators of water quality: coliform and faecal coliform; role of microbes in sewage and waste water treatment system.

Unit 6: Microbes and agriculture **3 hours**

Legume root nodule symbiosis, Mycorrhizae, Arbuscular Mycorrhiza Fungi (AMF) and its importance in agriculture.

Practicals: **60 hours**

1. Principle and functioning of instruments in microbiological laboratory (autoclave, laminar flow, incubator, fermenters).
2. Sterilization methods: Wet and dry methods, membrane filters, chemicals.
3. Preparation of different culture media (Potato dextrose agar/Czapek-Dox agar, Luria Bertani) for isolation of microorganisms from soil using serial dilution agar plating method and study of aero-microflora.
4. Culturing techniques: Streak plate method, pour plate method and spread plate method.
5. To study the ability of microorganisms to hydrolyse casein/ starch.
6. Production of alcohol using sugar/ jaggery.
7. Observation of AMF colonization in plant roots.
8. A visit to any educational institute/ industry to understand the uses of microbes for industrial applications and a report to be submitted for the same.

Suggested Readings:

1. Pelczar, M.J. Jr., Chan E.C. S., Krieg, N.R. (2010). Microbiology: An application based approach. New Delhi, Delhi: McGraw Hill Education Pvt. Ltd., Delhi.
2. Reed, G. (2004). Prescott and Dunn's Industrial Microbiology. 4thEdition , CBS Publishers and Distributors Pvt. Ltd.
3. Willey, J.M. (2023). Prescott's Microbiology, 12th edition, McGrew Hill.
4. Tortora, G.J., Funke, B.R., Case. C.L. (2007). Microbiology. 9th edition, San Francisco, SF: Pearson Benjamin Cummings.
5. Stanbury, P.F., Whitaker, A., Hall, S.J. (2017). Principles of Fermentation Technology. Amsterdam, NDL: Elsevier Publication
6. Patel, A.H. (2008). Industrial Microbiology, Bangalore, India: McMillan India Limited
7. Mohapatra. P.K. (2008). Textbook of Environmental Microbiology New Delhi, Delhi, I.K. International Publishing House Pvt. Ltd.
8. Bertrand, Jean-Claude, Caumette, P. Lebaron, P, Matheron, R., Normand, P., Sime Ngando, T. (2015). Environmental Microbiology: Fundamentals and Applications. Amsterdam, Netherlands, Springer.
9. Casida, J.R. (2019). Industrial Microbiology, 2nd Edition, New Age International Publishers, New Delhi.
10. Atlas, R.M., Bartha, R. (2009). Microbial Ecology: Fundamentals and Applications., Pearson, San Francisco
11. Sharma, P.D. (2005). Environmental Microbiology. Meerut, UP: Alpha Science International, Ltd.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-12)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Environmental Biotechnology & Management **GE-12**	**4**	**2**	**0**	**2**	Class XII pass	**Nil**

Learning Objectives:
The course aims to build awareness of:

- various global and regional environmental concerns due to natural causes and/or human activities.
- different types of pollution and their impacts on the environment.
- existing and emerging technologies that are important in the area of environmental biotechnology to fulfill Sustainable Development Goals.

Learning Outcomes:
After completion of course the student will be able to:

- demonstrate awareness about emerging concerns such as climate change, waste management; biodegradation of xenobiotic compounds; bioremediation, etc.
- relate applications of biotechnology for alleviating the environmental concerns
- appreciate the scientific, ethical and/or social issues
- understand the national and international legislations, policies and role of public participation in Environmental Protection

Unit 1: Environment **5 hours**
Basic concepts and issues, global environmental problems - ozone layer depletion, UV-B, greenhouse effect and acid rain due to anthropogenic activities, their impact and biotechnological approaches for management. Fate of pollutants in the environment, Bioconcentration, Biomagnification.

Unit 2: Microbiology of waste water treatment 7 hours

Aerobic process - activated sludge, oxidation ponds, trickling filter. Anaerobic process - anaerobic digestion, anaerobic filters, up-flow anaerobic sludge blanket reactors. Treatment schemes for waste waters of dairy and sugar industries.

Unit 3: Xenobiotic compounds 7 hours

Organic (Bio degradation of petroleum products and pesticides) and inorganic (metals, phosphates, nitrates). Bioremediation of xenobiotics in environment - ecological consideration, Bioaccumulation and Biosorption of metals

Unit 4: Treatment of toxic compounds: Role of immobilized cells/enzymes, microbial remediation 5 hours

Biopesticides, bioreactors, bioleaching, biomining, biosensors, biotechniques for air pollution abatement and odour control. Bioindicators and Bioprospecting

Unit 5: International Legislations, Policies for Environmental Protection 3 hours
Stockholm Conference (1972) and its declaration, WCED (1983) and Brundtland Report (1987), Rio Earth Summit-UNCED (1992) and its declaration, Montreal Protocol - 1987, Kyoto Protocol- 1997. Environmental ethics

Unit 6: National Legislations, Policies for Pollution Management 3 hours
Water Pollution (Prevention and Control) Act-1974, Air Pollution (Prevention and Control) Act-1981, National Environmental Policy - 2006, Central and State Pollution Control Boards: Constitution and power.

Practicals: 60 hours

1. To determine the pH and total hardness of water samples collected from different places (polluted and non-polluted sites)
2. To determine the salinity of water samples (polluted and non-polluted sites)
3. To determine the dissolved oxygen of two water samples.
4. To determine the alkalinity of water samples.
5. To determine the pH and rapid field test of soil samples (Chloride, Nitrate, and Sulphate).
6. To study microbessuspended in air and water samples.
7. A visit to any educational institute/ industry to understand the uses of microbes in environmental management and a report to be submitted for the same.

Suggested Readings:

1. De, A. K. (2022). Environmental Chemistry, 10th Edition, New Delhi. New Age International Pvt. Limited
2. Dennis, A., Seal, K.J., Gaylarde, C.C. (2004). Introduction to Biodeterioration, Cambridge University Press
3. Ahmed, N., Qureshi, F.M., Khan, O.Y. (2006). Industrial and Environmental Biotechnology, Horizon Press
4. Rochelle, P.A. (2001). Environmental Molecular Biology, Horizon Press.
5. Jadhav, H.V., Bhosale, V.M. (2015). Environmental Protection and Laws, Himalaya publishing House Pvt Ltd.
6. Trivedi, P. C. (2006). Biodiversity Assessment and Conservation, Agrobios Publ.
7. Rana, S.V.S. (2015). Environmental Biotechnology, Rastogi Publications, India.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-13): Plant Biotechnology

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical / Practice		
Plant Biotechnology **GE-13**	**4**	**2**	**0**	**2**	Class XII pass	**Nil**

Learning Objective

To give students knowledge of techniques used in plant biotechnology and its applications.

Learning Outcomes:

After completion of this course, students will be able to:

- understand the basic concepts, principles, and methods in plant biotechnology.
- will be able to explain the usage of the acquired knowledge in biotechnological, pharmaceutical, medical, ecological, and agricultural applications.

Unit 1: Introduction and Scope of Plant Biotechnology **2 hours**

Historical perspective, Current paradigms in plant biotechnology, GM crops, International/National institutions

Unit 2: Plant Tissue Culture **10 hours**

Plasticity and Totipotency of plant cells – why and how do plants grow from a single cell; Nutrient media and role of vitamins and hormones. Regeneration of plants in the laboratory: Direct and indirect organogenesis, somatic embryogenesis; Brief account of micropropagation, haploids, triploids and cybrids and their applications; artificial seeds

Unit 3:Cloning and transformation techniques **10 hours**

What is cloning?; Restriction and modifying enzymes, plasmids as cloning vehicles, Transformation of bacterial cells, selection of transformants and clones – antibiotic selection, blue-white selection; How do we make transgenic plants: *Agrobacterium*-mediated transformation, Direct gene transfer by Electroporation, Microinjection, Microprojectile bombardment. Selection of transgenic plants - selectable marker and reporter genes (Luciferase, GUS, GFP).

Unit 4: Applications **8 hours**

Applications of transgenic plants in enhancing crop productivity: Pest resistant (Bt-cotton, Bt Brinjal) and herbicide resistant plants (Round Up Ready soybean);

Transgenic crops with improved quality traits (FlavrSavr tomato, Golden rice); Improved horticultural varieties (Moondust carnations); Role of transgenics in bioremediation (Superbug), Edible vaccines; Genetically engineered products - Human Growth Hormone and Humulin; Transgenic plants and their role in understanding plant biology, Biosafety regulations for transgenic plants.

Practicals **60 hours**

1. a. Preparation of Murashige & Skoog's (MS) medium.
   b. Demonstration of in vitro sterilization and inoculation methods using leaf and nodal explants of *Nicotiana* / *Datura / Brassica*.
2. Study anther, embryo, endosperm culture, micropropagation and somatic embryogenesis (photographs/slides).
3. Study isolation of protoplasts and production of artificial seeds.
4. Study methods of gene transfer: A*grobacterium*-mediated, direct gene transfer by electroporation, microinjection, microprojectile bombardment (through digital resources).
5. Study various steps of genetic engineering for production of *Bt*cotton, Golden rice, Flavr Savr tomato.
6. Plasmid and genomic DNA isolation, Restriction digestion and agarose gel electrophoresis of DNA.
7. Visit to a plant tissue culture / Biotechnology laboratory and to submit a field report.

Suggested Readings:

1. Bhojwani, S.S., Bhatnagar, S.P. (2015). The Embryology of Angiosperms, 6th edition. New Delhi, Delhi: Vikas Publication House Pvt. Ltd.
2. Bhojwani, S.S., Razdan, M.K., (1996). Plant Tissue Culture: Theory and Practice. Amsterdam, Netherlands: Elsevier Science.
3. Newmann, Karl-Hermann (2020). Plant Cell and Tissue Culture: A Tool in Biotechnology, 2nd Edition {Springer}
4. Glick, B.R., Pasternak, J.J. (2022). Molecular Biotechnology Principles and Applications of Recombinant DNA, 6th Edition. Washington, U.S.: ASM Press.
5. Stewart, C.N. Jr. (2016). Plant Biotechnology and Genetics: Principles, Techniques and Applications, 2nd Edition. New Jearsey, U.S.: John Wiley & Sons Inc.

Additional Resources:

1. Razdan, M. K. (2019). Introduction to Plant Tissue Culture, 3rd Edition {CBS / Oxford & IBH}
2. Singh, B. D. (2022). Plant Biotechnology, Delhi, Medtech

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-14): Plant Tissue Culture

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Plant Tissue Culture **GE-14**	4	**2**	**0**	2	Class XII pass	**Nil**

Learning Objectives

To give students knowledge of techniques used in plant tissue culture and its applications.

Learning Outcomes

The successful students will be able to:

- learn the basic concepts, principles and processes in plant cell and tissue culture.
- understand the use of tissue culture techniques in plant improvement.
- apply the concepts and principles of plant cell and tissue culture in biotechnological and agricultural fields.
- become an entrepreneur by establishing their own plant tissue culture lab.

Unit 1 Introduction **3 hours**

Historical perspective, Important contributions of Haberlandt, White, Reinert & Steward, Murashige, Skoog, Cocking, Guha & Maheshwari, Morrel & Martin.

Terminologies: Cell culture,organ culture, explant, callus, totipotency, plasticity, regeneration, somaclonal variants.

Unit 2 Types and composition of Media **4 hours**

Role of nutrients, vitamins, hormones and supplements in nutrient medium. Composition of MS and White medium.

Unit 3 Techniques of Plant Tissue Culture **4 hours**

Collection of plant material, sterilization of tissue (maintenance of aseptic conditions by use of autoclave and laminar flow chamber), filter sterilization, inoculation.

Unit 4 Protoplast culture **5 hours**

Protoplast isolation (mechanical and enzymatic), culture, purification (viability test) and fusion (spontaneous, induced), selection of fused protoplasts, applications.

Unit 5Micropropagation **5 hours**

Selection of plant material and suitable explant, methodology, plant regeneration pathways-somatic embryogenesis, organogenesis, difference between somatic and zygotic embryos.

Unit 6 Tissue culture applications **9 hours**

Anther culture, Production of haploids, triploids and cybrids, artificial seeds (production & advantages), embryo rescue, virus elimination, secondary metabolite production; Cryopreservation; Germplasm conservation. Novel sources of variation.

Practicals **60 hours**

l. To study the equipment used in tissue culture: autoclave and laminar air flow chamber.
2. Preparation of Murashige & Skoog's (MS) medium.
3. Demonstration of sterilization and inoculation methods using leaf and nodal explants of tobacco, carrot, *Datura*, *Brassica* etc. (any two).
4. Study of anther, embryo and endosperm culture.
5. Study of micropropagation, somatic embryogenesis & artificial seeds.
6. Isolation of protoplasts.
7. Visit to a plant tissue culture laboratory and submission of field report.

Suggested Readings:

1. Bhojwani, S.S. (1990). Plant Tissue Culture: Applications and Limitations {Elsevier}
2. Bhojwani, S.S, Bhatnagar, S.P. (2015). The Embryology of Angiosperms, 6th edition. New Delhi, Delhi: Vikas Publication House Pvt. Ltd.
3. Bhojwani, S. S. and Dantu, P. K. (2013). Plant Tissue Culture: An Introductory Text Springer
4. Bhojwani, S. S. and Razdan, M. K. (1996). Plant Tissue Culture: Theory and Practice, Revised Edition, Elsevier
5. Newmann, Karl-Hermann (2020). Plant Cell and Tissue Culture: A Tool in Biotechnology, 2nd Edition Springer

Additional Resources:

1. Park, Sunghun (2021). Plant Tissue Culture: Techniques and Experiments, 4th Edition Elsevier
2. Razdan, M. K. (2019). Introduction to Plant Tissue Culture, 3rd Edition CBS / Oxford & IBH
3. Smith, R. H. (2013). Plant Tissue Culture: Techniques and Experiments, 3rd Edition {Elsevier}
4. Stewart, C. Neal (2016). Plant Biotechnology and Genetics, 2nd Edition Wiley-Blackwell
5. Trigiano, R. N. (2011). Plant Tissue Culture, Development, and Biotechnology CRC Press

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-15): Inheritance in Biology

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Inheritance in Biology **GE-15**	**4**	**2**	**0**	2	Class XII pass	**Nil**

Learning Objectives:

- Mendelian and non-Mendelian inheritance: How is genetic information transferred across generations?
- Genetic defects in humans: Causes, inheritance and diagnostics
- Mutations: Types and agents
- DNA fingerprinting: DNA as a tool for establishing unique identity

Learning Outcomes:

Students will get familiarized with the concepts and principles of inheritance, sex determination, causal agents of genetic changes (mutations) and defects (congenital diseases) in humans. The course will also enable students to learn how genetic information is used to detect diseases and also to establish unique identity of an individual.

Section A: Information transfer across generations: Transmission Genetics

Unit 1: Chromosomal Inheritance **7 hours**

Principles of Mendelian inheritance; Chromosomal theory of inheritance, Incomplete dominance and co- dominance; Multiple allelism; lethal alleles; Epistasis; Pleiotropy; Penetrance and expressivity; Polygenic inheritance; Linkage and crossing over.

Unit2: Extra-chromosomal Inheritance: **4 hours**

Chloroplast Inheritance: Variegation in Four O` clock plant; Mitochondrial inheritance: petite mutants in yeast; Maternal effect- shell coiling in snails.

Section B: Male or Female? What determines the gender of the offspring?

Unit 3: Sex determination **3 hours**

Mechanism of sex determination in Insects (*Drosophila*), Plants (*Melandrium, Coccinia*)and humans (Sex determination regions/genes-TDF, SRY and Testicular feminisation), Dosage compensation in humans.

Section C: Human Genetics

Unit 4: Genetic defects-Structural **3 hours**

Autosomal and sex linked, congenital defects: Hemophilia, Thalassemia, Sickle cell anemia, Phenylketonuria, Cystic fibrosis, pedigree analysis

Unit 5: Genetic Defects-Variation in Chromosome number **3 hours**
Syndromes associated with chromosomal abnormalities: Down, Turner, Klinefelter, Edward and Patau.

Section D: Molecular Genetics
Unit 6: Heritable changes (mutations) and their causes **3 hours**
Physical and chemical mutagens, Transposable genetic elements and their role in mutations.

Unit 7: Diagnostics for human genetic disorders **3 hours**
Molecular, chromosomal and biochemical testing

Unit 8: DNA fingerprinting as molecular signatures- applications **4 hours**
Forensics (case studies), Paternity testing, unique identity establishment, conservation, finding adulterants in food/drugs.

Practicals **60 hours**

1. To understand the genetic interaction involved using the given seed mixture. Genetic ratios to be calculated using Chi square analysis.
2. Pedigree analysis (Sex linked dominant and recessive; autosomal dominant and recessive)
3. To study/list human dominant and recessive traits and to observe the listed physical traits among the students present in the class. Analyse the results.
4. To study the syndrome through photographs (Klinefelter, Turner, Downs /Patau/Edwards)
5. To demonstrate variation in the ability to taste PTC (Phenylthiocarbamide) in a given population.
6. Chromosomal and gene mutations: Complex translocation ring, quadrivalents, lagging chromosomes, dicentric/inversion bridge, sickle cell anaemia, xeroderma pigmentosum
7. To study sex chromosomes in *Drosophila, Melandrium, Coccinia* and human through photographs.

Suggested Readings:

1. Gardner, E.J., Simmons, M.J., Snustad, D.P. (1991). Principles of Genetics, 8th edition. New Delhi, Delhi: John Wiley & sons.
2. Griffiths, A.J.F., Wessler, S.R., Carroll, S.B., Doebley, J. (2020). Introduction to Genetic Analysis, 12th edition. New York, NY: W.H. Freeman and Co.
3. Klug, W.S., Cummings, M.R., Spencer, C.A. (2020). Concepts of Genetics, 12th edition. San Francisco, California: Benjamin Cummings.
4. Campbell, N.A., Urry,L.A., Cain, M.L., Wasserman,S.A., Minorsky, P.V., Reece, J.B. (2020). Biology, 12th Edition. Harlow,England : Pearson

Additional Resources:

1. Hartl, D.L., Ruvolo, M. (2019). Genetics: Analysis of Genes and Genomes, 9th edition. New Delhi, Delhi: Jones and Bartlett Learning.
2. Snustad, D.P., Simmons, M.J. (2019). Principles of Genetics, 67th edition. New Delhi, Delhi: John Wiley & sons.
3. Singh, B. D. (2023). Fundamentals of Genetics, 6th edition. MedTech.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SWAMI SHRADDHANAND COLLEGE

Bachelor of Science (Hons.) in Applied Life Sciences with Agrochemicals and Pest Management

Botany Component

DISCIPLINE SPECIFIC CORE COURSE (DSC 03)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the core course			Eligibility criteria	Pre-requisite of the course (If any)
		Lecture	Tutorial	Practical/ Practice		
Genetics and Molecular Biology ALS BOT DSC 03	**4**	**2**	**0**	**2**	**XII pass with Science with Biology/ Biotechnology**	**NIL**

Learning Objectives:

The learning objectives of this course are as follows:

- To understand the basic concept of Mendelian genetics and comprehensive study of Mendelian extensions.
- To provide adequate knowledge about Linkage, Crossing over and Mutations.
- To provide brief knowledge of population and evolutionary genetics.
- To impart detailed understanding about the structure of nucleic acids and their types. .
- To understand key events of Molecular biology comprising mechanism of DNA Replication, Transcription and Translation in Prokaryotes and Eukaryotes.
- To give comprehensive explanation of Transcriptional Regulation with examples of lac operon and tryptophan operon in prokaryotic as well as eukaryotic organisms along with the key concept of Gene Silencing.

Learning Outcomes:

By studying this course, students will be able to:

- Analyse the basic concepts of Mendelian genetics and its extension, Linkage and Crossing over, Mutations and population genetics.
- Explicate the mechanism of replication, transcription, translation in prokaryotes and eukaryotes.
- Comprehend the mechanism of gene regulation and gene silencing.

Unit 1: Mendelian Genetics and Extensions (3 Hours)

Mendel's work on transmission of traits, Co-dominance, Incomplete dominance, Multiple alleles, Lethal Genes, Epistasis, Pleiotropy, Polygenic inheritance, Pedigree analysis.

Unit 2: Extra-chromosomal Inheritance (2 Hours)

Cytoplasmic inheritance: Chloroplast variegation in Four 'O clock plant, Kappa particles in *Paramecium*, Maternal effect - shell coiling pattern in snail.

Unit 3: Linkage, Crossing over and Chromosomal Mapping (3 Hours)

Linkage and crossing over, Recombination mapping - two point and three points.

Unit 4: Mutations (3 Hours)

Chromosomal mutations, Deletion, Duplication, Inversion, Translocation, Aneuploidy and Polyploidy, Gene mutations.

Unit 5: Population and Evolutionary Genetics (2 Hours)

Allelic frequencies, Genotypic frequencies, Gene pool, Hardy-Weinberg Law.

Unit 6: The Genetic Material: DNA and RNA (4 Hours)

DNA structure: Salient features of double helix, Types of DNA, DNA denaturation and renaturation, Nucleosome, Chromatin structure- Euchromatin, Heterochromatin (Constitutive and Facultative), RNA structure and its types.

Unit 7: Replication of DNA (3 Hours)

Mechanism of prokaryotic DNA replication, Chemistry of DNA synthesis, Enzymes and proteins involved in DNA replication, Comparison of replication in prokaryotes and eukaryotes.

Unit 8: Transcription and Processing of RNA (4 Hours)

Mechanism of transcription in prokaryotes and eukaryotes, Split genes: concept of introns and exons, Removal of introns, Spliceosome machinery group I & group II intron splicing, alternative splicing, eukaryotic mRNA processing (5' cap, 3' poly A tail).

Unit 9: Translation (3 Hours)

Mechanism of translation in prokaryotes and eukaryotes: initiation, elongation and termination of polypeptides, Proteins and enzymes involved in translation.

Unit 10: Regulation of transcription in prokaryotes and eukaryotes (3 Hours)

Prokaryotes: Regulation of lactose metabolism and tryptophan synthesis in *E. coli*, Eukaryotes: Transcription factors, Heat shock proteins, Gene silencing.

PRACTICAL (Credit: 02)

(Laboratory practical- 15 classes of 4 hours each)

1. To study Mendelian and Non- Mendelian gene interaction ratios (9:7, 9:6:1, 13:3, 15:1, 12:3:1, 9:3:4) through seeds.
2. To study linkage, recombination, gene mapping using marker-based data from *Drosophila*.
3. Karyotype and Idiogram preparation through photographs.
4. PTC testing in a population and calculation of allelic and genotypic frequencies.
5. Study of abnormal human karyotype and pedigrees.
6. Isolation of genomic DNA from Cauliflower curd.
7. Qualitative analysis of DNA using gel electrophoresis.
8. Estimation of DNA by Diphenylamine method.
9. Separation of nucleotide bases by paper chromatography.
10. Purity and quantitative estimation of isolated DNA by UV-VIS spectrophotometer.
11. Study of Molecular techniques: PCR, Southern, Northern and Western Blotting and PAGE.

Essential/ Recommended readings:

5. Snustad D.P. and Simmon M.J. (2012) *Genetics* 6 th Ed., John Wiley & Sons. (Singapore)
6. Pierce B.A, (2012) *Genetics - A Conceptual Approach*, 4 th Ed., W.H. Freeman & Co. (New York)

7. Griffiths A.J.F., Wessler S. R, Carroll S. B and Doebley J. (2010) *An Introduction to Genetic Analysis*, 10th Ed., W.H. Freeman & Company (New York).
8. Watson J.D., Baker, T.A., Bell, S.P., Gann, A., Levine, M. and Losick, R. (2007) *Molecular Biology of the Gene*, 6th Ed. Pearson Benjamin Cummings, CSHL Press, New York, U.S.A.

Suggestive readings:

3. Klug, W.S., Cummings, M.R. and Spencer, C.A. (2009) *Concepts of Genetics*. 9th Ed. Benjamin Cummings. U.S.A.
4. Russell, P. J. (2010) *Genetics- A Molecular Approach*. 3rd Ed. Benjamin Cummings, U.S.A.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE (DSE 01)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the core course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Ecology, Conservation and Restoration ALS BOT DSE 01	**4**	**2**	**0**	**2**	**XII pass with Science with Biology/ Biotechnology**	**NIL**

Learning Objectives:

The learning objectives of this course are as follows:

- To develop a scientific understanding of the diverse aspects of ecology.
- To familiarize students with the interactions between the organisms and their physical environment.
- To understand various attributes of populations and communities with the help of theoretical concepts and field studies.
- To make students understand various factors that lead to variations among populations of a species.
- To familiarize students about the concepts of conservation and restoration.

Learning Outcomes:

By studying this course, students will be able to:

- Gain knowledge about the basic concepts of ecology.
- Comprehend the characteristics of the community, ecosystem development and climax theories.
- Explicate the relationship of evolution of various species and their environment.
- Analyse the basic field studies including data collection and its interpretation.
- Explicate the Conservation and Restoration methods.

Unit 1: Introduction to Ecology **(3 Hours)**

Autecology and Synecology, Laws of limiting factors, Study of physical factors: Temperature and Light.

Unit 2: Population (4 Hours)

Unitary and Modular populations, Unique and group attributes of population: density, natality, mortality, Life tables, Fecundity table, Survivorship curves, Intraspecific population regulation: density-dependent and independent factors.

Unit 3: Species Interactions (5 Hours)

Types of species interactions, Interspecific competition: Lotka-Volterra model of competition, Gause's Principle, Niche concept, Predation, Predator defence mechanisms.

Unit 4: Community (4 Hours)

Community characteristics: species richness, dominance, diversity, abundance, guilds, ecotone and edge effect, Ecological succession with examples and types.

Unit 5: Ecosystem (5 Hours)

Types of Ecosystems: terrestrial and aquatic ecosystems, Vertical stratification in tropical forest, Food chain: detritus and grazing food chains, linear and Y-shaped food chains, F ood web, Energy flow through the ecosystem: Ecological pyramids and Ecological efficiencies, Biogeochemical cycles: Nitrogen cycle.

Unit 6: Conservation (5 Hours)

Ecology in wildlife conservation and management: In-situ conservation (Biosphere Reserves, National Parks, Wildlife Sanctuaries), Ex-situ conservation (botanical gardens, gene banks, seed and seedling banks, DNA banks), Principles of Environmental impact assessment.

Unit 7: Restoration (4 Hours)

Restoration ecology: Afforestation, Social forestry, Agro-forestry, Joint Forest management, Role of remote sensing in management of natural resources.

PRACTICAL (Credit: 02)

(Laboratory practical- 15 classes of 4 hours each)

12. Study of life tables and plotting of survivorship curves of different types from hypothetical/real data.
13. Determination of population density and abundance in a natural or a hypothetical community by quadrat method.
14. Quantitative analysis of herbaceous vegetation in the college campus and comparison with Raunkiaer's Frequency distribution law.
15. Study of morphological features of hydrophytes and xerophytes in the ecosystems.
16. Measurement of temperature, turbidity/penetration of light and pH of any two water samples.

17. Comparison of Dissolved oxygen content in different water samples using Winkler's titration method.
18. Comparison of organic carbon of two soil samples using Walkley and Black's rapid titration method.
19. Comparison of CO_2 and alkalinity in two different water samples.
20. Estimation of Total Dissolved Solids (TDS) in water samples.
21. Perform Rapid field tests to detect the presence of Carbonates, Nitrate, Sulphate, Chloride, Organic matter and Base deficiency in two soil samples.
22. A visit to a National Park/Biodiversity Park/Wildlife Sanctuary/Urban Forest.

Essential/Recommended readings:

4. Sharma, P.D. (2012). *Ecology and Environment*. Rastogi Publications.
5. Singh J.S., Singh S.P., and Gupta S. R. (2014) *Ecology, Environment Science and Conservation*. S. Chand and Company Limited.
6. Odum, E.P. and Barrett G. W. (2004) *Fundamentals of Ecology*. Indian Edition (5th) Brooks/Cole Publishers.

Suggestive readings:

4. Smith T. M. and Smith R. L. (2015). *Elements of Ecology*. 9th International Edition, Publisher: Benjamin Cummings.
5. Saha G.K. and Mazumdar S. (2020) *Wildlife Biology*, An Indian Perspective.Publisher: PHI Learning Private Limited
6. Futuyma, Douglas and Mark, Kirkpatrick (2017). *Evolutionary Biology* (3rd Edition), Oxford University Press

Note: Examination scheme and mode shall be as prescribed by the Examination Branch University of Delhi, from time to time.

CHEMISTRY COMPONENT

DISCIPLINE SPECIFIC CORE COURSE (DSC 03)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Organic Chemistry; ALS CHEM DSC 03	4	2	0	2	XII pass with Science with Biology/ Biotechnology	NIL

Learning Objectives:

The Learning Objectives of this course are as follows:

- To teach the fundamentals of organic chemistry.
- To introduce the basic concepts of stereochemistry of organic molecules.
- To familiarize students to different types of organic reactions.
- To inculcate the basics of reaction mechanism through different reactive intermediates.

Learning Outcomes:

By studying this course, students will be able to:

- Explain the relative behavior of organic compounds based on fundamental concepts learnt.
- Illustrate the mechanism of organic reactions by recalling and correlating the fundamental properties of the reactants involved.
- Differentiate between various types of organic reactions possible on the basis of reaction conditions.

Unit 1: Basic Concepts **(6 Hours)**

Electronic displacements and their applications: Inductive, electromeric, resonance (mesomeric) effects and hyperconjugation. Dipole moment, acidic and basic behaviour of organic molecules.

Homolytic and heterolytic fission. Types, shape and relative stability of carbocations, carbanions and free radicals. Electrophiles and nucleophiles.

Unit 2: Stereochemistry **(10 Hours)**

Stereoisomerism: Concept of asymmetry and Optical activity, Chirality in molecules with one and two stereocentres. Fischer projection, enantiomers, diastereomers and meso structures. Specific rotation.

Configuration: CIP rules: Erythro/Threo, D/L and R/S designations.
Geometrical isomerism: *cis-trans, syn-anti* and *E/Z* notations.
Conformational Isomerism: Newmann, Sawhorse, Fischer and their interconversion.
Conformations, relative stability and energy diagrams of Ethane, Propane and butane. Relative stability of cycloalkanes (Baeyer strain theory), Cyclohexane conformations with energy diagram. Conformations of monosubstituted cyclohexanes.

Unit 3: Types of Organic Reactions (10 Hours)

Introduction to substitution, addition, elimination, rearrangement, oxidation and reduction reactions.
Nucleophilic substitution reactions-SN1 and SN2 mechanisms with stereochemical aspects and effect of solvent.
Elimination reactions: E1 and E2 mechanisms, Saytzeff, Hoffmann eliminations and Cope elimination. nucleophilic substitution vs. elimination.
Free radical substitutions: Halogenation of alkanes and concept of relative reactivity and selectivity.
Electrophilic addition reactions of alkenes and alkynes: mechanism with suitable examples, (Markownikov's/anti-Markownikov's addition), syn and anti-addition; addition of hydrogen, halogens, hydroboration-oxidation, ozonolysis and hydroxylation.

Unit 4: Aromaticity (4 Hours)

Concept of Aromaticity: Electrophilic aromatic substitutions (with their mechanism): halogenation, nitration, Friedel Crafts alkylation/ acylation, sulphonation. Orientation and reactivity in mono-substituted aromatic compounds.

PRACTICAL (Credit: 02)

(Laboratory practical- 15 classes of 4 hours each)

1. Purification of organic compounds by crystallization (from water and alcohol) and distillation.
2. Calibration of thermometer.
3. Criteria of purity: Determination of melting point.
4. Effect of impurity on the melting point.
5. Determination of boiling point of liquid compounds (boiling point lower than and more than 100 °C by distillation and inverse capillary method).
6. Detection of extra elements.

7. Separation of a mixture of two amino acids/sugars by radial/ascending paper chromatography.
8. Preparations (Mechanism of various reactions involved to be discussed):
    a. Bromination of phenol/aniline
    b. Benzoylation of phenol/aniline
    c. Nitration of nitrobenzene/toluene

The above derivatives should be prepared using 0.5-1 g of the organic compound. The solid samples must be collected and may be used for recrystallization and melting point.

Essential/Recommended readings

1. Mehta Bhupinder; Mehta Manju (2015), *Organic Chemistry***,** Second Edition, ISBN-978-81-203-5126-4, PHI Learning Pvt. Ltd. New Delhi.
2. Sykes, P.(2003), *A Guide Book to Mechanism in Organic Chemistry***,** 6th Edition Pearson Education.
3. Eliel, E. L. (2001), *Stereochemistry of Carbon Compounds*, Tata McGraw Hill.
4. Morrison, R. N.; Boyd, R. N., Bhattacharjee, S.K. (2010), *Organic Chemistry*, 7th Edition, Pearson Education.
5. Bahl, A; Bahl, B. S. (2019), *Advanced Organic Chemistry*, 22nd Edition, S. Chand.

Suggestive readings

1. Furniss, B.S.; Hannaford, A.J.; Smith, P.W.G.; Tatchell, A.R. (2012), *Vogel's Textbook of Practical Organic Chemistry*, Pearson.
2. Mann, F.G.; Saunders, B.C. (2009), *Practical Organic Chemistry*, Pearson Education.
3. Dhingra, S; Ahluwalia V.K., (2017), *Advanced Experimental Organic Chemistry*, Manakin Press.
4. Pasricha, S.; Chaudhary, A. (2021), *Practical Organic Chemistry: Volume I*, I K International Publishing House Pvt. Ltd., New Delhi.
5. Singh, J.; Awasthi, S. K.; Singh, Jaya. (2023) *Fundamentals of Organic Chemistry-III*, Pragati Prakashan.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE (DSE 01)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Introduction to Heterocyclic Chemistry; ALS CHEM DSE 01	**4**	**2**	**0**	**2**	**XII pass with Science with Biology/ Biotechnology**	**NIL**

Learning Objectives:

The Learning objectives of this course are as follows:

- To teach students the fundamentals of heterocyclic chemistry.
- To make them familiar with classification and nomenclature of heterocyclic compounds.
- To study structural characteristics, physical properties, synthesis and chemical reactions of heterocyclic compounds.
- To know the importance of heterocyclic compounds.

Learning Outcomes:

By studying this course, students will be able to:

- Classify and name heterocyclic compounds.
- Analyze the important synthetic routes, physical properties, chemical properties and reactivity of five and six membered heterocyclic compounds.
- Explain the heterocyclic structures in biologically active compounds.
- Apply the study of heterocyclic compounds in medicine, agrochemicals, dyes and pigments, plastics and polymers.

Unit 1: Introduction and Nomenclature (4 Hours)

Introduction and classification of heterocyclic compounds. Nomenclature: Trivial names of common ring systems, Systematic (Hantzsch-Widman) nomenclature for heterocyclic compounds, naming of fused ring systems and Replacement nomenclature.

Unit 2: General Properties and Synthesis of Five and Six Membered Heterocyclic Compounds (8 Hours)

General discussion on the following aspects of five and six membered heterocyclic compounds containing one heteroatom: Structure, aromaticity, basicity, physical properties and general methods of synthesis of Furan, Pyrrole (Paal-Knorr synthesis, Knorr pyrrole synthesis, Hantzsch synthesis), Thiophene and Pyridine (Hantzsch synthesis).

Unit 3: Reactions of Five and Six Membered Heterocyclic Compounds (10 Hours)

Furan, Pyrrole, Thiophene: Orientation and reactivity towards electrophilic substitution reactions with mechanism.
Discussion on the following reactions: Nitration, sulphonation, halogenation, formylation, acylation, mercuration and carboxylation. Reactions exhibiting acidic/basic character. Oxidation, reduction and addition reactions. Diels-Alder reaction, reaction with diazonium salt.
Pyridine: Electrophilic substitution, nucleophilic substitution, oxidation and reduction reactions.

Unit 4: Importance of Heterocyclic Compounds (8 Hours)

Structure and importance of the following selected biologically active compounds to be discussed:
Heterocyclic Amino Acids: Proline, Hydroxyproline, Histidine, Tryptophan. Heterocyclic Vitamins; Niacin (Vitamin B3), Pyridoxine (Vitamin B6), Riboflavin (Vitamin B2), Thiamin (Vitamin B1) and Ascorbic acid (Vitamin C).
Pigments of Life: Hemoglobin and Chlorophyll.
Nucleic acids: Ribonucleic Acid (RNA) and Deoxyribonucleic Acid (DNA), Purines and Pyrimidines.

Structure and importance of the following selected Natural Products**:** Alkaloids, Marine Heterocycles, Halogenated Heterocycles, Macrocycles containing Oxazoles and Thiazoles, Anthocyanins and Flavones.

Structure and importance of heterocyclic compounds in Medicine, Agrochemicals, Dyes and pigments, Plastics and polymers.

PRACTICAL (Credit: 02)

(Laboratory practical- 15 classes of 4 hours each)

The following synthesis should be done by using 0.5-1 g of the organic compound. The solid samples must be collected and may be used for recrystallization and melting point.

1. Synthesis of oxygen containing heterocyclic compounds:
   (a) Phthalic anhydride (b) 7- Hydroxy-4-methylcoumarin

2. Synthesis of nitrogen containing heterocyclic compounds:
   (a) Phthalimide (b) Phthaloylglycine
3. Synthesis of Imidazole derivatives:
   (a) Benzimidazole (b) 2-Benzylbenzimidazole (c) 2-Methylbenzimidazole
4. Synthesis of Pyrazole derivatives:
   (a) 3-Methyl-2-pyrazolin-5-one (b) 3, 5-Dimethylpyrazole
5. Synthesis of Pseudothiohydantoin

Essential/Recommended readings

1. Mehta Bhupinder and Mehta Manju (2015) "*Organic Chemistry" 2nd Edn*., PHI Learning Pvt. Ltd. New Delhi. ISBN-978-81-203-5126-4.
2. Bansal Raj K "*Heterocyclic Chemistry" 5th Ed*, New Age International Publishers. ISBN 978-81-224-3143-8.
3. J. A. Joule, K. Mills and G. F. Smith, "*Heterocyclic Chemistry" 5th Edn.,* Wiley International Publications. ISBN: 978-1-4051-3300-5.
4. Thomas. L. Gilchrist "*Heterocyclic Chemistry" 3rd Edn.*, Prentice Hall Publication. ISBN 978-0-5822-7843-1.
5. R. M. Acheson "*An Introduction to the Chemistry of Heterocyclic compounds" 3rd Edn.,* Wiley India Pvt. Ltd. ISBN-13:978-8126516605.
6. I L Finar, "*Organic Chemistry" Vol. 1*, 6th Edn., Pearson Education. ISBN 10: 8177585428.
7. T. W. Graham Solomons, "*Organic Chemistry*" 12th Edn., John Wiley. ISBN-10: 1118133579.
8. Parashar, R. K.; Negi, B., "*Chemistry of Heterocyclic Compounds"*, 2015, Ane Books. ISBN-1466517131.

Suggestive readings

1. A.O. Fitton and R.K. Smalley, "*Practical Heterocyclic Chemistry"* 1st Edn., Academic Press. ISBN:9781483270791.

2. Furniss, B.S.; Hannaford, A.J.; Smith, P.W.G.; Tatchell, A.R. (2012), "*Vogel's Textbook of Practical Organic Chemistry"*, Pearson.

3. Mann, F.G.; Saunders, B.C. (2009), "*Practical Organic Chemistry*", Pearson.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

ZOOLOGY COMPONENT

DISCIPLINE SPECIFIC CORE (DSC 03)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Cell Biology and Biochemistry ALS ZOO DSC 03	4	2	0	2	XII pass with Science with Biology/ Biotechnology	NIL

Learning Objectives:

The learning objectives of this course are as follows:

- To understand structure and functions of various cellular compartments and cell organelles.
- To learn about cell-cycle and its regulation.
- To acquire the knowledge of biomolecules and metabolic pathways.
- To study about enzyme action.

Learning Outcomes:

By studying this course, students will be able to:

- correlate the structure of various cell components with their function.
- describe the metabolic fate of carbohydrates, proteins and fats and understand the mechanics of enzyme action.

Unit 1: Basic structure of cell and cell organelles (12 Hours)

Prokaryotic and eukaryotic cells. Structure of cell membrane: various models, fluidity of membrane. Eukaryotic cell organelles: Mitochondria, Chloroplast, Endoplasmic reticulum, Golgi body and Lysosomes. Nucleus: Nuclear Envelope- structure of nuclear pore complex, chromatin- euchromatin and heterochromatin; DNA packaging in eukaryotes.

Unit 2: Cell Cycle **(3 Hours)**

Cell division**:** Mitosis and Meiosis. Regulation of cell cycle.

Unit 3: Biomolecules and Metabolic pathways **(11 Hours)**

Introduction to Biomolecules: Carbohydrates, Lipids, and Proteins. Glycolysis, Kreb's Cycle, Pentose phosphate pathway, Gluconeogenesis, Glycogen Metabolism. β oxidation of palmitic acid. Transamination, Deamination and Urea Cycle.

Unit 4: Enzyme action and regulation **(4 Hours)**

Mechanism of action (induced fit theory), Enzyme Kinetics (Michaelis Menten equation for single enzyme single substrate reactions), Enzyme inhibition and regulation.

PRACTICAL **(Credit: 02)**

(Laboratory practical- 15 classes of 4 hours each)

1. Preparation of a temporary stained squash of onion root tip and to study various stages of mitosis.
2. Study of various stages of meiosis through permanent slides.
3. Cytochemical demonstration of DNA by Feulgen reaction.
4. Perform qualitative tests to identify functional groups of carbohydrates in given solutions (Glucose, Fructose, Sucrose, Lactose)
5. Study of activity of salivary amylase under optimum conditions.
6. Separation and identification of amino acids by paper chromatography

Essential/Recommended readings

1. Becker, Kleinsmith, and Hardin (2018) *The World of the Cell*, IX Edition, BenjaminCummings Publishing, San Francisco.
2. Karp, G. (2015). *Cell and Molecular Biology: Concepts and Experiments*, VIII Edition, John Wiley & Sons Inc.
3. Berg, J. M., Tymoczko, J. L. and Stryer, L. (2015) *Biochemistry*. VII Edition. W.H Freeman and Co.
4. Nelson, D. L., Cox, M. M. and Lehninger, A.L. (2009). *Principles of Biochemistry*. IV Edition. W.H. Freeman and Co.

Suggestive readings

1. Cooper, G.M., Hausman, R.E. (2019) *The Cell: A Molecular Approach*. VIII Edition, ASM Press and Sinauer Associates.
2. Murray, R.K., Granner, D.K., Mayes, P.A. and Rodwell, V.W. (2009). *Harper's Illustrated Biochemistry*. XXVIII Edition. Lange Medical Books/Mc Graw3Hill.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE (DSE 01)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Biostatistics and Bioinformatics ALS ZOO DSE 01	**4**	**2**	**0**	**2**	**XII pass with Science with Biology/ Biotechnology**	**NIL**

Learning Objectives:

The learning objectives of this course are as follows:

- To acquaint the students of the application of statistical methods for analysing the biological data.
- To impart the theoretical and practical knowledge of biological databases and use of various software for their analysis.

Learning Outcomes:

By studying this course, students will be able to:

- use statistical formulae for analyzing data.
- apply statistical tests like Chi-square tests, Z-test and t- test etc. for testing hypothesis.
- Use different biological databases and bioinformatic tools.

Unit 1: Introduction to Biostatistics **(2 Hours)**

Definition, Aim and Scope, Applications and limitations of biostatistics.

Unit 2: Measures of Central Tendency and Dispersion **(6 Hours)**

Mean, Median and Mode; Variance, Standard deviation, Standard error, Co-efficient of Variance.

Unit 3: Testing of Hypothesis and Statistical Tests **(7 Hours)**

Type-I and Type-II errors; Confidence Intervals and Confidence Levels, Chi-square test, Z-test and t-test.

Bioinformatics

Unit 4: Introduction to Bioinformatics (3 Hours)

Historical background, Aims and scope, Bioinformatics in Genomics, Transcriptomics, Proteomics, Metabolomics, Systems biology, Applications and Limitations in bioinformatics.

Unit 5: Biological Databases (5 Hours)

Introduction to biological databases; Primary, secondary and composite databases; Nucleic acid databases (GenBank, DDBJ, EMBL and NDB); Protein databases (PIR, SWISS-PROT, TrEMBL, PDB).

Unit 6: Basic Concepts of Sequence Alignment (7 Hours)

Scoring Matrices (PAM, BLOSUM), Methods of Alignment (Dot matrix, Dynamic Programming, BLAST and FASTA); Local and global alignment, pair wise and multiple sequence alignments; Similarity, identity and homology of sequences.

PRACTICAL (Credit: 02)

(Laboratory practical- 15 classes of 4 hours each)

Part - A Biostatistics

1. To compute Coefficient of Variance from samples provided.
2. To collect data on different parameters of animal samples and test significant difference between means (Z-test, t-test).
3. To compute 'test of independence' and test for 'goodness of fit' with samples/data provided.
4. To learn graphical representations of statistical data with the help of computers (e.g. MS Excel).

Part - B Bioinformatics

1. To learn about biological databases and their characteristics.
2. To retrieve nucleotide and protein sequences from the databases.
3. To perform pair-wise alignment of sequences (BLAST).

4. To perform multiple sequence alignment (Clustal X)

Essential/Recommended readings

1. Ghosh Z and Mallick B. (2008). Bioinformatics: *Principles and Applications*, Oxford University Press.
2. Pevsner J. (2009). *Bioinformatics and Functional Genomic*s, II Edition, Wiley Blackwell.
3. Zar, Jerrold H. (1999). *Biostatistical Analysis*, IV Edition, Pearson Education Inc and Dorling Kindersley Publishing Inc. USA

Suggestive readings

1. Zvelebil, Marketa and Baum O. Jeremy (2008. *Understanding Bioinformatics*, Garland Science, Taylor and Francis Group, USA.

2. Antonisamy, B., Christopher S. and Samuel, P. P. (2010). *Biostatistics: Principles and Practice*. Tata McGraw Hill Education Private Limited, India.

3. Pagana, M. and Gavreau, K. (2000). *Principles of Biostatistics,* Duxberry Press, USA

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.Sc (H) Biomedical Science

SEMESTER –III

Biomedical Science: *II Year*

DISCIPLINE SPECIFIC CORE COURSE -7 (BIOMED-DSC-07) MEDICAL MICROBIOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Medical Microbiology DSC-07	4	3	0	1	XII Passed	Basic knowledge of biology

Learning objectives

The Learning Objectives of this course are as follows:

- The Medical Microbiology course has been formulated to impart basic and medically relevant information on microbes.
- The microbial structure, growth and development. Methods of isolation and characterization of microbes and role of sterilization in the context of study of microbes.
- Pathogenic microbes and the diseases caused by them are included to broaden the perspective of the subject.
- This course will also focus on mechanisms of microbial pathogenesis and the host response, and the scientific approaches that are used to investigate these processes.
- The course also deals with the problem of emerging antimicrobial resistance with reference to known pathogens.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Medical microbiology describes a broad perspective to study structure, classification, and diseases caused by microbes including bacteria, fungi, protozoa and viruses. The course helps to understand the nature of microorganism, their systematic classification and contribution of various scientists in the discovery of disease causing pathogen and its etiology. It also describes various culture media used for cultivation of microbes, their optimum physical, chemical and cultural requirements, techniques for purification and preservation of microbes.
- This course explains the various types of microbial cells, shape, size, molecular structure and their role in pathogenesis. The basic nutrient requirements of microorganism and how they behave in variable atmospheric conditions is also included. Analyzing optimum growth conditions that facilitate in growth and cultivation of useful microorganisms are also mentioned.
- Microbial genetics helps to understand the basic phenomenon of gene functioning and effects of various mutagens on microorganism, elucidates different methods of gene transfer and explains causes of genetic variation.
- Course also elucidates the interaction between host and their pathogens, mode of transmission of infectious diseases and their cure.
- This course also explains pathogenesis, etiology, clinical symptoms, control and cure of microbial diseases in addition to introducing antimicrobial action of antibiotics. Describes basic structural and morphological variation in various viruses, classification and their life cycle. Introduction to requirements of viruses for multiplication and detailed study of common disease causing viruses, virusoids and prions is also included.

SYLLABUS OF BIOMED-DSC-07

Unit I: Fundamental concepts (10 hrs)

a) History of microbiology with special emphasis on contribution of Louis Pasteur and Robert Koch in Medical Microbiology.
b) Major Divisions of life- Domains, Kingdoms; Requirements for microbial growth, growth factors, culture media- synthetic and complex, types of media. Techniques for obtaining pure cultures of microbes, preservation and storage of bacterial cultures, growth curve and generation time, control of microbial growth.

Unit II: Bacterial cell: fine structure and function (10 hrs)

Size, shape and arrangement of bacterial cells; Cell membrane, cytoplasmic matrix, inclusion bodies (e.g.Carboxysomes, magnetosomes, gas vacuoles, cyanophycean granules, PHB granules, glycogen granules), nucleoid, ultrastructure of gram positive and gram negative bacterial cell wall, sex pili, capsule, flagella & motility and endospore.

Unit III: Microbial genetics **(08 hrs)**

Mutants-auxotrophs and prototrophs, bacterial recombination: general and site specific and replicative, bacterial plasmids fertility factor, col plasmid, bacterial conjugation (Hfr, F′, F^+, F^-), transformation, transduction- both generalized and specialized.

Unit IV: Host-pathogen relationship in the infectious diseases **(05 hrs)**

Relationship between normal microbiota and host, opportunistic microorganisms, nosocomial infections. Development and spread of infectious diseases: invasion, pathogen, parasite, pathogenicity, virulence, carriers and their types. Routes, mechanisms of invasion and establishment of infection.

Unit V: Microbial diseases **(06 hrs)**

Respiratory tract infections: with tuberculosis in detail, gastrointestinal tract infections, staphylococcal food poisoning. Life cycle of *Candida albicans* and *Plasmodium*.

Unit VI: Virus and virusoids **(06 hrs)**

General life cycle of a virus, structure, enveloped and un-enveloped viruses, plaque assay, growth curve, classification based on genetic material and detail study of influenza, SARS COV-2 and HIV virus with curative agent. Viroids, virusoids and prions.

Practical **(30 hrs)**

(Wherever wet lab experiments are not possible, the principles and concepts can be demonstrated through any other material or medium including videos/virtual labs etc.)

1. Preparation of different media: synthetic media Davis-Mingioli media, complex media-nutrient agar or Luria agar media.
2. Isolation and purification of pure bacteria: streaking for single colonies
3. Propagation of pure bacteria in liquid culture
4. Gram's staining; gram positive and gram negative bacteria

5. Capsule staining of *Bacillus subtilis*/*Klebsiella*
6. Endospore staining of *Bacillus subtilis*
7. Study and plotting the growth curve of *E. coli* using turbidometric method
8. Isolation of bacteriophages from soil/sewer water and calculation of the plaque forming units (pfu)
9. To perform antibacterial testing by Kirby-Bauer method
10. Field visit to a clinical microbiology lab/diagnostic lab to familiarize with latest tools and techniques used in microbial research

Essential readings:

- Dorothy Wood, Joanne Willey, Kathleen Sandman (2022). 12th Edition. Prescott's microbiology. New York, USA: McGraw-Hill Education. ISBN-10: 1-264-77733-7 / 1264777337
- Cappuccino, J.G. and Sherman, N. (2013). 10th Edition. Microbiology: A laboratory manual. California, USA: Benjamin Cumming. ISBN-13: 978-0321840226.

Suggestive readings:

- Tille, P. (2013). 13th Edition. Bailey & Scott's diagnostic microbiology. Missouri, USA: Mosby Publishers. ISBN-13: 978-0323083300.
- Madigan, M.T., Martinko, J.M., Stahl, D.A. and Clark, D.P. (2010). 13th Edition. Brock biology of microorganisms. California, USA: Benjamin Cumming. ISBN-13: 978-0321649638.
- Pelczar, M.J (2001). 5th Edition. Microbiology. New York, USA: McGraw Hill International. ISBN-13: 9780074623206.
- Tortora, G.J., Funke, B.R. and Case C.L. (2006). 9th Edition. Microbiology: An introduction. California, USA: Benjamin Cummings. ISBN-13: 978-0536292117.

DISCIPLINE SPECIFIC CORE COURSE -8 (BIOMED-DSC-08) MEDICINAL CHEMISTRY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
MEDICINAL CHEMISTRY DSC-08	4	3	0	1	XII Passed	Basic knowledge of Enzymes and proteins

Learning objectives

The introduction of Medicinal Chemistry course at undergraduate level to Biomedical Science students has been conceived to make them understand:

- Concealed chemical science interlinked to other science disciplines such as biophysics, chemistry, biology, biochemistry, pharmacology etc.
- Application of the area in revealing new drug design and targets through studying the drug-receptor interactions and signaling mechanism in cell for lead discovery.
- Various drug targets in the body and drug development strategies with mechanism of action and concept of drug resistance.

Learning Outcomes

- After completing the course, students shall be able to understand the various stages involved in drug development. Further, they will be able to explore various kinds of drug targets including protein, enzymes, nucleic acids etc.
- They will also appreciate the process of drug-receptor interactions; identify association between chemical structure and its physicochemical properties. After the completion of the course, the learners will demonstrate a strong foundation via problem solving, critical thinking and analytical reasoning in the fundamentals of medicinal chemistry, physicochemical principles of drug action and measurement of drug effects, comprehend the physicochemical basis for the rational drug design, analogue synthesis, and mechanism of action of drugs.
- Additionally, this course will involve extensive laboratory work. The students will be able to

design and carry out small molecule (low molecular drug-relevant compounds) synthesis. They will do the natural product isolation along with their purification and characterization through chromatography and spectroscopic methods and analyze the results of such experiments.

- They will also actively participate group exercises; communicate the results of experiments conducted in oral as well as written formats. Further, they will appreciate the central role of chemistry in our daily life and will also learn safe handling of hazardous chemicals and follow the SOP for chemical waste disposal.

SYLLABUS OF BIOMED-DSC-08

Unit-1: General introduction (02 hrs)

Definition and scope of Medicinal Chemistry

Unit-2: Principles of Drug Design (10 hrs)

Introduction to Structure Activity Relationship (SAR) of morphine/salicylic acid, strategies in the search for new lead compounds, analogue synthesis versus rational drug design, concept of prodrugs. Affinity, efficacy and potency of drugs. Concepts of agonist, antagonist and inverse agonist, competitive, non-competitive, suicide inhibitors.

Unit-3: Physicochemical principles of drug action and measurement of drug effects (10 hrs)

Partition coefficient, drug dissolution, acid-base properties, surface activity, bioavailability, stereochemical aspects of drug action, electronic structure (Hammett correlations) and determining relationship between chemical and biological data (Hansch approach). Kinetic analysis of ligand receptor interactions using Scatchard plot, Double reciprocal plot, Hill plot, forces involved, relationship between dose and effect (graded and quantal response).

Unit-4: Drug target classification (15 hrs)

a. Proteins as drug targets.
   i. Receptors: the receptor role, ion channels, membrane bound enzyme activation, desensitization and sensitization of receptors, agonist (e.g. endorphins) and antagonists(e.g. caffeine)
   ii. Enzymes: Enzyme inhibitors, medicinal use of enzyme inhibitors (e.g. clavulanic acid)

b. Nucleic acids as drug targets. Classes of drugs that interact with DNA: DNA intercalators (amsacrine), Groove binders (netropsin), DNA alkylators (amines: mechlorethamine; nitrosoureas: carmustine), concept of antisense therapy.

Unit-5: How drugs trigger the signals-molecular aspects (08 hrs)

Structure and functions of cell surface receptors, signal transduction mechanism (GPCRs, tyrosine kinase, guanylate-cyclase linked receptors and intracellular receptors that regulate DNA transcription).

Practical (30 hrs)

(Wherever wet lab experiments are not possible, the principles and concepts can be demonstrated through any other material or medium including videos/virtual labs etc.)

1. Preparation, recrystallization and purity of following drugs/compounds by melting point and TLC
   i. Hippuric acid.
   ii. Benzocaine,
   iii. Benzoquinone
   iv. Phenacetin
   v. s-benzyl thiouronium salt.
2. Determination of partition coefficient of aspirin in octanol-water system.
3. Extraction of caffeine from tea leaves.
4. Study absorption properties of caffeine.
5. Extraction of piperine from black pepper.
6. Phytochemical screening of *Curcuma longa* by solvent extraction: Terpenes and polyphenols

Essential Readings:

- Patrick G.I. (2017). 6th Edition. Introduction to medicinal chemistry. Oxford, UK: OxfordUniversityPress.ISBN-13: 978-0198749691.
- Silverman, R.B. and Holladay, M.W. (2015). 3rd Edition. The organic chemistry of drug design and drug action. San Diego, USA:Elsevier,AcademicPress.ISBN-13:9780123820303.
- Ashutosh Kar (2020) Advanced Practical Medicinal Chemistry 3rd Edition New Age International Private Limited, ISBN-10 : 9388818458

Suggestive Reading:

- Wermuth, C.G., Aldous, D., Raboisson, P. and Rognan, D. (2015). 4thEdition. The practice of medicinal chemistry. San Diego, USA: Elsevier, Academic Press. ISBN-13:978-0124172050.
- Nogrady, T. and Weaver, D.F. (2005). 3rd Edition. Medicinal chemistry: A molecular and biochemical approach. New York, USA: Oxford University Press. ISBN-13:978-0195104561.
- King F.D. (2003). 2nd Edition. Principles and practice of medicinal chemistry. London, UK: The Royal Society of Chemistry. ISBN-13: 978-0854046317.
- Gringauz, A. (1996). 1st Edition. Introduction to medicinal chemistry: How drugs act and why. Brooklyn, New York, USA: WileyVCH.ISBN-13:978-0471185451.

DISCIPLINE SPECIFIC CORE COURSE- 9 (BIOMED-DSC-09) BIOSTATISTICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
BIOSTATISTICS – DSC 09	4	3	0	1	XII Passed	Basic knowledge of biology

Learning objectives

The Learning objectives of this course are as follows:

- To acknowledge, appreciate and effectively incorporate the basic statistical concepts indispensable for carrying out and understanding biological hypotheses, experimentation as well as validations.
- The course is aimed to create awareness about the applications of statistics in biological sciences along with building confidence in students to test their experimental data with an appropriate test of significance.

Learning outcomes

Having successfully completed this course, students shall be able to:

- Appreciate the importance of statistics in biological sciences. They will also understand the concept of different variables and data types, and also the sampling techniques.
- Learn different measures of central tendency and dispersion with their applications. The students will also learn symmetric and asymmetric distributions, and kurtosis of distributions.
- Identify the degree of uncertainty in making important decisions, learning joint probability, conditional probability, Bayes' theorem and solving its application-level problems.
- Learn about the characteristics of normal, binomial and Poisson probability distributions. They will learn how to identify which type of distribution fits the given data and estimate

probabilities for random variables in these distributions

- Determine the strength of the relationship between two variables and also to predict the value of one variable given a value of another variable.
- Learn how to formulate statistical hypotheses for testing and application of different tests of significance for hypothesis testing for different biological problems.

SYLLABUS OF BIOMED-DSC-09

Unit I: Introduction to Biostatistics (02 hrs)

Types of data in biology, random variables: discrete and continuous. sample and population, techniques of sampling (random and stratified), sampling and non-sampling errors.

Unit II: Descriptive Statistics (08 hrs)

Measures of central tendency: arithmetic mean, mode, median and partition values. Measures of dispersion: range, standard deviation, coefficient of variance and covariance, masures of skewness: Pearson's Coefficient of skewness, and concept of kurtosis (platykurtic, mesokurtic and leptokurtic).

Unit III: Probability (05 hrs)

Basic concepts, addition and multiplication, rules of probability, conditional probability, Bayes' theorem and its applications in biostatistics.

Unit IV: Probability distributions (06 hrs)

Binomial and normal distributions along with their properties and relationships. Introduction to poisson distribution.

Unit V: Correlation and Linear Regression (06 hrs)

Correlation analysis: scatter diagrams, Pearson's and Spearman's coefficient of correlation, coefficient of determination.

Simple linear regression analysis: method of least squares, equations of lines of regression and their applications in biostatistics.

Unit VI: Hypothesis testing (18 hrs)

Sampling distributions and standard error, Null and Alternate hypothesis, Basic concept and illustrations of type I and type II errors, concept of confidence interval estimation. Large sample

tests for single mean and difference of means.

Student's t-distribution: test for single mean, difference of means and paired t-test. Chi-square distribution: test for goodness of fit, independence and homogeneity. F-test, one-way and two-way analysis of variance (ANOVA).Non-parametric analysis: The Sign test and The Wilcoxon signed-rank test.

Practical **(30 hrs)**

The computer-based experiments are designed for students to solve biostatistics problems. All theoretical concepts would be covered in the practical using any spreadsheet software like MS EXCEL.

1. Represent different types of data in tables and graphs (Line chart, histogram, bar chart, frequency polygon, pie chart).
2. Calculate various measures of central tendency (Arithmetic mean, mode, median and partition values) and dispersion (Range, standard deviation, coefficient of variance and covariance).
3. Calculate probabilities for different distributions- normal and binomial.
4. Prepare scatter plot between two variables and interpret the relationship between them using correlation and simple linear regression analysis.
5. Perform large sample test for single mean and difference of means.
6. Perform Student’s t-test for one sample, independent samples, and paired samples.
7. Perform Chi-square test.
8. Perform One-way ANOVA.
9. Perform Two-way ANOVA.
10. Perform Non-parametric analysis: The Sign test or The Wilcoxon signed-rank test.

Essential readings:

- Daniel, W.W. and Cross, C.L. (2019). 11th Edition. Biostatistics: A foundation for analysis in the health sciences. New York, USA: John Wiley & Sons. ISBN: 9781119588825.
- Pagano, M. and Gauvrean, K. (2018). 2nd Edition. Principles of biostatistics. California, USA: Duxbury Press. ISBN-13: 9781138593145.
- Schmuller, J. (2016). Statistical Analysis with Excel for Dummies. 5th Edition. New York, USA: John Wiley & Sons. ISBN: 9781119844549.

Suggestive readings:

- Triola M.M., Triola M.F., Roy J. (2019). Biostatistics for Biological and Health Sciences. Harlow, UK: Pearson Education Ltd.
- Zar, J.H. (2014). 5th Edition. Biostatistical analysis. USA: Pearson. ISBN: 9789332536678Glantz, S. (2012). 7th Edition. Primer of biostatistics. New York, USA: McGraw-Hill Medical. ISBN: 9780071781503.

POOL OF DSE FOR 3rd SEMESTER & 4th SEMESTER

DISCIPLINE SPECIFIC ELECTIVE COURSE –1 (BIOMED-DSE-1) PROTEINS AND ENZYMES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
PROTEINS AND ENZYMES BIOMED-DSE-01	4	3	0	1	XII Passed	Basic knowledge of Biochemistry

Learning objectives

The Learning Objectives of this course are as follows:

- The objective of this course is to provide an overview of protein biochemistry and enzymology.
- Proteins and enzymes, being the most versatile functional entities, hold several applications in life sciences research as well as in industry and biomedicine.
- The biochemical, structural, and functional aspects of the interaction of proteins and enzymes will be introduced in this course.

Learning outcomes

The Learning outcomes of this course are as follows:Having successfully completed this course, students shall be able to learn and appreciate:

- The unique features and characteristics of proteins and enzymes and their applications in research, medicine, and industry.
- The relationship between three–dimensional structure of proteins and enzymes and their functions.

- The basic mode of action of enzymes and their remarkable regulation.
- The protein misfolding and the diseases associated with it.
- The students would be able to understand the various biomedical applications of enzymes.
- The students would be able to gain hands-on experience in working with proteins and enzymes from various sources. Hence, it will improve their learning skills and imbibe the basic concepts of this field.

SYLLABUS OF BIOMED-DSE 01

Unit I: Structural organization of proteins (08 hrs)

Organization of protein structure- primary, secondary, tertiary, and quaternary. Secondary structures – helices, sheets and turns. Motifs, domains and their functional importance. Native and denatured state of a protein. Physico-chemical interactions that maintain the native structure of a protein.

Unit II: Protein folding and diseases related to protein misfolding (10 hrs)

Protein folding (Hydrophobic collapse), Anfinsen theory, Levinthal paradox and protein folding in the cytoplasm. Protein denaturation by chaotropic agents such as urea, GnHCl. Concept of how mutation causes protein misfolding (loss-of-function to toxic-gain-of function) and related diseases such as Alzheimer's disease, Prion diseases, Tay-Sachs disease and Huntington disease.

Unit III: Enzymes: characteristics and kinetics (14 hrs)

Classification of enzymes and nomenclature. Concept of multi-functional enzyme and multi-enzyme complex. Fischer's lock & key and Koshland's induced fit hypotheses. Enzyme specificity. Enzyme kinetics- Michaelis-Menten equation, Lineweaver-Burk plot. To understand the physiological significance of K_m, V_{max}, K_{cat} and the factors affecting enzyme activity. Basics of enzyme inhibition- reversible (competitive, uncompetitive, non-competitive) and irreversible inhibition.

Unit IV: Regulation of enzyme activity (06 hrs)

Allosteric regulation, feedback inhibition, reversible covalent modification (Phosphorylation, glycosylation and acetylation using example of glycogen phosphorylase/glycogen synthase). proteolytic activation- zymogens.

Unit V: Biomedical application of enzymes (07 hrs)

Applications of enzymes in the diagnosis of diseases using creatine kinase and glucose oxidase and in therapy (streptokinase). Enzyme inhibitors as drugs. Principle of enzyme immunoassay. Enzyme immobilization and its applications, concept of abzymes. Industrial applications of enzymes (biosensor - HRP; food industry- rennin; cosmetics-collagen, etc)

Practical (30 hrs)

(Wherever wet-lab experiments are not possible, the principles and concepts can be demonstrated through any other material or medium including videos/virtual labs, etc.)

1. Enzyme-based diagnostic assay (any one).
2. Measurement of enzyme activity and calculation of specific activity of an enzyme.
3. Effect of pH on enzyme activity.
4. Effect of temperature on enzyme activity
5. Visualization of 3D protein structure using suitable software.
6. Analysis of type of enzyme inhibition from the given experimental data
7. To study the effect of protein denaturants such as acid, alkali, heat and any organic solvent on protein.
8. Study of images of various toxic protein oligomeric species, associated with human diseases (amyloids, disordered aggregates, amorphous aggregates).

Essential readings:

- Nelson, D. L., & Cox, M. M. (2021). *Lehninger: Principles of Biochemistry* (8th ed.). Macmillan. ISBN: 9781319322328.
- Berg, J., Gatto, G., Stryer, L. and Tymoczko, J. L. (2019). *Biochemistry*. New York, USA: W. H. Freeman and Company.
- Voet, D., Voet J., Pratt, C. (2018). *Principles of Biochemistry*(5thed.) Wiley Blackwell. ISBN: 978-1-119451662.
- Plummer, D. (2017) An Introduction to Practical Biochemistry, (3rd ed.). McGraw-Hill College; ISBN-13: 978-0070841659.

Suggestive readings:

- Devlin, (2011). Textbook of Biochemistry with Clinical Correlations. UK: Wiley T & Sons.
- Campbell, M. K. and Farrel, S. O. (2012) (7thed.). Biochemistry. Boston, USA: Brooks/Cole Cengage Learning. ISBN: 13:978-1-111-42564-7
- Cooper, T.G. (2011). The Tools of Biochemistry (2nded.). Wiley-Inter science Publication (New Delhi). ISBN: 13:9788126530168.
- Sheehan, D. (2009). Physical Biochemistry (2nded.). Wiley-Blackwell (West Sussex), ISBN: 9780470856024/ISBN: 9780470856031.
- Nicholes,C.P., Lewis, S. (1999). Fundamentals of Enzymology (3rd ed.). Oxford University Press Inc. (New York), ISBN:0 19850229 X

DISCIPLINE SPECIFIC ELECTIVE COURSE –02 (BIOMED-DSE-02) PRACTICES IN BIOSAFETY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
PRACTICES IN BIOSAFETY BIOMED-DSE-02	4	3	0	1	XII Passed	Basic knowledge of biology

Learning objectives

- Recent advances in the field of Biomedical Research have brought into focus the need for certain practices and strategies to prevent exposure to pathogens and toxins.
- The inventions in the field of Genetic Engineering have significantly influenced agriculture, medicine and food processing industry. Thus implementation of biosafety enables number of procedures and rules that will be helpful in protecting humans and environment from disease causing microorganisms, pests, additives, contaminants and residues etc.
- Topics such as responsible use of biotechnology, biosafety levels, genetically modified (GM) food, biosafety regulations, impact of biotech processes on environment are of major significance in present scenario.

Learning outcomes

- In this students would understand application of biotechnology in different fields like agriculture, environment, industrial manufacturing, food processes, health and medicine etc. It will enable them to recognize implication of recombinant biomolecules and organisms on our society.

- This would enable students to know about various hazardous biological substances one can come across while working in the laboratory or day today life, and the steps taken to minimize the risk. The students would understand different regulations for handling biohazard and radioactive material.
- The course should kindle the inquisitiveness in students about genetically modified and living modified organisms (GMO & LMO) and their impact on the environment.

SYLLABUS OF BIOMED-DSE-02

Unit I: Introduction to biosafety (04 hrs)

Historical background of Biosafety, definition of biosafety, application of biosafety and need for biosafety.

Unit II: Social responsibility of biotechnology and biomedical research (08 hrs)

Legal and socio-economic impacts of biotechnology. Social responsibility towards safety measures.Social and ethical implications of biological weapons (Bioterrorism).Implication of recombinant biomolecules and organisms. Implication of gain of function research. Importance of biotechnology: benefits and limitations of transgenic to human health, society and the environment.

Unit III: Biosafety and importance of containment facility (08 hrs)

Components of biosafety (biohazard and biosecurity), measures of biosafety, containment (good laboratory practices and techniques, safety equipment, design facility), types of containment (physical and biological). Biosafety levels (BSL 1, 2, 3, 4), barriers (physical and secondary).

Unit-IV: Genetically modified organism: concerns and challenges (10 hrs)

Government of India definition of genetically modified organisms (GMOs) and living modified organisms (LMOs), roles of institutional biosafety committee, review committee on genetic manipulation (RCGM), genetic engineering approval committee (GEAC) for GMO applications in food and agriculture, environmental release of GMO in rDNA biosafety guidelines of India. Biosafety assessment procedures for biotech foods and related products, including transgenic food crops, case studies of relevance. Biosafety assessment of pharmaceutical products such as drugs/vaccines etc.

Unit-V: Handling and transportation of GM, infectious and radioactive materials (09 hrs)

Classification of infectious organisms, transportation of genetically modified/infectious organisms, General preparation of shipments for transport: Basic triple packaging system, marking of packages, labelling, precautions, monitoring strategies and methods for detecting transgenic; radiation safety and non-radio -isotopic procedures.

Unit VI: Biosafety guidelines and regulations (06 hrs)

Aim of biosafety guidelines, biosafety and risk assessment issues; regulatory framework; national biosafety policies and law, the cartagena protocol on biosafety, WTO and other international agreements related to biosafety.

Practical (30 hrs)

(Wherever wet lab experiments are not possible the principles and concepts can be demonstrated through any other material or medium including videos/virtual labs)

1. Protocol for development of recombinant / engineered proteins as therapeutics
2. Preparation of comparative account on BSL 1, 2,3,4. (poster, oral presentation, video)
3. Categorization of list of provided hazardous materials and its handling & disposal
4. To study GEAC guidelines on genetically modified crops (Bt-cotton/Bt-brinjal)
5. To develop an understanding of the role and composition of an ethical committee for research by a presentation mode.
6. To study and develop a flowchart to demonstrate spread and containment of any two infectious diseases (typhoid, SARS, Ebola, Dengue, Tuberculosis and Covid).
7. Preparation of chart explaining significance of various symbols used in chemistry and biology laboratories/ reagent bottles and equipment.

Essential Readings:

- Hunt, E. F. and Colander, D. C. (2019). 17th edition. Social science: An introduction to the study of society. Boston, USA: Pearson/Allyn and Bacon. ISBN 9781138592537.
- Helga, K. and Peter, S. (2016). 3rdedition. A companion to bioethics. New Jersey, USA: John Wiley and Sons. ISBN 9781118941508.
- Beauchamp, T.L and Childress, J.F. (2013). 8th edition. Principles of biomedical ethics.

Oxford, UK: Oxford University Press. ISBN 9780190640873.

- Peter, A. S. and Viens, A. M. (2008). 1st edition. The Cambridge textbook of bioethics. Cambridge, UK: Cambridge University Press.ISBN 9780521872843.
- Sateesh, M.K. (2008). 1st edition. Bioethics and Biosafety. New Delhi, India: I K International Pvt Ltd. ISBN 978-8190675703.

Suggestive readings:

- Rebecca, G.; James, F. H.; Karim, M. M.; Cholani,W. (2011). 1st edition. Environmental safety of genetically engineered crops. Michigan, USA: Michigan State University Press. ISBN 978-1611860085.
- Sreekrishna, V. (2007). 1st edition. Bioethics and biosafety in biotechnology. New Delhi, India: New Age International (P) Ltd. ISBN 978-8122420852.
- Rajmohan, J. (2006). 1st edition. Biosafety and bioethics. New Delhi, India: Isha Books. ISBN 13: 9788182053779.
- Tomme, Y. (2004). 1st edition. Genetically modified organisms and biosafety. Gland, Switzerland: World Conservation Union publications. ISBN 2831707986

DISCIPLINE SPECIFIC ELECTIVE COURSE –03 (BIOMED-DSE-03) SOCIAL AND PREVENTIVE MEDICINE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
SOCIAL AND PREVENTIVE MEDICINE **BIOMED-DSE-03**	**4**	**3**	**0**	**1**	**XII Passed**	Student should have studied science (Biological science/ Physical sciences)

Learning objectives

- The origin of medicine to alleviate human suffering from disease, and control of disease is as old as origin of human itself. Various civilizations practiced their own methods to treat and control diseases.
- The modern form of medicine that has evolved over time, is composed of two main branches viz: Curative medicine and Preventive medicine/Public health. It has been realized that causes of diseases are multifactorial- a disease can have multiple causes/factors such as social, economic, genetic, psychological and environmental factors.
- In the centre of modern medicine is epidemiology, which is concerned with measuring distribution patterns and determinants of disease in a Population/community, and needs of health related services.
- The health related services are delivered through health programmes and health systems to various risk groups such as at risk-mothers, at risk-infants, elderly or chronically ill patients.

Learning outcomes

- Introduction to various concepts of health and disease, factors determining health of individuals or population/community, interaction of factors in causing disease. Students will also be introduced to the concepts of levels of prevention adopted to achieve a state of health or to preserve health.
- Epidemiology is in the core of basic science of social preventive and medicine, and is concerned with study/measurement of the distribution and determinants of health related issues. Students will be introduced to the concepts of epidemiology, various methods and approaches that are used to measure the intensity and distribution of health related issues in the community/population.
- Introduction to the various definitions/ concepts related to natural history of disease viz: mode of disease transmission and progress of infection/disease in the host. Students would get opportunity to learn natural history of communicable disease, diagnosis, treatment and control, and various health programmes for prevention (with examples of certain prevalent diseases in India. Through examples of few diseases prevalent in India and globally, epidemiology of those diseases which are considered as lifestyle diseases or multi-factorial diseases will be introduced.
- The definition of health also includes dimensions of social and mental well-being. Therefore, mental illness has been recognized as one of the important health issues. Students will be introduced to the various types of mental illness and its prevention.
- Infertility is a worldwide problem, and estimates of infertility in India are about 4-6 percent. Childlessness is social and demographic implications. The etiology of infertility is variable. Mother and children are considered as special-risk group in a population, and is a priority group in any community. The mother, and the growth and development of fetus/ infants are at the risk of several health problems. Further, under certain circumstances, their survival too is at risk. The multitude of problems affecting the health of mother and child constitutes serious health problems in a developing country. Students will be introduced to the various maternal and child health related problems/ complications (and their prevention), from conception to the birth of infants.
- Health has been declared a fundamental human right and has to be delivered by the governments to all. Therefore, there is a system to promote and provide health services to every individual living in urban or rural settings. Students will be introduced briefly about the system of health care and various levels of health care in India.

SYLLABUS OF BIOMED-DSE-03

Unit I: Basic concepts of health and disease **(06 hrs)**

Definition, determinants and indicators of health and disease, demography (transition, and sources of demographic data, registries), survey methodology including census procedures and sampling. epidemiological triad. Multi-factorial aetiology of disease. Concepts of prevention and control.

Unit II: Epidemiology and epidemiological methods **(06 hrs)**

Definition and history, components of epidemiological studies viz. disease frequency, distribution and determinants. Basic measurements/tools in epidemiology: rates, ratios and proportions (mortality and morbidity rates and ratios, prevalence, incidence); epidemiological studies: descriptive, analytical, randomized controlled trials. Concept of association and causation. Brief introduction to modern epidemiological tools.

Unit III: Epidemiology of diseases **(16 hrs)**

Various definitions: epidemic, endemic, pandemic, sporadic, nosocomial infections etc. Cases, carriers, transmission of disease, concept of incubation period, generation time, communicable period and secondary attack rate.

a. Communicable diseases: control and health care programs for of national importance (extent of problem in India and worldwide, main clinical features, diagnosis, treatment & resistance, immunization and prevention practices, health programmes (if applicable):

Respiratory infections:	*Tuberculosis*
Intestinal infections:	*Cholera*
Arthropod-borne infections:	*Malaria*
Zoonosis:	*Rabies*
Sexually transmitted infection:	*AIDS*

b. Non-communicable disease: control and health care programs for of national importance (extent of problem, diagnosis, treatment and control, health programmes (if applicable): Hypertension, stroke, diabetes, breast cancer.

Unit IV: Mental health **(05 hrs)**

Introduction and scope. Features of mentally healthy person, signs of poor mental health, types of mental health (anxiety and depression), and prevention. National Mental Health Programme

(NMHP).

Unit V: Infertility, mother and child health (06 hrs)

Measures of fertility and factors affecting fertility, child health, maternal health, immunization programme.

Unit VI: Health care system in India (06 hrs)

Concept of health care, levels of health care, brief introduction to Primary Health Care in India (village level, sub-centre level, primary health centre level, community health centre level, hospitals).National Programme for Health Care of the Elderly (NPHCE).

Practical (30 hrs)

(Wherever wet lab experiments are not possible, the principles and concepts can be demonstrated through any other material or medium including videos/virtual labs etc.)

1. To explore any publically available database for tuberculosis/typhoid and study its epidemiology in the Indian population.
2. To study the epidemiology of malaria including geographical and seasonal distributions in India through a public database.
3. To study various parameters like risk factors, incidence, prevalence, mortality rate and DALYs. for any specific type of cancer prevalent in India through NCRP or any other public database.
4. To study the burden and causes of any hematological disorder in the Indian population.
5. To explore and analyse various national and international disease databases like ICMR/WHO/CDC/ etc.
6. To prepare a questionnaire for any health condition studied in S.No. 1-5.

7-10. To prepare a poster/ presentation using any digital media to communicate about the epidemiology and to create awareness about any health condition studied in S.No. 1-5.

Essential reading

- Park, K. (2021), 26th Edition, *Park's Textbook of Preventive and Social Medicine*,

Banarsidas Bhanot Publisher, ISBN-13 : 978-9382219163.

Suggestive reading:

- Bonita, Ruth, Beaglehole, Robert, Kjellström, Tord& World Health Organization. (2006) 2nd edition. *Basic Epidemiology*, World Health Organization, ISBN 978 92 4 154707 9.

GENERIC ELECTIVE COURSE -04 (BIOMED-GE-04): BIOCHEMICAL BASIS OF LIFE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
BIOCHEMICAL BASIS OF LIFE BIOMED-GE-04	4	3	0	1	XII Passed	Basic knowledge of biology

Learning objectives

The Learning Objectives of this course are as follows:

- The objective of this course is to address how the wonderful and remarkable properties of living organisms arise from the various biomolecules, the building blocks.
- The course focuses on the chemical complexity and organization of molecules in a living cell, extraction and transformation of energy
- It gives insights into the changes that occurred during the gradual evolution of life.

Learning outcomes

The Learning Outcomes of this course are as follows:

- The fundamental Chemistry of Life: students will gain an understanding of the elements found in living systems and appreciate the importance of water as the solvent for living systems. It is important to learn about the units used for expressing the biochemical basis of a living system. Students will learn the unit system for the molecular mass of biomolecules, units used for the concentration of solutions, and units for expressing the distances, etc.
- Cellular foundations of life**: a** stepwise organization of a living system, starting from the smallest unit to an entire living organism would be the focal point in this unit.

- Molecular basis of life**: s**tudents will understand the monomeric forms of different types of biomolecules. In addition, the relationship between the structure and function of biomolecules would also be learnt.
- Physical foundation of life: students would learn the concept of enthalpy, entropy and free energy in a living system and understand the importance of the energy currency and the significance of coupled biochemical reactions.
- Biochemical events in the origin of life: students would learn the origin of life and the nature of transformative changes that occurred for life to evolve from the pre-biotic world to the modern times.

SYLLABUS OF BIOMED-GE-04

Unit I: The fundamentals of chemistry of life (06 hrs)

Carbon chemistry of life, structure and importance of water, diverse inorganic ions, major elements (C, H, O, N, S), trace elements. Units used in biochemistry such as those expressed for the atomic mass unit (daltons), concentration (moles/litre) and distance (in nanometer-scale).

Unit II: Cellular foundations of life (06 hrs)

Levels of organization in a living system. The important features of living cells, subcellular organelles in eukaryotic cells and subcellular organization in prokaryotic cells. Brief description on phototrophs, chemotrophs, autotrophs and heterotrophs.

Unit III: Molecular basis of life (12 hrs)

Common functional groups and linkages in biomolecules.

Macromolecules: classification, building blocks, structural and functional diversity. Structural and functional forms of macromolecules: Proteins (collagen, albumin, hormones (insulin), enzyme (proteases, nucleases, amylases and lipases); Polysaccharides (starch, glycogen, cellulose), Nucleic acids, Lipids (cholesterol and triglycerides).

Unit IV: Physical foundation of life (11 hrs)

Enthalpy, Entropy, Free Energy, Standard Free Energy, Equilibrium constant, Open and closed systems, endergonic and exergonic reactions, the energy currency in a biological system (ATP), energy coupling reactions.

Unit V: Biochemical events in the origin of life **(10 hrs)**

Landmark events in the evolution of life. Biochemical basis of the origin of aerobic and anaerobic world. Evolution of biological monomers and polymers from pre-biotic compounds. Properties of DNA as genetic material. Structural and functional analysis of eukaryotes and prokaryotes, with suitable examples.

Practical **(30 hrs)**

(Wherever wet lab experiments are not possible, the principles and concepts can be demonstrated through any other material or medium including videos/virtual labs etc.)

1. Preparation of buffer at a specific molarity and pH.
2. Numerical problems based on Enthalpy, Free Energy and Entropy.
3. Comparative analysis of protein content in egg white and egg yolk using Bradford method.
4. Detection of a glucose polymer (starch) in rice/potato/corn, using iodine test.
5. To assess the differential solubility of lipids in aqueous and organic solvents.
6. Extraction of DNA from plant/microbial cells by the spooling method.
7. Demonstration of agarose gel electrophoresis for analyzing the isolated DNA.
8. To compare the structural features of a prokaryotic and eukaryotic cell by studying their electron micrographs.

Essential readings

- Nelson, D.L. and Cox, M.M. (2021). Lehninger: Principles of Biochemistry(7th ed.). W.H. Freeman & Company (New York), ISBN:13:9781319322328
- Pratt, C.W. and Cornely, K.(2017). Essential Biochemistry (4th ed.) John Wiley& Sons, Inc.ISBN:9781119012375
- Plummer, D.T. (2012). An Introduction to Practical Biochemistry. New Delhi, India: McGraw-Hill College.

Suggestive readings:

- Berg, J., Gatto, G., Stryer, L. and Tymoczko, J. L. (2019). Biochemistry. New York, USA: W. H. Freeman and Company.
- Campbell, M. K. and Farrell, S. O. (2017) 9th Edition. Biochemistry. Boston, USA: Brooks/Cole Cengage Learning. ISBN-13: 978-1305961135

GENERIC ELECTIVE-05 (BIOMED-GE-05) HEALTH AND BODY DEFENSE SYSTEM

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
HEALTH AND BODY DEFENSE SYSTEM BIOMED-GE-05	4	3	0	1	XII Passed	Basic knowledge of biology

Learning objectives

The Learning Objectives of this course are as follows:

- Characteristics of a healthy body and ways to improve one's health and well-being.
- Body defense system is a comprehensive study of the organization and functioning of the immune system with its network of cells and molecules. Understanding the biology of the immune system is key to developing strategies towards prevention and cure to a number of disorders and diseases that result due to malfunctioning and dysregulation of the immune system.
- This paper covers the organization and functioning of the various branches of immune system, namely, Innate and adaptive Immunity to combat different pathogens. Various Immunological techniques will also be taught to the students.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Students learn various aspects of health and immune system in normal and infectious stage

which equips students to design better strategies for combating the immunological disorders. Students will be given an overview to various pathogens and immune system in Invertebrates and Vertebrates.

- Students learn historical perspective of the extensive field of Immunology. They are introduced to the important concepts of Immunology.
- Students will be familiarized with origin and maturation of all blood cell types in bone marrow and thymus. They will understand the process of haematopoiesis, functions of various types of cells and roles played by them in generating immune responses against pathogens.
- The unit entails different barriers of Innate Immunity, Cells, Complement system, Patterns on the pathogens recognized by receptors of Innate Immune system, pathogen killing by the immune cells and concept & the importance of the Inflammation in an Immune response.
- Students will learn about the cells of adaptive immune system, the concept of antigen, antibody molecules and role of major histocompatibility complex & associated cells in the processing and presentation of antigen. The students will explore the branches of adaptive immunity - the humoral and cell mediated, their components and interplay of these components in combating the infection. The students will also be able to understand the significance of various kinds of growth factors and cytokines in the activations of various lymphocytes
- The students will be given knowledge about the principle, methodology and applications of various laboratory techniques involving antigen-antibody reaction.
- Vaccine based immunotherapies and their designing will assist them to think about new path for combating with pathogens and working mechanisms of immune system.
- The students will be made aware about the importance of diet and lifestyle in promoting Immunity and health.

SYLLABUS OF BIOMED-GE-05

Unit I: Hallmarks of health (06 hrs)

Basic aspects of healthy body: cells, tissue and organ system, difference between prokaryotes and eukaryotes. Key differences between bacteria, fungi, protozoans and viruses.

Requirements for ahealthy body according to age and gender. Survival strategies of host against the invading pathogens: bacterial defense against bacteriophage, immune system of plants, invertebrates (mollusca) and vertebrates.

Unit II: Introduction and Organization of Immune System (06 hrs)

Historical background, general concepts of the immune system, innate and adaptive immunity; active and passive immunity, contributions of Sir Edward Jenner and Louis Pasteur in vaccine development. Lymphoid organs: thymus, bone marrow and haematopoiesis, lymph nodes, spleen

Unit III: Innate Immune response (09 hrs)

Physical and chemical barriers; cells of the innate immune system: natural killer cells, monocytes and macrophages; neutrophils, eosinophils, basophils, mast cells and dendritic cells: structure, phenotypic and functional aspects.

Complement system: components of the complement activation classical, alternative and lectin pathways; biological consequence of complement activation.

Mechanisms of pathogen killing by macrophages and neutrophils: receptor/non receptor mediated endocytosis, phagosome formation, phagolysosome formation, respiratory burst phenomenon.

Inflammation: concept, hall marks of inflammation.

Unit IV: Adaptive Immune Response (10 hrs)

Cells of the adaptive immune system: T and B lymphocytes; characteristics of adaptive immune response: self and non-self recognition, specificity, diversity and memory, primary and secondary immune response, allergen/ allergy.

Antigens: antigenicity and immunogenicity, haptens. Properties (foreignness, molecular size, heterogeneity, route and dose of administration, solubility and degradability); host factors (genotypes, gender, nutrition);blood group antigens and transfusion reactions.

Basic function of major histocompatibility complex

Importance of Antigen presentation; types of antibodies and their function; cell mediated immune response. Major steps in T cell differentiation in thymus: thymic selection, self MHC restriction, T cell receptor assembly. Phenotypic characteristics of naïve T-cells ($CD4^+$ and $CD8^+$ T-cells). Migration of naïve T-cells from thymus to secondary lymphoid organs. Activation of T-cells, proliferation of clonally selected T cells and their effector functions, concepts of T-helper 1 (TH_1) and T-helper 2 (TH_2) cells. Basic introduction to cytokines: IL-2, IL-4 and IFN-γ. Contribution of MHC, B-cell receptor (BCR) and T-cell receptor (TCR) to diversity in adaptive immune response

Unit V: Immunological principles of various reactions and techniques (05 hrs)

Basic concepts of antigen-antibody interactions (epitope-paratope), affinity and avidity, cross

reactivity, precipitation, agglutination, immunodiffusion, immune-electrophoresis, ELISA (indirect, sandwich, competitive, chemiluminescence, and ELISPOT assay), western blotting, immunofluorescence microscopy, immunohistochemistry and lateral flow assay.

Unit VI: Diet, nutrition and life style in promoting health and Immunity (09 hrs)

Importance of a well- balanced nutrition, the role of Immunity boosters and immunomodulators from kitchen shelf (Any two: turmeric, ashwagandha, tomato & giloy), vitamins and minerals in improving health and defense. Role of probiotics, gut microbiota and prebioticsin regulating health and immunity. Role of physical activity and emotional & Mental state in regulation of immunity status, holistic health and happiness. A primer on our traditional practices, yogic lifestyle and meditation in creating homeostasis in the body (balancing *Vatta, Pitta* and *Kapha*) will also be given.

Practical (30 hrs)

(Wherever wet lab experiments are not possible, the principles and concepts can be demonstrated through any other material or medium including videos/virtual labs etc.)

1. Visualization of antigen-antibody interaction by Ouchterlony method
2. To perform Immuno-diffusion by Mancini Method
3. To perform Complement fixation assay
4. To perform sandwich dot ELISA
5. To perform Widal test (Indirect/passive agglutination) for the detection of typhoid antigen and blood group determination (direct agglutination)
6. To perform SARS-CoV-2 rapid antigen test(Lateral flow Assay)
7. Project work based on historical research work in the area of immunology.
8. Case studies on hypersensitivity reactions(seafood hypersensitivity, erythroblastosis fetalis)

Essential readings:

- Punt, J. Stranford, S. Jones, P. and Owen, J. (2019). 8th Edition. Kuby Immunology. New York, USA: W.H. Freeman and Company. ISBN- 13: 978-1464189784.
- Delves, P.J. Martin, S.J. Burton, D.R. and Roitt, I. M. (2017). 13th Edition. Roitt's Essential Immunology. New Jersey, USA: Wiley-Blackwell Science. ISBN: 13: 978- 1118415771.

Suggestive readings for basics:

- Ananthanarayan R and Jayaram Paniker CK (Author), Reba Kanungo (Editor) (2020) Ananthanarayan and Paniker's Textbook of Microbiology, Eleventh Edition. Universities Press (India) Pvt. ISBN **9389211433**
- Willey, J. Sherwood, L and Woolverton, C.J. (2016). 10th Edition. *Prescott's Microbiology*. New York, USA: McGraw-Hill Education. ISBN-13:978-1259281594.
- Satomi Oshima; Zhen-Bo Cao; Koichiro Oka (2015) 'Physical Activity, Exercise, Sedentary, Behavior and Health' Springer Tokyo Heidelberg New York Dordrecht London ISBN 978-4-431-55333-5 (eBook)
- Guglielmo M Trovato (2012) Behavior, nutrition and lifestyle in a comprehensive health and disease paradigm: skills and knowledge for a predictive, preventive and personalized medicine. Trovato EPMA Journal 2012, 3:8 (Review Article)
- Kindt T. J., Osborne B. A., Goldsby R. A. (2007). 6th Edition *Kuby Immunology*. New York, USA: W.H. Freeman and Company. ISBN-13: 978-1429202114 ISBN-10: 1429202114.
- Hay, F.C. and Westwood, O.M.R. (2002). 4th Edition. *Practical Immunology*. New Jersey, USA: Blackwell Science. ISBN:9780865429611
- Practical Ayurveda: Find Out Who You Are and What You Need to Bring Balance to Your Life Paperback – 5 June 2018 by Sivananda Yoga Vedanta Centre. Publisher : DK; Illustrated edition (5 June 2018) ISBN-10 : 1465468498, ISBN-13 : 978-1465468499.
- BYG-002 Yoga and Health, Block 4 Yogic Lifestyle, School of Health Science, Indira Gandhi National Open University (https://drive.google.com/file/d/10j00rWXLsCEV5cTbzK-hM43ezlNvn0hl/view)

GENERIC ELECTIVE -06 (BIOMED-GE-06) UNDERSTANDING THE HUMAN BODY SYSTEMS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
UNDERSTANDING THE HUMAN BODY SYSTEM BIOMED-GE-06	4	3	0	1	XII Passed	Basic knowledge of human physiology

Learning objectives

The Learning Objectives of this course are as follows:

- This is an introductory course dealing with the structure and function of the human organism and the issues facing the human in today's world.
- It is intended for students with limited science background. It would make them familiar with basic physiological concepts.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Students will have an increased understanding and appreciation for the workings of the human body. They will be familiar with the terminology and physiology of the major organ systems
- They will be able to explain the relation between form and function in biology, as expressed in molecular, cellular, and whole-organism physiology.
- Students will be able to recognize the anatomical structures and explain the physiological functions of the body systems.
- Recognize the anatomical structures and explain the physiological functions of the body systems. Develop scientific terminology to describe the parts and processes of the human body.

SYLLABUS OF BIOMED-GE- 06

Unit I: Body organization and integumentary system (05 hrs)

General anatomy of the body, introduction to various kinds of body planes, cavities and their membranes, tissues level of organization and classification (types, origin, function & repair). Structure and functions of human skin. Blood as connective tissue

Unit II: Nervous and Endocrine system (10 hrs)

Organization of the central and peripheral nervous system. Nerve physiology, motor and sensory physiology(special senses). General mechanism of hormone action, structure, function and regulation of the major gland of the body: pituitary, hypothalamus, thyroid, pancreas and adrenals. Basic concepts about hypo and hyper secretion of hormones.

Unit III: Muscular and skeletal system (05 hrs)

Functional anatomy of muscular system, types of muscles, neuromuscular junction structure, property and transmission, general characteristics of muscle contraction using skeletal muscle as example.

Unit IV: Cardiovascular and respiratory system (08 hrs)

Functional anatomy of heart, the cardiac cycle, electrocardiogram. Circulatory system: Blood vessels, hemodynamics and regulatory mechanisms. Lymphatic circulation - hemodynamics and regulation, micro-circulation, functional anatomy of the respiratory system. Mechanisms of pulmonary and alveolar, gaseous exchange, transport of gases, respiratory and nervous control and regulation of respiration.

Unit V: Gastrointestinal system and Renal physiology (11 hrs)

Anatomy and histology of the digestive tract. General principles of gut motility secretion, digestion, absorption and assimilation. Functional anatomy of kidney, histology of nephron and its physiology, process of urine formation. Urinary bladder: structure, micturition and its regulation

Unit VI: Reproductive System (06 hrs)

Structure and function of male and female reproductive organs. Basic concepts of gametogenesis (oogenesis and spermatogenesis), fertilization, implantation, menopause and contraception.

Practical (30 hrs)

(Wherever wet lab experiments are not possible, the principles and concepts can be demonstrated

through any other material or medium including videos/virtual labs etc.)

1. To prepare a blood smear and identify different types of white blood cells.
2. Estimation of hemoglobin (Sahli's method)
3. Physiological data acquisition based experiments (ECG/PFT/EMG).
4. Blood Pressure recordings in humans.
5. To study a simple reflex arc
6. To study the sensation of taste, touch and smell.
7. To study various types of contraceptives (condoms, IUDs, oral and injectable contraceptives)
8. To study different human organs and their sections through permanent histological slides T.S. of brain, spinal cord, skeletal fibers, cardiac muscles, skeletal muscles, T. S. of thyroid, liver, thymus, spleen, ovary, artery, vein, capillaries, testis, pancreas, esophagus, adrenal, kidney (cortex and medulla), urinary bladder, fallopian tubes, epididymis, lungs, trachea, heart. (minimum 8 slides covering the systems mentioned in theory).

Essential readings:

- Guyton and Hall Textbook of Medical Physiology, 14th edition (2020), J. E. Hall; W B Saunders and Company, ebook ISBN: 978-0-3236-4003-9; Hardcover ISBN: 978-0-3235-9712-8
- Principles of Anatomy and Physiology, 16th edition (2020), Gerard J. Tortora and Bryan H. Derrickson; Wiley and Sons, ISBN: 978-1-119-66268-6. (e book), ISBN: 978-1-119-70438-6 (for print book).
- Textbook of Practical Physiology, 9th edition (2019), CL Ghai; Jaypee Publication, ISBN-9789352705320.
- Human Physiology, 16th edition (2011), Stuart I. Fox; Tata McGraw Hill, ISBN10: 1260720462; ISBN13: 978-1-26-072046-4.

Suggestive readings:

- Ganong's Review of Medical physiology, 26th edition (2019), K. E. Barett, S. M. Barman, S. Boitano and H. Brooks; Tata McGraw Hill, ISBN 978-1-26-012240-4 (for ebook) ISBN:978-1-26-012241-1 (for print Book)

DEPARTMENT OF PHYSICS
B. SC. (HONOURS) PHYSICS

DISCIPLINE SPECIFIC CORE COURSE – DSC - 7: MATHEMATICAL PHYSICS III

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical		
Mathematical Physics III DSC – 7	**4**	**3**	**0**	**1**	Class 12th Pass	Should have studied DSC - 1 and DSC - 4 of this program or its equivalent

LEARNING OBJECTIVES

The emphasis of course is on applications in solving problems of interest to physicists. The course will also expose students to fundamental computational physics skills enabling them to solve a wide range of physics problems. The skills developed during course will prepare them not only for doing fundamental and applied research but also for a wide variety of careers.

LEARNING OUTCOMES

After completing this course, student will be able to,

- Determine continuity, differentiability and analyticity of a complex function, find the derivative of a function and understand the properties of elementary complex functions.
- Work with multi-valued functions (logarithmic, complex power, inverse trigonometric function) and determine branches of these functions.
- Evaluate a contour integral using parameterization, fundamental theorem of calculus and Cauchy's integral formula.
- Find the Taylor series of a function and determine its radius of convergence.
- Determine the Laurent series expansion of a function in different regions, find the residues and use the residue theory to evaluate a contour integral and real integral.
- Understand the properties of Fourier transforms and use these to solve boundary value problems.
- Solve linear partial differential equations of second order with separation of variable method.
- In the laboratory course, the students will learn to,
    - create, visualize and use complex numbers
    - use Gauss quadrature methods to numerically integrate proper and improper definite integrals
    - Solve the boundary value problems numerically
    - Compute the fast Fourier transform of a given function

SYLLABUS OF DSC – 7

THEORY COMPONENT

Unit - I **(28 Hours)**

Complex Analysis: The field of complex numbers. Graphical, Cartesian and polar representation. Algebra in the complex plane. Triangle inequality. Roots of complex numbers. Regions in the complex plane – idea of open sets, closed sets, connected sets, bounded sets and domain.

(3 Hours)

The complex functions and mappings. Limits of complex functions. Extended complex plane and limits involving the point at infinity. Continuity and differentiability of a complex function, Cauchy-Riemann equations in Cartesian and polar coordinates, sufficient conditions for differentiability, harmonic functions. Analytic functions, singular points. Elementary functions. Multi-functions, branch cuts and branch points.

(10 Hours)

Integration in complex plane: contours and contour integrals, Cauchy-Goursat Theorem (No proof) for simply and multiply connected domains. Cauchy's inequality. Cauchy's integral formula. Taylor's and Laurent's theorems (statements only), types of singularities (removable poles and essential), meromorphic functions, residues and Cauchy's residue theorem, Jordan Lemma (statement only), evaluation of real integrals by contour integration (excluding integrands with branch points)

(15 Hours)

Unit – II **(9 Hours)**

Fourier Transform: Fourier Integral theorem (Statement only), Fourier Transform (FT) and Inverse FT, existence of FT, FT of single pulse, finite sine train, trigonometric, exponential, Gaussian functions, properties of FT, FT of Dirac delta function, sine and cosine function, convolution theorem. Fourier Sine Transform (FST) and Fourier Cosine Transform (FCT)

Unit – III **(8 Hours)**

Partial Differential Equations: Solutions to partial differential equations (2 or 3 independent variables) using separation of variables: Laplace's equation in problems of rectangular geometry. Solution of wave equation for vibrational modes of a stretched string. Solution of 1D heat flow equation (Wave/Heat equation not to be derived)

References:

Essential Readings:

1) Mathematical methods for Scientists and Engineers, D.A. McQuarrie, Viva Book, 2003
2) Essential Mathematical Methods, K. F. Riley and M. P. Hobson, Cambridge Univ. Press, 2011
3) Mathematical Methods for Physicists, G. B. Arfken, H.J. Weber, F. E. Harris, 7th Edition, Elsevier, 2013
4) Complex Variables and Applications, J. W. Brown and R. V. Churchill, 9th Edition, Tata McGraw-Hill, 2021
5) Complex Variables: Schaum's Outline, McGraw Hill Education, 2009
6) Fourier analysis: With Applications to Boundary Value Problems, Murray Spiegel, McGraw Hill Education, 2017
7) Fourier series and boundary value problems, J. W. Brown and R. V. Churchill, 5th

Edition, Tata McGraw-Hill, 1993.
8) Applied Mathematics for Engineers and Physicists, 3rd edition, L. A. Pipes and L. R. Harvill, Dover Publications.

Additional Readings:

1) Mathematical Physics with Applications, Problems and Solutions, V. Balakrishnan, Ane Books, 2017
2) Complex Variables, A. S. Fokas and M. J. Ablowitz, 8th Edition, Cambridge Univ. Press, 2011
3) Fourier Transform and its Applications, third edition, Ronald New Bold Bracewell, McGraw Hill, 2000
4) A Students Guide to Fourier Transforms: With Applications in Physics and Engineering, 3rd edition, Cambridge University Press, 2015
5) Partial Differential Equations for Scientists and Engineers, S. J. Farlow, Dover Publications, 1993
6) Differential Equations – Theory, technique and practice, George F. Simmons and Steven G. Krantz, Indian Edition McGraw Hill Education Pvt. Ltd, 2014

PRACTICAL COMPONENT

(15 Weeks with 2 hours of laboratory session per week)

The aim of this lab is not just to teach computer programming and numerical analysis but to emphasize its role in solving problems in Physics.

- The course will consist of practical sessions and lectures on the related theoretical aspects of the laboratory.
- Assessment is to be done not only on the programming but also on the basis of formulating the problem.
- The list of recommended programs is suggestive only. More programs may be done in the class with physics applications. Emphasis should be given to formulate a physics problem as mathematical one and solve it by computational methods.
- At least 6 programs must be attempted (taking at least one from each unit). The implementation can be either in Python/ C++/ Scilab. Inbuilt libraries can be used wherever applicable.

Unit 1

Handling of Complex Numbers: Syntax for creating complex numbers in Python/C++/Scilab, accessing real and imaginary parts, calculating the modulus and conjugate of a complex number, complex number arithmetic, plotting of complex numbers as ordered pairs of real numbers in a plane, conversion from Cartesian to polar representation.

Recommended List of Programs:

a) Determine the nth roots of a complex number and represent it in Cartesian and polar form.
b) Transformation of complex numbers as 2-D vectors e.g. translation, scaling, rotation, reflection.
c) Visualisation of mappings of some elementary complex functions $w = f(z)$ from z-plane to w-plane.

Unit 2

Gauss Quadrature Integration Methods: Gauss quadrature methods for integration: Gauss Legendre, Gauss Lagaurre and Gauss Hermite methods.

Recommended List of Programs:

a) Solving a definite integral by Gauss Legendre quadrature method. Application – representation of a function as a linear combination of Legendre polynomials.
b) Solving improper integrals over entire real axis or the positive real axis using Gauss Lagaurre and Gauss Hermite quadrature method. Comparison of results with the ones obtained by contour integration analytically.
c) Comparison of convergence of improper integral computed by Newton Cotes and Gauss Quadrature Methods.

Unit 3

Fast Fourier Transform: Discrete Fourier transform, Any algorithm for fast Fourier transform.

a) Computation of Discrete Fourier Transform (DFT) using complex numbers.
b) Fast Fourier Transform of given function in tabulated or mathematical form e.g function $\exp(-x^2)$.

Unit 4

Numerical Solutions of Boundary Value Problems: Two-point boundary value problems, types of boundary conditions – (Dirichlet, Neumann and Robin), importance of converting a physics problem to dimensionless form before solving numerically. Finite difference method, Shooting method with bisection/Secant/Newton method for solving non-linear equation and using RK methods for solving IVP (The programs developed in the last semester may be used here).

Algorithm for any one numerical method to solve Partial Differential Equations e.g. Finite Difference method, relaxation methods, Crank-Nicolson method

Recommended List of Programs:

(a) The equilibrium temperature of a bar of length L with insulated horizontal sides and the ends maintained at fixed temperatures.
(b) Solve for the steady state concentration profile y(x) in the reaction-diffusion problem given by $y''(x) - y(x) = 0$ with $y(0) = 1, y'(1) = 0$.
(c) Use any numerical method to solve Laplace equation/ Wave equation/ Heat equation.

References (for Laboratory Work):

1) Documentation at the Python home page (https://docs.python.org/3/) and the tutorials there (https://docs.python.org/3/tutorial/).
2) Documentation of NumPy and Matplotlib: https://numpy.org/doc/stable/user/ and https://matplotlib.org/stable/tutorials/
3) Schaum's Outline of Programming with C++, J. Hubbard, 2000, McGraw-Hill Education.
4) An Introduction to Computational Physics, T. Pang, Cambridge University Press, 2010
5) Introduction to Numerical Analysis, S. S. Sastry, 5th Edition, 2012, PHI Learning Pvt. Ltd.
6) Numerical Recipes: The art of scientific computing, William H. Press, Saul A. Teukolsky and William Vetterling, Cambridge University Press; 3rd Edition, 2007
7) Computational Problems for Physics, R. H. Landau and M. J. Páez, CRC Press, 2018

DISCIPLINE SPECIFIC CORE COURSE – DSC - 8: THERMAL PHYSICS

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical		
Thermal Physics DSC – 8	**4**	**3**	**0**	**1**	Class 12th Pass	NIL

LEARNING OBJECTIVES

This course deals with the relationship between the macroscopic and microscopic properties of physical systems in equilibrium. It reviews the concepts of thermodynamics learnt at school from a more advanced perspective and how to develop them further to build new concepts. The course gives an understanding about the fundamental laws of thermodynamics and their applications to various systems and processes. It also includes a basic idea about the kinetic theory of gases, transport phenomena involved in ideal gases, phase transitions and behaviour of real gases. The students will be able to apply these concepts to several problems on heat. The lab course deals with providing the knowledge of the concepts of thermodynamics studied in the theory paper with the help of experiments and give the students a hands-on experience on the construction and use of specific measurement instruments and experimental apparatuses used in the Thermal Physics lab, including necessary precautions.

LEARNING OUTCOMES

At the end of this course, students will be able to

- Comprehend the basic concepts of thermodynamics, the first and the second law of thermodynamics.
- Understand the concept of reversibility, irreversibility and entropy.
- Understand various thermodynamic potentials and their physical significance with respect to different thermodynamic systems and processes.
- Deduce Maxwell's thermodynamical relations and use them for solving various problems in Thermodynamics.
- Understand the concept and behaviour of ideal and real gases.
- Apply the basic concept of kinetic theory of gases in deriving Maxwell-Boltzmann distribution law and its applications.
- Understand mean free path and molecular collisions in viscosity, thermal conductivity, diffusion and Brownian motion.
- While doing the practical, the students will have an opportunity to understand and hence use the specific apparatus required to study various concepts of thermodynamics. Hence, the student will be able to comprehend the errors they can encounter while performing the experiment and how to estimate them.

SYLLABUS OF DSC - 8

THEORY COMPONENT

Unit – I - Zeroth and First Law of Thermodynamics (6 Hours)
Fundamental idea of thermodynamic equilibrium and Zeroth Law of Thermodynamics, concept of work and heat, First law of Thermodynamics and its differential form, internal energy, applications of First law: General relation between C_P and C_v, work done during various processes (all four) and related problems, adiabatic lapse rate, Compressibility and Expansion Co-efficient for various processes.

Unit – II - Second law of Thermodynamics (6 Hours)
Reversible and Irreversible processes, Carnot engine and Carnot's cycle, Refrigerator, efficiency of Carnot engine and refrigerator, Second Law of Thermodynamics: Kelvin-Planck and Clausius statements and their equivalence, Carnot's theorem, Applications of Second Law of Thermodynamics in the light of Phase Change, Thermodynamic Scale of Temperature and its equivalence to Perfect Gas Scale.

Unit – III – Entropy (6 Hours)
Concept of Entropy, Entropy changes in Reversible and Irreversible processes with examples, Clausius Theorem, Clausius inequality, Second Law of Thermodynamics in terms of Entropy. Temperature-Entropy diagrams for Carnot's cycle and related problems, Entropy of perfect and real gases, conceptual problems related to Entropy during a Phase Change, Nernst Heat Theorem: Unattainability of Absolute Zero and Third Law of Thermodynamics.

Unit – IV - Thermodynamic Potentials and Maxwell's Relations (12 Hours)
Basic concept of Thermodynamic Potentials, Internal Energy, Enthalpy, Helmholtz Free Energy, Gibb's Free Energy, Magnetic work and basic idea about cooling due to adiabatic demagnetization, Phase Transitions : First order and Second order Phase Transitions with examples, Clausius Clapeyron Equation, Ehrenfest Equations, Derivation of Maxwell's Thermodynamic Relations and their applications in Clausius Clapeyron Equation, value of $C_P - C_v$, TdS equations, Energy equations, evaluation of C_P / C_v and Ratio of Adiabatic to Isothermal elasticity.

Unit – V - Kinetic Theory of Gases and Molecular Collisions (8 Hours)
Constrained maximization using Lagrange multipliers, Maxwell-Boltzmann law of distribution of velocities in an ideal gas and its experimental verification with any one method. Mean, Root Mean Square and Most Probable Speeds, Maxwell-Boltzmann equation for distribution of Energy: Average Energy and Most Probable Energy, Mean Free Path, Collision Probability, estimation of Mean Free Path, transport phenomena in ideal gases: viscosity, thermal conductivity and diffusion with continuity equation

Unit – VI - Real Gases (7 Hours)
Behaviour of Real Gases: Deviations from the ideal gas equation, Andrew's experiments on CO_2 Gas, Virial equation, Continuity of liquid and gaseous states, Boyle temperature, Van der Waals equation of state for real gases (derivation not required), comparison with experimental curves: P-V diagrams, value of critical constants, law of corresponding states, free adiabatic expansion of a perfect gas, Joule Thomson Porous - Plug Experiment, Joule Thomson Coefficient for Ideal and Van der Waals Gases, Temperature of Inversion and Joule Thomson cooling.

References:

Essential Readings:

1) Heat and Thermodynamics: M. W. Zemansky and R. Dittman, Tata McGraw-Hill, 1981
2) Thermal Physics: S. C. Garg, R. M. Bansal and C. K. Ghosh, 2nd Edition, Tata McGraw-Hill.
3) Thermodynamics, Kinetic Theory and Statistical Thermodynamics: Sears and Salinger, Narosa, 1988
4) Concepts in Thermal Physics: Blundell and Blundell, 2nd Edition, Oxford University Press, 2009
5) Thermal Physics, A. Kumar and S. P. Taneja, R. Chand Publications, 2014
6) A Text Book of Heat and Thermodynamics for Degree Students, J. B. Rajam, S. Chand, 1981

Additional Readings:

1) An Introduction to Thermal Physics: D. Schroeder, Oxford University Press (earlier published by Pearsons), 2021
2) Thermal Physics: C. Kittel and H. Kroemer, 2nd Edition, W.H. Freeman, 1980
3) Heat, Thermodynamics and Statistical Physics, Brij Lal, N. Subrahmanyam and P. S. Hemne, S. Chand and Company
4) Thermal Physics: Concepts and practices, A. L. Wasserman, Cambridge University Press, 2012
5) Fundamentals of Thermal and Statistical Physics, Frederick Reif, McGraw-Hill, 1965

PRACTICAL COMPONENT

(15 Weeks with 2 hours of laboratory session per week)

At least six experiments to be done from the following:

1) To determine Mechanical Equivalent of Heat, J, by Callender and Barne's constant flow method.
2) To determine the Coefficient of Thermal Conductivity of Cu by Searle's Apparatus.
3) To determine the Coefficient of Thermal Conductivity of a bad conductor by Lee and Charlton's disc method using steam or electrical heating.
4) To determine the Temperature Coefficient of Resistance by Platinum Resistance Thermometer (PRT) using Carey Foster's Bridge.
5) To determine the Temperature Coefficient of Resistance using Platinum Resistance Thermometer (PRT) by Callender-Griffith Bridge.
6) To study the variation of thermo-e.m.f. of a thermocouple with difference of temperature of its two junctions using a null method.
7) To calibrate a thermocouple to measure temperature in a specified range by direct method and/or by using Op Amp and to determine Neutral Temperature.
8) To determine the coefficient of thermal conductivity of Copper (Cu) by Angstrom's method.

References (for Laboratory Work):

1) Advanced Practical Physics for students: B. L. Flint and H. T. Worsnop, Asia Publishing House, 1971

2) A Text Book of Practical Physics : Indu Prakash and Ramakrishna, 11th Edition, Kitab Mahal
3) Advanced level Practical Physics: Nelkon and Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers
4) An Advanced Course in Practical Physics: D. Chattopadhyay and P. C. Rakshit, New Central Book Agency, 1990
5) Practical Physics: G. L. Squires, Cambridge University Press, 1985
6) B. Sc Practical Physics: Harnam Singh, P. S. Hemne, revised edition 2011, S. Chand and Co.
7) B. Sc Practical Physics: C. L. Arora, 2001, S. Chand and Co.
8) B.Sc. Practical Physics: Geeta Sanon, R. Chand and Co.

DISCIPLINE SPECIFIC CORE COURSE – DSC - 9: LIGHT AND MATTER

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical		
Light and Matter DSC – 9	**4**	**2**	**0**	**2**	Class 12th Pass	NIL

LEARNING OBJECTIVES

The objective of this course reviews the concepts of light and matter, their properties and their dual nature. This course provides an in depth understanding of dual nature of light, interference and diffraction with emphasis on practical applications of both. It prepares the student for the modern physics and quantum mechanics courses.

LEARNING OUTCOMES

On successfully completing the requirement of this course the student will have the skill and knowledge to,

- Appreciate the dual nature of light which is part of the electromagnetic spectrum and the dual nature of matter simultaneously.
- Understand the phenomena of interference and diffraction exhibited by light and matter, their nuances and details.
- Delve in to the depth of understanding wave optics with its various kinds of interference and diffraction exhibited by light.
- Demonstrate basic concepts of diffraction: Superposition of wavelets diffracted from aperture, understand Fraunhofer and Fresnel diffraction.
- Learn about the application of matter waves in latest technological developments of electron microscope e.g. SEM and TEM used widely for characterization in several fields of physics such as material science, nanotechnology etc.
- In the laboratory course, students will gain hands-on experience of using various optical instruments, measurement of resolving power and dispersive power, and making finer measurements of wavelength of light using Newton's rings experiment. They will also find wavelength of Laser sources by single and double slit experiment, wavelength and angular spread of He-Ne Laser using plane diffraction grating.

SYLLABUS OF DSC - 9

THEORY COMPONENT

Unit – I - Duality of Light and matter **(5 Hours)**

Light an EM wave - Hertz's experiments; Particle characteristics by photoelectric effect and Compton effect (concepts only) and wave characteristics by interference and diffraction.

Wave properties of particles: de Broglie hypothesis, wavelength of matter waves; particle

wave complementarity: Velocity of de Broglie wave and need of a wave packet; Group and phase velocities and relation between them; equivalence of group and particle velocity, dispersion of wave groups.

Unit – II – Interference **(10 Hours)**

Division of amplitude and wave-front. Two-slit interference experiment with photons: Young's double slit experiment. Lloyd's mirror. Phase change on reflection: Stokes' treatment. Interference in Thin Films: parallel and wedge-shaped films. Fringes of equal inclination (Haidinger Fringes); Fringes of equal thickness (Fizeau Fringe). Newton's Rings: Measurement of wavelength and refractive index. Single photon interference. Two-slit interference experiment with electrons.

Unit – III – Diffraction **(15 Hours)**

Fraunhofer diffraction: Single slit, double slit, diffraction grating, resolving power of grating.
Fresnel diffraction: Fresnel's assumptions, Fresnel's half-period zones for plane wave, explanation of rectilinear propagation of light, theory of a zone plate: multiple foci of a zone plate, Fresnel diffraction at straight edge, a slit and a wire by Fresnel half period zones.
Diffraction of photons (e.g. X-rays, gamma rays etc.) and particles by matter, experimental study of matter waves: Davisson-Germer experiment; Electron microscope: applications SEM, TEM.

References:

Essential Readings:

1) Concepts of Modern Physics, Arthur Beiser, McGraw-Hill, 2002
2) Modern Physics by R. A. Serway, C. J. Moses and C. A. Moyer, Thomson Brooks Cole, 2012
3) Modern Physics for Scientists and Engineers by S. T. Thornton and A. Rex, 4th Edition, Cengage Learning, 2013
4) Optics, Ajoy Ghatak, McGraw-Hill Education, New Delhi, 7th Edition
5) Fundamentals of Optics, F. A. Jenkins and H. E. White, McGraw-Hill, 1981
6) Fundamental of Optics, A. Kumar, H. R. Gulati and D. R. Khanna, R. Chand Publications, 2011
7) A Textbook of Optics N. Subrahmanyam, Brij Lal, M. N. Avadhanulu, S. Chand & Co Ltd.
8) Introduction to Optics I - Interaction of Light with Matter, Ksenia Dolgaleva, Morgan and Claypool, 2021
9) Physics for scientists and Engineers with Modern Physics, Jewett and Serway, Cengage Learning, 2010
10) Modern Physics, G. Kaur and G. R. Pickrell, McGraw Hill, 2014
11) Schaum's Outline of Beginning Physics II: Waves, electromagnetism, Optics and Modern Physics, Alvin Halpern, Erich Erlbach, McGraw Hill.
12) Theory and Problems of Modern Physics, Schaum's outline, R. Gautreau and W. Savin, 2nd Edition, Tata McGraw-Hill Publishing Co. Ltd.

Additional Readings:

1) Principles of Optics, Max Born and Emil Wolf, 7th Edition, Pergamon Press, 1999
2) Introduction to Optics, Pedrotti Frank L. Cambridge University Press.
3) Optics, Eugene Hecht, 4th Edition, Pearson Education, 2014
4) Six Ideas that Shaped Physics: Particle Behave like Waves, T. A. Moore, McGraw Hill, 2003

5) Thirty years that shook physics: the story of quantum theory, George Gamow, Garden City, NY: Doubleday, 1966.
6) Quantum Mechanics: Theory and Applications, (Extensively revised 6th Edition), Ajoy Ghatak and S. Lokanathan, Laxmi Publications, 2019
7) Optics, Karl Dieter Moller, Learning by computing with model examples, Springer, 2007
8) Modern Physics for Scientists and Engineers, J. R. Taylor, C. D. Zafiratos, M. A. Dubson, Viva Books Pvt Ltd, 2017
9) Physics of Atom, Wehr, Richards and Adair, Narosa, 2002

PRACTICAL COMPONENT

(15 Weeks with 4 hours of laboratory session per week)

Mandatory activity:

- Sessions on the review of experimental data analysis, sources of error and their estimation in detail, writing of scientific laboratory reports including proper reporting of errors.
- Applications of the specific experiments done in the lab.
- Familiarization with Schuster's focusing; determination of angle of prism.

At least 6 experiments from the following list.

1) Determination of refractive index of material of prism using mercury (Hg) light.
2) To determine the dispersive power and Cauchy constants of the material of a prism using mercury source.
3) To determine wavelength of sodium light using Newton's Rings.
4) To determine the thickness of a thin paper by measuring the width of the interference fringes produced by a wedge-shaped Film.
5) To determine wavelength of (1) Na source and (2) spectral lines of Hg source using plane diffraction grating.
6) To determine dispersive power of a plane diffraction grating using mercury lamp.
7) To determine resolving power of a plane diffraction grating using sodium lamp.
8) To determine the wavelength of laser source using diffraction of single slit.
9) To determine the wavelength of laser source using diffraction of double slit.
10) To determine wavelength and angular spread of He-Ne laser using plane diffraction grating.

References (for Laboratory Work):

1) Advanced Practical Physics for students, B. L. Flint and H. T. Worsnop, 1971, Asia Publishing House.
2) A Text Book of Practical Physics, I. Prakash and Ramakrishna, 11th Edition, 2011, Kitab Mahal.
3) Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers.
4) A Laboratory Manual of Physics for undergraduate classes, D. P. Khandelwal, 1985, Vani Pub
5) B.Sc. Practical Physics, Geeta Sanon, R. Chand and Co.

DISCIPLINE SPECIFIC ELECTIVE COURSE – DSE 1: BIOPHYSICS

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical		
Biophysics DSE – 1	**4**	**3**	**0**	**1**	Class XII Pass	NIL

LEARNING OBJECTIVES

This course familiarizes the students with the basic facts and ideas of biology from a quantitative perspective. It shows them how ideas and methods of physics enrich our understanding of biological systems at diverse length and time scales. The course also gives them a flavour of the interface between biology, chemistry, physics and mathematics.

LEARNING OUTCOMES

After completing this course, students will

- Know basic facts about biological systems, including single cells, multicellular organisms and ecosystems from a quantitative perspective.
- Gain familiarity with various biological processes at different length and time scales, including molecular processes, organism level processes and evolution.
- Be able to apply the principles of physics from areas such as mechanics, electricity and magnetism, thermodynamics, statistical mechanics, and dynamical systems to understand certain living processes.
- Get exposure to complexity of life at i) the level of cell, ii) level of multi cellular organism and iii) at macroscopic system – ecosystem and biosphere.
- Gain a systems level perspective on organisms and appreciate how networks of interactions of many components give rise to complex behaviour.
- Perform mathematical and computational modelling of certain aspects of living systems.
- Get exposure to models of evolution.
- Be able to perform experiments demonstrating certain physical processes that occur in living systems.

SYLLABUS OF DSE – 1

THEORY COMPONENT

Unit – I **(4 Hours)**

Overview: The boundary, interior and exterior environment of living cells. Processes: exchange of matter and energy with environment, metabolism, maintenance, reproduction, evolution. Self-replication as a distinct property of biological systems. Time scales and spatial scales.

Unit - II **(12 Hours)**

Molecules of life: Metabolites, proteins and nucleic acids. Their sizes, types and roles in structures and processes. Transport, energy storage, membrane formation, catalysis, replication, transcription, translation, signaling. Typical populations of molecules of various types present in cells, their rates of production and turnover. Energy required to make a bacterial cell. Simplified mathematical models of transcription and translation.

Unit - III **(12 Hours)**

Molecular motion in cells: Random walks and applications to biology: Diffusion; models of macromolecules. Mechanical, entropic and chemical forces: Osmosis, cell assembly, molecular motors, bacterial chemotaxis.

Unit - IV **(12 Hours)**

The complexity of life: At the level of a cell: Intracellular biochemical networks. Dynamics of metabolic networks; the stoichiometric matrix. The implausibility of life based on a simplified probability estimate, and the origin of life problem. At the level of a multicellular organism: Numbers and types of cells in multicellular organisms. Cellular differentiation and development. Brain structure: neurons and neural networks. At the level of an ecosystem and the biosphere: Foodwebs. Feedback cycles and self-sustaining ecosystems. Allometric scaling laws.

Unit - V **(5 Hours)**

Evolution: The mechanism of evolution: variation at the molecular level, selection at the level of the organism. Models of evolution.

PRACTICAL COMPONENT

(15 Weeks with 2 hours of laboratory session per week)

List of experiments

1) Demonstration of diffusion, effect of medium, temperature, molecular weight and size on the rate of diffusion.
2) Demonstration of osmosis in a living system.
3) Demonstration of the relationship between viscosity and density.
4) Demonstration of how microscopic particles travel in air through aerosols.
5) Graphic visualization and demonstrations of 3D structure of biomolecules using in-silico visualization tools.
6) Estimation of serum protein using BSA as the standard. (Optional).

References:

Essential Readings:

1) Biological Physics: Energy, Information, Life; Philip Nelson (W. H. Freeman & Co, NY, 2004)
2) Cell Biology by the Numbers; Ron Milo and Rob Phillips (Garland Science, Taylor & Francis Group, NY USA and Abingdon UK, 2016)
3) Physical Biology of the Cell (2nd Edition); Rob Phillips et al (Garland Science, Taylor & Francis Group, NY USA and Abingdon UK, 2013)
4) Evolution; M. Ridley (Blackwell Publishers, 2009, 3rd Edition).

Additional Readings:

1) Physics in Molecular Biology; Kim Sneppen and Giovanni Zocchi (Cambridge University Press, Cambridge UK, 2005)
2) Biophysics: Searching for Principles; William Bialek (Princeton University Press, Princeton USA, 2012).

DISCIPLINE SPECIFIC ELECTIVE COURSE – DSE 2: NUMERICAL ANALYSIS

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical		
NUMERICAL ANALYSIS DSE – 2	**4**	**2**	**0**	**2**	Class 12th Pass	NIL

LEARNING OBJECTIVES

The main objective of this course is to introduce the students to the field of numerical analysis enabling them to solve a wide range of physics problems. The skills developed during the course will prepare them not only for doing fundamental and applied research but also for a wide variety of careers.

LEARNING OUTCOMES

After completing this course, student will be able to,

- Analyse a physics problem, establish the mathematical model and determine the appropriate numerical techniques to solve it.
- Derive numerical methods for various mathematical tasks such as solution of non-linear algebraic and transcendental equations, system of linear equations, interpolation, least square fitting, numerical differentiation, numerical integration, eigen value problems and solution of initial value and boundary value problems.
- Analyse and evaluate the accuracy of the numerical methods learned.
- In the laboratory course, the students will learn to implement these numerical methods in Python/C++/Scilab and develop codes to solve various physics problems and analyze the results.

SYLLABUS OF DSE – 2

THEORY COMPONENT

Unit – I **(3 Hours)**

Approximation and Errors in computing: Introduction to numerical computation, Taylor's expansion and mean value theorem. Floating Point Computation, overflow and underflow. Single and double precision arithmetic. Rounding and truncation error, absolute and relative error, error propagation.

Unit – II **(8 Hours)**

Linear Systems: Solution of linear systems by Gaussian elimination method, partial and complete pivoting, LU decomposition, norms and errors, condition numbers, Gauss-Seidel method, diagonally dominant matrix and convergence of iteration methods. Solution of Tridiagonal systems; Eigenvalue Problem: Power method, inverse power method.

Unit – III **(5 Hours)**

Interpolation: Lagrange and Newton's methods (divided difference) for polynomial interpolation, theoretical error of interpolation. Inverse Interpolation. Optimal points for interpolation and Chebyshev Polynomials. Minimax Theorem (Statement only)

Unit – IV **(7 Hours)**

Numerical Integration: Newton Cotes quadrature methods. Derivation of Trapezoidal and Simpson (1/3 and 3/8) rules from Lagrange interpolating polynomial. Error and degree of precision of a quadrature formula. Composite formulae for Trapezoidal and Simpson methods.

Gauss Quadrature methods. Legendre, Lagaurre and Hermite quadrature methods.

Unit – V **(7 Hours)**

Initial and Boundary Value Problems: Solution of initial value problems by Euler, modified Euler and Runge Kutta (RK) methods. Local and global errors, comparison of errors in the Euler and RK methods

Finite difference and shooting method for solving two-point linear boundary value problems.

References:

Essential Readings:

1) Applied numerical analysis, Cutis F. Gerald and P. O. Wheatley, Pearson Education, India, 2007
2) Advanced Engineering Mathematics, Erwin Kreyszig, Wiley India, 2008
3) Introduction to Numerical Analysis, S. S. Sastry, 5th Edition, PHI Learning Pvt. Ltd, 2012
4) Elementary Numerical Analysis, K. E. Atkinson, 3rd Edition, Wiley India Edition, 2007

Additional Readings:

1) Numerical Recipes: The art of scientific computing, William H. Press, Saul A. Teukolsky and William Vetterling, Cambridge University Press; 3rd Edition, 2007
2) Numerical methods for scientific and engineering computation, M. K. Jain, S. R. K. Iyenger, New Age Publishers, 2012

PRACTICAL COMPONENT

(15 Weeks with 4 hours of laboratory session per week)

The aim of this lab is not just to teach computer programming and numerical analysis but to emphasize its role in solving problems in Physics. Assessment is to be done not only on the programming but also on the basis of formulating the problem. The list of recommended programs is suggestive only. Students should be encouraged to do more physics applications. Emphasis should be given to formulate a physics problem as mathematical one and solve by computational methods. The students should be encouraged to develop and present an independent project. At least 10 programs must be attempted (taking at least two from each unit).The implementation can be either in Python/ C++/Scilab.

Unit 1 - Linear Systems

a) Solve a system of linear equations using Gauss Elimination method with pivoting (application to electric networks).
b) Solve a system of linear equations using Gauss-Seidel method and study the convergence (application to spring mass system).
c) Determine the inverse of a square matrix using Gauss-Jordan method.
d) Solve a tri-diagonal system of linear equations.
e) Study an example of ill-conditioned systematic
f) Find the LU equivalent of a matrix.
g) Determine the largest and smallest eigenvalues using Power and inverse power methods. Consider a case where power method fails.

Unit 2 - Interpolation

a) Given a dataset (x, y) with equidistant x values, prepare the Newton's forward difference, backward difference and divided difference tables.
b) Given a dataset (x, y) corresponding to a physics problem, use Lagrange and Newton's forms of interpolating polynomials and compare. Determine the value of y at an intermediate value of x not included in the data set. This may be done with equally spaced and non-equally spaced x-values.
c) Given a tabulated data for an elementary function, approximate it by a polynomial and compare with the true function.
d) Compare the interpolating polynomial for a given dataset (following a known form e.g. exponential) with the approximation obtained by least square fitting.
e) Compare the interpolating polynomial approximating a given function in a given range obtained with uniformly spaced points and by Chebyshev points.
f) Compare the Chebyshev and Maclaurin series expansions of an exponential or sinusoidal function.

Unit 3 - Integration

a) Use integral definition of error function to compute and plot erf(x) in a given range. Use Trapezoidal, Simpson and Gauss Legendre methods and compare the results for small and large values of x.
b) Use the definition of erf(x) and numerically take the limit x going to infinity to get the value of Gaussian integral using Simpson method. Compare the result with the value obtained by Gauss Hermite and Gauss Lagaurre methods.
c) Verify the degree of precision of each quadrature rule.
d) Use Simpson methods to compute a double integral over a rectangular region.

e) Approximate the value of π by evaluating the integral $\int_0^\infty \frac{1}{x^2+1} dx$using Simpson, Gauss Hermite and Gauss Lagaurre methods.

Unit 4 - Initial Value Problems (IVP)

a) Compare the errors in Euler, RK2 and RK4 by solving a first order IVP with known solution. Reduce the step size to a point where the round off errors takes over.
b) Solve a system of n first order differential equations by Euler and RK methods. Use it to solve an nth order IVP. Solve a damped free and forced harmonic oscillator problem using this.
c) Solve a physics problem like free fall with air drag or parachte problem using RK method.
d) Solve a compound spring system (3 springs) by solving a system of differential equations using Euler and RK for a given set of i1nitial conditions.
e) Obtain the current flowing in a series LCR circuit with constant voltage for a given set of initial conditions.

Unit 5 - Boundary value problems (BVP)

a) Solve a linear BVP using shooting and finite difference method and compare the results.
b) Solve a non-linear BVP using the finite difference and shooting method and compare the results.
c) Determine the temperature distribution along a rod made of two dissimilar materials (of different thermal conductivities) welded together when temperatures at two ends are maintained at given temperatures.
d) Design a physics problem that can be modelled by a BVP and solve it by any method.

References for laboratory work:

1) Documentation at the Python home page (https://docs.python.org/3/) and the tutorials there (https://docs.python.org/3/tutorial/).
2) Documentation of NumPy and Matplotlib: https://numpy.org/doc/stable/user/ and https://matplotlib.org/stable/tutorials/
3) Computational Physics, Darren Walker, 1st Edition, Scientific International Pvt. Ltd, 2015
4) An Introduction to Computational Physics, T. Pang, Cambridge University Press, 2010
5) Computational Problems for Physics, R. H. Landau and M. J. Páez, CRC Press, 2018

Category II

Physical Science Courses
with Physics discipline as one of the Core Disciplines

(B. Sc. Physical Science with Physics as Major discipline)

DISCIPLINE SPECIFIC CORE COURSE – PHYSICS DSC 3: HEAT AND THERMODYNAMICS

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical		
HEAT AND THERMODYNAMICS PHYSICS DSC – 3	**4**	**2**	**0**	**2**	Passed 12th Class	NIL

LEARNING OBJECTIVES

This course will review the basic concepts of thermodynamics, kinetic theory of gases with a brief introduction to statistical mechanics. The primary goal is to make the student understand the applications of fundamental laws of thermodynamics to various systems and processes. This coursework will enable the students to understand the connection between the macroscopic observations of physical systems and microscopic behaviour of atoms and molecule through a brief knowledge of statistical mechanics. The lab course deals with providing the knowledge of the concepts of thermodynamics along with Planck's law and Stefan Boltzmann laws related to black body radiation.

LEARNING OUTCOMES

At the end of this course, students will be able to,

- gain an essence of the basic concepts of thermodynamics, the first and the second law of thermodynamics, the concept of entropy and the associated theorems, the thermodynamic potentials and their physical interpretations along with Maxwell's thermodynamic relations.
- Know the fundamentals of the kinetic theory of gases, Maxwell-Boltzmann distribution law, mean free path of molecular collisions, viscosity, thermal conductivity and diffusion.
- Learn about the black body radiations, Stefan- Boltzmann's law, Rayleigh-Jean's law and Planck's law and their significances.
- gain the basic knowledge about quantum statistics: the Bose-Einstein statistics and the Fermi-Dirac statistics.
- In the laboratory course, the students are expected to: Measure of Planck's constant using black body radiation, determine Stefan's Constant, coefficient of thermal conductivity of a bad conductor and a good conductor, determine the temperature coefficient of

resistance, study variation of thermo-e.m.f. across two junctions of a thermocouple with temperature etc.

SYLLABUS OF PHYSICS DSC – 3

THEORY COMPONENT

Unit – I - Laws of Thermodynamics (10 Hours)

Fundamental basics of Thermodynamic system and variables, Zeroth Law of Thermodynamics and temperature, First law and internal energy, various thermodynamical processes, Applications of First Law: general relation between C_P and C_V, work done during various processes, Compressibility and Expansion Coefficient, reversible and irreversible processes, Second law: Kelvin-Planck and Clausius statements, Carnot engine, Carnot cycle and theorem, basic concept of Entropy, Entropy changes in reversible and irreversible processes, Clausius inequality, Entropy-temperature diagrams.

Unit – II - Thermodynamic Potentials and Maxwell's Relations (5 Hours)

Basic concept of Thermodynamic Potentials, Internal Energy, Enthalpy, Helmholtz Free Energy, Gibb's Free Energy, derivation of Maxwell's Thermodynamic Relations and their applications in Clausius Clapeyron Equation, value of $C_P - C_v$, TdS Equations, Energy equations for ideal gases, evaluation of C_P/C_v

Unit – III - Kinetic Theory of Gases and Molecular Collisions (6 Hours)

Maxwell-Boltzmann Law of Distribution of Velocities in an ideal gas and its experimental verification, Mean, Root Mean Square and Most Probable Speeds, Mean Free Path (Zeroth order), Transport Phenomena in ideal gases: Viscosity, Thermal Conductivity and Diffusion (for vertical case)

Unit – IV - Theory of Radiation (5 Hours)

Blackbody radiation, Spectral distribution, Derivation of Planck's law, Deduction of Wien's law, Rayleigh-Jeans Law, Stefan Boltzmann Law and Wien's displacement law from Planck's law

Unit – V - Statistical Mechanics (4 Hours)

Macrostate and Microstate, phase space, Entropy and thermodynamic probability, Maxwell-Boltzmann law, qualitative description of Quantum statistics – Bose Einstein and Fermi Dirac, comparison of three statistics.

References:

Essential Readings:

1) Heat and Thermodynamics: M. W. Zemansky and R. Dittman, Tata McGraw-Hill, 1981
2) Thermal Physics: S. C. Garg, R. M. Bansal and C. K. Ghosh, 2nd Edition, Tata McGraw-Hill.
3) Thermodynamics, Kinetic Theory and Statistical Thermodynamics: Sears and Salinger, Narosa, 1988
4) Concepts in Thermal Physics: Blundell and Blundell, 2nd Edition, Oxford University Press, 2009
5) Thermal Physics, A. Kumar and S. P. Taneja, R. Chand Publications, 2014
6) A Text Book of Heat and Thermodynamics for Degree Students, J. B. Rajam, S. Chand, 1981

Additional Readings:

1) An Introduction to Thermal Physics: D. Schroeder, Oxford University Press (earlier published by Pearsons), 2021
2) Thermal Physics: C. Kittel and H. Kroemer, 2nd Edition, W. H. Freeman, 1980
3) Heat, Thermodynamics and Statistical Physics, Brij Lal, N. Subrahmanyam and P. S. Hemne, S. Chand and Company

PRACTICAL COMPONENT

(15 Weeks with 4 hours of laboratory session per week)

At least six experiments to be done from the following:

1) To determine Mechanical Equivalent of Heat, J, by Callender and Barne's constant flow method.
2) To determine the Coefficient of Thermal Conductivity of Cu by Searle's Apparatus.
3) To determine the Coefficient of Thermal Conductivity of a bad conductor by Lee and Charlton's disc method using steam or electrical heating.
4) Measurement of Planck's constant using black body radiation.
5) To determine the temperature coefficient of resistance by Platinum Resistance Thermometer using Carey Foster's bridge.
6) To study the variation of thermo-e.m.f. across two junctions of a thermocouple with temperature.
7) To determine Stefan's Constant.
8) To determine the Temperature Coefficient of Resistance using Platinum Resistance Thermometer (PRT) by Callender-Griffith Bridge

References for laboratory work:

1) Advanced Practical Physics for students: B. L. Flint and H. T. Worsnop, Asia Publishing House, 1971
2) A Text Book of Practical Physics: Indu Prakash and Ramakrishna, 11th Edition, Kitab Mahal
3) Advanced level Practical Physics: Nelkon and Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers.
4) An Advanced Course in Practical Physics: D. Chattopadhyay and P. C. Rakshit, 1990, New Central Book Agency.
5) Practical Physics: G. L. Squires, Cambridge University Press, 1985
6) B.Sc. Practical Physics: Harnam Singh, P. S. Hemne, revised edition 2011, S. Chand and Co.
7) B. Sc. Practical Physics: C. L. Arora, S. Chand and Co.
8) B. Sc. Practical Physics: Geeta Sanon, R. Chand and Co.

DISCIPLINE SPECIFIC ELECTIVE COURSE – PHYSICS DSE 13a: BIOPHYSICS

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical		
Biophysics PHYSICS DSE 13a	**4**	**3**	**0**	**1**	Passed 12th Class	NIL

LEARNING OBJECTIVES

This course familiarizes the students with the basic facts and ideas of biology from a quantitative perspective. It shows them how ideas and methods of physics enrich our understanding of biological systems at diverse length and time scales. The course also gives them a flavour of the interface between biology, chemistry, physics and mathematics.

LEARNING OUTCOMES

After completing this course, students will

- Know basic facts about biological systems, including single cells, multicellular organisms and ecosystems from a quantitative perspective.
- Gain familiarity with various biological processes at different length and time scales, including molecular processes, organism level processes and evolution.
- Be able to apply the principles of physics from areas such as mechanics, electricity and magnetism, thermodynamics, statistical mechanics, and dynamical systems to understand certain living processes.
- Get exposure to complexity of life at i) the level of cell, ii) level of multi cellular organism and iii) at macroscopic system – ecosystem and biosphere.
- Gain a systems level perspective on organisms and appreciate how networks of interactions of many components give rise to complex behaviour.
- Perform mathematical and computational modelling of certain aspects of living systems.
- Get exposure to models of evolution.
- Be able to perform experiments demonstrating certain physical processes that occur in living systems.

SYLLABUS OF PHYSICS DSE – 13a

THEORY COMPONENT

Unit – I **(4 Hours)**

Overview: The boundary, interior and exterior environment of living cells. Processes: exchange of matter and energy with environment, metabolism, maintenance, reproduction, evolution. Self-replication as a distinct property of biological systems. Time scales and spatial scales.

Unit - II **(12 Hours)**

Molecules of life: Metabolites, proteins and nucleic acids. Their sizes, types and roles in structures and processes. Transport, energy storage, membrane formation, catalysis, replication, transcription, translation, signaling. Typical populations of molecules of various types present in cells, their rates of production and turnover. Energy required to make a bacterial cell. Simplified mathematical models of transcription and translation.

Unit - III **(12 Hours)**

Molecular motion in cells: Random walks and applications to biology: Diffusion; models of macromolecules. Mechanical, entropic and chemical forces: Osmosis, cell assembly, molecular motors, bacterial chemotaxis.

Unit - IV **(12 Hours)**

The complexity of life: At the level of a cell: Intracellular biochemical networks. Dynamics of metabolic networks; the stoichiometric matrix. The implausibility of life based on a simplified probability estimate, and the origin of life problem. At the level of a multicellular organism: Numbers and types of cells in multicellular organisms. Cellular differentiation and development. Brain structure: neurons and neural networks. At the level of an ecosystem and the biosphere: Foodwebs. Feedback cycles and self-sustaining ecosystems. Allometric scaling laws.

Unit - V **(5 Hours)**

Evolution: The mechanism of evolution: variation at the molecular level, selection at the level of the organism. Models of evolution

PRACTICAL COMPONENT

(15 Weeks with 2 hours of laboratory session per week)

List of experiments

1) Demonstration of diffusion, effect of medium, temperature, molecular weight and size on the rate of diffusion.
2) Demonstration of osmosis in a living system.
3) Demonstration of the relationship between viscosity and density.
4) Demonstration of how microscopic particles travel in air through aerosols.
5) Graphic visualization and demonstrations of 3D structure of biomolecules using in-silico visualization tools.
6) Estimation of serum protein using BSA as the standard. (Optional).

References:

Essential Readings:

1) Biological Physics: Energy, Information, Life; Philip Nelson (W. H. Freeman & Co, NY, 2004)
2) Cell Biology by the Numbers; Ron Milo and Rob Phillips (Garland Science, Taylor & Francis Group, NY USA and Abingdon UK, 2016)
3) Physical Biology of the Cell (2nd Edition); Rob Phillips et al (Garland Science, Taylor & Francis Group, NY USA and Abingdon UK, 2013)
4) Evolution; M. Ridley (Blackwell Publishers, 2009, 3rd Edition).

Additional Readings:

1) Physics in Molecular Biology; Kim Sneppen and Giovanni Zocchi (Cambridge University Press, Cambridge UK, 2005)
2) Biophysics: Searching for Principles; William Bialek (Princeton University Press, Princeton USA, 2012).

DISCIPLINE SPECIFIC ELECTIVE COURSE – PHYSICS DSE 13b: MATHEMATICAL PHYSICS I

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical		
MATHEMATICAL PHYSICS I PHYSICS DSE – 13b	**4**	**3**	**1**	**0**	Passed 12th Class	NIL

LEARNING OBJECTIVES

The emphasis of course is to equip students with the mathematical tools required in solving problem of interest to physicists. The mathematical tools might be building blocks to understand the fundamental computational physics skills and hence enable them to solve a wide range of physics problems. Overall, to help students develop critical skills and knowledge that will prepare them not only for doing fundamental and applied research but also prepare them for a wide variety of careers

LEARNING OUTCOMES

After completing this course, student will be able to,

- Learn the functions more than one variable using the concepts of calculus.
- Solve first order differential equations and apply it to physical problems.
- Represent a periodic function by a sum of harmonics using Fourier series.
- Obtain power series solution of differential equation of 2nd order with variable coefficients using Frobenius mehod.
- Learn beta and gamma functions

SYLLABUS OF PHYSICS DSE 13b

THEORY COMPONENT

Unit – I **(18 Hours)**

Calculus of functions of more than one variable: Partial derivatives, chain rule for partial derivatives, exact and inexact differentials. Integrating factor, with simple illustration. Constrained Maximization using Lagrange Multipliers.

Fourier Series: Periodic functions. Orthogonality of sine and cosine functions, Dirichlet Conditions (Statement only). Expansion of periodic functions in a series of sine and cosine functions and determination of Fourier coefficients. Even and odd functions and their Fourier expansions. Application to Summing of Infinite Series.

Unit – II **(12 Hours)**

Frobenius Method and Special Functions: Singular Points of Second Order Linear Differential Equations and their importance. Frobenius method and its applications to differential equations. Legendre Differential Equations and its solution. Properties of Legendre Polynomials: Rodrigues Formula, Orthogonality. Simple recurrence relations.

Unit – III **(15 Hours)**

Some Special Integrals: Beta and Gamma Functions and Relation between them. Expression of Integrals in terms of Gamma Functions.

Partial Differential Equations: Solutions to partial differential equations, using separation of variables: Laplace's Equation in problems of rectangular geometry. Solution of 1D wave equation.

References:

Essential Readings:

1) An introduction to ordinary differential equations, E.A. Coddington, PHI learning, 2009
2) Differential Equations, George F. Simmons, McGraw Hill, 2007
3) Mathematical methods for Scientists and Engineers, D. A. McQuarrie, Viva Book, 2003
4) Advanced Engineering Mathematics, D. G. Zill and W. S. Wright, 5th Edition, Jones and Bartlett Learning, 2012
5) Advanced Engineering Mathematics, Erwin Kreyszig, Wiley India, 2008
6) Fourier Analysis: With Applications to Boundary Value Problems, Murray Spiegel, McGraw Hill Education, 2017
7) Mathematical Methods for Physicists, G. B. Arfken, H. J. Weber, F. E. Harris, 7th Edition, Elsevier, 2013
8) Essential Mathematical Methods, K. F. Riley and M. P. Hobson, Cambridge Univ. Press, 2011

Additional Readings:

1) Introduction to Electrodynamics, Chapter 1, David J. Griffiths, 4th Edition, Cambridge University Press, 2017
2) The Feynman Lectures on Physics, Volume II, Feynman, Leighton and Sands, Narosa Publishing House, 2008
3) Advanced Engineering Mathematics, D. G. Zill and W. S. Wright, 5th Edition, Jones and Bartlett Learning, 2012
4) Mathematical Tools for Physics, James Nearing, Dover Publications, 2010
5) Mathematical Physics, A. K. Ghatak, I. C. Goyal and S. J. Chua, Laxmi Publications Private Limited, 2017

Category II

Physical Science Courses (with Electronics)
with Physics and Electronics discipline as Core Disciplines

DISCIPLINE SPECIFIC CORE COURSE – PHYSICS DSC 5: HEAT AND THERMODYNAMICS

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical		
HEAT AND THERMODYNAMICS PHYSICS DSC 5	**4**	**2**	**0**	**2**	Passed 12th Class	NIL

LEARNING OBJECTIVES

This course will review the basic concepts of Thermodynamics, Kinetic Theory of gases with a brief introduction to Statistical Mechanics. The primary goal is to make the student understand the applications of fundamental laws of thermodynamics to various systems and processes. This coursework will enable the students to understand the connection between the macroscopic observations of physical systems and microscopic behaviour of atoms and molecule through a brief knowledge of statistical mechanics. The lab course deals with providing the knowledge of the concepts of Thermodynamics along with Planck's Law and Stefan Boltzmann laws related to black body radiation.

LEARNING OUTCOMES

At the end of this course, students will be able to

- gain an essence of the basic concepts of thermodynamics, the first and the second law of thermodynamics, the concept of entropy and the associated theorems, the thermodynamic potentials and their physical interpretations along with Maxwell's thermodynamic relations.
- Know the fundamentals of the kinetic theory of gases, Maxwell-Boltzmann distribution law, mean free path of molecular collisions, viscosity, thermal conductivity and diffusion.
- Learn about the black body radiations, Stefan- Boltzmann's law, Rayleigh-Jean's law and Planck's law and their significances.
- gain the basic knowledge about quantum statistics: the Bose-Einstein statistics and the Fermi-Dirac statistics.
- In the laboratory course, the students are expected to: Measure of Planck's constant using black body radiation, determine Stefan's Constant, coefficient of thermal conductivity of a bad conductor and a good conductor, determine the temperature coefficient of resistance, study variation of thermo-e.m.f. across two junctions of a thermocouple with temperature etc.

SYLLABUS OF PHYSICS DSC – 5

THEORY COMPONENT

Unit – I - Laws of Thermodynamics (10 Hours)

Fundamental basics of Thermodynamic system and variables, Zeroth Law of Thermodynamics and temperature, First law and internal energy, various thermodynamical processes, Applications of First Law: general relation between C_P and C_V, work done during various processes, Compressibility and Expansion Coefficient, reversible and irreversible processes, Second law: Kelvin-Planck and Clausius statements, Carnot engine, Carnot cycle and theorem, basic concept of Entropy, Entropy changes in reversible and irreversible processes, Clausius inequality, Entropy-temperature diagrams.

Unit – II - Thermodynamic Potentials and Maxwell's Relations (5 Hours)

Basic concept of Thermodynamic Potentials, Internal Energy, Enthalpy, Helmholtz Free Energy, Gibb's Free Energy, derivation of Maxwell's Thermodynamic Relations and their applications in Clausius Clapeyron Equation, value of $C_P - C_v$, TdS Equations, Energy equations for ideal gases, evaluation of C_P/C_v

Unit – III - Kinetic Theory of Gases and Molecular Collisions (6 Hours)

Maxwell-Boltzmann Law of Distribution of Velocities in an ideal gas and its experimental verification, Mean, Root Mean Square and Most Probable Speeds, Mean Free Path (Zeroth order), Transport Phenomena in ideal gases: Viscosity, Thermal Conductivity and Diffusion (for vertical case)

Unit – IV - Theory of Radiation (5 Hours)

Blackbody radiation, Spectral distribution, Derivation of Planck's law, Deduction of Wien's law, Rayleigh-Jeans Law, Stefan Boltzmann Law and Wien's displacement law from Planck's law

Unit – V - Statistical Mechanics (4 Hours)

Macrostate and Microstate, phase space, Entropy and thermodynamic probability, Maxwell-Boltzmann law, qualitative description of Quantum statistics – Bose Einstein and Fermi Dirac, comparison of three statistics.

References:

Essential Readings:

1) Heat and Thermodynamics: M. W. Zemansky and R. Dittman, Tata McGraw-Hill, 1981
2) Thermal Physics: S. C. Garg, R. M. Bansal and C. K. Ghosh, 2nd Edition, Tata McGraw-Hill.
3) Thermodynamics, Kinetic Theory and Statistical Thermodynamics: Sears and Salinger, Narosa, 1988
4) Concepts in Thermal Physics: Blundell and Blundell, 2nd Edition, Oxford University Press, 2009
5) Thermal Physics, A. Kumar and S. P. Taneja, R. Chand Publications, 2014
6) A Text Book of Heat and Thermodynamics for Degree Students, J. B. Rajam, S. Chand, 1981

Additional Readings:

1) An Introduction to Thermal Physics: D. Schroeder, Oxford University Press (earlier published by Pearsons), 2021
2) Thermal Physics: C. Kittel and H. Kroemer, 2nd Edition, W. H. Freeman, 1980
3) Heat, Thermodynamics and Statistical Physics, Brij Lal, N. Subrahmanyam and P. S. Hemne, S. Chand and Company

PRACTICAL COMPONENT

(15 Weeks with 4 hours of laboratory session per week)

At least six experiments to be done from the following:

1) To determine Mechanical Equivalent of Heat, J, by Callender and Barne's constant flow method.
2) To determine the Coefficient of Thermal Conductivity of Cu by Searle's Apparatus.
3) To determine the Coefficient of Thermal Conductivity of a bad conductor by Lee and Charlton's disc method using steam or electrical heating.
4) Measurement of Planck's constant using black body radiation.
5) To determine the Temperature Coefficient of Resistance by Platinum Resistance Thermometer using Carey Foster's bridge.
6) To study the variation of thermo-e.m.f across two junctions of a thermocouple with temperature.
7) To determine Stefan's Constant.
8) To determine the Temperature Coefficient of Resistance using Platinum Resistance Thermometer (PRT) by Callender-Griffith Bridge

References for laboratory work:

1) Advanced Practical Physics for students: B. L. Flint and H. T. Worsnop, Asia Publishing House, 1971
2) A Text Book of Practical Physics: Indu Prakash and Ramakrishna, 11th Edition, Kitab Mahal
3) Advanced level Practical Physics: Nelkon and Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers.
4) An Advanced Course in Practical Physics: D. Chattopadhyay and P. C. Rakshit, New Central Book Agency, 1990
5) Practical Physics: G. L. Squires, Cambridge University Press, 1985
6) B.Sc. Practical Physics: Harnam Singh, Dr P. S. Hemne, revised edition 2011, S. Chand and Co.
7) B. Sc. Practical Physics: C. L. Arora, S. Chand and Co.
8) B. Sc. Practical Physics: Geeta Sanon, R. Chand and Co.

DISCIPLINE SPECIFIC CORE COURSE – PHYSICS DSC 6: COMMUNICATION ELECTRONICS

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical		
COMMUNICATION ELECTRONICS PHYSICS DSC – 6	**4**	**2**	**0**	**2**	Passed 12th Class	NIL

LEARNING OBJECTIVES

This paper aims to describe the concepts of electronics in communication. Communication techniques based on analog modulation, analog and digital pulse modulation including PAM, PWM, PPM, ASK, PSK, FSK are described in detail. Communication and Navigation systems such as GPS, satellite and mobile telephony systems are introduced.

LEARNING OUTCOMES

At the end of this course, students will be able to develop following learning outcomes:

- This paper aims to describe the concepts of electronics in communication. In this course, students will receive an introduction to the principle, performance and applications of communication systems.
- Students will learn the various means and modes of communication. They will gain an understanding of fundamentals of electronic communication system and electromagnetic communication spectrum with an idea of frequency allocation for radio communication system in India.
- They will gain an insight on the use of different modulation and demodulation techniques used in analog communication
- Students will be able to analyse different parameters of analog communication techniques.
- They will learn the need of sampling and different sampling techniques where they can sample analog signal
- Students will learn the generation and detection of a signal through pulse and digital modulation techniques and multiplexing.
- They will gain an in-depth understanding of different concepts used in a satellite communication system.
- This paper will essentially connect the text book knowledge with the most popular communication technology in real world.

SYLLABUS OF PHYSICS DSC 6

THEORY COMPONENT

Unit – I **(10 Hours)**

Electronic communication: Introduction to communication – means and modes. Power measurements (units of power). Need for modulation. Block diagram of an electronic communication system. Brief idea of frequency allocation for radio communication system in India (TRAI). Electromagnetic communication spectrum, band designations and usage. Channels and base-band signals.

Analog Modulation: Amplitude Modulation: Frequency spectrum of AM waves, average power, average voltage, modulation index, AM-modulator circuits (collector modulation), AM-demodulator (diode detector), single side band generation and detection.

Angle Modulation: Frequency and phase modulation, frequency spectrum of FM waves, intersystem comparisons (FM and AM), FM generation using VCO, FM detector (slope detector)

Unit – II **(5 Hours)**

Analog Pulse Modulation: Channel capacity, Sampling Theorem and Nyquist Criterion, Basic Principles – Pulse Amplitude Modulation (PAM), Pulse Width Modulation (PWM), Pulse Position Modulation (PPM), modulation and detection technique for PAM only, Multiplexing – Time Division Multiplexing (TDM) and Frequency Division Multiplexing (FDM).

Unit – III **(6 Hours)**

Digital Pulse Modulation: Need for digital transmission, Pulse Code Modulation (PCM), Digital Carrier Modulation Techniques, Sampling, Quantization and Encoding. Concept of Amplitude Shift Keying (ASK), Frequency Shift Keying (FSK) and Phase Shift Keying (PSK)

Unit – IV **(6 Hours)**

Satellite Communication: Introduction, Geosynchronous satellite orbits, geostationary satellite advantages of geostationary satellites. Transponders (C - Band), Uplink and downlink, path loss, Satellite visibility, Ground and earth stations. Simplified block diagram of the earth station.

Unit – V **(3 Hours)**

Mobile Telephony System: Basic concept of mobile communication, frequency bands used in mobile communication, the concept of cell sectoring and cell splitting, SIM number, IMEI number, GPS navigation system (qualitative idea only).

References:

Essential Readings:

1) Communication Electronics, Principles and Applications, L. E. Frenzel, Tata McGraw-Hill.
2) Communication Systems: Analog and Digital, R. P. Singh and S. D. Sapre, Tata McGraw-Hill.
3) Analog and Digital Communications, H. Hsu, Schaum's Outline Series, Tata McGraw-Hill.
4) Electronic Communications Systems: Fundamentals Through Advanced, Wayne Tomasi, Fifth Edition, Pearson.

5) Communication Systems, S. Haykin, Wiley India

Additional Readings:

1) Electronic Communication, L. Temes and M. Schultz, Schaum's Outline Series, Tata McGraw- Hill.
2) Electronic Communication Systems, G. Kennedy and B. Davis, Tata McGraw-Hill
3) Analog and Digital Communication Systems, M. J. Roden, Prentice Hall of India.

PRACTICAL COMPONENT

(15 Weeks with 4 hours of laboratory session per week)

Every student must perform at least 06 experiments.

1) To study AM – Generation and Detection circuit
2) To study FM – Generation and Detection circuit
3) To study Time Division Multiplexing (TDM)
4) To study Pulse Amplitude Modulation (PAM)
5) To study Pulse Width Modulation (PWM)
6) To study Pulse Position Modulation (PPM)
7) To study Amplitude Shift Keying (ASK)
8) To study Frequency Shift Keying (FSK)
9) To study Phase Shift Keying (PSK)

References (for Laboratory Work):

1) Introduction to Analog and Digital Communication – by M. A. Bhagyaveni, R. Kalidoss and K. S. Vishvaksenan, River Publishers Series in Communications
2) Communication Systems – by Michael Moher Simon Haykin, Wiley
3) Wireless Communication – by Goldsmith Andrea, Cambridge University Press
4) Digital Communications: Fundamentals and Applications – Bernard Sklar and Pabitra Kumar Ray, Pearson Education India

DISCIPLINE SPECIFIC ELECTIVE COURSE – PHYSICS DSE 1: BIOPHYSICS

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical		
Biophysics PHYSICS DSE 1	**4**	**3**	**0**	**1**	Passed 12th Class	NIL

LEARNING OBJECTIVES

This course familiarizes the students with the basic facts and ideas of biology from a quantitative perspective. It shows them how ideas and methods of physics enrich our understanding of biological systems at diverse length and time scales. The course also gives them a flavour of the interface between biology, chemistry, physics and mathematics.

LEARNING OUTCOMES

After completing this course, students will

- Know basic facts about biological systems, including single cells, multicellular organisms and ecosystems from a quantitative perspective.
- Gain familiarity with various biological processes at different length and time scales, including molecular processes, organism level processes and evolution.
- Be able to apply the principles of physics from areas such as mechanics, electricity and magnetism, thermodynamics, statistical mechanics, and dynamical systems to understand certain living processes.
- Get exposure to complexity of life at i) the level of cell, ii) level of multi cellular organism and iii) at macroscopic system – ecosystem and biosphere.
- Gain a systems level perspective on organisms and appreciate how networks of interactions of many components give rise to complex behaviour.
- Perform mathematical and computational modelling of certain aspects of living systems.
- Get exposure to models of evolution.
- Be able to perform experiments demonstrating certain physical processes that occur in living systems.

SYLLABUS OF PHYSICS DSE – 1

THEORY COMPONENT

Unit – I **(4 Hours)**

Overview: The boundary, interior and exterior environment of living cells. Processes: exchange of matter and energy with environment, metabolism, maintenance, reproduction, evolution. Self-replication as a distinct property of biological systems. Time scales and spatial scales.

Unit - II **(12 Hours)**

Molecules of life: Metabolites, proteins and nucleic acids. Their sizes, types and roles in structures and processes. Transport, energy storage, membrane formation, catalysis, replication, transcription, translation, signaling. Typical populations of molecules of various types present in cells, their rates of production and turnover. Energy required to make a bacterial cell. Simplified mathematical models of transcription and translation.

Unit - III **(12 Hours)**

Molecular motion in cells: Random walks and applications to biology: Diffusion; models of macromolecules. Mechanical, entropic and chemical forces: Osmosis, cell assembly, molecular motors, bacterial chemotaxis.

Unit - IV **(12 Hours)**

The complexity of life: At the level of a cell: Intracellular biochemical networks. Dynamics of metabolic networks; the stoichiometric matrix. The implausibility of life based on a simplified probability estimate, and the origin of life problem. At the level of a multicellular organism: Numbers and types of cells in multicellular organisms. Cellular differentiation and development. Brain structure: neurons and neural networks. At the level of an ecosystem and the biosphere: Foodwebs. Feedback cycles and self-sustaining ecosystems. Allometric scaling laws.

Unit - V **(5 Hours)**

Evolution: The mechanism of evolution: variation at the molecular level, selection at the level of the organism. Models of evolution.

PRACTICAL COMPONENT

(15 Weeks with 2 hours of laboratory session per week)

List of experiments

1) Demonstration of diffusion, effect of medium, temperature, molecular weight and size on the rate of diffusion.
2) Demonstration of osmosis in a living system.
3) Demonstration of the relationship between viscosity and density.
4) Demonstration of how microscopic particles travel in air through aerosols.
5) Graphic visualization and demonstrations of 3D structure of biomolecules using in-silico visualization tools.
6) Estimation of serum protein using BSA as the standard. (Optional).

References:

Essential Readings:

1) Biological Physics: Energy, Information, Life, P. Nelson, W. H. Freeman & Co, NY, 2004
2) Cell Biology by the Numbers, R. Milo and R. Phillips, Garland Science, Taylor & Francis Group, NY USA and Abingdon UK, 2016
3) Physical Biology of the Cell, R. Phillips et al, 2nd edition, Garland Science, Taylor & Francis Group, NY USA and Abingdon UK, 2013
4) Evolution, M. Ridley, Blackwell Publishers, 2009, 3rd edition

Additional Readings:

1) Physics in Molecular Biology, K. Sneppen and G. Zocchi, Cambridge University Press, Cambridge UK, 2005
2) Biophysics: Searching for Principles, W. Bialek, Princeton University Press, Princeton USA, 2012

DISCIPLINE SPECIFIC ELECTIVE COURSE – PHYSICS DSE 2: MATHEMATICAL PHYSICS I

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical		
MATHEMATICAL PHYSICS I Physics DSE 2	**4**	**3**	**1**	**0**	Passed 12th Class	NIL

LEARNING OBJECTIVES

The emphasis of course is to equip students with the mathematical tools required in solving problem of interest to physicists. The mathematical tools might be building blocks to understand the fundamental computational physics skills and hence enable them to solve a wide range of physics problems. Overall, to help students develop critical skills and knowledge that will prepare them not only for doing fundamental and applied research but also prepare them for a wide variety of careers

LEARNING OUTCOMES

After completing this course, student will be able to,

- Learn the functions more than one variable using the concepts of calculus.
- Solve first order differential equations and apply it to physical problems.
- Represent a periodic function by a sum of harmonics using Fourier series.
- Obtain power series solution of differential equation of 2nd order with variable coefficients using Frobenius mehod.
- Learn beta and gamma functions

SYLLABUS OF PHYSICS DSE 2

THEORY COMPONENT

Unit – I **(18 Hours)**

Calculus of functions of more than one variable: Partial derivatives, chain rule for partial derivatives, exact and inexact differentials. Integrating factor, with simple illustration. Constrained Maximization using Lagrange Multipliers.

Fourier Series: Periodic functions. Orthogonality of sine and cosine functions, Dirichlet Conditions (Statement only). Expansion of periodic functions in a series of sine and cosine functions and determination of Fourier coefficients. Even and odd functions and their Fourier expansions. Application to Summing of Infinite Series.

Unit – II **(12 Hours)**

Frobenius Method and Special Functions: Singular Points of Second Order Linear Differential Equations and their importance. Frobenius method and its applications to differential equations. Legendre Differential Equations and its solution. Properties of Legendre Polynomials: Rodrigues Formula, Orthogonality. Simple recurrence relations.

Unit – III **(15 Hours)**

Some Special Integrals: Beta and Gamma Functions and Relation between them. Expression of Integrals in terms of Gamma Functions.

Partial Differential Equations: Solutions to partial differential equations, using separation of variables: Laplace's Equation in problems of rectangular geometry. Solution of 1D wave equation.

References:

Essential Readings:

1) An introduction to ordinary differential equations, E. A. Coddington, PHI learning, 2009
2) Differential Equations, George F. Simmons, McGraw Hill, 2007
3) Mathematical methods for Scientists and Engineers, D. A. McQuarrie, Viva Book, 2003
4) Advanced Engineering Mathematics, D.G. Zill and W.S. Wright, 5th Edition, Jones and Bartlett Learning, 2012
5) Advanced Engineering Mathematics, Erwin Kreyszig, Wiley India, 2008
6) Fourier Analysis: With Applications to Boundary Value Problems, Murray Spiegel, McGraw Hill Education, 2017
7) Mathematical Methods for Physicists, G. B. Arfken, H. J. Weber, F.E. Harris, 7th Edition, Elsevier, 2013
8) Essential Mathematical Methods, K. F. Riley and M. P. Hobson, Cambridge University Press, 2011

Additional Readings:

1) Introduction to Electrodynamics, Chapter 1, David J. Griffiths, 4th Edition, Cambridge University Press, 2017
2) The Feynman Lectures on Physics, Volume II, Feynman, Leighton and Sands, Narosa Publishing House, 2008
3) Advanced Engineering Mathematics, D. G. Zill and W. S. Wright, 5th Edition, Jones and Bartlett Learning, 2012
4) Mathematical Tools for Physics, James Nearing, Dover Publications, 2010
5) Mathematical Physics, A. K. Ghatak, I. C. Goyal and S. J. Chua, Laxmi Publications Private Limited, 2017

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

GENERIC ELECTIVE (GE – 4): INTRODUCTION TO ELECTRONICS

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisites
		Lecture	Tutorial	Practical		
INTRODUCTION TO ELECTRONICS GE – 4	4	2	0	2	Passed 12th Class	NIL

LEARNING OBJECTIVES

This paper aims to introduce fundamentals of electronics to students not majoring in physics. Basics of Analog and Digital Electronics are envisioned to be introduced with emphasis on applications of diodes, transistor (BJT), operational amplifier, 555 timer, number systems, basic gates and digital circuits.

LEARNING OUTCOMES

At the end of this course, students will be able to imbibe the following learning outcomes:

- This paper aims to describe the concepts of basic electronics in real-life. In this course, students will receive an introduction to the principle, performance and applications of basic electronic components.
- The students will gain an insight on the existence of analog and digital signals and their necessity. Specifically they would know the difference between active and passive electronic components including filters.
- Students will learn about diodes and its uses in rectification (analog) and switching properties thereof (digital). They will gain an insight into working principle of Photodiodes, Solar Cells, LED and Zener Diode as Voltage Regulator.
- They will gain an understanding of construction and working principle of bipolar junction transistors (BJTs). Specifically, they would understand the fundamentals of amplification.
- Students will be able to seamlessly understand and work on different numbers systems including binary, octal, hexadecimal besides decimal.
- They will learn about the existence of digital gates besides their need in electronic decision making thus laying the foundation for basic artificial intelligence.
- Students will learn the fundamentals of operation amplifier and their regular application including those used to sum, subtract and compare two or more signals.
- They will gain an in-depth understanding of working of Cathode Ray Oscilloscope which effectively acts as an electronic stethoscope for analysis of electronic signal in any laboratory.
- This paper will essentially connect the text book knowledge with the most common electronic components available that influence design of technology in a real world.
- The project component included in the practical section is envisaged to impart much

needed hands-on skill sets to the student. Therein he/she gets an experience in correctly choosing components required to build an electronic circuit, identifying the procurement source (online/offline) besides gaining valuable experience in trouble-shooting

SYLLABUS OF GE - 4

THEORY COMPONENT

Unit – I **(4 Hours)**

Analog and digital signals, Active and passive electronic components, RC integrator and differentiator (use as low pass and high pass filter): Qualitative analysis and frequency response.

Unit – II **(6 Hours)**

I-V characteristics of a diode and it's applications as rectifier (Half and full wave rectifier configurations), Clipper and Clamper circuits (Qualitative Analysis only). Principle and working of Photodiodes, Solar Cells, LED and Zener Diode as Voltage Regulator.

Unit – III **(4 Hours)**

Input and output characteristics of a bipolar junction transistor (BJT) in CB and CE configurations, identifying active, cut-off and saturation regions. Transistor parameters alpha and beta, and relation between them. Application of BJT as a switch and an amplifier in CE configuration (Graphical Analysis)

Unit – IV **(6 Hours)**

Review of basic and Universal Logic Gates, Binary to decimal and Decimal to binary conversion, binary addition and subtraction using 2's complement, Half and Full Adder, Half and Full Subtractor using NAND Gates.

Unit – V **(6 Hours)**

Operational Amplifier (Black Box Approach): Pinout diagram of IC 741; Characteristics of Op-amp (Voltage Gain, offset voltage, slew rate, CMRR, Bandwidth, Input Impedance and Output Impedance). Open loop configuration and its application as a comparator and zero crossing detector. Closed Loop Configuration and its Applications as Inverting and Non-inverting Amplifier (Voltage gain using concept of virtual ground), Summing Amplifier and Subtractor

Unit – VI **(4 Hours)**

Block diagram of CRO, Voltage and frequency measurement. Pin-out diagram of IC 555 and its application as Astable Multivibrator

References:

Essential Readings:

1) Electronic Devices, Thomas L Floyd; Pearsons Education
2) Op Amps and Linear Integrated Circuits, Ramakant A Gaekwad, Pearson Education
3) Microelectronic circuits, A. S. Sedra, K. C. Smith, A. N. Chandorkar, Oxford University Press
4) Electronic Principles, A. Malvino, D. J. Bates, 7th Edition, Tata Mc-Graw Hill Education, 2018

5) Electronic Devices and circuit theory, R. L. Boylestad and L. D. Nashelsky, Pearson Learning
6) Digital Principles and Applications, Donald P Leach, Albert Paul Malvino and Goutam Saha, Pearson Education, Tata Mc-Graw Hill.

Additional Readings:

1) Electronic Fundamental and Applications, John D Ryder; PHI Learning
2) Electronic Devices and Circuits, J. Millman and C. C. Halkias, Tata Mc-Graw Hill.

PRACTICAL COMPONENT

(15 Weeks with 4 hours of laboratory session per week)

Every student must perform either "04 Experiments and 01 Project" or "At least six experiments"

1) Voltage and frequency measurement using CRO
2) Study of RC circuits as an Integrator and Differentiator
3) IV characteristics for pn junction diode and Zener diode
4) Study of Zener diode as voltage regulator circuit
5) Study of transistor characteristics in CE configuration
6) Half Adder and Full Adder using NAND gates
7) Half Subtractor and Full Subtractor using NAND gates
8) Design Astable Multivibrator using IC 555
9) Study the Frequency Response of Op Amp in Inverting and Non Inverting configurations.
10) Study of zero crossing detector using Op amp IC 741
11) Addition of two dc voltages using OP Amp in inverting and non-inverting configurations.

References (for Laboratory Work):

1) An Analog Electronics Companion: Basic Circuit Design for Engineers and Scientists – by Scott Hamilton, Cambridge University Press
2) Practical Electronics – by Ralph Morrison, Wiley
3) Practical Electronic Design for Experimenters (ELECTRONICS) – by Louis E. Frenzel, McGraw Hill Education
4) Practical Electronics for Inventors – by Paul Scherz and Simon Monk, McGraw Hill
5) Analog Electronics with Op-amps: A Source Book of Practical Circuits (Electronics Texts for Engineers and Scientists) – by Anthony Peyton and Vincent Walsh, Cambridge University Press

GENERIC ELECTIVE (GE – 5): SOLID STATE PHYSICS

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical		
SOLID STATE PHYSICS GE – 5	4	3	1	0	Passed 12th Class	NIL

LEARNING OBJECTIVES

This course introduces the basic concepts and principles required to understand the various properties exhibited by condensed matter, especially solids. It enables the students to appreciate how the interesting and wonderful properties exhibited by matter depend upon its atomic and molecular constituents. It also communicates the importance of solid state physics in modern society. Emphasis should be given on the applications and uses of solids.

LEARNING OUTCOMES

On successful completion of the module students should be able to,

- Elucidate the concept of lattice, basis and symmetry in crystals. Learn to appreciate structure and symmetry of solids.
- Understand the elementary lattice dynamics and its influence on the properties of materials.
- Describe the main features of the physics of electrons in solids: origin of energy bands.
- Introduction to dia-, para-, ferri and ferro-magnetic properties of solids and their applications.
- Introduction to dielectric properties exhibited by solids and the concept of polarizability.
- Introduction to superconductivity.

SYLLABUS OF GE - 5

THEORY COMPONENT

UNIT – I **(21 Hours)**

Review of Atomic Structure and bonding in solids: Classification of matter as solid, liquid and gas: salient features and properties, Qualitative discussion on Rutherford Model and Bohr model of atom, qualitative idea about discrete energy levels, wave-mechanical concept of the atom, forces between atoms, Ionic bonding, covalent bonding, metallic bonding, Hydrogen bonding and Van der Waals bonding, Properties of solids exhibiting different bonding.

Crystal structure: Periodicity in crystals: lattice points and space lattice, translational, rotational and reflection symmetry elements, lattice with a basis and crystal structure, unit cells and lattice parameters, Bravais lattices (in 2D and 3D) and crystal systems SC, BCC and FCC lattices, conventional and primitive unit cell, Wigner Seitz unit cell, amorphous and crystalline materials. Planes, Miller Indices, directions, density of atoms in different planes, inter-planar spacing, concept of Reciprocal Lattice, Brillouin zones (2 D lattice)

Atomic Packing and Imperfections in crystals: Packing of spheres in 2D and 3D, hexagonal close packing, packing fraction of SC, FCC, and BCC. Point defects and line defects and their consequences on the crystal properties
X-rays: Their generation and properties, Bragg's law and Laue Condition, single crystal method and powder diffraction method, simple problems related to X-Ray diffraction in SC, BCC, FCC

UNIT – II **(4 Hours)**
Elementary Lattice Dynamics: Lattice vibrations and phonons: linear monoatomic and diatomic chains, acoustic and optical phonons, qualitative description of the phonon spectrum in solids.

UNIT – III **(10 Hours)**
Electrical properties of metals: Free electron theory of metals (Drude model), its success and drawbacks, concept of relaxation time, collision time and mean free path, electrical conductivity, mobility and Ohm's law, thermal conductivity of metals, Wiedemann-Franz-Lorentz law.
Band Theory: The Kronig-Penney model (Qualitative idea), Band Gap, direct and indirect bandgap, concept of effective mass, Hall Effect (Metal and Semiconductor).
Optical properties of solids: (Qualitative) Absorption process, transmission and reflectance in solids. Discussion on photoconductivity, photoluminescence.

UNIT – IV **(3 Hours)**
Magnetic Properties of solids: Dia-, Para-, Ferri- and Ferro- magnetic Materials, definition in terms of susceptibility.Weiss's Theory of FerromagnetismandFerromagnetic Domains (qualitative treatment only),B-H curve, soft and hard material and their applications(discussion only) as cores in generators, transformers and electromagnets, energy lossin Hysteresis curve.

UNIT – V **(4 Hours)**
Dielectric Properties of solids: Dipole moment, polarization,local electric field in solids. Depolarization field, electric susceptibility, various sources of polarizability,piezo-, pyro- and ferroelectric materials and their applications(discussion only) as transducers, pickups, sensors, actuators, delay lines.

UNIT – VI **(3 Hours)**
Superconductivity: (Qualitative treatment only) Experimental Results. Critical Temperature. Critical magnetic field. Meissner effect. Type I and type II Superconductors, applications of superconductors. Discussion on applications in MRI, particle collider, power transmission, magnetic levitation etc.

References:
Essential Readings:

1) Solid State Physics, M. A. Wahab, 3rd Edition, Narosa Publications, 2015
2) Solid State Physics, S. O. Pillai, New Age International Publishers
3) Introduction to Solid State Physics, Charles Kittel, 8th Edition, Wiley India Pvt. Ltd, 2004
4) Elements of Solid State Physics, J. P. Srivastava, 2nd Edition, Prentice-Hall of India, 2006
5) Solid State Physics, A. J. Dekker, Macmillan Education, 2008

Additional Readings:

1) Introduction to Solids, Leonid V. Azaroff, Tata Mc-Graw Hill, 2004
2) Solid State Physics, N. W. Ashcroft and N. D. Mermin, Cengage Learning, 1976
3) Elementary Solid State Physics, M. Ali Omar, Pearson, 2006
4) Solid State Physics, Rita John, McGraw Hill, 2014
5) Superconductivity: A Very short Introduction – Stephen J Blundell – Audiobook
6) Crystallography applied to solid state physics, A. R. Verma and O. N. Srivastava, New Age International Publishers, 2005

GENERIC ELECTIVE (GE – 7): BIOLOGICAL PHYSICS

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical		
BIOLOGICAL PHYSICS GE – 7	4	3	1	0	Passed 12th Class	NIL

LEARNING OBJECTIVES

This course familiarizes the students with the basic facts and ideas of biology from a quantitative perspective. It shows them how ideas and methods of physics enrich our understanding of biological systems at diverse length and time scales. The course also gives them a flavour of the interface between biology, chemistry, physics and mathematics.

LEARNING OUTCOMES

After completing this course, students will

- Know basic facts about biological systems, including single cells, multicellular organisms and ecosystems from a quantitative perspective.
- Gain familiarity with various biological processes at different length and time scales, including molecular processes, organism level processes and evolution.
- Appreciate how fundamental principles of physics can be applied to gain an understanding of biological systems.
- Get exposure to complexity of life at i) the level of cell, ii) level of multi cellular organism and iii) at macroscopic system – ecosystem and biosphere.
- Gain a systems level perspective on organisms and appreciate how networks of interactions of many components give rise to complex behaviour.
- Perform mathematical modelling of certain aspects of living systems.
- Get exposure to models of evolution.

SYLLABUS OF GE 7

THEORY COMPONENT

Unit – I **(4 Hours)**

Overview: The boundary, interior and exterior environment of living cells. Processes: exchange of matter and energy with environment, metabolism, maintenance, reproduction, evolution. Self-replication as a distinct property of biological systems. Time scales and spatial scales.

Unit - II **(12 Hours)**

Molecules of life: Metabolites, proteins and nucleic acids. Their sizes, types and roles in structures and processes. Transport, energy storage, membrane formation, catalysis, replication, transcription, translation, signaling. Typical populations of molecules of various

types present in cells, their rates of production and turnover. Energy required to make a bacterial cell. Simplified mathematical models of transcription and translation.

Unit - III **(12 Hours)**

Molecular motion in cells: Random walks and applications to biology: Diffusion; models of macromolecules. Molecular motors: Transport along microtubules. Flagellar motion: bacterial chemotaxis.

Unit - IV **(12 Hours)**

The complexity of life: At the level of a cell: Intracellular biochemical networks. Dynamics of metabolic networks; the stoichiometric matrix. The implausibility of life based on a simplified probability estimate, and the origin of life problem. At the level of a multicellular organism: Numbers and types of cells in multicellular organisms. Cellular differentiation and development. Brain structure: neurons and neural networks. At the level of an ecosystem and the biosphere: Foodwebs. Feedback cycles and self-sustaining ecosystems. Allometric scaling laws.

Unit - V **(5 Hours)**

Evolution: The mechanism of evolution: variation at the molecular level, selection at the level of the organism. Models of evolution.

References:

Essential Readings:

1) Biological Physics: Energy, Information, Life, P. Nelson, W H Freeman & Co, NY, 2004
2) Cell Biology by the Numbers, R. Milo and R. Phillips, Garland Science, Taylor & Francis Group, NY USA and Abingdon UK, 2016
3) Physical Biology of the Cell, R. Phillips et al, 2nd edition, Garland Science, Taylor & Francis Group, NY USA and Abingdon UK, 2013
4) Evolution, M. Ridley, Blackwell Publishers, 2009, 3rd edition

Additional Readings:

1) Physics in Molecular Biology, K. Sneppen and G. Zocchi, Cambridge University Press, Cambridge UK, 2005
2) Biophysics: Searching for Principles, W. Bialek, Princeton University Press, Princeton USA, 2012

GENERIC ELECTIVE (GE – 8):

NUMERICAL ANALYSIS AND COMPUTATIONAL PHYSICS

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical		
NUMERICAL ANALYSIS AND COMPUTATIONAL PHYSICS GE – 8	4	2	0	2	Passed 12th Class	Differential calculus, integration and ordinary differential calculus at the class 12 level.

LEARNING OBJECTIVES

The emphasis of course is to equip students with the mathematical tools required in solving problem of interest to physicists. To expose students to fundamental computational physics skills and hence enable them to solve a wide range of physics problems.

LEARNING OUTCOMES

After completing this course, student will be able to,

- Develop numerical methods to understand errors and solution of Algebraic and Transcendental equations.
- Understand interpolation, least square fitting, Numerical differentiation, Numerical integration and solution of ordinary differential equations.

In the laboratory course, the students will learn to,

- apply appropriate numerical method to solve selected physics problems using user defined and inbuilt functions
- solve non-linear equations
- perform least square fitting of the data taken in physics lab by user defined functions
- Interpolate a data by polynomial approximations
- numerically integrate a function and
- solve first order initial value problems numerically

SYLLABUS OF GE - 8

THEORY COMPONENT

Unit – I **(8 Hours)**

Errors and iterative Methods: Truncation and Round-off Errors. Floating Point Computation, Overflow and underflow. Single and Double Precision Arithmetic, Iterative Methods. Review of Taylor's Theorem and Mean value Theorem (No proofs).

Solutions of Algebraic and Transcendental Equations: Bisection method, Secant Method, Newton Raphson method. Comparison and error estimation

Unit – II **(10 Hours)**

Interpolation: Concept of Interpolation, Lagrange Form of interpolating polynomial, Newton's Forward and Backward Differences, Newton's Forward and Backward Interpolation Formulas.

Regression: Algorithm for Least square fitting of a straight line, Fitting a Power function, and Exponential Function using conversion to linear relation by transforming the variables.

Unit – III **(7 Hours)**

Numerical Differentiation: Approximating the derivative of a function given in the form of discrete data, Numerical Computation of First and second order derivative of a function given in closed form (using Taylor's expansion) , errors in Numerical Differentiation.

Numerical Integration: Newton Cotes Quadrature methods for evaluation of definite integrals numerically, Trapezoidal Rule, Simpson's 1/3 and 3/8 Rules. Derivation of composite formulae for these methods and discussion of error estimation

Unit – IV **(5 Hours)**

Solution of Ordinary Differential Equations: First Order ODE's: solution of Initial Value problems: (1) Euler's Method and (2) Runge Kutta methods

References:

Essential Readings:

1) Elementary Numerical Analysis, K. E. Atkinson, 3rd Edition, Wiley India Edition, 2007
2) Introduction to Numerical Analysis, S. S. Sastry, 5th Edition, PHI Learning Pvt. Ltd, 2012
3) Computational Physics, Darren Walker, 1st Edition, Scientific International Pvt. Ltd, 2015
4) Applied numerical analysis, Cutis F. Gerald and P. O. Wheatley, Pearson Education, 2007

Additional Readings:

1) An Introduction to Computational Physics, T. Pang, Cambridge University Press, 2010
2) Numerical Recipes: The art of scientific computing, William H. Press, Saul A. Teukolsky and William Vetterling, Cambridge University Press, 3rd Edition, 2007
3) Computational Problems for Physics, R. H. Landau and M. J. Páez, CRC Press, 2018

PRACTICAL COMPONENT

(15 Weeks with 4 hours of laboratory session per week)

The aim of this lab is not just to teach computer programming and numerical analysis but to emphasize its role in solving problems in Physics.

- The course will consist of practical sessions and lectures on Python.
- Assessment is to be done not only on the programming but also on the basis of formulating the problem.
- The list of recommended programs is suggestive only. Students should be encouraged to do more physics applications. Emphasis should be given to formulate a physics problem as mathematical one and solve by computational methods.
- At least 6 programs must be attempted (taking at least one from each unit).

Unit I

Basic Elements of Python: The Python interpreter, the print statement, comments, Python as simple calculator, objects and expressions, variables (numeric, character and sequence types) and assignments, mathematical operators. Strings, Lists, Tuples and Dictionaries, type conversions, input statement, list methods. List mutability, formatting in the print statement

Control Structures: Conditional operations, i*f, if-else, if-elif-else, while* and *for* Loops, indentation, break and continue, List comprehension. Simple programs for practice like solving quadratic equations, temperature conversion etc.

Functions: Inbuilt functions, user-defined functions, local and global variables, passing functions, modules, importing modules, math module, making new modules. Writing functions to perform simple operations like finding largest of three numbers, listing prime numbers, etc. Generating pseudo random numbers

Recommended List of Programs

(a) Make a function that takes a number *N* as input and returns the value of factorial of *N*. Use this function to print the number of ways a set of *m* red and *n* blue balls can be arranged.
(b) Generate random numbers (integers and floats) in a given range and calculate area and volume of regular shapes with random dimensions.
(c) Generate data for coordinates of a projectile and plot the trajectory. Determine the range, maximum height and time of flight for a projectile motion.

Unit II

NumPy Fundamentals: Importing *Numpy*, Difference between List and NumPy array, Adding, removing and sorting elements, creating arrays using *ones(), zeros(), random(), arange(), linspace()*. Basic array operations (*sum, max, min, mean, variance*), 2-d arrays, matrix operations, reshaping and transposing arrays, savetxt() and loadtxt().

Plotting with Matplotlib: *matplotlib.pyplot* functions, Plotting of functions given in closed form as well as in the form of discrete data and making histograms.

Recommended List of Programs

(a) Given a function in closed form y=f(x), generate numpy arrays for x and y and plot y as a function of x with appropriate scale and legend.
(b) Generate data for coordinates of a projectile and plot the trajectory.
(c) Given the expressions in closed form, plot the displacement-time and velocity-time graph for the un-damped, under damped critically damped and over damped oscillator.

Unit III

Root Finding

a) Determine the depth up to which a spherical homogeneous object of given radius and density will sink into a fluid of given density.
b) Solve transcendental equations like $\alpha = \tan(\alpha)$.
c) To approximate nth root of a number up to a given number of significant digits.

Unit IV

Least Square fitting

Make function for least square fitting, use it for fitting given data (*x,y*) and estimate the parameters *a, b* as well as uncertainties in the parameters for the following cases:

a) Linear ($y = ax + b$)
b) Power law ($y = ax^b$)

c) Exponential ($y = ae^{bx}$)

Interpolation:

(a) Write program to determine the unique polynomial of a degree *n* that agrees with a given set of (*n*+1) data points (x_i, y_i) and use this polynomial to find the value of *y* at a value of *x* not included in the data.

(b) Generate a tabulated data containing a given number of values (x_i, $f(x_i)$) of a function f(x) and use it to interpolate at a value of x not used in table.

Unit V

Numerical Differentiation

a) Given displacement at equidistant time values, calculate velocity and acceleration and plot them.

b) Compute the left, right and central approximations for derivative of a function given in closed form. Plot both the function and derivative (forward, backward and central derivatives) on the same graph. Plot the error as a function of step size on a log-log graph, study the behaviour of the plot as step size decreases and hence discuss the effect of round off error.

Numerical Integration:

a) Given acceleration at equidistant time values, calculate position and velocity and plot them.

b) Use integral definition of ln(x) to compute and plot ln(x) in a given range. Use trapezoidal and Simpson methods and compare the results.

c) Verify the rate of convergence of the composite Trapezoidal and Simpson methods by approximating the value of a given definite integral.

References

1) Documentation at the Python home page (https://docs.python.org/3/) and the tutorials there (https://docs.python.org/3/tutorial/).
2) Documentation of NumPy and Matplotlib: https://numpy.org/doc/stable/user/ and https://matplotlib.org/stable/tutorials/
3) Computational Physics, Darren Walker, 1st Edition, Scientific International Pvt. Ltd, 2015
4) Introduction to Numerical Analysis, S. S. Sastry, 5th Edition, PHI Learning Pvt. Ltd, 2012
5) Elementary Numerical Analysis, K. E. Atkinson, 3rd Edition, Wiley India Edition, 2007
6) Applied numerical analysis, Cutis F. Gerald and P. O. Wheatley, Pearson Education, 2007

GENERIC ELECTIVE (GE – 9): APPLIED DYNAMICS

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical		
APPLIED DYNAMICS GE – 9	4	3	1	0	Passed 12th Class	NIL

LEARNING OBJECTIVES

This course introduces the main topics of low-dimensional nonlinear systems, with applications to a wide variety of disciplines, including physics, engineering, mathematics, chemistry, and biology. This course begins with the first order dynamical system and the idea of phase space, flows and trajectories and ends with the elementary fluid dynamics. The nature of the subject demands that the tutorials should include only computational problems.

LEARNING OUTCOMES

Upon successful course completion, a student will be able to:

- Demonstrate understanding of the concepts that underlay the study of dynamical systems.
- Learn various forms of dynamics and different routes to chaos.
- Understand basic Physics of fluids and its dynamics

SYLLABUS OF GE 9

THEORY COMPONENT

Unit – I **(22 Hours)**

Introduction to Dynamical systems: Definition of a continuous first order dynamical system. The idea of phase space, flows and trajectories. Concept of stability and un-stability. Simple mechanical systems as first order dynamical systems: simple and damped harmonic oscillator. Fixed points, attractors, stability of fixed points, basin of attraction, notion of qualitative analysis of dynamical systems. Examples of dynamical systems – Population models e.g. exponential growth and decay, logistic growth, predator-prey dynamics.

Unit – II **(16 Hours)**

Introduction to Chaos: Bifurcations: Saddle-Node bifurcation, Transcritical bifurcation, Pitchfork bifurcation and Hopf bifurcation. Chaos in nonlinear equations: Logistic map and Lorenz equations. Sensitivity to initial states. Parameter dependence: steady, periodic and chaotic states. Cobweb iteration. Simple examples from physics, chemistry, engineering and lifesciences.

Unit – III **(7 Hours)**

Elementary Fluid Dynamics: Basic physics of fluids: The continuum hypothesis-concept of

fluid element or fluid parcel; Definition of a fluid- shear stress; Fluid properties- viscosity, thermal conductivity, mass diffusivity and equation of state.

References:

Essential Readings:

1) Nonlinear Dynamics and Chaos, S. H. Strogatz, Westview Press, 2nd Edition, 2014
2) Understanding Nonlinear Dynamics, Daniel Kaplan and Leon Glass, Springer New York, 1995
3) Nonlinear Dynamics: Integrability, Chaos and Patterns, M. Lakshmanan and S. Rajasekar, Springer, 2003
4) An Introduction to Fluid Dynamics, G. K. Batchelor, Cambridge University Press, 2002
5) Fluid Mechanics, 2nd Edition, L. D. Landau and E. M. Lifshitz, Pergamon Press, Oxford, 1987

ANNEXURE-10

Sub: Amendment to Ordinance V

[E.C Resolution No. 60-1/ (60-1-11) dated 03.02.2023]

Following addition be made to Appendix-II-A to the Ordinance V (2-A) of the Ordinances of the University;

Add the following:

Syllabi of Semester-III of Five Year Integrated Programme in Journalism based on Undergraduate Curriculum Framework -2022 under Delhi School of Journalism implemented from the Academic Year 2022-23.

CATEGORY I

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

DISCIPLINE SPECIFIC CORE COURSE – DSC A3: PRINT JOURNALISM & PRODUCTION

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Print Journalism & Production	4	3	0	1	Class XII Pass	NIL

Learning Objectives

The course will help the students to acquire advanced print media skills like editing, design, layout and production.

Learning Outcomes

- After completing the course, students will be able to understand basic concepts around news and news production and write news, feature stories, opinion articles and editorials etc.
- Students will also be able to design and produce a newspaper/magazine.

SYLLABUS OF DSC A3 – Print Media and Production (45 Hours)

Unit 1 – Print Journalism (12 Hours)

1. Introduction to Newspapers (major international, national and regional); Magazine & Magazine types: news, special interest, general, lifestyle; Magazine Formats and unique features that have developed
2. Headlines; importance, functions of headlines, typography and style, language, types of headlines, style sheet
3. Features: writing style, different types of features, special articles, article versus features, news versus features
4. Editorial: Significance, types of editorials, edit page, op-ed, opinion column, writing editorials, caricatures and cartoons, Selection and positioning of news pictures
5. Week-end pull-outs, Supplements, Backgrounders

Unit 2 – Print Production – Basic & Advanced (10 Hours)

1. Kinds of print publications- tabloid, broadsheet
2. Principles of Layout and Design: Layout and format, Typography
3. Copy preparation, Design process (size, anatomy, grid, design)
4. Handling text matter (headlines, pictures, advertisements)
5. Page make-up (Front page, Editorial page and Supplements)

Unit 3 – Specialized Reporting (12 Hours)

1. Parliamentary
2. Court
3. Development
4. International Affairs
5. Science and Technology
6. Elections
7. Rural
8. Sports
9. Business
10. Fashion
11. Entertainment
12. Investigating
13. Emerging Beats

Unit 4 – Trends in Print Journalism (11 Hours)

1. Citizen Journalism

2. Technology Boom & Print Journalism – Various Aspects
3. Editorial policy and ethical debates in print journalism. (Advertorial trend), Paid news, Agenda setting, Pressures in the newsroom, Trial by media, Gatekeepers.

Practical Component (30 Hours)
Production of Newspaper

1. Production of a newspaper
2. Designing/Layout/production of a newspaper: Planning front and inside pages
3. Various writing techniques: headline writing, writing reviews, translating stories from English to Hindi and vice-versa.
4. Opinion/columns
5. Feature
6. Editorial
7. Conducting interviews

Suggested Readings

1. Singh, A.K. (2012). *Sirph Patrakita*. Pragun Publications.
2. Allan, S. (2005). *Journalism: Critical Issues.* Open University Press. New Delhi.
3. Kamath, M.V. (2018). *Professional Journalism*. Vikas Publishing House. New Delhi
4. Nanda, V. (2016). *Tinka Dasna*. Massco Media. Delhi.
5. Sarkar, N.N. (2013). *Art and Production*. Oxford University Press. New Delhi.
6. John, M. (2015). *Editing Today*. Media House. Delhi.
7. Mishra, A. (2017). *Hindi Ke Pramukh Samacharpatra Aur Patrikayen.* Prabhat Publications.
8. Sharma. M. (2018). *Print Media: Kal aur Aaj*. Hindi Book Centre.

DISCIPLINE SPECIFIC CORE COURSE – DSC B3: DESIGN LAYOUT AND SOFTWARE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Design Layout & Software	4	3	0	1	Class XII Pass	NIL

Learning Objectives

The course will introduce the students to design software – Adobe Photoshop; video editing software – Adobe Premiere Pro and audio recording and editing software.

Learning Outcomes

- After completing this course, students will be able to gain understanding of basic design and lay-out, recording and editing software.
- Through the acquired skills, students will be able to create and produce programs for different media platforms.

SYLLABUS OF DSC B2 – Design Layout & Software (45 Hours)

Unit 1 – Digital Photo Editing- Using Software and Mobile Applications (12 Hours)

1. File formats
2. Image Correction
3. Cropping and Transformations
4. Colour Correction
5. Masking
6. Filters for image manipulation
7. Blending Modes
8. Creating text
9. Combining Multiple Images

Unit 2 – Video Editing- Using Software and Mobile Applications (12 Hours)

1. Importing video, audio and still – images
2. Working with stills and video formats
3. Adding Effects like video transitions, rendering, real time effects etc.

4. Colour correction
5. Exporting video to different mediums and formats

Unit 3 –Audio Editing - Using Software and Mobile Applications (11 Hours)

1. Audio editing and sound effects
2. File types and the need for the various formats
3. Changing audio levels and using audio clip mixer
4. Exporting audio to different mediums and formats

Unit 4 – Graphic Designing- Using latest Tools and Techniques (10 Hours)

1. Learning Design Skills
2. Professional Graphic Design
3. Creating Video and Animation using Graphic

Practical Component (30 Hours)

1. Practice Assignments
2. Exercises
3. Multimedia Projects
4. Tests

Suggested Readings

1. Dayley, B. & Dayley, D. (2012). *Adobe Photoshop CS6 Bible*. Wiley.
2. Jago, M. (2019). *Adobe Premiere Pro CC Classroom in a Book.* Adobe Press.
3. Canva Help Centre for Canva Software.
4. Dewis, G. (2014). *Photoshop Workbook, The: Professional Retouching and Compositing Tips, Tricks, and Techniques.* Peachpit Press.
5. Premiere Pro Tutorials - https://helpx.adobe.com/premiere-pro/tutorials.html
6. McDaniel, D.O., Shriver, R.C. & Collins, K. (2007). *Fundamentals of Audio Production.* Pearson Education.
7. Greenberg, et al. (2007) *Adobe Premiere Pro Studio Techniques (Digital Video & Audio Editing Courses)* (1st Edition). Adobe Press.
8. Frutiger, A. (1998). *Signs and Symbols: Their Design and Meaning.* Watson-Guptill.

DISCIPLINE SPECIFIC CORE COURSE – DSC C3 : INTRODUCTION TO BROADCAST MEDIA

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Introduction to Broadcast Media	**4**	**3**	**0**	**1**	**Class XII Pass**	**NIL**

Learning Objectives

The course will introduce the basics of broadcast media – Radio and Television, and broadcast news production techniques to students.

Learning Outcomes

- After completing this course, students will acquire basic hands-on training in broadcast media which will enable them to create and produce programmes in contemporary broadcast formats.

SYLLABUS OF DSC C3 – Introduction to Broadcast Media (45 Hours)

Unit 1 – Basics of Sound (11 Hours)

1. Concepts and types of Sound
2. Sound Design – its meaning in different mediums
3. Types of Microphones and Patterns
4. Acoustics
5. Podcasting

Unit 2 – Basics of Visual (10 Hours)

1. Images (Analogue & Digital) & Changing Trends
2. Image Editing
3. Basics of Visual Communication
4. Visual Grammar

Unit 3 – Radio (12 Hours)

1. Basics of Radio Programming

2. Radio Content Formats
3. Working in a Radio Studio (Radio Studio Operations and Production Control Room)
4. Radio Production & Transmission Techniques (Acoustics; Input and Output Chain; Studio Console for Recording and Mixing, Talk Back System etc.)

Unit 4 – Television (12 Hours)

1. Basics of a Camera (Lens & accessories); Camera Movements, Types of Shots etc.
2. Common terminologies used in TV media, TV News Scripts
3. Basics of Television Production - Electronic News Gathering (ENG) & Electronic field Production (EFP); Elements of a Television News Story etc.
4. Lighting – Concept of light, Three Point Lighting etc.
5. Basics of Editing for TV- Software and Techniques, 24 Hours news format, News Production cycle, etc.

Practical Component (30 Hours)

1. Radio Capsules
2. TV format style small projects
3. Lighting Techniques
4. Projects and presentations

Suggested Readings

1. Jelkhani, A. & Shah, M. (2017). *Television Karyakram Nirman Prakriya*. Prabhat Prakashan.
2. Chatterji, P.C. (1987). *Broadcasting in India*. Sage Publications.
3. Herbert, Z. (1991). *Television Production Handbook*. Wadsworth Publishing.
4. Yadav, S. (2013). *Prasaran Patrakarita*. Madhya Pradesh Hindi Granth Academy.
5. Pavarala, V. & Malik, K. (2007). *Other voices: the struggle for community radio in India*. Sage Publication. Los Angeles.
6. Barnas, F. & White, T. (2010). *Broadcast News Writing, Reporting, and Producing*. Routledge. New York.
7. Mehra, R. (2007). *Media aur Prasaran*. Takshila Prakashan.
8. Belavadi, V. (2008). *Video Production*. Oxford University Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE – DSE A: MEDIA AND ECONOMICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Media & Economics	4	3	1	0	Class XII Pass	NIL

Learning Objectives

The course will introduce students to basic Economic Concepts and Principles, Media Economics and Media Markets.

Learning Outcomes

- After completing this course, students will be able to acquire a comprehensive understanding of the Indian and International economic scenarios which will prepare them for writing and reporting on economic issues.

SYLLABUS OF DSE A – Media & Economics (45 Hours)

Unit 1- Introduction to Economics (11 Hours)

1. Definition of Economics and Economic Systems
2. Theories, Explanations and Applications
3. Economy - Consumer's Behaviour: Demand, Supply and Consumer's Equilibrium
4. Producer's Behaviour: Production Function and Producer's Equilibrium
5. Basic concepts related to Economic Growth and Economic Development: National Income, its accounting procedures, Concept of GDP, Per Capita Income, HDI, and Sustainable Development.

Unit 2 - Indian Economy (10 Hours)

1. Understanding Indian Economy: Key Determinants
2. Taxation System In India – Discussion of GST
3. Union Budget, Economic Survey & its linkages with Civic Lives
4. Fiscal and Monetary Policy

Unit 3 - International Economics (12 Hours)

1. International Trade Agencies

2. Global Cooperations and Economic Institutions
3. Interstate Organisations and Economic Institutions
4. Forex Reserves – Exchange rates and Investments
5. Economic Conflicts, Sanctions and Resolutions

Unit 4 - Understanding Media Economics (12 Hours)

1. Media as an Economic Enterprise: Support – State, Societal and International
2. Media and Financial Independence
3. Media Industry and Change- Technology, Regulation, Globalization and Socio-Cultural Developments

Activities to be conducted under tutorial

1. Case Studies
2. Individual projects to be done on any of the topics related to Media and Economic Development.

Suggested Readings

1. Jhingan, M. L. (2014). *Principles of Economics*. (Hindi Edition). Vrinda Publications
2. Kohli-Khandekar, V. (2017). *Bharatiya Media Vyavsay*. Sage Publications.
3. Albarran, A., Mierzejewska, B., & Jung, J. (Eds.). (2018). *Handbook of Media Management and Economics.* (2nd ed.). Routledge.
4. Alexander, et al. (2003). *Media Economics: Theory and Practice*. (3rd. ed.). Routledge.
5. Case, K.E. & Fair, R.C. & Oster, S.M. (2007). *Principles of Economics*. (8th ed.) Pearson Education.
6. Kaplia, U. (2013). *Indian Economy: Performance and Policies*. (Hindi Edition). (15th ed.) Academic Foundation. New Delhi.
7. Lotz, A. & Havens, T. (2011). *Understanding Media Industries*. Oxford University Press.
8. Lal, S.N. (2020). *Antarashtriya Arthashastra*.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE – DSE B: MEDIA & INTERNATIONAL RELATIONS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Media & International Relations	4	3	1	0	Class XII Pass	NIL

Learning Objectives

The course will introduce students to International Relations and is focussed on providing understanding of media's role within international relations and foreign policy.

Learning Outcomes

- After completing this course, students will be able to acquire a general understanding of the crucial role that media plays in international relations and will get trained in writing, reporting and critiquing on issues related to foreign affairs.

SYLLABUS OF DSE B – Media & International Relations (45 Hours)

Unit 1 - Journalism As Soft Power In International Relations (12 Hours)

1. Introduction to International Relations – Key concepts
2. Diplomacy and International Relations – Key Influencers
3. Soft power: Origins and Concepts; Soft power and mass media
4. Media Systems – Global and Indian; Making and Breaking of Narratives

Unit 2 – Media Coverage of Issues In Contemporary Global Politics (11 Hours)

1. Key debates and problems
2. Global Politics – Country specific concerns and relationships
3. Media coverage of contemporary issues (Case Studies)
4. Bilateralism & Multilateralism
5. Culture and Diplomacy

Unit 3 – India and International Politics (11 Hours)

1. India's foreign Policy
2. India and the Sub-continent
3. India and SAARC
4. India and Disarmament: Issues in NPT, CTBT

5. India as a Global Power: Changing Direction of Foreign Policy

Unit 4 - Global Institutions and their functions (11 Hours)

1. Institutions Affecting World Order
2. Political Organisations
3. Financial/Economic Organisations
4. Strategic Organisations
5. Commercial Organisations

Activities to be conducted under tutorial

1) Report Writing
2) Inferencing Case Studies
3) Visit to International Organisations like UN, UNDP etc.
4) Projects

Suggested Readings

1. Singh, U. (2022). *Antarashtriya Sambandh: Vividh Aayam, Muddein aur Chunautiyan.* McGraw Hill.
2. Pant, P. & Pandey, J.K. (2023). *21 vi Shataabdi mei Antarashtriya Sambandh.* McGraw Hill
3. Fadia, B.L. (2019). *Antarashtriya Sambandh.* Sahitya Bhawan Publications.
4. Mark Scheinbaum. (2020). *The Role of Media in International Relations.* Cognella.
5. Nye, J. (2017). *Soft power: the origins and political progress of a concept.* Palgrave Communications. Humanities and Social Sciences Communications
6. Hallin, Daniel C., & Mancini, M. (2004). *Comparing Media Systems: Three Models of Media and Politics*. Cambridge University Press.
7. Ganguly, S. & Pardesi, Manjeet S. (2009). *Explaining Sixty Years of India's Foreign Policy*. India Review, 8:1, 4-19, DOI: 10.1080/14736480802665162
8. Saran, S. (2018.) *How India Sees the World: Kautilya to the 21st Century.* Juggernaut.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

A N NEXURE- 11

Sub: Amendment to Ordinance V

[E.C Resolution No. 14-1/ (14-1-3) dated 09.06.2023]

Following addition be made to Appendix-II-A to the Ordinance V (2-A) of the Ordinances of the University;

Add the following:

Syllabi of Semester-III of BA (Vocational Studies) under the College of Vocational Studies based on UGCF-2022 to be implemented from academic year 2022-2023

Category-I

BACHELOR OF ARTS (VS) HUMAN RESOURCE MANAGEMENT

DISCIPLINE SPECIFIC CORE COURSE – 3.1 (DSC-3.1)
Organisational Behaviour

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Organisational Behaviour (DSC- 3.1)	4	3	1	0	12th Pass	Nil

Learning Objective:

The course aims to develop an in-depth understanding of the concept of organisational behaviour and its relevance in modern organisations. It also aims to expand the knowledge about the complexities of human behaviour, competitiveness, and interpersonal group dynamics.

Learning Outcomes:

After completion of the course, learners will be able to:

1. demonstrate the understanding of the basic concepts of organisational behaviour and their applicability in contemporary organisations.
2. examine the various means of managing & motivating people at the workplace.
3. interpret the complex nature of human behaviour and group dynamics.
4. critically evaluate leadership styles and strategies.
5. summarise the ways to build supportive organisational culture.

Unit 1: Introduction **(7 Hours)**

Organisational Behaviour: Concepts and Determinants; Relationship between Management and OB; Emergence of OB; Hawthorne Study; Contributing disciplines of OB; OB models.

Unit 2: Individual Behaviour **(10 Hours)**

Foundations of Individual Behaviour; Personality- Type A/B, Big five personality types, factors influencing personality; Attitude– concept, components, job related attitudes; Learning- concept, theories and reinforcement; Perception and emotions- concept, perceptual process, factors influencing perception, perceptual errors and distortions; Beliefs and values- concept and types: terminal values and instrumental values.

Unit 3: Communication and Motivation **(10 Hours)**

Communication– Understanding Communication; Persuasive communication; Communication styles; Transactional Analysis (TA), Johari Window.

Motivation– Why people work; Intrinsic vs extrinsic motivation; Need theories (Maslow's need hierarchy, ERG Theory, McClelland's Theory); Theory X and Theory Y, Two Factors Theory; Contemporary theories of motivation (Self-Determination Theory, Goal-setting Theory, Reinforcement Theory, Self-efficacy Theory, Vroom's theory, Porter-Lawler ability model, Adam's equity theory, Expectancy theory; Theory of Intrinsic Motivation at Work by Kenneth W. Thomas).

Unit 4: Group Behaviour and Leadership **(9 Hours)**

Formation of Groups; Group Behaviour- concepts, types- group norms, group roles, and group cohesiveness; Groups Vs Teams; Group decision making– process and types; Organisational conflict– nature, sources, and resolution strategies

Leadership- Concept and theories; Styles of leadership; Leadership continuum; Trait, Behavioural and Situational approach; Leadership grid; contemporary developments in leadership- servant leadership, Transformational leadership.

Unit 5: Dynamics of Organisational Behaviour **(9 Hours)**

Organisational culture- concept and determinants; Organisational change- importance, basics of change management process; Stress- individual and organisational factors, prevention and management of stress.

Practical Exercises:

The learners are required to:

1. evaluate personality type as a group activity.
2. role play on TA and Johari Window.
3. identify the innovative ways to manage counter-productive behaviour.
4. conduct a primary survey to study leadership styles.
5. practice five different types of stress management techniques including meditation.

Suggested Readings:

- Greenberg, J. (2015). *Behavior in Organizations (10th ed.).* New Delhi, India: Pearson Education India.
- Hersey, P. K., Blanchard, D., & Johnson, D. (2013). *Management of Organizational Behavior: Leading Human Resources (10th ed.).* Upper Saddle River, NJ: Pearson.
- Luthans, F. (2017). *Organizational Behavior: An Evidence-Based Approach (12th ed.).* New York, NY: McGraw-Hill Education.
- Pareek, U. (2014). *Understanding Organizational Behaviour.* New Delhi, India: Oxford University Press.
- Robbins, S. P., & Judge, T. A. (2019). *Essentials of Organizational Behavior (15th ed.).* Boston, MA: Pearson.
- Singh, A. K., & Singh, B. P. (2007). *Organizational Behavior (1st ed.).* New Delhi, India: Excel Books Pvt. Ltd.
- Singh, K. (2015). *Organizational Behavior: Texts & Cases (3rd ed.).* New Delhi, India: Pearson.

Notes:

1. **Suggested Readings will be updated and uploaded on college website from time to time.**
2. **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC CORE COURSE – 3.2 (DSC-3.2)
Business Laws

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Prerequisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Business Laws **DSC: 3.2**	4	3	1	0	Pass in Class XII	NIL

Learning Objectives:

To impart basic knowledge of the important business laws relevant for the inception and conduct of general and business activities with relevant case laws.

Learning outcomes:

After completion of this course, the learners will be able to:

1. apply the basic aspects of contracts vis-à-vis agreements and subsequently enter into valid business propositions.
2. describe various modes of discharge of contract and remedies available in case of breach.
3. compare and contrast between different type of special contracts.
4. examine the rights and obligations under the Sale of Goods Act.
5. explain the procedure related to Issue of digital signature.

6. demonstrate skills to form and manage entrepreneurial ventures as LLP.

Unit 1: The Indian Contract Act, 1872 **(9 Hours)**

Contract – meaning, characteristics and kinds; Essentials of a valid contract, offer and acceptance, consideration, contractual capacity, free consent, the legality of objects; Void agreements; Quasi–contracts. Modes of discharge of contract

Unit 2: Remedies for Breach and Special Contracts **(9 Hours)**

Breach of contract; Remedies for breach of contract, Contracts of Indemnity and Guarantee; Contracts of Bailment and Pledge; Contract of Agency.

Unit 3: The Sale of Goods Act, 1930 **(9 Hours)**

Contract of sale; Meaning and the difference between a sale and agreement to sell; Conditions and Warranties; Transfer of ownership in goods including sale by non, owners; Performance of the Contract of Sale; Unpaid seller – meaning and rights of an unpaid seller against the goods.

Unit 4: The Information Technology Act 2000 **(9 Hours)**

Definitions under the Act. Digital signature. Electronic governance. Attribution, acknowledgement, and dispatch of electronic records. Regulation of certifying authorities. Digital signatures certificates. Duties of subscribers under the Act. Penalties and adjudication. Offences as per the Act.

Unit 5: The Limited Liability Partnership Act, 2008 **(9 Hours)**

Salient Features and Nature of LLP; Small LLP; Difference between LLP and Partnership, LLP and Company; LLP Agreement; Incorporation Document; Incorporation by registration; Registered office of LLP and change therein; Change and Rectification of the name of LLP; Partners and Designated Partners: Partners and their Relations; Extent and limitation of liability of LLP and partners; Whistleblowing; Conversion into LLP.

Practical Exercises:

The learners will be able to:

1. identify components of valid contracts present in the rent agreement/ sale deed/appointment letters used or seen in day-to-day life.
2. identify and enumerate types of damages in case of breach of contract under different real, life situations.
3. prepare a list of gratuitous and non, gratuitous bailment contracts entered in daily life.
4. analyse some case studies where 'caveat emptor' is applicable.
5. explore the procedure for issue of digital signature.
6. examine RUN form and FiLLip webform from notification on MCA portal and enlist the mandatory fields for LLP.

Suggested readings

- Bhushan, B., Kapoor, N. D., Abbi, R., & Kapoor, R. (2020). *Elements of Business Laws*. Sultan Chand.
- Dagar, I., & Agnihotri, A. (2020). *Business Laws*. Sage Textbook.
- Jagota, R. (2021). *Business Laws*. MKM Publishers Scholar Tech Press.
- Kuchhal, M. C., & Kuchhal, V. (2023). *Business Laws*. Vikas Publishing House.
- Maheshwari, S. N., & Maheshwari, S. K. (2017). *A Manual of Business Laws*. Himalaya Publishing House Pvt. Ltd.
- Sharma, J. P., & Kanojia, S. (2018). *Business Laws*. Bharat Law House Pvt. Ltd.
- Singh, A. (2008). *The Principles of Mercantile Law*. Eastern Book Company.

- Sulphey, M. M., & Basheer, A. (2014). *Laws for Business* (5th ed.). PHI Learning.
- Tulsian, P. C. (2000). *Business Law*. Tata McGraw Hill.

Notes:

- **Suggested readings shall be updated and uploaded on the college website from time to time.**
- **Examination scheme and mode shall be prescribed by the Examination branch, University of Delhi from time to time.**

DISCIPLINE SPECIFIC CORE COURSE – 3.3 (DSC-3.3)
Indian Economic Environment

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Indian Economic Environment (DSC-3.3)	4	3	1	0	12th Pass	Nil

Learning Objectives:

The course aims to familiarise students with the basic framework of Indian economy and the recent developments. It provides understanding about the economic crisis of 1991 and the subsequent reforms that followed. It explains the role of foreign trade, Foreign Direct Investment (FDI) and foreign capital in economic development.

Learning Outcomes:

After completion of the course, learners will be able to:

1. explain the evolution of India's industrial growth experience and describe the relationship between economic growth and development, the idea of sustainability, circular economy and Sustainable Development Goals (SDGs).
2. examine the impact of policy changes in both the agriculture and the industry sector.
3. appraise the economic and social outcomes of policy initiatives in the services sector.
4. critique the role of foreign trade and foreign capital in India's development process.

Unit- 1: Indian Economy: An Overview **(12 Hours)**

A brief introduction to the current structure of the Indian economy: Evolution of Indian economic environment, import substitution to globalisation, the impact of the Covid-19 pandemic on the Indian economy;

Redefining development: changing ideas on growth and development, the idea of human development, the Human Development Index (HDI), the Gender Inequality Index (GII), the Gender Development Index (GDI), understanding the concepts and India's performance on these indicators; the idea of circular economy and Sustainable Development Goals (SDGs) 2030.

Unit 2: Transforming Agriculture - Current Trends and New Areas of Growth (11 Hours)

Role and importance of agriculture: data on poverty, inequality and growth without employment, the high proportion of population engaged in agriculture and the low agricultural productivity- broad trends and the instability in output, concerns of food security and nutritional outcomes, commitments to SDGs.

Issues in agriculture: rural credit and institutional finance, transportation and infrastructure, agricultural marketing, availability of agricultural inputs, technology and water management, soil degradation, rural entrepreneurship, crop insurance, contract farming, etc.

The need for a transformative vision in agriculture: new emerging areas and their impact on ecological management- including sustainable agriculture, alternative farming and organic farming, horticulture and floriculture, multi-layer farming etc.

Unit 3: Industrial Performance - An Appraisal (11 Hours)

Industrial development: post 1991 trends and growth, the new economic policy, public sector reforms and privatisation, the slow growth of the manufacturing sector and the issue of the 'missing middle', the challenges of finance, regulations and labour laws, the role of Micro, Small and Medium Enterprises (MSMEs) and the challenges faced by them.

Unit 4: Foreign Trade, Foreign Capital, Multi-National Corporations (MNCs) and the Services Sector (11 Hours)

Foreign trade and trade policy: post 2000 trends in trade, the concept of global value chains, importance of trading blocks and trade agreements, India's experience, growth and contribution of foreign capital and MNCs.

Growth of the services sector in India: recent trends, growth in the information and communication technology (ICT) & IT enabled services (ITES) sectors, education, health, banking and insurance, etc., impact of digitization and servicification.

Practical Exercises:

The learners are required to:

1. discuss main economic challenges faced in India (Unit1)
2. make a presentation on circular economy and the progress made towards the achievement of the 17 SDGs. (Unit 1)
3. form groups to make case studies on different aspects of India's economic performance (education, migration, employment, industrial production, exports, digital economy, e-commerce, etc.) during Covid-19. (Unit1)
4. make a group presentation on the pros and cons of the recent farm laws. (Unit 2)
5. design a questionnaire about the issues confronting small and medium enterprises for primary data collection from a industry in the vicinity and present analyses in the class. (Unit 3)
6. engage in a group project on different types of services (food delivery provided by restaurant chains/local neighbourhood eateries/home cooked tiffins, streetside fast food, etc. Other service providers such as pest control services, cleaning services, home health aide workers, parlours, gyms, cyber cafes, etc. operating in and around the student's neighbourhood. (Unit 4).

Suggested Readings

- Chand, R. (2022). *Indian agriculture Towards 2030- Need for a transformative Vision* in Chand. R. et al. (Ed.). *Indian Agriculture towards 2030*, India studies in Business and Economics, New Delhi: Springer.
- Dreze, J. & Sen, A. (2013). *India: An uncertain glory – India and its contradictions*, New Jersey: Princeton University Press. Chapter 2.
- Global value Chains (GVCs): India, OECD. https://www.oecd.org/sti/ind/gvcs%20-%20india.pdf

- Gulati, A. & Juneja, R., (2022). Transforming Indian Agriculture. Chand, R. Ed. *Indian Agriculture towards 2030.* India studies in Business and Economics, New Delhi: Springer.
- Joshi, V. (2017) *India's long road- the search for prosperity*. Allen Lane: Penguin Random House, Chapter 2.
- Kapila, U. (2022-23), (Ed.) Indian *economy since independence* (33th ed.), New Delhi: Academic foundation.
- Kapila, U. (2022). *Indian Economy: Performance and policies* (22nd ed.). New Delhi: Academic Foundation.
- Lerwen, L. & Ramakrishna, S. (2021). *An introduction to Circular Economy*, Singapore: Springer.
- Puri, V.K., Misra, S.K., & Garg, B. (2022). *Indian Economy* (40th ed.). New Delhi: Himalaya Publishing House.
- Walter, R. (2019). *The Circular Economy: A User's Guide*, New York: Routeledge.

Additional Readings:

- Chatterjee, S. & Subramanium, A. (2020). India's inward Re (turn) Is it warranted? Will it work? *Ashoka Centre for Economic Policy paper no 1.* October. https://ashoka.edu.in/static/doc_uploads/file_1602585593.pdf
- Eichengreen, B. & Gupta, P. (2012) Exports of Services: Indian Experience in Perspective. *National Institute of Public Finance and Policy.* Working Papers. 12/102.
- Marcello, T. & Cristoni, N. (2018). *Strategic Management & the Circular Economy*, New York: Routeledge.
- Subramanium, A. & Felman, J. (2021). India's stalled rise - How the State Has Stifled Growth, *Foreign Affair*. Watson Institute for International and Public Affairs and Brown University.

Notes:

1. **Suggested readings shall be updated and uploaded on the college website from time to time.**
2. **Examination scheme and mode shall be as prescribed by the Examination branch, University of Delhi from time to time.**

B.A. (VS) SMALL AND MEDIUM ENTERPRISE
SEMESTER III

DISCIPLINE SPECIFIC CORE COURSE - 3.1 (DSC-3.1)
Developing Entrepreneurial Skills

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Developing Entrepreneurial Skills (DSC-3.1)	4	3	1	0	12th Pass	Nil

Learning Objectives: The objectives of the paper are to:

1. understand the importance of entrepreneurship and the role it plays in economic development.
2. acquaint with the entrepreneurial innovation as well as various creative techniques.
3. know the importance of business skills and to understand how to develop a variety of entrepreneurial abilities.
4. familiarize with the various sectors and sub sectors of the economy and identify the business opportunities.
5. explore the management aspects and growth strategies of a business.

Learning Outcomes:

After completion of the course, learners will be able to:

1. describe the role played by entrepreneurs in the development of our economy.
2. apply creative techniques and innovative skills in accordance with the nature of business.
3. develop entrepreneurial skills and become more efficient in managing business.
4. explain the contribution of major sectors to the economy and explore the possibility of setting up new businesses.
5. design strategies for effective management and generate growth for small and medium enterprises.

Unit 1: Introduction **(9 Hours)**

Entrepreneur & Entrepreneurship, Entrepreneurial Culture, Common Characteristics of Entrepreneurs, Entrepreneurial Skills and Competencies, Myths and Realities, Entrepreneurial Values and Attitude, Motivation for Entrepreneurship: Internal Factors and External Factors, Individual Risk Propensity and Ability to Manage Risk, Ethics and Social Responsibilities, Entrepreneurship Development and Economic Growth

Unit 2: Creativity and Innovation Management **(9 Hours)**

Creativity: Nature, Types and Process, Developing Creative Thinking: Convergent Thinking, Divergent Thinking, Techniques of Creative Thinking, Process of Creative Problem Solving, Creative Performance,

Innovation and Entrepreneurship: Drivers of Innovation, Types of Innovations, Phases of Innovation; Risk, Uncertainty and Innovations; Creativity and Innovation difference, Developing Organizational Creativity and Innovation, Innovation Management in India.

Unit 3: Entrepreneurial Skills **(8 Hours)**

Need & Importance of Entrepreneurial Skills, Benefits to Economy & Society, Components of Entrepreneurial Skills: Leadership & Teamwork, Knowledge and Technical skills, Business Management and Personal Entrepreneurial Skills, Time Management and Organizational Skills, Branding, Marketing and Networking Skills, Financial and Analytical Skills.

Unit 4: Enterprise Formation Process **(9 Hours)**

Indian Economy: Sectors and Sub-sectors, Analyzing and Identifying Business Opportunities, Preparation of Business Plan, Start-ups and Basic Start-ups Problems, Market Demand Analysis, Project Feasibility Study, Sources of Financing, Business Start-ups; Cases of Indian Start-ups, Make in India Initiative.

Unit 5: Managerial Aspects and Growth of Business **(10 Hours)**

Managing Finance- Preparation of Operating/Cost Budget, Cash Budget; Understanding Management of Short Term and Long-term Capital; Human Resource Planning; Contract Management; Understanding Marketing Methods; Understanding of GST and Other Tax Compliances, Enterprise Life Cycle and Business Growth Strategies for Small and Medium Enterprises; Business Collaboration and Outsourcing of Resources; Network Management

Practical Exercises:

The learners are required to:

1. analyze the contribution of entrepreneurs to economic development. (Unit 1)
2. critically evaluate the various creative techniques of entrepreneurship in accordance with the nature of business. (Unit 2)
3. evaluate the different entrepreneurial skills and explain how these skills are contributing to the growth of various Indian enterprises. (Unit 3)
4. analyze the various sectors and sub sectors of the Indian economy and explore the possibility of setting up a new business. (Unit 4)
5. identify financial tools for business growth and design strategies for effective management using online simulation platform. (Unit 5)

Suggested Readings:

- Hitt, M. A., Ireland, R. D., Camp, S. M., & Sexton, D. (2002). *Strategic Entrepreneurship: Creating a New Mindset.* Oxford: Blackwell Publishers. (Unit 4 & 5)
- Holt, D. H. (2016). *Entrepreneurship and New Venture Creation.* Pearson. (Unit 1 & 4)
- Kumar, A. (2012). *Entrepreneurship: Creating and Leading an Entrepreneurial Organization.* Pearson. (Unit 2 & 4)
- Kumar, S. A., Poornima, S. C., Abraham, M. K., & Jayshree, K. (2021). *Entrepreneurship Development.* New Age International Publishers.
- Lyons, T. S., Lyons, J. S., & Samson, J. A. (2021). *Entrepreneurship Skill Building: Focusing*

Entrepreneurship Education on Skills Assessment and Development. Palgrave Macmillan. (Unit 2 & 3)
- Mathur, A. (2021). *Entrepreneurship Development.* New Delhi: Taxmann. (Unit 1 & 4)
- Scarborough, N. M., & Cornwall, J. R. (2018). *Essentials of Entrepreneurship and Small Business Management.* Boston: Pearson. (Unit 5)
- Shankar, R. (2012). *Entrepreneurship Theory and Practice.* Tata McGraw Hill. (Unit 2)
- Shukla, M. B. (2020). *Entrepreneurship and Small Business Management.* Allahabad: Kitab Mahal. (Unit 1, 2 & 4)
- Zenas, B. & MacMillan, I. C. (1995). *Corporate Venturing.* Boston: Harvard Business School Press. (Unit 4 & 5)

Notes:

1. **Suggested readings shall be updated and uploaded on the college website from time to time.**
2. **Examination scheme and mode as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC CORE COURSE - 3.2 (DSC-3.2)
Financial Accounting for MSMEs

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Financial Accounting for MSMEs (DSC-3.2)	**4**	**2**	**1**	**1**	**12th Pass**	**Nil**

Learning objectives:

The course aims to help learners to acquire conceptual knowledge of financial accounting, to impart skills for recording various kinds of business transactions and to prepare and analyse the financial statements.

Learning Outcomes:

After completion of the course, learners will be able to:

1. examine the generally accepted accounting principles while recording transactions and preparing financial statements.
2. evaluate the impact of depreciation and inventories on business income.
3. analyse the financial statements of sole proprietor firms and partnerships
4. prepare the cash flow statement and analyse it by applying ratios.
5. demonstrate the accounting process under a computerized accounting system.

Unit 1: Introduction to Accounting **(8 Hours)**

Financial Accounting: Nature, scope and limitations. Generally Accepted Accounting Principles (GAAP). Basic Concepts and Conventions, Accounting Standards: Meaning, Significance. IFRS and IndAS. Accounting Process: From recording of transactions to preparation of final accounts. Rectification of errors.

Bank Reconciliation statement

Unit 2: Valuation of Inventory and Depreciation accounting: (9 Hours)

(a) Valuation of Inventory. Impact of inventory valuation on measurement of business income by using FIFO, LIFO, and Weighted Average Method.

(b) Depreciation Accounting: Meaning of depreciation. Causes and need for providing depreciation. Accounting treatment including provision for depreciation accounting. Straight line method and diminishing balance method of charging deprecation.

Unit 3: Financial Statements of Sole Proprietorship and Partnership firms: (9 Hours)

(a) Preparation of Financial Statements of Sole Proprietorship

(b) Admission, Retirement, Dissolution of Partnership Firms: Legal Position, Accounting for simple dissolution.

Unit 4: Managerial decision making (7 Hours)

Analysis of financial statements, Common size balance sheet, Ratio analysis, Cash Flow statement.

Unit 5: Computerized Accounting Systems: (12 hours)

Computerized Accounting Systems: Computerized Accounts by using any popular accounting software Creating a Company; Configure and Features settings; Creating Accounting Ledgers and Groups; Creating Stock Items and Groups; Vouchers Entry including GST; Generating Reports - Cash Book, Ledger Accounts, Trial Balance, Profit and Loss Account, Balance Sheet, Cash Flow Statement. Selecting and shutting a Company; Backup and Restore data of a Company.

Notes:

(1) The relevant Accounting Standards for all of the above topics should be covered.

(2) Any revision of the relevant Indian Accounting Standard/Accounting Standard would become applicable.

Practical Exercises:

The learners are required to:

1. collect and examine the balance sheets of business organisations to study how these are prepared. (Unit 1)
2. examine the inventory valuation methods of few selected companies and also examine how these selected companies have charged depreciation on various assets. (Unit 2)
3. prepare Trading and Profit & Loss Account and Balance Sheet collecting necessary data from small business firms. (Unit 3)
4. prepare the cash flow statements and analyse the accounting ratios of small business firms. (Unit 4)
5. prepare financial statements manually and using appropriate software. (Unit 5)

Suggested Readings:

- Anthony, R. N., Hawkins, D., & Merchant, K. A. (2019). *Accounting: Text and Cases.* McGraw-Hill Education India.
- Goldwin, N., Alderman, W., & Sanyal, D. (2016). *Financial Accounting.* Boston: Cengage Learning.
- Goyal, B. K., & Tiwari, H. N. (2021). *Financial Accounting.* New Delhi: Taxmann Publication.
- Kumar, A. (2018). *Financial Accounting.* Singhal Publication.

- Lal, J., Srivastava, S. & Abrol, S. (2017). *Financial Accounting Text & Problems.* Mumbai: Himalaya Publishing House.
- Lt Bhupinder, (2020). *Financial Accounting – Concepts and Applications.* Cengage.
- Maheshwari, S. N., Maheshwari, S. K., & Maheshwari, S. K. (2018). *Financial Accounting.* New Delhi: Vikas Publishing House Pvt. Ltd.
- Monga, J. R., & Bahadur, R. (2022). *Financial Accounting: Concepts and Applications.* New Delhi: Scholar Tech Press.
- Sah, R. K. (2019). *Concept Building Approach to Financial Accounting.* Cengage India Pvt. Ltd.
- Sehgal, A., & Sehgal, D. (2015). *Fundamentals of Financial Accounting.* New Delhi: Taxmann.
- Sehgal, D. (2016). *Financial Accounting.* New Delhi: Vikas Publishing House Pvt. Ltd.
- Shukla, M. C., Grewal, T. S., & Gupta, S. C. (2017). *Advanced Accounts. Vol.-I.* New Delhi: Sultan Chand Publishing.
- Tulsian, P. C. (2016). *Financial Accounting.* New Delhi: S. Chand Ltd.

Additional Resources:

- Accounting Standards at the Website of the Institute of Chartered Accountants of India
- Indian Accounting Standards at the Website of the Ministry of Corporate Affairs.

Notes:

1. **Suggested readings shall be updated and uploaded on the college website from time to time.**
2. **Examination scheme and mode as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC CORE COURSE - 3.3 (DSC-3.3)
Indian Economic Environment

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Indian Economic Environment (DSC-3.3)	4	3	1	0	12th Pass	Nil

Learning Objectives:

The course aims to familiarise students with the basic framework of Indian economy and the recent developments. It provides understanding about the economic crisis of 1991 and the subsequent reforms that followed. It explains the role of foreign trade, Foreign Direct Investment (FDI) and foreign capital in economic development.

Learning Outcomes:

After completion of the course, learners will be able to:

1. explain the evolution of India's industrial growth experience and describe the relationship between economic growth and development, the idea of sustainability, circular economy and Sustainable Development Goals (SDGs).
2. examine the impact of policy changes in both the agriculture and the industry sector.
3. appraise the economic and social outcomes of policy initiatives in the services sector.
4. critique the role of foreign trade and foreign capital in India's development process.

Unit 1: Indian Economy- An Overview (12 Hours)

A brief introduction to the current structure of the Indian economy: Evolution of Indian economic environment, import substitution to globalisation, the impact of the Covid-19 pandemic on the Indian economy;

Redefining development: changing ideas on growth and development, the idea of human development, the Human Development Index (HDI), the Gender Inequality Index (GII), the Gender Development Index (GDI), understanding the concepts and India's performance on these indicators; the idea of circular economy and Sustainable Development Goals (SDGs) 2030.

Unit 2: Transforming Agriculture - Current Trends and New Areas of Growth (11 Hours)

Role and importance of agriculture: data on poverty, inequality and growth without employment, the high proportion of population engaged in agriculture and the low agricultural productivity- broad trends and the instability in output, concerns of food security and nutritional outcomes, commitments to SDGs.

Issues in agriculture: rural credit and institutional finance, transportation and infrastructure, agricultural marketing, availability of agricultural inputs, technology and water management, soil degradation, rural entrepreneurship, crop insurance, contract farming, etc.

The need for a transformative vision in agriculture: new emerging areas and their impact on ecological management- including sustainable agriculture, alternative farming and organic farming, horticulture and floriculture, multi-layer farming etc.

Unit 3: Industrial Performance - An Appraisal (11 Hours)

Industrial development: post 1991 trends and growth, the new economic policy, public sector reforms and privatisation, the slow growth of the manufacturing sector and the issue of the 'missing middle', the challenges of finance, regulations and labour laws, the role of Micro, Small and Medium Enterprises (MSMEs) and the challenges faced by them.

Unit 4: Foreign Trade, Foreign Capital, Multi-National Corporations (MNCs) and the Services Sector (11 Hours)

Foreign trade and trade policy: post 2000 trends in trade, the concept of global value chains, importance of trading blocks and trade agreements, India's experience, growth and contribution of foreign capital and MNCs.

Growth of the services sector in India: recent trends, growth in the information and communication technology (ICT) & IT enabled services (ITES) sectors, education, health, banking and insurance, etc., impact of digitization and servicification.

Practical Exercises: The learners are required to:

7. discuss main economic challenges faced in India (Unit1)
8. make a presentation on circular economy and the progress made towards the achievement of the 17 SDGs. (Unit 1)

9. form groups to make case studies on different aspects of India's economic performance (education, migration, employment, industrial production, exports, digital economy, e- commerce, etc.) during Covid-19. (Unit1)
10. make a group presentation on the pros and cons of the recent farm laws. (Unit 2)
11. design a questionnaire about the issues confronting small and medium enterprises for primary data collection from a industry in the vicinity and present analyses in the class. (Unit 3)
12. engage in a group project on different types of services (food delivery provided by restaurant chains/local neighbourhood eateries/home cooked tiffins, streetside fast food, etc. Other service providers such as pest control services, cleaning services, home health aide workers, parlours, gyms, cyber cafes, etc. operating in and around the student's neighbourhood. (Unit 4).

Suggested Readings:

- Chand, R. (2022). *Indian agriculture Towards 2030- Need for a transformative Vision* in Chand. R. et al. (Ed.). *Indian Agriculture towards 2030*, India studies in Business and Economics, New Delhi: Springer.
- Dreze, J. & Sen, A. (2013). *India: An uncertain glory – India and its contradictions*, New Jersey: Princeton University Press. Chapter 2.
- Global value Chains (GVCs): India, OECD. https://www.oecd.org/sti/ind/gvcs%20-%20india.pdf
- Gulati, A. & Juneja, R., (2022). Transforming Indian Agriculture. Chand, R. Ed. *Indian Agriculture towards 2030.* India studies in Business and Economics, New Delhi: Springer.
- Joshi, V. (2017) *India's long road- the search for prosperity.* Allen Lane: Penguin Random House, Chapter 2.
- Kapila, U. (2022-23), (Ed.) Indian *economy since independence* (33th ed.), New Delhi: Academic foundation.
- Kapila, U. (2022). *Indian Economy: Performance and policies* (22nd ed.). New Delhi: Academic Foundation.
- Lerwen, L. & Ramakrishna, S. (2021). *An introduction to Circular Economy*, Singapore: Springer.
- Puri, V.K., Misra, S.K., & Garg, B. (2022). *Indian Economy* (40th ed.). New Delhi: Himalaya Publishing House.
- Walter, R. (2019). *The Circular Economy: A User's Guide*, New York: Routeledge.

Additional Readings:

- Chatterjee, S. & Subramanium, A. (2020). India's inward Re (turn) Is it warranted? Will it work? *Ashoka Centre for Economic Policy paper no 1.* October. https://ashoka.edu.in/static/doc uploads/file_1602585583.pdf
- Eichengreen, B. & Gupta, P. (2012) Exports of Services: Indian Experience in Perspective. *National Institute of Public Finance and Policy.* Working Paper 12/102.
- Marcello, T. & Cristoni, N. (2018). *Strategic Management & the Circular Economy*, New York: Routeledge.
- Subramanium, A. & Felman, J. (2021). India's stalled rise - How the State Has Stifled Growth, *Foreign Affair.* Watson Institute for International and Public Affairs and Brown University.

Notes:

1. **Suggested readings shall be updated and uploaded on the college website from time to time.**
2. **Examination scheme and mode shall be as prescribed by the Examination branch, University of Delhi from time to time.**

B.A (VS) MATERIALS MANAGEMENT

SEMESTER – III

DISCIPLINE SPECIFIC CORE COURSE – 3.1 (DSC-3.1)
Warehouse Management and Inventory Control

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE, REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Warehouse Management and Inventory Control DSC: 3.1	4	3	1	0	Pass in Class XII	NIL

Learning Objectives:
To understand the concepts of warehouse management and inventory control, students will get a basic idea about warehousing and inventory management techniques. It will help them in understanding the need for warehouse management systems and measures of Material handling systems.

Learning Outcomes:
After completion of this course, the learners will be able to:

1. recognize the need for warehousing in today's competitive environment and how supply chain trends are impacting the design and operation of warehouses.
2. identify different types of material handling equipment and their characteristics and use a material handling equipment checklist to select the most suitable equipment for a given warehouse operation.
3. develop strategies for improving receiving and issuing material operations, including the use of barcoding and RFID technologies, the use of automation, and the optimization of picking and replenishment operations.
4. identify the functions of inventory and the different types of inventories, including WIP, finished goods, and MRO.
5. evaluate the applications of barcoding technology in material handling systems, including the benefits of real-time data collection, accuracy, and efficiency.

Unit 1: Introduction to Warehousing **(10 Hours)**

Warehouse: definition, warehouseman, depositor. Warehouse functions, warehouse process, types of warehouses: public and private warehouses, warehousing corporations-central and state warehouses, role of warehousing in an economy, Supply chain trends affecting warehousing, Problems and challenges in warehousing, characteristics of ideal warehouse, warehousing for online businesses. Recent trends in warehousing: Cloud-based operations management, Technology for omnichannel logistics, Simulation to anticipate needs, Logistics decisions based on big data, Robotics and Drones in warehousing.

Unit 2: Warehouse Management Systems **(9 Hours)**

Warehouse management systems, the necessity of WMS, warehouse location, Logics of determining locations and sequences, independent demand systems, uncertainties in material management systems, dependent demand systems, distribution resource planning. The layout of the warehouse, Size and shape of the warehouse, Storage utilization and organization, Types of storage systems, fixed versus random location, Material handling equipment, Material handling equipment checklist, Improving the receiving/issuing material operations, choosing a WMS-the process implementation-cloud computing, Warehouse Layout-Data collection-space calculation-aisle width- finding additional space.

Unit3: Warehouse and Its Operations **(9 Hours)**

The principles and performance measures of material handling systems –Vehicle travel path (time) – Handling time –vehicle utilization –number of loads completed –congestion –Effective performance systems, Importance of Warehouse Information, Decision Making Using Warehouse Information, ICT Applications in a Warehouse, Fundamentals of various types of material handling systems –automated storage and retrieval systems Bar Code Scanners, Wireless LAN, Mobile Computers, Bar coding technology and applications RFID technology. Warehouse automation.

Unit4: Inventory Management in Warehouse **(9 Hours)**

Introduction to inventory management, role in the supply chain, role in competitive strategy: Role of inventory, functions of inventory, types of inventories, WIP inventory, finished goods inventory, MRO (maintenance, repair, and operations) inventories, cost of inventories, need to hold inventory. Warehousing and inventory costs, Customer service in warehousing, locating inventory, organizing inventory, Dispatching inventory, Methods of inventory control: ABC Inventory control, managing inventories by ABC, FSN, EOQ, Batch tracking, multi –echelon inventory systems Managing inventory in multi echelon networks –managing inventory in single echelon networks.

Unit 5: Material Handling and Warehouse Safety **(9 Hours)**

Material Handling and Warehouse Safety: Material handling, Product movement-concept-costs-product load activity, dispatch activity unload, activity-control device-impact of computer technology-automatic identification-issues and trends in product transport, Packaging, Pallet, Stretch wraps, Cartons, Labelling, Health.

Practical Exercises:

The learners are required to:

1. identify the issues affecting warehousing and warehousing facilities by visiting to some warehouse.
2. prepare a report on the inventory management of any given company.
3. suggest the solutions to various uncertainties in material management systems in any warehouse
4. prepare the report on the multi –echelon inventory systems of any company.
5. apply the material handling systems for any company of your choice
6. to prepare report as a warehouse manager for a retail company that sells clothing and accessories online which want to set up a new warehouse facility for the company.

Suggested Readings:

- Arnold, J. R., & Chapman, S. N. (2018). *The Introduction to Materials Management* (7th ed.). Prentice-Hall.
- Blanchard, D. (2018). *Supply Chain Management Best Practices*. Wiley Publishing.
- Coyle, J. J., Jr., Langley, C. J., Novack, R.A., & Gibson, B.J. (2022). *Managing Supply Chains: A Logistics Approach* (9th ed.). McGraw-Hill.
- Chopra, S., & Meindl, P. (2018). *Supply Chain Management: Strategy, Planning, and Operation.* Pearson Education.
- Ten Hompel, M., & Schmidt, T. (2017). *Warehouse Management: Automation and Organisation of Warehouse and Order Picking Systems* [With CDROM]. Springer Verlag.
- Jessop, D. (1999). *Stores and Inventory Management*. Chartered Institute of Purchasing and Supply.
- Jacobs, F. R., & Chase, R. B. (2017). *Operations and Supply Chain Management*. McGraw-Hill Education.
- Mangan, J., Lalwani, C., & Butcher, T. (2016). *Global Logistics and Supply Chain Management*. John Wiley & Sons.
- Mentzer, J. T., Stank, T. P., & Esper, T. L. (2008). *Supply Chain Management: Principles and Practice.* Sage Publications.
- Rushton, A., Croucher, P., & Baker, P. (2020). *The Handbook of Logistics and Distribution Management: Understanding the Supply Chain*. Kogan Page.
- Saxena, J.P. (2018). *Warehouse Management and Inventory Control.* Vikas Publication House Pvt Ltd.
- Tompkins, J.A., & Harmelink, D. (2017). *Basics of Supply Chain Management*. St. Lucie Press.
- Waters, D. (2017). *Supply Chain Management: An Introduction to Logistics*. Palgrave Macmillan.
- Wild, R. (2017). *Warehouse Management: A Complete Guide to Improving Efficiency and Minimizing Costs in the Modern Warehouse*. Kogan Page.

Notes:

1. **Suggested readings shall be updated and uploaded on the college website from time to time.**
2. **Examination scheme and mode shall be prescribed by the Examination branch, University of Delhi from time to time.**

DISCIPLINE SPECIFIC CORE COURSE – 3.1 (DSC-3.1)
DSC 3.2: BUSINESS LAWS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE, REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Prerequisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
BUSINESS LAWS **DSC: 3.2**	4	3	1	0	Pass in Class XII	NIL

Learning Objectives:
To impart basic knowledge of the important business laws relevant for the inception and conduct of general and business activities with relevant case laws.

Learning outcomes:
After completion of this course, the learners will be able to:

1. apply the basic aspects of contracts vis-à-vis agreements and subsequently enter into valid business propositions.
2. describe various modes of discharge of contract and remedies available in case of breach.
3. compare and contrast between different type of special contracts.
4. examine the rights and obligations under the Sale of Goods Act.
5. explain the procedure related to Issue of digital signature.
6. demonstrate skills to form and manage entrepreneurial ventures as LLP.

Unit 1: The Indian Contract Act, 1872 **(9 Hours)**
Contract – meaning, characteristics and kinds; Essentials of a valid contract, offer and acceptance, consideration, contractual capacity, free consent, the legality of objects; Void agreements; Quasi–contracts. Modes of discharge of contract

Unit 2: Remedies for Breach and Special Contracts **(9 Hours)**
Breach of contract; Remedies for breach of contract, Contracts of Indemnity and Guarantee; Contracts of Bailment and Pledge; Contract of Agency.

Unit 3: The Sale of Goods Act, 1930 **(9 Hours)**
Contract of sale; Meaning and the difference between a sale and agreement to sell; Conditions and Warranties; Transfer of ownership in goods including sale by non, owners; Performance of the Contract of Sale; Unpaid seller – meaning and rights of an unpaid seller against the goods.

Unit 4: The Information Technology Act 2000 **(9 Hours)**

Definitions under the Act. Digital signature. Electronic governance. Attribution, acknowledgement, and dispatch of electronic records. Regulation of certifying authorities. Digital signatures certificates. Duties of subscribers under the Act. Penalties and adjudication. Offences as per the Act.

Unit 5: The Limited Liability Partnership Act, 2008 **(9 Hours)**

Salient Features and Nature of LLP; Small LLP; Difference between LLP and Partnership, LLP and Company; LLP Agreement; Incorporation Document; Incorporation by registration; Registered office of LLP and change therein; Change and Rectification of the name of LLP; Partners and Designated Partners: Partners and their Relations; Extent and limitation of liability of LLP and partners; Whistleblowing; Conversion into LLP.

Practical Exercises

After completion of this course, the learners will be able to:

1. identify components of valid contracts present in the rent agreement/ sale deed/appointment letters used or seen in day-to-day life.
2. identify and enumerate types of damages in case of breach of contract under different real, life situations.
3. prepare a list of gratuitous and non, gratuitous bailment contracts entered in daily life.
4. analyse some case studies where 'caveat emptor' is applicable.
5. explore the procedure for issue of digital signature.
6. examine RUN form and FiLLip webform from notification on MCA portal and enlist the mandatory fields for LLP.

Suggested readings

- Bhushan, B., Kapoor, N. D., Abbi, R., & Kapoor, R. (2020). *Elements of Business Laws*. Sultan Chand.
- Dagar, I., & Agnihotri, A. (2020). *Business Laws*. Sage Textbook.
- Jagota, R. (2021). *Business Laws*. MKM Publishers Scholar Tech Press.
- Kuchhal, M. C., & Kuchhal, V. (2023). *Business Laws*. Vikas Publishing House.
- Maheshwari, S. N., & Maheshwari, S. K. (2017). *A Manual of Business Laws*. Himalaya Publishing House Pvt. Ltd.
- Sharma, J. P., & Kanojia, S. (2018). *Business Laws*. Bharat Law House Pvt. Ltd.
- Singh, A. (2008). *The Principles of Mercantile Law*. Eastern Book Company.
- Sulphey, M. M., & Basheer, A. (2014). *Laws for Business* (5th ed.). PHI Learning.
- Tulsian, P. C. (2000). *Business Law*. Tata McGraw Hill.

Notes:

- **Suggested readings shall be updated and uploaded on the college website from time to time.**
- **Examination scheme and mode shall be prescribed by the Examination branch, University of Delhi from time to time.**

DISCIPLINE SPECIFIC CORE COURSE – 3.1 (DSC-3.1)
Indian Economic Environment

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE, REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Prerequisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Indian Economic Environment DSC – 3.3	4	3	1	0	Pass in Class XII	NIL

Learning Objectives:

The course aims to familiarise students with the basic framework of Indian economy and the recent developments. It provides understanding about the economic crisis of 1991 and the subsequent reforms that followed. It explains the role of foreign trade, Foreign Direct Investment (FDI) and foreign capital in economic development.

Learning Outcomes:

After completion of the course, learners will be able to:

1. explain the evolution of India's industrial growth experience and describe the relationship between economic growth and development, the idea of sustainability, circular economy and Sustainable Development Goals (SDGs).
2. examine the impact of policy changes in both the agriculture and the industry sector.
3. appraise the economic and social outcomes of policy initiatives in the services sector.
4. critique the role of foreign trade and foreign capital in India's development process.

Unit- 1: Indian Economy: An Overview (12 Hours)

A brief introduction to the current structure of the Indian economy: Evolution of Indian economic environment, import substitution to globalisation, the impact of the Covid-19 pandemic on the Indian economy;

Redefining development: changing ideas on growth and development, the idea of human development, the Human Development Index (HDI), the Gender Inequality Index (GII), the Gender Development Index (GDI), understanding the concepts and India's performance on these indicators; the idea of circular economy and Sustainable Development Goals (SDGs) 2030.

Unit 2: Transforming Agriculture - Current Trends and New Areas of Growth (11 Hours)

Role and importance of agriculture: data on poverty, inequality and growth without employment, the high proportion of population engaged in agriculture and the low agricultural productivity- broad trends and the instability in output, concerns of food security and nutritional outcomes, commitments to SDGs.

Issues in agriculture: rural credit and institutional finance, transportation and infrastructure, agricultural marketing, availability of agricultural inputs, technology and water management, soil degradation, rural entrepreneurship, crop insurance, contract farming, etc.
The need for a transformative vision in agriculture: new emerging areas and their impact on ecological management- including sustainable agriculture, alternative farming and organic farming, horticulture and floriculture, multi-layer farming etc.

Unit 3: Industrial Performance - An Appraisal (11 Hours)
Industrial development: post 1991 trends and growth, the new economic policy, public sector reforms and privatisation, the slow growth of the manufacturing sector and the issue of the 'missing middle', the challenges of finance, regulations and labour laws, the role of Micro, Small and Medium Enterprises (MSMEs) and the challenges faced by them.

Unit 4: Foreign Trade, Foreign Capital, Multi-National Corporations (MNCs) and the Services Sector (11 Hours)
Foreign trade and trade policy: post 2000 trends in trade, the concept of global value chains, importance of trading blocks and trade agreements, India's experience, growth and contribution of foreign capital and MNCs.
Growth of the services sector in India: recent trends, growth in the information and communication technology (ICT) & IT enabled services (ITES) sectors, education, health, banking and insurance, etc., impact of digitization and servicification.

Practical Exercises:
The learners are required to:

1. discuss main economic challenges faced in India (Unit1)
2. make a presentation on circular economy and the progress made towards the achievement of the 17 SDGs. (Unit 1)
3. form groups to make case studies on different aspects of India's economic performance (education, migration, employment, industrial production, exports, digital economy, e-commerce, etc.) during Covid-19. (Unit1)
4. make a group presentation on the pros and cons of the recent farm laws. (Unit 2)
5. design a questionnaire about the issues confronting small and medium enterprises for primary data collection from a industry in the vicinity and present analyses in the class. (Unit 3)
6. engage in a group project on different types of services (food delivery provided by restaurant chains/local neighbourhood eateries/home cooked tiffins, streetside fast food, etc. Other service providers such as pest control services, cleaning services, home health aide workers, parlours, gyms, cyber cafes, etc. operating in and around the student's neighbourhood. (Unit 4).

Suggested Readings

- Chand, R. (2022). *Indian agriculture Towards 2030- Need for a transformative Vision* in Chand. R. et al. (Ed.). *Indian Agriculture towards 2030*, India studies in Business and Economics, New Delhi: Springer.
- Dreze, J. & Sen, A. (2013). *India: An uncertain glory – India and its contradictions*, New Jersey: Princeton University Press. Chapter 2.

- Global value Chains (GVCs): India, OECD. https://www.oecd.org/sti/ind/gvcs%20-%20india.pdf
- Gulati, A. & Juneja, R., (2022). Transforming Indian Agriculture. Chand, R. Ed. *Indian Agriculture towards 2030.* India studies in Business and Economics, New Delhi: Springer.
- Joshi, V. (2017) *India's long road- the search for prosperity.* Allen Lane: Penguin Random House, Chapter 2.
- Kapila, U. (2022-23), (Ed.) Indian *economy since independence* (33th ed.), New Delhi: Academic foundation.
- Kapila, U. (2022). *Indian Economy: Performance and policies* (22nd ed.). New Delhi: Academic Foundation.
- Lerwen, L. & Ramakrishna, S. (2021). *An introduction to Circular Economy*, Singapore: Springer.
- Puri, V.K., Misra, S.K., & Garg, B. (2022). *Indian Economy* (40th ed.). New Delhi: Himalaya Publishing House.
- Walter, R. (2019). *The Circular Economy: A User's Guide*, New York: Routeledge.

Additional Readings:

- Chatterjee, S. & Subramanium, A. (2020). India's inward Re (turn) Is it warranted? Will it work? *Ashoka Centre for Economic Policy paper no 1.* October. https://ashoka.edu.in/static/doc_uploads/file_1602585593.pdf
- Eichengreen, B. & Gupta, P. (2012) Exports of Services: Indian Experience in Perspective. *National Institute of Public Finance and Policy.* Working Papers, 12/102.
- Marcello, T. & Cristoni, N. (2018). *Strategic Management & the Circular Economy*, New York: Routeledge.
- Subramanium, A. & Felman, J. (2021). India's stalled rise - How the State Has Stifled Growth, *Foreign Affair.* Watson Institute for International and Public Affairs and Brown University.

Notes:

1. **Suggested readings shall be updated and uploaded on the college website from time to time.**
2. **Examination scheme and mode shall be as prescribed by the Examination branch, University of Delhi from time to time.**

BACHELOR OF ARTS (VS) MODERN OFFICE MANAGEMENT

SEMESTER- III

DISCIPLINE SPECIFIC CORE COURSE - 3.1 (DSC-3.1)
Basic Phonography -II

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Basic Phonography -II (DSC-3.1)	4	3	0	1	12th Pass	Nil

Learning Objective:
The course aims to provide advanced knowledge to students with regard to the art of taking notes quickly and accurately by applying the principles of phonography as developed by Sir Isaac Pitman. Learners would be able to take notes in shorthand and transcribe the same into English and thus carry out the office and secretarial work smoothly.

Learning Outcomes:
After completion of the course, the learners will be able to:

1. demonstrate the principles of Shorthand.
2. apply the rules of Aspirate, Upward and downward forms of Consonant 'R', 'L' & 'SH' and Compound Consonants.
3. use the basic rules of Halving and Doubling Principles.
4. interpret the distinction between half-length and double-lengths of consonants.
5. practice words and sentences of Prefixes, Suffixes, Contractions and Figures.
6. transcribe passages from Shorthand to English and vice-versa.

Unit 1: The Aspirate **(10 Hours)**
Tick 'H', Dot 'H', additional rules for upward and downward forms of Consonant 'R', upward and downward forms of consonant 'L' and upward and downward forms of Consonant 'SH'. Compound Consonants: Initial 'W' and 'WH', strokes 'L' and 'R' thickened, addition of 'P' or 'B' to stroke 'M', aspirated 'W', vowel preceding 'W', stroke 'L' after 'KW', use of 'RER' and 'LER' signs, vowel after final 'R' and hooked form of 'MP.'

Unit 2: Halving Principle **(10 Hours)**
Vocalizing of half-length forms, halving for 'T' or 'D', circles following half-length forms, half-length 'H', exceptions to the use of Halving Principle and position of half-length forms. Halving and thickening of Strokes 'M', 'N', 'L' and 'R'. The signs for 'RT' and 'LT', joining of strokes of unequal length, use of Halving Principle for past tense words, use of Halving Principle in Phraseography.

Unit 3: Doubling Principle **(12 Hours)**

The general rule for doubling, doubling of straight and curved strokes, strokes 'MP' and 'MB', alternative forms of 'MPR'/'MBR', Stroke 'NG', alternative forms of 'NG-KR' and 'NG-GR', doubling of Stroke 'L', circle 'S' and double-length strokes, exceptions to the use of Doubling Principle, position of double-length strokes and use of Doubling Principle in Phraseography.

Unit 4: Diphones **(13 Hours)**

Use of Diphones. Medial semi-circle, left semi-circle and right semi-circle. Prefixes: Initial Com or Con, medial Com., Accom or Accommo, Intro, Megna/magne, Trans, Self, Self-con or Self-com, 'In' before 'Str', 'Skr' and 'H', Negative words and use of Logograms in Prefixes. Suffixes and Terminations: Dot 'Ing', Ality etc., Logical/Logically, Ment, Mental-ly-ity, Ship, Fullness, Ward, Wart, Wort, Yard and compound words. Contractions: Omission of consonants such as 'N', 'R', 'Etc', 'Kt' before 'Ive' and 'K' before 'Shun' in forming Contractions. Figures: Numerals in Shorthand, round numbers and monetary units.

Practical Exercises:

The learners are required to:

1. the principles of shorthand and undertake repeated practice of words and sentences of Aspirate, upward and downward forms of 'R', 'L' and 'SH' and Compound Consonants.
2. the rules of Halving and Doubling Principles.
3. the rules of Diphones, Medial Semi-circle, Prefixes, Suffixes, Contractions and Figures.
4. the transcription of passages from Shorthand to English and vice-versa.

Suggested Readings:

- Pitman, Sir Isaac. (1975). *Pitman Shorthand Instructor- Old Course Book.* Indian Reprint, A. H. Wheeler Publishing Co. Ltd., New Delhi
- Ajyar, K.S. (1981.) *Reporter's Phrase Book"*, A.H. Wheeler Publications. (India)
- Bhatia, R.C. (2002). "Principles of Shorthand Theory", G. Lal & Co. (India)
- Hynes, James (2020). *The Practical Phraser,* A.H. Wheeler Publications. (India)
- Kuthiala, O.P. (2020). *Shorthand Made Easy,* Pitman S.S. Publications. (India)
- Pitman, Sir Isaac. (2003). *The New Phonographic Phrase Book.",* A.H. Wheeler Publications. (India)
- Pitman, Sir Issac. (2003). *"Pitman Shorthand Instructor and Key",* Pearson Education. (India)
- Thorpe, E. & Kuthiala, O.P. (2020). *You too can write 200 wpm and above*. Pitman SS Publication. (India)

Notes:

1. **Suggested Readings will be updated and uploaded on college website from time to time.**
2. **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC CORE COURSE - 3.2 (DSC-3.2)
Computer Applications in Business –II

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Computer Applications in Business –II (DSC-3.2)	4	1	0	3	12th Pass	Nil

Learning Objective:
To provide the learners with the understanding about the role of computer networks, internet and database in management of information system and equip them with computational skills using spreadsheets applications.

Learning Outcomes:
After completion of the course, learners will be able to:
1. explain the different concepts related to networking, internet and communication.
2. describe the use of recent ICT developments in office/business.
3. demonstrate the use of different terms used in database management system.
4. create interactive databases using a popular software and describe its applications in a business unit/office.
5. explain and use various spreadsheet functions for making business computations.

Unit 1: Networking, Internet and Communication **(3 Hours)**
Networking-Concept, Networking terminologies: NIC, repeaters, hub, bridge, switch, gateways, and router. Wired vs Wireless networking, issues related with wireless networking, Wireless LAN. Peer-to-peer and client server networking architecture; Internet, intranet, and extranet; Internet Architecture; Managing the Internet; Internet Services; securing the networks from cyber threats.
Data Transmission Media, Guided Media: Twisted pair, Coaxial cable, Optical fibre. Unguided media: Microwave, Radio frequency propagation, Satellite, Transmission Modes, Transmission speed, Modulation and Switching, Circuit Switching and Packet Switching.
Various email app. and their features, setting up Email accounts, Composing Messages, Replying, Using Files and Folders, Setting Individual Emails, E-mail filtering, Creating E-mail rule, Managing Rules, Adding Contacts, Sending E-mail to group, Mail-Merge with Contacts, Setting Contact Options, Using the Calendar, Working with Appointments, creating tasks, Working with Assigned Tasks, Viewing Tasks.

Unit 2: Recent trends in computing **(3 Hours)**
Business collaborations: meaning, advantages and tools of business collaboration - emails, wikis, file sharing, screen sharing, web presenting, work scheduling; Cloud computing: meaning and types of cloud services: IaaS, PaaS, SaaS; Grid Computing; Virtualization; Green Computing; E-Commerce: meaning, business models, Electronic Data Interchange (EDI), Payment Gateways; Internet of Things (IoT)

Unit 3: Introduction to Database Management System **(3 Hours)**

Database: Introduction to database, Difference between Traditional File System and Database Management System, Characteristics of Database, Entity Relationship Model (ER-Model); Database Model- Relational, Network and Hierarchical, Components of Database System, Concept of Keys, Fundamental Integrity Rules; ERD to Relational Mapping, Normalization of databases up to 3 Normal Forms.

Unit 4: Creating databases using DBMS software **(3 Hours)**

DBMS Software: Environment; Tables; Forms; Queries; Reports; Modules; Applying DBMS in managing the data records of Employees, Suppliers and Customers.

SQL and Retrieval of Information: Basic Queries in SQL.

Unit 5: Spreadsheet Applications **(3 Hours)**

EMI calculation and Loan repayment schedule; Ratio Analysis; Break-even analysis; What-if-analysis- Goal seek, Data table and scenario managers; Payroll statements; Graphical representation of sales, stock price and return data; Frequency distribution and simple statistical calculations; Analysing sales performance of representatives, forecasting sales, volumes and costs. etc.

Practical Exercises:

The learners are required to:

1. practical exercise from unit 4 & 5.

Suggestive Readings:

- Silberschatz, A., Korth, H. & Sudarshan, S. (2009)". *Database system concepts"*. McGraw Hill International. (6th ed).
- Balagurusamy, E. (2009). "*Fundamentals of Computers*", Mc Graw Hill Publications, New Delhi. (1st ed.)
- Elmasari & Navathe (2018). "*Fundamentals of Database System*". Pearson Education. (7th ed.)
- Goel, A. (2010). "*Computer Fundamentals*". Pearson, Delhi. (5th ed.).
- Jain, H. C. & Tiwari, H. N. (2022). *"Computer Applications in Business*". Taxmann, Delhi. (Latest ed.)
- Thareja, R. (2020). *"Fundamentals of Computers"* Oxford University Press. Delhi. (2nd ed.)

Notes:

1. **Suggested Readings will be updated and uploaded on college website from time to time.**
2. **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC CORE COURSE - 3.3 (DSC-3.3)
Business Laws

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Business Laws (DSC-3.3)	4	3	1	0	12th Pass	Nil

Learning Objectives:
To impart basic knowledge of the important business laws relevant for the inception and conduct of general and business activities with relevant case laws.

Learning outcomes:
After completion of this course, the learners will be able to
1. apply the basic aspects of contracts vis-à-vis agreements and subsequently enter into valid business propositions.
2. describe various modes of discharge of contract and remedies available in case of breach.
3. compare and contrast between different type of special contracts.
4. examine the rights and obligations under the Sale of Goods Act.
5. explain the procedure related to Issue of digital signature.
6. demonstrate skills to form and manage entrepreneurial ventures as LLP.

Unit 1: The Indian Contract Act, 1872 **(9 Hours)**
Contract – meaning, characteristics and kinds; Essentials of a valid contract, offer and acceptance, consideration, contractual capacity, free consent, the legality of objects; Void agreements; Quasi–contracts. Modes of discharge of contract

Unit 2: Remedies for Breach and Special Contracts **(9 Hours)**
Breach of contract; Remedies for breach of contract, Contracts of Indemnity and Guarantee; Contracts of Bailment and Pledge; Contract of Agency.

Unit 3: The Sale of Goods Act, 1930 **(9 Hours)**
Contract of sale; Meaning and the difference between a sale and agreement to sell; Conditions and Warranties; Transfer of ownership in goods including sale by non, owners; Performance of the Contract of Sale; Unpaid seller – meaning and rights of an unpaid seller against the goods.

Unit 4: The Information Technology Act, 2000 **(9 Hours)**
Definitions under the Act. Digital signature. Electronic governance. Attribution, acknowledgement, and dispatch of electronic records. Regulation of certifying authorities. Digital signatures certificates. Duties of subscribers under the Act. Penalties and adjudication. Offences as per the Act.

Unit 5: The Limited Liability Partnership Act, 2008 **(9 Hours)**

Salient Features and Nature of LLP; Small LLP; Difference between LLP and Partnership, LLP and Company; LLP Agreement; Incorporation Document; Incorporation by registration; Registered office of LLP and change therein; Change and Rectification of the name of LLP; Partners and Designated Partners: Partners and their Relations; Extent and limitation of liability of LLP and partners; Whistleblowing; Conversion into LLP.

Practical Exercises:

The learners are required to:

7. identify components of valid contracts present in the rent agreement/ sale deed/appointment letters used or seen in day-to-day life.
8. identify and enumerate types of damages in case of breach of contract under different real, life situations.
9. prepare a list of gratuitous and non, gratuitous bailment contracts entered in daily life.
10. analyse some case studies where 'caveat emptor' is applicable.
11. explore the procedure for issue of digital signature.
12. examine RUN form and FiLLip webform from notification on MCA portal and enlist the mandatory fields for LLP.

Suggested readings:

- Bhushan, B., Kapoor, N. D., Abbi, R., & Kapoor, R. (2020). *Elements of Business Laws*. Sultan Chand.
- Dagar, I., & Agnihotri, A. (2020). *Business Laws*. Sage Textbook.
- Jagota, R. (2021). *Business Laws*. MKM Publishers Scholar Tech Press.
- Kuchhal, M. C., & Kuchhal, V. (2023). *Business Laws*. Vikas Publishing House.
- Maheshwari, S. N., & Maheshwari, S. K. (2017). *A Manual of Business Laws*. Himalaya Publishing House Pvt. Ltd.
- Sharma, J. P., & Kanojia, S. (2018). *Business Laws*. Bharat Law House Pvt. Ltd.
- Singh, A. (2008). *The Principles of Mercantile Law*. Eastern Book Company.
- Sulphey, M. M., & Basheer, A. (2014). *Laws for Business* (5th ed.). PHI Learning.
- Tulsian, P. C. (2000). *Business Law*. Tata McGraw Hill.

Notes:

1. **Suggested Readings will be updated and uploaded on college website from time to time.**
2. **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

BACHELOR OF ARTS (VS) TOURISM MANAGEMENT

SEMESTER III

DISCIPLINE SPECIFIC CORE COURSE – 3.1 (DSC-3.1)
Tourism Marketing

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	credits	Components of the course			Eligibility criteria	Pre-requisites of the course
		Lecture	Tutorial	Practical		
Tourism Marketing (DSC-3.1)	4	3	1	0	Pass in class XII	Nil

Learning Objectives:

The aim of this course is to give the students a wide knowledge of the existing and emerging trends in the field of tourism marketing. The module includes the operation techniques of tourism marketing. It enables basic knowledge of marketing principles, study to suitability of alternative promotional approaches and to formulate marketing plans for tourism industry.

Learning Outcomes:

After completing this course, the learners would be able to:

1. develop the basic understanding of the concepts of marketing like needs, wants, demands, market and marketing, customer value and satisfaction. Analyze the concept of market segmentation and evaluate its bases. Examine the implications of destination life cycle in tourism management.
2. differentiate the steps involved in conducting marketing research, analyze the various research methods and designs, research problem areas, and identify the need for market research in tourism industry. Examine the unique features of tourism demand and Tourism product.
3. investigate the ingredients of marketing mix including its expanded versions. Evaluate the pricing methods - the factor influencing the pricing decision, pricing objectives and pricing policies.
4. formulate the concept of destination planning and diversification; destination marketing. Appraise the marketing in new digital age - E - Business, E-Commerce and E-Marketing

Unit 1: Core concepts in tourism marketing **(10 hours)**

Needs, Wants and Demands, Products, Customer value and satisfaction, Quality, Exchange and transactions, Markets and marketing, Segmentation of tourism market- Concept, Justification, Importance and Bases. Tourism life cycle, Future of tourism marketing – Artificial intelligence, Robots, Chatbots, Augmented reality (AR), Virtual reality (VR).

Unit 2: Market research **(10 hours)**

Market research process and methods, Research problem areas, Marketing research in the tourism industry, unique features of tourism demand and Tourism product, Tourism product promotion: Advertising, Public relations, Sales promotion and Personal selling.

Unit 3: Tourism marketing mix & pricing **(11 hours)**

Tourism marketing mix- 8 Ps, Methods of pricing, Factors influencing the pricing decisions, Pricing objectives, Pricing policies, Service characteristics of tourism, Branding and Packaging, Conditions that support branding.

Unit 4: Destination planning & marketing **(14 hours)**

Destination planning and Product diversification, Destination marketing, Strategy for destination management planning and marketing in the new digital age (E-business, E-Commerce and E-marketing) and Complementary marketing, Destination branding, Role of media in promotion of tourism, T.V. / Radio, Newspaper, Travel magazines, Documentaries, Guide books, Travel writers, Travelogues of Shri Rahul Sankrityayan.

Practical Exercises

The learners are required to:

1. take a sample of 10 to 15 families from your neighbourhood and segment them on the basis of their needs and wants as a possible consumer of tourism services.
2. evaluate the need of market research in the field of tourism industry with focused group discussion. Explain different promotional technique for the tourism product.
3. create a marketing mix for tourism products of a specific tourism destination of Bharat.
4. analyze the importance of destination planning and destination marketing. Demonstrate tourism promotion skills through documentaries, travel writing.

Suggested Readings

- Kotler, P. (2021). *Tourism and Hospitality Marketing Management,* New Delhi: Prentice Hall of India.
- Kotler P., Bowen T.J & Baloglu S. (2021). *Marketing for Hospitality and Tourism,* Netherlands: Pearson.
- Kumari, N., & Swami, R. (2018). *Marketing Management*, New Delhi: Sage Publications India Pvt Ltd.
- Middleton, T.C. (1994). *Marketing in Travel and Tourism*, United Kingdom: Oxford Publishing House.
- Morrison, A. M. (2022). *Tourism Marketing: In the Age of the Consumer*. United Kingdom: Taylor & Francis.
- Wang, D., & Kim, S. (2021*). Future of Tourism Marketing*. United Kingdom: Taylor & Francis.

Notes:

1. **Suggested Readings will be updated and uploaded on college website from time to time.**
2. **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC CORE COURSE – 3.2 (DSC-3.2)
Impacts of Tourism

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	credits	Components of the course			Eligibility criteria	Pre-requisites of the course
		Lecture	Tutorial	Practical		
Impacts of Tourism (DSC- 3.2)	4	3	1	0	Pass in class XII	NIL

Learning Objectives:
The objective is to familiarize students with each distinct impact category while emphasizing both adverse and advantageous effects. This course focuses on the negative effects that uncontrolled tourism can have on the local community. Students' knowledge of environmental preservation will grow as a result, and they will gain insight into how tourism may support the preservation of both culture and the environment.

Learning Outcomes:
After completing this course, the learners would be able to:

1. examine socio-cultural impacts of tourism. Appraise the role of tourism in preserving social values and culture.
2. evaluate the relationship between tourism and the environment. State environment impact assessment process and environmental protection act.
3. argue about the economic impacts of tourism at the local destination. Relate tourism with employment generation and value the concept of tourism multiplier effect.
4. compare positive and negative political impacts of tourism. Examine government roles in destination growth.

Unit 1: Socio-cultural impacts of tourism **(12 hours)**
The nature of socio-cultural impact of tourism, the tourism development process, the psychological basis of tourism development, the sociological basis of development of tourism, some specific socio-cultural impacts of tourism, positive and negative socio-cultural impact of tourism.

Unit 2: Environmental impacts of tourism **(12 hours)**
Environmental impact, Environmental impact assessment, environmental auditing, environment impact assessment process, Environmental protection act, Positive impacts of tourism on the environment.

Unit 3: Economic impacts of tourism **(10 hours)**
The generation of economic impact by tourist spending, Direct, indirect and induced economic effects, The multiplier concept, Types of multipliers, Calculation of multiplier effect, Balance of Payments in the tourism sector. Impact of G-20 presidency in the growth of India's tourism.

Unit 4: Political impacts of tourism **(11 hours)**
Positive and negative tourism impacts, Tourism as a political tool, impact assessment of government policies related to tourism, Role of political stability in the growth of tourism. Role of

political leadership in trade blocks like SAARC, BRICS, SCO, G20 on the growth of tourism sector.

Practical Exercises

The learners are required to:

1. conduct a case study on socio-cultural impacts of tourism on a chosen city/ historical site of Bharat.
2. evaluate the need for environmental impact assessment in the field of tourism industry with focused group discussion.
3. assess the understanding of economic impacts by objective and subjective assessment (Class test, assignments, MCQs, Fill in the blanks and quiz).
4. analyze the importance of tourism as a political tool. Group discussion on the impacts of tourism performances and government efficiency on the destination growth.
5. prepare and present a case study on the impact of Presidency of G 20 on the growth of tourism in Bharat.

Suggested Readings

- Ashutosh, K. (2015). *Rajasthan Tourism: Past, Present & Future*. New Delhi: A.K. Publications.
- Bosselman, F. P., Craig A. P., & McCarthy, C. (2013). *Managing Tourism Growth: Issues and Applications.* Washington, DC: Island Press.
- Dwyer, L., Forsyth, P., & Dwyer, W. (2020). *Tourism Economics and Policy* (2nd ed.). Bristol, U.K: Channel View Publications. Retrieved from https://www.perlego.com/book/1344773/tourism-economics-and-policy-pdf *(Original work published 2020)*
- Gursoy, D., & Nunkoo, R. (2019). *The Routledge Handbook of Tourism Impacts: Theoretical and Applied Perspectives* (1st Ed.). Routledge.
- Laws, E. (2009). C. Michael Hall, Editor, *Pro-Poor Tourism – Who Benefits? Perspectives on Tourism and Poverty Reduction, Current Themes in Tourism,* Bristol, U.K: Channel View Publications,
- Mak, J. (2004). *Tourism and the Economy: Understanding the Economics of Tourism*. Hawaii: University of Hawaii Press. http://www.jstor.org/stable/j.ctvvn7rt
- Mckercher, B. & Cros, H. (2003). *Cultural Tourism: The Partnership between Tourism and Cultural Heritage Management. International Journal of Contemporary Hospitality Management.* pp-239-248.
- Moscardo, G. (2008). *Building community capacity for tourism development: Conclusions.* CABI Books. CABI International. Pp-172-179.
- Youcheng, W., & Pizam, A. (2011). *Tourism Destination Marketing and Management: Collaborative Stratagies,* CABI.

Notes:

1. **Suggested Readings will be updated and uploaded on college website from time to time.**
2. **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC CORE COURSE – 3.3 (DSC-3.3)
Historical Tourism: Archaeology, Art and Architecture

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (If any)
		Lecture	Tutorial	Practical/ Practice		
Historical Tourism: Archaeology, Art and Architecture (DSC- 3.3)	**4**	**3**	**1**	**0**	**Pass in class XII**	**NIL**

Learning Objectives:
This paper aims at introducing students of Tourism Management in Vocational Studies to Archaeology, Art and Architecture from an interdisciplinary perspective. It will help the students of Tourism to understand the importance and significance of these elements for the development and promotion of Historical Tourism. It will enable them to cultivate sharp observation and problem-solving skill sets which are essential prerequisites for any profession they chose to adopt.

Learning Outcomes:
After completion of the course, learners will be able to:

1. student will understand the evolution Tourism industry through the historical approach of archaeology.
2. will learn how to understand, assess and evaluate interconnection between art and tourism.
3. learners will become aware of role architecture as a form of tangible heritage in promotion and development of tourism.
4. the student will also come to know the role of Govt. & Private institutions in heritage management and tourism industry.

Unit 1: Archaeology and its role in the development of Tourism **(11 hours)**
Archaeology and Tourism: Linkages, Shared goals and changing perspective, Discovery of historical objects and Sites: Archaeological surveying, Contextualization, Excavation, and Interpretations.
Public Archaeology and Heritage Management. Relationship between Archaeology, History and Tourism Sites and Remains: Lothal, Hampi, Rakhigarhi, Adichanallur.

Unit 2: Art and Tourism **(11 hours)**
Art, Artifacts and Ecological Facts: An overview. Rock Art: Ajanta and Ellora caves, Bhimbetka Cave paintings etc. Folk Art: Madhubani, Warli, Miniature and Rajput Paintings (Kota, Bundi, Shekhawati school) Visual Art and Tourism: Museums, Galleries and Exhibitions

Unit 3: Architecture and Tourism **(11 hours)**
Architecture: Definition and Interdisciplinary linkages. Schools of Architecture, its regional variations

Secular and Religious Architecture. Natural, Cultural and built Heritage: Forts, Palaces and Havelis.

Unit 4: Heritage Management and Promotion of Tourism (12 hours)

UNESCO World Heritage sites: Dholavira, Nalanda Mahavihara, Taj Mahal etc.
Flagship Museums of India: National Museum Delhi, Indian Museum Kolkata, Salar Jung Museum Hyderabad. Government Schemes and Initiatives: Adopt a Heritage: Apni Dharohar, Apni Pehchan; Swadesh Darshan Scheme; Pilgrimage rejuvenation and spiritual augmentation drive (PRASAD) scheme. Social and Cultural Impact on local economies and geographies.

Practical Exercises:

The learners are required to:

1. Interactive sessions through group discussions or group presentations shall be used to enable learning of tangible heritage and its management and role of govt. and private institutions in the promotion of Tourism industry.
2. Using of audio-visual aids like documentaries and power point presentations, and an appropriate field-visit will be used for gaining in-depth knowledge of deep interconnections between History and Tourism industry.
3. Assess the understanding of theory and practical by objective and subjective assessment (Class test, assignments, MCQs, Fill in the blanks and quiz)

Suggested Readings:

- Acharya Ram (1980). *Tourism and Cultural Heritage of India*, Jaipur: RBSA Publication.
- Bahn, P. and Renfrew, C. (2008) *Archaeology: Theory, methods and practice*. New York: Thames and Hudson.
- Basham A.L. (2002). *Cultural History of India*, New Delhi: Oxford University Press.
- Chakrabarti, Dilip. K. (1988) *A History of Indian Archaeology from the Beginning to 1947*. Delhi: Munshiram Manhorlal Pvt. Ltd.
- Fagan, Brian (2001) *In the Beginning: An Introduction to Archaeological Practice*. New Jersey: Hall Upper Saddle River.
- Gamble, Clive (2004) *Archaeology the Basics*, UK: Routledge.
- Gupta, SP, Lal, K, Bhattacharya, M. (2002) *Cultural Tourism in India*, New Delhi: DK Printworld.
- Gupta S.P. and S Vijaykumar (2009). *Temples in India: Origin and Developmental Stages*, New Delhi: D. K. Print world Ltd.
- Gupta S. P (2004), *Elements of Indian Art: Including, Iconography and Iconometry,* New Delhi: D.K.Print world Ltd.
- Grover Satish (1981). *The Architecture of India: Islam*, New Delhi: Vikas Publishing House, Pvt. Ltd,
- Hardy Adam (2007). *The Temple Architecture of India*, New Jersey: John Wiley & Sons.
- Huntington Susan L. (2014). *The Art of Ancient India: Buddhist, Hindu and Jain*, New Delhi: Motilal Banarasidass.
- Hussain, S. A. (2022). *The National Culture of India,* New Delhi: National Book Trust.
- Mehta, Rustam.J.(1960). *The Handicrafts and Industrial Arts of India. A Pictorial and Descriptive Survey of Indian craftsmanship as seen in Masterpieces of Jewellery and Metal Crafts, Arms and Armour, Furniture and Inlay Crafts, Stone and Ivory Carving, Lacquer Crafts,* Bombay: D.B. Taraorevle Sons and Co. Pvt. Ltd.
- Michell George (1988). *The Hindu Temple: An Introduction to Its Meanings and Forms*, Chicago: University of Chicago Press.

- Michell, George (2015), *Late Temple Architecture of India, 15th to 19th Centuries: Continuities, Revivals, Appropriations, and Innovations*, USA: Oxford University Press.
- Pryce Will (2011). *World Architecture: The Masterworks,* London: Thames and Hudson.
- Rajkumar (2003). *Essays in Indian Art and Architecture*, New Delhi: Discovery Publishing House, Pvt. Ltd.
- Sinha R.K. (1999). *Growth and Development of Modern Tourism*, New Delhi: Dominant Publishers,
- Tomory Edith. (1982). *History of Fine arts in India and the West*, Orient Longman.
- Vatsayan, Kapila. (2018). *Indian Classical Dance,* New Delhi: Publications Division, Ministry of Information and Broadcasting.

Suggested Readings:

- Knudson, S. J. (1986) *Culture in Retrospect: An Introduction to Archaeology*. California: Waveland Press.
- Rajan. K (2002) *Archaeology Principles and Methods.* Thanjavur: Manoo Pathippakam.
- Renfrew, Colin and Paul Bahn (2005) *Archaeology: The Key Concepts*, London: Routledge.
- Trigger, Bruce G (1989) *A History of Archaeological Thoughts*. Cambridge: Cambridge University Press

Notes:

1. **Suggested Readings will be updated and uploaded on college website from time to time.**
2. **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

BA(VS) INSURANCE MANAGEMENT

SEMESTER-III

DISCIPLINE SPECIFIC CORE COURSE – 3.1 (DSC-3.1)
Insurance Law & Regulation

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Total Credits	Lectures	Tutorial	Practical	Eligibility criteria	Pre-requisite of the course
Insurance Law & Regulation DSC – 3.1	4	3	1	0	Class XII	Nil

Learning Objectives:
The course aims to familiarize the students with the main laws governing the insurance sector in India. The course also provides basic understanding of other laws associated with insurance such as prevention of money laundering activities.

Learning Outcomes:
After completion of the course, learners will be able to:

1. describe the salient features of the Insurance Act, 1938
2. explain the role of IRDAI as per the IRD Act, 1999
3. demonstrate knowledge of various regulations for the valuation of assets and liabilities of insurers.
4. determine the solvency margins of insurers (Life & non-life).
5. appraise the rights of policy holders and insurers with the help of important judgements covered under various Insurance Regulatory enactments and appraise the effectiveness of the regulatory enactments.
6. identify the important provisions of the Prevention of Money Laundering Act, 2002 (PMLA) and critique the role of insurance companies in preventing money laundering activities.

Unit 1: Insurance Act, 1938 **(11 Hours)**

Provisions applicable to insurers, investment, loans and management, assignment or transfer of policies and nominations, commission and appointment of agents, special provisions of law and miscellaneous; relevant case law:

1. Reliance Life Insurance Co. Ltd. vs Rekhaben Nareshbhai Rathod on 24 April, 2019.
2. Life Insurance Corporation of India v. Escorts Ltd.& Ors (1986) AIR1370
3. Life Insurance Corporation of India vs United Bank of India Ltd. and Anr on 13 March, 1970. AIR 1970 Cal 513, 1971 41 Comp Cas 603 Cal.
4. Insure Policy Plus Services vs The Life Insurance Corporation of India on 22 March, 2007.

Unit 2: Insurance Regulatory and Development Authority Act, 1999 (13 Hours)

Establishment and incorporation of the Authority. Duties, power and functions of the Authority. Powers of Central Government to supersede Authority; Protection of Policy holders Regulations 2002; IRDA Ombudsman Regulation 2017; IRDA (Insurance Advertisements and Disclosure) Regulations, 2021; relevant case law:

1. Meenakshi Popat Kumbhoje & Ors. vs Life Insurance Corporation Of on 11 March, 2015.
2. V.B. Cold Storage Private Limited vs Bajaj Allianz General Insurance on 24 September, 2021
3. United India Insurance Co. Ltd. vs Abada Khatun and Ors. on 11 February, 1998.

Unit 3: IRDA (Assets, Liabilities, and Solvency Margin of Insurers) Regulations, 2000 (11 Hours)

Valuation of assets, valuation of liabilities: life insurance. Valuation of liabilities: general insurance; Determination of solvency margins: life insurers; Determination of solvency margin: general insurers; relevant case law:

1. Insurance Regulatory and Development Authority of India (IRDAI) Order (IRDA/F&A/ORD/SOLP/200/11/2019; Section 64VA (5) on Reliance Health Insurance Co Ltd.

Unit 4: The Prevention of Money Laundering Act, 2002 (PMLA) (10 Hours)

Objectives, Salient provisions, role of insurance companies and implementation, international provisions related to money laundering (FATCA compliance)

Practical Exercises:

The learners are required to:

1. form groups providing consultation to dummy clients who wish to start a life insurance business in India regarding registration of any type of insurance as per Indian laws (Unit1).
2. make a group project by gathering information about the cases where power and function of IRDAI have been applied (Unit2).
3. make a project analysing the trends in assets and liabilities of any insurer operating in India (Unit3).
4. compute and appraise the solvency margin of any insurer operating in India (Unit3).
5. form small groups and gather data from insurers (based on case law/disputed claims along with reasons) on problems in implementing the regulatory provisions (Unit3)
6. engage in a classroom discussion about the anti-money laundering practices of different insurers operating in India (Unit4).
7. engage in classroom discussion on limitations placed by IRDAI on management of expenses of insurers (Unit4)

Suggested Readings:

- Malik (2018). *Handbook of Insurance Laws with Insurance Act 1938*. Delhi Law House
- Murthy, H. S.N. & Sarma, K.V.S. (2019). *Modern Law of Insurance in India*, Universal Book Traders, Delhi.
- Lexis, N. (2022). *The Insurance Act, 1938- Bare Act with Short Notes.* Universal's.

- Insurance Regulatory and Development Authority (Assets, Liabilities, and Solvency Margin of Insurers) Regulations (2000). Retrieved from https://irdai.gov.in/hi/document-detail?documentId=398837
- Insurance regulatory and development authority of India act (1999). Duties, powers and functions of authority § 14, 18, 19 (1999). Retrieved from https://www.indiacode.nic.in/bitstream/123456789/1893/1/A1999_41.pdf
- Insurance Regulatory and Development Authority (Insurance Advertisements and Disclosure) Regulations (2000). Retrieved from https://www.indiacode.nic.in/bitstream/123456789/1893/1/A1999_41.pdf
- Insurance Regulatory and Development Authority (Protection of Policyholders' Interests) Regulations (2002). Retrieved from https://irdai.gov.in/document-detail?documentId=398265
- The Prevention of Money-Laundering Act (2002). Retrieved from https://www.indiacode.nic.in/bitstream/123456789/2036/1/A2003-15.pdf

Cases

1. Reliance Life Insurance Co. Ltd. vs Rekhaben Nareshbhai Rathod on 24 April, 2019. Retrieved from https://indiankanoon.org/doc/110953063/
2. Life Insurance Corporation of India vs Escorts Ltd. & Ors 1986 AIR1370
3. Life Insurance Corporation Of vs United Bank Of India Ltd. And Anr on 13 March, 1970. AIR 1970 Cal 513, 1971 41 Comp Cas 603 Cal. Retrieved from https://indiankanoon.org/doc/34755/
4. Insure Policy Plus Services vs The Life Insurance Corporation Of on 22 March, 2007. Retrieved from https://indiankanoon.org/doc/1351197/
5. United India Insurance Co. Ltd. vs Abada Khatun And Ors. on 11 February, 1998. Retrieved from https://indiankanoon.org/doc/1533963/?type=print
6. Meenakshi Popat Kumbhoje & Ors. vs Life Insurance Corporation Of on 11 March, 2015. Retrieved from https://indiankanoon.org/doc/149277303/
7. V.B. Cold Storage Private Limited vs Bajaj Allianz General Insurance on 24 September, 2021. Retrieved from https://indiankanoon.org/doc/142520666/

Notes:

1. **Suggested readings & case laws shall be updated and uploaded on the college website from time to time.**
2. **Examination scheme and mode shall be as prescribed by the Examination branch, University of Delhi from time to time.**

DISCIPLINE SPECIFIC CORE COURSE – 3.2 (DSC-3.2)
Services Marketing

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Total Credits	Lectures	Tutorial	Practical	Eligibility criteria	Pre-requisite of the course
Services Marketing DSC – 3.2	4	3	1	0	Class XII	Nil

Learning Objectives:
The course aims to familiarize students with the fundamental concepts and principles of marketing. It will equip students with an understanding of recent trends in marketing and examine the emergent issues arising from them. The course will introduce the student to the marketing of services in general and marketing of insurance in particular.

Learning Outcomes:
After completion of the course, learners will be able to:
1. describe the traditional and modern concepts of marketing.
2. demonstrate the concept of market segmentation.
3. appraise the spread of digital, social and green marketing in India
4. differentiate between the marketing mix for products and services.
5. select the models applicable in insurance marketing

Unit 1: Introduction to Marketing **(10 Hours)**
Marketing: Nature, importance, scope; Evolution (Production concept, Product concept, Selling, Marketing) of Marketing, Marketing mix, Holistic marketing.
Emerging concepts: Digital Marketing, Social Marketing and Green Marketing, Network marketing.
Contemporary Issues in Marketing: Social, ethical and legal aspects of marketing.

Unit 2: Marketing Environment & Segmentation **(10 Hours)**
Macro environment: Demographic, Economic, Political, Legal, Socio cultural, Technological environment (global & Indian context), Michael Porter's Model of Competitive analysis, BCG Matrix.
Market Segmentation, Targeting and Positioning: Concept, Levels of Market Segmentation, Basis for Segmenting Consumer Markets, Targeting and Positioning concepts.

Unit 3: Services Marketing **(15 Hours)**
Marketing of services: concept, characteristics, Marketing mix (7Ps)
Product decisions: Product Classification, Concept of Product Life Cycle (PLC) and strategies.
Pricing Decisions: Determinants of Price, Pricing strategies.
Place: Types of distribution channels, factors affecting choice of a distribution channel.
Promotion– Importance, tools of promotion mix (traditional & modern)
People – concept & importance

Process - concept & importance
Physical evidence - concept & importance

Unit 4: Insurance marketing **(10 Hours)**

Nature and scope of Insurance Marketing; Bancassurance distribution model (benefits and types), Importance of promotion in Insurance marketing, Role and benefits of relationship marketing in insurance;
Application of three-stage model of service consumption in insurance, Factors determining service quality of an insurance company (Servqual Model)

Practical Exercises:
The learners are required to:

1. make a group presentation on Indian products/services that are marketed through emerging concepts like digital, social, or green marketing tools. (Unit 1)
2. engage in a group project to study the basis of market segmentation and targeting strategy followed for different types of insurance products (Unit 2)
3. prepare group presentations to showcase the product life cycle of some extinguished goods/services. (Unit 3)
4. collect data to present the marketing mix (7Ps) of various service firms, particularly insurance companies. (Unit 3)
5. form small groups and critically examine the marketing techniques used by insurance companies in India in the light of the different marketing models. (Unit 4)

Suggested Readings:

- Apte, G., (2004). *Services Marketing*. Oxford University Press.
- Govindarajan, M., (2020). *Marketing Management*, New Delhi: PHL Learning Pvt. Ltd.
- Kotler, P., (2021). *Marketing Management*, New Jersey: Englewood Cliffs, Prentice Hall Inc.
- Kotler, P., Armstrong, G., Agnihotri, P. Y., & Ul Haq, E. (2017). *Principles of Marketing: A South Asian Perspective* (13th edn) Pearson.
- Kotler Philip, Keller Kevin Lane, Chernev Alexander, Sheth N. Jagdish, & Shainesh G., (2022). *Marketing Management*, (16th Edition) Pearson.
- Pride W. M., & Ferrell O.C. (2019). *Marketing: Planning, Implementation and Control*, New Delhi: Cengage Learning India Ltd.
- Ramaswamy, V.S. & Namakumari, S. (2018). *Marketing Management: Global Perspective-Indian Context* Macmillan Publishers India Limited.
- Sharma, S. (2014). *Insurance Marketing*, Random publications.
- Wirtz, J., Lovelock, C., & Chatterjee, J. (2017). *Services Marketing: People, Technology, Strategy.* Pearson Education
- Zeithaml, V., Bitner, M. J., & Gremler, D. (2018). *Services Marketing: Integrating customer focus across the firm.* McGraw Hill.

Notes:

1. **Suggested readings shall be updated and uploaded on the college website from time to time.**
2. **Examination scheme and mode shall be as prescribed by the Examination branch, University of Delhi from time to time.**

DISCIPLINE SPECIFIC CORE COURSE – 3.3 (DSC-3.3)

Indian Economic Environment

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Total Credits	Lectures	Tutorial	Practical	Eligibility criteria	Pre-requisite of the course
Indian Economic Environment DSC – 3.3	4	3	1	0	Class XII	Nil

Learning Objectives:

The course aims to familiarise students with the basic framework of India's economy and the recent developments. It provides understanding about the economic crisis of 1991 and the subsequent reforms that followed. It explains the role of foreign trade, Foreign Direct Investment (FDI) and foreign capital in economic development.

Learning Outcomes:

After completion of the course, learners will be able to:

1. explain the evolution of India's industrial growth experience and describe the relationship between economic growth and development, the idea of sustainability, circular economy and Sustainable Development Goals (SDGs).
2. examine the impact of policy changes in both the agriculture and the industry sector.
3. appraise the economic and social outcomes of policy initiatives in the services sector.
4. critique the role of foreign trade and foreign capital in India's development process.

Unit 1: Indian Economy: An Overview **(12 Hours)**

A brief introduction to the current structure of the Indian economy: Evolution of Indian economic environment, import substitution to globalisation, the impact of the Covid-19 pandemic on the Indian economy;

Redefining development: changing ideas on growth and development, the idea of human development, the Human Development Index (HDI), the Gender Inequality Index (GII), the Gender Development Index (GDI), understanding the concepts and India's performance on these indicators; The idea of circular economy and Sustainable Development Goals (SDGs) 2030.

Unit 2: Transforming Agriculture - Current Trends and New Areas of Growth (11 Hours)

Role and importance of agriculture: data on poverty, inequality and growth without employment, the high proportion of population engaged in agriculture and the low agricultural productivity- broad trends and the instability in output, concerns of food security and nutritional outcomes, commitments to SDGs.

Issues in agriculture: rural credit and institutional finance, transportation and infrastructure, agricultural marketing, availability of agricultural inputs, technology and water management, soil degradation, rural entrepreneurship, crop insurance, contract farming, etc.
The need for a transformative vision in agriculture: new emerging areas and their impact on ecological management- including sustainable agriculture, alternative farming and organic farming, horticulture and floriculture, Multi-layer farming etc.

Unit 3: Industrial Performance - An Appraisal (11 Hours)
Industrial development: post 1991 trends and growth, the new economic policy, public sector reforms and privatisation, the slow growth of the manufacturing sector and the issue of the 'missing middle', the challenges of finance, regulations and labour laws, the role of Micro, Small and Medium Enterprises (MSMEs) and the challenges faced by them.

Unit 4: Foreign Trade, Foreign Capital, Multi-National Corporations (MNCs) and the Services Sector (11 Hours)
Foreign trade and trade policy: post 2000 trends in trade, the concept of global value chains, importance of trading blocks and trade agreements, India's experience, growth and contribution of foreign capital and MNCs.
Growth of the services sector in India: recent trends, growth in the information and communication technology (ICT) & IT enabled services (ITES) sectors, education, health, banking and insurance, etc., impact of digitization and servicification.

Practical Exercises:
The learners are required to:
1. discuss main economic challenges faced in India (Unit1)
2. make a presentation on circular economy and the progress made towards the achievement of the 17 SDGs. (Unit 1)
3. form groups to make case studies on different aspects of India's economic performance (education, migration, employment, industrial production, exports, digital economy, e- commerce, etc.) during Covid-19. (Unit1)
4. make a group presentation on the pros and cons of the recent farm laws. (Unit 2)
5. design a questionnaire about the issues confronting small and medium enterprises for primary data collection from an industry in the vicinity and present analyses in the class. (Unit 3)
6. engage in a group project on different types of services (food delivery provided by restaurant chains/local neighbourhood eateries/home cooked tiffins, streetside fast food, etc. Other service providers such as pest control services, cleaning services, home health aide workers, parlours, gyms, cyber cafes, etc. operating in and around the student's neighbourhood. (Unit 4).

Suggested Readings:

- Chand, R. (2022). *Indian agriculture Towards 2030- Need for a transformative Vision* in Chand. R. et al. (Ed.). *Indian Agriculture towards 2030*, India studies in Business and Economics, New Delhi: Springer.
- Dreze, J. & Sen, A. (2013). *India: An uncertain glory – India and its contradictions*, New Jersey: Princeton University Press. Chapter 2.
- Global value Chains (GVCs): India, OECD. https://www.oecd.org/sti/ind/gvcs%20-%20india.pdf

- Gulati, A. & Juneja, R., (2022). Transforming Indian Agriculture. Chand, R. Ed. *Indian Agriculture towards 2030.* India studies in Business and Economics, New Delhi: Springer.
- Joshi, V. (2017) *India's long road- the search for prosperity.* Allen Lane: Penguin Random House, Chapter 2.
- Kapila, U. (2022-23), (Ed.) *Indian economy since independence* (33th ed.), New Delhi: Academic foundation.
- Kapila, U. (2022). *Indian Economy: Performance and policies* (22nd ed.). New Delhi: Academic Foundation.
- Lerwen, L. & Ramakrishna, S. (2021). *An introduction to Circular Economy*, Singapore: Springer.
- Puri, V.K., Misra, S.K., & Garg, B. (2022). *Indian Economy* (40th ed.). New Delhi: Himalaya Publishing House.
- Walter, R. (2019). *The Circular Economy: A User's Guide*, New York: Routeledge.

Additional Readings:

- Chatterjee, S. & Subramanium, A. (2020). India's inward Re (turn) Is it warranted? Will it work? *Ashoka Centre for Economic Policy paper no 1.* October. https://ashoka.edu.in/static/doc_uploads/file_1602585593.pdf
- Eichengreen, B. & Gupta, P. (2012) Exports of Services: Indian Experience in Perspective. *National Institute of Public Finance and Policy*. Working Papers, 12/102.
- Marcello, T. & Cristoni, N. (2018). *Strategic Management & the Circular Economy*, New York: Routeledge.
- Subramanium, A. & Felman, J. (2021). India's stalled rise - How the State Has Stifled Growth, *Foreign Affair*. Watson Institute for International and Public Affairs and Brown University.

Notes:

1. **Suggested readings shall be updated and uploaded on the college website from time to time.**
2. **Examination scheme and mode shall be as prescribed by the Examination branch, University of Delhi from time to time.**

BACHELOR OF ARTS (VS)

MARKETING MANAGEMENT AND RETAIL BUSINESS

DISCIPLINE SPECIFIC CORE COURSE - 3.1 (DSC-3.1)
Advertising

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Advertising (DSC: 3.1)	4	3	1	0	Pass in Class XII	NIL

Learning Objective:
The objective of the course is to familiarize the students with the basic concepts of advertising. They will be able to learn the insights of advertising: preparing an advertising message, selecting an appropriate medium and evaluating an advertising campaign.

Learning Outcomes:
After completion of the course, learners will be able to:

1. explain the concepts, objectives and approaches of advertising used in marketing.
2. develop advertising messages using various advertising appeals and elements of advertising used by marketers for promoting their brands in the market.
3. describe the role and types of advertising agencies.
4. appraise the major media decisions, media choice and scheduling.

Unit 1: Introduction to Advertising **(12 Hours)**
Meaning, Features, Evolution, Importance, Types, Functions of Advertising & Setting of Advertising objectives, Advertising Budget Approaches of Advertising- DAGMAR (Defining Advertising Goals for Measured Advertising Results), AIDA (Attention, Interest, Desire and Action).

Unit 2: Advertising Copy **(12 Hours)**
Concepts and Elements, Requisites of a Good and Effective Advertising Copy, Advertising Appeals, Measuring Advertising Effectiveness. Communication and Sales effects; Methods of measuring advertising effectiveness; Ethical Aspects of Advertising in India

Unit 3: Advertising Agency **(09 Hours)**

Advertising Agencies: Concept, Role, Types and Selection of Advertising Agencies, Regulating Agencies: Advertising Standards Council of India (ASCI), the Advertising Agencies Association of India (AAAI).

Unit 4: Advertising Media **(12 Hours)**

Advertising Media: Evolution, objectives and Media Types, Factors Affecting Media Choice, Advertisement in 21st Century, challenges faced by advertisers in context with cultural diversity, global marketplace, changes in values and emerging technologies, Contemporary issues in advertising- Digital Marketing, Social Media Marketing, Influencer Marketing etc.

Practical Exercises:

The learners are required to:

1. identify a product and develop an advertising campaign for it. (Unit 1)
2. prepare a report on message strategy and copy elements used in the campaign. (Unit 2)
3. visit the website of ASCI and find out the types of complaints received and what action was taken by ASCI. (Unit 3)
4. prepare a report on various media options used in a campaign. (Unit 4)

Suggested Readings:

- Belch, G. E., Belch, M. A., & Purani, K. (2021). *Advertising and Promotion: An Integrated Marketing Communications Perspective.* Noida, India: McGraw Hill Education.
- Sharma, K. (2018). *Advertising: Planning and Decision Making.* New Delhi: Taxmann Publication Pvt. Ltd.
- Kapoor, N. (2020). *Advertising and Personal Selling.* New Delhi: Pinnacle.
- Shah, K., & D'Souza, A. (2017). *Advertising and Promotions*: An IMC Perspective. Noida, India: McGraw Hill Education.

Notes:

1. **Suggested readings shall be updated and uploaded on the college website from time to time.**
2. **Examination scheme and mode shall be prescribed by the Examination branch, University of Delhi from time to time.**

DISCIPLINE SPECIFIC CORE COURSE - 3.2 (DSC-3.2)
Business Laws

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Prerequisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Business Laws (DSC: 3.2)	4	3	1	0	Pass in Class XII	NIL

Learning Objectives:
To impart basic knowledge of the important business laws relevant for the inception and conduct of general and business activities with relevant case laws.

Learning outcomes:
After completion of the course, the learners will be able to:

7. apply the basic aspects of contracts vis-à-vis agreements and subsequently enter into valid business propositions.
8. describe various modes of discharge of contract and remedies available in case of breach.
9. compare and contrast between different type of special contracts.
10. examine the rights and obligations under the Sale of Goods Act.
11. explain the procedure related to Issue of digital signature.
12. demonstrate skills to form and manage entrepreneurial ventures as LLP.

Unit 1: The Indian Contract Act, 1872 **(9 Hours)**
Contract – meaning, characteristics and kinds; Essentials of a valid contract, offer and acceptance, consideration, contractual capacity, free consent, the legality of objects; Void agreements; Quasi–contracts. Modes of discharge of contract

Unit 2: Remedies for Breach and Special Contracts **(9 Hours)**
Breach of contract; Remedies for breach of contract, Contracts of Indemnity and Guarantee; Contracts of Bailment and Pledge; Contract of Agency.

Unit 3: The Sale of Goods Act, 1930 **(9 Hours)**
Contract of sale; Meaning and the difference between a sale and agreement to sell; Conditions and Warranties; Transfer of ownership in goods including sale by non, owners; Performance of the Contract of Sale; Unpaid seller – meaning and rights of an unpaid seller against the goods.

Unit 4: The Information Technology Act 2000 **(9 Hours)**
Definitions under the Act. Digital signature. Electronic governance. Attribution, acknowledgement, and dispatch of electronic records. Regulation of certifying authorities. Digital signatures certificates. Duties of subscribers under the Act. Penalties and adjudication. Offences as per the Act.

Unit 5: The Limited Liability Partnership Act, 2008 **(9 Hours)**

Salient Features and Nature of LLP; Small LLP; Difference between LLP and Partnership, LLP and Company; LLP Agreement; Incorporation Document; Incorporation by registration; Registered office of LLP and change therein; Change and Rectification of the name of LLP; Partners and Designated Partners: Partners and their Relations; Extent and limitation of liability of LLP and partners; Whistleblowing; Conversion into LLP.

Practical Exercises:

The learners are required to:

13. identify components of valid contracts present in the rent agreement/ sale deed/appointment letters used or seen in day-to-day life.
14. identify and enumerate types of damages in case of breach of contract under different real, life situations.
15. prepare a list of gratuitous and non, gratuitous bailment contracts entered in daily life.
16. analyse some case studies where 'caveat emptor' is applicable.
17. explore the procedure for issue of digital signature.
18. examine RUN form and Fill upweb form from notification on MCA portal and enlist the mandatory fields for LLP.

Suggested Readings:

- Bhushan, B., Kapoor, N. D., Abbi, R., & Kapoor, R. (2020). *Elements of Business Laws*. Sultan Chand.
- Dagar, I., &Agnihotri, A. (2020). *Business Laws*. Sage Textbook.
- Jagota, R. (2021). *Business Laws*. MKM Publishers Scholar Tech Press.
- Kuchhal, M. C., &Kuchhal, V. (2023). *Business Laws*. Vikas Publishing House.
- Maheshwari, S. N., &Maheshwari, S. K. (2017). *A Manual of Business Laws*. Himalaya Publishing House Pvt. Ltd.
- Sharma, J. P., &Kanojia, S. (2018). *Business Laws*. Bharat Law House Pvt. Ltd.
- Singh, A. (2008). *The Principles of Mercantile Law*. Eastern Book Company.
- Sulphey, M. M., & Basheer, A. (2014). *Laws for Business* (5th ed.). PHI Learning.
- Tulsian, P. C. (2000). *Business Law*. Tata McGraw Hill.

Notes:

1. **Suggested readings shall be updated and uploaded on the college website from time to time.**
2. **Examination scheme and mode shall be prescribed by the Examination branch, University of Delhi from time to time.**

DISCIPLINE SPECIFIC CORE COURSE - 3.3 (DSC-3.3)
Indian Economic Environment

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Prerequisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Indian Economic Environment (DSC-3.3)	**4**	**3**	**1**	**0**	Pass in Class XII	NIL

Learning Objectives:

The course aims to familiarise students with the basic framework of Indian economy and the recent developments. It provides understanding about the economic crisis of 1991 and the subsequent reforms that followed. It explains the role of foreign trade, Foreign Direct Investment (FDI) and foreign capital in economic development.

Learning Outcomes:

After completion of the course, learners will be able to:

1. explain the evolution of India's industrial growth experience and describe the relationship between economic growth and development, the idea of sustainability, circular economy and Sustainable Development Goals (SDGs).
2. examine the impact of policy changes in both the agriculture and the industry sector.
3. appraise the economic and social outcomes of policy initiatives in the services sector.
4. critique the role of foreign trade and foreign capital in India's development process.

Unit 1: Indian Economy: An Overview **(12 Hours)**

A brief introduction to the current structure of the Indian economy: Evolution of Indian economic environment, import substitution to globalisation, the impact of the Covid-19 pandemic on the Indian economy;

Redefining development: changing ideas on growth and development, the idea of human development, the Human Development Index (HDI), the Gender Inequality Index (GII), the Gender Development Index (GDI), understanding the concepts and India's performance on these indicators; the idea of circular economy and Sustainable Development Goals (SDGs) 2030.

Unit 2: Transforming Agriculture - Current Trends and New Areas of Growth

(11 Hours)

Role and importance of agriculture: data on poverty, inequality and growth without employment, the high proportion of population engaged in agriculture and the low agricultural productivity- broad trends and the instability in output, concerns of food security and nutritional outcomes, commitments to SDGs.

Issues in agriculture: rural credit and institutional finance, transportation and infrastructure, agricultural marketing, availability of agricultural inputs, technology and water management, soil degradation, rural entrepreneurship, crop insurance, contract farming, etc.
The need for a transformative vision in agriculture: new emerging areas and their impact on ecological management- including sustainable agriculture, alternative farming and organic farming, horticulture and floriculture, Multi-layer farming etc.

Unit 3: Industrial Performance - An Appraisal (11 Hours)

Industrial development: post 1991 trends and growth, the new economic policy, public sector reforms and privatisation, the slow growth of the manufacturing sector and the issue of the 'missing middle', the challenges of finance, regulations and labour laws, the role of Micro, Small and Medium Enterprises (MSMEs) and the challenges faced by them.

Unit 4: Foreign Trade, Foreign Capital, Multi-National Corporations (MNCs) and the Services Sector (11 Hours)

Foreign trade and trade policy: post 2000 trends in trade, the concept of global value chains, importance of trading blocks and trade agreements, India's experience, growth and contribution of foreign capital and MNCs.
Growth of the services sector in India: recent trends, growth in the information and communication technology (ICT) & IT enabled services (ITES) sectors, education, health, banking and insurance, etc., impact of digitization and servicification.

Practical Exercises:

The learners are required to:

1. discuss main economic challenges faced in India (Unit1)
2. make a presentation on circular economy and the progress made towards the achievement of the 17 SDGs. (Unit 1)
3. form groups to make case studies on different aspects of India's economic performance (education, migration, employment, industrial production, exports, digital economy, e-commerce, etc.) during Covid-19. (Unit1)
4. make a group presentation on the pros and cons of the recent farm laws. (Unit 2)
5. design a questionnaire about the issues confronting small and medium enterprises for primary data collection from a industry in the vicinity and present analyses in the class. (Unit 3)
6. engage in a group project on different types of services (food delivery provided by restaurant chains/local neighbourhood eateries/home cooked tiffins, streetside fast food, etc. Other service providers such as pest control services, cleaning services, home health aide workers, parlours, gyms, cyber cafes, etc. operating in and around the student's neighbourhood. (Unit 4).

Suggested Readings:

- Chand, R. (2022). *Indian agriculture Towards 2030- Need for a transformative Vision* in Chand. R. et al. (Ed.). *Indian Agriculture towards 2030*, India studies in Business and Economics, New Delhi: Springer.
- Dreze, J. & Sen, A. (2013). *India: An uncertain glory – India and its contradictions*, New Jersey: Princeton University Press. Chapter 2.
- Global value Chains (GVCs): India, OECD. https://www.oecd.org/sti/ind/gvcs%20-%20india.pdf

- Gulati, A. &Juneja, R., (2022). Transforming Indian Agriculture. Chand, R. Ed. *Indian Agriculture towards 2030.* India studies in Business and Economics, New Delhi: Springer.
- Joshi, V. (2017) *India's long road- the search for prosperity.* Allen Lane: Penguin Random House, Chapter 2.
- Kapila, U. (2022-23), (Ed.) Indian *economy since independence* (33th ed.), New Delhi: Academic foundation.
- Kapila, U. (2022). *Indian Economy: Performance and policies* (22nded.). New Delhi: Academic Foundation.
- Lerwen, L. & Ramakrishna, S. (2021). *An introduction to Circular Economy*, Singapore: Springer.
- Puri, V.K., Misra, S.K., & Garg, B. (2022). *Indian Economy* (40thed.). New Delhi: Himalaya Publishing House.
- Walter, R. (2019). *The Circular Economy: A User's Guide*, New York: Routeledge.

Additional Readings:

- Chatterjee, S. &Subramanium, A. (2020). India's inward Re (turn) Is it warranted? Will it work? *Ashoka Centre for Economic Policy paper no 1.* October. https://ashoka.edu.in/static/doc_uploads/file_1602585593.pdf
- Eichengreen, B. & Gupta, P. (2012) Exports of Services: Indian Experience in Perspective. *National Institute of Public Finance and Policy.* Working Papers. 12/102.
- Marcello, T. &Cristoni, N. (2018). *Strategic Management & the Circular Economy*, New York: Routeledge.
- Subramanium, A. &Felman, J. (2021). India's stalled rise -How the State Has Stifled Growth, *Foreign Affair*. Watson Institute for International and Public Affairs and Brown University.

Notes:

1. **Suggested readings shall be updated and uploaded on the college website from time to time.**
2. **Examination scheme and mode shall be as prescribed by the Examination branch, University of Delhi from time to time.**

ANNEXURE-12

Sub: Amendment to Ordinance V

[E.C Resolution No. 14-1/-(14-1-1/-) dated 09.06.2023]

Following addition be made to Appendix-II-A to the Ordinance V (2-A) of the Ordinances of the University;

Add the following:

Syllabi of Semester-III of the department of Hindi under Faculty of Arts based on Under Graduate Curriculum Framework -2022 implemented from the Academic Year 2022-23.

DEPARTMENT OF HINDI

बी.ए. ऑनर्स (हिंदी)

भारतीय साहित्य

Core Course – (DSC) Credits: 4

Course	Nature of Course	Total Credit	Component			Eligibility Criteria	Pre-requisite of the course (If any)
			Lecture	Tutorial	Practical		
भारतीय साहित्य	कोर कोर्स (DSC7)	4	3	1	0	12th Pass	Nil

पाठ्यक्रम का उद्देश्य (Course Objective):

- भारतीय साहित्य की अवधारणा से परिचिति कराना
- भारत की भौगोलिक, भाषिक और सांस्कृतिक विविधता का परिचय देना
- भारतीय सांस्कृतिक-बोध के विकास का परिचय कराना

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

- भारतीय साहित्य के अध्ययन से सांस्कृतिक समझ विकसित होगी

- भारतीय सांस्कृतिक विविधता में निहित एकता की समझ विकसित होगी
- भारतीय साहित्यिक परंपरा के विकास की समझ विकसित होगी

इकाई – 1 **(12 घंटे)**

- भारतीय साहित्य का संक्षिप्त परिचय: वैदिक, लौकिक, संस्कृत, पालि, प्राकृत, अपभ्रंश तथा संगम साहित्य (तमिल भाषा)
- आधुनिक भारतीय भाषाओं के साहित्य का संक्षिप्त परिचय: असमिया, बांग्ला, उड़िया, गुजराती, मराठी, उर्दू, पंजाबी, कश्मीरी, सिंधी, मैथिली, तमिल, कन्नड़, तेलुगू, मलयालम

इकाई – 2 **(12 घंटे)**

- बाल्मीकि – 'सप्तपर्ण' : रामकाव्य का जन्म : पृष्ठ 115-119 में महादेवी वर्मा कृत अनुवाद
- कालिदास – 'उत्तरमेघ' : भगवतशरण उपाध्याय द्वारा संपादित 'नागार्जुन चुनी हुई रचनाएँ' पुस्तक से, पृष्ठ 345-349, छंद संख्या 22 से 27

इकाई – 3 **(12 घंटे)**

- नामदेव – (संत काव्य, सं. परशुराम चतुर्वेदी, किताब महल, इलाहाबाद, संस्करण 1952) पद सं. 11 से 14 तक
- ललद्यद – (भाषा, साहित्य और संस्कृति, विमलेशकांति वर्मा)
  मुझ पर वे चाहे हँसे.....
  गुरु ने मुझसे कहा.....
  हम ही थे.....
  पिया को खोजने.....
- सुब्रह्मण्यम भारती की कविताएँ: साहित्य अकादेमी; संस्करण 1983, 'स्वतंत्रता का गान', पृष्ठ 46-47

इकाई – 4 **(09 घंटे)**

- काबुलीवाला (कहानी) – रवींद्रनाथ ठाकुर
- रामविजय (नाटक) – शंकरदेव (असमिया)

सहायक ग्रंथों की सूची:

- आज का भारतीय साहित्य – प्रभाकरमाचवे, साहित्य अकादेमी, नई दिल्ली
- वैदिक संस्कृति का विकास – तर्कतीर्थ लक्ष्मण शास्त्री, साहित्य अकादेमी, नई दिल्ली
- भारतीय साहित्य का समेकित इतिहास – डॉ. नगेंद्र, हिंदी माध्यम कार्यान्वयन निदेशालय, दिल्ली विश्वविद्यालय
- भारतीय साहित्य कोश – डॉ. नगेंद्र, नेशनल पब्लिशिंग हाउस, नई दिल्ली

- भाषा, साहित्य और संस्कृति – (सं.) विमलेशकांति वर्मा, ऑरियन्ट ब्लैक स्वान पब्लिकेशन्स, नई दिल्ली
- बांग्ला साहित्य का इतिहास – सुकुमार सेन; अनु. निर्मला जैन, साहित्य अकादेमी, नई दिल्ली
- सुब्रह्मण्यम भारती की कविताएँ: साहित्य अकादेमी
- संत काव्य (संग्रह) – परशुराम चतुर्वेदी, किताबमहल, इलाहबाद, (प्र. सं. 1952)

सेमेस्टर – 3

हिंदी नाटक एवं एकांकी

Core Course – (DSC) Credits: 4

Course	Nature of Course	Total Credit	Component			Eligibility Criteria	Pre-requisite of the course (If any)
			Lecture	Tutorial	Practical		
हिंदी नाटक एवं एकांकी	कोर कोर्स (DSC8)	4	3	1	0	12th Pass	Nil

पाठ्यक्रम का उद्देश्य (Course Objective):

- नाटक के उद्भव और विकास का परिचय देना
- नाटक के सांस्कृतिक और सामाजिक पक्ष का परिचय देना
- नाटक की सर्वांगीण समझ विकसित करना

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

- नाट्य परंपरा का परिचय प्राप्त होगा
- नाटक के सांस्कृतिक पक्ष और शैली के परिचय से विश्लेषण क्षमता विकसित होगी
- हिंदी के प्रमुख नाटकों के अध्ययन से हिंदी नाटक की विकास यात्रा का परिचय प्राप्त होगा

इकाई – 1 **(12 घंटे)**

- भारत-दुर्दशा – भारतेंदु हरिश्चंद्र

इकाई – 2 **(12 घंटे)**

- ध्रुवस्वामिनी – जयशंकर प्रसाद

इकाई – 3 **(12 घंटे)**

- कथा एक कंस की – दया प्रकाश सिन्हा

इकाई – 4 **(09 घंटे)**

- एकांकी – उत्सर्ग : रामकुमार वर्मा
  तौलिए: उपेन्द्रनाथ अश्क

सहायक ग्रंथों की सूची:

- नाटककार भारतेंदु की रंग-परिकल्पना – सत्येन्द्र तनेजा, राधाकृष्ण प्रकाशन, नई दिल्ली
- प्रसाद के नाटक: स्वरूप और संरचना – गोविंद चातक, तक्षशिला प्रकाशन, नई दिल्ली
- जयशंकर प्रसाद रंगदृष्टि – महेश आनंद, राष्ट्रीय नाट्य विद्यालय, नई दिल्ली
- हिंदी एकांकी की शिल्पविधि का विकास – सिद्धनाथ कुमार, राजकमल प्रकाशन, नई दिल्ली
- रंगमंच का सौन्दर्यशास्त्र – देवेन्द्रराज 'अंकुर', राजकमल प्रकाशन, नई दिल्ली
- रंगदर्शन – नेमीचंद जैन, राजकमल प्रकाशन, नई दिल्ली
- रंगकर्म – वीरेंद्र नारायण, आलेख प्रकाशन, नई दिल्ली
- स्वातंत्रयोत्तर पारम्परिक रंग प्रयोग – कुसुमलता मलिक, इंडियन पब्लिशर्स एवं डिस्ट्रीब्यूटर, कमला नगर, नई दिल्ली (2009)
- हिंदी नाटक का आत्मसंघर्ष – गिरीश रस्तोगी, लोकभारती प्रकाशन
- नाटककार दयाप्रकाश सिन्हा, समीक्षायन, रवीन्द्रनाथ बाहोरे, संजय प्रकाशन, दिल्ली

सेमेस्टर – 3

सामान्य भाषा विज्ञान

Core Course – (DSC) Credits: 4

Course	Nature of Course	Total Credit	Component			Eligibility Criteria	Pre-requisite of the course (If any)
			Lecture	Tutorial	Practical		
सामान्य भाषा विज्ञान	कोर कोर्स (DSC9)	4	3	1	0	12th Pass	Nil

पाठ्यक्रम का उद्देश्य (Course Objective):

- भाषा तथा भाषा विज्ञान की अवधारणा से परिचित कराना
- भाषा की विषेशताओं और उपांगों का विश्लेषणात्मक ज्ञान प्रदान करना

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

- भाषा विज्ञान के सैद्धांतिक एवं तकनीकी पक्षों की समझ विकसित हो सकेगी
- भाषा और उसके विभिन्न अंगों का परिचय प्राप्त होगा

इकाई – 1 : भाषा एवं भाषा विज्ञान **(12 घंटे)**

- भाषा की परिभाषा एवं स्वरूप
- भाषा की संरचना तथा विषेशताएँ
- भाषा विज्ञान का स्वरूप एवं अध्ययन की पद्धतियाँ
- भाषा विज्ञान के अध्ययन की उपयोगिता

इकाई – 2 : ध्वनिविज्ञान एवं रूपविज्ञान **(12 घंटे)**

- स्वन, स्वनिम, संस्वन, स्वर एवं व्यंजन
- ध्वनियों का वर्गीकरण
- ध्वनि-परिवर्तन की दिशाएँ
- रूप की परिभाषा, शब्द और रूप (पद), अर्थतत्त्व, संबंध-तत्व तथा रूप-परिवर्तन की दिशाएँ

इकाई – 3 : वाक्य विज्ञान **(12 घंटे)**

- वाक्य: स्वरूप एवं आवश्यकताएँ
- वाक्य रचना के आधार और भेद
- वाक्य के प्रकार

- वाक्य के निकटस्थ अवयव

इकाई – 4 : अर्थ विज्ञान **(09 घंटे)**

- अर्थ: परिभाषा, शब्द और अर्थ का संबंध
- अर्थ-प्रतीति के साधन
- अर्थ-निर्णय के साधन
- अर्थ परिवर्तन: कारण एवं दिशाएँ

सहायक ग्रंथों की सूची:

1. सामान्य भाषा विज्ञान – बाबूराम सक्सेना, हिंदी साहित्य सम्मेलन, प्रयाग
2. भाषा विज्ञान की भूमिका – देवेंद्रनाथ शर्मा, राधाकृष्ण प्रकाशन, नई दिल्ली
3. भाषा विज्ञान – भोलानाथ तिवारी, किताब महल, नई दिल्ली
4. आधुनिक भाषा विज्ञान – राजमणि शर्मा, वाणी प्रकाशन, दिल्ली
5. हिंदी व्याकरण – कामता प्रसाद गुरु, इण्डियन प्रेस, प्रयाग
6. हिंदी शब्दानुशासन – किशोरी दास वाजपेयी, नागरी प्रचारिणी सभा, काशी
7. भाषा विज्ञान: सैद्धांतिक चिंतन – रवीन्द्रनाथ श्रीवास्तव, राधाकृष्ण प्रकाशन

सेमेस्टर – 3

हिंदी की मौखिक और लोक-साहित्य परंपरा

Discipline Specific Elective (DSE) Credits: 4

Course	Nature of Course	Total Credit	Component			Eligibility Criteria	Pre-requisite of the course (If any)
			Lecture	Tutorial	Practical		
हिंदी की मौखिक और लोक-साहित्य परंपरा	डीएसई (DSE1)	4	3	1	0	12th Pass	Nil

पाठ्यक्रम का उद्देश्य (Course Objective):

- लोक साहित्य परंपरा के माध्यम से भारतीय लोक-जीवन से परिचित कराना
- लोक साहित्य परंपरा के माध्यम से भारतीय लोक-संस्कृति के विविध पक्षों को समझाना

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

- भारतीय जीवन की लोकधारा का परिचय प्राप्त होगा
- पर्यटन, लोक संगीत और नृत्य में रुचि विकसित होगी

इकाई – 1 : मौखिक साहित्य की परंपरा और उसके विविध रूप (12 घंटे)

- मौखिक साहित्य का विकास और लिखित साहित्य से संबंध
- साहित्य के विविध रूप : खेल, तमाशा, लोक-गीत, लोक-कथा, मुकरियाँ, पहेलियाँ, बुझौवल और मुहावरे, लोकगाथाएँ, लोकनाट्य आदि का सामान्य परिचय
- हिंदी प्रदेश की जनपदीय बोलियाँ और उनका साहित्य (संक्षिप्त परिचय)

इकाई – 2 : लोकगीत : वाचिक और मुद्रित (12 घंटे)

- सांस्कृतिक बोध और लोकगीत
- **संस्कार गीत:**
  - सोहर – अवधी (हिंदी प्रदेश के लोकगीत – कृष्ण देव उपाध्याय, साहित्य भवन, इलाहाबाद, पृष्ठ 110-111)
  - यज्ञोपवीत – भारतीय लोक-साहित्य : परंपरा और परिदृश्य – विद्या सिन्हा, पृष्ठ 88-89
  - विवाह भोजपुरी – भारतीय लोक-साहित्य परंपरा और परिदृश्य – विद्या सिन्हा, पृष्ठ 116
  - ऋतु संबंधी गीत – बारहमासा, होली, चैती, कजरी का सामान्य परिचय

- **श्रम संबंधी गीत:**
  - कटनी के गीत – अवधी (दो गीत), हिंदी प्रदेश के लोकगीत – कृष्ण देव उपाध्याय, पृष्ठ 134-135
  - जँतसर – भोजपुरी – भारतीय लोक साहित्य; परंपरा और परिदृश्य – विद्या सिन्हा, पृष्ठ 140-141

इकाई – 3 : लोककथा एवं लोकगाथा का सामान्य परिचय एवं पाठ (12 घंटे)

- प्रसिद्ध लोककथा एवं लोकगाथा – आल्हा, लोरिक, सारंगा सदावृक्ष, बिहुला का संक्षिप्त परिचय
- पाठ – (क) राजस्थानी लोककथा नं. 2, हिंदी साहित्य का वृहत इतिहास, राहुल सांकृत्यायन, पृष्ठ 10-11, सोलहवां भाग

(ख) मालवी लोक कथा नं. 2, हिंदी साहित्य का वृहत इतिहास, सोलहवां भाग, राहुल सांकृत्यायन, पृष्ठ 461-462

(ग) अवधी लोक कथा नं. 2, हिंदी साहित्य का वृहत इतिहास, सोलहवां भाग, राहुल सांकृत्यायन, पृष्ठ 187-188

इकाई – 4 : लोक नाट्य विधा का सामान्य परिचय एवं पाठ (09 घंटे)

- विविध भाषा क्षेत्रों के नाट्यरूप और शैलियाँ – रामलीला, रासलीला, नौटंकी, ख्याल आदि का संक्षिप्त परिचय
- पाठ : बिदेसिया (भिखारी ठाकुर)

सहायक ग्रंथों की सूची:

- लोक साहित्य में राष्ट्रीय चेतना, ज्ञानगंगा प्रकाशन
- भारत की लोक संस्कृति – हेमंत कुकरेती, प्रभात प्रकाशन
- हिंदी प्रदेश के लोकगीत – कृष्णदेव उपाध्याय, साहित्य भवन, इलाहाबाद
- हरियाणा प्रदेश का लोक साहित्य – शंकरलाल यादव, हिन्दुस्तानी अकादमी, इलाहाबाद
- मीट माई पीपल – देवेंद्र सत्यार्थी, नवयुग प्रकाशन
- हमारे लोकधर्मी नाट्य – श्याम परमार, लोकरंग, उदयपुर
- हिंदी साहित्य का वृहत इतिहास – राहुल सांकृत्यायन, सोलहवां भाग
- भारतीय लोक साहित्य: परंपरा और परिदृश्य – विद्या सिन्हा, प्रकाशन विभाग
- हिंदी साहित्य को हरियाणा प्रदेश की देन – हरियाणा साहित्य अकादमी का प्रकाशन
- मध्यप्रदेश लोककला अकादमी की पत्रिका – चौमासा

सेमेस्टर – 3

राष्ट्रीय सांस्कृतिक काव्य-धारा

Discipline Specific Elective (DSE) Credits: 4

Course	Nature of Course	Total Credit	Component			Eligibility Criteria	Pre-requisite of the course (If any)
			Lecture	Tutorial	Practical		
राष्ट्रीय सांस्कृतिक काव्य-धारा	डीएसई (DSE2)	4	3	1	0	12th Pass	Nil

पाठ्यक्रम के उद्देश्य (Course Objectives):

- राष्ट्रीय सांस्कृतिक साहित्य का स्वतंत्रता आंदोलन में योगदान
- देशवासियों में देश प्रेम की भावना जाग्रत करना
- खड़ी बोली को प्रतिष्ठित करना
- विद्यार्थियों को स्वर्णिम अतीत के गौरव से परिचित कराना

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

- राष्ट्रीय सांस्कृतिक चेतना के अर्थ को समझ सकेंगे
- भारत के गौरवशाली इतिहास को समझ सकेंगे
- खड़ीबोली की विकास यात्रा से परिचित होंगे
- स्वतंत्रता आंदोलन में साहित्य की भूमिका को पहचान सकेंगे

इकाई – 1 **(12 घंटे)**

- राष्ट्रीय सांस्कृतिक धारा और साहित्य
- अवधारणा / परिचय / महत्व / प्रवृत्तियाँ / परिस्थितियाँ : स्वतंत्रता आंदोलन

इकाई – 2 **(12 घंटे)**

- देश दशा – राधाकृष्णदास
- आनन्द अरुणोदय – बद्री नारायण चौधरी 'प्रेमघन'
- यह है भारत देश हमारा – सुब्रह्मण्यम भारती

इकाई – 3 **(12 घंटे)**

- भारत-भारती (अतीत खंड) – मैथिलीशरण गुप्त
- पुष्प की अभिलाषा – माखनलाल चतुर्वेदी
- वीरों का कैसा हो वसन्त – सुभद्रा कुमारी चौहान
- प्रताप – श्याम नारायण पाण्डेय

- आजादी के फूलों पर जय-जय – सोहनलाल द्विवेदी

इकाई – 4 **(09 घंटे)**

- विप्लव गान – बालकृष्ण शर्मा 'नवीन'
- अरुण यह मधुमय देश हमारा – जयशंकर प्रसाद
- जागो फिर एक बार – सूर्यकांत त्रिपाठी 'निराला'
- बापू – रामधारी सिंह 'दिनकर'

सहायक ग्रंथों की सूची:

- देश दशा – राधाकृष्ण ग्रंथावली, पहला खंड, संकलनकर्ता और संपादक- श्यामसुंदरदास, इंडियन प्रेस, लिमिटेड, प्रयाग, प्रथम संस्करण 1930
- आनन्द अरुणोदय – बद्री नारायण चौधरी 'प्रेमघन', प्रेमघन सर्वस्व, प्रथम भाग – 1829
- भारत भारती (अतीत खण्ड), प्रकाशक : साहित्य सदन, चिरगाँव, झाँसी, दसवां संस्करण
- वीरो का कैसा हो वसंत – सुभद्रा कुमारी चौहान, स्वतंत्रता पुकारती, (सं.) – नंद किशोर नवल, बालकृष्ण शर्मा नवीन, साहित्य अकादेमी 2006
- विप्लव गान – बालकृष्ण शर्मा 'नवीन', स्वतंत्रता पुकारती, (सं.) नंद किशोर नवल, बालकृष्ण शर्मा नवीन, साहित्य अकादेमी 2006
- जागो फिर एक बार – सूर्यकांत त्रिपाठी 'निराला', अपरा, राजकमल प्रकाशन, दिल्ली 2006
- प्रताप – संकलन हल्दीघाटी, श्री श्यामनारायण पाण्डेय, इंडियन प्रेस, लिमिटेड, प्रयाग 1953
- आजादी के फूलों पर – सोहनलाल द्विवेदी (जय भारत जय संकलन), राजपाल एण्ड संस, कश्मीरी गेट, दिल्ली, पहला संस्करण 1972
- पुष्प की अभिलाषा – माखनलाल चतुर्वेदी, समग्र कविताएँ, (सं.) – श्रीकांत जोशी, किताब घर, दिल्ली, 2006
- रामविलास शर्मा – महावीर प्रसाद द्विवेदी और हिंदी नवजागरण, राजकमल प्रकाशन, दिल्ली
- रामचंद्र शुक्ल, हिंदी साहित्य का इतिहास, काशी नागरी प्रचारिणी सभा, वाराणसी
- रामस्वरूप चतुर्वेदी, हिंदी साहित्य और संवेदना का विकास, लोक भारती इलाहाबाद
- लक्ष्मीसागर वार्ष्णेय – हिंदी साहित्य का इतिहास, लोकभारती प्रकाशन, इलाहाबाद
- किशोरीलाल गुप्त – भारतेन्दु और अन्य सहयोगी कवि, हिंदी प्रचारक पुस्तकालय, बनारस
- हिंदी साहित्य का इतिहास – (सं.) डॉ. नगेन्द्र
- हिंदी नवजागरण और संस्कृति – शम्भुनाथ
- भारतेंदु युग और हिंदी नवजागरण की समस्याएं – रामविलास शर्मा
- बीसवीं शताब्दी हिन्दी साहित्य: नये सन्दर्भ – लक्ष्मी सागर वार्ष्णेय

सेमेस्टर – 3

रचनात्मक लेखन

Discipline Specific Elective (DSE) Credits: 4

Course	Nature of Course	Total Credit	Component			Eligibility Criteria	Pre-requisite of the course (If any)
			Lecture	Tutorial	Practical		
रचनात्मक लेखन	डीएसई (DSE3)	4	3	1	0	12th Pass	Nil

पाठ्यक्रम का उद्देश्य (Course Objective):

- विद्यार्थियों में रचना-कौशल का विकास करना
- विद्यार्थियों को रोजगार की दृष्टि से सक्षम बनाना

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

- रचनात्मकता का विकास हो सकेगा
- विद्यार्थी विभिन्न माध्यमों – जैसे पत्रकारिता, मीडिया, विज्ञापन, सिनेमा आदि क्षेत्रों में रोजगार प्राप्त कर सकेंगे

इकाई 1 : रचनात्मक लेखन : अवधारणा, स्वरूप एवं सिद्धांत (12 घंटे)

- भाव एवं विचार की रचना में रूपांतरण की प्रक्रिया
- विविध अभिव्यक्ति क्षेत्र : पत्रकारिता, विज्ञापन, विविध गद्य एवं काव्य-रूप
- लेखन के विविध रूप : गद्य-पद्य, कथात्मक-कथेतर, नाट्य

इकाई 2 : रचनात्मक लेखन और भाषा (09 घंटे)

- भाषा की भंगिमाएं : औपचारिक-अनौपचारिक, मौखिक-लिखित, मानक भाषा
- भाषिक संदर्भ : स्थानीय, वर्ग, व्यवसाय, तकनीक

इकाई 3 : सृजनात्मक लेखन (12 घंटे)

- कविता लेखन
- कहानी लेखन
- नाटक लेखन

इकाई 4: जनसंचार माध्यमों के लिए लेखन (12 घंटे)

- प्रिन्ट मीडिया के लिए लेखन (फीचर, पुस्तक समीक्षा)

- रेडियो के लिए लेखन (रेडियो नाटक, रेडियो वार्ता)
- टेलिविज़न के लिए लेखन (वृत्तचित्र (डॉक्यूमेंट्री), विज्ञापन)

सहायक ग्रंथों की सूची:

- रचनात्मक लेखन – (सं) रमेश गौतम, भारतीय ज्ञानपीठ, नई दिल्ली
- सृजनात्मक लेखन – हरीश अरोड़ा, यश प्रकाशन, नई दिल्ली
- कथा-पटकथा – मन्नू भण्डारी, वाणी प्रकाशन
- रेडियो लेखन – मधुकर गंगाधर, बिहार हिंदी ग्रंथ अकादमी
- दृश्य-श्रव्य माध्यम लेखन – राजेन्द्र मिश्र व ईशिता मिश्र, तक्षशिला प्रकाशन, नई दिल्ली
- फिल्मों में कथा-पटकथा लेखन – रतन प्रकाश, प्रभात प्रकाशन
- सृजनशीलता और सौन्दर्य बोध – रवीन्द्रनाथ श्रीवास्तव
- कविता रचना-प्रक्रिया – कुमार विमल, बिहार हिंदी ग्रंथ अकादेमी, पटना
- पटकथा लेखन : एक परिचय – मनोहर श्याम जोशी, राजकमल प्रकाशन, दिल्ली

COMMON POOL OF GENERIC ELECTIVES

The Pool of Generic Electives offered in Semester -I and Semester-II will also be open for Semester-III.

BA (Prog.) with Hindi as MAJOR

सेमेस्टर III – DSC 5 – क्रेडिट 4

हिंदी कथा साहित्य

Course	Nature of Course	Total Credit	Component			Eligibility Criteria	Pre-requisite of the course (If any)
			Lecture	Tutorial	Practical		
हिंदी कथा साहित्य	(DSC)	4	3	1	0	12th Pass	Nil

पाठ्यक्रम के उद्देश्य (Course Objectives):

- विद्यार्थियों को उपन्यास तथा कहानी के उद्भव और विकास की जानकारी देना
- उपन्यास और कहानी के विश्लेषण की समझ विकसित कराना
- प्रमुख कहानियों और उपन्यासों के अध्ययन द्वारा उनकी संरचना की समझ विकसित कराना

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

- हिंदी कथा साहित्य का परिचय प्राप्त कर सकेंगे
- कहानी और उपन्यास के प्रभाव का विश्लेषण कर सकेंगे
- प्रमुख कहानियों और उपन्यासों के विश्लेषण की समझ विकसित होगी

इकाई – 1 **(12 घंटे)**

- हिंदी कहानी : स्वरूप और संरचना
- हिंदी उपन्यास : स्वरूप और संरचना

इकाई – 2 **(12 घंटे)**

- पुरस्कार – जयशंकर प्रसाद
- ऐसी होली खेलो लाल – पांडेय बेचन शर्मा 'उग्र'

इकाई – 3 **(12 घंटे)**

- शरणदाता – अज्ञेय
- वापसी – उषा प्रियंवदा

इकाई – 4 **(09 घंटे)**

- गबन – प्रेमचंद

सहायक ग्रंथों की सूची:

- हिंदी उपन्यास : एक अंतर्यात्रा – रामदरश मिश्र, राजकमल प्रकाशन, नई दिल्ली
- नयी कहानी की भूमिका – कमलेश्वर, अक्षर प्रकाशन प्राइवेट लिमिटेड, दिल्ली

- हिंदी कहानी : अन्तरंग पहचान – रामदरश मिश्र, वाणी प्रकाशन, नई दिल्ली
- कहानी नई कहानी – नामवर सिंह, राजकमल प्रकाशन, नई दिल्ली
- प्रेमचंद : एक विवेचना – इंद्रनाथ मदान, राजकमल प्रकाशन, नई दिल्ली
- एक दुनिया समानांतर – राजेन्द्र यादव, राधाकृष्ण प्रकाशन, नई दिल्ली

BA (Prog.) with Hindi as MAJOR
सेमेस्टर III – DSC 6 – क्रेडिट 4
जनपदीय साहित्य (लोकनाट्य विशेष)

Course	Nature of Course	Total Credit	Component			Eligibility Criteria	Pre-requisite of the course (If any)
			Lecture	Tutorial	Practical		
जनपदीय साहित्य (लोकनाट्य विशेष)	(DSC)	4	3	1	0	12th Pass	Nil

पाठ्यक्रम के उद्देश्य (Course Objectives):

- विद्यार्थियों को भारतीय लोकनाट्य साहित्य और लोक-परंपरा का अवलोकन कराना
- लोक-जीवन और संस्कृति की जानकारी देना
- जनपदीय लोकनाट्य शैलियों के प्रति रुचि विकसित करना

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

- जनपदीय साहित्य का परिचय प्राप्त होगा
- लोकनाट्य के विभिन्न रूपों का परिचय प्राप्त होगा
- लोक-संस्कृति और लोक जीवन के विश्लेषण की क्षमता विकसित होगी

इकाई – 1 **(12 घंटे)**

- लोकनाट्य : अवधारणा, स्वरूप और विकास
- विविध रूपों का सामान्य परिचय – रामलीला, रासलीला, माच, नौटंकी

इकाई – 2 **(12 घंटे)**

- सत्यवान सावित्री – लखमीचन्द

इकाई – 3

- बिदेसिया – भिखारी ठाकुर **(12 घंटे)**

इकाई – 4

- राजयोगी भरथरी – सिद्धेश्वर सेन **(09 घंटे)**

सहायक ग्रंथों की सूची:

- हिंदी साहित्य का बृहत इतिहास (सोलहवां भाग) – राहुल सांकृत्यायन, नागरी प्रचारिणी सभा, काशी

- भारतीय लोकनाट्य – वशिष्ठनारायण त्रिपाठी, वाणी प्रकाशन, नई दिल्ली
- भारतीय लोक-साहित्य : परंपरा और परिदृश्य – विद्या सिन्हा, प्रकाशन विभाग, भारत सरकार, नई दिल्ली
- लखमीचन्द का काव्य-वैभव – हरिचन्द्र बंधु
- लोक साहित्य : पाठ और परख – विद्या सिन्हा, आरुषि प्रकाशन, नोएडा
- भिखारी ठाकुर रचनावली – (सं.) प्रो. वीरेंद्र नारायण यादव, बिहार राष्ट्रभाषा परिषद, पटना
- परंपराशील नाट्य – जगदीशचंद्र माथुर, बिहार राष्ट्रभाषा परिषद, पटना
- हमारे लोकधर्मी नाट्य – श्याम परमार, लोकरंग, उदयपुर

BA (Prog.) with Hindi as NON-MAJOR

सेमेस्टर III – DSC 5 – क्रेडिट 4

हिंदी कथा साहित्य

Course	Nature of Course	Total Credit	Component			Eligibility Criteria	Pre-requisite of the course (If any)
			Lecture	Tutorial	Practical		
हिंदी कथा साहित्य	(DSC)	4	3	1	0	12th Pass	Nil

पाठ्यक्रम के उद्देश्य (Course Objectives):

- विद्यार्थियों को उपन्यास तथा कहानी के उद्भव और विकास की जानकारी देना
- उपन्यास और कहानी के विश्लेषण की समझ विकसित कराना
- प्रमुख कहानियों और उपन्यासों के अध्ययन द्वारा उनकी संरचना की समझ विकसित कराना

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

- हिंदी कथा साहित्य का परिचय प्राप्त कर सकेंगे
- कहानी और उपन्यास के प्रभाव का विश्लेषण कर सकेंगे
- प्रमुख कहानियों और उपन्यासों के विश्लेषण की समझ विकसित होगी

इकाई – 1 **(12 घंटे)**

- हिंदी कहानी : स्वरूप और संरचना
- हिंदी उपन्यास : स्वरूप और संरचना

इकाई – 2 **(12 घंटे)**

- पुरस्कार – जयशंकर प्रसाद
- ऐसी होली खेलो लाल – पांडेय बेचन शर्मा 'उग्र'

इकाई – 3 **(12 घंटे)**

- शरणदाता – अज्ञेय
- वापसी – उषा प्रियंवदा

इकाई – 4 **(09 घंटे)**

- गबन – प्रेमचंद

सहायक ग्रंथों की सूची:

- हिंदी उपन्यास : एक अंतर्यात्रा – रामदरश मिश्र, राजकमल प्रकाशन, नई दिल्ली
- नयी कहानी की भूमिका – कमलेश्वर, अक्षर प्रकाशन प्राइवेट लिमिटेड, दिल्ली

- हिंदी कहानी : अन्तरंग पहचान – रामदरश मिश्र, वाणी प्रकाशन, नई दिल्ली
- कहानी नई कहानी – नामवर सिंह, राजकमल प्रकाशन, नई दिल्ली
- प्रेमचंद : एक विवेचना – इंद्रनाथ मदान, राजकमल प्रकाशन, नई दिल्ली
- एक दुनिया समानांतर – राजेन्द्र यादव, राधाकृष्ण प्रकाशन, नई दिल्ली

BA (Prog.) सेमेस्टर III / IV
GE / Language – क्रेडिट 4
हिंदी गद्य : उद्भव और विकास 'क'

Course	Nature of Course	Total Credit	Component			Eligibility Criteria	Pre-requisite of the course (If any)
			Lecture	Tutorial	Practical		
हिंदी गद्य : उद्भव और विकास 'क'	जीई / भाषा (GE)	4	3	1	0	हिंदी विषय के साथ 12वीं पास	Nil

पाठ्यक्रम के उद्देश्य (Course Objectives):

- हिंदी के विभिन्न गद्य रूपों से परिचित कराना
- विभिन्न गद्य रूपों के विश्लेषण की समझ विकसित कराना
- प्रमुख गद्य रचनाओं के अध्ययन द्वारा उनकी प्रासंगिकता से परिचित कराना

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

- हिंदी गद्य रूपों का परिचय प्राप्त होगा
- विविध गद्य रचनाओं का महत्व और प्रासंगिकता से परिचित हो सकेंगे
- प्रमुख रचनाओं के विश्लेषण की समझ विकसित होगी

इकाई – 1 **(12 घंटे)**

- हिंदी गद्य रूपों का सामान्य परिचय और विकास – कहानी, रेखाचित्र, संस्मरण, निबंध, एकाँकी, व्यंग्य

इकाई – 2 : कहानी **(12 घंटे)**

- नमक का दरोगा – प्रेमचंद
- मलबे का मालिक – मोहन राकेश

इकाई – 3 : निबंध **(12 घंटे)**

- भाव और मनोविकार – रामचन्द्र शुक्ल
- मेरे राम का मुकुट भीग रहा है – विद्यानिवास मिश्र

इकाई – 4 : अन्य गद्य विधाएँ **(09 घंटे)**

- दीपदान – रामकुमार वर्मा
- सुभद्रा – महादेवी वर्मा

सहायक ग्रंथों की सूची:

- हिंदी का गद्य साहित्य – रामचन्द्र तिवारी, विश्वविद्यालय प्रकाशन, गोरखपुर
- हिंदी साहित्य का दूसरा इतिहास – बच्चन सिंह, राधाकृष्ण प्रकाशन, नई दिल्ली
- हिंदी गद्य : विन्यास और विकास – रामस्वरूप चतुर्वेदी, लोकभारती प्रकाशन, इलाहाबाद
- कवि तथा नाटककार : रामकुमार वर्मा, वरुण प्रकाशन, दिल्ली
- हिंदी का ललित निबंध साहित्य और आचार्य हजारी प्रसाद द्विवेदी – विदुषी भारद्वाज, राधा पब्लिकेशन
- साहित्यिक विधाएँ : पुनर्विचार – हरिमोहन, वाणी प्रकाशन, नई दिल्ली
- प्रतिनिधि हिंदी निबंधकार – विभुराम मिश्र, ज्योतिश्वर मिश्र, लोकभारती प्रकाशन, नई दिल्ली
- हिंदी कहानी : अन्तरंग पहचान – रामदरश मिश्र, वाणी प्रकाशन, नई दिल्ली
- हिंदी कहानी : प्रक्रिया और पाठ – सुरेन्द्र चौधरी, राधाकृष्ण प्रकाशन, नई दिल्ली

BA (Prog.) सेमेस्टर III / IV
GE / Language – क्रेडिट 4
हिंदी गद्य : उद्भव और विकास 'ख'

Course	Nature of Course	Total Credit	Component			Eligibility Criteria	Pre-requisite of the course (If any)
			Lecture	Tutorial	Practical		
हिंदी गद्य : उद्भव और विकास 'ख'	जीई / भाषा (GE)	4	3	1	—	हिंदी विषय के साथ 10वीं पास	Nil

पाठ्यक्रम के उद्देश्य (Course Objectives):

- हिंदी के विभिन्न गद्य रूपों से परिचित कराना
- विभिन्न गद्य रूपों के विश्लेषण की समझ विकसित कराना
- प्रमुख गद्य रचनाओं के अध्ययन द्वारा उनकी प्रासंगिकता से परिचित कराना

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

- हिंदी गद्य रूपों का परिचय प्राप्त होगा
- विविध गद्य रचनाओं का महत्व और प्रासंगिकता से परिचित हो सकेंगे
- प्रमुख रचनाओं के विश्लेषण की समझ विकसित होगी

इकाई – 1 **(12 घंटे)**

- हिंदी गद्य रूपों का सामान्य परिचय एवं विकास – कहानी, रेखाचित्र, संस्मरण, निबंध, एकाँकी, व्यंग्य

इकाई – 2 : कहानी **(12 घंटे)**

- आकाशदीप – जयशंकर प्रसाद
- परिन्दे – निर्मल वर्मा

इकाई – 3 : निबंध **(12 घंटे)**

- जबान – बालकृष्ण भट्ट
- सच्ची वीरता – सरदार पूर्ण सिंह

इकाई – 4 : अन्य गद्य विधाएँ **(09 घंटे)**

- मालव प्रेम – हरिकृष्ण प्रेमी
- गुंगिया – महादेवी वर्मा

सहायक ग्रंथों की सूची:

- हिंदी का गद्य साहित्य – रामचन्द्र तिवारी, विश्वविद्यालय प्रकाशन, गोरखपुर
- हिंदी साहित्य का दूसरा इतिहास – बच्चन सिंह, राधाकृष्ण प्रकाशन, नई दिल्ली
- हिंदी गद्य : विन्यास और विकास – रामस्वरूप चतुर्वेदी, लोकभारती प्रकाशन, इलाहाबाद
- साहित्यिक विधाएँ : पुनर्विचार – हरिमोहन, वाणी प्रकाशन, नई दिल्ली
- प्रतिनिधि हिंदी निबंधकार – विभुराम मिश्र, ज्योतिश्वर मिश्र, लोकभारती प्रकाशन, नई दिल्ली
- हिंदी कहानी : अन्तरंग पहचान – रामदरश मिश्र, वाणी प्रकाशन, नई दिल्ली
- हिंदी कहानी : प्रक्रिया और पाठ – सुरेन्द्र चौधरी, राधाकृष्ण प्रकाशन, नई दिल्ली

BA (Prog.) सेमेस्टर III / IV
GE / Language – क्रेडिट 4
हिंदी गद्य : उद्भव और विकास 'ग'

Course	Nature of Course	Total Credit	Component			Eligibility Criteria	Pre-requisite of the course (If any)
			Lecture	Tutorial	Practical		
हिंदी गद्य : उद्भव और विकास 'ग'	जीई / भाषा (GE)	4	3	1	0	हिंदी विषय के साथ 08वीं पास	Nil

पाठ्यक्रम के उद्देश्य (Course Objectives):

- हिंदी के विभिन्न गद्य रूपों से परिचित कराना
- विभिन्न गद्य रूपों के विश्लेषण की समझ विकसित कराना
- प्रमुख गद्य रचनाओं के अध्ययन द्वारा उनकी प्रासंगिकता से परिचित कराना

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

- हिंदी गद्य रूपों का परिचय प्राप्त होगा
- विविध गद्य रचनाओं का महत्व और प्रासंगिकता से परिचित हो सकेंगे
- प्रमुख रचनाओं के विश्लेषण की समझ विकसित होगी

इकाई – 1 **(12 घंटे)**

- हिंदी गद्य रूपों का सामान्य परिचय – कहानी, रेखाचित्र, संस्मरण, निबंध, एकाँकी, व्यंग्य

इकाई – 2 : कहानी **(12 घंटे)**

- बड़े भाई साहब – प्रेमचंद
- हार की जीत – सुदर्शन

इकाई – 3 : निबंध **(12 घंटे)**

- मेले का ऊंट – बालमुकुंद गुप्त
- नाखून क्यों बढ़ते हैं – हजारीप्रसाद द्विवेदी

इकाई – 4 : अन्य गद्य विधाएँ **(09 घंटे)**

- बुधिया – रामवृक्ष बेनीपुरी
- भोलाराम का जीव – हरिशंकर परसाई

सहायक ग्रंथों की सूची:

- हिंदी का गद्य साहित्य – रामचन्द्र तिवारी, विश्वविद्यालय प्रकाशन, गोरखपुर
- हिंदी साहित्य का दूसरा इतिहास – बच्चन सिंह, राधाकृष्ण प्रकाशन, नई दिल्ली

- हिंदी गद्य : विन्यास और विकास – रामस्वरूप चतुर्वेदी, लोकभारती प्रकाशन, इलाहाबाद
- साहित्यिक विधाएँ : पुनर्विचार – हरिमोहन, वाणी प्रकाशन, नई दिल्ली
- प्रतिनिधि हिंदी निबंधकार – विभुराम मिश्र, ज्योतिश्वर मिश्र, लोकभारती प्रकाशन, नई दिल्ली
- हिंदी कहानी : अन्तरंग पहचान – रामदरश मिश्र, वाणी प्रकाशन, नई दिल्ली
- हिंदी कहानी : प्रक्रिया और पाठ – सुरेन्द्र चौधरी, राधाकृष्ण प्रकाशन, नई दिल्ली

BCom (Prog) **सेमेस्टर III/IV – GE/Language** – **क्रेडिट 4**

हिन्दी गद्य विकास के विविध चरण 'क'

Course title & Code	Credits	Credit distribution of the course			Pre-requisite of the course (if any)	Eligibility Criteria
		Lecture	Tutorial	Practical/ Practice		
GE-Language **हिन्दी गद्य विकास के विविध चरण 'क'**	4	3	1	0	द्वितीय सिमेस्टर उत्तीर्ण	12th Pass

पाठ्यक्रम के उद्देश्य (Course Objectives)

- हिन्दी के विभिन्न गद्य रूपों से परिचित कराना
- विभिन्न गद्य रूपों के विश्लेषण की समझ विकसित कराना
- प्रमुख गद्य रचनाओं के अध्ययन द्वारा उनकी प्रासंगिकता से परिचित कराना

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes)

- हिन्दी गद्य रूपों का परिचय प्राप्त होगा
- विविध गद्य रचनाओं का महत्व और प्रासंगिकता से परिचित हो सकेंगे
- प्रमुख रचनाओं के विश्लेषण की समझ विकसित होगी

इकाई 1 हिन्दी गद्य रूपों का सामान्य परिचय – कहानी, रेखाचित्र, संस्मरण, निबंध, एकाँकी, व्यंग्य

इकाई 2 कहानी

अनमोल रतन - प्रेमचंद

मलबे का मालिक - मोहन राकेश

इकाई 3 निबंध

उत्साह - रामचन्द्र शुक्ल

आचरण की सभ्यता - अध्यापक पूर्ण सिंह

इकाई 4 अन्य गद्य विधाएँ

दीपदान - रामकुमार वर्मा

भोलाराम का जीव - हरिशंकर परसाई

सहायक ग्रंथ

- हिन्दी का गद्य साहित्य, रामचन्द्र तिवारी, विश्वविद्यालय प्रकाशन, गोरखपुर
- हिन्दी साहित्य का दूसरा इतिहास, बच्चन सिंह, राधाकृष्ण प्रकाशन, नई दिल्ली
- हिन्दी गद्य : विन्यास और विकास, रामस्वरूप चतुर्वेदी, लोकभारती प्रकाशन, इलाहाबाद
- साहित्यिक विधाएँ : पुनर्विचार, हरिमोहन, वाणी प्रकाशन, नई दिल्ली
- प्रतिनिधि हिन्दी निबंधकार, विभुराम मिश्र, ज्योतिश्वर मिश्र, लोकभारती प्रकाशन, नई दिल्ली
- हिंदी कहानी : अन्तरंग पहचान, रामदरश मिश्र, वाणी प्रकाशन, नई दिल्ली
- हिन्दी कहानी : प्रक्रिया और पाठ, सुरेन्द्र चौधरी, राधाकृष्ण प्रकाशन, नई दिल्ली

BCom (Prog) **सेमेस्टर Sem III/IV – GE/Language – क्रेडिट 4**

हिन्दी गद्य विकास के विविध चरण 'ख'

Course title & Code	Credits	Credit distribution of the course			Pre-requisite of the course (if any)	Eligibility Criteria
		Lecture	Tutorial	Practical/ Practice		
GE-Language **हिन्दी गद्य विकास के विविध चरण 'ख'**	4	3	1	—	द्वितीय सिमेस्टर उत्तीर्ण	10th Pass

पाठ्यक्रम के उद्देश्य (Course Objectives)

- हिन्दी के विभिन्न गद्य रूपों से परिचित कराना
- विभिन्न गद्य रूपों के विश्लेषण की समझ विकसित कराना
- प्रमुख गद्य रचनाओं के अध्ययन द्वारा उनकी प्रासंगिकता से परिचित कराना

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes)

- हिन्दी गद्य रूपों का परिचय प्राप्त होगा
- विविध गद्य रचनाओं का महत्व और प्रासंगिकता से परिचित हो सकेंगे
- प्रमुख रचनाओं के विश्लेषण की समझ विकसित होगी

इकाई 1 हिन्दी गद्य रूपों का सामान्य परिचय – कहानी, संस्मरण, निबंध, एकांकी

इकाई 2 कहानी

उसने कहा था - चंद्रधर शर्मा गुलेरी
चीफ की दावत - भीष्म साहनी

इकाई 3 निबंध

एक दुराशा - बालमुकुंद गुप्त
मजदूरी और प्रेम - सरदार पूर्ण सिंह

इकाई 4 अन्य गद्य विधाएँ

बिबिया - महादेवी वर्मा
सूखी डाली - उपेन्द्रनाथ अश्क

सहायक ग्रंथ

- हिन्दी का गद्य साहित्य, रामचन्द्र तिवारी, विश्वविद्यालय प्रकाशन, गोरखपुर
- हिन्दी साहित्य का दूसरा इतिहास, बच्चन सिंह, राधाकृष्ण प्रकाशन, नई दिल्ली
- हिन्दी गद्य : विन्यास और विकास, रामस्वरूप चतुर्वेदी, लोकभारती प्रकाशन, इलाहाबाद
- साहित्यिक विधाएँ : पुनर्विचार, हरिमोहन, वाणी प्रकाशन, नई दिल्ली
- प्रतिनिधि हिन्दी निबंधकार, विभुराम मिश्र, ज्योतिश्वर मिश्र, लोकभारती प्रकाशन, नई दिल्ली
- हिंदी कहानी : अन्तरंग पहचान, रामदरश मिश्र, वाणी प्रकाशन, नई दिल्ली
- हिन्दी कहानी : प्रक्रिया और पाठ, सुरेन्द्र चौधरी, राधाकृष्ण

BCom (Prog) **सेमेस्टर Sem III/IV – GE/Language – क्रेडिट 4**

हिन्दी गद्य विकास के विविध चरण 'ग'

Course title & Code	Credits	Credit distribution of the course			Pre-requisite of the course (if any)	Eligibility Criteria
		Lecture	Tutorial	Practical/ Practice		
GE-Language **हिन्दी गद्य विकास के विविध चरण 'ग'**	4	3	1	0	द्वितीय सिमेस्टर उत्तीर्ण	8th Pass

पाठ्यक्रम के उद्देश्य (Course Objectives)

- हिन्दी के विभिन्न गद्य रूपों से परिचित कराना
- विभिन्न गद्य रूपों के विश्लेषण की समझ विकसित कराना
- प्रमुख गद्य रचनाओं के अध्ययन द्वारा उनकी प्रासंगिकता से परिचित कराना

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes)

- हिन्दी गद्य रूपों का परिचय प्राप्त होगा
- विविध गद्य रचनाओं का महत्व और प्रासंगिकता से परिचित हो सकेंगे
- प्रमुख रचनाओं के विश्लेषण की समझ विकसित होगी

इकाई 1 हिन्दी गद्य रूपों का सामान्य परिचय – कहानी, रेखाचित्र, संस्मरण, निबंध, एकाँकी, व्यंग्य

इकाई 2 कहानी

दो बैलों की कथा - प्रेमचंद

बहादुर - अमरकांत

इकाई 3 निबंध

सच्ची वीरता - सरदार पूर्ण सिंह

घर जोड़ने की माया - हजारी प्रसाद द्विवेदी

इकाई 4 अन्य गद्य विधाएँ

रामा - महादेवी वर्मा

मंगर - रामवृक्ष बेनीपुरी

सहायक ग्रंथ

- हिन्दी का गद्य साहित्य, रामचन्द्र तिवारी, विश्वविद्यालय प्रकाशन, गोरखपुर
- हिन्दी साहित्य का दूसरा इतिहास, बच्चन सिंह, राधाकृष्ण प्रकाशन, नई दिल्ली
- हिन्दी गद्य : विन्यास और विकास, रामस्वरूप चतुर्वेदी, लोकभारती प्रकाशन, इलाहाबाद
- साहित्यिक विधाएँ : पुनर्विचार, हरिमोहन, वाणी प्रकाशन, नई दिल्ली
- प्रतिनिधि हिन्दी निबंधकार, विभुराम मिश्र, ज्योतिश्वर मिश्र, लोकभारती प्रकाशन, नई दिल्ली
- हिंदी कहानी : अन्तरंग पहचान, रामदरश मिश्र, वाणी प्रकाशन, नई दिल्ली
- हिन्दी कहानी : प्रक्रिया और पाठ, सुरेन्द्र चौधरी, राधाकृष्ण

बी.ए. ऑनर्स हिन्दी पत्रकारिता एवं जनसंचार

Category I

बी.ए. ऑनर्स हिन्दी पत्रकारिता एवं जनसंचार **for Undergraduate Honours**

(B.A. Honours in Hindi Journalism & Mass Communication)

माध्यम क़ानून और आचार संहिता DSC 7 (4)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 7 **माध्यम क़ानून और आचार संहिता**	**4**	**3**	0	**1**	12th Pass	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

1. छात्रों को मीडिया संबंधी कानूनों से अवगत कराना।
2. छात्रों को संविधान में निहित सामाजिक उत्तरदायित्वों के प्रति संवेदनशील बनाना।
3. छात्रों को मीडिया नियमन और भविष्य की चुनौतियों का अवलोकन कराना।
4. छात्रों में मीडिया की आचार संहिता और आत्म नियमन की समझ विकसित करना।

Learning Outcomes

1. भारतीय मीडिया के संवैधानिक आयामों की समझ विकसित होगी।
2. मीडिया के कानूनों और नियमों से परिचित होंगे।
3. मीडिया की आचार संहिता और आत्म नियमन की समझ विकसित होगी।
4. सामाजिक उत्तरदायित्व के साथ स्वस्थ और ईमानदार पत्रकारिता हेतु दक्ष होंगे।

1. प्रेस की स्वतंत्रता और संवैधानिक प्रावधान 10 घंटे

- वाक एवं अभिव्यक्ति की स्वतंत्रता, अनुच्छेद 19(1) (a), (19) (2)
- विविध प्रेस आयोग
- श्रमजीवी पत्रकार कानून (पालेकर, बछावत, मजीठिया और मणिसाना)

2. अधिनियम और कानून 10 घंटे

- प्रेस एवं पुस्तक पंजीकरण अधिनियम 1867, बौद्धिक संपदा कानून - प्रतिलिप्याधिकार कानून 1957, पेटेंट कानून 1970
- शासकीय गोपनीयता अधिनियम 1923, सूचना का अधिकार 2005
- युवकों के लिए हानिप्रद प्रकाशन कानून 1956, महिलाओं के अशिष्ट रुपण प्रतिषेध अधिनियम 1986

3. मीडिया कानून और समाज 10 घंटे

- भारतीय दंड संहिता 1860: मानहानि, राजद्रोह
- न्यायालय अवमानना अधिनियम अनुच्छेद 1971 (अनुच्छेद 361)
- संसदीय एवं विधान मंडल विशेषाधिकार

4. इलेक्ट्रॉनिक और न्यू मीडिया कानून 15 घंटे

- सिनेमैटोग्राफी अधिनियम
- मीडिया के नए कानून 2021
- माध्यम आचार संहिता: अवधारणा और आवश्यकता, एडिटर्स गिल्ड ऑफ इंडिया की आचार संहिता, विज्ञापन संबंधी आचार संहिता

व्यावहारिक कार्य : 30 घंटे

- किसी एक न्यायिक प्रक्रिया का अवलोकन और उसकी रिपोर्ट तैयार करना।
- संसदीय प्रक्रिया का अवलोकन और उसकी रिपोर्ट तैयार करना।
- न्यायालय की तकनीकी शब्दावली तैयार करना।
- विभिन्न प्रेस कानूनों (उपरोक्त) से संबंधित केस स्टडी पर आधारित एक परियोजना कार्य।

संदर्भ पुस्तकें :

1. शासकीय गजट में प्रकाशित संबंधित अधिनियम
2. भारतीय दंड संहिता, प्रकाशन विभाग द्वारा प्रकाशित मूल अधिनियम
3. आपातकालीन पत्रकारिता की संघर्ष-गाथा, अरुण कुमार भगत, अनामिका पब्लिशर्स, नई दिल्ली
4. प्रेस विधि, नंदकिशोर त्रिखा, विश्वविद्यालय प्रकाशन, वाराणसी
5. प्रेस कानून और पत्रकारिता, संजीव भानावत, राजस्थान हिन्दी ग्रंथ अकादमी, जयपुर
6. प्रेस विधि एवं अभियुक्त स्वातंत्र्य, डॉ हरबंश दीक्षित, वाणी प्रकाशन, नई दिल्ली
7. हिंदी पत्रकारिता के विविध आयाम, वेद प्रताप वैदिक, हिन्दी बुक सेंटर, नई दिल्ली
8. जनमाध्यम कानून एवं उत्तरदायित्व, श्रीकांत सिंह, हिन्दी बुक सेंटर, नई दिल्ली
9. बौद्धिक संपदा विधियां, ज्ञानवती धाकड़, सेंट्रल लॉ प्रकाशन

संपादन DSC 8 (4)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 8 संपादन	**4**	**3**	0	**1**	12th Pass	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

1. समाचार संपादन के महत्व, प्रक्रिया और प्रयोग से छात्रों को अवगत कराना।
2. समाचार संपादन में आवश्यक कारकों की जानकारी प्रदान करना।
3. विभिन्न माध्यमों के संपादन कार्य से परिचित कराना।
4. संपादकीय लेखन, प्रूफ संशोधन आदि का ज्ञान प्रदान करना।

Course Learning Outcomes

1. छात्र समाचार लेखन में संपादन कार्य के महत्व को समझ पायेंगे।
2. पेज मेकअप, ले आउट, डिजाइन आदि की जानकारी प्राप्त कर सकेंगे।
3. छात्र ऑनलाइन संपादन का परिचय प्राप्त कर सकेंगे।

1. संपादन **10 घंटे**

- संपादन अर्थ, उद्देश्य, प्रक्रिया और प्रमुख सिद्धान्त
- समाचार पत्र एवं पत्रिका संपादन
- रेडियो टीवी एवं ऑनलाइन समाचार संपादन

2. समाचार संपादन **10 घंटे**

- कॉपी संपादन, ऑनलाइन संपादन, पृष्ट समाचार संपादन
- ग्राफिक्स कार्टून और फ़ोटो चयन

- लेआउट, डिज़ाइन एवं पेज मेकअप

3. संपादन तकनीक 10 घंटे

- संपादकीय पृष्ठ की संरचना और संपादकीय लिखना
- संपादकीय नीति और स्टाइल पुस्तिका
- संपादकीय चिह्न और पांडुलिपि संशोधन, प्रूफ संशोधन

4. विशेष लेख और संपादन 15 घंटे

- संपादकीय विभाग का ढांचा
- संपादक एवं उपसंपादक के कार्य एवं योग्यताएं
- शीर्षक लेखन, टिप्पणी, विश्लेषण, समीक्षा, संपादन के नाम पत्र

5. व्यावहारिक कार्य : 30 घंटे

- संपादकीय पृष्ठ हेतु लेखन की प्रस्तुति
- संपादकीय पृष्ठ का डमी निर्माण
- संपादकीय पृष्ठ का तुलनात्मक अध्ययन और उसकी प्रस्तुति
- प्रकाशन हेतु कॉपी तैयार करना

सहायक पुस्तकें :

1. पत्रकारिता : सर्जनात्मक लेखन और रचना-प्रक्रिया, अरुण कुमार भगत, राष्ट्रीय पुस्तक न्यास, दिल्ली
2. ग्राफ़िक डिजाइन, नरेंद्र यादव, हरियाणा ग्रंथ अक़ादमी, पंचकुला
3. समाचार, फ़ीचर लेखन एवं संपादन कला, डॉ हरिमोहन, तक्षशिला प्रकाशन, नई दिल्ली
4. हिंदी की आधुनिक पत्रकारिता, अरुण कुमार भगत, राष्ट्रीय पुस्तक न्यास, दिल्ली
5. सोशल नेटवर्किंगः नए समय का संवाद, डॉ संजय द्विवेदी, यश पब्लिकेशन्स, दिल्ली
6. संपादन कला, के पी नारायणन, मध्यप्रदेश हिन्दी ग्रंथ अक़ादमी, भोपाल
7. समाचार-पत्र, मुद्रण और साज-सज्जा, श्यामसुंदर शर्मा, मध्यप्रदेश हिन्दी ग्रंथ अक़ादमी, भोपाल

रेडियो DSC 9 (4)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
रेडियो DSC 9	**4**	**3**	0	**1**	12th Pass	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

Course Objective

1. रेडियो का व्यावहारिक परिचय कराना।
2. रेडियो कार्यक्रमों द्वारा सांस्कृतिक, सामाजिक और सांस्कृतिक मूल्यों से परिचित कराना।
3. बदलते दौर में नए वैश्विक संदर्भ और कार्यक्रम प्रविधि तकनीक से अवगत कराना।
4. रेडियो कार्यक्रम, उपकरण, लेखन, रिपोर्टिंग संबंधी पहलुओं से अवगत कराना।

Course Learning Outcomes

1. रेडियो कार्यक्रम की समझ विकसित होगी।
2. श्रव्य माध्यम का महत्व समझेंगे।
3. रेडियो का व्यावहारिक ज्ञान प्राप्त होगा।
4. वैश्विक परिदृश्य और नई तकनीक की जानकारी होगी।

1. जन श्रव्य माध्यम रेडियो - सामान्य परिचय 10 घंटे

- भारतीय परिप्रेक्ष्य में रेडियो के प्रमुख बदलाव: 90 के दशक के बाद से आज तक
- रेडियो की विशेषताएं और संभावनाएं
- रेडियो के विविध रूप : एएम, एफएम, सामुदायिक रेडियो, पॉडकास्ट

2. रेडियो कार्यक्रम लेखन 10 घंटे

- समाचार कार्यक्रमों के लिए लेखन: समाचार बुलेटिन, वार्ता, एंकरिंग
- मनोरंजन कार्यक्रम की विधाएँ : लघु नाटिका, फिल्म, ,नाटक, प्रहसन, डाक्यूमेंट्री

- विशिष्ट श्रोता वर्ग कार्यक्रम: स्त्री, बाल, युवा, बुजुर्ग, सैनिक, किसान, ग्रामीण, शहरी, आदिवासी और दिव्यांग

3. रेडियो कार्यक्रम तकनीक एवं संपादन 10 घंटे

- रेडियो केंद्र का ढांचा, संगठन और कार्यप्रणाली
- रेडियो स्टूडियो के विभिन्न उपकरण : रिकॉर्डर, हेडफोन,कंसोल, माइक्रोफोन, ऑन एयर लाइट, ऑटोमेशन सॉफ्टवेयर
- रेडियो जॉकी : भूमिका और दायित्व

4. रेडियो प्रबंधन 15 घंटे

- आकाशवाणी, एफ.एम. और सामुदायिक रेडियो का प्रबंधन
- रेडियो कार्यक्रम: विपणन और वितरण
- आकाशवाणी की रेडियो प्रसारण संबंधी आचार संहिता

व्यावहारिक कार्य 30 घंटे

- रेडियो पर प्रसारित सामाजिक, आर्थिक, राजनीतिक और सांस्कृतिक कार्यक्रमों की समीक्षा करना।
- रेडियो के लिए किसी समाचारपरक, वार्तापरक, और मनोरंजन परक कार्यक्रम की स्क्रिप्ट तैयार करना।
- रेडियो के लिए 5 मिनट का साक्षात्कार तैयार करना।
- रेडियो के लिए 5 मिनट का समाचार बुलेटिन और न्यूजरील तैयार करना।
- किसी समसामयिक मुद्दे पर 5 मिनट का पॉडकास्ट तैयार करना।

Essential/recommended readings

1. अंडरस्टैंडिंग रेडियो: एंड्रयू क्रिसेल, क्रिसेल टेलर एंड ग्रुप पब्लिकेशन
2. रेडियो और दूर-दर्शन पत्रकारिता, डॉ हरिमोहन, तक्षशिला, नई दिल्ली
3. ब्रॉडकास्टिंग इन इंडिया : जी.सी.अवस्थी, एलाइड पब्लिकेशन
4. रेडियो लेखन: मधुकर गंगाधर, बिहार हिंदी ग्रंथ अकादमी, पटना
5. रेडियो जॉकीईंग की कला, डॉ हरिमोहन, तक्षशिला, दिल्ली
6. इंडिया ब्रॉडकास्टिंग: एच.के लूथरा, प्रकाशन विभाग, भारत सरकार
7. ब्रॉडकास्टिंग एंड द पीपुल्स: मेहरा मसानी, नेशनल बुक ट्रस्ट, नई दिल्ली

क्षेत्रीय पत्रकारिता DSE 1- (4)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 1 **क्षेत्रीय पत्रकारिता**	**4**	**3**	0	**1**	12th Pass	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

1. क्षेत्रीय पत्रकारिता के स्वरूप को समझाना।
2. संस्कृति-विकास और स्थानीय महत्त्व की दृष्टि से क्षेत्रीय पत्रकारिता की उपयोगिता से अवगत कराना।
3. लोक कला, लोक साहित्य, लोक संगीत के विकास में क्षेत्रीय पत्रकारिता की भूमिका पर विचार करना।

Course Learning Outcomes

1. समाज और संस्कृति के परिप्रेक्ष्य में क्षेत्रीय पत्रकारिता के विविध रूपों की जानकारी हासिल कर पाएंगे।
2. स्थानीय भाषाओं के महत्त्व एवं उसके योगदान से अवगत होंगे।
3. क्षेत्रीय पत्रकारिता के क्षेत्र में रोजगारपरक संभावनाओं से परिचित होंगे।

1. क्षेत्रीय पत्रकारिता : सामान्य परिचय **10 घंटे**

- क्षेत्रीय पत्रकारिता – अर्थ स्वरूप एवं प्रकृति
- स्वाधीनता संग्राम में क्षेत्रीय पत्रकारिता का योगदान
- मुख्यधारा की मीडिया और क्षेत्रीय पत्रकारिता में अंतर

2. क्षेत्रीय पत्रकारिता : सामाजिक और सांस्कृतिक प्रभाव **10 घंटे**

- क्षेत्रीय पत्रकारिता का प्रबंधन और बाज़ार, सामग्री संकलन
- सामाजिक परिवर्तन और लोक संस्कृति पर क्षेत्रीय पत्रकारिता का प्रभाव

- क्षेत्रीय पत्रकारिता की भाषा शैली

3. क्षेत्रीय पत्रकारिता की अंतर्वस्तु **10 घंटे**

- क्षेत्रीय पत्र-पत्रिकाओं में स्थानीय समाचार, जनसरोकार संबंधी मुद्दों की प्रस्तुति
- आकाशवाणी – दूरदर्शन में क्षेत्रीय कार्यक्रमों की प्रस्तुति के विविध आयाम
- ऑनलाइन क्षेत्रीय पत्रकारिता और क्षेत्रीय मुद्दे

4. क्षेत्रीय ग्रामीण पत्रकारिता **15 घंटे**

- क्षेत्रीय पत्रकारिता में ग्रामीण संदर्भ
- प्रिंट माध्यमों में जनपदीय ब्यूरो-संरचना, संकलन एवं अन्य संदर्भ
- क्षेत्रीय पत्रकार की कार्यप्रणाली और चुनौतियाँ

प्रायोगिक कार्य : 30 **घंटे**

- मुख्य-धारा एवं क्षेत्रीय समाचार-पत्र, पत्रिकाओं की विषयवस्तु का तुलनात्मक विश्लेषण
- क्षेत्रीय समाचार पत्र के लिये रिपोर्ट लेखन, फ़ीचर प्रस्तुत करना
- क्षेत्रीय पत्रकारिता की भाषा शैली की समीक्षा करना
- स्थानीय मुद्दों पर आधारित न्यूजलेटर का निर्माण करना

सहायक पुस्तकें :

1. मीडिया में महिलाओं की भूमिका, संगीता अग्रवाल, राजकमल प्रकाशन
2. बिहार में पत्रकारिता का इतिहास, विजय भास्कर, प्रभात प्रकाशन
3. कृषि पत्रकारिता का सैद्धांतिक एवं व्यावहारिक पक्ष, राम कृष्ण पराशर, नकुल पराशर, हिंदी माध्यम क्रियान्वयन निदेशालय, दिल्ली विश्वविद्यालय
4. हिंदी पत्रकारिता शब्द संपदा, बद्रीनाथ आर, राकेश शिवकुमार अवस्थी
5. हिंदी पत्रकारिता और राष्ट्रीय एकता, डॉ हरिमोहन, डॉ जयंत शुक्ल, तक्षशिला प्रकाशन
6. हिंदी के प्रमुख समाचार-पत्र और पत्रिकाएं, अच्युतानंद मिश्र, सामयिक प्रकाशन
7. हिन्दी के प्रमुख क्षेत्रीय समाचार पत्र-पत्रिकाओं और चैनलों पर प्रकाशित-प्रसारित सामग्री

DSE 2 पर्यावरण पत्रकारिता

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 2 पर्यावरण पत्रकारिता	**4**	**3**	0	**1**	12th Pass	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

1. पर्यावरण के प्रति छात्रों में संवेदनशीलता पैदा करना।
2. पर्यावरण संरक्षण के प्रति छात्रों को जागरूक करना।
3. पर्यावरण संरक्षण के लिए छात्रों को प्रोत्साहित करना।
4. प्रकृति, राष्ट्रीय संसाधनों के प्रति प्रेम एवं सह-अस्तित्व का भाव पैदा करना।

Course Learning Outcomes

1. पर्यावरण के प्रति समझ विकसित होगी।
2. पर्यावरण समस्याओं से छात्र अवगत होंगे।
3. पर्यावरण संरक्षण में मीडिया के प्रयोग को समझ सकेंगे।
4. पर्यावरण समस्याओं को उजागर करने में मीडिया की भूमिका से अवगत होंगे।

1. पर्यावरण जागरूकता और मीडिया 10 घंटे

- पर्यावरण अध्ययन की परिभाषा, क्षेत्र और महत्व
- ग्लोबल और भारतीय मीडिया में पर्यावरण जागरूकता एवं प्रमुख पर्यावरण मुद्दे
- प्राकृतिक संसाधनों के संरक्षण में मीडिया की भूमिका

2. पर्यावरण संरक्षण एवं मीडिया 10 घंटे

- राष्ट्रीय-अंतरराष्ट्रीय पर्यावरण संरक्षण आंदोलन और मीडिया
- अंतरराष्ट्रीय पर्यावरण सम्मेलन एवं मीडिया
- वैश्विक अंतरराष्ट्रीय पर्यावरण समझौते

3. पर्यावरण एवं भारतीय मीडिया 10 घंटे

- पर्यावरण से संबंधित भारतीय मीडिया का दृष्टिकोण
- प्रिंट मीडिया में पर्यावरण प्रस्तुति
- टीवी, रेडियो एवं डिजिटल मीडिया में पर्यावरण मुद्दे

4. पर्यावरण चिंताएँ एवं मीडिया 15 घंटे

- प्रमुख पर्यावरण चुनौतियाँ और मुद्दे : जलवायु परिवर्तन, ग्लोबल वार्मिंग, प्रदूषण, ग्रीन हाउस गैस प्रभाव
- राष्ट्रीय और स्थानीय स्तरों पर जैव विविधता
- पर्यावरण संबंधी सूचना के प्रसार में मीडिया की भूमिका
- विभिन्न पर्यावरणीय समस्याओं के संदर्भ में मीडिया की भूमिका।

प्रायोगिक कार्य 30 घंटे

- विभिन्न पर्यावरणविदों से साक्षात्कार
- जल संकट, वायु प्रदूषण, पर्यावरणीय संकट पर डॉक्यूमेट्री तैयार करना
- पर्यावरणीय संकट पर फ़ीचर, स्लोगन, रिपोर्ट, परिचर्चा
- प्रयावरणीय मुद्दों पर आधारित न्यूज़ लेटर निर्माण करना

सहायक पुस्तकें :

1. भारत में जनसंचार, केवल जे कुमार, जैको पब्लिशिंग हाउस
2. पर्यावरण अध्ययन में परिप्रेक्ष्य, ए. कौशिक और पी.सी. कौशिक, दरियागंज, न्यू एज प्रकाशन, दिल्ली
3. पर्यावरण अध्ययन, डॉ दया शंकर त्रिपाठी, मोतीलाल बनारसी प्रकाशन, नई दिल्ली
4. पर्यावरण अध्ययन-संकट से इलाज तक, आर राजगोपालन, ऑक्सफ़ोर्ड यूनिवर्सिटी प्रेस, नई दिल्ली

DSE 3 कम्प्यूटर तकनीक एप्लीकेशन एवं मीडिया (ग)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 3 कम्प्यूटर तकनीक एप्लीकेशन एवं मीडिया	4	3	0	1	12th Pass	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

1. कंप्यूटर और इन्टरनेट के स्वरूप, कार्यप्रणाली और उपयोगिता से अवगत कराना।
2. मीडिया में कंप्यूटर और इंटरनेट तकनीक से अवगत कराना।
3. इंटरनेट आधारित संचार के स्वरूप को समझाना।
4. मीडिया के तकनीकी परिदृश्य से परिचित कराना।

Course Learning Outcomes

1. मीडिया में कंप्यूटर और इंटरनेट के प्रयोग को जान पाएँगे।
2. मीडिया में कंप्यूटर और इंटरनेट से परिचित होकर रोजगार की संभावनाओं से परिचित होंगे।
3. कम्प्यूटर और इंटरनेट के विभिन्न अनुप्रयोगों का उपयोग कर सकेंगे।
4. इन्टरनेट आधारित अभिव्यक्ति के नए रूपों के प्रयोग में सक्षम होंगे।

1. कंप्यूटर और इंटरनेट का सामान्य परिचय: 10 घंटे

- सूचना-स्रोत तथा कन्टेन्ट प्रसारक के रूप में मीडिया में इंटरनेट का अनुप्रयोग
- मीडिया के कामकाज में प्रयुक्त प्रमुख सॉफ़्टवेयर : एम एस वर्ड, क्वार्क एक्सप्रेस, इन डिजाइन, कोरल ड्रा, माइक्रोसॉफ़्ट पब्लिशर, फ़ोटोशॉप, केनवा
- कंप्यूटर और मल्टीमीडिया (ग्राफ़िक्स, फोटोग्राफ़, वीडियो तथा ऑडियो)

2. कंप्यूटर, इंटरनेट, तकनीक और मीडिया लेखन 10 घंटे

- सोशल मीडिया लेखन: फेसबुक, इंस्टाग्राम, ब्लॉग लेखन
- ऑडियो रिकॉर्डिंग और संपादन, पॉडकास्ट एप
- वेबसाइट कंटेंट लेखन, संपादन, ले आउट, डिजाइन

3. कंप्यूटर, इंटरनेट और मुद्रित माध्यम 10 घंटे

- मैगजीन एप और पत्रिका निर्माण, न्यूजपेपर एप
- पोस्टर और बैनर एप और निर्माण
- ब्रोशर एप और निर्माण

4. कंप्यूटर इंटरनेट आधारित संचार के नए रूप 15 घंटे

- रील्स, मीम, शार्ट वीडियो, डिजिटल विज्ञापन, वेब सीरीज, स्टीकर, इमोजी
- लाइव स्ट्रीमिंगः कार्यप्रणाली तथा उपलब्ध मंच
- भारत में सूचना प्रौद्योगिकी तथा कॉपीराइट कानून

प्रायोगिक कार्य 30 घंटे

- रील्स, मीम, शार्ट वीडियो, डिजिटल विज्ञापन निर्माण करना
- पोस्टर और बैनर
- ब्रोशर निर्माण

सहायक पुस्तकें :

1. तकनीक तेरे कितने आयाम, बालेन्दु शर्मा दाधीच, प्रभात प्रकाशन
2. मास मीडिया एंड इन्फोमेशन टेक्नोलॉजी, जे के सिंह
3. डिजीटल इंडिया, अजय कुमार, प्रभात प्रकाशन
4. तकनीकी सुलझनें, बालेन्दु शर्मा दाधीच, ई प्रकाशक
5. सूचना प्रौद्योगिकी और समाचार पत्र,रविंद्र शुक्ला, राजकमल प्रकाशन
6. दिव्यांगों के लिए तकनीक, बालेन्दु शर्मा दाधीच, राष्ट्रीय पुस्तक न्यास
7. Internet as a Media, Sandeep Banarjee, Kalpaz Publication, 2014
8. Internet and Mass Media, Lucy Kung, Robert G. Pichard, Ruth Towse, Sage Publication, 200

GE (क) राजनीतिक दार्शनिक विचारक एवं मीडिया (4)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE (क) **राजनीतिक दार्शनिक विचारक एवं मीडिया**	4	3	0	1	12th Pass	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- भारत के प्रमुख राजनीतिज्ञों के योगदान की जानकारी प्रदान करना।
- जनसंचार माध्यमों में राजनीतिक-दर्शन और घटनाओं की उपस्थिति से अवगत कराना।
- स्वतंत्रता-पूर्व और स्वातंत्र्योत्तर पत्र-पत्रिकाओं में प्रकाशित राजनीतिक-सांस्कृतिक सामग्री का मूल्यांकन करना।
- प्रमुख राजनीतिक दार्शनिकों, पत्रकारों के योगदान का परिचय देना।

Course Learning Outcomes

- भारत की सामाजिक-सांस्कृतिक गतिविधियों की समझ विकसित होगी।
- भारत-निर्माण में मीडिया की भूमिका की जानकारी प्राप्त होगी।
- समय और घटना-विशेष के संदर्भ में पत्र-पत्रिकाओं एवं पत्रकारों का योगदान रेखांकित हो सकेगा।
- भारत-बोध विकसित होगा।

1. राजनीति और मीडिया 10 घंटे

- भारत में राजनीति और मीडिया का अंतःसंबंध : मूल्य, व्यक्ति विशेष और सत्ता समीकरण के रूप में
- प्रमुख राजनीतिक दर्शन और मीडिया : संक्षिप्त परिचय (स्वाधीनता, सर्वोदय, स्वदेशी, अंत्योदय, लोकतंत्र)
- लोकतंत्र के चौथे स्तंभ के रूप में मीडिया पर प्रमुख राजनीतिक दार्शनिकों के विचार

2. स्वतंत्रता-पूर्व राजनीतिक दर्शन और मीडिया **10 घंटे**

- स्वाधीनता, स्वराज्य का विचार तथा हिंदी पत्रकारिता में उसके स्वरूप का अध्ययन (1857 का स्वाधीनता संघर्ष, बंग-भंग आंदोलन, ख़िलाफ़त आंदोलन तथा पूर्ण स्वराज्य)
- पुनर्जागरण का दर्शन और हिंदी पत्र-पत्रिकाएं (बालाबोधिनी, हिंदी प्रदीप तथा सरस्वती के विशेष संदर्भ में)
- साहित्य, पत्रकारिता तथा फिल्मों में स्वतंत्रता-पूर्व भारत बोध का स्वरूप

3. स्वातंत्र्योत्तर राजनीतिक घटनाक्रम और मीडिया **10 घंटे**

- राष्ट्र निर्माण के लक्ष्य में मीडिया की भूमिका , क्रांति चेतना और मीडिया
- स्वातंत्र्योत्तर भारत के प्रमुख घटनाक्रम और हिंदी मीडिया : साम्राज्यवाद और सर्वसत्तावाद (विशेष संदर्भ- 1962 का भारत-चीन युद्ध तथा आपातकाल)
- मीडिया पर नव-उदारवादी व्यवस्था का प्रभाव

4. प्रमुख राजनीतिक दार्शनिक **15 घंटे**

- राममोहन राय, भारतेंदु हरिश्चंद्र, महावीर प्रसाद द्विवेदी
- बाल गंगाधर तिलक, गणेश शंकर विद्यार्थी, महात्मा गांधी
- भीमराव अंबेडकर, दीनदयाल उपाध्याय, सच्चिदानंद हीरानंद वात्स्यायन 'अज्ञेय'

प्रायोगिक कार्य : **30 घंटे**

- प्रमुख राजनीतिक दार्शनिकों द्वारा मीडिया पर किए गए विचारों का संकलन और लेखन
- ऊपर वर्णित राजनीतिक दर्शनों के संदर्भ में तत्कालीन पत्र-पत्रिकाओं में छपी सामग्री पर रिपोर्ट लेखन
- प्रमुख राजनीतिक दार्शनिकों का मीडियाकर्मी के रूप में दिए गए योगदान पर परियोजना-कार्य
- भारत-बोध में मीडिया के योगदान पर समूह-चर्चा, निबंध लेखन
- प्रमुख राजनीतिक-दार्शनिकों, क्रांतिकारियों द्वारा संपादित पत्र-पत्रिकाओं की तथा उनसे जुड़े स्थानों, स्मारकों और उन पर केंद्रित फिल्मों की सूची का निर्माण

सहायक पुस्तकें :

1. समाज और राजनीति का दार्शनिक अध्ययन, डॉ. ज्ञानंजय द्विवेदी, उत्तर प्रदेश हिंदी संस्थान, लखनऊ
2. हिंदी पत्रकारिता का बृहद इतिहास, डॉ. अर्जुन तिवारी, वाणी प्रकाशन, नई दिल्ली
3. हिंदी पत्रकारिता का इतिहास, जगदीश प्रसाद चतुर्वेदी, प्रभात प्रकाशन, नई दिल्ली
4. अंतर्वेद प्रवर गणेश शंकर विद्यार्थी, अमित राजपूत, लोकोदय प्रकाशन
5. राजा राममोहन राय, विजित कुमार दत्त, नेशनल बुक ट्रस्ट, इंडिया
6. भारतेन्दु हरिश्चंद्र और हिंदी नवजागरण की समस्याएं, रामविलास शर्मा, राजकमल प्रकाशन, नई दिल्ली
7. महावीर प्रसाद द्विवेदी और हिंदी नवजागरण , रामविलास शर्मा, राजकमल प्रकाशन, नई दिल्ली
8. पं. दीनदयाल उपाध्याय : कर्तृत्व एवं विचार, डॉ. महेशचंद्र शर्मा, प्रभात प्रकाशन, नई दिल्ली
9. राष्ट्र निर्माताओं की पत्रकारिता, कृपाशंकर चौबे, प्रलेक प्रकाशन, मुंबई
10. पत्रकार डॉ. भीमराव अंबेडकर, सूर्यनारायण रणसुभे, प्रभात प्रकाशन, नई दिल्ली
11. मूकनायक डॉ. अंबेडकर, संकलन एवं अनुवाद- श्यौराज सिंह बेचैन, गौतम बुक सेंटर
12. लोकमान्य बाल गंगाधर तिलक, रचना भोला 'यामिनी', प्रभात प्रकाशन

GE (ख) मीडिया प्रोडक्शन (4)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE (ख) **मीडिया प्रोडक्शन**	4	3	0	1	12th Pass	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- छात्रों को रेडियो, टेलीविजन, प्रिंट के प्रोडक्शन की जानकारी देना।
- मीडिया हाउस की प्रोडक्शन प्रक्रिया से रूबरू कराना।
- रेडियो एवं टेलीविजन की प्रसारण प्रक्रिया की जानकारी देना।

Course Learning Outcomes

- छात्रों में मीडिया के विविध कार्यक्रम तैयार करने का कौशल विकसित होगा।
- रेडियो एवं टेलीविजन प्रसारण प्रक्रिया को जान पायेंगे।
- मीडिया प्रोडक्शन में तकनीकी महत्व की जानकारी प्राप्त होगी।

1. **प्रिंट प्रोडक्शन** **10 घंटे**
   - फ़ॉण्ट, कंप्यूटर टाइपिंग
   - एडिटिंग सॉफ्टवेयर : कोरल ड्रा, कंप्यूटर डिजाइनिंग, क्वॉर्क, केनवा, पेज मेकर, इनडिजाइन
   - फोटोग्राफी के सिद्धांत, फोटो चयन, कैप्शन लेखन, फ़ोटोशॉप
2. **रेडियो प्रोडक्शन** 10 **घंटे**
   - रेडियो स्टूडियो की संरचना, उपकरण एवं प्रमुख रेडियो सॉफ़्टवेयर
   - रिकॉर्डिंग और संपादन, एनालॉग ध्वनि, डिजिटल ध्वनि, डबिंग, वॉयस मॉड्यूलेशन
   - रेडियो कार्यक्रम निर्माण एवं रेडियो प्रसारण
3. **टेलीविजन एवं वीडियो प्रोडक्शन** **10 घंटे**
   - टीवी स्टूडियो संरचना, टीवी प्रसारण तकनीक, दृश्य-श्रव्य सॉफ्टवेर
   - वीडियो प्रोडक्शन प्रक्रिया : प्री प्रोडक्शन, प्रोडक्शन, पोस्ट प्रोडक्शन

- कैमरा और प्रकाश व्यवस्था, विभिन्न शॉट्स और उनका कंपोजिशन, प्रकाशीय उपकरण

4. फिल्म और वेब प्रोडक्शन 15 घंटे

- फिल्म निर्माण प्रकिया, निर्देशन, सिनेमेटोग्राफी, ध्वनि, संगीत, संपादन, कंप्यूटर एवं फ़िल्म प्रोडक्शन
- वेब प्रोडक्शन, वेब पोर्टल की संरचना, वेब पेज निर्माण
- ओ.टी.टी. प्लेटफॉर्म और वेब सीरीज

प्रायोगिक कार्य : 30 घंटे

- समाचार पत्र पृष्ठ निर्माण करना।
- रेडियो बुलेटिन और पॉडकास्ट तैयार करना।
- वेब पेज निर्माण करना।
- प्रेस रिलीज, समाचार निर्माण, पॉडकास्ट और फोटोग्राफी अभ्यास हेतु कॉलेज कार्यक्रमों की कवरेज करना।

सहायक पुस्तकें :

1. ग्राफिक डिजाइन, नरेंद्र यादव, राजस्थान हिंदी ग्रंथ अकादमी
2. ब्रॉडकास्टिंग एंड द पीपुल, मेहरा मसानी, नेशनल बुक ट्रस्ट, इंडिया
3. रेडियो लेखन, मधुकर गंगाधर, बिहार हिंदी ग्रंथ अकादमी
4. रेडियो वार्ता शिल्प, डॉ. सिद्धनाथ कुमार,राधा कृष्ण प्रकाशन
5. वीडियो प्रोडक्शन टेक्नीक, डॉनल्ड एल.डीफेन्बच एण्ड एनी ई.स्लेटन, रूटलेज,ए फोकल प्रेस बुक
6. वेब सीरीज लेखन (हिंदी संस्करण) दिनकर कुमार, किंडल बुक

ANNEXURE-13

Sub: Amendment to Ordinance V

[E.C Resolution No. 14-1/-(14-1-1/-) dated 09.06.2023]

The Common Pool of Discipline Specific Elective (DSE) courses in respect of Department of Persian for 3rd Semester is notified herewith for all the concerned:

DEPARTMENT OF PERSIAN

COMMON POOL OF DSE COURSES

DISCIPLINE SPECIFIC ELECTIVE COURSE – 1: Developing reading & writing skills

Credit distribution, Eligibility and Pre-requisites of the Course:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Developing reading & writing skills	4	3	1	NIL	Class XII pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make students fluent with simple Persian texts through simple text
2. To equip the students with Persian comprehension and writing skills

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, the students will be able to understand simple Persian text.
- By studying this course, the students will be familiar with Persian comprehension and writing.

SYLLABUS OF DSE-1

UNIT – I (3 Weeks/9 Hours)

The following Text:

- اوّلین روز دبستان (ص5 کتاب فارسی، دوم دبستان)
(Awwaleen rooz-e-Dabistan, Page 5, Kitab-e-Farsi, Duwwum Dabistan)
- دوستان جدید (ص9 کتاب فارسی، دوم دبستان)
(Dustan-e-Jadeed, Page 9, Kitab-e-Farsi, Diwwum Dabistan)
- چراغ سبز (ص30 کتاب فارسی، دوم دبستان)
(Charagh-e-Sabz, Page 30, Kitab-e-Farsi, Duwwum Dabistan)

UNIT – II (3 Weeks/9 Hours)

The following Text:

- تصمیم کبری (ص34 کتاب فارسی، دوم دبستان)
(Tasmeem-e-Kubra, Page 34, Kitab-e-Farsi, Duwwum Dabistan)
- کوکب خانم (ص42 کتاب فارسی، دوم دبستان)
(Kaukab Khanum, Page 42, Kitab-e-Farsi, Duwwum Dabistan)
- دندان شیری (ص 45کتاب فارسی، دوم دبستان)
(Dandaan-e-Shiri, Page 45, Kitab-e-Farsi, Duwwum Dabistan)

UNIT – III (3 Weeks/9 Hours)

The following Text:

- برادر کوچک (ص48 کتاب فارسی، دوم دبستان)
(Baradar-e-Koochak, Page 48, Kitab-e-Farsi, Duwwum Dabistan)
- برگ ریزان (ص51 کتاب فارسی، دوم دبستان)
(Barg Reezan, Page 51, Kitab-e-Farsi, Duwwum Dabistan)

UNIT – IV (3 Weeks/9 Hours)

The following Text:

- دوستان ما (ص56 کتاب فارسی، دوم دبستان)
(Doostan-e-Ma, Page 57, Kitab-e-Farsi, Duwwum Dabistan)
- حسنک کجایی (ص65 کتاب فارسی، دوم دبستان)
(Hasnak Kujaii, Page 65, Kitab-e-Farsi, Duwwum Dabistan)

UNIT – V (3 Weeks/9 Hours)

- Translation and summary of the Text in English, Hindi and Urdu

Essential/recommended readings:

1. Farsi Dabistan(Diwum): Vizarate Aamuzish wa Parvarish, Sazmane kitabhaye Darsi, Tehran, Iran. 1348
2. Khanlari, Dr., Zahra:Dastur-e-Zaban-e-Farsi, Idarah-e-Adabiyat-e-Dehli, Jaiyyed press, Ballimaran,Delhi-110006

DISCIPLINE SPECIFIC ELECTIVE COURSE – 2: Introduction to ancient Persian Culture

Credit distribution, Eligibility and Pre-requisites of the Course:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Introduction to ancient Persian Culture	4	3	1	NIL	Class XII pass	NIL

Learning Objectives:

The Learning Objectives of this course are as follows:

1. To acquaint the students with ancient Iranian Culture
2. To enable the students to know different cultural elements like festivals and some ancient stories

Learning outcomes:

The Learning Outcomes of this course are as follows:

- By learning this course, students will be familiar with ancient Iranian culture
- By learning this course, students will be able to know the different ancient Iranian festivals and stories.

SYLLABUS OF DSE- 2

UNIT – I (3 Weeks/9 Hours)

The following Text:

- جشن مهرگان (ص8، کتاب فارسی چهارم دبستان)
(Jashn-e-Mehrgaan, Page 8, Kitab-e-Farsi, Chaharum Dabistan)

- چهار شنبه سوری (ص 133، کتاب فارسی دوم دبستان)
(Chahar Shanbe Soori, Page 133, Kitab-e-Farsi, Duwwum Dabistan)

UNIT – II (3 Weeks/9 Hours)

The following Text:

- جشن سده (ص 41، کتاب فارسی برای کلاس های دیپلم)
(Jashn-e-Sade, Page 41, Kitab-e-Farsi, barai classhai Diplum)
- جشن نوروز (۱) (ص 139، کتاب فارسی دوم دبستان)
(Jashn-e-Naurooz(1), Page 139, Kitab-e-Farsi, Duwwum Dabistan)

UNIT – III (3 Weeks/9 Hours)

The following Text:

- جشن نوروز (2) (ص 143، کتاب فارسی دوم دبستان)
(Jashn-e-Naurooz (2), Page 143, Kitab-e-Farsi, Duwwum Dabistan)
- سیزده بدر (۱) (ص 149، کتاب فارسی دوم دبستان)
(Sizdeh be Dar (1), Page 149, Kitab-e-Farsi, Duwwum Dabistan)

UNIT – IV (3 Weeks/9 Hours)

The following Text:

- سیزده بدر (۲) (ص 153، کتاب فارسی دوم دبستان)
(Sizdeh be Dar (2), Page 153, Kitab-e-Farsi, Duwwum Dabistan)
- تخت جمشید (ص 100، کتاب فارسی چهارم دبستان)
(Takht-i-Jamsheed, Page 100, Kitab-e-Farsi, Chaharum Dabistan)

UNIT – V (3 Weeks/9 Hours)

The following Text:

- داستان باربد (ص 109، کتاب فارسی چهارم دبستان)
(Dastan-e-Barbud, Page 109, Kitab-e-Farsi, Chaharum Dabistan)
- رستم پهلوان بیمانند شاهنامه (۱)(ص 203، کتاب فارسی پنجم دبستان)
(Rustam Pahalwan-e-Bimaanand-e-Shahname (1), Page 203, Kitab-e-Farsi, Panjum Dabistan)

Essential/recommended readings:

1. Farsi Dabistan(Diwum,chahrum wa Panjum): Vizarate Aamuzish wa Parvarish, Sazmane kitabhaye Darsi, Tehran, Iran. 1348
2. Kitab-e-Farsi (For Diploma Classes), Department of Persian, University of Delhi, Delhi-110007

DISCIPLINE SPECIFIC ELECTIVE COURSE – 3: Development of Persian Literature in Deccan

Credit distribution, Eligibility and Pre-requisites of the Course:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Development of Persian Literature in Deccan	4	3	1	NIL	Class XII pass	NIL

Learning Objectives:

The Learning Objectives of this course are as follows:

1. To acquaint the students with the Development of Persian Literature in Deccan
2. To enable the students to get acquainted with introductory history of Deccan

Learning outcomes:

The Learning Outcomes of this course are as follows:

- By learning this course, students will be familiar with Persian Literature produced in Deccan
- By learning this course, students will be able to know about the Persian poets and prose writers of Deccan
- By learning this course, students will be able to familiarize themselves with Indo-Iranian Architecture of Deccan

SYLLABUS OF DSE- 3

UNIT – I (3 Weeks/9 Hours)

- An Introduction to the History of Deccan

UNIT – II (3 Weeks/9 Hours)

Prominent Persian poets of Deccan

The Following poets:

- Mirak Moin Sabzwari
- Asadullah Wajih
- Abdul Ali Taliqani
- Ulfati Sawaji
- Mirak Moin Sabzwari

UNIT – III (3 Weeks/9 Hours)

- Prominent Prose writers of Deccan

The following prose writers/Historians:

- Nizamuddin Ahmad
- Allama Ibn-e-Khatun-ul-Aamuli
- Muhammad Husain Tabrizi
- Fuzuni-e-Astarabadi
- Abul Qasem Farishta

UNIT – IV (3 Weeks/9 Hours)

- Indo-Iranian Architecture of Deccan

UNIT – V (3 Weeks/9 Hours)

- Sufis of Deccan, Malfooz literature, Khanqah

Essential/recommended readings:

1. Sabahuddin, Abdur Rahman, Bazm-e-Taimuriah, Shibli Academy, Azamgarh, (U.P.)
2. Sabahuddin, Abdur Rahman, Bazm-e-Mamlukia, Shibli Academy Azamgarh (U.P.)
3. Sabahuddin, Abdur Rahman, Bazm-e-Sufiyah, Shibli Academy, Azamgarh (U.P.)
4. Sabahuddin, Abdur Rahman, Sufi Amir Khusrau, Shibli Academy, Azamgarh (U.P.)
5. Sabahuddin, Abdur Rahman, Hindustan Amir Khusrau ki Nazar Mein, Shibli Academy, Azamgarh (U.P.)
6. Ikram, Mohammad, Aab-e-Kausar, Fareed Book Depot, Delhi, 1999
7. Ikram, Mohammad, Rood-e-Kausar, Fareed Book Depot, Delhi, 1999
8. Ikram, Mohammad, Mauj-e-Kausar, Fareed Book Depot, Delhi, 1999
9. Ghani, M.A., A History of Persian Language & Literature at the Mughal Court (Part I & II), Allahabad (U.P.), 1929-30.
10. Qasemi, S.H., A History of Indo-Persian Literature (1806-1857), Department of Persian, University of Delhi, Delhi-110 007, 2008
11. Qasemi, Z.S., A History of Indo-Persian Literature (1627-59), Department of Persian, University of Delhi, Delhi-110 007, 2015
12. Akbar, Razia, Nazm-o-Nasr-e-Farsi dar Zaman-e-QutbShahi, Seema Publishers and Book Promoters, Hyderabad, 1982

DISCIPLINE SPECIFIC ELECTIVE COURSE – 4: Development of Persian Literature In Awadh

Credit distribution, Eligibility and Pre-requisites of the Course:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Development of Persian Literature in Awadh	4	3	1	NIL	Class XII pass	NIL

Learning Objectives:

The Learning Objectives of this course are as follows:

1. To acquaint the students with the Development of Persian Literature in Awadh
2. To enable the students to get acquainted with introductory history of Awadh

Learning outcomes:

The Learning Outcomes of this course are as follows:

- By learning this course, students will be familiar with Persian Literature produced in Awadh
- By learning this course, students will be able to know about the Persian poets and prose writers of Awadh
- By learning this course, students will be able to familiarize themselves with Indo-Iranian Architecture of Awadh

SYLLABUS OF DSE- 4

UNIT – I (3 Weeks/9 Hours)

- An Introduction to the Social and Cultural History of Awadh
- Promotion of Persian Language and Literature in Awadh.

UNIT – II (3 Weeks/9 Hours)

Eminent Persian poets in Awadh.

The Following poets:

- Mir Ghulam Ali Azad Bilgrami
- Shah Fasih Afsah

- Maulana Shah Ali Qalandar
- Bindraban Das Khushgu
- Mohan Lal Anis
- Sheikh Ghulam Hamadani Mushafi

UNIT – III (3 Weeks/9 Hours)

- Prominent Prose writers of Deccan

The following prose writers:

- Khwaja Abdul Aziz
- Sheikh Bahadur Ali Wamiq
- Sheikh Faiz Mohammad Faiz
- Munshi Khali Ram Khali
- Tika Ram Tasali
- Sheikh Mohammad Ashiq

UNIT – IV (3 Weeks/9 Hours)

Famous Persian Prose Works:

- Gulshan-i-Sukhan (Mardan Ali Khan Mubtala)
- Waqiat-i-Mushtaqi (Rizqullah Mushtaqi)
- Riyaz-ul-Fusaha (Ghulam Ali Hamdani)
- Khulasat-ul Ifkar (Abu Talib Isfahani)
- Anis-ul- Ahba (Mohan Lal Anis)
- Safina-i-Khushgau (Bindraban Das Khushgau)
- Safina-i-Hindi (Bhagwan Das Hindi)
- Tarikh-i-Farah Bakhsh or Tarikh-i-Faiz Bakhsh (Munshi Faiz Bakhsh Faizabadi Kakorvi)
- Imad-us-Sadat (Ghulam Ali Khan Naqvi)
- Tafzih-ul-Ghafeleen or Tarikh-i-Asifi (Abu Talib Isfahani)

UNIT – V (3 Weeks/9 Hours)

- Awadh Architecture
- Imam Baras

Essential/recommended readings:

1. Maulana Hakeem Mohammad Najmul Ghani: Tarikh-e-Awadh, Matba-e-Munshi Nawal Kishore, Lucknow, 1919
2. Lal Shri Ram Dehlawi: Purane Lucknow ki Jhalkiyan, Arakeen-E-Adabiyat-E-Aliya (U.P).

3. Dr Zohra Farooqi: Awadh Ke Farsi Go Sho'ra, Fine Offset works Urdu Bazar, Delhi
4. Ikram, Mohammad, Rood-e-Kausar, Fareed Book Depot, Delhi, 1999
5. Shibili Nomani: She'r-ul-Ajam, Shibli Academy, Azamgarh (U.P)
6. Qasemi, S.H., A History of Indo-Persian Literature (1806-1857), Department of Persian, University of Delhi, Delhi-110 007, 2008
7. Qasemi, Z.S., A History of Indo-Persian Literature (1627-59), Department of Persian, University of Delhi, Delhi-110 007, 2015
8. Hindi, Bhagwan Das: Safina-i-Hindi, compiled by Ataur Rehman Kakoee, Patna- 1958
9. Khushgau, Bindraban Das: Safina-i-Khushgau, compiled by Ataur Rehman Kakoee, Patna- 1959
10. Isfahani, Mirza Abu Talib: Tarikh-i-Asifi, Translated by Dr. Sarwat Ali, NCPUL New Delhi- 1987

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

ANNEXURE-14

Sub: Amendment to Ordinance V

[E.C Resolution No. 60/ (60-1-5) dated 03.02.2023]

Following addition be made to Appendix-II-A to the Ordinance V (2-A) of the Ordinances of the University;

Add the following:

Syllabi of Semester-III of the Department of Music under Faculty of Music & Fine Arts based on Under Graduate Curriculum Framework -2022 implemented from the Academic Year 2022-23.

Faculty of Music & Fine Arts
(Department of Music)

B.A. (Hons.) II Music - Hindustani Music
Vocal/Instrumental (Sitar/Sarod/Guitar/Violin/Santoor)

SEMESTER - III

DSC – 7: HISTORICAL STUDY OF HINDUSTANI MUSIC

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		L	T	P		
HISTORICAL STUDY OF HINDUSTANI MUSIC (301)	4	4	0	0	• Class XII Pass • Must have learnt for a minimum of 4 years at an established music institute or from a reputed artiste /guru	Must have studied the following papers – • General Theory (Sem I) • Theory of Indian Music (Sem II) OR • Must have an understanding of the basic concepts such as Shruti, Svara, Raga, Tala etc and their associated components • Knowledge of the Bhatkhande and Paluskar notation systems

Learning Objectives:

- To develop the interest of the students in musicology by introducing them to the ancient texts of music.
- To explain the Raga-Ragini system of classification of ragas
- To teach them about the various musical instruments from the ancient to the modern times.
- To focus on the ancient musical forms that were the precursor to the current musical forms.

Learning Outcomes:

- The student will come to know about the origin of many current musical forms of singing in Hindustani music, such as Dhrupad, Dhamar and Khayal. This knowledge is useful for further study of musicology as well as for purposes of research.
- He will be able to have an understanding of the Raga-Ragini system of classifying ragas
- He will understand how various musical instruments of India are made, and are categorized on the basis of solids, animal skin, wind and metallic strings. This will enhance his knowledge and will be beneficial in future research on musical instruments.
- He will gain valuable knowledge on the various musical forms, as they existed in ancient India, and how they gave rise to some of the musical forms that are sung today, such as Dhrupad, Dhamar and Khayal.

Syllabus:

Unit I (20 hours)
Study of the ancient texts –

- Natya Shastra
- Brihaddeshi
- Dattilam
- Sangeet Ratnakar

Unit II (4 hours)

Raga-Ragini system

Unit III (4 hours)

Classification of Instruments

Unit IV (24 hours)

- Grama
- Moorchhana
- Jati Gayan

- Prabandha
- Alapti
- Tala-Dasapranas.

Unit V (4 hours)

- Study of the following talas in detail – Dhamar & Roopak
- Study of the application of talas in musical forms
- Ability to write the notation of the talas in dugun, tigun and chaugun

Unit VI (4 hours)

- Study of the ragas of this semester – Khamaj, Des, Deshkar, Shuddha Kalyan, Bihag
- Comparative study of the ragas with each other
- Ability to write the notation of compositions in prescribed ragas

Suggestive readings:

- Shastri, Babulal Shukla (2009) Natya Shastra, Delhi, Chaukhamba Sanskrit Sansthan
- Kumar, Pushpendra (2010) Natya Shastra of Bharatamuni, Delhi, New Bharatiya Book Corporation
- Matang (1994) Brihaddeshi, Delhi,Indra Gandhi National Centre for the Arts
- Shringy, R.K. (1978) Sangita-Ratnakar of Sarangdeva, Varanasi, U.P. MotilalBanarsidass Indological Publisher
- Chaudhary, Subhadra (2009) Sangeet Ratnakar, New Delhi, Delhi, Radha Publication.
- Prajnanananda, Swami (1981) A Historical Study of Indian Music, Delhi, Delhi,Munsiram Monoharlal Publishers Pvt. Ltd.
- Singh, Thakur Jaidev (1905) Indian Music, Kolkata, West Bengal, Sangeet Research Academy
- Nigam, V.S. (1973) Sangeet Kaumudi, Allahabad, UP, Indian Press
- Chakravarty, Indrani (1988) Sangeet Manjusha, Delhi, Delhi, Mittal Publication
- Singh, Thakur Jaidev (1994) Bhartiya sangeet ka Itihas, Varanasi, UP, Sangeet Research Academy
- Kasliwal Suneera (2001) Classical musical Instruments, Delhi, Delhi, Rupa and Co.
- Paranjape, S.S. (1972) Sangeet Bodh, Bhopal, MP, Madhya Pradesh Hindi Academy
- Chandorkar, Vijaya (1993). Delhi University, Delhi
- Chandorkar, Vijaya (2014). Compositional Forms of Hindustani Music: A Journey, Munshiram Manoharlal Publishers Pvt. Ltd.

DSC – 8: Stage Performance (3)

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		L	T	P		
STAGE PERFORMANCE (3) (302)	4	0	0	4	• Class XII Pass • Must have learnt for a minimum of 4 years at an established music institute or from a reputed artiste /guru	Must have studied the following papers – • General Theory (Sem I) • Theory of Indian Music (Sem II) • Ragas and talas of Sem I and II OR • Must have an understanding of the basic concepts such as Shruti, Svara, Raga, Tala etc and their associated components • Knowledge of the Bhatkhande and Paluskar notation systems • Knowledge of the 10 Thaatas • Knowledge of the Time Theory of ragas • Abillity to perform raga Bhupali

Learning Objectives:

- To focus more on the Stage Performance of the student
- To encourage the student to attempt to improvise while singing/playing.
- To focus on his learning of newer talas

Learning Outcomes:

- The student will develop the confidence to perform a raga for a long duration of time.
- The student will be able to sing new compositions in new talas

Syllabus:

Prescribed Ragas:

- Khamaj
- Des
- Deshkar
- Shuddha Kalyan
- Bihag

Unit I – Vocal Music (60 hours):

- A detailed performance of Vilambit and Drut Khayal with gayaki to be presented in any one raga
- Presentation of one semi classical, devotional or folk song

OR

Unit II – Instrumental Music (60 hours):

- A detailed performance of Maseetkhani and Razakhani Gats with elaboration to be presented in any one raga
- Presentation of a dhun, devotional or light music composition

Note**:** Students of Vocal and Instrumental music will have to prepare according to the requirements of their respective Units.

Suggestive readings:

- Bhatkhande, V.N. (2000) Kramik Pustak Malika, Part I, Hathras, U.P., Sangeet Karyalya.
- Bhatkhande, V.N. (2002) Kramik Pustak Malika, Part II, Hathras, U.P., Sangeet Karyalya
- Bhatkhande, V.N. (2002) Kramik Pustak Malika, Part III, Hathras, U.P., Sangeet Karyalya
- Bhatkhande, V.N. (1970) Kramik Pustak Malika, Part IV, Hathras, U.P., Sangeet Karyalya
- Patwardhan, V.R. (2001) Raga Vigyan, Part I, Pune, Maharashtra, Publisher – Dr. Madhusudhanan Patwardhan
- Patwardhan, V.R. (1996) Raga Vigyan, Part II, Pune, Maharashtra, Publisher – Dr. Madhusudhanan Patwardhan
- Patwardhan, V.R. (1991) Raga Vigyan, Part III, Pune, Maharashtra, Publisher – Dr. Madhusudhanan Patwardhan
- Patwardhan, V.R. (1959) Raga Vigyan, Part IV, Pune, Maharashtra, Publisher – Dr. Madhusudhanan Patwardhan
- Thakur, Omkar Nath (1977) Sangeetanjali, Part I, Bombay, Maharashtra, Pandit Omkar Nath Thakur Estate
- Thakur, Omkar Nath (1975) Sangeetanjali, Part II, Bombay, Maharashtra, Pandit Omkar Nath Thakur Estate
- Thakur, Omkar Nath (2005) Sangeetanjali, Part III, Bombay, Maharashtra, Pandit Omkar Nath Thakur Estate
- Thakur, Omkar Nath (2003) Sangeetanjali, Part IV, Bombay, Maharashtra, Pandit Omkar Nath Thakur Estate
- Mishra, Lalmani (1979) Tantrinada, Kanpur, U.P. Sahitya Ratnakar
- Aggarwal, V.K. and Nagpal, Alka (2004) Sitar and its Compositions, Part-I-II, Delhi, Sanjay Prakashan
- Mahajan, Anupam (2003) Compositions in Instrumental Music (Traditional and NewCreation), Delhi, Sanjay Prakashan

DSC – 9: Ragas, talas and their applications (3)

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		L	T	P		
RAGAS, TALAS AND THEIR APPLICATIONS (3) (302)	4	0	0	4	• Class XII Pass • Must have learnt for a minimum of 4 years at an established music institute or from a reputed artiste /guru	Must have studied the following papers – • General Theory (Sem I) • Theory of Indian Music (Sem II) • Ragas and talas of Sem I and II OR • Must have an understanding of the basic concepts such as Shruti, Svara, Raga, Tala etc and their associated components • Knowledge of the Bhatkhande and Paluskar notation systems • Knowledge of the 10 Thaatas • Knowledge of the Time Theory of ragas • Abillity to perform raga Bhupali

Learning Objectives:

- To focus more on the practical knowledge of the ragas and talas of the student.
- To teach new compositions based on various talas

Learning Outcomes:

- The student will be able to explain the grammatical rules of a raga in detail.
- He will develop the confidence to differentiate between similar ragas.
- The student will be able to sing new compositions in new talas

Syllabus:

Prescribed Ragas:

- Khamaj
- Des
- Deshkar
- Shuddha Kalyan
- Bihag

Unit I – Vocal Music (60 hours):

- Vilambit and Drut Khayal with gayaki in all the ragas
- Dhrupad-Dhamar or Sadra composition in each of the prescribed ragas with Alap, Layakari & Upaj
- Knowledge and demonstration of the following talas – Dhamar & Roopak
- Ability to tune the Tanpura

OR

Unit II – Instrumental Music (60 hours):

- Maseetkhani and Razakhani Gat with elaboration in all the ragas
- Knowledge and demonstration of the following talas – Dhamar & Roopak
- Ability of the student to tune his respective instrument

Note**:** Students of Vocal and Instrumental music will have to prepare according to the requirements of their respective Units.

Suggestive readings:

- Bhatkhande, V.N. (Jan. 2000) Kramik Pustak Malika, Part I, Hathras, U.P., Sangeet Karyalya
- Bhatkhande, V.N. (Nov. 2002) Kramik Pustak Malika, Part II, Hathras, U.P., Sangeet Karyalya
- Bhatkhande, V.N. (2002) Kramik Pustak Malika, Part III, Hathras, U.P., Sangeet Karyalya
- Bhatkhande, V.N. (1970) Kramik Pustak Malika, Part IV, Hathras, U.P., Sangeet Karyalya
- Patwardhan, V.R. (2001) Rag Vigyan, Part I, Pune, Maharashtra, Publisher - Dr. Madhusudhanan Patwardhan
- Patwardhan, V.R. (1996), Rag Vigyan, Part II, Pune, Maharashtra, Publisher - Dr. Madhusudhanan Patwardhan
- Patwardhan, V.R. (1991), Rag Vigyan, Part III, Pune, Maharashtra, Publisher - Dr.Madhusudhanan Patwardhan
- Patwardhan, V.R. (1959) Rag Vigyan, Part IV, Pune, MH, Publisher - Dr. Madhusudhanan Patwardhan
- Thakur, Omkar Nath (1977) Sangeetanjali, Part I, Bombay, Maharashtra, Pandit Omkar NathThakur Estate
- Thakur, Omkar Nath (1975) Sangeetanjali, Part II, Bombay, Maharashtra, Pandit Omkar Nath Thakur Estate
- Thakur, Omkar Nath (2005) Sangeetanjali, Part III, Bombay, Maharashtra, Pandit Omkar Nath Thakur Estate
- Thakur, Omkar Nath (2003) Sangeetanjali, Part IV, Bombay, Maharashtra, Pandit Omkar Nath Thakur Estate
- Mishra, Lalmani (1979) Tantrinada, Kanpur, U.P. Sahitya Ratnalaya
- Aggarwal, V.K. and Nagpal, Alka (2004) Sitar and its Compositions, Part I-II, NewDelhi, Delhi, Sanjay Prakashan
- Mahajan, Anupam (2003) Compositions in Instrumental Music (Traditional and NewCreation), Delhi, Sanjay Prakashan

B.A. (Hons.) Music
Hindustani Music - Vocal/Instrument (Sitar/Sarod/Guitar/Violin/Santoor)

Syllabus for DSE - Khayal

SEMESTER – III, DSE – 1

DSE - Khayal

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		L	T	P		
DSE - Khayal (101)	4	1	0	3	• Class XII Pass	Nil

Course Objectives:

- To initiate a relative beginner into the world of Hindustani music, where he is made aware of the rich cultural heritage of India, that Indian classical music is.
- To teach him the very basics of Indian music, such as sound, notes, scales, tempo, rhythmetc, so that his foundation can be made strong.
- To discuss in detail the two notation systems of Hindustani music, that are essential forreading a composition.
- To teach the student the fundamentals of singing such as voice production, the right posture for sitting, breathing exercises to enhance lung capacity for singing etc.
- To demonstrate tonal exercises, such as *palta-s* and *alankar-s*, vital for both singing
- To initiate his training in the realm of performance, with the most basic of all ragas, likeYaman and Bhairav.

Course Outcomes:

- The student will come to know what the basic terminologies of Indian music are, which will help him in the proper understanding of not just Hindustani music, but also Indian music as a whole. Having understood the basic concepts like Laya (tempo), Tala (rhythmic cycle), Alap (tonal elaborations), the student will be on course to becoming a performing artiste in Hindustani music.
- The student will develop the ability to read and write the notations of compositions according to a well-defined notion system, which in turn, will help him in learning new compositions by various composers of Hindustani music.
- They will grasp the various theoretical aspects of the prescribed ragas, like how it arises,what are the general grammatical rules that govern the ragas in this course, etc.
- They come to understand the concept of Tala and the use of various talas in

Hindustani music.

- The student will become well-versed with the techniques of singing
- The student will be able to achieve dexterity of the voice, through regular practice of the tonal exercises at home.
- The students will know how to tune the Tanpura
- Having learnt the Notation system in the Theory, the student will able to read and learn new compositions in the prescribed ragas.
- He will grasp the various grammatical aspects of the prescribed ragas, like how they arise, what are the respective rules that govern these ragas, how do the notes move in the ragas, what are the performing times of the ragas etc.
- He will learn the art of singing especially with regard to having the Tabla asan accompanying instrument.
- He will possess a fairly good idea of how a raga is to be performed after learning the basic ragas.

Syllabus:

Theory:

Unit I (5 hours)

- Sangeet
- Nada and its properties
- Shruti
- Svara
- Saptak
- Thata
- Raga
- Vadi, Samvadi, Anuvadi, Vivadi
- Jati

Unit II (1 hour)

The concept of Alap in Khayal gayan

Unit III (2 hours)

Knowledge of the notation systems of the following musicians –

- Pt. Vishnu Narayan Bhatkhande
- Pt. Vishnu Digambar Paluskar

Unit IV (3 hours)

Study of the ragas of this semester – Bhairav, Yaman, Alhaiya Bilawal

Unit V (2 hours)

Ability to write the notation of compositions in the prescribed ragas

Unit VI (2 hours)

- Study of the following talas in detail – Teentala & Ektala
- Ability to write the notation of the talas in dugun, tigun and chaugun

Practical component:

Prescribed Ragas:

1. Bhairav
2. Yaman
3. Alhaiya Bilawal

Unit I (30 hours)

Five alankars to be presented in the prescribed ragas.

Unit II (10 hours)

One Sargam Geet each in the prescribed ragas

Unit III (10 hours)

One Lakshan Geet each in the prescribed ragas

Unit IV (15 hours)

Two Drut Khyals with elaborations in any of the prescribed ragas

Unit V (15 hours)

Knowledge and demonstration of the following talas with dugun, tigun and chaugun – Teentala & Ektala

Unit VI (10 hours)

Basic knowledge of Tanpura and its tuning

Suggestive reading:

- Paranjape, S.S. (1964) Bhartiya Sangeet ka Itihas, Varanasi, U.P., Chaukhamba SurbhartiPrakashan
- Paranjape, S.S. (1972) Sangeet Bodh, Bhopal, M.P., Madhya Pradesh Hindi Granth Academy
- Bhathkande, V.N. (1975) Bhathkande Sangeet Shastra,part 1, Hathras,UP, Sangeet Karyalaya
- Bhathkande, V.N. (1969) Bhathkande Sangeet Shastra,part- 2,Hathras,UP, Sangeet Karyalaya
- Prajnananda, Swami (1963) History of Indian Music, vol. 1, Kolkata, WB, Swami Adyananda Ram Krishna Math.
- Prajnanananda, Swami (1981) Historical study of Indian Music, New Delhi, Delhi, Munshiram Monoharlal Publishers Pvt. Ltd.
- Singh, Lalit Kishore (1999) Dhvani aur Sangeet, New Delhi,Delhi, Bhartiya Gyan Peeth
- Rajurkar,Govind Rao (1984) Sangeet sastra parag, Jaipur, Rajasthan, Hindi granth Academy
- Sharma, Swatantra (1996) Fundamental of Indian Music, Delhi, PratibhaPrakashan
- Madan, Pannalal (1991) Sangeet Shastra vigyan, Chandigarh, HR, Abhishak Publication
- Charavarty, Indrani (1988) Sangeet Manjusha, Delhi, Mittal Publication
- Bhatkhande, V.N. (2000) Kramik Pustak Malika, Part-I, Hathras, U.P., Sangeet Karyalaya
- Bhatkhande, V.N. (2000) Kramik Pustak Malika, Part-II, Hathras, U.P., Sangeet Karyalaya
- Patwardhan, V.R., (2001) Raga Vigyan, Part-I, Pune, MH, Dr. Madhusudhan Patwardhan
- Patwardhan, V.R., (1999) Raga Vigyan, Part-II, Pune, MH Dr. Madhusudhan Patwardhan
- Patwardhan, V.R., (1967) Raga Vigyan, Part-III, Pune, MH, Dr. Madhusudhan Patwardhan
- Mishra, Lalmani, (1979) Tantrinada, Kanpur, U.P. Sahitya Ratnalaya
- Aggarwal, V.K. and Nagpal, Alka (2004) Sitar and its Compositions, Part-I-II, Delhi, Sanjay Prakashan
- Mahajan, Anupam (2003) Compositions in Instrumental Music (Traditional and New Creation), Delhi, Sanjay Prakashan

B.A. (Hons.) Music
Hindustani Music - Vocal/Instrument (Sitar/Sarod/Guitar/Violin/Santoor)

Syllabus for DSE - Sitar

SEMESTER – III, DSE – 1

DSE - Sitar

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		L	T	P		
DSE – Sitar (101)	4	1	0	3	Class XII Pass	Nil

Course Objectives:

- To initiate a relative beginner into the world of Hindustani music, where he is madeaware of the rich cultural heritage of India, that Indian classical music is.
- To teach him the very basics of Indian music, such as sound, notes, scales, tempo, rhythmetc, so that his foundation can be made strong.
- To discuss in detail the two notation systems of Hindustani music, that are essential forreading a composition.
- To teach the student the fundamentals of singing and playing, such as voice production,holding of the Sitar and the correct placement of the hands on the instrument, the right posture for sitting, breathing exercises to enhance lung capacity for singing etc.
- To demonstrate tonal exercises, such as *palta-s* and *alankar-s*, vital for both singing andplaying.
- To initiate his training in the realm of performance, with the most basic of all ragas, likeYaman and Bhairav.

Learning Outcomes:

- The student will come to know what the basic terminologies of Indian music are, whichwill help him in the proper understanding of not just Hindustani music, but also Indian music as a whole. Having understood the basic concepts like Laya (tempo), Tala (rhythmic cycle), Alap (tonal elaborations), the student will be on course to becoming aperforming artiste in Hindustani music.
- The student will develop the ability to read and write the notations of compositions according to a well-defined notion system, which in turn, will help him in learning newcompositions by various composers of Hindustani music.
- They will grasp the various theoretical aspects of the prescribed ragas, like how it arises,what are the general grammatical rules that govern the ragas in this course, etc.
- They come to understand the concept of Tala and the use of various talas in Hindustanimusic, especially ragas.
- The student will become well-versed with the techniques of singing or playing, as thecase may be.

- The student will be able to achieve dexterity of the voice (singing) and hand (playing), through regular practice of the tonal exercises at home.
- The students will know how to tune their respective instruments – Tanpura for vocal students, and Sitar, Sarod etc. for instrumental students.
- Having learnt the Notation system in the Theory, the student will able to read and learn new compositions in the prescribed ragas.
- He will grasp the various grammatical aspects of the prescribed ragas, like how they arise, what are the respective rules that govern these ragas, how do the notes move in theragas, what are the performing times of the ragas etc.
- He will learn the art of singing or playing, especially with regard to having the Tabla as an accompanying instrument.
- He will possess a fairly good idea of how a raga is to be performed after learning thebasic ragas.

Syllabus:

Theory:

Unit I (5 hours)

- Sangeet
- Nada and its properties
- Shruti
- Swara
- Saptak
- Thata
- Raga
- Vadi, Samvadi, Anuvadi, Vivadi
- Jati

Unit II (1 hour)

The concept of Razakhani gat in Sitar.

Unit III (2 hours)

Knowledge of the notation systems of the following musicians –

- Pt. Vishnu Narayan Bhatkhande
- Pt. Vishnu Digambar Paluskar

Unit IV (3 hours)

Study of the ragas of this semester – Bhairav, Yaman, Bhupali

Unit V (2 hours)

Ability to write the notation of compositions in the prescribed ragas

Unit VI (2 hours)

- Study of the following talas in detail – Teentala & Ektala
- Ability to write the notation of the talas in dugun, tigun and chaugun

Practical component:

Prescribed Ragas:

1. Bhairav
2. Yaman
3. Bhupali

Unit I (30 hours)

Five swar alankars to be presented in the prescribed ragas.

Unit II (10 hours)

Five Alankars based on mijrab bols.

Unit III (10 hours)

Knowledge of basic structure of Jhala.

Unit IV (15 hours)

Two Razakhani gats with five tans in any of the prescribed ragas.

Unit V (15 hours)

Knowledge and demonstration of the following talas with dugun, tigun and chaugun - Teentala & Ektala

Unit VI (10 hours)

Basic knowledge of Sitar and its tuning.

Suggestive reading:

- Paranjape, S.S. (1964) Bhartiya Sangeet ka Itihas, Varanasi, U.P., Chaukhamba Surbharti Prakashan
- Paranjape, S.S. (1972) Sangeet Bodh, Bhopal, M.P., Madhya Pradesh Hindi Granth Academy
- Bhathkande, V.N. (1975) Bhathkande Sangeet Shastra,part 1, Hathras,UP, Sangeet Karyalaya
- Bhathkande, V.N. (1969) Bhathkande Sangeet Shastra,part- 2,Hathras,UP, Sangeet Karyalaya
- Prajnananda, Swami (1963) History of Indian Music, vol. 1, Kolkata, WB, Swami Adyananda Ram Krishna Math.
- Prajnananda, Swami (1981) Historical study of Indian Music, New Delhi, Delhi, Munshiram Monoharlal Publishers Pvt. Ltd.
- Singh, Lalit Kishore (1999) Dhvani aur Sangeet, New Delhi,Delhi, Bhartiya Gyan Peeth
- Rajurkar,Govind Rao (1984) Sangeet sastra parag, Jaipur, Rajasthan, Hindi granthAcademy
- Sharma, Swatantra (1996) Fundamental of Indian Music, Delhi, PratibhaPrakashan
- Madan, Pannalal (1991) Sangeet Shastra vigyan, Chandigarh, HR, Abhishak Publication
- Charavarty, Indrani (1988) Sangeet Manjusha, Delhi, Mittal Publication

SEMESTER – III

B.A. (Hons.) PERCUSSION MUSIC - TABLA/PAKHAWAJ

Syllabus for DSC Papers

DSC – 7: ANCIENT AND MEDIEVAL HISTORY OF AVANADDHA VADYAS

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		L	T	P		
Ancient and medieval history of avanaddha vadyas	4	4	0	0	• Class XII Pass • Must have learnt for a minimum of 4 years at an established music institute or from a reputed artiste /guru	Must have studied the following papers • General Terminology (Sem I) • Biographies & Composers of Music (Sem II) OR • Understanding of the basic concepts of Avanaddha vadyas, origin of Tabla & Pakhawaj, Importance of vadyas in music. • Knowledge of the Bhatkhande and Paluskar notation systems

Course Objectives:

- To develop the interest of the students in musicology by introducing them to the ancient texts of music
- To teach them about the evolution and development of various Indian Percussion musical instruments from the ancient to the modern times
- Brief Study of some eminent authors

Learning Outcomes:

- Students study history of Tabla & Pakhawaj
- The students study about the various kind of ancient Percussion Instruments
- Students study the texts of ancient scholars of Hindustani music
- Students learn to write the practical compositions according to the Notation system
- Students study about the theoretical aspects of Talas

Syllabus:

Unit I (8 hours)

Brief history of Avanaddha Vadyas.

Unit II (8 hours)

Avanaddha Vadyas from vedic to modern period

Unit III (12 hours)

Study of following Avanaddha vadyas :-

- Bhumi Dundubhi
- Dundubhi
- Tripuskar
- Aankik
- Urdhwak
- Alingyak
- Panava
- Dardur
- Karata
- Ghadas

Unit IV (8 hours)

History of evolution of Tabla & Pakhawaj

Unit V (8 hours)

Analytical study of different opinions about the origin of Tabla & Pakhawaj

Unit VI (8 hours)

Importance & relevance of Avanaddha vadyas in music

Unit VII (8 hours)

Brief study of the following authors: Bharat, Sharngadeva
Notation of compositions in prescribed Talas

Suggestive reading:

- Mishra, Dr. Lalmani, (2002) Bhartiye Sangeet Vadya, Bhartiye Gyanpeeth, New Delhi
- Kumar, Dr. Ajay, Pakhawaj ki Utpatti, Vikash ewam Vadan Shaileyan (2010), Kanishka Publishers, Delhi

- Shastri, Babulal Shukla, Hindi Natyashastra Bhaag IV (2009) Chokhambha Sankrit Sansthan, Varanasi,U.P
- Chaudhary, Subhadra, Sangeet Ratnakar Bhag III Sarswati Vyakhya(2006) Radha Publishers, Delhi
- Shukla Dr. Yogmaya,Tab'le Ka Udgam Vikash Evam Vadan Shailiyan(1984) Hindi Madhyam Karyanya Nirdeshalya,D.U
- Mestry Dr. Aban E, Pakhawaj Aur Tabla ke Ghare Ewam Paramprayen (1984), Swar Sadhana Samiti, Mumbai
- Kippen James, The Tabla of Lucknow (1988), Published by the Press Syndicate of University of Cambridge, N.Y, U.S.A
- Dr. Kasliwal, Suneera Classical Musical Instruments,(2001) New Delhi Rupa & Co.
- Pt.Sudhir Mainkar, Kala Aur Shastra
- Pt.Sudhir Mainkar, Tabala vadan mein nihit Soundarya
- Pt.Arvind Mulgonkar, Tabla

DSC – 8: Stage Performance (3)

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		L	T	P		
Stage performance (3)	4	0	0	4	• Class XII Pass • Must have learnt for a minimum of 4 years at an established music institute or from a reputed artiste /guru	Must have studied the following papers General Terminology (Sem I) OR • Understanding of the Laya, Matra, Tali, Khali, Tala . • Knowledge of the theka of Teentala, Jhaptala, Tilwada, Jhoomra, Deepchandi, Aadachautala, Pancham Sawari • Knowledge of Uthan/ Peshkar, Kayada, Rela & Tukada. • Ability to Perform in Teentala

Course Objectives:

- Advanced training in the content of basic Taal Teentala/Chautala Introduction of Tabla gats from different Gharanas.
- Introducing the tricky concept of tihaies from different matras and talas.

Learning Outcomes:

The student is able to give a detailed practical demonstration of any Tala.

Syllabus:

TABLA

Unit I (20 hours)

Prescribed Talas: Jhaptala, Tilwada, Jhoomra, Deepchandi, Aadachautala, Pancham Sawari

Unit II (30 hours)

- A complete solo performance of 10 minutes in Teentala with various compositions.

Unit III (30 hours)

- Solo recital of 10 minutes in Jhaptala with following:-Peshkar/ Uthan, Kayada, Rela, Chakradars.

Unit IV (10 hours)

- One Bedam & One Damdar Tihai in Jhaptala.

Unit V (8 hours)

- One Rela of Dhir Dhir with Paltas and Tihai in Teentala.

Unit VI (10 hours)

- One Farrukhabadi and one Banaras Gat in Teentala.

Unit VII (12 hours)

- Basic knowledge of Tabla tuning.
- Notation book to be submitted for internal assessment.

PAKHAWAJ

Unit I-A (20 hours)

- **Prescribed Talas: Chautala, Dhamar, Sooltala, Tilwada and Ektala.**

Unit II-A (30 hours)

- A complete Solo performance of 10 minutes in Chautala with various compositions.

Unit III-A (30 hours)

- Solo recital of 10 minutes in Sultala with Theke ka vistar, Paran, Rela, Chakradars and Tihai.

Unit IV-A (10 hours)

- Dhumkit ka vadan in Chautala.

Unit V-A (10 hours)

- Dhenenak-ka-Baaj, Stuti Paran & Nauhakka.

Unit VI-A (20 hours)

- Basic knowledge of Pakhawaj tuning.
- Notation book to be submitted for internal assessment.

Suggestive reading:

- Mishra, Pt. Chhote Lal (2004) Taal Prasoon, Kanishka Publishers, New Delhi
- Kumar, Dr. Ajay, Banaras Gharane Ke Pravartak Pandit Ram Sahai Ji Ki Tabla Vadan Parampra (2022) Kanshika Publishers, Delhi
- Mishra, Pt. Chhote Lal (2006) Tabla Granth, Kanishka Publishers, New Delhi
- Das, Ram Shankar Pagal (1964)Tabla Kaumudi, Ramchandra S Publishers
- Das, Ram Shankar Pagal (1976) Mridanga Tabla Prabhakar Bhag I,II, Sangeet Karyalaya, Hathras, U.P
- Mishra, Pt. Chhote Lal (2006) Taal Prabandh, Kanishka Publishers, New Delhi
- Pt.Sudhir Mainkar, Kala Aur Shastra
- Pt.Sudhir Mainkar, Tabala vadan mein nihit Soundarya
- Pt.Arvind Mulgonkar, Tabla

DSC – 9: Talas, compositions and their applications (3)

Course Title & Code	Credit	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		L	T	P		
Talas, compositions and their applications (3)	4	0	0	4	• Class XII Pass • Must have learnt for a minimum of 4 years at an established music institute or from a reputeted artiste/guru.	Must have studied the following paper - General Terminology (Sem I) OR • Must have an understanding of Laya, Matra, Tali, Khali, Tala . • Knowledge of the theka of Teentala, Jhaptala, Tilwada, Jhoomra, Deepchandi, Aadachautala, Pancham Sawari • Knowledge of Uthan/ Peshkar, Kayada, Rela & Tukada. • Ability to Perform in Teentala

Course Objectives:

- Skilling the students to play with padhant of different talas with layakari.
- Balanced tuning of the Instrument.

Learning Outcomes:

- Students study about the history of Indian Music
- Students studies the texts of ancient scholars of Hindustani music
- Student studies of Tala Notations System
- Student learns to write the practical compositions according to the Notation system
- Student studies about the theoretical aspects of Talas

Syllabus:

TABLA

Unit I (20 hours)

- **Prescribed Talas: Teentala, Jhaptala, Tilwada, Jhoomra, Deepchandi, Aadachautala & Pancham Sawari**

Unit II (30 hours)

- Ability to Perform 10 minutes of Teentala with various compositions.

Unit III (30 hours)

- Solo recital of 10 minutes in Jhaptala with following:-Peshkar/ Uthan, Kayada, Rela, Chakradars and Tihai.

Unit IV (8 hours)

- Playing knowledge of prescribed Theka in different laya.

Unit V (8 hours)

- Demonstration of different layakari such as Tigun & Aad i.e- 3/1, 3/2.

Unit VI (10 hours)

- Practice of padhant various compositions in Tali Khali.

Unit VII (4 hours)

- Knowledge of Tihai starting from Sum, 5^{th}Matra, 9^{th} Matra & 13^{th} Matra in different layas.

Unit VIII (10 hours)

- Basic knowledge of Tabla tuning.
- Solo performance other than in stage performance.
- Notation book to be submitted for internal assessment

PAKHAWAJ

Unit I-A (20 hours)

- **Prescribed Talas: Dhamar, Sooltala, Jhoomra, Deepchandi, Pancham Sawari & Gajajhampa**

Unit II-A (30 hours)

- Ability to perform 10 minutes in Chautala with various compositions.

Unit III-A (30 hours)

- Solo recital of 10 minutes in Sultatala with following:-Theke ka Badhat, Uthan, Rela, Chakradars, Paran and Tihai.

Unit IV-A (8 hours)

- Playing knowledge of prescribed Talas in different laya.

Unit V-A (8 hours)

- Knowledge of different layakari such as Tigun & Aad, i.e. -3/1, 3/2.

Unit VI-A (10 hours)

- Practice of padhant compositions in Taali Khali.

Unit VII-A (4 hours)

- Knowledge of Tihai starting from Sum, 5thMatra, 9th Matra & 13th Matra in different layas.

Unit VIII-A (10 hours)

- Basic knowledge of Pakhawaj tuning.
- Notation book to be submitted for internal assessment.

Note: Students of Percussion Music have to prepare according to the requirements of their respective Units.

Suggestive reading:

- Mishra, Pt. Chhote Lal, Taal Prasoon, (2004), Kanshika Publishers, Delhi
- Kumar, Dr. Ajay, Banaras Gharane Ke Pravartak Pandit Ram Sahai Ji Ki Tabla Vadan Parampra (2022) Kanshika Publishers, Delhi
- Mishra, Pt. Chhote Lal, Tabla Granth, (2006), Kanshika Publishers, Delhi
- Verma,Prof. S.K, The Art of Tabla Playing (1990), Lucknow Lalit Kala Prakashan, U.P
- Das, Purushottam, Mridangam Vadan (1983), Sangeet Natak Academy, Delhi
- Iyer, T.V, The Art of Playing Mridangam (1969) Bharati Vijayam Press, Triplicane, Madras-5
- Pt.Sudhir Mainkar, Kala Aur Shastra
- Pt.Sudhir Mainkar, Tabala vadan mein nihit Soundarya
- Pt.Arvind Mulgonkar, Tabla

PERCUSSION MUSIC TABLA/PAKHAWAJ

Syllabus for DSE - PAKHAWAJ

SEMESTER – III

DSE – Pakhawaj

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		L	T	P		
DSE – Pakhawaj	4	1	0	3	Class XII Pass	Nil

Course Objectives

The students are taught primarily the techniques and art of playing Pakhawaj in this course. Music being a primary form of Art, is a very specialized subject, which needs specialized training too, especially the Practical, i.e. Pakhawaj playing. Different Talas, finger techniques and compositions are taught in an age-old 'Oral tradition', imbibing this vital element of teaching-learning from the traditional 'Guru-Shishya Parampara', wherein both the teacher and the students sit on the carpeted floor facing each other, and the students repeat all that the teacher plays/ demonstrates practically. The students are encouraged to improvise after learning the basic techniques, be it in the slow elaborations of different Thekas, or in the fast presentation of compositions. The students are taught to keep in mind the aesthetics of both the tala, playing style, clarity of bols and the overall performance in the mind at all times. The students, thus, get trained towards becoming young budding Solo performing artistes and accompanists as well.

Learning Outcomes

- The students of this course get to know the Structure, Tuning, Syllables and playing techniques of Pakhawaj.
- The students get the knowledge of the following technical terms- Laya, Taal, Matra, Theka, Tali, Khali, Vibhag, Sam, Avartan, ,Thah, Dugun, Tigun, Chaugun, Uthaan, Rela, Paran, Tihai.
- The students learn about different talas like Chautala, Sooltala, Tevra, Ektala, Dhamar.
- Students get to learn the notation system given by V.N. Bhatkhande.
- Students develop the ability to write notations of Theka and composition in prescribed talas with Dugun, Tigun and Chaugun.

Theory Contents:

Unit 1 (2 hours)

Structure knowledge of Pakhawaj.

Unit 2 (2 hours)

Study of Syllables (Bols) of Pakhawaj.

Unit 3 (2 hours)

Playing techniques of Pakhawaj.

Unit 4 (3 hours)

Knowledge of the following terms:-

- Laya
- Taal
- Matra
- Theka
- Tali
- Khali
- Vibhag
- Sam
- Avartan

Unit 5 (3 hours)

Brief knowledge of V.N.Bhatkhande Tala Notation System.

Unit 6 (3 hours)

- Ability to write the Theka of Chautala, Sooltala, Dhamar, Keharva & Dadra in different laya.
- Notation book prepare for compositions writing.

Practical Contents:

Unit 1 (12 hours)

Prescribed Talas : Chautala, Sooltala, Dhamar, Tevra.

Unit 2 (12 hours)

Playing techniques & produce the sound of vrious syllables on Pakhawaj.

Unit 3 (14 hours)

Rela of Tirkita with four Palta and Tihai in Chautala.

Unit 4 (14 hours)

Knowledge of variations of Theka in Chautala with different laya.

Unit 5 (12 hours)

Knowledge of two Sadharan‘Paran’ two Chakradar Paran in Chautala.

Unit 6 (14 hours)

Four variations of Theka Sooltala

Unit 7 (12 hours)

Ability to play Keharwa and Dadra Tala in different laya.

Suggested Books:

- Kumar. Dr. Ajay, Pakhawaj Ki Utpatti Vikas Ewam Vadan Shaili (2010) Kanishka Publisher, Delhi
- Mistry. Dr. Aban E, Pakhawaj our Tabla ke Gharane(2000), Pt. Keki S Jijina,Swar Sadhna Samiti, Mumbai
- Mishra, Pt. Chhotel Lal,Taal Prasoon (2004) Kanishka Publisher, Delhi
- Shukla, Dr, Yogmaya, Tab’le Ka Udgam Vikas evam Vadan Shailiyan(1984) Delhi Vishwavidyalay Prakashan
- Mishra, Pt. Chhote Lal,Taal Prabandh(2002) Kanishka Publisher, DelhiMishra, Pt. Chhote Lal, Playing Techniques of Tabla: Banaras Gharana Kanishka Publisher, DelhiMishra, Pt. Chhotel Lal,Taal Prasoon (2004) Kanishka Publisher, DelhiShukla, Dr, Yogmaya, Table Ka Udgam Vikas evam Vadan Shailiyan(2003) Delhi Vishwavidyalay Prakashan
- Mishra, Pt. Chhote Lal,Taal Prabandh(2002) Kanishka Publisher, Delhi
- Mishra, Pt. Chhote Lal, Playing Techniques of Tabla: Banaras Gharana(2009) Kanishka Publisher, Delhi
- Das, Purushottam, Mridanga Vadan, Sangeet Natak Akademi, Delhi

PERCUSSION MUSIC TABLA/PAKHAWAJ

Syllabus for DSE - TABLA

SEMESTER – III

DSE – Tabla

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		L	T	P		
DSE - Tabla	4	1	0	3	Class XII Pass	Nil

Course Objectives

The students are taught primarily the techniques and art of playing Tabla in this course. Music being a primary form of Art, is a very specialized subject, which needs specialized training too, especially the Practical, i.e. Tabla playing. Different Talas, finger techniques and compositions are taught in an age-old 'Oral tradition', imbibing this vital element of teaching-learning from the traditional 'Guru-Shishya Parampara', wherein both the teacher and the students sit on the carpeted floor facing each other, and the students repeat all that the teacher plays/ demonstrates practically. The students are encouraged to improvise after learning the basic techniques, be it in the slow elaborations of different Thekas, or in the fast presentation of compositions. The students are taught to keep in mind the aesthetics of both the tala, playing style, clarity of bols and the overall performance in the mind at all times. The students, thus, get trained towards becoming young budding Solo performing artistes and accompanists as well.

Learning Outcomes

- The students of this course get to know the Structure, Tuning, Syllables and playing techniques of Tabla.
- The students get the knowledge of the following technical terms- Laya, Taal, Matra, Theka, Tali, Khali, Vibhag, Sam, Avartan, ,Thah, Dugun, Tigun, Chaugun, Peshkaar, Uthaan, Kayada, Rela, Palta, Mukhda, Tukda, Paran, Tihai.
- The students learn about different talas like Teentala, Ektala, Choutala, Dhamar.
- Students get to learn the notation system given by Pt. V.N. Bhatkhande.
- Students develop the ability to write notations of Theka and composition in prescribed talas with Dugun, Tigun and Chaugun.

Syllabus:

Theory:

Unit 1 (1 hours)

Structure knowledge of Tabla.

Unit 2 (2 hours)

Study of Syllables (Bols) of Tabla.

Unit 3 (2 hours)

Playing techniques of Tabla.

Unit 4 (4 hours)

Knowledge of the following terms:-

- Laya
- Taal
- Matra
- Theka
- Tali
- Khali
- Vibhag
- Sam
- Avartan

Unit 5 (3 hours)

Brief knowledge of Pt. V.N.Bhatkhande Tala Notation System.

Unit 6 (3 hours)

- Ability to write the Theka of Teentala, Jhaptala, Ektala, Keharva & Dadra in different laya.
- Notation book prepare for compositions writing.

Practical Components:

Unit 1 (10 hours)

Prescribed Talas: Teentala, Jhaptala, Ektala, Chautala, Keharwa & Dadra

Unit 2 (12 hours)

Playing techniques & produce the sound of various syllables on Tabla.

Unit 3 (14 hours)

Kayada of Tete & Tirkita with four Palta and Tihai in Teentala.

Unit 4 (12 hours)

One Rela with four variations and Tihai in Teentala.

Unit 5 (12 hours)

Knowledge of two Sadharan'Tukra' two Chakradar Tukra and one Paran in Teentala.

Unit 6 (15 hours)

Four variations of Theka of Teentala, Jhaptala.

Unit 7 (15 hours)

Ability to play Keharwa and Dadra Tala in different laya.

Suggested Books :

- Mistry. Dr. Aban E, Pakhawaj our Tabla ke Gharane(2000), Pt. Keki S Jijina,Swar Sadhna Samiti, Mumbai
- Mishra, Pt. Chhotel Lal,Taal Prasoon (2004) Kanishka Publisher, Delhi
- Shukla, Dr, Yogmaya, Tab'le Ka Udgam Vikas evam Vadan Shailiyan(1984) Delhi Vishwavidyalay Prakashan
- Mishra, Pt. Chhote Lal,Taal Prabandh(2002) Kanishka Publisher, Delhi
- Mishra, Pt. Chhote Lal, Playing Techniques of Tabla: Banaras Gharana Kanishka Publisher, Delhi
- Mishra, Pt. Chhotel Lal,Taal Prasoon (2004) Kanishka Publisher, Delhi
- Shukla, Dr, Yogmaya, Table Ka Udgam Vikas evam Vadan Shailiyan(2003) Delhi Vishwavidyalay Prakashan
- Mishra, Pt. Chhote Lal,Taal Prabandh(2006) Kanishka Publisher, Delhi
- Mishra, Pt. Chhote Lal, Playing Techniques of Tabla: Banaras Gharana( ) Kanishka Publisher, Delhi
- Das, Purushottam, Mridanga Vadan, Sangeet Natak Akademi, Delhi
- Pt.Sudhir Mainkar, Kala Aur Shastra
- Pt.Sudhir Mainkar, Tabala vadan mein nihit Soundarya
- Pt.Arvind Mulgonkar, Tabla

B.A. (Hons.) II
Karnatak Music - Vocal & Instrumental (Veena/Violin)

Syllabus for DSC Papers

SEMESTER – III
DSC- 7: Historical Study of Karnatak Music

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		L	T	P		
Historical Study of Karnatak Music (301)	4	4	0	0	• Class XII Pass • Must have learnt for a minimum of 4 years at an established music institute or from a reputed guru	Must have studied the following papers • General Musicology (Sem- I) • Theory of Indian Music (Sem – II) OR • Understanding of the basic concepts such as Shruti, Swara, Raga, Tala etc and their associated components • Knowledge of the notation system

Learning Objectives:

- The main focus of this unit is to create an in-depth knowledge about the everlasting history of Indian Music, its technical terms, old texts and biographies.
- To study the notation of the compositions and imbibe the basic concepts of Indian notation system.

Learning outcomes:

- Gaining knowledge of Technical Terms of Ancient Indian Music, Classification of Ragas of different periods, Patronage of Music before the independent era.
- Accumulative knowledge of pre- post Trinity and modern composers.

SYLLABUS

UNIT – I (12 hours)

Historical Study of the following technical terms:

- Grama
- Murchana
- Jati,
- Anibaddha

- Nibaddha
- Marga
- Desi
- Gandharva

UNIT – II (8 hours)

- Raga classification through the ages: From ancient period to the Period of Matanga.

UNIT – III (10 hours)

- Patronage of Music – Kings, Chieftains, Zamindars

UNIT – IV (10 hours)

- **Biographies -Vocal**: -

- Purandara Dasa
- Bhadrachala Ramadasa
- Swati Tirunal
- Paidala Gurumurty Shastri
- Pachimirium Adiyappaiah
- Mahavaidyanatha Iyer

- **Biographies - Violin: -**

- Malikkottai Govindaswamy Pillai
- Tirukkodi Kaval Krishna Iyer and any 4 biographies from the list given for Vocal.

- **Biographies -Veena: -**

- Mysore Doraiswamy Iyengar
- S. Balachandar and any 4 biographies from the list given for Vocal

UNIT – V (8 Hours)

- Notation of Varnam in 2-degrees of speed in Adi Tala

UNIT – VI (12 Hours)

- Raga Lakshana of prescribed ragas mentioned in paper no. 302

Suggestive readings:

- Prajnanananda, Swami, (1963), A Historical Study of Indian Music, Calcutta, Ramakrishna Vedanta Muth, Page No 5 to 73
- Bhagyalekshmy, Dr. S. (1999), LakshanaGranthas in Music, Madras, CBH Publications, Page 21 to 14
- Bhathkhande, V.N. (1984), Music Systems in India: A comparative Study of some of the leading Music Systems of the 15th, 16th, 17th and 18th Centuries, New Delhi, S.Lal and co. Page 13 to 101
- Sambamoorthy, P. Prof. (1959), Great Musicians, Madras, Indian Book Publishing House Page No. 1 to 20, 77 to 86
- Music Journals – Sangeet Natak Academy, Journal of Music Academy
- Kannakumar, P.B., Dr. (2007), Patnam Subramanya Iyer – "A Beacon light" among the post-Trinity composers, Delhi, Kanishka Publishers

DSC- 8: Stage Performance (3)

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		L	T	P		
Stage Performance (3) **(302)**	**4**	**0**	**0**	**4**	• Class XII Pass • Must have learnt for a minimum of 4 years at an established music institute or a reputed Guru	Must have studied the following papers – •General Musicology (Sem- I) • Theory of Indian Music (Sem – II) • Ragas, Talas of Sem.-I & Sem.- II OR •Understanding of the basic concepts such as Shruti, Swara, Raga, Tala etc and their associated components • Knowledge of notation systems • Knowledge of the 10 Mela and ragas

Learning Objectives:

- The main focus of this course is to develop an aptitude towards the practical ability in singing the compositions of the prominent composers of Karnatak Music and develop an understanding about the concert pattern of it.

Learning outcomes:

- Ability to demonstrate various musical forms and creative aspects of ragas from the prescribed syllabus

SYLLABUS

Prescribed Ragas:

- Kambhoji
- Begada
- Khamas
- SuddhaDhanyasi
- Saveri
- Sriranjini
- Ritigaula
- Saranga
- Sri

UNIT – I (40 Hours)

- One advanced Swarajati

UNIT – II (20 Hours)

- One advanced varnam in Ata tala (in two degrees of speed)

Detailed contents

UNIT – III (20 hours)

- 2 kritis of Muthuswamy Dikshitar (including one Navavaranam)
- One kriti each of Syama Sastry, Subbraya Sastri, Poochi Srinivasa Iyengar, Patnam Subramanya Iyer, Swati Tirunal
- 2 Tyagarajakritis (including one Pancharathnam)

UNIT – IV (20 hours)

- One Ragamalika

UNIT – V (20 hours)

- Brief alapana of Kalyani, Kharaharapriya, Shankarabharanam, Mohanam and Kalpana Svaras in two speeds.

Suggestive readings:

- Panchapakesa Iyer, A.S. (2002), Ganamrutha Varna Malika, Chennai, Karnatic Music Book Centre
- Kriti Mani Malai - T K Govinda Rao
- Kriti Mani Malai - Ranga Ramanuja Iyenkar

DSC - 9: Ragas, Talas and their applications (3)

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		L	T	P		
Ragas, Talas and their applications (3) **(303)**	**4**	**0**	**0**	**4**	• Class XII Pass • Must have learnt for a minimum of 4 years at an established music institute or a reputed Guru	Must have studied the following papers •General Musicology (Sem- I) • Theory of Indian Music (Sem – II) • Ragas, Talas of Sem.-I & Sem.-II OR •Understanding of the basic concepts such as Shruti, Swara, Raga, Tala etc and their associated components • Knowledge of notation systems • Knowledge of the 10 Mela & ragas

Learning Objectives:

- This course aims at practically elaborate and illustrate the compositions mentioned in the syllabus and orally demonstrate the creativity and know-how of the ragas and details about the compositions

Learning outcomes:

- Ability to improvise and demonstrate characteristic features of ragas through various musical forms

SYLLABUS

Prescribed Ragas:

- Kambhoji
- Begada
- Khamas
- SuddhaDhanyasi
- Saveri
- Sriranjini
- Ritigaula
- Saranga
- Sri

UNIT – I (20 Hours)

- One advanced Swarajati

UNIT – II (20 Hours)

- One advanced Varnam in Ata tala (in two degrees of speed)

UNIT – III (40 Hours)

- 2 kritis of Muthuswamy Dikshitar (including one Navavaranam)
- One kriti each of SyamaSastry, SubbrayaSastri, Poochi Srinivasa Iyengar, Patnam Subramanya Iyer, Swati Tirunal
- 2 Tyagaraja kritis (including one Pancharathnam)

UNIT – IV (20 Hours)

- One Ragamalika

UNIT – V (20 Hours)

- Brief alapana of Kalyani, Kharaharapriya, Shankarabharanam, Mohanam and Kalpana Svaras in two speeds.

Suggestive readings:

- Panchapakesa Iyer, A.S. (2002), Ganamrutha Varna Malika, Chennai, Karnatic Music Book Centre
- Kriti Mani Malai - T K Govinda Rao
- Kriti Mani Malai - Ranga Ramanuja Iyenkar

B A (Hons.) II, Sem III
DISCIPLINE SPECIFIC ELECTIVE - DSE -I
KARNATAK MUSIC – VOCAL/VIOLIN/VEENA

Syllabus For DSE - Basics of Karnatak Music

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical		
Basics of Karnatak Music	4	1	0	3	Class XII Pass	Nil

Course Objective

- The main objective of the course is to establish a better understanding of the Karnatak Music to the students of other music disciplines. Therefore, the course is more practically inclined along with relevant theory for achieving better understanding. This helps the students of other disciplines to acquire theoretical and practical skills and idea about this stream from the foundation level, thus giving them a holistic approach in Karnatak Music Learning. At the end of the course, a project work helps gaining in-depth study on the chosen topic.
- The focus of the course is to establish a better understanding of basic theory of the Karnatak Music
- To study basic concept of Karnatak music notation Course
- To study the basic concept of the tala of Karnatak Music and musical forms

Course Outcome

- Students will gain knowledge of the basic terminologies of Karnatak music and its importance in the musical rendition
- Ability to demonstrate elementary concepts of mela and raga classification
- The student will understand the characteristics of selected Raga of the unit and to notate musical form Geetam
- Students will able to to demonstrate the preliminary lessons of Karnatak Music
- The student will understand the simple talas through Alankaras and Geetams.
- Ability to give a brief shade of ragas through musical forms- Swarajati and Varnam

Syllabus

Unit I: Knowledge about Swara- (2 Hours.)

- Swarasthana
- Dwadasa Swarasthanas
- Shodasa Swara

Unit II: Elementary knowledge about terms- (2 Hours.)

- Mela
- Raga classification.

Unit III: Basic elements of Tala- (2 Hours.)

- Shadangas
- Jati
- Gati
- Sapta suladi tala

Unit IV: Basic knowledge about the musical forms –(3 Hours.)

- Geetam
- Varnam
- Kriti

Unit V: Ragalakshana of Ragas prescribed in Elective-I (3 Hours.)

- Mohana
- Kalyani
- Kambhoji
- Sudha Saveri

Unit VI: Notation of Geetam –(3 Hours.)

- Notation any of the Geetam, which has been taught in Elective-I

Practical Component:

Unit 1: Varisas – (15 Hours.)

- Sarali Varisas
- Janta varisas
- Dhattu Varisas
- Madhya Sthayai Varisas
- Tara Sthayi Varisas

Unit 2: Alankaras (Sapata Tala) – (30 Hours.)

- Eka
- Roopaka
- Triputa

Unit 3: Geetams (rendered in 2 speeds in following Ragas) – (30 Hours.)

- Mohanam
- Kalyani
- Kamboji
- Suddha Saveri

Unit 4: Musical form –(15 Hours.)

- One simple Swarajati or one simple Varnam

Suggestive Reading:

• Sambamoorthy, P. Prof. (Vol 3, 1971), A dictionary of South Indian Music, Madras, Indian Music Publishing House
• Sambamoorthy, P. Prof. (Vol. 1, 1983), South Indian Music, Madras, Indian Music Publishing House
• Sambamoorthy, P. Prof. (Vol. 2, 1982), South Indian Music, Madras, Indian Music Publishing House
• Sambamoorthy, P. Prof. (Vol. 3, 1964), South Indian Music, Madras, Indian Music Publishing House
• Bhagya Lkshmy, Dr. S. (1990), Ragas in Carnatic Music, Trivandrum, CBH Publications
• Kuppuswamy, Gowry Dr. (1990), Textbook of Comparative Music, Trivandrum, CBH Publications.
• Panchapakesa Iyer, A.S. (2002), Ganamrutha Bodhini, Chennai, Karnatic Music Book Centre
• Panchapakesa Iyer, A.S.(2002), Ganamrutha Varna Malika, Chennai, Karnatic Music Book Centre
• Kriti Mani Malai - T K Govinda Rao
• Kriti Mani Malai - Ranga Ramanuja Iyenkar

B.A. (PROG.) MUSIC – HINDUSTANI MUSIC (VOCAL/INSTRU.)
SEMESTER -III

DSC-3(A/B): Theory of Indian music & contribution of musicologists

Course Title	Nature of the Course	Total Credits	Components			Eligibility Criteria	Prerequisite
			L	T	P		
Theory of Indian music & contribution of musicologists	DSC-3(A/B) – CORE (NON MAJOR)	4	2	0	2	XII Pass	Knowledge of swara and laya

DSC-3-C Ancient theory of Indian Music

Course Title	Nature of the Course	Total Credits	Components			Eligibility Criteria	Prerequisite
			L	T	P		
Theory of ancient Indian Music	DSC-3-C-CORE (MAJOR)	4	2	0	2	XII Pass	Knowledge of Swara and Tala

SEMESTER-3

Course : DSC 3 (A)

Paper Name: Theory of Indian Music & Contribution of musicologists.

Theory:

Component-1

Credit: 2

(Total- 30 Hours)

Learning Objectives

- The main focus of the course is to establish better understanding about the musical forms and varied elements of Raga and Tala.
- Basic knowledge of notation writing in Bhatkhande Paddhati.
- Writing notation of compositions. The visually challenged students have an option of writing essays on the given topics.
- The students study the origin and development of Vedic music and prescribed ancient treatises.
- The students learn about the contribution of various musicians and musicologists.

Learning Outcomes

- The study of the elements and forms of Indian music will open new horizons and create interest amongst the students for the subject.
- Writing of the Bhatkhande Swarlipi Paddhati will teach students the importance and value of traditional style of writing musical notations.
- Students will also learn to write Talas and compositions in notation with minute details.
- The visually challenged students are given an option of attempting either writing of notation or an essay on a general topic.
- Detailed study of the Ragas will enable students to attain proficiency in the subject.
- The study of Vedic music and Natya Shastra will give a speculative insight to the students to understand the origin and development of Indian Music.
- Life and contribution of great musicians and musicologists will be a source of constant inspiration for the students.

Contents

General discussion and study of the following:-

Unit I (5 hrs.)

- Dhrupad- Dhamar,
- Khayal-Vilambit Khayal, Drut Khayal,
- Maseetkhani Gat, Razakhani Gat.

Unit II (3 hrs.)

- Tala- Definition and its Ten Pranas.

Unit III (3 hrs.)

- Meend, Soot, Murki, Khatka, Kan, Krintan.

Unit IV (3 hrs.)

- Knowledge of Pt. Bhatkhande Swarlipi Paddhati.

Unit V (3 hrs.)

- Writing of Talas in notation with their Vibhags, Matras, Bols, Sam, Tali and Khali with Dugun and Chaugun:
- Chautala, Jhaptala, Teentala,Ektala, Dadra.

Unit VI (3 hrs.)

- Vedic Swara- Udatta, Anudatta, Swarita
- Vedic evam Laukik Scales,

Unit VII (2 hrs.)

- General study of Natyashastra

Unit VIII (2 hrs.)

- Detailed study of the following Ragas :
  Bihag, Vrindavani Sarang, Malkauns.

Unit IX (3 hrs.)

- Life & Contribution of the following musicians and musicologists:
  Pt. V. D. Paluskar,
  Sourindra Mohan Tagore,
  Mozart,
  Shyama Shastri.

Unit X (3 hrs.)

- Writing of compositions in notation of Vilambit Khayal, Drut Khayal (For Vocal students),

- Maseetkhani Gat, Razakhani Gat (For Instrumental students).

Or

Only Visually challenged students have the option of attempting either notation or an essay on the following topics:

- Bhakti evam Sangeet.
- Shastreeya Sangeet va Lok Sangeet.
- Sangeet Ke vikas mein Akashwani ka yogdan.

Reference

- Paranjapey, Sridhar Sharat Chandra (2nd Edition: 1985) Bhartiya Sangeet ka Itihas Madhya Pradesh, Hindi Granth Academy.
- Paranjpey, Sridhar Sharat Chandra (1972) Sangeet Bodh, Madhya Pradesh, Hindi Granth Academy.
- Kumar, Pushpendra,(2010), Natya Shastra of Bharatamuni, Delhi, New Bharatiya Book Corporation.
- Singh, Thakur Jaidev (1st Edition: 1995) Indian Music, Sangeet Research Academy.
- Mishra, Lalmani (4th Edition, 2011) Bhartiya Sangeet Vadya, Delhi, Bhartiya Gyanpeeth.
- Mishra, Chhotelal (1st Edition: 2006) Tala Prabandh, New Delhi, Delhi, Kanishka Publishers,
- Rajan, Renu (1996) Hindustani Sangeet Mein Raga Lakshan, New Delhi, Delhi, Radha Publications.
- Garg, Laxmi Narayan (3rd Edition: 2003) Nibandh Sangeet, Hathras, U.P., Sangeet Karyalaya.
- Shrivastava, Harish Chandra (4th Edition: 1974) Sangeet Nibandh Sangrah, Allahabad, U.P., Sangeet Sadan Prakashan.
- Sharma, Swatantra, (2012), Pashchatya swarlipi paddhati evam Bhartiya sangeet, Allhabad, U.P., Anubhav publication house.

DSC 3 (A/B)

Practical: Component-2

Performance & Viva –Voce

Credit: 2

(Total- 60 Hours)

Learning Objectives

- The prime design of this course is to enable students to develop performance skills by learning to-
- Demonstrate various forms of music in different Ragas and Talas as a part of performance and Viva-Voce.

- To identify the Ragas and Talas.
- Sing or play one Light Dhun/Bhajan/Lokgeet based on Raga.

Learning Outcomes

- A variety of musical forms in each Raga will be taught to the students, thus building their repertoire and preparing them for stage performance.
- The students will learn the customary and traditional Gayaki of Dhrupad-Dhamaar.
- ·The students will learn to identify different Ragas and Talas while being sung and played .
- Reciting the Thekas of the Talas and playing basic Talas will enable students to get acquainted with the rhythmic patterns.
- The knowledge of playing Harmonium will aid the students in understanding the placement of fingers and swaras on the instrument.
- The practical file with details of each topic covered in the syllabus will teach the students the method of systematic documentation and presentation.

Content:

Prescribed Ragas – Bihag, Malkauns,Vrindavani Sarang.

Prescribed Talas - Chautala, Jhaptala, Teentala, Ektala, Dadra tala.

Vocal Music

- One Vilambit Khayal with Alaaps and Taans in any of the prescribed Ragas.

- Madhyalaya Khayal in any three of the prescribed Ragas.
- One Dhrupad with Dugun, Tigun and Chaugun.

Or

- One Dhamar with Dugun, Tigun and Chaugun.
- One Raga based Bhajan/Lok geet.

Instrumental Music

- Maseetkhani Gat in any one of the prescribed Ragas with Alaaps & Tanas.
- Razakhani Gat in any three of the prescribed Ragas with Taanas & Jhalas.
- Any one Dhun in a Tala other than Teentala

Vocal & Instrumental

- Identifying Ragas and Talas of the prescribed syllabus while being sung or played.
- · Ability to recite the Thekas of the following Talas along-with Tali and Khali and Dugun : Chautala, Jhaptala, Teentala, Ektala, Dadra tala.
- Practical file with details of Ragas, Notations of compositions & Talas with Dugun, Chaugun.

References

- Bhatkhande, V.N. (Part I, Jan. 2000, Part-II Dec.2013), Kramik Pustak Malika, Hathras, U.P., Sangeet Karyalya.
- Patwardhan, V.R. (1996), Raga Vigyan, Pune, MH, Publisher : Dr. Madhusudhanan Patwardhan.
- Bhatkhande, V.N. (6th Edition, I999), Bhatkhande Sargam Geet Sangrah, Hathras, U.P., Sangeet Karyalya.
- Mishra Lalmani, (1st Edition: 1979) Tantri Naad Part-I, Kanpur, U.P., Sahitya Ratnawali. Ratanjanka Krishna Narayan (1990) Abhinav Geet Manjari, Mumbai, Maharashtra, Acharya S. N. Ratanjankar Foundation
- Jha Ramashraya (2014) Abhinav Geetanjali, Allahabad, U.P., Sangeet Sadan Prakashan.
- Singh, Tejpal (1st Edition, 2015) Shastreeya Sangeet Sikshan, New Delhi, Delhi, Akanksha Publishing House.
- Shrivastava Harish Chandra (June:2002) Raag Parichaya, New Delhi, Delhi, Rubi Prakashan,

SEMESTER - III

DSC – 3 (C) MAJOR

THEORY OF ANCIENT INDIAN MUSIC

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		L	T	P		
THEORY OF ANCIENT INDIAN MUSIC **(MAJOR)**	4	2	0	2	XII PASS	Knowledge of Swara and Tala

DSC 3 (C)

Paper Name: Theory of ancient Indian Music

Theory : Component-1

Credit : 2

(Total- 30 Hours)

Learning Objectives:

- To develop the interest of the students in musicology by introducing them to the ancient texts of music.
- To explain the Raga-Ragini system of classification of ragas
- To teach them about the various musical instruments from the ancient to the modern times.

Learning Outcomes:

- Students will come to know about the Music during Vedic period. This knowledge will be useful for further study.
- Students will be able to have an understanding of the Raga-Ragini system of classifying ragas.
- Students will understand how various musical instruments of India are made, and are categorized. This will enhance their knowledge and will be beneficial in future research.

Contents:

Unit I (8 hrs.)

Detailed study of the following –

- Vedic Music-with special reference to Samavedic Music
- Gramgeya Gana –Aranya Gana
- Panchvidha Sama, Saptvidha Sam
- Sama Vikar

Unit II (3 hrs.)

- Vedic Instrument

Unit III (4 hrs.)

General study of following Granthas-

- Natya Shastra
- Brihddeshi

Unit IV (3 hrs.)

- Gram with reference to Natya Shastra

Unit V (6 h r s .)

Alapti :

- Ragalapti
- Roopakalapti

Unit VI (3 hrs.)

- Study of the following talas in detail – Dhamar & Roopak
- Ability to write the notation of the talas in dugun, tigun and chaugun

Unit VII (3 hrs.)

- Study of the ragas – Malkauns , Deshkar, Bhairav
- Ability to write the notation of compositions in prescribed ragas

References:

- Shastri, Babulal Shukla (2009) Natya Shastra, Delhi, Chaukhamba Sanskrit Sansthan
- Kumar, Pushpendra (2010) Natya Shastra of Bharatamuni, Delhi, New Bharatiya Book Corporation
- Matang (1994) Brihaddeshi, Delhi,Indra Gandhi National Centre ARTS.
- Prajnanananda, Swami (1981) A Historical Study of Indian Music, Delhi, Delhi,Munsiram Monoharlal Publishers Pvt. Ltd.
- Singh, Thakur Jaidev (1905) Indian Music, Kolkata, West Bengal, Sangeet Research Academy
- Nigam, V.S. (1973) Sangeet Kaumudi, Allahabad, UP, Indian Press
- Chakravarty, Indrani (1988) Sangeet Manjusha, Delhi, Delhi, Mittal Publication
- Singh, Thakur Jaidev (1994) Bhartiya sangeet ka Itihas, Varanasi, UP, Sangeet Research Academy
- Kasliwal Suneera (2001) Classical musical Instruments, Delhi, Delhi, Rupa and CO.
- Paranjape, S.S. (1972) Sangeet Bodh, Bhopal, MP, Madhya Pradesh Hindi Academy
- Rajan Renu (1st Edition 2010) Bhartiya Shastriya Sangeet ke Vividh Ayaam,Delhi, Ankit Publication.
- Rajan Renu (1996) Hindustani Sangeet mein Raag Lakshan,Delhi, Radha Publication.

Practical: Component -2
Performance & Viva-Voce
Credit -2
(Total- 60 Hours)

Learning Objectives:

- To focus more on the Stage Performance of the student
- To encourage the student to attempt to improvise while singing/playing.
- To focus on his learning of newer talas
- To focus on the Viva-Voce of the student.

Learning Outcomes:

- Students will develop the skill to perform a raga with improvisation.
- Students will be able to sing new compositions in new talas
- Students will be able to explain the grammatical rules of a raga in detail.
- Students will develop the understanding to differentiate between similar ragas.

Content:

Prescribed Ragas:

- Malkauns
- Deshkar
- Bhairav

Unit I – Vocal Music:

- A performance of Vilambit and Drut Khayal with gayaki to be presented in anyone raga.
- Drut Khayal with gayaki in all the ragas
- Dhrupad or Dhamar composition in any one of the prescribed ragas with Layakari
- Knowledge and demonstration of the following talas – Dhamar & Roopak

Unit II – Instrumental Music:

- A performance of Maseetkhani and Razakhani Gats with elaboration to be presented in any one raga
- Presentation of a dhun in a Tala other than Teentala.
- Razakhani Gat with elaboration in all the ragas
- Knowledge and demonstration of the following talas – Dhamar & Roopak

Note**:** Students of Vocal and Instrumental music will have to prepare according to the requirements of their respective Units.

Refrences:

- Bhatkhande, V.N. (2000) Kramik Pustak Malika, Part I, Hathras, U.P., Sangeet Karyalya.
- Bhatkhande, V.N. (2002) Kramik Pustak Malika, Part II, Hathras, U.P., Sangeet Karyalya
- Bhatkhande, V.N. (2002) Kramik Pustak Malika, Part III, Hathras, U.P., Sangeet Karyalya
- Bhatkhande, V.N. (1970) Kramik Pustak Malika, Part IV, Hathras, U.P., Sangeet Karyalya
- Patwardhan, V.R. (2001) Raga Vigyan, Part I, Pune, Maharashtra, Publisher – Dr. Madhusudhanan Patwardhan
- Patwardhan, V.R. (1996) Raga Vigyan, Part II, Pune, Maharashtra, Publisher – Dr. Madhusudhanan Patwardhan
- Patwardhan, V.R. (1991) Raga Vigyan, Part III, Pune, Maharashtra, Publisher – Dr. Madhusudhanan Patwardhan
- Patwardhan, V.R. (1959) Raga Vigyan, Part IV, Pune, Maharashtra, Publisher – Dr. Madhusudhanan Patwardhan
- Thakur, Omkar Nath (1977) Sangeetanjali, Part I, Bombay, Maharashtra, Pandit Omkar Nath Thakur Estate
- Thakur, Omkar Nath (1975) Sangeetanjali, Part II, Bombay, Maharashtra, Pandit Omkar Nath Thakur Estate
- Thakur, Omkar Nath (2005) Sangeetanjali, Part III, Bombay, Maharashtra, Pandit Omkar Nath Thakur Estate
- Thakur, Omkar Nath (2003) Sangeetanjali, Part IV, Bombay, Maharashtra, Pandit Omkar Nath Thakur Estate
- Mishra, Lalmani (1979) Tantrinada, Kanpur, U.P. Sahitya Ratnakar
- Aggarwal, V.K. and Nagpal, Alka (2004) Sitar and its Compositions, Part-I-II, Delhi, Sanjay Prakashan
- Mahajan, Anupam (2003) Compositions in Instrumental Music (Traditional and New Creation), Delhi, Sanjay Prakashan

HINDUSTANI MUSIC (VOCAL & INSTRUMENTAL)

GENERIC ELECTIVE

B.A. Hindustani Music Vocal/Instrumental

Course Title& Code	Credits	Credit distributions of the course			Eligibility Criteria	prerequisite of the course (if any)
		Lecture	Tutorial	Practical/practical		
Study of Hindustani Music GE-3	4	2	0	2	XII Pass	Knowledge of Swara

SEMESTER-3

GE-3

Paper Name: Study of Hindustani Music

Theory: Component -1

Credit: 2

(Total- 30 Hours)

Learning Objectives

- The purpose of this course is mainly to impart comprehensively the tenets of Hindustani Music, with a brief introduction to Western music terminologies.
- The objective is to acquire the radical information of Tanpura and Sitar, and sketching it, along with the recognition of classification of musical instruments into four categories.
- The aim is pointed towards understanding the comparative study of the two major notation systems of the Hindustani music, as well as to acquire dexterity in writing the notation of a Vilimbit/Drut Khayal/Maseetkhani/Razakhani Gat,

- And also towards imparting instruction to the students such that they gain proficiency in understanding the prescribed Talas as well as writing their notations.

Learning Outcomes

- Students go through the structural, functional and maintenance aspects of instruments by gaining the elementary knowledge and sketching.
- The students obtain knowledge about the basic elements of musicology along with the classification of musical instruments.
- Students also make comparative study of notation systems and develop an ability to write various Talas.
- They also submit a project work on any one of the forms of Hindustani Classical Music**.**

Content:

Unit 1

- **Detailed study of prescribed Ragas – Bhairav and Vrindavani sarang.**

Unit 2

- **Elementary knowledge of Tanpura/ Sitar with sketch.**

Unit 3

- **Grama,**
- **Moorchana**
- **Gamak**
- **Vibration, Pitch, Intensity & Timber.**

Unit 3

- **Classification of Musical Instruments.**

Unit 4

- **Comparative Study of notation system of Pt. V.D.Paluskar & Pt. V.N. Bhatkhande.**

Unit 5

Ability to write notation of one Vilambit Khayal / Maseetkhani Gat and one Drut Khayal / Razakhani Gat.

Unit 6

Write an essay on the following topics :

- **Global Music**
- **Folk Music**

Unit 7

- **Knowledge of following talas – Teentaal, Chautaal, Ektaal with skills to write Thaah, Dugun & Chaugun.**

Unit 8

- **Project Work on any one of the classical musical forms of the Hindustani Music.**

References

- Bhatkhande, V.N. (Part-I 1st Edition: 1951, Part-II 3rd Edition: April- 1969, Part-III 2nd Edition: April- 1968, Part-IV 2nd Edition: March- 1970) Bhatkhande Sangeet Shastra, Hathras, U.P., Sangeet Karyalaya.
- Govardhan, Shanti. (1st Edition, Part-I 2005, Part-I 2004) Sangeet Shastra Darpan. Allahabad, U.P., Rantakar Pathak.
- Shrivastava, Harish Chandra (1st Edition: 1970) Sangeet Nibandh Sangrah, Allahabad, U.P., Sangeet Sadan Prakashan.
- Garg, Laxmi Narayan (3rd Edition: 2003) Nibandh Sangeet, Hathras, U.P., Sangeet Karyalaya,
- Mishra, Lalmani (4th Edition: 2011) Bhartiya Sangeet Vadya, Delhi, Bhartiya Gyanpeeth.
- Kasliwal, S.(2001),Classical Musical Instruments, New Delhi, Delhi, Rupa & co.
- Mishra, Chhotelal (1st Edition: 2006) Taal Prasoon, New Delhi, Delhi, Kanishka Publishers.
- Tagore, S.M (2005) Universal History of Music, New Delhi, Delhi, Sanjay Prakashan.
- Sharma, BS (1977) Pashchatya Sangeet Shiksha, Hathras, U.P., Sangeet karyalaya.

SEMESTER-3

GE-3

Practical: Component- 2

Performance &Viva –Voce

Credit: 2

(Total- 60 Hours)

Learning Objectives

- There are two major facets included in this semester, first to impart tuitions on voice/sound production techniques and second, to learn to self-tune an instrument Tanpura/Sitar. The end goal is to achieve self-reliance
- The other objective is to train the students for the next level in giving a short performance in Vilimbat & Drut Khayal/Maseetkhani & Razakhani compositions.
- Guided audio visuals of various genres give a larger revelation and perspective of the subject.

Learning Outcomes

- The students give a practical demonstration of prescribed Ragas and Talas, which increases their confidence in performance.
- The knowledge of voice production and techniques of playing on an opted instrument have been introduced to flourish and increase their attention.
- Basic knowledge of the Talas helps the students to sing the compositions in Talas.
- Learning the tuning of instruments i.e. Tanpura and Sitar is important part of the subject which teaches them the finesse and subtlety of sound.

Content

Unit 1

- **Prescribed ragas – Bhairav and Vrindavani sarang.**

Unit 2

- **Knowledge of voice production/ techniques of playing of any opted instrument.**

Unit 3

- **Ability to sing one Vilambit/ Drut khayal or play Maseetkhani / Razakhani gat with taans in each of the prescribed ragas with Jhala.**

Unit 4

- **Ability to keep the Theka by hand beats of Teentaala, Chautaala and Roopak with Thaah and Dugun.**

Unit 5

- **Tuning of one's own instrument i.e. Tanpura/ Sitar.**

Unit 6

- **Guided listening of khayal singing/ Thumri singing /Instrumental compositions**

Reference

- Bhatkhande, V.N. (2008) Kramik Pustak Malika (Part- II, III, IV), Hathras, U.P., Sangeet Karyalya.
- Patwardhan, V.R. (1996), Raga Vigyan, Pune, MH, Publisher: Dr. Madhusudhanan Patwardhan.
- Bhatkhande, V.N., (6th Edition, I999), Bhatkhande Sargam Geet Sangrah, Hathras, U.P., Sangeet Karyalya.
- Ratanjankar, Krishna Narayan (1990) Abhinav Geet Manjari, Mumbai, Maharashtra, Acharya S. N. Ratanjankar Foundation.
- Jha, Ramashraya (2014) Abhinav Geetanjali, Allahabad, U.P., Sangeet Sadan Prakashan.
- Singh, Tejpal (1st Edition, 2015) Shastreeya Sangeet Sikshan, New Delhi, Delhi, Akanksha Publishing House.
- Shrivastava , Harish Chandra (June:2002) Raga Parichaya, New Delhi, Delhi, Rubi Prakashan.
- Mishra, Lalmani, (1st Edition: 1979) Tantri Naad Part-I, Kanpur, U.P., Sahitya Ratnawali.
- Mishra, Chhotelal (1st Edition: 2006) Tala Prabhandh, New Delhi, Kanishka Publishers,
- lmani, (1st Edition: 1979) Tantri Naad Part-I, Kanpur, U.P., Sahitya Ratnawali

B.A. (PROG.)
Hindustani Music - Vocal/Instrument

Syllabus for DSE

DSE-1 – GENERAL THEORY

Course title & Code	credits	Credit distributions of the course			Eligibility Criteria	prerequisite of the course (if any)
		Lecture	Tutorial	practical		
GENERAL THEORY DSE-1	4	2	0	2	XII Pass	Knowledge of Alankars And uses

Paper Name: General Theory

Theory:

Component -1

Credit: 2

(Total- 30Hours)

Course Objectives:

- To initiate a relative beginner into the world of Hindustani music, where he is madeaware of therich cultural heritage of India, that Indian classical music is.
- To teach him the very basics of Indian music, such as sound, notes, scales, tempo, rhythmetc, sothat his foundation can be made strong.
- To discuss in detail the two notation systems of Hindustani music, that are essential forreading a composition

Course Learning Outcomes:

- The student will come to know what the basic terminologies of Indian music are, whichwill help him in the proper understanding of not just Hindustani music, but also Indian music as a whole. Having understood the basic concepts like Laya (tempo), Tala (rhythmic cycle), Alap (tonal elaborations), the student will be on course to becoming aperforming artiste in Hindustani music.
- The student will develop the ability to read and write the notations of compositions according

toa well-defined notion system, which in turn, will help him in learning newcompositions by variouscomposers of Hindustani music.

- They will grasp the various theoretical aspects of the prescribed ragas, like how it arises,what are the general grammatical rules that govern the ragas in this course, etc.
- They come to understand the concept of Tala and the use of various talas in Hindustanimusic, especially ragas.

Contents:

Unit I (10 hrs.)

- Sangeet
- Nada and its properties
- Shruti
- Svara
- Saptak
- Thata
- Raga
- Vadi, Samvadi, Anuvadi, Vivadi
- Jati

Unit II (4 hrs.)

The concept of Alap in Khyal gayan

Unit III (4 hrs.)

Knowledge of the notation systems of the following musicians –

- Pt. Vishnu Narayan Bhatkhande
- Pt. Vishnu Digambar Paluskar

Unit IV (4 hrs.)

Study of the ragas of this semester (mentioned in the Practical section)

Unit V (4 hrs.)

Ability to write the notation of compositions in the prescribed ragas

Unit VI (4 hrs.)

- Study of the following talas in detail – Teentala & Ektala
- Ability to write the notation of the talas in dugun, tigun and chaugun

Reference Books:

- Paranjape, S.S. (1964) Bhartiya Sangeet ka Itihas, Varanasi, U.P., Chaukhamba Surbharti Prakashan
- Paranjape, S.S. (1972) Sangeet Bodh, Bhopal, M.P., Madhya Pradesh Hindi Granth Academy
- Bhathkande, V.N. (1975) Bhathkande Sangeet Shastra,part 1, Hathras,UP, Sangeet Karyalaya
- Bhathkande, V.N. (1969) Bhathkande Sangeet Shastra,part- 2,Hathras,UP, Sangeet Karyalaya
- Prajnananda, Swami (1963) History of Indian Music, vol. 1, Kolkata, WB, Swami Adyananda Ram Krishna Math.
- Prajnananda, Swami (1981) Historical study of Indian Music, New Delhi, Delhi,Munshiram Monoharlal Publishers Pvt. Ltd.
- Singh, Lalit Kishore (1999) Dhvani aur Sangeet, New Delhi,Delhi, Bhartiya Gyan Peeth
- Rajurkar,Govind Rao (1984) Sangeet sastra parag, Jaipur, Rajasthan, Hindi granthAcademy
- Sharma, Swatantra (1996) Fundamental of Indian Music, Delhi, PratibhaPrakashan
- Madan, Pannalal (1991) Sangeet Shastra vigyan, Chandigarh, HR, Abhishak Publication
- Charavarty, Indrani (1988) Sangeet Manjusha, Delhi, Mittal

DSE -1
Practical: Component -2
Performance & Viva-Voce
Credit: 2
(Total-60 Hours)

Course Objectives:

- To teach the student the fundamentals of singing and playing, such as voice production,holding ofthe Sitar and the correct placement of the hands on the instrument, the right posture for sitting, breathing exercises to enhance lung capacity for singing etc.
- To demonstrate tonal exercises, such as *palta-s* and *alankar-s*, vital for both singing andplaying.
- To initiate his training in the realm of performance, with the most basic of all ragas, likeYaman and Bhairav.

Learning Outcomes:

- The student will become well-versed with the techniques of singing or playing, as thecase may be.
- The student will be able to achieve dexterity of the voice (singing) and hand (playing), through regular practice of the tonal exercises at home.
- The students will know how to tune their respective instruments – Tanpura for vocal students, andSitar, Sarod etc. for instrumental students.
- Having learnt the Notation system in the Theory, the student will able to read and learn new compositions in the prescribed ragas.
- He will grasp the various grammatical aspects of the prescribed ragas, like how they arise, what are the respective rules that govern these ragas, how do the notes move in theragas, what are the performing times of the ragas etc.
- He will learn the art of singing or playing, especially with regard to having the Tabla asan accompanying instrument.
- He will possess a fairly good idea of how a raga is to be performed after learning thebasic ragas.

Contents:

Prescribed Ragas:

1. Bhairav
2. Yaman
3. Alhaiya Bilawal

Unit I

Five alankars to be presented in the prescribed ragas.

Unit II

One Sargam Geet each in the prescribed ragas

Unit III

One Lakshan Geet each in the prescribed Ragas.

Unit IV

Two Drut Khyals with elaborations in any of the prescribed ragas

Unit V

Knowledge and demonstration of the following talas with dugun, tigun and chaugun - Teentala &Ektala

Unit VI

Basic knowledge of Tanpura and its tuning

ANNEXURE-15

N O T I F I C A T I O N

Sub: Amendment to Ordinance V

[E.C Resolution No. 60-1/(60-1-1) dated 03.02.2023]

Following addition be made to Appendix-II-A to the Ordinance V (2-A) of the Ordinances of the University;

Add the following:

Syllabi of Semester-III of the following departments under Faculty of Arts based on Under Graduate Curriculum Framework -2022 implemented from the Academic Year 2022-23.

FACULTY OF ARTS

DEPARTMENT OF ARABIC

BA (Hons.) Arabic

DISCIPLINE SPECIFIC CORE COURSE – 7

INTERMEDIATE ARABIC: MODERN ARABIC PROSE & POETRY-1

SEMESTER-3

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Intermediate Arabic: MODERN ARABIC PROSE & POETRY-1	4	3	1	0	Class XII Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make students aware of Modern Arabic Prose & Poetry.
2. To introduce briefly to prominent & distinguished Poets and Prose Writers of Arabic.

Learning outcomes

The Learning Outcomes of this course are as follows:

After completing this course the learner will be able to:

1. Use day-to-day vocabulary.
2. Learn sentence formation.
3. Learn a few couplets in order to begin comprehending Arabic Poetry.

SYLLABUS OF DSC-7

Unit 1 (15 hours)

The following lessons from the prescribed book:

- كيف أقضي يومي (1)
- في السوق (4)
- النملة (4)

Unit 2 (15 hours)

The following lessons from the prescribed book:

- الأمانة (13)
- فضيلة الشغل (17)
- الطائر(6)

Unit 3 (15 hours)

The following lessons from the prescribed book:

- قريتي (20)
- يوم مطير(26)
- ترنيمة الولد في الصباح (19)
- شر وخير(26)

Practical component (if any) - NIL

Prescribed Book:

- Al Shaikh Abul Hasan Ali Al Hasani Al Nadwi: Al Qira'at Al Rashida (Part-1), Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 8
INTERMEDIATE ARABIC GRAMMAR

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Intermediate Arabic Grammar	4	3	1	0	Class XII Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make learners well versed in Syntax and Morphology.
2. To enable them to translate the text of Intermediate level.
3. To develop speaking, reading and writing skills.

Learning outcomes

The Learning Outcomes of this course are as follows:

After completing this course the learner will be able to:

1. Easily derive perfect, imperfect, imperative, prohibitive verbs and active/passive participles from any infinitive of the following irregular patterns.

2. Conjugate 14 or 6 moods of the following verbs and adverbs and use them as per their requirement.
3. Use them in their writings and speaking as per the need.
4. Learn advanced grammar of the Arabic syntax.

SYLLABUS OF DSC-8

Unit 1 (15 hours)

Morphology & Syntax

Conjugation of the following irregular verb patterns in detail i.e. 14-mood conjugations of Perfect, Imperfect (active & passive), 6-mood conjugation of Imperative, Prohibitive, Active Participle and Passive Participle each:

وقى/يقي	وجد /يجد	وضع/يضع	باع/يبيع	قال/يقول

• Relative Pronoun • Intransitive & Transitive Verbs • Active & Passive Verbs • Declinable (Mu'rab) & Indeclinable (Mabni)	• الاسم الموصول (الذي، من ، ما ، أي ، أية) • الفعل اللازم والفعل المتعدي • الفعل المعلوم و الفعل المجهول • المعرب والمبني

Unit 2 (15 hours)

Morphology & Syntax

Conjugation of the following irregular verb patterns in detail i.e. 14-mood conjugations of Perfect, Imperfect (active & passive), 6-mood conjugation of Imperative, Prohibitive, Active Participle and Passive Participle each:

رمى/يرمي	لقي/يلقى	أخذ/يأخذ	رأى/يرى	شاء/يشاء

• نواصب المضارع: أن، لن، كي، لكي، إذن، حتى، لأن، لِ • جوازم المضارع: لم ، لما ، لام الأمر، لاء النهي، أدوات الشرط الجازمة • بدل ومبدل منه	• Particles of Nasab: An, Lan, Kai, Likai, Izan, Hatta, Lian, Li. • Particles of Jazm: Lam, Lamma, Laamul Amr, Laa'un Nahyi, Particles of Conditions that give Jazm • Substitute

Unit 3 (15 hours)

Morphology & Syntax

Conjugation of the following irregular verb patterns in detail i.e. 14-mood conjugations of Perfect, Imperfect (active & passive), 6-mood conjugation of Imperative, Prohibitive, Active Participle and Passive Participle each:

دعا/يدعو	مدّ/يمدّ	فرّ/يفرّ	مسّ/يمسّ

• ظرف الزمان و ظرف المكان • المفعول له • المفعول المطلق	• Adverb of Time & Place • Reasoning Object • Absolute Object

Practical component (if any) - NIL

Essential/recommended readings

1. Dr. W. A. Nadwi: A Practical Approach to the Arabic Language Vol.1 & 2, New Delhi.
2. J. A. Haywood & H. M. : A New Arabic Grammar, New Delhi.
3. S.A. Rahman: Teach Yourself Arabic, New Delhi.
4. Maulana Abdur rahman Amritsari, Kitab Al Sarf, Panipat.
5. Maulana Abdur rahman Amritsari, Kitab Al Nahw, Panipat.
6. Abdus Sattar Khan: Arabi Ka Muallim, Delhi
7. Ali Jarim Wa Mustafa Amin, Al Nahw Al Wazih Fi Qawaid Al Lugha Al Arabiyya, Delhi.
8. Antuwan Dahdah, Mu'jam Tasrif Al Af'aal Al Arabiyya, Delhi.

Suggestive readings

1. J. A. Haywood & H. M. : A New Arabic Grammar,New Delhi.
2. Maulana Sajid: Tayseer Al-Insha, Delhi
3. Muhammad Rabi Al Hasani Al Nadwi, Muallim Al Insha, Lucknow.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 9
INTERMEDIATE ARABIC TRANSLATION & CONVERSATION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Intermediate Arabic Translation & Conversation	4	3	0	1	Class XII Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

1. To enable students to translate simple sentences from English-Arabic-Hindi and vice versa.
2. To develop conversation abilities among students.

Learning Outcomes

The Learning Outcomes of this course are as follows:

After completing this course the learner will be able to:

1. Acquire skills in simple sentences translation from English into Arabic & Hindi.
2. Acquire skills in simple sentences translation from Arabic into English & Hindi.
3. Acquire skills in conversation and short speeches on simple topics.

SYLLABUS OF DSC-9

Unit 1 (15 hours)

Translation from English into Arabic & Hindi:

- Simple Sentences

Unit 2 (15 hours)

Translation from Arabic into English & Hindi:

- Simple Sentences

Unit 3 (15 hours)

Conversation:

- Short Speech in Arabic on simple topics
- Conversational Sentences

Practical component (if any) – Yes (30 hours)

The practical will be based upon the following:

- Simultaneous Translation
- Interpretation
- Viva-Voce (Examination)

Essential/recommended readings

1. Dr. W. A. Nadwi: A Practical Approach to the Arabic Language Vol.2, New Delhi.
2. J. A. Haywood & H. M. Nahmad : A New Arabic Grammar ,New Delhi.
3. Abdur Sattar Khan: Arabi Ka Muallim 1-4, Delhi.
4. Dr. Manzoor Khan: Nahwal Insha Wa Al Tarjama, Srinagar, Kashmir.

Suggestive readings

1. Dr. Sayed Muhammad Ijtiba Nadwi: Al Tabeer Wal Muhadatha, Delhi.
2. S.A Rahman: Let Us Speak Arabic, New Delhi.
3. A Group of Scholars, Allugha Al Wazifiyya, NCPUL, New Delhi.
4. Md. Quamruddin: Translation Made Easy, U.P.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category II

B.A. Programmes with Arabic as Major discipline

SEMESTER-3
DISCIPLINE SPECIFIC CORE COURSE – 5
MODERN ARABIC-I

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Modern Arabic-I	4	3	1	0	Class XII Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make them familiar with the Modern Arabic Text.
2. To enable them to read and write Arabic with grammatical rules with the help of text.

Learning outcomes

The Learning Outcomes of this course are as follows:

After completing this course the learner will be able to:

1. Develop skills of reading and writing.
2. Read, understand and comprehend structures of Arabic sentences at intermediate level.

SYLLABUS OF DSC-5 (CATOGORY-II)

Unit 1 (15 hours)

Arabic Text-1

Lessons: 1,2,3,4,5,6,7,8,9,10

Prescribed Book:

القراءة الواضحة (الجزءالثاني)

مولانا وحيد الزمان قاسمي كيرانوي

Unit 2 (15 hours)

Arabic Text-2

Lessons: 11,12,13,14,15,16,18,19,21,22

Prescribed Book:

القراءة الواضحة (الجزءالثاني)

مولانا وحيد الزمان قاسمي كيرانوي

Unit 3 (15 hours)

Comprehension & Applied Grammar

Lessons: 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,18,19,21,22

Prescribed Book:

القراءة الواضحة (الجزءالثاني)

مولانا وحيد الزمان قاسمي كيرانوي

Practical component (if any) - NIL

Essential/recommended readings

1. Dr. W. A.Nadwi: A Practical Approach to the Arabic Language Vol.1, New Delhi.
2. Dr. Amir Jamal: Arabic Learn the Easy Way, New Delhi.
3. Ali Jarim Wa Mustafa Amin: Al Nahw Al Wazih, Delhi.
4. Mualana Abdur Rahman Amritsari, Kitab Al Nahw, Panipat.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER-3
DISCIPLINE SPECIFIC CORE COURSE – 6
ARABIC: TEXT, GRAMMAR & TRANSLATION -III

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Arabic: Text, Grammar & Translation-III	4	3	1	0	Class XII Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make the learners familiar with the Arabic language skills.
2. To make them familiar with grammar rules required at the second stage of learning Arabic.
3. To enhance their vocabulary & translation skills through the given text and understand the different structures of sentences.

Learning outcomes

The Learning Outcomes of this course are as follows:

After completing this course, the learner will be able to:

1. Read the Arabic text.
2. Understand and solve grammar based exercises.
3. Translate sentences based on learnt grammar.

SYLLABUS OF DSC-6 (CATEGORY-II)

Unit 1 (15 hours)

Arabic Text

Lessons: 1-6

Prescribed Book:

Duroosul Lugha Al-Arabiyya Li Ghairin Naatiqeen Biha (English) Vol.-2

Dr. V. Abdur Rahim

Unit 2 (15 hours)

Grammar:

- Active & Passive Verb
- Active Participle
- Passive Participle
- *Inna* & Its Sisters
- *Kaana* & Its Sisters
- Adverbial Accusative of the State/Condition
- Exception by *Illa*
- Sound and Weak Verb
- Ordinal Number (1 to 10)

Unit 3 (15 hours)

Translation:

Translation English-Arabic-Hindi based upon the grammar topics learnt.

Practical component (if any) – NIL

Essential/recommended readings

1. R.I. Faynan: Essential Arabic, New Delhi.
2. S.A. Rahman: Teach Yourself Arabic, New Delhi.
3. Dr. W. A.Nadwi: A Practical Approach to the Arabic Language, New Delhi.

Suggestive readings

1. J.A. Haywood & H.M. Nahmad: A New Arabic Grammar
2. Syed Ali: Arabic For Beginners
3. Amir Jamal: Arabic Learn the Easy Way, New Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category III (Semester-3)

B.A. Programmes with Arabic as Non-Major or Minor discipline

COURSES OFFERED BY DEPARTMENT OF ARABIC

SEMESTER-3
DISCIPLINE SPECIFIC CORE COURSE – 6
ARABIC: TEXT, GRAMMAR & TRANSLATION -III

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Arabic: Text, Grammar & Translation-III	4	3	1	0	Class XII Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make the learners familiar with the Arabic language skills.
2. To make them familiar with grammar rules required at the second stage of learning Arabic.
3. To enhance their vocabulary & translation skills through the given text and understand the different structures of sentences.

Learning outcomes

The Learning Outcomes of this course are as follows:

After completing this course, the learner will be able to:

1. Read the Arabic text.
2. Understand and solve grammar-based exercises.
3. Translate sentences based on learnt grammar.

SYLLABUS OF DSC-6 (CATEGORY-III)

Unit 1 (15 hours)

Arabic Text

Lessons: 1-6

Prescribed Book:

Duroosul Lugha Al-Arabiyya Li Ghairin Naatiqeen Biha (English) Vol.-2

Dr. V. Abdur Rahim

Unit 2 (15 hours)

Grammar:

- Active & Passive Verb
- Active Participle
- Passive Participle
- *Inna* & Its Sisters
- *Kaana* & Its Sisters
- Adverbial Accusative of the State/Condition
- Exception by *Illa*
- Sound and Weak Verb
- Ordinal Number (1 to 10)

Unit 3 (15 hours)

Translation:

Translation English-Arabic-Hindi based upon the Grammar Topics learnt.

Practical component (if any) – NIL

Essential/recommended readings

1. R.I. Faynan: Essential Arabic, New Delhi.
2. S.A. Rahman: Teach Yourself Arabic, New Delhi.
3. Dr. Wali Akhtar Nadwi: A Practical Approach to the Arabic Language, New Delhi.

Suggestive readings

1. J.A. Haywood & H.M. Nahmad: A New Arabic Grammar
2. Syed Ali: Arabic For Beginners
3. Amir Jamal: Arabic Learn the Easy Way, New Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

POOL OF DISCIPLINE SPECIFIC ELECTIVES (DSEs)

DISCIPLINE SPECIFIC ELECTIVE COURSE – 1
Introduction to Arabic Short Story

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Introduction to Arabic Short Story	4	3	1	0	Class XII Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make students acquainted with the Arabic Short Story.
2. To make familiar to pioneers of Arabic Short Story.

Learning Outcomes

The Learning Outcomes of this course are as follows:

After completing this course the learner will be able to:

1. The meaning of the story, origin of the Arabic story, history of the stories of the pre-Islamic era and about the stories of the Holy Qur'an.
2. The definition of the short story, its salient features and the constituent elements.
3. The history of the origin and development of the short story in the modern period.
4. Basic features of and dissimilarities between the Arabic short stories and the European short stories in terms of themes.
5. About the pioneer of the Arabic short story, about the first artistic short story and also about some prominent short story writers.

SYLLABUS OF DSE-1

Unit 1 (15 hours)

▪ Al-Qissah (Lughatan wa Istilaahan) wa Nash'atuha fi al-Lughah al-Arabiyyah ▪ Al-Qissatul-Arabiyyah fi al-Asr al-Jaahili ▪ Al-Qissah fi al-Qur'an al-Kareem	● القصة (لغة واصطلاحا) ونشأتها في اللغة العربية ● القصة العربية في العصر الجاهلي ● القصة في القرآن الكريم

Unit 2 (15 hours)

▪ Al-Qissah al-Qasirah: Ta'rif wa Khasais wa' Anasir ▪ Nash'atul Qissah al-Qasirah wa Tatawwuruha fi al-'Asr Al-Hadith ▪ Al-Qissah al-Qasirah al-Arabiyyah wal Qisas al-Urubbiyyah (Mumayyizat wa Furuq)	● القصة القصيرة : تعريف وخصائص وعناصر ● نشأة القصة القصيرة وتطورها في العصر الحديث ● القصة القصيرة العربية والقصص الأوروبية (مميزات وفروق)

Unit 3 (15 hours)

▪ Ra'idul Qissah al-Qasirah: Mahmud Taymur ▪ Al Qissah al Qasirah al-Fanniyyah al Uola: (fi al-Qitar) Ta'rif ▪ Ba'adh 'Aalam al Qissah al Qasirah al Arabiyyah: - Mustafa Lutfi al-Manfaluti - Jubran Khalil Jubran	● رائدالقصة القصيرة : محمود تيمور ● القصة القصيرة الفنية الأولى : (في القطار)تعريف ● بعض أعلام القصة القصيرة العربية: 1) مصطفى لطفي المنفلوطي 2) جبران خليل جبران

Practical component (if any) - Nil

Essential/recommended readings:

1) Duktur Muhammad Shaukat: Al-Nass al-Qasasi Min al-Adab al-Arabi al-Hadith
2) Abbas Khidhar: Al-Qissah al-Qasirah fi Misr
3) Duktur Ahmad Haykal: Al-Adab al-Qasasiwa al-Masrahi fi Misr
4) Duktur Yusuf Najm: Al-Qissah fi al-Adab al-Arabi al-Hadith
5) Muhammad Yusuf: Fann al-Qissah

Suggestive readings:

1) Ahmad Abu Sa'eed: Fann al-Qissah
2) Muhammad Taymur: Fann al-Qissah
3) Duktur Muhammad Yunus Abdul 'Aal: Fi al Nasr al-ArabiQadhayawaFununwaNusus, Al Sharikah al-Misriyyah al-Aalamiyyah Li al-Nashr, Longman
4) M. M. Badawi : Modern Arabic Literature, Cambridge University Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 2
Arabic Text Comprehension-1

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Arabic Text Comprehension	4	3	1	0	Class XII Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make students acquainted with Arabic text.
2. To enable them to comprehend the Arabic text.

Learning Outcomes

The Learning Outcomes of this course are as follows:

After completing this course the learner will be able to:

1. Read and comprehend the Arabic text.
2. Translate the given text into English or Hindi or Urdu.

3. Make sentences on the patterns of sentences given in the text.

SYLLABUS OF DSE-2

Unit 1 (15 hours)

- The following lessons from the prescribed book:
  Lessons 1-5

Unit 2 (15 hours)

- The following lessons from the prescribed book:
  Lessons 6-10

Unit 3 (15 hours)

- The following lessons from the prescribed book:
  Lessons 11-15

Practical component (if any) - Nil

Prescribed Book:

- Al Jadid Fil Lugha Al Arabiyya, S.A. Rahman, New Delhi

Suggestive readings:

1. Dr. W. A. Nadwi: A Practical Approach to the Arabic Language Vol.1 & 2, New Delhi.
2. J. A. Haywood & H. M. : A New Arabic Grammar, New Delhi.
3. S.A. Rahman: Teach Yourself Arabic, New Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

SEMESTER-3

GENERIC ELECTIVES (GE-7): SPOKEN ARABIC-2

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Spoken Arabic-2	4	3	1	0	Class XII Pass	NIL	Arabic

Learning Objectives

The Learning Objectives of this course are as follows:

1. To teach learners how to speak, read and write the language efficiently.
2. To polish the language of learners.
3. To help them improve fluency in Arabic speaking.

Learning outcomes

The Learning Outcomes of this course are as follows:

By studying this course the student will be able to:

1. Learn the day-to-day vocabulary useful in conversation.
2. Learn the formal and informal greetings and expressions.
3. Learn the language to speak on different occasions.

SYLLABUS OF G.E.-7

Unit 1 (15 hours)

Lessons on Speaking from the Prescribed Book:

Lesson: 1-5

Unit 2 (15 hours)

Lessons on Speaking from the Prescribed Book:
Lesson: 6 to 10

Unit 3 (15 hours)

Conversational Sentences of following occasions:

- At the Airport
- In the Hotel
- In the Restaurant

Practical component (if any) - NIL
Prescribed Book:

- Prof. S.A. Rahman: Let Us Speak Arabic, New Delhi.

Suggestive readings

1. Makhdoom Sabri: English Urdu And Arabic Guide, Delhi
2. Rapidex (Arabic Version), New Delhi
3. Mohd. Haroon Rashid & Khalid Parwez: Arabic Conversation Book, New Delhi.
4. Badruz Zaman Qasmi Kairanwi: Learn to Speak Arabic & English, Delhi

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-8): SIMPLE ARABIC TEXT-1

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Simple Arabic Text-1	4	3	1	0	Class XII Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

1. To enable them to comprehend the Arabic text.
2. To teach elementary Arabic grammar.
3. To make them familiar with Arabic structures based upon elementary grammar.
4. To enable them to translate simple sentences.

Learning outcomes

The Learning Outcomes of this course are as follows:

By studying this course the student will be able to:

1. Read simple sentences correctly.
2. Learn to translate simple sentences based on the prescribed grammatical rules.
3. Read and comprehend the Arabic text.
4. Translate the given text into English or Hindi or Urdu.
5. Make sentences on the patterns of sentences given in the text.

SYLLABUS OF G.E.-8

Unit 1 (15 hours)

- The following lessons from the prescribed book:
  Lessons 1-7

Unit 2 (15 hours)

- The following lessons from the prescribed book:

Lessons 8-15

Unit 3 (15 hours)

- The following lessons from the prescribed book:
  Lessons 16-23

Practical component (if any) – NIL

Prescribed Book:

- Minhajul Arabiyya Vol. I, Syed Nabi Hydrabadi, New Delhi.

Suggestive readings

1. Dr. W. A. Nadwi: A Practical Approach to the Arabic Language Vol.1 & 2, New Delhi.
2. J. A. Haywood & H. M. : A New Arabic Grammar, New Delhi.
3. S.A. Rahman: Teach Yourself Arabic, New Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF BUDDHIST STUDIES

BA (PROG.) WITH BUDDHIST STUDIES AS MAJOR- DSC

DISCIPLINE SPECIFIC CORE COURSE -3 (DSC-3A)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITE OF THE COURSE

Distribution of Total Hours of Teaching							
MAJOR COURSE DSC-3 – 3A : INTRODUCTION TO TIBETAN BUDDHISM							
Total Credits	Lectures (Credits)	Tutorial (Credits)	Practical(Credits)	No. of Hours of Lecture	No. of Hours of Tutorial	No. of Hours of Practical	Total hours of teaching
4	3	1	-	45	15	0	60

Learning Objectives

The primary objective of this course is to make students aware of the history of the introduction and development of Buddhism in Tibet along with Tibetan Buddhist literature.

Learning Outcomes

By studying this course, students would be able to have a clear understanding of the Buddhism that flourished and developed in Tibet. It would also make the students acquainted with the Buddhist sects, and literature that developed in Tibet.

Course content [DSC-3 - 3A]

Unit	Content	Duration in hours	
		Lecture	Tutorial
I	1. Introduction of Buddhism in Tibet	06	02
II	2. History of Buddhism in Tibet. 3. Role of Tibetan Dharma-rajas in propagation of Buddhism in Tibet	12	04
III	4. Indian Scholars visited Tibet – Padmasambhav, Shantarakshit and Atish Dipankar	09	03
IV	5. Tibetan Buddhist sects 6. Origin and Growth of the Institution of Dalai Lama.	12	04
V	7. Buddhist Literature developed in Tibet 8. Pilgrimage in Tibet	06	02
Total		**45**	**15**

Essential Readings:

- Bapat, P.V. (ed.), *2500 Years of Buddhism*, Publications Division, Ministry of Information and Broadcasting, Government of India, New Delhi: 1964.
- McKay, Alex (ed). *History of Tibet*, Richmond Surrey: Curzon Press. 2003.
- Tulku Dondub, bod skad slob deb (Tibbati Piṭaka), Sarnath: CIHTS, 1976.
- Sarao, K..T.S., *Pilgrimage to Kailash: The Indian Route*, Delhi, 2009.

Suggested Readings

- Alex McKay, *History of Tibet*, 3 vols, London: Routeledge, 1996.
- Chattopadhyaya Alaka, *Atisa and Tibet: Life and Works of Dipamkara Srijnana in relation to the History and Religion of Tibet*, Delhi: Motilal Banarasi Das, 1981.
- Francke, A.H., *Antiguities of Indian Tibet,* 2 vols., New Delhi: S.Chand, 1972.
- Khosla Sarla, *History of Buddhism in Kashmir,* New Delhi: Sagar,1972.
- Norbu Namkhai, *The Necklace of gzi: A Cultural History of Tibet,*Dharamsala: Information Office of H.H., The Dalai Lama, 1984.
- Bruce Newman, *A Beginner's Guide to Tibetan Buddhism*, Snow Lion Publication, 1996.
- Thubten Chodron, *Buddhism for Beginners*, Snow Lion Publication,1972.
- Wallace, B. Alan (October 25, 1993). *Tibetan Buddhism from the Ground up: A Practical Approach for Modern Life*. Wisdom Publications.
- Yeshe, Lama Thubten (2001). *The Essence of Tibetan Buddhism*, Lama Yeshe Wisdom Archive.
- John Power (2007), Introduction to Tibetan Buddhism, Snow Lion Publication.
- Waddell, D. *The Buddhism of Tibet*, W. Heffer & Sons Ltd. Cambridge, 1985
- Sherburne, Richard, *A Lamp of the Path and Commentary by Atisha*, London: 1983.

DISCIPLINE SPECIFIC CORE COURSE -3 (DSC-3B)

Distribution of Total Hours of Teaching							
MAJOR COURSE DSC - 3 – 3B : INTRODUCTION TO CHINESE BUDDHISM							
Total Credits	Lectures (Credits)	Tutorial (Credits)	Practical(Credits)	No. of Hours of Lecture	No. of Hours of Tutorial	No. of Hours of Practical	Total hours of teaching
4	3	1	-	45	15	0	60

Learning Objectives

The primary objective of this course is to make students aware of the history of the introduction and development of Buddhism in China.

Learning Outcomes

By studying this course, students would be able to have a clear understanding of the Buddhism that flourished and developed in China. It would also make the students acquainted with the Buddhist societies, centers, festivals, and etc. that developed in China.

Course content [DSC-3 - 3B]

Unit	Content	Duration in Hours	
		Lecture	**Tutorial**
I	1. Introduction of Buddhism in China- Pre-Buddhist Religions (Confucianism and Taoism) and social condition	09	03
II	2. Role of Ancient Land and Sea Routes to China in the propagation of Buddhism in China. 3. Introduction and State of Buddhism during the Han Dynasty.	12	04
III	4. Influence of Indian Buddhism on Chinese Buddhist Sects.	03	01
IV	5. Buddhist Social interaction in China religious preaching, Buddhist Societies, Buddhist festivals, and social welfare activities of the Buddhist Saṅgha. 6. Important Chinese Buddhist sites.	15	05
V	7. Eminent Chinese monks and their contribution.	06	03
Total :		**45**	**15**

Essential Readings:

- Bapat, P.V. (ed.), *2500 Years of Buddhism*, Publications Division, Ministry of Information and Broadcasting, Government of India, New Delhi: 1964.
- Buckley Patricia and Gregory Peter N. (ed.), *Religion and Society in Tang and Sung China*, University of Hawaii Press, Honolulu 1993.
- Ch'en Kenneth, K.S., *Buddhism In China: A Historical Survey.*Princeton University Press, Princeton, 1964.
- Ch'en Kenneth, K.S., *The Chinese transformation of Buddhism*, Princeton University Press, New Jersey, 1973.

- Daisaku Ikeda, Burton Watson (Tr.) *Flower of Chinese Buddhism*, Weather Hill, New York, Tokyo, 1986.
- Edkins Joseph, *Chinese Buddhism*. Kegan Paul Paragon Book Reprint Corp. 1958.
- Gernet Jacques, Buddhism in Chinese Society. Columbia University Press, New York, 1955.
- Reichely, Kaul Ludvig, *Truth and Tradition in Chinese Buddhism*. The Commercial Press Ltd., Shanghai, China, 1928.
- Samuel Beal, trans. *The Life of Hiuen-Tsiang* Trans. from the Chinese of Shaman Hwui li. London, 1911. 2nd ed.Delhi. Munishiram Manoharlal, 1973.
- Wright A.F., *Buddhism in Chinese History*, Stanford University Press, Stanford California, 1959.
- Yoshinori Takeuchi (ed.), *Buddhist Spirituality,* vol. I, Motilal Banarsidass Publishers Pvt. Limited, Delhi 1990.

Suggested Readings:

- Bradley Smith and Wang-go Weng *China, A History of Art*, New York, Doubleday. n.d.
- Cunningham, A. *The Ancient Geography of India.* Delhi: Indological Book House, 1871.
- Kieschnick, J. *The Eminent Monk: Buddhist Ideals in Medieval Chinese Hagiography.* Honolulu: University of Hawai'i Press,1997.
- Lusthaus, D. *Buddhist Phenomenology: A Philosophical Investigation of Yogacara Buddhism and the Ch'eng Wei-shi lun.* London: Routledge, Curzon Press, 2002.
- Li Yongshi, trans. *The Life of Hsuan-Tsang* by Huili. Peking: Chinese Buddhist Assoc. 1959.
- Pal, P. *Light of Asia: Buddha Sakyamuni in Asian Art.* Los Angeles: Los Angeles Country Museum: University of Washington Press, 1984.
- Samuel Beal, trans. *Si-yu-ki Records of the Western World by Hiuen Tsiang*. 2 vols. London. 1884: rpt. Delhi: Oriental Books Reprint Corp., 1969.
- Sally Hovey Wriggins *Xuanzang: A Buddhist Pilgrim on the Silk Road*, Boulder, Westview Press/Harper Collins 1996.
- T. Akiyama and S. Matsubara, *Arts of China: Buddhist Cave Temples*, New Researches, Trans. A Soper. 1969; Tokyo, Kodansha International, 1972.
- Thomas Watters, trans. *On Yuan Chwang's Travels in India* ,2 vols. London. 1904-5; rpt. Delhi: Munshiram Manoharlal, 1961.

BA (PROG.) WITH BUDDHIST STUDIES AS NON-MAJOR- DSC

DISCIPLINE SPECIFIC CORE COURSE -3 (DSC-3A)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITE OF THE COURSE

Distribution of Total Hours of Teaching							
NON-MAJOR COURSE -3 (DSC-3) : INTRODUCTION TO TIBETAN BUDDHISM							
Total Credits	Lectures (Credits)	Tutorial (Credits)	Practical(Credits)	No. of Hours of Lecture	No. of Hours of Tutorial	No. of Hours of Practical	Total hours of teaching
4	3	1	-	45	15	0	60

Learning Objectives

The primary objective of this course is to make students aware of the history of the introduction and development of Buddhism in Tibet along with Tibetan Buddhist literature.

Learning Outcomes

By studying this course, students would be able to have a clear understanding of the Buddhism that flourished and developed in Tibet. It would also make the students acquainted with the Buddhist sects, and literature that developed in Tibet.

Course content [DSC-3]

Unit	**Content**	**Duration in hours**	
		Lecture	**Tutorial**
I	1. Introduction of Buddhism in Tibet	06	02
II	2. History of Buddhism in Tibet. 3. Role of Tibetan Dharma-rajas in propagation of Buddhism in Tibet	12	04
III	4. Indian Scholars visited Tibet – Padmasambhav, Shantarakshit and Atish Dipankar	09	03
IV	5. Tibetan Buddhist sects 6. Origin and Growth of the Institution of Dalai Lama.	12	04
V	7. Buddhist Literature developed in Tibet 8. Pilgrimage in Tibet	06	02
Total		**45**	**15**

Essential Readings:

- Bapat, P.V. (ed.), *2500 Years of Buddhism*, Publications Division, Ministry of Information and Broadcasting, Government of India, New Delhi: 1964.
- McKay, Alex (ed). *History of Tibet*, Richmond Surrey: Curzon Press. 2003.
- Tulku Dondub, bod skad slob deb (Tibbati Piṭaka), Sarnath: CIHTS, 1976.
- Sarao, K..T.S., *Pilgrimage to Kailash: The Indian Route*, Delhi, 2009.

Suggested Readings

- Alex McKay, *History of Tibet*, 3 vols, London: Routeledge, 1996.
- Chattopadhyaya Alaka, *Atisa and Tibet: Life and Works of Dipamkara Srijnana in relation to the History and Religion of Tibet*, Delhi: Motilal Banarasi Das, 1981.
- Francke, A.H., *Antiguities of Indian Tibet,* 2 vols., New Delhi: S.Chand, 1972.
- Khosla Sarla, *History of Buddhism in Kashmir,* New Delhi: Sagar,1972.
- Norbu Namkhai, *The Necklace of gzi: A Cultural History of Tibet,* Dharamsala: Information Office of H.H., The Dalai Lama, 1984.
- Bruce Newman, *A Beginner's Guide to Tibetan Buddhism*, Snow Lion Publication, 1996.
- Thubten Chodron, *Buddhism for Beginners*, Snow Lion Publication,1972.
- Wallace, B. Alan (October 25, 1993). *Tibetan Buddhism from the Ground up: A Practical Approach for Modern Life*. Wisdom Publications.
- Yeshe, Lama Thubten (2001). *The Essence of Tibetan Buddhism*, Lama Yeshe Wisdom Archive.
- John Power (2007), Introduction to Tibetan Buddhism, Snow Lion Publication.
- Waddell, D. *The Buddhism of Tibet*, W. Heffer & Sons Ltd. Cambridge, 1985
- Sherburne, Richard, *A Lamp of the Path and Commentary by Atisha*, London: 1983.

Department of English

Category I

BA(Hons.) English

DISCIPLINE SPECIFIC CORE COURSE -7 (DSC-7) – : Romantic Literature

No. of hours- 60(Theory- 45 hrs.+Tutorials-15 hrs.)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 7: Romantic Literature	4	3	1	0	Passed Class XII with English	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To offer students a foundational understanding of the way in which Romantic thought and literature continue to sensitise us in terms of cultural and social change.
- To open up a sense of how dominant movements in the field of political and social representation, education and imagination emerge powerfully at this time.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students' imagination will be stimulated by an understanding of the ways in which Romantic theory and praxis influence many movements of change in the contemporary world.
- This course will map an exciting phase in the development of thought, gender-mobility and social change.

SYLLABUS OF DSC-7

UNIT – I (15 weeks-1 hour/week)

1. William Blake: *Songs of Innocence and Experience*: (i) 'Lamb' (ii) 'Tiger' (iii) 'Chimney Sweeper'(Songs of Innocence) (iv) 'Chimney Sweeper'(Songs of Experience)

2. William Wordsworth: (i) ‘Tintern Abbey’ (ii) ‘London’
3. Samuel Taylor Coleridge: (i) ‘Kubla Khan’ (ii) ‘Dejection: An Ode’

UNIT – II (15 weeks-1 hour/week)
1. Percy Bysshe Shelley: (i) ‘Ozymandias (ii) ‘Ode to the West Wind’
2. John Keats: (i) ‘Ode to a Nightingale’ (ii) ‘Ode on a Grecian Urn’ (iii) ‘Ode to Autumn’

UNIT – III (15 weeks-1 hour/week)
1. Mary Shelley: *Frankenstein*

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings:
1. William Wordsworth, ‘Preface to Lyrical Ballads’, in *Romantic Prose and Poetry*, ed. Harold Bloom and Lionel Trilling, New York: OUP, 1973. pp 594–611
2. John Keats, ‘Letter to George and Thomas Keats, 21 December 1817’, and ‘Letter to Richard Woodhouse, 27 October, 1818’, in Romantic Prose and Poetry. ed. Harold Bloom and Lionel Trilling, New York: OUP, 1973. pp 766–768, 777–778
3. Jean-Jacques Rousseau, ‘Preface’ to *Emile or Education*. tr. Allan Bloom. Harmondsworth: Penguin, 1991.
4. Samuel Taylor Coleridge, ‘Chap. XIII’, *Biographia Literaria*. ed. George Watson, London: Everyman, 1993. pp 161–66
5. J.J. Rousseau, ‘Discourse on the Origin of Inequality’: Part One, *Jean-Jacques Rousseau: Basic Political Writings*. Hackett Publishing Company, 1987. pp 37-60
6. Gilpin, William. ‘On Picturesque Travel’, *Three Essays: On Picturesque Beauty; On Picturesque Travel; and On Sketching Landscape: to which is Added a Poem, On Landscape Painting*. UK: R. Blamire, 1794.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 8 (DSC-8): Victorian Literature

No. of hours- 60(Theory- 45 hrs.+Tutorials-15 hrs.)

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 8- Victorian Literature	4	3	1	O	Passed Class XII with English	NIL

Learning Objectives:

The Learning Objectives of this course are as follows:

- To offer students a fundamental understanding of how nineteenth-century developments in England around industrialization, colonization and gender-relations foreshadow later thinking on the subject.
- To offer students a basic sense of the deep-rooted nature of contemporary social and cultural challenges as having their origins in earlier times.

Learning outcomes:

The Learning Outcomes of this course are as follows:

- By studying this course, students' imagination will be kindled to the way in which a range of genres speak to the spirit of an era.

SYLLABUS OF DSC- 8

UNIT – I (15 weeks-1 hour/week)
1. Charlotte Bronte: *Jane Eyre*
2. Alfred Tennyson: 'The Lady of Shalott'

UNIT – II (15 weeks-1 hour/week)
1. Charles Dickens: *Great Expectations*
2. Robert Browning: 'My Last Duchess'

UNIT – III (15 weeks-1 hour/week)
1. George Eliot: *The Mill on the Floss*
2. Elizabeth Barrett Browning: 'How Do I Love Thee? Let me Count the Ways'

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings (if any):

1. Karl Marx and Friedrich Engels, 'Mode of Production: The Basis of Social Life', 'The Social Nature of Consciousness', and 'Classes and Ideology', in *A Reader in Marxist Philosophy*. ed. Howard Selsam and Harry Martel, New York: International Publishers, 1963. pp 186–8, 190–1, 199–201
2. Charles Darwin, 'Natural Selection and Sexual Selection', in *The Descent of Man in The Norton Anthology of English Literature*. 8th edn., vol. 2, ed. Stephen Greenblatt, New York: Northon, 2006. pp 1545–9
3. John Stuart Mill, 'The Subjection of Women', *The Norton Anthology of English Literature*, 8th edn., vol. 2, ed. Stephen Greenblatt, New York: Norton, 2006. pp 1061–9

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE– 9 (DSC-9): Literary Criticism

No. of hours- 60(Theory- 45 hrs.+Tutorials-15 hrs.)

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 9: Literary Criticism	4	3	1	0	Passed Class XII with English	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To offer students a foundational understanding of the tenets of literary appreciation with specific reference to aesthetic evolution, genre and cultural production.
- To open up a cross-disciplinary sense of the field with specific reference to philosophy, aesthetics and historicism.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be communicated a basic sense of the evolution of literary criticism.
- Students will be encouraged towards comprehending how literary criticism enriches our understanding of how philosophical and material contexts shape literature.

SYLLABUS OF DSC-9

UNIT – I (15 weeks-1 hour/week)

1. David Hume, 'Of the Standard of Taste', from 'Four Dissertations', *The Norton Anthology of Theory and Criticism*, ed. Vincent Leitch, New York: W. W. Norton & Co., 2001. pp 486-99
2. Edmund Burke, Part 1: Section VII, Section XVIII; Part 2- Sections I- VIII; Part 3- Section XXVII, *A Philosophical Enquiry into the Origin of our Ideas of the Sublime and the Beautiful*. ed. James T. Boulton, Oxford: Blackwell, 1987. pp 39-40, 51-52, 57-74, 124-25

UNIT – II (15 weeks-1 hour/week)

1. Virginia Woolf: 'Modern Fiction' (1919)

2. T.S. Eliot: 'Tradition and the Individual Talent' (1919)

UNIT – III (15 weeks-1 hour/week)
1. I.A. Richards: *Principles of Literary Criticism* (1926) Chapters 1 & 2.
2. Cleanth Brooks: *The Well-Wrought Urn: Studies in the Structure of Poetry* (1947) (i) 'The Heresy of Paraphrase' (ii) 'The Language of Paradox'

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings:
1. Kant, Immanuel Kant. 'Analytic of the Beautiful', trans. Paul Guyer, *The Critique of Judgment*. Cambridge: Cambridge University Press, 2000. pp 89-127
2. Schiller, Friedrich. 'Letter 2'; 'Letter 6', and 'Letter 9', trans. Reginald Snell, *Letters on the Aesthetic Education of Man*. UK: Dover Publications, 2004. pp 46-50, 69-83, 93-100
3. Hegel, G. W. F. (i) 'Work of Art as Product of Human Activity'; (ii) 'The Kantian Philosophy'; (iii) 'Imagination Genius and Inspiration', trans. T. M. Knox, in *Aesthetics: Lectures on Fine Art Vol. 1* (Oxford: Clarendon Press, 1988) pp 25-32, 56-61, 281-88.
4. Nietzsche, Friedrich. 'What is the Meaning of Ascetic Ideals', Book III, Sections 1–6, *On the Genealogy of Morals*. trans. Walter Kaufmann and John Hollingdale, New York: Vintage Books 1967. pp 1-6
5. Bakhtin, Mikhail. 'Forms of Time and of the Chronotope in the Novel', *The Dialogic Imagination: Four Essays*. trans. Caryl Emerson Michael Holquist, Texas:University of Texas Press, 1981. pp 84-110, 243-58

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category II

(Discipline Specific Courses for Undergraduate Programme of study with ENGLISH(Major) as one of the Core Disciplines)

DISCIPLINE SPECIFIC CORE COURSE -5 (DSC-5) – : Romantic Literature

No. of hours- 60(Theory- 45 hrs.+Tutorials-15 hrs.)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 5: Romantic Literature	4	3	1	0	Passed Class XII with English	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To offer students a foundational understanding of the way in which Romantic thought and literature continue to sensitise us in terms of cultural and social change.
- To open up a sense of how dominant movements in the field of political and social representation, education and imagination emerge powerfully at this time.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students' imagination will be stimulated by an understanding of the ways in which Romantic theory and praxis influence many movements of change in the contemporary world.
- This course will map an exciting phase in the development of thought, gender-mobility and social change.

SYLLABUS OF DSC-5

UNIT – I (15 weeks-1 hour/week)

1. William Blake: *Songs of Innocence and Experience*: (i) 'Lamb' (ii) 'Tiger' (iii) 'Chimney Sweeper'(Songs of Innocence) (iv) 'Chimney Sweeper'(Songs of Experience)
2. William Wordsworth: (i) 'Tintern Abbey' (ii) 'London'
3. Samuel Taylor Coleridge: (i) 'Kubla Khan' (ii) 'Dejection: An Ode'

UNIT – II (15 weeks-1 hour/week)
1. Percy Bysshe Shelley: (i) 'Ozymandias (ii) 'Ode to the West Wind'
2. John Keats: (i) 'Ode to a Nightingale' (ii) 'Ode on a Grecian Urn' (iii) 'Ode to Autumn'

UNIT – III (15 weeks-1 hour/week)
1. Mary Shelley: *Frankenstein*

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings:
1. William Wordsworth, 'Preface to Lyrical Ballads', in *Romantic Prose and Poetry*, ed. Harold Bloom and Lionel Trilling, New York: OUP, 1973. pp 594–611
2. John Keats, 'Letter to George and Thomas Keats, 21 December 1817', and 'Letter to Richard Woodhouse, 27 October, 1818', in Romantic Prose and Poetry. ed. Harold Bloom and Lionel Trilling, New York: OUP, 1973. pp 766–768, 777–778
3. Jean-Jacques Rousseau, 'Preface' to *Emile or Education*. tr. Allan Bloom. Harmondsworth: Penguin, 1991.
4. Samuel Taylor Coleridge, 'Chap. XIII', *Biographia Literaria*. ed. George Watson, London: Everyman, 1993. pp 161–66
5. J.J. Rousseau, 'Discourse on the Origin of Inequality': Part One, *Jean-Jacques Rousseau: Basic Political Writings*. Hackett Publishing Company, 1987. pp 37-60
6. Gilpin, William. 'On Picturesque Travel', *Three Essays: On Picturesque Beauty; On Picturesque Travel; and On Sketching Landscape: to which is Added a Poem, On Landscape Painting*. UK: R. Blamire, 1794.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 6 (DSC-6): Victorian Literature

No. of hours- 60(Theory- 45 hrs.+Tutorials-15 hrs.)

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 6: Victorian Literature	4	3	1	O	Passed Class XII with English	NIL

Learning Objectives:

The Learning Objectives of this course are as follows:

- To offer students a fundamental understanding of how nineteenth-century developments in England around industrialization, colonization and gender-relations foreshadow later thinking on the subject.
- To offer students a basic sense of the deep-rooted nature of contemporary social and cultural challenges as having their origins in earlier times.

Learning outcomes:

The Learning Outcomes of this course are as follows:

- By studying this course, students' imagination will be kindled to the way in which a range of genres speak to the spirit of an era.

SYLLABUS OF DSC- 6

UNIT – I (15 weeks-1 hour/week)
1. Charlotte Bronte: *Jane Eyre*
2. Alfred Tennyson: 'The Lady of Shalott'

UNIT – II (15 weeks-1 hour/week)
1. Charles Dickens: *Great Expectations*
2. Robert Browning: 'My Last Duchess'

UNIT – III (15 weeks-1 hour/week)
1. George Eliot: *The Mill on the Floss*
2. Elizabeth Barrett Browning: 'How Do I Love Thee? Let me Count the Ways'

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings (if any):

1. Karl Marx and Friedrich Engels, 'Mode of Production: The Basis of Social Life', 'The Social Nature of Consciousness', and 'Classes and Ideology', in *A Reader in Marxist Philosophy*. ed. Howard Selsam and Harry Martel, New York: International Publishers, 1963. pp 186–8, 190–1, 199–201
2. Charles Darwin, 'Natural Selection and Sexual Selection', in *The Descent of Man in The Norton Anthology of English Literature*. 8th edn., vol. 2, ed. Stephen Greenblatt, New York: Northon, 2006. pp 1545–9
3. John Stuart Mill, 'The Subjection of Women', *The Norton Anthology of English Literature*, 8th edn., vol. 2, ed. Stephen Greenblatt, New York: Norton, 2006. pp 1061–9

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category III

Discipline Specific Courses for Undergraduate Programme of study with ENGLISH(minor) as one of the Core Disciplines

DISCIPLINE SPECIFIC CORE COURSE -3 (DSC-3) – : Romantic Literature

No. of hours- 60(Theory- 45 hrs.+Tutorials-15 hrs.)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 3: Romantic Literature	4	3	1	0	Passed Class XII with English	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To offer students a foundational understanding of the way in which Romantic thought and literature continue to sensitise us in terms of cultural and social change.
- To open up a sense of how dominant movements in the field of political and social representation, education and imagination emerge powerfully at this time.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students' imagination will be stimulated by an understanding of the ways in which Romantic theory and praxis influence many movements of change in the contemporary world.
- This course will map an exciting phase in the development of thought, gender-mobility and social change.

SYLLABUS OF DSC-3

UNIT – I (15 weeks-1 hour/week)

1. William Blake: *Songs of Innocence and Experience*: (i) 'Lamb' (ii) 'Tiger' (iii) 'Chimney Sweeper'(Songs of Innocence) (iv) 'Chimney Sweeper'(Songs of Experience)
2. William Wordsworth: (i) 'Tintern Abbey' (ii) 'London'
3. Samuel Taylor Coleridge: (i) 'Kubla Khan' (ii) 'Dejection: An Ode'

UNIT – II (15 weeks-1 hour/week)
1. Percy Bysshe Shelley: (i) 'Ozymandias (ii) 'Ode to the West Wind'
2. John Keats: (i) 'Ode to a Nightingale' (ii) 'Ode on a Grecian Urn' (iii) 'Ode to Autumn'

UNIT – III (15 weeks-1 hour/week)
1. Mary Shelley: *Frankenstein*

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings:
1. William Wordsworth, 'Preface to Lyrical Ballads', in *Romantic Prose and Poetry*, ed. Harold Bloom and Lionel Trilling, New York: OUP, 1973. pp 594–611
2. John Keats, 'Letter to George and Thomas Keats, 21 December 1817', and 'Letter to Richard Woodhouse, 27 October, 1818', in Romantic Prose and Poetry. ed. Harold Bloom and Lionel Trilling, New York: OUP, 1973. pp 766–768, 777–778
3. Jean-Jacques Rousseau, 'Preface' to *Emile or Education*. tr. Allan Bloom. Harmondsworth: Penguin, 1991.
4. Samuel Taylor Coleridge, 'Chap. XIII', *Biographia Literaria*. ed. George Watson, London: Everyman, 1993. pp 161–66
5. J.J. Rousseau, 'Discourse on the Origin of Inequality': Part One, *Jean-Jacques Rousseau: Basic Political Writings*. Hackett Publishing Company, 1987. pp 37-60
6. Gilpin, William. 'On Picturesque Travel', *Three Essays: On Picturesque Beauty; On Picturesque Travel; and On Sketching Landscape: to which is Added a Poem, On Landscape Painting*. UK: R. Blamire, 1794.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF DISCIPLINE SPECIFIC ELECTIVE (DSE) COURSES FOR SEMESTER III

DISCIPLINE SPECIFIC ELECTIVE COURSE– 1 (DSE-1): Literature and Cinema

No. of hours- 60(Theory- 45 hrs.+Tutorials-15 hrs.)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
DSE-1 Literature and Cinema	4	3	1	0	Passed Class XII	NIL	English

Learning Objectives

The Learning Objectives of this course are as follows:

- To familiarize students with the basic aspects of cinema studies.
- To consider the relationship between literature and cinema.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to acquire knowledge of visual grammar across genres of film.
- Students will understand how cinema deals with issues of gender and sexuality.

SYLLABUS OF DSE-1

UNIT – I (15 weeks-1 hour/week)

UNIT I: Language of Cinema

- Mise en scène
- film vocabulary

- signs and syntax
- Origin of Cinema as a New Form of Art
- questioning the traditional functions of art
- analysing new art forms in the 20th century
- film as a new form of art
- silent cinema

1. Monaco, James. 'The Language of Film: Signs and Syntax', *How to Read a Film: The World of Movies Media and Multimedia*. New York: OUP 2009. pp 170-249

2. Walter Benjamin: *The Work of Art in the Age of Mechanical Reproduction* (1935)

3. *Modern Times*, dir. Charlie Chaplin, 1936.

FOR VISUALLY IMPAIRED STUDENTS:

3. Film script of *Modern Times*:

http://chaplin.bfi.org.uk/resources/bfi/filmog/film_thumb.php?fid=59441&resource=Script

UNIT – II (15 weeks-1 hour/week)

UNIT II: Cinematic adaptations of literary texts

- theory of adaptation
- the relationship between literature and films
- film as an adapted text

4. William Shakespeare: *Macbeth* (1623)

5. *Maqbool*, dir. Vishal Bhardwaj, 2003.

6. *Throne of Blood*, dir. Akira Kurosawa, 1957.

FOR VISUALLY IMPAIRED STUDENTS:

5. Film Script of *Maqbool*:

https://www.filmcompanion.in/download-the-script-ofmaqbool/amp/

6. Film script of *Throne of Blood*:

https://transcripts.thedealr.net/script.php/throne-of-blood-1957-DAL

UNIT – III (15 weeks-1 hour/week)

UNIT III: Gender and sexuality

- connection with literature
- the difference between sexuality in films and literary texts
- the gaze
- the body
- cinematography

7. Mulvey, Laura. 'Visual Pleasure and Narrative Cinema', *Film Theory and Criticism: Introductory Readings*. eds. Leo Braudy and Marshall Cohen, New York: Oxford UP 1999. pp 833-44

8. *Thelma and Louise*, dir. Ridley Scott, 1991.

9. *Margarita with a Straw*, dir. Shonali Bose, 2014.

FOR VISUALLY IMPAIRED STUDENTS:

8. Film Script for *Thelma and Louise*:

https://www.imsdb.com/scripts/Thelma-&-Louise.html

9. Film Script for *Margarita with a Straw*:

https://www.scripts.com/script/margarita%2C_with_a_straw_13368

NOTE: For visually impaired students to be able to take this paper, a number of supplementary readings are offered for Units 2 and 3. The cinematic texts in these units are to be supplemented by close reading of the respective film scripts.

For purposes of assessment/evaluation, a general advisory may be made to assist visually impaired students filter out areas they may not be able to address due to the nature of their disability and to focus on using supplementary texts to instead create other perspectives/forms of knowledge on the same texts.

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings:

1. Berger, John, et al. Chaps. 2 & 3, *Ways of Seeing*. United Kingdom: British Broadcasting Corporation and Penguin Books, 1972. pp 35-64

2. Bordwell, David. *Film Art: An Introduction*. New York: McGraw Hill, 1998.

3. Cartmell, Deborah(ed). *A Companion to Literature, Film and Adaptation*. Oxford: Wiley-Blackwell, 2012.

4. Costello, Tom. *International Guide to Literature on Film*. London: Bowker-Saur, 1994. Print.

5. Nichols, Bill(ed). *Movies and Methods: Vol. I: An Anthology*. Calcutta: Seagull Books, 1985.

6. Nichols, Bill(ed). *Movies and Methods: Vol. II: An Anthology*. Calcutta: Seagull Books, 1985.

7. Prasad, Madhava. 'The Absolutist Gaze: The Political Structure and the Cultural Form', in *Ideology of the Hindi Film: A Historical Construction* pp 48-82.

8. Roberge, Gaston. *The Subject of Cinema*. Calcutta: Seagull Books. 1990. Print.

9. Ross, Harris. *Film as Literature, Literature as Film: An Introduction and Bibliography of Film's relationship to Literature*. New York: Greenwood, 1987.

10. Stam Robert and Alessandra Raengo(ed). *A Companion to Literature and Film*, London: Blackwell, 2004. Print.

DISCIPLINE SPECIFIC ELECTIVE COURSE– 2 (DSE-2): Literary Theory

No. of hours- 60(Theory- 45 hrs.+Tutorials-15 hrs.)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
DSE-2 Literary Theory	4	3	1	0	Passed Class XII	NIL	English

Learning Objectives

The Learning Objectives of this course are as follows:

- To familiarize students with the aspects of canonical literary theory
- To create a base for theoretical knowledge

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to discern relations between text, theory, and the world.
- This course will provide an understanding of complexities of theoretical positions.

SYLLABUS OF DSE-2

UNIT – I (15 weeks-1 hour/week)

1. Antonio Gramsci: (i) 'Formation of the Intellectuals' (ii) 'Hegemony and the Separation of Powers'

UNIT – II (15 weeks-1 hour/week)

1. Jacques Derrida: 'Structure, Sign and Play in the Discourse of Human Sciences'

2. Michel Foucault: 'Truth and Power'

UNIT – III (15 weeks-1 hour/week)

1. Luce Irigaray: (i) ‘This Sex Which Is Not One’ (ii) ‘Commodities Amongst Themselves’

2. Judith Butler: ‘Women as the Subject of Feminism’

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings:

1. Ahmad, Aijaz. ‘Introduction’; Chapter 7: ‘Indian Literature: Notes Towards the Definition of a Category’; Chapter 8: ‘Three Worlds Theory: End of a Debate’, *In Theory: Classes, Nations, Literatures*. London, New York: Verso, 2000.

2. Barry, Peter. *Beginning Theory: An Introduction to Literary and Cultural Theory*. Manchester: Manchester University Press, 4th Edition, 2017.

3. Eagleton, Terry. ‘Introduction’; Chapter 1; ‘Conclusion’, *Literary Theory: An Introduction*. Minneapolis: University of Minneapolis Press, 2008.

DISCIPLINE SPECIFIC ELECTIVE COURSE– 3 (DSE-3): Nineteenth Century European Realism

No. of hours- 60(Theory- 45 hrs.+Tutorials-15 hrs.)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
DSE-3 Nineteenth Century European Realism	4	3	1	0	Passed Class XII	NIL	English

Learning Objectives

The Learning Objectives of this course are as follows:

- To familiarize students with the classic writings of European realism in the Nineteenth Century.
- To enable an understanding of specifics of realism among students.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to comprehend different registers of European realism.
- This course will provide critical insights into ideas of the novel and its development.

SYLLABUS OF DSE-3

UNIT – I (15 weeks-1 hour/week)

1. Balzac, Honoré de. *Old Man Goriot* (1835). trans. Olivia Mc Cannon, UK: Penguin Classics, 2011.

UNIT – II (15 weeks-1 hour/week)

1. Flaubert, Gustave. *Madame Bovary* (1856). trans. Geoffrey Wall, UK: Penguin Classics, 2003.

UNIT – III (15 weeks-1 hour/week)

1. Dostoyevsky, Fyodor. *Crime and Punishment* (1866). trans. Oliver Ready, UK: Penguin Classics Deluxe, edition, 2014.

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings:

1. Balzac, Honoré de. 'Society as Historical Organism', from Preface to, 'The Human Comedy', *The Modern Tradition*, ed. Richard Ellmann et al, Oxford: OUP, 1965. pp 265-267

2. Belinsky, V. G. 'Letter to Gogol (1847)', *Selected Philosophical Works*. Moscow: Moscow Foreign Languages Publishing House, 1948. pp 506-07

3. Flaubert, Gustave. 'Heroic Honesty', *The Modern Tradition*. ed. Richard Ellmann et al, Oxford: OUP, 1965. pp 242-43.

4. Frank, Joseph. *Dostoevsky: A Writer in His Time*. United Kingdom: Princeton University Press, 2012. pp 472-508

5. Frank, Joseph. *Lectures on Dostoevsky*. United States: Princeton University Press, 2022.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVE (GE) COURSES FOR ODD SEMESTERS

NOTE: The Generic Electives for the ODD SEMESTERS already approved, will also run for Semester III students. These are:

GENERIC ELECTIVES (GE-1: Language and Culture)

No. of hours- 60(Theory- 45 hrs.+Tutorials-15 hrs.)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
GE-1 Language and Culture	4	3	1	0	Passed Class XII	NIL	English

Learning Objectives

The Learning Objectives of this course are as follows:

- To familiarize students with the basic approaches to the study of language.
- To impart a socio- cultural perspective to the study of English in the Indian context.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to analyze both the socio-cultural and formal aspects of language in general and English in particular.
- Students will be able to understand the shifting and evolving dynamics of the link between language and culture in India.

SYLLABUS OF GE-1

UNIT – I (15 weeks-1 hour/week)
UNIT I-Language

1. Connor-Linton, Jeffrey, and Fasold, Ralph. 'Introduction', *An Introduction to Language and Linguistics*. United States: Cambridge University Press, 2006.
2. Fromkin, Victoria, Robert Rodman, and Nina Hyams. 'Part 1', *An Introduction to the Study of Language.* Boston, MA: Cengage, 2017.
3. Wardaugh, Ronald. Chapters 2 and 3, *An Introduction to Sociolinguistics*. Malden, MA: Blackwell, 2006.
4. Rodriques, M V. Chapters 2 and 6, *Perspectives of Communication and Communicative Competence*. India: Concept Pub, 2000.

UNIT – II (15 weeks-1 hour/week)
UNIT II- English Language in India and Multilingualism
1. Jayendran, Nishevita, et al. Chapters 3, 5 and 6, *Language Education: Teaching English in India*. India: Taylor & Francis, 2021.
2. Mukherjee, Joybrato. 'The development of the English language in India', *The Routledge Handbook of World Englishes*. ed. A. Kirkpatrick, London and New York: Routledge, Taylor & Francis Group, 2000. pp 167-180
3. Bhatia, Tej K. 'The Multilingual Mind, Optimization Theory and Hinglish', *Chutnefying English: The Phenomenon of Hinglish. India.* ed. Rita Kothari & Rupert Snell, Penguin Books, 2011.

UNIT – III (15 weeks-1 hour/week)
UNIT III: Language and Society
1. Wardaugh, Ronald. 'Gender', An *Introduction to Sociolinguistics*. Malden, MA: Blackwell, 2006.
2. Soden, Satori, et al. Chapter 5, 6, 8, 9, *Language, Society and Power: An Introduction*. Taylor & Francis, 2010.
3. Wilson, James C. and Cynthia Lewiecki-Wilson. 'Disability, Rhetoric, and the Body': *Embodied Rhetorics: Disability in Language and Culture*. United States: Southern Illinois University Press, 2001.

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings:
1. Fowler, Roger. *The Linguistics of Literature*. London: Routledge and Kegan Paul Ltd, 1971.
2. Bailey, R. W. and J. L. Robinson, ed. *Varieties of present-day English*. New York: Macmillan, 1973.
3. Fishman, J.A. *Sociolinguistics: A Brief Introduction*. Mass: Newbury House Rowley, 1971.
4. Gupta R. S. and K. S. Agarwal, *Studies in Indian Sociolinguistics*. New Delhi: Creative Books, 1996.

5. ‘Notes on the History of the Study of the Indian Society and Culture’, *Structure and Change in Indian Society*, ed. Milton Singer and Bernard S Cohn. Chicago: Aldine Press, 1968.
6. ‘Towards a Definition of Culture’, *India and World Culture*. New Delhi: Sahitya Academy, 1986.
7. ‘Culture and Ideology’, *Culture, Ideology and Hegemony: Intellectual and Social Consciousness in Colonial India*. London and New York: Longman,1995.
8. Crystal, David. *The Stories of English*. UK: Penguin Books Limited, 2005.
9. Krishnaswamy, N., and Krishnaswamy, Lalitha. *The Story of English in India*. India: Foundation Books, 2006.
10. Crystal, David. *The Cambridge Encyclopedia of the English Language*. Cambridge: Cambridge University Press, 1995.
11.Mesthrie, Rajend, and Bhatt, Rakesh M. *World Englishes: The Study of New Linguistic Varieties*. United Kingdom: Cambridge University Press, 2008.
12. Marckwardt, Albert H. “English as a Second Language and English as a Foreign Language.” *PMLA*, vol. 78, no. 2, 1963, pp 25–28.
13. Kramschin, Claire. *The Routledge Handbook of Language and Culture. United Kingdom, Taylor & Francis, 2014.*

GENERIC ELECTIVES (GE-2: Genre Fiction)

No. of hours- 60(Theory- 45 hrs.+Tutorials-15 hrs.)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
GE-2 Genre Fiction	4	3	1	0	Passed Class XII	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- To understand how the evolving genre of fiction engages with contemporary social and cultural realities.
- To understand the strategies of narrative and themes this specific genre of fiction uses.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to efficiently undertake textual analysis within the specific rubric of genre fiction.
- Students will gain knowledge of the aspects of fictionality while engaging with popular culture.

SYLLABUS OF GE-2

UNIT – I (15 weeks-1 hour/week)
1. Arthur Conan Doyle: *The Sign of Four*

UNIT – II (15 weeks-1 hour/week)
1. Kashigo Ishiguro: *Never Let Me Go*

UNIT – III (15 weeks-1 hour/week)
1. Ibn-e-Safi: *House of Fear*
2. Madulika Liddle: *Crimson City*

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings:

1. H. Thomas Milhorn: *Writing Genre Fiction: A Guide to the Craft* (2006)
2. Beth Driscoll, Kim Wilkins, Lisa Fletcher: *Genre Worlds: Popular Fiction and Twenty-First-Century* (2022)
3. Joyce G. Saricks: *The Readers' Advisory Guide to Genre Fiction* (2009)
4. Jeremy Rosen: 'Literary Fiction and the Genres of Genre Fiction' Posted 8th July, 2018.
https://post45.org/2018/08/literary-fiction-and-the-genres-of-genre-fiction/

GENERIC ELECTIVES (GE-3): Dystopian Writings

No. of hours- 60(Theory- 45 hrs.+Tutorials-15 hrs.)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
GE-3: Dystopian Writings	4	3	1	0	Passed Class XII	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To familiarize students with the evolution of the literary trends/movements under Dystopian writings.
- To analyse texts and identify the distinctions across prominent milieus and regions.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to understand what constitutes the genre of Dystopian Writings.
- students will be able to discern the shifting dynamics of reality and representation.

SYLLABUS OF GE-3

UNIT – I (15 weeks-1 hour/week)
1. Mary Shelley: *The Last Man*

UNIT – II (15 weeks-1 hour/week)
1. H.G. Wells: *The Time Machine*

UNIT – III (15 weeks-1 hour/week)
1. Malcolm Bradbury: *Fahrenheit 451*

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings:

1. Stock, Adam. *Modern Dystopian Fiction and Political Thought: Narratives of World Politics*. United Kingdom: Taylor & Francis, 2018.
2. Gottlieb, Erika. *Dystopian Fiction East and West: Universe of Terror and Trial*. Maldives: McGill-Queen's University Press, 2001.
3. Basu, Balaka, et al. (ed.) *Contemporary Dystopian Fiction for Young Adults: Brave New Teenagers*. United States: Taylor & Francis, 2013.
4. Isomaa, Saija, et al. (ed.) *New Perspectives on Dystopian Fiction in Literature and Other Media*. United Kingdom: Cambridge Scholars Publishing, 2020.
5. Anthony, Ashley G., et al. (ed.) *Worlds Gone Awry: Essays on Dystopian Fiction*. United States: Incorporated Publishers, 2018.

GENERIC ELECTIVES (GE-4) Literature & Human Rights

No. of hours- 60(Theory- 45 hrs.+Tutorials-15 hrs.)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
GE-4 Literature & Human Rights	4	3	1	0	Passed Class XII	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To consider the relationship between literature and human rights.
- To indicate investments in human rights within literary texts.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to understand the relevance of human rights in everyday contexts.
- Students will be able to appreciate the importance of human rights in literary and theoretical terms.

SYLLABUS OF GE-4

UNIT – I (15 weeks-1 hour/week)
1. George Orwell: *1984*(1949)

UNIT – II (15 weeks-1 hour/week)
1. Harper Lee: *To Kill a Mockingbird* (1960)

UNIT – III (15 weeks-1 hour/week)
1. *Freedom: Short Stories Celebrating the Universal Declaration of Human Rights*. Amnesty International, 2009.
(i) 'In the Prison of Repose'—Paulo Coelho
(ii) 'Amnesty'—Nadine Gordimer
(iii) 'ABC Antidote'—Ishmael Beah
2. Maya Angelou: 'I Know Why the Caged Bird Sings'[poem]

3. June Millicent Jordan: ‘Poem About My Rights’

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings:

1. The Universal Declaration of Human Rights
https://www.un.org/en/udhrbook/pdf/udhr_booklet_en_web.pdf
2. Barzilay, Vered Cohen. ‘Foreword: The Tremendous Power of Literature’, *Freedom: Short Stories Celebrating the Universal Declaration of Human Rights*. Amnesty International, 2009.
3. Hunt, Lynn. *Inventing Human Rights: A History*. W.W. Norton, 2008.
4. Nickel, James W. *Making Sense of Human Rights: Philosophical Reflections on the Universal Declaration of Human Rights*. United Kingdom: University of California Press, 1987.
5. Tierney, Brian. *The Idea of Natural Rights: Studies on Natural Rights, Natural Law, and Church Law*, 1150-1625. United Kingdom: Eerdmans Publishing Company, 2001.
6. Rawls, John. T*he Law of Peoples: with “The Idea of Public Reason Revisited”*. United Kingdom: Harvard University Press, 1999.
7. Griffin, James. *On Human Rights*. United Kingdom: OUP, 2009.

GENERIC ELECTIVES (GE-5) Readings on Indian Diversities and Literary Movements

No. of hours- 60(Theory- 45 hrs.+Tutorials-15 hrs.)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
GE-5 Readings on Indian Diversities and Literary Movements	4	3	1	0	Passed Class XII	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce the social and cultural history of India which were conducive to the development of art and literature
- To inculcate new ways to interpret, understand and read representations of diversity.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to read non-verbal social and cultural history.
- Students will be encouraged to be open to the diverse modes of thought.

SYLLABUS OF GE-5

UNIT – I (15 weeks-1 hour/week)

1. Overview
2. Linguistic Plurality within Sufi and Bhatia Tradition

UNIT – II (15 weeks-1 hour/week)

1. Language Politics: Hindi and Urdu
2. Tribal Verse
3. Dalit Voices

UNIT – III (15 weeks-1 hour/week)

1. Writing in English
2. Woman Speak: Examples from Kannada and Bangla
3. Literary Cultures: Gujarati and Sindhi

Practical component (if any) - NIL

Essential/recommended readings:

1. Kumar, Sukrita Paul et al. (eds.). *Cultural Diversity, Linguistic Plurality, and Literary Traditions in India*. New Delhi: Macmillan, 2005.

Suggestive readings- NIL

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-6) Indian English Literatures

No. of hours- 60(Theory- 45 hrs.+Tutorials-15 hrs.)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
GE-6 Indian English Literatures	**4**	**3**	**1**	**0**	Passed Class XII	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce literary texts from a range of regional, cultural, social, and political locations within India.
- To inculcate an in-depth understanding of some of the major issues shaping this literary production.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to comprehend regional differences in the issues discussed and in socio-cultural contexts.
- Students will be able to analyze the use of the English language by non-native speakers and writers.

SYLLABUS OF GE-6

UNIT – I (15 weeks-1 hour/week)

1. Vikram Seth: *A Suitable Boy*

UNIT – II (15 weeks-1 hour/week)

1. Shashi Deshpande: 'The Intrusion'
2. Salman Rushdie: 'The Courter'
3. Rohinton Mistry: 'Swimming Lessons'
4. Vikram Chandra: 'Dharma'

UNIT – III (15 weeks-1 hour/week)

1. Kamala Das: (i) 'An Introduction' (ii) 'My Grandmother's House'

2. Nissim Ezekiel: (i) ‘Night of the Scorpion’ (ii) ‘Goodbye Party for Miss Pushpa TS’
3. Arun Kolatkar: (i) ‘The Bus’
4. Mamang Dai, ‘The Sorrow of Women’

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings:

1. Burton, Antoinette. *Dwelling in the Archive: Women Writing House, Home, and History in Late Colonial India*. Oxford UP, 2003.
2. Zecchini, Laetitia. *Arun Kolatkar & Literary Modernism in India: Moving Lines*. USA: Bloomsbury Academic, 2014.
3. Nerlekar, Anjali. *Bombay Modern: Arun Kolatkar and Bilingual Literary Culture*. Speaking Tiger, 2017.
4. Anjaria, Ulka. *Realism in the Twentieth-Century Indian Novel: Colonial Difference and Literary Form*. Cambridge UP, 2012.
5. Parashkevova, Vassilena. *Salman Rushdie's Cities: Reconfigurational Politics and the Contemporary Urban Imagination*. Bloomsbury, 2012.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVE (GE) LANGUAGE COURSES

GENERIC ELECTIVES LANGUAGE-5 (GE Language 5) English Language through Literature-II

No. of hours- 60(Theory- 45 hrs.+Tutorials-15 hrs.)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
GE Language 5- English Language Through Literature-II	**4**	**3**	**1**	**0**	Passed Class XII	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- To develop in students the ability and confidence to process, understand and examine different kinds of texts-verbal and written-that they encounter in everyday life.
- To enable students to identify and understand social contexts and ethical frameworks in the texts they encounter.
- To encourage suitable research–to recognize sources; to distinguish fact from opinion/editorialization; produce objective versus subjective pieces
- To learn skilled comprehension; listening/reading; skimming; summarizing; précis writing; paraphrasing; note making
- To identify key topics/arguments/ideas
- To accomplish writing goals: creating an essay; writing a thesis statement; producing topic sentences; developing organised paragraphs; evolving the skill of producing suitable transitions between paragraphs

- To enable students to write in expository argumentative and descriptive modes
- To help students identify and use the characteristic features of various writing forms: letters; programmes reports/press-releases; newspaper; feature articles; fiction and nonfiction
- To enable students to choose between expository, argumentative, descriptive and narrative writing styles to assemble their own writing

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to inculcate confident expression.
- Students will be able to articulate their own views confidently as their language skills sufficiently empower them to converse, research and collate information from various textual sources—verbal or written.

SYLLABUS OF GE LANGUAGE 5-

UNIT – I (15 weeks-1 hour/week)

UNIT 1: Understanding Fiction

1. Kumar E., Santhosh. 'Three Blind Men describe an Elephant', *Indian Review*.

http://indianreviewin/fiction/malayalam-short-stories-three-blind-men-describe-an-elephant-by-e-santhosh-kumar/ Accessed 1st June 2022

2. Mistry, Rohinton. 'The Ghost of Firozsha Baag', *Tales from Firozsha Bagh*. McClelland & Stewart, 1992.

3. Joshi, Umashankar. 'The Last Dung Cake', *The Quilt from the Flea-market and Other Stories*. Delhi: National Book Trust, 2017.

UNIT – II (15 weeks-1 hour/week)

UNIT 2: Creating Your Own Voice

4. Powell, Tori B. 'Young people discuss how phones and social media create connection — and self-doubt: "Compared to them, I am a nobody"' *CBS News*. Posted 24th May 2022.

https://www.cbsnews.com/news/mental-health-impacts-phones-social-media/

5. Khanna, Twinkle. 'Lesson from Frida: Backbone can win over broken spine' in 'Mrs. Funnybones' *The Times of India*. 16th September 2018. https://timesofindia.indiatimes.com/blogs/mrsfunnybones/lesson-from-frida-backbone-can-win-over-broken-spine/ Accessed 13th June 2022

UNIT – III (15 weeks-1 hour/week)

UNIT 3: Writing your own academic paper

6. Patel, Raj and Moore Jason. 'How the chicken nugget became the true symbol of our era' *The Guardian*, 8th May 2018

https://wwwtheguardiancom/news/2018/may/08/how-the-chicken-nugget-became-the-true-symbol-of-our-era Accessed 1st June 2022

7. Latest editions of the MLA and APA style sheets

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings- NIL

GENERIC ELECTIVES LANGUAGE-6 (GE Language 6) Digital Communication-II

No. of hours- 60(Theory- 45 hrs.+Tutorials-15 hrs.)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
GE Language 6- Digital Communication-II	**4**	**3**	**1**	**0**	Passed Class XII	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- To hone skills for online communication and provide interpersonal skills required in the digital world.
- To effectively present themselves in personal and professional capacities using online mediums.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to understand and learn globally emerging forms of digital communication in English and effectively communicate in their everyday contexts be it in social or professional situations.

SYLLABUS OF GE LANGUAGE 6-

UNIT – I (15 weeks-1 hour/week)

UNIT I: Curating Persona

1. Maintaining profiles (continuity: coherence, cohesion)

2. Innovating content (introducing new ideas, opinions, and facts: style and correctness)

3. Content writing (briefs, press releases, podcast scripts: concise, cohesion, coherence, clarity)

UNIT – II (15 weeks-1 hour/week)

UNIT II: Making Institutional Profiles and networks

1. Writing about the institution (describing and assessing)

2. Building networks (compare, contrast, synthesize)

3. Updating Blogs and Vlogs (discourse markers)

UNIT – III (15 weeks-1 hour/week)

UNIT III: Online Interactions and Diversity

1. Etiquettes for online interactions (chats, meetings, video conferences).

2. Ethics towards inclusive and integrated participation (addressing gender, ethnicity, special abilities)

3. Drawing boundaries in communication (obscenities, hostility, addressing disrespectful comments and feedback: changing register and tone of communication)

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings- NIL

GENERIC ELECTIVES LANGUAGE-7 (GE Language 7) English Fluency-II

No. of hours- 60(Theory- 45 hrs.+Tutorials-15 hrs.)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
GE Language 7- English Fluency-II	**4**	**3**	**1**	**0**	Passed Class XII	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- To describe or express their opinions on topics of personal interest such as their experiences of events, their hopes and ambitions.
- To read and understand information on topical matters and explain the advantages and disadvantages of a situation.
- To write formal letters, personal notes, blogs, reports and texts on familiar matters.
- To comprehend and analyse texts in English.
- To organise and write paragraphs and short essays in a variety of rhetorical styles.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to effectively communicate in their everyday contexts.
- Students will be equipped with skills that will help them interact with people around their personal, institutional and social spaces.

SYLLABUS OF GE LANGUAGE 7-

UNIT – I (15 weeks-1 hour/week)

Unit 1: In the State

- Research -- Filing an FIR, making an RTI request, submitting a consumer complaint
- Active & Passive voice; idioms

A. Find out what the procedure is for making a complaint about trees being cut in your neighbourhood.

B. Draft a formal letter requesting information about the disbursal of funds collected by a residents' welfare association

Readings:

1. Sendak, Maurice. *Where the Wild Things Are*. UK: Random House, 2000.

2. https://rtionline.gov.in/

3. www.jaagore.com/know-your-police/procedure-of-filing-fir

4. www.consumercomplaints.in/municipal-corporation-of-delhi-b100274

UNIT – II (15 weeks-1 hour/week)

Unit 2: Interface with Technology

- Book/film reviews
- Punctuation

A. Write a review of a text you have read in class.

B. Record a collaborative spoken-word review of the latest film your group have all seen

Readings:

5. Kennedy, Elizabeth. "Breakdown and Review of 'Where the Wild Things Are'." *ThoughtCo*. Posted 3rd July, 2019.

https://www.thoughtco.com/where-the-wild-things-are-maurice-sendak-626391
Accessed 1st June, 2022

6. Brown, Dan. *Angels & Demons*. UK: Pocket Books, 2000.

7. *Angels & Demons*. dir. Ron Howard, 2009.

UNIT – III (15 weeks-1 hour/week)

Unit 3: Self-Representation

- Introducing oneself, giving and seeking information.
- Introduce characters from the texts you are reading.
- Creating a profile for social media.
- Creating a professional profile of oneself.
- Dialogue writing, Paragraph writing – Brainstorming, planning/outline rough drafts, editing.
- Intercultural Communication

Readings:

8. "To Jyotiba, From Savitribai Phule: These Aren't Love Letters, But Tell You What Love Is All About", *Scroll.In*. Posted 14th February, 2016.

https://scroll.in/article/801848/to-jyotiba-from-savitribai-phule-these-arent-love-letters-buttell-you-what-love-is-all-about Accessed on 1st June 2022

9. Sharma, Natasha. *Squiggle Takes a Walk: All About Punctuation*. Penguin/Young Zubaan and Puffin, 2014.

10. Lorde, Audre. 'The Transformation of Silence into Language and Action', *Sister Outsider*. NY: Random House, 1984. pp 40-44

11. *Haroun and the Sea of Stories: Salman Rushdie*. New Delhi: Penguin Books, 1991. pp 15-23

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings: NIL

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES LANGUAGE-8 (GE Language 8) Developing English Language Skills-II

No. of hours- 60(Theory- 45 hrs.+Tutorials-15 hrs.)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
GE Language 8- Developing English Language Skills-II	**4**	**3**	**1**	**0**	Passed Class XII	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- To enhance comprehension skills and enrich vocabulary through the reading of short and simple passages with suitable tasks built around these.
- To introduce simple syntactical structures and basic grammar to students through contextualized settings and ample practice exercises so that they can engage in short independent compositions.
- To introduce the sounds of the language and the essentials of English pronunciation to students in order to remove the inhibitions experienced by them while speaking English.
- To acquaint students with social formulae used to perform various everyday functions so that they can converse in English in simple situations.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to read and write in English with confidence.
- The course will help in increasing their proficiency in English, increase their vocabulary and improve their comprehension of syntactical structures

SYLLABUS OF GE LANGUAGE 8-

UNIT – I (15 weeks-1 hour/week)

UNIT 1: Reading & Vocabulary–II

- Ways of expanding vocabulary;
- learning how to use a dictionary;
- understanding more text types such as argumentative and descriptive passages, poetry, character sketches, etc. through suitable activities based on selected texts

Readings:

1. *A Foundation English Course for Undergraduates*: Book III. Delhi: University of Delhi, 1993. pp 5–10, 27–29, 40–44, 81–83

2. *Developing Language Skills 2*. Delhi: Doaba House, 1995. pp 43–51

3. *Everyday English*. Delhi: Pearson, 2005. pp 36–43

4. *English at the Workplace II*. Delhi: Oxford University Press, 2007. pp 32–37, 46–48

UNIT – II (15 weeks-1 hour/week)

UNIT 2: Writing & Grammar–II

- Understanding what constitutes a piece of good writing;
- learning to describe objects and processes, narrate incidents and stories, and argue a point of view.
- framing of questions and negative sentences;
- modals and their uses.

Readings:

5. *A Foundation English Course for Undergraduates*: Book II. Delhi: University of Delhi, 1992. pp 115–130

6. *A Foundation English Course for Undergraduates*: Book III. Delhi: University of Delhi, 1993. pp 126–136

7. *Developing Language Skills I*. Delhi: Manohar, 1997. pp 183–186, 206–209

8. *Developing Language Skills 2*. Delhi: Doaba House, 1995. pp 112–116

9. *English at the Workplace II* (Delhi: Oxford University Press, 2007) pp 49 – 52.

UNIT – III (15 weeks-1 hour/week)

UNIT 3: Speaking & Listening–II

- Understanding the essentials of English pronunciation: word stress and rhythm in connected speech; speaking on the telephone;
- becoming a better listener;
- expressions used for getting and giving permission, agreeing and disagreeing, warning and persuading, inviting, suggesting, accepting and refusing, expressing likes and dislikes, regulating speech and ending a conversation.

Readings:

10. *Developing Language Skills I*. Delhi: Manohar, 1997. pp 26–45

11. *English at the Workplace*. Delhi: Macmillan, 2006. pp 52–57

12. *English at the Workplace II*. Delhi: Oxford University Press, 2007. pp 10–13, 20–24, 38–45

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings- NIL

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

BA(Hons.) Journalism

Bachelor in Journalism (Honours) degree

No. of hours- 60(Theory- 45 hrs.+Tutorials/Practicals-15 hrs.)

DISCIPLINE SPECIFIC CORE COURSE-7 (DSC-7): Media and Cultural Studies

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-7 Media and Cultural Studies	**4**	**3**	**0**	**1**	Passed Class XII with English	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To engage with contemporary media forms actively and critically in its diversity of music, films, graffiti, new media and folk media.
- To contextualize the developments of the media and its role though political and economic changes across the world.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to attain familiarity with the historical evolution of the media.

SYLLABUS OF DSC-7

UNIT – I (15 weeks-1 hour/week)

UNIT I: Understanding Culture

- Mass Culture, Popular Culture, Folk Culture
- Frankfurt School, Media as Cultural Industries
- Political Economy, Ideology and Hegemony
- Technological Determinism

UNIT – II (15 weeks-1 hour/week)

UNIT II: Representation

- Media as Texts
- Signs and Codes in Media
- Uses and gratification approach
- Reception studies
- Representation of nation, class, caste and gender issues in media

UNIT – III (15 weeks-1 hour/week)

UNIT III: Audiences

- Active audiences
- Women as audiences
- Sub Cultures; music and the popular
- Fandom

Practical component (if any)- Assignments can take rather creative forms like group blogging, journal entries, short films and posters. Students can be encouraged to do projects on analysis of TV shows, cultural symbols, folk performances, and music shows. They can also take up challenging themes like the representation of caste, gender, and nation in contemporary media.

Essential/recommended readings-

1. AS Media Studies: An Essential Introduction Edited by Philip Rayner, Peter Wall and Stephen Kruger, Routledge (Covers Unit II, III, IV and V), 2019

2. John Fiske, Introduction to Communication Studies, Routledge (Covers Unit II, Ideology and Meanings and Unit III signs and codes), 1982

3. Dennis McQuail, (fourth Edition) Mass Communication Theory, London, Sage (Covers Unit IV, Media Technologies), 2000

4. Baran and Davis, Mass Communication Theory (covers Unit II, III and IV), 1994

5. John Storey. Cultural Theory and Popular Culture: An Introduction. London: Pearson Longman. (Covers Unit 1 and II and IV), 2009

6. Kevin Williams, Understanding Media Theory (Covers Unit II, III and IV), 2003

Suggestive readings-

1. Media Cultures by Nick Stevenson, 2002, Second Edition, SAGE.

2. Short Extracts from writings by Adorno and Horkheimer, Radway, Roland Barthes, McLuhan

3. Parmar S. Traditional Folk Media in India, 1975, New Delhi, Geka Books

4. Chatterji, Roma. "Folklore and the construction of national tradition." Indian Folklife 19 (2005).

5. Rege, Sharmila. "Conceptualising Popular Culture:'Lavani' and 'Powada' in Maharashtra." Economic and political weekly (2002): 1038-1047.

6. Uberoi, Patricia. "Feminine identity and national ethos in Indian calendar art." Economic and Political Weekly (1990): WS41-WS48.

7. Punathambekar, Aswin. "Reality television and the making of mobile publics: The case of Indian Idol." in The Politics of Reality Television, pp. 154-174.Routledge, 2010.

8. Ranganathan, Maya. “The archetypes of Sita, Kaikeyi and Surpanakha stride the small screen.” In Rodrigues, Usha M., and Maya Ranganathan. Indian news media: From observer to participant. SAGE Publications India, 2014.

DISCIPLINE SPECIFIC CORE COURSE-8 (DSC-8): Introduction to New Media

No. of hours- 60(Theory- 45 hrs.+Tutorials/Practicals-15 hrs.)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-8 Introduction to New Media	**4**	**3**	**0**	**1**	Passed Class XII with English from List A in CUET	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To study new media theories from a critical lens.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to critically assess and synthesize new media theories, analytical approaches, and practices, connect disparate theories and understand their development and contribution to the field of new media studies; critique and contribute to debates about digital media ownership, economics, intellectual property, regulation, privacy, identity, sociality, infrastructure, and equity; understand user behaviour and participatory cultures online, audience analysis for production of content for websites and blogs, integration of social media and journalism and get employment as new media professional.

SYLLABUS OF DSC- 8

UNIT – I (15 weeks-1 hour/week)

UNIT I: Key Concepts

- Defining new media and digital media,
- terminologies and their meaning,
- advocacy journalism,
- multiplier effect,
- technological determinism,
- mobile-mediated-communication (MMC),
- networked society,
- Participatory culture- Blogs, Vlogs, Social Media Trends

UNIT – II (15 weeks-1 hour/week)

UNIT II: Digitization of Content: Debates & Concerns

- Piracy, copyright, copy-left and open source
- Digital archives
- How are new media monetized?
- New media and ethics

UNIT – III (15 weeks-1 hour/week)

UNIT III: Web Writing and Website Design

- Online reporting, linking, multimedia, building narratives with multimedia
- Website planning and visual design
- Content strategy and audience analysis

Practical component (if any)- Create a news website to understand the use of digital media for activism and journalism. Teacher and students will function as an Editor and Reporters, gathering multi-media content for the class website. The website will reflect unique multimedia productions from each student produced during the course of the semester. These productions will include shooting and editing videos, audios and pictures for the web, packaging text and content for an online audience.

Essential/recommended readings-

1. Vincent Miller. *Understanding Digital culture*. Sage Publications, 2011

2. Lev Manovich. "What is New Media?" in *The Language of New Media.* Cambridge: MIT Press. pp. 19-48, 2001

3. Siapera, Eugenia., *Understanding New Media.* Sage, 2011

4. *Digital Disconnect: How capitalism is turning the internet against democracy,* Robert McChesney, 2013

5. Jenkins, Henry. *Convergence Culture: Where Old and New Media Collide.* New York,NY: NYU Press, 2006

6. *New Media: A critical introduction* by Lister, Dovey, Giddings, Grant and Kelly, 2003

Suggestive readings-

1. Baym, Nancy K., Personal *Connections in the Digital Age.* Polity, 2010. (Chapter 3)

2. Goldsmith, Jack, and Tim Wu. 2006. Who Controls the Internet? Illusions of Borderless World. Oxford University Press US.

3. O'Reilly, Tim. (2005). What is web 2.0: Design patterns and business models for the next generations software. Oreilly.com, retrieved from http://oreilly.com/web2/archive/whatis web-20.html

4. Grossman, "Iran Protests: Twitter, the Medium of the Movement" Lemann, Nicholas. 2006.

5. Amateur Hour: Journalism without Journalists. The New Yorker, August 7, 2006. Available at http://www.newyorker.com/archive/2006/08/07/060807fa_fact1

6. Xiang, Biao. 2005. "Gender, Dowry and the Migration System of Indian Information Technology Professionals" Indian Journal of Gender Studies 12: 357-380.

7. Spreadable Media: Creating value and meaning in a networked culture, Jenkins, Ford, & Green. The Culture of Connectivity: A critical history of social media, Jose Van Dijck, 2013

8. Mobile Interfaces in Public Spaces: Locational privacy, control, and urban sociability, de Souza e Silva and Frith, 2012

DISCIPLINE SPECIFIC CORE COURSE-9 (DSC-9): Introduction to Photography

No. of hours- 60(Theory- 45 hrs.+Tutorials/Practicals-15 hrs.)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-9 Introduction to Photography	**4**	**3**	**0**	**1**	Passed Class XII with English from List A in CUET	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To utilize the technology and the tools of the photography in the production of photographic images, to include the operation of the camera, exposure, lenses etc.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to work as a photojournalist, professional photographer with any organization/political party and capture pictures for any event in the personal or professional capacities of customers.

SYLLABUS OF DSC-

UNIT – I (15 weeks-1 hour/week)

UNIT I: Beginning & Types of Photography

- The birth of Camera and its evolution
- Invention of Digital Photography
- Photojournalism: News Photography, Sports Photography, Nature photography, Portrait photography, Travel photography, Fashion photography and advertisement photography

UNIT – II (15 weeks-1 hour/week)

UNIT II: Camera Equipment & Lighting

- Camera Lenses, aperture, shutter
- Digital storage
- Different types of lighting-Natural lighting–and Artificial Lighting
- Three-point lighting

UNIT – III (15 weeks-1 hour/week)

UNIT III: Photo editing software

- Microsoft Office Picture manager,
- CorelDraw,
- Adobe Photoshop Elements,
- Photoshop CC (Creative Cloud) Correcting imperfect images: Picture orientation,
- Cropping,
- Levels,
- Altering brightness and contrast,
- red eye

Practical component (if any)- Students will make a photo feature on selected topics. Other methods will include lectures, class exercises of following photographs used by various social media and new paper and class discussions on mobile photography trends, as well as other significant debates on topical issues.

Essential/recommended readings-

1. *The Photography Book* by Editors of Phaidon Press, 30 April 2000.

2. *Communication Technology for Development*, Pannu P, Tomar A Yuki, IK international publishing House, 2011.

3. *All about Photography* by Ashok Dilwali, National Book Trust, Year of Publication: 2010 New Delhi.0

4. *Practical photography* by O.P. SHARMA HPB/FC (14 March 2003)

5. *The Photographer's Guide to Light* by Freeman John Collins & Brown, 2005.

6. *Lonely Planet's Best Ever Photography Tips* by Richard I' Anson published by Lonely Planet, 2013

Suggestive readings- NIL

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF DISCIPLINE SPECIFIC ELECTIVE (DSE) COURSES FOR SEMESTER III

DISCIPLINE SPECIFIC ELECTIVE-1 (DSE-1): Print Journalism and Production

No. of hours- 60(Theory- 45 hrs.+Tutorials/Practicals-15 hrs.)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSE-1 **Print Journalism and Production**	**4**	**3**	**1**	**0**	Passed Class XII	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- To learn the skills required for designing, printing and reporting for news organisations as journalists.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to understand the print culture.

SYLLABUS OF DSE-1

UNIT – I (15 weeks-1 hour/week)

UNIT I: Specialized Reporting

- Parliament
- Elections
- Business
- Political
- Agriculture
- Development
- Science and Technology

UNIT – II (15 weeks-1 hour/week)

UNIT II: Components of newspapers and magazines

- Headlines, features, editorials, caricatures, cartoons, columns, articles,
- Selection and positioning of news stories and news pictures, photographs
- Broadsheets and Tabloids, Changing trends in print journalism
- Boom in niche Newspapers and Magazines

- Magazine Journalism: Differences between magazines and newspapers, types of magazines, basics of magazine writing, magazines writing styles.

- Impact of technology on print journalism

- Digital newspapers

- Citizen Journalism

- Investigative journalism/ Sting operations
- Ethical debates in print Journalism

UNIT – III (15 weeks-1 hour/week)

UNIT III: Understanding Principles of Art and Production

- Principles of Layout and Design
- Layout and format, Copy preparation
- Newspaper Make-up,
- Design process (size, anatomy, grid, design)
- Handling text matter (headlines, pictures, advertisements)
- Page make-up (Print and Electronic copy) (Front page, Editorial page and Supplements)

- Identity design
- Picture Editing and Caption Writing
- Designing Magazines
- Use of software- In-design, Adobe, Photoshop

Practical component (if any)- NIL

Essential/recommended readings- NIL

Suggestive readings-

1. Editing: A Handbook for Journalists – by T. J. S. George, IIMC, New Delhi, 1989
2. News Reporting and Editing by Shrivastava, K. M. (1991) Sterling Publishers, New Delhi
3. Professional Journalism, by M.V. Kamath, Vikas Publications, 1980
4. Groping for ethics in Journalism, by Eugene H. Goodwin, Iowa State Press, 1987
5. Modern Newspapers practice, by Hodgson F. W. Heinemann London, 1984.
6. Principles of Art and Production, by N.N. Sarkar, Oxford University Press, 2008
7. Allan Stuart, Journalism: Critical Issues, New Delhi: Open University Press, 2005
8. Media Laws and Ethics, by Nanda, V, Kanishka Publishers, 2018

DISCIPLINE SPECIFIC ELECTIVE- (DSE-2): Integrated Marketing Communication

No. of hours- 60(Theory- 45 hrs.+Tutorials/Practicals-15 hrs.)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSE-2 Integrated Marketing Communication	**4**	**3**	**0**	**1**	Passed Class XII	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- To strategize integrated marketing communication programme of a business organisation and how various tools help in achieving business objectives.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to work as marketing professionals in advertising and related fields.

SYLLABUS OF DSE-2

UNIT – I (15 weeks-1 hour/week)

Unit I: Understanding Integrated marketing Communication (IMC)-

- Key features, Objectives and components of IMC
- Theoretical Underpinnings and Models of IMC

- Benefits and Barriers
- Understanding Promotional mix

(i) Personal selling (ii) Advertising (iii) Public Relations (iv) Direct and Database Marketing

(v) Sales Promotion (vi) Online communication/Interactive marketing

UNIT – II (15 weeks-1 hour/week)

UNIT II: Marketing Communication, Strategic Management and Branding

- Segmentation, Targeting and positioning
- Strategic Management
- Developing Marketing Strategy- SWOT analysis, Strategic planning process
- Consumer Behaviour
- Branding- An overview

UNIT – III (15 weeks-1 hour/week)

UNIT III: IMC Plan and campaigns

- Developing IMC Plan / Campaign planning
- Situation analysis, Market research and formulating objectives
- Campaign creation and Production
- Media Planning, selection, budgeting and scheduling
- Evaluation, Feedback and Analysis

Practical component (if any)- Students will create an effective, well-integrated IMC plan, blending offline and online tools to maximize customer value. They will develop an effective content strategy to ensure delivery of coordinated and synergistic messages across all touch points and channels. Make an effective crisis management campaign. Students will submit written assignments on the emerging paradigm of IMC. They will study the changing Models and do a comparative study. Students will evaluate the contribution of each element—including advertising, direct marketing, Facebook, Twitter and blogs—to maximize communication impact. They will strategically link and leverage all elements in the communication mix across channels. They will understand and apply the Social Media Buyer Behavior Model to create engaging content to reach, impact and engage customers**.** Students will do case studies of different brands, their SWOT analysis, strategic planning and positioning and Identify new ways to differentiate a brand

Essential/recommended readings-

1. Philip Kotler and Lane Keller, Marketing Management, Pearson Prentice Hall, 2009
2. Ramaswami V.S and Namakumari S, Marketing Management, Planning, implementation and control, 3rd edition, Macmillan (pg- 3-26, 107-206, 219-250), 2002

3. Fill C, Marketing Communication: Interactivity, Communities and Content. FT Prentice Hall, 2009
4. Pickton D & Broderick A, Integrated Marketing Communications Pearsons, 2009
5. Egan J., Marketing Communications, Thomson, 2007

Suggestive readings- NIL

DISCIPLINE SPECIFIC ELECTIVE-3 (DSE-3): Film Appreciation

No. of hours- 60(Theory- 45 hrs.+Tutorials/Practicals-15 hrs.)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSE-3 Film Appreciation	**4**	**3**	**0**	**1**	Passed Class XII	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- To grasp the visual language of cinema and will be able to understand cinema beyond its entertainment value.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to understand the notion of Journalism and grasp the underlying factors that define the news.

SYLLABUS OF DSE-3

UNIT – I (15 weeks-1 hour/week)

UNIT I: Language of Cinema

- Language of Cinema I – Focus on visual Language: Shot, Scene, Mis-en-scene, Deep focus, Continuity Editing, Montage
- Focus on Sound and Color: Diegetic and Non-Diegetic Sound; Off
- Screen Sound; Sync Sound; the use of Color as a stylistic Element

UNIT – II (15 weeks-1 hour/week)

UNIT II: History of Cinema

- German Expressionism and Film Noir
- Italian Neo-realism
- French New-Wave
- Genre and the development of Classical Hollywood Cinema (Western, Film Noir, Musicals)
- Beginning of Indian Cinema (Phalke, Silent Cinema)
- Arrival of Sound to Post Independence Era
- The Indian New-Wave
- Globalization and Indian Cinema

UNIT – III (15 weeks-1 hour/week)

UNIT III: Alternative Visions

- Third Cinema
- Non-Fiction Cinema
- Introduction to Feminist Film Theory
- Auteur- Film Authorship with a special focus on Satyajit Ray or Hitchcock

Practical component (if any)- Students can be encouraged to work on projects that correspond to various film movements in the world, analyze film clips, and undertake visits to film archives and produce journals / blogs as a collective project on films.

Essential/recommended readings-

1. Villarejo, Amy. *Film studies: The Basics*. Routledge, (For Unit I) P 1-54, 2006
2. A Nowell –Smith.G.*The Oxford History of World Cinema. Oxford: Oxford University Press,* (Unit II, III, IV), 1996
3. Duggal, Menon & Bhattacharya. Film Studies: An Introduction, Worldview Publications, New Deli, (for Unit I, II, IV and V), 2019
4. Mishra, Vijay. Bollywood cinema: Temples of desire. Routledge. (Chapter 3 chapter 4, Chapter 5) , 2013

Recommended Screenings or clips

Unit I

- Rear Window (1954) Alfred Hitchcock (Language of Cinema)
- Battleship Potempkin (1925) Sergei Eisenstein (Language of Cinema)
- Man with a Movie Camera (1929) Dziga Vertov

Unit II

- Rome Open City (1945) by Roberto Rosselini (Italian Neo Realism)
- Metropolis (1927) Fritz Lang/ German Expressionism

- Double Indemnity (1944) Billy Wilder (Film Noir)
- Breathless (1960) Jean Luc Godard (French New Wave)

Unit III

- Pather Panchali (1954) Satyajit Ray
- Clips from the hour of the Furnaces (1968) by Fernando Solanas
- Battle of Algiers (1966) Gille Pontecorvo (Third cinema)
- Nanook of the North (1922) Robert Flaherty (Non-Fiction Cinema)
- Nishant (1975) Shyam Benegal (Indian New wave)
- Pyaasa (1957) Guru Dutt
- Mother India (1957) Mehboob Khan
- Jagte Raho (1956) Raj Kapoor

Suggestive readings-

1. Anandam P. Kavoori & Punanthambekar Eds. *Global Bollywood*, New York: New York University Press. 2008. Pages 17-41, 223-240
2. Paul Schrader —Notes on Film Noir in John Belton ed. Movies and Mass Culture, New Brunswick, New Kersey: Rutgers University Press: 1996 pg.153-17
3. Robert Stam, "The Cult of the Auteur," in *Film Theory: An Introduction*. Massachusetts &Oxford Blackwell Publishers: 2000
4. Andre Bazin, —The Ontology of the Photographic Image‖ from his book: What is Cinema Vol.I Berekeley, Los Angeles and London: University of California Press: 1967, 9-16
5. Sergei Eisenstein, —A Dialectic Approach to Film Form‖ from his book Film Form: Essays in Film Theory (Edited and Translated by Jay Leyda) San Diego, New York, London: A Harvest/Harcourt Brace Jovanovich, Publishers: 1977, 45-63
6. Tom Gunning, "Non-continuity, Continuity, and Discontinuity: A theory of Genres in Early Films,"in Thomas Elsaesser, ed. Early Cinema: Space, Frame, Narrative. London: British Film Institute, 1990,86-94
7. David Bordwell, "Classical Hollywood Cinema: Narrational Principles and Procedures" in Philip Rosen, ed. Narrative, Apparatus, Ideology. New York: Columbia University Press, 1986, 17-34.
8. Richard Dyer —*Heavenly Bodies: Film Stars and Society‖ in Film and Theory: An Anthology* Massachusetts, U.S.A & Oxford, U.K: Blackwell Publishers: 2000, 603-617
9. Madhava Prasad. Ideology of Hindi Film New Delhi: Oxford University Press. 1998

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVE (GE) COURSES FOR ODD SEMESTERS

NOTE: The Generic Electives for the ODD SEMESTERS already approved, will also run for Semester III students. These are:

GENERIC ELECTIVES (GE-1: Basics of Journalism

No. of hours- 60(Theory- 45 hrs.+Tutorials/Practicals-15 hrs.)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
GE-1 Basics of Journalism	**4**	**3**	**0**	**1**	Passed Class XII	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- To learn the process of structuring news formation for print publications as print journalists.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to understand the notion of Journalism and grasp the underlying factors that define the news.

SYLLABUS OF GE-1

UNIT – I (15 weeks-1 hour/week)

UNIT I: Understanding News

- Meaning and definition of Journalism; news and reportage
- News: meaning, definition, nature
- Hard news versus. Soft news, basic components of a news story- dateline, credit line and byline.
- Attribution, embargo, verification, balance and fairness, brevity
- Different forms of print-A historical perspective (Yellow journalism, Penny press, tabloid press)

UNIT – II (15 weeks-1 hour/week)

UNIT II: Understanding the structure and construction of news

- Organizing a news story- 5W's and 1H, Inverted pyramid
- Criteria for news worthiness
- Principles of clear writing
- Basic differences between the print, electronic and online journalism

UNIT – III (15 weeks-1 hour/week)

UNIT III: Role of media in a democracy

- Citizen Journalism
- Responsibility to Society
- Contemporary debates and issues relating to media
- Ethics in Journalism

Practical component (if any) - Prepare a presentation on difference between Soft news and Hard news from the newspapers.

Essential/recommended readings-

1. Bruce D. Itule and Douglas A. Anderson. News writing and reporting for today's media; McGraw Hill Publication, 2000.

2. M.L. Stein, Susan Paterno& R. Christopher Burnett. News writer's Handbook: An Introduction to Journalism; Blackwell Publishing,2006.

3. George Rodmann. Mass Media in a Changing World; Mcgraw Hill Publication,2007.

4. Carole Flemming and Emma Hemmingway. An Introduction to Journalism; Vistaar Publications, 2006.

Suggestive readings-

1. Richard Keeble. The Newspaper's Handbook; Routledge Publication, 2006.

2. The Golden Age of the Newspaper. George H. Douglas. Greenwood Publishing Group, 1999 - Language Arts & Disciplines - 300 pages.

3. Media Ethics: Truth, Fairness, and Objectively 2nd Edition (English, Paperback, Paranjoy Guha Thakurta), Oxford, 2015.

4. Media, the State and Marginalisation: Tackling Challenges: Rachna Sharma: UK, Cambridge Scholars Publishing, (2018) (ed.)

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-2): Introduction to Media Studies

No. of hours- 60(Theory- 45 hrs.+Tutorials/Practicals-15 hrs.)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
GE-2 Introduction to Media Studies	**4**	**3**	**1**	**0**	Passed Class XII	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- To identify media's communicative potential through everyday examples such as mobile phone, television shows and other media use.
- To think retrospectively of media use and its effects through live and vibrant examples from everyday experience.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to identify communication practices, their formative role in society, understand the relationship between media and democracy.
- This course will help students in reporting on political issues and democratic concerns as journalists.

SYLLABUS OF GE-2

UNIT – I (15 weeks-1 hour/week)

UNIT I: Communication, Mass Communication and Models

- Levels of Communication
- Mass Communication and its Process
- Forms of Communication
- Transmission models
- Ritual or Expressive models
- Publicity Model, Reception Model

UNIT – II (15 weeks-1 hour/week)

UNIT II: Mass Communication and Effects Paradigm

- Direct Effects: Mass Society Theory, Propaganda
- Limited Effects: Individual Difference Theory, Personal Influence Theory
- Public Opinion
- Cultural Effects and the Emergence of an Alternative Paradigm
- Critique of the effects Paradigm and emergence of alternative paradigm
- Cultural Effects: Agenda Setting, Spiral of Silence
- Cultivation Analysis

UNIT – III (15 weeks-1 hour/week)

UNIT III: Media and the Everyday

- Media technologies and the everyday
- Media and Modernity
- Normative Theories of the Press
- Media and the Public Sphere

Practical component (if any) - NIL

Essential/recommended readings-

1. Michael Ruffner and Michael Burgoon, Interpersonal Communication (New York, Holt, Rinehart and Winston 1981, 2134; 5972

2. John Fiske, Introduction to Communication Studies, (Routledge 1982), pp 138

3. Dennis McQuail, Mass Communication Theory, (London, Sage, 2000), pp 111; 4154; 121133 (fourth Edition)

4. Baran and Davis, Mass Communication Theory, Indian Edition, (South West Coengate Learning, 2006) pages 4264; 7184; 148153; 298236

5. Kevin Williams, Understanding Media Theory, (2003), pp.168188

Suggestive readings – NIL

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-3) Basics of Photography

No. of hours- 60(Theory- 45 hrs.+Tutorials/Practicals-15 hrs.)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
GE-3 Basics of Photography	**4**	**3**	**1**	**0**	Passed Class XII	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- To use technological tools of photography in journalism.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to utilize the technology and the tools of the photography in the production of photographic images, to include the operation of the camera, exposure, lenses etc required to work as a photojournalists and photographers.

SYLLABUS OF GE-3

UNIT – I (15 weeks-1 hour/week)

UNIT I: Beginning & Types of Photography

- The birth of Camera and its evolution
- Invention of Digital Photography

- Photojournalism- News Photography, Sports Photography, Nature Photography, Portrait Photography, Travel Photography, Fashion Photography and Advertisement Photography

UNIT – II (15 weeks-1 hour/week)

UNIT II: Camera Equipment & Lighting

- Camera Lenses, Aperture, Shutter
- Digital Storage
- Different types of Lighting-Natural lighting and Artificial Lighting
- Three-Point Lighting

UNIT – III (15 weeks-1 hour/week)

UNIT III: Photo Editing Software

- Microsoft Office Picture manager, CorelDraw, Adobe Photoshop Elements, Photoshop CC (Creative Cloud)
- Correcting imperfect images: Picture orientation, Cropping, Levels, Altering brightness and contrast, Red eye

Practical component (if any) - NIL

Essential/recommended readings-

1. The Photography Book by Editors of Phaidon Press, 30 April 2000.

2. Communication Technology for Development, Pannu. P,Tomar A Yuki, IK international publishing House, 2011

3. All about Photography by Ashok Dilwali, National Book Trust, Year of Publication:2010 New Delhi.

4. Practical photography by O.P. SHARMA Hindi Pocket Books,2003.

5. The Photographer's Guide to Light by Freeman John Collins & Brown, 2005.

6. Lonely Planet's Best Ever Photography Tips by Richard I'Anson published by Lonely Planet, 2013.

Suggestive readings- NIL

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-4) Advertising and Corporate Communication

No. of hours- 60(Theory- 45 hrs.+Tutorials/Practicals-15 hrs.)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
GE-4 Advertising and Corporate Communication	**4**	**3**	**1**	**0**	Passed Class XII	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- To develop an understanding of corporate communications and the tools available to build the corporate identity for organizations.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to plan, execute and evaluate advertising and public relations campaigns for brands, advertising agencies and other related organisations.

SYLLABUS OF GE-4

UNIT – I (15 weeks-1 hour/week)

Unit I: Advertising: Concepts, Functions and Process

- Meaning, Evolution and Functions of Advertising
  Concept of Marketing Mix, Promotional Mix: Advertising, Publicity, Events, Sales Promotion, Personal Selling and PR, Role of Advertising in the Marketing Mix

- Advertising Objectives, Segmentation, Positioning, Targeting and Branding
- Media Selection, Planning, Scheduling
- Advertising Department vs. Agency - Structure, and Functions
- Creativity and Copy Writing
- Campaign Planning, Creation and Production
- Ethical & Regulatory Aspects of Advertising - Apex Bodies in Advertising - AAAI, ASCI and their codes

UNIT – II (15 weeks-1 hour/week)

Unit II: Corporate Communication

- Corporate Communication - Concept and Meaning
- Facets of Corporate Communication - Organizational Communication, Marketing Communication, Management Communication
- Functions of Corporate Communication - Employee Relations (ER) Investor Relations (IR), Media Relations (MR), Government Relations (GR), Customer Relations (CR) and
- Public Relations (PR)
- Principles and Tools of communication in ER, IR, MR, GR, CR and PR
- Role of Communication in building Corporate Reputation: Corporate Identity, Corporate Image and Corporate Brands
- Corporate Social Responsibility, Case Studies in CSR

UNIT – III (15 weeks-1 hour/week)

Unit III: Public Relations: Concept, Principles and Practice

- Public Relations: Concept and Practice
- Importance, Role and Functions of PR
- Publics in PR
- Principles and Tools of Public Relations
- PR Strategies for social media

- Organization of Public relations: In House Department versus Consultancy
- PR Campaign - Planning, Execution, Evaluation
- Role of PR in Crisis Management
- Ethical issues in PR, Apex bodies in PR - IPRA and PRSI Code

Practical component (if any) - NIL

Essential/recommended readings-

1. Jethwaney and Jain, Advertising Management, Oxford University Press Jethwaney Jaishri, Advertising, Phoenix Publishing House, 2012.
2. Philip Kotler and Lane Keller, Marketing Management (Designing and Managing Integrated Marketing Communication), Upper Saddle River, N.J. : Pearson Prentice Hall,2009.
3. Pickton D& Broderick A, Integrated marketing communications 2ND ED., Pearsons, 2009
Heath Robert L, Handbook of Public Relations, Sage Publications.

Suggestive readings-

1. Dennis L. Wilcose & Glen T, Public Relations, Pearson, 2014.

2. Cutlip S.M and Center A.H., Effective Public Relations, Prentice Hall Kaul J.M., Noya Prakash, Public Relation in India, Calcutta, 2006.

3. Social Media Marketing: Strategies for engaging on Facebook, Twitter and other social media, Liana Evans, Que Publishing, 2010.

4. Social Media Marketing: Tracy L. Tuten, Michael R. Solomon, Sage, 2017.

5. The power of corporate communication; Argenti, Paul A.& Forman, Janis, McGraw Hill, 2002.

6. Van Riel, C. B., & Fombrun, C. J. (2007). Essentials of Corporate Communication: Implementing practices for effective reputation Management, Routledge.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-5) Television Journalism

No. of hours- 60(Theory- 45 hrs.+Tutorials/Practicals-15 hrs.)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
GE-5 Television Journalism	**4**	**3**	**1**	**0**	Passed Class XII	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- To train students for television Journalism.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to create TV News bulletins, documentaries and other programs as Television journalists.

SYLLABUS OF GE-5

UNIT – I (15 weeks-1 hour/week)

Unit I: Understanding TV Journalism

- Organizational structure of TV news channels
- TV Reporters Tools and techniques
- Structuring a TV news report, V/O's, packages & story formats.
- PTC: Opening, Bridge and closing.
- Introduction to the equipment: Shooting, recording and editing.
- Understanding the pitfalls of broadcast punctuation and presentation

UNIT – II (15 weeks-1 hour/week)

Unit II: TV News Production

- The production team and the process: Line producers, field producers and their role
- The production process, Gate keeping and the run downs
- Back timing and going on air,
- News analysis and experts
- Commercials and promo breaks,
- Headlines
- Discussion and talk shows & organizing studio for TV news programs

UNIT – III (15 weeks-1 hour/week)

Unit III: The Changing Newsroom

- Live reporting: organizing thoughts and adlibbing, DSNG, Multiple OB locations and Split screen, V/O from field and technical challenges.
- Satellite link for News reporting: Satellite bookings & co-ordination with local TV channels, booking local editing facilities
- Planning news stories of cultural and social interest on the sidelines
- Satellite phones, broadband, optical fiber and internet & 4G based solutions

Practical component (if any) - NIL

Essential/recommended readings-

1. Bignell, Jonathan, Jeremy, Orlebar, and Patrica Holland, The Television Handbook, London: Routledge, 2005.

2. Chatterji, P.C., Broadcasting in India. New Delhi: Sage,1987.

3. Fleming, Carole, and Pete Wilby, The Radio Handbook, London: Routledge, 2002.

4. Orlebar, Jeremy, The Practical Media Dictionary, London: Arnold, 2003.

5. Page, David, and William Crawley, Satellites over South Asia, (1st edition), New Delhi: Sage Publications, 2001.

Suggestive readings-

1. Rajagopal, Arvind, Politics after Television, (1st Edition), Cambridge UK:

Cambridge University Press,2001.

2. Saksena, Gopal, Television in India, (1st Edition), New Delhi: Vikas Publication House, 1996.

3. Starkey, Guy, and Andrew Crisell, Radio Journalism, (1st edition), Los Angeles: Sage, 2009.

4. Thussu, Daya Kishan, News as Entertainment, (1st edition), Thousand Oaks California: Sage, 2007.

5. Verma, and Adarsh Kumar, Advanced Journalism, (1st edition), New Delhi: Har- Anand Publications,1993.

6. Baruah, U.L., This is All India Radio. (1st Edition), New Delhi: Publication Division, Ministry of Information and Broadcasting, Govt. of India,1983.

7. Bhatt, S.C., Satellite Invasion of India, (1st Edition), New Delhi: Gyan Publication House, 1994.

8. Sabharwal, Tarjeet, Satellite Television: An Impact on Social Participation, Kanishka Publishers,2008

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-6) Web Journalism

No. of hours- 60(Theory- 45 hrs.+Tutorials/Practicals-15 hrs.)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
GE-6 Web Journalism	**4**	**3**	**1**	**0**	Passed Class XII	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- To acquire web journalism skills.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to engage in the cyberspace creatively and meaningfully as web journalists.

SYLLABUS OF GE-6

UNIT – I (15 weeks-1 hour/week)

Unit I: Basics of Web Journalism

- The origin and development of web journalism – historicizing web journalism
- Web journalism - Redefining journalism concepts and practices
- Convergence: Impact & new forms, Changes due to convergence
- Web journalism and its distinct characteristics, Functions of Web

Journalism

- The structure and formation of new media industry, the distinct structure and workflow of news room for web journalism
- New media Economics

UNIT – II (15 weeks-1 hour/week)

Unit II: Forms and Formats of Web Journalism

- Writing for web journalism Photo, audio and video for web – their different narrative forms and techniques
- Info-graphics and data visualization, multimedia package and multi-media documentary
- New forms of journalism and latest narrative devices – blogs, social media and beyond
- News website and its different production stages
- Researching online, online news sources, news gathering process, verification and fact check Editing for web
- Packaging and distribution of online news, online advertising and marketing

UNIT – III (15 weeks-1 hour/week)

Unit III: Ethical and Legal Issues in Journalism

- Cyber laws and regulatory Framework, IT Act
- Cyber Crime, Cyber Terrorism, Cyber Security, Cyber defense, Cyber-attack,
- Surveillance
- Community Informatics, Open-Source Approaches, Activism in Cyberspace

Practical component (if any) - NIL

Essential/recommended readings-

1. Blaine, M., The Digital Reporter's Notebook. London: Routledge, 2013.

2. Bradshaw, P., and L. Rohumaa, Online Journalism Handbook. New York: Pearson, 2011.

3. Brigg, M., Entrepreneurial Journalism- How to build what is next for news. Washington DC: CQ Press, 2011.

4. Brigg, M. Journalism Next.Washington DC: CQ Press, 2016.

5. Curran et.al. Misunderstanding the Internet.New York: Routledge, 2012.

6. Doctor, Ken, Newsonomics, USA: Martin's Press,2010.

7. Friend and Singer.Online Journalism ethics, New York: ME Sharpe, 2007.

Suggestive readings-

1. Hill, S., and P. Lashmar, Online Journalism -The Essential Guide, 2013.

2. Jim, H., Online Journalism: A critical Primer. London: Pluto Press, 2001.

3. Jones, and Lee, Digital Journalism.London: Sage, 2011.

4. Ray, T. Online Journalism: A basic text. Cambridge: Cambridge University press, 2006.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-7) Print Journalism

No. of hours- 60(Theory- 45 hrs.+Tutorials/Practicals-15 hrs.)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
GE-7 Print Journalism	**4**	**3**	**0**	**1**	Passed Class XII	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- To equip students with the skills required for working as a print journalist.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to increase their understanding of print media.

SYLLABUS OF GE-7

UNIT – I (15 weeks-1 hour/week)

UNIT I: Introduction to Print Journalism

- News-Definition; types of news
- Brief on various types of publications- Newspapers, Magazines
- Types of newspapers-Based on size, periodicity & content, tabloid, broadsheet etc.
- Departments/Sections of a Newspaper Organization Functions and responsibilities of the Editor Functions, duties and responsibilities of News Editor, Chief Sub-Editor, Sub- Editors and Reporters
- Types of magazines – based on format, periodicity and content

UNIT – II (15 weeks-1 hour/week)

UNIT II: Genesis of the Press and Basics of Journalistic Writing

- Press in India–Before and after Independence
- Emergency Era and the contemporary issues
- Inverted pyramid style
- Leads- significance and types; Headlines- functions and types Sources of news, elements of news
- Editorial page-structure and content
- Features and article writing, Column Writing
- Writing for niche magazines and audiences
- Book reviews and Film reviews

UNIT – III (15 weeks-1 hour/week)

UNIT III: Contemporary Issues in Print Media

- Editorial Freedom, Media Trial, Sting Operations
- Ethics of Journalism; Regulatory Body –PCI
- Objectivity, agenda setting, fake news

Practical component (if any) - Students will undertake assignments based on writing variety of stories for print media. They will also be required to create their own newsletter comprising of all the crucial elements of print journalism.

Essential/recommended readings-

1. Editing: A Handbook for Journalists, T.J.S. George, IIMC, New Delhi, 1989

2. Professional Journalism: M.V. Kamath, Vikas Publications, 1980.

3. Groping for Ethics in Journalism: Eugene H.Goodwin, Iowa State Press, 1983.

4. Journalism: Critical Issues: Stuart Allan, Open University Press, 2005.

5. Modern Newspapers Practice: Hodgson F.W.Heinemann London, 1984.

Suggestive readings-

1. News Writing and Reporting: Bruce D.Itule and Douglas A.Anderson, McGraw Hill Publication, 2000.

2. News Writer's Handbook: An Introduction to Journalism: M.L.Stein, Susan Paterno & R. Christopher Burnett. Blackwell Publishing, 2006.

3. An Introduction to Journalism: Carole Flemming and Emma Hemmingway.Vistaar Publications, 2006.

4. The Newspaper's Handbook: Richard Keeble, Routledge Publication, 2006

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-8) Media Management

No. of hours- 60(Theory- 45 hrs.+Tutorials/Practicals-15 hrs.)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
GE-8 Media Management	**4**	**3**	**1**	**0**	Passed Class XII	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- To understand the Media Economics, problems of finance, personnel, land, machinery etc. as business managers working in media organisations.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to various wings of media organization and role and responsibilities of people heading different sections.

SYLLABUS OF GE-8

UNIT – I (15 weeks-1 hour/week)

Unit I: Media Management Concepts and Issues

- Concept, origin and growth of media management, fundamentals of management, management school of thought
- Changing phases of media management
- Challenges and issues: finance, personnel, land, machinery etc.
- Media industry as manufacturers- Manufacturing Consent, news and content management.

- Market Forces, performance evaluation (TAM, TRP, BARC and HITS) and Market shifts Changing Ownership patterns

UNIT – II (15 weeks-1 hour/week)

Unit II: Media Economics

- Media Economics, Strategic Management and Marketing, Government-Media Interface Policies and regulations, FDI (policies & Practices)
- Issues of Paid news, lobbying, pressure group influence,
- Corporatization and Politicization of Media Capital inflow, Budgeting, Financial management, and personnel Management, Market forces

UNIT – III (15 weeks-1 hour/week)

UNIT III: Media Market: Contemporary Scenario

- Ethico–legal perspectives in Media management
- Regional media industry
- Alternative media forums and their management
- Case Studies -Indian and International Media Giants

Practical component (if any) - NIL

Essential/recommended readings-

1. Vinita Kohli Khandekar, *Indian Media Business,* Sage, 2010.

2. Pradip Ninan Thomas, *Political Economy of Communications in India*, Sage, 2010.

3. Lucy Kung, *Strategic management in media*, SAGE, 2008.

4. Dennis F. Herrick, *Media Management in the age of Giants*, Surjeet Publications, 2012.

5. Jennifer Holt and Alisa Perren, (Edited) *Media Industries-History, Theory and Method*, Wiley- Blackwel, 2009.

Suggestive readings-

1. John M. lavine and Daniel B. Wackman, *Managing Media Organisations,* Longman Pub Group, 1988.

2. Robin Jeffrey, *India's Newspaper Revolution*, Oxford University Press, New Delhi, 2000

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

GENERIC ELECTIVES (GE-9) Documentary Production

No. of hours- 60(Theory- 45 hrs.+Tutorials/Practicals-15 hrs.)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
GE-9 Documentary Production	**4**	**3**	**1**	**0**	Passed Class XII	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- To develop skills in documentary form; improve knowledge about language of documentary film, including shots composition and editing.
- To gain a better understanding of storytelling in documentary production.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to work as filmmakers/ documentary filmmakers.
- Students would be able to conceptualize and ideate through workshops and peer-review and use sound and visuals in film.

SYLLABUS OF GE-9

UNIT – I (15 weeks-1 hour/week)

UNIT I: Understanding the Documentary

- Introduction to the debate on realism
- Modes of Documentaries
- Camcorder Cults, Mocumentary.
- Ethical Debates in the Documentary Encounter

UNIT – II (15 weeks-1 hour/week)

UNIT II: Documentary Production

- Research for the Documentary
- Writing a Treatment, Proposal and Budgeting
- Structure and scripting the documentary
- Documentary Sound
- Documentary Cinematography
- Grammar of editing
- Use of editing in Transitions: Scenic Realism & Sound Effects and Visual Effects

UNIT – III (15 weeks-1 hour/week)

UNIT III: Historical Context

- Documentary Movement of India: History, Evolution, Growth.
- Distribution and Exhibition Spaces (Traditional and Online)
- Funding of a documentary- Sponsors, Public service funding, Crowd funding

Practical component (if any) - NIL

Essential/recommended readings-

1. Charles Musser “Documentary” in Geoffrey Nowell Smith ed The Oxford History of World Cinema Oxford University Press: 1996, 322-333

2. Michael Renov “The Truth about Non-Fiction” and “Towards a Poetics of Documentary” in Michael Renov ed. Theorizing Documentary AFI Film Readers, New York and London: Routledge: 1993, 1-36

3. Trisha Das, How to Write a Documentary, Public Service Broadcasting Trust, 2007

4. A History of the Indian Documentary Film, Sanjit Narwekar, 1996.

5. Double Take by PSBT

6. DOX: Documentary Film Magazine

7. Nichols, Bill (2001) Introduction to Documentary, Indiana University Press: Bloomington.

8. Lancaster, Kurt (2010) DSLR Cinema Crafting the Film Look with Video, Focal Press

9. Hampe, Barry (2007) Making Documentary Films and Videos, Holt Paperbacks

10. Fitzgerald, Jon (2017) Film making for Change, Michael Wiese Productions

Suggestive readings(screenings)-

1. Nanook of the North by Robert J Flaherty
2. Michael Moore: Roger and Me
3. Standard Operating Procedure by Errol Morris
4. I am 20 by SNS Sastry
5. Ram Ke Naam by Anand Patwardhan
6. Season Outside by Amar Kanwar
7. In The Forest Hangs A Bridge by Sanjay Kak
8. Q2P by Paromita Vohra
9. Gulabi Gang by Nishtha Jain
10. Pinch Of Skin by Priya Goswami
11. We Have Not Come Here to Die by Deepa Dhanraj
12. Films by PSBT
13. Human Flow by Ai Weiwei
14. Born Into Brothels by Zana Briski
15. Fire In the Blood by MSF

16. Dying laughing by Gravitas Ventures

17. The Out List by HBO

18. Celluloid Man by PK Nair

19. One representative film of each documentary mode as an example.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF GERMANIC & ROMANCE STUDIES – FRENCH

B.A. (HONOURS) FRENCH

DISCIPLINE SPECIFIC CORE COURSE – 7:

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Language in Context: Developing Reading and Writing Skills (3)	**4**	**3**	**1**	**0**	**12th Pass**	

Learning Objectives

In semester 3, students will learn to

- Prepare for a meeting
- Accept or refuse an appointment, invitation
- Write and reply to an invitation
- React to a problem situation
- Describe habits
- Write about daily schedules
- Describe a past event
- Describe a place
- Describe a physical state
- Describe a person's character
- Write a biography
- Write a dialogue for a specific situation or a *roman-photo.*
- Describe their projects
- Describe their family

Course Learning Outcomes

At the end of Semester 3, students will be able to

- read simple texts and answer questions on them.
- write on subjects pertaining to themselves and their immediate environment.
- complete partially Level A 2 of reading and writing skills as prescribed in the Common European Framework

SYLLABUS OF DSC-7[1]

Unité 1: (Lessons 1-4 + Project): 6 hours

Reading Comprehension: Reading and understanding simple texts, and answering questions on them.

Writing : Write an invitation accept or refuse an invitation, description of a cultural event or activity, propose a meeting, accept or refuse a meeting proposal, fill in a lost property form.

Grammar: Negatives with *ne...plus, ne ...rien,ne personne,* structure *être en train de+ infinitif* (le present progressif),*être a l'heure, être en retard.*

Vocabulary: Words and stgructures related to fear, giving and receiving compliments, freindship, cultural events (films, amusement parks national days) personal objects

Intercultural: Speed dating, park Asterix, Belgian national day.

Practical component (if any) – NIL

Unité 2: (Lessons 1-4 + Project): 6 hours

Reading Comprehension: Read short texts on daily routine (personal and professional) people, places and events and answer simple questions on them.

Writing: Write about means of transport in your city, your daily routine, a well known.locality/area of your city.

Grammar: Present tense of reflexive verbs, passe compose with *avoir* and *être,*adverbs of frequence (*souvent, jamais, rarement, parfois*)

Vocabulary: daily activities, personal objects, means of transport

Intercultural: Public means of transport in Morocco, paying a fine in Montreal, Dakar airport.

Unité 3: (Lessons 1-4 + Project): 6 hours

Reading Comprehension: Read short journalistic texts, comic book adaptation of extracts from well known novelsshort descriptive texts on well known writers, historical events, objects, artists, an accident or a natural catastrophe and answer questions on them.

Writing: An email to a freined describing your visit to a city of historical importance, a short text on past events, people.

Grammar: the present continuous (*l'imparfait*), use of *passé composé* and *l'imparfait*, indicators of chrnology *d'abord, puis, ensuite, après, afin*, direct object pronouns.

Vocabulary : short journalistic texts, description, careers and professions, parts of the body, health.

Intercultural : emergency numbers in France, Francophone personalities from literature, science and the arts, Normandy and its history.

Unité 4: (Lessons 1-4 + Project): 9 hours

Reading Comprehension: Read and answer a personality quiz, read and associate a photo and a text, read the physical description of a person and find the correct photo,read and understand

an email announcing the results of an interview, read simple advertisements looking for someone to share an appartement with and answer questions on the same.

Writing: describea classmate, write down reasons for why the police is looking fro a certain person,describe a work of art (painting, sculpture, novel) of your choice,write the biography of a well known personality of your choice,note down things you should talk about or not in an interview, skills or apptitudes necessary for a good job inyour domain,write a short advertsiement looking for a person to share an appartment with.

Grammar: relative pronouns *qui, que/qu'* place and agreement of adjectives, comparative.

Vocabulaire : Physical description, descriptions of personality, biography.

Intercultural: sharing an appartment, job interview, cliches, descriptions of well known French and francophone personalities.

Practical component (if any) – NIL

Unité 5: (Lessons 1-4 + Project): 9 hours

Reading Comprehension: Read a short text on fabrics and fashion, clothesbuying on line, different modes of payment and answer questions on them.

Writing: Your preferred dressing style, a message to an online seller.

Grammar: Markers of time (*à partir de, dès*) superlative, adverbs of quantity (assez, peu, beaucoup),

Vocabulaire : Clothes and accessories, different types of fabrics, purchases, sentiments.

Intercultural: different types of payments, different types of fabrics, different dressing styles,online/offline purchases.

Practical component (if any) – NIL

Unité 6: (Lessons 1-4 + Project): 9hours

Reading Comprehension: Read short texts (about an app proposing outdoor activities, sportspersons' their future plans, visit to a wine growing region and a wine cellar) a message, a publicity slogan and answer questions on them.

Writing: Propose an activity for an application, write an SMS inviting a friend to a play, a family activity, write a slogan for a product.

Grammar: structure *verbs pouvoir, vouloir, devoir+infinitif*, the simple future tense, pronouns for indirect objects.

Vocabulaire : sports, hobbies, family.

Intercultural: Applications proposing outdoor activities, visit to a wine growing region, wine cellars and wine tasting.

Practical component (if any) – NIL

Essential/recommended readings:

Any of the textbooks given below may be prescribed.

1. A Bredelet, M.Bufferne, B Megre, W.M. rodrigues:"*Odysée A2, Méthode de français"*, CLÉ International, France, 2021, Unités 1-6.
2. Sophie Brezy Todd, Cedric Vial : « *La Classe A 2, Méthode de français* »,CLÉ International, 2018, Unités 1-3.
3. Emilie Marolleau Emilie Pommier, Delphine Ripaud, Marie Rabin (DELF) : *« L'Atelier A2, Méthode de français »*, Les Éditions DIDIER, France, 2019, Unités 1-4.
4. Pascal Biras, Monique Denyer, Audrey Gloaneac, Stephanie Witta, Geneviève Briet, Valérie Collige-Neunschwander (capsules de phonétique), Raphaëlle Fouillet (précis de grammaire) : « *Défi –2 Méthode de français* », Éditions Maison des Langues, 2018, Unités 1-4
5. Clemence Fafa, Florence Gajdosova, Alexandrin Horquin, Airelle pasquet, Marion Perrard, Violette Petitmengin, Caroline Sperandio,Marlene Dodin (DELF),Julie Veldeman -Abry : « *Edito- A2 Méthode de français (2e édition)* », Editions DIDIER FLE, 2022, Unités 1-5.
6. L. Cheniac-Knight : "*Odysée A 2, Cahier d'activités"*, CLÉ International, France, 2021, Unités 1-6.
7. Claire Sanchez : « *La Classe A 2, Cahier d'activités* », CLÉ International, 2018, Unités 1-3.
8. Emilie Marolleau Emilie Pommier, Delphine Ripaud : *« L'Atelier A2, Méthode de français »*, Les Éditions DIDIER, France, 2019, Unités 1-4.
9. *« L'Atelier A1, Cahier d'activités »,* Les Éditions DIDIER, France, 2019, Unités 1-4.
10. Pascal Biras, Monique Denyer, Audrey Gloaneac, Stephanie Witta, Camille de Rongé (phonétique), Nancy Verhulst (phonétique), Alexandrin Horquin (DELF) : « *Défi – 1 Cahier d'activités*», Éditions Maison des Langues, 2018, Unités 1-4
11. Roxane Amoravain, Valerie Blasco, Marie Gatin,Marie-Laure,Lions Olivéri,LucieMensdorff-Pouilly, Eugénie Mottironi, Magosha Frequelin et MarieGouelleu (DELF) Julie Veldman-Abry (phonétique) : *« Edito A2, Cahier d'activités »*, DIDIER FLE, 2022 Unités 1-5.

Additional material may be provided by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 8

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Language in Context: Developing Listening and Speaking Skills (3)	**4**	**3**	**1**	**0**	**12th Pass**	**Nil**

Learning Objectives

In Semester 3, students will learn to

- Compliment someone.
- Congratulate someone
- Ask about and give information about an event
- Accept or refuse an invitation.
- Speak about his likes and dislikes
- Ask for and give information about his habits.
- Describe his daily routine.
- Describe different modes of transport in his city and explain how to use them
- Describe an object, present its characteristics.
- Speak about past events (personal and historical)
- Ask for and propose to help.
- Describe a person's character
- Compare people, events, places and objects
- Carry out simple purchases and transactions
- Talk about his family
- Present his projects
- Ask for and give his opinion on a variety of subjects (different ways of meeting other people, importance of history and historical figures, stereotypes, etc)

Learning outcomes

At the end of Semester 3, students will be able to

- listen to and understand simple texts and answer questions on them.
- talk on subjects pertaining to his/her immediate environment.
- interact in simple everyday situations.
- attain partially Level A2 of listening and speaking skills as described in the Common European Framework.

SYLLABUS OF DSC- 8[2]

[2] A text book contains 6-8 modules/units called *unité*. Each unite comprises 4 lessons. Therefore the syllabus is given in terms of the text book unit being covered along with the content of the 4 lessons with a total duration of the number of weeks needed to cover a *unité* of 4 lessons.

Unité 1: (Lessons 1-4 + Project): (6 hours)

Listening Comprehension: Listen to a short text on different ways to meet people, an an inflight announcement and answer simple questions on them.

Speaking: Compliment someone, congratulate someone, express opinion on the different ways of meeting others, propose a meeting, accept/refuse an invitation

Phonetics: semi vowels

Vocabulary: Words and stgructures related to fear, giving and receiving compliments, freindship, cultural events (films, amusement parks national days) personal objects

Intercultural: Speed dating, park Asterix, Belgian national day.

Unité 2: (Lessons 1-4 + Project): (6 hours)

Listening comprehension: Listen to a short text on a personal/professional routine and answer questions on them, to a short dialogue or a public announcement and answer questions on them, associate an image with a text..

Speaking: your daily personal/professsional routine,give advise or opinion about another's routine, pros and cons of public transport, give instructions on how to find one's way, present a well known person to the class, speak about his work, express your views on stereotypes between men and women. A favorite area/locality in your city

Phonetics: sibilant sounds *s, z et ch*

Vocabulary: daily activities, personal objects, means of transport

Intercultural: Public means of transport in Morocco, paying a fine in Montreal, Dakar airport

Unité 3: (Lessons 1-4 + Project): (6 hours)

Listening Comprehension: listen to short texts and dialogues (between an emergency service and a reporter, a patient and the doctor) and answer questions on them

Speaking: carry out a small police enquiry,present your region, present well known french and or francophone personalities related to science, arts, a historical event, describe a painting by a well known french/francophone painter, a dialogue between a doctor and a patient.

Phonetics:oral and nasal sounds

Vocabulary : short journalistic texts, description, careers and professions, parts of the body, health.

Intercultural : emergency numbers in France, Francophone personalities from literature, science and the arts, Normandy and its history.

Unité 4: (Lessons 1-4 + Project): (9 hours)

Listening Comprehension: Listen to a text and circle the qualities described, listen to a short text (interview with a journalist a discussion between a mother and a daughter, a description of a well known person, a job interview) and answer questions on them.

Speaking: describe a class mate, a well known personality(writer, singer, musician, painter, actor...) give your opinion on cliches,a job interview, dialogue between you and the person who is going to share your appartement.

Phonetics: Nasal vowels

Vocabulaire : Physical description, descriptions of personality, biography.

Intercultural: sharing an appartment, job interview, cliches, descriptions of well known French and francophone personalities.

Unité 5: (Lessons 1-4 + Project): (9 hours)

Listening Comprehension: Listen to a short text, watch a video on clothes accessories and shoppin and answer questions on them.

Speaking: speak about your preferred styles of dressing, your favorite clothes and accessories,your opinion for or against clothes made of animal fur,advantages and disadvantages of online shopping, a dialogue between you and the vendo to return an article purchased online.

Phonetics: e muet

Vocabulaire : Clothes and accessories, different types of fabrics, purchases, sentiments.

Intercultural: different types of payments, different types of fabrics, different dressing styles,online/offline purchases.

Unité 6: (Lessons 1-4 + Project): (9 hours)

Listening Comprehension: a telephone conversation, a voice message, short description of a game, and answer questions on them

Speaking: explain the functioning of an app to a friend, propose an outing to a freined, explain a game traditionally played in your country to a freind, present a region to your friend, your weekend projects, leave a voive message/reply to a voice message.

Phonetics: Graphie and phonie [o]

Vocabulaire : sports, hobbies, family.

Intercultural: Applications proposing outdoor activities, visit to a wine growing region, wine cellars and wine tasting.

Essential/recommended readings:

Any of the textbooks given below may be prescribed.

1. A Bredelet, M.Bufferne, B Megre, W.M. rodrigues:"*Odysée A2, Méthode de français"*, CLÉ International, France, 2021, Unités 1-6.

.

2. Sophie Brezy Todd, Cedric Vial : « *La Classe A 2, Méthode de français* »,CLÉ International, 2018, Unités 1-3.
3. Emilie Marolleau Emilie Pommier, Delphine Ripaud, Marie Rabin (DELF) : *« L'Atelier A2, Méthode de français »*, Les Éditions DIDIER, France, 2019, Unités 1-4.
4. Pascal Biras, Monique Denyer, Audrey Gloaneac, Stephanie Witta, Geneviève Briet, Valérie Collige-Neunschwander (capsules de phonétique), Raphaëlle Fouillet (précis de grammaire) : « *Défi –2 Méthode de français* », Éditions Maison des Langues, 2018, Unités 1-4
5. Clemence Fafa, Florence Gajdosova, Alexandrin Horquin, Airelle pasquet, Marion Perrard, Violette Petitmengin, Caroline Sperandio,Marlene Dodin (DELF),Julie Veldeman -Abry : « *Edito- A2 Méthode de français (2e édition)* », Editions DIDIER FLE, 2022, Unités 1-5.
6. L. Cheniac-Knight : "*Odysée A 2, Cahier d'activités"*, CLÉ International, France, 2021, Unités 1-6.
7. Claire Sanchez : « *La Classe A 2, Cahier d'activités* », CLÉ International, 2018, Unités 1-3.
8. Cocton Marie-Noëlle (coordination pédagogique), Pommier Émilie, Ripaud Delphine, Rabin Marie : *« L'Atelier A1, Cahier d'activités »,* Les Éditions DIDIER, France, 2019, Unités 5-8.
9. Pascal Biras, Monique Denyer, Audrey Gloaneac, Stephanie Witta, Camille de Rongé (phonétique), Nancy Verhulst (phonétique), Alexandrin Horquin (DELF) : « *Défi – 1 Cahier d'activités*», Éditions Maison des Langues, 2018, Unités 1-4
10. Roxane Amoravain, Valerie Blasco, Marie Gatin,Marie-Laure,Lions Olivéri,LucieMensdorff-Pouilly, Eugénie Mottironi, Magosha Frequelin et MarieGouelleu (DELF) Julie Veldman-Abry (phonétique) : *« Edito A2, cahier d'activités »*, DIDIER FLE, 2022 Unités 1-5.

    Additional material may be provided by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 9:

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Engaging with Literary texts	**4**	**3**	**1**	**0**	**12th Pass**	**NIL**

Learning Objectives

- Introduce students to literary texts with focus on the major cultural and intellectual movements of the XX and XXI century.
- Developing skills to identify and analyse various genres such as poetry, shorter narrative texts, autobiography, intermedial narratives written by French and Francophone authors.
- Introduction to major XX and XXI century writers and the themes/questions they engage with.

Learning Outcomes

At the end of semester 3, a student will

- become familiar with literary criticism and understand the various ways of engaging with XX and XXI century literary texts written in French
- demonstrate their analytical skills by identifying key literary devices and themes present in poetry, shorter narrative texts, autobiography, intermedial narratives written in the XX and XXI century by French and Francophone authors
- be able to differentiate between various literary genres and understand the conventions, styles and specificitie of such genres.

SYLLABUS OF DSC-9

Unit 1: (12 hours)

Short narrative texts written by XX and XXI century writers: Study of narrative devices and specificity of the shorter narrative forms, Study of various components of narrative texts such as plot, event, character, setting, narrator, narrative style etc., study of the socio-cultural context that has shaped such texts.

Unit 2: (12 hours)

Poetic texts written by XX and XXI century writers: Study of poetic devices and the specificity of the poetic form such as tone, poetic style, rhetoric and poetic devices, authorial voice, conventions of various poetic genres such as sonnet, ode, free verse etc, study of the socio-cultural context that has shaped such texts.

Unit 3: (12 hours)

Life writing by the XX and XXI century writers: Study of the features and genres of autobiographical texts, undertanding the autobiographical pact in relation to factuality, objectivity, and subjectivity of autobiograpical and autofictional texts, study of the socio-cultural context that has shaped such texts.

Unit 3: (9 hours)

Intermedial narratives of the XX and XXI century: Study of the features and genric specificities of comic strips and graphic novels. Study of various components of such intermedial texts and strategies to analyse and interpret them.

Practical component (if any) - NIL

Essential/recommended readings

1. F. Allouache, N. Blondeau, *Littérature progressive de la francophonie - Niveau débutant*, F Clé International, Paris, 2016.
2. Jean-Louis Joubert, *Litterature Francophone Anthologie*, Cideb, 1997.
3. Michel Brix, *Histoire de la Littérature française*, De Boeck, Bruxelles, Paris, 2014

Additional material may be provided by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVE (GE-3)
Basic Communicative French (3)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Basic Communicative French (3)	**4**	**3**	**1**	**0**	**12th Pass**	**NIL**

Learning Objectives: Reading and Writing:

In Semester 3, the student will learn to

- To compare courses offered by different language schools
- To carry out simple administrative procedures
- To organise a trip
- To get information on lodging and boarding
- To describe a place (region town, city, country)
- To describe and understand safety measures
- To organise a weekend around a theme
- To describe a trip to an unusual place
- To describe his itinerary
- To read and understand a job offer
- To look for a job
- To propose one's services
- To give advice
- To describe one's career path
- To explain facts
- To summarize an event
- To answer a questionnaire
- To appreciate someone/something
- To ask for explanations
- To express one's desires

Course Learning Outcomes (Reading and Writing)

At the end of Semester 3, students will be able to

- Read simple texts and answer questions on them.
- Write about subjects pertaining to his/her immediate environment.
- Complete partially Level A2 of reading and writing skills as described in the Common European Framework.

Learning Objectives (Listening and Speaking)

In Semester 2, students will learn

- To describe a place (region, city, country)
- To narrate an experience
- To speak about his feelings and emotions
- To describe a trip to an unusual place
- To describe his itinerary
- To propose one's services
- To give advice
- To describe one's career path
- To explain facts
- To summarize an event
- To answer a questionnaire
- To appreciate someone/something
- To ask for explanations
- To express one's desires

Course Learning Outcomes (Listening and Speaking)

At the end of Semester 3, students will be able to

- listen to and understand simple texts and answer questions on them.
- talk on subjects pertaining to their immediate environment.
- interact in simple everyday situations.
- attain partially Level A2 of listening and speaking skills as described in the Common European framework.

SYLLABUS OF GE 3 (FRENCH)[3]

Dossier 1: Lessons 1-6 + Project (9 hours)

Reading Comprehension: to read and understand short texts, messages, websites of language schools and lodging and boarding for students, a brochure describing various types of lodgings in France, unusual types of lodging facilities, to read proposals on how to visit a city and propose one's services as a tourist guide.

Writing: To create a text advising students how to prepare for a study trip to France , to prepare a brochure on different types of lodging about past events, projects and experiences, to write a short biography of a well known person, describe a person, to make a list of advice in a specific situation (ex. improve one's French)

[3] A text book contains 6-8 modules/units called *dossier* Each dossier comprises 6 lessons. Therefore the syllabus is given in terms of the text book unit being covered along with the content of the 6 lessons with a total duration of the number of weeks needed to cover a dossier of 6 lessons.

Grammar: Comparative, pronouns *y* and *en,* pronouns for direct and indirect objects, imperative with *devoir + infinitive, il faut + infinitive, il est imperatif de.* Negative structures *ne…plus, rien, personne, jamais,* adverbs, relative pronouns *qui, que/qu' a qui*
Listening Comprehension: to listen to and understand short conversations, interviews,radio journal, a telephone conversation, and radio programs on various subjects and answer questions on them
Speaking: to talk about different apps for language learning, information relevant to students coming to France describe different modes of public transport, describe an itinerary, a lodging, tourist places and activities in your city.
Phonetics: Pronunciation of *plus* in different contexts, nasal vowels, intonation for imperative sentences.
Vocabulary: Words related to description of language school programs, administrative formalities, modes of transport, lodging and boarding, an unusual site, important places in a town and tourist activities
Intercultural: Linguistic stays and tourist visits

Dossier 2: Lessons 1-6 + Project (12 hours)
Reading Comprehension: Read short texts/forums on unusual tourist sites and itineraries, campus memories, brochures on various sport activities and answer questions on them
Writing: Describe an unusual tourist site, rules and advice to learn French, precautions to take while participating in a tourist activity, a memory, prepare a flyer for sporting activities, describe an unusual tourist visit.
Grammar: Agreement of the Past participle with *être,* present subjunctive, use of passé composé and imparfait, structures *c'est qui*… and *c'est que*…. Gender of nouns, markers of time *(il y a, depuis, pendant,dans)*
Listening Comprehension: to listen to and understand conversations, radio programs, interviews on unusual tourist sites and itineraries, campus memories, sport activities and to answer questions on them.
Speaking: Describe an unusual tourist site, campus memories, sporting activities, personal and professional career path,.
Phonetics: nasal vowels, liaison
Vocabulary: Terms related to tourist activities, express rules and recommendations, sentiments and emotions, sporting activities and personal and career paths.
Intercultural: tourist visits and unusual experiences and meetings, café de langue

Dossier 3: Lessons 1-6 + Project (12 hours)
Reading comprehension: read and understand a job advertisement, different types of CV, an advertisement proposing a service, a forum describing ones studies and career progression, an interview and answer questions on them.
Writing: an advertisement for a post in a language school, a CV, a proposal for a service, a short report on your career progression
Grammar: articulators, adverbs, hypothesis with si, plus que-parfait,formal questions and indefinite adjectives to express a quantity (*tout, quelques, plusieurs*)
Listening comprehension: Listen to extracts of job descriptions, telephone conversations, a radio program extract of an interview and answer questions on them.
Speaking: Discuss and describe various professions related to a language school, different ways to look for jobs and propose one's services, speak about your career progression, a job interview.
Phonetics: sounds *s et z,* non nasal sounds, pronunciation *tout, tous*
Vocabulary : Terms to describe professional skills, related to interviews, CV , studies
Intercultural: Erasmus program, bilingual studies.

Dossier 4: Lessons 1-6 + Project (12 hours)
Reading Comprehension: to read and understand short texts on television serials, music, the circus and comic books, forums on cultural events, and answer questions on them. Read and interpret tables and statistics on cultural preferences,
Writing: describe your preferred TV serial, a cultural event, carry out a survey of cultural practices in your country, famous French artists, French comic books and their authors
Grammar: Place of the adverb, structures *ce qui/ce que… c'est/ ce sont*, interrogative pronouns *(lequel, laquelle, lesquels, lesquelles*) superlative, the conditional present, different ways of asking a question.
Listening Comprehension: Listen to interviews, reports on cultural events, radio programs on cultural practices and comic books, circus and answer questions on them
Speaking: talk about your favorite TV serial, a cultural event, cultural practices in your country, famous French artists and French comic books
Phonetics: sound r, semi vowels
Vocabulary: terms related to TV series, cultural events, surveys, comic books, films and circus.
Intercultural: French cinema and film festivals

Essential/Recommended Readings
1. Nathalie Hirschsprung, Tony Tricot, Anne Veillon (sons de francais), Emilie Pardo ('exercer), Nelly Mous (DELF) : « *Cosmopolite, Méthode de français A2,* » Hachette- TV 5 Monde, 2017, France Dossiers1-4.
2. Anouchka de Oliveira, Anneline Dintilhac, Dorothée Dupleix (DELF), Delphine Ripaud (Phonétique): *« Saison Méthode de Français A2+ »* Les Editions DIDIER, 2014, France, Unité 0 et Module 1
3. Luca Giachino,Carla Baracco : « Nouvelle Generation Methode de francais (Livre+Cahier) » Les Editions DIDIER, France,2022 Unités 1-3.
4.Anais Dorey –Mater,Emilie Mathieu-Benoit, Nelly Mous, « Cosmopolite, Cahjier d'activites A2, »Hachette TV 5 Monde,2017 France dossiers 1-4
5.Isabelle Cartier, Camille Dereeper,Camille Gomy, Anne Valenza, Delphine Ripaud : *« Saison Méthode de Français A2+ »*, Les Editions DIDIER, 2014, France, Unité 0 et Module 1

DISCIPLINE SPECIFIC ELECTIVES (DSE 1)

Option 1: Studying Different Text Types

Learning Objectives:

- Introduction to discursive specificities and patterns of language across texts and the functions of texts in their social, literary and cultural contexts.
- Familiarise students with various types of texts so that they can identify how the texts resemble or differ from each other in terms of vocabulary, grammar, cohesion and stylistic features.
  Iincrease awareness of linguistic and stylistic features of text types and the reasons for the variation between them. Such an awareness will be useful in further work with text, for example in writing, reading, analysing and interpreting them.

Learning Outcomes:

- Develops skills to study different text types in order to familiarize oneself with different kinds of language usages in literary and semi-literary texts.
- Enables learners to develop relevant analytical skills to critically evaluate the form and content of these texts.
- Helps learnres to identify different language registers, rhetoric and other compositional specificities of the texts.

Syllabus for DSE 1: Option 1: Studying Different Text types

Unit 1 (1-5 weeks)

Prose: Introduction and analytical study of both form and content of a variety of texts written in simple prose form such as shorter and longer Narrative genres, (Eg. short story, fable, chronicle, myth, novella, tales, anecdote, autobiography, biography, novel etc.).

Unit 2 (6-10 Weeks)

Poetry : Introduction and analytical study of both form and content of various types of poetic texts, songs, slams etc, written in a simple and accessible language.

Unit 3 (10-15 Weeks)

Intermedial and semi-liteary texts: Introduction and analytical study of both form and content of comic strips, graphic novels, or semi literary forms such as essay, commentary, informative/descriptive texts on history, geography, economy, culture that are not too complex.

Essential/recommended Readings

A selection of texts can be made from the following reference materials.

1.*Civilisation progressive du français - Niveau Intermédiaire*, Catherine Carlo, Mariella Causa, Clé International, Paris, 2016
2.*Civilisation progressive de la francophonie - Niveau Intermédiaire*, Jackson Noutchié-Njiké, Clé International, Paris, 2016
3.*Littérature progressive du Français - Niveau Intermédiaire*, Nicole Blondeau, Marie-Françoise Né., Ferroudja Allouache, Clé International, Paris, 2016
4.Littérature progressive de la francophonie - Niveau Intermédiaire, F. Allouache, N. Blondeau, Clé International, Paris, 2016
5.Les textes types et prototypes, Jean-Michel Adam, Armand Colin, Paris, 2017 in La Linguistique textuelle, Jean-Michel Adam, Armand Colin, Paris, 2015
6.ABC DELF B1, Corinne Kober-Kleinert, Marie-Louise Parizet, Clé International, Paris.

Additional material may be made available by the Department.

DSE 1: Option 2: Introduction to the History of France and the Francophone World
Learning Objectives:

- Develop an understanding about major historical events that have shaped France from the medieval to contemporary period.
- Critically engage with French Colonialism and its aftermath in relation to the period of decolonisation and its aftermath.
- Familiarize students with techniques and startegies to analyse historical documents as evidences of historical events.

Learning Outcomes:

- Familiarize students with the major social, political and cultural events from the medieval to contemporary period.
- Develop a critical perspective of the colonial past of France and its realtions to its colonies.
- Provide a good understanding of Contemporary France and its relations with the French speaking world including its policy towards immigration.
- Develop the skill to analyse very short historical texts in order to examine documentary evidence of hostical events.

Syllabus for DSE -1 Option 2: Introduction to the History of France and the Francophone World

Unit 1 (1-4 Weeks)
1.1The Gauls and the Franks.
1.2 The making of the Kingdom of France (987-1453) and Consolidation of the French Monarchy.
1.3. Renaissance and Guerre de Religions
1.4. Beginning of colonialism

Unit 2 (5-8 Weeks)
2.1 French Revolution and the Napoleonic era.
2.2 Rise of Republican thought in the 19th century and the 3rd Republic with special emphasis on its policy towards education.
2.3 France and its colonies.

Unit 3 (9-12 Weeks)
3.1 The Belle époque
3.2 The First World War
3.3 France between the Wars
3.4 The second World War and Decolonisation
3.5 Major developments of the Vth Republic

Unit 4 (13-15 Weeks)
4.1 Contemporary France and its relations with the French speaking world, including its policy towards immigration.
4.2 European Union

Essential/recommended Readings

1. Jean Thoraval et al, Les Grandes Etapes De La Civilisation Française, Bordas (1967).
2. Jean Meyer, Jean Tarrade, Annie Rey-Goldzeiguer, *Histoire de la France coloniale, en trois volumes*, Armand Colin, coll. Agora (1991).
3. Marc Ferro, *Histoire des colonisations. Des conquêtes aux indépendances. 13e au 20e siècle*, Seuil, 1996.
4. Pascal Blanchard, *La France noire : Présences et migrations des Afriques. des Amériques et de l'océan indien en France*, Editions de la Découverte(2012).
5. Guillaume Devin and Guillaume Courty, *La construction européenne*, La Découverte, coll. Repères(2010).

Additional material may be provided by the Department.

DSE -1: Option 3 Life in French Speaking Countries

Learning Objectives

- The course initiates learners to the culture and civilization of France and French speaking countries.
- Provides knowledge about education systems, home, family, leisure activities, festivals, politics, tourism, physical geography of France and the Francophone countries.
- Introduces the students to the great thinkers of France and other Francophone countries in the areas of literature, cinema, art, etc.
- Enables students to understand and analyse cultural aspects of the French and Francophone Countries and develops intercultural competence amongst students

Learning Outcomes:

- Understand historical, political, economic, cultural and social specificities of various French Speaking Countries
- Analyse various civilisational aspects of the French speaking countries such as their education systems, home, family, leisure activities, festivals, politics, food, cultural and literary movements etc.
- Develop intercultural competence to engage with French Speaking Countries.

SYLLABUS DSE 1: Option 3: Life in French Speaking Countries

Unit 1 (1-5 Weeks)

Basic knowledge of various cultural and civilisational aspects of France and Francophone countries, such as, daily lives and routines of an average person, education systems, home, family, leisure activities, festivals, politics, tourism, physical geography etc. in the areas of literature, cinema, art, etc.

Unit 2 (6-10 Weeks)

Great thinkers of France and other Francophone countries.

Unit 3 (11-15 Weeks)

Introduction to literature, cinema, art of France and other Francophone countries

Essential/recommended Readings

1.Belhabib, Assia (2008) *Langues, littératures, civilisations des pays francophones*.
Ponts/Ponti 7 : Présences du mythe. Le français à l'université.
2 .Jeffroy, Géraldine et Unter, *Bulles De France, Les stéréotypes et l'interculturel en BD*,
FLE, Mauchamp, Nelly , *La France De Toujours – Civilisation*, CLE International, Paris, 2014.

3.Noutchié Njiké, Jackson, *Civilisation progressive de la Francophonie* : Avec 350 activités, Niveau avancé, CLE International, Paris, 2005
4.Silva Ochoa, Haydée, *Langues, littératures, civilisations des pays francophones*, Ponts/Ponti 5 : Enfances. Le français à l'université, 2007.

Additional material will be made available by the Department.

DSE 1: Option 4: Debating and Presentation Techniques

Learning Objectives

- Improve critical thinking and argumentative skills
- Develop skills to structure thoughts
- Impart skills to present structured thought in a coherent and rational manner
- Teach necessary lexical, discursive and grammatical tools of argumentative speech

Learning Outcomes

- Present and explain information, findings, and supporting evidence, conveying clear and distinct arguments on simple topics related to their immediate environment
- Justify one's point of view with proper line of reasoning and examples
- Develop the skills to formulate, organize, prove arguments with the help of examples, data, tables, charts, illustrations or other graphic supports.
- Develop the capacity to formulate and present counter-arguments
- Acquire lexical, discursive, grammatical tools of argumentative speech
- Develop awareness about ICT enabled tools and non-verbal elements of an effective presentation such as, voice modulation, eye contact, use of space etc.

Unit 1 (1-4 weeks)

Components and structure of augmentative speech: Introduction, development, conclusion, claims, proofs and evidences, The distinction between speaking and demonstrating

Unit 2 (5-8 weeks)

Exercises on coherence and coherence with the help of connectors, Introduction of lexical, discursive and grammatical tools required to effectively present and justify concrete arguments.

Unit 3 (9-12 Weeks)

Components and structure of debate: How to start and end a debate, how to present counter-arguments etc.

Unit 4 (13-15 Weeks)

Gathering information, data, evidences through research and structured presentation of all these elements by utilizing verbal, non-verbal and ICT tools.

Essential/Recommended Readings

1.Lambert Jean, (2022), *Tout sur l'expression orale-Plus de 40 fiches d'exercices et corrigés et commentés pour réussir sa prise de parole en public*, Paris : Bloc-notes-ellipses
2.Michele Barfety, Patricia Beaujohn, (2018), *Expression Orale : Niveau 2*, Paris : CLE International

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.A.(Programme) with French as Non-Major

DISCIPLINE SPECIFIC CORE COURSE (DSC-3): French in Context: Intermediate Level – 1

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
French in Context: Intermediate Level – 1	4	3	1	Nil	Passed Class XII	None

Learning Objectives: (Reading, Writing, Listening and Speaking):

In Semester 3, the student will learn to

- understand and extract the essential information from short, clear, simple messages, announcements and short recorded passages.
- understand simple directions.
- dealing with predictable everyday matters.
- reading very short, simple texts to find specific, predictable information in simple everyday material such as advertisements, prospectuses, menus, timetables, classified advertisements, Internet forums etc.
- describe using simple language different aspects of his or her background, relevant environment and matters in areas of immediate need such as narrating past events and future plans, commenting on and presenting simple texts, describing visual materials (photos, pictures, etc.)
- communicate in simple and routine tasks requiring a simple, short and direct exchange of information on familiar and routine matters such as asking for and giving instructions, discussing what to do in the evening/at the weekend, making and responding to suggestions, agreeing and disagreeing with others, etc.
- describe past, present and future events.

- write short, simple notes and messages relating to matters in areas of immediate need.

Learning outcomes: (Reading, Writing, Listening and Speaking):

At the end of Semester 3, a student will be able to

- read and understand straightforward factual texts on frequently used expressions related to areas of immediate relevance.
- understand the main points of simple audio messages or recorded material and read and understand simple texts about familiar subjects delivered relatively slowly and clearly.
- describe experiences, feelings and events in some detail.
- attain partially A2 Level of the Common European Framework (CEF).

SYLLABUS OF DSC-3[4]

Dossier 1 Lessons 1-6 + Project (12 hours)

Reading Comprehension: Read content of an article on internet, a travel column, a brochure observe images and answer questions based on them.

Writing: Compare your maternal language with french , prepare program of a linguistic stay in France, write a guide book and propose a visit for francophone tourists, create a brochure for types of accomodation for francophone students visiting your city for a linguistic stay, write description of an unfamiliar place in your city, prepare a list of touristic activities available in your city(cultural, sportive, etc.).

Grammar: Expressions of comparison, indirect pronoun *y* and *en* to replace a thing, a place or an idea, pronoun *COD* and *COI* to avoid repetition, structures to express rules and give recommendations : imperatif, verb *devoir* + infinitif form of the verb, *il faut* + infinitf form of the verb, *il est impératif de ,* negation (*ne… plus* , *rien, personne, jamais* …), adverbs and adverbial phrase for describing a place, relative pronouns (*qui, que* (or *qu'*), *à qui* , *avec qui* for giving precisions.

Listening comprehension: Listen to a conversation on a mobile application, on an internet website, radio show, telephonic conversation and answer questions based on them.

[4] A text book contains 6-8 modules/units called *dossier* Each dossier comprises of 6 lessons. Therefore, the syllabus is given in terms of the text book unit being covered along with the content of the 6 lessons with a total duration of the number of weeks needed to cover a dossier of 6 lessons. In Semester 3, initial 4 units of the text book will be covered i.e from Unit 1-4.

Speaking: Compare linguistic stays, follow an administrative procedure, organise a trip, enquire about an accomodation, describe a place, give clarifications.

Phonetics: Prononunciation of the word *plus*, the nasal vowels [ã] [ẽ], intonation for expressing obligation.

Vocabulary: Words related to description of a linguistic stay, administrative formalities, means of travel: car pool, describe an accomodation, words to describe an unfamiliar place, places in the city, touristic activities in your city.

Cultural: Visiting Paris, France, complete your cultural report card.

Dossier 2 Lessons 1-6 + Project (12 hours)

Reading Comprehension: Read and understand contents of an article , brochure, testimonials, flyer, travel testimonial and answer questions based on them.

Writing: Write about your trip to an infamiliar place in your city that you may propose to francophone tourists, read the programme of a travel agency, present a touristic activity of your city for francophone tourists, give advices, make a guide book, write a testimonial: choose the theme of your testimonial(travel memory, public speaking etc.) and express your emotions and sentiments related to this testimonial, prepare a flyer for a sports activity , present travel to an unfamiliar place.

Grammar: Accord of past participle with the verb *être* in *passé composé*, express an obligation, prohibition and give advices, use of present subjunctive to express an obligation, *passé composé* and *imparfait* to narrate past events , memories, *c'est … qui, c'est… que* in order to highlight, gender of nouns, expressions of time: *il y a*, *pendant, depuis, dans*.

Listening comprehension: Listen to a musical piece on an interet website , a conversation on a travel plan in a café of languages, radio chat show.

Speaking: Narrate an experience, understand the advices and safety instructions, talk about your emotions and sentiments, plan a weekend, describe a travel to an unfamiliar place, describe one's journey.

Phonetics: Nasal vowels [ɑ̃] [ʒ], the pronunciation of *passé composé* and *imparfait, liaison* with sounds [z], [t] and [n].

Vocabulary: Words to describe a touristic activity, verbs and structures for expressing rules and giving recommendations, expressing sentiments and

emotions, words to describe an unsual sports activity, the characteristics of informal french, words related to professional and personal journey.
Cultural: Intercultural meeting , a cultural exchange.

Dossier 3 Lessons 1-6 + Project (12 hours)
Reading Comprehension: Read and understand cotents of a job offer, a message for job search, website offering services near you, testimonials, different sections of a CV, read an article in a magazine meant for francophone readers and answer questions based on them.
Writing: Create a job offer for your center of languages **,** write your speculative CV, write an advertisement offering your services, give advices to a francophone who is looking for a job in your country/ city, present a CV(classic or unique) and a motivation letter, write a short testimonial about your professional or educational journey.
Grammar: Logical connectors for stucturig a speech, adverbs: regular and irregular to give precision, hypothesis with *si* for giving advices and indicating consequences, *plus que parfait* for describing past events, asking questions in a formal situation, indefinite adjectives for expressing quantities ex- *quelques, plusieurs* .
Listening comprehension: Listen to a job interview, conversation on an internet website, radio chat show, radio interview on testimonials.
Speaking: Understanding a job offer, searching for a job, offering services, giving advices, talking about one's professional jouney, replying to formal questions and preparing for a professional interview.
Phonetics: Sounds [s] and [z], denasalisation, pronunciation of *tous* and *tout.*
Vocabulary: Words to describe professional competencies and qualities, words related to a professional interview, professional application (speculative/ telephonic interview), words related to exchange of services, studies, professional experience(CV), words related to a professional interview (description of an internship, professional qualities).
Cultural: Fren speaking community on television: TV5 monde, television shows such as: Destination francophony, ERASMUS program, importance of bilingual education.

Dossier 4 Lessons 1-6 + Project (12 hours)

Reading Comprehension: Read and understand contents of an article on a forum about a television series, read the account of an event , article in a newspaper about an author of a comic script and answer questions based on them.

Writing: Present your favourite series, describe a cultural event, prepare a survey about different cultural pactices in your country, write an article to present an art form (painting,theatre, circus etc.) and famous artists related to each art form, present an author of a francophone comic script and write questions to ask from this author, give advices and suggestions to be given to the creative guide of the show *Cirque du Soleil* to plan a similar event in your country.

Grammar: Place of adverbs(simple and complex tenses), *ce que/ce qui… c'est/ce sont…* for higlighting, interrogative pronouns (*lequel* , *laquelle, lesquels, lesquelles*) for asking an information or a precision, the superlative for expressing superiority or inferiority, interrogation for asking question in oral and written form (inverted question), conditional present to express a wish and give an advice.

Listening comprehension: Listen to an interview, radio show on cultural forum, radio chat show on infographic survey.

Speaking: Present, modify and explain facts, give account of an event, reply to a survey, give appreciation, ask for explanations, express desires and give advices.

Phonetics: Sounds [r],[y], [o] and [u] , pronunciation in imparfait and conditional present.

Vocabulary: Words related to television series, words and expressions that describe professional success, festive (musical festival) and cultural events, present the results of a survey, describe an age group, words related to cultural life, to the world of showbiz, words related to comic strip, live performances, words and expressions for giving advices and expressing wishes.

Cultural: A new king at Versailles, French cinema abroad.

Practical component (if any) - NIL

Essential/recommended readings: Any of the text books given below may be prescribed:

1. Mater Anaïs, Mathieu-Benoit Émilie, Hirschsprung Nathalie, Mous Nelly, Tricot Tony : *« Cosmopolite- A2 Méthode de français »,* Hachette Français langue etrangere, 2017 Dossiers 1-4.
2. Cocton Marie-Noëlle, Marolleau Émilie, Pommier Émilie, Ripaud Delphine : *« L'Atelier-A2, Méthode de français »*, Les Éditions DIDIER, France, 2019, Unités 1-4.
3. Biras Pascal, Denyer Monique, Gloanec Audrey, Witta Stéphanie, Briet Geneviève, Collige-Neueschwander Valérie (capsules de phonétique), Fouillet Raphaëlle (précis de grammaire) : « *Défi- 2 Méthode de français* », Éditions Maison des Langues, 2018, Unités 5-8.
4. Bredelet A., Bufferne M., Mègre B., Rodrigues W. M. : « *Odyssée- A2, Méthode de français »*, CLÉ International, France, 2021, Unités 1-6.
5. Fafa Clémence, Gajdosova Florence, Horquin Alexandra, Pasquet Airelle, Perrard Marion, Petitmengin Violette, Sperandio Caroline, Dodin Marlène (DELF), Veldeman-Abry Julie (phonétique) : « *Edito-A2 Méthode de français (2e édition)* », Editions DIDIER FLE, 2022, Unités 1-6.
6. Cocton Marie-Noëlle, Marolleau Émilie, Pommier Émilie, Ripaud Delphine: *« Cosmopolite- A2 Cahier d'activites »* , Hachettte Français langue etrangere, 2017 Dossiers 1-4.
7. Cocton Marie-Noëlle (coordination pédagogique), Pommier Émilie, Ripaud Delphine, Rabin Marie : *« L'Atelier- A2, Cahier d'activités »,* Les Éditions DIDIER, France, 2019, Unités 5-8.
8. Biras Pascal, Denyer Monique, Gloanec Audrey, Witta Stéphanie, de Rongé Camille (phonétique), Verhulst Nancy (phonétique), Horquin Alexandra (DELF) : « *Défi- 2 Cahier d'exercices* », Éditions Maison des Langues, 2018, Unités 1-4.
9. Chanéac-Knight Laëtitia : « *Odysée- A2, Cahier d'activités »*, CLÉ International, France, 2021, Unités 1-6.
10. Amoravain Roxane, Blasco Valérie, Gatin Marie, Lions-Olivieri Marie-Laure : « *Edito- A2 Cahier d'activités »*, Les Éditions DIDIER FLE, 2022, Unités 1-6.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF GERMANIC & ROMANCE STUDIES – GERMAN

Category I

BA (HONOURS) GERMAN

DISCIPLINE SPECIFIC CORE COURSE -7 (DSC-7)
Language in Context: Intermediate Reading and Writing Skills (1)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Language in Context: Intermediate Reading and Writing Skills (1)	**4**	**3**	**1**	**0**	**12th pass**	**NIL**

Learning Objectives

Enable student to

- read texts and answer questions on them;
- be able to write texts, about subjects pertaining to his/her immediate environment;
- attain Level A 2.1 of the Common European Framework (CEF).

Learning outcomes

- Enable students to fully attain A2.1 Level of reading and writing skills in the concerned language.
- Reading simple texts and answering questions on them.
- Equip students to write about subjects pertaining to his/her immediate environment.

SYLLABUS OF DSC-7

Unit I **9 hours**

Understand information about people
Understand and narrate a story
Justify something
Make guesses about something
Answer questions about a text

- Possessive article with dative
- Model particle “doch”

- Conjunction “weil”
- Vocabulary related to cuisines and eating habits

Unit II **9 hours**

Read about others school experiences
Write comments on others school experiences
Get to know a city through brochures
Read about schools in German speaking countries

- Past tense of model verbs
- Two-way prepositions
- Verbs related to position and action

Unit III **9 hours**

Read texts about media
Write about one’s opinion about different media
Engage with a film review

- Comparison with “als” and “wie”
- Conjunction “dass”
- Superlative degree of comparison

Unit IV **9 hours**

Read different texts about festivals
Write about any Indian festival
Describe a city
Read and write a blog entry

- Conjunction “wenn”
- Adjective endings after definite articles
- Adjective endings after indefinite articles

Unit V **9 hours**

Read texts about different professions
Read newspaper articles
Write about a trip

- Prepositions “ohne” and “mit”
- Indirect questions
- Prepositions related to location

Practical component (if any) - NIL

Essential/recommended readings

1. Dengler, S., Rusch, P., Schmitz, H. (2013). *Netzwerk A2.1: Deutsch als Fremdsprache. Kurs- und Arbeitsbuch mit DVD und 2 Audio--CDs.* Klett Verlag.

2. Dengler, Stefanie; Tanja Mayr-Sieber, Paul Rusch, Helen Schmitz. *Netzwerk neu A2.1: Deutsch als Fremdsprache. Kurs- und Übungsbuch mit Audios und Videos.* Klett Verlag
3. Evans, S., Pude, A., Specht, F. (2021). *Momente A2: Kurs- und Arbeitsbuch.* Hueber Verlag.
4. Evans, S., Pude, A., Specht, F. (2020). *Menschen A2: Kurs- und Arbeitsbuch.* Max Hueber Verlag
5. Höldrich, B. (2010). – *Lesen & Schreiben A2: Buch (Deutsch üben) Taschenbuch*. München: Hueber Verlag.
6. Rusch, P., Schmitz, H. *Einfach Grammatik Deutsch A1 Bis B1.* Berlin: Langenscheidt.
7. Sander, I., Braun, B., Fügert, N., Kotas, O. (2016). *DaF kompakt neu A2: Deutsch als Fremdsprache für Erwachsene. Kurs- und Übungsbuch.* Klett Verlag.
8. Von, Rosa-Maria Dallapiazza, et al. (2011). *Tangram aktuell A2: Kurs- und Arbeitsbuch*. Hueber Verlag.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 8 (DSC-8)
Language in Context: Intermediate Listening and Speaking Skills (1)

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Language in Context: Intermediate Listening and Speaking Skills (1)	**4**	**3**	**1**	**0**	**12th Pass**	**NIL**

Learning Objectives

Enable student to

- read simple texts and answer questions on them;
- be able to express on different topics, about subjects pertaining to his/her immediate environment;
- attain complete Level A 2.1 of the Common European Framework (CEF).

Learning Outcomes

- Enable students to fully attain A2.1 Level of listening and speaking skills in the concerned language.
- Express ideas on audios listened and answering questions on them.
- Equip students to speak about subjects pertaining to his/her immediate environment

SYLLABUS OF DSC-8

Unit I **9 hours**
Talk about food
Introduce oneself and others
Talk about emotions

Unit II **9 hours**
Talk about one's school experiences
Talk about one's habits
Talk about the Indian school system

Unit III **9 hours**
Discuss the pros and cons of different media
Watch a short film
Talk about films

Unit IV **9 hours**
Express gratitude and good wishes
Listen to a song
Recite a poem

Unit V **9 hours**
Simulate buying a ticket from the ticket counter
Talk about one's dream job
Listen to travel related announcements

Practical component (if any) - NIL

Essential/recommended readings

1. Dengler, S., Rusch, P., Schmitz, H. (2013). *Netzwerk A2.1: Deutsch als Fremdsprache. Kurs- und Arbeitsbuch mit DVD und 2 Audio--CDs.* Klett Verlag.
2. Dengler, Stefanie; Tanja Mayr-Sieber, Paul Rusch, Helen Schmitz. *Netzwerk neu A2.1: Deutsch als Fremdsprache. Kurs- und Übungsbuch mit Audios und Videos.* Klett Verlag
3. Evans, S., Pude, A., Specht, F. (2021). *Momente A2: Kurs- und Arbeitsbuch.* Hueber Verlag.

4. Evans, S., Pude, A., Specht, F. (2020). *Menschen A2: Kurs- und Arbeitsbuch.* Max Hueber Verlag
5. Rusch, P., Schmitz, H. *Einfach Grammatik Deutsch A1 Bis B1.* Berlin: Langenscheidt.
6. Sander, I., Braun, B., Fügert, N., Kotas, O. (2016). *DaF kompakt neu A2: Deutsch als Fremdsprache für Erwachsene. Kurs- und Übungsbuch.* Klett Verlag.
7. Von, Rosa-Maria Dallapiazza, et al. (2011). *Tangram aktuell A2: Kurs- und Arbeitsbuch*. Hueber Verlag.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE– 9 (DSC-9)
Engaging with Literary Texts (1)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Engaging with Literary Texts (1)	**4**	**3**	**1**	**0**	**12th Pass**	**NIL**

Learning Objectives

Enable students to read, understand and analyse short literary texts (prose, poetry, films, songs etc.) adapted for students of level A2 and to answer questions on the same.

Learning outcomes

SYLLABUS OF DSC-9

UNIT – I (9 hours)

The students will read short stories of level A2, and learn to summarise the content as well as answer basic comprehension questions on it.

UNIT – II (9 hours)

The students will get familiar with various components of literary analysis like narrator, character, tone etc. as well as with various forms of short prose. The students will learn to answer more analytical questions.

UNIT – III (9 hours)

The students will learn to read and analyse poetry while gaining knowledge about various poetic devices.

UNIT – IV (9 hours)

The students will learn to listen to and analyse various German songs and try to apply knowledge of poetic devices on the song texts, while also learning more about intonation, melody, rhythm etc.

UNIT – V (9 hours)

The students will learn to comprehend and do a basic analysis of short visual texts like shorts films, advertisements, skits etc.

Practical component (if any) - NIL

Suggestive readings

Learning / Teaching Material: To be compiled and provided by the Department.

1. Rosmarie Thee Morewedge. (2008). Mitlesen - Mitteilen Literarische Texte zum Lesen, Sprechen, Schreiben und Hören. Boston: Thomson Heinle. 4th Edition

2. Habersack, Charlotte. (2010). Der Tote im See. Hueber

3. Schwenninger, Marion. (2016). Träume beißen nicht. Hueber

4. Baier, Gabi. (2015). Verschollen in Berlin. Hueber

5. List of Films
https://www.goethe.de/ins/pl/de/spr/unt/kum/dfj/fil.html

6. List of Songs
https://www.goethe.de/prj/stg/de/mat/mmu.html

Additional material may be provided by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Pool of Discipline Specific Electives (DSEs)

DISCIPLINE SPECIFIC ELECTIVE COURSE – 1 (DSE-1):
Introduction to the History of Germany and the German-speaking World.(1)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Introduction to the History of Germany and the German Speaking World	**4**	**3**	**1**	**0**	**12th Pass**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce students to major social, political and cultural events in Germany and German-speaking countries.
- To study the impact of these social, political and cultural events in the German-speaking world and in Europe.

Learning outcomes

The Learning Outcomes of this course are as follows:

- To familiarise students with the major social, political and cultural events from the medieval to contemporary period.
- To provide a good understanding of contemporary Germany and German-speaking countries and their standing in the world.

SYLLABUS OF DSE-1

UNIT – I (9 hours)
Reformation and Counter-Reformation.
Thirty Years' War
Enlightenment

UNIT – II (9 hours)
1848 Revolution
Unification of Germany under Bismarck.

Weimar Republic

UNIT – III (9 hours)
Habsburg Empire
World War I.
Division of Germany

UNIT – IV (9 hours)
Basic Law, Economic Miracle
1968 student revolt

UNIT – V (9 hours)
Fall of the Berlin Wall in 1989, Reunification
Germany in the European Union

Practical component (if any) - NIL

Essential/recommended readings

1. Herbert, Ulrich. (2014). *Geschichte Deutschlands im 20. Jahrhundert.* München: C.H. Beck Verlag.
2. Hein, Dieter (2016). *Deutsche Geschichte im 19. Jahrhundert*. München: C. H. Beck Verlag.
3. Stollberg-Rilinger, Barbara. (2013). *Das Heilige Römische Reich Deutscher Nation: Vom Ende des Mittelalters bis 1806*. München: C. H. Beck.
4. Brechtken, Magnus. (2012). *Die nationalsozialistische Herrschaft 1933-1939.* Darmstadt: Wissenschaftliche Buchgesellschaft.
5. Stern, C., Winkler, H.A. (Hrsg.). (1994). *Wendepunkte deutscher Geschichte 1848-1990.* Frankfurt am Main: Fischer-Verlag.

Additional material will be provided by the Department.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 1 (DSE-1):
Life in German speaking Countries.

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Life in German-Speaking Countries	**4**	**3**	**1**	**0**	**12th Pass**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce the learner to various aspects of contemporary culture (films, art, education system etc.) in Germany and German-speaking countries.

Learning outcomes

The Learning Outcomes of this course are as follows:

- To initiate learners to the culture and civilization of Germany and German-speaking countries.
- To provide knowledge about education systems, home, family, leisure activities, festivals, politics, tourism, physical geography of Germany and German-speaking countries.
- To introduce the students to the great thinkers of Germany and German-speaking countries in the areas of literature, cinema, art etc.
- To enable students to understand and analyse cultural aspects of Germany and German-speaking countries and develop an intercultural competence among students.

SYLLABUS OF DSE-1

UNIT – I (9 hours)
Detailed contents
Basic knowledge of various cultural and civilisational aspects of Germany and German-speaking countries, such as daily lives and routines of an average person, home, family, leisure activities, festivals etc.

UNIT – II (9 hours)
Basic knowledge of education systems, politics etc.

UNIT – III (9 hours)
Basic knowledge of tourism, physical geography etc.

UNIT – IV (9 hours)
Great thinkers of Germany and other German speaking countries.

UNIT – V (9 hours)
Introduction to literature, cinema, art of Germany and other German speaking countries.

Practical component (if any) - NIL

Essential/recommended readings

1. Williams, J., (2011). *Weimar Culture Revisited.* London: Palgrave Macmillan.
2. Schräder, B., Schebera, J. (1987). *Die „goldenen" zwanziger Jahre. Kunst und Kultur der Weimarer Republik.* Köln: Hermann Bohlaus.
3. Kolb, E., Schumann, D. (2012). *Die Weimarer Republik. 8. erw. Aufl.* München/Wien: Oldenbourg.
4. Schräder, B., Schebera, J. (2010). *Deutschland nach der Wiedervereinigung. Deutsche Einheit. Bundeszentrale für politische Bildung.* APUZ 30-31.
5. Koch, Gertrud (ed.). (1999). *Bruchlinien. Tendenzen der Holocaustforschung*. Köln: Böhlau Verlag.
6. Heimrod, Ute (ed.). (1999). *Der Denkmalstreit – das Denkmal? Die Debatte um das "Denkmal für die ermordeten Juden Europas".* Berlin/Wien: Philo.
7. Rumpler, H., Urbanitsch, P. (eds.). (2006). *Die Habsburgermonarchie 1846-1918. Politische Öffentlichkeit und Zivilgesellschaft* . Wien: VÖAW.
8. Caduff, C., Sorg, R. (eds.). (2004). *Nationale Literaturen heute – ein Fantom ? Tradition und Imagination des Schweizerischen als Problem*. München: Fink Wilhelm GmbH + CoKG.
9. Pautz, H. (2005). *Die deutsche Leitkultur. Eine Identitätsdebatte.* Stuttgart: ibidem.
10. Ohlert, M. (2014). *Zwischen « Multikulturalismus » und « Leitkultur ».* Berlin: Springer VS.

Additional material will be provided by the Department.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 1 (DSE-1):
Different Text Types

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Different Text Types	**4**	**3**	**1**	**0**	**12th Pass**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce and familiarise the learner to different types of literary and non-literary texts.
- To identify the linguistic, discursive and formal specificities of literary and non-literary texts
- To analyse the form and content of literary and non-literary texts.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Develops skills to study different text types in order to familiarise oneself with different kinds of language usages in literary and semi-literary texts.
- Enables learners to develop relevant analytical skills to critically evaluate the form and content of these texts
- Helps learners to identify different language registers, rhetoric and other compositional specificities of the texts.

SYLLABUS OF DSE-1

UNIT – I (9 hours)

Prose: Introduction and analytical study of both form and content of a variety of texts written in simple shorter narrative genres, (Ex. short story, fable, chronicle, myth, tales, anecdote etc.)

UNIT – II (9 hours)

Prose: Introduction and analytical study of both form and content of a variety of texts written in simple longer narrative genres, (Ex. novella, autobiography, biography, novel, play etc.)

UNIT – III (9 hours)

Poetry: Introduction and analytical study of both form and content of various types of poetic texts, songs, slams etc. written in a simple and accessible language.

UNIT – IV (9 hours)

Intermedial and semi-literary texts: Introduction and analytical study of both form and content of comic strips, graphic novels etc.

UNIT – V (9 hours)

Intermedial and semi-literary texts: Introduction and analytical study of both form and content of semi literary forms such as essay, commentary, informative/descriptive texts on history, geography, economy, culture that are not too complex.

Practical component (if any) - NIL

Essential/recommended readings

Any of the following textbooks may be prescribed and will be partially completed.

- Thoma L. (2009). *Das Idealpaar Jugendbuch / Kurzgeschichten / Leichte Lesetexte (A1).* München: Hueber Vlg.
- Specht, F. (2010). *Rumpelstilzchen Jugendbuch; Leichte Lesetexte (A1).* München Hueber.
- Thomas, S. (2008). *Vera, Heidelberg Jugendbuch Leichte Lesetexte (A2).* München Hueber.
- Urs, L. (2010). *Fräulein Else Jugendbuch/Leichte Lesetexte (A2).* München Hueber.

Additional texts will be provided by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 1 (DSE-1):
Debating and Presentation Techniques

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Debating and Presentation Techniques	**4**	**3**	**1**	**0**	**12th Pass**	**NIL**

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES OFFERED BY THE DEPARTMENTS

GENERIC ELECTIVES (GE-3)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Basic Communicative German (3)	**4**	**3**	**1**	**0**	**12th Pass**	**NIL**

Learning Objectives

Enable student to

- read texts and answer questions on them;
- be able to write texts, about subjects pertaining to his/her immediate environment;
- attain Level A 2.1 of the Common European Framework (CEF).

Learning outcomes

- Enable students to fully attain A2.1 Level of reading and writing skills in the concerned language.
- Reading simple texts and answering questions on them.
- Equip students to write about subjects pertaining to his/her immediate environment.
- Enable students to fully attain A2.1 Level of listening and speaking skills in the concerned language.
- Express ideas on audios listened and answering questions on them.
- Equip students to speak about subjects pertaining to his/her immediate environment

SYLLABUS OF GE-3

Unit I **9 hours**

Understand information about people
Understand and narrate a story
Justify something

Make guesses about something
Answer questions about a text
Talk about food
Introduce oneself and others
Talk about emotions

- Possessive article with dative
- Model particle “doch”
- Conjunction “weil”
- Vocabulary related to cuisines and eating habits

Unit II **9 hours**

Read about others school experiences
Write comments on others school experiences
Get to know a city through brochures
Read about schools in German speaking countries
Talk about one’s school experiences
Talk about one’s habits
Talk about the Indian school system

- Past tense of model verbs
- Two-way prepositions
- Verbs related to position and action

Unit III **9 hours**

Read texts about media
Write about one’s opinion about different media
Engage with a film review
Discuss the pros and cons of different media
Watch a short film
Talk about films

- Comparison with “als” and “wie”
- Conjunction “dass”
- Superlative degree of comparison

Unit IV **9 hours**

Read different texts about festivals
Write about any Indian festival
Describe a city
Read and write a blog entry
Express gratitude and good wishes
Listen to a song
Recite a poem

- Conjunction “wenn”
- Adjective endings after definite articles
- Adjective endings after indefinite articles

Unit V **9 hours**

Read texts about different professions
Read newspaper articles
Write about a trip
Simulate buying a ticket from the ticket counter
Talk about one's dream job
Listen to travel related announcements

- Prepositions "ohne" and "mit"
- Indirect questions
- Prepositions related to location

Essential/recommended readings

Essential/recommended readings/Suggestive readings

Learning/Teaching Material:

- Dengler, S., Rusch, P., Schmitz, H. (2013). Netzwerk A2.1: Deutsch als Fremdsprache. Kurs- und Arbeitsbuch mit DVD und 2 Audio--CDs. Klett Verlag.
- Dengler, Stefanie; Tanja Mayr-Sieber, Paul Rusch, Helen Schmitz. *Netzwerk neu A2.1: Deutsch als Fremdsprache. Kurs- und Übungsbuch mit Audios und Videos.* Klett Verlag
- Evans, S., Pude, A., Specht, F. (2021). *Momente A2: Kurs- und Arbeitsbuch.* Hueber Verlag.
- Evans, S., Pude, A., Specht, F. (2020). *Menschen A2: Kurs- und Arbeitsbuch.* Max Hueber Verlag
- Höldrich, B. (2010). – *Lesen & Schreiben A2: Buch (Deutsch üben) Taschenbuch*. München: Hueber Verlag.
- Rusch, P., Schmitz, H. *Einfach Grammatik Deutsch A1 Bis B1.* Berlin: Langenscheidt.
- Sander, I., Braun, B., Fügert, N., Kotas, O. (2016). *DaF kompakt neu A2: Deutsch als Fremdsprache für Erwachsene. Kurs- und Übungsbuch.* Klett Verlag.
- Von, Rosa-Maria Dallapiazza, et al. (2011). *Tangram aktuell A2: Kurs- und Arbeitsbuch*. Hueber Verlag.

Additional material may be provided by the Department.Additional material may be provided by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

BA (PROG.) WITH GERMAN AS NON-MAJOR

DISCIPLINE SPECIFIC CORE COURSE (DSC-1): German in Context: Intermediate Level – 1

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
German in Context: Intermediate Level – 1	4	3	1	Nil	12th Pass	German Basic Level- 2

Learning Objectives

The Learning Objectives of this course are as follows:
At the end of semester 3, a student will

- be able to read long texts and answer questions on them.
- be able to write short texts about one's own feelings and one's immediate environment.
- Be able to express own opinion and feeling, be able to comment and make suggestions
- To understand and conduct telephonic conversation.
- attain Level A 2.1 of the Common European Framework (CEF).

Learning outcomes

The Learning Outcomes of this course are as follows:

- Enable students to attain A 2 Level of listening, speaking, reading and writing skills in the concerned language.
- Reading long and difficult texts and answering questions on them.
- Equip students to write about subjects pertaining to his/her immediate environment.

SYLLABUS OF DSC-3

Content

Listening: Understanding words and phrases about persons, professions and far away places, long and difficult. formal/informal conversation, questions, instructions and suggestions, description of places.

Speaking:

Describing and presenting someone's professional life. Taking part in a conversation and interaction. Asking for/ giving information on topics or matters related to travel, Films and profession. Seeking information through telephonic conversation.

Reading: Reading long and difficult texts related to one's immediate and far away environment such as brochures, advertisements, posters, fliers, responding to emails.

Writing: Guided writing will include activities such as describing a city, tourist destinations, travelling experiences, a journey, professional routine, a film

Morphosyntax and Vocabulary: Complex grammatical structures and vocabulary used to describe oneself and others, describe one's local surroundings, cities, professions and journies etc.

UNIT I **9 hours**

To compare and talk about advantages and disadvantages, talk about films and make comments about films, to express one's opinion, to conduct an interview, talk about feelings, congratulate, thank, express happiness and regret.

UNIT II **9 hours**

To talk about an event, incident, understand and write a blog, ask about things, understand talks related to banking, make a polite request, describe a city and follow city tours.

UNIT III **9 hours**

To talk at with travel ticket counter, talk about holiday offers, describe dream profession, preparing conversation via telephone, pass on information out of a text, asking for information, understanding and describing the way to a destination, using the public transport system

UNIT IV **9 hours**

describing advantages and disadvantages, expressing one's own experience, describing graphics, describing experiences during train journey, story writing, understanding problems in learning, understanding and making suggestions, understanding reports about professions,

UNIT V **9 hours**

Understanding an interview, preparing a small presentation, expressing hope, despair and admiration during sports, understanding and writing comments, express consequences and contradictions, giving suggestions and reacting, to fix an appointment, understand difficult texts, presenting a tourist destination.

Practical component (if any) - NIL

Essential/recommended readings

Any of the following textbooks may be prescribed and will be partially completed.

9. Dengler, S., Rusch, P., Schmitz, H., Sieber, T. (2020). *Netzwe neu A 2: Deutsch als Fremdsprache. Kurs- und Übungsbuch mit DVD und 2 Audio--CDs.* Klett Verlag.

10. Dengler,Stefanie; Tanja Mayr-Sieber, Paul Rusch, Helen Schmitz. *Netzwerk neu A1.1 and A1.2: Deutsch als Fremdsprache. Kurs- und Übungsbuch mit Audios und Videos.* Klett Verlag
11. Evans, S., Pude, A., Specht, F. (2021). *Momente A1.1. Kurs- und Arbeitsbuch.* Hueber Verlag.
12. Evans, S., Pude, A., Specht, F. (2020). *Menschen A 1. Kurs- und Arbeitsbuch.* Max Hueber Verlag
13. Höldrich, B. (2010). – *Lesen & Schreiben A1: Buch (Deutsch üben) Taschenbuch*. München: Hueber Verlag.
14. Rusch, P., Schmitz, H. *Einfach Grammatik Deutsch A1 Bis B1.* Berlin: Langenscheidt.
15. Sander, I., Braun, B., Fügert, N., Kotas, O. (2016). *DaF kompakt neu A1: Deutsch als Fremdsprache für Erwachsene. Kurs- und Übungsbuch.* Klett Verlag.
16. Von, Rosa-Maria Dallapiazza, et al. (2011). *Tangram aktuell A2. Kurs- und Arbeitsbuch*. Hueber Verlag.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category I

B.A.(Hons) Spanish

DISCIPLINE SPECIFIC CORE COURSE – 7:

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Language in Context: Intermediate Reading and Writing Skills (1)	**4**	**3**	**1**	**0**	**12th Pass**	**Nil**

Learning Objectives

Enable student to

- read complex texts and answer questions on them;
- be able to write complex texts, about subjects pertaining to his/her immediate environment;
- attain Level A 2.1 of the Common European Framework (CEF).

Learning Outcomes

- Enable students to fully attain A2.1 Level of reading and writing skills in the concerned language.
- Reading complex texts and answering questions on them.
- Equip students to write about subjects pertaining to his/her immediate environment.

Content:

Reading: Read and understand standard documents, texts, emails containing personal information, cultural aspect of the language, gastronomy, free time activities, movie review, writing a biography, talk about experiences, give suggestions etc.

Writing: Guided writing activities. Making suggestions to improve Sapnish, writing on a movie/ biography, email describing what did you do, writing about past activities, food choices, and writing recipes, writing on free time, invitations, make excuses, activities related to write about preferences and choices etc.

Morphosyntax and Vocabulary: standard grammatical structures and vocabulary used to write past experiences, travelling vocabulary, imperative to write recipes, vocabulary related

to social interaction, house, movie review, biography, vocabulary related to preferences and choices, invitations, make excuses etc.

Intercultural and cocultural: Introduction to Hispanic movies, relating to past, design a house, social contacts, plan a weekend, prepare food for the party, hispanic authors and personalities, movies, hispanic places to visit etc.

SYLLABUS OF DSC-7

UNIT – I (9 hours)
Spanish language and you
Read a text related to the topic.
Write about habits and difficulties.
Write suggestions for improving your Spanish.
Read a text on how to learn Spanish better.
Write a questionnaire to know how your classmates learn and what their difficulties are.

UNIT – II (9 hours)
A life in pictures
Read a text related to the topic.
Write a biography of an actor/director.
Write about your activities in the last weekend.
Read a text related to a topic.
Write on the pictures given.
Read a text related to a topic.
Write a biography of your favourite person.

UNIT – III (9 hours)
Home, sweet home
Read a text related to a topic.
Different types of houses.
Read a text related to a topic.
Write a note on the interior designing of your drawing room.
Compare two houses with different interior design.
Write advertisement for the rent/sale of a house,
Read a text on unique houses.
Write about a house of your dreams.
UNIT – IV (9 hours)
How are things?
Read a text related to a topic.
Write a note on greetings and goodbye.
What are they doing?
Difference between Dejar and Dar, estar+gerund
Write a brief note on your activities at present

.

UNIT –V (9 hours)

Leisure time

Read a text related to the topic.

Write about how to spend free time.

Préterito perfecto, todavía, ya, marcadores temporales: hoy, este año, esta mañana ir a +infinitivo etc.

Write on a series of pictures.

Read a text related to the topic.

Write a plan of a weekend for a particular group, students, retired persons, a couple etc.

UNIT VI (9 hours)

I am vegetarian

Read a text related to a topic.

Write the food items in the breakfast, in the lunch and at dinner.

Read a text on vegans and recipes

Write a recipe of your favorite food.

Read a text related to the topic.

Write a diet chart to lose some weight.

Se+tercera persona

Write on a dinner plan.

Essential/recommended readings

Essential/recommended readings/Suggestive readings

Learning/Teaching Material: Any of the textbooks given below may be prescribed.

1. Alondo, Elcina. Corpas, Jaime. (2018). Diverso A2 Libro de alumno. Madrid, Madrid: SGEL.

2. Alvarez Martinez, María Angeles. Canales, Ana Blanco. et al. (2017). Sueña 2 Libro de

alumno. Salamanca. Salamanca: Grupo Anaya.

3. Baulenas, Neus Sans. Peris, Ernesto Martín. et al. (2016). Bítacora 2 Libro de alumno. Barcelona, Barcelona: Editorial Difusión.

4. Campo, Cristina, Cuadrado, Charo et.al. (2017) Protagonistas A2- Libro de alumno.

Madrid, Madrid: Ediciones SM.

5. Sanz, N. (2016). Aula Internacional 2. Barcelona. Barcelona: Editorial Difusión

6. Martís Peris, E., Sans, N. (2016). Gente 2 Libro del alumno. Barcelona: Editorial Difusión.

Additional material may be provided by the Department.Additional material may be provided by the Department.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC CORE COURSE – 8

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Language in Context: Intermediate Listening and Speaking Skills (1)	**4**	**3**	**1**	**0**	**12th Pass**	**NIL**

Learning Objectives

Enable student to

- read simple texts and answer questions on them;
- be able to express on different topics, about subjects pertaining to his/her immediate environment;
- attain complete Level A 2.1 of the Common European Framework (CEF).

Learning Outcomes

- Enable students to fully attain A2.1 Level of listening and speaking skills in the concerned language.
- Express ideas on audios listened and answering questions on them.
- Equip students to speak about subjects pertaining to his/her immediate environment.

SYLLABUS OF DSC- 8

UNIT – I (9 hours)

Spanish language and you

Listen to an audio activity related to the topic.
Talk about habits and difficulties.
Interact to know suggestions for improving your Spanish.
Listen to an audio related to the topic.

UNIT – II (9 hours)

A life in pictures
Listen to an audio related to the topic.
Speak about a biography of an actor/director.
Exchange biography of your family member and learn to express your opinion.
Listen to a text related to a topic.
Express your opinion on a video clip or audio activity.

UNIT – III (9 hours)
Home, sweet home
Read a text related to a topic.
Different types of houses.
Read a text related to a topic.
Write a note on the interior designing of your drawing room.
Compare two houses with different interior design.
Write advertisement for the rent/sale of a house,
Read a text on unique houses.
Write about a house of your dreams.
UNIT – IV (9 hours)
How are things?
Read a text related to a topic.
Write a note on greetings and goodbye.
What are they doing?
Difference between Dejar and Dar, estar+gerund
Write a brief note on your activities at present
.
UNIT –V (6 hours)
Leisure time
Listen to a text related to a topic.
Talk about your leisure time and activities you do.
Interview a person in the class about his/her activities in his/her leisure time and record the audio.
Exchange about how to spend free time.
Speak about a plan of a weekend for a particular group, students, retired persons, a couple etc.
UNIT VI (3hours)
I am vegetarian
Listen to an audio related to the topic.
Speak about the food items in the breakfast, in the lunch and at dinner.
Listen to an audio related to the topic.
Exchange a recipe of your favorite food.
Invite at lunch and do role play.

Essential/recommended readings
Essential/recommended readings/Suggestive readings

Learning/Teaching Material: Any of the textbooks given below may be prescribed.

1. Alondo, Elcina. Corpas, Jaime. (2018). Diverso A1 Libro de alumno. Madrid, Madrid:
SGEL.

2. Alvarez Martinez, María Angeles. Canales, Ana Blanco. et al. (2017). Sueña 2 Libro de

alumno. Salamanca. Salamanca: Grupo Anaya.

3. Baulenas, Neus Sans. Peris, Ernesto Martín. et al. (2016). Bítacora 2 Libro de alumno. Barcelona, Barcelona: Editorial Difusión.

4. Campo, Cristina, Cuadrado, Charo et.al. (2017) Protagonistas A2- Libro de alumno.

Madrid, Madrid: Ediciones SM.

5. Sanz, N. (2016). Aula Internacional 2. Barcelona. Barcelona: Editorial Difusión

6. Martís Peris, E., Sans, N. (2016). Gente 2 Libro del alumno. Barcelona:
Editorial Difusión.

Additional material may be provided by the Department.Additional material may be provided by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 9:

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Engaging with literary texts (1)	**4**	**3**	**1**	**0**	**12Th Pass**	**NIL**

Learning Objectives: Enable students to read and understand a short literary/journalistic/ad/song text adapted for students of level A2.1 and to answer questions on the same.

Learning Outcomes

- Enable students to fully attain A2.1 Level skills in the concerned language.
- Understand ideas on audios listened and answering questions on them.
- Equip students to learn about subjects pertaining to his/her immediate environment.

SYLLABUS OF DSC-9

UNIT I Literary Texts **(9 hours)**

(A selection will be made from the list below)
Miguel de Cervantes*, Rinconete y Cortadillo*, European Language Institute.
Cuentos y leyendas, todoele.net
Excerpts from Sanz N. (2016). Aula Internacional 2. Barcelona. Barcelona: Editorial Difusión:
Ajendro Amenábar
El Che Guevara
Las nuevas caras del cine español
Casas únicas
Vida en las plazas
Espacios naturales
Denominación de origen
Un nuevo caso: Netflix puede esperar *Lola Lago & asociados Las nuevas aventuras de Lola Lago* de N. Sans y L. Miquel
Los hackers nunca duermen, Lola Lago & asociados Las nuevas aventuras de Lola Lago de N. Sans y L. Miquel
Un poco de tranquilidad, solo un poco Lola Lago & asociados Las nuevas aventuras de Lola Lago de N. Sans y L. Miquel
Fin de escapada Lola Lago & asociados Las nuevas aventuras de Lola Lago de N. Sans y L. Miquel
El misterio hombre de la gabardina Lola Lago & asociados Las nuevas aventuras de Lola Lago de N. Sans y L. Miquel
Rinconete y Cortadillo, Miguel de Cervantes, adaptado por Raquel García Prieto
Todas las voces. Curso de cultura y civilización de N. Murillo

UNIT II Journalistic Texts **(9 hours)**

(A selection will be made from the list below)
Hoy en clase de Campus Difusión
Los espejuelos de Lennon -- *Cuba* de Dolores Soler-Espiauba
Con Frida en el altiplano -- *Bolivia* de Dolores Soler-Espiauba
Guantanameras – Cuba de Dolores Soler-Espiauba
Ojalá que te vaya bonito – México de Dolores Soler-Espiauba
Los espejuelos de Lennon – Cuba de Dolores Soler-Espiauba
Dos semanas con los ticos – Costa Rica de Dolores Soler-Espiauba

UNIT III Simple poems **(9 hours)**
Poemas de Alfonsina Storni
Poemas de Federico García Lorca
Poemas de Pablo Neruda
Poemas de Francisco de Quevedo
Poemas de Jóse Agustín Goytosolo
Poemas de Rafael Alberti
Poemas de Antonio Machado
Poemas de Gloria Fuertes

(A selection as per language level will be made from the list below. Any extra material will be provided by the Department)

UNIT IV Simple Audio / Visual Texts/Songs **(9 hours)**

(A selection will be made from the list below)
Songs (A2)
Guantanamera
No me doy por vencido
Canciones de Audry Funk
Vida de Rubén Blades
Casas de Cartón de Marco Antonio Solís
Mi país de Ruben Rada
De donde vengo yo de ChocQuibTown

Documentaries
Aldea Latinoamericana – Por la Geografía de América Latina
Historia del Arte en 10 minutos
Historia del imperio romano en 10 minutos

UNIT V Advertisement **(9 hours)**

Suggestive readings
Learning / Teaching Material: To be compiled and provided by the Department.

1. Murillo, N. (2010). Todas las voces. Curso de cultura y civilización. Barcelona: Editorial
2. Difusión (cap. 4 Literatura: novelas, cuentos y leyendas, poesía, leer)
3. Sans, N., Miquel, L. Lola Lago (2003). Detective: Lejos de casa (A2). Barcelona: Editorial Difusión.
4. Sans, N., Miquel, L. Lola Lago (2003). Detective: una nota falsa (A2). Barcelona: Editorial
5. Difusión.
6. Soler-Espiauba, D. (2002). Con Frida en el altiplano (A1-A2). España: Editorial
7. Difusión.
8. Soler-Espiauba, D. (2008). Dos semanas con los ticos (A1-A2). Costa Rica: CEGAL.
9. Soler-Espiauba, D. (2014). Los espejuelos de Lennon (A1). Cuba: CEGAL.
10. Soler-Espiauba, D. (2012). Guantanameras (A1-A2). Cuba: Editorial Difusión.
11. Soler-Espiauba, D. (2015). Ojalá que te vaya bonito(A1-A2). México: Editorial Difusíon.
12. Hoy en clase. Campus Difusión. https://campus.difusion.com/dashboard
13. Aldea Latinoamericana – Por la Geografía de América Latina https://www.youtube.com/watch?v=2jN3kP-gM2o
14. Historia del Arte en 10 Minutos, https://www.youtube.com/watch?v=rUHxLrZwSIY
15. Historia del imperio romano en 10 minutos, https://www.youtube.com/watch?v=N4Ljm78end4
16. 100 Anuncios Publicitarios con Eslogan

DISCIPLINE SPECIFIC ELECTIVE - DSE 1

Introduction to the History of Spain and the Spanish speaking World (1)

Learning Objectives:

To familiarize students with the major social, political and cultural events from the medieval to contemporary period

Learning Outcomes:

To provide a good understanding of Contemporary Spain and contemporary Latin America and their standing in the world

Unit 1

Arab contributions to Spanish culture (711-1492).

Unit 2

The Catholic kings, discovery of America and the Spanish empire.

Unit 3

XIX century Spanish American Independence movements

Unit 4

XX century: Spanish Civil War, Latin American dictatorships

Unit 5

Contemporary Spain and Latin America

References

- Fernandez Alvarez, Manuel. (2008). *Pequeña historia de España* Madrid: Espasa Libros SLU.
- Fernández Álvarez, Manuel. (2011) *España, biografía de una nación.*Madrid: Espasa Libros SLU.
- Hernández, Guillermo. (2008). *De la edad media a la actualidad*. Madrid: SGEL.
- Quintana, M. (2007). *Historia de América Latina* Madrid: Edinumen.
- Vazquez, German and Martinez Diaz, Nelson, et al. (1998). *Historia de América Latina*, Madrid: SGEL.

Additional material will be provided by the Department

Teaching Learning Process

- Interactive teaching with lectures, presentations, discussions and debates with the help of audio-visual teaching aids.
- The learners are encouraged to collaborate with their peers to complete specific projects, assignments, term papers assigned to them.
- By using latest tools of Information technology the learners will be expected to explore and investigate about the topics introduced in the class in order to develop a critical perspective on the issues concerned

Assessment Methods

- 25% weightage on Formative Internal assessment through closed-book/open-book tests, tasks, projects, presentations, review-assignments using the target language
- 75% weightage on End Semester Written Examination

Keywords

Spain, Latin America, Democracy, Dictatorship, Freedom Movement, Immigration, History

Life in Spanish speaking Countries

Learning Objectives:

To introduce the learner to various aspects of contemporary culture (films, art, education system, etc.) in Spain and Latin America.

Learning Outcomes:

- To initiate learners to the culture and civilization of Spain and Latin American countries
- To provide knowledge about education systems, home, family, leisure activities, festivals, politics, tourism, physical geography of Spain and Latin American countries.
- To introduce the students to the great thinkers of Spain and Latin America in the areas of literature, cinema, art, etc.
- To Enable students to understand and analyse cultural aspects of Spain and Latin American Countries and develop an intercultural competence among students

Unit 1

The 19th century phenomenon of the caudillo and cacique in Spain and Latin America. 20th century dictatorships (Franco - Spain, Trujillo - Dominican Republic, Pinochet - Chile, etc.) Banana republics. Guerrilla warfare. Revolutions (Mexico, Cuba).

Unit 2

Transition to Democracy in Spain and Latin America. Spain and the European Union. NAFTA.

Unit 3

Separatism, terrorism and regional nationalism in Spain. Grassroots people's movements in Latin America.

Unit 4

Distant Neighbours: Latin America and the United States. Monroe Doctrine. Good Neighbour Policy.

Operation Condor. Spain: Multiculturalism and Immigration.

Unit 5

Cultural forms and National Identity: Flamenco (Spain) Merengue (Dominican Republic) Tango (Argentina)

Cultures of resistance: La movida madrilena, New Song Movement, Narcocorridos.

References

Excerpts from

- Chasteen, John Charles. (2001). *Born in Blood and Fire, A Concise History of Latin America*. New York: Norton.
- Florencia Garramuño. (2011). *Primitive Modernities: Tango, Samba and Nation* Trans. Anna Kazumi Stahl. Stanford: Stanford University Press.
- Grandin, Greg. (2006). *Empire's Workshop. Latin America, the United States and the Rise of the New Imperialism*. New York: Henry Holt.
- Pérez, Edmundo. (2012). *Que me entierren con narcocorridos*. Mexico: Grijalbo.
- Films: Dirs. Pedro Almodovar, Carlos Saura (Spain), Guillermo de Toro (Mexico) among others
- Music: Carlos Gardel (Tango) Mercedes Sosa (Folk) among others

Additional material will be provided by the Department

Teaching Learning Process

- Interactive teaching with lectures, presentations, discussions and debates with the help of audio-visual teaching aids.
- The learners are encouraged to collaborate with their peers to complete specific projects, assignments, term papers assigned to them.
- By using latest tools of Information technology the learners will be expected to explore and investigate about the topics introduced in the class in order to develop a critical perspective on the issues concerned

Assessment Methods

- 25% weightage on Formative Internal assessment through closed-book/open-book tests, tasks, projects, presentations, review-assignments using the target language
- 75% weightage on End Semester Written Examination

Keywords

Culture, civilisation, Intercultural Competence, Spain, Latin America

Different text types

Learning Objectives

- To introduce and familiarize the learner to different types of literary and non-literary texts.
- To identify the linguistic, discursive and formal specificities of literary and non-literary texts
- To analyze the form and content of literary and non-literary texts.

Learning Outcomes

- Develops skills to study different text types in order to familiarize oneself with different kinds of language usages in literary and semi-literary texts.
- Enables learners to develop relevant analytical skills to critically evaluate the form and content of these texts
- Helps learners to identify different language registers, rhetoric and other compositional specificities of the texts.

Unit 1

Prose: Introduction and analytical study of both form and content of a variety of texts written in simple prose form such as shorter and longer Narrative genres, (Ex. short story, fable, chronicle, myth, novella, tales, anecdote, autobiography, biography, novel etc.), play etc.

Unit 2

Poetry: Introduction and analytical study of both form and content of various types of poetic texts, songs, slams etc. written in a simple and accessible language.

Unit 3

Intermedial and semi-literary texts: Introduction and analytical study of both form and content of comic strips, graphic novels, or semi literary forms such as essay, commentary, informative/descriptive texts on history, geography, economy, culture that are not too complex.

References

Any of the following textbooks may be prescribed and will be partially completed.

- Merino, José María. (1998). *Cien años de cuentos* (1989-1998) Madrid, Madrid: Alfaguara
- Peinado, Juan Carlos ed. (2002) *Cuentos hispanoamericanos del siglo XX*, Salamanca, Salamanca: Anaya.

Additional texts by representative authors will be provided by the department.

Teaching Learning Process

- Interactive teaching with presentations, discussions and debates.
- The learners are encouraged to collaborate with their peers to complete specific projects, assignments, book reviews assigned to them.
- By using latest tools of Information technology the learners will be expected to explore and investigate about the topics and texts introduced in the class.

Assessment Methods

- 25% weightage on Formative Internal assessment through closed-book/open-book tests, tasks, projects, presentations, review-assignments using the target language
- 75% weightage on End Semester Written Examination

Keywords

Text types, Prose, poetry, intermedial and semi-literary texts, analytical study

Debating and Presentation Techniques

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES OFFERED BY THE DEPARTMENTS

GENERIC ELECTIVES (GE-3)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Basic Communicative French (3)	**4**	**3**	**1**	**0**	**12th Pass**	**NIL**

Learning Objectives

The course focuses on developing communicative competence building on the language skills acquired by students in the previous two semesters and will teach intermediate level of communicative transactions such as to give small instructions and simple opinions, to make plans and programs, build adequate lexicon on various topics, carry out small meaningful conversations, etc., among other things. By the end of this semester the students will partially attain A2.1 level of CEF.

Learning Outcomes

- Enable students to partially attain A2.1 Level of reading and writing skills in the concerned language

- Enable students to partially attain A2.1 Level of listening and speaking skills in the concerned language
- Equip students to read and write about opinions, plans, instructions related to one's immediate environment.
- Prepare learners to carry out small meaningful conversations to fulfil the needs of everyday life.

Unit 1: Listening

Identifying the main points in short, clear, simple messages and announcements.

Unit 2: Reading

Reading: Reading very short, simple texts to find specific, predictable information in simple everyday material such as advertisements, prospectuses, menus, timetables, classified advertisements, Internet forums etc.

Unit 3: Speaking

- Monologue: Can describe in simple terms aspects of his/her background/relevant environment and matters in areas of immediate need such as narrating past, present and future events, plans, programs.
- Dialogue: Communicating in simple and routine tasks requiring a simple, short and direct exchange of information on familiar and routine matters such as asking for and giving instructions, discussing what to do in the evening/at the weekend etc.

Unit 4: Writing

Describing past, present and future events, writing short, simple notes and messages relating to matters in areas of immediate need.

References

Any of the following textbooks may be prescribed and will be partially completed.

- Campo, Cristina, Melero, Pilar. et. al.(2017) *Protagonistas A2- Libro de alumno.*Madrid, Madrid: Ediciones SM.
- Sanz, N. (2016). *Aula Internacional 2.* Barcelona. Barcelona: Editorial Difusión.

Additional material will be provided by the Department.

Additional Resources

- Alondo, Elcina. Corpas, Jaime. (2018). *Diverso A1-A2 Libro de alumno.* Madrid: SGEL.
- Baulenas, Neus Sans. Peris, Ernesto Martín. et al. (2017). *Bítacora 2 Libro de alumno*. Barcelona: Editorial Difusión.
- Alvarez Martinez, María Angeles. Canales, Ana Blanco. et al. (2017). *Sueña 2 Libro de alumno*. Salamanca. Salamanca: Grupo Anaya.

Teaching Learning Process

- Task Based Learning modules that integrate real life situations within the context of the classroom. Learner; are expected to perform certain tasks in day to day life situations in groups.
- The learners are encouraged to collaborate with their peers to complete specific projects assigned to them based on specific linguistic, communicative, analytical, enquiry based, co-cultural, problem-solving and other skills that they need to acquire.
- The learners will be encouraged to evaluate their own learning process through regular self-assessment sheets.
- By using latest tools of Information technology and social media, the learners will be given an opportunity to put in practice reading and writing skills in real life environment while communicating with their peers beyond classrooms.

Keywords

Relevant environment, areas of immediate need, communicating in routine tasks

DISCIPLINE SPECIFIC CORE COURSE (DSC-3): Spanish in Context: Intermediate Level – 1

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Spanish in Context: Intermediate Level – 1	**4**	**3**	**1**	**nil**	**Pass in B.A. (Prog.) Sem. II**	**none**

Learning Objectives

The Learning Objectives of this course are as follows:
At the end of Semester 3, a student will be able to:

- Read texts on various social topics and answer questions on them.
- Write short texts on subjects pertaining to his/her environment.
- Attain Level A2.1 of the Common European Framework (CEF)

Learning Outcomes

The Learning Outcomes of this course are as follows:

- Enable students to partially attain A2 Level of listening, speaking, reading and writing skills in the concerned language.
- Reading texts and answering questions on them.
- Equip students to write about subjects pertaining to his/her environment.

SYLLABUS OF DSC – 3

Content

Listening: Listen to and understand texts on various topics like fashion, professions, health, means of communication, environment, etc.

Speaking, which includes:
Monologue: Present orally one's views on various topics like health, professions, fashion, social media, etc.
Dialogue: Engage in conversations on various topics like clothes, health, professions, social media, etc.

Reading: Read and understand texts, emails, blogs on various topics like fashion, social media, professions, etc.

Writing: Guided writing activities. Writing a short text, an email, a formal and an informal letter, one's curriculum, etc.

Morphosyntax and Vocabulary: Grammatical structures and vocabulary used to talk and write on various topics like social media, fashion, health, professions, etc.

Intercultural and co-cultural: Introduction to Spanish-speaking regions/countries, celebrities from Spanish speaking countries, fashion, cinema, comic strips, etc.

Unit 1 **3 weeks**

Talking about fashion, clothes and related issues. Reading, comprehending and discussing blogs on fashion. Vocabulary related to purchase of clothes – "rebajas, gastar mucho/poco dinero, probarse/ponerse/llevar una prenda." Clothes, shoes and accesories for different occasions. Reacting to different opinions using "de acuerdo", "yo también", "yo tampoco" "yo sí", "yo no", etc. Material and style of clothes, measurements, prices, places where one can buy clothes, shoes, etc. Use of "qué, cuál, cuáles" while selecting and purchasing clothes, shoes and accessories. Discussing what we can do with clothes we don't need. Learning and using the "pronombres de objeto indirecto" and combining them with "pronombres objeto directo". Using "pronombres posesivos – mío,mía, etc.".

Unit 2 **3 weeks**

Different professions and the work involved in them. Expressing positive and negative aspects at work. Vocabulary involved when talking about the workplace and work. The verb "soler". Learning and using "el pretérito indefinido" of regular and irregular verbs. Learning time markers when speaking of the past like "ayer, el año pasado, hace tres años, etc.". Talking of past actions and of special moments of life in the past. Forming a curriculum. Discussing the importance of work in one's life and other aspects like salary, free time, motivation, etc. Reading and discussing the process of selection for a job. Talking of skills and capabilities. Discussing the preferred profession of the students.

Unit 3 **3 weeks**

Talking of health. Knowing the human body. Discussing about the daily habits which lead to a healthy life. Talking about health problems using "doler, tener + fiebre, estar + enfermo/cansado, etc.". Giving advice in order to maintain good health using "es necesario/importante, etc.". Relating to others in a formal and informal way using "tú" and "usted". Discussing one's food habits and exercise routine. Talking about the different states of mind. Discussing remedies if in bad health. Interview with a nutritionist. Discussion on naturopathic medicine. Connectors which connect parts of a sentence – "…y es que", "ya que", "porque", "en primer lugar", etc. Expressing actions one should or should not do using "hay que/no hay que + infinitivo, deber + infinitivo, tengo que + infinitivo".

Unit **3 weeks**

Talking about the different means of communication – the newspaper, the radio, the television, the social network. Pointing out the differences in paper press and digital press. Talking about the various sections of a newspaper – sports, culture, etc. Forming News Headlines. Discussing the structure of a news item – the headline, the introduction and the body with all the details. The contrast between the "Pretérito Perfecto" and "Pretérito Indefinido". Use of "ya", "todavía no". Reacting to news using "qué + adjetivo", "qué + adverbio", "qué + sustantivo", "qué + sustantivo + tan/más + adjetivo". Discussing the different social networking sites. Writing a formal letter and email and an informal letter and email.

Unit 5 **3 weeks**

Talking about environment and ecology. Discussing various issues related to environment like global warming, climatic change, natural resources, animals in danger of extinction. Expressing the cause of something using "porque", "a causa de (que)". Expressing the purpose for which something is done using "para + infinitivo". Expressing opposition using "pero", "sino (que)", "sin embargo". Expressing consequence using "por eso". Using some nouns which are derived from verbs like "elevar…la elevación, cambiar…el cambio, etc.". Expressing agreement/disagreement using "estar de acuerdo/en desacuerdo, etc.". Expressing certainty using "estar seguro, etc.". Structure of a conference. Expressions used in a debate.

References:
Any of the following textbooks may be prescribed and will be partially completed.

- Alonso Encina, et al. (2018). *Diverso A1-A2.* Madrid: SGEL.
- Corpas J., et al. (2017). *Aula Internacional 2.* Barcelona: Editorial Difusión
- Campo C., et al. (2017). *Protagonistas A2.* Madrid: SM Español para extranjeros.
- Baulenas Neus Sans, et al. (2017). *Bítacora 2.* Barcelona: Editorial Difusión.
- Martinez María Angeles Alvarez, et al. (2017). *Sueña 2.* Madrid: Grupo Anaya.
  Additional material can be also used.

DEPARTMENT OF SPANISHIC & ROMANCE STUDIES – ITALIAN

B.A. (HONOURS) ITALIAN

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

DISCIPLINE SPECIFIC CORE COURSE - 7 (DSC-7)
Language in Context: Intermediate Reading and Writing Skills (1)

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Language in Context: Intermediate Reading and Writing Skills (1)	**4**	**3**	**1**	**0**	**Passed XII Class**	**Nil**

DSC-7
Language in Context: Intermediate Reading and Writing Skills (1)

Learning Objectives:
Enable student to

- read and understand texts related to the learner's field of interest.
- answer questions on the text.
- write texts describing and relating events, expressing one's feelings and opinion.
- attain Level A 2.1 of the Common European Framework (CEF).

Learning Outcomes:

- Enable learners to attain A2.1 Level of reading and writing skills in the concerned language
- Develop competence to read and understand straightforward factual texts on subjects related to his/her field and interest with a satisfactory level of comprehension.
- Equip the learners to write personal letters and notes asking for or conveying simple information of immediate relevance, getting across the point he/she feels to be important by describing experiences, feelings and events in some detail.
- Develops skills to read and understand journalistic texts

Syllabus:

UNIT I	**(9 hours)**
Reading • Reading and understanding relevant information in everyday material such as letters, brochures, short official documents, short journalistic or commercial texts in order to recognize significant points and line of argument in the treatment of the issue presented	
UNIT II	**(9 hours)**
Writing • Writing personal letters describing experiences, feelings and events in some detail.	

• Writing notes conveying simple information of immediate relevance to friends, service, people, teachers and others who feature in his/her everyday life, getting across comprehensibly the points he/she feels are important.	
UNIT III	**(9 hours)**
Writing • Comparing headlines and presentation of news in different newspapers. • Analysing an editorial. • Writing a short story/anecdote. • Writing about feelings/impressions.	
UNIT IV	**(9 hours)**
Lexical, Morphosyntactic and Phonological Competences • Developing a fairly wide repertoire of vocabulary for matters connected to one's field of interest and general topics related to the socio-cultural milieu. • Grammatical structures required to describe events, feelings, impressions, opinions in past, present and future, more detailed usage of pronouns and prepositions and basic knowledge of connectors to compose fairly coherent text. • Developing sufficient understanding of phonological specificity of Italian to help learners articulate and read more independently predicting pronunciation of unknown words.	
UNIT V	**(9 hours)**
Co-cultural and Inter-Cultural Competence • Awareness of a fair amount of socio-cultural codes, conventions customs and practices of the Italian and Italophone world.	
Learning / Teaching Material: Any of the textbooks given below may be prescribed: • Balboni, Paolo E.. (2009. *Nuovo Rete! A2*. Perugia: Guerra Edizioni. • Balboni, Paolo E.. (2009). *Nuovo Rete! A1.* Perugia: Guerra Edizioni. • Balì, Maria. Rizzo, Giovanna. (2012). *Espresso 2.* Firenze: Alma Edizioni and Delhi: Goyal Saab Publishers and Distributors Pvt. Ltd, Delhi. • Corno, Dario. (2002). *Scrivere e comunicare.* Milano: Bruno Mondadori. • De Giuli, Alessandra. Guastalla, Carlo. Naddeo, Ciro Massimo. (2011). *Nuovo Magari*. Firenze: Alma Edizioni. • Frattegiani, M. Teresa. Baldelli, Rosella. (2009). *Arrivo in Italia: Corso di lingua italiana per studenti stranieri di livello A1-A2*. Perugia: Guerra Edizioni. • Frattegiani, M. Teresa. Gigliarelli, Valentina. (2011). *Vivere in Italia: Corso di lingua italiana per studenti stranieri di livello B1*. Perugia: Guerra Edizioni. • Guastalla, Carlo. (2004). *Giocare con la scrittura.* Firenze: Alma Edizioni. • Guastalla, Carlo. Naddeo, Ciro Massimo. (2011). *Domani 2*. Firenze: Alma Edizioni. • Guastalla, Carlo. Naddeo, Ciro Massimo. (2011). *Domani 3,* Firenze: Alma Edizioni. • Marin, Telis. (2008). *Nuovo Progetto Italiano 3.* Roma: Edilingua. • Mezzadri, Marco, (2008). *Grammatica essenziale della lingua italiana con esercizi.* Guerra edizione, Perugia.	
Additional material may be provided by the Department. **Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**	

DISCIPLINE SPECIFIC CORE COURSE – 8 (DSC-8)
Language in Context: Intermediate Listening and Speaking Skills (1)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Language in Context: Intermediate Listening and Speaking Skills (1)	**4**	**3**	**1**	**0**	**Passed XII Class**	**Nil**

DSC-8 **Language in Context: Intermediate Listening and Speaking Skills (1)**	
Learning Objectives: Enable student to • listen to and understand texts related to the learner's field of interest. • answer questions on the text. • describe and relate events, to express one's feelings and opinion. • ask and answer questions related to one's field of interest. • attain Level A 2.1 of the Common European Framework (CEF).	
Learning Outcomes: • Enable learners to attain A2.1 Level of listening and speaking skills in the concerned language • Equip learners to understand the main points of radio news bulletins and simpler recorded material about familiar subjects delivered relatively slowly and clearly. • Develop the capacity to present and discuss topics, moving out of the immediate environment of the learners. • Prepare to cope with less routine situations in public spaces while obtaining goods and availing services.	
Syllabus:	
UNIT I	**(9 hours)**
Listening • Understanding the main points of short radio or TV programmes on current affairs or topics of personal or professional interest when the delivery is relatively slow and clear	
UNIT II	**(9 hours)**
Speaking • Exchanging, checking and confirming accumulated factual information on familiar routine and non-routine matters within one's field with some confidence	

Discussing topics moving out of the immediate environment of the students such as: • discussing film/book/advertisement, TV radio programmes, • current issues • preparing and conducting an opinion poll Coping with less routine situations in shops, post office, bank, e.g. • returning an unsatisfactory purchase	
UNIT III	**(9 hours)**
Speaking Discussing topics moving out of the immediate environment of the students such as: • conducting an interview • working with songs, etc. Coping with less routine situations in shops, post office, bank, e.g. • making a complaint • dealing with most situations likely to arise when making travel arrangements or when actually travelling.	
UNIT IV	**(9 hours)**
Lexical, Morphosyntactic and Phonological Competences • Developing a repertoire of sufficient vocabulary to express him/herself with some circumlocutions on most topics pertinent to one's everyday life such as family, hobbies and interests, work, travel, and current events. • Grammatical structures required to describe events, feelings, impressions, opinions in past, present and future, more detailed usage of pronouns and prepositions and basic knowledge of connectors to compose fairly coherent text. • Developing sufficient understanding of phonological specificities of Italian to help learners articulate and read more independently predicting pronunciation of unknown words.	
UNIT V	**(9 hours)**
Co-cultural and Intercultural Competences • Awareness of a fair amount of socio-cultural codes, conventions customs and practices of the Italian and Italophone world.	
Learning / Teaching Material: Any of the textbooks given below may be prescribed: • Bailini, Sonia. Consonno, Silvia. (2002). *Ricette per parlare*. Firenze: Alma edizioni. • Frattegiani, M. Teresa. Gigliarelli, Valentina. (2011). *Vivere in Italia: Corso di lingua italiana per studenti stranieri di livello B1*. Perugia: Guerra Edizioni. • Guastalla, Carlo, Naddeo. Ciro Massimo. (2011). *Domani 2*. Firenze: Alma Edizioni. • Tettamanti, Vittoria. Talini, Stefania. (2003).*Foto parlanti.* Roma: Bonacci editore.	
Additional material may be provided by the Department. **Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**	

DISCIPLINE SPECIFIC CORE COURSE– 9 (DSC-9)
Engaging with Literary Texts (1)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Engaging with Literary Texts (1)	**4**	**3**	**1**	**0**	**Passed XII Class**	**Nil**

DSC-9 **Engaging with Literary Texts (1)**	
Learning Objectives: At the end of Semester 3, a student will • be able to read and understand simple texts (literary/semi-literary/audio-visual/advertisements etc.) adapted for the students of level A2.1, and answer questions on them; • be able to analyse, express their underlying meaning and answer questions based on them; • attain Level A 2.1 of the Common European Framework (CEF).	
Learning Outcomes: The Learning Outcomes of this course are as follows: • Enable students to attain A2.1 Level of reading, understanding, analysing and writing skills in the concerned language. • Reading and understanding simple texts and answering questions on them. • Equip students to analyse, express their underlying meaning and answer questions based on them;	
Syllabus:	
UNIT I	**(9 hours)**
Literary Texts (Prose)	
A selection will be made from the following list:	
4-5 texts will be introduced and analysed in the class.	
UNIT II	**(9 hours)**
Literary Texts (Poetry)	
A selection will be made from the following list:	
4-5 texts will be introduced and analysed in the class.	
UNIT III	**(6 hours)**
Semi-literary / Journalistic Texts	
A selection will be made from the following list:	
4-5 texts will be introduced and analysed in the class.	
UNIT IV	**(6 hours)**
Audio / Visual Texts – Songs / Music Videos	
A selection will be made from the following list:	
4-5 texts will be introduced and analysed in the class.	

UNIT V	**(9 hours)**
Audio / Visual Texts – Films / Video Clips	
A selection will be made from the following list:	
4-5 texts will be introduced and analysed in the class.	
UNIT VI	**(6 hours)**
Advertisements – Print / Electronic	
A selection will be made from the following list:	
Various ads from newspapers, social media, YouTube etc.	
Practical component (if any) - NIL	
Learning / Teaching Material: Any of the textbooks given below may be prescribed: • Bailini, Sonia. Consonno, Silvia. (2002). *Ricette per parlare*. Alma Edizioni, Firenze. • Corno, Dario. (2002). *Scrivere e comunicare*. Bruno Mondadori, Milano. • Guastalla, Carlo. (2004). *Giocare con la scrittura*. Alma Edizioni, Firenze. • Guastalla, Carlo. Naddeo, Ciro Massimo. (2010). *Domani* 1. Alma Edizioni, Firenze. • Guastalla, Carlo. Naddeo, Ciro Massimo. (2011). *Domani 2*. Alma Edizioni, Firenze. • Guastella, Carlo. (2002). *Giocare con la letteratura.* Firenze: Alma Edizioni. • Mengaldo, Pier Vincenzo. (2008). *Attraverso la prosa Italiana: analisi di testi esemplari.* Roma: Carocci editore. • Menzel, Rosangela Verri. (1989). *La bottega dell'italiano: antologia di scrittori italiani del Novecento.* Roma: Bonacci Editore. • Pichiassi, Mauro. Zagnanelli, Giovanna. (2003) *Contesti italiani*. Perugia: Guerra Edizioni.	
Additional material may be provided by the Department. **Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**	

DISCIPLINE SPECIFIC ELECTIVE (DSE-1)

COMMON POOL OF DISCIPLINE SPECIFIC ELECTIVE (DSE) COURSES OFFERED BY THE DEPARTMENTS

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Introduction to the History of Italy (1)	**4**	**3**	**1**	**0**	**Passed Class XII**	**Nil**

Introduction to the History of Italy (1)	
Learning Objectives: • To introduce students to major social, political and cultural events in Italy and Italophone countries. • To study the impact of these social, political and cultural events in the Italophone world and in Europe.	
Learning Outcomes: • Familiarize students with the major social, political and cultural events from the medieval to contemporary period. • Provide a good understanding of Contemporary Italy and its relations with the Italian speaking world including its policy towards immigration.	
Syllabus:	
UNIT I	**(15 hours)**
• The Gauls and the Franks. • The making of the Kingdom of Italy (987-1453) and Consolidation of the Italian Monarchy.	
UNIT II	**(15 hours)**
• Italian Revolution and the Napoleonic era. • Rise of Republican thought in the 19th century and the Third Republic with special emphasis on its policy towards education. • Italy and its colonies.	
UNIT III	**(15 hours)**
• Contemporary Italy and its relations with the Italian speaking world / European Union, including its policy towards immigration.	
Learning/Teaching Material: Any of the textbooks given below may be prescribed: • Cantarella, Eva. Guidorizzi, Giulio. (2010). *Dall'impero romano alla crisi del Trecento*. Milano: Einaudi Scuola.	

- Del Boca, Angelo. (1992). *L'Africa nella coscienza degli Italiani*. Roma-Bari: Laterza.
- Pallotti, Gabriele. Cavadi, Giorgio. (2014). *Che Storia: la storia italiana raccontata in modo semplice*. Roma: Bonacci.
- Prosperi, Adriano. Viola, Paolo. (2004). 1. *Dalla peste del Trecento al Concilio di Trento. 2. Dalle guerre di religionealla guerra dei Trent'anni. 3. Dall'assolutismo alla rivoluzione francese. 4. Dal Congresso di Vienna al trionfo del capitalismo. 5. Dal 1870 alla seconda guerra mondiale*. Milano: Einaudi scuola.

Additional material may be provided by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Life in Italy	**4**	**3**	**1**	**0**	**Passed Class XII**	**Nil**

Life in Italy	
Learning Objectives: • To introduce the learner to various aspects of contemporary culture (films, art, education system...) in Italy and Italophone countries.	
Learning Outcomes: • Initiate learners to the culture and civilization of Italy and Italian speaking countries. • Provide knowledge about education systems, home, family, leisure activities, festivals, politics, tourism, physical geography of Italy and the Italophone countries. • Introduce the students to the great thinkers of Italy and other Italophone countries in the areas of literature, cinema, art, etc. • Enable students to understand and analyse cultural aspects of the Italian and Italophone Countries and develops intercultural competence amongst students	
Syllabus:	
UNIT I	**(15 hours)**
• Basic knowledge of various cultural and civilisational aspects of Italy and Italophone countries, such as, daily lives and routines of an average person, education systems, home, family, leisure activities, festivals, politics, tourism, physical geography etc. in the areas of literature, cinema, art, etc.	
UNIT II	**(15 hours)**
• Great thinkers of Italy and other Italophone countries	
UNIT III	**(15 hours)**
• Introduction to literature, cinema, art of Italy and other Italophone countries	
Learning/Teaching Material: Any of the textbooks given below may be prescribed: • Caprara, Mario. Semprini, Gianluca. (2012). *Neri! La storia mai raccontata della destra radicale, eversiva e terrorista*. Rome: Newton Compton Editori.	

- Caprara, Mario. Semprini, Gianluca. (2007). *Destra estrema e criminale*. Rome: Newton Compton Editori.
- De Lutiis, Giuseppe. (1984). *Storia dei servizi segreti in Italia*. Roma: Editori Riuniti.
- De Rosa, Gabriele. et al. (2003). *L'Italia repubblicana nella crisi degli anni Settanta: Sistema politico e istituzioni*. Soveria Mannelli: Rubbettino Editore.
- Ferraresi, Franco. (1995). *Minacce alla democrazia. La destra radicale e la strategia della tensione in Italia nel dopoguerra*. Milano: Feltrinelli.
- http://www.istat.it/it/archivio/129854
- ISTAT. (15 June 2015). "Cittadini Stranieri. Popolazione residente e bilancio demografico al 31 dicembre 2014". Rome: ISTAT.
- Rao, Nicola. (2009). *Il piombo e la celtica: Storie di terrorismo nero dalla Guerra di strada allo spontaneismo armato*. Milano: Sperling & Kupfer.
- Viale, Guido. (1978). *Il Sessantotto: tra rivoluzione e restaurazione*. Rimini: NdA Press.
- Weinberg, Leonard. (1995). "Italian Neo-Fascist Terrorism: A comparative Perspective in Terror form extreme right" in Bjørgo, Tore. (1995). *Terror from the Extreme Right*. London: Routledge.

Additional material may be provided by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Different Text Types	**4**	**3**	**1**	**0**	**Passed Class XII**	**Nil**

Different Text Types

Learning Objectives:

- To introduce and familiarize the learner to different types of literary and non-literary texts.
- To identify the linguistic, discursive and formal specificity of literary and non-literary texts
- To analyze the form and content of literary and non-literary texts

Learning Outcomes:

- Develop skills to study different text types in order to familiarize oneself with different kinds of language usages in literary and non literary texts.
- Enable learners to develop relevant analytical skills to critically evaluate the form and content of these texts.
- Help learners to identify different language registers, rhetoric and other compositional specificities of the texts.

Syllabus:

UNIT I	**(15 hours)**
Prose	
Introduction and analytical study of both form and content of a variety of texts written in simple prose form such as shorter and longer Narrative genres:	

short story fable chronicle myth novella tales anecdote autobiography biography novel play	
UNIT II	**(15 hours)**
Poetry	
Introduction and analytical study of both form and content of various types of poetic texts, songs, slams etc., written in a simple and accessible language.	
UNIT III	**(15 hours)**
Intermediate and Semi-Literary Texts	
Introduction and analytical study of both form and content of comic strips, graphic novels, or semi literary forms such as essay, commentary, informative/descriptive texts on history, geography, economy, culture that are not too complex.	

Learning/Teaching Material: Any of the textbooks given below may be prescribed:

- Biagi, Enzo. (2004). *La nuova storia d'Italia a fumetti: dall'impero romano ai giorni nostri*. Milano: Mondadori.
- De Giuli, Alessandra. Guastalla, Carlo. Naddeo, Ciro Massimo. (2011). *Nuovo Magari*. Firenze: Alma Edizioni.
- Guastalla, Carlo. Naddeo, Ciro Massimo. (2011)*Domani 3.* Firenze: Alma Edizioni.
- Guastella, Carlo. (2002). *Giocare con la letteratura.* Firenze: Alma Edizioni.
- Mengaldo, Pier Vincenzo. (2008). *Attraverso la poesia Italiana: analisi di testi esemplari.* Roma: Carocci editore.
- Mengaldo, Pier Vincenzo. (2008). *Attraverso la prosa Italiana: analisi di testi esemplari.* Roma: Carocci editore.
- Menzel, Rosangela Verri. (1989). *La bottega dell'italiano: antologia di scrittori italiani del Novecento.* Roma: Bonacci Editore.
- Pichiassi, Mauro. Zagnanelli, Giovanna. (2003) *Contesti italiani*. Perugia: Guerra Edizioni.

Additional material may be provided by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Debating and Presentation Techniques	**4**	**3**	**1**	**0**	**Passed Class XII**	**Nil**

Debating and Presentation Techniques	
Learning Objectives: • The course focuses on developing communicative competence building on the language skills acquired by students in the previous two semesters and will teach intermediate level of communicative transactions such as to give small instructions and simple opinions, to make plans and programs, build adequate lexicon on various topics, carry out small meaningful conversations, etc., among other things. By the end of this semester the students will partially attain A2.1 level of CEF.	
Learning Outcomes: • Enable students to partially attain A2.1 Level of reading and writing skills in the concerned language • Enable students to partially attain A2.1 Level of listening and speaking skills in the concerned language • Equip students to read and write about opinions, plans, instructions related to one's immediate environment. • Prepare learners to carry out small meaningful conversations to fulfil the needs of everyday life.	
Syllabus:	
UNIT I	**(9 hours)**
Listening	
Identifying the main points in short, clear, simple messages and announcements.	
UNIT II	**(12 hours)**
Reading	
Reading: Reading very short, simple texts to find specific, predictable information in simple everyday material such as advertisements, prospectuses, menus, timetables, classified advertisements, Internet forums etc.	
UNIT III	**(15 hours)**
Speaking	
• Monologue: Can describe in simple terms aspects of his/her background/relevant environment and matters in areas of immediate need such as narrating past, present and future events, plans, programs. • Dialogue: Communicating in simple and routine tasks requiring a simple, short and direct exchange of information on familiar and routine matters such as asking for and giving instructions, discussing what to do in the evening/at the weekend etc.	
UNIT IV	**(9 hours)**
Writing	

Describing past, present and future events, writing short, simple notes and messages relating to matters in areas of immediate need.	

Learning/Teaching Material: Any of the textbooks given below may be prescribed:

- Bailini, Sonia. Consonno, Silvia. (2002). *Ricette per parlare*. Firenze: Alma edizioni.
- Carlo Guastalla, Ciro Massimo Naddeo, *Domani 1*, Alma Edizioni, Firenze (2010).
- Frattegiani, M. Teresa. Gigliarelli, Valentina. (2011). *Vivere in Italia: Corso di lingua italiana per studenti stranieri di livello B1*. Perugia: Guerra Edizioni.
- Guastalla, Carlo, Naddeo. Ciro Massimo. (2011). *Domani 2*. Firenze: Alma Edizioni.
- Luciana Ziglio, Giovanna Rizzo, *Espresso 1*, Alma Edizioni, Firenze and Goyal Publishers and Distributors Pvt. Ltd., Delhi, 2012.
- Mariateresa Serafini, *Nuovo l'italiano: grammatica e scrittura*, Fabbri, Milano, 2009.
- Susanna Nocchi, *Grammatica pratica della lingua italiana*, Alma edizioni, Firenze.
- Tettamanti, Vittoria. Talini, Stefania. (2003). *Foto parlanti.* Roma: Bonacci editore.

Additional material may be provided by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF LINGUISTICS

B.A. (PROG.) WITH LINGUISTICS AS MAJOR

DSC - 5: MORPHOSYNTACTIC PROCESSES

Total Credits: 04 (Credits: Theory-03, Tutorial-1)

Total Lectures: Theory-45, Tutorial-15, Practical-Nil

Duration: 15 weeks

Course title & Code	Credits (Hours)	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Morphosyntactic Processes (DSC-5)	4	3	1	0	Class XII	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To make learners aware about the structure word as a unit
- To make learner understand the word formation processes in languages
- To teach the fundamentals of syntactic structures of languages

Learning Outcomes

By participating in this course, the student will develop:

- an appreciation of the difference between sounds, words and sentences;
- skills to analyse structure of words and sentences from a linguistic perspective;
- experience of handling of language data at the word and sentence levels.

Unit 1: Structure of words

(9 hours)

Segmenting and Labeling constituents of words

- Morpho-phonological processes in languages
- Productivity

Unit I1: Processes of word formation

(12 hours)

- Inflectional processes
- derivational processes
- Morphological Typology
- Morphological typology of languages

Unit III: Structure of simple sentences **(12 hours)**

- Major parts of speech of languages.
- Structure, Constituency, & Word order.
- Structure of Noun phrase, Verb phrase, Adjectival phrase, Prepositional phrase.
- Structure of simple sentences in languages.

Unit IV: Structure of Complex sentences **(12 hours)**

- Structure of embedded clauses, complex sentences.
- Types of embeddings.
- Embedding and the role of complementizers.
- Finiteness/ Non-finiteness.

Readings

1. Bauer Laurie (1988). *Introducing Linguistic Morphology.* Edinburgh: Edinburgh University Press.
2. Carnie, Andrew. 1999. *Sentence Structure: A Generative Introduction*. OUP
3. Haegeman, Liliane. 1991. *Introduction to GB Theory* (2nd Edition). Blackwell.
4. Yule, George (2010). *The study of language.* Cambridge: Cambridge University Press.

DSC - 6: MORPHOSYNTACTIC PROCESSES IN INDIAN LANGUAGES

Total Credits: 04 (Credits: Theory-03, Tutorial-1)

Total Lectures: Theory-45, Tutorial-15, Practical-Nil

Duration: 15 weeks

Course title & Code	Credits (Hours)	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Morphosyntactic Processes in Indian languages (DSC-6)	4 (60 hours)	3 (45 hours)	1 (15 hours)	0	Class XII	NIL	Linguistics

Learning Objectives

The Learning Objectives of this course are as follows:

• To make learners aware about word as a unit in Indian languages

• To make learner understand the word formation processes of Indian language

• To teach the fundamentals of syntactic structures of Indian languages

Learning Outcomes

By participating in this course, the student will develop:

• an appreciation of the difference between sounds, words and sentences in the context of Indian languages;

• skills to analyse structure of words and sentences in Indian languages from a linguistic perspective;

• experience of handling of Indian language data at the word and sentence levels;

Unit 1: Structure of words of Indian languages **(9 hours)**

- Word segmentation of Indian languages.
- Labeling of word-level constituents of any Indian language.
- Word formation processes and Indian languages.

Unit I1: Processes of word formation and Indian languages **(12 hours)**

- Inflectional processes of any Indian language.

- Derivational processes of any Indian language.
- Language Typology and Indian languages.

Unit III: Structure of simple sentences in Indian languages **(12 hours)**

- Parts of speech of any Indian language.
- Word order and the major language families of India.
- Structure of Noun phrase, Verb phrase, Adjectival phrase, Prepositional phrase and Indian languages.
- Structure of simple sentences in any one Indian language.

Unit IV: Structure of Complex sentences in Indian languages **(12 hours)**

- Sentence structure of embedded clauses in Indian languages.
- Types of embeddings and Indian languages.
- India as a linguistic area on the basis of complex sentence structures.
- The role of finiteness and complementizers.

Readings

1. Bauer Laurie (1988). *Introducing Linguistic Morphology.* Edinburgh: Edinburgh University Press.
2. But, Miriam (2017). Hindi/Urdu and Related Languages. In Jessica Coon, Diane Massam, & Lisa Demena Travis (Eds.), *The Oxford handbook of ergativity.* Oxford: Oxford University Press.
3. Carnie, Andrew. 1999. *Sentence Structure: A Generative Introduction*. OUP
4. Yule, George (2010). *The study of language.* Cambridge: Cambridge University Press.

B.A. (PROG.) WITH LINGUISTICS AS NON-MAJOR

DSC - 5: MORPHOSYNTACTIC PROCESSES

Total Credits: 04 (Credits: Theory-03, Tutorial-1)

Total Lectures: Theory-45, Tutorial-15, Practical-Nil

Duration: 15 weeks

Course title & Code	Credits (Hours)	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Morphosyntactic Processes (DSC-5)	4 (60 hours)	3 (45 hours)	1 (15 hours)	0	Class XII	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To make learners aware about the structure word as a unit
- To make learner understand the word formation processes in languages
- To teach the fundamentals of syntactic structures of languages

Learning Outcomes

By participating in this course, the student will develop:

- an appreciation of the difference between sounds, words and sentences;
- skills to analyse structure of words and sentences from a linguistic perspective;
- experience of handling of language data at the word and sentence levels.

Unit 1: Structure of words **(9 hours)**

- Segmenting and Labeling constituents of words
- Morpho-phonological processes in languages
- Productivity

Unit I1: Processes of word formation **(12 hours)**

- Inflectional processes
- derivational processes

- Morphological Typology
- Morphological typology of languages

Unit III: Structure of simple sentences **(12 hours)**

- Major parts of speech of languages.
- Structure, Constituency, & Word order.
- Structure of Noun phrase, Verb phrase, Adjectival phrase, Prepositional phrase.
- Structure of simple sentences in languages.

Unit IV: Structure of Complex sentences **(12 hours)**

- Structure of embedded clauses, complex sentences.
- Types of embeddings.
- Embedding and the role of complementizers.
- Finiteness/ Non-finiteness.

Readings

5. Bauer Laurie (1988). *Introducing Linguistic Morphology.* Edinburgh: Edinburgh University Press.
6. Carnie, Andrew. 1999. *Sentence Structure: A Generative Introduction*. OUP
7. Haegeman, Liliane. 1991. *Introduction to GB Theory* (2nd Edition). Blackwell.
8. Yule, George (2010). *The study of language.* Cambridge: Cambridge University Press.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

GENERIC ELECTIVES (GE-3): LANGUAGE AND MIND

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits (Hours)	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Language and Mind (GE-3)	4 (60 hours)	3 (45 hours)	1 (15 hours)	0	Class XII	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To develop students' understanding of the connection between linguistic and cognitive concepts
- To develop students' understanding of how individuals produce and comprehend language
- To teach the fundamental characteristics of language acquisition as well as language disorders
- To make students appreciate the complexity of the processes underlying language use

Learning outcomes

By participating in this course, the student will develop:

- an appreciation of linguistic structures and mental architectures underlying language use;
- skills to analyse spoken and written language using linguistic tools in the contexts of language acquisition, language production, language comprehension and language disorders
- experience of handling complex data from different populations of language users and an understanding of the issues involved in collecting or analysing such data;

SYLLABUS OF GE-3

UNIT – I (9 hours) : Language in the mind

- Behaviourism
- Cognitive Revolution
- Competence and Performance

UNIT – II (12hours) : Language Acquisition

- Critical Period
- Phonetic & Phonological features
- Morphological features
- Syntactic features

UNIT – III (12 hours): Language Use

- Nature of Linguistic Structures
- Production
- Comprehension

UNIT – IV (12 hours): Language disorders

- Development language disorder
- Aphasia
- Dyslexia

Practical component (if any) – NIL

Essential/recommended readings

Carroll, D. W. (2008). Psychology of Language. 5th Edition. Thomson & Wadsworth.

Aitchison, J. (2007). The articulate mammal: An introduction to psycholinguistics. Routledge.

Pinker, S. (2003). The language instinct: How the mind creates language. Penguin UK.

Suggestive readings

Chomsky, N. (1959). "A review of BF Skinner's Verbal Behavior". Language, 35(1), 26-58.

Friederici, A. D. (2017). Language in Our Brain: The Origins of a Uniquely Human Capacity. United States: MIT Press.

O'grady, W. (2005). How children learn language. Cambridge University Press.

Sedivy, J. (2019). Language in Mind: An Introduction to Psycholinguistics. United Kingdom: Oxford University Press.

Rescorla, M. (2020). "The Computational Theory of Mind" in Edward N. Zalta (ed.), The Stanford Encyclopedia of Philosophy. https://plato.stanford.edu/archives/fall2020/entries/computational-mind/

Skinner, B. F. (1957). Verbal behavior. New York: Appleton-Century-Crofts.

Traxler, M. (2012). Introduction to psycholinguistics: Understanding language science. Malden, MA: Wiley-Blackwell.

DEPARTMENT OF PHILOSOPHY

BA (HONS.) PHILOSOPHY

DISCIPLINE SPECIFIC CORE COURSE -7 (DSC-7) – Western Philosophy: Descartes to Kant

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title& Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Western Philosophy: Descartes to Kant DSC 7	**4**	**3**	**1**	**0**	12th Pass	**Sem 1 and II, UG, BA Hons, Philosophy**

Learning Objectives

The Learning Objectives of this course are as follows:

- The paper introduces the seminal ideas of the western philosophers from the time of Descartes (1592-1650) onwards till David Hume (1711-1776)
- The readings will enhance the study of six philosophers grouped under two traditions of thought: Rationalism and Empiricism
- The course will aim at analysing the main arguments surrounding the reasons for accepting rationalism vs empiricism
- The course will increase an understanding of the genesis of modern debates in philosophy and allied disciplines like cognitive science, artificial intelligence.

Learning outcomes

The Learning Outcomes of this course are as follows:

- It will enable students to understand the debates between rationalism and empiricism through the reading of original texts
- Students will be able to critically analyse the arguments on each side of the rationalist-empiricist debate
- Students will be able to evaluate the modern significance of the historical debates that are still reverberating in contemporary research

UNIT 1: Introduction (9 hours)

1. Rationalism
2. Empiricism
3. The main aspects of the debate

Essential Readings

Rationalism vs. Empiricism- Markie, Peter, *The Stanford Encyclopaedia ofPhilosophy*, 2017 ed. Zalta.N. Edward.

UNIT 2: Rationalism (12 hours)

1. Descartes: Method of Doubt
2. Spinoza : Concept of God
3. Leibniz : The concept of Monads

Essential Readings

Rene Descartes- Meditations on First Philosophy, London: Penguin Classics, 1998.(Ch. 1 and 2)
Spinoza- Ethics, London, Penguin Classics, 2005 (Book-1)
G W Leibniz- Refer to any secondary source for the concept of Monads.

UNIT 3: Empiricism (12 hours)

1. Locke: Critique of Innate Ideas
2. Berkeley: Immaterialism(denial of matter)
3. Hume : Ideas and Impressions (brief description) and Causation

Essential Readings-

Locke, John: An Essay Concerning Human Understanding, London, Penguin Classics, 1997 **(Book-1)**
Berkeley, George- Three Dialogues between Hylas and Philonous, London, Penguin Classics, 1988. **(First Dialogue only**)
Hume, David : An Enquiry Concerning Human Understanding, Oxford : Clarendon Press, 1975 **(Part 1- section 2 &3 and Part 2- section 7)**

UNIT 4: Critical Philosophy (12 hours)

1. Classification of Propositions
2. Analytic, Synthetic,
3. Synthetic a priori

Essential Reading

Kant, Immanuel, Critique of Pure Reason, Cambridge Ed. of the works of Immanuel Kant, Guyer, Paul and Wood, Allen, 1999, **(Introduction- pp-127-152)**

Suggestive Readings

1. Copleston, F.J. History of Philosophy, USA, Image Books, 1993
2. Falkenberg, R. History of Modern Philosophy, USA, Jefferson Publications, 2015
3. Moore, Bruder, Philosophy: The Power of Ideas, New Delhi, Tata McGraw Hill,2011
4. O'Connor, D.J. A Critical History of western Philosophy, USA, MacMillan, 1964
5. Steg Muller, W. Main Currents in Contemporary German, British and American Philosophy, Dordrecht; D. Riedel Publishing, 1969
6. Garrett, Thomson, An Introduction to Modern Philosophy, California: Wadsworth Publishing, 1993

DISCIPLINE SPECIFIC CORE COURSE -8 (DSC-8) – Social and Political Philosophy

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisiteof the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Social and Political Philosophy DSC-8	**4**	**3**	**1**	**Nil**	12th Pass	**Sem I and Sem II UG Philosophy Hons**

Course Objective

- This course aims at introducing the students to fundamental issues, and concepts in modern social and political philosophy.
- This course will enhance the understanding of social and political structures that govern our world, and understand the underlying theoretical frameworks.
- This course will discuss concept like liberty, justice, democracy, dignity, civilisation, and nationalism, inter alia.

Course Learning Outcomes

- The student will learn to analyze political concepts and understand their critical role in our intellectual and practical lives
- The course will enable to the student to reflect on the theoretical presuppositions of our social and political structures
- The student will understand the philosophical origin, and nature of some of the fundamental concepts used in contemporary political discourse.

UNIT-I: INTRODUCTION (9 hours)

1. Understanding Political Philosophy.
2. Basic Concepts

Essential/Recommended Readings:

Strauss, L. (1957). What is Political Philosophy? *The Journal of Politics*, *19*(3), 343–368. https://doi.org/10.2307/2126765

UNIT-II: MODERN LIBERAL THOUGHT (12 hours)

1. Fundamentals of Modern Western Liberal Thought.
2. Enlightenment, State of Nature, Slavery
3. The Beginning of Political Societies

Essential/Recommended Readings:

Kant, I. (2006). An Answer to the Question: What is Enlightenment? In Kleingeld, P., & Colclasure, D. L. *Toward Perpetual Peace and Other Writings on Politics, Peace, and History (Rethinking the Western Tradition)*. (pp. 17–23). Yale University Press.

Locke, J. (1960). Of the State of Nature. In Laslett, P. *Two Treatises of Government*. (sections. 4-15) Cambridge University Press.

Locke, J. (1960). Of Slavery. In Laslett, P. *Two Treatises of Government*. (sections 22- 24) Cambridge University Press.

Locke, J. (1960). Of the Beginning of Political Societies. In Laslett, P. *Two Treatises of Government*. (sections 95-104) Cambridge University Press.
Rawls, J (2001). Fundamental Ideas. In Kelly, E. (Ed.). *Justice as Fairness: A Restatement*. (pp. 1-38). Harvard University Press.

UNIT- III: LIMITS OF MODERN WESTERN POLITICAL THOUGHT (12 hours)

1) Social structures
2) The Possibility of a classless society

Essential/Recommended Readings:

Arendt, H. (1976). A Classless Society. In *The Origins of Totalitarianism*. (pp. 305-340). Harvest Book.

UNIT-IV: INDIAN POLITICAL THOUGHT (12 hours)

1) Critique of Nationalism.
2) Critique of Modern Western Civilisation.
3) Democracy and Annihilation of Caste.
4) Radical Humanism.

Tagore, R. (2005). Nationalism in the West. In *Nationalism*. (Chapter 1) Rupa & Co. Gandhi, M. K. (1997). Hind Swaraj. In Parel, A. (Ed.). (Chapter 6-13). Cambridge University Press.
Ambedkar, B.R. (2002). Caste, Class and Democracy. In Rodrigues, V. (Ed.). *The Essential Writings of B.R. Ambedkar*. (pp. 132-148). Oxford University Press.

Ambedkar, B.R. (2014). Annihilation of Caste. In Anand, S. (Ed.). *Annihilation of Caste: The Annotated Critical Edition*. (Sections 14.1-14.7). Verso.
Roy, M.N. (1981). A New Political Philosophy. In *A New Humanism: A Manifesto*. (Chapter 6, pp. 34-37). Ajanta Publications.

Suggestive Readings

Lof Der Zotheid Psychologenpraktijk. (2016). The Milgram Experiment 1962 Full Documentary [Video]. You Tube. https://www.youtube.com/watch?v=rdrKCilEhC0
I
Berlin, I. (1969). Two Concepts of Liberty. In *Four Essays on Liberty*. (pp. 118-172) Oxford University Press.
Raphael, D D. *Problems of Political Philosophy* , New York : Palgrave, 2009.
Miller, D. *Political Philosophy - A Very Short Introduction,* New Delhi : Oxford University Press, 2006 .

DISCIPLINE SPECIFIC CORE COURSE – 9 (DSC-9): Applied Ethics

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
AppliedEthics DSC 9	**4**	**3**	**1**	**Nil**	12th Pass	**Sem I and II UG Philosophy Hons**

Learning Objectives

- This course is about an evolving interdisciplinary domain dealing with ethical issues in diverse areas
- This incorporates social, political, normative, business, computer, medical, bioethics, and environmental ethics.
- The course will inculcate a sense of inquiry into new areas that students feel interested in but don't know how to inquire into systematically.

Course Learning Outcomes

- This course will develop skills of comprehension of real life ethical situations
- This course will equip students with the intellectual ability to deal with dilemmas and problems faced in actual situations of ethical import
- This course will enhance the student's capacity to handle complex situations involving many variables of decision making in an ethical manner
- This course will create a better understanding of the complex world of decision making faced in professional life

Unit 1 An Introduction to Applied Ethics (9 hours)

1. Introduction
2. Basic concepts
3. Dilemmas and problems

Essential/Recommended Readings

Singer Peter, Applied Ethics, Oxford University Press, 1986

Unit 2 Value of Human Life (12 hours)

1. Human Rights
2. Punishment

Essential/Recommended Readings:

Benn, S. I. (1958). An Approach to the Problems of Punishment. *Philosophy* 33 (127):325 - 341.

Ewing, Alfred C. (1929). *The Morality of Punishment : With Some Suggestions for a General Theory of Ethics*. Routledge.

Flew, Antony (1954). The Justification of Punishment. *Philosophy* 29 (111):291 - 307.

Unit 3 Environmental Ethics (12 hours)

1. Nature as Means or End.
2. Respect for animals and ecology.

Essential/Recommended Readings:

Singer, Peter (2009). *Animal Liberation: The Definitive Classic of the Animal Movement*. Ecco Book/Harper Perennial.

Vibha Chaturvedi, Pragati Sahni (2019, Understanding ethics, Motilal Banarsidass Publishers, Private Limited, Delhi.

Unit 4 Professional Ethics and Public Policy (12 hours)

1. Medical Ethics - Surrogacy, Euthanasia and Doctor-Patient Relationship
2. Privacy: The Public Interest and a Prurient Public in Media Ethics.

Essential/Recommended readings

Campbell, Alastair V. (2013). Clinical Ethics. In *Bioethics: The Basics*. New York: Routledge, pp. 79-114

Tong, R. (2005). Surrogate Motherhood. In A Companion to Applied Ethics (eds R.G. Frey and C. Heath Wellman). https://doi.org/10.1002/9780470996621.ch27

Archard, David (1998), Privacy, The Public Interest and a Prurient Public in Media Ethics, Ed. Kieran Mathew, Routledge, pp. 82-94

Suggestive Readings

Singer Peter, Applied Ethics, Oxford University Press, 1986

Pojman Louis, Pojman Paul, McShane Katie, Environmental Ethics: Readings in Theory and Application, Cengage Learning, 2017

Motilal Shashi (ed)(2010), Applied Ethics and Human Rights: Conceptual Analysis and Contextual Applications. London, Anthem Press

Cohen I. Cohen and Wellman Christopher Heath, Contemporary Debates in Applied Ethics, Wiley Blackwell, 2014
Patterson and Lee Wilkins, Media Ethics:Issues and Cases, Rowman and Littlefield Publishers, 2018
Rachel James, The Elements of Moral Philosophy, Oxford University Press, 2011

DISCIPLINE SPECIFIC ELECTIVE -1 (DSE-1) – Jainism

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title& Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 1 Jainism	**4**	**3**	**1**	**Nil**	12th Pass	

Learning Objectives.

- This course aims at providing students with a comprehensive understanding of Jain Philosophy.
- This course will bring out the various aspects of Jainism such as the origin of Jainism, their metaphysics, Epistemology and ethics. It will also discuss the doctrine of Ahimsha and aspects of Karma theory.
- This course will also have contain some glimpses into ecology as influenced by Jain thinking

Course Learning Outcomes

1. Students will learn a basic set of concepts and ideas relating to Jainism both from the perspectives of a lay man and monastic.
2. At the end of the course, a student should be able to demonstrate a clear understanding of the Jain philosophy.

3. Students will develop a sound understanding of Jain epistemology, metaphysics, ethics, its practical relevance in today's contemporary scenario and shall be able to go for further research in the subject.

Unit1 Jainism: An overview (9 hours)

1. Introduction to Jainism & Jain Studies (Film: Frontiers of Peace)
2. Symbols in Jainism and their implications

Essential/ Recommended Readings:

- Jain,J.P.(2005),FundamentalsofJainism,RadiantPublishers,NewDelhi,Chapter-1, pp,1-19.
- Chatterjee,S.&Datta.D.M.(1984),AnIntroductiontoIndianPhilosophy,8th ed., University of Calcutta, Calcutta, Chapter-3, pp,68-70.
- Dasgupta,S.N.(2004),AHistoryofIndianPhilosophy,Vol.1,MotilalBanarasiDass Publishers, Delhi, Chapter-4, pp,169-175

Unit 2: Jain Epistemology (12 hours)

1. Pramana and Naya
2. Syādvāda

Essential/ Recommended Readings:

- Jain, Veersagar, (2013). BharatiyeChintaneSyadavada (Syadavada in IndianThought), SHRI LAL BAHADUR SHASTRI RASHTRIYA SANSKRIT VIDYAPEETHA, New Delhi.
- Chatterjee,S.&Datta.D.M.(1984),AnIntroductiontoIndianPhilosophy,8th ed., University of Calcutta, Calcutta, Chapter-3, pp,70-77.
- Dasgupta,S.N.(2004),AHistoryofIndianPhilosophy,vol.1,MotilalBanarasiDass Publishers, Delhi, Chapter-4, pp,175-186.

Unit 3 Jain Metaphysics (12 hours)

1. Ahimsha and Anekāntavāda
2. Concept of Substance
3. Karma and rebirth

Essential/ Recommended Readings:

- Jaini, Padmanabh (2000). Collected Papers on Jaina Studies. Delhi: Motilal Banarsidass Publ. ISBN 81-208-1691-9.
- Chatterjee,S.&Datta.D.M.(1984),AnIntroductiontoIndianPhilosophy,8th ed., University

of Calcutta, Calcutta, Chapter-3, pp,81-93.

- Dasgupta,S.N.(2004),A History of Indian Philosophy, vol.1,Motilal Banarasi Dass Publishers, Delhi, Chapter-4, pp,187-203.
- Jain,J.P.(2005),Fundamentals of Jainism, Radiant Publishers, New Delhi, Chapter-2, pp,19-52, Chapter-5, pp,113-144 and Chapter-11, pp,265-295.

Unit 4 Jain Ethics **(12 hours)**

1. Triratna and Panchamahavrata
2. Ecology
3. Fear of Food: Jaina Attitudes on Eating

Essential/Recommended Readings:

- ChappleChristopher key. (2006). (ed) , Jainism and Ecology (Non-violence in the Web of Life), "The living earth of Jainism and the new story: rediscovering and reclaiming a functional cosmology", Motilal Banarasidass Pvt Ltd. pp.119 to 140.
- Chatterjee,S.&Datta.D.M.(1984),AnIntroductiontoIndianPhilosophy,8th ed., University of Calcutta, Calcutta, Chapter-3, pp,94-103
- Jaini, Padmanabh S. 2000. *Collected Papers on Jaina Studies*. Delhi: Motilal Banarsidass Publ. ISBN 81-208-1691-9.Ch. 16.
- Jain,J.P.(2005),FundamentalsofJainism,RadiantPublishers,NewDelhi,Chapter-6, pp,145-169, Chapter-7, pp,170-191 and Chapter-8, pp,192-222.
- Mahapragya,Acharya.(2010),Anekanta:PhilosophyofCo-Existence,JainVishva Bharti, Ladnun-Rajasthan, Chapter-12, pp,155-172.

Suggestive Readings

- Chatterjee,S.&Datta.D.M.(1984),AnIntroductiontoIndianPhilosophy,8th ed., University of Calcutta, Calcutta.
- Dasgupta,S.N.(2004),AHistoryofIndianPhilosophy,Vol.1,MotilalBanarasiDass Publishers, Delhi.
- Jain,J.P.(2005),FundamentalsofJainism,RadiantPublishers,NewDelhi.
- Mahapragya,Acharya.(2010),Anekanta:PhilosophyofCo-Existence,JainVishva Bharti, Ladnun-Rajasthan.

DISCIPLINE SPECIFIC ELECTIVE -2 (DSE-2) – Information Ethics

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 2 Information Ethics	4	3	1	Nil	12th Pass	

Learning Objectives

- The course aims to give students a thorough understanding of the primary philosophical concepts and arguments of information ethics.
- Information Ethics deals with the ethical, legal, and social aspects of the use of information and information and communication technology.
- Students will learn the key ethical theories and frameworks that have shaped the field of information ethics. In addition to learning about a variety of ethical theories, students will have the opportunity to explore significant information ethics concerns linked to social justice, surveillance, the digital divide, privacy, and access to information.

Course Learning Outcomes

- This course will enable the students to have a comprehensive understanding of major ethical theories and frameworks that have shaped the field of information ethics.
- Students will get to explore ethical issues related to the design and use of information technology, thereby enabling them to acquire the requisite knowledge, skill, and attitude required for making informed ethical decisions about information production, management, and use.
- Students will also be able to explore and apply a wide range of ethical theories to examine critical ethical issues raised by recent information and communication technology advances.

UNIT 1: Introduction to Information Ethics (9 hours)

1. Historical root of Information Ethics
2. What is Information Ethics?
3. Nature and scope of information ethics
4. Ethical issues of Indormation Age

Essential/Recommended Readings

Bynum, T. W. (2010). The Historical Roots of Information and Computer Ethics. In Cambridge *Handbook of Information and Computer Ethics* edited by Luciano Floridi, pp. 20 – 38. New York: Cambridge University Press.
Froehlich, T. (2005). A Brief History of Information Ethics. *National Conference on IT for Silk Industry,* Vol. 28, Issue 12, 11 – 13.
Floridi, L. (2006). Information ethics, its nature and scope. *Acm Sigcas Computers and Society, 36(3), 21-36.*
Mason, R. O. (2017). Four ethical issues of the information age. In *Computer ethics* (pp. 41-48). Routledge.

UNIT 2: Privacy, Accountability, and Surveillance Capitalism (12 hours)

1. Privacy, Security and Information Ethics
2. Transparency and Information Ethics
3. Surveillance Capitalism

Essential/Recommended Readings

Brey, P. (2007). Ethical Aspects of Information Security and Privacy. *Security, Privacy, and Trust in Modern Data Management,* 21-36
Turilli, M., & Floridi, L. (2009). The Ethics of Information Transparency. *Ethics and Information Technology*, 11(2), 105-112.
Fuchs, Christian. (2016). Information Ethics in the Age of Digital Labour and the Surveillance-Industrial Complex. *In Information Cultures in the Digital Age: A Festschrift in Honor of Rafael Capurro* edited by Matthew Kelly & Jared Bielby, pp. 173 - 190. Springer

UNIT 3: Data, Digital Divide, and Information Ethics (12 hours)

1. Access to Information
2. Social justice
3. Digital divide

Essential/Recommended Readings

Hongladarom, S. (2005). The digital divide, epistemology and global justice. In *National Conference on IT for Silk Industry*, Vol. 28, Issue 12, 5-6.
Johnson, J. A. (2014). From open data to information justice. *Ethics and Information Technology,* 16(4), 263-274.
Tavani, H. T. (2003). Ethical reflections on the digital divide. *Journal of Information, Communication and Ethics in Society.*MCB UP Ltd, pg 99-108
Floridi, L. (2002). Information ethics: an environmental approach to the digital divide. *Philosophy in the Contemporary World*, 9(1), 39-45.
Webster, F. (2007). Information and democracy: Jürgen Habermas. In *Theories of the Information Society* (pp. 169-210). Routledge.

Unit 4 Plurality in Information Ethics **(12 hours)**

1. Global Information Ethics
2. Inter-cultural Information ethics
3. Future of Information Ethics

Essential/Recommended Readings

Ess, C. (2006). Ethical pluralism and global information ethics. *Ethics and Information Technology*, 8(4), 215-226.
Hongladarom, S. (2016). Intercultural information ethics: a pragmatic consideration. In *Information cultures in the digital age* (pp. 191-206). Springer VS, Wiesbaden.
Ess, Charles. (2010). Brave New Worlds? The Once and Future Information Ethics. *International Review of Information Ethics*, Vol 12, 37 - 44.

DISCIPLINE SPECIFIC ELECTIVE (DSC-3): Indian Materialism

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title& Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 3 Indian Materialism	**4**	**3**	**1**	**Nil**	12th Pass	

Learning Objectives

- The primary objective of this course is to familiarize the students with the nature, significance and import of Materialism as a strong philosophical motif present in the Indian philosophical knowledge systems
- This course will also critically evaluate the theoretical framework in the activity of philosophizing in Indian materialism
- This course will bring out the contemporary relevance of Indian materialism and throw fresh light on its historical role in Indian Philosophy and knowledge systems.

Course Learning Outcomes

- The student after having done this course is expected to have a fair understanding of the **t**heoretical construct as well as the argumentative force of Materialism as a philosophical theory in the Indian context.
- The students will have understood a vital element in the Indian knowledge systems
- The student will be able to appreciate the plurality and diversity of Indian knowledge systems.

Unit 1: Introduction (9 hours)

1. Ancient Indian Materialism and Its sourses.
2. Characteristic features of Carvaka/Lokayata: Metaphysics, Epistemology and Ethics

Essential/ Recommended Readings:

Dasgupta, S.N. (2004), A History of Indian Philosophy, Vol.1, MotilalBanarasi Dass Publications, Delhi.

Bhattacha**r**ya, R. (2013), Development of Materialism in India", EserciziFilosofici 8, pp. 1-12.

MadhavaAcarya(1904), "Sarvadarsana-samgraha: Section on 'Carvaka'", trans. E.B.Cowell& A.E. Gough, London, Kegan Paul, Trubner& co. ltd, pp. 2-11.

Unit 2: Shades of Materialism (12 hours)

1. The Materialistic view: Rational, Realistic
2. Naturalistic, Anti-dogmatic and Anti-ritualistic.

Essential/Recommended Readings:

1. Franco, Eli (2011), "Lokayata" in Brill's Encyclopedia of Hinduism, Vol. III, ed. Knut A. Jacobsen, Lieden/Boston, Brill, pp. 629-642.
2. Dale, M Reipe (1961), "Naturalistic Traditions in Indian Thought.
3. Mills, Ethan (2015), "Jayarasi's Delightful destruction of Epistemology", Philosophy East & West, Vol. 65, pp. 498-54.

Unit 3: Influence on Contemporary Times (12 hours)

1. Indian Materialism and Its Influence in Contemporary Social Movements:
2. Marxist, Atheist, Rationalist

Essential/Recommended Readings:

Quack, Jihannes (2012), "Disenchanting India- Organized Rationalism and Criticism of Religion in India, Oxford University Press, Delhi, pp. 3-21.

Unit 4: Contemporary Indian Materialists (12 hours)

1. Contemporary Thinkers of Indian Materialism: M.N.Roy, Periyar,
    a. D.P. Chattopadhyaya.

Essential/Recommended Readings:

Roy, M.N. (1987), "Materialism", Ajanta Publications, Delhi.

Chattopadhyaya, Debiprasad (2008), "Lokayata- Study in Ancient Materialism", Peoples Publishing house, Bombay.

Suggestive Readings

Chattopadhyaya, D.P., (1964), Indian Philosophy: A Popular Introduction, People's Publishing House, New Delhi.

Ewing, A.C. (1951), Fundamental Questions of Philosophy, Routledge & Kegan Paul ltd., London.

Raju, P.T. (1985), Structural Depths of Indian Thought, Asian Publishers, New Delhi.

Hiriyana, M. (1951), Outlines of Indian Philosophy, Allen & Unwin, London.

Gokhale, P.P. (1993), "Carvaka's Theory of Pramanas: A Restatement", Philosophy East & West, Vol. 43, pp. 675-682.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Ba (Prog) with Philosophy as Major

Category II

(Courses for Undergraduate Programme of study with Philosophy discipline as one of the Core Disciplines)

DISCIPLINE SPECIFIC CORE COURSE (DSC-5): Ethics

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 5 Ethics	4	3	1	Nil	Class XII	NIL

Learning Objectives

- The course is designed to grasp the traditional ethical (Western and Indian) theories
- This course will also ensure that students will be able to apply ethics on the practical front.
- It is a curriculum which enables students to develop ability for moral reasoning and act with ethical deliberations.

Course Learning Outcomes

- The student will be able to understand and analyse ethical theories
- The student will appreciate the role of reasoning in ethics
- The student will be able to evaluate different theories of ethics
- The student will be able to apply ethical theories in practical situations

UNIT 1: Introduction to Ethics **(9 hours)**

1. Domain of Ethics
2. Conventional and Reflective Morality

Essential/Recommended Readings:

1) Mackenzie,J.S., (1977), A Manual of Ethics, Oxford University Press Bombay, Chapter-1, "Scope of Ethics",pp,1-14.
2) Sinha, Jadunath, (2004), A Manual of Ethics, New Central Book Agency, Chapter-1, pp.1-13,

UNIT 2: Theories of Ethics **(12 hours)**

1. Virtue Ethics with especial reference to Aristotle's Eudemonia
2. Teleological Ethics with especial reference to Mill's Utilitarianism
3. Deontological Ethics with especial reference to Kant's Categorical Imperatives

Essential/Recommended Readings

1. Aristotle, (1926) Nicomachean Ethics, Harvard University Press.
2. Mill, J.S. (1863): Utilitarianism, London, in Mary Warnock. Ed.1962.
3. Kant, Immanuel: Groundwork of the Metaphysics of Morals, Trans. H J Paton, as The Moral Law. London

UNIT 3 : Ethical Issues **(12 hours)**

1. l) Nature of Free-willand Responsibility
2. ll) Deterrent and Retributive Punishment

Essential/Recommended Readings

1. Thiroux, J. ETHICS: Theory and Practice, Chapter6 pp.131-142
2. Thiroux,J. ETHICS: Theory and Practice, Chapter 5,pp.101-114

UNIT 4 : INDIAN ETHICS **(12 hours)**

1. Ethics of Gita
2. Buddhist Ethics

Recommended Readings

1. Sharma, I.C.(1965) Ethical Philosophies of India, George Allen & Unwin LTD. Chapter XII, and Chapter VII'
2. Keown, D. (2005). Buddhist Ethics: A very short introduction, OUP, Chapter 1 (Buddhist Morality)

Suggestive Readings

3. Mackenzie,J.S., (1977), A Manual of Ethics, Oxford University Press.
4. Lillie, W. [1948), An Introduction to Ethics, Methuen & Co. Ltd. London.
5. Nuttall Jon, Moral Questions: An Introduction to Ethics, Polity Press, 1993
6. Sharma, Bhanu (2019) The Conceptual Analysis of Karma, Kohenoor Publications, Chapter 7,pp.223-248.

DISCIPLINE SPECIFIC CORE COURSE – 6 (DSC-6):

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Social and Political Philosophy DSC 6	**4**	**3**	**1**	**Nil**	**Class XII**	NIL

Learning Objective

- This course aims to provide the students with an understanding of the basic conceptsof social and political philosophy, and their underpinnings.
- The course will introduce the students to some thinkers in both the Indian and western traditions, who have played a key role in setting the discourse for contemporary thought.

Course Learning Outcomes

- The student will understand the philosophical origin, and nature of some of the fundamental concepts used in contemporary political discourse.
- The student will be able to analyze political discourse by using concepts in both western and Indian traditions
- The student will appreciate the concepts and ideas of western and Indian political thought.

UNIT-I: BASIC CONCEPTS IN POLITICAL THOUGHT (15 hours)

1. Social Contract
2. Liberty
3. Justice

Essential/Recommended Readings

Locke, J. (1960). Of the State of Nature. In Laslett, P. *Two Treatises of Government*. (sections. 4-15) Cambridge University Press.

Locke, J. (1960). Of the Beginning of Political Societies. In Laslett, P. *Two Treatises of Government*. (sections 95-104) Cambridge University Press.

Berlin, I. (1969). Two Concepts of Liberty. In *Four Essays on Liberty*. (pp. 118-172) Oxford University Press.

Rawls, J. (2001). Fundamental Ideas. In Kelly, E. (Ed.). *Justice as Fairness: A*

Restatement. (pp. 1-38). Harvard University Press.

UNIT-II: INDIAN POLITICAL THOUGHT (15 hours)

1. Critique of Nationalism.
2. Critique of Modern Western Civilisation.
3. Democracy and Annihilation of Caste.
4. Radical Humanism.

Essential/Recommended Readings

Tagore, R. (2005). Nationalism in the West. in *Nationalism*. (Chapter 1) Rupa & Co. Gandhi, M. K. (1997). Hind Swaraj. In Parel, A. (Ed.). (Chapter 6-13). Cambridge University Press.

Ambedkar, B.R. (2002). Caste, Class and Democracy. In Rodrigues, V. (Ed.). *The Essential Writings of B.R. Ambedkar*. (pp. 132-148). Oxford University Press.

Ambedkar, B.R. (2014). Annihilation of Caste. In Anand, S. (Ed.). *Annihilation of Caste: The Annotated Critical Edition*. (Sections 14.1-14.7). Verso.

Roy, M.N. (1981). A New Political Philosophy. In *A New Humanism: A Manifesto*. (Chapter 6, pp. 34-37). Ajanta Publications.

UNIT-III: SOME CONTEMPORARY POLITICAL ISSUES (15 hours)

1. Communitarianism
2. Feminism

Essential/Recommended Readings:

Abbey, R., & Taylor, C. (1996). Communitarianism, Taylor-Made: An Interview with Charles Taylor. *The Australian Quarterly*, *68*(1), 1–10. https://doi.org/10.2307/20634713

hooks, b. (1984). Feminism: A Movement to End Sexist Oppression. *Feminist Theory: From Margin to Centre.* (pp. 17-31) South End Press.

Suggestive Readings

- Raphael, D D. *Problems of Political Philosophy* , New York : Palgrave, 2009.
- Miller, D. *Political Philosophy - A Very Short Introduction,* New Delhi : Oxford University Press, 2006 .
- Ghoshal, U.N. A History of Indian Political Ideas, Oxford University Press, 1950.
- Benn, S. I.,Peters, R. S. *Social Principles and The Democratic State,* London: George Allen and Unwin LTD.

Ba (Prog) with Philosophy as Non-Major
Category III

Courses for Undergraduate Programme of study with discipline of Philosophy as one of the Core Disciplines (Non-Major/Minor)

DISCIPLINE SPECIFIC CORE COURSE (DSC-3): Social and Political Philosophy

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Social and Political Philosophy DSC 3	**4**	**3**	**1**	**0**	**Class XII**	NIL

Learning Objective

- This course aims to provide the students with an understanding of the basic conceptsof social and political philosophy, and their underpinnings.
- The course will introduce the students to some thinkers in both the Indian and western traditions, who have played a key role in setting the discourse for contemporary thought.

Course Learning Outcomes

- The student will understand the philosophical origin, and nature of some of the fundamental concepts used in contemporary political discourse.
- The student will be able to analyze political discourse by using concepts in both western and Indian traditions
- The student will appreciate the concepts and ideas of western and Indian political thought.

UNIT-I: BASIC CONCEPTS IN POLITICAL THOUGHT (15 hours)

4. Social Contract
5. Liberty
6. Justice

Essential/Recommended Readings

Locke, J. (1960). Of the State of Nature. In Laslett, P. *Two Treatises of Government*. (sections. 4-15) Cambridge University Press.

Locke, J. (1960). Of the Beginning of Political Societies. In Laslett, P. *Two Treatises of Government*. (sections 95-104) Cambridge University Press.

Berlin, I. (1969). Two Concepts of Liberty. In *Four Essays on Liberty*. (pp. 118-172) Oxford University Press.

Rawls, J. (2001). Fundamental Ideas. In Kelly, E. (Ed.). *Justice as Fairness: A Restatement*. (pp. 1-38). Harvard University Press.

UNIT-II: INDIAN POLITICAL THOUGHT (15 hours)

5. Critique of Nationalism.
6. Critique of Modern Western Civilisation.
7. Democracy and Annihilation of Caste.
8. Radical Humanism.

Essential/Recommended Readings

Tagore, R. (2005). Nationalism in the West. in *Nationalism*. (Chapter 1) Rupa & Co.

Gandhi, M. K. (1997). Hind Swaraj. In Parel, A. (Ed.). (Chapter 6-13). Cambridge University Press.

Ambedkar, B.R. (2002). Caste, Class and Democracy. In Rodrigues, V. (Ed.). *The Essential Writings of B.R. Ambedkar*. (pp. 132-148). Oxford University Press.

Ambedkar, B.R. (2014). Annihilation of Caste. In Anand, S. (Ed.). *Annihilation of Caste: The Annotated Critical Edition*. (Sections 14.1-14.7). Verso.

Roy, M.N. (1981). A New Political Philosophy. In *A New Humanism: A Manifesto*. (Chapter 6, pp. 34-37). Ajanta Publications.

UNIT-III: SOME CONTEMPORARY POLITICAL ISSUES (15 hours)

1. Communitarianism
2. Feminism

Essential/Recommended Readings:

Abbey, R., & Taylor, C. (1996). Communitarianism, Taylor-Made: An Interview with Charles Taylor. *The Australian Quarterly*, *68*(1), 1–10. https://doi.org/10.2307/20634713

hooks, b. (1984). Feminism: A Movement to End Sexist Oppression. *Feminist Theory: From Margin to Centre.* (pp. 17-31) South End Press.

Suggestive Readings

a. Raphael, D D. *Problems of Political Philosophy* , New York : Palgrave, 2009.
b. Miller, D. *Political Philosophy - A Very Short Introduction,* New Delhi :Oxford University Press, 2006 .
c. Ghoshal, U.N. A History of Indian Political Ideas, Oxford University Press,1950.
d. Benn, S. I.,Peters, R. S. *Social Principles and The Democratic State,* London:George Allen and Unwin LTD.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

GENERIC ELECTIVES (GE-9): Formal Logic

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Formal Logic GE 9	4	3	1	Nil	UG 1st year	None	Philosophy

Learning Objectives

- This course is designed as an introductory course in logic which will bring out the standard forms of Formal reasoning.
- It introduces the basic logical concepts and provides a clear understanding of the structure of arguments and the nature of inferential reasoning.
- It equips students with the logical skills and techniques for formal testing of syllogistic arguments.

Course Learning Outcomes

- The student's reasoning skill will be enhanced. The student will learnways for testing and recognizing strong arguments.
- After this course, the student will be able to construct good arguments and helps them develop skills with which they can discern the distinction between the valid and the invalid argumentation through several differentmethods.

UNIT I: BASIC LOGICAL CONCEPTS (9 hours)

1. Sentence and Proposition
2. Classification of Categorical Propositions
3. Quality, Quantity and Distribution of Terms
4. Truthand Validity

Essential/Recommended Readings

Topic 1. Copi, Irving M., Cohen, Carl, and McMahon, Kenneth. Introduction toLogic. 14th ed. Pearson New International Edition, 2014. Ch 1, pp 2-5.
Topic 2. Copi, Irving M., Cohen, Carl, and McMahon, Kenneth. Introduction toLogic. 14th ed. Pearson New International Edition, 2014. Ch 5, pp 170-173.
Topic 3. Copi, Irving M., Cohen, Carl, and McMahon, Kenneth. Introduction toLogic. 14th ed. Pearson New International Edition, 2014. Ch 5, pp 174-177.
Topic 4. Copi, Irving M., Cohen, Carl, and McMahon, Kenneth. Introduction toLogic. 14th ed. Pearson New International Edition, 2014. Ch 1, pp 27-31.

UNIT II: - ARISTOTELIAN LOGIC (12 hours)

1. Translating ordinary sentences into Standard Form Categorical Propositions
2. Traditional Square of Opposition
3. Immediate Inference (Conversion, Obversion and Contraposition)
4. Mediate Inference: Standard Form Categorical Syllogism -Mood and Figure
5. Testing Validity/Invalidity of Syllogism by Syllogistic Rules

Essential/Recommended Readings:
Topic 1. Copi, Irving M., Cohen, Carl, and McMahon, Kenneth. Introduction toLogic. 14th ed. Pearson New International Edition, 2014. Ch 7, pp 259-268.
Topic 2. Copi, Irving M., Cohen, Carl, and McMahon, Kenneth. Introduction toLogic. 14th ed. Pearson New International Edition, 2014. Ch 5, pp 180-184.
Topic 3. Copi, Irving M., Cohen, Carl, and McMahon, Kenneth. Introduction toLogic. 14th ed. Pearson New International Edition, 2014. Ch 5, pp 184-192.
Topic 4. Copi, Irving M., Cohen, Carl, and McMahon, Kenneth. Introduction toLogic. 14th ed. Pearson New International Edition, 2014.Ch 6, pp 211-216.

Topic 5. Copi, Irving M., Cohen, Carl, and McMahon, Kenneth. Introduction to Logic. 14th ed. Pearson New International Edition, 2014. Ch 6, pp 230-240.

UNIT III: BOOLEAN LOGIC AND VENN DIAGRAM (12 hours)

1. Existential Import and the Boolean Interpretation of Categorical Propositions
2. Boolean Square of Opposition
3. Symbolic Representation of Categorical Propositions
4. Testing Validity/Invalidity of Categorical Syllogism by Venn Diagram

Essential/ Recommended Readings

Topic 1. Copi, Irving M., Cohen, Carl, and McMahon, Kenneth. Introduction to Logic. 14th ed. Pearson New International Edition, 2014. Ch 5, pp. 193-199.
Topic 2Copi, Irving M., Cohen, Carl, and McMahon, Kenneth. Introduction to Logic. 14th ed. Pearson New International Edition, 2014. Ch 5, pp 201-202.
Topic 3. Copi, Irving M., Cohen, Carl, and McMahon, Kenneth. Introduction to Logic. 14th ed. Pearson New International Edition, 2014. Ch 5, pp 203-206.
Topic 4. Copi, Irving M., Cohen, Carl, and McMahon, Kenneth. Introduction to Logic. 14th ed. Pearson New International Edition, 2014. Ch 6, pp 219-230.

UNIT IV: PROPOSITIONAL LOGIC (12 hours)

1. Importance of Symbolic logic
2. Logical constants, Variables and basic truth functions (Negation, Conjunction, Disjunction (Alternation), Conditional (Material Implication), Bi-conditional (Material Equivalence)
3. Symbolization of statements
4. Logical Status of Statements: Tautologous, Contingent, Contradictory
5. Proving Validity/Invalidity: Truth Table Method & Reductio ad absurdum

Essential/ Recommended Readings

Topic 1. Copi, Irving M., Cohen, Carl, and McMahon, Kenneth. Introduction to Logic. 14th ed. Pearson New International Edition, 2014. Ch 8, pp. 305-306.
Topics2 and 3.Copi, Irving M., Cohen, Carl, and McMahon, Kenneth. Introduction to Logic. 14th ed. Pearson New International Edition, 2014. Ch 8, pp. 306-327; pp. 344-345.
Topic 4. Copi, Irving M., Cohen, Carl, and McMahon, Kenneth. Introduction to Logic. 14th ed. Pearson New International Edition, 2014. Ch 8, pp. 343-344.
Topic 5. Copi, Irving M., Cohen, Carl, and McMahon, Kenneth. Introduction to Logic. 14th ed. Pearson New International Edition, 2014. Ch 8, pp. 332-334.

Suggestive Readings

1. Copi, Irving M., Cohen, Carl, and McMahon, Kenneth. Introduction to Logic. 14th ed. Pearson New International Edition, 2014.
2. Cavendish, A. P., and O'Connor, D. J., Introduction to symbolic logic. London: University Tutorial Press, 1959. Additional Resources: Jain, Krishna. A Textbook of Logic. New Delhi: D.K. Printworld, 2018.

GENERIC ELECTIVES (GE-10):

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Readings in Western Philosophy GE 10	4	3	1	Nil	UG 1st year	None	Philosophy

Learning Objectives

- This course will critically examine the basic text of some philosophers.
- This course will introduce students to selected themes in philosophy like existentialism, the value of philosophy, love, self, etc.
- The course will develop the student's curiosity to explore philosophy further in a more fruitful manner

Course Learning Outcomes

- After completing this course, the student will understand the central themes on which great philosophers have written
- The student will appreciate the genesis of the enlightenment and its reliance on reason
- The student will be able to connect ancient themes in philosophy with contemporary themes in a seamless way

Unit 1: Greek Philosophy **(9 hours)**

1. Love
2. Madness

Essential/Recommended Reading

"On Love and madness: *Phaedrus"* 227a-258 (in Plato's Phaedrus translated by Walter Hamilton, Penguine Books, Harmondsworth 1973)

Unit 2: Modern Philosophy (9 hours)

1. The Enlightenment
2. Private and Public Reason

Essential/Recommended Reading

"On Enlightenment" (in Immanuel Kant, *Perpetual Peace and Other Essays*,Hackett, 1983)

Unit 3: Post Kantian Theme (9 hours)

1. Thinking
2. Self and world

Recommended Reading:

"On Thinking for Oneself" (in Schopenhauer, *Parega and Paralipomena: Short Philosophical Essays*, Vol.2, trans. E.F.J. Payne, Oxford: Clarendon Press, 1974)

Unit 4: Contemporary Philosophy (18 hours)

1. Jean-Paul Sartre
2. Bertrand Russell

Essentiakl/Recommended Readings

1. "Existentialism is a Humanism"**(in**Walter Kaufmann**,** *Existentialism from Dostoevsky to Sartre,* Penguin USA, 1975)
2. "The Value of Philosophy" (in Russell, *The Problems of Philosophy*, 2nd edition, Oxford University Press, 1997)

GENERIC ELECTIVES (GE-11): Philosophuical Debates: Western

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Philosophical Debates: Western GE 11	4	3	1	Nil	12th Pass	None	Philosophy

Learning Objectives

Course Objective

- The paper is designed to appreciate the profound ideas that sprung from the minds of the great philosophers of the Greek world, as well as modern western and contemporary philosophy.
- It allows students to learn the main issues, arguments and counter-arguments in the entire spectrum of western philosophical debates.
- The syllabus comprises of philosophers grouped under several traditions of thought. It begins with Descartes' seminal views on epistemology and metaphysics and traces the emergence of ideas in a kind of chronological order which demonstrates methodical development of philosophical thought.

Course Learning Outcomes

- It will develop skills of critical evaluation of key arguments of philosophers
- It will enable students to have a better understanding of how a philosopher develops and defends a theme
- It will create an understanding of philosophical themes and debates

Unit 1 Epistemology **(9 hours)**

1) Knowledge and opinion/belief
2) Episteme and doxa

Essential/recommended readings

Plato, *Republic*, Translated by Lee (Penguin), Book VI & VII, pp. 502-521.

Unit 2 Metaphysics **(12 hours)**

1) Descartes' Mind-Body dualism.
2) Gilbert Ryle on Descartes Myth.

Essential/Recommended Readings

Rene Descartes, Meditations Concerning First Philosophy, Meditation II, in J J Blom (Ed), *Descartes; Essential Writings* (Harper Torch Books, 1977).

Gilbert Ryle, *The Concept of Mind* (Hutchinson, 1949), Chapter I.

Unit 3 Empiricism about substance (3 weeks)

1) John Locke's theory of material substance.
2) Berkeley's critique of Locke's material substance.

Essential/Recommended readings

John Locke, *An Essay Concerning Human Understanding* (London, 1706), Chapter XXIII.

George Berkeley, The Principles of Human Knowledge in G J Warnocke (Ed), (Fontana Press, 1985), Part I, Section 1-24.

Unit 4 Humanism; Emotion & God (4 weeks)

1) Jean Paul Sartre' s theory of emotion.
2) Russell and Copleston debate on the existence of God.

Essential/Recommended readings

- Jean Paul Sartre, *Sketch for a Theory of the Emotions* (London: Routledge).
- Bertrand Russel, *Why I am not a Christian?*(London: George Allen and Unwin), including the BBC debate between Russel and Copleston Broadcast in 1948.

Suggestive readings

- T Z Lavine, *From Socrates to Sartre: The Philosophic Quest* (New York: Bantam Books, 1984).
- F C Copleston, *History of Philosophy* (Image Books, 1993).
- R Falkenberg, *History of Modern Philosophy* (Jefferson Publications, 2015).
- Bruder Moore, *Philosophy: The Power of Ideas* (New Delhi: Tata McGraw Hill, 2011).
- D J O'Connor, *A Critical History of Western Philosophy* (Macmillan, 1964).
- W Stegmuller, *Main Currents in Contemporary German, British and American Philosophy* (Riedel Publishing, 1959).
- Thomson Garett, *An Introduction to Modern Philosophy* (California: Wadswordth Publishing, 1993).
- Y Masih, *A Critical History of Western Philosophy* (New Delhi: Motilal Banarsidas, 2016)

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF PSYCHOLOGY

Category I

B.A. (HONS.) PSYCHOLOGY

(B.A. Honours in Psychology in three years)

DISCIPLINE SPECIFIC CORE (DSC) COURSES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE DSC-7 COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-7 Development of Psychological Thought	**4**	**3**	**1**	**0**	**Class XII Pass**	**Nil**

Learning Objectives

The Learning Objectives of this course are:

- To understand and evaluate the historical events and key philosophical, pre-scientific and scientific developmental milestones that has shaped the discipline of contemporary psychology.
- To appreciate the polycentric history and diversity of interests and foci within psychology.
- To describe the perspectives and significant contributions of luminaries in the history of psychology.
- To understand the development of psychological thought from both the Indian and Western perspectives.

Learning outcomes

By studying the course students will be able to:

- Understand the historical events and key philosophical, pre- scientific and scientific developmental milestones that have shaped the discipline of contemporary psychology.
- Identify and appreciate the perspectives and significant contributions of luminaries in the history of psychology.
- Recognize the relevance of diversity of contexts and the pluralistic origin of significant ideas, concepts and theories which shaped the history of psychology.
- Compare and contrast the development of psychological thought from both the Indian and Western perspectives.

- Use critical thinking to question, debate and evaluate the guiding assumptions of psychological theories, concepts and principles and to apply these effectively, both at an individual level and in diverse settings.

SYLLABUS OF DSC-7

UNIT – I: (11 Hours)

Polycentric History of Psychology- Psychology of Consciousness: Eastern (Yoga and Vedant); and Western views (Wundt, James, Phenomenology) on Consciousness; applications of Yoga & Vedant.

UNIT – II: (11 Hours)

Psychology of Behaviour and Mind: Rise of Behaviourism (Watson), Shift from Behaviourism to neo-behaviourism (Tolman, Skinner); Transition from Behaviourism to Cognitive Psychology (Paradigms and Themes); Applications of Behaviourism and Cognitive psychology.

UNIT – III: (14 Hours)

Psychology of the Unconscious: Classical Psychoanalysis (Freud), Sociological Shift in Psychoanalysis (Horney, Erikson), Object Relations Perspective (Key Concepts); Existentialist & Humanist Perspective (Tenets and Concepts).

UNIT – IV: (9 Hours)

Psychology of Subjective Experience: Humanist Psychology (Tenets), Rogerian Self Psychology; Existential Psychology (Tenets), Transpersonal Psychology (Themes & Contributions).

Tutorial Component – 15 Hrs.

Suggestive Tutorial Activities:

- Literature Review to trace polycentric history of Psychology
- Class debates to develop critical thinking e.g. Skinner-Chomsky debate
- Working timeline on the History of Psychology including History of Psychology in India
- Mapping a timeline of Psychology with popular culture movements to see convergences between the two.
- Role plays to demonstrate concepts e.g. operation of defense mechanisms.
- Discussions on topics of contemporary relevance e.g. artificial intelligence.
- Essays on philosophical debates
- Movie screenings and discussions e.g. Wild Strawberries

This is a suggestive and not an exhaustive list of tutorial activities.

Practical Component – NIL

Essential readings

Brock, A. C. (2014). What is a polycentric history of psychology? *Estudosem Psicologia 14* (2), 646-659.

Cornilissen, R.M. Misra, G. &Varma, S. (Eds.), (2013). *Foundations and applications of Indian psychology.* New Delhi: Pearson

Davis, J. (2003). An overview of transpersonal psychology. *The Humanist Psychologist 31* (2-3), 6-21.

Hergenhahn, B.R. & Henley, T.B. (2014). *An introduction to history of psychology*. London : Wadsworth,Cengage Learning.

Kakar, S. (1997). Culture in Psychoanalysis. In S. Kakar (Ed.) *Culture and psyche: Selected essays* (pp. 1-19*)*. New Delhi: OUP.

King, D.B., Viney, W. & Woody, W.D. (2008).*A history of psychology: Ideas and context* London, UK: Pearson Education.

Leahey, T.H. (2005). *A history of psychology: Main currents in psychological thought*. Singapore: Pearson Education.

Paranjpe, A. C. (1984*). Theoretical psychology: The meeting of East and West.* New York: Plenum Press.

Pickren, W.E. (2009). Indigenization and the history of psychology.*Psychological Studies 54*, 87-95.

Sternberg, R.J. & Sternberg, K. (2012). *Cognitive psychology*. Wadsworth: Cengage Learning.

Suggestive readings

Bansal, P. (2019). *Psychology: Debates and controversies.* New Delhi: Sage.

Cunningham, P. F. (2021). *Introduction to transpersonal psychology: Bridging spirit and science* .NY: Routledge.

Danzinger, K. (2013). Psychology and its history.*Theory & Psychology 23*(6), 829-83.

Marsh,T. (2020). Neo Freudians. In V. Zeigler-Hill & T.K. Shackelford (Eds.), *Encylopedia of personality and individual differences.*

Paranjpe, A. (2006). From tradition through colonialism to globalization: Reflections on the history of psychology in India (pp.56-74). In A.C. Brock (Ed.), *Internationalizing the history of psychology.* NY: New York University Press.

Rao, K, R. &Paranjpe, A.C. (Eds.), (2017).*Psychology in the Indian tradition.* New Delhi: Springer.

Rao,K.R. (2011). Trisula: Trident Model of Indian Psychology (pp.1-20). In G. Misra (Eds.), *Oxford handbook of psychology in India*. New Delhi: Oxford University Press.

Schultz, D.P. & Schultz, S.N. (2011). *A history of modern psychology,*.London: Wadsworth, Cengage Learning.

St. Clair, M. (1999). *Object relations and self-psychology*: *An introduction.* Belmont, California: Wadsworth Publishing.

Thomas, T. (*2005). The critique of psychology: From Kant to post colonial theory.* NY: Springer-Verlag.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-8 Paradigmatic Foundations of Psychological Inquiry	**4**	**3**	**0**	**1**	**Class XII Pass**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- To acquaint students with the concept of of paradigms as a basis for psychological inquiry
- To introduce the basic assumptions of the key paradigms that inform knowledge generation in psychology
- To give an overview of the quantitative and qualitative traditions of inquiry
- To acquaint students with the different methods of data collection for psychological inquiry
- To present the essential considerations of design, rigour and ethics of knowledge generation through psychological inquiry

Learning outcomes

After doing this course, the students will be able to

- Appreciate and critically analyse the paradigmatic foundations and assumptions of different theories in Psychology
- Appreciate and use the different traditions of psychological inquiry
- Identify and use the suitable methods of data generation for different psychological inquiries

SYLLABUS

UNIT – I Paradigmatic Assumptions of Psychological Inquiry (12 hours)

- Paradigms of Inquiry: Positivist, Post-positivist, Critical, Constructivist and Participatory

UNIT – II Traditions of Inquiry (18 hours)

- Quantitative and qualitative approaches- overview, differences and convergences in mixed methods
- Issues and techniques of sampling in quantitative and qualitative approaches
- Issues of quality and ethics in quantitative and qualitative approaches
- Role of reflexivity in knowledge generation

UNIT – III Techniques of data generation (15 hours)

- Survey
- Interview
- Observation
- Focus Group Discussion
- Case study
- Use of secondary data sources

Suggestive Practicals– (30 hours)

- Students may be given different research works each rooted in one paradigm and may be asked to identify and illustrate the basic assumptions of these paradigms.
- Students may be asked to design a study with an interview (structured, semi-structured, unstructured, life-history etc.)/ observation (participant or non-participant)/ focus group discussion (online or in-person)/ case-study (single/multiple) as a method of data collection. The data obtained may be analysed using a suitable method of data analysis.
- Students may be asked to design a survey based study which may involve designing a questionnaire, collecting and analysing the data.
- Students can design a study using secondary data sources such as archives, blogs, life-history documents, biographies, movies, documentaries, short stories, advertisements, newspaper articles, policy documents, speeches etc. They can then analyse the secondary data with suitable method/s.

Essential/recommended readings

Bansal, P. (2019). *Psychology: Debates and controversies.* SAGE Publications India Pvt, Limited.

Bryman, A. (2004). *Quantity and quality in social research.* London, UK: Routledge.

Coolican, H. (2006). *Introduction to research methodology in psychology.* London: Hodder Arnold

Denzin, N. K., & Lincoln, Y. S. (2018). *The Sage handbook of qualitative research.* 5th Ed. Sage.

Gall, M., Gall, J., & Borg, R. (2007). E*ducational research: An introduction* (8th ed.). New York, NY: Pearson Education

Howitt, D., & Cramer, D. (2014). *Introduction to research methods in psychology.* United Kingdom: Pearson.

Lammers, W. J., & Badia, P. (2005). *Fundamentals of behavioral research.* United States of America: Thompson/Wadsworth.

Lincoln, Y. S., Lynham, S. A., & Guba, E. G. (2011). *Paradigmatic controversies, contradictions, and emerging confluences, revisited.* The Sage handbook of qualitative research. 4(2), 97-128.

Neuman, W.L. (2014). *Social research methods: Qualitative and quantitative approaches.* Boston: Pearson Education.

Suggestive readings

Pelham, B. W. (2018). *Conducting research in psychology: Measuring the weight of smoke.* 5 th Ed. Sage Publications Inc.

Schweigert, W. A. (2020). *Research methods in psychology: A handbook.* Illinois. Waveland Press, Inc.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-9 Social Psychology in Applied Contexts	4	3	0	1	Class XII Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To understand the importance of applied social psychology in various domains.
- To appreciate the applications of the field in various contexts of life.

Learning outcomes

The student at the end of this course should be able to:

- Understand the key issues and concepts related to social inequalities and environmental concerns, especially in the Indian context.
- Understand the importance of interventions in dealing with social problems.
- Design and execute a study based on any relevant intervention/participatory method.

UNIT – I (15 Hours)

Introduction

Nature of Applied Social Psychology, Overview of Participatory Research Methods, Process of Intervention, Applying Social Psychological Principles in the Indian Context - Case Studies.

UNIT – II (15 Hours)

Social Diversity and its Challenges

Economic, Religious, Gender, Linguistic, Caste based Diversity

Challenges (discrimination, stereotypes and prejudice)

UNIT – III (15 Hours)

Applying Social Psychology to the Environment

Resource dilemmas, Natural Disasters, Culture and Environment, Pro-environmental Behaviour and Dealing with Natural Disasters

Practical component- (30 Hours)

- Case Studies in the Indian context related to the topics in unit 2 and 3.
- Focus Group discussions based on relevant social issues (diversity, discrimination, environment etc.)
- Analysis of Designing interventions for relevant social issues (diversity, discrimination, environment etc.)
- Analysis of films, other media and other secondary data sources (e.g relevant social policies)
- Interview based /observational inquiry in relevant social settings (e.g NGOs, rural settings etc.)
- Questionnaire based surveys on relevant topics in unit 2 and 3

Recommended readings

Aronson, E., Wilson, T.D., Akert, R.M., & Sommers, S.R. (2017). *Social Psychology, 9th edition,* Delhi: Pearson.

Jain, S. & Bhardwaj, G. (2014). Understanding diversity issues vis-à-vis caste based quota system: A solution or a source of discrimination. *Vision, 18(4),* 317-325.

Jaspal, R. (2011). Caste, social stigma and identity processes. *Psychology and Developing Societies*, *23*(1), 27-62.

Khandelwal, K., Dhillon, M., Kalyani, A. & Papneja, D. (2014). The ultimate attribution error: Does it transcend conflict? An investigation amongst Muslim adolescents in Kashmir and Delhi. *Psychological Studies, 59(4),* 427-435. (ISSN: 0033-2968)

Kool, V. K., & Agrawal, R. (2020). *Gandhi and the Psychology of Nonviolence, Volume 2.* Springer International Publishing.

Mangal, S.K. & Mangal, S. (2022) Essentials of Social Psychology: An Indian Perspective. Routledge

Mohanty, A. K., (2010). Languages, Inequality and Marginalization: Implications of the double divide in Indian multilingualism. *International Journal of the Sociology of Language, 205,* 131-154

Mikkelson, B. (1995). *Methods for Development Work and Research: A Guide for Practitioners.* New Delhi: Sage.

Misra, G., & Tripathi, K. N. (2004). Psychological dimensions of poverty and deprivation. In J. Pandey (Ed.), *Psychology in India revisited – Developments in the discipline* (Applied social and organizational psychology, Vol. 3, pp. 118–215). New Delhi: Sage.

Pandey, J., & Singh, P. (2005). Social psychology in India: Social roots and development. *International Journal of Psychology*, *40*(4), 239-253.

Priya, K. R. (2002). Suffering and healing among the survivors of Bhuj earthquake. *Psychological Studies, 47*(1-3), 106–112.

Schneider, F.W., Gruman, A., Coults, L. M. (Eds.). (2012). *Applied Social Psychology: Understanding and Addressing Social and Practical Problems.* New Delhi: Sage Publications.

Schultz, P. W. (2014). Strategies for promoting pro-environmental behaviour. *European Psychologist. 19(2),* 107–117

Vindhya, U. (2007). Quality of women's lives in India: Some findings from two decades of psychological research on gender. *Feminism & Psychology*, *17*(3), 337-356.

Additional Readings (if any)

Ahuja, K. K., Dhillon, M., Juneja, A., Deepak, S. & Srivastava, G. (2019). Subverting Heteronormativity: An Intervention to Foster Positive Attitudes toward Homosexuality Among Indian College Students. *Journal of Homosexuality, 66(6),* 746-768. DOI: 10.1080/00918369.2018.1484230

Apollo, M., Wengel, Y., Schänzel, H., & Musa, G. (2020). Hinduism, ecological conservation, and public health: What are the health hazards for religious tourists at Hindu temples?. *Religions*, *11*(8), 416.

Kloos, B., Hill, J., Thomas, E., Wandersman, A., Elias, M. J. (2012). C*ommunity Psychology: Linking Individuals and Communities.* Boston, MA: Cengage Learning.

Nandy, A. (2002). The beautiful, expanding future of poverty: popular economics as a psychological defense. *International Studies Review*, *4*(2), 107-121.

Preston, J. L., & Baimel, A. (2021). Towards a psychology of religion and the environment. *Current Opinion in Psychology*, *40*, 145-149.

Renugadevi, R. (2012). Environmental ethics in the Hindu Vedas and Puranas in India. *African Journal of History and Culture, 4(1),* 1-3.

Steg, L., Keizer, K., Buunk, A. P., & Rothengatter, T. (Eds.). (2017). *Applied social psychology*. Cambridge University Press.

Tripathi, R. C., Kumar, R., & Tripathi, V. N. (2019). When the advantaged feel victimised: The case of Hindus in India. *Psychology and Developing Societies*, *31*(1), 31-55.

Vindhya, U., Swain, S., Kapse, P., & Sule, N. (2022). Farmers' Suicides and Psychosocial Intervention. *Psychology and Developing Societies*, *34*(1), 104-124

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE DSE-2 COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE-1 Social Behaviour and Group Interactions	**4**	**3**	**1**	**0**	**Class XII Pass**	**Nil**

Learning Objectives

The Learning Objectives of this course are as follows:

- To develop an understanding of verbal and nonverbal communication in the social context and appreciate the role of culture in social behavior.
- To develop conceptual knowledge of interpersonal relationships and prejudiced attitudes.
- To understand how social influences affect the behavior of individuals,
- To introduce the concept of group behavior and group decision making.

Learning outcomes

The Learning Outcomes of this course are as follows:
After completing the course, the students will be able to:

- Understand the importance of verbal and nonverbal communication.
- Develop an awareness about underlying factors for interpersonal attraction and targets and effects of prejudice.
- Understand the effect of social influences on individuals' behaviour.
- Locate social thought and behaviour in the cultural context.
- Acquire knowledge about the concept of group, as well as interaction and decision making in groups.

SYLLABUS OF DSE-1

UNIT – I (4 Weeks)
Communication: language and nonverbal communication; Culture: locating culture in social psychology, culture and history, culture, thought, and behavior, contact between cultures.

UNIT – II (5 Weeks)
Interpersonal Relationship: evolution and attraction, what increases liking, attraction, and rewards; Prejudice: Nature and dimensions, prejudiced attitudes, targets of prejudice, effects of prejudice.

UNIT – III (3 Weeks)
Social Influence Processes: obedience, compliance, and conformity

UNIT – IV (3 Weeks)

Group Processes and Decision Making: basic features of groups (status, norms, roles, cohesiveness), group interaction (facilitation, loafing); group decision making: rules governing group decisions, brainstorming, group memory, groupthink, group polarization.

Tutorial Component – 15 Hrs.

Suggestive Tutorial Activities

- Group Discussions
- Presentations of latest research reviews related to the topics covered in the syllabus.
- Role play
- Study of social behaviour and group interactions through observation, interviews, surveys etc.
- Examination of social phenomena in real life through case study analyses
- Understanding of social behaviour and group processes through media analyses, such as, movies, advertisements, cartoons, serials, songs, etc.
- Problem solving exercises for the existing social issues.
- Quizzes and creative writing.

The above list is a suggested one and not an exhaustive list of Tutorial Activities.

Practical component (if any) - NIL

Essential/recommended readings

Branscombe, N.R., & Baron, R.A., (2023). *Social Psychology*, 15th Ed. New Delhi: Pearson.
Franzoi, S.L. (2009). *Social Psychology* (5th Ed.). New York: McGraw-Hill.
Hogg, M. &Vaughan, G.M. (2022*). Social Psychology*, 9th Ed. Pearson
Taylor, S.E., Peplau, L.A. & Sears, D.O. (2006). *Social Psychology* (12th Ed.). New Delhi: Pearson.

Suggestive readings

Baumeister, R.F. & Bushman, B.J. (2018). *Social Psychology and Human Nature*. New Delhi: Cengage Learning.
Forsyth, D. R. (2019). Group Dynamics, 7th Edition, Boston, Cengage.
Mishra, A.K., Akoijam, A.B. & Misra, G. (2009). Social psychological perspectives on self and identity. In G. Misra (ed.) Psychology in India, Vth ICSSR Survey of Psychology. New Delhi: Pearson.
Smith, P. B., & Bond, M. H. (1999). Social psychology: Across cultures (2nd Ed.). Allyn & Bacon.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE DSE-2 COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE-2 Development of Indian Psychological Thought	**4**	**3**	**1**	**0**	**Class XII Pass**	**Nil**

Learning Objectives

The Learning Objectives of this course are as follows:

- To develop an understanding of the concepts of Indian psychological thought.
- To understand the process of self and personality from a developmental perspective and its involvement in health and healing.
- To facilitate an understanding into mapping selfhood in the context of relationships, motivation, action and agency.

Learning outcomes

The Learning Outcomes of this course are as follows:

- To formulate strategies to address issues in therapeutic, educational and organizational settings from the indigenous Indian perspective.

SYLLABUS OF DSE-2

UNIT – I **(12 Hours)**
Introduction: Core Components of Indian Psychological Thought, Consciousness, Self in Indian Psychology: *Upanishadic* view.

UNIT – II **(15 Hours)**
Self Development: Evolution of self. Emotions and their transformation in Indian Psychology, Meaning in Life: Indian perspective.

UNIT – III **(9 Hours)**
Karma Theory: Concept of Karma Yoga in the *Bhagvad Gita* in relation to *Jnana* and *Bhakti Yoga.*

UNIT – IV **(9 Hours)**
Applications of Indian Psychology: Counselling, education, health & organizations.

Tutorial Component – 15 Hrs.

Suggestive Tutorial Activities

- Literature review

- Yoga and meditative exercises
- Using secondary data sources

The above list is a suggested one and not an exhaustive list of Tutorial Activities.

Practical component (if any) - NIL

Essential/recommended readings

Bhawuk, D, (2011). Spirituality and Indian Psychology: Lessons from the Bhagavad Gita. New Delhi: Springer.

Cornelisson, M., Misra, G. & Varma, S. (2013). Foundations and Applications of Indian Psychology. New Delhi: Pearson.

Rao, K, R. & Paranjpe, A.C. (2017). Psychology in the Indian Tradition. New Delhi: D.K. Printworld.

Rao, K, R., Paranjpe, A.C. & Dalal, A.K. (Eds.) (2008). Handbook of Indian Psychology. New Delhi: Cambridge University Press.

Rama, S. (2007). Perennial Psychology of the Bhagad Gita. New Delhi: Himalayan Institute Press.

Suggestive readings

Dalal, A. S. (Ed.) (2001). Living Within. Pondicherry: Sri Aurobindo Ashram Trust.

Hiriyanna, M. (2000). The Essentials of Indian Philosophy. New Delhi: Motilal Banarsidas Publishers.

Yogananda (146/1975). Autobiography of a Yogi. Bombay: Jaico.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES
Offered by Department of Psychology

GENERIC ELECTIVE (GE) COURSES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE GE-9 COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisiteof the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE-9 Basics of Social Psychology	**4**	**3**	**1**	**0**	**Class XII Pass**	**Nil**

Learning Objectives

- To define social psychology and describe its origins as a separate discipline withinpsychology.
- To develop an understanding of cognitions, and actions of oneself and others in thesocial and cultural context.
- To discuss the relationship between the person and the situation and its influence onattitudes, and social influence processes.

Learning outcomes

- Define social psychology and related terminology.
- Identify and evaluate the current and historical research, and research methods of social psychology, including ethical considerations.
- Apply social psychological principles to real-world issues

SYLLABUS OF GE-9

Unit I **(11 Hours)**

Introduction to Social Psychology: Nature, Scope, History, Methods of research, Social Psychology in India, and Current Trends.

Unit II **(11 Hours)**

Person Perception & Social Cognition: Social Schemas, Heuristics, Attribution: Types and theories.

Unit III **(11 Hours)**

Attitudes: Structure, Characteristics, Formation, Attitude-Behaviour Link, Attitude change

Unit IV **(12 Hours)**

Social Influence Processes: Compliance: principles and tactics; Conformity: Classic studies and recent trends; Obedience: factors affecting obedience.

Tutorial Component – 15 Hrs.

- Group Discussions
- Book Review
- Class Presentations
- Group Projects
- Media Analysis (Movies, documentaries, serials, songs, advertisements, social media
- posts)
- Any creative production (group activity)

The above list is a suggested one and not an exhaustive list of Tutorial Activities.

Practical Component – NIL

Essential/recommended readings

Baumeister, R. F., & Bushman, B. J. (2018). *Social Psychology and Human Nature*. New Delhi:Cengage Learning.

Branscombe, N. R., & Baron, R. A. (2023). *Social Psychology Fifteenth Global Edition*. Pearson Education Limited.

Dalal, A. & Misra, G.(2002)Social Psychology in India : Evolution and Emerging trends in New Directions in Indian Psychology (vol. 1: Social Psychology). In A. K. Dalal & G. Misra ((Eds.). New Delhi: Sage

Hogg, M., & Vaughan, G. M. (2018). *Social Psychology*. Pearson Education Limited.

Misra, G. (2009). Psychology in India: Theoretical and Methodological Developments (ICSSR Survey of Advances in Research), Vol 4. New Delhi: Pearson.

Pandey, J. & Singh, P. (2005) Social psychology in India: Social roots and development. International Journal of Psychology, 40(4), 239-253.

Suggested Readings

Misra, G., Sanyal, N., & De, S. (2021). Psychology in Modern India Historical, Methodological, and Future Perspectives. Springer

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE GE-10 COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE-10 Youth and Mental Health	**4**	**3**	**1**	**0**	**Class XII Pass**	**Nil**

Learning Objectives

The Learning Objectives of this course are as follows:

- To develop understanding of common risk factors affecting mental health of young persons
- To develop knowledge of signs and symptoms of various disorders that are prevalent amongst youth
- To help students appreciate the competencies and strategies to build the competencies for positive youth development

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, the student will be able to understand the ecological perspective on the risk and protective factors affecting mental health amongst young people.
- By studying this course, students will be able to identify and distinguish amongst widely prevalent disorders afflicting youth.

SYLLABUS OF GE-10

UNIT – I **(12 Hours)**
Mental Health Determiners in Youth – Ecological Model of Human Development; Risk Factors: Familial Dysfunction; Peer Pressure and Unpopularity; Academic and Career Related Stress; Bullying and Sexual Violence; Poverty and Discrimination; Media Saturation

UNIT – II **(12 Hours)**
Internalizing Problems amongst Youth – Signs and symptoms of Anxiety, Depression and Suicide, Eating Disorders (Anorexia Nervosa, Bulimia Nervosa), Gender Dysphoria, Self harm behaviours

UNIT – III **(11 Hours)**
Externalizing Problems amongst Youth – Crime and Delinquency, Signs and symptoms of Substance use disorder, Internet and Social Media addiction

UNIT – IV **(10 Hours)**
Positive Youth Development –5 C's model of Positive Youth Development, Strategies of promoting Positive Youth Development

Tutorial Component – 15 Hrs.

- Presentation of research review to understand the bio-psychosocial etiology of disorders
- Watching documentaries/films to understand the lived experience of psychological problems
- Group discussions on selected texts (fiction/non fiction) to understand mental health problems
- Self exploration and self enhancement exercises

The above list is a suggested one and not an exhaustive list of Tutorial Activities.

Practical Component – NIL

Essential/recommended readings

Arnett, J.J. (2013). Adolescence and emerging adulthood: A cultural approach, 5th ed. New Jersey: Pearson

Butcher, J.N., Hooly, J. M, Mineka, S., & Dwivedi, C.B (2017). Abnormal Psychology. New Delhi: Pearson.

Bronfenbrenner, U., & Morris, P. A. (2006). The bioecological model of human development. InW. Damon (Series Ed.) & R. M. Lerner (Vol. Ed.), Handbook of child psychology: Theoretical models of human development (pp. 793–828). New York, NY: Wiley.

Geldhof, G. J., Bowers, E. P., Mueller, M. K., Napolitano, C. M., Callina, K. S., Walsh, K. J., Lerner, J. V., & Lerner, R. M. (2015). The five Cs model of positive youth development. In E. P. Bowers, G. J. Geldhof, S. K. Johnson, L. J. Hilliard, R. M. Hershberg, J. V. Lerner, & R. M. Lerner (Eds.), *Promoting positive youth development: Lessons from the 4-H study* (pp. 161–186). Springer International Publishing.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE GE-11

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE-11 Foundations of Inquiry in Psychology	4	3	0	1	Class XII Pass	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce students to the paradigmatic foundations of psychological inquiry
- To present the essential considerations of design, rigour and ethics of knowledge generation through psychological inquiry
- To acquaint students of the quantitative and qualitative approaches of inquiry
- To give an overview of the different methods of data generation for psychological inquiry

Learning outcomes

After doing this course, the students will be able to

- Critically analyse and compare paradigmatic frameworks and their underlying assumptions and contributions to the field of psychology
- Understand the ways in which the issues of ethics and rigour are addressed while engaging in psychological inquiries
- Appreciate the nuances of the quantitative and qualitative approaches of psychological inquiry
- Select and use the suitable methods of data generation for psychological inquiries

Unit – I : Foundational Assumptions of Psychological Inquiry (18 Hours)

- Positivist & Post-positivist, Interpretivist, and Critical Paradigm
- Quantitative & Qualitative approaches to inquiry
- Integrating paradigms to advance interdisciplinarity

UNIT – II: Fundamentals of Design in Inquiry (12 Hours)

- Types of designs in psychological inquiry-experimental, correlational, cross-sectional, longitudinal, observational
- Ethics- Balancing scientific rigour with ethical considerations, Guidelines for ethical inquiry

UNIT – III: Data Gathering Techniques (15 Hours)

- Field Experiments
- Survey
- Interview
- Case Study

- Using secondary data and documents

Suggestive Practicals **(30 hours)**

- Students may be given different research works each rooted in one paradigm and may be asked to identify and illustrate the basic assumptions of these paradigms.
- Students may be asked to design a study with field experiment/interview/ case study as a method of data collection. The data obtained could be analysed using a suitable technique of data analysis.
- Students may be asked to design a survey based study which may involve designing a questionnaire, collecting and analysing the data.
- Students can design a study using secondary data sources such as archives, blogs, life-history documents, biographies, movies, documentaries, short stories, advertisements, newspaper articles, policy documents, speeches etc. They can then analyse the secondary data with a suitable method of data analysis.

Essential/recommended readings

Bansal, P. (2019). *Psychology: Debates and Controversies.* SAGE Publications India Pvt, Limited.

Bryman, A. (2004). *Quantity and Quality in Social Research.* London, UK: Routledge.

Coolican, H. (2006). *Introduction to Research Methodology in Psychology.* London: Hodder Arnold

Denzin, N. K., & Lincoln, Y. S. (2018). The Sage Handbook of Qualitative Research. 5th Ed. Sage.

Gall, M., Gall, J., & Borg, R. (2007). Educational research: An introduction (8th ed.). New York, NY: Pearson Education

Howitt, D., & Cramer, D. (2014). *Introduction to Research Methods in Psychology.* United Kingdom: Pearson.

Lammers, W. J., & Badia, P. (2005). *Fundamentals of Behavioral Research.* United States of America: Thompson/Wadsworth.

Lincoln, Y. S., Lynham, S. A., & Guba, E. G. (2011). *Paradigmatic controversies, contradictions, and emerging confluences, revisited.* The Sage handbook of qualitative research. 4(2), 97-128.

Neuman, W.L. (2014). *Social Research Methods: Qualitative and Quantitative Approaches.* Boston: Pearson Education.

Suggestive readings

Pelham, B. W. (2018). *Conducting research in psychology: Measuring the weight of smoke.* 5 th Ed. Sage Publications Inc.

Schweigert, W. A. (2020). *Research Methods in Psychology: A Handbook.* Illinois. Waveland Press, Inc.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.A. (HONS.) APPLIED PSYCHOLOGY

Category I

(B.A. Honours in Applied Psychology in three years)

DISCIPLINE SPECIFIC CORE COURSE 07: Psychology Of Positive Living

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE – REQUISITES OF THE COURSE

Course title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre – requisite of the Course (if Any)
		Lecture	Tutorial	Practical/Practice		
DSC- 07 PSYCHOLOGY OF POSITIVE LIVING	4	3	0	1	Class 12 Pass	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- Understanding the meaning and emergence of the field of positive psychology in the west and in the east.
- Learning the various pathways through which cognitive states and processes like optimism, Hope and mindfulness influence well-being.
- Understanding the applications of positive psychology in various context.

Learning Outcomes

The learning outcomes of this course are as follows:

- After the completion of the course the students will be able to:
- Gain deeper insights into the emergence of the field of Positive Psychology and its progression in the west and east, particularly in India.
- Have a better understanding of cognitive states like Optimism, Hope and Mindfulness in
- Positive Psychology.
- Comprehend, appreciate and implement the positive psychological concepts in real world.

SYLLABUS OF DSC- 07

UNIT-I **(15 Hours)**

Introduction: Meaning and goals of Positive Psychology; Historical development and culturally embedded understanding of the field [An overview of Hinduism, Buddhism and Sufism].

UNIT– II **(15 Hours)**

Positive Cognitive States and Processes: Optimism [Seligman theory and Scheier and Carver's perspective; scales of measurement and outcomes] and Hope[Snyder theory, scales for measurement and outcomes], Mindfulness [Jon Kabat-Zinn perspective and Vipassana meditation].

UNIT- III **(15 Hours)**

Applying Positive Psychology in real life: Positive psychology in education (components, care, trust & respect

for diversity), Positive psychology at workplace (gainful employment), Community (Me/We balance).

Practical component – **30 Hrs.**

1. One practicum based upon Experiential exercise/s on any of the units given above
2. One practicum based on field study or Lab study/experiment from any of the units given Above

Tutorial component – NIL

Essential/Recommended Readings:

Cassaniti, J.L. (2014). Buddhism and Positive Psychology. In: Kim-Prieto, C. (eds) Religion and Spirituality Across Cultures. Cross-Cultural Advancements in Positive Psychology, vol 9. Springer, Dordrecht. https://doi.org/10.1007/978-94-017-8950-9_6

Varma, S. (2009). Summary of Buddhism. Unpublished Paper

Ghosh and Deb (2016). Positive Psychology Progress in India: Accomplishments and Pathways Ahead. Psychological Studies. Springer

Pradhan, M (2019). Positive psychology in context with Indian Heritage. Indian Journal of Community Psychology

Kumar, Kiran. (2015).Indian Perspectives and Positive Psychology. In Upadesh Kumar, Archana, & Vijay Prakash (Eds.) (2015). Positive Psychology: Applications in Work, Health and Well-being. New Delhi: Pearson India. Pp. 1-18

Frager, Robert & Fadiman, James. (2013). Personality and Personal Growth. Pearson Education.

Carr, A. (2004). Positive Psychology: The Science of Happiness and Human Strength. London, UK: Routledge.

Snyder, C. R., & Lopez, S. (Eds.) (2002). Handbook of Positive Psychology. New York: Oxford University Press.

Suggestive Readings:

Dhar, P.L. No I, No Problems: The Quintessence of Buddhist Psychology of Awakening. Psychol Stud 56, 398 (2011). https://doi.org/10.1007/s12646-011-0111-0

Dalal, A. K., & Misra, G. (2010). The Core and Context of Indian Psychology. Psychology and Developing Societies, 22(1), 121–155. https://doi.org/10.1177/097133360902200105

Shirazi, B.A.K. (2014). The Sufi path of self-transformation. In Cornelissen, M, MisraG,

Varma, S (Eds). Foundations and applications of Indian psychology. Pearson Education India. (Sufism)

Varma S. (2017). Non-violent ways of relating: Love, healing, and beyond. In W. Shukla [Eds.], Annals of Hindi Studies. New Delhi: JBS Publications India.

Baumgardner, S.R., & Crothers, M.K. (2010). Positive Psychology. Upper Saddle River, New Jersey: Prentice Hall.

Snyder, C.R., & Lopez, S.J.(2007). Positive Psychology: The Scientific and Practical Exploration of Human Strengths. Thousand Oaks, CA: Sage.

Peterson, C. (2006). A Primer in Positive Psychology. New York: Oxford University Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 8: BIOPSYCHOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC- 8 Biopsychology	4	3	1	0	**Passed Class 12th**	Nil

This DSC is offered in BA (H) Psychology of Semester-I. The syllabus of this DSC may be seen at the link mentioned below :

du.ac.in/uploads/24-11-2022-Artsfaculty.pdf

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-9 **Basic Statistics in Psychology**	**4**	**3**	**0**	**1**	**12th Pass**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- The basic level course will assist the students in grasping the fundamental research and techniques of descriptive statistics used in social sciences. Additionally, it will aid them in developing the conceptual foundations of correlation, normal probability curve and acquiring appropriate computation skills.
- Calculate measures of central tendency, variability, and score transformations.
- Define and calculate correlation coefficients and understand the concepts of prediction and regression.
- Describe the normal curve and use the curve to solve various problems including probability.

Learning outcomes

By studying this course, students will be able to:

- Understand fundamental research, statistical techniques and analyse simple data.
- Calculate the statistics necessary to solve problems using measures of central tendency, correlation coefficients and simple regression.
- Communicate the meaning of statistical analyses in everyday language and professional formats (e.g., graphs and tables).

SYLLABUS OF DSC 06

UNIT – I **(15 Hours)**

Introduction to Descriptive Statistics: Level of measurement; Measures of central tendency: mean, median and mode (characteristics and computation); Measures of variability: range, semi-interquartile range, standard deviation, variance (characteristics and computation)

UNIT – II **(15 Hours)**

Score transformations: standard scores and percentile ranks (characteristics and computation); Normal probability curve: Characteristics and application of normal probability curve.

UNIT – III **(15 Hours)**

Analysis of relationships: Meaning, direction and degree of correlation; Factors affecting Pearson's correlation; Computation of correlation: Pearson's coefficient correlation and Spearman's rank order correlation; Prediction and Simple Regression (Concept and calculation)

Practical component (if any) - (30 Hours)

Total of two practicums based on statistical analysis of data:

- One practicum from Unit I based on any one of the statistics: measures of central Measures of central tendency: mean, median and mode; Measures of variability: range, semi-interquartile range, standard deviation, variance (characteristics and computation)
- One practicum from Unit III based on analysis of relationship (correlation or prediction)

Data sets available online or those from other sources can be used for this purpose. The Practicum should focus on conceptual understanding of the statistical techniques used.

Essential/recommended readings

Aron, A., Aron, E.N. & Coups, E.J. (2007). *Statistics for Psychology.* (4th Ed.) India: Pearson Education

King, B.M., Rosopa, P.J., & Minium, E.W. (2007). *Statistical Reasoning in the Behavioral Sciences.* (7th Ed.) USA: John Wiley.

Mangal, S.K. (2010). Statistics in Psychology and Education (2nd Ed.). PHI Learning.

Suggestive readings

Garrett, H.E. (1973). *Statistics in Psychology and Education.* Bombay: Vakils, Feffer and Simons Private Ltd.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE (DSE) COURSES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE DSE-1COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE-1 Youth Psychology	4	3	0	1	12th Pass	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- To define youth psychology and emphasize upon studying the relevance and concerns of the youth in the contemporary world.
- To gain a deeper understanding for the various issues and challenges faced by the youth.
- To discuss the positive aspects of youth development.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Appreciate the term 'youth', 'youth psychology' in the light of various socio-cultural influences; about the phases in the development of youth identity; and the need for study in the present day world.
- Develop an understanding for the risk behaviors youth engage in, the challenges they face related to employment, education; health, body image and being in transition.
- Understand about the positive aspects of youth development and its related constructs of Responsibility, social capital, Citizenship and political engagement.

SYLLABUS OF DSE-1

UNIT – I **(15 Hours)**

Introduction: Defining youth; Youth across cultures; Formulation of youth identity; Concerns and relevance of youth psychology.

UNIT – II **(15 Hours)**

Issues and challenges: Youth and risk behaviors (Drug abuse, delinquency, sexuality & suicide risk); Employment, education; Health and Body image Youth in transition.

UNIT – III **(15 Hours)**

Youth and sustainable social well-being: Positive youth development: Responsibility, social capital, Citizenship and political engagement.

Practical component **(30 Hours)**

Any Two Practicum based on above mention topics.

Tutorial Component- NIL

Essential/recommended readings

Brown, B. B., R. Larson, & T. S. Saraswathi. (2002).The world's youth: Adolescence in eight regions of the globe. New York: Cambridge University Press. (Unit 1: Chapter 1)

Edward Elgar, Rew, L. (2005). Adolescent health: A multidisciplinary approach to theory, research and intervention. India, Sage. (Unit 3: Chapter 6)

Furlong, A.(2013) Youth Studies: An Introduction. Routledge, New York. (Unit 1: Chapter1 & Chapter 6) Unit 3 Chapter 10, Chapter 12)

Furlong, A.(2013) Hand Book of Youth and young adulthood. Routledge, New York.(Unit 3: Chapter 9, Chapter 36 & 37),

Suggestive readings

Jonathan,I., Thomas, K., &Ramaswamy,S.(2002). Social capital and wellbeing in developing countries: An introduction. In Jonathan Isham, Thomas Kelly, and Sunder Ramaswamy, eds. Social capital and economic development: Well-Being in developing countries. Northampton, MA (Unit 3)

Lernere, R.M;Napolitano,C.M; Boyd,M.J;Muller,M.K.,& Callina K.S. (2014)Mentoring Positive Youth Development in Bous, D;and Karcher, M. j.(Eds.) Handbook of Youth Mentoring (Second edition) Sage.

Dyck,R.(2015).Youth Education and Social Responsibility. Systems Research and Behavioral Science Syst. Res. 32, 168–174 (2015) Published online 24 March 2014 in Wiley Online Library wileyonlinelibrary.com) DOI: 10.1002/sres.2256

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE DSE-2COURSE

Course title& Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE-2 Introduction to Indian Psychology	**4**	**3**	**1**	**0**	**12th Pass**	**Nil**

Learning Objectives

The Learning Objectives of this course are as follows:

- To acquaint the student with the nature and scope of Indian Psychology.
- To acquaint the student with significant schools of Indian Psychology and its applications.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Students will be able to apply the knowledge of Indian Psychology in making sense of lived experience in India, and understand the deeper psycho-spiritual significance of the deeper meaning of various customs and rituals.

- Students will be able to benefit personally from specific practices which are essential to Indian Psychology, such as meditation.

- Students will be able to apply principles of Indian Psychology in various fields such as Counseling, Organizational Behaviour, and Education.

SYLLABUS OF DSE-2

UNIT – I **(15 Hours)**

Definition, nature and scope of Indian Psychology, Historical foundations and growth of the discipline.

UNIT – II **(15 Hours)**

An overview to Three major schools of Indian Psychology: Yoga as a path to self transformation, Buddhism as a way out of suffering, and Sufism as a path of love and self transformation.

UNIT – III **(15 Hours)**

Indian Psychology in the folk tradition: Sant Kabir Das - Social critique, inclusiveness: equality & justice. *Bhakti*: love & healing.

UNIT – IV **(15 Hours)**

Some applications of Indian Psychology –Psychotherapy (mainstream as well as folk traditions, Organizational Behaviour, and Education

Tutorial Component - 15 Hrs.

- Psychological insight from alternative sources: text, songs, documentary, experiential, ancient sources
- Introducing Sufism through Music; Guided Meditation:
- Documentary by Shabnam Virmani- Had Anhad: Journeys of Ram and Kabir
- Discussion on cultural healing technique; Screening of Movie Crazy Wise showing Alternative ways of healing; Discussion on limitation of traditional teaching and move towards Integral Education

Practical component - Nil

Essential/recommended readings

Cornelissen, M., Misra, G. & Varma S. (Eds.) (2011). Chapters 3, 4, 7 & 12. Foundations of Indian Psychology, Vol. 2: Practical Applications New Delhi: Pearson.

Cornelissen, M., Misra, G. & Varma S. (Eds.) (2014). Introduction. Foundations and Applications of Indian Psychology. New Delhi: Pearson.

Frager, R. & Fadiman, J. (2013). Chapters 13 & 15. Personality and Personal Growth. Pearson: Boston

Smith, Huston (1997). The world's religions. New Delhi: Harper Collins India

Varma S. (2017). Non-violent ways of relating: Love, healing, and beyond. In W. Shukla [Ed.], Annals of Hindi Studies. New Delhi: JBS Publications India

Suggestive readings

Cornelissen, M. (2011). What is human knowledge? A reflection based on the work of Sri Aurobindo. In M. Cornelissen, G. Misra, & S. Varma (Eds.), Foundations of Indian Psychology, Vol. I. New Delhi: Springer.

Hedayetullah, M. (2009). Kabir: The apostle of Hindu-Muslim unity. Delhi: Motilal Banarsidass.

Paranjpe, A.C. (1998). Self and identity in modern psychology and Indian thought. New York: Plenum.

Peck, Scott M. (1978). The road less traveled. London: Arrow Books. Rogers, C. R. (1961). On becoming a person. Boston: Houghton Mifflin.

Shweder, R. A. & Haidt, J.(2000). The cultural psychology of emotions: Ancient and new. The cultural psychology of emotions. In M. Lewis & J. Hoviland, (Eds.) Handbook of emotions. (pp. 397-414). New York: Guilford Press.

Sinha, J. (1961). Indian psychology: Emotion and will (vol. 3) Calcutta: Sinha Publishing
Varma, S. (2005). From the self to the Self: An exposition on personality based on the works of Sri Aurobindo. In K. R. Rao, & S. M. Bhatt (Eds.), Towards a spiritual psychology. New Delhi: Samvad

Virmani, S. (2010). Walking with Kabir. Seminar, January Issue, # 605.

Ziad, H., Rao, V. &Virmani, S. (2008). In every body Kabir. Bangalore: Shrishti.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES
Offered by Department of Psychology

GENERIC ELECTIVE (GE) COURSES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisiteof the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE-9 Basics of Social Psychology	4	3	1	0	Class XII Pass	Nil

Learning Objectives

- To define social psychology and describe its origins as a separate discipline withinpsychology.
- To develop an understanding of cognitions, and actions of oneself and others in the social and cultural context.
- To discuss the relationship between the person and the situation and its influence onattitudes, and social influence processes.

Learning outcomes

- Define social psychology and related terminology.
- Identify and evaluate the current and historical research, and research methods of social psychology, including ethical considerations.
- Apply social psychological principles to real-world issues

SYLLABUS OF GE-9

Unit I **(11 Hours)**

Introduction to Social Psychology: Nature, Scope, History, Methods of research,Social Psychology in India, and Current Trends.

Unit II **(11 Hours)**

Person Perception & Social Cognition: Social Schemas, Heuristics, Attribution: Types and theories.

Unit III **(11 Hours)**

Attitudes: Structure, Characteristics, Formation, Attitude-Behaviour Link, Attitude change

Unit IV **(12 Hours)**

Social Influence Processes: Compliance: principles and tactics; Conformity: Classic studies and recent trends; Obedience: factors affecting obedience.

Tutorial Component – 15 Hrs.

- Group Discussions
- Book Review
- Class Presentations
- Group Projects
- Media Analysis (Movies, documentaries, serials, songs, advertisements, social media
- posts)
- Any creative production (group activity)

The above list is a suggested one and not an exhaustive list of Tutorial Activities.

Practical Component – NIL

Essential/recommended readings

Baumeister, R. F., & Bushman, B. J. (2018). *Social Psychology and Human Nature*. New Delhi: Cengage Learning.

Branscombe, N. R., & Baron, R. A. (2023). *Social Psychology Fifteenth Global Edition*. Pearson Education Limited.

Dalal, A. & Misra, G.(2002)Social Psychology in India : Evolution and Emerging Trends in New Directions in Indian Psychology (vol. 1: Social Psychology). In A. K. Dalal & G.Misra ((Eds.). New Delhi: Sage

Hogg, M., & Vaughan, G. M. (2018). *Social Psychology*. Pearson Education Limited.

Misra, G. (2009). Psychology in India: Theoretical and Methodological Developments (ICSSRSurvey of Advances in Research), Vol 4. New Delhi: Pearson.

Pandey, J. & Singh, P. (2005) Social psychology in India: Social roots and development.International Journal of Psychology, 40(4), 239-253.

Suggested Readings

Misra, G., Sanyal, N., & De, S. (2021). Psychology in Modern India Historical, Methodological,and Future Perspectives. Springer

Note: Examination scheme and mode shall be as prescribed by the ExaminationBranch, University of Delhi, from time to time.

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE GE-10 COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE-10 Youth and Mental Health	**4**	**3**	**1**	**0**	**Class XII Pass**	**Nil**

Learning Objectives

The Learning Objectives of this course are as follows:

- To develop understanding of common risk factors affecting mental health of young persons
- To develop knowledge of signs and symptoms of various disorders that are prevalent amongst youth
- To help students appreciate the competencies and strategies to build the competencies for positive youth development

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, the student will be able to understand the ecological perspective on the risk and protective factors affecting mental health amongst young people.
- By studying this course, students will be able to identify and distinguish amongst widely prevalent disorders afflicting youth.

SYLLABUS OF GE-10

UNIT – I **(12 Hours)**
Mental Health Determiners in Youth – Ecological Model of Human Development; Risk Factors: Familial Dysfunction; Peer Pressure and Unpopularity; Academic and Career Related Stress; Bullying and Sexual Violence; Poverty and Discrimination; Media Saturation

UNIT – II **(12 Hours)**
Internalizing Problems amongst Youth – Signs and symptoms of Anxiety, Depression and Suicide, Eating Disorders (Anorexia Nervosa, Bulimia Nervosa), Gender Dysphoria, Self harm behaviours

UNIT – III **(11 Hours)**
Externalizing Problems amongst Youth – Crime and Delinquency, Signs and symptoms of Substance use disorder, Internet and Social Media addiction

UNIT – IV **(10 Hours)**
Positive Youth Development –5 C's model of Positive Youth Development, Strategies of promoting Positive Youth Development

Tutorial Component – 15 Hrs.

- Presentation of research review to understand the bio-psychosocial etiology of disorders
- Watching documentaries/films to understand the lived experience of psychological problems
- Group discussions on selected texts (fiction/non fiction) to understand mental health problems
- Self exploration and self enhancement exercises

The above list is a suggested one and not an exhaustive list of Tutorial Activities.

Practical Component – NIL

Essential/recommended readings

Arnett, J.J. (2013). Adolescence and emerging adulthood: A cultural approach, 5th ed. New Jersey: Pearson

Butcher, J.N., Hooly, J. M, Mineka, S., & Dwivedi, C.B (2017). Abnormal Psychology. New Delhi: Pearson.

Bronfenbrenner, U., & Morris, P. A. (2006). The bioecological model of human development. InW. Damon (Series Ed.) & R. M. Lerner (Vol. Ed.), Handbook of child psychology: Theoretical models of human development (pp. 793–828). New York, NY: Wiley.

Geldhof, G. J., Bowers, E. P., Mueller, M. K., Napolitano, C. M., Callina, K. S., Walsh, K. J., Lerner, J. V., & Lerner, R. M. (2015). The five Cs model of positive youth development. In E. P. Bowers, G. J. Geldhof, S. K. Johnson, L. J. Hilliard, R. M. Hershberg, J. V. Lerner, & R. M. Lerner (Eds.), *Promoting positive youth development: Lessons from the 4-H study* (pp. 161–186). Springer International Publishing.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE GE-11

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE-11 Foundations of Inquiry in Psychology	**4**	**3**	**0**	**1**	**Class XII Pass**	**Nil**

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce students to the paradigmatic foundations of psychological inquiry
- To present the essential considerations of design, rigour and ethics of knowledge generation through psychological inquiry
- To acquaint students of the quantitative and qualitative approaches of inquiry
- To give an overview of the different methods of data generation for psychological inquiry

Learning outcomes

After doing this course, the students will be able to

- Critically analyse and compare paradigmatic frameworks and their underlying assumptions and contributions to the field of psychology
- Understand the ways in which the issues of ethics and rigour are addressed while engaging in psychological inquiries
- Appreciate the nuances of the quantitative and qualitative approaches of psychological inquiry
- Select and use the suitable methods of data generation for psychological inquiries

Unit – I : Foundational Assumptions of Psychological Inquiry (18 Hours)

- Positivist & Post-positivist, Interpretivist, and Critical Paradigm
- Quantitative & Qualitative approaches to inquiry
- Integrating paradigms to advance interdisciplinarity

UNIT – II: Fundamentals of Design in Inquiry (12 Hours)

- Types of designs in psychological inquiry-experimental, correlational, cross-sectional, longitudinal, observational
- Ethics- Balancing scientific rigour with ethical considerations, Guidelines for ethical inquiry

UNIT – III: Data Gathering Techniques (15 Hours)

- Field Experiments
- Survey
- Interview
- Case Study
- Using secondary data and documents

Suggestive Practicals **(30 hours)**

- Students may be given different research works each rooted in one paradigm and may be asked to identify and illustrate the basic assumptions of these paradigms.
- Students may be asked to design a study with field experiment/interview/ case study as a method of data collection. The data obtained could be analysed using a suitable technique of data analysis.
- Students may be asked to design a survey based study which may involve designing a questionnaire, collecting and analysing the data.
- Students can design a study using secondary data sources such as archives, blogs, life-history documents, biographies, movies, documentaries, short stories, advertisements, newspaper articles, policy documents, speeches etc. They can then analyse the secondary data with a suitable method of data analysis.

Essential/recommended readings

Bansal, P. (2019). *Psychology: Debates and Controversies.* SAGE Publications India Pvt, Limited.

Bryman, A. (2004). *Quantity and Quality in Social Research.* London, UK: Routledge.

Coolican, H. (2006). *Introduction to Research Methodology in Psychology.* London: Hodder Arnold

Denzin, N. K., & Lincoln, Y. S. (2018). The Sage Handbook of Qualitative Research. 5th Ed. Sage.

Gall, M., Gall, J., & Borg, R. (2007). Educational research: An introduction (8th ed.). New York, NY: Pearson Education

Howitt, D., & Cramer, D. (2014). *Introduction to Research Methods in Psychology.* United Kingdom: Pearson.

Lammers, W. J., & Badia, P. (2005). *Fundamentals of Behavioral Research.* United States of America: Thompson/Wadsworth.

Lincoln, Y. S., Lynham, S. A., & Guba, E. G. (2011). *Paradigmatic controversies, contradictions, and emerging confluences, revisited.* The Sage handbook of qualitative research. 4(2), 97-128.

Neuman, W.L. (2014). *Social Research Methods: Qualitative and Quantitative Approaches.* Boston: Pearson Education.

Suggestive readings

Pelham, B. W. (2018). *Conducting research in psychology: Measuring the weight of smoke.* 5 th Ed. Sage Publications Inc.

Schweigert, W. A. (2020). *Research Methods in Psychology: A Handbook.* Illinois. Waveland Press, Inc.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category II

(B. A. Programme with Psychology as Major discipline)

DISCIPLINE SPECIFIC CORE COURSE DSC-05 UNDERSTANDING MENTAL DISORDERS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC - 05 Understanding Mental Disorders	4	3	0	1	Passed Class 12th	Nil

Learning Objectives

The Learning Objectives of this course are:

- To introduce the field of abnormal/clinical psychology.
- To provide an overview of the clinical picture and etiology of the various psychological disorders.
- To orient the learners to the diagnostic criteria and the related vocabulary of major psychological disorders.

Learning Outcomes

By studying this course, students will be able to:

- Distinguish between normal and abnormal behavior and learn the criteria of determining abnormality.
- Categorize and diagnose disorders according to the current diagnostic systems (current editions of the Diagnostic and Statistical Manual of Mental Disorders and International Classification of Diseases- Mental Disorders section).
- Discriminate between the various anxiety disorders and different mood disorders.

SYLLABUS OF DSC-05

UNIT – I **(15 Hours)**

Introduction: Criteria of Abnormality, Causal Factors, Classification, Clinical Assessment.

UNIT – II **(15 Hours)**

Anxiety Disorders and Obsessive-Compulsive Disorder (Clinical Picture and Dynamics): Generalized Anxiety Disorder, Social anxiety disorder, Specific phobias, Agoraphobia; Obsessive-Compulsive Disorder.

UNIT – III **(15 Hours)**

Depressive Disorder and Bipolar Disorders (Clinical Picture and Dynamics): Major Depressive disorder, Persistent Depressive disorder, Bipolar I, Bipolar II and Cyclothymia.

PRACTICUM **(30 Hours)**

Practical Component:

Suggestive list of practicals:

1. Visual Media and/or text analysis as an approach to understanding mental disorders.
2. Using the case study approach to understanding clinical picture of mental disorders.
3. Assessment of anxiety using any psychometric test.
4. Using Review of literature to understand anxiety disorders/depression/bipolar disorders.
5. Assessment of depression using any psychometric test.

Tutorial component: NIL

Essential/recommended readings

Bansal, P. (2019). *Psychology: Debates and controversies*. New Delhi: Sage.

Barlow H. & Durand V. Mark (2014). *Abnormal psychology*: *An integrative approach.* Delhi: Cengage Learning India.

Carson, R.C., Butcher, J.N., Mineka, S. & Hooley, J.M. (2017). *Abnormal psychology*. (17thEdn) New Delhi: Pearson.

Comer, R.J. and Comer, J.S. (2021). *Abnormal psychology* (11th Ed.). New York, Macmillan International.

Diagnostic & Statistical Manual of Mental Disorders (2022). American Psychiatric Association (5th Ed. Text Revision). American Psychiatric Publishing.

Kring, A.M., Johnson, S.L., Davison, G.C. & Neale, J.M. (2014). *Abnormal psychology* (12th ed.). New Jersey: John Wiley & Sons.

Suggestive readings

Kearney, C. A. & Trull, T. J. (2012). *Abnormal psychology and life: A dimensional approach*. New Delhi: Cengage Learning.

Singh, A.K. (2016)*आधुनिकअसामान्यमनोविज्ञान*(*Modern abnormal psychology* - Hindi), Motilal Banarsidass Pvt.Ltd.

Watters, E. (2010). *Crazy like us: The globalization of the American psyche*. Simon and Schuster.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE– 06: BIOPSYCHOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-06 Biopsychology	4	3	1	0	**Passed Class 12th**	Nil

This DSC is offered in BA (H) Psychology of Semester-I. The syllabus of this DSC may be seen at the link mentioned below :

du.ac.in/uploads/24-11-2022-Artsfaculty.pdf

Category III

(B. A. Programme with Psychology as Non-Major discipline)

DISCIPLINE SPECIFIC CORE COURSE DSC-05 UNDERSTANDING MENTAL DISORDERS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC - 05 Understanding Mental Disorders	**4**	**3**	**0**	**1**	**Passed Class 12th**	**Nil**

Learning Objectives

The Learning Objectives of this course are:

- To introduce the field of abnormal/clinical psychology.
- To provide an overview of the clinical picture and etiology of the various psychological disorders.
- To orient the learners to the diagnostic criteria and the related vocabulary of major psychological disorders.

Learning Outcomes

By studying this course, students will be able to:

- Distinguish between normal and abnormal behavior and learn the criteria of determining abnormality.
- Categorize and diagnose disorders according to the current diagnostic systems (current editions of the Diagnostic and Statistical Manual of Mental Disorders and International Classification of Diseases- Mental Disorders section).
- Discriminate between the various anxiety disorders and different mood disorders.

SYLLABUS OF DSC-05

UNIT – I **(15 Hours)**

Introduction: Criteria of Abnormality, Causal Factors, Classification, Clinical Assessment.

UNIT – II **(15 Hours)**

Anxiety Disorders and Obsessive-Compulsive Disorder (Clinical Picture and Dynamics): Generalized Anxiety Disorder, Social anxiety disorder, Specific phobias, Agoraphobia; Obsessive-Compulsive Disorder.

UNIT – III **(15 Hours)**

Depressive Disorder and Bipolar Disorders (Clinical Picture and Dynamics): Major Depressive disorder, Persistent Depressive disorder, Bipolar I, Bipolar II and Cyclothymia.

PRACTICUM **(30 Hours)**

Practical Component:

Suggestive list of practicals:

1. Visual Media and/or text analysis as an approach to understanding mental disorders
2. Using the case study approach to understanding clinical picture of mental disorders.
3. Assessment of anxiety using any psychometric test.
4. Using Review of literature to understand anxiety disorders/depression/bipolar disorders.
5. Assessment of depression using any psychometric test.

Tutorial component: NIL

Essential/recommended readings

Bansal, P. (2019). *Psychology: Debates and controversies*. New Delhi: Sage.

Barlow H. & Durand V. Mark (2014). *Abnormal psychology*: *An integrative approach.* Delhi: Cengage Learning India.

Carson, R.C., Butcher, J.N., Mineka, S. & Hooley, J.M. (2017). *Abnormal psychology*. (17thEdn) New Delhi: Pearson.

Comer, R.J. and Comer, J.S. (2021). *Abnormal psychology* (11th Ed.). New York, Macmillan International.

Diagnostic & Statistical Manual of Mental Disorders (2022). American Psychiatric Association (5th Ed. Text Revision). American Psychiatric Publishing.

Kring, A.M., Johnson, S.L., Davison, G.C. & Neale, J.M. (2014). *Abnormal psychology* (12th ed.). New Jersey: John Wiley & Sons.

Suggestive readings

Kearney, C. A. & Trull, T. J. (2012). *Abnormal psychology and life: A dimensional approach*. New Delhi: Cengage Learning.

Singh, A.K. (2016)*आधुनिकअसामान्यमनोविज्ञान*(*Modern abnormal psychology* - Hindi), Motilal Banarsidass Pvt.Ltd.

Watters, E. (2010). *Crazy like us: The globalization of the American psyche*. Simon and Schuster.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF PUNJABI

Category I

Discipline Specific Courses offered by Department of Punjabi for the UG Programme with Punjabi as the Single Core Discipline

[UG Programme for Bachelor in **Punjabi (Honours)** degree in three years]

DISCIPLINE SPECIFIC CORE COURSE -7 (DSC-7)

SAHIT DE ROOP

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Sahit de Roop (DSC-7)	4	3	1	0	Class 12th pass in any subject	**Studied Punjabi up to 10th Standard** **or** ***Basic knowledge of Punjabi language***

LEARNING OBJECTIVES:

- The course is designed to analyse various genres of literature and understand their significance to culture.
- The course will develop a critical attribute of each genre to appreciate the artistry of the writer.
- It will encourage the students to appreciate the significance of stylistic and rhetorical features of the text.
- It will help them to explain and discuss the importance of different types of literary genres.

LEARNING OUTCOMES:

- The students will able to compose various types of essays and narratives dependent on reader, purpose, and message.
- They will be able to recognize formal characteristics of various literary genres.
- They will perceive and appreciate the significance of the historical and cultural context of various genres.

Unit- I ਸਾਹਿਤ ਬਾਰੇ ਬੁਨਿਆਦੀ ਸਮਝ (Sahit bare Buniadi Samajh) (12 Hours)

- ਸਾਹਿਤ: ਪ੍ਰਕਿਰਤੀ ਅਤੇ ਪ੍ਰਯੋਜਨ

  Sahit: Parkirti ate Paryojan
- ਸਾਹਿਤ ਦੇ ਤੱਤ

  Sahit de Tatt
- ਸਾਹਿਤ ਅਤੇ ਭਾਸ਼ਾ: ਅੰਤਰ ਸੰਬੰਧ

  Sahit ate Bhasha: Antar Sambandh
- ਸਾਹਿਤ ਅਤੇ ਸਮਾਜ: ਅੰਤਰ ਸੰਬੰਧ

  Sahit ate Samaj: Antar Sambandh

Unit-II ਕਾਵਿ ਰੂਪਾਕਾਰ (Kaav Roopakar) (11 Hours)

- ਕਵਿਤਾ: ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਤੱਤ

  Kavita: Paribhasha ate Tatt
- ਨਜ਼ਮ, ਗੀਤ

  Nazam, Geet
- ਰੁਬਾਈ, ਗ਼ਜ਼ਲ

  Rubai, Ghazal
- ਖੁੱਲ੍ਹੀ ਕਵਿਤਾ

  Khuli Kavita

Unit-III ਆਧੁਨਿਕ ਗਲਪ ਤੇ ਨਾਟ ਰੂਪਾਕਾਰ (Adhunik Galap te Naat Roopakar) (11 Hours)

- ਨਾਵਲ: ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਤੱਤ

  Novel: Paribhasha ate Tatt
- ਨਿੱਕੀ ਕਹਾਣੀ: ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਤੱਤ

  Nikki Kahani: Paribhasha ate Tatt
- ਨਾਟਕ: ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਤੱਤ

  Natak: Paribhasha ate Tatt
- ਇਕਾਂਗੀ: ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਤੱਤ

  Ikangi: Paribhasha ate Tatt

Unit- IV ਵਾਰਤਕ ਰੂਪਾਕਾਰ (Vartak Roopakar) (11 Hours)

- ਨਿਬੰਧ: ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਤੱਤ

  Nibandh: Paribhasha ate Tatt
- ਸਵੈ-ਜੀਵਨੀ: ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਤੱਤ

  Swai-Jeevni: Paribhasha ate Tatt
- ਸਫ਼ਰਨਾਮਾ: ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਤੱਤ

  Safarnama: Paribhasha ate Tatt
- ਰੇਖਾ-ਚਿੱਤਰ: ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਤੱਤ

  Rekha-Chittar: Paribhasha ate Tatt

ESSENTIAL READINGS:

- Brahamjagdish Singh (2011) **Samalochna Shastar**, Waris Shah Foundation, Amritsar.
- Jaggi, Ratan Singh (2005) **Sahit de Roop,** Punjabi University, Patiala.

SUGGESTED READINGS:

- Phul, Gurdial Singh (1990) **Punjabi Ikangi: Saroop Sidhant ate Vikaas**, Punjabi University, Patiala.
- Phul, Gurdial Singh (2011) **Punjabi Natak: Saroop Sidhant ate Vikaas,** Punjabi University, Patiala.
- Piara Singh (Prof.) (2004) **Punjabi Galap: Sidhant, Itihas te Parvirtian**, New Book Company, Mai Hiran Gate, Jalandhar.

MAGAZINES/RESEARCH JOURNALS:

- Khoj Patrika, **Nibandh Ank (Vol. 29),** Punjabi University, Patiala.

ENCYCLOPEDIAS:

- Jaggi, Ratan Singh, (ed.) (2011) **Sahit Kosh,** Punjabi University, Patiala.

***(Note: Teachers are free to recommend additional related standard source books, if required so.)**

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE -8 (DSC-8)

PUNJABI NOVEL

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Punjabi Novel (DSC-8)	4	3	1	0	Class 12th pass in any subject	**Studied Punjabi up to 10th Standard** **or** ***Basic knowledge of Punjabi language***

LEARNING OBJECTIVES:

- The course is designed to develop skills in narrative analysis, including character-sketch, point of view, theme and plot.
- The course will help the students to gain an appreciation of different literary styles, voices and approaches depicted in Punjabi Novel.
- It will nurture ethical values, social concerns and awareness among the students.

LEARNING OUTCOMES:

- The students will develop the ability to apply critical and theoretical approaches to the reading and analysis of Punjabi Novel.
- They will be able to identify, analyze, interpret and describe the critical ideas, values, and themes in the prescribed texts.
- They will understand the narrative techniques through which ideas, values, and themes incorporated in the societies.

Unit-I ਪੰਜਾਬੀ ਨਾਵਲ: ਸਿਧਾਂਤਕ ਪੱਖ (Punjabi Novel: Sidhantak Pakh) (12 Hours)

- ਪੰਜਾਬੀ ਨਾਵਲ ਦਾ ਸੰਖੇਪ ਇਤਿਹਾਸ

  Punjabi Novel da Sankhep Itihas
- ਪੰਜਾਬੀ ਨਾਵਲ ਦੀਆਂ ਪ੍ਰਮੁੱਖ ਪ੍ਰਵਿਰਤੀਆਂ: ਆਦਰਸ਼ਵਾਦੀ, ਸੁਧਾਰਵਾਦੀ, ਯਥਾਰਥਵਾਦੀ

  Punjabi Novel dian Parmukh Parvirtian: Adarshvadi, Sudharvadi, Yathartvadi
- ਪੰਜਾਬੀ ਦੇ ਪ੍ਰਮੁੱਖ ਨਾਵਲਕਾਰਾਂ ਨਾਲ ਸੰਖੇਪ ਜਾਣ-ਪਛਾਣ

  Punjabi de Parmukh Novelkaran naal Sankhep Jaan-Pachhan

- ਪੰਜਾਬੀ ਨਾਵਲ ਦੀਆਂ ਬਿਰਤਾਂਤਕ ਜੁਗਤਾਂ

  Punjabi Novel dian Birtantak Jugtan

Unit- II ਸੁੰਦਰੀ: ਭਾਈ ਵੀਰ ਸਿੰਘ (Sundri: Bhai Vir Singh) (11 Hours)

- ਭਾਈ ਵੀਰ ਸਿੰਘ: ਜੀਵਨ ਅਤੇ ਰਚਨਾ

  Bhai Vir Singh: Jeevan ate Rachna
- ਕਥਾਨਕ ਅਤੇ ਵਿਸ਼ਾ ਪੱਖ

  Kathanak ate Visha Pakh
- ਪਾਤਰ ਉਸਾਰੀ

  Patar Usari
- ਕਲਾ ਪੱਖ

  Kala Pakh

Unit- III ਪਵਿੱਤਰ ਪਾਪੀ: ਨਾਨਕ ਸਿੰਘ (Pavitar Papi: Nanak Singh) (11 Hours)

- ਨਾਨਕ ਸਿੰਘ: ਜੀਵਨ ਅਤੇ ਰਚਨਾ

  Nanak Singh: Jeevan ate Rachna
- ਕਥਾਨਕ ਅਤੇ ਵਿਸ਼ਾ ਪੱਖ

  Kathanak ate Visha Pakh
- ਪਾਤਰ ਉਸਾਰੀ

  Patar Usari
- ਕਲਾ ਪੱਖ

  Kala Pakh

Unit-IV ਪਿੰਜਰ: ਅੰਮ੍ਰਿਤਾ ਪ੍ਰੀਤਮ (Pinjar: Amrita Pritam) (11 Hours)

- ਅੰਮ੍ਰਿਤਾ ਪ੍ਰੀਤਮ: ਜੀਵਨ ਅਤੇ ਰਚਨਾ

  Amrita Pritam: Jeevan ate Rachna
- ਕਥਾਨਕ ਅਤੇ ਵਿਸ਼ਾ ਪੱਖ

  Kathanak ate Visha Pakh
- ਪਾਤਰ ਉਸਾਰੀ

  Patar Usari
- ਕਲਾ ਪੱਖ

  Kala Pakh

ESSENTIAL READINGS:

- Bhai Vir Singh (2013) **Sundri**, Bhai Vir Singh Sahitya Sadan, Delhi.
- Nanak Singh (2015) **Pavitar Papi**, Lok Sahit Parkashan, Amritsar.
- Pritam, Amrita (2013 2nd Edition) **Pinjar**, Shri Parkashan, Delhi.

SUGGESTED READINGS:

- Daweshwar, Surinder Kumar (Dr.) (2006) **Samaj Satta te Samkali Novel**, Lokgeet Parkashan, Chandigarh.

- Harbhajan Singh (Dr.) (2010) **Rachna Sanrachna**, Guru Nanak Dev University, Amritsar.
- Jagbir Singh. (1999) **Punjabi Galap Sansar**, Wellwish Publishers, New Delhi.
- Karanjit Singh (ed.) (2010) **Punjabi Galap Adhiyan De Badalde Paripekh**, Sahit Akademi, New Delhi.
- Piara Singh (Prof.) (2004) **Punjabi Galap: Sidhant, Itihas te Parvirtian**, New Book Company, Mai Hiran Gate, Jalandhar.
- Sandhu, Gurpal Singh (2005) **Punjabi Novel da Itihaas**, Punjabi Academy, Delhi.

MAGAZINES/RESEARCH JOURNALS:

- Khoj Patrika (1999) **Veehvi Sadi da Punjabi Galap**, Vishesh Ank, Punjabi University, Patiala.

WEBSITES:

- **https://www.punjabikahani.punjabi-kavita.com/PunjabiNovels.php**

***(Note: Teachers are free to recommend additional related standard source books, if required so.)**

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE -9 (DSC-9)

PUNJABI NATAK

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Punjabi Natak (DSC-9)	4	3	1	0	Class 12th pass in any subject	**Studied Punjabi up to 10th Standard** **or** ***Basic knowledge of Punjabi language***

LEARNING OBJECTIVES:

- The course will prepare the students to understand and appreciate Drama as a literary genre.
- It will help them to demonstrate ideas elaborated in various kinds of dramatic scripts.
- The course is designed to make them aware about the relevance of Punjabi drama and theatre.
- It will educate them to understand the social and political concerns of society reflected in Punjabi Drama.

LEARNING OUTCOMES:

- Students will demonstrate an understanding of terms, themes, strategies, and issues of Punjabi Drama.
- They can express their understanding of the relationship between Punjabi Drama and the historical/cultural contexts.
- They will be able to read and analyse various socio-political issues and concerns depicted in Punjabi Drama.

Unit-I: ਪੰਜਾਬੀ ਨਾਟਕ: ਸਿਧਾਂਤਕ ਪੱਖ (Punjabi Natak: Sidhantak Pakh) (12 Hours)

- ਪੰਜਾਬੀ ਨਾਟਕ ਦਾ ਸੰਖੇਪ ਇਤਿਹਾਸ

  Punjabi Natak da Sankhep Itihas
- ਪੰਜਾਬੀ ਨਾਟਕ ਦੀਆਂ ਪ੍ਰਮੁੱਖ ਨਾਟ-ਸ਼ੈਲੀਆਂ: ਯਥਾਰਥਵਾਦੀ, ਐਬਸਰਡ, ਐਪਿਕ

  Punjabi Natak dian Parmukh Naat-Shallian: Yatharthvadi, Absurd, Epic
- ਪੰਜਾਬੀ ਦੇ ਪ੍ਰਮੁੱਖ ਨਾਟਕਕਾਰਾਂ ਨਾਲ ਸੰਖੇਪ ਜਾਣ-ਪਛਾਣ

  Punjabi de Parmukh Natakkaran naal Sankhep Jaan-Pachhan

- ਪੰਜਾਬੀ ਰੰਗਮੰਚ: ਚੁਣੌਤੀਆਂ ਅਤੇ ਸੰਭਾਵਨਾਵਾਂ

  Punjabi Rangmanch: Chunoutian ate Sambhavnavan

Unit- II: ਮਿਰਜ਼ਾ ਸਾਹਿਬਾਂ: ਬਲਵੰਤ ਗਾਰਗੀ (Mirza Sahiban: Balwant Gargi) (11 Hours)

- ਬਲਵੰਤ ਗਾਰਗੀ: ਜੀਵਨ ਅਤੇ ਰਚਨਾ

  Balwant Gargi: Jeevan ate Rachna
- ਕਥਾਨਕ ਅਤੇ ਵਿਸ਼ਾ ਪੱਖ

  Kathanak ate Visha Pakh
- ਪਾਤਰ ਉਸਾਰੀ

  Patar Usari
- ਰੰਗਮੰਚੀ ਸਾਰਥਕਤਾ

  Rangmanchi Sarthakta

Unit- III: ਚੰਦਨ ਦੇ ਓਹਲੇ: ਪਾਲੀ ਭੁਪਿੰਦਰ ਸਿੰਘ (Chandan de Ohle: Pali Bhupinder Singh) (11 Hours)

- ਪਾਲੀ ਭੁਪਿੰਦਰ ਸਿੰਘ: ਜੀਵਨ ਅਤੇ ਰਚਨਾ

  Pali Bhupinder Singh: Jeevan ate Rachna
- ਕਥਾਨਕ ਅਤੇ ਵਿਸ਼ਾ ਪੱਖ

  Kathanak ate Visha Pakh
- ਪਾਤਰ ਉਸਾਰੀ

  Patar Usari
- ਰੰਗਮੰਚੀ ਸਾਰਥਕਤਾ

  Rangmanchi Sarthakta

Unit-IV: ਨਾਟ ਧਾਰਾ (ਨਾਟ-ਸੰਗ੍ਰਹਿ): (ਸੰਪਾ.) ਮਨਜੀਤ ਪਾਲ ਕੌਰ, ਸਤੀਸ਼ ਕੁਮਾਰ ਵਰਮਾ (Naat Dhara (Naat-Sangreh): (ed.) Manjit Pal Kaur, Satish Kumar Verma (11 Hours)

- ਸੰਬੰਧਤ ਇਕਾਂਗੀਆਂ ਦਾ ਵਿਸ਼ਾ ਪੱਖ

  Sambandhat Ikangiyan da Visha Pakh
- ਸੰਬੰਧਤ ਇਕਾਂਗੀਆਂ ਦਾ ਕਲਾ ਪੱਖ

  Sambandhat Ikangiyan da Kala Pakh
- ਸੰਬੰਧਤ ਇਕਾਂਗੀਆਂ ਵਿਚ ਪਾਤਰ ਉਸਾਰੀ

  Sambandhat Ikangiyan vich Patar Usari
- ਸੰਬੰਧਤ ਇਕਾਂਗੀਆਂ ਦੀ ਰੰਗਮੰਚੀ ਸਾਰਥਕਤਾ

  Sambandhat Ikangiyan di Rangmanchi Sarthakta

ESSENTIAL READINGS:

- Gargi, Balwant (2020) **Mirza Sahiban**, Tarakbharti Parkashan, Barnala.
- Manjit Pal kaur, Verma, Satish Kumar (ed.) (1998) **Naat Dhara (Naat-Sangreh),** Punjabi University, Patiala.
- Pali, Bhupinder Singh (2008) **Chandan de Ohle**, Chetna Parkashan, Ludhiana.

SUGGESTED READINGS:

- Behl, Navnindra (2001) **Nataki Sahit**, Punjabi University, Patiala.
- Bhatia, Harbhajan Singh (2015) **Ikkiveen Sadi da Punjabi Natak**, Guru Nanak Dev University, Amritsar.
- Dhaliwal, Kewal (2015) **Swarajbir: Sirjak ate Sirjana**, Chetna Parkashan, Ludhiana.
- Dheer, Kuldip Singh (2000) **Natak, Stage ate Darshan**, Punjabi University, Patiala.
- Kazak, Kirpal (2015) **Lok Dharmi Rangmanch: Sidhant ate Vihar**, Chetna Prakashan, Ludhiana.
- Phull, Gurdial Singh (1990) **Punjabi Ikangi: Saroop Sidhant ate Vikaas**, Punjabi University, Patiala.
- Phull, Gurdial Singh (2011) **Punjabi Natak: Saroop Sidhant ate Vikaas**, Punjabi University, Patiala.
- Rawail Singh (2001) **Punjab di Lok-Naat Parampara ate Punjabi Natak**, Shilalekh, Delhi.
- Uppal, Kamlesh (2002) **T. V. ate Punjabi Rangmanch: Bahupakhi Adhiyan**, Punjabi University, Patiala.
- Uppal, Kamlesh (2004) **Punjabi Natak ate Rangmanch**, Punjabi University, Patiala.
- Verma, Satish Kumar (2004) **Punjabi Naatak da Itihaas**, Punjabi Academy, Delhi.

MAGAZINES/JOURNALS:

- Khoj Patrika (1994) **Natak Vishesh Ank**, Punjabi University, Patiala.
- Khoj Patrika (1997) **Nat Shellian Vishesh Ank**, Punjabi University, Patiala.
- Samdarshi (2003) **Balwant Gargi Vishesh Ank**, Punjabi Academy, Delhi.

***(Note: Teachers are free to recommend additional related standard source books, if required so.)**

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

Category II

(Discipline Specific Core Courses for Undergraduate Programme of study with Punjabi as one of the Core Disciplines)

(B.A. Programmes with Punjabi as Major discipline)

DISCIPLINE SPECIFIC CORE COURSE –5 (DSC-5)
GURMAT KAAV

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Gurmat Kaav (DSC-5)	4	3	1	0	Class 12th pass in any subject	**Studied Punjabi up to 8th Standard** **or** ***Basic knowledge of Punjabi language***

LEARNING OBJECTIVES:

- To make students familiar with Gurmat Kaav.
- To familiarize students with major aspects of its compilation.
- To provide students with an understanding of the socio-cultural and political scenario of that period.
- To develop a better appreciation and understanding of the Gurbani and its message.
- To enhance awareness of students with regard to India's rich knowledge tradition.

LEARNING OUTCOMES:

- Students would be able to get familiar with the composition of Sri Guru Granth Sahib.
- They will get to know the basic ideas of Gurmat Kaav.
- They will develop positive outlook towards Indian thoughts and traditions.
- They would be able to relate traditional knowledge to the present context.
- Students will be able to understand the ideology and philosophy of Gurmat poetry.
- They would be able to learn about ethics, social concerns, humanity and environmental issues.

Unit-I ਗੁਰਮਤਿ ਕਾਵਿ: ਸਿਧਾਂਤਕ ਪਰਿਪੇਖ (Gurmat Kaav: Sidhantak Peripekh) (12 hrs.)

- ਗੁਰਮਤਿ ਕਾਵਿ: ਸੰਖੇਪ ਜਾਣ-ਪਛਾਣ

  Gurmat Kaav: Sankhep Jaan-Pachhan
- ਗੁਰਮਤਿ ਕਾਵਿ: ਵਿਚਾਰਧਾਰਾ

Gurmat Kaav: Vichardhara

- ਗੁਰਮਤਿ ਕਾਵਿ: ਨੈਤਿਕਤਾ

  Gurmat Kaav: Naitikta
- ਗੁਰਮਤਿ ਕਾਵਿ: ਪ੍ਰਕਿਰਤੀ ਚਿਤਰਨ

  Gurmat Kaav: Parkirti Chitran

Unit-II ਗੁਰਮਤਿ ਕਾਵਿ: ਰੂਪਾਕਾਰ (Gurmat Kaav: Roopakaar) (11 hrs.)

- ਅਸ਼ਟਪਦੀ

  Ashtapadi
- ਸ਼ਬਦ

  Shabad
- ਬਾਵਨ ਅਖਰੀ

  Bawan Akhri
- ਵਾਰ

  Vaar

Unit- III ਬਾਰਹ ਮਾਹ ਮਾਝ: ਗੁਰੂ ਅਰਜਨ ਦੇਵ ਜੀ (Barah Mah Majh: Guru Arjun Dev Ji)

(11 hrs.)

- ਬਾਰਹ ਮਾਹ ਮਾਝ: ਵਿਸ਼ੇਗਤ ਅਧਿਐਨ

  Barah Mah Majh: Vishegat Adhiyan
- ਬਾਰਹ ਮਾਹ ਮਾਝ: ਅਧਿਆਤਮਕ ਅਤੇ ਸਮਾਜਕ ਸਰੋਕਾਰ

  Barah Mah Majh: Adhiyatmak ate Smajak Sarokaar
- ਬਾਰਹ ਮਾਹ ਮਾਝ: ਪ੍ਰਕਿਰਤੀ ਚਿਤਰਨ

  Barah Mah Majh: Parkirti Chitran
- ਬਾਰਹ ਮਾਹ ਮਾਝ: ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ

  Barah Mah Majh: Parsang Sahit Viyakhiya

Unit-IV ਸਲੋਕ: ਗੁਰੂ ਤੇਗ਼ ਬਹਾਦਰ ਜੀ (Salok: Guru Tegh Bahadur Ji) (11 hrs.)

- ਸਲੋਕ: ਵਿਸ਼ੇਗਤ ਅਧਿਐਨ

  Salok: Vishegat Adhiyan
- ਸਲੋਕ: ਅਧਿਆਤਮਕ ਅਤੇ ਸਮਾਜਕ ਸਰੋਕਾਰ

  Salok: Adhiyatmak ate Smajak Sarokaar
- ਸਲੋਕ: ਵੈਰਾਗ ਦੀ ਭਾਵਨਾ

  Salok: Varaag di Bhawna
- ਸਲੋਕ: ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ

  Salok: Parsang sahit viyakhiya

ESSENTIAL READINGS:

- Jagbir Singh (2004) **Gurmat Kaav da Itihas**, Panjabi Academy, Delhi.
- Jaggi, Rattan Singh (Dr.) &Gursharan Kaur Jaggi (Dr.) (2011) **Guru Tegh Bahadur: Bani Vishleshan**, Gurmat Prakashan, Patiala.

- Matharoo, Rajwant Kaur (Dr.) (2008) **Bani Guru Arjan Dev: Vichardhara ate Kav Mulankan**, Ruhi Parkashan, Amritsar.

SUGGESTED READINGS:

- Beant Kaur (Dr.) (2010) **Sikh Dharam Shastar da Tatsaar (Utter Adhunik Paripekh)**, Chetna Parkashan, Ludhiana.
- Bhathal, Ravinder Singh (Prof.) and Dr. Surjit Singh (ed.) (2005) **Shri Guru Granth Sahib: Vibhin Pasar**, Punjabi Sahitya Akademi, Ludhiana.
- Dil, Balbir Singh (Dr.) (2009) **Guru Tegh Bahadur: Jeevan te Rachna**, Punjabi Bhasa Vikas, Punjabi University, Patiala.
- Gurmukh Singh (2008) **Guru Arjun Dev Ji: Jivan, Darshan ate Bani**, Ruhi Parkashan, Amritsar.
- Jagbir Singh (1997) **Gurbani: Vishavdrishti te Vichardhara**, Wellwish Publishers, New Delhi.
- Jagbir Singh (1989) **Madhkali Shabad Sabhyachar**, Ravinder Parkashan, Delhi.
- Jagbir Singh (Dr.) (2011) **Gurmat Kav: Sidhant te Vihar**, Chetna Parkashan, Ludhiana.
- Jagbir Singh (2012) **Guru Granth Sahib di Samkalin Sarthakta te Prasangikta**, Punjabi University, Patiala.
- Manmohan Singh (Dr.) (1975) **Guru Tegh Bahadur Ji Da Darshnik Chintan**, Mandeep Parkashan, Delhi.
- Narang, C.L.(Prof.) (1976) **Novey Nanak Guru Tegh Bahadur**, Madan Publishers, Patiala.
- Sahib Singh (2015) **Gurbani Vyakaran**, Singh Brothers, Amritsar.
- Sarbjinder Singh (ed.) (2006) **Sri Guru Granth Sahib ate Ikivin Sadi**, Publication Bureau, Punjabi University, Patiala.
- Taran Singh (Dr.) (1995) **Guru Tegh Bahadur-Jiwan te Sikhiya**, Publication Bureau, Punjabi University, Patiala.

JOURNALS:

- Khoj Patrika (2003) **Bani Kaav- Roop Vishes Ank-58**, Publication Bureau, Punjabi University, Patiala.
- Khoj Patrika (1985) **Gurmit Kaav Ank-26**, Publication Bureau, Punjabi University, Patiala.

INTERNET RESOURCES:

- **www.searchgurbani.com**

***(Note: Teachers are free to recommend additional related standard source books, if required so.)**

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE –6 (DSC-6)
BHAGATI KAAV

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Bhagati Kaav (DSC-6)	4	3	1	0	Class 12th pass in any subject	**Studied Punjabi up to 8th Standard** **or** ***Basic knowledge of Punjabi language***

LEARNING OBJECTIVES:

- To analyze and evaluate the socio-cultural and religious conditions of medieval period related to Bhagti Lehar which reflect diverse genres, time periods and cultures.
- To analyze the relationship of language and literature to class, culture, ethnicity, gender, histories, race etc. during the medieval period.
- To familiarise students with Bhakti Lehar and Bhagti Kaav.
- To give them an understanding of the socio-cultural and political scenario of that period.
- To develop better appreciation and understanding of the Bhagti Kaav and its moral and ethical values.

LEARNING OUTCOMES:

- Students will get to know about India's rich Bhagti movement.
- Students will be able to analyze major medieval Bhagat poets, their works and their representations of the human experiences.
- Students will be able to understand various concepts of Bhagats.
- Students will be able to interpret medieval Bhagti literature within its historical and social contexts and its importance in the present context.
- Students will learn about ethics, ecology, social behaviours and concerns.
- Students will be able to deal with the contemporary challenges and solutions through the knowledge acquired.

Unit-I ਭਗਤੀ ਕਾਵਿ: ਸਿਧਾਂਤਕ ਪਰਿਪੇਖ (Bhagti Kaav: Sidhantak Peripekh) (12 hrs.)

- ਭਗਤ, ਭਗਤੀ ਅਤੇ ਭਗਤੀ ਕਾਵਿ

  Bhagat, Bhagati ate Bhagati Kaav

- ਭਗਤੀ ਕਾਵਿ: ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ

  Bhagati Kaav: Itihasak Peripekh
- ਭਗਤੀ ਕਾਵਿ-ਰੂਪ: ਨਿਰਗੁਣ ਅਤੇ ਸਰਗੁਣ

  Bhagati Kaav-Roop: Nirgun ate Sargun
- ਭਗਤੀ ਕਾਵਿ: ਸਮਕਾਲੀ ਪ੍ਰਸੰਗਿਕਤਾ

  Bhagti Kaav: Samkali Parsangikta

Unit-III ਭਗਤਾਂ ਦਾ ਜੀਵਨ ਅਤੇ ਰਚਨਾ (Bhagatan da Jeevan ate Rachna) (11 hrs.)

(11 hrs.)

- ਭਗਤ ਕਬੀਰ: ਜੀਵਨ ਅਤੇ ਰਚਨਾ

  Bhagat Kabir: Jeevan ate Rachna
- ਭਗਤ ਧੰਨਾ: ਜੀਵਨ ਅਤੇ ਰਚਨਾ

  Bhagat Dhana: Jeevan ate Rachna
- ਭਗਤ ਤ੍ਰਿਲੋਚਨ: ਜੀਵਨ ਅਤੇ ਰਚਨਾ

  Bhagat Tarlochan: Jeevan ate Rachna
- ਭਗਤ ਸੈਣ: ਜੀਵਨ ਅਤੇ ਰਚਨਾ

  Bhagat Sain: Jeevan ate Rachna

Unit-III ਭਗਤ ਨਾਮਦੇਵ (Bhagat Namdev) (11 hrs.)

- ਭਗਤ ਨਾਮਦੇਵ : ਜੀਵਨ ਅਤੇ ਰਚਨਾ

  Bhagat Namdev: Jeevan ate Rachna
- ਭਗਤ ਨਾਮਦੇਵ ਬਾਣੀ: ਵਿਚਾਰਧਾਰਾ

  Bhagat Namdev Bani: Vichardhara
- ਭਗਤ ਨਾਮਦੇਵ ਬਾਣੀ: ਨੈਤਿਕਤਾ

  Bhagat Namdev Bani: Naitikta
- ਭਗਤ ਨਾਮਦੇਵ ਬਾਣੀ: ਸਮਕਾਲੀ ਪ੍ਰਸੰਗਿਕਤਾ

  Bhagat Namdev Bani: Samkali Parsangikta

Unit-IV ਭਗਤ ਰਵਿਦਾਸ (Bhagat Ravidas) (11 hrs.)

- ਭਗਤ ਰਵਿਦਾਸ: ਜੀਵਨ ਅਤੇ ਰਚਨਾ

  Bhagat Ravidas: Jeevan ate Rachna
- ਭਗਤ ਰਵਿਦਾਸ ਬਾਣੀ: ਵਿਚਾਰਧਾਰਾ

  Bhagat Ravidas Bani: Vichardhara
- ਭਗਤ ਰਵਿਦਾਸ ਬਾਣੀ: ਨੈਤਿਕਤਾ

  Bhagat Ravidas Bani: Naitikta
- ਭਗਤ ਰਵਿਦਾਸ ਬਾਣੀ: ਸਮਕਾਲੀ ਪ੍ਰਸੰਗਿਕਤਾ

  Bhagat Ravidas Bani: Samkali Parsangikta

ESSENTIAL READINGS:

- Sahib Singh (1986) **Bhagat Bani Steek**, Singh Brothers, Amritsar.

- Singal, Dharampal (Ed.) (1994) **Bhagtan di Bani**, National Book Trust, India, Delhi.

SUGGESTED READINGS:

- Badan, Baldev Singh (2007) **Bani Bhagat Ravidas: Ik Vivechan**, Manpreet Parkashan, Delhi.
- Bedi, Gurnam Kaur (1985) **Guru Granth Sahib vich Darj Kabir Bani da Alochnatmik Adhiyan**, Guru Nanak Dev University, Amritsar.
- Bhai Jodh Singh (1971) **Bhagat Kabir Ji: Jeevni ate Sikhiya**, Punjabi University, Patiala.
- Braham, Jagdish Singh (2006) **Sant Kabir: Jeevan, Darshan ate Bani**, Waris Shah Foundation, Amritsar.
- Gumtala, Charanjit Singh (2012) **Bhagat Ravidas: Jeevan ate Rachna**, Punjabi Writers Cooperative Society Limited, Ludhiana/Amritsar.
- Harmeet Singh (Ed.) (1987) **Banikar Bhagat Nam Dev**, Punjabi Academy, Delhi.
- Iqbal Kaur (Prof.) (2009) **Bhagat Namdev: Jiwan ate Bani**, Waris shah Foundation, Amritsar.
- Jaggi, Rattan Singh (1984) **Bani Guru Ravidas, Bhasha Vibhag**, Punjab, Patiala.
- Jog, Lakshman Ganesh (1988) **Namdev**, National Book Trust, New Delhi.
- Jodh Singh (1978) **Bhagat Namdev tatha hor Bhagat: Jeevni ate Rachna**, Punjabi University, Patiala.
- Nirbhai Singh (1998) **Madhkaleen Bhagatan Da Bharati Darshan Vich Yogdan**, Punjabi University, Patiala.
- Ranju Bala (2015) **Bhagat Ravidas Bani: Sankalap ate Sarokar**, Twentyfirst Century Publications, Patiala.

JOURNALS:

- Nanak Parkash Patrika (1995) **Bhagat Namdev Vishesh Ank-1**, Publication Bureau, Punjabi University, Patiala.

INTERNET RESOURCES:

- **www.searchgurbani.com**

***(Note: Teachers are free to recommend additional related standard source books, if required so.)**

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category III

Discipline Specific Core Courses for Undergraduate Programme of study with Punjabi as one of the Core Disciplines

(B.A. Programmes with Punjabi as non-Major or Minor discipline)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Gurmat Kaav (DSC-5)	4	3	1	0	Class 12th pass in any subject	**Studied Punjabi up to 8th Standard** **or** ***Basic knowledge of Punjabi language***

LEARNING OBJECTIVES:

- To make students familiar with Gurmat Kaav.
- To familiarize students with major aspects of its compilation.
- To provide students with an understanding of the socio-cultural and political scenario of that period.
- To develop a better appreciation and understanding of the Gurbani and its message.
- To enhance awareness of students with regard to India's rich knowledge tradition.

LEARNING OUTCOMES:

- Students would be able to get familiar with the composition of Sri Guru Granth Sahib.
- They will get to know the basic ideas of Gurmat Kaav.
- They will develop positive outlook towards Indian thoughts and traditions.
- They would be able to relate traditional knowledge to the present context.
- Students will be able to understand the ideology and philosophy of Gurmat poetry.
- They would be able to learn about ethics, social concerns, humanity and environmental issues.

Unit-I ਗੁਰਮਤਿ ਕਾਵਿ: ਸਿਧਾਂਤਕ ਪਰਿਪੇਖ (Gurmat Kaav: Sidhantak Peripekh) (12 hrs.)

- ਗੁਰਮਤਿ ਕਾਵਿ: ਸੰਖੇਪ ਜਾਣ-ਪਛਾਣ

  Gurmat Kaav: Sankhep Jaan-Pachhan
- ਗੁਰਮਤਿ ਕਾਵਿ: ਵਿਚਾਰਧਾਰਾ

  Gurmat Kaav: Vichardhara

- ਗੁਰਮਤਿ ਕਾਵਿ: ਨੈਤਿਕਤਾ

  Gurmat Kaav: Naitikta
- ਗੁਰਮਤਿ ਕਾਵਿ: ਪ੍ਰਕਿਰਤੀ ਚਿਤਰਨ

  Gurmat Kaav: Parkirti Chitran

Unit-II ਗੁਰਮਤਿ ਕਾਵਿ: ਰੂਪਾਕਾਰ (Gurmat Kaav: Roopakaar) (11 hrs.)

- ਅਸ਼ਟਪਦੀ

  Ashtapadi
- ਸ਼ਬਦ

  Shabad
- ਬਾਵਨ ਅਖਰੀ

  Bawan Akhri
- ਵਾਰ

  Vaar

Unit- III ਬਾਰਹ ਮਾਹ ਮਾਝ: ਗੁਰੂ ਅਰਜਨ ਦੇਵ ਜੀ (Barah Mah Majh: Guru Arjun Dev Ji)

(11 hrs.)

- ਬਾਰਹ ਮਾਹ ਮਾਝ: ਵਿਸ਼ੇਗਤ ਅਧਿਐਨ

  Barah Mah Majh: Vishegat Adhiyan
- ਬਾਰਹ ਮਾਹ ਮਾਝ: ਅਧਿਆਤਮਕ ਅਤੇ ਸਮਾਜਕ ਸਰੋਕਾਰ

  Barah Mah Majh: Adhiyatmak ate Smajak Sarokaar
- ਬਾਰਹ ਮਾਹ ਮਾਝ: ਪ੍ਰਕਿਰਤੀ ਚਿਤਰਨ

  Barah Mah Majh: Parkirti Chitran
- ਬਾਰਹ ਮਾਹ ਮਾਝ: ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ

  Barah Mah Majh: Parsangh Sahit Viyakhiya

Unit-IV ਸਲੋਕ: ਗੁਰੂ ਤੇਗ਼ ਬਹਾਦਰ ਜੀ (Salok: Guru Tegh Bahadur Ji) (11 hrs.)

- ਸਲੋਕ: ਵਿਸ਼ੇਗਤ ਅਧਿਐਨ

  Salok: Vishegat Adhiyan
- ਸਲੋਕ: ਅਧਿਆਤਮਕ ਅਤੇ ਸਮਾਜਕ ਸਰੋਕਾਰ

  Salok: Adhiyatmak ate Smajak Sarokaar
- ਸਲੋਕ: ਵੈਰਾਗ ਦੀ ਭਾਵਨਾ

  Salok: Varaag di Bhawna
- ਸਲੋਕ: ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ

  Salok: Parsangh Sahit Viyakhiya

ESSENTIAL READINGS:

- Jagbir Singh (2004) **Gurmat Kaav da Itihas**, Panjabi Academy, Delhi.
- Jaggi, Rattan Singh (Dr.) &Gursharan Kaur Jaggi (Dr.) (2011) **Guru Tegh Bahadur: Bani Vishleshan**, Gurmat Prakashan, Patiala.

- Matharoo, Rajwant Kaur (Dr.) (2008) **Bani Guru Arjan Dev: Vichardhara ate Kav Mulankan**, Ruhi Parkashan, Amritsar.

SUGGESTED READINGS:

- Beant Kaur (Dr.) (2010) **Sikh Dharam Shastar da Tatsaar (Utter Adhunik Paripekh)**, Chetna Parkashan, Ludhiana.
- Bhathal, Ravinder Singh (Prof.) and Surjit Singh (Dr.), (ed.) (2005) **Shri Guru Granth Sahib: Vibhin Pasar**, Punjabi Sahitya Akademi, Ludhiana.
- Dil, Balbir Singh (Dr.) (2009) **Guru Tegh Bahadur: Jeevan te Rachna**, Punjabi Bhasa Vikas, Punjabi University, Patiala.
- Gurmukh Singh (2008) **Guru Arjun Dev Ji: Jivan, Darshan ate Bani**, Ruhi Parkashan, Amritsar.
- Jagbir Singh (1997) **Gurbani: Vishavdrishti te Vichardhara**, Wellwish Publishers, New Delhi.
- Jagbir Singh (1989) **Madhkali Shabad Sabhyachar**, Ravinder Parkashan, Delhi.
- Jagbir Singh (Dr.) (2011) **Gurmat Kav: Sidhat te Vihar**, Chetna Parkashan, Ludhiana.
- Jagbir Singh (2012) **Guru Granth Sahib di Samkalin Sarthakta te Prasangikta**, Punjabi University, Patiala.
- Manmohan Singh (Dr.) (1975) **Guru Tegh Bahadur Ji Da Darshnik Chintan**, Mandeep Parkashan, Delhi.
- Narang, C.L.(Prof.) (1976) **Novey Nanak Guru Tegh Bahadur**, Madan Publishers, Patiala.
- Sahib Singh (2015) **Gurbani Vyakaran**, Singh Brothers, Amritsar.
- Sarbjinder Singh (Ed.) (2006) **Sri Guru Granth Sahib ate Ikivin Sadi**, Publication Bureau, Punjabi University, Patiala.
- Taran Singh (Dr.) (1995) **Guru Tegh Bahadur-Jiwan te Sikhiya**, Publication Bureau, Punjabi University, Patiala.

JOURNALS:

- Khoj Patrika (1985) **Gurmit Kaav Ank-26**, Publication Bureau, Punjabi University, Patiala.
- Khoj Patrika (2003) **Bani Kaav-Roop Vishes Ank-58**, Publication Bureau, Punjabi University, Patiala.

INTERNET RESOURCES:

- **www.searchgurbani.com**

***(Note: Teachers are free to recommend additional related standard source books, if required so.)**

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category IV

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES OFFERED BY THE DEPARTMENT OF PUNJABI

GENERIC ELECTIVE (GE-10)
PUNJABI JEEVNI SAHIT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Punjabi Jeevni Sahit (GE-10)	4	3	1	0	Class 12th pass in any subject	**Studied Punjabi up to 8th Standard** **or** ***Basic knowledge of Punjabi language***

LEARNING OBJECTIVES:

- To learn about the concepts, forms and history of biography that helps in understanding the documented life of great personalities.
- To learn about the value of struggle and hard work to succeed.
- To sensitize students about the rich heritage of humanity through different successful persons life stories.
- To develop a keen interest in literature related to biography so that the students can inspire their self to serve their surroundings and motivate others to live a better life.

LEARNING OUTCOMES:

- Students will demonstrate the knowledge of various forms of biography in Punjabi language.
- Students will be able to know the theoretical aspect of the biography.
- Students will be able to understand the struggle of life and can try to find the appropriate way to serve his/her community as a member of the society.
- Students will learn about different great personalities.
- Students will learn the history of Punjabi biographical literature and its relation with its geography and language.

Unit-I ਜੀਵਨੀ: ਸਿਧਾਂਤਕ ਪੱਖ (Jeevni: Sidhantak Pakh) (12 hrs.)

- ਜੀਵਨੀ : ਪਰਿਭਾਸ਼ਾ, ਪ੍ਰਕਿਰਤੀ ਅਤੇ ਸਰੂਪ

  Jeevni: Pribhasha, Prkriti ate Saroop
- ਪੰਜਾਬੀ ਜੀਵਨੀ ਸਾਹਿਤ: ਸੰਖੇਪ ਇਤਿਹਾਸ

  Punjabi Jeevni Sahit: Sankhep Itihas
- ਅੰਸ਼ਿਕ ਜੀਵਨੀ ਅਤੇ ਜੀਵਨੀ ਲੇਖ ਵਿਚ ਅੰਤਰ

  Anshik Jeevni ate Jeevni Lekh Vich Antar
- ਜੀਵਨੀ ਅਤੇ ਸਵੈ-ਜੀਵਨੀ ਵਿਚ ਅੰਤਰ

  Jeevni ate Swai-Jeevni vich Antar

Unit-II ਲਘੂ-ਆਕਾਰੀ ਜੀਵਨੀ ਸਾਹਿਤ {ਪੰਜਾਬ ਦੀਆਂ ਪ੍ਰਮੁੱਖ ਹਸਤੀਆਂ (ਚੋਣਵੀਆਂ ਜੀਵਨੀਆਂ)} Laghu-Akari Jeevni Sahit {Punjab Dian Pramukh Hastian (Chonvian Jeevnian)}

(11 hrs.)

- ਸ਼ਹੀਦ ਭਗਤ ਸਿੰਘ

  Shahid Bhagat Singh
- ਮੁਹੰਮਦ ਰਫ਼ੀ

  Muhammad Rafi
- ਮਹਿੰਦਰ ਸਿੰਘ ਰੰਧਾਵਾ

  Mahinder Singh Randhawa
- ਨੇਕ ਚੰਦ

  Nek Chand

Unit-III ਵੱਡ-ਆਕਾਰੀ ਜੀਵਨੀ ਸਾਹਿਤ {ਅੱਜ ਦੀ ਵੀਰਾਂਗਣਾ ਮਲਾਲਾ ਯੂਸਫ਼ਜ਼ੇਈ (ਚੋਣਵੇਂ ਅੰਸ਼)} Vadd-Akari Jeevni Sahit {Ajj di Veerangna Malala Yousafzai (Chonven Ansh)

(11 hrs.)

- ਮਹਾਂਸ਼ਕਤੀਆਂ ਦੀ ਖਿੱਚੋਤਾਣ ਦਾ ਸ਼ਿਕਾਰ: ਅਫ਼ਗਾਨਿਸਤਾਨ ਤੇ ਮਲਾਲਾ ਵੀ

  Mahan Shaktian di Khichotan da Shikaar: Afganistan te Malala vi
- ਮਲਾਲਾ ਦੀ ਜਨਮ ਭੂਮੀ: ਸਵਾਤ ਘਾਟੀ

  Malala di Janam Bhoomi: Swaat Ghati
- ਇਕ ਬੱਚੀ ਦਾ ਵੀਰਾਂਗਣਾ ਬਣਨਾ

  Ik Bachi da Veerangna Banna
- ਆਲਮੀ ਭਾਈਚਾਰੇ ਅੱਗੇ ਮਲਾਲਾ ਦੀ ਬਾਲੜੀ ਲਲਕਾਰ

  Aalmi Bhaichare Agge Malala di Baalrhi Lalkar

Unit-IV ਸਾਖੀ ਮੂਲਕ ਜੀਵਨੀ ਸਾਹਿਤ (Sakhi Moolak Jeevni Sahit) (11 hrs.)

- ਮਨਸੂਰ

  Mansoor
- ਕੋਹਿਨੂਰ ਦਾ ਪਾਰਖੂ, ਰਾਇ ਬੁਲਾਰ ਖ਼ਾਨ ਸਾਹਿਬ

  Kohenoor Da Paarkhu, Rai Bulaar Khan Sahib

- ਭਾਈ ਮਰਦਾਨਾ ਜੀ

  Bhai Mardana Ji
- ਮਹਾਰਾਜਾ ਰਣਜੀਤ ਸਿੰਘ

  Maharaja Ranjit Singh

ESSENTIAL READINGS:

- Abhai Singh (2014) **Ajj di Veeragana Malala Yousafzai,** Lokgeet Parkashan, Chandigarh.
- Grover, Kamaljeet (Dr.) (2003) **Punjab Dian Parmukh Hastian**, Kastoori Lal and sons, Amritsar.
- Pannu, Harpal Singh (2014) **Gautam Ton Taski Tak,** Lahore Book Shop, Ludhiana.

SUGGESTED READINGS:

- Jaggi, Rattan Singh (2003) **Sahit De Roop**, Publication Bureau, Punjabi University, Patiala.
- Pannu, Harpal Singh (2012) **Pathar Ton Rang Tak,** Singh Brothers, Amritsar.
- Satinder Singh, (2006) **Adhunik Punjabi Vartak da Itihas,** Punjabi Academy, Delhi.

***(Note: Teachers are free to recommend additional related standard source books, if required so.)**

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

GENERIC ELECTIVES (GE-11)
PUNJABI NIBANDH SAHIT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Punjabi Nibandh Sahit (GE-11)	4	3	1	0	Class 12th pass in any subject	**Studied Punjabi up to 8th Standard** **or** ***Basic knowledge of Punjabi language***

LEARNING OBJECTIVES:

- To theorize and conceptualize different forms of Punjabi essay.
- To understand philosophical and ideological background of Punjabi essay.
- To go through the available criticism on the subject.
- To identify different trends emerged/emerging in Punjabi essay.
- To learn practical analysis of literary texts of Punjabi essay.

LEARNING OUTCOMES:

- Students will understand the theoretical and philosophical debate available on Punjabi essay.
- It will broaden their vocabulary and develop aptitude for appreciation of language and its connotations and denotations.
- Students will learn to evaluate literary texts going through the available criticism on the subject.
- Students will learn to do practical analysis of literary texts with the help of different approaches, and it develops their writing skill also.

Unit-I ਨਿਬੰਧ: ਸਿਧਾਂਤਕ ਪੱਖ (Nibandh: Sidhantak Pakh) (12 hrs.)

- ਨਿਬੰਧ: ਪਰਿਭਾਸ਼ਾ, ਸਰੂਪ ਅਤੇ ਲੱਛਣ

  Nibandh: Pribhasha, Saroop ate Lachhan
- ਨਿਬੰਧ ਸਾਹਿਤ: ਸੰਖੇਪ ਇਤਿਹਾਸ

Nibandh Sahit: Sankhep Itihas

- ਨਿਬੰਧ ਦੇ ਤੱਤ

  Nibandh de Tatt
- ਨਿਬੰਧ ਦਾ ਵਰਗੀਕਰਨ

  Nibandh da Vargikaran

Unit-II ਵਿਚਾਰ ਪ੍ਰਧਾਨ ਨਿਬੰਧ (Vichar Pradhan Nibandh) (11 hrs.)

- ਕਿਰਤ-ਪ੍ਰੋ. ਪੂਰਨ ਸਿੰਘ

  Kirat- Prof. Puran Singh
- ਪੁਰਾਣਾ ਪੰਜਾਬ- ਗਿਆਨੀ ਗੁਰਦਿੱਤ ਸਿੰਘ

  Purana Punjab- Gyani Gurditt Singh
- ਜੰਟਲਮੈਨ-ਲਾਲ ਸਿੰਘ ਕਮਲਾ ਅਕਾਲੀ

  Jantalman- Lal Singh Kamla Akali
- ਪੁਤਲੀਆਂ ਦਾ ਤਮਾਸ਼ਾ- ਬਲਵੰਤ ਗਾਰਗੀ

  Putlian Da Tamasha- Balwant Gargi

Unit-III ਭਾਵ ਪ੍ਰਧਾਨ ਨਿਬੰਧ (Bhav Pradhan Nibandh) (11 hrs.)

- ਘਰ ਦਾ ਪਿਆਰ-ਪ੍ਰਿੰ. ਤੇਜਾ ਸਿੰਘ

  Ghar da Piyaar- Principal Teja Singh
- ਅੱਥਰੂ-ਬਲਰਾਜ ਸਾਹਨੀ

  Athroo- Balraj Sahni
- ਸੜਕ ਪਾਰ ਕਰਦਾ ਬੁਢੇਪਾ- ਪ੍ਰੋ. ਕੁਲਬੀਰ ਸਿੰਘ ਕਾਂਗ

  Sarhak Paar Karda Budhepa- Prof. Kulbir Singh Kaang
- ਦੋਸਤੀ ਦੀ ਮਹਿਕ: ਸਾਥੀ ਲੁਧਿਆਣਵੀ

  Dosti di Mehak: Sathi Ludhianvi

Unit-IV ਵਿਅਕਤੀਤਵ ਪ੍ਰਧਾਨ ਨਿਬੰਧ (Viaktitav Pradhan Nibandh) (11 hrs.)

- ਗੰਗਾਦੀਨ- ਪ੍ਰਿੰ: ਤੇਜਾ ਸਿੰਘ

  Gangadeen- Principal Teja Singh
- ਮੇਰੀ ਨੰਨ੍ਹੀ ਲਿਲਾਹ- ਗੁਰਬਖ਼ਸ਼ ਸਿੰਘ ਪ੍ਰੀਤਲੜੀ

  Meri Nanhi Lilah- Gurbaksh Singh Preetlarhi
- ਮਾਂ-ਪ੍ਰੋ. ਅਮਰੀਕ ਸਿੰਘ

  Maa- Prof. Amrik Singh
- ਫਲਾਈਂਗ ਸਿੱਖ-ਮਿਲਖਾ ਸਿੰਘ- ਪ੍ਰਿੰ. ਸਰਵਣ ਸਿੰਘ

  Flying Sikh- Milkha Singh- Principal Sarwan Singh

ESSENTIAL READINGS:

- Puar, Joginder Singh (Dr.), Parmjit Singh, Sidhu (Dr.), (ed.) (1995) **Chonve Punjabi Nibandh,** Punjabi University, Patiala.
- Thind, Karnail Singh (Ed.) (1998) **Nibandh Prakash**, (2017, 2nd ed.) Panjab University Publication Bureau, Chandigarh.

SUGGESTED READINGS:

- Jaggi, Rattan Singh (2003) **Sahit De Roop**, Publication Bureau, Punjabi University, Patiala.
- Komal, Amar (2013) Chonven Punjabi Nibandh, atioal Book Trust, India.
- Satinder Singh (2006) **Adhunik Punjabi Vartak Da Itihas,** Punjabi Academy, Delhi.

***(Note: Teachers are free to recommend additional related standard source books, if required so.)**

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

GENERIC ELECTIVES (GE-12)
DESH WAND DI FILMKARI

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Desh Wand di Filmkari (GE-12)	4	3	1	0	Class 12th pass in any subject	**Studied Punjabi up to 8th Standard** **or** ***Basic knowledge of Punjabi language***

LEARNING OBJECTIVES:

- To learn about the various aspects of Partition of Punjab and its representation in Punjabi Cinema.
- To learn about representation of partition in different Punjabi films.
- To sensitize students about the pain of dislocated people from their homes and homeland.
- To understand the partition as well as cinema and its various aspects.

LEARNING OUTCOMES:

- Students will demonstrate the knowledge of various aspects of Punjab and its partition.
- Students will be able to examine the representation of partition in different Punjabi films.
- Students will be able to understand the problems of past as well as present related with fundamentalism.
- Students will learn the history of partition and its link with colonialism.

Unit-I ਦੇਸ਼ ਵੰਡ ਦੀ ਫਿਲਮਕਾਰੀ: ਸਿਧਾਂਤਕ ਪੱਖ (Desh Wand di Filmkari: Sidhantak Pakh)

(12 hrs.)

- ਦੇਸ਼ ਵੰਡ: ਰਾਜਨੀਤਕ ਸਰੂਪ ਤੇ ਕਾਰਨ
  Desh Wand: Rajneetak Saroop te Kaaran
- ਦੇਸ਼ ਵੰਡ: ਧਾਰਮਕ ਤੇ ਸਮਾਜਕ ਪ੍ਰਭਾਵ

Desh Wand: Dharmak te Smajak Prabhav

- ਦੇਸ਼ ਵੰਡ ਦੀ ਫਿਲਮਕਾਰੀ: ਮਹੱਤਵ

  Desh Wand di Filmkari: Mahattav
- ਫਿਲਮ-ਪਾਠ ਤੇ ਸਾਹਿਤ-ਪਾਠ: ਅੰਤਰ ਨਿਖੇੜ

  Film-Path Te Sahit-Path: Antar Nikherh

Unit-II ਫਿਲਮ 'ਸ਼ਹੀਦ-ਏ-ਮੁਹੱਬਤ ਬੂਟਾ ਸਿੰਘ' ਦਾ ਵਿਸ਼ਲੇਸ਼ਣ (1999) (Film 'Shaheed-E-Mohabbat Boota Singh' da Vishleshan) (1999) (11 hrs.)

- ਵੰਡ ਦੀ ਪੇਸ਼ਕਾਰੀ

  Wand di Peshkari
- ਵਿਸ਼ਾ ਤੇ ਮੰਤਵ

  Visha te Mantav
- ਪ੍ਰਭਾਵਿਤ ਧਿਰਾਂ ਦਾ ਦੁਖਾਂਤ

  Prabhavit Dhiran da Dukhaant
- ਪਾਤਰ ਉਸਾਰੀ

  Patar Usaari

Unit-III ਫਿਲਮ 'ਖ਼ਾਮੋਸ਼ ਪਾਣੀ' ਦਾ ਵਿਸ਼ਲੇਸ਼ਣ (2003) Film 'Khamosh Paani' da Vishleshan (2003) (11 hrs.)

- ਵੰਡ ਦੀ ਪੇਸ਼ਕਾਰੀ

  Wand di Peshkari
- ਵਿਸ਼ਾ ਤੇ ਮੰਤਵ

  Visha te Mantav
- ਪ੍ਰਭਾਵਿਤ ਧਿਰਾਂ ਦਾ ਦੁਖਾਂਤ

  Prabhavit Dhiran da Dukhaant
- ਪਾਤਰ ਉਸਾਰੀ

  Patar Usaari

Unit-IV: ਫਿਲਮ 'ਕਿੱਸਾ' ਦਾ ਵਿਸ਼ਲੇਸ਼ਣ (2013) Film 'Qissa' da Vishleshan (2013) (11 hrs.)

- ਵੰਡ ਦੀ ਪੇਸ਼ਕਾਰੀ

  Wand Di Peshkari
- ਵਿਸ਼ਾ ਤੇ ਮੰਤਵ

  Visha te Mantav
- ਪ੍ਰਭਾਵਿਤ ਧਿਰਾਂ ਦਾ ਦੁਖਾਂਤ

  Prabhavit Dhiran da Dukhaant
- ਪਾਤਰ ਉਸਾਰੀ

  Patar Usaari

ESSENTIAL READINGS:

- Brar, Rajinderpal Singh (Ed.) (2011) **Punjabi Bhasha, Sahit, Sabhyachar ate Media: Antar Samvad,** Publication Bureau, Punjabi University, Patiala.

- Ghuman, Kapoor Singh (Trans.) (1987) **Filmaan Kiven Bandiyan Han**, (Written by Khwaja Ahmad Abbas), NBT, India.
- Seetal, Sohan Singh (2012) **Punjab Da Ujarha,** Lahore Book Shop, Ludhiana.

SUGGESTED READINGS:

- Narender, Mohan (2010) **Vibhajan ki Trasadi Bhartiya Katha Drishti,** Bhartiya Gyanpeeth, Nayi Dilli.
- Deepak Manmohan Singh (1989) **Desh Wand de Punjabi Sahit te Paye Prabhav (Galap de Adhar te),** Lahore Book Shop, Ludhiana.
- Kirpal Singh (Dr.) (1994) **Punjab da Batwara**, Punjabi University, Patiala.
- Ravinder Kaur (2007) **Since 1947: Partition Narratives Among Punjabi Migrants Old Delhi,** Oxford University Press, New Delhi.
- Khushwant Singh & Kuldip Nyiyar (1984) **Punjab da Dukhant,** Navyug Publishers, Delhi.
- Bhasker Sarkar (2009) **Mourning the Nation: Indian Cinema in the Wake of Partition**, Duke University Press Durham & London.
- Christian Metz (1990) **Film Language: A Semiotics of Cinema**, University of Chicago Press, Chicago.
- Satya M. Rai (1965) **Partition of the Punjab: A Study of Its effects on the Politics and Administration of the Punjab (1) 1947-56,** Asia Pub. House, London.
- Sinah, Kuldeep (2011) **Film Nirdeshan** Radha Krishan Prakashan Private Limited, Nayi Dilli.
- Paarkh, Jwarimal (2001) **Lokpriya Cinema Aur Samajik Yatharath,** Anamika Publishers and Limited, Delhi.
- Piyaar Singh (1974) **Cinema,** Bhasha Vibhag Punjab, Patiala.
- Sahni, Balraj (1974) **Cinema te Stage,** Nanak Singh Pustakmala, Amritsar.

INTERNET RESOURCES:

https://shodhganga.inflibnet.ac.in:8443/jspui/handle/10603/366035?mode=full

***(Note: Teachers are free to recommend additional related standard source books, if required so.)**

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

GENERIC ELECTIVES (GE-13)
PUNJAB DIAN LOK KALAVAN

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Punjab Dian Lok Kalavan (GE-13)	4	3	1	0	Class 12th pass in any subject	**Studied Punjabi up to 8th Standard** **or** ***Basic knowledge of Punjabi language***

LEARNING OBJECTIVES:

- The purpose of this course is to provide information about folk arts.
- The study of folk arts will help the students to enrich their cultural and creative aptitude.
- The course will develop a fundamental understanding of the basic nature, branches and history of Punjabi folk skills.
- It will help the students to understand and use methods of analysing the data from various forms of Punjabi folk arts.
- The course will provide them a broad interdisciplinary perspective of Punjabi folk arts.

LEARNING OUTCOMES:

- The students will obtain advanced knowledge of Punjabi folk arts.
- They will develop an insight about various forms of Punjabi arts.
- They will have in-depth knowledge of selected areas of Punjabi folk arts.
- They will understand the concepts of Punjabi folk arts.
- They will analyse the historical background Punjabi folk arts and their relation to Punjabi culture.

Unit-I ਲੋਕ ਕਲਾ: ਸਿਧਾਂਤਕ ਪੱਖ (Lok Kala: Sidhantak Pakh) (12 hrs.)

- ਲੋਕ ਕਲਾ: ਪਰਿਭਾਸ਼ਾ, ਪ੍ਰਕਿਰਤੀ ਅਤੇ ਸਰੂਪ

  Lok Kala: Pribhasha, Prakirti ate Saroop
- ਲੋਕ ਕਲਾ: ਵੰਨਗੀਆਂ

  Lok Kala: Vangiyan

- ਲੋਕ ਕਲਾ: ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ

  Lok Kala: Visheshtavan
- ਲੋਕ ਕਲਾ: ਸਮਾਜਕ ਮਹੱਤਵ

  Lok Kala: Samajak Mahattav

Unit-II ਮਿੱਟੀ ਨਾਲ ਸੰਬੰਧਤ ਲੋਕ ਕਲਾਵਾਂ (Mitti Naal Sambandhat Lok kalavan) (11 hrs.)

- ਹਥਵਾਰਾ ਨਾਲ ਵਾਧਾ ਕਰ ਕੇ ਵਿਸ਼ੇਸ਼ ਆਕਾਰ ਸਿਰਜਨਾ (Modelling): ਚੁੱਲ੍ਹਾ, ਭੜੋਲਾ

  Hathvara naal Vaadha kar ke Vishesh Aakaar Sirjana: Chullha, Bharhola
- ਵਿਸ਼ੇਸ਼ ਸਾਂਚੇ ਵਿਚ ਮਿੱਟੀ ਥੱਪ ਕੇ ਵਸਤੂ ਤਿਆਰ ਕਰਨਾ (Casting):ਅੰਗੀਠੀ, ਚੱਕਵਾਂ ਚੁੱਲ੍ਹਾ

  Vishesh Sanche vich Mitti thapp ke Vastu tyaar karna: Angithi, Chakvaan Chullha
- ਥੋਬੇ ਪੱਥ ਕੇ ਤਰਾਸ਼ਨ ਰਾਹੀਂ ਬਣਾਈਆਂ ਆਕ੍ਰਿਤੀਆਂ (Carving): ਹਾਰਾ, ਆਲ੍ਹਾ

  Thobe path ke Trashan rahin banayian aakritian: Haara, Aalaa
- ਲੋਕ ਕੰਧ ਚਿੱਤਰ (Wall Painting): ਕੰਧ ਉੱਤੇ ਰੰਗਾਂ ਨਾਲ ਚਿਤਰ, ਮਿੱਟੀ ਦੀਆਂ ਆਕ੍ਰਿਤੀਆਂ ਨੂੰ ਰੰਗਣਾ

  Lok Kandh Chittar: Kandh utte Rangan naal Chittar, Mitti dian aakritian nu rangana

Unit-III ਲੋਕ ਬੁਣਨ ਕਲਾ (Lok Bunan Kala) (11 hrs.)

- ਘਰੇਲੂ ਵਸਤਾਂ ਵਜੋਂ: ਦਰੀ, ਪੱਖੀਆਂ

  Ghreloo Vastan Vajon: Dari, Pakhiyan
- ਪਹਿਰਾਵੇ ਨਾਲ ਸੰਬੰਧਤ: ਕੱਪੜਾ, ਨਾਲ਼ੇ

  Pehraave naal Sambandhat: Kaprha, Naale
- ਖੇਤੀਬਾੜੀ ਨਾਲ ਸੰਬੰਧਤ: ਛਿੱਕਲੀ, ਟੋਕਰੇ

  Khetibaarhi naal Sambandhat: Chhikli, Tokre
- ਸਜਾਵਟੀ ਵਸਤਾਂ ਵਜੋਂ: ਦਰਵਾਜਿਆਂ ਦੀਆਂ ਲਟਕਣਾਂ, ਤਸਵੀਰਾਂ

  Sajawati Vastan Vajon: Darvajeyan dian Latkanan, Tasveeran

Unit-IV ਕਸੀਦਾਕਾਰੀ (Kaseedakari) (11 hrs.)

- ਮਰਦਾਂ ਦੇ ਕੱਪੜੇ ਉੱਤੇ ਕਸੀਦਾਕਾਰੀ: ਕੁੜਤਾ, ਰੁਮਾਲ

  Mardan de Kaprhe Utte Kaseedakari: Kurhta, Rumal
- ਔਰਤਾਂ ਦੇ ਕੱਪੜੇ ਉੱਤੇ ਕਸੀਦਾਕਾਰੀ: ਮੇਮ ਅਤੇ ਚਿੜੀਆ ਫੁੱਲ, ਫੁਲਕਾਰੀ

  Auratan de Kaprhe Utte Kaseedakari: Meim ate Chidia Full, Fulkari
- ਘਰੇਲੂ ਵਰਤੋਂ ਦੀਆਂ ਵਸਤਾਂ ਉੱਤੇ ਕਸੀਦਾਕਾਰੀ: ਚਾਦਰਾਂ, ਝੋਲ਼ੇ

  Ghreloo varton dian Vastan utte Kaseedakari: Chadran, Jhole
- ਸਜਾਵਟੀ ਵਰਤੋਂ ਲਈ ਕਸੀਦਾਕਾਰੀ: ਮੇਜ ਪੋਸ਼, ਤਸਵੀਰਾਂ

  Sajawati varton layi Kaseedakari: Mej Posh, Tasveran

ESSENTIAL READINGS:

- Harjit Singh (2005) **Punjab Di Lok Kala**, Guru Nanak Dev University, Amritsar.
- Kehal, Harkesh Singh (2013) **Punjabi Virsa Kosh,** Unistar Books Pvt. Ltd., Chandigarh.
- Thind, Karnail Singh (Dr) (2007) **Punjab da Lok Virsa (Part-I),** Punjabi University, Patiala.

SUGGESTED READINGS:

- Bedi, Vanjara (1967) **Suhaj Prabodh**, National Book Shop, Delhi.
- Bhupinder Singh, Surjit Singh (Ed.) (2009) **Lokdhara Di Bhumika**, Punjabi University, Patiala.
- Chaman, Saroj (2009) **Saundarya Shaster**, Publication Bureau, Punjabi Univesity, Patiala.
- Gill, Harjeet Singh (1975) **Folk art of Punjab**, Publication Bureau, Punjabi Univesity, Patiala.
- Gill, Harjeet Singh (1977) **A Fulkari from Bathinda**, Publication Bureau, Punjabi Univesity, Patiala.
- Kang, Kanwarjit Singh (1998) **Punjab De Kandh Chittar**, Publication Bureau, Punjabi Univesity, Patiala.
- Noor, Jagir Singh (Dr) (2008) **Punjabi Sabhiyachar: Mool Pachhan**, National Book Trust, Delhi.
- Thind, Karnail Singh (1996) **Punjab Da Lok Virsa**, Publication Bureau, Punjabi Univesity, Patiala.

INTERNET RESOURCES:

https://shodhganga.inflibnet.ac.in/handle/10603/103872?mode=full

***(Note: Teachers are free to recommend additional related standard source books, if required so.)**

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

Category V

COMMON POOL OF DISCIPLINE SPECIFIC ELECTIVE COURSES (DSE)

OFFERED BY THE DEPARTMENT OF PUNJABI

DISCIPLINE SPECIFIC ELECTIVE (DSE-1)
DALIT JEEVAN DI PUNJABI KAVITA

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Dalit Jeevan Di Punjabi Kavita **(DSE-1)**	4	3	1	0	Class 12th pass in any subject	**Studied Punjabi up to 8th Standard** **or** ***Basic knowledge of Punjabi language***

LEARNING OBJECTIVES:

- To introduce students with the political and cultural context of Dalit Poetry.
- To understand and trace the changes occurred in Dalit poetry during different time periods.
- To train students in parallel aesthetics created by Dalit literature.

LEARNING OUTCOMES

- Students will be able to form a distinct understanding of contemporary and historical understanding of the society created by Dalit poetry.
- They will be able to create a timeline of Dalit poetry in Indian and Punjabi literature.
- They will be able to analyse aesthetics and content of Punjabi Dalit poetry.

Unit-I ਦਲਿਤ ਚੇਤਨਾ ਤੇ ਪੰਜਾਬੀ ਕਵਿਤਾ (Dalit Chetna te Punjabi Kavita)

(12 hrs.)

- ਦਲਿਤ ਦੀ ਪਰਿਭਾਸ਼ਾ ਤੇ ਪਛਾਣ

  Dalit di Paribhasha te Pachhan
- ਪੰਜਾਬੀ ਦਲਿਤ ਸਾਹਿਤ ਦਾ ਨਿਕਾਸ ਅਤੇ ਵਿਕਾਸ

  Punjabi Dalit Sahit da Nikas ate Vikas
- ਪੰਜਾਬੀ ਕਵਿਤਾ ਵਿਚ ਦਲਿਤ ਦੇ ਆਰਥਕ-ਸਮਾਜਕ ਸਰੋਕਾਰਾਂ ਦੀ ਪੇਸ਼ਕਾਰੀ

  Punjabi Kavita vich Dalit de Arthak-Samajak Sarokaraan di Peshkari
- ਪੰਜਾਬੀ ਕਵਿਤਾ ਵਿਚ ਦਲਿਤ ਦੇ ਰਾਜਨੀਤਕ ਸਰੋਕਾਰਾਂ ਦੀ ਪੇਸ਼ਕਾਰੀ

  Punjabi Kavita vich Dalit de Rajnitak Sarokaraan di Peshkari

Unit-II ਪਹਿਲੇ ਦੌਰ ਦੀ ਦਲਿਤ ਕਵਿਤਾ (Pehle Dour di Dalit Kavita) (11 hrs.)

- ਬਾਬੂ ਮੰਗੂ ਰਾਮ ਮੂਗੋਵਾਲੀਆ: ਗੁਰਦੇਵ ਉਸਤਤੀ, ਪੰਜਾਬ ਦੇ ਅਛੂਤ ਪੰਥ ਨੂੰ ਵਧਾਈ

  Babu Mangu Ram Mugovaliya: Gurdev Ustati, Punjab de Achhoot Panth nu Vadhai
- ਚਰਨ ਦਾਸ ਨਿਧੜਕ: ਅਛੂਤ ਦੀ ਜਿੰਦਗੀ, ਦੇਸ਼ ਦੀ ਨਾਰੀ ਜਾਗੀ

  Charan Das Nidharak: Achhoot di Zindagi, Desh di Naari Jaagi
- ਗੁਰਦਾਸ ਰਾਮ ਆਲਮ: ਮਜ਼ਦੂਰ, ਇਨਸਾਨ

  Gurdas Ram Aalam: Mazdur, Insaan
- ਚਾਣਨ ਲਾਲ ਮਣਕ: ਨਾਮ ਅਮਰ ਹੈ ਗੁਰੂ ਰਵਿਦਾਸ ਤੇਰਾ, ਪੱਛੜੇ ਲੋਕਾਂ ਦਾ ਕਿਵੇਂ ਕਲਿਆਣ ਹੋਵੇ

  Chanan Lal Mnak: Naam Amar hai Guru Ravidas tera, Pachhre Lokan da kiven Kaliyan hove

Unit-III ਦੂਜੇ ਦੌਰ ਦੀ ਦਲਿਤ ਕਵਿਤਾ (Duje Dour di Dalit Kavita) (11 hrs.)

- ਚਰਨ ਸਿੰਘ ਸਫਰੀ: ਮਿਲਿਆ ਬੰਦੇ ਨੂੰ ਹੱਕ ਬਰਾਬਰੀ ਦਾ, ਜੇ ਭਾਰਤ ਦੀ ਧਰਤੀ ਉਤੇ

  Charan Singh Safri: Milya Bande nu Haq Brabari da, Je Bharat di Dharti utte
- ਪ੍ਰੀਤਮ ਰਾਮਦਾਸਪੁਰੀ: ਆਜ਼ਾਦੀ ਦੇ ਪਹਿਲੇ ਅਲੰਬਰਦਾਰ, ਬੇਗਮਪੁਰਾ

  Pritam Ramdaspuri: Azaadi de Pehle Alambardaar, Begampura
- ਸਿਰੀ ਰਾਮ ਅਰਸ਼: ਸ਼ਕਤੀ ਹੀਣੇ ਲੋਕ, ਸੋਹੰ

  Sri Ram Arsh: Shakti Heene lok, Sonh
- ਸੰਤ ਰਾਮ ਉਦਾਸੀ: ਨਵੇਂ ਅਹਿਦਨਾਮੇ, ਗੀਤਾਂ ਦਾ ਵਾਰਸ

  Sant Ram Udasi: Naven Ahidname, Geetan da Vaaras

Unit-IV ਤੀਜੇ ਦੌਰ ਦੀ ਦਲਿਤ ਕਵਿਤਾ (Teeje Dour di Dalit Kavita) (11 hrs.)

- ਬਲਬੀਰ ਮਾਧੋਪੁਰੀ: ਸੁਨਾਮੀ ਲਹਿਰਾਂ, ਸੰਸਕ੍ਰਿਤੀ

  Balbir Madhopuri: Sunami Lehran, Sanskriti
- ਗੁਰਮੀਤ ਕੱਲਰ ਮਾਜਰੀ: ਮੁਸਾਫਿਰ, ਪੋਸਟਮੈਨ

  Gurmeet Kalar Majri: Musafir, Postman
- ਨਵਤੇਜ ਗੜ੍ਹਦੀਵਾਲਾ: ਸਿਰਨਾਵੇਂ ਦੀਆਂ ਜੜ੍ਹਾਂ, ਤਾਰੇ

  Navtej Garhdiwala: Sirnaave diyan Jarhan, Taaro
- ਮਦਨ ਵੀਰਾ: ਧੁੰਦ ਤੋਂ ਪਾਰ, ਪਿੰਡ

  Madan Veera: Dhund ton Paar, Pind

ESSENTIAL READING:

- Gurmeet Singh Kalarmajri, Santokh Singh Sukhi (Kaav-Sangreh) (2022) **Zakhma da Haashiya,** Caliber Publications, Patiala.

SUGGESTED READING:

- Chaman Lal (2001) **Dalit aur Avshet Sahitya: Kujh Vichar,** Bhartiye Uchh Adhiyan Sansthan, Shimla.
- Ravinder Kumar (2005) **Aurat te Dalit: Hashiyagat Parvachan Nav-Itihasvaadi Paripekh,** Lokgeet Parkashan, Chandigarh.
- Ronki Ram, (2004) **Dalit Sahit: Sarot te Saroop,** Lokgeet Parkashan, Chandigarh.
- Ronki Ram (2012) **Dalit Pachaan: Mukti ate Shaktikarn,** Publication Bureau, Punjabi University, Patiala.
- Sarabjeet Singh (Ed.) (2004) **Dalit Drishti,** Chetna Parkashan, Ludhiana.

MAGAZINES/JOURNALS:

- Amarjeet Singh (Ed.) (2021) **Kaav-Shaster: Subaltern Studies Vishesh Ank 25-26,** Phagwara.

INTERNET RESOURCES:

- https://punjabipedia.org/
- https://pa.wikipedia.org/

***(Note: Teachers are free to recommend additional related standard source books, if required so.)**

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC ELECTIVE (DSE-2)
ANUVADIT BHARTI KAVITA

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Anuvadit Bharti Kavita (DSE-2)	4	3	1	0	Class 12th pass in any subject	**Studied Punjabi up to 8th Standard or *Basic knowledge of Punjabi language***

LEARNING OBJECTIVES:

- The course is designed to introduce poetry from various languages of our country.
- To help students understand the theme, structure and style of poetry in various Indian languages.
- To help students realize the importance of translated poetry.

LEARNING OUTCOMES:

- Students will gain cultural and historic background related to the poetry being studied.
- Students will be able to deliver comparative insights into the different poetry styles and themes.
- Students will be able to reflective translation commentary, where they analyse the source text and reflect on their translation process.

Unit-I ਉੱਤਰੀ ਭਾਰਤ (Uttari Bharat) **(12 hrs.)**

- **ڈوگری:** ਧਿਆਨ ਸਿੰਘ (ਲੋਅ ਦੀ ਆਸ), ਪਦਮਾ ਸਚਦੇਵ (ਅਮਨ)
  Dogri: Dhian Singh (Lo di Aas), Padma Sachdev (Aman)
- **ਉਰਦੂ:** ਗੁਲਜ਼ਾਰ (ਕਿਤਾਬਾਂ), ਨਿਦਾ ਫਾਜ਼ਲੀ (ਛੋਟਾ ਆਦਮੀ)
  Urdu: Gulzar (Kitaban), Nida Fazli (Chhota Aadmi)

- **ਸੰਸਕ੍ਰਿਤ:** ਡਾ. ਕੌਸ਼ਲ ਤਿਵਾੜੀ (ਗੋਲੀ), ਰਾਧਾ ਵੱਲਭ ਤ੍ਰਿਪਾਠੀ (ਨਿੱਕੀਆਂ ਮੱਛੀਆਂ ਦੀ ਵੱਡੀਆਂ ਮੱਛੀਆਂ ਨਾਲ ਗੱਲਬਾਤ)

  Sanskrit: Dr. Kaushal Tiwari (Goli), Radha Vallabh Tripathi (Nikkian Machhiya di Vaddiya Machhiya nal Galbaat)
- **ਕਸ਼ਮੀਰੀ:** ਸ਼ਾਇਸਤਾ ਮੁਬਾਰਕ ਬੁਖਾਰੀ (ਤੇਰੇ ਨਾਲ ਪਿਆਰ ਨਾ ਸਹੀ), ਮਹਾਰਾਜ ਕ੍ਰਿਸ਼ਨ ਸੰਤੋਸ਼ੀ (ਪ੍ਰਗਤੀ ਪ੍ਰਕਾਸ਼ਨ ਮਾਸਕੋ),

  Kashmiri: Shaista Mubarak Bukhari (Tere naal Pyaar Na Sahi), Maharaj Krishan Santoshi (Pragati Prakashan Moscow)
- **ਹਿੰਦੀ**: ਅਨਾਮਿਕਾ (ਰਾਬੀਆ ਅਨਵਰ: ਖੋਲੀ ਨੰਬਰ 73), ਕੁੰਵਰ ਨਰਾਇਣ (ਪ੍ਰੇਮ ਰੋਗ)

  Hindi: Anamika (Rabiya Anwar : Kholi No. 73), Kunwar Narayan (Prem Rog)

Unit-II ਪੱਛਮੀ ਭਾਰਤ (Pachhami Bharat) (11 hrs.)

- **ਸਿੰਧੀ**: ਹਰੀਸ਼ ਕਰਮਚੰਦਾਣੀ (ਬਾਪੂ ਵੀ ਰੋਂਦਾ ਹੈ), ਵੀਨਾ ਕਰਮਚੰਦਾਣੀ (ਗੁਲਾਬੀ ਰੰਗ)

  Sindhi: Harish Karamchandani (Bapu Vi Ronda Hai), Veena Karamchandani (Gulabi Rang)
- **ਕੋਂਕਣੀ**: ਸ਼ੰਕਰ ਪਰੁਲਕਰ (ਭਾਸ਼ਾ), ਨਯਨਾ ਆੜਾਰਕਰ (ਮੈਂ ਕੌਣ)

  Konkani: Shankar Parulkar (Bhasha), Nayna Aarharkar (Main Kaun)
- **ਮਰਾਠੀ**: ਪੀ. ਵਿੱਠਲ (ਮਨੁੱਖੀ ਭਾਸ਼ਾ ਦਾ ਆਦਮ ਦੁੱਖ), ਪ੍ਰਫੁੱਲ ਸ਼ਿਲੇਦਾਰ (ਪਿਆਰ)

  Marathi: P. Vitthal (Manukhi Bhasha da Adam Dukh), Praful Shiledar (Pyar)
- **ਗੁਜਰਾਤੀ**: ਸੰਜੂ ਵਾਲਾ (ਉਪਾਅ), ਜੈਯੰਤ ਪਾਠਕ (ਧੀ ਦੇ ਵਿਆਹ ਤੋਂ ਬਾਅਦ ਘਰ ਵਿੱਚ)

  Gujarati: Sanju Wala (Upaa), Jayant Pathak (Dhee de Viyah ton Baad Ghar Vich)

Unit-III ਦੱਖਣੀ ਭਾਰਤ (Dakhni Bharat) (11 hrs.)

- **ਤਮਿਲ:** ਆਰ. ਬਾਲਾਚੰਦਰਨ (ਸਰਕਸ), ਮੁੱਤੂਲਕਸ਼ਮੀ (ਏਥੇ ਸਭ ਰਾਜੀ-ਖੁਸ਼ੀ ਹੈ)

  Tamil: R. Balachandaran (Circus), MuttuLakshmi (Ethe Sabh Raazi-Khushi Hai)

- **ਤੇਲਗੂ:** ਕਾਂਚਨਪੱਲੀ ਰਾਜੇਂਦਰ ਰਾਜੂ (ਰਾਤ), ਡਾ. ਐੱਨ. ਗੋਪੀ (ਰੋਟੀ),

  Telugu: Kanchanpalli Rajendra Raju (Raat), Dr. N. Gopi (Roti)
- **ਮਲਿਆਲਮ:** ਕੇ. ਸੱਚਿਦਾਨੰਦਨ (ਭਾਸ਼ਾਵਾਂ), ਡਾ. ਜੋਇ ਵਾਸ਼ਇਲ (ਦਸ ਚੀਜਾਂ)

  Malayam: K. Sachidanandan (Bhashava), Dr. Joy Vashial (Das Cheeza)
- **ਕੰਨੜ:** ਚੰਦਰਸ਼ੇਖਰ ਪਾਟਿਲ (ਤਾਰਾ ਹੱਸ ਪਿਆ), ਡਾ. ਨਾ ਮੋਗਸਲੇ (ਇਹ ਨਹੀਂ ਇਹ ਨਹੀਂ)

  Kannad: Chandarshekhar Patil (Tara hass Piya), Dr. Na. Mogslay (Eh Nahi Eh Nahi)

Unit-IV ਪੂਰਬੀ ਭਾਰਤ (Purbi Bharat) (11 hrs.)

- **ਬੋਡੋ:** ਅਨਿਲ ਬੋਡੋ (ਜੇ ਤੂੰ ਕਦੇ ਆਉਂਦਾ ਹੈਂ), ਰਸ਼ਮੀ ਚੌਧਰੀ (ਹੰਝੂ)

  Bodo: Anil Bodo (Je Tu Kade Aunda Hain), Rashmi Chaudhary (Hanjhu)
- **ਬੰਗਾਲੀ:** ਸੁਨੀਲ ਗੰਗੋਪਾਧਿਆਇ (ਸਿਰਫ਼ ਕਵਿਤਾ ਦੇ ਲਈ), ਨਵਨੀਤਾ ਦੇਵਸੇਨ (ਉਹ ਕੁੜੀ)

  Bangali: Sunil Gangopadhyaya (Sirf Kavita De lyi), Navneeta Devsen (Oh Kurhi)
- **ਮੈਥਿਲੀ:** ਤਾਰਾਨੰਦ ਵਿਯੋਗੀ (ਛੁੱਟਣਾ), ਦੇਵਸ਼ੰਕਰ ਨਵੀਨ (ਦੰਗਾਕਾਰੀਆਂ ਨੂੰ ਘਰ ਦੀ ਸਮਝ ਨਹੀਂ ਹੁੰਦੀ)

Maithili: Taranand Viyogi (Chhuttna), Devshankar Naveen (Dangakaariya nu Ghar di Samajh Nahi Hundi)

- **ਮਣੀਪੁਰੀ:** ਆਰ. ਕੇ. ਦੇਵਰਿਤਾ (ਇਕ ਫੁੱਲ ਦੀ ਜੀਵਨ ਕਥਾ), ਈ. ਵਿਜੇ ਲਕਸ਼ਮੀ (ਮਣੀਪੁਰ)

  Manipuri: R. K. Devrita (Ik Phull di Jeevan Katha), E. Vijaylakshmi (Manipur)
- **ਨੇਪਾਲੀ:** ਕਾਲੂ ਸਿੰਘ ਰਨਪਹੇਲੀ (ਜਿੰਦਗੀ ਏਥੇ ਹੀ ਕਿਤੇ ਹੋਵੇਗੀ), ਪ੍ਰਵੀਨ ਰਾਈ ਚੁਮੇਲੀ (ਇਕ ਦਿਨ)

  Nepali: Kalu Singh Ranpaheli (Zindagi Ethe hi Kite Hovegi), Praveen Rai Chumeli (Ik Din)
- **ਉੜੀਆ:** ਸੀਤਾਕਾਂਤ ਮਹਾਪਾਤਰ (ਪੱਥਰ), ਵਿਸ਼ਣੂ ਮਹਾਂਪਾਤਰ (ਪਰਤਾਂਗਾ ਇਕ ਦਿਨ)

  Odiya: Sitakant Mahapatar (Pathar), Vishnu Mahapatar (Partanga Ik Din)

- **ਅਸਮੀ**: ਹਰੇਕ੍ਰਿਸ਼ਨ ਡੇਕਾ (ਪਿਆਰ ਦੇ ਲਈ ਦੋ ਸ਼ਬਦ), ਨੀਲਮਣੀ ਫੁੱਕਣ (ਅਕਾਸ਼)

  Assami: Harekrishan Deka (Pyar de Layi Do Shabad), Neelmani Phukan (Akaash)

- **ਸੰਥਾਲੀ:** ਚੰਦਰ ਮੋਹਨ ਕਿਸਕੂ (ਫੁੱਲਾਂ ਦੀ ਖੇਤੀ), ਨਿਰਮਲਾ ਪੁਤੁਨ (ਔਰਤ)

  Santhali : Chandar Mohan Kisku (Phullan di Kheti), Nirmala Putun (Aurat)

ESSENTIAL READING:

- Tarsem, Satpal Bhikhi, Gurdeep Singh (Tr. & Ed.) (2022) **Kaav-Dishavan (Bharti Bhashavan diya kavitavan)**, Caliber Publication, Patiala.

SUGGESTED READINGS:

- Bhola Nath Tiwari (1972) **Anuvaad Vigyan,** Kitabghar Prakashan, New Delhi.
- Mohit K. Roy (Ed.) (2000) **Studies in Translation,** Atlantic Publishers, Delhi.
- Sushil Kumar (2003) **Anuvaad de Samvaad,** Udaan Publications, Mansa.

INTERNET RESOURCES:

- https://punjabipedia.org/topic.aspx?txt=%E0%A8%85%E0%A8%A8%E0%A9%81%E0%A8%B5%E0%A8%BE%E0%A8%A6

- https://pa.wikipedia.org/wiki/%E0%A8%85%E0%A8%A8%E0%A9%81%E0%A8%B5%E0%A8%BE%E0%A8%A6

- **https://www.youtube.com/watch?v=qnLBS6d2RvM&t=790s/**

***(Note: Teachers are free to recommend additional related standard source books, if required so.)**

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC ELECTIVE (DSE-3)

JEEVNI TE SWAI-JEEVNI SAHIT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Jeevni te Swai-Jeevni Sahit (DSE-3)	4	3	1	0	Class 12th pass in any subject	**Studied Punjabi up to 8th Standard or *Basic knowledge of Punjabi language***

LEARNING OBJECTIVES:

- To introduce the students to Punjabi Biography & Autobiography tradition.
- To acquaint the students with the technicalities involved in the genesis of biographies and autobiographies in general.
- To introduce them to certain biographical pieces of socio cultural, literary and moral significance.

LEARNING OUTCOMES:

- Students would have learnt the importance of memory in writing Biography & Autobiography.
- Students would have learnt good lessons by reading the Biography & Autobiographies of remarkable persons.
- Reading of Biography & Autobiographies would have helped them to refine their life and to make their life health

Unit-I ਜੀਵਨੀ ਤੇ ਸਵੈ-ਜੀਵਨੀ: ਸਿਧਾਂਤਕ ਪੱਖ (Jeevni te Swai-Jeevni: Sidhantak Pakh)

(12 hrs.)

- ਜੀਵਨੀ: ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਤੱਤ

  Jeevni: Paribhasha ate Tatt

- ਸਵੈ-ਜੀਵਨੀ: ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਤੱਤ

  Swai-Jeevni: Paribhasha ate Tatt
- ਪੰਜਾਬੀ ਜੀਵਨੀ ਦਾ ਇਤਿਹਾਸ

  Punjabi Jeevni da Itihaas
- ਪੰਜਾਬੀ ਸਵੈ-ਜੀਵਨੀ ਦਾ ਇਤਿਹਾਸ

  Punjabi Swai-Jeevni da Itihaas

Unit-II ਗਿਆਨੀ ਗੁਰਮੁਖ ਸਿੰਘ ਮੁਸਾਫਿਰ: ਕਰਤਾਰ ਸਿੰਘ ਦੁੱਗਲ (Giani Gurmukh Singh Musafir-Kartar Singh Duggal) **(11 hrs.)**

- ਪਾਤਰ ਚਿਤਰਣ

  Patar Chitran
- ਨਾਇਕ ਦੀ ਸ਼ਖਸੀਅਤ ਦਾ ਵਿਕਾਸ

  Naayak di Shakhsiyat da Vikas
- ਸਮਾਜਕ, ਧਾਰਮਕ ਤੇ ਰਾਜਨੀਤਕ ਪੱਖ

  Smajak, Dharmak te Rajnitak Pakh
- ਜੀਵਨੀ ਵਜੋਂ ਪਰਖ

  Jeevni Vajon Parakh

Unit-III ਆਰਸੀ:ਤੇਜਾ ਸਿੰਘ (Aarsi:Teja Singh) (11 hrs.)

- ਮੁੱਖ ਪਾਤਰ ਦਾ ਵਿਅਕਤੀਤਵ

  Mukh Patar da Vyaktitav
- ਸਹਾਇਕ ਪਾਤਰ

  Sahayak Patar
- ਪਰਿਵਾਰਕ ਤੇ ਸਮਾਜਕ ਮਾਹੌਲ

  Parivarak te Samajak Maahol
- ਸਵੈ-ਜੀਵਨੀ ਵਜੋਂ ਪਰਖ

  Swai-Jeevni Vajon Parakh

Unit-IV ਪੰਜਾਬ ਦੀਆਂ ਪ੍ਰਮੁੱਖ ਹਸਤੀਆਂ: ਡਾ. ਕੰਵਲਜੀਤ ਗਰੋਵਰ (Punjab Diyan Pramukh Hastiyan-Dr. Kanwaljit Grover) (11 hrs.)

- ਸੋਭਾ ਸਿੰਘ

  Sobha Singh
- ਬਲਰਾਜ ਸਾਹਨੀ

  Balraj Sahni
- ਖੁਸ਼ਵੰਤ ਸਿੰਘ

  Khushwant Singh
- ਹਰਗੋਬਿੰਦ ਖੁਰਾਣਾ

  Hargobind Khuranna

ESSENTIAL READINGS:

- Duggal, Kartar Singh (1983) **Giani Gurmukh Singh Musafir**, National Book Trust, Delhi.

- Grover, Kanwaljit (Dr.) (2003) **Punjab Diyan Pramukh Hastiyan,** Kasturi Lal and Sons, Hall Bazar, Amritsar.
- Teja Singh (1952) **Aarsi,** Sikh Publishing House, Amritsar.

SUGGESTED READINGS:

- Arvinderpal Kaur (1991) **Swai-Jeevni Shastar,** Waris Shah Foundation, Amritsar.
- Gurnaib Singh ate Charanjeet Kaur (Ed.) **(**2014) Ratan Singh Jaggi, **Jeevan Katha (Vartak Sidhant)**, Publication Bureau, Punjabi University, Patiala.
- Rajbir Kaur, (Ed.) (2009) **Puratan ate Naveen Punjabi Vartak: Sidhant te Vihar,** Waris Shah Foundation, Amritsar.
- Vatish, Dharamchand (1999) **Punjabi Swai-Jeevni,** Punit Publishers, Malerkotla.

INTERNET RESOURCES:

- **https://punjabipedia.org/topic.aspx?txt=%E0%A8%AA%E0%A9%B0%E0%A8%9C%E0%A8%BE%E0%A8%AC%E0%A9%80+%E0%A8%B8%E0%A9%8D%E0%A8%B5%E0%A9%88%E0%A8%9C%E0%A9%80%E0%A8%B5%E0%A8%A8%E0%A9%80++%E0%A8%B8%E0%A8%BE%E0%A8%B9%E0%A8%BF%E0%A8%A4&k=4**

- **https://pa.wikipedia.org/wiki/%E0%A8%AA%E0%A9%B0%E0%A8%9C%E0%A8%BE%E0%A8%AC%E0%A9%80_%E0%A8%B8%E0%A8%B5%E0%A9%88_%E0%A8%9C%E0%A9%80%E0%A8%B5%E0%A8%A8%E0%A9%80**

***(Note: Teachers are free to recommend additional related standard source books, if required so.)**

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE (DSE-4)
DESH WAND DA PUNJABI SAHIT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Desh Wand da Punjabi Sahit **(DSE-4)**	4	3	1	0	Class 12th pass in any subject	**Studied Punjabi up to 8th Standard** **or** ***Basic knowledge of Punjabi language***

LEARNING OBJECTIVES:

- To help students understand the difficult socio-political issues leading up to, and following from, the independence and partition of British India.
- To help them to realise the impact of partition on communities and individuals through the selected texts.
- To help them to learn about the crucial role played by literary and creative texts in making available to us the full dimensions of human tragedy.

LEARNING OUTCOMES:

- Students will be able to define circumstances before and after partition.
- They will be able to recognize the role played by partition in shaping the cultural, social and political realities of contemporary Punjab.
- Students will be able to recognize the various elements of conflict poetry in the selected texts.

Unit- I ਦੇਸ਼ ਵੰਡ ਨਾਲ ਸੰਬੰਧਤ ਸਾਹਿਤ: ਮੁਢਲੀ ਜਾਣ-ਪਛਾਣ (Desh Wand naal Sambhandit Sahit: Mudhli Jaan-Pachhan) (12 hrs.)

- ਦੇਸ਼ ਵੰਡ ਦੀ ਪੰਜਾਬੀ ਕਵਿਤਾ

  Desh Wand di Punjabi Kavita
- ਦੇਸ਼ ਵੰਡ ਦੀ ਪੰਜਾਬੀ ਕਹਾਣੀ

  Desh Wand di Punjabi Kahani
- ਦੇਸ਼ ਵੰਡ ਦਾ ਪੰਜਾਬੀ ਨਾਵਲ

  Desh Wand da Punjabi Novel

- ਦੇਸ਼ ਵੰਡ ਦਾ ਪੰਜਾਬੀ ਨਾਟਕ
  Desh Wand da Punjabi Natak

Unit- II ਪਹਿਲੇ ਦੌਰ ਦੀ ਦੇਸ਼ ਵੰਡ ਨਾਲ ਸੰਬੰਧਤ ਕਵਿਤਾ (Pehle Dour di Desh Wand naal Sambhandit Kavita) (11 hrs.)

- ਗੁਰਮੁੱਖ ਸਿੰਘ ਮੁਸਾਫਿਰ: ਰਾਵਲਪਿੰਡੀ
  Gurmukh Singh Musafir: Rawalpindi
- ਸ਼ਰੀਫ ਕੁੰਜਾਹੀ: ਫੁੱਲ ਕਿਉਂ ਹੋਏ ਕੰਡੇ
  Sharif Kunjahi: Phull Kyun Hoye Kande
- ਕਰਨੈਲ ਸਿੰਘ ਪਾਰਸ: ਪਹਿਲ ਪੰਜ ਬੰਦ
  Karnail Singh Paras: Pehl Panj Band
- ਅੰਮ੍ਰਿਤਾ ਪ੍ਰੀਤਮ: ਅੱਜ ਆਖਾਂ ਵਾਰਿਸ ਸ਼ਾਹ ਨੂੰ
  Amrita Pritam: Aj Akhaan Waris Shah Nu

Unit- III ਦੂਜੇ ਦੌਰ ਦੀ ਦੇਸ਼ ਵੰਡ ਨਾਲ ਸੰਬੰਧਤ ਕਵਿਤਾ (Duje Dour di Desh Wand naal Sambhandit Kavita) (11 hrs.)

- ਹਰਿਭਜਨ ਸਿੰਘ: ਸੌਂ ਜਾ ਮੇਰੇ ਮਾਲਕਾ
  Harbhajan Singh: So ja Mere Maalaka
- ਅਹਿਮਦ ਰਾਹੀ: ਦੇਸ਼ਾਂ ਵਾਲੀਏ
  Ahmed Rahi: Deshan Waliye
- ਸ਼ਿਵ ਕੁਮਾਰ : ਮੌਤ ਦੇ ਰਾਹ
  Shiv Kumar: Maut de raah
- ਸੁਰਜੀਤ ਪਾਤਰ: ਉਨ੍ਹਾਂ ਦਾ ਵਿਰਲਾਪ
  Surjit Patar: Unha da Virlaap

Unit- IV ਤੀਜੇ ਦੌਰ ਦੀ ਦੇਸ਼ ਵੰਡ ਨਾਲ ਸੰਬੰਧਤ ਕਵਿਤਾ (Teeje Dour di Desh Wand naal Sambhandit Kavita) (11 hrs.)

- ਅਮਿਤੋਜ: ਲਾਹੌਰ ਦੇ ਨਾਂ ਖਤ
  Amitoj: Lahore de naa khat
- ਨਿਰੁਪਮਾ ਦੱਤ: ਕਿੱਥੇ ਗਿਆ ਬੰਦਿਆ
  Nirupma Dutt: Kithe Gyea Bandiya
- ਜੁਬੈਰ ਅਹਿਮਦ: ਸ਼ਹਿਰ ਬਟਾਲੇ ਦੀ ਫੇਰੀ
  Zubair Ahmed: Shehar Batale di Pheri
- ਮਹਿਮੂਦ ਅਵਾਣ: ਪੀਰਾਂ ਆਲਾ ਬਾਗ
  Mahmood Avaan: Peeran Aala Baag

ESSENTIAL READINGS:

- Amarjeet Chandan (Ed.) (2018) **Sann Santaali (Punjab de Ujaarhe di Shayari),** Navyug Publishers, Navi Delhi.

SUGGESTED READINGS:

- Anita, Inder Singh (1987) **The Origin of the Partition of India 1936-1947,** Oxford University Press, Delhi.
- Bipan Chander ate Hor **(**1972) **Suntanntrata Sangraam,** NBT, Delhi.
- Fauja Singh (1972) **A Brief Account of Freedom Movement in the Punjab,** Punjabi University, Patiala.
- Jolly, Jagjit Kaur (2008) **Pakistani Punjabi Kavita: Samaj Sabhiyacharak Adhian,** Lokgeet Parkashan, Chandigarh.
- Kaloti, Keval (1993) **Honi ik Desh Di,** Ravi Sahit Prakashan, Amritsar.
- Seekri, S.L. (2003) **Bharat da Rashtari Andolan ate Sanvidhanak Vikas (1858-1947),** Punjabi University, Patiala.
- Seetal, Sohan Singh (2012) **Punjab da Ujaarha,** Lahore Book Shop, Ludhiana.

INTERNET RESOURCES:

- https://punjabipedia.org/
- https://pa.wikipedia.org/

***(Note: Teachers are free to recommend additional related standard source books, if required so.)**

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DEPARTMENT OF SANSKRIT

DSC-7: Classical Sanskrit Literature: Drama

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the Course			Eligibility criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Classical Sanskrit Literature: Drama	04	3	1	0	Semester II Passed	Working Knowledge of Sanskrit

Learning Objectives

This course is intends to acquaint the students with two of the most famous dramaturgical works of Sanskrit literature that represent the developmental phases of Sanskrit drama.

Learning outcomes

After the completion of this course, the students will be well informed about the vastness and richness of classical Sanskrit dramatic tradition. This course will enhance the ability of the learners for critical thinking on issues that relate to culture, polity, morality, religion etc. as reflected in the prescribed texts. The course will give the students a basic knowledge of the formal patterns and structures of Sanskrit drama in the tradition of Bharata's Natya Shastra.

Detailed Syllabus

Unit I **15Hrs**

Abhijānaśākuntalam– Kālidāsa I & IV

Abhijñānaśākuntalam : Act I and Act IV
(Text Reading ,Grammar, Translation, Explanation, Introduction to the Author, Purpose and design of Šākuntalam., Popular sayings about the Author, Poetic excellence, Drama's Plot, Timing of Action. Personification of nature, Linguistic style of Kālidāsa, Dhvani , Upamā of Kālidāsa, and other problems related to the text).

Unit II **15Hrs**

Mudrārākṣasam –Act- I , Act- II and Act –III

Mudrārākṣasam: Act-I
Mudrārākṣasam: Act-II
Mudrārākṣasam: Act-III
(Text Readings ,Grammar, Translation, Explanation, Introduction, Author, Purpose and design of *Mudrārākṣasa.* Poetic excellence, Plot, Timing of Action, Thematic analysis and other problems related to text.)

Note- Following verses are not to be taught and will not be asked in question-paper.

Act I-11, 12, 13, 15, 16 and 22
Act II-2, 6, 12 and 14
Act III-7, 8, 9, 10, 11, 19, 25, 27, 28 and 30.

Unit III **09Hrs**

Critical survey of Sanskrit Drama

Origin and Development of Sanskrit Drama: Some prominent dramatists and their works-: Bhāsa, Śūdraka, ŚriHarṣa, Bhavabhūti, and Bhaṭṭanārāyaṇa.

Unit IV **06Hrs**

Some Dramaturgical Terms

Nāndī, Prastāvanā, Sūtradhāra, Pāripārśvika, Vidūśaka, Kañcukī, Viṣkambhaka, Praveśaka, Chūlikā, Aṅkāsya, Aṅkāvatāra, Prakāśa, Svagata, Barata-vākya,

Essential/recommended readings

- अभिज्ञानशाकुन्तलम्, व्या०सुबोधचन्द्र पन्त मोतीलाल बनारसीदास, दिल्ली।
- अभिज्ञानशाकुन्तलम्, व्या० सुरेन्द्रदेव शास्त्री, रामनारायण बेनीप्रसाद,, इलाहाबाद।
- अभिज्ञानशाकुन्तलम्, व्या० नारायणराम आचार्य निर्णयसागर प्रेस।
- मुद्राराक्षसम् चौखम्बा विद्याभवन, वाराणसी।
- मुद्राराक्षसम् निरूपण विद्यालंकार, , साहित्य भण्डार मेरठ।
- मुद्राराक्षसम्, रमाशंकर त्रिपाठी, वाराणसी ।
- भगवतशरण उपाध्याय, कालिदास, कवि और काव्य, भारतीय ज्ञानपीठ, काशी.
- हजारीप्रसाद द्विवेदी, कालिदास की लालित्य योजना, राजकमल प्रकाशन.
- पंकज कुमार, मिश्र शाकुन्तलविषयक रम्यत्व की अवधारणा, परिमल पब्लिकेशन, दिल्ली
- Abhijñanaśākuntalam, C.R.Devadhar (Ed.), MLBD, Delhi.
- Abhijnanasakuntalam, M.R. Kale (Ed.), MLBD, Delhi.
- Gajendra Gadakar (Ed.), Bose, Ramendramohan, Abhijñanas Agency, 10 College, Square, Calcutta.
- Mudräräksasam, M.R. Kale(Ed.),MLBD, Delhi.
- Mudraraksasam, K.T.Telang(Ed.), Nag Publishers, Delhi.

Additional Resources:

1. Minakshi Dalal, *Conflict in Sanskrit Drama,* Somaiya Publication Pvt. Ltd.

2. Ratnamayi Dikshit, *Women in Sanskrit Dramas*, Meherchand Lachhman Das, Delhi.

3. A.B. Keith, *Sanskrit Drama,* Oxford University Press London, 1970.

4. G. K. Bhat, *Sanskrit Drama*, Karnataka University Press, Dharwar 1975.

5. Henry W. Wells, *Six Sanskrit Plays,* Asia Publishing House, Bombay.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

DSC-8: Sanskrit Linguistics

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Sanskrit Linguistics	04	3	1	0	Semester II Passed	Working Knowledge of Sanskrit

Learning Objectives

This course intends to acquaint the students with basic knowledge of Sanskrit linguistics. The Primary objective of the course is to familiarise the learners with the concepts and theories of modern Linguistics and encourage them to analyse Sanskrit Linguistically.

Learning outcomes

After the completion of this course, the students will be able to form a fundamental knowledge about the modern development of the subject of Linguistic and examine Sanskrit language in the light of the structures propounded by the modern Linguistics .

Detailed Syllabus

Unit I — 12Hrs

भाषा का स्वरूप, भाषा की परिभाषा, भाषा की विशेषताएँ, भाषाविज्ञान का स्वरूप, भाषाविज्ञान के मुख्य अङ्ग एवं भाषाविज्ञान की उपादेयता

Unit II — 12Hrs

संस्कृत की दृष्टि से ध्वनिविज्ञान, पदविज्ञान, वाक्यविज्ञान एवं अर्थविज्ञान का सामान्य अवबोध

Unit III — 12Hrs

मूल भारोपीय भाषा की संकल्पना एवं उसकी आधुनिक समीक्षा, भारोपीय भाषापरिवार एवं संस्कृत

Unit IV — 09Hrs

संस्कृत एवं तुलनात्मक भाषाविज्ञान के इतिहास का सामान्य परिचय

Essential/recommended readings

1. तिवारी, भोलानाथ, तुलनात्मक भाषाविज्ञान, मोतीलाल बनारसीदास, दिल्ली, 1974.
2. तिवारी, भोलानाथ, भाषाविज्ञान, किताबमहल, इलाहाबाद, 1992.
3. द्विवेदी, कपिलदेव, भाषाविज्ञान एवं भाषाशास्त्र, विश्वविघालय प्रकाशन, वाराणसी, 2001.
4. व्यास, भोलाशंकर, संस्कृत का भाषाशास्त्रीय अध्ययन, चौखम्बा विघाभवन, 1957.
5. शर्मा, देवीदत्त, भाषिकी और संस्कृत भाषा, हरियाणा साहित्य अकादमी, चंडीगढ़
6. शर्मा, देवीदत्त, संस्कृत का ऐतिहासिक एवं संरचनात्मक परिचय (a Historical and Structural Introduction to Sanskrit), हरियाणा साहित्य अकादमी, चण्डीगढ़
7. शर्मा, देवेन्द्रनाथ, भाषाविज्ञान की भूमिका, राधाकृष्ण प्रकाशन, दिल्ली, 2014
8. सिंह, कर्ण, भाषा विज्ञान (Comparative Philology and History of Linguistics), साहित्य भण्डार, सुभाष बाज़ार, मेरठ, 250002
1. Burrow, T., Sanskrit Language (also trans. into Hindi by Bholashankar Vyas), ChaukhambaVidyaBhawan, Varanasi, 1991.
2. Crystal, David, The Cambridge Encyclopedia of Language, Cambridge, 1997.
3. Ghosh, B.K., Linguistic Introduction to Sanskrit, Sanskrit Pustak Bhandar, Calcutta, 1977.
4. Gune, P.D., Introduction to Comparative Philology, Chaukhamba Sanskrit Pratisthan, Delhi, 2005.
5. Jesperson, Otto, Language: Its Nature, Development and Origin, George Allen & Unwin, London, 1954.
6. Murti, M., An Introduction to Sanskrit Linguistics, D.K. Srimannarayana, Publication, Delhi, 1984.
7. Taraporewala, Elements of the Science of Language, Calcutta University Press, Calcutta, 1962.
8. Verma, S.K., Modern Linguistics, Oxford University Press, Delhi,
9. Woolner, A.C., Introduction to Prakrit, Bhartiya Vidya Prakashan, Varanasi.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

DSC-9: Indian Epigraphy I

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Indian Epigraphy I	04	3	1	0	Semester II Passed	Working Knowledge of Sanskrit

Learning Objectives

This course aims at acquainting the students with the basic knowledge of resources epigraphical in Sanskrit, the only source which directly reflects the society, politics, geography and economy of the time. The course is also intended to help students know the different styles of Sanskrit writings.

Learning outcomes

After the completion of this course , the learners will be aware of the different types of inscription . He will have a sound idea about the relationship of Epigraphy and Histriocity .

Detailed Syllabus

Unit I: Epigraphy **10Hrs**

Introduction to Epigraphy and Types of Inscriptions
Role of Indian Inscriptions in the reconstruction of Ancient Indian History and Culture

Unit II **10Hrs**

History of Epigraphical Studies in India
History of Decipherment of Ancient Indian Scripts, Contribution of Indologists in the field of Epigraphy: Fleet, Cunninghum, Princep, Buhler, D.C. Sircar, Gaurishankar Ojha, Rajbali Pandey, R.G. Bhandarkar.

Unit III: Palaeography **15Hrs**

Antiquity of the Art of Writing
Writing Materials, Inscribers and Libraries
Introduction to Ancient Indian Scripts. Reading and writing skills of Asokan Brahmi Script
Introduction to Gupatan Brahmi, Kharoshthi, Sharda, Kutil,

Unit IV: Chronology **10Hrs**

General Introduction to Ancient Indian Chronology
System of Dating the Inscriptions (Chronograms)
Main Eras- Saptarshi, Kali, Veer Samvat, Bauddha Samvat, Maurya Samvat, Vikrama Era, Śaka Samvat, Gupta Samvat, Harsha Samvat, Solar Year and Lunar Year.

Essential/recommended readings

1. अभिलेख-मंजूषा, रणजीत सिंह सैनी, न्यूभारतीय बुक कार्पोरेशन, दिल्ली, 2000.
2. उत्कीर्णलेखपञ्चकम्, झा बन्धु, वाराणसी, 1968.
3. उत्कीर्णलेखस्तबकम्, जियालाल काम्बोज, ईस्टर्न बुकलिंकर्स, दिल्ली.
4. भारतीय अभिलेख, एस.एस. राणा, भारतीय विद्याप्रकाशन, दिल्ली, 1978.
5. भारतीय प्राचीन लिपिमाला, गौरीशंकरहीराचन्द ओझा, अजमेर, 1918.
6. Select Inscriptions (Vol.I) - D.C. Sircar, Calcutta, 1965.
7. नारायण, अवध किशोर एवं ठाकुरप्रसाद वर्मा : प्राचीनभारतीय लिपिशास्त्र और अभिलेखिकी , वाराणसी, 1970.
8. पाण्डे, राजबली : भारतीय पुरालिपि, लोकभारती प्रकाशन, इलाहाबाद, 1978.
9. ब्यूलर, जॉर्ज : भारतीय पुरालिपि शास्त्र, (हिन्दीअनु०) मङ्गलनाथ सिंह, मोतीलाल बनारसीदास, दिल्ली, 1966.
10. मुले, गुणाकर : अक्षरकथा, प्रकाशनविभाग, भारतसरकार, दिल्ली, 2003.
11. राही, ईश्वरचन्द : लेखनकला का इतिहास (खण्ड 1—2), उत्तरप्रदेश हिन्दीसंस्थान, लखनऊ, 1983.
12. सरकार, डी.सी. : भारतीय पुरालिपिविद्या, (हिन्दीअनु०) कृष्णदत्त वाजपेयी, विद्यानिधि प्रकाशन, दिल्ली, 1996.
13. सहाय, शिवस्वरूप : भारतीय पुरालेखों का अध्ययन, मोतीलाल बनारसीदास,दिल्ली. Dani, Ahmad Hasan: *Indian Paleography*, Oxford, 1963.
14. Mishra, Vinod K., Calenders of Indian Motilal Banarsidass, Delhi-110007, 2020.
15. Pillai, Swami Kannu& K.S. Ramchandran: *Indian Chronology (Solar, Lunar and Planetary),* Asian Educational Service, 2003.
16. Satyamurty, K.: *Text Book of Indian Epigraphy*, Lower Price Publication, Delhi, 1992.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

SANSKRIT AS MAJOR

DSC-5: Sanskrit Theatre

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
(Discipline A-3) Indian Theatre	04	3	1	0	Semester II Passed	Working Knowledge of Sanskrit

Learning Objectives

With its audio-visual characteristics, drama is considered to be the best among all forms of arts. The history of theatre in India is very old and the glimpses of the Theatre can be finding in the hymns of Rigveda. The dramaturgy was later developed by Bharat. The objectives of this curriculum are to help the students to identify the richness of drama and to become aware of the classical aspects of Theatre.

Learning outcomes

After going through this course students will be able to know about several theoretical aspects of theatrical performance and production. They will become aware of the many types of theatres, their design and stage setting, acting, dress and makeup etc. Students also become familiar with the main principals of theatre performance and appreciation.

Detailed Syllabus

Unit I **15Hrs**

Origin and development of stage in different ages:
Pre-historic, Vedic age. Epic-puranic age

Unit II **12Hrs**

Theatre: Types and Constructions

Unit III **10Hrs**

Drama: Subject-Matter (vastu),
Acting: Āṅgika, Vācika, Sāttvika and Āhārya

Unit IV **08Hrs**

Actor (netā), ***Rasa*** (Sentiment)

Essential/recommended readings

1. नाट्यशास्त्रम्, (सम्पा. एवं व्या.) डा. पारसनाथ द्विवेदी, सम्पूर्णानन्दसंस्कृतविश्वविद्यालय, वाराणसी।
2. राधावल्लभ त्रिपाठी (*सम्पा. एवं संक.*), संक्षिप्तनाट्यशास्त्र हिन्दी भाषानुवादसहित, वाणी प्रकाशन दिल्ली *2008*
3. राधावल्लभ त्रिपाठी, भारतीय नाट्य: स्वरूप एवं परम्परा, संस्कृत परिषद्, सागर मध्य प्रदेश *1988*
4. हजारी प्रसाद द्विवेदी (*सं.*), नाटशास्त्र की भारतीय परम्परा एवं दशरूपक,राजकमल प्रकाशन, दिल्ली *1963*
5. सीताराम झा, नाटक और रंगमंच, बिहार राष्ट्रभाषा परिषद् पटना *1982*
6. बाबूलाल शुक्ल शास्त्री (सम्पा.), नाट्यशास्त्र (1-4 भाग), चौखम्भा संस्कृत संस्थान, वाराणसी, 1984
7. राधावल्लभ त्रिपाठी, नाट्यशास्त्र विश्वकोश (1-4 भाग), प्रतिभा प्रकाशन दिल्ली 1999
8. राधावल्लभ त्रिपाठी, भारतीय नाट्यशास्त्र की परम्परा और विश्व रंगमंच, प्रतिभा प्रकाशन दिल्ली।
9. व्रजमोहन चतुर्वेदी, नाट्यशास्त्रम्, विद्यानिधि प्रकाशन दिल्ली, 2003
10. केशवरामुसलगांवकर, संस्कृत नाट्य मीमांसा, परिमल प्रकाशन, दिल्ली ।
11. शिवशरण शर्मा, आचार्य भरत, मध्य प्रदेश हिन्दी ग्रन्थ अकादमी, भोपाल ।

Suggested Readings:

1. रामलखन शुक्ल, संस्कृत नाट्य कला, मोतीलाल बनारसीदास, नई दिल्ली, 1970
2. गोविन्द चन्द्र राय, नाट्यशास्त्र में रंगशालाओं के रूप, काशी, 1958
3. भानुशंकर मेहता, भरत नाट्यशास्त्र तथा आधुनिक प्रासंगिकता, वाराणसी ।
4. वाचस्पति मेहता, भारतीय नाट्य परम्परा एवं अभिनयदर्पण, इलाहाबाद, 1967
5. लक्ष्मी नारायण लाल, रंगमंच और नाटक की भूमिका, दिल्ली, 1965
6. लक्ष्मी नारायण गर्ग, भारत के लोकनाट्य, हाथरस संगीत कार्यालय, 1961
7. सीताराम चतुर्वेदी, भारतीय तथा पाश्चात्य रंगमंच, हिन्दी समिति, लखनऊ 1964
8. जगदीशचन्द्र माथुर, परम्पराशील नाट्य, बिहार राष्ट्रभाषा परिषद्, पटना, 1961
9. C.B. Gupta, Indian Theatre, Varanasi, 1954.
10. R.K. Yajnick, Indian Theatre, London, 1933.
11. Tarla Mehta, Sanskrit Play Production in Ancient India, MLBD, Delhi, 1999.
12. Allardyce Nicoll, The Theatre and Dramatic Theory, London, 1962.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

DSC-6: Gītā and Upaniṣad

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
(Discipline B-3) Gītā and Upaniṣad	04	3	1	0	Semester II Passed	Working Knowledge of Sanskrit

Learning Objectives

Objective of this course is to get students to know about the principle thesis of the Gītā and the Upaniṣad.

Learning outcomes

The course will enable the students to familiarize themselves with the II Chapter of the Gita and the general introduction to Upaniṣad philosophy. After the completion of this course the learner will be exposed to the Philosophy of Gita and Upaniṣad.

Detailed Syllabus

Unit I **12Hrs**

General introduction to Philosophy of Gita:

Jnana Yoga, Karmayoga and Bhakti Yoga.

Gītā: Chapter Two – (Verse: 09-30)

Nature of Atman, (Text Reading, Grammar, Translation, Explanation, Question based on Shlokas)

Unit II **12Hrs**

Gītā: Chapter Two – (Verse: 31-54)

Karmyog, (Text Reading, Grammar, Translation, Explanation, Question based on Shlokas)

Gītā: Chapter Two – (Verse: 55-68)

Sthitaprajya, (Text Reading, Grammar, Translation, Explanation, Question based on Shlokas)

Unit III **09Hrs**

General Introduction to Upaniṣadic Philosophy

General Introduction to Upaniṣadic Philosophy: ātman, brahman, īśvara, karma, srśṭi.

Unit IV **12Hrs**

Upaniṣad: Īśāvāsyopniṣad

Text Introduction to Īśāvāsyopniṣad

Text Reading of Īśāvāsyopniṣad

Essential/recommended readings

1. भगवद्गीता, शाङ्करभाष्य अनुवाद सहित, अनुवादक- श्री हरिकृष्णदास गोयन्दका, गीता प्रेस गोरखपुर।

2. गीताभाष्यनवाम्बरा, डा. शिवनारायण शास्त्री।

3. श्रीमद्भगवद्गीता, साधकसञ्जीवनी टीका, रामसुखपरमदास, गीताप्रअस गोरखपुर।

4. हनुमान प्रसाद पोद्दार (सम्पादक), ईशावास्योपनिषद्, गीताप्रेस गोरखपुर ।

5. शिवनारायण शास्त्री (व्या), ईशावास्योपनिषद्, परिमल प्रकाशन, दिल्ली, 1996 ।

6. शशि तिवारी, ईशावास्योपनिषद्: भूमिका एवं व्याख्या, भारतीय विद्या प्रकाशन, दिल्ली,

7.Radhakrushana, Gītā.

8. Gītā with Hindi Translation, Gita Press, Goraphpur

Suggested Readings:

1. राजबली पाण्डेय, हिन्दू संस्कार ।

2. पी.बी. काणे, धर्मशास्त्र का इतिहास (खण्ड-I) ।

3. भारतीय दर्शन, आचार्य बलदेव उपाध्याय, चौखम्भा ओरियण्टालिया, वाराणसी।

4. भारतीय दर्शन की रूपरेखा, आचार्य बलदेव उपाध्याय, चौखम्भा ओरियण्टालिया, वाराणसी।

5. भारतीय दर्शन का इतिहास, डा. एस. एन. दासगुप्त, राजस्थान हिन्दी ग्रन्थ अकादमी।

6. Rajbali Pandey, Hindu Samskar.

7. शिवदत्त ज्ञानी, भारतीय संस्कृति ।

8. Allardyce Nicoll, the Theatre and Dramatic Theory, London, 1962.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

SANSKRIT AS MINOR

DSC-3: Sanskrit Theatre

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the Course			Eligibility criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
(Discipline A-3) Indian Theatre	04	3	1	0	Semester II Passed	Working Knowledge of Sanskrit

Learning Objectives

With its audio-visual characteristics, drama is considered to be the best among all forms of arts. The history of theatre in India is very old and the glimpses of the Theatre can be find in the hymns of Rigveda. The dramaturgy was later developed by Bharat. The objectives of this curriculum are to help the students to identify the richness of drama and to become aware of the classical aspects of Theatre.

Learning outcomes

After going through this course students will be able to know about several theoretical aspects of theatrical performance and production. They will become aware of the many types of theatres, their design and stage setting, acting, dress and makeup etc. Students also become familiar with the main principals of theatre performance and appreciation.

Detailed Syllabus

Unit I **15Hrs**

Origin and development of stage in different ages:
Pre-historic, Vedic age. Epic-puranic age

Unit II **12Hrs**

Theatre: Types and Constructions

Unit III **10Hrs**

Drama: Subject-Matter (vastu),
Acting: Āṅgika, Vācika, Sāttvika and Āhārya

Unit IV **08Hrs**

Actor (netā), ***Rasa*** (Sentiment)

Essential/recommended readings

1. नाट्यशास्त्रम्, (सम्पा. एवं व्या.) डा. पारसनाथ द्विवेदी, सम्पूर्णानन्दसंस्कृतविश्वविद्यालय, वाराणसी।
2. राधावल्लभ त्रिपाठी (*सम्पा. एवं संक.*), संक्षिप्तनाट्यशास्त्र हिन्दी भाषानुवादसहित, वाणी प्रकाशन दिल्ली *2008*
3. राधावल्लभ त्रिपाठी, भारतीय नाट्य: स्वरूप एवं परम्परा, संस्कृत परिषद्, सागर मध्य प्रदेश *1988*
4. हजारी प्रसाद द्विवेदी (*सं.*), नाटशास्त्र की भारतीय परम्परा एवं दशरूपक,राजकमल प्रकाशन, दिल्ली *1963*
5. सीताराम झा, नाटक और रंगमंच, बिहार राष्ट्रभाषा परिषद् पटना *1982*
6. बाबूलाल शुक्ल शास्त्री (सम्पा.), नाट्यशास्त्र (1-4 भाग), चौखम्भा संस्कृत संस्थान, वाराणसी, 1984
7. राधावल्लभ त्रिपाठी, नाट्यशास्त्र विश्वकोश (1-4 भाग), प्रतिभा प्रकाशन दिल्ली 1999
8. राधावल्लभ त्रिपाठी, भारतीय नाट्यशास्त्र की परम्परा और विश्व रंगमंच, प्रतिभा प्रकाशन दिल्ली।
9. व्रजमोहन चतुर्वेदी, नाट्यशास्त्रम्, विद्यानिधि प्रकाशन दिल्ली, 2003
10. केशवरामुसलगांवकर, संस्कृत नाट्य मीमांसा, परिमल प्रकाशन, दिल्ली ।
11. शिवशरण शर्मा, आचार्य भरत, मध्य प्रदेश हिन्दी ग्रन्थ अकादमी, भोपाल ।

Suggested Readings:

1. रामलखन शुक्ल, संस्कृत नाट्य कला, मोतीलाल बनारसीदास, नई दिल्ली, 1970
2. गोविन्द चन्द्र राय, नाट्यशास्त्र में रंगशालाओं के रूप, काशी, 1958
3. भानुशंकर मेहता, भरत नाट्यशास्त्र तथा आधुनिक प्रासंगिकता, वाराणसी ।
4. वाचस्पति मेहता, भारतीय नाट्य परम्परा एवं अभिनयदर्पण, इलाहाबाद, 1967
5. लक्ष्मी नारायण लाल, रंगमंच और नाटक की भूमिका, दिल्ली, 1965
6. लक्ष्मी नारायण गर्ग, भारत के लोकनाट्य, हाथरस संगीत कार्यालय, 1961
7. सीताराम चतुर्वेदी, भारतीय तथा पाश्चात्य रंगमंच, हिन्दी समिति, लखनऊ 1964
8. जगदीशचन्द्र माथुर, परम्पराशील नाट्य, बिहार राष्ट्रभाषा परिषद्, पटना, 1961
9. C.B. Gupta, Indian Theatre, Varanasi, 1954.
10. R.K. Yajnick, Indian Theatre, London, 1933.
11. Tarla Mehta, Sanskrit Play Production in Ancient India, MLBD, Delhi, 1999.
12. Allardyce Nicoll, The Theatre and Dramatic Theory, London, 1962.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

Pool of Discipline Specific Electives

DSE-1: Indian System of Logic and Debate

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the Course			Eligibility criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Indian System of Logic and Debate	**04**	**3**	**1**	**0**	**Semester II Passed**	**Working Knowledge of Sanskrit**

Learning Objectives

This course aims at getting the students acquainted with the fundamental Indian principles of debate and its applications, not just in the philosophical discourse, but also in every area of knowledge. The course intends to bring the indigenous science of argumentation to the fore.It also intends to help the students develop logical faculty of discourse mind and to perceive the world in a more rational way in their day-to-day life situations.

Learning outcomes

At the end of this course, the learners will be able to form a comprehensive idea about different levels, layers and components of Indian science of debate .

Detailed Syllabus

Unit I **12Hrs**

Fundamentals of the Science of Debate

Science of inquiry (Anvīkṣikī) & its importance, Growth of Anvīkṣikī into the art of Debate, The council of debate (Pariṣad) & its types, Discussant (Vādī), Opponent (Prativādī), Madhyastha (Judge) and Prāśnika.

Note: The definitions and concepts are to be taken from *Nyāyasūtra*, *Nyāyakośa* of Bhimacharya Jhalkikar and *A History of Indian Logic* by S. C. Vidyabhushan, Chapter III of Section I.

Unit II **12Hrs**

Syllogistic Logic

Inference (Anumāna) & its key terms, viz. major term or probandum (Sādhya), middle term or probans (Hetu), minor term (Pakṣa), illustration (Sapakṣa), contrary-illustration (Vipakṣa), basic understanding of invariable concomitance (Vyāpti) & its types, establishing Vyāpti through inductive method, demonstration of pervasion- Upādhi and Tarka, nature and variety of Tarka, Pañcāvayava-vākya.

Note: The definitions and concepts are to be taken from the Tarkasaṁgraha, Tarkabhāṣā and the Nyāya Theory of Knowledge by S. C. Chatterjee, Chapters XI-XIV.

Unit III **09Hrs**

Theory of Debate

Basic understanding of the following terms: Example (Dṛṣṭānta), Tenet (Siddhānta), Ascertainment (Nirṇaya), Dialogue (Kathā) and its kinds, Discussion (Vāda), Wrangling (Jalpa), Cavil (Vitaṇḍā).

Unit IV **12Hrs**

Quibble (Chala) & its kinds; Analogue (Jāti), Point of defeat (Nigrahasthāna) & its kinds- Hurting the proposition (Pratijñāhāni), Shifting of proposition (Pratijñāntara), Opposing the proposition Pratijñāvirodha), Renouncing the Proposition (Pratijñāsannyāsa), Admission of an opinion (Matānujñā).

Note: The definitions and concepts are to be taken from the Nyāyasūtra, Nyāyakośa by Bhimacharya Jhalkikar and A History of Indian Logic by S. C. Vidyabhushan, Chapter II of Section II.

Essential/recommended readings

1. Vidyabhushan, Satish Chandra, A History of Indian Logic, MLBD, Delhi, 1962. (Chapter III of Section I & Chapter II of Section II only)
2. Potter, Karl H., Encyclopaedia of Indian Philosophies, Vol. II, Motilal Banarsidass, Delhi, 1977.
3. Jhalkikar, Bhimacharya, Nyāyakośaḥ, Bhandarkar Oriental Research Institute, Poona, 1997 (reprint of fourth edition)
4. Athalye & Bodas, Tarkasaṅgraha, Mumbai, 1920. (only introduction & exposition of anumāna)
5. Shastri , Kuppuswami, A Primer of Indian Logic, Madras, 1951 (only introduction & exposition of anumāna).
6. Tarkasaṁgraha of Annaṁbhaṭṭa (with Dipika), (Ed. & Tr. in Hindi), Kanshiram & Sandhya Rathore, MLBD, Delhi 2007.
7. Bagchi, S. S. – Inductive Logic : A Critical Study of Tarka & Its Role in Indian Logic, Darbhanga, 1951.
8. Chatterjee, S. C. & D. M. Datta - Introduction to Indian Philosophy, Calcutta University, Calcutta, 1968 (Hindi Translation also)
9. Chatterjee, S. C. – The Nyāya Theory of Knowledge, Calcutta, 1968.
10. Hiriyanna, M. - Outline of Indian Philosophy, London, 1956 (also Hindi Translation).
11. Jha, Harimohan – Bhāratīya Darśana Paricaya, Vol. I (Nyāya Darśana), Darbhanga.
12. Matilal, B. K. – The Character of Logic in India, Oxford, 1998.
13. Radhakrishnan, S. - Indian Philosophy, Oxford University Press, Delhi, 1990.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

DSE-2: Fundamentals of Ayurveda

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Fundamentals of Ayurveda	04	3	1	0	Semester II Passed	Working Knowledge of Sanskrit

Learning Objectives

Āyurveda is the most ancient but still a living healthcare system of India. This course will introduce students to the basic concepts of the Science of Āyurveda. The major objective of the course is to make the learners understand the basic principles and concepts of preventative and curative medicines, health maintenance, diet and nutrition, usage of commonly used spices and herbs and therapeutic procedures in Āyurveda

Learning outcomes

Graduates who read this course should be able to know the ancient tradition of Indian Medicine system, which talks about not only to the physical health but also a healthy lifestyle. After reading this paper students will know the history of Āyurveda through original sources of ancient medicine system as enshrined in the Sanskrit texts like Charaka Saṁhitā, Śuśruta Saṁhitā, Aṣtānṅga Hridaya etc. and they will also get the basic knowledge of eight departments of Āyurveda. Second section of this paper is related to ancient physiology.

Detailed Syllabus

Unit I **15Hrs**

Introduction to Āyurveda

History of Āyurveda in the pre-Charaka period, the two schools of Āyurveda: Dhanvantari and Punarvasu.

Ācāryas of Āyurveda: Charaka, Sushruta, Vagbhata, Madhava, Sharngadhara and Bhavamishra

Basic Principles of Āyurveda

1. The Pancamahābhūtas: Ākāśa (Space), Vāyu (Air), Tejas or Agni (Fire), Jala (Water) and Prithivī (Earth).

2. The Triguṇas: Sattva, Rajas and Tamas.

3. The Tridoṣas: Vāta, Pitta and Kapha.

4. The Saptadhātus: Rasa (fluid), Rakta (blood), Māṁsa, Meda (fat) Asthi, Majjā and Śukra.

5. The Trayodaśāgnis: Jatharāgni (gastric fire), Saptadhātvagni and Pancabhūtāgni.

6. The Trimalas: Purīṣā (faeces), Mūtra (urine) and Sveda (sweat).

Unit II **10Hrs**

Eight branches of Āyurveda (Aṣṭāṅga Āyurveda):

1. Kāycikitsā (General Medicine)
2. Kaumārabhṛtya (Pediatrics)
3. śalyatantra (Surgery)
4. Śālākya-Tantra (Ent. and Ophthalmology)
5. Bhūta Vidyā (Psychiatry Medicine).
6. Viṣa Vijñāna (Toxicology).
7. Rasāyana (Rejuvenates).
8. Vājīkaraṇa (Aphrodisiac).

Unit III **10Hrs**

Lifestyle and Preventive Medicine:

1. Understanding Health and Disease in Āyurveda
2. Ayurvedic SvasthaVṛtta (Preventive Medicine): Seasonal regimen & Social Conduct and its effect on health.

3. Carakasaṁhitā – Sūtra-sthānam (Tasyāśitīyādhyāya)

Regimen of Six Seasons (Ṛtucharyā) : Hemanta (Early Winter), Śiśira (Winter),Vasanta (Spring), Grīṣma (Summer), Varṣā (Rainy) and Śarada (Autumn).

Unit IV **10Hrs**

Diagnosis of illness (Roga-Parīkṣaṇa)

Eight ways of diagnosing illness-

Nāḍī (Pulse Examination), Mūtra (Urine Examination), Mala (Stool Examination), Jihvā (Tongue Examination), Śabda (Speech Examination), Sparśa (Touch Examination), Dṛk (Vision Examination), and Ākriti (Appearance).

Pancha kosha

The holistic concept of body in Indian Medicine Based on Taittirīyopaniṣad - Bhriguvalli, Anuvāka- (1-6)

Essential/recommended readings

1. आयुर्वेद का साहित्यिक इतिहास, हिन्दी साहित्य सम्मेलन, इलाहाबाद.
2. Singh R.H., Body, Mind, Spirit – Integrative Medicine in Ayurveda, Yoga and Nature Cure - Chowkhamba Surbharti Pratishthanam, Varanasi, I 2009
3. V.B. Athavale, Basic Principles of Āyurveda, ChaukhambaSanskrit Pratishthan New Delhi, 2005.
4. Priya Vrat Sharma, Essentials of Āyurveda: Sodasangahṛdayam, MotilalBanarsidass Publishers, 1999

Suggested readings

1. Bhagavan Dash, Vaidya, and Acarya Manfred M. Junius, A Handbook of Āyurveda, Concept Publishing Co., New Delhi,1987.
2. Bhishagratna, Kaviraj Kunjalal, ed., translator. (2002). Sushruta Samhita Volumes I and II. Varanasi, India: Chowkhamba Sanskrit Series.

3. Charak Samhita E-text: http://www.charakasamhita.com/ 7. http://www.tkdl.res.in/tkdl/langdefault/ayurveda/Ayu_Principles.asp?GL=#q1
4. K. R. Srikantha Murthy, Illustrated Susruta Samhita, ChaukhambaOrientalia, 2012
5. M.S. Valiathan, An Introduction to Āyurveda Paperback, Universities Press (India) Private Limited, 2013
6. M.S. Valiathan, The Legacy of Suśruta, Universities Press, 2007
7. Ravi DattaTripathi, Vāgbhaṭa's Aṣṭāṅg-saṅgraha, ChowkhambaSanskrit Pratishthanam, Delhi., 2011.
8. ShanthaGodagama, The Handbook of Āyurveda, North Atlantic Books, 2004
9. Sharma, Priyavrit V., ed., translator. (1981-1994). Charaka Samhita, Vols. 1 - 4, Chaukhamba Sanskrit Series, Varanasi, India: Varanasi, India: Chowkhamba SanskritSeries.
10. Sharma, Ram Karan and Bhagawan Dash, Vaidya, eds., translators (1992 – 2000). CharakaSamhita Vols. 1 – 6. Varanasi, India.Chaukhamba Sanskrit Series]
11. Srikrishnamurthy, K.R. Srikantha, translator. (1991-1992). Vagbhata, AstangaHridayamVols. 1 and 2. Varanasi, India: Krishnadas Academy
12. Srikrishnamurthy, K.R. Srikantha, translator. (2001). Sharangadhara Samhita: A treatise on Āyurveda. Varanasi, India: ChaukhambaOrientalia.
13. Susruta (Author), Kunja Lal Bhishagratna, An English Translation of the Sushruta Samhita, Based on Original Sanskrit Text. Edited and Published by KavirajKunja Lal Bhishagratna. with a Full ... Notes, Comperative Views, Index, Glossary, Nabu Press, 2012

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

DSE-3: Computational Linguistics for Sanskrit

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Computational Linguistics for Sanskrit	04	3	1	0	Semester II Passed	Basic knowledge of Computer and Sanskrit

Learning Objectives

This course is supposed to familiarise the students with modern technology in the field of Computational linguistics and language technology and prepare the students for next level of Computational understanding in Sanskrit. After covering these topics in Computational Linguistics (CL), the students will learn the tools and techniques of CL and also do the detailed survey and learn various methodologies used in the field.

Learning outcomes

The course-level learning outcomes that a student of this course is required to demonstrate are indicated below:

- Learn the basics of Theoretical Concepts of Computational Linguistics.
- Learn the basic concepts of the various Applied Areas of Computational Linguistics e.g. Morphological Analyzer/Speech/Speaker Recognition, Speech Synthesis, Text to Speech, Language Analysis, Understanding, Generation, Natural Language Interface, Text Processing and Machine Translation etc.
- Learn the basic concept of databases for data Storage.
- Students will learn the Survey of Computational Linguistics.

Detailed Syllabus

Unit I **12Hrs**

Theoretical Concepts of Computational Linguistics:

Language and Communication, Levels of Language, Phonemes, Morphemes, POS, Lexicon, Syntax, Semantics, Discourse, Natural Language vs Artificial Language, Speech and Language, Grammars. Computer Intelligent Interaction (HCII), Human Processing of Languages vs Computer Processing of Natural Languages, Rule based vs Statistical Processing, Machine Learning, Annotation of Language, Standards, Unicode, and Language Resources.

Unit II **09Hrs**

Survey of the Sanskrit Computational Linguistics

Unit III **12Hrs**

Applied Areas of Sanskrit Computational Linguistics

Morphological Analyzer
Speech/Speaker Recognition
Speech Synthesis,
Text to Speech
Language Analysis
Language Understanding
Language Generation
Natural Language Interface
Text Processing
Machine Translation

Unit IV **12Hrs**

Data Storage:

An Introduction to Databases
Databases and Database Systems,
Architecture of Database Systems
Historical Perspective of Database Systems.
Basics of MS SQL Database

Essential/recommended readings

1. Chandra Subhash (2021). भाषासंगणन (Language Computing), Upasana Publications, New Delhi, India, ISBN: 978-93-87677-05-0.
2. Chandra Subhash (2017). मशीनी अनुवाद (Machine Translation) यूजीसी सीबीसीएस स्कीम के तहत बीए (संस्कृत) के एईसी (AEEC)-3 के पाठ्यक्रम पर आधारित. Vidya Nidhi Prakashana, New Delhi, India, ISBN 978-93-85539-52-7.
3. Bharti A., R. Sangal, V. Chaitanya, "NL, Complexity Theory and Logic" in Foundations of Software Technology and Theoretical Computer Science, Springer, 1990.
4. Gazdar G. and C. Mellish, NLP in Prolog, Wokhingham: Addison Wesley, 1989.
5. Gazdar, G. and C. Mellish, NLP in Lisp, Wokhingham: Addison Wesley, 1989.
6. Grishman, R., Computational Linguistics: An introduction, Cambridge University Press, 1986.
7. Grosz, Barbara J. (et al.) Readings in NLP, (ed.) LA: Morgan Kaufmann, 1990
8. Kenneth A. Lambert, 2011, Fundamentals of Python: First Programs, Cengage Learning.
9. Nath Jha, Girish (ed.), 2010, Sanskrit Computational Linguistics, Springer. Verlag, Germany, 2010.
10. Ruslan Mitkov, Oxford handbook of computational linguistics, Oxford University Press, 2005.
11. Dan Jurafsky, James H. Martin, 2000, Speech and Natural Language Processing, Prentice Hall.
12. R. Elmasri, S.B. Navathe, Fundamentals of Database Systems (5th Ed.), PearsonEducation.

Suggested readings

1. Chandra, Subhash and Jha, GN. Computer Processing of Nominal Inflections in Sanskrit: Methods and Implementations, CSP, UK, 2012.

2. Sanskrit Computational Linguistics symposium 1-2: Springer Verlag LNCS 5402 G Huet, A Kulkarni and P Scharf (eds), Proceedings of the 1st and 2nd International Symposium, 2009.
3. Sanskrit Computational Linguistics symposium 3: Springer Verlag LNCS 5406 A Kulkarni, G Huet (eds), Proceedings of the 3rd International Symposium, Jan 15 - 17, 2009, Hyderabad.
4. Grishman, R., Computational Linguistics: An introduction, Cambridge University Press, 1986.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

DSE-4: Web Application Development for Sanskrit

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Web Application Development for Sanskrit	**04**	**3**	**1**	**0**	**Semester II Passed**	**Basic knowledge of Computer and Sanskrit**

Learning Objectives

This course is intended to familiaries the students with the modern technology of web publishing, web page development in Sanskrit and other Indian languages.

Learning outcomes

The course-level learning outcomes that a student of this course is required to demonstrate are indicated below:

- Learn the basic concepts of web page development.
- Learn the basic concepts about HTML, CSS and Java Scripts.
- Learn the basic concepts of Typing tools in Devanagari Unicode.

Detailed Syllabus

Unit I **12Hrs**

Brief Introduction to Web Applications for Sanskrit

Front End
Web Server
Back End

Unit II **12Hrs**

Front End and Back End development in Sanskrit

Basics of Hyper Text Markup Language (HTML)
Basics of Cascading Style Sheets (CSS)
Basics of Data storage (files)
Basics of Data Bases

Unit III **09Hrs**

Web Servers

Basics Java-Scripts (JS)
Basics of Python

Unit IV **12Hrs**

Typing Tools for Unicode Devanagari (Sanskrit)

Computer program for typing
Online typing tools
Voice typing tools
Mobile Typing

Essential/recommended readings

1. Chandra Subhash (2021). भाषासंगणन (Language Computing), Upasana Publications, New Delhi, India, ISBN: 978-93-87677-05-0.
2. Chandra Subhash (2017). मशीनी अनुवाद (Machine Translation) यूजीसी सीबीसीएस स्कीम के तहत बीए (संस्कृत) के एईसी (AEEC)-3 के पाठ्यक्रम पर आधारित. Vidya Nidhi Prakashana, New Delhi, India, ISBN 978-93-85539-52-7.
3. Various e-resources and online tools suggested by teachers

Suggested readings

1. HTML Tutorial - W3Schools: https://www.w3schools.com/html/
2. CSS Tutorial - W3Schools: https://www.w3schools.com/css/default.asp
3. JS Tutorial - W3Schools: https://www.w3schools.com/js/default.asp
4. Python Tutorial- W3Schools: https://www.w3schools.com/python/default.asp
5. SQL Tutorial- W3Schools: https://www.w3schools.com/sql/default.asp

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

DSE-5: Environmental Awareness in Sanskrit Literature

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Environmental Awareness in Sanskrit Literature	04	3	1	0	Semester II Passed	Working Knowledge of Sanskrit

Learning Objectives

The main objective of this course is to make the students acquainted with the basic concepts of Indian Environmental Science and salient features of environmental awareness as reflected in Vedic and Classical Sanskrit literature. The National culture of every country depends on its environmental and climatic conditions and human behaviour towards natural resources. Nature- friendly thoughts reflected in Sanskrit Literature have benefited the human race for long. Many religious practices were framed by ancient thinkers as a tool to protect nature and natural resources.

Learning outcomes

After completing this course, students will realize themselves to be a part of Nature and Nature, intern, belongs to all creatures. They will learn to be a more careful about the utilization and preservation of natural resources. This will make them better citizens of the world.

Detailed Syllabus

Unit I **12Hrs**

Science of Environment: Definition, Scope and Modern Crises:

Modern Challenges and Crises of Environment: Global warming, Climate change, Ozone depletion, explosively increase in Pollution, Decrease in underground water label, River pollution, Deforestation in large scale. Natural calamities such as flood, draft and earthquakes.

Environmental Consciousness in Sanskrit Literature:

Concept of 'Mother Earth' and worship of Rivers in Vedic literature; Brief survey of environmental issues such as protection and preservation of mother nature, planting trees, and water preservation techniques as propounded in the Sanskrit Literature. Buddhist and Jain concepts of ecology, protection of trees, love for animals and birds.

Unit II **12Hrs**

Environment Awareness in Vedic Literature:

Environmental Issues and Eco-system in Vedic Literature

Divinity to Nature, Co-ordination between all natural powers of universe; Equivalent words **for Environment in** *Atharvaveda*: '*Vṛtavṛta*' *(12.1.52)*, '*Abhivarah*,' *(1.32.4.)*, '*Avṛtaḥ*' *(10.1.30)*, '*Parivrita*' *(10.8.31);* **five basic elements of universe covered by environment : Earth, Water, Light, Air, and Ether. (***Aitareya Upaniṣad 3.3)*

Three constituent elements of environment: Jala (water), *Vāyu* (air), and *Oṣadhi* (plants) (*Atharvaveda*, 18.1.17).
Natural sources of water in five forms: *rain water (Divyah),natural spring(Sravanti), wells and canals (Khanitrimah), lakes (Svayamjah) and rivers(Samudrarthah)* *ṛgveda*, 7.49.2*).*

Environment Preservation in Vedic Literature:
Five elementary sources of environment preservation: *Parvat* (mountain),
***Soma* (water),*Vayu* (air), *Parjanya* (rain) and *Agni* (fire) (*Atharvaveda*, 3.21.10);** Environment **Protection from Sun** (*Rgveda*,1.191.1-16, ***Atharvaveda*,2.32.1-6, *Yajurveda*,4.4,10.6); Congenial atmosphere for the life created by the Union of herbs and plants with sun rays (*Atharvaveda*,5.28.5); Vedic concept of Ozone-layer *Mahat ulb'*(*ṛgveda*,10.51.1; *Atharvaveda*,4.2.8);** Importance of plants and animals for preservation of global ecosystem; **(*Yajurveda* ,13.37);** Eco friendly **environmental organism in Upaniṣads (*Bṛhadāraṇyaka Upaniṣad*, 3.9.28, *Taittiriya Upaniṣad*,5.101)**

Unit III **12Hrs**

Environment Awareness in Puranas and Classical Sanskrit Literature:

Environmental Awareness and Tree plantation **:**
Planting of Trees in *Purāṇas* as a pious activity **(** *Matsya* ***Purāṇa***, 59.159;153.512 ; *Varāha* ***Purāṇa*** 172. 39), **Various medinal trees to be planted in forest by** king **(*śukranīti*,4.58-62)** Plantation of new trees and preservation of old trees as royal duty of king **(*Arthaśāstra*, 2.1.20); Punishments for destroying trees and plants (*Arthaśāstra*,3.19),** Plantation of trees for recharging under ground water(***Bṛhatsaṁhitā*, 54.119)**
Environmental Awareness and Water management **:**
Various types of water canels *'Kulyā'* for irigation : canal originated from river '*Nādimatṛ mukha kulyā',* canal originated from near by mountain *'Parvataparsva vartini kulyā',* canal originated from pond*,'Hrdasrta kulyā,* **Preservation of water resources** '*Vāpi –kūpa –taḍāga*' **(*Agnipuraṇas*,209-2;*V.Ramayana*,2.80.10-11); Water Harvesting system in *Arthaśāstra* (2.1.20-21); Underground Water Hydrology in Bṛhatsaṁhitā (Dakāgalādhyāya, chapter-54);**

Unit IV **09Hrs**

Universal Environmental Issues in the Literature of Kalidasa:

Eight elements of **Environment and concept of '*Aṣṭamūrti*' Siva (*Abhijñānaśākuntalam*); Preservation of forest,water resources, natural resources; protection of animals, birds and plant in Kalidasa's works, Environmental** awareness **in *Abhijñānaśākuntalam* Drama, Eco- system of indian monsoon in *Meghdūt*, Seasonal weather conditions of Indian sub continent in *ṛtusamhara,* Himalayan ecology *in Kumārasaṁbhava,* Oceanography in *Raghuvaṁśa* (canto-13).**

Essential/recommended readings

1. कौटिलीय अर्थशास्त्र —हिन्दी अनुवाद —उदयवीर शास्त्री, मेहरचन्द लछमनदास,

दिल्ली,1968.
2. बृहत्संहिता— वराहमिहिर विरचित, हिन्दी अनुवाद— बलदेव प्रसाद मिश्र, खेमराज श्रीकृष्णदास प्रकाशन, मुम्बई.
3. यजुर्वेद— हिन्दी अनुवाद सहित, सातवलेकर, श्रीपाद दामोदर, पारडी
4. शुक्रनीति — हिन्दी अनुवाद, ब्रह्मशंकर मिश्र, चौखम्बा संस्कृत सीरीज, वाराणसी, 968.
5. श्रीमद्वाल्मीकिरामायण — हिन्दी अनुवाद सहित, (सम्पा०) जानकी नाथ शर्मा, (1 —2 भाग) गीताप्रेस, गोरखपुर.
6. ठाकुर, आद्यादत्त— वेदों में भारतीय संस्कृति, हिन्दी समिति, लखनऊ,1967.
7. तिवारी, मोहन चन्द —अष्टाचक्रा अयोध्याः इतिहास और परम्परा,उत्तरायण प्रकाशन,दिल्ली, 2006.
8. विघालंकार, सत्यकेतु — प्राचीन भारतीय शासनव्यवस्था और राजशास्त्र, सरस्वती सदन, मसूरी, 1968.
9. सहायक्चशिवस्वरूपक्च प्राचीन भारत का सामाजिक एवं आर्थिक इतिहास, मोतीलाल बनारसीदास, दिल्ली, 2012 कौटिलीय अर्थशास्त्र —हिन्दी अनुवाद —उदयवीर शास्त्री, मेहरचन्द लछमनदास, दिल्ली,1968.
10. बृहत्संहिता— वराहमिहिर विरचित, हिन्दी अनुवाद— बलदेव प्रसाद मिश्र, खेमराज श्रीकृष्णदास प्रकाशन, मुम्बई.
11. यजुर्वेद— हिन्दी अनुवाद सहित, सातवलेकर, श्रीपाद दामोदर, पारडी
12. शुक्रनीति — हिन्दी अनुवाद, ब्रह्मशंकर मिश्र, चौखम्बा संस्कृत सीरीज, वाराणसी, 968.
13. श्रीमद्वाल्मीकिरामायण — हिन्दी अनुवाद सहित, (सम्पा०) जानकी नाथ शर्मा, (1 —2 भाग) गीताप्रेस, गोरखपुर.
14. ठाकुर, आघादत्त— वेदों में भारतीय संस्कृति, हिन्दी समिति, लखनऊ,1967.
15. विद्यालंकार, सत्यकेतु — प्राचीन भारतीय शासनव्यवस्था और राजशास्त्र, सरस्वती सदन, मसूरी, 1968.
16. सहायक्चशिवस्वरूपक्च प्राचीन भारत का सामाजिक एवं आर्थिक इतिहास, मोतीलाल बनारसीदास, दिल्ली, 2012
17. अग्निपुराण - हिंदी अनुवाद तारिणीश झा एवं घनश्याम त्रिपाठी, हिंदी साहित्य सम्मलेन, इलाहाबाद, 1998
18. ईशोपनिषद – गीता प्रेस, गोरखपुर संस्करण
19. तैत्तिरीयोपनिषद – ईशादिद्शोपनिषद, दिल्ली, 1964
20. बृहदारण्यकोपनिषद – (108 उपनिषद) ज्ञानखंड, सम्या० श्री एम. शर्मा, शांति कुंज, हरिद्वार, 1997
21. ऐतरेयोपनिषद - (108 उपनिषद) ज्ञानखंड, सम्या० श्री एम. शर्मा, शांति कुंज, हरिद्वार,

1997

22. मत्स्यपुरण – आनंदाश्रय संस्कृत सीरीज, पूजा, 1907
23. ओझा, डी.डी., विज्ञान और वेड, साइंटिफिक पब्लिशर्स, जोधपुर, 2005
24. द्विवेदी, कपिल देव, वेदों में विज्ञान, विख्याति अनुसंधान परिषद्, यदोई 2004
25. पंडा, पी. के. , कालिदास का साहित्य आधुनिक परिप्रेक्ष्य में, विद्यानिधि प्रकाशन, दिल्ली Í 2009
26. सेमवाल, श्री कृष्णा (सम्या०), 'संस्कृत वाड्मये कृषि विज्ञानम' दिल्ली संस्कृत अकादमी, 2006
27. ***Arthashastra of Kautilya***—(ed.) ***Kangale, R.P. Delhi, Motilal Banarasidas 1965***
28. Atharvaveda samhita.(2 Vols — (Trans.) R.T.H. Griffith, Banaras 1968.
29. Ramayana of Valmaki (3 Vols)— (Eng. Tr.) H.P. Shastri, London, 1952-59.
30. **Rgveda samhita (6 Vols)— (Eng. Tr.) H.H. Wilson, Bangalore, 1946**
31. Bhandarkar,RG— *Vaishnavism, Saivism and Minor Religious Systems*, Indological Book House, Varanasi, 1965
32. **Das Gupta, SP— *Environmental Issues for the 21st Century*, Amittal Publications, New Delhi, 2003**
33. **Dwivedi, OP, Tiwari BH — *Environmental Crisis and Hindu Religion,* Gitanjali Publishing House, New Delhi,1987**
34. **Dwivedi, OP — *The Essence of the Vedas,* Visva Bharati Research Institute, Gyanpur, Varanasi ,1990**
35. **Pandya,SmtaP. — *Ecological Renditions in the Scriptures of Hinduism – I* (article) *Bulletin* of *the Ramakrishna Mission Institute of Culture.***
36. **Kiostermair,Klaus—*Ecology and Religion: Christian and Hindu Paradigms* (article) *Jornal of Hindu-Christian Studies,* Butler university Libraries, Vol.6,1993**

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

DSE-6: Art of Balanced Living

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the Course			Eligibility criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Art of Balanced Living	04	3	1	0	Semester II Passed	Working Knowledge of Sanskrit

Learning Objectives

This course aims at getting the students acquainted with the Art of living as found in Sanskrit literature . It also intends to make the students work on human resource management for being more effective and productive in day to day life situations.

Learning outcomes

After the completion of this course, the learners will be well informed about the various concepts, components and issues propounded by the philosophical and religious literature in Sanskrit

Detailed Syllabus

Unit I **12Hrs**

Method of Self-presentation: Hearing (śravaṇa), Reflection (manana) & meditation (nididhyāsana) - (Bṛhadāraṇyakopaniṣad, 2.4.5) and Vedantasara
Concentration: Concept of Yoga: (Yogasūtra, 1.2); Restriction of fluctuations by practice (abhyāsa) and passionlessness (vairāgya) :(Yogasūtra, 1.12-16)

Unit II **09Hrs**

Eight aids to Yoga (aṣṭāṅgayoga): (Yogasūtra - 2.29, 30, 32, 46, 49, 50; 3.1-4).
Yoga of action (kriyāyoga): (Yogasūtra, 2.1)
Four distinct means of mental purity (cittaprasādana) leading to oneness: (Yogasūtra - 1.33)

Unit III **09Hrs**

Refinement of Behaviour: Means of improving behaviour:
Jñāna-yoga – Gita Ch. II – 14,15,16,19, Ch XIII- 11,12,14,15,16,19,20,21,23,29,31,32
dhyāna-yoga – VI – 24 to 27, 30, 32,

Unit IV **15Hrs**

Bhakti-yoga – Gita Ch. IX – 17,22,23,27,29,34 ; Ch XI – 10,11,12, 13; Ch. - XII – 4, 6 to 12, 20 Karma : A natural impulse, essentials for life journey, harmony with the universe, an ideal duty and a metaphysical dictate - Gītā, Ch. – III 5, 8, 10-16, 20 & 21

Essential/recommended readings

1. वेदान्तसार: राममूर्ति शर्मा नैशनल पब्लिशिंग हाउस दिल्ली ।
2. पातञ्जल योग दर्शन: सुरेश चन्द्र श्रीवास्तव, चौखंबा सुरभारती प्रकाशन, वाराणसी 2008.
3. भगवद्गीता : गीताप्रैस, गोरखपुर
4. उपनिषद रहस्य, एकादश उपनिषद, महात्मा नारायण स्वामी, गोविन्द राम हासानन्द, दिल्ली

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

Common Pool of Generic Elective

GE-7: Fundamentals of Indian Philosophy

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the Course			Eligibility criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Fundamentals of Indian Philosophy	04	3	1	0	Semester II Passed	Working Knowledge of Sanskrit

Learning Objectives

The primary objective of this course is to familiaries the students with the basic issues in Indian Philosophy. The course will give a hand on knowledge of various Fundamental concepts and Theories to enable them to learn the higher concepts and Theories of different Philosophical schools of Indian Philosophy

Learning outcomes

Indian Philosophy teaches critical thinking, close reading, clear writing, and logical analysis. It develops the tools of logic and reason to analyse the ways in which the individual experiences the Universe. It guides the student to understand the language we use to describe the world, and our place within it. Different areas of philosophy are distinguished by the questions they ask. The most important reason to study philosophy is that it is of enormous and enduring interest. Philosophy is important, but it is also enormously enjoyable in which students are provided with the tools and the opportunity to develop and express their own philosophical views.

Detailed Syllabus

Unit I: Fundamentals of Philosophy 10Hrs

Darśana - concept and aims, Classification of Indian Philosophical schools, Fundamental issues in Indian Philosophy- Epistemology: Pramanas

Unit: II Metaphysics: 10Hrs

Satkaryavada, Asatkaryavada, Parinamavada, Vivartavada, Svabhavavada, Consciousness and matter, theories of self
Ethics: Karma & Punarjanma theory, Liberation

Unit: III Schools of Indian Philosophy 10Hrs.

Heterodox Schools - **Cārvāka** - General introduction with emphasis on Challenge to Veda, Rejection of Transcendental Entities, Ethics

Jainism: General Introduction with emphasis on Anekantavāda, Syadvāda, Saptabhanginyaya.

Buddhism- General introduction with emphasis on Four Noble Truths

Unit : IV Orthodox Schools 15Hrs.

Samkhya- General Introduction with emphasis on Prakṛti, three Gunas & Puruşa (Based on Samkhyakärikā)

Yoga – Eight-fold path of Yoga

Nyaya Vaisesika - General Introduction Seven Padrathas (overview only) Mimamsa - Svatah Prāmāṇyavāda

Advaita Vedanta - General Introduction with emphasis on Brahman, Māyā, Jīva and Jagat

Essential/recommended readings

1. 1.मिश्र, पंकज कुमार, तर्कसंग्रह तन्वी व्याख्या, परिमल पब्लिकेशन्स, शक्ति नगर, दिल्ली-7, 2013
2. मिश्र, पंकज कुमार, चार्वाक, शिवालिक प्रकाशन, 27/16, शक्ति नगर, दिल्ली-7, 2019
3. शर्मा, चन्द्रधर, भारतीय दर्शन, मोतीलाल बनारसीदास, जवाहर नगर, दिल्ली
4. Bhartiya, Mahesh Bharatiya Darśana Ki Pramukha Samasyaem, Ghaziabad, 1999.
1. Chatterjee, S. C. & D. M. Datta - Introduction to Indian Calcutta University, Calcutta, 1968 (Hindi Translation also).
2. Hiriyanna, M.- Outline of Indian Philosophy, London, 1956 (also Hindi Translation).
3. Shastri, Kuppuswami, A Primer of Indian Logic, 1951 (only introduction).
4. Bhartiya, Mahesh - Causation in Indian Philosophy, Ghaziabad, 1975.
5. Pandey, Ram Chandra - Panorama of Indian Philosophy (also Hindi version), M.L.B.D., Delhi, 1966.
6. Raja, Kuhnan - Some Fundamental Problems in Indian Philosophy, MLBD, Delhi, 1974.
7. Rishi, Uma Shankar (Ed.), Sarva-Darshana_Samgraha, Chowkhamba Vidyabhawan, Varansi, 1984.

Additional Resources:

1. Hiriyanna, M. - Outline of Indian Philosophy, London, 1956 (also Hindi Translation).
2. Shastri, Kuppuswami, A Primer of Indian Logic, 1951 (only introduction).
3. Bhartiya, Mahesh - Causation in Indian Philosophy, Ghaziabad, 1975.
4. Radhakrishnan, S. Indian Philosophy, Oxford University Press, Delhi, 1990.
5. Pandey, Ram Chandra Panorama of Indian Philosophy (also Hindi version), M.L.B.D.,
6. Raja, Kuhnan - Some Fundamental Problems in Indian Philosophy, MLBD, Delhi, 1974.
7. Chatterjee, S. C.- The Nyaya Theory of Knowledge, Calcutta, 1968.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

GE-8: Indian Epigraphy & Palaeography

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the Course			Eligibility criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Indian Epigraphy & Palaeography	**04**	**3**	**1**	**0**	**Semester II Passed**	**Working Knowledge of Sanskrit**

Learning Objectives

This course provides the students with the knowledge of the Indian Epigraphy and Palaeography and basics of Indian history of ancient period. Learners interested in acquiring historical facts direct from the original source can be benefitted with this course. It is extremely helpful for those who are willing to involve in archaeological studies.

Learning outcomes

After completion of this course , the students will form a solid undersdtanding of the various Inscriptions , antiquity of writing and other issues related to Indian Epigraphy and Palaeography

Detailed Syllabus

Unit: I **10Hrs.**

Welfare state: repair of dam, mati-saćiva, karma-saciva in Junagadh Inscription of Rudradāman.

Unit: II **10Hrs.**

1. Eran Pillar Inscription: Status of Samudragupta
2. Meharauli Iron Pillar Inscription of Candra: Victory, Recognition of Chandra

Unit: III **15Hrs.**

1**. Antiquity of writing in India**

a) Observations from foreign scholars
b) Literary evidences
c) Observations made by Indian Epigraphists.

2. Importance of the study of Inscriptions.

a) Geographical description
b) Historical evidences
e) Society
d) Religion
e) Literature
f) Economic Conditions

g) Administration

1. Writing material:
a) Rocks b) Pillars c) Metal Plates Brush, Chisel, Stylus, Paint/Colour d) Statues e) Pen

Unit: IV **10Hrs.**

1. Origin of the Brahmi Script
a) Foreign Origin
b) Indian Origin

2. Development of the script upto 700 A.D.

Essential/recommended readings

1. Buhler, G, On the origin of the Indian alphabet & numerals.
2. Dani, A. H, Indian Paleography
3. Ojha, G. H, Bharatiya Praćina Lipimāla (Hindi)
4. Pandey, R.B, Asoka ke Abhilekha (Hindi), Bharatiya Puralipi (Hindi)
5. Rana, S.S., Bharatiya Abhilekha
6. Sircar, D.C., Indian Epigraphy, Select Inscriptions (Part - I)
7. Upadhyay, V., Praćina Bharatiya Abhilekha (Hindi)
8. Thapar, Romila, Asoka tatha Maurya Samrajya Ka Patana (Hindi)

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

Category II

(*B.A (Prog.) Courses* for Undergraduate Programme of study with *Tamil Discipline* as one of the Core Disciplines)

DISCIPLINE SPECIFIC CORE COURSE (DSC-5): History of Tamil Literature (Medieval)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
History of Tamil Literature : (Medieval- Later Epic, Puranas and Prabbandas)	04	03	01	-	Class 12th pass	Students who have studied the Tamil language up to Class XII

Learning Objectives:

The aim of the course is to give a complete survey of medieval Tamil literature in chronological order. Since Tamil has a vast collection of literature from the ancient to modern time, it is necessary to introduce to the students of medieval literature with literary texts in historical background. This course explains the types of Tamil literature, their social and historical background of medieval period.

Learning Outcomes:

This course will enable students to understand the medieval literary history in a comprehensive method and explains the types of Tamil literature, their social and historical background from Epic period. The evolution, changes, and transition in literary production, emergence, and development of various literary genres are discussed with specific examples.

SYLLABUS OF DSC- 5

Total Hours of Teaching: 60 Hrs
(Lecture-45 Hrs, Tutorials -15 Hrs)

Unit-I (L-09 Hrs, T-03Hrs)

- Introduction to History of Medieval Tamil Literature

Unit -II (L-09 Hrs, T-03 Hrs)

- Medieval Puranas & Epics: Periyapuranam, , Thiruvilayadarpuranam, Kanthapuranam, Harichandrapuranam, Merumanthirapuranam

Unit -III (L-09 Hrs, T-03 Hrs)

- Medieval Epics: Kambaramayanam, Villi Bharatham , Perungathai, Nala Venba, Naidatham.

Unit -IV (L-09 Hrs, T-03 Hrs)

- Prabhanda Literature: Parani, Ula, Pillaitamil, Kuravanchi, Kovai

Unit -V (L-09 Hrs, T-03 Hrs)

- Medieval period Poets: Twin Poets, Kaalamegam, Arunagirinathar, Thayumanavar, Kumarakurubarar, Sivagnanamunivar, Sivapirakasar

Essential/recommended Readings:

1. Varadarajan, M., 1972, *Tamiḻ Ilakkiya Varalāṟu*, New Delhi: Sahitya Akademi.

2. Meenakshisundaram, T.P., 1965, *History of Tamil Literature*, Annamalai Nagar: Annamalai University.

Suggestive Readings (if any):

1) Indiragandi, P., & P. Dravidamani, 2015, *Tamiḻ Ilakkiya Varalāṟu*, Chennai: NCBH.

2) Savarimuthu. S., 2001, *Tamiḻ Ilakkiya Varalāṟu*, Chennai: Manivasagar Padippagam.

3) G.Devaneyap Paavanar, Thamizh Ilakkiya Varalaru, Ilankumaran Pathippakam, Chennai: 2017.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category III

(*B.A (Prog.)* with *Tamil Discipline* as Non-Major/ Minor

DISCIPLINE SPECIFIC CORE COURSE – 3 (DSC-3): An Introduction of Tamil Literature

(This course is Common in B.A (Programme) with Tamil as Major Discipline)

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Study of Tamil Novels	04	03	01	-	Class 12th pass	For students who have studied the Tamil language up to Class Xth & above.

Learning Objectives:

Introduction of European thoughts in Tamil land - impact of missionaries and European administration - introduction of print medium and modern education - emergence of modernity in Tamil - development of new literary genres: prose, non-fiction, novel, short story and modern poetry - development of novel as narratives in Tamil.

Learning Outcomes:

The study will motivate the students to develop their Tamil literary heritage of storytelling - socio-political issues in fiction writings - emergence of various genres in Novel - representation of novels from the first Tamil novel to contemporary novels - trends and various approaches in fiction writing.

SYLLABUS OF DSC

Total Hours of Teaching: 60 Hrs

(Lecture-45 Hrs, Tutorials -15 Hrs)

Unit-I (L-09 Hrs, T-03Hrs)

- Introduction to Tamil Fiction

Unit-II (L-09 Hrs, T-03Hrs)

- Role of Fiction in Tamil

Unit –III (L-09 Hrs, T-03Hrs)

- Folk Elements & Language in Novel

Unit -IV (L-09 Hrs, T-03Hrs)

- Characterization and Novel

Unit -V (L-09 Hrs, T-03Hrs)

- History and Cultural Reflections in Novel

References:

Compulsory Readings:

1. A.Mathavaiah, 1981. *Muththumeenakshi*, Chennai, Vaanavil Pirasuram.
2. P.R.Ramanujam. 2019, *Thunaiventharkal,* Madurai: Nembukol Pathippakam.

Additional Resources:

1. Varadarajan, M., 1972, *Tamiḻ Ilakkiya Varalāṟu*, New Delhi: Sahitya Akademi
2. Sundararajan, P.K. & Sivapadasundaram, 1977, Tamil *Nāval: Nūṟṟāṇḍu Varalāṟum Vaḷarcciyum*, Chennai: Christian Literature Society.
3. Kailasapathy, K., 1987, *Tamiḻ Nāval Ilakkiyam*, Chennai, New Century Book House.
4. G.Devaneyap Paavanar, Thamizh Ilakkiya Varalaru, Ilankumaran Pathippakam, Chennai: 2017.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

GENERIC ELECTIVES (GE-5): Intermediate Tamil

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Intermediate Tamil	04	03	01	-	Class 12th pass	For students who have not studied the Tamil language	Department of Modern Indian Languages-Tamil

Learning Objectives:

This semester course aims at creating an awareness of Dynamics of Tamil words and introducing classification weak & strong verbs- Infinitive forms of Verbs Auxiliaries and Tamil script learning.

Learning Outcomes:

The course will enable the students to obtain the skills of reading, writing and speaking in Tamil along with building up a vocabulary. After the course they can read and write Tamil sentences, can figure out words having conjunct character, and can have everyday conversation.

SYLLABUS OF GE-5

Total Hours of Teaching: 60 Hrs

(Lecture-45 Hrs, Tutorials -15 Hrs)

Unit -I (L-09 Hrs, T-03Hrs)

- Dynamics of Tamil words

Unit -II (L-09 Hrs, T-03Hrs)

- Rules of Verb formation.

Unit -III (L-09 Hrs, T-03Hrs)

Subject, Object, Verb construction (SOV structure)

Unit -IV (L-09 Hrs, T-03Hrs)

1. Making simple sentences, Interrogative sentences & exclamatory sentences**.**

Unit -V (L-09 Hrs, T-03Hrs)

2. Technical Terms

Reading list:

1. *Asher, R.E. Colloquial Tamil, Routledge (Lesson 1), London. 2002.*
2. *Rajaram, S. An Intensive Course in Tamil (Unit. 4), CIIL, Mysore, 1987.*
3. *Arokianathan, S. Spoken Tamil for Foreigners, (Lesson 1-5) A-team Info Media Publishers Pvt. Ltd, Chennai. 2012.*
4. *Hart, Kausalya. Tamil for Beginners Part I & II, (Lesson 1- 5 & 10) Centre for South and South East Asia, University of California at Berkeley, 1992.*
5. *Karunakaran, K. & Balakrishnan.R. Elementry Tamil (Introductory Course), Sabanayagam Printers, Chidambaram, 2001.*
6. Nuhman, M.A, 2010, Adippadait Tamil Ilakkanam, Puthanatham, Adaiyalam Publications.
7. *Thamizhannal, 1989, Ungal Tamizhai Therinthu kollungal, Madurai, Meenakshi Puththaka Nilayam.*

Suggestive readings: NIL

GENERIC ELECTIVES (GE-6:

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Creative Writing (Tamil)	04	03	01	-	Class 12th pass	For students who have studied the Tamil language up to 10th standard and above.	Department of Modern Indian Languages-Tamil

Learning Objectives:

Writing is the most potent and yet the simplest form of human expression. Unlike speech, writing transcends the barriers of space and time. The craft of writing has multiple dimensions - novels, short stories, essays, stage plays, fiction, non-fiction, screen-writing, mainline print and visual media, profile-writing, interviews, blogs, web-writing, travelogues and experimental pieces. The Course is intended to help students express ideas through a medium that has appreciable aesthetic appeal.

Learning Outcomes:

This course is designed to make understand creativity and attain a firm command over the medium. This creative writing course includes practical activity so that students are able to test and experiment with something they have learnt in the classroom.

SYLLABUS OF GE-6

Total Hours of Teaching: 60 Hrs
(Lecture-45 Hrs, Tutorials -15 Hrs)

Unit I (L-09 Hrs, T-03Hrs)

- Definition of creative writing and creator (Writer)

Unit II(L-09 Hrs, T-03Hrs)

- Characters of creator

Unit III (L-09 Hrs, T-03Hrs)

- Introduction of Novel, Short Story, Drama

Unit-IV (L-09 Hrs, T-03Hrs)

- Definition of Poetry, Free verses and Haiku

Unit V (L-09 Hrs, T-03Hrs)

- Creative skills of Poem, Short story and one act play

Essential/recommended Readings:

1. Alexi Tolstoy, 2016. *Eḻudum Kalai*, Chennai: NCBH

2. Shanmugam. S.V. 2013. *Pēccum Eḻuttum*, Chennai: NCBH.

Suggestive Readings:

Nannan, M., 2006, *Nalla Urainaḍai Eḻuda Veṇḍuma*? Chennai: Egam Padippagam.

2. Paranthamanar, A.K., 1972, *Nalla Tamiḻ Eḻuda Veṇḍuma*? Chennai: Pari Nilaiyam.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF MODERN INDIAN LANGUAGES AND LITERARY STUDIES

BA (Prog.) with Telugu Discipline as Minor

COURSES OFFERED BY DEPARTMENT OF DEPARTMENT OF MODERN INDIAN LANGUAGES AND LITERARY STUDIES

Category I

(Provide the details of the Discipline Specific Courses offered by your department for the UG Programme with your discipline as the Single Core Discipline)

[UG Programme for Bachelor in B.A. (Programme) degree in three years]

SEMESTER-III
CORE (DSC)

(DSC - 5)

History of Telugu Literature (Up to 15th Century)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
History of Telugu Literature (Up to 15th Century)	4	03	01	0	Students who are class XII Pass and have studied Telugu up to 8th Standard	NIL

Learning Objectives

Telugu literature has more than a thousand year's history, and it is one of the classical languages in India. The course provides students with a substantive understanding of literature and the history of Telugu. This course gives an outline of Telugu literature. The main aim of the course is to introduce the important poets and their wrings to Telugu students from the 11th century to the 15th Century.

Learning outcomes

After completing the course, students will be able to understand the History and evaluation of Telugu literature up to the 15th century.

SYLLABUS OF DSC

Unit-I **15 hours**

(i) Pre-Nannaya Literature.
(ii) Nannaya Era

Unit-II **15 hours**

(i) Sivakavi Yugam and Ramayana Poets
(ii) Tikkana Yugam

Unit-III **15 hours**

(i) Srinatha Yugam

Essential/recommended readings

1. Arudra, *Samagrandhra Sahityam,* Hyderabad:Telugu Academi. 2002
2. Lakshmikantam, Pingali. *Andhra SahityaCharitra.* Hyderabad: Andhra Pradesh Sahitya Academy, 1974.
3. Nageswararao, Kasinathuni. *Andhra Vangmaya Charitramu*, Madras: Andhra Granthamala, 1928.
4. Shastri, Dva.Na., *Telugu Sahitya Charitra,* Hyderabad: Pragati Publishers. 2007.
5. Simmanna, Velamala. *Telugu Sahitya Charitra*. Vishakapatnam: Dalita Sahitya Peetham, 2011.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF MODERN INDIAN LANGUAGES AND LITERARY STUDIES
UNIVERSITY OF DELHI, DELHI-110007
BA (Prog.) with Telugu Discipline as Major

SEMESTER-III
CORE (DSC)
(DSC - 6)

TELUGU DRAMA

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
TELUGU DRAMA	4	03	01	0	Students who are class XII Pass & have studied Telugu up to 10th Standard	NIL

Learning Objectives

In fictional writings, drama or Natakam is considered one of the popular writing in Telugu. Telugu Natakam has a history of more than hundred fifty years, and many writers have written thousands of Natakas and Ekankikas. The authors of Nataka in Telugu tried to follow the Sanskrit Nataka sampradaya initially; however, later writers focused on modern Nataka sampradaya. The course's main objective is to introduce the brief history of Telugu Natakam, features of Sanskrit Nataka, and features of Nataka. Students will read the select Telugu Natakas in Telugu.

Learning outcomes:

This study will enable the students to understand the Ancient forms of Telugu Drama – *Veethi* as a traditional Telugu theatre art form and understand the features of Telugu drama.

Students will be able to understand the difference between ancient and Modern Telugu dramas.

SYLLABUS OF DSC

Unit-1. The Origin and Development of Telugu Drama

15 Hours

Unit-2. Dasarupakas and Features of Drama

10 Hours

Unit-3. Select Texts:

20 Hours

Maa Bhoomi by Sunkara Satyanarayana, Vasireddy Bhaskararao.
Padamatigaali by Patibandla Anandarao

Essential/recommended readings

1. Anandarao, Patibandla. *Padamatigaali*, , AP State – Dept. of culture, 2018 (1998).
2. Nagabhushanasarma, Modali. *Nataka Silpam*, _____:Creative links publications, 2013.
3. Satyanarayana, Sunkara, Bhaskararao, Vasireddy *Maa Bhoomi.* Vijayawada: Visalandhra Publishing House, 2015.
4. Srirama Apparao, Ponangi. *Telugu Nataka Vikasamu,* Hyderabad: Natyamala Prachuranamu-3, 1967.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

POOL OF GENERIC ELECTIVES

SEMESTER-III

GENERIC ELECTIVE
(GE-A)

TELUGU SATHAKA SAHITYAM

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Telugu Sathaka sahityam	4	03	01	0	Students who are class XII Pass & have studied Telugu up to 8th Standard	NIL

Learning Objectives

Shataka is a unique genre with a long history in Telugu literature. Thousands of Shatakas are available in Telugu. The experiences of many great personalities are found in Shataka literature. The valuable elements for man's best way of life are found in the Shataka literature. The best qualities for human development are widely seen in Shataka literature. This genre has become an effective form for expressing a variety of topics to readers. Shataka literature in Telugu has significantly contributed to developing the individual's personality.

Learning outcomes

The course will enable the students to understand the unique features of Shataka, i.e. Shataka Sankhya, Makuta, Metreand the history of Shataka literature in Telugu. After completing the course, Students will be able to understand how to read Telugu verses and remember the verses and develop the Telugu vocabulary.

SYLLABUS OF GE

Unit I **15** Hours

Telugu Sathaka sahithyam: An Introduction
Features of Sathakam

Unit II **15** Hours

Categories in Sathaka sahithyam

Unit III **15** Hours

Sumati Sathakam (1-20 Poems), Bhaskara Sathakam (1-20 Poems), Vemana Sathakam (1-20 Poems)

Essential/recommended readings

1. Baddena. *Sumathi satakam*, Hyderabad: Sri Pavani seva samithi, 2000.
2. *Bhaskara Sathakam*, Hyderabad: Sri Pavani seva samithi,_____.
3. Gopalakrishna rao, K., *Andhra Sathaka vangmayamu*, Hyderabad: Andhrapradesh Sahitya Academy, 1975.
4. Subbarao, Vanguri. *Sathaka kavula charitra*, Narasapuramu: Kamala Kuteera press and publications, 1957 (1923).
5. Vemana. *VemanaSathakam*, Hyderabad: Sri Pavani seva samithi, 2004.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Semester-III

Generic Elective
(GE-B)

Intermediate Telugu

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Intermediate Telugu	4	03	01	0	Students who are class XII Pass & have studied Pre-Intermediate Telugu	NIL

Learning Objectives

This Course aspires to develop the students' language skills through Telugu popular texts thus enabling them to gain a firm grip over its nuances and helping them to extend their vocabulary. Along with teaching higher leaving reading, writing and conversational skills the course will demonstrate the essentials of translating complex sentences. Through prescribed texts and additional readings, the course also aims to make the students aware to the distinction between contemporary standard usage and its historical variant prevalent in nineteenth and early twentieth century known as*Sishta Bhasha*.

Learning outcomes

The course will enable the students to deal with the complexities of Telugu language. Along with an advanced reading, writing and conversational competence it will equip them as better translators as well.

SYLLABUS OF GE

Unit I **12**Hours

Reading Practice

Text: Select lessons from Telugu Vachakam 4th Class published by Telugu Akademi

Unit II **12** Hours

Difference between *Shishta Bhasha and Vyavaharika Bhasha*

Unit III **12** Hours

Complex Sentences Translation (Telugu-English-Telugu)

Unit IV **9** Hours

Paragraph writing (minimum 20 sentences)

Conversation Practice

Essential/recommended readings

1. Arden, A H., *A progressive grammar of the Telugu language.* 2nd ed. Madras: Society for promoting Christian knowledge, 1905.
2. Krishnamurti, B. and Gwynn, J. P. L. *A Grammar of Modern Telugu.* USA:Oxford University Press, 1986.
3. Parandhama Reddy, M. and Venkateswara Shastri,J. *Telugu Velugu- I.* . Mysore: Central Institute of Indian Languages, 1997.
4. Ramanarasimham, Parimi. *An Intensive Course in Telugu.* Mysore: Central Institute of Indian Languages, 1985.
5. Sanjay, D., *Spoken Telugu for Absolute Beginners*. _____: _____, 2019.
6. Venkatavadhani, Divakarla. *Telugu in Thirty Days.* Hyderabad. Andhra Pradesh Sahitya academy, 2017.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

BA (H) BENGALI

Category I

[UG Programme for Bachelor in Bengali (Honours) degree in three years]

DISCIPLINE SPECIFIC CORE COURSE -7 (DSC-7) – : Oitihasik Bhasabigyan

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Oitihasik Bhasabigyan	4	3	1	NIL	Class 12th pass in any subject	Studied Bengali Up to 10th & Above

Oitihasik Bhasabigyan

ঐতিহাসিক ভাষাবিজ্ঞান

Learning Objectives: Bengali language, in Indian literature, can be traced back in the 8th–10th century AD. Charyapada, which is a collection of a bunch of mystical poems written by some Buddhist monks of Mahayana Buddhism, where Bengali can be traced with some other languages (Purvi-Magdhi group) in that period. There are other instances of Bengali too during this period. Starting a thousand of years ago, Bengali has been grown into a modern Indian language of today. A student of Bengali must know that the language has changed time to time to become today's Bangla.

Learning Outcomes: After studying this paper students will know the historical development of the Indo-European Group of Languages. Students will be able to understand the development of Bengali language through various phases, development of Bengali script, and the dialects of Bengali.

UNIT I

ইন্দো-ইউরোপীয় ভাষাগোষ্ঠী থেকে বাংলা ভাষার উদ্ভবের সংক্ষিপ্ত ইতিহাস

UNIT II

ভাষাতাত্ত্বিক বৈশিষ্ট্য : প্রাচীন বাংলা, মধ্য বাংলা, আধুনিক বাংলা

UNIT III

বাংলা লিপির উদ্ভব ও ক্রমবিকাশ

বাংলার ভৌগোলিক উপভাষার শ্রেণিবিভাগ ও বৈশিষ্ট্য

Essential/Recommended readings

রামেশ্বর শ', ১৪১৯ বঙ্গাব্দ, *সাধারণ ভাষাবিজ্ঞান ও বাংলা ভাষা*, পুস্তক বিপণি, কলকাতা

Suggestive readings

কৃষ্ণপদ গোস্বামী, ২০০১, *বাংলা ভাষাতত্ত্বের ইতিহাস*, করুণা প্রকাশনী, কলকাতা

পবিত্র সরকার, ১৪১২ বঙ্গাব্দ, *ভাষা, দেশ, কাল*, মিত্র ও ঘোষ পাবলিশার্স, কলিকাতা

পরেশচন্দ্র মজুমদার, ১৯৯২, *বাঙলা ভাষা পরিক্রমা*, প্রথম খণ্ড, দে'জ পাবলিশিং, কলকাতা

পরেশচন্দ্র মজুমদার, ২০১২, *বাঙলা ভাষা পরিক্রমা*, দ্বিতীয় খণ্ড, দে'জ পাবলিশিং, কলকাতা

মনিরুজ্জামান, ১৯৯৪, *উপভাষা চর্চার ভূমিকা*, বাংলা একাডেমী, ঢাকা

মুহম্মদ শহীদুল্লাহ্, ২০১২, বাঙ্গালা ভাষার ইতিবৃত্ত, মাওলা ব্রাদার্স, ঢাকা

মৃণাল নাথ, ১৯৯৯, *ভাষা ও সমাজ*, নয়া উদ্যোগ, কলকাতা

সুকুমার সেন, ২০০১, *ভাষার ইতিবৃত্ত*, আনন্দ পাবলিশার্স, কলকাতা

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 8 (DSC-8): Bangla Sahityer Itihas: Adhunik Jug- I

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Bangla Sahityer Itihas: Adhunik Jug- I	4	3	1	NIL	Class 12th pass in any subject	Studied Bengali Up to 10th & Above

Bangla Sahityer Itihas: Adhunik Jug- I

বাংলা সাহিত্যের ইতিহাস: আধুনিক যুগ- ১

Learning Objectives: Bengali Literature in the 19th Century had seen a scintillating outburst of various genres like poetry, drama, Novel, Essays etc. Emergence of Bengali prose took a much matured turn in the early 19th century. Bengali poetry entered a new era. Farces and Plays on social issues were being written. Greatest of the Fiction and non-fiction Writers, Playwrights, Poets etc became evident. The objective of introducing this paper is to get our students acquainted with the main features of the literature of this century.

Learning Outcomes: While studying this paper, the students will be knowing the social and political history of Bengal during this period which led to the creation of a whole bunch of literary works. They will also be acquainted to the main writers and poets and their works. Like the previous history of Literature paper, this one also will draw an outline of the literature in the 19th century.

UNIT I

যুগলক্ষণ, বাংলা গদ্যভাষার উদ্ভব ও বিকাশ

শ্রীরামপুর মিশন, ফোর্ট উইলিয়ম কলেজ, রামমোহন রায়, দেবেন্দ্রনাথ ঠাকুর, অক্ষয়কুমার দত্ত, ঈশ্বরচন্দ্র বিদ্যাসাগর

UNIT II

বাংলা প্রবন্ধ

বঙ্কিমচন্দ্র চট্টোপাধ্যায়, রবীন্দ্রনাথ ঠাকুর, হরপ্রসাদ শাস্ত্রী, রামেন্দ্রসুন্দর ত্রিবেদী, প্রমথ চৌধুরী, অবনীন্দ্রনাথ ঠাকুর, সৈয়দ মুজতবা আলী

Essential/Recommended readings:

অসিতকুমার বন্দ্যোপাধ্যায়, ২০০৪-২০০৫, *বাংলা সাহিত্যের সম্পূর্ণ ইতিবৃত্ত,* মডার্ণ বুক এজেন্সী, কলকাতা

ক্ষেত্র গুপ্ত, ২০০২, *বাংলা সাহিত্যের সমগ্র ইতিহাস,* গ্রন্থনিলয়, কলকাতা

Suggestive readings:

অসিতকুমার বন্দ্যোপাধ্যায়, ১৯৯২, *বাংলা সাহিত্যের ইতিবৃত্ত,* সপ্তম খণ্ড, মডার্ণ বুক এজেন্সী, কলকাতা

অসিতকুমার বন্দ্যোপাধ্যায়, ২০০৭, *বাংলা সাহিত্যের ইতিবৃত্ত,* ষষ্ঠ খণ্ড, মডার্ণ বুক এজেন্সী, কলকাতা

অসিতকুমার বন্দ্যোপাধ্যায়, ২০০৭, *বাংলা সাহিত্যের ইতিবৃত্ত,* অষ্টম খণ্ড, মডার্ণ বুক এজেন্সী, কলকাতা

অসিতকুমার বন্দ্যোপাধ্যায়, ২০০৯-২০১০, *বাংলা সাহিত্যের ইতিবৃত্ত,* পঞ্চম খণ্ড, মডার্ণ বুক এজেন্সী, কলকাতা

অরুণকুমার মুখোপাধ্যায়, ২০০০, *বাংলা গদ্যরীতির ইতিহাস,* দে'জ পাবলিশিং, কলকাতা

গোপাল হালদার, ১৪১২ বঙ্গাব্দ, *বাঙলা সাহিত্যের রূপরেখা,* দ্বিতীয় খণ্ড, অরুণা প্রকাশনী, কলকাতা

সুকুমার সেন, ১৯৯৮, *বাঙ্গালা সাহিত্যে গদ্য,* আনন্দ পাবলিশার্স, কলকাতা

সুকুমার সেন, ১৪১৬ বঙ্গাব্দ, *বাঙ্গালা সাহিত্যের ইতিহাস,* তৃতীয় খণ্ড, আনন্দ, কলকাতা

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 9 (DSC-9): Rabindrasahitya-1

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Rabindrasahitya-1	4	3	1	NIL	Class 12th pass in any subject	Studied Bengali Up to 10th & Above

Rabindrasahitya-1

রবীন্দ্রসাহিত্য-১

Learning Objective: Rabindranath Tagore, the first Nobel-laureate in Literature (1913) from Asia, has contributed innumerable literary works in Bangla. No branch of literature exists where we do not get his works. His importance in Bangla Sahitya is beyond question. So, a full paper containing his literature has been added in this syllabus.

Learning Outcomes: Students will get the scope to know Rabindra-sahitya-1 (along with his life) better as earlier they have studied only one or two of his short poems or stories in the school syllabus. Here they will be working upon his Poems, Novels and see his overflowing philosophy through all these works.

UNIT I

কবিতা

নির্ঝরের স্বপ্নভঙ্গ, বধূ, পুরাতন ভৃত্য, অপমানিত, সবুজের অভিযান, ছেলেটা, ওরা কাজ করে

UNIT II

উপন্যাস

ঘরে-বাইরে

Essential/Recommended readings:

রবীন্দ্রনাথ ঠাকুর, ১৩৪৮ বঙ্গাব্দ, *রবীন্দ্র-রচনাবলী*, অষ্টম খণ্ড, ঘরে-বাইরে, বিশ্বভারতী, কলিকাতা

রবীন্দ্রনাথ ঠাকুর, ১৪১৬ বঙ্গাব্দ, *সঞ্চয়িতা*, বিশ্বভারতী গ্রন্থনবিভাগ, কলকাতা

Suggestive readings:

অমরেশ দাশ, ২০০২, রবীন্দ্রনাথের উপন্যাস : নবমূল্যায়ন, পুস্তক বিপণি, কলকাতা

অরুণকুমার মুখোপাধ্যায়, ১৩৬৮ বঙ্গাব্দ, *রবীন্দ্রবিতান*, এ. মুখার্জী, কলিকাতা

উজ্জ্বলকুমার মজুমদার, ১৪০০ বঙ্গাব্দ, *রবীন্দ্রনাথ : সৃষ্টির উজ্জ্বল স্রোতে*, আনন্দ পাবলিশার্স, কলকাতা

উপেন্দ্রনাথ ভট্টাচার্য, ১৪১৪ বঙ্গাব্দ, *রবীন্দ্র-কাব্য-পরিক্রমা*, ওরিয়েন্ট বুক কোম্পানি, কলকাতা

ক্ষিতিমোহন সেন, ১৯৫৫, *বলাকা-কাব্য-পরিক্রমা*, এ মুখার্জী, কলিকাতা

চারুচন্দ্র বন্দ্যোপাধ্যায়, ১৪১০ বঙ্গাব্দ, *রবি রশ্মি*, প্রথম খণ্ড, দে বুক স্টোর, কলকাতা

চারুচন্দ্র বন্দ্যোপাধ্যায়, ১৪১০ বঙ্গাব্দ, *রবি রশ্মি*, দ্বিতীয় খণ্ড, দে বুক স্টোর, কলকাতা

জগদীশ ভট্টাচার্য, ২০১৪, *কবিমানসী*, দ্বিতীয় খণ্ড, ভারবি, কলকাতা

জগদীশ ভট্টাচার্য, ২০১৫, *কবিমানসী*, প্রথম খণ্ড, ভারবি, কলকাতা

প্রমথনাথ বিশী, ১৩৬৮ বঙ্গাব্দ, *রবীন্দ্রসাহিত্য বিচিত্রা*, ওরিয়েন্ট বুক কোম্পানি, কলকাতা

বুদ্ধদেব বসু, ১৯৮৩, *রবীন্দ্রনাথ : কথাসাহিত্য*, নিউ এজ পাবলিশার্স, কলিকাতা

বুদ্ধদেব বসু, ২০০১, *কবি রবীন্দ্রনাথ*, দে'জ পাবলিশিং, কলকাতা,

সত্যব্রত দে, ১৯৭১, *রবীন্দ্র= উপন্যাস সমীক্ষা*, জিজ্ঞাসা, কলিকাতা

DISCIPLINE SPECIFIC ELECTIVE COURSE– 1 (DSE-1): Bangla Janapriya Sahitya - 1

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Bangla Janapriya Sahitya - 1	4	3	1	NIL	Class 12th pass in any subject	Studied Bengali Up to 10th & Above

Bangla Janapriya Sahitya - 1

বাংলা জনপ্রিয় সাহিত্য - ১

Learning Objectives: Another brilliant genre is the Children's Literature or Juvenile Literature in Bengali. This literature has been a part of Folk-literature at times but later on it has been written and nurtured by many writers and poets. Nowadays, it is studied as a totally different genre.

Learning Outcomes: Students will be guided to read and discuss the features of children's or Juvenile Literature and study the literature as a genre. They will enjoy studying some interesting texts written in Bangla starting from 19th century.

UNIT - I

জনসাহিত্যের সংজ্ঞা ও বৈশিষ্ট্য

কথাসাহিত্য

অবনীন্দ্রনাথ ঠাকুর – ক্ষীরের পুতুল

শীর্ষেন্দু মুখোপাধ্যায় – মনোজদের অদ্ভুত বাড়ি

UNIT - 2

ছড়া ও নাটক

সুকুমার রায় – গোঁফ চুরি

অন্নদাশঙ্কর রায় – তেলের শিশি

সুকুমার রায় – লক্ষণের শক্তিশেল

Essential/Recommended readings:

অশোককুমার মিত্র (সম্পা.), ২০১৩, *অবনীন্দ্রনাথ ঠাকুর কিশোর রচনাসমগ্র*, পুনশ্চ, কলকাতা

শীর্ষেন্দু মুখোপাধ্যায়, ২০১১, *কিশোর রচনা সমগ্র*, আনন্দ পাবলিশার্স, কলকাতা

সুকুমার রায়, ২০১০, *সুকুমার রচনাসমগ্র*, শুভম প্রকাশনী, কলকাতা

Suggestive readings:

Dominic Strinati, 2004, *An Introduction to Theories of Popular Culture*, Routledge, London.

DISCIPLINE SPECIFIC ELECTIVE COURSE– 2 (DSE-2): Bangladesher Sahitya - 1

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Bangladesher Sahitya - 1 **1**	4	3	1	NIL	Class 12th pass in any subject	Studied Bengali Up to 10th & Above

Bangladesher Sahitya - 1

বাংলাদেশের সাহিত্য – ১

Learning Objectives: The partition of Bengal in 1946 drew a division-line upon the Bengali intelligentsia, The Artists, The Poets, the Academicians who had the same culture and language but had to be in different sides of the border. People from every walk of life strove to get their Mother-language Bangla which result East Pakistan to be emerged as Bangladesh in 1971. Bengali literature has been created and nurtured in Bangladesh with great esteem. In this paper we will get our students learn the short history of the country and read some glorious Literature.

Learning Outcomes: The students will get to know the history of Bangladesh which had been same as ours upto 1947 and then turned otherwise. The students will also be able to read and research upon some of their greatest literary works till date.

UNIT - I

পটভূমিঃ ভাষা আন্দোলন, মুক্তিযুদ্ধ

উপন্যাস

সেলিনা হোসেন – নীলময়ূরের যৌবন

UNIT – 2

ছোটগল্প

আবু ইসাহাক – জোঁক

আখতারুজ্জামান ইলিয়াস – দুধভাতে উৎপাত

Essential/Recommended readings:

সেলিনা হোসেন, ২০০৯, *নীল ময়ূরের যৌবন*, স্বরবৃত্ত, ঢাকা

আখতারুজ্জামান ইলিয়াস, ২০১৩, *জাল স্বপ্ন ও স্বপ্নের জাল*, মাওলা ব্রাদার্স, ঢাকা

পারভেজ হোসেন (সম্পা.), ২০১৮, *বাংলাদেশের ছোটগল্প*, নবযুগ প্রকাশনী, ঢাকা

Suggestive readings:

আবু জাফর (অনু.), ২০১৬, *দেশভাগের অর্জন : বাংলা ও ভারত*, মাওলা ব্রাদার্স, ঢাকা

আহমদ রফিক, ২০১৫, *দেশবিভাগ : ফিরে দেখা*, অনিন্দ্যপ্রকাশ, ঢাকা

নীলিমা ইব্রাহিম, ২০১৮, *আমি বীরাঙ্গনা বলছি*, জাগৃতি প্রকাশনী, ঢাকা

বদরুদ্দিন ওমর, ১৯৮৭, *বঙ্গভঙ্গ সাম্প্রদায়িক রাজনীতি*, চিরায়ত, কলকাতা

বদরুদ্দীন উমর, (২০১০), *আমাদের ভাষার লড়াই*, ঢাকা : জাতীয় সাহিত্য প্রকাশ

অচ্যুৎ গোস্বামী, ২০১৮, *বাংলা উপন্যাসের ধারা*, ভাষাপ্রকাশ, ঢাকা

আজহার ইসলাম, ১৯৯৬, *বাংলাদেশের ছোটগল্প : বিষয়ভাবনা স্বরূপ ও শিল্পমূল্য*, বাংলা একাডেমী, ঢাকা

চঞ্চলকুমার বোস, ২০১৬, *বাংলাদেশের ছোটগল্প : জীবনজলধির শিল্প*, সুচয়নী পাবলিশার্স, ঢাকা

Proposed Bengali Discipline Major Course for III Semester B.A. Programme Bengali

Category II

(B.A. Programme Courses for Undergraduate Programme of study with Bengali discipline as one of the Core Disciplines)

DISCIPLINE SPECIFIC CORE COURSE- 3 (DSC-3): Uponibesh Porber Bangla Sahitya – I (Colonial Bengali Literature – I)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Uponibesh Porber Bangla Sahitya – I (Colonial Bengali Literature – I)	4	3	1	NIL	Class 12th pass in any subject	Studied Bengali up to 10th standard Or Working knowledge of Bengali language

Learning Objectives

To give the students a detail idea about Colonial Bengali Literature.

Learning outcomes

The course will enlighten the students about deferent types of Colonial Bengali Literature, its characteristics and features. It will also introduce students about their socio – cultural background of Colonial Bengal through literature.

SYLLABUS OF DSC-3

UNIT – I (6 Weeks)

বাংলা গদ্যের বিকাশ: শ্রীরামপুর মিশন, ফোর্ট উইলিয়াম কলেজ, রামমোহন রায়, অক্ষয়কুমার দত্ত, দেবেন্দ্রনাথ ঠাকুর, বিদ্যাসাগর

UNIT – II (6 Weeks)

প্রবন্ধঃ বঙ্কিমচন্দ্র চট্টোপাধ্যায়, কালীপ্রসন্ন সিংহ, রবীন্দ্রনাথ ঠাকুর, হরপ্রসাদ শাস্ত্রী, রামেন্দ্রসুন্দর ত্রিবেদী, প্রমথ চৌধুরী, অবনীন্দ্রনাথ ঠাকুর

Practical component (if any) - NIL

Essential/recommended readings:

অসিতকুমার বন্দ্যোপাধ্যায়, ২০০৪-২০০৫, বাংলা সাহিত্যর সম্পূর্ণ ইতিবৃত্ত, মডার্ন বুক এজেন্সী, কলকাতা

ক্ষেত্র গুপ্ত, ২০০২, বাংলা সাহিত্যের সমগ্র ইতিহাস, গ্রন্থনিলয়, কলকাতা

Suggestive readings:

অসিতকুমার বন্দ্যোপাধ্যায়, ২০০৯-২০১০, বাংলা সাহিত্যর ইতিবৃত্ত, পঞ্চম খণ্ড, মডার্ন বুক এজেন্সী, কলকাতা

অসিতকুমার বন্দ্যোপাধ্যায়, ২০০৭, বাংলা সাহিত্যর ইতিবৃত্ত, ষষ্ঠ খণ্ড, মডার্ন বুক এজেন্সী, কলকাতা

অসিতকুমার বন্দ্যোপাধ্যায়, ১৯৯২, বাংলা সাহিত্যর ইতিবৃত্ত, সপ্তম খণ্ড, মডার্ন বুক এজেন্সী, কলকাতা

অসিতকুমার বন্দ্যোপাধ্যায়, ২০০৭, বাংলা সাহিত্যর ইতিবৃত্ত, অষ্টম খণ্ড, মডার্ন বুক এজেন্সী, কলকাতা

Teaching Learning Process: Lecture-40 Hrs. Discussions 5Hrs. Assignments / Presentation-5 Hrs

Unit I Seven weeks

Unit II Six weeks

Assessment Methods: Monthly Test., Internal Exam, Semester Exam.

Keywords: Colonial, Bengali Prose, Nineteen Century,

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Proposed Bengali Discipline Major & Minor Course for III Semester B.A. Programme Bengali

Category III

B. A. Programme Courses for Undergraduate Programme of study with discipline as one of the Core Disciplines

(For e.g. courses for B.A. Programmes with Bengali as Major & minor discipline)

DISCIPLINE SPECIFIC CORE COURSE- 3 (DSC-3): Bangali Monisha (Bengali intellect)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Bangali Monisha (Bengali intellect)	**4**	**3**	**1**	**NIL**	**Class 12th pass in any subject**	**Studied Bengali up to 10th standard Or Working knowledge of Bengali language**

Learning Objectives

To introduce students about glorious life and history of Bengali Intellect of past.

Learning outcomes

This course will enable students to understand the values of various Bengali Intellectuals life and massages.

SYLLABUS OF DSC- 3

Maximum Marks 70 (04 Credit)

Unit I **30**

অতীশ দীপঙ্কর, শ্রী চৈতন্যদেব, রাজা রামমোহন রায়, ঈশ্বরচন্দ্র বিদ্যাসাগর, হাজি মহম্মদ মহসীন, হেনরি ডিরোজিও, মাইকেল মধুসূদন দত্ত, হাসন রাজা

Unit II **40**

রবীন্দ্রনাথ ঠাকুর, লালন সাঁই, চিত্তরঞ্জন দাস, বেগম রোকেয়া, নন্দলাল বসু, স্বামী বিবেকানন্দ, শেখ মুজিবর রহমান, অমর্ত্য সেন

Primary Resources:

সুশীল রায়, মনীষী জীবন কথা, ১৯৫৮, ওরিয়েন্ট বুক কোম্পানি, কলকাতা

স্বকৃত নোমান, বাঙালি মনীষীদের ছেলেবেলা, ২০১৯, অনিন্দ্য প্রকাশ, বাংলাদেশ

Additional Resources:

Study materials prepared by the department.

Teaching Learning Process: Lecture-40 Hrs. Discussions 5Hrs. Assignments / Presentation-5 Hrs

Unit I Seven weeks

Unit II Six weeks

Assessment Methods: Monthly Test., Internal Exam, Semester Exam.

Keywords: Biography, Life, Value, childhood, Intellectuals.

COMMON POOL OF BENGALI GENERIC ELECTIVES (GE) COURSES

DEPARTMENT OF BENGALI

GENERIC ELECTIVES (GE-3): BANGLA NATAK (BENGALI PLAYS)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
BANGLA NATAK (BENGALI PLAYS)	4	3	1		Class 12th pass in any subject	Studied Bengali up to 10th standard Or Working knowledge of Bengali language	BENGALI

Course Objectives: To give the students an idea about Bengali drama and its history. It also offers a general idea of the trend of Bengali drama.

Course Learning Outcomes: The course will enlighten the students about Bengali drama.

Maximum Marks 70 (04 Credit)

Unit – 1

বাংলা নাটকের উৎস ও বিবর্তন

Unit – 2

একেই কি বলে সভ্যতা – মাইকেল মধুসূদন দত্ত

টিনের তলোয়ার – উৎপল দত্ত

লক্ষণের শক্তিশেল – সুকুমার রায়

Compulsory Readings:

আশুতোষ ভট্টাচার্য, বাংলা নাট্যসাহিত্যের ইতিহাস, এ, মুখার্জী অ্যান্ড কোং প্রাঃ লিঃ, কলকাতা
উৎপল দত্ত, টিনের তলোয়ার, ১৪০৭, জাতীয় সাহিত্য পরিষদ, কলকাতা
সুকুমার রায়, ২০১০, সুকুমার রচনাসমগ্র, শুভম প্রকাশনী, কলকাতা
পুষ্পেন্দুশেখর গিরি(সম্পা), ২০০৬, মাইকেল মধুসূদন দত্তের একেই কি বলে সভ্যতা? ঃ সভ্যতার দুই মুখ, করুণা প্রকাশনী, কলকাতা

Additional Resources:

অজিত কুমার ঘোষ, ২০০৫, বাংলা নাটকের ইতিহাস, দে'জ পাবলিশিং, কলকাতা

Teaching Learning Process: Lecture- 28 Hrs. Discussions 4Hrs. Assignments / Presentation-4Hrs

Unit I Four weeks
Unit II Four weeks
Unit III Five weeks

Assessment Methods: Monthly Test, Internal Exam, Semester Exam.

Keywords: Creative Writing, Creative Genres, Plot, Poetry, Drama, Fiction, Prosody, Rhetoric, Imagery

GENERIC ELECTIVES (GE-4): BANGLA SHISHU SAHITYA (Bengali Children's Literature)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
BANGLA SHISHU SAHITYA (Bengali Children's Literature)	**4**	**3**	**1**		**Class 12th pass in any subject**	**Studied Bengali up to 10th standard Or Working knowledge of Bengali language**	**BENGALI**

Course Objectives: This course will offer students an opportunity to learn language through children literature.

Course Learning Outcomes: The course will enlighten the students about Bengali children literature.

Maximum Marks 70 (04 Credit)

Unit – 1

ঈশ্বরচন্দ্র বিদ্যাসাগর - কথামালা(সর্প ও কৃষক , খরগোশ ও কচ্ছপ, একচক্ষু হরিণ , চোর ও কুকুর)

Unit – 2

রবীন্দ্রনাথ ঠাকুর - সহজ পাঠ (১ম ও ২য় ভাগ নির্বাচিত অংশ)

উপেন্দ্রকিশোর রায়চৌধুরি - টুনটুনির গল্প (নির্বাচিত)

Compulsory Readings:

ঈশ্বরচন্দ্র বিদ্যাসাগর - কথামালা , প্রবোধচন্দ্র মজুমদার এণ্ড ব্রাদার্স , কলকাতা, ১৩৫১

রবীন্দ্রনাথ ঠাকুর - সহজ পাঠ, বিশ্বভারতী, ১৩৮৭

উপেন্দ্রকিশোর রায়চৌধুরি, টুনটুনির গল্প, দেব সাহিত্য-কুটীর প্রাইভেট লিমিটেড, ১৯৬৪

Additional Resources:

ডঃ প্রবীর প্রামানিক, বাংলা শিশু ও কিশোর সাহিত্যঃ আধুনিক বিচার, বঙ্গীয় সাহিত্য সংসদ, ২০১০

আশা গঙ্গোপাধ্যায়, বাংলা শিশু সাহিত্যের ক্রমবিকাশ, ডি এম লাইব্রেরি, কলকাতা, ১৩৬৬

Teaching Learning Process: Lecture- 38 Hrs. Discussions 4Hrs. Assignments / Presentation-4Hrs

Unit I Five weeks

Unit II Four weeks

Unit III Four weeks

Assessment Methods: Monthly Test, Internal Exam, Semester Exam.

Keywords: children literature , language, juvenile, moral stories

Proposed Bengali AEC Courses for III Semester B.A. Programme Bengali

DISCIPLINE SPECIFIC CORE COURSE – 7: Modern Persian Prose

Credit distribution, Eligibility and Pre-requisites of the Course:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Modern Persian Prose	4	3	1	NIL	Class XII pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make students acquainted with critical and theoretical approaches to the reading and analysis of modern Persian texts
2. To equip the students with socio-cultural aspects of the Iranian society and contemporary world.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, the students will be able to get acquainted with critical and theoretical approaches to the reading and analysis of modern Persian texts
- By studying this course, they shall get to know about socio-cultural aspects of the Iranian society and contemporary world.

SYLLABUS OF DSC-7

UNIT – I (12 Hours)

- Mahatma Gandhi (Dr. Mehmood Sana'i)
- Khana-e-Pidari (Saeed Nafisi)
- Eidi (Mohammad Hijazi)
- Life and works of respective authors

UNIT – II (12 Hours)

- AdhamPinaDuz (Shin Partu)
- Kabutar-o-Kulagh (Yusuf E'tesamulmulk)
- Life & works of respective authors

UNIT – III (9 Hours)

- Mahi-e-Kuchulu (Samad Behrangi)
- Zuban-i-Farsi Dar Hind (Ali Asghar Hikmat)
- Life & works of respective authors

UNIT – IV (12 Hours)

- History of modern Persian literature, etc.

Essential/recommended readings:

1. Khan, Dr. M.A. and Dr S.H. Qasemi: Intekhab-e-Nasr-e-M'aasir-e-Farsi, Department of Persian, University of Delhi, Delhi-110 007, 1991.
2. Khan, Hakim Zaki Ahmad: Nisb-e-Jadeed-e-Farsi, Jayyed Press, Ballimaran, Delhi-110 006.
3. Hameedi, Mehdi: Darya-e-Gauhar (Vol. I), Intesharate-Amir Kabir, Tehran, Iran, 1343/1964.

Suggestive readings

1. Kamshad, Hasan: Modern Persian Prose, Cambridge University Press, 1966. 2. Hakemi, Isma'il: Adabiyat-e-Mu'asir-e-Farsi, Tehran, 1988.
2. Abedini, Mir Hasan: Sad Sal Dastn-Navisidar Iran; 3 Vols., Iran, 1377/1998.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 8: Modern Persian Poetry

Credit distribution, Eligibility and Pre-requisites of the Course:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Modern Persian Poetry	4	3	1	NIL	Class XII pass	NIL

Learning Objectives:

The Learning Objectives of this course are as follows:

1. To equip the students with some prominent modern poets with their specimen
2. To enable the students to know the Persian Poetry Genres with poetry selections of some of the famous modern poets of Iran

Learning outcomes:

The Learning Outcomes of this course are as follows:

- By learning this course, students will come to know about modern Persian poetry
- By learning this course, students will be able to know the different Poetry Genres of modern Persian poetry.

SYLLABUS OF DSC- 8

UNIT – I (9 Hours)

Following poetry of Malik-ush-Shoara Bahar:

شعر و نظم　　چشمه و سنگ　　مادر

در راه عشق　　از بدی پرهیز کن

UNIT – II (9 Hours)

Following poetry of Parwin E'tesami:

ای مرغک　　کوته نظر　　مست و هشیار

اشک یتیم

UNIT – III (9 Hours)

Following poetry of Rahi Muayyari:

نا آشنا　　سنگریزه

Following poetry of Nima Yushij:

ای شب　　چشمهٔ کوچک

UNIT – IV (9 Hours)

Following poetry of Shahryar:

حالا چرا　　پروانه در آتش　　نالهٔ بلبل

Following poetry of Simin Behbahani:

نیلوفر آبی

UNIT – V (9 Hours) *Following*

poetry of Iraj Mirza:

قلب مادر

- History of Modern Persian Poetry, Life & works of Poets

Essential/recommended readings:

1. Khalkhali, Syed Abdul Hameed: Tazkirah-e-Shoara-e-Ma'asir-e-Iran, Kitabkhana-e-Tahoori, Iran.
2. Faridunkar: Shhkrha-e-Shair-e-Ma'asir-e-Iran,, Intesharat-e Amir Kabir, Tehran, Iran, 1337/1958
3. Aryanpur, Yahya: AzSaba Ta Nima (Vol. I & II), Tehran, Iran. 4. Muneeb-urRehman: Jadeed Farsi Shaeri, Aligarh Muslim University, Aligarh, 1959.

Suggestive readings

1. Qasemi, S.H.: JadeedFrsiShaeri, Indo-Persian Society, Delhi-110 006, 1977.
2. Qasemi, Zakira Sharif: Farsi ShaeriEkMutale'a, Indo-Persian Society, Delhi-110 006, 1987.

DISCIPLINE SPECIFIC CORE COURSE – 9: Life & works of Mughal Poet laureates

Credit distribution, Eligibility and Pre-requisites of the Course:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Life & works of Mughal Poet laureates (India)	**4**	**3**	**1**	**NIL**	**Class XII pass**	**NIL**

Learning Objectives:

The Learning Objectives of this course are as follows:

1. To acquaint the students with some of the famous poets and their works during Mughal period.
2. To familiarize the students with Persian literature produced in Mughal Period.

Learning outcome:

- By learning this course, students will come to know the poet laureates of Mughal period (1526-1707)
- By learning this course, students will be able to get acquainted with poetic styles of Mughal poet laureates

SYLLABUS OF DSC-9

UNIT – I (9 Hours)

- Introduction to History of Persian language and literature in Mughal Court

UNIT – II (9 Hours)

Life & works of following Poet laureates with some selection of poetry:

Ghazali Mashhadi (2 ghazals):

۱. خواب اگر بینم من آن است عتاب آلود را
۲. بستر شده در کوی تو خاکستر امشب

UNIT – III (9 Hours)

Faizi Fayyazi (2 Ghazals):

۱. حریف باده کجا عاشق خراب کجا (ص۷ دیوان فیضی فیاضی)
۲. بزم چون دادی ایمن شده پر نور امشب (ص ١٤ دیوان فیضی فیاضی)

UNIT – IV (9 Hours)

Talib Amuli:

- Ghazal no 21 to 25, (Page no 228-232from Diwan-e-Talib Amuli)

UNIT – V (9 Hours)

Kaleem Hamdani:

- Masnavi “Tareefe Akbarabad va Bagh-i-Jahan Ara Begum” (Page no. 142-50 from Diwan-e-Kaleem Hamdani)

Essential/recommended readings:

1. NabiHaadi: MughlonkeMalikusShuara, Allahabad-1978
2. ShibliNomani: Shair-ulAjam, Shibli Academy, Azamgarh (U.P.)
3. Sabahuddin, AbdurRahman: Bazm-e-Taimuriah, Shibli Academy, Azamgarh, (U.P.)
4. Sabahuddin, AbdurRahman: Bazm-e-Sufiyah, Shibli Academy, Azamgarh (U.P.).
5. Ikram, Mohammad: Ab-e-Kausar, Fareed Book Depot. Delhi, 1999.
6. Ikram, Mohammad: Rud-e-Kausar, Fareed Book Depot, Delhi, 1999.
7. . Ikram, Mohammad: Mauj-e-Kausar, Fareed Book Depot, Delhi, 1999
8. Ghani, M.A.: A History of Persian Language & Literature at the Mughal Court (Part I & II),
9. Allahabad (U.P.), 1929-30. . Qasemi, S.H.: A History of Indo-Persian Literature (1806-1857),
10. Department of Persian, University of Delhi, Delhi-110 007, 2008
11. . Qasemi, Z.S.: A History of Indo-Persian Literature (1627-59), Department of Persian,University of Delhi, Delhi-110 007, 2015
12. Talib Amuli, Kulliyate ashare Malik us ShuaraTalibAmuli, edited by TahiriShahab, KitabkhaneSanai, 1346

13. KalimHamdani, DiwanKalimHamdani, edited by Mohammad Qaharman, AstaneQudseRizavi, Mashhad, Iran, 1369
14. Ghazali Mashahdi: Hayat Aur Karname, Dr.Salman Abbasi, Lucknow 1978
15. Diwan Faizi Fayyazi, Firozuddin &Sons Publisher Lahore.

Category II

Persian Courses for Undergraduate Programme of study with Persian as one of the Core Disciplines

(B.A. Programmes with Persian as Major discipline)

DISCIPLINE SPECIFIC CORE COURSE – : Understanding Persian Poetry: Lavel-1

Credit distribution, Eligibility and Pre-requisites of the Course:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Understanding Persian Poetry: Lavel-1	4	3	1	NIL	Class XII pass	NIL

Learning Objectives:

The Learning Objectives of this course are as follows:

1. To equip the students with some prominent poets with their specimen
2. To enable the students to know the Persian Poetry Genres Studying some Persian Poetry Selections on Different Subjects

Learning outcomes:

The Learning Outcomes of this course are as follows:

- By learning this course, students will come to know the basics of Persian poetry
- By learning this course, students will be able to know the different Poetry Genres like Ghazal, Qasida, Masnavi, Rubaei, Tarjihband, Tarkibband, Misrah, Qafiya, Takhallus, Matla, Maqta, Tashbih,I steara etc.

SYLLABUS OF DSC- 8

UNIT – I (12 Hours)

- Khuda (Parveen Daulatabadi)
- Sitareh (Nasir Kishawarz)
- Pidar-e-Buzurg (Nasir Kishawarz)
- Man Hunarmandam (Afsheen Ala)

- Ai Khane Ma (Mustafa Rahmandoost)
- Lehzehi Sabz Dua (Qaisar Ameenpur)
- Iran-e-Aziz (Abbas Yamini Shareef)
- Watan (Mohammad Taqi Bahar)

UNIT – II (12 Hours)

- Ittefaq-e-Sadeh (Quaisar Ameenpur)
- Lutf-e-Haq (Parveen Eitesami)
- Ummeed (Asghar Mir Khadyoee)
- Sheer wa Moosh (Iraj Mirza)
- Khirad wa Danish (Shahname Firdausi)
- Niyayash (Elahi nameh, Attar Nishapuri)

UNIT – III (12 Hours)

- Brief introduction of respective poets

UNIT – IV (9 Hours)

- Translation and summary of the poems in English, Hindi, Urdu

Essential/recommended readings:

1. Farsi Dabistan (Awwal, Diwum, Siwum wa Chahrum): Vizarate Aamuzish wa Parvarish, Sazmane Pizuhish wa Barnameh Rezie Amuzishi, Khayabane Iranshahr, Tehran, Iran.
2. Nisab-e-Jadeed-e-Farsi:Jaiyyed Press, Ballimaran,Delhi.
3. Shamisa, Sirus:Anwa-e-Adabi,Intesharat-e Firdos,Tehran,Iran,2004.
4. Khanlari, Dr., Zahra:Dastur-e-Zaban-e-Farsi, Idarah-e-Adabiyat-e-Dehli, Jaiyyed press, Ballimaran,Delhi. 6.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 2: Persian Poetry: Some selections

Credit distribution, Eligibility and Pre-requisites of the Course:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Persian Poetry: Some selections	4	3	1	NIL	CLASS XII PASS	NIL

Learning Objectives:

The Learning Objectives of this course are as follows:

1. To equip the students with some poetic specimens of some of the famous poets of Indian and Iran like Khayaam, Allama Iqbal and Amir Khusraw
2. To acquaint the students with the life and works of the mentioned poets

Learning outcomes:

The Learning Outcomes of this course are as follows:

1. By learning this course, the students will be acquainted with the poetry of Khayaam, Allama Iqbal and Amir Khusraw
2. By learning this course, the students will get acquainted with the life and works of above-mentioned poets

SYLLABUS OF DSC-2

UNIT – I (12 Hours)

Following poetry of Allama Iqbal:

- **محاوره مابین خدا و انسان**
- **سرود انجم**

UNIT – II (12 Hours)

- Rubaiyyat-e-Umar Khaiyyam (1 to15) From Nisab-e-Jadeed-e-Farsi
- Following Ghazals of Amir Khusrau From Nisab-e-Jadeed-e-Farsi:

۱. جان من از آرام رفت آرام جان من کجا
۲. رسید باد صبا تازه کرد جان مرا
۳. زهی وصف رخت مهر زبانها
٤. ساقیا باده ده امروز که جانان اینجاست
٥. یارب که این درخت گل از بوستان کیست

UNIT – III (12 Hours)

- Explanation and translation of Persian poetry in English, Hindi, Urdu.

UNIT – IV (9 Hours)

- Summary of the poems in English, Hindi, Urdu

Essential/recommended readings:

1. Kitab-e-Farsi: B.A.(P), Part 1/2/3, Department of Persian, University of Delhi, Delhi 110007.
2. Nisab-e-Jadeed-e-Farsi:Jaiyyed Press, Ballimaran,Delhi.
3. Shamisa, Sirus: Anwa-e-Adabi, Intesharat-e Firdos, Tehran, Iran, 2004.

4. Khanlari, Dr. Zahra: Dastur-e-Zaban-e-Farsi, Idarah-e-Adabiyat-e-Dehli, Jaiyyed Press, Ballimaran, Delhi-110006

Category III

Persian Courses for Undergraduate Programme of study with Persian as one of the Core Disciplines

(B.A. Programmes with Persian as non-Major or Minor discipline)

DISCIPLINE SPECIFIC CORE COURSE (DSC-1): Understanding Persian Poetry: Lavel-1
This course is common in BA (Programme) in Persian as major discipline for Semester III

Credit distribution, Eligibility and Pre-requisites of the Course:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Understanding Persian Poetry: Lavel-1	4	3	1	NIL	Class XII pass	NIL

Learning Objectives:

The Learning Objectives of this course are as follows:

3. To equip the students with some prominent poets with their specimen
4. To enable the students to know the Persian Poetry Genres Studying some Persian Poetry Selections on Different Subjects

Learning outcomes:

The Learning Outcomes of this course are as follows:

- By learning this course, students will come to know the basics of Persian poetry
- By learning this course, students will be able to know the different Poetry Genres like Ghazal, Qasida, Masnavi, Rubaei, Tarjihband, Tarkibband, Misrah, Qafiya, Takhallus, Matla, Maqta, Tashbih,I steara etc.

SYLLABUS OF DSC- 8

UNIT – I (12 Hours)

- Khuda (Parveen Daulatabadi)
- Sitareh (Nasir Kishawarz)
- Pidar-e-Buzurg (Nasir Kishawarz)
- Man Hunarmandam (Afsheen Ala)

- Ai Khane Ma (Mustafa Rahmandoost)
- Lehzehi Sabz Dua (Qaisar Ameenpur)
- Iran-e-Aziz (Abbas Yamini Shareef)
- Watan (Mohammad Taqi Bahar)

UNIT – II (12 Hours)

- Ittefaq-e-Sadeh (Quaisar Ameenpur)
- Lutf-e-Haq (Parveen Eitesami)
- Ummeed (Asghar Mir Khadyoee)
- Sheer wa Moosh (Iraj Mirza)
- Khirad wa Danish (Shahname Firdausi)
- Niyayash (Elahi nameh, Attar Nishapuri)

UNIT – III (12 Hours)

- Brief introduction of respective poets

UNIT – IV (9 Hours)

- Translation and summary of the poems in English, Hindi, Urdu

Essential/recommended readings:

1. Farsi Dabistan (Awwal, Diwum, Siwum wa Chahrum): Vizarate Aamuzish wa Parvarish, Sazmane Pizuhish wa Barnameh Rezie Amuzishi, Khayabane Iranshahr, Tehran, Iran.
2. Nisab-e-Jadeed-e-Farsi:Jaiyyed Press, Ballimaran,Delhi.
3. Shamisa, Sirus:Anwa-e-Adabi,Intesharat-e Firdos,Tehran,Iran,2004.
4. Khanlari, Dr., Zahra:Dastur-e-Zaban-e-Farsi, Idarah-e-Adabiyat-e-Dehli, Jaiyyed press, Ballimaran,Delhi. 6.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES OFFERED BY THE DEPARTMENTS

GENERIC ELECTIVES (GE-6): Spoken Persian – level 1

Credit distribution, Eligibility and Pre-requisites of the Course:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Spoken Persian-level 1	4	3	1	Nil	12th Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To make the students equipped with basics of Persian grammar
- To make the students able to read, write and speak fluently in Persian language
- To make the students interpret from English to Persian and vice versa

Learning outcomes

The Learning Outcomes of this course are as follows:

- By learning this course, the students will be equipped with basics of Persian grammar
- By learning this course, the students will be able to read, write and speak fluently in Persian language
- By learning this course, the students will be able to interpret from English to Persian and vice versa

SYLLABUS OF GE-6

UNIT –I (15 Hours)

Applied Grammar:

- From the book: Let's Learn Persian (first half of the book; pp. 1-103)

UNIT – II (15Hours)

Communication:

- Name of Persian Days of the week
- Name of Persian Months, Time and date
- Name of colours in Persian
- Name of Animals, Birds, flowers in Persian

- Cardinal and Ordinal numbers
- Mode of Transportation

UNIT – III (15 Hours)

- Translation and Interpretation

Essential/recommended readings:

1. Let's Learn Persian, NCPUL, MHRD, New Delhi.
2. Gargesh, R. Goswami, Translation and Interpretation, University of Delhi, Delhi.
3. Kumar, Rajinder, Elementary Persian Grammar, Harjit Publications, WS-3107/A, Mahindra Park, Delhi-110034.
4. English Farsi Phrasebook with useful wordlist, US Department of State, Washington DC.
5. Sufi, Abdul Aziz, Essentials of Persian Translation, Indo-Iran Society, Lal Kuan, Delhi-06, 1999.

Suggestive readings:

1. Kumar, Rajinder: Elementary Persian Grammar, Harjeet Publication, Delhi-110 034, 2009.

GENERIC ELECTIVES (GE-7): An outline of the history of Persian language (Ancient times)

Credit distribution, Eligibility and Pre-requisites of the Course:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
An outline of the history of Persian language (Ancient times)	**4**	**3**	**1**	**Nil**	**12th Pass**	

Learning Objectives

The Learning Objectives of this course are as follows:

- To equip the students with the history of Persian language in ancient time.
- To familiarize the students with ancient Iranian languages like Old Persian, Avesta and Middle Persian (Pahlavi)

Learning outcomes

The Learning Outcomes of this course are as follows:

- By learning this course, the students will be able to know about the history of Persian language in ancient time
- By learning this course, the students will be acquainted with ancient Iranian Languages like Old Persian, Avesta and Middle Persian (Pahlavi)

SYLLABUS OF GE-7

UNIT–I (15 Hours)

- Old Persian: Language and Literature Unani, Yehudi, Islamic and Iranian sources
- Achaemenid Empire
- Indo-European language family,
- Cuneiform Script, Avesta, Inscriptions etc

UNIT – II (15 Hours)

- Development and Promotion of Persian language and step by step changes in languages and writing

UNIT – III (15Hours)

- Middle Persian: Pahlavi language
- Sasanid Empire

Essential/recommended readings

1. Shafaq, Raza Zadeh: Tareekh-e-Adabyat-e-Iran, tr. by Syed Mubarizuddin Rafat, Nadvatul Musannefin, Urdu Bazar, Jama Masjid, Delhi-110 006. 1993.
2. Iran Sadiyon Ke Aine Main by Ishrat, Amrit Lal, Idara-e-Musannefin, Hyderabad.

DEPARTMENT OF URDU

COURSES OFFERED BY DEPARTMENT OF URDU

Category I

(Provide the details of the Discipline Specific Courses offered by your department for the UG Programme with your discipline as the Single Core Discipline)
[UG Programme for Bachelor in Urdu (Honours) degree in three years]

DISCIPLINE SPECIFIC CORE COURSE -7 (DSC-7) – : STUDY OF CLASSICAL PROSE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Study of Classical Prose	4	3	1	N.A.	Urdu in class XII or X	-

Learning Objectives

The Learning Objectives of this course are as follows:

- To give knowledge of classical society of India through Urdu fiction and non-fiction.
- To give knowledge of fiction and non-fiction writing such as Dastan and Khutoot.
- To give a glimpse of classical literature with special reference to Urdu fiction and non-fiction.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Understanding of concepts.
- Exercising concepts through writings.
- Demonstrating conceptual and textual understanding in test and exam.

SYLLABUS OF DSC-7

UNIT – I (20 Hours)

1. Urdu Nasra ka Ahad-ba-Ahad Irteqa
2. Mir Amman ki Nasra Nigari
3. Rajab Ali Beg Suroor ki Nasra Nigari

UNIT – II (20 Hours)

4. Fort William College ki Nasri Khidmat
5. Maktoob Nigari ka Fan
6. Ghalib ki Khutoot Nigari

UNIT – III (20 Hours)

7. Baagh-o-Bahar - Mir Amman (Sair Chauthey Darvesh ki)
8. Fasana-e-Ajaib – Rajab Ali Beg Suroor (Aaghaz dastan se Anjuman Aara ki Shadi tak)
9. Intekhab-e-Khutoot Ghalib – Khaliq Anjum (Ibtedai 10 Khutoot)

(Matn ki Tadrees)

Practical component (if any) - NIL

Essential/recommended readings

1. Khutoot-e-Ghalib
2. Bagh-o-Bahar
3. Fasana-e-Ajaib

Suggestive readings

1. Tareekh-e-Adab Urdu – Jamil Jalibi
2. Dastan-e-Tareekh Urdu – Hamid Hassan Qadri
3. Urdu ki Nasri Dastanein – Gyan Chand Jain

4. Dastan se Novel Tak – Ibn Kanwal
5. Khutoot-e-Ghalib – Muqaddema, Ghulam Rasool Mehr
6. Tanqeedein – Khursheed-ul-Islam

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 8 (DSC-8): STUDY OF CLASSICAL GHAZAL

CREDIT DISTRIBUTION, ELIGIBILITY AND PREREQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Study of Classical Ghazal	4	3	1	N.A.	Urdu in Class XII or X	-

Learning Objectives

The Learning Objectives of this course are as follows:

- To give knowledge of classical society of India through classical Ghazal.
- To give a glimpse of classical literature with special reference to Urdu Ghazal.
- Through classical Ghazal student can learn about lifestyle, rituals and customs of Indian society of 18th and 19th centuries.

Learning Outcomes

The Learning Outcomes of this course are as follows:

- Understanding of concepts.
- Exercising concepts through writings.
- Demonstrating conceptual and textual understanding in test and exam.

SYLLABUS OF DSC -8

UNIT – I (15 Hours)

1. Ghazal ki Tareef aur Fanni Rewayat
2. Ghazal ka Aagaz-o-Irteqa
3. Wali Dakni ki Ghazal Goi
4. Sauda ki Ghazal Goi
5. Khwaja Mir Dard ki Ghazal Goi

UNIT – II (15 Hours)

6. Mir Taqi Mir ki Ghazal Goi
7. Aatish ki Ghazal Goi
8. Momin ki Ghazal Goi
9. Ghalib ki Ghazal Goi
10. Ilm-e-Byan, Sana-e-Lafzi, Sana-e-Manvi

UNIT – III (15 Hours)

NISAB:

Wali Dakni: (i) Kiya mujh ishq ne zalim ko aab aahista aahista
(ii) Woh sanam jab sooN basa deeda-e-hairan me aa
(iii) Tujh lab ki shifat laal-e-badakhsan sooN kahunga

Sauda: (i) Gul phenke hain auron ki taraf balki samar bhi
(ii) Naseem bhi tere kuche me aur saba bhi hai
(iii) Jo guzari mujh pe na us se kaho huaa so huaa

Dard: (i) Arz-o-Sama kahan teri wusat ko pa sake
(ii) Ham tujh se kis hawas ki falak ki justjoo karen
(iii) Tohmaten chand apne zimme dhar chale

(Matn ki Tadrees)

UNIT – IV (15 Hours)

Mir Taqi Mir: (i) Jis sar ko ghuroor aaj hai yaan taajwari ka
(ii) Tha mustear husn se us ke jo noor tha
(iii) Ranj khinche the daagh khaye the

Aatish: (i) Yeh aarzoo thi tujhe gul ke rubaru kartey
(ii) Ishq ke saude se pahle dard-e-sar koi na tha
(iii) Sar mein haway-e-kucha-e-dildaar le chale

Momin: (i) Asar us ko zara nahi hota
(ii) Nawak andaz jidhar deeda-e-jaana honge
(iii) Thaani thi dil me ab na milenge kisi se ham

Ghalib: (i) Aah ko chahiye ek umra asar hone tak
(ii) Ishrat-e-qatra hai dariya me fana ho jana
(iii) Sab kahan kuchh lala-o-gul me numayan ho gayeen

(Matn ki Tadrees) (Matn ki Tadrees) (Matn ki Tadrees)

Practical component (if any) - NIL

1. Classical Ghazal ka Motala'a – M.R. Publicatiion

Essential/recommended readings

1. Urdu Shairi ka Fanni Irteqa – Dr. Farman Fatehpuri
2. Urdu Ghazal – Kamil Qureshi
3. Ghazal aur Motaghazalen – Abul Lais Siddiqui
4. Ghazal aur Motalaa-e-Ghazal – Ibadat Barelvi
5. Ghazal ki sarguzist – Akhtar Ansari
6. Maashir Adab ke Pesh Roo – Mohammad Hassan
7. Urdu Ghazal ke Aham Mod – Shamsh-ur-Rahman Farooqi
8. Urdu Ghazal – Yusuf Hussain Khan

Suggestive readings (if any)

1. Dilli ka Dabistan-e-Shairi – Noorul Hasan Hashmi
2. Urdu Adab ki Tanqeedi Tareekh – Prof. Ehtesham Husain

DISCIPLINE SPECIFIC CORE COURSE– 9 (DSC-9): STUDY OF PROSE WRITER SIR SYED AHMED KHAN

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Study of Prose writer Sir Syed Ahmed Khan	4	3	1	N.A.	Urdu in Class XII or X	-

Learning Objectives

The Learning Objectives of this course are as follows:

- To give knowledge of literary movements through Sir Syed and his writings.
- To give a glimpse of pollical and social thoughts of Sir Syed for nation making.

Learning Outcomes

The Learning Outcomes of this course are as follows:

- Understanding of concepts.
- Exercising concepts through writings.
- Demonstrating conceptual and textual understanding in test and exam.

SYLLABUS OF DSC-9

UNIT – I (20 Hours)

1. Sir Syed: Sawaneh aur Shakhshiyat
2. Ali Gharh Tahreek aur Urdu Adab

UNIT – II (20 Hours)

3. Sir Syed ki Nasri Khidmaat
4. Sir Syed ki inshaiah Nigari
5. Ali Gharh Tahreek Aaghaz-o-Irteqa

UNIT – III (20 Hours)
INTEKHAB:

6. Intekhab Mazameen-e-Sir Syed – Maktba Jamia Limited
   Hamdard, Bahas-o-Takraar, Guzara Huaa Zamana, Khushaamad, Umeed ki Khushi, Sarab-e-Hayat (Matn ki Tadrees)

Practical component (if any) - NIL

Essential/recommended readings

1. Intekhab Mazameen-e-Sir Syed – Maktba Jamia Limited

Suggestive readings

1. Hayat-e-Javed – Altaf Husain Hali
2. Mutala-e-Sir Syed Ahmed Khan – Maulvi Abdul Haq
3. Sir Syed Ahmed Khan – Khaleeq Ahmad Nizami
4. Sir aur Unke Namwar Rofqa – Syed Abdullah
5. Sir Syed Ahmed aur Unka Ahed – Suraiyya Hussain
6. Ali Garh Tahreek – Naseem Qureshi

Category II

(Multidisciplinary Courses for Undergraduate Programme of study with Urdu discipline as one of the Core Disciplines)

(For e.g. courses for B.A. Programmes with Urdu (discipline's name) as Major discipline)

DISCIPLINE SPECIFIC CORE COURSE (DSC-3): STUDY OF URDU FICTION-SHORT STORY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Study of Urdu Fiction-Short Story	4	3	1	N.A.	Urdu in class X or XII	-

Learning Objectives

The Learning Objectives of this course are as follows:

- To give knowledge of contemporary society of India through Urdu Short Story.
- To give a glimpse of modern literature with special reference to Urdu Short Story.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Understanding of concepts.
- Exercising concepts through writings.

- Demonstrating conceptual and textual understanding in test and exam.

SYLLABUS OF DSC-3

SHORT STORY:

UNIT – I (10 Hours)

1. Afsane ki Tareef aur uska Fan
2. Urdu Afsane ka Aaghaz-o-Irteqa
3. Taraqqi Pasand Afsana Nigari

UNIT – II (15 Hours)

4. Prem Chand ki Afsana Nigari
5. Krishn Chander ki Afsana Nigari
6. Saadat Hassan Manto ki Afsana Nigari
7. Ghulam Abbas ki Afsana Nigari

UNIT – III (15 Hours)

8. Ahmad Nadeem Qasmi ki Afsana Nigari
9. Hayatullah Ansari ki Afsana Nigari
10. Intezar Husain ki Afsana Nigari
11. Kafan - Prem Chand (Matn ki Tadrees)
12. Maha Lakshmi ka Pul- Krishn Chander (Matn ki Tadrees)

UNIT – IV (20 Hours)

13. Tooba Tek Singh - Manto (Matn ki Tadrees)
14. Aanandi - Ghulam Abbas (Matn ki Tadrees)
15. Raees Khana - Ahmad Nadeem Qasmi (Matn ki Tadrees)
16. Aakhiri Koshish - Hayatullah Ansari (Matn ki Tadrees)
17. Aakhiri Aadmi - Intezar Husain (Matn ki Tadrees)

Practical component (if any) - NIL

Essential/recommended readings

1. Urdu ke Terah Afsane – Athar Parvez – Educational Book House, Aligarh

Suggestive readings

1. Naya Afsana – Waqar Azeem
2. Dastan se Afsane Tak – Waqar Azeem
3. Urdu Nasra ka Fanni Irteqa – Dr. Farman Fatehpuri
4. Urdu Afsana Rewayat aur Masail – Gopi Chand Narang
5. Urdu Fiction – All Ahmad Suroor
6. Prem Chand Kahani ka Rahnuma – Jafar Raza
7. Urdu Afsane ki Himayat me – Shamsur Rahman Faruqi
8. Urdu Afsana Fanni-o-Takniki Motala'a – Nighat Rehana Khan

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

(Multidisciplinary Courses for Undergraduate Programme of study with Urdu discipline as one of the Core Disciplines)

(For e.g. courses for B.A. Programmes with Urdu (discipline's name) as Major discipline)

DISCIPLINE SPECIFIC CORE COURSE – 4 (DSC-4): STUDY OF CLASSICAL POETRY

CREDIT DISTRIBUTION, ELIGIBILITY AND PREREQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Study of Classical Poetry	4	3	1	N.A.	Urdu in Class XII or X	-

Learning Objectives

The Learning Objectives of this course are as follows:

- To give knowledge of Classical society of India through Classical Poetry.
- To give knowledge of literature such as classical Ghazal, Qasida, Marsia, and Masnvi.
- To give a glimpse of classical literature with special reference to Urdu Poetry.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Understanding of concepts.
- Exercising concepts through writings.
- Demonstrating conceptual and textual understanding in test and exam.

SYLLABUS OF DSC- 4

UNIT – I (30 Hours)

GHAZALIAAT:

1. **Wali Dakni**
   - (i) Dil ko lagti hai dilruba ki ada
   - (ii) Jise ishq ka teer-e-kaari lage
2. **Sauda**
   - (i) Jo guzari mujh pe mat us se kaho, hua so hua
   - (ii) Naseem bhi tere kuche me aur saba bhi hai
3. **Dard**
   - (i) Madrsa yaa dair tha, yaa kaba yaa butkhana tha
   - (ii) Ham tujhse kis hawas ki falak ki justjoo karen
4. **Mir Taqi Mir**
   - (i) Hasti apni hubab ki si hai
   - (ii) Ulti ho gayi sab tadbiren kuchh na dawa ne kaam kiya
5. **Ghalib**
   - (i) Yeh na thi hamari qismat ke visal-e-yaar hota
   - (ii) Aah ko chahiye ik umra asar hone tak

(Matn ki Tadrees)

(Matn ki Tadrees)

UNIT – II (10 Hours)

MASNVI:

6. **Meer Hasan** – Masnavi Saharul-bayan (Dastan taiyari me bagh ki) **(**Matn ki Tadrees)

UNIT – III (10 Hours)

MARSIA:

7. **Mir Anees** – Subah-e-Shahadat (Jab raat ibaadat me basar ki shah-e-deen) (Matn ki Tadrees)

UNIT – IV (10 Hours)

QASIDA:

8. Sheikh Ibrahim Zauq – (Zahe Nishat agar kijiey ise tahreer) (Matn ki Tadrees)

Practical component (if any) - NIL

Essential/recommended readings

1. Intikhab-e-Manzumat Hissa Dom – Uttar Pradesh Urdu Akademi, Lucknow
2. Shaoor-e-Adab – Maktba Jamia Limited, New Delhi

Suggestive readings (if any)

1. Tareekh-e-Adab Urdu – Aijaz Husain
2. Urdu Adab ki Tareekh – Noorul Hasan Naqvi
3. Urdu Shairi ka Fanni Irteqa – Farman Fatehpuri
4. Ghazal aur Motghazaleen – Abullais Siddiqui
5. Urdu Qasidah Nigari ka Tanqeedi Jayeza – Mahmood Ilahi
6. Urdu Masnvi ka Irteqa – Masihuz Zaman
7. Mawazna-e-Anees-o-Dabeer – Shibli Nomani

Category III

Multidisciplinary Courses for Undergraduate Programme of study with discipline as one of the Core Disciplines

(For e.g. courses for B.A. Programmes with Urdu (discipline's name) as non-Major or Minor discipline)

DISCIPLINE SPECIFIC CORE COURSE (DSC-3): STUDY OF URDU FICTION-SHORT STORY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Study of Urdu Fiction-Short Story	4	3	1	N.A.	Urdu in class X or XII	-

Learning Objectives

The Learning Objectives of this course are as follows:

- To give knowledge of contemporary society of India through Urdu Short Story.
- To give a glimpse of modern literature with special reference to Urdu Short Story.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Understanding of concepts.
- Exercising concepts through writings.
- Demonstrating conceptual and textual understanding in test and exam.

SYLLABUS OF DSC-3

SHORT STORY:

UNIT – I (10 Hours)

1. Afsane ki Tareef aur uska Fan
2. Urdu Afsane ka Aaghaz-o-Irteqa
3. Taraqqi Pasand Afsana Nigari

UNIT – II (15 Hours)

4. Prem Chand ki Afsana Nigari
5. Krishn Chander ki Afsana Nigari
6. Saadat Hassan Manto ki Afsana Nigari
7. Ghulam Abbas ki Afsana Nigari

UNIT – III (15 Hours)

9. Ahmad Nadeem Qasmi ki Afsana Nigari
10. Hayatullah Ansari ki Afsana Nigari
11. Intezar Husain ki Afsana Nigari
12. Kafan - Prem Chand (Matn ki Tadrees)
13. Maha Lakshmi ka Pul- Krishn Chander (Matn ki Tadrees)

UNIT – IV (20 Hours)

14. Tooba Tek Singh- Manto (Matn ki Tadrees)
15. Aanandi - Ghulam Abbas (Matn ki Tadrees)
16. Raees Khana - Ahmad Nadeem Qasmi (Matn ki Tadrees)
17. Aakhiri Koshish - Hayatullah Ansari (Matn ki Tadrees)
18. Aakhiri Aadmi - Intezar Husain (Matn ki Tadrees)

Practical component (if any) - NIL

Essential/recommended readings

1. Urdu ke Terah Afsane – Athar Parvez – Educational Book House, Aligarh

Suggestive readings

1. Naya Afsana – Waqar Azeem
2. Dastan se Afsane Tak – Waqar Azeem
3. Urdu Nasra ka Fanni Irteqa – Farman Fatehpuri
4. Urdu Afsana Rewayat aur Masail – Gopi Chand Narang
5. Urdu Fiction – All Ahmad Suroor
6. Prem Chand Kahani ka Rahnuma – Jafar Raza
7. Urdu Afsane ki Himayat me – Shamsur Rahman Faruqi
8. Urdu Afsana Fanni-o-Takniki Motala'a – Nighat Rehana Khan

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

GENERIC ELECTIVES (GE-7) ELEMENTARY URDU

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Elementary Urdu	4	3	1	NA	Basic knowledge of Urdu	-

Learning Objectives

The Learning Objectives of this course are as follows:

- To give a simple taste of Urdu language and literature
- To give a communication skill in Urdu language.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Understanding of concepts.
- Exercising concepts through writings.
- Demonstrating conceptual and textual understanding in test and exam.

SYLLABUS OF GE-7

UNIT – I (15 Hours)

Ghazaliyat:

1. Mir darya hai sune sheir – Mir Taqi Mir (Matn ki Tadrees)
2. Ye na thi hamari qismat - Ghalib (Matn ki Tadrees)
3. Sitaro se aage Jahan aur bhi hain - Iqbal (Matn ki Tadrees)

UNIT – II (20 Hours)

Mazameen:

4. Sawere jo kal ankh meri khuli – Patras Bukhari (Matn ki Tadrees)
5. Ji aaya sahab – Saadat Hassan Manto (Matn ki Tadrees)

6. Ghalib ke khutoot – Ghalib (Matn ki Tadrees)

UNIT – III (20 Hours)
Manzumat:

7. O des se aane wale bata – Akhtar Shirani (Matn ki Tadrees)
8. Awara - Majaz (Matn ki Tadrees)
9. Gulon me rang bhare – Faiz (Matn ki Tadrees)

Note: Shairon aur Nasri takhleeqkaron ke mukhtsar sawanehi haalat aur fanni khushusiyat par bhi roshni daali jaye.

Practical component (if any) - NIL

Essential/recommended readings

1. Urdu ki nai kitab part-2

Suggestive readings

1. Urdu Shairi ka Fanni Irteqa – Farman Fatehpuri
2. Urdu Nasra ka Fanni Irteqa - Farman Fatehpuri
3. Asnaf-e-Adab Urdu – Edited by Qamar Raees and Khaleeq Anjum
4. Urdu Adab ki Tanqeedi Tareekh – Ehtesham Hussain
5. Urdu Ghazal – Kamil Qureshi
6. Jadeed Urdu Ghazal – Rasheed Ahmad Siddiqui
7. Urdu Ghazal ka Naya Manzarnama – Shamim Hanfi
8. Tareekh-e-Adab Urdu – Noorul Hasan Naqvi

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-8): STUDY OF NAZIR AKBARABADI

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Study of Poet Nazir Akbarabadi	4	3	1	N.A.			URDU

Learning Objectives

The Learning Objectives of this course are as follows:

- To give knowledge of Urdu Poetry of eighteenth century.
- To give a glimpse of Ganga-Jamuni culture. A best brotherhood of Indian society.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Understanding of concepts.
- Exercising concepts through writings.
- Demonstrating conceptual and textual understanding in test and exam.

SYLLABUS OF GE-8

UNIT – I (30 Hours)

1. Nazir Akbarabadi: Sawaneh aur Shakhshiyat
2. Nazir Akbarabadi: Fikr-o-Fan
3. Nazir Akbarabadi aur Awami Rewayat
4. Nazir Akbarabadi ki nazm nigari

UNIT – II (30 Hours)

DARZ ZEL NAZMO KI TADREES:

5. Muflisi
6. Banjaranama
7. Aadminama
8. Diwali
9. Rotinama
10. Barsaat ki bahaarein

(Matn ki Tadrees)

Practical component (if any) - NIL

Essential/recommended readings

1. Intekhab-e-Manzumaat (Part-I) by Uttar Pradesh Urdu Academy
2. Muntkhab Nazmein - by Uttar Pradesh Urdu Academy

Suggestive readings

1. Urdu Shairi ka Fanni Irteqa – Farman Fatehpuri
2. Asnaf-e-Adab Urdu – Edited by Qamar Raees and Khaleeq Anjum
3. Urdu Adab ki Tanqeedi Tareekh – Ehtesham Hussain
4. Rooh-e-Nazir – Syed Mehmood Rizvi Makhmurabadi
5. Intekhab-e-Nazir Akbarabadi – Moqaddema: Rashid Hassan Khan
6. Nazir Akbarabadi – Mohammad Hassan
7. Diwan Nazir Akbarabadi – Mirza Farhatullah Begh
8. Nazir ka Aawaza-e-Buland – Mohammad Zakir
9. Nazir Akbarabadi unka Ahed aur Shairi

GENERIC ELECTIVES (GE-9: STUDY OF SHORT STORY WRITER PREMCHAND

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Study of Short Story Writer Premchand	4	3	1	N.A.	-	-

Learning Objectives

The Learning Objectives of this course are as follows:

- To give knowledge of contemporary society of India through Urdu fiction.
- To give knowledge of literature such as Urdu Afsana.
- To give a glimpse of literature with special reference to Urdu fiction.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Understanding of concepts.
- Exercising concepts through writings.
- Demonstrating conceptual and textual understanding in test and exam.

SYLLABUS OF GE-9

UNIT – I (30 Hours)

1. Premchand: Sawaneh aur Shakhshiyat
2. Premchand ki Afsana Nigari
3. Premchand ke Afsano mein Dehati Manzarnama
4. Premchand ki Haqiqat Nigari
5. Premchan ka Usloob Byan

UNIT – II (30 Hours)

DARZ ZEL MATN KI TADREES:

6. Bade Ghar ki Beti
7. Hajj-e-Akbar
8. Burhi Kaaki
9. Nijaat
10. Kafan
11. Poos ki Raat

Practical component (if any) - NIL

Essential/recommended readings

1. Premchand ke Numaindah Afsane – Compiled by Qamar Raees

Suggestive readings -

1. Munshi Premchand: Shakhshiyat aur Karnaame – Qamar Raees
2. Premchan: Fikr-o-Fan – Qamar Raees
3. Urdu Afsana Rewayat aur Masail – Gopi Chand Narang
4. Urdu Nasr ka Fanni Irteqa – Farman Fatehpuri
5. Prem Chand Kahani ka Rehnuma – Jafar Raza
6. Premchand Ek Naqeeb – Jafar Raza
7. Premchand Tanqeedi Motala'a – Qamar Raees
8. Fiction ke Fankar: Premchand – Shakeelur Rahman
9. Premchand aur unki Afsana Nigari – Mohd Akbaruddin Siddiqi

ANNEXURE-16

Sub: Amendment to Ordinance V

[E.C Resolution No. 27-12/ dated 25.08.2023]

The guidelines for Internship Apprenticeship and Community Outreach applicable for the students of Semester 3 to Semester 6 based on Under Graduate Curriculum Framework 2022, is notified, for all the concerned as under:

GUIDELINES FOR INTERNSHIP, APPRENTICESHIP AND COMMUNITY OUTREACH (IAC)

Projects, Internships, Apprenticeship and Community Outreach are integral components of holistic undergraduate education. They provide students with valuable opportunities to apply knowledge, develop skills, foster personal growth, and contribute to society. These experiences enrich their educational journey, enhance their employability, and cultivate well-rounded individuals capable of making a positive difference in the world.

In the UGCF 2022, from second semester onwards, Internship, Apprenticeship, Projects, or Community Outreach (IAPC) figures as an alternative to the Skill Enhancement Courses. Students can opt for either Internship or Apprenticeship or Projects or Community Outreach or SEC from semester 3 to 6. The first batch of students who were admitted under UGCF 2022 in the academic session 2022-23, shall be in the third semester in the academic session commencing on 16th August 2023. The University is rolling out for these students Internship, Apprenticeship and Community Outreach in addition or as an alternative to the Skill Enhancement Courses. 'Projects' shall be rolled out later under this category after formulation of modalities for its implementation.

INTERNSHIP/APPRENTICESHIP

It is a course requiring students to participate in a professional activity or work experience, or cooperative education activity with an entity external to the education institution, normally under the supervision of an expert of the given external entity. A key aspect of the internship/ apprenticeship is induction into actual work situations. It involves working with local industry, government or private organizations, business

organizations, artists, crafts persons, and similar entities to provide opportunities for students to actively engage in on-site experiential learning. It will allow students to actively engage in the learning processes beyond traditional classroom lectures and gain practical experience, develop a deeper understanding of subjects, and build self-confidence. These will offer opportunities to gain industry-specific knowledge, build professional networks, and understand workplace dynamics. This exposure prepares them for future careers and enhances their employability.

EXPECTED OUTCOMES

- Demonstrate working knowledge and skill of the domain specific learning outcome or that of a specific branch/section/tasks in an industry/ organizational set up.
- Achieve/complete assigned target(s)/ task(s) given by the person to whom the intern or apprentice is reporting (Supervisor).

COMMUNITY OUTREACH

Community outreach will promote social responsibility and civic engagement among students. Through it, students will develop an understanding of social issues, contribute to the welfare of communities, and develop a sense of empathy and compassion.

EXPECTED OUTCOMES:

- Demonstrate understanding of different approaches to working with communities and develop sense of empathy and compassion.
- Being able to identify social issues faced by the community he/she is working with.
- Contribute to the solving of social problem or to the welfare of the community or raising awareness and enabling

GUIDELINES FOR IMPLEMENTING IAC

- Internship, Apprenticeship, or Community Outreach (IAC) will be offered as an alternative to SECs to the batch of students who were admitted under UGCF 2022 in the academic session 2022-23.
- It is expected that students shall be engaged in an industry, company or organization or NGO for the purpose of internship/apprenticeship/ community outreach (IAC).
- College offering should have a prior MoU with discipline specific commercial and non-commercial organizations or enterprises, and industry before introducing the apprenticeship/internship.

- It is advisable that students who are desirous of exiting after second year of the programme choose internship/apprenticeship/community outreach in the relevant field, as far as possible, so that their employability increases.
- The College may fix the number of seats for apprenticeship/internship training as per the facility and infrastructure available.
- As in SECs, any student from any department/program can opt for any IACs offered.
- Each category of IACs will be equivalent to 02 credits, like SECs.
- The spells of apprenticeship/internship shall be scheduled either continuously or at intervals depending upon the requirement and practicality of the discipline concerned.
- The total duration of the IACs shall be of 60 hours in a semester, if done during the semester.
- In case of IACs done during summer/winter vacation for a period of 8 weeks, where a student invests 480 hours, he/she shall be awarded 8 credits, if he/she successfully completes it through the assessments provided below.
- Students are provided the flexibility to choose the working days of IAC in consultation with the organization engaging them. The same should be communicated to the teacher who monitors them. Teacher can check up the work of any student involved in IAC.

NO. OF STUDENTS AND WORKLOAD

- A department can offer any one or more of the IACs category for all the programmes that it runs put together.
- If a programme is run by more than one department (for e.g. B.Sc. Life Science), each department may offer one. For example in B.Sc. Life Science programme, Botany may offer Internship, Chemistry may offer Apprenticeship and Zoology may offer community outreach in a semester. These departments may rotate among themselves semester wise.
- The workload of a teacher monitoring students who goes for IAC shall be two hours per week for a section size of 40 students.
- In case the number of students ranges from 05 to 19, a teacher shall be allotted workload of one hour per week.
- A teacher shall be allotted a maximum of two hours per week for monitoring students pursuing IAC.
- The workload of such teacher shall be part of the teacher's timetable.

MONITORING AND ASSESSMENT OF INTERNSHIP/ APPRENTICESHIP

- Monitoring by the teacher regarding the regularity of the intern at his/her workplace.
- Teacher shall regularly keep a tap of the Activity logbook which is to be maintained by every student.

- Teacher shall interact and assess the progress of every student once in 15 days. Therefore, if 40 students are allotted to a teacher 20 students can be interacted and assessed in one week and the other half in the next week.
- Students should preferably inform the monitoring teacher and the Internship Supervisor at least one day prior to availing leave except emergency.
- Monitoring of the intern/apprentice shall also be done by the Internship/Apprenticeship/outreach Supervisor at his/her workplace.
- Observations of the Internship/Apprenticeship/outreach Supervisor should be taken by the teacher concerned regarding the student(s) associated with the Internship/Apprenticeship Supervisor.
- Continuous assessment of the student shall be done in consultation by the monitoring teacher and the Supervisor at the work place which shall be co-related with the activities recorded in the Activity Logbook.

FINAL ASSESSMENT

The assessment of the students will be similar to those 2 credit courses having 002 LTP and shall be carried out at following stages:

The student will be evaluated through a seminar presentation/viva-voce on his work, by a duly constituted expert committee, on the following suggestive aspects.

The expert committee shall consists of the Monitoring Teacher, Internship/Apprenticeship/ outreach Supervisor and an External Expert, who shall be appointed by the Head of the Institution/Head of the Department (in case of the University)/ Director of Centre/Institute/ Principal of College.

The evaluation and assessment shall be done on the basis of the following:

1. Activity logbook and evaluation report of Internship Supervisor
2. Format of presentation and the quality of intern's report
3. Acquisition of skill sets by the student (in view of the expected output)
4. Originality and any innovative contribution (or problem solving etc.)
5. Significance of outcomes (in view of the expected output)

ANNEXURE-17

Sub: Amendment to Ordinance V

[E.C Resolution No. 27-1/ (27-1-6/-) dated 25.08.2023]

Following addition be made to Appendix-II-A to the Ordinance V (2-A) of the Ordinances of the University;

Add the following:

Syllabi of Semester-III/IV of the following Ability Enhancement Course – Language based on Undergraduate Curriculum Framework -2022 implemented from the Academic Year 2022-23.

1. Department of MIL&LS – AEC-A and AEC-B
2. BA (Prog.) Bengali
3. Department of Punjabi
4. Department of Hindi
5. Department of Sanskrit – AEC 1 and AEC 2
6. Department of Urdu
7. AEC-1 Environmental Science : Theory into Practice -II

DEPARTMENT OF MODERN INDIAN LANGUAGES AND LITERARY STUDIES
UNIVERSITY OF DELHI, DELHI – 110007

ABILITY ENHANCEMENT COURSE (A)
Under UGCF – 2022 in the line of NEP – 2020

Semester: III/ IV
ASSAMESE
AEC (A) - II

AEC (A)-II: Journalistic Writing in Assamese

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical / Practice			
Journalistic Writing in Assamese	**02**	**02**	**0**	**0**	(For students who have studied the language up to Class VIII & above	students who have already opted AEC (A)-I in Assamese in either Semester I or II (alternative semester)	**MIL&LS**

Learning Objectives : The course aims at teaching and training the students in journalistic writing in the language so that they are well-equipped in the news covering, reporting, writing and editing for the electronic and print media. It also aims at enhancing their competence for freelancing and in the choice of their areas such as sports, movies, entertainment, business, social, political, historical etc.

Learning outcomes: After completing the course, the students are expected to start preparing news items, reporting, taking interviews in Assamese for the media houses, electronic and print. The study shall provide sufficient training in writing and reporting (oral), conducting interviews and panel discussions for electronic media. The students will also be aware of the law and ethics involved in Journalism.

Allotted class: 30 hours

Unit -I **10 hours**

- Journalistic writing and reporting from the field
- Types of writings based on investigation, news covering, reporting, writing, editing and giving suitable titles, feature writing and column writing
- Analysis of the good/bad samples of writing

Unit -II **10 hours**

- Elements and stages of journalistic writing and art of news story writing
- Analysis of both bad and good samples of writing for the media,
- Conducting Interview and debate with demonstration

Unit -III

10 hours

- Freelancing: scope and worthwhileness of the topic
- Editing and Proof-reading
- Laws and ethics in Journalistic writings
- Writing and reporting: Practical components

Essential/recommended readings:

Baruah, Santanu Kausik & Sankab Kausik Baruah. *Lekhok-Sambadikor Guide*, 2nd ed., Guwahati: Sanjiwan Prakasan, 2016.

Bhagawati, Radhikamohan. *Sambad Sambadpatra Aru Sambadikata*, 2nd ed., Guwahati: Publication Board Assam, 2019

Chaudhary, Utpaljyoti & Joyjit Deka. *Ganasanjog Aru Sangbadikata*, Guwahati: Aank-Baak, 2012.

Dutta, Ankuran. *Ganamadhyam Aru Samprasar Sanbadikata*, 2nd ed., Guwahati: Publication Board Assam, 2019

Kasyap, Samudra Gupta. *Songbadmadhyam aru Ahi Thoka Sangbadikotar Dhara*, Guwahati: Assam Publishing Company. 2020

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DEPARTMENT OF MODERN INDIAN LANGUAGES AND LITERARY STUDIES
UNIVERSITY OF DELHI, DELHI – 110007

ABILITY ENHANCEMENT COURSE (A)
Under UGCF – 2022 in the line of NEP – 2020

Semester: III/ IV
BENGALI
AEC (A)-II

AEC (A)-II: Journalistic Writing in Bengali

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
Journalistic Writing in Bengali	**02**	**02**	**0**	**0**	(for students who have studied the language up to Class VIII & above	students who have already opted AEC (A)-I in Bengali in either Semester I or II (alternative semester)	**MIL&LS**

Learning Objectives : The course aims at teaching and training the students in journalistic writing in the language so that they are well-equipped in the news covering, reporting, writing and editing for the electronic and print media. It also aims at enhancing their competence for freelancing and in the choice of their areas such as sports, movies, entertainment, business, social, political, historical etc.

Learning outcomes: : After completing the course, the students are expected to start preparing news items, reporting, taking interviews in Bengali for the media houses, electronic and print. The study shall provide sufficient training in writing and reporting (oral), conducting interviews and panel discussions for electronic media. The students will also be aware of the law and ethics involved in Journalism.

Allotted class: 30 hours

Unit -I **6 hours**

- Journalistic writings: Definition and elements

Unit -II **8 hours**

- Journalism: Definition and types

Unit -III **16 hours**

- Mediums of Journalistic writings: Print, Online, Multi-medial

Essential/recommended readings:

Adhikari, Anupam. *Sangbadikata Byboharik Prayog,* Kolkata: Alpana Enterprize, 2012.
Bhattacharya, Kaushik. *Jarrnalijmer Sahaj Path,* Kolkata: Parul Prakashani, 2004.
Chattopadhyay, Partha. *Ganajnapan: Tattwe O Prayoge,* Kolkata: Dey's, 2018.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DEPARTMENT OF MODERN INDIAN LANGUAGES AND LITERARY STUDIES
UNIVERSITY OF DELHI, DELHI – 110007

ABILITY ENHANCEMENT COURSE (A)
Under UGCF – 2022 in the line of NEP – 2020

Semester: III/ IV
BODO
AEC (A)-II

AEC (A)-II: Journalistic Writing in Bodo

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
Journalistic Writing in Bodo	**02**	**02**	**0**	**0**	(for students who have studied the language up to Class VIII & above)	students who have already opted AEC (A)-I in Bodo in either Semester I or II (alternative semester)	**MIL&LS**

Learning Objectives : The course aims at teaching and training the students in journalistic writing in the language so that they are well-equipped in the news covering, reporting, writing and editing for the electronic and print media. It also aims at enhancing their competence for freelancing and in the choice of their areas such as sports, movies, entertainment, business, social, political, historical etc.

Learning outcomes: After completing the course, the students are expected to start preparing news items, reporting, taking interviews in Bodo for the media houses, electronic and print. The study shall provide sufficient training in writing and reporting (oral), conducting interviews and panel discussions for electronic media. The students will also be aware of the law and ethics involved in Journalism.

Allotted class: 30 hours

Unit -I **6 hours**

- Journalistic writing and reporting from the field
- Types of writings based on investigation, news covering, reporting, writing, editing and giving suitable titles, feature writing and column writing
- Analysis of the good/bad samples of writing

Unit -II **8 hours**

- Elements and stages of journalistic writing and art of news story writing
- Analysis of both bad and good samples of writing for the media,
- Conducting Interview and debate with demonstration

Unit -III **16 hours**

- Freelancing: scope and worthwhileness of the topic
- Editing and Proof-reading
- Laws and ethics in Journalistic writings
- Writing and reporting: Practical components

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DEPARTMENT OF MODERN INDIAN LANGUAGES AND LITERARY STUDIES
UNIVERSITY OF DELHI, DELHI – 110007

ABILITY ENHANCEMENT COURSE (A)
Under UGCF – 2022 in the line of NEP – 2020

Semester: III/ IV
DOGRI
AEC (A)-II

AEC (A)-II: Journalistic Writing in Dogri

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
Journalistic Writing in Dogri	**02**	**02**	**0**	**0**	(For students who have studied the language up to Class VIII & above)	students who have already opted AEC (A)-I in Dogri in either Semester I or II (alternative semester)	**MIL&LS**

Learning Objectives : The course aims at teaching and training the students in journalistic writing in the language so that they are well-equipped in the news covering, reporting, writing and editing for the electronic and print media. It also aims at enhancing their competence for freelancing and in the choice of their areas such as sports, movies, entertainment, business, social, political, historical etc.

Learning outcomes: : After completing the course, the students are expected to start preparing news items, reporting, taking interviews in Dogri for the media houses, electronic and print. The study shall provide sufficient training in writing and reporting (oral), conducting interviews and panel discussions for electronic media. The students will also be aware of the law and ethics involved in Journalism.

Allotted class: 30 hours

Unit -I **6 hours**

- Journalistic writing and reporting from the field
- Types of writings based on investigation, news covering, reporting, writing, editing and giving suitable titles, feature writing and column writing
- Analysis of the good/bad samples of writing

Unit -II **8hours**

- Elements and stages of journalistic writing and art of news story writing
- Analysis of both bad and good samples of writing for the media,
- Conducting Interview and debate with demonstration

Unit -III **16 hours**

- Freelancing: scope and worthwhileness of the topic
- Editing and Proof-reading
- Laws and ethics in Journalistic writings
- Writing and reporting: Practical components

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DEPARTMENT OF MODERN INDIAN LANGUAGES AND LITERARY STUDIES
UNIVERSITY OF DELHI, DELHI – 110007

ABILITY ENHANCEMENT COURSE (A)
Under UGCF – 2022 in the line of NEP – 2020

Semester: III/ IV
GUJARATI
AEC (A)-II

AEC (A)-II: Journalistic Writing in Gujarati

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
Journalistic Writing in Gujarati	**02**	**02**	**0**	**0**	(For students who have studied the language up to Class VIII & above)	students who have already opted AEC (A)-I in Gujarati in either Semester I or II (alternative semester)	**MIL&LS**

Learning Objectives : The course aims at teaching and training the students in journalistic writing in the language so that they are well-equipped in the news covering, reporting, writing and editing for the electronic and print media. It also aims at enhancing their competence for freelancing and in the choice of their areas such as sports, movies, entertainment, business, social, political, historical etc.

This paper consists of three units, namely, A brief history of Journalism in Gujarati, Journalistic writing and reporting and Journalistic writing Practical components. The first unit attempt to introduce the early Gujarati journals, well known Gujarati editors and Print, Electronic and New Media and News, News collection and different writing methods. Second unit would give

an idea how to report from the field and conduct interview and debate with people. The last unit focuses on Journalistic writing and practical components.

Learning outcomes: After completing the course, the students are expected to start preparing news items, reporting, taking interviews in Gujarati for the media houses, electronic and print. The study shall provide sufficient training in writing and reporting (oral), conducting interviews and panel discussions for electronic media. The students will also be aware of the law and ethics involved in Journalism.

Allotted class: 30 hours

Unit -I

Reporting and representing: brief history of Journalism in Gujarati

16 hours

- From British Bombay to Bhavnagar
- Print, Electronic and cyber Media
- Elements and stages of journalistic writing and art of news story writing

Unit -II Journalistic writing and reporting

6 hours

- Journalistic writing and filed reporting
- Editorial writing
- News and storied of human interest

Unit -III Journalistic writing and Practical components

8 hours

- Freelancing: freedom and fieldwork
- Editing and Proof-reading
- Writing and reporting: Practical components

Essential/recommended readings:

Marshal Ratan, '*Gujarati Patrakaratvano Itihas'*,Navbharat,2009,Ahmedabad
Dalal Yasin,Mashyam Vichar,Pub.Self,2015
Mehta Chandrakant, Sanchar madhyam sanshodhan,book pratha Global,2013
Desai, Dinesh,Electronic media,Navbharat ,2019.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DEPARTMENT OF MODERN INDIAN LANGUAGES AND LITERARY STUDIES
UNIVERSITY OF DELHI, DELHI – 110007

ABILITY ENHANCEMENT COURSE (A)
Under UGCF – 2022 in the line of NEP – 2020

Semester: III/ IV
KANNADA
AEC (A)-II

AEC (A)-II: Journalistic Writing in Kannada

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
Journalistic Writing in Kannada	**02**	**02**	**0**	**0**	(For students who have studied the language up to Class VIII & above)	students who have already opted AEC (A)-I in Kannada in either Semester I or II (alternative semester)	**MIL&LS**

Learning Objectives : The course aims at teaching and training the students in journalistic writing in the language so that they are well-equipped in the news covering, reporting, writing and editing for the electronic and print media. It also aims at enhancing their competence for freelancing and in the choice of their areas such as sports, movies, entertainment, business, social, political, historical etc.

Learning outcomes: : After completing the course, the students are expected to start preparing news items, reporting, taking interviews in Kannada for the media houses, electronic and print. The study shall provide sufficient training in writing and reporting (oral), conducting interviews and panel discussions for electronic media. The students will also be aware of the law and ethics involved in Journalism.

Allotted class: 30 hours

Unit -I **6 hours**

- Journalistic writing and reporting from the field
- Types of writings based on investigation, news covering, reporting, writing, editing and giving suitable titles, feature writing and column writing
- Analysis of the good/bad samples of writing

Unit -II **8 hours**

- Elements and stages of journalistic writing and art of news story writing
- Analysis of both bad and good samples of writing for the media,
- Conducting Interview and debate with demonstration

Unit -III **16 hours**

- Freelancing: scope and worthwhileness of the topic
- Editing and Proof-reading
- Laws and ethics in Journalistic writings
- Writing and reporting: Practical components

Essential/recommended readings:

Aroli, Ramesh. Samvahana Kannada. In *Modern Indian Language - Kannada*, ed. by T. S. Satyanath, Basavaraj Kalgudi and Vikram Visaji, p. 402-21. New Delhi: IGNOU.

Gurumurthy, B. N. *Radio, Television: Bhasha Samvahana*. Hampi: Kannada University.

Purnima, T. C. *Adhunika Samvahana Madhyamagalu mattu Kannada Abhivriddhi.* Hampi: Kannada University.

Ranganatharao, G. N. *Patrikodyama: Varadigarike mattu Suddiparishkarana*. Bangalore: Kamadhenu Pustaka.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DEPARTMENT OF MODERN INDIAN LANGUAGES AND LITERARY STUDIES
UNIVERSITY OF DELHI, DELHI – 110007

ABILITY ENHANCEMENT COURSE
Under UGCF – 2022 in the line of NEP – 2020

Semester: III/ IV
KASHMIRI
AEC (A)-II
(for students who have studied the language up to Class VIII& above)

AEC (A)-II: Journalistic Writing in Kashmiri

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
Journalistic Writing in Kashmiri	**02**	**02**	**0**	**0**	(For students who have studied the language up to Class VIII & above)	students who have already opted AEC (A)-I in Kashmiri in either Semester I or II (alternative semester)	**MIL&LS**

Learning Objectives : The course aims at teaching and training the students in journalistic writing in the language so that they are well-equipped in the news covering, reporting, writing and editing for the electronic and print media. It also aims at enhancing their competence for freelancing and in the choice of their areas such as sports, movies, entertainment, business, social, political, historical etc.

Learning outcomes: : After completing the course, the students are expected to start preparing news items, reporting, taking interviews in Bengali for the media houses, electronic and print. The study shall provide sufficient training in writing and reporting (oral), conducting interviews and panel discussions for electronic media. The students will also be aware of the law and ethics involved in Journalism.

Allotted class: 30 hours

Unit -I **6 hours**

- Journalistic writings: Definition and Elements

Unit -II **8 hours**

- Journalism: Definition and types

Unit –III **16 hours**

- Mediums of Journalistic writings: Print, Online, Multi-medial

Essential/recommended readings:

Rudin, Richard & Ibbotson, Trevor.An Introduction to Journalism Taylor & Francis Ltd.
Kamath,M.V.Professional Journalism. Vikas Publishing House Pvt Ltd 1980
Keval J.Kumar. Mass Communication in India(4th Edition) Jaico Publishing House 2000

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DEPARTMENT OF MODERN INDIAN LANGUAGES AND LITERARY STUDIES
UNIVERSITY OF DELHI, DELHI – 110007

ABILITY ENHANCEMENT COURSE (A)
Under UGCF – 2022 in the line of NEP – 2020

Semester: III/ IV
KONKANI
AEC (A)-II

AEC (A)-II: Journalistic Writing in Konkani

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
Journalistic Writing in Konkani	**02**	**02**	**0**	**0**	(For students who have studied the language up to Class VIII & above)	students who have already opted AEC (A)-I in Konkani in either Semester I or II (alternative semester)	**MIL&LS**

Learning Objectives : The course aims at teaching and training the students in journalistic writing in the language so that they are well-equipped in the news covering, reporting, writing and editing for the electronic and print media. It also aims at enhancing their competence for freelancing and in the choice of their areas such as sports, movies, entertainment, business, social, political, historical etc.

Learning outcomes: : After completing the course, the students are expected to start preparing news items, reporting, taking interviews in Konkani for the media houses, electronic and print. The study shall provide sufficient training in writing and reporting (oral), conducting interviews and panel discussions for electronic media. The students will also be aware of the law and ethics involved in Journalism.

Allotted class: 30 hours

Unit -I **6 hours**

- Journalistic writing and reporting from the field
- Types of writings based on investigation, news covering, reporting, writing, editing and giving suitable titles, feature writing and column writing
- Analysis of the good/bad samples of writing

Unit -II **8 hours**

- Elements and stages of journalistic writing and art of news story writing
- Analysis of both bad and good samples of writing for the media,
- Conducting Interview and debate with demonstration

Unit -III **16hours**

- Freelancing: scope and worthwhileness of the topic
- Editing and Proof-reading
- Laws and ethics in Journalistic writings
- Writing and reporting: Practical components

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DEPARTMENT OF MODERN INDIAN LANGUAGES AND LITERARY STUDIES
UNIVERSITY OF DELHI, DELHI – 110007

ABILITY ENHANCEMENT COURSE (A)
Under UGCF – 2022 in the line of NEP – 2020

Semester: III/ IV
MALAYALAM
AEC (A)-II

AEC (A)-II: Journalistic Writing in Malayalam

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
Journalistic Writing in Malayalam	**02**	**02**	**0**	**0**	(For students who have studied the language up to Class VIII & above)	students who have already opted AEC (A)-I in Malayalam in either Semester I or II (alternative semester)	**MIL&LS**

Learning Objectives : The course aims at teaching and training the students in journalistic writing in the language so that they are well-equipped in the news covering, reporting, writing and editing for the electronic and print media. It also aims at enhancing their competence for freelancing and in the choice of their areas such as sports, movies, entertainment, business, social, political, historical etc.

Learning outcomes: : After completing the course, the students are expected to start preparing news items, reporting, taking interviews in Malayalam for the media houses, electronic and print. The study shall provide sufficient training in writing and reporting (oral), conducting

interviews and panel discussions for electronic media. The students will also be aware of the law and ethics involved in Journalism.

Allotted class: 30 hours

Unit -I **6 hours**

- Journalistic writing and reporting from the field
- Types of writings based on investigation, news covering, reporting, writing, editing and giving suitable titles, feature writing and column writing
- Analysis of the good/bad samples of writing

Unit -II **8 hours**

- Elements and stages of journalistic writing and art of news story writing
- Analysis of both bad and good samples of writing for the media,
- Conducting Interview and debate with demonstration

Unit -III **16 hours**

- Freelancing: scope and worthwhileness of the topic
- Editing and Proof-reading
- Laws and ethics in Journalistic writings
- Writing and reporting: Practical components

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DEPARTMENT OF MODERN INDIAN LANGUAGES AND LITERARY STUDIES
UNIVERSITY OF DELHI, DELHI – 110007

ABILITY ENHANCEMENT COURSE (A)
Under UGCF – 2022 in the line of NEP – 2020

Semester: III/ IV
MANIPURI
AEC (A)-II

AEC (A)-II: Journalistic Writing in Manipuri

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
Journalistic Writing in Manipuri	**02**	**02**	**0**	**0**	(For students who have studied the language up to Class VIII & above)	students who have already opted AEC (A)-I in Manipuri in either Semester I or II (alternative semester)	**MIL&LS**

Learning Objectives : The course aims at teaching and training the students in journalistic writing in the language so that they are well-equipped in the news covering, reporting, writing and editing for the electronic and print media. It also aims at enhancing their competence for freelancing and in the choice of their areas such as sports, movies, entertainment, business, social, political, historical etc.

Learning outcomes: : After completing the course, the students are expected to start preparing news items, reporting, taking interviews in Manipuri for the media houses, electronic and print. The study shall provide sufficient training in writing and reporting (oral), conducting interviews and panel discussions for electronic media. The students will also be aware of the law and ethics involved in Journalism.

Allotted class: 30 hours

Unit -I **6 hours**

- Journalistic writing and reporting from the field
- Types of writings based on investigation, news covering, reporting, writing, editing and giving suitable titles, feature writing and column writing
- Analysis of the good/bad samples of writing

Unit -II **8 hours**

- Elements and stages of journalistic writing and art of news story writing
- Analysis of both bad and good samples of writing for the media,
- Conducting Interview and debate with demonstration

Unit -III **16 hours**

- Freelancing: scope and worthwhileness of the topic
- Editing and Proof-reading
- Laws and ethics in Journalistic writings
- Writing and reporting: Practical components

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DEPARTMENT OF MODERN INDIAN LANGUAGES AND LITERARY STUDIES
UNIVERSITY OF DELHI, DELHI – 110007

ABILITY ENHANCEMENT COURSE (A)
Under UGCF – 2022 in the line of NEP – 2020

Semester: III/ IV
MARATHI
AEC (A)-II

AEC (A)-II: Journalistic Writing in Marathi

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
Journalistic Writing in Marathi	**02**	**02**	**0**	**0**	(For students who have studied the language up to Class VIII & above)	students who have already opted AEC (A)-I in Marathi in either Semester I or II (alternative semester)	**MIL&LS**

Learning Objectives : The course aims at teaching and training the students in journalistic writing in the language so that they are well-equipped in the news covering, reporting, writing and editing for the electronic and print media. It also aims at enhancing their competence for freelancing and in the choice of their areas such as sports, movies, entertainment, business, social, political, historical etc.

Learning outcomes: : After completing the course, the students are expected to start preparing news items, reporting, taking interviews in Marathi for the media houses, electronic and print. The study shall provide sufficient training in writing and reporting (oral), conducting

interviews and panel discussions for electronic media. The students will also be aware of the law and ethics involved in Journalism.

Allotted class: 30 hours

Unit -I **6 hours**

- Journalistic writing and reporting from the field
- Types of writings based on investigation, news covering, reporting, writing, editing and giving suitable titles, feature writing and column writing
- Analysis of the good/bad samples of writing

Unit -II **8 hours**

- Elements and stages of journalistic writing and art of news story writing
- Analysis of both bad and good samples of writing for the media,
- Conducting Interview and debate with demonstration

Unit -III **16 hours**

- Freelancing: scope and worthwhileness of the topic
- Editing and Proof-reading
- Laws and ethics in Journalistic writings
- Writing and reporting: Practical components

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DEPARTMENT OF MODERN INDIAN LANGUAGES AND LITERARY STUDIES
UNIVERSITY OF DELHI, DELHI – 110007

ABILITY ENHANCEMENT COURSE
Under UGCF – 2022 in the line of NEP – 2020

Semester: III/ IV
MAITHILI
AEC (A)-II

AEC (A)-II: Journalistic Writing in Maithili

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
Journalistic Writing in Maithili	**02**	**02**	**0**	**0**	(for students who have studied the language up to Class VIII & above)	students who have already opted AEC (A)-I in Maithili in either Semester I or II (alternative semester)	**MIL&LS**

Learning Objectives : The course aims at teaching and training the students in journalistic writing in the language so that they are well-equipped in the news covering, reporting, writing and editing for the electronic and print media. It also aims at enhancing their competence for freelancing and in the choice of their areas such as sports, movies, entertainment, business, social, political, historical etc.

Learning outcomes: : After completing the course, the students are expected to start preparing news items, reporting, taking interviews in Maithili for the media houses, electronic and print. The study shall provide sufficient training in writing and reporting (oral), conducting

interviews and panel discussions for electronic media. The students will also be aware of the law and ethics involved in Journalism.

Allotted class: 30 hours

Unit -I **6 hours**

- Journalistic writings: Definition and Types: investigative, news, reviews, columns and feature-writing

Unit -II **8 hours**

- Journalism: Definition and Types: Education, Sports, Business, Political, Arts, Crime, Investigative and others

Unit –III **16 hours**

- Mediums of Journalistic writings: Print, Online, Multi-media
- Maithili Patra-Patrika

Essential/recommended readings:

1. Study material compiled by the Department.
2. Amar, Chandranath Mishra, Maithili Patrakaritak Itihas
3. Bhardvaj, Mohan. Maithili Patra-Patrika, Delhi: Sahitya Akademi, 2007
4. Chaoudhary, Shardindu. Maithili Patrakariak Dasha O Disha
5. Chaoudhary, Shardindu. Sakshatkarak: Darpan Mein Sudhanshu Shekhar Choudhary, Shekhar Prakashan
6. Maithili-Hindi Conversation Guide, Central Directorate, Department of Higher Education, Ministry of Education, Government of India, 2021
7. Jha, Sudhir Kumar. Paramarsh

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DEPARTMENT OF MODERN INDIAN LANGUAGES AND LITERARY STUDIES
UNIVERSITY OF DELHI, DELHI – 110007

ABILITY ENHANCEMENT COURSE (A)
Under UGCF – 2022 in the line of NEP – 2020

Semester: III/ IV
NEPALI
AEC (A)-II

AEC (A)-II: Journalistic Writing in Nepali

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
Journalistic Writing in Nepali	**02**	**02**	**0**	**0**	(for students who have studied the language up to Class VIII & above)	students who have already opted AEC (A)-I in Nepali in either Semester I or II (alternative semester)	**MIL&LS**

Learning Objectives : The course aims at teaching and training the students in journalistic writing in the language so that they are well-equipped in the news covering, reporting, writing and editing for the electronic and print media. It also aims at enhancing their competence for freelancing and in the choice of their areas such as sports, movies, entertainment, business, social, political, historical etc.

Learning outcomes: : After completing the course, the students are expected to start preparing news items, reporting, taking interviews in Nepali for the media houses, electronic and print. The study shall provide sufficient training in writing and reporting (oral), conducting

interviews and panel discussions for electronic media. The students will also be aware of the law and ethics involved in Journalism.

Allotted class: 30 hours

Unit -I **6 hours**

- Journalistic writing and reporting from the field
- Types of writings based on investigation, news covering, reporting, writing, editing and giving suitable titles, feature writing and column writing
- Analysis of the good/bad samples of writing

Unit -II **8 hours**

- Elements and stages of journalistic writing and art of news story writing
- Analysis of both bad and good samples of writing for the media,
- Conducting Interview and debate with demonstration

Unit -III **16hours**

- Freelancing: scope and worthwhileness of the topic
- Editing and Proof-reading
- Laws and ethics in Journalistic writings
- Writing and reporting: Practical components

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DEPARTMENT OF MODERN INDIAN LANGUAGES AND LITERARY STUDIES
UNIVERSITY OF DELHI, DELHI – 110007

ABILITY ENHANCEMENT COURSE (A)
Under UGCF – 2022 in the line of NEP – 2020

Semester: III/ IV
ODIA
AEC (A)-II

AEC (A)-II: Journalistic Writing in Odia

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
Journalistic Writing in Odia	**02**	**02**	**0**	**0**	(for students who have studied the language up to Class VIII & above)	students who have already opted AEC (A)-I in Odia in either Semester I or II (alternative semester)	**MIL&LS**

Learning Objectives : The course aims at teaching and training the students in journalistic writing in the language so that they are well-equipped in the news covering, reporting, writing and editing for the electronic and print media. It also aims at enhancing their competence for freelancing and in the choice of their areas such as sports, movies, entertainment, business, social, political, historical etc.

Learning outcomes: : After completing the course, the students are expected to start preparing news items, reporting, taking interviews in Odia for the media houses, electronic and print. The study shall provide sufficient training in writing and reporting (oral), conducting interviews

and panel discussions for electronic media. The students will also be aware of the law and ethics involved in Journalism.

Allotted class: 30 hours

Unit -I **6 hours**

- Journalistic writing and reporting from the field
- Types of writings based on investigation, news covering, reporting, writing, editing and giving suitable titles, feature writing and column writing
- Analysis of the good/bad samples of writing

Unit -II **8 hours**

- Elements and stages of journalistic writing and art of news story writing
- Analysis of both bad and good samples of writing for the media,
- Conducting Interview and debate with demonstration

Unit -III **16 hours**

- Freelancing: scope and worthwhileness of the topic
- Editing and Proof-reading
- Laws and ethics in Journalistic writings
- Writing and reporting: Practical components

Essential/recommended readings:

Chatterjee, Mrinal. *Shabda, chhabi, akshyara*, Dhenkanal: Shephali Communication, 2002.
Chatterjee, Mrinal. *Ganamaadhyama o saambaadikataa*, Dhenkanal: Shephali Communication, 2015.
Mohapatra, Chandra Shekhar. *Sambada o saambaadikataa*, Bhubaneswar: State Text Book Production Centre, 2021.
Shastri, D. G. *Saambaadikataa prabeshikaa*, Bhubaneswar: State Text Book Production Centre, 2021

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DEPARTMENT OF MODERN INDIAN LANGUAGES AND LITERARY STUDIES
UNIVERSITY OF DELHI, DELHI – 110007

ABILITY ENHANCEMENT COURSE (A)
Under UGCF – 2022 in the line of NEP – 2020

Semester: III/ IV
SANTALI
AEC (A)-II

AEC (A)-II: Journalistic Writing in Santali

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
Journalistic Writing in Santali	**02**	**02**	**0**	**0**	(for students who have studied the language up to Class VIII & above)	students who have already opted AEC (A)-I in Santali in either Semester I or II (alternative semester)	**MIL&LS**

Learning Objectives : The course aims at teaching and training the students in journalistic writing in the language so that they are well-equipped in the news covering, reporting, writing and editing for the electronic and print media. It also aims at enhancing their competence for freelancing and in the choice of their areas such as sports, movies, entertainment, business, social, political, historical etc.

Learning outcomes: After completing the course, the students are expected to start preparing news items, reporting, taking interviews in Santali for the media houses, electronic and print.

The study shall provide sufficient training in writing and reporting (oral), conducting interviews and panel discussions for electronic media. The students will also be aware of the law and ethics involved in Journalism.

Allotted class: 30 hours

Unit -I **6 hours**

- Journalistic writing and reporting from the field
- Types of writings based on investigation, news covering, reporting, writing, editing and giving suitable titles, feature writing and column writing
- Analysis of the good/bad samples of writing

Unit -II **8 hours**

- Elements and stages of journalistic writing and art of news story writing
- Analysis of both bad and good samples of writing for the media,
- Conducting Interview and debate with demonstration

Unit -III **16 hours**

- Freelancing: scope and worthwhileness of the topic
- Editing and Proof-reading
- Laws and ethics in Journalistic writings
- Writing and reporting: Practical components

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DEPARTMENT OF MODERN INDIAN LANGUAGES AND LITERARY STUDIES
UNIVERSITY OF DELHI, DELHI – 110007

ABILITY ENHANCEMENT COURSE
Under UGCF – 2022 in the line of NEP – 2020

Semester: III/ IV
SINDHI
AEC (A)-II

AEC (A)-II: Journalistic Writing in Sindhi

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
Journalistic Writing in Sindhi	**02**	**02**	**0**	**0**	(for students who have studied the Sindhi language up to Class VIII & above)	students who have already opted AEC (A)-I in Sindhi in either Semester I or II (alternative semester)	**MIL&LS**

Learning Objectives : The course aims at teaching and training the students in journalistic writing in the language so that they are well-equipped in the news covering, reporting, writing and editing for the electronic and print media. It also aims at enhancing their competence for freelancing and in the choice of their areas such as sports, movies, entertainment, business, social, political, historical etc.

Learning outcomes: : After completing the course, the students are expected to start preparing news items, reporting, taking interviews in Sindhi for the media houses, electronic and print. The study shall provide sufficient training in writing and reporting (oral), conducting

interviews and panel discussions for electronic media. The students will also be aware of the law and ethics involved in Journalism.

Allotted class: 30 hours

Unit -I **6 hours**

- Journalistic writings: Definition and elements

Unit -II **8 hours**

- Journalism: Definition and types

Unit -III **16 hours**

- Mediums of Journalistic writings: Print, Online, Multi-medial

Essential/recommended readings:
Golani Roshan, *Sindhi Adibi Akhbaar Navisi*, Ahmedabad

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DEPARTMENT OF MODERN INDIAN LANGUAGES AND LITERARY STUDIES
UNIVERSITY OF DELHI, DELHI – 110007

ABILITY ENHANCEMENT COURSE (A)
Under UGCF – 2022 in the line of NEP – 2020

Semester: III/ IV
TAMIL
AEC (A)-II

AEC (A)-II: Journalistic Writing in Tamil

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
Journalistic Writing in Tamil	**02**	**02**	**0**	**0**	(for students who have studied the language up to Class VIII & above)	students who have already opted AEC (A)-I in Tamil in either Semester I or II (alternative semester)	**MIL&LS**

Learning Objectives : The course aims at teaching and training the students in journalistic writing in the language so that they are well-equipped in the news covering, reporting, writing and editing for the electronic and print media. It also aims at enhancing their competence for freelancing and in the choice of their areas such as sports, movies, entertainment, business, social, political, historical etc.

Learning outcomes: : After completing the course, the students are expected to start preparing news items, reporting, taking interviews in Tamil for the media houses, electronic and print. The study shall provide sufficient training in writing and reporting (oral), conducting

interviews and panel discussions for electronic media. The students will also be aware of the law and ethics involved in Journalism.

Allotted classes: 30 hours

Unit -I **10 hours**

Introduction of Tamil Journalism and Report Writing:

- Brief History of Tamil Journalism
- Journalistic writing and reporting from the field
- Types of writings based on investigation, news covering, reporting, writing, editing and giving suitable titles, feature writing and column writing
- Analysis of the good/bad samples of writing

Unit -II **10 hours**

Method, Usages & Issues of Interview:

- Elements and stages of journalistic writing and art of news story writing
- Methods of Conducting Interview and debate with demonstration.
- Usages of Interview.
- Issues in Interviewing with Personalities.
- Interview with different persons of various social strata.

Unit -III **10 hours**

Editing, Editorial, Proof- Reading and Ethics:

- Freelancing: scope and worthwhileness of the topic
- Editing and Proof-reading
- Editorial writing.
- Laws and ethics in Journalistic writings
- Writing and reporting: Practical components

Essential/recommended readings:

Radha, V, 2004, Vaniha-t-Tagaval Thodarbu, Chennai, Prasanna Publication

Raja.Ki, 2006, Makkal Takaval Thodarbiyal: Arimukam, Chennai, NCBH.

Savarimuthu. S, 2004, Idhaliyal Makkal Thagavaliyal, Chennai, Muthu Pathippagam.

Gurusamy.M.P. *Ithazhiyal Kalai*, Chennai: Kurunthemozhi Pathippakam.

Vinayaga Moorthy, *Pathippu Paarvaikal,* Madurai: Balamurugan Pathippakam.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DEPRTMENT OF MODERN INDIAN LANGUAGES AND LITERARY STUDIES
UNIVERSITY OF DELHI, DELHI – 110007

ABILITY ENHANCEMENT COURSE (A)
Under UGCF – 2022 in the line of NEP – 2020

Semester: III/ IV
TELUGU
AEC (A)-II

Credit distribution, Eligibility and Pre-requisites of the Course

AEC (A)-II: Journalistic Writing in Telugu

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
Journalistic Writing in Telugu	**02**	**02**	**0**	**0**	For students who have studied the language up to Class VIII & above	students who have already opted AEC (A)-I in Telugu in either Semester I or II (alternative semester)	**MIL&LS**

Learning Objectives: The course aims to teach and train students in journalistic writing in the language so that they are well-equipped in the news covering, reporting, writing and editing for the electronic and print media. It also aims at enhancing their competence for freelancing and in the choice of their areas such as sports, movies, entertainment, business, social, political, historical etc.
This paper consists of three units: A brief history of Journalism in Telugu, Journalistic writing and reporting and Journalistic writing Practical components. The first unit attempted to introduce the early Telugu journals, well-known Telugu editors and Print, Electronic and New Media and News, News collection and different writing methods. The second unit would give an idea of how to report from the field and conduct interviews and debates with people. The last unit focuses on Journalistic writing and practical components.

Course Learning Outcomes: After completing the course, the students are expected to start preparing news items, reporting, and taking interviews in Telugu for the media houses, both electronic and print. The study shall provide sufficient training in writing and reporting (oral),

conducting interviews and panel discussions for electronic media. The students will also be aware of the law and ethics involved in Journalism.

Allotted classes: 30 hours

Unit -I A brief history of Journalism in Telugu

10 hours

- Beginnings of Communication Era, Early Telugu Journals and Editors
- Print, Electronic and New Media
- Editor and Editorial department, Journalist
- News, News collection and writing, Lead, Body, Column writing and Feature writing, Editor and Editorial, Interview and Reporting, investigation, news covering, editing and giving suitable titles
- Elements and stages of journalistic writing and art of news story writing

Unit -II Journalistic writing and reporting

10 hours

- Journalistic writing and reporting from the field
- Conducting Interviews and debates with a demonstration
- Analysis of both evil and sound samples of writing for the media

Unit -III Journalistic writing and Practical components

10 hours

- Freelancing: scope and worthwhileness of the topic
- Editing and Proof-reading
- Laws and ethics in Journalistic writings
- Writing and reporting: Practical components

Reading list:

Anand Bhaskar, *Rapolu. Journalism Charitra-vyavastha.* Hyderabad: Udyama Publications, 1988.
Krishna Rao, Bendaalam. *Vaarthalu Ela Raayaali?* Vijayawada: Rushi Prachu- ranalu, 2006.
Mallesham, Chilla. *Tappulu- Tippalu.* Hyderabad: Telangana Rashtra Media Academy, 2018.
Mallesham, Chilla. *Vartha Kathanalu.* Hyderabad: Telangana Rashtra Media Academy, 2018.
Radha Krishna, Budaraju. *Journalism Avagaahana – Aacharana.* Madras: S.I.J.F., 1995.
Radha Krishna, Budaraju. *Manci Jarnalistu Kaavanlante*. Hyderabad: Media House Publications, 2000.
Ramamohana Rao, Nanduri. *Telugu Patrikala Bhasha Konni Soochanalu.* Hyderabad: Andhra Pradesh Press Academy, 2004.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

EPARTMENT OF MODERN INDIAN LANGUAGES AND LITERARY STUDIES
UNIVERSITY OF DELHI, DELHI – 110007

ABILITY ENHANCEMENT COURSE (B)
Under UGCF – 2022 in the line of NEP – 2020

Semester: III/ IV
ASSAMESE
AEC (B)-II

AEC (B)-II: Intermediate Assamese

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
Intermediate Assamese	**02**	**2**	**0**	**0**	**(for students who have not studied the language)**	students who have already opted AEC (B)-I in Assamese in either Semester I or II (alternative semester)	**MIL&LS**

Learning Objectives : The students who have acquired a basic idea about Assamese language in the previous semester will be taught about Assamese language grammar and technicalities through course in this semester. Students will be introduced to verbs and various kinds of it, tenses, concepts of persons, genders, grammatical numbers etc. in Assamese language and in the semester, they will learn about the rules to frame compound and complex sentences in Assamese keeping in mind that they have already learnt about the formation of simple sentences in the previous semester. During the course of learning it will be emphasised to teach the students about the grammatical rules in Assamese which are essential to frame various kinds of sentences such as affirmative, negative, interrogative sentences, exclamatory sentences etc.

Learning outcomes: After completing the course the students are expected to have working knowledge about Assamese language and its grammar, which will eventually lead them to produce oral and written contents in Assamese language correctly. This will help them in their professional and technical careers provided those careers are related to Assam and Assamese language in someway such as a job in Assam or a job in translation area etc.

Allotted classes: 30 hours

Unit -I **10 hours**

Verb Formation, Tense and Person

- Verb formations and Classification of verbs
- Tense
- Person

Unit -II **10 hours**

Gender, Number and Person

- Gender, types of gender and methods to change gender of words in Assamese language
- Grammatical number and rules to change numbers in Assamese language

Unit -III (Class - 10) **10 hours**

Sentence

- Framing different types of sentence (Simple sentences, Compound sentences, Complex sentence, Affirmative Sentence, Negative sentences, Interrogative sentences, Exclamatory sentences etc.)
- Phrases and proverbs

Essential/ recommended readings:

Baruah, Tultul (ed). *Asamiya Rachana Sankalan*, Guwahati: Students Stores. 2013

Das Gupta, Bindu Bhusan. *Assamese Self-Taught*. Kolkata: Das Gupta Prakashan. 1956.

Dutta Barua, Lohit. Learninh Assamese Language: A Brief Handbook. Guwahati: Spandan Prakash. 2021

Dutta Baruah, P.N. *An Intensive Course in Assamese*. Mysore: CIIL. 1996

Neog, Dr Maheswar. *Nika Asamiya Bhasa*, Guwahati: Layers' Book Stall. 1994

Assamese-English Dictionary

Deka, Pranav Jyoti. *Jyoti-Dviashik Abhidhan*. Guwahati: Assam Book Dipot. **2011.**

https://dsal.uchicago.edu/dictionaries/candrakanta/

www.xobdo.org

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DEPARTMENT OF MODERN INDIAN LANGUAGES AND LITERARY STUDIES
UNIVERSITY OF DELHI, DELHI – 110007

ABILITY ENHANCEMENT COURSE (B)
Under UGCF – 2022 in the line of NEP – 2020
Semester: III/ IV
BENGALI
AEC (B)-II

AEC (B)-II: Intermediate Bengali

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
Intermediate Bengali	**02**	**2**	**0**	**0**	**(for students who have not studied the language)**	students who have already opted AEC (B)-I in Bengali in either Semester I or II (alternative semester)	**MIL&LS**

Learning Objectives : The course aims to prepare bilingual and multilingual students proficient in translation and interpretation, have sufficient knowledge of at least two languages, the source and the target language, and apply them adequately for all practical purposes. Besides, it also aims to build cross-cultural communications and enables the students to use different skills effectively to prepare themselves to take jobs in translation and interpretation.

Learning outcomes: Students will be able to build various professional, technical, and linguistic skills to take the job of translation and interpretation. Their knowledge in various fields in both the source and the target languages will help them translate in multiple areas and take interpretation jobs for the different target groups; the translator works with the written material/texts; the interpreter will mediate between languages orally.

Allotted classes: 30 hours

Unit -I **10 hours**

Rules of Verb Formation

Unit -II **10 hours**

Making Simple sentences, Negative sentences, Interrogative sentences, Exclamatory sentences

Unit -III **10 hours**

Vocabulary

Essential/ recommended readings:

Mahapatra,Tushar Kanti.Bengali for Non Bengalis. Kolkata: Shishu Sahitya sang shod. August 1999.

Mahapatra,Tushar Kanti.Bengali for Beginners Kolkata : Shishu Sahitya sang shod. August 1999.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DEPARTMENT OF MODERN INDIAN LANGUAGES AND LITERARY STUDIES
UNIVERSITY OF DELHI, DELHI – 110007

ABILITY ENHANCEMENT COURSE (B)
Under UGCF – 2022 in the line of NEP – 2020
Semester: III/ IV
BODO
AEC (B)-II

AEC (B)-II: Intermediate Bodo

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
Intermediate Bodo	**02**	**2**	**0**	**0**	**(for students who have not studied the language)**	students who have already opted AEC (B)-I in Bodo in either Semester I or II (alternative semester)	**MIL&LS**

Learning Objectives: The course aims to prepare bilingual and multilingual students proficient in translation and interpretation, have sufficient knowledge of at least two languages, the source and the target language, and apply them adequately for all practical purposes. Besides, it also aims to build cross-cultural communications and enables the students to use different skills effectively to prepare themselves to take jobs in translation and interpretation.

Learning outcomes: Students will be able to build various professional, technical, and linguistic skills to take the job of translation and interpretation. Their knowledge in various fields in both the source and the target languages will help them translate in multiple areas and

take interpretation jobs for the different target groups; the translator works with the written material/texts; the interpreter will mediate between languages orally.

Allotted classes: 30 hours

Unit -I **10 hours**

Rules of Verb Formation

Unit -II **10 hours**

Making Simple sentences, Negative sentences, Interrogative sentences, Exclamatory sentences

Unit -III (Class - 06) **10hours**

Vocabulary

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DEPARTMENT OF MODERN INDIAN LANGUAGES AND LITERARY STUDIES
UNIVERSITY OF DELHI, DELHI – 110007

ABILITY ENHANCEMENT COURSE (B)
Under UGCF – 2022 in the line of NEP – 2020
Semester: III/ IV
DOGRI
AEC (B)-II

AEC (B)-II: Intermediate Dogri

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Intermediate Dogri	**02**	**2**	**0**	**0**	**(for students who have not studied the language)**	students who have already opted AEC (B)-I in Dogri in either Semester I or II (alternative semester)

Learning Objectives : The course aims to prepare bilingual and multilingual students proficient in translation and interpretation, have sufficient knowledge of at least two languages, the source and the target language, and apply them adequately for all practical purposes. Besides, it also aims to build cross-cultural communications and enables the students to use different skills effectively to prepare themselves to take jobs in translation and interpretation.

Learning outcomes: Students will be able to build various professional, technical, and linguistic skills to take the job of translation and interpretation. Their knowledge in various fields in both the source and the target languages will help them translate in multiple areas and take interpretation jobs for the different target groups; the translator works with the written material/texts; the interpreter will mediate between languages orally.

Allotted classes: 30 hours

Unit -I **10 hours**

Rules of Verb Formation

Unit -II **10 hours**

Making Simple sentences, Negative sentences, Interrogative sentences, Exclamatory sentences

Unit -III **10 hours**

Vocabulary

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DEPARTMENT OF MODERN INDIAN LANGUAGES AND LITERARY STUDIES
UNIVERSITY OF DELHI, DELHI – 110007

ABILITY ENHANCEMENT COURSE (B)
Under UGCF – 2022 in the line of NEP – 2020
Semester: III/ IV
GUJARATI
AEC (B)-II

AEC (B)-II: Intermediate Gujarati

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
Intermediate Gujarati	**02**	**2**	**0**	**0**	(for students who have not studied the language)	students who have already opted AEC (B)-I in Gujarati in either Semester I or II (alternative semester)	**MIL&LS**

Course Learning Objectives : This course has been designed for students who have the primary knowledge of the Gujarati language and can make as well as to figure out simple sentences. The course enables students to construct compound and complex sentences in Gujarati. Furthermore, the course empowers the students to acquire skills to comprehend small passages, writing short paragraphs, and having better conversational skills and teach them the basic rules of translation as well. The course offers a wide range of exercises from the book and challenging activities can be given to students i.e. vocabulary-based activity or a grammar drill, a language manipulation exercise or an up-to-date reading comprehension. A unit focuses

on particular topic and also to those students who want to practice the language through additional independent study and open-ended exercises will be included to encourage learners to communicate more spontaneously and to allow some autonomy and encourage creativity. Additional materials and support will be given to the students.

Course Learning Outcome: The course will enable students to understand the distinctions of the language by empowering them with better reading, writing and conversational skills. Students will try to capture radio and TV advertisements, news, advertisements and other programs broadcast. They will read short paragraphs in a language related to books, newspapers, magazines, notice boards, posters, personal and other types of letters, etc., as well as the use of dictionaries and reference texts. They will also try to write a short portion on select topics and write personal and other types of letters, directly on familiar and simple topics, and write independent articles. Students will be able to translate any prose words from Gujarati to English and vice versa with the help of a dictionary or through online sources.

Allotted classes: 30 hours

Unit -I **10 hours**

Compound verbs

Transitive and intransitive verbs

Making compound sentences in Gujarati using conjunction

Making complex sentences in Gujarati

Unit II **10 hours**

Reading comprehension

Paragraph and letter Writing

Conversation writing

Unit III **10 hours**

Translation from English to Gujarati

Translation from Gujarati to English

Essential/ recommended readings:

1. Christian, Sonal, *Gujarati-English/English-Gujarati Dictionary & Phrasebook* (Hippocrene Dictionary & Phrasebook), 2006

2. Clair Tisdall, William St., *A Simplified Grammar of the Gujarati Language Together With a Short Reading Book and Vocabulary*, Forgotten Books 25, 2017

3. Dwyer, y Rachel Dwyer, *Get Started in Gujarati Absolute Beginner Course: The essential introduction to reading, writing, speaking and understanding a new language*.NTC publishing group,2013

4. Jhaveri, Krishnalal M., *Milestones in Gujarati Literature*, Manohar Publishers & Distributors, 2021

5. Madhu K. Sampat, *Advanced Course Reader in Gujarati*, CIIL,2009

6. Nayar,Usha, *Intermediate Courses in Gujarati* ,CIIL,2009

7. Nayar,Usha, *Gujarati Bhasha Saurabh*, CIIL,2009

8. Subaiiah P., *Tests of Language Proficiency*: Gujarati. CIIL, 2009

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DEPARTMENT OF MODERN INDIAN LANGUAGES AND LITERARY STUDIES
UNIVERSITY OF DELHI, DELHI – 110007

ABILITY ENHANCEMENT COURSE (B)
Under UGCF – 2022 in the line of NEP – 2020
Semester: III/ IV
KANNADA
AEC (B)-II

AEC (B)-II: Intermediate Kannada

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
Intermediate Kannada	**02**	**2**	**0**	**0**	**(for students who have not studied the language)**	students who have already opted AEC (B)-I in Kannada in either Semester I or II (alternative semester)	**MIL&LS**

Title: Intermediate Kannada

Learning Objectives : The course aims to prepare bilingual and multilingual students proficient in translation and interpretation, have sufficient knowledge of at least two languages, the source and the target language, and apply them adequately for all practical purposes. Besides, it also aims to build cross-cultural communications and enables the students to use different skills effectively to prepare themselves to take jobs in translation and interpretation.

Learning outcomes: Students will be able to build various professional, technical, and linguistic skills to take the job of translation and interpretation. Their knowledge in various

fields in both the source and the target languages will help them translate in multiple areas and take interpretation jobs for the different target groups; the translator works with the written material/texts; the interpreter will mediate between languages orally.

Allotted classes: 30 hours

Unit -I **10 hours**

Rules of Verb Formation

Unit -II **10 hours**

Making Simple sentences, Negative sentences, Interrogative sentences, Exclamatory sentences

Unit -III **10 hours**

Vocabulary

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DEPARTMENT OF MODERN INDIAN LANGUAGES AND LITERARY STUDIES
UNIVERSITY OF DELHI, DELHI – 110007

ABILITY ENHANCEMENT COURSE (B)
Under UGCF – 2022 in the line of NEP – 2020
Semester: III/ IV
KASHMIRI
AEC (B)-II

AEC (B)-II: Intermediate Kashmiri

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
Intermediate Kashmiri	**02**	**2**	**0**	**0**	**(for students who have not studied the language)**	students who have already opted AEC (B)-I in Kashmiri in either Semester I or II (alternative semester)	**MIL&LS**

Learning Objectives : The course aims at building proficiency of all those bilingual and multilingual students in translation and interpretation who have sufficient knowledge of at least two languages- the source and the target language, and further apply them adequately for all practical purposes. Besides, it is also aimed to help the students to develop their creativity, and critical sense and cross-cultural awareness and enable the students to use different skills effectively to prepare themselves to take jobs in translation and interpretation.

Learning outcomes: Students will be able to build various professional, technical, and linguistic skills to take the job of translation and interpretation. Their knowledge in various fields in both the source and the target languages will help them translate in multiple areas and

take interpretation jobs for the different target groups; the translator works with the written material/texts; the interpreter will mediate between languages orally.

Allotted classes: 30 hours

Unit -I **10 hours**

Rules of Verb Formation

Unit -II **10 hours**

Making Simple sentences, Negative sentences, Interrogative sentences, exclamatory sentences

Unit -III **10 hours**

Vocabulary

Essential/ recommended readings:

Wade, T.R. A Grammar of the Kashmiri Language. Kessinger Publishing(Re-printed)2010

Shauq, Shafi Kashruk Grammar. Ali Mohmmad and Sons,Srinagar 2014

Grierson,G.A.The Standard Manual of the Kashmiri Language(2 Vols) Light and Life Publishers(RE-printed)1973

Koul,O.N.Modern Kashmiri Grammar.Dunwoody Press Springfield 2006

Bhat,Roop Krishan.A Descriptive Study in Kashmiri.Amar Prakashan Delhi 1987

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DEPARTMENT OF MODERN INDIAN LANGUAGES AND LITERARY STUDIES
UNIVERSITY OF DELHI, DELHI – 110007

ABILITY ENHANCEMENT COURSE (B)
Under UGCF – 2022 in the line of NEP – 2020
Semester: III/ IV
KONKANI
AEC (B)-II

AEC (B)-II: Intermediate Konkani

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
Intermediate Konkani	**02**	**2**	**0**	**0**	**(for students who have not studied the language)**	students who have already opted AEC (B)-I in Konkani in either Semester I or II (alternative semester)	**MIL&LS**

Learning Objectives : The course aims to prepare bilingual and multilingual students proficient in translation and interpretation, have sufficient knowledge of at least two languages, the source and the target language, and apply them adequately for all practical purposes. Besides, it also aims to build cross-cultural communications and enables the students to use different skills effectively to prepare themselves to take jobs in translation and interpretation.

Learning outcomes: Students will be able to build various professional, technical, and linguistic skills to take the job of translation and interpretation. Their knowledge in various fields in both the source and the target languages will help them translate in multiple areas and take interpretation jobs for the different target groups; the translator works with the written material/texts; the interpreter will mediate between languages orally.

Allotted classes: 30 hours

Unit -I **10hours**

Rules of Verb Formation

Unit -II **10 hours**

Making Simple sentences, Negative sentences, Interrogative sentences, Exclamatory sentences

Unit -III **10 hours**

Vocabulary

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DEPARTMENT OF MODERN INDIAN LANGUAGES AND LITERARY STUDIES
UNIVERSITY OF DELHI, DELHI – 110007

ABILITY ENHANCEMENT COURSE (B)
Under UGCF – 2022 in the line of NEP – 2020
Semester: III/ IV
MALAYALAM
AEC (B)-II

AEC (B)-II: Intermediate Malayalam

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
Intermediate Malayalam	**02**	**2**	**0**	**0**	**(for students who have not studied the language)**	students who have already opted AEC (B)-I in Malayalam in either Semester I or II (alternative semester)	**MIL&LS**

Learning Objectives : The course aims to prepare bilingual and multilingual students proficient in translation and interpretation, have sufficient knowledge of at least two languages, the source and the target language, and apply them adequately for all practical purposes. Besides, it also aims to build cross-cultural communications and enables the students to use different skills effectively to prepare themselves to take jobs in translation and interpretation.

Learning outcomes: Students will be able to build various professional, technical, and linguistic skills to take the job of translation and interpretation. Their knowledge in various fields in both the source and the target languages will help them translate in multiple areas and

take interpretation jobs for the different target groups; the translator works with the written material/texts; the interpreter will mediate between languages orally.

Allotted classes: 30 hours

Unit -I **10 hours**

Rules of Verb Formation

Unit -II **10 hours**

Making Simple sentences, Negative sentences, Interrogative sentences, Exclamatory sentences

Unit -III **10 hours**

Vocabulary

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DEPARTMENT OF MODERN INDIAN LANGUAGES AND LITERARY STUDIES
UNIVERSITY OF DELHI, DELHI – 110007

ABILITY ENHANCEMENT COURSE (B)
Under UGCF – 2022 in the line of NEP – 2020
Semester: III/ IV
MANIPURI
AEC (B)-II: Intermediate Manipuri

AEC (B)-II: Intermediate Manipuri

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
Intermediate Manipuri	**02**	**2**	**0**	**0**	**(for students who have not studied the language)**	students who have already opted AEC (B)-I in Manipuri in either Semester I or II (alternative semester)	**MIL&LS**

Learning Objectives : The course aims to prepare bilingual and multilingual students proficient in translation and interpretation, have sufficient knowledge of at least two languages, the source and the target language, and apply them adequately for all practical purposes. Besides, it also aims to build cross-cultural communications and enables the students to use different skills effectively to prepare themselves to take jobs in translation and interpretation.

Learning outcomes: Students will be able to build various professional, technical, and linguistic skills to take the job of translation and interpretation. Their knowledge in various fields in both the source and the target languages will help them translate in multiple areas and

take interpretation jobs for the different target groups; the translator works with the written material/texts; the interpreter will mediate between languages orally.

Allotted classes: 30 hours

Unit -I **10 hours**

Rules of Verb Formation

Unit –II **10 hours**

Making Simple sentences, Negative sentences, Interrogative sentences, Exclamatory sentences

Unit-III **10 hours**

Vocabulary

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DEPARTMENT OF MODERN INDIAN LANGUAGES AND LITERARY STUDIES
UNIVERSITY OF DELHI, DELHI – 110007

ABILITY ENHANCEMENT COURSE (B)
Under UGCF – 2022 in the line of NEP – 2020
Semester: III/ IV
MARATHI
AEC (B)-II

AEC (B)-II: Intermediate Marathi

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
Intermediate Marathi	**02**	**2**	**0**	**0**	**(for students who have not studied the language)**	students who have already opted AEC (B)-I in Marathi in either Semester I or II (alternative semester)	**MIL&LS**

Learning Objectives : The course aims to prepare bilingual and multilingual students proficient in translation and interpretation, have sufficient knowledge of at least two languages, the source and the target language, and apply them adequately for all practical purposes. Besides, it also aims to build cross-cultural communications and enables the students to use different skills effectively to prepare themselves to take jobs in translation and interpretation.

Learning outcomes: Students will be able to build various professional, technical, and linguistic skills to take the job of translation and interpretation. Their knowledge in various fields in both the source and the target languages will help them translate in multiple areas and take interpretation jobs for the different target groups; the translator works with the written material/texts; the interpreter will mediate between languages orally.

Allotted classes: 30 hours

Unit -I **10 hours**

Rules of Verb Formation

Unit -II **10 hours**

Making Simple sentences, Negative sentences, Interrogative sentences, Exclamatory sentences

Unit -III **10 hours**

Vocabulary

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DEPARTMENT OF MODERN INDIAN LANGUAGES AND LITERARY STUDIES
UNIVERSITY OF DELHI, DELHI – 110007

ABILITY ENHANCEMENT COURSE (B)
Under UGCF – 2022 in the line of NEP – 2020
Semester: III/ IV
MAITHILI
AEC (B)- II:

AEC (B)-II: Intermediate Maithili

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
Intermediate Maithili	**02**	**2**	**0**	**0**	**(for students who have not studied the language)**	students who have already opted AEC (B)-I in Maithili in either Semester I or II (alternative semester)	**MIL&LS**

Learning Objectives : The course aims to prepare bilingual and multilingual students proficient in translation and interpretation, have sufficient knowledge of at least two languages, the source and the target language, and apply them adequately for all practical purposes. Besides, it also aims to build cross-cultural communications and enables the students to use different skills effectively to prepare themselves to take jobs in translation and interpretation.

Learning outcomes: Students will be able to build various professional, technical, and linguistic skills to take the job of translation and interpretation. Their knowledge in various fields in both the source and the target languages will help them translate in multiple areas and take interpretation jobs for the different target groups; the translator works with the written material/texts; the interpreter will mediate between languages orally.

Allotted classes: 30 hours

Unit -I **10 hours**

Rules of Verb Formation

Unit -II **10 hours**

Making Simple sentences, Negative sentences, Interrogative sentences, Exclamatory sentences

Unit –III **10 hours**

Vocabulary

Essential/ recommended readings:

1. Reading Material compiled by the Department.
2. Grierson, George Abraham. Seven Grammars of the Dialects and Sub dialects of the Bihari Language: South Maithili-Magadhi Dialect, South Maithili-Bangali Dialect, Kalpaz Publications, 2005
3. Jha, Pandit Govind. Ucchatara Maithili Vyakaran, Patna: Maithili Akademi, 1992
4. Jha, Rajeshwar, Tirhuta Lipik Vikas
5. Jha, Subhadra, Formation of the Maithili Language, Luzac, 1958
6. Jha, Sunil Kumar. Maithili: Some Aspects of Its Phonetics and Phonology, Delhi: Motilal Banarsidass Publishers, 2001
7. Jha, Virendra. ed., Maithili Bhashiki: Maithili Bhashak Prakriti and Prakarya
8. Mishra, Dhirendra Nath. Maithili Bhasha Shastra
9. Mishra, Navin Chandra. Thakur Shivkant. Maithili Bhasha Vigyan
10. Yadav, Ramawatar. A Reference Grammar of Maithili: Trends in Linguistic Documentation, 1996

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DEPARTMENT OF MODERN INDIAN LANGUAGES AND LITERARY STUDIES
UNIVERSITY OF DELHI, DELHI – 110007

ABILITY ENHANCEMENT COURSE (B)
Under UGCF – 2022 in the line of NEP – 2020
Semester: III/ IV
NEPALI
AEC (B)- II

AEC (B)-II: Intermediate Nepali

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
Intermediate Nepali	**02**	**2**	**0**	**0**	**(for students who have not studied the language)**	students who have already opted AEC (B)-I Nepali in either Semester I or II (alternative semester)	**MIL&LS**

Learning Objectives : The course aims to prepare bilingual and multilingual students proficient in translation and interpretation, have sufficient knowledge of at least two languages, the source and the target language, and apply them adequately for all practical purposes. Besides, it also aims to build cross-cultural communications and enables the students to use different skills effectively to prepare themselves to take jobs in translation and interpretation.

Learning outcomes: Students will be able to build various professional, technical, and linguistic skills to take the job of translation and interpretation. Their knowledge in various fields in both the source and the target languages will help them translate in multiple areas and

take interpretation jobs for the different target groups; the translator works with the written material/texts; the interpreter will mediate between languages orally.

Allotted classes: 30 hours

Unit -I (Class - 12) **10 hours**

Rules of Verb Formation

Unit -II (Class – 12) **10 hours**

Making Simple sentences, Negative sentences, Interrogative sentences, Exclamatory sentences

Unit -III (Class - 06) **10 hours**

Vocabulary

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DEPARTMENT OF MODERN INDIAN LANGUAGES AND LITERARY STUDIES
UNIVERSITY OF DELHI, DELHI – 110007

ABILITY ENHANCEMENT COURSE (B)
Under UGCF – 2022 in the line of NEP – 2020
Semester: III/ IV
ODIA
AEC(B)-II

AEC (B)-II: Intermediate Odia

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
Intermediate Odia	**02**	**2**	**0**	**0**	**(for students who have not studied the language)**	students who have already opted AEC (B)-I in Odia in either Semester I or II (alternative semester)	**MIL&LS**

Learning Objectives : The course aims to prepare bilingual and multilingual students proficient in translation and interpretation, have sufficient knowledge of at least two languages, the source and the target language, and apply them adequately for all practical purposes. Besides, it also aims to build cross-cultural communications and enables the students to use different skills effectively to prepare themselves to take jobs in translation and interpretation.

Learning outcomes: Students will be able to build various professional, technical, and linguistic skills to take the job of translation and interpretation. Their knowledge in various fields in both the source and the target languages will help them translate in multiple areas and

take interpretation jobs for the different target groups; the translator works with the written material/texts; the interpreter will mediate between languages orally.

Allotted classes: 30 hours

Unit -I **10 hours**

Rules of Verb Formation

Unit-II

10 hours

Making Simple sentences, Negative sentences, Interrogative sentences, Exclamatory sentences

Unit -III **10 hours**

Vocabulary

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DEPARTMENT OF MODERN INDIAN LANGUAGES AND LITERARY STUDIES
UNIVERSITY OF DELHI, DELHI – 110007

ABILITY ENHANCEMENT COURSE (B)
Under UGCF – 2022 in the line of NEP – 2020
Semester: III/ IV
SANTALI
AEC(B)-II

AEC (B)-II: Intermediate Santali

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
Intermediate Santali	**02**	**2**	**0**	**0**	**(for students who have not studied the language)**	students who have already opted AEC (B)-I in Santali in either Semester I or II (alternative semester)	**MIL&LS**

Learning Objectives: The course aims to prepare bilingual and multilingual students proficient in translation and interpretation, have sufficient knowledge of at least two languages, the source and the target language, and apply them adequately for all practical purposes. Besides, it also aims to build cross-cultural communications and enables the students to use different skills effectively to prepare themselves to take jobs in translation and interpretation.

Learning outcomes: Students will be able to build various professional, technical, and linguistic skills to take the job of translation and interpretation. Their knowledge in various fields in both the source and the target languages will help them translate in multiple areas and

take interpretation jobs for the different target groups; the translator works with the written material/texts; the interpreter will mediate between languages orally.

Allotted classes: 30 hours

Unit -I **10 hours**

Rules of Verb Formation

Unit -II **10 hours**

Making Simple sentences, Negative sentences, Interrogative sentences, Exclamatory sentences

Unit -III **10 hours**

Vocabulary

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DEPARTMENT OF MODERN INDIAN LANGUAGES AND LITERARY STUDIES
UNIVERSITY OF DELHI, DELHI – 110007

ABILITY ENHANCEMENT COURSE (B)
Under UGCF – 2022 in the line of NEP – 2020
Semester: III/ IV
SINDHI
AEC (B)- II

AEC (B)-II: Intermediate Sindhi

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
Intermediate Sindhi	**02**	**2**	**0**	**0**	**(for students who have not studied Sindhi language)**	students who have already opted AEC (B)-I in Sindhi in either Semester I or II (alternative semester)	**MIL&LS**

Learning Objectives : This course is aimed to teach intermediate language communication skills in Sindhi. It will introduce intermediate skills of Sindhi language: its alphabets, essential words and complex sentence construction methods. The course intends to facilitate students acquiring skill of Sindhi language communication. This course will introduce letter writing and dialogue writing.

Learning outcomes: The course will enable students to learn features of various types of language communication like letter, public speech, dialogue writing and to develop the ability of reading and comprehension in Sindhi. After completing the course they can read and write Sindhi sentences, can figure out words having conjunct character, and can have basic everyday conversation.

Allotted classes: 30 hours

Unit -I **10 hours**

Rules of Verb Formation

Unit -II **10 hours**

Making Simple sentences, Negative sentences, Interrogative sentences, Exclamatory sentences

Unit -III **10 hours**

Vocabulary

Essential/ recommended readings:

Lekhwani K.P, *An intensive course in Sindhi*, Central Institute of Indian Languages, Mysore

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DEPARTMENT OF MODERN INDIAN LANGUAGES AND LITERARY STUDIES
UNIVERSITY OF DELHI, DELHI – 110007

ABILITY ENHANCEMENT COURSE (B)
Under UGCF – 2022 in the line of NEP – 2020
Semester: III/ IV
TAMIL
AEC (B)-II

AEC (B)-II: Intermediate Tamil

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
Intermediate Tamil	**02**	**2**	**0**	**0**	**(for students who have not studied the language)**	students who have already opted AEC (B)-I in Tamil in either Semester I or II (alternative semester)	**MIL&LS**

Learning Objectives : This semester course aims at creating an awareness of Dynamics of Tamil words and introducing classification weak & strong verbs- Infinitive forms of Verbs Auxiliaries and Tamil script learning.

Allotted classes: 30 hours

Unit –I **10 hours**

Rules of Verb formation

- **Subject, Object, Verb construction (SOV structure)**

Unit –II **10 hours**

Making simple sentences, Interrogative sentences & exclamatory sentences.

Unit -III **10 hours**

Technical Terms

Essential/ recommended readings:

1. *Asher, R.E. Colloquial Tamil, Routledge (Lesson 1), London. 2002.*
2. *Rajaram, S. An Intensive Course in Tamil (Unit. 4), CIIL, Mysore, 1987.*
3. *Arokianathan, S. Spoken Tamil for Foreigners, (Lesson 1-5) A-team Info Media Publishers Pvt. Ltd, Chennai. 2012.*
4. *Hart, Kausalya. Tamil for Beginners Part I & II, (Lesson 1- 5 & 10) Centre for South and South East Asia, University of California at Berkeley, 1992.*
5. *Karunakaran, K. & Balakrishnan.R. Elementry Tamil (Introductory Course), Sabanayagam Printers, Chidambaram, 2001.*
6. Nuhman, M.A, 2010, Adippadait Tamil Ilakkanam, Puthanatham, Adaiyalam Publications.
7. *Thamizhannal, 1989, Ungal Tamizhai Therinthu kollungal, Madurai, Meenakshi Puththaka Nilayam.*

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DEPARTMENT OF MODERN INDIAN LANGUAGES AND LITERARY STUDIES
UNIVERSITY OF DELHI, DELHI – 110007

ABILITY ENHANCEMENT COURSE (B)
Under UGCF – 2022 in the line of NEP – 2020
Semester: III/ IV
TELUGU
AEC (B)-II

AEC (B)-II: Intermediate Telugu

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
Intermediate Telugu	**02**	**2**	**0**	**0**	**(For students who have not studied the language)**	students who have already opted AEC (B)-I in Telugu in either Semester I or II (alternative semester)	**MIL&LS**

Learning Objectives :

This course has been designed for students with primary knowledge of the Telugu language who can make and figure out simple sentences. The course enables students to construct compound and complex sentences in Telugu. Furthermore, the course empowers the students to acquire skills to comprehend small passages, write short paragraphs, have better conversational skills and teach them the basic rules of translation. The course offers a wide range of exercises from the book, and challenging activities can be given to students, i.e. vocabulary-based activity or a grammar drill, a language manipulation exercise or ap-to-date reading comprehension. A unit that focuses s on particular topics and students who want to practice the language through additional independent study, and open-ended exercises will be included to encourage learners to communicate more spontaneously and to allow some autonomy and creativity. Additional materials and support will be given to the students.

Course Learning Outcome: The course will enable students to understand the distinctions of the language by empowering them with better reading, writing and conversational skills. Students will try to capture radio and TV advertisements, news advertisements and other broadcast programs. They will read short paragraphs in a language related to books, newspapers, magazines, notice boards, posters, personal and other types of letters, etc., and use dictionaries and reference texts. They will also try to write a short portion on select topics, write personal and other types of letters directly on familiar and simple topics, and write independent articles. Students will be able to translate any prose words from Telugu to English and vice versa with the help of a dictionary or through online sources.

Allotted classes: 30 hours

Unit -I

12 hours

Compound verbs

Transitive and intransitive verbs

Making compound sentences in Telugu using conjunction

Making complex sentences in Telugu

Unit II ```

10 hours

Reading comprehension

Paragraph and letter Writing

Conversation writing

Unit III

8 hours

Translation from English to Telugu

Translation from Telugu to English

Essential/recommended readings:

Arden, A H. *A progressive grammar of the Telugu language.* 2nd ed. Madras: Society for promoting Christian knowledge, 1905.

Krishnamurti, B. and Gwynn, J. P. L. *A Grammar of Modern Telugu.* USA: Oxford University Press, 1986.

Parandhama Reddy, M. and Venkateswara Shastri,J. *Telugu Velugu- I.* . Mysore: Central Institute of Indian Languages, 1997.

Ramanarasimham, Parimi. An Intensive Course in Telugu. Mysore: Central Institute of Indian Languages, 1985.

Ramanarasimham, Parimi. Telugu Velugu -III. Mysore: Central Institute of Indian Languages, 1974.

Reddy G.N. and Matson D.M. *Glossaries for graded readings in newspaper Telugu and modern literary Telugu*: USA: U.S. Department of health, education & welfare, 1966.

Sanjay, D. *Spoken Telugu for Absolute Beginners*. _____: _____, 2019.

Venkataramana Rao, Y. *Telugu Velugu -IV.* Mysore: Central Institute of Indian Languages, 1976.

Venkatavadhani, Divakarla. *Telugu in Thirty Days.* Hyderabad. Andhra Pradesh Sahitya academy, 2017.

Proposed Bengali AEC Courses for III Semester B.A. Programme Bengali

COMMON POOL OF BENGALI ABILITY ENHANCEMENT COURSES(AEC)

DEPARTMENT OF BENGALI

ABILITY ENHANCEMENT COURSE- A- II (AEC-A-II): GANAGYAPAN O SANGBADIKATA

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
GANAGYAPAN O SANGBADIKATA	2	2	0	0	For students who have studied the language up to class VIII & above	NIL	BENGALI

Course Objectives: To introduce the basic features of Mass Communication, various forms of Mass Communications, basic features of News and Newspaper, definition of Journalism and Journalistic writings, aspects of editing, aspects and types of interviewing.

Course Learning Outcomes: This course will enable students to understand the basic features of Mass Communication, News, News Paper, News Writing, Editing and Interviewing.

Unit I (8 Hours)

জ্ঞাপন – একান্ত জ্ঞাপন – গণজ্ঞাপনঃ সংজ্ঞা, পার্থক্য, প্রকারভেদ, কাজ

Unit II (10 Hours)

সংবাদঃ সংজ্ঞা, উপাদান, শ্রেণীবিভাগ, মাধ্যম(সংবাদপত্র)

Unit III (10 Hours)

সাংবাদিকতাঃ সংজ্ঞা, শ্রেণীবিভাগ, মাধ্যম

প্রতিবেদন রচনা

Compulsory Readings:

Study materials prepared by the department

অনুপম অধিকারী, ২০১২, সাংবাদিকতা ব্যবহারিক প্রয়োগ, আলপনা এন্টারপ্রাইজ, কলকাতা

পার্থ চট্টোপাধ্যায়, ২০১৮, গণজ্ঞাপনঃ তত্ত্বে ও প্রয়োগে, দে'জ পাবলিশিং, কলকাতা

Additional Resources:

কৌশিক ভট্টাচার্য, ২০০৪, জার্নালিজমের সহজ পাঠ, পারুল প্রকাশনী, কলকাতা

ABILITY ENHANCEMENT COURSE- B -II (AEC-B -II): BASIC BENGALI - 2

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
BASIC BENGALI - 2	2	2	0	0	(For students who have not studied the language)	NIL	BENGALI

Course Objectives: This course is aimed to teach the basic language skills in Bengali. It will introduce basic skills of the Bengali Language: it's simple sentence construction methods. The course intends to facilitate students acquiring primary skills of reading, writing and speaking Bengali along with building up an elementary vocabulary.

Course Learning Outcome: The course will enable the students to obtain the basic skills of reading, writing and speaking in Bengali along with building up a primary vocabulary. After completing the course they can read and write simple Bengali sentences, can figure out words having conjunct character, and can have basic everyday conversations.

Unit I (8 Hours)
Introduction to Bengali qualifiers/adjectives
Conjunctions and its usage

Unit II (10 Hours)
Introduction to Verb and Time/Tense
Conjugation of different verbs

Unit III (10 Hours)
Making simple sentences in Bengali (basic syntactical rules)
Making Negative sentences in Bengali
Making Interrogative sentences in Bengali
Making Complex sentences in Bengali

Essential/ recommended readings:

Mahapatra,Tushar Kanti.Bengali for Non Bengalis. Kolkata : Shishu Sahitya sangshod. August 1999.
Mahapatra,Tushar Kanti.Bengali for Beginners Kolkata : Shishu Sahitya sang shod. August 1999.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

COMMON POOL OF ABILITY ENHANCEMENT (AEC) COURSES

(For all the Ability Enhancement Courses offered by Department of Punjabi in Semester III/IV)

ABILITY ENHANCEMENT COURSE (AEC-4)

PUNJABI BHASHA ATE MEDIA

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
PUNJABI BHASHA ATE MEDIA	2	2	0	0	Class 12th pass in any subject	Studied Punjabi up to 8th Standard or *Working knowledge of Punjabi language*

LEARNING OBJECTIVES:

- To impart knowledge of the Punjabi language and media.
- To educate the students in understanding Social and Political concerns of Punjabi society, as reflected in contemporary Punjabi media.
- To address the demands of Punjabi Print and Electronic media.
- To enable students to learn about practical aspects of electronic and print media.

LEARNING OUTCOMES:

- Students will demonstrate an understanding of terms, themes, strategies and issues of Punjabi media.
- They can express their understanding of the relationship between Punjabi print and electronic media.
- They will be able to write and upload their views on social media platforms.
- They will be able to get recognition at National and International level through

their Blogs and YouTube Channels.

Unit I ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਤੇ ਮੀਡੀਆ (Punjabi Bhasha ate Media) (8 Hrs.)

- ਭਾਸ਼ਾ ਅਤੇ ਮੀਡੀਆ: ਅੰਤਰ-ਸੰਵਾਦ

  Bhasha ate Media: Antar-Sanvad
- ਪੰਜਾਬੀ ਮੀਡੀਆ: ਸੰਖੇਪ ਜਾਣ-ਪਛਾਣ

  Punjabi Media: Sankhep Jaan-Pachhan
- ਪੰਜਾਬੀ ਮੀਡੀਆ ਦੇ ਰੂਪ (ਪ੍ਰਿੰਟ ਅਤੇ ਇਲੈਕਟ੍ਰੋਨਿਕ ਮੀਡੀਆ)

  Punjabi Media de Roop (Print ate Electronic Media)

Unit II ਅਖ਼ਬਾਰ ਅਤੇ ਇਲੈਕਟ੍ਰੋਨਿਕ ਮੀਡੀਆ (Akhbar ate Electronic Media) (8 Hrs.)

- ਪੰਜਾਬੀ ਦੇ ਪ੍ਰਮੁੱਖ ਅਖ਼ਬਾਰਾਂ ਨਾਲ ਜਾਣ-ਪਛਾਣ

  Punjabi de Parmukh Akhbaran naal Jaan-Pachhan
- ਪੰਜਾਬੀ ਦੇ ਪ੍ਰਮੁੱਖ ਚੈਨਲਾਂ ਨਾਲ ਜਾਣ-ਪਛਾਣ

  Punjabi de Parmukh Channels naal Jaan-Pachhan
- ਪੰਜਾਬੀ ਦੀਆਂ ਸਾਹਿਤਕ ਅਤੇ ਸਭਿਆਚਾਰਕ ਵੈਬਸਾਇਟਸ ਨਾਲ ਜਾਣ-ਪਛਾਣ

  Punjabi dian Sahitak ate Sabhiyacharak Websites naal Jaan-Pachhan

Unit III ਅਖ਼ਬਾਰ: ਵਿਹਾਰਕ ਪੱਖ (Akhbar: Viharak Pakh) (7 Hrs.)

- ਪ੍ਰੈਸ ਨੋਟ ਅਤੇ ਖ਼ਬਰ ਤਿਆਰ ਕਰਨਾ

  Press Note ate Khabar Tiyar Karna
- ਫ਼ੀਚਰ ਲੇਖਣ

  Feature Lekhan
- ਸੰਪਾਦਕੀ ਖ਼ਤ

  Sampadaki Khat

Unit IV ਇਲੈਕਟ੍ਰੋਨਿਕ ਮੀਡੀਆ: ਵਿਹਾਰਕ ਪੱਖ (Electronic Media: Viharak Pakh)

(7 Hrs.)

- ਪੰਜਾਬੀ ਸਾਹਿਤਕ/ਸਭਿਆਚਾਰਕ ਯੂ-ਟਿਊਬ ਚੈਨਲ ਦਾ ਰਿਵਿਊ

  Punjabi Sahitak/Sabhiyacharak YouTube Channel da Review
- ਬਲਾਗ ਲੇਖਣ

  Blog Lekhan
- ਇੰਟਰਵਿਊ ਕਰਨਾ

  Interview Karna

ESSENTIAL READING:

- Bhajan Singh (Ed.) (1987), **Punjabi Patarkari Vichar Parvah**, Punjabi Academy, Delhi.
- Megha Singh (Dr.) (2019), **Punjabi Patarkari ate Pustak Reviewkari**, Saptrishi Publication,Chandigarh.
- Walia, Harjinder Singh and Parul Raizada (2014), **Patrarkar, Patrarkri ate Jan Sanchar,** Madan Publishing House, Patiala.

SUGGESTED READINGS:

- Bhullar, Gian, Harmeet Kaur (Dr.) (2015), **E-Lokdhara**, Unistar Books, Chandigarh.
- Gautam, Roop Chand (2003), **Electronic Media ke Sidhant**, Sh. Navraj Parkashan, Delhi.
- Kalia, Sanjiv (Dr.) (Ed.) (2012), **Cinema ate Samajik Tabdeeli**, Zohra Publication, Patiala.
- Rawail Singh (Dr.) (2017), **Media: Viharak Adhiyan**, Gracious, Patiala.
- Waraich, Amarjit Singh (2010), **Hun Tusi Khabran Suno**, Punjabi University, Patiala.
- Thapar, Prithvi Raj (Dr.) (2011), **Punjabi Media**, Manpreet Parkashan, Delhi.
- Thapar, Prithvi Raj (Dr.) (2012), **Sanchar, Takneek te Multimedia**, Manpreet Parkashan, Delhi.

***(Note: Teachers are free to recommend additional related standard source books, if required so.)**

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

ABILITY ENHANCEMENT COURSE (AEC-5)

PUNJABI BHASHA ATE COMPUTER

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Punjabi Bhasha ate Computer	2	2	0	0	Class 12th pass in any subject	Studied Punjabi up to 8th Standard **or** ***Working knowledge of Punjabi language***

LEARNING OBJECTIVES:

- To enable students to learn about basic concepts of Computer and Punjabi Language.
- To provide knowledge about computer fundamentals, Punjabi Language and tools, applications, software and different models of Computational Linguistics.

LEARNING OUTCOMES:

- The students will understand how Computer can help in advancement of Punjabi Language.
- They will be able to understand the Typing system, Unicode System and Punjabi Fonts
- They will understand the concept of Computational Linguistics.

Unit I ਕੰਪਿਊਟਰ ਅਤੇ ਪੰਜਾਬੀ ਭਾਸ਼ਾ (Computer ate Punjabi Bhasha) (8 Hrs.)

- ਕੰਪਿਊਟਰ: ਮੁਢਲੀ ਜਾਣ-ਪਛਾਣ

  Computer: Mudhli Jaan-Pachhan
- ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦਾ ਕੰਪਿਊਟਰੀਕਰਨ

  Punjabi Bhasha da Computerikaran
- ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੇ ਸਾਫ਼ਟਵੇਅਰ ਨਾਲ ਜਾਣ-ਪਛਾਣ

  Punjabi Bhasha de Software naal Jaan-Pachhan

Unit II ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਤੇ ਐੱਮ.ਐੱਸ ਆਫਿਸ (Punjabi Bhasha ate MS office) (8 Hrs.)

- ਐੱਮ.ਐੱਸ ਵਰਡ

  MS Word
- ਪਾਵਰ ਪੁਆਇੰਟ ਪੇਸ਼ਕਾਰੀ

  Power Point Peshkari
- ਐਕਸਲ ਸ਼ੀਟ

  Excel Sheet

Unit III ਫੌਂਟ ਅਤੇ ਪੰਜਾਬੀ ਫੌਂਟ (Font ate Punjabi Fonts) (7 Hrs.)

- ਰਮਿੰਗਟਨ ਫੌਂਟ

  Remington Fonts
- ਫੋਨੈਟਿਕ ਫੌਂਟ

  Phonetic Fonts
- ਯੂਨੀਕੋਡ ਫੌਂਟ

  Unicode Fonts

Unit IV ਕੰਪਿਊਟਰ ਅਤੇ ਪੰਜਾਬੀ ਦੇ ਸਾਫ਼ਟਵੇਅਰ (Computer and Punjabi de Software) (7 Hrs.)

- ਅੱਖਰ

  Akhar
- ਗੂਗਲ ਇਨਪੁੱਟ ਟੂਲਜ਼

  Google Input Tools
- ਫੌਂਟ ਕਨਵਰਟਰ

  Font Convertor

Essential Readings:

- Jalwanna, Amandeep Kaur, Raj, Harminder Singh. (2013), **Daftari Varton lai Computer Kiven Sikhiye**, Tarakbharti Parkashan, Barnala.
- Kamboj, C.P. (2010), **Computer ate Punjabi Bhasha**, Lokgeet Parakashan, Chandigarh.

Suggested Readings:

- Juneja, Jagmohan Singh (2008), **Computer: Muddhli Jankari ate Upyog**, Punjabi University,Patiala.
- Kamboj, C.P. (2010), **Cyber Sansar ate Punjabi Bhasha**, Lokgeet Parkashan, Chandigarh.
- Kamboj, C.P. (2012), **Computer Vigyan**, Punjabi University, Patiala.
- Pawan Kumar (2007), **Computer Jaan-Pachhaan**, Lokgeet Parkashan, Chandigarh.
- Rajiv Khanna (2007), **Computer Application,** New Age International Private Ltd, New Delhi.

Internet Resources:

www.akhariwp.com

***(Note: Teachers are free to recommend additional related standard source books, if required so.)**

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

ABILITY ENHANCEMENT COURSE-6 (AEC-6)

PUNJABI BHASHA ATE ANUVAD

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Punjabi Bhasha ate Anuvad	2	2	0	0	Class 12th pass in any subject	Studied Punjabi up to 8th Standard **or** ***Working knowledge of Punjabi language***

LEARNING OBJECTIVES:

- The purpose of this course is to enhance student's Language and translation skills.
- The study of this course will help the students to develop their skills in Punjabi Language and their translation aptitude.
- The course will provide them a broad perspective of translation and Punjabi Language.

LEARNING OUTCOMES:

- The students will be able to enhance their writing skills in Punjabi language through translation.
- They will be able to do translation from English/Hindi to Punjabi language.
- The students will be able to understand Translation through online resources and also technical terminology.

UNIT 1: ਭਾਸ਼ਾ ਅਤੇ ਅਨੁਵਾਦ: ਅੰਤਰ-ਸੰਵਾਦ (Bhasha ate Anuvad: Antar-Sanvad) (7 Hrs.)

- ਬਹੁ-ਭਾਸ਼ਾਈ ਅੰਤਰ-ਸੰਵਾਦ

  Bahu-Bhashai Antar- Sanvad
- ਮਾਨਵੀ ਅਨੁਵਾਦ

  Manvi Anuvad
- ਮਸ਼ੀਨੀ ਅਨੁਵਾਦ

  Machini Anuvad

UNIT 2: ਅਨੁਵਾਦ ਅਭਿਆਸ (Anuvad Abhiyas) (7 Hrs.)

- ਅਨੁਵਾਦ ਬਾਰੇ ਸੰਖੇਪ ਜਾਣ-ਪਛਾਣ

  Anuvad bare Sankhep Jaan-Pachhan
- ਹਿੰਦੀ/ਅੰਗਰੇਜ਼ੀ ਤੋਂ ਪੰਜਾਬੀ ਵਿਚ ਸ਼ਬਦਾਂ ਦਾ ਅਨੁਵਾਦ

  Hindi/Angrezi ton Punjabi vich Shabadan da Anuvad
- ਹਿੰਦੀ/ਅੰਗਰੇਜ਼ੀ ਤੋਂ ਪੰਜਾਬੀ ਵਿਚ ਵਾਕਾਂ ਦਾ ਅਨੁਵਾਦ

  Hindi/Angrezi ton Punjabi vich Vaakan da Anuvad

UNIT 3: ਰਚਨਾਤਮਕ ਅਨੁਵਾਦ (Rachnatamak Anuvad) (8 Hrs.)

- ਪੈਰਾ ਅਨੁਵਾਦ (ਹਿੰਦੀ/ਅੰਗਰੇਜ਼ੀ ਤੋਂ ਪੰਜਾਬੀ)

  Para Anuvad (Hindi/Angrezi ton Punjabi)
- ਵਿਗਿਆਪਨ ਅਨੁਵਾਦ (ਹਿੰਦੀ/ਅੰਗਰੇਜ਼ੀ ਤੋਂ ਪੰਜਾਬੀ)

  Vigyapan Anuvad (Hindi/Angrezi ton Punjabi)
- ਖ਼ਬਰ ਅਨੁਵਾਦ (ਹਿੰਦੀ/ਅੰਗਰੇਜ਼ੀ ਤੋਂ ਪੰਜਾਬੀ)

  Khabar Anuvad (Hindi/Angrezi ton Punjabi)

UNIT 4: ਤਕਨੀਕੀ ਸ਼ਬਦਾਵਲੀ ਦਾ ਪੰਜਾਬੀ ਅਨੁਵਾਦ (Takniki Shabadvali da Punjabi Anuvad) (8 Hrs.)

- ਦਫ਼ਤਰੀ ਸ਼ਬਦਾਵਲੀ ਦਾ ਪੰਜਾਬੀ ਅਨੁਵਾਦ

  Dafatri Shabadavali da Punjabi Anuvad
- ਬੈਂਕ ਨਾਲ ਸੰਬੰਧਤ ਸ਼ਬਦਾਵਲੀ ਦਾ ਪੰਜਾਬੀ ਅਨੁਵਾਦ

  Bank naal Sambandhat Shabadavali da Punjabi Anuvad
- ਰੇਲਵੇ ਨਾਲ ਸੰਬੰਧਤ ਸ਼ਬਦਾਵਲੀ ਦਾ ਪੰਜਾਬੀ ਅਨੁਵਾਦ

  Railway naal Sambandhat Shabadavali da Punjabi Anuvad

ESSENTIAL READINGS:

- Jaspal Kaur (Dr.) (2013), **Anuvad te Maukhik Anuvad Kala**, Manpreet Parkashan, Delhi.
- **Lazmi Punjabi**-11 (11vi Shreni Layi) (2016), Punjab School Sikkhia Board, Sahibzada Ajeet Singh Nagar.
- Reddy, Ra. Ramachandra (2020), **Anuvad de Siddhant: Samasiyavan ate Hal,** Tr. Ranju Bala, Sahitya Akedemi, Delhi.

SUGGESTED READINGS:

- Bhola Nath Tiwari (2018), **Anuvad Vigyan**, Kitabghar Prakashan, Delhi.
- Harkirat Singh, (1988), **Punjabi Baare,** Punjabi University, Patiala.
- Sushil Kumar (2003), **Anuvad da Samvaad**, Udaan Publication, Mansa.

***(Note: Teachers are free to recommend additional related standard resource books, if required so.)**

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

AEC - Hindi D
विदेशी विद्यार्थियों के लिए पाठ्यक्रम

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
AEC - Hindi D (विदेशी विद्यार्थियों के लिए पाठ्यक्रम)	**2**	**2**	**--**	**--**	**विदेशी विद्यार्थियों के लिए**	**विदेशी विद्यार्थियों के लिए**

पाठ्यक्रम का उद्देश्य (Learning Objectives):

1. विद्यार्थी की भाषाई दक्षता और भाषा-कौशल को बढ़ावा देना
2. हिंदी भाषा में व्यावहारिक कार्य को प्रोत्साहन देना

पाठ्यक्रम अधिगम प्रतिफल (Learning outcomes):

1. भाषा के शुद्ध उच्चारण, रचनात्मक लेखन, अनौपचारिक/औपचारिक लेखन का अभ्यास कराना
2. हिंदी भाषा में अभिव्यक्ति कौशल का विकास

सेमेस्टर III

इकाई 1: भारतीय संस्कृति एवं जन-जीवन (सामान्य परिचय)

- भारत के महत्वपूर्ण दर्शनीय स्थल (कोई पांच)
- भारतीय भोजन

- भारतीय पर्व, उत्सव और मेले
- पारंपरिक भारतीय वेशभूषा

इकाई 2: हिंदी लेखन अभ्यास

- संवाद लेखन (किसी नाटक अथवा फिल्म के माध्यम से)
- किसी घटना, दृश्य अथवा स्थल का वर्णन
- पत्र-लेखन (अनौपचारिक)
- अपठित गद्यांश

संदर्भ ग्रंथ:

1. स्वयं हिंदी सीखें : वी. आर. जगन्नाथन
2. हिंदी व्याकरण - कामता प्रसाद गुरु, नागरी प्रचारिणी सभा, काशी
3. हिंदी : शब्द, अर्थ, प्रयोग - हरदेव बाहरी, अभिव्यक्ति प्रकाशन, दिल्ली
4. हिंदी का समसामयिक व्याकरण - यमुना काचरू, मैकमिलन, नई दिल्ली
5. Basic Hindi Course for Foreigners, Central Hindi Institute, Agra, UP Basic Hindi Vocabulary, Ministry of Education, Govt. of India.
6. English-Hindi Conversational Guide & Hindi-English Conversational Guide, Central Hindi Directorate, New Delhi
7. Fairbanks, G & Mishra, 8.G. Spoken and written Hindi Cornell University Press, New York
8. Fairbanks, G & Pandit, P.B.: A Spoken approach, Deccan College, Pune
9. McGregor, R.S. Exercises in spoken Hindi, Oxford University Press, Oxford, England
10. Verma, Vimlesh Kanti: Learner's Hindi-English Dictionary, Dreamland Publication, New Delhi

AEC – Hindi E
अनिवार्य हिंदी पाठ्यक्रम – 1

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
AEC-Hindi E (अनिवार्य हिंदी पाठ्यक्रम – 1)	2	2	--	--	12वीं की परीक्षा उत्तीर्ण की हो	उन भारतीय विद्यार्थियों के लिए जिन्होंने 8वीं तक हिंदी की परीक्षा उत्तीर्ण नहीं की है।

पाठ्यक्रम का उद्देश्य (Learning Objectives):

1. हिंदी भाषा-कौशल का संवर्धन
2. व्यावहारिक जीवन में हिंदी भाषा का सफलतापूर्वक प्रयोग

पाठ्यक्रम अधिगम प्रतिफल (Learning outcomes):

1. भाषा के शुद्ध उच्चारण, रचनात्मक लेखन, अनौपचारिक/औपचारिक लेखन का अभ्यास कराना
2. हिंदी भाषा में अभिव्यक्ति-कौशल का विकास

Sem-I & II

इकाई 1: हिंदी में वार्तालाप (प्रारंभिक स्तर) **(1-7 सप्ताह)**

- स्व-परिचय, मेरा परिवार
- मेरा दैनिक कार्यक्रम
- टेलीफोन / मोबाईल पर हिंदी में बातचीत
- बाजार, मॉल में सामान्य बातचीत का अभ्यास
- रेलवे स्टेशन, मेट्रो, यातायात के अन्य साधन

इकाई 2: हिंदी का व्यावहारिक व्याकरण (प्रारंभिक स्तर) **(8-15 सप्ताह)**

- हिंदी वर्णमाला – स्वर, व्यंजन, संयुक्त व्यंजन
- हिंदी संज्ञा शब्द – वचन व लिंग के आधार पर

- हिंदी सर्वनाम
- हिंदी विशेषण शब्द
- हिंदी क्रिया

संदर्भ ग्रंथ:

1. स्वयं हिंदी सीखें : वी. आर. जगन्नाथन
2. हिंदी व्याकरण – कामताप्रसाद गुरु, नागरी प्रचारिणी सभा, काशी
3. हिंदी : शब्द, अर्थ, प्रयोग – हरदेव बाहरी, अभिव्यक्ति प्रकाशन, दिल्ली
4. हिंदी का समसामयिक व्याकरण – यमुना काचरू, मैकमिलन, नई दिल्ली
5. सामान्य हिंदी – डॉ. पृथ्वीनाथ पांडेय, नालंदा पब्लिशिंग हाउस, इलाहाबाद
6. मानक हिंदी व्याकरण – डॉ. नरेश मिश्र, राधाकृष्ण प्रकाशन, नयी दिल्ली
7. Basic Hindi Course for Foreigners, Central Hindi Institute, Agra, UP Basic Hindi Vocabulary, Ministry of Education, Govt. of India.
8. English-Hindi Conversational Guide & Hindi-English Conversational Guide, Central Hindi Directorate, New Delhi
9. Fairbanks, G & Mishra, 8.G. Spoken and written Hindi Cornell University Press, New York
10. Fairbanks, G & Pandit, P.B.: A Spoken approach, Deccan College, Pune
11. McGregor, R.S. Exercises in spoken Hindi, Oxford University Press, Oxford, England
12. Verma, Vimlesh Kanti: Learner's Hindi-English Dictionary, Dreamland Publication, New Delhi

AEC – Hindi E
अनिवार्य हिंदी पाठ्यक्रम – 2

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
AEC-Hindi E (अनिवार्य हिंदी पाठ्यक्रम – 2)	2	2	--	--	12वीं की परीक्षा उत्तीर्ण की हो	उन भारतीय विद्यार्थियों के लिए जिन्होंने 8वीं तक हिंदी की परीक्षा उत्तीर्ण नहीं की है।

पाठ्यक्रम का उद्देश्य (Learning Objectives):

1. हिंदी भाषा-कौशल का संवर्धन
2. व्यावहारिक जीवन में हिंदी भाषा का सफलतापूर्वक प्रयोग

पाठ्यक्रम अधिगम प्रतिफल (Learning outcomes):

1. भाषा के शुद्ध उच्चारण, रचनात्मक लेखन, अनौपचारिक/औपचारिक लेखन का अभ्यास कराना
2. हिंदी भाषा में अभिव्यक्ति-कौशल का विकास

Semester III/IV

इकाई 1: देवनागरी लिपि का व्यावहारिक ज्ञान (1-7 सप्ताह)

- अनुस्वार (बिंदु) और अनुनासिक (चंद्र बिंदु) के प्रयोग के नियम
- विदेशी ध्वनियों का देवनागरी लिप्यंतरण
- हिंदी विराम चिह्न
- हिंदी की वाक्य संरचना के सामान्य नियम

इकाई 2: हिंदी में लेखन अभ्यास (8-15 सप्ताह)

- कहानी, निबंध लेखन
- यात्रा, दृश्य, घटना का वर्णन
- संवाद लेखन (किसी नाटक अथवा फिल्म के माध्यम से)
- अपठित गद्यांश

संदर्भ ग्रंथ:

1. स्वयं हिंदी सीखें : वी. आर. जगन्नाथन
2. हिंदी व्याकरण – कामताप्रसाद गुरु, नागरी प्रचारिणी सभा, काशी
3. हिंदी : शब्द, अर्थ, प्रयोग – हरदेव बाहरी, अभिव्यक्ति प्रकाशन, दिल्ली
4. हिंदी का समसामयिक व्याकरण – यमुना काचरू, मैकमिलन, नई दिल्ली
5. सामान्य हिंदी – डॉ. पृथ्वीनाथ पांडेय, नालंदा पब्लिशिंग हाउस, इलाहाबाद
6. मानक हिंदी व्याकरण – डॉ. नरेश मिश्र, राधाकृष्ण प्रकाशन, नयी दिल्ली
7. रचनात्मक लेखन – प्रो. रमेश गौतम, ओरिएंट ब्लैक स्वान पब्लिकेशन, दिल्ली
8. Basic Hindi Course for Foreigners, Central Hindi Institute, Agra, UP Basic Hindi Vocabulary, Ministry of Education, Govt. of India.
9. English-Hindi Conversational Guide & Hindi-English Conversational Guide, Central Hindi Directorate, New Delhi
10. Fairbanks, G & Mishra, 8.G. Spoken and written Hindi Cornell University Press, New York
11. Fairbanks, G & Pandit, P.B.: A Spoken approach, Deccan College, Pune
12. McGregor, R.S. Exercises in spoken Hindi, Oxford University Press, Oxford, England
13. Verma, Vimlesh Kanti: Learner's Hindi-English Dictionary, Dreamland Publication, New Delhi

सेमेस्टर III व IV

AEC 2: व्यावहारिक हिंदी (हिंदी क)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
व्यावहारिक हिंदी	02	2	--	---	**हिंदी क** (उन विद्यार्थियों के लिए जिन्होंने 12वीं कक्षा तक हिंदी पढ़ी है।)	**हिंदी क** (उन विद्यार्थियों के लिए जिन्होंने 12वीं कक्षा तक हिंदी पढ़ी है।)	**हिंदी**

पाठ्यक्रम का उद्देश्य (Course Objectives):

- विद्यार्थी की भाषाई दक्षता और भाषा-कौशल को बढ़ावा देना
- भाषा प्रयोगशाला के माध्यम से प्रायोगिक कार्य को प्रोत्साहन देना
- रोजगार सम्बन्धी क्षेत्रों के लिए तैयार करना
- विभिन्न क्षेत्रों में हिंदी के प्रयोग की जानकारी
- हिंदी प्रयोग से जुड़े फील्ड वर्क पर आधारित विश्लेषण और लेखन पर बल देना

पाठ्यक्रम अधिगम प्रतिफल (Course Learning Outcomes):

- भाषा के शुद्ध उच्चारण, रचनात्मक लेखन, औपचारिक लेखन तथा तकनीकी शब्दों से विद्यार्थी अवगत हो सकेगा।
- स्नातक स्तर के विद्यार्थी को भाषायी सम्प्रेषण की समझ और संभाषण से सम्बन्धित विभिन्न पक्षों से अवगत हो सकेगा।
- वार्तालाप, भाषण, संवाद, समूह चर्चा, अनुवाद के माध्यम से विद्यार्थी में अभिव्यक्ति कौशल का विकास हो सकेगा।
- समूह चर्चा, परियोजना के द्वारा विद्यार्थी में आलोचनात्मक क्षमता का विकास हो सकेगा।

SYLLABUS OF AEC-2 (Semester – III/IV)

इकाई 1 : व्यावहारिक हिंदी (1-7 सप्ताह)

- व्यावहारिक हिंदी के विविध रूप (सामान्य परिचय)
- बैंको में प्रयोग होने वाली हिंदी
- संपर्क भाषा के रूप में हिंदी का महत्त्व
- बम्बईया हिंदी, कलकतिया हिंदी, हैदराबादी हिंदी

इकाई 2 : संपर्क भाषा के रूप में हिंदी के विविध रूप (8-15 सप्ताह)

- सार्वजनिक स्थानों पर हिंदी का प्रयोग (अस्पताल, बाज़ार, मॉल, मंडी)

- बैंकों में प्रचलित पारिभाषिक शब्दावली
- कार्यालयों में प्रचलित हिंदी की पारिभाषिक शब्दावली
- बाज़ार / दर्शनीय स्थल / क्रिकेट मैच का अनुभव-लेखन

सहायक पुस्तकें:

1. हिंदी भाषा – हरदेव बाहरी, अभिव्यक्ति प्रकाशन, दिल्ली
2. प्रयोजनमूलक हिंदी: सिद्धांत और प्रयोग – दंगल झालटे, वाणी प्रकाशन, दिल्ली संस्करण 2010
3. मानक हिंदी का स्वरूप – भोलानाथ तिवारी, प्रभात प्रकाशन, दिल्ली संस्करण 2008
4. व्यावहारिक हिंदी एवं प्रयोग – डॉ. ओम प्रकाश, राजपाल एंड संस, संस्करण 2003
5. प्रायोगिक हिंदी – (सं) रमेश गौतम, ओरिएंट ब्लैकस्वान, प्रकाशन संस्करण 2013

मूल्यांकन पद्धति: (Assessment Method)

- कुल अंक: 80
- लिखित परीक्षा: 60 अंक
- आंतरिक मूल्यांकन: 20 अंक

AEC 2 : जनसंचार और रचनात्मक लेखन (हिंदी ख)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
जनसंचार और रचनात्मक लेखन	02	2	--	--	**हिंदी** ख (उन विद्यार्थियों के लिए जिन्होंने 10वीं कक्षा तक हिंदी पढ़ी है।)	**हिंदी** ख (उन विद्यार्थियों के लिए जिन्होंने 10वीं कक्षा तक हिंदी पढ़ी है।)	**हिंदी**

पाठ्यक्रम का उद्देश्य (Course Objetive):

- विद्यार्थियों के अभिव्यक्ति कौशल को विकसित करना।
- प्रिंट एवं इलेक्ट्रॉनिक माध्यमों के लिए लेखन कार्य की समझ विकसित करना
- हिंदी भाषा में रचनात्मक लेखन की ओर प्रेरित करना।
- विद्यार्थियों में कल्पनाशीलता और रचनात्मक लेखन का विकास करना।
- रचनात्मक लेखन के विविध क्षेत्रों की कार्यशैली का अध्ययन।

पाठ्यक्रम अधिगम प्रतिफल (Course Learning Outcomes):

- विद्यार्थियों के मौखिक और लेखन कौशल को बढ़ाया जा सकेगा।
- विद्यार्थियों को प्रिंट एवं इलेक्ट्रॉनिक लेखन की ओर अग्रसर किया जा सकेगा।
- आज शिक्षा का व्यवसाय से भी संबंध है। यह पाठ्यक्रम वर्तमान संदर्भों के अनुकूल स्थापित ह सकेगा।
- विद्यार्थियों को साहित्य लेखन की जानकारी का ज्ञान विकसित होगा।
- रचनात्मक लेखन के सैद्धांतिक और व्यावहारिक पक्षों से परिचित हो सकेंगे।

SYLLABUS OF AEC-2 (Semester – III/IV)

इकाई 1 : रचनात्मक लेखन का स्वरूप (1-7 सप्ताह)

- रचनात्मक लेखन का अर्थ और महत्व
- रचनात्मक लेखन के विविध रूप
- जनसंचार माध्यमों के लिए रचनात्मक लेखन
- जनसंचार माध्यमों में हिंदी भाषा

इकाई 2: विविध माध्यमों के लिए रचनात्मक लेखन (8-15 सप्ताह)

- प्रिंट माध्यम के लिए लेखन (साक्षात्कार, यात्रा अनुभव लेखन)
- इलेक्ट्रॉनिक माध्यमों के लिए लेखन (संवाद लेखन और गीत)
- विज्ञापन लेखन

सहायक पुस्तकें:

1. रचनात्मक लेखन – प्रो. रमेश गौतम, भारतीय ज्ञानपीठ प्रकाशन, नई दिल्ली, संस्करण 2016
2. कथा पटकथा – मन्नू भंडारी, वाणी प्रकाशन, नई दिल्ली, संस्करण 2006
3. पटकथा लेखन: एक परिचय – मनोहर श्याम जोशी, राजकमल प्रकाशन, नई दिल्ली, 2000
4. जनसंचार माध्यम: सम्प्रेषण और विकास – देवेन्द्र इस्सर, इन्द्रप्रस्थ प्रकाशन, दिल्ली
5. जनसंचार माध्यमों का सामाजिक चरित्र – जवरीमल्ल पारिख, अनामिका प्रकाशन, दिल्ली

मूल्यांकन पद्धति: (Assessment Method)

- कुल अंक: 80
- लिखित परीक्षा: 60 अंक
- आंतरिक मूल्यांकन: 20 अंक

AEC 2 : हिन्दी भाषा और तकनीक (हिंदी ग)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
हिंदी भाषा और तकनीक	02	2	--	--	**हिंदी ग** (उन विद्यार्थियों के लिए जिन्होंने 8वीं कक्षा तक हिंदी पढ़ी है।)	**हिंदी ग** (उन विद्यार्थियों के लिए जिन्होंने 8वीं कक्षा तक हिंदी पढ़ी है।)	**हिंदी**

पाठ्यक्रम का उद्देश्य (Course Objectives):

- विद्यार्थी की भाषाई दक्षता और भाषा-कौशल को बढ़ावा देना
- भाषा प्रयोगशाला के माध्यम से प्रायोगिक कार्य को प्रोत्साहन देना
- हिंदी भाषा दक्षता और तकनीक के अंतः संबंध को रेखांकित करना
- प्रभावी सम्प्रेषण का महत्त्व
- भाषिक सम्प्रेषण के स्वरूप एवं सिद्धांतों से विद्यार्थी का परिचय
- विभिन्न माध्यमों की जानकारी

पाठ्यक्रम अधिगम प्रतिफल (Course Learning Outcomes):

- भाषा के शुद्ध उच्चारण, रचनात्मक लेखन, औपचारिक लेखन तथा तकनीकी शब्दों से अवगत कराना
- स्नातक स्तर के विद्यार्थी को भाषाई सम्प्रेषण की समझ और संभाषण से सम्बन्धित विभिन्न पक्षों से अवगत कराना

SYLLABUS OF AEC-2 (Semester – III/IV)

इकाई 1 : हिंदी भाषा और प्रौद्योगिकी (1-7 सप्ताह)

- ई-गवर्नेंस में हिंदी का प्रयोग
- राजभाषा के प्रचार-प्रसार में कम्प्यूटर की भूमिका
- हिंदी और वेब डिजाइनिंग
- हिंदी के संदर्भ में यूनिकोड का प्रयोग

इकाई 2 : तकनीक और हिंदी भाषा (8-15 सप्ताह)

- इंटरनेट पर हिंदी की प्रमुख पत्रिकाओं की सूची बनाना
- हिंदी की किसी एक प्रमुख वेबसाइट की भाषा का विश्लेषण करना

- क्म्प्यूटर पर हिंदी में स्ववृत ,एस.एम.एस. और संदेश लेखन
- मशीनी अनुवाद से संबंधित प्रमुख सॉफ्टवेयर की सूची बनाना

सहायक पुस्तकें:

1. सृजनात्मक साहित्य – रवींद्रनाथ श्रीवास्तव, वाणी प्रकाशन, दिल्ली
2. व्यवहारिक हिंदी शुद्ध प्रयोग – ओमप्रकाश, राजपाल एंड संस, दिल्ली
3. हिंदी भाषा का आधुनिकीकरण एवं मानकीकरण – डॉ. त्रिभुवननाथ शुक्ल, वाणी प्रकाशन, दिल्ली
4. रचनात्मक लेखन – (सं.) प्रो. रमेश गौतम, भारतीय ज्ञानपीठ प्रकाशन, दिल्ली
5. तकनीकी सुलझने – बालेंदु शर्मा दधीचि, ईप्रकाशकडॉटकॉम
6. https://balendu.com/

मूल्यांकन पद्धति: (Assessment Method)

- कुल अंक: 80
- लिखित परीक्षा: 60 अंक
- आंतरिक मूल्यांकन: 20 अंक

- हिंदी की वाक्य संरचना के सामान्य नियम

इकाई 2: हिंदी में लेखन अभ्यास

(8-15 सप्ताह)

- कहानी, निबंध लेखन
- यात्रा, दृश्य, घटना का वर्णन
- संवाद लेखन (किसी नाटक अथवा फिल्म के माध्यम से)
- अपठित गद्यांश

संदर्भ ग्रंथ:

1. स्वयं हिंदी सीखें : वी. आर. जगन्नाथन
2. हिंदी व्याकरण - कामताप्रसाद गुरु, नागरी प्रचारिणी सभा, काशी
3. हिंदी : शब्द, अर्थ, प्रयोग - हरदेव बाहरी, अभिव्यक्ति प्रकाशन, दिल्ली
4. हिंदी का समसामयिक व्याकरण - यमुना काचरू, मैकमिलन, नई दिल्ली
5. सामान्य हिंदी - डॉ. पृथ्वीनाथ पांडेय, नालंदा पब्लिशिंग हाउस, इलाहाबाद
6. मानक हिंदी व्याकरण - डॉ. नरेश मिश्र, राधाकृष्ण प्रकाशन, नयी दिल्ली
7. रचनात्मक लेखन - प्रो. रमेश गौतम, ओरिएंट ब्लैक स्वान पब्लिकेशन, दिल्ली
8. Basic Hindi Course for Foreigners, Central Hindi Institute, Agra, UP Basic Hindi Vocabulary, Ministry of Education, Govt. of India.
9. English-Hindi Conversational Guide & Hindi-English Conversational Guide, Central Hindi Directorate, New Delhi
10. Fairbanks, G & Mishra, 8.G. Spoken and written Hindi Cornell University Press, New York
11. Fairbanks, G & Pandit, P.B.: A Spoken approach, Deccan College, Pune
12. McGregor, R.S. Exercises in spoken Hindi, Oxford University Press, Oxford, England
13. Verma, Vimlesh Kanti: Learner's Hindi-English Dictionary, Dreamland Publication, New Delhi

AEC 1: Sanskrit A: Advance Neeti Literature in Sanskrit

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
	02	02	00	NA	12th Pass	Nil	Sanskrit

Learning Objectives

This course aims at making the students acquainted with general outline of Sanskrit literature. This course will help the learners be familiar with the tradition of Prose literature with some focus on individual contributors of Sanskrit prose writing.

Learning outcomes

- The students will learn the advance form of Sanskrit language
- The stories and verses prescribed in the course will help the learners develop an understanding of the moral and ethical values that will be useful in their day-to-day life.
- They will be familiar with the rich history of Sanskrit Literature.
- This course will enhance their skills of chaste Sanskrit pronunciation as well as competence and performance of the language.
- This will help them translate and explain the prescribed Sanskrit texts in their native language.

SYLLABUS OF AEC-1 (Sanskrit A)

Unit: I **Credits: 01**

Course Content/Prescribed Books

Origin and development of Nītikāvya: Kathāsaritsāgara, Paňcatantra, Hitopadeśa, Cāṇakyanīti.

Unit: II **Credits: 01**

Course Content/Prescribed Books

Pancatantra, First Story, Verses: 1-35

(Translation, Explanation and Grammar)

Essential/recommended readings

- Pancatantra, Subodh Publications, ISBN: 9788170780403, 8170780403, 2017
- Pancatantra, Prashant Acharya, Notion Press Media Pvt Ltd., ISBN: 9798885915229
- Pancatantra,

Suggested readings

1. शर्मा, उमाशंकर ऋषि: संस्कृत साहित्य का इतिहास, चौखम्बा भारती अकादमी, वाराणसी
2. उपाध्याय, बलदेव: संस्कृत साहित्य का इतिहास, शारदा निकेतन, वाराणसी
3. प्रीतिप्रभा, गोयल: संस्कृत साहित्य का इतिहास, राजस्थानी ग्रन्थगार, जोधपुर
4. त्रिपाठी, राधावल्लभ: संस्कृत साहित्य का अभिनव इतिहास, विश्वविद्यालय प्रकाशन, वाराणसी
5. Keith, A.B., History of Classical Sanskrit Literature, MLBD, Delhi, हिन्दी अनुवाद सहित, मंगलदेव शास्त्री, मोतीलाल बनारसीदास, दिल्ली
6. M. Krishnamachariyar Shastri: History of Classical Sanskrit Literature, MLBD, Delhi
7. Gaurinath Shastri: A Concise History of Sanskrit Literature, MLBD, Delhi

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

Basic Structure of Question Paper & Division of Marks	**75**
Long Answer from each unit (2+2= 4)	04 x 12 = 48
Short Answer from each unit (2+2=4)	05x 04 = 20
Short Notes 2	02x3.5 = 07
Internal Assessment (Project/Discussion/Assignment/paper presentation/ Periodic tests etc.)	**25**
Total Marks: (I+II)	**(75+25) = 100**

AEC 1: Sanskrit B: Introductory Upanishad and Geeta

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
	02	02	00	NA	NA	Open to All	Sanskrit

Learning Objectives

This course aims at making

- the students acquainted with general outline of Sanskrit literature.
- the learners be familiar with the tradition of Indian Philosophical literature
- with some focus on individual contributors of Sanskrit prose writing.

Learning outcomes

The students will learn

- the teachings of Upanisads and Gita
- three major knowledge systems of Traditional Indian Philosophy
- the mantras and verses, prescribed in the course, will help the learners to develop an understanding of the moral and ethical values that will be useful in their day-to-day life.
- They will be familiar with the rich history of Sanskrit Literature.
- This course will enhance their skills of chaste Sanskrit pronunciation as well as competence and performance of the language also.
- This will help them translate and explain the prescribed Sanskrit texts in their native language.

SYLLABUS OF AEC-1

Unit: I **Credits: 01**

Course Content/Prescribed Books

General Introduction to Upanisads

Text Introduction to Ishavasyopanishad- Karma, Vidya-Avidya, Satya, Atman

Unit: II **Credits: 01**

Course Content/Prescribed Books

Introduction to Geeta: Background, Purpose,
Gyanyoga
Karmayoga
Bhaktiyoga

Essential/recommended readings

1. भगवद्गीता, शाङ्करभाष्य अनुवाद सहित, अनुवादक श्रीहरिकृष्णदास गोयन्दका, गीता प्रैस, गोरखपुर
2. Valmiki Ramayana – Valmiki.iitk.ac.in
3. गीताभाष्यनवाम्बरा- डॉ० शिवनारायण शास्त्री
4. Ishavasyopnishad- Geeta Press, Gorakhpur, 1992
5. Ishavasyopnishad- Swami Sharvananda, Shri RamKrishna Math, Mylapur, Madras, 1943
6. Ishavasyopnishad, Dr. Shashi Tiwari, Bhartiya Vidya Prakashan, Delhi, 1997

Suggested readings

1. Bhagawadgita with the commentary of Shankaracharya – A.K. Warrior,
2. Bhagawadgita – Dr. S. Radhakrishnan
3. Śrimadbhagavadgītā, The Scripture of Mankind, text in Devanagari with transliteration in English and notes by Swami Tapasyananda, Sri Ramakrishna Math, 1984

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

	Basic Structure of Question Paper & Division of Marks	**75**
i.	Long Answer from each unit (2+2= 4)	04 x 12 = 48
ii.	Short Answer (from each unit (2+2=4)	05x 04 = 20
iii.	Short Notes 2	02x3.5=7
II	**Internal Assessment (Project/Discussion/Assignment/ paper presentation/ Periodic tests etc.)**	**25**
	Total Marks: (I+II)	**(75+25) = 100**

AEC 1: Sanskrit C: Introductory Introduction to Sanskrit Language

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
	02	02	00	NA	12th Pass	Nil	Sanskrit

Learning Objectives

This course aims at making the students acquainted with general outline of Sanskrit Grammar and Composition. This course will enhance their skills of chaste Sanskrit pronunciation as well as competence and performance of the language.

Learning outcomes

- The students will learn the basic Sanskrit language.
- They will learn to create and understand this Language independently.
- This course will enhance the ability to understand classical Sanskrit texts.
- Through the practice of this prescribed syllabus, students will be able to enhance their knowledge of structural patterns of Sanskrit.

SYLLABUS OF AEC-1 (Intermediate)

Unit: II **Credits: 01**

Basic Sanskrit Sentence Formation (Active Voice) using the following:

कारक एवं विभक्ति: कर्त्ता, कर्म एवं करण

वचन एवं लिङ्ग:

शब्दरूप: राम, बालक, लता, अस्मद्, युष्मद्, तत्, इदम्, किम्, सर्व, हरि, मति, जल, फल, पुष्प, ज्ञान, भोजन, धन, गुरु

क्रियारूप: निम्नलिखित धातुओं का केवल लट्, लृट् एवं लङ् लकार में रूप:

भू, पठ्, लिख्, खाद्, चल्, गम् (गच्छ्), हस्, वद्, पा (पिब्), अस्, गै (गाय), भ्रम्,

स्था (तिष्ठ्), दृश् (पश्य्), पच्, वर्ष्, दा (यच्छ्)

शब्दकोश: संस्कृत सामान्य शब्दों के लिए शब्दकोश

यत्र, तत्र, कुत्र, श्व, अद्य, कथम्, यथा, तथा, च, अथवा

Unit: II **Credits: 01**

व्यावहारिक वाक्य संरचना

Essential/recommended readings

- पाण्डेय, राधामोहन: संस्कृत सहचर, स्टूडेंट्स फ्रेंड्स पटना, बिहार
- नौटियाल, चक्रधर: बृहद् अनुवाद चन्द्रिका, मोतीलाल बनारसीदास, दिल्ली
- रूपचन्द्रिका, डॉ० ब्रह्मानन्द त्रिपाठी , चौखम्बा सुरभारती प्रकाशन, वाराणसी

Suggested readings

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

Basic Structure of Question Paper & Division of Marks	**75**
Long Answer from each unit (2+2= 4)	04 x 12 = 48
Short Answer (from each unit (2+2=4)	05x 04 = 20
Short Notes 2	02x3.5 = 07
Internal Assessment (Project/Discussion/Assignment/ paper presentation/ Periodic tests etc.)	**25**
Total Marks: (I+II)	**(75+25) = 100**

AEC 2: Course A: Advance Ancient Indian Economy

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
	02	02	00		12th Pass	Nil	Sanskrit

Learning Objectives

The aim of this course is to make the students acquainted with various aspects of economic thought and Indian economy as propounded in the ancient Sanskrit texts from Vedic Saṁhita to later texts in the Dharamśāstra and Arthaśāstra traditions.

Learning outcomes

This course will enable the students to appreciate the fundamental concepts of Indian economic thoughts discussed in ancient Sanskrit texts such as Vedic Saṁhita, Kauṭilya's Arthaśāstra, Manusmṛiti etc. This session deals with the economic model of ancient India and financial growth of the state's thought through Sanskrit literature. Students will be able to understand various aspects of the taxation model in ancient India and they should be able to compare ancient and contemporary models.

SYLLABUS OF AEC-2 Course A

Unit: 1
Introduction to Ancient Indian Economy **Credit: 1**

Early and Later Vedic Period
Buddhist Period
Centralized Economy of Mauryan Period
Post Mauryan Period
Gupta and Post Gupta Period

Unit: 2 **Credit: 1**
Readings in Indian Economy:

Manusmṛiti- Chapter 7, Verse No- 123-138, Arthaśāstra- Second Adhikaraṇa, Sannidhātṛnicayakarma and Samāhrtṛsamudayaprasthāpanam

Essential/recommended readings

1. R.P Kangle (ed.) Arthaśāstra of Kauṭilya, Motilal Banarsidas, Delhi, 1965
2. P. Olivelle (ed. & trans), Manu code of law: A Critical Edition & translation of the Manava- Dharmasastra, UUP, New Delhi, 2006
3. R. S. Sharma, Aspects of Political Ideas & Institutions in Ancient India, Delhi, 1996
4. A. S. Altekar, State and Government in Ancient India, Motilal Banarsidas, Delhi, 2011
5. कपिलदेव द्विवेदी, वैदिक साहित्य एवं संस्कृति, वाराणसी, विश्वविद्यालय प्रकाशन, षष्ठ संस्करण, 2015
6. शर्मा, उमाशंकर ऋषि, संस्कृत साहित्य का इतिहास, चौखम्भा भारती अकादमी, वाराणसी

Suggested readings

1. कैलाशचन्द्र जैन, प्राचीन भारतीय समाजिक और आर्थिक संस्थाएं, मध्यप्रदेश हिन्दी ग्रन्थ अकादमी, भोपाल, 1976
2. शशि तिवारी, संस्कृत साहित्य में राष्ट्रवाद एवं भारतीय राजशास्त्र, विद्यानिधि प्रकाशन, दिल्ली, 2013
3. सहाय, शिवस्वरूप, प्राचीन भारत का सामाजिक एवं आर्थिक इतिहास, मोतीलाल बनारसीदास, दिल्ली, 2012

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

Basic Structure of Question Paper & Division of Marks	
Questions - 03 (from Unit 1)	03 x 15 = 45
Explanations 03 (from unit-2)	03 x 08 = 24
Short Notes 02	02x3 = 06
Total Marks: (I+II)	**75**

AEC 2: Course B: Intermediate Administrative Structure in Kauṭilya's Arthaśāstra

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
	02	02	00	NA	12th Pass	Nil	Sanskrit

Learning Objectives

The government policies mentioned in Arthaśāstra indicate that the ruler of the kingdom or the country should follow the duties assigned to him for the welfare of the people. The aim of this course is to make the students acquainted with various aspects of Administrative parts and his responsibilities mentioned in Kauṭilya's Arthaśāstra.

Learning outcomes

After going through this course, students will know the most important aspect of Arthaśāstra was public welfare even in an autocratic agrarian state. In addition, they will know King was the head and the main function of him was military judicial legislative and executive which in the present is the function of the president.

SYLLABUS OF AEC-1

Unit: 1 **Credit: 1**

Introduction to Kauṭilya's Arthaśāstra: Author, Structure of the Text, Editions and Translations, Introduction to all Adhikaraṇas.

Unit: 2 **Credit: 1**

Saptānga Theory

Concept of Welfare State

Samāharta

Sannidhātā

Dharmasthīya

Kaṇṭakaśodhana

Sitādhyakṣa

Essential/recommended readings

1. R.P Kangle (ed.) Arthaśāstra of Kauṭilya, Motilal Banarsidas, Delhi, 1965
2. उदयवीर शास्त्री (अनुवाद) कौटिल्य अर्थशास्त्र, मेहरचंद्र लक्ष्मणदास, दिल्ली, 1968
3. कैलाशचन्द्र जैन, प्राचीन भारतीय समाजिक और आर्थिक संस्थाएं, मध्यप्रदेश हिन्दी ग्रन्थ अकादमी, भोपाल, 1976
4. A. S. Altekar, State and Government in Ancient India, Motilal Banarsidas, Delhi, 2011
5. वाचस्पति गैरोला, कौटिलीयम् अर्थशास्त्रम् (हिन्दीव्याख्योपेतम्), वारणसी, चौखम्भा विद्याभवन, संस्करण 2015

Suggested readings

1. Kautilya Arthshastra, translated by R Shyamshastri, Delhi, Choukhamba Sanskrit Pratisthan.
2. R. S. Sharma, Aspects of Political Ideas & Institutions in Ancient India, Delhi, 1996
3. शशि तिवारी, संस्कृत साहित्य में राष्ट्रवाद एवं भारतीय राजशास्त्र, विद्यानिधि प्रकाशन, दिल्ली, 2013
4. U.N. Ghosal, A History of Indian Political Ideas, Bombay, 1956.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

Basic Structure of Question Paper & Division of Marks	**75**
Questions 03 (from Unit 1)	03 x 10 = 30
Questions 02 (from Unit 2)	03 x 10 = 30
Short Notes (from Unit 2)	03 x 05 = 15
Total Marks: (I+II)	**75**

AEC 2: Course C: (Introductory) **Culture and Society** संस्कृतिः समाजश्च

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
	02	02	00	NA	12th Pass	Nil	Sanskrit

Learning Objectives

To provide the fundamentals of Indian culture and society in Sanskrit Literature. This course is envisioning to help students learn the various aspects of Indian Culture and Society as depicted in Sanskrit Literature.

Learning outcomes

Students will learn and evaluate institution of marriage, status of women and Indian Social Institutions. They will be equipped with the primary resources to understand the essence of Indian Perspective of Sociology. They will be able to conduct independent research in the abovementioned areas. This course will also allow them to understand the society that framed India.

SYLLABUS OF AEC-1

Unit: I **Credit: 01**

Essence of Indian Culture-
Spirituality- Ishavasyopnishad (1st Mantra); Sthitapragya- Srimadbhagwadgita (2/ 54-59)
Life Style -Satya, Ahimsa, Asteya, Santosh, Tapas, Swadhayaya, Ishvara pranidhan (with special reference to Yogasutra);
Social Conduct and Harmony- Rigveda, SanjnanaSukta, 10. 191 (2-4)

Unit: II **Credit: 01**

Indian Social Thinkers- Fundamental thoughts of the following:
Manu, Gautam Buddha, Kautilya, Swami Vivekananda, Swami Dayanand Sarasvati, Mahatma Gandhi

Essential/recommended readings

1. Ishavasyopnishad- Geeta Press, Gorakhpur, 1992
2. Ishavasyopnishad- Swami Sharvananda, Shri RamKrishna Math, Mylapur, Madras, 1943
3. Ishavasyopnishad, Dr. Shashi Tiwari, Bhartiya Vidya Prakashan, Delhi, 1997
4. Kautilya Arthashastra, Vachaspati Gairola, Chaukhamba Vidya Bhawan, Varanasi, 2017
5. Kautilya Arthashastra, R.P. Kangle, Motillal Banarasidas publishers, Delhi, 1997
6. Manu's Code of law- (Ed. & Trans.) Olivelle, P. (A Critical Edition and Translation of the Manava- Dharmashastra, OUP, New Delhi, 2006.
7. Rigveda Samhita, (6 Vols)- Eng. Tr. H.H. Wilson, Bangalore Printing & Publishing Co., Bangalore, 1946
8. Vivekananda Sahitya, Vol.1-10, Advaita Ashram, 2014
9. ऋग्वेद संहिता, सायणाचार्य कृत भाष्य एवं हिन्दी व्याख्या सहित, राम गोविंद त्रिवेदी, चौखम्बा संस्कृत प्रतिष्ठान, दिल्ली
10. पातंजल योगदर्शन,व्याख्या – स्वामी श्री ब्रह्मलीन मुनि, चौखम्बा प्रकाशन, वाराणसी, 2007
11. पातंजल योगदर्शन, डॉ सुरेशचंद्र श्रीवास्तव्, चौखम्बा सुरभारती प्रकाशन वाराणसी, 2016
12. बौद्ध दर्शन, राहुल सांकृत्यायन, किताब महल, इलाहाबाद, 1944
13. श्रीमद्भगवद्गीता, जयदयाल गोयन्दका, गीताप्रेस गोरखपुर, संवत 2067
14. भगवद्गीता, डॉ सर्वपल्ली राधाकृष्णन्, हिन्द पॉकेट बुक्स, नई दिल्ली, 2011
15. कौटिल्य अर्थशास्त्र, उदयवीर शास्त्री, मेहरचंद लक्ष्मणदास, दिल्ली, 1969-1970
16. गाँधी, महात्मा- सत्य के प्रयोग, सस्ता साहित्य मण्डल, नई दिल्ली, 1994
17. सरस्वती, दयानंद- सत्यार्थप्रकाश , राष्ट्रीय आर्य निर्मात्री सभा, रोहतक, हरियाणा, 2014
18. महाभारत (1-6 भाग)- हिन्दी अनुवाद सहित, (अनु) रामनारायण दत्त शास्त्री पाण्डेय, गीताप्रेस, गोरखपुर।
19. मनुस्मृति (1-13 भाग)- (संपादित एवं व्याख्या)- उर्मिला रुस्तगी, जे. पी. पब्लिशिंग हाउस, दिल्ली, 2005

Suggested readings

1. Prabhu, P.H.- Hindu Social Organization, Popular Publication, Mumbai, 1998
2. The Rigvedic People, B.B. Lal, Aryan Books International, India, 2015
3. जैन, कैलाशचंद्र - प्राचीन भारतीय सामाजिक और आर्थिक संस्थाएँ, मध्य प्रदेश हिन्दी ग्रंथ अकादमी, भोपाल, 1976
4. टंडन, किरण- भारतीय संस्कृति, ईस्टर्न बुक लिंकर्स, दिल्ली, 2017
5. पाण्डेय, राजबली – हिन्दू संस्कार (सामाजिक तथा धार्मिक अध्ययन), चौखम्बा विद्या भवन वाराणसी, 1957
6. सहाय, शिवस्वरूप, प्राचीन भारत का सामाजिक एवं आर्थिक इतिहास, मोतीलाल बनारसीदास, दिल्ली , 2014
7. काणे, पी. वी. – धर्मशास्त्र का इतिहास (1-4 भाग), अनुवाद अर्जुन चौबे काश्यप, हिन्दी समिति, लखनऊ, 1966-73

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

Basic Structure of Question Paper & Division of Marks		**75**
Long Questions 03 (from unit-1 and 2)	03 x 12	= 36
Short Answer Type Questions 3 (Unit 1 to 2)	03 x 08	= 24
Short Notes 03 (from 1-4 Units)	03 x 05	= 15
Total Marks : (I+II)		**75**

AEC-2 URDU A FOR III/IV SEM

ABILITY ENHANCEMENT COURSE-2 (AEC-2): URDU-A

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title &Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical / Practice			
Urdu-A, Ability Enhancement Course (AEC)	02	2	0	0	12th Pass	Studied AEC-1 Urdu A	URDU

Learning Objectives

The Learning Objectives of this course are as follows:

- To give knowledge of contemporary society of India through UrduProse and Poetry.
- To give a glimpse of classical literature with special reference to Urdu Prose and Poetry.

Learning outcomes

The learning outcomes of this course are as follows:

- Knowledge of contemporary society of India through Urdu Prose and Poetry
- Understand classical literature with special reference to Urdu Prose and Poetry
- Explain and analyze the different text in Urdu.

SYLLABUS OF AEC-4

UNIT-I- (18-Hours) Hissa-e-Nasr

1. Toba Tek Singh (Manto) *(Matn ki Tadrees)*
2. Karman (Qurratul-ain-Haider) *(Matn ki Tadrees)*
3. AkhiriKoshish (Hayatullah Ansari) *(Matn ki Tadrees)*

UNIT-II- (8-Hours) Hissa-e-Shairi (Gazaliyaat)

4. Jigar Muradabadi

- Dil ko SukoonRooh ko Aaraam aa gaya *(Matn ki Tadrees)*
- Kabhi Shakh-o-Sabza-o-Barg par *(Matn ki Tadrees)*

5. FiraqGorakhpuri

- Narm Fiza ki Karwatein Dil ko Dukhake Rah Gayin *(Matn ki Tadrees)*
- Bahut Pahle se Un Kadmon ki AahatJaanLete Hain *(Matn ki Tadrees)*

6. Faiz Ahmad Faiz

- Rang Pairahan Ka, Khushboo ZulfLehrane Ka Naam *(Matn ki Tadrees)*
- Dil Mein Ab Yun TereBhoole Hue Gham Aate Hain *(Matn ki Tadrees)*

UNIT-III- (4-Hours) Hissa-e-Shairi (Manzoomat)

7. Lab-e-Saahil Aur Mauj (Akbar) *(Matn ki Tadrees)*

8. Ae IshqKahin Le Chal (Akhtar Sheerani) *(Matn ki Tadrees)*

(The total number of hours should add up to 15 only)

Practical component (if any) -

Essential/recommended readings

Suggested readings

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

ABILITY ENHANCEMENT COURSE-2 (AEC-2): URDU-B

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical / Practice			
Urdu-B, Ability Enhancement Course (AEC)	02	2	0	0	10th Pass	Studied AEC-1 Urdu B	URDU

Learning Objectives

The Learning Objectives of this course are as follows:

- To give knowledge of contemporary society of India through Urdu Prose and Poetry.
- To give a glimpse of modern literature with special reference to Urdu Prose and Poetry.

Learning outcomes

The learning outcomes of this course are as follows

- Understand the text and can explain and analyse the text.
- Appreciate the nuances behind the texts especially Urdu Ghazal.
- Express understanding, knowledge and critical thinking through writings.

SYLLABUS OF AEC-5

UNIT-I- (18-Hours) Hissa-e-Nasr

1.Qaul-e-Faisal (Abul Kalam Azad) *(Matn ki Tadrees)*

2.Diya Salai (Khwaja Hasan Nizami) *(Matn ki Tadrees)*

3.Nazara Darmiya Hain (Qurrat-ul Ain Haider) *(Matn ki Tadrees)*

UNIT-II- (8-Hours) Hissa-e-Shairi (Ghazaliyaat)

9. Dagh

- Khatir Se Ya Lihaz Se Main Maan To Gaya *(Matn ki Tadrees)*

10. Shaad

- Tamannaon Mein Uljhaya Gaya Hoon *(Matn ki Tadrees)*

11. Firaq

- Sar Mein Sauda Bhi Nahi *(Matn ki Tadrees)*

UNIT-III- (4-Hours) Hissa-e-Shairi (Manzoomat)

7. Mujh Se Pehli Si Muhabbat Mere Mehboob Na Maang (Faiz) *(Matn ki Tadrees)*

8. Akhiri Mulaqaat (Jaan Nisar Akhtar) *(Matn ki Tadrees)*

9. Parchhaiyan (SahirLudhyanvi) *(Matn ki Tadrees)*

Teaching Learning Process

Classroom Teaching, Lecture Method

Assessment Methods

Assignment, Internal Test

Keywords- Dagh, Shaad, Firaq, Faiz, Jaan Nisar, Sahir

Practical component (if any) –

Essential/recommended readings

Suggested readings

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

ABILITY ENHANCEMENT COURSE-2 (AEC-2): URDU-C

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
Urdu-C, Ability Enhancement Course (AEC)	02	2	0	0	Basic Knowledge of Urdu	Studied AEC-1 Urdu C	URDU

Learning Objectives:

- To give a simple taste of Urdu Poetry and Literature.
- To make them appreciate and understand the poetry of Urdu.

Learning Outcomes:

- Students read and understand the poetry of Urdu.
- Students express the meaning of couplets and stories in their own words.

SYLLABUS OF AEC-6

Unit-I(18 Hours)Hissa-e-Nasr

1. Sawere Jo Kal Ankh Meri Khuli (Pitras) *(Matn ki Tadrees)*
2. Ji Aaya Sahab (Manto) *(Matn ki Tadrees)*
3. Ghalib KeKhutoot (Ghalib) *(Matn ki Tadrees)*

Unit-II (8 Hours)Hissa-e-Shairi

4. Ye Na ThiHamariQismatKeWisal-e-YaarHota (Ghalib) *(Matn ki Tadrees)*
5. Sitaron Se Aage Jahan Aur Bhi Hain (Iqbal) *(Matn ki Tadrees)*
6. Gulon Mein Rang Bhare (Faiz) *(Matn ki Tadrees)*

Unit-III (4 Hours)

8. Ramayan Ka Ek Scene (Chakbast) *(Matn ki Tadrees)*
9. Sheeshe Ka Aadmi (Akhtar-ul-Iman)*(Matn ki Tadrees)*

Teaching Learning Process

Classroom Teaching, Lecture Method Assessment Methods

Assignment, Internal Test Keywords-

Practical component (if any) -

Essential/recommended readings:

1. **Urdu Ki Nai Kitaab Part-II** (Published by Educational Publishing House,New Delhi

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

AEC 1: Environmental Science: Theory into Practice –II

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
AEC 1: Environmental Science: Theory into Practice – II	02	01	–	01	All UG Courses	All UG Courses	Department of Environmental Studies/Sciences

Learning Objectives

The Ability Enhancement Course on Environmental Science: Theory into Practice (I & II) at Undergraduate level (AEC- I) aims to train students to cater to the need for ecological citizenship through development of a strong foundation on the critical linkages between ecology-society-economy.

The Learning Objectives of this course are as follows:

- **Disciplinary knowledge**
  Enable students to develop a comprehensive understanding of various facets of life forms, ecological processes, and the impacts on them by humans during the Anthropocene era.

- **Critical thinking**
  Build capabilities to identify relevant environmental issues, analyse the various underlying causes, evaluate the practices and policies, and develop framework to make informed decisions.
- **Moral and ethical awareness/reasoning**
  Develop empathy for all life forms, appreciation for the various ecological linkages within the web of life, awareness and responsibility towards environmental protection and nature preservation.

Learning outcomes

The Learning Outcomes of this course are as follows.

After the course the students will be empowered and able to:

- Analyse natural processes and resources that sustain life and govern economy.
- Predict the consequences of human actions on the web of life, global economy, and quality of human life.
- Think critically and develop appropriate strategies (scientific, social, economic, administrative, and legal) for environmental protection, conservation of biodiversity, environmental equity, and sustainable development.
- Demonstrate values and show compassionate attitudes towards complex environmental-economic-social challenges, and participate at national and international levels in solving current environmental problems and preventing the future ones.
- Adopt sustainability as a practice in life, society, and industry.

Teaching Learning process

The teaching–learning methodologies are designed to provide the undergraduate students a comprehensive understanding of the subject in a simplistic manner as well as evoke critical reasoning and analytical thinking among them. Some of the theoretical concepts related to practicals/outreach activities, etc. should be covered during practical sessions. The various approaches to teaching–learning process include classroom lectures, video presentations, and ICT enabled teaching tools. For enhancing practical understanding, field visits are encouraged to relevant places in Delhi like Biodiversity Parks, Protected areas, Wetlands, Sewage treatment plants, etc.

SYLLABUS OF AEC-1: Environmental Science: Theory into Practice – II (Year 2)

Unit V

Global Environmental Issues and Policies (5 lectures 8 practical/ outreach activities)

- Causes of Climate change, Global warming, Ozone layer depletion, and Acid rain; Impacts on human communities, biodiversity, global economy, and agriculture
- International agreements and programmes: Earth Summit, UNFCCC, Montreal and Kyoto protocols, Convention on Biological Diversity (CBD), Ramsar convention, The Chemical Weapons Convention (CWC), UNEP, CITES, etc.
- Sustainable Development Goals: India's National Action Plan on Climate Change and its major missions
- Environment legislation in India: Wildlife Protection Act, 1972; Water (Prevention and Control of Pollution) Act, 1974; Forest (Conservation) Act 1980; Air (Prevention & Control of Pollution) Act, 1981; Environment Protection Act, 1986; Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006

Unit VI

Biodiversity and Conservation (6 lectures and 7 practical/ outreach activities)

- Definition of Biodiversity; Levels of biological diversity: genetic, species and ecosystem diversity
- India as a mega-biodiversity nation; Biogeographic zones of India; Biodiversity hotspots; Endemic and endangered species of India; IUCN Red list criteria and categories
- Value of biodiversity: Ecological, economic, social, ethical, aesthetic, and informational values of biodiversity with examples; sacred groves and their importance with examples
- Threats to biodiversity: Habitat loss, degradation, and fragmentation; Poaching of wildlife; Man-wildlife conflicts; Biological invasion with emphasis on Indian biodiversity; Current mass extinction crisis
- Biodiversity conservation strategies: in-situ and ex-situ methods of conservation; National Parks, Wildlife Sanctuaries, and Biosphere reserves; Keystone, Flagship, Umbrella, and Indicator species; Species reintroduction and translocation
- *Case studies*: Contemporary Indian wildlife and biodiversity issues, movements, and projects (e.g., Project Tiger, Project Elephant, Vulture breeding program, Project GreatIndian Bustard, Crocodile conservation project, Silent Valley movement, Save Western Ghats movement, etc)

Unit VII

Human Communities and the Environment (4 lectures and 5 practical/ outreach activities)

- Human population growth: Impacts on environment, human health, and welfare; Carbon foot-print
- Resettlement and rehabilitation of developmental project affected persons and communities; relevant case studies
- Environmental movements: Chipko movement, Appiko movement, Silent valley movement, Bishnois of Rajasthan, Narmada Bachao Andolan, etc
- Environmental justice: National Green Tribunal and its importance
- Environmental philosophy: Environmental ethics; Role of various religions and cultural practices in environmental conservation
- Environmental communication and public awareness: case studies (e.g., CNG vehicles in Delhi, Swachh Bharat Abhiyan, National Environment Awareness Campaign (NEAC), National Green Corps (NGC) “Eco-club” programme, etc)

(The total number of weeks should add up to 15 only)

Practical component– (15 Weeks)

Unit V

Global Environmental Issues and Policies (8 practical/ outreach activities)

Practical/Exercises/Experiential activities/Outreach activities

(*College may choose as per requirement*)

- Depict temperature/precipitation trend of a given study area using online data
- Formulate questionnaire/online surveys for assessment of the impact of climate change on people
- Assess Nationally Determined Contributions (NDCs) of developed and developing countries
- Development and simulation of Model UNFCCC for inoculating negotiation skills at climate change summits
- Development and simulation of Moot Court for Mock Trials in Negotiation Green Tribunal
- Identify carbon footprint of your college/home/locality (refer wwf@envis.nic.in).
- Analyze the status of at least 3 sustainable development goals in your neighbourhood and write a proposal to help achieve them at global standard (identify environmental problems and its social and economic impact, define objectives, explain methodology, budgetary requirements, and suggest the expected outcomes). A PowerPoint presentation to be made based on the project proposal.

Unit VI

Biodiversity and Conservation (7 practical/ outreach activities)

Practical/Exercises/Experiential activities/Outreach activities

(*College may choose as per requirement*)

- Acquaintance with open-source databases of biodiversity
- Determine species location in a given study area
- Depict distribution of biodiversity across latitude and altitude
- Show species distribution across space and time
- Quantify species loss across different time periods
- Sampling of plant and animal biodiversity of the College campus
- Identification of the floral diversity of Delhi and other states.
    - Documentation of the plants by clicking pictures, finding out the scientific names/ local names through literature or mobile applications, identification of their conservation status (IUCN red book list), medicinal properties, water consumption status, and socio-economic-environmental importance. A short report to be submitted)
- Exercise to understand the socio-economic-environmental impact of wildlife conservation.

  (Students can choose any global animal species and identify the relevance of the species for the ecosystem/ society/ culture/ local economy, historic or present range of the species, emerging threats due to human activities, identification of documented events of natural disasters/ conflicts/ poaching of the species in the present range, conservation status (IUCN red book list), identification of protected areas/ programs of the government/ international organisation, and their opinion to further improve the conservations of the species. A short report to be submitted.

Unit 7

Human Communities and the Environment (5 practical/ outreach activities)

Practical/Exercises/Experiential activities/Outreach activities

(*College may choose as per requirement*)

- Assessment of carbon foot-print of different countries using online databases and mathematical tools
- Visit to marginalized localities and students for environmental education and environmental awareness
- Formulation of questionnaire/online surveys for assessment of the impact of environmental education
- Visit to any developmental project affected locality for assessing the impacts of economic development on human lives
- Correlation analysis of human population growth and impacts on the environment and human health

Essential/recommended readings

Unit V

Global Environmental Issues and Policies (5 lectures 8 practical/ outreach activities)

1. Divan, S. and Rosencranz, A. (2002). *Environmental Law and Policy in India: Cases, Material &Statutes*, 2nd Edition. Oxford University Press, India. **Chapter 2** (Pages: **23-39**); **Chapter 3** (Pages: **41-86**).
2. Raven, P.H, Hassenzahl, D.M., Hager, M.C, Gift, N.Y. and Berg, L.R. (2015). *Environment*, 9thEdition. Wiley Publishing, USA. **Chapter 19** (Pages: **370-376**); **Chapter 20** (Pages: **385-399**).
3. Singh, J.S., Singh, S.P. and Gupta, S.R. (2017). *Ecology, Environmental Science and Conservation*. S. Chand Publishing, New Delhi. **Chapter 23** (Pages: **555-598**); **Chapter 30** (Pages: **801-807**).

Unit VI

Biodiversity and Conservation (6 lectures and 7 practical/ outreach activities)

1. Primack, R.B. (2014). *Essentials of Conservation Biology*, Oxford University Press, USA. Page.1-536.
2. Raven, P.H, Hassenzahl, D.M., Hager, M.C, Gift, N.Y. and Berg, L.R. (2015). *Environment*, 9thEdition. Wiley Publishing, USA. **Chapter 5** (Pages: 97-99); **Chapter 16** (Pages: **299-318**).
3. Singh, J.S., Singh, S.P. and Gupta, S.R. (2017). *Ecology, Environmental Science and Conservation*. S. Chand Publishing, New Delhi. **Chapters 24** (Pages: **599-690**); **Chapter 26** (Pages: **664-714**).

Unit VII

Human Communities and the Environment (4 lectures and 5 practical/ outreach activities)

Suggested Readings

1. Divan, S. and Rosencranz, A. (2002). Environmental Law and Policy in India: Cases, Material & Statutes, 2nd Edition. Oxford University Press, India. **Chapter 10** (Pages: **416-473**).
2. Raven, P.H, Hassenzahl, D.M., Hager, M.C, Gift, N.Y. and Berg, L.R. (2015). Environment, 9thEdition. Wiley Publishing, USA. **Chapter 2** (Pages: **33-36**); **Chapter 8** (Pages: **148-162**).
3. Singh, J.S., Singh, S.P. and Gupta, S.R. (2017). Ecology, Environmental Science and Conservation. S. Chand Publishing, New Delhi. **Chapter 1** (Pages: **23-26**); **Chapter 31** (Pages:**826-842**).

Suggested readings

1. Brusseau, M.L., Pepper, I.L. and Gerba, C.P. (2019). *Environmental and Pollution Science*, 3rdEdition. Academic Press, USA.
2. Carson, R. (2002). Silent Spring. Houghton Mifflin Harcourt, USA.
3. Raven, P.H, Hassenzahl, D.M., Hager, M.C, Gift, N.Y. and Berg, L.R. (2015). Environment, 9thEdition. Wiley Publishing, USA.
4. van Wormer, K. and Besthorn, F. (2017). Human Behavior and the Social Environment, Macro Level Groups, Communities, and Organizations, Third Edition, Oxford University Press.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

Assessment methods

1. Written examinations (Semester exams) [(**Year 1:** 01 credit (1 hour); **Year 2:** 01 credit (1 hour)]
2. Project work and reports related to field visits, outreach activities, case study, project formulation, assignments, presentations and practical learning (Internal practical assessment) [(**Year 1:** 01 credit (2 hour); **Year 2:** 01 credit (2 hour)]

Year 1 (Sem-I/Sem-II): 01 Credit Theory+ 01 Credit practical exercises, etc.
= **Total 02 Credits (03 hours)**

Year 2 (Sem-I/Sem-II): 01 Credit Theory+ 01 Credit practical exercises, etc.
= **Total 02 Credits (03 hours)**

ANNEXURE-18

Sub: Amendment to Ordinance V

[E.C Resolution No. 27-1/ (27-1-11) dated 25.08.2023]

Following addition be made to Appendix-II-A to the Ordinance V (2-A) of the Ordinances of the University;

Add the following:

Syllabi of Semester-III, IV, V and VI of the following B.Voc courses based on Undergraduate Curriculum Framework -2022 to be implemented from the Academic Year 2022-23.

1. B.Voc Healthcare Management (Jesus & Mary College)
2. B.Voc Retails Management and IT (Jesus & Mary College)
3. B.Voc Software Development (Ramanujan College)
4. B.Voc (Banking & Financial Services & Insurance (Ramanujan College)
5. B.Voc Web Designing (Kalindi College) – IIIrd Semester only
6. BA (Hons.) Multimedia and Mass Communication

SEMESTER-3
Bachelor of Vocation – Healthcare Management

DISCIPLINE SPECIFIC CORE COURSE – 7 Communication in Healthcare

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Communication in Healthcare	4	3	1	0	Class XII Pass	NA

Learning Objectives

By the end of the term students should be able to demonstrate the use of critical thinking, decisions making and problem-solving skills though effective written and oral business communication.

Learning outcomes

- Student will be able to get an understanding of principles & objectives of Communication.
- Student will be able to understand the importance of Communication in an organization.
- Student will be able to identify barriers of communication and the best methods to communicate effectively.
- Students will be able to effectively use different styles of communication

SYLLABUS OF DSC-7

Unit 1-Communication – Origin, Meaning and Definition (6 Hours)

- Principles of Communication
- Objectives of communication
- Styles of Human Communication

Unit 2-Communication as a process (5 Hours)

- Oral Communication
- Written Communication

- Filtering and distortion of Message
- Common causes that weaken Effective Communication

Unit 3-Interpersonal Communication (12 hours)

- Perception in Interpersonal communication
- Transactional Analysis
- Structure of Transaction
- Principles to initiate communication
- Communication in Organization Setting
- Communication Skills in Interview Setting
- Essential of Effective Communication
- Models of Understanding Interpersonal Relationship

Unit 4-Barriers to Communication (11 hours)

- Organizational Barriers
- Semantic Barriers
- Personal Barriers
- Barriers in Subordinates
- Psychological Barriers
- Other Barriers
- Overcoming Barriers in Communication

Unit 5-Flow of Communication in an Organization (11 hours)

- Downward Communication
- Upward Communication
- Horizontal Communication
- Problems in Downward Communication
- Problems in Upward Communication
- Problems in Horizontal Communication

Practical component (if any) -

N/A

Essential/recommended readings

1. M. Jones, Phil (2017), Exactly what to Say, Box Of Tricks Publishing
2. Kumar, Sanjay; Lata, Pushp (2015), Communication Skills, Oxford University Press.
3. Schiavo, Renata (2013), Healthcare Communication-From Theory to Practice, Jossey-Bass.
4. Garg, Kumar, Dr.Manoj (2020),English Communication-Theory & Practice, Abcibook.
5. Tuhovsky, Ian (2017), The Science of Effective Communication, Rupa & Co.

DISCIPLINE SPECIFIC CORE COURSE – 8: Medical Terminology-3

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Medical Terminology-3	4	3	1	0	Class XII pass	Medical Terminology-2

Learning Objectives

Includes structure, recognition, analysis, definition, spelling, pronunciation, and combination of medical terms from prefixes, suffixes, roots, and combining forms.

Learning outcomes

- Student will be able to get an understanding of Diseases and disorders of the system as mentioned in the medical terms.
- Student will be able to guide the patients about the treatment options and diagnostic procedures as advised by the physician.
- This subject will enhance the medical terminology vocabulary of different conditions and treatment methods of organ system which is required at Front office and radiology department to guide the patients.
- Students will get an understanding of general Terminology (procedures, diseases, treatment) related to different body system

SYLLABUS OF DSC-8

Unit-1 (10 hours)

Nervous System-

- Basic Anatomy & Physiology of Nervous System
- Common Terms in Nervous System
- Common Diseases
- Diagnostic Tests and Procedures
- Treatment
- Basic Knowledge of Hospital Care / Infrastructure / Facilities/ Intensive Care / Neuro ICU / Stroke ICU/ and other specialized needs for patient
- Importance of Rehabilitation Services for Neuro patients
- Basic understanding of Stroke management

Unit-2 (10 hours)

Musculoskeletal System- procedures, diseases, treatment

- Basic Anatomy & Physiology of Musculoskeletal System
- Common Terms
- Diagnostic Tests and Procedures
- Basic understanding of Pain Management
- Treatment

Unit-3 (10 hours)

Oncology -Types of Cancers

- Diagnostics & Procedures
- Basic Understanding of Medical Oncology, Surgical Oncology, Chemotherapy, Immunotherapy & Radiotherapy
- Treatment
- Psychological aspects of cancer care
- Importance of Cancer Awareness Program

Transplant Medicine

- Introduction to transplantation of Human Organs & tissues
- Different types of transplants
- Care after Transplant

Unit-4 (5 hours)

Cardiovascular System-

- Brief Introduction-Heart
- procedures, diseases, treatment
- Preventive Aspects.

Unit-5 (10 hours)

ENT & Ophthalmology-

- Introduction –Ear, Nose, Throat & Eyes
- Understanding of ENT & Ophthalmology procedures
- Day care Procedures
- Common diseases
- Treatment

Practical component (if any) –N/A

Essential/recommended readings-

1. Stedman, (2005), STEDMAN'S Medical Dictionary, Wolters Kluwer.
2. A. Gylys, Barbara; Wedding, Mary Ellen (2017), Medical Terminology Systems, F.A. Davis Company.

DISCIPLINE SPECIFIC CORE COURSE – 9: Medical Software Applications-2

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Medical Software Applications-2	4	3	1	0	Class XII pass	Medical Software Applications-1

Learning Objectives

- Basic Understanding of functioning of computers & its application in healthcare with a perspective on Hospital operations
- Create basic awareness on healthcare record systems and infrastructure.

Learning outcomes

- Student will get the basic understanding and awareness about the software being used in hospital.
- Awareness of modules being used in different departments will help the student to work efficiently on the Systems.

SYLLABUS OF DSC-9

Unit-1(9 hours)

- Review of FO module
- Describe various modalities for Patient Registration in HIS
- Describe Important Information and Credentials to be captured in HIS
- Physician Schedules, Appointment entry and rescheduling appointment
- Describe Escalation Matrix in case of Non-Compliance
- Assess the working status of HIS as and when required
- Admission Module-IP Number Generation, Wrist band for tracking of patients, Bed allotment, Requisition of drugs and consumables from the pharmacy, Discharge Summary.

Unit-2-(13 hours)

- Management Information System – Business Intelligence, MIS as a tool to managerial control

- Core Functions of HIS – Patient Management, Clinical Management-Clinical Decision, Medical Forms, Doctors Notes; Revenue Management; Inventory Management – Procures stocks, Medicines and Consumables for day-to-day consumption of hospital needs. This module helps in maintaining the stocks, reordering, financial planning, Inventory Management & Stock
- Maintenance of patient's Database in HIS

Unit-3-(10 hours)

- Introduction to CRM tool
- Describe the Importance of Electronic Health Records / Medical Records/ Computerized patient record system.
    - Software for Pharmacy
    - Lab
    - Radiology
    - Allergy Tracking
    - Consults
    - Dietetics
    - Progress Notes

Unit 4(13 hours)

Modules used in HIS

- Emergency Module –Sends alert to the corresponding departments, Consulting Details, Clinical Follow up, lab Test Reports, Service orders and bookings, Pharmacy/ Surgical Details, Statutory forms
- Basics of HR Module –Recruitment, Training & Development, Compensation Management, Employee Tracking , Work Flows and Benefits
- Basics of Store Module

Practical component (if any) –

N/A

Essential/recommended readings-

1. Kelkar, S.A. (2010), Hospital Informations Systems, PHI.

Discipline Specific Elective 1: Healthcare Organization Operations

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Healthcare Organization Operations	4	3	1	0	Class XII pass	NA

Learning Objectives

- To enable the students to understand the fundamental concepts of operations management
- To provide awareness on the roles and responsibilities of operations managers in different organizational contexts

Learning outcomes

1. Understand the key functions and roles within a healthcare organization.
2. Analyze the impact of healthcare policies and regulations on operations.
3. Identify strategies to improve operational efficiency and patient safety.
4. Evaluate the quality of healthcare services within an organization.
5. Apply management principles to healthcare operations.
6. Demonstrate an understanding of healthcare information systems and technology.
7. Discuss the importance of patient-centered care and its impact on organizational operations.

SYLLABUS OF DSE-1

Unit 1(10 hours)

Introduction to Healthcare Operations Management

- Overview of healthcare operations management
- Importance and challenges of managing healthcare operations
- Role of operations management in healthcare quality and patient safety
- Healthcare regulatory environment and compliance considerations

Unit 2(10 hours)

Healthcare Processes & Policies

- Hospital Policies
- Process mapping and flowcharting in healthcare
- Lean principles in healthcare operations

Unit 3(15 hours)

Healthcare Capacity Planning and Resource Management

- Managing healthcare capacity and demand
- Resource allocation and optimization in healthcare
- Scheduling and appointment systems
- Managing healthcare workforce and staffing challenges

Unit 4(10 hours)

Emerging Trends in Healthcare Operations

- Innovations in healthcare technology and management
- Telehealth and its impact on healthcare operations
- Population health management and preventive care
- Global healthcare operations and challenges

Practical component (if any) –
N/A

Essential/recommended readings
N/A

Suggestive readings

1. "Operations Management for Healthcare Organizations: Applying Lean Concepts to Improve Patient Safety and Outcomes" by Lisa M. Anderson and Lisa S. Anderson**.**
2. "Healthcare Operations Management" by Daniel B. McLaughlin, Julie M. Hays, and Eugene Schneller.
3. "Lean Hospitals: Improving Quality, Patient Safety, and Employee Engagement" by Mark Graban.

Discipline Specific Elective 1: Healthcare Economics & Policy

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Healthcare Economics & Policy	4	3	1	0	Class XII pass	NA

Learning Objectives

This course aims to provide students with an understanding of the key principles and concepts of healthcare economics and the role of policy in shaping healthcare systems. Students will examine the economic factors that influence healthcare decision-making, analyze healthcare policies and their impact on access, cost, and quality of care, and explore the challenges and opportunities in healthcare markets.

Learning outcomes

Upon successful completion of the course, students will be able to:

1. Explain the key economic concepts relevant to healthcare, such as scarcity, opportunity cost, and efficiency.
2. Analyze the factors influencing the demand and supply of healthcare services and their implications on healthcare delivery.
3. Evaluate the effectiveness of different healthcare financing and reimbursement models.
4. Critically assess the impact of healthcare policies on vulnerable populations and healthcare disparities.

SYLLABUS OF DSE-1

Unit 1(10 hours)

Introduction to Healthcare Economics

- Definition of Economics
- Circular flow of economic activity
- Relation between Economics and Health Economics
- Importance of Health Economics
- Theory of Utility
- Theory of Demand-Determinants of healthcare demand, Elasticity of healthcare demand

Unit 2(10 hours)

- Theory of Production: Concept, factors and its implications. Production function- short and long run. Laws of diminishing marginal returns and variable proportions.
- Theory of cost: short and long run cost function. Fixed and Variable costs- Opportunity Cost- Average and marginal cost
- Market- its concept in economics, Perfect competition- nature, short and long run equilibrium, concept of break even and shut down point

Unit 3(10 hours)

Healthcare Financing

- Overview of healthcare financing models
- Health insurance systems in India
- Public vs. private healthcare financing in India
- Pricing strategies in healthcare
- Cost-benefit and cost-effectiveness analysis in healthcare

Unit 4(15 hours)

Health Economics

- Indian scenario
- Effect of globalization and privatization
- Importance of PPP Model
- Problem faced by health industry
- Changing scenario of health industry
- Public initiative to eradicate difficulties
- Alternative Models of Hospital Behavior-Utility Maximizing Model, Physician Control Models, The Trend towards Multi Hospital Systems.

Practical component (if any) –
N/A

Essential/recommended readings
N/A

Suggestive readings

1. Indian Healthcare Economic & Policy by Rajeev Ahuja and Roger Jeffery
2. Healthcare Economics Made Easyby Satish Dinkar
3. Healthcare in India: A Comprehensive Analysis by Subrata Kumar Mitra and Vijay Govindarajan
4. Health Economics and Policy by James W. Henderson
5. Health Economics for Hospital Management- Shuvendu Bikash Dutta- Jaypee Brothers Publication

GENERAL ELECTIVE – 3: Patient Behavior & Psychology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Patient Behaviour & Psychology	4	3	1	0	Class XII pass	Organization & Planning of Hospital Departments

Learning Objectives

It is aimed at helping the students to acquire knowledge & understanding of patient behavior and acquire the skills in managing them effectively in hospital settings.

Learning outcomes

1. Demonstrate an understanding of psychological theories and concepts relevant to patient behavior.
2. Analyze and interpret patient behavior in healthcare contexts using psychological frameworks.
3. Apply effective communication techniques to establish rapport and trust with patients.
4. Demonstrate cultural sensitivity in healthcare interactions and decision-making.
5. Develop strategies to address patient anxiety and improve coping mechanisms.
6. Devise patient-centered approaches to enhance treatment adherence and compliance.

SYLLABUS OF GE-3

Unit 1(10 hours)

Introduction:

- History and origin of science of psychology
- Definitions & Scope of Psychology
- Relevance to Healthcare Managers
- Methods of Psychology

Unit 2(10 hours)

Biology of behavior

- Body mind relationship modulation process in health and illness
- Genetics and behavior: Heredity and environment

- Brain and behavior: Nervous system, Neurons and synapse, Association Cortex, Rt and Lt Hemispheres
- Psychology of Sensations
- Muscular and glandular controls of behavior
- Nature of behavior of an organism/Integrated responses

Unit 3(15 hours)

Motivation and Emotional Processes

- Motivation: Meaning, Concepts, Types, Theories, Motives and behavior, Conflict resolution
- Emotions & stress
- Emotion: Definition components, Changes in emotions, theories, emotional adjustments, emotions in health and illness
- Stress: stressors, cycle, effect, adaptation & coping

Communication and Patient-Provider Relationship

- Verbal and non-verbal communication skills
- Active listening and empathy
- Building trust and rapport with patients

Unit 4(10 hours)

Developmental Psychology

- Psychology of people at different ages from infancy to old age
- Psychology of vulnerable individuals- challenged, women, sick, etc
- Psychology of groups

Practical component (if any) –
N/A

Essential/recommended readings
N/A

Suggestive readings

1. Introduction to Psychology by Clifford T.Norgan, Richard A.King
2. Psychology 5th Edition by Robert A.Baron/Girishwar Misra
3. Empathy: A History" by Susan Lanzoni
4. "The Compassionate Connection: The Healing Power of Empathy and Mindful Listening" by David Rakel

SEMESTER - IV

Bachelor of Vocation – Healthcare Management

DISCIPLINE SPECIFIC CORE COURSE – 10: Quality in Healthcare-Service & Medical Quality

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Quality in Healthcare-Service & Medical Quality	4	3	1	0	Class XII pass	NA

Learning Objectives

Create basic awareness on quality in healthcare and its applicability

Learning outcomes

- Student will get the basic understanding and awareness about the quality and the quality standards applicable to different departments of the hospital.
- Students will also understand the importance of Accreditation and International Patient Safety Goals
- Awareness of Quality will enhance patient safety and satisfaction in the hospital and students will be able to effectively implement the organization policies.

SYLLABUS OF DSC-10

Unit-1(12 hours)

Quality – An Overview

- Dimensions of Quality-
- Scope and Importance in Healthcare
- Quality Concept, Quality Assurance,
- Total Quality Management, Quality Circle,
- Medical Quality
- NABH, JACHO, ISO

Unit-2(12 hours)

- Medical Documentation Audits
- Introduction
- Definition of Medical Audit
- Need and Purpose of Medical Audit
- Types of Medical Audit
- Medical Audit Committee
- Medical Documentation Audits
    - Physician Documents
    - Nursing Documents

Organization Policies

- Emergency Codes
- Hospital Waste Management
- Hospital Infection Control

Unit 3(12 hours)

Quality Standards applicable to the Front Office

- Customer Service Excellence and Patient Satisfaction
- Patient Satisfaction Metrics- Quantitative Measures and Qualitative Measures
- Call Centre Experience –Service Enquiry, Appointment Fixing, Complaints
- OPD Services - Establishing Eye Contact, Greetings, End conversation with a standard closing statement as per the Hospital protocol
- In-Patient Experience
- Measure Patient Satisfaction
- Importance of Feedback & Closure

Unit 4(9 hours)

- What Defines Quality in Healthcare
- Quality Initiatives in ensuring Patient Safety-International Patient Safety Goals
- Quality Indicators in Healthcare
- Concept of Lean & Six Sigma

1. Introduction
2. Objectives
3. Importance of Lean & Six Sigma in Health Care Management

- Importance of Quality Improvement Projects

Practical component (if any) –

N/A

Essential/recommended readings-

1. Joshi, S.K. (2013), Quality Management in Hospitals, Jaypee Brothers Medical Publishers

DISCIPLINE SPECIFIC CORE COURSE – 11: Insurance Management (TPA Operations)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Insurance Management (TPA Operations)	4	3	1	0	Class XII pass	NA

Learning Objectives

After completion of this module student should be able to describe the concept of health Insurance and Insurance management process in healthcare

Learning outcomes

- Student will get the basic understanding and awareness about the health insurance and different types of policies available to the insurer.
- Students will also understand the TPA's and the role of the same as a mediator between Health Insurance Organizations and Insurers.
- Awareness of TPA & Insurance policies will help students to effectively manage & handle the payment queries of the patients visiting the hospital

SYLLABUS OF DSC-11

Unit-1(12 hours)

Introduction to Health Insurance

- Concept of Health Insurance
- Definition, History & Scope of Health Insurance
- Types of Health Insurance
- Health Insurance in Private Health Sector (CGHS, ECHS, TPA, ESI.)
- Health Insurance in developing and developed countries
- Underwriting of Health Insurance

Unit 2(12 hours)

- Different Health Insurance Policies
- Analysis and Management
- GOI & State Govt. Policy in implementation of Health insurance

- Government Medical Services and Health Insurance Schemes
- IRDA Guidelines
- Hospital Empanelment: Criteria & Procedure
- Various Definitions under Mediclaim – Health Insurance Policies
- Standard Exclusions

Unit-3(9 hours)

- Concept of combined Life Insurance and Health Insurance
- Portability of Health Insurance
- Pre-Existing Diseases

Unit 4(12 hours)

- Hospitals / TPA / Insurance Company / Relationship and Problems.
- Cashless Mediclaim Processing & TPA
- Planned Hospitalization
- Emergency Hospitalization
- Claim Processing of Health Insurance

Practical component (if any) –
N/A

Essential/recommended readings-

1. Gupta, Dr. L.P., (2014), Health Insurance for Rich & Poor in India, Dr. L.P.GUPTA
2. Patukale, Prof.Kshitij, Mediclaim and Health Insurance, Prabhat Prakashan.
3. Dayal, Dr. Hargovind (2017), Fundamentals of Insurance, Notion Press.
4. Alexander, Sally, Risk and Insurance Management Manual for Libraries, Updated (ALCTS Monograph), ALA Editions.
5. IRDA Guidelines on Health Insurance - Govt. of India- https://www.financialservices.gov.in

DISCIPLINE SPECIFIC CORE COURSE – 12: Hospital Policies

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Hospital Policies	**4**	**3**	**1**	**0**	**Class XII pass**	**NA**

Learning Objectives

On completion of this module the students should be familiar with the various hospital policies of relevance

Learning outcomes

- Student will get the basic understanding and awareness about the different Hospital Policies with respect to NABH Accreditation standards.
- Students will also understand the importance & methodology of Incidence Reporting Systems and different incidents which needs to be documented
- Awareness of Patient & Staff Policies will give the students confidence of making hospitals safe place for patients/visitors/staff.

SYLLABUS OF DSC-12

Unit-1(10 hours)

Introduction to Hospital Policies

- Definition and Importance of SOP's, Policies, Manuals & Procedures.
- **AAC –** Registration Policy, Admission Policy, Bed Management Policy, Discharge Policy, Transport Policy, Admission to ICU Policy, Initial assessment Policy, Reassessment Policy, LAMA Policy.

Unit-2(10 hours)

- **COP –** Emergency Services, Ambulance Services, unique needs of End-of-Life Care, Care of Pediatric Patients, High Risk Obstetrical Pts., Rehabilitative Services, Patient Restraint Policy,
- **PRE –** Patient & Family Rights & Responsibilities, Patient and Family Education, Patient Confidentiality and Privacy, Patient Feedback (How to voice Complaint), Service Recovery, Policy on Informed Consent**,** Complaint Management process.

Unit-3(15 hours)

Patient & Staff Safety Policies

- Policy on Emergency Codes
- Hospital disaster Management
- Adverse Events
- Patient Identification
- Other Safety Codes
- Safety – Clinical Storage Guidelines, Electrical Equipment, Hazardous Material Spill, Handling of Cytotoxic Drugs
- Possession of Weapons by Patient and Visitors
- House Keeping Services Safety.

Unit 4(10 hours)

Incidence Reporting

- Incidence Investigation and Analysis
- Incidence Review
- Incident Report Form
- Benefits of doing Investigation
- How to Conduct an Investigative Interview
- Who should conduct the Investigation
- Root Cause Analysis
- Corrective & Preventive Actions
- Safety Orientation & Training

Practical component (if any) –

N/A

Essential/recommended readings-

1. Agarwal, Dr. Arun K. (2019), Standard Operating Procedures (SOP) for Hospitals in India, Notion Press.
2. NABH Accreditation Standards For Hospital- https://www.nabh.co>standard
3. References- Measures of Patient Safety Based on Hospitals- https://www.ncbi.nlm.gov
4. Accreditation Standards for Hospitals- https://www.babh.co

Discipline Specific Elective 2 :HRM in Healthcare

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
HRM in Healthcare	4	3	1	0	Class XII pass	NA

Learning Objectives

By the end of this course, students should be able to:

- Understand the unique challenges and dynamics of Human Resource Management (HRM) in the healthcare industry.
- Explore the role of HRM in promoting a positive organizational culture and employee engagement within healthcare settings.
- Develop skills in talent acquisition, recruitment, and retention strategies specific to healthcare professionals.
- Analyze the importance of training and development programs for healthcare staff to enhance their skills and knowledge.
- Gain insights into effective performance management and evaluation methods in healthcare organizations.
- Examine the legal and ethical considerations related to HRM in the healthcare sector.
- Learn about effective communication and conflict resolution techniques in healthcare teams.
- Understand the impact of healthcare policies and regulations on HRM practices.

Learning outcomes

Upon successful completion of this course, students will:

- Explain the key HRM challenges faced by healthcare organizations and propose strategies to address them effectively.
- Assess the role of HRM in fostering a positive and inclusive work environment in healthcare settings.
- Formulate talent acquisition and retention plans tailored to the specific needs of the healthcare industry.
- Design and implement training programs that enhance the skills and knowledge of healthcare professionals.

- Apply performance management techniques to evaluate healthcare staff and promote continuous improvement.
- Demonstrate an understanding of the legal and ethical considerations in HRM practices within healthcare organizations.
- Employ effective communication and conflict resolution skills to resolve HR-related issues in healthcare teams.
- Analyze the impact of healthcare policies and regulations on HRM decisions and compliance.

SYLLABUS OF DSE-2

Unit 1(5 hours)

Introduction to HRM in Healthcare

- Overview of HRM and its significance in the healthcare sector.
- Key challenges and opportunities in HRM specific to healthcare organizations.
- Understanding the healthcare industry's unique workforce requirements.

Unit 2(10 hours)

Organizational Culture and Talent Acquisition

- The role of HRM in shaping the organizational culture within healthcare settings.
- Strategies to promote employee engagement and job satisfaction in healthcare teams.
- Employee motivation and its impact on patient care.
- Recruitment strategies for attracting and selecting skilled healthcare professionals.
- Effective interviewing techniques and assessment methods for healthcare candidates.
- Diversity and inclusion in healthcare hiring.

Unit 3(5 hours)

Training and Development in Healthcare

- Identifying training needs and designing relevant programs for healthcare staff.
- Implementing continuous learning initiatives to enhance healthcare professionals' skills.
- Evaluating the effectiveness of training programs in healthcare settings.

Unit 4(5 hours)

Performance Management in Healthcare

- Establishing performance management systems for healthcare employees.
- Performance appraisal methods and feedback mechanisms in healthcare organizations.
- Addressing performance issues and fostering improvement.

Unit 5(10 hours)

Legal and Ethical Considerations in HRM

- Understanding healthcare-related employment laws and regulations.
- Ethics in HRM decisions, especially concerning patient privacy and confidentiality.
- Managing conflicts between ethical principles and organizational objectives.

Unit 6(10 hours)

Communication and Conflict Resolution in Healthcare Teams

- Effective communication strategies in healthcare settings.
- Handling conflicts and promoting teamwork among healthcare professionals.
- Building effective working relationships in a diverse healthcare workforce.

Practical component (if any) –
N/A

Essential/recommended readings

1. Human Resource Management in Healthcare: Principles and Practice, Author: Diane Huber
2. Strategic Human Resources Management in Health Services Organizations, Author: S. Robert Hernandez
3. Healthcare Human Resource Management, Author: Walter J. Flynn, Robert L. Mathis, John H. Jackson
4. The Healthcare Quality Book: Vision, Strategy, and Tools, Third Edition, Author: Maulik Joshi, Elizabeth R. Ransom, David B. Nash, Scott B. Ransom

Discipline Specific Elective 2 :Financial Management in Healthcare

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Financial Management in Healthcare	4	3	1	0	Class XII pass	NA

Learning Objectives

By the end of this course, students will be able to:

1. Understand the unique financial challenges faced by healthcare organizations.
2. Apply financial management techniques to improve the financial performance of healthcare institutions.
3. Analyze and interpret financial statements of healthcare organizations.
4. Develop effective budgeting and cost control strategies for healthcare settings.
5. Evaluate the financial implications of healthcare policies and regulations.
6. Make informed financial decisions to address healthcare industry-specific challenges.

Learning outcomes

Upon successful completion of this course, students will be able to:

1. Analyze the financial structure of healthcare organizations and propose improvements for enhanced financial performance.
2. Develop and implement budgeting and cost control strategies to optimize resource allocation.
3. Identify the financial impact of different healthcare policies and regulations on organizations.
4. Formulate financial plans and recommendations for healthcare organizations' sustainable growth.
5. Apply financial analysis techniques to assess investment opportunities and risk management in the healthcare sector.

SYLLABUS OF DSE-2

Unit 1(5 hours)

Introduction to Financial Management in Healthcare

- Overview of financial management concepts- Nature, scope, functions, goals, sources of finance
- Unique financial challenges in the healthcare industry

- Role of financial management in healthcare decision-making

Unit 2(15 hours)

Budgeting and Cost Control in Healthcare

- Budgeting process and techniques
- Cost behavior analysis in healthcare organizations
- Cost control strategies and cost reduction measures
- Capital Budgeting – Nature of Investment Decisions – Investment Evaluation criteria – Net Present Value (NPV), Internal Rate of Return (IRR), Profitability Index (PI), Payback Period, Accounting Rate of Return (ARR)

Working Capital Management including cash Management, Receivables Management, Inventory Management, Types & Determinants of working capital, credit management

Unit 3(10 hours)

Healthcare Reimbursement Systems

- Fee-for-service vs. value-based reimbursement
- Government and private payer systems
- Impact of reimbursement systems on financial management

Financial Planning and Decision-Making in Healthcare

- Capital budgeting and investment decisions
- Funding sources for healthcare projects
- Financial risk assessment and management

Unit 4(10 hours)

Healthcare Policy and Financial Implications

- Regulatory environment in healthcare
- Health insurance policies and their financial impact
- Healthcare reform and its financial consequences
- Concept of business plan, project plan
- Merger & Acquisition

Healthcare Revenue Cycle Management

- Patient billing and collections
- Revenue cycle optimization
- Managing accounts receivable and bad debts

Practical component (if any) –
N/A

Essential/recommended readings

1. Financial Management in Health Services by Finkler, S.A., Ward, D.M., & Calabrese, T.D.
2. Healthcare Finance: An Introduction to Accounting and Financial Managementby Louis C. Gapenski
3. Financial Management of Health Care Organizations: An Introduction to Fundamental Tools, Concepts, and Applications by William N. Zelman, Michael J. McCue, and Noah D. Glick
4. Financial Management, P. Chandra-TMH Publications

GENERAL ELECTIVE – 4:Patient Safety & Benchmarking in Healthcare

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Patient Safety & Benchmarking in Healthcare	4	3	1	0	Class XII pass	Patient Behavior& Psychology

Learning Objectives

By the end of this course, students should be able to:

- Explain the significance of patient safety in healthcare and its impact on patient outcomes.
- Identify potential risks, errors, and adverse events in healthcare processes.
- Apply patient safety principles and best practices to enhance the quality of care.
- Understand the concept of benchmarking in healthcare and its role in improving performance.
- Analyze healthcare data and implement benchmarking techniques to evaluate and compare healthcare outcomes.
- Develop strategies for continuous improvement and patient safety culture in healthcare organizations.

Learning outcomes

Upon successful completion of this course, students will:

- Demonstrate a comprehensive understanding of patient safety concepts and their importance in healthcare.
- Recognize and assess potential risks and errors in various healthcare scenarios.
- Apply patient safety strategies effectively to reduce adverse events and improve patient outcomes.
- Demonstrate proficiency in benchmarking methodologies and their application to healthcare performance analysis.
- Evaluate and interpret healthcare data to identify areas for improvement and measure progress.
- Formulate actionable plans to enhance patient safety and quality of care in healthcare organizations.

SYLLABUS OF GE-4

Unit 1(5 hours)

Introduction to Patient Safety

- Importance of patient safety in healthcare

- Patient safety culture and its impact
- Common patient safety challenges and errors

Unit 2(10 hours)

Understanding Adverse Events

- Types of adverse events and their causes
- Root cause analysis and error investigation
- Strategies to prevent adverse events
- Sentinel events and near miss events
- Incident Reporting System

Unit 3(10 hours)

Patient Safety Best Practices

- International Patient Safety Goals
- Medication safety and medication reconciliation
- Infection control measures
- Surgical safety and surgical checklist implementation

Unit 4(10 hours)

Benchmarking in Healthcare

- Definition and objectives of benchmarking
- Types of benchmarking in healthcare
- Data sources and metrics for benchmarking
- Developing improvement plans based on benchmarking results

Unit 5(10 hours)

Patient Safety Culture

- Creating a culture of safety in healthcare organizations
- Teamwork and communication in patient safety
- Human factors and their impact on patient safety
- Performance indicators for patient safety
- Continual monitoring and improvement strategies
- Patient engagement and its role in sustaining safety efforts

Practical component (if any) –

N/A

Essential/recommended readings

- Reason, J. (2000). Human error: Models and management. BMJ Books.
- Institute of Medicine (US) Committee on Quality of Health Care in America. (2001). Crossing the quality chasm: A new health system for the 21st century. National Academies Press.

Suggestive readings

- Leape, L. L. (2014). Patient safety: A human factors approach. CRC Press.
- Vincent, C. (Ed.). (2016). Patient safety. John Wiley & Sons.

SEMESTER-5

Bachelor of Vocation – Healthcare Management
Undergraduate Curriculum Framework 2022(UGCF)

DISCIPLINE SPECIFIC CORE COURSE – 13: Bio Medical Waste Management & Radiation Safety

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Bio Medical Waste Management & Radiation Safety	4	3	1	0	Class XII pass	NA

Learning Objectives

- To understand the significance of nosocomial infections, biomedical waste and its proper disposal
- To understand the harmful effects of Radiation and measures taken to ensure radiation safety

Learning outcomes

- Student will get the basic understanding and awareness about the different types of biomedical waste generated in the hospital
- Students will also understand the importance of segregation of BMW and different methods to treat different wastes.
- Awareness of Radiation Hazards in hospital will give students the methods of monitoring & reporting hazards.

SYLLABUS OF DSC-13

Unit 1- (12hours)

Introduction to Biomedical Waste

- Definition
- Classification of Bio- Medical waste
- Sources of Bio-Medical Waste

- Effects- Air, Water &Land Pollution
- Process of BMW Management – Segregation, collection, transportation, disposal

Unit -2(9 hours)

Types of BMW

- Liquid BMW, Radioactive waste, Metals / Chemicals /Drug waste
- Importance
- BMW Management & methods of disinfection

Unit 3(12 hours)

- Modern technology for handling BMW
- Monitoring & controlling of cross infection (Protective devices),
- Potential Health Risk -Needle Stick Injury, Exposure to Cytotoxic drugs, Chemical burns, Air Pollution,

Unit-4(12 hours)

- Radiation Hazards in a hospital,
- Safe use of Radioactive Drugs,
- Radioactive Waste Safe Disposal Guidelines
- Monitoring & Reporting
- Radiation safety -Training

Practical component (if any) –

N/A

Essential/recommended readings-

1. Gupta, Suharshi (2021), Biomedical Waste Management, LAP Lambert Academic Publishing.
2. Bio-Medical Waste Act & Rules Govt. of India- https://health.delhigovt.nic.in
3. Guidelines for Management of Healthcare waste as per Biomedical Waste Management Rules, 2016- https://cpcb.nic.in
4. Challenges in Biomedical Waste Management in Cities- https://www.hilarispublisher.com>open-acess

DISCIPLINE SPECIFIC CORE COURSE – 14: General Safety Codes, Fire Safety & Disaster Management in Hospitals

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
General Safety Codes, Fire Safety & Disaster Management in Hospitals	4	3	1	0	Class XII pass	NA

Learning Objectives

On completion of this module the students should be familiar with the General Safety Codes, Fire Safety & Disaster Management in Hospitals

Learning outcomes

- Students will get the basic understanding and awareness about the General Safety codes being followed in hospital for different kinds of emergencies.
- Students will be able to identify different risks and hazards in the hospital
- Students will be able to identify difference between emergency, accident and disasters and how to be prepared for different types of disasters.
- As the hospital work and surge of admissions increase during disasters, students will be able to work on proper planning and implementation of successfully managing the situation in various disasters.

SYLLABUS OF DSC-14

Unit 1(12 hours)

General Safety Codes in a hospital – Bomb Threat, Violent Patient, Cardiac arrest, Child abduction, Fire, Disaster, Clinical Storage Guidelines, Compressed gas Safety Precautions Hazardous Material Spill, Handling of Cytotoxic Drugs, Laser maintenance

Unit 2(12 hours)

Assessment of Risks and Hazards in Hospital-

- Disruption of Services – Electric, Failure of Elevators, Failure of Operating Theatre Air Conditioning System, Disruption of Services-Water
- Management – Accident Investigation and Analysis
- Safety Orientation Training
- Annual Evaluation of The Effectiveness of Safety Management Program

Unit 3(9 hours)

Fire Safety

- Minor Fire
- Major Fire (without Evacuation)
- Major fire (With Partial/full evacuation)
- Composition of firefighting team
- Duties of staff involved in fire
- Mock Drill
- Emergency Exit Plan

Unit 4(12 hours)

Hospital Disaster Management

- Basics of disaster management and Mass casualties
- Components of disaster plan : pre-hospital and hospital
- Disaster alertness in Hospital
- Disaster management planning and implementation
- Severity of illness amongst disaster victims and risk assessment
- Mock exercise on disaster management in Hospital

Practical component (if any) – N/A

Essential/recommended readings

1. National Disaster Management Guidelines- https://ndma.gov.in
2. Hospital Disaster Management Guidelines- https://nidm.gov.in
3. Muller, Robert J., (2017), Hospital Emergency Management: A Bible for Hospital Emergency Managers, CreateSpace Independent Publishing Platform.

DISCIPLINE SPECIFIC CORE COURSE – 15: Hospital Infection Control

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Hospital Infection Control	4	3	1	0	Class XII pass	NA

Learning Objectives

On completion of this module the students should be familiar with the hazards of Infections and Infection control practices in Hospitals

Learning outcomes

- Students will understand different types of hospital acquired infections and the ways infections are transmitted
- Students will understand the infection control and prevention measures to be implemented in the hospital to make it a safe place.
- Knowledge of Disinfection & Sterilization policies to be followed in the hospital will make students equipped about the practices to be followed in patient care areas.

SYLLABUS OF DSC-15

Unit 1(12 hours)

Epidemiology of communicable diseases, disease transmission

- Host defence immunizing agents, cold chain, immunization, disease monitoring and surveillance.
- Screening and surveys
- Notifiable diseases

Unit 2(12 hours)

Infection Control & Prevention-

- Hazards of infection
- Hospital Acquired Infection(HAI)
- Types of HAI
- Surveillance of HAI
- Risk Factors,
- Hospital Infection Control Measures- Universal Precautions, Hand Hygiene Protocols

- Investigation of an epidemic and role of hospital in its control.
- Hospital Infection Control committee

Unit 3(12 hours)

General Cleaning Disinfection and Sterilization-

- Cleaning and Disinfecting of Environmental Surfaces in Patient-Care Areas
- Antiseptics and disinfectants
- Methods of sterilization and disinfection

Unit 4(9 hours)

Spill Management-

- Types of Spillages
- Policy on Spill Management
- General Precautions

Practical component (if any) –
N/A

Essential/recommended readings

- S. Sastry, Apurba; R., Deepashree (2019), Essentials of Hospital Infection Control, Jaypee Brothers Medical Publishers.
- Singh, Sanjeev; Gupta, Shakti Kumar; Kant, Sunil (2012), Hospital Infection Control Guidelines, Jaypee Brothers Medical Publishers.

Discipline Specific Elective 3 :Material Management in Healthcare

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Material Management in Healthcare	4	3	1	0	Class XII pass	NA

Learning Objectives

This course provides an overview of material management principles and practices in the healthcare industry. It focuses on the effective management of medical supplies, equipment, and other materials to ensure their timely availability, cost-effectiveness, and quality in healthcare settings. Students will explore various aspects of material procurement, inventory control, distribution, and vendor management specific to healthcare organizations.

Learning outcomes

Upon successful completion of this course, students will be able to:

1. Understand the importance of material management in healthcare and its impact on patient care, safety, and operational efficiency.
2. Identify and apply various material management techniques and best practices in healthcare settings.
3. Analyze and optimize the inventory management process to reduce costs while maintaining adequate stock levels.
4. Evaluate the selection criteria for healthcare suppliers and establish effective vendor relationships.
5. Utilize technology and software tools to enhance material management processes in healthcare organizations.

SYLLABUS OF DSE-3

Unit 1(5 hours)

Introduction to Material Management in Healthcare

- Definition, scope and importance of materials management
- Aims, objectives & principles of materials management;
- Material Cycle
- Importance of material management in healthcare
- Material management challenges in healthcare settings

- Integrated Approach to Material planning & control

Unit 2(10 hours)

Inventory Control

- Definition & objectives of inventory control
- Types of inventory cost
- Pareto' law
- ABC/VED/SDE analysis
- Basic inventory management techniques
- Economic Order Quantity (EOQ) and Reorder Point (ROP) analysis
- Stock rotation and expiry management in healthcare

Unit 3(10 hours)

Material Procurement in Healthcare

- Purchasing process -Meaning of purchasing, Objectives of purchasing, 5 R‟s of purchasing, Centralized & Decentralized purchasing, General principles of procurement of medicine
- Identifying healthcare material needs and requirements
- Request for Proposal (RFP) and Request for Quotation (RFQ) processes
- Supplier selection and evaluation criteria
- Vendor Management

Unit 4(5 hours)

Stores Management

- Responsibilities and functioning of stores
- Types of Medical Stores, planning of hospital stores
- Location, lay-out planning and design of hospital stores
- Preservation of stores, documentation & evaluation of stores

Unit 5(10 hours)

Equipment Management

- Classification of Hospital equipment
- Planning and selection of equipment
- Factors affecting utilization of equipment
- Equipment failure, documentation, equipment maintenance and its types and Equipment audit.

Unit 6(5 hours)

Future Trends/Sustainability in Material Management

- Emerging technologies and innovations in healthcare material management
- Predictive analytics and artificial intelligence applications in material management
- Green procurement and eco-friendly materials
- Waste management and disposal considerations in healthcare
- Sustainable practices in material management

Practical component (if any) –

N/A

Essential/recommended readings

1. Production (Operation) Management, L.C Jhamp-Everest

2. Production and materials management, K. Sridhara Bhatt-Himalaya
3. Hospital stores management an integral approach, Shakti Gupta-JAYPEE
4. Hospital Stores Management, Shakti Gupta, Sunilkanth – Jaypee Brothers
5. Materials Management, Gopalakrishna, P., Prentice Hall, New Delhi, 1997.
6. Hospital Stores Management- An Integrated Approach, by Dr. Gupta Shakti, JaypeeBrothers.
7. Material Management by Dr. PawanArora, Global India Publication Pvt Ltd
8. Procurement and Materials management for Hospitals, Rex H Gregor, Harold C. Mickey
9. Institute of Supply Chain Management. (Website: https://www.iscm.co.in/)

Discipline Specific Elective 3 :Trends & Innovations in Healthcare

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Trends & Innovations in Healthcare	4	3	1	0	Class XII pass	NA

Learning Objectives

By the end of this course, students should be able to:

1. To understand the latest trends and innovations in the healthcare industry.
2. To explore the impact of technology on healthcare delivery and patient outcomes.
3. To analyze the challenges and opportunities presented by healthcare innovations.
4. To evaluate the ethical and regulatory considerations related to healthcare advancements.
5. To develop critical thinking skills for assessing the potential of emerging healthcare trends.

Learning outcomes

Upon successful completion of this course, students will:

1. Identify and discuss the major trends and innovations in healthcare.
2. Explain the role of technology in healthcare and its impact on patient care.
3. Assess the advantages and disadvantages of various healthcare innovations.
4. Analyze the ethical implications and regulatory aspects of implementing new healthcare technologies.
5. Critically evaluate the potential of emerging trends in improving healthcare outcomes.

SYLLABUS OF DSE-3

Unit 1(5 hours)

Introduction to Healthcare Trends and Innovations

- Overview of healthcare industry advancements

- Importance of staying updated with the latest trends
- Impact of innovations on patient care and outcomes

Unit 2(15 hours)

Technology in Healthcare

- Telemedicine and remote patient monitoring
- Electronic health records (EHR) and interoperability
- Artificial intelligence and machine learning applications in healthcare

Precision Medicine

- Personalized treatment approaches
- Genomics and genetic testing in healthcare
- Challenges and opportunities in precision medicine

Unit 3(20 hours)

Internet of Medical Things (IoMT)

- Connected medical devices and wearables
- Data security and privacy concerns in IoMT
- Enhancing patient engagement through IoMT

Virtual Reality (VR) and Augmented Reality (AR) in healthcare

- Applications of VR/AR in medical training and education
- VR/AR in pain management and therapeutic interventions
- Future possibilities and limitations of VR/AR in healthcare

Robotics and Automation in Healthcare

- Surgical robots and robotic-assisted procedures
- Automation in pharmaceutical manufacturing and drug delivery
- Ethical considerations in the use of healthcare robots

Unit 4(5 hours)

Future of Healthcare Innovations

- Predicting upcoming trends in the healthcare industry
- Potential disruptions and transformative innovations
- Preparing for a career in the evolving healthcare landscape

Practical component (if any) –

N/A

Essential/recommended readings

1. Article: "The Impact of Technology on Healthcare Delivery" - Journal of Healthcare Management
2. Report: "Trends and Innovations in Precision Medicine" - World Health Organization
3. Whitepaper: "Internet of Medical Things: Transforming Healthcare" - Deloitte
4. Book: "Healthcare Robotics: Technologies and Applications" - Richard G. Marklin
5. Article: "Blockchain in Healthcare: Opportunities and Challenges" - Health Information Science and Systems Journal
6. Deep Medicine: How Artificial Intelligence Can Make Healthcare Human Again - Eric Topol
7. The Creative Destruction of Medicine: How the Digital Revolution Will Create Better Healthcare- Eric Topol
8. The Fourth Industrial Revolution - Klaus Schwab

GENERAL ELECTIVE – 5:E-Skills & Software used in healthcare

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
E-Skills & Software used in healthcare	4	3	1	0	Class XII pass	Patient Safety & Benchmarking in Healthcare

Learning Objectives

This course provides an introduction to the essential E-Skills and Software used in the healthcare industry. Students will explore various technologies and software applications that play a crucial role in modern healthcare settings, including electronic health records, telemedicine, healthcare analytics, and patient management systems. Through hands-on exercises and case studies, students will gain practical knowledge to leverage technology effectively in healthcare delivery.

Learning outcomes

Upon successful completion of this course, students will be able to:

1. Understand the significance of E-Skills and Software in healthcare and its impact on patient care and overall healthcare efficiency.
2. Identify and use various healthcare software applications for tasks like patient record management, medical billing, and telemedicine consultations.
3. Analyze healthcare data using software tools and techniques to derive meaningful insights and improve decision-making processes.
4. Demonstrate competence in navigating electronic health records and other health information systems.
5. Evaluate the potential benefits and risks of using E-Skills and Software in healthcare contexts.

SYLLABUS OF GE-5

Unit 1(5 hours)

Introduction to E-Skills in Healthcare

- Overview of E-Skills in the context of healthcare
- Importance of technology in improving patient care and outcomes
- Ethical and legal considerations related to technology use in healthcare

Unit 2(10 hours)

Introduction to Healthcare Information System

- Definition, Meaning, Scope, Importance & Challenges of HIS
- Introduction to E-Prescription, CPRS, Electronic Health Records
- Important Modules of Hospital Management System

Unit 3(15 hours)

Application of HIS in Hospitals

- Back office & Front Office
- IPD & OPD
- Patient Registration & Appointment Scheduling
- Admission Discharge Transfer (ADT)
- Computerized Physician Order Entry (CPOE)
- Roster Management
- Laboratory Information System
- Radiology Information System
- CSSD
- Pharmacy
- Operation Theatre
- Inventory Management

Unit 4(10 hours)

- Knowledge Management System
- Management Information System
- Clinical Decision Support System
- Executive Support System
- Introduction to Marketing Information System
- Telemedicine & its application
- Overview of mHealth apps and their diverse uses

Unit 5(5 hours)

Emerging Technologies in Healthcare

- Exploring AI, IoT, and other cutting-edge technologies in healthcare
- Potential applications and challenges of emerging technologies
- Discussing the future of technology in healthcare

Practical component (if any) –

N/A

Essential/recommended readings

1. Healthcare Information Technology Exam Guideby Kathleen McCormick
2. Healthcare Analytics for Quality and Performance Improvementby Trevor L. Strome
3. Telemedicine Technologies: Information Technologies in Medicine and Telehealth by Bernard Fong, et al.
4. Mobile Health: A Technology Road Mapby Robert Istepanian, et al.
5. Artificial Intelligence in Healthcareedited by Adam Bohr and Rick Lawrence
6. Hospital Information Systems by S.A Kelkar, PHI
7. Management Information System by Ashok Arora & Akshaya Bhatia, Excel Book.

SEMESTER-6
Bachelor of Vocation – Healthcare Management
Undergraduate Curriculum Framework 2022(UGCF)

DISCIPLINE SPECIFIC CORE COURSE – 16: Health Services Legal & Ethical Issues

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Health Services Legal & Ethical Issues	4	3	1	0	Class XII pass	NA

Learning Objectives

After completion of the module student should be able to describe the important Legal & Ethical Issues associated with Healthcare

Learning outcomes

- Students will understand different laws, acts, rules and regulations which the hospital have to comply to.
- Students will understand the acts pertaining to different departments in the hospital and their importance for the smooth functioning of hospital as per the legislature of the country
- Knowledge of Medical Negligence, Consent and contracts will help the students in understanding the importance of legalities with respect to the health of the patients.

SYLLABUS OF DSC-16

Unit 1(12 hours)

Introduction to Act, Law, Rules and Regulations

Medical Ethics

- Medical Ethics as per MCI-Duties of Doctors
- Ethical Dilemmas in Healthcare Industry

Unit 2(12 hours)

Laws applicable to Hospital

- Law of Contracts, Specific Performance
- Medical jurisprudence and functioning of hospitals
- Consent & its Importance

Unit 3(12 hours)

Important Acts

- Consumer Protection Act and Hospitals
- I.D. Act, W.C. Act
- West Bengal Clinical Establishment Act and Rules
- ESI Act, Trade Union Act
- Organ transplantation Act
- Pc PNDT Act
- MTP Act
- ART & Surrogacy Act

Unit 4(9 hours)

- Medico-Legal Cases
- Medico- Legal Problems in relation to health administration
- Medical Negligence and Types

Practical component (if any) –
N/A

Essential/recommended readings

1. Bhat, Sandeep (2023), Reflection on Medical Law and Ethics in India, Eastern Law House.

DISCIPLINE SPECIFIC CORE COURSE – 17: Management of Non-Clinical Departments - Support and Utility Services

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Management of Non-Clinical Departments - Support and Utility Services	**4**	**3**	**1**	**0**	**Class XII pass**	**NA**

Learning Objectives

On completion of this module the students should be familiar with the various aspects of planning, operating and evaluation of different support and utility services in hospitals

Learning outcomes

- Students will understand planning, organization, structure, location, functions, policies and quality parameters of different departments of support & utility services.
- Knowledge of functioning of all these departments will help the students to implement and manage the operations of these departments.

SYLLABUS OF DSC-17

Unit 1(9 hours)

Introduction- Support Services Departments; Planning, Organization Structure, Location and Function of support service departments.

Unit 2(14 hours)

Policies and Quality Parameters

- Methods of Sterilization CSSD- Methods of Sterilization
- Pharmacy Department
- Radiology Department
- Nuclear Medicine
- Laboratory Services
- Medical Record Department

Unit 3(9 hours)

Introduction to Utility Services Departments-Planning, Organization Structure, Location, Functions, Policies and Quality Parameters

Unit 4(13 hours)

Understanding of different utility service departments-

- Laundry services
- Security Services
- Transportation Services (External & Internal)-Ambulance Services
- Hospital Stores
- Mortuary (Preservation, transportation & religious formalities)
- Kitchen services
- House Keeping Department
- Engineering & Maintenance Department

Practical component (if any) –
N/A

Essential/recommended readings-

1. Das, Joydeep (2015), Hospital Administration and Management, Jaypee Brothers Medical Publisher.
2. Goel, Dr. Sonu (2013), Hospital Administration, Elsevier India.

DISCIPLINE SPECIFIC CORE COURSE – 18: Hospital Engineering & Bio-Medical Engineering

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Hospital Engineering & Bio-Medical Engineering	4	3	1	0	Class XII pass	NA

Learning Objectives

On completion of this module the students should be familiar with the equipment management process and its various components and their roles in hospital system

Learning outcomes

- Students will understand the different medical equipment used in hospital, they will understand in detail the requirement, procurement and functioning of all the equipment.
- Students will also get an understanding of different types of maintenance contracts required for all the biomedical equipment

SYLLABUS OF DSC-18

Unit 1(10 hours)

Introduction

List of common Medical Equipment used in Hospital

- General Requirements
- Local, National and International availability of Medical Equipment

Unit 2-(15 hours)

Purchase / Installation / Commissioning of Medical Equipment

- Equipment selection guideline, Estimation of cost and Q.C. Planning
- Justification of purchase proposal, Hospital Need Assessment
- Equipment selection guideline, Estimation of cost and Q.C. Planning

Unit -3(10 hours)

Budgeting of Biomedical Equipment

- Replacement of old equipment and Buyback Policy
- Estimation of Breakeven point and Profit – Projection in hospital budget

Unit 4(10 hours)

Medical Equipment Maintenance

- In-house, AMC and CMC
- Preventive Maintenance
- Calibration of Equipment

Practical component (if any) –
N/A

Essential/recommended readings-

1. Willson, Keith; Ison, Keith; Tabakov, Slavik (2013), Medical Equipment Management, CRC Press.

Discipline Specific Elective 4 : Healthcare Marketing

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Healthcare Marketing	4	3	1	0	Class XII pass	NA

Learning Objectives

By the end of this course, students should be able to:

1. Understand the unique challenges and opportunities in the healthcare industry regarding marketing and promotion.
2. Analyze the target audience and consumer behavior in healthcare settings.
3. Develop effective marketing strategies to promote healthcare products and services.
4. Explore ethical considerations and regulatory frameworks in healthcare marketing.
5. Utilize digital marketing techniques and technologies to enhance healthcare campaigns.
6. Measure and evaluate the success of healthcare marketing initiatives.

Learning outcomes

Upon successful completion of this course, students will:

1. Describe the key concepts and principles of healthcare marketing.
2. Conduct market research to identify healthcare consumer needs and preferences.
3. Design and implement healthcare marketing strategies that align with industry best practices.
4. Evaluate the ethical implications of various marketing tactics in the healthcare sector.
5. Apply digital marketing tools and platforms to create targeted healthcare campaigns.
6. Measure the effectiveness of healthcare marketing efforts using relevant metrics.

SYLLABUS OF DSE-4

Unit 1(10 hours)

Introduction to Healthcare Marketing

- Meaning and importance of marketing
- Role of marketing in modern organizations
- Basic concepts of marketing
- Evolution of marketing
- Scanning the marketing environment
- Marketing Mix

- Understanding Consumer Behavior-Analyzing patient decision-making processes, Factors influencing healthcare consumer choices

Unit 2(15 hours)

Marketing Research & Strategies

- Techniques for gathering healthcare market data
- Analyzing market trends and opportunities
- Competitive analysis in the healthcare sector
- Product and service positioning in healthcare
- Creating value propositions for healthcare offerings
- Developing a healthcare marketing mix

Unit 3(10 hours)

Promotion of Business in Hospitals

- Service Marketing – Patient care and communication
- Advertisement and Branding
- Marketing promotional activities
- Corporate marketing
- Marketing and medical ethics
- Ethical guidelines for healthcare marketers
- Building a strong healthcare brand identity

Unit 4(10 hours)

Digital Marketing in Healthcare

- Leveraging social media for healthcare marketing
- Search engine optimization (SEO) for healthcare websites
- Email marketing and online advertising in the healthcare industry

Practical component (if any) –

N/A

Essential/recommended readings

1. Marketing for Healthcare Organizations, Kotler, P., & Bucher, T. (2020). Pearson.
2. Stevens, R. (2018). Healthcare Marketing: A Case Study Approach, Stevens, R. (2018). CRC Press.
3. Healthcare Marketing: A Comprehensive Guide for Medical Practice, Hollander, S. C., & Pulos, E. (2015). Jones & Bartlett Learning
4. Essentials of Health Care Marketing**,** Berkowitz, E. N. (2017). Jones & Bartlett Learning
5. Marketing Management by Philip Kotler, Pearson publishers, 2003
6. Marketing Management by Rajan Saxena, TMH, 2005.
7. Marketing-the best practices by K.Douglar, Hoffman&Czinkota, Thomson, 2004
8. Basic Marketing by William D. Rerreult&Mc Carthy, TMH,2005
9. Marketing Management by V.S.Ramaswamy, Namakumari, Macmillan, 2006

Discipline Specific Elective 4: Developing Strategy in Healthcare

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Developing Strategy in Healthcare	4	3	1	0	Class XII pass	NA

Learning Objectives

1. Understand the fundamental concepts and theories of strategic management to devise short & long-term goals for healthcare
2. Analyze the external and internal factors influencing an organization's strategic decisions.
3. Develop skills in formulating and implementing effective business strategies.
4. Evaluate the role of innovation, sustainability, and ethics in strategic decision-making.
5. Assess the impact of globalization on strategic management practices.
6. Apply strategic management frameworks to real-world healthcare business scenarios.

Learning outcomes

By the end of this course, students will be able to:

1. Identify and explain the key principles and theories of strategic management.
2. Conduct a comprehensive strategic analysis of a given organization.
3. Formulate actionable business strategies that align with the organization's goals.
4. Evaluate and recommend strategic alternatives for healthcare growth and sustainability.
5. Demonstrate an understanding of the ethical and social implications of strategic decisions.
6. Communicate strategic recommendations effectively to stakeholders.

SYLLABUS OF DSE-4

Unit 1(5 hours)

Introduction to Strategic management

- Importance of Strategic management
- Strategic management process: strategy and tactics
- Strategic vision and mission, strategists in Strategic Management
- Levels of strategy: Corporate, business, and functional
- Porter’s value chain: concept and applications

Unit 2(15 hours)

Strategic analysis in Healthcare Organizations

- Introduction & need for strategic analysis

- Internal Analysis and External Environmental Analysis
- SWOT Analysis
- PESTEL Analysis
- Competitor Analysis
- Value chain analysis
- Core competencies and capabilities

Unit 3(10 hours)

Level of strategy

- Corporate Level Strategy: Grand Strategy
- Portfolio analysis: BCG Matrix
- Business level Strategy: Generic Business Strategy
- Functional strategy analysis: Plans and policies: Financial, Marketing, Operational, Personnel
- Globalization and its impact on business strategy
- Multinational and global strategies

Unit 4(15 hours)

Corporate Governance and Ethics

- Corporate governance principles and practices
- Role of the board of directors
- Ethical considerations in strategic decision-making
- Corporate social responsibility (CSR) and sustainability

Strategy Implementation

- Organizational structure and design
- Strategic control and performance measurement
- Strategy execution and managing change
- Strategic leadership and culture

Strategic Evaluation and Control

- Criteria for evaluating strategies
- Balanced Scorecard approach
- Learning from strategic failures and successes
- Making strategic adjustments

Practical component (if any) –

N/A

Essential/recommended readings

1. Kazmi, A: Business policy and Strategic management, Tata McGraw Hill.
2. Dess and Miller, Strategic Management,Tata McGraw Hill.
3. Cherunilam, F: Strategic Management, Himalaya Publishing House.
4. Budhiraja, S.B. and Athreya, M.B: Cases in Strategic Management, Tata McGraw Hill.
5. Thomson and Strickland: Strategic Management, McGraw Hill.
6. Hill, C. W., Jones, G. R., & Schilling, M. A. (or latest edition), Strategic Management: Theory & Cases: An Integrated Approach.
7. Peter. M. Ginter, Strategic Management of Healthcare Organizations

GENERAL ELECTIVE – 6: Legal System of Healthcare Industry

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Legal System of Healthcare Industry	4	3	1	0	Class XII pass	E-Skills & Software used in healthcare

Learning Objectives

This course provides an in-depth understanding of the laws and regulations that govern the healthcare industry in India. Students will explore various legal aspects related to healthcare, including licensing, medical practice, patient rights, medical malpractice, and more. The course aims to equip learners with the knowledge and skills to navigate legal challenges and ensure compliance in the healthcare sector.

Learning outcomes

Upon successful completion of this course, students will be able to:

1. Explain the key laws and regulations governing the Indian healthcare industry and their implications.
2. Apply legal principles to real-world scenarios in the healthcare sector.
3. Evaluate the legal risks and compliance requirements for healthcare organizations.
4. Analyze the legal and ethical aspects of patient care and decision-making.
5. Demonstrate proficiency in identifying and addressing legal issues in healthcare practices.

SYLLABUS OF GE-6

Unit 1(5 hours)

Introduction to Indian Healthcare Laws

- Laws pertaining to establishment of hospitals
- Legal requirements under Medical Council Acts
- West Bengal Clinical Establishment Act and rules

Unit 2(15 hours)

Acts pertaining to Hospitals

- Legal aspects relating to Organ transplantation

- MTP Act 1971
- Basics of Drugs and Cosmetic Acts
- Euthanasia
- ESI Act
- PNDT Act
- Human experimentation, Clinical trials
- Industrial dispute Act
- Central Births & Death Registration Act
- Consumer Protection Act

Unit 3(10 hours)

Legal liability of hospitals

- Criminal, civil and tortuous
- Liability for negligence
- Absolute liability and vicarious liability
- Legal remedies available to patients

Unit 4(15 hours)

Medical ethics

- Ethical Principles & rules
- Core concepts of medical ethics
- Law & ethics-a comparison
- Elements of medical malpractice
- Medical negligence and liability
- Confidentiality
- Autonomy & Informed Consent

Practical component (if any) –
N/A

Essential/recommended readings

1. Healthcare Laws in Indiaby Shailaja Chandra
2. Law and the Practice of Medicine in India by Anant Bhan and Amar Jesani
3. Medical Law and Ethics by Amitava Sengupta
4. Indian Medical Law: A Treatise on Crimes against Medical Profession by Sandeep Joshi
5. Medical negligence and legal remedies, 3rd edition, universal law Publisher, Anoop Kaushal K, New Delhi, 2004.
6. Medico-legal Aspects of Patient Care, 3rd Edition, R. C. Sharma, Peepee Publishers & Distributers2008

SEMESTER-3

Bachelor of Vocation - Retail Management & IT course

Undergraduate Curriculum Framework 2022(UGCF)

DISCIPLINE SPECIFIC CORE COURSE – DSC-7 E-Commerce

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-7 E-commerce	**4**	**3**	**1**	**0**	**Class XII**	**Nil**

Learning Objectives

The course aims to enhance skills for effective and contemporary applications of E-Commerce.

Learning outcomes

By studying this course, students will be able to:

- Describe the challenging needs of the society in the field of E-Commerce.
- Identify various applications in the context of online transactions.
- Explain the steps in designing of website.
- Describe various e-payment systems.
- Analyse security and operational issues in E-Commerce.

SYLLABUS OF DSC-7

UNIT – I (12 Hours)

Introduction to E-commerce: Meaning, nature, concepts , advantages, disadvantages and reasons for online transactions online, Electronic commerce, Types of Electronic commerce, Electronic commerce models, Challenges and barriers to E-commerce environment; E-commerce in India: Transition to E-commerce in India, Indian readiness for E-commerce, E-transition challenges for Indian corporate.

UNIT – II (12 Hours)

Electronic Payment system: Digital payment requirements, Electronic payment system, Types of Electronic payment systems, Concept of e-money, infrastructure issues and risks in EPS, Electronic fund transfer.

UNIT – III (12 Hours)

E-commerce Application: E-commerce applications in retail and other industries, Emerging trends in E-commerce, Mobile commerce; Technological and social considerations, Regulatory and ethical considerations in E-commerce

UNIT – IV (9 Hours)

E-Commerce security: Meaning, need and concepts; Electronic commerce security environment, security threats in E-commerce environment, Basics of encryption and decryption.

Essential/recommended readings

1. Arora Shivani, e-Commerce (Taxmann: New Delhi).
2. Awad, Elias M., Electronic Commerce: From Vision To Fulfillment (PHI Learning: New Delhi).

Suggestive readings

1. Bharat Bhaskar, Electronic Commerce- Framework, Technologies and Applicatonc,(Tata McGraw Hill).
2. Chhabra, T.N., Jain, H. C., and Aruna Jain, An Introduction to HTML (Dhanpat Rai & Co.: New Delhi).
3. Gupta, Pralok, ed., E-COMMERCE In India: Economic And Legal Perspectives (Sage Publications: New Delhi). Kenneth C. Laudon, Carol Guercio Traver, E-commerce, Global Edition (Pearson Education).

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – DSC-8 Sales and Distribution Management

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-8 Sales and Distribution Management	**4**	**3**	**1**	**0**	**Class XII**	**Nil**

Learning Objectives

The course aims to enhance an in-depth understanding of sales management and personal selling.

Learning outcomes

By studying this course, students will be able to:

- Understand the compensation and supervision of salesmen besides setting sales territories and targets.
- Develop proficiency in evaluation of sales performance and sales cost analysis.
- Understand the different marketing channels.
- Develop basic understanding of distribution management and evaluation of channel performance.

SYLLABUS OF DSC-8

UNIT – I (12 Hours)

Sales Management; Objectives and Functions; Setting and Formulating Personal Selling Objectives; Recruiting and selecting Sales Personnel; Developing and conducting Sales Training Programmes. Sales organization, Sales function & policies, Personal selling - nature, scope & objectives, Formulating Personal selling strategy.

UNIT – II (12 Hours)

Designing and Administering Compensation Plans; Supervision of Salesmen; Standards and Performance; Motivating Sales Personnel; Sales Meetings and Sales contests. Planning the Sales Effort - Sales planning and Budgeting, Estimating Market Potential and Sales forecasting, Setting the sales territory & quotas, Sales and cost Analysis

UNIT – III (11 Hours)

Marketing Channels, their Structure; Channel Intermediaries-Role and Types; Wholesaling and Retailing; Logistics of Distribution; Channel Planning, Organizational Patterns in Marketing Channels: Assessing Performance of Marketing Channels; International Marketing Channels.

UNIT – IV (10 Hours)

Distribution Management - Managing marketing logistics & channels, Channel Integration - VMS, HMS, Channel Management, and Marketing channel Policies & legal issue. Channel Institutions & control, Wholesaling &- Retailing, Channel Information systems, Managing & Evaluating Channel Performance Case & future trends in sales & distribution management.

Essential/recommended readings

1. Gupta, S.L (2005) Sales and Distribution Management: Text and Cases – An Indian Perspective, Excel Books.
2. Havaldar, K. K.& Cavale, V. M. (2007) Sales and Distribution Management: Text & Cases, Tata McGraw-Hill.

Suggestive readings

1. Still, R. R., Cundiff, E. W. & Govoni, N. A. P(1998) Sales Management: Decision Strategies and Cases, Dorling Kindersley.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – DSC-9 Customer Experience Management

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-9 Customer Experience Management	**4**	**3**	**1**	**0**	**Class XII**	**Nil**

Learning Objectives

This course aims to familiarize the students with the concept and importance of the relationship with customers and techniques to enhance customer experience.

Learning outcomes

By studying this course, students will be able to:

- Demonstrate the management of customer life-cycle, importance of trust, value and commitment in building relationship.
- Analyse the CEM techniques and strategies..
- Describe the applications of CEM tools in the retail sector.

SYLLABUS OF DSC-9

UNIT – I (12 Hours)

Introduction to the strategy of CEM and CRM and the interdisciplinary relationship, Customer Experience Innovation, Communicate effectively with stake-holders Develop individual retail service opportunities

UNIT – II (12 Hours)

Business Models and its impact on customer experience: Offline, online, B2C and B2B – social media, platforms and merging offline and online experiences

UNIT – III (12 Hours)

Mapping the customer journey: Process of interaction with a supplier – methods and tools to analyze what's right and what's wrong, Design step-by-step experiences, which enchant customers and at the same time create new opportunities and lead to sustainable competitive advantage

UNIT – IV (9 Hours)

Establish and satisfy customer needs, Monitor and solve customer service problems, Effective Stakeholder communication, Effective after sales service**,** Customer feedback Management

Essential/recommended readings

1. Sheth, J. N., & Parvatiyar, A. (2013). Handbook of Relationship Marketing. London, UK: Sage Publications Ltd.
2. S. Shanmugasundaram (2008) Customer relationship management, Prentice Hall of India Private Limted, New Delhi

Suggestive readings

1. Sheth, J. N., Parvatiyar, A., & Shainesh, G. (2017). Customer Relationship Management: Emerging Concept, Tools and Applications. India: McGraw Hill.
2. Stone, M., & Woodrock, N. (1995). Relationship Marketing. London: Kogan Page.
3. Rai Kumar Alok (2011) Customer relationship management- Concept and Cases, Prentice Hall of India Private Limted, New Delhi. 2011

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Discipline Specific Course

Bachelor of Vocation - Retail Management & IT course

DISCIPLINE SPECIFIC ELECTIVE –DSE- 1 Retail Team organization and Dynamics

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
DSE-1 Retail Team organization and Dynamics	**4**	**3**	**1**	**0**	Class XII Pass	**NA**

Learning Objectives

Upon completion of this course, students will be able to understand the importance of effective team organization in the retail industry.Analyze the dynamics of retail teams and their impact on overall performance.

Learning outcomes

By studying this course, students will be able to:

1. Assess the effectiveness of retail team organization and propose improvements for enhanced performance.
2. Implement leadership and communication strategies to foster teamwork and collaboration.
3. Develop recruitment and training processes that align with the needs of the retail organization.
4. Design performance management systems to motivate and support retail team members.
5. Apply conflict resolution techniques to maintain a positive work environment and resolve issues.
6. Evaluate the impact of diversity and inclusion on retail team dynamics and propose inclusive practices.

SYLLABUS

UNIT – I (9 Hours)

Introduction to Retail Team Organization: Importance of effective team organization in retail, Team dynamics and their impact on retail performance, Types of retail teams (sales, customer service, merchandising, etc.); Leadership and Communication in Retail Teams: Qualities of effective retail leaders, Communication strategies for team cohesion, Team meetings and feedback mechanisms.

UNIT – II (10 Hours)

Recruitment and Training in Retail Teams: Recruitment strategies for attracting top talent, On boarding and orientation for new team members, Continuous training and skill development; Performance Management in Retail Teams, Setting performance goals and expectations, Performance evaluation and feedback, Employee recognition and incentive programs.

UNIT – III (14 Hours)

Conflict Resolution in Retail Teams: Identifying sources of conflict in retail settings, Techniques for resolving conflicts and fostering collaboration, dealing with difficult team dynamics and personalities,; Problem-Solving in Retail Teams, Analyzing retail challenges and finding solutions as a team, Decision-making processes in retail team settings, Creative problem-solving techniques; Diversity and Inclusion in Retail Team Organization, Benefits of diverse and inclusive retail teams, Promoting diversity in recruitment and hiring practices, Creating an inclusive work environment.

UNIT – IV (12 Hours)

Building Team Culture and Morale: Cultivating a positive team culture in retail settings, Employee engagement and morale-boosting activities, Team-building exercises and workshops; Managing Remote and Hybrid Retail Teams, Strategies for effectively managing remote and hybrid teams, Communication and collaboration tools for dispersed teams, Overcoming challenges of remote work in retail; Real-World Retail Case Studies.

Essential/recommended readings

1. "The 5 Dysfunctions of a Team: A Leadership Fable" by Patrick Lencioni.
2. "Crucial Conversations: Tools for Talking When Stakes Are High" by Al Switzler, Joseph Grenny, and Ron McMillan.
3. "The Retail Revival: Reimagining Business for the New Age of Consumerism" by Doug Stephens.

Suggestive readings

1. "Good to Great: Why Some Companies Make the Leap...And Others Don't" by Jim Collins.
2. "Daring Greatly: How the Courage to Be Vulnerable Transforms the Way We Live, Love, Parent, and Lead" by Brené Brown.
3. "The Culture Code: The Secrets of Highly Successful Groups" by Daniel Coyle.
4. "Team of Teams: New Rules of Engagement for a Complex World" by General Stanley McChrystal.
5. "The Five Most Important Questions You Will Ever Ask About Your Organization" by Peter F. Drucker.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE –DSE-1 Merchandise Planning

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
DSE-1 Merchandise Planning	**4**	**3**	**1**	**0**	Class XII Pass	**NA**

Learning Objectives

Upon completion of this course, students will be able to understand the concept of merchandise planning and its significance in retail operations. Analyze market trends, consumer behavior, and external factors influencing merchandise planning decisions. Develop skills in assortment planning and product selection to meet customer demands.

Learning outcomes

By studying this course, students will be able to:

1. Demonstrate a comprehensive understanding of merchandise planning principles and their application in retail settings.
2. Analyze and interpret market data, customer insights, and external factors to make informed merchandise planning decisions.
3. Create effective merchandise assortment plans based on market demands, seasonality, and target audience preferences.
4. Implement inventory management techniques to minimize stockouts and overstock situations while optimizing cash flow.

SYLLABUS

UNIT – I (12 Hours)

Introduction to Merchandise Planning, Definition and importance of merchandise planning in retail, Merchandise planning process and its components, Market Analysis and Consumer Behavior, Analyzing market trends and competitors, Understanding consumer behavior and preferences, Identifying factors influencing buying decisions.

UNIT – II (9 Hours)

Assortment Planning and Product Selection, Creating merchandise categories and subcategories, Product lifecycle management, Assortment optimization techniques

UNIT – III (12 Hours)

Inventory control methods (ABC analysis, EOQ, safety stock), Inventory forecasting and demand planning, Pricing Strategies and Promotional Planning, Pricing tactics (cost-based, value-based, and competitive-based), Promotions and discounts in merchandise planning, Seasonal and event-based promotions.

UNIT – IV (12 Hours)

Utilizing data for merchandise decision-making, Introduction to merchandise planning software and tools, Demand forecasting techniques, Performance Evaluation and Adjustment, Key performance indicators (KPIs) for merchandise planning, Evaluating merchandise plan effectiveness.

Essential/recommended readings

1. "Retail Management: A Strategic Approach" by B. Pattnaik and P. R. Kumar
2. "Merchandising Mathematics for Retailing" by Cynthia R. Easterling and Ellen L. Flottman
3. "Retailing Management: Text and Cases" by Swapna Pradhan

Suggestive readings

1. "Merchandising Mathematics for Retailing" by Cynthia R. Easterling and Ellen L. Flottman
2. "Fashion Buying: From Trend Forecasting to Shop Floor" by Dimitri Koumbis
3. "The New Rules of Retail: Competing in the World's Toughest Marketplace" by Robin Lewis and Michael Dart

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERAL ELECTIVE –GE-3 Retail Brand Management and CRM

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
GE-3 Retail Brand Management and CRM	**4**	**3**	**1**	**0**	Class XII Pass	**Should have studied GE -2 B.Voc-RM&IT**

Learning Objectives

Upon completion of this course, students will be able to understand the significance of retail brand management and its impact on consumer perceptions and loyalty.Analyze the elements of successful retail branding strategies and their alignment with overall business objectives.

Learning outcomes

By studying this course, students will be able to:

1. Articulate the importance of retail brand management and its influence on customer loyalty and preference.
2. Develop and execute retail branding strategies that align with the overall brand identity and target audience.
3. Utilize CRM tools and techniques to personalize customer interactions and enhance the customer journey.
4. Implement effective customer segmentation strategies to tailor marketing efforts and improve customer satisfaction.
5. Measure brand equity and CRM performance using relevant metrics and data analytics.
6. Apply ethical principles to retail brand management and CRM practices to build trust with customers.

SYLLABUS

UNIT – I (9 Hours)

Introduction to Retail Brand Management: Understanding retail branding and its significance, Brand equity and its impact on customer behavior, Building a strong brand identity and positioning, Elements of Retail Brand Strategy, Brand vision, mission, and values, Brand personality and brand storytelling, Brand extension and co-branding.

UNIT – II (12 Hours)

Customer Relationship Management (CRM) in Retail: Importance of CRM in retail business, CRM vs. traditional marketing approaches, CRM technologies and tools, Customer Segmentation and Personalization, Types of customer segmentation, Personalization techniques in retail marketing, Customizing the customer experience.

UNIT – III (12 Hours)

CRM Data Analytics and Insights: Collecting and analyzing customer data, Using data to drive CRM decisions, Implementing CRM Strategies, Designing CRM programs and initiatives, CRM communication and touch points; Measuring CRM effectiveness, Managing Customer Loyalty and Retention, Building customer loyalty through CRM, Customer retention strategies and tactics.

UNIT – IV (12 Hours)

Measuring Brand Equity and Customer Satisfaction: Metrics for measuring brand equity, Customer satisfaction surveys and feedback, Net Promoter Score (NPS) and other customer loyalty metrics; Ethical Considerations in Retail Brand Management and CRM, Privacy and data protection in CRM, Transparency and trust in brand communications, Sustainable and socially responsible brand practices.

Essential/recommended readings

1. "Building Strong Brands" by David A. Aaker.
2. "Strategic Brand Management: Building, Measuring, and Managing Brand Equity" by Kevin Lane Keller.
3. "CRM at the Speed of Light: Capturing and Keeping Customers in Internet Real Time" by Paul Greenberg.

Suggestive readings

1. Customer Relationship Management: Concepts and Technologies" by Francis Buttle.
2. "Customer Data Platforms: Use People Data to Transform the Future of Marketing Engagement" by David M. Raab.
3. "The Loyalty Leap: Turning Customer Information into Customer Intimacy" by Bryan Pearson.
4. "The Brand Gap: How to Bridge the Distance Between Business Strategy and Design" by Marty Neumeier.
5. "The CRM Handbook: A Business Guide to Customer Relationship Management" by Jill Dyché.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER-4

Bachelor of Vocation - Retail Management & IT course

DISCIPLINE SPECIFIC CORE COURSE – DSC-10 Material Planning and Control

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-10 Material Planning and Control	4	3	1	0	Class XII	Nil

Learning Objectives

The course aims to enhance the understanding of the basic concept of material planning and evaluating various costs in material management.

Learning outcomes

By studying this course, the students will be able to:

- Have basic understanding of costing for decision making.
- Have knowledge of standard costing.
- Develop in-depth understanding of budgeting and budgetary control.
- Understand the usage of computers in materials management.
- Develop skill to evaluate the Material Management Function

SYLLABUS OF DSC-10

UNIT–I: (15 Hours)

Costing for Decision making: Marginal Cost, Fixed and Variable Costs (Period and Product Costs), Marginal Costing System, Marginal Cost Equation, Profit -Volume Ratio, Break Even Analysis, Margin of Safety, Cost-Volume Profit Analysis and its Uses, Concept of Relevant Costs in Decision Making.

UNIT – II: (15 Hours)

Budgeting &Budgetary Control: Meaning of Budget, Types of Budgets, Budgetary Control System, Material Requirement Planning, Principal Budget Factor, Budget Manual, Preparation of Different Types of Budgets Like Sales, Production, Material Consumption, Purchase Budget etc. Fixed and Flexible Budget.

UNIT – III: (9 Hours)

Standard Costing: Meaning of standard cost, Standard Costing System, Material Cost Variance Analysis.

UNIT – IV: (6 Hours)

Evaluation of Material Management Function: Meaning and Procedure. Evaluation Tools and Techniques.

Essential/recommended readings

1. Dutta A.K. (1998) Materials Management: Procedures, Text and cases 2nd edition, Prentice Hall of India Pvt. Ltd., New Delhi.
2. Gopalakrishnan, P. and Sundarson, M. (2007) Materials Management: An Integrated Approach, Prentice Hall of India Pvt. Ltd., New Delhi.

Suggestive readings

1. Maheshwari• & Mittal (2010) Management Accounting 3rd edition, Shree Mahavir Book, Depot, New Delhi.
2. Saxena, V.K. and Vashist CD (2015) Cost and Management Accounting, 7th edition• Sultan Chand and Sons, New Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – DSC-11 Retail Branding and Strategy

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-11 Retail Branding and Strategy	**4**	**3**	**1**	**0**	**Class XII**	**Nil**

Learning Objectives

The course aims to provide a basic understanding of strategic approaches to management of retail.

Learning outcomes

By studying this course, students will be able to:

- Develop preliminary understanding of the meaning of brand
- Understand the consumers perspective about the brand
- Develop proficiency in managing the brand portfolio
- Have comprehensive understanding of retailing organizations and their growth

SYLLABUS OF DSC-11

UNIT – I (12 Hours)

Brand: Meaning, Definition, Role of Brand, Brand Positioning & Personality of a Brand, Consumer's concept of 'Self-Image', Brand Proposition, Brand Name & Brand Awareness.

UNIT – II (12 Hours)

Managing Brand Portfolio, Contemporary view of the role of Brand Management, Various issues related to Brand Management, Process involve in Building & Managing Brand in retail management.

UNIT – III (12 Hours)

Retailing organizations, Formulation and evaluation of strategic options within retailing organizations, Mergers, Acquisition and strategic alliances involving retailers, Analysis of organization structure and design among retail organizations.

UNIT – IV (9 Hours)

Strategic Management: Approaches to Strategic Analysis of the retailing environment, Approaches to the analysis of resources, Competence and Strategic capability, Application of technique such as Value Chain Analysis & Bench Marking.

Essential/recommended readings

1. Siva Kumar (2007) Retail Marketing, Excel Books.
2. B.R. Londhe (2006) Retail and Distribution Management, Nirali Prakashan, Mumbai.
3. Bajaj, Tuli & Srivastava (2010) Retail Management, Oxford University Press, New Delhi.

Suggestive readings

1. R.K Srivastava (2011) Cases in Retail management, WILEY; First Edition.
2. Wayne D. Hoyer & J. Maclnnis (2012) Consumer Behaviour, Cengage Learning; 6th edition.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – DSC-12 Basics of Consumer Protection

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-12 Basics of Consumer Protection	**4**	**3**	**1**	**0**	**Class XII**	**Nil**

Learning Objectives

This course seeks to familiarize the learners with their rights and responsibilities of a consumer and the procedure to redress their complaints. The learner should be able to comprehend the business firm's interface with consumers and the related regulatory and business environment.

Learning outcomes

By studying this course, the students will be able to:

- Describe the concept of consumer and post-purchase voicing of consumer grievances.
- Demonstrate how to exercise the consumer rights provided under Consumer Protection Act, 2019.
- Comprehend the filing, hearings, and appeal provisions.
- Identify the role of industry regulators in consumer protection.
- Demonstrate the impact of standards on quality of products.

SYLLABUS OF DSC-12

UNIT–I: (12 Hours)

Nature of markets: Liberalization and Globalisation of the Indian Consumer Market, online and offline markets; Organized and unorganized market, Grey market Concept of price in retail and wholesale, MRP, Fair price, labelling and packaging: legal aspects.

UNIT – II: (9 Hours)

The Consumer Protection Act, 2019- Genesis of the Consumer Protection law in India; Basic concepts: Consumer, goods, service, defect in goods, deficiency in service, spurious goods, unfair trade practice, restrictive trade practice, unfair contract, product liability, consumer rights.

UNIT – III: (12 Hours)

Grievance Redress Mechanism under the CPA, 2019- Who can File a Complaint? Grounds of Filing a Complaint, Limitation Period, Procedure for Filing and Hearing of Complaint, Reliefs provided, Appeal, Enforcement of Order, Offences and Penalties.

UNIT – IV: (12 Hours)

Consumer Movement in India; Voluntary Consumer Organisations (VCOs); National Consumer Helpline, GAMA, CONFONET, e-daakhil, Quality and Standardisation: AGMARK, ISI mark, Hallmarking, Consumer Grievance Redressal under the BIS Act, 2016.

Essential/recommended readings

1. Aggarwal, V. K., Law of Consumer Protection, 4th ed. (Bharat Law House, Delhi, 2021)
2. Khanna, Sri Ram and Hanspal, Savita, Consumer Affairs & Customer Care, 1 st ed. (VOICE Society Regd., 2020)
3. Kapoor, Sheetal, Consumer Affairs and Customer Care, 1st ed. (Scholar Tech Press, Delhi, 2021)

Suggestive readings

1. Rao, Rajyalakshami, Consumer is King (Universal Law Publishing Company, 2022)
2. The Consumer Protection Act, 2019.
3. The Bureau of Indian Standards, 2016.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE –DSE-2 Warehouse Management in Retail

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
DSE-2 Warehouse Management in Retail	**4**	**3**	**1**	**0**	Class XII Pass	**NA**

Learning Objectives

Upon completion of this course, students will be able to understand the role and significance of efficient warehouse management in the retail supply chain.Analyze the key components and processes involved in warehouse operations. Comprehend the principles of inventory management and control in a retail warehouse setting.

Learning outcomes

By studying this course, students will be able to:

1. Assess the efficiency of retail warehouse management practices and propose enhancements.
2. Implement inventory management techniques to ensure accurate stock levels and minimize stockouts.
3. Optimize warehouse layout and space utilization for improved productivity.
4. Design and execute effective order picking and packing processes to meet customer demands.
5. Utilize technology-driven warehouse management solutions for enhanced efficiency and accuracy.
6. Implement safety protocols and compliance measures to create a secure warehouse environment.

SYLLABUS

UNIT – I (12 Hours)

Introduction to Warehouse Management in Retail: Importance of efficient warehouse management in retail operations, Role of the warehouse in the retail supply chain, Warehouse management challenges and trends: Key Components of Warehouse Operations, Receiving and checking inbound shipments, Storage and shelving systems in retail warehouses, Order processing and outbound logistics: Inventory Management and Control, Inventory tracking and stock rotation methods, Demand forecasting and replenishment strategies, Minimizing stock outs and excess inventory.

UNIT – II (12 Hours)

Warehouse Layout and Space Utilization: Principles of efficient warehouse layout design, Racking systems and material handling equipment, Maximizing space utilization in a retail warehouse, Order Picking and Packing Strategies, Order picking methods (batch picking, zone picking, etc.), Packing techniques for different types of products, Order verification and accuracy checks.

UNIT – III (9 Hours)

Technology Applications in Warehouse Management: Warehouse management systems (WMS) and their features, Barcode scanning and RFID technology in retail warehouses, Automation and robotics in warehouse operations, Safety and Compliance in Retail Warehouses, Warehouse safety guidelines and best practices, Occupational health and safety considerations.

UNIT – IV (12 Hours)

Returns Management and Reverse Logistics: Handling customer returns and reverse logistics processes, Reworking and restocking returned products, Managing the environmental impact of returns; Warehouse Performance Metrics and Analysis, Key performance indicators (KPIs) for retail warehouse management, Data analytics for warehouse performance evaluation, Continuous improvement in warehouse operations.

Essential/recommended readings

1. "Warehouse Management: A Complete Guide to Improving Efficiency and Minimizing Costs in the Modern Warehouse" by Gwynne Richards.
2. "Essentials of Inventory Management" by Max Muller.
3. "Warehouse Management and Inventory Control" by G. Don Taylor.

Suggestive readings

1. "Warehousing and Fulfillment: A Comprehensive Guide to Distribution Logistics" by Kenneth B. Ackerman.
2. "Lean Warehousing: The Comprehensive Guide to Lean Warehousing Principles" by Tim McMahon.
3. "The Distribution Management Handbook" by James L. Ginter, Douglas M. Lambert, and J. Paul Dittmann.
4. "Warehouse Management Using Microsoft Dynamics AX: 2018 Edition" by Scott Hamilton.
5. "Warehouse Management with SAP ERP: Functionality and Technical Configuration" by Martin Murray and Sanil Kimmatkar.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE –DSE-2 Retail Technology and Innovation

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
DSE-2 Retail Technology and Innovation	**4**	**3**	**1**	**0**	Class XII Pass	**NA**

Learning Objectives

Upon completion of this course, students will be able to understand the significance of retail technology and innovation in modern business environments. Analyze the impact of retail technology on consumer shopping behavior. Evaluate the various technologies and tools used in retail. Explore the challenges and opportunities of implementing retail technology in different retail formats.

Learning outcomes

By studying this course, students will be able to:

1. Articulate the role of technology and innovation in shaping the retail industry.
2. Critically analyze the influence of retail technology on consumer behavior and preferences.
3. Identify and apply appropriate retail technologies for specific retail formats and business models.
4. Evaluate the impact of digitalization on the supply chain and inventory management in retail.
5. Develop effective strategies to address ethical and privacy challenges associated with retail technology.

SYLLABUS

UNIT – I (12 Hours)

Introduction to Retail Technology and Innovation: Definition and scope of retail technology, The role of innovation in the retail industry, Historical overview of retail technology adoption, Online shopping trends and preferences, The psychology of online buying decisions, Impact of mobile technology on consumer behavior.

UNIT – II (10 Hours)

Key Technologies Shaping Retail: Artificial Intelligence and machine learning applications in retail, Internet of Things (IoT) and smart retail solutions, Augmented Reality (AR) and Virtual Reality (VR) in retail.

UNIT – III (11 Hours)

RFID and inventory tracking systems, Demand forecasting and supply chain optimization, Automation in warehousing and fulfilment centres, Retail Data Analytics and Personalization: Customer data collection and privacy concerns, Utilizing data analytics for personalized marketing, Customer segmentation and targeting strategies.

UNIT – IV (12 Hours)

Ethical Considerations in Retail Technology: Data privacy and security issues, The impact of technology on employment in the retail sector, Sustainable and responsible retail practices, Integrating Technology for Enhanced Customer Experience, Mobile apps and in-store technology, Virtual shopping experiences and interactive displays, Loyalty programs.

Essential/recommended readings

1. "The Tech Whisperer: On Technology and Retail" by Alok Bardiya
2. "Digital Retailing in India: Evolution or Revolution" by Abhay Kumar

Suggestive readings

1. "The Retail Revival: Reimagining Business for the New Age of Consumerism" by Doug Stephens
2. "The Everything Store: Jeff Bezos and the Age of Amazon" by Brad Stone

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERAL ELECTIVE –GE-4 Visual Merchandising and Space Planning

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
GE-4 Visual Merchandising and Space Planning	**4**	**3**	**1**	**0**	Class XII Pass	**Should have studied GE -3 B.Voc-RM&IT**

Learning Objectives

Upon completion of this course, students will be able to understand the principles and importance of visual merchandising in retail environments. Analyze the elements of effective visual merchandising and their impact on consumer behavior.

Learning outcomes

By studying this course, students will be able to:

1. Apply the principles of visual merchandising to create captivating and engaging retail displays.
2. Design and execute effective window displays that attract customers and communicate brand messages.
3. Utilize space planning techniques to optimize the use of retail floor space and enhance the shopping journey.
4. Analyze consumer behavior in the context of visual merchandising and space planning.
5. Implement technology-driven visual merchandising solutions to enhance customer engagement.
6. Assess store layout designs and propose improvements to maximize sales and foot traffic.

SYLLABUS

UNIT – I (9 Hours)

Introduction to Visual Merchandising and Space Planning: Definition and importance of visual merchandising, Role of space planning in retail environments, Relationship between visual merchandising and store layout; Elements of Effective Visual Merchandising: Colour, lighting, and visual composition, Merchandise presentation and styling, Signage and branding in visual displays, Window Displays and Storefronts.

UNIT – II (12 Hours)

Psychology of Visual Merchandising: Understanding consumer behavior in retail settings, Visual merchandising and buying impulses, creating emotional connections through displays, Space Planning and Store Layout, Store layout design principles, Traffic flow management and customer navigation, Maximizing retail floor space for optimal product placement.

UNIT – III (12 Hours)

Technology in Visual Merchandising: Augmented reality (AR) and virtual reality (VR) applications, Digital signage and interactive displays, Incorporating technology into visual displays, Visual Merchandising for Different Retail Formats, Visual merchandising in department stores, Visual presentation in boutique and specialty stores, Visual strategies for pop-up shops and temporary spaces.

UNIT – IV (12 Hours)

Retail Fixture and Display Design: Selecting and arranging retail fixtures, Creating flexible and adaptable display systems, Sustainability and eco-friendly fixture design, Promotional Visual Merchandising, Promotional strategies and seasonal displays, Visual merchandising for sales and special events, Coordinating promotional campaigns with visual displays; Real-World Retail Case Studies: Analyzing successful visual merchandising and space planning examples, Identifying challenges and proposing innovative solutions.

Essential/recommended readings

1. "The Art of Visual Merchandising: Display and Decoration in the Retail Store" by Martin M. Pegler.
2. "Visual Merchandising: Display and Design of Retail Stores" by Tony Morgan.
3. "New Retail Space" by Raul A. Barreneche.

Suggestive readings

1. Space Planning for Commercial and Residential Interiors" by Sam Kubba.
2. "Window and Interior Display: The Principles of Visual Merchandising" by Tony Morgan.
3. "Visual Merchandising and Display" by Martin M. Pegler.
4. "Store Design and Visual Merchandising: Creating Store Space That Encourages Buying" by Claus Ebster and Marion Garaus.
5. "Retail Design: Theoretical Perspectives" edited by Lynne C. Lancaster and David G. Duman.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

(Semester-5)

Bachelor of Vocation - Retail Management & IT course

DISCIPLINE SPECIFIC CORE COURSE – DSC-13 Introduction to Logistic Management

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-13 Introduction to Logistic Management	**4**	**3**	**1**	**0**	**Class XII**	**Nil**

Learning Objectives

The course aims to provide an understanding Integrated Logistics & Quality Customer Service.

Learning outcomes

By studying this course, students will be able to:

- Have basic understanding of the concept of logistics
- Understand the logistics management
- Develop proficiency in understanding logistics strategies
- Develop the skill of effectively outsourcing logistics

SYLLABUS OF DSC-13

UNIT – I (10 Hours)

Logistics Framework: Concept, Objective and Scope, Transportation, Warehousing, Inventory Management, Packing and Unitization, Control and Communication.

UNIT – II (10 Hours)

Role of Information Technology in Logistics, Logistics Service Firms and Third Party Logistics outsourcing- challenges and future directions.

UNIT – III (14 Hours)

Retail Logistics Network Design for Global Operations: Global Logistics Network Configuration, Orienting International Facilities, Considerations and Framework, Trade-offs Associated with each Approach, Mapping the Different Approaches, Capacity Expansion Issues, Information Management for Global Logistics

UNIT – IV (11 Hours)

Role and importance, Factors influencing transportation and warehousing decision, Importance of Multimodal Transport and containerization, Cost effectiveness of various modes of transport and types of warehouses.

Essential/recommended readings

1. Chopra, S. & Meindl, P. (2007). Supply Chain Management: Strategy, Planning and Operation, Pearson Education.
2. David J Bloomberg, Stephen Lemay, (2015) Logistics 8th edition, Pearson Education.
3. Hult, M. G., Closs, D., Frayer, D. Global (2014). Supply Chain Management: Leveraging Processes, Measurements, and Tools for Strategic Corporate Advantage. Mc Graw Hill Ltd.

Suggestive readings

4. Shapiro, J.F. (2007). Modelling the Supply Chain, Cengage Learning.
5. Simchi-Levi, D., Kaminsky, P., Simchi-Levi, E. & Ravi, Shankar (2008). Designing and Managing the Supply

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE –DSC-14 Supply Chain Management

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
DSC- 14 Supply Chain Management	**4**	**3**	**1**	**0**	**Class XII**	**Nil**

Learning Objectives

The course aims to provide basic understanding of supply chain management.

Learning outcomes

By studying this course, students will be able to:

- Have knowledge of supply management systems
- Have in-depth understanding of cross functional teams and supply management, information sharing
- Develop proficiency in quality management concepts
- Understand the importance of supply chain in retail.

SYLLABUS OF DSC-14

UNIT – I (14 Hours)

Introduction to supply chain management; global optimization; future trends in supply chain management; increasing supply chain responsiveness, Procurement Process and sourcing decision; procurement process perspective, strategies & trends in procurement, The sourcing decision and strategies, E- Procurement, risk and benefits of outsourcing.

UNIT – II (12 Hours)

Supply management systems: B2B, Strategic Supply Management. Enabling Concepts in Supply: Buyer-supplier relationship: Developing and Managing collaboration and Alliance relationship, Social issues & Relationship development in S.C.M.

UNIT – III (10 Hours)

Cross-functional teams and supply-Management Activities. Challenges and problems with cross functional approach, ERP Systems, Negotiations and Bidding, Information sharing.

UNIT – IV (9 Hours)

Quality Management Concepts: ISO Certification. Methods of Control: Product, Process, Risk, Evolution, Management Approaches, Quality Management Support System.

Essential/recommended readings

1. Chopra S, Meinde P & Kalra D.V. (2009) SCM-Strategy Planning & Operation, 3rd Edition, Pearson Education.
2. Fawcelt, Ellram & Ogden (2007) Supply Chain Management, From Vision to Implementation, Pearson education.

Suggestive readings

1. Render Barry, Stair, Hanna & Badri (2008) Quantative Analysis for Management, 10th Edition, Prentice Hall.
2. Saxena Anurag & Kaushik Sircar (2008) Logistics and SCM, Jaico Publishing House, 2008
3. Vohra N.D. (2006) Quantitative Techniques in Management, 3rd edition, McGraw Hill 2006

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE –DSC-15 Packing and Packaging Management

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-15 Packing and Packaging Management	**4**	**3**	**1**	**0**	**Class XII**	**Nil**

Learning Objectives

The course aims to provide knowledge to differentiate packaging and packing.

Learning outcomes

By studying this course, students will be able to:

- Get an overview of types of packaging
- Develop basic understanding of packing considerations
- Have an understanding of different materials used for packing
- Develop proficiency in managing the economics of packaging

SYLLABUS OF DSC-15

UNIT – I (12 Hours)

Packing and Packaging: Meaning, Functions and Essentials of Packing and Packaging. Difference, Types of packing: for Storage, Overseas Shipment, Inland Transportation, Packaging for Product content Protection, Test of packaging: Mechanical, Climatic & Lab test, International Care labeling code, Packaging cost.

UNIT – II (12 Hours)

Packaging Types, Requirements of Consumer Packaging, Channel Member Packaging and Transport Packaging, Shrink packaging, Identification codes, bar codes, and electronic data interchange (EDI), Universal Product Code, GSI Standards.

UNIT – III (12 Hours)

Packaging/Packing Materials & Components: Various Materials/Metals, Packaging Demands of Consumer goods Industry, Packaging Demands of Industrial Users, Technology Trends in Packaging Industry, Aseptic processing, Authentication, Automatic identification and data capture.

UNIT – IV (9 Hours)

Packaging Economics: Packaging Cost Vs Product cost, Cost Reduction in Packaging, Packing for Inventory Control, Value Analysis, Packing and Value Engineering, Standardization in Packaging, Quality assurance, Radio- frequency identification, Track and trace.

Essential/recommended readings

1. Calver, G. (2003) 'What Is Packaging Design', Rot vision.
2. Dean, D. A. (2000) 'Pharmaceutical Packaging Technology' Taylor & Francis.
3. McKinley, A. H. (2004) 'Transport Packaging', IoPP.

Suggestive readings

1. Scott Boylston (2009) Designing Sustainable Packaging, Lawrence King.
2. Soroka, W (1995) 'Fundamentals of Packaging Technology', IPP.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE –DSE-3 Retail Store Operations

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
DSE-3 Retail Store Operations	**4**	**3**	**1**	**0**	Class XII Pass	**NA**

Learning Objectives

By the end of this course, students will be able to understand the fundamental concepts and theories related to retail store operations management.Evaluate and design an effective retail store layout to enhance the overall shopping experience. Implement inventory management techniques to optimize stock levels and minimize carrying costs. Develop strategies to improve customer service and handle customer complaints and inquiries.

Learning outcomes

By studying this course, students will be able to:

1. Demonstrate a comprehensive understanding of retail store operations management principles.
2. Compare and contrast different retail formats and their respective advantages and limitations.
3. Create and justify a well-designed retail store layout to enhance customer engagement and sales.
4. Propose an efficient inventory management plan based on demand forecasting and stock analysis.

SYLLABUS

UNIT – I (12 Hours)

Overview of Retail Industry and its significance, Retail Management Process and Functions, Retail Store Formats and Types, Retail Store Operations, Store Planning and Design, Inventory Management and Control, Supply Chain and Logistics Management in Retail.

UNIT – II (12 Hours)

Visual Merchandising Strategies and Techniques, Store Layout and Space Management, Customer Experience and Service Management, Understanding Customer Behavior and Preferences, Building Customer Loyalty and Retention, Customer Feedback and Satisfaction Measurement.

UNIT – III (12 Hours)

Retail Analytics and Data-Driven Decision Making, Importance of Retail Analytics, Collecting and Analyzing Retail Data, Using Data for Business Decision Making; Leadership and Team Management in Retail, Retail Store Team Structure and Roles, Effective Leadership and Communication Skills, Motivating and Managing Retail Store Teams.

UNIT – IV (9 Hours)

Compliance, Ethics, and Sustainability in Retail, Legal and Regulatory Compliance in Retail, Ethical Practices in Retail Operations, Sustainable Retailing and Corporate Social Responsibility.

Essential/recommended readings

1. "Retail Management: A Strategic Approach" by B. Rajagopal.
2. "Indian Retail: Evolving Growth Strategies and Future Prospects" by Shoppers' Stop and R. Srinivasan.

Suggestive readings

1. "Retailing Management" by Swapna Pradhan.
2. "Retail Marketing Management" by Nisha and Swapna Pradhan.
3. "Strategic Retail Management: Text and International Cases" by Amitabh Mishra and Piyush Kumar Sinha.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE –DSE-3 Multichannel Retail Marketing

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
DSE-3 Multichannel Retail Marketing	**4**	**3**	**1**	**0**	Class XII Pass	**NA**

Learning Objectives

Upon completion of this course, students will be able to understand the concept of multichannel retail marketing and its importance in the modern business landscape. Analyze and compare different multichannel retail strategies used by Indian and international retailers. Identify the key challenges and opportunities in multichannel retail marketing.

Learning outcomes

By studying this course, students will be able to:

1. Explain the concept and significance of multichannel retail marketing and its role in enhancing customer experience and loyalty.
2. Critically evaluate and compare various multichannel retail strategies used by both Indian and international retailers.
3. Identify and analyze the challenges and opportunities specific to multichannel retail marketing.
4. Apply multichannel marketing techniques to address the needs and preferences of target customers effectively.

SYLLABUS

UNIT – I (12 Hours)

Introduction to Multichannel Retail Marketing: Definition and evolution of multichannel retailing, Advantages and disadvantages of multichannel retail strategies, The impact of customer behavior on multichannel marketing, Multichannel Retailing Strategies, Offline vs. online vs. hybrid retail models, The role of mobile commerce and apps in multichannel retailing.

UNIT – II (10 Hours)

Digital Marketing in Multichannel Retailing: Search engine optimization (SEO) and search engine marketing (SEM), Social media marketing and influencer strategies, Email marketing and personalized communications.

UNIT – III (12 Hours)

Importance of data analytics in multichannel retailing, Key metrics and KPIs for evaluating multichannel marketing effectiveness, Data privacy and ethical considerations in data collection and analysis Integrating Offline and Online Channels; Creating seamless customer experiences across channels, Click-and-collect and ship-from-store strategies, Show rooming and web rooming in multichannel retailing.

UNIT – IV (11 Hours)

Building customer loyalty through rewards and incentives, Strategies to reduce churn and increase customer lifetime value, Voice commerce and conversational AI in retail, Sustainability and ethical considerations in multichannel marketing.

Essential/recommended readings

1. "The New Rules of Retail: Competing in the World's Toughest Marketplace" by Robin Lewis and Michael Dart
2. "Omnichannel Retail: How to Build Winning Stores in a Digital World" by Tim Mason
3. "Retail Marketing Management: Principles and Practice" by Chetan Bajaj and Rajnish Tuli

Suggestive readings

1. Customer Centricity: Focus on the Right Customers for Strategic Advantage" by Peter Fader
2. "The Long Tail: Why the Future of Business is Selling Less of More" by Chris Anderson
3. "Data Science for Business: What You Need to Know about Data Mining and Data-Analytic Thinking" by Foster Provost and Tom Fawcett
4. "Retailing Management" by Michael Levy and Barton A. Weitz

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERAL ELECTIVE –GE-5 Sourcing and Vendor Management

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
GE-5 Sourcing and Vendor Management	**4**	**3**	**1**	**0**	Class XII Pass	**Should have studied GE-4B.Voc-RM&IT**

Learning Objectives

Upon completion of this course, students will be able tounderstand the importance of sourcing and vendor management in the retail industry.Analyze the sourcing needs and requirements of a retail business.Evaluate and select appropriate vendors to meet the retail business's needs.Develop effective vendor management strategies to enhance collaboration and performance.

Learning outcomes

By studying this course, students will be able to:

1. Assess the sourcing and vendor management practices of a retail business and recommend improvements.
2. Formulate effective sourcing strategies tailored to the specific needs of a retail organization.
3. Develop a vendor selection process and criteria to align with the retail business's objectives.
4. Design a vendor management framework to foster better collaboration and mutual success.
5. Analyze and negotiate contractual agreements with vendors to maximize value and minimize risk.
6. Implement risk management techniques to mitigate potential disruptions in the supply chain.

SYLLABUS

UNIT – I (12 Hours)

Introduction to Sourcing and Vendor Management in Retail, Overview of sourcing and vendor management concepts in the retail industry, Importance of effective sourcing strategies for retail businesses; Sourcing Needs Analysis: Identifying and understanding the sourcing needs of a retail business, Conducting market research and supplier assessment.

UNIT – II (9 Hours)

Vendor Selection and Evaluation, Vendor selection criteria and processes in retail, Performance evaluation and supplier scorecards;Vendor Management Strategies: Building strong vendor relationships and effective communication, Collaborative planning, forecasting, and replenishment (CPFR).

UNIT – III (12 Hours)

Contract Negotiation and Management, Contracting methods and negotiation techniques in retail sourcing, Key contract clauses and legal considerations; Risk Management in Vendor Relationships: Identifying and assessing risks in the retail supply chain, Developing risk mitigation strategies and contingency plans.

UNIT – IV (12 Hours)

Sourcing and Vendor Management's Impact on the Bottom Line, Financial analysis and cost optimization in sourcing decisions, Measuring vendor performance and its effect on profitability; Ethical and Sustainable Sourcing in Retail: Ethical considerations in sourcing decisions, Implementing sustainability initiatives in the supply chain.

Essential/recommended readings

1. "Strategic Sourcing in the Retail Industry" by Michael Hugo and Judith Lynch
2. "Vendor Management Best Practices: Optimizing Supply Chain Collaboration" by Eric Evans
3. "The Procurement Game Plan: Winning Strategies and Techniques for Supply Management Professionals" by Charles Dominick and Soheila R. Lunney

Suggestive readings

1. Supplier Relationship Management: How to Maximize Vendor Value and Opportunity" by Christian Schuh, Michael F. Strohmer, and Stephen Easton
2. "The Sustainable Supply Chain: How to Create a Green Infrastructure with a Competitive Advantage" by Robert Sroufe and Steven Melnyk
3. "Negotiation Genius: How to Overcome Obstacles and Achieve Brilliant Results at the Bargaining Table and Beyond" by Deepak Malhotra and Max Bazerman
4. "Supply Chain Risk Management: An Emerging Discipline" by Gregory L. Schlegel and Robert J. Trent

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER-6

Bachelor of Vocation - Retail Management & IT course

DISCIPLINE SPECIFIC CORE COURSE –DSC-16 Retail Planning and Legal Framework

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-16 Retail Planning and Legal Framework	**4**	**3**	**1**	**0**	**Class XII**	**Nil**

Learning Objectives

The course aims to provide fundamental understanding of strategic management of retail in India.

Learning outcomes

By studying this course, students will be able to:

1. Get holistic knowledge of retail operations.
2. Develop ability to manage the various aspects of human resources involved in retailing.
3. Develop proficiency in legal framework documentation involved in retailing.
4. Have comprehensive knowledge of mall management.

SYLLABUS OF DSC-16

UNIT – I (10 Hours)

Introduction to Strategic Management : Retailing, Role, Relevance & Trends, Retail Customer, Retail Market Segmentation & franchising, Relationship marketing in Retailing.

UNIT – II (10 Hours)

Social Marketing in Retail Management Strategic Management, Retail in India, Services Marketing and Management, Brand Management, International / Strategies, Pricing, Advertising & sales promotion.

UNIT – III (12 Hours)

Operations in Retailing: Retails location strategy, Product and Merchandise Management, TQM, EDP / MIS Logistics & SCM Security Measures, Footfalls / computerized methods non-computerized methods, Visual / Display methods, Merchandising & Management.

UNIT – IV (13Hours)

Legal framework for Retailing: License, Contracts & Recovery, Legal Process, PF/ESIC & Exemptions, PPF, IR Law: Shops & establishments, IPR Patents, Copy right & Trademarks, Procedural Compliance for Establishing an Retail Store, Customer Rights, Consumer Protection Acts, Unfair Trade Practices, Holding of Contests and Schemes, The Standards of Weights and Measures Act, Procedures applicable for a Retail Store.

Essential/recommended readings

1. Mathur U.C. (2010) Retail Management, I.K. International Publishing House Pvt. Ltd. New Delhi.
2. Nair Suja (2006) Retail Management, Himalya Publishing House, New Delhi.
3. Pradhan Swapna (2009) Retailing Management, Tata McGraw-Hill, New Delhi.

Suggestive readings

1. Varley Rosemary (2001) Retail Product Management, Routledge, New York.

V.S.Ramaswamy and S.Namakumari (2017) Marketing Management, Macmillan• Publishers India Ltd. New Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE –DSC-17 Enterprise Resource Planning

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-17 Enterprise Resource Planning	**4**	**3**	**1**	**0**	**Class XII**	**Nil**

Learning Objectives

The course aims to provide an overview of enterprise resource planning (ERP).

Learning outcomes

By studying this course, students will be able to:

1. Get the knowledge of selection and implementation of ERP and business process re-engineering
2. Develop basic understanding of ERP packages and framework
3. Develop the knowledge of technical architecture of ERP systems
4. Get understanding of ERP, supply chain management and SAP

SYLLABUS OF DSC-17

UNIT – I (12 Hours)

Enterprise Resource Planning: Evolution of ERP, difference between integrated and traditional information systems, early and new ERP packages, overview of ERP packages, ERP products and markets, players and characteristics, benefits of ERP implementations, critical success factors, pitfalls.

.

UNIT – II (12 Hours)

Opportunities and problems in ERP selection and implementation, ERP implementation, identifying ERP benefits, team formation-consultant intervention, Business Process

Reengineering (BPR) concepts: emergence of reengineering, business process, rethinking of processes, identification of reengineering

UNIT – III (12 Hours)

Retailing organizations, Formulation and evaluation of strategic options within retailing organizations, Mergers, Acquisition and strategic alliances involving retailers, Analysis of organization structure and design among retail organizations.

UNIT – IV (9 Hours)

Technical Architecture of ERP Systems: Communication and networking facilities, distributed computing, client server systems, concepts of business objects, distributed object, computing architecture, support for data mining and warehousing, EDI, internet and related technologies, Net technologies.

Essential/recommended readings

1. Jyothindra Zaveri (2012) Enterprise Resource Planning Himalaya Publishing House Pvt. Ltd.
2. Motiwalla F. Luvai (2011) Enterprise Systems for Management 2 edition, Pearson.

Suggestive readings

1. Ptak, Carol A. & Eli Schragenheim (2000) Enterprise Systems for Management, St. Lucie Press NY.
2. D.P. Goyal, Enterprise Resource Planning.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE –DSC-18 Crisis Management in Retail

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-18 Crisis Management in Retail	**4**	**3**	**1**	**0**	**Class XII**	**Nil**

Learning Objectives

To provide students with the ability to understand the principles, strategies and techniques for incident response and crisis management.

Learning outcomes

By studying this course, students will be able to:

1. Develop the knowledge and skills necessary for implementing an effective structure and processes for responding to and managing incidents and crises.
2. Get the knowledge of different types of crisis in retail.
3. Get the understanding of disaster management in retail.
4. Develop proficiency in designing crisis management strategies.

SYLLABUS OF DSC-18

UNIT – I (10 Hours)

Introduction to Crisis Management and Incident Management- Different Types of Crisis in retail, Crisis Leadership and Team Building, Crisis Management Centres - design and operation

.

UNIT – II (10 Hours)

Information Management - situational awareness & decision making under pressure, Media and Crisis Communications, Media Interview Training, Using Social Media in a Crisis

UNIT – III (12 Hours)

Exercise Excellence - design, delivery, review, Preparing for Epidemics, Pandemics and Disasters in the Workplace, Supporting People after Traumatic Incidents.

UNIT – IV (13 Hours)

Disaster Management **-** Basics of disaster management and Mass casualties**,** Components of disaster plan- pre and post, Disaster alertness, Disaster management planning and implementation, Severity of illness amongst disaster victims and risk assessment **,** Mock exercise on disaster management in Retail.

Essential/recommended readings

1. Marchesani Ph D V J, "The Fundamental of Crisis Management", Page Publishing, Inc.
2. Yunus D Saleh, "Crisis Management", Mill City Press Inc**.**

Suggestive readings

1. Bernstein Jonathan, "Manager's Guide to Crisis Management", Briefcase Books Series.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE –DSE-4 Personnel Management in Retail

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
DSE-4 Personnel Management in Retail	**4**	**3**	**1**	**0**	Class XII Pass	**NA**

Learning Objectives

By the end of this course, students will be able to understand the importance of personnel management in the retail industry and its impact on organizational success.Identify the key functions and responsibilities of personnel managers in a retail setting. Apply effective recruitment and selection techniques to hire the right talent for retail positions. Develop strategies for employee training, development, and performance improvement in a retail environment.

Learning outcomes

By studying this course, students will be able to:

1. Demonstrate a comprehensive understanding of personnel management principles and their applications in the retail sector.
2. Apply various recruitment and selection techniques to attract and hire suitable candidates for retail positions.
3. Design and implement effective employee training programs to enhance their skills and knowledge in a retail environment.
4. Asses and manage employee performance, providing constructive feedback and support for improvement.
5. Formulate employee engagement strategies to boost morale and reduce turnover in a retail setting.

SYLLABUS

UNIT – I (12 Hours)

Introduction to Retail Personnel Management: Definition and significance of personnel management in the retail sector, Evolution of personnel management practices in retail, Role of personnel managers in retail organizations; Recruitment and Selection in Retail: Job analysis and job descriptions for retail

positions, Effective recruitment strategies: internal and external sources, Selection techniques and conducting interviews for retail positions.

UNIT – II (12 Hours)

Training and Development in Retail, Identifying training needs in the retail workforce, Designing and implementing retail-specific training programs, Evaluating the effectiveness of training initiatives, Performance Management in Retail, Setting performance standards and expectations in retail jobs, Performance appraisal methods and their relevance in retail, Providing feedback and coaching for improved performance.

UNIT – III (12 Hours)

Employee Engagement in Retail: Understanding employee motivation and engagement in the retail context, Designing employee recognition and reward programs in retail, Promoting work-life balance and employee well-being, Employee Relations and Conflict Management, Addressing employee grievances and resolving conflicts in retail, Implementing disciplinary actions and maintaining a positive work environment, Dealing with employee turnover and retention strategies.

UNIT – IV (9 Hours)

Ensuring fairness, diversity, and inclusivity in retail HR practices, Ethical challenges and best practices in retail HR management, Emerging Trends in Retail Personnel Management, Technology's impact on HR practices in the retail industry, Adapting to remote work and virtual teams in retail, Sustainable HR practices in the retail sector.

Essential/recommended readings

1. "Retail Management: A Strategic Approach" by Swapna Pradhan
2. "Human Resource Management in Retail" by S. Venkata Subbaiah
3. "Retail Marketing Management: Principles and Practice" by Chetan Bajaj and Ricky W. Griffin

Suggestive readings

1. "Retail Human Resource Management: Contemporary Issues and Cases" by Barry J. Babin and Brian D. Tietje
2. "Strategic Human Resource Management in Retailing" by Janet H. Marler and Shad S. Morris
3. "Human Resource Management in Retail: A Research Agenda" by Mike Noon and Stephen Bach

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE –DSE-4 Retailing in India- Growth & Challenges

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
DSE-4 Retailing in India- Growth & Challenges	**4**	**3**	**1**	**0**	Class XII Pass	**NA**

Learning Objectives

Upon completion of this course, students will be able to understand the evolution and current status of the retail sector in India. Identify the factors contributing to the growth of the Indian retail industry. Analyze the challenges faced by retailers and the broader retail ecosystem. Evaluate the impact of technology and digitalization on retailing in India.

Learning outcomes

By studying this course, students will be able to:

1. Describe the historical development and transformation of the retail industry in India.
2. Analyze the key drivers that have led to the growth of organized and unorganized retail in the country.
3. Identify the major challenges faced by retailers, including supply chain issues, competition, and changing consumer behavior.
4. Discuss the impact of e-commerce and digital disruption on traditional retail models.

SYLLABUS

UNIT – I (10 Hours)

Growth Drivers of Indian Retail, Rise of the middle class and increasing disposable income, Urbanization and changing consumer lifestyles, Demographic dividend and youth population, Technological advancements and digitalization.

UNIT – II (11 Hours)

E-commerce and its impact on traditional retail, Challenges Faced by Indian Retailers, Supply chain and logistics issues, Intense competition and pricing pressures, Regulatory hurdles and licensing requirements, Consumer preferences and brand loyalty.

UNIT – III (12 Hours)

Role of Government Policies in Retail Growth, FDI regulations and its impact on the sector, Goods and Services Tax (GST) and its implications, Retail trade reforms and liberalization, Technology and Digital Transformation in Retail, Data analytics and personalized marketing, Inventory management and AI-driven solutions.

UNIT – IV (12 Hours)

Future Trends and Opportunities, Emerging retail trends in India and globally, Opportunities in niche markets and regional retailing, Sustainable and socially responsible retail practices, Social and Economic Impact of Retail Growth, Employment generation, Impact on traditional mom-and-pop stores, Effects on local economies and small-scale industries.

Essential/recommended readings

1. "The Retail Revolution in India" by Rajiv Lal and Arar Han
2. "Indian Retail Industry: Past, Present & Future" by Dr. C.S. Mukundan
3. "The New Rules of Retail: Competing in the World's Toughest Marketplace" by Robin Lewis and Michael Dart

Suggestive readings

1. "Retail Management: A Strategic Approach" by Barry Berman and Joel R. Evans
2. "Retail Marketing Management" by David Gilbert
3. Retailing Management" by Michael Levy and Barton A. Weitz

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERAL ELECTIVE –GE-6 Sales and Service excellence

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
GE-6 Sales and Service excellence	**4**	**3**	**1**	**0**	Class XII Pass	**Should have studied GE - 5B.Voc-RM&IT**

Learning Objectives

By the end of this course, students should be able to understand the fundamental concepts of sales and service excellence.Identify and analyze customer needs to tailor sales strategies accordingly. Develop effective sales communication and negotiation skills. Implement relationship-building techniques to foster long-term customer loyalty.

Learning outcomes

By studying this course, students will be able to:

1. Demonstrate an understanding of the key principles and theories related to sales and service excellence.
2. Evaluate customer needs and preferences to design customized sales approaches.
3. Employ effective communication and persuasion techniques to close sales successfully.
4. Apply relationship-building strategies to retain existing customers and attract new ones.
5. Address customer complaints and conflicts with empathy and professionalism.
6. Utilize data-driven insights to optimize sales strategies and performance.
7. Exhibit ethical behavior and integrity in all sales and service interactions.

SYLLABUS

UNIT – I (12 Hours)

Introduction to Sales and Service Excellence: Definition and importance of sales and service excellence, Historical perspectives and current trends in sales and customer service, Understanding Customer Behavior, Customer psychology and decision-making processes, Customer segmentation and targeting strategies.

UNIT – II (9 Hours)

Sales Communication and Negotiation Skills: Effective communication techniques in sales, Negotiation strategies to reach win-win outcomes, Customer Relationship Management (CRM), Building and maintaining customer relationships, CRM tools and technology.

UNIT – III (12 Hours)

Handling Customer Complaints and Challenging Situations: Dealing with difficult customers, Conflict resolution and problem-solving techniques, Data Analytics in Sales and Service, Utilizing data to make informed sales decisions, Customer analytics and predictive modelling.

UNIT – IV (12 Hours)

Upselling and Cross-selling Strategies: Identifying upselling and cross-selling opportunities, Techniques for suggestive selling, Ethics and Integrity in Sales and Service, Importance of ethical behavior in sales and customer service, Ethical dilemmas and their resolutions.

Essential/recommended readings

1. "The Psychology of Selling" by Brian Tracy
2. "Customer Satisfaction Is Worthless, Customer Loyalty Is Priceless" by Jeffrey Gitomer
3. "To Sell Is Human: The Surprising Truth About Moving Others" by Daniel H. Pink

Suggestive readings

1. "The Challenger Sale: Taking Control of the Customer Conversation" by Matthew Dixon and Brent Adamson
2. "Customer Success: How Innovative Companies Are Reducing Churn and Growing Recurring Revenue" by Nick Mehta, Dan Steinman, and Lincoln Murphy
3. "Customer Relationship Management: Concept, Strategy, and Tools" by V. Kumar and Werner Reinartz
4. "Predictive Analytics: The Power to Predict Who Will Click, Buy, Lie, or Die" by Eric Siegel

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER-III
B.Voc Software Development
Ramanujan College
Detailed Syllabus – Discipline Specific Core

DISCIPLINE SPECIFIC CORE COURSE – DSC-07: DATA STRUCTURES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Data Structures	4	3	0	1	Class XII pass with Mathematics	DSC-01

Learning Objectives:

1. *To introduce the fundamentals of data structures*
2. *To get familiar with programming*

Learning Outcomes:

1. *Develop the ability to use basic data structures like array, stacks, queues, lists, trees and hash tables to solve problems.*
2. *Use well-organized data structures in solving various problems.*
3. *Differentiate the usage of various structures in problem solutions.*
4. *Implement algorithms to solve problems using appropriate data structures.*

Unit I **(5 hours)**

Arrays: Single and multi-dimensional arrays, analysis of insert, delete and search operations in arrays (both linear search and binary search), implementing sparse matrices, applications of arrays to sorting: selection sort, insertion sort, bubble sort, comparison of sorting techniques via empirical studies.

Unit II **(5 hours)**

Linked Lists: Singly- linked, doubly-linked and circular lists, analysis of insert, delete and search operations in all the three types, implementing sparse matrices.

Unit III **(10 hours)**

Queues: Array and linked representation of queue, de-queue, comparison of the operations on queues in the two representations. Applications of queues.

Unit IV **(15 hours)**

Stacks: Array and linked representation of stacks, comparison of the operations on stacks in the two representations, implementing multiple stacks in an array; applications of stacks: prefix, infix and postfix expressions, utility and conversion of these expressions from one to another;

applications of stacks to recursion: developing recursive solutions to simple problems, advantages and limitations of recursion.

Unit V **(10 hours)**

Trees and Heaps: Introduction to tree as a data structure; binary trees, binary search trees, analysis of insert, delete, search operations, recursive and iterative traversals in binary search trees. Height-balanced trees (AVL), B trees, analysis of insert, delete, search operations on AVL and B trees. Introduction to heap as a data structure. Analysis of insert, extract-min/max and delete-min/ max operations, applications to priority queues.

Hash Tables: Introduction to hashing, hash tables and hashing functions -insertion, resolving collision by open addressing, deletion, searching and their analysis, properties of a goodhash function.

References

1. *Michael T. Goodrich, Roberto Tamassia and Michael H. Goldwasser (2013), Data Structures and Algorithms in Python, Wiley.*
2. *Rance D. Necaise, Data Structures and Algorithms Using Python, John Wiley & Sons, Inc.*
3. *Introduction to Algorithms, by Cormen, Leiserson, Rivest, and Stein, MIT Press, Third Edition, 2009.*

List of Practical **(30 hours)**

A practical implementation of various data structure such as Array, Queues, Stacks, Linked List and Trees.

DISCIPLINE SPECIFIC CORE COURSE – DSC-08: Web Design and Development

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Web design and development	**4**	**3**	**0**	**1**	**Class XII**	**NIL**

***Learning objectives*:**

1. To introduce the fundamentals of Internet, and the principles of web design.
2. To construct basic websites using HTML and Cascading Style Sheets.
3. To build dynamic web pages with validation using Java Script objects and by applying different event handling mechanisms.
4. To develop modern interactive web applications using PHP, XML and MySQL

Learning Outcomes:

1. *Structure and implement HTML/CSS.*
2. *Implement basic JavaScript.*
3. *Learn server side scripting language PHP and integration with database using MYSQL.*

UNIT-I **(5 Hours)**

Introduction to HTML & CSS:

HTML Basics, HTML Responsive, HTML Entities, HTML Forms, HTML5 Canvas, HTML5 SVG, HTML5 Data Storage, HTML5 Audio and Video , CSS Introduction, CSS Syntax, CSS Text, CSS Backgrounds, CSS Fonts, CSS Links, CSS Lists, CSS Tables, CSS Box Model, CSS Margins, Dimensions, Display, CSS Navigation Bar, CSS Attribute Selectors, CSS Rounded Corners, CSS Border Images, CSS Backgrounds, CSS Colors, CSS Animations.

UNIT-II **(10 Hours)**

Introduction to JavaScript:

JavaScript Introduction, JavaScript Output, JavaScript Variables, JavaScript Operators, JavaScript Arithmetic, JavaScript Data Types, JavaScript Assignment, JavaScript Functions, JavaScript Objects, JavaScript Scope, JavaScript Events, JavaScript Strings and String Methods, JavaScript Numbers and Number Methods, JavaScript Math, JavaScript Dates: Formats and Methods, JavaScript Booleans , JavaScript Comparisons, JavaScript Conditions, JavaScript Switch, JavaScript Loops, JavaScript Break, JavaScript Type, JavaScript Forms (API and Validation), JavaScript Objects, JavaScript Functions, JavaScript DOM, JavaScript Browser BOM, JavaScript Frameworks

UNIT-III **(15 Hours)**

Introduction to Bootstrap: Bootstrap Introduction, Bootstrap Components, Bootstrap Plugins, Bootstrap Grids, Bootstrap JS , PHP Introduction-Installing PHP, PHP Syntax, PHP Variables, PHP Data Types, PHP Strings, PHP Constants, PHP Operators, PHP Programming Loops, PHP Functions, PHP Arrays, PHP Super-global, PHP Forms and XML- PHP Form Handling, PHP Form Validation (Server side).

UNIT-IV **(15 Hours)**

PHP with MySQL: PHP MySQL Database, PHP Connecting to Database, PHP Creating Records, PHP Selecting Records, PHP Deleting Records, PHP Updating Records, PHP Limit Data, PHP Insert Multiple.

References

1. Learning PHP, MySQL & JavaScript: With JQuery, CSS & HTML5 by Robin Nixon , O'Reilly Media, Inc.

2. PHP and MySQL for Dynamic Web Sites: Visual QuickPro Guide by Larry Ullman , Fifth Edition.

List of Practicals (30 hours)

1. Design a home page which displays information about your college department using headings, HTML entities and paragraphs.
2. Implement different types of list tags, hyperlinks, marquee tag and HTML formatting tags in the college department homepage.
3. Create a web page having two frames, Frame 1 containing links and another with contents of the link. When a link is clicked appropriate contents should be displayed on Frame 2. Also, insert an iframe in the same page.
4. Design your course timetable and display it in tabular format.
5. Design an admission form for any course in your college with text, password fields, drop-down list, check-boxes, and radio buttons, submit and reset button etc. with proper CSS formatting.
6. Create a website for online book stores with Home, Login, Catalogue, Registration page with links to all these pages in a menu on top of every page. Embed heading, paragraph, images, video, .iframe, form controls, table, and list in this website. Use both Internal and external CSS in this.
7. Write a JavaScript program to display the current day and time.
8. Write a JavaScript program to
   a) Remove a character at the specified position of a given string and return the new string.
   b) Change the case of a string. (I.e. upper case to lower case and vice-versa).
9. Write a JavaScript program to compute the sum of elements of a given array of integers.
10. Develop and demonstrate a HTML file that includes JavaScript script for taking full name in a text field and display first, middle, last name *in 3 different labels. Middle and last name may be optional, thus messages like "NA" should be displayed in corresponding labels. If input contains 2 words, then they should be considered as first and last names.
11. Design HTML form for keeping student record, apply JavaScript validation for restriction of mandatory fields, numeric field, email-address field, specific value in a field etc.
12. Write a JavaScript code that displays text "Bigger Text" with increasing font size in the interval of 10ms in red color, when the font size reaches 50 pt. it displays "Smaller Text" in green color. Then the font size should decrease to 5pt and then stop.
13. Write a PHP script that removes the whitespaces from a string.
14. Create a login page having user name and password. On clicking submit, a welcome message should be displayed if the user is already registered (i.e.name is present in the database) otherwise error message should be displayed.
15. Create a simple 'birthday countdown' script, the script will count the number of days between current day and birth day.

DISCIPLINE SPECIFIC CORE COURSE – DSC-09: Operating Systems

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Operating Systems	**4**	**3**	**0**	**1**	**Class XII**	**NIL**

***Learning objectives*:**

1. *Learn fundamental operating system abstractions such as processes, threads, files, semaphores, IPC abstractions, shared memory regions, etc.,*
2. *Learn how the operating system abstractions can be used in the development of application programs, or to build higher level abstractions,*
3. *Learn how the operating system abstractions can be implemented,*
4. *Learn the principles of concurrency and synchronization, and apply them to write correct concurrent programs/software,*
5. *Learn basic resource management techniques (scheduling, time management, space management) and principles and how they can be implemented. These also include issues of performance and fairness objectives, avoiding deadlocks, as well as security and protection.*

Learning Outcomes:

1. *Understand the need of an Operating System & Define Multiprogramming and multithreading concepts.*
2. *Implement Process Synchronization service (Critical Section, Semaphores), CPU scheduling service with various algorithms.*
3. *Learn Main memory Management (Paging, Segmentation) algorithms, Handling of Deadlocks*
4. *Identify and appreciate the File systems Services, Disk Scheduling service*

UNIT - I **(5 hours)**

Introduction: Operating Systems (OS) definition and its purpose, Multi-programmed and Time Sharing Systems, OS Structure, OS Operations: Dual and Multi-mode, OS as resource manager.

UNIT – II **(5 hours)**

Operating System Structures: OS Services, System Calls: Process Control, File Management, Device Management, and Information Maintenance, Inter-process Communication, and Protection, System programs, OS structure- Simple, Layered, Microkernel, and Modular.

UNIT - III **(10 hours)**

Process Management : Process Concept, States, Process Control Block, Process Scheduling, Schedulers, Context Switch, Operation on processes, Threads, Multicore Programming, Multithreading Models, Threads, Process Scheduling Algorithms: First Come First Served, Shortest-Job-First, Priority & Round-Robin, Process Synchronization: The critical-section problem and Peterson's Solution, Deadlock characterization, Deadlock handling.

UNIT – IV **(10 hours)**

Memory Management: Physical and Logical address space, Swapping, Contiguous memory allocation strategies - fixed and variable partitions, Segmentation, Paging.

Virtual Memory Management: Demand Paging and Page Replacement algorithms: FIFO Page Replacement, Optimal Page replacement, and LRU page replacement.

UNIT – V **(15 hours)**

File System: File Concepts, File Attributes, File Access Methods, Directory Structure: Single-Level, Two-Level, Tree-Structured, and Acyclic-Graph Directories.

Mass Storage Structure: Magnetic Disks, Solid-State Disks, And Magnetic Tapes, Disk Scheduling algorithms: FCFS, SSTF, SCAN, C-SCAN, LOOK, and C-Look Scheduling.

References

1. *Silberschatz, A., Galvin, P. B., Gagne G. Operating System Concepts, 9th edition, John Wiley Publications, 2016*
2. *Dhamdhere, D. M. Operating Systems: A Concept-based Approach. 2nd edition, Tata McGraw-Hill Education, 2017*
3. *Kernighan, B. W., Rob Pike, R. The UNIX Programming Environment. Englewood Cliffs, NJ: Prentice-Hall, 1984*
4. *Stallings, W. Operating Systems: Internals and Design Principles. 9th edition, Pearson Education, 2018*
5. *Tanenbaum, A. S. Modern Operating Systems. 3rd edition, Pearson Education, 2007*

List of Practicals :(30 hours)

1. Write a program (using fork() and/or exec() commands) where parent and child execute:
   a) Same program, same code.
   b) Same program, different code.
   c) Before terminating, the parent waits for the child to finish its task.
2. Write a program to report behavior of Linux kernel including kernel version, CPU type and model. (CPU information)
3. Write a program to report behavior of Linux kernel including information on configured memory, amount of free and used memory. (Memory information)
4. Write a program to print file details including owner access permissions, file access time, where file name is given as argument.
5. Write a program to copy files using system calls.
6. Write a program to implement FCFS scheduling algorithm.
7. Write a program to implement Optimal scheduling algorithm.
8. Write a program to implement the SJF scheduling algorithm.
9. Write a program to implement a non-preemptive priority based scheduling algorithm.
10. Write a program to implement SRJF scheduling algorithm.
11. Write a program to calculate sum of n numbers using thread library.
12. Write a program to implement first-fit, best-fit and worst-fit allocation strategies.

DSE-01(a): Programming Using R

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Programming using R	4	2	0	2	Class XII with Mathematics	NIL

***Learning objectives*:**

1. *Master the use of the R and RStudio interactive environment.*
2. *Expand R by installing R packages.*
3. *Explore and understand how to use the R documentation.*
4. *Read Structured Data into R from various sources.*
5. *Understand the different data types in R.*
6. *Understand the different data structures in R.*

Learning Outcomes:

1. *Develop an R script and execute it*
2. *Install, load and deploy the required packages, and build new packages for sharing and reusability*
3. *Extract data from different sources using API and use it for data analysis*
4. *Visualize and summarize the data*
5. *Design application with database connectivity for data analysis*

UNIT-I **(5 hours)**

Introduction: R interpreter, Introduction to major R data structures like vectors, matrices, arrays, list and data frames, Control Structures, vectorized if and multiple selection, functions.

UNIT-II **(10 hours)**

Installing, loading and using packages: Read/write data from/in files, extracting data from web-sites, Clean data, Transform data by sorting, adding/removing new/existing columns, centering, scaling and normalizing the data values, converting types of values, using string in-built functions, Statistical analysis of data for summarizing and understanding data, Visualizing data using scatter plot, line plot, bar chart, histogram and box plot

UNIT-III **(10 hours)**

Designing GUI: Building interactive application and connecting it with database.

UNIT-IV **(5 hours)**

Building Packages.

References:

1. Cotton, R., Learning R: a step by step function guide to data analysis. 1st edition. O'reilly Media Inc.
2. Gardener, M.(2017). Beginning R: The statistical programming language, WILEY.
3. Lawrence, M., & Verzani, J. (2016). Programming Graphical User Interfaces in R. CRC press. (ebook)

List of Practical :(60 hours)

Q1. Write an R script to do the following:

a) Simulate a sample of 100 random data points from a normal distribution with mean 100 and standard deviation 5 and store the result in a vector.
b) Visualize the vector created above using different plots.
c) Test the hypothesis that the mean equals 100.
d) Use Wilcox test to test the hypothesis that mean equals 90.

Q2. Using the Algae data set from package DMwR to complete the following tasks.

a) Create a graph that you find adequate to show the distribution of the values of algae a6.
b) Show the distribution of the values of size 3.
c) Check visually if oPO4 follows a normal distribution.
d) Produce a graph that allows you to understand how the values of NO3 are distributed across the sizes of river.
e) Using a graph check if the distribution of algae a1 varies with the speed of the river.
f) Visualize the relationship between the frequencies of algae a1 and a6. Give the appropriate graph title, x-axis and y-axis title.

Q3. Read the file Coweeta.CSV and write an R script to do the following:

a) Count the number of observations per species.
b) Take a subset of the data including only those species with at least 10 observations.
c) Make a scatter plot of biomass versus height, with the symbol color varying by species, and use filled squares for the symbols. Also add a title to the plot, in italics.
d) Log-transform biomass, and redraw the plot.

Q4. The built-in data set mammals contain data on body weight versus brain weight. Write R commands to:

a) Find the Pearson and Spearman correlation coefficients. Are they similar?
b) Plot the data using the plot command.
c) Plot the logarithm (log) of each variable and see if that makes a difference.

Q5. In the library MASS is a dataset UScereal which contains information about popular breakfast cereals. Attach the data set and use different kinds of plots to investigate the following relationships:

a) relationship between manufacturer and shelf
b) relationship between fat and vitamins
c) relationship between fat and shelf
d) relationship between carbohydrates and sugars
e) relationship between fiber and manufacturer
f) relationship between sodium and sugars

Q6. Write R script to:

Do two simulations of a binomial number with n = 100 and p = .5. Do you get the same results each time? What is different? What is similar?

Do a simulation of the normal two times. Once with n = 10, $\mu = 10$ and $\sigma = 10$, the other with n = 10, $\mu = 100$ and $\sigma = 100$. How are they different? How are they similar? Are both approximately normal?

Q.7 Create a database medicines that contains the details about medicines such as {manufacturer, composition, price}. Create an interactive application using which the user can find an alternative to a given medicine with the same composition.
Q.8 Create a database songs that contains the fields {song_name, mood, online_link_play_song}. Create an application where the mood of the user is given as input and the list of songs corresponding to that mood appears as the output. The user can listen to any song form the list via the online link given
Q.9 Create a package in R to perform certain basic statistics functions.

DSE-01 (b): Discrete Structures

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Discrete Structures	4	3	0	1	Class XII with Mathematics	NIL

***Learning objectives*:**

1. To teach students how to think logically and mathematically.
2. To stress on mathematical reasoning and describe different ways in which mathematical problems could be solved.
3. To cover four thematic areas: mathematical reasoning, combinatorial analysis, discrete structures, and mathematical modelling.
4. To touch upon topics like logic, proofs, set theory, counting, probability theory (the discrete part of the subject), graph theory, trees, Boolean algebra, and modelling computation.

Learning Outcomes:

1. *Relate mathematical concepts and terminology to examples in the domain of Computer Science.*
2. *Model real world problems using various mathematical constructs.*
3. *Use different proofing techniques; construct simple mathematical proofs using logical arguments.*
4. *Divide a problem or a proof into smaller cases.*
5. *Formulate mathematical claims and construct counterexamples.*

UNIT-I **(7 hours)**

Sets, Functions, Sequences and Summations, Relations. Sets: Set Operations, Computer Representation of Sets, Countable and Uncountable Set, Principle of Inclusion and Exclusion, Multi-sets; Functions: One-to-one and Onto Functions, Inverse Functions and Compositions of Functions, Graphs of Functions Sequences and Summations: Sequences, Special Integer Sequences, Summations; Relations: Properties of Binary Relations, Equivalence relations and Partitions, Partial Ordering Relations and Lattices.

UNIT-II **(8 hours)**

Logic and Proofs. Propositional Logic, Propositional Equivalences, Use of first-order logic to express natural language predicates, Quantifiers, Nested Quantifiers, Rules of Inference, Introduction to Proofs, Proof Methods and Strategies, Mathematical Induction.

UNIT-III **(7 hours)**

Number Theory. Division and Integers, Primes and Greatest Common Divisors, Representation of Integers, Algorithms for Integer Operations, Modular Exponentiation, Applications of Number

Theory.

UNIT-IV **(8 hours)**

Combinatorics/Counting. The Pigeonhole Principle, Permutations and Combinations, Binomial Coefficients, Generalized Permutations and Combinations, Generating Permutations and Combinations.

UNIT-V **(10 hours)**

Graphs and Trees. Graphs: Basic Terminology, Multigraphs and Weighted Graphs, Paths and Circuits, Eulerian Paths and Circuits, Hamiltonian paths and Circuits, Shortest Paths, Spanning Trees, Graph Isomorphism, Planar Graphs; Trees: Trees, Rooted Trees, Path Lengths in Rooted Trees.

UNIT-VI **(5 hours)**

Recurrence. Recurrence Relations, Generating Functions, Linear Recurrence Relations with Constant Coefficients and their solution.

References

1. *C.L. Liu & Mahopatra, Elements of Discrete mathematics. 3rd edition. Tata McGraw Hill. 2008.*
2. *Kenneth R., Discrete Mathematics and Its Applications. 6th edition. Mc Graw Hill. 2006.*

List of practicals (30 Hours)

1. Write a Program to create a SET A and determine the cardinality of SET for an input array of elements (repetition allowed) and perform the following operations on the SET:
a) ismember (a, A): check whether an element belongs to set or not and return value as true/false.
b) powerset(A): list all the elements of power set of A.

2. Create a class SET and take two sets as input from user to perform following SET Operations:
a) Subset: Check whether one set is a subset of other or not.
b) Union and Intersection of two Sets.
c) Complement: Assume Universal Set as per the input elements from the user.
d) Set Difference and Symmetric Difference between two SETS
e) Cartesian Product of Sets.

3. Create a class RELATION, use Matrix notation to represent a relation. Include functions to check if the relation is Reflexive, Symmetric, Anti-symmetric and Transitive. Write a Program to use this class.

4. Use the functions defined in Ques 3 to check whether the given relation is:
a) Equivalent, or
b) Partial Order relation, or
c) None

5. Write a Program to implement Bubble Sort. Find the number of comparisons during each pass and display the intermediate result. Use the observed values to plot a graph to analyse the complexity of algorithm.

6. Write a Program to implement Insertion Sort. Find the number of comparisons during each pass and display the intermediate result. Use the observed values to plot a graph to analyse the complexity of algorithm.

7. Write a Program that generates all the permutations of a given set of digits, with or without repetition. (For example, if the given set is {1,2}, the permutations are 12 and 21). (One method is given in Liu)

8. Write a Program to accept the truth values of variables x and y, and print the truth table of the following logical operations:
a) Conjunction f) Exclusive NOR
b) Disjunction g) Negation
c) Exclusive OR h) NAND
d) Conditional i) NOR
e) Bi-conditional

9. Write a Program to store a function (polynomial/exponential), and then evaluate the polynomial. (For example store f(x) = 4n3 + 2n + 9 in an array and for a given value of n, say n = 5, evaluate (i.e. compute the value of f(5)).

10. Write a Program to represent Graphs using the Adjacency Matrices and check if it is a complete graph.

11. Write a Program to accept a directed graph G and compute the in-degree and out-degree of each vertex.

DSE-01 (c): Digital Image Processing

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Digital Image Processing	**4**	**3**	**0**	**1**	**Class XII with Mathematics**	**NIL**

***Learning objectives*:**

1. *To understand the sensing, acquisition and storage of digital images.*
2. *To study the image fundamentals and mathematical transforms necessary for image processing.*
3. *To understand the digital processing systems and corresponding terminology.*
4. *To understand the base image transformation domains and methods.*

Learning Outcomes:

1. *Understand the fundamentals of Image Processing and its role and importance in avariety of applications.*
2. *Write programs to read/write and manipulate images for the purpose of enhancement.*
3. *Understand the need for image transforms and their properties.*
4. *Understand different causes for image degradation and use various techniques to restore images.*

UNIT-I **(8 hours)**

Introduction: Digital Image Fundamentals, Brightness, Adaptation and Discrimination, Light and Electromagnetic Spectrum, Image Sampling and Quantization, Some Basic Relationships between Pixels Types of images.

UNIT-II **(7 hours)**

Spatial Domain Filtering: Some Basic Intensity Transformation Functions, Histogram Equalization, Spatial Correlation and Convolution, Smoothening Spatial Filters-Low pass filters, Order Statistics filters; Sharpening Spatial Filters- Laplacian filter.

UNIT-III **(8 hours)**

Filtering in Frequency Domain: The Discrete Fourier Transformation (DFT), Frequency Domain Filtering:-Ideal and Butterworth Low pass and high pass filters

UNIT-IV **(7 hours)**

Image Degradation and Compression: Noise models, Noise Restoration Filters, Fundamentals of Image Compression, Huffman Coding, Run Length Coding

UNIT-V **(10 hours)**

Morphological Image Processing: Erosion, Dilation, Opening, Closing, Hit-or-Miss Transformation, Basic Morphological Algorithms.

UNIT VI **(5 hours)**

Image Segmentation: Point, Line and Edge Detection, Thresholding.

References:

1. *Gonzalez, R. C., & Woods, R. E. Digital Image Processing. 4th edition. Pearson Education, 2017*
2. *Castleman, K. R. Digital Image Processing. 1st edition. Pearson Education,2007*
3. *Gonzalez, R. C., Woods, R. E., & Eddins, S. Digital Image Processing using MATLAB. Pearson Education Inc., 2004*
4. *Jain, A. K. Fundamentals of Digital Image Processing. 1st edition Prentice Hall of India, 1988.*

List of practicals (30 Hours)

1. Write program to read and display digital image using MATLAB or SCILAB
a. Become familiar with SCILAB/MATLAB Basic commands
b. Read and display image in SCILAB/MATLAB
c. Resize given image
d. Convert given color image into gray-scale image
e. Convert given color/gray-scale image into black & white image
f. Draw image profile
g. Separate color image in three R G & B planes
h. Create color image using R, G and B three separate planes
i. Flow control and LOOP in SCILA
j. Write given 2-D data in image file

2. To write and execute image processing programs using point processing method
a. Obtain Negative image
b. Obtain Flip image
c. Thresholding
d. Contrast stretching

3. To write and execute programs for image arithmetic operations
a. Addition of two images
b. Subtract one image from other image
c. Calculate mean value of image
d. Different Brightness by changing mean value

4. To write and execute programs for image logical operations
a. AND operation between two images
b. OR operation between two images
c. Calculate intersection of two images
d. Water Marking using EX-OR operation
e. NOT operation (Negative image)

5. To write a program for histogram calculation and equalization using
a. Standard MATLAB function
b. Program without using standard MATLAB functions
c. C Program

6. To write and execute program for geometric transformation of image
a. Translation
b. Scaling
c. Rotation
d. Shrinking
e. Zooming

7. To understand various image noise models and to write programs for
a. image restoration
b. Remove Salt and Pepper Noise
c. Minimize Gaussian noise
d. Median filter and Weiner filter

8. Write and execute programs to remove noise using spatial filters
a. Understand 1-D and 2-D convolution process
b. Use 3x3 Mask for low pass filter and high pass filter

9. Write and execute programs for image frequency domain filtering
a. Apply FFT on given image
b. Perform low pass and high pass filtering in frequency domain
c. Apply IFFT to reconstruct image

10. Write a program in C and MATLAB/SCILAB for edge detection using different edge detection mask

11. Write and execute program for image morphological operations erosion and dilation.

SEMESTER-4
B.Voc - Software Development

DISCIPLINE SPECIFIC CORE COURSE – DSC-10: Software Modelling

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Software Modelling	4	3	0	1	Class XII	NIL

***Learning objectives*:**

1. *Design and develop software systems (including analysis, design, construction, maintenance, quality assurance and project management) using the appropriate theory, principles, tools and processes.*
2. *Use appropriate computer science and mathematics principles in the development of software systems.*
3. *Solve problems in a team environment through effective using various tools, techniques and processes.*
4. *Introduce the current issues presently involved in effectively performing duties as a software practitioner in an ethical and professional manner for the benefit of society.*
5. *Practice the lifelong learning needed in order to keep current as well as new challenging issues in real life scenario.*
6. *Develop software in at least one application domains like Healthcare, safety, Society, Legal, Environment, Communication etc.*

Learning Outcomes:

1. *Illustrate the strengths and weaknesses of certain models and logics including state machines, algebraic and process models, and temporal logic;*
2. *Describe appropriate abstract formal models for certain classes of systems, describe abstraction relations between different levels of description, and reason about the correctness of refinements;*
3. *Prove elementary properties about systems described by the models introduced in the course.*

Unit-I **(10 hours)**

Introduction: The Evolving Role of Software, Software Characteristics, Changing Nature of Software, Software Engineering as a Layered Technology, Software Process Framework, Framework and Umbrella activities, process models, Capability Maturity Model Integration (CMMI). Software Requirement Analysis, Initiating Requirement Engineering Process, Requirement Analysis and Modeling Techniques, Flow Oriented Modeling, Need for SRS, Characteristics and Components of SRS.

Unit-II **(7 hours)**

Software Project Management: Estimation in Project Planning Process, Project Scheduling. Software Risks, Risk Identification, Risk Projection and Risk Refinement, RMMM Plan.

Unit-III **(8 hours)**

Quality Management Quality Concepts, Software Quality Assurance, Software Reviews, Metrics for Process and Projects.

Unit-IV **(10 hours)**

Design Engineering Design Concepts, Architectural Design Elements, Software Architecture, Data Design at the Architectural Level and Component Level, Mapping of Data Flow into Software Architecture, Modeling Component Level Design.

Unit-V **(10 hours)**

Testing Strategies & Tactics: Software Testing Fundamentals, Strategic Approach to Software Testing, Test Strategies for Conventional Software, Validation Testing, System Testing, Black-Box Testing, White-Box Testing and their type, Basis Path Testing.

***Referenced Books**:*

1. R.S. Pressman, Software Engineering: A Practitioner's Approach (7th Edition), McGraw-Hill, 2009.

2. P. Jalote, An Integrated Approach to Software Engineering (2nd Edition), Narosa Publishing House, 2003.

3. K.K. Aggarwal and Y. Singh, Software engineering (revised 2nd Edition), New Age International Publishers, 2008.

4. R. Mall, Fundamentals of Software Engineering (2nd Edition), Prentice-Hall of India, 2004.

List of Practicals :(30 hours)

A project report needs to be submitted which includes the following:

1. Problem Statement and Process Model
2. Requirement Analysis:
    a. Creating a Data Flow
    b. Data Dictionary, Use Cases
3. Project Management:
    a. Computing FP
    b. Effort
    c. Schedule, Risk Table, Timeline chart
4. Design Engineering:
    a. Architectural Design
    b. Data Design, Component Level Design

DISCIPLINE SPECIFIC CORE COURSE – DSC-11:
FULL STACK WEB DEVELOPMENT -1

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
FULL STACK WEB DEVELOPMENT -1	4	3	0	1	Class XII	DSC-08

***Learning objectives*:**

1. To introduce the fundamentals of Internet, and the principles of web design.
2. To construct basic websites using JQuery and AJAX.

Learning Outcomes:

1. *Assimilate and master latest framework like frameworks like js, Node.js, and Mongo DB.*
2. *Build Responsive Web application using Angular Typescript*
3. *Learn Angular Binding and events with templates*
4. *Use Mongo DB queries, tools and apply CRUD operations.*

UNIT I **(10 hours)**

Introduction to JQuery: JQuery Introduction, JQuery Syntax, JQuery Selectors, JQuery Events, JQuery Effects- JQuery Hide/Show, JQuery Fade, JQuery Slide(), JQuery Animate, JQuery Stop(), JQuery Callback, JQuery Chaining, JQuery AJAX- JQuery AJAX Introduction, JQuery Load, JQuery Get/Post, JQuery HTML, JQuery Get, JQuery Set, JQuery Add, JQuery Remove, JQuery CSS Classes, JQuery CSS(), JQuery forms.

UNIT II **(5 hours)**

Introduction to Angular JS: Angular Architecture, Building blocks of Angular, Angular CLI and commands, Angular Modules, Understanding files in Angular, Angular forms.

UNIT III **(10 hours)**

Working of Angular Applications: Angular App Bootstrapping ,Angular Components, Creating A Component Through Angular CLI , Ways to specify selectors , Template and styles , Installing bootstrap to design application , Data Binding , Types of Data Binding , Component Interaction using @Input and @Output decorator , Angular Animations , Component Life-cycle Hooks , Angular Directives.

UNIT IV **(10 hours)**

Introduction of Mongo DB: Overview , Design Goals for Mongo DB Server and Database, Mongo DB Tools , How to modularize code by separating routes , Usage of various Mongo DB Tools available with Mongo DB Package , Mongo DB Development Architecture.

UNIT V **(10 hours)**

Crud Operations : Mongo DB CRUD Introduction, Mongo DB Datatypes , Analogy between RDBMS & Mongo DB Data Model, Mongo DB Data Model (Embedding & Linking), Challenges for Data Modelling in Mongo DB.

References

1. Node.js, Mongo DB and Angular Web Development: The definitive guide to using the MEAN stack to build web applications (Developer's Library) - by Brad Dayley , Addison-Wesley; 2nd edition

2. JQuery Cookbook by Cody Lindley, O'Reilly Media, Inc.

List of Practicals: (30 hours)

A web development project implementing following technologies:

- JQuery
- JavaScript
- Angular JS
- Mongo DB

DISCIPLINE SPECIFIC CORE COURSE – DSC-12:
Data communication and Networks

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Data Communication and Networks	4	3	0	1	Class XII	NIL

***Learning objectives*:**

1. *The objective of the course is to equip the students with a general overview of the concepts and fundamentals of computer networks.*
2. *Familiarize the students with the standard models for the layered approach to communication between machines in a network and the protocols of the various layers*

Learning Outcomes:

1. *Understand the basics of data communication, networking, internet and their importance*
2. *Analyze the services and features of various protocol layers in data networks.*
3. *Differentiate wired and wireless computer networks*
4. *Analyze TCP/IP and their protocols.*
5. *Recognize the different internet devices and their functions.*
6. *Identify the basic security threats of a network.*

UNIT-I **(8 hours)**

Basics of Networking: Network Concept, Benefits of Network, Network classification (PAN, LAN, MAN, WAN), Peer to Peer, Client Server architecture,

Transmission media: Guided & Unguided, Network Topologies.

Networking terms: DNS, URL, client server architecture, TCP/IP, FTP, HTTP, HTTPS, SMTP, Telnet

OSI and TCP/IP Models: Layers and their basic functions and Protocols, Comparison of OSI and TCP/IP. Networking Devices: Hubs, Switches, Routers, Bridges, Repeaters, Gateways and Modems, ADSL.

UNIT-II **(7 hours)**

Ethernet Networking: Half and Full-Duplex Ethernet, Ethernet at the Data Link Layer, Ethernet at the Physical Layer.

Switching Technologies: layer-2 switching, address learning in layer-2 switches, network loop problems in layer-2 switched networks, Spanning-Tree Protocol, LAN switch types and working with layer-2 switches, Wireless LAN

UNIT- III **(15 hours)**

Internet layer Protocol: Internet Protocol, ICMP, ARP, RARP.

IP Addressing: Different classes of IP addresses, Sub-netting for an internet work, Classless Addressing. Comparative study of IPv4 & IPv6.

Introduction to Router Configuration. Introduction to Virtual LAN.

UNIT- IV **(15 hours)**

Transport Layer: Functions of transport layer, Difference between working of TCP and UDP.
Application Layer: Domain Name System (DNS), Remote logging, Telnet, FTP, HTTP, HTTPS.

References:

1. *Tananbaum A.S, "Computer Networks" 3rd Ed. PHI, 1999*
2. *Dr. Sanjay Sharma, "A Course in Computer Network" S. K. Kataria & Sons*
3. *Todd Lammle, "CCNA Cisco Certified Network Associate Study Guide", SYBEX.*
4. *A Forouzan, "Data Communications & Networking",4th Ed, Tata McGraw Hill, 2007*

List of Practicals: (30 hours)

Introduce students to any network simulator tool and do the following:

1. To Study basic network command and Network configuration commands.
2. To study and perform PC to PC communication.
3. Create a Network Using Bluetooth-(Piconet/Scatternet)
3. To create Star topology using Hub and Switch.
4. To create Bus, Ring, Tree, Hybrid, Mesh topologies.
5. Perform an initial Switch configuration.
6. Perform an initial Router configuration.
7. To implement Client Server Network.
8. To implement connection between devices using router.
9. To perform remote desktop sharing within LAN connection.

DSE-02 (a): Big Data

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Big Data	4	2	0	2	Class XII	DSC-04

***Learning objectives*:**

This course gives an overview of Big Data, i.e. storage, retrieval and processing of big data. In addition, it also focuses on the "technologies", i.e., the tools/algorithms that are available for storage, processing of Big Data. It also helps a student to perform a variety of "analytics" on different data sets and to arrive at positive conclusions.

Learning Outcomes:

1. *Perform data gathering of large data from a range of data sources.*
2. *Critically analyze existing Big Data datasets and implementations, taking practicality, and usefulness metrics into consideration.*
3. *Understand and demonstrate the role of statistics in the analysis of large of datasets*
4. *Select and apply suitable statistical measures and analyses techniques for data of various structure and content and present summary statistics*
5. *Understand and demonstrate advanced knowledge of statistical data analytics as applied to large data sets*
6. *Employ advanced statistical analytical skills to test assumptions, and to generate and present new information and insights from large datasets*

Unit-I **(5 hours)**

Introduction to big data: Introduction to Big Data Platform – Challenges of Conventional Systems - Intelligent data analysis – Nature of Data - Analytic Processes and Tools - Analysis vs. Reporting.

Unit-II **(5 hours)**

Mining data streams: Introduction to Streams Concepts – Stream Data Model and Architecture - Stream Computing - Sampling Data in a Stream – Filtering Streams – Counting Distinct Elements in a Stream – Estimating Moments – Counting Oneness in a Window – Decaying Window - Real time Analytics Platform (RTAP) Applications - Case Studies – Real Time Sentiment Analysis- Stock Market Predictions.

Unit-III **(5 hours)**

Hadoop: History of Hadoop- the Hadoop Distributed File System – Components of Hadoop

Analyzing the Data with Hadoop - Scaling Out- Hadoop Streaming- Design of HDFS- Java interfaces to HDFS Basics- Developing a Map Reduce Application-How Map Reduce Works-Anatomy of a Map Reduce Job Run-Failures-Job Scheduling-Shuffle and Sort – Task execution - Map Reduce Types and Formats- Map Reduce Features Hadoop environment.

Unit-IV **(5 hours)**

Frameworks: Applications on Big Data Using Pig and Hive – Data processing operators in Pig – Hive services – HiveQL – Querying Data in Hive - fundamentals of HBase and Zoo Keeper - IBM Info Sphere Big Insights and Streams.

Unit-V **(10 hours)**

Predictive Analytics: Simple linear regression- Multiple linear regression- Interpretation of regression coefficients. Visualizations - Visual data analysis techniques- interaction techniques - Systems and applications.

References:

1. Michael Berthold, David J. Hand, "Intelligent Data Analysis", Springer, 2007.
2. Tom White "Hadoop: The Definitive Guide" Third Edition, O'reilly Media, 2012.
3. Chris Eaton, Dirk DeRoos, Tom Deutsch, George Lapis, Paul Zikopoulos, "Understanding Big Data: Analytics for Enterprise Class Hadoop and Streaming Data", McGraw Hill Publishing, 2012.
4. Anand Rajaraman and Jeffrey David Ullman, "Mining of Massive Datasets", CUP, 2012.
5. Bill Franks, "Taming the Big Data Tidal Wave: Finding Opportunities in Huge Data Streams with Advanced Analytics", John Wiley& sons, 2012.

***List of Practicals*:** **(60 hours)**

1. (i) Perform setting up and Installing Hadoop in its two operating modes:
a) Pseudo distributed,
b) Fully distributed.
(ii) Use web-based tools to monitor your Hadoop setup.
2. (i) Implement the following file management tasks in Hadoop:
a) Adding files and directories
b) Retrieving files
c) Deleting files
3. Run a basic Word Count Map Reduce program to understand Map Reduce Paradigm.
a) Find the number of occurrences of each word appearing in the input file(s).
b) Performing a Map Reduce Job for word search count (look for specific keywords in a file).
4. Install and Run Pig then write Pig Latin scripts to sort, group, join, project, and filter your data.
5. Write a Pig Latin script for finding TF-IDF value for book dataset (A corpus of eBooks available at: Project Gutenberg).
6. Install and Run Hive then use Hive to create, alter, and drop databases, tables, views, functions.

DSE-02 (b): Advance DBMS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Advance DBMS	**4**	**2**	**0**	**2**	**Class XII**	**DSC-04**

***Learning objectives*:**

1. *Explain and evaluate the fundamental theories for advanced database architectures and query operators.*
2. *Design and implement parallel database systems with evaluating different methods of storing, managing of parallel database.*
3. *Assess and apply database functions of distributed database.*

Learning Outcomes:

1. *Identify advance database concepts and database models.*
2. *Apply and analyze various terms related to transaction management in centralized and distributed database.*
3. *Learn concept of transactional processing and its commands.*
4. *Improve the database design by normalization.*
5. *Administer and analyze database with query optimization technique*

UNIT-I **(5 hours)**

Introduction: Formal review of relational database and FDs Implication, Closure, its correctness.

UNIT-II **(5 hours)**

Normalization: 3NF and BCNF, Decomposition and synthesis approaches, Review of SQL Queries, Basics of query processing, Query optimization, external sorting, file scans.

UNIT-III **(5 hours)**

Transactional Control: Commit, Save point, Rollback, DCL Commands: Grant and Revoke, Types of locks: Row level locks, Table level locks, Shared lock, Exclusive lock, Deadlock.

UNIT-IV **(5 hours)**

Creating and altering Views: Fundamentals of Database Triggers, Creating Triggers, Types of Triggers: Before, after for each row, for each statement, Basics of PL/SQL.

UNIT-V **(10 hours)**

T/O based techniques: Multiversion approaches, Comparison of CC methods, dynamic databases, Failure classification, recovery algorithm, XML and relational databases.

***References*:**

1. R. Ramakrishnan, J. Gehrke, Database Management Systems, McGraw Hill, 2004
2. A. Silberschatz, H. Korth, S. Sudarshan, Database system concepts, 5/e, McGraw Hill, 2008.
3. R. Elmasri, S.B. Navathe Database Systems Models, Languages, Design and application Programming, 6th Edition, Pearson Education, 2013.

***List of Practicals :*(60 hours)**

1. Perform queries for DCL Commands and Locks.
2. Implement authorization, authentication, and privileges on database.
3. Perform queries to Create synonyms, sequence and index.
4. Perform queries to Create, alter and update views.
5. Implement PL/SQL programmes using control structures.
6. Implement PL/SQL programmes using Cursors.
7. Implement PL/SQL programmes using exception handling.
8. Implement user defined procedures and functions using PL/SQL blocks.
9. Perform various operations on packages.
10. Implement various triggers.
11. Practice on functional dependencies
12. Practice on Normalization – using any database perform various normal forms.
13. Practice on transaction processing.

DSE-02 (c): Android Programming

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Android Programming	**4**	**2**	**0**	**2**	**Class XII**	**DSC-05**

***Learning objectives*:**

1. *Creating robust mobile applications and learn how to integrate them with other services.*

Learning Outcomes:

1. *Describe characteristics of Android operating system.*
2. *Describe components of an android applications.*
3. *Design user interfaces using various widgets, dialog boxes, menus.*
4. *Define interaction among various activities/applications using intents, broadcasting, and service.*
5. *Develop Android applications that require database handling.*

UNIT-I **(10 hours)**

Introduction: Review to JAVA & OOPS Concepts, History of Android, Introduction to Android Operating Systems, Android Development Tools, and Android Architecture, Android components including activities, view and view group, services, content providers, broadcast receivers, intents, parcels, instance state.

UNIT-II **(12 hours)**

User Interface Architecture: Application context, intents: explicit intents, returning results from activities, implicit intents, intent filter and intent resolution, and applications of implicit intents, activity life cycle, activity stack, application's priority and its process' states, fragments and its life cycle.

UNIT-III **(12 hours)**

User Interface Design: Layouts, optimizing layout hierarchies, form widgets, text fields, button control, toggle buttons, spinners, images, menu, dialog.

UNIT-IV **(11 hours)**

Broadcast receivers and Database: Broadcast sender, receiver, broadcasting events with intents, notifications and services.

SQLite, Content Values and Cursors, creating SQLite databases, querying a database.

References

1. *Griffiths, D., & Griffiths, D., (2015). Head First Android Development, O'reilly Media.*
2. *Meier, R., (2012). Professional Android™ 4 Application Development. John Wiley & Sons, Inc.*

List of Practicals: **(60 hours)**

1. Create "Hello World" application. That will display "Hello World" in the middle of the screen in the emulator. Also display "Hello World" in the middle of the screen in the Android Phone.
2. Create an application with three buttons (increment, decrement and reset) and a textView aligned vertically. On clicking, increment/decrement button, the value of the textview should increment/decrement by 1while selecting reset button, the value of textview should become zero.
3. Create an application with login module. (Check username and password).
4. Create spinner with strings taken from resource folder (res >> value folder) and on changing the spinner value, Image will change.
5. Create a menu with 5 options and selected option should appear in text box.
6. Create a list of all courses in your college and on selecting a particular course teacher-incharge of that course should appear at the bottom of the screen.
7. Create an application with three option buttons, on selecting a button colour of the screen will change.
8. Create an application to display various activity life cycle and fragment life cycle methods.
9. Create an application with 2 fragments, one to set the background and other to set the fore-color of the text.
10. Create an application with an activity having EditText and a button (with name "Send"). On clicking Send button, make use of implicit intent that uses a Send Action and let user select app from app chooser and navigate to that application.
11. Create a Login application. On successful login, use explicit intent to second activity displaying welcome message (Welcome Username) to the user and a logout button. When user presses logout button, a dialog box with a message ("Are you sure you want to exit?") and two buttons ("Yes" and "No") should appear to confirm logout. On "Yes" button click, go to login activity and on "No", stay on the same activity.
12. Create an application for Broadcast sender and receivers.
13. Create an application to create notification having icon, text and title.
14. Create an application to create services.
15. Create an application to Create, Insert, update, Delete and retrieve operation on database

SEMESTER-V
B.Voc Software Development

DISCIPLINE SPECIFIC CORE COURSE – DSC-13: Machine Learning

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Machine Learning	4	3	0	1	Class XII	DSC-01

Learning Objectives:

1. *To understand the basic theory underlying machine learning.*
2. *To be able to formulate machine learning problems corresponding to different applications.*
3. *To understand a range of machine learning algorithms along with their strengths and weaknesses.*
4. *To be able to apply machine learning algorithms to solve problems of moderate complexity.*
5. *To apply the algorithms to a real-world problem, optimize the models learned and report on the expected accuracy that can be achieved by applying the models.*

Learning Outcomes:

1. *Differentiate between supervised and unsupervised learning tasks.*
2. *Appreciate the need of preprocessing, feature scaling and feature selection.*
3. *Understand the fundamentals of classification, regression and clustering*
4. *Implement various machine learning algorithms learnt in the course.*

Unit I **(9 Hours)**

Introduction: Basic definitions and concepts, key elements, supervised and unsupervised learning, introduction to reinforcement learning, applications of ML.

Unit II **(9 Hours)**

Preprocessing: Feature scaling, feature selection methods. Dimensionality reduction (Principal Component Analysis).

Unit III **(9 Hours)**

Regression: Linear regression with one variable, linear regression with multiple variables,gradient descent, over-fitting, regularization. Regression evaluation metrics.

Unit IV **(9 Hours)**

Classification: Decision trees, Naive Bayes classifier, logistic regression, k-nearest neighbor classifier, perceptron, multilayer perceptron, neural networks, back-propagation algorithm, Support Vector Machine (SVM). Classification evaluation metrics.

Unit V **(9 Hours)**

Clustering: Approaches for clustering, distance metrics, K-means clustering, hierarchical clustering.

References

1. Mitchell, T.M. Machine Learning, McGraw Hill Education, 2017.
2. James, G., Witten. D., Hastie. T., Tibshirani., R. An Introduction to Statistical Learning with Applications in R, Springer, 2014.
3. Alpaydin, E. Introduction to Machine Learning, MIT press, 2009.

Practical List: (30 Hours)

Use Python for practical labs for Machine Learning. Utilize publically available datasets from online repositories like https://data.gov.in/ and
https://archive.ics.uci.edu/ml/datasets.php
For evaluation of the regression/classification models, perform experiments as follows:

- Scale/Normalize the data
- Reduce dimension of the data with different feature selection techniques
- Split datasets into training and test sets and evaluate the decision models
- Perform k-cross-validation on datasets for evaluation

Report the efficacy of the machine learning models as follows:

- MSE and R2 score for regression models
- Accuracy, TP, TN, FP, TN, error, Recall, Specificity, F1-score, AUC for classification models.

DISCIPLINE SPECIFIC CORE COURSE – DSC 14: FULL STACK WEB DEVELOPMENT -2

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
FULL STACK WEB DEVELOPMENT -2	4	3	0	1	Class XII	DSC-11

***Learning objectives*:**

1. *Assimilate and master latest framework like frameworks like js, Node.js, and Mongo DB.*

***Learning outcomes*:**

1. *Able to use basic to advanced Node js.*
2. *Integrate Node js with mongo database*
3. *Install and use different tools like Github, Maven and Jenkins.*
4. *Develop a fully functioning website and deploy on a web server.*

UNIT I **(5 hours)**

Introduction to Node JS: What is Node.js, Why Node.js, Node in-built packages (buffer, fs, http, os, path, util, url), Node.js Modules, Import your own Package, Node Package Manager (NPM), Local and Global Packages, File System: Get Input from Users, Pass Multiple Arguments with Yargs, File System Module.

UNIT II **(10 hours)**

Advanced Node JS : Express Framework, Run a Web Server using Express Framework, Routes, Deploy application using PM2 and Nginx, Asynchronous Programming- Call Stack, Callbacks, Callback Queue and Event Loop , Callback Abstraction , Callback Chaining

UNIT III **(10 hours)**

Integration of Node.js with Mongo DB: Inserting Documents, Querying, Updating and Deleting Documents, Connect Mongo DB and Node.js Application, REST API

UNIT IV **(10 hours)**

Overview of Git, Jenkins and Maven: Git- Understand the differences between Git, Github and Gitlab, Install and configure Git for use, Use Git to manage files using CLI commands, Create, Clone and manage repositories.

Jenkins- Jenkins and its architecture, Jenkins tools management, user management in Jenkins

Maven - Maven project structure, maven plugins, Project object model (POM), maven build lifecycle, adding external dependencies to maven pom.xml, maven build and test project

UNIT V **(10 hours)**

Introduction to Docker: Comparing VM and Docker, Docker- an Architectural overview, The Docker Hub A brief Introduction, Preparing docker - machine- Installation and configuration, Start containerizing, Play with docker images, Customizing container on your own, Running Container with Docker - commands, Port forwarding with docker container.

References:

1. Node.js, Mongo DB and Angular Web Development: The definitive guide to using the MEAN stack to build web applications (Developer's Library) - by Brad Dayley , Addison-Wesley; 2nd edition

2. DevOps. Building CI/CD Pipelines with Jenkins, Docker Container, AWS ECS, JDK 11, Git and Maven by John Edward Cooper Berg , Kindle Edition

List of Practicals **(30 hours)**

A web development project implementing technologies such as Node JS, Mongo DB, Angular JS, JQuery, JavaScript, Git, Jenkins and Maven.

DISCIPLINE SPECIFIC CORE COURSE – DSC 15: Minor Project-1

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Minor Project-1	4	0	0	4	Class XII	NIL

Learning Objectives:

The students will undergo one semester of project work based on the concepts studied in a subject of their choice. The objective is to train the students for the industry by exposing them to prototype development of real life software.

Learning Outcomes:

On successful completion of this course, a student will be able to:

1. *Develop a project plan based on informal description of the project.*
2. *Implement the project as a team.*
3. *Write a report on the project work carried out by the team and defend the work done by the team collectively.*
4. *Present the work done by the team to the evaluation committee.*

Each student shall carry out a minor project in the fifth semester. The students will work on any project based on the concepts studied in core/elective/ skill based elective courses. Specifically, the project could be a research study, or a software development project.

In case the student is opting for research project, students are required to select a relevant topic, carryout a detailed literature review followed by a critical analysis or implementation. The conclusions drawn from the analysis/ implementation must also be brought out in the form of a research paper.

PROJECT GROUP ORGANIZATION/PLAN

- Students will initially prepare a synopsis (500 words) and submit it to their respective department/supervisor. Only after obtaining the approval of supervisor the student can initiate the Project work.
- For a given project, the group size could be a maximum of four (04) students.
- Each group will be assigned a teacher as a supervisor who will be responsible for their lab classes.
- A maximum of four (04) projects would be assigned to one teacher.

PROJECT EVALUATION

The project will be evaluated as follows:

(a) Mid-semester evaluation 25% weightage

(b) End-semester evaluation

(i) External Examination 50% weightage

Thesis/Project report - 25% of total marks.

Software Coding

i) Documentation - 10% of total marks.

ii) Software - 15% of total marks.

(ii) Viva-voce **25% weightage**

- Practical/discussion sessions based on the area of the project. Work carried out in each lab session will be assessed out of five marks (zero for being absent). Finally, the marks obtained will be scaled out of a maximum marks of mid-semester evaluation (i.e. 25% of total marks).
- The end-**semester evaluation marks** to be awarded jointly by the examiner and supervisor / mentor.
- The **Mid-semester evaluation** to be awarded by the supervisor/mentor. Work carried out in each lab session will be assessed.
- The students will submit both the soft copy and the hard copy of the report.
- The reports may be retained by the examiners.

PROJECT REPORT

Two copies of the Project Report certified by the supervisor shall be submitted to the Department. The format of report can be downloaded from the website/guide/ coordinator.

DSE-03 (a): Distributed Systems

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Distributed Systems	4	4	0	0	Class XII	DSC-09

***Learning objectives*:**

1. *To provide hardware and software issues in modern distributed systems.*
2. *To get knowledge in distributed architecture, naming, synchronization, consistency and replication, fault tolerance, security, and distributed file systems.*
3. *To analyze the current popular distributed systems such as peer-to-peer (P2P) systems will also be analyze*

Learning Outcomes:

1. *To understand the foundations of distributed systems.*
2. *To learn issues related to clock Synchronization and the need for global state in distributed systems.*
3. *To learn distributed mutual exclusion and deadlock detection algorithms.*

UNIT-I **(15 hours)**

Characterization of Distributed Systems: Introduction, Examples of distributed Systems, Resource sharing and the Web Challenges. Architectural models, Fundamental Models. Theoretical Foundation for Distributed System: Limitation of Distributed system, absence of global clock, shared memory, Logical clocks, Lamport's & vectors logical clocks. Concepts in Message Passing Systems: causal order, total order, total causal order, Techniques for Message Ordering, Causal ordering of messages, global state, and termination detection.

UNIT-II **(15 hours)**

Distributed Mutual Exclusion: Classification of distributed mutual exclusion, requirement of mutual exclusion theorem, Token based and non-token based algorithms, performance metric for distributed mutual exclusion algorithms. Distributed Deadlock Detection: system model, resource Vs communication deadlocks, deadlock prevention, avoidance, detection & resolution, centralized dead lock detection, distributed dead lock detection, path pushing algorithms, edge chasing algorithms.

UNIT -III **(15 hours)**

Agreement Protocols: Introduction, System models, classification of Agreement Problem, Byzantine agreement problem, Consensus problem, Interactive consistency Problem, Solution to Byzantine Agreement problem, Application of Agreement problem, Atomic Commit in Distributed Database system. Distributed Resource Management: Issues in distributed File Systems, Mechanism for building distributed file systems, Design issues in Distributed Shared Memory, Algorithm for Implementation of Distributed Shared Memory.

UNIT-IV **(15 hours)**

Failure Recovery in Distributed Systems: Concepts in Backward and Forward recovery, Recovery in Concurrent systems, obtaining consistent Checkpoints, Recovery in Distributed Database Systems. Fault Tolerance: Issues in Fault Tolerance, Commit Protocols, Voting protocols, Dynamic voting protocols

References

1. Singhal&Shivaratri, "Advanced Concept in Operating Systems", McGraw Hill
2. Ramakrishna,Gehrke," Database Management Systems", McGraw Hill
3. Vijay K.Garg Elements of Distributed Computing, Wiley
4. Coulouris, Dollimore, Kindberg, "Distributed System: Concepts and Design", Pearson Education
5. Tenanuanbaum, Steen," Distributed Systems", PHI.

DSE-03 (b): Artificial Intelligence

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Artificial Intelligence	4	3	0	1	Class XII	DSC-03 DSC-06

Learning Objectives:

1. Study the concepts of Artificial Intelligence.
2. Learn the methods of solving problems using Artificial Intelligence.
3. Learn the knowledge representation techniques, reasoning techniques and planning
4. Introduce the concepts of Expert Systems and machine learning.

Learning Outcomes:

1. Identify problems that are amenable to solutions by specific AI methods.
2. Appreciate the utility of different types of AI agents.
3. Apply different informed search techniques for solving real world problems.
4. Use knowledge representation techniques for AI systems..
5. Understand human level, data driven and end to end approaches to AI.

UNIT-I **(10 Hours)**

Introduction to Artificial Intelligence: background and applications, Turing test, Weak AI, Strong AI, Narrow AI, Artificial General Intelligence, Super AI, rational agent approaches to AI, introduction to intelligent agents, their structure, behavior and task environment , the Present and the Future of AI.

UNIT-II **(12 Hours)**

Problem Solving and Searching Techniques: Problem characteristics, production systems, control strategies, breadth-first search, depth-first search, hill climbing and its variations, heuristics search techniques: best-first search, A* algorithm, constraint satisfaction problem, means-end analysis, introduction to game playing, min-max and alpha-beta pruning algorithms.

UNIT-III **(12 Hours)**

Knowledge Representation: Propositional logic, First-Order Predicate logic, resolution principle, unification, semantic nets, conceptual dependencies, frames, and scripts, production rules, Introduction to Programming in Logic (PROLOG).

UNIT-IV **(11 Hours)**

Understanding Natural Languages: Components and steps of communication, the contrast between formal and natural languages in the context of grammar, Chomsky hierarchy of grammars, parsing, and semantics, Parsing Techniques, Context-Free and Transformational

Grammars, Recursive and Augmented transition nets.

References:

1. Stuart J. Russell and Peter Norvig, Artificial Intelligence - A Modern Approach, Pearson, 4th edition, 2020.
2. Elaine Rich and Kelvin Knight, Artificial Intelligence, 3 rd edition, Tata McGraw Hill, 2010.
3. Ivan Bratko, Prolog Programming for Artificial Intelligence, Addison-Wesley, Pearson Education, 4th edition, 2012.

List of Practicals: (30 hours)

1. Write a prolog program to calculate the sum of two numbers.
2. Write a Prolog program to implement max(X, Y, M) so that M is the maximum of two numbers X and Y.
3. Write a program in PROLOG to implement factorial (N, F) where F represents the factorial of a number N. 60
4. Write a program in PROLOG to implement generate_fib(N,T) where T represents the Nth term of the fibonacci series.
5. Write a Prolog program to implement GCD of two numbers.
6. Write a Prolog program to implement power (Num,Pow, Ans) : where Num is raised to the power Pow to get Ans.
7. Prolog program to implement multi (N1, N2, R) : where N1 and N2 denotes the numbers to be multiplied and R represents the result.
8. Write a Prolog program to implement memb(X, L): to check whether X is a member of L or not.
9. Write a Prolog program to implement conc (L1, L2, L3) where L2 is the list to be appended with L1 to get the resulted list L3.
10. Write a Prolog program to implement reverse (L, R) where List L is original and List R is reversed list.
11. Write a program in PROLOG to implement palindrome (L) which checks whether a list L is a palindrome or not.
12. Write a Prolog program to implement sumlist(L, S) so that S is the sum of a given list L.
13. Write a Prolog program to implement two predicates evenlength(List) and oddlength(List) so that they are true if their argument is a list of even or odd length respectively.
14. Write a Prolog program to implement nth_element (N, L, X) where N is the desired position, L is a list and X represents the Nth element of L.
15. Write a Prolog program to implement maxlist(L, M) so that M is the maximum number in the list.
16. Write a prolog program to implement insert_nth (I, N, L, R) that inserts an item I into Nth position of list L to generate a list R.
17. Write a Prolog program to implement delete_nth (N, L, R) that removes the element on Nth position from a list L to generate a list R.
18. Write a program in PROLOG to implement merge (L1, L2, L3) where L1 is first ordered list and L2 is second ordered list and L3 represents the merged list.

DSE-03 (c): Design and Analysis of Algorithms

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Design and Analysis of Algorithms	**4**	**3**	**0**	**1**	**Class XII**	**DSE-07**

***Learning objectives*:**

1. *Introduces the recurrence relations for analyzing the algorithms.*
2. *Introduces the graphs and their traversals.*
3. *Describes major algorithmic techniques (divide-and-conquer, greedy, dynamic programming, Brute Force, Transform and Conquer approaches) and mention problems for which each technique is appropriate.*
4. *Describes how to evaluate and compare different algorithms using worst-case, average-case and best-case analysis.*

Learning Outcomes:

1. *Compute the asymptotic time complexity of algorithms*
2. *Prove correctness of algorithms*
3. *Use appropriate algorithm design technique(s) for solving a given problem*
4. *Appreciate the difference between tractable and intractable problems*

UNIT-1 **(10 hours)**

Sorting: Selection. Insertion Sort, Selection Sort, Bubble Sort, Heap sort, Linear Time Sorting, Selection Problem, running time analysis and correctness.

UNIT-II **(10 hours)**

Graphs: Review of graph traversals, graph connectivity, testing bi-partiteness, Directed Acyclic Graphs and Topological Ordering.

UNIT-III **(13 hours)**

Divide and Conquer. Introduction to divide and conquer technique, Merge Sort, Quicksort, Maximum-subarray problem.

Intractability: Decision vs optimization problems, NP as a class of problems, NP-hardness, NP-completeness with examples.

UNIT-IV **(12 hours)**

Greedy and dynamic Algorithms: Introduction to the Greedy algorithm design approach, application to minimum spanning trees, fractional knapsack problem.

Introduction to the Dynamic Programming approach, application to subset sum, integer knapsack problem.

References

1. Cormen, T. H., Leiserson, C. E., Rivest, R. L., Stein C., Introduction to Algorithms. 3rd edition. Prentice Hall of India. 2010.
2. Kleinberg, J., Tardos, E. Algorithm Design. 1st edition. Pearson. 2013.

List of Practicals **(30 hours)**

A practical implementation of various algorithmic techniques such as sorting, graphs,greedy and dynamic programming.

SEMESTER-VI
B.Voc - Software Development

DISCIPLINE SPECIFIC CORE COURSE – 16: Cloud Computing

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Cloud Computing	**4**	**3**	**0**	**1**	**Class XII pass with Mathematics**	**NIL**

Learning Objectives:

1. *To provide the students basic understanding about cloud and virtualization along with it how one can migrate over it.*
2. *To provide students concepts of security and privacy in a cloud.*

Learning Outcome:

1. *The fundamental ideas behind Cloud Computing, the evolution of the paradigm, its applicability; benefits, as well as current and future challenges;*
2. *The basic ideas and principles in data center design; cloud management techniques and cloud software deployment considerations;*
3. *Different CPU, memory and I/O virtualization techniques that serve in offering software, computation and storage services on the cloud; Software Defined Networks (SDN) and Software Defined Storage (SDS);*
4. *Could storage technologies and relevant distributed file systems, NoSQL databases and object storage;*
5. *The variety of programming models and develop working experience in several of them.*

Unit I **(7 Hours)**

Evolution of Cloud Computing: Trends of computing, Introduction to distributed computing, cloud computing, Cloud Based Application Development Approach Vs. Traditional Application Development Approach, What's cloud computing, Properties & Characteristics, Service models, Deployment models, SLA(Service Level Agreements), SLA at various levels, SOA(Service oriented Architecture), SOA characteristics

Unit II **(8 Hours)**

Cloud Computing Architectural Framework: Infrastructure as a Service (IAAS), Platform as a Service (PAAS), Software as a Service (SAAS), cloud computing vendors, Cloud Computing threats, Cloud Reference Model, The Cloud Cube Model, issues in Cloud Computing ,Managing and administrating the cloud services and cloud resources, Virtualization -Hypervisor Architecture, Hardware Virtualization, Software Virtualization, Memory Virtualization, Storage Virtualization, Data Virtualization, Network Virtualization,
Virtualization Security Recommendations

Unit III **(8 Hours)**

Security in Cloud: Infrastructure security: Network Level, Host Level and Application Level

Security and Storage: Aspects of Data Security, Data control, Network Security, Host Security, Data Security Mitigation, Encryption, storage- confidentiality, integrity, and availability.
Security Management in the Cloud: Security Management Standards, Availability Management- PAAS, SAAS, IAAS, Access Control, Security Vulnerability, Patch and Configuration Management.

Unit IV **(7 Hours)**

Privacy in Cloud: Data Life-Cycle, Key Privacy Concerns in the Cloud, Responsibility for protecting Privacy, Risk Management and Compliance in relation to Cloud Computing, Legal and Regulatory Implications. Disaster Recovery: Disaster recovery planning, Disaster in Cloud, Disaster Management

Unit V **(15 Hours)**

Case study: Hadoop- architecture, Hadoop Distributed file system, map- reduce model, getting started with the Hadoop, Amazon EC2 / S3 and EC2 Commands. Introduction of MS Windows Azure, Google Apps / Google Docs.

Reference Books:

1. Tim Mather, Subra Kumaraswamy, Shahed Latif, "Cloud Security and Privacy," O Reilly
2. George Reese, "Cloud Application Architectures," O Reilly
3. David S. Linthicum, "Cloud Computing and SOA Convergence in your Enterprise, A Step by Step Guide, "Pearson
4. Dr. Gautam Shroff,"Enterprise Cloud Computing Technology, Architecture, Applications", Cambridge University Press.

List of practicals (30 Hours)

1. What are the fundamental differences between centralized and distributed computing?
2. How do elasticity and scalability differ in the context of cloud computing?
3. How to set up an Amazon EC2 instance?
4. Design a basic service-oriented architecture for a simple e-commerce website?
5. Explain the role of firewalls in cloud network security.
6. Launch a Linux Virtual Machine
7. Host a Static Website
8. Create an Amazon Elastic Kubernetes Service (EKS) and S3 Bucket
9. Writing IAM Policies: How to Grant Access to an Amazon S3 Bucket

DISCIPLINE SPECIFIC CORE COURSE – 17: Information Security

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Information Security	**4**	**3**	**0**	**1**	**Class XII pass with Mathematics**	DSC-12

Learning Objectives:

1. *To make a student learn basic principles of information security.*
2. *To familiarize students with cryptography, authentication and access control methods along with software security.*
3. *To touch upon the implications of security in cloud and Internet of Things (IoT).*
4. *To discuss potential security threats and vulnerabilities of systems along with their impacts and countermeasures.*

Learning Outcome:

1. *Identify the major types of threats to information security*
2. *Describe the role of cryptography in security*
3. *Discover the strengths and weaknesses of private and public key cryptosystems*
4. *Identify and apply various access control and authentication mechanisms*
5. *Discuss data and software security and, related issues*
6. *Explain network security threats and attacks*

Unit I **(5 Hours)**

Overview Computer Security Concepts, Threats, Attacks, Security Functional Requirements,Fundamental Security Design Principles, Attack Surfaces and Attack Trees.

Unit II **(10 Hours)**

Cryptographic tools Confidentiality with Symmetric Encryption, Message Authentication and Hash Functions, Public-Key Encryption, Digital Signatures and Key Management, Random and Pseudorandom Numbers, DES (Data Encryption Standard), RSA , Diffie-Hellman key exchange, Post quantum cryptography.

Unit III **(5 Hours)**

Data Security User authentication and Access Control, Database and Data Center Security

Unit IV **(12 Hours)**

Software Security Types of Malicious Software, Threats, Viruses, Worms, SPAM E-Mail, Trojans, Payload, System Corruption, Payload, Attack Agent, Zombie, Bots, Payload, Information Theft, Key-loggers, Phishing, Spyware, Payload Stealthing Backdoors, Rootkits, Countermeasures. Overflow Attacks - Stack Overflows, Buffer Overflows. Handling Program Input, Writing Safe Program Code, Interacting with the Operating System and Other Programs.

Unit V **(13 Hours)**

Network Security Denial-of-Service Attacks, Flooding Attacks, Distributed Denial-of-Service Attacks, Overview of Intrusion Detection, Honeypots, Firewalls, Secure Email and S/MIME, Secure Sockets Layer (SSL) and Transport Layer Security (TLS), HTTPS, IPv4 and IPv6 Security, Public-Key Infrastructure.

References:

1. Stallings, W. and Brown L. (2018) Computer Security: Principles and Practice, Fourth edition, Pearson Education.

2. Pfleeger, C.P., Pfleeger, S.L., & Margulies, J. (2015). Security in Computing. 5th edition. Prentice Hall

3. Lin, S. & Costello, D. J. (2004). Error Control Coding: Fundamentals and applications. 2nd edition. Pearson Education

List of Practicals **(30 hours)**

1. Demonstrate the use of Network tools: ping, ipconfig, ifconfig, tracert, arp, netstat,whois
2. Use of Password cracking tools : John the Ripper, Ophcrack. Verify the strength of passwords using these tools.
3. Use nmap/zenmap to analyse a remote machine.
4. Use Burp proxy to capture and modify the message.
5. Demonstrate sending of a protected word document.
6. Demonstrate sending of a digitally signed document.
7. Demonstrate sending of a protected worksheet.
8. Demonstrate use of gpg utility for signing and encrypting purposes.

DISCIPLINE SPECIFIC CORE COURSE – 18: MINOR PROJECT-2

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
MINOR PROJECT-2	**4**	**0**	**0**	**4**	**Class XII pass with Mathematics**	**DSC-15**

Learning Objectives:

The students will undergo one semester of project work based on the concepts studied in a subject of their choice. The objective is to train the students for the industry by exposing them to prototype development of real life software.

Learning Outcomes:

On successful completion of this course, a student will be able to:

1. *Develop a project plan based on informal description of the project.*
2. *Implement the project as a team.*
3. *Write a report on the project work carried out by the team and defend the work done by the team collectively.*
4. *Present the work done by the team to the evaluation committee.*

Each student shall carry out a minor project in the sixth semester that can be a continuation of advancement in Minor Project-1 or can be done from scratch. The students will work on any project based on the concepts studied in core/elective/ skill based elective courses. Specifically, the project could be a research study, or a software development project.

In case the student is opting for research project, students are required to select a relevant topic, carryout a detailed literature review followed by a critical analysis or implementation. The conclusions drawn from the analysis/ implementation must also be brought out in the form of a research paper.

PROJECT GROUP ORGANIZATION/PLAN

- Students will initially prepare a synopsis (500 words) and submit it to their respective department/supervisor. Only after obtaining the approval of supervisor the student can initiate the Project work.
- For a given project, the group size could be a maximum of four (04) students.
- Each group will be assigned a teacher as a supervisor who will be responsible for their lab classes.
- A maximum of four (04) projects would be assigned to one teacher.

PROJECT EVALUATION

The project will be evaluated as follows:

(a) Mid-semester evaluation 25% weightage

(b) End-semester evaluation

(i) External Examination 50% weightage

Thesis/Project report - 25% of total marks.

Software Coding

i) Documentation - 10% of total marks.

ii) Software - 15% of total marks.

(ii) Viva-voce **25% weightage**

- Practical/discussion sessions based on the area of the project. Work carried out in each lab session will be assessed out of five marks (zero for being absent). Finally, the marks obtained will be scaled out of a maximum marks of mid-semester evaluation (i.e. 25% of total marks).
- The end-**semester evaluation marks** to be awarded jointly by the examiner and supervisor / mentor.
- The **Mid-semester evaluation** to be awarded by the supervisor/mentor. Work carried out in each lab session will be assessed.
- The students will submit both the soft copy and the hard copy of the report.
- The reports may be retained by the examiners.

PROJECT REPORT

Two copies of the Project Report certified by the supervisor shall be submitted to the Department. The format of report can be downloaded from the website/guide/ coordinator.

DSE – 04 (a): Deep Learning

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Deep Learning	**4**	**2**	**0**	**2**	**Class XII pass**	DSC-03 DSC-13

Learning Objectives:

To introduce students to deep learning algorithms and their applications in order to solve real problems.

Learning Outcomes:

1. *Describe the feed-forward and deep networks.*
2. *Design single and multi-layer feed-forward deep networks and tune various hyper parameters.*
3. *Implement deep neural networks to solve a problem*
4. *Analyze performance of deep networks.*
5. *Use pre-trained models to solve a problem*

UNIT-I **(6 hours)**

Introduction to neural networks: Artificial neurons, perceptron, computational models of neurons, Structure of neural networks, Multilayer feed-forward neural networks (MLFFNN), Back-propagation learning, Empirical risk minimization, bias-variance tradeoff, Regularization, output units: linear, softmax , hidden units:tanh, RELU

UNIT-II **(6 hours)**

Deep neural networks: Difficulty of training DNNs, Greedy layerwise training, Optimization for training DNN's, Newer optimization methods for neural networks (AdaGrad, RMSProp, Adam), Regularization methods (dropout, drop connect, batch normalization).

UNIT-III **(6 hours)**

Convolution neural networks (CNNs): Introduction to CNN - convolution, pooling, Deep CNNs - LeNet, AlexNet. Training CNNs, weights initialization, batch normalization, hyper parameter optimization, Understanding and visualizing CNNs, Using a pre trained convnet

UNIT-IV **(6 hours)**

Recurrent neural networks (RNNs): Sequence modeling using RNNs, Back propagation through time, Longshot Term Memory (LSTM), Bidirectional RNN, Bidirectional LSTM

UNIT-V **(6 hours)**

Unsupervised deep learning: Auto-encoders, Generative Adversarial Networks. Applications of Deep learning - Computer vision, Speech recognition and NLP.

References:

1. *Ian Goodfellow, Yodhua Bengio and Aaron Courville, Deep Learning, MITPress Book*
2. *Francois Chollet, Deep Learning with python second edition, Meaning Publications Co.*
3. *Bunduma, N. (2017). Fundamentals of Deep Learning. O'reilly Books.*
4. *Heaton, J. (2015). Deep Learning and Neural Networks, Heaton Research Inc.*

***List of Practicals*: (60 Hours)**

1. Implement a feed-forward neural networks for classifying movie reviews as positive or negative(using IMDB dataset)
2. Implement a deep-neural feed-forward network for estimating the price of house, given real-estate data(Boston Housing Price)
3. Implement a deep-neural network for classifying news wires by topic (Reuter's dataset).
4. Implement CNN for classifying MNIST dataset
5. Create a model for time-series forecasting using RNN/LSTM
6. Implement an auto-encoder

DSE – 04 (b): Internet of Things (IoT)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Internet of Things(IoT)	**4**	**2**	**0**	**2**	**Class XII pass**	**DSC-01**

Learning Objectives

1. *To make students understand what IoT is and how it works today*
2. *To make students aware of different applications of IoT.*
3. *To introduce students to technologies and smart systems under IoT*

Learning Outcomes:

1. *Able to understand the application areas of IOT ·*
2. *Able to realize the revolution of Internet in Mobile Devices, Cloud & Sensor Networks*
3. *Able to understand building blocks of Internet of Things and characteristics.*

UNIT-I **(5 Hours)**

Introduction to IoT: Definition and Characteristics, Physical Design Things- Protocols, Logical Design- Functional Blocks, Communication Models- Communication APIs- Introduction to measure the physical quantities.

UNIT-II **(5 Hours)**

IoT Enabling Technologies - Wireless Sensor Networks, Cloud Computing Big Data Analytics, Communication Protocols- Embedded System- IoT Levels and Deployment Templates.

UNIT-III **(10 Hours)**

Introduction to Smart Systems using IoT: IoT Design Methodology- IoT Boards (Raspberry Pi, Arduino) and IDE - Case Study: Weather Monitoring- Logical Design using Python, Data types & Data Structures- Control Flow, Functions- Modules- Packages, File Handling - Date/Time Operations, Classes- Python Packages of Interest for IoT.

UNIT-IV **(5 Hours)**

Sensing and Sensors: Wireless Sensor Networks, Challenges and Constraints, Introduction – Fundamentals of MAC Protocols – MAC protocols for WSN – Sensor MAC Case Study.

UNIT-V **(5 Hours)**

Applications: Home Automation, Smart Cities, Environment, Energy, Retail, Logistics, Agriculture, Industry, Health and Lifestyle, IoT and M2M

References:

1. Michael Miller, The Internet of Things, Pearson Education, 2015.
2. Arshdeep Bahga and Vijay Madisetti, Internet of Things: Hands-on Approach, Hyderabad University Press, 2015.
3. Greengard, Samuel. The internet of things. MIT press, 2015.

List of Practicals: (60 Hours)

1. Familiarization with Arduino/Raspberry Pi and perform necessary software installation.
2. To interface LED/Buzzer with Arduino/Raspberry Pi and write a program to turn ON LED for 1 sec after every 2 seconds.
3. To interface Push button/Digital sensor (IR/LDR) with Arduino/Raspberry Pi and write a program to turn ON LED when push button is pressed or at sensor detection.
4. To interface DHT11 sensor with Arduino/Raspberry Pi and write a program to print temperature and humidity readings.
5. To interface motor using relay with Arduino/Raspberry Pi and write a program to turn ON motor when push button is pressed.
6. To interface OLED with Arduino/Raspberry Pi and write a program to print temperature and humidity readings on it.
7. To interface Bluetooth with Arduino/Raspberry Pi and write a program to send sensor data to smartphone using Bluetooth.
8. To interface Bluetooth with Arduino/Raspberry Pi and write a program to turn LED ON/OFF when '1'/'0' is received from smartphone using Bluetooth.
9. Write a program on Arduino/Raspberry Pi to upload temperature and humidity data to thingspeak cloud.
10. Write a program on Arduino/Raspberry Pi to retrieve temperature and humidity data from thing speak cloud.
11. To install MySQL database on Raspberry Pi and perform basic SQL queries.
12. Write a program on Arduino/Raspberry Pi to publish temperature data to MQTT broker.
13. Write a program on Arduino/Raspberry Pi to subscribe to MQTT broker for temperature data and print it.
14. Write a program to create TCP server on Arduino/Raspberry Pi and respond with humidity data to TCP client when requested.
15. Write a program to create UDP server on Arduino/Raspberry Pi and respond with humidity data to UDP client when requested.

DSE – 04 (c): SOFTWARE TESTING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Software Testing	**4**	**3**	**0**	**1**	**Class XII pass**	**NIL**

Learning Objectives

1. To study fundamental concepts in software testing
2. To discuss various software testing issues and solutions in software unit test, integration and system testing.
3. To expose the advanced software testing topics, such as object-oriented software testing methods.

Learning Outcomes:

1. List a range of different software testing techniques and strategies and be able to apply.
2. Distinguish characteristics of structural testing methods.
3. Demonstrate the integration testing which aims to uncover interaction and compatibility problems as early as possible.
4. Discuss about the functional and system testing methods.
5. Demonstrate various issues for object oriented testing.

UNIT-I **(12 Hours)**

Review of Software Engineering: Overview of Software Evolution, SDLC, Testing Process, Terminologies in Testing: Error, Fault, Failure, Verification, Validation, Difference between Verification and Validation, Test Cases, Testing Suite, Test, Oracles, Impracticality of Testing All Data; Impracticality of Testing All Paths. Verification: Verification Methods, SRS Verification, Source Code Reviews, User Documentation Verification, Software, Project Audit, Tailoring Software Quality Assurance Program by Reviews, Walkthrough, Inspection and Configuration Audits.

UNIT-II **(13 Hours)**

Functional Testing: Boundary Value Analysis, Equivalence Class Testing, Decision Table Based Testing, Cause Effect Graphing Technique. Structural Testing: Control Flow Testing, Path Testing, Independent Paths, Generation of Graph from Program, Identification of Independent Paths, Cyclomatic Complexity, Data Flow Testing, Mutation Testing.

UNIT-III **(8 Hours)**

Regression Testing: What is Regression Testing? Regression Test cases selection, reducing the number of test cases, Code coverage prioritization technique. Reducing the number of test cases: Prioritization guidelines, Priority category, Scheme, Risk Analysis.

UNIT-IV **(7 Hours)**

Software Testing Activities: Levels of Testing, Debugging, Testing techniques and their applicability, Exploratory Testing Automated Test Data Generation: Test Data, Approaches to test data generation, test data generation using genetic algorithm, Test Data Generation Tools, Software Testing Tools, and Software test Plan

UNIT-V **(5 Hours)**

Object Oriented Testing: Definition, Issues, Class Testing, Object Oriented Integration and System Testing. Testing Web Applications: Web Testing, User Interface Testing, Usability Testing, Security Testing, Performance Testing, Database testing, Post Deployment Testing.

References:

1. *Yogesh Singh, "Software Testing", Cambridge University Press, New York, 2012*
2. *K.K. Aggarwal & Yogesh Singh, "Software Engineering", New Age International Publishers, New Delhi, 2003.*
3. *Roger S. Pressman, "Software Engineering – A Practitioner's Approach", Fifth Edition, McGraw-Hill International Edition, New Delhi, 2001.*
4. *Marc Roper, "Software Testing", McGraw-Hill Book Co., London, 1994.*
5. *M.C. Trivedi, Software Testing & Audit, Khanna Publishing House*
6. *Boris Beizer, "Software System Testing and Quality Assurance", Van Nostrand Reinhold, New York, 1984.*

Practicals (30 Hours)

Practicals related to basic path testing and other testing techniques.

SEMESTER- III
B.Voc. - Banking, Financial Services & Insurance

DISCIPLINE SPECIFIC CORE COURSE – 7
FINANCIAL SERVICES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
FINANCIAL SERVICES	4	3	1	0	Class XII	Nil

Learning Objective:

This paper equips students with the basic structure of the Financial Services Sector and enables them to make a career in the financial services sector.

Learning Outcomes:

After completion of the course, learners will be able to:

1. Analyse the development in housing finance
2. Understand the regulatory framework in financial services.
3. Understand the concepts of Leasing and Hire Purchase system.
4. Develop understanding of Venture Capital, Insurance and Credit Ratings.
5. Learn about the recent developments in Retail Financing.

UNIT—I: Introduction to Housing finance (12 hours)

Concept of financial services, difference between financial and non-financial services, financial service providers in India, latest development in financial services, Regulatory frameworks related to different financial services like leasing, HP, NBFCs, Insurance Cos, HFCs. Significance of housing finance in economic development, NHB- as a regulator and refinancer, modus operandi of HFCs; Securitization - concept, types, process of securitization, securitization in India.

Unit—II: Leasing and Hire Purchase (12 Hours)

Concepts of leasing, types of leasing - financial & operating lease, direct lease and sales & lease back, single investor lease and leveraged lease, Domestic lease and International lease,

advantages and limitations of leasing, legal aspects of leasing, determination of lease rental; lease evaluation- the lessee's angle, determination of breakeven lease rental. Hire-Purchase: concept, mathematics of HP, legal aspects of HP, financial evaluation the hirer's view.

Unit—III: Venture Capital, Insurance and Credit Ratings (12 Hours)

Concept, history and evolution of VC, the venture investment process, various steps in venture financing, incubation financing. Concept, classification, principles of insurance, IRDA and different regulatory norms, operation of General Insurance. Health Insurance, Life Insurance. Introduction, types of credit rating, advantages and disadvantages of credit ratings, Credit rating agencies and their methodology, International credit rating practices.

Unit—IV: Retail Finance (9 Hours)

Introduction to retail finance, benefits and objective, different models/channels of retail finance, methods of determining profit for retail financer, opportunities and challenges of retail finance, Global retail finance scenario, overview of retail finance in India, customer perception and expectation about retail finance.

Essential/recommended readings

1. Khan, M. Y. (2015). *Financial Services (8th ed.).* Tata Mc Graw Hill Education Private Limited.
2. Pond, K. (2017). *Retail banking*. Global Professional Publishing Ltd.
3. Gupta, N. K., & Chopra, M. (2010). *Financial Markets, Institutions & Services*. Ane Books Pvt Ltd.
4. Sriram, K. (1992). *Hand Book of Leasing, Hire Purchase & Factoring, ICFAI, Hyderabad*.

Suggestive readings

1. Kataria, K., & Rajni. (2017). *Financial Markets, Institutions and Financial Services*. Galgotia Publishing Company.
2. Irani, F. (1994). *Inside Leasing*. Tata McGraw Hill
3. Gurusamy, S. (2017). *Essentials of Financial Services*.
4. *SEBI Guidelines.* Nabhi Publications

DISCIPLINE SPECIFIC CORE COURSE – 8
BUSINESS STATISTICS AND FINANCIAL MATHEMATICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Business Statistics and Financial Mathematics	**4**	**2**	**0**	**2**	Class XII Pass	NIL

Learning Objectives:

To familiarize students with various statistical and mathematical data analysis tools that can be used for effective decision making. Emphasis will be on the application of the concepts learned to be employed in various financial and managerial situations.

Learning Outcomes:

After the end of the course, students should be able to:

1. Summarize data sets using descriptive statistics.
2. Explain mathematical formulation and solution to problems related to finance including different methods of interest calculation, future, and present value of money.
3. Analyse the relationship between two variables of various managerial situations.
4. Geometrically interpret Correlation and Regression.
5. Develop managerial decision problems using Probability Density Functions and Cumulative Density Functions.

Unit1: Descriptive Analysis and Mathematics of Finance (9 Hours)

a. Descriptive Analysis

Measures of Central Value - Mean, Median, Mode; Measures of Dispersion - Absolute and Relative: Range, Quartile Deviation, Mean Deviation, Standard Deviation, Coefficient of Variance.

b. Mathematics of Finance

Rates of interest - nominal, effective and their inter-relationships in different compounding situations, compounding a sum using different types of rates, Types of annuities: ordinary, due

and deferred - Discrete and continuous, Perpetuity, Determination of future and present values using different types of rates of interest, Applications relating to a loan, mortgage, sinking fund etc.

Unit2: Correlation and Regression Analysis (8 Hours)

Correlation Analysis - Meaning and significance; Correlation and Causation, Types of Correlation, Methods of studying simple correlation: Scatter diagram, Karl Pearson's coefficient of correlation, Spearman's Rank correlation coefficient.
Regression Analysis - Meaning and significance, Regression vs. Correlation, Simple Regression model: Linear Regression, R-square and MSE in Regression, Geometric interpretation of Regression.

Unit3: Random Variable Analysis (7 Hours)

Probability - Meaning and need, Conditional probability, Bayes' theorem, Random Variable: discrete and continuous; Probability Distribution: Meaning, characteristics (Expectation and variance) of Binomial, Poisson, Exponential and Normal distribution, z-score, Chebyshev and empirical rule, Central limit theorem.

Unit4: Introduction to Estimation and Hypothesis Testing (6 Hours)

Estimation - Point and Interval estimation of population mean, Confidence intervals for the parameters of a normal distribution (one sample only), Hypothesis Testing: Null and Alternate Hypothesis, One Tail and Two tail tests, Level of Significance, Type I and Type II error, Test of hypothesis concerning Mean: z-test & t-test.

Practical component (60 Hours)

Students will perform practical problems based upon the concepts such as descriptive statistics, financial functions, correlation, regression analysis, finding z-score, t-test and z-test on excel & relevant software.

Also a detailed case study showcasing the use of Business statistics in the operations of the company, some practical application of use of statistics in demand estimation in real life business.

Essential Readings:

1. 1.Keller, G. (2022). *Statistics for management and economics*. Cengage Learning.
2. 2.Levin, R. I., & Rubin, D. S. (2021). *Statistics for management*.
3. 3.Stine, R., & Foster, D. (2017). *Statistics for Business: Decision Making and Analysis* (3rd ed.). Pearson.
4. Gupta, S. P. (2012). *Statistical Methods.* Sultan Chand & Sons .

Additional Readings:

1. Vohra, N. D. (latest edition). *Business Statistics.* McGraw Hill Education.
2. Thukral, J. K. (latest edition). *Fundamentals of Business Statistics.* Taxmann.

Note: Latest edition of the readings may be used.

DISCIPLINE SPECIFIC CORE COURSE – 9
FUNDAMENTALS OF INSURANCE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Fundamentals of Insurance	**4**	**3**	**1**		Class XII Pass	NIL

Learning Objectives:

The objective of the course is to make learners understand the concepts of Insurance, basic operations and technical components involved.

Learning Outcomes:

1. Identify the concept and components involved in Insurance.
2. Make learners familiar with practical usage of Insurance and its implications at the time of adversities.

3. Make them understand how digitisation has changed the face of Insurance.

Unit I: Insurance and its function (9 hours)

Introduction to Insurance - Growth, Origin and History of Insurance, Purpose and Need, Meaning and Definition of Insurance, Characteristics of Insurance, nature, Benefits of insurance, Functions of Insurance, Societal perspective of Insurance, Economic development and Insurance. Insurance as a social security tool.

Unit II: Principle of Insurance (12 hours)

Principles of Insurance, Principle of Utmost good faith (Uberrimae Fidei), Principal of Indemnity, Principle of Contribution, Principle of Mitigation of Loss, Principle of Subrogation, Principle of Proximate Cause, Principle of Insurable Interest. Premium- basic definition and concept of Premium.

Unit III: Risk and Management (12 hours)

Risk and Uncertainty- Concepts, causes, degree, classification of risks, and cost, Insurable risk. Psychology and attitude towards risk. Managing risk and uncertainty. Cash flow at risk, risk assessment, risk transfer & mitigation method. Risk management-concept, evolution, purpose, scope, importance and its future. Role of risk management in economic growth. Risk management function. Managerial Aspects- goals, identification, evaluation, risk response, and plan administration.

Unit IV: Insurance contract and its regulatory bodies (12 hours)

Insurance Documents and policy terms and conditions, Insurance policy Contract-nature-subject- matter of insurance and subject-matter of contract of insurance, features-as per Contract Act, special features, evidence and documents. Types of insurance contract – Personal, Property, Liability, and Guarantee Insurance, Insurance contract vs. Wagering agreement, Assurance vs. Insurance, Gambling vs. Insurance. Payment of premium. E-insurance policy and Insurance Repositories. KYC norms and anti-money laundering guidelines for insurers. Reinsurance Contract- meaning and purpose. IRDA guidelines related to detection and monitoring of Insurance Frauds.

References:

1. Principles of Insurance (IC-01), Insurance Institute of India, Mumbai.
2. Practice of Life Insurance (IC-02), Insurance Institute of India, Mumbai

3. Practice of General Insurance (IC-11), Insurance Institute of India, Mumbai
4. Corporate Agent (IC-38), Insurance Institute of India, Mumbai

Text Books:

1. C. Arthur Williams, Jr. Peter Young, Michael Smith, Risk Management and Insurance, Tata Mc Graw Hill
2. Gulati Neelam C., Principles of Risk Management and Insurance, Excel Publishing Gupta
3. P.K., Insurance and Risk Management, Himalaya Publishing House.
4. Kakkar D.N. & Srivastava S.N., Insurance & Risk Management, New Age Publication.
5. Scott E. Harrington, Gregory R Niehaus, Risk Management and Insurance, Tata McGraw Hill.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 1
FUNDAMENTALS OF MANAGEMENT & ORGANIZATIONAL BEHAVIOUR

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Fundamentals of Management and Organizational Behaviour	**4**	**3**	**1**	**0**	Class XII Pass	NIL

Learning Objectives:
To acquaint the students with the fundamentals of managing business and to understand Individual and group behavior at work place so as to improve the effectiveness of an Organization. The course will use and focus on Indian experiences, approaches and cases.

Learning Outcomes:

At the end of the course, students should be able to:
i. Understand the nature of management and describe the functions of management.
ii. Develop understanding of different approaches to designing organizational structures.
iii. Understand the role of personality, learning and emotions at work.
iv. Discover and understand the concept of motivation, leadership, power and conflict.
v. Understand the foundations of group behavior and the framework for organizational change and development.

Unit I **(10 Hours)**

Introduction to management; Evolution of management thought: Scientific, Administrative, Human Relations and Systems approach to management; Management functions and Managerial roles.

References:
Stephen P. Robbins & Mary Coulter, Management. 13th Ed. Pearson[Chapter 1]
Kaul Vijay Kumar, Business Organization & Management - Text and Cases, Pearson[Chapter 23]

Unit II **(10 Hours)**

Planning: Importance and types of plans, planning process, MBO; Decision making: process, types, concept of bounded rationality; Control: process and types; Principles of organizing: common organizational structures, Departmentalization: types of departmentalization,

Delegation & Decentralization: Factors affecting the extent of decentralization, Process and Principles of delegation.

References:
Stephen P. Robbins & Mary Coulter, Management. 13th Ed. Pearson[Chapter 2,8,10,18]

Unit III **(10 Hours)**

Meaning & concept of organizational behaviour; Personality: meaning, factors affecting personality, Big five model of personality; Learning: concept and theories of learning (Classical conditioning, operant conditioning and social learning theory), concept of reinforcement; Perception: concept, factors affecting perception, process of perception, perceptual errors. Motivation: Concept, importance, Content theories (Maslow's need theory, Alderfers' ERG theory, Mc Cllelands' theory of needs, Herzberg's two factor theory) & Process theories (Adams equity theory, Vrooms expectancy theory).

References:
Robbins Stephen P and Judge T.A., Vohra, Organisational Behaviour, 16th Ed. Pearson.[Chapter 5,6,7]
Kaul Vijay Kumar, Business Organization & Management - Text and Cases, Pearson[Chapter 28]

Unit IV **(15 Hours)**

Leadership: Concept, Theories (Trait, Behavioural, Contingency, Charismatic, Transactional and Transformational Leadership; Emotional Intelligence: Concept, Importance, Dimensions. Groups: Definition, Stages of Group Development, Group Cohesiveness; Analysis of Interpersonal Relationship: Transactional Analysis, Johari Window; Conflict: Concept, Sources, Types, Stages of Conflict, Management of Conflict; Organisational Power: Sources of Power and Dysfunctional uses of Power; Organizational Change: Concept, Resistance to change, Managing resistance to change, Kurt Lewin , Theory of Change; Organizational Development(OD): Meaning and types of OD Interventions.

References:
Robbins Stephen P and Judge T.A., Vohra, Organisational Behaviour, 16th Ed. Pearson.[Chapter 9,12,13,14,17]

Essential Readings:
1. Robbins Stephen P and Judge T.A. (2017) Organisational Behaviour, 17th Ed. Pearson.
2. Stephen P. Robbins & Mary Coulter (2017) Management. 13th Ed. Pearson.
3. Kaul Vijay Kumar (2012). Business Organization & Management - Text and Cases, Pearson.

Additional Readings:
1. Kavita Singh: Organisational Behaviour 3rd Ed. Vikas Publication.

2. Koontz & Heinz Weihrich, Essential of Management, McGraw Hill.
3. Kumar, P. Sachdeva A. (2012). Fundamentals of Management. S. Chand. 1ed.
Note: Latest edition of the readings may be used.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 2
COMMERCIAL BANKING FOR BUSINESS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Commercial Banking for Business	**4**	**3**	**1**	**0**	Class XII Pass	NIL

Learning Objectives:

The course aims to provide the students with a theoretical and structural understanding of the commercial banking system and its working. It also focuses upon the developments in commercial banking market.

Learning Outcomes:

After completing the course, the student shall be able to:

1. Understand the evolution and growth of Commercial Banking in India.
2. Learn about commercial banking structure in India.
3. Understand the basic functions of banks with respect to business.
4. Analyze the recent developments in banking system.

Unit I: Commercial banking and its structure (12 hours)

Evolution of banking in India, Functions of Banks – Traditional and Modern. Role & contribution of banks in India. Overview of banking sector reforms.

Commercial banking – concept, Structure and Composition of Commercial Banks; Types of Banks – Public, Private, Cooperative, Regional Rural Banks (RRBs), Foreign, National Housing Bank, Small Industries Development Bank of India (SIDBI), Export-Import Bank of India (EXIM); Comparison between public and private banks; comparison between

Cooperative and Regional Rural Banks. Role of commercial banks in economy; asset liability management; financial inclusion.

Unit 2: Loans, Advances and Commercial Banks operations for business (12 hours)

Principles of sound lending; Methods of granting advances; Priority Sector Lending; Introduction to the Balance Sheet of a Commercial Bank, Concept of Non-Performing Assets (NPAs)-Reasons for Non-Performing Assets and Measures to check Non-Performing Assets. Anti-Money Laundering (AML), CIBIL.

Commercial bank services: Cash Management System, Debt Management, Factoring and Forfaiting, Trusteeship, Custodial services, Business advisory, Salary and pension, Off shore services, Trade services, Forex Management, Corporate Deposits; Corporate Finance: Seed capital, working capital, Import-Export funding. Corporate Debt Restructuring.

Unit 3: Role of Artificial Intelligence in Banking Industry (12 hours)

Artificial Intelligence: Concept, benefits, and scope. Differences between AI, Machine Learning (ML) and Deep Learning (DL). AI strategy for business enterprise - Considerations for an AI strategy. Introduction to mobile computing and Cloud computing. Redefined banking industry – the adoption of Analytics, AI-powered financial services, Fraud mitigation in banks with AI, Reorienting customer retention, Risk management with AI, AI-driven transformation in Insurance, Digital-based insurance model.

Unit 4: Regulation and developments in banking industry (9 hours)

Reserve Bank- Introduction. Emerging role of Reserve Bank of India in Indian Banking System, Banking Sector Reforms – Narasimhan Committee -I, Narasimhan Committee- II; Securitization of Standard Assets and its computation; Basel Accord: merits and weaknesses of the Basel II, Basel III and Basel IV. Introduction to various forms of Banking – Corporate Banking, Retail Banking, International Banking, Investment Banking, Development Banking, Virtual Banking, Non-Banking Financial Intermediaries.

Suggested Readings:

1. Singh, K & Dutta V., Commercial Bank Management.

2. Khan M.Y.: Indian Financial System; Tata McGraw Hill; 10th edition; 2018
3. Paul, R.R. & Mansuri, B.B. Banking and Financial Systems, Kalyani Publications, New Delhi.
4. Sethi, Jyotsna & Bhatia, Nishwan, Elements of Banking and Insurance, PHI Learning Pvt. Ltd., New Delhi.
5. Chaturvedi, D.D. & Mittal, Atul, Banking and Insurance, Scholar Tech Press, New Delhi.
6. Akerkar, R. (2018). Artificial Intelligence for Business. Basingstoke: Springer Nature.
7. Dhanrajani, S. (2018). AI & Analytics: Accelerating Business Decisions. New Jersey: Wiley.

Additional Readings:

1. Sethi, Jyotsna & Bhatia, Nishwan, Elements of Banking and Insurance, PHI Learning Pvt. Ltd., New Delhi.
2. Pathak, Bharti V., – Indian Financial System: Markets, Institutions and Services, Pearson Education, New Delhi; 5th edition 2018.
3. Russell, S. J., & Norvig, P. (2019). Artificial Intelligence: A Modern Approach, 3rd Edition. New Jersey: Prentice Hall
4. Tandon, Deepak & Tandon, Neelam, Management of Banks- Text and Cases, Taxmann Publications Pvt Ltd, New Delhi.

Note: Latest edition of readings may be used

SEMESTER-IV

Bachelor of Vocation
Banking, Financial Services & Insurance

DISCIPLINE SPECIFIC CORE COURSE – 10
FINANCIAL MARKETS AND INSTITUTIONS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Financial Markets and Institutions	**4**	**3**	**1**	**0**	**Class XII**	**Nil**

Learning Objectives:

The objective of this paper is to introduce students to the different aspects and components of financial Institutions and financial markets. This will enable them to take the rational decision in financial environment.

Learning outcomes:

After completion of the course, learners will be able to:

1. Understand the financial architecture of an economy and its key players.
2. Learn about the crucial aspects related to financial and banking structure in India.
3. Understand the concepts related to securities market and trading in secondary market.

4. Analyse the functions of different players in the financial market including Regulators like RBI and SEBI.

UNIT–I: Introduction to Financial and Banking System in India (12 Hours)

Structure of Indian Financial System: An overview of the Indian financial system, financial sector reforms: context, need and objectives, major reforms in the last decade; competition; deregulation; capital requirements; issues in financial reforms and restructuring: future agenda of reforms; Regulation of Banks, NBFCs & FIs: Salient provisions of banking regulation act and RBI Act; Role of RBI as a central banker; Products offered by Banks and FIs: Retail banking and corporate banking products. Universal Banking: need, importance, trends and RBI guidelines, Core banking solution (CBS); RTGS and internet banking, NBFCs and its types, comparison between Banks and NBFCs

Unit—II: Financial Market in India (12 Hours)

Introduction to Financial Markets in India: Role and Importance of Financial Markets, Financial Markets: Money Market; Capital Market; Factors affecting Financial Markets, Linkages Between Economy and Financial Markets, Integration of Indian Financial Markets with Global Financial Markets, Primary & secondary market, Currency Market, Debt Market-role and functions of these markets. Primary Market for Corporate Securities in India: Issue of Corporate Securities: Public Issue through Prospectus, Green shoe option, Offer for sale, Private Placement, Rights Issue, Online IPO, Book Building of Shares, Disinvestment of PSU, Employees Stock Options, Preferential Issue of Shares, Venture Capital, Private Equity, Performance of Primary Market in India, Corporate Listings Listing and Delisting of Corporate Stocks.

Unit—III: International Financial Market and Trading (12 Hours)

Secondary Market in India: Introduction to Stock Markets, Regional and Modern Stock Exchanges, International Stock Exchanges, Demutualization of exchanges, Comparison between NSE and BSE, Raising of funds in International Markets: ADRs and GDRS, FCCB and Euro Issues, Indian Stock Indices and their construction, maintenance, adjustment for corporate actions (rights, bonus and stock split;) on index with numerical, free float vs. full float methodology, Classification of Securities to be included in the Index, Bulls and Bears in Stock Markets, Factors influencing the movement of stock markets, indicators of maturity of stock markets, Major Instruments traded in stock markets: Equity Shares, Debentures, Myths

attached to Investing in Stock Markets Trading of securities on a stock exchange; Selection of broker, capital and margin requirements of a broker.

Unit—IV: Financial Market Institutions (9 Hours)

Functions and workings of Regional Rural Banks (RRBs) and National Bank for Agriculture and Rural Development (NABARD).The Objectives, Functions and Working of Small Industries Development Bank of India (SIDBI), State Financial Corporations (SFCs), State Industrial Development Corporations (SIDCs)/State Industrial Investment Corporations (SIICs), Industrial Finance Corporation of India (IFCI), Industrial Development Bank of India (IDBI), Industrial Credit & Investment Corporation of India (ICICI). International Monetary Institutions: International Monetary Fund (IMF), International Bank for Reconstruction and Development (IBRD), International Development Association (IDA) and International Finance Corporation (IFC)

Essential/recommended readings

1. Saunders, A. & Cornett, M. M. (2007). *Financial Markets and Institutions (3rd ed.)*. Tata McGraw Hill
2. Madura, J. (2008). *Financial Institutions and Markets*. Cengage Learning.
3. Kohn, M. (2004). *Financial Institutions and Markets.* Oxford University Press.

Suggestive readings

1. Pathak, B. (2018). *Indian Financial System (5th ed.)*. Pearson Publication.
2. Bhole, L. M. & Mahakund, J. (2017). *Financial Institutions and Markets (6th ed.)*. McGraw Hill Publishing
3. Kataria, K., & Rajni. (2017). *Financial Markets, Institutions and Financial Services*. Galgotia Publishing Company.
4. Khan, M. Y. (2015). *Financial Services (8th ed.).* Tata Mc Graw Hill Education Private Limited.

Note: Latest edition of the readings may be used.

DISCIPLINE SPECIFIC CORE COURSE – 11
TECHNOLOGY IN BANKING AND INSURANCE SECTOR

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Technology in Banking and Insurance Sector	**4**	**3**	**0**	**1**	**Class XII**	**Nil**

Learning Objectives:

The course aims to make the students conversant with different aspects of technology used in banking and insurance, and various issues related to security and controls with reference to India.

Learning Outcomes:

After completion of the course, learners will be able to:

1. Describe the basic concepts related to electronic banking and Insurance
2. Analyze the different electronic payment systems available.
3. Summarize the Electronic Fund Transfer System.
4. Discuss different types of security threats in Indian Banking.
5. Interpret the E-Banking and insurance Regulations and Cloud Computing.

UNIT–I: E-Banking & E-Insurance (9 Hours)

E-Banking and E-Insurance: Definition, need, types and services offered; e-banking and e-insurance versus traditional banking and insurance.

Unit—II: Electronic Payment System (12 Hours)

Overview of Electronic Payment System: Automated Teller Machine (ATM), Mobile Banking, Unified Payments Interface (UPI), GPay, Paytm, PhonePe, Amazon Pay, MobiKwik, Bharat

Interface for Money (BHIM). Payment Gateways: PayPal, PayUMoney, CCAvenue, etc. Card Technologies, MICR electronic clearing. Electronic Credit and Debit Clearing: NEFT, RTGS, DNS, ECS (Credit/Debit), IMPS, VSAT, SWIFT Code. E-money, Electronic purse, Digital Cash.

Unit—III: Security Threats (12 Hours)

Security Threats in online Environment: Viruses, Worms, Malware, Software Bombs, Phishing, Spoofing, Spamming, Denial of Service Attacks, Application-based Digital Frauds. Technology Solutions: Digital Signature, Encryption, Protection, Multiple Step Verification.

Unit—IV: E-Banking & E-Insurance Regulations and Cloud Computing (12 Hours)

Legal and regulatory issues of e-banking and e-insurance in India. Definition of Cloud Computing. Significance and Challenges of Cloud Computing.

Practical component (30 Hours)

Students will be made familiar to using all the major payment interface. Basic practical knowledge of KYC and data privacy steps will also be given.

Essential/recommended readings

1. Agarwal, O.P. (2017). *Banking & Insurance*. Himalaya Publishing House.
2. Kaptan S.S., & Choubey N.S. (2003). *Indian Banking in Electronic Era.* Sarup & Sons.
3. IIBF. (2019). *Digital Banking*. Taxmann Publisher.
4. Deva, V. (2007). *E–Banking*. Common Wealth Publishers, New Delhi.
5. Uppal, R.K. (2020). *Banking with Technology*. New Century Publications, New Delhi.

Suggestive readings

1. Khan, M.Y. (2009). *Indian Financial System*. Tata McGraw Hill Publishing Company Ltd., New Delhi.
2. Desai, V. (2017). *Banks and Institutional Management.* Himalaya Publishing House, Mumbai.

DISCIPLINE SPECIFIC CORE COURSE – 12
CORPORATE & SECURITIES LAW

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Corporate and Securities Law	4	3	1	0	Class XII Pass	NIL

Learning Objectives:

In view of increasing emphasis on adherence to norms of good corporate governance, Corporate and Securities Law assumes an added importance in the corporate legislative. It deals with structure, management, administration and conduct of affairs of various laws and to understand the application of corporate laws to practical commercial situations.

Learning outcomes:

By studying this course, the students will be able to:

1. To acquire theoretical and practical perspective on many aspects of various legal acts.
2. To understand the detailed procedure and applicability of SEBI Act, Depositories Act, Competition Act, FEMA Act, NCLT and NBFCs.
3. To develop critical thinking through the use of corporate law cases.

UNIT-I: INTRODUCTION **(12 hours)**

Characteristics of a company; lifting of corporate veil; types of companies including one person company, small company and producer company; association not for profit; illegal association; formation of company –promoters, their legal position, pre-incorporation contract and provisional contracts; online registration of a company. Memorandum of association, articles of association, doctrine of constructive notice and indoor management, prospectus-shelf and red herring prospectus, misstatement in prospectus; GDR; book building; issue, allotment and forfeiture of share, transmission of shares, buyback and provisions regarding buyback; issue of bonus shares.

UNIT-II: Depositories Act, 1996 (9 hours)

Definition of Depository Board and Beneficial Owner, Certificate of Commencement of Business; Rights and obligations of Depositories, Participants, Issuers and Beneficial Owners.

Competition Act, 2002- Applicability of the Act – Definitions, Prohibition of certain agreements, abuse of Dominant position and Regulation of combinations, Competition Commission of India- Powers, Functions, Power of Central Government to supersede Commission, Penalties, Appeals, Competition Advocacy.

National Company Law Tribunal (NCLT)- Powers and Jurisdiction, Position under the Finance Act, 2021.

UNIT-III: Management (12 hours)

Directors, Classification of directors, women directors, independent director, small shareholder's director; disqualifications, director identity number (DIN); appointment; legal positions, powers and duties; removal of directors; key managerial personnel, managing director, manager; meetings of shareholders and board; types of meeting, convening and conduct of meetings, postal ballot, meeting through video conferencing, e-voting. Books of accounts, registers; online filing of documents; dividend provisions; auditor's appointment; rotation of auditors; auditor's report; secretarial audit; concept and modes of winding up.

UNIT-IV: Non-banking Financial Companies (NBFCs) (12 hours)

Formation and regulation of NBFC's-Consumer Protection Act, 1986 - Salient Features - Definitions of complainant, Consumer, Manufacturer, Consumer Dispute, Service, Goods, Unfair Trade Practices, Liability of Companies to consumers, Basic Features of the GST Act,2021. Corporate Governance- International dimensions of Company Law.

Essential/recommended readings

1. Avtar Singh (2018) "Company Law", Eastern Book Company.
2. H.K. Saharay (2012) "Principles and Practice of Company Law in India, Prentice Hall of India Private Limited", New Delhi.
3. S.M. Shah: Lectures on Company Law, N.M. Tripathi Private Ltd.
4. Chalesworth & Cain: Company Law, Geoffrey Morse, Steven and Sons, London.

Suggestive readings

1. L.C.B. Grover “The Principles of Modern Company Law”, Steven and Sons, London.
2. Pennigton “Company Law, Butterworths, London”, Taxmann’s.
3. B.K Pahwa Law relating to Non-Banking Financial Companies

DISCIPLINE SPECIFIC ELECTIVE COURSE – 3
EMERGING BANKING AND FINANCIAL SERVICES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Emerging Banking and Financial Services	4	3	1	0	Class XII	NIL

UNIT–I: Indian Banking System and Other Banking Reforms (12 Hours)

An overview of the Indian Banking system; Major Banking Reforms in the last decade: Payment banks, Monetary Policy Committee, MCLR Based Lending. Innovative Remittance Services, Issues in financial reforms and restructuring. Future agenda of reforms: Assessing Non-Performing Assets in Indian Banking, Previous methodologies for recovery, Impact of Gross NPAS on a bank's bottom line-burning need for bad banks, Functioning of Bad Banks, Government backing for bad banks - National Asset Reconstruction Company Ltd. (NARCL).

Unit—II: Neo- Banking, Merger and Acquisition (9 Hours)

Introduction to neo-banks, Functions of neo-banks, Operating Model of neo-banks, Regulatory requirements for setting up and running neo-banks, emerging need for neo-banks, neo-banks vs. traditional banks. Merger & Acquisition: Introduction, Benefits of mergers, Synergies accruing out of mergers, Regulatory mechanisms surrounding M&A in banking, Case-studies of recent banking mergers and related outcomes.

Unit—III: Banking Services, Cross Sell Products Investments and Loans (12 Hours)

Service channels – Branch, ATM, internet, mobile banking, Payment and collection services – cheques, electronic funds transfers, cash management, cheque clearing, Ancillary services – locker and safe custody, payment of taxes and bills, Financial services – Sale of insurance mutual

funds, gold coins, Government bonds, Depository services – DEMAT and web trade, Wealth management, Foreign exchange, Principles of lending, concepts, regulations, Retail lending – secured and unsecured, Home loan, car loan, loan against securities, Credit cards, personal loan educational loan, Business credit – working capital and term loan. Over draft cash credit, term loans, fund based and non-fund based, Priority sector lending – Agriculture credit, MSME.

Unit—IV: KYC, AML and Account Opening Process (12 Hours)

Importance of KYC and AML- Why RBI insists on KYC procedures. The role of Banks in implementing KYC, penalties for non-adherence, Different stages of money laundering, Understand the importance of AML at the time of account opening, Customer acceptance policy – low, medium and high risk customers, Customer verification procedure – KYC documents required for account opening, verification process, Account opening formalities, forms, documents, procedures, Risk management – KYC, AML – monitoring transactions and reporting of suspicious transactions.

Essential/recommended readings

1. Pathak, B. (2018). *Indian Financial System (5th ed.)*. Pearson Publication.
2. Agarwal, O. P. (2014). *International Banking and Finance (1st ed.)*. Himalaya, Publishing House.
3. IIBF. (2019). *Principles & practices of Banking*. Macmillan India Limited.

Suggestive readings

1. Khan, M.Y. (2009). *Indian Financial System*. Tata McGraw Hill Publishing Company Ltd., New Delhi.
2. Khan, M. Y. (2015). *Financial Services (8th ed.)*. Tata Mc Graw Hill Education Private Limited.
3. RBI Guidelines on Payment Banks, Monetary Policy Committee, Universal Banking, Bad bank in India and MCLR based lending.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 4
CORPORATE FINANCE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Corporate Finance	**4**	**3**	**1**	**0**	Class XII Pass	NIL

Learning Objectives:

To provide an understanding of the essential elements of the financial environment where the businesses operate. To acquaint students with the techniques of financial management and its applications for business decision making. It aims to provide and develop an understanding among students about various perspectives that the CFO (Chief Executive Officer) of a firm may hold. Additionally, it will help to develop relevant skills required for diverse strategic finance roles in modern business entities. A CFO's job is to maximize firm value through majorly four types of decisions: which projects to invest in, how to finance the selected projects by using a mix of various financing sources, how to use the surplus generated and how to manage the cash flows of the firm.

Learning Outcomes:

1. Equipped with the basic concepts of financial management.
2. Understand how to coordinate various decisions to maximize the wealth of an organization in today`s financial environment.
3. Arrive at strategic corporate finance decisions with the required accuracy aided by various excel functions.

Unit 1 **(9 Hours)**

Introduction: Nature of Financial Management: Finance and related disciplines; Scope of Financial Management; Profit Maximization, Wealth Maximization. Functions of Finance –

Finance Decision, Investment Decision, Dividend Decision; Risk-Return Trade-off in Finance Functions, Organization of Finance Function.

Time value of money: Concept of Time Value of Money – present value, future value, annuity, growing annuity, perpetuity, growing perpetuity, excel functions of time value of money.

Unit 2: Strategic Investment Decisions: (12 Hours)

Capital Budgeting: Nature and Meaning of Capital Budgeting; Principles and Process; Estimation of relevant Cash Flows and Terminal Value; Evaluation techniques– Payback Period, Accounting Rate of Return, Net Present Value, Internal Rate of Return & MIRR, NPV vs. IRR, Net Terminal Value, Profitably Index Method, Risk analysis in Capital Budgeting - Sensitivity and Scenario analysis, Certainty Equivalent Approach, RADR, Real Options, Excel functions of Capital Budgeting techniques.

Cost of Capital: Meaning and Concept, Measurement of Cost of Capital-Cost of Debt; Cost of Equity Share; Cost of Preference Share; Cost of Retained Earning; Computation of over-all Cost of Capital based on Historical and Market weights (WACC); Adjusting Cost of Capital for Risk.

Unit 3: (12 Hours)

Strategic Financing Decisions: Capital Structure, Theories and Value of the firm – Net Income Approach, Net Operating Income Approach, Traditional Approach, Modigliani Miller (MM) model, HAMADA model; Determining the Optimal Capital Structure, Checklist for Capital Structure decisions, Costs of Bankruptcy and Financial Distress, Trade off models, Pecking Order Theory.

Leverage Analysis and EBIT - EPS Analysis: Concept of leverage, Types of leverage -Operating leverage, financial leverage, combined leverage; EBIT-EPS Analysis, Guidelines for Capital Structure Planning, Link between Capital Structure and Capital Budgeting.

Dividend Decisions: Factors determining Dividend Policy, Theories of Dividend – Gordon Model, Walter Model, MM Hypothesis, Signaling Theory, Forms of Dividend – Cash Dividend, Bonus Shares, Stock Split, Dividend Policies in Practice, Patterns Observed in Payout Policies worldwide.

Unit 4: Working Capital Management (12 Hours)

Working Capital Management: Determination of Working Capital, Determining Financing mix of Working Capital, Receivables Management – Objectives; Credit Policy, Cash Discount, Debtors Outstanding and Ageing Analysis; Costs – Collection Cost, Capital Cost, Default Cost, Delinquency Cost, Management of Cash (Theory only) – Need for Cash, Cash Management

Techniques (Lock box, Concentration Banking), Inventory Management (Theory only) – ABC Analysis; Minimum Level; Maximum Level; Reorder Level; Safety Stock; EOQ (Basic Model).

Essential Readings:

1. Berk, J. B., & DeMarzo, P. M. (2007). *Corporate finance*. Pearson Education.
2. Van Horne, J. C., & Wachowicz, J. M. (2005). *Fundamentals of financial management*. Pearson Education.
3. Pandey, I. M. (2021). *Financial Management.* Pearson.

Additional Readings:

1. Gupta, K. (2011). Khan, MY and Jain, PK, Financial Management: Text, Problems and Case. *Journal of Services Research*, *11*(2).
2. Brealey, R., Myers, S., Allen, F., & Mohanty, P. (2017). *Principles of Corporate Finance* (11ed.). McGraw Hill Education.

Note: Latest edition of the readings may be used.

DISCIPLINE SPECIFIC CORE COURSE – 13
Management Information Systems

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Management Information Systems	**4**	**3**	**1**	**0**	Class XII Pass	NIL

Learning Objectives:

To provide the understanding and use of management information systems in an office and organization.

Learning Outcomes:

After completing this course, students shall be able to:

1. Relate the basic concepts and technologies used in the field of management information systems.
2. Compare the processes of developing and implementing information systems.
3. Outline the role of the ethical, social, and security issues of information systems.

Unit I: Conceptual Foundations **(10 Hours)**

Management Information Systems - Need, Purpose and Objectives - Contemporary Approaches to MIS - Information as a strategic resource - Use of information for Competitive advantage - MIS as an instrument for the organizational change. Nature and scope of MIS- Structure of MIS- Types of MIS- -Definition of system-system related concepts Information, Management and Decision Making - Models of Decision Making Classical, Administrative and Herbert Simon's Models - Types of information-Porters Five Forces Model.

Unit II: Information Technologies **(10 Hours)**

Information Technology - Definition, IT Capabilities and their organizational impact - Telecommunication and Networks - Types and Topologies of Networks - IT enabled services such as Call Centers, Geographical Information Systems etc.

Data Base Management Systems - Data Warehousing and Data Mining, Systems Analysis and Design - Systems Development Life Cycle - Prototyping -Application of DBMS using MS ACCESS.

Unit III: Business Applications of IS **(10 Hours)**

e-Commerce , e-Business and e- Governance .e-Commerce infrastructure. e-Commerce Applications and payment systems.e-Business and e-Governance. Customer Relationship Management system(CRM) System. Supply chain Management (SCM) System.

Tools - Object Oriented Systems (Only introduction to these tools & techniques), Decision Support Systems - Group Decision Support Systems - Executive Information Systems - Executive Support Systems - Expert Systems and Knowledge Based Expert Systems - Artificial Intelligence.

Unit IV: Management of IS **(10 Hours)**

Information system planning-creating an IS plan. IS development and project Management. System development life cycle- system development Models.
IS Implementation and change management

Unit V: IS Security and control and ethical and social issues of ISs **(5 Hours)**

IS Security threats -protecting information system - IS security technology- IS security level.Ethical responsibility of business professionals. Social issues of IS.

Suggested Readings:

1. Management Information Systems, Laudon and Laudon, 7th Edition, Pearson Education Asia
2. Management Information Systems, Jawadekar, Tata McGraw Hill
3. Management Information Systems, Davis and Olson, Tata McGraw Hill
4. Analysis and Design of Information Systems, Rajaraman, Prentice Hall
5. Decision Support Systems and Intelligent Systems, Turban and Aronson, Pearson Education Asia

DISCIPLINE SPECIFIC CORE COURSE – 14
CORPORATE ACCOUNTING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Corporate Accounting	**4**	**3**	**1**	**0**	Class XII Pass	NIL

Learning Objectives:

To enable students to conceptualize the knowledge in the area of corporate accounting and understanding the techniques employed in the preparation of financial statements of the companies.

Learning Outcomes:

After completing this course, students shall be able to:

1. Understand and prepare the final accounts according to revised schedule.
2. Comprehend the concepts as well as standards intrinsic to the accounting systems utilised for measuring the performance of the businesses.

Unit 1 Final Accounts **(12 Hours)**

Preparing the statement of profit and loss account and balance sheet as per Schedule III of Companies Act 2013.

Unit 2 Banking Companies **(9 Hours)**

Differentiation between the balance sheet of banking and non-banking companies; Prudential norms; Asset structure of banks; Concept of Capital Adequacy Norms; Provisioning of NPAs (Nonperforming assets).

Unit 3 Analysis of Financial Statements of Companies **(12 Hours)**

Preparation of Cash Flow Statements (CFS) as per AS 3 (Revised): Indirect Method & AS 7 (theory only); Ratio Analysis – Profitability Ratio, Liquidity Ratio, Capital Structure Ratio, Activity Ratio, Stock Valuation.

Unit 4 Contemporary Trends in Accounting **(12 Hours)**

Forensic Accounting – Concept, History, Types of fraud, Techniques of forensic accounting; Introduction to provisions of Insolvency and Bankruptcy Code; Internal Reconstruction (practical questions).

Essential Readings:

1. Monga, J. R. (2012). *Fundamentals of Corporate Accounting.* Mayur Paper Backs.
2. Goyal, B. K. (2020). *Corporate Accounting* (7th ed.). Taxmann.
3. Agarwal, O. P. (2013). *International Banking and Finance.* Himalaya Publishing House.
4. Tulsian, P. C., & Bharat, T. (2016). *Corporate Accounting*. S. Chand Publishing.

Additional Readings:

1. Gupta, R. K. (2011). *Banking Law and Practice (3 VOLS SET).* Research publication .
2. Chadha, R., & Sumant, C. (2017). *Corporate Laws*. Scholar Tech Press.

Note: Latest edition of the readings may be used.

DISCIPLINE SPECIFIC CORE COURSE – 15
LIFE INSURANCE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Life Insurance	**4**	**3**	**1**	**0**	Class XII Pass	-

Learning Objectives:

The objective of the course is to make learners understand the concepts of Insurance, basic operations and technical components involved.

Learning Outcomes:

1. Identify the concept and components involved in Insurance.
2. Make learners familiar with Life Insurance and its practical usage.
3. Make them understand how digitisation has changed the face of Insurance.

Unit 1: Foundation and Principles **(9 hours)**

Life Insurance- Basic definition and Concept, Purpose and Need of Life Insurance, Important Terminologies: Premium, Sum Assured Insured, Proposer, Nominee, Survivor, Assignee, Assignment, Riders etc., Essential features of Life Assurance , Principles of Life Insurance, Importance of Life Insurance.

Unit 2: Life Insurance Products **(12 hours)**

Whole-life Plans, Endowment Insurance Plans, Term Insurance Plans, Whole-life and Endowment Plans: Comparison, Couple Life Insurance Policy, Female Insurance Plans, Children Plans, Plans for Handicapped Dependents, Plans for High Worth Individuals, Money Back Plans, Micro Insurance Plans, Group Insurance Schemes, Social Security Schemes, Pension/ Annuity Plans, Unit Plans.

ULIP, health insurance plans, Property insurance policies. Post office life insurance schemes: postal life insurance and rural postal life insurance.

Unit 3: Insurance Pricing and Underwriting **(12 hours)**

Pricing Objectives, Life Insurance Pricing Elements, Insurance Rating Methods, Calculation of Premium, Payment of Premium, Classification of Expenses, Surrender Value, Sum Assured Value and Paid up Value.

Appointment, Qualification and Disqualification of Life Insurance Agents, Authority of an Agent, Procedure for Becoming an Agent as a Profession, Functions of Agent, Remuneration of Agent, Code of Conduct for Agent under IRDA Act, 1999, Agent's Liability for Protection of Interest of Life Insurance Policyholders, Insurance Ombudsman Scheme, 2006.

Unit 4: Insurance Products and Digitization **(12 hours)**

Digitization in the field of Insurance. Benefits of digitization in field of Insurance.

Regulatory Framework of Insurance in India (briefly) – Insurance Legislation and IRDA. Control of Malpractices, Negligence, Loss Assessment and Loss Control, Exclusion of perils, Regulatory Framework of Insurance: Role, Power, and Functions of IRDA, Composition of IRDA, IRDA Act 1999.

Traditional Life Insurance Products- Products of LIC, Establishment and Incorporation of Life Insurance Corporation of India, Constitution and Functions of LIC, Constitution of Tribunal, Management of LIC.

Non-Traditional Life Insurance Products (SBI and ICICI- their Introduction, Forms and Procedures), Difference between traditional and non-traditional products in Insurance.

Essential Readings

1. H. S. N. Murthy & Sharma Modern Law of Insurance in India, Fourth Ed. (2002). Universal Book Traders, Delhi.
2. Keneth Black, JR. & Harold D. Skipper JR.. Life and Health Insurance. Thirteen Fd. (2000), Pearson Education.K.C. Mishra &C. S. Kumar, Life Insurance- Principles and Practice. (2009).Cengage Learning India Pvt. Ltd.

Additional Readings

1. H. Narayanan, Indian Insurance- A Profile, (2006). jaico Publishing House.
2. Shashidharan K. Kutty. Managing Life Insurance, (2008), Prentice- Hall of India Pvt. Ltd.
3. H. Sadhak. Life Insurance in India, Response Books, New Delhi- 1.
4. Kaninika Mishra. Fundamentals of Life Insurance. (2010). PHI Learning Pvt. Ltd. Publications of Insurance Institute of India, Mumbai

Promotion: Nature and importance of promotion; Promotion Tools: Advertising, Personal Selling, Public Relations & Sales Promotion, Promotion tools and their effectiveness, determining optimal promotion mix.

Unit 4: Personal Selling (12 hours)

Introduction to Personal Selling: Nature and importance of personal selling. Difference between Personal Selling Salesmanship and Sales Management, Myths of selling, Relationship Marketing and Role of Personal Selling. Characteristics of a good salesman. Types of selling situations. Types of salespersons; Career opportunities in selling, Measures for making selling an attractive career.

Theories of Selling: Traditional and Modern, AIDAS Model of Selling Problem Solving Approach, Right Set of Circumstances Theory and Modern Sales Approaches.

Selling Process: Prospecting and qualifying, Pre-approach, Presentation and demonstration, handling of objections and complaints; Closing the sales; Customer Relations, Follow-up and Dealing customer concerns and complaints.

Essential/recommended readings:

1. Kotler, Philip; Keller, Kevin Lane; Koshy, Abraham, and Mithileshwar Jha (2019) "*Marketing Management: A South Asian Perspective"*, Pearson Education.
2. Chhabra, T.N., (2021) *Principles of Marketing*, Sun India Publication.

Suggestive readings:

1. Armstrong, Gary, and Kotler, Philip (2017) *The Essentials of Marketing*, Pearson Education, New Delhi.
2. McCarthy, E. Jerome., and William D. Perreault, *Basic Marketing*, Richard D. Irwin.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 5
CUSTOMER RELATIONSHIP MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Customer Relationship Management	4	3	1	0	Class XII Pass	NIL

Learning Objectives:

The course objective is to provide an in-depth knowledge of the concepts of Customer relationship management and its importance in organizations. Its aim to provide the understanding of Customer, its acquisition and retention through analytics of CRM.

Learning outcomes:

Upon completion of the course a learner shall be competent to

1. Understand the Customer relationship management through various Models or tools
2. Explain customer experiences and interpret various strategies of CRM
3. Identify ways to enhance Customer services.
4. Understand many ways of data management of related with customer

Unit1: Understanding customer relationships. (12 hours)

Introduction: Definition and Concept of CRM, Emergence of CRM, Components of CRM, Understanding the goal of CRM, Models of CRM, Customer Touch Points, Factors responsible for CRM growth, CRM process, framework of CRM, Benefits of CRM, Types of CRM, Scope of CRM, Customer Profitability, Features Trends in CRM, CRM and Cost-Benefit Analysis, Myths about CRM

CRM and Relationship Marketing: Understanding about relationships, Customer satisfaction, loyalty and business performance, Relationship Management Theories, Managing the customer journey: customer acquisition, Customer journey: Process, Operational CRM tools helping in customer acquisition, Customer retention and development: Definition and Strategies for customer retention.

Unit 2: Strategic CRM (9 hours)

Strategic CRM: Developing CRM Strategy; Role of CRM in Business Strategy, Understanding service Quality; Technical, Functional and Dimensions of Service Quality, Managing Customer Communications

Customer Portfolio Management: Definition, Basic disciplines for CPM, Managing customer-experienced value: Understanding customer-perceived value, Sources of Customer Value, Customization, CRM software applications influencing customer experience.

Unit 3: Operational CRM (12 hours)

Marketing Automation: What is marketing automation? Benefits of marketing automation, Software applications for marketing.

Sales Force Automation: Definition, Benefits, Sales process, Activity, Contact, Lead and knowledge Management, Field Force Automation, SFA Adoption, SFA impact on performance.

Service automation: Definition, Customer service, Modeling service quality, Customer service standards, Benefits from service automation, Software applications for service.

Unit 4: Analytical CRM **(12 hours)**

CRM Process: Introduction and Objectives of a CRM Process; an Insight into CRM and E-CRTA /online CRM, The CRM cycle i.e. Assessment Phase; Planning Phase ; The Executive Phase; Modules in CRM , 4C's (Elements) of CRM Process , CRM Process for Marketing Organization, CRM Affiliation in Retailing Sector.

Developing and managing customer-related databases: Corporate customer-related data, Structured and unstructured data, Data integration, Data warehousing, Data marts, Knowledge management, Analytics for CRM strategy and tactics, Analytics throughout the customer journey, Analytics for structured and unstructured data, Big data analytics

Essential/recommended readings:

1. Buttle, F., Maklan, S. (2019). Customer Relationship Management, 4th Edition. Routledge
2. Kumar, V., Reinartz, Werner (2014) Customer Relationship Management Concept, Strategy
   and Tools, 1st edition, Springer Texts

Suggestive readings:

1. Jagdish N. Sheth, Atul Parvatiyar & G. Shainesh, (2010) "Customer Relationship Management", Emerging Concepts, Tools and Application", TMH.
2. Dilip Soman & Sara N-Marandi (2014) "Managing Customer Value" 1st edition, Cambridge.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 6
GST AND INDIRECT TAXES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GST and Indirect Taxes	**4**	**3**	**1**	**0**	**Class XII Pass**	**NIL**

Learning Objectives:

The objective of this course is to acquaint students with the GST & Indirect Taxation System and its implications on tax in India.

Learning Outcomes:

After successful completion of the course students will be able:

1. To understand taxation structure in India.
2. To understand basic provisions regarding two major acts contributing to Government Funds.
3. To acquire knowledge about valuation of goods under Customs Act and clarity about the concept of "One Nation One Tax". Also, the availability of Input tax credit.
4. To get acquainted with basic knowledge of registration and e-filing process under GST Act.

UNIT-I: Introduction to Indirect Taxation and GST (10 hours)

Direct Taxes and Indirect Taxes: Features of Indirect taxes, Difference, Advantages and Disadvantages, Sources and Authority of Taxes in India (Art 246 of the Indian Constitution), Genesis of GST in India, Power to tax GST (Constitutional Provisions), Meaning and Definition of GST, Benefits of GST, Conceptual Framework – CGST, IGST, SGST, UTGST, Imports of goods or services or both, Export of goods or services or both, Taxes subsumed and not subsumed under GST, Goods and Services Tax Council, Goods and Services Tax Network (GSTN).

UNIT-II: Levy & Collection of Tax and Concept of Supply (8 hours)

Charge of GST, Levy and Collection GST, Composite and Mixed Supplies under GST, Power to Grant Exemption, Negative list of GST, GST Rate Schedule for Goods and Services, Concept and Scope of Supply, Time of Supply, Place of Supply and Value of Taxable Supply.

UNIT-III: Input Tax Credit, Documentation and Computation of GST (7 hours)

Eligibility and conditions for taking Input Tax Credit, Apportionment of credit & Blocked credits, Credit in special circumstances, Computation of GST under Inter State supplies and Intra State Supplies, Tax Invoices, Credit and Debit Notes.

UNIT-IV: Registration, Payment of Tax & Refunds and GST Returns (10 hours)

Persons liable for Registration, Persons not liable for Registration, Procedure for Registration, Deemed Registration, Amendment, Cancellation and Revocation of Registration. Computation of Tax Liability, Payment of Tax, Interest and other Amounts, Interest on delayed Payment,

TDS, TCS Refund of tax, Refund in certain cases, Interest on delayed refunds, Types of Returns and Provisions relating to filing of Returns.

UNIT-V: Introduction to Customs Act, 1962 & Procedures under Customs Act (10 hours)

Introduction to customs law including Constitutional aspects, Levy of and exemptions from customs duties – All provisions including application of customs law, taxable event, charge of customs duty, exceptions to levy of customs duty, exemption from custom duty, Types of customs duties, Classification and valuation of imported and export goods. Import and Export Procedures – All import and export procedures including special procedures relating to baggage, goods imported or exported by post, stores, Provisions relating to coastal goods and vessels carrying coastal goods, Warehousing and Drawback.

Essential/recommended readings

1. V.S. Datey (2013) Indirect Taxes – Law and Practice
2. H.C Mehrotra (2018) Indirect Taxes, SahityaBhavan Publications, New Delhi
3. Vinod K Singania (2018) Indirect Taxes, Taxmann's Publications, New Delhi

Suggestive readings

1. Study materials on GST by ICAI and ICSI.
2. Rakesh Kumar (2019) Goods and Services Tax, Diamond Pocket Books Pvt Ltd.

SEMESTER - VI
Bachelor of Vocation
Banking, Financial Services & Insurance

DISCIPLINE SPECIFIC CORE COURSE – 16
REGULATORY FRAMEWORK FOR BANKING AND INSURANCE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Regulatory Framework for Banking and Insurance	4	3	1	0	Class XII Pass	NIL

Learning Objectives:

The objective of this paper is to introduce students to role and functioning of Central Bank of India, non-performing assets and different rules applicable, Insurance act and guidelines framed by IRDA. It explains the role of RBI and IRDA. Various conceptual issues related to banking

the role of regulatory bodies, mechanism of banking, operations of insurance companies are discussed elaborately.

Learning Outcomes:

After completion of the course, learners will be able to:

1. Understand the concept of Central Bank, its role, functions, structure and working.
2. Understand the concept of Insurance, the agencies involved in Insurance.
3. Know and understand the Non-Performing Assets, its types and rules related to it.
4. Know and understand the role of Insurance Regulatory Development Agency (IRDA).

UNIT–I: Central Bank of India and its Function (12 Hours)

The Reserve Bank of India Act 1934; The Banking Regulation Act, 1949; Setting up of a new bank, Branch licensing, Branch authorization policy for commercial banks and New Bank Licensing Policy, 2013. Objectives and Functions of RBI; Tools of Monetary Control; Regulatory Restrictions on Lending, Power of RBI to Issue Directions, Regulation of Interest Rate; Regulationof Payment Systems.

Unit—II: Non Performing Assets & Regulation (9 Hours)

Banking sector reforms and NPAs, Importance of banking reforms, NPAs assets classification, NPAs accounts, management of NPAs. Internet Banking Guidelines; Regulation of Money Market Instruments; Banking Ombudsman; Reserve Funds; Maintenance of CRR, SLR; Assets in India.

Unit—III: Insurance Act and Guidelines (12 Hours)

The Insurance Act, 1938 – Insurance Regulatory and Development Act, 1999 – Life Insurance Corporation Act, 1956 – General Insurance Business (Nationalization) Act, 1972. Insurance Law-need. Indian Insurance Industry, The Insurance Regulatory and Development Authority Act, 1999 (as amended). The Regulatory Body-IRDA- functions, powers, and role. Self-regulation by insurers.

Unit—IV: Insurance and its Grievance Redressal System (12 Hours)

Regulation- regarding registration of insurers, need for capital in insurance-capital adequacy, and solvency requirements. Risk based capital for insurers. Regulation concerning investment of fundsand protection of policyholders' interest. Redressal of grievance.

Essential Readings

1. Agarwal, O. P. (2014). *International Banking and Finance (1st ed.)*. Himalaya, Publishing House.
2. IIBF. (2019). *Principles & practices of Banking*. Macmillan India Limited.
3. IIBF. (2021). *Legal & Regulatory Aspects of Banking*. Macmillan India Limited.
4. Tannan, M. L. (2012). *Tannan's Banking Law and Practice in India*. LexisNexis.
5. Cranston, R. (2002). *Principles of Banking Law.* Oxford.
6. Gomez, C. (2011). *Banking and Finance: Theory, Law and Practice*. PHI Learning Private Limited.

Additional Readings

1. IIBF. (2020). *Accounting & Finance for Bankers*. Macmillan India Limited.
2. Rao, P. M. & Hyderabad R. L. (2002). *Financial Services: Text, Cases and Strategies*. Deep & Deep Publications Pvt. Ltd.
3. IIBF. (2010). *General Bank Management*. Macmillan India Limited.
4. Kothari, V. (2022). *Tannan's Banking Law and Practice in India*. LexisNexis.

DISCIPLINE SPECIFIC CORE COURSE – 17
Non-Life Insurance I (Fire, Marine & Motor)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Non-Life Insurance I (Fire, Marine & Motor) DSC-17	**4**	**3**	**0**	**1**	Class XII Pass	NIL

Learning Objectives:

The course has the objective of making learners familiar with the role of various non-life insurance in risk management.

Learning Outcome

1. To introduce the concept of risk and ways to mitigate it.
2. Make learners familiar with Fire, Marine and Motor Insurance.

UNIT 1: Introduction (12 hours)

Definition and Structure of Non-Life Insurance, Purpose and need of Non-Life Insurance, The Overall Market Size of Non-Life Insurance Sector in India, Major Non-Life Insurance Companies in India; Emerging Trends in Non-Life Insurance: Customer Centricity as Driver of Innovation, Increase in Adoption of the Internet Channel, Social Media to Increase Market Penetration.

UNIT 2: Fire Insurance (12 hours)

Fire Insurance - Contract- meaning and salient features, Need of Fire Insurance, Standard Fire and Special Perils Policy-recital, coverage, exclusions, conditions, and add-on-covers. Special Polices- reinstatement. Declaration. and floater. Fire Insurance - SBI and ICICI Plans - Introduction, Forms and Procedures, Standard Fire and Special Perils Policy, Tariff system and special policies.

Unit 3: Marine Insurance (9 hours)

Marine Insurance- Meaning and nature of Contract, Need of Marine Insurance, Hull Insurance, Marine (Cargo) Insurance – Inland Vessels and Sailing Vessels, Postal Consignment, Air Consignment, Types of Losses, Losses covered under Marine Insurance, Types of Marine Policies, and Specific Policy.

Unit 4: Motor Insurance (12 hours)

Motor Vehicles Act, 1988- Overview, Motor Insurance- Introduction and Need, Types of policy- Third party Liability, comprehensive-contents- schedule, own damage, third party liability, and owner- driver cover, exceptions, conditions, deductibles, no claim bonus. Pricing and discounts. Add-ons. Claim settlement for own damage.

Practical component (30 Hours)

Students need to perform a demo for online purchase of Car insurance and Two-wheeler insurance, Calculation of premium amount for Marine Insurance. A detail study of Fire Insurance policy of SBI or ICICI.

Essential Readings

1. George, E. Rejda, Principles of Risk Management and Insurance, Pearson Education.

2. Dorfman, Marks S., Introduction to Risk Management and Insurance, Pearson.
3. Gupta. P.K, Insurance and Risk Management, Himalaya Publishing House.
4. Kumar, Sunil, Essential of Insurance and Risk Management, JSR Publishers, New Delhi.
5. Mishra, M. N., Principles and Practices of Insurance, S. Chand and Sons.
6. Farooqui, A, Principles and Practices of Insurance, Wisdom Publications.

DISCIPLINE SPECIFIC CORE COURSE – 18
Non-Life Insurance II (Health, Accidents, Rural & Miscellaneous)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Non-Life Insurance II (Health, Accidents, Rural & Miscellaneous) DSC-18	**4**	**3**	**1**	**0**	Class XII Pass	NIL

Learning Objectives:

This paper will provide knowledge to students with the various forms of non-life insurance and their practical applications in everyday life. And how these insurance help to mitigate the risk.

Learning Outcomes:

1. The student will be acquainted with Health Insurance, it's benefits and usage.
2. To understand how different risk can be mitigated using these insurance services.
3. Companies providing these Insurance and their procedures.
4. Regulatory bodies governing Insurance Sector.

UNIT 1: Health Insurance **(12 hours)**

Health Insurance- meaning and need. Salient features. Indian scenario regarding health insurance. Basic health policy- scope and renewal. Senior citizen insurance, Critical Illness cover and add-ons. Life insurers policies vs. General/ Health insurers policies. Grace Days. Claim

settlement- cashless vs. reimbursement, procedure and documentation. Role of TPA's in claim settlement. Health Insurance Regulations, 2013. Relevant companies in this field.

UNIT 2: Accident and Travel Insurance (12 hours)

Personal Accident and Travel Insurance- Introduction and need. Automobile Insurance. Personal Accident Policy- special features, accident, coverage, benefits, provisos, exclusions, conditions, bonus and extensions. Travel Insurance domestic and overseas policies. Claim procedure. Relevant companies in this field.

UNIT 3: Home Insurance (9 hours)

Home Insurance: Meaning and Importance. Coverage: Structure and contents. Perils covered and exclusions. Methods of determining sum assured. Utility of reinstatement method. Terms and conditions. Claim procedure. Relevant companies in this field.

UNIT 4: RURAL INSURANCE (12 hours)

Overview of Indian Rural Insurance Market - Need of rural Insurance, Major Types of Rural Insurance Policies; Challenges and Opportunities in Rural Insurance market, IRDA Regulations in Rural Insurance; Crop Insurance; Cattle Insurance and Insurance of other Livestock; Poultry Insurance; Claim and settlement, Companies offering Rural Insurance in India.

Essential Readings:

1. K. C. Mishra & C. S. Kumar, General Insurance- Principles and Practice, (2009), Gengage Learning India Pvt. Ltd.
2. Indian Institute of Banking & Finance, Mumbai, Insurance Product, Second Ed. (2007)
3. Murthy, K. S. N. & K. V. S. Sharma, Modern Law of Insurance in India, Fourth Ed. (2002), Butterworths.

Additional Readings:

1. Sharda Kumaraswamy & V. Kumaraswamy, Corporate Insurance, (2005), Tata McGraw- Hill Publishing Co. Ltd... New Delhi.
2. Publications of the Insurance Institute of India, Mumbai
3. IC- 34-General Insurance
4. IC- 57-Fire and Consequential Loss Insurance
5. IC- 78- Miscellaneous Insurance.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 7
SECURITY ANALYSIS & PORTFOLIO MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Security Analysis & Portfolio Management	**4**	**3**	**1**	**0**	**Class XII Pass**	**NIL**

Learning Objectives:

To familiarize students with the essential concepts and fundamentals of financial investments. The course will enable them to understand and make informed choice about the various available financial investment alternatives.

Learning Outcomes:

After completion of the course, learners will be able to:

1. Understand the fundamentals of financial investments and the investment decision process.
2. Able to compute various measures of risk and return, and understand their role for evaluating investments.
3. Understand and carry out security analysis using different approaches.
4. Learn basic approaches to valuation of securities and carry out portfolio analysis.

UNIT–I: Investments – An Overview (9 Hours)

Concept of Investment, Financial Investment Vs. Real Investment, Investment Vs. Speculation, Objectives or Features of Investment, Risk Return Trade Off, Investment Environment – Overview of Securities Market and Different Types of Financial Investment. Investment Decision Process, Direct Investing Vs. Indirect Investing, Approaches to Investing – Active Vs. Passive. Diversification, Hedging and Arbitrage.

Unit—II: Risk – Return Analysis (12 Hours)

Concepts of Return and Risk, Types of Return - their Calculation & Utility: Absolute Return, Average Return, Expected Return, Portfolio Return, Holding Period Return, Effective Annualized Return, Risk-Adjusted Return. Causes (or Sources) and Types of Risk – Systematic and Unsystematic Risk, Components of Systematic and Unsystematic Risk, Calculation of Total, Systematic and Unsystematic Risk. Impact of Taxes and Inflation on Investment – Computation of Post Tax and Real Returns.

Unit—III: Security Analysis (12 Hours)

Approaches to Security Analysis – Fundamental Analysis, Technical Analysis, and Efficient Market Hypothesis (EMH). Fundamental Analysis – EIC Framework, Economic Analysis, Industry Analysis, and Company Analysis. Technical Analysis – Basic Tenets of Technical Analysis, Tool of Technical Analysis – Charts, and Technical Indicators, Limitations of Technical Analysis. Difference between Fundamental Analysis and Technical Analysis. Efficient Market Theory (EMH) – Concept, Forms of Market Efficiency, Weak Form Hypothesis, Semi Strong Form, and Strong Form of Market Efficiency. Implications of EMH.

Unit—IV: Fundamentals of Valuation and Portfolio Analysis (12 Hours)

Valuation of Equity Shares – Peculiar features of Equity Shares, Dividend Discount Model, Earning Multiplier or Price-Earnings (P/E) Model, and Capital Asset Pricing Model (CAPM). Valuation of Fixed Income Securities – Bond Fundamentals, Types of Bonds, Bond Valuation. Portfolio Analysis – Portfolio Management Process, Portfolio Analysis – Markowitz Model, Portfolio Risk, Portfolio Return.

Essential/recommended readings

1. Tripathi, V. *Security Analysis and Portfolio Management*. Taxmann Publications.
2. Chandra, P. *Investment Analysis and Portfolio Management*. McGraw Hill Education.

Suggestive readings

1. Rustagi, R.P. *Investment Management*. Sultan Chand Publications.
2. Reilly, F. K. & Brown, K. C. *Analysis of Investments and Management of Portfolios*. Cengage India Pvt. Ltd.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 8
MARKETING & PERSONAL SELLING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
MARKETING & PERSONAL SELLING	4	3	1	0	Class XII Pass	NIL

Learning Objectives:

The objective of this course is to provide basic knowledge of concepts, principles, tools and techniques of marketing and to familiarize the students with the fundamentals of personal selling and the selling process.

Learning outcomes:

By studying this course, the students will be able to:

1. Understand the concept of marketing and related disciplines.
2. An in-depth understanding of various elements of marketing mix for effective functioning of an organization.
3. Learning some of the tools and techniques of marketing with focus on Indian experiences, approaches and cases.

Unit 1: Introduction (12 hours)

Marketing: Definition, nature, scope & importance, Evolution of Marketing Concept, Marketing Mix, Marketing Environment: Internal, External (Micro & Macro Environment), Understanding of Consumer Behavior, Purchase decision Process and influences, Marketing management process- a strategic perspective, Market Segmentation, Targeting and Positioning (STP): Segmentation Concept, Importance and Bases, Targeting Concept, Importance and Bases; Market Selection, Brand Positioning concept, importance and bases; Repositioning Concept.

Unit 2: Marketing Mix: Price & Product (9 hours)

Product: Meaning, Importance, Product Mix, Product Classification, New Product development, Levels of Product, Product Life Cycle (PLC), Branding, Packaging and Labelling, After Sales Services.

Price: Significance, Importance, Factors affecting price of a product; Methods of Pricing, Pricing Policies and Strategies.

Unit 3: Marketing Mix: Promotion & Distribution Channels (12 hours)

Distribution: Concept, Importance, Different types of distribution channels etc., Wholesaling and retailing: Factors affecting choice of distribution channel, Distribution logistics and major logistics decisions.

Promotion: Nature and importance of promotion; Promotion Tools: Advertising, Personal Selling, Public Relations & Sales Promotion, Promotion tools and their effectiveness, determining optimal promotion mix.

Unit 4: Personal Selling (12 hours)

Introduction to Personal Selling: Nature and importance of personal selling. Difference between Personal Selling Salesmanship and Sales Management, Myths of selling, Relationship Marketing and Role of Personal Selling. Characteristics of a good salesman. Types of selling situations. Types of salespersons; Career opportunities in selling, Measures for making selling an attractive career.

Theories of Selling: Traditional and Modern, AIDAS Model of Selling Problem Solving Approach, Right Set of Circumstances Theory and Modern Sales Approaches.

Selling Process: Prospecting and qualifying, Pre-approach, Presentation and demonstration, handling of objections and complaints; Closing the sales; Customer Relations, Follow-up and Dealing customer concerns and complaints.

Essential/recommended readings:

1. Kotler, Philip; Keller, Kevin Lane; Koshy, Abraham, and Mithileshwar Jha (2019) "*Marketing Management: A South Asian Perspective"*, Pearson Education.
2. Chhabra, T.N., (2021) *Principles of Marketing*, Sun India Publication.

Suggestive readings:

1. Armstrong, Gary, and Kotler, Philip (2017) *The Essentials of Marketing*, Pearson Education, New Delhi.
2. McCarthy, E. Jerome., and William D. Perreault, *Basic Marketing*, Richard D. Irwin.

KALINDI COLLEGE

SEMESTER – III

Bachelor of Vocation- Web Designing

DISCIPLINE SPECIFIC CORE COURSE 07–Data Structures

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Data Structures	4	3	0	1	Class XII Pass	NA

Learning Objectives:

1. To introduce the fundamentals of data structures
2. To get familiar with programming

Learning Outcomes:

1. Develop the ability to use basic data structures like array, stacks, queues, lists, trees andhash tables to solve problems.
2. Use well-organized data structures in solving various problems.
3. Differentiate the usage of various structures in problem solutions.
4. Implement algorithms to solve problems using appropriate data structures.

Unit I **(5 hours)**

Arrays: Single and multi-dimensional arrays, analysis of insert, delete and search operations in arrays (both linear search and binary search), implementing sparse matrices, applicationsof arrays

to sorting: selection sort, insertion sort, bubble sort, comparison of sorting techniques via empirical studies.

Unit II **(5 hours)**

Linked Lists: Singly- linked, doubly-linked and circular lists, analysis of insert, delete and search operations in all the three types, implementing sparse matrices.

Unit III **(10 hours)**

Queues: Array and linked representation of queue, de-queue, comparison of the operations on queues in the two representations. Applications of queues.

Unit IV **(15 hours)**

Stacks: Array and linked representation of stacks, comparison of the operations on stacks in the two representations, implementing multiple stacks in an array; applications of stacks: prefix, infix and postfix expressions, utility and conversion of these expressions from one to another; applications of stacks to recursion: developing recursive solutions to simple problems, advantages and limitations of recursion.

Unit V **(10 hours)**

Trees and Heaps: Introduction to tree as a data structure; binary trees, binary search trees, analysis of insert, delete, search operations, recursive and iterative traversals in binary search trees. Height-balanced trees (AVL), B trees, analysis of insert, delete, search operations on AVL and Btrees. Introduction to heap as a data structure. Analysis of insert, extract-min/max and delete-min/ max operations, applications to priority queues.

Hash Tables: Introduction to hashing, hash tables and hashing functions -insertion, resolving collision by open addressing, deletion, searching and their analysis, properties of a goodhash function.

References

1. Michael T. Goodrich, Roberto Tamassia and Michael H. Goldwasser (2013), Data Structuresand Algorithms in Python, Wiley.
2. Rance D. Necaise, Data Structures and Algorithms Using Python, John Wiley & Sons, Inc.

3. Introduction to Algorithms, by Cormen, Leiserson, Rivest, and Stein, MIT Press, Third Edition, 2009.

List of Practical (30 hours)

A practical implementation of various data structure such as Array, Queues, Stacks, Linked List and Trees.

DISCIPLINE SPECIFIC CORE COURSE 08– Programming with Java

Course title &Code	Credits	Credit distribution of the course			Eligibility criteria	Pre- requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Programming with Java	4	3	0	1	Class XII Pass	NA

Learning Objectives

This course is designed to develop understanding of object-oriented programming concepts like Classes, Objects, Inheritance and Polymorphism using Java. The course provides understanding of multithreading and exception handling in Java. It also introduces how to create Java applications with graphical user interface (GUI).

Learning Outcomes

On successful completion of the course, students will be able to:

1. Understand the object-oriented concepts – Classes, Objects, Inheritance, Polymorphism– for problem solving.
2. Create and handle multithreading.
3. Handle program exceptions.
4. Handle input/output through files.
5. Create Java applications with graphical user interface (GUI).

SYLLABUS OF DSC-08

Unit 1 Introductory Concepts: (2 weeks)

Program, identifiers, variables, constants, primitive data types, expressions, Naming Conventions, Type casting, operators, control statements, structured data types, arrays, functions.

Unit 2 Object Oriented Concepts: (4 weeks)

Abstraction, encapsulation, objects, classes, methods, constructors, inheritance, polymorphism, static and dynamic binding, Anonymous block, Static Data members, overloading and overriding, Usage of super and this keyword, Abstract classes, Interfaces and Packages, Access modifiers, Object class

Unit 3 Multithreading: (4 weeks)

Creating Threads, Thread Priority, Blocked States, Extending Thread Class, Runnable Interface, Starting Threads, Thread Synchronization, Sync Code Block, Overriding Synced Methods, Thread Communication, wait, notify and notify all.

Unit 4 Introduction to Exception handling: (3 weeks)

Exception and Error, Throw, try and catch Blocks, Exception handlers, java. Lang Exceptions, Built-In Exceptions.

Unit 5 Introduction to File Handling: (2 weeks)

Byte Stream, Character Stream, File I/O Basics, File Operations, Serialization.

Practical component

Programming exercises using Java.

Essential Readings

1. James Gosling, Bill Joy, Guy L. Steele Jr, Gilad Bracha, Alex Buckley, The Java Language Specification, Java SE 7 th edition, Addison-Wesley, 2013.
2. Herbert Schildt, Java: The Complete Reference, 10th edition, McGraw-Hill Education, 2018.
3. Cay S. Horstmann, Core Java - Vol. I – Fundamentals, 10th edition, Pearson, 2017.
4. Richard Johnson, An Introduction to Java Programming and Object-Oriented Application Development, Thomson Learning, 2006.
5. Kathy Sierra and Bert Bates, Head First Java, 3 rd edition, O'Reilly, 2022

DISCIPLINE SPECIFIC CORE COURSE 07– Data Analysis using Python

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Data Analysis using Python	4	3	0	1	Class XII Pass	NA

Learning Objectives

This course is designed to introduce the students to real-world data analysis problems, use of statistics to get a deterministic view of data and interpret results in the field of exploratory data science using Python. This course is the first in the "Data Science" pathway and builds the foundation of three subsequent courses in the pathway

Learning Outcomes

On successful completion of the course, students will be able to:

1. Apply descriptive statistics to obtain a deterministic view of data.
2. Perform data handling using Numpy arrays.
3. Load, clean, transform, merge and reshape data using Pandas.
4. Visualize data using Pandas and matplot libraries.
5. Solve real world data analysis problems

SYLLABUS OF DSC-09

Unit 1 Introduction to basic statistics and analysis: (4 weeks)

Fundamentals of Data Analysis, Statistical foundations for Data Analysis, Types of data, Descriptive Statistics, Correlation and covariance, Linear Regression, Statistical Hypothesis Generation and Testing, Python Libraries: NumPy, Pandas, Matplotlib

Unit 2 Array manipulation using NumPy: (2 weeks)

NumPy array: Creating NumPy arrays; various data types of NumPy arrays, indexing and slicing, swapping axes, transposing arrays, data processing using NumPy arrays

Unit 3 Data Manipulation using Pandas: (4 weeks)

Data Structures in Pandas: Series, Data Frame, Index objects, loading data into Pandas data frame, Working with Data Frames: Arithmetic, Statistics, Binning, Indexing, Reindexing, Filtering, Handling missing data, Hierarchical indexing, Data wrangling: Data cleaning, transforming, merging and reshaping

Unit 4 Plotting: (3 weeks)

Using Matplotlib to plot data: figures, subplots, markings, color and line styles, labels and legends, Plotting functions in Pandas: Line, bar, Scatter plots, histograms, stacked bars, Heatmap

Unit 5 Data Aggregation and Group operations: (2 weeks)

Group by Mechanics, Data aggregation, General split-apply-combine, Pivot tables and cross tabulation

Practical component

Programming exercises using Python.

Essential Readings:

1. McKinney W. Python for Data Analysis: Data Wrangling with Pandas, NumPy and IPython, 2nd edition, O'Reilly Media, 2018.
2. Molin S. Hands-On Data Analysis with Pandas, Packt Publishing, 2019.
3. Gupta S.C., Kapoor V.K. Fundamentals of Mathematical Statistics,12th edition, Sultan Chand & Sons, 2020

Suggested Readings:

(i) Chen D. Y. Pandas for Everyone: Python Data Analysis, 1 st edition, Pearson Education, 2018.

(ii) Miller J.D. Statistics for Data Science, Packt Publishing Limited, 2017.

DISCIPLINE SPECIFIC ELECTIVE 1– Cryptography

Course title &Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Cryptography	4	3	0	1	Class XII	NA

Learning Objectives

The course objectives of this paper are: to understand basics of Cryptography and Network Security, to be able to secure a message over insecure channel by various means, to learn about how to maintain the Confidentiality, Integrity and Availability of a data, to understand various protocols for network security to protect against the threats in the networks.

Learning Outcomes

On successful completion of the course, students will be able to:

1. Comprehend the fundamentals of Cryptography and Network Security
2. To be able to secure a message over an unsecured channel using a variety of methods.
3. To gain knowledge on how to preserve the Confidentiality, Integrity, and Availability of data
4. To comprehend various network security protocols for protection against network threats

SYLLABUS OF DSE 1

Unit 1 Overview of Security: (2 weeks)

Protection versus security; aspects of security–data integrity, data availability, privacy; security problems, user authentication, Orange Book.

Unit 2 Security Threats: (3 weeks)

Program threats, worms, viruses, Trojan horse, trap door, stack and buffer overflow; system threats-intruders; communication threats- tapping and piracy.

Unit 3 Cryptography: (4 weeks)

Substitution, transposition ciphers, symmetric-key algorithms-Data Encryption Standard, advanced encryption standards, public key encryption - RSA; Diffie-Hellman key exchange, ECC cryptography, Message Authentication- MAC, hash functions.

Unit 4 Public key cryptography and Authentication requirements: **(4 weeks)**

Principles of public key crypto systems - RSA algorithm - security of RSA - key management – Diffle-Hellman key exchange algorithm - introductory idea of Elliptic curve cryptography – Elgamel encryption - Message Authentication and Hash Function: Authentication requirements - authentication functions - message authentication code - hash functions - birthday attacks – security of hash functions and MACS.

Unit 5 Digital signatures: (2 weeks)

Symmetric key signatures, public key signatures, message digests, public key infrastructures.

Essential Readings

1. W. Stalling, Cryptography and Network Security Principles and Practices (4th ed.), Prentice-Hall of India, 2006
2. C. Pfleeger and SL Pfleeger, Security in Computing (3rd ed.), Prentice-Hall of India, 2007
3. D. Gollmann, Computer Security, John Wiley and Sons, NY, 2002
4. J. Piwprzyk, T. Hardjono and J. Seberry, Fundamentals of Computer Security, Springer-Verlag Berlin, 2003

Suggested Readings

(i) W. Mao, "Modern Cryptography – Theory and Practice", Pearson Education.

(ii) Charles P. Pfleeger, Shari Lawrence Pfleeger – Security in computing – Prentice Hall of India.

(iii) J.M. Kizza, Computer Network Security, Springer, 2007

(iv) M. Merkow and J. Breithaupt, Information Security: Principles and Practices, Pearson Education, 2006.

DISCIPLINE SPECIFIC ELECTIVE 2– Digital Image Processing

Course title &Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Digital Image Processing	4	3	0	1	Class XII	NA

Learning objectives:

1. To understand the sensing, acquisition and storage of digital images.
2. To study the image fundamentals and mathematical transforms necessary for image processing.
3. To understand the digital processing systems and corresponding terminology.
4. To understand the base image transformation domains and methods.

Learning Outcomes:

1. Understand the fundamentals of Image Processing and its role and importance in a variety of applications.
2. Write programs to read/write and manipulate images for the purpose of enhancement.
3. Understand the need for image transforms and their properties.
4. Understand different causes for image degradation and use various techniques to restore images.

UNIT-I **(8 hours)**

Introduction: Digital Image Fundamentals, Brightness, Adaptation and Discrimination, Light and Electromagnetic Spectrum, Image Sampling and Quantization, Some Basic Relationships between Pixels Types of images.

UNIT-II **(7 hours)**

Spatial Domain Filtering: Some Basic Intensity Transformation Functions, Histogram Equalization, Spatial Correlation and Convolution, Smoothening Spatial Filters-Low pass filters, Order Statistics

filters; Sharpening Spatial Filters- Laplacian filter.

UNIT-III **(8 hours)**

Filtering in Frequency Domain: The Discrete Fourier Transformation (DFT), Frequency Domain Filtering:-Ideal and Butterworth Low pass and high pass filters

UNIT-IV **(7 hours)**

Image Degradation and Compression: Noise models, Noise Restoration Filters, Fundamentals of Image Compression, Huffman Coding, Run Length Coding

UNIT-V **(10 hours)**

Morphological Image Processing: Erosion, Dilation, Opening, Closing, Hit-or-Miss Transformation, Basic Morphological Algorithms.

UNIT VI **(5 hours)**

Image Segmentation: Point, Line and Edge Detection, Thresholding.

References:

1. Gonzalez, R. C., & Woods, R. E. Digital Image Processing. 4th edition. PearsonEducation, 2017
2. Castleman, K. R. Digital Image Processing. 1st edition. Pearson Education,2007
3. Gonzalez, R. C., Woods, R. E., & Eddins, S. Digital Image Processing using MATLAB. Pearson Education Inc., 2004
4. Jain, A. K. Fundamentals of Digital *Image Processing. 1st edition Prentice Hall of India,1988.*

SEMESTER-III
(B.A. Honours in Multi Media and Mass Communication)

DISCIPLINE SPECIFIC CORE COURSE – 7: GRAPHIC DESIGN: TECHNOLOGY AND SOFTWARE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-7 GRAPHIC DESIGN: TECHNOLOGY AND SOFTWARE	4	2	0	2	Class XII	Nil

Syllabus of DSC-7

Course Objectives

1. To train students to produce graphics using software for various visual mediums.
2. To develop skills to use graphics for communication.
3. To understand the function of motion graphics and significance of visualisation techniques in design.
4. To acquire comprehensive skills in designing and creating layouts using visual design software and digital platforms.

Course Learning Outcomes

1. Understanding of designing software for communication.
2. Design and graphics as communication.
3. Acquiring comprehensive skills in designing, creating layouts, photo montage, digital collage etc. using visual design software and digital platforms.
4. Capacity to use acquired skills and knowledge to produce a Photo Montage using Motion Graphics

SYLLABUS OF DSC-7

Unit 1
Software for Graphic Design **(10 Hours)**

- Adobe Photoshop
- CorelDRAW
- Adobe After Effects
- Adobe Illustrator

Unit 2 **(12 Hours)**

Visualization

- Motion Graphics
- Skills and Role of a Production Team
- The Digital Platforms and Open Sources
- Audience Identification and Needs

Unit 3

Digital Design **(10 Hours)**

- Photo Montage
- Assemblage
- Digital Collage and E-Collage
- Designing a Portfolio

Practical:

Production of a Photo Montage using Motion Graphics

References

Essential Readings

- Davis, M. (2012). *Graphic design theory*. London: Thames and Hudson. Ohio
- Joss, M., & Nelson, L. (1977). *Graphic design tricks and techniques*: North Light Books.
- Sarkar, N. N. (2012). *Art and print production*. Canada: Oxford University Press.
- Villamil, J., & Molina, L. (1999). Multimedia: *An introduction. Indianapolis*: Que Education.

Additional Resources:

Suggested Readings

- Rose, G (2016). Visual Methodologies. London: Sage.
- Rose, D. (2015). *Responsive web design with Adobe Photoshop*. Adobe Press.
- Sarkar, N. N. (1998). *Designing print communication*. New Delhi: Sagar Publications.

E-resources

- https://creativemarket.com/blog/10-basic-elements-of-design
- https://www.youtube.com/watch?v=zryY_AjHC-U
- https://www.youtube.com/watch?v=gaoBr7SzF-c

Assessment Method

- Evaluation scheme and mode will be as per the guidelines notified by University of Delhi.

DISCIPLINE SPECIFIC CORE COURSE – DSC-8 MEDIA LAWS AND ETHICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-8 Media Laws and Ethics	**4**	**3**	**1**	**0**	**Class XII**	**Nil**

Syllabus of DSC-8

Course Objectives

1. To train students to critically analyse legal and ethical issues related to different forms of media with appropriate case-studies.
2. To enhance the student's awareness of the paradigms regarding ethical responsibilities of the mass communications professional.
3. Examine the social, political, economic, legal and ethical dilemmas confronted by contemporary media practitioners in new, digital settings.

Course Learning Outcomes

1. Understanding the key legal and ethical frameworks faced by media practitioners while reporting journalistically.
2. Learning to understand and resolve ethical and media issues originating in digital technology.
3. Learning to formulate communication strategies in view of existing media law and ethical codes.

Unit 1

Freedom and The Fourth Estate **(15 Hours)**

- Historical Perspective on Mass Media Laws: Colonial Period
- Democracies and Freedom of the Press
- Provision of the Indian Constitution: Article 19
- The Emergency in India: Case Study (The Indian Express, The Statesman, Samachar etc.)

Unit 2

Media Regulations in India **(15 Hours)**

- Press Council Act 1978
- Intellectual Property Rights

- Central Board of Film Certification
- Advertising Standards Council of India
- Information Technology Act, 2000

Unit 3

Information Technology and Ethics (18 Hours)

- The Public and the Private: Definitions, Limitations, Conflation
- Cyber Security, Cyber Warfare and Cyber Citizenship
- Informational Disorder: Computational Propaganda, Trolling, Sock Puppet Networks, Spoofers
- Paid News, Fake News, Deep Fakes, Private Treaties, Post Truth

References

Essential Readings

- Assembly, U. G. (1948). Universal declaration of human rights. *UN General Assembly*, *302*(2), 14-25.
- Bhowmik, S. (2013). Film censorship in India. *Routledge handbook of Indian cinemas*. https://doi.org/10.4324/9780203556054. ch14.
- Boyd, B. M. (1972). Film censorship in India: A" reasonable restriction" on freedom of speech and expression. *Journal of the Indian law institute*, *14*(4), 501-561.
- Chowdhury, A. R. (2008). The future of copyright in India. *Journal of intellectual property law & practice*, *3*(2), 102-114.
- Gosain, D. Agarwal, A., Shekhawat, S., Acharya, H. B., & Chakravarty, S. (2017). Mending wall: On the implementation of censorship in India. *International conference on security and privacy in communication systems.* (pp. 418-437). Springer, Cham.
- Jenkins, R., & Goetz, A. M. (1999). Accounts and accountability: theoretical implications of the right-to-information movement in India. *Third world quarterly*, *20*(3), 603-622.
- Lu, S. P. (1999). Corporate codes of conduct and the FTC: Advancing human rights through deceptive advertising law. *Colum. J. Transnat'l L.*, *38*, 603.
- Nickel, J. W. (1987). *Making sense of human rights: Philosophical reflections on the universal declaration of human rights*. Univ of California Press.

Additional Resources:

Suggested Readings

- Al-Zaman, M. S. (2021). Social Media Fake News in India. *Asian journal for public opinion research*, *9*(1), 25-47.
- Ashraf, P. (2014). The role of media in good governance: Paid news culture of media and the challenges to Indian democracy. *International research journal of social sciences*, *3*(3), 41-43.
- Farooq, G. (2018). Politics of Fake News: how WhatsApp became a potent propaganda tool in India. *Media Watch*, *9*(1), 106-117.
- Fichman, P. & Rathi, M. (2021). Cross Cultural Analysis of Trolling Behaviors. *Proceedings of the association for information science and technology*, *58*(1), 716-717.

- Gudipaty, N. (2017). Gendered public spaces. Online trolling of women journalists in India. *Comunicazione politica*, *18*(2), 299-310.
- Kshetri, N. (2016). Cybercrime and cybersecurity in India: causes, consequences and implications for the future. *Crime, law and social change*, *66*(3), 313-338.
- Kumari, T. (2020). A study on growth of over the top (OTT) video services in India. *International Journal of latest research in humanities and social science (IJLRHSS)*, *3*(9), 68-73.

E-Resources

- Sansad TV (2017, March 27) "Media Ethics, Principles in Journalism,"[Video: File] Retrieved from https://www.youtube.com/watch?v=v672qS48GRA
- Saxena, A. (2019, June 28) "Media Ethics: Maintaining Ethical Standards in Broadcast Journalism,"[Video: File] Retrieved from https://www.youtube.com/watch?v=eJqFAHDpxfM

Assessment Method

- Evaluation scheme and mode will be as per the guidelines notified by University of Delhi.

DISCIPLINE SPECIFIC CORE COURSE – DSC-9: RADIO PRODUCTION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-9:Radio Production	**4**	**2**	**0**	**2**	**Class XII**	**Nil**

Syllabus of DSC-9

Course Objectives

1. To familiarise students with Radio as means of communication.
2. To understand the growth and evolution of Radio as a medium of communication.
3. To learn specific skills relating to reporting and anchoring for Radio.
4. To understand the requirements for programming for Radio.
5. To produce a programme for Radio.

Course Learning Outcomes

1. Using knowledge gained in previous courses of the programme me, to specifically report for radio.
2. Understanding radio as a medium and technology.
3. Knowledge of the grammar and aesthetics of radio programming.
4. Familiarity with Radio programme formats.

Unit 1

Introduction to Radio **(10 Hours)**

- Evolution of Radio in India: Pre and Post-Independence
- Organizational Structure of the Radio Station: State-owned, Privately-owned
- Types of Radio Transmission: AM, FM, Digital Radio, Satellite Radio, Community, HAM, Amateur, FM Radio
- Radio Programme Formats: News, Talk, Feature, Drama, Live Broadcast, documentaries, Podcast

Unit 2 **(10 Hours)**

The Grammar and Aesthetics of Radio

- Writing for Radio: Idiom of the Spoken Word, Journey of Sound-Analogue and Digital.
- Sound: Properties, Recording Techniques and Microphones
- Use of Voice: Tone, Timbre, Pitch, Range, Intonation, Inflection, Fluency, Modulation
- Role of Anchor as RJ

Unit 3
Production for Radio **(12 Hours)**

- Pre-production: Idea, Research, Radio Script, Storyboard, Proposal Writing, Budget, Pilot
- Production: Creative use of Sound; Listening, Recording, Using Archived Sounds
- Post-production: Creative use of Sound Editing and Special Effects
- Software for Audio Recording: Logic Pro, Adobe Audition, Audacity

Practical:
Production of a Radio Programme

References

Essential Readings

- Chantler, P., & Stewart, P. (2013). *Basic of radio journalism*. New York: Routledge.
- Shrivastava, K. M. (1990). *Radio and TV journalism.* New Delhi: Sterling Publishers.
- Chatterji, P. C. (1998). *The adventure of Indian broadcasting: A philosopher's autobiography*. New Delhi: Konark Publishers.
- Luthra, H. R. (1986). *Indian broadcasting*. Publications Division Ministry of Information & Broadcasting.
- McLiesh, R. (2005). *Radio production,* New Delhi: Focal Press.
- Saxena, A. (2011). *Radio in new avatar –AM TO FM,* New Delhi: Kanishka Publishers.

Additional Resources:

Suggested Readings

- Aspinall, R. (2010). *Radio programme production: A manual for training*. UNESCO, Paris.
- Awasthi, G.C. (1965). *Broadcasting in India*. Allied Publishers Private Ltd.
- Hausman, C., Messere, F., O'Donnell, L. B., & Benoit, P. (2012). *Modern radio production: production programming & performance*. Cengage Learning.
- Luthra, H. (1987). *Indian broadcasting*. Publications Division, New Delhi.
- Thomson, R. (2010). *Journalists*. Routledge, New York.

Assessment Method

- Evaluation scheme and mode will be as per the guidelines notified by University of Delhi.

DISCIPLINE SPECIFIC ELECTIVE COURSE – DSE-1: DIGITAL JOURNALISM AND SOCIAL MEDIA

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 1- Digital Journalism and Social Media	4	2	0	2	Class XII	Nil

Syllabus of DSE 1

Course Objectives

1. To understand the types of online communication and how they have revolutionized the way we interact.
2. To comprehend how digital media & ICT make it possible for anyone to create, modify and share content, using relatively simple tools that are often free or inexpensive.
3. To demonstrate how online media provides a platform for amalgamation of various mediums like text, audio, video, graphics and animation.
4. To enable the use of various writing formats for web.

Course Learning Outcomes

i. Understand the impact of new media technologies and platforms to change the nature of communication.
ii. Ability to redefine the private and the public sphere.
iii. Learn to critically evaluate new media technologies to raise ethical concerns.
iv. Utilize knowledge gained to design and manage a website as a part of practicum.

Unit 1 **(10 Hours)**

Content Creation for Digital Media

- Introduction to Digital Journalism
- Blogging, Microblogging and Live Blogging
- Publishing Articles, White Papers and E-Books
- Producing a Multimedia Story

Unit 2 **(12 Hours)**

Basics of Social Media

- Social Media: Definition, Characteristics and Scope
- Emerging Trends in Social Media Platforms: Facebook, Instagram, Twitter, Pinterest, LinkedIn and others
- Webcasting, Podcasting and Video Conferencing
- Ethical Concerns in Digital Media

Unit 3 **(10 Hours)**

Digital Media Management

- Search Engine Results Pages (SERP)
- Search Engine Optimization (SEO) and Social Media Optimization (SMO)
- Website Audience Measurement (WAM)
- Digital Marketing Tools: MeetEdgar and Biteable

Practical:

Creating and Managing a Website

References

Essential Readings:

- Heggde, G., & Shainesh, G. (Eds.). (2018). *Social media marketing: Emerging concepts and applications*. Singpore: Palgrave Macmillan.
- Lister, M. (2009). *New media: A critical introduction*. London: Routledge.
- Mishra, R.C. (2008). *Cyber crime: Impacts in the new millennium.* New Delhi: Author Press.
- Swartz, A. (2020). *See You on the Internet: Building Your Small Business with Digital Marketing*. Vancouver: Page Two Books.
- Tuten, T. L., & Solomon, M. R. (2017). *Social media marketing*. New Delhi: Sage Publications.

Additional Resources:

Suggested Readings

- Barker, M. S., Barker, D. Bormann, N. F., & Neher, K. (2013). *Social media marketing: A strategic approach.* Mason: Cangage Learning.
- Castells, M. (2005). *The network society: A cross-cultural perspective*. Cheltenham: Edward Elgar.
- Satish, D., & Kaila, R.P. (2006). *Blogs: Emerging communication media*. The ICFAI University Press

Assessment Method

- Evaluation scheme and mode will be as per the guidelines notified by University of Delhi.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES OFFERED BY THE DEPARTMENTS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

GENERIC ELECTIVES (GE-3): ADVERTISEMENT AND MEDIA

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
GE-3: Advertisement And Media	**4**	**3**	**1**	**0**	**Class XII**	**Nil**

Course Objectives

1. To introduce the students to the concepts and principles of Advertising.
2. To understand the integration of various promotional tools in the present demand of the market.
3. To familiarize students with the concepts of market, audience, product and brand.
4. To familiarize the students with the structure of Advertising Agency.

Course Learning Outcomes

1. Understanding the language and grammar of Advertising.
2. Understanding the process of encoding and decoding in Advertising.
3. Familiarizing with the concepts of targeting, positioning and segmenting.
4. Understanding the models and the structure of an Advertising Agency.

Unit I **(15 Hours)**
Introduction

- Advertisement as Communication
- Consumer Culture and the Advertisement: A Critical Evaluation
- Models: AIDA, DAGMAR, Maslow's Hierarchy Model
- Marketing Mix

Unit II **(18 Hours)**
Advertising Strategies

- Types of Media, Segmentation
- Positioning and Targeting
- Media Selection, Planning and Scheduling
- Market Strategy and Branding

Unit III **(15 Hours)**

Ad Agency: Structure and Practices

- Process of Planning an Ad Campaign
- Profile of an Advertising Professional
- Structure of an Advertising Agency
- Ethical Issues: Advertising and Regulatory Bodies

References

Essential Readings

- Belch, E. G. (2020). *Advertising and promotion: An integrated marketing communications perspective*, New York: McGraw-Hill Education.
- Goffman, E. (1987). *Gender advertisements*. New York: Harper & Row.
- Halve, A. (2005). *Planning for power advertising: A user's manual for students and practitioner*s, New Delhi: SAGE Publications.
- Jethwaney, J., & Jain, S.(2011). *Advertising management, (2nd edition)*, New Delhi: Oxford University Press.
- Kumar, S. R. & Krishnamurthy, A. (2020). *Advertising, brands and consumer behaviour: The Indian context,* New Delhi: SAGE Publications.
- Marieke, De M. (2011). *Consumer behavior and culture: Consequences for global marketing & advertising*, New Delhi: SAGE Publications.
- McGuigan, J. (2014). Advertising – the magic system (1960/1969). In *Raymond Williams on culture & society: Essential writings* (pp. 57-84). SAGE Publications Ltd, https://dx.doi.org/10.4135/9781473914766.n4
- Melissa, D. (2009). *The fundamentals of branding*, New York: Ava Publications.
- Miles, Y., (2018). *Ogilvy on advertising in the digital age*, New York: Carlton Books.
- Monley, L., & Johnson, C. (2003). *Principles of advertising: A global perspective*, New York: Routledge.

Suggested Readings

- Aaker, D.(2018). *Creating signature stories: Strategic messaging that persuades, energizes and inspires*, New Delhi: Penguin Portfolio.
- Dayal, S. (2021). *Right between the ears: how to use brain science to build epic brands*, New Delhi: Penguin Portfolio.
- Dorothy & Cohen, (1988). *Advertising*, London: Scott. Forsmon and Co.
- Naomi , K. (2009). *No logo*, New York: Macmillan.
- Cudson, M. (1993). *Advertising, The uneasy persuasion*, New York: Routledge.
- Steel, J. (2009). *Truth, lies and advertising: The art of account planning*, New York: Wiley.
- Ogilvy, D. (1997). *Ogilvy on advertising*, London: Prion Books.
- Valladares, J. (2005). *The craft of copywriting*, New Delhi: SAGE Publications.
- Vilanilam, J. V., & Verghese, A.K. (2012). *Advertising basics*, New Delhi: SAGE Publications.

Assessment Method

- Evaluation scheme and mode will be as per the guidelines notified by University of Delhi.

SEMESTER-IV
(B.A. Honours in Multi Media and Mass Communication)

DISCIPLINE SPECIFIC CORE COURSE – DSC – 10 PUBLIC SERVICE BROADCASTING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC - 10 Public Service Broadcasting	4	3	1	0	Class XII	Nil

Syllabus of DSC - 10

Course Objectives

1. To know about the global overview of Public Service Broadcasting.
2. To understand the functioning and role of various government agencies like Prasar Bharati, AIR, Doordarshan, Films Division etc.
3. To know about the latest technology adopted in various Public Service Broadcasting agencies.
4. To have an understanding about the global revenue models of Public Service Broadcasting.

Course Learning Outcomes

1. Understanding the concept of Public Service Broadcasting
2. Critical evaluation of global revenue models in Public Service Broadcasting
3. Understanding of role and functions of Prasar Bharati and other agencies

Unit 1 **(15 hours)**

Introduction to Public Service Broadcasting

- Global Overview of Public Service Broadcasting
- Model Public Service Broadcasting Law, UNESCO
- Public Service Model in India: An Overview
- Early Public Service Broadcasting in India: Prasar Bharati, All India Radio, Doordarshan, Films Division

Unit 2 **(18 hours)**

Revenue Models of PSB

- Government Grants Model
- License Fee Model
- Hybrid Model

- Advertising Model

Unit 3 **(15 hours)**
Public Service Broadcasting in the Digital Age

- Radio and the Digital Age
- PSB Television and Webcasting
- Direct to Home Public Service Broadcasting
- Curriculum Broadcasting in the Digital Age: E-pathshalas

References

Essential Readings

- Chatterji, P. C. (1991). *Broadcasting in India.* New Delhi: Sage.
- Ghosal, H. R. (1962). *An outline history of the Indian people.* New Delhi: Publications Division, Ministry of Information and Broadcasting, Govt. of India.
- Saxena, A. (2011). *Radio in new avatar: AM to FM.* New Delhi: Kanishka, Distributors.

Additional Resources:

Suggested Readings

- Fleming, C. (2010). *The radio handbook.* London: Routledge.
- Luthra, H. R. (1986). *Indian broadcasting.* New Delhi: Publications Division, Ministry of Information and Broadcasting, Govt. of India.
- Natarajan, J. (1955). *History of Indian journalism.* New Delhi: Publications Division, Ministry of Information and Broadcasting.

E-resources

- http://osou.ac.in/eresources/Deveopment%20of%20Public%20Srvice%20Bradcasting%20in%20India.pdf
- https://unesdoc.unesco.org/ark:/48223/pf0000141584

Assessment Method

- Evaluation scheme and mode will be as per the guidelines notified by University of Delhi.

DISCIPLINE SPECIFIC CORE COURSE – DSC-11 DEVELOPMENT COMMUNICATION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-11 Media Laws and Ethics	**4**	**2**	**0**	**2**	**Class XII**	**Nil**

Syllabus of DSC-11

Course Objectives

1. To understand development and development communication as a process of qualitative change and quantitative growth of social and economic reality.
2. To describe the participatory process of social change in society which intends to bring about both social and national advancement for the majority of people.
3. To highlight the role of media and significance of development support communication in raising awareness on issues of national importance.
4. To understand the role played by various Governmental and Non-Governmental agencies in development communication.
5. To design a multi-media development communication campaign on a social issue.

Course Learning Outcomes

1. Defining development in global and local scenarios.
2. Understanding development communication as a specific mode for defined target audiences.
3. Critical engagement with models and paradigms of development communication.
4. Ability to produce a multi-media campaign on a development issue.

Unit 1 **(10 hours)**
Social Change and Issues in Development

- Communication and Social Change
- Global Parameters of Development and India
- Regional Initiatives and India: Human Rights, Social Inclusion, Gender, Public Health, Family Welfare and Minorities
- Millennium Development Goals and Sustainable Development Goals

Unit 2
Paradigms of Development Communication **(12 hours)**

- Linear Models: Rostow's Demographic Transition, Transmission

- Non-Linear Models: World Systems Theory, Marxist Theory, Wood's Triangle
- Dependency Paradigm: Centre-periphery, Development and Under Development
- Alternative Paradigms: Participatory, Think Local-act Global/ Think Global-act Local (community radio and community video)

Unit 3 **(10 hours)**
Development Communication Approaches

- Development Support Communication: RTI, Social Audits, Grass-root Activism, Whistleblowers, NGOs and Other Agencies
- Pre-testing and KAP Gap
- Multi Media Campaigns: Print, Radio, TV and Digital Media
- Citizen Journalism

Practical:
Developing a Multi Media Campaign on a Development Issue

Essential Readings

- Joshi, U. (2001). *Understanding development communication.* New Delhi: Dominant publishers and Distributors.
- Melkote, S. R. (2015). *Communication for development in the third world: theory and practice.* New Delhi: Sage.
- Nair, K. S., & Smith, S. A. (1993). *Perspectives on development communication*. New Delhi: Sage.
- Narula, U. (2007). *Development communication: theory and practice.* New Delhi: Har Anand Publications.
- Sood, R, (1992) *Message design for development communication*. New Delhi: Sage

Suggested Readings

- Gupta, V. S. (2004). *Communication and development.* New Delhi: Concept Publications.
- Dow, B. J. (2001) Ellen, Television, and the Politics of Gay and Lesbian Visibility. *Critical studies in media communication* 18:123-140.
- Jethwaney, J. (2016). *Social sector communication in India: concepts, practices, and case studies*. New Delhi: Sage.
- Pezzullo, P.C. (2003). Resisting "National Breast Cancer Awareness Month": The Rhetoric of Counter publics and their Cultural Performances. *Quarterly journal of speech 89* (4):354-365.

  Sharma, R. (2012). *Breakout nations: In Pursuit of the next economic miracles*. New York: W.W. Norton.

Assessment Method

- Evaluation scheme and mode will be as per the guidelines notified by University of Delhi.

DISCIPLINE SPECIFIC CORE COURSE – DSC-12: TELEVISION JOURNALISM

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-12: Television Journalism	4	2	0	2	Class XII	Nil

Syllabus of DSC-12

Course Objectives

1. To familiarize students with the television as a medium of journalism and mass communication.
2. To train them with skills required for news gathering process.
3. To develop understanding of on-screen presentation of content for audio-visual medium.
4. To develop understanding of on-field/ live reporting techniques.

Course Learning Outcomes

1. Understanding television as an audio-visual medium.
2. Extrapolate theories of political economy and ownership patterns acquired in previous courses on journalism, onto television.
3. Knowledge and skills involved in diverse news gathering and reporting.
4. Develop skills in the use of camera as a tool of news gathering and editing techniques.

Unit 1 **(10 hours)**

Understanding Television as a Journalism Format

- Political Economy of Television, Ownership Patterns, Revenue Models, Hierarchy and Editorial Policies
- Ethical issues in TV Journalism
- The Audio-visual Grammar: Camera, Sound, Light
- Camera movements, Camera positioning– shots, aspect ratio, resolution

Unit 2 **(10 hours)**

Television News Gathering

- Finding the Story and Sources, Packaging
- News-gathering Techniques: Electronic News Gathering (ENG) and Electronic Field Production (EFP)
- Techniques of Television Interview, Vox Pop, Piece to Camera
- Formats: TV News, Debates, Discussions, Talk Shows

Unit 3 **(12 hours)**

Presenting on the Screen

- Reporting from the Field
- Presenting a TV Report
- Skill Sets for Anchors
- Audience Segmentation: Prime Time Slots, TRPs, Research and Surveys

Practical:

Production of a News Package

References

Essential Readings

- Belavadi, V. (2013). *Video production.* New Delhi: Oxford University Press.
- Boyd, A., et al. (2008). *Broadcast journalism: Techniques of radio and TV news.* Oxford: Focal Press.
- Papper, R. A. (2017). *Broadcast news and writing stylebook.* London: Routledge.
- Shrivastava, K. M. (1990). *Radio and TV journalism*. New Delhi: Sterling Publishers.
- Zettl, H. (2005). *Television production handbook.* Massachusetts: Cengage Learning.

Additional Resources:

Suggested Readings

- Anderson, C. (2016). *TED Talks: The Official TED Guide to Public Speaking.* Iowa: Mariner Books.
- Papper, R. A. (2013). *Broadcast news and writing stylebook.* New Jearsey: Pearson Education.
- White, T. (2002). *Broadcast news writing, reporting and producing.* Boston: Focal Press. Yorke, I. (2017). *Television news.* London: Routledge.

Assessment Method

- Evaluation scheme and mode will be as per the guidelines notified by University of Delhi.

DISCIPLINE SPECIFIC ELECTIVE COURSE – DSE-2: MASS MEDIA AND REGIONAL DEVELOPMENTS IN INDIA

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 2- Mass Media and Regional Developments in India	4	3	1	0	Class XII	Nil

Syllabus of DSE 2

Course Objectives

1. To familiarise the student with the nature and growth of mass media in the context of regional developments of society and language in India.
2. To familiarise the student with freedom movement and growth of vernacular press.
3. To create awareness about the historical perspectives of mass media and their respective growth within the framework of technological developments in the media industry.
4. Analysis of the impact of digital media on regional-specific developments as well as demographic consumption patterns.

Course Learning Outcomes

1. Understanding the political, socio-economic and technological development of mass media within regional development of the country.
2. Understanding of the impact of language-based mass media's growth and development.
3. Understanding the relationship between area-studies and languages in the context of media's development.

Unit 1

Historical Perspectives **(15 hours)**

- The National Movement and The Rise of Print Media
- The Role of Radio
- Regional Cinema
- Television: Early Years

Unit 2 **(18 hours)**

Expanding Horizons

- Overview of the Media Industry: North, South, East, West
- Print: Bhartendu, Ganesh Shankar Vidyarthi, Agyeya, Nav Bharat Times, Jansatta

- Radio: Aakashvani and BBC
- Television: Aaj Tak, Zee TV
- Digital Media: Hindi Blogging, Hindi Websites and YouTube Channels

Unit 3 **(15 hours)**

Area Studies

- Bangla
- Marathi
- Malayalam
- Punjabi

References

Essential Readings

- Apte, M. L. (1976). *Multilingualism in India and its socio-political implications: an overview.* Language and Politics, 141-164.
- Malik, K. K. (2022). *Media education and regional language journalism in India.* Media Asia, 49(2), 170-175.
- Neyazi, T. A. (2010). Cultural imperialism or vernacular modernity? Hindi newspapers in a globalizing India. *Media, Culture & Society*, 32(6), 907-924.
- Rao, S. (2008). Accountability, democracy, and globalization: A study of broadcast journalism in India. *Asian Journal of Communication*, 18(3), 193-206.
- Sridhar, K. K. (1996). Language in education: Minorities and multilingualism in India. *International review of education*, 42(4), 327-347.

Additional Resources:

Suggested Readings

- Bonea, A. (2022). *Print journalism in India: Historical perspectives and contemporary developments. An Introductory Note.*
- Mishra, V. M. (1971). *The Hindi press in India: an interpretative history.* Gazette (Leiden, Netherlands), 17(4), 243-250.
- Neyazi, T. A. (2011). Politics after vernacularisation: Hindi media and Indian democracy. *Economic and political weekly*, 75-82.
- Paul, S., & Palmer, R. (2021). The view from the hinterland: caste, gender and press freedom in Hindi news reporting. *Asian journal of communication*, 1-18.
- Tomar, R. (2011). Gender and media: Status of women journalist in Hindi print media in India. Presented at *Rethinking development in an Age of scarcity and uncertainty* on University of York, 19-22 sep.

Assessment Method

- Evaluation scheme and mode will be as per the guidelines notified by University of Delhi.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES OFFERED BY THE DEPARTMENTS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

GENERIC ELECTIVES (GE-4): REPORTING AND ANCHORING

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
GE:4 Reporting and Anchoring	4	3	1	0	Class XII	Nil

Course Objectives

1. To familiarise students with skills for on-field reporting and anchoring.
2. To understand the concepts of audience segmentation and research.
3. To familiarise students with elements of reporting and its techniques.
4. To introduce elements and techniques of anchoring.

Course Learning Outcomes

1. Knowledge and skills involved in anchoring and on-field reporting.
2. Developing presentation skills for broadcast media.
3. Learning voice modulation techniques for media.

Unit I **(15 hours)**

Introduction to Reporting and Anchoring

- Being a Reporter
- Being an Anchor
- Audience Segmentation and Research
- Ethics, Values and Responsibilities

Unit II **(18 hours)**

Types and Techniques of Reporting

- Techniques of Newsgathering
- News Reporting: Legal, Culture, Politics, Sports, Education, Entertainment
- Reporting from the Field: Vox Pop, Piece to Camera
- Television Interview

Unit III **(15 hours)**

Elements of Anchoring

- Facing the Camera: Voice, Gesture, Dress Code
- News and Talk Show; Host and Moderator
- Voice and the Microphone: Breathing, Articulation, Pitch, tone, intonation, inflection, fluency
- Discreet Anchoring, Legal pitfalls

References

Essential Readings

- White, T. (2012). *Broadcast news writing, reporting, and producing*. New York: Routledge.
- Reardon, N., Flynn, T. (2014). *On camera: How to report, anchor & interview*. New York & London: Taylor & Francis.
- Stephens, K., & Sidlow, F. M. (2022). *Broadcast news in the digital Age: A guide to reporting, producing and anchoring online and on TV*. New York and London: Taylor & Francis.
- Yorke, I. (2017). *Television news.* London: Routledge.

Additional Resources:

Suggested Readings

- Hinz, E. R. (2001). *The complete book of anchoring and mooring.* Maryland: Cornell Maritime Press.
- Schultz, B. (2005). *Broadcast news producing*. New Delhi: SAGE Publications.
- Yorke, I., Alexander, R. (2013). *Television news*. London and New York: Taylor & Francis.
- Zettl, H., (2006). *Television production handbook* (pp. 74-75). Boston: Thomas Wadsworth.

Assessment Method

- Evaluation scheme and mode will be as per the guidelines notified by University of Delhi.

SEMESTER-V
(B.A. Honours in Multi Media and Mass Communication)

DISCIPLINE SPECIFIC CORE COURSE – DSC – 13 MEDIA PSYCHOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC - 13 Media Psychology	4	3	1	0	Class XII	Nil

Syllabus of DSC - 13

Course objectives

1. To acquaint students with the interface of media and psychology.
2. To understand and reflect on the human experience of media in terms of reciprocal effects and influences.
3. To illustrate the role of media, especially social media, as a tool of psychosocial cultural influence.
4. To explicate and critically reflect on the role of technology in creating the human experience of media.

Course Learning outcomes

1. Use psychological concepts, theories and research to make sense of the human experience of media.
2. Understand how media and new media constructs social reality.
3. Critically reflect on their experience of being the audience and consumers of media.
4. Identify how there exists a reciprocal influence between motivations and emotions and consumption and creation of media content

Unit 1 **(15 hours)**

Interface of Psychology and Media

- Introduction to Media Psychology: Key Concepts and Theories
- How Fantasy becomes Reality: Understanding Media Influence, Challenges and Opportunities of Living in a Media Saturated World
- Being the audience: Para-social Interaction, Celebrity and Fandom
- Being Critical Consumers of Media: Media Literacy

Unit 2 **(18 hours)**

Psychological Effects and Influences of Media

- Media Influences on Prosocial and Antisocial Behaviour
- Body Image, Eating Disorders and Media
- Media and Image Building: Representation of Social Groups in Media (Women, Ethnic Minorities, Disability etc.)
- Social Psychology of Political Coverage

Unit 3 **(15 hours)**

Human Experience of Media and Role of Technology

- Jean Baudrillard's Perspective on Impact of Media Technology
- Marshall Mc Luhan's Perspective on Impact of Media Technology
- Expressing of Self and Identity on Social Media
- Severe Dependence on Media Technology: Media Addiction

Essential Readings

- Dill, K. E. (2009). *How fantasy becomes reality: Seeing through media influence.* New York: Oxford University Press.
- Dill, K. (Ed.). (2013). *Oxford Handbook of Media Psychology.* New York: Oxford University Press.
- Giles, D. (2003). *Media psychology*. New York: Routledge.
- McLuhan, M. (2001). *Understanding media: The extensions of man.* London: Routledge.
- Merrin, W. (2005). *Baudrillard and the media: A critical introduction*. Polity. Cambridge: UK.

Additional Resources:

Suggested Readings

- Giles, D. (2010). *Psychology of the media.* Macmillan International Higher Education.
- Joinson, A. McKenna, K. Y. A.Postmes, T. & Reips, U.-D. (Eds.). (2007). *The oxford handbook of internet psychology.* Oxford: Oxford University Press.
- Mc Mahon, C. (2019). *The psychology of social media.* New York: Routledge.

E-resources

- Killing us Softly 4 (2010) by Jean Kilbourne
- The Social Dilemma (2020) by Orlowski, Davis Coombe, and Vickie Curtis

Assessment Method

- Evaluation scheme and mode will be as per the guidelines notified by University of Delhi.

DISCIPLINE SPECIFIC CORE COURSE – DSC 14- ADVERTISING AND BRAND MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-14 Advertising and Brand Management	**4**	**2**	**0**	**2**	**Class XII**	**Nil**

Syllabus of DSC-14

Course Objectives

1. To introduce the students to the concepts and principles of Advertising and Brand Management.
2. To understand the integration of various promotional tools in the present demand of the market.
3. To familiarize student with the concepts of market, audience, product and brand.
4. To enable to design seamless brand communication across various mass media platforms.

Course Learning Outcomes

1. Learning to define Advertising and Brand Communication and its components.
2. Understand the advertisement as a mode of communication.
3. Capacity to create an advertisement.
4. Capacity to plan and design an Advertising campaign.

Unit 1 **(10 hours)**

What is Brand Management?

- Brand Identity and Brand Equity
- Brand Elements and Positioning
- Building Brands Over Time
- Brand and the Digital World

Unit 2 **(10 hours)**

The Advertisement

- Role of Advertising in Brand Management
- The Advertising Agency: Structure and Role
- The Marketing Mix
- Theories and Models: AIDA Model, DAGMAR Model, Maslow's Hierarchy of Needs

Unit 3 **(12 hours)**

Strategic Planning

- The Process of Planning an Ad Campaign
- Consumer Behaviour
- Components of an Ad
- Market: Consumer Segmentation, SWOT Analysis and Positioning

Practical:

Creating an Advertising Campaign

References

Essential Readings

- Aaker, D. (2015). *Aaker on branding: 20 Principles That Drive Success*, New Delhi: SAGE publications.
- Belch, E. G. (2020). *Advertising and promotion: An integrated marketing communications perspective*, New York: McGraw-Hill Education.
- Bhatia, K.T. (2007). *Advertising and marketing in rural India,* New Delhi: Macmillan India Ltd.
- Clifton, R., & Simmons, J. (2011). *Brands and branding*, London: Profile Books Ltd.
- Goffman, E. (1987). *Gender advertisements*. New York: Harper & Row.
- Haig, M. (2008). *Brand failures*, New York: Kogan Page.
- Halve, A. (2005). *Planning for power advertising: A user's manual for students and practitioner*s, New Delhi: SAGE Publications.
- Halve, A. (2012). *Darwin's brands, adapting for success*, New Delhi: SAGE Publications.
- Isaac, C. Jacob K. Lane K. Vanitha, S. & Parameswaran, M. G. A. (2020). S*trategic brand management*, New Delhi: Pearson Education.
- Jethwaney, J., & Jain, S.(2011). *Advertising management, (2nd edition)*, New Delhi: Oxford University Press.
- Kapferer, J. N. (2009). *Strategic brand management- creating & sustaining brand equity*, New York: Kogan Page.
- Kumar, S. R. & Krishnamurthy, A. (2020). *Advertising, brands and consumer behaviour: The Indian context,* New Delhi: SAGE Publications.
- Lepla, & Joseph, F. (2002). *Integrated branding*, New York: Kogan Page.
- Loken, B., et.al. (2010). *Brands and brand management, contemporary research perspectives*, London: Psychology Press.
- Marieke, De M. (2011). *Consumer behavior and culture: Consequences for global marketing & advertising*, New Delhi: SAGE Publications.
- McGuigan, J. (2014). Advertising – the magic system (1960/1969). In *Raymond Williams on culture & society: Essential writings* (pp. 57-84). New Delhi: SAGE Publications Ltd, https://dx.doi.org/10.4135/9781473914766.n4
- Melissa, D. (2009). *The fundamentals of branding*, New York: Ava Publications.
- Miles, Y., (2018). *Ogilvy on advertising in the digital age*, New York: Carlton Books.

- Monley, L., & Johnson, C. (2003). *Principles of advertising: A global perspective*, New York: Routledge.

Additional Resources:

Suggested Readings

- Aaker, D.(2018). *Creating signature stories: Strategic messaging that persuades, energizes and inspires*, New Delhi: Penguin Portfolio.
- Dayal, S. (2021). *Right between the ears: how to use brain science to build epic brands*, New Delhi: Penguin Portfolio.
- Dorothy & Cohen, (1988). *Advertising*, London: Scott. Forsmon and Co.
- Elliott, R. (2009). *Strategic advertising managemen*t, New York: Oxford University Press.
- Kevin, L. K. (2008). *Strategic brand management, (3rd edition)*, New York: Prentice Hall Financial Times.
- Kumar, N. (2009). *India's global powerhouses*, Harvard: Harvard Business Press.
- Martin, B. (2020). *Strategic brand management*, London: ED-Tech Press UK.
- Martin, L. (2005). *Brand sense*, New York: Kogan Page.
- Klein, N. (2009). *No logo: No space*, no choice, no jobs. Knopf Canada and Picador
- Cudson, M. (1993). *Advertising, The uneasy persuasion*, New York: Routledge.
- Steel, J. (2009). *Truth, lies and advertising: The art of account planning*, Michigan: Wiley.
- Ogilvy, D. (1997). *Ogilvy on advertising*, London: Prion Books.
- Valladares, J. (2005). *The craft of copywriting*, New Delhi: SAGE publications.
- Van, S.G. (2004). *Global brand strategy*. New York: Kogan Page.
- Vilanilam, J. V., & Verghese, A.K. (2012). *Advertising basics*, New Delhi: SAGE publications.

Assessment Method

- Evaluation scheme and mode will be as per the guidelines notified by University of Delhi.

DISCIPLINE SPECIFIC CORE COURSE – DSC-15: Videography and Editing

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-15: Videography and Editing	4	0	0	4	Class XII	Nil

Syllabus of DSC-15

Course Objectives

1. To train students with hands-on skills using a video camera.
2. To help student understand different techniques of on-field production.
3. To familiarize student with techniques of video editing.
4. To give hands on training for lighting and other production equipment.
5. To help develop a visual narrative for video production.

Course Learning Outcomes

1. Familiarity with the elements of a video camera and techniques of their usage.
2. Hands-on training with production equipment.
3. Skill acquisition of lighting and editing for video production.
4. Production of a Video Clip.

Unit 1 **(20 Hours)**

Video Camera

- Video Camera, Working, Types and Operating Techniques
- Types of Lenses, Focus and Resolution
- Cinematography: Camera Perspective, Angle, Composition, Continuity, Cutting and Close-Up, Shots and Movements
- Ethical Issues and Privacy Concerns

Unit 2 **(24 Hours)**

Production Techniques and Lighting

- Video Recording Formats: Analog and Digital, Broadcast Standards
- Single Camera Production: Filming Techniques, Dubbing
- Fundamental Lighting Concepts, Types of Lights
- Lighting Procedures, Lighting Objectives

Unit 3 **(20 Hours)**

Post Production

- Video Editing: Concept and Process
- Types of Video Editing: Linear, Non-Linear and Online, Offline
- Techniques of Video Editing: Continuity and Montage, Kuleshov Experiment,
- Use of Graphics, Filters and Effects

Practical:

Production of a Video Clip

References

Essential Readings

- Belavadi, V. (2013). *Video production.* New Delhi: Oxford University Press.
- Jackman, J. (2017). *Lighting for digital video and television.* Oxford: CRC Press.
- Millerson, G., & Millerson, G. (1999). *Television production*. Oxford: Focal Press,13 edition.
- Zettl, H. (2015). *Television production handbook.* Stamford: Wadsworth Cengage Learning.
- Landau, D. (2014). *Lighting for cinematography: A practical guide to the art and craft of lighting for the moving image.* United Kingdom: Bloomsbury Academic.
- Millerson, G. (2016). *Effective TV production.* United Kingdom: Taylor & Francis Group.

Additional Resources:

Suggested Readings

- Donald, R., et al. (2000). *Fundamentals of television production.* New Jersey: Wiley—Blackwell.
- Gupta, R. G. (2010). *Audio and video systems: Principles, maintenance & troubleshooting.* New Delhi: Tata McGraw-Hill.
- Mercado, G. (2022). *The filmmaker's eye: Learning (and Breaking) the Rules of Cinematic Composition.* United Kingdom: Routledge.
- Hall, B. (2015). *Understanding cinematography.* United Kingdom: Crowood Press

E-Resources

- Videomaker (2019). Video courses and educational articles retrieved from http://www.videomaker.com
- Mediacollege (2019). Video, camera and tutorials. Retrieved from www.mediacollege.com/video/camera/tutorials

Assessment Method

- Evaluation scheme and mode will be as per the guidelines notified by University of Delhi.

DISCIPLINE SPECIFIC ELECTIVE COURSE – DSE 3- GENDER AND MEDIA

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 3- Gender and Media	**4**	**3**	**1**	**0**	**Class XII**	**Nil**

Syllabus of DSE 3

Course Objectives

1. Acquainting students with the key concepts and debates within the paradigm of media, gender and patriarchy.
2. Understanding of the intersectional impact of sex, gender, race, class, sexuality, age, ethnicity, ability, and other complex aspects of identities and how they influence social structures and women's empowerment.
3. Understanding of the role and impact of gender on media organisations, occupational segregation, hierarchy and labour.

Course Learning Outcomes

1. Critically exploring debates around gendered-identities and intersectionality on contemporary media and digital culture.
2. Ability to examine a range of media texts, including film, TV programmes and magazines as well as digital media within the gendered performances.
3. Ability to analyse the portrayal and normalising of gender roles in popular Hindi Film Clips.

Unit 1 **(15 Hours)**

Media Organisations and Gender

- Profile of Media Organisations
- Occupational Segregation
- Gender Debate: Hierarchy, Equity, Labour, Visibility, Techno-cultures
- Sexual Harassment and Organisational Grievance Redressal

Unit 2 **(15 Hours)**

Intersectionalities

- Patriarchy, Gender and Sexuality
- Representations of women
- Representations of Masculinities
- Representations of LGBTQ+

Unit 3 **(18 Hours)**

Clips from Popular Hindi Cinema: Some Case Studies

- Dilwale Dulhania Le Jayenge
- Kuch Kuch Hota Hai
- Aligarh
- Chennai Express
- Chandigarh Kare Aashiqui

References

Suggested Readings

- Beechey, V. (1979). On patriarchy. *Feminist Review*, *3*(1), 66-82.
- Byerly, C. M., & Ross, K. (2008). *Women and media: A critical introduction*. Blackwell Publishing: John Wiley & Sons.
- Chakravarti, U. (1993). Conceptualising Brahmanical patriarchy in early India: Gender, caste, class and state. *Economic and Political Weekly*, 579-585.
- Malhotra, A., Vanneman, R., & Kishor, S. (1995). Fertility, dimensions of patriarchy, and development in India. *Population and development review*, 281-305.
- Phillips, M., Mostofian, F., Jetly, R., Puthukudy, N., Madden, K., & Bhandari, M. (2015). Media coverage of violence against women in India: a systematic study of a high profile rape case. *BMC women's health*, *15*(1), 1-10.
- Hamilton, J. B., Knouse, S. B., & Hill, V. (2011). Online activism for a heterogeneous time: The Pink Chaddi Campaign and the social media in India. *Building and strengthening communities and social networks*, *27*(2), 63.
- Ladner, K. L. (2009). Gendering decolonisation, decolonising gender. *Australian indigenous law review*, *13*(1), 62-77.

Additional Resources

Suggested Readings

- Bhandari, I. K. (2018). Commodification of Women body in Indian media. *International journal of research and analytical reviews (IJRAR)*, *5*(3).
- Dasgupta, S., Sinha, D., & Chakravarti, S. (2011). *Media, gender, and popular culture in India: Tracking change and continuity*. SAGE Publishing India.
- Grosu-Rădulescu, L. M. (2016). Objectification of women and violence in what the body remembers. *Rupkatha journal on interdisciplinary studies in humanities*, *8*(1), 86-96.
- Gupta, B. (2021). An Analysis of the socio-legal framework around objectification of women in India. *Journal of humanities and social sciences studies*, *3*(1), 07-23.
- Griffin, M., Viswanath, K., & Schwartz, D. (1994). Gender advertising in the US and India: Exporting cultural stereotypes. *Media, culture & society*, *16*(3), 487-507.
- Gupta, V. K., Turban, D. B., & Pareek, A. (2013). Differences between men and women in opportunity evaluation as a function of gender stereotypes and stereotype activation. *Entrepreneurship theory and practice*, *37*(4), 771-788.

- Kathpalia, S. S. (2019). Redefining gender stereotypes in Indian English TV advertising. *World englishes*, *38*(3), 486-499.
- Fatehkia, M., Kashyap, R., & Weber, I. (2018). Using Facebook ad data to track the global digital gender gap. *World development*, *107*, 189-209.
- Kuroda, R., Lopez, M., Sasaki, J., & Settecase, M. (2019). The digital gender gap. *Policy brief prepared for W20 Japan, EY-GSMA*.
- Sambaraju, R. (2020). “I would have taken this to my grave, like most women”: Reporting sexual harassment during the# MeToo movement in India. *Journal of social issues*, *76*(3), 603-631.
- Pegu, S. (2019). MeToo in India: building revolutions from solidarities. *Decision*, *46*(2), 151-168.

E-Resources

- Thomas, J (2018, May 8). "Women in Media: Power and Struggle,"Newslaundry, [Online: Web] URL:https://www.newslaundry.com/2018/05/04/women-media-gender-bias-power-indian-newsrooms-male-editors
- Yale Courses (2009, September 9) ."The Classical Feminist Tradition,"[Video File]. Retrieved from https://www.youtube.com/watch?v=wxZDA3M2lOM

Assessment Method

- Evaluation scheme and mode will be as per the guidelines notified by University of Delhi.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES OFFERED BY THE DEPARTMENTS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

GENERIC ELECTIVES (GE-5): THEATRE AND COMMUNICATION

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
GE:5 Theatre and Communication	**4**	**3**	**1**	**0**	**Class XII**	**Nil**

Syllabus of GE-5

Course Objectives

1. To promote the cultural and sociological understanding of theatre as a medium of communication.
2. To situate theatre as a flourishing medium of socio-political commentary.
3. To cover ground through watershed historical moments of Western and Indian Theatre
4. To impart practical training in different aspects of production and design essential to staging a play.

Course Learning Outcomes

1. Define theatre as a tool of mass communication.
2. Understand the significance of locales and the audience.
3. Understand various theatrical tools and techniques as communication strategies.
4. Utilize the knowledge gained in conceptualising a theatrical production as communication.

Unit 1 **(15 hours)**

Theatre and the Public

- Orality and Performance: Speech, Song, Dance, Visual Effects
- Entertainment and Information: Jatra, Bahrupiya, Nautanki
- Theatre as Subversion: Colonial Rule and the Dramatic Performances Act of 1876
- Theatre as Resistance: Devising and Writing a script

Unit 2 **(15 hours)**

Locales and Spectators

- The Theatre and its Architectonics: Classical Greek, Modern
- The Making of the Stage: Theatre of the Marketplace to the Proscenium stage
- The People's Stage: Commedia dell'Arte
- The Street Corner: Nukkad Natak
- Designing a Set

Unit 3 **(18 hours)**

Theatrical Techniques as Communication

- Brecht's Alienation Effect
- Dario Fo's Act III
- The Mask in Classical Greek Drama
- Bibek in the Jatra of Bengal
- The Chorus
- The Sutradhar
- The Vidushak and Shakespeare's Clown
- Performing a Scene

References

Essential Readings

- Amodio, M. C. (2004). *Writing the oral tradition: Oral poetics and literate culture in medieval England*. Notre Dame: University of Notre Dame Press.
- Bauman, R. (1986). *Story, performance and event: Contextual studies of oral narrative*. New York: Cambridge University Press.
- Brecht, B. (2010). *A short organum for the theatre, Approaches in literary theory: Marxism.* (Ed.) Anand Prakash. New Delhi: Worldview Publications.
- Emigh, J. (1996). *Masked performance: the play of self and other in ritual and theatre*. Philadelphia: University of Pennsylvania Press.
- Graham L. (2006). *A short introduction to the ancient reek theatre*. Revised Edition. Chicago: The University of Chicago Press
- Hansen, K. (1992). *Grounds for play: The nautanki theatre of North India.* Berkeley: University of California Press.
- Leach, R. (2008). *Theatre studies*: *The basics.* London: Routledge.

Additional Resources:

Suggested Readings

- Bloom, H. (ed.). (2004) *Elizabethan drama*. New York: Chelsea House.
- Chaffee, J. & Crick, O. (ed.) (2015). *The Routledge companion to commedia dell' arte*. London: Routledge.
- Dundes, A. (ed.). (1965). *The study of folklore. Englewood Cliffs*, NJ: Prentice Hall.
- McDonald, M., & Walton, J. (ed.). (2007) *The Cambridge companion to reek and roman theatre*. New York: Cambridge University Press.
- Minchin, E. (2011). *Orality, literacy and performance in the ancient world.* Leiden: Brill Academic Publishers.
- Thorne G. (1999). *Stage design: A practical guide*. Ramsbury, Wiltshire: Crowood Press.

Assessment Method

- Evaluation scheme and mode will be as per the guidelines notified by University of Delhi.

SEMESTER -VI

(B.A. Honours in Multi Media and Mass Communication)

DISCIPLINE SPECIFIC CORE COURSE – DSC – 16 GLOBAL POLITICS AND MEDIA

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC - 16 Global Politics and Media	**4**	**3**	**1**	**0**	**Class XII**	**Nil**

Syllabus of DSC - 16

Course Objectives

1. To acquaint students with key trends and issues located at the intersection of global politics and media.
2. To offer insights into key contemporary global issues and how they are entangled with the discourse of media.
3. To enable critical insights into the interplay of globalisation and media through broader theoretical frameworks.

Course Learning Outcomes

1. Critically engage with various socio-economic and political global media issues.
2. Explain the changing trends in global information flow and concept of network society.
3. Describe the global communication system during and post-world wars, terrorism events, conflict reporting and manufacturing consent.
4. Utilize knowledge gained to analyse major global media conglomerates and trends during migration, censorship and technology growth.
5. Understand media technology in the context of case studies of global crisis and events.

Unit 1

Media, Politics, and Globalisation **(15 hours)**

- Relationship between Politics and Media
- Media and the Global Market: Media Conglomerates, Monopolies and Oligopolies
- Network Society: Information Society, Network Service Economy, Movement of Intangibles
- Media Imperialism, Globalisation and the Culture Industry

Unit 2 **(18 hours)**

Global Crises and the Media- Case Studies

- World War II
- The Gulf Wars: CNN Factor, Embedded Journalism
- Terrorism and Media: 9/11, 26/11
- Big Data Mining and Deployment in Electoral Process: Cambridge Analytica

Unit 3 **(15 hours)**

Global Media Initiatives

- Regional Initiatives: Al-Jazeera
- Panama and Pandora Papers
- Peace Journalism
- Hacktivism, Wikileaks

References

Essential Readings

- Daya K. T., & Des F. (2003). *'Introduction' in Daya Kishan Thussu and des freedman, war and the media: Reporting conflict 24/7*, New Delhi: Sage
- Francesca, O. (2015). Dil Maange More: Cultural Contexts of Hinglish in Contemporary India, *African studies*, 74(2):199-220.
- Kak, A.U. (2018). 'Cambridge Analytica and the Political Economy of Persuasion', *Economic and political weekly*, 53(21): 23-36
- Keinonen, H. (2016). Television Formats as Cultural Negotiations: Studying Format Appropriation Through A Synthesizing Approach. *Journal of European television history & culture,* 5(9):6-15
- Lukes, S. (1974) *Power: A Radial View*, London: Macmillan.
- Manfred, S. (2003) *Globalisation: A very short introduction*, Oxford: Oxford University Press
- Street, J. (2010*). Power and mass media: Mass media, politics and democrac*y. London: Macmillan.

Additional Resources:

Suggested Readings

- Coyer, K. (2007). *The alternative media handbook,* London: Routledge.
- Engstrom, E. (2008). Unravelling the Knot: Political Economy and Cultural Hegemony in Wedding Media. *Journal of communication inquiry* 32(1):60-82.
- Kumar, S. (2016). Concentration of Media Ownership and the Imagination of Free Speech. *Economic and political weekly*. 51(1): 17- 23.
- Matusitz, J. (2014). The Disneyfication of the World: A Globalisation Perspective. *Journal of organisational transformation and social change.* 11(2):91-107.

- Thakurta, P. G. (2013). Curbing Media Monopolies, *Economic and political weekly*. 48(16):20-34
- Thakurta, P. G., & Chaturvedi, S. (2012). Corporatisation of the Media, *Economic and political weekly*. 47(7):34-56
- Thussu, D. K. (2005). *War and the media: Reporting conflict 24/7*. London: Sage

E-Resources

- Bergman, T. (2018). Media, Propaganda and the Politics of Intervention. *European journal of communication*, 33(2): 242–244. https://doi.org/10.1177/0267323118761156
- Hannan, J. (2018). Trolling ourselves to death? Social media and Post-truth Politics. *European journal of communication*, 33(2): 214–226. https://doi.org/10.1177/0267323118760323
- Puppis, M. (2008). National Media Regulation in the Era of Free Trade: The Role of Global Media Governance. *European journal of communication,* 23(4): 405–424. https://doi.org/10.1177/0267323108096992
- Shani, O. (2014). Media Representation and the Global Imagination. *European journal of communication,* 29(3): 386–387. https://doi.org/10.1177/026732311453187 3b
- Splichal, S. (2009). 'New' Media, 'Old' Theories: Does the (National) Public Melt into the Air of Global Governance? *European journal of communication*, 24(4): 391–405. https://doi.org/10.1177/0267323109345522
- Robinson, P. (2001). Theorizing the Influence of Media on World Politics: Models of Media Influence on Foreign Policy. *European journal of communication*, 16(4): 523–544. https://doi.org/10.1177/0267323101016004005

Assessment Method

- Evaluation scheme and mode will be as per the guidelines notified by University of Delhi.

DISCIPLINE SPECIFIC CORE COURSE – DSC-17 PUBLIC RELATIONS AND CORPORATE COMMUNICATION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-17 Public Relations and Corporate Communication	**4**	**2**	**0**	**2**	**Class XII**	**Nil**

Syllabus of DSC-17

Course Objectives

1. To understand the concepts of public relations and corporate communication.
2. To take the students through the role and scope of PR in management.
3. To acquaint student with the concepts of public opinion and persuasion.
4. To look at the elements of corporate communication and its role in marketing communication.

Course Learning Outcomes

i. Learning to define public relations and its components.
ii. Understand the difference between public relations and corporate communication.
iii. Capacity to create an PR and corporation communication strategies.
iv. Capacity to plan and design a campaign.

Unit 1 **(12 hours)**

Understanding Public Relations

- Define Public Relations: Definitions and Functions
- The PR Process: Research, Strategy, Measurement, Evaluation and Impact
- Defining Publics and Stakeholders
- Laws and Ethics in PR

Unit 2 **(10 hours)**

PR Practice and Process

- Public Opinion and Persuasion as a PR Skill
- PR as a Source of News, Media Tracking
- Public Affairs, PR in Social Sector
- Modes of Public Relations

Unit 3 **(10 hours)**

Corporate Communication

- Corporate Communication: Definition and Function
- Crisis Communication
- Corporate Reputation Management and Corporate Identity
- Corporate Social Responsibility and Sustainable Development

Practical:

Developing a Public Relations/ Crisis Communication Campaign.

References

Essential Readings

- Argenti, P. A. (2013). *Corporate communication*. Spain: McGraw-Hill Higher Education.
- Coleman, A. (2020). *Crisis communication strategies: How to prepare in advance, respond effectively and recover in full*. New York: Kogan Page.
- Gregory, A. (2008). *Public relations in practice*, (2nd edition), New York: Kogan Page
- Jethwaney, J. (2018). *Corporate communication: Principles and practice*. New Delhi: SAGE.
- Jethwaney, J. (2016). *Social sector communication in India: concepts, practices, and case studies*. New Delhi: Sage.
- Jethwaney, J., & Sarkar, N. N.(2015). *Public relations management*, New Delhi: Sterling Publishers.
- Kotler, P., & Lee, N. (2011). *Corporate social responsibility: Doing the most good for your company and your cause*. W. Ross MacDonald School Resource Services Library.
- L'etang, J. (2008). *Public relations, concepts, practice and critique*, New Delhi: SAGE.
- Field, J. (2021). *Influential internal communication: Streamline your corporate communication to drive efficiency and Engagement*. New York: Kogan Page.
- Parsons, P. J. (2005). *Ethics in public relations*: *A guide to best practice*, New York: Kogan Page.
- Smith, D. R. (2012). *Becoming a public relations writer*, (4th edition), London: Routledge.
- Theaker, A., & Yaxley, H. (2013). *The public relations strategic toolkit*, London: Routledge.

Additional Resources:

Suggested Readings

- Black, S., & Sharpe, M. L. (1999). *Practical public relations*. Universal Book Stall, New Delhi.
- Cutlip, S. M. (1962). *Effective public relations*. New Delhi: Pearson Education.
- Danny, M., & Desanto, B. (2011). *Public relations: A managerial perspective*, SAGE.

- Henry, R. A. (2000). *Marketing public relations: The hows that make it work*. Iowa State Press.
- Henslowe, P. (2003). *Public relations: A practical guide to the basics*. Kogan Page Publishers.
- Jugenheimer, D. W. Bradley, S. D., Kelley, L. D. & Hudson, J. C. (2014). *Advertising and public relations*, (2nd edition), Routledge.

Assessment Method

- Evaluation scheme and mode will be as per the guidelines notified by University of Delhi.

DISCIPLINE SPECIFIC CORE COURSE – DSC-18 STUDIO PRODUCTION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-18: Studio Production	4	0	0	4	Class XII	Nil

Syllabus of DSC-18

Course Objectives

1. To train students with hands-on skills using a video camera.
2. To help student understand different techniques of on-field production.
3. To familiarize student with techniques of video editing.
4. To give hands on training for lighting and other production equipment.
5. To help develop a visual narrative for video production.

Course Learning Outcomes

1. Familiarity with the elements of a video camera and techniques of their usage.
2. Hands-on training with production equipment.
3. Skill acquisition of lighting and editing for video production.
4. Production of a Video Clip.

Unit 1

Video Camera **(20 hours)**

- Video Camera, Working, Types and Operating Techniques
- Types of Lenses, Focus and Resolution
- Cinematography: Camera Perspective, Angle, Composition, Continuity, Cutting and Close-Up, Shots and Movements
- Ethical Issues and Privacy Concerns

Unit 2

Production Techniques and Lighting **(24 hours)**

- Video Recording Formats: Analog and Digital, Broadcast Standards
- Single Camera Production: Filming Techniques, Dubbing
- Fundamental Lighting Concepts, Types of Lights
- Lighting Procedures, Lighting Objectives

Unit 3 **(20 hours)**

Post Production

- Video Editing: Concept and Process
- Types of Video Editing: Linear, Non-Linear and Online, Offline
- Techniques of Video Editing: Continuity and Montage, Kuleshov Experiment,
- Use of Graphics, Filters and Effects

Practical:

Production of a Video Clip

References

Essential Readings

- Belavadi, V. (2013). *Video production.* New Delhi: Oxford University Press.
- Jackman, J. (2017). *Lighting for digital video and television.* Oxford: CRC Press.
- Millerson, G., & Millerson, G. (1999). *Television production*. Oxford: Focal Press,13 edition.
- Zettl, H. (2015). *Television production handbook.* Stamford: Wadsworth Cengage Learning.
- Landau, D. (2014). *Lighting for cinematography: A practical guide to the art and craft of lighting for the moving image.* United Kingdom: Bloomsbury Academic.
- Millerson, G. (2016). *Effective TV production.* United Kingdom: Taylor & Francis Group.

Additional Resources:

Suggested Readings

- Donald, R., et al. (2000). *Fundamentals of television production.* New Jersey: Wiley—Blackwell.
- Gupta, R. G. (2010). *Audio and video systems: Principles, maintenance & troubleshooting.* New Delhi: Tata McGraw-Hill.
- Mercado, G. (2022). *The filmmaker's eye: Learning (and Breaking) the Rules of Cinematic Composition.* United Kingdom: Routledge.
- Hall, B. (2015). *Understanding cinematography.* United Kingdom: Crowood Press

E-Resources

- Videomaker (2019). Video courses and educational articles retrieved from http://www.videomaker.com
- Mediacollege (2019). Video, camera and tutorials. Retrieved from www.mediacollege.com/video/camera/tutorials

Assessment Method

- Evaluation scheme and mode will be as per the guidelines notified by University of Delhi.

DISCIPLINE SPECIFIC ELECTIVE COURSE – DSE 4- MEDIA MOMENTS IN HISTORY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 4- Media Moments in History	4	3	1	0	Class XII	Nil

Syllabus of DSE 4

Course Objectives

1. The understanding of how media creates, filters and juxtaposes political reality of historic events is necessary to sharpen the intellectual acumen of students.
2. Enabling the students to understand critique and debate about the historic media moments. It will help them to understand the subtle yet significant relationship between media and gender/caste/rural societal discourses prevalent in the current era.
3. Ability to research on a particular historic media moment, analyse its impact and reach, while debating about the various ways in which it changed the fluid political discourse.

Course Learning Outcomes

1. Understanding the significance of a historic media moment in its political and socio-cultural context.
2. Critical evaluation of the role played by media in creating, filtering and manufacturing the prevalent political reality.
3. Analysis of the role played by media in rural/urban divide along with gender and caste based hierarchy that functions within the system.
4. Understanding the relationship between historical moments, societal hegemonic trends and media impact.

Unit 1

Historical Perspectives **(15 Hours)**

- Technology and Mass Media Transmissions
- The Printing Press
- Radio
- Camera: Photograph, Film

Unit 2 **(15 Hours)**

Defining Moments- India

- Dandi March
- Partition
- ‘Tryst with Destiny'
- 83 World Cup
- 26/11 Mumbai Attacks

Unit 3
Defining Moments- Global **(18 Hours)**

- Fall of Berlin Wall
- Hiroshima and Nagasaki: The Mushroom Cloud
- The Apollo 11 Lunar Landing
- 9/11 Twin Tower Attacks
- HAM Radio World War II
- Churchill's Speech
- Bombing of Baghdad

References

Essential Readings

- Blumler, J., & Coleman, S. (2015) Democracy and the Media—Revisited, Javnost - *The public*, 22(2): 111-128, Retrieved from DOI: 10.1080/13183222.2015.1041226
- Brummett, B. (1980) Towards a theory of silence as a political strategy. *Quarterly journal of speech* 66(3): 289-303, Retrieved from DOI: https://doi.org/10.1080/00335637509383294
- Entman, R. (2000). *Mediated politics: Communication in the future of democracy*. Cambridge: Cambridge University Press
- Farrell, T.B. (1978) Political conventions as legitimating ritual. *Communication monographs*, 45(4): 293-305, Retrieved from DOI: 10.1080/03637757809375975
- Kraidy, M. (2016). The Naked Blogger of Cairo. Harvard: Harvard University Press

Additional Resources:

Suggested Readings

- Cimino, R., & Smith, C. (2007). Secular Humanism and Atheism beyond Progressive Secularism. *Sociology of religion*, 68(4), 407-424. Retrieved from http://www.jstor.org/stable/20453183
- Frank, A.G., (1977). Emergence of Permanent Emergency in India. *Economic and Political Weekly.* 12(11): 463-475
- Lundby, K. (2017). Public Religion in Mediatized Transformations. In Engelstad F., Larsen H., Rogstad J., Steen-Johnsen K., Polkowska D., Dauber-Griffin A., et al. (Eds.), *Institutional change in the public sphere: Views on the Nordic Model* (pp. 241-263). Berlin/Boston: De Gruyter. Retrieved from http://www.jstor.org/stable/j.ctvbkk05k.15

- Miller, D., Costa, E., Haynes, N., McDonald, T., Nicolescu, R., Sinanan, J. & Wang, X. (2016). What is social media? *In How the World Changed Social Media* (pp. 1-8). London: UCL Press. Retrieved from http://www.jstor.org/stable/j.ctt1g69z35.8

E-Resources

- Deutsches Haus (2017, December 17). *The Politics of Language: A Conversation among Masha Gessen, Siri Hustvedt, and Ulrich Bae.* [Video File]. Retrieved from https://www.youtube.com/watch?v=bnUc5GVOQ4M
- Mitchell, D.S., (2016, November 8). History of Berlin Wall- An Amazing Documentary. [Video File]. Retrieved from https://www.youtube.com/watch?v=myW1Padwxqk
- Pandey, A., (2016, September 24). *Rare Story of Gandhi's Dandi March by an eyewitness.*[Video File].Retrieved from https://www.youtube.com/watch?v=sSo_4_vfzBM
- Rajya Sabha TV, (2018, June 26). In-depth: The emergency. [Video File]. Retrieved from https://www.youtube.com/watch?v=mevPEZ4G9WQ

Assessment Method

- Evaluation scheme and mode will be as per the guidelines notified by University of Delhi.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES OFFERED BY THE DEPARTMENTS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

GENERIC ELECTIVES (GE-6): EXPLORING HINDI CINEMA

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
GE:6 Exploring Hindi Cinema	4	3	1	0	Class XII	Nil

Syllabus of GE-6

Course Objectives

1. To promote the cultural and sociological understanding of theatre as a medium of communication.
2. To situate theatre as a flourishing medium of socio-political commentary.
3. To cover ground through watershed historical moments of Western and Indian Theatre
4. To impart practical training in different aspects of production and design essential to staging a play.

Learning Outcomes

1. Define theatre as a tool of mass communication.
2. Understand the significance of locales and the audience.
3. Understand various theatrical tools and techniques as communication strategies.
4. Utilize the knowledge gained in conceptualising a theatrical production as communication.

Unit 1 **(15 hours)**

Theatre and the Public

- Orality and Performance: Speech, Song, Dance, Visual Effects
- Entertainment and Information: Jatra, Bahrupiya, Nautanki
- Theatre as Subversion: Colonial Rule and the Dramatic Performances Act of 1876
- Theatre as Resistance: Devising and Writing a script

Unit 2 **(15 hours)**

Locales and Spectators

- The Theatre and its Architectonics: Classical Greek, Modern
- The Making of the Stage: Theatre of the Marketplace to the Proscenium stage
- The People's Stage: Commedia dell'Arte
- The Street Corner: Nukkad Natak
- Designing a Set

Unit 3 **(18 hours)**

Theatrical Techniques as Communication

- Brecht's Alienation Effect
- Dario Fo's Act III
- The Mask in Classical Greek Drama
- Bibek in the Jatra of Bengal
- The Chorus
- The Sutradhar
- The Vidushak and Shakespeare's Clown
- Performing a Scene

References

Essential Readings

- Amodio, M. C. (2004). *Writing the oral tradition: Oral poetics and literate culture in medieval England*. Notre Dame: University of Notre Dame Press.
- Bauman, R. (1986). *Story, performance and event: Contextual studies of oral narrative*. New York: Cambridge University Press.
- Brecht, B. (2010). *A short organum for the theatre, Approaches in literary theory: Marxism.* (Ed.) Anand Prakash. New Delhi: Worldview Publications.
- Emigh, J. (1996). *Masked performance: the play of self and other in ritual and theatre*. Philadelphia: University of Pennsylvania Press.
- Graham L. (2006). *A short introduction to the ancient reek theatre*. Revised Edition. Chicago: The University of Chicago Press
- Hansen, K. (1992). *Grounds for play: The nautanki theatre of North India.* Berkeley: University of California Press.
- Leach, R. (2008). *Theatre studies*: *The basics.* London: Routledge.

Additional Resources:

Suggested Readings

- Bloom, H. (ed.). (2004) *Elizabethan drama*. New York: Chelsea House.
- Chaffee, J. & Crick, O. (ed.) (2015). *The Routledge companion to commedia dell' arte*. London: Routledge.
- Dundes, A. (ed.). (1965). *The study of folklore. Englewood Cliffs*, NJ: Prentice Hall.
- McDonald, M., & Walton, J. (ed.). (2007) *The Cambridge companion to reek and roman theatre*. New York: Cambridge University Press.
- Minchin, E. (2011). *Orality, literacy and performance in the ancient world.* Leiden: Brill Academic Publishers.
- Thorne G. (1999). *Stage design: A practical guide*. Ramsbury, Wiltshire: Crowood Press.

Assessment Method

- Evaluation scheme and mode will be as per the guidelines notified by University of Delhi.

ANNEXURE-19

Sub: Amendment to Ordinance V

[E.C Resolution No. 27-1-1/(8) dated 25.08.2023]

In accordance with EC resolution No. 27-1-1 (8) dated 25.08.2023, paper titled "Electronic Instrumentation" is offered as Discipline Specific Elective in the Syllabi of 3rd Semester of Department of Physics for BSc Physical Science with Electronics as one of the Core Discipline. The course content and credit structure of the paper is at ***Annexure – 1.***

COURSE TITLE – ELECTRONIC INSTRUMENTATION

Total Credits: 04 (Credits: Theory: 02, Practical: 02)

Total Hours: Theory: 30, Practical: 60

Course Objective

• This course aims to provide an exposure on basics of measurement and instrumentation and its various aspects and their usage through hands-on mode.

• It also aims to provide exposure of various measurement instruments such as power supply, oscilloscope, multivibrators, signal generators are discussed in detail.

• It also aims to develop an understanding of virtual instrumentation and transducers.

Course Learning Outcomes

At the end of this course, students will have understanding of:

• basic principles of the measurement and errors in measurement, specifications of basic Measurement instruments and their significance with hands on mode.

• principles of voltage measurement, advantages of electronic voltmeter over conventional multimeter in terms of sensitivity etc.

• measurement of impedance using bridges, Power supply, Filters, IC regulators and Load and line regulation.

• Specifications of CRO and their significance, the use of CRO and DSO for the measurement of voltage (dc and ac), frequency and time period.

• Multivibrators, working circuits of Astable and monostable multivibrators.

• Phase Locked Loop (PLL), Voltage controlled oscillators and lock-In amplifier.

• explanation and specifications of Signal and pulse Generators

• the Interfacing techniques, Audrino microcontroller & interfacing software, Understanding and usage of Transducers.

Unit 1

Measurements: Shielding and grounding. Electromagnetic Interference.

Basic Measurement Instruments: DC measurement-ammeter, voltmeter, ohm meter, AC measurement, Digital voltmeter systems (integrating and non-integrating). Digital Multimeter; Block diagram principle of measurement of I, V, C. Measurement of Impedance- A.C. bridges, Measurement of Self Inductance (Anderson's bridge), Measurement of Capacitance (De-Sauty’s bridge), Measurement of frequency (Wien's bridge).

(12 Lectures)

Unit 2

Power supply: Using IC Regulators (78XX and 79XX), Line and load regulation, Short circuit protection. Idea of switched mode power supply (SMPS) & uninterrupted power supply (UPS).
Oscilloscope: Block Diagram, CRT, Deflection (Qualitative). Screens for CRT, Oscilloscope probes, measurement of voltage, frequency, and phase by Oscilloscope. Digital Storage Oscilloscope. **(6 Lectures)**

Unit 3

Multivibrators (IC 555): Block diagram, Astable & Monostable multivibrator circuits.
Signal Generators: Function generator (Black Box Approach)

(4 Lectures)

Unit 4

Virtual Instrumentation: Introduction, Interfacing techniques (RS 232, GPIB, USB). Idea about Audrino microcontroller & interfacing software like lab View).
Transducers: Classification of transducers. Measurement of temperature (RTD, semiconductor IC sensors), Light transducers (photo resistors & photovoltaic cells).

(8 Lectures)

PRACTICALS-LAB: ELECTRONIC INSTRUMENTATION LAB

"Sessions on the construction and use of specific measurement instruments and experimental apparatuses used in the lab, including necessary precautions.
Sessions on the review of experimental data analysis, sources of error and their estimation in detail, writing of scientific laboratory reports including proper reporting of errors. Application to the specific experiments done in the lab."

At least 08 experiments from the following

1. Measurement of resistance by Wheatstone bridge and measurement of bridge sensitivity.
2. Measurement of Capacitance by De Sauty's bridge.
3. Design a regulated power supply of given rating (5 V or 9V).
4. To determine the Characteristics of LVDT.
5. To determine the Characteristics of Thermistors and RTD.
6. Measurement of temperature by Thermocouples.
7. To design an Astable Multivibrator of given specification using IC 555 Timer.
8. To design a Monostable Multivibrator of given specification using IC 555 Timer.
9. To design and study the Sample and Hold Circuit.
10. To plot the frequency response of a microphone.
11. Glow an LED via USB port of PC.
12. Sense the input voltage at a pin of USB port and subsequently glow the LED connected with another pin of USB port.

References for Theory

Essential Readings

1. Electronic Instrumentation and Measurement Techniques, W.D. Cooper and A. D. Helfrick, Prentice Hall (2005).
2. Measurement Systems: Application and Design, E.O.Doebelin, McGraw Hill Book - fifth Edition (2003).
3. Electronic Devices and Circuits, David A. Bell, Oxford University Press (2015).

Additional Readings

1. Instrumentation Devices and Systems, S. Rangan, G. R. Sarma and V. S. Mani, Tata McGraw Hill(1998).

References for Laboratory

1. “Measurement and Instrumentation Principles”, Alan S. Morris, Elsevier (Butterworth Heinmann-2008).
2. Basic Electronics: A text lab manual, P.B.Zbar, A.P.Malvino, M.A.Miller, 1990, Mc-Graw Hill.

ANNEXURE- 20

Sub: Amendment to Ordinance V

[E.C Resolution No. 27-1-6/-(7) dated 25.08.2023 dated 25.08.2023]

In accordance with the Executive Council Resolution No. 27-1-6/-(7) dated 25.08.2023, the Syllabi of Compulsory Language Pool of Generic Elective (GEs) in Semester-I, II, III and IV offered by department of MIL&LS under Faculty of Arts based on Under Graduate Curriculum Framework -2022 implemented from the Academic Year 2022-23, is notified herewith for all the concerned. The course content and credit structure of Compulsory Language Pool of Generic Electives (GEs) may be seen at ***Annexure -1.***

Annexure-I

INDEX

DEPARTMENT OF MILL&S

Semester-I, II, III, IV

S.No.	Contents	Page No.
1	**Compulsory language Pool of Generic Electives (GE (A))** 1. Origin and Development of Assamese Language and Literature 2. Origin and Development of Gujarati Language and Literature 3. Origin Development of Kannada Language and Literature 4. Origin and Development of Malayalam Language and Literature 5. Origin and Development of Manipuri Language and Literature 6. Origin and Development of Marathi Language and Literature 7. Study of a Genre: Assamese short Story 8. Study of a Genre: Gujarati Short Story 9. Study of a Genre: Kannada Short Story 10. Study of a Genre: Malayalam Short Story 11. Study of a Genre: Manipuri Short Story 12. Study of a Genre: Marathi Short Story	**01-25**
	Compulsory language Pool of Generic Electives (GE (B)) 1. Introductory Assamese 2. Introductory Gujrati 3. Elementary Kannada 4. Introductory Malayalam 5. Introductory Manipuri 6. Introductory Marathi 7. Intermediatory Assamese 8. Intermediatory Gujarati 9. Intermediatory Kannada	**01-24**

	10. Intermediatory Malayalam 11. Intermediatory Manipuri 12. Intermediatory Marathi **Compulsory language Pool of Generic Electives (GE-3)** 1. History and Methods of Comparative Literature 2. Introduction to Indian Poetics 3. Translation in Indian Languages and Literature	**25-30**

DEPARTMENT OF MODERN INDIAN LANGUAGES AND LITERARY STUDIES
UNIVERSITY OF DELHI, DELHI – 110007

COMPULSORY LANGUAGE POOL OF GENERIC ELECTIVES (GE) COURSES

Under UGCF – 2022 in the line of NEP – 2020
Semester: I/ II

GENERIC ELECTIVES (GE (A) -1): Origin and Development of Assamese Language and Literature

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Origin and Development of Assamese Language and Literature	4	3	1	Nil	Passed Class XII and studied Assamese upto Class VIII and above	None, as this is the first course to opt for GE (A) Assamese Semester I or II (alternative semester)	**MIL&LS**

Learning Objectives:

As the title of the course suggests, this course will deal with the origin and development of the Assamese language and literature. But, since the area of study is too vast, the prime aim of this course is to give just an overall idea of it in a nutshell. All the Units will cover only a selective part of the history. The most significant literary milestones of Assamese literature will be discussed in this course.

Learning Outcome:
After completing the course, the students will have the knowledge of how the Assamese language was derived from the Indo-Aryan languages. The students will also be able to know about the brief outline of Assamese literature from the beginning to the modern era.

Allotted class: 60 hours **Credits: 04**

Unit – I (5 hours)

Development of Assamese language from Indo-Aryan languages

Unit – II (15 hours)
Emergence of Assamese literature
(i) Oral tradition
(ii) Charyapada

Unit – III (20 hours)
Medieval Assamese Literature
(i) Pre-Shankarite era
(ii) Literature of the Vaishnavite era
(iii) The *charit*s and *buranji*s

Unit-IV (20 hours)

Modern Assamese Literature
(i) Contribution of the Missionaries in Modern Assamese literature
(ii) The emergence of new genres in Assamese literature
(iii) Role of literary magazines

Essential/recommended readings:
Goswami, Upendranath. *Asamiya bhasar udbhav, samriddhi aru bikash*. Guwahati: Baruah Agency, 1991. (Selected articles only)
Sarma, Hemanta Kumar. *Asamiya sahityat drishtipat*. Guwahati: Bina Library. 1997. (Selected articles only)

Suggested readings:
Sarma, Satyendranath. *Asamiya sahityar samikshatmak itibritta*. 9th ed. Guwahati, 2000.
Neog, Maheswar. *Asamiya sahityar ruprekha*. 9th ed. Guwahati: Chandra Prakash, 2000.
Pathak, Ramesh. *Asomiya bhasar itihas*. Guwahati: Ashok Book Stall, 2008.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

GENERIC ELECTIVES (GE (A) -1): Origin and Development of Gujarati Language and Literature

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Origin and Development of Gujarati Language and Literature	4	3	1	Nil	Passed Class XII and studied Gujarati upto Class VIII and above	None, as this is the first course to opt for GE (A) Gujarati Semester I or II (alternative semester)	**MIL&LS**

Learning Objectives:

The aim of the course is to teach the history and development of language and Gujarati script. Gujarati Language is a part of the Indo-Aryan family which is a branch of the Indo-European languages. It also comes under one of the 22official languages recognized by the Government of India. Apart from Gujarat this language is also spoken in adjacent union territories of Daman and Diu and Dadra and Nagar Haveli. Gujarati language stands at the 26th position among the most spoken native language in the world and nearly46.1 million people speak Gujarati throughout the world. Students will be taught the importance of Gujarati Language.

Learning Outcome:

This course aims at introducing the history of Gujarati language beginning from the origin of the Gujarati script. The latter texts of grammatical treatises, epics, and commentaries etc., the students will learn how the phonological, morphological, semantic, and syntactic changes taken place in Gujarati language. This course also explains the place of Gujarati in the indo Aryan languages, various dialects of Gujarati and the impact of Sanskrit and other languages on Gujarati.

Allotted class: 60 hours **Credits: 04**

Unit – I (5 hours)

Development of Gujarati language from Indo-Aryan languages

Unit – II (15 hours)

1. Indo Aryan school of Languages and Gujarati
2. History of Gujarati Script.
3. Sources of Gujarati Language

Unit -II (20 hours)

1. Dialects of Gujarati: brief introduction
2. Development of the vocabulary of Gujarati

Important characteristics of Gujarati Language

Unit -III (20 hours)

1. Evolution of Gujarati writings
2. Development of print and publication in Gujarati Language
3. Gujarati literature: Brief introduction –evolution of various genres

Essential reading

1. Jhaveri,Mansukhlal, *History of Gujarati Literature*, Delhi, Sahitya Akademi, ,2008

2. Malabari, Behramji M, *Gujarat and the Gujaratis*,Gyan,Delhi, Publishing House, 2019.

3. Thakar, Dhitubhai, *Glimpses of Gujarati Literature.* Gandhinagar, Gujarat Sahitya Academy, 1999

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

GENERIC ELECTIVES (GE (A) -1): Origin and Development of Kannada Language and Literature

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Origin Development of Kannada language and literature	4	3	1	Nil	Passed Class XII and studied Kannada upto Class VIII and above	None, as this is the first course to opt for GE (A) Kannada Semester I or II (alternative semester)	**MIL&LS**

Learning Objectives:

This course will help students understand the history of Kannada literature. It will introduce them to the rich literary tradition of Kannada language. Purely focused on Kannada literature. The course will provide a brief overview of the eminent personalities and literary works, as well as their contributions to Kannada literature. It will also explore the changes that occurred in literature after the arrival of the British. Through translation, printing technology, and educational dissemination, students will become familiar with the changes that have taken place in Kannada literature. Additionally, the course will cover the recent emergence of rural, Dalit, tribal, and feminist literary movements in the post-independence era.

Course Learning Outcome:

This course will help students understand the development process of the Kannada language and literature. It will provide an insight into the social, cultural, and political development of society as reflected in its literature. By studying the Kannada society as a significant linguistic group and its literature, students will gain an understanding of how it has been portrayed. Additionally, it aims to attract students to study literature that has been written in other regional languages of India and foster their interest in comparative studies.

Allotted class: 60 hours **Credits: 04**

UNIT – I (15 hours)

Introduction to Kannada Language

Oral Tradition and Kannada Literature

UNIT – II (15 hours)
Ancient Kannada Literature

(i) Pre-Pampa era
(ii) Pampa era

UNIT – III (15 hours)

Medieval Kannada Literature

(i) Vachana sahitya era
(ii) Dasa sahity era
(iii) Kumara Vyasa era

UNIT – IV (15 hours)
Modern Kannada Literature

(i) Navodaya Sahitya
(ii) Navya Sahitya
(iii) Pragatishila Sahitya
(iv) Dalita Bandhaya Sahitya
(v) Mahila Sahitya

Essential/recommended readings:

(i) Ta.su.Shamaraya, Kannada Sahitya Charitre: indu Samiksha, Mysore, Ta.vem.Smaraka Grantamale,
(ii) K.V.Puttappa, Kannada Kaipidi, Mysore, Prasaranga, 1987.
(iii) C.N Krishna Moorty, Kannada Kavya Parampare, Bangalore, IBH Publication, 2015
(iv) Ambalike Hiriyanna, Jaanapada Kaipidi
(v) Devayya Harabe, Dalitha Sahitya mattu itara lekanagalu, Mysore, Rashmi Udyama Kendra, Jayalakshmi puram, 1982
(vi) M. Chidananda moorthy, Vachana Sahitya, Bangalore, University of Bangalore, 1975

(vii) G.S. Siddalingayya,M.H. Krishnayya, SaluDeepagalu, Bangalore, Karnataka Sahitya Academy, 1990

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

GENERIC ELECTIVES (GE (A) -1): Origin and Development of Malayalam Language and Literature

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Origin and Development of Malayalam Language and Literature	4	3	1	Nil	Passed Class XII and studied Malayalam upto Class VIII and above	None, as this is the first course to opt for GE (A) Malayalam Semester I or II (alternative semester)	**MIL&LS**

Learning Objectives:

This course will help students understand the Malayalam language. It will introduce them to the rich literary tradition of Malayalam literature and focus on the development of Malayalam literature. The course will provide a brief overview of the great personalities and traditions of the Mahakavi Thunchath Ramanujan Ezhuthachan and Mahakavi Kumaranasan as well as their contributions to Malayalam literature. It will also explore the changes that occurred in Malayalam literature after the arrival of the British. Through translation, printing technology, and educational dissemination, students will become familiar with the changes that have taken place in Malayalam literature. Additionally, the course will cover the recent emergence of Romantic, Realistic, Modern and Post Modern literary movements in the post-independence era.

Course Learning Outcome:

This course will help students understand the development process of the Malayalam language and Malayalam literature. It will provide an insight into the social, cultural, and political development of Kerala society as reflected in its literature. By studying the Kerala society as a significant linguistic group and its literature, students will gain an understanding of how it has been portrayed. Additionally, it aims to attract students to study literature that has been written in other regional languages of India and foster their interest in comparative studies.

Allotted class: 60 hours **Credits: 04**

UNIT – I (15 Hours)

Introduction to Malayalam Language

Ancient tradition of Malayalam Literature

The Traditions and Literature of Cheeraman

UNIT – II (15 Hours)
Medieval Literature

The Traditions and Literature of Cherusseri
The Traditions and Literature of Thunchath Ramanujan Ezhuthachan
The Traditions and Literature of Kunchan Nambiar

UNIT – III (15 Hours)
Pre-Independence Malayalam Literature

Literature of Kumaranasan
Literature of Ullur
Literature of Vallathol
Short Stories, Novels, Plays

UNIT – IV
Section: 4 Malayalam Literature in the Post-Independence Era

Romantic Trend
Realistic Trend
Modern Trend
Post Modern Trend

Essential/recommended readings:

Aapye, V. G. *Marathi Shabdratnakar*, Mumbai, Keshav Bhikaji Dhavle, 2013.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

GENERIC ELECTIVES (GE (A) -1): Origin and Development of Manipuri Language and Literature

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Origin and Development of Manipuri Language and Literature	4	3	1	Nil	Passed Class XII and studied Manipuri upto Class VIII and above	None, as this is the first course to opt for GE (A) Manipuri Semester I or II (alternative semester)	**MIL&LS**

Learning Objectives:

The course is intended to introduce the origin and development of the Manipuri language and literature. But, since the area of study is too vast, the prime aim of this course is to give just an overall idea of it in a nutshell. All the Units will cover only a selective part of the history. The most significant literary milestones of Assamese literature will be discussed in this course.

Learning Outcome:

After completing the course, the students will have the knowledge of the origin and history of Manipuri language. The students will also be able to know about the brief outline of the history of Manipuri literature.

Allotted class: 60 hours **Credits: 04**

Unit – I (10 hours)

Development and Aspects of Manipuri language and Script

Unit – II (10 hours)

Periodization and Classification of Manipuri Literature

Unit – III (20 hours)
Features of Ancient/Old Manipuri Literature

Unit-IV (20 hours)
Background of Medieval Manipuri Literature

Essential/recommended readings:

Jhalajit, RK. *A History of Manipuri Literature*. Imphal: OK Store. 1976

Manihar, Ch. *A History of Manipuri Literature.* New Delhi: Sahitya Akademi. 2003

Shastri, Kalachand. *Asamba Manipuri Sahitya Itihas*. Imphal: 1997

Singh, N. Khelchandra, *Ariba Manipuri Sahityagi Itihas*. Imphal. 1967

Suggested readings:

Kumar, Laiphrakpam Ashok. *Ariba Manipuri Sahityagi (Seirol) Paring*, G.M. Publications, Imphal. 2016

Singh, N. Tombi & Thokchom Ibohanbi Singh, ed., *Manipuri Sahityagi Itihas*, Manipuri, Sahitya Parishad, Imphal. 2001

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

GENERIC ELECTIVES (GE (A) -1): Origin and Development of Marathi Language and Literature

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Origin and Development of Marathi Language and Literature	4	3	1	Nil	Passed Class XII and studied Marathi upto Class VIII and above	None, as this is the first course to opt for GE (A) Marathi Semester I or II (alternative semester)	**MIL&LS**

Learning Objectives:

This course will help students understand the Marathi language. It will introduce them to the rich literary tradition of Marathi literature and focus on the development of Marathi literature. The course will provide a brief overview of the great personalities and traditions of the Mahanubhav and Warkari sects, as well as their contributions to Marathi literature. It will also explore the changes that occurred in Marathi literature after the arrival of the British. Through translation, printing technology, and educational dissemination, students will become familiar with the changes that have taken place in Marathi literature. Additionally, the course will cover the recent emergence of rural, Dalit, tribal, and feminist literary movements in the post-independence era.

Course Learning Outcome:

This course will help students understand the development process of the Marathi language and Marathi literature. It will provide an insight into the social, cultural, and political development of Marathi society as reflected in its literature. By studying the Marathi society as a significant

linguistic group and its literature, students will gain an understanding of how it has been portrayed. Additionally, it aims to attract students to study literature that has been written in other regional languages of India and foster their interest in comparative studies.

Allotted class: 60 hours **Credits: 04**

UNIT – I (15 Hours)

Introduction to Marathi Language

Oral Tradition and Marathi Literature

UNIT – II (15 Hours)
Medieval Saint Literature

The Traditions and Literature of Mahanubhav
The Tradition and Literature of Varkari
Panditi and Shahiri Literature

UNIT – III (15 Hours)
Pre-Independence Marathi Literature

Translated Literature
Intellectual Writing
Short Stories, Novels, Poems, Plays

UNIT – IV (15 Hours)
Section: 4 Marathi Literature in the Post-Independence Era

Rural Literature
Dalit Literature
Tribal Literature
Feminist literary
Urban Literature

Essential/recommended readings:

Joglekar, G. N. *Marathi bhashecha Itihas*, Pune, Shreevidya Prakashan, 2022.

Kulkarni, Aniluddha. *Pradakshina Khand 1 & 2,* Pune, Continental Prakashan, 2013.

Kulkarni K. P. *Marathi Bhasha Udgam v Vikas,* Pune, Mehta Publication, 2000.

Nasirabadkmar L. R. Madhayugeen Marathi vangmayacha itihas, Kolhapur, bhashavikas sanshodhan sanstha, 2023.

Tulpule, S. G. *Yadavkalin Marathi Bhasha,* Pune, Venus Prakashan, 1973.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

COMPULSORY LANGUAGE POOL OF GENERIC ELECTIVES (GE) COURSES

Under UGCF – 2022 in the line of NEP – 2020
Semester: III/ IV

GENERIC ELECTIVES (GE (A) -2): Study of a Genre: Assamese Short story

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Study of a Genre: Assamese Short story	4	3	1	Nil	Passed Class XII and studied Assamese upto Class VIII and above	Students who have already opted GE (A)-I in Assamese in either Semester I or II (alternative semester)	**MIL&LS**

Learning Objectives:

This course will introduce students to the modern and widely popular genre of literature called the short story. The students will be introduced to the origin of short stories in Assamese literature and the various trends in the development of short stories in Assamese literature will also be discussed. In addition, the contribution of various journals to the development of short stories will also be discussed in this course. There are many storytellers who have achieved a special place in Assamese literature with their story writing techniques and style. Stories by some of the storytellers will also be included for study.

Course Learning Outcome:

This course will help students understand the general characteristics of short stories and the artistic achievements of Assamese writers in this genre. It will encourage them to study extensively the social, cultural, political, psychological, human perspectives etc. reflected in creative prose literature. This course may also attract students to study short stories written in other regional languages of India in the future and make them interested to do comparative studies.

Allotted class: 60 hours **Credits: 04**

UNIT – I (20 Hours)

Short story and Assamese Short story

(i) Definition of short story

(ii) Special features of short story

(iii) Development of Assamese short story

UNIT – II (20 Hours)

Study of select short stories

(i) '*Patmugi*' by Lakshminath Bezbarua
(ii) '*Abuj Maya*' by Rama Dash
(iii) '*Siraj*' by Lakshmidhar Sarma
(iv) '*Prithivir Asukh*' by Jogesh Das

UNIT – III (20 Hours)

Study of select Short stories

(i) '*Ekhan Nadir Mrityu*' by Mahim Bora
(ii) '*Gahbbar*' by Bhabendranath Saikia
(iii) '*Golam*' by Saurabh Kumar Chaliha
(iv) '*Samskar*' by Mamani Raisom Goswami

Essential/recommended readings:

Barua, Prahlad Kumar. *Asamiya Sutigalpar Adhyan*. Dibrugarh: Banalata Prakashan, 1995.
Bargohain, Homen (Ed.) *Asomiya Galpa Samkalan* (Part-1). 3rd ed. Guwahati: Publication Board Assam, 2004.
_____. *Asomiya Galpa Samkalan* (Part-2). Guwahati: Publication Board Assam, 2004.
_____. *Asomiya Galpa Samkalan* (Part-3). Guwahati: Publication Board Assam, 2007.

Bhattacharya, Basanta Kumar. *Asamiya Sutigalpar Subash*. Nalbari: Jarnal Emporium, 2012
Sarma, Hemanta Kumar. *Asamiya Sahityat Drishtipat*. Guwahati: Bina Library, 1997.
Sarma, Satyendranath. *Asamiya Sahityar Samikshatmak Itibritta*. 9th ed. Guwahati: Saumar Prakash, 2000.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

GENERIC ELECTIVES (GE (A) -2): Study of a Genre: Gujarati Short story

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Study of a Genre: Gujarati Short story	4	3	1	Nil	Passed Class XII and studied Gujarati upto Class VIII and above	Students who have already opted GE (A)-I in Gujarati in either Semester I or II (alternative semester)	**MIL&LS**

Learning Objectives:

This course will introduce students to the modern and widely popular genre of literature called the short story. The students will be introduced to the origin of short stories in Gujarati literature and the various trends in the development of short stories in Gujarati literature will also be discussed. In addition, the contribution of various journals to the development of short stories will also be discussed in this course. Interestingly, the Frist Gujarati Short story 'Govalani' (the lady milk seller) was first published in 1913, this year is the 110th year of the emergence of the genre of short story in Gujarati Language.

Course Learning Outcome:

This course will help students understand the general characteristics of short stories and the artistic achievements of Gujarati writers in these genres. It will encourage them to study extensively the social, cultural, political, psychological, human perspectives etc. reflected in creative prose literature. This course may also attract students to study short stories written in other regional languages of India in the future and make them interested to do comparative studies.

Allotted class: 60 hours **Credits: 04**

UNIT – I (20 Hours)

Short story and Gujarati Short Story

(iv) Definition of short story

(v) Special features of short story

(vi) Development of Gujarati short story

UNIT – II (20 Hours)

Study of select Short stories

(v) '*Govalani'* by Kanchanlal Mehta
(vi) '*Post office'* by Dhoomketu
(vii) Vani mari Koyal' by Chunilal Madiya
(viii) *Mukundray* by Dviref

UNIT – III (20 Hours)

Study of select Short stories

(v) *Khari ma* by Ramanlala Desai
(vi) *Kanku* by Pannalal Patel
(vii) *Shravani Melo* by Umashankar Joshi
(viii) *Sarika Pinjarstha* by Saroj Pathak

Essential/recommended readings:

1. Adhvaryu, vinod,ed. Gujarati *Pratinidhi Vartao*, (Collection of best representative short stories of Gujarati Literature). R.R.Sheth, 1982, Ahmedabad

2. Kothari,Jayant, ed. V*arta ane Gujarati Toonki Varta,* Gurjar Sahitya Bhavan,2019,Ahmedabad

Additional/ supplementary reading

Jadav, Kishor,Ed, *Contemporary Gujarati Short Stories,2002*, Indian Publishers Distributor Delhi Sahitya Kosh,Vol-II,(complilation)Gujarati Sahitya Parishad,2003, Ahmedabad

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

GENERIC ELECTIVES (GE (A) -2): Study of a Genre: Kannada Short story

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Study of a Genre: Kannada Short story	4	3	1	Nil	Passed Class XII and studied Kannada upto Class VIII and above	Students who have already opted GE (A)-I in Kannada in either Semester I or II (alternative semester)	**MIL&LS**

Learning Objectives:

This course will introduce students to the modern and widely popular genre of literature called the short story. The students will be introduced to the origin of short stories in Kannada literature and the various trends in the development of short stories in Kannada literature will also be discussed. In addition, the contribution of various journals to the development of short stories will also be discussed in this course. In this session we have to discuss about short stories of famous writer of Kannada

Course Learning Outcome:

This course will help students understand the general characteristics of short stories and the artistic achievements of Kannada writer's in these genres. It will encourage them to study extensively the social, cultural, political, psychological, human perspectives etc. reflected in creative prose literature. This course may also attract students to study short stories written in other regional languages of India in the future and make them interested to do comparative studies.

Allotted class: 60 hours **Credits: 04**

UNIT – I (20 Hours)

Short story and Kannada Short story

(i) Definition of short story

(ii) Special features of short story

(iii) Development of Kannada short story

UNIT – II (20 Hours)

Study of select short stories

(i) Marasu Bete - Kuvempu
(ii) Huli joyisara kathe - Bhagalodi Devaraya
(iii) Koneya giraki - Niranjana
(iv) Bed No. 7 - Thriveni

UNIT – III (20 Hours)

Study of select Stories
(Special author - Poorna Chandra Thejaswi)
(I). Abachurina post office
(2). kiragurina gayyaligalu

Essential/recommended readings

(i). Janardhan Bhat - Dakshina Kannadada shatamanada kathegalu, Karnataka Sangha, 2003
(ii). D. S Nagabhushan, Kuvempu indu anveshane, geetanjali prakashana, Shivamogga,2012
(iii). Dr. C. Viranna, Kannada Sahitya Charitrika Belavanige, Navakarnataka, Bangalore, 2017
(iv). Dr Rajappa Dalavai, Kannada sahitya Kosha, Lavanya mudranalaya, 2018
(v). Masti Venkatesh Iyengar, Sanna Kathegalu

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

GENERIC ELECTIVES (GE (A) -2): Study of a Genre: Malayalam Short story

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Study of a Genre: Malayalam Short story	4	3	1	Nil	Passed Class XII and studied Malayalam upto Class VIII and above	Students who have already opted GE (A)-I in Malayalam in either Semester I or II (alternative semester)	**MIL&LS**

Learning Objectives:

This course will introduce students to the modern and widely popular genre of literature called the short story. The students will be introduced to the origin of short stories in Malayalam literature and the various trends in the development of short stories in Malayalam literature will also be discussed. In addition, the contribution of various journals to the development of short stories will also be discussed in this course. There are many storytellers who have achieved a special place in Malayalam literature with their story writing techniques and style. Stories by some of the storytellers will also be included for study.

Course Learning Outcome:

This course will help students understand the general characteristics of short stories and the artistic achievements of Malayalam writers in these genres. It will encourage them to study extensively the social, cultural, political, psychological, human perspectives etc. reflected in creative prose literature. This course may also attract students to study short stories written in other regional languages of India in the future and make them interested to do comparative studies.

Allotted class: 60 hours **Credits: 04**

UNIT – I (20 Hours)

Short story and Malayalam Short story

(i) Definition of short story

(ii) Special features of short story

(iii) Development of Malayalam short story

(iv)

UNIT – II (20 Hours)
Study of select short stories

(i) '*Vaasana Vikrithi' by Kesari Kunjiraman Nayanar*
(ii) '*Marappavakal' by Kaaroor Neelakandappillai*
(iii) 'Maghan singinte maranam' by T.Padmanaban

UNIT – III (20 Hours)
Study of select Short stories

(i) '*Kadaltheerath' by O.V. Vijayan*
(ii) '*Radha Radha Mathram' by M.Mukundan*
(iii) 'Biriyani' by Santhosh Eechikkanan

Essential/recommended readings:

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

GENERIC ELECTIVES (GE (A) -2): Study of a Genre: Manipuri Short story

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Study of a Genre: Manipuri Short story	4	3	1	Nil	Passed Class XII and studied Manipuri upto Class VIII and above	Students who have already opted GE (A)-I in Manipuri in either Semester I or II (alternative semester)	**MIL&LS**

Learning Objectives:

This course will introduce students to the genre of Short Story in Manipuri literature. The students will be introduced to the origin of short stories in Manipuri literature and the various trends in the development of short stories in Manipuri literature will also be discussed.

Course Learning Outcome:

This course will help students understand the general characteristics of short stories and the artistic achievements of Manipuri writers in this genre. It will encourage them to study extensively the social, cultural, political, psychological, human perspectives etc. reflected in creative prose literature. This course may also attract students to study short stories written in other regional languages of India in the future and make them interested to do comparative studies.

Allotted class: 60 hours **Credits: 04**

UNIT – I **(20 Hours)**

Short story and Manipuri Short story

(vii) Definitions and Features of Short Story

(viii) Trends and Growth of Manipuri Short Story

UNIT – II **(20 Hours)**

Study of select short stories

(ix) *Inthokpa* by R.K. Shitaljit
(x) *Mamangthong Lollabadi Maningthongda Lakudna* by E. Sonamani Singh
(xi) *Ilisha Amagi Mahao* by N. Kunjamohan Singh
(xii) *Brojendrogi Luhongba* by L. Kamal
(xiii) *Eigi Thahoudraba Heitup Lalu* by M.K. Binodini

UNIT – III **(20 Hours)**

Study of select Short stories

(ix) *Khongji Makhol* by Ningombam Sunita
(x) *Wanom Sareng* by Khumanthem Prakash
(xi) *Yeknaba* by Elangbam Dinamani
(xii) *Khungi Keithel Macha* by Yumlembam Ibomcha
(xiii) *Nongdi Tarakhidare* by Keisham Priyokumar

Essential/recommended readings:

Parishadki Khangatlaba Warimacaha, Manipuri Sahitya Parishad, Imphal, 3rd edition, 2012.

Sharma A.K. 1996, *Canchi Warimacha*, Manipur University, Imphal.
Memchoubi, A (ongbi). *Manipuri Sahityada Nupigi Khonjel.* Sahitya Akademi. 2001

Suggested readings:

Devi, N. Aruna. *Nongthang Leima amasung Taibang*. Imphal: LEIKOL**,** 2023

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

GENERIC ELECTIVES (GE (A) -2): Study of a Genre: Marathi Short story

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Study of a Genre: Marathi Short story	4	3	1	Nil	Passed Class XII and studied Marathi upto Class VIII and above	Students who have already opted GE (A)-I in Marathi in either Semester I or II (alternative semester)	**MIL&LS**

Learning Objectives:

This course will introduce students to the modern and widely popular genre of literature called the short story. The students will be introduced to the origin of short stories in Marathi literature and the various trends in the development of short stories in Marathi literature will also be discussed. In addition, the contribution of various journals to the development of short stories will also be discussed in this course. There are many storytellers who have achieved a special place in Marathi literature with their story writing techniques and style. Stories by some of the storytellers will also be included for study.

Course Learning Outcome:

This course will help students understand the general characteristics of short stories and the artistic achievements of Marathi writers in these genres. It will encourage them to study extensively the social, cultural, political, psychological, human perspectives etc. reflected in creative prose literature. This course may also attract students to study short stories written in other regional languages of India in the future and make them interested to do comparative studies.

Allotted class: 60 hours **Credits: 04**

UNIT – I (20 Hours)

Short story and Marathi Short story

(i) Definition of short story

(ii) Special features of short story

(iii) Development of Marathi short story

UNIT – II (20 Hours)

Study of select Short stories

(i) '*Angnatil Popat* ' by Divakar Krushna
(ii) *'Mrugacha Paus'* by Kusumavati Deshpande
(iii) *'Kidleli manse'* by Gangadhar gadgil
(iv) '*zelya*' by Vankatesh Madgulkar

UNIT – III (20 Hours)

Study of select Short stories

(i) '*Swatala visar*' by Da. Ba. Mokashi
(ii) '*Vat*' by Charuta Sagar
(iii) *'Tda'* by Bhaskar chandanshiv
(iv) '*Chavkashi*' by Jayant Pawar

Essential/recommended readings:

Divakar Krushna. Angnatil Popat, Deshpade, Kusumavati. *Deepkali,* Mumbai 4: Krushnaji Narayan Sapale, 1935.
Gadgil, Gangadhar. Kidleli Manse. Madgulkar, Vankatesh. *Mandeshi Manse*, Pune, Mehata Publication, 2014.
Mokasi D. B. *Laman diva*, Mumbai, Mouj Prakashan, 2015.
Charuta Sagar. *Nagin*, Aurangabad, Saket Prakashan, 2012.
Bhalerao Indajeet. Nivadak Bhashar chandanshiv, Mumbai, Lokvangmay prakashan Ghrh, 2012.
Pawar Jayant. Lekhakacha mrutu aani eter goshti, Mumbai, Shabda Publication.
Shevde Indumati. Marathi Kathecha Udgam aani vikas, Mumbai, Somayaa Publication, 1967.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DEPARTMENT OF MODERN INDIAN LANGUAGES AND LITERARY STUDIES
UNIVERSITY OF DELHI, DELHI – 110007

COMPULSORY LANGUAGE POOL OF GENERIC ELECTIVES (GE) COURSES

Under UGCF – 2022 in the line of NEP – 2020
Semester: I/ II

GENERIC ELECTIVES (GE (B) -1): Introductory Assamese

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Introductory Assamese	4	**3**	1	Nil	Students completing standard 12th without studying Assamese at any level of formal education.	None, as this course will be the first step to study the language as GE (B)	**M.I.L.&L.S.**

Learning Objectives:
The learning objectives of this are as follows:

- The course is specially designed for students who have not studied Assamese before. Hence, the prime aim of the course is to introduce the students the basic reading and writing skills in Assamese.
- If any non-Assamese-speaking student opts for this course, effort will be put to enable them to communicate in the Assamese language.
- Building or developing Assamese vocabulary among the students is another objective of the course.
- The basics of the grammar of the Assamese language will be taught in this course.

Learning Outcome:
The learning outcomes of this course are as follows:

- Non-Assamese-speaking students will be able to learn basic speaking, reading and writing skills along with the essential vocabulary of Assamese after completing the course.
- Assamese-speaking students, who did not study Assamese at any level during their education, will be able to read and write the language along with a better understanding of elementary grammar.
- Students will be competent enough to enter the intermediate phase (i.e. GE (B)-2 Assamese) of learning Assamese where they will get an opportunity to learn more about the language.

Allotted class: 60 hours **Credits: 04**

Syllabus of GE (B)-1

Unit – I (15 Hours)

Assamese vowels and consonant sounds and the letters
Consonant conjuncts/ Consonant clusters
Assamese Numerical
Framing simple words without *matra* and conjuncts

Unit – II (15 Hours)

Framing words with *matra* and conjuncts
Introduction to the Parts of Speech in Assamese
Introducing the punctuation marks

Unit – III (15 Hours)

Vocabulary building
Post-positions in Assamese
Assamese Verb and Tense
Basic syntactical rules in Assamese

Unit-IV (15 Hours)

Framing simple sentences in Assamese
Making Negative and Interrogative Sentences in Assamese

Assamese reading and writing

Essential/recommended readings
Baruah, Tultul, *Rachana bichitra*.
Bora Satyanath, *Bahal byakaran*.

Suggested reading:
Barua, Bhimkanta. *Asamiya Bhasa*. Dibrugrah: Banalata, 1997.
Bharali, Debananda. *Asamiya bhasar moulik bicar*. Guwahati: Lawyers' Book Stall, 1993. (Selected articles only)
Goswami, Golok Chandra. Asamiya byakaranar moulik bicar. 4th ed. Guwahti: Bina Library, 1999. ((Selected articles only)

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

GENERIC ELECTIVES (GE (B) -1): Introductory Gujarati

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Introductory Gujarati	4	**3**	1	Nil	Students completing standard 12th without studying Gujarati at any level of formal education.	None, as this course will be the first step to study the language as GE (B)	**M.I.L.&L.S.**

Learning Objectives:
The learning objectives of this are as follows:

- The course is specially designed for students who have not studied Gujarati before. Hence, the prime aim of the course is to introduce the students the basic reading and writing skills in Gujarati.

- If any non-Gujarati -speaking student opts for this course, effort will be put to enable them to communicate in the Gujarati language.
- Building or developing Gujarati vocabulary among the students is another objective of the course.
- The basics of the grammar of the Gujarati language will be taught in this course.

Learning Outcome:

The learning outcomes of this course are as follows:

- Non-Gujarati -speaking students will be able to learn basic speaking, reading and writing skills along with the essential vocabulary of Gujarati after completing the course.
- Gujarati -speaking students, who did not study Gujarati at any level during their education, will be able to read and write the language along with a better understanding of elementary grammar.
- Students will be competent enough to enter the intermediate phase (i.e. GE (B)-2 Gujarati) of learning Gujarati where they will get an opportunity to learn more about the language.

Allotted class: 60 hours **Credits: 04**

Syllabus of GE (B)-1

Unit – I (15 Hours)

Gujarati vowels and consonants with sounds and the letters
Consonant conjuncts/ Consonant clusters
Gujarati Numerical
Framing simple words without *matra* and conjuncts

Unit – II (15 Hours)

Framing words with *matra* and conjuncts
Introduction to the Parts of Speech in Gujarati
Introducing the punctuation marks

Unit – III (15 Hours)

Vocabulary building
Post-positions in Gujarati
Gujarati Verb and Tense
Basic syntactical rules in Gujarati

Unit-IV (15 Hours)

Framing simple sentences in Gujarati
Making Negative and Interrogative Sentences in Gujarati
Gujarati reading and writing

Essential/recommended readings

1. Christian, Sonal, *Gujarati-English/English-Gujarati Dictionary & Phrasebook* (Hippocrene Dictionary & Phrasebook), New york, Hippocrene Books, Inc.2006.print

2. Clair Tisdall, William, *A Simplified Grammar of the Gujarati Language Together With a Short Reading Book and Vocabulary*, London, Forgotten Books, 2017.print

3. Dwyer, y Rachel Dwyer, *Get Started in Gujarati Absolute Beginner Course: The essential introduction to reading, writing, speaking and understanding a new language*., new Orleans, NTC publishing group,2013

4. Jhaveri, Krishnalal M., *Milestones in Gujarati Literature*, Dehli, Manohar Publishers & Distributors, 2021

Suggested reading:

1 Sampat Madhu, *Advanced Course Reader in Gujarati ,*Mysuru, CIIL,2009

2 Subaiiah P. *Intermediate Courses in Gujarati*, Mysuru, CIIL,2009

3, ,Usha, Nayar ,*Gujarati Bhasha Saurabh*, Mysuru, CIIL,2009

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

GENERIC ELECTIVES (GE (B) -1): Introductory Kannada

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Elementary Kannada	4	3	1	Nil	Students completing standard 12th without studying Kannada at any level of formal education.	None, as this course will be the first step to study the language as GE (B)	**MIL&LS**

Learning objectives

The course will enable the non Kannadiga student to understand, speak, read and write Kannada language and communicate (converse) in Kannada language in their daily life with Kannada speakers. Course will help to enhance the ability of the students to know the Kannada language.

Course Learning Outcome:

The student will be able to read, write, speak and understand the Kannada language. Students will as able to learn basic Kannada word and sentence formation in practical. Students will improve their speaking ability in Kannada.

Allotted class: 60 hours **Credits: 04**

Unit – I (15 Hours)

Lesson to teach and learn Kannada Language.

Unit – II (15 Hours)

Kannada Language script Part I

Unit – III (15 Hours)

Kannada Vocabulary list

Unit – IV (15 Hours)

Kannada Words in Conversation

Essential/recommended readings
(I). Thimmayya. L, balake kannada, Belagavi, Jnana sangama 2017

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

GENERIC ELECTIVES (GE (B) -1): Introductory Malayalam

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Introductory Malayalam	4	3	1	Nil	Students completing standard 12th without studying Malayalam at any level of formal education.	None, as this course will be the first step to study the language as GE (B)	**MIL&LS**

Learning objectives
This course will be helpful for students who are not familiar with the Malayalam language to understand, speak, read, and write in Malayalam. It will enable students to communicate with Malayalam speakers in their daily lives. Additionally, this course will help enhance students' ability to learn and understand the Malayalam language.

Course Learning Outcome:
Students will understand the linguistic diversity of the country. It is important to be multilingual. Students will be able to read, write, speak, and understand the Malayalam language. Using Malayalam in everyday communication will make students competent. The ability to speak in Malayalam will improve among students. Moreover, they will be able to comprehend Malayalam language, literature, and culture.

Allotted class: 60 hours **Credits: 04**

UNIT – I

Introduction to Malayalam Language (15 Hours)

Introduction of Devnagari Script, Vattezhuth Script and Kolezhuth Script
Introduction of Malayalam alphabet and pronunciation

UNIT – II

Fundamental parts of speech in Malayalam grammar (15 Hours)

Devnagari Script, Vattezhuth Script and Kolezhuth Script
Nouns
Pronouns
Verbs
Adverbs
Adjectives etc.

UNIT – III

Verb Formation, Tense and Person (15 Hours)

Rules of Verb Formation
Tense
Person

UNIT - IV

Malayalam vocabulary (15 Hours)

Common words and phrases in Malayalam
Everyday objects and their names in Malayalam

Essential/recommended readings

Andranove M S. *Dravida Bashakal*, Thiruvananthapuram, Kerala Bhasha Institute, 1976

Gundert Herman *Malayala Bhasha Vyakaranam*, Kottayam, D C Books, 1991

Kunjanpillai Shooranadu (Ed) Leelathilakam, Thiruvananthapuram, Kerala Bhasha Institute, 1996

Parameshwaran S Ulloor, *Kerala Sahithya Cahrithra*m, Thiruvananthapuram, Kerala University Publication Wing, ,1990

Rajarajavarma A R, Kerala Panineeyam, Kottayam, D C Books, 2003

Robert Karldwel, Dravida Bhasha Vaykaranam, Thiruvananthapuram, Kerala Bhasha Institute,.1994

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

GENERIC ELECTIVES (GE (B) -1): Introductory Manipuri

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Introductory Manipuri	4	3	1	Nil	Students completing standard 12^{th} without studying Manipuri at any level of formal education.	None, as this course will be the first step to study the language as GE (B)	Modern Indian Languages and Literary Studies

Learning Objectives:

The learning objectives of this are as follows:

- The course is specially designed for students who have not studied Manipuri before. Hence, the prime aim of the course is to introduce the students the basic reading and writing skills in Manipuri.
- Developing Manipuri vocabulary among the students is another objective of the course.
- The basics of the grammar of the Manipuri language will be taught in this course.

Learning Outcome:

The learning outcomes of this course are as follows:

- Non-Manipuri-speaking students will be able to learn basic speaking, reading and writing skills along with the essential vocabulary of Manipuri after completing the course.
- Manipuris peaking students, who did not study Manipuri at any level during their education, will be able to read and write the language along with a better understanding of elementary grammar.

- Students will be competent enough to enter the intermediate phase (i.e. GE (B)-2 Manipuri) of learning Manipuri where they will get an opportunity to learn more about the language.

Allotted class: 60 hours **Credits: 04**

Unit – I (15 Hours)

Manipuri/Meiteilon Alphabets
Manipuri Numerals

Unit – II (15 Hours)

Parts of Speech-Noun, Pronoun, Verb
Tense

Unit – III (15 Hours)

Vocabulary building
Common words and phrases in Manipuri
Everyday objects and their names in Manipuri

Unit-IV (15 Hours)

Framing simple sentences in Manipuri

Essential/recommended readings

Ningomba, M.S., *Meitei Lonmit*, Saraswati. Book House, Imphal. 1992

Singh, Chungkham Yashawanta. *Manipuri Grammar* (Manipuri Version), Imphal: Yaibiren Communications, 2020

Thoudam, P.C. *Remedial Manipuri Grammar*. Imphal: Aman Enterprise. 1991

Suggested reading:

Singh, Chungkham Yashawanta. *Manipuri Grammar* (English Version), Delhi: Rajesh Publications, 2000

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

GENERIC ELECTIVES (GE (B) -1): Introductory Marathi

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Introductory Marathi	4	3	1	Nil	Students completing standard 12th without studying Marathi at any level of formal education.	None, as this course will be the first step to study the language as GE (B)	**MIL&LS**

Learning objectives

This course will be helpful for students who are not familiar with the Marathi language to understand, speak, read, and write in Marathi. It will enable students to communicate with Marathi speakers in their daily lives. Additionally, this course will help enhance students' ability to learn and understand the Marathi language.

Course Learning Outcome:

Students will understand the linguistic diversity of the country. It is important to be multilingual. Students will be able to read, write, speak, and understand the Marathi language. Using Marathi in everyday communication will make students competent. The ability to speak in Marathi will improve among students. Moreover, they will be able to comprehend Marathi language, literature, and culture.

Allotted class: 60 hours **Credits: 04**

UNIT – I

Introduction to Marathi Language (15 Hours)

Introduction Devnagari Script
Introduction Marathi alphabet and pronunciation

UNIT – II

Fundamental parts of speech in Marathi grammar (15 Hours)

Devnagari Script
Nouns
Pronouns
Verbs
Adverbs
Adjectives etc.

UNIT – III

Verb Formation, Tense and Person (15 Hours)

Rules of Verb Formation
Tense
Person

UNIT - IV

Marathi vocabulary (15 Hours)

Common words and phrases in Marathi
Everyday objects and their names in Marathi

Essential/recommended readings

Walimbe, M. R. : *Sugam Marathi Vyakran v lekhan*, Pune, Nitin Prakashan, 2016.
Walimbe, M. R. : *Marathi shudhalekhan Pradeep,* Pune, Nitin Prakashan, 2008.
Fadke, Arun : *Sudhalekhan Margpradeep* : Thane, Ankur Prakashan, 2013.
Fadke, Arun : *Shudhalekhan Margpradeep*, Pune, Rajhans Prakashan Pvt. Ltd., 2022.
Fadke, Arun : *Mla Marathi Shikaychy,* Pune, Rajhans Prakashan Pvt. Ltd., 2022.
Fadke, Arun : *Sope Marathi Shudhalekhan,* Pune, Rajhans Prakashan Pvt. Ltd., 2022.
Fadke, Arun : *Shudhalekhan theva khishyat,* Pune, Rajhans Prakashan Pvt. Ltd., 2022.
https://rmvs.marathi.gov.in/

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

COMPULSORY LANGUAGE POOL OF GENERIC ELECTIVES (GE) COURSES

Under UGCF – 2022 in the line of NEP – 2020
Semester: III/ IV

GENERIC ELECTIVES (GE (B) -2): Intermediatory Assamese

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Intermediatory Assamese	4	3	1	Nil	Passed Class XII without studying Assamese at any level of formal education	Students who have already opted GE (B)-I in Assamese in either Semester I or II (alternative semester)	**MIL&LS**

Learning Objectives:

This course is designed for the students who have gained basic knowledge of Assamese language in the previous semester. Students will have the opportunity to study some aspects of the Assamese language in detail through this course. This course will cover higher level grammar than the previous semester and will give special emphasis on Assamese vocabulary and syntax.

The study of this course will not only make students proficient in the conversations of everyday life but also develop an interest in translation between two or more languages.

Course Learning Outcome:

After studying this course, students are expected to be able to provide oral and written information accurately in Assamese. After studying this course, students can also play the role of a translator and interpreter between two or more languages.

In the future, if a student wishes to pursue research on any subject related to Assam, he/she will not have to depend on other language to communicate during written or oral data collection – this is also a promising aspect of this course.

Allotted class: 60 hours **Credits: 04**

UNIT – I (15 Hours)

Grammar

1. Number
2. Gender
3. Person
4. Narration
5. Voice

UNIT – II (15 Hours)

Vocabulary

1. The structure of the vocabulary of the Assamese language
2. Use of Homophones and Homonyms
3. Use of Synonyms and Antonyms
4. Introduction to Assamese colloquial and local words

UNIT – III (15 Hours)

Sentence

1. Structure of Sentence formation in Assamese language
2. Framing different types of sentence (Simple, Compound, Complex)
3. Idiomatic uses of Assamese words in sentence
4. Phrases and proverbs

UNIT- IV (15 Hours)

Reading and Writing

1. Conversation in Assamese
2. Translation between two or more than two languages
3. Short Paragraph writing

Essential/recommended readings:

Baruah, Tultul (ed). *Asamiya Rachana Sankalan*, Guwahati: Students Stores. 2013
Das Gupta, Bidhu Bhusan. *Assamese Self-Taught*. Kolkata: Das Gupta Prakashan. 1956.
Dutta Barua, Lohit. *Learning Assamese Language: A Brief Handbook*. Guwahati: Spandan Prakash. 2021
Dutta Baruah, P.N. *An Intensive Course in Assamese*. Mysore: CIIL. 1996
Neog, Dr Maheswar. *Nika Asamiya Bhasa*, Guwahati: Layers' Book Stall. 1994

Dictionary

Chaliha, Sumanta. *Asamiya Samarthak Shabdakosh*. Dibrugarh: Banalata. 2019
Deka, Pranav Jyoti. *Jyoti-Dviashik Abhidhan*. Guwahati: Assam Book Dipot. 2011.
https://dsal.uchicago.edu/dictionaries/candrakanta/
www.xobdo.org

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

GENERIC ELECTIVES (GE (B) -1): Intermediatory Gujarati

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Intermediatory Gujarati	4	3	1	Nil	Passed Class XII	Students who have already	**MIL&LS**

					without studying Gujarati at any level of formal education	opted GE (B)-I in Gujarati in either Semester I or II (alternative semester)	

Learning Objectives:

This course is designed for the students who have gained basic knowledge of Gujarati language in the previous semester. Students will have the opportunity to study some aspects of the Gujarati language in detail through this course. This course will cover higher level grammar than the previous semester and will give special emphasis on Gujarati vocabulary and syntax and sentences. The study of this course will not only make students proficient in the conversations of everyday life but also develop the interest in translations between two or more languages.

Course Learning Outcome:

After studying this course, students are expected to be able to provide oral and written information accurately in Gujarati language. Students can also play the role of a translator and interpreter between two or more languages.

In the future, if a student wishes to pursue research on any subject related to Gujarat , he/she will not have to depend on other language to communicate during written or oral data collection – this is also a promising aspect of this course.

Allotted class: 60 hours **Credits: 04**

UNIT – I (15 Hours)

Grammar

6. Number
7. Gender
8. Person
9. Narration
10. Voice

UNIT – II (15 Hours)

Vocabulary

5. The structure and the nature of the vocabulary of the Gujarati language
6. Use of Homophones and Homonyms
7. Use of Synonyms and Antonyms
8. Introduction to Gujarati colloquial and local(Deśya) words

UNIT – III (15 Hours)

Sentence

5. Structure of Sentence formation in Gujarati language
6. Framing different types of sentence (Simple, Compound, Complex)
7. Idiomatic uses of Gujarati words in sentence
8. Phrases and proverbs

UNIT- IV (15 Hours)

Reading and Writing

4. Conversation in Gujarati
5. Translation between two or more than two languages
6. Short Paragraph writing

Essential/recommended readings:

1.Gandhi,Chintan, *ABCs of Gujarati Workbook: Learn to read and write the Gujarati Alphabet (Learning Reading and Writing.* Ahmedabad, CDSNG Consulting,2020

2.Kothari,Jayant, *Bhashaparichay Ane Gujarati Bhashanu Swaroop* Ahmedabad,GSUBP board,2013

3.Pandit ,Prabodh, *Vyakaan Arth Ane Aakar.*Ahmedabad,GSUBP board,2019

4.Sarth Jodni Kosh,Ahmedabad,Navjivan Publication,2020

5. Suthar,Babu, *Gujarati –English learner's dictionary*, Philadelphia,2019

https://ccat.sas.upenn.edu/plc/gujarati/guj-engdictionary.pdf

(open source file)

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

GENERIC ELECTIVES (GE (B) -2): Intermediatory Kannada

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Elementary course	4	3	1	Nil	Passed Class XII without studying Kannada at any level of formal education	students who have already opted GE (A)-I in Kannada in either Semester I or II (alternative semester)	**MIL&LS**

Learning objectives

The course will enable the non kannadiga student to understand, speak, read and write kannada language and communicate (converse) in Kannada language in their daily life with kannada speakers. Course will help to enhance the ability of the students to know the kannada language.

Course Learning Outcome:

The student will be able to read, write, speak and understand the kannada language. Students will also able to learn basic kannada word and sentence formation in practical. Students will improve their speaking ability in Kannada. Read and write and also do the comparative study with another language.

Allotted class: 60 hours **Credits: 04**

UNIT – I (20 Hours)

Lesson to learn simple kannada words

UNIT – II (20 Hours)

Kannada Language script reading

UNIT – III (20 Hours)

Kannada vacabulary list and usage of words in a sentence

Essential/recommended readings

Thimmayya. L, balake kannada, Belagavi, Jnana sangama 2017

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

GENERIC ELECTIVES (GE (B) -1): Intermediatory Malayalam

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Intermediatory Malayalam	4	3	1	Nil	Passed Class XII without studying Malayalam at any level of formal education	Students who have already opted GE (B)-I in Malayalam in either Semester I or II (alternative semester)	**MIL&LS**

Learning objectives

This course will be helpful for students who are not familiar with the Malayalam language to understand, speak, read, and write in Marathi. It will enable students to communicate with Malayalam speakers in their daily lives. Additionally, this course will help enhance students' ability to learn and understand the Malayalam language.

Learning Outcome:

Students will understand the linguistic diversity of the country. It is important to be multilingual. Students will be able to read, write, speak, and understand the Malayalam language. Using Malayalam in everyday communication will make students competent. The ability to speak in Malayalam will improve among students. Moreover, they will be able to comprehend Malayalam language, literature, and culture.

Allotted class: 60 hours **Credits: 04**

UNIT – I Sentence (15 Hours)

Framing different types of sentence

(Simple sentences, Compound sentences, Complex sentence, Affirmative Sentence, Negative sentences, Interrogative sentences, Exclamatory sentences etc.)

Phrases and proverbs

UNIT – II Basic Conversations (15 Hours)

Dialogue practice for common scenarios (greetings, ordering food, asking for directions, etc.)

UNIT – II Speaking and translating

Speaking with correct pronunciation

Translating Small Sentences from Malayalam into English/Hind vice versa

UNIT – IV Unicode Typing and its application (15 Hours)

Understanding Unicode Typing and its application

Email, messaging, chatting etc.

Essential/recommended readings

Andranove M S. *Dravida Bashakal*, Thiruvananthapuram, Kerala Bhasha Institute, 1976

Gundert Herman *Malayala Bhasha Vyakaranam*, Kottayam, D C Books, 1991

Kunjanpillai Shooranadu (Ed) Leelathilakam, Thiruvananthapuram, Kerala Bhasha Institute, 1996

Parameshwaran S Ulloor, *Kerala Sahithya Cahrithra*m, Thiruvananthapuram, Kerala University Publication Wing, , 1990

Rajarajavarma A R, Kerala Panineeyam, Kottayam, D C Books, 2003

Robert Karldwel, Dravida Bhasha Vaykaranam, Thiruvananthapuram, Kerala Bhasha Institute,.1994

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

GENERIC ELECTIVES (GE (B) -2): Intermediatory Manipuri

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Intermediatory Manipuri	4	3	1	Nil	Passed Class XII without studying Manipuri at any level of formal education	Students who have already opted GE (B)-I in Manipuri in either Semester I or II (alternative semester)	**MIL&LS**

Learning Objectives:

This course is designed for the students who have gained basic knowledge of Manipuri language in the previous semester. Students will have the opportunity to study some aspects of the Manipuri language in detail through this course. This course will cover higher level grammar than the previous semester and will give special emphasis on Manipuri vocabulary and syntax.

The study of this course will not only make students proficient in the conversations of everyday life but also develop an interest in translation between two or more languages.

Course Learning Outcome:

After studying this course, students are expected to be able to provide oral and written information accurately in Manipuri. After studying this course, students can also play the role of a translator and interpreter between two or more languages.

In the future, if a student wishes to pursue research on any subject related to Manipuri, he/she will not have to depend on other language to communicate during written or oral data collection – this is also a promising aspect of this course.

Allotted class: 60 hours **Credits: 04**

UNIT – I (15 Hours)

Number, Person, Case

UNIT – II (15 Hours)

Aspects, Mood

UNIT – III (15 Hours)

Additional Vocabulary
Body Parts, Colour (Basic)
Day to day used Nouns and Verbs
Kinship Terms

UNIT- IV (15 Hours)

Sentence Construction: Simple Sentence, Complex Sentence and Compound Sentence

Essential/recommended readings:

Ningomba, M.S., *Meitei Lonmit*, Saraswati. Book House, Imphal. 1992

Singh, Chungkham Yashawanta. *Manipuri Grammar* (Manipuri Version), Imphal: Yaibiren Communications, 2020

Thoudam, P.C. *Remedial Manipuri Grammar*. Imphal: Aman Enterprise. 1991

Suggested reading:

Singh, Chungkham Yashawanta. *Manipuri Grammar* (English Version), Delhi: Rajesh Publications, 2000

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

GENERIC ELECTIVES (GE (A) -2): Intermediatory Marathi

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Intermediatory Marathi	4	3	1	Nil	Passed Class XII without studying Marathi at any level of formal education	students who have already opted GE (B)-I in Marathi in either Semester I or II (alternative semester)	**MIL&LS**

Learning objectives

This course will be helpful for students who are not familiar with the Marathi language to understand, speak, read, and write in Marathi. It will enable students to communicate with Marathi speakers in their daily lives. Additionally, this course will help enhance students' ability to learn and understand the Marathi language.

Course Learning Outcome:

Students will understand the linguistic diversity of the country. It is important to be multilingual. Students will be able to read, write, speak, and understand the Marathi language. Using Marathi in everyday communication will make students competent. The ability to speak in Marathi will improve among students. Moreover, they will be able to comprehend Marathi language, literature, and culture.

Allotted class: 60 hours **Credits: 04**

UNIT – I Sentence (15 Hours)

Framing different types of sentence
(Simple sentences, Compound sentences, Complex sentence, Affirmative Sentence, Negative sentences, Interrogative sentences, Exclamatory sentences etc.)
Phrases and proverbs

UNIT – II Basic Conversations (15 Hours)

Dialogue practice for common scenarios (greetings, ordering food, asking for directions, etc.)

UNIT – III Speaking and translating

Speaking with correct pronunciation

Translating Small Sentences from Marathi into English/Hind vice versa

UNIT - IV Unicode Typing and its application (15 Hours)

Understanding Unicode Typing and its application
Email, messaging, chatting etc.

Essential/recommended readings

Walimbe, M. R. : *Sugam Marathi Vyakran v lekhan*, Pune, Nitin Prakashan, 2016.
Walimbe, M. R. : *Marathi shudhalekhan Pradeep,* Pune, Nitin Prakashan, 2008.
Fadke, Arun : *Sudhalekhan Margpradeep* : Thane, Ankur Prakashan, 2013.
Fadke, Arun : *Shudhalekhan Margpradeep*, Pune, Rajhans Prakashan Pvt. Ltd., 2022.
Fadke, Arun : *Mla Marathi Shikaychy,* Pune, Rajhans Prakashan Pvt. Ltd., 2022.
Fadke, Arun : *Sope Marathi Shudhalekhan,* Pune, Rajhans Prakashan Pvt. Ltd., 2022.
Fadke, Arun : *Shudhalekhan theva khishyat,* Pune, Rajhans Prakashan Pvt. Ltd., 2022.
https://rmvs.marathi.gov.in/

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DEPARTMENT OF MODERN INDIAN LANGUAGES AND LITERARY STUDIES
UNIVERSITY OF DELHI, DELHI – 110007

COMPULSORY LANGUAGE POOL OF GENERIC ELECTIVES (GE) COURSES

Under UGCF – 2022 in the line of NEP – 2020

COMPARATIVE INDIAN LITERATURE

GENERIC ELECTIVES (GE-3): History and Methods of Comparative Literature

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
History and Methods of Comparative Literature	04	03	01	NIL	Class 12th passed in any subject	None	Modern Indian Languages and Literary Studies

Learning Objectives:

The course aims at giving an overview of the history, schools and methods in comparative literary studies. It is intended to familiarize the students with concepts of Comparative Literature and its basic methods and approaches while introducing it as an academic discipline. The course also touches upon the new directions and contemporary perspectives of Comparative Literature.

Learning Outcomes:

The course is expected to orient the students towards 'comparison' as a method of literary and cultural studies within the frame of Comparative Literature. After completing the course, the students will be able to develop basic understanding of Comparative Literature as an academic discipline and the process of literary study within comparative framework.

Allotted class: 60 hours **Credits: 04**

Unit I (15 hours)

History of Comparative Literature as an Academic Discipline

Unit II (15 hours)

Major Schools of Comparative Literature

Unit III (20 hours)

Concepts and tools of Comparative Literature - influence, reception, interdisciplinarity, genology, thematology, literary historiography

Unit IV (10 hours)

New Directions and Perspectives of Comparative Literature

Essential/recommended readings:

Bassnett, S. *Comparative Literature: A Critical Introduction*. Oxford: Blackwell. 1993. (Select Chapters)

Behdad, Ali & Thomas, Dominic. Eds. *A Companion to Comparative Literature*. London: Wiley-Blackwell. 2011. (Select Chapters)

Dominguez, C, Saussy, H., & Villanueva, D. Eds. *Introducing Comparative Literature: New Trends and Applications*. London and New York: Routledge. 2015. (Select Chapters)

Prawer, S. S. *Comparative Literary Studies: An Introduction.* London: Duckworth. 1973. (Select Chapters)

Saussy, H. Eds. *Comparative Literature in an Age of Globalization*. Baltimore: Johns Hopkins University Press. 2006. (Select Chapters)

Totosy de Zepetnek, S. *Comparative Literature: Theory, Method, Application*. Amsterdam-Atlanta, GA: Rodopi.1998. (Select Chapters)

Weisstein, U. *Comparative Literature and Literary Theory*. London: Indiana. 1969. (Select Chapters)

Suggested Readings:

Bandhyopadhyay, S. (Ed.) *Thematology: Literary Studies in India.* Kolkata: Jadavpur University. 2004

Chanda, Ipshita (ed.) *Literary Studies in India: Literary Historiography*. Kolkata: Jadavpur University, 2004.

Damrosch, D., Melas, N., & Buthelezi, M. Eds. *The Princeton Sourcebook in Comparative Literature: From the European Enlightenment to the Global Present*. New Jersey: Princeton University Press. 2009

Dasgupta, Subha Chakraborty. *Literary Studies in India: Genology*. Jadavpur University, 2004

Dev, Amiya and Das, Sisir Kumar. eds. *The Idea of Comparative Literature: Theory and Practice*. Delhi: Allied Publishers, 1989.

Spivak, G. C. *Death of a Discipline*. New York: Columbia University Press. 2003.

Wellek, R., & Warren, A. *Theory of Literature*. New York: Harcourt, Brace and Company. 1956.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

GENERIC ELECTIVES (GE -4): Introduction to Indian Poetics

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Introduction to Indian Poetics	04	03	01	Nil	Class 12th passed in any subject	None	Modern Indian Languages and Literary Studies

Learning Objectives:

In order to understand literature, readers need to know the characteristics of writing and its various styles. There are texts in Indian literature that describe the characteristics of literature. Different theories and texts were written by several Indian theoreticians under the category of poetics or *kavyashastra* or *Alankara granthas* or *cheyyul uruppukal*. In those texts, the theoreticians proposed different theories and qualities necessary for studying poetic literature. In this course, students will study briefly the important characteristics and theories of Indian poetics and its devices.

Course Learning Outcome:

After completing this course, the students will get a basic introduction to some of the important literary features and doctrines that have existed in India since ancient times such as Rasa, Dhvani, Vakrukti, Alankara, Ullurai and Irraci etc.

Allotted class: 60 hours **Credits: 04**

Unit I (15 hours)

The Definition of Poetry, The Aim and Purpose of Poetry, Development of Poetic sensibility

Unit II (15 hours)

Various Sanskrit poetic devices such as Rasa, Alankara, Dhvani, Vakrokti

Unit III (15 hours)

A brief introduction to Tamil Poetic form and devices- Akam, Puram, Thinai concepts and Ullurai and Irraci etc

Unit IV (15 hours)

A brief introduction to Modern Poetic Devices and various types used in different literary genres.

Essential/recommended readings:

Choudhary, Satya Dev. *Glimpses of Indian Poetics: A Survey of Sanskrit Poetics*. New Delhi: Sahitya Akademi, 2002.

Deshpande, G.T. *Indian Poetics*. Mumbai: Popular Prakashan, 2009.

Marudhanayagam, P. *Ancient Tamil Poetry and Poetics: New Perspectives*. Chennai: Central Institute of Classical Tamil, 2020. (Pages 1—30)

Nirmal Selvamony, *Tinai Poetics and Tamil Poetry*, Amirthamani Publications, 2011.

Suggested readings:

De, S.K. *History of Sanskrit Poetics.* Calcutta: Firma K.L. Mukhopadhaya, 1960.

Kane, P.V. *History of Sanskrit Poetics.* New Delhi: Motilal Banarasidas, 1961.

Meenakshi, K. *Literary Criticism in Tamil and Sanskrit*. Chennai: International Institute of Tamil Studies, 1999.

Pandey, Kanti Chandra. *Indian Aesthetics.* Varanasi: Chowkhamba, 1959.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

GENERIC ELECTIVES (GE -5): Translation in Indian Languages and Literature

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Translation in Indian Languages and Literature	04	03	01	Nil	Class 12th passed in any subject	None	Modern Indian Languages and Literary Studies

Learning Objectives:

In a multilingual and multicultural country like India, translation is the best way to know about Indian literature produced in various Indian languages. The present course primarily aims at introducing the students to the vast arena of translation studies and the translation of literature in different Indian languages. One of the objectives of the course is also to enable the students to apply their knowledge in translation studies.

Course Learning Outcome:

On completing the course, the students will have a clear idea about translation studies in general and translation studies in India in particular. Most importantly, this course will generate interest among the students to study and work on translation in future.

Allotted class: 60 hours **Credits: 04**

Unit I (15 hours)

Introduction to Translation Studies

Unit II (15 hours)

Translations in Indian Languages and the Role of English

Unit III (15 hours)

Cultural Translation in the Indian Context

Unit IV (15 hours)

Translation in Indian Languages and Literature: Problems and Perspectives

Essential/recommended readings:

Bassnett-McGuire, Susan. *Translation Studies*. London: Routledge, 1991. Print.

Das, *A Handbook of Translation Studies*. (Reprint) Atlantic Publishers: New Delhi. 2022. Print.

Mukherjee, Sujit. *Translation as Discovery and Other Essays on Indian Literature in English Translation*. New Delhi: Allied Publishers Private Ltd. 1981. Print.

_____ *Translation as Recovery*. Ed. Meenakshi Mukherje. Delhi: Penchant International, 2009. Print.

Ray, Mohit K. Ed. *Studies in Translation*. New Delhi: Atlantic Publishers, 2002. Print.

Routledge Encyclopedia of Translation Studies. London and New York: Routledge, 2001. Print.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

ANNEXURE-21

Sub: Amendment to Ordinance V

[E.C Resolution No. 14-1/-(14-1-1/-) dated 09.06.2023 and 27-1-6/- dated 25.08.2023]

Following addition be made to Appendix-II-A to the Ordinance V (2-A) of the Ordinances of the University;

Add the following:

Syllabi of Semester-IV, V and VI of the following departments under Faculty of Arts based on Under Graduate Curriculum Framework -2022 implemented from the Academic Year 2022-23 :

(i) Linguistics
(ii) Philosophy
(iii) Sanskrit
(iv) Psychology
(v) Applied Psychology

DEPARTMENT OF LINGUISTICS

DISCIPLINE SPECIFIC CORE (DSC-7) COURSES

SEMESTER-IV [MAJOR/ NON-MAJOR]

DSC - 7: LANGUAGE IMPAIRMENT

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Language Impairment	4	3	1	0	Class XII	NIL

Learning Objectives:

The Learning Objectives of this course are as follows:

- To make learners become aware of different categories of language disorders arising from specific developments affecting the brain
- To make learners become aware of language disorders across distinct populations including: monolinguals vs. multilinguals; adults vs. children; spoken language vs sign language users

Learning Outcomes: The learning outcomes include:

- Learners will have broad knowledge regarding language in the brain
- Learners will be able to identify various language disorders based on their characteristics
- Learners will be equipped to analyse the nature of language impairment in novel data

SYLLABUS OF DSC-7 (SEMESTER-IV)

UNIT 1: **Language and Brain** **12 Hours (4 Weeks)**

- Acquisition of a First Language: Critical Period Hypothesis and Early/Late Language Acquisition
- Acquisition of a Second Language: Age of Acquisition, Bilingualism, Multilingualism
- Experimental evidence for brain organization for language

UNIT 2: **Various kinds of language disorders** **18 Hours (6 Weeks)**

- Children: Developmental Language Disorder, Specific Language Impairment, Dyslexia
- Adults: Wernicke's Aphasia, Broca's Aphasia, Global Aphasia

UNIT 3: **Analysis of impaired speech** **15 Hours (5 Weeks)**

- Analyzing Form, Syntax and Meaning
- Comparison of impairments in spoken languages and sign languages
- Case studies of speech impairments: from Indian and foreign languages

Essential/recommended readings

1. Traxler, Matthew J. (2012). *Introduction to Psycholinguistics: Understanding language science.* Wiley-Blackwell. Bickerton,
2. Carroll, David W. (1994). *Psychology of language*. California: Brooks/Cole Publishing Company.
3. Caplan, David (1987). *Neurolinguistics and linguistic aphasiology*. Cambridge: Cambridge University Press.
4. Caplan, David, Lecours, Andre Roch, & Smith, Alan (Eds.). (1984). *Biological perspectives on language.* Cambridge, Massachusetts: MIT Press.
5. Friederici, A. D. (2017). *Language in Our Brain: The Origins of a Uniquely Human Capacity*. United States: MIT Press.
6. Bose, Arpita; Lori Buchanan. (2007). A cognitive and psycholinguistic investigation of neologisms, *Aphasiology*, 21:6-8, 726-738, DOI: 10.1080/02687030701192315
7. Bishop, Dorothy V.M. (2017). Why is it so hard to reach agreement on terminology? The case of developmental language disorder (DLD). *International Journal of Language & Communication Disorders,* 52: 671-680. https://doi.org/10.1111/1460-6984.12335

KEYWORDS: Brain, Bilingualism, Language disorders, Dyslexia, Aphasia

DISCIPLINE SPECIFIC CORE COURSES

SEMESTER-IV [MAJOR]

DSC - 8: SIGN LINGUISTICS

Total Credits: 04 (Credits: Theory-03, Tutorial-1)

Total Lectures: Theory-45, Tutorial-15, Practical-Nil

Duration: 15 weeks

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Sign Linguistics	4	3	1	0	Class XII	NIL

Learning Objectives:

- To make students appreciate that Sign Languages are natural languages like spoken languages.
- To make students become aware of the history of sign languages of the world.
- To make students become familiar with Deaf rights.
- To make students familiarise themselves with the basic features of signs of Indian Sign Language.

Learning Outcomes:

After participating in the course, the students will be able:

- to appreciate the similarities and differences between spoken and signed languages.
- to recognise parts of speech of Indian Sign Language (ISL).
- to analyse the basic features of signs of ISL.

SYLLABUS OF DSC-8 (SEMESTER-IV)

UNIT 1: **Status of sign languages** **12 Hours (4 Weeks)**

- Status of sign language as a language
- Signed and Spoken languages from a linguistic perspective
- History of sign languages of the world
- Linguistic studies of sign language

UNIT 2: **Indian Sign Language (ISL): Past and Present**

12 Hours (4 Weeks)

- Pre-19th century history of sign language in India
- 19th century history of sign language in India
- Deaf schools and the status of sign language in India

UNIT 3: **Parts of Speech in Spoken and Indian Sign language**

9 Hours (3 Weeks)

- Word classes
- Word classes in ISL

UNIT 4: **Basic features of Signs** **12 Hours (4 Weeks)**

- Parts of a sign
- Iconicity
- Minimal pairs and phonemes

Essential/recommended readings

1. Zeeshan, Ulrike and AYJNIHH. 2001, 2002. *Basic and Advanced Course in Indian Sign Language* (Video). AYJNIHH: Delhi.
2. Zeeshan, Ulrike and AYJNIHH. 2001, 2002. *Workbooks for Basic and Advanced Course in Indian Sign Language*. AYJNIHH: Delhi.
3. Ramakrishna Mission Vidyalaya. 2001. *Indian Sign Language Dictionary*. Coimbatore: Sri Ramkrishna Mission Vidyalaya Printing Press.
4. Vasishta, Madan, James Woodward and Susan DeSantis. 1950. *An Introduction to Indian Sign Language*. New Delhi: All India Federation of the Deaf.

KEYWORDS: Signs, Deaf Studies, Finger spelling, Greetings.

DEPARTMENT OF LINGUISTICS

DISCIPLINE SPECIFIC CORE COURSES

SEMESTER-V [MAJOR/ NON-MAJOR]

DSC - 9: LANGUAGE, HISTORY AND CHANGE

Total Credits: 04 (Credits: Theory-03, Tutorial-1)

Total Lectures: Theory-45, Tutorial-15, Practical-Nil

Duration: 15 weeks

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Language, History and Change	4	3	1	0	Class XII	NIL

Learning Objectives:

Learning objectives of this course are as follows:

- to introduce students to the idea that languages evolve over time
- to be aware that languages undergo various changes
- to teach the fundamentals of how to study language change with the help of earlier written records using the Comparative Method

Learning outcomes:

By participating in this course, the student will develop:

- the ability to identify cases of language change
- to recognise the influence if one language (or group) over another
- the skill to analyse language contact and mixed forms

SYLLABUS OF DSC-9 (SEMESTER-V)

UNIT 1: **Origin of Language** **9 Hours (3 weeks)**

- Writing and history
- Language evolution
- Language change
- Reasons and manners of languages change

UNIT 2: **How are languages of the world related?** **12 Hours (4 weeks)**

- World's language families

- Language families in India
- Language isolates

UNIT 3: **Evidence for genetic similarities through lexical comparisons**
12 Hours (4 weeks)

- The Indo-European language family
- Language families in India
- Types of language change

UNIT 4: **Language contact and borrowings** **12 Hours (4 weeks)**

- Sanskrit words in Indian languages and semantic shifts
- Munda/ Dravidian words in Sanskrit
- Words borrowed across continents
- Non-Indo Aryan words in Indo-Aryan languages
- Pidgins and Creoles

Essential/ Recommended Readings

1. Campbell, Lyle (1999). Historical linguistics: An introduction. Cambridge, Massachusetts: MIT Press.
2. Cardona, George, & Jain, Dhanesh (2003). General introduction. In George Cardona & Dhanesh Jain, (Eds.), The Indo Aryan languages. New York: Routledge.
3. Crowley, Terry, & Bowern, Claire (2010). An introduction to historical linguistics. New York: Oxford University Press.
4. Crystal, David (2006). How language works. Victoria: Penguin Books.
5. Kachru, Braj B., Kachru, Yamuna, & Sridhar, S.N. (Eds.). (2008). Language in South Asia. New York: Cambridge University Press.

KEYWORDS: Language change, Language family, Language contact, Pidgin, Creole.

DISCIPLINE SPECIFIC CORE COURSES

SEMESTER-V [MAJOR]

DSC-10: LINGUISTIC TRADITION AND HISTORICAL LINGUISTICS

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Linguistic tradition and Historical Linguistics	4	3	1	0	Class XII	NIL

Learning Objectives:

Learning objectives of this course are as follows:

- to make students learn the concept of genetic relationship among languages, the idea of language family, similarities due to contact
- to understand language change
- to make use of comparative method to construct the past

Learning outcomes:

After participating the course, the students are:

- able to recognise languages of different families in India
- able to reconstruct proto-forms by using different methods
- able to use the grammatical rules given by Indian grammarians

SYLLABUS OF DSC-10 (SEMESTER-V)

UNIT 1: Western encounters with Sanskrit **12 Hours (4 weeks)**

- 18th century pioneers
- Indology in British India
- Books, dictionaries and annotations

UNIT 2: Language families of India **12 Hours (4 weeks)**

- 4 major language families of India
- Language families during Middle Indo-Aryan period
- Andamanese and Tai-Kadai as other two families

UNIT 3: Historical linguistics **12 Hours (4 weeks)**

- Language change and types

- Grimm's Law

UNIT 4: Historical Linguistics Methods **9 Hours (3 weeks)**

- Comparative method
- Internal reconstruction method

Essential/ Recommended Readings

1. Aitchison, Jean (1981/2001). *Language Change: Progress or Decay*? Cambridge: Cambridge University Press.
2. Bynon, Theodora (1977/2012). *Historical Linguistics*. Cambridge: Cambridge University Press.
3. Trask, R. L., and Robert McColl Millar (2013). *Trask's Historical Linguistics*, revised edition. New York: Routledge.

KEYWORDS: Indology, Middle Indo-Aryan, Andamanese, Tai-Kadai, Grimm's Law, Reconstruction

DISCIPLINE SPECIFIC ELECTIVE (DSE-1) COURSES

SEMESTER-V [MAJOR/ NON-MAJOR]

DSE - 1: INTRODUCTION TO INDIAN GRAMMATICAL TRADITIONS

Total Credits: 04 (Credits: Theory-03, Tutorial-1)

Total Lectures: Theory-45, Tutorial-15, Practical-Nil

Duration: 15 weeks

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Introduction to Indian Grammatical Tradition	4	3	1	0	Class XII	NIL

Learning Objectives:

The learning objectives of the course are as follows:

- to introduce students to the linguistic tradition of India
- to make students become aware of the different parts of languages that were studied in ancient India
- to make students become aware of the Karaka theory

Learning outcomes:

After participating in the course, the students are able to:

- appreciate the Indian grammatical tradition
- use grammatical rules to analyse parts of Sanskrit texts
- make correct use of different grammatical rules of Sanskrit

SYLLABUS OF DSE-1 (SEMESTER-V)

UNIT 1: **Language & Linguistics** **9 Hours (3 Weeks)**

- The importance of grammar in India
- Grammatical study before Pa:nini
- Pa:nini, Ka:tyayana, Patanjali and Bhartrihari

UNIT 2: **Phonetics & Phonology** **12 Hours (4 Weeks)**

- Siva Sutras (Pratya:ha:ra)

- Sthana (place of articulation)
- Karana (articulator)
- Prayatna (manner of articulation)

UNIT 3: **Morphology** **12 Hours (4 Weeks)**

- Padam (word)
- Subantam (noun) and tiṇantam(verb)
- Yaska's classification of Words

UNIT 4: **Case theory** **12 Hours (4 Weeks)**

- Ka:raka: and Vibhakti
- Six ka:rakas - Apa:da:nam, Samprada:nam, Karanam, Adhikaranan, Karma, Karta.

Essential/ Recommended Readings

1. Namboodri, E.V.N. 2016. *Origin and Development of Modern Linguistics*. Crescent Publishing Corporation.
2. Prakasam,V.(ed,). 2008. *Encyclopaedia of Linguistic Sciences*. Allied Publishers. (Ch:V).
3. Sharma, Ramesh Chand (ed.). 1995. *Indian Theory of Knowledge and Language*. Bahri Publication, Delhi.
4. Subrahmanyam, Korada. 2008. *Theories of Language: Oriental and Occidental*. D.K. Publishers, Delhi.
5. Subrahmanyam, P.S. 2011. *Pa:ninian Linguistics*. Rashtriya Sanskrit Vidyapeetha, Tirupathi. (ch. 1,3,8.)

KEYWORDS: Panini, Bhratrihari, Siva Sutras, Yaska, Karaka

DISCIPLINE SPECIFIC ELECTIVE (DSE-2) COURSES

SEMESTER-V [MAJOR/ NON-MAJOR]

DSE - 2: INTRODUCTION TO INDIAN SIGN LANGUAGE

Total Credits: 04 (Credits: Theory-03, Tutorial-1)

Total Lectures: Theory-45, Tutorial-15, Practical-Nil

Duration: 15 weeks

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Introduction to Indian Sign language	4	3	1	0	Class XII	NIL

Learning Objectives

- To make students appreciate that Sign Language as a visual medium.
- To make students become aware of basic communication skills in a sign language.
- To make students familiarise themselves with the basic signs of Indian Sign Language.

Learning outcomes

After participating in the course, the students will be able:

- to engage in basic communication through sign language.
- to make basic signs of Indian Sign Language (ISL).

SYLLABUS OF DSE-2 (SEMESTER-V)

UNIT I: **Sign language** **15 Hours (5 weeks)**

- Sign language as a visual language
- Common stereotypes of sign language
- Basic components of sign language

UNIT 2: **Basic Communication skills in Sign Language** **15 Hours (5 weeks)**

- Introduction
- Emotions, feelings, colours and shapes
- Dialogues

UNIT 3: **Basic signs in ISL** **15 Hours (5 weeks)**

- Greetings
- Non-manual marking and facial expressions
- Use of space
- Finger spelling

Essential/recommended readings

1. Zeeshan, Ulrike and AYJNIHH. 2001, 2002. *Basic and Advanced Course in Indian Sign Language* (Video). AYJNIHH: Delhi.
2. Zeeshan, Ulrike and AYJNIHH. 2001, 2002. *Workbooks for Basic and Advanced Course in Indian Sign Language*. AYJNIHH: Delhi.
3. Ramakrishna Mission Vidyalaya. 2001. *Indian Sign Language Dictionary*. Coimbatore: Sri Ramakrishna Mission Vidyalaya Printing Press.

KEYWORDS: Signs, Stereotypes, Dialogues, Space, Finger Spelling

DISCIPLINE SPECIFIC ELECTIVE (DSE-3) COURSES

SEMESTER-V [MAJOR/ NON-MAJOR]

DSE - 3: GENDER AND LANGUAGE

Total Credits: 04 (Credits: Theory-03, Tutorial-1)

Total Lectures: Theory-45, Tutorial-15, Practical-Nil

Duration: 15 weeks

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Language and Gender	4	3	1	0	Class XII	NIL

Learning Objectives

Learning Objectives of the course are as follows:

- to make students become aware of the connection between gender, language and power
- to make students understand women's and men's languages (genderlects)
- to make students sensitive towards gender imbalance in media discourse
- to make students understand the connection between gender and linguistics

Learning Outcomes

By participating in this course, the student will develop:

- the ability to see the connection between gender and language
- the ability to recognise women's and men's talks
- sensitivity towards evaluating gender imbalances in media discourse
- the skill to analyse the linguistic aspects of gender

SYLLABUS OF DSE-3 (SEMESTER-V)

UNIT 1: **Gender and Language connection** **12 Hours (4 weeks)**

- Language, gender and power
- Social inequality
- Feminist discourse

UNIT 2: **Gender in Linguistic forms** **12 Hours (4 weeks)**

- Genderlects
- Cross-cultural differences
- Pronunciation, vocabulary and Syntax

UNIT 3: **Gender and Media** **9 Hours (3 weeks)**

- Gender, language and media
- Discourse structure and gender

UNIT 4: **Gender and Linguistics** **12 Hours (4 weeks)**

- Sociolinguistic studies of gender
- Linguistic studies of gender
- Psycholinguistic studies of gender

Essential/ Recommended Readings

1. Tannen, Deborah (1990). *You just don't understand: Women and men in conversation.* New York: Harper Collins.
2. Tannen, Deborah (1996). *Gender And Discourse*. Oxford, England: Oxford University Press.
3. Coates, Jennifer (1993). *Women, Men and language*. London: Longman.

KEYWORDS: Feminist discourse, Genderlects, Gender bias, Discourse structure.

DEPARTMENT OF LINGUISTICS

DISCIPLINE SPECIFIC CORE COURSES

SEMESTER-VI [MAJOR/ NON-MAJOR]

DSC - 11: LANGUAGE IN SOCIETY

Total Credits: 04 (Credits: Theory-03, Tutorial-1)

Total Lectures: Theory-45, Tutorial-15, Practical-Nil

Duration: 15 weeks

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Language in Society	4	3	1	0	Class XII	NIL

Learning Objectives:

The learning objectives of the course are as follows:

- to make students understand language in its social context.
- to familiarizes students with the basic notions and concepts relating to social perspectives on language.
- to make them appreciate the evolving nature of language.
- to make them appreciate linguistic diversity.

Learning Outcomes:

After attending this course, the student is expected to:

- recognize language/ dialect/ register distinctions in any speech variety
- develop skills to identify social influences on language
- gain experience in observing language at work and analyse the same.

SYLLABUS OF DSC-11 (SEMESTER-VI)

UNIT 1: **Language, communication, gossip and socialization**

9 Hours (3 Weeks)

- Social origins of language
- Language and social interaction
- Cross-cultural and cross-linguistic communication

- Language indexing social identity

UNIT 2: **Linguistic diversity** **12 Hours (4 Weeks)**

- Language-dialect-register.
- Standard languages and vernaculars
- Language as a speech variety
- Attitudes towards language and their speakers; prestige and stigma associated with different ways of speaking
- Plurality of language

UNIT 3: **Methodology for studying language in social context**

12 Hours (4 Weeks)

- Observing language use; the Observer's Paradox
- How speakers use language to construct styles and adapt their language to different audiences and social contexts
- Accommodation and influence: People mutually influence each other's speech

UNIT 4: **Social differentiation of speech** **12 Hours (4 Weeks)**

- How language and society affect each other
- Language and social class, ethnicity, and gender
- Differentiation in individual, group and family

Essential/ Recommended Readings

1. Chambers, J. K., Trudgill, Peter, & Schilling-Estes, Natalie (2004). *The handbook of language variation and change*. Oxford: Blackwell Publishing.
2. Holmes, Janet, & Wilson, Nick (2017). *An introduction to sociolinguistics*. Oxon: Routledge.
3. Labov, William (1972). *Sociolinguistic patterns*. Philadelphia: University of Pennsylvania Press.
4. Meyerhoff, Miriam (2011). *Introducing sociolinguistics*. Oxon: Routledge.
5. Montgomery, Martin (2008). *Introduction to language and society*. Oxon: Routledge.
6. Romaine, Suzanne (2000). *Language in society: An introduction to sociolinguistics*. Oxford: Oxford University Press.
7. Tagliamonte, Sali A. (2012). *Variationist sociolinguistics: Change, observation, interpretation*. Oxford: Wiley-Blackwell.
8. Trudgill, Peter (2000). *Sociolinguistics: An introduction to language and society*. London: Penguin Books.
9. Wardhaugh, Ronald (2010). *An introduction to sociolinguistics*. Oxford: Wiley-Blackwell.

KEYWORDS: Dialect, Register, Observer's Paradox, Ethnicity.

DISCIPLINE SPECIFIC CORE COURSES

SEMESTER-VI [MAJOR]

DSC - 12: LANGUAGE IN INDIAN SOCIETY

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Language in Indian Society	4	3	1	0	Class XII	NIL

Learning Objectives:

The learning objectives of the course are as follows:

- to make students understand Indian language in their social contexts.
- to familiarizes students with the basic notions and concepts relating to social perspectives on especially Indian language.
- to make them appreciate the evolving nature of language.
- to make them appreciate linguistic diversity in India.

Learning Outcomes:

After attending this course, the student is expected to:

- recognize language/ dialect/ register distinctions in any Indian speech variety
- develop skills to identify social influences on Indian language
- gain experience in observing Indian languages at work and analyse the same.

SYLLABUS OF DSC-12 (SEMESTER-VI)

UNIT 1: **Language, communication, gossip and socialization in Indian Society**

12 Hours (4 Weeks)

- Indian Social origins of language
- Language and social interaction in India
- Cross-cultural and cross-linguistic communication in India
- Language indexes and social identity in India

UNIT 2: **Linguistic diversity in India** **12 Hours (4 Weeks)**

- Language-dialect-register in India
- Standard languages and vernaculars of India

- Language as a speech variety in India
- Attitudes toward language and the Indian speakers; prestige and stigma associated with different ways of speaking
- Plurality of Indian languages

UNIT 3: **Methodology for studying Indian language in social context**

12 Hours (4 Weeks)

- Observing language use; the Observer's Paradox
- How speakers use language to construct styles and adapt their language to different audiences and social contexts.
- Accommodation and influence: People mutually influence each other's speech.

UNIT 4: **Social differentiation of speech in India** **9 Hours (3 Weeks)**

- How language and society affect each other
- Language and social class, ethnicity, and gender.
- Differentiation in individual, group and family.

Essential/ Recommended Readings

1. Agnihotri, R.K. 2002. Sociolinguistic Theory and Practice: The Indian Counterpoint. In Rajendra Singh (Ed.), *The Yearbook of South Asian Languages and Linguistics.*
2. Annamalai, E. 1997. Development of sociolinguistics in India. In Christina Bratt Paulston and G. Richard Tucker (eds.), *The early days of sociolinguistics: memories and reflections.* SIL International Publications; pp. 35–41.
3. Pandit, P.B. (1979). Perspectives on Sociolinguistics in India. In *Language and Society*, (eds.) William C. McCormack and Stephen A. Wurm. Berlin: De Gruyter Mouton.
4. Pattanayak, D. P. (1990). Multilingualism in India. *Multilingual Matters.*
5. Shapiro, Michel C.; Harold F. (1981). *Language and Society in South Asia.* Delhi: Motilal Banarsidass.

KEYWORDS: Linguistic diversity, Dialect/ Register, Standard Vs Vernacular, Attitude, Plurality.

DISCIPLINE SPECIFIC ELECTIVE COURSES

SEMESTER-VI

DSE - 2: STRUCTURE OF INDIAN LANGUAGES

Total Credits: 04 (Credits: Theory-03, Tutorial-1)

Total Lectures: Theory-45, Tutorial-15, Practical-Nil

Duration: 15 weeks

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Structure of Indian Languages	4	3	1	0	Class XII	NIL

Learning Objectives:

The Learning Objectives of this course are as follows:

- to understand the place of his/her language in the context of south Asian languages in terms of geographical and genetic relations among languages
- to become familiar with looking at languages from a linguistic perspective
- to be aware of the issues of convergence and contact among languages, and to be able to therefore appreciate the inter-relations among languages

Learning Outcomes:

By participating in this course, the student will:

- be able to demonstrate understanding of the major characteristics of grammar of Indian languages
- be able to apply correct terminology and techniques of phonetics/phonology to transcription and data analysis, analyse the structure words, phrases, and clauses of Indian languages
- be able to recognise the influence of one language on another

SYLLABUS OF DSE-2 (SEMESTER-VI)

UNIT 1: **Introduction to South Asian Languages** **12 Hours (4 Weeks)**

- Language families of South Asia
- Language families of India: Core and periphery

- Genetic and areal distribution of languages

UNIT 2: **Linguistic Features of Indian Languages** **12 Hours (4 Weeks)**

- Types of linguistic features
- Pan Indic linguistic features
- Linguistics features of the 4 core families

UNIT 3: **Formal features for analysis** **12 Hours (4 Weeks)**

- Phonetic and Phonological features
- Morphological features
- Syntactic and Semantic features

UNIT 4: **Contact and convergence** **9 Hours (3 Weeks)**

- Super-stratum and sub-stratum languages
- Dakhini as a case of convergence
- Pidgins and Creoles
- Sadri and Nagamese as Lingua Franca

Essential/ Recommended Readings

1. Bhaskararao, P. and Subbarao K.V. (eds.). (2004). *Non-nominative Subjects* (Vol 1 and 2). Amsterdam: John Benjamins.
2. Emeneau, M.B. 1956. India as a linguistic area. *Language*, 32.3, 3-16.
3. Krishnamurti Bh., Masica Colin P., Sinha A.K. (eds.). 1986. *South Asian Languages: Structure, Convergence and Diglossia*. Delhi: Motilal Banarsidass.
4. Masica, C.P. 1976. *Defining a linguistic area: South Asia*. University of Chicago Press, Chicago.
5. Subbarao, K.V. 2012. *South Asian Languages: A Syntactic Typology*. Cambridge, University Press, Cambridge. (Chapters 2-6).
6. Subbarao K. V., Arora, H. (1988/1990). On Extreme Convergence: The Case of Dakkhini Hindi-Urdu. *Indian Linguistics* 49, 92-107.

KEYWORDS: Genetic and Areal, Phonological, Morphological, Syntactic, Dakhini, Sadri, Nagamese

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES OFFERED BY DEPARTMENT OF LINGUISTICS

GENERIC ELECTIVES (GE-6): MULTILINGUALISM

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Multilingualism	4	3	1	0	Class XII	NIL

Learning Objectives:

- To make students understand how language policy influences multilingual contexts
- To make students appreciate the relationship between multilingualism and migration in the context of globalisation
- To make them aware of how multilingualism helps construct/articulate cultural identities
- To make them appreciate the role of family, education and work place in maintaining multilingualism

Learning outcomes:

After completing this course, the students will be able:

- to apply critical thinking and problem-solving techniques to address new issues and data
- to appreciate and engage with important concepts in multilingualism
- to critically assess key issues and approaches to the study of multilingualism

SYLLABUS OF GE-6 (SEMESTER-VI)

UNIT 1: Bilingualism and multilingualism **9 Hours (3 weeks)**

- Child and adult bilingualism
- Language contact and bilingualism
- Sociolinguistics of multilingualism

UNIT 2: Perspectives on Multilingualism **12 Hours (4 weeks)**

- Linguistic
- Sociolinguistic

- Psycholinguistic

UNIT 3: Language Contact **12 Hours (4 weeks)**

- Definitions and types
- Code-switching
- Code-mixing

UNIT 4: Multilingualism and education **12 Hours (4 weeks)**

- Educational Policy and multilingualism
- Language acquisition in a multilingual setting
- Language development in a multilingual setting
- The cognitive effects of multilingualism

Essential/ Recommended Readings

1. Agnihotri, Rama Kant. 2009. Multilinguality and a new world order. In A. K. Mohanty, M. Panda, R. Phillipson, & T. Skutnabb-Kangas (Eds.), *Multilingual education for social justice: Globalizing the local.* New Delhi: Orient BlackSwan; 268–277.
2. Auer, Peter, & Wei, Li (Eds.). (2007). *Handbook of multilingualism and multilingual communication* New York: Mouton De Gruyter.Chapters: 1, 2, 4, 5
3. Hoffmann, Charlotte (2014). *Introduction to bilingualism*. New York: Routledge. Chapters: 1, 2, 3, 5
4. Marilyn Martin-Jones, Adrian Blackledge, Angela Creese (2012). *The Routledge Handbook of Multilingualism*. Taylor& Francis.

KEYWORDS: Bilingualism, Multilingualism, Code-switching, Code-mixing, Cognitive effect

DEPARTMENT OF PHILOSOPHY
SEMESTER - IV
Category 1

(B.A. Honours in Philosophy in three years)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

DISCIPLINE SPECIFIC CORE COURSE -10 (DSC - 10) – Texts of Indian Philosophy

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Textual study of Indian Philosophy DSC 10	4	3	1	Nil	12th Passed	"Indian Philosophy" Sem 1

Learning Objectives

The Learning Objectives of this course are as follows:

- The paper introduces the seminal ideas regarding epistemology in the Indian tradition
- The readings will enhance the study of the diverse streams of thought in Indian epistemology
- The course will aim at analysing the main arguments surrounding the reasons for accepting one means of knowledge or another in Indian philosophical schools of thought

Learning outcomes

The Learning Outcomes of this course are as follows:

- It will enable students to gain knowledge about perception and inference in Indian philosophy in the Buddhist and Nyaya tradition
- Students will be able to critically analyse the arguments on each side of the debate regarding the key schools of Indian philosophy
- Students will be able to evaluate the modern significance of these debates
- Students will be able to apply their knowledge to current debates in perception and inference.

Unit I Introduction **(9 hours, 3 weeks)**

1. Subject matter and Purpose of the Text (SamyagjñānpūrvikāPurūṣārthsidhhi)
2. Definition of Right knowledge (AvisaṁvādakjñānamAnadhigatjñānam)
3. Kind of Sources of Knowledge (DwividhamSamyagjñānam)

Essential/Recommended Readings

Nyāyabindu of Dharmakīrti with Dharmottara'sṬīkā chapter I :Perception (Pratyakṣa)
Th. Stcherbatsky, *Buddhist Logic, Volume II*, Delhi: Motilal Banarsidass Publishers Private Limited, Indian edition, 2008 (1993), pp. 1-25. Hindi translation and annotation by Srinivasa Shastri: *Nyāyabindu-ṭīkā of Dharmottara with Nyāyabindu of Dharmakīrti*, Meerut: SahityaBhandar, 1975.

Unit II Perception and Knowledge **(12 Hours, 4 Weeks)**

1. Definition of Perception (KalpanāpoḍhamabhrāntamPratyakṣam)
2. Varieties of Direct Knowledge (Indriya-jñānam, Mānas-pratyakṣa, Sva-saṁvedanam, Yogi-jñānam)
3. Object of Direct Knowledge (Svalakṣanam, Arthkriyākāritvam)

Essential/Recommended Reading
Nyāyabindu of Dharmakīrti with Dharmottara'sṬīkā chapter I :Perception (Pratyakṣa)
Th. Stcherbatsky, *Buddhist Logic, Volume II*, Delhi: Motilal Banarsidass Publishers Private Limited, Indian edition, 2008 (1993), pp. 25-46. Hindi translation and annotation by Srinivasa Shastri: *Nyāyabindu-ṭīkā of Dharmottara with Nyāyabindu of Dharmakīrti*, Meerut: SahityaBhandar, 1975.

Unit III Inference **(12 Hours, 4 Weeks)**

1. Definition of Inference (Tat-pūrvakamAnumānam)
2. Criticism by Cārvāka
3. Criticism by Bauddha

Essential/Recommended readings

NyāyaMañjarī, Ahnika II, Section on 'Inference" *Jayant Bhatta's Nyaya-Manjari,* trans. Janaki Vallabha Bhattacharyya. Delhi: Motilal Banarsidass, 1978, pp. 226- 246.

Unit IV Types of Inference **(12 Hours, 4 Weeks)**

1. Types of Inference (Pūrvavat, Śeṣvat and Samānyatodṛst)
2. Distinction between the Śeṣvattype and Samānyatodṛṣtatype

Essential/Recommended readings.

NyāyaMañjarī, Ahnika II, Section on 'Inference" *Jayant Bhatta's Nyaya-Manjari,* trans. Janaki Vallabha Bhattacharyya. Delhi: Motilal Banarsidass, 1978, pp. 265-284.

Suggestive Readings

Th. Stcherbatsky, *Buddhist Logic, Volume II,* Delhi: Motilal Banarsidass Publishers Private Limited, Indian edition, 2008 (1993), pp. 1-46. Hindi translation and annotation by Srinivasa Shastri: *Nyāyabindu-ṭīkā of Dharmottara with Nyāyabindu of Dharmakīrti*, Meerut: SahityaBhandar, 1975.

Jayant Bhatta's Nyaya-Manjari, trans. Janaki Vallabha Bhattacharyya. Delhi: Motilal Banarsidass, 1978, pp. 261-284.

Bharadwaja, Vijay (1997), "Logic and Language in Indian Philosophy" in Brian Carr& Indira Mahalingam (eds), *Companion Encylopedia of Asian Philosophy.* London & New York: Routledge, pp. 230-250.

Bilimoria, Purushottama (2018), "Pramana Epistemology: Origins and Developments" in *Routledge History of World Philosophies:History of Indian Philosophy.* Ed. PurushottamaBilimoria. London & New York: Routledge, pp. 27-39.

Dunne, John. (2004), *Foundations of Dharmakīrti's Philosophy*, New York.

Potter, Karl H. (ed) (1977). *Encyclopaedia of Indian Philosophies: Vol.II. Indian Metaphysics and Epistemology: The Tradition of Nyaya-VaisesikauptoGangesa.* Delhi: Motilal Banardidass Publishers Private Limited.

Shaw, J.L. (2018), The Nyaya on Inference and Fallacies" in *Routledge History of World Philosophies:History of Indian Philosophy.* Ed. PurushottamaBilimoria. London & New York: Routledge, pp. 184-194.

DISCIPLINE SPECIFIC CORE COURSE -11 (DSC - 11) – Texts of Western Philosophy

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Textual study of Western Philosophy DSC 11	4	3	1	Nil	12th Passed	"Western Philosophy: Descartes to Kant": Sem III

Learning Objectives

- This course aims at introducing the students to fundamental issues that have been raised in contemporary western philosophy
- This course will provide a historical framework to the student through the study of key texts from the field of western philosophy
- This course will discuss philosophers like Kant, Heidegger, Nagel etc keeping in mind debates related to knowledge, being, ethics, etc, hence, providing rounded knowledge to the student

Learning Outcomes

- The student will learn to analyze philosophical debates by location them in their right historical framework
- The student will acquire the necessary knowledge to progress responsibly in the study of western philosophy
- The student will understand the philosophical origin of many of the concepts that are in current debate in the area of expertise concerned.

Unit1: Key Themes **(12 Hours, 4 Weeks)**

1. Kant's introduction and its themes
2. The Framework of Kant
3. Nietzsche's critique

Essential/recommended reading

Immanuel Kant's Critique of Pure Reason's **Introduction** (Translated by Norman Kemp Smith, London : The Macmillan Press, 1978), pp.41-62.
Friedrich Nietzsche's *BeyondGoodandEvil* (London:Penguin Classics,1975), Chapterl, pp.5-33.

Unit 2: The Nature of Thinking **(9 hours, 3 weeks)**

1. The Nature of thought
2. Thought and the world
3. Heidegger's take on the nature of thought

Essential/recommended reading

1. Heidegger, Martin. *What is Called Thinking*? (New York : Harper & Row Publishers; 1968), PartI: Lecture1, pp. 3-18.

Unit3: Thinking without Mirroring **(12 Hours, 4 Weeks)**

1. Grasping the world
2. The Mind as Mirror
3. Knowing without Mirroring

Rorty, Richard. *Philosophy and the Mirror of Nature (*Princeton: Princeton UniversityPress; 2017*),*Introduction and Chapter8.

Unit4:The Defence of Reason **(12 Hours, 4 Weeks)**

1. Reason in Philosophy
2. Reasons against reason
3. The stand of reason

Essential/recommended reading

Thomas Nagel, *The Last Word* (Oxford: Oxford University Press, 1997), Introduction, pp.1-11.

Suggestive Reading

Kant's, Immanuel. Critique of Pure Reason's (Translated by Norman Kemp Smith, London, The Macmillan Press, 1978).
Nietzsche, F. *Beyond Good and Evil*(London: Penguin Classics, 1975).
Heidegger, Martin. *What is Called Thinking*? (New York : Harper & Row Publishers, 1968).
Rorty, R. *Philosophy and the Mirror of the Nature* (Princeton: Princeton UniversityPress,1979).
Thomas, Nagel. *The Last Word*(Oxford: OxfordUniversityPress,1997).

DISCIPLINE SPECIFIC CORE COURSE – 12 (DSC-12): Truth Functional Logic

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Truth-Functional Logic DSC 12	4	3	1	Nil	12th Passed	None

Learning Objectives

- This paper aims to equip the students with an understanding of basic logical concepts in modern logical theory
- This paper helps to enhance the student's reasoning capacity and problem-solving skills.
- In this paper students will learn to appreciate disciplined and rigorous thinking as applied to arguments in natural language
- The paper is designed to help students understand the power of a deductive theory and also the importance of the notion of deduction

Learning Outcomes

After completing this course:

1. Students will be able to evaluate arguments symbolized in truth functional notation.
2. Students will learn to use proof system for both sentential logic and predicate logic to construct derivations for valid arguments.

3. Students will be able to formulate counterexamples for invalid arguments symbolized in the notations of predicate logic.
4. Students will develop critical thinking and problem-solving skills.

UNIT 1: LOGIC OF COMPOUND PROPOSITIONS (Sentential) (12 Hours, 4 Weeks)

1. Logical Connectives: Conjunction, Negation and Disjunction; Interdefinability Stroke function
2. Truth Tables for Logical Connectives
3. Symbolisation and Translation; Arguments and Argument forms
4. Truth table Method; Shorter Truth Table method (Reductio ad absurdum)

UNIT II: PROVING VALIDITY (PROOF PROCEDURES) (12 Hours, 4 Weeks)

1. Derivation Rules: Rules of Inference and Rules of Replacement
2. Formal Proof of Validity
3. Indirect Proof of Validity
4. Conditional Proof of Validity (strengthened rule)

UNIT III: LOGIC OF SINGULAR/ UNIVERSAL PROPOSITIONS(12 Hours, 4 Weeks)

1. Symbolization of Categorical Propositions
2. The Four Rules of Inference (Quantification Rules)
3. Restrictions on Quantifier Rules:
(a) Special Restriction on UG (b) Special Restriction on EI
4. Proving Validity

UNIT- IV Quantification Theory (9 Hours, 3 Weeks)

Proving Invalidity

Essential Recommended Reading:
Copi, I.M. Introduction to Logic, 14th and 15th Edition. India: Pearson, 2013, 2019.

Suggestive Readings:

- Hurley, Patrick. Introduction to Logic. Delhi :Wordsworth, 2007.
- Jeffrey, R. Formal Logic: Its scope and limits. U.S.A: MacGraw Hill, 1967.
- Quine, W.V.O. Methods of Logic. London: Routledge, 1965.
- Sen, Madhucchanda. Logic. Delhi: Pearson, 2008.
- Copi, I.M. Symbolic Logic, 5th edition. India: Pearson, 2008.
- Chakraborty, C. Logic: Informal, Symbolic and Inductive. Prentice-Hall of India Pvt. Limited, New Delhi, 2006.
- Jetli& Prabhakar. Logic. India: Pearson, 2012

DISCIPLINE SPECIFIC ELECTIVE -4 (DSE-4) – Philosophy of Science

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Philosophy of Science DSE 4	4	3	1	Nil	12th Passed	None

Learning Objectives.

- The course will introduce students to the methods, assumptions, epistemological leanings and metaphysical implications of the domain of modern science
- The course offers some significant philosophical positions on: What is the nature of explanation in science? What are the laws of nature and how are they employed as a tool of explanation? What are the implications of the problem of induction for the scientific explanation?
- The course will introduce students to the problems raised by Hume, Popper, Lakatos, Feyerabend and other philosophers

Learning Outcomes

1. Students will learn to ask questions about science in a rational spirit of inquiry
2. The student will be enabled to discuss questions regarding the methods and assumptions of science
3. Students will develop a good understanding of the debates surrounding the growth, progress and achievements of science
4. The students will learn to appreciate the difference between science and other subjects

UNIT I: THE PROBLEM OF INDUCTION (9 Hours, 3 Weeks)

1. Hume: The Traditional Problem of Induction
2. The Uniformity of Nature
3. The Problem of Circularity

Essential/Recommended Readings:

- Hume, D. (2002). David Hume, An Enquiry Concerning Human Understanding (Section IV- parts 1 & 2). In M. Huemer (Ed.), *Epistemology: Contemporary readings* (pp. 298–306). Routledge. (Originally published in 1748).
- Salmon, Wesley C. (1953). The uniformity of nature. *Philosophy and Phenomenological Research* 14 (1):39-48.

UNIT II: OBSERVATION, LAWS OF NATURE AND SCIENTIFIC EXPLANATION (12 Hours, 4 Weeks)

1. Theory Ladenness of Observation
2. Two Models of Scientific Explanation
3. Laws and Regularities

Essential/Recommended Readings:

- Hanson, N. R. (1958). Observation. In *Patterns of discovery: An inquiry into the conceptual foundations of Science* (pp. 4–30). C.U.P.
- Hempel, C. G. (2007). Two models of scientific explanation. In Y. Balashov& A. Rosenberg (Eds.), *Philosophy of science: Contemporary readings* (pp. 45–55). essay, Routledge.
- Hildebrand, Tyler (2023). *Laws of Nature*. Cambridge: Cambridge University Press (Introduction, pp. 1-5)

UNIT III: THE METHODOLOGY OF SCIENCE-I (12 Hours, 4 Weeks)

1. The Problem of Demarcation
2. Karl Popper's Theory of Falsification
3. Lakatos: Scientific Research Programmes

Essential Readings:

- Popper, K. (1963). *Conjectures and Refutations*, 2nd ed., pp.33-46. Routledge.
- Popper, K. (1959).*The Logic of Scientific Discovery*, pp. 10-20, 57-73. Routledge.
- Lakatos, I. (1978). A Methodology of Scientific Research Programmes. In J. Worrall & G. Currie (Eds.), *The methodology of scientific research programmes: Philosophical papers (Vol. 1*, pp. 47–67). Cambridge University Press.

UNIT IV: THE METHODOLOGY OF SCIENCE-II (12 Hours, 4 Weeks)

1. Kuhn: Paradigm and Paradigm Shift
2. Feyerabend: Epistemological Anarchism

Essential/Recommended Readings

- Kuhn, T. (1962). *The Structure of Scientific Revolutions*. Chicago University Press, chapters 1-2, 11- 12.
- Feyerabend, P. (1981). In I. Hacking (Ed.),How to Defend Society Against Science. In *Scientific revolutions* (pp. 156–167). Oxford University Press.

Suggestive Readings

- Boyd, R., Gasper, P., & Trout, J. D. (1999). *The Philosophy of Science*. MIT Press.
- Curd, M., Cover, J. A., &Pincock, C. (Eds.). (2013). *Philosophy of science: The central issues*. W.W. Norton & Company.
- Feynman, R. P. (2010). *The Feynman lectures on physics* (Vol. 1), pp. 52—56. Basic Books.
- Godfrey-Smith, P. (2003). *Theory and reality: An introduction to the philosophy of science*. The University of Chicago Press.
- Humphreys, P. (Ed.). (2016). *The Oxford Handbook of Philosophy of Science*. Oxford University Press.
- Ladyman, J. (2002). *Understanding philosophy of science*. Routledge.
- Machamer, P., & Silberstein, M. J. (2008). *The Blackwell Guide to the Philosophy of Science*. Blackwell Publishers.
- Okasha, S. (2016). What is Science? In *Philosophy of science: A very short introduction* (2nd ed., pp. 1–15). Oxford University Press.
- Papineau, D. (1996). *The Philosophy of Science*. Oxford University Press.

DISCIPLINE SPECIFIC ELECTIVE -5 (DSE-5) – Contemporary Indian Philosophy

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Contemporary Indian Philosophy DSE 5	4	3	1	Nil	12th Passed	None

Learning Objectives

- The objective of this course is to make students familiar with Contemporary Indian Philosophers and their philosophical thinking.
- Philosophers like Swami Vivekananda, Aurobindo, Gandhi, B R Ambedkar, JyotibaPhule, M N Roy, amongst others will be covered.
- In this course, various issues of contemporary relevance such as freedom, self-respect, Integral Yoga, Universalism etc. will be discussed

Learning outcomes

On completion of this course, the student can be expected to

- Have a comprehensive understanding of the conceptual roots of the Contemporary Indian Philosophy
- Understand how various social and contemporary issues have been addressed in this discipline
- Understand how one can have multiple perspectives to address various social issues like Caste, Religion, Yoga etc.
- An in-depth understating of various approaches to the study of Contemporary Philosophy in a comparative framework.

Unit- 1: Swami Vivekananda and Sri Aurobindo **(9 Hours, 3 Weeks)**

1. Swami Vivekananda: Universal Religion and Neo Vedanta
2. Sri Aurobindo: Integral Yoga

Essential/recommended readings

Swami Vivekananda , 'The way of realisation of a Universal Religion', The ideal of a Universal Religion *The Complete Works of Swami Vivekananda Vol.II*, Kolkata: Advaita Ashrama,pp.359-396

Integral Yoga: Sri Aurobindo's Teaching & Method of Practice , Compiled by Sri Aurobindo Ashram, Archives and Research Library, Lotus Press, USA

Unit- 2: Jyotiba Phule, B R Ambedkar and E V Ramaswamy Periyar (12 Hours, 4 Weeks)

1. JyotibaoPhule: Critical understanding of the slavery and Caste system
2. B.R.Ambedkar:Annihilation of Caste
3. E V RamaswamyPeriyar: Self Respect

Essential/Recommended Readings

Ambedkar, B R. (1946) *Who were the Shudras, Writings and Speeches, Vol. 7*, Preface, pp.9-20

G.P. Deshpande (Ed.) 'Excerpts from Gulamgiri', *Selected Writings of JotiraoPhule*New Delhi: Leftword, 2002, PP.36-63

G.Aloysious, Periyar and Modernity, New Delhi: Critical Quest, 2019, pp.22-51

Unit- 3: K.C.Bhattacharya and M K Gandhi (12 Hours, 4 Weeks)

1. K.C.Bhattacharyya-Swaraj in Ideas
2. M.K. Gandhi: Civilization and Swaraj

Essential/recommended readings

K.C. Bhattacharyya, 'Swaraj in Ideas', *Indian Philosophical Quarterly11:1984, pp385-393*

'What is Swaraj? 'Pp26-28, 'Civilization,'pp 34-38, 'What is true civilization?', pp.66-71) extracts fromAnthony J Parel .*Gandhi: Hind swaraj and other Essays* , Cambridge: Cambridge University Press,2009

Unit 4: M.N.Roy and J.Krishnamurti (12 Hours, 4 Weeks)

1. M.N. Roy: Radical Humanism
2. J.Krishnamurti: Knowledge and Freedom
3. D D Upadhyaya: Integral Humanism

Essential/Recommended Readings

M.N. Roy: Radical Humanist: Selected Writings, by M.N.Roy, 2004

Radical Democracy pp.38-51, Principles of Radical Democracy 22 Theses, p.5262, M.N.Roy New Humanism- A Manifesto,New Delhi: Ajanta Publications, 1981

J.Krishnamurti, 'Freedom from the Known,'*Total Freedom-The Essential Krishnamurti,* Chennai:

KFI, 2018, pp.109-132

Upadhyaya, D. D (2020) Lecture II: *Western vs. Bharatiya View*, in *Integral Humanism*, Prabhhat Prakasan Pvt Ltd.

Suggestive Readings

- T.M.P. Mahadevan&C.V.Saroja: Contemporary Indian Philosophy, Madras, 1985.
- Basant Kumar Lal: Contemporary Indian Philosophy, Delhi: MotilalBanarsidas, 1999.
- BenayGopal Ray: Contemporary Indian Philosophers, Allahabad, 1957.
- V.S.Naravane : Modern Indian Thought, Bombay, 1964
- *What Religion Is in the Words of Swami Vivekananda*, John Yale, Kessinger Publishing, ISBN 978-1-4254-8880-2
- A Reading of Jyotiba Phule's Gulamgiri: A Seminal Text on Caste,Pradnya Waghule ,1885, 2017,
- Gavaskar, Mahesh (1999). "Phule's Critique of Brahmin Power". In Michael, S. M. (ed.). Untouchable, Dalits in Modern India. Lynne Rienner Publishers. pp. 43–56. ISBN 978-1-55587-697-5.
- B. R. Ambedkar: Annihilation of Caste
- A.Parel, *The Political theory of Gandhi's Hind Swaraj*
- https://www.asj.upd.edu.ph/mediabox/archive/ASJ-07-03-1969/parel-political%20theory%20gandhi%20hind%20swaraj.pdf
- V.Geetha, 'Graded Inequality and Untouchability; Towards the Annihilation of Caste,' *BhimraoRamjiAmbedkar and the Question of Socialism in India*, New Delhi: Palgrave Macmillan,2022,pp147-190

DISCIPLINE SPECIFIC ELECTIVE (DSC-6): Sufism

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Bhakti and Sufism DSE 6	4	3	1	Nil	12th Passed	None

Learning Objectives

- The main objective of this course is to make students familiar with leading Sufis of India and world at large and explore their tradition and thought.
- The students will be introduced to the main currents of thought in Sufism. Sufism as a system of values is non-ritualistic and liberal. It fosters such virtues as kindness, compassion inter-cultural bonding, and inter-religious fraternity opposed to differences and discrimination
- This course will also introduce students to Islamic Mysticism, Islamic Philosophy and comparative mysticism,

Learning Outcomes

- Makes students gain familiarity with the various traditions of Sufis.
- Make students gain familiarity with the values and teachings of major Sufis in India and world at large.
- Make students learn about the bhakti movement emerging in India and its key figures.
- Since Sufi tradition presents a very positive and optimistic vision of coexistence in the theologically polarised global conditions, as a therapeutic learning the course would enables students to learn the pluralistic vision of Sufis against the quest for theological objectivism and orthodoxy.

- The course will enable students to learn the Sufi values of standing for tolerance, universalism, as it aligns with contemporary multi-cultural, multi-ideological and multi religious worldview.

UNIT 1- Bhakti and Sufism (9 Hours, 3 weeks)

1. Bhakti Movement and Emergence of Sufism
2. Concept of Love: Rumi
3. Nature of Mystic Experience

Essential/Recommended Readings

Govinda Pillai. P. (2022). "Bhakti and Sufism" In *Bhakti Movement: Renaissance or Revivalism,* Aakar Publication, New Delhi, pp. 156-164.
John A. Subhan (1938): *Sufism: Its Saints and Shrines*, Lucknow publishing home, Lucknow (selections: introduction p.6-16,Ch X p.174-192)
M.M. Sharif (1963): *A History of Muslim Philosophy Vol 1,(*selection: early sufisp.335-348)
M.M. Sharif-(1966): *A History of Muslim Philosophy, Vol 2*, Ottoharrassowitz Wiesbaden, New Jersey and PPC publication (p. 62-69) and Prof. Ghadir Golkarian- *Divine love in Rumi Lore and Mysticism,* Prof. L.S. Kazmi
Sir M. Iqbal (2022) *Reconstruction of Religious thought in Islam,* Kitab Bhawan , New Delhi(selection: p.124-130, chapter :The spirit of Muslim Culture)

UNIT II Bhakti: Integration and Influence (12 Hours, 4 Weeks)

1. Bhakti: Nanak, Kabeer
2. Darashikoh: Confluence of two oceans

Essential/Recommended Readings

Mani, Braj Ranjan (2009) *Bhakti Radicalism,* Critical Quest, New Delhi
Dr. Tara Chand(1963)- *Influence of Islam on Indian Culture*, LG Publishers, Delhi (p.143-163,166-177)
Athar Abbas Rizvi (1978): *History of Sufism in India*, MunshiramManoharlal Publishers Pvt. Ltd., Delhi.(selections:Chapter on Interaction between medieval Hindu Mystics and Sufis, p.322)
Darashikoh (1929) :*Confluence of Two Oceans*or *Majmaul Bahrain*, Mahfuzul Haq (tr.) (p.38-75)

UNIT III: Sufism: Principles and Methods (12 Hours, 4 Weeks)

1. Wahdat-al-Wujud- Ibn-e-Arbi
2. Wahdat-al-Shuhud-Shekh Ahmad Sirhindi
3. Reconcilliation - Shahwaliullah

Essential/Recommended Readings

M.M. Sharif-(1966):*A History of Muslim Philosophy, Vol 2,*Ottoharrassowitz Wiesbaden,New Jersey and Pakistan Philosophical Congress publication. (selection:p.798-810)
M. Abdul Haq Ansari (1997ed.): *Sufism and Sharah,* (selections on Ibn Arabi, Shaikh Ahmad Sirhindi, Shah Waliallah reconciliation)

UNIT IV: Characteristic of a Sufi: Moinuddin Chishti (12 Hours, 4 Weeks)

1. Love of God- NizamuddinAulia
2. Amir Khusru: Universal Love

Essential/Recommended Reading

M.M. Sharif- A History of Muslim Philosophy, Volume 1 and 2(see above)
Mir Valiuddin (1959): *The Quranic Sufism,* Motilal Banarsi Das, Delhi. (selections: Chishtiya Order p.105-108,Naqshbandiya Order p.109)

Suggestive Readings

Mani, Braj Ranjan (2009) *Bhakti Radicalism,* Critical Quest, New Delhi
Krishna, Daya ; Lāṭha, Mukunda & Krishna, Francine Ellison (eds.) (2000). *Bhakti, a contemporary discussion: philosophical explorations in the Indian Bhakti tradition.* New Delhi: Indian Council of Philosophical Research.
Rizvi, Athar Abbas. (1978). *A history of Sufism in India.* New Delhi : Munshiram Manoharlal
Nasr, S H (1972). *Sufi Essays.* SUNY Albany
Kazmi, Latif H. S. (2021) *Islamic Spiritual Tradition,* National Printers and Publishers
Dehlvi. Sadia (2010) *Sufism: The Heart of Islam.* Harper Collins
Ridgeon, L. (Ed.). (2014). *The Cambridge Companion to Sufism* (Cambridge Companions to Religion). Cambridge: Cambridge University Press.
Govinda Pillai. P. (2022). *Bhakti Movement: Renaissance or Revivalism,* Aakar Publication, New Delhi

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

Category II

BA (Prog.) with Philosophy as Major

(Courses for Undergraduate Programme of study with Philosophy discipline as one of the Core Disciplines)

DISCIPLINE SPECIFIC CORE COURSE (DSC-7): Truth Functional Logic

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Truth-Functional Logic DSC 7	4	3	1	Nil	12th Passed	None

Learning Objective

- This paper aims to equip the students with an understanding of basic logical concepts in modern logical theory
- This paper helps to enhance the student's reasoning capacity and problem-solving skills.
- In this paper students will learn to appreciate disciplined and rigorous thinking as applied to arguments in natural language
- The paper is designed to help students understand the power of a deductive theory and also the importance of the notion of deduction

Learning Outcomes

After completing this course:

- Students will be able to evaluate arguments symbolized in truth functional notation.
- Students will learn to use proof system for both sentential logic and predicate logic to construct derivations for valid arguments.
- Students will be able to formulate counterexamples for invalid arguments symbolized in the notations of predicate logic.
- Students will develop critical thinking and problem-solving skills.

UNIT 1: LOGIC OF SIMPLE ANDCOMPOUND PROPOSITIONS (Sentential) (12 Hours, 4 Weeks)

1. Sentence, Proposition and Argument.

2. Logical Connectives: Conjunction, Negation and Disjunction; Interdefinability
3. Truth Tables; Material Implication and Equivalence

UNIT II: SYMBOLISATION(12 Hours, 4Weeks)

1. Symbolisation and Translation
2. Truth table Method
3. Shorter Truth Table method (Reductio ad absurdum)

UNIT III: PROVING VALIDITY (PROOF PROCEDURES) (9 Hours, 3 Weeks)

1. Derivation Rules: Rules of Inference
2. Rules of Replacement
3. Formal Proof of Validity

UNIT IV: LOGIC OF SINGULAR/ UNIVERSAL PROPOSITIONS (12 Hours, 4 Weeks)

1. Symbolization of Categorical Propositions
2. The Four Rules of Inference (Quantification Rules); Restrictions on UG and EI
4. Proving Validity

Essential Recommended Reading:
Copi, I.M. Introduction to Logic, 14th and 15th Edition. India: Pearson, 2013, 2019.

Suggestive Readings:

- Hurley, Patrick. Introduction to Logic. Delhi :Wordsworth, 2007.
- Quine, W.V.O. Methods of Logic. London: Routledge, 1965.
- Sen, Madhucchanda. Logic. Delhi: Pearson, 2008.
- Copi, I.M. Symbolic Logic, 5th edition. India: Pearson, 2008.

DISCIPLINE SPECIFIC CORE COURSE (DSC-8): Greek Thought

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 8 Greek Thought	4	3	1	Nil	12th Passed	None

Learning Objectives

- The course is intended for giving a comprehensive account of early Greco-Roman Philosophy, popularly known as early 'Greek Thought'
- The content covered in the course will be the fundamental aspects of being, knowledge and virtue
- The thinkers covered in the course will be from the Pre-Socratics to the Stoics

Learning Outcomes

- The student will comprehend major trends of thought in Greek Philosophy
- The student will understand the most fundamental aspects of philosophy that remain with us today and ideas that still form the frame of the subject
- The student will be able to critically assess a significant aspect of western intellectual history

Unit -I: Cosmos **(12 Hours, 4 Weeks)**

1. The spirit of Naturalism
2. The concept of *Arche*

Essential/Recommended Readings:

J. Barnes. Early Greek Philosophy. Harmondsworth: Penguin Books,1981. p.xi-xxv.

Curd, Patricia. A Presocratic Reader: Selected Fragments and Testimonia Second Edition Edited, with Introduction. Translations by Richard D Mc Kirahan and Patricia Curd (Hackett Publishing Company, Inc, 2011) p.13-19.

Kirk, G.S and Raven, J.E, The Presocratic Philosophers: A Critical History with Selection of Texts (Cambridge; At The University Press, 1957) pp74-99

Vijay Tankha. Ancient Greek Philosophy. (Pearson: Delhi, 2014). Chapter-1

Unit-II: Metaphysics **(12 Hours, 4 Weeks)**

1. Doctrine of Flux
2. Theory of Number
3. Notion of Being

Essential/Recommended Readings:

Curd, Patricia. A Presocratic Reader: Selected Fragments and Testimonia Second Edition Edited, with Introduction. Translations by RichardDMckirahan and Patricia Curd (Hackett Publishing Company, Inc,2011) ,p.39-65,

G.S Kirk and J.E. Raven, The Pre-Socratic Philosophers, Chapters vi and x

Vijay Tankha. Ancient Greek Philosophy. (Pearson: Delhi, 2014). Chapters 2, 3 and 5

Unit-III: Epistemology and Ethics **(9 Hours, 3 Weeks)**

1. The concept of Knowledge in Greek Thought
2. The concept of Virtue in Greek Thought

Essential/Recommended Readings:

Christopher Shields (edited)The Blackwell Guide to Ancient Philosophy. (Blackwell Publishing, 2003), Chapter-2, Parts I and II

Mary Louise Gill and Pierre Pellegrin (eds). A Companion to Ancient Philosophy, (Blackwell, 2006.) Relevant chapters

Vijay Tankha. Ancient Greek Philosophy. (Pearson: Delhi,2014)

Chapter-9 (p.316-324) and chapter-10

Unit-IV: The Best Life **(12 Hours, 4 Weeks)**

1. Pleasure and happiness
2. Living according to nature

Essential/Recommended Readings:

Christopher Shields(edited). The Blackwell Guide to Ancient Philosophy (Blackwell Publishing, 2003, chapters 12 and 13

Reference Reading for all units:

Warren, James & Frisbee Sheffield (eds.). The Routledge Companion to Ancient Philosophy. Routledge: London and New York, 2014. Part-1., 94-124 and chapters 27 and 30.

Courses for Undergraduate Programme of study with discipline of Philosophy as one of the Core Disciplines (Minor)

DISCIPLINE SPECIFIC CORE COURSE (DSC-4): Truth-functional Logic

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Truth-functional Logic DSC 4	4	3	1	Nil	12th Passed	None

Learning Objective

- This paper aims to equip the students with an understanding of basic logical concepts in modern logical theory
- This paper helps to enhance the student's reasoning capacity and problem-solving skills.
- In this paper students will learn to appreciate disciplined and rigorous thinking as applied to arguments in natural language
- The paper is designed to help students understand the power of a deductive theory and also the importance of the notion of deduction

Learning Outcomes

After completing this course:

- Students will be able to evaluate arguments symbolized in truth functional notation.
- Students will learn to use proof system for both sentential logic and predicate logic to construct derivations for valid arguments.
- Students will be able to formulate counterexamples for invalid arguments symbolized in the notations of predicate logic.
- Students will develop critical thinking and problem-solving skills.

UNIT 1: LOGIC OF SIMPLE ANDCOMPOUND PROPOSITIONS (Sentential) (12 Hours, 4 Weeks)

1. Sentence, Proposition and Argument.
2. Logical Connectives: Conjunction, Negation and Disjunction; Interdefinability
3. Truth tables; Material Implication and Material Equivalence

UNIT II: SYMBOLISATION (12 Hours, 4 Weeks)

1. Symbolisation and Translation
2. Truth table Method
3. Shorter Truth Table method (Reductio ad absurdum)

UNIT III: PROVING VALIDITY (PROOF PROCEDURES) (9 Hours, 3 Weeks)

1. Derivation Rules: Rules of Inference
2. Rules of Replacement
3. Formal Proof of Validity

UNIT IV: LOGIC OF SINGULAR/ UNIVERSAL PROPOSITIONS. (12 Hours, 4 Weeks)

1. Symbolization of Categorical Propositions
2. The Four Rules of Inference (Quantification Rules); Restrictions on UG and EI
4. Proving Validity

Essential Recommended Reading:

Copi, I.M. Introduction to Logic, 14th and 15th Edition. India: Pearson, 2013, 2019.

Suggestive Readings:

- Hurley, Patrick. Introduction to Logic. Delhi:Wordsworth, 2007.
- Quine, W.V.O. Methods of Logic. London: Routledge, 1965.
- Sen, Madhucchanda. Logic. Delhi: Pearson, 2008.
- Copi, I.M. Symbolic Logic, 5th edition. India: Pearson, 2008.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

GENERIC ELECTIVES (GE-12): Bioethics

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Bioethics GE 12	4	3	1	Nil	12th Passed	None

Learning Objectives

- The course aims at ethical analysis of the topics within the realm of bio-medical sciences and legal studies.
- It is a career-oriented curriculum which enables students to develop competence in policy making and participation in ethics committee of various medical and care institutes.
- It sensitizes the minds towards the ongoing ethical dilemmas

Course Learning Outcomes

- The learning outcomes of this course are multidimensional. It forms a strong base in the field of research of ethics and medicine care.
- It would also increase the student's ability to identify their role in capacity building
- It directly enforces student's role in social responsibility.

UNIT 1- INTRODUCING BIOETHICS **(9 Hours, 3 Weeks)**

1. Historical Survey of Bioethics
2. Main Themes of Bioethics

Essential/ Recommended Readings

Khuse, H and P. Singer. "What is Bioethics? A Historical Introduction." In *A Companion to Bioethics* 2nd ed., Edited by H. Kuhse and P. Singer, 3-11. UK: Wiley Blackwell, 2009

UNIT 2- CORE CONCEPTS **(12 Hours, 4 Weeks)**

1. Issues regarding Informed Consent
2. The Concept of Confidentiality

Essential/Recommended Readings

Beauchamp, Tom L. "Informed consent: Its Historical Meaning and Present Challenges" In *Bioethics: An Anthology* 3rd ed. Edited by Helga Kuhse, Udo Schuklenk and Peter Singer, 635-641. UK: Wiley Blackwell, 2015.

Slowther, Anne and Irwin Kleinman. "Confidentiality" In *Cambridge Textbook of Bioethics*, Edited byP. Singer and A. M. Viens, 43-48. Cambridge: Cambridge University Press, 2008.

UNIT-3 ETHICAL DILEMMAS **(12 Hours, 4 Weeks)**

1. Women's Rights to her Body
2. Mother: Biological and Stand-In Mothers

Essential/Recommended Readings

Warren, Mary Anne. "Abortion." In *A Companion to Bioethics* 2nd Ed. Edited by Helga Kuhse and Peter Singer, 140-148. UK: Wiley Blackwell, 2009.

Steinbock, Bonnie. "The Surrogate Motherhood as Prenatal Adoption." In *Law, Medicine and Healthcare* 6, no. 1 (1988): 44-50.

UNIT 4- PERSONS AND LIVES **(12 Hours, 4 Weeks)**

1. Life on the scale of Values
2. Philosophical Issues of Assisted Reproduction

Essential/Recommended Readings

Harris, John. "Value of Life". In *Bioethics: An Anthology* 3rd ed. Edited by Helga Kuhse, Udo Schuklenk and Peter Singer, 397-405. UK: Wiley Blackwell, 2015.

Purdy, Laura M. "Assisted Reproduction, Prenatal Testing and Sex Selection." In A Companion to Bioethics 2nd Ed. Edited by Helga Kuhse and Peter Singer, 178-192 . UK: Wiley Blackwell, 2009.

Suggestive Readings

Jecker, Nancy S., Albert R. Johnson, and Robert A. Pearlman, eds. *Bioethics : An Introduction to the history, method and practice*. New Delhi: Jones and Barlett, 2010.
Arthur L.Caplan and Robert Arp, eds. *Contemporary debates in Bioethics*. UK: Blackwell Publishing Ltd, 2014.

GENERIC ELECTIVES (GE-13): Symbolic Logic

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Symbolic Logic GE 13	4	3	1	Nil	12th Passed	None

Learning Objectives

- This course is designed for students who are comfortable with elementary mathematical and algebraic techniques.
- It will cover both truth functional logic and methods of deductive proof, quantification and predicate logic along with the logic of relations.

Learning Outcomes

After completing this course students are expected to be able to do the following:

1. The student will be enabled to understand advanced methods in logic
2. The student will understand the importance of formal methods in philosophy
3. The student will be able to construct symbolic form of both sentential as well as predicate logic and finally examining more complex arguments for deriving a clear rational conclusion.
4. The student will develop competence in formulating counterexamples for invalid arguments symbolized in the notations of predicate logic.

Unit 1: Basic Logical Concepts & Connectives **(9 Hours, 3 Weeks)**

1. Truth and Validity
2. Relevance of Symbolic Logic
3. Uses of Symbols and Symbolization
4. Truth Tables: Statements & Argument

Unit 2: The Method of Deduction **(12 Hours, 4 Weeks)**

1. Formal proof of validity: Rules of Inference and Rules of Replacement
2. Techniques for proving validity/invalidity: Indirect Proof, Conditional Proof
3. Proofs of Tautologies

Unit 3: Quantification Theory **(12 Hours, 4 Weeks)**

1. Symbolization of Singular, General and Multiply-general propositions

2. Restrictions on Quantifier Rules:
   (a) Special Restriction on UG (b) Special Restriction on EI
3. Proving validity and Proving invalidity

Unit 4: The Logic of Relations **(12 Hours, 4 Weeks)**

1. Symbolization: Relation
2. Some attributes of relations
3. Predicate Variables and Attributes of Attributes.

Essential Recommended Readings: -

1. Copi, I.M. Symbolic Logic, 5th edition. India: Pearson, 2008.Ch1- 5
2. Copi, Irving M. *Introduction to logic*. 6th Ed. New York London: Macmillan Collier Macmillan, 1982. Ch1.

Suggested Readings:

- Hurley, Patrick J. *A concise introduction to logic*. Boston, MA: Wadsworth Cengage Learning, 2012.
- Sen, Madhucchanda. Logic. Delhi: Pearson, 2008.
- Jetli & Prabhakar. Logic. India: Pearson, 2012

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DEPARTMENT OF PHILOSOPHY

Semester V

Category I

(B.A. Honours in Philosophy in three years)

DISCIPLINE SPECIFIC CORE COURSE -13 (DSC-13) – Analytic Philosophy

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Analytic Philosophy DSC 13	**4**	**3**	**1**	**None**	**12th Passed**	"Fundamentals of Philosophy" Sem II

Learning Objective

- Analytic Philosophy is considered as a dominant philosophical tradition in Anglo-American philosophy from the early 20th century.
- The objective of this course is to make the studentsconversant with an important school of Western Philosophy in the 20thcentury that led to arevolutionary re-conceptualization of the subject matter and methodology of philosophy interms of linguistic analysis, logic and mathematics.
- This course will study some of these major thinkers of the analytic tradition like Gottlob Frege in Germany, Bertrand Russell and G. E. Moore in Britain and Ludwig Wittgenstein

Learning Outcomes

After completing this course in Analytic Philosophy students will have:

1. A strong logical foundation to analyse complex set of interconnected concepts.
2. A critical and reflective insight into complex philosophical issues.
3. Ability to directly address ordinary questions in a constructive manner.
4. Analytical skill to progress by intensively investigating a limited range of philosophical issues that lead to the answers to broader questions.

UNIT 1: Frege on Meaning **(9 hours, 3 weeks)**

- Frege: Philosophy of Language
- Sense and Reference

- Truth

Essential/Recommended Reading

:

Frege, G. "The Thought: A Logical Inquiry", *Mind*, Vol. 65, No. 259 (Jul. 1956), Oxford University Press, pp. 289-311.

UNIT II: Russell on Knowledge (12 Hours, 4 weeks)

- Bertrand Russell: Epistemology
- Two types of knowledge
- Knowledge by Acquaintance and Knowledge by Description

Essential/Recommended Reading:

"Knowledge by Acquaintance & Knowledge by Description"
Russell, B. *The Problems of Philosophy.* London: Oxford University Press, 1959, (Chapter 5).

UNIT III: Logical Atomism and Logical Positivism (12 Hours, 4 weeks)

- Language and Reality
- Propositions and Truth
- The status of Facts

Essential/Recommended Reading:

Russell, B. *The Philosophy of Logical Atomism.* London: Routledge, 2010, (lecture 1 and 2).
Passmore, John Arthur (1967). Logical Positivism. In P. Edwards (ed.), *The Encyclopedia of Philosophy.* Macmillan. pp. 52--57.

UNIT IV: Wittgenstein on Meaning (12 hours, 4 weeks)

1. Ludwig Wittgenstein: Language and Reality
2. Facts
3. Picture theory

Essential/Recommended Reading:

Wittgenstein, L. *Tractatus Logico Philosophicus*, London: KeganPaul, 1922, (Propositions:1, 2 & 3)

Suggestive Readings:

- Dummett, M. *Frege: Philosophy of Language.* Harvard University Press, 1981.
- Russell, B. *The Problems of Philosophy.*London: OxfordUniversity Press, 1959.
- Russell, B.*The Philosophy of Logical Atomism.*London: Routledge, 2010.
- Russell, B., "On Denoting", *Mind*, 1905, pp. 479-493.

- Ayer, A. J. *Language, Truth and Logic*. London: Victor Gollancz, 1938.
- Wittgenstein, L. *TractatusLogicoPhilosophicus*, London: Kegan Paul, 1922.
- Wittgenstein, Ludwig. *Philosophical Investigations: PhilosophischeUntersuchungen.* Oxford: Blackwell, 1968. (Selected Sections -1, 11,12,23,43,65,66,67,69,83,84 & 91)
- Martinich, A. P. and Sosa D. (Ed.) *Analytic Philosophy: An Anthology*. 2nd ed. Malden, MA: Blackwell,2011.
- Glock, Hans-Johann. *What Is Analytic Philosophy?*Cambridge, UK: Cambridge UniversityPress, 2008.
- Schwartz, Steve. *A Brief History of Analytic Philosophy: From Russell to Rawls*. Chichester:Wiley-Blackwell, 2012.
- Urmson, James O. *Philosophical Analysis: Its Development Between the Two World Wars*.New York: Oxford University Press, 1978.

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Continental Philosophy DSC 14	**4**	**3**	**1**	**NIL**	**12th Passed**	"Texts of Western Philosophy" Sem IV

The main objective of this course is to make students familiar with the leading figures of 19th and 20th century Continental philosophy.

Learning Objectives

- This course will familiarize students with the stream of philosophy called Continental Philosophy
- Key thinkers like Hegel, Husserl, Sartre, Heidegger and Foucault will be discussed in this book
- Key themes like method of dialectics, phenomenology, Sartre's concept of Look, Heidegger on technology and Foucault's main ideas will be analysed at length

Learning Outcomes

- Students will understand the basics of Continental Philosophy and also be acquainted with major currents of thought in this tradition
- Students will learn to analyze the various ideas of the thinkers in the course, especially those of Hegel and Husserl's key contributions

- Students will develop the ability to understand original writings of philosophers
- Students will understand the general relevance of continental philosophy and its contemporary reach and influence

UNIT 1: Introducing Continental Philosophy **(12 Hours, 4 Weeks)**

1. Critical Philosophy of Immanuel Kant
2. From Modernity to Enlightenment
3. Critics of the Enlightenment

Essential/Recommended Readings

West, David (1996). *An Introduction to Continental Philosophy*. Polity, pp. 1 – 33 (Introduction to Continental Critics of Enlightenment)

UNIT II : Hegel (9 Hours, 3 weeks)

1. Phenomenology of Spirit
2. Dialectic

Essential/Recommended Reading

1. AlexandreKojeve.1980.*IntroductiontotheReadingofHegel:LecturesonThe Phenomenology of the Spirit,* pp. 3-30. Ithaca & London: Cornell University Press.

UNITIII: Husserl and Sartre (12 Hours, 4 Weeks)

- Phenomenological Method
- Intentionality
- Consciousness
- Concept of Look

Essential/Recommended Readings

EdmundHusserl.2003."PhenomenologicalMethodandIntentionalityofConsciousness. " In *Husserl's Phenomenology*, pp.13-21 & pp. 39-43.Ed. Dan Zahavi. California: Stanford University Press.

Jean-PaulSartre,1984."TheConcept of Look"in*BeingandNothingness*,pp.252-270. Trans. Hazel E. Barnes. New York: Washington Square Press.

UNITIV: Heidegger and Foucault **(12 Hours, 4 Weeks)**

- Man and Technology
- Essence of Technology
- PerspectivesofFoucaultandHeidegger

Essential/Recommended Readings

MartinHeidegger.1977.TheQuestionConcerningTechnologyandOtherEssays,PartI-" *The Question Concerning Technology"*, pp. 3-35. Translated and with an Introduction by William Levitt. New York & London: Garland Publishing, INC.

Michel Foucault.1984. The Foucault Reader. Part II-Docile Bodies, pp.179-187.edited byPaul,Rabinow. New York: Pantheon Books.

Suggesive Readings

Cutrofello, Andrew (2004). *Continental Philosophy: A Contemporary Introduction*. Routledge.

Kearney, Richard & Rainwater, Mara (eds.) (1995). *The Continental Philosophy Reader*. Routledge.

McNeill, William & Feldman, Karen S. (eds.) (1998). *Continental Philosophy: An Anthology*. Wiley-Blackwell.

Kearney, Richard (ed.) (2003). *Continental Philosophy in the 20th Century: Routledge History of Philosophy Volume 8*. Routledge.

Solomon, Robert C. (1988). *Continental Philosophy Since 1750: The Rise and Fall of the Self*. Oxford University Press.

DISCIPLINE SPECIFIC CORE COURSE – 6 (DSC-6): Approaches to Indian Philosophy

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Approaches to Indian Philosophy DSC 15	**4**	**3**	**1**	**NIL**	**12th Passed**	**None**

Learning Objectives

- This course will introduce students to various ways of reading Indian philosophy-from teh spiritual to the material.
- This course will give a corrective picture of Indian philosophy, paving the way for a better and more nuanced reading of the subject
- This course will provide a better base to the student to do more serious research in the subject that is both relevant and contemporary

Learning Outcomes

- Upon taking this course, the students will have a proper historical understanding of Indian philosophy
- The student will be able to analyse the structure, dogmas, and myths of Indian philosophy
- The student will develop critical faculties to understand the historical trajectory of Indian philosophy.

Unit I Indian Philosophy: Tradition and Significance (9 Hours, 3 Weeks)

1. Traditional Approach
2. Concept of Philosophy in India

Essential/Recommended Readings

S.Radhakrishnan and Charles A Moore. 'History of Indian Thought', Source Book in Indian Philosophy, Princeton: Princeton University Press,1957, Pp.XV-XXIX

Bimal K Matilal, 'On the concept of Philosophy in India', Jonardon, Ganeri (Ed.) *Indian Philosophy: A Reader* London: Routledge,2020,pp.7-16

Unit II Dogmas and Debates (12 Hours, 4 Weeks

1. Discourse and Debates
2. Dogmas and Myths

Essential/Recommended readings

Raghramaraju, 'The Discourse of Debates in Indian Philosophy: Classical, Colonial, and Contemporary',*Debates in Indian Philosophy-Classical, Colonial and Contemporary*, New Delhi: Oxford University Press, 2007, pp 1-27

Dasgupta, S.N.(1982). 'Dogmas of Indian Philosophy,'*Philosophical Essays*, New Delhi: MotilalBanarsidasPublications.

Dayakrishna, (1991).Three Myths about Indian Philosophy, *Indian Philosophy: A Counter Perspective* Delhi: Oxford University Press.

Unit III Materialistic Approach to Indian Philosophy (12 Hours, 4 Weeks)

1. Deviating from the "tradition"
2. A different reading of Indian philosophy
3. Naturalism in Indian Philosophy

Essential/recommended readings

Dale Riepe-'Introduction', *Naturalistic Tradition of Indian Philosophy, Delhi:* MotilalBanarsidass, 1964,pp.3-14,

Chattopadhyaya,Debi Prasad.(1976).'Materialism in Indian Philosophy' Knowledge and Intervention Calcutta: Firma KLM ,1985,pp.196-227
Roy, M.N.(2007). Introduction,K.SatchidanadaMurty, Evolution of Indian Philosophy Delhi: DK Print World.
M.N.Roy, Materialism in Indian Philosophy, New Delhi: Critical Quest2017,pp.3-40 (Excerpts from M .N. Roy's Materialism: An Outline of Scientific Thought)

Unit IV Alternative approach to Indian Philosophy (12 Hours, 4 Weeks)

1. Caste, Society and Philosophy: Ambedkar
2. The Philosophy of Hinduism

Essential/Recommended readings

Dr.BabasahebAmbedkar Writings and speeches vol.1, New Delhi: DrAmbedkar Foundation, GoI ,2020, pp.50-58,69-80 (Excerpts from *Annihilation of Caste)*

Dr.BabasahebAmbedkar Writings and speeches vol.3, New Delhi: DrAmbedkar Foundation, GoI , 2020,Pp.66-72,80-87 (Excerpts from *Philosophy of Hinduism*)

Ambedkar,B.R. Selected excerpts from*Philosophy of Hinduism, Riddles of Hinduism,Annihilation of Caste,Buddha and His Dhamma,* Mumbai: Government of Maharashtra pp.50-58,69-80

Suggestive Readings

- Debiprasad, Chattopadhyaya*What is Living and Dead in Indian Philosophy*, Mumbai: Peoples Publishing House
- *Dr.Babasaheb Ambedkar Writings and Speeches,*New Delhi: DrAmbedkar Foundation, GoI ,2020, pp249-309
- Nalini Bhushan and Jay L Garfield (Eds.), *Indian Philosophy in English- From Renaissance to Independence,* Oxford: Oxford University Press,2011
- Sharad Deshpnde, *Philosophy in Colonial India*, New Delhi: Springer,2015
- K.Sachidanandamurthy and K.Ramakrishna Rao (Eds), *Current trends in Indian Philosophy*, London: Asia Publishing House, 1972
- *Debates in Indian Philosophy-Classical, Colonial and Contemporary*, New Delhi: Oxford University Press,2007
- Dale Riepe, *Indian Philosophy since Independence, Calcutta: Research India Publications*
- Jonardon Ganeri (Ed.) *Indian Philosophy: A Reader* London: Routledge,2020
- Ronald Inden, Orientalist Constructions of India, *Modern Asian Studies*,Vol.20:3,1986., pp.401-446

DISCIPLINE SPECIFIC ELECTIVE - (DSE-7) – Philosophy of Mind

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Philosophy of Mind DSE 7	4	3	1	Nil	12th Passed	None

Learning Objective

The philosophy of mind is one of the most exciting areas within philosophy. This course is an introduction to the Philosophy of Mind.

- The course will introduce students to the basic problems of philosophy of mind
- The course will discuss the mind body problem and various solutions to it in depth
- The course will provide a firm basis for the development of their philosophical knowledge and understanding to analyse and evaluate the key theories about the nature of mind and itsrelation to the world.

Learning Outcomes

The student at the end of the course:

- The student will grasp the mind body problem from various angles
- The student will develop insight into the issues that are common challenges like the question of subjective experience relative to a person's material properties and processes.
- 3.The student will be able to critically analyse the fundamental problems in philosophy and appreciate some of the solutions and problems with the solutions
- The student will develop an interest in modern cognitive science

UNIT I The Mind/Body Problem (12 Hours, 4 Weeks)

1. Thinking and Being
2. Dualism
3. Mind Body Interaction

Essential Recommended Readings:

1. Descartes, R. "Meditations II and VI". *Philosophy of Mind: Classical and Contemporary Readings*, edited by David Chalmers, Oxford: Oxford University Press, 2002, pp. 10-21.
2. Ryle, G. "Descartes' Myth," *Philosophy of Mind: Classical and Contemporary Readings*, edited by David Chalmers, Oxford: Oxford University Press, 2002, pp. 32-38.

UNIT-II: Identity Theory and Functionalism (12 Hours, 4 Weeks)

1. The Material Mind
2. Identity theory
3. Functionalism

Essential Recommended Readings:

1. Smart, J.J.C. "Sensations and Brain Processes". *Philosophy of Mind: Classical and Contemporary Readings*, edited by David J. Chalmers, Oxford: Oxford University Press, 2002, pp. 60-68.
2. Putnam, H. "The Nature of Mental States".*Philosophy of Mind: Classical and Contemporary Readings*, edited by David J. Chalmers, Oxford: Oxford University Press, 2002, pp. 73-79.

UNIT III Subjective Experience (12 Hours, 4 Weeks)

1. Subjective and Objective
2. The Problem of Qualia

Essential Recommended Readings:
1. Nagel, T. "What is it Like to Be a Bat?".*Philosophy of Mind: Classical and Contemporary Readings*, edited by David J. Chalmers, Oxford: Oxford University Press, 2002, pp. 219-225.
2. Jackson, F. "Epiphenomenal Qualia".*Philosophy of Mind: Classical and Contemporary Readings*, edited by David J. Chalmers, Oxford: Oxford University Press, 2002, pp. 273-280.

UNIT-IV Problem of Consciousness (9 Hours, 3 Weeks)

- The Mysterious Flame
- Consciousness and Material Reality

Essential Recommended Readings:

1. Chalmers, D."Facing up to the Problem of Consciousness." *Journal of Consciousness Studies*, 2, No.3, 1995, pp. 200-219.

Suggestive Readings:

- Chalmers, David. "Naturalistic Dualism". *The Blackwell Companion to Consciousness*,
  edited by Susan Schneider and Max Velmans, Oxford: Wiley Blackwell, 2017, pp. 263-273.
- Crane, T. *The Mechanical Mind: A Philosophical Introduction to Minds, Machines and*
  Mental Representation,(2nd edition). New York: Routledge, 2003.
- Levin, Janet. "Functionalism".*The Stanford Encyclopedia of Philosophy* (Fall 2018 Edition), edited by Edward N. Zalta, 20 Jul, 2018:https://plato.stanford.edu/archives/win2021/entries/functionalism/
- Searle, John. "Biological Naturalism". *The Blackwell Companion toConsciousness*, edited by Susan Schneider and Max Velmans, Oxford:Wiley Blackwell, 2017, pp. 327-336.
- Banks, WilliamP. *EncyclopediaOf Consciousness*. Oxford: Elsevier Academic Press, 2009.
- Churchland, Patricia. *Matter and Consciousness: A Contemporary Introduction to the Philosophy of Mind*. Cambridge (MA): MIT Press, 1988.
- Chalmers, David, J. *Philosophy of Mind: Classical and Contemporary Readings. Oxford: Oxford University Press*. 2002.
- Heil, John. *Philosophy of Mind: A Contemporary Introduction (3rd edition)*. London: Routledge, 2013.
- Kim, Jaegwon. *Philosophy of Mind, (3rd edition)*. Oxford: Westview Press, 2010.
- Churchland, Patricia. *Matter and Consciousness: A Contemporary Introduction to the Philosophy of Mind*. Cambridge (MA): MIT Press, 1988.

DISCIPLINE SPECIFIC ELECTIVE - (DSE-8) – Philosophy of Law

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 8 Philosophy of Law	4	3	1	Nil	12th Passed	None

Learning Objectives

The course in Philosophy of Law, seeks to:

- Familiarize students with the nature and purpose of law by examining questions such as "What is (the nature of) law?", "How, if at all, is law connected with morality?" and "What is justice?", and to instruct students about possible answers and arguments provided in legal philosophy and theory.
- Introduce students to philosophical schools such as Legal Positivism and Natural Law.
- Help students critically examine the institution of legal punishment that pertains to the coercive impact of law.

Learning Outcomes

- The ideal outcome of this course is to make students understand the concept of law, its place in our lives, its formal structure, rules and modalities.
- Students should be able to discuss and argue on crucial legal questions that impact the life of common citizens with sensitivity, acumen, precision and insight.

UNIT 1 **(12 Hours, 4 Weeks)**

Law: Concept, Meaning and Definition

1. Theories of Law: Aquinas and Austin
2. The Concept of *Nyaya*: Agreement and Disputes - Kautilya

Essential/Recommended Reading:

- Topics 1 from Altman, Andrew; *Arguing About Law: An Introduction to Legal Philosophy*, Australia: Wadsworth, 2001, pp 32-58
- Topic 5 from Shamasastry, R. (Tr.), Kautilya'sArthashastra, Book III – Concerning Law Chapter I. Determination of Forms of Agreement; Determination of Legal Disputes, https://csboa.in/eBooks/Arthashastra_of_Chanakya_-_English.pdf; pp 213-218

UNIT 2 Legal Obligation: Reason and Scope (12 Hours, 4 Weeks)

1. Why Should We Obey the Law
2. The Ambit of Legal Obligation
3. The Rule of Law

Essential/Recommended Readings

- Topic 1 from Mackie, J. L.; The Obligation to Obey the Law, Virginia Law Review, Vol. 67, No. 1, The Symposium in Honor of A. D. Woozley and Obedience (Feb 1981), pp. 143-158
- Topic 2 from Fuller, Lon; The Case of the Speluncean Explorers, Harvard Law Review, Vol. 62, No. 4, February 1949, pp 616-645
- Topic 3 from Marmor, Andrei; The Ideal of the Rule of Law, A Companion to Philosophy of Law and Legal Theory (Second Edition), Dennis Patterson (Ed.), Blackwell Publishing Ltd., pp 666-674

UNIT 3 Legal Issues in India (9 hours, 3 weeks)

1. Basic Structure of the Constitution
2. Judicial Review

Essential/Recommended Readings

- Topic1 from Abridged Judgement of KesavanandBharati Vs. State of Kerala; AIR 1973 SC 1461
- Topic2 from Baxi, Upendra; Who Bothers about the Supreme Court? The Problem of Impact of Judicial Decisions, Journal of the Indian Law Institute, Vol. 24, No. 4 (October-December 1982), pp. 848-862

UNIT 4 Fundamentals of Law (12 Hours, 4 Weeks)

1. Codification
2. *Mens Rea/Actus Reus*
3. Crime and Punishment

Essential/Recommended Readings

- Topic 1 from Alfange, Dean; Jeremy Bentham and Codification of Law, Cornell Law Review, Vol. 55, Issue 1, November 1969, pp 58-75
- Topic 2 from Tebbit, Mark; *Philosophy of Law: An Introduction*, (3rd Edition), Routeledge 2017, pp 193-212
- Topic 3 from from Tebbit, Mark; *Philosophy of Law: An Introduction*, (3rd Edition), Routeledge 2017, pp 242-253

Additional Resources:

- Marmor, Andrei, *Philosophy of Law*, New Jersey: Princeton University Press, 2011
- Rangarajan, L. N. (Tr. & ed.), *Kautilya: The Arthashastra*, Penguin Books India (P) Ltd., New Delhi, 1992
- Golding, Martin Philip, and Edmundson, William A., *The Blackwell Guide to Philosophy of Law and Legal Theory*, Oxford: Blackwell, 2005
- Marmor, Andrei (ed), *The Routeledge Companion to Philosophy of Law*,New York: Routeledge, (1st ed.), 2012
- Choudhary, S., Khosla, M. and Mehta, P.B., *The Oxford Handbook of the Indian Constitution* (1st ed.), Oxford: Oxford University Press, 2016
- Jain, M.P., *Indian Constitutional Law*, Lexis Nexis, (8th ed.), 2018
- Rai, Udai Raj, *Fundamental Rights and their Enforcement* India: Prentice Hall, 2011

DISCIPLINE SPECIFIC ELECTIVE - (DSE-9) – Medical Ethics: From Principles to Practice

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 9 Medical Ethics - From Principles to Practice	**4**	**3**	**1**	**Nil**	**12th Passed**	**None**

The course aims at ethical analysis of the topics within the realm of bio-medical sciences and legal studies.

Learning Objectives

- The course aims at ethical analysis of the topics within the realm of bio-medical sciences and legal studies.
- It is a career-oriented curriculum which enables students to develop competence in policy making and participation in ethics committee of various medical and care institutes.
- It sensitizes the minds towards the ongoing ethical dilemmas.

Learning Outcomes

The learning outcomes of this course are multidimensional.

- It forms a strong base in the field of research of medical ethics
- It would also increase the student's ability to identify serious concerns regarding the expanding field of medicine and appreciate ethical concerns in new areas of medical research
- It increases the student's general awareness about public health ethics

UNIT 1- Introducing Medical Ethics **(9 Hours, 3 Weeks)**

1. Tracing the past of medical ethics
2. Scope of Medical ethics

Essential/Recommended Readings

A.F.Cascais (1997), "Bioethics: History, Scope, Object," In *Global Bioethics,* 10:1-4, 9-24. Retrieved on 13 July 2022. https://doi.org/10.1080/11287462.1997.10800712.

UNIT 2- CORE CONCEPTS **(12 Hours, 4 Weeks)**

1. Philosophical Issues of Informed Consent
2. The concept of Confidentiality

Essential/Recommended Readings

Williams, J. R. "Consent". In *Cambridge Textbook of Bioethics*, Edited by P. Singer and A. M. Viens, 11-16. Cambridge: Cambridge University Press, 2008.
Beauchamp, Tom L. "Informed consent: Its Historical Meaning and Present Challenges" In *Bioethics: An Anthology* 3rd ed. Edited by Helga Kuhse, UdoSchuklenk and Peter Singer, 635-641. UK: Wiley Blackwell, 2015.
_Slowther, Anne and Irwin Kleinman. "Confidentiality" In *Cambridge Textbook of Bioethics*, Edited byP. Singer and A. M. Viens, 43-48. Cambridge: Cambridge University Press, 2008.

UNIT-3 ETHICAL DILEMMAS

(12 Hours, 4 Weeks)

1. Mothers: Biological and Other
2. Moral Status of Animals

Essential/Recommended Readings

Steinbock, Bonnie. "The Surrogate Motherhood as Prenatal Adoption." In*Law, Medicine and Healthcare* 6, no. 1 (1988): 44-50.
_Darr, Judith. "The Reproductive Revolution". In *The New Eugenics: Selective Breeding in an Era of Reproductive Technologies*, 1-27. USA: Yale University Press, 2017.
Use of animals in medical experimentation and research
Bernard. E. Rolling. "The Moral status of Animals and their use as Experimental Subjects." In *A Companion to Bioethics* 2nd Ed. Edited by Helga Kuhse and Peter Singer, 495-509. UK: Wiley Blackwell, 2009.

UNIT 4 Medical ethics: Death and Dying **(12 Hours, 4 Weeks)**

1. Death and Dying
2. Jain Fasting to Death (*santhara*)

Essential/Recommended Readings

Donaldson, B., & Bajželj, A. (2021). Calculations of Death. In *Insistent Life: Principles for Bioethics in the Jain Tradition* (1st ed., pp. 182–212). University of California Press. http://www.jstor.org/stable/j.ctv2rb75qt.11.
Crawford, S. Cromwell, "The Ethics of Death and Dying." In Crawford, S. Cromwell. *Hindu Bioethics for the Twenty-first Century*, 188-198. New York: SUNY, 2003.
Suggestive Readings

Jecker, Nancy S., Albert R. Johnson, and Robert A. Pearlman, eds. *Bioethics: An Introduction to the history, method and practice*. New Delhi: Jones and Barlett, 2010.
Arthur Caplan and Robert Arp, eds. *Contemporary debates in Bioethics*. UK: Blackwell Publishing Ltd, 2014.
Steinbock, Bonnie, ed. *The Oxford handbook of Bioethics*. New York: Oxford University Press. 2007.
Donaldson, Brianne. "Outlawing the Jain Fast-Unto-Death is a Bioethical Issue," *Patheos* 2015. Retrieved on 13 July 2022. Outlawing the Jain Fast-Unto-Death Is a Bioethical Issue | Guest Contributor (patheos.com)

Category II

BA (Prog.) with Philosophy as Major

(Courses for Undergraduate Programme of study with Philosophy discipline as one of the Core Disciplines)

DISCIPLINE SPECIFIC CORE COURSE (DSC 9): Modern Western Philosophy

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 9 Modern Western Philosophy	4	3	1	NIL	12th Passed	"Introduction to Western Philosophy" DSC 4

Learning Objectives

- This course aims at introducing the students to fundamental issues that have been raised in modern western philosophy.
- This course will provide an overview of the problems which led to the development of empiricist and rationalist philosophical views in the field of modern western philosophy.
- This course will also discuss a wide range of philosophical theories such as metaphysical monism, pluralism, dualism, immaterialism, and transcendentalism.

Learning Outcomes

- The student will learn about the philosophical origins of many current debated concepts.
- The students will acquire the ability to think outside of the box in terms of prevalent philosophical orthodoxies.
- The students will learn how to think differently about philosophy's fundamental problems in alternative ways.

Unit 1: Introduction to Modern Western Philosophy (12 Hours, 4 Weeks)

1. Key Themes of Rationalism
2. Key Themes of Empiricism

Essential/recommended reading

Scruton, Roger, From Descartes to Wittgenstein- A Short History of Modern Philosophy, London, Routledge & Kegan Paul, 1981, Ch.1&2

Unit 2: Rationalism **(12 Hours, 4 Weeks)**

1. Descartes- Methodic Doubt, Cogito Ergo Sum
2. Spinoza- Concept of Substance
3. Leibnitz- Theory of Monads

Essential/recommended reading

Descartes, R.(1647), Meditations on the First Philosophy, Harper Perennial Classics, 2013, Meditation 1&2

Spinoza, B. (1677), Ethics, Penguin classics, 1996, BK-1

Leibniz, G.W. (1714), Monadology: An Edition for Students, University of Pittsburgh Press; 1st edition (1991)

Unit 3: Empiricism **(12 Hours, 4 Weeks)**

1. Locke- Critique of Innate Ideas
2. Berkeley- Critique of Locke's Theory of Material Substance
3. Hume- Theory of Causation

Essential/recommended reading

Locke, J. (1690) *An Essay Concerning Human Understanding*, Penguin Classics, 1996, BK-1

Berkeley, G. (1710) *The Principles of Human Knowledge*, Warnock, G.J. ed. UK, Fontana Press,1985, Part 1- section 1-24.

Hume, David. (1748), *An Enquiry Concerning Human Understanding*, Oxford World Classics, ed. Peter Millican, 2008, Part II- Section VII

Unit 4: Critical Philosophy **(9 Hours, 3 Weeks)**

1. Kant's- Classification of propositions- Analytic, Synthetic, Synthetic a priori

Essential/recommended reading

Kant, Immanuel, *Critique of Pure Reason*, (Cambridge Edition of The Works ofImmanuel Kant) : ed. Guyer, Paul and Wood, Allen 1999. Introduction, pp. 127-152.

Suggestive Readings

- Copleston, F.J. *History of Philosophy,* USA, Image Books, 1993
- Falkenberg,R.*History of Modern Philosophy*, USA, Jefferson Publications, 2015
- Moore, Bruder, *Philosophy: The Power of Ideas*, New Delhi, Tata McGraw Hill,2011
- O'Connor, D.J. *A Critical History of western Philosophy*, USA, MacMillan, 1964
- Steg Muller, W. *Main Currents in Contemporary German, British and American Philosophy*, Dordrecht; D. Riedel Publishing, 1969
- Garrett, Thomson, *An Introduction to Modern Philosophy*, California: Wadsworth Publishing, 1993

DISCIPLINE SPECIFIC CORE COURSE – 10 (DSC-10): Contemporary Indian Philosophy

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Contemporary Indian Philosophy DSC 10	**4**	**3**	**1**	**NIL**	**12th Passed**	"Introduction to Indian Philosophy" DSC 3

Learning Objectives

- The objective of this course is to make students familiar with Contemporary Indian Philosophers and their philosophical thinking.
- Philosophers like Swami Vivekananda, Aurobindo, Gandhi, B R Ambedkar, JyotibaPhule, M N Roy, amongst others will be covered.
- In this course, various issues of contemporary relevance such as freedom, self-respect, Integral Yoga, Universalism etc. Will be discussed

Learning outcomes

On completion of this course, the student can be expected to

- Have a comprehensive understanding of the conceptual roots of the Contemporary Indian Philosophy
- Understand how various social and contemporary issues have been addressed in this discipline
- Understand how one can have multiple perspectives to address various social issues like Caste, Religion, Yoga etc.

- An in-depth understating of various approaches to the study of Contemporary Philosophy in a comparative framework.

Unit- 1: Swami Vivekananda and Sri Aurobindo (9 Hours, 3 Weeks)

1. Swami Vivekananda: Universal Religion and Neo Vedanta
2. Sri Aurobindo: Integral Yoga

Essential/recommended readings

Swami Vivekananda , 'The way of realisation of a Universal Religion', The ideal of a Universal Religion *The Complete Works of Swami Vivekananda Vol.II*, Kolkata: Advaita Ashrama,pp.359-396

Integral Yoga: Sri Aurobindo's Teaching & Method of Practice , Compiled by Sri Aurobindo Ashram, Archives and Research Library, Lotus Press, USA

Unit- 2: Jyotiba Phule, B R Ambedkar and E V Ramaswamy Periyar (12 Hours, 4 Weeks)

1. JyotibaoPhule: Critical understanding of the slavery and Caste system
2. B.R.Ambedkar:Annihilation of Caste
3. E V RamaswamyPeriyar: Self Respect

Essential/Recommended Readings

G.P. Deshpande (Ed.) 'Excerpts from Gulamgiri', *Selected Writings of JotiraoPhule*New Delhi: Leftword, 2002, PP.36-63

G.Aloysious, Periyar and Modernity, New Delhi: Critical Quest, 2019, pp.22-51

Unit- 3: K.C.Bhattacharya and M K Gandhi (12 Hours, 4 Weeks)

1. K.C.Bhattacharyya-Swaraj in Ideas
2. M.K. Gandhi: Civilization and Swaraj

Essential/recommended readings

K.C. Bhattacharyya, 'Swaraj in Ideas', *Indian Philosophical Quarterly11:1984, pp385-393*

'What is Swaraj? 'Pp26-28, 'Civilization,'pp 34-38, 'What is true civilization?', pp.66-71) extracts fromAnthony J Parel .*Gandhi: Hind swaraj and other Essays* , Cambridge: Cambridge University Press,2009

Unit 4: M.N.Roy and J.Krishnamurti (12 Hours, 4 Weeks)

1. M.N. Roy: Radical Humanism
2. J.Krishnamurti: Knowledge and Freedom
3. D D Upadhyaya: Integral Humanism

Essential/Recommended Readings

M.N. Roy: Radical Humanist: Selected Writings, by M.N.Roy, 2004

Radical Democracy pp.38-51, Principles of Radical Democracy 22 Theses, p.5262, M.N.Roy New Humanism- A Manifesto,New Delhi: Ajanta Publications, 1981

J.Krishnamurti. 'Freedom from the Known,'*Total Freedom-The Essential Krishnamurti,*

Chennai: KFI, 2018, pp.109-132

Upadhyaya, D. D (2020) Lecture II: *Western vs. Bharatiya View*, in *Integral Humanism*, Prabhhat Prakasan Pvt Ltd.

Suggestive Readings

- T.M.P. Mahadevan&C.V.Saroja: Contemporary Indian Philosophy, Madras, 1985.
- Basant Kumar Lal: Contemporary Indian Philosophy, Delhi: MotilalBanarsidas, 1999.
- BenayGopal Ray: Contemporary Indian Philosophers, Allahabad, 1957.
- V.S.Naravane : Modern Indian Thought, Bombay, 1964
- *What Religion Is in the Words of Swami Vivekananda*, John Yale, Kessinger Publishing, ISBN 978-1-4254-8880-2
- A Reading of Jyotiba Phule's Gulamgiri: A Seminal Text on Caste,Pradnya Waghule ,1885, 2017,
- Gavaskar, Mahesh (1999). "Phule's Critique of Brahmin Power". In Michael, S. M. (ed.). Untouchable, Dalits in Modern India. Lynne Rienner Publishers. Pp. 43–56. ISBN 978-1-55587-697-5.
- B. R. Ambedkar: Annihilation of Caste
- A.Parel, *The Political theory of Gandhi's Hind Swaraj*
- https://www.asj.upd.edu.ph/mediabox/archive/ASJ-07-03-1969/parel-political%20theory%20gandhi%20hind%20swaraj.pdf
- V.Geetha, 'Graded Inequality and Untouchability; Towards the Annihilation of Caste,' *BhimraoRamjiAmbedkar and the Question of Socialism in India*, New Delhi: Palgrave Macmillan,2022,pp147-190

DISCIPLINE SPECIFIC ELECTIVE – (DSE-1) – Understanding Dimensions of Gender

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 1 Understanding Dimensions of Gender	4	3	1	Nil	12th Passed	None

Learning Objective

- This course aims to orient students to gender and feminism to study society, social roles, and the diversity of subjects in society.
- The course seeks to create gender sensitization and develops a holistic approach toward education.
- This course addresses the concerns of women in terms of debates on consciousness and soul, analyses their connect with nature and culture, and explains the development of feminist ideologies.

Learning Outcome:

- Study of feminism equips the student with analytical skills to develop valid arguments to counter gender discrimination, sexism and patriarchal dominance.
- Feminist theory seeks to initiate transformation in social structures, customs and practices.
- A course in feminism will empower the students to understand gender oppression and to learn how to discuss it in a responsible manner and learn to avoid the same in their lives.

UNIT 1 –Introduction **(9 Hours, 3 Weeks)**

1. Gender: Concept and significance
2. Understanding and Analyzing Patriarchy

Essential/Recommended Readings:

Nicholson, Linda, "Gender". In *Companion to Feminist Philosophy: Blackwell Companion to Philosophy*, Edited by Alison M. Jaggar and Iris M. Young, 289-297. Oxford: Blackwell Publishers, 1998.

Bhasin, Kamla. *What is Patriarchy*. New Delhi: Kali for Women, 1993.

UNIT 2: Women and Social Construction (12 Hours, 4 Weeks)

1. The Study of relationship
2. Female body and its situatedness

Essential/Recommended Readings:

Goldman, Emma, "Marriage and Love". In *Anarchism and Other Essays*, 233-242. New York: Gordon Press Publishers, 1914.

Thapan, Meenakshi. "Femininity and its Discontents: Woman's Body in Intimate Relationships". In *Embodiment Essays on Gender and Identity*, edited by Meenakshi Thapan. New Delhi: Oxford University Press, 1997.

UNIT 3 – Embodiment (12 Hours, 4 Weeks)

1. Stereotypes and myths about beauty
2. The Norms of Sexuality

Essential/Recommended Readings:

Naomi Wolf, "The Beauty Myth". In *The Beauty Myth*, 9-19. New York, Harper Collins, 1991.

Rich, Adrienne, "Compulsory Heterosexuality and Lesbian Existence". In *Journal of Women's History* 15-3 (Autumn 2003), 11-48.

UNIT 4 – Gender Politics (12 Hours, 4 Weeks)

1. Defining Body Politics
2. Is Feminism Monolithic?: Studying Third World Feminism

Essential/Recommended Readings:

Sandra Lee Bartky, "Body Politics". In Alison M. Jaggar and Iris Marion Young, *A Companion to Feminist Philosophy*, Blackwell Companion to Philosophy. Oxford: Blackwell Publishers, 1998.

Narayan, Uma, "Westernization, Respect for Cultures, and Third-World Feminists". In Linda J. Nicholson (Ed.), *The Second Wave: A Reader in Feminist Theory*. Routledge, 1997, 396-414.

DISCIPLINE SPECIFIC ELECTIVE - (DSE-2) – Philosophy of B R Ambedkar

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 2 Philosophy of B R Ambedkar	4	3	1	Nil	12th Passed	None

Learning Objectives

- The aim of this course is to introduce the alternative approaches of contemporary Indian philosophical thought with special focus on Philosophy of B R Ambedkar.
- This course is an exploration of democratic and normative philosophical thought in reconstruction Indian society.
- This course introduces the essential philosophical writings of contemporary Indian thinker B R Ambedkar by discussing the Philosophical method in general and Social-Political philosophy and philosophy of religion of Ambedkar in particular.

Course Learning Outcomes

- Learn Ambedkar's alternative reading of Indian philosophy by interrogating dominant philosophical systems and its texts.
- Critical engagement with social reality conditioned by the caste system.
- Learn the liberative and democratic potential of philosophy of Ambedkar in reconstructing Indian nation.
- To make good citizen by understudying the indigenous democratic philosophical thought.

Unit 1 Life world of B R Ambedkar **(9 Hours, 3 Weeks)**

1. Life and Essential Writings of Ambedkar
2. Concepts and methodology of B.R.Ambedkar

Essential/Recommended readings

Rodrigues, Valerian (ed). 'Introduction', *The Essential Writings of B.R. Ambedkar*. New Delhi: Oxford Press, 2002, p.1- 20.

Rodrigues, Valerian (ed). , 'Introduction', Rodrigues, Valerian (ed). *The Essential Writings of B.R. Ambedkar*. New Delhi: Oxford Press, 2002, p.20-36

Unit 2 Philosophy of Religion **(12 Hours, 4 Weeks)**

1. Philosophy of Religion and Indian Social Order

Essential/Recommended Readings
'The Hindu Social order: Its Essential Principles',*Dr. Babasaheb Ambedkar Writings and Speeches Vol.3*,New Delhi: Dr.Ambedkar Foundation,2014,pp95-115

2. Buddhism and Marxism

Essential/Recommended Readings

Rodrigues, Valerian (ed).'Religion and Dhamma',*The Essential Writings of B.R. Ambedkar*. New Delhi: Oxford Press, 2002Pp.57-59
Rodrigues, Valerian (ed). 'Buddha or Karl Marx', *The Essential Writings of B.R. Ambedkar. New Delhi: Oxford Press*, 2002, pp173-189

Unit 3 Social and Political Philosophy **(12 Hours, 4 Weeks)**

1. Social Justice and Ideal society

Essential/Recommended reading

Rodrigues, Valerian (ed). 'Introduction', The Essential Writings of B.R. Ambedkar. New Delhi: Oxford Press, 2002, (extracts from Annihilation of Caste) pp267-268,275-277,294-304

2. Constitutional morality and Democracy

Essential/Recommended Reading

Rodrigues, Valerian (ed).' Democracy ', *The Essential Writings of B.R. Ambedkar. New Delhi: Oxford Press,* 2002, pp 60-64
Rodrigues, Valerian (ed). 'Political safeguards for depressed classes', *The Essential Writings of B.R. Ambedkar*. New Delhi: Oxford Press, 2002, 369-382

Unit 4 Contemporary Relevance of Ambedkar **(12 Hours, 4 Weeks)**

1. Relevance of Ambedkar

Essential/Recommended Readings

B.R. Ambedkar, 'Introduction', Rodrigues, Valerian (ed). The Essential Writings of B.R. Ambedkar. New Delhi: Oxford Press, 2002, p.36-43

Suggestive Readings:

B.R. Ambedkar, 'Philosophy of Hinduism', Moon, Vasant (Compiled) Dr. Babasaheb Ambedkar Writings and Speeches Vol.3, Education Department, Government of Maharashtra, 1987.

Rodrigues, Valerian.(Ed.) 'Krishna and His Gita', *The Essential Writings of B.R. Ambedkar. New Delhi: Oxford Press, 2002, pp.193-204*

Rodrigues, Valerian(Ed.). 'Basic Features of Indian constitution', *The Essential Writings of B.R. Ambedkar. New Delhi: Oxford Press, 2002*New Delhi: Oxford Press, 2002, p.473-495

Omvedt, Gail. 'Ambedkarism : The Theory of Dalit Liberation', *Dalits And The Democratic Revolution: Dr. Ambedkar And The Dalit Movement In Colonial India* (Sage India, 1994) p.225-260 (Ambedkarism)

Omvedt, Gail. *Ambedkar:Towards Enlightened India,* Delhi: Pengiun,2017

Christophe Jaffrelot and Narender Kumar (Eds), *Dr.Ambedkar and Democracy*, New Delhi: Oxford University Press, 2018(Chapter 16)

V.Geetha, *Bhimraoramji Ambedkar and the Question ofSocialism in India*, Delhi: Palgrave, 2022

Gokhale, Pradeep (Ed.) *The Philosophy of Dr.B.R.Ambedkar*, Pune: IPQ Publication,2008
G. Aloysius, Nationalism without a nation in India. Delhi: Oxford University Press, 1997. Xii + 265 pp.

P. Kesava Kumar, *Political Philosophy of B.R.Ambedkar- AnInquiry into the Theoretical Foundations of the Dalit Movement*, New Delhi: Kalpaz,2013

DISCIPLINE SPECIFIC ELECTIVE – DSE 3: Philosophy of Mind

ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Philosophy of Mind DSE 3	4	3	1	Nil	12th Passed	None

Learning Objective

The philosophy of mind is one of the most exciting areas within philosophy. This course is an introduction to the Philosophy of Mind.

- The course will introduce students to the basic problems of philosophy of mind
- The course will discuss the mind body problem and various solutions to it in depth
- The course will provide a firm basis for the development of their philosophical knowledge and understanding to analyse and evaluate the key theories about the nature of mind and itsrelation to the world.

Learning Outcomes

The student at the end of the course:

- The student will grasp the mind body problem from various angles
- The student will develop insight into the issues that are common challenges like the question of subjective experience relative to a person's material properties and processes.
- 3.The student will be able to critically analyse the fundamental problems in philosophy and appreciate some of the solutions and problems with the solutions
- The student will develop an interest in modern cognitive science

UNIT I The Mind/Body Problem (12 Hours, 4 Weeks)

4. Thinking and Being
5. Dualism
6. Mind Body Interaction

Essential Recommended Readings:

1. Descartes, R. "Meditations II and VI". *Philosophy of Mind: Classical and Contemporary Readings*, edited by David Chalmers, Oxford: Oxford University Press,

2002, pp. 10-21.
2. Ryle, G. "Descartes' Myth," *Philosophy of Mind: Classical and Contemporary Readings*, edited by David Chalmers, Oxford: Oxford University Press, 2002, pp. 32-38.

UNIT-II: Identity Theory and Functionalism (12 Hours, 4 Weeks)

4. The Material Mind
5. Identity theory
6. Functionalism

Essential Recommended Readings:

1. Smart, J.J.C. "Sensations and Brain Processes". *Philosophy of Mind: Classical and Contemporary Readings*, edited by David J. Chalmers, Oxford: Oxford University Press, 2002, pp. 60-68.
2. Putnam, H. "The Nature of Mental States".*Philosophy of Mind: Classical and Contemporary Readings*, edited by David J. Chalmers, Oxford: Oxford University Press, 2002, pp. 73-79.

UNIT III Subjective Experience (12 Hours, 4 Weeks)

3. Subjective and Objective
4. The Problem of Qualia

Essential Recommended Readings:
1. Nagel, T. "What is it Like to Be a Bat?".*Philosophy of Mind: Classical and Contemporary Readings*, edited by David J. Chalmers, Oxford: Oxford University Press, 2002, pp. 219-225.
2. Jackson, F. "Epiphenomenal Qualia".*Philosophy of Mind: Classical and Contemporary Readings*, edited by David J. Chalmers, Oxford: Oxford University Press, 2002, pp. 273-280.

UNIT-IV Problem of Consciousness (9 Hours, 3 Weeks)

- The Mysterious Flame
- Consciousness and Material Reality

Essential Recommended Readings:

1. Chalmers, D."Facing up to the Problem of Consciousness." *Journal of Consciousness Studies*, 2, No.3, 1995, pp. 200-219.

Suggestive Readings:

- Chalmers, David. "Naturalistic Dualism". *The Blackwell Companion to Consciousness*,
  edited by Susan Schneider and Max Velmans, Oxford: Wiley Blackwell, 2017, pp. 263-273.

- Crane, T. *The Mechanical Mind: A Philosophical Introduction to Minds, Machines and Mental Representation,(2nd edition)*. New York: Routledge, 2003.
- Levin, Janet. "Functionalism".*The Stanford Encyclopedia of Philosophy* (Fall 2018 Edition), edited by Edward N. Zalta, 20 Jul, 2018:https://plato.stanford.edu/archives/win2021/entries/functionalism/
- Searle, John. "Biological Naturalism". *The Blackwell Companion toConsciousness*, edited by Susan Schneider and Max Velmans, Oxford:Wiley Blackwell, 2017, pp. 327-336.
- Banks, WilliamP. *EncyclopediaOf Consciousness*. Oxford: Elsevier Academic Press, 2009.
- Churchland, Patricia. *Matter and Consciousness: A Contemporary Introduction to the Philosophy of Mind*. Cambridge (MA): MIT Press, 1988.
- Chalmers, David, J. *Philosophy of Mind: Classical and Contemporary Readings. Oxford: Oxford University Press*. 2002.
- Heil, John. *Philosophy of Mind: A Contemporary Introduction (3rd edition)*. London: Routledge, 2013.
- Kim, Jaegwon. *Philosophy of Mind, (3rd edition)*. Oxford: Westview Press, 2010.
- Churchland, Patricia. *Matter and Consciousness: A Contemporary Introduction to the Philosophy of Mind*. Cambridge (MA): MIT Press, 1988.

DISCIPLINE SPECIFIC ELECTIVE - (DSE 4) – Medical Ethics: From Principles to Practice

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 4 Medical Ethics – From Principles to Practice	**4**	**3**	**1**	**Nil**	**12th Passed**	**Basic knowledge of ethical theories**

The course aims at ethical analysis of the topics within the realm of bio-medical sciences and legal studies.

Learning Objectives

- The course aims at ethical analysis of the topics within the realm of bio-medical sciences and legal studies.

- It is a career-oriented curriculum which enables students to develop competence in policy making and participation in ethics committee of various medical and care institutes.
- It sensitizes the minds towards the ongoing ethical dilemmas.

Learning Outcomes

The learning outcomes of this course are multidimensional.

- It forms a strong base in the field of research of medical ethics
- It would also increase the student's ability to identify serious concerns regarding the expanding field of medicine and appreciate ethical concerns in new areas of medical research
- It increases the student's general awareness about public health ethics

UNIT 1- DEFINING BIOETHICS **(9 Hours, 3 Weeks)**

1. Tracing the past of medical ethics
2. Scope of Medical ethics

UNIT 1- Introducing Medical Ethics **(9 Hours, 3 Weeks)**

3. Tracing the past of medical ethics
4. Scope of Medical ethics

Essential/Recommended Readings

A.F.Cascais (1997), "Bioethics: History, Scope, Object," In *Global Bioethics*, 10:1-4, 9-24. Retrieved on 13 July 2022. https://doi.org/10.1080/11287462.1997.10800712.

UNIT 2- CORE CONCEPTS **(12 Hours, 4 Weeks)**

3. Philosophical Issues of Informed Consent
4. The concept of Confidentiality

Essential/Recommended Readings

Williams, J. R. "Consent". In *Cambridge Textbook of Bioethics*, Edited by P. Singer and A. M. Viens, 11-16. Cambridge: Cambridge University Press, 2008.
Beauchamp, Tom L. "Informed consent: Its Historical Meaning and Present Challenges" In *Bioethics: An Anthology* 3rd ed. Edited by Helga Kuhse, UdoSchuklenk and Peter Singer, 635-641. UK: Wiley Blackwell, 2015.
Slowther, Anne and Irwin Kleinman. "Confidentiality" In *Cambridge Textbook of Bioethics*, Edited byP. Singer and A. M. Viens, 43-48. Cambridge: Cambridge University Press, 2008.

UNIT-3 ETHICAL DILEMMAS

(12 Hours, 4 Weeks)

3. Mothers: Biological and Other
4. Moral Status of Animals

Essential/Recommended Readings

Steinbock, Bonnie. "The Surrogate Motherhood as Prenatal Adoption." In*Law, Medicine and Healthcare* 6, no. 1 (1988): 44-50.
_Darr, Judith. "The Reproductive Revolution". In *The New Eugenics: Selective Breeding in an Era of Reproductive Technologies*, 1-27. USA: Yale University Press, 2017.
Use of animals in medical experimentation and research
Bernard. E. Rolling. "The Moral status of Animals and their use as Experimental Subjects." In *A Companion to Bioethics* 2nd Ed. Edited by Helga Kuhse and Peter Singer, 495-509. UK: Wiley Blackwell, 2009.

UNIT 4 Medical ethics: Death and Dying **(12 Hours, 4 Weeks)**

3. Death and Dying
4. Jain Fasting to Death (santhara)

Essential/Recommended Readings

Donaldson, B., & Bajželj, A. (2021). Calculations of Death. In *Insistent Life: Principles for Bioethics in the Jain Tradition* (1st ed., pp. 182–212). University of California Press. http://www.jstor.org/stable/j.ctv2rb75qt.11.
Crawford, S. Cromwell, "The Ethics of Death and Dying." In Crawford, S. Cromwell. *Hindu Bioethics for the Twenty-first Century*, 188-198. New York: SUNY, 2003.

Suggestive Readings

Jecker, Nancy S., Albert R. Johnson, and Robert A. Pearlman, eds. *Bioethics: An Introduction to the history, method and practice*. New Delhi: Jones and Barlett, 2010.
Arthur Caplan and Robert Arp, eds. *Contemporary debates in Bioethics*. UK: Blackwell Publishing Ltd, 2014.
Steinbock, Bonnie, ed. *The Oxford handbook of Bioethics*. New York: Oxford University Press. 2007.
Donaldson, Brianne. "Outlawing the Jain Fast-Unto-Death is a Bioethical Issue," *Patheos* 2015. Retrieved on 13 July 2022. Outlawing the Jain Fast-Unto-Death Is a Bioethical Issue | Guest Contributor (patheos.com)

DISCIPLINE SPECIFIC ELECTIVE - (DSE-5) – Philosophy of Swami Vivekananda

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 5 Philosophy of Swami Vivekananda	4	3	1	Nil	12th Passed	None

Learning Objectives

- The aim of this course is to introduce the alternative approaches of contemporary Indian philosophical thought with special focus on Philosophy of Swami Vivekananda.
- This course is an exploration of Advaitic approaches in reconstructing Indian society.
- This course introduces the essential philosophical works of contemporary Indian thinker Swami Vivekananda by discussing the Philosophical method in general and Social- Political philosophy and philosophy of religion of Vivekananda in particular.

Course Learning Outcomes

- Learn Vivekananda's alternative reading of Indian philosophy by interrogating dominant philosophical systems .
- Constructive engagement with social reality conditioned with certain historical cracks in it.
- Learn the democratic potential of philosophy of Vivekananda in reconstructing Indian nation.
- To make responsible citizen by understanding the indigenous democratic philosophical thought.

Unit 1 Philosophical world of Vivekananda (9 Hours, 3 Weeks)

1. Introduction to Swami Vivekananda
2. Chicago Addresses
3. Philosophical Background

Essential/Recommended readings

Medhananda, Swami (2022). Introduction, *Swami Vivekananda's Vedāntic Cosmopolitanism.* Oxford University Press, pp. 1-16

Addresses at the parliament Of Religion' in 'Complete Works of Swami Vivekananda'.Vol.1.Kolkata,Advaita Ashram.(Pages 1-22)
Vivekananda,Swami. 'The Vedanta Philosophy' Lecture delivered at Harvard University, on March 25, 1896.(Available in Complete Works of Swami Vivekananda'.Vol.1.Kolkata,Advaita AshramA)

Unit 2 Philosophy of Religion and Dharma (12 Hours, 4 Weeks)

1. Universal Religion and Harmony
2. Hinduism and Buddhism

Essential/Recommended Readings

'The way to realisation Of Universal Religion' and 'The Ideal Of Universal Religion', in Complete Works of Swami Vivekananda.Vol.2.Kolkata,AdvaitaAshrama.
'Buddhistic India' in Complete Works of Swami Vivekananda.Vol.3.Kolkata,AdvaitaAshrama.

Unit 3 Social and Political Philosophy (12 Hours, 4 Weeks)

1. Vedanta and Equality
2. Cultural Nationalism

Essential/Recommended reading

Practical Vedanta part I and II IN 'Complete Works of Swami Vivekananda'Vol.2.Kolkata,Advaita Ashram
Vivekananda,Swami. 'My India The India Eternal' Kolkata: Ramkrishna Mission Publication,1993 (Page 5 to 35)

Unit 4 Contemporary Relevance of Vivekananda (12 Hours, 4 Weeks)

2. Understanding Hindutva
3. Discourse on Women

Essential/Recommended Readings

Vivekananda,Swami, 'Essentials of Hinduism,Mayavati,**Advaita**Ashrama, 1937.(Page 7-28)

Vivekananda,Swami.'Women Of India'Chennai, Ramkrishna math.2013(Selected Pages)

Suggestive readings

Medhananda, Swami (2022). *Swami Vivekananda's Vedāntic Cosmopolitanism*. Oxford University Press.

Raghuramaraju, A. (1998). *Debates in Indian Philosophy: Classical, Colonial, and Contemporary*. Delhi, IN: Oxford University Press India.

DISCIPLINE SPECIFIC ELECTIVE - (DSE-6) – Philosophy of Mahatma Gandhi

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

DSE 6 Philosophy of Mahatma Gandhi	**4**	**3**	**1**	**Nil**	**12th Passed**	**None**

Learning Objectives

- The aim of this course is to introduce key ideas of Mahatma Gandhi that shaped values and practices of Nationalist movement in India.
- There is a renaissance in reinterpreting Gandhi. This course aims to lay out such reinterpretations.
- This course introduces to key interlocuters of Gandhi in his life time that opens up fault lines in Gandhi's thinking.

Course Learning Outcomes

- Learn Key philosophical reinterpretations of Gandhi .
- Understand at least one approach to key ideas in Gandhi's thinking and its moral potential
- Learn the points of variation and contest of his interlocuters with Gandhi's ideas.
- To make students appreciate Gandhi's contribution to Nationalist Movement and Nation building and its relevance.

Unit 1 Gandhi as Philosopher **(12 Hours, 3 Weeks)**

1. Introduction to Gandhi's Thought
2. Gandhi's Philosophical Approach

Essential/Recommended readings

Parel A. j.(ed), Gandhi: Hind Swaraj and Other Writings, Cambridge, Cambridge university Press,1996 Chapters on Introduction

Bilgrami Akeel, Gandhi The philosopher, EPW, Vol.38, no,39,27 Sep., 2003.

Nandy Ashis From Outside the Imperium Gandhi's Cultural Critique of the West in Pantham Thomas, Deutsche Kenneth L(Ed) Political Thought in Modern India, Sage Publications, Delhi 1986.

Unit 2 Gandhi: Key Ideas I **(12 Hours, 4 Weeks)**

1. Swaraj
2. Satya
3. Ahimsa

Essential/Recommended Readings

Parel A. j.(ed), Gandhi: Hind Swaraj and Other Writings, Cambridge, Cambridge university Press,1996 Chapters on Introduction, Civilisation, what is True civilisation, Why was India Lost, Lawyers, Doctors and Passive resistance
Parel A J, The Doctrine of Swaraj in Gandhi's Philosophy in Parekh, Bhiku & Baxi Upendra (Ed) Crisis and Change in Contemporary India, New Delhi, Sage Publication, 1996.
Parekh, Bhiku, Colonialism, Tradition and Reform: An Analysis of Gandhi's Political Discourse, New Delhi, Sage publication,1999. Chapter on Non Violence

Unit 3 Gandhi: Key Ideas II **(12 Hours, 4 Weeks)**

1. Swadeshi
2. Satyagraha

Essential/Recommended reading

Parekh, Bhiku, Colonialism, Tradition and Reform: An Analysis of Gandhi's Political Discourse, New Delhi, Sage publication,1999. Chapter on Satyagraha

Unit 4 Gandhi on State and Constructive Programme (12 Hours, 4 Weeks)

1. Theory of State
2. Constructive Programme

Essential/Recommended Readings

Parel, A. (2011). Gandhi and the state. In J. Brown & A. Parel (Eds.), *The Cambridge Companion to Gandhi* (pp. 154-172). Cambridge: Cambridge University Press.
Gandhi, M K "Constructive Programme."
https://www.jmu.edu/gandhicenter/_files/gandhiana-constprog.pdf

Suggestive Readings:

Bhattacharjee ,Sabyasachi, The Mahatma and The Poet, Delhi, National Book Trust 1995.

Chatterjee Partha, Nationalist Thought and the Colonial world: A derivative discourse?, London, Zed Books,1986.
Dalton D, Mahatma Gandhi : Non violent Power in Action, New York , Coloumbia University Press, 1993

Iyer Raghavan N The Moral and Political Thought of Mahatma Gandhi, New Delhi, OUP, 2000.

Miri, Mrinal (ed.) (2003). *Identity and the moral life*. New York: Oxford University Press

Parel A J, Gandhi: Freedom and Self-rule, Lanham MD, Lexington Books, 2000.

Raghuramaraju, A. (2010). Debating Gandhi, OUP

Shurud Tridip, An Autobiography, Penguin 2018

Category III

BA (Prog.) with Philosophy as Minor

DISCIPLINE SPECIFIC CORE COURSE (DSC 2): Contemporary Indian Philosophy

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Contemporary Indian Philosophy DSC 5	**4**	**3**	**1**	**NIL**	**12th Passed**	Basic knowledge of classical Indian philosophy

Learning Objectives

- The objective of this course is to make students familiar with Contemporary Indian Philosophers and their philosophical thinking.
- Philosophers like Swami Vivekananda, Aurobindo, Gandhi, B R Ambedkar, JyotibaPhule, M N Roy, amongst others will be covered.
- In this course, various issues of contemporary relevance such as freedom, self-respect, Integral Yoga, Universalism etc. Will be discussed

Learning outcomes

On completion of this course, the student can be expected to

- Have a comprehensive understanding of the conceptual roots of the Contemporary Indian Philosophy
- Understand how various social and contemporary issues have been addressed in this discipline
- Understand how one can have multiple perspectives to address various social issues like Caste, Religion, Yoga etc.
- An in-depth understating of various approaches to the study of Contemporary Philosophy in a comparative framework.

Unit- 1: Swami Vivekananda and Sri Aurobindo (9 Hours, 3 Weeks)

1. Swami Vivekananda: Universal Religion and Neo Vedanta
2. Sri Aurobindo: Integral Yoga

Essential/recommended readings

Swami Vivekananda , 'The way of realisation of a Universal Religion', The ideal of a Universal Religion *The Complete Works of Swami Vivekananda Vol.II*, Kolkata: Advaita Ashrama,pp.359-396

Integral Yoga: Sri Aurobindo's Teaching & Method of Practice , Compiled by Sri Aurobindo Ashram, Archives and Research Library, Lotus Press, USA

Unit- 2: Jyotiba Phule, B R Ambedkar and E V Ramaswamy Periyar (12 Hours, 4 Weeks)

1. JyotibaoPhule: Critical understanding of the slavery and Caste system
2. B.R.Ambedkar:Annihilation of Caste
3. E V RamaswamyPeriyar: Self Respect

Essential/Recommended Readings

G.P. Deshpande (Ed.) 'Excerpts from Gulamgiri', *Selected Writings of JotiraoPhule*New Delhi: Leftword, 2002, PP.36-63

G.Aloysious, Periyar and Modernity, New Delhi: Critical Quest, 2019, pp.22-51

Unit- 3: K.C.Bhattacharya and M K Gandhi (12 Hours, 4 Weeks)

1. K.C.Bhattacharyya-Swaraj in Ideas
2. M.K. Gandhi: Civilization and Swaraj

Essential/recommended readings

K.C. Bhattacharyya, 'Swaraj in Ideas', *Indian Philosophical Quarterly11:1984, pp385-393*

'What is Swaraj? 'Pp26-28, 'Civilization,'pp 34-38, 'What is true civilization?', pp.66-71) extracts fromAnthony J Parel .*Gandhi: Hind swaraj and other Essays* , Cambridge: Cambridge University Press,2009

Unit 4: M.N.Roy and J.Krishnamurti (12 Hours, 4 Weeks)

1. M.N. Roy: Radical Humanism
2. J.Krishnamurti: Knowledge and Freedom
3. D D Upadhyaya: Integral Humanism

Essential/Recommended Readings

M.N. Roy: Radical Humanist: Selected Writings, by M.N.Roy, 2004

Radical Democracy pp.38-51, Principles of Radical Democracy 22 Theses, p.5262, M.N.Roy New Humanism- A Manifesto,New Delhi: Ajanta Publications, 1981

J.Krishnamurti, 'Freedom from the Known,'*Total Freedom-The Essential Krishnamurti,*

Chennai: KFI, 2018, pp.109-132
Upadhyaya, D. D (2020) Lecture II: *Western vs. Bharatiya View*, in *Integral Humanism*, Prabhhat Prakasan Pvt Ltd.

Suggestive Readings

- T.M.P. Mahadevan&C.V.Saroja: Contemporary Indian Philosophy, Madras, 1985.
- Basant Kumar Lal: Contemporary Indian Philosophy, Delhi: MotilalBanarsidas, 1999.
- BenayGopal Ray: Contemporary Indian Philosophers, Allahabad, 1957.
- V.S.Naravane : Modern Indian Thought, Bombay, 1964
- *What Religion Is in the Words of Swami Vivekananda*, John Yale, Kessinger Publishing, ISBN 978-1-4254-8880-2
- A Reading of Jyotiba Phule's Gulamgiri: A Seminal Text on Caste,Pradnya Waghule ,1885, 2017,
- Gavaskar, Mahesh (1999). "Phule's Critique of Brahmin Power". In Michael, S. M. (ed.). Untouchable, Dalits in Modern India. Lynne Rienner Publishers. Pp. 43–56. ISBN 978-1-55587-697-5.
- B. R. Ambedkar: Annihilation of Caste
- A.Parel, *The Political theory of Gandhi's Hind Swaraj*
- https://www.asj.upd.edu.ph/mediabox/archive/ASJ-07-03-1969/parel-political%20theory%20gandhi%20hind%20swaraj.pdf
- V.Geetha, 'Graded Inequality and Untouchability; Towards the Annihilation of Caste,' *BhimraoRamjiAmbedkar and the Question of Socialism in India*, New Delhi: Palgrave Macmillan,2022,pp147-190

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES
For BA Hons/Major

GENERIC ELECTIVES (GE-14): Philosophy of Feminism

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Philosophy of Feminism GE 14	4	3	1	Nil	12th Passed	None

Course Objectives:

- A course in Feminism is needed to sensitise students to a perspective of thought that acts as a filter—a lens through which all subjects must be studied.
- It seeks to create gender sensitization and develops a holistic approach towards education.
- This course addresses the concerns of women in terms of debates on consciousness and soul, analyses their connect with nature and culture; and explains the development of feminist ideologies.

Learning Outcomes:

- Study of Feminism arms the student with analytical skills to develop valid arguments to counter gender discrimination, sexism and patriarchal dominance.
- Feminist theory has a social agenda i.e. to initiate transformation in social structures, customs and practices.
- The study of Feminism is not only an empowering tool against gender oppression but also against other systems of oppression such as race, class and colour.

Unit I Patriarchy and the Origin of Feminism **(9 Hours, 3 Weeks)**

1. The Origins of Patriarchy

2. Aspects of Domination and Subordination

Essential/Recommended readings:

Lerner, Gerda. "The Creation of Patriarchy." In *The Creation of Patriarchy*, 212-229. New York: OUP, 1986.
Hooks, Bell. "Feminism: A Movement to End Sexist Oppression." In *Feminisms* edited by Sandra Kemp and Judith Squires, 22-27. New York: OUP, 2009.

Unit II Feminism and Intersectionality **(12 Hours, 4 Weeks)**

1. Perceptions and Perspectives
3. Women and Caste: Voices of the Dalit women

Essential/Recommended readings

Adichie, Chimamanda Ngozi. *We Should All Be Feminists*. London: Fourth Estate, 2014.
Badron, Margot. "Islamic Feminism on the Move". In *Feminism in Islam*, 323-338. Oxford: One World, 2009.
Rege, Sharmila. "Dalit Women Talk Differently: A Critique of 'Difference' and towards a Dalit Feminist Standpoint Position". *Economic and Political Weekly*, (October 31, 1998): WS 39-46.

Unit III Body and Gender **(12 Hours, 4 Weeks)**

1. Women as Objects
2. Self and Gender

Essential/Recommended readings

Nussbaum, Martha C. "Objectification". Philosophy & Public Affairs, 24, no.4 (Autumn 1995): 249-291.
Vanita, Ruth. "The Self is Not Gendered: Sulabha's Debate with King Janaka." *NWSA Journal*, 15(2003): 76-93

Unit IV Women and Environment **(12 Hours, 4 Weeks)**

1. Discussion on Ecofeminism
2. Indian perspective on gender and environment

Essential/recommended readings

Mies Maria and Shiva Vandana. "Ecofeminism." In *Feminisms* edited by Sandra Kemp and Judith Squires, 497-502. New York: OUP, 2009.
Aggarwal, Bina. "The Gender and the Environmental Debate Lessons from India." *Feminist Studies*, 18, no.1(1992):119-158.

Suggestive readings

Jagger, Alison M. and Iris Marion Young (eds). *Companion to Feminist Philosophy: Blackwell Companion to Philosophy*. Oxford: Blackwell Publishers, 1998.
Kemp, Sandra and Judith Squires, eds. *Feminisms*. New York: OUP, 2009.

GENERIC ELECTIVES (GE-15): Philosophical Debates (Indian)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Philosophical Debates (Indian) GE 15	4	3	1	Nil	12th Passed	None

Learning Objective

- The primary objective of this course is to know Indian Philosophy through some engaging debates. .
- Various debates in Indian Philosophy will be highlighted in this course.
- The course will cover material from a wide range of perspectives in Indian philosophy, from Jainism to Vedanta and from materialism to Buddhism.
- The debates will highlight the key differences between Indian philosophical schools

Learning Outcome

- At the end of the course, a student should be able to demonstrate a clear understanding of the background the philosophical debates
- The students will acquire a good understanding of the key concepts of Indian schools through critical analysis.
- The students will have the sound understanding of epistemological, metaphysical, ontological and so many other critical issues and shall be able to go for further studies in the subject.

Unit 1 Introduction and Materialism vs Realism (9 Hours, 3 Weeks)

1. Definition and Scope of a Debate
2. Carvaka's rejection of Consciousness- Refutation by Samkhya

Essential/Recommended Readings:

Mohanty, Aditya Kumar (2009), PHILOSOPHY: Why? What? How?, Centre of Advanced Study in Philosophy, Bhubaneswar.
SamkhyaPravacana Sutra: III-21-22.

Raju, P.T. (1985), Structural Depths of Indian Thought, State University of New York Press, NY Albany.

Unit 2: Pluralism vs Monism **(12 Hours, 4 Weeks)**

1. Jaina Anekanta-vada- refutation by Samkara
2. Jaina Syadvada- refutation by Buddhism

Essential/Recommended Readings:

Sinha, J.N. (1985), Outlines of Indian Philosophy, New Central Book Agency (p) ltd., London.

Dasgupta, S.N. (2004), A History of Indian Philosophy, Vol.1, MotilalBanarasi Das Publications, Delhi.

Unit 3.Dvaita, Advaita and Visistadvaita **(12 Hours, 4 Weeks)**

1. Samkhya Dualism- refutation by Samkara
2. Samkaras concept of Brahman and Maya- refutation by Ramanuja

Essential/Recommended Readings:

S.B.S. 2, ii 32-34
Ramanuja Brahma Sutra 1 i. 1 and 2 i. 1
Brahma Sutra SamkaraBhasya, (SBS) 3. I. 54.
Sinha, J.N. (1985), Outlines of Indian Philosophy, New Central Book Agency (p) ltd., London.

Unit 4. Metaphysics vs Ontology **(12 Hours, 4 Weeks)**

1. Buddhist Theory of Ksanika-vada- refutation by Nyaya system
2. Nyaya proofs for the existence of God- refutation of Mimamsa system

Essential/Recommended Readings:

Nyayamanjari, MotilalBanarasidass, Delhi, pp. 358-456.
Syadvadamanjari, Ch. On Isvara, 29-36.
KumarillaSlokavartika, GanganathJha (tr.), Ch. 16, 47-51.
Sinha, J.N. (1985), Outlines of Indian Philosophy, New Central Book Agency (p) ltd., London.

Suggestive Readings:

Radhakrishnan, S. Moore (1967), A Source book of Indian Philosophy, Princeton, CA.

Strawson, Peter (1992), Analysis and Metaphysics: An Introduction to Philosophy, Oxford University Press.

Mahathera, Narada. (2006), The Buddha and His Teachings, Jaico Publishing House, Mumbai.

Chatterjee, S.C. &Datta, D.M. (1984), An Introduction to Indian Philosophy, reprint, University of Calcutta, Calcutta.

Hiriyana, M. (1951), Outlines of Indian Philosophy, Allen & Unwin, London.

GENERIC ELECTIVES (GE-16): Sikhism

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Sikhism GE 16	4	3	1	Nil	12th Passed	None

Learning objectives

- The objective of this course is to make students familiar with Sikhism and the underlying philosophy of its major concepts. The course consists of Introduction to Sikhism, Metaphysical doctrine, Ethical views and Guru-Bani.
- This course will help the students to understand the basic tents of Sikhism and to highlight the philosophical implications in Sikh tradition. This will help the students to understand the significance of Sikhism by giving exposure to Guru Bani.

Learning Outcomes

- At the end of this course, a student will acquire a clear understanding of origin and key doctrines of Sikh Philosophy.
- This paper will prepare a student for taking up further studies in Sikhism and comparative religions.

Unit 1: Introduction (9 Hours, 3 Weeks)

1. Sikh, Sikhi, Sikhism

2. Basic tenets of Sri Guru Granth Sahib

Essential/Recommended Reading;

W.H. McLeod, The A to Z of Sikhism, The Scarecrow Press, 2009. P. xviii-xxxii.

Pashaura Singh, *The Guru Granth Sahib*, The Oxford Handbook of Sikh Studies, Oxford University Press, 2014. P. 125-134.

Unit -2 Philosophical Aspects of Sikhism (12 Hours, 4 Weeks)

1. Mool mantar and Aarti
2. Five Khands of Japji

Essential/Recommended Reading;

Avtar Singh, Ethics of the Sikhs, Publication EUREAU, Punjabi University, Patiala, 1983. P. 202-254 (For Five Khand)

Wazir Singh, The Sikh Vision; Problem of philosophy and faith, EssEss Publication, Delhi, 1992. P. 34-43. (For Hukum)

Unit 3: Metaphysical Aspects of Sikhism (12 Hours, 4 Weeks)

- Brahm, Jagat, JIva, Mukti, Maya
- Nama, Guru and Sat-Sangat

Essential/Recommended Readings

Dr. Gopal Singh (Tr.), Sri Guru Granth Sahib (English Translation), Allied Publishers Pvt. Limited, 2005. Stanza 1, p.1.

Jasbir Singh Ahluwalia, The Quintessence of Sikhism: The Doctrinal Sovereignty, Sikh Spectrum.com, Issue No. 21, August 2005.

Daljeet Singh, Essentials of Sikhism, Singh Brother Publisher, Amritsar, 1994, P.144-164.

Unit 4: Ethical Aspects of Sikhism (12 Hours, 4 Weeks)

1. Sat and Sachiara

   Essential/Recommended Reading;

   Avtar Singh, Ethics of the Sikhs, Publication EUREAU, Punjabi University, Patiala, 1983. P.23-50.

2. Hukum and Humae

   Essential/Recommended Reading;

   Avtar Singh, Ethics of the Sikhs, Publication EUREAU, Punjabi University, Patiala, 1983. Ch- 4 and 6.

Suggestive Readings

- Pashaura Singh, *An Overview of Sikh History*, The Oxford Handbook of Sikh Studies, Oxford university Press, 2014. P. 19-34.
- Dr. Gopal Singh (Tr.), Sri Guru Granth Sahib (English Translation), Allied Publishers Pvt. Limited, 2005. P. XX- XLVIII.
- Eleanor Nesbitt, Sikhism; A Short Introduction, Oxford University Press, 2005. Ch-1,2.
- Nikky-Guninder Kaur Singh, World Religions Sikhism, Chelsea House Publishers, 2009. Ch-1, 2.
- Christopher Shackle, *Survey of Literature in the Sikh Tradition*, The Oxford Handbook of Sikh Studies, Oxford university Press, 2014. P. 109-124.
- Pashaura Singh, TheBhagat of the Guru Granth Sahib, Oxford University Press, 2003, Ch-1.
- Christopher Shackle, and Arvind Mandair, Teachings of the Sikh Gurus: Selections from the Sikh Scriptures, Taylor and Francis Group, 2005. Ch-1.
- Keshav Singh, Vice and Virtue in Sikh Ethics, The Monist, Volume 104, Issue 3, July 2021, P.319-336.

GENERIC ELECTIVES (GE-17): Evaluating Aesthetic Experience

- Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Evaluating Aesthetic Experience GE 17	4	3	1	Nil	12th Passed	None

Course Objective

- The objective of the course is to enable a student to become an active and engaging viewer of art and cinema.
- The course introduces students to both 75ndian and western aspects of aesthetics
- The course will open a new vista of understanding in students with relation to everyday perception of art

Learning Outcomes

- It would enable the student to discern the aesthetic experience as different from art experience.
- It shall enable a student to understand and appreciate films and other related art forms.
- It will make students aware of nuances of art and films that usually go unnoticed.

Unit 1: Meaning and Analysis of Indian and Western Aesthetics (12 Hours, 4 Weeks)

1. Meaning of Aesthetics
2. Indian Aesthetics- Rasa Theory and concept of Sadharanikarana
3. Western Aesthetics- The concept of Aesthetic Attitude, Aesthetics Experience and Aesthetic Judgment

Essential/Recommended Readings

1 Osborne, Harold. *Aesthetics*. (London: Oxford University Press, 1972), Chapter-2, "J P Sartre".

2 Barlingay, S.S. *A Modern Introduction to Indian Aesthetic Theories*. (New Delhi: D .K . Print Pvt Ltd , 2016 edition) Chapters 7 and 8.

3 Wenz, Christian. Kant's Aesthetics: Overview and Recent Literature (2009). *Philosophy Compass* 4(3). Pp.385-391. DOI:10.1111/j.1747-9991.2009.00214.x . Retrievedfrom: https://www.researchgate.net/publication/249474233_Kant's_Aesthetics_Overview_and_Recent_Literature

4 Hiriyanna, *M. Art Experience*, (Delhi: Indira Gandhi National Centre for the Arts, Manohar, 1997) Chapter 6.

5 Gupta, Shyamala. *Art, Beauty and Creativity*, (New Delhi: DK Printworld, 1999) Chapters 1, 2, 15 to 17.

Unit II: Comparison between Different Arts **(12 Hours, 4 Weeks)**

1. Form and Content in art forms
2. Performative arts, Literary Arts and Visual Art

Essential/Recommended Reading

Gupta, Shyamala. *Art, Beauty and Creativity*, (New Delhi: DK Printworld, 1999) Chapters 8 and 9.

Unit III: Film as an Art Form **(12 Hours, 4 Weeks)**

1. Documentaries
2. Commercial and Parallel Cinema
3. Web Series

Essential/Recommended Readings:

1. _____

2. Lakshmi, C. S. Feminism and the Cinema of Realism (1986). *Economic and Political Weekly*. Vol XXI, No 3.

3. Kracauer, Siegfriend (1960).*Theory of Films: The Redemption of Physical Reality*. Princeton. Retrieved here from: Kracauer, —Bazin and realism in cinemal. (Web blog post _____/cusmar350/2013/03/01/erasmus19-kracauerbazin-and-realism-in-cinema

4. _____

5. _____

6. Maheshkumar, D.R. A Study on Impact & Popularity of Web Series on Youth (2020). *International Journal of Creative Research Thoughts* 8(9), pp.1085-1093.

Unit IV: Art, Morality and Culture **(9 Hours, 3 Weeks)**

1. What is Art and Morality?
2. What is Culture?

Essential/ Recommended Readings:

1. Tolstoy, Leo. What is Art? Translated from the Original MS, with an Introduction by Aylmer Maude Chapters 1 and 2
2. Gupta, Shyamala. *Art, Beauty and Creativity*, (New Delhi: DK Printworld, 1999) Chapters 13 and 18.
3. Hiriyanna, *M. Art Experience*, (Delhi: Indira Gandhi National Centre for the Arts, Manohar, 1997) Chapter 7

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

SEMESTER - VI

DEPARTMENT OF PHILOSOPHY

Category I

(B.A. Honours in Philosophy in three years)

DISCIPLINE SPECIFIC CORE COURSE 16 (DSC 16) – Philosophy of Religion

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Philosophy of Religion DSC 16	4	3	1	None	12th Passed	None

Learning Objective

- The course familiarizes the students with basic arguments regarding religion that philosophers have presented
- The course cover topics like the language of religion, cognitive and non-cognitivist theories, key proofs for the existence of God and the ethics of belief
- The course will give students a very important orientation regarding the manner of assessment of arguments and claims made by religion.

Learning Outcomes

- The students will be able to analyze arguments presented in religion
- The students will learn to pay attention to the nuances of the language of religion
- The students will comprehend the complications involved in choosing between faith and reason and will come to have a better appreciation of the religious life.

Unit 1 Introduction **(9 Hours, 3 Weeks)**

1. Nature of Religion and its relation to Philosophy of Religion
2. Religious language.

Essential/Recommended Readings

John H.Hick, *Philosophy of Religion*, New Jersey Prentice Hall, Englewood Cliffs,1990.

Brody, Baruch A, *Readings in Philosophy of Religion*, Ed. Vol 1,NewJersey,PHI, 1974.

Nielson, Kai (2008). "The Problem of Religious Language", In Routledge Companion to Philosophy of Religion *Edited By Chad Meister, Paul Copan*, Chapter 39

Ambedkar, B R. *The Philosophy of Hinduism,* Critical Quest, New Delhi, pg. 3-22. ("Towards a Philosophy of Religion")

Unit 2 Existence of God **(12 Hours, 4 Weeks)**

1. Proofs for the existence of God: Ontological Argument (with reference to St. Anselm,
2. Gaunilo's Criticism, Descartes version, Kant's and Bertrand Russell's critique)
3. Cosmological Argument (Thomas Aquinas' version).
4. Teleological Argument (William Paley: Classic version, David Hume's critique)
5. The idea of Divine in Indian Philosophy

Essential/Recommended Readings

Ramamurty, A. *Indian Philosophy of Religion,* Decent Books, New Delhi, 2002, pg. 15-41 ("Divine")

Baruch A Brody ed, *Reading in Philosophy of Religion*, New Jersey PHI Publication, 1974.

Meister Chad, (ed.),*Philosophy of Religion Reade*r, New York, Routledge, 2008.

John H. Hick, *Philosophy of Religion*, New Jersey Prentice Hall, Englewood Cliffs,1990.

Unit 3 Challenges to Religion **(12 Hours, 4 Weeks)**

1. Religious Pluralism.
2. Science and Religion

Recommended Readings

John H.Hick (2008) "Religious Pluralism", In Routledge Companion to Philosophy of Religion *Edited by Chad Meister and Paul Copan,* RKP, Chapter 20

Dawkins, R. "Science Discredits Religion" http://www.stephenhicks.org/wp-content/uploads/2018/11/DawkinsR-Science-Discredits-Religion.pdf

Unit 4: The tradition of religious experience **(12 Hours, 4 Weeks)**

1. Vedic and Upanishadic Tradition,
2. Yoga, Tantra and Bhakti

Essential/Recommended Readings

McDaniel, J. (2009), Religious Experience in Hindu Tradition. Religion Compass, 3: 99-115. https://doi.org/10.1111/j.1749-8171.2008.00120.x

Suggestive readings

- Ramamurty, A. *Indian Philosophy of Religion,* Decent Books, New Delhi, 2002
- Mahapatra, A R. *Philosophy of Religion,* Sterling Publishers, 1990
- Meister Chad, (ed.), *Philosophy of Religion Reader*, New York, Routledge, 2008.
- Russell, Bertrand ,*Why am I not a Christian*, Routledge , Indian edition, 2004.
- William Lane Craig (ed.), *Philosophy of Religion : A Reader and Guide*, Edinburgh, Edinburgh University Press, 2002.
- Stump and Murray, ed. *Philosophy of Religion : The Big Questions, Blackwell Publications*, 1999
- Ramamurty, A. *Indian Philosophy of Religion,* Decent Books, New Delhi, 2002
- Narasu, Lakshmi. *Religion of the Modern Buddhist,* Wordsmiths, *2002.*

DISCIPLINE SPECIFIC CORE COURSE -17 (DSC 17) – Philosophy of Language

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Philosophy of Language DSC 17	4	3	1	NIL	12th Passed	None

Learning Objective

- This course is an introduction to the philosophy of Language. Philosophy of Language concerns quite a large no. of topics including meaning, truth, content, reference, the syntax and semantics of various linguistic constructions, etc.
- The objective of this course is to focus on some central topics which have far reaching consequences in other topics of philosophy of language in particular and other areas of philosophy in general.
- On the one hand, students will be exposed to some of the central theories of meaning proposed by a couple of philosophers of Language from the West, and on the other hand, to the epistemology of language understanding from a perspective of an Indian school of thought.

Learning Outcomes

After completing this course students will

1. Develop an understanding of classical philosophical theories of meaning and reference.
2. Acquire the ability to provide reasons for and against various positions in the philosophical debates over language and semantics.
3. Develop a rational insight into the intrinsic relation between language, language users and the world.

UNIT I: Theories of Meaning: Frege &Russell (12 Hours, 4 Weeks)

1. Sinn und Bedeutung
2. Denotation
3. Descriptions and Names

Essential/Recommended Reading:

Frege, G., "On Sense and Reference", tr. by M. Black in Translations from the *Philosophical Writings of Gottlob Frege,* P. Geach and M. Black (eds. and trans.), Oxford, Blackwell, 3rd edition, 1980, pp. 1-11.

Russell, B., "On Denoting", *Mind*, 1905, pp. 479-493.

UNIT II: Critique of the Theories of Meaning: Strawson (9 Hours, 3 weeks)

1. Use
2. Presupposition and Entailment
3. Sentence, Statement, Utterance

Essential/Recommended Readings

Strawson, P. F., "On Referring", *Mind*, 1950, pp. 320-344.

UNIT III: Language and the World: Indian Perspective (12 Hours, 4 Weeks)

1. Word and the world
2. The relation of language to reality

Essential/Recommended Readings:

Matilal, B.K. *The Word and the World: India's contribution to the Study of Language.* Delhi; Oxford University Press, 1990, pp. 3-7; 18-30,(Introduction, Words and their Meanings)

UNIT IV: Nature and causes of Word generated Knowledge (12 Hours, 4 Weeks)

1. Nyaya Philosophy of Language

Essential/Recommended Readings:

NyayasiddhantaMuktavali*, Shabdakhandam, Karikavalli,** Verse 81, 83, 84abc, 84cd (Sanskrit Text along with English Translation in John Vattanky SJ, ***Nyaya Philosophy of Language, [Sri Satguru Publications, Delhi, 1995] pp.113-115; 118-132; 458; 479-80; 496-97.

Suggestive Readings:

- Lycan, W. *Philosophy of Language: A ContemporaryIntroduction,* New York: Routledge, 2008.
- Jerrold, K. J. "ThePhilosophical Relevance of Linguistic theory"in*ThePhilosophyofLanguage,* (ed.) Searle, Oxford University Press, 1971.
- Russell, B. *The Philosophy of Logical Atomism.* London: Routledge, 2010.
- Morris, Michael. *An Introduction to the Philosophy of Language,* CambridgeUniversity Press, Cambridge, 2007.
- Donnellan, K., "References and Definite Descriptions" ,*ThePhilosophicalReview,* vol.-75,1966, pp. 281-304.
- Jha, V. N. *Śabdakhaṇḍa of the Nyāyasiddhāntamuktāvalī,* Sambhāṣā, Vol. 13, 1992.
- Kunjuni Raja, K. *Indian Theories of Meaning,* Adyar Library, Madras; 1963.
- Shastri, D. N. *Critique of Indian Realism,* Agra: Agra University, 1964.
- Matilal, B.K. *The Word and the World: India's contribution to the Study of Language.* Delhi; Oxford University Press, 1990.
- Matilal, B. K. *Logic, Language, and Reality,* Delhi: MotilalBanarsidass, Delhi, 1996.
- *NyayaSiddhantaMuktavali*ofVisvanatha, English Translation: *Nyaya Philosophy of*
- *Language*,Tr. by John Vattanky , S. J. , Sri Satguru Publications, Delhi, 1995.

DISCIPLINE SPECIFIC CORE COURSE – 18 (DSC-18) Epistemology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Epistemology DSC 18	4	3	1	NIL	12th Passed	None

Learning Objectives

- We all want knowledge, but do we know what knowledge is? This is a course in epistemology: the theory of knowledge which aims to acquaint students with the various aspects of knowledge and to instruct them on the biggest challenge it faces viz. skepticism.
- The course will cover various theories of knowledge and what definitions of knowledge have been offered.
- The course will acquaint students with whether knowledge is even possible and how to handle objections from skepticism.

Learning Outcomes

The learning outcomes aimed at are the following:

- The students will learn about the concerns that surround the notion of knowledge
- The students will appreciate the problems surrounding the definition of knowledge
- The students will be able to analyse and critically think about the sources of knowledge
- The student will understand the power of radical skepticism and how to respond in a measured and responsible way

UNIT 1: KNOWLEDGE AND ITS DEFINITION (9 Hours, 3 Weeks)

1. Types of knowledge
2. Truth and Belief
3. Knowing Versus Merely Getting It Right
4. The Problem of the Criterion
5. Is Knowledge Justified True Belief?

Essential/Recommended Readings:

Topics 1 – 3, Pritchard, Duncan. What is this thing called Knowledge?,Fourth Edition. RKP, 2018, Chapter 1 and 3 (Part I) Title of Chapter 1: Some Preliminaries, pp.3 - 9

Topic 5, Gettier, Edmund. Is Justified True Belief Knowledge?, Analysis 23 (6), pp. 121-123. 1963.

Topics 4 – 6, Pritchard, Duncan. What is this thing called Knowledge?,Fourth Edition. RKP, 2018, Chapter 3 (Part I) Title of Chapter 3: Defining Knowledge pp. 19 - 29

UNIT 2: KNOWLEDGE AND JUSTIFICATION (12 Hours, 4 Weeks)

1. The nature of Justification

2. Infinitism
3. Coherentism
4. Foundationalism

Essential/Recommended Reading:
Topics 1 – 4, Pritchard, Duncan. What is this thing called knowledge?,Fourth Edition. RKP, 2018, Chapter 4 (Part I) Title of Chapter: The Structure of Knowledge, pp. 30 - 40

UNIT 3: SOURCES OF KNOWLEDGE **(12 Hours, 4 Weeks)**

1. The Problem of Perceptual Knowledge
2. Indirect and Direct Realism
3. Idealism
4. A Priori and Empirical Knowledge and Their Interdependence
5. Introspective Knowledge
6. Deduction
7. Induction
8. Abduction

Recommended Readings:
Topics 1 – 3, Pritchard, Duncan. What is this thing called Knowledge?,Fourth Edition. RKP, 2018, Chapter 7 (Part II) Title of the Chapter: Perception, pp. 67 - 76
Topics 4 – 8, Pritchard, Duncan. What is this thing called Knowledge?,Fourth Edition. RKP, 2018, Chapter 9 (Part II)Title of the Chapter: A Priority and Inference, pp. 88 - 97

UNIT 4: SCEPTICISM **(12 Hours, 4 Weeks)**

1. How do we have knowledge about other minds
2. Strategies and arguments regarding knowledge of other minds
3. Perceiving someone else's mind
4. Radical Scepticism and Closure
5. Mooreanism
6. Contextualism

Recommended Readings:
Topics 1 - 3, Pritchard, Duncan. What is this thing called Knowledge?,Fourth Edition. RKP, 2018, Chapter 18(Part V) Title of Chapter: Scepticism about Other Minds, pp. 193 - 200
Topics 4 - 6, Pritchard, Duncan. What is this thing called Knowledge?,Fourth Edition. RKP, 2018, Chapter 19 (Part V) Title of Chapter: Radical Scepticism, pp.201 -213

Suggestive Readings

- Gettier, Edmund. Is Justified True Belief Knowledge? Analysis 23 (6), 121-123. 1963.
- Sosa, Ernest. Epistemology. Princeton University Press, 2017.
- •Steup, Matthias & Ernest Sosa, ed. Contemporary Debates in Epistemology. WileyBlackwell, 2005.
- Dancy, Jonathan, Ernest Sosa and Matthias Steup, ed. A Companion to Epistemology, Second Edition. Blackwell, 2010.
- Chisholm, R.M. Theory of Knowledge. U.S: Prentice Hall, 1966.
- Hamlyn, D. Theory of Knowledge. London: Macmillan, 1970.
- Lehrer, K. Knowledge. Oxford: Clarendon Press, 1974.

DISCIPLINE SPECIFIC ELECTIVE – (DSE-10): Feminist Perspectives on Epistemology and Ethics

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Feminist Perspectives on Epistemology and Ethics DSE 10	**4**	**3**	**1**	**Nil**	**12th Passed**	**None**

Learning Objectives

- A course in alternative perspectives is needed to sensitise students to trends of thought that acts as a filter—a lens through which all subjects must be studied.
- It seeks to create gender sensitization and develops a holistic approach towards education.
- This course addresses the concerns of women in terms of debates on gender, body, knowledge and what is right and wrong.

Learning Outcomes

- Study of Feminist perspective arms the student with analytical skills to develop valid arguments to counter gender discrimination, sexism and patriarchal dominance.
- Feminist theory has a social agenda i.e. to initiate transformation in social structures, customs and practices.
- Thus the study of Feminism is not only an empowering tool against gender oppression but also against other systems of oppression such as race, class and colour

Unit I Feminist Epistemology (9 Hours, 3 Weeks)

1. Feminist Epistemology
2. Critiquing the androcentricity of Philosophy

Essential/recommended readings

- Anderson, Elizabeth. "Feminist Epistemology: An Interpretation and a Defence", *Hypatia* 10, no.3(1995):50-84.

- Gatens, Moira. "The Feminist Critique of Philosophy." In *Feminism and Philosophy: Perspective on Difference and Equality* by Moira Gatens, 85-99. UK: Polity Press, 1991.

Unit II Body and Gender **(12 Hours, 4 Weeks)**

1. Gender and the biological life
2. Analyzing the Notion of Self: Gendered or Not?

Essential/recommended readings

- Birke, Lynda. "Life as we have known It: Feminism and Biology of Gender." In *Science and Sensibility: Gender Enquiry,1780-1945,* edited by Marina Benjamin, 243-264. UK: Oxford; MA: Cambridge; USA: B. Blackwell, 1991.
- Vanita, Ruth. "The Self Is Not Gendered: Sulabha's Debate with King Janaka." NWSA Journal, 15(2003):76-93.

Unit III Women and the Surrounding **(12 Hours, 4 Weeks)**

1. Women in Ancient India
2. Islamic Perspective on Feminism

Essential/recommended readings

- Adamson, P and Ganeri, J (2020). "Women in Ancient India" In *Classical Indian Philosophy,* OUP
- Chakravarty, Uma. "Whatever happened to the Vedic Dasi? Orientalism, Nationalism and a Script for the Past." In *Recasting Women: Essays in Indian Colonial History,* edited by Kumkum Sangari and Sudesh Vaid, 27-87. New Brunswick, New Jersey: Rutgers University Press, 1990.
- Lughod, Lila Abu. "Do Muslim Women Really Need Saving? Anthropological Reflections on Cultural Relativism and Its Others." *American Anthropologist,* 47, no.3(2002):783-790.

Unit IV Feminist Perspectives

1. Feminist Perspective on Ethics
2. Feminist Perspective on Bioethics

Essential/recommended readings

- Jaggar, Alison. "Feminist Ethics: Project, Problems and Prospects". In *Feminist Ethics,* edited by C. Card, 78-104. Lawrence: University Press of Kansas, 1991.

- Rogers, Wendy A. "Feminist Bioethics". In *The Routledge Companion to Feminist Philosophy*, edited by Ann Garry, Serene J. Khader and Alison Stone, 579-592. New York & London: Routledge, 2017.

Suggestive Readings

- Jagger, Alison M. and Iris Marion Young, eds.*Companion to Feminist Philosophy: Blackwell Companion to Philosophy*. Oxford: Blackwell Publishers, 1998.
- Hooks, Bell. "Feminism: A Movement to End Sexist Oppression". In *Feminisms* edited by Sandra Kemp and Judith Squires, 22-27. New York: OUP, 2009.
- Kemp, Sandra and Judith Squires, eds. *Feminisms*. New York: OUP, 2009.
- Mies, Maria and Vandana Shiva. *Eco-Feminism*. Jaipur: Rawat Publications, 1993
- Padia, Chandrakala, ed. *Feminism, Tradition and Modernity*. Shimla: IIAS, 2002.
- Indradeva, Shrirama (1976). The Status of Woman in Ancient India: Compulsives of the Patriarchal Order. *Diogenes* 24 (93):67-80.

DISCIPLINE SPECIFIC ELECTIVE - (DSE-11) – Indian Theories of Consciousness

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Indian Theories of Consciousness DSE 11	4	3	1	Nil	12th Passed	Basic Knowledge of Classical Indian Tradition

Learning Objectives

- The aim is to make students familiar with and develop a clear understanding of the major concepts such as the nature of the self (*Atman/Brahman*), *paravidya*and*aparavidya*, No-soul theory, karma and rebirth, etc. within spectrum of Indian theories of consciousness.
- To develop a deeper understanding of the nature of the self which ultimately reveals one's own existence or being.
- The reading of original texts help students to know the fundamental tenants of different schools of Classical Indian thought.
- Exposure to various methodologies, interpretations used in the writing style of ancient Indian philosophers..

Learning outcomes

- Students will have knowledge of the Indian Theories of Consciousness given in *Mandukyopanishad,Bhagavadgita, Buddhism, Charvaka, Nyaya and Advaita Vedanta.*
- In all four units students will learn to develop scientific, logical and rational inquiry for understanding the Indian Philosophical systems. Students will able to do a comparative analysis of all systems which will further enhance their debating skills.
- This paper helps to enhance students' ratiocinatively abilities and writing skills which are essential for establishing logical conclusions in all aspects of human existence.

UNIT-I Introduction **(12 Hours, 4 weeks)**

1. Consciousness in Mandukya Upanishad
2. Consciousness in Bhagavad Gita

Essential/Recommended Readings

Mandukyopanishad., Tr. and Annoted by Swami Nikhilananda, Advaita Ashram, Calcutta, 2000, PP. 7-85.
Bhagavadgītā: Chapter II, Verses 11-30; TheBhagavadgītā (Text and Translation) by R. C. Zahner, Oxford University Press, New York, 1973.

UNIT-II Buddhist Understanding of Consciousness **(9 Hours, 3 Weeks)**

Essential/Recommended Readings

1. King Milinda's Questions

The Questions of King Milinda, Book II, Translated from Pali by T. W. Rhys David, MotilalBanarsidas, Delhi, 1965, pp 40-99.

UNIT-III Nyaya theory of Consciousness **(12 Hours, 4 Weeks)**

1. Jayanta Bhatta's Exposition

Essential/Recommended Readings

Nyāyamañjarī of Jayanta Bhaṭṭa, Dehātmavāda (Śarīrātmavādī-cārvāka-mata),Indian Council of Philosophical Research, New Delhi, 1990, pp 109-128

UNIT-IV Advaita Vedanta on Consciousness **(12 Hours, 4 Weeks)**

1. Sankara's introduction to the Brahmasutra

Sankara's introduction to the Brahmasutra called *Upodghata*, pp.1-4, Brahmasutrasamkarabhashya (edited by Vasudeva Sharma) Published by TukaramJavaji,NimayaSagara,Bombay.

Suggestive Readings

- Hume,R.E.Thirteen Principal Upaniṣads. Oxford: Oxford University Press,1921.
- Radhakrishnan, S.The Principal Upaniṣads. London: George Allen & Unwin,1974.
- Swami, Gambhirananda,trans.Brahmasūtra-śāṃkara-bhāṣya. Calcutta: Advaita Ashram
- Swami Vireshwarananda, trans. Brahmasūtra-śāṃkara-bhāṣya. Calcutta :Advaita Ashram, 2003, pp 1-16.
- Organ, Troy Wilson. The Self in Indian Philosophy. London: Mounton& Co., 1964.
- Pandey, SangamLal. Pre-SamkaraAdvaita Philosophy, 2nd ed. Allahabad: DarsanPeeth, 1983.
- Paul S. and Anthony J. Tribe. Buddhist Thought: A Complete Introduction to the Indian Tradition. London: Routledge,2000.
- Stcherbatsky, Theodore. The Soul Theory of Buddhists, 1 st ed. Varanasi: BharatiyaVidyaPrakasana, 1970.
- Gupta, Bina, Cit Consciousness. OUP.:New Delhi 2003.

DISCIPLINE SPECIFIC ELECTIVE (DSE-12) – Aesthetics

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Aesthetics DSE 12	4	3	1	Nil	12th Passed	None

Course Objective

- This course is about how to think about art.
- The experience of art is common but its analysis is rare. This course will inculcate an analytical and critical look at art
- The course is aimed to make students understand various philosophical traditions and approaches to contextualise the nature, meaning anddefinition of art, craft, beauty, creativity and aesthetic experience. The course also includes an eclectic collection of textual references.

Learning Outcomes:

- The students will appreciate the nature of art better by taking this course
- The students will understand art from various dimensions and

- The student will come to analyse art from spiritual, sublime, and disinterested perspectives
- The student will also be acquainted with Indian theory of art
- The student will have a richer comprehension of art

Unit-1:An Introduction to the Nature and Meaning of Aesthetics (9 Hours, 3 Weeks)

1. Art and Craft, Comparison of Art Forms
2. Philosophy of Art, Beauty, Creativity and Imagination

Essential/Recommended Readings:

Gupta, S. Art, Beauty and Creativity, (Delhi: D.K Printers, 1999) Chapters I,3,4,5,7,8 and 9
Jhanji, R. The Sensuous in Art: Reflections on Indian Aesthetics. (Indian Institute of Advanced Study:Shimla, 1989). Chapter-1

Unit-2Axiological Aspect (12 Hours, 4 Weeks)

1. What is Art
2. Art and Morality: Comparison and Contrast
3. Marcuse on Aesthetics

Essential/Recommended Readings

Hiriyanna, M. 'Art and Morality' in Art Experience, (Indira Gandhi National Centre for the Arts: Manohar, Revised edition: 1997)

Sartre, Jean Paul, 'The Work of Art' in Aesthetics, Harold Osborne, (London: Oxford University Press, 1972).

Marcuse, H. The Aesthetic Dimension: Towards a Critique of Marxist Aesthetics. Kindle Edition.

Unit 3 Rasa theory and art (12 Hours, 4 Weeks)

1. Rasa in comparison with Spiritual bliss
2. Art as a Spiritual Activity

Essential/Recommended Readings:

Hiriyanna, M. Art Experience,(Indira Gandhi National Centre for the Arts, Manohar: Delhi, This edition: 1997). Chapters 1 and 5.

Coomaraswamy, A.The Transformation of Nature in Art,(Sterling Publishers, 1995) Chapter-1 (p.1-39)

Tagore, R. *Sadhana* in Tagore Omnibus, Volume IV. Rupa Publications Pvt Ltd.

Unit-4 Art and Aesthetic Attitude (12 Hours, 4 Weeks)

1. Idea of Art
2. Kant's Disinterestedness

Essential/Recommended Readings:

Daniels, Paul, Kant on the Beautiful: The Interest is Disinterestedness, (Colloquy, 16, 2008, p. 198-209) URL: https://www.monash.edu/__data/assets/pdf_file/0006/1762206/daniels.pdf
Paul Valery, 'The Idea of Art in Aesthetics by Harold Osborne(London: Oxford University Press,1972).
'Disinterestedness and Desire in Kant's Aesthetics' in The Journal of Aesthetics and Art Criticism, Paul Guyer . (Blackwell Publishing on behalf of The American Society for Aesthetics . Vol. 36, No. 4 (Summer, 1978), pp. 449- 460
Link for this:
https://static1.squarespace.com/static/58d6b5ff86e6c087a92f8f89/t/593b6f7017bffc1f7c58cbdf/1497067378006/Desinterstedness+and+Desire+in+

Suggestive Readings

- Gupta, S. Art, Beauty and Creativity, (Delhi: D.K Printers, 1999) Chapters I,3,4,5,7,8 and 9
- Jhanji, R. The Sensuous in Art: Reflections on Indian Aesthetics. (Indian Institute of Advanced Study: Shimla, 1989). Chapter-1
- Daniels, Paul, Kant on the Beautiful: The Interest is Disinterestedness, (Colloquy, 16, 2008, p. 198-209) URL: https://www.monash.edu/__data/assets/pdf_file/0006/1762206/daniels.pdf
- Paul Valery, 'The Idea of Art in Aesthetics by Harold Osborne (London: Oxford University Press,1972).
- 'Disinterestedness and Desire in Kant's Aesthetics' in The Journal of Aesthetics and Art Criticism, Paul Guyer . (Blackwell Publishing on behalf of The American Society for Aesthetics . Vol. 36, No. 4 (Summer, 1978), pp. 449- 460
- Hiriyanna, M. Art Experience,(Indira Gandhi National Centre for the Arts, Manohar: Delhi,This edition: 1997). Chapters 1 and 5.
- Coomaraswamy, A.The Transformation of Nature in Art,(Sterling Publishers, 1995) Chapter- 1 (p.1-39)
- Tagore, R. *Sadhana* in Tagore Omnibus, Volume IV. Rupa Publications Pvt Ltd.
- Sartre, Jean Paul, 'The Work of Art' in Aesthetics, Harold Osborne, (London: OxfordUniversity Press, 1972).
- Marcuse, H. The Aesthetic Dimension: Towards a Critique of Marxist Aesthetics. Kindle Edition.
- Saxena, S. K. (2010). Aesthetics: Approaches, Concepts. And Problems, D K Printworld
- Barlingay, S.S. A Modern Introduction to Indian Aesthetic Theory. DK Printworld: Delhi. 2016 edition). Chapters 1,4, 5 and 6.
- Ray, N.R. An Approach to Indian Art, (Publications Bureau :Panjab University). Chapters1-4.
- Graham, G. Philosophy of the arts: An introduction to aesthetics. Third Edition (Routledge 2005).

DISCIPLINE SPECIFIC ELECTIVE - (DSE-13) – Philosophy of Logic

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Philosophy of Logic DSE 13	4	3	1	Nil	12th Passed	Knowledge of Truth functional Logic

Learning Objectives

- This course is essentially about the nature of logic
- This course is designed to apprise students of the diversity of point of views on the problematic and debatable logical issues.
- The selection of issues is done keeping in mind the topics that the student is already familiar with. Introductory courses on Logic include syllogism, the laws of thought and symbolic logic.
- Hence this course includes theoretical discussions of issues in these areas of deductive logic.

Learning Outcomes

- Students will understand the debates around the nature of logic
- Students will develop the critical ability to engage with abstract concepts in logic
- Students will appreciate the problems and beauty of the basics of logic
- Students will realize that what seems trivial is actually profound and can be subject to change

UNIT 1 Nature of Logic (12 Hours, 4 Weeks)

1. The Formal Laws of Thought: Immanuel Kant
2. Logic as the Essence of Philosophy: Bertrand Russell

Essential/Recommended Reading

I. M. Copi, J.A. Gould (ed.), Readings on Logic 1st edn., New York, NY: Macmillan (1964), 38-42.

I. M. Copi, J.A. Gould (ed.), Readings on Logic 1st edn., New York, NY: Macmillan (1964), 78-92

UNIT 2 The Syllogism (9 Hours, 12 Weeks)

1. What the Tortoise said to Achilles:Lewis Carroll
2. Aristotle's Logic: Bertrand Russell

Essential/Recommended Readings

Carroll, L. (1895), "What the Tortoise Said to Achilles", Mind N.S. 4, 278–280 Also reprinted inI. M. Copi, J.A. Gould (ed.), Readings on Logic 1st edn., New York, NY: Macmillan (1964), 122–124.

I. M. Copi, J.A. Gould (ed.), Readings on Logic 1st edn., New York, NY: Macmillan (1964), 125-130.

UNIT 3 Laws of Thought **(12 Hours, 4 Weeks)**

1. Proving the Laws of Thought by Aristotle
2. A Defense of the Law of Excluded Middle by Bertrand Russell

Essential/Recommended Reading

I. M. Copi, J.A. Gould (ed.), Readings on Logic 1st edn., New York, NY: Macmillan (1964), 133-144.

I. M. Copi, J.A. Gould (ed.), Readings on Logic 1st edn., New York, NY: Macmillan (1964), 117-186

UNIT 4 Symbolic Logic **(12 Hours, 4 Weeks)**

1. Mathematics and Logic by Bertrand Russell

Essential/Recommended Reading

I. M. Copi, J.A. Gould (ed.), Readings on Logic 1st edn., New York, NY: Macmillan (1964), 216-223

Suggestive Readings

- Barnes, Jonathan, 1981. "Proof and the Syllogism", 17–59 in Berti 1981.
- Boolos, G., 1998, *Logic, Logic, and Logic*, Cambridge: Harvard University Press.
- Freeman, J. B. 1988 Thinking Logically, Englewood Cliffs, NJ: Prentice Hall.
- Gabbay, Dov M., and John Woods (eds.), 2009, *Handbook of the History of Logic: Volume 5 — Logic From Russell to Church*, Amsterdam: Elsevier/North Holland.
- Galaugher, Jolen, 2013, *Russell's Philosophy of Logical Analysis*, London: Palgrave Macmillan.
- Hintikka, Jaakko, 2009, "Logicism", in A.D. Irvine (ed.), *Philosophy of Mathematics*, Amsterdam: Elsevier/North Holland, 271–290.
- Lear, Jonathan, 1980. *Aristotle and Logical Theory*, Cambridge University Press.
- Patzig, Günther, 1969. *Aristotle's Theory of the Syllogism*, Jonathan Barnes (trans.), Dordrecht: D. Reidel.
- Scriven, M. 1976 Reasoning, New York, NY: McGraw-Hill

Category II

BA (Prog.) with Philosophy as Major

(Courses for Undergraduate Programme of study with Philosophy discipline as one of the Core Disciplines)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

DISCIPLINE SPECIFIC CORE COURSE (DSC-11) : Analytic Philosophy

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Analytic Philosophy DSC 11	4	3	1	NIL	12th Passed	None

Learning Objective

- The course aims at exposing students to Analytic Philosophy, a school of thought that has held a dominant position in Western Philosophy since the beginning of the twentieth century.
- As a philosophical tradition it is characterized by an emphasis on, scientific rigor, argumentative precision and logical clarity in the development of thought and concept.
- Its familiar tools are formal logic, conceptual analysis, and, mathematics.

Learning Outcomes

- The students will develop acquaintance with one of the most vital streams of philosophy in contemporary times
- The students will learn to analyze topics in epistemology, metaphysics, philosophy of mind and language through the methods and techniques of analytic philosophy

Unit 1 Metaphysics **(12 Hours, 4 Weeks)**

1. Fundamental Problems
2. Appearance and Reality
3. The Reality of Matter

Essential/Recommended Reading

1) The Problems of Philosophy - Bertrand Russell (Chapters 1, 2, and 3) in The Problems of Philosophy, OUP, 1980 reprint

Unit 2 Epistemology **(12 Hours, 4 Weeks)**

1. Proof of an external world
2. Knowledge by Acquaintance
3. Knowledge by Description

Essential/Recommended Reading

1) Proof of an External World - G. E. Moore, in G. E. Moore Selected Writings, Thomas Baldwin, ed., Routledge, 1993
2) Knowledge by Acquaintance & Knowledge by Description - Bertrand Russell, The Problems of Philosophy, Chapter 5

Unit 3 Philosophy of Mind **(12 Hours, 4 Weeks)**

1. Can a computer think?
2. Subjective experience

Essential/Recommended Readings

1) Can Computers Think? - John R. Searle, Analytic Philosophy: An Anthology, A. P. Martinich& David Sosa, eds., Wiley Blackwell , 4th edn., 2009, Part IV, Chapter 27
2) What is it Like to be a Bat? - Thomas Nagel, Analytic Philosophy: An Anthology, Part IV, Chapter 25

Unit 4 Philosophy of Language **(9 Hours, 3 Weeks)**

1. Logical Analysis
2. Elimination of Metaphysics

Essential/Recommended Reading

The Elimination of Metaphysics Through Logical Analysis of Language - Rudolph Carnap, 1931, (Translated by Arthur Pap) *www.ditext.com/carnap/elimination.html*

Suggestive Readings

- Ayer, A. J. *Language, Truth and Logic*. New York: Dover Publications, 2002.
- Beaney, Michael. *Analytic Philosophy: A Very Short Introduction*. Oxford, United Kingdom: Oxford University Press, 2017.
- Martinich, Aloysius, and David Sosa. *The Philosophy of Language*. New York: Oxford University Press, 2012.
- Rorty, Richard M. *The Linguistic Turn: Essays in Philosophical Method*. Chicago, IL: University of Chicago Press, 1992.
- Russell, Bertrand. *The Problems of Philosophy. Bertrand Russell*. London: Oxford University Press, 1912.
- Schwartz, Steve. *A Brief History of Analytic Philosophy: From Russell to Rawls*. Chichester: Wiley-Blackwell, 2013
- Glock, Hans-Johann. *What Is Analytic Philosophy?*Cambridge, UK: Cambridge University Press, 2008.

DISCIPLINE SPECIFIC CORE COURSE – 10 (DSC-12): Philosophical Understanding of Religion

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Philosophical Understanding of Religion DSC 12	**4**	**3**	**1**	**NIL**	**12th Passed**	**None**

Learning Objective

- The course familiarizes the students with basic arguments regarding religion that philosophers have presented
- The course cover topics like the language of religion, cognitive and non-cognitivist theories, key proofs for the existence of God and the ethics of belief
- The course will give students a very important orientation regarding the manner of assessment of arguments and claims made by religion.

Learning Outcomes

- The students will be able to analyze arguments presented in religion
- The students will learn to pay attention to the nuances of the language of religion

- The students will comprehend the complications involved in choosing between faith and reason and will come to have a better appreciation of the religious life.

UNIT 1 Philosophy of Religion: Indian and Western (9 Hours, 3 Weeks)

1. Nature of Religion and its relation to Philosophy of Religion
2. Metaphysical attributes of God
3. Indian Philosophy of Religion

Essential/Recommended Readings

Meister,Chad, *Philosophy of Religion Reader*, Routledge New York,2008

Brody, Baruch A, *Readings in Philosophy of Religion*,Ed. Vol 1,New Jersey,PHI, 1974.

Ramamurty, A. *Indian Philosophy of Religion,* Decent Books, New Delhi, 2002, pg. 1-13 ("Introduction")

UNIT 2 Evil and Belief (12 Hours, 4 Weeks)

1. Problem of Evil
2. "The Ethics of Belief" - W.K.Clifford

Essential/Recommended Readings

Meister, Chad, *Philosophy of Religion,* Reader, Routledge, NewYork, 2008.

John H.Hick, *Philosophy of Religion*, New Jersey Prentice Hall, Englewood Cliffs,1990.

McCloske, Quinn, P.L. and Taliaferro, C. ed., *A Companion to Philosophy of Religion*, UK, Blackwell Publishers, 1997.

McCloskey, H.J.*God and Evil*, Philosophical Quarterly, Vol.10, 1960.

Unit 3 Faith and Reason (12 Hours, 4 Weeks)

1. Faith
2. Reason
3. Revelation

Essential/Recommended Readings

McCloskey, Quinn, P.L. and Taliaferro, C. ed., *A Companion to Philosophy of Religion*, UK, Blackwell Publishers, 1997.

John H.Hick, *Philosophy of Religion,* New Jersey Prentice Hall, Englewood Cliffs,1990.

UNIT 4 Concepts of Religious Pluralism and Liberation (12 Hours, 4 Weeks)

1. Religious Pluralism
2. Concept of liberation: Nirvana {Buddhism) ,Moksha (Advaita Vedanta)

Essential/Recommended Readings

Dasgupta, S.N.,*History of Indian Philosophy*, Vol.1, London, Cambridge University Press, 1922.

M.Hiriyanna, *Outlines of Indian Philosophy*, London, George Allen and Unwin Ltd. Publishers, 1932.

T.R.V.Murti, *The Central Philosophy of Buddhism: A Study of the Madhyamika System*, London, George Allen and Unwin Ltd. Publishers, 1955.

John H.Hick, *Philosophy of Religion*, New Jersey Prentice Hall, Englewood Cliffs,1990.

Suggestive readings

- Hinnells, J.R.*The Routledge Companion to the Study of Religion* ,Oxon. Routledge, 2005.
- Quinn Philip L, and Talliaferro Charles, *A Companion To Philosophy Of Religion*, Blackwell Publishers , 1997.
- Sinha, Jadunath, *Indian Philosophy* (Vol-I & II), Delhi, MLBD, 2000.
- Peterson, HaskorReichenbeah and Basinger, *Philosophy of Religion : Selected Readings*, OUP, 2001.
- William Lane Craig (ed.), *Philosophy of Religion : A Reader and Guide,* Edinburgh, Edinburgh University Press, 2002.
- Stump and Murray, ed. *Philosophy of Religion : The Big Questions,* Blackwell Publications, 1999
- Verma V. P., *धर्मदर्शनकीमूलसमस्याएं: The Fundamental Problems of the Philosophy of Religion,* Hindi Madhyam, KaryanvayaNideshalaya, 2012.

DISCIPLINE SPECIFIC ELECTIVE (DSE 8) : Aesthetics: Indian and Western Perspectives

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Aesthetics: Indian and Western Perspectives DSE 8	4	3	1	Nil	12th Passed	None

Learning Objective

- Experiencing art is common, but coming to understand it is not. This course aims at bringing students the critical ability to understand art
- This course will bring both western and Indian perspectives on art to the fore, with more emphasis on the Indian perspective.
- This course will make students appreciate art in different artistic forms

Learning Outcomes

- Upon completing this course, students will learn to appreciate artistic forms better
- The students will come to express in language what they only felt before as an experience
- The students will be able to critically analyze art forms
- The student will be equipped to pursue a career in art criticism and aesthetics

Unit 1 Nature and Meaning of Aesthetics **(9 Hours, 3 Weeks)**

1. Introduction to Aesthetics
2. Philosophy of Art and Beauty.

Essential/Recommended Readings:

Saxena, S K, Art and Philosophy: Seven Aestheticians (Pragati Publications,1995). Chapter on 'Langer'

Shyamala Gupta, Art, Beauty and Creativity, (DK Print world: New Delhi,1999). Chapters 1,4,7,8,9.

Unit 2 Identity of a Work of Art **(12 Hours, 4 Weeks)**

1. The Idea of Art
2. Form of Feeling

Essential/Recommended Readings:

Paul Valery, 'The Idea of Art' in Aesthetics by Harold Osborne (London: Oxford University Press,1972).

Form of Feeling: The Aesthetic Theory of Susanne K Langer by Sam Reese in Music

Educators Journal, Vol. 63, No. 8 (Apr., 1977), pp. 44-49 Online Source: https://www.jstor.org/stable/3395285

Unit 3 Aesthetic Delight, Rasa and Disinterestedness **(12 Hours, 4 Weeks)**

1. Concept of Rasa and Aesthetic Delight with reference to Indian context.
2. Kant on the Beautiful: The Interest in Disinterestedness

Essential/Recommended Readings:

Hiriyanna, M. Art Experience, (Indira Gandhi National Centre for the Arts,Manohar: Delhi, 1997). Chapter-1&5

Daniels, Paul, Kant on the Beautiful: The Interest is Disinterestedness, (Colloquy, 16, 2008, p. 198-209) URL:https://www.monash.edu/__data/assets/pdf_file/0006/1762206/daniels.pdf

Unit 4 Art, Religion, and Spirituality: Indian View **(12 Hours, 4 Weeks)**

1. Ananda Coomaraswamy
2. Sri Aurobindo
3. Rabindranath Tagore.

Essential/Recommended Readings:

Coomaraswamy, A. K. *The Transformation of Nature in Art*, (Sterling Publishers,1995) Chapter-1(p.1-39)

Online material available for Aurobindo and Tagore on shodhganga/inflib.net and jstor.

Tagore,R. "Sadhana" in Tagore Omnibus, Volume IV. Rupa Publications Pvt Ltd.

DISCIPLINE SPECIFIC ELECTIVE (DSE) COURSE: Indian Philosophy

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Texts of Indian Philosophy DSE 9	4	3	1	Nil	12th Passed	"Introduction to Indian Philosophy" DSC 3

Learning Objectives

- This course will introduce students to Indian knowledge systems and values. Stress will be laid in making the student understand notions like Rt*a, Satya and dharma*
- This course will make students aware of their intellectual heritage
- This course will give the necessary instruction so that a student can go and further research in Indian thought and culture

Learning Outcomes

- The students will learn about an aspect of Indian intellectual and cultural heritage
- The students will understand the richness of Indian intellectual heritage and will have a better idea of the basis of Indian thought and culture
- The student will learn to analyze the ancient Indian texts from a scholarly angle and will appreciate their meanings in a better and informed way

UNIT 1 Vedic Values **(12 Hours, 4 Weeks)**

1. Prithvi Sutaka (Rg Veda) hyms 47 to 60
2. The concept of Rt*a, Satya and dharma.*

Essential/Recommended Readings:

1. Pannikar,R. (2001), The Vedic Experience, Mantramanjari: An anthology of the Vedas for modern man and contemporary Celebrations.MotilalBanarsidass Publishers,pp.120-122; 126-129

2. Wezler, A., 'Dharma in the Veda and Dharmasastras', DHARMA(ed. Patrick Olivelle), MLBD, 2009, pg.207 – 231.

UNIT 2. Basic Characteristics of Upaniṣad **(12 Hours, 4 Weeks)**

1. What are the Upaniṣads and what do they mean
2. Characteristics of the Upaniṣads

Essential/Recommended Readings

Swami Krishnananda, Lessons on the Upanishads , The Divine Life Society, pp.06-59.
www.swami-krishnananda.org
Radhakrishnan, S. (1951) The Principal Upaniṣad, Harper Collins, pp 15-26.

UNIT 3 Kena Upaniṣad **(9 Hours, 3 Weeks)**

1. Poetry in Kena Upaniṣad
2. Interpretation of the Poetry

Essential/Recommended Readings

Chapter 1 and 2 (poetry) of Kena Upaniṣad

UNIT 4. Kena Upaniṣad **(12 Hours, 4 Weeks)**

1. Prose in Kena Upaniṣad
2. Interpretation of Prose

Recommended Readings

Chapter 3 and 4 (Prose) of Kena Upaniṣad

Suggestive Readings

- Kane, P.V. (1973). History of Dharmaśāstra, Vol.III,2nd ed. Poona: Bhandarkar Oriental Research Institute.
- Radhakrishnan, S. (1951) The Principal Upaniṣad, Harper Collins, pp579-592.
- Raju, P.T. Structural Depths of Indian Philosophy, pp.25-40.

DISCIPLINE SPECIFIC ELECTIVE (DSE 10): Indian Theories of Consciousness

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Indian Theories of Consciousness DSE 10	4	3	1	Nil	12th Passed	"Introduction to Indian Philosophy" DSC 3

Learning Objectives

- The aim is to make students familiar with and develop a clear understanding of the major concepts such as the nature of the self (*Atman/Brahman*), *paravidya*and*aparavidya*, No-soul theory, karma and rebirth, etc. within spectrum of Indian theories of consciousness.
- To develop a deeper understanding of the nature of the self which ultimately reveals one's own existence or being.
- The reading of original texts help students to know the fundamental tenants of different schools of Classical Indian thought.
- Exposure to various methodologies, interpretations used in the writing style of ancient Indian philosophers..

Learning outcomes

- Students will have knowledge of the Indian Theories of Consciousness given in *Mandukyopanishad,Bhagavadgita, Buddhism, Charvaka, Nyaya and Advaita Vedanta.*
- In all four units students will learn to develop scientific, logical and rational inquiry for understanding the Indian Philosophical systems. Students will able to do a comparative analysis of all systems which will further enhance their debating skills.
- This paper helps to enhance students' ratiocinatively abilities and writing skills which are essential for establishing logical conclusions in all aspects of human existence.

UNIT-I Introduction (12 Hours, 4 weeks)

3. Consciousness in Mandukya Upanishad
4. Consciousness in Bhagavad Gita

Essential/Recommended Readings

Mandukyopanishad., Tr. and Annoted by Swami Nikhilananda, Advaita Ashram, Calcutta, 2000, PP. 7-85.
Bhagavadgītā: Chapter II, Verses 11-30; TheBhagavadgītā (Text and Translation) by R. C. Zahner, Oxford University Press, New York, 1973.

UNIT-II Buudhist Understanding of Consciousness (9 Hours, 3 Weeks)

Essential/Recommended Readings

1. King Milinda's Questions

The Questions of King Milinda, Book II, Translated from Pali by T. W. Rhys David, MotilalBanarsidas, Delhi, 1965, pp 40-99.

UNIT-III Nyaya theory of Consciousness (12 Hours, 4 Weeks)

1. Jayanta Bhatta's Exposition

Essential/Recommended Readings

Nyāyamañjarī of Jayanta Bhaṭṭa, Dehātmavāda (Śarīrātmavādī-cārvāka-mata),Indian Council of Philosophical Research, New Delhi, 1990, pp 109-128

UNIT-IV Advaita Vedanta on Consciousness (12 Hours, 4 Weeks)

1. Sankara's introduction to the Brahmasutra

Sankara's introduction to the Brahmasutra called *Upodghata* , pp.1-4, Brahmasutrasamkarabhashya (edited by Vasudeva Sharma) Published by TukaramJavaji,NimayaSagara,Bombay.

Suggestive Readings

- Hume,R.E.Thirteen Principal Upaniṣads. Oxford: Oxford University Press,1921.
- Radhakrishnan, S.The Principal Upaniṣads. London: George Allen & Unwin,1974.
- Swami, Gambhirananda,trans.Brahmasūtra-śāṃkara-bhāṣya. Calcutta: Advaita Ashram
- Swami Vireshwarananda, trans. Brahmasūtra-śāṃkara-bhāṣya. Calcutta :Advaita Ashram, 2003, pp 1-16.
- Organ, Troy Wilson. The Self in Indian Philosophy. London: Mounton& Co., 1964.
- Pandey, SangamLal. Pre-SamkaraAdvaita Philosophy, 2nd ed. Allahabad: DarsanPeeth, 1983.
- Paul S. and Anthony J. Tribe. Buddhist Thought: A Complete Introduction to the Indian Tradition. London: Routledge,2000.
- Stcherbatsky, Theodore. The Soul Theory of Buddhists, 1 st ed. Varanasi: BharatiyaVidyaPrakasana, 1970.
- Gupta, Bina, Cit Consciousness. OUP.:New Delhi 2003.

Category III

BA (Prog.) with Philosophy as Minor

DISCIPLINE SPECIFIC CORE COURSE (DSC 2) : Contemporary Indian Philosophy

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Analytic Philosophy DSC 6	4	3	1	NIL	12th Passed	None

Learning Objective

- The course aims at exposing students to Analytic Philosophy, a school of thought that has held a dominant position in Western Philosophy since the beginning of the twentieth century.
- As a philosophical tradition it is characterized by an emphasis on, scientific rigor, argumentative precision and logical clarity in the development of thought and concept.
- Its familiar tools are formal logic, conceptual analysis, and, mathematics.

Learning Outcomes

- The students will develop acquaintance with one of the most vital streams of philosophy in contemporary times
- The students will learn to analyze topics in epistemology, metaphysics, philosophy of mind and language through the methods and techniques of analytic philosophy

Unit 1 Metaphysics **(12 Hours, 4 Weeks)**

1. Fundamental Problems
2. Appearance and Reality
3. The Reality of Matter

Essential/Recommended Reading

1) The Problems of Philosophy - Bertrand Russell (Chapters 1, 2, and 3) in The Problems of Philosophy, OUP, 1980 reprint

Unit 2 Epistemology **(12 Hours, 4 Weeks)**

1. Proof of an external world
2. Knowledge by Acquaintance
3. Knowledge by Description

Essential/Recommended Reading

1) Proof of an External World - G. E. Moore, in G. E. Moore Selected Writings, Thomas Baldwin, ed., Routledge, 1993
2) Knowledge by Acquaintance & Knowledge by Description - Bertrand Russell, The Problems of Philosophy, Chapter 5

Unit 3 Philosophy of Mind **(12 Hours, 4 Weeks)**

1. Can a computer think?
2. Subjective experience

Essential/Recommended Readings

1) Can Computers Think? - John R. Searle, Analytic Philosophy: An Anthology, A. P. Martinich& David Sosa, eds., Wiley Blackwell , 4th edn., 2009, Part IV, Chapter 27
2) What is it Like to be a Bat? - Thomas Nagel, Analytic Philosophy: An Anthology, Part IV, Chapter 25

Unit 4 Philosophy of Language **(9 Hours, 3 Weeks)**

1. Logical Analysis
2. Elimination of Metaphysics

Essential/Recommended Reading

The Elimination of Metaphysics Through Logical Analysis of Language - Rudolph Carnap, 1931, (Translated by Arthur Pap) *www.ditext.com/carnap/elimination.html*

Suggestive Readings

- Ayer, A. J. *Language, Truth and Logic*. New York: Dover Publications, 2002.
- Beaney, Michael. *Analytic Philosophy: A Very Short Introduction*. Oxford, United Kingdom: Oxford University Press, 2017.
- Martinich, Aloysius, and David Sosa. *The Philosophy of Language*. New York: Oxford University Press, 2012.
- Rorty, Richard M. *The Linguistic Turn: Essays in Philosophical Method*. Chicago, IL: University of Chicago Press, 1992.
- Russell, Bertrand. *The Problems of Philosophy. Bertrand Russell*. London: Oxford University Press, 1912.
- Schwartz, Steve. *A Brief History of Analytic Philosophy: From Russell to Rawls*. Chichester: Wiley-Blackwell, 2013
- Glock, Hans-Johann. *What Is Analytic Philosophy?*Cambridge, UK: Cambridge University Press, 2008.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

Credit distribution, Eligibility and Pre-requisites of the Course

GENERIC ELECTIVES (GE-18): Legal Philosophy

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Legal Philosophy GE 18	4	3	1	Nil	12th Passed	None

Learning Objectives

The course in Philosophy of Law, seeks to:

- Familiarize students with the nature and purpose of law by examining questions such as "What is (the nature of) law?", "How, if at all, is law connected with morality?" and "What is justice?", and to instruct students about possible answers and arguments provided in legal philosophy and theory.
- Introduce students to philosophical schools such as Legal Positivism and Natural Law.
- Help students critically examine the institution of legal punishment that pertains to the coercive impact of law. Questions such as, "Is it ever right to punish someone?", "What does it mean to say someone is innocent until proven guilty?", "What are the various theories justifying punishment?" will be explored with a view to enhance student sensitivity and understanding of a legal issue.

Learning Outcomes

- The ideal outcome of this course is to make students understand the concept of law, its place in our lives, its formal structure, rules and modalities.
- Students should be able to discuss and argue on crucial legal questions that impact the life of common citizens with sensitivity, acumen, precision and insight.

UNIT 1 Law: Concept, Meaning and Definition (12 Hours, 4 Weeks)

1. Traditional Natural Law Theory – Thomas Aquinas
2. Legal Positivism – Austin
3. Law as System of Rules – Hart
4. Law as Integrity – Dworkin

Essential/Recommended Reading:
Altman, Andrew; *Arguing About Law: An Introduction to Legal Philosophy*, Australia: Wadsworth, 2001, pp 32-58 (Topic 1-4)

UNIT 2 Scope of Legal Obligation (12 Hours, 4 Weeks)

1. The Ambit of Legal Obligation
2. Freedom of Speech

Essential/Recommended Readings:

Fuller, Lon; The Case of the Speluncean Explorers, Harvard Law Review, Vol. 62, No. 4, February 1949, pp 616-645
van Mill, David; Freedom of Speech, The Stanford Encyclopedia of Philosophy, Edward N. Zalta (ed.), Metaphysics Research Lab, Stanford University, 2021, URL = <https://plato.stanford.edu/archives/spr2021/entries/freedom-speech/>

UNIT 3 Legal Issues and India (9 Hours, 3 Weeks)

1. Basic Structure of the Constitution
2. Impact of Judicial Decisions

Essential/Recommended Readings:

Abridged JudgementofKesavanandBharatiVs. State of Kerala; AIR 1973 SC 1461

Baxi, Upendra; Who Bothers about the Supreme Court? The Problem of Impact of Judicial Decisions, Journal of the Indian Law Institute, Vol. 24, No. 4 (October-December 1982), pp. 848-862

UNIT 4 Fundamentals of Law (12 Hours, 4 Weeks)

1. Jury System vs. Judge System
2. Crime and Punishment

Essential/Recommended Readings:

Brooks,Thom; The Right to Trial by Jury, Wiley, Journal of Applied Philosophy, Vol. 21, No. 2, 2004, pp. 197-212
Tebbit, Mark; *Philosophy of Law: An Introduction*, (3rd Edition), Routledge 2017, pp 242-253

Suggestive Readings

- Marmor, Andrei, *Philosophy of Law*, New Jersey: Princeton University Press, 2011
- Golding, Martin Philip, and Edmundson, William A., *The Blackwell Guide to Philosophy of Law and Legal Theory*, Oxford: Blackwell, 2005
- Marmor, Andrei (ed), *The Routeledge Companion to Philosophy of Law*, New York: Routeledge, (1st ed.), 2012
- Choudhary, S., Khosla, M. and Mehta, P.B., *The Oxford Handbook of the Indian Constitution* (1st ed.), Oxford: Oxford University Press, 2016
- Jain, M.P., *Indian Constitutional Law*, Lexis Nexis, (8th ed.), 2018
- Rai, Udai Raj, *Fundamental Rights and their Enforcement*India: Prentice Hall, 2011

GENERIC ELECTIVES (GE-19): Feminist Film Theory

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Feminist Film Theory GE 18	4	3	1	Nil	12th Passed	None

Learning Objective

- This paper examines how the mainstream cinema has been affected by the patriarchal mindset of our society at large, and

- The course deals with the concept of spectatorship in cinema and how this spectatorship could/should be shifted from being focused on the male audience to catering to a female audience.
- The methods of pyscho-analysis, post-feminism, etc. will be taught in this course

Learning Outcomes

- The course anticipates enabling students to understand the link between reality and cinema,
- The course will make students appreciate how the representation of women in the latter has been influenced by the patriarchal structure of the society.
- Through discussions on topics like the male gaze and spectatorship, the course will also equip the students to widen their horizons in terms of thinking about the way our sexuality is placed in variety of contexts.

UNIT 1 – Women in Indian Cinema **(12 Hours, 3 Weeks)**

1. The representation of Women
2. Illusion and Reality in Women's Representation

Essential/Recommended Readings

Women in Indian Cinema, Butalia, Urvashi. (1984). Feminist Review, No. 17, Many Voices, One Chant: Black Feminist Perspectives. Pp. 108-110.

Retrieved from: https://www.scribd.com/document/522622330/women-in-indian-cinema

Gender Equality: An Illusion in Indian Cinema a Study on Women in Indian Film IndustrybyShaliniShaji (2017) in Social Sciences International Research Journal, Vol. 3, Issue. 2. Pp. 5-7.

UNIT 2 – Pleasure and Male Gaze **(12 Hours, 3 Weeks)**

1. Visual Pleasure
2. Narrative Cinema

Essential/Recommended Readings

Mulvey, Laura. (1975). Visual Pleasure and Narrative Cinema (pp. 14-16). London: Macmillan.

Mulvey, Laura. (1981). Afterthoughts on "Visual Pleasure and Narrative Cinema", inspired by 'King Vidor's Duel in the Sun' (pp. 29-37). London: Macmillan.

Kaplan, E. A. (1983). *Women and film: Both Sides of the Camera* (pp. 35-47). New York and London: Methuen.

UNIT 3 – Women, Nation, and Bollywood **(12 Hours, 3 Weeks)**

1. Film and the Nation and Women

Singh, Indubala. *Gender Relations and Cultural Ideology in Indian Cinema: A Study of Select Adaptations of Literary Texts*(Chapter-2). Deep and Deep Publications, 2007.

UNIT 4 –Oppositional Gaze **(9 Hours, 3 Weeks)**

1. Black Female Spectators

Essential/Recommended Readings

Hooks, Bell. "The Oppositional Gaze: Black Female Spectators". In *Black Looks: Race and Representation*. Boston: South End Process, 1992.

GENERIC ELECTIVES (GE-20): Care Ethics

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Care Ethics GE 20	4	3	1	Nil	12th Passed	None

Learning Objective

- The course will examine the foundation of ethics as it applies in ethical decision making in various fields of humanistic inter-personal relationships and thereby covers a broad range of topics like mothering/parental care, fields of health care and education.
- Often perceived as a niche area of ethics or soft ethics covering Feminist morality, the paper will stress on the fact that this is a dynamic ethical approach and is equally applicable to field of justice and jurisprudence, and deontological ethics.
- The course will draw upon contemporary readings to familiarize the students about the topic of care ethics.

Learning Outcome

- This course will make students understand the working in the fields of medicine, teaching, law and policy making institutions from the perspective of care ethics
- It will facilitate a reasonable and an empathetic perspective among students.
- Students will be able to critically analyse other notions of care from the angle of care ethics

Unit 1 Care Ethics: Introduction **(12 Hours, 4 Weeks)**

1. Meaning and Nature of Care Ethics
2. Care ethics and its unique methodology (its difference from three traditional theories)

Essential/Recommended Readings

Gilligan, Carol. In A Different Voice: Psychological Theory and Women's Development New York University : 1982.(P.24-39)**Otherwise, this is a seminal work on Care Ethics**
Link: file:///C:/Users/HP/Downlods/In_A_Different_Voice_Psychological_Theory_and_Wome.pdf. ,https://www.researchgate.net/publication/275714106
Slote, Michael. THE ETHICS OF CARE AND EMPATHY. Routledge,2007. P.11-41 (Chapters 1and 2)
https://www.lettere.uniroma1.it/sites/default/files/263/Slote%2C%20The%20Ethics%20of%20Care%20and%20Empathy.pdf
Milton Mayeroff. On Caring (edited) by Ruth Nanda Anshen. (Harper and Row,1971). Parts II-1V. p.9-37.

Unit 2: Care, Gender and Inter-personal Relationships **(9 Hours, 3 Weeks)**

1. Care Ethics and Feminist Morality
2. Virtues of compassion and respect in inter-personal relationships

Essential/Recommended Readings

Held, Virginia.'Feminism and Moral Theory' in Bioethics: An Introduction to the History, Methods. And Practice(ed) Nancy, S. Jecker et al. (Jones and Bartlet Publishers, 2010). P. 158-163
Slote, Michael. The Ethics of Care and Empathy, Routledge,2007. P.10-21(Chapter-3, p.42-54)

Unit 3: Ethics of Care in Education and Health **(12 Hours, 4 Weeks)**

1. 1.Care Ethics and Education
2. Care ethics and the field of Health Care

Essential/Recommended Readings:

Noddings, Nel. *Caring: A Feminine Approach to Ethics and Moral Education.* Berkeley: University of CA Press, 1982.

Sherwin, Susan. *"Feminist and Medical Ethics: Two Different Approaches to Contextual Ethics"* in Bioethics: An Introduction to the History, Methods. And Practice(ed) Nancy S, Jecker et al. (Jones and Bartlet Publishers, 2010). P.183-188.

Unit 4: Care Ethics and the Just World-view **(12 Hours, 4 Weeks)**

1. Care Ethics as an inclusive and fair ethics

Essential/Recommended Readings

Virginia The Ethics of Care: Personal, Political, and Global (OUP, 2006). P.76-106 and 154-169
Available as a download on
https://voidnetwork.gr/wp-content/uploads/2015/10/The-Ethics-of-Care-Personal-Political-and-Global-by-Virginia-Held.pdf
Maureen Sander-Staudt. Care Ethics in https://iep.utm.edu/care-ethics/ Sections 7-9

Suggestive Readings

- Ruddick, Sara. Maternal Thinking: Toward a Politics of Peace. New York, NY: Ballentine Books, 1989.
- Tronto, Joan. Moral Boundaries: A Political Argument for an Ethic of Care. New York, NY: Routledge, 1994.
- Navneet, Rekha. "Abstract Universality and Ethics of Duty Vs Limited Universality and Ethics of Care" in Journal of Indian Philosophical Research (JICPR), Volume XXVI Number2. April-June2009. P.91-103.

GENERIC ELECTIVES (GE-21): Indian Ethics

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Indian Ethics GE 21	4	3	1	Nil	12th Passed	None

LearningObjectives

- The objective of the course is to inform and educate students about the rich intellectual heritage of India and some of its ethical practice systems
- The course will cover some basic doctrines of ethical practices in India including the Āśrama System and Jain and Buddhist practices
- The course will also cover the Purusarthas apart from other aspects of Indian thought about the goals of life

Learning Outcomes

- The students will understand the ethical aspects of Indian thought and their grounding in practice
- The students will be able to analyze for themselves the various practices and their contemporary relevance
- The students will have a better comprehension of the ethical practices in India since they will be reading about them from original sources

Unit 1 Introduction **(9 Hours, 3 Weeks)**

1. Prithvi Sutaka(Rg Veda) hyms 47 to 60
2. The concept of Rt*a, Satya and dharma.*

Essential/Recommended Readings:

Pannikar,R. (2001), The Vedic Experience, Mantramanjari: An anthology of the Vedas for modern man and contemporary Celebrations. Motilal BanarsidassPublishers,pp.120-122; 126-129

Wezler,A.,'Dharma in the Veda and Dharmasastras', DHARMA(ed. Patrick Olivelle), MLBD, 2009, pg. 207 – 231

Creel, Austin B. (1975). The reexamination of "Dharma" in hindu ethics. *Philosophy East and West* 25 (2):161-173.

Unit 2 Indian Moral Philosophy **(12 Hours, 4 Weeks)**

1. The nature of Indian Moral Philosophy
2. Deconstructing a Myth of Morality in Classical Indian Thought

Essential/Recommended Readings

Kelkar, M (2002). "The Nature of Indian Moral Philosophy", In *Studies in Indian Moral Philosophy,* Ed. S E Bhelke and P P Gokhale, IPQ Publications, Pune, pp, 13-26

Bhelke, S. E. (2002). "Deconstructing a myth of Morality in Classical Indian Thought", In *Studies in Indian Moral Philosophy,* Ed. S E Bhelke and P P Gokhale, IPQ Publications, Pune, pp. 45-62

Unit 3 ThePurusarthas and Concept of Sreyas and Preyas **(12 Hours, 4 Weeks)**

1. The Purusarthas: Trivarga (purpose of life)
2. Concept of Sreyas and Preyas (KathoUpanisada Apph.2 Commentary by Sankara)

Essential/Recommended Readings:

Talghatti, S R (2002). "The Concept of Purusartha", In *Studies in Indian Moral Philosophy,* Ed. S E Bhelke and P P Gokhale, IPQ Publications, Pune, pp, 93-103

Krishna, Daya (2001). The myth of the purusarthas. In Roy W. Perrett (ed.), *Theory of Value.* Garland. pp. 5--11.

Sharma, I.C.(1965) Ethical Philosophies of India, George Allen & Unwin LTD. Chapter XII.

Unit4 Jain and Buddhist Ethics **(12 Hours, 4 Weeks)**

1. Jaina Code of Conduct
2. Maitri, Karuna and Mudita (Buddhism)

Essential/Recommended Readings:

Kelkar, M (2002). "The Jaina Code of Conduct" In *Studies in Indian Moral Philosophy,* Ed. S E Bhelke and P P Gokhale, IPQ Publications, Pune, pp, 233-258

Narada (2009)The Buddha and His Teachings, Jaico Publishing House, pp 419-437

Suggestive Readings

- Bhelke, S. E and Gokhale, P. P. (2002). *Studies in Indian Moral Philosophy,* IPQ Publications, Pune
- Bilimoria, Purushottama& Prabhu, Joseph (2007). *Indian Ethics: Classical Traditions and Contemporary Challenges: Volume I.* Routledge.
- Harvey, Peter. (1990), An Introduction of Buddhist Ethics, Cambridge University Press, Cambridge.
- Keown, D. (1992), The Nature of Buddhist Ethics, Macmillan, London.
- Dahlke, P., Silacara, B., Oates, L.R., &Lounsbery, G. Constant. (2008), The Five Precepts, Buddhist Publication Society, Srilanka, pp,3-13.
- Tandon, Kiran. (2012), BharatiyaSanskriti, Eastern Book Linkers, New Delhi. Chapter -3, pp, 192-231.
- Pandey, Rajbali. (2013), Hindu Samskaras: Socio-Religious study of Hindu Sacraments, Motilal Banarasi Dass Publications, Delhi.
- Prasad, Rajendra, (1999), Varnadharma, Niskamakarma and Practical Morality, A Critical essay on Applied Ethics. D. K. Print world (P) Ltd. New Delhi.
- Satyanarayana,Y.V.(2010), Ethics: Theory and Practice, Pearson, Chapter-2 "Critical Survey of Indian Ethics", pp,13-17.
- Hiriyana,(1950), Popular Essays in Indian Philosophy, Kavyalaya Publishers, Mysore. Chapter-9,"Idea of Purusarthas, pp,65-68.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DEPARTMENT OF SANSKRIT
SEMESTER - IV
BA (Hons.) SANSKRIT: DSCs

DSC-10: Modern Sanskrit Literature

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Modern Sanskrit Literature	04	3	1	0	XII Passed	Working Knowledge of Sanskrit

Learning Objectives

The purpose of this course is to expose students to the rich & profoundly active tradition of modern creative writing in Sanskrit, enriched by new genres of writing.

Learning Outcomes

This course will enable the students to appreciate the Mahākāvya and Charitakāvya, Gadyakāvya, Rūpaka, GītiKāvya and Other genres and General Survey of Modern Sanskrit Literature. It is supposed to create an awareness of historicity of modern Sanskrit literature.

Detailed Syllabus

Unit I **10 hrs**

Mahākāvya and Caritakāvya:

Svātantryasambhavam (Revaprasada Dwivedi)
Canto 2, Verses 21-45
Bhimāyanam (Prabha Shankar Joshi)
Canto X. Verses 20-29

Unit II **12 hrs**

Gadya and Rūpaka:

Śataparvikā (Abhirāja Rajendra Mishra)
Śārdūla-Śakatam (1-3 Canto, Virendra Kumar Bhattacharya)

Unit III **13 hrs**

Other genres:

Hariram Acharya (Sankalpa Gitih);
Pushpa Dikshit (Bruhi Ko'smin yuge.)
RadhaVallabh Tripathi (Dhivaragitih – Naukamiha saram saram…)

Harshdev Madhava: Haiku - Snanagrihe, Vedanā, Mrityuh 1, Mrtyuh 2;
Mathura Nath Shastri- Kundaliyan (durjana and sajjana maitri)

Unit IV

General Survey **10 hrs**

Brief Introduction to Modern Sanskrit Literature,
Pandita Kshama Rao, S. B. Varnekar, Parmanand Shastri, Janaki Vallabh Shastri, Ram Karan Sharma. Jagannath Pathak, S. Sunderrajan, Haridas Siddhanta Vagish, Mula Shankar M. Yajnika, Mahalinga Shastri, Yatindra Vimal Chowdhury, V Raghavan, Mohan Lal Sharma Pandey, Ramakant Shukla, and their works.

Essential/Recommended Readings

1. मिश्र अभिराज राजेन्द्र, कल्पवल्ली (समकालीनसंस्कृतकाव्यसंकलन)—साहित्य अकादमी, 2013
2. प्रभाशंकर जोशी, भीमायनम्, शारदा गौरव ग्रन्थमाला, पुणे
3. त्रिपाठी राधावल्लभ, नवस्पन्दः, मध्य प्रदेश हिन्दी ग्रन्थ अकादमी
4. त्रिपाठी राधावल्लभ, आयतिः, राष्ट्रिय संस्कृत संस्थान, दिल्ली.
5. द्विवेदी,रेवाप्रसाद स्वातन्त्र्यसम्भवम् (द्वितीय सर्ग स्वातन्त्र्यसंकल्पोदय) अनु० सदाशिव द्विवेदी, व्या० शोभामिश्रा, भक्तिप्रकाशन, आर्यनगर, कानपुर.2021
6. पन्त, गिरीश चन्द्र (सम्पा०), आधुनिकसंस्कृत-साहित्य-संचयन, विद्यानिधि प्रकाशन, दिल्ली, 2008.
7. श्रीनिवासरथ, तदेव गगनं सैव धरा (काव्यसंग्रह), राष्ट्रिय संस्कृत संस्थान, दिल्ली.
8. मिश्र, अभिराज राजेन्द्र, विंशशताब्दी- संस्कृत-काव्यामृतम् , (संक०) (भाग—1)

Additional Resources:

1. उपाध्याय, रामजी, आधुनिकसंस्कृतनाटक, चौखम्बासुरभारती प्रकाशन, वाराणसी, 1996.
2. त्रिपाठी, राधावल्लभ, संस्कृतसाहित्य : बीसवीं शताब्दी, राष्ट्रिय संस्कृत संस्थान, दिल्ली, 1999.
3. मीरा द्विवेदी, आधुनिक संस्कृत महिला नाटककार, परिमल पब्लिकेशन्स, दिल्ली, 2000.
4. रुचि कुलश्रेष्ठ, बीसवीं शताब्दी का संस्कृतलघुकथासाहित्य, राष्ट्रिय संस्कृतसंस्थान, दिल्ली, 2008.
5. कलानाथ शास्त्री, आधुनिक काल का संस्कृत गद्य—साहित्य, राष्ट्रिय संस्कृतसंस्थान, दिल्ली, 1995.
6. शुक्ल, हीरालाल, आधुनिकसंस्कृतसाहित्य, रचनाप्रकाशन, इलाहाबाद, 1971.
7. Joshi, K.R. & S.M. Ayachuit., Post Independence Sanskrit Literature, Nagpur, 1991.
8. Prajapati, Manibhai K., Post Independence Sanskrit Literature: A Critical Survey, Patna, 2005.

9. Usha Satyavrat Sanskrit Dramas of the Twentieth Century, Mehar Chand Lachmandas, Delhi, 1987.
10. द्विवेदी, रहस विहारी, आधुनिक महाकाव्य समीक्षणम्
11. त्रिपाठी, राधावल्लभ, संस्कृत साहित्य बीसवीं शताब्दी , 1999 दिल्ली .
12. मुसलगाओंकार, केसावा राव, आधुनिक संस्कृत काव्य परम्परा, २००४
13. नारंग, स. प., कालिदास पुनर्नवा

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DSC-11: Sanskrit and World Literature

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Sanskrit and World Literature	04	3	1	0	XII Passed	Working Knowledge of Sanskrit

Learning Objectives

This course aims to expose students to the spread & influence of Sanskrit literature and culture through the ages in various parts of the world.

Learning Outcomes

Scholars who pursue this course will learn about the cultural contacts between India on the one hand and Europe, West Asia and South East Asia on the other during different phases of history. They will also see how colonialism distorted India's achievements in knowledge production.

They will become aware of Indo European linguistic and cultural affinities, spread of Indian fables, the Upanishads, the Gita and Kalidasa's works in the west. They will be able to appreciate the close relation between Upanishadic thought and Sufism.
They will study how Sanskrit literature has impacted India's cultural ties with South East Asian countries.

Detailed Syllabus

Unit I **12 hrs**

General Survey

The idea of World Literature
Approaches to Sanskrit literature: Romanticism to Utilitarianism and the colonialist agenda
Sanskrit words in Indo -European languages

Unit II **12 hrs**

Indian Philosophical thought and it's Global Spread

Vedantic Thought and its Global impact
Upanishadic thought and Sufism: Dara Shikoh's Persian Translation of Upanishads

Unit III **12 hrs**

Sanskrit Kavya in World Literature

Ramayana in South East Asia
Mahabharata in South East Asian Cultures
Shakuntala in Europe
Journey of Panchatantra

Unit IV **09 hrs**

Sanskrit Studies across the World

Sanskrit studies in the United States of America (USA) and Canada
Sanskrit studies in China and Japan
Sanskrit studies in Europe (United Kingdom (UK), Germany and France)

Books/Readings:

Compulsory Readings

1. Jurgen Lutt, Germany, India and the German Image of India – The Romantic and Utilitarian Image of India in Europe,
2. Ganeri Jonardon: Migrating Texts and Traditions :Dara Shukoh and the Transmission of the Upanishads to Islam
3. Neria H. Hebber; Influence of Upaniṣads in the West, Boloji.com. Retrieved on : 2012-03-02
4. arisebharat.com/2011/10/22/impact-of-bhagvad-gita-on-west/
5. Swami Tathagatananada, Bhagwadgita castes its spell on the West
6. Grigore George : Kalila wa Dimna and its Journey to the World literatures, Romano - Arabica, XIII, 2013, (University of Bucharest, Centre for Arab Studies)
7. Vijay Bedekar : History of Migration of Panchatantra
8. K. Satya Dev Prasad: Impact of Kalidasa on the West (adapted from Light from the Orient)
9. Mahulikar, Gauri : Effect of Ramayana On Various Cultures And Civilisations, Ramayana Institute
10. Dr. V. Raghavan Ed. : The Rāmāyana Tradition in Asia, Sahitya Akademi, New Delhi
11. रामकथा की विदेश यात्रा – ignca.gov.in
12. Mahabharat in South East Asia – You tube video by Veenus Jain
13. Sanskrit in the World: Rashtriya Sanskrit Sansthan, New Delhi
14. संस्कृत का वैश्विक परिदृश्य
15. Websites of various universities

Additional Readings

1 Swami Tathagatananda, Journey of the Upanishads in the West, Advaita Ashrama, Kolkata
2 Halbfass ; India and Europe, Moti Lal Banarasi Dass (free down load available)
3 Swami Tathagatananda, Light from the Orient,
4 Sinha Mishka: Corrigibility, Allegory, Universality: A History of the Gita's Transnational Reception, 1785-1945, Modern Intellectual History, 7, 2(2010) pp 297-317
5 Davis Richard M. : The Bhagawadgita – A Biography. Princeton University Press, 2015
6 Halbfass William – Europe and India, Motilal Banarasi Dass, Delhi, (free download available) Chapters on Schopenhaur and Hegel
7 Edgerton, Franklin : *The Panchatantra,* translated in 1924 from the Sanskrit by Franklin Edgerton, George Allen and Unwin, London, 1965,)

8 Amitabhbose.net : The Sakuntala Epoch in European Romanticism and Indian Classicalism

9 Swami Tathagatananda : Abhijnana Shakuntalam – A Wonder Coming from a Land of Wonders in Light from the Orient - pp 69 - 94

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DSC-12: Indian Epigraphy II

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the Course			Eligibility criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Indian Epigraphy II	04	3	1	0	XII Passed	Working Knowledge of Sanskrit

Learning Objectives

This course aims at acquainting the students with the basic knowledge of epigraphical resources in Sanskrit, the only source which directly reflects the society, politics, geography and economy of the time.

Learning Outcomes

After the completion of this course, the learners will be aware of the different types of inscription. He will have a sound idea about the relationship between Epigraphy and Historicity.

Detailed Syllabus

Unit I: Selected Inscriptions (Up to 400 AD) **12 hrs**

1. First Pillar Edict Delhi Topra of Ashoka
2. Maski Rock Inscription of Ashoka
3. Girnar Inscription of Rudradaman
4. Naland Copper Inscription of Samudragupt
5. Mehrauli Iron-Pillar Inscription

Unit II Selected Inscriptions (Post 400 AD) **12 hrs**

1. Mandsaur Rock-pillar Inscription of Yashodharman
2. Aihole Inscription of Pulkeshin II
3. Vigrahraj Inscription of Kotla

Unit III: Importance of Epigraphy **12 hrs**

1. Inscriptions as Historical Source Material
2. Proper dating of events
3. Understanding ancient culture and beliefs
4. Learning the social and economic life of ancient people
5. Learning new languages

Unit IV: Chronograms and Dating of Inscriptions **09 hrs**

Essential/recommended readings

1. अभिलेख-मंजूषा, रणजीत सिंह सैनी, न्यूभारतीय बुक कार्पोरेशन, दिल्ली, 2000.
2. उत्कीर्णलेखपञ्चकम्, झा बन्धु, वाराणसी, 1968.

3. उत्कीर्णलेखस्तबकम्, जियालाल काम्बोज, ईस्टर्न बुकलिंकर्स, दिल्ली.
4. भारतीय अभिलेख, एस.एस. राणा, भारतीय विद्याप्रकाशन, दिल्ली, 1978.
5. Select Inscriptions (Vol.I) - D.C. Sircar, Calcutta, 1965.
6. सहाय, शिवस्वरूप : भारतीय पुरालेखों का अध्ययन, मोतीलाल बनारसीदास,दिल्ली. Dani, Ahmad Hasan: *Indian Paleography*, Oxford, 1963.
7. Pillai, Swami Kannu& K.S. Ramchandran: *Indian Chronology (Solar, Lunar and Planetary)*, Asian Educational Service, 2003.
8. Satyamurty, K.: *Text Book of Indian Epigraphy*, Lower Price Publication, Delhi, 1992.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

UGCF for Multidisciplinary Courses of Study

SANSKRIT AS MAJOR

DISCIPLINE SPECIFIC CORE COURSE, DISCIPLINE A-4: DSC-7: Dharmashastra Studies

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/Practice		
(Discipline A-4) **Dharmashastra Studies** DSC-7	**04**	**3**	**1**	**0**	**XII Passed**	**Working Knowledge of Sanskrit**

Learning Objectives:

In the course of understanding Indian knowledge traditions, to know the ancient Indian society and its vital institutions is essential and admirable. Ancient Indian Society, in terms of whole and it's parts, has been depicted in the texts compiled in Sanskrit known as 'Dharmashastra'. 'Dharmashastra Studies' course aims to make students acquainted with rich tradition of Indian Social, Political, Economical, Legal thoughts

Learning Outcomes:

With studying this course Students will know that Indians were not anarchic, they evolved well structured society where normative institutions were established. They will understand the real meaning of the term 'Dharma'. Students will find the great aim for the life of an individual. They will be acquainted with Indian methods of regularizing Society.

Detailed Syllabus

Unit-I: 09 hrs

Concept of Dharma

Society and Norms, Normative Social Institutions, Dharma as normative and ethical element in ancient India.

Survey of Dharmashastra texts: Sutra literature, Smriti literature, commentaries and Nibandha texts, Kautilyarthshastra, Ramayana, Mahabharata, Puranas.

Unit-II: 12 hrs

Content of Dharmashastra:

Three major categories; Achara, Vyavahara, Prayashchitta.

Achara: Structure of the society in the form of Varna system, managing individual life through Ashrama system, bringing balance in the society with the thought of

Purushartha chatushtya, Education and Marriage as ways of setting civilized society, Concept of performing yajna and sharing resources (Daana) for sensitive and collective efforts in the society. Code of Conduct for the members of society

Unit-III **12 hrs**

Vyavahara and Polity:

Vyavahara: Ancient Indian Legal system: various types of disputes, Courts, Legal administration, Civil and Criminal Law, Legal Procedure, Evidences, Penal code, Judgement.

Polity: Monarchic Rulers, acquisition and protection of the State, Good Governance, Seven elements of State, essential qualification for the King and ministers, Internal and International affairs: Mandala theory, Shadgunya, four Upayas,

Unit-IV **12 hrs**

Prayashchitta: Types of Sins, various Penances in the form of Fasting, sharing (Daana), Yajya, Pilgrimage, Shraddha.

Essential/recommended readings:

1. Apastamba Dharmasutra
2. Boudhayana Dharmasutra
3. Vasstha Dharmasutra
4. Manu Smriti
5. Yajynavalkya Smriti
6. Narada Smriti
7. Kautilyrthashastra
8. Mitakshra Commentary on Yajyavalkya Smriti
9. Viramitrodaya
10. Vyavaharamayukha
11. Smritichandrika
12. Ramayana
13. Mahabharata
14. Kane, P.V. History of Dharmashastra, B.O.R.I Pune
15. काणे, पी.वी.—धर्मशास्त्र का इतिहास (1—4 भाग) अनु० अर्जुन चौबे काश्यप,हिन्दी समिति,लखनऊ, 1966—73.
16. तिवारी, शशि— संस्कृत साहित्य में राष्ट्रवाद और भारतीय राजशास्त्र, विद्यानिधि प्रकाशन, दिल्ली, 2013.
17. दीक्षित, प्रेमकुमारी— प्राचीन भारत में अन्तर्राष्ट्रीय सम्बन्ध, उत्तर प्रदेश, हिन्दी ग्रन्थ अकादमी, लखनऊ, 1977.
18. नाटाणी, प्रकाश नारायण — प्राचीन भारत के राजनीतिक विचारक, पोइन्टर पब्लिशर्स, जयपुर, 2002.

19. विद्यालंकार, सत्यकेतु — प्राचीन भारतीय शासनव्यवस्था और राजशास्त्र, सरस्वती सदन, मसूरी, 1968.
20. सिन्हा विनोद एवं सिन्हा रेखा— प्राचीन भारतीय इतिहास एवं राजनैतिक चिन्तन, राधा पब्लिकेशन्स, दिल्ली, 1989
21. Altekar, A.S — State and Government in Ancient India, Motilal Banarsidass, Delhi, 2001.
22. Ghosal, U.N. — A History of Indian Political Ideas, Bombay,1959.
23. Jayaswal, K.P.— Hindu Polity, Bangalore, 1967.
24. Law, N. S.— Aspect of Ancient Indian Polity, Calcutta, 1960.
25. Maheshwari, S. R. — Local Government in India, Orient Longman, New Delhi,
26. Prasad, Beni — Theory of Government in Ancient India, Allahabad, 1968.
27. Saletore, B.A. — Ancient Indian Political Thought and Institutions, Bombay, 1963.
28. Sharma, R. S.— Aspects of Political Ideas and Institutions in Ancient India, Motilal Banarsidass, Delhi, 1996.
29. Sinha, K.N.— Sovernity in Ancient Indian Polity, London,1938.
30. Verma, V.P.— Studies in Hindu Political Thought and its Metaphysical Foundations, Delhi, 1954.

Suggested Readings:

1. ठाकुर लक्ष्मी दत्त, प्रमुख स्मृतियों का अध्ययन
2. Olliville, Patrick, Dharmasutras
3. Mathur, A.D. Medieval Hindu Law
4. Kangle, R. P. Kautilyarthshastra
5. K.P. Jayaswal, Hindu Polity
6. pandey, Rajbali, Hindu Sanskara
7. Prabhu, P.H Hinduanisation
8. सिंह चन्द्र देव, प्राचीन भारतीय समाज और चिंतन
9. Arthashastra of Kautilya—(ed.) Kangale, R.P. Delhi, Motilal Banarasidas 1965
10. Atharvaveda samhita— (Trans.) R.T.H. Griffith, Banaras, 1896-97, rept.(2 Vols) 1968.
11. Mahabharata (7 Vols)— (Eng. Tr.) H.P. Shastri, London, 1952-59.
12. Manu's Code of Law—(ed. & trans.) : Olivelle, P. (A Critical Edition and Translation of the Mānava- Dharmaśāstra), OUP, New Delhi, 2006.
13. Ramayana of Valmiki — (Eng. Tr.) H.P. Shastri, London, 1952-59. (3 Vols)
14. Rgveda samhita (6 Vols)— (Eng. Tr.) H.H. Wilson, Bangalore Printing &Publishing Co., Bangalore, 1946.
15. Satapatha brahmana— (with Eng. trans. ed.) Jeet Ram Bhatt, Eastern (3 Vols) Book Linkers, Delhi, 2009.

16. कौटिलीय अर्थशास्त्र —हिन्दी अनुवाद —उदयवीर शास्त्री, मेहरचन्द लछमनदास, दिल्ली,1968.
17. महाभारत (1—6 भाग) — हिन्दी अनुवाद सहित, (अनु०) रामनारायण दत्त शास्त्री पाण्डेय, गीताप्रेस, गोरखपुर.
18. मनुस्मृति (1—13 भाग) — (सम्पा० एवं व्या०) उर्मिला रुस्तगी, जे.पी. पब्लिशिंग हाउस, दिल्ली, 2005
19. शुक्रनीति — हिन्दी अनुवाद, ब्रह्मशंकर मिश्र, चौखम्बा संस्कृत सीरीज, वाराणसी, 1968.
20. श्रीमद्वाल्मीकिरामायण — हिन्दी अनुवाद सहित, (सम्पा०) जानकी नाथ शर्मा, (1 —2 भाग) गीताप्रेस, गोरखपुर.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DISCIPLINE SPECIFIC CORE COURSE, DISCIPLINE B-4:
DSC-8: Readings from Vedas

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/Practice		
(Discipline B 4) Readings from Vedas DSC-8	04	3	1	0	XII Passed	Working Knowledge of Sanskrit

Learning Objectives:

This course on Vedic literature aims to introduce the great treasure of India I.e. the Vedic Saṁhitãs to the bachelor degree students. While the course will enable the students to understand the various ways of reading Vedic hymns, they will also be able to understand the Aupaniṣadika view through the selected section on Kathopaniṣad about the Self, Knowledge, ãtman and Mokṣa which propounds Indian Spiritual viewpoint. It will also facilitate the students to know about philosophical, moral, and scientific principles including the source of Indian Intellectual traditions of Vedic period.

Learning Outcomes:

By reading these texts, students will have an impression of the depth of Vedic knowledge and will be able to realize that ideas of Vedic seers are based on philosophical, moral, and scientific principles. By understanding them, students will be able to know and achieve some higher attributes from Vedic heritage about our culture, morals, and thoughts. Thus they may develop curiosity to know more about other Vedic texts and concepts as well. After completing this course students will surely be able to communicate about some important Vedic verses with their meaning and teaching, and thus fundamentals of religious life of India will be revealed to them in its true form. Students will understand the strength of Unity, power of mind, and will realize the importance of earth in their life. From the study of Upaniṣad they will know about philosophical and Psychological insights of our ancestors and can develop this learning further for the benefit of themselves in particular and society in general.

Unit-I: 12 hrs

General introduction to Vedic Literature:

Samhitas, Brahmanas, Aranyakas, Upanishadas, Vedangas.

History of Vedic literature:

Date of vedas: Indian tradition, Western Historians/Thinkers.

Unit-II: **12 hrs**

Readings from the Vedic Saṁhitās:

Ṛgveda:
Agni Sūkta- 1.1, Akṣa Sūkta-10.34,

Yajurveda:
Śivasaṁkalpa Sūkta - 34.1-6

Unit-III **09 hrs**

Readings from the Vedic Saṁhitās:

Atharvaveda:
Bhūmi Sūkta - 12.1.1-12, Samjñāna Sūkta- 10.191.1-4

Unit-IV **12 hrs**

Readings from the Upaniṣad:
Kathopaniṣad - 1.1 to 2.3

Essential/recommended readings:

1. ऋग्वेदसंहिता, सायणाचार्यकृत भाष्य एवं हिन्दी व्याख्या सहित, रामगोविन्द त्रिवेदी, चौखम्बा संस्कृत
प्रतिष्ठान, दिल्ली.
2. शुक्लयजुर्वेदसंहिता, (उव्वट-महीधर भाष्य संवलित, तत्त्वबोधिनीहिन्दी व्याख्या सहित), रामकृष्ण शास्त्री,
चौखम्बा संस्कृत प्रतिष्ठान, दिल्ली.
3. अथर्ववेदसंहिता, सायणाचार्यकृत भाष्य एवं हिन्दी व्याख्या सहित, प्रो विश्वनाथ विद्यालंकार, अजमेर.
4. कठोपनिषद् (शाडकरभाष्य संवलित), जिया लाल काम्बोज, ईस्टर्न बुक लिंकर्स, दिल्ली.
5. कठोपनिषद् (शाङ्करभाष्य संवलित), शशि तिवारी, मेहरचन्द लछमनदास पब्लिकेशन्स्, नई दिल्ली,
प्रथम संस्करण 1981
6. वैदिक संग्रह, कृष्णलाल, इन्दु प्रकाशन, दिल्ली, प्रथम संस्करण 1973.
7. Atharvaveda (Saunakīya): (Ed.) Vishva Bandhu, VVRI, Hoshiharpur, 1960.
8. Suklayajurveda-Samhitā, (Vajasaneyi-Madhyandina), (Ed.) Jagadish Lal Shastri, MLBD, Delhi, 1978.
9. संस्कृत साहित्य का इतिहास, उमाशंकर ऋषि, चौखम्बा भारती अकादमी, वाराणसी , 2017

Suggested Readings:

1. शर्मा, उमाशंकर ऋषि, ऋक्सूक्तनिकरः, चौखम्बा ओरियण्टालिया, वाराणसी.

2. सूर्यकान्त (अनु.)- वैदिक देवशास्त्र, (ए.ए.मैकडनल(,, मेहरचन्द लछमनदास पब्लिकेशन्स, नई दिल्ली,
1962
3. शशि तिवारी, वेदव्याख्यापद्धतयः, प्रतिभा प्रकाशन, दिल्ली, 2014
4. Velankar,H.D., Rksūktāvalī, Vaidika Sanshodhana Mandala, Pune, 1965.
5. Velankar,H.D., Rksūktavaijayanti, Bharatiya Vidya Bhavan, Bombay, 1972.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

SANSKRIT AS NON-MAJOR / MINOR

UGCF for Multidisciplinary Courses of Study

DISCIPLINE SPECIFIC CORE COURSE, DISCIPLINE A-4:
DSC-4: Dharmashastra Studies

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/Practice		
(Discipline A-4) Dharmashastra studies DSC-4	04	3	1	0	XII Passed	Working Knowledge of Sanskrit

Learning Objectives:

In the course of understanding Indian knowledge traditions, to know the ancient Indian society and its vital institutions is essential and admirable. Ancient Indian Society, in terms of whole and it's parts, has been depicted in the texts compiled in Sanskrit known as 'Dharmashastra'. 'Dharmashastra Studies' course aims to make students acquainted with rich tradition of Indian Social, Political, Economical, Legal thoughts

Learning Outcomes:

With studying this course Students will know that Indians were not anarchic, they evolved well structured society where normative institutions were established. They will understand the real meaning of the term 'Dharma'. Students will find the great aim for the life of an individual. They will be acquainted with Indian methods of regularizing Society.

Detailed Syllabus

Unit-I: 12 hrs

Concept of Dharma

Society and Norms, Normative Social Institutions, Dharma as normative and ethical element in ancient India.

Survey of Dharmashastra texts: Sutra literature, Smriti literature, commentaries and Nibandha texts, Kautilyarthshastra, Ramayana, Mahabharata, Puranas.

Unit-II: 12 hrs

Content of Dharmashastra:

Three major categories; Achara, Vyavahara, Prayashchitta.

Achara: Structure of the society in the form of Varna system, managing individual life through Ashrama system, bringing balance in the society with the thought of Purushartha chatushtya, Education and Marriage as ways of setting civilized society, Concept of performing yajna and sharing resources (Daana) for sensitive and

collective efforts in the society. Code of Conduct for the members of society

Unit-III **12 hrs**

Vyavahara and Polity:

Vyavahara: Ancient Indian Legal system: various types of disputes, Courts, Legal administration, Civil and Criminal Law, Legal Procedure, Evidences, Penal code, Judgement.

Polity: Monarchic Rulers, acquisition and protection of the State, Good Governance, Seven elements of State, essential qualification for the King and ministers, Internal and International affairs: Mandala theory, Shadgunya, four Upayas,

Unit-IV **09 hrs**

Prayashchitta: Types of Sins, various Penances in the form of Fasting, sharing (Daana), Yajya, Pilgrimage, Shraddha.

Essential/recommended readings:

1. Apastamba Dharmasutra
31. Boudhayana Dharmasutra
32. Vashshushtha Dharmasutra
33. Manu Smriti
34. Yajyavalkya Smriti
35. Narada Smriti
36. Kautilyrthashastra
37. Mitakshra Commentary on Yajyavalkya Smriti
38. Viramitrodaya
39. Vyvhaaramayukha
40. Smritichandrika
41. Ramayana
42. Mahabharata
43. Kane, P.V. History of Dharmashastra, B.O.R.I Pune
44. काणे, पी.वी.—धर्मशास्त्र का इतिहास (1—4 भाग) अनु० अर्जुन चौबे काश्यप,हिन्दी समिति,लखनऊ, 1966—73.
45. तिवारी, शशि— संस्कृत साहित्य में राष्ट्रवाद और भारतीय राजशास्त्र, विद्यानिधि प्रकाशन, दिल्ली, 2013.
46. दीक्षित, प्रेमकुमारी— प्राचीन भारत में अन्तर्राष्ट्रीय सम्बन्ध, उत्तर प्रदेश, हिन्दी ग्रन्थ अकादमी, लखनऊ, 1977.
47. नाटाणी, प्रकाश नारायण — प्राचीन भारत के राजनीतिक विचारक, पोइन्टर पब्लिशर्स, जयपुर, 2002.
48. विघालंकार, सत्यकेतु — प्राचीन भारतीय शासनव्यवस्था और राजशास्त्र, सरस्वती सदन, मसूरी, 1968.

49. सिन्हा विनोद एवं सिन्हा रेखा— प्राचीन भारतीय इतिहास एवं राजनैतिक चिन्तन, राधा पब्लिकेशन्स, दिल्ली, 1989
50. Altekar, A.S — State and Government in Ancient India, Motilal Banarsidass, Delhi, 2001.
51. Ghosal, U.N. — A History of Indian Political Ideas, Bombay,1959.
52. Jayaswal, K.P.— Hindu Polity, Bangalore, 1967.
53. Law, N. S.— Aspect of Ancient Indian Polity, Calcutta, 1960.
54. Maheshwari, S. R. — Local Government in India, Orient Longman, New Delhi,
55. Prasad, Beni — Theory of Government in Ancient India, Allahabad, 1968.
56. Saletore, B.A. — Ancient Indian Political Thought and Institutions, Bombay, 1963.
57. Sharma, R. S.— Aspects of Political Ideas and Institutions in Ancient India, Motilal Banarsidass, Delhi, 1996.
58. Sinha, K.N.— Sovernity in Ancient Indian Polity, London,1938.
59. Verma, V.P.— Studies in Hindu Political Thought and its Metaphysical Foundations, Delhi, 1954.

Suggested Readings:

21.Thakur, Laxmidutt, Pramukha smritiyon ka adhyayana
22.Olliville, Patrick, Dharmasutras
23.Mathur, A.D. Medieval Hindu Law
24.Kangle, R. P. Kautilyarthshastra
25.K.P. Jayaswal, Hindu Polity
26.pandey, Rajbali, Hindu Sanskara
27.Prabhu, P.H Hinduanisation
28.Singh, Chandradeva, Prachina Bhartiya samaj aur Chintan
29. Arthashastra of Kautilya—(ed.) Kangale, R.P. Delhi, Motilal Banarasidas 1965
30. Atharvaveda samhita— (Trans.) R.T.H. Griffith, Banaras, 1896-97, rept.(2 Vols) 1968.
31. Mahabharata (7 Vols)— (Eng. Tr.) H.P. Shastri, London, 1952-59.
32. Manu's Code of Law—(ed. & trans.) : Olivelle, P. (A Critical Edition and Translation of the Mānava- Dharmaśāstra), OUP, New Delhi, 2006.
33. Ramayana of Valmiki — (Eng. Tr.) H.P. Shastri, London, 1952-59. (3 Vols)
34. Rgveda samhita (6 Vols)— (Eng. Tr.) H.H. Wilson, Bangalore Printing &Publishing Co., Bangalore, 1946.
35. Satapatha brahmana— (with Eng. trans. ed.) Jeet Ram Bhatt, Eastern (3 Vols) Book Linkers, Delhi, 2009.

36. कौटिलीय अर्थशास्त्र —हिन्दी अनुवाद —उदयवीर शास्त्री, मेहरचन्द लछमनदास, दिल्ली,1968.

37. महाभारत (1—6 भाग) — हिन्दी अनुवाद सहित, (अनु०) रामनारायण दत्त शास्त्री पाण्डेय, गीताप्रेस, गोरखपुर.

38. मनुस्मृति (1—13 भाग) — (सम्पा० एवं व्या०) उर्मिला रुस्तगी, जे.पी. पब्लिशिंग हाउस, दिल्ली, 2005

39. शुक्रनीति — हिन्दी अनुवाद, ब्रह्मशंकर मिश्र, चौखम्बा संस्कृत सीरीज, वाराणसी, 1968.

40. श्रीमद्वाल्मीकिरामायण — हिन्दी अनुवाद सहित, (सम्पा०) जानकी नाथ शर्मा, (1 —2 भाग) गीताप्रेस, गोरखपुर.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

Pool of Discipline Specific Electives

DSE-5: Environmental Awareness in Sanskrit Literature

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Environmental Awareness in Sanskrit Literature	04	3	1	0	Semester II Passed	Nil

Learning Objectives

The main objective of this course is to make the students acquainted with the basic concepts of Indian Environmental Science and salient features of environmental awareness as reflected in Vedic and Classical Sanskrit literature. The National culture of every country depends on its environmental and climatic conditions and human behavior towards natural resources. Nature-friendly thoughts reflected in Sanskrit Literature have benefited the human race for long. Many religious practices were framed by ancient thinkers as a tool to protect nature and natural resources.

Learning outcomes

After completing this course, students will realize themselves to be a part of Nature and Nature, intern, belongs to all creatures.They will learn to be a more careful about the utilization and preservation of natural resources. This will make them better citizens of the world.

Detailed Syllabus

Unit I

Science of Environment: Definition, Scope and Modern Crises:

Modern Challenges and Crises of Environment: Global warming, Climate change, Ozone depletion, explosively increase in Pollution, Decrease in underground water label, River pollution, Deforestation in large scale. Natural calamities such as flood, draft and earthquakes.

Environmental Consciousness in Sanskrit Literature:

Concept of 'Mother Earth' and worship of Rivers in Vedic literature; Brief survey of environmental issues such as protection and preservation of mother nature, planting trees, and water preservation techniques as propounded in the Sanskrit Literature. Buddhist and Jain concepts of ecology, protection of trees, love for animals and birds.

Unit II

Environment Awareness in Vedic Literature:

Environmental Issues and Eco-system in Vedic Literature

Divinity to Nature, Co-ordination between all natural powers of universe; Equivalent words **for Environment in** *Atharvaveda*: *'Vṛtavṛta' (12.1.52), 'Abhivarah,'(1.32.4.), 'Avṛtaḥ' (10.1.30), 'Parivrita' (10.8.31);* **five basic elements of universe covered by environment : Earth, Water, Light, Air, and Ether.** *(Aitareya Upaniṣad 3.3)*
Three constituent elements of environment: Jala (water), *Vāyu* (air), and *Oṣadhi* (plants) (*Atharvaveda*, 18.1.17).
Natural sources of water in five forms: *rain water (Divyah),natural spring(Sravanti), wells and canals (Khanitrimah), lakes (Svayamjah) and rivers(Samudrarthah)* *ṛgveda*, 7.49.2*).*

Environment Preservation in Vedic Literature:
Five elementary sources of environment preservation: *Parvat* (mountain),
***Soma* (water),*Vayu* (air), *Parjanya* (rain) and *Agni* (fire) (*Atharvaveda*, 3.21.10);** Environment **Protection from Sun** (*Rgveda*,1.191.1-16, ***Atharvaveda*,2.32.1-6, *Yajurveda*,4.4,10.6); Congenial atmosphere for the life created by the Union of herbs and plants with sun rays (*Atharvaveda*,5.28.5); Vedic concept of Ozone-layer *Mahat ulb'(ṛgveda*,10.51.1; *Atharvaveda*,4.2.8);** Importance of plants and animals for preservation of global ecosystem; **(*Yajurveda* ,13.37);** Eco friendly **environmental organism in Upaniṣads (*Bṛhadāraṇyaka Upaniṣad*, 3.9.28, *Taittiriya Upaniṣad*,5.101)**

Unit III
Environment Awareness in Puranas and Classical Sanskrit Literature:

Environmental Awareness and Tree plantation **:**
Planting of Trees in *Purāṇas* as a pious activity (*Matsya* ***Purāṇa***, 59.159;153.512 ; *Varāha* ***Purāṇa*** 172. 39), **Various medinal trees to be planted in forest by** king **(*śukranīti*,4.58-62)** Plantation of new trees and preservation of old trees as royal duty of king **(*Arthaśāstra*, 2.1.20); Punishments for destroying trees and plants (*Arthaśāstra*,3.19),** Plantation of trees for recharging under ground water**(*Bṛhatsaṁhitā*, 54.119)**

Environmental Awareness and Water management **:**
Various types of water canels *'Kulyā'* for irigation : canal originated from river *'Nādimatṛ mukha kulyā'*, canal originated from near by mountain *'Parvataparsva vartini kulyā'*, canal originated from pond,*'Hrdasrta kulyā,* **Preservation of water resources** *'Vāpi –kūpa –taḍāga'* **(*Agnipuraṇas*,209-2;*V.Ramayana*,2.80.10-11); Water Harvesting system in *Arthaśāstra* (2.1.20-21); Underground Water Hydrology in Bṛhatsaṁhitā (Dakāgalādhyāya, chapter-54);**

Unit IV
Universal Environmental Issues in the Literature of Kalidasa:

Eight elements of **Environment and concept of *'Aṣṭamūrti'* Siva (*Abhijñānaśākuntalam*); Preservation of forest,water resources, natural resources; protection of animals, birds and plant in Kalidasa's works, Environmental** awareness **in *Abhijñānaśākuntalam* Drama, Eco- system of indian monsoon in *Meghdūt*, Seasonal weather conditions of Indian sub continent in *ṛtusamhara*, Himalayan ecology *in Kumārasaṁbhava*, Oceanography in *Raghuvaṁśa* (canto-13).**

Essential/recommended readings

1. कौटिलीय अर्थशास्त्र —हिन्दी अनुवाद —उदयवीर शास्त्री, मेहरचन्द लछमनदास, दिल्ली,1968.
2. बृहत्संहिता— वराहमिहिर विरचित, हिन्दी अनुवाद— बलदेव प्रसाद मिश्र, खेमराज श्रीकृष्णदास प्रकाशन, मुम्बई.
3. यजुर्वेद— हिन्दी अनुवाद सहित, सातवलेकर, श्रीपाद दामोदर, पारडी
4. शुक्रनीति — हिन्दी अनुवाद, ब्रह्मशंकर मिश्र, चौखम्बा संस्कृत सीरीज, वाराणसी, 968.
5. श्रीमद्वाल्मीकिरामायण — हिन्दी अनुवाद सहित, (सम्पा०) जानकी नाथ शर्मा, (1 —2 भाग) गीताप्रेस, गोरखपुर.
6. ठाकुर, आद्यादत्त— वेदों में भारतीय संस्कृति, हिन्दी समिति, लखनऊ,1967.
7. तिवारी, मोहन चन्द —अष्टाचक्रा अयोध्याः इतिहास और परम्परा,उत्तरायण प्रकाशन,दिल्ली, 2006.
8. विघालंकार, सत्यकेतु — प्राचीन भारतीय शासनव्यवस्था और राजशास्त्र, सरस्वती सदन, मसूरी, 1968.
9. सहायक्चशिवस्वरूपक्च प्राचीन भारत का सामाजिक एवं आर्थिक इतिहास, मोतीलाल बनारसीदास, दिल्ली, 2012 कौटिलीय अर्थशास्त्र —हिन्दी अनुवाद —उदयवीर शास्त्री, मेहरचन्द लछमनदास, दिल्ली,1968.
10. बृहत्संहिता— वराहमिहिर विरचित, हिन्दी अनुवाद— बलदेव प्रसाद मिश्र, खेमराज श्रीकृष्णदास प्रकाशन, मुम्बई.
11. यजुर्वेद— हिन्दी अनुवाद सहित, सातवलेकर, श्रीपाद दामोदर, पारडी
12. शुक्रनीति — हिन्दी अनुवाद, ब्रह्मशंकर मिश्र, चौखम्बा संस्कृत सीरीज, वाराणसी, 968.
13. श्रीमद्वाल्मीकिरामायण — हिन्दी अनुवाद सहित, (सम्पा०) जानकी नाथ शर्मा, (1 —2 भाग) गीताप्रेस, गोरखपुर.
14. ठाकुर, आघादत्त— वेदों में भारतीय संस्कृति, हिन्दी समिति, लखनऊ,1967.
15. विद्यालंकार, सत्यकेतु — प्राचीन भारतीय शासनव्यवस्था और राजशास्त्र, सरस्वती सदन, मसूरी, 1968.
16. सहायक्चशिवस्वरूपक्च प्राचीन भारत का सामाजिक एवं आर्थिक इतिहास, मोतीलाल बनारसीदास, दिल्ली, 2012
17. अग्निपुराण - हिंदी अनुवाद तारिणीश झा एवं घनश्याम त्रिपाठी, हिंदी साहित्य सम्मलेन, इलाहाबाद, 1998
18. ईशोपनिषद – गीता प्रेस, गोरखपुर संस्करण
19. तैत्तिरीयोपनिषद – ईशादिद्शोपनिषद, दिल्ली, 1964

20. बृहदारण्यकोपनिषद – (108 उपनिषद) ज्ञानखंड, सम्या० श्री एम. शर्मा, शांति कुंज, हरिद्वार, 1997
21. ऐतरेयोपनिषद - (108 उपनिषद) ज्ञानखंड, सम्या० श्री एम. शर्मा, शांति कुंज, हरिद्वार, 1997
22. मत्स्यपुरण – आनंदाश्रय संस्कृत सीरीज, पूजा, 1907
23. ओझा, डी.डी., विज्ञान और वेड, साइंटिफिक पब्लिशर्स, जोधपुर, 2005
24. द्विवेदी, कपिल देव, वेदों में विज्ञान, विख्याति अनुसंधान परिषद्, यदोई 2004
25. पंडा, पी. के. , कालिदास का साहित्य आधुनिक परिप्रेक्ष्य में, विद्यानिधि प्रकाशन, दिल्ली । 2009
26. सेमवाल, श्री कृष्णा (सम्या०), 'संस्कृत वाड्मये कृषि विज्ञानम' दिल्ली संस्कृत अकादमी, 2006
27. ***Arthashastra of Kautilya***—(ed.) ***Kangale, R.P. Delhi, Motilal Banarasidas 1965***
28. Atharvaveda samhita.(2 Vols — (Trans.) R.T.H. Griffith, Banaras 1968.
29. Ramayana of Valmaki (3 Vols)— (Eng. Tr.) H.P. Shastri, London, 1952-59.
30. **Rgveda samhita (6 Vols)— (Eng. Tr.) H.H. Wilson, Bangalore, 1946**
31. Bhandarkar,RG— *Vaishnavism, Saivism and Minor Religious Systems,* Indological Book House, Varanasi, 1965
32. **Das Gupta, SP— *Environmental Issues for the 21st Century*, Amittal Publications, New Delhi, 2003**
33. **Dwivedi, OP, Tiwari BH — *Environmental Crisis and Hindu Religion,* Gitanjali Publishing House, New Delhi,1987**
34. **Dwivedi, OP — *The Essence of the Vedas,* Visva Bharati Research Institute, Gyanpur, Varanasi ,1990**
35. **Pandya,SmtaP. — *Ecological Renditions in the Scriptures of Hinduism – I* (article) *Bulletin* of *the Ramakrishna Mission Institute of Culture.***
36. **Kiostermair,Klaus—*Ecology and Religion: Christian and Hindu Paradigms* (article) *Jornal of Hindu-Christian Studies,* Butler university Libraries, Vol.6,1993**

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

DSE-6: Art of Balanced Living

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the Course			Eligibility criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Art of Balanced Living	04	3	1	0	Semester II Passed	Nil

Learning Objectives

This course aims at getting the students acquainted with the Art of living as found in Sanskrit literature . It also intends to make the students work on human resource management for being more effective and productive in day to day life situations.

Learning outcomes

After the completion of this course , the learners will be well informed about the various concepts, components and iussues propounded by the philosophical and religious literature in Sanskrit

Detailed Syllabus

Unit I

Method of Self-presentation: Hearing (śravaṇa), Reflection (manana) & meditation (nididhyāsana) - (Bṛhadāraṇyakopaniṣad, 2.4.5) and Vedantasara
Concentration: Concept of Yoga: (Yogasūtra, 1.2); Restriction of fluctuations by practice (abhyāsa) and passionlessness (vairāgya) :(Yogasūtra, 1.12-16)

Unit II

Eight aids to Yoga (aṣṭāṅgayoga): (Yogasūtra - 2.29, 30, 32, 46, 49, 50; 3.1-4).
Yoga of action (kriyāyoga): (Yogasūtra, 2.1)
Four distinct means of mental purity (cittaprasādana) leading to oneness: (Yogasūtra - 1.33)

Unit III

Refinement of Behaviour : Means of improving behaviour:
Jñāna-yoga – Gita Ch. II – 14,15,16,19, Ch XIII- 11,12,14,15,16,19,20,21,23,29,31,32
dhyāna-yoga – VI – 24 to 27, 30, 32,

Unit IV

Bhakti-yoga – Gita Ch. IX – 17,22,23,27,29,34 ; Ch XI – 10,11,12, 13; Ch. - XII – 4, 6 to 12, 20 Karma : A natural impulse, essentials for life journey, harmony with the universe, an ideal duty and a metaphysical dictate - Gītā, Ch. – III 5, 8, 10-16, 20 & 21

Essential/recommended readings

1. वेदान्तसार: राममूर्ति शर्मा नैशनल पब्लिशिंग हाउस दिल्ली ।
2. पातञ्जल योग दर्शन: सुरेश चन्द्र श्रीवास्तव, चौखंबा सुरभारती प्रकाशन, वाराणसी 2008.
3. भगवद्गीता : गीताप्रैस, गोरखपुर
4. उपनिषद रहस्य, एकादश उपनिषद, महात्मा नारायण स्वामी, गोविन्द राम हासानन्द, दिल्ली

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

DSE-7: Introduction to Ancient Indian Scripts

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Introduction to Ancient Indian Scripts	04	3	1	0	XII Passed	Working Knowledge of Sanskrit

Learning Objectives

This course provides an introduction to the history, evolution, and usage of ancient Indian scripts. Students will explore the various scripts used in ancient India, including Brahmi, Kharosthi, and Devanagari, and will learn about the cultural, social, and religious significance of these scripts. The course will also cover the techniques used in the creation of ancient Indian manuscripts and the methods of preservation.

Learning outcomes

Upon completion of this course, students will be able to:

Understand the history and evolution of ancient Indian scripts
Identify and describe the various scripts used in ancient India
Analyze the cultural and religious significance of ancient Indian scripts
Understand the techniques used in the creation of ancient Indian manuscripts
Learn about the methods of preservation used to protect ancient Indian scripts
Develop an understanding of the connection between language and script

Detailed Syllabus

Unit I **12 hrs**

Introduction to Ancient Indian Scripts
- Definition and significance of scripts
- Historical overview of Indian scripts
- Importance of scripts in Indian culture and society
- Major Ancient Indian Scripts

Unit II **12 hrs**

Brahmi Script
- Brahmi script and its evolution
- Introduction to the Brahmi script
- Writing system and pronunciation
- Basic reading and writing exercises
- Kharosthi Script and its Usage

Introduction to Kharosthi script
Historical context and usage of Kharosthi script

Unit III **09 hrs**

Introduction to Gupta script
Characteristics and evolution of Gupta script
Basic reading and writing exercises
Comparison with Brahmi and Kharosthi script

Unit IV **12 hrs**

A. Techniques used in the creation of Ancient Indian Manuscripts
Introduction to ancient Indian manuscripts
Techniques used in manuscript creation
Preservation techniques

B. Social and Cultural Significance of Ancient Indian Scripts

Significance of ancient Indian scripts in social and cultural contexts
Analysis of manuscripts and scripts in different periods up to 8th century AD

Essential/recommended readings

1. Buhler, G, On the origin of the Indian alphabet & numerals.
2. Dani, A. H, Indian Paleography
3. Dhavalikar, M.K. Indian Palaeography. Munshiram Manoharlal Publishers, 2006.
4. Ojha, G. H, Bharatiya Praćina Lipimāla (Hindi)
5. Pandey, R.B, Asoka ke Abhilekha (Hindi), Bharatiya Puralipi (Hindi)
6. Parpola, Asko. Deciphering the Indus Script. Cambridge University Press, 1994.
7. Rana, S.S., Bharatiya Abhilekha
8. Sircar, D.C., Indian Epigraphy, Select Inscriptions (Part - I)
9. Salomon, Richard. Indian Epigraphy: A Guide to the Study of Inscriptions in Sanskrit, Prakrit, and the other Indo-Aryan Languages. Oxford University Press, 1998.
10. Upadhyay, V., Praćina Bharatiya Abhilekha (Hindi)
11. Thapar, Romila, Asoka tatha Maurya Samrajya Ka Patana (Hindi)

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

DSE-9: Computer Applications for Sanskrit

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the Course			Eligibility criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Computer Applications for Sanskrit	04	3	1	0	Semester IV Passed	Working Knowledge of Sanskrit

Learning Objectives

This course will introduce the current researches and developments in Sanskrit computing. The primary emphasis will be on tools and techniques developed under government and private funding and on exploring new technologies for Sanskrit.

Learning outcomes

The students will get an overview of computational works undertaken in the field of Sanskrit and a clear idea about how a range of practical linguistic tasks of Sanskrit can be done by developing CL systems. And, they will also know how CL tools can facilitate the learning and teaching process in the field of Sanskrit.

Detailed Syllabus

Unit I **12 hrs**

Interactive Sanskrit Teaching Learning Tools

Introduction to Interactive Sanskrit Learning Tools, Why Interactive Tools for Sanskrit? E-learning, Basics of Multimedia, Web-based tools development, HTML, Web page, etc., Tools and Techniques

Unit II **09 hrs**

Standard for Indian Languages (Unicode)

Unicode Typing in Devanagari Scripts, Typing Tools and Software

Unit III **12 hrs**

Text Processing and Preservation Tools

Text Processing, Preservation Techniques, Text Processing, and Preservation, Tools, and Techniques, Survey

Unit IV **12 hrs**

Optical Character Reader

Optical Character Reader (OCR), Applications of OCR for Sanskrit and Indian Languages, Tool and Techniques, Survey

Essential/recommended readings

1. Teacher's notes, ppt, and handout
2. Bharti A., R. Sangal, V. Chaitanya, "NL, Complexity Theory and Logic" in Foundations of Software Technology and Theoretical Computer Science, Springer, 1990.
3. E-Content suggested by Teacher
4. Tools developed by Computational Linguistics Group, Department of Sanskrit, University of Delhi, Delhi-110007 available at: http://sanskrit.du.ac.in
5. Basic concept and issues of multimedia: http://www.newagepublishers.com/samplechapter/001697.pdf
6. Content creation and E-learning in Indian languages: a model: http://eprints.rclis.org/7189/1/vijayakumarjk_01.pdf
7. HTML Tutorial - W3Schools: www.w3schools.com/html
8. The Unicode Consortium: http://unicode.org/.

Additional Resources:

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DEPARTMENT OF SANSKRIT
SEMESTER - V

DSC-13: Veda and Upanishad

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the Course			Eligibility criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Veda and Upanishad	04	3	1	0	12th Passed	Working Knowledge of Sanskrit

Learning Objectives

This course on Vedic literature aims to introduce two Vedic Saṁhitās (Rgveda-saṁhitā & Yajurveda-saṁhitā) to bachelor degree students. The students will also be able to read and know about the contents of one famous Upaniṣad, namely, Kathopaniṣad, which propounds basic Vedānta-view. It will also facilitate the students to know about philosophical, moral, and scientific principles including the source of Indian Intellectual traditions of Vedic period.

Learning Outcomes

By reading these texts, the students will have an impression of the depth of Vedic knowledge and will be able to realize that ideas of Vedic seers based on philosophical, moral, and scientific principles. The various commentators of the Vedas like Sayana, Uvata and Dayananda have also contributed in preserving and promoting the knowledge preserved in the Vedas. By understanding them, students will be able to know and achieve some higher attributes from Vedic heritage about our culture, morals, and thoughts. Thus they may develop curiosity to know more about other Vedic texts and concepts as well. After completing this course, students will surely be able to communicate about some important Vedic verses with their meaning and teaching, and thus fundamentals of religious life of India will be revealed to them in its true form. The students will be able to understand the strength of unity, power of mind, and will realize the importance of earth in their life. From the study of Upaniṣad, they will know about philosophical and Psychological insights of our ancestors and can develop this learning further for the benefit of themselves in particular and society in general.

Detailed Syllabus

Unit I **12 hrs**
Introduction to Vedic Literature: Samhita (Period and Contents of Samhitas)

Unit II **10 hrs**
Introduction to Vedic Literature: Brahmana, Ayanyaka and Upanishad (Analysis of Contents)

Unit III **10 hrs**
Rgveda 1.1 (Agni), 1.81 (Indra)

Unit IV **15 hrs**
Kathopanishad (Second Valli)

Essential/Recommended Readings

1. ऋग्वेदसंहिता (सायणभाष्यम्), केन्द्रिय संस्कृत विश्वविद्यालय, नई दिल्ली।
2. ऋग्वेदसंहिता, सायणाचार्यकृत भाष्य एवं हिन्दी व्याख्या सहित, रामगोविन्द त्रिवेदी, चौखम्बा संस्कृत प्रतिष्ठान, दिल्ली, 1990
3. ऋग्वेदसंहिता, सायणाचार्यकृत भाष्य एवं हिन्दी अनुवाद, कन्हैयालाल जोशी, परिमल पब्लिकेशन्स, दिल्ली, 2019
4. कठोपनिषद्, शाङ्करभाष्य हिन्दी अनुवाद सहित, गीता प्रेस, गोरखपुर, 2015
5. कठोपनिषद्, शाङ्करभाष्य संवलित, शशि तिवारी, मेहरचन्द लछमनदास पब्लिकेशन्स्, नई दिल्ली, 1981
6. वैदिक संग्रह, कृष्णलाल, इन्दु प्रकाशन, दिल्ली, 1973.
7. शुक्लयजुर्वेदसंहिता, (उवट-महीधरभाष्यसंवलिता), डॉ. रामकृष्ण शास्त्री, चौखम्बा विद्याभवन, वाराणसी, 2015.
8. RIG-VEDA, H. H. Wilson, The Bangalore Printing & Publishing Co. LTD, Bangalore City, 1946
9. New Vedic Selection, Telang and Choubey, Bharatiya Vidya Prakashan, Varanasi, 1997
10. Suklayajurveda-Samhitā (Vajasaneyi-Madhyandina), (Ed.) Jagadish Lal Shastri, MLBD, Delhi, 1978.

Additional Resources:

1. शर्मा, उमाशंकर ऋषि, ऋक्सूक्तनिकरः, चौखम्बा ओरियण्टालिया, वाराणसी. 2019
2. सूर्यकान्त (अनु.)- वैदिक देवशास्त्र, ए.ए.मैकडनल, मेहरचन्द लछमनदास पब्लिकेशन्स, नई दिल्ली, 1962
3. शशि तिवारी, वेदव्याख्यापद्धतयः, प्रतिभा प्रकाशन, दिल्ली, 2014
4. Velankar, H.D., Rksūktāvalī, Vaidika Sanshodhana Mandala, Pune, 1965.
5. Velankar, H.D., Rksūktavaijayanti, Bharatiya Vidya Bhavan, Bombay, 1972.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DSC-14: Sanskrit Grammar: Laghusiddhāntkaumudī

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Sanskrit Grammar: Laghusiddhāntkaumudī	04	3	1	0	12th Passed	Working Knowledge of Sanskrit

Learning Objectives

Sanskrit is much known for a long tradition of grammatical and semantic analysis of the language. Panini's grammar has always been highly respected for providing the best model for structural and semantic studies. This course intends to introduce to students the basic structure of Sanskrit language through the the Laghusiddhantakaumudi , the premier text of Sanskrit grammar by Varadaraj.

Learning Outcomes

After completion of this course students will understand the basic structural nuances of Panini's grammar. They will become familiar with fundamental samdhi and compounding patterns. They will also understand some most important primary and secondary suffixes of Sanskrit. The practice of the application of the rules learnt from the reading of the texts will further enhance their knowledge of the structural patterns of Sanskrit language.

Detailed Syllabus

Unit I — 10 hrs

संज्ञा-प्रकरण

माहेश्वरसूत्र ।

प्रत्याहार बनाने की विधि ।

संज्ञाविधायक-सूत्रः हलन्त्यम्, अदर्शनं लोपः, तस्य लोपः, आदिरन्त्येन सहेता, ऊकालोऽज्झ्रस्वदीर्घप्लुतः, तुल्यास्यप्रयत्नं सवर्णम्, अणुदित् सवर्णस्य चाप्रत्ययः, मुखनासिकावचनोऽनुनासिकः, हलोऽनन्तराः संयोगः, सुप्तिङन्तं पदम्

Unit II **अच्-सन्धि** 10 hrs

यण् सन्धि - इको यणचि, परः सन्निकर्षः संहिता, तस्मिन्निति निर्दिष्टे पूर्वस्य, स्थानेऽन्तरतमः ।

दीर्घ सन्धि - अकः सवर्णे दीर्घः ।

अयादिसन्धि - एचोयवायावः, यथासंख्यमनुदेशः समानाम् ।

गुणसन्धि – अदेङ् गुणः, आद्गुणः, उरण् रपरः ।

वृद्धि सन्धि - वृद्धिरादैच्, वृद्धिरेचि, भूवादयो धातवः, उपसर्गाः क्रियायोगे ।

पूर्वरूप सन्धि – एङः पदान्तादति ।

पररूप सन्धि - एङि पररूपम् ।

Unit III **हल् सन्धि एवं विसर्ग सन्धि** 10 hrs

हल् सन्धि:-

श्चुत्व - स्तोः श्चुना श्चुः ।

ष्टुत्व - ष्टुना ष्टुः ।

अनुनासिक - यरोऽनुनासिकेऽनुनासिको वा ।

छत्व – शश्छोऽटि ।

जश्त्व - झलां जशोऽन्ते ।

अनुस्वार- मोऽनुस्वारः ।

विसर्ग सन्धि:-

सत्व - विसर्जनीयस्य सः ।

उत्व - ससजुषो रुः ।

अतो रोरप्लुतादप्लुते, हशि च ।

लोप - भोभगोअघोअपूर्वस्य योऽशि, हलि सर्वेषाम् , ढ्रलोपे पूर्वस्य दीर्घोऽणः, रो रि ।

Unit IV **समास प्रकरण** 15 hrs

अव्ययीभाव समास - समर्थः पदविधिः, अव्ययं विभक्तिसमीपसमृद्धिव्यृद्ध्यर्थाभावात्ययासम्प्रतिशब्दप्रादुर्भावपश्चाद्यथानुपूर्व्ययौगपद्यसादृश्यसम्पत्तिसाकल्यान्तवचनेषु, प्रथमानिर्दिष्टं समास उपसर्जनम्, उपसर्जनं पूर्वम्, नाऽव्ययीभावादतोऽम्त्वपञ्चम्याः, नदीभिश्च ।

तत्पुरुष समास - - द्वितीया श्रितातीतपतितगतात्यस्तप्राप्तापन्नैः, तृतीया तत्कृतार्थेन गुणवचनेन, चतुर्थी तदर्थार्थ बलिहितसुखरक्षितैः, पंचमी भयेन, षष्ठी, सप्तमी शौण्डैः ।

तत्पुरुष के अन्य भेद - विशेषणं विशेष्येण बहुलम्, नञ्, नलोपो नञः, तस्मान्नुडचि

बहुव्रीहि समास - अनेकमन्यपदार्थे, सप्तमीविशेषणे बहुव्रीहौ

द्वन्द्व समास - चार्थे द्वन्द्वः

Essential/Recommended Readings

Compulsory Readings:

1. धरानन्द शास्त्री, लघुसिद्धान्तकौमुदी, मूल एवं हिन्दी व्याख्या, दिल्ली।
2. भीमसेन शास्त्री, लघुसिद्धान्तकौमुदी भैमी व्याख्या) भाग-1), भैमी प्रकाशन, दिल्ली।
3. चारुदेव शास्त्री, व्याकरण चन्द्रोदय) भाग-1,2 एवं 3), मोतीलाल बनारसीदास, दिल्ली।
4. सत्यपाल सिंह) संपा. (लघुसिद्धान्तकौमुदी :प्रकाशिका हिन्दी व्याख्या सहिता, शिवालिक पब्लिकेशन, दिल्ली, 2014।
5. Kanshiram, Laghusiddhāntakaumudī (Vol. I), MLBD, Delhi, 2009.

Additional Resources:

1. Online Tools for Sanskrit Grammar developed by Computational Linguistics Group, Department of Sanskrit, University of Delhi: http://sanskrit.du.ac.in
2. M.R. Kale, Higher Sanskrit Grammar, MLBD, Delhi (Hindi Translation also available).
3. V.S. Apte, The Students' Guide to Sanskrit Composition, Chowkhamba Sanskrit Series, Varanasi (Hindi Translation also available).

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DSC-15: Introduction to Nyaya-Vaisheshika Philosophy

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the Course			Eligibility criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Introduction to Nyaya-Vaisheshika Philosophy	04	3	1	0	12th Passed	Working Knowledge of Sanskrit

Learning Objectives

This course aims at getting the students acquainted with the cardinal principles of the Nyaya-Vaisheshika Philosophy and enablling students to understand Philosophical texts like Tarkasangrah. It also intends to give them an understanding of essential aspects of Indian Philosophy like Pluralism, Theory of Causation, Realism, etc.

Learning Outcomes

After completion of this course students will become familiar with the most important and influential schools of Indian Philosophy i.e. Nyaya-Vaisheshika. They will also be introduced to essential problems of Nyaya-Vaisheshika- Causation, Ontology and Epistemology. This will enable them to engage with other texts in Indian philosophy with some ease.

Detailed Syllabus

Unit I **10 hrs**

Origin and Development of Nyaya-Vaisheshika Philosophy.
Introduction to prominent Acharyas (Gautam, Kanada, Prashasta-Pada, Vatsyayana, and Vachaspati Mishra) and their texts.
Introduction to Navya-Nyaya

UNIT II **10 hrs**

Some Basic Tenets of Nyaya-Vaisheshika- Yatharthavada or Vastuvāda (Realism), Bahu-tattvavāda (Pluralism); Dharma (Property) Dharmi (Substratum) Karyakaraṇavāda (Causation) Asatkaryavada and Arambhavada (doctrine of non-pre-existence of effect in the cause)

Unit III Vaisheshika Ontology (Tarkasangraha) **10 hrs**

Concept of Padartha, Three Characteristics of Padarthas,
Definition of Dravya, Definitions of All Nine Dravyas and their examination
Twenty Four types of Qualities, Five types of Karma.
Sāmānya, Višesa, Samavāya, Abhāva,

Unit: IV **15 hrs**

Nyaya-Epistemology (Tarkasangraha)

Buddhi (Jñana)- Nature of Jñana in Nyaya-Vaisheshika;
Karana and Kaarana
Definitions and types of Pramā
Pratyaksha, Anumana including Hetvabhäsa
Upamana and sabda Pramāṇa,
Types of Ayathartha Anubhava

Suggested Books/Readings:

Compulsory Readings:

1. Athalye & Bodas, **Tarkasamgraha of Annambhatta** (with Dipika & Nyayabodhini), (Ed. & Tr.) Mumbai, 1930.
2. Chatterjee, S. C. & D. M. Datta - Introduction to Indian Philosophy, Calcutta University, Calcutta, 1968 (Hindi Translation available).
3. Mishra, Pankaj Kumar, **Tarkasamgraha** of Annambhatta (with Dipika and its Hindi Translation), (Ed. & Tr), Parimal Publication, Delhi-7, 2013,
4. Narendra Kumar, **Tarkasamgraha**, Hansa Prakashan, Jaipur.

Additional Resources:

1. Bhattacharya, Chandrodaya, The Elements of Indian Logic and Epistemology
2. Chatterjee, S. C., The Nyaya Theory of Knowledge, Calcutta, 1968.
3. Hiriyanna, M., Outline of Indian Philosophy, London, 1956 (also Hindi Translation).
4. Kuppuswami Shastri, A Primer of Indian Logic, Madras, 1951.
5. Maitra, S.K., Fundamental Questions of Indian Metaphysics & Logic,
6. Radhakrishnan, S, Indian Philosophy, Oxford University Press, Delhi, 1990.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DISCIPLINE SPECIFIC CORE COURSE, DISCIPLINE A 5:
DSC-9: Indian Epigraphy & Paleography

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/Practice		
(Discipline A 5) Indian Epigraphy & Paleography DSC - 9	04	3	1	0	12th Passed	Working Knowledge of Sanskrit

Learning Objectives:

This course known as the Indian Epigraphy and Paleography provides background and basis of Indian history of ancient period. Students with no knowledge of Sanskrit but interested in acquiring historical facts direct from their source can be benefitted with this course. It is extremely helpful for those who are willing to involve in archaeological studies.

This course provides basics covered in ancient Indian inscriptions. Some of the terminologies available in inscriptions are introduced here. Unit II of this section provides historical facts through the inscriptions.

It introduces background of the Indian epigraphical study. Importance of inscriptions on the basis of contents, their impact and reflections of society, economy, religious, political instances can also be understood here. It helps to understand about prevailing theories of the origin of the Brahmi script. Development of the letters of this script in different regions in a span of time is introduced. Their causes of change are also made clear to illustrate different forms in the script. Unit III provides the history of study of inscriptions in India. A number of Indian and foreign scholars made attempts in this field. Students are made aware about some prominent scholars who made valuable efforts in this field.

Learning Outcomes:

Contents of this course are related to formation of history of ancient India, so it is an inter-disciplinary course within Sanskrit. Students of Sanskrit can understand how important role Sanskrit based inscriptions play in preparing history, and their knowledge of the language can

help historians to make a perfect history, undoubtedly. Similarly students of History will find themselves on the positive ground and direct in touch with material related to history of ancient India.

Syllabus

Unit-I: **15 hrs**

Inscription of Rudradāman.
Eran Pillar Inscription:
Status of Samudragupta
Iron Pillar Inscription of Ćandra

Unit-II: **10 hrs**

Antiquity of writing in India
Observations of foreign scholars
Literary evidences
Observations made by Indian Epigraphists.
Importance of the study of Inscriptions.
Geographical description
Historical evidences
Society, Religion, Literature
Economic Conditions
Administration

Unit-III **10 hrs**

Types of Inscriptions:
Praśasti
Religious
Donations
Grants

Writing material:
Rocks
Pillars
Metal Plates
Statues
Pen, Brush, Chisel, Stylus, Paint/Colour

Unit-IV **10 hrs**

Origin of the Brāhmī Script
Foreign Origin, Indian Origin, Greek origin, Phoenician origin
Theory of South Indian Origin
Theory of Aryan Origin.

History of reading of Indian Inscriptions.
Contribution of Epigraphists: G.H. Ojha, Fleet, Princep, D.C. Sircar, Cunningham, Buhler.

System of dating and use of eras:
Vikram Era, Śaka Era, Gupta Era, Harśa Era.

Essential/recommended readings:

1. Buhler, G, On the origin of the Indian alphabet & numerals.
2. Dani, A. H, Indian Paleography
3. Ojha, G.H, Bhāratīya Prāćīna Lipimāla (Hindi)
4. Pandey, R.B, Bhāratīya Purālipi (Hindi)
5. Rana, S.S., Bhāratīya Abhilekha
6. Sircar, D.C., Indian Epigraphy, Select Inscriptions (Part-I)
7. Upadhyay, V., Prāćīna Bhāratīya Abhilekha (Hindi)

Suggested Readings:

1. Classical Age by Altekar, Majumdar, Sircar
2. श्रेण्य-युग (हिंदी अनुवाद): अल्तेकर, मजुमदार, सरकार
3. गुप्त-सम्राट और उनका काल: उदित नारायण राय

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DISCIPLINE SPECIFIC CORE COURSE, DISCIPLINE A 6:
DSC-10: Basic Elements of Indian Philosophy

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/Practice		
(Discipline A 6) Basic Elements of Indian Philosophy DSC - 10	04	3	1	0	Passed in Semester-IV	Working Knowledge of Sanskrit

Learning Objectives:

The objective of the Syllabus is to study the basic issues in Indian Philosophy.

Learning Outcomes:

Indian Philosophy teaches critical thinking, close reading, clear writing, and logical analysis. It develops the tools of logic and reason to analyze the ways in which the individual experiences the Universe. It guides the student to understand the language we use to describe the world, and our place within it. Different areas of philosophy are distinguished by the questions they ask. The most important reason to study philosophy is that it is of enormous and enduring interest. Philosophy is important, but it is also enormously enjoyable in which students are provided with the tools and the opportunity to develop and express their own philosophical views.

Syllabus

Unit-I: **09 hrs**

Darśana - concept and aims, Classification of Indian Philosophical schools,
Fundamental issues in Indian Philosophy - Epistemology: Six Pramanas

Unit-II: **12 hrs**

Metaphysics: Realism, Idealism, Causation – Satkaryavada, Asatkaryavada, Parinamavada, Vivartavada
Ethics: Karma & Punarjanma theory

Unit-III **12 hrs**

Schools of Indian Philosophy

Heterodox Schools - Cārvāka – General introduction with emphasis on Challenge to Veda, Rejection of Transcendental Entities, Ethics (Based on Sarvadarshansamgrah)
Jainism – General introduction with emphasis on Anekāntavāda, Syādvāda, Saptabhaṅginyāya, Triratna

Buddhism- General Introduction with emphasis on Four Noble Truths

Unit-IV **12 hrs**

Sāṁkhya – General Introduction with emphasis on Prakṛti, three Guṇas & Puruṣa (Based on Sāṃkhyakārikā)

Yoga - Eight fold path of Yoga (Based on Yogasūtra Sādhanapāda and Yogabhāṣya thereon)

Nyāya Vaiśesika - General Introduction with emphasis on Tarksamgraha – seven padrathas (overview only)

Mīmāṃsā – Concept of dharma

Advaita Vedānta – General Introduction with emphasis on Brahman, Māyā, Jīva and Jagat (Based on Vedāntasāra)

Essential/recommended readings:

1. Bhartiya, Mahesh - *Bhāratīya Darśana Kī Pramukha Samasyāeṁ*, Ghaziabad, 1999.
2. Chatterjee, S. C. & D. M. Datta - *Introduction to Indian Philosophy*, Calcutta University, Calcutta, 1968 (Hindi Translation also).
3. Hiriyanna, M. - *Outline of Indian Philosophy*, London, 1956 (also Hindi Translation).
4. Shastri, Kuppuswami, *A Primer of Indian Logic*, 1951 (only introduction).
5. Bhartiya, Mahesh - *Causation in Indian Philosophy*, Ghaziabad, 1975.
6. Pandey, Ram Chandra - *Panorama of Indian Philosophy* (also Hindi version), M.L.B.D., Delhi, 1966.
7. Raja, Kuhnan - *Some Fundamental Problems in Indian Philosophy*, MLBD, Delhi, 1974.
8. Rishi, Uma Shankar (Ed.), *Sarva-Darshana_Samgraha*, Chowkhamba Vidyabhawan, Varansi, 1984.

Suggested Readings:

1. Hiriyanna, M. - Outline of Indian Philosophy, London, 1956 (also Hindi Translation).
2. Shastri, Kuppuswami, A Primer of Indian Logic, 1951 (only introduction).
3. Bhartiya, Mahesh - Causation in Indian Philosophy, Ghaziabad, 1975.
4. O'Flaherty, Wendy Doniger – Karma and Rebirth in Classical Indian Tradition, MLBD, Delhi, 1983.
5. Radhakrishnan, S. - Indian Philosophy, Oxford University Press, Delhi, 1990.
6. Raja, Kuhnan - Some Fundamental Problems in Indian Philosophy, MLBD, Delhi,1974.
7. Chatterjee, S. C. – *The Nyāya Theory of Knowledge*, Calcutta, 1968.
8. Radhakrishnan, S. - *Indian Philosophy*, Oxford University Press, Delhi, 1990.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DISCIPLINE SPECIFIC CORE COURSE, DISCIPLINE A 5:
DSC-5: Indian Epigraphy & Paleography

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/Practice		
(Discipline A 5) Indian Epigraphy & Paleography DSC - 5	04	3	1	0	12th Passed	Working Knowledge of Sanskrit

Learning Objectives:

This course known as the Indian Epigraphy and Paleography provides background and basis of Indian history of ancient period. Students with no knowledge of Sanskrit but interested in acquiring historical facts direct from their source can be benefitted with this course. It is extremely helpful for those who are willing to involve in archaeological studies.

This course provides basics covered in ancient Indian inscriptions. Some of the terminologies available in inscriptions are introduced here. Unit II of this section provides historical facts through the inscriptions.

It introduces background of the Indian epigraphical study. Importance of inscriptions on the basis of contents, their impact and reflections of society, economy, religious, political instances can also be understood here. It helps to understand about prevailing theories of the origin of the Brahmi script. Development of the letters of this script in different regions in a span of time is introduced. Their causes of change are also made clear to illustrate different forms in the script. Unit III provides the history of study of inscriptions in India. A number of Indian and foreign scholars made attempts in this field. Students are made aware about some prominent scholars who made valuable efforts in this field.

Learning Outcomes:

Contents of this course are related to formation of history of ancient India, so it is an inter-disciplinary course within Sanskrit. Students of Sanskrit can understand how important role Sanskrit based inscriptions play in preparing history, and their knowledge of the language can help historians to make a perfect history, undoubtedly. Similarly students of History will find

themselves on the positive ground and direct in touch with material related to history of ancient India.

Syllabus

Unit-I: **12 hrs**

Inscription of Rudradāman.
Eran Pillar Inscription:
Status of Samudragupta
Iron Pillar Inscription of Ćandra

Unit-II: **12 hr**

Antiquity of writing in India
Observations of foreign scholars
Literary evidences
Observations made by Indian Epigraphists.
Importance of the study of Inscriptions.
Geographical description
Historical evidences
Society, Religion, Literature
Economic Conditions
Administration

Unit-III **12 hrs**

Types of Inscriptions:
Praśasti
Religious
Donations
Grants

Writing material:
Rocks
Pillars
Metal Plates
Statues
Pen, Brush, Chisel, Stylus, Paint/Colour

Unit-IV **09 hrs**

Origin of the Brāhmī Script
Foreign Origin, Indian Origin, Greek origin, Phoenician origin
Theory of South Indian Origin
Theory of Aryan Origin.

History of reading of Indian Inscriptions.
Contribution of Epigraphists: G.H. Ojha, Fleet, Princep, D.C. Sircar, Cunningham, Buhler.
System of dating and use of eras:

Vikram Era, Śaka Era, Gupta Era, Harśa Era.

Essential/recommended readings:

8. Buhler, G, On the origin of the Indian alphabet & numerals.
9. Dani, A. H, Indian Paleography
10. Ojha, G.H, Bhāratīya Prāćīna Lipimāla (Hindi)
11. Pandey, R.B, Bhāratīya Purālipi (Hindi)
12. Rana, S.S., Bhāratīya Abhilekha
13. Sircar, D.C., Indian Epigraphy, Select Inscriptions (Part-I)
14. Upadhyay, V., Prāćīna Bhāratīya Abhilekha (Hindi)

Suggested Readings:

4. Classical Age by Altekar, Majumdar, Sircar
5. श्रेण्य-युग (हिंदी अनुवाद): अल्तेकर, मजुमदार, सरकार
6. गुप्त-सम्राट और उनका काल: उदित नारायण राय

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DSE-09: Lexicographical Tradition in Sanskrit

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the Course			Eligibility criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Lexicographical Tradition in Sanskrit	04	3	1	0	12th Passed	Working Knowledge of Sanskrit

Learning Objectives

This course will introduce the theories of writing dictionaries in Sanskrit and its traditions.

Learning outcomes

After doing this course, students will learn the rich lexicographical tradition of Sanskrit field and they will get an outlook of the traditional and modern works in this field which will work as a great source of research tools for their future research endeavors.

Detailed Syllabus

Unit I **12 hrs**

Introduction to Sanskrit Lexicography

Origin and Development
Brief Introduction to Major Lexicons
Types of Dictionaries

Unit II **12 hrs**

Tradition of Sanskrit Lexicons

Early Sanskrit Lexicography:
Saravanukarmani, Nighaṇṭu and Nirukta
Dhātupāṭha, Gaṇapāṭha and Word lists in Śikṣās, Prātiśākhyas

Unit III **12 hrs**

Classical Sanskrit Lexicons

Vācaspatyam:
Textual organisation, Commentaries, Translations and Digitized works
Śabdakalpaduma:
Textual organisation, Commentaries, Translations and Digitized works

Halāyudhakośa:
Textual organisation, Commentaries, Translations, and Digitized works
Amarakośa:
Textual organisation, Commentaries, Translations, and Digitized works
Mankhakośa:
Textual organisation, Commentaries, Translations and Digitized works
Medinīkośa:
Textual organisation, Commentaries, Translations and Digitized works

Unit IV **09 hrs**

Modern Sanskrit Lexicographers

Monier William, Apte, Acharya Vishbandhu, Jainendra Siddhantakosha, Nyayakosha, M. Bloom Field

Essential/recommended readings

Amarakosha compiled by B.L.Rice, edited by N.Balasubramanya, 1970, page

Additional Resources:

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

DSE-10: Introduction to Sanskrit Poetics

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the Course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Introduction to Sanskrit Poetics	04	3	1	0	12th Passed	Working Knowledge of Sanskrit

Learning Objectives

This course on an introduction to Sanskrit Poetics aims at providing the students with the knowledge of fundamental principles of Sanskrit Poetics in the Indian tradition on the basis of Kāvyaprakāśa and Sahityadarpana.

Learning outcomes

This course will make students aware of the fundamental principles of Sanskrit Poetics. They will be able to recognize the various genres of Sanskrit Poetics, appreciate the objectives of Sanskrit Poetics, and also analyze the structure of a work in terms of the essential ingredients of Sanskrit Poetics as propounded.

Detailed Syllabus

Unit I **09 hrs**

Kāvya-Prayojana (objectives of poetry)

Kāvya-Prayojana (objectives of poetry) based on Bhāmaha and Mammaṭa.

Unit II **12 hrs**

Kāvya-Hetu (causes of poetry)

Kāvya-Hetu (causes) of poetry based on Daṇḍī, Mammaṭa and Paṇḍitarāja Jagannātha.

Unit III **12 hrs**

Kāvya- Lakṣaṇa (definition)

Kāvya-Lakṣaṇa (definition) based on Bhāmaha, Daṇḍī, Kuntaka, Mammaṭa and Vishvanath.

Unit IV **12 hrs**

Figures of speech (Alaṅkāra)

Figures of speech based on Candrāloka -

Definition of Alaṅkāra, Anuprāsa, Yamaka, Upamā, Rūpaka, Utprekṣā, Bhrānti, Sandeha, Kāvyaliṅga, Śleṣa, Aprastutaprasaṁsā, Arthāntaranyāsa, Vibhāvanā and Viśeṣokti,

Essential/recommended readings

1. Kāvyālaṅkāra - Bhāmaha, Bhāṣyakāra, Devendra Nath Sharma, Bihaar rāṣṭrabhāṣā pariṣad, Patna, 1962.
2. Kāvyaprakāśa - Mammaṭa, Srinivas Shastri, Sahitya Bhandara Meerut.
3. Kāvyādarśa - Daṇḍī, Ramchandra Mishra, Chaukhamba Vidyabhavan, Varanasi.
4. Rasagaṅgādhara - Paṇditarāja Jagannātha, Chaukhamba Vidyabhavan, Varanasi
5. Vakroktijīvitam (1st Unmeṣa) – Kuntaka, Ved Prakash Dindoriya, Shivalik Prakashan, Delhi.
6. Sāhityadarpaṇa – Viśvanātha, Nirupan Vidyalankar, Sahitya Bhandara Meerut
7. Candrāloka – Jayadeva, Subodha Chandra Pant, MLBD, Delhi.

Additional Resources:

1. बलदेव उपाध्याय, संस्कृत—आलोचना, हिन्दी समिति, सूचना विभाग, उ. प्र., 1963.
2. Kane P.V., *History of Sanskrit Poetics* pp.352-991,
3. Kane, P.V., 1961, *History of Sanskrit Poetics* and its Hindi translation by Indrachandra Shastri, Motilal Banarasidas, Delhi.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

DSE-11: Phonetics in Sanskrit Tradition

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Phonetics in Sanskrit Tradition	04	3	1	0	12th Passed	Working Knowledge of Sanskrit

Learning Objectives

The main objective of this course is to introduce basic concepts of phonetics in Sanskrit. This course aims at acquainting students with the mechanisms of speech production and to train them to perceive, identify and transcribe speech sounds. To make aware the students to phonetics in Indian tradition.

Learning outcomes

After completing this course the students will learn the basics of Sanskrit Phonetics. They will get acquainted with the sound systems, and the speech production mechanism of Sanskrit. They will also learn the traditional Sanskrit theories and principles of Phonetics.

Detailed Syllabus

Unit I **12 hrs**

Brief Introduction to Phonetics

- Definition of Phonetics
- Origin and Development
- Indian Phonetic traditions
- Types of Phonetics

Unit II **09 hrs**

General Introduction to Pratishakyas and Paniniya Shiksha

Unit III **12 hrs**

Introduction to Paniniya Shiksha (Vriddhapaatha)

- Sthana-prakarna
- Karana-prakarna
- Antahprayatna-prakrana
- Bahyaprayatna-prakrana
- Sthanapeedana-prakrana
- Vrittikars-prakrana
- Prakrama—prakrana

Nabhitala-prakrana

Unit IV **12 hrs**

Introduction to Paniniya Shiksha (Shlokatika)

Paniniya Shiksha (Shlokatika)

Based on Shloks 1-22

Essential/recommended readings

1. Paniniya Shiksha- Somlekha, Chaukhamba Sanskrit Pratishthan, Delhi, 2014
2. पाणिनीयशिक्षा, शिवराज आचार्य कौंडिण्न्यायन, CHAUKHAMBHA VIDYA BHAWAN, 2012

Additional Resources:

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

DSE-12: Ancient Indian Robotics

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the Course			Eligibility criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Ancient Indian Robotics	04	3	1	0	Twelfth Passed	Working Knowledge of Sanskrit

Learning Objectives

Ancient Indian Robotics is a comprehensive course that delves into the rich history of robotics in ancient India. The course explores the fascinating world of ancient Indian engineering and automaton technology, shedding light on the remarkable achievements and advancements made by ancient Indian civilizations in the field of robotics. Students will study the principles, designs, and mechanisms of ancient Indian robots, and gain insights into the cultural, social, and scientific contexts that influenced their development. Through a combination of lectures, discussions, and hands-on activities, students will develop a deep understanding of ancient Indian Robotics and its relevance to contemporary technology.

Learning outcomes

After completion of this course, students will be able to

- Explore the historical and cultural background of ancient India and its contributions to the field of robotics.
- Study the principles, designs, and mechanisms of ancient Indian robots.
- Examine the cultural, social, and scientific contexts that influenced the development of ancient Indian Robotics.
- Analyze the impact of ancient Indian Robotics on contemporary technology.
- Foster critical thinking, research skills, and the ability to draw connections between historical developments and present-day technology.

Detailed Syllabus

Unit: I

Historical Background

Introduction to ancient Indian civilization and its technological advancements
Discussion on the significance of studying ancient Indian Robotics in the context of contemporary technology
Examination of ancient Indian texts and scriptures mentioning robots and automata
Exploration of ancient Indian scientific traditions relevant to Robotics

Unit: II

Types of Ancient Indian Robots

Study of various types of ancient Indian robots, such as humanoid robots, animal-shaped robots, and mechanical devices

Analysis of their designs, mechanisms, and functions

Case studies of notable ancient Indian robots, such as the Yantra Sarvasva.

Exploration of religious and mythological beliefs related to robots in ancient Indian society.

Unit: III

Scientific and Mathematical Foundations

Study of scientific concepts/knowledge utilized in ancient Indian Robotics.

Examination of the instruments developed by ancient Indian scientists

Unit: IV

Samarangan-sutrdhar

Verse 101-107, Chapter 31 (दृग्ग्रीवातल ,योगतस्ते गुणानाम् -Ed. T. Ganpati Shastri)

Essential/recommended readings

1. **SamranganSutradhar** by Shukla, Dr.dijendranath, भारत भारती प्रेस, 1 अन्सारी रोड दरयागंज दिल्ली-6 1965
2. **SamranganSutradhar** S.K.Jugnu. ISBN: 9788170803676. 2011. Publisher: Chaukhamba Sanskrit Series.
3. **मयमतम्,** डॉ ० श्रीमती शैलजा पाण्डेय, चौखम्बा सुरभारती प्रकाशन, वाराणसी, 2007
4. **History of Mechanical Inventions in Ancient India** by Debiprasad Chattopadhyaya FIRMA KLM PRIVATE LIMITED 257-B, B. B. Ganguly Street Calcutta 700 012 INDIA
5. **Ancient India and the Indian Robotics** by Jayant Vishnu Narlikar
6. **The Wonder That Was India** by A.L. Basham
7. **Indian Scientific Heritage: An Introduction** by P.R. Sarkar
8. **Indian Civilization and Culture** by S.N. Sadasivan

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DEPARTMENT OF SANSKRIT
SEMESTER - VI

DSC-16: Vedic Samhita & Grammar

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the Course			Eligibility criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Vedic Samhita & Grammar	04	3	1	0	12th Passed	Working Knowledge of Sanskrit

Learning Objectives

This course on Vedic literature aims to introduce two Vedic Samhitās (Samaveda & Atharvaveda) and Vedic Grammar to Bachelor Degree students. Also, the course has a special segment introducing Sri Aurobindo's Commentary on Vedas. It will also facilitate the students to know about philosophical, moral, and scientific principles including the source of Indian Intellectual traditions of the Vedic period.

Learning Outcomes

After completing this course students will be able to communicate some important Vedic verses with their meaning and teaching, and thus fundamentals of the religious life of India will be revealed to them in their true form. The students will be able to understand the strength of unity and power of the mind, and will realize the importance of the earth in their life.

Detailed Syllabus

Unit I **12 hrs**

Rgveda: 10.34 (Aksha Sukta) 10.121 (Hiranyagarbha)
Yajurveda
23.1-12 (Prajapati), 34.1-6 Sivasamkalpa Sukta

Unit II **12 hrs**

Atharvaveda
3-30 (Sammanasya Sukta), 12.1-12 (Pruthivi Sukta)

Unit III **09 hrs**

The Secret of the Veda (Sri Aurobindo)

Chapter V–VII

Unit IV **12 hrs**

Vedic Grammar
Padapatha, Vaidika Svara, Let Lakara, Ktvarthaka & Tumarthaka pratyaya

Essential/Recommended Readings

1. अथर्ववेद संहिता, सुबोध भाष्य, पण्डित श्रीपाद दामोदर सातवलेकर, स्वाध्याय मण्डल, पारडी, जिला-बलसाड, गुजरात, 2010
2. अथर्ववेदसंहिता (सायणभाष्यसहिता हिन्दीभाषानुवादसंवलिता), व्याख्याकारः सम्पादकश्च पण्डित रामस्वरूपशर्मागौडः, चौखम्बा विद्याभवन, वाराणसी, 2011
3. वैदिक संग्रह, कृष्णलाल, इन्दु प्रकाशन, दिल्ली, प्रथम संस्करण 1973.
4. सामवेदसंहिता (सायणभाष्यसहिता हिन्दीभाषानुवादसंवलिता), व्याख्याकारः सम्पादकश्च पण्डित रामस्वरूपशर्मागौडः, चौखम्बा विद्याभवन, वाराणसी, 2011
5. सामवेदसंहिता, श्रीपाद दामोदर सातवलेकर, स्वाध्याय मण्डल, पारडी, गुजरात, 2000
6. Atharvaveda (Saunakīya): (Ed.) Vishva Bandhu, VVRI, Hoshiharpur, 1960.
7. Atharvavedasamhita, English Tr. By Dr. Tulsi Ram, Vijaykumar Govindram Hasanand, Delhi, 2013
8. Hymns of Samaveda, Translated with popular commentary by Ralph T.H Griffith, Benares, EJ lazarus and Co., 1983
9. Samaveda, English Tr. By Dr. Tulsi Ram, Vijaykumar Govindram Hasanand, Delhi, 2013

Additional Resources:

1. शर्मा, उमाशंकर ऋषि, ऋक्सूक्तनिकरः, चौखम्बा ओरियण्टालिया, वाराणसी 2019
2. सूर्यकान्त (अनु.)- वैदिक देवशास्त्र, (ए.ए.मैकडनल), मेहरचन्द लछमनदास पब्लिकेशन्स, नई दिल्ली, 1962
3. शशि तिवारी, वेदव्याख्यापद्धतयः, प्रतिभा प्रकाशन, दिल्ली, 2014
4. Velankar,H.D., Rksūktāvalī, Vaidika Sanshodhana Mandala, Pune, 1965.
5. Velankar,H.D., Rksūktavaijayanti, Bharatiya Vidya Bhavan, Bombay, 1972.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DSC-17: Sanskrit Composition and Communication

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Sanskrit Composition and Communication	04	3	1	0	12th Passed	Working Knowledge of Sanskrit

Learning Objectives

This paper aims at developing compositional and communicative skills in Sanskrit. Students will learn also learn the art of translation from Sanskrit into Hindi or English and vice versa.

Learning Outcomes

After the completion of this course the learners will be able to develop a critical, linguistic and scientific approach towards Sanskrit language. The practice of essay writing will make the students form ideas and express them in Sanskrit. This practice will also familiarize them with various shastric theories and doctrines of various knowledge domains.

Detailed Syllabus

Unit I **12 hrs**

Compositional Sanskrit: Vibhaktyartha, Voice & Krt

Translation from/to Hindi/English to/from Sanskrit on the basis of cases, Compounds, Voices and kṛt suffixes.

Vibhaktyartha Prakarana of Laghusiddhantakaumudi
Vācya (Voice) – kartṛ, Karma and Bhāva
Selected kṛt Suffixes - tavya, anīyar, yat, ṇyat, ṇvul, tṛc, kta, ktavatu, śatṛ, śānac, tumun, ktvā-lyap, lyuṭ, ghañ, ktin

Unit II **09 hrs**

Communicative Sanskrit

Simple Conversations

Unit III **12 hrs**

Essay on Traditional Subjects

Composition of long/detailed essay on Veda, Upanisad, Sanskrit, Ramayana, Mahabharata, Purana, Gita, prominent classical Sanskrit poets.

Unit IV **12 hrs**

Essay on Comtemporary Subjects

Composition of short essay on contemporary issues and topics.

Essential/Recommended Readings

1. शास्त्री, घरानन्द, लघुसिद्धान्तकौमुदी, मूल एवं हिन्दी व्याख्या, मोतीलाल बनारसीदास,
2. नौटियाल, चक्रधर, बृहद्- अनुवाद- चन्द्रिका, मोतीलाल बनारसीदास, दिल्ली.
3. द्विवेदी, कपिलदेव, रचनानुवादकौमुदी, विश्वविद्यालय प्रकाशन, वाराणसी.
4. द्विवेदी, कपिलदेव, संस्कृत निबन्धशतकम् विश्वविद्यालय प्रकाशन, वाराणसी
5. Kale, M.R, Higher Sanskrit Grammar, MLBD, Delhi (Hindi Translation also available).

Additional Resources:

1. शास्त्री, भीमसेन, लघुसिद्धान्तकौमुदी, भैमीव्याख्या) भाग-1), भैमीव्याख्या, दिल्ली.
2. पाण्डेय, राधामोहन, संस्कृत सहचर, स्टूडेण्ट्स फ्रेण्ड्स, पटना.
3. Apte, V.S.,The Students' Guide to Sanskrit Composition, Chowkhamba Series, Varanasi (Hindi Translation also available).
4. Kanshiram, Laghusiddhantakaumudi (Vol. 1), MLBD, Delhi, 2009.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DSC-18: Poetics and Literary Criticism

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the Course			Eligibility criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Poetics and Literary Criticism	**04**	**3**	**1**	**0**	**12th Passed**	**Working Knowledge of Sanskrit**

Learning Objectives

This course on Poetics and Literary Criticism aims at providing the students with the knowledge of fundamental principles of literary criticism in the Indian tradition on the basis of Kāvyaprakāśa and Sahityadarpana.

Learning Outcomes

After completetion of this course the students will be equipped with skills to assess the merits or demerits of works on poetry, prose and drama. They will be able recognize various genres of poetry, appreciate the objectives of poetry and also analyze the structure of a work in terms of the essential ingredients of poetry as propounded. Students will be inspired and encouraged to compose.

Detailed Syllabus

Unit I Introduction to Sanskrit Poetics **12 hrs**

Origin and development of Sanskrit poetics,
Its various names- kriyākalpa, alaṁkāraśāstra, sāhityaśāstra, saundryaśāstra.
Kāvya-Prayojana (objectives) and Kāvya-Lakṣaṇa (definition, based on Sāhityadarpaṇa)
Kāvya-Hetu (causes) of poetry (based on kāvyaprakāśa).

Unit II Forms of Poetry **10 hrs**

Forms of poetry: Dṛśya, Śravya, Miśra, (campū)
Mahākāvya, Khaṇḍakāvya, Gadya-Kāvya: Kathā, Ākhyāyikā (based on Sāhityadarpaṇa)

Unit III **14 hrs**

Śabda-śakti

General introduction to Śabda-śakti (based on Kāvyaprakāśa).
Abhidhā (expression/ denotative power),
Lakṣaṇā (indication/ indicative power) and
Vyañjanā (suggestion/ suggestive power).

Unit IV **09 hrs**

Rasa-sūtra

Rasa: Rasa-sūtra of Bharata and its prominent expositions (based on Kāvyaprakāśa):
Utpattivāda,
Anumitivāda,
Bhuktivāda and
Abhivyaktivāda.

Essential/Recommended Readings

1. Sāhityadarpaṇa: (Ch.VIth), Kārikā 6/1,2,313-37
2. Dwivedi, R.C, The Poetic Light:, Motilal Banarsidas, Delhi.1967.
3. Kāvyaprakāśa, kārikās 4/27, 28 with explanatory notes.
4. Ray, Sharad Ranjan, Sāhityadarpaṇa; Viśvanātha, (Ch I, VI & X) with Eng. Exposition, Delhi.
5. नगेन्द्र, (सं०), काव्यप्रकाश : मम्मटकृत, आचार्य विश्वेश्वर की व्याख्या सहित, ज्ञानमंडल लि०, वाराणसी ।
6. शालिग्राम शास्त्री, साहित्यदर्पण : (व्या०), मोतीलाल बनारसीदास, दिल्ली ।

Additional Resources:

1. बलदेव उपाध्याय, संस्कृत—आलोचना, हिन्दी समिति, सूचना विभाग, उ. प्र., 1963.
2. Kane P.V., History of Sanskrit Poetics pp.352-991,
3. Kane, P.V., 1961, History of Sanskrit Poetics and its Hindi translation by Indrachandra Shastri, Motilal Banarasidas, Delhi.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

BA (Prog.) with SANSKRIT AS MAJOR

DISCIPLINE SPECIFIC CORE COURSE, DISCIPLINE B 5:
DSC-11: Sanskrit Literature: Katha-Kavya

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/Practice		
(Discipline B 5) Sanskrit Literature: Katha-Kavya DSC – 11	04	3	1	0	12th Passed	Working Knowledge of Sanskrit

Learning Objectives:

This course aims to get the students acquainted with the outline of Sanskrit Katha Kavya through texts Pañcatantram and Hitopadesh with the General Introduction to Sanskrit Literature

Learning Outcomes:

The students will learn the essence of the ways of life depicted and enjoined in the Katha Kavya of Sanskrit language & Literature. They will also learn various aspects and forms of Sanskrit as one of the modern Indian Language through the practice of easy and simple Sanskrit texts of Katha Kavya. The stories prescribed in the texts will help the students to develop an understanding of the moral and ethical values that will be useful in their day today life situations and asset of life. They will be familiar with the general history of Sanskrit Literature and with the style and contents of the works of eminent literary figures. This course will enhance the skill of chaste Sanskrit pronunciation as well as competence and performance of language. This will help them translate and explain the prescribed Sanskrit texts in their native language.

Syllabus

Unit-I: **12 hrs**

Panchatantram: Aparikshitakarakam (पञ्चतन्त्रम्: अपरीक्षितकारकम्)

Kshapanakakatha (**क्षपणककथा**), Brahmaninakulakatha (**ब्राह्मणीनकुलकथा**), Lobhavishta-Chakradharkatha (**लोभाविष्टचक्रधरकथा**)

Unit-II: **12 hrs**

Sinha-Karakabrahmankatha (सिंहकारकब्राह्मणकथा)

Murkha-brahmanakatha (मूर्खब्राह्मणकथा)

Matsyamandukkatha (मत्स्यमण्डूककथा)

Rakshashrgalkatha (राक्षसशृगालकथा)

Unit-III **12 hrs**

Hitopdeshah : Mitralabhah (हितोपदेशः : मित्रलाभः)

Vriddhavyagraha-Lubdhvirakatha (वृद्धव्याघ्र-लुब्धविप्रकथा)

Unit-IV **09 hrs**

Tradition of Kathakavya in Sanskrit Literature
(संस्कृतसाहित्य में कथाकाव्य की परम्परा)
Origin and Development of Kathakavya
(कथाकाव्य का उद्भव और विकास)
Panchtantra, Hitopdesa, Kathasaritsagar, Vetalpanchavimsatika, Simhasanadwatrimsika and Purusapariksha
(पञ्चतन्त्र, हितोपदेश, कथासरित्सागर, वेतालपञ्चविंशतिका, सिंहासनद्वात्रिंशिका और पुरुषपरीक्षा)

Essential/recommended readings:

1. **पञ्चतन्त्रम्, श्रीविष्णुशर्माप्रणीत, व्याख्याकार-पाण्डेय, श्रीश्यामाचरण, मोतीलाल बनारसीदास, वाराणसी, दिल्ली, प्रथम संस्करण: वाराणसी**, 1975
2. **हितोपदेश, श्रीनारायणपण्डितविरचित, सम्पादक-प्रो. बालशास्त्री, चौखम्बा सुरभारती प्रकाशन, वाराणसी, संस्करण**, 2015
3. हितोपदेश, पण्डित जीवानन्द विद्यासागर, सरस्वती प्रेस कलकत्ता ।
4. पञ्चतन्त्रम्, श्यामाचरण पाण्डेय (व्या.), विष्णु शर्मा, मोतीलाल बनारसीदास, दिल्ली, 1975
5. M.R. Kale, Pancatantram (ed. and trans.), Motilal Banarasidass, Delhi 1999
6. Chandra Rajan, Pancatantram (trans.) Penguin Classics, Penguin Books.

Suggested Readings:

1. रमाशंकर त्रिपाठी, संस्कृत साहित्य का प्रामाणिक इतिहास, कृष्णदास अकादमी, वाराणसी
2. उमाशंकर शर्मा 'ऋषि', संस्कृत साहित्य का इतिहास, चौखम्बा सुरभारती, वाराणसी
3. बलदेव उपाध्याय, संस्कृत साहित्य का इतिहास, शारदा निकेतन, वाराणसी

4. A Collection of Ancient Hindu Tales (ed.) Franklin Edgerton, Johannes Hertel, 1908.
5. Krishnamachariar, History of Classical Sanskrit Literature, MLBD, Delhi
6. Dasgupta S.N., A History of Sanskrit Literature: Classical Period, University of Calcutta, 1977.
7. A.B. Keith, History of Sanskrit Literature (हिन्दी अनुवाद, मंगलदेव शास्त्री, मोतीलाल बनारसीदास, दिल्ली)

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DISCIPLINE SPECIFIC CORE COURSE, DISCIPLINE B 6:
DSC-12: Indian Aesthetics

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/Practice		
(Discipline B 6) Indian Aesthetics DSC - 12	04	3	1	0	Passed in Semester-IV	Working Knowledge of Sanskrit

Learning Objectives:

Indian aesthetics is a potent field for the study of literary criticism. It has developed as an independent discipline today, which deals with the historically determined essence of human values, their creation, perception, appreciation and assimilation. It is the science and philosophy of essential analysis of all the fine arts. Indian perception accepts poetry, drama, music, architecture, iconography and painting as independent Arts. The main objective of this paper is to give its brief overview with reference to major trends of Indian Aesthetics.

Learning Outcomes:

This course will enable students to identify the real essence of Beauty propounded by Indian rhetoricians. After the completion of the course the learner will come across the Indian deliberation on aesthetic experience in the form of Rasa and its process. The participant will be able to appreciate the various artistic mods of expressions of Beauty in general and poetry in particular. The course will help the student peep into the historical evolution of the Indian science of aesthetics.

Syllabus

Unit-I: 12 hrs

Aesthetics (Saundaryaśāstra), its nature and components

Beauty (Saundarya): its definition, nature and components : vaya,rūpa, vacana, hāva, Discussion of synonyms of the term Beauty(Saundarya) : ramaṇīyatā, śucitā, lāvaṇya, cārutā, kānti, vicchitti, madhuratā, mugdhatā, manohāritā, śrī.

Unit-II: 09 hrs

Aesthetic experience (Rasa)

Nature of rasa (Aesthetic experience) according to Sāhityadarpaṇa, aesthetic enjoyment – eternal bliss, the ultimate reality (ānandamayatā, alaukikatā)

Unit-III 12 hrs

The process of Aesthetic experience (Rasa)

Constituents of rasa: bhāva (human feelings and emotions) vibhāva (causes or determinants), anubhāva (voluntary gestures), sāttvika bhāva (Involuntary gestures), vyabhicāri bhava (transitory states) and sthāyibhāva(basic mental states), sahṛdaya / sāmājika (Connoisseur / Spectator). anukārya, anukartā, sādhāraṇīkaraṇa (Generalization), four mental stages of rasa realization: vikāsa (cheerfulness), vistāra(exaltation), kṣobha (agitation), vikṣepa (perturbation). number of rasas according to Bharat

Unit-IV 12 hrs

Aesthetic elements (saundarya - tattva)

Art as the mode of expression of saundarya –in fine arts (Architecture, Sculpture and Painting), Main aesthetic elements of literary arts (Poetry and Drama) : alaṅkāra, rīti, dhvani,vakrokti & aucitya.

Prominent thinkers of Indian Aesthetics

Bharata, Bhāmaha, Vāmana, Daṇḍī, Ānandavardhana Abhinavagupta, Kuntaka, Mahimabhaṭṭa, Kṣemendra, Vishvanātha and Jagannātha.

Essential/recommended readings:

1. Sāhityadarpaṇa of Vishvanatha, (Based on karikas3/1-28).
2. Kane P.V., *History of Sanskrit Poetics* pp.352-391,
3. Upadhyaya, Baladeva, *Sanskrit Ālocanā* (for six schools)
4. Pandey, Kantichandra: *Comparative Aesthetics,* vol.1 Chowkhamba Sanskrit series office Varanasi, 2008
5. चतुर्वेदी ब्रजमोहन, भारतीय सौन्दर्यदर्शन, मध्यप्रदेश हिन्दी ग्रन्थ अकादमी, पृ० 5—12, 22—34, 37-42, 42-60,61-76
6. पाण्डेय कान्तिचन्द्र स्वतन्त्र कलाशास्त्र, प्रथम भाग पृ. 593—625.
7. पाण्डेय कान्तिचन्द्र, स्वतन्त्र कलाशास्त्र, प्रथम भाग पृ. 593—625.

Suggested Readings:

1. Gnoli, R. : *The Aesthetic Experience according to Abhinavagupta*, Chowkhamba Sanskrit series office Varanasi.
2. उपाध्याय बलदेव संस्कृत—आलोचना, हिन्दी समिति, सूचना विभाग, उ. प्र., 1963.
3. कृष्णकुमार अलंकारशास्त्र का इतिहास, साहित्य भण्डार,मेरठ,1998
4. Coomarswami A: *Introduction to Indian Art,* Theosophical Society, Adyar, 1956.
5. कृष्णकुमार अलंकारशास्त्र का इतिहास, साहित्य भण्डार,मेरठ,1998

6. पाण्डेय, कान्तिचन्द्र स्वतन्त्र कलाशास्त्र, प्रथम तथा द्वितीय भाग, चौखम्भा संस्कृत सीरीज वाराणसी 1967, 1978.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

BA (Prog.) with SANSKRIT AS Non-Major/ Minor

DISCIPLINE SPECIFIC CORE COURSE, DISCIPLINE B 5: DSC-6: Sanskrit Literature: Katha-Kavya

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/Practice		
(Discipline B 5) Sanskrit Literature: Katha-Kavya DSC – 6	04	3	1	0	12th Passed	Working Knowledge of Sanskrit

Learning Objectives:

This course aims to get the students acquainted with the outline of Sanskrit Katha Kavya through texts Pañcatantram and Hitopadesh with the General Introduction to Sanskrit Literature

Learning Outcomes:

The students will learn the essence of the ways of life depicted and enjoined in the Katha Kavya of Sanskrit language & Literature. They will also learn various aspects and forms of Sanskrit as one of the modern Indian Language through the practice of easy and simple Sanskrit texts of Katha Kavya. The stories prescribed in the texts will help the students to develop an understanding of the moral and ethical values that will be useful in their day today life situations and asset of life. They will be familiar with the general history of Sanskrit Literature and with the style and contents of the works of eminent literary figures. This course will enhance the skill of chaste Sanskrit pronunciation as well as competence and performance of language. This will help them translate and explain the prescribed Sanskrit texts in their native language.

Syllabus

Unit-I: **12 hrs**

Panchatantram: Aparikshitakarakam (पंचतन्त्रम्: अपरीक्षितकारकम्)

Kshapanakakatha (**क्षपणककथा**), Brahmaninakulkatha (**ब्राह्मणीनकुलकथा**), Lobhavishta-Chakradharkatha (**लोभाविष्टचक्रधरकथा**)

Unit-II: **12 hrs**

Sinha-Karakabrahmankatha (सिंहकारकब्राह्मणकथा)

Murkha-brahmanakatha (मूर्खब्राह्मणकथा)

Matsyamandukkatha (मत्स्यमण्डूककथा)

Rakshashrgalkatha (राक्षसशृगालकथा)

Unit-III **09 hrs**

Hitopdeshah : Mitralabhah (हितोपदेशः : मित्रलाभः)

Vriddhavyagraha-Lubdhvirakatha (वृद्धव्याघ्र-लुब्धविप्रकथा)

Unit-IV **12 hrs**

Tradition of Kathakavya in Sanskrit Literature
(संस्कृतसाहित्य में कथाकाव्य की परम्परा)
Origin and Development of Kathakavya
(कथाकाव्य का उद्भव और विकास)
Panchtantra, Hitopdesa, Kathasaritsagar, Vetalpanchavimsatika, Simhasanadwatrimsika and Purusapariksha
(पंचतन्त्र, हितोपदेश, कथासरित्सागर, वेतालपञ्चविंशतिका, सिंहासनद्वात्रिंशिकाश् और पुरुषपरीक्षा)

Essential/recommended readings:

7. **पञ्चतन्त्रम्, श्रीविष्णुशर्माप्रणीत, व्याख्याकार-पाण्डेय, श्रीश्यामाचरण, मोतीलाल बनारसीदास, वाराणसी, दिल्ली, प्रथम संस्करण: वाराणसी**, 1975
8. **हितोपदेश, श्रीनारायणपण्डितविरचित, सम्पादक-प्रो. बालशास्त्री, चौखम्बा सुरभारती प्रकाशन, वाराणसी, संस्करण**, 2015
9. पञ्चतन्त्रम्, श्यामाचरण पाण्डेय (व्या.), विष्णु शर्मा, मोतीलाल बनारसीदास, दिल्ली, 1975
10. M.R. Kale, Pancatantram (ed. and trans.), Motilal Banarasidass, Delhi 1999
11. Chandra Rajan, Pancatantram (trans.) Penguin Classics, Penguin Books.
12. हितोपदेश, पण्डित जीवानन्द विद्यासागर, सरस्वती प्रेस कलकत्ता ।

Suggested Readings:

8. रमाशंकर त्रिपाठी, संस्कृत साहित्य का प्रामाणिक इतिहास, कृष्णदास अकादमी, वाराणसी ।
9. A Collection of Ancient Hindu Tales (ed.) Franklin Edgerton, Johannes Hertel, 1908.
10. बलदेव उपाध्याय, संस्कृत साहित्य का इतिहास, शारदा निकेतन, वाराणसी

11. Krishnamachariar, History of Classical Sanskrit Literature, MLBD, Delhi
12. उमाशंकर शर्मा 'ऋषि', संस्कृत साहित्य का इतिहास, चौखम्बा सुरभारती, वाराणसी
13. Dasgupta S.N., A History of Sanskrit Literature: Classical Period, University of Calcutta, 1977.
14. A.B. Keith, History of Sanskrit Literature (हिन्दी अनुवाद, मंगलदेव शास्त्री, मोतीलाल बनारसीदास, दिल्ली)

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DSE-13: Basic Principles of Pāṇinian Grammar

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the Course			Eligibility criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Basic Principles of Pāṇinian Grammar	04	3	1	0	Nil	Nil

Learning Objectives

This course introduces the basics of Pāṇinian grammar. It provides information related to the grammar written by Pāṇini. The core concept of Paninian grammar will be introduced. The main aim of this course is to introduce the structure of Ashtadhyayi and richness of the Indian linguistic tradition for those who are not Sanskrit scholars but are curious to know about the scientific literature in Sanskrit.

Learning outcomes

The students will get an overview of the Paninian grammar. Within the field of Sanskrit studies, the field of vyākaraṇa (grammar) is said to be the core foundation upon which everything else is built. It will be a deep exploration of the study of grammar starting from absolute scratch. Students will be able to learn how to study Paninian Grammar.

Detailed Syllabus

Unit I

Introduction to Ashtadhyayai

Introduction to Pāṇini
General information of his grammar
Current Pāṇinian tradition
Structure of the Ashtadhyayi
The Phonemic Components: Alphabest (Mahashwara Sutra)
Pratyaharas

Unit II

Core Concept of Ashtadhyayi

Types of Sutras
The concept of Anuvritti, Adhikara, Samjna
Decoding the meaning of the sutras
Technical Terms of Panini

Unit III

Core Concept of Ashtadhyayi

Decoding the meaning of the sutras
Role of Various types of Sutras
Utsarga and Apavada
Brief Introduction to Sanskrit Suffixes: Sup, Tin, Krit, Taddhita

Unit IV

Databases of Panini

Sutrapatha
Dhatupatha:
Classification Dhatus: Gana (10), Pada (3), Idagama (3), karma, ac numbers, anubandha, aadivarna, antyavarna, upadhavarba
Brief Introduction to Dhatus, Lakar
Ganapatha

Essential/recommended readings

1. The Aṣṭādhyāyī Sūtrapāṭha of Panini, with Vārtikas, Gaṇa, Dhātupāṭha, Pāṇinīya-śikṣā and Paribhāṣāpāṭha, second edition, edited by C. Sankara Rama Shastri, printed and published by The Shri Bala Manorama Press, Mylapore, Madras, 1937.
2. The Aṣṭādhyāyī of Pāṇini, translated into English by Shrish Chandra Vasu, first published in 1891, reprinted by Motilal Benarsidass, Delhi, 1962.
3. The Ashtadhyayi of Panini. Vol. 6. Satyajnan Chaterji, 1897.
4. Pawate, Ishtalingappa Siddharamappa. The structure of the Ashtadhyayi. Amar Prakashan, 1987.
5. Mahalakshmi, A. Soumya, and Minal Moharir. "Ashtadhyayi—An Experimental Approach to Enhance Programming Languages and Compiler Design Using." *Recent Findings in Intelligent Computing Techniques: Proceedings of the 5th ICACNI 2017, Volume 3* 709 (2018): 3.
6. Subbanna, Sridhar, and Shrinivasa Varakhedi. "Computational structure of the Ashtadhyayi and conflict resolution techniques." *Sanskrit Computational Linguistics* (2009): 56-65.
7. Dr. Naresh Jha, Ashtadhyayi of Panini (Sanskrit With Hindi Text), 2014, Chaukhamba Surbharati Prakashan.
8. Jha, Girish N. "The system of Panini." *Language in India* 4.2 (2004).

9. Sharma, R. N. "Astadhyayi of Panini. Vol. 1-2. N." *Delhi. Voloshina, OA 2019a:[Types of Sutra Rules in the Grammar of Panini]. Indoevropeiskoe yazykoznanie i klassicheskaya filologiya [Indo-European linguistics and classical philology]* 23 (2000): 170-177.

Additional Resources:

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

DSE-14: Introduction to Ancient Indian Mathematics

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the Course			Eligibility criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Introduction to Ancient Indian Mathematics	04	3	1	0	Twelfth Passed	Working Knowledge of Sanskrit

Learning Objectives

This course provides an in-depth exploration of the rich heritage of ancient Indian mathematics, covering various mathematical concepts, techniques, and achievements that emerged in the Indian subcontinent over centuries. Students will delve into the works of renowned mathematicians such as Aryabhata, Brahmagupta, and Bhaskara, among others. The course aims to highlight the significant contributions of ancient Indian mathematics to various branches of mathematics and its influence on contemporary mathematical thought.

Learning outcomes

By the end of this course, students will be able to:

1. Understand the historical and cultural context of ancient Indian mathematics.
2. Familiarize themselves with the fundamental mathematical concepts and techniques developed by ancient Indian mathematicians.
3. Analyze and interpret ancient Indian mathematical texts.
4. Recognize the contributions of ancient Indian mathematics to modern mathematical fields.
5. Appreciate the interconnectedness of ancient Indian mathematics with other areas of knowledge, including astronomy, philosophy, and linguistics.

Detailed Syllabus

Unit: I

Introduction to Ancient Indian Mathematics

Overview of ancient Indian mathematical traditions
Significance of ancient Indian mathematics in global mathematical history
Major mathematical works and their authors

Unit: II

Life and works of Aryabhata, Brahmagupta, Baskaracharya

Unit: III

Contribution of Aryabhata, Brahmagupta, Baskaracharya

Unit: IV

Some Essentials of ancient Mathematics

Decimal place value system and its origins
Numerical notations and symbols used in ancient Indian mathematics
Basic arithmetic operations (addition, subtraction, multiplication, division) in ancient Indian mathematics
Geometrical concepts and constructions in ancient Indian mathematics
Connection between astronomy and mathematics in ancient India

Essential/recommended readings

1. "Sulba Sutras" - These ancient texts, composed between 800 BCE and 200 BCE, present mathematical techniques for constructing altars and fire pits used in Vedic rituals. They contain geometric and algebraic methods, including the Pythagorean theorem.
2. "Aryabhatiya" by Aryabhata - Written in the 5th century CE, this work is a foundational text of Indian mathematics. It covers various mathematical topics, including arithmetic, algebra, trigonometry, and astronomy. It introduces the concept of zero and provides an approximation for the value of pi.
3. "Brahmasphutasiddhanta" by Brahmagupta - Composed in the 7th century CE, this treatise covers topics such as arithmetic, algebra, geometry, and astronomy. It introduces negative numbers and presents solutions to quadratic equations.
4. "Lilavati" by Bhaskara II - This 12th-century CE work focuses on arithmetic and algebra. It contains a wide range of mathematical problems and their solutions, along with geometric and combinatorial techniques.
5. "Ganita Sara Sangraha" by Mahaviracharya - Written in the 9th century CE, this treatise provides a comprehensive overview of arithmetic and algebra. It covers topics such as number theory, fractions, series, and solutions to linear and quadratic equations"Yuktibhasa" by Jyesthadeva - Composed in the 16th century CE, this work explores advanced topics in algebra and calculus. It introduces the Kerala school's method of calculating with infinite series and provides a comprehensive understanding of calculus in ancient India.
6. "Siddhanta Shiromani" by Bhaskara II - This monumental work, written in the 12th century CE, comprises four parts: Lilavati, Bijaganita, Grahaganita, and Goladhyaya. It covers arithmetic, algebra, geometry, and astronomy, offering insights into advanced mathematical concepts and calculations.
7. "Vedic Mathematics" by Bharati Krishna Tirtha - This modern compilation, published in the 20th century, presents the mathematical principles found in the Vedas. It provides techniques for mental calculations, quick multiplication, division, and square roots, highlighting the mathematical wisdom of ancient India.

Reference readings

1. "Mathematics in Ancient India" by T.K. Puttaswamy and S.K. Rangaswami - This comprehensive book explores the development of mathematics in ancient India, covering various mathematical concepts, techniques, and contributions by Indian mathematicians.

2. "A Source Book in Indian Mathematics" edited by K. Sarma - This anthology brings together translations of key texts in ancient Indian mathematics, providing direct access to original sources and mathematical concepts developed in the Indian subcontinent.
3. "The History of Hindu Mathematics: A Sourcebook" by Bibhutibhusan Datta and Avadhesh Narayan Singh - This book presents an in-depth examination of mathematical ideas and techniques from ancient Indian texts, including arithmetic, algebra, geometry, and astronomy.
4. "Mathematics in India" by Kim Plofker - Offering a scholarly analysis of Indian mathematical traditions, this book covers topics such as number systems, arithmetic, algebra, geometry, and trigonometry, with a focus on historical context and cultural influences.
5. "Indian Mathematics: Engaging with the World from Ancient to Modern Times" edited by Agathe Keller, Clemency Montelle, and Christine Proust - This collection of essays explores various aspects of Indian mathematics, from its ancient roots to contemporary developments, including contributions to astronomy, linguistics, and philosophical thought.
6. "History of Ancient Indian Mathematics" by C. N. Srinivasiengar - This book provides a historical overview of ancient Indian mathematics, tracing its evolution from the Indus Valley Civilization to the medieval period, highlighting the contributions of notable mathematicians and the impact on subsequent mathematical developments

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

DSE-15: Basic Skills for Research Paper and Dissertation

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Basic Skills for Research Paper and Dissertation Writing	**04**	**3**	**1**	**0**	**12th Passed**	**Working Knowledge of Sanskrit**

Learning Objectives

This course will introduce the basic methods and skills to write a research dissertation and paper.

Learning outcomes

The students will learn the basics of writing research dissertations or papers and they will acquire the skills needed for the same. They will get a clear idea about the standards to be followed and techniques to be used for their research writings.

Detailed Syllabus

Unit I **12 hrs**

Theoretical concept of Research

Introduction, Objectives and Types of Research
Outline of Research Work
Topic Selection and Writing Methods
Material Collection: Primary and Secondary
E-Recourses and Research Tools

Unit II **09 hrs**

Dissertation/Paper Editing Tools

Typing tools for Unicode Devanagari
Editing Tools: Microsoft Word and Google Docs

Unit III **12 hrs**

Basics of Research Paper Writing

Topic Selection
Review of Literature
Drafting the body

Revision/Editing
Major Components of a Research Papers
Abstract, Keywords, Background and Introduction, Review of Literatures, Objective, Material (data) and methodology, result and discussions, conclusions, finding, future direction of research, acknowledgement, references

Unit IV **12 hrs**

Dissertation Writing Skill

Overview of the dissertation
Major steps: Proposal, Dissertation Writing, Editing/Review, Presentation and Submission
Essential Elements of Research Proposal:
- Research topic selection
- A brief description of the proposed thesis
- Preliminary outline of the proposed research
- Survey
- Reference list

Structure of Dissertation
- Title Page
- Acknowledgement
- Abstract
- Table of Contents
- List of figures
- List of Tables
- List of Appendixes
- Dissertation Chapters
- References Lists

Essential/recommended readings

1. Teacher's notes, ppt, and handout
2. http://www.makeuseof.com/tag/5-powerpoint-tips-improve-presentation-skills-overnight/
3. https://www.slideshare.net/subagini/effective-presentation-skills-28512891
4. http://www.free-power-point-templates.com/articles/18-tips-to-improve-presentation-skills/
5. Yelikar, 2009, Essentials of Research Methodology & Dissertation Writing ((Fogsi), Jaypee Brothers Medical Publishers.

Additional Resources:

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

DSE-16: Research Methodology for Sanskrit Studies

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Research Methodology for Sanskrit Studies	04	3	1	0	12th Passed	Working Knowledge of Sanskrit

Learning Objectives

This course will introduce the basics of research methodology and the methodologies followed in the research field of Arts or Sanskrit. The primary emphasis will be on the study of research methods applicable to undertaking research in Sanskrit.

Learning outcomes

After completing this course the students will get an overview of the various research methodologies. They will be able to understand the specific procedures or techniques to be used to identify, select, process, and analyze information about a research topic.

Detailed Syllabus

Unit I **12 hrs**

Theoretical concept of Research

Introduction, Objectives, and Types of Research
Outline of Research Work
Research Methodologies
Topic Selection and Writing Methods
Material Collection: Primary and Secondary
E-Recourses and Research Tools

Unit II **12 hrs**

Literature Review

Brief Introduction of Survey
Techniques/Methods of Survey
Tools and Techniques of Survey
Step of the Survey

Unit III **12 hrs**

Referencing

What is Referencing?
Step of Referencing
How to make references?
Citation and Citation in Text, Various patterns of Citation in Text and Sample
Various Software for Referencing
Components of referencing, Book, Dictionary, Journal, Conference, News Paper, Magazine, Report, Government Publications, Thesis, Dissertation, Web pages, Internet Resources, Personal Communications (Written, oral and email), Lectures, Video, DVD, Films, etc.)
Introduction of Various Style Sheets of Referencing.
Detail Introduction of the above Style for Sanskrit.
Creation Methods of Reference List and Samples.

Unit IV **09 hrs**

Transliteration

Transliteration Schemes
International Alphabet of Sanskrit Transliteration (IAST)
Indian languages Transliteration (ITRANS)
Introduction to available computational tools for converting
Devanagari Texts to IAST and TTRANS.

Essential/recommended readings

1. Teacher's notes, ppt, and handouts
2. http://www.makeuseof.com/tag/5-powerpoint-tips-improve-presentation-skills-overnight/
3. https://www.slideshare.net/subagini/effective-presentation-skills-28512891
4. http://www.free-power-point-templates.com/articles/18-tips-to-improve-presentation-skills/
5. Yelikar, 2009, Essentials of Research Methodology & Dissertation Writing ((Fogsi), Jaypee Brothers Medical Publishers.

Additional Resources:

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

GE-7: Fundamentals of Indian Philosophy

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the Course			Eligibility criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Fundamentals of Indian Philosophy	04	3	1	0	Semester II Passed	Nil

Learning Objectives

The primary objective of this course is to familiaries the students with the basic issues in Indian Philosophy. The course will give a hand on knowledge of various Fundamental concepts and Theories to enable them to learn the higher concepts and Theories of different Philosophical schools of Indian Philosophy

Learning outcomes

Indian Philosophy teaches critical thinking, close reading, clear writing, and logical analysis. It develops the tools of logic and reason to analyse the ways in which the individual experiences the Universe. It guides the student to understand the language we use to describe the world, and our place within it. Different areas of philosophy are distinguished by the questions they ask. The most important reason to study philosophy is that it is of enormous and enduring interest. Philosophy is important, but it is also enormously enjoyable in which students are provided with the tools and the opportunity to develop and express their own philosophical views.

Detailed Syllabus

Unit I: Fundamentals of Philosophy

Darśana - concept and aims, Classification of Indian Philosophical schools, Fundamental issues in Indian Philosophy- Epistemology: Pramanas

Unit: II Metaphysics:

Satkaryavada, Asatkaryavada, Parinamavada, Vivartavada, Svabhavavada, Consciousness and matter, theories of self

Ethics: Karma & Punarjanma theory, Liberation

Unit: III Schools of Indian Philosophy

Heterodox Schools - **Cārvāka** - General introduction with emphasis on Challenge to Veda, Rejection of Transcendental Entities, Ethics

Jainism: General Introduction with emphasis on Anekantavāda, Syadvāda, Saptabhanginyaya.

Buddhism- General introduction with emphasis on Four Noble Truths

Unit : IV Orthodox Schools

Samkhya- General Introduction with emphasis on Prakṛti, three Gunas & Puruṣa (Based on Samkhyakārikā)

Yoga – Eight-fold path of Yoga

Nyaya Vaisesika - General Introduction Seven Padrathas (overview only) Mimamsa - Svatah Prāmāṇyavāda

Advaita Vedanta - General Introduction with emphasis on Brahman, Māyā, Jīva and Jagat

Essential/recommended readings

1. 1.मिश्र, पंकज कुमार, तर्कसंग्रह तन्वी व्याख्या, परिमल पब्लिकेशन्स, शक्ति नगर, दिल्ली-7, 2013
2. मिश्र, पंकज कुमार, चार्वाक, शिवालिक प्रकाशन, 27/16, शक्ति नगर, दिल्ली-7, 2019
3. शर्मा, चन्द्रधर, भारतीय दर्शन, मोतीलाल बनारसीदास, जवाहर नगर, दिल्ली
4. Bhartiya, Mahesh Bharatiya Darśana Ki Pramukha Samasyaem, Ghaziabad, 1999.
1. Chatterjee, S. C. & D. M. Datta - Introduction to Indian Calcutta University, Calcutta, 1968 (Hindi Translation also).
2. Hiriyanna, M.- Outline of Indian Philosophy, London, 1956 (also Hindi Translation).
3. Shastri, Kuppuswami, A Primer of Indian Logic, 1951 (only introduction).
4. Bhartiya, Mahesh - Causation in Indian Philosophy, Ghaziabad, 1975.
5. Pandey, Ram Chandra - Panorama of Indian Philosophy (also Hindi version), M.L.B.D., Delhi, 1966.
6. Raja, Kuhnan - Some Fundamental Problems in Indian Philosophy, MLBD, Delhi, 1974.
7. Rishi, Uma Shankar (Ed.), Sarva-Darshana_Samgraha, Chowkhamba Vidyabhawan, Varansi, 1984.

Additional Resources:

1. Hiriyanna, M. - Outline of Indian Philosophy, London, 1956 (also Hindi Translation).
2. Shastri, Kuppuswami, A Primer of Indian Logic, 1951 (only introduction).
3. Bhartiya, Mahesh - Causation in Indian Philosophy, Ghaziabad, 1975.
4. Radhakrishnan, S. Indian Philosophy, Oxford University Press, Delhi, 1990.
5. Pandey, Ram Chandra Panorama of Indian Philosophy (also Hindi version), M.L.B.D.,
6. Raja, Kuhnan - Some Fundamental Problems in Indian Philosophy, MLBD, Delhi, 1974.
7. Chatterjee, S. C.- The Nyaya Theory of Knowledge, Calcutta, 1968.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

GE-8: Indian Epigraphy & Palaeography

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the Course			Eligibility criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Indian Epigraphy & Palaeography	04	3	1	0	Semester II Passed	Nil

Learning Objectives

This course provides the students with the knowledge of the Indian Epigraphy and Palaeography and basics of Indian history of ancient period. Learners interested in acquiring historical facts direct from the original source can be benefitted with this course. It is extremely helpful for those who are willing to involve in archaeological studies.

Learning outcomes

After completion of this course , the students will form a solid undersdtanding of the various Inscriptions , antiquity of writing and other issues related to Indian Epigraphy and Palaeography

Detailed Syllabus

Unit: I

Welfare state: repair of dam, mati-saćiva, karma-saciva in Junagadh Inscription of Rudradāman.

Unit: II

1. Eran Pillar Inscription: Status of Samudragupta
2. Meharauli Iron Pillar Inscription of Candra: Victory, Recognition of Chandra

Unit: III

1. **Antiquity of writing in India**

a) Observations from foreign scholars
b) Literary evidences
c) Observations made by Indian Epigraphists.

2. Importance of the study of Inscriptions.

a) Geographical description
b) Historical evidences

e) Society
d) Religion
e) Literature
f) Economic Conditions
g) Administration

1. Writing material:
a) Rocks b) Pillars c) Metal Plates Brush, Chisel, Stylus, Paint/Colour d) Statues e) Pen

Unit: IV

1. Origin of the Brahmi Script
a) Foreign Origin
b) Indian Origin

2. Development of the script upto 700 A.D.

Essential/recommended readings

1. Buhler, G, On the origin of the Indian alphabet & numerals.
2. Dani, A. H, Indian Paleography
3. Ojha, G. H, Bharatiya Praćina Lipimāla (Hindi)
4. Pandey, R.B, Asoka ke Abhilekha (Hindi), Bharatiya Puralipi (Hindi)
5. Rana, S.S., Bharatiya Abhilekha
6. Sircar, D.C., Indian Epigraphy, Select Inscriptions (Part - I)
7. Upadhyay, V., Praćina Bharatiya Abhilekha (Hindi)
8. Thapar, Romila, Asoka tatha Maurya Samrajya Ka Patana (Hindi)

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

GE 9: Indian Legal System

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Indian Legal System	04	3	1	0	Semester II Passed	Working Knowledge of Sanskrit

Course Objectives

To provide an understanding of law in the Indian knowledge system
To enable students to appreciate the practical and pragmatic aspects of Indian legal thought

Learning Outcomes

Students will acquire a general understanding of various aspects of law
They will understand the tensions between forces of change and status quo
They will appreciate the role of people in the evolution of law
They will learn how a legal system has to be sensitive to peoples' needs

Detailed Syllabus

Unit 1- Concept of law in the Indian knowledge system **09 hrs**

Vyavahara as Law, difference between dharma and vyavahara
Survey of vyavahara literature – smritis, commentaries and nibandhas
Peoples' Practices and the letter of law – Custom as a source of law
Fundamental Principles of Vyavahara

Unit II- Wealth based Disputes **12 hrs**

Labour and Employment
Market Operations
Finance and Banking
Commercial Enterprises
Laws of Inheritance

Unit III- Violence based disputes **12 hrs**

Law of Insolent speech
Law of injury and Death
Crimes against women

Unit IV- Procedure and Evidence **12 hrs**

Types and hierarchy of courts
Legal procedure- Plaint, prima facie assessment, summons, injunctions, Reply, Judgement
Laws of Evidence
Legal Interpretation and Growth of law

Suggested Readings

1. Kane P.V. : History of Dharma Shastra, Bhandarkar Oriental Research Institute, Pune
2. Lingat Robert : Classical Hindu Law,
3. Mathur A.D. : Medieval Hindu Law, Oxford University Press, New Delhi
4. Sarkar Kishori Lal : Mimamsa principles of Interpretation, 1924 (Revised by Matkandey Katju)

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

GE 10: Fundamentals of Buddhist Philosophy

Credit distribution, Eligibility, and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Fundamentals of Buddhist Philosophy	04	3	1	0	Semester II Passed	Working Knowledge of Sanskrit

Learning Objectives

This course provides an introduction to the basic teachings, practices, and history of Buddhism. Students will learn about the key concepts and philosophical ideas in Buddhism, including the Four Noble Truths, the Noble Eightfold Path, and the concept of karma. The course will also cover the history and development of Buddhism in different regions of the world, including South Asia, Southeast Asia, East Asia, and the West.

Learning outcomes

To introduce students to the fundamental teachings and practices of Buddhism
To provide an overview of the historical development of Buddhism in different regions of the world
To develop critical thinking skills by analyzing the philosophical and ethical ideas in Buddhism
To enhance students' ability to articulate their own views on Buddhism

Detailed Syllabus

Unit: I **12 hrs**

Introduction to Buddhism

Basic concepts of Buddhism
The development of Theravada Buddhism
Historical context and cultural background
The role of Buddhism in ancient India

Unit: II **09 hrs**

Life of Buddha

Buddha and his teachings
The Four Noble Truths and the Noble Eight fold Path Buddhism- General Introduction with emphasis on Four Noble Truths Pratityasamutpadvad.

Unit: III **12 hrs**

Buddhist Philosophy

The nature of reality- Shunyavada, Kshanabhangvaad,
Theory of Existence
The concept of karma and rebirth

Unit: IV **12 hrs**

Buddhist Ethics

Five Precepts
Practice of meditation
Role of compassion and wisdom in Buddhist ethics
Role of Buddhism in social justice movements and Environmentalism

Recommended Books/Readings:

1. Bhartiya, Mahesh - Bhāratīya Darśana Kī Pramukha Samasyāem, Ghaziabad, 1999.
2. Bhartiya, Mahesh - Causation in Indian Philosophy, Ghaziabad, 1975.
3. Chatterjee, S. C. & D. M. Datta - Introduction to Indian Philosophy, Calcutta University, Calcutta, 1968 (Hindi Translation also).
4. Hiriyanna, M. - Outline of Indian Philosophy, London, 1956 (also Hindi Translation).
5. O'Flaherty, Wendy Doniger – Karma and Rebirth in Classical Indian Tradition, MLBD, Delhi, 1983.
6. Pandey, Ram Chandra - Panorama of Indian Philosophy (also Hindi version), M.L.B.D., Delhi, 1966.
7. Radhakrishnan, S. - Indian Philosophy, Oxford University Press, Delhi, 1990.
8. Raja, Kuhnan - Some Fundamental Problems in Indian Philosophy, MLBD, Delhi, 1974.
9. Rishi, Uma Shankar (Ed.), Sarva-Darshana_Samgraha, Chowkhamba Vidyabhawan, Varanasi, 1984.
10. Shastri, Kuppuswami, A Primer of Indian Logic, 1951 (only introduction).

Suggested Reading :

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

GE 11: Introduction to Jain Philosophy

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the Course			Eligibility criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Introduction to Jain Philosophy	04	3	1	0	Semester II Passed	Working Knowledge of Sanskrit

Learning Objectives

This course provides an introduction to Jainism, one of the oldest and most influential religious traditions of India. Students will learn about the history, beliefs, practices, and ethical principles of Jainism. The course will also explore Jain contributions to Indian culture, philosophy, and literature. By the end of the course, students will have a basic understanding of Jainism and its significance in Indian society and beyond.

Learning outcomes

To familiarize students with the history and basic principles of Jainism
To explore the role of Jainism in Indian society and culture
To examine the ethical principles and practices of Jainism
To introduce students to Jain literature and philosophy
To encourage critical thinking and reflection on Jainism and its relevance to contemporary issues.

Detailed Syllabus

Unit I
Introduction to Jainism **12 hrs**

Historical background of Jainism
Basic concepts of Jainism: karma, dharma, ahimsa,
Introduction to Jain scriptures: Agamas and commentaries
Major Texts and Philosophers of Jain Philosophy

Unit II **12 hrs**
Jain Philosophy

Jaina Ontology- Dravya, Guna, Paryaya, Concept of seven Dravyas, Astikaaya and Anastikaay
Jain philosophy: the three principles (Anekantavada, Syadvada, and Nayavada)
Contributions of Jainism to Indian philosophy
Jain beliefs about the nature of the soul and the universe

Unit III **12 hrs**

Jain Ethics

Jain practices: meditation, fasting, rituals, etc.
Principle of ahimsa (non-violence) and its implications
Jain ethics and environment

Unit IV **09 hrs**

Jainism and Contemporary Society

Role of Jainism in Indian society and culture
Jainism in the modern world

Essential/recommended readings

1. Bhartiya, Mahesh - Bhāratīya Darśana Kī Pramukha Samasyāem, Ghaziabad, 1999.
2. Bhartiya, Mahesh - Causation in Indian Philosophy, Ghaziabad, 1975.
3. Chatterjee, S. C. & D. M. Datta - Introduction to Indian Philosophy, Calcutta University, Calcutta, 1968 (Hindi Translation also).
4. Hiriyanna, M. - Outline of Indian Philosophy, London, 1956 (also Hindi Translation).
5. O'Flaherty, Wendy Doniger – Karma and Rebirth in Classical Indian Tradition, MLBD, Delhi, 1983.
6. Pandey, Ram Chandra - Panorama of Indian Philosophy (also Hindi version), M.L.B.D., Delhi, 1966.
7. Radhakrishnan, S. - Indian Philosophy, Oxford University Press, Delhi, 1990.
8. Raja, Kuhnan - Some Fundamental Problems in Indian Philosophy, MLBD, Delhi, 1974.
9. Rishi, Uma Shankar (Ed.), Sarva-Darshana_Samgraha, Chowkhamba Vidyabhawan, Varanasi, 1984.
10. Shastri, Kuppuswami, A Primer of Indian Logic, 1951 (only introduction).

Additional Resources:

1. Jainism: An Introduction by Jeffery D. Long
2. The Jain Path: Ancient Wisdom for the West by Aidan Rankin

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

GE-12 Ancient Indian Polity

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the Course			Eligibility criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Ancient Indian Polity	04	3	1	0	Semester II Passed	Working Knowledge of Sanskrit

Learning Objectives

Fundamental Concepts of Indian Political thought have been discussed in Dharma-śāstra literature as the scientific branches of knowledge in ancient India. The aim of this course is to make the students acquainted with various aspects of Indian Political Thought and institutions of Polity as propounded in the ancient Sanskrit texts such as Vedic Samhitas, Mahābhārata, Purāṇas, Kauṭilya's Arthaśāstra and other works known as Nītiśāstra.

Learning outcomes

This course will enable the students to appreciate the fundamental concepts of Indian political thoughts discussed in ancient Sanskrit texts such as Vedic Samhitas, Mahābhārata, Purāṇas, Arthaśāstra, and other works known as Nītiśāstra. It is supposed to create an awareness of the various aspects of Indian political thoughts and institutions of polity and at the same time make the people politically conscious from time to time.

Detailed Syllabus

Unit I **09 hrs**

Basic Features of Ancient Indian Political Thought:

Name, Scope, and Sources of Ancient Indian Political Thought:

Various Names of Indian Polity: 'Daṇḍanīti', Arthshastra, 'Dharmaśāstra', Rajshastra 'Nītiśāstra'.

Sources of Ancient Indian Political Thought: Vedic Literature, Purāṇa, Rāmāyaṇa, Mahābhārata, Dharmaśāstra, Nītiśāstra Kautilya's Arthaśāstra and Rajaśāsana (Inscriptions).

Prominent Indian Political Thinkers: Manu, Śukrācārya, Kauṭilya, Kāmandaka, Somadeva Suri.

Unit: II **12 hrs**

Ancient Indian Political Thought: Origin and Development:

Indian Political Thought from Vedic Period to Buddhist Period: Election of King by the People' Visas 'in Vedic period: (Ṛgveda,10.173;10.174, Atharvaveda, 3.4.2; 6.87.1-2), Parliamentary Institutions: 'Sabhā, 'Samiti' and 'Vidatha'

Ṛgveda, 10.85.26),
Democratic practices in the Buddhist Period (Diggnikāya, Mahāparinibbāṇa Sūtta, Anguttaranikāya, 1.213; 4.252, 256)

Unit: III **12 hrs**

Nature, Types and Theories of the State:

Nature of the State in Arthaśāstra (6.1) and Manusmṛti (9.294) with Special Reference to Saptāṅga-Theory (Brief description)

Types of State: Rājya, Svarājya, Bhojya, Vairājya, Mahārājya, Sāmarājya (Aitreya Brāhmaṇa, 8.3.13-14; 8.4.15-16).

Kauṭilya's concept of the Welfare State (Arthaśāstra, 1.13); Essential Qualities of King (Arthaśāstra, 6.1.16-18); Duties of King and State 'Rajadharma' (Mahābhārata, Śāntiparva, 120.1-15; Manusmṛti, 7.1-15; Śukranīti,1.1-15) Constituent Elements of Jain political thought (Somadeva's Nītivākyāmṛta, 9.1.18 and, 19.1.10)

Unit IV **12 hrs**

Cardinal Theories and Ancient Indian Political Thinkers

Cardinal Theories of Indian Political Science:
'Saptāṅga' Theory of State: Svāmī, Amātya, Janapada, Pura, Kośa, Daṇḍa and Mitra (Arthaśāstra-6.1, Mahābhārata-Śantiparva-56.5, Śukranīti, 1.61-62).
'Maṇḍala 'Theory of Inter-State Relations:
'Sadguṇya' Policy of War and Peace Diplomacy:
'Caturvidha Upāya' for balancing the power of State: Śāma, Dāma, Daṇḍa, Bheda.
Three types of State power 'Śakti': Prabhu Śakti, Mantra Śakti, and Utsāha Śakti.

[A] *References:*

Compulsory Reading:

1. R.P Kangale (ed.) Arthashastra of Kautilya, Motilal Banarasidas, Delhi, 1965.
2. R.T.H. Griffith (Trans.), Atharvaveda Samhita, 1896-97, rept. (2 Vols) 1968.
3. H.P. Shastri, Mahabharata (7 Vols), London, 1952-59.
4. P. Olivelle (ed. & trans.), Manu's Code of Law: A Critical Edition and Translation of the Manava- Dharamashastra, OUP, New Delhi, 2006.
5. H.P. Shastri (trans.), Ramayana of Valmiki (3 Vols), London, 1952-59.
6. H.H. Wilson (trans.), Ṛgveda samhitā (6 Vols), Bangalore Printing & Publishing Co., Bangalore, 1946.
7. A.S. Altekar, State and Government in Ancient India, Motilal Banarsidas, Delhi,

2001.
8. S.K. Belvalkar, Mahabharata: Santi Parvam, 1954.
9. D.R. Bhandarkar, Some Aspects of Ancient Indian Hindu Polity, Banaras Hindu University.
10. J.R. Gharpure, Teaching of Dharmashastra, Lucknow University, 1956.
11. U.N. Ghosal, A History of Indian Political Ideas, Bombay, 1959.
12. K.P. Jayaswal, Hindu Polity, Bangalore, 1967.
13. N. S Law, Aspect of Ancient Indian Polity, Calcutta, 1960.
14. S.R. Maheshwari, Local Government in India, Orient Longman, New Delhi,

Additional Resources:

1. Beni Prasad, Theory of Government in Ancient India, Allahabad, 1968.
2. B.A. Saletore, Ancient Indian Political Thought, and Institutions, Bombay, 1963.
3. R. S. Sharma, Aspects of Political Ideas and Institutions in Ancient India, Delhi, 1996.
4. K.N. Sinha, Sovereignty in Ancient Indian Polity, London,1938.
5. V.P. Verma, Studies in Hindu Political Thought and its Metaphysical Foundations, Delhi, 1954.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

GE 13: Introduction to Smṛti Literature

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the Course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Introduction to Smṛti Literature	04	3	1	0	Semester II Passed	Working Knowledge of Sanskrit

Learning Objectives

The aim of this course is to make the students acquainted with salient ancient Indian social features and aspects propounded in various Smṛti texts. Smṛti literature is a corpus of ancient Indian society. One can find the root of Indian social, and administrative issues and ancient Indian jurisprudence in Smṛti literature. This course provides an opportunity to study and understand ancient Indian Institutions through the original text of Smṛtis.

Learning outcomes

After the completion of this course, students will be able to connect the theoretical model propounded by the Smṛti texts in the forms of the Varnaashram system, Education, marriage, and the Rights of women. The learners will be able to see Dharma as a dynamic institution. This will free them from the traces of fundamentalism and they should become more open-minded and liberal. Learning and developing a critical approach to the institution of caste and women's issues will make the participants sensitive to discriminating practices. Students will be able to understand the importance of Smṛti literature and they will become unbiased towards the myths regarding various Smṛtis.

Detailed Syllabus

Unit I **09 hrs**

Smṛti Literature

Brief Introduction of Smṛti
Concept of Smṛti
Relation between Smṛti and Dharmshastra.
Some Prominent Smṛti and Author- Manu, Yajnyvalkya, Shukracharya, Somdeva, Medhatithi, Vigyaneshwara

Unit II **12 hrs**

Social Institutions

Dharma: Meaning of Dharma, sources of dharma (Manu.2.1, 6, 10, 12) Yaj. 1.7 Ten fold of Dharma & it's versions Manu. 6.91-94

Varna and Ashram System: An organized society,
Concept, Composition, purpose and Relevance of Varnashram (Manu. 1.87, 10.4, 1.88, 1.89, 9.326, 1.90, 1.91, Manu.10.65, 9.335, 4.245, 2.103,2.168)

Ashram System: Bringing balance in human life
Ashram dharma (Mitakshra Teeka on Yaj. 1.1), Different Ashramas depicted in Smṛti-Literature. Marriage (Manu. 3.4), Panch-Mahayagya 3.69-76, 82, Importance of Grihastha ashram 3.77-81, 6.82-90, Social Responsibility of Grihastha.

Unit: III **12 hrs**

Social Institutions

Education: Attaining knowledge: Beginning of education; Manu 2, Yaj. 1.10-115, Gurukul; Manu chap 2 and 3 Yaj 1.10-115, rules regarding dressing, eating, rising up, sleeping, behaving etc.
Marriage: Marriage as a social institution for the regulation of the relation between man & woman; forms of marriage; manu 3.27-37, Yaj. 1.58, a woman has right to select a suitable husband for herself; manu 9.90-91,Yaj. 1.89 Qualifications of bride and bridegroom; manu 3.2-11 Yaj- 1.35, 52-55 Narada 12.8-11, Dissolution of marriage; Manu 9.72-74 Yaj. 1.76 Narada 12.16-19

Unit IV **12 hrs**

Women and society

Respect of Women: Manu 3.55-58, 62, 9.26, Yaj- 1.82, Women Safety Manu 9.3, 9.5-7, Yaj. 1.76,85, Women are not responsible for wicket progeny Manu 9.9,33,36,40, No selling of girl child Manu 3.51,53,54, 9.8,100, Yaj. 1.64
Property rights of women: Right of ownership of property; Manu 9.192-195, 9.217 Yaj. 1.76 Narada 4.14, Protection of her property; Manu 8.28-29, 8.350, Right of Inheritance; Manu 9.118, 130, 131 Narada 4.13 Yaj. 2.115 Never take property of a woman: Manu. 3.52, 9.200, Things can't be counted under women's property Manu. 9.92,199
Women's Empowerment; Manu 9.11 , Right of Education; Manu 5.150, Right of testimony; Manu 8.68, Narada 4.155, Responsibility of Women: Yaj. 1.83,87

References:

Compulsory Readings:

1. नारदस्मृतिः,लेखक- ब्रजकिशोर स्वांई चौखम्बा संस्कृत संस्थान वाराणसी वि- सं- 2065
2. मनुस्मृतिः श्री कुल्लुकभट्ट टीका सहित व्याख्याकार हरगोविन्दशास्त्री चौखम्बा संस्कृत संस्थान

वाराणसी 1992
3. याज्ञवल्क्यस्मृतिः उमेशचन्द्रपाण्डेय
4. स्मृतिचन्द्रिका श्रीयाज्ञिकदेवणभट्टप्रणीत नागप्रकाशन 1988
5. काणे पी-वी- धर्मशास्त्र का इतिहास (हिन्दी अनुवादक-अर्जुन चौबे) हिन्दी समिति प्रभाग लखनऊ

Additional Resources:

1. काणे पी-वी- धर्मशास्त्र का इतिहास (हिन्दी अनुवादक-अर्जुन चौबे) हिन्दी समिति प्रभाग लखनऊ
2. जोशी- लक्ष्मण शास्त्री धर्मकोष प्रजनपथशाला मण्डल बई सतरा वि- सं 1994
3. ठाकुर- लक्ष्मीदत्त प्रमुख स्मृतियों का अध्ययन प्रथम संस्करण 1965 हिन्दी समिति सूचना विभाग लखनऊ
4. स्मृतिसंदर्भ, संशोधित संस्करण 1988 प्रकाशन नाग प्रकाशन
5. भारतीय संस्कृति, डॉ. किरण टण्डन, ईस्टर्न बुक लिंकर्स
6. भारतीय संस्कृति, डॉ. प्रीति प्रभा गोयल, राजस्थानी ग्रंथागार जोधपुर

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

GE-14: Philosophy of Yoga

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the Course			Eligibility criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Philosophy of Yoga	04	3	1	0	Semester II Passed	Working Knowledge of Sanskrit

Learning Objectives

This course approaches Patanjali's Aphorisms on Yoga as philosophical psychology. The course aims to make students aware of the importance of balance in life and to make them aware of the theoretical and practical aspects of Balanced Living inherent in Sanskrit texts and apply them to live a better life. Graduates who read this course should be able to see that in order to bring balance in life, a proper understanding of one's life situation is necessary. For this understanding, Shravana, Manana, and Nididhyasana are important tools.

Learning outcomes

Graduates must know the true essence of listening (acquisition of information) manana (reflection) and nididhyasana (unflinching commitment). In this segment, students can learn how to improve concentration. They will be able to identify the causes of indecisiveness and confusion and will learn how emotional stability can lead to clearer thinking. This section should help students to understand the importance of Ashtang yoga and Kriyayoga for the purification mind. Teamwork and social cohesion require interpersonal skills. One needs to know that one's behavior can create conflicts. Students should learn how active engagement with action is most conducive to healthy and successful living. By reading this segment, learners should develop a more balanced approach to life.

Detailed Syllabus

Unit I **12 hrs**

Introduction and History of Yoga Philosophy
Psychology of Yoga
Method of Self-presentation: Hearing (śravaṇa), Reflection (manana) & meditation (nididhyāsana) - (Bṛhadāraṇyakopaniṣad, 2.4.5) and Vedantasara

Unit II **12 hrs**

Concept of Yoga: (Yogasūtra 1.2)
Restriction of fluctuations by practice (abhyāsa) and passionlessness (vairāgya): (Yogasūtra)
Concentration:

Unit III **12 hrs**

Eight Folds of Yoga (aṣṭāṅgayoga)
Yoga of action (kriyāyoga)
Four distinct means of mental purity (cittaprasādana) leading to oneness

Unit IV **09 hrs**

Pancha Kosha: Theory of Personality (5 Insights of great Indian psychology)
Sri Aurovindo's Integral Yoga.

Essential/recommended readings

1. Indian Philosophy
2. उपनिषद् रहस्य
3. एकादश उपनिषद्,
4. *Yoga Sutras of Patanjali*

Additional Resources:

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

GE-15: Unveiling the Richness of the Indian Knowledge System

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the Course			Eligibility criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Unveiling the Richness of the Indian Knowledge System	04	3	1	0	Twelveth Passed	Working Knowledge of Sanskrit

Learning Objectives

This Course aims to shed light on the vast tapestry of the Indian knowledge system, highlighting its historical development, key dimensions, methods of knowledge acquisition, contributions, and its relevance in the modern era. By understanding and appreciating this ancient wisdom, we can foster cross-cultural dialogue, promote interdisciplinary research, and pave the way for a harmonious future that blends the best of traditional wisdom with contemporary knowledge and innovation.

Learning outcomes

The Indian knowledge system is a treasure trove of wisdom that has been nurtured and evolved over several millennia. Rooted in ancient scriptures, philosophical treatises, scientific discoveries, and artistic expressions, this knowledge system encompasses diverse fields such as philosophy, spirituality, mathematics, astronomy, medicine, literature, and more.

After completion of this course, students will be able to explore the intricacies and significance of the Indian knowledge system, its historical development, and its relevance in the modern world.

Detailed Syllabus

Unit: I **10Hrs.**

Introduction

1.1 Background and significance

1.2 Objective of the paper

Unit: II **10Hrs.**

Historical Development of the Indian Knowledge System

2.1 Vedic Period: The Foundation of Indian Thought

2.2 Upanishadic Era: Quest for Ultimate Reality

2.3 Classical Age: Synthesis of Philosophy, Science, and Arts

Unit: III **15Hrs.**

Key Dimensions of the Indian Knowledge System

3.1 Philosophy and Spirituality

3.2 Mathematics and Astronomy

3.3 Medicine and Ayurveda

3.4 Linguistics and Grammar

3.5 Arts and Literature

Unit: IV **10Hrs.**

Epistemology and Methods of Knowledge Acquisition

4.1 Shruti and Smriti: Oral and Textual Traditions

4.2 Guru-Shishya Parampara: Teacher-Student Tradition

4.3 Yoga and Meditation: Self-Realization and Higher States of Consciousness

4.4 Observation and Empirical Analysis

Essential/recommended readings

1. The Vedas
2. The Yoga Sutras of Patanjali
3. The Arthashastra by Chanakya
4. The Bhagavad Git
5. The Ramayana
6. The Mahabharata
7. The Science of Yoga by I.K. Taimni
8. Indian Architecture: Buddhist and Hindu Periods by Percy Brown
9. Indian Music: A Brief Introduction by Guy L. Beck

Reference readings

1. "India: A Sacred Geography" by Diana L. Eck -
2. "The Lost River: On the Trail of the Sarasvati" by Michel Danino
3. "Indian Philosophy: A Very Short Introduction" by Sue Hamilton.
4. "The Upanishads" translated by Swami Prabhavananda and Frederick Manchester
5. "The Cultural Heritage of India" edited by Kapila Vatsyayan

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

GE-16: Contributions of the Indian Knowledge System

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the Course			Eligibility criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Contributions of the Indian Knowledge System	04	3	1	0	Twelfth Passed	Working Knowledge of Sanskrit

Learning Objectives

This Course aims to Gain an understanding of the historical development of the Indian knowledge system, including its foundation in the Vedic period, evolution during the Upanishadic era, synthesis in the classical age.

It will explore the key dimensions of the Indian knowledge system, including philosophy and spirituality, mathematics and astronomy, medicine and Ayurveda, linguistics and grammar, arts and literature, and social sciences and governance.

It will recognize the relevance of the Indian knowledge system in the modern world, including its spiritual and philosophical significance, scientific and technological applications, integration with modern education, and the potential for global exchange and cross-cultural learning.

Learning outcomes

After completion of this course, students will be able to-

- Develop a deeper awareness and appreciation for the rich and diverse knowledge system that has evolved in India over thousands of years. They will gain insights into the historical development, key dimensions, and contributions of the Indian knowledge system, leading to a greater understanding of its cultural and intellectual significance.
- Promote cross-cultural dialogue by showcasing the Indian knowledge system to a wider audience. It highlights the potential for exchanging ideas, perspectives, and insights between different cultures and knowledge systems. This can foster mutual understanding and collaboration, promoting global learning and innovation.
- Recognize the value of integrating traditional wisdom with contemporary knowledge and practices. This can inspire the development of new interdisciplinary approaches and solutions to complex problems.
- Become more aware of the importance of safeguarding traditional knowledge. This may lead to initiatives aimed at preserving and reviving traditional practices and teachings, ensuring their continuity for future generations.
- Gain insights into the need for responsible adaptation, taking into account cultural sensitivity, intellectual property rights, and the preservation of indigenous knowledge systems.

The comprehensive overview of the Indian knowledge system provided in the paper can serve as a foundation for further research and study. It can inspire scholars, researchers, and students to delve deeper into specific areas of interest within the Indian knowledge system and contribute to the ongoing exploration and understanding of this vast body of wisdom.

Detailed Syllabus

Unit: I **15Hrs.**

Contributions of the Indian Knowledge System

1.1 Metaphysical and Philosophical Insights
1.2 Advancements in Mathematics and Astronomy
1.3 Holistic Approach to Medicine and Well-being
1.4 Linguistic Analysis and Grammar Structures
1.5 Artistic Expressions and Literary Masterpieces

Unit: II **15Hrs.**

Relevance of the Indian Knowledge System Today

2.1 Spiritual and Philosophical Relevance
2.2 Scientific and Technological Applications
2.3 Integrating Traditional Wisdom
2.4 Global Exchange and Cross-Cultural Learning

Unit: III **15Hrs.**

Challenges and Future Directions

3.1 Preservation and Documentation
3.2 Reviving Traditional Knowledge in Contemporary Contexts
3.3 Ethical Considerations and Responsible Adaptation
3.4 Embracing the Past to Shape a Harmonious Future

Essential/recommended readings

10. "The Vedas"
11. "The Yoga Sutras of Patanjali"
12. "The Arthashastra" by Chanakya
13. "The Bhagavad Gita"
14. "The Ramayana" by Valmiki
15. "The Mahabharata"
16. "The Science of Yoga" by I.K. Taimni
17. "Indian Architecture: Buddhist and Hindu Periods" by Percy Brown
18. "Indian Music: A Brief Introduction" by Guy L. Beck

These reference books and essential readings will serve as valuable resources for unveiling the richness of the Indian knowledge system, covering various aspects of philosophy, literature, spirituality, arts, and sciences. They offer insights into the profound wisdom and multidimensional heritage of India

Reference readings

1. "India: A Sacred Geography" by Diana L. Eck -
2. "The Lost River: On the Trail of the Sarasvati" by Michel Danino
3. "Indian Philosophy: A Very Short Introduction" by Sue Hamilton.
4. "The Upanishads" translated by Swami Prabhavananda and Frederick Manchester
5. "The Cultural Heritage of India" edited by Kapila Vatsyayan

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

GE-17: Ancient Indian Medicinal Science: Unveiling the Secrets of Ayurveda

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the Course			Eligibility criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Ancient Indian Medicinal Science: Unveiling the Secrets of Ayurveda	**04**	**3**	**1**	**0**	**Twelfth Passed**	**Working Knowledge of Sanskrit**

Learning Objectives

This course offers a comprehensive study of ancient Indian Medicinal Science, focusing on Ayurveda, the traditional system of medicine. Students will explore the foundational principles, concepts, and practices of Ayurveda as documented in ancient texts, such as Charaka Samhita and Sushruta Samhita. Through a combination of lectures, discussions, and practical sessions, students will gain a deep understanding of Ayurvedic principles, diagnosis techniques, treatment modalities, herbal medicine, dietary guidelines, and lifestyle recommendations. The course will also delve into the historical development, philosophical underpinnings, and contemporary relevance of Ayurveda.

Learning outcomes

By the end of the course, students will be able to:

Understand the historical development and cultural context of ancient Indian medicinal science, with a particular focus on Ayurveda.

Identify and explain the fundamental principles and concepts of Ayurveda, such as the five elements (Pancha Mahabhutas), three doshas (Vata, Pitta, Kapha), and the concept of Prakriti (individual constitution).

Analyze the Ayurvedic approach to health and disease, including the concepts of Samprapti (pathogenesis), Tridosha theory, and the role of Agni (digestive fire) and Ama (toxicity).

Apply diagnostic techniques in Ayurveda, including Nadi Pariksha (pulse diagnosis), Jihva Pariksha (tongue examination), and examination of the body constitution.

Evaluate the role of Ayurveda in promoting holistic well-being, preventive healthcare, and the management of specific diseases.

Analyze the philosophical underpinnings of Ayurveda, including the concepts of Prana (life force), Dharma (ethical living), and the interconnectedness of mind, body, and spirit.

Critically assess the contemporary relevance and challenges faced by Ayurveda, including integration with modern healthcare systems, evidence-based research, and ethical considerations. Engage in scholarly discussions and presentations on various aspects of ancient Indian medicinal shastra and Ayurveda.

Detailed Syllabus

Unit: I **10Hrs.**

Introduction

1.1 Historical development and cultural context

1.2 Overview of Ayurveda and its branches

Unit: II 10**Hrs.**

Ayurvedic Philosophy and Principles

Five elements (Pancha Mahabhutas)

Three doshas (Vata, Pitta, Kapha)

Concept of Prakriti (individual constitution)

Unit: III **15Hrs.**

Ayurvedic Diagnosis Techniques

Nadi Pariksha (pulse diagnosis)

Jihva Pariksha (tongue examination)

Examination of body constitution

Samprapti (pathogenesis)

Role of Agni (digestive fire) and Ama (toxicity)

Unit: III **10Hrs.**

Ayurvedic Treatment Modalities

Diet and nutrition in Ayurveda

Lifestyle recommendations

Yoga and meditation practices

Essential/recommended readings

Reference readings

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

GE-18: Basics of Hindu Studies

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the Course			Eligibility criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Hindu Studies	04	3	1	0	Twelfth Passed	Working Knowledge of Sanskrit

Learning Objectives

Hindu Studies is an interdisciplinary course that explores the rich traditions, beliefs, practices, and philosophies of Hinduism. This course provides a comprehensive understanding of Hinduism, one of the world's oldest and complex religions. Students will delve into the historical, cultural, philosophical, and social aspects of Hinduism, examining its scriptures, rituals, deities, festivals, and ethical teachings. Through a combination of lectures, readings, discussions, and experiential learning, students will gain a deep appreciation for the diverse facets of Hinduism and its relevance in the modern world.

Learning outcomes

After completion of this course, students will be able to

- Develop a comprehensive understanding of the origins, historical development, and diversity within Hinduism.
- Examine the major philosophical schools and concepts within Hinduism, such as Vedanta, Yoga, and Bhakti.
- Explore the scriptures, including the Vedas, Upanishads, Bhagavad Gita, and Puranas, and their significance in Hinduism.
- Investigate the practices, rituals, and symbolism associated with Hindu worship and daily life.
- Analyze the social, cultural, and ethical dimensions of Hinduism and their impact on individuals and communities.
- Foster critical thinking, research skills, and the ability to engage in respectful dialogue about Hinduism.

Detailed Syllabus

Unit: I **10Hrs.**

Introduction to Hinduism

Introduction to key terms and concepts in Hinduism
Historical background and cultural context of Hinduism

Sacred Scriptures of Hinduism

Vedas and their significance in Hinduism
Introduction to the Upanishads and their philosophical teachings,
Examination of the Bhagavad Gita and its role in Hindu thought.

Unit: II **10Hrs.**

Hindu Philosophical Systems

Overview of the major philosophical schools in Hinduism
Analysis of key concepts, including Atman, Brahman, Karma and Moksha

Hindu Deities and Mythology

Exploration of the major deities in Hinduism, including Brahma, Vishnu, Shiva, Devi, and their manifestations

Unit: III **15Hrs.**

Hindu Rituals and Worship

Study of Hindu rituals and their role in religious and social life
Examination of major Hindu festivals and their significance
Exploration of sacred spaces, temples, and pilgrimage in Hinduism

Ethics and Morality in Hinduism

Analysis of Hindu ethical principles- dharma and karma
Discussion on the concept of moral responsibility and the pursuit of righteousness in Hinduism.

Unit: IV **10Hrs.**

Contemporary Issues and Hinduism

Exploration of the challenges and adaptations of Hinduism in the modern world
Analysis of Hindu nationalism, secularism, and religious pluralism
Reflection on the relevance of Hindu teachings and practices in addressing global challenges

Essential/recommended readings

1. The Hindus: An Alternative History" by Wendy Doniger
2. Hinduism: A Very Short Introduction" by Kim Knott
3. Introduction to Hinduism" by Gavin D. Flood
4. The Bhagavad Gita" translated by Eknath Easwaran
5. The Upanishads" translated by Swami Prabhavananda and Frederick Manchester
6. Indian Philosophy: An Introduction to Hindu and Buddhist Thought" by Richard King
7. The Cambridge Companion to Hinduism edited by Gavin D. Flood
8. Hinduism: A Sourcebook edited by Wendy Doniger
9. The Hindu World: An Encyclopedic Survey of Hinduism edited by Sushil Mittal and Gene Thursby
10. Hinduism: Beliefs and Practices by Jeanine Miller

Reference readings

1. The Rig Veda.
2. The Upanishads
3. The Bhagavad Gita
4. Hinduism: A Very Short Introduction by Kim Knott
5. The Hindus: An Alternative History by Wendy Doniger
6. Indian Philosophy: An Introduction to Hindu and Buddhist Thought" by Richard King
7. The Concept of the Goddess" by David Kinsley
8. The Illustrated Encyclopedia of Hinduism" edited by James G. Lochtefeld
9. A Sourcebook in Indian Philosophy" edited by Sarvepalli Radhakrishnan and Charles A. Moore
10. Hindu Gods and Goddesses" by Swami Harshananda

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

B.A. (HONS.) PSYCHOLOGY

SEMESTER – V

Category I

B.A. (Hons.) Psychology Courses for Undergraduate Programme of study with Psychology as a Single Core Discipline

(B.A. Honours in Psychology – 3 years)

DISCIPLINE SPECIFIC CORE COURSE DSC-10 UNDERSTANDING MENTAL AND BEHAVIOURAL DISORDERS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-10 UNDERSTANDING MENTAL DISORDERS	**4**	**3**	**0**	**1**	**Class 12th Pass**	**Basic knowledge of Introductory psychology**

Learning Objectives

- To introduce the field of abnormal/clinical psychology.
- To provide an overview of the clinical picture and etiology of the various psychological disorders.
- To orient the learners to the diagnostic criteria and the related vocabulary of major psychological disorders.

Learning Outcomes

After doing this course the student will be able to:

- Distinguish between normal and abnormal behavior and learn the criteria of determining abnormality.
- Categorize and diagnose disorders according to the current diagnostic systems (current editions of the Diagnostic and Statistical Manual of Mental Disorders and International Classification of Diseases- Mental Disorders section).
- Discriminate between the various anxiety disorders and different mood disorders.

SYLLABUS OF DSC-10

UNIT – I **(18 hours)**

Introduction: Criteria of Abnormality, Causal Factors, Classification, Clinical Assessment

UNIT – II **(18 hours)**

Anxiety Disorders and Obsessive-Compulsive Disorder (Clinical Picture and Dynamics): Generalized Anxiety Disorder, Social anxiety disorder, Specific phobias, Agoraphobia; Obsessive-Compulsive Disorder

UNIT – III **(9 hours)**

Depressive Disorder & Bipolar Disorders (Clinical Picture and Dynamics): Major Depressive disorder, Persistent Depressive disorder, Bipolar I, Bipolar II and Cyclothymia

Practical Component **(30 hours)**

Suggestive Practicals:

- Mental Status Examination (MSE).
- Assessment of mental disorders using a psychometric test.
- Assessment of IQ/ADHD using a psychometric test.
- Case study writing to examine/understand clinical picture, dynamics, diagnosis and differential diagnosis.
- Correlational study of demographic variables and a mental disorder.
- Analysis of mental illness related visual media/text to understand mental disorders.

Tutorial Component: Nil

Essential/Recommended Readings

American Psychological Association (2022). *Diagnostic and statistical manual of mental disorders* (5th ed., text rev.). https://doi.org/10.1176/appi.books.9780890425787

Bansal, P. (2019). *Psychology: Debates and controversies*. New Delhi: Sage.

Barlow H. & Durand V. Mark (2014). *Abnormal psychology*: *An integrative approach.* Delhi: Cengage Learning India.

Carson, R.C., Butcher, J.N., Mineka, S. & Hooley, J.M. (2017). *Abnormal psychology.* (17thed.). New Delhi: Pearson.

Comer, R.J. and Comer, J.S. (2021). *Abnormal psychology* (11th Ed.). New York, Macmillan International.

Kring, A.M., Johnson, S.L., Davison, G.C. & Neale, J.M. (2014). *Abnormal psychology* (12th ed.). New Jersey: John Wiley & Sons.

Suggestive Readings

Kearney, C. A. & Trull, T. J. (2012). *Abnormal psychology and life: A dimensional approach*. New Delhi: Cengage Learning.

Singh, A.K. (2016). *Modern abnormal psychology* (Hindi), Motilal Banarsidass Pvt .Ltd.

Watters, E. (2010). *Crazy like us: The globalization of the American psyche*. Simon and Schuster.

Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE DSC 11 POSITIVE PSYCHOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 11 POSITIVE PSYCHOLOGY	**4**	**3**	**0**	**1**	**Class 12TH Pass**	**Basic knowledge of Introductory psychology**

Learning Objectives

- To understand the core concepts of positive psychology pertaining to Eastern and Western perspectives.
- To develop an understanding of positive states and processes.
- To equip the students with strategies to enhance their happiness and well-being

Learning Outcomes

After doing this course the student will be able:

- To understand and appreciatiate the meaning and conceptual approaches to positive psychology.
- Understand the importance of positive states and processes
- Learn various strategies to enhance happiness and well-being.

SYLLABUS OF DSC-11

UNIT 1 **(12 hours)**

Introduction: Positive Psychology: An Introduction, Perspectives on Positive Psychology: Judeo-Christian, Athenian, Hinduism, Buddhism, Jainism and Islam, Character Strengths and Virtues- Values In Action (VIA) Classification System.

UNIT 2 **(12 hours)**

Positive States and Processes I: Happiness and Well-being, Indian concepts of happiness and well-being (Sukha, Ananda, Panchakosas), Resilience

UNIT 3 **(12 hours)**

Positive States and Processes II: Optimism, Wisdom, Flow, Spirituality

UNIT 4 **(9 hours)**

Positive Psychological Interventions: Positive thinking, Meditation, Gratitude, Kindness

Practical Component **(30 hours)**

Suggestive Practicals

- Identifying and enhancing one's character strengths
- Enhancing happiness/ well-being through an intervention based on positive thinking/meditation/gratitude/kindness
- Cross-sectional comparisons on Optimism/Wisdom/Flow/Mindfulness OR Intervention based on Optimism/Wisdom/Flow/Mindfulness
- Analysis of data from secondary sources- movies, books, news articles/ editorials or any other media sources

Tutorial Component : Nil

Essential/Recommended Readings

Baumgardner, S.R., & Crothers, M.K. (2010). *Positive psychology.* Upper Saddle River, New Jersey.: Prentice Hall.

Carr, A. (2004). Positive Psychology: *The science of happiness and human strength.* London, UK: Routledge.

Davis, E. B., Worthington, E. L., Jr, & Schnitker, S. A. (2022). *Handbook of positive psychology, religion, and spirituality.* Springer Nature.

Gotise, P., & Upadhyay, B. K. (2018). Happiness from ancient Indian perspective: Hitopadeśa. *Journal of Happiness Studies, 19*(3), 863-879.

Jeste, D. V., & Vahia, I. V. (2008). Comparison of the conceptualization of wisdom in ancient Indian literature with modern views: Focus on the Bhagavad Gita. *Psychiatry: Interpersonal and Biological Processes, 71*(3), 197-209.

Parks, A. C., & Titova, L. (2016). Positive psychological interventions: An overview. In A. M. Wood & J. Johnson (eds.), *The Wiley handbook of positive clinical psychology* (pp. 307–320). Wiley Blackwell.

Snyder, C.R., & Lopez, S.J. (2007). *Positive psychology: The scientific and practical exploration of human strengths.* Thousand Oaks, CA: Sage.

Suggested Readings

Gable, S. L., & Haidt, J. (2005). What (and why) is positive psychology? *Review of General Psychology, 9,* 103-110.

Peterson, C. (2006). *A primer in positive psychology.* New York: Oxford University Press.

Seligman, M.E.P. (2002). *Authentic happiness: Using the new positive psychology to realise your potential for lasting fulfilment.* New York: Free Press/Simon and Schuster.

Singh, K., Bandyopadhyay, S., & Saxena, G. (2022). An exploratory study on subjective perceptions of happiness from India. *Frontiers in Psychology, 13,* 111.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC CORE COURSE DSC-12 INFERENTIAL STATISTICS IN PSYCHOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PREREQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC - 12 INFERENTIAL STATISTICS IN PSYCHOLOGY	4	3	0	1	Class 12th Pass	Knowledge of Descriptive Statistics

Learning Objectives

- The advanced statistics course will assist students in grasping the techniques of inferential statistics necessary for carrying out research.
- They should be able to analyze and interpret statistical data obtained in research.

Learning Outcomes

After doing this course the student will be able:

- To understand advanced statistical techniques.
- To understand the statistical methods used in Statistical Inferences with a concept-focused approach.

SYLLABUS OF DSC-12

UNIT – I **(15 hours)**

Introduction to Inferential Statistics: Parametric and Non-Parametric Statistics, Testing hypothesis about single means (*z* and *t*): Random sampling distribution of means, Null and alternate Hypotheses; One-tailed (directional) and Two-tailed (non-directional) hypothesis; Characteristics of Student's distribution of *t*; Degrees of freedom; Assumptions of *t*-test; Levels of significance versus *p*-values.

UNIT – II **(15 hours)**

Interpreting the results of hypothesis testing: Type I and Type II error, Power of a test; Difference between Two Means (*t*-test) - Independent and Dependent Groups; Confidence Intervals

Unit-III **(15 hours)**

Hypothesis Testing: More than two groups (One way ANOVA): Assumptions and calculation of one-way; Comparison of *t* and *F*. *Post Hoc* Comparisons (conceptual understanding).
Chi-Square: Chi-Square as a Measure of Discrepancy between Expected and Observed Frequencies: Assumptions and calculations.

Suggesive Practicals **(30 hours)**

- Comparison of two groups using t-test
- Comparison of more than two groups using ANOVA
- Use of chi-square

Data sets available online or those from other sources can be used for this purpose.

Tutorial Component :Nil

Essential/Recommended Readings

Dyer, C. (2001). *Research in psychology: A practical guide to research methodology and statistics* (2nd ed.). Oxford: Blackwell Publishers.

King, B.M., Rosopa, P.J., & Minium, E.W. (2007). *Statistical reasoning in the behavioral sciences.* (7th Ed.). USA: John Wiley.

Mangal, S.K. (2010). *Statistics in psychology and education* (2nd Ed.). PHI Learning.

Suggestive Readings

Garrett, H.E. (1973). *Statistics in psychology and education.* Bombay: Vakils, Feffer and Simons Private Ltd.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC ELECTIVE COURSE DSE-3 ADVANCED SOCIAL PSYCHOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE:3 ADVANCED SOCIAL PSYCHOLOGY	**4**	**3**	**1**	**0**	**Class 12th Pass**	**Basic knowledge of Social Psychology**

Learning Objectives

- Acquaint the students with contemporary developments and methods in the field of social psychology.
- Enhance the critical thinking skills of the students.
- Understand the concepts of collective behaviour, identity and social inequalities.

Learning Outcomes

After doing this course the student will be able :

- To understand concepts of sociological social psychology and various associated methods.
- To think critically about contemporary issues in the field of social psychology.
- To develop an insight into the dynamics of social and collective behaviour.

SYLLABUS OF DSE -3

UNIT – I **(10 hours)**

Contemporary Perspectives and Methods: Social Psychology as History, Psychological and Sociological Social Psychology, Symbolic Interactionism, Social representations, Discursive Psychology, Ethnomethodology

UNIT – II **(12 hours)**

Collective Behaviour: Constructing Collective Behaviour: Mass Hysteria Theory, Rational Choice in Collective Behaviour: Emergent Norm Theory, Value-Added Theory, Perception Control Theory; Structure of Crowds and Social Movements; Behaviour during Collective Events

UNIT – III **(11 hours)**

Culture and Identity: Perspectives on Identity: Social Identity Theory, Self-Categorization Theory, Social Dominance Theory and Intersectionality; Influence of Status and Power: Effects of subordination; Violence and Social Practices in Human History; Role of Culture

UNIT – IV **(12 hours)**

Inequalities and Social Justice: Constructing Inequality: Social Stratification, Structures of Inequality and Social Stratification Processes in Groups; Systems Justification Theory, Social Justice: Idea and Ideal of Social Justice & Diversity, Distributive, Retributive & Procedural Justice, Principles of Social Psychology of Social Justice.

Practical Component - Nil

Tutorial Component **(15 hours)**

Suggestive Tutorial Activities: *(This is a suggestive not an exhaustive list of activities)*

- Analysis of media products *(like movies, documentaries, social media posts among others)* on the various themes of Collective Behaviour, Identity and Social Justice.
- Selecting an event from history that can be analysed using the various constructs in Social Psychology.
- Group Discussions to understand the idea of Inequality, Social Justice and Diversity.
- Book reviews for relevant themes (e.g.; *The Argumentative Indian by Amartya Sen, India: A Million Mutinies Now by V.S. Naipaul, Intimate Enemy by Ashis Nandy, Colors of Violence by Sudhir Kakar, Indian Identity by Sudhir Kakar, Being Indian by Pavan K. Varma, Tomb of Sand by Geetanjali Shree, Joothan by Om Prakash Valmiki, Pinjar by Amrita Pritam, Tamas by Bhisham Sahni, Maila Aanchal by Phanishwar Nath Renu* among others.)
- Analysis of popular speeches of social and political leaders.
- Working in groups and adapting any event from Indian History into a skit and presenting.

Essential/Recommended Readings

Cassidy, C., Hopkins, N., Levine, M., Pandey, J., Reicher, S., & Singh, P. (2007). Social identity and collective behaviour: Some lessons from Indian research at the Magh Mela at Prayag. *Psychological Studies, 52(4),* 286–292.

Clayman, S. E. (2015). Ethnomethodology, General. In J.D. Wright (Ed.) *International Encyclopedia of the Social & Behavioral Sciences,* 203–206. doi:10.1016/b978-0-08-097086-8.44020-1

Crawford, L. A., & Novak, K. B. (2018). *Individual and society: Sociological social psychology.* Routledge.

Elcheroth, G., Reicher, S., Elcheroth, G., & Reicher, S. (2017). Riots, religion and the mobilisation of communal hatred in India (with-Rakshi Rath). *Identity, violence and power: Mobilising hatred, demobilising dissent,* 155-181.

Gergen, K. J. (1973). Social psychology as history. *Journal of Personality and Social Psychology, 26,* 309-320.

Hammack, P. L. (2018). Social psychology and social justice: Critical principles and perspectives for the twenty-first century. In P. L. Hammack (Ed.), *The Oxford Handbook of Social Psychology and Social Justice* (pp. 3-39). New York: Oxford University Press.

Jost, J. T., & Banaji, M. R. (1994). The role of stereotyping in system-justification and the production of false consciousness. *British Journal of Social Psychology, 33,* 1–27. doi:10.1111/j.2044-8309.1994. tb01008.x

Krishnan, L. (2014). Research on distributive justice: Implications for social policy. *Psychology, development and social policy in India,* 223-255.

Rohall, D. E., Milkie, M. A., & Lucas, J. W. (2014). *Social psychology: Sociological perspectives*. Waveland Press.

Rosenberg, M., & Turner, R. H. (Eds.). (1990). *Social psychology: Sociological perspectives.* Transaction Publishers.

Singh, P. (2009). Justice and diversity: The twin concerns for developing societies. *Psychology and Developing Societies, 21*(1), 1-11.

Thrift, E., & Sugarman, J. (2019). What is social justice? Implications for psychology. *Journal of Theoretical and Philosophical Psychology, 39(1),* 1.

Van der Toorn, J., & Jost, J. T. (2014). Twenty years of system justification theory: Introduction to the special issue on "Ideology and system justification processes". *Group Processes & Intergroup Relations, 17*(4), 413-419.

Worchel, S. (2003). Come one, come all: Toward understanding the process of collective behaviour. In M. Hogg & J.M. Cooper (Eds.) *The SAGE Handbook of Social Psychology.* SAGE Publications.

Suggestive Readings

Babu, N., Prakash, A. & Bharadwaj, I.U. (Eds.), (2021). *Understanding vulnerabilities in contemporary society. Psychological insights and reflections.* New Delhi: SAGE.

Darley, J., Tyler, T.R., & Bilz, K. (2003). Enacting Justice: The Interplay of Individual and Institutional Perspectives. In M. Hogg & J.M. Cooper (Eds.) *The SAGE Handbook of Social Psychology.* SAGE Publications.

Hollander, J. A., & Howard, J. A. (2000). Social psychological theories on social inequalities. *Social Psychology Quarterly*, 338-351.

Jena, S.P.K..(2020) *Homelessness: Research, practice and policy.* Routledge (Taylor Francis).

Kakar, S. (1996). *The colors of violence: Cultural identities, religion, and conflict.* University of Chicago Press.

Lester, J. N., & O'Reilly, M. (2021). The social construction of stigma: Utilizing discursive psychology for advancing the conceptualization of stigma in mental health. *Stigma and Health, 6*(1), 53–61.

Krishnan, L. (2004). Attitudes, social cognition and justice. In J. Pandey (Ed.), *Psychology in India revisited: Developments in the discipline, Vol. 3. Applied social and organisational psychology* (pp. 19–68). Sage Publications, Inc.

Maynard, D. W., & Clayman, S. E. (2003). Ethnomethodology and conversation analysis. In L.T. Reynolds & N.J. Herman-Kinney (Eds). *Handbook of symbolic interactionism,* 173-202.

Nandy, A. (1989). *Intimate enemy.* Oxford: Oxford University Press.

Sambaraju, R. (2020). "I would have taken this to my grave, like most women": Reporting sexual harassment during the #MeToo movement in India. *Journal of Social Issues, 76(3),* 603-631.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE DSE-4 GROUP DYNAMICS IN ORGANIZATIONS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE- 4 GROUP DYNAMICS IN ORGANIZATIONS	**4**	**3**	**1**		**Class 12th Pass**	**Basic knowledge of Introductory Psychology**

Learning Objectives

- Help students understand the principles and dynamics of group interactions in organizations from a psychological perspective.
- Develop an understanding of issues that groups and teams face, including communication, power and politics in workplaces, and conflict.

Learning Outcomes

After doing this course the student will be able to:

- Recognize and understand the nature and characteristics of groups and teams within organizations.
- Critically examine the ways in which group dynamics shape organizational outcomes.
- Identify and analyze the dynamics of organizational communication, power and politics, sexual harassment, and conflicts and negotiations in organizations.

SYLLABUS OF DSE- 4

UNIT - I **(12 hours)**

Understanding Work Teams: Groups and Teams; Stages of Group Development (Tuckman Model); Characteristics of effective teams; Types of teams; High-Performing Work Teams; Team-effectiveness model; Team-building.

UNIT - II **(12 hours)**

Organizational communication: Functions of communication; Communication model; Direction of communication; Informal communication network; Electronic communication; Barriers to effective communication; Enhancing communication effectiveness.

UNIT - III **(12 hours)**

Power and Politics in Organizations: Classifications of Power (French & Raven); Power Tactics; Sexual Harassment; Causes and consequences of Political Behavior.

UNIT - IV **(9 hours)**

Conflict and Negotiation: Nature of conflict in organizations; Conflict process; Negotiation (Process, Bargaining strategies); Conflict management; Indian approach to resolving conflicts.

Practical Component: Nil

Tutorial Component **(15 hours)**

Suggestive Tutorial Activities *(This is a suggestive and not an exhaustive list of tutorial activities)*

- Self and other awareness exercises that encourage constructive feedback
- Experiential exercises to enhance team building
- Presentations on contemporary topics to enhance communication skills
- Role plays to practice skills of communication, negotiation, etc.
- Team building and problem-solving exercises to demonstrate various stages of Tuckman's model
- Use of icebreakers for conflict management
- Encourage students to think of real-life power and influence tactics to use, e.g. different teachers in classroom situations, and asking them to reflect on how and why it benefited them or backfired.
- Review of literature, e.g. on power in organizations
- Critical discourse analysis to explore communication of organizations

Essential/ Recommended Readings

Greenberg, J. & Baron, R.A. (2007). *Behaviour in organizations* (10th ed.). Noida: Dorling Kindersley.

Luthans, F., Luthans, B. C., & Luthans, K. W. (2021). *Organizational behavior*: An *evidence-based* approach(14th edn.). IAP.

Pareek, U. (2010). *Understanding organizational behaviour*. Oxford: Oxford University Press.

Robbins, S. P., Judge, T. A., & Vohra, N. (2019). Organizational behaviour (18 th ed). Noida: Pearson Education India.

Sinha, J.B.P. (2008). *Culture and organizational behaviour.* New Delhi: SAGE.

Suggestive Readings

Ahuja, K. K., Padhy, P., & Srivastava, G. (2019). MeToo at the workplace: exploring sexual harassment experienced by female employees in private sector organisations in Delhi-NCR. *OPUS: HR Journal, 10*(2), 21-45.

Ahuja, K. K., &Padhy, P. (2021). The Cyber avatar of Sexual Harassment at the workplace: Media Analysis of Reports During COVID-19. *Journal of Psychosexual Health,3* (4) 322-331.

Fisher, R., Ury, W., & Patton, B. (2011*). Getting to yes: Negotiating agreement without giving in* (3rd ed.). New York, NY: Penguin.

French, J. R. P., Jr., & Raven, B. (1959). The bases of social power. In D. Cartwright (ed.), *Studies in social power* (pp. 150–167). University of Michigan.

Levi, D., & Askay, D. A. (2020). *Group dynamics for teams.* Sage Publications.

Thomas, K. W. (1992). Conflict and conflict management: Reflections and update. *Journal of* organizational*behavior*, 265-274.

Wheeler, M. (2013). *The art of negotiation: How to improvise agreement in a chaotic world.* Simon and Schuster.

Wood, J. D. (1990). New Haven Nighthawks. In J. R. Hackman (Ed.), *Groups that work (and those that don't)* (pp. 265- 279). San Francisco: Jossey-Bass Publishers.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE DSE-5 PSYCHODIAGNOSTICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE: 5 PSYCHODIAGNOSTICS	**4**	**2**	**0**	**2**	**Class 12th Pass**	**Basic knowledge of Introductory Psychology and familiarity with concepts of test standardization, reliability, validity etc.**

Learning Objectives

- To impart conceptual knowledge of psychodiagnostics, its domains, and purposes.
- To acquaint the students with the procedure of psychological testing of intellectual - cognitive abilities and personality in the clinical setting.
- To develop an understanding of the multiple methods of clinical assessment.
- To underscore the strengths and weaknesses of different methods of clinical assessment.
- To critically evaluate the psychological assessment through the lens of cultural context and ethics.

Learning Outcomes

After doing this course the student will be able to:

- Learn which kinds of tests are used for intellectual, cognitive and personality assessment in clinical contexts.
- Understand the key descriptive features of tests used in the clinical contexts.
- Know salient interpretive possibilities of psychological tests for diagnostic purposes.
- Evaluate the role of multiple methods of assessment in clinical settings.
- Assess the cultural and ethical issues in psychological assessment.

SYLLABUS OF DSE-5

UNIT – I **(12 hours)**

Introduction to Psychodiagnostics of Intellectual and Cognitive Function- Definition and Relevance of Psychodiagnostics; Domains of Assessment: Performance variables, Personality variables; Wechler's Adult Intelligence Scale- IV; Vineland Social Maturity Scale; NIMHANS Neuropsychological Battery; Montreal Cognitive Assessment; Mental Status Examination.

UNIT - II **(12 hours)**

Tests used in Clinical Setting: Assessment of Personality- Minnesota Multiphasic Personality Inventory (MMPI); Temperament and Character Inventory (TCI); Rotter's Incomplete Sentence Blank; Rorschach Inkblot Test; Thematic Apperception Test.

UNIT - III **(6 hours)**

Critical Considerations in Clinical Assessment-; Multi-method assessment (use of interview and observation in clinical settings); Assessment of immediate contexts (school, family, peers); Assessment of strengths.

Practical Component **(60 hours)**

Suggestive Practicals

- Administration and interpretation of rating scales
- Preparation of interpretive report using tests of intelligence/tests of cognitive functions
- Personality testing using self report inventories and semi projective/projective techniques
- Conducting mini Mental status examination in the community/ for an individual
- Conducting clinical interviews
- Behavioural observations and assessment

Tutorial Component: Nil

Essential/Recommended readings:

Cohen, R. J. & Swerdlik, M. E. (2017). *Psychological testing and assessment* (9th ed.). McGraw Hill.

Dwyer, P. (2022). the neurodiversity approach: What are they and what do they mean for researchers? *Human Development; 66:* 73-92.

Geisinger, K. F., Bracken, B. A., Carlson, J. F., Hansen, J.-I. C., Kuncel, N. R., Reise, S. P., & Rodriguez, M. C. (Eds.). (2013). *APA handbook of testing and assessment in*

psychology: (Vol. 2): Testing and assessment in clinical and counselling psychology. American Psychological Association.

Kaplan, R. M. &Saccuzzo, D. P. (2017). *Psychological testing: Principles, applications and issues* (10 ed). Cengage Learning.

Korchin, S. (1986). *Modern clinical psychology: Principles of intervention in the clinic and community*. CBS Publishers and Distributors.

Strauss, E., Sherman, E.M.S. & Spreen, O. (2006). *A compedium of neuropsychological tests: Administration, norms and commentary.* Oxford University Press.

Suggestive Readings:

Kellerman, H. & Burry, A. (2007). *Handbook of psychodiagnostic testing: Analysis of personality in the psychological report.* Springer Science

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES
Offered by Department of Psychology

GENERIC ELECTIVE COURSE GE - 12 IDENTIFYING AND DEALING WITH PSYCHOLOGICAL DISORDERS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE- 12 IDENTIFYING AND DEALING WITH PSYCHOLOGICAL DISORDERS	**4**	**3**	**0**	**1**	**Class 12th Pass**	**None**

Learning Objectives

- To impart preliminary knowledge about psychological disorders prevalent in society
- To develop an understanding of diagnostic criteria for psychological disorders
- To acquaint the students with the importance of psychological assessment
- To attain an overview of the role of various therapies in dealing with psychological disorders

Learning Outcomes

After doing this course the student will be able:

- To identify clinical picture of various psychological disorders using DSM-5 Classification
- To understand the importance of clinical assessment in diagnosis of psychological disorders
- To understand and appreciate the role of psychological first aid and therapies in treatment of psychological disorders

SYLLABUS OF GE -12

UNIT – I **(15 hours)**

Psychological Disorders: Criteria, Perspectives, Classification (DSM – 5), Psychological Assessment (Clinical Interview, Case History, Tests, Behavioral Assessment).

UNIT – II **(21 hours)**

Clinical Picture of Psychological Disorders: Generalized Anxiety Disorder; Obsessive Compulsive Disorder; Depressive Disorders (Major Depressive Disorder, Persistent Depressive Disorder); Bipolar and related Disorders (Bipolar I Disorder, Bipolar II Disorder, Cyclothymia); Suicide, Schizophrenia, Intellectual Developmental Disorder, Autism Spectrum Disorder, Attention Deficit Hyperactivity Disorder.

UNIT – III **(9 hours)**

Dealing with Psychological Disorders: Psychological First Aid; Biological Intervention (Pharmacological treatment and Electroconvulsive Therapy); Psychotherapy (Brief Description of Psychoanalysis, Behavior Therapy, Cognitive-Behavior Therapy, Client-centered Therapy, Family Therapy, Group Therapy)

Practical component **(30 hours)**

Suggestive Practicals:

- Using the clinical interview to take the case history of a client.
- Visual Media and/or text analysis as an approach to understanding mental disorders.
- Screening for psychological disorders such as Generalized Anxiety Disorder, Major Depressive Disorder, Obsessive Compulsive Disorder, Intellectual Disability, Attention Deficit Hyperactivity Disorder using tests, checklists.
- Conducting demographic surveys to identify individuals at risk of developing psychological disorder/s.

Tutorial component : Nil

Essential/Recommended Readings

Arora, M.K. (2022). *Neurodevelopmental Disorders in the Indian Context: Different Disorders speak Different Stories.* New Delhi: Prestige Publications.

Barlow, D. H., & Durand, V. M. (2021). *Abnormal psychology: An Integrative Approach.* Thomson Brooks/Cole Publishing Co.

Butcher, J. N., Hooley, J. M, Mineka, S. (2019). *Abnormal Psychology (*17th ed), New Delhi: Pearson.

Corey, G. (2012). *Theory and Practice of Counseling and Psychotherapy* (11th ed), Cengage Learning.

Kring, A. M., Johnson, S. L., Davison, G. C., Neale, J. M., & (2013). *Abnormal psychology* (12th ed). John Wiley & Sons Inc.

Ruzek, J., Brymer, M., Jacobs, A., Layne, C., Vernberg, E., & Watson, P. (2007). Psychological First Aid. *Journal of Mental Health Counseling. 29*(1), 17-49.

Suggestive Readings

Ahuja, N. (2011). *A short textbook of psychiatry.* Jaypee Brothers Medical Publishers.

Gladding, S. T. (2021). *Theories of counseling.* (3rd ed.). Rowman & Littlefield.

Seligman, L. and Reichenberg, L.W. (2009) *Theories of counseling and psychotherapy: Systems, strategies, and skills.* (4th ed.). Pearson.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

GENERIC ELECTIVE COURSE GE-13 PSYCHOLOGY AT THE WORKPLACE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE-13 PSYCHOLOGY AT THE WORKPLACE	4	3	1	0	Class 12th Pass	None

Learning Objectives

After doing this course the student will be able to:

- Understand the need and scope of application of psychological concepts and theories in organisations.
- Become aware of different challenges and trends that influence people management practices in contemporary organisations.
- Appreciate the evolution of the field of I/O Psychology.
- Understand the key theories of motivation and leadership in the organisations.

Learning Outcomes

After doing this course the student will be able to:

- Apply the basic principles of psychology in work-settings.
- Critically evaluate the contemporary issues that shape management practices in organisations.
- Apply theories and concepts of motivation and leadership in organisations.

SYLLABUS OF GE- 13

UNIT - I **(9 hours)**

Introduction to I/O Psychology: Definition, Evolution of the field, Major Fields of I/O psychology: Personnel Psychology, Organizational Psychology,Human Factors/Ergonomics.

UNIT - II **(9 hours)**

Contemporary Opportunities and Challenges: Telecommuting, Green Business Practices & Sustainability, Workforce Diversity, Gender Discrimination & Sexual Harassment,, Technology, Corporate Social Responsibility, Mental Health and Well being.

UNIT - III **(12 hours)**

Work Motivation: Theories and applications: Maslow's Need-Hierarchy, Herzberg's Two Factor Theory, Goal-Setting Theory, Expectancy Theory, Equity Theory, Job Characteristics Model.

UNIT - IV **(15 hours)**

Leadership: Early approaches to leadership (Trait, Behavioural), Contingency- (Fiedler's contingency model), Contemporary Approaches to Leadership- (Charismatic, Transformational & Transactional Leadership), Managing Diversity as a Core Leadership Competency, Indian Perspective (Nurturant Task Leadership).

Practical Component: Nil

Tutorial Component: **(15 hours)**

Suggestive Tutorial Activities (*This is a suggestive and not an exhaustive list of tutorial activities)*

- Presenting videos on Hawthorne Studies
- Class debates to develop critical thinking, e.g., pros and cons of use of technology in organizations, workplace diversity
- Analysis of corporate social responsibility across different sectors or nations
- Film analysis (character mapping and plot lining) using a theoretical framework, for e.g., Bombshell, She Said, The Assistant
- Case study of effective leaders
- Experiential exercises on what motivates students to come to college
- Review of literature, e.g. on theories of motivation across cultures
- Class presentations on contemporary topics
- Role plays to practice leadership skills

Essential/ Recommended Readings

De Cenzo and Robbins, S.P. (2006). *Fundamentals of human resource management* (8th ed.). New York: Wiley.

Greenberg, J. ,& Baron, R.A. (2007*). Behaviour in organizations* (9th ed.). Noida: Dorling Kindersley.

Griffin, R.W., & Moorhead, G. (2009). *Organizational behaviour: Managing people and organizations.* New Delhi: Biztantra publishers.

Robbins, S. P., & Judge, T.A. (2007). *Organizational behaviour* (12th ed.). New Delhi: Prentice Hall of India.

Sinha, J.B.P. (2008). *Culture and organizational behaviour.* New Delhi: Sage.

Suggestive Readings

Adler, N.J. (1997). Global leaders: Women of influence. In G. N. Powell (Ed.), *Handbook of Gender and Work*, (pp. 239-261). Thousand Oaks, CA, US: Sage Publications.

Bass, B. M. (1990). From transactional to transformational leadership: Learning to share the vision. *Organizational Dynamics, 18*(3), 19-31.

Carnevale, J. B., & Hatak, I. (2020). Employee adjustment and well-being in the era of COVID-19: Implications for human resource management. *Journal of Business Research, 116,* 183–187. https://doi.org/10.1016/j.jbusres.2020.05.037.

Herzberg, F. (1966). *Work and the nature of man.* Cleveland: World Publishing Company.

Hubbard, E. E. (2004). *The manager's pocket guide to diersity management.* US: HRD Press.

Kotler, P., & Lee, N. (2004). *Corporate social responsibility: Doing the most good for your company and your cause.* NY: John Wiley & Sons.

Kumar, G. & Prakash, A. (2017). CSR Evangelism: Rural consumers walk down the road to enlightenment. *The Indian Journal of Industrial Relations, 53*(2), 183-199.

Locke, E.A. (1968). Toward a theory of task motivation and incentives. *Organizational Behaviour and Human Performance, 3*(2), 157-189.

Pareek, U. (2010). *Understanding organizational behaviour.* Oxford: Oxford University Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVE COURSE GE- 14 PSYCHOLOGY OF ADJUSTMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE-14 PSYCHOLOGY OF ADJUSTMENT	4	3	1	0	Class 12th Pass	None

Learning Objectives

- To learn the nature and relevance of adjustment in everyday life.
- To understand the different factors shaping adjustment.
- To understand healthy adjustment strategies in different contexts: relationships, digital world, and work settings.

Learning Outcomes

After doing this course the student will be able to:

- Gain greater grounding in concepts related to psycho-social-emotional adjustment.
- Apply their knowledge to attain better levels of adjustment in different life situations.

SYLLABUS OF GE- 14

UNIT – I **(9 Hours)**

Introduction: Concept of Adjustment, Adjustment as a Lifelong Process, Need for Adjustment, Factors affecting Adjustment, The Role of Psychology in Promoting Adjustment

UNIT – II **(12 Hours)**

Adjustment in Relationships-: Self in a Relational Context (need to belong, affiliation, isolation, social exclusion), Strategies for Adjustment in Varied Relational Contexts: Familial Contexts (Dealing with Family Dynamics, Negotiating Autonomy and Agency), Friendships (Peer Pressure, Bullying, and Social exclusion), Romantic

Relationships (Identity, Intimacy & Isolation and Equity), Conflict Management; Dealing with Loss: Dissolution of Relationships and Bereavement.

UNIT – III **(12 Hours)**

Adjustment In The Digital Age: The Self in a Technological World (Immersion in tech spaces, multiple selves, and information overload), Challenges in the Digital Age (Illusion of choice, social comparison, cyber-victimization, and intrusive social media), Strategies for Adjustment: Self care, digital detox, reconnecting with nature, meaningful digital engagement.

UNIT – IV **(12 Hours)**

Adjustment in Work Settings: Adjustment in the Workplace: Job Satisfaction and its Enhancement; Gender at Work: Diversity Issues, Job satisfaction and subjective well being in a multicultural workplace; Occupational hazards: Work Stress, Sexual harassment, Unemployment, and Burnout; Well-being in Work Settings: Work-life balance (Leisure and Recreation), Mindfulness based stress reduction at work.

Practical Component: Nil

Tutorial Component **(15 Hours)**

Suggestive Tutorial Activities *(This is a suggestive and not an exhaustive list of tutorial activities)*

- Media Analysis (documentaries, short stories, songs, social media posts etc.)
- Group Discussions on topics such as experiences of bullying and social exclusion
- Book Reviews
- Journal keeping
- Reflective writing exercises on past adjustment experiences of self and others
- Research based presentations
- Activities and exercises focussed on the development of skills needed for better adjustment (e.g, assertiveness, self care)
- Self administration of standardized questionnaires to increase self awareness

Essential/ Recommended Readings

Hefner, D., &Vorderer, P. (2017). Digital stress: Permanent connectedness and multitasking. In L. Reinecke & M. B. Oliver (Eds.), *The Routledge handbook of media use and well-being: International perspectives on theory and research on positive media effects* (pp. 237–249). Routledge/Taylor & Francis Group.

Kirsh, S.J., Duffy, K.G. & Atwater, E. (2014).*Psychology for living: Adjustment, growth, and behavior today,* (11th ed.). Pearson.

Moritsugu, J., Vera, E. M., Jacobs, J. H., & Kennedy, M. (2016). *Psychology of adjustment: The search for meaningful balance*. SAGE Publications.

Rathus, S. A., &Nevid, J. S. (2019). *Psychology and the challenges of life: Adjustment and growth*. John Wiley & Sons.

Riba, M. B., Parikh, S. V., &Greden, J. F. (Eds.). (2019). *Mental health in the workplace: Strategies and tools to optimize outcomes*. Springer.

Rozkwitalska, M., Sułkowski, Ł., &Magala, S. (2017). *Intercultural interactions in the multicultural workplace*. Springer: Cham, Switzerland.

Sinha, J. B. (2009). *Culture and organizational behaviour*. SAGE Publications India.

Takahashi, T. (2016). Creating the self in the digital age: young people and mobile social media. *The good life in Asia's digital 21st Century. Digital Asia Hub, Hong Kong*, 44-50.

Tuli, M., & Chaudhary, N. (2010). Elective interdependence: Understanding individual agency and interpersonal relationships in Indian families. *Culture & Psychology, 16(4)*, 477-496.

Weinstein, E. C., Selman, R. L., Thomas, S., Kim, J. E., White, A. E., &Dinakar, K. (2016). How to cope with digital stress: The recommendations adolescents offer their peers online. *Journal of Adolescent Research, 31(4)*; 415-441.

Weiten, W. (2021). *Psychology: Themes and variations*. Cengage Learning

Weiten, W., Dunn, D. & Hammer, E. (2018).*Psychology applied to modern life*. Cengage Learning

Suggestive Readings

Chan, K. T. (2022). Emergence of the 'Digitalized Self' in the age of digitalization. *Computers in Human Behavior Reports, 6*, 100191.

Toffler, A. (1970). *Future shock*. Sydney. Pan.

HBR *guide to dealing with conflict (HBR Guide Series)*. Harvard Business Review Press.- 2014.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DEPARTMENT OF PSYCHOLOGY

Category II

Psychology Courses for Undergraduate Programme of study with Psychology as one of the Core Disciplines

(B.A. Programme with Psychology as Major discipline)

DISCIPLINE SPECIFIC CORE COURSE – 7: STATISTICAL METHODS AND PSYCHOLOGICAL TESTING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-7 Statistical Methods and Psychological Testing	4	3	0	1	Passed Class 12th	Basic knowledge of introductory psychology

Learning Objectives

The Learning Objectives of this course are as follows:

- To foster an understanding of the techniques of descriptive statistics.
- To familiarize students with the statistical skills necessary to interpret scores obtained from psychological tests.
- To learn the fundamentals of psychological testing.

Learning Outcomes

After completing this course, the student will be able to:

- Apply the knowledge of descriptive statistics in psychological testing
- Present numerical data graphically.
- Administer and interpret objective psychological tests

SYLLABUS OF DSC - 7

Unit- I **(10 Hours)**

Relevance of Statistics in Psychology; Descriptive and Inferential Statistics; Scales of Measurement; Graphical Representation of Data (Histogram, Bar Diagram, Frequency Polygon)

Unit- II **(10 Hours)**

Measures of Central Tendency: Definition; Properties and Comparison; Calculation of Mode, Median and Mean from Raw Scores; Measures of Variability: Range; Variance; Standard

Deviation (Properties and Comparison); Calculation of Range, Variance and Standard Deviation from Raw Scores

Unit- III **(15 Hours)**

Standard (z) Scores: Standard Scores; Properties of z-Scores; Transforming Raw Scores Into z-Scores, Determining Raw Scores From z-Scores, Some Common Standard Scores, Comparison of z- Scores and Percentile Ranks; The Normal Probability Distribution: Nature, Properties and Applications

Meaning of Correlation; Correlation and Causation; Calculating Pearson's Correlation Coefficient from Raw Scores

Unit- IV **(10 Hours)**

Defining features of a psychological test, Reliability, Validity, Norms, Types of tests, Applications and Ethical issues.

Practical component – **(30 Hours)**

Suggestive list of practicals:

1. Graphical presentation of data
2. Problems based on mean, median, mode
3. Problems based on variance and standard deviation
4. Problems based on Pearson's correlation
5. Intelligence test
6. Personality test

Essential/recommended readings

Chadha, N. K. (2009). *Applied Psychometry.* SAGE Publications India.

Gregory, R.J. (2017). *Psychological Testing: History, Principles, and Applications* (7th Ed.). Pearson Education.

King, B.M., Rosopa, P.J., & Minium, E.W. (2018). *Statistical Reasoning in the Behavioral Sciences* (7th Ed.). Wiley.

Murphy, K.R. & Davidshofer, C.O. (2019). *Psychological Testing: Principles & Applications* (6th Ed.). Pearson Education.

Suggestive readings

Aron, A., Coups, E.J. & Aron, E.N. (2013). *Statistics for Psychology* (6th Ed.). Pearson Education.

Garrett, H.E. (2005). *Statistics in Psychology and Education.* Paragon International Publishers.

Mangal, S.K. (2010). *Statistics in Psychology and Education* (2nd Ed.). PHI Learning.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC CORE COURSE – 8: EMERGENCE AND GROWTH OF PSYCHOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-8 Emergence and Growth of Psychology	**4**	**3**	**1**	**0**	**Passed Class 12th**	Basic knowledge of introductory psychology

Learning Objectives

The Learning Objectives of this course are:

- To understand the key tenets and historical and contemporary relevance of different schools of Psychology.
- Critically evaluate the limitations of underlying assumptions of psychological theories and principles.

Learning Outcomes

By studying the course students will be able to:

- Appreciate the changing nature and of subject matter and methodologies in the evolution of the discipline.
- Apply psychological concepts and principles in a more informed manner in diverse settings

SYLLABUS OF DSC-8

UNIT – I: (9 Hours)

Early Schools of Psychology- Structuralism, Functionalism and Gestalt Psychology (tenets and contributions), Core and Context of Indian Psychology

UNIT – II: (12 Hours)

Behaviourism - Watsonian Behaviourism, Skinnerian Behaviourism; Emergence of Information Processing Approach of Cognitive Psychology

UNIT – III: **(12 Hours)**

Psychoanalysis - Classical Freudian Approach (Models and Critique), Adlerian Perspective (Central concepts), Feminist Critique of Freudian Psychoanalysis: Contributions of Karen Horney

UNIT – IV: **(12 Hours)**

Third Force Psychology- Rogerian Self Psychology, Maslow's Hierarchy of Needs, Existentialism (Tenets and Contributions)

Tutorial Component – **(15 Hours)**

Suggestive Tutorial Activities:

- Role playing a psychologist
- Turncoat debate on debates in psychology
- Position paper on perspectives in psychology
- Group discussion on applications in psychological theories

Practical Component – NIL

Essential/recommended readings

Dalal, A. K. & Mishra G. (2010). The Core and Context of Indian Psychology. *Psychology and Developing Societies*, 22, 1 (2010): 121-155.

Hergenhahn, B.R. & Henley, T.B. (2014). *An introduction to history of psychology.* London: Wadsworth, Cengage Learning.

Lawson, R.B., Anderson, E.D., & Cepeda-Benito, A. (***2017***). *A History of Psychology: Globalization, Ideas, and Applications* (2nd edition). New York: Routledge

Schultz, D.P. & Schultz, S.N. (2011). *A history of modern psychology*. London: Wadsworth, Cengage Learning.

Suggestive readings

King, D.B., Viney, W. & Woody, W.D. (2008). *A history of psychology: Ideas and context* London, UK: Pearson Education.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

Category III

Psychology Courses for Undergraduate Programme of study with Psychology as one of the Core Disciplines

(B.A. Programme with Psychology as Minor discipline)

DISCIPLINE SPECIFIC CORE COURSE – 7: STATISTICAL METHODS AND PSYCHOLOGICAL TESTING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-7 Statistical Methods and Psychological Testing	4	3	0	1	Passed Class 12th	Basic knowledge of introductory psychology

Learning Objectives

The Learning Objectives of this course are as follows:

- To foster an understanding of the techniques of descriptive statistics.
- To familiarize students with the statistical skills necessary to interpret scores obtained from psychological tests.
- To learn the fundamentals of psychological testing.

Learning Outcomes

After completing this course, the student will be able to:

- Apply the knowledge of descriptive statistics in psychological testing
- Present numerical data graphically.
- Administer and interpret objective psychological tests

SYLLABUS OF DSC-7

Unit- I **(10 Hours)**

Relevance of Statistics in Psychology; Descriptive and Inferential Statistics; Scales of Measurement; Graphical Representation of Data (Histogram, Bar Diagram, Frequency Polygon)

Unit- II **(10 Hours)**

Measures of Central Tendency: Definition; Properties and Comparison; Calculation of Mode, Median and Mean from Raw Scores; Measures of Variability: Range; Variance; Standard

Deviation (Properties and Comparison); Calculation of Range, Variance and Standard Deviation from Raw Scores

Unit- III **(15 Hours)**

Standard (z) Scores: Standard Scores; Properties of z-Scores; Transforming Raw Scores Into z-Scores, Determining Raw Scores From z-Scores, Some Common Standard Scores, Comparison of z- Scores and Percentile Ranks; The Normal Probability Distribution: Nature, Properties and Applications

Meaning of Correlation; Correlation and Causation; Calculating Pearson's Correlation Coefficient from Raw Scores

Unit- IV **(10 Hours)**

Defining features of a psychological test, Reliability, Validity, Norms, Types of tests, Applications and Ethical issues.

Practical component – **(30 Hours)**

Suggestive list of practicals:

1. Graphical presentation of data
2. Problems based on mean, median, mode
3. Problems based on variance and standard deviation
4. Problems based on Pearson's correlation
5. Intelligence test
6. Personality test

Essential/recommended readings

Chadha, N. K. (2009). *Applied Psychometry.* SAGE Publications India.

Gregory, R.J. (2017). *Psychological Testing: History, Principles, and Applications* (7th Ed.). Pearson Education.

King, B.M., Rosopa, P.J., & Minium, E.W. (2018). *Statistical Reasoning in the Behavioral Sciences* (7th Ed.). Wiley.

Murphy, K.R. & Davidshofer, C.O. (2019). *Psychological Testing: Principles & Applications* (6th Ed.). Pearson Education.

Suggestive readings

Aron, A., Coups, E.J. & Aron, E.N. (2013). *Statistics for Psychology* (6th Ed.). Pearson Education.

Garrett, H.E. (2005). *Statistics in Psychology and Education.* Paragon International Publishers.

Mangal, S.K. (2010). *Statistics in Psychology and Education* (2nd Ed.). PHI Learning.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

SEMESTER - V

B.A. (HONS.) PSYCHOLOGY

Category I

B.A. (Hons.) Psychology Courses for Undergraduate Programme of study with Psychology as a Single Core Discipline

(B.A. Honours in Psychology in three years)

DISCIPLINE SPECIFIC CORE COURSE DSC -13 PERSPECTIVES IN MENTAL AND BEHAVIORAL DISORDERS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC - 13 PERSPECTIVES IN MENTAL AND BEHAVIORAL DISORDERS	**4**	**3**	**0**	**1**	**Class 12th Pass**	**Basic knowledge of Mental Disorders**

Learning Objectives

- To introduce the clinical picture and etiological understanding of Schizophrenia spectrum disorders, with focus on Schizophrenia.
- To provide an understanding about personality disorders and substance related disorders.
- To orient the learner to neurodevelopmental disorders.

Learning Outcomes

After doing this course the student will be able to:

- Understand the symptoms and causal factors of schizophrenia
- Recognize the clinical picture of substance related disorders
- Discriminate between different personality disorders
- Identify children with neurodevelopmental disorders

SYLLABUS OF DSC-13

UNIT – I **(15 hours)**

Schizophrenia Spectrum Disorder (Clinical Picture and Dynamics) and Personality Disorders (Clinical Picture only): Schizophrenia, Antisocial Personality Disorder, Borderline Personality Disorder

UNIT – II **(18 hours)**

Somatic Symptom & Related Disorders, Substance Related Disorders and Gender dysphoria (Clinical Picture Only): Functional Neurological Symptom Disorder (Conversion Disorder); Alcohol Use Disorder; Drug Abuse and Dependance (Opioids, Stimulants, Sedatives, Hallucinogens); Gender Dysphoria

UNIT – III **(12 hours)**

Neurodevelopmental Disorders (Clinical Picture Only) – Intellectual Developmental Disorder (Intellectual Disability)/ Specific Learning Disorder (Specific Learning Disabilities), Autism Spectrum Disorder, Attention Deficit Hyperactivity Disorder

Practical Component **(30 hours)**

Suggestive Practicals

- Mental Status Examination (MSE).
- Assessment of mental disorders using a psychometric test.
- Assessment of IQ/ADHD using a psychometric test.
- Case study writing to examine/understand clinical picture, dynamics, diagnosis and differential diagnosis.
- Correlational study of demographic variables and a mental disorder.
- Analysis of mental illness related visual media/text to understand mental disorders.

Tutorial Component : Nil

Essential/Recommended Readings

Arora, M.K. (2022). *Neurodevelopmental disorders in the Indian context: Different disorders speak different stories.* New Delhi: Prestige Publications.

Butcher, J.N., Hooley, J.M., & Mineka, S. (2014). *Abnormal psychology* (16th ed.). New York: Pearson.

Barlow, D.H. & Durand, V.M. (2013). *Abnormal psychology: An integrative approach* (7th ed.). Noida: Cengage Learning India Edition.

Kearney, C. A. & Trull, T. J. (2012). *Abnormal psychology and life: A dimensional approach.* Hyderabad: Wadsworth, Cengage Learning.

Kring, A.M., Johnson, S.L., Davison, G.C. & Neale, J.M. (2014). *Abnormal psychology* (12th ed.). New Jersey: John Wiley & Sons.

Suggestive Readings

Das, J.P. (2020). *Reading difficulties & dyslexia: Essential concepts and programs for improvement.* SAGE Publications India Pvt. Ltd.

Gururaj, G. et. al. (2016) *National mental health survey of India, 2015-16: Prevalence, patterns and outcomes.* Bengaluru: NIMHANS Publication No. 129.

Jena, S.P.K. (2013). *Learning disability: Theory and practice*. New Delhi: SAGE Publications India Pvt. Ltd.

Kapoor, S. & Jena, S.P.K. (2013). Emotional expression and self-concept of children with learning disabilities. *Indian Journal of Clinical Psychology,40* (2), 155-158.

Singh, A.K. (2016). *Modern abnormal psychology.* (Hindi), Motilal Banarsidass Pvt Ltd.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC CORE COURSE DSC – 14 CHILD AND ADOLESCENT DEVELOPMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-14 CHILD AND ADOLESCENT DEVELOPMENT	**4**	**3**	**0**	**1**	**Class 12th Pass**	**Basic knowledge of Introductory Psychology**

Learning Objectives

- To trace human development from conception to adolescence.
- To inculcate sensitivity to socio-cultural context of human development.

Learning Outcomes

After doing this course the student will be able to:

- Recognize various issues in human development.
- Identify the milestones in different domains of human development
- Understand the cognitive and socio-emotional factors that influence development
- Comprehend the contributions of various socio-cultural contexts toward shaping human development
- Design a practicum in the area of developmental psychology.

SYLLABUS OF DSC-14

UNIT - I **(9 hours)**

Introduction: Concepts; Themes; Theoretical Perspectives of Human Development (Psychoanalytic, Behavioural, Ethological, Evolutionary, Ecological Perspective); Research Designs.

UNIT - II **(18 hours)**

Stages of Development: Prenatal Development, Birth and Infancy, Adolescence; Developmental stages and child-rearing practices in the Indian context; Socio-cultural contexts of development.

UNIT - III **(18 hours)**

Domains of Human Development: Cognitive Development (Piaget, Vygotsky); Language Development; Emotional Development; Moral Development (Kohlberg).

Practical Component: **(30 hours)**

Suggestive Practicals

- Study on child-rearing practices using test/ case study
- Impact of family environment on socio-emotional development/ cognitive growth.
- Application of Piaget's theory of cognitive development
- Assessment of moral development using test/ dilemmas
- Language assessment using Multilingual Assessment Instrument for Narratives (MAIN)
- Assessment of attachment style and socio-emotional development

Tutorial Component: Nil

Essential/Recommended Readings

Belsky, J. (2022). *Experiencing the lifespan* (6th ed.). New York: Worth Publishers Macmillan Learning.

Berk, L. E. (2010). *Child development* (9th ed.). New Delhi: Prentice Hall.

Feldman, R.S. & Babu, N. (2023). *Development across the lifespan* (9th ed.) . New-Delhi: Pearson.

Kakar, S. (2012). *The inner world: A psychoanalytic study of childhood and society in India* (4th ed.). New Delhi: Oxford University Press.

Rangaswamy, K. (1992). Indian model of stages in human development and developmental tasks. *Indian Journal of Psychological Medicines*, 15 (1), pp. 77-82. doi:10.1177/09751564199201l2

Santrock, J.W. (2019). *Life-span development* (17th ed.). New-Delhi: Tata McGraw-Hill.

Suggestive Readings

Feldman, R.S. & Babu, N. (2011). *Discovering the life-span*. New-Delhi: Pearson.

Kapur, M. (n.d.). Child care in ancient India: A life span approach. *Indian Psychological Institute*. https://ipi.org.in/texts/others/malvikakapur-childcare-sp.php

Patra, S. (2022). *Adolescence in India: Issues, challenges and possibilities*. New Delhi: Springer.

Sharma, N. & Chaudhary, N. (2009). Human development: Contexts and processes. In G. Misra (Ed.). *Psychology in India*, Vol 1: *Basic psychological processes and human development. India*: Pearson.

Srivastava, A. K. (1997). *Child development: An Indian perspective*. New Delhi.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC CORE COURSE DSC – 15 APPLYING PSYCHOLOGY TO WORK

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC- 15 APPLYING PSYCHOLOGY TO WORK	**4**	**3**	**0**	**1**	**Class 12th Pass**	**Basic knowledge of Introductory psychology**

Learning Objectives

- Develop an awareness of how psychology can be applied to the workplace
- Help students appreciate the evolution of the field of Industrial/Organizational Psychology
- Develop a deeper understanding of conceptual and theoretical bases of motivation and understanding how to apply them.
- Understand how cultures of organizations affect behaviour at the workplace
- Understand leadership from different theoretical perspectives, especially the Indian approach

Learning Outcomes

After doing this course the student will be able to:

- Become familiar with the underlying concepts of Industrial /Organizational Psychology.
- Understand the evolution of the field of Industrial/Organizational Psychology
- Explain organizational ethics, corporate social responsibility and various other opportunities and managerial challenges managers at the contemporary workplace.
- Apply the understanding of work motivation, leadership and organizational culture in real world settings.
- Critically examine the impact of gender on leadership.
- Identify and assess best practices relating to leadership across various organizational contexts and cultures.

SYLLABUS OF DSC-15

UNIT - I **(12 hours)**

Introduction to the Field: The organizational context; Sub-fields of Industrial/Organizational Psychology; Historical evolution of the field of Industrial/Organizational Psychology; Antecedents of Organizational Behaviour; Scientific Management and Human Relations Movement; Organizational Ethics & Corporate Social Responsibility, Opportunities and Challenges for managers.

UNIT - II **(16 hours)**

Motivation, Stress & Well-being at Work: Motivation at work: Theoretical approaches (Maslow's need hierarchy, Herzberg's two-factor theory; Expectancy, Equity, Goal Setting); Ways to motivate people at the workplace; Indian Perspective; Work stress; Managing stress and well-being in organizations.

UNIT - III **(17 hours)**

Dynamics of Workplace : Organizational culture: Models (Schein and Pareek); Managing Organizational Culture; Leadership: Theories (Trait, Behavioural, Contingency); Indian Perspective; Inspirational Approaches to Leadership (Charismatic and Transformational Leadership); Gender and Leadership.

Practical Component **(30 hours)**

Suggestive Practicals

- Formulation of the research problem based on concepts of Organizational Behaviour
- Data gathering using appropriate methods and /or tools. Reviewing literature/ Locating external sources to design solutions to the research problem chosen.
- Analysis of information using apporoprite methods and/or tools and drawing conclusions and implications for organizations.

Following is the list of illustrative topics on which practicum may be designed:

- Organizational Stress
- Well-being at Workplace
- Organizational Ethics
- Corporate Social Responsibility
- Diversity at the Workplace
- Work Motivation
- Organizational Culture
- Leadership

Tutorial component- Nil

Essential/ Recommended Readings

Eklund, K.E., Barry, E.S. & Grunberg, N.E. (2017). Gender and leadership. In A. Alvinius (Ed.). *Gender differences in different contexts*. In Tech Open.

Greenberg, J. & Baron, R.A. (2007). *Behaviour in organizations* (10th ed.). Noida: Dorling Kindersley.

Griffin, R.W., Phillips, J.M. & Gully, S.M. (2019). *Organizational behavior: Managing people and organizations* (13th ed.). *Boston, MA: Cengage.*

Luthans, F. (2011). *Organizational behaviour: An evidence based approach* (11th ed.) New York: McGraw-Hill/Irwin.

Nelson, D.L. & Quick, J.C. (2018*). ORGB: Organizational behavior* (6th th ed.). NY: Cengage.

Muchinsky, P. (2006). *Psychology applied to work: An introduction to industrial and organizational psychology.* Summerfield, NC: Hypergraphic Press.

Pareek, U. (2004). *Understanding organizational behavior*. New Delhi: Oxford University Press.

Robbins, S. P. Judge, T.A & Vohra, N. (2019). *Organizational behavior* (18th ed.). New Delhi: Pearson.

Schultz, D. & Schultz, S.E. (2017). *Psychology at work today* (10th ed.). London: Routledge.

Singh, K. (2010). *Organizational behavior: Texts & cases.* Noida: Dorling Kindersley.

Sinha, J.B.P. (2008). *Culture and organizational behaviour*. New Delhi: Sage.

Suggestive Readings

Bass, B.M. (1990). From transactional to transformational leadership: Learning to share the vision. *Organizational Dynamics*, *18*(3), 19-31.

Griffin, R.W.& Moorhead, G. (2009). *Organizational behav*iour: Managing people & organizations. New Delhi: Biztantra Publishers.

Herzberg, F. (1966). *Work and The Nature Of Man. Cleveland*: World Publishing Company.

Jones, J. & Hill, R. (2021). *The great resignation: Why millions are leaving their jobs and who will win the battle for talent.* Minnesota: Lone Rock Publishing.

Kanungo, R.N. & Mendonca, M. (1994)(Eds.). *Work Motivation; Models for developing countries. New Delhi: Sage.*

Khandelwal, K.A. & Mohendra, N. (2010). Espoused Organizational Values, Vision, and Corporate Social Responsibility: Does it Matter to Organizational Members? *Vikalpa. The Journal for Decision Makers, Vol. 35(3),* 19-35.

Kumar, G. & Prakash, A. (2017). CSR Evangelism: Rural consumers walk down the road to enlightenment. *The Indian Journal of Industrial Relations, 53*(2), 183-199.

Landy, F.J. & Conte, J.M. (2013). *Work in the 21st century: An introduction to Industrial and organizational Psychology.* New Jersey: John Wiley.

Peterson, J. (2020). *Entrepreneurial leadership: The art of launching new ventures, inspiring others, and running stuff* (Illustrated edition). Harper Collins.

Smith, P., Farmer, M., &Yellowley, W. (2012). *Organizational behavior.* Routledge/Taylor & Francis Group.

Wilson, E. (2001): *Organizational behavior reassessed: The impact of gender. London: Sage.*

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC ELECTIVE (DSE) COURSES

DISCIPLINE SPECIFIC ELECTIVE COURSE DSE – 6 PSYCHOLOGY OF DISABILITY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE- 6 PSYCHOLOGY OF DISABILITY	**4**	**3**	**1**	**0**	**Class 12th Pass**	**Basic knowledge of Introductory psychology**

Learning Objectives

- To learn the nature and concerns related to disability in India
- To assess definition based conundrums around the concept of disability.
- To understand the heterogeneous nature of disabilities
- To comprehend the scope and relevance of Psychology of Disability as a field, especially in India
- To critically examine models relevant to the Psychology of Disability and understand their manifestations in everyday life.

Learning Outcomes

After doing this course the student will be able to:

- Gain greater grounding in concepts related to disability
- Identify the psycho-socio-cultural phenomena associated with disability.
- Analyze disability related phenomena through a lens of critical consciousness
- Recognize and challenge ableist notions in society

SYLLABUS OF DSE- 6

UNIT – I **(12 hours)**

Conceptualizing Disability: An Introduction: Defining disability and its conundrums; Diagnosis, assessment, certification and its critique; Disability Law and Policy in India: Mental Health Care Act 2017, RPwD Act 2016, National Trust Act, 1999, PwD Act 1995, Rehabilitation Council of India Act, 1992.

UNIT – II **(12 hours)**

Theories and Debates: Models: Charity Model, Medical Model, Social Model, Empowerment Model; Issues of language; Disability and Gender in India; Contemporary debates: Euthanasia and prenatal selection

UNIT - III **(12 hours)**

Accessibility: Built and Digital Spaces, Education, Employment, Mental Health Services: Practising disability inclusive counselling

UNIT - IV **(9 hours)**

Personal Spaces: Family and Marriage, Friendships and Peer Relationships, Sexuality and Reproductive health

Practical component – Nil
Tutorial Component **(15 hours)**

Suggestive Tutorial Activities *(This is a suggestive and not an exhaustive list of tutorial activities)*

- Research based presentations (either by individual students or small groups of students)
- Reviewing published research papers on themes related to the course content
- Documentary screenings
- Book Reviews
- Analysis of media content (films, short stories, songs, social media posts etc.)
- Group discussions on topics such as issues of language, disability and gender in India
- Reflective writing exercises
- Short quizzes

Essential/Recommended Readings

Addlakha, R. (Ed.). (2020). *Disability studies in India: Global discourses, local realities.* Taylor & Francis.

Dunn, D. S., & Andrews, E. E. (2015). Person-first and identity-first language: Developing psychologists' cultural competence using disability language. *American Psychologist, 70*(3), 255–264.

Ghai, A. (2015). *Rethinking disability in India.* Routledge.

Ghosh, N. (2016). *Interrogating disability in India.* Springer.

Hemlata (2016). A critical analysis of various legislations and policies on disability in India. *MIER Journal of Educational Studies, Trends and Practices, 1.*

Henderson, G., & Bryan, W. V. (2004). *Psychosocial aspects of disability.* Charles C Thomas Publisher.

Karki, J., Rushton, S., Bhattarai, S., & De Witte, L. (2023). Access to assistive technology for persons with disabilities: a critical review from Nepal, India and Bangladesh. *Disability and Rehabilitation: Assistive Technology, 18*(1), 8-16.

Kulkarni, M. (2019). Digital accessibility: Challenges and opportunities. *IIMB Management Review, 31*(1), 91-98.

Olkin, R. (2016). Disability-affirmative therapy. In I. Marini & M. A. Stebnicki (Eds.), The *professional counselor's desk reference* (pp. 215–223). Springer Publishing Company.

Sharma, S., & Sivakami, M. (2019). Sexual and Reproductive concerns of persons with disability in India: An issue of deep-rooted silence. *Journal of biosocial science, 51*(2), 225–243.

Suggestive Readings

Arora, M.K. (2022). *Neurodevelopmental disorders in the Indian context: Different disorders speak different stories*. New Delhi: Prestige Publications.

Bottema-Beutel, K., Kapp, S. K., Lester, J. N., Sasson, N. J., & Hand, B. N. (2021). Avoiding ableist language: Suggestions for autism researchers, *autism in adulthood.*

Goodley, D. & Lawthom, R. (2006). *Disability and psychology: Critical introductions and reflections.* London: Palgrave Macmillan.

Jamal, G. (2019). Stereotypes about adults with learning disabilities: Are professionals a cut above the rest? *Disability, CBR & Inclusive Development. 30* (2), 7-36. 10.5463/dcid.v30i2.811.

Kunnath, S. K., & Mathew, S. N. (2019). Higher education for students with disabilities in India: Insights from a focus group study. *Higher Education for the Future, 6*(2), 171-187.

Riley, A., Daruwalla, N., Kanougiya, S., Gupta, A., Wickenden, M., &Osrin, D. (2022). Intimate partner violence against women with disability and associated mental health concerns: A cross-sectional survey in Mumbai, India. *BMJ Open, 12*(4), e056475

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC ELECTIVE COURSE DSE – 7 ESSENTIALS OF MEDIA PSYCHOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE -7 ESSENTIALS OF MEDIA PSYCHOLOGY	**4**	**3**	**1**	**0**	**Class 12th Pass**	**Basic knowledge of Introductory psychology**

Learning Objectives

- To educate learners about media and its impact.
- To acquaint learners with the role of media in psychosocial change.
- To help learners understand critical issues related to media.

Learning Outcomes

After doing this course the student will be able to:

- Understand the concept of media and its interface with psychology.
- Distinguish between fantasy and reality.
- Analyse the relationship between advertising and persuasion.
- Critically examine the psychosocial influences of media.

SYLLABUS OF DSE- 7

UNIT – I **(9 hours)**

Introduction to Media Psychology: Nature and scope of media psychology; Classic Theories in Media Studies (Marshall McLuhan, Baudrillard); Research in Media Psychology; Indian perspective of Media Psychology.

UNIT – II **(12 hours)**

Media and the User: Fantasy and Reality; Expressing self and identity through social media; Finding communities (Fandoms, Virtual Communities); Use and Abuse of Internet

UNIT – III **(12 hours)**

Social Impact of Media: Media influences on pro-social behaviours, violence, and aggression; Psycho-social effects (Social Comparisons, Body Image, Substance Use).

UNIT – IV **(12 hours)**

Critical Issues in Media Psychology: Media as a tool for social and political change (Social Media movements, Propaganda); Representations of social groups in media (Gender and Sexuality, Religious Minorities, Disability); Ethics and Media

Practical component (if any) – Nil

Tutorial component **(15 hours)**

Suggestive Tutorial Activities *(This is a suggestive and not an exhaustive list of tutorial activities)*

- Discussions around use of media for campaign promotion like Swachh Bharat Abhiyan, Fit India etc.
- Critical thinking exercises like Advertisement Analyser worksheets
- Questionnaires to understand social media and its impact, such as Social Media Use Questionnaire (e-SMUQ) or Internet Addiction Scale
- Reflective exercise on identifying influence of social media on behaviour
- Documentary screenings and discussions
- Discussions around FOMO and JOMO

Essential/Recommended readings

Batra, R., Aaker, D. A., and Myers, J. G. (2006). *Advertising management.* New Delhi Dorling Kindersley (India).

Cill, J.C., Culbert, D.H., & Welsh, D. (2003) *Propaganda and mass persuasion: A Historical Encyclopedia,* Santa Barbara: ABC-CLIO, Inc.

Dill, K. E. (2009). *How fantasy becomes reality: Seeing through media influence.* Oxford University Press.

Dill, K. (Ed.). (2013). *Oxford handbook of media psychology.* New York: Oxford University Press.

Gayle, S.S., Giles, D.C., Cohen, D., & Meyers, M.E. (2021). *Understanding Media Psychology*. Routledge

Giles, D. (2008). *Media psychology.* Lawrence Erlbaum

Giles, D. (2010). *Psychology of the media.* Macmillan International Higher Education.

Kumar, N. (2021). *Media psychology: Exploration and application.* Routledge.

Mc Mahon, C. (2019). *The psychology of social media*. Routledge.

McLuhan, M. (2001). *Understanding Media: The extensions of man*. United Kingdom: Routledge.

Newman, M. J. (2015). Image and identity: Media literacy for young adult Instagram users. *Visual Inquiry. 4* (3): 221–227

Sharma, S. & Singh, R. (2011). *Advertising: Planning and implementation* (5thed.). PHI Learning Pvt Ltd.

Tiwari, S., Jina, P., Pathak, D.N., Uniyal, V., and Singh, U.K. (2022). The paradox of use, abuse, and misuse of the internet by the children. *International Journal of Mechanical Engineering, 7*(3), 707-713.

Suggestive Readings

Frohardt, M. & Tamin, J. (2003). Use and abuse of media in vulnerable societies. *Special Report*, United Institute of Peace, www.usip.org

Joinson, A., McKenna, K. Y. A., Postmes, T., &Reips, U.-D. (Eds.). (2007). *The Oxford handbook of internet psychology.* Oxford: Oxford University Press.

Merrin, W. (2005). *Baudrillard and the media: A critical introduction*. Polity. Wiley

Pescott, C. K. (2020). "I Wish I was wearing a filter right now": An exploration of identity formation and subjectivity of 10- and 11-year olds' Social Media Use. *Social Media + Society, 6*(4).

Spies Shapiro LA, Margolin G. (2014). Growing up wired: social networking sites and adolescent psychosocial development. *Clinical Child and Family Psychology Review, 17*(1),1-18.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC ELECTIVE COURSE DSE- 8 PSYCHOLOGY OF GENDER

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE - 8 PSYCHOLOGY OF GENDER	**4**	**3**	**1**	**0**	**Class12th Pass**	**Basic knowledge of Introductory Psychology**

Learning Objectives

After doing this course the student will be able:

- To be able to define and evaluate gender as a social construct
- To understand the ways gender, power, privilege, and oppression play out across a range of human experiences.

Learning outcomes

- Examine the growth of gender as a construct in psychological research and its methods.
- Critically analyse the different perspectives highlighting the development of the concept of gender in a child.
- Reflect on issues and challenges faced by women, men and LGBTQA+ communities and their resulting mental health outcomes.
- Develop gender sensitivity and learn to apply the principles of promoting equality and equity in various facets of life.

SYLLABUS OF DSE- 8

UNIT - I **(9 hours)**

Conceptualizing Gender: Social construction of gender; History of gender in psychology; Common features of feminist research methodology.

UNIT - II **(12 hours)**

Theories of Gender Development: Psychoanalytic, Cognitive-developmental, Gender schema, Biological and Social Cognitive Theory.

UNIT - III **(12 hours)**

Gender Heterogeneity: Issues and Challenges: Discrimination against gender spectrum, Gender based violence; Mental health concerns.

UNIT - IV **(12 hours)**

Current Frontiers in Psychology of Gender; Gender Sensitization; Prevention of sexual harassment; Promoting equality and equity; Gender neutral parenting.

Practical component– Nil

Tutorial component **(15 hours)**

Suggestive Tutorial Activities *(This is a suggestive and not an exhaustive list of tutorial activities)*

- Literature review on topics such as LGBTQ community in India, Sexual harassment at workplace, gender neutral parenting etc.
- Movie screening and discussion based on themes ofdiversity issues and gender
- Constructing childhood memoirs that shaped sensibilities around the students' gender roles.
- Tracing the activities of an NGO who is working towards gender empowerment.
- Group projects and/or based on gender based concerns.
- Case study analysis of an Indian case around the themes of gender.

Essential/Recommended Readings

Bussey, K., & Bandura, A. (1999). Social cognitive theory of gender development and differentiation. *Psychological Review, 106*(4), 676.

Etaugh, C. A., & Bridges, J. S. (2015). *Women's lives: A psychological exploration.* Psychology Press.

Haig, B. D. (1997). Feminist research methodology. In J.P. Keeves (Ed.), *Educational research methodology and measurement: An international handbook* (2nd ed.). Pergamon.

Helgeson, V. S. (2015). *The psychology of gender*. Psychology Press.

Koehler, G. (2016). Tapping the Sustainable Development Goals for progressive gender equity and equality policy?.*Gender & Development, 24*(1), 53-68.

Lorber, J. (1994). Night to his day": The social construction of gender. *Paradoxes of gender, 1*, 1-8.

Martin, K. A. (2005). William wants a doll. Can he have one? Feminists, child care advisors, and gender-neutral child rearing. *Gender & Society, 19*(4), 456-479.

Ranade, K., Chakravarty, S., Nair, P., Shringarpure, G. (2022). *Queer affirmative counselling practice – A resource book of Mental health practices in India*, Mumbai: Mariwala Health Initiative.

Sharma, M. (2019). Ambedkar's feminism: Debunking the myths of Manu in a quest for gender equality. *Contemporary Voice of Dalit, 11*(1), 17-24.

Vyas, A. N., Malhotra, G., Nagaraj, N. C., & Landry, M. (2020). Gender attitudes in adolescence: Evaluating the girl rising gender-sensitization program in India. *International Journal of Adolescence and Youth, 25*(1), 126-139.

Suggestive Readings

Bailyn, L. (2003). Academic careers and gender equity: Lessons learned from MIT . *Gender, Work & Organization, 10*(2), 137-153.

Bhasin, K. (2000). *Understanding gender: Gender basics*. Kali for women.

Chrisler, J. C., & Mc Creary, D. R. (2010). *Handbook of gender research in psychology* (Vol. 1, p. 558). New York: Springer.

Dawar, B.V. & Ravindran,T.K.S. (2015). *Gendering Mental Health: Knowledges, identities and institutions*. Oxford University Press.

Hesse-Biber, S. N. (Ed.). (2011). *Handbook of feminist research: Theory and praxis*. SAGE publications.

Hyde, J. S. (1990). Meta-analysis and the psychology of gender differences. *Signs: Journal of* women *in culture and society, 16*(1), 55-73.

Mills, M. (2010). Gender roles, gender (in) equality and fertility: An empirical test of five gender equity indices. *Canadian Studies in Population [ARCHIVES], 37*(3-4), 445-474.

Nakkeeran, N., &Nakkeeran, B. (2018). Disability, mental health, sexual orientation and gender identity: understanding health inequity through experience and difference. *Health research policy and systems, 16*, 9-19.

Pandey, P. (2014). Equality: As a social principle described in vedic tradition. *Veda-Vidya*, 24, 149-158.

Parri, M., & Ceciliani, A. (2019). Best Practice in PE for gender equity-A review. *Journal of Physical Education and Sport, 19*, 1943-1952.

Sweetman, C. (Ed.). (2001). *Men's involvement in gender and development policy and practice: Beyond rhetoric*. Oxfam.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES
Offered by Department of Psychology

GENERIC ELECTIVE COURSE GE - 15 MEDIA PSYCHOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE -15 MEDIA PSYCHOLOGY	4	3	1	0	Class 12th Pass	Basic knowledge of Introductory psychology

Learning Objectives

- To develop an understanding of media, media literacy and their psychological implications.
- To examine how we interact with media on the psychological level.
- Understand the benefits of applying media psychology.
- Appreciate the interaction of media and culture.
- Examine media contents and effects and socialization.

Learning Outcomes

After doing this course the student will be able to:

- Understand the psychological power of media and its effects
- Discuss the psychological role of media in creating realities
- Discuss the effect of media on identity, youth and violence
- Demonstrate knowledge and skills for media psychology, media effects and media content
- Describe the relationship between media and social change

SYLLABUS OF GE- 15

UNIT - I **(12 hours)**

Understanding Media Psychology: Defining Media Psychology; Media Influence in everyday life, Media and social Interaction, Media Theories (Linguistic and Communicative theories).

UNIT - II **(12 hours)**

Mass Media and Society: Paradigms in media sociology; Mass Media and Family, Youth Empowerment and Media; Gender Representation in the Media; Critical Evaluation of Mass Media and Indian Society.

UNIT - III **(9 hours)**

Media and Culture: Mass Media and Culture; Communities and sub-cultures,; Intercultural Communication; Ideology and Media Representations; Realistic Conflict Theory.

UNIT - IV **(12 hours)**

Effects of Media: Media Effects Theories; Media Effect on Identity; Media Effect on Women; Social Learning Theory;Media Violence and its Effect on Youth.

Practical Component – Nil

Tutorial Component **(15 hours)**

Suggestive Tutorial Activities *(This is a suggestive and not an exhaustive list of tutorial activities)*

- Reflections on everyday experiences in the light of Theories of Media.
- Panel Discussion (e.g. gender and media, youth and media, family systems and media).
- Analysing the variation of information disseminated in media across cultures and understanding the nuances of communication.
- Learning the effects of media through debates.
- Class projects related to effects of media on Individual and group behaviour.

Essential/Recommended Readings

Giles, D, (2010). *Psychology of the media.* Basingstoke: Palgrave Macmillan.

Kumar, N. (2020). *Media psychology*: *Exploration and application.* Routledge India.

Stever, G. S., Giles, D. C., Cohen, J., Myers, M. E. (2021) *Understanding media psychology.* Routledge.

Suggestive Readings

Bandura, A. (2001). Social cognitive theory of mass communication. *Media psychology, 3* pp. 265-299.

Brewer, G. (2011). *Media psychology*. Basingstoke: Palgrave Macmillan.

Dill, K. E. (2012). *Oxford handbook of media psychology*. New York: Oxford University Press.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

GENERIC ELECTIVE COURSE GE-16 FOUNDATIONS OF DEVELOPMENTAL PSYCHOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE GE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE – 16 FOUNDATIONS OF DEVELOPMENTAL PSYCHOLOGY	**4**	**3**	**0**	**1**	**Class 12th Pass**	**Basic knowledge of Introductory psychology**

Learning Objectives

- To equip the learner with an understanding of the concepts and issues of human development
- To examine and discuss major theories of development such as those of Piaget, Vygotsky, Kohlberg, Erikson, Freud and Bronfenbrenner.
- To enumerate stages and types of development .

Learning Outcomes

After doing this course the student will be able to:

- Develop an understanding of various issues related to human development.
- Understand different domains of development.
- Develop an understanding of human growth from conception to Adulthood.

SYLLABUS OF GE-16

UNIT - I **(9 hours)**

Introduction: Nature, issues and theoretical perspectives – Psychoanalytic, Psychosocial and Ecological perspective. Indian model of human development.

UNIT – II **(12 hours)**

Domains of Development: Cognitive development – Piaget and Vygotsky, Moral development – Kohlberg and Emotional development – Attachment and temperament

UNIT - III **(12 hours)**

Stages of Development I: Prenatal development, Birth and Infancy (Physical and Motor Development).

UNIT - IV **(12 hours)**

Stages of Development II: Adolescence – Physical changes, Socioemotional development – Self, Identity, Family, Peers

Adulthood – Physical changes, Socioemotional development – Career issues, Attraction & Love and Family

Practical Component **(30 hours)**

Suggestive Practicals

- Conservation tasks – Piaget's theory
- Attachment style assessment
- Observation of a 2/3/4 years old baby for progress in developmental domains
- Assessment of emotional expression or regulation
- Assessment of family environment /Assessment of marital adjustment
- Heinz dilemma – Kohlberg's theory
- Assessment of Identity status – Marcia's theory
- Cross-sectional study for crisis experienced – based on Erickson's theory
- Developmental record and its analysis of a new born upto 6 months

Tutorial component: Nil

Essential/Recommended Readings:

Berk, L. E. (2010).*Child development* (9th ed.). New Delhi: Prentice Hall.

Feldman, R.S. & Babu, N. (2023). *Development across the lifespan.*Pearson.

Rangaswami, K. (1992). Indian model of stages in human development and developmental tasks. *Indian Journal of Psychological Medicine, 15* (1) pp 77 – 82.

Santrock, J.W. (2012).*Lifespan development* (13 th ed.) New Delhi: McGraw Hill.

Suggestive Readings

Belsky, J. (2022). *Experiencing the lifespan* (6th ed.). New York: Worth Publishers Macmillan Learning.

Khalakdina, M. (2008). *Human Development in the Indian context. A socio-cultural focus* (Vol 1.) New Delhi: Sage Publications.

Srivastava, A.K. (1997). *Child development: An Indian Perspective*. New DelhI: NCERT.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

GENERIC ELECTIVE COURSE GE- 17 NEGOTIATING INTIMATE RELATIONSHIPS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE-17: NEGOTIATING INTIMATE RELATIONSHIPS	**4**	**3**	**1**	**0**	**Class 12th Pass**	**Basic knowledge of Introductory psychology**

Learning Objectives

- To understand the construct of friendship and intimate relationship
- To develop an understanding of the psychology behind love
- To understand how and when relationships go wrong.
- To establish positive relationships.

Learning Outcomes

After doing this course the student will be able to:

- Recognize the complex nature of romantic love
- Understand the theoretical implication of love
- Identify distress in intimate relationships
- Build and foster a positive relational attitude

SYLLABUS OF GE- 17

UNIT - I **(12 hours)**

Psychology of Friendships and Intimate Relationships: Making friends, Effects of friendships, Factors affecting friendships, Dating, Marriage.

UNIT - II **(12 hours)**

Understanding Love: Types of love; Theories of love (two-factor theory of love; Sternberg's triangular theory); Sexuality.

UNIT - III **(12 hours)**

Signs of Relationship Going Sour: Jealousy; Romantic transgressions; Breakup: Intimate Partner Violence.

UNIT - IV **(9 hours)**

Flourishing Relationships: Positive Families; Building Relationship Satisfaction.

Practical Component (if any)- Nil

Tutorial Component: *(This is a suggestive and not an exhaustive list of tutorial ativities)* **(15 hours)**

- Focus Group Discussion
- Movie Review, e.g. Kabir Singh, Titanic
- Class debates to develop critical thinking, e.g. use of Apps like Tinder
- Analysis of the student's social network of friends and followers on social media
- Self and other awareness exercises that encourage constructive feedback
- Experiential exercises to enhance gratitude, practice forgiveness
- Review of Contemporary Art: Music, Painting etc.
- Review of literature or papers in journals or book, e.g. impact of stressors like natural disasters, pandemic, etc. on love and relationships
- Presentations on contemporary topics
- Use of Sternberg's Triangular Love Scale to assess one's love towards a romantic partner

Essential/Recommended Readings

Branscombe, N.R. & Baron, R.A. (2022). *Social psychology* (15th ed.). Pearson.

Compton, W.C. & Hoffman, E. (2020). Romantic love and positive families. In *Positive Psychology: The science of happiness and flourishing*, (3rd ed.). New Delhi: Sage.

Hojjat, M. & Moyer, A. (2016) (Eds.). *The Psychology of friendships*. UK: Oxford University Press.

Jewkes, R. (2002). Intimate Partner Violence: Causes and prevention. *The Lancet- Violence against women III, 359*, 1423-1429.

Rudman, L.A., & Glick, P. (2021). Love and Romance (pp. 204-230). In L.A. Rudman & P. Glick (2021). *The Social Psychology of gender: How power and intimacy shape gender relations*. Guilford publications.

Wilerton, J. (2010). *The Psychology of relationships*. New York: Red Globe Press.

Suggestive Readings

Ahuja, K.K. & Khurana, D. (2021). Locked-down love: A study of intimate relationships before and after the COVID lockdown. *Family Relations, 70*(5), 1343-1357.

Belus, J.M., Wanklyn, S., Iverson, K.M., Pukay-Martin, N.D., Langhinrinchsen-Rohling, J. & Monson, C.M. (2014). Do Anger and jealousy mediate the relationship between adult attachment syles and intimate violence perpetration? *Partner Abuse,* 5, 388-406.

Field, T., Diego, M., Pelaez, M., Deeds, O., & Delgado, J. (2010). Breakup distress and loss of intimacy in university students. *Psychology, 1*(03), 173-177.

Gala, J., & Kapadia, S. (2013). Romantic relationships in emerging adulthood: A developmental perspective. *Psychological Studies, 58*(4), 406-418.

Gordon, A. M., Impett, E. A., Kogan, A., Oveis, C., & Keltner, D. (2012). To have and to hold: Gratitude promotes relationship maintenance in intimate bonds. *Journal of Personality and Social Psychology, 103*, 257-274.

Snyder, C. R., Lopez, S. J., & Pedrotti, J. T. (2011). *Positive psychology: The Scientific and practical explorations of human strengths.* New Delhi, India: Sage Publication.

Sternberg, R.J. & Weis, K. (2008)(Eds.). *The new psychology of love*. New Haven, CT, US: Yale University Press.

Varma, S. (2017). Non-violent ways of relating: Love, healing, and beyond. In W. Shukla (Ed.), *Annals of Hindi Studies*. New Delhi: JBS Publications India.

https://www.youtube.com/watch?v=LLXX8wzvT7c. John Gottman talk on how to make relationships work (part 1).

Note: **Examination scheme and mode shall he as prescribed by the Examination Branch, University of Delhi, from time to time.**

Category II

(B.A. Programme with Psychology as Major Discipline)

DISCIPLINE SPECIFIC CORE COURSE – 9: ORGANIZATIONAL

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-9 Organizational Behaviour	4	3	0	1	Passed Class 12th	Basic knowledge of introductory psychology

Learning Objectives

The Learning Objectives of this course are as follows:

- Develop an awareness of the concepts related to organizational behaviour.
- Help students appreciate the evolution of the field of organizational behaviour and the role of organizational ethics, especially corporate social responsibility.
- Develop a deeper understanding of conceptual and theoretical bases of motivation and employees' work attitudes and their relationship with performance and organizational outcomes.
- Understanding attitudes at work, motivation, leadership processes from different theoretical perspectives.
- Provide practical guidelines to develop entrepreneurial leadership qualities.
- Help the students develop a connection between concepts and practices of organizations.

Learning Outcomes

After completing this course, the student will be able to:

- Familiarise themselves with the underlying concepts of organizational behaviour.
- Understand the evolution of the field of organizational behaviour and recognize the role of organizational ethics, especially corporate social responsibility.
- Apply the understanding of employee attitudes, motivation leadership and organizational culture in real world organizational settings.
- Examine the relationship between gender and leadership.
- Develop an ability to adapt leadership approaches/ practices in a variety of organizational contexts and cultures.
- Identify best practices relating to entrepreneurial leadership.

SYLLABUS OF DSC- 9

Unit- I **(11 Hours)**

Introduction to Industrial/Organizational Psychology- Scope of the Field; Historical Antecedents of Organizational Behaviour; Scientific Management and Human Relations Movement; Organizational Ethics and Corporate Social Responsibility.

Unit- II **(16 Hours)**

Work Related Attitudes and Motivation- Job Satisfaction (Antecedents and consequences of Job Satisfaction); Organizational Commitment.

Early Theories of Work Motivation: Maslow, Herzberg; Contemporary Theories and Applications: Expectancy, Equity, Goal Setting; Indian Approach to Work Motivation.

Unit- III **(18 Hours)**

Organizational Culture and Leadership- Models (Schein and Pareek); Managing Organizational Culture; Leadership Approaches: Overview of Trait Theories and Behavioural Theories, Contingency Theories; Contemporary Issues: Inspirational Approaches to Leadership (Charismatic and Transformational Leadership); Gender and Leadership; Indian Perspective on Leadership (Nurturant Task Leadership); Entrepreneurial leadership and leadership in startups.

Practical component – **(30 Hours)**

Suggestive list of practicals:

1. Understanding contemporary challenges faced by organizations using surveys and interviews.
2. Exploring work motivation in the Indian workplace
3. Studying the impact of organizational citizenship behaviour among employees in different industries and sectors in India.
4. Using standardized psychological tests and scales, students may study work-related attitudes such as job satisfaction, organizational commitment, and organizational justice among different employees and organizations.
5. Using secondary sources of data, case studies or psychological scales, students may study the leadership styles of organizational leaders.
6. Students may also work on relationship between different concepts related to organizational psychology.

Essential/recommended readings

Eklund, K.E., Barry, E.S. & Grunberg, N.E. (2017). Gender and leadership. In A. Alvinius (Ed.). *Gender differences in different contexts*. In Tech Open.

Greenberg, J. & Baron, R.A. (2007). *Behaviour in organizations* (10th ed.). Noida: Dorling Kindersley.

Griffin, R.W., Phillips, J.M. & Gully, S.M. (2019). *Organizational behavior: Managing people and organizations* (13th ed.). *Boston, MA: Cengage.*

Luthans, F. (2011). *Organizational behaviour: An evidence based approach* (11th ed.) New York: McGraw-Hill/Irwin.

Nelson, D.L. & Quick, J.C. (2018). *ORGB: Organizational behavior* (6thth ed.). NY: Cengage.

Muchinsky, P. (2006). *Psychology applied to work: An introduction to industrial and organizational psychology.* Summerfield, NC: Hypergraphic Press.

Pareek, U. (2004). *Understanding organizational behavior.* New Delhi: Oxford University Press.

Robbins, S. P. Judge, T.A & Vohra, N. (2019). *Organizational behavior* (18th ed.). New Delhi: Pearson.

Schultz, D. & Schultz, S.E. (2017). *Psychology at work today* (10th ed.). London: Routledge.

Singh, K. (2010). *Organizational behavior: Texts & cases.* Noida: Dorling Kindersley.

Sinha, J.B.P. (2008). *Culture and organizational behaviour.* New Delhi: Sage.

Suggestive readings

Bass, B.M. (1990). From transactional to transformational leadership: Learning to share the vision. *Organizational Dynamics*, *18*(3), 19-31.

Jones, J. & Hill, R. (2021). *The great resignation: Why millions are leaving their jobs and who will win the battle for talent.* Minnesota: Lone Rock Publishing.

Kumar, G. & Prakash, A. (2017). CSR Evangelism: Rural consumers walk down the road to enlightenment. *The Indian Journal of Industrial Relations, 53*(2), 183-199.

Griffin, R.W. & Moorhead, G. (2009). *Organizational behav*iour: Managing people & organizations. New Delhi: Biztantra Publishers.

Herzberg, F. (1966). *Work and The Nature of Man. Cleveland*: World Publishing Company.

Kanungo, R.N. & Mendonca, M. (1994) (Eds.). *Work Motivation; Models for developing countries. New Delhi: Sage.*

Khandelwal, K.A. & Mohendra, N. (2010). Espoused Organizational Values, Vision, and Corporate Social Responsibility: Does it Matter to Organizational Members? *Vikalpa. The Journal for Decision Makers, Vol. 35(3),* 19-35.

Landy, F.J. & Conte, J.M. (2013). *Work in the 21st century: An introduction to Industrial and organizational Psychology.* New Jersey: John Wiley.

Peterson, J. (2020). *Entrepreneurial leadership: The art of launching new ventures, inspiring others, and running stuff* (Illustrated edition). Harper Collins.

Smith, P., Farmer, M., & Yellowley, W. (2012). *Organizational behavior.* Routledge/Taylor & Francis Group.

Wilson, E. (2001): *Organizational behavior reassessed: The impact of gender. London: Sage.*

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC CORE COURSE – 10: PERSPECTIVES IN MENTAL AND BEHAVIORAL DISORDERS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 10 – Perspectives in Mental and Behavioral Disorders	4	3	0	1	Passed Class 12th	Basic understanding of mental disorders

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce the clinical picture and etiological understanding of Schizophrenia spectrum disorders, with focus on Schizophrenia.
- To provide an understanding about personality disorders and substance related disorders.
- To orient the learner to neurodevelopmental disorders.

Learning outcomes

After completing this course, the student will be able to:

- Understand the symptoms and causal factors of schizophrenia
- Recognize the clinical picture of substance related disorders
- Discriminate between different personality disorders
- Identify children with neurodevelopmental disorders

SYLLABUS OF DSC- 10

Unit – I **(15 Hours)**

Schizophrenia Spectrum Disorder (Clinical Picture and Dynamics) and Personality Disorders (Clinical Picture only): Schizophrenia; Antisocial Personality Disorder, Borderline Personality Disorder

Unit – II **(18 Hours)**

Somatic Symptom & Related Disorders, Substance Related Disorders and Gender dysphoria (Clinical Picture Only): Functional Neurological Symptom Disorder (Conversion

Disorder); Alcohol Use Disorder; Drug Abuse and Dependance (Opioids, Stimulants, Sedatives, Hallucinogens); Gender Dysphoria

Unit – III **(12 Hours)**

Neurodevelopmental Disorders (Clinical Picture Only) – Intellectual Developmental Disorder (Intellectual Disability)/ Specific Learning Disorder (Specific Learning Disabilities), Autism Spectrum Disorder, Attention Deficit Hyperactivity Disorder

Practical component – **(30 Hours)**

Suggestive list of practicals:

- Visual Media and/or text analysis as an approach to understanding mental disorders.
- Using the case study approach to understanding clinical picture of mental disorders.
- Assessment of a mental disorder using a psychometric test.
- Using Review of literature to understand schizophrenia/substance related disorders/Personality disorders/Neurodevelopmental disorder.
- Assessment of IQ/ADHD using a psychometric test.
- Correlational study of demographic variables and a mental disorder.

Essential/recommended readings

Arora, M.K. (2022). *Neurodevelopmental disorders in the Indian context: Different disorders speak different stories.* New Delhi: Prestige Publications.

Butcher, J.N., Hooley, J.M., & Mineka, S. (2014). *Abnormal psychology* (16th ed.). New York: Pearson.

Barlow, D.H. & Durand, V.M. (2013). *Abnormal psychology: An integrative approach* (7th ed.). Noida: Cengage Learning India Edition.

Kearney, C. A. & Trull, T. J. (2012). *Abnormal psychology and life: A dimensional approach.* Hyderabad: Wadsworth, Cengage Learning.

Kring, A.M., Johnson, S.L., Davison, G.C. & Neale, J.M. (2014). *Abnormal psychology* (12th ed.). New Jersey: John Wiley & Sons.

Shah, S. (2012). *Asamanya Manovigyan.* Rajkumar Prakashan

Suggestive readings

Gururaj, G. et. al. (2016) *National Mental Health Survey of India, 2015-16: Prevalence, Patterns and outcomes.* Bengaluru: NIMHANS Publication No. 129.

Singh, A.K. (2016) *आधुनिक असामान्य मनोविज्ञान* (*Modern Abnormal Psychology* - Hindi), Motilal Banarsidass Pvt Ltd.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

Category II

Psychology Courses for Undergraduate Programme of study
with Psychology as one of the Core Disciplines
(B.A. Programme with Psychology as Minor discipline)

DISCIPLINE SPECIFIC CORE COURSE – 9: ORGANIZATIONAL

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-9 Organizational Behaviour	4	3	0	1	Passed Class 12th	Basic knowledge of introductory psychology

Learning Objectives

The Learning Objectives of this course are as follows:

- Develop an awareness of the concepts related to organizational behaviour.
- Help students appreciate the evolution of the field of organizational behaviour and the role of organizational ethics, especially corporate social responsibility.
- Develop a deeper understanding of conceptual and theoretical bases of motivation and employees' work attitudes and their relationship with performance and organizational outcomes.
- Understanding attitudes at work, motivation, leadership processes from different theoretical perspectives.
- Provide practical guidelines to develop entrepreneurial leadership qualities.
- Help the students develop a connection between concepts and practices of organizations.

Learning Outcomes

After completing this course, the student will be able to:

- Familiarise themselves with the underlying concepts of organizational behaviour.
- Understand the evolution of the field of organizational behaviour and recognize the role of organizational ethics, especially corporate social responsibility.
- Apply the understanding of employee attitudes, motivation leadership and organizational culture in real world organizational settings.
- Examine the relationship between gender and leadership.
- Develop an ability to adapt leadership approaches/ practices in a variety of organizational contexts and cultures.
- Identify best practices relating to entrepreneurial leadership.

SYLLABUS OF DSC- 9

Unit- I **(11 Hours)**

Introduction to Industrial/Organizational Psychology- Scope of the Field; Historical Antecedents of Organizational Behaviour; Scientific Management and Human Relations

Movement; Organizational Ethics and Corporate Social Responsibility.

Unit- II **(16 Hours)**

Work Related Attitudes and Motivation- Job Satisfaction (Antecedents and consequences of Job Satisfaction); Organizational Commitment.

Early Theories of Work Motivation: Maslow, Herzberg; Contemporary Theories and Applications: Expectancy, Equity, Goal Setting; Indian Approach to Work Motivation.

Unit- III **(18 Hours)**

Organizational Culture and Leadership- Models (Schein and Pareek); Managing Organizational Culture; Leadership Approaches: Overview of Trait Theories and Behavioural Theories, Contingency Theories; Contemporary Issues: Inspirational Approaches to Leadership (Charismatic and Transformational Leadership); Gender and Leadership; Indian Perspective on Leadership (Nurturant Task Leadership); Entrepreneurial leadership and leadership in startups.

Practical component – **(30 Hours)**

Suggestive list of practicals:

1. Understanding contemporary challenges faced by organizations using surveys and interviews.
2. Exploring work motivation in the Indian workplace
3. Studying the impact of organizational citizenship behaviour among employees in different industries and sectors in India.
4. Using standardized psychological tests and scales, students may study work-related attitudes such as job satisfaction, organizational commitment, and organizational justice among different employees and organizations.
5. Using secondary sources of data, case studies or psychological scales, students may study the leadership styles of organizational leaders.
6. Students may also work on relationship between different concepts related to organizational psychology.

Essential/recommended readings

Eklund, K.E., Barry, E.S. & Grunberg, N.E. (2017). Gender and leadership. In A. Alvinius (Ed.). *Gender differences in different contexts*. In Tech Open.

Greenberg, J. & Baron, R.A. (2007). *Behaviour in organizations* (10th ed.). Noida: Dorling Kindersley.

Griffin, R.W., Phillips, J.M. & Gully, S.M. (2019). *Organizational behavior: Managing people and organizations* (13th ed.). *Boston, MA: Cengage.*

Luthans, F. (2011). *Organizational behaviour: An evidence based approach* (11th ed.) New York: McGraw-Hill/Irwin.

Nelson, D.L. & Quick, J.C. (2018*). ORGB: Organizational behavior* (6thth ed.). NY: Cengage.

Muchinsky, P. (2006). *Psychology applied to work: An introduction to industrial and organizational psychology.* Summerfield, NC: Hypergraphic Press.

Pareek, U. (2004). *Understanding organizational behavior.* New Delhi: Oxford University Press.

Robbins, S. P. Judge, T.A & Vohra, N. (2019). *Organizational behavior* (18th ed.). New Delhi: Pearson.

Schultz, D. & Schultz, S.E. (2017). *Psychology at work today* (10th ed.). London: Routledge.

Singh, K. (2010). *Organizational behavior: Texts & cases.* Noida: Dorling Kindersley.

Sinha, J.B.P. (2008). *Culture and organizational behaviour.* New Delhi: Sage.

Suggestive readings

Bass, B.M. (1990). From transactional to transformational leadership: Learning to share the vision. *Organizational Dynamics*, *18*(3), 19-31.

Jones, J. & Hill, R. (2021). *The great resignation: Why millions are leaving their jobs and who will win the battle for talent.* Minnesota: Lone Rock Publishing.

Kumar, G. & Prakash, A. (2017). CSR Evangelism: Rural consumers walk down the road to enlightenment. *The Indian Journal of Industrial Relations, 53*(2), 183-199.

Griffin, R.W. & Moorhead, G. (2009). *Organizational behav*iour: Managing people & organizations. New Delhi: Biztantra Publishers.

Herzberg, F. (1966). *Work and The Nature of Man. Cleveland*: World Publishing Company.

Kanungo, R.N. & Mendonca, M. (1994)(Eds.). *Work Motivation; Models for developing countries. New Delhi: Sage.*

Khandelwal, K.A. & Mohendra, N. (2010). Espoused Organizational Values, Vision, and Corporate Social Responsibility: Does it Matter to Organizational Members? *Vikalpa. The Journal for Decision Makers, Vol. 35(3),* 19-35.

Landy, F.J. & Conte, J.M. (2013). *Work in the 21st century: An introduction to Industrial and organizational Psychology.* New Jersey: John Wiley.

Peterson, J. (2020). *Entrepreneurial leadership: The art of launching new ventures, inspiring others, and running stuff* (Illustrated edition). Harper Collins.

Smith, P., Farmer, M., & Yellowley, W. (2012). *Organizational behavior.* Routledge/Taylor & Francis Group.

Wilson, E. (2001): *Organizational behavior reassessed: The impact of gender. London: Sage.*

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC ELECTIVE (DSE) COURSES

Discipline Specific Elective (DSE) Courses for Semester V:

DSE 1: Positive Psychology
DSE 2: Diversity and Inclusion in Institutions
DSE 3: Self and Personal Growth

DISCIPLINE SPECIFIC ELECTIVE COURSE – 1: POSITIVE PSYCHOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE-1 Positive Psychology	4	3	1	0	Passed Class 12th	Basic knowledge of introductory psychology

Learning Objectives

The Learning Objectives of this course are as follows:

- To understand the core concepts of positive psychology pertaining to Eastern and Western perspectives.
- To develop an understanding of positive states and processes.
- To equip the students with strategies to enhance their happiness and well-being

Learning outcomes

After completing this course, the student will be able to:

- To understand and appreciate the meaning and conceptual approaches to positive psychology.
- Understand the importance of positive states and processes
- Learn various strategies to enhance happiness and well-being.

SYLLABUS OF DSE - 1

Unit - I **(12 Hours)**

Introduction: Positive Psychology: An Introduction, Perspectives on Positive Psychology: Judeo-Christian, Athenian, Islam, Hinduism, Buddhism, and Jainism, Character Strengths and Virtues (VIA Classification System)

Unit - II **(12 Hours)**

Positive States and Processes I: Happiness and Well-being, Indian concepts of happiness and well-being (Sukha, Ananda, Panchakosas), Resilience

Unit - III **(12 Hours)**

Positive States and Processes II: Optimism, Wisdom, Flow, Spirituality

Unit - IV **(9 Hours)**

Positive psychology interventions: Positive thinking, Meditation, Gratitude, Kindness

Tutorial component **(15 Hours)**

Suggestive Tutorial Activities:

- Review of relevant articles on Indian views of happiness and well-being
- Role plays to demonstrate the role of positive states and processes
- Group discussion on any secondary source like a book, movie or a podcast related to positive psychology concepts
- Report writing on experiential exercises related to positive psychology interventions in the class

Practical component – NIL

Essential/recommended readings

Baumgardner, S.R., & Crothers, M.K. (2010). *Positive psychology.* Upper Saddle River, New Jersey.: Prentice Hall.

Carr, A. (2004). Positive Psychology: *The science of happiness and human strength.* London, UK: Routledge.

Davis, E. B., Worthington, E. L., Jr, & Schnitker, S. A. (2022). *Handbook of positive psychology, religion, and spirituality.* Springer Nature.

Gotise, P., & Upadhyay, B. K. (2018). Happiness from ancient Indian perspective: Hitopadeśa. *Journal of Happiness Studies, 19*(3), 863-879.

Jeste, D. V., & Vahia, I. V. (2008). Comparison of the conceptualization of wisdom in ancient Indian literature with modern views: Focus on the Bhagavad Gita. *Psychiatry: Interpersonal and Biological Processes, 71*(3), 197-209.

Parks, A. C., & Titova, L. (2016). Positive psychological interventions: An overview. In A. M. Wood & J. Johnson (eds.), *The Wiley handbook of positive clinical psychology* (pp. 307–320). Wiley Blackwell.

Snyder, C.R., & Lopez, S.J. (2007). *Positive psychology: The scientific and practical exploration of human strengths.* Thousand Oaks, CA: Sage.

Suggested readings

Gable, S. L., & Haidt, J. (2005). What (and why) is positive psychology? Review of General Psychology, 9, 103-110.

Peterson, C. (2006). A primer in positive psychology. New York: Oxford University Press.

Seligman, M.E.P. (2002). Authentic happiness: Using the new positive psychology to realise your potential for lasting fulfilment. New York: Free Press/Simon and Schuster.

Singh, K., Bandyopadhyay, S., & Saxena, G. (2022). An exploratory study on subjective perceptions of happiness from India. *Frontiers in Psychology, 13*, 111.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC ELECTIVE COURSE – 2: DIVERSITY AND INCLUSION IN INSTITUTIONS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE-2 Diversity and Inclusion in Institutions	4	3	1	0	Passed Class 12th	Basic knowledge of introductory psychology

Learning Objectives

The Learning Objectives of this course are as follows:

- To facilitate an understanding and acknowledgment of building the morale for diversity in institutions.
- To build an understanding of the best practices and policies for creating more inclusive environments.

Learning Outcomes

After completing this course, the student will be able to:

- Understand the key principles around diversity, equity, and inclusion; and advocate for the need of building more inclusive institutional places.
- Examine the opportunities and challenges related to diversity issues in institutions, e.g., educational institutions.
- Reflect upon the various strategies used to manage diversity.

SYLLABUS OF DSE-2

Unit - I **(9 Hours)**

Introduction: Understanding diversity, equity, and inclusion; Paradigms of Diversity Management

Unit - II **(12 Hours)**

Differences between EEO, Affirmative Action, and Diversity; Opportunities and challenges of working with diversity

Unit - III **(12 Hours)**

Types of diversity: Disability, Sexual orientation, Caste

Unit - IV **(12 Hours)**

Creating an inclusive environment- Case studies.

Tutorial component **(15 Hours)**

Suggestive Tutorial Activities

- Encourage students to peer mentor minority groups in classroom in a mutually collaborative project.
- Presentations and discussions on diversity and focused concerns across diverse institutions
- Collaboration may be done with other institutions for Diversity, Equity and Inclusion (DEI) activities, e.g., weekly virtual book club meetings may be organized to share books on inclusion.
- Reflective exercises and journal writing
- Film and documentary screening on DEI

Practical component – NIL

Essential/recommended readings

Barak, M. (2017). *Managing Diversity toward a Globally Inclusive Workplace* (4th ed.). London: SAGE Publications Ltd.

Hubbard, E. E. (2004). *The Manager's Pocket Guide to Diversity Management.* Human Resource Development.

Noronha, E. (2021). Caste and workplace bullying: A persistent and pervasive phenomenon. *Dignity and Inclusion at Work*, 489-512.

Thomas, D. A., & Ely, R. J. (1996). Making differences matter. *Harvard Business Review*, 74(5), 79-90.

Suggestive readings

Bourke, J., Garr, S., van Berkel, A., and Wong, J. (2017). Diversity and inclusion: The reality gap. Deloitte University: https://www2.deloitte.com/insights/us/en/focus/human-capital-trends/2017/diversity-andinclusion-at-the-workplace.html

Lup, D. (2017). Becoming a manager increases men's job satisfaction, but not women's. https://hbr.org/2017/11/research-becoming-a-manager-increases-mens-job-satisfaction-but-not-womens

Phillips, K. W. (2014). How diversity makes us smarter, *Scientific American*, 311 (4). http://www.scientificamerican.com/article/how-diversity-makes-us-smarter

Stockton, H. & Bourke, H. (2014). From diversity to inclusion: Shift from compliance to diversity as a business strategy. Deloitte University: https://www2.deloitte.com/global/en/pages/humancapital/articles/diversity-to-inclusion.html

Thomas Jr, R. R. (1990). From affirmative action to affirming diversity. *Harvard Business Review*, 68(2), 107-117.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE DISCIPLINE SPECIFIC ELECTIVE COURSE – 3: SELF AND PERSONAL COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE-3 Self and Personal Growth	4	3	1	0	Passed Class 12th	Basic knowledge of introductory psychology

Learning Objectives

The Learning Objectives of this course are as follows:

- To explore and understand the concept of self.
- To identify the meaning of self in a social world.
- To help the students understand the idea of self from the Indian and Western perspective.
- To facilitate personal growth and the development of an individual.

Learning Outcomes

After completing this course, the student will be:

- Able to understand the idea of self; it's antecedents and place in the social world.
- Able to understand the notion of self from an Indian and western perspective.
- Equipped with skills of self-management.

SYLLABUS OF DSE - 3

Unit – I **(12 Hours)**
Understanding Self
Self-concept: Nature; Factors shaping the self-concept; Sources of self-concept; Impact of culture, gender, and other social factors on the self-concept.
Self and Identity in the social world/context; Influence of social media and technology on self-identity and self-presentation.

Unit – II **(12 Hours)**
Theories of Self
Concept of Self in the Indian context (Ātman, Purusha, Jiva); and its relation to personal growth; The concept of Sat-chit-ananda and its relationship to self-realization and personal growth; Carl Rogers' theory on self; Carl Jung's concept of self: Jung's concept of the self as an archetype and its relationship to individuation; Neuroscience of Self

Unit – III **(6 Hours)**
Managing Self
Self-regulation: Importance and Strategies; Self-presentation: Strategies for enhancing self-presentation skills; Subjective wellbeing: Definition; contributing factors.

UNIT – IV **(15 Hours)**
Personal Growth
Developing character strengths and virtues;
Hope, Optimism and Resilience: Role in coping with adversity and promoting personal growth; Strategies for developing these qualities and enhancing personal growth and well-being; Understanding the challenges and potential barriers to personal growth and strategies for overcoming them.

Tutorial component **(15 Hours)**

Suggestive Tutorial Activities:
- Group Discussion
- Case Study Analysis
- Comparative Analysis
- Self-Reflection Journal
- Strengths Assessment

Practical component – NIL

Essential/recommended readings

Carr, A. (2004). *Positive Psychology: The science of happiness and human strength.* UK: Routledge

Cornelissen, M., Varma, S., Mishra, G., & Paranjpe, A. C. (1999). *Self and identity in modern psychology and Indian thought.* New York: Plenum Press

Dalal, A. K. & Mishra, G. (Ed) (2011). New Directions in Health Psychology. Sage.

Mishra, G. (2017). Psychosocial Interventions for Health and Well-Being. Springer.

Popper, K. R. & Eccles, J.C. (2012). *The Self and its Brain.* Springer Science & Business Media.

Stevans, R. (1996). *Understanding the Self.* Sage Publications.

Weitan, W. & Lloyd, M. A. (2007). *Psychology Applied to Modern Life.* 8th Ed. Wadsworth Publishing Company.

Suggestive readings

Luft, J. & Ingham, H. (1955). "The Johari window, a graphic model of interpersonal awareness". *Proceedings of the Western Training Laboratory in Group Development.* Los Angeles: University of California.

Kahneman, D. (2011). *Thinking, Fast and Slow.* New York.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

B.A. (HONS.) PSYCHOLOGY

SEMESTER - VI

DEPARTMENT OF PSYCHOLOGY

Category I

(B.A. Honours in Psychology in three years)

DISCIPLINE SPECIFIC CORE COURSE DSC 16 HUMAN RESOURCE MANAGEMENT: THEORY AND PRACTICE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC- 16: HUMAN RESOURCE MANAGEMENT: THEORY AND PRACTICE	**4**	**3**	**0**	**1**	**Class 12th Pass**	**Basic knowledge of Introductory psychology**

Learning Objectives

- To recognize and appreciate the salient role played by Human Resource Management (HRM) in managing organizations.
- To familiarize students with key concepts, policies, and practices relevant to managing human resources in organizations.
- To orient students to the basics of International HRM.
- To develop an analytical and strategic orientation to addressing HRM issues through course readings, discussions, case studies, and in-class exercises.

Learning Outcomes

After doing this course the student will be able to:

- Understand key concepts, principles, and practices of HRM.
- Develop the basic ability to assist HR departments in fulfilling human resource functions, particularly related to recruitment, selection, performance appraisal, and training
- Critically examine organizational policies and practices in the context of new realities of the workforce.

SYLLABUS OF DSC-16

UNIT - I **(12 hours)**

Introduction to Human Resource Management (HRM): HRM and HRD, Strategic and Traditional HRM; HRM Challenges; Overview of International HRM.

UNIT - II **(21 hours)**

Staffing and Maintaining High Performance: Recruitment (sources of recruitment) and Selection - Process and Methods (resume, interviews, testing).
Performance Appraisal – Performance Management Systems, Methods.

UNIT - III **(12 hours)**

Training Process: Identification of training needs- - Training Need Analysis (TNA); Techniques of Training, Overview of Training Evaluation.

Practical Component **(30 hours)**

Suggestive Practicals

- Identification of research gaps in the field
- Gathering and measuring information
- Evaluate outcomes and work out recommendations for HR managers

Following is the list of illustrative topics on which practicum may be designed :

- Challenges faced by HRM managers (work from home, sexual harassment, downsizing, etc.)
- International HRM
- Recruitment
- Selection
- Performance Appraisal
- Training

Tutorial Component: Nil

Essential/ Recommended Readings

Aamodt, M. G. (2022). *Industrial/organizational psychology: An appliedapproach.* Cengage Learning.

Deb, T. (2009). *Managing human resource and industrial relations.* Excel Books India.

De Cenzo, D. A., Robbins, S. P., & Verhulst, S. L. (2016). *Fundamentals of human resource management.* John Wiley & Sons.

Dessler, G., &Varkkey, B. (2011). *Human resource management* (12th ed.). New Delhi, India: Pearson Education.

Jex, S.M. & Britt, T.W. (2014). *Organizational psychology:A scientist-practitioner approach* (3 rd ed.). New York: Wiley.

Tarique, I., Briscoe, D. R., & Schuler, R. S. (2015). *International human resource management: policies and practices for multinational enterprises.* Routledge.

Suggestive Readings

Ahuja, K. K. (2021). (In) Sincerely Yours: Ingratiation tactics in job cover letters on selection. *Indian Journal of Industrial Relations*, 57(1), 86-98.

Banfield, P., & Kay, R. (2011). *Introduction to human resource management* (2nd ed.). New Delhi: Oxford University Press.

Bhatnagar, J. &Budhwar, J. (2009). *The changing face of people management in India.* London: Routledge.

Chadha, N.K. (2005). *Human resource management: Issues, case studies and experiential exercises.* (3rd edn.) .New Delhi: Sai Printographers.

Smither, R. D. (1988). *The psychology of work and human performance.* NY: Harper & Row

Vrontis, D., Christofi, M., Pereira, V., Tarba, S., Makrides, A., & Trichina, E. (2022). Artificial intelligence, robotics, advanced technologies and human resource management: A systematic review. *The International Journal of Human Resource Management,* 33(6), 1237-1266.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC CORE COURSE – 17: COUNSELLING PSYCHOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC- 17: COUNSELLING PSYCHOLOGY	**4**	**3**	**0**	**1**	**Class 12th Pass**	**Basic knowledge of Introductory psychology**

Learning Objectives

- To develop an understanding of basic concepts, processes, and techniques of Counselling.
- Having a comprehensive understanding of the profession of counselling, particularly in the Indian context.

Learning Outcomes

After doing this course the student will be able to:

- Define counselling and its goals.
- Acquiring basic counselling skills of problem identification,and relationship building (e.g.empathy,listening, paraphrasing, unconditional positive regard).
- Developing qualities of an effective counsellor including increasing self-awareness, reflexivity,self-monitoring and objectivity.
- Helping clients having mild concerns in life;for instance acting as peer counsellors in the college/community.

SYLLABUS OF DSC-17

UNIT - I **(9 hours)**

Introduction: Nature and Goals; Ethics in counseling; Characteristics of a Professional Counselor; Status and Practice of Counselling Psychology in India.

UNIT - II **(12 hours)**

Therapeutic Process: Building Therapeutic Relationships; Working in a Therapeutic Relationship; Termination.

UNIT - III **(24 hours)**

A. **Techniques of Counseling**: Psychoanalytic Techniques (Freud); Behaviour Therapy; Person-centered Therapy; Cognitive Therapy.

B. **Applications**: Family Counselling; Crisis Intervention: Suicide, Grief, and Sexual Abuse

Practical Component **(30 hours)**

Suggestive Practicals

- Need for Counselling among college students/ children/ adolescents using any standardized test.
- To study the self-efficacy of counsellors using any scale for better understanding of personality characteristics of a professional counsellor.
- Information-oriented first interview (Cormier &; Hackney, 2008).
- Practical based on any three micro skills (Pre-post design).
- Construction of a Genogram.
- Aptitude & Interest Assessment in Career Counselling.

Tutorial Component: Nil

Essential/ Recommended Readings

Corey, G. (2017). *Theory and practice of counseling And psychotherapy* (10th ed.). New Delhi: Cengage Learning.

Gladding, S. T. (2012). *Counseling: A comprehensive profession.* (7th ed.) . New Delhi. Pearson.

Nystul,M.S.(2016). *Introduction to counselling: An art and science perspective* (5th ed.). New Delhi: Sage.

Rao, K. (2010). Psychological interventions: From theory to practice. In G. Misra (Ed.): *Psychology in India. Volume 3: Clinical and health psychology.* New Delhi. ICSSR/ Pearson.

Seligman, L. & Reichenberg , L.W.(2010). *Theories of counseling and psychotherapy: Systems,strategies, and skills* (3rd ed.). New Delhi: Pearson.

Seth, S., Bhatia, H. & Chadha, N.K. (2018). *Counselling skills: Knowing self and others.* Delhi: The Readers Paradise.

Sharf, R. S. (2012). *Theories of psychotherapy & counselling: Concepts and Cases* (5th ed.).Boston: Brooks/ Cole Cengage Learning.

Suggestive Readings

Belkin, G. S. (1998). *Introduction to counseling* (3rd ed.). Iowa: W. C. Brown.

Capuzzi,D. &Gross, D. R. (2007). *Counseling and psychotherapy: Theories and interventions* (4th Ed.) New Delhi: Pearson.

Gibson, Robert, L. Mitchell, Marianne, H. (2015*). Introduction to counseling and guidance* (7thEd.). New York: Pearson.

James, R. K. (2008). *Crisis intervention strategies* (6th ed.). Australia. Thomson Brooks/Cole.

Hillman, J.L (2002). *Crisis intervention and trauma: New approaches to evidence-based practice.* New York: Kluwer Academic/Plenum Publishers.

S.N. & Sahajpal, P. (2013). *Counselling and guidance*. New Delhi: Tata McGraw H

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC CORE COURSE – 18: HEALTH PSYCHOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC- 18: HEALTH PSYCHOLOGY	**4**	**3**	**0**	**1**	**Class 12th Pass**	**Basic knowledge of Introductory psychology**

Learning Objectives

- Understanding Health Psychology and its theoretical perspectives.
- Identifying the characteristics of health behaviours.
- Promoting health enhancing behaviours by using exercise, nutrition and emotional regulation.
- Developing an understanding of interlinkages between culture, health and healing systems.

Learning Outcomes

After learning the course the student will be able to:

- Understand the core concepts of Health Psychology
- Apply of Health Psychology theories and concepts (e.g. health behaviour) in everyday life.
- Analyse the role of Ayurveda, Folk healing and Homeopathy in the creation of health.
- Evaluate the efficacy of various health promotion strategies including nutrition, exercise and emotional management.
- Create inter-linkages between culture and health
- Develop readiness to pursue a specialised degree in Health psychology.

SYLLABUS OF DSC-18

UNIT - I **(12 hours)**

Introduction to Health Psychology: Nature, Goals of Health Psychology, Relationship Between Health and Psychology, Models (Bio-medical Model, Bio-Psychosocial Model of Health, Indian Model of Health).

UNIT - II **(12 hours)**

Behaviour and Health: Characteristics of Health Behaviour; Barriers to Health Behaviour; Theories of Health Behaviour (Health –Belief Model, Theory of Planned Behaviour, Stages of Change Model).

UNIT - III **(12 hours)**

Culture, Health and Healing: Cultural Construction of Health, Ayurveda, Folk Healing, Homeopathy.

UNIT – IV **(9 hours)**

Health Promotion and Management: Exercise, Nutrition and Emotional Regulation.

Practical Component **(30 hours)**

Suggestive Practicals

- Analysis of films and other media sources highlighting health issues.
- Analyzing health based policies of India e.g National Health Policy.
- Using the case study approach to understand relevant health issues.
- Questionnaire based survey on health concerns.
- Practicals based on relevant standardized psychological tests pertaining to health.
- Correlational studies of health based variables.
- Health based interventions of brief duration.

Tutorial Component: Nil

Essential/Recommended Readings

Allen, F. (2011). *Health psychology and behaviour*. Delhi: Tata McGraw Hill.

Dalal, A.K. (2016). *Cultural psychology of health in India*. Delhi: Sage.

Donelli, D. and Antonelli, M (2021) Homeopathy and Psychological Therapies. Encyclopaedia 2021, 1(1), 57-64; https://doi.org/10.3390/encyclopedia1010008.

Sarafino, E.P., & Smith, T.W. (2016). *Health psychology: Bio- psychosocial interactions* (9thedn.). New York: Wiley.

Scrimshaw, S., & Lane, S. D. (2018). Culture, behavior, and health. In *Global health: Diseases, programs, systems and policies* (4th ed.). Jones & Bartlett.

Song, Y., Lu, H., Hu, S., Xu, M., Li, X., & Liu, J. (2015). Regulating emotion to improve physical health through the amygdala. *Social Cognitive and Affective Neuroscience, 10* (4), 523-530.

Taylor, S.E. (2017). *Health psychology* (10th ed.). Delhi: Tata McGraw Hill.

Suggestive Readings

Arora, M.K. and Sran, S.K.(2017). *Psychology of health and well being. New Delhi: Book Age Publications.*

Hariharan, M. (2020). *Health psychology: Theory practice and research.* New Delhi: SAGE Publications Incorporated.

Khosla, M.(Ed.) (2022). *Understanding the psychology of health and well-being*. New Delhi: SAGE Texts.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC ELECTIVE COURSE- 9 PSYCHOLOGY OF EXCEPTIONAL CHILDREN

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE- 09: PSYCHOLOGY OF EXCEPTIONAL CHILDREN	**4**	**3**	**0**	**1**	**Class 12th Pass**	**Basic knowledge of Child & Adolescent Psychology / Developmental Psychology**

Learning Objectives

- To develop an understanding of exceptional children.
- To familiarise oneself with the various types/ categories of exceptionalities.
- To understand the differences between children with disabilities, gifted children and twice exceptional children
- To learn methods of assessment of learning disability, giftedness and twice exceptionality.
- To know interventions used with the various areas of exceptionality.

Learning Outcomes

After learning the course the student will be able to:

- Understand the range of potential differences among children with learning disabilities, gifted children and twice exceptional children.
- Screen and identify exceptional children.
- Suggest intervention strategies for exceptional children.

SYLLABUS OF DSE- 09

UNIT - I **(9 hours)**

Introduction: Neurodiversity, Exceptional children, types and their prevalence, Historical perspectives, Inclusion and integration, Overview of special education, Roles and responsibilities of professionals working with exceptional children

UNIT – II **(12 hours)**

Specific Learning Disorder: Definitions, Prevalence, Causes, Assessment, Psychological and Behavioural Characteristics, Intervention and educational considerations for children and adolescents

UNIT – III **(12 hours)**

Gifted & Talented Children: Definition, Prevalence; Origins of Giftedness (genetic and environmental factors); Screening and identification tools; Physical, psychological and behavioural characteristics; Intervention and educational considerations for children and adolescents

UNIT – IV **(12 hours)**

Twice Exceptional Children: Definition, prevalence, types, Psychological and Behavioural Characteristics, Identifying twice exceptional children, interventions and educational considerations for twice exceptional children

Practical Component **(30 hours)**

Suggestive Practicals

- Case study to understand exceptional children.
- Use of special education assessment tool
- Inclusive or exclusive education for exceptional children
- Interview with caregivers of exceptional children/special educators/professionals working with children to understand challenges they experience and strategies they use to cope.
- Reflections on volunteering in programs for exceptional children
- Development of intervention plans for exceptional children

Tutorial Component: Nil

Essential/Recommended Readings

Baum, S.M., Schader, R.M. & Owen, S.V. (2017). *To be gifted and learning disabled: Strength-based strategies for helping twice-exceptional students with LD, ADHD, ASD, and more (3rd ed.).* New York: Routledge

Hallahan, D. P., Kauffman, J. M. (1997). *Exceptional learners: Introduction to special education.* United States: Allyn and Bacon.

Gallagher, J. J., Coleman, M. R., Kirk, S. A. (2009). *Educating exceptional children.* United States: Wadsworth.

Kircher-Morris, E. (2022). *Raising twice-exceptional children: A handbook for parents of neurodivergent gifted kids.* New York: Routledge.

Macintyre, C. (2008). *Gifted and talented children 4–11: Understanding and supporting their development.* Oxon: Routledge.

Porter, L. (2005). *Gifted young children: A guide for teachers and parents (2nd edn.).* Australia: Allen & Unwin

Suggestive Readings

Gillespie, P. (2021). *A successful self-taught reader with five learning disabilities: A guide for educators and parents.* Independently published.

Jena, S.P.K. (2013). *Learning disability: Theory and practice*. New Delhi: SAGE.

Kurup, A. & Dixit, S. (2016). Gifted with disabilities: The twice-exceptional in India. *Indian Educational Review, 54* (2).

Pfeiffer, S. I. (2008) *Handbook of giftedness in children: Psychoeducational theory, research, and best practices.* Germany: Springer.

Trail, B.A. (2022). *Twice-exceptional gifted children: Understanding, teaching, and counseling gifted student (2nd ed.)*. New York: Routledge.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC ELECTIVE COURSE -10 RESEARCH METHODS IN PSYCHOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE- 10 RESEARCH METHODS IN PSYCHOLOGY	**4**	**3**	**0**	**1**	**Class 12th Pass**	**Familiarity with Paradigmatic foundations of psychological inquiry and tecniques of data collection**

Learning Objectives

- To present the essential steps, process and considerations of designing research in Psychology
- To introduce the key techniques quantitative and qualitative techniques of data-analysis in psychological research
- To acquaint students with the possibilities in mixed methods research in Psychology

Learning outcomes

After learning the course the student will be able to:

- Understand the utility and key differences of major qualitative data analysis techniques.
- Understand and appreciate the utility and different approaches to mixing methods in psychological research.
- Design a ethically grounded psychological research study and write a proposal for the same

SYLLABUS OF DSE- 10

UNIT – I Introduction to Research Methods in Psychology (10 hours)

Introduction to psychological research and its goals; Common research forms: Exploratory research, Descriptive research and Explanatory research; Delineating Steps of Quantitative and Qualitative Research

UNIT - II Issues of Design in Quantitative and Qualitative Studies (10 hours)

Designing Quantitative and Qualitative Studies: Language of Variables and Hypothesis v/s Language of Cases and Context; Research Question Method Link: Survey, Observation, Interview, Focus Group Discussion; Measurement process in Quantitative and Qualitative

Research: Conceptualisation, Operationalisation, Reliability and Validity; Sampling in Quantitative and Qualitative Research: Types and techniques

UNIT – III Approaches to Quantitative and Qualitative Data Analysis (15 hours)

Quantitative Approaches: Correlation and Regression Analysis; Qualitative Approaches: Thematic analysis, Grounded Theory & Narrative Analysis

UNIT – IV Mixed-methods Research (10 hours)

Why mix methods of research? Using quantitative and qualitative methods as complementary modes of inquiry; Mix-method designs: Triangulation Design, Embedded Design, Explanatory Design, Exploratory Design; Mixed-method sampling; Mixing qualitative methods: Pluralistic Qualitative Research (PQR)

Practical Component (30 Hours)

Suggestive Practicals

- Designing and conducting a correlational study using suitable variables, and standardised tools/questionnaires/tests.
- Conducting an interview /observation/ FGD/ case study as a method of data collection and then analyse it using a suitable method of qualitative data analysis such as thematic analysis.
- Designing a mixed-method study (quantitative-qualitative mixed method or pluralistic qualitative research) and writing a detailed research plan/proposal for the same.

Tutorial Component- Nil

Essential/Recommended Readings

Bansal, P. (2019). *Psychology: Debates and controversies* SAGE Publications India Pvt. Ltd.

Bryman, A. (2004). *Quantity and quality in social research. London,* UK: Routledge.

Coolican, H. (2006). *Introduction to research methodology in psychology.* London: Hodder Arnold

Corbetta, P. (2003). *Social research: Theory, methods and techniques.* United Kingdom: SAGE Publications.

Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches.* 4th ed. Thousand Oaks, California, SAGE Publications

Frost, N. (2021). *Qualitative research methods in psychology: Combining core approaches* (2nd ed.). United Kingdom: McGraw-Hill Education.

Howitt, D., Cramer, D. (2014). *Introduction to research methods in psychology.* United Kingdom: Pearson.

Lammers, W. J., & Badia, P. (2005). *Fundamentals of behavioral research.* United States of America: Thomson/Wadsworth.

Neuman, W.L. (2014). *Social research methods: Qualitative and quantitative approaches.* Boston: Pearson Education.

Willig, C. (2021). *Introducing qualitative research in psychology.* United Kingdom: Open University Press.

Suggestive Readings

Bielski, P. (2010). *Handbook of emergent methods.* Edited by Sharlene Nagy Hesse- Biber and Patricia Leavy. London. The Guilford Press

Charmaz, K., McSpadden, E., Anderson, R., McMullen, L. M., Josselson, R., Wertz, F. J. (2011). *Five ways of doing qualitative analysis: Phenomenological psychology, grounded theory, discourse analysis, narrative research, and intuitive inquiry.* United Kingdom: Guilford Publications.

Creswell, J. W., Plano Clark, V. L. (2017). *Designing and conducting mixed methods research.* United States: SAGE Publications.

Givens, L.M. (2008) T*he SAGE encyclopaedia of qualitative research methods.* UK: SAGE Publications.

Mertens, D. (2020). R*esearch and evaluation in education and psychology: Integrating diversity with quantitative, qualitative, and mixed methods* (5th Ed.). SAGE.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC ELECTIVE COURSE 11 – EDUCATIONAL PSYCHOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical / Practice		
DSE – 11 EDUCATIONAL PSYCHOLOGY	**4**	**3**	**0**	**1**	**Class 12th Pass**	**Basic knowledge of Introductory psychology**

Learning Objectives

- To familiarize students with core concepts of educational psychology
- To foster an understanding of the teaching-learning process and issues with classroom management and assessment
- To create a vision for better educational institutions that practice positive and inclusive education

Learning Outcomes

After learning the course the student will be able to:

- Develop an understanding of the core concepts of educational psychology.
- Gain an insight into various facets of the teaching learning process, and issues with classroom management and assessment.
- Get sensitised towards the need for positive and inclusive educational practices.

SYLLABUS OF DSE- 11

UNIT - I **(9 hours)**

Introduction: Nature and scope of Educational psychology; Contributions of Psychology to Education; Theoretical perspectives (Behavioural, Piaget, Vygotsky, Brofrenbrenner)

UNIT - II **(12 hours)**

Teaching-learning Process: Learner: Learner Differences and Learning Needs, Teacher: Characteristics of an Effective Teacher: Empathy, Communication, Perspective taking

Skills; Metaphors for Teaching-Learning Process; Teaching Methods and their Applications: Teacher centred and Student centred; Use of ICT: Benefits and challenges.

UNIT - III

(12 hours)

Classroom Management and Assessment: Classroom Management, Psychological testing in education, Issues related to Classroom Assessment, Alternatives to traditional assessment

UNIT - IV

(12 hours)

Towards Better Educational Institutions: Inclusive Education; Addressing Classroom Diversity: Gender, Socio-Economic Status, Linguistic Diversity, Disability; Issues related to Categorization & Labelling, Positive education

Practical Component

(30 hours)

Suggestive Practicals

- Comparison of two or more teaching methods.
- Intervention based on any aspect(s) of positive education.
- Comparison of assessment methods in education.
- Analysis of data from primary/ secondary sources regarding education in India

Tutorial Component- Nil

Essential/Recommended Readings

Badley, K., & Hollabaugh, J. (2012). Metaphors for teaching and learning. In K. Badley and H.V. Brummelen (Eds.), *Metaphors we teach by: How metaphors shape what we do in the classroom*. Oregon: Wipf and Stock Publishers.

Bardach, L., Klassen, R.M., & Perry, N.E. (2022). Teachers' psychological characteristics: Do they matter for teacher effectiveness, teachers' well-being, retention, and interpersonal relations? An integrative review. *Educational Psychology Review,* 34, 259-300.

Bartlett, S., & Burton, D. (2016). *Introduction to education studies*. Sage.

Santrock, J.W. (2017). *Educational psychology* (6th ed.). London, UK: Mc Graw Hill Education.

Slavin, R. (2006). *Educational psychology: Theory and practice*. New York: Pearson.

Sutherland, M. (1988). *Theory of education*. London: Longman.

Woolfolk, A. (2020). (14th ed.). *Educational psychology*. Pearson.

Suggested Readings

Banks, J. A. (Ed.). (2012). *Encyclopedia of diversity in education.* Sge Publications.

Leicester, M. (2008). *Creating an inclusive school.* Bloomsbury Publishing.

Morris, B. (1966). The Contribution of Psychology to the Study of Education. In J. Tibble (Ed.) *The study of education.* London: Routledge & Kegan Paul.

Norrish, J. M., Williams, P., O'Connor, M., & Robinson, J. (2013). An applied framework for positive education. *International Journal of Wellbeing, 3*(2), 147-161. doi:10.5502/ijw.v3i2.2

Seligman, M.E.P., Ernst, R.M., Gillham, J., Reivich, K. and Linkins, M. (2009) Positive education: Positive psychology and classroom interventions. *Oxford Review of Education, 35,* 293-311.

Smith, M. (1977). *The underground and education: A Guide to the alternative Press.* London: Methuen & Co. Ltd.

Spring, J. (1975). *A primer of libertarian education.* New York: Free Life Editions.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES
Offered by Department of Psychology

GENERIC ELECTIVE COURSE – 18: Understanding Human Resources

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE 18 UNDERSTANDING HUMAN RESOURCES	4	3	1	0	Class 12th Pass	Basic knowledge of Introductory psychology

Learning Objectives

- To enable students to understand the HR Management and system in various industries or organisations.
- To help students focus on and analyse the issues and strategies required to select and develop manpower resources.
- To develop relevant skills necessary for application in HR related issues.

Learning outcomes

After learning the course the student will be able to:

- Develop the understanding of the concept of human resource management and to understand its relevance in organisations.
- Effectively manage and plan key human resource functions within organisations.
- Integrate the knowledge of HR concepts to take correct business decisions.

SYLLABUS OF GE-18

UNIT - I **(13 hours)**

Acquisition of Human Resources: Human Resource Planning: Job Analysis (any one technique); Recruitment: Sources, Resume Preparation; Selection: Process; Interview, Testing.

UNIT - II **(9 hours)**

Development of Human Resources: Training- Process, Training Need Analysis, Training methods; Career Development and Planning: Career Development and Life Stages, Career Self –Management.

UNIT - III **(11hours)**

Rewarding Human Resources: Performance Appraisal: Process, Methods: Behaviour Oriented Methods (Absolute- Critical Incidents, Forced Choice, Behaviourally Anchored Rating Scales, BARS and Relative- Forced Distribution, Individual, Paired Comparison); Result Oriented Appraisal; 360 degrees feedback; Creating Performance Management Systems.

UNIT - IV **(12 hours)**

HRM and IHRM: Introduction to Human Resource Management (HRM): HRM and HRD; International Human Resource Management (IHRM): Policies and Practices (Global Talent Management, Expatriate Training, Performance Management).

Practical Component - Nil

Tutorial Component **(15 hours)**

Suggestive Tutorial Activities *(This is a suggestive and not an exhaustive list of tutorial activities)*

- Mock Recruitment Process
- Training Needs Analysis (TNA)
- Performance Appraisal Role Play
- Discussion of case Study on relevant Human Resource Management concerns

Essential/Recommended Readings

Briscoe, D. R., Schuler, R. S. & Claus, L. (2009). *International human resource management: policies and practices for multinational enterprises* (3rd ed.). New York: Routledge.

De Cenzo, D. A. & Robbins, S.P. (2021). *Fundamentals of human resource management.* (14th edn.). NY: Wiley.

Harzing, A. W. (2011). *International human resource management.* SAGE.

Schultz, D. & Schultz, S.E. (2017). *Psychology at work today* (10th ed.). London: Routledge.

Suggestive Readings

Deb, T. (2006). *Strategic approach to human resource management: Concept, Tools & application.* Atlantic Publisher

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

GENERIC ELECTIVE 19: GROUP PROCESSES AND DYNAMICS AT WORK

CREDIT DISTRIBUTION, ELIGIBILITY AND PREREQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE-19 GROUP PROCESSES AND DYNAMICS AT WORK	**4**	**3**	**0**	**1**	**Class 12th Pass**	**Basic knowledge of Introductory psychology**

Learning Objectives

- Equip students with an understanding of the principles and processes of group dynamics and interactions from a psychological perspective.
- Facilitate everyday application of various aspects of group dynamics including group interactions, decision-making, communication, and leadership.

Learning Outcomes

After learning the course the student will be able to:

- Demonstrate an understanding of the nature and characteristics of groups and teams within organizations.
- Critically examine the ways in which group dynamics influence group interactions and decision-making processes.
- Identify and analyze the dynamics of communication and reflect on strategies to improve communication in organizations.
- Demonstrate an understanding of various psychological perspectives on leadership in organizations; reflect upon contemporary leadership roles; and apply best practices to group leadership.

SYLLABUS OF GE- 19

UNIT - I **(9 hours)**

Groups and Teams: Basic features of groups (status, norms, roles, cohesiveness); Differences between groups and teams; Stages of Group Development (Tuckman Model); Team-building.

UNIT - II **(12 hours)**

Group Processes and Decision Making: Group Interaction (facilitation, loafing); Group Decision Making (Brainstorming, Group think; Polarization) .

UNIT - III **(12 hours)**

Organizational communication: Objectives of Communication; Communication model; Direction of communication; Grapevine; Barriers to effective communication; Enhancing Communication Effectiveness.

UNIT - IV **(12 hours)**

Leadership in the Contemporary World: Overview to early approaches to leadership (trait, behavioural), Contingency (Fiedler's contingency model), Contemporary issues in leadership- Charismatic, Transformational & Transactional Leadership; Implicit leadership; Authentic leadership; Contemporary leadership roles (Mentoring, Self-leadership, Online leadership); Indian Perspective (Nurturant Task Leadership).

(30 hours)

Practical Component

Suggestive Practicals

- Design and roll out a team building intervention
- Compare the effectiveness of individual vs group decision making OR Identify the dynamics of group decision making- group think and/or group polarization using textual/film/experiential analysis
- Assess your own leadership style using any one standardized tool of leadership / Analyze leadership style of any one leader using archival research.

Tutorial Component: Nil

Essential/ Recommended Readings

Forsyth, D. R. (2018). *Group dynamic*s. Cengage Learning.

Greenberg, J. & Baron, R.A. (2007). *Behaviour in organizations* (10th ed.). Noida: Dorling Kindersley.

Luthans, F., Luthans, B. C., & Luthans, K. W. (2021). *Organizational behavior: An evidence-based approach* (14 th ed.). IAP.

Pareek, U. (2010). *Understanding organizational behaviour*. Oxford: Oxford University Press.

Robbins, S. P., Judge, T. A., & Vohra, N. (2019). *Organizational behavior.* Pearson Education India.

Sinha, J.B.P. (2008). *Culture and organizational behaviour.* New Delhi: SAGE.

Suggestive Readings

Avolio, B. J., Walumbwa, F. O., & Weber, T. J. (2009). Leadership: Current theories, research, and future directions. *Annual Review of pychology, 60,* 421-449.

Levi, D., & Askay, D. A. (2020). *Group dynamics for teams.* Delhi: SAGE Publications.

Wood, J. D. (1990). New Haven Nighthawks. In J. R. Hackman (Ed.), *Groups that work (and those that don't)* (pp. 265- 279). San Francisco: Jossey-Bass Publishers.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

GENERIC ELECTIVE - 20: DISABILITY AND REHABILITATION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE-20 DISABILITY AND REHABILITATION	**4**	**3**	**1**	**0**	**Class 12th Pass**	**Basic knowledge of Introductory psychology**

Learning Objectives

- To orient students to the concept of disability and rehabilitation
- To impart information related to models practiced in disability and rehabilitation
- To develop an understanding of ethics, policies and psychosocial aspect of disability and rehabilitation

Learning Outcomes

After learning the course the student will be able to:

- Understand the concept of disability and rehabilitation
- Learn about the skill development and employment perspective
- Apply the policies and acts in welfare of disability and rehabilitation

SYLLABUS OF GE-20

UNIT - I **(12 hours)**

Introduction: Basic overview of Disability (Terminology, types and Neurodiversity); Impairment, Activity and Participation;Disability in India; Basic overview on Rehabilitation (Terminology and types); Role of a Rehabilitation Professional

UNIT - II **(12 hours)**

Models of Disability and Rehabilitation: *Models of Disability*- Medical Model, Social Model, Overview of Charity and Empowerment Models ; *Models of Rehabilitation*- Psycho-social Model, Community Based Rehabilitation Model, Brief orientation to other models:

Home Based Rehabilitation Model, Institute Based Rehabilitation Model; Assessment and Certification of Disability in India.

UNIT – III **(12 hours)**

Psycho-Social Aspects of Rehabilitation: Accessibility and Advocacy; Social support- Family, Self help groups etc; Skill Development and Employment.

UNIT – IV **(9 hours)**

Provision and Ethics: Rehabilitation ethics; Rehabilitation policies and Acts- The Rights of Persons with Disabilities Act , 2016; Mental Health Care Act, 2017; Rehabilitation Council of India Act,1992; Provision and Schemes.

Practical Component – Nil

Tutorial Component: **(15 hours)**

Suggestive Tutorial Activities *(This is a suggestive and not an exhaustive list of tutorial activities)*

- Analysing the review for disability research and making research based student presentations
- Participation in Self- help groups for understanding Community Based Rehabilitation
- Analysing films on disability to promote inclusivity.
- Analysis of Case-Studies related to Disability Rehabilitation
- Study of Government initiatives for educaion and rehabilitation of children with disabilities
- Study of Policy documents on issues of disability

Essential/Recommended Readings

Arora, M.K. (2022). *Neurodevelopmental disorders in the indian context: different disorders speak different stories*. New Delhi: Prestige Publications.

Caplan, A. L. Is medical care the right prescription for chronic illness? In: S. Sullivan and M. E. Lewin (eds.) *The economics and ethics of long term care and disability*(pp. 73-89) Lanham, Md.:University Press of America .

Dalal, A .K., & Misra,G. (2010). *The core and context of Indian psychology; Psychology and Developing Societies*, *22*(1), 121–155.

Ghai, A. (2015). *Rethinking disability in India*; New Delhi: Routledge.

Markowitz, G., and Rosner, D. (1989). The illusion of medical certainty: Silicosis and the politics of industrial disability, 1930–1960. *Milbank Quarterly 9; 67 Suppl* 2 *Part 1,* 228-253.

Mohopatra C. S., 2004 '*Disability management in India*' National Institute for the Mentally Handicapped (NIMH).

Nagi, S. Z. *Some conceptual issues in disability and rehabilitation*In: M. OCR for page 32

Linton, S. (1995). *Claiming disability: Knowledge and identity* NY: New York University Press; 199 pp.

Status of Disability in India – 2012, Rehabilitation Council of India, New Delhi.

The Mental Healthcare Act, 2017 (No. 10 Of 2017). (2017). Ministry of Law and Justice (Legislative Department) https://egazette.nic.in/WriteReadData/2017/175248.pdf

The Persons of Persons with Disabilities Act, Ministry of Social Justice & Empowerment, Government of India, New Delhi, 2016

Suggestive Readings

Aberecht, G. (2006). (Ed.). *Encyclopedia of disability*. Chicago: Sage Publications.

Berkowitz, E., & Fox, D. (1989). The politics of social security expansion: Social security disability insurance, 1935–1986. *Journal of Policy History, 1(3)*:233-260.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

Category II

Psychology Courses for Undergraduate Programme of study with Psychology as one of the Core Disciplines
(B.A. Programme with Psychology as Major/Discipline)

DISCIPLINE SPECIFIC CORE COURSE – 11: COUNSELLING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-11 Counselling Psychology	4	3	0	1	Passed Class 12th	Basic knowledge of introductory psychology

Learning Objectives

The Learning objectives of this course are as follows:

- To develop an understanding of basic concepts, processes and techniques of counselling.
- Having a comprehensive understanding of the profession of counselling, particularly in the Indian context.

Learning Outcomes

After completing this course, the student will be able to:

- Define counselling and its goals.
- Acquiring basic counselling skills of problem identification, and relationship building (e.g., empathy, listening, paraphrasing, unconditional positive regard).
- Developing qualities of an effective counsellor including increasing self-awareness, reflexivity, self-monitoring and objectivity.
- Helping clients having mild concerns in life; for instance, acting as peer counsellors in the college/community.

SYLLABUS OF DSC-11

UNIT – I **(9 hours)**

Introduction-Nature and Goals; Ethics in counseling; Characteristics of a professional counselor; Status and practice of Counselling Psychology in India.

UNIT – II **(12 hours)**

Therapeutic Process- Building Therapeutic Relationships; Working in a Therapeutic Relationship; Termination.

UNIT – III **(24 hours)**

C. **Techniques of Counseling**- Psychoanalytic Techniques (Freud); Behaviour Therapy; Person-centered Therapy; Cognitive Therapy.

D. **Applications**: Family Counselling; Crisis Intervention: Suicide, Grief, and Sexual Abuse

Practical component – **(30 Hours)**

Suggestive list of practicals:

1. Need for Counselling among college students/ children/ adolescents using any standardized test.
2. To study the self-efficacy of counsellors using any scale for better understanding of
3. personality characteristics of a professional counsellor.
4. Information-oriented first interview (Cormier & Hackney, 2008).
5. Practical based on any 3 micro skills (Pre-post design).
6. Construction of a Genogram.
7. Aptitude and Interest Assessment in Career Counselling.

Essential/recommended readings

Corey, G. (2017). *Theory and practice of counseling and psychotherapy* (10th ed.). New Delhi: Cengage Learning.

Gladding, S. T. (2012). *Counseling: A comprehensive profession.* (7th ed.) . New Delhi. Pearson.

Nystul, M. S.(2016). *Introduction to counselling: An art and science perspective* (5th ed.). New Delhi: Sage.

Rao, K. (2010). Psychological interventions: From theory to practice. In G. Misra (Ed.): *Psychology in India. Volume 3: Clinical and health psychology.* New Delhi. ICSSR/ Pearson.

Seligman, L. & Reichenberg, L.W. (2010). *Theories of counseling and psychotherapy: Systems,strategies, and skills* (3rd ed.). New Delhi; Pearson.

Sharf, R. S. (2012). *Theories of psychotherapy & counselling: Concepts and Cases* (5th ed.).Boston: Brooks/ Cole Cengage Learning.

Suggestive readings

Belkin, G. S. (1998). *Introduction to counseling* (3rd ed.). Iowa: W. C. Brown.

Capuzzi, D. & Gross, D. R. (2007). *Counseling and psychotherapy: Theories and interventions* (4th Ed.) New Delhi: Pearson.

Gibson, Robert, L. Mitchell, Marianne, H. (2015*). Introduction to counseling and guidance* (7thEd.). New York: Pearson.

James, R. K. (2008). *Crisis intervention strategies* (6th ed.). Australia. Thomson Brooks/Cole.

Hillman, J.L (2002). *Crisis intervention and trauma: New approaches to evidence-based practice.* New York: Kluwer Academic/Plenum Publishers.

S.N. & Sahajpal, P. (2013). *Counselling and guidance*. New Delhi: Tata McGraw Hill.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC CORE COURSE – 12: DEVELOPMENTAL

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-12 Developmental Psychology	4	3	0	1	Passed Class 12th.	Basic knowledge of introductory psychology

Learning Objectives

The Learning Objectives of this course are as follows:

- To assist students in understanding how developmental psychology plays a role in theirown lives and future careers
- Connect students to current research and real-world application
- To gain insight in understanding, explaining and applying key human development issues in real life setting
- To foster awareness about the socio-cultural context of human development.

Learning Outcomes

After completing this course, the student will be able to:

- Critically evaluate theories of lifespan development
- Assess the biological cognitive, emotional and social factors that influence development
- Discuss methodological approaches used to study development
- Examine development issues of children and adolescent in the Indian context.

SYLLABUS OF DSC-12

Unit - I **(15 Hours)**

Nature and Perspectives of Development: Understanding context: family, peers, school; research methods and designs (Longitudinal & Cross-Sectional). Physical development: patterns of growth from prenatal development to adolescence.

Unit - II **(15 Hours)**

Cognitive Development: Brief introduction to cognitive development: Piagetian, Vygotskian. Language development

Unit - III **(15 Hours)**

Emotional Development: Displaying, Recognizing and Interpreting Emotions; Attachment;Theories of Moral development (Kohlberg, Gilligan).

Practical component – **(30 Hours)**

Suggestive list of practicals:

1. Study on child-rearing practices using test/ case study
2. Impact of family environment on socio-emotional development/ cognitive growth.
3. Application of Piaget's theory of cognitive development
4. Assessment of moral development using test/ dilemmas
5. Language assessment using Multilingual Assessment Instrument for Narratives (MAIN)
6. Assessment of attachment style and socio-emotional development

Essential/recommended readings

Berk, L. E. (2010). *Child Development* (9th Ed.). New Delhi: Prentice Hall. (Unit 3:Chapter 12)

Feldman, R.S. & Babu, N. (2011). *Discovering the life-span.* New-Delhi: Pearson.(Unit 1: Chapter 1, 2 to 8)

Kakar, S. (2012) *The inner world: A psychoanalytic study of childhood and society inIndia* (4th Ed.). New Delhi. Oxford University Press (Unit 3)

Santrock, J.W. (2012). *A topical approach to life-span development.* New Delhi: Tata McGraw- Hill. (Unit 1 to 3)

Shaffer, D.R. & Kipp, K. (2007). *Developmental psychology: Childhood and Adolescence* Indian reprint: Thomson Wadsworth (Unit 2: Chapter 7 to 10, Unit 3:Chapter 11, 15 &

16)

Sharma, N. & Chaudhary, N. (2009). *Human development: Contexts and processes* In G. Misra (ed) Psychology in India, Vol 1: Basic psychological processes and human development.India: Pearson. (Unit 3)

Suggestive readings

Georgas, J., John W. Berry., van debVijver, F.J.R, Kagitçibasi, Çigdem,Poortinga, Y. P. (2006). *Family across Thirty Cultures: A Thirty Nation PsychologicalStudy.* Cambridge Press.

Mitchell, P. and Ziegler, F. (2007). *Fundamentals of development: The Psychology of Childhood.* New York: Psychology Press.

Saraswathi, T.S. (2003). *Cross-cultural perspectives in Human Development: Theory, Research and Applications.* New Delhi: Sage Publications.

Srivastava, A.K. (1997). *Child Development: An Indian Perspective.* New Delhi.

Patra, S. (2022). *Adolescence in India: Issues, Challenges and Possibilities.* New Delhi: Springer

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

Category III

Psychology Courses for Undergraduate Programme of study with Psychology as one of the Core Disciplines
(B.A. Programme with Psychology as Minor discipline)

DISCIPLINE SPECIFIC CORE COURSE – 11: COUNSELLING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-11 Counselling Psychology	4	3	0	1	Passed Class 12th	Basic knowledge of introductory psychology

Learning Objectives

The Learning objectives of this course are as follows:

- To develop an understanding of basic concepts, processes and techniques of counselling.
- Having a comprehensive understanding of the profession of counselling, particularly in the Indian context.

Learning Outcomes

After completing this course, the student will be able to:

- Define counselling and its goals.
- Acquiring basic counselling skills of problem identification, and relationship building (e.g., empathy, listening, paraphrasing, unconditional positive regard).
- Developing qualities of an effective counsellor including increasing self-awareness, reflexivity, self-monitoring and objectivity.
- Helping clients having mild concerns in life; for instance, acting as peer counsellors in the college/community.

SYLLABUS OF DSC-11

UNIT – I

Introduction-Nature and Goals; Ethics in counseling; Characteristics of a professional counselor; Status and practice of Counselling Psychology in India. **(9 hours)**

UNIT – II

(12 hours)

Therapeutic Process- Building Therapeutic Relationships; Working in a Therapeutic Relationship; Termination.

(24 hours)

UNIT – III

A. **Techniques of Counseling-** Psychoanalytic Techniques (Freud); Behaviour Therapy; Person-centered Therapy; Cognitive Therapy.
B. **Applications**: Family Counselling; Crisis Intervention: Suicide, Grief, and Sexual Abuse

(30 Hours)

Practical component –

Suggestive list of practicals:

1. Need for Counselling among college students/ children/ adolescents using any standardized test.
2. To study the self-efficacy of counsellors using any scale for better understanding of
3. personality characteristics of a professional counsellor.
4. Information-oriented first interview (Cormier & Hackney, 2008).
5. Practical based on any 3 micro skills (Pre-post design).
6. Construction of a Genogram.
7. Aptitude and Interest Assessment in Career Counselling.

Essential/recommended readings

Corey, G. (2017). *Theory and practice of counseling and psychotherapy* (10th ed.). New Delhi: Cengage Learning.

Gladding, S. T. (2012). *Counseling: A comprehensive profession.* (7th ed.) . New Delhi. Pearson.

Nystul, M. S.(2016). *Introduction to counselling: An art and science perspective* (5th ed.). New Delhi: Sage.

Rao, K. (2010). Psychological interventions: From theory to practice. In G. Misra (Ed.): *Psychology in India. Volume 3: Clinical and health psychology.* New Delhi. ICSSR/ Pearson.

Seligman, L. & Reichenberg, L.W. (2010). *Theories of counseling and psychotherapy: Systems,strategies, and skills* (3rd ed.). New Delhi: Pearson.

Sharf, R. S. (2012). *Theories of psychotherapy & counselling: Concepts and Cases* (5th ed.).Boston: Brooks/ Cole Cengage Learning.

Suggestive readings

Belkin, G. S. (1998). *Introduction to counseling* (3rd ed.). Iowa: W. C. Brown.

Capuzzi, D. & Gross, D. R. (2007). *Counseling and psychotherapy: Theories and interventions* (4th Ed.) New Delhi: Pearson.

Gibson, Robert, L. Mitchell, Marianne, H. (2015). *Introduction to counseling and guidance* (7th Ed.). New York: Pearson.

James, R. K. (2008). *Crisis intervention strategies* (6th ed.). Australia. Thomson Brooks/Cole.

Hillman, J.L (2002). *Crisis intervention and trauma: New approaches to evidence-based practice.* New York: Kluwer Academic/Plenum Publishers.

S.N. & Sahajpal, P. (2013). *Counselling and guidance*. New Delhi: Tata McGraw Hill.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC ELECTIVE (DSE) COURSES

Discipline Specific Elective (DSE) Courses for Semester VI:

DSE 4: Psychological Research: Paradigms, Approaches, and Methods
DSE 5: Essentials of Media Psychology
DSE 6: Managing Human Capital at Workplace

DISCIPLINE SPECIFIC ELECTIVE (DSE) COURSE – 4: PSYCHOLOGICAL RESEARCH: PARADIGMS, APPROACHES, AND METHODS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE-4 Psychological Research: Paradigms, Approaches, and Methods	4	3	0	1	Passed Class 12th	Basic knowledge of introductory psychology

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce the paradigmatic foundations of psychological research
- To understand the differences between the quantitative and qualitative traditions of research in psychology
- Present the essential considerations of research in Psychology
- Introduce the process, designs and techniques of data-analysis in the quantitative and qualitative research tradition

Learning Outcomes

After completing this course, the student will be able to:

- Critically analyse and compare paradigmatic frameworks and their underlying assumptions and contributions to the field of psychology
- Appreciate the nuances of quantitative and qualitative traditions of research in Psychology and select an appropriate research tradition for their own research problems.
- Understand the commonalities and differences in features, goals, steps, sampling procedures and ethics of quantitative and qualitative traditions of research.
- Design a quantitative and qualitative research and select an appropriate method of data collection and analysis.

SYLLABUS OF DSE - 4

Unit – I **(18 hours)**

Essential considerations of Psychological Research

Paradigmatic considerations: Positivist, Post-positivist, Interpretivist, Critical Paradigm, and Constructivist.

Psychological research: Goals of research; Steps of Research - Problem identification, Hypothesis formulation, Designing the research, Data collection, Data analysis, and Interpretation; Common research forms - exploratory, descriptive and explanatory; Quantitative and Qualitative research traditions - overview, and differences.

Sampling: Defining Population and Sample, Sampling bias (Sampling error and Non sampling error), Types of Probability and Non-probability sampling.

Unit – II **(12 hours)**

Quantitative Research Techniques

Experimental Method: Causality versus correlation, Laboratory experiments and field experiments; True experimental and quasi-experimental design; Within-subject design, Between subject design, Pre and Post designs.

Survey Research: The logic and types of survey; Designing a survey questionnaire.

Issues of ethics and rigour in quantitative research.

Unit – III **(15 hours)**

Qualitative Research Techniques

Methods of data gathering: Interview, Focus group discussion, Case study, Observational Method, Using secondary data sources.

Techniques of qualitative analysis: content analysis and thematic analysis

Issues of ethics and rigour in qualitative research.

Orientation to Mixed Methods Research: Combining quantitative and qualitative approaches

Practical component – **(30 hours)**

Suggestive list of practicals:

1. To identify and illustrate the basic assumptions of paradigms using different research works.
2. Designing a true experimental or quasi-experimental study using any designs such as between-subjects, within-subjects, or pre-post designs.
3. Conducting a survey which may involve designing a questionnaire, collecting and analysing the data.
4. Conducting an interview (structured, semi-structured, unstructured, life-history etc,)/ observation (participant or non-participant)/ focus group discussion (online or in-person)/ case-study (single/multiple) as a method of data collection. The data obtained may be analysed using a suitable method of data analysis such as thematic or content analysis.
5. Designing a mixed-method study and writing a detailed research plan/proposal for the same.

Essential/recommended readings

Bryman, A. (2004). *Quantity and Quality in Social Research.* London, UK: Routledge.

Coolican, H. (2006). *Introduction to Research Methodology in Psychology*. London: Hodder Arnold

Corbetta, P. (2003). *Social Research: Theory, Methods and Techniques*. United Kingdom: SAGE Publications.

Creswell, J. W. (2014). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. 4th ed. Thousand Oaks, California, SAGE Publications

Denzin, N. K., & Lincoln, Y. S. (2018). *The sage handbook of qualitative research*. 5th Ed. Sage.

Gall, M., Gall, J., & Borg, R. (2007). *Educational research: An introduction* (8th ed.). New York, NY: Pearson Education

Howitt, D., Cramer, D. (2014). *Introduction to Research Methods in Psychology*. United Kingdom: Pearson.

Lammers, W. J., &Badia, P. (2005). *Fundamentals of Behavioral Research*. United States of America: Thomson/Wadsworth.

Mertens, D. (2020). R*esearch and evaluation in education and psychology: integrating diversity with quantitative, qualitative, and mixed methods* (5th ed.). SAGE.

Neuman, W.L. (2014). S*ocial Research Methods: Qualitative and Quantitative Approaches*. Boston: Pearson Education.

Willig, C. (2021). *Introducing Qualitative Research in Psychology*. United Kingdom: Open University Press.

Suggestive readings

Givens, L.M. (2008) T*he SAGE Encyclopaedia of Qualitative Research Methods*. United Kingdom: SAGE Publications.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC ELECTIVE (DSE) COURSE – 5: ESSENTIALS OF MEDIA PSYCHOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 5: Essentials of Media Psychology	4	3	1	0	Passed Class 12th	Basic knowledge of introductory psychology

Learning Objectives

The Learning Objectives of this course are as follows:

- To educate learners about media and its impact
- To acquaint learners with the role of media in psychosocial change.
- To help learners understand critical issues related to media

Learning outcomes

After completing this course, the student will be able to:

- Understand the concept of media and its interface with psychology
- Distinguish between fantasy and reality
- Analyse the relationship between advertising and persuasion
- Critically examine the psychosocial influences of media

SYLLABUS OF DSE - 5

Unit – I **(9 Hours)**

Introduction to Media Psychology- - Nature and scope of media psychology; Classic Theories in Media Studies (Marshall McLuhan, Baudrillard); Research in Media Psychology; Indian perspective of Media Psychology

Unit – II **(12 Hours)**

Media and the User- Fantasy and reality; Expressing self and identity through social media; Finding communities (Fandoms, virtual communities); Use and abuse of internet

Unit – III **(12 Hours)**

Social Impact of Media- Media influences on pro-social behaviours, violence, and aggression; Psycho-social effects (social comparisons, body image, substance use); Advertising and persuasion (Advertising appeals, AIDAS Model)

Unit – IV **(12 Hours)**

Critical Issues in Media Psychology- Media as a tool for social and political change (Social Media movements, Propaganda); Representations of social groups in media (Gender and sexuality, religious minorities, disability); Ethics and Media

Tutorial component **(15 Hours)**

Suggestive Tutorial Activities

- Discussions around use of media for campaign promotion like Swachh Bharat Abhiyan, Fit India etc.
- Critical thinking exercises like Advertisement Analyser worksheets
- Questionnaires to understand social media and its impact, such as Social Media Use Questionnaire (e-SMUQ) or Internet Addiction Scale
- Reflective exercise on identifying influence of social media on behaviour
- Documentary screenings and discussions
- Discussions around FOMO and JOMO

Practical component (if any) - NIL

Essential/recommended readings

Batra, R., Aaker, D. A., and Myers, J. G. (2006). *Advertising management.* New Delhi Dorling Kindersley (India).

Cill, J.C., Culbert, D.H., & Welsh, D. (2003) *Propaganda and mass persuasion: A Historical Encyclopedia,* Santa Barbara: ABC-CLIO, Inc.

Dill, K. E. (2009). *How fantasy becomes reality: Seeing through media influence.* Oxford University Press.

Dill, K. (Ed.). (2013). *Oxford handbook of media psychology.* New York: Oxford University Press.

Gayle, S.S., Giles, D.C., Cohen, D., & Meyers, M.E. (2021). *Understanding Media Psychology*. Routledge

Giles, D. (2008). *Media psychology.* Lawrence Erlbaum

Giles, D. (2010). *Psychology of the media.* Macmillan International Higher Education.

Kumar, N. (2021). *Media psychology: Exploration and application.* Routledge.

Mc Mahon, C. (2019). *The psychology of social media.* Routledge.

McLuhan, M. (2001). *Understanding Media: The extensions of man.* United Kingdom: Routledge.

Newman, M. J. (2015). Image and identity: Media literacy for young adult Instagram users. *Visual Inquiry. 4* (3): 221–227

Sharma, S. & Singh, R. (2011). *Advertising: Planning and implementation* (5thed.). PHI Learning Pvt Ltd.

Tiwari, S., Jina, P., Pathak, D.N., Uniyal, V., and Singh, U.K. (2022). The paradox of use, abuse, and misuse of the internet by the children. *International Journal of Mechanical Engineering, 7*(3), 707-713.

Suggestive readings

Frohardt, M. & Tamin, J. (2003). Use and abuse of media in vulnerable societies. *Special Report*, United Institute of Peace, www.usip.org

Joinson, A., McKenna, K. Y. A., Postmes, T., & Reips, U.-D. (Eds.). (2007). *The Oxford handbook of internet psychology.* Oxford: Oxford University Press.

Merrin, W. (2005). *Baudrillard and the media: A critical introduction.* Polity. Wiley

Pescott, C. K. (2020). "I Wish I was wearing a filter right now": An exploration of identity formation and subjectivity of 10- and 11-year olds' Social Media Use. *Social Media + Society, 6*(4).

Spies Shapiro LA, Margolin G. (2014). Growing up wired: social networking sites and adolescent psychosocial development. *Clinical Child and Family Psychology Review, 17*(1),1-18.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC ELECTIVE (DSE) COURSE – 6: MANAGING HUMAN CAPITAL AT WORKPLACE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 6: Managing Human Capital at Workplace	4	3	1	0	Passed Class 12th	Basic knowledge of introductory psychology

Learning Objectives

The Learning Objectives of this course are as follows:

- To help students understand the various processes and practices related to Human Capital.
- Enable students to develop a connection between concepts, process and practices in organizations.
- Understanding counterproductive behavior in organization.
- To develop the understanding of the importance of employee talent and job analysis at workplace.

Learning outcomes

After completing this course, the student will be:

- Able to understand the different processes and practices related to human capital.
- Able to understand issues, functioning and challenges of managing human capital at workplace.
- Able to develop knowledge and skills related to employee recruitment, Job Analysis and talent management.

SYLLABUS OF DSE - 6

Unit – I **(15 Hours)**

Job Analysis and Talent Management

Basics of job Analysis, Methods for Collecting job Analysis Information, Writing Job Description, Talent Management Process, Profiles in Talent Management: Competencies and Competency-Based Job Analysis.

Unit – II **(15 Hours)**

Attraction and Socialization: An Organizational Perspective
Recruitment Process: Applicant's Perspective, Organizational Socialization: Diversity in Organization.

Unit – III **(15 Hours)**

Counterproductive Behavior at workplace
Nature of Counterproductive Behavior, Ineffective Job Performance, Employee Absenteeism, Employee Turnover, Odd Forms of Counterproductive Behavior .

Tutorial component (15 Hours)

Suggestive Tutorial Activities:

- Case study on an Indian Organization based on primary/secondary data, on Job Analysis/ Talent management
- Case study on an Indian Organization based on Organizational socialization, diversity in organizations
- Role play on Counterproductive Work Behavior.

Practical component (if any) - NIL

Essential/recommended readings

Aamodt, M. G. (2022). *Industrial/organizational psychology: An applied approach.* Cengage Learning. (Unit 1: chapter 2; Unit 2: chapter 4, chapter 5, chapter 6)

Dessler, G., & Varkkey, B. (2020). *Human Resource Management* (16th Edition). New Delhi, India: Pearson Education. (Unit 1: chapter 1, chapter 4; Unit 3: chapter 8)

Jex, S.M. & Britt, T.W. (2014). *Organizational Psychology: A Scientist–Practitioner Approach*, John Wiley & Sons

Lynton, R. P., & Pareek, U. (2011). *Training for development.* SAGE publishing India.

Rao, V.S.P. (2009). *Human Resource Management.* 2nd ed. Excel books (Unit 1: chapter 1, chapter 3; Unit 2: chapter 4, chapter 5; Unit 3: chapter 13)

Suggestive readings

Bulger, C. A., Schultz, D. P., & Schultz, S. E. (2020). *Psychology and work today.* Routledge.

DeCenzo, D. A., Robbins, S. P., & Verhulst, S. L. (2020). *Fundamentals of human resource management.* John Wiley & Sons.

Harzing, A-W., & Pinnington, A.H. (Eds.) (2014). *International Human Resource Management* (4th Ed) New Delhi: Sage.

Bhatnagar, J. & Budhwar, J. (2009). The *Changing Face of People Management in India.* London: Routledge.

Pareek, U. (2010) *Understanding Organizational Behaviour.* Oxford: Oxford University Press.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

B. A. (Hons.) APPLIED PSYCHOLOGY COURSE

SEMESTER - IV

DISCIPLINE SPECIFIC CORE COURSE 10 – Approaches and Practice of Counselling

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 10: Approaches and Practice of Counselling	**04**	**03**	**0**	**01**	**Class 12th pass**	**Basic knowledge of Introductory Psychology**

Learning Objectives

The Learning Objectives of this course are as follows:

- To build a comprehensive understanding of the profession of counselling
- To facilitate development of basic counselling skills
- To understand the application of counselling in different contexts

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course the student will be able to understand the nature and scope of counseling psychology, and its difference from other allied fields.
- By studying this course the students will understand the different techniques of counseling based on different approaches.
- By studying this course the students will become aware of the application of counseling in different settings

SYLLABUS OF DSC-

Unit 1: Counselling: process, issues and challenges **(15 hrs)**

Definitions, Process and outcome of Counselling, Counselling and Psychotherapy, Personal and professional aspects of a counsellor (skills), Ethical principles in counselling, Challenges of counselling profession in India.

Unit 2: Approaches to counselling **(15 hrs)**

Behavioural approach (behaviour modification techniques), cognitive approaches (Aaron Beck and Albert Ellis techniques), Freudian techniques, Rogerian approach, positive psychotherapy (Seligman, Rashid and Parks)

Unit 3: Application of counselling **(15 hrs)**

School counselling with a Solution Focused Brief Therapy lens, Super's model of career counselling, Queer affirmative therapy, Bowen's Family systems therapy

Practical **(30 hrs)**

Any 2 practicals based on the topics covered in the above three units. The options are given below:

1. Skill based practicum based on Rogers' Person centered approach
2. Understanding counseling process
3. Externship in school counseling
4. Learning counseling techniques based on CBT or REBT or Psychoanalytic approach or positive psychotherapy

Essential/Recommended Readings:

Bhola, P. & Raghuram, A. (2016). *Ethical Issues in Counseling and Psychotherapy Practice: Walking the line.* Springer. (Chapter 1, Chapter 9, Appendix A [Indian only])

Gladding, S & Batra, P. (2018) *Counselling: A comprehensive profession.* New Delhi: Pearson

Murphy, J.J. (2015). *Solutions Focused Counselling in Schools.* Wiley. (Chapter 3, Appendix E,G,H,J)

Nelson, R, J. (2015) *Theory and Practice of Counseling and Psychotherapy*. 6th edition. New Delhi: Sage South Asia.

Ranade, K., Chakravarty, S., Nair, P., Shringarpure, G. (2022). *Queer Affirmative Counselling Practice - A Resource Book for Mental Health Practitioners in India.* Mumbai: Mariwala Health Initiative (chapter 5 and 6)

Seligman, L & Reichenberg, L.W. (2010) *Theories of counseling and Psychotherapy.* New Jersey: Pearson (SFBT and family systems)

Seligman, M. E. P., Rashid, T., & Parks, A. C. (2006). Positive psychotherapy. *American Psychologist*, 61(8), 774–788. https://doi.org/10.1037/0003-066X.61.8.774

Suggestive Readings

Capuzzi, D. & Stauffer, M. D. (2022). *Counselling and Psychotherapy: Theories and Interventions* (7th Ed.) American Counselling Association

Corey, G. (2009) *Counselling and Psychotherapy: Theory and Practice*. (7th Ed.) New Delhi: Cengage Learning.

Seth, S., Bhatia, H., and Chadha, N. K. (2018). *Counselling skills: Knowing self and others*. New Delhi: The Readers' Paradise.

Sharf, R. S. (2012). *Theories of Psychotherapy and Counseling: Concepts and Cases*.5th Edition. Belmont: Brooks/Cole (Cengage Learning) (Unit 3)

Colin Feltham, Terry Hanley, & Laura Ann Winter (2018). *The Sage Handbook of Counseling and Psychotherapy*. 4th Edition. Sage.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC CORE COURSE 11: Introduction to Psychological Assessment

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical		
DSC 11: Introduction to Psychological Assessment	**4**	**3**	**0**	**1**	**Class 12th pass**	**Basic knowledge of Introductory Psychology**

Learning Objectives

The Learning Objectives of this course are as follows:

- To build a comprehensive understanding psychological assessment
- To facilitate development of basic psychological assessment skills
- To understand the application of Psychological assessment in different contexts

Learning Outcomes

After doing the course, the students would be able to

- Understand the basic principles of psychological assessment and its various phases.
- Develop knowledge of the ethical and legal issues involved in the assessment process
- Familiarise with the steps in test construction and test standardization
- Know about different scales of measuring psychological attributes

UNIT – I **(15 Hours)**

Introduction to Assessment: Historical development of Testing and assessment, Nature, Types and Scope of assessment. Comparison between test and assessment. Ethical and social consideration in testing and assessment (APA basic principles and standard Guidelines).

UNIT – II **(15 Hours)**

Test Construction and Standardisation: Item writing, Item analysis, Norms and Test Standardisation, Reliability, and Validity.

UNIT – III **(15 Hours)**

Types of Scales: Likert, Thurstone, Guttman and Semantic differential scale.
Applications and Future Directions: Uses of Psychological Tests in different settings. Future directions in psychological assessment (Virtual reality, Computer assisted assessment, assessment in multicultural context).

Practical **(30 Hours)**

Total of two Practicums -one each from the following areas:

1 Test Construction/Standardisation; Scale construction
2 Psychological assessment: Assessment through any one psychological tests or scale (e.g. Likert, Thurstone, Guttman and Semantic differential scale)

Essential/recommended readings:

Anastasi, A., & Urbina, S. (2003). *Psychological testing.* (7th ed). New Delhi: Prentice – Hall of India Pvt. Ltd.

Gregory, R. J. (2014). *Psychological testing: History, principals and applications.* (6th ed.) Boston: Pearson Education.

Mohanty, B., & Misra, S. (2015). *Statistics for behavioral and social sciences.* New Delhi: Sage Publications.

Murphy, K. R., & Davidshofer, C. O. (2019). *Psychological Testing: Principles and Applications.* 6th ed., New Delhi: Pearson.

Suggestive readings:

Aiken, L. R., & Groth-Marnet, G. (2009). *Psychological testing and assessment.* (12th ed). New Delhi: Pearson Education.

Husain, A. (2012). *Psychological testing.* New Delhi, India: Pearson Education.

Kaplan, R. M., & Saccuzzo, D. P. (2012). *Psychological testing: Principles, applications and issues.* (8th ed.). New Delhi, India: Cengage.

Miller, L. A., Lovler, R. L., McIntire, S. A. (2013). *Psychological Testing: A Practical Approach.* New Delhi: Sage Publications.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC CORE COURSE 12 – Inferential Statistics in Psychology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 12 - Inferential Statistics in Psychology	**4**	**3**	**0**	**1**	**Passed Class 12th**	**Knowledge of Descriptive Statistics**

Learning Objectives

After doing the course, the students would

- The advanced statistics course will assist students in grasping the techniques of inferential statistics necessary for carrying out research.
- They should be able to analyze and interpret statistical data obtained in research.

Learning outcomes

By studying this course, students will be able

- To understand advanced statistical techniques.
- To understand the statistical methods used in Statistical Inferences with a concept-focused approach.

SYLLABUS-

UNIT – I **(15 Hours)**

Introduction to Inferential Statistics: Parametric and Non-Parametric Statistics, Testing hypothesis about single means (*z* and *t*): Random sampling distribution of means, Null and alternate Hypotheses; One-tailed (directional) and Two-tailed (non-directional) hypothesis; Characteristics of Student's distribution of *t*; Degrees of freedom; Assumptions of *t*-test; Levels of significance versus *p*-values;

UNIT – II **(15 Hours)**

Interpreting the results of hypothesis testing: Type I and Type II error, Power of a test; Difference between Two Means (*t*-test) - Independent and Dependent Groups; Confidence Intervals

Unit-III **(15 Hours)**

Hypothesis Testing: More than two groups (One way ANOVA): Assumptions and calculation of one-way; Comparison of *t* and *F*. *Post Hoc* Comparisons (conceptual understanding). Chi-Square: Chi-Square as a Measure of Discrepancy between Expected and Observed Frequencies: Assumptions and calculations.

Practical component **(30 Hours)**

Total of two practicums from any of the following areas:

1 One practical based on comparison of two groups using t test
2 One practical based on comparison of more than two groups using ANOVA
3 One practical based on Chi-square

Data sets available online or those from other sources can be used for this purpose.

Essential/Recommended Readings:

Dyer, C. (2001). *Research in Psychology: A Practical Guide to Research Methodology and Statistics* (2nd ed.). Oxford: Blackwell Publishers.

King, B.M., Rosopa, P.J., & Minium, E.W. (2007). *Statistical Reasoning in the Behavioral Sciences.* (7th Ed.) USA: John Wiley.

Mangal, S.K. (2010). *Statistics in Psychology and Education* (2nd Ed.). PHI Learning.

Suggestive Readings

Garrett, H.E. (1973). Statistics in Psychology and Education. Bombay: Vakils, Feffer and Simons Private Ltd.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC ELECTIVE COURSE 3 – : Advances in Applied Social Psychology

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 3: Advances in Applied Social Psychology	04	03	0	01	Class 12th pass	Social Psychology

Learning Objectives

- To understand Advanced Social Psychology and its various processes including social aspects of brain and behaviour
- To understand psychological aspects of economic and financial management and ongoing recent trends in Social Psychology

Learning outcomes

- By studying this course, the student will be exposed to the area of social neuroscience
- By studying this course, the students will understand the social bases of economic behaviour, like financial planning and decision making.
- By studying this course, the students will become aware of the emerging issues and problems that face social psychologists

SYLLABUS OF DSE-

Unit I **(15 hrs)**

Social Brain and Behaviour: Origins of social brains; Anatomy of brains; Chromosomes, genes and DNA; Research Method of Social Neuroscience; Application of Social Neuroscience; Evolution, Brain plasticity, Culture

Unit II **(15 hrs)**

Social Psychology of Personal Finance: Behavioural Economics and Financial Markets; Loss of aversion; Mental accounting; Decision Paralysis; Personal finance Planning, Tax Morale and Tax Compliance behaviour.

Unit III **(15hrs)**

Emerging Trends in Social Psychology: Social Cure, Social Psychology of Happiness; Social Psychology of religion, Social Psychology applied to environmental studies, Aggression in Every day life (Explaining sexual aggression, Vulnerability factor for sexual victimization,, Hate crime, Aggression on the Road

Practicum: **(30 hours)**

Two practicums to be done, one each from the following two areas:

1) Social Psychology of Personal Finance

2) Emerging Trends in Social Psychology

Essential/Recommended Readings:

Barrett, D. W. (2017). *Social Psychology: Core Concepts and Emerging Trends*. Sage Publication.

Glinonich, K. C., & Nisbett (2016). *Social Psychology*. WW Norton & Co. New York.

Jetten, J., Haslam, C. Haslam, S. A. (2012). *Social Cure: Identity Health and Well-being*. Psychology Press, New York.

Kirchler, E. (2009). *The Economic Psychology of Tax Behaviour*. Cambridge University Press, New York

Krahe, B. (2021). *The Social Psychology of Aggression*. Routledge, U.K.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC ELECTIVE COURSE 4 – Foundations of Sports Psychology

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 4: Foundations of Sports Psychology	**04**	**03**	**0**	**01**	**Class 12th pass**	**Basic knowledge of Introductory Psychology**

Learning Objectives

- To understand the role of psychology in sports
- To get familiarized with the fundamental concepts of psychology with an emphasis on the application of psychology in sports.
- Through an integrated approach students gain the insight they need to understand, explain & apply key concepts of sports psychology in a real-life setting.
- The study of this course will open another branch of psychology where they can work & contribute to society for instance working with sports organizations, National, State & District sports federations, Educational Setups, National, State & Youth Teams, Individual sportspersons etc.
- Hands-on training for students with the help of practical are listed in the course

Learning Outcomes

- To develop a foundational understanding of Sports Psychology
- To understand the application of psychological principles in Sports Psychology

UNIT-1: BASICS OF SPORTS PSYCHOLOGY **(15 hours)**

Introduction (competitive & non-competitive physical activities): Historical Development (history of sports Psychology in India); Need & Scope of Sports Psychology; Relationship of Sports Psychology with other Sports Sciences (Anthropometry, Physiology, Biomechanics & Nutrition); Role of Sports Psychologist (imp of sports psy for athletes, coaches & others related to sports setting)

UNIT-2: PSYCHOPYSIOLOGICAL ASPECTS IN RELATION TO SPORTS PERFORMANCE **(15 Hours)**

Anxiety, Arousal (inverted u hypothesis, drive theory &IZOF) & Stress in relation to performance & its management; Biofeedback (GSR, EEG & EMG) (Relaxation Techniques (PMR, Autogenic Training, Deep Breathing, Yoga, meditation, & biofeedback-assisted relaxation); Perception & vision in relation to sports (Depth perception, peripheral vision Anticipation, Attention & Concentration (Reaction Time & DM) in relation to performance & Management (Concentration Training, Self-talk, Thought stopping & centering).

UNIT-3: SOCIAL PSYCHOLOGY IN SPORTS **(15 Hours)**

Individual & Team sports (Team Cohesion: Nature, Correlates, and Development); Team Building: (Factor Affecting group performance: Homogeneity of the group, stability of membership, communication structure, social facilitation, and inhibition); Relationship of Team Cohesion to Team Success (cultural influences on teamwork: Building teams in the Indian Sport Context); Impact of the audience on Sport Performance

Practicals: **(30 hours)**

A total of two practicals (from different units) of the following:

1. Any psychological test from the above units: measuring Sports Competitive Anxiety, Mental Toughness Dimensions, Test of Attentional & interpersonal Style etc.
2. Hands-on training on measuring Reaction Time, Anticipation Time, GSR, EMG, etc. assisted with any of the above-listed interventions.
3. FGD/ Simulated Exercise / Workshop /Case study of Indian sportsperson /Team.
4. Any one field based practical from the units above.

Essential/Recommended Readings:

Cox, R (2006). *Sports Psychology*. McGraw -Hill Education

Carron, A.V., Hausenlas, H. A. Mark Eys (2005). *Group Dynamics in Sports*. Organtown, WV: Fitness information Technology, INC, US.

Mohan, J. (2010). *Sports Psychology*: *Emerging Horizons*. New Delhi: Friends Publishers

Weinberg, R. S., & Gould, D. (1995). *Foundation of sports & Exercise psychology*. Champaign, I, Human Kinetics.

Suggestive Readings:

Kamlesh, M. L., Mohan J. (1987) The development of sport psychological research in India . *The Sports Psychologist*, 1, 257-261.

Perry, J. (2016). *Sports Psychology: A complete Introduction*. Hachette UK.

Jarvis, M. (2006). *Sports Psychology: A Students handbook*. Routledge.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE 5 – Understanding Self and Others

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE – REQUISITES OF THE COURSE

Course title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre – requisite of the Course (if Any)
		Lecture	Tutorial	Practical/Practice		
DSE 5: Understanding Self and Others	**4**	**0**	**0**	**4**	**Class 12th pass**	**Basic knowledge of Introductory Psychology**

Learning Objectives

- To be able to understand self and other
- To be able to understand the self; reflecting throughout the journey from childhood; be accountable for one's actions and be in touch with one's own emotions.
- To be able to understand issues related to that of gender and sexuality, group dynamics, diversity and stereotypes
- To demonstrate an understanding of the issues in communication, practice mindfulness, experience creativity and flow and be able to develop coping abilities to deal with stress
- To understand consumer culture and its impact, connect with nature, enjoy music as a way of self-knowledge and develop empathy

Learning Outcomes:

- Developing insights about how to build authentic relationship with self and others and embark on a journey of personal growth.
- Developing the skills of reflexivity and self-reflection.
- Acquiring skills to practice mindfulness, meditation and contemplation to live a deeper and more engaged life.
- Experiencing responsibility for self and others.

Syllabus of DSE-

This is an entirely practicum/experiential based paper. Format of the Practicum (experiential exercises):

- The aim of the practicum is to facilitate an experiential journey towards a deeper insight into self and social world and lead to self-development.
- A series of long workshops spread over the semester can be conducted. Other formats like short retreats followed by workshops may also be explored wherever possible.
- The themes suggested in the next section in varied combinations may be used to structure workshops according to group needs.

The following are only suggestive practicals (experiential exercises) and similar practicals (experiential exercises) can be explored by the teacher. A total of four practicums -one from each unit can be conducted:

Unit 1 **(18 hours)**

1. Exploring the Self: The students undertake an experiential journey that leads to an initial answer to the question 'Who am I?
2. A Journey through Childhood: The students engage with their own childhood experiences and relive its joys, hurts, longings and aspirations. They learn to listen to each other's childhood experiences and empathize with them.
3. Taking Responsibility for One's Decisions: The students engage with situations where a critical decisions needed to be taken and their own response pattern in such situations. The students engage experientially with ways in which they can take much more conscious decisions and not hold others responsible for the default decisions that they allow them to make.
4. Engaging with the Emotional Self: The students explore their emotional selves through different experiential exercises.

Unit 2 **(18 hours)**

1. Gender and Sexuality: The students explore the issues related with gender and sexuality in an environment of openness and trust. Students also dialogue on issues like menstruation, child abuse, marital rape etc. and find ways to protect, care and nourish their own and others' physical and emotional selves.
2. Understanding Group Dynamics: The group dynamics are explored from the perspective of finding creative ways of understanding and resolving conflict. A nuanced understanding of leadership is explored which moves away from domination of 'others' towards listening and empathy as a way creating avenues for leading one's own self.
3. Challenging Stereotypes and Prejudice: The students undertake an experiential journey to confront conditioned habits, negativity, stereotypes and prejudice in one's outlook.
4. Engaging with Diversity: The students can engage with the concept of diversity and its varied dimensions.

Unit 3 **(18 hours)**

1. Communication: Observing the role of active listening, attention and empathy in communication; analyzing verbal and non-verbal communication patterns.

2. Practicing Mindfulness: The students learn to practice mindful ways of 'being' and action.
3. Creativity and Flow: The aim of the workshop is to encourage student-teachers to think originally and find ways of solving problems with open-mindedness, fluency and flexibility. The students learn to experience a state of 'flow' which evokes curiosity, deepens insight, can engage with complexity and sustains intrinsic interests.
4. Dealing with Stress: In this workshop the students examine the concept of the 'hurried psyche' and ways of slowing down that can help release stress and relax.

Unit 4 **(18 hours)**

1. Artificial Desires - The Psychology of Consumer Culture: This workshop helps the students to examine the way in which the 'market' has entered our personal domains. It examines the way in which artificial desires are created and we are held hostage to a market that is geared towards fulfilling these false desires.
2. Connecting with Nature: To understand the value of 'slowing down' and being living in the 'present' through connection with nature. Learning to trust one's own senses and appreciating the beauty, rhythms and simplicity of nature.
3. Music and the Self: The students explore music as a way of self-knowledge.
4. Empathy, Wisdom and Compassion: The students learn to listen to each other with greater compassion and empathy. They collaboratively find way of extending compassion to oneself and others.

Essential/Recommended Readings:

Rosenberg, M. (2012). *Living nonviolent communication.* Boulder: Sounds True Pub.

Csikszentmihalyi, M. (1990). *Flow.* New York: Harper and Row.

Fromm, E. (2006). *The art of loving.* New York: The Harper Perennial Modern Classics.

The Mother. (2002). The science of living, in On education (pp. 3-8). *Complete works of The Mother* (2nded., Vol.12). Pondicherry: Sri Aurobindo Ashram Press.

Thich N. H. (1999). *The miracle of mindfulness: Introduction to the practice of meditation.* Boston: Beacon Press.

Kumar, S. (2006). *You are therefore I am: A declaration of dependence.* New Delhi: Viveka Foundation.

Dweck, C. (2006). *Mindset: The new psychology of success.* New York: Ballantine Books.

Virmani, S. Had anhad: *Journey with Ram and Kabir.* An Audio-Video Resource

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

B. A. (Hons.) APPLIED PSYCHOLOGY COURSE

SEMESTER - V

DISCIPLINE SPECIFIC CORE COURSE 13: Essentials of Organizational Psychology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE – REQUISITES OF THE COURSE

Course title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre – requisite of the Course (if Any)
		Lecture	Tutorial	Practical /Practice		
DSC- 13: Essentials of Organizational Psychology	4	3	0	1	Class 12th Pass	Basic knowledge of Introductory Psychology

Learning Objectives

The learning objectives of this course are as follows:

- To develop an awareness among students regarding the concepts and theories related to Industrial and Organizational psychology (I/0 Psychology) and its historical development especially with reference to contemporary Indian research.
- Help students develop a connection between the determinants of individual, group and organizational processes and apply this understanding to the solution of problems at work.
- Understanding the evolution of the field of organizational psychology and the challenges faced by the field today.

Learning Outcomes

The learning outcomes of this course are as follows:

- Developing knowledge of I/O Psychology, and its historical development (especially w.r.t India).
- Understanding ideas and issues related to organizational behavior, OB model, organizational structure, and organizational designs.
- Displaying knowledge related to employee attitudes such as Job Satisfaction, Work Motivation and Leadership.

UNIT 1 EVOLUTION OF INDUSTRIAL/ORGANIZATIONAL PSYCHOLOGY: (15 Hours)

Historical Background of Industrial and Organizational Psychology with inputs from the Indian context; Historical Antecedents of I/O Psychology OB Models (Robbins and Parikh & Gupta); Challenges faced by the field: Sexual Harassment, Discrimination & Diversity; Elements of Organizational structure; Common Organizational Designs and New Design Options.

UNIT 2 FACTORS EFFECTING PERFORMANCE AT WORKPLACE: (15 Hours)

Nature of Performance at workplace, Performance and productivity, Employee Attitudes: Job Satisfaction and Dissatisfaction, Employee Engagement and Karma Yoga; Workplace Motivation: theories: Herzberg's Two factor theory, Porter and Lawler's Expectancy theory, Edwin Locke's Goal-setting theory, Adam's Equity theory, Deci & Ryan's Self-determination Theory.

UNIT 3. DYNAMICS OF ORGANIZATIONAL PSYCHOLOGY: (15 Hours)

Power and empowerment; Leadership: Nature, Early Approaches (Great Man and Trait Approaches) Fiedler's Contingency theory, Contemporary theories (Burns and Bass Transformational theory, Northouse Authentic leadership theory, Virtual Leadership) Mentorship. Indian perspective on leadership, Issues and challenges to leadership.

PRACTICAL COMPONENT: **(30 Hours PRACTICUM)**

1. One field based practical from the units above
2. One practical to assess any job attitude, leadership, or any other organization-related concept from the units above.

ESSENTIAL/RECOMMENDED READINGS

Greenberg, J. & Baron, R.A. (2010/latest edition). *Behavior in Organizations*. Noida: Dorling Kindersley. (Unit 1: chapter 6; Unit 2: chapter 6, chapter 7, chapter 11; Unit 3: chapter 13)

Luthans, F. Luthans, B.C. & Luthans, K. W. (2021). *Organizational Behavior: An Evidence-Based Approach*. Information Age Publishing. (Unit 1: chapter 1, chapter 3)

Jex, S.M. & Britt, T. W. (2014/latest edition). *Organizational Psychology: A Scientist–Practitioner Approach*. John Wiley & Sons (Unit 2: Chapter 5)

Northouse, P.G. (2018/latest edition). *Leadership: Theory and Practice*. Sage Publications, India (Unit 3: chapter 1, chapter 2, chapter 8, chapter 9)

Pareek, U. & Khanna S. (2016). *Understanding Organizational Behavior*. Oxford: Oxford University Press (Unit 1: chapter 1, chapter 21; Unit 2: chapter 2; Unit 3: chapter 23)

Vischer, J. (2007). *The Concept of Workplace Performance and Its Value to Managers*. California Management Review. 49. 2.

https://www.researchgate.net/publication/255648928_The_Concept_of_Workplace_Performance_and_Its_Value_to_Managers

ADDITIONAL REFERENCES

Robbins, S. P. Judge, T. A. & Vohra, N. (2019/latest edition). *Organizational Behavior* (18th Ed). New Delhi: Pearson.

Howes, S & Muchinsky, P. (2023). *Psychology applied to work: An introduction to Industrial and Organizational psychology*. Summerfield, NC: Hypergraphic Press.

Uhl-Bien, M., Piccolo, R. F., Schermerhorn Jr, J. R. & Dash, S.S. (2022). *Organizational behavior. An Indian Adaptation.* India: John Wiley & Sons.

Prakash, A. (2011). Organizational Behaviour in India: An Indigenous Perspective. In G. Misra (Ed.), *Handbook of Psychology*. New Delhi: Oxford University Press.

Parikh, M. & Gupta, R. (2010). *Organization Behaviour*. Tata McGraw Hill Education, New Delhi (Unit 1: Chapter1, Chapter,20).

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC CORE COURSE DSC-14 UNDERSTANDING MENTAL DISORDERS

DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC - 14 UNDERSTANDING MENTAL DISORDERS	**4**	**3**	**0**	**1**	**Class 12th Pass**	**Basic knowledge of Introductory Psychology**

Learning Objectives

- To introduce the field of abnormal/clinical psychology.
- To provide an overview of the clinical picture and etiology of the various psychological disorders.
- To orient the learners to the diagnostic criteria and the related vocabulary of major psychological disorders.

Learning Outcomes

- Distinguish between normal and abnormal behavior and learn the criteria of determining abnormality.
- Categorize and diagnose disorders according to the current diagnostic systems (current editions of the Diagnostic and Statistical Manual of Mental Disorders and International Classification of Diseases- Mental Disorders section).
- Discriminate between the various anxiety disorders and different mood disorders.

SYLLABUS-

UNIT – I **(15 Hours)**

Introduction: Criteria of Abnormality, Causal Factors, Classification, Clinical Assessment

UNIT – II **(15 Hours)**

Anxiety Disorders and Obsessive-Compulsive Disorder (Clinical Picture and Dynamics): Generalized Anxiety Disorder, Social anxiety disorder, Specific phobias, Agoraphobia; Obsessive-Compulsive Disorder

UNIT – III **(15 Hours)**

Depressive Disorder & Bipolar Disorders Clinical Picture and Dynamics): Major Depressive disorder, Persistent Depressive disorder, Bipolar I, Bipolar II and Cyclothymia

Practical Component: **(30 Hours)**

Suggestive Practicals:

A total of two practicals from any of the following:

- Mental Status Examination (MSE).
- Assessment of anxiety disorders using any psychometric test.
- Assessment of depression/bipolar disorders using any psychometric test.
- Case study writing to examine/understand clinical picture, dynamics, diagnosis and differential diagnosis.
- Analysis of mental illness related visual media/text to understand mental disorders.

Tutorial component: Nil

Essential/recommended readings

Bansal, P. (2019). *Psychology: Debates and controversies*. New Delhi: Sage.

Barlow H. & Durand V. Mark (2014). *Abnormal psychology: An integrative approach.* Delhi: Cengage Learning India.

Carson, R.C., Butcher, J.N., Mineka, S. & Hooley, J.M. (2017). *Abnormal psychology.* (17thEdn) New Delhi: Pearson.

Comer, R.J. and Comer, J.S. (2021). *Abnormal psychology* (11th Ed.). New York, Macmillan International.

Diagnostic & Statistical Manual of Mental Disorders (2022). American Psychiatric Association (5th Ed. Text Revision). American Psychiatric Publishing.

Kring, A.M., Johnson, S.L., Davison, G.C. & Neale, J.M. (2014). *Abnormal psychology* (12th ed.). New Jersey: John Wiley & Sons.

Suggestive readings

Kearney, C. A. & Trull, T. J. (2012). *Abnormal psychology and life: A dimensional approach*. New Delhi: Cengage Learning.

Singh, A.K. (2016) *आधुनिक असामान्य मनोविज्ञान* (*Modern abnormal psychology* - Hindi), Motilal Banarsidass Pvt .Ltd.

Watters, E. (2010). *Crazy like us:. The globalization of the American psyche*. Simon and Schuster.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE 15: Systems & Theories in Psychology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 15: Systems & Theories in Psychology	**04**	**03**	**01**	**0**	**Class 12th Pass**	**Basic knowledge of Introductory Psychology**

Learning Objectives

The Learning Objectives of this course are as follows:

- To help students understand the evolution of Psychology in Indian and Western thought (including philosophical and general-scientific milestone events that have influenced the development of the discipline.)
- To developing critical thinking skills with increased ability to articulate sound arguments and ask relevant questions regarding theories and principles of psychology

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course the student will be able to view critically different perspectives in Psychology.
- By studying this course the students will appreciate the contribution of Indian thought in Psychology as a discipline in India
- By studying this course the students will become aware of the debates in the discipline and learn to examine issues critically.

SYLLABUS OF DSC-

UNIT – I **(12hours)**

Ontology, epistemology and methodology of Psychology in India and West: Issues in practice of Psychology as a natural and human science, Philosophical questions in Science, Psychology as a science.

Discipline of Psychology in Indian tradition, methodology, applications, and its difference from Western perspectives.

UNIT – II **(12 hours)**

Schools of thoughts in Psychology - I: British empiricism, Structuralism, Functionalism, Classical Behaviourism, Neo-behaviourism (view of human nature, central tenets of the schools)

UNIT – III **(12 hours)**

Schools of thoughts in Psychology - II: Cognitive revolution. Classical Psychoanalysis and neo-Freudians, Humanistic-Existential, Transpersonal-Spiritual perspective (view of human nature and central tenets of the schools)

UNIT – IV **(12 hours)**

Psychology in Indian System of thoughts: Upanishads, Samkhya-Yoga, Advaita Vedanta, Buddhism, Jainism, Sufi tradition, folk traditions with emphasis on Kabir Das (view of human nature, mind and self)

Practical component (if any) - NIL

Suggested Tutorial activities **(30hours)**

Objectivity and subjectivity in Science - a group discussion or science and spirituality - a group discussion (Drawing elements from Fritjof Capra's The Tao of Physics); A class debate on Psychology as a Science; YouTube videos of Shabnam Virmani on Kabir: An experiential journey; Preparing a time line of History of Psychology in India, highlighting important contributions and Psychologists in India; A discussion on the contribution of women Psychologists to the discipline of psychology; A critical evaluation of all the major schools of Psychology and creating a framework for a holistic model

Essential/Recommended Readings

Dalal, A. K. (2011). Journey back to the roots: Psychology in India. In Cornelissen, R. M. M., Misra, G., Varma, S. (Eds.), *Foundations of Indian Psychology*, Volume 1, Theories and Concepts. Pearson.

Dhar, P. L. (2011). No I, No Problems: The Quintessence of Buddhist Psychology of Awakening. *Psychological Studies.* 56, 398. https://doi.org/10.1007/s12646-011-0111-0 (Buddhism)

Frager, R. & Fadiman, J. (2013). *Personality and Personal Growth.* Pearson. (Chapters on Buddhism and Sufism)

Hergenhahn, H. R. & Henley, T. B. (2014). *An Introduction to the History of Psychology Seventh Edition.* Wadsworth Cengage Learning. (Chapters 12, 16, 17, 19, 20)

King, D.B., Woody, W.D. & Viney, W. (2013). *A History of Psychology: Ideas and Context.* (5th Edition). Pearson. (Chapter 2, 13, 16, 17, 18)

Kireet, J. *Summary of Upanishads and Gita* (word document)

Leahey, T. H. (2018). *A History of Psychology: From antiquity to modernity.* (8th Edition). N.Y: Routledge. (Chapter 1: Understanding Science; Chapter 7 Psychology as Science)

Paranjpe, A. C. (1984). *Theoretical psychology: The meeting of East and West.* New York: Plenum Press. (Chapter 1, 2, 3)

Ramakrishna Rao, K. & Paranjpe, A. C. (2016). *Psychology in the Indian Tradition.* Springer. (Chapter 1, 2, 3, 5, 7)

Shirazi, B. A. K. (2013). The Sufi path of self-transformation. In Matthijs Cornelissen, Girishwar Misra, Suneet Varma (Eds). *Foundations and applications of Indian psychology.* Pearson Education India.

Singh, K. (2011). Beyond mind: The future of psychology as a science. In R. M. M. Cornellisen, G. Misra & S. Varma (Eds.), *Foundations of Indian Psychology: Concepts and theories* (pp. 86-102). Pearson.

Varma, S. (2002). The farther reaches of a new psychology. *Psychological Studies*, 47, 70-86.

Virmani, S. (n.d.). https://www.india-seminar.com/2010/605/605_shabnam_varmani.htm (for Kabir)

Suggestive readings

Bhatia S. (2002). Orientalism in Euro-American and Indian psychology: historical representations of "natives" in Colonial and postcolonial contexts. *History of psychology*, *5*(4), 376–398. https://doi.org/10.1037/1093-4510.5.4.376.

Cornelliseen, M., Misra, G. & Varma, S. (Eds) (2014). *Foundations and applications of Indian Psychology.* Pearson: New Delhi

Dalal, A.K. & Misra, G. (2010). *"The Core and Context of Indian Psychology," Psychology and Developing Societies,* Vol. 22(1), pages 121-155, March.

Kireet, J. (2012). *The Veda in the Light of Sri Aurobindo*. Popular Media.

Kireet, J. (2009). *The Gita and its Synthesis of Yoga*. The Mother's Institute of Research.

Kireet, J. (2012). *Science and Spirituality*. Shubhra Ketu Foundation and The Mother's Institute of Research

Virmani, S. Had-unhad. https://www.youtube.com/watch?v=QKI4RcplM5o

Virmani, S. Koi sunta hai. https://www.youtube.com/watch?v=Dr83axn1IbM

Youtube Videos of Team Sunaad

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC ELECTIVE COURSE 6: Disorders of Childhood and Adolescence

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 6: Disorders of Childhood and Adolescence	**04**	**03**	**0**	**01**	**Class 12th Pass**	**Understanding of Mental Disorders**

Learning Objectives

This course has the following objectives:

- Develop an understanding of how maladaptive behaviour appears in different life periods.
- Knowing the common disorders of childhood and adolescence.
- Understanding the clinical picture and etiology of the common disorders of childhood and adolescence.

Learning Outcomes

- To demonstrate a critical understanding of some of the neurodevelopmental disorders as well as Disruptive, Impulse-control, and Conduct Disorders in Clinical Psychology.
- To develop a foundation for a career in Clinical Psychology

Syllabus of DSE-

Unit-1 **(15 hours)**

Introduction to Neurodevelopmental Disorders; ADHD, Autism Spectrum Disorder (Clinical Picture and Etiology)

Unit 2 **(15 hours)**

Intellectual Disabilities, Specific Learning Disorders (Clinical Picture and Etiology)

Unit-3 **(15 hours)**

Introduction to Disruptive, Impulse-control, and Conduct Disorders; Conduct Disorder, Oppositional Defiant Disorder; Introduction to Eating disorders; Anorexia Nervosa, Bulimia Nervosa, Binge-eating disorder (Clinical Picture and Etiology)

PRACTICALS **(30 hours)**

Two practicums to be done, one each from the following two areas:

1. Case-history of at least two cases from the list of disorders mentioned above
2. Screening children for above disorders in schools/communities
3. Assessing stress of caregivers of children with above disorders

Essential/Recommended Readings:

Hooley, J.M., Butcher, J.N., Nock, M.K., & Mineka, S. (2017). *Abnormal psychology* (17th ed., global edition). Boston: Pearson.

Goldstein, S. and DeVries, M. (2017). *Handbook of DSM-5 disorders in children and adolescents*. Springer International Publishing AG.

Suggestive Readings:

American Psychiatric Association (2022). *Diagnostic and Statistical Manual of Mental Disorders* (5th ed., text revision)-DSM-5-TR™.

Brinkerhoff, S. (2014). *Childhood and adolescent disorders*. Simon and Schuster.

Dailey, S.F., Gill, C.S., Karl, S.L., & Barrio Minton, C.A. (2014). *DSM-5: Learning Companion for Counselors*. Alexandria, VA: American Counseling Association.

Kendall, P.C., & Comer, J.S. (2010). *Childhood disorders*. USA: Taylor and Francis.

Whitbourne, S.K., and Halgin, R.P. (2015). *Abnormal psychology: Clinical perspectives on psychological disorders* (7th ed.). India: McGraw Hill Education Pvt. Ltd.

DISCIPLINE SPECIFIC ELECTIVE COURSE 7: Learning and Innovation in Organization

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE – REQUISITES OF THE COURSE

Course title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre – requisite of the Course (if Any)
		Lecture	Tutorial	Practical/Practice		
DSE 7: Learning and Innovation in Organization	**4**	**3**	**0**	**1**	**Class 12th Pass**	**Essentials of Organizational Psychology**

Learning Objectives

The learning objectives of this course are as follows:

- To understand the advances and innovations in organizations in the context of information technology and globalization
- To develop a conceptual understanding of organizational culture and values with a focus on the Indian context.
- To help students learn about various facets of positive work environment and behavior in organizations.

Learning Outcomes

The learning outcomes of this course are as follows:

- Learners will be able to understand the advances and innovations taking place in organizations.
- Learners will be able to understand the role and impact of technology and globalization at organizational level.
- Leaners will understand the different work cultures, work values, notion of psychological safety and positive work environment in Indian context.

Syllabus of DSE-

UNIT 1- INFORMATION TECHNOLOGY, INNOVATION & GLOBALIZATION **(15 hours)**

OB and advances in technology (Virtual organizations, telecommuting), OB and globalization, Innovations in Organizations: Startups, entrepreneurship.

UNIT 2- ORGANIZATIONAL CULTURE & VALUES **(15 hours)**

Organizational Climate & Culture, Theories of Organizational culture, Organizational Values and Work Values.

UNIT 3- POSITIVE WORK ENVIRONMENT **(15 hours)**

Psychological Safety, PsyCap, Knowledge management, Positive Approach and Positive Thinking, Organizational Performance.

PRACTICAL COMPONENT: **(30 hours)**

Two practicums to be done, one each from the following two areas:

1. Case study on Technology/Innovation/Startups in Organizational settings from Unit 1.
2. Field based practical on Organizational Climate/Organizational Culture/Work Values from Unit 2.

ESSENTIAL/RECOMMENDED READINGS

Greenberg, J. (2011). *Behaviour in Organizations* (10th Ed.). Pearson. [Chapter 1, 14]

Luthans,F, Luthans , B.C. & Luthans ,K.W.,(2021) *Organizational Behavior: An Evidence-Based Approach.* Information Age Publishing. [Chapter 2, 7]

Pareek, U. (2011). *Understanding Organizational Behavior* (2nd edition). Oxford. [chapters 2, 3, 11 and 24]

Schein, E. H. (2004): *Organizational Culture and Leadership*, (3rd Ed), San Francisco, Jossey Bass. [Chapter 1, 2]

Sinha, J.B.P. (2008). *Culture and Organizational Behaviour*. New Delhi: Sage. [Chapter 2, 12, 13]

Edmondson, A. C. (1999). Psychological Safety and Learning Behavior in Work Teams. *Administrative Science Quarterly*, *44*(2), 350–383. https://doi.org/10.2307/2666999

Suggestive Readings

Edmondson, A. C. (2004). Psychological Safety, Trust, and Learning in Organizations: A Group Level Lens. In R. M. Kramer & K. S. Cook (Eds.), *Trust and distrust in organizations: Dilemmas and approaches* (pp. 239–272). Russell Sage Foundation.

Gautam, V., Ningthoujam, S., & Singh, T. (2019). Impact of Psychological Capital on Well-Being of Management Students. Theoretical Economics Letters, 09(05), 1246–1258. https://doi.org/10.4236/tel.2019.95081

Rousseau, D. M. (1990): Assessing Organizational Culture: The Case for Multiple Methods' In Schneider, B. (Ed.), Organizational Climate and Culture, Oxford: Jossey Bass.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC ELECTIVE COURSE 8: Psychology of Sports

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE – REQUISITES OF THE COURSE

Course title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre – requisite of the Course (if Any)
		Lecture	Tutorial	Practical/Practice		
DSE 8: Psychology of Sports	**4**	**3**	**0**	**1**	**Class 12th Pass**	**Foundations of Sports Psychology**

Learning Objectives

- Understanding the major issues related to psychophysiological aspects of sports performance
- Demonstrating an ability to identify and evaluate psychological problems of sportspersons
- Developing an understanding of the career transitions, exercise and competitions for seniors

Learning Outcomes

- To develop a strong base of knowledge in the ever-expanding field of mental training in sports
- To gain insight into the psychological problems of athletes pertaining to various sports & ways of dealing with those
- Understand potential issues with measurement and interventions in sports
- Hands-on training to students with the help of practical are listed in the course.

Syllabus of DSE-

UNIT-1: Psychopysiological aspects in relation to sports performance (15 hours)

Personality: sports-specific personality traits, personality & performance in sports (POMS by Morgan); Aggression in sports, relationship b/w aggression & sports performance; Motivation, Goal orientation (moral functioning -sportsperson ship) & Goal setting (motivation & sports performance); Activation Techniques: Imagery, VMBR, Psych up technique (pep talk, music & mindfulness training, Self-confidence, self-efficacy in sports)

UNIT – 2: Psychological problems of athletes (15 Hours)

Injury in sports (Understanding the Psychological Factors of Injury and Rehabilitation) , Path to Rehabilitation Failure and to Rehabilitation Success; Eating Disorders (Defining, Causes, Prevention & Treatment of Eating Disorders); Substance Abuse: (Commonly Used Substances: Recognition, Prevention, and Treatment for Substance Abuse); Burnout & overtraining (Prevention & Treatment)

UNIT – 3: Career transitions, exercise & competition for seniors **(15 Hours)**

Career Transitions: Definitions and Causes of Career Transitions; Psychological Reactions to Career Transition, Coping Factors Related to Quality of Career Transition, Career Transition Interventions; Fitness issues for seniors; Competitive Sports in the Elderly

Practicals:

A total of two practicals (from different units) of the following: **(30 Hours)**

- Any psychological test from the above units: measuring Aggression (Aggression Questionnaire Buss & Perry), POMS, Participation Motivation Questionnaire, Willi's sports motivation scale, Vealey's (TSCI) ,SSCI , COI etc.
- Hands-on training on any of the above-listed interventions through simulated Exercise / Workshop.
- Any one field-based practical from the units above.

Essential/Recommended Readings:

- Cox, R. (2006). *Sports Psychology*. McGraw -Hill Education
- Orlick, T. (2008) *In Pursuit of Excellence: How to win in sport & life through mental training* (4th ed). Champaign I, Human Kinetics
- Tenenbaum, G., & Eklund, R. C. (Eds.). (2007). *Handbook of sport psychology* (3rd ed.). John Wiley & Sons, Inc.
- Weinberg, R.S., & Gould, D. (1995). *Foundation of sports & Exercise psychology* Champaign I, Human Kinetics.

Suggestive readings:

Robert A. R. & Roberts, S.O. (1999). *Fundamental Principles of Exercise Physiology for fitness , Performance & health* . McGraw hill College , New York

Mohan, J., & Sehgal, M. (2005). *Readings in Sports Psychology*. New Delhi: Friends

LeUnes, A., & Nation, J.R (2002). *Sport Psychology: An Introduction* (3rd ed.). Belmont CA: Wadsworth Thomson Learning

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE 9: Psychology of Relationships

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical /Practice		
DSE 9: Psychology of relationships	4	3	0	1	Class 12th Pass	Basic knowledge of Introductory Psychology

Learning Objectives

- To provide an insight into basic facts and key concepts of the relationship science.
- To understand the dynamics of establishing and maintaining close relationships.
- To explore the nature of close relationships in contemporary time.

Learning Outcomes

- Establish effective relationships with family, friends and significant others.
- Learn strategies to effectively deal with distress in relationships and establish positive relationships.
- Appreciate the complex nature of relationships in modern time.

Syllabus of DSE-

UNIT -1 Understanding relationships: **(15 Hours)**

Relationship science: Concepts, development, and types (an overview); *Relationship process*: cognitive and affective; Significance of relationships.

UNIT -II Psychological insights into Close relationships: **(15 Hours)**

Family, Friendship and Romantic relationships: Concepts, nature and challenges. Creating harmony in relationships.

UNIT -III Relationships in contemporary time: **(15 Hours)**

Virtual relationships in social media: Nature, risks and benefits; Parasocial relationships: Main features, levels and effect; Live -in relationships; Queer relationships; Human -pet relationships.

PRACTICALS: **(30 Hours)**

Two practicums to be done, one each from the following two areas:

1. Participatory exercises/activities for relationship building.
2. Focus group discussion or any other qualitative technique to explore the relationship issues and their management or using scale on relationships mentioned in above units.

Essential/Recommended readings

Berscheid, E., & Regan P. (2016). *The psychology of interpersonal relationships*. New York, USA:Routledge.

Elsayed, W. (2020). Students and the risk of virtual relationships in social media: Improving learning environments. *International Journal of Emerging Technologies in Learning (iJET)* 15(21), 118.

Giles, D. (2010). *Parasocial relationships*. DOI:10.1515/9783110232424.4.442.

http://www.researchgate.net/publications/263088893.

Hojjat, M. & Moyer, A. (2017). *The Psychology of friendship*. New York, USA: Oxford university press.

Regan, P. (2011). *Close relationships*. New York, USA: Routledge.

Suggestive readings

Arditti, J. C. (2015). *Family problems: Stress, Risks and Resilience*. Willey Blackwell: UK.

Compton, W. C. & Hoffman, E. (2020). Chapter 5. Romantic love and positive families. In *Positive Psychology: The science of happiness and flourishing*, 3rd Ed. New Delhi: Sage.

Wilerton, J. (2010). *The Psychology of Relationships*. New York: Red Globe Press.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC CORE COURSE DSC – 16 PERSPECTIVES IN MENTAL AND BEHAVIORAL DISORDERS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC - 16 PERSPECTIVES IN MENTAL AND BEHAVIORAL DISORDERS	4	3	0	1	Class 12th Pass	Basic understanding of mental disorders

Learning Objectives

- To introduce the clinical picture and etiological understanding of Schizophrenia spectrum disorders, with focus on Schizophrenia.
- To provide an understanding about personality disorders and substance related disorders.
- To orient the learner to neurodevelopmental disorders.

Learning outcomes

- Understand the symptoms and causal factors of schizophrenia
- Recognize the clinical picture of substance related disorders
- Discriminate between different personality disorders
- Identify children with neurodevelopmental disorders

SYLLABUS-

UNIT – I **(15 Hours)**

Schizophrenia Spectrum Disorder (Clinical Picture and Dynamics) and Personality Disorders (Clinical Picture only): Schizophrenia; Antisocial Personality Disorder, Borderline Personality Disorder

UNIT – II **(18 Hours)**

Somatic Symptom & Related Disorders, Substance Related Disorders and Gender dysphoria (Clinical Picture Only): Functional Neurological Symptom Disorder (Conversion Disorder); Alcohol Use Disorder; Drug Abuse and Dependance (Opioids, Stimulants, Sedatives, Hallucinogens); Gender Dysphoria

UNIT – III **(12 Hours)**

Neurodevelopmental Disorders (Clinical Picture Only) – Intellectual Developmental Disorder (Intellectual Disability)/ Specific Learning Disorder (Specific Learning Disabilities), Autism Spectrum Disorder, Attention Deficit Hyperactivity Disorder

Practical Component: **(30 Hours)**

Suggestive Practicals

A total of two practicals from any of the following:

- Mental Status Examination (MSE).
- Assessment of mental disorders using a psychometric test.
- Assessment of IQ/ADHD using a psychometric test.
- Case study writing to examine/understand clinical picture, dynamics, diagnosis and differential diagnosis.
- Correlational study of demographic variables and a mental disorder.
- Analysis of mental illness related visual media/text to understand mental disorders.

Tutorial Component : Nil

Essential/recommended readings

Arora, M.K. (2022). *Neurodevelopmental disorders in the Indian context: Different disorders speak different stories.* New Delhi: Prestige Publications.

Butcher, J.N., Hooley, J.M., & Mineka, S. (2014). *Abnormal psychology* (16th ed.). New York: Pearson.

Barlow, D.H. & Durand, V.M. (2013). *Abnormal psychology: An integrative approach* (7th ed.). Noida: Cengage Learning India Edition.

Kearney, C. A. & Trull, T. J. (2012). *Abnormal psychology and life: A dimensional approach.* Hyderabad: Wadsworth, Cengage Learning.

Kring, A.M., Johnson, S.L., Davison, G.C. & Neale, J.M. (2014). *Abnormal psychology* (12th ed.). New Jersey: John Wiley & Sons.

Suggestive readings

Das, J.P. (2020). *Reading difficulties & dyslexia: Essential concepts and programs for improvement.* SAGE Publications India Pvt. Ltd.

Gururaj, G. et. al. (2016) *National mental health survey of India, 2015-16: Prevalence, patterns and outcomes*. Bengaluru: NIMHANS Publication No. 129.

Jena, S.P.K. (2013). *Learning disability: Theory and practice*. New Delhi: SAGE Publications India Pvt. Ltd.

Kapoor, S. & Jena, S.P.K. (2013). Emotional expression and self-concept of children with learning disabilities. *Indian Journal of Clinical Psychology,40* (2), 155-158.

Singh, A.K. (2016) *Modern abnormal psychology* (Hindi), Motilal Banarsidass Pvt Ltd.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC CORE COURSE 17: MANAGING HUMAN CAPITAL AT WORKPLACE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE – REQUISITES OF THE COURSE

Course title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre – requisite of the Course (if Any)
		Lecture	Tutorial	Practical /Practice		
DSC 17: Managing Human Capital at Workplace	**4**	**3**	**0**	**1**	**Class 12th pass**	**Basic knowledge of Introductory Psychology**

Learning Objectives

The learning objectives of this course are as follows:

- To help students understand the various processes and practices related to Human Capital.
- Enable students to develop a connection between concepts, process and practices in organizations.
- Understanding counterproductive behavior in organization.
- To develop the understanding of the importance of employee talent and job analysis at workplace.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Learners will be able to understand the different processes and practices related to human capital.
- Learners will be able to understand issues, functioning and challenges of managing human capital at workplace.
- Learners will be able to develop knowledge and skills related to employee recruitment, Job Analysis and talent management.

UNIT 1 Job Analysis and Talent Management (15 Hours)

Basics of job Analysis, Methods for Collecting job Analysis Information, Writing Job Description, Talent Management Process, Profiles in Talent Management: Competencies and Competency-Based Job Analysis.

UNIT 2 Attraction and Socialization: An Organizational Perspective (15 Hours)

Recruitment Process: Applicant's Perspective, Organizational Socialization: Diversity in Organization.

Unit 3 Counterproductive Behavior at workplace (15 Hours)

Nature of Counterproductive Behavior, Ineffective Job Performance, Employee Absenteeism, Employee Turnover, Odd Forms of Counterproductive Behavior .

PRACTICAL COMPONENT: (30 Hours PRACTICUM)

1. Understanding any one tool for human behavior (FIRO-B, 16PF, MBTI, CWB-C by Spector et al. (2006).
2. Case study on an Indian Organization based on primary data, on Job Analysis, Talent management, Organizational socialization, diversity in organizations, Counterproductive Work Behavior.

ESSENTIAL/RECOMMENDED READINGS

Aamodt, M. G. (2022). *Industrial/organizational psychology: An applied approach*. Cengage Learning. (Unit 1: chapter 2; Unit 2: chapter 4, chapter 5, chapter 6)

Dessler, G., & Varkkey, B. (2020). *Human Resource Management* (16th Edition). New Delhi, India: Pearson Education. (Unit 1: chapter 1, chapter 4; Unit 3: chapter 8)

Jex, S.M.& Britt,T.W. (2014) *Organizational Psychology: A Scientist–Practitioner Approach*. John Wiley & Sons.

Lynton, R. P., & Pareek, U. (2011). *Training for development*. SAGE publishing India.

Rao, V.S.P. (2009) *Human Resource Management. (*2nd ed.). Excel books (Unit 1: chapter 1, chapter 3; Unit 2: chapter 4, chapter 5; Unit 3: chapter 13)

Suggestive readings

Bulger, C. A., Schultz, D. P., & Schultz, S. E. (2020). *Psychology and work today*. Routledge.

DeCenzo, D. A., Robbins, S. P., & Verhulst, S. L. (2020). *Fundamentals of human resource management*. John Wiley & Sons.

Harzing, A-W., & Pinnington, A.H. (Eds.) (2014). *International Human Resource Management* (4th Edition) New Delhi: Sage.

Bhatnagar, J. & Budhwar, J. (2009). The *Changing Face of People Management in India*. London: Routledge.

Pareek, U. (2010) *Understanding Organizational Behaviour*. Oxford: Oxford University Press.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC CORE COURSE 18: Cultural and Indigenous Perspectives on Psychology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE – REQUISITES OF THE COURSE

Course Title & Code	Total Credits	Credit distribution of the course			Eligibility Criteria/Pre-requisite	Pre-requisite of the course, if any
		Lecture	Tutorial	Practical		
DSC 18: Cultural and Indigenous Perspectives on Psychology	4	3	0	1	Class 12th pass	Basic knowledge of Introductory Psychology

Learning Objectives

- Understanding the concept of Culture
- Understanding the role of culture in understanding social behavior.
- Exploring psychological insights in the Indian thought traditions.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, the student will be exposed to the area of Culture
- By studying this course, the students will understand the cultural influence on social behaviour
- By studying this course, the students will become aware of the emerging issues and challenges of indigenization and psychological perspective Indian traditions.

Syllabus of DSC-

Unit1: **(16 hrs.)**

An introduction to Cultural psychology: What is Cultural Psychology? Relationship between Culture and Psychology: A historical perspective; Dynamics of interdependence (self system and social system); Theoretical issues in cultural Psychology .

Unit2: **(15 hrs.)**

Culture, Self and Social Behavior: Culture and Social structure; Culture, self and identity; Multicultural identities, Culture and social behaviour

Unit: 3 **(14 hrs.)**

Indigenous Psychology: Indian Psychology – Implications and applications; Indian perspective on emotions, self and identity; Indigenization of psychology in India.

Practicum: **(30 hours)**

A total of two practicals (from different units) of the following:

1. Studying culture as a variable
2. Cultural implication on self and identity
3. Exploring role of culture in social behaviour
4. Understanding Indian perspective on emotions, self and identity

Essential/Recommended Readings:

Adair, John. G. (2002). How International is International Psychology? *International Journal of Psychology,* 37, 160-170.

Auluck, S. (2002). Self and identity. In G. Misra, and A. K. Mohanty (eds.), *Perspectives on indigenous psychology*. p. 374-398. New Delhi: Concept Publishing Company.

Bansal, P. (2022). Insurrections of indigenous knowledges: Debating 'critical' in indigenous psychologies. *Culture &psychology, 0*(0). https://doi.org/10.1177/1354067X221145897

Allwood, C. A. (2002) Indigenized psychologies, Social Epistemology: A Journal of Knowledge, *Culture and Policy.*16:4, 349-366, DOI: 10.1080/0269172022000064621

Chaudhary, N., Misra, G., Bansal, P., Valsiner, J. & Singh, T. (2002). Making Sense of Culture for the Psychological Science. *Review of General Psychology, Vol.0(0) 1-17*

Fox, S. (2019). Culture and Psychology, Sage.

Gergen, K. J. (2010). *The Acculturated Brain. Theory & Psychology Vol.20(6)*1-20

Kityama, S. & Cohen,D. (2007). *Handbook of Cultural Psychology.* The Guilford Publication New York.

Miller, J.G. (1996). Theoretical issues in cultural Psychology. In Berry, J.W., Poortinga, Y., & Pandey, J. (Eds.) (1996) *Handbook of Cross-Cultural Psychology: Theory and Method.* (vol. 1), Boston: Allyn & Bacon.

Misra, G & Dalal, A.K. (2015). *Psychology for India: Essays by D. Sinha.* New Delhi: SAGE

Misra, G., & Gergen, K. J. (2002). On the place of culture in psychological science. In G. Misra, and A. K.Mohanty (eds.), *Perspectives on indigenous psychology*. p. 421-439. New Delhi: Concept Publishing Company.

Sinha, D. (1993), Indigenization of psychology in India and its relevance. In U. Kim and J. W. Berry (eds), 1993, *Indigenous Psychologies Research and Experience in Cultural Context* (Newbury Park: Sage Publications), pp. 30±43.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC ELECTIVE COURSE 10: Organizational Change and Development

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE – REQUISITES OF THE COURSE

Course title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre – requisite of the Course (if Any)
		Lecture	Tutorial	Practical /Practice		
DSE 10: Organizational Change and Development	**4**	**3**	**0**	**1**	**Class 12th pass**	Essentials of Organizational Psychology

Learning Objectives

The learning objectives of this course are as follows:

- To develop a conceptual and practical understanding of models for planning change and development in organizations with a focus on the Indian context.
- To equip the students in designing different types of intervention strategies for organizational development.
- To acquaint students with the various techniques used in the process of Organizational Development.

Learning Outcomes

The learning outcomes of this course are as follows:

- Learners will be able to develop conceptual understanding of change in organizations.
- Learners will be able to understand action research and its role in organizational development.
- Learners will be able to understand the skills of interventions for organization development through various methods.

Syllabus of DSC-

UNIT 1 ORGANIZATIONAL CHANGE **(15 HOURS)**

Concepts, types of change, Change Models, Resistance to Change, Case studies in the Indian context, Models of Planned Change - Systems Model of Change, Lewin's Force Field Analysis Model, Kotter's Eight-step Change Management Model. Appreciative Inquiry

UNIT 2 ORGANIZATIONAL DEVELOPMENT **(15 HOURS)**

Nature, History and Process of OD, Action Research, Seven Steps in the Cyclical Phase of Planned Change.

UNIT 3 METHODS OF ORGANIZATIONAL DEVELOPMENT (15 HOURS)

Three levels of intervention (Individual, group and organization level). Survey Feedback, Grid Organizational Development, Process Consultation, Gestalt, and Comprehensive Interventions.

PRACTICAL COMPONENT: (30 HOURS)

Two practicums to be done, one each from the following two areas:

1. One practicum based on techniques of appreciative inquiry (eg. Strengths, Opportunities, Aspirations, and Results (SOAR) analysis) Unit 1 or 2.
2. Understanding of Organizational Change/Development based on Case study method for Unit 1 or 3.

ESSENTIAL/RECOMMENDED READINGS

French, W.L.; Bell, C., Vohra. V. (2021) *Organization Development: Behavioural Science Interventions for Organization Improvement*. Pearson, India [Chapter 2, 5, 6, 7, 9, 10 and 11]

Pareek, U. N. (2004, February 1). *Understanding Organizational Behaviour*. [Chapter 27 and 28]

Singh, K. (2010). *Organizational Behaviour. In Text and Cases*. Pearson [Chapter-17]

Cummings, T.G. and Worley, C.G. (2009). *Organizational Development and Change* (9th Ed.) South-Western Cengage Learning: Mason OH. [Chapter 2 and 9]

Seijts, G.H. (2006). *Cases in Organizational Behaviour*. Sage: New Delhi

Priest, K. L., Kaufman, E. K., Brunton, K., & Seibel, M. (2013). Appreciative Inquiry: A Tool for Organizational, Programmatic, and Project-Focused Change. *Journal of Leadership Education*, 12(1). DOI:10.12806/V12/I1/R2

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC ELECTIVE COURSE III
Neurocognitive Disorders

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE – REQUISITES OF THE COURSE

Course title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre – requisite of the Course (if Any)
		Lecture	Tutorial	Practical /Practice		
DSE 11: **Neurocognitive Disorders**	4	3	0	1	Class 12th pass	Understanding of Mental Disorders

Learning Objectives

- Developing knowledge of the neurocognitive disorders recognised in the latest classification system.
- Recognizing the clinical features of neurocognitive disorders
- Understanding the presumed causes of these disorders.

Learning Outcomes

- To create a foundation for a career in Clinical Psychology
- To show an understanding of the clinical features of brain impairment in adults
- Understand the various neurocognitive disorders in Clinical Psychology

Syllabus of DSE

THEORY

Unit-1

Introduction: Brain Impairment in Adults (Clinical Signs of Brain Damage, Diffuse Versus Focal Damage, The Neurocognitive/Psychopathology Interaction); Delirium (Clinical Picture, and Etiology) **(15 hours)**

Unit-2

Neurocognitive Disorders due to Traumatic Brain Injury, Parkinson's Disease, Huntington's Disease (Clinical Picture, and Etiology) **(15 hours)**

Unit-3

(15 hours)

Neurocognitive Disorder due to Alzheimer's Disease (Clinical Picture, and Etiology)

(30 hours)

PRACTICALS

Two practicums to be done, one each from the following two areas:

1. Clinical case analysis with the use of secondary data obtained from movies.
2. Neuropsychological testing (any one test) which is clinically appropriate.

Essential/Recommended Readings:

Hooley, J.M., Butcher, J.N., Nock, M.K., & Mineka, S. (2017). *Abnormal psychology* (17th ed., global edition). Boston: Pearson.

Goldstein, S. and DeVries, M. (2017). *Handbook of DSM-5 disorders in children and adolescents*. Springer International Publishing AG.

Suggestive Readings:

Brinkerhoff, S. (2014). *Childhood and adolescent disorders*. Simon and Schuster.

Kendall, P.C., & Comer, J.S. (2010). *Childhood disorders*. USA: Taylor and Francis.

Whitbourne, S.K., and Halgin, R.P. (2015). *Abnormal psychology: Clinical perspectives on psychological disorders* (7th ed.). India: McGraw Hill Education Pvt. Ltd.

American Psychiatric Association (2022). *Diagnostic and Statistical Manual of Mental Disorders* (5th ed., text revision)-DSM-5-TR™.

Dailey, S.F., Gill, C.S., Karl, S.L., & Barrio Minton, C.A. (2014). *DSM-5: Learning Companion for Counselors*. Alexandria, VA: American Counseling Association.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC ELECTIVE COURSE 12: Research Methods in Applied Psychology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 12: Research Methods in Applied Psychology	**4**	**3**	**0**	**1**	**Class 12th pass**	**Foundational understanding of Applied Psychology**

Learning Objectives

After doing the course, the students would

- Understand the meaning, purpose and process of research
- Develop knowledge of the ethical issues involved in psychological research
- Know the basic paradigms of research
- Develop a basic understanding of the various qualitative and quantitative research methods
- Understand action research as an important method of research.

Learning outcomes

By studying this course, students will be able

- To understand the importance of research
- To understand the basic concepts and issues pertinent in research
- To be able to carry out a research project by using appropriate research methods and tools
- To be able to appreciate the role of action research in applied settings.
- To be able to understand how to conduct action research.

SYLLABUS OF DSE-

UNIT I

(15 Hours)

Introduction: Paradigms of Research (Positivist and Interpretive), Steps and approaches in quantitative and qualitative research; Experimental and Correlational research; Sampling

techniques, Tools and techniques of data collection (observation, interviews, surveys), Ethics in Psychological Research

(15 hours)

Unit 2:

An introduction to Action Research: What is Action Research, Essential features of action research, Conceptual models of action research, methodology in action research, Action research in social Psychology

(15 hours)

Unit 3:

Participatory Action research: Participatory Rural Appraisal, Participatory Learning and Action, Techniques/ methods of participatory research/action research

(30 Hours)

Practicals

Total of two practicums- one each from the following areas:

1. One practical based on qualitative or quantitative research such as experiment, observation, thematic analysis etc.

2 One practical of the following:

a. Case study on action research
b. Designing action research using mixed method paradigm
c. Field study based on Participatory Rural appraisal
d. Inquiry using participatory learning and action

Essential/Recommended Readings:

Chambers, R. (2005). *Participatory Rural Appraisal: Methods and Applications in Rural Planning*. Concept Publishing Company

Creswell. J.W. and Creswell, J.D. (2017) *Research Design Qualitative, Quantitative, and Mixed Methods Approaches*. (4th Ed.). Sage, Newbury Park. International (P) Ltd.

Kerlinger, F.N.& Lee, H.B. (1999). *Foundations of Behavioural research*. Wadsworth Publishing.

Kumar, S. (2002). *Method for Community Participation: A complete Guide for Practitioners*. Vistaar Publications.

McNiff, J. (2013). *Action research: Principles and practice*. Routledge

Newman, W. L. (2008). *Social research methods: Qualitative and quantitative approaches*. New Delhi: Pearson Education.

Suggestive Readings

Adelman,C.(1993). Kurt Lewin and the Origin of Action Research. *Educational Action Research*, Vol.1 No.1 7-24

Bryman, Alan. (2021). *Social Research Methods* [6th edition]. Oxford University Press

Kemmis, S; & Taggart, M.R. (2005) Participatory Action Research: Community Action and Public Sphere. In Denzin., N.& Lincoln, Y.S. (Ed.) *The Sage Handbook of Qualitative Research*, 3rd Edition. Sage Thousand Oaks.

Molineux, J. (2018). Using Action research for change in organizations: Processes, Reflections and Outcome. *Journal of Work Applied and Management* Vol.10(1)pp 19-34

Reason, P., & Bradbury, H. (Eds.). (2001). *Handbook of action research: Participative inquiry and practice*. Sage.

Simon, A.F. & Wilder, D. (2018). Action Research in Social Psychology. Archives of *Scientific Psychology*, (6) 169-177.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC ELECTIVE COURSE 13 – CONTEMPORARY THERAPEUTIC APPROACHES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 13: Contemporary therapeutic approaches	**04**	**03**	**0**	**01**	**Class 12th pass**	**Basic knowledge of Counselling**

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce the students to cutting-edge therapeutic approaches that are globally used, but generally not included within traditional counseling theories
- To facilitate development of evidence based counselling skills

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course the student will be able to broaden their understanding of the scope of counseling psychology
- By studying this course the students will understand newer approaches that are informing contemporary counseling practice.

SYLLABUS OF DSE-

Unit 1 **(15 hrs)**

Case conceptualization and intake interview, Diversity and social justice issues in psychotherapy, Somatic therapy (Levine) and EMDR (Eye movement desensitization and reprocessing by Shapiro), Emotion Focused Therapy

Unit 2 **(15 hrs)**

Narrative therapy, Mindfulness based approach, Dialectical Behaviour Therapy, Acceptance-Commitment Therapy

Unit 3 **(15 hrs)**

Creative approaches in counseling and Psychotherapy (arts, music, dance), Integrative modalities/Common factor approach

Practical **(30 hrs)**

A total of two practicals (from different units) of the following:

1. Skill based practicum based on narrative therapy
2. Skill based practicum based on dialectical behaviour therapy
3. Skill based practicum on Acceptance Commitment Therapy
4. Use of creative approaches in counseling
5. Case conceptualization based on secondary data
6. Mindfulness training
7. Counseling case studies and intake interview using role plays

Essential/Recommended Readings:

David Capuzzi and Mark D. Stauffer (Eds) (2016). *Counseling and Psychotherapy: Theories and Interventions*. (6th ed.). APA (Creative approaches to counseling, Narrative)

Else Jones-Smith (2020). *Theories of Counseling and Psychotherapy: An Integrative Approach.* Sage.

Edward Neukrug (Editor) (2020). *Contemporary Theories in Counseling and Psychotherapy.* Cognella Academic Publishing. ISBN-13 : 978-1516581306

Tinsley, H. E. A., Lease, S.H., Giffin Wiersma, N. S. (Eds) (2015) Contemporary Theory and Practice in Counseling and Psychotherapy. Sage (for dialectical behaviour, narrative, integrative theory)

Jay L. Lebow (Ed.) (2008). Twenty-First Century Psychotherapies: Contemporary approaches to theory and practice. John Wiley and Sons

Seligman, L & Reichenberg, L.W. (2010) *Theories of counseling and Psychotherapy*. New Jersey: Pearson ((Narrative, Emotion focused)

Suggestive Readings:

Colin Feltham, Terry Hanley, & Laura Ann Winter (2018). *The Sage Handbook of Counseling and Psychotherapy.* (4th Ed.). Sage

Sommers-Flanagan, J. & Sommers-Flanagan R. (2004). *Counseling and Psychotherapy theories in Context and Practice: Skills, Strategies and Techniques*. John Wiley and Sons (chapter 12 on multicultural and non-westren theories)

Tracy D. Eels. (Ed) (2007). *Handbook of Psychotherapy Case Formulation*. Guilford (Chapter 1 and 2)

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

ANNEXURE-22

Sub: Amendment to Ordinance V

[E.C Resolution No. 14-1/-(14-1-1/-) dated 09.06.2023]

Following addition be made to Appendix-II-A to the Ordinance V (2-A) of the Ordinances of the University;

Add the following:

Syllabi of Semester-IV, V and VI of the following departments under Faculty of Arts based on Under Graduate Curriculum Framework -2022 implemented from the Academic Year 2022-23 :

(i) Arabic

(ii) English

(iii) English (Journalism)

(iv) Urdu

(v) Persian

DEPARTMENT OF ARABIC
Semester-IV

DISCIPLINE SPECIFIC CORE COURSE – 10

UPPER INTERMEDIATE ARABIC: MODERN ARABIC PROSE & POETRY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Upper Intermediate Arabic: Modern Arabic Prose & Poetry	4	3	1	0	Class XII Pass	Intermediate Level Arabic

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make students learn Modern Arabic Prose & Poetry.
2. To let them know briefly about prominent & distinguished Poets and Prose Writers of Arabic.

Learning outcomes

The Learning Outcomes of this course are as follows:

After completing this course the learner will be able to:

1. Read and comprehend modern Arabic language.
2. Write and comprehend simple Arabic poetry.
3. Learn a few couplets in order to begin comprehending Arabic Poetry.

SYLLABUS OF DSC-10

Unit 1 (15 Hours)

The following lessons from the prescribed book "Al-Qira'at Al-Arabiyya", Volume: 3, Co-Authored by Al-Qasmi, Abdul Quddus & Sajid, Muhammad:

• Al Shabakah Al Dualiyyah (9) • Al Munaafasah ((11) • Al Taaqah Al Shamsiyyah (13) • Min Yaumiyyat Tilmiz Fi Al Madrasah (17) • Al Qiraa'ah (18) • Al Tadkheen (35)	• الشبكة الدولية (9) • المنافسة (11) • الطاقة الشمسية (13) • من يوميات تلميذ في المدرسة (17) • القراءة (18) • التدخين (35)

Unit 2 (15 Hours)

Brief biography of the following poets:

- Hafiz Ibrahim
- Mahmood Sami al-Barudi
- Ahmed Shouqi
- Abdullah Basha Fikri
- Al Shaikh Hasan Al Attar

Unit 3 (15 Hours)

The following poems from their respective Diwans:

• Al-Umm Madrasah Idha A'dadtaha - Hafiz Ibrahim (1-6 Verses) • Siwaaya Bitahnaan Al Aghaareed Yatrub - Mahmood Sami Al Baroodi (1-7 Verses) • Tafdeeka Nafs Shaj - Abdullah Basha Fikri (1-7 Verses) • Ya Ukht Andalus - Ahmad Shauqi (1-9 Verses) • A 'anil Muhibb - Al Shaikh Hasan Al Attar (1-9 Verses)	• الأم مدرسة اذا أعددتها - حافظ إبراهيم (1 to 6 Verses) • سواي بتحنان الأغاريد يطرب- محمود سامي البارودي (1 to 7 Verses) • تفديك نفس شج - عبد الله باشا فكري (1 to 7 Verses) • يا أخت أندلس – أحمد شوقي (1 to 9 Verses) • أعن المحب – الشيخ حسن العطار (1 to 9 Verses)

Practical component (if any) - NIL

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 11
UPPER INTERMEDIATE ARABIC GRAMMAR

SEMESTER-4

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Upper Intermediate Arabic Grammar	4	3	1	0	Class XII Pass	Intermediate Level Arabic

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make learners well versed in Syntax and Morphology.
2. To enable them to translate the text of Intermediate level.
3. To develop speaking, reading and writing skills.

Learning outcomes

The Learning Outcomes of this course are as follows:

After completing this course the learner will be able to:

1. Easily derive perfect, imperfect, imperative, prohibitive verbs and active/passive participles from any infinitive of the following irregular patterns.
2. Conjugate 14 or 6 moods of the following verbs and adverbs and use them as per their requirement.
3. Use them in their writings and speaking as per the need.
4. Learn advanced grammar of the Arabic syntax.

SYLLABUS OF DSC-11

Unit 1 (15 Hours)

Morphology

Conjugation of the following irregular verb patterns of (الفعل الثلاثي المزيد فيه) in Perfect, Imperfect (14-mood active & passive), 6-mood conjugation of Imperative, 6-Mood Prohibitive, Active Participle and Passive Participle:

تربّى يتربّى	ألقى يلقي	أراد يريد	أحبّ يحبّ	نادى ينادي	سمّى يسمي
اختار يختار	اهتزّ يهتزّ	انقضى ينقضي	انحاز ينحاز	انشقّ ينشقّ	تلاقى يتلاقى

Unit 2 (15 Hours)

Syntax

▪ المنادى بلام التعريف، منادى المضاف والمضاف إليه، منادى النكرة المعينة	• Al Munada Bi Laam Al Ta'rif, Munada Al Mudaf Wa Al Mudaf Ilaih, Munada Al Nakira Al Mu'ayyana.
▪ الحال وصاحب الحال	• Al Haal Wa Saahibul Haal
▪ تمييز الجملة	• Tamyeezul Jumla
▪ الاستثناء بـــ إلا	• Al Istithnaa Bi Illa
▪ العدد والمعدود	• Al Adad Wal Ma'dood
▪ الجار والمجرور (مفصلا)	• Al Jaar Wal Majroor (In Detail)

Unit 3 (15 Hours)

Morphology

Conjugation of the following irregular verb patterns in detail i.e. 14-mood conjugations of Perfect, Imperfect (active & passive), 6-mood conjugation of Imperative, Prohibitive, Active Participle and Passive Participle each:

استرضى - يسترضي	استراح - يستريح	استقرّ – يستقرّ	اكترى - يكتري

Syntax

▪ كان وأخواتها (مفصلا)	• Kaana Wa Akhawaatuha (In Detail)
▪ اسم ا لتفضيل	• Ism Al Tafzeel
▪ أدوات الشرط	• Adawaat Al Shart
▪ غير المنصرف	• Ghair Al Munsarif

Practical component (if any) - NIL

Essential/recommended readings

1. Dr. W. A. Nadwi: A Practical Approach to the Arabic Language Vol.1 & 2, New Delhi.
2. J. A. Haywood & H. M. : A New Arabic Grammar, New Delhi.
3. Porf. S.A. Rahman: Teach Yourself Arabic, New Delhi.
4. Maulana Abdur rahman Amritsari, Kitab Al Sarf, Panipat.
5. Maulana Abdur rahman Amritsari, Kitab Al Nahw, Panipat.
6. Abdus Sattar Khan: Arabi Ka Muallim, Delhi
7. Ali Jarim Wa Mustafa Amin, Al Nahw Al Wazih Fi Qawaid Al Lugha Al Arabiyya, Delhi.
8. Antuwan Dahdah, Mu'jam Tasrif Al Af'aal Al Arabiyya, Delhi.

Suggestive readings

1. J. A. Haywood & H. M. : A New Arabic Grammar,New Delhi.
2. Maulana Sajid: Tayseer Al-Insha, Delhi
3. Muhammad Rabi Al Hasani Al Nadwi, Muallim Al Insha, Lucknow.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 12
UPPER INTERMEDIATE ARABIC TRANSLATION & COMPOSITION

SEMESTER-4

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Upper Intermediate Arabic Translation & Composition	4	3	1	0	Class XII Pass	Intermediate Level Arabic

Learning Objectives

The Learning Objectives of this course are as follows:

1. To enable students to translate simple sentences from English-Arabic & vice versa.
2. To develop writing abilities among students.

Learning Outcomes

The Learning Outcomes of this course are as follows:

After completing this course the learner will be able to:

1. Acquire skills in simple sentences translation from English into Arabic & Hindi.
2. Acquire skills in simple sentences translation from Arabic into English & Hindi.
3. Acquire skills in writing short essays, applications and simple letters.

SYLLABUS OF DSC-12

Unit 1 (15 Hours)

Translation from English Newspapers into Arabic on the topics given below:

- Political
- Socio-economical
- Cultural

Unit 2 (15 Hours)

Translation from Arabic Newspapers into English on the topics given below:

- Political
- Socio-economical
- Cultural

Unit 3 (15 Hours)

Composition:

- Application Writing
- Letter Writing
- Short Essay Writing

Practical component (if any) – Nil

Essential/recommended readings

1. Dr. W. A. Nadwi: A Practical Approach to the Arabic Language Vol.2, New Delhi.
2. J. A. Haywood & H. M. Nahmad : A New Arabic Grammar ,New Delhi.
3. Abdur Sattar Khan: Arabi Ka Muallim 1-4, Delhi.
4. Dr. Manzoor Khan: Nahwal Insha Wa Al Tarjama, Srinagar, Kashmir.
5. Dr. Aboo Backer K P : A Handbook of Commercial Arabic, Kerala.

Suggestive readings

1. Dr. Sayed Muhammad Ijtiba Nadwi: Al Tabeer Wal Muhadatha, Delhi.
2. S.A Rahman: Let Us Speak Arabic, New Delhi.
3. Dr. Habibullah Khan, Duroos Fil Tarjama Al Suhufiyyah, New Delhi.
4. A Group of Scholars, Allugha Al Wazifiyya, NCPUL, New Delhi.
5. Md. Quamruddin: Translation Made Easy, U.P.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category II (Semester-4)

Arabic Courses for Undergraduate Programme of study with Arabic as one of the Core Disciplines

(B.A. Programmes with Arabic as Major discipline)

SEMESTER-4
DISCIPLINE SPECIFIC CORE COURSE – 7
MODERN ARABIC-II

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Modern Arabic-II	4	3	1	0	Class XII Pass	Basic Knowledge of Arabic Language

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make them familiar with the Modern Arabic Text.
2. To enable them to read and write Arabic with grammatical rules with the help of text.

Learning outcomes

The Learning Outcomes of this course are as follows:

After completing this course the learner will be able to:

1. Develop skills of reading and writing.
2. Read, understand and comprehend structures of Arabic sentences at intermediate level.

SYLLABUS OF DSC-7 (CATOGORY-II)

Unit 1 (15 Hours)

Arabic Text-1

Lessons: 23,24,25,27,28,29,33

Prescribed Book:

Al Qira'atul Waziha (Part-2)
Mualana Wahiduz Zaman Qasmi Kairanwi

Unit 2 (15 Hours)

Arabic Text-2

Lessons: 34,35,36,37,38,39

Prescribed Book:

Al Qira'atul Waziha (Part-2)
Mualana Wahiduz Zaman Qasmi Kairanwi

Unit 3 (15 Hours)

Comprehension & Applied Grammar

Lessons: 23,24,25,27,28,29,33,34,35,36,37,38,39

Prescribed Book:
Al Qira'atul Waziha (Part-2)
Mualana Wahiduz Zaman Qasmi Kairanwi

Practical component (if any) - NIL

Essential/recommended readings

1. Dr. W. A.Nadwi: A Practical Approach to the Arabic Language Vol.1, New Delhi.
2. Dr. Amir Jamal: Arabic Learn the Easy Way, New Delhi.
3. Ali Al Jarim Wa Mustafa Amin: Al Nahw Al Wazih, Delhi.
4. Mualana Abdur Rahman Amritsari, Kitab Al Nahw, Panipat.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER-4
DISCIPLINE SPECIFIC CORE COURSE – 8
ARABIC: TEXT, GRAMMAR & TRANSLATION -IV

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Arabic: Text, Grammar & Translation-IV	4	3	1	0	Class XII Pass	Basic Knowledge of Arabic Language

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make the learners familiar with the Arabic language skills.
2. To make them familiar with grammar rules required at the third stage of learning Arabic.
3. To enhance their vocabulary & translation skills through the given text and understand the different structures of sentences.

Learning outcomes

The Learning Outcomes of this course are as follows:

After completing this course, the learner will be able to:

1. Read the Arabic text.
2. Understand and solve grammar based exercises.
3. Translate sentences based on the grammar taught.

SYLLABUS OF DSC-8 (CATEGORY-II)

Unit 1 (15 Hours)

Arabic Text

Lessons: 7-13

Prescribed Book:

Duroosul Lugha Al-Arabiyya Li Ghairin Naatiqeen Biha (English Version) Vol.-2

Dr. V. Abdur Rahim

Unit 2 (15 Hours)

Grammar:

- Abwabul Fi'l Al Thulathi Al Mazid Fih أبواب الفعل الثلاثي المزيد فيه

(تفعيل-مفاعلة-إفعال-تفعّل-تفاعل-انفعال-افتعال-استفعال)
(Taf'eel - Mufaa'ala - If'aal - Tafa''ul - Tafaa'ul - Infi'aal - Ifti'aal - Istif'aal)

- Al Huruf Al Naasiba Lil Muzaari' الحروف الناصبة للمضارع
- Al Huruf Al Jaazima Lil Muzaari' الحروف الجازمة للمضارع
- Hamzatul Wasl & Hamzatul Qat' همزة الوصل وهمزة القطع
- Zarf Al Zamaan Wa Zarf Al Makaan ظرف الزمان وظرف المكان

Unit 3 (15 Hours)

Translation:

Translation English-Arabic based on simple sentences.

Practical component (if any) – NIL

Essential/recommended readings

1. R.I. Faynan: Essential Arabic, New Delhi.
2. S.A. Rahman: Teach Yourself Arabic, New Delhi.
3. Dr. W. A.Nadwi: A Practical Approach to the Arabic Language, New Delhi.

Suggestive readings

1. J.A. Haywood & H.M. Nahmad: A New Arabic Grammar
2. Syed Ali: Arabic For Beginners
3. Amir Jamal: Arabic Learn the Easy Way, New Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category III (Semester-4)

Arabic Courses for Undergraduate Programme of study with Arabic as one of the Core Disciplines

(B.A. Programmes with Arabic as Non-Major or Minor discipline)

COURSES OFFERED BY DEPARTMENT OF ARABIC

SEMESTER-4
DISCIPLINE SPECIFIC CORE COURSE – 8
ARABIC: TEXT, GRAMMAR & TRANSLATION -IV

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Arabic: Text, Grammar & Translation-IV	4	3	1	0	Class XII Pass	Basic Knowledge of Arabic Language

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make the learners familiar with the Arabic language skills.
2. To make them familiar with grammar rules required at the third stage of learning Arabic.
3. To enhance their vocabulary & translation skills through the given text and understand the different structures of sentences.

Learning outcomes

The Learning Outcomes of this course are as follows:

After completing this course, the learner will be able to:

1. Read the Arabic text.
2. Understand and solve grammar based exercises.
3. Translate sentences based on the grammar taught.

SYLLABUS OF DSC-8 (CATEGORY-III)

Unit 1 (15 Hours)

Arabic Text

Lessons: 7-13

Prescribed Book:

Duroosul Lugha Al-Arabiyya Li Ghairin Naatiqeen Biha (English Version) Vol.-2

Dr. V. Abdur Rahim

Unit 2 (15 Hours)

Grammar:

- Abwabul Fi'l Al Thulathi Al Mazid Fih أبواب الفعل الثلاثي المزيد فيه

(تفعيل-مفاعلة-إفعال-تفعّل-تفاعل-انفعال-افتعال-استفعال)

(Taf'eel - Mufaa'ala - If'aal - Tafa''ul - Tafaa'ul - Infi'aal - Ifti'aal - Istif'aal)

- Al Huruf Al Naasiba Lil Muzaari' الحروف الناصبة للمضارع
- Al Huruf Al Jaazima Lil Muzaari' الحروف الجازمة للمضارع
- Hamzatul Wasl & Hamzatul Qat' همزة الوصل وهمزة القطع
- Zarf Al Zamaan Wa Zarf Al Makaan ظرف الزمان وظرف المكان

Unit 3 (15 Hours)

Translation:

Translation English-Arabic based on simple sentences.

Practical component (if any) – NIL

Essential/recommended readings

1. R.I. Faynan: Essential Arabic, New Delhi.
2. S.A. Rahman: Teach Yourself Arabic, New Delhi.
3. Dr. W. A.Nadwi: A Practical Approach to the Arabic Language, New Delhi.

Suggestive readings

1. J.A. Haywood & H.M. Nahmad: A New Arabic Grammar
2. Syed Ali: Arabic For Beginners
3. Amir Jamal: Arabic Learn the Easy Way, New Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 3
INTRODUCTION TO ARABIC NOVEL

SEMESTER-4

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Introduction to Arabic Novel	4	3	1	0	Class XII Pass	Basic Knowledge of Arabic Language

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make students acquainted with the Arabic Novels.
2. To make them familiar to famous Arab Novelists.

Learning Outcomes

The Learning Outcomes of this course are as follows:

After completing this course the learner will be able to:

1. Learn about origin and development of Arabic Novel.
2. Display working knowledge of Arabic Novel as a literary genre.
3. Identify and describe distinct literary characteristics of Novel.
4. Know about different literary trends in Arabic Novel.
5. Assess the contributions of different scholars to the development of Novel in Arabic.
6. Analyze the important literary works of Arabic Novelists for their structure, style and meaning.

SYLLABUS OF DSE-3

Unit 1 (15 Hours)

▪ Novel: Introduction, Characteristics & Elements ▪ Origin & Development of Arabic Novel	▪ الرواية : تعريف وخصائص وعناصر ▪ نشأة الرواية العربية وتطورها

Unit 2 (15 Hours)

▪ Pioneer of Arabic Novel: Muhammad Husain Haykal. ▪ Novel “Zainab”: An Introduction	▪ رائد الرواية العربية: محمد حسين هيكل ▪ رواية "زينب": تعريف وجيز

Unit 3 (15 Hours)

▪ Eminent Arab Novelists - Jurji Zaidan - Abdul Qadir Al-Mazni - Naguib Mahfouz - Najib Al Kilaani	▪ أعلام الرواية العربية: - جرجي زيدان - عبدالقادر المازني - نجيب محفوظ - نجيب الكيلاني

Practical component (if any) - Nil

Essential/recommended readings:

1. M. M. Badawi: Modern Arabic Literature, Cambridge university press.
2. Ahmad Haykal: Al-Adab al-Qasasi wa al-Masrahi fi Misr, Al Qahira.
3. Abdul Muhsin Badar: Tatawwur Al Riwaya Al Arabiyya, Darul Ma’arif.
4. Dr. Ali Al Raa’i: Diraasaat Fir Riwayah Al Misriyya, Al Qahira
5. Abdul Halim Nadwi: Arabi Adab Ki Tareekh, New Delhi

Suggestive readings:

1. Ian Watt : Nushu al-Riwayat, Wizarat al-Thaqafa, Damascus, 1991.
2. Fatma Moussa Mahmoud : The Arabic novel in Egypt (1914-1970), Egyptian General Book Organization, 1973
3. Mahdi, Ismat : Modern Arabic literature, 1900-1967, Rabi Publishers, 1983

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 4
ARABIC TEXT COMPREHENSION-2

SEMESTER-4

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Arabic Text Comprehension-2	4	3	1	0	Class XII Pass	Basic Knowledge of Arabic Language

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make students acquainted with Arabic text.
2. To enable them to comprehend the Arabic text.

Learning Outcomes

The Learning Outcomes of this course are as follows:

After completing this course the learner will be able to:

1. Read and comprehend the Arabic text.
2. Translate the given text into English or Hindi or Urdu.
3. Make sentences on the patterns of sentences given in the text.

SYLLABUS OF DSE-4

Unit 1 (15 Hours)

- The following lessons from the prescribed book Al Qira'atul Waziha-3, Maulana Wahiduzzaman Qasmi Kairanwi, New Delhi:

.1	النزهة	Al-Nuzha	Excursion
.2	الشرطي	Al-Shurtiy	Policeman
.3	الأنبج	Al-Anbaj	Mango
.4	فصول السنة	Fusool Al Sana	Seasons

Unit 2 (15 Hours)

- The following lessons from the prescribed book Al Qira'atul Waziha-3, Maulana Wahiduzzaman Qasmi Kairanwi, New Delhi:

.5	الجهات الأصلية	Al-Jihaat Al-Asliyya	Directions
.6	النشاط المدرسي	Al-Nashaat Al Madrasi	School Activity
.7	اجتماع الأصدقاء	Ijtima Al-Asdiqa	Meeting of Friends
.8	حديث الأصدقاء	Hadith Al-Asdiqa	Conversation of Friends

Unit 3 (15 Hours)

- The following lessons from the prescribed book Al Qira'ah Al Rasheedah, Vol-1:

.1	الحريق	Al Hariq	Fire
.2	المطر	Al Matar	Rain
.3	الطائر	Al Taa'ir	Bird
.4	الشباك	Al Shubbak	Window

Practical component (if any) - Nil

Suggestive readings:

1. W. A. Nadwi: A Practical Approach to the Arabic Language Vol.1 & 2, New Delhi.
2. J. A. Haywood & H. M. : A New Arabic Grammar, New Delhi.
3. S.A. Rahman: Teach Yourself Arabic, New Delhi.
4. Amir Jamal: Arabic Learn the Easy Way, New Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 5
ARABIC FOR TOURISM

SEMESTER-4

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Arabic for Tourism	4	3	1	0	Class XII Pass	Basic level of Arabic

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make students familiar with the basic Arabic vocabulary & expressions used in the field of tourism.
2. To make them familiar with the famous Indian Monuments and provide vocabulary in Arabic.

Learning Outcomes

The Learning Outcomes of this course are as follows:

After completing this course, the learner will be able to:

1. Learn the Arabic vocabulary related to tourism.
2. Learn Arabic expressions and sentences related to tourism.

SYLLABUS OF DSE-5

Unit 1 (15 Hours)

• Common Arabic Vocabulary used in the field of Tourism - Airport - Hotel - Hospital - Historical Monuments	▪ المفرادات العربية حول السياحة: - المطار - الفندق - المستشفى - المعالم التاريخية

Unit 2 (15 Hours)

• Common Arabic Expression/Phrases used in the field of Tourism - Airport - Hotel - Hospital - Historical Monuments	▪ التعابير العربية حول السياحة: - المطار - الفندق - المستشفى - المعالم التاريخية

Unit 3 (15 Hours)

• Introduction to important Indian historical places in Arabic • Akshardham • India Gate • Red Fort • Mughal Garden • Qutub Minar • Taj Mahal	▪ التعريف عن المعالم التاريخية الهندية: - أكشردهام - بوابة الهند - القلعة الحمراء - حديقة مغول - منارة قطب - التاج محل

Practical component (if any) - Nil

Essential/recommended readings:

1. Abdul Fattah Sabri Wa Ali Umar: Al Qi'ra'ah Al Rasheeda: Vol.-1, 2, 3 & 4, Egypt.
2. Al Shaikh Abu Al Hasan Ali Al Nadwi: Al Qira'ah Al Rashida, Vol.-1, 2 & 3, Lucknow.
3. Ijtiba Nadwi: Al Ta'bir Wa Al Muhadatha, New Delhi.
4. Al Musannifoon: Al Lughah Al Arabiyyah Al Wazifiyyah, New Delhi
5. Manzoor Khan: Nahwa Al Insha Wa Al Tarjama, Jammu & Kashmir.

Suggestive readings:

1. S.A. Rahman: Teach Yourself Arabic, New Delhi.
2. J. A. Haywood & H. M. Nahmad: A New Arabic Grammar, New Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

SEMESTER-4

GENERIC ELECTIVES (GE-9): IMPACT OF ARAB SCHOLARS ON EUROPEAN RENAISSANCE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)	Department offering the course
		Lecture	Tutorial	Practical / Practice			
Impact of Arabic Scholars on European Renaissance	4	3	1	0	Class XII Pass	NIL	Arabic

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make students acquainted with the knowledge of impact of Arab Scholars on European Renaissance.
2. To make acquire them the knowledge of some important Arab thinkers.

Learning outcomes

The Learning Outcomes of this course are as follows:

By studying this course the student will be able to:

1. Acquire the knowledge of Impact of Arab Scholars on European Renaissance.
2. Acquire the knowledge of the important contribution of Arab scholars to European Renaissance.
3. Acquire the knowledge of life and works of the prescribed Arab scholars, who made their major contribution to the world development.

SYLLABUS OF G.E.-9

Unit 1 (15 Hours)

- Al-Ma'arri
- Hayy Ibn Yaqzaan

Unit 2 (15 Hours)

- Ibn Khaldoon
- Ibn Sina (Avicenna)

Unit 3 (15 Hours)

- Al Farabi
- Ibn Haytham
- Al Razi (Rhazes)

Practical component (if any) - NIL

Suggestive readings

1. Abbas Mahmood Al Aqqad: Asarul Arab Fil Hazaara Al Aurubbiyya, Al Qahira.
2. Dr. V. Abdur Rahim : Europe Speaks Arabic, New Delhi
3. Dr. Sanaullah Nadwi : The Arab Legacy in Latin Europe, Aligarh, 2003
4. Dr. Sanaullah Nadwi : Klasiki Adabiyate Europe per Islam ka Asar- Dante ke Hawale se (Islam and the Classical European Literature: A Case Study of Dante Alighieri, Aligarh.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

SEMESTER-4

GENERIC ELECTIVES (GE-10): SIMPLE ARABIC TEXT-2

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Simple Arabic Text-2	4	3	1	0	Class XII Pass	Reading & Writing of Arabic

Learning Objectives

The Learning Objectives of this course are as follows:

1. To enable them to comprehend the Arabic text.
2. To teach elementary Arabic grammar.
3. To make them familiar with Arabic structures based upon elementary grammar.
4. To enable them to translate simple sentences.

Learning outcomes

The Learning Outcomes of this course are as follows:

By studying this course the student will be able to:

1. Read simple sentences correctly.
2. Learn to translate simple sentences based on the prescribed grammatical rules.
3. Read and comprehend the Arabic text.
4. Translate the given text into English or Hindi or Urdu.
5. Make sentences on the patterns of sentences given in the text.

SYLLABUS OF G.E.-10

Unit 1 (15 Hours)

- The following lessons from the prescribed book:
  Lessons 1-4

Unit 2 (15 Hours)

- The following lessons from the prescribed book:
  Lessons 5-8

Unit 3 (15 Hours)

- The following lessons from the prescribed book:
  Lessons 9-12

Practical component (if any) – NIL

Prescribed Book:

- Al Qiraatul Waziha-1, Maulana Wahiduzzaman Qasmi Kairanwi, New Delhi.

Suggestive readings

1. Dr. W. A. Nadwi: A Practical Approach to the Arabic Language Vol.1 & 2, New Delhi.
2. J. A. Haywood & H. M. : A New Arabic Grammar, New Delhi.
3. S.A. Rahman: Teach Yourself Arabic, New Delhi.
4. Amir Jamal: Arabic Learn the Easy Way, New Delhi

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 13
CLASSICAL ARABIC PROSE & POETRY-1

SEMESTER-5

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Classical Arabic Prose & Poetry-1	4	3	1	0	Class XII Pass	Intermediate Level Arabic

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make students learn Classical Arabic Prose & Poetry.
2. To let them know briefly about life sketches and works of prominent & distinguished Poets and Prose Writers of Arabic.

Learning outcomes

The Learning Outcomes of this course are as follows:

After completing this course the learner will be able to:

1. Enhance the ability to read and understand Classical Arabic text.
2. Add vocabulary into his/her knowledge through Arabic text.
3. Learn a few couplets, recite and quote them on different occasions.

SYLLABUS OF DSC-13

Unit 1 (15 Hours)

The following lessons from the prescribed book "Al Mansurat Min Adab Al Arab" by Muhammad Al Rabi' Al Hasani Al Nadwi:

• Wasiyyatu Luqmaan Li Ibnih (13-19, Surat Luqmaan) • Al I'tiraaf Bin Ni'mah (Al Imaam Muslim) • Jood A'raabi (Abul Faraj Al Asbahaani) • Aduwwaan Yusaalimaan (Ibn Al Muqaffa) • Azaa' Ali Ibn Abi Talib Li Abi Bakr (Sayyiduna Ali Ibn Abi Talib)	▪ وصية لقمان لابنه (13-19، سورة لقمان) ▪ الاعتراف بالنعمة (الإمام مسلم) ▪ جود أعرابي (أبو الفرج الأصبهاني) ▪ عدوان يسالمان (ابن المقفع) ▪ عزاء علي بن أبي طالب لأبي بكر (سيدنا علي بن أبي طالب ﷺ)

Unit 2 (15 Hours)

Brief biography of the following writers/poets:

• Al-Imam Muslim • Abul Faraj Al-Asbahani • Ibn Al-Muqaffa • Ali Ibn Abi Talib • Safiuddin Al-Hilliy	• Muhazzab Al-Din • Abul Ala Al-Ma'arri • Al-Mutanabbi • Ibn Al-Rumi

Unit 3 (15 Hours)

The following poems from the anthology "Majmu'a Min Al Nazm Wa Al Nasr Lil Hifz Wat Tasmee'" by Sharif Saleem, Muhammad:

• La Yamtati Al Majda - Safiuddin Al Hilliy (1-5 Verses) • Wa Iza Al Karim - Muhazzib Al Din (1-5 Verses) • Ala Fi Sabil Al Majd - Abul Ala Al Ma'arri (1-6 Verses) • Zu Al Aql Yashqa - Al Mutanabbi (1-5 Verses) • Takhiztukum Dir'an - Ibn Al Rumi (1-4 Verses)	▪ لا يمتطي المجد - صفي الدين الحلي (1 to 5 Verses) ▪ وإذا الكريم - مهذب الدين (1 to 5 Verses) ▪ ألا في سبيل المجد - أبو العلاء المعري (1 to 6 Verses) ▪ ذو العقل يشقى - المتنبي (1 to 5 Verses) ▪ تخذتكم درعا - ابن الرومي (1 to 4 Verses)

Practical component (if any) – NIL

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 14
HISTORY OF ARABIC LITERATURE-1

SEMESTER-5

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
History of Arabic Literature-1	4	3	1	0	Class XII Pass	Intermediate Level Arabic

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make students acquainted with the history of Arabic Literature.
2. To make familiar to famous Prose writers and Poets.

Learning Outcomes

The Learning Outcomes of this course are as follows:

After completing this course the learner will be able to:

1. Know about the Arabic Literature during Pre-Islamic period.
2. Know about the development of Arabic Literature during Islamic period.
3. Understand the impact of Qur'an and Hadith Literature on Arabic language and literature.
4. Know about different literary schools and movements during the Abbasid period.

SYLLABUS OF DSC-14

Unit 1 (15 Hours)

Pre-Islamic Period (500-622 AD)

- Prose
  - Khitaabah
  - Amsaalul Hikam
  - Wasaaya
- Poetry
  - Al-Mu'allaqaat
  - Imru'ul Qais
  - Zuhair Bin Abi Sulma

Unit 2 (15 Hours)

Islamic & Umayyad Period (622-750 AD)

- Impact of Islam (Qur'an and Hadith) on Arabic Literature
- Letters: Abdul Hameed Al Katib
- Hassan Bin Thabit
- Umar Bin Abi Rabi'a
- Jamil Buthaina
- Al Farazdaq

Unit 3 (15 Hours)

Abbasid Period (750-1258 AD)

- Prose
  - Al Jahiz Wa Kitabul Bayan Wat Tabyeen
  - Ibn Al Muqaffa Wa Kitab Kalila Wa Dimna
- Poetry
  - Bashshar Ibn Burd
  - Al Mutanabbi
  - Abul Ala Al Ma'arri

Practical component (if any) – Nil

Essential/recommended readings

1. Umar Farrukh: Tarikh Al Adab Al Arabi
2. Shauqi Zaif: Tarikh Al Adab Al Arabi
3. Ahmad Hasan Al Zayyat: Tarikh Al Adab Al Arabi
4. K.A. Fariq: History of Arabic Literature

Suggestive readings

1. Dr. Abdul Halim Nadwi: Arabi Adab Ki Tareekh
2. Hanna Al Fakhoori: Al Jami' Fi Tarikh Al Adab Al Arabi

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 15
ADVANCED ARABIC GRAMMAR & TRANSLATION

SEMESTER-5

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Advanced Arabic Grammar & Translation	4	3	1	0	Class XII Pass	Intermediate Level Arabic

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make learners well versed in Advanced Arabic Grammar.
2. To enable them to translate the text of Advanced level.
3. To develop speaking, reading and writing skills at Advanced Level.

Learning outcomes

The Learning Outcomes of this course are as follows:

After completing this course the learner will be able to:

1. Understand Advanced Arabic Grammar for Reading and Writing.
2. Use Arabic language in their writings and speaking as per the need.
3. Translate the text of Arabic newspapers.

SYLLABUS OF DSC-15

Unit 1 (15 Hours)

Advanced Grammar

• Af'aalul Madh Wa Al Zamm • Al Taukeed • Asmaa'ul Af'aal • Af'aalul Muqaaraba Wa Al Rajaa Wa Al Shuroo' • Khawaass Al Fi'l Al Thulathi Al Mazid Fih	• أفعال المدح والذم • التوكيد • أسماء الأفعال • أفعال المقاربة والرجاء والشروع • خواص الفعل الثلاثي المزيد فيه

Unit 2 (15 Hours)

Advanced Translation from English Newspaper into Arabic on the given topics:

- Political
- Socio-economical
- Cultural

Unit 3 (15 Hours)

Advanced Translation from Arabic Newspaper into English on the given topics:

- Political
- Socio-economical
- Cultural

Practical component (if any) - NIL

Essential/recommended readings

1. Dr. W. A. Nadwi: A Practical Approach to the Arabic Language Vol.1 & 2, New Delhi.
2. J. A. Haywood & H. M. : A New Arabic Grammar, New Delhi.
3. S.A. Rahman: Teach Yourself Arabic, New Delhi.
4. Maulana Abdur rahman Amritsari, Kitab Al Sarf, Panipat.
5. Maulana Abdur rahman Amritsari, Kitab Al Nahw, Panipat.
6. Abdus Sattar Khan: Arabi Ka Muallim, Delhi
7. Ali Al Jarim Wa Mustafa Amin, Al Nahw Al Wazih Fi Qawaid Al Lugha Al Arabiyya, Delhi.
8. Antuwan Dahdah, Mu'jam Tasrif Al Af'aal Al Arabiyya, Delhi.

Suggestive readings

1. J. A. Haywood & H. M. : A New Arabic Grammar, New Delhi.
2. Maulana Sajid: Tayseer Al-Insha, Delhi
3. Muhammad Rabi Al Hasani Al Nadwi, Muallim Al Insha, Lucknow.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category II (Semester-5)

Arabic Courses for Undergraduate Programme of study with Arabic as one of the Core Disciplines

(B.A. Programmes with Arabic as Major discipline)

SEMESTER-5
DISCIPLINE SPECIFIC CORE COURSE – 9
MODERN ARABIC-III

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Modern Arabic-III	4	3	1	0	Class XII Pass	Intermediate Level Arabic

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make them familiar with the Modern Arabic Text.
2. To enable them to read and write Arabic with grammatical rules with the help of text.

Learning outcomes

The Learning Outcomes of this course are as follows:

After completing this course the learner will be able to:

1. Develop skills of reading and writing.
2. Read, understand and comprehend structures of Arabic sentences at intermediate level.

SYLLABUS OF DSC-9 (CATOGORY-II)

Unit 1 (15 Hours)

Arabic Text-1

Lessons: 1,2,3,5,6,7,9

Prescribed Book:

Al Qira'atul Waziha (Part-3)
Mualana Wahiduz Zaman Qasmi Kairanwi

Unit 2 (15 Hours)

Arabic Text-2

Lessons: 10,11,12,13,15,16

Prescribed Book:

Al Qira'atul Waziha (Part-3)
Mualana Wahiduz Zaman Qasmi Kairanwi

Unit 3 (15 Hours)

Comprehension & Applied Grammar

Lessons: 1,2,3,5,6,7,9,10,11,12,13,15,16

Prescribed Book:
Al Qira'atul Waziha (Part-3)
Mualana Wahiduz Zaman Qasmi Kairanwi

Practical component (if any) - NIL

Essential/recommended readings

1. Dr. W. A.Nadwi: A Practical Approach to the Arabic Language Vol.1, New Delhi.
2. Dr. Amir Jamal: Arabic Learn the Easy Way, New Delhi.
3. Ali Al Jarim Wa Mustafa Amin: Al Nahw Al Wazih, Delhi.
4. Mualana Abdur Rahman Amritsari, Kitab Al Nahw, Panipat.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER-5
DISCIPLINE SPECIFIC CORE COURSE – 10
ARABIC: TEXT & TRANSLATION-I

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Arabic: Text & Translation-I	4	3	1	0	Class XII Pass	Intermediate Level Arabic

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make the learners with Arabic language at intermediate level.
2. To make them familiar with Arabic text at intermediate level.
3. To enhance their vocabulary & translation skills through the given text and understand the different structures of sentences.

Learning outcomes

The Learning Outcomes of this course are as follows:

After completing this course, the learner will be able to:

1. Read the Arabic text.
2. Understand and solve grammar based exercises.
3. Translate sentences based on the grammar taught.

SYLLABUS OF DSC-10 (CATEGORY-II)

Unit 1 (15 Hours)

Arabic Text

Lessons: 1-5

Prescribed Book:

Duroosul Lugha Al-Arabiyya Li Ghairin Naatiqeen Biha (English Version) Vol.-3

Dr. V. Abdur Rahim

Unit 2 (15 Hours)

Exercises & New Words:

Lessons: 1-5

Prescribed Book:

Duroosul Lugha Al-Arabiyya Li Ghairin Naatiqeen Biha (English Version) Vol.-3

Dr. V. Abdur Rahim

Unit 3 (15 Hours)

Translation:

English-Arabic & Vice Versa based on simple sentences.

Practical component (if any) – NIL

Essential/recommended readings

1. R.I. Faynan: Essential Arabic, New Delhi.
2. S.A. Rahman: Teach Yourself Arabic, New Delhi.
3. Dr. W. A.Nadwi: A Practical Approach to the Arabic Language, New Delhi.

Suggestive readings

1. J.A. Haywood & H.M. Nahmad: A New Arabic Grammar
2. Syed Ali: Arabic For Beginners
3. Amir Jamal: Arabic Learn the Easy Way, New Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category III (Semester-5)

Arabic Courses for Undergraduate Programme of study with Arabic as one of the Core Disciplines

(B.A. Programmes with Arabic as Non-Major or Minor discipline)

COURSES OFFERED BY DEPARTMENT OF ARABIC

SEMESTER-5
DISCIPLINE SPECIFIC CORE COURSE – 10
ARABIC: TEXT & TRANSLATION -I

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Arabic: Text & Translation-I	4	3	1	0	Class XII Pass	Intermediate Level Arabic

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make the learners with Arabic language at intermediate level.
2. To make them familiar with Arabic text at intermediate level.
3. To enhance their vocabulary & translation skills through the given text and understand the different structures of sentences.

Learning outcomes

The Learning Outcomes of this course are as follows:

After completing this course, the learner will be able to:

1. Read the Arabic text.
2. Understand and solve grammar based exercises.
3. Translate sentences based on the grammar taught.

SYLLABUS OF DSC-10 (CATEGORY-III)

Unit 1 (15 Hours)

Arabic Text

Lessons: 1-5

Prescribed Book:

Duroosul Lugha Al-Arabiyya Li Ghairin Naatiqeen Biha (English Version) Vol.-3

Dr. V. Abdur Rahim

Unit 2 (15 Hours)

Exercises & New Words:

Lessons: 1-5

Prescribed Book:

Duroosul Lugha Al-Arabiyya Li Ghairin Naatiqeen Biha (English Version) Vol.-3

Dr. V. Abdur Rahim

Unit 3 (15 Hours)

Translation:

English-Arabic & Vice Versa based on simple sentences.

Practical component (if any) – NIL

Essential/recommended readings

1. R.I. Faynan: Essential Arabic, New Delhi.
2. S.A. Rahman: Teach Yourself Arabic, New Delhi.
3. Dr. W. A.Nadwi: A Practical Approach to the Arabic Language, New Delhi.

Suggestive readings

1. J.A. Haywood & H.M. Nahmad: A New Arabic Grammar
2. Syed Ali: Arabic For Beginners
3. Amir Jamal: Arabic Learn the Easy Way, New Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 6
INTRODUCTION TO ARABIC DRAMA

SEMESTER-5

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Introduction to Arabic Drama	4	3	1	0	Class XII Pass	Basic Knowledge of Arabic Language

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make students acquainted with the Arabic Drama.
2. To make familiar to famous Arab Dramatists.

Learning Outcomes

The Learning Outcomes of this course are as follows:

After completing this course the learner will be able to:

1. The basic elements of Drama.
2. Emergence of Drama as an important part of the Arabic literature.
3. The pioneers of the Drama who had contributed a lot in its development.
4. Some selected and most famous prose and poetic drama.

SYLLABUS OF DSE-6

Unit 1 (15 Hours)

Drama: Elements & History

▪ Drama: Introduction, Characteristics & Elements ▪ Origin & Development of Arabic Drama	▪ المسرحية : تعريف وخصائص وعناصر ▪ نشأة المسرحية وتطورها في اللغة العربية

Unit 2 (15 Hours)

Pioneers of Drama

▪ Pioneer of Arabic Drama: Taufiq Al Hakim ▪ Pioneer of Poetic Drama: Ahmad Shauqi	▪ رائد المسرحية العربية: توفيق الحكيم ▪ رائد المسرحية الشعرية : أحمد شوقي

Unit 3 (15 Hours)

Selected Famous Dramas

▪ Selected Drama - “Aghla Minal Hubb” Li Ali Ahmad Baktheer ▪ Selected Drama - “Usfur Min Al Sharq” Li Taufiq Al Hakim	▪ مسرحية منتخبة - "أغلى من الحب" لعلي أحمد باكثير ▪ مسرحية منتخبة - "عصفور من الشرق" لتوفيق الحكيم

Practical component (if any) - Nil

Essential/recommended readings:

1. Hanna Fakhoori: Tarikh Al Adab Al Arabi (Al Jadid)
2. Dr. Muhammad Mandoor: Masrahiyyat Taufiq Al Hakim
3. Dr. Muhammad Mandoor: Masrahiyyat Shauqi
4. Ahmad Haykal: Al Adab Al Qasasi Al Arabi
5. Umar Al Dasuqi: Al Masrahiyya

Suggestive readings:

1. Maqsood Ahmad: The Beginnings & Development of Drama in Arabic, Falah-e-Darain Trust New Delhi (2nd enlarged edition) 2006
2. Ismat Mehdi : History of Modern Arabic Literature, Hyderabad.
3. Dr. Yusuf Al Najm: Al Masrahiyya
4. Abdul Haq: Jadid Arabi Adab Tahlili Jaize

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 7
ARABIC TEXT COMPREHENSION-3

SEMESTER-5

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Arabic Text Comprehension-3	4	3	1	-	Class XII Pass	Basic Knowledge of Arabic Language

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make students acquainted with Arabic text.
2. To enable them to comprehend the Arabic text.

Learning Outcomes

The Learning Outcomes of this course are as follows:

After completing this course the learner will be able to:

1. Read and comprehend the Arabic text.
2. Translate the given text into English or Hindi or Urdu.
3. Make sentences on the patterns of sentences given in the text.

SYLLABUS OF DSE-7

Unit 1 (15 Hours)

- The following lessons from the prescribed book Al Qira'atul Waziha-3, Maulana Wahiduzzaman Qasmi Kairanwi, New Delhi:

.1	القاضي	Al Qazi	Judge
.2	بدء العام الدراسي	Bad' Al Aam Al Diraasi	Start of the School Year
.3	الجيش	Al Jaish	Army
.4	الجهد والصبر في العمل	Al Juhd Was Sabr Fil Amal	Effort & Patience at Work

Unit 2 (15 Hours)

- The following lessons from the prescribed book Al Qira'atul Waziha-3, Maulana Wahiduzzaman Qasmi Kairanwi, New Delhi:

.1	النصائح	Al Nasaaih	Advices
.2	السوق	Al Sooq	Market
.3	العين	Al Ain	Eye
.4	الطائرة	Al Taairah	Aeroplane

Unit 3 (15 Hours)

- The following lessons from the prescribed book Al Qira'ah Al Rasheeda, Vol-1:

.1	عيادة المريض	Iyadah Al Mariz	Visiting of Patient
.2	الأسد والفأر	Al Asad Wa Al Fa'r	Lion and Rat
.3	يوم العطلة	Yaum Al Utla	Holiday
.4	الملح	Al Milh	Salt

Practical component (if any) - Nil

Suggestive readings:

1. Dr. W. A. Nadwi: A Practical Approach to the Arabic Language Vol.1 & 2, New Delhi.
2. J. A. Haywood & H. M.: A New Arabic Grammar, New Delhi.
3. S.A. Rahman: Teach Yourself Arabic, New Delhi.
4. Amir Jamal: Arabic Learn the Easy Way, New Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 8
INDIAN ARABIC WRITERS

SEMESTER-5

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Indian Arabic Writers	4	3	1	0	Class XII Pass	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make students familiar with the Indian Arabic writers.
2. To make them familiar with the Indian Arabic legacy.

Learning Outcomes

The Learning Outcomes of this course are as follows:

After completing this course, the learner will be able to:

1. Learn about the life and services of the Indian Arabic writers.
2. Understand the role played by different scholars in the field of Arabic writings.
3. Assess the contributions of Indian scholars to the promotion of Arabic language in India.
4. Display a working knowledge of the historical and cultural contexts of Indian Arabic literature across the ages.
5. Identify and describe distinct literary characteristics of Indian Arabic literature indifferent phases.

SYLLABUS OF DSE-8

Unit 1 (15 Hours)

• Arabic Writings in India - Arabic writings in India before 1857 - Arabic writings in India before Independence (1947) - Arabic writings in India after Independence (1947)	▪ الكتابات العربية في الهند - الكتابات العربية قبل 1857م - الكتابات العربية قبل الاستقلال - الكتابات العربية بعد الاستقلال

Unit 2 (15 Hours)

▪ Notable Arabic Writers in India - Al Shah Waliullah Al Dehlvi - Al Nawab Siddiq Hasan Khan - Abdul Hay Al Hasani - Abdul Aziz Al Maimani - Abul Hasan Ali Al Nadwi	▪ أعلام كتّاب اللغة العربية في الهند - الشاه ولي الله الدهلوي - النواب صديق حسن خان - عبدالحي الحسني - عبدالعزيز الميمني - أبو الحسن علي الندوي

Unit 3 (15 Hours)

▪ Introduction to the following Arabic works: - Hujjat Allah al Balighah - Abjad al-Ulum - Nuzhat al- Khawatir - Abul 'Ala Wa Ma Ilaih - Maza Khasir al-Aalam bi Inhitat al-Muslimin	▪ التعريف بالكتبالمذكورة أدناه: - حجة الله البالغة - أبجد العلوم - نزهة الخواطر - أبو العلاء وما إليه - ماذا خسرالعالم بانحطاط المسلمين

Practical component (if any) - Nil

Essential/recommended readings:

1. Ghulam Ali Azad Al Bilgirami: Subhatul Marjaan Fi Aathaar Hindustan
2. Abdul Hay Al Hasani: Al Thaqafah Al Islamiyyah Fil Hind
3. Dr. Ashfaq Ahmad Al Nadwi: Musahamah Ulama' Al Hind Fi Al Nasr Al Arabi
4. Abdul Hay Al Hasani: Nuzhatul Khawaatir
5. Zubaid Ahmad: Al Aadaab Al Arabiyyah Fi Al Hind
6. Dr. Ijtiba Al Nadwi: Al Siddiq Hasan Khan: Hayatuhu Wa Aathaaruhu
7. Dr. Ijtiba Al Nadwi: Al Imam Ahmad Bin Abdur Rahim Al Ma'roof Bish Shah Waliullah Al Dehlvi.

Suggestive readings:

1. Fazle Haq Khairabadi: Al Thaura Al Hindiyya
2. Al Shaikh Abul Hasan Ali Al Nadwi: Al Muslimoon Fil Hind
3. Dr. Sadrul Hasan Al Nadwi: Al Madaaih Al Nabawiyya Fil Hind
4. Zubair Ahmad Al Farooqi: MusahamatuUlmaae Deoband Fil Adad Al Arabi
5. Dr. Jamaluddin Al Farooqi: A'laamul Adab Al Arabi Fil Hind.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

SEMESTER-5

GENERIC ELECTIVES (GE-11): ARAB CULTURE & CIVILIZATION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)	Department offering the course
		Lecture	Tutorial	Practical / Practice			
Arab Culture & Civilization	4	3	1	0	Class XII Pass	NIL	Arabic

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make students aware of the Arab culture and civilization.
2. To make acquire them the basic knowledge of Arabs before & after the revelation of the Quran.

Learning outcomes

The Learning Outcomes of this course are as follows:

By studying this course the student will be able to:

1. Know about Arab world and its culture.
2. Know about Arabs before and after the Quran was revealed.
3. Know about Arabs outside Arabia.

SYLLABUS OF G.E.-11

Unit 1 (15 Hours)

- Arabian Peninsula: An Introduction
- Bedouin life in Arabia: tribe-system, food, dressing, housing systems
- Social structure of Arabia before revelation of the Holy Qu'ran

Unit 2 (15 Hours)

- Political structure of Arabia before revelation of the Holy Qu'ran
- Education and knowledge before revelation of the Holy Qu'ran
- Conditions of women before revelation of the Holy Qu'ran

Unit 3 (15 Hours)

- Impact of the Holy Qur'an and Hadith on the life of the Arabs
- Arabs outside Arabia
- Interaction of the Arabs with the world

Practical component (if any) - NIL

Essential/Recommended readings

1. History of the Arabs by Philip K. Hitti. , London.
2. The history of Arab people by Abert Hourani, Pengnin, New Delhi
3. Understanding of Arab Culture by Dr. Jehad al-Omari, Oxford University.
4. History of Islamic civilization by Jurji Zayadan, Kitab Bhavan, New Delhi.

Suggestive readings

1. The Arab world, society, culture and state by Halim Isber Barakat, Cambridge University press.
2. Indo Arab relations by Prof. Maqbool Ahmad, ICCR, New Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

SEMESTER-5

GENERIC ELECTIVES (GE-12): SIMPLE ARABIC TEXT-3

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Simple Arabic Text-3	4	3	1	0	Class XII Pass	Reading & Writing of Arabic

Learning Objectives

The Learning Objectives of this course are as follows:

1. To enable them to comprehend the Arabic text.
2. To teach Intermediate Arabic grammar.
3. To make them familiar with Arabic structures based upon Intermediate grammar.
4. To enable them to translate simple sentences.

Learning outcomes

The Learning Outcomes of this course are as follows:

By studying this course the student will be able to:

1. Read simple sentences correctly.
2. Learn to translate simple sentences based on the prescribed grammatical rules.
3. Read and comprehend the Arabic text.
4. Translate the given text into English or Hindi or Urdu.
5. Make sentences on the patterns of sentences given in the text.

SYLLABUS OF G.E.-12

Unit 1 (15 Hours)

- The following lessons from the prescribed book:
  Lessons 13-16

Unit 2 (15 Hours)

- The following lessons from the prescribed book:
  Lessons 17-20

Unit 3 (15 Hours)

- The following lessons from the prescribed book:
  Lessons 21-24

Practical component (if any) – NIL

Prescribed Book:

- Al Qiraatul Waziha-1, Maulana Wahiduzzaman Al Kairanwi, New Delhi.

Essential/Recommended readings

1. Dr. W. A. Nadwi: A Practical Approach to the Arabic Language Vol.1 & 2, New Delhi.
2. J. A. Haywood & H. M. : A New Arabic Grammar, New Delhi.
3. S.A. Rahman: Teach Yourself Arabic, New Delhi.
4. Amir Jamal: Arabic Learn the Easy Way, New Delhi

Suggestive readings

1. Abdus Sattar Khan: Arabi Ka Muallim, Vol.1 & 2, New Delhi

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 16
CLASSICAL ARABIC PROSE & POETRY-2

SEMESTER-6

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Classical Arabic Prose & Poetry-2	4	3	1	0	Class XII Pass	Intermediate Level Arabic

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make students aware of the Classical Arabic Prose & Poetry.
2. To let them know briefly about life sketches and works of prominent & distinguished Poets and Prose Writers of Arabic.

Learning outcomes

The Learning Outcomes of this course are as follows:

After completing this course the learner will be able to:

1. Enhance the ability to read and understand Classical Arabic text.
2. Add vocabulary into his/her knowledge through Arabic text.
3. Learn a few couplets, recite and quote them on different occasions.
4. Know about the life sketches and works of different writers and poets.

SYLLABUS OF DSC-16

Unit 1 (15 Hours)

Prose:

The following lessons from the prescribed book "Al Mukhtarat Min Adab Al Arab" (Vol.1 & Vol.2) by Al Sheikh Abul Hasan Ali Al Nadwi:

• Al Khitabah Al Mu'jiza: Muhammad (PBUH) • Khuttah Umar Fil Hukm (Umar Bin Al Khattab) • Akhlaaq Al Mu'min (Al Hasan Al Basari) • Wasf Al Kitab Wa Fazluhu (Al Jahiz) • Sayyid Al Tabi'een Saeed Bin Al Musaiyyib (Ibn Khalikaan)	▪ الخطابة المعجزة: (محمد ﷺ) ▪ خطة عمر في الحكم (عمر بن الخطاب) ▪ أخلاق المؤمن (الحسن البصري) ▪ وصف الكتاب وفضله (الجاحظ) ▪ سيد التابعين سعيد بن المسيب (ابن خلكان)

Unit 2 (15 Hours)

Brief biography of the following writers/poets:

• Umar Ibn Al-Khattab • Al-Jahiz • Ibn Khalikan • Umayya Ibn Abi Al Salt	• Al-Khansa' • Hassan Ibn Thabit • Abul Aswad Al-Duali • Al-Imam Al-Shafa'i

Unit 3 (15 Hours)

Poetry:

The following poems from the anthology "Majmu'a Min Al Nazm Wa Al Nasr Li Al Hifz Wa Al Tasmee'" by Muhammad Sharif Salim:

• A Azkur Haajati - Umayya Ibn Abi Al Salt (1 - 5 Verses) • A Ainaiyya Jooda - Al Khansa (1 - 5 Verses) • Lisaani Wa Saifi - Hassan Ibn Saabit (1 - 6 Verses) • Wa Iza Talabta - Abul Aswad Al Duali (1 - 5 Verses) • Ma Fi Al Muqaami - Al Imam Shafai (1 - 5 Verses)	▪ أأذكر حاجتي - أمية ابن أبي الصلت (1 - 5 Verses) ▪ أعينيّ جودا - الخنساء (1 - 5 Verses) ▪ لساني و سيفي - حسان بن ثابت (1 - 6 Verses) ▪ وإذا طلبت - أبو الأسود الدؤلي (1 - 5 Verses) ▪ ما في المقام - الإمام الشافعي (1 - 5 Verses)

Practical component (if any) – NIL

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER-VI

DISCIPLINE SPECIFIC CORE COURSE – 17
HISTORY OF ARABIC LITERATURE-2

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
History of Arabic Literature-2	4	3	1	0	Class XII Pass	Intermediate Level Arabic

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make students acquainted with the history of Arabic Literature.
2. To make familiar to famous Prose writers and Poets.

Learning Outcomes

The Learning Outcomes of this course are as follows:

After completing this course the learner will be able to:

1. Know about the development of Arabic Literature during Andalusi period.
2. Know about the Arab renascence and its impact on the development of Arabic
3. Literature during the Modern period.
4. Know about the famous Modern Arabic literary scholars like the Nobel Prize winner *Naguib Mahfouz* and *Gibran Khalil.*
5. Know about different literary schools and movements during the Modern period.

SYLLABUS OF DSC-17

Unit 1 (15 Hours)

Arabic Literature in Andalus (710-1492 AD)

- Prose: Ibn Abd Rabbih
- Poetry: Ibn Zaydun

Unit 2 (15 Hours)

Prose in Modern Period

- Mustafa Lutfi Al Manfaluti
- Jibran Khalil Jibran
- Mahmood Taimoor
- Taha Husain
- Najib Mahfouz

Unit 3 (15 Hours)

Poetry in Modern Period

- Mahmood Sami Al Barudi
- Ahmad Shauqi
- Hafiz Ibrahim
- Ilya Abu Mazi
- Abul Qasim Al Shabbi

Practical component (if any) – Nil

Essential/recommended readings

1. Umar Farrukh: Tarikh Al Adab Al Arabi
2. Shauqi Zaif: Tarikh Al Adab Al Arabi
3. Ahmad Hasan Al Zayyat: Tarikh Al Adab Al Arabi
4. K.A. Fariq: History of Arabic Literature

Suggestive readings

1. Dr. Abdul Halim Nadwi: Arabi Adab Ki Tareekh
2. Hanna Al Fakhoori: Al Jami' Fi Tarikh Al Adab Al Arabi

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 18
ARABIC PROFICIENCY: GRAMMAR & TRANSLATION

SEMESTER-6

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Arabic Proficiency: Grammar & Translation	4	3	1	0	Class XII Pass	Intermediate Level Arabic

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make learners well versed in Grammar required being proficient in Arabic.
2. To develop speaking, reading and writing skills at proficient Level.
3. To make student to be able to translate the Arabic news items and reports.

Learning outcomes

The Learning Outcomes of this course are as follows:

After completing this course the learner will be able to:

1. Understand Most Advanced Arabic Grammar for Reading and Writing.
2. Use Arabic language in their writings and speaking as per the need.
3. Translate the text of Arabic newspapers.

SYLLABUS OF DSC-18

Unit 1 (15 Hours)

Grammar:

• In, Ma & La resembling to Laisa • Ism Al Nisba • Ism Al Tasgheer • Ikhtisaas • Ishtighaal • Al Adad Al Wasfi	• إن وما ولا المشبهات بليس • اسم النسبة • اسم التصغير • اختصاص • اشتغال • العدد الوصفي

Unit 2 (15 Hours)

Translation of English News Items into Arabic

Unit 3 (15 Hours)

Translation of Arabic News Items into English

Practical component (if any) - NIL

Essential/recommended readings

1. Dr. W. A. Nadwi: A Practical Approach to the Arabic Language Vol.1 & 2, Delhi.
2. J. A. Haywood & H. M. : A New Arabic Grammar, New Delhi.
3. S.A. Rahman: Teach Yourself Arabic, New Delhi.
4. Maulana Abdur rahman Amritsari, Kitab Al Nahw, Panipat.
5. Abdus Sattar Khan: Arabi Ka Muallim1-4, Delhi
6. Ali Al Jarim Wa Mustafa Amin, Al Nahw Al Wazih Fi Qawaid Al Lugha Al Arabiyya, Delhi.
7. Dr. Habibullah Khan: Durus Fit Tarjama Al Suhufiyya, New Delhi

Suggestive readings

1. Dr. Manzoor Khan: Nahwal Insha Wat Tarjama, Kashmir
2. Muhammad Rabi Al Hasani Al Nadwi, Muallim Al Insha, Lucknow.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category II (Semester-6)

Arabic Courses for Undergraduate Programme of study with Arabic as one of the Core Disciplines

(B.A. Programmes with Arabic as Major discipline)

SEMESTER-6
DISCIPLINE SPECIFIC CORE COURSE – 11
MODERN ARABIC-IV

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Modern Arabic-IV	4	3	1	0	Class XII Pass	Intermediate Level Arabic

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make them familiar with the Modern Arabic Text.
2. To enable them to read and write Arabic with grammatical rules with the help of text.

Learning outcomes

The Learning Outcomes of this course are as follows:

After completing this course the learner will be able to:

1. Develop skills of reading and writing.
2. Read, understand and comprehend structures of Arabic sentences at upper intermediate level.

SYLLABUS OF DSC-11 (CATOGORY-II)

Unit 1 (15 Hours)

Arabic Text-1

Lessons: 18,19,20,21,22,23,24

Prescribed Book:

Al Qira'atul Waziha (Part-3)
Mualana Wahiduz Zaman Qasmi Kairanwi

Unit 2 (15 Hours)

Arabic Text-2

Lessons: 25,26,29,30,31,33,34

Prescribed Book:

Al Qira'atul Waziha (Part-3)
Mualana Wahiduz Zaman Qasmi Kairanwi

Unit 3 (15 Hours)

Comprehension & Applied Grammar

Lessons: 18,19,20,21,22,23,24,25,26,29,30,31,33,34

Prescribed Book:
Al Qira'atul Waziha (Part-3)
Mualana Wahiduz Zaman Qasmi Kairanwi

Practical component (if any) - NIL

Essential/recommended readings

1. Dr. W. A.Nadwi: A Practical Approach to the Arabic Language Vol.1, New Delhi.
2. Dr. Amir Jamal: Arabic Learn the Easy Way, New Delhi.
3. Ali Jarim Wa Mustafa Amin: Al Nahw Al Wazih, Delhi.
4. Mualana Abdur Rahman Amritsari, Kitab Al Nahw, Panipat.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER-6
DISCIPLINE SPECIFIC CORE COURSE – 12
ARABIC: TEXT & TRANSLATION-II

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Arabic: Text & Translation-II	4	3	1	0	Class XII Pass	Intermediate Level Arabic

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make the learners with Arabic language at upper intermediate level.
2. To make them familiar with Arabic text at intermediate level.
3. To enhance their vocabulary & translation skills through the given text and understand the different structures of sentences.

Learning outcomes

The Learning Outcomes of this course are as follows:

After completing this course, the learner will be able to:

1. Read the Arabic text.
2. Understand and solve grammar based exercises.
3. Translate sentences based on the grammar taught.

SYLLABUS OF DSC-12 (CATEGORY-II)

Unit 1 (15 Hours)

Arabic Text

Lessons: 6-10

Prescribed Book:

Duroosul Lugha Al-Arabiyya Li Ghairin Naatiqeen Biha (English Version) Vol.-3

Dr. V. Abdur Rahim

Unit 2 (15 Hours)

Exercises & New Words:

Lessons: 6-10

Prescribed Book:

Duroosul Lugha Al-Arabiyya Li Ghairin Naatiqeen Biha (English Version) Vol.-3

Dr. V. Abdur Rahim

Unit 3 (15 Hours)

Translation:

English-Arabic & Vice Versa

Practical component (if any) – NIL

Essential/recommended readings

1. R.I. Faynan: Essential Arabic, New Delhi.
2. S.A. Rahman: Teach Yourself Arabic, New Delhi.
3. Dr. W. A.Nadwi: A Practical Approach to the Arabic Language, New Delhi.

Suggestive readings

1. J.A. Haywood & H.M. Nahmad: A New Arabic Grammar
2. Syed Ali: Arabic For Beginners
3. Amir Jamal: Arabic Learn the Easy Way, New Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category III (Semester-6)

Arabic Courses for Undergraduate Programme of study with Arabic as one of the Core Disciplines

(B.A. Programmes with Arabic as Non-Major or Minor discipline)

COURSES OFFERED BY DEPARTMENT OF ARABIC

SEMESTER-6
DISCIPLINE SPECIFIC CORE COURSE – 12
ARABIC: TEXT & TRANSLATION -II

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Arabic: Text & Translation-II	4	3	1	0	Class XII Pass	Intermediate Level Arabic

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make the learners with Arabic language at upper intermediate level.
2. To make them familiar with Arabic text at intermediate level.
3. To enhance their vocabulary & translation skills through the given text and understand the different structures of sentences.

Learning outcomes

The Learning Outcomes of this course are as follows:

After completing this course, the learner will be able to:

1. Read the Arabic text.
2. Understand and solve grammar based exercises.
3. Translate sentences based on the grammar taught.

SYLLABUS OF DSC-12 (CATEGORY-III)

Unit 1 (15 Hours)

Arabic Text

Lessons: 6-10

Prescribed Book:

Duroosul Lugha Al-Arabiyya Li Ghairin Naatiqeen Biha (English Version) Vol.-3

Dr. V. Abdur Rahim

Unit 2 (15 Hours)

Exercises & New Words:

Lessons: 6-10

Prescribed Book:

Duroosul Lugha Al-Arabiyya Li Ghairin Naatiqeen Biha (English Version) Vol.-3

Dr. V. Abdur Rahim

Unit 3 (15 Hours)

Translation:

English-Arabic & Vice Versa

Practical component (if any) – NIL

Essential/recommended readings

1. R.I. Faynan: Essential Arabic, New Delhi.
2. S.A. Rahman: Teach Yourself Arabic, New Delhi.
3. Dr. W. A.Nadwi: A Practical Approach to the Arabic Language, New Delhi.

Suggestive readings

1. J.A. Haywood & H.M. Nahmad: A New Arabic Grammar, U.K.
2. Syed Ali: Arabic For Beginners, Madras.
3. Amir Jamal: Arabic Learn the Easy Way, New Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 9
INDIAN ARABIC POETS

SEMESTER-6

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Indian Arabic Poets	4	3	1	0	Class XII Pass	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make students familiar with the Indian Arabic poets.
2. To make them familiar with the Indian Arabic legacy.

Learning Outcomes

The Learning Outcomes of this course are as follows:

After completing this course the learner will be able to:

1. Learn about the life and services of the Indian Arabic poets.
2. Understand the role played by different scholarsin the field of Arabic poetry.
3. Assess the contributions of Indian scholars to the promotion of Arabic language inIndia.
4. Identify and describe distinct literary characteristics of Indian Arabic poetry indifferent phases.

SYLLABUS OF DSE-9

Unit 1 (15 Hours)

▪ Arabic Poetry in India - Arabic poetry in India before Independence (1947) - Arabic poetryin India after Independence (1947)	▪ الشعر العربي في الهند - الشعر العربي قبل الاستقلال (1947) - الشعر العربي بعد الاستقلال (1947)

Unit 2 (15 Hours)

▪ Notable Arabic Poets in India-1 - Al Muqtadir al-Kindi - Fazl-e-Haq al-Khairabadi - Ghulam Ali Azad al-Bilgirami - Zulfiqar Ali al-Deobandi - Faizul Hasan al-Saharanpuri	▪ أعلام شعراء العربية في الهند-1 - المقتدر الكندي - فضل حق الخيرآبادي - غلام علي آزاد البلغرامي - ذو الفقار علي الديوبندي - فيض الحسن السهارنفوري

Unit 3 (15 Hours)

▪ Notable Arabic Poets in India-2 - Anwar Shah al-Kashmiri - Habeebur Rahman al-Uthmani - Muhammad Nazim Nadwi - 'Izaz Ali Amrohvi - Mufti Kifayatullah Dehlavi - Abdul Mannan al-Mewati	▪ أعلام شعراء العربية في الهند-2 - أنور شاه الكشميري - حبيب الرحمن العثماني - محمد ناظم الندوي - إعزاز علي الأمروهوي - المفتي كفاية الله الدهلوي - عبد المنان الميواتي

Practical component (if any) - Nil

Essential/recommended readings:

1. Ghulam Ali Azad Al Bilgirami: Subhatul Marjaan Fi Aathaari Hindustan
2. Abdul Hay Al Hasani: Al Thaqafa Al Islamiyya Fil Hind
3. Abdul Hay Al Hasani: Nuzhatul Khawaatir
4. Zubaid Ahmad: Al Aadaab Al Arabiyya Fil Hind
5. Abdul Malik Rasoolpuri: Al-Allamah Mummad Anwar Shah al-Kahmiri HayatuhuWaShi'ruhu, Farid Book Depot. Delhi, 2013
6. Ateequr Rahman Islahi: Maulana Faizul Hasan Adeeb Saharanpuri, Azamgarh, 1997
7. Mu'een al-Labeeb fi Jami' Qasaid al-Habeeb,Maktabah 'Izazia,Deoband, 1932

Suggestive readings:

1. Fazle Haq Khairabadi: Al Thaura Al Hindiyya
2. Al Shaikh Abul Hasan Ali Al Nadwi: Al Muslimoon Fil Hind
3. Dr. Sadrul Hasan Al Nadwi: Al Madaaih Al Nabawiyya Fil Hind
4. Zubair Ahmad Al Farooqi: MusahamatuUlmaae Deoband Fil Adad Al Arabi
5. Dr. Jamaluddin Al Farooqi: A'laamul Adab Al Arabi Fil Hind.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 10
ARABIC TEXT COMPREHENSION-4

SEMESTER-6

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Arabic Text Comprehension-4	4	3	1	0	Class XII Pass	Basic Knowledge of Arabic Language

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make students acquainted with Arabic text.
2. To enable them to comprehend the Arabic text.

Learning Outcomes

The Learning Outcomes of this course are as follows:

After completing this course the learner will be able to:

1. Read and comprehend the Arabic text.
2. Translate the given text into English or Hindi or Urdu.
3. Make sentences on the patterns of sentences given in the text.

SYLLABUS OF DSE-10

Unit 1 (15 Hours)

- The following lessons from the prescribed book Al Qira'atul Waziha-3, Maulana Wahiduzzaman Qasmi Kairanwi, New Delhi:

من يعلّق الجرس؟ Man Yualliq Al Jarasa? (Who will hang the bell?)	الحداد والنجار Al-Haddad Wan Najjar (Blacksmith & Carpenter)	المراكب Al-Maraakib (Boats)	السفر بالقطار Al-Safar Bil Qitaar (Journey By Train)

Unit 2 (15 Hours)

- The following lessons from the prescribed book Al Qira'atul Waziha-3, Maulana Wahiduzzaman Qasmi Kairanwi, New Delhi:

قصب السكر Qasabus Sukkar (Sugarcane)	Usratul Fallah (Peasant's Family)	شجاعة صبية Shaja'atu Sabiyya (Bravery of a girl)	الشاي Al-Shaay (Tea)

Unit 3 (15 Hours)

- The following lessons from the prescribed book Al Qira'atur Rasheeda, Vol.-2, Abdul Fattah Sabri & Ali Umar, Darul Ma'aarif.

الأسد والثعلب Al-Asad Wath Tha'lab (Lion & Fox)	هدية الفيران Hadiyatul Firaan (Gift of Rats)	الأمانة كنز Al-Amanatu Kanz (Honesty is Treasure)	الحمامة والنحلة Al-Hamama Wan Namla (Dove & Bee)	جزاء الصدق Jazaa' Al-Sidq (Reward of Truth)

Practical component (if any) - Nil

Suggestive readings:

1. Dr. W. A. Nadwi: A Practical Approach to the Arabic Language Vol.1 & 2, New Delhi.
2. J. A. Haywood & H. M. : A New Arabic Grammar, New Delhi.
3. S.A. Rahman: Teach Yourself Arabic, New Delhi.
4. Amir Jamal: Arabic Learn the Easy Way, New Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 11
INTERPRETATION

SEMESTER-6

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Interpretation	4	3	0	1	Class XII Pass	Intermediate level of Arabic

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make students familiar with Arabic interpretation.
2. To make them familiar with the skills and art of interpretation.

Learning Outcomes

The Learning Outcomes of this course are as follows:

After completing this course, the learner will be able to:

1. Learn the skills and art of Arabic interpretation.
2. Learn the vocabulary used in various academic fields.

SYLLABUS OF DSE-11

Unit 1 (15 Hours)

▪ Interpretation - Definition & Characteristics - Principles - Types of Interpretation - Qualities of an Interpreter	- الترجمة الفورية - تعريف وخصائص - أصول - أنواع الترجمة الفورية - صفات المترجم الفوري

Unit 2 (15 Hours)

▪ Interpretation from English into Arabic on the following subjects: - Politics - Sociology - Culture & civilization - Economics	▪ الترجمة من الإنجليزية إلى العربية حول المواضيع المذكورة أدناه: - السياسة - الاجتماع - الحضارة والثقافة - الاقتصاد

Unit 3 (15 Hours)

▪ Interpretation from Arabic into English on the following subjects: - Politics - Sociology - Culture & civilization - Economics	▪ الترجمة من العربية إلى الإنجليزية حول المواضيع المذكورة أدناه: - السياسة - الاجتماع - الحضارة والثقافة - الاقتصاد

Practical component (if any) - Yes

The practical will be based upon the following:

- Simultaneous Interpretation from Arabic into English
- Simultaneous Interpretation from English into Arabic

Essential/recommended readings:

1. J. A. Haywood & H. M. Nahmad : A New Arabic Grammar, New Delhi.
2. Dr. Aboo Backer K P: A Handbook of Commercial Arabic, Kerala.
3. Ijtiba Nadwi: Al Ta'bir Wa Al Muhadatha, New Delhi.
4. Habibullah Khan: Duroos Fi Al Tarjama Al Suhufiyyah, New Delhi.
5. Manzoor Khan: Nahwa Insha Wa Al Tarjama, Jammu & Kashmir.
6. Dalil Al Tarjaman Fi Mabadi' Al Tarjama Al Shafahiyya: Ali Mohammad Al Darwish, Melbourne, Australia

Suggestive readings:

1. S.A. Rahman: Teach Yourself Arabic, New Delhi.
2. Prof. Moinudin Azami: Method of Translation, Calicut.
3. Md. Quamruddin: Translation Made Easy, U.P.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

SEMESTER-6

GENERIC ELECTIVES (GE-13): ARAB WORLD: A BRIEF INTRODUCTION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Arab World: A Brief Introduction	4	3	1	0	Class XII Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make students acquainted with the history of Arab world and it's Culture.
2. To make them aware about the influence of the Arabs on the world trade.

Learning outcomes

The Learning Outcomes of this course are as follows:

By studying this course the student will be able to:

1. Know about Arab world and its culture.
2. Know about the Arab world when it was under Ottoman caliphate and under other colonies.
3. Know about post-colonial Arab world.
4. Know how the Arab world is the source of the most of the world's oil and how they influence and reach world trade.
5. Know about the socio-political scenario of the Arab world.

SYLLABUS OF G.E.-13

Unit 1 (15 Hours)

- Brief history of the Arab world
- Brief introduction of the modern Arab world
- Geographical introduction of the current Arab world

Unit 2 (15 Hours)

- Arab under the Ottoman Caliphate
- Arab in the colonial period
- Impact of the Ottoman caliphate and colonialism on the Arab society

Unit 3 (15 Hours)

- Post-colonial Arab world
- Formation of the modern Arab states
- Arab society after the discovery of petrol
- Current socio-political scenario of the Arab world

Practical component (if any) – NIL

Essential/Recommended readings

1. Al Shaikh Muhammad Al Rabe Al Hasani Al Nadwi: Jaziratul Arab
2. Basheer Ahmad Jamali : Glimpses of Modern Arab World, Delhi, 2006
3. Halim Barakat: The Arab World: Society, Culture and State, California, 1993
4. Jehad al-Omari : Understanding the Arab Culture, 2008
5. Andrew Hammond: Popular Culture in the Arab World, American Press in Cairo, 2007

Suggestive readings

1. Dr. Muhammad Uzair: Daulat-e-Uthmania (Urdu), Mushtaq Book Corner, 2016
2. Donald Quataert: The Ottoman Empire 1700-1922, Cambridge University Press, 2005
3. Arthur Goldschmidt Jr.: A Concise History of the Middle East, West view Press, 2012

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

SEMESTER-6

GENERIC ELECTIVES (GE-14): SIMPLE ARABIC TEXT-4

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Simple Arabic Text-4	4	3	1	0	Class XII Pass	Reading & Writing of Arabic

Learning Objectives

The Learning Objectives of this course are as follows:

1. To enable them to comprehend the Arabic text.
2. To teach Intermediate Arabic grammar.
3. To make them familiar with Arabic structures based upon Intermediate grammar.
4. To enable them to translate simple sentences.

Learning outcomes

The Learning Outcomes of this course are as follows:

By studying this course the student will be able to:

1. Read simple sentences correctly.
2. Learn to translate simple sentences based on the prescribed grammatical rules.
3. Read and comprehend the Arabic text.
4. Translate the given text into English or Hindi or Urdu.
5. Make sentences on the patterns of sentences given in the text.

SYLLABUS OF G.E.-14

Unit 1 (15 Hours)

- The following lessons from the prescribed book:
  Lessons 1, 2, 10, 14, 16

Unit 2 (15 Hours)

- The following lessons from the prescribed book:
  Lessons 21, 27, 28, 33, 40

Unit 3 (15 Hours)

- The following lessons from the prescribed book:
  Lessons 41, 53, 57, 59, 60

Practical component (if any) – NIL

Prescribed Book:

- Al Qira'atur Rasheeda-1, Abdul Fattah Sabri & Ali Umar, Darul Ma'arif, Egypt.

Essential/Recommended readings

1. Dr. W. A. Nadwi: A Practical Approach to the Arabic Language Vol.1 & 2, New Delhi.
2. J. A. Haywood & H. M. : A New Arabic Grammar, New Delhi.
3. S.A. Rahman: Teach Yourself Arabic, New Delhi.
4. Amir Jamal: Arabic Learn the Easy Way, New Delhi

Suggestive readings

1. Abdus Sattar Khan: Arabi Ka Muallim, Vol.1 & 2, New Delhi

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Department of English
Semester-IV

BA (Hons.) English

DISCIPLINE SPECIFIC CORE COURSE 10 - (DSC-10) – : AMERICAN LITERATURE

No. of hours- 60(Theory- 45 hrs.+Tutorials -15 hrs.)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 10: American Literature	4	3	1	0	Passed Class XII with English	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To offer students a foundational understanding of the literature of the United States with specific reference to the way it chronicles patterns of oppression and freedom in the lives of its peoples.
- To open up a range of possibilities in the way in which literature shapes and chronicles new frontiers and cultural groups.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to trace the powerful role played by literature in shaping the emergent United States.
- Students will be enlightened on how literature chronicles and shapes both different kinds of enslavement and possibilities of liberation.

SYLLABUS OF DSC- 10

UNIT – I (15 hours)

1. Toni Morrison: *Beloved*

UNIT – II (15 hours)

2. Kate Chopin: *The Awakening*

3. Herman Melville: 'Bartleby the scrivener'

UNIT – III (15 hours)

4. Walt Whitman: (i) 'O Captain, My Captain' (ii) 'Passage to India'(lines 1–68)

5. Alexie Sherman Alexie: (i) 'Crow Testament' (ii) 'Evolution'

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings:

1. Emerson, Ralph Waldo. 'Self-Reliance', *The Selected Writings of Ralph Waldo Emerson.* ed. Brooks Atkinson, New York: The Modern library, 1964.

2. Martin Luther King Jr, 'I have a dream', *African American Literature*. ed. Kieth Gilyard, Anissa Wardi, New York: Penguin, 2014. pp 1007-1011

3. Douglass, Frederick. Chaps. 1–7, *A Narrative of the life of Frederick Douglass*. Harmondsworth: Penguin, 1982. pp 47–87

4. Rich, Adrienne. 'When We Dead Awaken: Writing as Re-Vision', *College English*. Vol. 34, No. 1, Women, Writing and Teaching (Oct., 1972), pp. 18-30

5. Crevecouer, Hector St John. Letter III: 'What is an American', *Letters from an American Farmer*. Harmondsworth: Penguin, 1982. pp 66–105

DISCIPLINE SPECIFIC CORE COURSE 11- (DSC-11) : Indian Writing in English

No. of hours- 60(Theory- 45 hrs.+Tutorials-15 hrs.)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 11: Indian Writing in English	4	3	1	0	Passed Class XII with English	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To offer students a foundational understanding of the distinctively Indian qualities of literature in English, across a range of genres.
- To open up a sense of the Indian response to literary and political challenges in modern times.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to gain a basic sense of Indian writing in English as a viable means to understand the evolution of modern India.
- Students' imagination will be stimulated by an understanding of how Indian writing in English opens up the challenges and complexities of contemporary India.

SYLLABUS OF DSC- 11

UNIT – I (15 hours)

1. Anita Desai: *The Clear Light of the Day*

UNIT – II (15 hours)

2. H.L.V. Derozio: (i) 'Freedom to the Slave' (ii) 'The Orphan Girl'

3. Kamala Das: (i) 'Introduction' (ii) 'My Grandmother's House'

4. Sarojini Naidu: (i) 'An Indian Love Song', (ii) 'In Salutation to the Eternal Peace'

5. Robin S. Ngangom: (i) 'The Strange Affair of Robin S. Ngangom' (ii) 'A Poem for Mother'

UNIT – III (15 hours)

6. Salman Rushdie: 'The Free Radio'

7. Shashi Deshpande: 'The Intrusion'

8. Padmanabhan, Manjula. 'Stains', *Hot Death, Cold Soup: Twelve Short Stories*. New Delhi: Kali for Women/Zubaan, 1996.

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings:

1. Rao, Raja. 'Foreword', *Kanthapura*. New Delhi: OUP, 1989. pp v–vi

2. Rushdie, Salman. 'Commonwealth Literature does not exist', *Imaginary Homelands*. London: Granta Books, 1991. pp 61–70

3. Mukherjee, Meenakshi. 'Divided by a Common Language', *The Perishable Empire*. New Delhi: OUP, 2000. pp 187–203

4. King, Bruce. 'Introduction', *Modern Indian Poetry in English*. New Delhi: OUP, 2nd edn., 2005. pp 1–10

DISCIPLINE SPECIFIC CORE COURSE -12 (DSC-12) : Indian Writing in English Translation

No. of hours- 60(Theory- 45 hrs.+Tutorials -15 hrs.)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 12: Indian Writing in English Translation	4	3	1	0	Passed Class XII with English	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To understand and celebrate the diversity of linguistic and regional influences on the shaping of modern India.
- To open up a sense of the sophistication and fluidity of Indian thought and literature even when it speaks through the medium of translation.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will gain knowledge of the richness of modern Indian writing.
- Students will be encouraged to understand how contemporary India owes its diversity to a range of literatures, cultures and regions.

SYLLABUS OF DSC-12

UNIT – I (15 hours)

1. Premchand 'The Shroud', *Penguin Book of Classic Urdu Stories*. ed. M. Assaduddin, New Delhi: Penguin/Viking, 2006.

2. Chugtai, Ismat. 'The Quilt', *Lifting the Veil: Selected Writings of Ismat Chugtai*. tr. M. Assaduddin. New Delhi: Penguin Books, 2009.

3. Senapati, Fakir Mohan. 'Rebati', *Oriya Stories*. ed. Vidya Das, tr. Kishori Charan Das, Delhi: Srishti Publishers, 2000.

UNIT – II (15 hours)

4. Bharati, Dharamveer. *Andha Yug*. tr. Alok Bhalla, New Delhi: OUP, 2009.

5. Tagore, Rabindranath. 'Light, Oh Where is the Light?' & 'When My Play was with thee', *Gitanjali: A New Translation with an Introduction*. trans. William Radice, New Delhi: Penguin India, 2011.

6. Muktibodh, G.M. 'The Void' (tr. Vinay Dharwadker) & 'So Very Far', (tr. Tr. Vishnu Khare and Adil Jussawala), *The Oxford Anthology of Modern Indian Poetry*. ed. Vinay Dharwadker and A.K. Ramanujam, New Delhi: OUP, 2000.

UNIT – III (15 hours)

7. Pritam, Amrita. 'I say unto Waris Shah' (tr. N.S. Tasneem), *Modern Indian Literature: An Anthology, Plays and Prose, Surveys and Poems*. ed. K.M. George, vol. 3, Delhi: Sahitya Akademi, 1992.

8. Singh, Thangjam Ibopishak. 'Dali, Hussain, or Odour of Dream, Colour of Wind' & 'The Land of the Half-Humans', *The Anthology of Contemporary Poetry from the Northeast*. tr. Robin S. Ngangom, NEHU: Shillong, 2003.

9. Macwan, Joseph. *The Stepchild*. Trans. Rita Kothari, Oxford University Press, New Delhi, 2004.

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings:

1. Singh, Namwar. 'Decolonising the Indian Mind', *Indian Literature*, tr. Harish Trivedi, no. 151(Sept./Oct. 1992), 1992.

2. Ambedkar, B.R. Chaps. 4, 6, & 14, *Annihilation of Caste in Dr. Babasaheb Ambedkar: Writings and Speeches*, vol. 1, Maharashtra: Education Department, Government of Maharashtra, 1979.

3. U.R. Ananthamurthy: 'Being a Writer in India'

4. Vinay Dharwadker: 'Some Contexts of Modern Indian Poetry'

5. Aparna Dharwadker, 'Modern Indian Theatre', *Routledge Handbook of Asian Theatre*. ed. Siyuan Liu, London: Routledge, 2016. pp 243-67

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category II

(Discipline Specific Courses for Undergraduate Programme of study with ENGLISH(Major) as one of the Core Disciplines)

DISCIPLINE SPECIFIC CORE COURSE -11 (DSC-11) : Indian Writing in English

No. of hours- 60(Theory- 45 hrs.+Tutorials -15 hrs.)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 11: Indian Writing in English	4	3	1	0	Passed Class XII with English	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To offer students a foundational understanding of the distinctively Indian qualities of literature in English, across a range of genres.
- To open up a sense of the Indian response to literary and political challenges in modern times.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to gain a basic sense of Indian writing in English as a viable means to understand the evolution of modern India.

- Students' imagination will be stimulated by an understanding of how Indian writing in English opens up the challenges and complexities of contemporary India.

SYLLABUS OF DSC- 11

UNIT – I (15 hours)

1. Anita Desai: *The Clear Light of the Day*

UNIT – II (15 hours)

2. H.L.V. Derozio: (i) 'Freedom to the Slave' (ii) 'The Orphan Girl'

3. Kamala Das: (i) 'Introduction' (ii) 'My Grandmother's House'

4. Sarojini Naidu: (i) 'An Indian Love Song', (ii) 'In Salutation to the Eternal Peace'

5. Robin S. Ngangom: (i) 'The Strange Affair of Robin S. Ngangom' (ii) 'A Poem for Mother'

UNIT – III (15 hours)

6. Salman Rushdie: 'The Free Radio'

7. Shashi Deshpande: 'The Intrusion'

8. Padmanabhan, Manjula. 'Stains', *Hot Death, Cold Soup: Twelve Short Stories*. New Delhi: Kali for Women/Zubaan, 1996.

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings:

1. Rao, Raja. 'Foreword', *Kanthapura*. New Delhi: OUP, 1989. pp v–vi

2. Rushdie, Salman. 'Commonwealth Literature does not exist', *Imaginary Homelands*. London: Granta Books, 1991. pp 61–70

3. Mukherjee, Meenakshi. 'Divided by a Common Language', *The Perishable Empire*. New Delhi: OUP, 2000. pp 187–203

4. King, Bruce. 'Introduction', *Modern Indian Poetry in English*. New Delhi: OUP, 2nd edn., 2005. pp 1–10

DISCIPLINE SPECIFIC CORE COURSE 12- (DSC-12) : Indian Writing in English Translation

No. of hours- 60(Theory- 45 hrs.+Tutorials -15 hrs.)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 12: Indian Writing in English Translation	4	3	1	0	Passed Class XII with English	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To understand and celebrate the diversity of linguistic and regional influences on the shaping of modern India.
- To open up a sense of the sophistication and fluidity of Indian thought and literature even when it speaks through the medium of translation.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will gain knowledge of the richness of modern Indian writing.

- Students will be encouraged to understand how contemporary India owes its diversity to a range of literatures, cultures and regions.

SYLLABUS OF DSC-12

UNIT – I (15 hours)

1. Premchand 'The Shroud', *Penguin Book of Classic Urdu Stories*. ed. M. Assaduddin, New Delhi: Penguin/Viking, 2006.

2. Chugtai, Ismat. 'The Quilt', *Lifting the Veil: Selected Writings of Ismat Chugtai*. tr. M. Assaduddin. New Delhi: Penguin Books, 2009.

3. Senapati, Fakir Mohan. 'Rebati', *Oriya Stories*. ed. Vidya Das, tr. Kishori Charan Das, Delhi: Srishti Publishers, 2000.

UNIT – II (15 hours)

4. Bharati, Dharamveer. *Andha Yug*. tr. Alok Bhalla, New Delhi: OUP, 2009.

5. Tagore, Rabindranath. 'Light, Oh Where is the Light?' & 'When My Play was with thee', *Gitanjali: A New Translation with an Introduction*. trans. William Radice, New Delhi: Penguin India, 2011.

6. Muktibodh, G.M. 'The Void' (tr. Vinay Dharwadker) & 'So Very Far', (tr. Tr. Vishnu Khare and Adil Jussawala), *The Oxford Anthology of Modern Indian Poetry*. ed. Vinay Dharwadker and A.K. Ramanujam, New Delhi: OUP, 2000.

UNIT – III (15 hours)

7. Pritam, Amrita. 'I say unto Waris Shah' (tr. N.S. Tasneem), *Modern Indian Literature: An Anthology, Plays and Prose, Surveys and Poems*. ed. K.M. George, vol. 3, Delhi: Sahitya Akademi, 1992.

8. Singh, Thangjam Ibopishak. 'Dali, Hussain, or Odour of Dream, Colour of Wind' & 'The Land of the Half-Humans', *The Anthology of Contemporary Poetry from the Northeast*. tr. Robin S. Ngangom, NEHU: Shillong, 2003.

9. Macwan, Joseph. *The Stepchild*. Trans. Rita Kothari, Oxford University Press, New Delhi, 2004.

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings:

1. Singh, Namwar. 'Decolonising the Indian Mind', *Indian Literature*, tr. Harish Trivedi, no. 151(Sept./Oct. 1992), 1992.

2. Ambedkar, B.R. Chaps. 4, 6, & 14, *Annihilation of Caste in Dr. Babasaheb Ambedkar: Writings and Speeches*, vol. 1, Maharashtra: Education Department, Government of Maharashtra, 1979.

3. U.R. Ananthamurthy: 'Being a Writer in India'

4. Vinay Dharwadker: 'Some Contexts of Modern Indian Poetry'

5. Aparna Dharwadker, 'Modern Indian Theatre', *Routledge Handbook of Asian Theatre*. ed. Siyuan Liu, London: Routledge, 2016. pp 243-67

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category III

Discipline Specific Courses for Undergraduate Programme of study with ENGLISH (minor) as one of the Core Disciplines

DISCIPLINE SPECIFIC CORE COURSE 11- (DSC-11): Indian Writing in English

No. of hours- 60(Theory- 45 hrs.+Tutorials -15 hrs.)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 11: Indian Writing in English	4	3	1	0	Passed Class XII with English	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To offer students a foundational understanding of the distinctively Indian qualities of literature in English, across a range of genres.
- To open up a sense of the Indian response to literary and political challenges in modern times.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to gain a basic sense of Indian writing in English as a viable means to understand the evolution of modern India.
- Students' imagination will be stimulated by an understanding of how Indian writing in English opens up the challenges and complexities of contemporary India.

SYLLABUS OF DSC- 11

UNIT – I (15 hours)

1. Anita Desai: *The Clear Light of the Day*

UNIT – II (15 hours)

2. H.L.V. Derozio: (i) 'Freedom to the Slave' (ii) 'The Orphan Girl'

3. Kamala Das: (i) 'Introduction' (ii) 'My Grandmother's House'

4. Sarojini Naidu: (i) 'An Indian Love Song', (ii) 'In Salutation to the Eternal Peace'

5. Robin S. Ngangom: (i) 'The Strange Affair of Robin S. Ngangom' (ii) 'A Poem for Mother'

UNIT – III (15 hours)

6. Salman Rushdie: 'The Free Radio'

7. Shashi Deshpande: 'The Intrusion'

8. Padmanabhan, Manjula. 'Stains', *Hot Death, Cold Soup: Twelve Short Stories*. New Delhi: Kali for Women/Zubaan, 1996.

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings:

1. Rao, Raja. 'Foreword', *Kanthapura*. New Delhi: OUP, 1989. pp v–vi

2. Rushdie, Salman. 'Commonwealth Literature does not exist', *Imaginary Homelands*. London: Granta Books, 1991. pp 61–70

3. Mukherjee, Meenakshi. 'Divided by a Common Language', *The Perishable Empire*. New Delhi: OUP, 2000. pp 187–203

4. King, Bruce. 'Introduction', *Modern Indian Poetry in English*. New Delhi: OUP, 2nd edn., 2005. pp 1–10

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF DISCIPLINE SPECIFIC ELECTIVE (DSE) COURSES FOR SEMESTER III

DISCIPLINE SPECIFIC ELECTIVE COURSE 4–(DSE-4): Dystopian Writings

No. of hours- 60(Theory- 45 hrs.+Tutorials-15 hrs.)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSE-4: Dystopian Writings	4	3	1	0	Passed Class XII	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce a body of writings on dystopic themes
- To consider the range of literary representations in the field

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to analyse literary representations in contemporary contexts.
- Students will be provided a literary and theoretical understanding of the ideas of dystopia.

SYLLABUS OF DSE-4

UNIT – I (15 hours)

1. Mary Shelley: *The Last Man*

UNIT – II (15 hours)

2. H.G. Wells: *The Time Machine*

UNIT – III (15 hours)
3. Malcolm Bradbury: *Fahrenheit 451*

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings:

1. Stock, Adam. *Modern Dystopian Fiction and Political Thought: Narratives of World Politics*. United Kingdom: Taylor & Francis, 2018.

2. Gottlieb, Erika. *Dystopian Fiction East and West: Universe of Terror and Trial*. Maldives: McGill-Queen's University Press, 2001.

3. Basu, Balaka, et al. (ed.) *Contemporary Dystopian Fiction for Young Adults: Brave New Teenagers*. United States: Taylor & Francis, 2013.

4. Isomaa, Saija, et al. (ed.) *New Perspectives on Dystopian Fiction in Literature and Other Media*. United Kingdom: Cambridge Scholars Publishing, 2020.

5. Anthony, Ashley G., et al. (ed.) *Worlds Gone Awry: Essays on Dystopian Fiction*. United States: Incorporated Publishers, 2018.

DISCIPLINE SPECIFIC ELECTIVE COURSE 5 (DSE-5): Literature of the Indian Diaspora

No. of hours- 60(Theory- 45 hrs.+Tutorials-15 hrs.)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSE-5 Literature of the Indian Diaspora	4	3	1	0	Passed Class XII	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To familiarize students with select contemporary literature of the Indian diaspora.
- To highlight diversity of diasporic locations and writings.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to acquire understanding of complex diasporic imaginations.
- Students will be able to comprehend the interrelations between home, homeland, diaspora, and migration.

SYLLABUS OF DSE-5:

UNIT – I (15 hours)

1. M. G. Vassanji: *The Book of Secrets*

UNIT – II (15 hours)

2. Vikram Seth: *The Golden Gate*

UNIT – III (15 hours)

3. Meera Syal: *Anita and Me*

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings:

1. Mishra, Vijay. *The Literature of the Indian Diaspora: Theorising the Diasporic Imaginary*. New York: Routledge, 2007.

2. Braziel, Jana Evans, et al. (ed.). *Theorizing Diaspora: A Reader*. Wiley, 2003.

3. Unnikrishnan, Deepak. *Temporary People*. New York: Restless Books, 2017.

4. Phillips, Caryl. 'Somewhere in England', *Crossing the River*. London: Random House, 1993.

5. Gilroy, Paul. 'The Black Atlantic as a Counterculture of Modernity', *The Black Atlantic: Modernity and Double Consciousness*. London: Verso, 1993.

6. Jayaram, N. (ed.). *The Indian Diaspora: Dynamics of Migration*. Vol.4, Sage: New Delhi, 2004.

DISCIPLINE SPECIFIC ELECTIVE COURSE 6 (DSE-6): Graphic Narratives

No. of hours- 60(Theory- 45 hrs.+Tutorials-15 hrs.)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSE-6 Graphic Narratives	4	3	1	0	Passed Class XII	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce students to the field of graphic narratives.
- To sample a variety of graphic narratives from different locations and in varied styles.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be provided an understanding of the specific languages of graphic narratives.
- Students will be able to comprehend the relationship between text and visuality.

SYLLABUS OF DSE-6:

UNIT – I (15 hours)

1. Miller, Frank. *Batman: The Dark Knight Returns*. Delhi: Random House, 2016.

Supplementary Reading for Visually Impaired Students:

1. Feiffer, Jules. 'Introduction' and 'Afterword', *The Great Comic Book Heroes*. Bonanza Books, 1965.

http://www.tcj.com/the-great-comic-book-heroes-intro-afterword-by-jules-feiffer/

UNIT – II (15 hours)

2. Natarajan, Srividya and Aparajita Ninan. *A Gardener in the Wasteland*. Delhi: Navayana,

2016.

3. Kadam, Dilip and S. S. Rege. *Babasaheb Ambedkar: He Dared to Fight*. Vol. 611, Mumbai: Amar Chitra Katha, 1979.

Supplementary Reading for Visually Impaired Students

2. Nayar, Pramod K. ‘Drawing on Other Histories.’, *The Indian Graphic Novel: Nation, History and Critique*. Routledge, 2016. pp 109-154

UNIT – III (15 hours)

4. Patil, Amruta. *Kari*. Delhi: Harper Collins, 2008.

5. Satrapi, Marjane. *Persepolis: The Story of a Childhood*. London: Pantheon 2004.

Supplementary Reading for Visually Impaired Students

4. Robinson, Lillian S. ‘Chronicles: Generations of Super Girls,’ *Wonder Women: Feminisms and Superheroes*. Routledge, 2004. pp 65-94

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings:

1. Chute, Hilary. ‘Comics as Literature?: Reading Graphic Narrative,’ *PMLA* 123 (2), pp 452-465

2. McCloud, Scott. *Understanding Comics: The Invisible Art*. USA: HarperCollins, 1993. pp 60-137

3. Mickwitz, Nina. *Documentary Comics: Graphic Truth-Telling in a Skeptical Age*. UK: Palgrave Macmillan, 2016. pp 1-28

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

NOTE: The Generic Electives for the EVEN SEMESTERS will also run for Semester IV students.

GENERIC ELECTIVES LANGUAGE COURSES for Semester III and IV (to be offered in flip mode)

Note: GE Language courses for Semester III, will also run in Semester IV, as these courses are offered in the flip mode.

Their titles are:

(GE Language 5) English Language Through Literature-II
(GE Language 6) Digital Communication-II
(GE Language 7) English Fluency-II
(GE Language 8) Developing English Language Skills-II

SEMESTER-V

Category I

BA (Hons.) English

DISCIPLINE SPECIFIC CORE COURSE -13 (DSC-13) : Twentieth Century Poetry & Drama

No. of hours- 60(Theory- 45 hrs.+Tutorials -15 hrs.)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 13: Twentieth Century Poetry & Drama	4	3	1	0	Passed Class XII with English from List A in CUET	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To offer students an understanding of the distinctive characteristics of the twentieth century as a space of thought, with specific reference to its poetry and drama as significant tools of cultural analysis.
- To open up the way in which the poetry and drama of the period reconstitute readership/ spectatorship as agents of cultural change.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to inculcate a basic sense of the anxieties and influences of the age immediately preceding our own.

- Students will gain knowledge on how literature as a discipline continues to critique and alter its times.

SYLLABUS OF DSC 13-

UNIT – I (15 hours)

1. T.S. Eliot: (i) 'The Love Song of J. Alfred Prufrock' (ii) 'The Hollow Men'

2. W.B. Yeats: (i) 'Leda and the Swan' (ii) 'The Second Coming'

UNIT – II (15 hours)

3. Edith Sitwell: 'Still Falls the Rain'

4. Anne Michaels: 'Memoriam'

5. Phillip Larkin: (i) 'Whitsun Weddings' (ii) 'Church Going'

6. Ted Hughes: (i) 'Hawk Roosting' (ii) 'Crow's Fall'

UNIT – III (15 hours)

7. Samuel Beckett: *Waiting for Godot* (1952)

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings:

1. Sinfield, Alan. 'Literature and Cultural Production', in *Literature, Politics, and Culture in Postwar Britain*. Berkley and Los Angeles: University of California Press, 1989. pp 23–38

2. Heaney, Seamus. 'The Redress of Poetry', *The Redress of Poetry*. London: Faber, 1995. pp 1–16

3. Waugh, Patricia. 'Culture and Change: 1960-1990', *The Harvest of The Sixties: English Literature and Its Background, 1960-1990*. Oxford: OUP, 1997.

4. Williams, Raymond, 'Metropolitan Perceptions and the Emergence of Modernism', *Raymond Williams: The Politics of Modernism*. London: Verso, 1996. pp 37-48

DISCIPLINE SPECIFIC CORE COURSE 14- (DSC-14) : Twentieth Century Novel

No. of hours- 60(Theory- 45 hrs.+Tutorials -15 hrs.)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 14: Twentieth Century Novel	4	3	1	0	Passed Class XII with English	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To offer students an understanding of the distinctive characteristics of the way in which the novel as an art form defines and alters the twentieth century.
- To open up the way in which the twentieth century novel is the most telling site of social critique and change.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to inculcate a basic sense of the instruments that the twentieth century novel uses to alter the period of its origin.
- Students will gain an understanding of how the novel as an art form can pick up the philosophical and political lines of inquiry of the period under survey.

SYLLABUS OF DSC-14

UNIT – I (15 hours)

1. Joseph Conrad: *Heart of Darkness* (1899)

UNIT – II (15 hours)

2. D.H. Lawrence: *Sons and Lovers* (1913)

UNIT – III (15 hours)

3. Virginia Woolf: *Mrs. Dalloway* (1925)

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings:

1. Woolf, Virginia. *ON BEING ILL*. Germany, Musaicum Books, 2017.

2. Freud, Sigmund. 'Theory of Dreams', 'Oedipus Complex', and 'The Structure of the Unconscious', *The Modern Tradition*. ed. Richard Ellman et. al. Oxford: OUP, 1965. pp 571, 578–80, 559–63

3. Williams, Raymond. 'Introduction', *The English Novel from Dickens to Lawrence*. London: Hogarth Press, 1984. pp 9–27

4. Lawrence, D.H. 'Morality and the Novel', *The Modern Tradition: Backgrounds of Modern Literature*. eds. Richard Ellmann and Charles Feidelson, Jr. Oxford University Press, 1965.

DISCIPLINE SPECIFIC CORE COURSE 15- (DSC-15) : Dalit Writings

No. of hours- 60(Theory- 45 hrs.+Tutorials -15 hrs.)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 15: Dalit Writings	4	3	1	0	Passed Class XII with English	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To offer students a foundational understanding of the way in which Dalit literature both chronicles a continuing history of oppression and functions as an invaluable instrument of cultural assertion.
- To open up a sense of the way in which intersectional marginalities find their voices in Dalit literature and seek social and human justice.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to grasp the importance of Dalit literature as historical witness and as cultural catalyst.
- Students' imagination will be stimulated through an understanding of how the aesthetic of suffering may be used to bring about social and cultural redressal.

SYLLABUS OF DSC-15

UNIT – I (15 hours)

1. Valmiki, Om Prakash. *Joothan: A Dalit's Life*. trans. Arun Prabha Mukerjee, Kolkatta: Samya, 2003.

UNIT – II (15 hours)

2. Sivakami, P. *The Grip of Change, and author's notes*. trans. P. Sivakami, New Delhi: Orient Longman, 2016.

UNIT – III (15 hours)

3. Limbale, Sharankumar. 'White Paper', *Poisoned Bread: Translations from Modern Marathi Dalit Literature*. ed. Arjun Dangle, Hyderabad: Orient Longman, 1992.

4. Parmar, Jayant. 'The last will of a Dalit poet', *Listen to the Flames: Texts and Readings from the Margins*. eds. Tapan Basu, Indranil Acharya, A. Mangai, New Delhi: Oxford University Press, 2017.

5. Navaria, Ajay. 'New Custom', *The Exercise of Freedom: An Introduction to Dalit Studies*. trans. Laura Brueck, eds. K. Sathyanarayana, Susie Tharu, New Delhi: Navayana Publishing, 2013.

6. Kumar, Sanjay. 'Black Ink', *Listen to the Flames: Texts and Readings from the Margins*. , trans. Raj Kumar, eds. Tapan Basu, Indranil Acharya, A. Mangai, New Delhi: Oxford University Press, 2017.

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings:

1. Limbale, Sharankumar. 'Dalit Literature and Aesthetics', *Towards an Aesthetic of Dalit Literature: History, Controversies & Considerations*. Orient Longman, 2004. pp 103-21

2. Gauthaman, Raj. 'Dalit Culture', *No Alphabet in Sight*. eds., K Satyanarayana and Susie Tharu, Penguin Books, 2011. pp 151-157

3. Rani, Challapalli Swaroopa: 'Caste Domination Male Domination' in *Steel Nibs are Sprouting*. eds. K Satyanarayana and Susie Tharu, Harper Collins, 2013. pp 704-709

4. Dirks, Nicholas B. *Castes of Mind: Colonialism and the Making of Modern India*. Princeton, Princeton University Press, 2001.

5. Srinivas, M. N. *Caste in Modern India and Other Essays*. London, Asia Publishing House. 1970.

6. Bagul, Baburao. 'Dalit Literature is but Human Literature', *Poisoned Bread: Translations from Modern Marathi Dalit Literature*. ed. Arjun Dangle, Hyderabad: Orient Longman, 1992. pp 271-289

7. Ahmad, Imtiaz. 'Can there be a Category called Dalit Muslims?' *Dalit Assertion in Society, Literature and History*. ed. Imtiaz Ahmad and Shashi Bhushan Upadhya, New Delhi: Orient BlackSwan, 2010. pp 243-258

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category II

(Discipline Specific Courses for Undergraduate Programme of study with ENGLISH(Major) as one of the Core Disciplines)

DISCIPLINE SPECIFIC CORE COURSE 13- (DSC-13) : Twentieth Century Poetry & Drama

No. of hours- 60(Theory- 45 hrs.+Tutorials -15 hrs.)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 13: Twentieth Century Poetry & Drama	4	3	1	0	Passed Class XII with English from List A in CUET	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To offer students an understanding of the distinctive characteristics of the twentieth century as a space of thought, with specific reference to its poetry and drama as significant tools of cultural analysis.
- To open up the way in which the poetry and drama of the period reconstitute readership/ spectatorship as agents of cultural change.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to inculcate a basic sense of the anxieties and influences of the age immediately preceding our own.

- Students will gain knowledge on how literature as a discipline continues to critique and alter its times.

SYLLABUS OF DSC 13-

UNIT – I (15 hours)

1. T.S. Eliot: (i) 'The Love Song of J. Alfred Prufrock' (ii) 'The Hollow Men'

2. W.B. Yeats: (i) 'Leda and the Swan' (ii) 'The Second Coming'

UNIT – II (15 hours)

3. Edith Sitwell: 'Still Falls the Rain'

4. Anne Michaels: 'Memoriam'

5. Phillip Larkin: (i) 'Whitsun Weddings' (ii) 'Church Going'

6. Ted Hughes: (i) 'Hawk Roosting' (ii) 'Crow's Fall'

UNIT – III (15 hours)

7. Samuel Beckett: *Waiting for Godot* (1952)

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings:

1. Sinfield, Alan. 'Literature and Cultural Production', in *Literature, Politics, and Culture in Postwar Britain*. Berkley and Los Angeles: University of California Press, 1989. pp 23–38

2. Heaney, Seamus. 'The Redress of Poetry', *The Redress of Poetry*. London: Faber, 1995. pp 1–16

3. Waugh, Patricia. 'Culture and Change: 1960-1990', *The Harvest of The Sixties: English Literature and Its Background, 1960-1990*. Oxford: OUP, 1997.

4. Williams, Raymond, 'Metropolitan Perceptions and the Emergence of Modernism', *Raymond Williams: The Politics of Modernism*. London: Verso, 1996. pp 37-48

DISCIPLINE SPECIFIC CORE COURSE 14- (DSC-14) : Twentieth Century Novel

No. of hours- 60(Theory- 45 hrs.+Tutorials -15 hrs.)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 14: Twentieth Century Novel	4	3	1	0	Passed Class XII with English from List A in CUET	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To offer students an understanding of the distinctive characteristics of the way in which the novel as an art form defines and alters the twentieth century.
- To open up the way in which the twentieth century novel is the most telling site of social critique and change.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to inculcate a basic sense of the instruments that the twentieth century novel uses to alter the period of its origin.
- Students will gain an understanding of how the novel as an art form can pick up the philosophical and political lines of inquiry of the period under survey.

SYLLABUS OF DSC-14

UNIT – I (15 hours)

1. Joseph Conrad: *Heart of Darkness* (1899)

UNIT – II (15 hours)

2. D.H. Lawrence: *Sons and Lovers* (1913)

UNIT – III (15 hours)

3. Virginia Woolf: *Mrs. Dalloway* (1925)

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings:

1. Woolf, Virginia. *ON BEING ILL*. Germany, Musaicum Books, 2017.

2. Freud, Sigmund. 'Theory of Dreams', 'Oedipus Complex', and 'The Structure of the Unconscious', *The Modern Tradition*. ed. Richard Ellman et. al. Oxford: OUP, 1965. pp 571, 578–80, 559–63

3. Williams, Raymond. 'Introduction', *The English Novel from Dickens to Lawrence*. London: Hogarth Press, 1984. pp 9–27

4. Lawrence, D.H. 'Morality and the Novel', *The Modern Tradition: Backgrounds of Modern Literature*. eds. Richard Ellmann and Charles Feidelson, Jr. Oxford University Press, 1965.

Category III

Discipline Specific Courses for Undergraduate Programme of study with ENGLISH(minor) as one of the Core Disciplines

DISCIPLINE SPECIFIC CORE COURSE 14- (DSC-14) : Twentieth Century Novel

No. of hours- 60(Theory- 45 hrs.+Tutorials -15 hrs.)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 14: Twentieth Century Novel	4	3	1	0	Passed Class XII with English	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To offer students an understanding of the distinctive characteristics of the way in which the novel as an art form defines and alters the twentieth century.
- To open up the way in which the twentieth century novel is the most telling site of social critique and change.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to inculcate a basic sense of the instruments that the twentieth century novel uses to alter the period of its origin.
- Students will gain an understanding of how the novel as an art form can pick up the philosophical and political lines of inquiry of the period under survey.

SYLLABUS OF DSC-14:

UNIT – I (15 hours)

1. Joseph Conrad: *Heart of Darkness* (1899)

UNIT – II (15 hours)

2. D.H. Lawrence: *Sons and Lovers* (1913)

UNIT – III (15 hours)

3. Virginia Woolf: *Mrs. Dalloway* (1925)

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings:

1. Woolf, Virginia. *ON BEING ILL*. Germany, Musaicum Books, 2017.

2. Freud, Sigmund. 'Theory of Dreams', 'Oedipus Complex', and 'The Structure of the Unconscious', *The Modern Tradition*. ed. Richard Ellman et. al. Oxford: OUP, 1965. pp 571, 578–80, 559–63

3. Williams, Raymond. 'Introduction', *The English Novel from Dickens to Lawrence*. London: Hogarth Press, 1984. pp 9–27

4. Lawrence, D.H. 'Morality and the Novel', *The Modern Tradition: Backgrounds of Modern Literature*. eds. Richard Ellmann and Charles Feidelson, Jr. Oxford University Press, 1965.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF DISCIPLINE SPECIFIC ELECTIVE (DSE) COURSES FOR SEMESTER V

DISCIPLINE SPECIFIC ELECTIVE COURSE–7 (DSE-7): Children's Literature

No. of hours- 60(Theory- 45 hrs.+Tutorials-15 hrs.)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSE-7 Children's Literature	4	3	1	0	Passed Class XII	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To familiarize students with the field of children's writing.
- To convey a sense of diversity within children's literature.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to appreciate the literary and theoretical complexity of children's writing.
- This course will enable a comprehension of children's literature across time and cultural spaces.

SYLLABUS OF DSE-7:

UNIT – I (15 hours)

1. Roald Dahl: *Fantastic Mr Fox*

2. Antoine de Saint-Exupéry: *The Little Prince*

UNIT – II (15 hours)

3. Roychowdhury, Upendra Kishore. *Goopy Gyne Bagha Byne*. New Delhi: Puffin Books, 2004. pp 3-27

4. Ray, Satyajit. *The Golden Fortress (Sonar Kella)*. trans. Gopa Majumdar, Penguin/Puffin, 2015.

UNIT – III (15 hours)

5. Anderson, M.T. *Feed*, Somerville: Candlewick Press, 2002.

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings:

1. Carpenter, Humphrey and Mari Prichard (Eds.). *The Oxford Companion to Children's Literature*. Oxford: Oxford University Press, 1984.

2. Egoff, Sheila, et al. (Eds.) *Only Connect: Readings on Children's Literature*, 3rd Edition. New York: Oxford University Press, 1996.

3. Hunt, Peter. *Criticism, Theory and Children's Literature*. Cambridge, Ma: Basil Blackwell, 1999.

4. Lehr, Susan. *The Child's Developing Sense of Theme: Responses to Literature*. New York: Teachers College Press, 1991.

5. Lukens, Rebecca J. *A Critical Handbook of Children's Literature*, 6th Edition. New York: Longman, 1999.

6. Lurie, Alison. *Don't Tell the Grown-Ups: Subversive Children's Literature*. Boston: Little, Brown, 1990.

7. Townsend, John Rowe. *Written for Children: An Outline of English Children's Literature*. 4th Edition. New York: Harper Collins, 1990.

8. Bang, Molly. 'Building the Emotional Content of Pictures', *Picture This: How Pictures Work*. San Francisco: Chronicle Books, 2018. pp 1-50

9. Nodelman, Perry. 'Defining Children's Literature', *The Hidden Adult: Defining Children's Literature*, Baltimore: John Hopkins University Press, 2008. pp 133-137

DISCIPLINE SPECIFIC ELECTIVE COURSE 8–(DSE-8): Indian Partition Literature

No. of hours- 60(Theory- 45 hrs.+Tutorials-15 hrs.)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSE-8 Indian Partition Literature	4	3	1	0	Passed Class XII	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce the subject of Partition Literature in India.
- To sensitize students to complex narratives of Partition.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to comprehend the relationship between literary representations and memories of the Partition.
- Students will acquire in-depth knowledge of literary and theoretical insights into Partition.

SYLLABUS OF DSE-8:

UNIT – I (15 hours)

1. Butalia, Urvashi. 'Beginnings', *The Other Side of Silence: Voices from the Partition of India*. India: Penguin books, 1998.

2. Nandy, Ashish. 'The Invisible Holocaust and the Journey as an Exodus', *A Very Popular Exile*. Delhi: OUP, 2007.

UNIT – II (15 hours)

3. Manṭo, Saʿādat Ḥasan. 'Toba Tek Singh', *Manto: Selected Short Stories: Including 'Toba Tek Singh' and 'The Dog of Tithwal'.* India, Random House India, 2012.

4. Chander, Krishan. 'Peshawar Express', *Stories About the Partition of India*. trans. Jai Ratan, ed. Alok Bhalla, Vol. 3, Delhi: Indus, 1994. pp 205-215

5. Waliullah, Syed. 'The Tale of a Tulsi Plant', *Mapmaking: Partition Stories from Two Bengals,* trans. Rani Ray, ed. Debjani Sengupta, Amaryllis: 2011. pp 101-114

6. Kothari, Rita. (ed.) Selections from *Unbordered Memories: Sindhi Stories of Partition*. New Delhi: Penguin Books, 2009.

UNIT – III (15 hours)

7. Gangopadhyay, Sunil. *Arjun*. trans. Chitrita Bannerjee, Penguin, 1987.

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings:

1. Bhasin, Kamla and Ritu Menon. 'Introduction', *Borders and Boundaries*. Delhi: Kali for Women, 1998.

2. Pandey, Gyanendra. 'The Three Partitions of 1947', *Remembering Partition: Violence, Nationalism and History in India*. Cambridge: Cambridge UP, 2001. pp 21-44

3. Schendel, Willem van. 'Partition Studies', *The Bengal Borderland: Beyond State and Nation in South Asia*. London: Anthem Press, 2005. pp 24-38

5. Khan, Yasmin. 'Leprous Daybreak' and 'Bitter Legacies', *The Great Partition: The Making of India and Pakistan.* Delhi: Penguin Random House, 2007. pp 143-185

DISCIPLINE SPECIFIC ELECTIVE COURSE 9–(DSE-9): Literature and Human Rights

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSE-9 Literature and Human Rights	4	3	1	0	Passed Class XII	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To consider the relationship between literature and human rights.
- To indicate investments in human rights within literary texts.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to realise the relevance of human rights in everyday contexts.
- Students will be able to appreciate the importance of human rights in literary and theoretical terms.

SYLLABUS OF DSE-9

UNIT – I (15 hours)

1. George Orwell: *1984*(1949)

UNIT – II (15 hours)

2. Harper Lee: *To Kill a Mockingbird* (1960)

UNIT – III (15 hours)

3. *Freedom: Short Stories Celebrating the Universal Declaration of Human Rights*. Amnesty International, 2009.

(i) 'In the Prison of Repose'—Paulo Coelho

(ii) 'Amnesty'—Nadine Gordimer

(iii) ‘ABC Antidote’—Ishmael Beah

4. Maya Angelou: ‘I Know Why the Caged Bird Sings’[poem]

5. June Millicent Jordan: ‘Poem About My Rights’

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings:

1. *The Universal Declaration of Human Rights*

https://www.un.org/en/udhrbook/pdf/udhr_booklet_en_web.pdf

2. Barzilay, Vered Cohen. ‘Foreword: The Tremendous Power of Literature’, *Freedom: Short Stories Celebrating the Universal Declaration of Human Rights*. Amnesty International, 2009.

3. Hunt, Lynn. *Inventing Human Rights: A History*. W.W. Norton, 2008.

4. Nickel, James W. *Making Sense of Human Rights: Philosophical Reflections on the Universal Declaration of Human Rights*. United Kingdom: University of California Press, 1987.

5. Tierney, Brian. *The Idea of Natural Rights: Studies on Natural Rights, Natural Law, and Church Law*, 1150-1625. United Kingdom: Eerdmans Publishing Company, 2001.

6. Rawls, John. T*he Law of Peoples: with “The Idea of Public Reason Revisited”*. United Kingdom: Harvard University Press, 1999.

7. Griffin, James. *On Human Rights*. United Kingdom: OUP, 2009.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

NOTE: The Generic Electives for the ODD SEMESTERS will also run for Semester V students.

SEMESTER -VI

BA (Hons.) English

DISCIPLINE SPECIFIC CORE COURSE 16- (DSC-16) : Modern European Drama

No. of hours- 60(Theory- 45 hrs.+Tutorials -15 hrs.)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 16: Modern European Drama	4	3	1	0	Passed Class XII with English from List A in CUET	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To analyse the way in which nineteenth and twentieth-century theatre in Europe thinks through political and cultural hierarchies of power, enslavement and liberation.
- To open up a sense of the way in which European drama articulates questions of continuing relevance in the contemporary world such as the individual and the state, the position of women, and issues of dominance.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to inculcate a basic sense of the way theatre serves as a means of social and cultural investigation and change.

- Students will learn how drama as a genre alters our sense of both the individual and society.

SYLLABUS OF DSC-16:

UNIT – I (15 hours)

1. Henrik Ibsen: *Ghosts* (1881)

UNIT – II (15 hours)

2. Bertolt Brecht: *Mother Courage and Her Children* (1939)

UNIT – III (15 hours)

3. Eugene Ionesco: *Rhinoceros* (1959)

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings:

1. Camus, Albert. (i) 'Absurdity and Suicide' (ii) 'The Myth of Sisyphus', *The Myth of Sisyphus*. trans. Justin O'Brien, London: Vintage, 1991. pp 13-17; 79-82

2. Stanislavsky, Constantin. 'Faith and the Sense of Truth', *An Actor Prepares*. United Kingdom: Bloomsbury Academic, 2013. pp 111-139

3. Brecht, Bertolt. 'The Street Scene', 'Theatre for Pleasure or Theatre for Instruction', and 'Dramatic Theatre vs Epic Theatre', *Brecht on Theatre: The Development of an Aesthetic*. ed. and tr. John Willet, London: Methuen, 1992. pp 68–76, 121–128

4. Steiner, George. 'On Modern Tragedy', *The Death of Tragedy*. London: Faber, 1995. pp 303–24

DISCIPLINE SPECIFIC CORE COURSE 17- (DSC-17): Literature and Disability

No. of hours- 60(Theory- 45 hrs.+Tutorials-15 hrs.)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 17: Literature and Disability	4	3	1	0	Passed Class XII with English from List A in CUET	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To challenge and reconstitute our sense of what constitutes 'the normal' as a category of thought and action.
- To build a critically compassionate consciousness on the subjects of individual and social identity-construction under conditions of disability.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to inculcate a basic sense of the theory and field of Disability Studies with specific reference to its articulation through literature.

- This course will encourage students to think of a revolutionised debate on the subject of self/ social-alienation and self/social-restoration under the challenge of disability.

SYLLABUS OF DSC-17:

UNIT – I (15 hours)

1. Firdaus Kanga: *Trying to Grow* (1991)

UNIT – II (15 hours)

2. Georgina Kleege: *Sight Unseen* (1999)

UNIT – III (15 hours)

3. Anne Finger. "Helen and Frida" *The Kenyon Review*, Summer, 1994, New Series, 16.3, 1994. pp 1-7

4. Mukhopadhyay, Tito Rajarshi. 'Poem 1' and 'Poem 4', *The Mind Tree: A Miraculous Child Breaks the Silence of Autism*. Arcade Publishing, 2003.

5. Barclay, Hayleigh. 'Happy Birth-day'. *Disability Horizons*. Posted 14th May, 2018

https://disabilityhorizons.com/2018/05/disability-short-stories-series-happy-birth-day/

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings:

1. Linton, Simi. 'Disability Studies/Not Disability Studies', *Disability & Society*, Vol. 13.4, 1998. pp 525-40

2. Davis, Lennard J. 'Constructing Normalcy', *Enforcing Normalcy: Disability, Deafness, and the Body*. London and New York: Verso, 1995. pp 23–49

3. Quayson, Ato. 'A Typology of Disability Representation', *Aesthetic Nervousness: Disability and the Crisis of Representation*. Columbia: Columbia University Press, 2007. pp 32–53

4. Couser, Thomas. 'Signifying Selves: Disability and Life Writing', *The Cambridge Companion on Literature and Disability*. eds Clare Barker and Stuart Murray, New York: Cambridge University Press, 2017. pp 199–211

5. Anand, Shilpaa. 'Historicizing Disability in India: Questions of Subject and Method', *Disability Studies in India: Global Discourses, Local Realities*. ed. Renu Addlakha, New York: Routledge. pp 35–60

6. Das, Veena and Renu Addlakha, 'Disability and Domestic Citizenship: Voice, Gender, and the Making of the Subject', *Public Culture*. Vol. 13:3, 2001. pp 511-531

DISCIPLINE SPECIFIC CORE COURSE 18- (DSC-18) : Women Writings

No. of hours- 60(Theory- 45 hrs.+Tutorials -15 hrs.)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 18: Women Writings	4	3	1	0	Passed Class XII with English	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To offer students a foundational understanding of the ways in which critical categories such as ethnicity, caste and class find their articulate in writings by women.
- To open up a sense of the Indian presence in the ongoing debate on the rights and position of women in contemporary society.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to inculcate a basic sense of how writings by women serve as a primary instrument to document and demand social change.

- This course will open up a space for a discussion on how this is a core area that demands attention and change in contemporary India.

SYLLABUS OF DSC-18:

UNIT – I (15 hours)

1. Alice Walker: *The Color Purple*

UNIT – II (15 hours)

2. Charlotte Perkins Gilman: 'The Yellow Wallpaper'

3. Begum Rokheya: 'Sultana's Dream'

4. Devi, Rassundari. Excerpts from *Amar Jiban*. trans. by Enakshi Chatterjee, *Women's Writing in India*. Vol 1, ed. Susie Tharu and K. Lalita, Oxford University Press, New Delhi, 1989. pp 192-202

UNIT – III (15 hours)

5. Emily Dickinson: (i) 'I cannot live with you' (ii) 'I'm wife; I've finished that'

6. Sylvia Plath: (i) 'Lady Lazarus' (ii) 'Daddy'

7. Eunice De Souza- (i) 'Advice to Women' (ii) 'Bequest'

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings:

1. Wollstonecraft, Mary. *A Vindication of the Rights of Woman*. New York: Norton, 1988.

2. Woolf, Virginia. *A Room of One's Own*. New York: Harcourt, 1957.

3. Elaine Showalter: 'Introduction', *A Literature of Their Own: British Women Novelists from Bronte to Lessing*, 1977.

4. Simone de Beauvoir: 'Introduction', *The Second Sex*

5. Chakravarti, Uma. 'Reconceptualising Gender: Phule, Brahmanism and Brahmanical Patriarchy', *Gender and Caste*. edited by Anupama Rao, Kali for Women, New Delhi, 2003. pp 164-179

6. Irigaray, Luce. 'When the Goods Get Together', *This Sex Which is Not One.* in *New French Feminisms*. trans. Catherine Porter & Carolyn Burke, Ithaca: Cornell University Press, 1985. pp 23-33

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category II

(Discipline Specific Courses for Undergraduate Programme of study with ENGLISH(Major) as one of the Core Disciplines)

DISCIPLINE SPECIFIC CORE COURSE 17- (DSC-17) : Literature and Disability

No. of hours- 60(Theory- 45 hrs.+Tutorials -15 hrs.)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 17: Literature and Disability	4	3	1	0	Passed Class XII with English	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To challenge and reconstitute our sense of what constitutes 'the normal' as a category of thought and action.

- To build a critically compassionate consciousness on the subjects of individual and social identity-construction under conditions of disability.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to inculcate a basic sense of the theory and field of Disability Studies with specific reference to its articulation through literature.

- This course will encourage students to think of a revolutionised debate on the subject of self/ social-alienation and self/social-restoration under the challenge of disability.

SYLLABUS OF DSC-17:

UNIT – I (15 hours)

1. Firdaus Kanga: *Trying to Grow* (1991)

UNIT – II (15 hours)

2. Georgina Kleege: *Sight Unseen* (1999)

UNIT – III (15 hours)

3. Anne Finger. "Helen and Frida" *The Kenyon Review*, Summer, 1994, New Series, 16.3, 1994. pp 1-7

4. Mukhopadhyay, Tito Rajarshi. 'Poem 1' and 'Poem 4', *The Mind Tree: A Miraculous Child Breaks the Silence of Autism*. Arcade Publishing, 2003.

5. Barclay, Hayleigh. 'Happy Birth-day'. *Disability Horizons*. Posted 14th May, 2018

https://disabilityhorizons.com/2018/05/disability-short-stories-series-happy-birth-day/

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings:

1. Linton, Simi. 'Disability Studies/Not Disability Studies', *Disability & Society*, Vol. 13.4, 1998. pp 525-40

2. Davis, Lennard J. 'Constructing Normalcy', *Enforcing Normalcy: Disability, Deafness, and the Body*. London and New York: Verso, 1995. pp 23–49

3. Quayson, Ato. 'A Typology of Disability Representation', *Aesthetic Nervousness: Disability and the Crisis of Representation*. Columbia: Columbia University Press, 2007. pp 32–53

4. Couser, Thomas. 'Signifying Selves: Disability and Life Writing', *The Cambridge Companion on Literature and Disability*. eds Clare Barker and Stuart Murray, New York: Cambridge University Press, 2017. pp 199–211

5. Anand, Shilpaa. 'Historicizing Disability in India: Questions of Subject and Method', *Disability Studies in India: Global Discourses, Local Realities*. ed. Renu Addlakha, New York: Routledge. pp 35–60

6. Das, Veena and Renu Addlakha, 'Disability and Domestic Citizenship: Voice, Gender, and the Making of the Subject', *Public Culture*. Vol. 13:3, 2001. pp 511-531

DISCIPLINE SPECIFIC CORE COURSE 18- (DSC-18) : Women Writings

No. of hours- 60(Theory- 45 hrs.+Tutorials -15 hrs.)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 18: Women Writings	4	3	1	0	Passed Class XII with English	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To offer students a foundational understanding of the ways in which critical categories such as ethnicity, caste and class find their articulate in writings by women.
- To open up a sense of the Indian presence in the ongoing debate on the rights and position of women in contemporary society.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to inculcate a basic sense of how writings by women serve as a primary instrument to document and demand social change.
- This course will open up a space for a discussion on how this is a core area that demands attention and change in contemporary India.

SYLLABUS OF DSC-18:

UNIT – I (15 hours)

1. Alice Walker: *The Color Purple*

UNIT – II (15 hours)

2. Charlotte Perkins Gilman: 'The Yellow Wallpaper'

3. Begum Rokheya: 'Sultana's Dream'

4. Devi, Rassundari. Excerpts from *Amar Jiban*. trans. by Enakshi Chatterjee, *Women's Writing in India*. Vol 1, ed. Susie Tharu and K. Lalita, Oxford University Press, New Delhi, 1989. pp 192-202

UNIT – III (15 hours)

5. Emily Dickinson: (i) 'I cannot live with you' (ii) 'I'm wife; I've finished that'

6. Sylvia Plath: (i) 'Lady Lazarus' (ii) 'Daddy'

7. Eunice De Souza- (i) 'Advice to Women' (ii) 'Bequest'

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings:

1. Wollstonecraft, Mary. *A Vindication of the Rights of Woman*. New York: Norton, 1988.

2. Woolf, Virginia. *A Room of One's Own*. New York: Harcourt, 1957.

3. Elaine Showalter: 'Introduction', *A Literature of Their Own: British Women Novelists from Bronte to Lessing*, 1977.

4. Simone de Beauvoir: 'Introduction', *The Second Sex*

5. Chakravarti, Uma. 'Reconceptualising Gender: Phule, Brahmanism and Brahmanical Patriarchy', *Gender and Caste*. edited by Anupama Rao, Kali for Women, New Delhi, 2003. pp 164-179

6. Irigaray, Luce. 'When the Goods Get Together', *This Sex Which is Not One.* in *New French Feminisms*. trans. Catherine Porter & Carolyn Burke, Ithaca: Cornell University Press, 1985. pp 23-33

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category III

Discipline Specific Courses for Undergraduate Programme of study with ENGLISH(minor) as one of the Core Disciplines

DISCIPLINE SPECIFIC CORE COURSE 18- (DSC-18) : Women Writings

No. of hours- 60(Theory- 45 hrs.+Tutorials-15 hrs.)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 18: Women Writings	4	3	1	0	Passed Class XII with English	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To offer students a foundational understanding of the ways in which critical categories such as ethnicity, caste and class find their articulate in writings by women.
- To open up a sense of the Indian presence in the ongoing debate on the rights and position of women in contemporary society.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to inculcate a basic sense of how writings by women serve as a primary instrument to document and demand social change.
- This course will open up a space for a discussion on how this is a core area that demands attention and change in contemporary India.

SYLLABUS OF DSC-18:

UNIT – I (15 hours)

1. Alice Walker: *The Color Purple*

UNIT – II (15 hours)

2. Charlotte Perkins Gilman: 'The Yellow Wallpaper'

3. Begum Rokheya: 'Sultana's Dream'

4. Devi, Rassundari. Excerpts from *Amar Jiban*. trans. by Enakshi Chatterjee, *Women's Writing in India*. Vol 1, ed. Susie Tharu and K. Lalita, Oxford University Press, New Delhi, 1989. pp 192-202

UNIT – III (15 hours)

5. Emily Dickinson: (i) 'I cannot live with you' (ii) 'I'm wife; I've finished that'

6. Sylvia Plath: (i) 'Lady Lazarus' (ii) 'Daddy'

7. Eunice De Souza- (i) 'Advice to Women' (ii) 'Bequest'

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings:

1. Wollstonecraft, Mary. *A Vindication of the Rights of Woman*. New York: Norton, 1988.

2. Woolf, Virginia. *A Room of One's Own*. New York: Harcourt, 1957.

3. Elaine Showalter: 'Introduction', *A Literature of Their Own: British Women Novelists from Bronte to Lessing*, 1977.

4. Simone de Beauvoir: 'Introduction', *The Second Sex*

5. Chakravarti, Uma. 'Reconceptualising Gender: Phule, Brahmanism and Brahmanical Patriarchy', *Gender and Caste*. edited by Anupama Rao, Kali for Women, New Delhi, 2003. pp 164-179

6. Irigaray, Luce. 'When the Goods Get Together', *This Sex Which is Not One.* in *New French Feminisms*. trans. Catherine Porter & Carolyn Burke, Ithaca: Cornell University Press, 1985. pp 23-33

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF DISCIPLINE SPECIFIC ELECTIVE (DSE) COURSES FOR SEMESTER VI

DISCIPLINE SPECIFIC ELECTIVE COURSE 10–(DSE-10): World Literatures

No. of hours- 60(Theory- 45 hrs.+Tutorials-15 hrs.)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSE-10 World Literatures	4	3	1	0	Passed Class XII	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce students to the field of World Literatures.
- To indicate diversity of literary representations in the field

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will gain a critical knowledge about the categorization of 'World Literature'.
- Students will gain an understanding of the complexity of theoretical and literary representations in the field.

SYLLABUS OF DSE-10:

UNIT – I (15 hours)

1. Abdulrazak Gurnah: *By the Sea* (2001)

UNIT – II (15 hours)

2. Pablo Neruda: ‘Fable of the Mermaid and the Drunks’

3. Walcott: ‘Names’

4. Nazar Qabbani: ‘Beirut, The Mistress of the World’

5. Meena Alexander: ‘Shook Silver’

UNIT – III (15 hours)

6. Marquez: ‘Balthasar’s Marvellous Afternoon’

7. Paz: ‘The Blue Bouquet’

8. Ngugi wa Thiong’o. "Introduction: Towards the Universal Language of Struggle" & “The Language of African Literature”. *Decolonising the Mind*, London: James Currey, 1986. pp 1-33

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings:

1. Damrosch, David. ‘Goethe Coins a Phrase’, *What is World Literature?*. Princeton UP, 2003. pp 1-36

2. Cheah, Pheng. ‘The New World Literature: Literary Studies Discovers Globalization’, *What is a World?: On Postcolonial Literature as World Literature*. Duke University Press, 2015. pp 23-45

3. Moretti, Franco. ‘Conjectures on World Literature’, *NLR* 1, Jan-Feb. 2000. pp 54- 68

4. Chaudhari, Rosinka. ‘Viśvasāhitya: Rabindranath Tagore’s Idea of World Literature’, *The Cambridge History of World Literature*. ed. Debjani Ganguly, Cambridge UP, 2021. pp 261-278.

5. Mufti, Aamir. 'Global English and Its Others', *Forget English! Orientalism and World Literatures*. Harvard UP, 2016. pp 146-202

DISCIPLINE SPECIFIC ELECTIVE COURSE 11–(DSE-11): Speculative Fiction & Detective Fiction

No. of hours- 60(Theory- 45 hrs.+Tutorials-15 hrs.)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSE-11 Speculative Fiction & Detective Fiction	4	3	1	0	Passed Class XII	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce students to types of detective and speculative fiction.
- To look at generic characteristics of the literature.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to analyse world writings as reflections on contemporary realities.
- Students will be able to appreciate the vitality and diversity of detective and speculative fictions.

SYLLABUS OF DSE-11:

UNIT – I (15 hours)

1. Doyle, Arthur Conan. *The Hound of the Baskervilles: Another Adventure of Sherlock Holmes*. United States: Grosset & Dunlap, 1902.

UNIT – II (15 hours)

2. Atwood, Margaret Eleanor. *The Handmaid's Tale*. Demco Media, 1985.

UNIT – III (15 hours)

3. Crichton, Michael and Kidd, Chip. *Jurassic Park*. New York: Knopf, 1990.

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings:

1. Heinlein, Robert A. 'On the Writing of Speculative Fiction'

https://staging.paulrosejr.com/wp-content/uploads/2016/12/on_the_writing_of_speculative_ficiton.pdf

2. Hayles, Katherine N. 'Towards Embodied Virtuality', *How We Became Posthuman: Virtual Bodies in Cybernetics Literature and Informatics*. Chicago: University of Chicago Press, 1999. pp 1-24

3. Haraway, Donna. 'A Cyborg Manifesto: Science Technology and Socialist-Feminism in the Late Twentieth Century', *Simians Cyborgs and Women: The Reinvention of Nature*. New York: Routledge, 1991. pp 149-181.

4. Rzepka, Charles J. 'Introduction: What is Crime Fiction?', *Companion to Crime Fiction, Blackwell Companions to Literature and Culture*. eds Charles J. Rzepka and Lee Horsley, Oxford: Wiley and Blackwell, 2010. pp 1-9

5. Palmer, Joy. 'Tracing Bodies: Gender Genre and Forensic Detective Fiction', *South Central Review* Vol. 18 No. 3/4, Whose Body: Recognizing Feminist Mystery and Detective Fiction, Autumn-Winter 2001. pp 54-71

DISCIPLINE SPECIFIC ELECTIVE COURSE 12–(DSE-12): British Literature Post World War II

No. of hours- 60(Theory- 45 hrs.+Tutorials-15 hrs.)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSE-12 British Literature Post World War II	4	3	1	0	Passed Class XII	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To familiarize students with a specific body of British writings post World War II.
- To highlight diverse voices in literary representations.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to think critically about the complexities of a multicultural Post-war decolonized Britain.
- Students will be provided knowledge about the manner in which British writings change after World War II.

SYLLABUS OF DSE-12:

UNIT – I (15 hours)

1. John Fowles: *The French Lieutenant's Woman*

UNIT – II (15 hours)

2. Jeanette Winterson: *Sexing the Cherry*

UNIT – III (15 hours)

3. Hanif Kureshi: *My Beautiful Launderette*

4. Seamus Heaney: (i) 'Digging', (ii) 'Casualty'

5. Carol Anne Duffy: (i) 'Text', (ii) 'Stealing'

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings:

1. Sinfield, Alan. 'Literature and Cultural Production', *Literature, Politics, and Culture in Postwar Britain*. Berkley and Los Angeles: University of California Press, 1989. pp 23–38

2. Heaney, Seamus. 'The Redress of Poetry', *The Redress of Poetry*. London: Faber, 1995. pp 1–16

3. Waugh, Patricia. 'Culture and Change: 1960-1990', *The Harvest of The Sixties: English Literature And Its Background*, *1960-1990*. Oxford: OUP, 1997.

DISCIPLINE SPECIFIC ELECTIVE COURSE –(DSE-13): Research Methodology

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSE-13 Research Methodology	4	3	0	1	Passed Class XII	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To offer students practical training in academic writing.
- To introduce the basics of academic research.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to acquire in-depth and practical knowledge regarding academic reading and writing.
- Students will gain proficiency in writing research papers as part of project work.

SYLLABUS OF DSE-13:

UNIT – I (15 hours)

1. Introduction to Practical Criticism

2. Conceptualizing and Drafting of a Research Proposal

UNIT – II (15 hours)

3. Style Manuals: Notes, References and Bibliography/Annotated Bibliography

UNIT – III (15 hours)

4. Workshop on Topic Development

5. Workshop on Research Proposal

Note: During classes, the workshop mode of teaching is to be favoured for units which indicate the same. In the tutorials, individual guidance is to be given to each student.

Practical component: (30 hours)
Writing a Research Paper (2000 to 2,500 words)

Essential/recommended readings:

1. Flick, Uwe. *Introducing Research Methodology: A Beginner's Guide to Doing a Research Project.* New Delhi: Sage, 2017.

2. Leki, Ilona. *Academic Writing: Exploring Processes and Strategies*. 2nd edn. New York: CUP, 1998.

3. Dev, Anjana N (ed.). *Academic Writing and Composition.* New Delhi: Pinnacle, 2015.

4. Richards, I. A. *Practical Criticism: A Study of Literary Judgement*. New York: Harcourt Brace, 1929.

5. Bailey, Stephen. *The Essentials of Academic Writing for International Students.* London: Routledge, 2015.

6. Orwell, George. *Politics and the English Language*. United Kingdom: Sahara Publisher Books, 1946.

Suggestive Readings:

1. Hamp-Lyons, Liz and Ben Heasley. *Study Writing: A Course in Writing Skills for Academic Purposes*. Cambridge: CUP, 2006.

2. Kumar, Ranjit. *Research Methodology: A Step by Step Guide for Beginners*. New Delhi: Sage, 2014.

3. Phanse, Sameer. *Research Methodology: Logic, Methods and Cases*. New Delhi: OUP, 2016.

4. Griffin, Gabrielle, ed. *Research Methods for English Studies.* 2nd edn. New Delhi: Rawat Publications. 2016 (Indian Reprint)

Common Pool of Generic Elective (GE) Courses for EVEN Semesters

NOTE: The Generic Electives for the EVEN SEMESTERS will also run for Semester VI students.

Department of English (Journalism)
SEMESTER-IV

[UG Programme for Bachelor in Journalism (Honours) degree in three years]

DISCIPLINE SPECIFIC CORE COURSE 10- (DSC-10) : Conflict and War Reporting

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 10: Conflict and War Reporting	4	3	0	1	Passed Class XII with English	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To inculcate among students, an in-depth awareness of the difficulties involved in conflict reporting while keeping in mind ethical standards to their analysis of conflict reporting.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to apply a historical perspective to the media coverage of conflict and war reporting.

SYLLABUS OF DSC-10:

UNIT – I (15 hours)

Unit 1: Introduction

- Conflict Reporting and War Reportage: Concepts
- Information warfare and dominance
- Issues & Obstacles in war reporting
- Dimensions of War Coverage: Organizations and Reporters
- Working lives of War Correspondents
- Components and themes in war reporting, construction of 'enemy'
- Concept of 'hybrid war'

UNIT – II (15 hours)

Unit II: Issues

- Risks and Risk Management, Threats to personal safety
- Objectivity, Rationality and accuracy of media coverage
- Competing narratives & Viewpoints
- Cultural differences in reporting the war on terror
- Reporting from a foreign land (Challenges)

UNIT – III (15 hours)

Unit III: Challenges and Ethical Concerns

- Media Opinions and Advocacy
- Contemporary changes in warfare & Media environment
- Women in war reporting: discrimination, derogatory attitudes, sexual harassment
- News Media Visuals, Images of death spectacle
- Technological developments and its uses in war
- Digital Platforms, blogs, Twitter, chats

Practical component: (30 hours)

Students are expected to do projects, critically examining the coverage of wars in each phase of development of the media. The students must submit write ups on the reporting of wars in the context of the limitations of technology in each phase of the

media beginning from the coverage from the era of print journalism to the present times. Debates and discussions will be held on the issues of conflict and the role of international bodies in the call for peace. They must write a critical report comparing the reportage of war on traditional/mainstream media with posts/reports on social media platforms of the Russian-Ukraine war and its implications on international politics and economy. The students can also do an analytical write up on the violent visuals and images of destruction of the Russo-Ukraine war.

Essential/recommended readings

1. Harris, Janet and Kevin Williams. 2018. *Reporting War and Conflict*. Taylor and Francis.
2. Thussu, Daya Kishan and Des Freedman. 2003. *War and the Media*. Sage Publications.
3. Zelizer, Berbie and Stuart Allan. 2004. *Reporting War: Journalism in Wartime*. Routledge.

Suggestive readings:

1. Armoudian, Maria. 2016. *Reporting from the Danger Zone: Frontline Journalists, Their Jobs and an Increasingly Perilous Future.* Introduction, Chapter Two & Conclusion

2. Wolfsfeld, Gadi. “Telling a Good Story.” In *Making Sense of Media & Politics*. Routledge, 2011

3. Galtung, Johan, and Dietrich Fischer. 2013."High road, low road: Charting the course for peace journalism." *Johan Galtung*. Springer Berlin Heidelberg. 95-102. http://reference.sabinet.co.za/webx/access/electronic_journals/track2/track2_v7_n4_a4.htm

4. Jakobsen, Peter Viggo. 2000. “Focus on the CNN Effect Misses the Point: The Real Media Impact on Conflict Management is Invisible and Indirect.” *Journal of Peace Research*. Vol. 37, No. 2 (p. 131-143).

5. Lance Bennett: When the Press Fails. University of Chicago Press. Introduction, 2008

6. Cull, Nicholas. 2009. *Annals of the American Academy of Political and Social Science*. Vol. 616, Public Diplomacy in a Changing World (Mar., 2008), pp. 31-54.

7. Seib, Philip. 2010. "Transnational journalism, public diplomacy, and virtual states." *Journalism Studies*5: 734-744.

8. Norris, Pippa, Montague Kern & Marion Just. “The Lessons of Framing Terrorism.” In *Framing Terrorism*, 2004

9. Bolt, Neville. 2011. “Conclusion.” From The Violent Image.”, Columbia University Press.

10. Rutkin, Aviva. 2016. “Cyberwar becomes official.” *New Scientist*.

DISCIPLINE SPECIFIC CORE COURSE 11- (DSC-11) : Multimedia Journalism

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 11: Multimedia Journalism	4	3	0	1	Passed Class XII with English	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To facilitate students with the knowledge of multimedia and its contribution towards journalism. To help students adapt the contemporary practises of multi-media journalism and production.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to learn how to produce a personal website that showcases their work (also used as a digital portfolio throughout the major); produce a portfolio of photographs; produce an audio and video production; and produce a final multi-media project.

SYLLABUS OF DSC-11:

UNIT – I (15 hours)

UNIT I: Introduction to Multimedia

- Development of multimedia journalism
- Basics of Multi-media Journalism- features and elements
- Importance of multimedia skills in contemporary newsroom
- Writing and editing for online
- Interviewing for the web
- Developing content for multimedia publishing
- Online media law, ethics & multicultural sensitivity

UNIT – II (15 hours)

UNIT II: Multimedia production

- Multimedia production process, multimedia newsroom function
- Online research, planning, sources, news gathering, storyboarding
- Developing website, website design, editing and publishing – Tools and Software

- New forms of journalism – blogs, social media, interactive stories, mobile journalism, citizen journalism, news application

UNIT – III (15 hours)

UNIT III: Packaging and integration

- Basics on developing photos, audio and video production for online, Different forms and formats of online photo stories, Tools, techniques and software for photo editing
- Mobile Journalism- Learning how to shoot, edit and tell stories through mobile phones
- Social media as a tool of reporting and a distribution tool
- Concepts of multimedia narrative, packaging and multimedia documentary
- Social media integration – tools and techniques
- Social media optimization of content
- User Generated Content integration – forms and techniques

Practical component: (30 hours)

Multimedia journalism will involve practical participation of students by means of constantly pitching ideas and learning to align their ideas with a suitable medium across different online platforms. Class discussions on individual multimedia projects and team inputs from the teacher will help create a dynamic online newsroom for the duration of this course.

Teacher will impart knowledge of traditional (DSLRs) and emerging tools, including smartphones, and sharing multimedia storytelling fundamentals, especially creative photo and audio techniques.

Record Man on the Street Interviews, shooting feature videos and podcast using smartphones, story pitch review, writing for the web; expanding the idea of narrative; interviewing tips and techniques

Final project: Producing a multimedia package and making it live online

Essential/recommended readings-

1. Christin, Anne-Marie, ed. *A History of Writing: From Hieroglyph to Multimedia*. Flammarion-Pere Castor, 2002.
2. Garrand, Timothy. *Writing for Multimedia and the Web: A Practical Guide to Content Development for Interactive Media.* CRC Press, 2006.
3. Korolenko, Michael. *Writing for Multimedia: A Guide and Source Book for the Digital Writer.* Pearson. 2005.
4. Savage, Terry Michael, and Karla E. Vogel. *An Introduction to Digital Multimedia.* Jones & Bartlett Publishers, 2013.

5. *Digital Storytelling in the Classroom: New Media Pathways to Literacy, Learning, and Creativity,* Published by Corwin; 2013

6. *Video journalism: Multimedia Storytelling*, Routledge, 2017

Suggestive readings:

1. Poynter Online Media Ethics Bibliography, 2002, https://www.poynter.org/archive/2002/media-ethics-bibliography/

2. *The Principles of Multimedia Journalism: Packaging Digital News*, by Richard Hernandez, Jeremy Rue, 2015

3. *Aim for the Heart: Write, Shoot, Report and Produce for TV and Multimedia* by Al Tompkins, 2011

4. *Feature and Narrative Storytelling for Multimedia Journalists*, by Duy Linh Tu, 2015

5. *Journalism Next: A Practical Guide to Digital Reporting and Publishing* by Mark Briggs, 2009

http://www.poynter.org/content/content_view.asp?id:1208

6. Digital Natives (Produced by the Berkman Center for Internet and Society, Youth and Media Project)
http://cyber.law.harvard.edu/research/youthandmedia/digitalnatives

7. Press Ahead! A Teacher's Guide to Creating Student Newspapers
http://www.naafoundation.org/docs/Foundation/teacher%27s_guide-4color.pdf

8. Journalist's Toolbox, Presented by the Society of Professional Journalists
http://www.journaliststoolbox.org/

DISCIPLINE SPECIFIC CORE COURSE-12 (DSC-12) : Broadcast Production

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 12: Broadcast Production	4	3	0	1	Passed Class XII with English	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To facilitate students with the knowledge of history of broadcasting models in India.
- To enable students to understand the basics of sound and visual grammar of diverse broadcast genres.

- To make the students adept at script writing and production for broadcast media

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to make TV News bulletins, documentaries and other programs.

SYLLABUS OF DSC-12:

UNIT – I (15 hours)

Unit I: **Broadcasting Models**

- Public Service Model in India (Policy and laws)
- Global Overview of Public Service Broadcasting
- Private Broadcasting Model in India; Policy and Laws
- Structure, Functions and Working of a Broadcast Channel
- Public and Private partnership in television and Radio programming (India and Britain case studies)

UNIT – II (15 hours)

UNIT II: Broadcast Genres

- News, Interviews, Features
- Why am I the 'Idiot Box'? -Debates, Issues and Concerns of Television Genre
- Various Evolving Contemporary Television genres: Drama, soap opera, comedy, reality television, children's television, animation, prime time and day time

- Current and emerging trends of broadcast media: Audience effectiveness
- Use of social media by Radio & TV channels,
- Internet TV/ Radio and Mobile TV/Radio

UNIT – III (15 hours)

Unit III: **Advanced Broadcast Production**

- Writing and Producing for Radio
- Public Service Advertisements
- Jingles
- Radio Magazine shows
- Music Video for social comment/as documentary
- Mixing ENG and EFP
- Reconstruction in News based Programming

Practical component: (30 hours)

Students will work in groups under the supervision of faculty member to produce news bulletins as a part of practical component of this course. They can also be encouraged to visit studios of leading news channels to understand the process of television news production thoroughly and familiarize themselves with the rapidly changing newsroom.

- Script writing
- Presentation of experimental genre in Radio/ TV
- Presentation about PSBT and similar organizations

- Script on Music Presentation
- Presentation of Commercial Channel functions.
- Presentation on global broadcasting models & Indian broadcasting models

Essential/recommended readings:

1. Bignell, Jonathan, Jeremy, Orlebar, and Patrica Holland, *The Television Handbook*, London: Routledge, 2005.

2. Chatterji, P.C., *Broadcasting in India*. New Delhi: Sage,1987.

3. Fleming, Carole, and Pete Wilby, *The Radio Handbook*, London: Routledge, 2002.

4. Orlebar, Jeremy, *The Practical Media Dictionary*, London: Arnold, 2003.

5. Page, David, and William Crawley, *Satellites over South Asia*, (1st edition), New Delhi: Sage Publications, 2001.

Suggestive readings:

1. Rajagopal, Arvind, *Politics after Television*, (1stEdition), Cambridge UK: Cambridge University Press, 2001.

2. Saksena, Gopal, *Television in India*, (1st Edition), New Delhi: Vikas Publication House, 1996.

3. Starkey, Guy, and Andrew Crisell, *Radio Journalism*, (1st edition), Los Angeles: Sage, 2009.

4. Thussu, Daya Kishan, *News as Entertainment*, (1st. edition), Thousand Oaks California: Sage, 2007.

5. Verma, and Adarsh Kumar, *Advanced Journalism*, (1st edition), New Delhi:

Har- Anand Publications,1993.

6. Baruah, U.L., *This is All India Radio*. (1st Edition), New Delhi: Publication Division, Ministry of Information and Broadcasting, Govt. of India, 1983.

7. Bhatt, S.C., *Satellite Invasion of India*, (1st Edition), New Delhi: Gyan Publication House, 1994.

8. Sabharwal, Tarjeet, *Satellite Television: An Impact on Social Participation*, Kanishka Publishers, 2008.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF DISCIPLINE SPECIFIC ELECTIVE (DSE) COURSES FOR SEMESTER IV

DISCIPLINE SPECIFIC ELECTIVE COURSE 4– (DSE-4): Introduction to Media and

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSE-4 Introduction to Media and Politics	4	3	0	1	Passed Class XII with English	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To familiarize students with the uses and impact of media in politics. The students will be able to grasp the language and narrative of issues of political parties and political activities.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to assess application of the range of theories and methodologies in the field of political communication.
- They will be able to critically evaluate the uses and effects of media on political processes and citizens; and apply theories and principles to developments and trends involving countries, levels of governance, and issues of interest to them.

SYLLABUS OF DSE-4:

UNIT – I (15 hours)

Unit I: Introduction

- Political Communication: Background
- Relationship between Politics and Communication
- Role and Influence of media on political communication
- Influence Agents – opinion leaders, intellectuals, trolls
- Religion and Politics
- Gender and Politics
- Culture and Politics

UNIT – II (15 hours)

Unit II: Political Language

- Political Communication Strategies
- Myths and Ideology
- Strategic uses of political language
- Political Rhetoric
- Political Advertising
- Framing of Issues, Agenda and Narrative setting

- Post-truth and Alternative Facts

UNIT – III (15 hours)

Unit III: Trends

- Political Branding and Image-building
- Digital Platforms – Social Media and Political Engagement
- Political Polarization and Mobilization
- Use of AI, Big Data, Hybrid Intelligence
- Political Humour and Satire, memes and echo chambers

Practical component: (30 hours)
The students must submit a report of how issues are framed in the media. They must be able to contextualise the political rhetoric and the narrative discourse of issues by political leaders. They must also analyse how social media is used for political branding and image building.

Essential/recommended readings-

1. Oates, Sarah (2008). *Introduction to Media and Politics*, Sage Publications
2. Robertson, Alexa (2015). *Media and Politics in a Globalizing World*, Polity Press
3. Rozell, Mark (ed.) (2003). Media Power, Media Politics. Rowman & Littlefield

Suggestive readings:

1. Carey (1995). The press, public opinion and public discourse. In Glasser & Salmon (Eds.), *Public opinion and the communication of consent*, pp, 373-402.
2. Nimmo & Combs (1983). Pack journalism. In *Mediated Political Realities*, pp. 162-81.
3. Atkin (1980). Political Campaigns: Mass Communication and Persuasion. In Roloff & Miller (Eds.), *Persuasion*, pp. 285-308.

4. Iyengar (1987). Television news and citizens' explanations of national affairs. *American Political Science Review*, 81: 815-31

5. *The Influence and Effects of Mass Media* (McQuail) Cook, Timothy. (2005). *Governing with the News: The News Media as a Political Institution*. 2nd ed. University of Chicago Press.

6. Dahlgren, Peter. (2009) *Media and Political Engagement*: Citizens, Communication, and Democracy. Cambridge University Press.

7. Graber, Doris A. (2009). Mass Media and American Politics. Washington: CQ Press.
   Graber, Doris, Denis McQuail, and Pippa Norris, eds. (2007). The Politics of News: The News of Politics, 2nd. Ed. CQ Press.

8. Kuhn, Raymond. (2007). Politics and the Media in Britain. Palgrave Macmillan.

9. McNair, Brian. 2007. An introduction to political communication. 4th ed.. London: Routledge. Oates, Sarah (2008). Introduction to Media and Politics. Sage Publications.

10. Seib, Philip (2012). Real Time Diplomacy: Power and Politics in the Social Media Era. Palgrave Macmillan.

11. Wolfsfeld, Gadi (2011). Making Sense of Media and Politics. Routledge.

DISCIPLINE SPECIFIC ELECTIVE COURSE 5–(DSE-5): Photography and Digital Imaging

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSE-5 Photography and Digital Imaging	4	3	0	1	Passed Class XII with English	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To familiarize students with the history of photography and
- To enable students to understand diverse types of photography and the process of photo editing.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to utilize the technology and tools of photography in the production of photographic images to include: the operation of the camera, exposure, lenses etc.

SYLLABUS OF DSE-5:

UNIT – I (15 hours)

UNIT I: History of Photography

- Introduction to history of Photography- Camera obscura, the daguerreotype and Edward Muybridge experiment (Screening of Genius of Photography, BBC Four Series)

- Profile of Famous phtotographers (Henri Cartier Bresson, Robert Capa, Dorothea, Raja Deen Dayal, Raghubir Singh, Raghu Rai, Homai Vyarawalla)

UNIT – II (15 hours)

UNIT II:Understanding the camera

- Introduction to 35mm analog and DSLR operations
- Understanding lenses (standard and zoom) and how perspective shifts with varying focal lengths.
- Exposure Triangle
- Basic rules of composition, framing and rule of the third.

UNIT – III (15 hours)

UNIT III: Types of Photography & Photo Editing

- Photojournalism, News Photography, Sports Photography, Nature photography, Portrait photography, Travel photography, Fashion photography and advertisement photography
- Introduction to editing and post-processing images;
- Photo Editing softwares - Adobe Lightroom or Photoshop.

Practical component: (30 hours)

- Students will make a photo feature on selected topics. Other methods will include lectures, class exercises of following photographs used by various social media and new paper and class discussions on mobile photography trends, as well as other significant debates on topical issues. The students should make photo features on a variety of topics.

Essential/recommended readings- as listed in the units

1. *Photography Changes Everything*, Marvin Heiferman, by Aperture Foundation, 2012

2. *Camera Lucida: Reflections on Photography*- Roland Barthes, Hill and Wang, 1980

3. *On Photography,* Susan Sontag – New York Review of Books, 1977

4. *Ways of Seeing,* John Berger, Penguin Books, 1972

5. *The Photography Book* by Editors of Phaidon Press, 30 April 2000.

Suggestive readings:

1. *Communication Technology for Development,* Pannu. P, Tomar A Yuki, IK international publishing House .2011

2. *All about Photography* by Ashok Dilwali, National Book trust, Year of Publication:2010 New Delhi.

3. *Practical photography* by O.P. SHARMA HPB/FC (14 March 2003)

4. *The Photographer's Guide to Light* by Freeman John Collins & Brown, 2005.

Journal/Magazine Subscriptions and Book Recommendations:

Journals- *Aperture, Photo works, British Journal of Photography, PDN, Amateur Photographer*

Magazines- *Outdoor Photography, Better Photography, National Geographic, Creative Image*

Books, catalogues, DVD materials

DISCIPLINE SPECIFIC ELECTIVE COURSE 6–(DSE-6): Media, Gender and Human Rights

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSE-6 Media, Gender and Human Rights	4	3	0	1	Passed Class XII with English	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To identify the limits and gaps in contemporary reporting and develop alternative approaches towards creating better democratic culture through media practice.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to comprehend the intricate interconnections between media narratives and questions around gender, class and caste.

SYLLABUS OF DSE-6:

UNIT – I (15 hours)

UNIT I: Conceptual Frameworks in Gender studies

- Feminist Theory (Liberal feminism, Radical feminism, Socialist feminism) Black Feminism, Dalit Feminism
- Masculinity, Queer Theory, Intersectionality
- Media and Gender - Theoretical concerns
- Media and Gender- Indian debates (Case studies)

UNIT – II (15 hours)

UNIT II: Media: Power and Contestation

- Public Sphere and its critique (Counter Publics)
- Public sphere of the disempowered?
- Media and Social Difference: Caste, Gender and Class

UNIT – III (15 hours)

UNIT III: Human Rights

- Human Rights- Theoretical perspectives,
- Critique, Universal Declaration of Human Rights
- Human Rights and Media
- Social movements and mass media
- Social media, political change, and human rights
- Case studies

Practical component: (30 hours)
The students must critically analyse the issues taken up by the main stream media on human rights and gender. The students should make a report of social movements and evaluate the role of media in highlighting and representing these issues in India.

Essential/recommended readings:

1. Street, John. *Mass media, politics and democracy.* Palgrave Macmillan, 2011.
2. Mackay, Hugh, and Tim O'Sullivan, eds. *The media reader: continuity and transformation.* SAGE Publications Limited, 1999. 13-28, 43-73, 287-305.
3. Asen, Robert &Brouwer, Daniel, 2001.*Counter Publics and the State,* SUNY Press. 1-35, 111-137
4. Ninan, Sevanti. *Headlines from the heartland: Reinventing the Hindi public sphere.* SAGE Publications Pvt. Limited, 2007.

Suggestive readings:

1. Curran, James. *"Rethinking mass communication, Cultural studies and communications".* London: Arnold (1996).
2. Berger, Arthur Asa. *Media and society: A critical perspective.* Rowman& Littlefield, 2012.Pg 9-21,167-180
3. Nichols, Joe& Price, John, *Advanced Studies in Media,* Thomes Nelson,1999. 42-55
4. Thirumal, P., and Gary Michael Tartakov. "India's Dalits search for a democratic opening in the digital divide." *International Exploration of Technology Equity and the Digital Divide:Critical, Historical and Social Perspectives* (2010): 20.
5. Balnaves, Mark, Stephanie Donald, and Brian Shoesmith*. Media theories and approaches: A global perspective*. Palgrave-Macmillan. 2009 (pg No. 3-10, 11-34, 35-53)
6. D. Ravi kumar, *"The Unwritten writing: Dalits and the Media"* in Rajan, Nalini, ed. 21st century journalism in India. SAGE Publications India, 2007.61-78
7. Menon, B. "Social Movements and the Mass Media", in Chandhoke, Neera, and Praveen Priyadarshi, eds. *Contemporary India: economy, society, politics.* Pearson Education India, 2009. 156-169
8. Rajagopal, Arvind, ed. *The Indian Public Sphere: Readings in Media History*. New Delhi:Oxford University Press, 2009. 278-290.
9. Bannerjee, Menon& Priyameds. *Human Rights, gender and Environment,* Pearson & Co. 2010
10. Nanda, V. (2016) *Tinka Tinka Dasna*: Tinka Tinka Foundation: ISBN 978-93-5265-730-8, Pages 31-60 (translated by Nupur Talwar)
11. Menon, Nivedita. *Seeing like a Feminist.* Penguin UK, 2012.
12. Rege, Sharmila. *"A Dalit feminist standpoint*. "In SEMINAR-NEW DELHI-, 1998. pp. 47-52.
13. Teltumbde, Anand. *Dalits: Past, present and future*. Routledge India, 2016.p16-33

14. Paul, Subin, and David O. Dowling. *"Digital Archiving as Social Protest: Dalit Camera and the mobilization of India's "Untouchables"."* Digital Journalism 6, no. 9 (2018): 1239-1254.
15. Balasubramaniam, J. *"Dalits and a Lack of Diversity in the Newsroom."* Economic and Political Weekly (2011): 21-23.

Common Pool of Generic Electives (GE) Courses for EVEN Semesters

NOTE: The Generic Electives for the EVEN SEMESTERS will also run for Semester IV students.

SEMESTER -V

[UG Programme for Bachelor in Journalism (Honours) degree in three years]

DISCIPLINE SPECIFIC CORE COURSE 13- (DSC-13) : Global Media and Politics

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 13: Global Media and Politics	4	3	0	1	Passed Class XII with English	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To get an over view of the politics of news dissemination and the dynamics of reporting international issues and events. To understand the use of media by different countries during war times. To grasp the turning points and changing boundaries of journalism with the evolution of technology.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to comprehend the impact of globalization on media and cultural implications.

SYLLABUS OF DSC-13:

UNIT – I (15 hours)

UNIT I: Media and International Communication

- Propaganda in the inter-war years: Nazi Propaganda
- Radio and international communication

- Media during the Cold War, Vietnam War, Disintegration of USSR;
- Radio free Europe, Radio Liberty and Voice of America
- Communication debates: NWICO, McBride Commission and UNESCO
- Unequal development and Third World concerns: North-South, Rich – Poor

UNIT – II (15 hours)
UNIT II: Conflict and Rise of Global Media

- World Wars and Media Coverage post 1990: Rise of Al Jazeera
- The Gulf Wars: CNN's satellite transmission, embedded Journalism
- 9/11 and implications for the media

UNIT – III (15 hours)
Unit III: Media and Cultural Globalization

- Cultural Imperialism, Cultural politics: media hegemony and
- Global cultures, homogenization, Local/Global, Local/Hybrid
- Discourses of globalization: barrier–free economy, digital divide
- Media conglomerates and monopolies: Ted Turner/Rupert Murdoch
- Global and regional integrations: Zee TV as a Pan-Indian Channel; Bollywood Entertainment: Local adaptations of global programmes: KBC/Big Boss etc.

Practical component: (30 hours)
The students will prepare case studies of the media at various points in time and highlight the turning points and changing boundaries of journalism during each evolving phase of the history of the media. The students will also analyse the changing content of media for international communication in the pre and post globalization phases. The students must compare the entertainment and other cultural products produced by international giants and media conglomerates.

Essential/recommended readings:

1. Yahya R. Kamalipour and Nancy Snow. *War, Media and Propaganda-A Global Perspective,* Rowman and Littlefield Publishing Group, 2004.

2. Communication and Society, Today and Tomorrow *"Many Voices One World"* UNESCO Publication, Rowman and Littlefield publishers, 2004.

3. Barbie Zelizer and Stuart Allan. *Journalism after 9/11*, Taylor and Francis Publication, 2012.

4. Stuart Allan and Barbie Zelizer. *Reporting war : Journalism in war time*, Routledge Publication, 2004.

5. Lee Artz and Yahya R. Kamalipor. *The Globalization of Corporate Media Hegemony*, New York Press, 2003.

6. Zahida Hussain and Vanita Ray. *Media and communications in the third world countries,* Gyan Publications, 2007.

Suggestive readings:

1. Choudhary, Kameswar (ed) *Globalisation, Governance Reforms and Development in India*, Sage, New Delhi, 2007.

2. Yadava, J.S, *Politics of news*, Concept Publishing and Co.1984.

3. Daya Kishan Thussu, *War and the media: Reporting conflict 24x7*, Sage Publications, 2003.

4. Patnaik, B.N &Imtiaz Hasnain (ed). *Globalisation: language, Culture and Media,* Indian Institute of Advanced Studies, Shimla, 2006.

5. Monroe, Price. *Media Globalisation' Media and Sovereignty,* MIT press, Cambridge, 2002.

6. Singh, Yogendra. *Culture Change in India: Identity and Globalisation*, Rawat Publication, New Delhi, 2000.

7. Lyn Gorman and David McLean. *Media and Society into the 21st Century: A Historical Introduction.* (2nd Edition) Wiley-Blackwell, 2009 .pp.82-135, 208-283.

DISCIPLINE SPECIFIC CORE COURSE-14 (DSC-14) : Development Communication

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 14: Development Communication	4	3	0	1	Passed Class XII with English	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To develop an understanding and sensitivity towards developmental concerns.
- To understand the issues and factors that help in development through effective tools of communication.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be equipped with critical skills to understand the importance of effective development communication strategies to spread development messages among the poor and weaker sections of society.

SYLLABUS OF DSC-14:

UNIT – I (15 hours)

UNIT 1: Introduction to Development Communication

- Development – Genesis, Meaning, Concept & Measurement (PQLI, HDI, GDI)
- Economic Growth vs. Development

- Human Development
- Development as Freedom
- Models of Development – Basic Needs, Nehruvian, Gandhian Model
- Development communication: Concept and approaches - Diffusion of innovation, Empathy, Magic multiplier
- Paradigms of development: Dominant paradigm, dependency, alternative/new paradigm
- Sustainable Development
- Gender and development
- Development support communication – Definition, genesis, Woods triangle

UNIT – II (15 hours)

UNIT 2: Role of Media in Development Communication

- Use of folk media for development
- Overview and Critical Appraisal of Development Communication Programmes of All India Radio and Doordarshan: Radio Rural Forum, Farm & Home Unit, Krishi Darshan, SITE, Kheda Communication Project.
- Case Studies of Community Video: SEWA, Video Volunteers and Community Radio in India
- ICT for development, e-governance, e-chaupal, national knowledge network
- Using New Media Technologies for Development
- Strategies for designing messages for Print, Radio, Television, New media.

UNIT – III (15 hours)

UNIT 3: Communication for Development and Social Change

- Information needs in rural areas; rural newspapers
- Critical appraisal of mainstream media's reporting of rural problems and issues

- Tribal society: Features, Information needs, Communication Programmes
- Role of development agencies and NGOs in development communication
- Development support communication endeavours in India: Programmes and Communication Strategies
- Health & Family welfare: National Rural Health mission; Ayushman Bharat Yojana.
- Poverty: Jan Dhan Yojna; MGNREGA.
- Education: Beti Bachao Beti Padhao; Mid-day meals scheme.

Practical component: (30 hours)

Students under the guidance of the faculty must undertake visits to mohalla clinics, NGOs, Women's Self-Help groups, Special schools for underprivileged students and other such initiatives in the city to develop content for blogs/ newsletters/magazines from the visits. Interaction with rural journalists and video volunteers (eg. Khabar Lehariya) must be arranged. The students must participate pro-actively to design and execute a development project for a near by village with development support communication techniques.

Essential/recommended readings:

1. Rogers Everett: *Communication and Development- Critical Perspective*, Sage, New Delhi, 2000

2. Srinivas R. Melkote & H. Leslie Steeves: *Communication for Development in The Third World*, Sage Publications, 2001

3. Belmont CA: *Technology Communication Behavior*, Wordsworth Publication, New Delhi, 2001.

4. D V R Murthy: *Development Journalism, What Next?* Kanishka Publication, New Delhi, 2007.

5. Amartya Sen: *Development as freedom*, Alfred A Knopf, New York, 1999.

Suggestive readings:

1. UNDP: Human Development Report (published every year), Oxford University Press, New Delhi.

2. *World Bank: World Development Report* (published every year) Oxford University Press, New Delhi.

3. Wilbur Schramm: *Mass Media and National Development- the role of information in developing countries*, UNESCO/ Stanford University Press, 1964.

4. Ghosh & Pramanik: *Panchayat System in India*, Kanishka Publication, New Delhi, 2007.

5. Shivani Dharmarajan: *NGOs as Prime Movers*, Kanishka Publication, New Delhi, 2007.

6. What Do We Mean By Development: An Article by Nora C Quebral in *International Development Review*, Feb, 1973, P-25.

DISCIPLINE SPECIFIC CORE COURSE 15- (DSC-15) : Media Ethics and the Law

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 15: Media Ethics and the Law	4	3	1	0	Passed Class XII with English	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To understand the contemporary media practices through contemporary debates.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to grasp the nuances and the legal provisions laid down in the Constitution of India.

SYLLABUS OF DSC-15:

UNIT – I (15 hours)

UNIT I: Ethical framework and media practice

- Freedom of expression (Article 19(1) (a) and Article 19(1)2)
- Freedom of expression and defamation- Libel and slander, Issues of privacy and surveillance in society
- Right to Information Idea of Fair Trial/Trial by Media
- Issues of Copyright

- Media ethics and cultural dependence
- Live reporting and ethics Legality and Ethicality of Sting Operations,
- Phone Tapping etc. Ethical issues in Social media (IT Act 2000, Sec 66 A and the verdict of The Supreme Court)

UNIT – II (15 hours)

UNIT II: Representation, Regulation and ethics

- Advertisement and Women
- Pornography related laws and case studies- Indecent representation of Women (Prohibition) Act,1986 and rules 1987, Protection of Women against Sexual Harassment Bill, 2007, Sec 67 of IT Act 2000 and 292 IPC etc
- Regulatory bodies, codes and ethical guidelines
- Self-regulation, media content- Debates on morality and accountability: taste, culture and taboo, censorship and media debates

UNIT – III (15 hours)

UNIT III: Media and Social Responsibility

- Media reportage of marginalized sections- children, Dalits, tribals, gender, differently-abled, old-aged persons.
- Media coverage of violence and related laws - inflammatory writing (IPC 353), Sedition- incitement to violence, hate Speech.

Practical component (if any) - NIL

Essential/recommended readings::

1. Thakurta, Paranjoy Guha, *Media Ethics*, Oxford University Press, 2009

2. Barrie mc Donald and Michel petheran *Media Ethics*,mansell, 1998.

3. Austin Sarat *Where Law Meets Popular Culture* (ed.), The University of Alabama Press, 2011.

4. Vikram Raghvan, *Communication Law in India*, Lexis Nexis Publication, 2007

5. Iyer Vekat, *Mass Media Laws and Regulations in India*-Published by AMIC, 2000

6. William Mazzarella, Censorium: *Cinema and the Open Edge of Mass Publicity*, 2013

Suggestive readings:

1. Raminder Kaur, William Mazzarella, *Censorship in South Asia: Cultural Regulation from Sedition to Seduction*, 2009

2. Linda Williams, *Hard Core: Power, Pleasure, and the "Frenzy of the Visible*, 1999

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Common Pool of Discipline Specific Elective (DSE) Courses for Semester V

DISCIPLINE SPECIFIC ELECTIVE COURSE 7–(DSE-7): Media and Audiences

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSE-7 Media and Audiences	4	3	0	1	Passed Class XII with English	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To familiarize students with the diversity of media audiences. To make the students understand the importance of target audience and audience as consumers of varied content on a variety of media and social media platforms.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to generate content and messages for different audiences on various media platforms.

SYLLABUS OF DSE-7:

UNIT – I (15 hours)

UNIT I: Understanding Media Audiences

- Who are media audiences?

- History of Early Audiences
- Parameters of audiences – politics, religion, race, class, gender, nation
- Homogenous and heterogeneous audiences
- Contesting 'Audiences'

UNIT – II (15 hours)

UNIT II: Sociology of Media Audiences

- Passive and Active Audience - Perspectives
- Ball –Rokeach and DeFleur's dependency theory
- Symbolic Interactionism, interpretive communities
- Post-modern audiences
- Commodification of audiences
- Children as audiences
- Audience ratings and measurement and ethnographies

UNIT – III (15 hours)

UNIT III: New Media Audiences and Contemporary Issues

- 'Old' audiences to 'New' media audiences – mass to interactive
- Mapping Audiences of Digital Technologies - Music, Books, TV, Films, Video Digital news audience – active, interactive, creative
- New media ecosystems: 'audience' subjectivity to 'user subjectivity'
- Issues of privacy, tracking audiences, data mining, authenticity, challenges for audience research

Practical component: (30 hours)
The students must analyse the demographic profile of audiences of different media and social media platforms. They must map the content preferences of digital audiences and compare audience of old media and new media.

Essential/recommended readings:

1. *Media Studies: Content, Audiences, and Production,* edited by Pieter Jacobus Fourie, JUTA, 2006
2. *Media Audiences: Effects, Users, Institutions and Power,* edited by John L. Sullivan, Sage, 2012
3. *The Handbook of Media Audiences,* Virginia Noghtingale, Blackwell, 2011
4. *Media and Audiences: New Perspectives,* Karen Ross and Virginia Nightingale, OUP, 2003
5. *Satellite Television: An Impact on Social Participation,* Sabharwal, Tarjeet, ISBN 978-81-8457-064-9, Kanishka Publishers, 2008

Suggestive readings:

1. *Media Institutions and Audiences:* Nick Lacey, Palgrave 2002

DISCIPLINE SPECIFIC ELECTIVE COURSE 8–(DSE-8): Sports Journalism

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSE-8 Sports Journalism	4	3	0	1	Passed Class XII with English	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To familiarize students with the coverage of sports by different types of media platforms in India. To help the students to grasp the sports terminologies and to use them in a lucid and simple style while reporting the game to mass audiences.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to understand the basics of Sports in India and list down various policy making bodies functioning in India & abroad and demonstrate abilities to do sports reporting for print and electronic media.

SYLLABUS OF DSE-8:

UNIT – I (15 hours)

Unit 1: Introduction to Sports

- Sports in India: A Historical Perspective Sports Journalism: Concept & History
- Major national and international sports events Profile of outstanding sports personalities

UNIT – II (15 hours)

Unit 2: Sports Policymaking

- Sports regulatory/ governing bodies in India (Ministry of Sports, SAI, BCCI, IHA, etc)
- International Sports Organisations (FIFA, IOC, etc)
- Sports Budget by Indian Government

UNIT – III (15 hours)

Unit 3: Sports Reporting

- Sports Coverage by Print Media (Sports News, Sports Photography, Sports Features, Interviews)
- Sports Magazines
- Sports Coverage by Television (Sports TV Channels, Commentary & Broadcasting on TV, Special Programmes on Sports, Live Telecasts, Writing Sports News for TV) Sports Coverage by Radio (Commentary & Broadcasting on Radio, writing sports news for radio)
- Sports Newsroom

- Gender Neutral Reporting

Practical component: (30 hours)

The students shall prepare a comprehensive report on the coverage of various sports in newspapers and broadcast media. The students must visit a sports newsroom for reporting live telecasts and commentary on radio.

Essential/recommended readings-

1. Stofer, Kathryan T. *Sports Journalism: An Introduction to Reporting and Writing*, Rowman & Littlefield Publishers, 2019.
2. Richards, Huw. *Routledge Handbook of Sports Journalism*, Taylor and Francis, 2020.

Suggestive readings:

1. Srinivas Rao. *Sports Journalism*, Khel Sahitya Kendra K.S.K. Publishers, 2009

2. Prasidh Kumar. *Sports Journalism*. Apple Books, 2010

3. Phil Andrews. *Sports Journalism: A Practical Introduction*, Sage Publications, 2014

DISCIPLINE SPECIFIC ELECTIVE COURSE 9–(DSE-9): Folk Media and Communication

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSE-9 Folk Media and Communication	4	3	0	1	Passed Class XII with English	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To create awareness among students about the definition of folk, complex relationship to Indian social structure, transformations in folk media practice and orient them towards effective and hybrid use of folk media.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to explore different folk media forms of development projects. The students will be able to understand the importance of folk media in addressing significant issues in the Indian context.

SYLLABUS OF DSE-9:

UNIT – I (15 hours)

UNIT I: Folk Media and its Forms

- Understanding Oral Tradition and Folk as 'Medium'
- Folk Media: Concept and Characteristics
- Folk Media: 'People as Producers'
- Gender and caste in folk
- Forms of Folk Media: Theatre, Music, Dance and other Narrative forms
- Objectives of Folk Media: Aesthetic expression, Expressional and Communicational
- Folk Media: Scope and Limitations

UNIT – II (15 hours)

UNIT II: Folk media and Development

Government Agencies and Promotion of Folk Artists: Song Drama Division, Publications Division, The Directorate of Advertising and Visual Publicity (DAVP) and Ministry of Rural Development.

UNIT – III (15 hours)

UNIT III: Culture and Folk Media

- Conceptualizing Folk culture and folk media
- Influence of Modern technology on Folk Communication: (A Comparative understanding)

- Folk Communities: Art for whose sake? (In the context of 'Art for Art's sake' debate)

Practical component: (30 hours)
The students will visit nearby rural areas in small teams and prepare a report on the use of folk media to address issues of health, hygiene, nutrition, illiteracy and other social issues by rural people.

Essential/recommended readings:

1. Chatterji, Roma. "The category of folk." *The Oxford India Companion to Sociology and Social Anthropology 1* (2003): 567-97.
2. Singer, Melton *Traditions in India: Structure and Change*, American Folk society, 1957
3. Kothari, Komal. "On Folk Narratives." *Indian Folklife* 16 (2004).
4. Inglis, David. "Theorising Media: Power, Form and Subjectivity." (2013): 87-89.
5. Dissanayake, Wimal. "New wine in old bottles: Can folk media convey modern messages?." *Journal of Communication* 27, no. 2 (1977): 122-124.
6. Ghosh, Sampa, and Utpal Kumar Banerjee. *Indian puppets.* Abhinav Publications, 2006.
7. Rege, Sharmila. "Conceptualising Popular Culture:'Lavani' and 'Powada' in Maharashtra." *Economic and political weekly* (2002): 1038-1047
8. Ghosh, Arjun. *A History of the Jana Natya Manch: Plays for the People.* SAGE Publications India, 2012.
9. McCormack, Thelma. "Folk culture and the mass media." *European Journal of Sociology/Archives Européennes de Sociologie* 10, no. 2 (1969): 220-237.
10. Chatterji, Roma. "Event, image, affect: the tsunami in the folk art of Bengal." In *Suffering, Art, and Aesthetics*, pp. 75-98. Palgrave Macmillan, New York, 2014.
11. Inglis, David. "Theorising Media: Power, Form and Subjectivity." (2013): 87-89.
12. Hollander, Julia. *Indian folk theatres*. Routledge, 2007.
13. Parmar, Shyam *Traditional Folk Media in India* New Delhi: Geka Books 1975

14. Kumar, Harish. "Folk media and rural development." *Indian Media Studies Journal* 1, no. 1 (2006): 93-98.
15. Sherinian, Zoe C. *Tamil folk music as Dalit liberation theology*. Indiana University Press, 2014. 1-34

Suggestive readings:

1. Snodgrass, Jeffrey. "The future is not ours to see: puppetry and modernity in Rajasthan." *Journal of Anthropology* 69, no. 1 (2004): 63-88.
2. Mehrotra, Deepti Priya. *Gulab Bai: the queen of Nautanki theatre*. Penguin Books India, 2006. P 88-97, 198-208
3. Marcus, Scott. "Recycling Indian Film-Songs: Popular Music as a Source of Melodies for North Indian Folk Musicians." *Asian Music* 24, no. 1 (1992): 101-110
4. Pierre Bourdieu. *The Field of Cultural Production. Essays on Art and Literature.,* Columbia University Press, 1993.

Common Pool of Generic Elective (GE) Courses for ODD Semesters

NOTE: The Generic Electives for the ODD SEMESTERS will also run for Semester V students.

SEMESTER -VI

[UG Programme for Bachelor in Journalism(Honours) degree in three years]

DISCIPLINE SPECIFIC CORE COURSE-16 (DSC-16) : Social Media and Communication

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 16: Social Media and Communication	4	3	0	1	Passed Class XII with English	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To understand the dynamics of social media platforms and their significance in daily life.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to explore new avenues of internet mediated communication.

SYLLABUS OF DSC-16:

UNIT – I (15 hours)

UNIT I: Understanding Social Media: Nature and Concepts

- Definition of social media,
- Social, para-social and asocial nature of social media
- Social media concepts and theories

- Social media-Impersonal, interpersonal, hyper-personal
- Virtual Identity
- Evolution and rise of social media- a brief historical perspective
- Social network sites and logistics of interaction, features and characteristics
- Applications-politics, government, social support, democracy

UNIT – II (15 hours)

UNIT II: Use and relevance of Social media in Journalism

- Sources of news
- News aggregators
- News Consumption cultures-feedback and sharing
- Crowd sourcing, micro blogging
- Social Media Activism, hash-tag activism, Cultural polarisation
- Social Media Integration

UNIT – III (15 hours)

UNIT III: Social Media Marketing

- Social Media Marketing – Introduction
- Social Media Management – Strategies, Tools and Technologies
- Social Media Audience Measurement
- Case studies of successful social media marketing campaigns

Practical component: (30 hours)

The students will analyse the features of different social media platforms and understand the strategies of communicating on these platforms. The students can critically examine the social media campaigns of each social media platform. They can compare the marketing strategies of organisations/institutions for reaching out to target publics.

Essential/recommended readings:

1. Coban, and Baris, *Social Media and Social Movements: The Transformation of communication Patterns*, New York: Lexington, 2016
2. Fuchs Christian, *Social Media: A Critical Introduction*, London: Sage, 2014.
3. Lipschultz, and Harris Jeremy, *Social Media Communication: Concepts, Practices*, Data, Law, New York: Routledge, 2014.
4. Seargeant, Philip and Tagg, and Caroline, *The Language of social media: Identity and Community on the Internet*, New York: Palgrave Macmillan, 2014.

Suggestive readings:

1. Trottier, Daniel and Fuchs, and Christian, *social media, Politics and the state: protests, Revolutions, Riots, Crime and Policing in the* Age of Facebook, Twitter and You Tube, New York: Routledge, 2015.

DISCIPLINE SPECIFIC CORE COURSE-17 (DSC-17) : Introduction to Cinema Studies

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 17: Introduction to Cinema Studies	4	3	0	1	Passed Class XII with English from List A in CUET	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To historicize cinema as historically specific cultural forms.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to achieve a critical vocabulary about cinema which takes them beyond reading films as just entertainment.

SYLLABUS OF DSC-17:

UNIT – I (15 hours)

UNIT I: Language of Cinema

- Focus on visual Language: Shot, Scene, Mis-en-scene
- Deep focus, Continuity Editing, Montage,
- Diegetic and Non-Diegetic Sound; Off -Screen Sound; Sync Sound;
- The use of colour as a stylistic Element
- Difference between story, plot, screenplay

UNIT – II (15 hours)

UNIT II: History of Cinema

- Beginnings of Cinema (Photography to cinema)
- Soviet Cinema- Eisenstein and Pudovkin
- Classical Hollywood Cinema
- Italian Neorealism
- French New-Wave
- Beginnings of Indian cinema (Phalke, Nationalist movement and cinema)
- 1950s - Cinema and the Nation (Guru Dutt, Raj Kapoor)
- The Indian New-Wave
- Regional cinema formations
- Globalization and Indian Cinema

UNIT – III (15 hours)

UNIT III: Alternative Visions

- Third Cinema
- Non-Fiction Cinema
- Feminist Film Theory- Apparatus Theory and Male Gaze
- Auteur- Film Authorship with a special focus on Satyajit Ray or Hitchcock

Practical component: (30 hours)

Students can be encouraged to work on projects that correspond to various film movements in the world, analyze film clips, and undertake visits to film archives and produce journals / blogs as a collective project on films.

Suggested Class Screenings:

- *Rear Window* (1954) Director Alfred Hitchcock (Language of Cinema)
- *Battleship Potemkin* (1925) Director Sergei Eisenstein (Language of Cinema)
- *Man with a Movie Camera* (1929) Director Dziga Vertov
- *Shots from Lumiere Brothers*
- *Rome Open City (1945)* directed by Roberto Rosselini (Italian Neo Realism)
- *Breathless* (1960) Director Jean Luc Godard (French New Wave)
- *Pather Panchali (1955)* Director Satyajit Ray
- *Mandabi (1969)* Director Ousmane Sembane
- Clips from *The Hour of the Furnaces* (1968) Directors Gettino and Solanas, Films by Costa Gavras
- *Battle of Algiers* (1966) Director Gille Pontecorvo
- *Nishant (1975)* by Shyam Benegal/Aakrosh by Govind Nihalani (Indian New wave)
- *Pyaasa (1957)* by Guru Dutt
- *Mother India (1957)* by Mehboob Khan

- *Jagte Raho (1956)* Raj Kapoor

Essential/recommended readings:

1. Villarejo, Amy. *Film Studies : The Basics*, Routledge, 2006.(Unit I & II)

2. Vincendeau, Ginette. "European cinema" *World Cinema: critical approaches*, 2000. (For Unit III) 65-82)

3. Robert Stam, " Film Theory: An Introduction". Massachusetts & Oxford: Blackwell Publishers: 2000

4. Nowell-Smith.G, *The Oxford History of World Cinema. Oxford: Oxford University Press*, 1996

5. Duggal.V, Menon & Bhattacharya*. Film Studies: An Introduction,* Worldview Publications. 2019.

Suggestive readings:

1. Brockmann, Stephen. *A critical history of German film*. Vol. 93. Camden House.43-59, 2010

2. Paul Schrader —Notes on Film Noir in John Belton ed. *Movies and Mass Culture* New Brunswick, New Kersey: Rutgers University Press:pg.153-170, 1996

3. Srinivas, S. V. "Gandhian nationalism and melodrama in the 30s Telugu cinema. *"Journal of the Moving Image* 1, no. 1: 14-36, 1999

4. Velayutham, Selvaraj. *Tamil cinema: the cultural politics of India's other film industry*. Routledge, 2008. P 1-15, 58-75

5. Anandam P. Kavoori & Punanthambekar Eds. *Global Bollywood*, New York: New York University Press. 2008. Pages 17-41, 223-240

6. Mishra, Vijay. *Bollywood cinema: Temples of desire*. Routledge, 2013. chapter 3, chapter 4, Chapter 5

7. Ravikant."*Popular Cinephilia in North India: Madhuri shows the way* (1964–78)." Journalism Studies 16, no. 5 (2015): 637-650.

8. Andre Bazin, —*The Ontology of the Photographic Image|| from his book What is Cinema* Vol I Berekeley, Los Angeles and London: University of California Press: 1967, 9-16

9. Sergei Eisenstein, —*A Dialectic Approach to Film Form|| from his book Film Form: Essays in Film Theory* (Edited and Translated by Jay Leyda) San Diego, New York, London: A Harvest/Harcourt Brace Jovanovich, Publishers: 1977, 45-63

DISCIPLINE SPECIFIC CORE COURSE 18- (DSC-18) : Media Industry and Management

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 18: Media Industry and Management	4	3	0	1	Passed Class XII with English from List A in CUET	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To apprehend Media Economics, problems of finance, personnel, land, machinery etc.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to understand the emerging alternative online media platforms and their role in keeping spirit of free press alive.

SYLLABUS OF DSC-18:

UNIT – I (15 hours)

Unit I: Media Management Concepts and Issues

- Concept, origin and growth of media management, fundamentals of management, management school of thought
- Changing phases of media management
- Challenges and issues: finance, personnel, land, machinery etc.
- Media industry as manufacturers- Manufacturing Consent, news and content management.
- Market Forces, performance evaluation (TAM, TRP, BARC and HITS) and Market shifts Changing Ownership patterns

UNIT – II (15 hours)

Unit II: Media Economics

- Media Economics, Strategic Management and Marketing, Government-Media Interface Policies and regulations, FDI (policies & Practices)
- Issues of Paid news, lobbying, pressure group influence,
- Corporatization and Politicization of Media Capital inflow, Budgeting, Financial management, and personnel Management, Market forces

UNIT – III (15 hours)

UNIT III: Media Market: Contemporary Scenario

- Ethico–legal perspectives in Media management
- Regional media industry
- Alternative media forums and their management
- Case Studies -Indian and International Media Giants

Practical component (30 hours)

The students must undertake a case study examination of the Indian and International media giants and examine their management strategies.

Essential/recommended readings:

1. Vinita Kohli Khandekar, *Indian Media Business,* Sage, 2010.

2. Pradip Ninan Thomas, *Political Economy of Communications in India*, Sage, 2010

3. Lucy Kung, *Strategic management in media*, Sage, 2008

4. Dennis F. Herrick, *Media Management in the age of Giants*, Surjeet Publications, 2003

5. Jennifer Holt and Alisa Perren, (Edited) *Media Industries-History, Theory and Method*, Wiley- Blackwell, 2009

Suggestive readings:

1. John M. Lavine and Daniel B.Wackman, *Managing Media Organisations*, 1988

2. Robin Jeffrey, *India's Newspaper Revolution*, Oxford University Press, New Delhi, 2000

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Common Pool of Discipline Specific Elective (DSE) Courses for Semester VI

DISCIPLINE SPECIFIC ELECTIVE COURSE 10–(DSE-10): Media Automation

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSE-10 Media Automation	4	3	0	1	Passed Class XII with English	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To familiarize students with the interconnections between media and automation applications and the ethical issues associated with them. The students will understand the future of the media industries with the induction of AI and Robots.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to understand the nature of automation and artificial intelligence with special reference to media industries.
- They will be able to comprehend current trends and developments in news, advertising, social media and political communication with respect to the use of automation, AI, big data and the ensuing ethical challenges and issues.

SYLLABUS OF DSE-10:

UNIT – I (15 hours)

Unit I: Technologies, Terms and Concepts

- Big data and the algorithmic world
- Automation Technologies
- Algorithms: what are they, and why do they matter
- Automation in Media industry

UNIT – II (15 hours)

Unit II: Automation Applications

- Algorithmic journalism and computer assisted reporting
- News bots: automating news and information dissemination
- Digital Advertising and Algorithms
- Social Media Automation
- Political Campaigning and use of Data

UNIT – III (15 hours)

Unit III: Ethical Issues and Challenges

- Critical perspectives of AI, robots and ethics
- Human-machines communication
- Big Data, surveillance and privacy
- Fake news and open-source journalism

Practical component: (30 hours)
The students will prepare a comprehensive report on the media automation applications in the industry. They will write a critical report on the use of Artificial Intelligence and Robots in news and information dissemination.

Essential/recommended readings:

1. Gillespie, T. (2016). Algorithm. In B. Peters (Ed.), *Digital keywords: A vocabulary of information society and culture* (pp. 18-30). Princeton: Princeton University Press.

2. Striphas, T. (2012). What is an algorithm? *Culture Digitally*.
3. Beer, D. (2017). The social power of algorithms. Information, *Communication & Society*, 20(1), 1-13 (online first)
4. Napoli, P. M. (2014). On Automation in Media Industries: Integrating Algorithmic Media Production into Media Industries Scholarship. *Media Industries* 1(1).
5. Lokot, T., & Diakopoulos, N. (2015). News bots: Automating news and information dissemination on Twitter. *Digital Journalism*, 4(6), 682-699.
6. Woolley, S. C., & Howard, P. N. (2016). Political communication, computational propaganda, and autonomous agents. *International Journal of Communication*, 10, 9. [Introduction to a special issue: "Automation, Algorithms, and Politics"
7. Gunkel, D. J. (2012). Communication and artificial intelligence: Opportunities and challenges for the 21st century. *Communication+ 1*, 1(1), 1-25.
8. Gunkel, D. J. (2012). *The machine question: Critical perspectives on AI, robots, and ethics*. Cambridge: MIT Press.
9. Lewis, S. C., & Westlund, O. (2016). Mapping the human–machine divide in journalism. In T.Witschge, C. W. Anderson, D. Domingo, & A. Hermida (Eds.), *The SAGE handbook of digital journalism* (pp. 341-353). London: SAGE.
10. Kreiss, D. (2016). *Prototype politics: Technology-Intensive campaigning and the data of democracy.* Oxford: Oxford University Press.
11. Usher, N. (2016). *Interactive journalism: Hackers, data, and code.* Champaign, IL: University of Illinois Press.
12. Anderson, C. W. (2013). Towards a sociology of computational and algorithmic journalism. *New Media & Society*, 15(7), 1005-1021.
13. Lewis, S. C., & Usher, N. (2013). Open source and journalism: Toward new frameworks for imagining news innovation. *Media, Culture & Society*, 35(5), 602-619
14. Lewis, S. C., & Usher, N. (2014). Code, collaboration, and the future of journalism: A case study of the Hacks/Hackers global network. *Digital Journalism*, 2(3), 383-393.

15. McCoy, T. (2016, November 20). For the 'new yellow journalists,' opportunity comes in clicks and bucks. *The Washington Post.*

16. Boczkowski, P. (2016). Fake news and the future of journalism. *Nieman Journalism Lab*

17. Lewis, S. C., & Westlund, O. (2015). Big data and journalism: Epistemology, expertise, economics, and ethics. *Digital Journalism*, 3(3), 447-466

18. Dörr, K. N. (2015). Mapping the field of algorithmic journalism. *Digital Journalism*, 4(6), 700-722.

Suggestive readings:

1. Perlich, C. (2013, May 13). How big data touches YOU: Tales from the digital advertising world. Presentation given at the Governing Algorithms conference in New York.
2. Neff, G., & Nagy, P. (2016). Talking to bots: Symbiotic agency and the case of Tay. *International Journal of Communication*, 10, 17
3. Coddington, M. (2015). Clarifying journalism's quantitative turn: A typology for evaluating data journalism, computational journalism, and computer-assisted reporting. *Digital Journalism*, 3(3), 331-348.
4. Bucher, T. (2016). 'Machines don't have instincts': Articulating the computational in journalism. *New Media & Society*, 1461444815624182
5. Kraemer, F., Overveld, K. V., & Peterson, M. (2011). Is there an ethics of algorithms? *Ethics and Information Technology*, 13(3), 251-260

DISCIPLINE SPECIFIC ELECTIVE COURSE 11–(DSE-11): Development Journalism

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSE-11 Development Journalism	4	3	0	1	Passed Class XII with English	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To familiarize students with an understanding and sensitivity towards developmental concerns.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be equipped with skills to write development features and develop development material for different media platforms.

SYLLABUS OF DSE-11:

UNIT – I (15 hours)

UNIT I: Development and Development Journalism

- Models of development, major development paradigms -dominant paradigm. Alternative paradigm – participatory approach.
- Evolution of development journalism, agriculture extension, development support communication,
- Communication for social change, media advocacy, new age media, use of ICTs for development, Participatory development journalism

UNIT – II (15 hours)

UNIT II: Development stories:

- Researching and writing a development story,
- Development with a human face,
- Packaging of the development story,
- Development feature writing,
- Conflict of interests,
- mobilizing support for development.

UNIT – III (15 hours)

UNIT III: Media specific development coverage:

- The differences in approach between print and broadcast development journalism,
- packaging attractive ideas, visuals and documentation,
- Folk media,
- community radio for local development,
- Niche, rural and tribal communication media, newspapers and magazines
- Development communication agencies and websites.
- Critical appraisal of mainstream media's reporting of development issues.

Practical component: (30 hours)

Students under the guidance of the faculty must undertake visits to mohalla clinics, NGOs, Women's Self-Help groups, Special schools for underprivileged students and other such initiatives in the city to develop content for blogs/ newsletters/magazines from the visits. Interaction with rural journalists and video volunteers (eg. Khabar Lehariya) must be arranged too.

Essential/recommended readings:

1. A Manual of Development Journalism – Alan Chalkley, Vikas Publications, 1970.

2. Participatory Communication, Working for change and development – Shirley A .White, K Sadanandan Nair and Joseph Ascroft, Sage, 1994.

3. Development Communication and Media Debate – Mridula Menon, Kanishka Publsihers, 1997.

4. India, the Emerging Giant – Arvind Panagariya, Oxford University Press, 2008.

5. Participatory Video, Images that Transform and Empower – Shirley A. White (Editor), Sage Publications, 2003.

6. The Art of Facilitating Participation – Shirley A . White (Editor), Sage Publications, 1999.

7. Television and Social Change in Rural India – Kirk A. Johnson, Sage Publications, 1999

8. *Communication, Modernization and Social Development.* K. Mahadevan, Kiran Prasad, Ito Youichi and Vijayan K. Pillai.

Suggestive readings:

1. Everybody Loves a Good Drought. Stories from India's Poorest Districts, P. Sainath, 2000.

2. Designing messages for development communication: An audience participation-based approach (communication and human values).by Bella M Mody, Sage Publications, 1991.

3. Development Journalism/Communication: The Status of the Concept, Christine L. Ogan, Sage, 1982

4. Development Journalism: What Next? An Agenda For The Press, D. V. R. Murthy, Kanishka Publishers Distributors, 2006

5. Communication for Development: theory and practice for empowerment and social justice, Melkote, Srinivas R, Steeves, H. Leslie, Sage (New Delhi), 2015

DISCIPLINE SPECIFIC ELECTIVE COURSE 12–(DSE-12): Research Methodology for Media

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSE-12 Research Methodology for Media	4	3	0	1	Passed Class XII with English	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To familiarise students on how to write a research paper and a research report.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to write a research proposal and undertake research. T
- Students will be equipped to work as researchers independently as well as for various organisations.

SYLLABUS OF DSE-12:

UNIT – I (15 hours)

UNIT I: Introduction to Research and Basic Elements

- Definition, basic and applied research,
- Scientific approach, theoretical framework,
- Steps of research: selection of the problem, review of literature, statement of hypothesis and research question, methodology and methods, research design, sampling, data analysis and interpretation, presentation of results,
- Replication and ethical perspectives of mass media research
- Concepts and constructs,
- Independent and dependent variables,
- Nature of Measurement, levels of measurement, measurement scales, Specialized Rating Scales, Reliability and Validity, Research question and Hypothesis

UNIT – II (15 hours)

UNIT II: Sampling and Methods

- Universe, population, need for sampling, sampling methods: probability and non-probability, representativeness of the samples, sampling error, sample size
- Quantitative and Qualitative Techniques: content analysis, survey method, audience and readership surveys, designing questionnaires, observation methods, experimental research, case studies, field experiments, focus groups, intensive interviews, longitudinal research, Historical research, Ethnographies, Textual analysis, Discourse analysis

UNIT – III (15 hours)

UNIT III: Media Research Approaches

- Representational approach
- Media and the senses
- Academic writing, Citations, Bibliography

Practical component: (30 hours)

The students will present and submit a research proposal in his/her area of interest under the guidance of the faculty.

Essential/recommended readings-

1. Wimmer, Roger, D and Dominick, Joseph,R. *Mass Media Research,* Thomson Wadsworth, 2006, pgs1-60; 65-81;83-98.

2. Arthur Asa Berger. *Media Research Techniques*, Sage Publications, 1998.

3. John Fiske. *Introduction to Communication Studies*, Routledge Publications,1982.

4. David Croteau and William Hoynes. *Media/Society: Industries, Images and Audiences*, Forge Press (For Case Studies) Amazon,2002.

5. Hall, Stuart. Representation: Cultural Representations and Signifying Practices. New Delhi, Sage Publications, 1997.

6. Mankekar, Purnima. *Screening Culture, Viewing Politics*. Duke; 1999.

7. Buck-Morss, Susan. 1994. "The Cinema Screen as Prosthesis of Perception: A Historical Account." In The Senses Still, ed. Nadia Seremetakis, Chicago: University of Chicago Press (Chapter 4).

8. Hirschkind, Charles. 2006. The Ethical Soundscape: Cassette Sermons and Islamic Counterpublics. New York: Columbia University Press.

Suggestive readings-

1. Kothari, C.R. *Research Methodology: Methods and Techniques*, New Age International Ltd. Publishers, 2004, pgs1-55; pp. 95-120.

2. Bertrand, Ina and Hughes, Peter. 2005. *Media Research Methods; Audiences, institutions, Texts*. New York; Palgrave

Common Pool of Generic Elective (GE) Courses for EVEN Semesters

NOTE: The Generic Electives for the EVEN SEMESTERS will also run for Semester VI students.

Semester-IV
DEPARTMENT OF URDU

COURSES OFFERED BY DEPARTMENT OF URDU
Category I

(Provide the details of the Discipline Specific Courses offered by your department for the UG Programme with your discipline as the Single Core Discipline)

[UG Programme for Bachelor in Urdu (Honours) degree in three years]

DISCIPLINE SPECIFIC CORE COURSE -10 (DSC-10) – : URDU QASIDA

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Urdu Qasida	4	3	1	0	Urdu in class XII or X	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- To give knowledge of classical poetry particularly Qasida, which is written specially in praise of kings and their throne, kingdom, military squad etc.
- To give knowledge of such poetic form which is not in use in these days?
- To give a glimpse of classical literature with special reference to Urdu Qasida.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Knowledge about classical form of poetry Qasida.
- Appreciate nuances of Qasida.
- Demonstrating conceptual and textual understanding.

SYLLABUS OF DSC-10

UNIT – I (15 Hours)

1. Qasida ka Fan
2. Qaside ke Ajzaye Tarkibi
3. Urdu mein Qaside ka Aaghaz-o-Irteqa

UNIT – II (15 Hours)

1. Sauda ki Qasida Nigari
2. Zauq ki Qasida Nigari

UNIT – III (15 Hours)

1. Uth Gaya Bahman-o-de ka chamanistan se amal (Sauda)
2. Zahe Nishat agar kijiye use tahreer (Zauq)

Practical component (if any) - NIL

Essential/recommended readings

1. Intekhab-e-Qasaid – Uttar Pradesh Academy

Suggestive readings

1. Urdu me Qasida Nigari – Abu Mohd Sahar
2. Urdu Qasida Nigari ka Tanqeedi Jaeza – Mahmood Ilahi
3. Sher-ul-Hind – Abdus Salam Nadvi
4. Sauda – Sheikh Chand
5. Mirza Mohmmad Rafi Sauda – Khaliq Anjum
6. Kulliyat-e-Zauq – Tanveer Ahmad Alvi

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 11 (DSC-11): URDU MASNAVI

CREDIT DISTRIBUTION, ELIGIBILITY AND PREREQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Urdu Masnavi	4	3	1	0	Urdu in Class XII or X	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- To give knowledge of classical society of India through Urdu Masnavi.
- To give a glimpse of classical literature with special reference to Urdu Masnavi.
- Through Urdu Masnavi student can learn about lifestyle, rituals and customs of Indian society of 18th and 19th centuries.

Learning Outcomes

The Learning Outcomes of this course are as follows:

- Demonstrating conceptual and textual understanding.
- Knowledge about classical form of poetry Masnavi.
- Appreciate nuances of Masnavi.

SYLLABUS OF DSC -11

UNIT – I (15 Hours)

1. Masnavi ka Fan
2. Urdu Masnavi ka Aaghaz-o-Irteqa
3. Dakan me Urdu Masnavi ka Irteqa
4. Shumali Hindme Urdu Masnavi ka Irteqa

UNIT – II (15 Hours)

1. MeerHasan ki Masnavi Nigari
2. Pandit Daya Shankar Naseem ki Masnavi Nigari
3. Nawab Mirza Shauq ki Masnavi Nigari

UNIT – III (15 Hours)

1. Masnavi Sehar-ul-Bayan – Meer Hasan (Aaghaz-e-Dastan se Paristan me jane tak)
2. Gulazar-e-Naseem – Naseem (Ibteda se Pahunchna Tajulmaluk ka ek Andhe ke Takiye par tak)
3. Zahar-e-Ishq – Mirza Shauq (Mukammal)

Practical component (if any) - NIL

Essential/recommended readings

1. Urdu Masnavi ka Irteqa – Abdul Qadir Sarwari
2. Urdu Masnavi Shumali Hind mein – Gyan Chand Jain
3. Urdu Masnavi ka Irteqa Shumali Hind mein – Syed Mohammad Aqil
4. Urdu ki Teen Masnaviyan – Khan Rasheed
5. Masnaviyat-e-Shauq – Rasheed Hasan Khan
6. Masnavi Sehar-ul-Bayan - Rasheed Hasan Khan
7. Masnavi Gulzar-e-Naseem - Rasheed Hasan Khan
8. Tareekh-e-Masnviyat-e-Urdu – Syed Jalaluddin

Suggestive readings (if any)

DISCIPLINE SPECIFIC CORE COURSE– 12 (DSC-12): POET GHALIB

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Poet Ghalib	4	3	1	0	Urdu in Class XII or X	Nil

Matn ki Tadrees

Learning Objectives

The Learning Objectives of this course are as follows:

- To give knowledge of speciality of Mirza Ghalib as a poet and his writings.
- To develop Understanding of poetry and its importance for development of social consciousness.

Learning Outcomes

The Learning Outcomes of this course are as follows:

- Knowledge about classical poet Ghalib.
- Appreciate the importance of Ghalib in Urdu poetry.
- Explain the couplets of Ghalib.

SYLLABUS OF DSC-12

UNIT – I (15 Hours)

1. Ghalib: Sawaneh aur Shakhshiyat
2. Ghalib ki Ghazalgoi ki Aham Khususiyat
3. Tasauvvuf aur Ghalib
4. Ghalib ki Ishqiya Ghazalgoi
5. Ghalib ki falsafiyana Ghazalgoi

UNIT – II (15 Hours)

1. Ghalib ki Shairi meinrang-e-Zarafat
2. Ghalib ki Inferadiyat
3. Ghalib ki ghazal mein izahar-e-gham
4. Mohasin Kalam-e-Ghalib
5. Ghalib Haivan-e-Zareef

UNIT – III (15 Hours)

1. Diwan-e-Ghalib (Radeef Alif) (Matn ki Tadrees)

Practical component (if any) - NIL

Essential/recommended readings

1. Diwan-e-Ghalib
2. Yadgar-e-Ghalib – Altaf Husain Hali
3. Ghalib Shakhshiyat-o-Shairi – Rasheed Ahmad Siddiqui
4. Ghalib Taqleed aur Ijtihad – Khursheedul Islam
5. Irfan-e-Ghalib – Aal Ahmad Suroor
6. Mohasin-e-Kalam-e-Ghalib – Abdurrahman Bijnori
7. Atraaf-e-Ghalib – Syed Abdullah
8. Naqd-e-Ghalib – Khumaruddin Ahmad Aarzoo
9. Ghalib Shanasi – Z. Ansari

Suggestive readings

Category II

(MultidisciplinaryCourses for Undergraduate Programme of study with Urdu discipline as one of the Core Disciplines)

(For e.g. courses for B.A. Programmes with Urdu (discipline's name) as Major discipline)

DISCIPLINE SPECIFIC CORE COURSE (DSC-7): URDU FICTION-NOVEL

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Urdu Fiction-Novel	4	3	1	0	Urdu in class X or XII	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- To give knowledge of contemporary society of India through Urdu Novel.
- To give a glimpse of modern literature with special reference to Urdu Novel.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Understand the importance of novel in development of Urdu fiction.
- Express knowledge about the contribution of Haider and Bedi for Urdu fiction.
- Critically analyze the text prescribed with.

SYLLABUS OF DSC-7

UNIT – I (15 Hours)

1. Novel ki Tareef, Fan aur Ajzaye Tarkeebi
2. Urdu Novel ka Aaghaz-o-Irteqa
3. Qurratulain Hyder ki Novel Nigari
4. Rajinder Singh Bedi ki Novel Nigari

UNIT – II (15 Hours)

1. Agle Janam Mohe Bitya na Kijiyo (Qurratulain Hyder)
2. Ek Chadar Maili Si (Rajinder Sing Bedi)

UNIT – III (15 Hours)

1. Agle Janam Mohe Bitya Na Kijiyo ka Tanqidi-o-Tajziyati Motala'a
2. Ek Chadar maili si ka Tanqidi-o-Tajziyati Motala'a

Practical component (if any) - NIL

Essential/recommended readings

1. Agle Janam Mohe Bitya na Kijiyo (Novelette) – Qurratulain Hyder
2. Ek Chadar Maili Si (Novelette) – Rajinder Singh Bedi

Suggestive readings

1. Dastan se Afsane Tak – Waqar Azeem
2. Urdu Nasra ka Fanni Irteqa – Dr. Farman Fatehpuri
3. Urdu Fiction – All Ahmad Suroor
4. Qurratulain Hyder: Shakshiyat aur Fan – Sahab Ali
5. Qurratulain Hyder Aur Novel ka Jadeed Fan
6. Qurratulain Hyder Ek Motala'a – Irteza Karim

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

(Multidisciplinary Courses for Undergraduate Programme of study with Urdu discipline as one of the Core Disciplines)

(For e.g. courses for B.A. Programmes with Urdu (discipline's name) as Major discipline)

DISCIPLINE SPECIFIC CORE COURSE – 8 (DSC-8): CLASSICAL PROSE

CREDIT DISTRIBUTION, ELIGIBILITY AND PREREQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Classical Prose	4	3	1	0	Urdu in Class XII or X	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- To give knowledge of Classical society of India through Classical Poetry.
- To give knowledge of literature such as classical Ghazal, Qasida, Marsia, and Masnvi.
- To give a glimpse of classical literature with special reference to Urdu Poetry.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Understand the importance of dastan in development of Urdu fiction.
- Express knowledge about the contribution of M and Bedi for Urdu fiction.
- Critically analyze the text prescribed with.

SYLLABUS OF DSC- 8

UNIT – I (15 Hours)

1. Urdu Nasr ke Ibtedai Naqoosh

2. Urdu Nasr ka Irteqa
3. Mir Amman ki Nasr Nigari

UNIT – II (15 Hours)

1. Insha Allah Khan Insha ki Nasr Nigari
2. Ghalib ki Khutoot Nigari
3. Sair Pahle Darvesh ki – Mir Amman (Matn ki Tadrees)

UNIT – III (15 Hours)

1. Rani Ketki ki Kahani – Insha Allah Khan (Matn ki Tadrees)
2. Intekhab-e-Khutoot-e-Ghalib – Ghalib
   Majrooh ke name khat no. 3, 4, 5

Practical component (if any) - NIL

Essential/recommended readings

1. Bagh-o-Bahar – Mir Amman
2. Rani Ketki ki Kahani – Insha Allah Khan Insha
3. Ghalib ke Khutoot – Ghalib by Khaliq Anjum

Suggestive readings (if any)

1. Urdu Nasr ka Fani Irteqa – Farman Fatehpuri
2. Tareekh-e-Adab Urdu – Syed Ejaz Husain
3. Dastan se Novel Tak – Ibn-e-Kanwal
4. Urdu ki Nasri Dastanen – Gyan Chand Jain
5. Fan Dastangoi – Kaleemuddin Ahmed
6. Khutoot Ghalib – Muqaddema Ghulam Rasool Mehar
7. Ghalib ke Khutoot – Khaliq Anjum Muqaddema

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category III

Multidisciplinary Courses for Undergraduate Programme of study with discipline as one of the Core Disciplines

(For e.g. courses for B.A. Programmes with Urdu (discipline's name) as non-Major or Minor discipline)

DISCIPLINE SPECIFIC CORE COURSE (DSC-4): URDU FICTION-NOVEL

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Urdu Fiction-Novel	4	3	1	0	Urdu in class X or XII	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- To give knowledge of contemporary society of India through Urdu Novel.
- To give a glimpse of modern literature with special reference to Urdu Novel.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Understanding of concepts.
- Exercising concepts through writings.
- Demonstrating conceptual and textual understanding in test and exam.

SYLLABUS OF DSC-4

UNIT – I (15 Hours)

1. Novel ki Tareef, Fan aur Ajzaye Tarkeebi
2. Urdu Novel ka Aaghaz-o-Irteqa
3. Qurratulain Hyder ki Novel Nigari
4. Rajinder Singh Bedi ki Novel Nigari

UNIT – II (15 Hours)

1. Agle Janam Mohe Bitya na Kijiyo (Qurratulain Hyder)
2. Ek Chadar Maili Si (Rajinder Sing Bedi)

UNIT – III (15 Hours)

1. Agle Janam Mohe Bitya na Kijiyo ka Tanqidi-o-Tajziyati Motala'a
2. Ek Chadar maili si ka Tanqidi-o-Tajziyati Motala'a

Practical component (if any) - NIL

Essential/recommended readings

1. Agle Janam Mohe Bitya na Kijiyo (Novelette) – Qurratulain Hyder
2. Ek Chadar Maili Si (Novelette) – Rajinder Singh Bedi

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

(For all the Generic Elective courses offered by your Department, please put it in the format provided below)

GENERIC ELECTIVES (GE-10) FILM AND STAGE DRAMA

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Film and Stage Drama	4	3	1	0	Urdu in Class XII or X	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- To give the knowledge of History of film and stage drama.
- To provide an understanding of importance of film and stage drama.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Understanding of concepts.
- Exercising concepts through writings.
- Demonstrating conceptual and textual understanding in test and exam.

SYLLABUS OF GE-10

UNIT – I (15 Hours)

1. Film ki Ibteda aur Ahad-ba-Ahad Irteqa
2. Film Script likhne ka tareeqa aur iske buniyadi Usool
3. Film ki Zuban aur Mukalma Nigari

UNIT – II (15 Hours)

1. Feature, Documentary and Ishtehari Film
2. Drame ki tareef aur Ajzaye Tarkeebi
3. Drame ke Aqsaam

UNIT – III (15 Hours)

1. Urdu Drame ki Rewayat
2. Drame ki stage peshkash: Musiqi, lights, make up, malbusaat

Practical component (if any) - NIL

Essential/recommended readings

1. Urdu Drame ki Tareekh – Ishrat Rahmani
2. Urdu Theatre (4 Volumes) – Abdul Aleem Nami
3. Lucknow ka Shahi Stage – Masood Hussain Adeeb
4. Film Kaise Banaye – Khwaja Ahmad Abbas
5. Urdu Drama Fan aur Rewayat

Suggestive readings

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-11): POET AKBAR ALLAHABADI

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Poet Akbar Allahabadi	4	3	1	0	Urdu in Class XII or X	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- To make the students understand role of a Poet and his poetry.
- To give knowledge of such voice which was against the western culture and voice was completely in support of Indian culture and civilization.

[State the purpose for creating and teaching the course. Describe what the course aims to do from the teacher's perspective.]

Learning outcomes

The Learning Outcomes of this course are as follows:

- Understanding of concepts.
- Exercising concepts through writings.
- Demonstrating conceptual and textual understanding in test and exam.

SYLLABUS OF GE-11

UNIT – I (15Hours)

1. Akbar Allahabadi: Sawaneh aur Shakhshiyat

2. Akbar Allahabadi: Fikr-o-Fan
3. Akbar Allahabadi ki Shairi mein Tanz-o-Mazah

UNIT – II (15 Hours)

1. Akbar Allahabadi ki Ghazalgoi
2. Akbar Allahabadi ki Nazm Nigari
3. Darj zail ghazalon ki tadrees (Matn ki Tadrees):

i) Ghamza nahi hota ki ishara nahi haota ii) Dil mera jis se bahalta koi aisa na mila
iii) Sans lete huye bhi darta hu iv) Hangama hai kyon barpa
v) Hoon mai parwana magar shama vi) Duniya mein hu duniya ka talabgar nahi hu

UNIT – III (15 Hours)

4. Darz zail nazmon ki tadrees(Matn ki Tadrees):

i) Nayi Tahzeeb ii) Mis simin badan iii) Barq Kalisa
iv) Taleem Niswan v) Jalawa-e-Darbar-e-Dilli

Practical component (if any) - NIL

Essential/recommended readings

1. Intekhab-e-Akbar Allahabadi – Compiled by Siddiqur Rahman Qidwai
2.

Suggestive readings

1. Akbar ki Shairi ka Tanqidi Motala – Soghra Mehdi
2. Akbar Allahabadi: Tahqiqi-o-Tanqidi Moatala – Khwaja Mohammad Zakriya
3. Fikr-o-Tahqeeq (Sah mahi) Akbar Number –NCPUL, New Delhi

GENERIC ELECTIVES (GE-12: SHORT STORY WRITER KRISHN CHANDER

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Short Story Writer Krishn Chander	4	3	1	0	Urdu in Class XII or X	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce role and responsibility of a writer and his writings.
- To give knowledge of Urdu Short Story and its importance.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Understanding of concepts.
- Exercising concepts through writings.
- Demonstrating conceptual and textual understanding in test and exam.

SYLLABUS OF GE-12

UNIT – I (20 Hours)

1. Krishn Chander: Sawaneh aur Shakhshiyat
2. Krishn Chander ki Afsana Nigari
3. Krishn Chander ki Romanvi Haqiqat Nigari
4. Krishn Chander ki Infaradiyat

UNIT – II (25 Hours)

Darj zail matn ki Tadrees:

1. Ann Data
2. Poore chand ki raat
3. Shahzada
4. Peshawar Express
5. Do farlaang lambi sadak

Practical component (if any) - NIL

Essential/recommended readings

1. Krishn Chander aur Unke Afsane – Athar Parvez
2. Krishn Chander – Jilani Bano
3. Krishan Chander : Shakhshiyat aur Fan – Jagdeesh Chandra Badhawan
4. Krishn Chander ke Afsanvi adab mein haqiqat nigari – Shakeeb Niyazi
5. Krishn Chander aur Mukhtsar Afsana Nigari – Ahmad Hasan
6. Mahnama Aaj Kal Krishn Chander Number - 2014

Suggestive readings -

DEPARTMENT OF URDU

COURSES OFFERED BY DEPARTMENT OF URDU

Category I

(Provide the details of the Discipline Specific Courses offered by your department for the UG Programme with your discipline as the Single Core Discipline)

[UG Programme for Bachelor in Urdu (Honours) degree in three years]

DISCIPLINE SPECIFIC ELECTIVECOURSE -1 (DSE-1) – : URDU SHORT STORY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Urdu Short Story	4	3	0	1	Urdu in Class XII or X	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- To give knowledge of contemporary society of India through Urdu short story.
- To give knowledge of fiction writing such as Novel and Afsana.
- To give a glimpse of classical literature with special reference to Urdu short story.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Knowledge of contemporary society of India through Urdu short story.
- Explain and appreciate fiction writing such as Novel and Afsana.
- Understand classical literature with special reference to Urdu short story.

SYLLABUS OF DSE-1

UNIT – I (15 Hours)

1. Afsane ka Fan aur AjzayeTarkeebi
2. AfsanekeMukhtlifRujhaanat (AdabiTahreekatkeHawale se)
3. Prem Chand ki Afsana Nigari

UNIT – II (15 Hours)

1. Rajinder Singh Bedi ki Afsana Nigari

2. Krishn Chander ki Afsana Nigari
3. Ismat Chughtai ki Afsana Nigari
4. Ghulam Abbas ki Afsana Nigari

UNIT – III (15 Hours)

1. Kafan - Prem Chand
2. Apne Dukh Mujhe De Do - Rajinder Singh Bedi
3. Maha Lakshmi ka Pul - Krishn Chander
4. Chauthi ka Joda -Ismat Chughtai
5. Aanandi – Ghulam Abbas

Practical component (if any) –

UNIT- IV (30 Hours)

1. Urdu Afsana Nigari ka TakhliqiMashq (Practice of Short Story Writings)
   (i) Plot
   (ii) Kirdar Nigari
   (iii) Zuban-o-Bayan
   (iv) Zamaan-o-Makaan
   (v) Usloob
   (vi) Wahadat-e-Tassur

Essential/recommended readings

1. Urdu keTerahAfsane – Athar Parvez

Suggestive readings

1. Naya Afsana - Waqar Azeem
2. Fan-e-Afsana Nigari – Waqar Azeem
3. Dastan se Afsane Tak - Waqar Azeem
4. Urdu Fiction – Ale Ahmad Suroor
5. Urdu Nasra ka FanniIrteqa -Dr. Farman Fatehpuri
6. Urdu Afsana Riwayat aur Masayel – Prof. Gopi Chand Narang
7. Urdu meinBiswin Sadi ka AfsanviAdab- Prof. Qamar Raees
8. Kahani kePaanch Rang – Shamim Hanfi

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 2 (DSE-2): URDU DRAMA

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Urdu Drama	4	3	0	1	Urdu in XII or X	Nill

Learning Objectives

The Learning Objectives of this course are as follows:

- To give knowledge of contemporary society of India through Urdu Drama.
- To give knowledge of fiction writing such as Dram and Script Writings.
- To give a glimpse of classical literature with special reference to Urdu Drama.

Learning Outcomes

The Learning Outcomes of this course are as follows:

- Knowledge of contemporary society of India through Urdu Drama.
- Explain and appreciate fiction writing such as Stage drama and other types of Drama.
- Understand classical literature with special reference to Urdu Drama

SYLLABUS OF DSE -2

UNIT – I (15 Hours)

1. Urdu me Drame ka Aagaz aur Irteqa
2. Mashriq aur Maghrib me Drame ki Riwayat
3. Drame ka Fan aur Aqsaam(Nukkad Natak, Stage Drama, Radio Drama, T.V. Drama, Opera.

UNIT – II (15 Hours)

1. Aagha Hasan Amanat ki Drama Nigari
2. AaghaHashr Kashmiri ki Drama Nigari
3. Imteyaz Ali Taj ki Drama Nigari

UNIT – III (15 Hours)

1. Indra Sabha (Aagha Hasan Amanat)
2. Silver King (AaghaHashr Kashmiri)
3. Anar Kali (Imteyaz Ali Taj)

Practical component (if any) -

UNIT- IV (30 Hours)

1. Urdu Drama Nigari ka TakhliqiMashq (Practice of Urdu Drama Writings)
   (i) Plot (Aaghaz, Urooj, Nuqta-e-Urooj, Tanjul, Anjam, Tasadum)
   (ii) Kirdaar
   (iii) Mukalma
   (iv) Zuban-o-Byan
   (v) Aaraish

Essential/recommended readings

1. Indra Sabha (Aagha Hasan Amanat)
2. Silver King (AaghaHashr Kashmiri)
3. Anar Kali (Imteyaz Ali Taj)

Suggestive readings (if any)

1. Urdu Drame ka Irteqa – Ishrat Rahmani
2. Urdu Drame ki Tareekh-o-Tanqeed – Ishrat Rahmani

3. Drama Fan aur Rewayat – Mohammad Shahid Hussain
4. AwamiRewayat aur Urdu Drama – Mohammad Shahid Hussain
5. Urdu Drama Fan aur Manzilein – Waqar Azeem

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

(Semester-V)
DEPARTMENT OF URDU

COURSES OFFERED BY DEPARTMENT OF URDU

Category I

[UG Programme for Bachelor in Urdu (Honours) degree in three years]

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

DISCIPLINE SPECIFIC CORE COURSE -13 (DSC-13) – : URDU TANZ-O-MAZAH

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Urdu Tanz-o-Mazah	4	3	1	0	Urdu in class XII or X	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- To give knowledge of light essayparticularlyUrdu Tanz-o-Mazah,which is very useful to develop some one's personality in very easy way.
- To give knowledge of Tanz-o-Mazah in poetic form which has same importance like prose.
- To give a glimpse of a new kind of literature with special reference to Urdu Tanz-o-Mazah.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Knowledge about Tanz o Mazah
- Critically analyze the nuances of Urdu humour and satire.
- Demonstrating conceptual and textual understanding.

SYLLABUS OF DSC-13

UNIT – I (15 Hours)

1. Tanz-o-Mazah: Tareef aur Ahmiyat
2. Urdu Nasr meinTanz-o-Mazah
3. Urdu ShairimeinTanz-o-Mazah
4. Patras ki Tanz-o-Mazah Nigari

UNIT – II (15 Hours)

1. Rasheed Ahmad Siddiqui ki Tanz-o-Mazah Nigari
2. Mushtaq Ahmed Yusufi ki Tanz-o-Mazah Nigari
3. Akbar Allahabadi ki Tanz-o-Mazah Nigari

UNIT – III (15 Hours)

1. Kutte, Savere jo kal aankh meri khuli – Patras Bukhari
2. Charpai, Murshid – Rasheed Ahmad Siddiqui
3. Caesar, Mata Hari aur Mirza - Mushtaq Ahmed Yusufi
4. Barq-e-Kalisa, Qata-Khuda Hafiz Muslmano ka Akbar, Qata- IshratiGhar ki Mohabb ka mazabhoolgaye.

(Matn ki Tadrees)

Practical component (if any) - NIL

Essential/recommended readings

1.

Suggestive readings

1. Urdu AdabmeinTanz-o-Mazah – WazeerAagha
2. Tanziyat-o-Muzahekaat – Rasheed Ahmad Siddiqui
3. Azadi kebaadurdu Nasr meinTanz-o-Mazah – Nami Ansari
4. Urdu AdabmeinTanz-o-Mazah – Khalid Mahmood
5. Akbar Allahabadi – Khwaja Mohammad Zakariya
6. Sahib-e-TarzNigar: Mustaq Ahmed Siddiqui – Mazhar Ahmad

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 14 (DSC-14): LITERARY MOVEMENTS IN URDU

CREDIT DISTRIBUTION, ELIGIBILITY AND PREREQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Literary Movements in Urdu	4	3	1	0	Urdu in Class XII or X	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- To give knowledge of literary movements, what these are and what are the importance of these movements.
- To give knowledge of movements of different era and its impact on the society.
- To give knowledge of understanding of literary movements and how it affects to other movements.

Learning Outcomes

The Learning Outcomes of this course are as follows:

- Understand the importance of Urdu literary movements in development of Urdu.
- Analyse the role of literary movements.
- Demonstrate conceptual and textual understanding.

SYLLABUS OF DSC -14

UNIT – I (15 Hours)

1. AdabiTahreekat: Maani-o-Afadiyat
2. Urdu meinAdabiTahreekat ki Rewayat

UNIT – II (15 Hours)

1. Sir Syed Tahreek
2. Romanvi Tahreek

UNIT – III (15 Hours)

1. TaraqqiPasand Tahreek
2. Jadidiyat

Practical component (if any) - NIL

Essential/recommended readings

1. Ali Garh Tahreek ka Pas Manzar – Khaliq Ahmad Nizami
2. Urdu meinRomanvi Tahreek – Mohammad Hasan
3. Urdu meinTaraqqiPasandAdabi Tahreek – KhalilurRahaman Azmi
4. Urdu AdabkeIrteqameinAdabiTahreekon aur Rujhanon ka Hissa – Manzar Azmi
5. TaraqqiPasandAdab – Aziz Ahmad
6. Urdu Adab ki Tahreekein – Anwar Sadeed
7. TaraqqiPasandAdab – Ali Sardar Jafri
8. Sir Syed aur UnkeNamwarRufqa – Syed Abdullah

Suggestive readings (if any)

DISCIPLINE SPECIFIC CORE COURSE– 15 (DSC-15): POET IQBAL

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Poet Iqbal	4	3	1	0	Urdu in Class XII or X	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- To give knowledge of speciality of Iqbal as a poet and his writings.
- To develop Understanding of poetry and its importance for development of social consciousness.

Learning Outcomes

The Learning Outcomes of this course are as follows:

- Understand the contribution of poet Iqbal in the development of Urdu Poetry.
- Explain and appreciate the poetry of Iqbal.
- Express thoughts about art & thought of Iqbal.

SYLLABUS OF DSC-15

UNIT – I (15 Hours)

1. Iqbal: Sawaneh aur Shakhshiyat
2. Iqbal ki Nazm Nigari
3. Iqbal ki Ghazalgoi
4. Iqbal ki ShairikeImteyazaat
5. Falsafa-e-Khudi aur Iqbal

UNIT – II (15 Hours)

1. Nazariya-e-Mard-e-Momin
2. Nazariya-e-Ishq-o-Khirad
3. Iqbal aur UnkaPaigham
4. Iqbal aur HubbulWatani

UNIT – III (15 Hours)

1. Kulliyat-e-Iqbal:
   MuntkhabNazmein- Himalaya, Tasveer-d-Dard, Shikwa, Jawab-e-Shikwa, Khizr-e-Raah, Farishton ka Geet, Farman-e-Khuda(Matn ki Tadrees)
   Bal-e-Jibreel ki IbtedaiPanchGhazalein (Matn ki Tadrees)

Practical component (if any) - NIL

Essential/recommended readings

1. Rooh-e-Iqbal – Yusuf Husain Khan
2. Sher-e-Iqbal – Aabid Ali Aabid
3. Zikr-e-Iqbal – Abdul Majeed Salik
4. Iqbal aur Iqbaliyat – Abdul Haq
5. Fikr-e-Iqbal – Khalifa Abdul Hakim
6. Zinda Rood – Javed Iqbal
7. Iqbal: Shair-o-Mufakkir – Noorul Hasan Naqvi
8. Iqbal Sab ke Liye – Farman Fatehpuri
9. Tasauvvuraat-e-Ishq-o-Khirad Iqbal ki Nazarmein – WazeerAagha

Suggestive readings

Category II

(MultidisciplinaryCourses for Undergraduate Programme of study with Urdu discipline as one of the Core Disciplines)

(For e.g. courses for B.A. Programmes with Urdu (discipline's name) as Major discipline)

DISCIPLINE SPECIFIC CORE COURSE – 9 (DSC-9): LITERARY MOVEMENTS

CREDIT DISTRIBUTION, ELIGIBILITY AND PREREQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Literary Movements in Urdu	4	3	1	0	Urdu in Class XII or X	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- To give knowledge of literary movements, what these are and what are the importance of these movements.
- To give knowledge of movements of different era and its impact on the society.
- To give knowledge of understanding of literary movements and how it affects to other movements.

Learning Outcomes

The Learning Outcomes of this course are as follows:

- Understand the importance of Urdu literary movements in development of Urdu.
- Analyse the role of literary movements.
- Demonstrate conceptual and textual understanding.

SYLLABUS OF DSC -9

UNIT – I (15 Hours)

1. AdabiTahreekat: Tareef aur Tarruf
2. Urdu meinAdabiTahreekat ki Rewayat

UNIT – II (15 Hours)

1. Sir Syed Tahreek
2. Romanvi Tahreek

UNIT – III (15 Hours)

1. TaraqqiPasand Tahreek
2. Halqa-e-Arbab-e-Zauq

Practical component (if any) - NIL

Essential/recommended readings

1. Ali Garh Tahreek ka Pas Manzar – Khaliq Ahmad Nizami
2. Urdu meinRomanvi Tahreek – Mohammad Hasan
3. Urdu meinTaraqqiPasandAdabi Tahreek – KhalilurRahaman Azmi
4. Urdu AdabkeIrteqameinAdabiTahreekon aur Rujhanon ka Hissa – Manzar Azmi
5. TaraqqiPasandAdab – Aziz Ahmad
6. Urdu Adab ki Tahreekein – Anwar Sadeed
7. TaraqqiPasandAdab – Ali Sardar Jafri
8. Sir Syed aur UnkeNamwarRufqa – Syed Abdullah

Suggestive readings (if any)

(Multidisciplinary Courses for Undergraduate Programme of study with Urdu discipline as one of the Core Disciplines)

(For e.g. courses for B.A. Programmes with Urdu (discipline's name) as Major discipline)

DISCIPLINE SPECIFIC CORE COURSE (DSC-10): SHORT STORY WRITER PREMCHAND

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Short Story Writer Premchand	4	3	1	0	Urdu in Class XII or X	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- To give knowledge of contemporary society of India through Urdu fiction.
- To give knowledge of literature such as Urdu Afsana.
- To give a glimpse of literature with special reference to Urdu fiction.

Learning outcomes

The Learning Outcomes of this course are as follows:

Understand the contribution of Prem chand in the development of Urdu Fiction.

- Explain and appreciate the writings of Prem Chand.
- Express thoughts about art & thought of Prem Chand.

SYLLABUS OF DSC-10

UNIT – I (15 Hours)

1. Premchand: Sawaneh aur Shakhshiyat
2. Premchand ki Afsana Nigari
3. PremchandkeAfsanomeinDehatiManazir ki Akkasi
4. Premchand ki Haqiqat Nigari
5. Premchan ka UsloobByan

UNIT – II (30 Hours)

DARZ ZEL MATN KI TADREES:

1. Hajj-e-Akbar
2. BurhiKaaki
3. Nijaat
4. Kafan
5. Poos ki Raat

Practical component (if any) - NIL

Essential/recommended readings

1. PremchandkeNumaindahAfsane – Compiled by Qamar Raees

Suggestive readings -

1. Munshi Premchand: Shakhshiyat aur Karnaame – Qamar Raees
2. Premchan: Fikr-o-Fan – Qamar Raees
3. Urdu Afsana Rewayat aur Masail – Gopi Chand Narang
4. Urdu Nasr ka FanniIrteqa – Farman Fatehpuri
5. Prem Chand Kahani ka Rehnuma – Jafar Raza
6. Premchand Ek Naqeeb – Jafar Raza
7. PremchandTanqeediMotala'a – Qamar Raees
8. Fiction keFankar: Premchand – Shakeelur Rahman
9. Premchand aur unki Afsana Nigari – Mohd Akbaruddin Siddiqi

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category III

Multidisciplinary Courses for Undergraduate Programme of study with discipline as one of the Core Disciplines

(For e.g. courses for B.A. Programmes with Urdu (discipline's name) as non-Major or Minor discipline)

DISCIPLINE SPECIFIC CORE COURSE – 5 (DSC-5): LITERARY MOVEMENTS

CREDIT DISTRIBUTION, ELIGIBILITY AND PREREQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Literary Movements in Urdu	4	3	1	0	Urdu in Class XII or X	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- To give knowledge of literary movements, what these are and what are the importance of these movements.
- To give knowledge of movements of different era and its impact on the society.
- To give knowledge of understanding of literary movements and how it affects to other movements.

Learning Outcomes

The Learning Outcomes of this course are as follows:

- Understand the importance of Urdu literary movements in development of Urdu.
- Analyse the role of literary movements.
- Demonstrate conceptual and textual understanding.

SYLLABUS OF DSC -9

UNIT – I (15 Hours)

1. AdabiTahreekat: Tareef aur Tarruf
2. Urdu meinAdabiTahreekat ki Rewayat

UNIT – II (15 Hours)

1. Sir Syed Tahreek
2. Romanvi Tahreek

UNIT – III (15 Hours)

1. TaraqqiPasand Tahreek
2. Halqa-e-Arbab-e-Zauq

Practical component (if any) - NIL

Essential/recommended readings

1. Ali Garh Tahreek ka Pas Manzar – Khaliq Ahmad Nizami
2. Urdu meinRomanvi Tahreek – Mohammad Hasan
3. Urdu meinTaraqqiPasandAdabi Tahreek – KhalilurRahaman Azmi
4. Urdu AdabkeIrteqameinAdabiTahreekon aur Rujhanon ka Hissa – Manzar Azmi
5. TaraqqiPasandAdab – Aziz Ahmad
6. Urdu Adab ki Tahreekein – Anwar Sadeed
7. TaraqqiPasandAdab – Ali Sardar Jafri
8. Sir Syed aur UnkeNamwarRufqa – Syed Abdullah

Suggestive readings (if any)

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

GENERIC ELECTIVES (GE-13): PRINT MEDIA IN URDU

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Print Media in Urdu	4	3	1	0	Urdu in Class XII or X	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- To make the students understand the role and use of print media in liberal democracy.
- To give a job opportunity.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Understand the importance of print media in development of Urdu.
- Analyse the role of newspaper and magazines.
- Write different types of writings for print media such as feature, column and others.

SYLLABUS OF GE-13

UNIT – I (15 Hours)

1. Sahafat ki tareef, Ibteda aur Ahad-ba-Ahad Irteqa
2. Urdu Sahafat ka Manzarnama
3. Khabar Nigari

UNIT – II (15 Hours)

1. Idariya Nigari
2. Column Nigari
3. Feature

UNIT – II (15 Hours)

1. Interview
2. Ishtehaar

3. Tabsra

Practical component (if any) - NIL

Essential/recommended readings

1. Urdu Mass Media – Fazalul Haq
2. Ablaghiyat – Shahid Husain
3. Hindustani AkhbarNavisi – Mohammad Ateeq Siddiqui
4. Khabar Nigari – ShafeQidwai
5. Tareekh-e-Sahafat – Imdad Sabri

Suggestive readings

GENERIC ELECTIVES (GE-14): POET FAIZ AHMAD FAIZ

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Poet Faiz Ahmad Faiz	4	3	1	0	Urdu in Class XII or X	Nil	URDU

Learning Objectives

The Learning Objectives of this course are as follows:

- To give knowledge of Urdu Poetry of with special reference to Faiz Ahmad Faiz.
- To inculcate need and philosophy of realism, educate the balance between rationality and emotions.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Understand the contribution of poet Faiz in the development of Urdu Poetry.
- Explain and appreciate the poetry of Faiz.
- Express thoughts about art & thought of Faiz.

SYLLABUS OF GE-14

UNIT – I (20Hours)

1. Faiz Ahmad Faiz: Sawaneh aur Shakhshiyat

2. Faiz Ahmad Faiz: Fikr-o-Fan
3. Faiz Ahmad Faiz aur taraqqipasandshairi
4. Faiz Ahmad Faiz ki Ghazalgoi
5. Faiz Ahmad Faiz ki Nazm Nigari

UNIT – II (25 Hours)

DARZ ZAIL NAZMO KI TADREES:

i) Do Ishq ii) Subah-e-Aazadi iii) Mulaqaat
iv) Aaj Bazar meinpaabazaulachalo v) Raqeeb se
vi) Mujh se PahalisiMohabbat mere mahboobna mang

DARZ ZAIL GHAZALON KI TADREES:

i) Donojahanterimohabbatmeinhaarke
ii) Rang pairahan ka, Khushboo zulflahrane ka name
iii) Dilmein ab yuterebhulehuyeghamaate hain
iv) Sham-e-firaq ab napuchhaayi aur aaketakgayi
v) Kabthahregadard aye dil, kabraatbasarhogi

(Matn ki Tadrees)

Practical component (if any) - NIL

Essential/recommended readings

1. Faiz ki Shairi ek mutala'a – Nusarat Chaudhari
2. Faiz ki Shairi – Abdul Moghani
3. Faiz Ahmad Faiz: Shakhsh aur Shairi – Athar Nabi

Suggestive readings

GENERIC ELECTIVES (GE-15): SHORT STORY WRITER RAJENDAR SINGH BEDI

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Short Story WriterRajendar Singh Bedi	4	3	1	0	Urdu in Class XII or X	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- To give knowledge of contemporary society of India through Urdu fiction.
- To give knowledge of literature such as Urdu Afsana.
- To give a glimpse of literature with special reference to Urdu fiction.

Learning outcomes

The Learning Outcomes of this course are as follows:

Understand the contribution of Prem chandin the development of Urdu Fiction.

- Explain and appreciate the writings of Prem Chand.
- Express thoughts about art & thought of Prem Chand.

SYLLABUS OF GE-15

UNIT – I (20 Hours)

1. Rajendar Singh Bedi: Sawaneh aur Shakhshiyat
2. Bedi ki Afsana Nigari
3. Bedi ka Usloob-e-Byan
4. AfsanviAdabmein Bedi ka maqaam

UNIT – II (25 Hours)

DARZ ZEL MATN KI TADREES:

1. Laajwanti
2. Apne Dukh Mujhe de do
3. Jogiya
4. Quarantine
5. Garam Coat
6. Aaloo

Practical component (if any) - NIL

Essential/recommended readings

1. Rajender Singh Bedi: Shakhshiyat aur Fan – Jagdish Chand Bidhawan
2. Rajender Sing Bedi – Waris Alvi
3. Baqiyaat-e-Bedi – Shamshul Haq Usmani
4. Aajkal Bedi Number
5. Talash-o-Tawazun – Qamar Raees
6. Urdu Nasr ka FanniIrteqa – Farman Fatehpuri

Suggestive readings -

DEPARTMENT OF URDU

COURSES OFFERED BY DEPARTMENT OF URDU

Category I

(Provide the details of the Discipline Specific Courses offered by your department for the UG Programme with your discipline as the Single Core Discipline)

[UG Programme for Bachelor in Urdu (Honours) degree in three years]

DISCIPLINE SPECIFIC ELECTIVES (DSE-3) FILM AND STAGE DRAMA

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Film and Stage Drama	4	3	0	1	Urdu in Class XII or X	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- To give the knowledge of History of film and stage drama.
- To provide an understanding of importance of film and stage drama.

Learning outcomes

- The Learning Outcomes of this course are as follows: Knowledge of contemporary society of India through Urdu Drama.
- Explain and appreciate fiction writing such as Stage drama and other types of Drama.
- Understand classical literature with special reference to Urdu Drama

SYLLABUS OF DSE-3

UNIT – I (15 Hours)

1. Film ki Ibteda aur Ahad-ba-Ahad Irteqa
2. Film Script likhne ka tareeqa aur iskebuniyadiUsool
3. Film ki Zuban aur Mukalma Nigari

UNIT – II (15 Hours)

1. Feature, Documentary and Ishtehari Film
2. Drame ki tareef aur AjzayeTarkeebi
3. DramekeAqsaam

UNIT – III (15 Hours)

1. Urdu Drame ki Rewayat
2. Drame ki stage peshkash: Musiqi, lights, make up, malbusaat

Practical component (if any) - NIL

UNIT-VI (30 Hours)

1. Practice of different script writings given in this syllabus ie. Film Script, Mukalma, Feature, Documentary, Istehaar, Drama etc.

Essential/recommended readings

1. Urdu Drame ki Tareekh – Ishrat Rahmani
2. Urdu Theatre (4 Volumes) – Abdul Aleem Nami
3. Lucknow ka Shahi Stage – Masood Hussain Adeeb
4. Film KaiseBanaye – Khwaja Ahmad Abbas
5. Urdu Drama Fan aur Rewayat

Suggestive readings

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVES (DSE-4): PRINT MEDIA IN URDU

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Print Media in Urdu	4	3	0	1	Urdu in Class XII or X	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- To make the students understand the role and use of print media in liberal democracy.
- To give a job opportunity.

Learning outcomes

- The Learning Outcomes of this course are as follows: Understand the importance of print media in development of Urdu.
- Analyse the role of newspaper and magazines.
- Write different types of writings for print media such as feature, column and others.

SYLLABUS OF DSE-4

UNIT – I (15 Hours)

1. Sahafat ki tareef, Ibteda aur Ahad-ba-Ahad Irteqa
2. Urdu Sahafat ka Manzarnama
3. Khabar Nigari

UNIT – II (15 Hours)

1. Idariya Nigari
2. Column Nigari
3. Feature

UNIT – III (15 Hours)

1. Interview
2. Ishtehaar
3. Tabsra

Practical component (if any) –

UNIT-IV (30 Hours)

1. Practice of different writings given in this syllabus ie. Khabar Nigari,Idariya Nigari, Column Nigari, Feature, Interview, Ishtehaar, Tabsraetc.

Essential/recommended readings

1. Ss
2. Urdu Mass Media – Fazalul Haq
3. Ablaghiyat – Shahid Husain
4. Hindustani AkhbarNavisi – Mohammad Ateeq Siddiqui
5. Khabar Nigari – ShafeQidwai
6. Tareekh-e-Sahafat – Imdad Sabri

Suggestive readings

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Semester-VI
DEPARTMENT OF URDU

COURSES OFFERED BY DEPARTMENT OF URDU
Category I

(Provide the details of the Discipline Specific Coursesoffered by your department for the UG Programme with your disciplineas the Single Core Discipline)
[UG Programme for Bachelor in Urdu (Honours) degree in three years]

DISCIPLINE SPECIFIC CORE COURSE -16 (DSC-16) – : HISTORY OF URDU LANGUAGE AND LITERATURE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
History of Urdu Language and Literature	4	3	1	0	Urdu in class XII or X	-

Learning Objectives

The Learning Objectives of this course are as follows:

- To give knowledge of development of Language and Literature.
- To give knowledge of relationship between society language and literature.
- To give basic knowledge of phonetics and morphology and its importance.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Express knowledge about development of Language and Literature.
- Have knowledge of relationship between society, language and literature.
- Differentiate between phonetics and morphology and its importance.

SYLLABUS OF DSC-16

UNIT – I (15 Hours)

1. Urdu Zuban ka Aaghaz-o-Irteqa
2. Urdu keIbteda se MutalliqMukhtlifNazariyat
3. Dakanmein Urdu ShairikeIbtedaiNaqoosh

UNIT – II (15 Hours)

1. Shumali Hind mein Urdu ShairikeIbtedaiNaqoosh
2. Dabistan-e-Delhi
3. Dabistan-e-Lucknow

UNIT – III (15 Hours)

1. Fort William College ki AdabiKhidmaat
2. Delhi College ki AdabiKhidmaat

Practical component (if any) - NIL

Essential/recommended readings

1.

Suggestive readings

1. Tareekh-e-Adab-e-Urdu – Jameel Jalibi
2. MuqqademaTareekh-e-Zaban-e-Urdu – Masood Husain Khan
3. Hindustani Lesaniyat – Mohiuddin Qadri Zor
4. Punjab mein Urdu – Mahmood Khan Shirani
5. Dakanmein Urdu – Naseeruddin Hashmi
6. Do Adabi School – Ali Jawad Zaidi
7. Lucknow ka Dabistan-e-Shairi – Abul Lais Siddiqui
8. Delhi ka Dabistan-e-Shairi – Noorul Hasan Hashmi
9. Marhoom Delhi College – Maulvi Abdul Haq
10. Urdu ki LisaniTashkeel – Mirza Khalil Ahmad Beg
11. Fort William College ki AdabiKhidmaat – Ubaida Begam

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 17 (DSC-17): URDU MARSIYA

CREDIT DISTRIBUTION, ELIGIBILITY AND PREREQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Urdu Marsiya	4	3	1	0	Urdu in Class XII or X	-

Learning Objectives

The Learning Objectives of this course are as follows:

- To give knowledge of such anold poetic form which is not in use in these days.
- To realize the pain of truth through which one can prove its humanity it may be called a form of Katharsis.

Learning Outcomes

The Learning Outcomes of this course are as follows:

- Understand the origin of Urdu Poetry with reference to Marsiya.
- Explain the nuances of Marsiya.
- Demonstrate conceptual and textual understanding

SYLLABUS OF DSC -17

UNIT – I (15 Hours)

1. Marsiye ka Fan aur AjzayeTarkeebi
2. Urdu Marsiye ka Aaghaz-o-Irteqa

UNIT – II (15 Hours)

1. Meer Anees ki Marsiya Nigari
2. Mirza Dabeer ki Marsiya Nigari

UNIT – III (15 Hours)

1. Jab Qata ki Musaafat-e-Shab Aftab ne - (Anees) Ibtedai 50 band (Matn ki Tadrees)
2. Dast-e-Khuda ka Quat-e-Baazoo Hussain hai - (Dabeer) Ibtedai 50 band (Matn ki Tadrees)

Practical component (if any) - NIL

Essential/recommended readings

1. Marka-e-Anees-o-Dabeer – NaiyerMasud
2. Aneesiyat – Masood Hasan RizviAdeeb
3. Mawazna-e-Anees-o-Dabeer - Shibli
4. Urdu Marsiya Nigari – Umm-e-Haani Ashraf
5. Anees ki Marsiya Nigari – Jafar Ali khan Asar
6. Yadgar-e-Anees – Ameer Ahmad Alvi
7. Urdu Marsiye ka Irteqa – Masihuz Zaman
8. Marsiye ka Fan – NaiyerMasud
9. AneesShakhshiyat aur Fan – Fazal-e-Imam
10. Dabeer ki Marsiya Nigari – Mohammad Zaman Azurda
11. Mirza Dabeer ki Marsiya Nigari – S. A. Siddiqi

Suggestive readings (if any)

DISCIPLINE SPECIFIC CORE COURSE– 18 (DSC-18): URDU BIOGRAPHIES, TRAVELOGUE AND REPORTAGE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Urdu Biographies, Travelogue and Repaortage	**4**	**3**	**1**	**0**	**Urdu in Class XII or X**	**-**

Learning Objectives

The Learning Objectives of this course are as follows:

- To give knowledge of some important non-fictional creative forms which is used very often in daily lives.
- The given non-fictional creative forms have historical importance so by reading this syllabus student can learn an other way to see the world.

Learning Outcomes

The Learning Outcomes of this course are as follows:

- Understand the origin of Urdu Prose with reference to Biographies and travalogue.
- Exercise concepts through writings.
- Demonstrate conceptual and textual understanding

SYLLABUS OF DSC-15

UNIT – I (15 Hours)

1. Sawanehki Tareef aur Uska Fan
2. Safarname ki Tareef aur Uska Fan
3. Reportage ki Tareef aur Uska Fan

UNIT – II (15 Hours)

1. Urdu meinSawaneh Nigari ki Rewayat
2. Urdu meinSafarname Nigari ki Rewayat
3. Urdu mein Reportage Nigari ki Rewayat

UNIT – III (15 Hours)

1. Hayat-e-Javed (Hali)
2. Aajaybaat-e-Firang (Yusuf Kambalposh) Compiled by Mazhar Ahmad (Ibteda se page no. 25 ki satar main ye tilismdekhkarapnegharaaya)

3. Bombay se Bhopal Tak – Ismat Chughtai

Practical component (if any) - NIL

Essential/recommended readings

1. Urdu mein Fan-e-Sawaneh Nigari ka Irteqa – MumatazFakhera
2. Urdu Safarnamo ka TanqidiMotala
3. Unnisavinsadike Urdu Safarname – Qudsiya Qureshi
4. Urdu Safarnamonmein Hindustani Tahzeeb-o-Saqafat – Khwaja Mohammad Ikramuddin
5. Urdu mein Fan-e-Sawaneh Nigari ka Irteqa–Altaf Fatima
6. Urdu meinRepartage Nigari – Abdul Aziz
7. Urdu Reportage: Tareekh-o-Tanqeed – Talat Gul

Suggestive readings

Category II

(MultidisciplinaryCourses for Undergraduate Programme of study with Urdu discipline as one of the Core Disciplines)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

DISCIPLINE SPECIFIC CORE COURSE -11 (DSC-11) – : DEVELOPMENT OF URDU LANGUAGE AND LITERATURE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Development of Urdu Language and Literature	4	3	1	0	Urdu in class XII or X	-

Learning Objectives

The Learning Objectives of this course are as follows:

- To give knowledge of development of Language and Literature.
- To give knowledge of relationship between society language and literature.
- To give basic knowledge of phonetics and morphology and its importance.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Understanding of concepts.
- Exercising concepts through writings.
- Demonstrating conceptual and textual understanding.

SYLLABUS OF DSC-11

UNIT – I (15 Hours)

1. Urdu Zuban ka Aaghaz-o-Irteqa
2. Urdu keIbteda se MutalliqMukhtlifNazariyat

UNIT – II (15 Hours)

1. Dabistan-e-Delhi
2. Dabistan-e-Lucknow

UNIT – III (15 Hours)

1. Fort William College ki AdabiKhidmaat
2. Delhi College ki AdabiKhidmaat

Practical component (if any) - NIL

Essential/recommended readings

Suggestive readings

1. Tareekh-e-Adab-e-Urdu – Jameel Jalibi
2. MuqqademaTareekh-e-Zaban-e-Urdu – Masood Husain Khan
3. Hindustani Lesaniyat – Mohiuddin Qadri Zor
4. Punjab mein Urdu – Mahmood Khan Shirani
5. Dakanmein Urdu – Naseeruddin Hashmi
6. Do Adabi School – Ali Jawad Zaidi
7. Lucknow ka Dabistan-e-Shairi – Abul Lais Siddiqui
8. Delhi ka Dabistan-e-Shairi – Noorul Hasan Hashmi
9. Marhoom Delhi College – Maulvi Abdul Haq
10. Urdu ki LisaniTashkeel – Mirza Khalil Ahmad Beg
11. Fort William College ki AdabiKhidmaat – Ubaida Begam

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

(Multidisciplinary Courses for Undergraduate Programme of study with Urdu discipline as one of the Core Disciplines)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

DISCIPLINE SPECIFIC CORE COURSE -12 (DSC-12) – : URDU TANZ-O-MAZAH						
Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Urdu Tanz-o-Mazah	4	3	1	0	Urdu in class XII or X	-

Learning Objectives

The Learning Objectives of this course are as follows:

- To give knowledge of light essay particularly Urdu Tanz-o-Mazah, which is very useful to develop some one's personality in very easy way.
- To give knowledge of Tanz-o-Mazah in poetic form which has same importance like prose.
- To give a glimpse of a new kind of literature with special reference to Urdu Tanz-o-Mazah.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Knowledge about Tanz o Mazah
- Critically analyze the nuances of Urdu humour and satire.
- Demonstrating conceptual and textual understanding.

SYLLABUS OF DSC-12

UNIT – I (15 Hours)

1. Tanz-o-Mazah: Tareef aur Ahmiyat
2. Urdu Nasr meinTanz-o-Mazah
3. Urdu ShairimeinTanz-o-Mazah
4. Patras ki Tanz-o-Mazah Nigari

UNIT – II (15 Hours)

1. Rasheed Ahmad Siddiqui ki Tanz-o-Mazah Nigari
2. Mushtaq Ahmed Yusufi ki Tanz-o-Mazah Nigari
3. Akbar Allahabadi ki Tanz-o-Mazah Nigari

UNIT – III (15 Hours)

1. Kutte, Savere jo kal aankh meri khuli – Patras Bukhari
2. Charpai, Murshid – Rasheed Ahmad Siddiqui
3. Caesar, Mata Hari aur Mirza - Mushtaq Ahmed Yusufi
4. Barq-e-Kalisa, Qata-Khuda Hafiz Muslmano ka Akbar, Qata- IshratiGhar ki Mohabb ka mazabhoolgaye.

(Matn ki Tadrees)

Practical component (if any) - NIL

Essential/recommended readings

Suggestive readings

1. Urdu AdabmeinTanz-o-Mazah – WazeerAagha
2. Tanziyat-o-Muzahekaat – Rasheed Ahmad Siddiqui
3. Azadi kebaadurdu Nasr meinTanz-o-Mazah – Nami Ansari
4. Urdu AdabmeinTanz-o-Mazah – Khalid Mahmood
5. Akbar Allahabadi – Khwaja Mohammad Zakariya
6. Sahib-e-TarzNigar: Mustaq Ahmed Siddiqui – Mazhar Ahmad

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category III

Multidisciplinary Courses for Undergraduate Programme of study with discipline as one of the Core Disciplines

(For e.g. courses for B.A. Programmes with Urdu (discipline's name) as non-Major or Minor discipline)

DISCIPLINE SPECIFIC CORE COURSE -6 (DSC-6) – :DEVELOPMENT OF URDU LANGUAGE AND LITERATURE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Development of Urdu Language and Literature	4	3	1	0	Urdu in class XII or X	-

Learning Objectives

The Learning Objectives of this course are as follows:

- To give knowledge of development of Language and Literature.
- To give knowledge of relationship between society language and literature.
- To give basic knowledge of phonetics and morphology and its importance.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Understanding of concepts.
- Exercising concepts through writings.
- Demonstrating conceptual and textual understanding.

SYLLABUS OF DSC-6

UNIT – I (15 Hours)

1. Urdu Zuban ka Aaghaz-o-Irteqa
2. Urdu keIbteda se MutalliqMukhtlifNazariyat
3. Dakanmein Urdu ShairikeIbtedaiNaqoosh

UNIT – II (15 Hours)

1. Shumali Hind mein Urdu ShairikeIbtedaiNaqoosh
2. Dabistan-e-Delhi
3. Dabistan-e-Lucknow

UNIT – III (15 Hours)

1. Fort William College ki AdabiKhidmaat
2. Delhi College ki AdabiKhidmaat

Practical component (if any) - NIL

Essential/recommended readings

Suggestive readings

1. Tareekh-e-Adab-e-Urdu – Jameel Jalibi
2. MuqqademaTareekh-e-Zaban-e-Urdu – Masood Husain Khan
3. Hindustani Lesaniyat – Mohiuddin Qadri Zor
4. Punjab mein Urdu – Mahmood Khan Shirani
5. Dakanmein Urdu – Naseeruddin Hashmi
6. Do Adabi School – Ali Jawad Zaidi
7. Lucknow ka Dabistan-e-Shairi – Abul Lais Siddiqui
8. Delhi ka Dabistan-e-Shairi – Noorul Hasan Hashmi
9. Marhoom Delhi College – Maulvi Abdul Haq
10. Urdu ki LisaniTashkeel – Mirza Khalil Ahmad Beg
11. Fort William College ki AdabiKhidmaat – Ubaida Begam

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

GENERIC ELECTIVES (GE-16): ELECTRONIC MEDIA IN URDU

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Electronic Media in Urdu	4	3	1	0	Urdu in Class XII or X	-

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce role and responsibility of electronic media through Urdu Programme.
- To make able for making documentary, advertisement, radio drama, feature and script writing which have demand in market.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Understand the importance of electronic media in development of Urdu.
- Analyse the role of radio and television.
- Write different types of writings for electronic media such as feature, column and others.

SYLLABUS OF GE-16

UNIT – I (20 Hours)
Radio:

6. Radio: Ibteda aur Irteqa
7. All India Radio ki Urdu Services
8. Radio drama, Feature, Documentary, Adabi Program, Interview, Ishtehaar, Announcement

UNIT – II (25 Hours)
Television:

9. Television ki Ibteda aur Irteqa
10. T.V. Adabi Program

11. T.V. News
12. Numaindah Urdu Channel
13. Tele Film, T.V. Serial, Documentary, Ishtehaar aur Interview

Practical component (if any) - NIL

Essential/recommended readings

7. Television Nashriyat – Anjum Usmani
8. Nashriyaat aur All India Radio – AkhlaqAsar
9. Ablaghiyat – Shahid Husain
10. Urdu Mass Media – Fazalul Haq

Suggestive readings -

GENERIC ELECTIVES (GE-17): POET IQBAL

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Poet Iqbal	4	3	1	0	Urdu in Class XII or X		URDU

Learning Objectives

The Learning Objectives of this course are as follows:

- To give knowledge of Urdu Poetry of with special reference to Iqbal.
- To inculcate need and philosophy of realism, educate the balance between rationality and emotions.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Understand the contribution of poet Iqbal in the development of Urdu Poetry.
- Explain and appreciate the poetry of Iqbal.
- Express thoughts about art & thought of Iqbal.

SYLLABUS OF GE-17

UNIT – I (20 Hours)

1. Iqbal: Sawaneh aur Shakhshiyat
2. Iqbal: Fikr-o-Fan

3. Iqbal ki Ghazalgoi
4. Iqbal ki Nazm Nigari
5. Iqbal ka paigham

UNIT – II (25 Hours)

DARZ ZAIL NAZMO KI TADREES:

i) Himalaya ii) Shikwa iii) Sair-e-Falak
v) Lenin Khudakehuzoormein v) Shuaa-e-Umeed

DARZ ZAIL GHAZALON KI TADREES:

i) Agar kaj raw hain anjum, aasman tera haiyamera
ii) Gesu-e-taabdaar ko aur bhitaabdaarkar
iii) Phircharagh-e-lala se raushanhuyekoh-o-daman
iv) Na too zameenkeliyehainaaasmankeliye
v) Jab Ishqsikhatahaiaadaab-e-khud aagahi

(Matn ki Tadrees)

Practical component (if any) - NIL

Essential/recommended readings

1. Iqbal Shair aur Mufakkir – Noorul Hasan Naqvi
2. Iqbal Shair aur Falsafi – Syed Waqar Azeem
3. Sher-e-Iqbal – Aabid Ali Aabid
4. Rooh-e-Iqbal – Yusuf Husain Khan
5. Iqbal Sab ke Liye – Farman Fatehpuri

Suggestive readings

GENERIC ELECTIVES (GE-18): SHORT STORY WRITER QURRATULAIN HYDER

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Short Story Writer Qurratulain Hyder	4	3	1	0	Urdu in Class XII or X	-

Learning Objectives

The Learning Objectives of this course are as follows:

- To give knowledge of contemporary society of India through Urdu fiction.
- To give knowledge of literature such as Urdu Afsana.
- To give a glimpse of literature with special reference to Urdu fiction.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Understand the contribution of Qurrat ul Ain in the development of Urdu Fiction.
- Explain and appreciate the fiction of Qurrat.
- Express thoughts about art & thought of Qurrat.

SYLLABUS OF GE-18

UNIT – I (20 Hours)

1. Qurratulain Hyder: Sawaneh aur Shakhshiyat
2. Qurratulain Hyder ki Fikr-o-Fan
3. Qurratulain Hyder ki Afsana Nigari
4. Qurratulain Hyder ka Usloob-e-Byan

UNIT – II (25 Hours)

DARZ ZAIL MATN KI TADREES:

1. NazaaraDarmyaan Hai
2. Kaarman
3. Housing Society
4. Malfuzaat-e-Hazi Gul Baba Bektashi
5. Ye Ghazi Ye TerePur Asrar Bande

Practical component (if any) - NIL

Essential/recommended readings

1. Roshani ki Raftar – Qurratulain Hyder
2. Qurratulain Hyder: Ek Motala'a – Irteza Karim
3. Qurratulain Hyder ka Fan – Abdul Moghani
4. Qurratulain Hyder ki Afsana Nigari: Ek TanqeediMotala'a – Musarrat Jahan

Suggestive readings -

DSE for 5th and 6th Semester (Programme)
DEPARTMENT OF URDU

COURSES OFFERED BY DEPARTMENT OF URDU

Category I

(Provide the details of the Discipline Specific Coursesoffered by your department for the UG Programme with your disciplineas the Single Core Discipline)
[UG Programme for Bachelor in Urdu (Honours) degree in three years]

DISCIPLINE SPECIFIC ELECTIVECOURSE -1 (DSE-1) – : POET MEER TAQI MEER

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Poet Meer Taqi Meer	4	3	0	1	Urdu in Class XII or X	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- To give knowledge of contemporary society of India through Urdu Ghazal.
- To give knowledge of classical Urdu poetry through Meer Taqi Meer's writings.
- To give a glimpse of classical literature with special Meer Taqi Meer's writings.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Understand the contribution of poet Meer the development of Urdu Poetry.
- Explain and appreciate the poetry of Meer.
- Express thoughts about art & thought of Meer.

SYLLABUS OF DSE-1

UNIT – I (15 Hours)

1. Meer Taqi Meer: Sawaneh aur Shakhshiyat
2. Meer Taqi Meer: Fikr-o-Fan
3. Meer ki Shairi ki Buniyadi Khususiyaat

UNIT – II (30 Hours)

4. Intekhab Kalam-e-Meer (Radeef Alif) – Maulvi Abdul Haq(Matn ki Tadrees)

Practical component (if any) –

UNIT-III (30 Hours)

1. Meer ke istemaal kardah bahar me deegar shoara (Khususan Ahad-e-Meer talluq rakhne wale) ki 3-5 ghazlein talash karein aur unka tajziya karein

Essential/recommended readings

1. Intekhab Kalam-e-Meer – Maulvi Abdul Haq (Anjuman Taraqqi Urdu (Hind) New Delhi

Suggestive readings

1. Meer Taqi Meer: Hayat aur Shayeri - Khwaja Ahmad Farooqui
2. Meer Taqi Meer: Shakhshiyat aur Fan – Khushhaal Zaidi
3. Meer ki Aapbiti – Nisar Ahmad Farooqui
4. Naqd-e-Meer: Syed Abdullah
5. Meer Taqi Meer – Jameel Jalibi
6. Zikr-e-Meer – Nisar Ahmad Farooqui

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 2 (DSE-2): POET MIRZA GHALIB

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Poet Mirza Ghalib	4	3	0	1	Urdu in XII or X	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- To give knowledge of contemporary society of India through Urdu Ghazal.
- To give knowledge of classical poetry through Ghalib's Writings.
- To give a glimpse of classical literature with special reference to Ghalib's Ghazals.

Learning Outcomes

The Learning Outcomes of this course are as follows:

- Understand the contribution of poet Ghalib the development of Urdu Poetry.
- Explain and appreciate the poetry of Ghalib.
- Express thoughts about art & thought of Ghalib.

SYLLABUS OF DSE -2

UNIT – I (20 Hours)

1. Ghalib: Sawaneh aur Shakshiyat
2. Ghalib: Fikr-o-Fan
3. Ghalib ki Ghazalgoi ki Khushushiyaat

UNIT – II (25 Hours)

4. Darz zail ghazalon ki tadrees

i) Naqsh Fariyaadi hai kis ki shokhi-e-tahreer ka
ii) Kahte ho na denge ham dil agar pada payaa
iii) Dahar mein naqsh-e-wafa wajah-e-tasalli na huaa
iv) Bas ki dushwar hai har kaam ka aasan hona
v) Yeh na thi hamari qismat ki visal-e-yaar hota
vi) Dard Minnat kash dawa na huaa
vii) Na tha kuchh to khuda tha
viii) Phir mujhe deeda-e-tar yaad aaya
ix) Hui takheer to kuchh baais-e-takheer bhi tha
x) Zikr us pari wash ka
xi) Ishrat-e-qatra hai dariya mein fana ho jana
xii) Aah ko chahiye ik umr fana hone tak
xiii) Dil hi to hai na sang-o-khisht
xiv) Kisi ko de ke dil koi nawa sanj foghaan kyo ho
xv) Shauq har rang mein raqeeb sar-o-saaman nikla
xvi) Lazim tha ki dekho mera rasta koi din aur
xvii) Ibn-e-Mariyam huaa kare koi
xviii) Sab kahan kuchh lal-o-gul mein numayan ho gayin
xix) Dil se teri nigah jigar tak utar gayi
xx) Bazeecha-e-atfal hai duniya mere aage

Practical component (if any) –
UNIT-III (30 Hours)

1. Ghalib ke istemaal kardah bahar me deegar shoara (Khususan Ahad-e-Ghalib talluq rakhne wale) ki 3-5 ghazlein talash karein aur unka tajziya karein

Essential/recommended readings

1. Diwan-e-Ghalib - Ghalib

Suggestive readings (if any)

1. Yadghar-e-Ghalib - Hali
2. Irfan-e-Ghalib – Aal Ahmad Suroor

3. Ghalib: Shaksh-o-Shair – Majnoo Gorakhpuri
4. Mohasin-e-Kalam-e-Ghalib – Abdul Rahman Bijnori
5. Zikr-e-Ghalib – Malik Ram
6. Ghalib: Shaksh-o-Shair – Rasheed Ahmad Siddiqui
7. Ghalib aur Motala'a-e-Ghalib- Ibadat Barelvi
8. Ghalib Riwayat aur Ijtehaad – Khursheedul Islam

SEMESTER-IV

BA (Hons.) Persian

DISCIPLINE SPECIFIC CORE COURSE – 10: Classical Persian Prose

Credit distribution, Eligibility and Pre-requisites of the Course:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Classical Persian Prose	4	3	1	0	Class XII pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make students acquainted with Classical Persian Prose
2. To equip the students with some of the famous Persian classics like Safar Nama, Marzaban Nama and Chahar Maqala

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, the students will be able to get acquainted with Classical Persian Prose
- By studying this course, they shall get to know about some of the famous Persian classics

SYLLABUS OF DSC-10

UNIT – I (3 Weeks/9 Hours)

- Safar Nameh, Hakim Nasir Khusrau Alavi Qubadiani, (Nasr-e-Kohan; pp.351-65)

UNIT – II (4 Weeks/12 Hours)

- Marzban Nameh , Amir Unsar-ul Ma'ali bin Iskander Kaikaoos (Nasr-e-Kohan (pp. 499-513)

The following stories

- Dastan-e-Aahu-o-Mush-o-Uqaab
- Dastan-e-Barzigar Ba Mar
- Dastan-e-Shighal-e-Khar-Sawar
- Dastan-e-Shahryar-e Babul Ba Shahryarzadeh

UNIT – III (4 Weeks/12 Hours)

- Chahar Maqaleh by Nizami Aruzi Samarqandi edited by Mohammad Qazvini

The following stories from **Maqla I:**

- Introduction: Dar Mahiyat-e-Dabiri wa Kaifiyat, (P.No-12)
- Hikayat 1:Iskafi Dabiri (P.No 13)
- Hikayat-2: Chun Iskafi ra Kar,(P.No-14)
- Hikayat-5: Lamghan Shehri ast (P.No-17)

The following stories from **Maqla II:**

- Introduction: Dar Mahiyat-e-Ilm-e-Shair, (P.No-23)
- Hikayat-1: Ahmad bin Abdullah Al-Khujistani, (P.No-24)
- Hikayat: Nasr bin Ahmad Samani,(P.No-27)
- Hikayat: Abul-Qasim Firdausi (P.No-40)

UNIT – IV (4 Weeks/12 Hours)

- Life and works of respective authors
- Importance of Classical Persian Prose

Essential/recommended readings:

1. Nasr-e-Kohan; Intersharat-e-Vizarat-e-Farhang-o-Hunar, Idareh Kull-e Nigarish, Tehran, Iran.
2. Nizami Aruzi Samarqandi: Chahar Maqaleh; edited Mohammad Qazvini, Tehran University Publication, Tehran, Iran, 1334/1955.
3. Saaduddin, Warravini: Marzaban Nama, edited and explanations, Effat Karbasi & Dr.Mohd Reza Barzigar Khaliqi, Zawwar, Tehran, Iran-1397
4. Khusrau, Abu Moin Hamiduddin: Safar nameh, Edited and annotated by Prof.Dabir Siyaqi, Tehran-1335
5. Khusrau, Abu Moin Hamiduddin: Safar nameh, Translated by Abdur Razaaq Kanpuri, Anjuman-i-Taraqqi Urdu (Hind) Delhi-1941
6. Shafaq, Razazadeh: Tarikh-e-Adabiyat-e-Iran, Translated in Urdu by Sayyed Mubarizuddin Raf'at, Nadwatul Musannefin, Delhi,1955.
7. Shibli Nomani: Shair-ul Ajam, Shibli Academy, Azamgarh (U.P.)

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 11: Classical Persian Poetry

Credit distribution, Eligibility and Pre-requisites of the Course:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Classical Persian Poetry	4	3	1	0	Class XII pass	NIL

Learning Objectives:

The Learning Objectives of this course are as follows:

1. To equip the students with some prominent classical Persian poetry with their specimens
2. To enable the students to know the Persian Poetry Genres with poetry selections of some of the famous classical poets of Iran like Umar Khayyam, Hafiz Shirazi and Anwari

Learning outcomes:

The Learning Outcomes of this course are as follows:

- By learning this course, students will come to know about classical Persian poetry with some of its specimens
- By learning this course, students will be able to know the different Poetry Genres of classical Persian poetry like Rubaai, Ghazal and Qaseeda

SYLLABUS OF DSC- 11

UNIT – I (3 Weeks/9 Hours)

- Rubiyat Umar Khayyam bin Ibrahim Khayyami Nishaburi (30 Rubais) from Nisab-e-Jadeed-e-Farsi; Hakim Zaki Ahmad Khan (pp.140-43)

UNIT – II (3 Weeks/9 Hours)

- Ghazaliyat, Hafiz Shirazi, Khwaja Shamsuddin Mohammad (20 Ghazals) from Intekhab-e-Ghazaliyat-e-Hafiz; Mugheesuddin Faridi (pp.16-55)

UNIT – III (3 Weeks/9 Hours)

- Qasaid-e-Anwari, (3 Qasidah); Diwan-e Anwari, ed-Mohammad Taqi Mudarris Rezavi (pp.6-9 & 25-29):
    1. Ai Qaida-e-Taze ze Dast-e-Tu Karam ra
    2. Zan Pas ke Qaza Shakl-e-Digar Kard Jahan Ra

3. Inke Mibinam be Beedarist ya Rab ya Be Khab

UNIT – IV (3 Weeks/9 Hours)

- History of Classical Persian poetry

UNIT – V (3 Weeks/9 Hours)

- Characterization of Persian Ghazal, Qasidah and Rubaee
- Life and works of Umar Khayyam, Hafiz Shirazi and Anwari

Essential/recommended readings:

1. Rezavi, Mohammad Taqi Mudarris: Diwan-e-Anwari, Bangah-e-Tarjuma wa Nashr-e Kitab, Tehran, 1st edition, 1337/1958.
2. Faridi, Mugheesuddin: Intekhab-e-Ghazaliyat-e-Hafiz, Maktaba Shahrah, Urdu Bazar, Delhi-110 006, 1975.
3. Khan, Hakim Zaki Ahmed: Nisb-e-Jadeed-e-Farsi, Jayyed Press, Ballimaran, Delhi-110 006.
4. Shafaq, Razazadeh: Tarikh-e-Adabiyat-e-Iran, Translated in Urdu by Sayyed Mubarizuddin Raf'at, Nadwatul Musannefin, Delhi, 1955.
5. Shibli Nomani: Shair-ul Ajam, Shibli Academy, Azamgarh (U.P.).

DISCIPLINE SPECIFIC CORE COURSE – 12: Persian Translation & Interpretation – Basic Level

Credit distribution, Eligibility and Pre-requisites of the Course:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Persian Translation & Interpretation – Basic Level	**4**	**3**	**1**	**0**	**Class XII pass**	**NIL**

Learning Objectives:

The Learning Objectives of this course are as follows:

1. To acquaint the students with basics of Persian interpretation and translation.
2. To equip the students with elementary level interpretation and translation skills.
3. To equip the students with proficiency in reading, writing and talking and enable him/her to use the language in different situations

Learning outcome:

- By learning this course, students will know the basic level interpretation and translation skills
- By learning this course, students will be able to perform simple tasks of translation and interpretation

SYLLABUS OF DSC-12

UNIT – I (4 Weeks/12 Hours)

- Translation of Persian texts into English

UNIT – II (4 Weeks/12 Hours)

- Translation of English text into Persian

UNIT – III (3 Weeks/9 Hours)

- Dialogues & phrases in Persian

UNIT – IV (4 Weeks/12 Hours)

- Interpretation into Persian from Urdu, Hindi and English and vice versa

Essential/recommended readings:

1. Let's Learn Persian, N.C.P.U.L., Ministry of HRD, New Delhi
2. Dars-eFarsi by Namdaryan, Taqipur. Published by Institute for Humanities & Cultural Studies, Tehran, Iran, 1378 A.H./1999 A.D.
3. Samareh, Yadollah, Persian Language Teaching (Azfa) Elementary Course, Book-1, Tehran Iran 1998
4. Gargesh, R. Goswami.: Translation and Interpretation, University of Delhi, Delhi-110 007

Category II

Persian Courses for Undergraduate Programme of study with Persian as one of the Core Disciplines

(B.A. Programmes with Persian as Major discipline)

DISCIPLINE SPECIFIC CORE COURSE : Persian Grammar, Essay & Translation

Credit distribution, Eligibility and Pre-requisites of the Course:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Persian Grammar, Essay & Translation	4	3	1	0	Class XII pass	NIL

Learning Objectives:

The Learning Objectives of this course are as follows:

1. To equip the students with Persian Grammar, Essay & Translation
2. To enable the students to translate from Persian language into English and vice versa

Learning outcomes:

The Learning Outcomes of this course are as follows:

- By learning this course, students will be able to translate from Persian language into English and vice versa
- By learning this course, students will be well versed in Persian Grammar, Essay & Translation

SYLLABUS OF DSC

UNIT – I (5 Weeks/15 Hours)

- Applied Persian Grammar

UNIT – II (5 Weeks/15 Hours)

- Translation: Persian to English and vice-versa

UNIT – III (5 Weeks/15 Hours)

- Essay and Letter Writing in Persian

Essential/recommended readings:

1. Sufi, Abdul Aziz, Essentials of Persian Translation, Indo-Iran Society, Lal Kuan, Delhi-06, 1999.
2. Namdariyan, Taqipur; Dars-e-Farsi, Published by Institute for Humanities & Cultural Studies, Tehran, Iran, 1378/1999
3. Gargesh, R, Goswami; Translation and Interpretation, University of Delhi, Delhi110007
4. Kumar, Dr., Rajinder; Elementary Persian, Grammar, Harjeet Publication, Delhi-110034, 2009.
5. English Farsi Phrasebook with useful word list, US Department of State, Washington DC.
6. Lambton, Ann; Persian Grammar, Manohar Publications, New Delhi

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE : Modern Persian Short-Story Writing

Credit distribution, Eligibility and Pre-requisites of the Course:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Modern Persian Short-Story Writing	4	3	1	0	CLASS XII PASS	NIL

Learning Objectives:

The Learning Objectives of this course are as follows:

1. To equip the students with Modern Persian Short-Story Writing
2. To familiarize the students with the modern Iranian society through these short stories

Learning outcomes:

The Learning Outcomes of this course are as follows:

1. By learning this course, the students will be acquainted with Persian Short Story Writing and its writers
2. By learning this course, the students will be introduced to the trends of Persian Short Story Writing

SYLLABUS OF DSC

UNIT – I (4 Weeks/12 Hours)

Selection of Short Stories:

- Khana-i-Pidari
- Khud Kushi
- Safar be shahar-i-Suleman

UNIT – II (4 Weeks/12 Hours)

Life & works Modern Persian Short Story Writers:

- Buzurg Alavi
- Jalal Ale Ahmad
- Samad Behrangi
- Sadiq Choobak
- Simin Danishwar
- Mahmood Daulatabadi

UNIT – III (4 Weeks/12 Hours)

Life & works Modern Persian Short Story Writers:

- Haushang Gulsheri
- Sadiq Hidayat
- Mohd Hijazi
- Mohd Ali Jamal Zadeh
- Hoshang Morad Kirmani
- Ghulam Hosain Saadi

UNIT – IV (3 Weeks/9 Hours)

- History of Short Story Writing in Persian

Essential/recommended readings:

1. Safa, Zabihullah; Nasr-e-Farsi, Intasharat-e-Kitabfaroshi-e-Ibn-i-Sina, Tehran, 1347
2. Akbar, Dr. Razia; Iran me Jadeed Farsi Adab ke Pachas Saal (1900-1950), Ajaz Press, Hyderabad, Andhra Pradesh, 1991
3. Khan, Dr. M.A. and Dr S.H. Qasemi; Intekhab-e-Nasr-e-Mu'asir-e-Farsi, Department of Persian, University of Delhi, Delhi-110 007, 1991.
4. Khan, Hakim Zaki Ahmad; Nisb-e-Jadeed-e-Farsi, Jayyed Press, Ballimaran, Delhi-110 006.
5. Hameedi, Mehdi; Darya-e-Gauhar (Vol. I), Intesharat-e-Amir Kabir, Tehran, Iran, 1343/1964.
6. Kamshad, Hasan; Modern Persian Prose, Cambridge University Press, 1966.
7. Hakemi, Isma'il; Adabiyat-e-Mu'asir-e-Farsi, Tehran, 1988. 9. Abedini, Mir Hasan: Sad Sl Dastn-Navisi dar Iran; 3 Vols., Iran, 1377/1998.

Category III

Persian Courses for Undergraduate Programme of study with Persian as one of the Core Disciplines

(B.A. Programmes with Persian as non-Major or Minor discipline)

DISCIPLINE SPECIFIC CORE COURSE : Persian Grammar, Essay & Translation

This course is common in BA (Programme) in Persian as major discipline for Semester VI

Credit distribution, Eligibility and Pre-requisites of the Course:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Persian Grammar, Essay & Translation	4	3	0	NIL	Class XII pass	NIL

Learning Objectives:

The Learning Objectives of this course are as follows:

1. To equip the students with Persian Grammar, Essay & Translation
2. To enable the students to translate from Persian language into English and vice versa.

Learning outcomes:

The Learning Outcomes of this course are as follows:

- By learning this course, students will be able to translate from Persian language into English and vice versa.
- By learning this course, students will be well versed in Persian Grammar, Essay & Translation

SYLLABUS OF DSC

UNIT – I (5 Weeks/15 Hours)

- Applied Persian Grammar

UNIT – II (5 Weeks/15 Hours)

- Translation: Persian to English and vice-versa

UNIT – III (5 Weeks/15 Hours)

- Essay and Letter Writing in Persian

Essential/recommended readings:

1. Sufi, Abdul Aziz, Essentials of Persian Translation, Indo-Iran Society, Lal Kuan, Delhi-06, 1999.
2. Namdariyan, Taqipur; Dars-e-Farsi, Published by Institute for Humanities & Cultural Studies, Tehran, Iran, 1378/1999
3. Gargesh, R, Goswami; Translation and Interpretation, University of Delhi, Delhi110007
4. Kumar, Dr., Rajinder; Elementary Persian, Grammar, Harjeet Publication, Delhi-110034, 2009.
5. English Farsi Phrasebook with useful word list, US Department of State, Washington DC.
6. Lambton, Ann; Persian Grammar, Manohar Publications, New Delhi

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES OFFERED BY THE DEPARTMENT OF PERSIAN

Credit distribution, Eligibility and Pre-requisites of the Course:

GENERIC ELECTIVES (GE-8): Persian Grammar & Text

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Persian Grammar & Text	4	3	1	0	12th Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To make the students equipped with Functional Persian Grammar
- To make the students able to converse in Persian Language

Learning outcomes

The Learning Outcomes of this course are as follows:

- By learning this course, the students will be able to read, write and speak fluently in Persian language
- By learning this course, the students will be able to know about Functional Persian Grammar

SYLLABUS OF GE-8

UNIT – I (4 Weeks/12 Hours)

- Lesson 1 to 6 with exercises from Dars-e-Farsi by Namdaryan, Taqipur

UNIT – II (4 Weeks/12 Hours)

- Lesson 7 to 10 with exercises from Dars-e-Farsi by Namdaryan, Taqipur

UNIT – III (4 Weeks/12 Hours)

- Lesson 11 to 15 with exercises from Dars-e-Farsi by Namdaryan, Taqipur

UNIT – IV (3 Weeks/9 Hours)

- Translation of Persian text into English, Hindi & Urdu

Essential/recommended readings:

1. Dars-e-Farsi by Namdaryan, Taqipur. Published by Institute for Humanities & Cultural Studies, Tehran, Iran, 1378 A.H./1999 A.D.
2. Kumar, Dr., Rajinder; Elementary Persian, Grammar, Harjeet Publication, Delhi-110034, 2009.
3. English Farsi Phrasebook with useful word list, US Department of State, Washington DC.
4. Lambton, Ann; Persian Grammar, Manohar Publications, New Delhi
5. Sufi Abdul Aziz: Essentials of Persian Translation, Indo-Iran Society, Lal Kuan, Delhi 110 006, 1999

GENERIC ELECTIVES (GE-9): Spoken Persian – Level 2

Credit distribution, Eligibility and Pre-requisites of the Course:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Spoken Persian-Level 2	4	3	1	0	12th Pass	Spoken Persian – level 1

Learning Objectives

The Learning Objectives of this course are as follows:

- To equip the students with the second level of spoken Persian
- To familiarize the students with daily usage Persian sentences

Learning outcomes

The Learning Outcomes of this course are as follows:

- By learning this course, the students will be able to converse in simple Persian language
- By learning this course, the students will be acquainted daily usage Persian sentences

SYLLABUS OF GE-9

UNIT – I (5 Weeks/15 Hours)

- Part- I & II from Azfa-1

UNIT – II (5 Weeks/15 Hours)

- Part-3 From Azfa -1

UNIT – III (5 Weeks/15 Hours)

- Grammar & Translation
- Introducing yourself
- Dialogues
- Accent

Essential/recommended readings

1. Samareh, Yadollah, Persian Language Teaching (Azfa) Elementary Course, Book-1, Tehran Iran 1998.
2. Gargesh, R. Goswami, Translation and Interpretation, University of Delhi, Delhi.
3. Kumar, Rajinder, Elementary Persian Grammar, Harjit Publications, WS-3107/A, Mahindra Park, Delhi-110034.
4. English Farsi Phrasebook with useful wordlist, US Department of State, Washington DC.
5. Sufi, Abdul Aziz, Essentials of Persian Translation, Indo-Iran Society, Lal Kuan, Delhi-06, 1999

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF DSE COURSES

DISCIPLINE SPECIFIC ELECTIVE COURSE –DSE 5: Study of Persian Ghazals

Credit distribution, Eligibility and Pre-requisites of the Course:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Study of Persian Ghazals	4	3	1	NIL	Class XII pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make students equipped with Ghazal and its peculiarities
2. To equip the students with Persian Ghazals and its components

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, the students will be able to know about Persian Ghazal and its famous poets
- By studying this course, the students will be familiar with Persian Ghazal writings

SYLLABUS OF DSE-5

UNIT – I (4 Weeks/12 Hours)

- Brief introduction of Ghazal writing in Persian

UNIT – II (4 Weeks/12 Hours)

Selection of following Ghazals from Nisab-e-Jadid-e-Farsi; P.No. 6-9:

1. اگر آن ترک شیرازی بدست آرد دل ما را
(Agar aan Turk-e-Shirazi be dast aarad dil-e-ma ra)
2. دل می‌رود ز دستم صاحبدلان خدا را
(Dil mi rawad ze dastam Sahibdilan khuda ra)
3. ساقی بنور باده برافروز جام ما
(Saaqi be noor-e-baade bar afrooz jaam-e-ma)
4. صوفی بیا که آئینه صاف ست جام را

(Soofi biya ke aaine saaf ast jam ra)

5. بیا که قصر امل سخت سست بنیادست
(Biya ke Qasr-e-Amal sakht sust bunyadast)

UNIT – III (4 Weeks/12 Hours)

Selection of following Ghazals from Nisab-e-Jadid-e-Farsi; P.No. 18-21:

1. ای باد برقع بر فگن آن روی آتشناک را
(Ai baad burqe bar Fagan aan rooy-e-aatishnaak ra)
2. جان من از آرام رفت آرام جان من کجا
(Jaan-e-man az aaraam raft aaraam-e-jaan-e-man kuja)
3. رسید باد صبا تازه کرد جان مرا
(Raseed baad-e-Saba taaze kard jaan-e-maraa)
4. زهی وصف رخت مهر زبانها
(Zahi wasf-e-rukhat mehr-e-zabanha)
5. ساقیا باده ده امروز که جانان اینجاست
(Saaqiya baade deh imrooz ke jaanan injaast)

UNIT – IV (3 Weeks/9 Hours)

- Brief introduction of respective poets

Essential/recommended readings:

1. Nisab-e-Jadeed-e-Farsi:Jaiyyed Press, Ballimaran,Delhi.
2. Shamisa, Sirus:Anwa-e-Adabi,Intesharat-e Firdos,Tehran,Iran,2004.
3. Shafaq, Razazadeh: Tarikh-e-Adabiyat-e-Iran, Translated in Urdu by Sayyed Mubarizuddin Raf'at, Kutubkhana, Khurshidia, Urdu Bezar, Lahore, 2014.
4. Shibli Nomani: Shair-ul Ajam, Shibli Academy, Azamgarh (U.P.).

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – DSE 6: Study of Persian Qasida

Credit distribution, Eligibility and Pre-requisites of the Course:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Study of Persian Qasida	4	3	1	NIL	Class XII pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make students equipped with Qasida and its peculiarities
2. To equip the students with Persian Qasida and its components

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, the students will be able to know about Persian Qasida and its famous poets.
- By studying this course, the students will be familiar with Persian Qasida writings.

SYLLABUS OF DSE- 6

UNIT – I (4 Weeks/12 Hours)

- Brief introduction of Qasida writing in Persian

UNIT – II (4 Weeks/12 Hours)

Selection of following Ghazals from Nisab-e-Jadid-e-Farsi; P.No. 90-100:
انتخاب از قصاید قاآنی (Intakhaab az Qasaid-e-Qaani):

- در شکایت از ممدوح گوید
(Dar Shikayat az mamdooh guyad)

UNIT – III (4 Weeks/12 Hours)

Selection of following Ghazals from Nisab-e-Jadid-e-Farsi; P.No 113-115:
انتخاب از قصاید عرفی شیرازی:
(Intakhaab az Qasaaid-e-Urfi Shirazi)

- در وصف کشمیر
(Dar wasf-e-Kashmir)

UNIT – IV (3 Weeks/9 Hours)

- Life & works of respective poets

Essential/recommended readings:

1. Nisab-e-Jadeed-e-Farsi:Jaiyyed Press, Ballimaran,Delhi.
2. Shamisa, Sirus:Anwa-e-Adabi,Intesharat-e Firdos,Tehran,Iran,2004.
3. Shafaq, Razazadeh: Tarikh-e-Adabiyat-e-Iran, Translated in Urdu by Sayyed Mubarizuddin Raf'at, Kutubkhana, Khurshidia, Urdu Bezar, Lahore, 2014.
4. Shibli Nomani: Shair-ul Ajam, Shibli Academy, Azamgarh (U.P.).

DISCIPLINE SPECIFIC ELECTIVE COURSE – DSE 7: Novel writing in modern Persian

Credit distribution, Eligibility and Pre-requisites of the Course:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Novel writing in modern Persian literature	4	3	1	NIL	Class XII pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make students equipped with Novel writing in modern Persian literature and its peculiarities
2. To equip a student with the tradition and culture of Novel writing in Persian literature

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, the students will be able to know about Novel writing in modern Persian literature and its peculiarities.
- By studying this course, the students will be familiar with the tradition and culture of Novel writing in Persian literature.
- By studying this course, the students will be able to know the socio-cultural aspects of the Iranian society and contemporary world

SYLLABUS OF DSE- 7

UNIT – I (3 Weeks/9 Hours)

- A brief history of Novel writing in modern Persian literature

UNIT – II 3 Weeks/9 Hours)

- Literary and Socio-cultural importance of Persian Novel writing

UNIT – III (3 Weeks/9 Hours)

Introduction of the following famous Persian Novels:

1. Tehran Makhoof (تهران مخوف)
2. Savushun (سو وشون)
3. Sang-e sabour (سنگ صبور)
4. Ziba (زیبا)
5. Shohar- Aahu khanum (شوهر آهو خانم)

UNIT – IV (3 Weeks/9 Hours)

Life and literary attainments of the following novel writers:

1. Mushfaq kazami (مشفق کاظمی)
2. Simin Danishwar (سیمین دانشور)
3. Sadiq chubak (صادق چوبک)
4. Mohammad Hejazi (محمد حجازی)
5. Mohammad ali afghani (محمد علی افغانی)
6. Sadiq Hidayat (صادق هدایت)

UNIT – V (3 Weeks/9 Hours)

- Chashmhaesh (چشمهایش) Page no. (05 to 20)

Essential/recommended readings:

1. Kamshad, Hasan, Jadeed Farsi Nasri Adab, translated in Urdu by Masudi, Dr. Mohmmad, Indian Printing press, Dal gate, Sri Nagar, 1996.
2. Istelami, Dr. Mohmmad, Barrasi-e- Adabiyat-e-Imruz-e-Iran, translated in Urdu by Nomani, Dr. Rais Ahmed, International printing press, Abdul Qadeer Market, Jail Road, Aligarh, 2012.
3. Roozbe, Mohammad Raza, Adabiyat-e-Moasir-e-Iran, Sher, Nasr-e-Ruzgar, Tehran, 1392.
4. Emam, Manzar, Adabiyat-e-Jadeed Iran, Kitabistan, Muzaffarpur, Bihar, 1996.
5. Kamshad, Hasan, Modern Persian Prose, Cambridge University press, 1996.
6. Abidini, Hasan Mir, Sad Saal Dastan Nawisi-e-Iran, Vol-1-4, Tehran, 2005
7. Abidini, Hasan Mir, Hashtad Saal Dastan-e-Kutah-e-Irani, Vol-1, Tehran, 2014
8. Aryanpour, Yahya, Az Saba ta Nima, Vol-2, Intesharat-e-Jawwar, Tehran, 1372
9. Sulemani, Mohsin, Rumman Cheest?, Intesharat-e-Parg, Tehran, 1366
10. Alavi, Bojorg, Chashmhayash, Intesharat-e-Nigah, 1401

DISCIPLINE SPECIFIC ELECTIVE COURSE – DSE 8: Marsia Nigari In Perisan Literature

Credit distribution, Eligibility and Pre-requisites of the Course:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Marsia Nigari in Perisan Literature	4	3	1	NIL	Class XII pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make students equipped with the development of Marsia writing through the centuries
2. To equip a student with the eminent Persian poets of Marsia

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, the students will be able to know about the development of Marsia writing through the centuries.
- By studying this course, the students will be familiar with the eminent Persian poets of Marsia.

SYLLABUS OF DSE- 8

UNIT – I (4 Weeks/12 Hours)

- Introduction, History of Marsia Nigari In Persian Literature

UNIT – II (3 Weeks/9 Hours)

- Promotion of Marsiah Nigari In Persian Literature

UNIT – III (4 Weeks/12 Hours)

- Dawazdeh Band Mohtashhim Kashani
- Selection of Marsia (Six Band of Mohtashim Kashani)

UNIT – IV (4 Weeks/12 Hours)

The life and Works of the respective poets:

- Mohtashim Kashani
- Visal Shirazi
- Hatif Isfahani
- Mohsin Kashi
- Qaani

Essential/recommended readings:

1. Shafaq, Razazadeh: Tarikh-e-Adabiyat-e-Iran, Translated in Urdu by Sayyed Mubarizuddin Rafat, Kutubkhana, Khurshidia, Delhi
2. Badakhshani, Maqbool Beig: Tarikh-e-Iran (2 Vol.), Majlis-e-Taraqqi-e-Adab,
3. Edward, Brown: Tarikh-e-Adabiyat-e-Iran, translated Sajjad Husain, Jamia Usmania. Hyderabad, 1932.
4. Safa, Zabihullah: Farsi Adab ki Mukhtasar Tarikh, translated Andalib ZahraFareed Book Depot, Delhi.
5. Subhani, Dr.Tufique: Tareekh-E-Iran, Tehran, Iran.
6. Edward, Brown: Tarikh-e-Adabiyat-e-Iran dar Ahd-e-Jadeed, Translate by Syed Wahaj-ud-Din Ahmed, Anjuman-i Taraqqi-i Urdu.
7. هفت دیوان محتشم کاشانی، کاشانی، کمال الدین محتشم؛ عبدالحسین نوایی و مهدی صدری، تهران، وزارت فرهنگ و ارشاد اسلامی، ۱۳۸۰،

SEMESTER-V
BA Hons Persian

DISCIPLINE SPECIFIC CORE COURSE – 13: Indo-Persian Poetry

Credit distribution, Eligibility and Pre-requisites of the Course:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Indo-Persian Poetry	4	3	1	0	Class XII pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make students acquainted with Indo-Persian Poetry
2. To equip the students with some of the famous Indo-Persian Poets like Amir Khusrau, Urfi Shirazi and Ghalib Dehlavi
3. To familiarize the students with specialties of Indo-Persian poetry like Sabk-e-Hindi

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, the students will be able to get acquainted with above mentioned famous Indo-Persian Poets
- By studying this course, they shall get to know about Indo-Persian poetry like Sabk-e-Hindi

SYLLABUS OF DSC-13

UNIT – I (3 Weeks/9 Hours)

- Ghazaliyat Amir Khusrau (10 Ghazals); Nisab-e-Jadeed-e-Farsi (p.18-25)

UNIT – II (3 Weeks/9 Hours)

Following Qasaid of Urfi Shirazi

- Ae Mata‘ Dard dar Bazar Jan Andakhteh
- Har Sookhteh Jani ke be Kashmir dar Aayad (Nisab-e-Jadeed-e-Farsi (p.113-16)

UNIT – III (3 Weeks/9 Hours)

- Ghazaliyat Ghalib Dehlavi, Mirza Asadullah Khan 10 Ghazals; Naqshha-i-Rang Rang; Aat Kakavi (p.7-23)

UNIT – IV (3 Weeks/9 Hours)

- Specialties of Indo-Persian poetry, Sabke Hindi

UNIT – V (3 Weeks/9 Hours)

- Life and works of respective poets

Essential/recommended readings:

1. Khan, Hakim Zaki Ahmad: Nisb-e-Jadeed-e-Farsi, Jayyed Press, Ballimaran, Delhi-110 006
2. Ata Kakvi: Ghalib: Naqsh-hae-Rang Rang, Azimushshan Book Depot, Sultan Ganj, Patna
3. Siddiqui, Zaheer Ahmed: (Compiled & Translated) Ghalib: Naqsh-hae-Rang Rang, Dept,of Urdu, University of Delhi, Jamal Press, Delhi-1970.
4. Ghalib, Mirza: Intekhab-i-Ghazaliyat-i-Ghalib Farsi ma' Tashreehat, Compiled by Maulana Hamid Hasan Qadri, Ghalib Institute, New Delhi 2009
5. Khusrau, Amir: Diwan Amir Khusrau, Compiled by Dr. Anwarul Hasan, Raja Ram Kumar Book Depot, Lucknow, 1967
6. Persian Ghazals of Ghalib, Translated into English by Dr. Yusuf Husain, Ghalib Institute, New Delhi-1979
7. Urfi, Maulana Jamaluddin: Qasaid-i-Urfi, Nawal Kishore Press, Lucknow.
8. Qutubuddin, Mullah: Sharah Qasaid-i-Urfi, Nawal Kishore Press, Lucknow 1881

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 14: Indo-Persian Prose

Credit distribution, Eligibility and Pre-requisites of the Course:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Indo-Persian Prose	4	3	1	0	Class XII pass	NIL

Learning Objectives:

The Learning Objectives of this course are as follows:

1. To equip the students with some prominent Indo-Persian Prose writings
2. To enable the students to get acquainted with specimens of Indo-Persian Prose works like Jahangir Nameh, Jawame-ul-Hikayat and Khutoot-e-Ghalib

Learning outcomes:

The Learning Outcomes of this course are as follows:

- By learning this course, students will come to know about some of the prominent Indo-Persian Prose writings
- By learning this course, students will be able to know about above mentioned specimens of Indo-Persian Prose works

SYLLABUS OF DSC- 14

UNIT – I (3 Weeks/9 Hours)

- Jahangir Nameh: Mutamad Khan, Abul-Hasan; Nisab-e-Jadeed-e-Farsi, (p.118-28)

UNIT – II (3 Weeks/9 Hours)

- Jawame-ul-Hikayat by Aufi, Mohammad Sadiduddin; Nasr-e-Kohan (pp.514-31)

UNIT – III (3 Weeks/9 Hours)

- History of Indo-Persian Literature

UNIT – IV (3 Weeks/9 Hours)

- Khutoot-e-Ghalib; Ghalib Dehlavi, Mirza Asadullah Khan; Nasr-e-Kohan (p.615-20)

UNIT – V (3 Weeks/9 Hours)

- Importance of Sabke Hindi
- Life and works of respective authors

Essential/recommended readings:

1. Khan, Hakim Zaki Ahmed: Nisb-e-Jadeed-e-Farsi, Jayyed Press, Ballimaran, Delhi-110 006
2. Nasr-e-Kohan; Intersharat-e-Vizarat-e-Farhang-o-Hunar, Idara-e-Kull-e Nigarish, Tehran, Iran
3. Abidi, Prof., S. A. H, Indo-Persian Literature, Complied by Prof. S. B. F. Husaini, Department of Persian, Delhi-110007

DISCIPLINE SPECIFIC CORE COURSE – 15: Persian Translation & Interpretation – Advance Level

Credit distribution, Eligibility and Pre-requisites of the Course:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Persian Translation & Interpretation – Advance Level	**4**	**3**	**1**	**0**	**Class XII pass**	**Persian Translation & Interpretation – Basic Level**

Learning Objectives:

The Learning Objectives of this course are as follows:

1. To acquaint the students with advance level of Persian interpretation and translation
2. To equip the students with proficiency in reading, writing and talking and enable him/her to use the language in different situations

Learning outcome:

The Learning Outcomes of this course are as follows:

- By learning this course, students will know the advance level interpretation and translation skills
- By learning this course, students will be able to perform different tasks of translation and interpretation

SYLLABUS OF DSC-15

UNIT – I (4 Weeks/12 Hours)

- Translation of Persian texts into English

UNIT – II (4 Weeks/12 Hours)

- Translation of English text into Persian

UNIT – III (3 Weeks/9 Hours)

- Introducing yourself, Your Family, City & country etc. in Persian dialogues

UNIT – IV (4 Weeks/12 Hours)

- Interpretation into Persian from Urdu, Hindi and English and vice versa

Essential/recommended readings:

1. Let's Learn Persian, N.C.P.U.L., Ministry of HRD, New Delhi.
2. Dars-eFarsi by Namdaryan, Taqipur. Published by Institute for Humanities & Cultural Studies, Tehran, Iran, 1378 A.H./1999 A.D.
3. Samareh, Yadollah, Persian Language Teaching (Azfa) Elementary Course, Book-1, Tehran Iran 1998
4. Gargesh, R. Goswami.: Translation and Interpretation, University of Delhi, Delhi-110 007
5. Khanlari, Dr.,Zahra:Dastur-e-Zaban-e-Farsi, Idarah-e-Adabiyat-e-Dehli, Jaiyyed press, Ballimaran,Delhi-110006.
6. Kumar, Rajinder, Elementary Persian Grammar, Harjit Publications, WS-3107/A, Mahindra Park, Delhi-110034

Category II

Persian Courses for Undergraduate Programme of study with Persian as one of the Core Disciplines

(B.A. Programmes with Persian as Major discipline)

DISCIPLINE SPECIFIC CORE COURSE – : Introduction to famous Persian Ghazal writers

Credit distribution, Eligibility and Pre-requisites of the Course:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Introduction to famous Persian Ghazal writers	4	3	1	0	Class XII pass	NIL

Learning Objectives:

The Learning Objectives of this course are as follows:

1. To equip the students with development of Ghazal through the centuries
2. To enable the students to feel the essence of Persian poetry by Ghazal
3. To make the students aware of some of the eminent Persian poets of Ghazal

Learning outcomes:

The Learning Outcomes of this course are as follows:

- By learning this course, students will be able to know the fascinating poets of Ghazal
- By learning this course, students will be able to go through the Ghazals of poets like Sadi, Hafez, Rumi, Khusrau, Bedil, Ghalib and others

SYLLABUS OF DSC

UNIT – I (4 Weeks/12 Hours)

Introduction to the following famous poets:

- Saadi
- Hafez
- Rumi
- Abdur Rahman Jami

UNIT – II (4 Weeks/12 Hours)

Introduction to the following famous poets:

- Amir Khusrau
- Urfi Shirazi
- Naziri Nishapuri
- Ghalib Dehlavi

UNIT – III (4 Weeks/12 Hours)

Introduction to styles of Persian Poetry (Sabk):

- Sabk-e-Khorasani
- Sabk-e-Iraqi
- Sabk-e-Hindi
- Sabk-e-Bazgasht

UNIT – IV (3 Weeks/9 Hours)

Selection of Ghazals (Saadi Shirazi):

- Ae Nafs-e-Khurram-e-Baad-e-saba
- Az bar-e-yaar aamde ae Mahaba
- Rooye tu Khush mi Numayad Aaina-e-ma
- Ke aaine pakizeh ast wa rooye tu ziba

Essential/recommended readings:

1. Shafaq, Razazadeh: Tarikh-e-Adabiyat-e-Iran, Translated in Urdu by Sayyed Mubarizuddin Raf'at, Kutubkhana, Khurshidia, Urdu Bezar, Lahore, 2014.
2. Badakhshani, Maqbool Beig: Tarikh-e-Iran (2 Vol.), Majlis-e-Taraqqi-e-Adab, Lahore, 1971.
3. Edward, Brown: Tarikh-e-Adabiyat-e-Iran, translated Sajjad Husain, Jamia Usmania, Hyderabad, 1932.
4. Safa, Zabihullah : Farsi Adab ki Mukhtasar Tarikh, translated Andalib Zahra, Fareed Book Depot, Delhi.
5. Kulliyat-i-Saadi, Edited by Mohd. Ali Farooghi, Inteserat-i-Herman, Tehran,Iran, 1385

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 2: Persian Translation & Interpretation – Intermediary Level

Credit distribution, Eligibility and Pre-requisites of the Course:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Persian Translation & Interpretation – Intermediary Level	4	3	1	0	CLASS XII PASS	NIL

Learning Objectives:

The Learning Objectives of this course are as follows:

1. To equip the students with Persian Translation and Interpretation of Intermediary Level
2. To familiarize the students with creativeness and presentation on the language during discussion

Learning outcomes:

The Learning Outcomes of this course are as follows:

- By learning this course, the students will be acquainted with Persian Short Story Writing and its writers
- By learning this course, the students will have proficiency in reading, writing and talking

SYLLABUS OF DSC-2

UNIT – I (4 Weeks/12 Hours)

- Translation of Persian texts into English Khana-i-Pidari

UNIT – II (4 Weeks/12 Hours)

- Translation of English text into Persian

UNIT – III (4 Weeks/12 Hours)

- Dialogues into Persian

UNIT – IV (3 Weeks/9 Hours)

- Interpretation into Persian from Urdu, Hindi and English

Essential/recommended readings:

1. Let's Learn Persian, N.C.P.U.L., Ministry of HRD, New Delhi.
2. Dars-eFarsi by Namdaryan, Taqipur. Published by Institute for Humanities & Cultural Studies, Tehran, Iran, 1378 A.H./1999 A.D.
3. Samareh, Yadollah, Persian Language Teaching (Azfa) Elementary Course, Book-1, Tehran Iran 1998.
4. Khanlari, Dr.,Zahra:Dastur-e-Zaban-e-Farsi, Idarah-e-Adabiyat-e-Dehli, Jaiyyed press, Ballimaran,Delhi-110006.
5. Sufi Abdul Aziz: Essentials of Persian Translation, Indo-Iran Society, Lal Kuan, Delhi 110006, 1999.
6. Kumar, Rajinder, Elementary Persian Grammar, Harjit Publications, WS-3107/A, Mahindra Park, Delhi-110034.

Category III

Persian Courses for Undergraduate Programme of study with Persian as one of the Core Disciplines

(B.A. Programmes with Persian as non-Major or Minor discipline)

DISCIPLINE SPECIFIC CORE COURSE (DSC-1): Introduction to famous Persian Ghazal writers

This course is common in BA (Programme) in Persian as major discipline for Semester V

Credit distribution, Eligibility and Pre-requisites of the Course:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Introduction to famous Persian Ghazal writers	4	3	0	NIL	Class XII pass	NIL

Learning Objectives:

The Learning Objectives of this course are as follows:

1. To equip the students with development of Ghazal through the centuries
2. To enable the students to feel the essence of Persian poetry by Ghazal
3. To make the students aware of some of the eminent Persian poets of Ghazal

Learning outcomes:

The Learning Outcomes of this course are as follows:

- By learning this course, students will be able to know the fascinating poets of Ghazal
- By learning this course, students will be able to go through the Ghazals of poets like Sadi, Hafez, Rumi, Khusrau, Bedil, Ghalib and others

SYLLABUS OF DSC

UNIT – I (4 Weeks/12 Hours)

Introduction to the following famous poets:

- Saadi
- Hafez

- Rumi
- Abdur Rahman Jami

UNIT – II (4 Weeks/12 Hours)

Introduction to the following famous poets:

- Amir Khusrau
- Urfi Shirazi
- Naziri Nishapuri
- Ghalib Dehlavi

UNIT – III (4 Weeks/12 Hours)

Introduction to styles of Persian Poetry (Sabk):

- Sabk-e-Khorasani
- Sabk-e-Iraqi
- Sabk-e-Hindi
- Sabk-e-Bazgasht

UNIT – IV (3 Weeks/9 Hours)

Selection of Ghazals (Saadi Shirazi):

- Ae Nafs-e-Khurram-e-Baad-e-saba
- Az bar-e-yaar aamde ae Mahaba
- Rooye tu Khush mi Numayad Aaina-e-ma
- Ke aaine pakizeh ast wa rooye tu ziba

Essential/recommended readings:

1. Shafaq, Razazadeh: Tarikh-e-Adabiyat-e-Iran, Translated in Urdu by Sayyed Mubarizuddin Raf'at, Kutubkhana, Khurshidia, Urdu Bezar, Lahore, 2014.
2. Badakhshani, Maqbool Beig: Tarikh-e-Iran (2 Vol.), Majlis-e-Taraqqi-e-Adab, Lahore, 1971.
3. Edward, Brown: Tarikh-e-Adabiyat-e-Iran, translated Sajjad Husain, Jamia Usmania, Hyderabad, 1932.
4. Safa, Zabihullah : Farsi Adab ki Mukhtasar Tarikh, translated Andalib Zahra, Fareed Book Depot, Delhi.
5. Kulliyat-i-Saadi, Edited by Mohd. Ali Farooghi, Inteserat-i-Herman, Tehran,Iran, 1385

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES OFFERED BY THE DEPARTMENT OF PERSIAN

GENERIC ELECTIVES (GE-10): Spoken Persian – Level 3

Credit distribution, Eligibility and Pre-requisites of the Course:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Spoken Persian – Level 3	4	3	1	0	12th Pass	Spoken Persian – Level 2

Learning Objectives

The Learning Objectives of this course are as follows:

- To make the students equipped with conceptual understanding, analytical and interpretive skills
- To enable the students to speak Persian language and Interpret from Hindi, Urdu and English to Persian

Learning outcomes

The Learning Outcomes of this course are as follows:

- By learning this course, the students will be able to develop conceptual understanding, analytical and interpretive skills which will enable them to fulfil the language related requirements
- By learning this course, the students will be able interpret from Hindi, Urdu and English to Persian and vice versa

SYLLABUS OF GE-10

UNIT – I (4 Weeks/12 Hours)

- Part- I, II & III from Azfa-III

UNIT – II (4 Weeks/12 Hours)

- Part-IV, V & VI from Azfa -III

UNIT – III (4 Weeks/12 Hours)

- Grammar & Translation

UNIT – IV (3 Weeks/9 Hours)

- Introducing yourself, your city, Country, Family & Friends
- Dialogues
- Accent

Essential/recommended readings:

1. Saffar Muqaddam, Dr. Ahmad: Zaban-e Farsi, Council for the Promotion of Persian Language and Literature, Tehran, Iran, Vol. I, II & III
2. Let's learn Persian, NCPUL, Ministry of HRD, New Delhi.
3. Samareh, Yadollah, Persian Language Teaching (Azfa) Elementary Course, Book-3, Tehran, Iran
4. Khanlari, Dr., Zahra:Dastur-e-Zaban-e-Farsi, Idarah-e-Adabiyat-e-Dehli, Jaiyyed press, Ballimaran,Delhi-110006.
5. Dars-eFarsi by Namdaryan, Taqipur. Published by Institute for Humanities & Cultural Studies, Tehran, Iran, 1378 A.H./1999 A.D.
6. Sufi Abdul Aziz: Essentials of Persian Translation, Indo-Iran Society, Lal Kuan, Delhi 110006, 1999.

GENERIC ELECTIVES (GE-11): Persian Newspaper and Journal Reading

Credit distribution, Eligibility and Pre-requisites of the Course:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Persian Newspaper and Journal Reading	**4**	**3**	**1**	**0**	**12th Pass**	**Nil**

Learning Objectives

The Learning Objectives of this course are as follows:

1. To equip the students with first hand information on Persian Newspaper and Journal
2. To acquaint a student with the tradition of Persian Newspaper and Journal Reading

Learning outcomes

The Learning Outcomes of this course are as follows:

- By learning this course, the students will have the ability to apply critical and theoretical approaches to the reading and analysis of Persian Newspapers and journals
- By learning this course, the students will be acquainted able to know the socio-cultural aspects of the Iranian society and contemporary world

SYLLABUS OF GE-11

UNIT – I (5 Weeks/15 Hours)

- History of Printing press in Iran

UNIT – II (5 Weeks/15 Hours)

- History of Persian newspaper in Iran and world

UNIT – III (5 Weeks/15 Hours)

- Famous Persian journal: Qande Parsi, Danish, Persian Research Journal, Maarif, etc.

Essential/recommended readings

1. Ahan, Akhlaq Ahmad: Hindustan Mein Farsi Sahafat ki Tarikh, Educational Publishing House, Delhi, 2008.
2. Natarajan, J.: History of Journalism, Publication Division, Ministry of Information and Broadcasting, Govt. of India, New Delhi, July 2000.
3. Siddiqui, Mohammad Atiq: Hindustani Akhbar-Navisi (Company ke Ahd Mein), Anjuman Taraqqi Urdu, Aligarh, 1975.
4. Edward, Brown: Tarikh-e-Adabiyat-e-Iran, translated Sajjad Husain, Jamia Usmania, Hyderabad, 1932

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF DSE COURSES

DISCIPLINE SPECIFIC ELECTIVE COURSE –DSE 9: Masnavi Nigari in Persian literature

Credit distribution, Eligibility and Pre-requisites of the Course:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Masnavi Nigari in Persian literature	4	3	1	NIL	Class XII pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make students equipped Masnavi and its peculiarities
2. To equip the students with Persian Masnavi writing and its components

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, the students will be able to know about Persian Masnavi and its famous poets.
- By studying this course, the students will be familiar with Persian Ghazal writing and its components.

SYLLABUS OF DSE-9

UNIT – I (4 Weeks/12 Hours)

- Brief introduction of Masnavi writing in Persian

UNIT – II (4 Weeks/12 Hours)

انتخاب از مثنوی معنوی:
(Intakhaab az Masnavi-e-Ma'navi)

1. نصاب جدید فارسی، ص 118-120
(Nisab-e-Jadeed-e-Farsi, Page 118-120)

UNIT – III (4 Weeks/12 Hours)

انتخاب از مثنوی معنوی:
(Intakhaab az Masnavi-e-Ma'navi)

1. حکایت عاشق شدن پادشاه بر کنیزک (نصاب جدید فارسی، ص 120-121)
(Hikayat-e-Aashiq shudan-e-Padshah bar Kanijak, Page 120-121)

UNIT – IV (3 Weeks/9 Hours)

- Life & works of Maulana Jalaluddin Rumi

Essential/recommended readings:

1. Nisab-e-Jadeed-e-Farsi:Jaiyyed Press, Ballimaran,Delhi.
2. Shamisa, Sirus:Anwa-e-Adabi,Intesharat-e Firdos,Tehran,Iran,2004.
3. Shafaq, Razazadeh: Tarikh-e-Adabiyat-e-Iran, Translated in Urdu by Sayyed Mubarizuddin Raf'at, Kutubkhana, Khurshidia, Urdu Bezar, Lahore, 2014.
4. Shibli Nomani: Shair-ul Ajam, Shibli Academy, Azamgarh (U.P.)

DISCIPLINE SPECIFIC ELECTIVE COURSE – DSE 10: Study of Persian Rubaai

Credit distribution, Eligibility and Pre-requisites of the Course:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Study of Persian Rubaai	4	3	1	NIL	Class XII pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make students equipped with Rubaai and its peculiarities
2. To equip the students with Persian Rubaai writing and its components

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, the students will be able to know about Persian Rubaai and its famous poets.
- By studying this course, the students will be familiar with Persian Rubaai writings.

SYLLABUS OF DSE- 10

UNIT – I (4 Weeks/12 Hours)

- Brief introduction of Persian Rubaiyat

UNIT – II (4 Weeks/12 Hours)

انتخاب از رباعیات عمر خیام: (1-20)
(Intakhab az Rubaiyaat-e-Umar Khayyam, Page 1-20)

- نصاب جدید فارسی، ص141-143
(Nisab-e-Jadeed-e-Farsi, Page 141-143)

UNIT – III (4 Weeks/12 Hours)

- رباعیات ابو سعید ابو الخیر، (انتخاب از سفینه مروارید،ص 49)
(Rubaaiyat-e-Abu Saeed Abul Khair, (Intakhab az Safeena-e-Marwareed, Page 49)

UNIT – IV (3 Weeks/9 Hours)

- Life & works of famous poets of Rubaai

Essential/recommended readings:

1. Nisab-e-Jadeed-e-Farsi: Jaiyyed Press, Ballimaran, Delhi.
2. Manochehr Danish Pazooh: Safina-e-Marvareed, Intesharat-e-Allama Tabatabai, Tehran, Iran, 1383/2004.
3. Shamisa, Sirus:Anwa-e-Adabi,Intesharat-e Firdos,Tehran,Iran,2004.
4. Shafaq, Razazadeh: Tarikh-e-Adabiyat-e-Iran, Translated in Urdu by Sayyed Mubarizuddin Raf'at, Kutubkhana, Khurshidia, Urdu Bezar, Lahore, 2014.
5. Shibli Nomani: Shair-ul Ajam, Shibli Academy, Azamgarh (U.P.).

DISCIPLINE SPECIFIC ELECTIVE COURSE – DSE 11: History of Dari & Tajik Literature

Credit distribution, Eligibility and Pre-requisites of the Course:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
History of Dari & Tajik Literature	4	3	1	NIL	Class XII pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make students equipped with history and culture of Tajikistan
2. To equip the students with introductory history of Dari & Tajik language and literature

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, the students will be able to get acquainted with introductory history of Dari & Tajik language and literature.
- By studying this course, the students will be familiar with equipped with history and culture of Tajikistan.

SYLLABUS OF DSE- 11

UNIT – I (3 Weeks/9 Hours)

- The history of Tajikistan Literature

UNIT – II (3 Weeks/9 Hours)

Introduction to following Tajik Writers & Poets:

- Sadruddin Aini
- Abul Qasem Lahuti
- Timur Zulfikaro
- Kamal Khujandi
- Ustad khalili

UNIT – III (3 Weeks/9 Hours)

Introduction to following cultural aspects of Tajikistan:

- Music
- National Dances
- National Clothing
- Sports & Games
- Pamiri Culture

UNIT – IV (3 Weeks/9 Hours)

The following Tajik Festivals:

- New Year's Day
- Nauruz
- Sayri Guli Lola
- Eid-ul-Fitr
- Eid-ul-Adha

UNIT – V (3 Weeks/9 Hours)

- Dari & Tajik Language

Essential/recommended readings:

1. India and Tajikistan: Revitalising a Traditional Relationship, Mahavir Singh, Anamika Publisher & Distributar, 2003.
2. Tareekh - e - Adabiyat - e - Tajikistan, Kabir Ahmed Jayasi, Anjuman -e- Tarakki Urdu, Delhi, 1977.
3. Tareekh -e- Afghanistan, Ali Ahmed Kehzaad and Mohd. Usman Siddique, Volume 1st, Kabul.
4. Tareekh-e-Balkh, Meer Aabi Deeni, Tehran, 1371.
5. Tareekh-e-Adabyate-e-Afghanistan (Period of Mohd. Zayi), Meer Ghulam Mohammed, Kabul, 1330.Published by Aarish Publication.
6. Tareekh -e- Afghanistan Baad Az Islam, Abdul Hayi Habibi, Volume 1st & 2nd, 1377. Published by Meyvand.

DISCIPLINE SPECIFIC ELECTIVE COURSE – DSE 12: A Survey of Persian Newspapers in India (18th& 19th Century)

Credit distribution, Eligibility and Pre-requisites of the Course:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
A Survey of Persian Newspapers in India (18th& 19th Century)	4	3	1	NIL	Class XII pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make students equipped with first-hand information on Persian Newspapers of India
2. To equip the students with the tradition of Persian Newspapers publication.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, the students will be able to apply critical and theoretical approaches to the reading and analysis of Persian Newspapers of that period.
- By studying this course, the students will be familiar with the socio-cultural aspects of the Indian society and contemporary world through Persian newspapers.

SYLLABUS OF DSE- 12

UNIT – I (3 Weeks/9 Hours)

- History of Persian journalism in India

UNIT – II (4 Weeks/12 Hours)

- Literary and cultural importance of Persian Newspapers of India

UNIT – III (4 Weeks/12 Hours)

Introduction to following famous Persian Newspapers of India:

- Mirat-ul- Akhbar
- Aien-i-Sikander
- Doorbeen
- Shamsul Akhbar
- Mahe Alam Afroz
- Jam-i-Jahan Numa

UNIT – IV (4 Weeks/12 Hours)

Introduction to following famous Persian Newspapers of India:

- Siraj-ul-Akhbar,
- Akhbar-i-Sirampur
- Akhbar-i-Ludhiana
- Hablul Mateen
- Darfash Kavyani
- Azad
- Nawal Kishor Press and other Publishing Houses

Essential/recommended readings:

1. Ahan, Akhlaq Ahmad: Hindustan Mein Farsi Sahafat ki Tarikh, Educational Publishing House, Delhi, 2008.
2. Natarajan, J.: History of Journalism, Publication Division, Ministry of Information and Broadcasting, Govt. of India, New Delhi, July 2000.
3. Siddiqui, Mohammad Atiq: Hindustani Akhar-Navisi (Company ke Ahd Mein), Anjuman Taraqqi Urdu, Aligarh,

4. Pernau, Margrit & Yunus Jaffery: Information and the Public Sphere (Persian Newsletters from Mughal Delhi, Oxford University Press, New Delhi-110001, 2009
5. Dudney, Arthur: India in the Persian world of letters, Oxford University Press, U.K., 2002
6. Noorani,Amir Hasan: Munshi Nawal Kishore: Halat aur Khidmat, Maktaba Subaha Adab, Delhi, 1982
7. Zamani, Dr. Asifa: Munshi Nawal Kishor aur unki Adabi Khidmat, Lucknow, 2000
8. پروین، ناصرالدین (۱۳۷۹)، تاریخ روزنامه‌نگاری ایرانیان و دیگر پارسی‌نویسان، جلد دوم: بحران آزادی، تهران، مرکز نشر دانشگاهی.
9. حکمت، علی‌اصغر (۱۳۳۷)، سرزمین هند، تهران، انتشارات دانشگاه تهران.
10. خانیکی، هادی (۱۳۷۸)، ساختار مشروطه و نسبت آن با ساخت مطبوعات، فصلنامه تخصصی تاریخ معاصر ایران، مؤسسه مطالعات تاریخ معاصر ایران، سال سوم، شماره ۱۰.
11. انیکی، هادی (۱۳۸۱)، قدرت، جامعه مدنی و مطبوعات، تهران، طرح نو.

PERSIAN

COURSES OFFERED BY DEPARTMENT OF PERSIAN

Category I

Persian Courses for Undergraduate Programme of study with Persian as a Single Core Discipline

(B.A. Honours in Persian in four years)

STRUCTURE OF SIXTH SEMESTER

DISCIPLINE SPECIFIC CORE COURSE – 16: Essay and Translation

Credit distribution, Eligibility and Pre-requisites of the Course:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Essay and Translation	4	3	1	0	Class XII pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

1. To make students acquainted with advanced version of Persian Translation
2. To equip the students with the basic and fundamental levels of Translation

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, the students will be able to get acquainted with the advanced version of Persian Translation and Essays
- By studying this course, they shall get an opportunity to take translation assignments for their livelihood.

SYLLABUS OF DSC-16

UNIT – I (4 Weeks/12 Hours)

Essay in Persian language on various topics:

- Famous poets, Places, Festivals and others literary and cultural subjects

UNIT – II (4 Weeks/12 Hours)

- Translation from Persian to English and vice-versa

UNIT – III (3 Weeks/9 Hours)

- Reading of Text and Translation

UNIT – IV (4 Weeks/12 Hours)

- Creative writing.
- Technical Terms of Persian

Essential/recommended readings:

1. Saffar Muqaddam, Dr. Ahmad: Zaban-e Farsi, Council for the Promotion of Persian Language and Literature, Tehran, Iran, Vol. I & II, 2007
2. Samareh, Yadollah, Persian Language Teaching (Azfa) Elementary Course, Book-1, Tehran Iran 1998
3. Khanlari, Dr.,Zahra:Dastur-e-Zaban-e-Farsi, Idarah-e-Adabiyat-e-Dehli, Jaiyyed press, Ballimaran,Delhi-110006.
4. Dars-eFarsi by Namdaryan, Taqipur. Published by Institute for Humanities & Cultural Studies, Tehran, Iran, 1378 A.H./1999 A.D.
5. Sufi Abdul Aziz: Essentials of Persian Translation, Indo-Iran Society, Lal Kuan, Delhi 110006, 1999.
6. Kumar, Rajinder, Elementary Persian Grammar, Harjit Publications, WS-3107/A, Mahindra Park, Delhi-110034.
7. English Farsi Phrasebook with useful wordlist, US Department of State, Washington DC.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 17: Sufistic Persian Literature

Credit distribution, Eligibility and Pre-requisites of the Course:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Sufistic Persian Literature	**4**	**3**	**1**	**0**	**Class XII pass**	**NIL**

Learning Objectives:

The Learning Objectives of this course are as follows:

1. To equip the students with Sufistic Persian Literature
2. To enable the students to get acquainted with specimens of Sufistic Persian Literature like Kashf-ul Mahjub, Fawaid-ul Fowad and Masnavi Gul-o-Bulbul
3. To acquaint the students with some of the famous Sufi Silsilas of India

Learning outcomes:

The Learning Outcomes of this course are as follows:

- By learning this course, students will come to know about Sufistic Persian Literature
- By learning this course, students will be able to get acquainted with the sufi literary works like Kashf-ul Mahjub, Fawaid-ul Fowad and Masnavi Gul-o-Bulbul
- By learning this course, students will know about the Sufi traditions in Indian sub-continent

SYLLABUS OF DSC- 17

UNIT – I (3 Weeks/9 Hours)

- Kashf-ul Mahjub, Jalali Hujveri, Shaikh Abul-Hasan Ali bin Usman; Nasr-e-Kohan (p.213-221)

UNIT – II (3 Weeks/9 Hours)

- Fawaid-ul Fowad, Hasan Sijzi, Amir Hasan; Nasr-e-Kohan; (p.302-14)

UNIT – III (3 Weeks/9 Hours)

- Nala-i-Andleeb, Khwaja Nasir Andleeb, (p. 10-14)

UNIT – IV (3 Weeks/9 Hours)

- Introduction of Famous Sufi Silsilas in India

UNIT – V (3 Weeks/9 Hours)

- Impact of Sufism on Indian society

Essential/recommended readings:

1. Nasr-e-Kohan; Intersharat-e-Vizarat-e-Farhang-o-Hunar, Idareh Kull-e Nigarish, Tehran, Iran.
2. Nale-i-Andleeb, Khwaja Nasir Andleeb, Maba-i-Shahjahani,Bhopal 1310Hijri
3. Khan, Hakim Zaki Ahmad: Nisab-e-Jadeed-e-Farsi, Jayyed Press, Ballimaran, Delhi-110 006
4. Shafaq, Razazadeh: Tarikh-e-Adabiyat-e-Iran, Translated in Urdu by Sayyed Mubarizuddin Raf'at, Nadwatul Musannefin, Delhi1955.
5. Shibli Nomani: Shair-ul Ajam, Shibli Academy, Azamgarh (U.P.). .
6. Sabahuddin, Abdur Rahman: Bazm-i-Sufiya, Shibli Academy, Azamgarh, (U.P.).
7. Dehlavi, Amir Hasan Ala Sijzi: Fawaid-ul-Fowad, Edited by Dr. Mohd. Barani & Dr. Maryam Khalili Jahantegh, Zahedan, Iran-1384
8. Dehlavi, Amir Hasan Ala Sijzi: Fawaid-ul-Fowad, Translated by Khwaja Hasan Saani Nizami Dehlavi, Delhi-1989
9. Habib, Mohammad: Hazrat Nizamuddin Aulia: Hayat aur Talimat, Dept.of Urdu, University of Delhi, Delhi -1970

DISCIPLINE SPECIFIC CORE COURSE – 18: Ethical Persian Literature

Credit distribution, Eligibility and Pre-requisites of the Course:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		

Ethical Persian Literature	**4**	**3**	**1**	**0**	**Class XII pass**	

Learning Objectives:

The Learning Objectives of this course are as follows:

1. To acquaint the students with Ethical Persian Literature
2. To equip the students with prevalent ethical teachings in Persian literature
3. To enable the students to learn moral values present in Persian Literature

Learning outcome:

- By learning this course, students will learn the moral values through Persian ethical texts
- By learning this course, students will have an experience of some of the celebrated ethical texts of Persian like Gulistan, Bustan and Qabusnama

SYLLABUS OF DSC-18

UNIT – I (3 Weeks/9 Hours)

- Gulistan Sa'di Shirazi, Shaikh Mushrafuddin Musleh; Nasr-e-Kohan (p.429-43)

UNIT – II (3 Weeks/9 Hours)

- Qabus Nameh; Kaikaoos, Amir Unsarul Ma'ali bin Iskander; Nasr-e-Kohan (p.366-83)

UNIT – III (3 Weeks/9 Hours)

Bustan Sa'di Shirazi, Shaikh Mushrafuddin Musleh;

Following Hikayat from Kulliyat-e-Sa'di

- Darvesh Haqugo (pp.231-32)
- Jawan Mard wa Sag-e Tishneh; (pp.248-49)
- Darvesh wa Rubah-e BiDast-o-Pai (p.252)
- Piri ke Kharash dar Gil Uftadeh Bud (pp.257-58)

UNIT – IV (3 Weeks/9 Hours)

- Rubaiyat Abu-Saeed Abul-Khair (6 Rubais from Safina-e-Marvareed, p.49)
- Rubaiyat Baba Tahir Uryan (First 5 Rubais from Safina-e-Marvareed, p.53)

UNIT – V (3 Weeks/9 Hours)

- Life and works of respective authors and Poets

Essential/recommended readings:

1. Nasr-e-Kohan; Intersharat-e-Vizarat-e-Farhang-o-Hunar, Idareh Kull-e Nigarish, Tehran, Iran.

2. Sa‘di Shirazi, Kulliyat-e-Sa‘di; Mohammad Ali Furooghi, Intesharat-e-Mu‘iniyan, Tehran, 1375/1996.
3. Sa‘di Shirazi, Boostan-e-Sa‘di; Mohammad Ali Farughi, Tehran, 1316/1937.
4. Manochehr Danish Pazooh: Safina-e-Marvareed, Intesharat-e-Allama Tabatabai, Tehran, Iran, 1383/2004.
5. Kaikaoos, Amir Unsarul Ma‘ali bin Iskander: Nasihat Nameh ya Qaboos Nameh,Edited by Dr. Ameen Abdul Majeed Badooe, Tehran, Iran-1963
6. Kaikaoos, Amir Unsarul Ma‘ali bin Iskander: Nasihat Nameh ya Qaboos Nameh,With Introduction & annotation by Saeed Nafisi, Tehran, Iran-1212
7. Rampuri, Mullah Ghayasuddin: Bahar-i-Baran Shrah Gulistan-i-Saadi, Nawal Kishore Press, Lucknow
8. Hali, Khwaja Altaf Husain: Hayat-i-Saadi, Maktaba Jamia Limited, NewDelhi-1886
9. Shafaq, Razazadeh: Tarikh-e-Adabiyat-e-Iran, Translated in Urdu by Sayyed Mubarizuddin Raf‘at, Nadwatul Musannefin, Delhi,1955.
10. Shibli Nomani: Shair-ul Ajam, Shibli Academy, Azamgarh (U.P.)

Category II

Persian Courses for Undergraduate Programme of study with Persian as one of the Core Disciplines

(B.A. Programmes with Persian as Major discipline)

DISCIPLINE SPECIFIC CORE COURSE – : Study of Modern Persian Literature (Prose & Poetry)

Credit distribution, Eligibility and Pre-requisites of the Course:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Study of Modern Persian Literature (Prose & Poetry)	4	3	1	0	Class XII pass	NIL

Learning Objectives:

The Learning Objectives of this course are as follows:

1. To equip the students with Modern Iranian Society through Persian literature
2. To acquaint the students with the influence of French literature on Persian literature
3. To make the students aware of Constitutional Revolution and Islamic Revolution of Iran

Learning outcomes:

The Learning Outcomes of this course are as follows:

- By learning this course, students will be able to know different literary genres both in prose and poetry like short stories, novels, dramas, Ghazal, Nazm, Rubai, Qasida etc.
- By learning this course, students will be able to go through the writings of some of the prominent modern Persian poets and prose writers and to see Iranian Society through their works

SYLLABUS OF DSC

UNIT – I (4 Weeks/12 Hours)

Introduction to the following famous poets:

- Nima Yushij
- Bahar
- Iraj Mirza
- Sharyaar

- Praveen Ehtesami
- Simin Behbahani
- Khanlari
- Sohrab Sipehri

UNIT – II (4 Weeks/12 Hours)

Introduction to the following famous prose writers:

- Jamalzada
- Sadiq Hidayat
- Hijazi
- Jalal Aal Ahmed
- Buzurg Alavi
- Saeed Nafisi
- Samad Behrangi
- Akbar Radi

UNIT – III (4 Weeks/12 Hours)

Selection of stories:

- 1. Haji Morad 2. Aseer-i- Fransavi, (from Zindeh be goor by Sadiq Hedayat P.No. 39 to 49)

UNIT – IV (3 Weeks/9 Hours)

Selection of Poems:

- 1. Widaa 2. Asfane-i-Talakh of Furoogh Farrokhzaad

Essential/recommended readings:

1. Kamshad, Hasan, Jadeed Farsi Nasri Adab, translated in Urdu by Masudi,Dr.M.M.,Indian Printing press,Dal gate,Sri Nagar,1996.
2. Istelami, Dr.Mohammad, Barrasi-e-Adabiyat -e-Imruz-e-Iran,translated in Urdu by Nomani, Dr.Rais Ahmed,International printing press,Abdul Qadeer Market,Jail Road Aligarh,2012.
3. Ahmed, Dr. Zahuruddin:Naya Irani Adab: Markaz-e-Tahqiqat-e-Farsi-e-Iran wa Pakistan Islamabad. 1975.
4. Roozbe, Mohammed Raza,Adabiyat-e- Moasir-e-Iran,Sher,Nashr-e-Ruzgar,Tehran 1392.
5. Hidayat, Sadiq: Zindeh be goor, Intesherat-i-Amir Kabir, Tehran, Iran 1342
6. Farakhzad, Farookh: Majmuae Ashaar-i-Faroogh, Intesherat-i-Amir Kabir, Tehran, Iran

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE : Introduction to Persian Literature during Safavid Period

Credit distribution, Eligibility and Pre-requisites of the Course:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Introduction to Persian Literature during Safavid Period	4	3	1	0	CLASS XII PASS	NIL

Learning Objectives:

The Learning Objectives of this course are as follows:

1. To equip the students with an outline of socio-cultural history of Safavid period
2. To familiarize the students with some prominent distinguished poets and prose writers of the period

Learning outcomes:

The Learning Outcomes of this course are as follows:

- By learning this course, the students will be acquainted with the socio-cultural history of Safavid Period
- By learning this course, the students will be familiarised with the Safavid order of Sufism
- By learning this course, the students will know about the Persian literature produced during Safavid period

SYLLABUS OF DSC-2

UNIT – I (4 Weeks/12 Hours)

- Socio-Cultural history of Safavi Period

UNIT – II (4 Weeks/12 Hours)

- Literary tendencies of Safavi Period. Contribution of Safavid to Persian literature

UNIT – III (4 Weeks/12 Hours)

- Development of Marsia Nigari
- Selection of Marsia of Mohtashim Kashani "Haft Band" as example

UNIT – IV (3 Weeks/9 Hours)

- Art and architecture, history writing Tazkirah Writing

Essential/recommended readings:

1. Shibli Nomani: Shair-ul Ajam, Shibli Academy, Azamgarh (U.P.).
2. Edward, Brown: Tarikh-e-Adabiyat-e-Iran, translated Sajjad Husain, Jamia Usmania, Hyderabad, 1932.
3. Safa, Zabihullah : Farsi Adab ki Mukhtasar Tarikh, translated Andalib Zahra, Fareed Book Depot, Delhi.

Category III

Persian Courses for Undergraduate Programme of study with Persian as one of the Core Disciplines

(B.A. Programmes with Persian as non-Major or Minor discipline)

DISCIPLINE SPECIFIC CORE COURSE: Introduction to Persian Literature during Safavid Period
This course is common in BA (Programme) in Persian as major discipline for Semester V

Credit distribution, Eligibility and Pre-requisites of the Course:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Introduction to Persian Literature during Safavid Period	4	3	0	NIL	Class XII pass	NIL

Learning Objectives:

The Learning Objectives of this course are as follows:

1. To equip the students with an outline of socio-cultural history of Safavid period
2. To familiarize the students with some prominent distinguished poets and prose writers of the period

Learning outcomes:

The Learning Outcomes of this course are as follows:

- By learning this course, the students will be acquainted with the socio-cultural history of Safavid Period
- By learning this course, the students will be familiarised with the Safavid order of Sufism
- By learning this course, the students will know about the Persian literature produced during Safavid period

SYLLABUS OF DSC-2

UNIT – I (4 Weeks/12 Hours)

- Socio-Cultural history of Safavi Period

UNIT – II (4 Weeks/12 Hours)

- Literary tendencies of Safavi Period. Contribution of Safavid to Persian literature

UNIT – III (4 Weeks/12 Hours)

- Development of Marsia Nigari
- Selection of Marsia of Mohtashim Kashani "Haft Band" as example

UNIT – IV (3 Weeks/9 Hours)

- Art and architecture, history writing tazkirah Writing

Essential/recommended readings:

1. Shibli Nomani: Shair-ul Ajam, Shibli Academy, Azamgarh (U.P.).
2. Edward, Brown: Tarikh-e-Adabiyat-e-Iran, translated Sajjad Husain, Jamia Usmania, Hyderabad, 1932.
3. Safa, Zabihullah : Farsi Adab ki Mukhtasar Tarikh, translated Andalib Zahra, Fareed Book Depot, Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES OFFERED BY THE DEPARTMENT OF PERSIAN

Credit distribution, Eligibility and Pre-requisites of the Course:

GENERIC ELECTIVES (GE-12): History of Persian Literature during Qajar Period (1757-1921)

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
History of Persian Literature during Qajar Period (1757-1921)	**4**	**3**	**1**	**0**	**12th Pass**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

1. To acquaint the students with the Literature produced during the Qajar period of Iran
2. To enable the students to know the literary upheavals of Qajar period

Learning outcomes

The Learning Outcomes of this course are as follows:

- By learning this course, the Students will have the ability to apply critical and theoretical approaches to the reading and analysis of Persian literature of Qajar Period
- By learning this course, the students will be able understand the socio-cultural conditions of Qajar Period

SYLLABUS OF GE-12

UNIT – I (3 Weeks/9 Hours)

- Social and cultural history

UNIT – II (4 Weeks/12 Hours)

Brief history of Qajar Period:

- Aagha Mohd Khan Qajar
- Fateh Ali Shah Qajar
- Mohd. Shah
- Nasiruddin Shah
- Muzaffar Shah

UNIT – III (4 Weeks/12 Hours)

Introduction to the following poets:

- Fateh Ali Saba
- Sarosh Isfahani
- Mirza Abdul Wahab Nishat
- Mirza Habibullah Qa'ani
- Muzmir Isfahani
- Mirza Shafi Visal Qayam
- Muqam Farahani
- Yaghma
- Mehmood Khan Malikush Shuara
- Visali Shirazi
- Farooghi Bustami

UNIT – IV (4 Weeks/12 Hours)

Introduction to the following prose writers:

- Nasikh-ut-Tawareekh
- Maasir I Khaqani wa Hadaiqul jinan
- Jam-i-jam
- Aatish Kada-i-Aazar
- Aaine Sikandari
- Majma-ul-Fusaha
- Ganj-i-Danish

Essential/recommended readings:

1. Edward, Brown: Tarikh-e-Adabiyat-e-Iran, translated Sajjad Husain, Jamia Usmania, Hyderabad, 1932.
2. Safa, Zabihullah : Farsi Adab ki Mukhtasar Tarikh, translated Andalib Zahra, Fareed Book Depot, Delhi.

GENERIC ELECTIVES (GE-13): History of Persian Literature during Pahalavi Period & Post Islamic Revolution in Iran (1925 to till date)

Credit distribution, Eligibility and Pre-requisites of the Course:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
History of Persian Literature during	**4**	**3**	**1**	**0**	**12th Pass**	**Nil**

Pahalavi Period & Post Islamic Revolution in Iran (1925 to till date)						

Learning Objectives

The Learning Objectives of this course are as follows:

1. To acquaint the students with the Literature produced during the Pahlavi period of Iran
2. To introduce the students to the literary styles of Pahlavi period

Learning outcomes

The Learning Outcomes of this course are as follows:

- By learning this course, the students will have the ability to apply critical and theoretical approaches to the reading and analysis of modern Persian texts
- By learning this course, the students will be acquainted with the Impact of modernisation on the literature, society and culture of Iran

SYLLABUS OF GE-13

UNIT – I (4 Weeks/12 Hours)

- Socio-cultural condition of Pahlavi Period, Inquilab-i-Safeed, Status of women in Iranian society, religion, land reform and education

UNIT – II (4 Weeks/12 Hours)

- Impact of modernisation on the literature of Iran. Darul Funoon,
- Mirza Jafar Qarcha, Mirza Aqa Tabrizi,Abdul Rahim Talibuf, Zainul Abedeen, Arif Qazveni, Mohd Taqi Bahar, Nima Yushij,Ahmad Shamlu, Farugh Farakhzad, Mehdi ekhwan Salis, Nadir Nadirpur etc.

UNIT – III (4 Weeks/12 Hours)

- Islamic revolution, Ayatullah Khumaini, Religions in Persia,
- Adabiyate difa-e-Muqaddas, Social life of Iran

UNIT – IV (3 Weeks/9 Hours)

- Role of oil in the development of culture, Means of amusements (Traditional and Modern) Book, T.V., Theatres, Cinema etc.

Essential/recommended readings

1. Edward, Brown: Tarikh-eAdabiyat-e-Iran, translated Sajjad Husain, Jamia Usmania, Hyderabad, 1932
2. Safa, Zabihullah : Farsi Adab ki Mukhtasar Tarikh, translated Andalib Zahra, Fareed Book Depot, Delhi.
3. Ishrat, Dr. Amrit Lal: Iran Sadyun ke Aaine Mein, Idarah-e-Musannefeen, Hyderabad.
4. Abedini, Mir Hasan: Sad Sal Dastn-Navisi dar Iran; 3 Vols., Iran, 1377/1998

COMMON POOL OF DSE COURSES

DISCIPLINE SPECIFIC ELECTIVE COURSE –DSE 13: Study of Theatre in Modern Iran

Credit distribution, Eligibility and Pre-requisites of the Course:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Study of Theatre in Modern Iran	4	3	1	NIL	Class XII pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

1. To equip the students with the knowledge related to theatre in modern Iran
2. To make the students aware of different perspective of life and society through this genre

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, the students will be familiarized with theatre in modern Iran
- By studying this course, the students will learn about the theatre, Drama, Rowzeh Khwani, Naqqali, Khemeh Shab Bazi etc.

SYLLABUS OF DSE-13

UNIT – I (4 Weeks/12 Hours)

- Brief socio-political history of modern Iran

UNIT – II (4 Weeks/12 Hours)

Brief introduction of theatre in Modern Iran

- General Information on the theatre
- Theatre in the Universities
- Theatre Publishing & criticism
- Women in the theatre

UNIT – III (4 Weeks/12 Hours)

Life & Works of following Play Writers:

- Ghulam Husain Saadi
- Nagmeh Samini
- Bahram Beyzai
- Mirza Aqa Tabrizi
- Akbar Raadi
- Mohammad Yaqoobi

UNIT – IV (3 Weeks/9 Hours)

Brief introduction of following works on theatre:

- مرگ یزدگرد از بهرام بیضایی
(Marg-e-Yazdgurd az Bahram Baizaai)
- خشکسالی و دروغ از محمد یعقوبی
(Khusksaali-o-Duroogh az Mohammad Yaqoobi)
- پلکان از اکبر رادی
(Palakaan az Akbar Raadi)
- هیولا خوانی از نغمه ثمینی
(Huyula Khaani az Naghme Samini)

Essential/recommended readings:

1. Kamshad, Hasan, Jadeed Farsi Nasri Adab, translated in Urdu by Masudi,Dr.M.M.,Indian Printing press,Dal gate,Sri Nagar,1996.
2. Istelami, Dr.Mohammad, Barrasi-e-Adabiyat -e-Imruz-e-Iran,translated in Urdu by Nomani, Dr.Rais Ahmed,International printing press,Abdul Qadeer Market,Jail Road Aligarh,2012.
3. Roozbe, Mohammed Raza, Adabiyat-e- Moasir-e-Iran, Sher-e-Nashr-e-Ruzgar, Tehran 1392.
4. Bezaee, Bahram, Numaish dar Iran, Cahp Karwan,Tehran, 1344
5. Seyed Habiballah, Post-Revolutionary Iranian theatre: Three representative plays in translation with critical commentary, Ph.D. thesis, University of Leeds, 1994
6. Akbar, Razia Dr., Iran Mein Jadeed Farsi Adab ke Pachas Saal (1900-1950), Hyderabad 1991.
7. Floor, Willem, History of theatre in Iran, Mega Publishers, Washington, D.C. 2005

DISCIPLINE SPECIFIC ELECTIVE COURSE – DSE 14: Development of Persian Literature in Kashmir

Credit distribution, Eligibility and Pre-requisites of the Course:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Development of Persian Literature in Kashmir	**4**	**3**	**1**	**NIL**	**Class XII pass**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

1. To acquaint the students with the Persian literature produced in Jammu & Kashmir
2. To make the students aware of the impact of Persian language, literature and culture on the languages of Jammu & Kashmir

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, the students will have the ability to apply critical and theoretical approaches to the reading and analysis of Persian writings of Jammu & Kashmir
- By studying this course, the students will be familiar with society and culture of that region

SYLLABUS OF DSE- 14

UNIT – I (3 Weeks/9 Hours)

- Impact of Persian language, literature and culture in Jammu & Kashmir

UNIT – II (3 Weeks/9 Hours)

- Brief history of Persian literature during Shahmiri and Chak Period

UNIT – III (3 Weeks/9 Hours)

Prominent Persian poets of Jammu & Kashmir:

- Ghani Kashmiri
- Fani Kashmiri
- Shaikh Yaqub Sarfi
- Habibullah Nowsheri

UNIT – IV (3 Weeks/9 Hours)

Life and works of the famous Persian writers during the Dogra Period:

- Lala Ganesh Das
- Diwan Kirpa Ram
- Ghulam Nabi Khanyari
- Pir Ghulam Hassan Shah

UNIT – V (3 Weeks/9 Hours)

Famous Sufi saints of Jammu and Kashmir:

- Mir Sayyid Ali Hamadani
- Syed Bulbul Shah
- Mir Shams-ud-Din Araqi
- Lal Ded

Essential/recommended readings:

1. Ibrahim, Molvi Mohammad: Tazkira-o-Auliay-e-Kashmir, Srinagar, 1960
2. Puri, Mohammad Khaleel Mir Jaan: Tarikh Khaleel Mir Jaanpuri, Srinagar
3. Khaniari, Ghulam Nabi: Wajiz ut Tareekh, Translated in Urdu by Mohammad Yusuf Lone, Srinagar, 1862
4. Ansari, Nurul Hasan: Farsi Adab-be-Ahd-e-Aurangzeb, Department of Persian, University of Delhi, Delhi, 2006
5. Ahmed, Shams ud din, Waqiyat-e-Kashmir, Delhi, 2000

6. Ahmed, Shams ud din: Shams-ul-Tawareekh, Delhi, 2001
7. Ram, Diwan Kirpa: Gulabnama, Translated in English by Sukhdev Singh Charak, Light and Life Publishers
8. Shah, Pir Ghulam Hassan: Taareekh-e-Hassan, Translated in Urdu by Prof. Sharif Husain Qasemi, Ali Mohammad and Sons, Lal Chowk, Srinagar
9. Das, Ganesh: Rajadarshini, Translated in English by Sukhdev Singh Charak, JK Book House
10. Bhat, Ghulam Rasul: Morkheen Kashmir Ki Tareekhein, City Book Centre, Srinagar, 2008
11. Abidi, Amir Hasan: Hindustan Mein Farsi Adab, Indo-Persian Society, Delhi, 1984.
12. Naeemuddin: Hindustan Mein Farsi Adab, M.S. Publications, Lal Kuan, Delhi, 1985

DISCIPLINE SPECIFIC ELECTIVE COURSE – DSE 15: Study of Classical Persian literature: Prose

Credit distribution, Eligibility and Pre-requisites of the Course:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Study of Classical Persian literature: Prose	4	3	1	NIL	Class XII pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

1. To acquaint the students with the classical Persian prose literature
2. To make the students aware of the famous classical Persian prose writers like Abul Fazl Baihaqi, Daulat Shah Samarqandi and Ne'mat Khal Aali etc.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, the students will have the ability to apply critical and theoretical approaches to classical Persian prose literature
- By studying this course, the students will be familiar with the famous classical Persian prose writers like Abul Fazl Baihaqi, Daulat Shah Samarqandi and Ne'mat Khal Aali etc.

SYLLABUS OF DSE- 15

UNIT – I (3 Weeks/9 Hours)

- Kimiya-i-Saadat, Abu Hamid Imam Muhammad Ghazali (Nasr-e-Kohan; pp.250-266)

UNIT – II (3 Weeks/9 Hours)

Life and works of Famous Prose writers:

- Abul Fazal Baihaqi
- Imam Ghazali
- Nizamul Mulk Tusi

UNIT – III (3 Weeks/9 Hours)

Life and works of Famous Prose writers:

- Daulat Shah Samarqandi
- Abul Fazal Allami
- Nemat Khan Aali

UNIT – IV (3 Weeks/9 Hours)

- Importance & features of Classical Persian Prose

UNIT – V (3 Weeks/9 Hours)

Famous Sufi saints of Jammu and Kashmir:

- Mir Sayyid Ali Hamadani
- Syed Bulbul Shah
- Mir Shams-ud-Din Araqi
- Lal Ded

Essential/recommended readings:

1. Nasr-e-Kohan; Intersharat-e-Vizarat-e-Farhang-o-Hunar, Idareh Kull-e Nigarish, Tehran, Iran-1354.
2. Shafaq, Razazadeh: Tarikh-e-Adabiyat-e-Iran, Translated in Urdu by Sayyed Mubarizuddin Raf'at, Nadwatul Musannefin, Delhi-1955.
3. Shibli Nomani: Shair-ul Ajam, Shibli Academy, Azamgarh (U.P.).

DISCIPLINE SPECIFIC ELECTIVE COURSE – DSE 16: Modern Persian Literature: Prose

Credit distribution, Eligibility and Pre-requisites of the Course:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/		

				Practice		
Modern Persian Literature: Prose	**4**	**3**	**1**	**NIL**	**Class XII pass**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

1. To acquaint students with the chief characteristics of Modern Persian Prose
2. To provide knowledge about some prominent Modern Persian Prose writers and their literary contributions

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, the students will have the ability to gain knowledge about the essence of modern Persian prose
- By studying this course, the students will be familiar with different genres and writings of prominent modern prose writers of Iran will enable the students to learn the literary importance of their works and also the study will provide them an opportunity to know different aspects of modern Iranian society and culture

SYLLABUS OF DSE- 16

UNIT – I (3 Weeks/9 Hours)

- A brief overview of modern Persian prose

UNIT – II (4 Weeks/12 Hours)

- Social and political conditions of modern Iran

UNIT – III (4 Weeks/12 Hours)

A brief introduction of the following prose writers:

- Mohammad Ali Jamalzada
- Saeed Nafisi
- Sadiq Hidayat
- Bozurg Alavi
- Jalal Ale Ahmad
- Simin Danishwar
- Ibrahim Gulistan
- Jamal Mir Sadeqi

UNIT – IV (4 Weeks/12 Hours)

A brief introduction of the following prose writers:

- Behram Sadeqi
- Houshang Gulshiri
- Samad Behrangi
- Mehmud Daulatabadi
- Houshang Muradi Kirmani
- Mohsin Makhmalbaf
- Saiyyad Mehdi Shujaee
- Razia Tujjar

Essential/recommended readings:

1. Nasr-e-Kohan; Intersharat-e-Vizarat-e-Farhang-o-Hunar, Idareh Kull-e Nigarish, Tehran, Iran-1354.
2. Shafaq, Razazadeh: Tarikh-e-Adabiyat-e-Iran, Translated in Urdu by Sayyed Mubarizuddin Raf'at, Nadwatul Musannefin, Delhi-1955.
3. Shibli Nomani: Shair-ul Ajam, Shibli Academy, Azamgarh (U.P.).

ANNEXURE-23

Sub: Amendment to Ordinance V

[E.C Resolution No. 14/ (14-1-4) dated 09.06.2023]

Following addition be made to Appendix-II-A to the Ordinance V (2-A) of the Ordinances of the University;

Add the following:

Syllabi of Semester-IV, V and VI of the following departments under Faculty of Interdisciplinary and Applied Sciences based on Under Graduate Curriculum Framework -2022 implemented from the Academic Year 2022-23.

DEPARTMENT OF BIOCHEMISTRY
BSc. (Hons.) Biochemistry
Semester IV

DISCIPLINE SPECIFIC CORE COURSE - (DSC-10)
METABOLISM OF AMINO ACIDS AND NUCLEOTIDES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Metabolism of Amino Acids and Nucleotides (BCH-DSC-401)	4	2L	00	2P	Class XII with Science and Biology	NIL

Learning Objectives

The main objective of the course is to offer detailed and comprehensive knowledge about the synthesis and degradation pathways of amino acids and nucleotides and their importance in the proper functioning of the cells. This course also interrelates the metabolism of these

molecules with respect to health diseases in addition to providing an overview of inhibitors of metabolism for treating the diseases of metabolic disorders.

Learning outcomes

On successful completion of the course, students will be able to:

1. Explain the importance of nitrogen cycle.
2. Explain the degradation and biosynthetic pathways of amino acids and nucleotides in humans.
3. Discuss the importance of amino acids as precursors to a variety of important biomolecules.
4. Examine the role of inhibitors of nucleotide metabolism as chemotherapeutic drugs
5. Discuss the integration of the amino acid, nucleotide, carbohydrate and lipid metabolism

SYLLABUS OF DSC-10

BCH-DSC-10 : METABOLISM OF AMINO ACID AND NUCLEOTIDES
Semester – IV

THEORY (Credits 2)

Total Hours: 30

Unit I: Overview of Nitrogen and Amino Acid Metabolism (6 Hours)

Nitrogen cycle, incorporation of ammonia into biomolecules, Role of essential and non-essential amino acids in growth and development, Metabolic fates of amino groups. Transamination, role of pyridoxal phosphate, Glucose-alanine cycle, Krebs bicycle, urea cycle, its regulation and inherited defects of urea cycle, Gamma Glutamyl cycle.

Unit II: Catabolism, Biosynthesis and precursor functions of amino acids (10 Hours)

Catabolic pathways of individual amino acids, Glucogenic and ketogenic amino acids. Metabolism of one carbon unit, Overview of amino acid synthesis: Biosynthesis of non-essential amino acids and its regulation, Disorders of amino acids metabolism, phenylketonuria, alkaptonuria, maple syrup urine disease, methyl malonic acidemia (MMA), homocystinuria, and Hartnup's disease, ***Precursor Functions of Amino Acids*****:** Biosynthesis of creatine and creatinine, polyamines (putrescine, spermine, spermidine), catecholamines (dopamine, epinephrine, norepinephrine) and neurotransmitters (serotonin, GABA)

Unit III: Biosynthesis and Degradation of Nucleotides (10 Hours)

De novo synthesis of purine and pyrimidine nucleotides, regulation and salvage pathways, Digestion of nucleic acids, degradation of purine and pyrimidine nucleotides, Inhibitors of nucleotide metabolism. Lesch Nyhan Syndrome, Gout and SCID (Adenosine deaminase deficiency), Biosynthesis of deoxyribonucleotides and its regulation, conversion to triphosphates, biosynthesis of coenzyme nucleotides

Unit IV: Integration of Metabolism **(4 Hours)**

Integration of metabolic pathways (carbohydrate, lipid and amino acid metabolic pathways), tissue specific metabolism (brain, muscle, and liver).

2.3 Practical (Credits 2)

Total Hours: 60

1. Assay of serum transaminase – SGOT and SGPT
2. Estimation of serum urea.
3. Estimation of serum uric acid.
4. Estimation of serum creatinine.
5. Glutamate Dehydrogenase Assay
6. Aspartate Transcarbomylase kinetics
7. Case studies on SCID, Gout and Lesch Nyhan Syndrome.

2.4 Essential readings:

- Berg, J.M., Tymoczko, J.L. and Stryer L., (2012) W.H. Biochemistry (7th ed.), Freeman and Company (New York), ISBN:10: 1-4292-2936-5, ISBN:13:978-1-4292-2936-4.
- Devlin, T.M. (2011) Textbook of Biochemistry with Clinical Correlations (7th ed.), John Wiley & Sons, Inc. (New York), ISBN:978-0-470-28173-4 / BRV ISBN:978-0-470-60152-5.
- Nelson, D.L. and Cox, M.M. (2017) Lehninger: Principles of Biochemistry (7th ed.) W.H. Freeman & Company (New York), ISBN:13: 9781464126116 / ISBN:10- 1464126119.
- Principles of Biochemistry (2013) 4th ed., Voet, Donald, Voet, Judith & Pratt, charlotte. Wiley & Sons, Inc. (New Jersey), ISBN:978-1-11809244-6.
- Victor Rodwell, David Bender, et al. (2018) ISE Harper's Illustrated Biochemistry Thirty-First Edition, McGraw Hill (A and L Lange series), ISBN-10. 1259837939; ISBN-13. 978-1259837937.

3. Keywords

Metabolism, essential and non-essential amino acids, Nucleotides, Biosynthesis, Salvage pathway, metabolic disorders, HGPRT, Adenosine deaminase

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – (DSC-11)
Hormones: Biochemistry and Function

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Hormones: Biochemistry and Function (BCH-DSC-402)	**4**	**2L**	**0**	**2P**	**Class XII with Science and Biology**	**NIL**

Learning Objectives

The course is designed to enable the students to understand and appreciate the delicate network and balance of hormones required for the healthy functioning of the human body. The course emphasizes on studying the different types of hormones along with their physiological action. The students will be taught the consequences of any hormonal imbalances (over and underproduction of hormones) with special emphasis on human diseases. It provides an understanding of the different endocrine factors that regulate metabolism, growth, electrolyte and mineral homeostasis, glucose homeostasis, stress physiology and reproductive function. It also prepares a student for postgraduate studies in any course related to molecular medicine.

Learning outcomes

On successful completion of the course, students will be able to:

1. Explain the molecular mechanism and signaling pathways mediating Hormone Action
2. Describe the physiological role of each hormone in regulating growth, appetite, metabolism and reproduction
3. Examine the regulatory mechanisms regulating Hormone secretion and release.
4. Discuss the basis of endocrine diseases taking case studies.

SYLLABUS OF DSC-11

BCH-DSC-11 : HORMONES : BIOCHEMISTRY AND FUNCTION
Semester – IV

2.2 Course Contents
Theory (2 credits)

Total Hours: 30

Unit 1: Introduction to hormones and Hypothalamic- hypophyseal system: (5 Hours)

Introduction to hormones; Hypothalamic - pituitary axis- anatomy, histology, vasculature, and secretions. Physiological and biochemical actions of hypothalamic hormones and Anterior

pituitary hormones; Hormone feed- back regulatory cascade. Posterior pituitary hormones – structure, physiology and biochemical actions of AVP and Oxytocin; Diabetes insipidus.

Unit 2: Hormones regulating growth, energy metabolism and calcium homeostasis
(10 Hours)

Regulation of Growth: growth hormone and somatomedin, Endocrine disorders - gigantism, acromegaly, dwarfism, pygmies.

Thyroid gland- Biosynthesis of thyroid hormone and its regulation: Role of TRH, TSH in T_4 synthesis and response. Physiological and biochemical action of Thyroxine. Pathophysiology of thyroxine secretion: Goiter, Graves' disease, cretinism, myxedema.

Regulation of calcium homeostasis: PTH, Vitamin D and calcitonin. Mechanism of Ca^{2+} regulation involving bone, skin, liver, gut and kidneys. Pathophysiology - rickets, osteomalacia, osteoporosis.

Unit 3: Hormones regulating glucose homeostasis, stress physiology and electrolyte balance: (10 Hours)

Hormones of the Pancreas: structure, synthesis, regulation of release, incretins, physiology and biochemical actions of insulin and glucagon. Role of these hormones in blood glucose homeostasis; Pathophysiology - diabetes type I and type II. GIT hormones: Secretin, gastrin and incretins.

Physiology and action of Aldosterone; the Renin Angiotensin System. Physiology and Biochemical actions of Cortisol; Role of POMC and CRH in cortisol synthesis; Adrenal medullary hormones: epinephrine and norepinephrine. The Fight or flight response; Dual receptor hypothesis. General adaptation syndrome: acute and chronic stress response. Pathophysiology – Addison's disease, Conn's syndrome, Cushing syndrome.

Unit 4: Reproductive hormones: (5 Hours)

Male and female sex hormones. Interplay of hormones during ovarian and uterine phases of menstrual cycle; Placental hormones; role of hormones during parturition and lactation. Hormone based Contraceptives.

2.3 Practical (2 Credits)

Total Hours: 60

1. Glucose tolerance test.
2. Estimation of serum Ca^{2+}.
3. Determining the thyroid profile by estimating T_4 and TSH under normal and pathophysiological conditions. Or Estimation of estrogen during different days of the menstrual cycle.
4. Presentation Assignments on GI Tract hormones and Adipokines
5. HCG based pregnancy test.
6. Estimation of serum electrolytes.
7. Case studies: Diabetes Insipidus, Acromegaly and dwarfism, Diabetes Mellitus, Rickets, Osteoporosis, Cushing syndrome

2.4 Essential readings:

1. Vander's Human Physiology (2008) 11th ed.,Widmaier, E.P., Raff, H. and Strang, K.T. McGraw Hill International Publications, ISBN: 978-0-07-128366-3.
2. Sherwood, L. (2012) Introduction to Human Physiology 8th edition; Brooks/Cole, Cengage Learning. ISBN-13: 978-1133104544.
3. Victor Rodwell, David Bender, et al. (2018) ISE Harper's Illustrated Biochemistry Thirty-First Edition, McGraw Hill (A and L Lange series), ISBN-10. 1259837939; ISBN-13. 978-1259837937

Suggested readings:

1. Endocrinology (2007) 6th ed., Hadley, M.C. and Levine, J.E. Pearson Education (New Delhi), Inc. ISBN: 978-81-317-2610-5.
2. Guyton, A.C. and Hall, J.E., (2016) Reed Textbook of Medical Physiology 13th ed., Elseviers India Pvt. Ltd. (New Delhi). ISBN: 978-1455770052

3. Keywords

Hypothalamic-hypophyseal axis, hormones, calcium and glucose homeostasis, hormonal disorders.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – (DSC-12)
Gene Organization, Replication and Repair

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Gene Organization, Replication and Repair (BCH-DSC-403)	4	2L	0	2P	Class XII with Science and Biology	NIL

Learning Objectives

The objective of the course is to introduce to the students, the basic concepts of genome, DNA structure, genes, chromatin and chromosomes. It provides an understanding of DNA replication, recombination, mutations and repair processes in a way that students can apply this knowledge in understanding the life processes and develop an interest to pursue high quality research.

Learning outcomes

After completion of this course, learners will be able to:

1. Analyse the structure of DNA and various forms of DNA and learn about organisation of genome in various life forms, supercoiling of DNA and its significance
2. Perform isolation of DNA and analyse the purity of isolated DNA sample
3. Evaluate the molecular basis of processes like DNA replication, recombination and transposition and demonstrate the significance of these processes
4. Perform various methods of DNA estimation
5. Discuss the various ways in which the DNA can be damaged leading to mutations, lesions and repair mechanisms

SYLLABUS OF DSC-12
BCH-DSC-12 : GENE ORGANIZATION, REPLICATION AND REPAIR
Semester – IV

2.2 Course Contents

Theory (2 Credits)

Total Hours: 30

Unit I: Structure of DNA and genomic organization **(8 Hours)**

Watson and Crick model of DNA, various forms of DNA, Supercoiling of DNA, linking number, Topoisomerases, Topoisomerase inhibitors and their clinical importance, Definition

of a gene, organization of genes in viruses, bacteria and eukaryotes, concept of split genes, introns, exons, satellite DNA, highly repetitive DNA.

Unit II: Replication of DNA **(10 Hours)**

The chemistry of DNA synthesis, DNA polymerase, the replication fork, enzymes and proteins in DNA replication, *E coli* DNA polymerases, stages of replication: initiation, elongation, origin of replication, relationship between replication and cell division, replication in eukaryotes, end replication problem, telomerases. Comparison of replication in prokaryotes and eukaryotes. Inhibitors of DNA replication and applications in medicine.

Unit III: Recombination and transposition of DNA **(6 Hours)**

Homologous recombination, enzymes in homologous recombination, site-specific recombination, recombinases. Transposition, DNA transposition by cut and paste and replicative mechanism.

Unit IV: Mutations and DNA Repair **(6 Hours)**

Importance of mutations in evolution of species, Types of mutations, DNA damage by hydrolysis, alkylation, oxidation and radiation. Mutations caused by base analogs and intercalating agents. Ames test. Replication errors and their repair, mismatch repair system. Repair of DNA damage-direct reversal of DNA damage, base excision repair, nucleotide excision repair, translesion DNA synthesis. DNA repair diseases.

2.3 Practical (2 Credits)

Total Hours: 60

1. DNA estimation by DPA
2. Separation of nitrogenous bases by paper chromatography
3. To plot the ultraviolet absorption spectrum of DNA
4. Isolation of chromosomal DNA from *E coli* cells
5. Determination of DNA concentration and purity by UV absorption.
6. Determination of the melting temperature of DNA
7. Demonstration of the mechanism of Transposition and Recombination (Dry Lab)
8. Ames test
9. Exercise with *in silico* tools (NCBI, GenBank, EMBL, DDBJ, NBD, BLAST and Clustal omega)

2.4 Essential readings:

- Lehninger: Principles of Biochemistry (7th ed.) (2017) Nelson, D.L. and Cox, M.M W.H. Freeman & Company (New York), ISBN:13: 9781464126116 / ISBN:10-1464126119.
- Molecular biology of the gene: (7th ed), (2014) Watson, J. D., Baker, T. A., Bell, S. P., Gann, A., Levine, M., & Losick, R. International). Pearson.

Suggested readings:

- Genetics - A Conceptual Approach,) (6^{th} ed). (2012), Pierce, B.A. W.H. Freeman & Co. (New York), ISBN:13:978-1-4292-7606-1 / ISBN:10:1-4292-7606-

- Lewin's Gene X (10th edition) (2018). Lewin, B., Krebs, J.E., Kilpatrick, S.T., Goldstein, E.S., Bartlett Learning publishers, LLC, ISBN: 978-0-7637-6632-0.
- The Cell: A Molecular Approach (7th ed.) (2009). Cooper, G.M. and Hausman, R.E. ASM Press & Sunderland (Washington DC), Sinauer Associates, MA. ISBN:978-0- 87893-3030.
- *Biochemistry* (6th ed.) (2016). Garrett, R. H., & Grisham, C. M. Brooks Cole. ISBN: 9781305882409

3. Keywords

DNA, Double helix, Supercoiling, Recombination, Transposition, DNA Repair

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

POOL OF DSEs

DISCIPLINE SPECIFIC ELECTIVE COURSE – (DSE-4)
BIOCHEMICAL MECHANISMS AND RESPONSES IN PLANTS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Biochemical Mechanisms and Responses in Plants (BCH-DSE-4)	04	02	0	02	Class XII with Science and Biology	Basic courses allied to biological science

Learning Objectives

The course aims to provide thorough understanding of metabolic processes in plants and the role of different biosynthetic pathways in growth and development of plants. The course will also impart basic concepts and applications of plant secondary metabolites.

Learning outcomes

On successful completion of the course students will be able to:

1. Describe the structure and function of plant cell organelles in plant metabolism.
2. Explain the various plant biochemical processes and metabolic pathways including photosynthesis, photorespiration, nitrogen fixation and assimilation and plant secondary metabolism and their biological significance.
3. Discuss the role of plant hormones in plant growth and development.
4. Evaluate the various plant responses to different abiotic and biotic stress conditions.
5. Plan and execute plant tissue culture.

SYLLABUS OF DSE-4

BCH-DSE-4 : BIOCHEMICAL MECHANISMS AND RESPONSES IN PLANTS
Semester – IV

2.2 Course Contents

Theory (Credits – 2)

Total Hours : 30

Unit I: Photosynthesis and Respiration **(8 Hours)**

Introduction to Plant cells, Cell wall, Vacuole and Tonoplast membrane, Plastids and Peroxisomes. Overview to photosynthesis and Carbon assimilation, Light reaction and photosystems, Cyclic and non-cyclic photophosphorylation, Calvin cycle and its regulation, C4 cycle and Crassulacean acid metabolism (CAM), Photorespiration. Photoinhibition. Glycolytic pathway and its alternative reactions in plants, Translocation of metabolites across mitochondrial membrane, TCA cycle, electron transport chain in plants, alternative NAD(P)H oxidative pathways.

Unit II: Nitrogen metabolism (7 Hours)

Nitrogen cycle; Biological nitrogen fixation; Structure and function of Nitrogenase complex. Nitrate assimilation: Nitrate and Nitrite reductase. Primary and secondary ammonia assimilation in plants; ammonia assimilation by glutamine synthetase-glutamine oxoglutarate aminotransferase (GS-GOGAT) pathway.

Unit III: Plant physiology and Secondary metabolites (10 Hours)

Plant vascular system; Plant hormones and their role in plant growth and development; Regulation of plant morphogenetic processes by light. Plant stress responses to abiotic and biotic stresses: Water deficit, temperature, salinity, insect manifestation. Secondary metabolites: types, structure and functions of Alkaloids, Phenolics and terpenoids.

Unit IV: Plant tissue culture (5 Hours)

Cell and tissue culture techniques, types of cultures: organ and explant culture, callus culture, cell suspension culture and protoplast culture. Plant regeneration pathways: organogenesis and somatic embryogenesis. Applications of cell and tissue culture and somaclonal variation. Germplasm storage and cryo-preservation. Brief introduction to transgenic plants.

2.3 Practical:

Credits: 2 Total Hours : 60

1. Induction of hydrolytic enzymes (proteases /amylases/lipase) in germinating wheat seeds.
2. Effect of plant hormones on plant growth (Phytochrome effects on lettuce germination/ Gibberellic acid effect on α-amylase secretion in barley seeds).
3. Extraction and assay of Urease from Jack bean.
4. Estimation of carotene/phenols/tannins in fruits and vegetables.
5. Estimation of ascorbic acid in fruits and vegetables.
6. Effect of light on chlorophyll production.
7. Separation and analysis of chloroplast proteins (Rubisco) using SDS-PAGE.
8. Plant tissue culture

2.4 Essential readings:

1. Buchann (2015). Biochemistry and Molecular Biology of plant. (2nd ed.). I K International. ISBN-10: 8188237116, ISBN- 978047 07 14218
2. Caroline Bowsher, Martin steer, Alyson Tobin (2008). Plant Biochemistry. Garland Science. ISBN 978-0-8153-4121-5.

3. Dey, P. M. and J.B. Harborne, J.B., (Editors) (1997). Plant Biochemistry. Academic Press. ISBN-10:0122146743, ISBN-13:978-0122146749. 94
4. Taiz, L. and Zeiger, E. (2010). Plant Physiology (5th ed.). Sinauer Associates Inc. ISBN-13: 978-0878938667, ISBN-10: 0878938664

4. Keywords

Plant cell, photosynthesis, respiration, nitrogen fixation and assimilation, secondary metabolism, stress biology.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – (DSE-5)
NUTRITIONAL BIOCHEMISTRY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Nutritional Biochemistry (BCH-DSE-5)	04	02	0	02	Class XII with Science and Biology	Basic courses allied to biological science

Learning Objectives

This course provides students with knowledge and understanding of the characteristics, function, metabolism and deficiency of macro and micronutrients in the human body. It involves integrated learning between the areas of Biochemistry and Nutrition.

Learning outcomes

On successful completion of the course students will be able to:

1. Critically analyse and evaluate concepts in nutritional biochemistry that are important for an understanding of human nutrition.
2. Demonstrate the relationship between nutrition and health.
3. Discuss the macro and micronutrients and their nutritional deficiencies.
4. Describe techniques used in the assessment of nutritional status and nutritional disorders.
5. Explain drug nutrient interactions.

SYLLABUS OF DSE-5

BCH-DSE-5 : NUTRITIONAL BIOCHEMISTRY
Semester – IV

2.2 Course Contents

Theory (Credits – 2)

Total Hours: 30

Unit I: Introduction to Nutrition and Energy Metabolism (4 Hours)

Defining nutrition, role of nutrients. Unit of energy, Food energy, SDA. Energy expenditure and its components, Energy Balance, Recommended Nutrient Intakes (RNI) and Recommended Dietary Allowances for different age groups.

Unit II: Macronutrients (10 Hours)

Food sources of carbohydrates, functions of carbohydrates, RDA, Factors affecting bioavailability, Glycemic index and glycemic load. Dietary fiber and the role of fibre in health. Role of Gut microbiome in maintaining health. Role of prebiotics and probiotics in nutritive health.

Essential Fatty Acids; Functions of EFA, AI, excess and deficiency of EFA, factors affecting bioavailability. Dietary implications of ratios of n6 and n3, MUFA, PUFA and SFA, Cholesterol in the body.

Functions of proteins in the body. RDA for different age groups. Essential and Nonessential amino acids. Complete and incomplete protein, Amino Acid Interactions: Antagonism, Toxicity, Imbalance, Amino acid complementation and Supplementation in foods. Protein quality determinants NPU, Biological Value, PDCAAS, Nitrogen balance. PEM: Marasmus and Kwashiorkor.

Unit III: Fat and water soluble Vitamins (9 Hours)

Vitamin A, D, E, K and dietary sources, RDA, Role of Vitamin A in Visual cycle and overview of other functions. Role of Vitamin K in Gamma carboxylation (blood clotting). Role of Vitamin E as an antioxidant. Role of Vitamin D in maintenance of bone physiology and overview of other functions. Vitamin C- Dietary sources, RDA, role in collagen synthesis. The B Complex vitamins- Dietary sources, RDA. Functions and role in metabolism, Role of Vitamin B12 and Folate in Haematopoiesis and Neurology. Biochemical basis for deficiency symptoms, Hypervitaminosis.

Unit IV: Minerals (7 Hours)

Minerals: Dietary Sources, RDA. Sodium, Potassium, Calcium, Iron, Chloride, Copper and Phosphorus- Function, metabolism, Excretion, Deficiency, Toxicity, Trace Elements Iodine, Fluoride, Mg, Zn, Se, Chromium, Molybdenum: Function, Metabolism, deficiency, Toxicity and Sources.

2.3 Practical:

Credits: 2 **Total Hours: 60**

1. Anthropometric identifications for nutrition related diseases, BMR calculation
2. Determination of oxidative stress: TBARS in serum, antioxidant enzymes in hemolysate/plant sources.
3. Estimation of A/E vitamin in serum.
4. Estimation of minerals in drugs/food/serum.
5. Determination of nutritive value of foods.
6. Understanding fortification and supplementation
7. Presentation and discussion on Food as medicine.
8. Group discussion on Nutrient-nutrient and drug-nutrient interactions
9. Case studies on nutritional disorders.

2.4 Essential readings:

1. Coombs Jr. G. F., (2008). *The vitamins, Fundamental aspects in Nutrition and Health.* Elsevier's Publications. ISBN-13- 978-0-12- 183493-7.
2. Mahan, L.K., Strings, S.E., Raymond, J. (2012) *Krause's Food and Nutrition Care process.* Elsevier's Publications. ISBN: 978-1-4377-2233-8.
3. Rosalind Gibson (2005). *Principles of Nutritional Assessment.* Oxford University Press. ISBN: 9780195171693
4. Tom Brody (1999). *Nutritional Biochemistry* (2nd Ed). Harcourt Braces. ISBN:9814033251, 978981403325.
5. Malik, D., Narayanasamy, N., Vavilala, P., Takur, J., Sinha, N., (2022). Textbook of Nutritional Biochemistry. Springer Singapore, ISBN978-981-19-4149-8.

Suggested reading:

1. Devlin, T. M., (2011). *Textbook of Biochemistry with Clinical Correlations.* John Wiley & Sons, Inc. (New York), ISBN: 978-0-4710-28173-4.

3. Keywords

Nutrition, macronutrients, micronutrients, energy balance, nutrient deficiency

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

POOL OF GENERIC ELECTIVES

GENERIC ELECTIVE COURSE - (GE-7)
CELLULAR COMMUNICATIONS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Cellular Communications (BCH-GE-7)	04	02	0	02	Class XII with Science and Biology	Basic course in cell biology

Learning Objectives

- Explain the concept of Cell-cell communication.
- Describe the various types of receptors, signal transduction pathways, second messengers and effector molecules.
- To understand how signalling pathways, regulate cell motility, metabolism, growth, organogenesis, and cell death.
- Discuss the crosstalk between signal transduction pathways crosstalk and are auto-regulated.
- To know about various diseases associated with cellular communication pathway defects.

Learning outcomes

On successful completion of the course, students will be able to:

1. Describe various types of cell - cell communication.
2. Discuss the various types of receptors and signal transduction pathways in bacteria, plants and animal system.
3. Explain the importance of various signalling pathways in the regulation of metabolism, growth, organogenesis and cell death.
4. Discuss the cellular communication defects that lead to various types of diseases including cancers.

SYLLABUS OF GE-7

BCH-GE-7 : CELLULAR COMMUNICATIONS
SEMESTER - IV

2.2 Course Contents

Theory (Credit 2)

Total Hours : 30

Unit: 1 Introduction to cell- cell communication. (2 Hours)

Chemical signalling - endocrine, paracrine, autocrine, intracrine and neuroendocrine mechanisms. Cognate signalling.

Unit: 2 Receptors and Signal transduction pathways (16 Hours)

Hormone receptors - extracellular and intracellular. Receptor - hormone binding, Scatchard analysis. G-Protein-coupled Receptors: Heterotrimeric G proteins, Second messengers: cAMP, cGMP, Lipid-derived Second Messengers (IP3, DAG) NO, Calcium Signalling. Effector systems - adenylyl cyclase, guanylyl cyclase, PDE, PLC. Protein kinases (PKA, PKB, PKC, PKG).

Enzyme linked receptors: Receptor Tyrosine Kinases: EGF, insulin and erythropoietin. Ras - MAP kinase cascade, and JAK - STAT pathway.
Ion-channel linked receptors; Neurotransmitter receptors (Acetylcholine receptor). Nerve transmission.

Intracellular receptors: Cytoplasmic and nuclear receptors. Steroid hormone, thyroid hormone receptors. Gene regulation.

Integrin receptors. Integrin signalling. Cell matrix communication Receptor Regulation. Cross talk.

Unit 3: Photoreceptors and signal transduction in plants (4 Hours)

Phytochromes, cryptochromes and phototropins signalling.

Unit 4: Cell death signalling (4 Hours)

Apoptosis, Autophagy

Unit 5: Bacterial signalling (4 Hours)

Quorum sensing, autoinducers, chemotaxis.

2.3 Practical

Credit: 2 **Total Hours : 60**

1. Yeast response to mating pherohormones .
2. Study of Chemotaxis response in Tetrahymena/ paramecium/ dictostylium
3. Study change in heart rate (sympathetic response) on exposure to caffeine (cAMP mediated) in zebrafish larvae.
4. Chemotaxis/ motility assay in microbes.
5. Effect of plant hormones on plant growth or photomorphogenesis in response to light. (Phytochrome effects on lettuce germination/ Gibberellic acid effect on α-amylase secretion in barley seeds)

Essential readings:

1. Lodish, U. H. (2016) Molecular Cell Biology. W.H. Freeman, 2016.
2. Nelson, D. L., & Cox, M. M. (2021). Lehninger principles of biochemistry (8th ed.). W.H. Freeman. ISBN:9781319230906
3. Lim, W., Mayer, B., & Pawson, T. (2015). Cell signaling: principles and mechanisms. New York: Garland Science, Taylor & Francis Group.
4. Kocher, S. L., and Gujral, S. K. (2020). Plant Physiology Theory and Application. Cambridge University Press DOI: https://doi.org/10.1017/9781108486392.018
5. Demuth, D., & Lamont, R. (Eds.). (2006). Bacterial Cell-to-Cell Communication: Role in Virulence and Pathogenesis (Advances in Molecular and Cellular Microbiology). Cambridge: Cambridge University Press. doi:10.1017/CBO9780511541506

Suggested readings:

1. ZFIN protocols
2. Harris UM. A., McGee, S. A., and Batzi J. M. (2018). Uncooking Yeast: Cells Signalling a Rise to Inquiry. Tested Studies for Laboratory Teaching. Proceedings of the Association for Biology Laboratory Education. 38 (9) 1-48
3. Plant physiology and biotechnology laboratory manual. Compiled by: David Law, Lada Malek and JoAnne Henderson. 2006. https://old.amu.ac.in/emp/studym/99997510.pdf

3. Keywords

Chemical signaling, Receptors, signal transduction, GPCRs, RTKs, Photoreceptors, cell death signaling, bacterial signalling

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES COURSE - (GE-8)
BIOCHEMICAL CORRELATION OF DISEASES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
BIOCHEMICAL CORRELATION OF DISEASES (BCH-GE-8)	**04**	**02**	**0**	**02**	**Class XII with Science and Biology**	**XIIth pass in biology**

Learning Objectives

The course aims to provide students with knowledge and understanding of the spectrum of human diseases. It will introduce the concept of a well-balanced diet, healthy lifestyle, the biochemical mechanism of diseases, treatment strategies, mechanism of action of drugs and drug resistance against various antimicrobials. The course also aims to outline the various strategies that could be employed for prevention of infectious and non-infectious diseases.

Learning outcomes

On successful completion of the course students will be able to:

1. Discuss the importance of a balanced diet, regular exercises and healthy lifestyle in leading a disease-free life.
2. Explain the functioning of the immune system and endocrine system and the basis of various autoimmune and hormonal disorders.
3. Correlate the genetic mutation and metabolic disorders.
4. Discuss the molecular mechanism of microbial pathogenicity, drug resistance and implications in public health management.

SYLLABUS OF GE-8

BCH-GE-8 : BIOCHEMICAL CORRELATION OF DISEASES
SEMESTER - IV

2.2 Course Contents

Theory (Credit 2)

Total Hours: 30

Unit I: Inherited Metabolic diseases and Hormonal disorders (9 Hours)

Introduction to inherited Metabolic diseases. Alkaptonuria, Phenylketonuria; Glycogen storage diseases (Von Gierke disease, Cori disease); Lipid storage diseases: Gaucher's disease; SCID. Overview of the endocrine disorders: Cushing's disease, Diabetes insipidus.

Unit II: Nutritional deficiency and lifestyle-based diseases (7 Hours)

Concept of nutrition and balanced diet; Protein-energy malnutrition: Kwashiorkor and Marasmus; Vitamin deficiency diseases: Beri-Beri, Scurvy, Pellagra, Nutritional deficiency Anemia, Night blindness, Rickets. Lifestyle-based diseases: Atherosclerosis, Diabetes Mellitus-II.

Unit III: Autoimmune diseases (6 Hours)

Concepts in immune recognition-self and non-self-discrimination, organ specific autoimmune diseases- Hashimoto's thyroiditis, Graves' disease, Myasthenia Gravis, Diabetes Melitus-I, Systemic diseases: Systemic lupus erythematosus (SLE), Rheumatoid arthritis.

Unit IV: Infectious diseases (8 Hours)

Classification of infectious diseases; Role of sanitation, drugs and vaccines in prevention, transmission and treatment of infectious diseases. Diseases caused by viruses: Polio, Influenza, HIV and COVID. Diseases caused by bacteria: Tetanus, Tuberculosis. Protozoan infections: Malaria; Parasitic infections: Kala Azar.

2.3 Practical:

Credits: 2 **Total Hours : 60**

1. Anthropometric measurements: BMI, Waist/Hip Ratio, Mid Arm Muscle Area (MAMA), Mid Arm Area (MAA).
2. Measurement of Blood pressure
3. Determination of blood Lipid Profile: Triglyceride, Cholesterol
4. Glucose tolerance test
5. Widal test
6. Permanent slides of malarial parasites/Leishmania
7. Case studies related to autoimmune diseases, life-style disorders and hormonal imbalance

2.4 Essential readings:

1. Berg, J.M., Tymoczko, J.L., Gatto, G.J., Stryer, L. (2019). Biochemistry (9th ed.). W.H Freeman and Company (New York). ISBN-13:9781319114671
2. Coico, R. (2021). Immunology: A Short Course (8th ed.). John Wiley & Sons, Inc (New Jersey). ISBN: 9781119551577.
3. Devlin, T. M., (2011). Textbook of Biochemistry with Clinical Correlations. John Wiley & Sons, Inc. (New York). ISBN: 978-0-4710-28173-4.
4. Willey, J., Sandman, K., Wood, D. (2019). Prescott's Microbiology (11th ed.). McGraw Hill International Edition (New York) ISBN: 9781260211887.

Suggested readings:

1. Sherwood, L. (2012). Introduction to Human Physiology (8th ed.). Brooks/Cole, Cengage Learning. ISBN-13: 978-1133104544 ISBN-10: 1133104541.
2. Hadley, M.E., Levine, J.E. (2007). Endocrinology (6th ed.). New Delhi, Pearson Education, Inc. ISBN: 978-81-317-2610-5.
3. Malik, D., Narayanasamy, N., Vavilala, P., Takur, J., Sinha, N., (2022). Textbook of Nutritional Biochemistry. Springer Singapore, ISBN978-981-19-4149-8.

3. Keywords

Lifestyle and metabolic disorders, nutritional deficiency, hormonal disorder, autoimmunity and infectious diseases.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES COURSE – (GE-9)
FUNDAMENTALS OF MOLECULAR BIOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Fundamentals of Molecular Biology (BCH-GE-9)	04	02	0	02	Class XII with Science and Biology	Basic courses allied to biological science

Learning Objectives

This course is designed to introduce the concepts of how the genetic material is organized within genomes and the difference in the architecture of the genome in various organisms. It deals with the replication of the genetic material in prokaryotes and eukaryotes as well as the expression of genes into RNA as well as proteins; all being crucial life processes required for the perpetuity and successful functioning of living organisms. It also introduces the concept of regulation of gene expression in prokaryotes.

Learning outcomes

On successful completion of the course, students will be able to:

1. Perform the isolation of bacterial genomic DNA and assess its purity
2. Evaluate the characteristic properties of DNA and RNA using biochemical assays like Dische test and Bial's test.
3. Identify the different nitrogenous bases present in Nucleic acids
4. Compare the DNA replication in prokaryotes and eukaryotes.
5. Discern the processes of conversion of the information stored in the genetic code into mRNA as well as proteins.

SYLLABUS OF GE-9

BCH-GE-9 : FUNDAMENTALS OF MOLECULAR BIOLOGY
SEMESTER - IV

2.2 Course Contents

Theory (Credit 2)

Total Hours: 30

Unit 1 Genome organization in organisms (3 Hours)

Definition of a gene, organization of genes in viruses, bacteria and eukaryotes. Supercoiling of DNA, linking number, topoisomerases.

Unit 2 Replication of genomes (9 Hours)

General features of DNA replication, properties of prokaryotic and eukaryotic DNA polymerases. Three stages of DNA replication, end replication problem, telomerase, Inhibitors of DNA replication and applications in medicine.

Unit 3 Transcription (10 Hours)

Transcription in prokaryotes, RNA polymerase, sigma factor, bacterial promoters, identification of DNA binding sites by DNA footprinting, various stages of RNA synthesis, initiation, elongation and termination, rho-dependent and rho-independent termination. Concept of operons (Lac operon). Eukaryotic RNA polymerases. Inhibitors of transcription and applications in medicine.

Unit 4 Translation (8 Hours)

Features of the genetic code, structure of ribosomes, charging of tRNAs, amino acyl tRNA synthetases; three stages of protein synthesis - initiation, elongation and termination. Inhibitors of protein synthesis.

2.3 Practicals

CREDITS: 2 **Total Hours: 60**

1. Quantitative determination of DNA and RNA by absorbance at 260 nm.
2. Estimation of DNA by Dische's reagent.
3. Estimation of RNA by Bial's reagent.
4. Separation of nitrogenous bases by paper chromatography.
5. Isolation of chromosomal DNA from *E. coli* and estimation of its purity by 260nm/280nm absorbance.

2.4 Suggested Readings

1. Nelson, D.L. and Cox, M.M. (2013). *Lehninger: Principles of Biochemistry* (6^{th} ed.,) W.H. Freeman & Company (New York), ISBN-13; 978-1-4641-0962-1 / ISBN:10-14641-0962-1.

2. Berg, J.M., Tymoczko, J.L. and Stryer, L., (2012). *Biochemistry* (7th ed.,) W.H Freeman and Company (New York), ISBN: 13:978-1-4292-7635-1.
3. Watson, J.D., Baker, T.A., Bell, S.P., Gann, A., Levine, M. and Losick, R. (2008) *Watson: Molecular Biology of the Gene* (7th ed.), Cold Spring Harbor Laboratory Press, Cold spring Harbor (New York), ISBN:0-321-50781 / ISBN-13: 9780321762436.

3. Keywords

Genes, Replication, Transcription, Translation, Genetic code, Protein synthesis.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER V
BSC (HONS.) BIOCHEMISTRY

DISCIPLINE SPECIFIC CORE COURSE – (DSC-13)
MOLECULAR CELL BIOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Molecular Cell Biology (BCH-DSC-501)	4	2L	0	2P	Class XII with Science and Biology	NIL

Learning Objectives

The course aims to provide advanced knowledge about the function of cellular organelles and the mechanism of protein sorting in the cell. It will also provide details of cellular communications in the cell and understanding of molecular regulation of cell growth and cell death. The course will outline the molecular details of cancer development and treatment.

Learning outcomes

On successful completion of the course, students will be able to:

1. Explain the process of protein trafficking in the cell and role of various regulatory proteins involved in the process.
2. Discuss the different modes of cellular communication in a multicellular organism
3. Explain the regulatory mechanisms involved in controlling the process of mitosis, meiosis, apoptosis, necrosis and autophagy.
4. Examine the molecular and genetic basis of cancer development and various molecular approaches used for cancer treatment.

SYLLABUS OF DSC-13

BCH-DSC-501 : MOLECULAR CELL BIOLOGY
SEMESTER - V

Theory (2 Credits)

Total Hours: 30

Unit I: Protein Sorting and Secretory Pathway **(7 Hours)**

Overview of the endomembrane system; Co-translational and post-translational targeting of proteins into Endoplasmic Reticulum; Protein Modifications, Folding and Quality Control in ER; Protein targeting to Golgi complex and Lysosomes; Exocytosis; Sorting of Proteins to Mitochondria, Chloroplasts and Peroxisomes.

Unit II: Cellular Signaling (10 Hours)

Chemical signaling- endocrine, paracrine, autocrine, intracrine and neuroendocrine mechanisms. Hormone receptors- extracellular and intracellular. G protein coupled receptors, G proteins, second messengers- cAMP, cGMP, IP3, DAG, Ca^{2+}, Effector systems- adenylyl cyclase, guanylyl cyclase, PDE, PLC. Protein kinases (PKA, PKB, PKC, PKG). Receptor tyrosine kinases-EGF, Insulin and Ras-MAP kinase cascade. Non-receptor tyrosine kinase-erythropoietin receptor JAK-STAT pathway. Intracellular receptor family: Steroid hormone receptor and NO receptors.

Unit III: Cell cycle and Apoptosis (8 Hours)

Overview of the cell cycle; Stages of eukaryotic cell cycle; Events of Mitotic Phase and Cytokinesis; Role of cyclins and cyclin-dependent kinases; Molecular mechanisms of cell cycle regulation and Cell Growth; Meiosis and its regulation; Cell death: Apoptosis, Necrosis and Autophagy; Intrinsic and extrinsic apoptotic pathways; Regulation of apoptotic pathways.

Unit IV: Molecular Basis of Cancer Biology (5 Hours)

Types of cancer; Stages of cancer development; Properties of Cancerous Cells; Genetic basis of cancer; Cancer causing agents: radiations, chemical carcinogens and introduction to viral oncogenes; Role of cancer critical genes: oncogenes and tumor suppressor genes; Molecular approaches for cancer treatment.

2.3 Practical (2 Credits)

Total Hours: 60

1. Isolation of organelles by subcellular fractionation and validation of separated organelles by marker enzymes.
2. Study the changes in heart rate (sympathetic response) on exposure to caffeine (cAMP mediated) in model organisms.
3. Preparation of hepatocyte primary culture and cell enumeration.
4. Study of cell viability/death assay by use of trypan blue and MTT assay.
5. Polyploidy in onion root tip by colchicine treatment.
6. Study of apoptosis through analysis of DNA fragmentation patterns.
7. Identification and study of cancerous cells using permanent slides and photomicrograph.

2.4 Essential readings:

1. Cooper, G.M. (2018). The Cell: A Molecular Approach. (8th ed.). Sinauer Associates Inc: Oxford University Press. ISBN: 9781605357072
2. Karp, G., (2010). Cell and Molecular Biology: Concepts and Experiments (8th ed.). John Wiley & Sons. Inc. ISBN: 978-1-118-65322-7.
3. Alberts, B., Johnson, A., Lewis, J., Morgan, D., Raff, M., Roberts, K., Walter, P. (2014). Molecular Biology of the Cell. (6th ed.). Garland Science. ISBN: 978-0815345244

4. Lodish, H., Berk, A., Kaiser, C.A., Krieger, M., Bretscher, A., Ploegh. A., Martin, K.C., Yaffe, M., Amon, A. (2021). Molecular Cell Biology (9th ed.). W.H. Freeman & Company (New York). ISBN-13: 978-1319208523/ ISBN-10: 1319208525

Suggested readings:

1. Kleinsmith, L. J., Hardin, H., Wayne G., Becker, M. (2009). The World of the cell (7th ed.). ISBN-13: 978-0805393934 / ISBN-10: 0805393935.

3. Keywords

Protein Sorting, Protein Modification, exocytosis, Cellular communication, autophagy, mitosis, meiosis, Apoptosis, Necrosis, Cancer, Oncogenes, Chemotherapeutics.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – (DSC-14)
CONCEPTS IN GENETICS AND EVOLUTION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Concepts in Genetics and Evolution (BCH-DSC-502)	4	2L	0	2P	Class XII with Science and Biology	NIL

Learning Objectives

The aim of the course is to provide an understanding of both classical and modern concepts in the areas of mapping techniques, transmission, molecular, quantitative, population and evolutionary Genetics. Practicals are well correlated with the theory topics and designed to support skill-oriented learning outcomes. The course also works as preparation for further studies in a Master's programme in molecular biology or related topics.

Learning outcomes

On successful completion of the course, students will be able to:

1. Explain the principles of Mendelian genetics, extensions and applications.
2. Examine the various factors that confer genotypic and phenotypic variability.
3. Correlate human and viral genetics to create linkage and genetic maps.
4. Perform experiments using genetic model system *Drosophila melanogaster*.
5. Analyse biological data using statistical tools
6. Discuss the principles of transmission and inheritance in real life situations.

SYLLABUS OF DSC-14

BCH-DSC-502 : CONCEPTS IN GENETICS AND EVOLUTION
SEMESTER - V

2.2 Course Contents

Theory (2 Credits)

Total Hours: 30

Unit I: Mendelian and Non-Mendelian genetics (8 Hours)

Revision of Mendelian Genetics; Allelic variation and gene function - dominance relationships, multiple alleles, lethal alleles and null alleles. Complementation test using examples from

Drosophila eye colour mutants to differentiate allelic variants from gene interaction. Pleiotropic gene interaction - epistatic and non- epistatic, interaction between gene(s) and environment. Penetrance and expressivity, norm of reaction and phenocopy.

Unit II: Linkage, crossing over and mapping techniques (9 Hours)

Linkage and crossing over, genetic mapping in eukaryotes, centromere mapping with ordered tetrads, cytogenetic mapping with deletions and duplications, detection of linked loci by pedigree analysis in humans, LOD score, somatic cell hybridization for positioning genes on chromosomes and physical maps using molecular markers.

Unit III: Molecular genetics (8 Hours)

Sex determination: Genetic basis of sex determination in Humans, *Drosophila melanogaster* and *C. elegans. Non-nuclear inheritance and Epigenetics:* Extra nuclear inheritance, tests for organelle heredity and maternal effect; Mechanism of dosage compensation; X chromosomal inactivation in humans and *Drosophila melanogaster.* Epigenetic mechanisms of transcriptional regulation. Monoallelic expressions and Genomic imprinting.

Unit IV: Quantitative and Evolutionary Genetics (5 Hours)

Inheritance of complex traits, analysis of quantitative traits, quantitative trait loci (QTL), narrow and broad sense heritability, and their identification. Hybrid vigor and transgressive inheritance.

Molecular evolution - analysis of nucleotide and amino acid sequences, homologous sequences, molecular phylogenies, phenotypic evolution and speciation, Understanding the concept of fitness with respect to evolutionary genetics.

2.3 Practical (2 Credits)

Total Hours :60

1. Understanding Mendelian genetics (dry lab).
2. Monohybrid crosses in *Drosophila* for studying autosomal/sex-linked inheritance.
3. Squash preparation of salivary glands of Dipteran larva to observe polytene chromosomes.
4. Smear technique to demonstrate sex chromatin in buccal epithelial cells/neutrophils.
5. Understanding Hardy-Weinberg principle. PTC testing in a population and calculation of allelic and genotype frequencies.
6. Understanding chromosomal structure.
   - The study of normal and abnormal human karyotype (dry lab).
   - understanding polyploidy by studying karyotypes in plants
7. Study of human pedigrees (dry lab).

2.4 Essential readings:

1. Principles of Genetics (2015) 7th ed., Snustad, D.P. and Simmons, M.J., John Wiley & Sons. (Singapore), ISBN: 9781119142287
2. Genetics - A Conceptual Approach (2020), 7th ed., Pierce, B.A., W.H. Freeman & Co. (New York), ISBN: 978-01346047

Suggested readings:

1. An Introduction to Genetic Analysis (2017), 11th ed., Griffiths, A.J.F, Wessler, S. R, Carroll, S. B. and Doebley, J., W.H. Freeman & Company (New York), ISBN: 1464109486

2. Klug, W.S., Cummings, M.R., Spencer, C.A. (2019). Concepts of Genetics. Edition 12. Benjamin Cummings.

3. Keywords

Complementation, Allelic and gene interaction, Gene mapping, Non-nuclear inheritance and Epigenetics, Sex determination, Quantitative and Evolutionary Genetics

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – (DSC-15)
GENE EXPRESSION AND REGULATION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Gene Expression and Regulation (BCH-DSC-503)	4	2L	0	2P	Class XII with Science and Biology	NIL

Learning Objectives

The objective of the course is to introduce to the students the basic knowledge about how genes are transcribed and how translation takes place in prokaryotes and eukaryotes and how these processes are regulated, so that students can apply this knowledge in enhancing their analytical and problem-solving skills.

Learning outcomes

After completion of this course, learners will be able to:

1. Analyse the processes of transcription and translation in prokaryotes and eukaryotes
2. Discuss the features of the genetic code and various experimental approaches used to crack the code
3. Perform estimation of RNA by orcinol method
4. Discuss the molecular basis of RNA processing and RNA splicing
5. Perform isolation of RNA from bacteria and plant cells
6. Evaluate the various ways in which transcription and translation are regulated

SYLLABUS OF DSC-15

BCH-DSC-503 : GENE EXPRESSION AND REGULATION
SEMESTER - V

2.2 Course Contents
Theory (2 credits)

Total Hours: 30

Unit I: Transcription in Prokaryotes and Eukaryotes (10 Hours)

Transcription cycle in bacteria, Sigma factor, bacterial promoters and RNA Polymerases, various stages of RNA synthesis- initiation, elongation and termination, rho-dependent and rho-independent termination. Introduction of basal eukaryotic transcription machinery: three classes of eukaryotic RNA polymerases – I, II and III, and their respective promoters. Details of transcription by RNA polymerase II, features of RNA polymerase II core promoters. Inhibitors of eukaryotic and prokaryotic transcription and their applications.

Unit II: RNA Processing **(4 Hours)**

Various types of mRNA processing- polyadenylation and capping, brief overview of rRNA and tRNA processing. Chemistry of RNA splicing, the spliceosome machinery, group I and group II introns, alternative splicing.

Unit III: Translation **(7 Hours)**

Salient features of the genetic code, triplet nature, degenerate, wobble hypothesis, codon usage bias. Experimental approaches used to decipher the genetic code. Messenger RNA, transfer RNA, charging of tRNA. Structure of the ribosome. Three stages of translation-initiation, elongation and termination in prokaryotes and eukaryotes.

Unit IV: Regulation of gene expression **(9 Hours)**

Concept of operons, regulatory proteins, activators, repressors, DNA binding domains, regulation of *lac* and *trp* operon, riboswitches. Eukaryotic gene regulation by chromatin remodelling, regulation of galactose metabolism in yeast, action of enhancers and insulators, working of activators and repressors, synthesis and mechanism of action - siRNA and miRNA.

2.3 Practical (2 Credits)

Total Hours: 60

1. Quantitative estimation of RNA by Orcinol Method
2. Extraction of total RNA from bacteria /yeast
3. To study growth curve and diauxic growth curve in *E. coli*
4. To study inducible promoter activity by reporter assay
5. To study the effect of inhibitors on protein synthesis
6. DNA Footprinting (Dry Lab)

2.4 Essential readings:

1. Nelson, D.L. and Cox, M.M (2017) *Lehninger: Principles of Biochemistry* (7th ed.) W.H. Freeman & Company (New York), ISBN:13: 9781464126116 / ISBN:10-1464126119.
2. Watson, J.D., Baker, T.A., Bell, S.P., Gann, A., Levine, M. and Losick, R. (2008) *Watson: Molecular Biology of the Gene* (7th ed.), Cold Spring Harbor Laboratory Press, Cold spring Harbor (New York), ISBN:0-321-50781 / ISBN-13: 9780321762436

Suggested readings:

1. Lewin, B., Krebs, J.E., Kilpatrick, S.T., Goldstein, E.S., (2018) *Lewin's Gene X* (10th edition). Bartlett Learning publishers, LLC, ISBN: 978-0-7637-6632-0.

3. Keywords

RNA, Transcription, Translation, Genetic code, Gene expression, Operon

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

POOL OF DISCIPLINE SPECIFIC ELECTIVES

DISCIPLINE SPECIFIC ELECTIVE COURSE – (DSE-2)
BIOCHEMICAL APPLICATIONS IN FORENSIC SCIENCES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Biochemical Applications in Forensic Sciences (BCH-DSE-2)	04	02	0	02	Class XII with Science and Biology	NIL

Learning Objectives

The course aims to provide an understanding of the applications of biochemistry in forensic sciences through analysis of evidence, which will help students develop analytical and problem-solving skills for real life situations. With a background of the DSC of Biochemistry, the students get an insight into a major area of application of Modern Biology. The course will keep abreast with all recent developments and emerging trends in forensic science like DNA fingerprinting, brain mapping and facial reconstruction; thus, helping interested students take up forensic science as a future course of study.

Learning outcomes

On successful completion of the course students will be able to:

1. Explain the fundamental concepts and principles of forensic science and their significance.
2. Demonstrate forensic investigation, preservation of evidences, as well as chemical, physical and biological analysis of biological samples
3. Establish the age, sex and identity of an individual of an individual by document evaluation, fingerprints, footprints and DNA analysis.
4. Analyze samples for drug testing, ink and stain testing and document and handwriting verification.
5. Perform Narco Analysis, polygraphy, lie detection and facial reconstruction.

SYLLABUS OF DSE-2

BCH-DSE-2 : BIOCHEMICAL APPLICATIONS IN FORENSIC SCIENCES
Semester – V

2.2 Course Contents

Theory (Credits – 2)

Total Hours : 30

Unit I: Introduction to forensic science and application of biological sciences to forensic investigation (10 Hours)

History and Development of Forensic Science, Biochemical analysis of various biological evidences: blood, semen, viscera, bite marks, and hair. Establishment of identity of individuals: fingerprints, footprints, blood and DNA. Anthropology – skeletal remains, Odontology. Time of death - rigor mortis, liver mortis, algor mortis, forensic entomology. Biochemical basis for determination of cause of death. case studies

Unit II: Application of chemical sciences to forensic investigation (6 Hours)

Detection of drugs of abuse and narcotics in biological samples, Toxicological examination of viscera, detection of petroleum products and food adulteration. Analysis of inks and their use in questioned document identification. Blood spatter analysis, Case studies

Unit III: DNA Fingerprinting (6 Hours)

Introduction to DNA-and source of DNA in Forensic case work, Techniques of DNA fingerprinting-RFLP, STR, PCR, DNA fingerprinting in paternity disputes, mass disaster and other forensic case work, studying kinship by DNA profiling: Related individuals have similar DNA profiles, DNA profiling and the remains of the Romanovs. Sex identification by DNA analysis: PCRs directed at Y chromosome-specific sequences, Amelogenin gene typing. Case studies

Unit IV: Recent advances in forensics (8 Hours)

Narco analysis: theory, forensic significance, future prospect, *Brain mapping:* introduction, EEG, P-3000 wave, forensic applications, limitation of technique, *Polygraph*: Principle and technique, polygraph as forensic investigative tool, use of psychoactive drugs in forensic analysis. NHRC guidelines for polygraph test. *Facial reconstruction*: Method and technique, facial reconstruction in forensic identification, Case studies.

2.3 Practicals

Credit: **2** **Total Hours : 60**

1. Definition, Identification and Mapping of Crime scene
2. Collection, Preservation, Packaging, and Labeling of biological evidence for their forensic investigation.
3. Preliminary and Confirmatory test for blood/semen/saliva

4. Examination of Micro Evidences: fiber, hair, pollen and soil
5. Fingerprint development from various surfaces and their microscopic and chemical examination
6. Handwriting identification based on class characteristic and individual characteristics
7. Identification of dyes, drugs and ink by TLC
8. Blood spatter analysis
9. DNA Fingerprinting: Sex determination through Y specific STRs and Maternal lineage identification through mitochondrial DNA comparisons.
10. Field trip to a forensic laboratory

2.4 Essential readings:

- James, S.H., Nordby, J.J. & Bell, S. (2014). *Forensic Science: An Introduction to Scientific and Investigative Techniques, Fourth Edition*: Taylor & Francis. ISBN 9781439853832
- Jones, P., & Williams, R.E. (2009). *Crime Scene Processing and Laboratory Workbook First Edition*: CRC Press. ISBN 9780429249976
- Saferstein, R. (2018). *Criminalistics: An Introduction to Forensic Science, Twelveth edition*: Pearson Education. ISBN 10:0134477596, ISBN 13: 9780134477596
- Veeraraghavan, V. (2009). *Handbook of Forensic Psychology, First Edition*: Selective & Scientific Books, ISBN 13: 9788189128166.

Suggested readings:

- Lee, H., Palmbach, T. & Miller, M. (2001). *Henry Lee's crime scene handbook, First Edition*: Academic Press ISBN 9780080507989
- Parikh, C.K. (2016). *Parikh's textbook of medical jurisprudence, forensic medicine and toxicology: for classrooms and courtrooms*, *Seventh Edition*: CBS Publishers and Distributors. ISBN 9788123926469

3. Keywords

Forensic biology; blood spatter analysis; toxicology; narco-analysis; DNA fingerprinting; polygraph; odontology; forensic entomology.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – (DSE-3)
MICROBIOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Microbiology (BCH-DSE-3)	04	02	0	02	Class XII with Science and Biology	XIIth pass with biology

Learning Objectives

The course aims to trace the history of development of the discipline of Microbiology and to emphasize the existence of the immense diversity in the microbial world and maintenance of microbes under laboratory conditions. Through this course students will be introduced to the concept of different modes of gene transfer in bacteria. Further, students will be made aware about the applications of microorganisms in food and industry.

Learning outcomes

On successful completion of the course students will be able to:

1. Identify different types of microbes
2. Perform routine microbiological practices including sterilisation, media preparation, maintenance of microbial culture, microbial growth etc.
3. Plan basic research using microbes
4. Discuss the varied applications of microbes.

SYLLABUS OF DSE-3

BCH-DSE-3 : MICROBIOLOGY
Semester – V

2.2 Course Contents

Theory (Credits – 2)

Total Hours : 30

Unit I: History and Diversity of Microbial world **(8 Hours)**

Spontaneous generation versus biogenesis, contributions of Anton von Leeuwenhoek, Joseph Lister, Paul Ehrlich, Richard Petri, Charles Chamberland, Edward Jenner, Louis Pasteur,

Robert Koch, Martinus W. Beijerinck, Sergei Winogradsky, Alexander Fleming, Elie Metchnikoff and Emil von Behring. General characteristics of different groups: Acellular microorganisms (Viruses, Viroids, Prions) and Cellular microorganisms (Bacteria, Archaea, Algae, Fungi and Protozoa. Cell-wall: Composition and detailed structure of Gram positive and Gram-negative cell walls, mechanism of Gram staining

Unit II: Microbial Nutrition, Growth and Control (6 Hours)

Nutritional types of microorganisms, growth factors, culture media- synthetic and complex, types of media; isolation of pure cultures, growth curves, mean growth rate constant, generation time; influence of environmental factors on growth of microbes: effect of pH, temperature, solute, oxygen concentration, pressure and radiations. Sterilization, disinfection and antiseptics.

Unit III: Microbial Genetics (6 Hours)

Conjugation, Transformation and Transduction. Gene mapping in Bacteria

Unit IV: Application of Microbes (10 Hours)

Basic design of fermenter, continuous and discontinuous culture. Preparation of fermented food products such as curd and cheese. Preparation of alcoholic beverages like wine and beer. Treatment of waste-water (Municipal treatment plant) and sewage. Bioremediation and biodegradation. Human microbiome: Role in health and disease**.** Soil Microbiome: Role in plant health

2.3 Practical:

Credits: 2 Total Hours : 60

1. To prepare and sterilise the culture media for the growth of microorganisms
2. To perform various culture transfer techniques: Solid to solid (streaking), liquid to solid (spreading), liquid to liquid, solid to liquid and determine CFU/ml
3. To study growth curve of bacteria
4. To study the effect of pH/temperature on the growth of bacteria
5. To perform gram staining
6. To determine the effect of antibiotics using disc diffusion test
7. Study of different shapes of bacteria, fungi, algae, protozoa using permanent slides/pictographs

2.4 Essential readings:

1. Willey, J., Sherwood, L., Woolverton, C. (2017). Prescott's Microbiology (10th ed.). McGraw Hill international. ISBN 13: 9781259657573.
2. Chan, M. J., Krieg E. C. S., Pelczar, N. R. (2004) Microbiology (5th ed.). McGraw Hill International. ISBN 13: 9780094623206.
3. Pierce, B.A. (2012) Genetics - A Conceptual Approach, (6th ed.), W.H. Freeman & Co. (New York), ISBN:13:978-1-4292-7606-1 / ISBN:10:1-4292-7606-1
4. Cappuccin, and Sherman N., Microbiology: A Laboratory manual (10th ed.). Benajamin/ Cummings. ISBN 1o J. G.3: 9780321840226. 86

Suggested readings:

1. Madigan, M. T., Martinko J. M., & Stahl D. A., (2010) Brock Biology of Microorganisms (13th ed.). Pearson Education International. ISBN 13: 9780321649638.
2. Snustad, D.P. and Simmons, M.J. (2012) Genetics (6th ed.), John Wiley & Sons. (Singapore), ISBN: 978-1-118-09242-2

3. Keywords

Microbiological Techniques, Media, Sterilization, Growth curve

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – (DSE-6)
IN-SILICO TOOLS IN PROTEOMICS AND GENOMICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
In-silico Tools in Proteomics and Genomics (BCH-DSE-6)	04	02	0	02	Class XII with Science and Biology	Basic courses allied to Biological sciences

Learning Objectives

The objective of this course is to impart basic understanding of computational biology with a broader knowledge of genomics and proteomics. In silico tools used in the study of genomes and proteins will be emphasized. The course presents an overview of theoretical knowledge, and practical methods for characterization of functional elements in DNA and Protein data. Students will be trained in the basic theory and application of programs used for database searching, protein and DNA sequence analysis, genome analysis, prediction of protein structures and protein-protein interactions.

Learning outcomes

On successful completion of the course students will be able to:

1. Discuss the basics of bioinformatics and computational biology
2. Describe the use of several softwares/tools in omics biology.
3. Discuss, access and use biological databases in the public domain.
4. Explain protein structure using visualization softwares.
5. Perform sequence alignments
6. Discuss the fundamental aspects of *in-silico* protein structure prediction.
7. Explain the applications of bioinformatics from genomes to personalized medicine.
8. Describe the concept of drug designing using a bioinformatic approach.

SYLLABUS OF DSE-6

BCH-DSE-6 : In-silico Tools in Proteomics and Genomics
Semester – V

2.2 Course Contents

Theory
Credits: 2 **(30 Hours)**

Unit I: Introduction to omics biology **No. of hours: 4**

History of omics biology, introduction to central dogma, Scope of bioinformatics, Tools and databases (sequence alignment, BLAST, NCBI and PDB databases)

Unit II: Genomics **No. of hours: 9**

Introduction to Genomics, Structure and Organization of Prokaryotic and Eukaryotic Gene. Genome Sequencing, Human Genome Project, Genome Browsers, Gene annotation, Gene Identification and Sequence analysis

Unit III: Protein structure prediction and proteomics **No. of hours: 9**

Introduction to proteomics, 2D gel Electrophoresis, Mass spectroscopy, computational prediction of protein 2D and 3D structure - Homology Modeling, Fold Recognition and *ab-intio* methods, protein - protein interactions (yeast two hybrid system, pull down assay), Protein Disordered Regions

Unit IV: Applications of genomics and proteomics **No. of hours: 8**

Functional Genomics, Comparative genomics, Proteomics in Drug discovery, Protein-Drug interaction studies, Computer Aided Drug Discovery (CADD). Role of genomics and proteomics in Diagnostics and Therapeutics. Role of AI in genomics and proteomics.

2.3 Practical:

Credits: 2 **(60 Hours)**

1. Sequence retrieval (protein and gene) from NCBI.
2. Sequence Analysis - BLAST suite of tools for pairwise alignment.
3. Gene Prediction Tools (Genscan/Glimmer)
4. Structure download (protein and DNA) from PDB & Molecular view by visualization Software (Pymol/Rasmol)
5. Protein Secondary Structure Prediction Tools (GORR)
6. Protein Tertiary Structure Prediction (Homology Modelling/SWISS Model)
7. Protein -Protein Interaction Databases (STRING)
8. Protein-Ligand Docking and Interaction studies (CADD)

2.4 Essential readings:

1. David M. (2004). Bioinformatics: Sequence and Genome Analysis. Cold Spring Harbor Laboratory Press; ISBN 978-087969712-9.
2. Pevsner, J. (2003). Bioinformatics and Functional Genomics (1st ed.), John Wiley & Sons, Inc. (New Jersey); ISBN: 0-47121004-8.
3. Baxevanis A.D. and Ouellette Francis B.F. (2005), Bioinformatics: A Practical Guide to the Analysis of Genes and Proteins (3rd ed.), John Wiley & Sons, Inc. (New Jersey), ISBN: 0-47147878-4.
4. Ghosh, Z. and Mallick, B., (2008) Bioinformatics – Principles and Applications, (1st ed.) Oxford University Press (India), ISBN: 9780195692303.
5. Introduction to Proteomics – Tools for the new biology (1st Ed.) by Liebler, D.C., Humana Press Inc., New Jersey, USA. 2002.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

POOL OF GENERIC ELECTIVES

GENERIC ELECTIVE COURSE - (GE-5)
NUTRITION AND FOOD SCIENCE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Nutrition and Food Science (BCH-GE-5)	04	02	0	02	Class XII with Science	NIL

Learning Objectives

The course aims to provide the basic knowledge of food and its importance in nutrition. The students will understand the importance of a balanced diet and the association of life style disorders with unhealthy food eating habits. They will be able to understand the concept of under and over nutrition and the deficiency diseases that result due to deficiency of micronutrients in diet.

Learning outcomes

On successful completion of the course students will be able to:

- Describe the importance of food in our life
- Explain how food is spoiled and learn about some common food borne diseases/ food allergies
- Elaborate the functions of macro and micronutrients in our body
- Apply the knowledge gained to rationalize the diseases associated with malnutrition/ overnutrition and deficiency diseases

BCH-GE-5 : NUTRITION AND FOOD SCIENCE
SEMESTER – V

2.2 Course Contents
Theory
Credits: 2 **Total Hours: 30**

Unit 1 –Basics of Food Science and Nutrition **(10 Hours)**

Definition of Food, Nutrition, Nutrient, Nutritional status

Energy value of foods, determination, physiological fuel values, SDA of foods, BMR & RMR, factors influencing BMR. Recommended allowance-RDA for Indians, basis for requirement, energy allowance for different growth pattern of children, energy allowance for various activities and different age groups. Balanced diet, fad diets

Unit 2– Macronutrients (10 Hours)

Introduction to macronutrients and their function, digestion, absorption and assimilation of carbohydrates, lipids and proteins, Glycemic response and glycemic index of foods, dietary fiber- types, properties, sources and its role, importance of essential fatty acids, their requirements and deficiency, role & nutritional significance of PUFA, MUFA, SFA, omega-3/omega 6 fatty acid, essential amino acids, dietary protein quality- PER, NPU, BV, chemical score and PDCAAS. Factors affecting protein bio-availability including anti-nutritional factors, protein toxicity, amino acid complementation and Supplementation in foods

Unit 3 – Micronutrients (10 Hours)

Fat soluble vitamins: Sources, physiological importance and deficiency diseases. Water soluble vitamins: Sources, physiological importance and deficiency diseases. Minerals: Sources, physiological importance and diseases due to excess or deficiency of Ca, P, Na, K, Fe, Zn, S, Mg, Se, Cu.

Unit 4 – Food and Health (5 Hours)

Food as medicine: medicinal value of functional foods such as garlic, ginger, turmeric, tulsi, fenugreek, ajwain, aloe vera, moringa, role of Gut microbiome in maintaining health, pre and probiotics, various types of food additives: emulsifiers, preservatives and food colors, benefits and risks associated with these, food allergies, food spoilage, food poisoning, food borne diseases, Cholera, Hepatitis, Typhoid, Botulism

2.3 Practicals

Credits: 2 Total Hours:60

1. Analysis of food labels for the presence of nutrients and other additives.
2. Estimation of carbohydrate content in food
3. Degree of unsaturation of any three different oils using Bromine test
4. Acid value / peroxide value of oil
5. Estimation of vitamin E / vitamin C in food
6. Morphological identification of important yeast and mold in foods (slides and culture)-
7. Assessment of diet chart for the presence/absence of nutrients
8. Case studies: PEM (Marasmus and Kwashiorkor), Diabetes, Obesity, Vitamin and mineral deficiency

2.4 Essential readings:

1. Mahan, L.K., Strings, S. E., Raymond, J. (2012) *Krause's Food and Nutrition Care process.* Elsevier's Publications. ISBN: 978-1-4377-2233-8.

2. Rosalind Gibson (2005). *Principles of Nutritional Assessment.* Oxford University Press. ISBN: 978019517169
3. Nelson, D.L., Cox, M.M. (2017). *Lehninger: Principles of Biochemistry* (7th ed.). New York, WH: Freeman and Company. ISBN13: 9781464126116, ISBN10: 1464126119
4. Vasudevan, D.M., & Das, K.S. (2020). *Practical textbook of biochemistry for medical students* (3rd ed.). Jaypee Brothers Medical

Suggested readings:

1. Practical Biochemistry, Damodaran Geetha K, Jaypee Brothers Medical Publishers Private Limited; 1st edition (1 January 2011), ISBN: 9789350251416, 9789350251416
2. Plummer, D.T. (1998) *An Introduction to Practical Biochemistry* (3rd ed.), Tata McGraw Hill Education Pvt. Ltd. (New Delhi); ISBN: 13: 978-0-07-099487-4 / ISBN:10: 0-07-099487-0.
3. Malik, D., Narayanasamy, N., Vavilala, P., Takur, J., Sinha, N., (2022). Textbook of Nutritional Biochemistry. Springer Singapore, ISBN978-981-19-4149-8.
4. Coombs Jr. G.F., (2008). *The vitamins, Fundamental aspects in Nutrition and Health.* Elsevier's Publications. ISBN-13- 978-0-12- 183493-7.
5. Devlin, T. M., (2011). *Textbook of Biochemistry with Clinical Correlations.* John Wiley & Sons, Inc. (New York), ISBN: 978-0-4710-28173-4.

3. Keywords:

Food, Nutrition, macronutrients, micronutrients, food as medicine, food spoilage, food allergies

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVE COURSE - (GE-6)
PHYSIOLOGY AND SPORTS AND EXERCISE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Physiology of Sports and Exercise (BCH-GE-6)	**04**	**02**	**0**	**02**	**Class XII with Science**	**Basic course on human physiology**

Learning Objectives

To learn the changes in human body systems due to exercise and sporting activities in an integrated manner. To gain knowledge about sports training. Understanding the basic system physiology in sports. To understand the physiological adaptation and metabolic changes during exercise at varying intensities. To gain skill in measurement of various physiological responses.

Learning outcomes

On successful completion of the course students will be able to:

- Explain the effect of exercise in detail and in application perspective.
- Measure the changes and interpret them in the context of sports.
- Describe the system concepts behind sports performance.
- Explain human body functioning during exercise and thus provide appropriate nutrition/fuel.

BCH-GE-6 : PHYSIOLOGY OF SPORTS AND EXERCISE
SEMESTER - V

2.2 Course Contents

Theory

Credits: 2 **Total Hours : 30**

Unit I: Introduction to Exercise Physiology (Total Hours: 4)

Structure, types and Function of Skeletal Muscle. Fuel for Exercise: Aerobic and anaerobic muscle metabolism, Muscle Fatigue.

Unit II: Cardiovascular and Pulmonary control in Sports Performance (Total Hours : 10)

Heart rate and Blood Pressure. Electrophysiology of Heart, Introduction and interpretation of EKG/ECG, Pacemakers and its Rhythms. Mechanics of ventilation during exercise. Cardiorespiratory Responses to physical activities. Training of cardiorespiratory responses in different types of physical activities for maximising output.

Unit III: Hormonal Effects on Physical Activities (Total Hours: 8)

Role of epinephrine, cortisol, sex hormones, growth hormones and growth factors on physical endurance. Effect of aging on Sport performance.

Unit IV: Drugs and Doping in Sports (Total Hours : 8)

History and evolution of Doping and Anti-doping in Sports, Prevalence of Doping in Sports, Doping Control in Sports, Role of Athlete Support Personnel in Preventing Deliberate and Inadvertent Use of Prohibited Substances, WADA Rules and Regulations.

2.3 Practical:

Credits: 2 **Total Hours: 60**

1. BMI Estimation with and without software - Techniques of taking various anthropometric measurements; Skinfold measurement and Body Fat Percentage calculations.
2. Aerobic Power Field Assessments; Cooper 1.5-Mile Run/Walk Test and 12-Minute Run/Walk Test/Rockport Fitness Walking Test.
3. Tests for anaerobic power; Wingate Test/Anaerobic Cycling Power
4. High-Intensity Fitness Testing/ AAHPER health related physical fitness test Léger 20 m Shuttle Run Test/ Margaria - Kalamen Stair Climb Test,
5. Pulmonary Function Testing: Ratio of Forced expiratory volume (FEV1/FEV6) by spirometry, Lung Volumes and Capacities
6. Determination of age by Radiography (Dry lab)
7. Blood Pressure Measurements: Effects of Body Position, Dynamic Exercise and Isometric Contractions on BP.

8. Determination of Physiological adaptation with training through Submaximal Exercise Testing; Submaximal Bench Step Test/Submaximal Cycle Ergometer Test

2.4 Essential readings:

1. Physiology of Sport and Exercise 6th Edition with Web Study Guide-Loose-Leaf Edition by W. Larry Kenney, Jack Wilmore, David Costill.
2. Endocrinology of Physical Activity and Sport, Second Edition Constantini, Naama, Hackney, Anthony C, 2013.
3. David R. Mottram, Neil Chester (2018) Drugs in Sports, Routledge, ISBN:1351838989. Portefield, Jason (2008) Doping: athletes and drugs, Rosenn Publishing, New York, ISBN:1-4042-1917-5.
4. Laboratory Manual for Exercise Physiology 2nd Edition. With Web Study Guide, Human Kinetics by G. Gregory Haff, Charles Dumke, 2018.
5. Physiological Tests for Elite Athletes 2nd Edition by Australian Institute of Sport Rebecca Tanner, Christopher Gore, 2012.

Suggested readings:

1. A Textbook of Sports & Exercise Physiology by Dey Swapan Kumar, Jaypee Publishers
2. Exercise Physiology: Theory and Application to Fitness and Performance 10th Edition by Scott Powers and Edward Howley 2018.
3. Exercise Physiology: Nutrition, Energy, and Human Performance 8th Edition by William D. McArdle, Frank I. Katch, Victor L. Katch
4. Practical ECG for Exercise Science and Sports Medicine by Greg Whyte, Sanjay Sharma, Human Kinetics, 2010
5. ACSM's Guidelines for Exercise Testing and Prescription, 10th Edition by American College of Sports Medicine. Wolters Kluwer, 2017.

3. Keywords

Muscle metabolism, Muscle Fatigue, Cardiorespiratory Responses, Sport performance, Prohibited Substances

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES COURSE - (GE-10)
INTERMEDIARY METABOLISM

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
INTERMEDIARY METABOLISM (BCH-GE-10)	04	02	0	02	Class XII with Science and Biology	Basic courses allied to biological sciences

Learning Objectives

The course aims to familiarise the learner with the pathways of fuel and energy metabolism with an emphasis on their interrelationship and integrated regulation.

Learning outcomes

On successful completion of the course learners will be able to:

1. Discuss the underpinnings of fuel metabolism
2. Describe the mechanism of ATP synthesis.
3. Discuss the biosynthesis and degradation pathways.
4. Evaluate the interrelationships of carbohydrate and lipid metabolism
5. Discuss the biosynthesis and degradation of amino acids and nucleotides
6. Correlate the integration of metabolism

SYLLABUS OF GE-10

BCH-GE-10 : INTERMEDIARY METABOLISM
SEMESTER - V

2.2 Course Contents
Theory (Credit 2)

Total Hours : 30

Unit I: Carbohydrate metabolism **(14 Hours)**

Glycolysis as a universal pathway, anaerobic glycolysis, fermentation, gluconeogenesis, reciprocal regulation of glycolysis and gluconeogenesis, Pentose phosphate pathway, Pyruvate dehydrogenase complex, oxidation of acetyl CoA. TCA cycle, amphibolic role, ATP calculation, Glycerol-3-phosphate and malate-aspartate shuttle.

Unit II: Fatty acid catabolism **(6 Hours)**

TAG as energy source, β oxidation of saturated fatty acids in mitochondria, Fatty acid activation and overview of regulation, formation of ketone bodies and metabolism

Unit III: Amino acid and nucleotide metabolism (6 Hours)

Transamination, Deamination, urea cycle and its regulation, Glucose-alanine cycle, Krebs bicycle, Nucleotide Biosynthesis - salvage pathways, Degradation.

Unit IV Integration of metabolism (4 Hours)

Metabolic shifts in absorptive, post absorptive, fasting and starvation states.

2.3 Practical:

Credits: 2 **Total Hours : 60**

1. Estimation of blood glucose by GOD-POD method
2. Demonstration of alcohol fermentation by yeast.
3. Estimation of serum cholesterol.
4. Estimation of serum TAGs.
5. Estimation of urea in serum
6. Estimation of uric acid in serum

2.4 Essential readings:

1. Nelson, D.L. and Cox, M.M. (2017). Lehninger: Principles of Biochemistry (7th ed.). W.H. Freeman & Company (New York), ISBN:13: 9781464126116 / ISBN:10-1464126119.
2. Berg, J.M., Tymoczko, J.L., Stryer L., (2012) Biochemistry 7th ed., W.H. Freeman and Company (New York); ISBN:10:1-4292-2936-5, ISBN:13:978-1-4292-2936-4.
3. Campbell, M.K., Farrel, S.O. (2012) Biochemistry 7th ed, S.O. Brooks/Cole, Cengage Learning (Boston); ISBN: 13:978-1-111-42564-7 ISBN:10:1-4292-2936-5.
4. An Introduction to Practical Biochemistry (1998) 3rd ed., Plummer D. T., Tata McGraw Hill Education Pvt. Ltd. (New Delhi), ISBN:13: 978-0-07-099487-4 / ISBN:10:0-07-099487-0.

Suggested Readings:

1. Principles of Biochemistry (2013) 4th ed., Voet, Donald, Voet, Judith &Pratt, charlotte. Wiley & Sons, Inc. (New Jersey), ISBN:978-1-11809244-6.

3. Keywords

Catabolism, anabolism, Glycolysis, TCA, Glycogen metabolism, Gluconeogenesis, nucleotide metabolism, beta oxidation, salvage pathway and integration

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER VI
BSc. (Hons.) Biochemistry

DISCIPLINE SPECIFIC CORE COURSE – (DSC-16)
HUMAN PHYSIOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Human Physiology (BCH-DSC-601)	4	2L	0	2P	Class XII with Science and Biology	NIL

Learning Objectives

The objective of the course is to provide a comprehensive study of the molecular and cellular mechanisms that govern the integrative working and regulation of the various organ systems in the human body. The course will provide a foundation of the physiological principles and the application of the same in real-life situations. It will prepare students for higher education in any field related to medical physiology.

Learning outcomes

On successful completion of the course, students will be able to:

1. Explain the homeostatic control and functioning of the human body systems
2. Discuss the regulatory mechanism regulating different organ system.
3. Describe the functioning of the different organ systems.
4. Explain the basis of various physiological diseases.
5. Perform and analyse various physiological tests that examine the function of various systems of the human body.

SYLLABUS OF DSC-16

BCH-DSC-16 : HUMAN PHYSIOLOGY
SEMESTER - VI

2.2 Course Contents
Theory (2 Credits)

Total Hours: 30

Unit I: Circulatory system **(7 Hours)**

Homeostasis: definition and control mechanisms (negative and positive feedback mechanisms). Blood Composition and Blood coagulation. Anatomy of Heart. Heartbeat Coordination: Cardiac action potential and Pacemaker potential. Cardiac cycle. Cardiac output and its regulation. The role of blood vessels in circulation: Arteries, Veins and Blood capillaries.

Unit II: Life Processes (15 Hours)

Respiratory physiology: Ventilation and lung mechanics. Inspiration, Expiration, Lung compliance and its determinants. Transport of oxygen and carbon dioxide in blood. Regulation of respiration.

Renal physiology: Cell biology of the Bowmans' capsule. Physiology of glomerular filtration and GFR. Tubular processing of the glomerular filtrate. Urine concentration: The counter current multiplier system. Blood buffer systems.

Gastrointestinal physiology: Propulsion, motility, digestion and assimilation of food. Secretory functions of the gastrointestinal tract. Enteric nervous system. Regulation of GI tract functions. Hepatic physiology and Enterohepatic circulation.

Unit III: Introduction to muscular and neural physiology (4 Hours)

Molecular mechanisms of skeletal and smooth muscle contraction: role of troponin, tropomyosin, and calcium in contraction, excitation-contraction coupling. Overview of Central and Peripheral Nervous System and neural conduction.

Unit IV: Reproductive Physiology (4 Hours)

Sex determination and differentiation. Oogenesis, Spermatogenesis, capacitation and transport of sperm, blood-testis barrier. Fertilization, Implantation and Placentation.

2.3 Practical (2 Credits)

Total Hours: 60

1. Hematology:
    a. Determination of Packed Cell Volume, Bleeding Time and Clotting Time.
    b. Preparation of blood smear and estimation of differential leucocyte count.
    c. Enumeration of Blood cells: RBC and WBC
    d. Estimation of hemoglobin and calculation of blood indices
2. Serum Proteins Electrophoresis
3. Understanding the anatomy/structure of following: Heart, GI Tract, Kidney and Nephron, Neuron, Lung and alveoli, skeletal, smooth and cardiac muscle
4. Pulmonary function tests: Understanding Lung capacities and Lung volumes using Spirometry
5. Determination of the Blood Pressure.
6. Case studies: Renal clearance, Gastrointestinal disorder, Anemia, Jaundice (any two)
7. Virtual Lab on ECG

2.4 Essential Readings:

- Widmaier, E.P., Raff, H. and Strang, K.T. (2019) Vander's Human Physiology 15th ed., McGraw Hill International Publications (New York), ISBN: 978-1259903885
- Fox, S.I. (2018) Human Physiology 15th ed., McGraw Hill International Publications, (New York) ISBN 978-1259864629

Suggested Readings:

- Guyton, A.C. and Hall, J.E., (2016) Reed Textbook of Medical Physiology 13th ed., Elseviers India Pvt. Ltd. (New Delhi). ISBN: 978-1455770052
- Sherwood, L. (2012) Introduction to Human Physiology 8th edition; Brooks/Cole, Cengage Learning. ISBN-13: 978-1133104544.
- Gerard G Totora. (2017). Principles of Physiology and Anatomy 15th Edition, Wiley. ISBN: 978-1-119-40006-6

3. Key word:

Physiology, Homeostasis, life processes, heart, neurophysiology, reproduction

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – (DSC-17)
BASICS OF IMMUNOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Basics of Immunology (BCH-DSC-602)	4	2L	0	2P	Class XII with Science and Biology	NIL

Learning Objectives

The course is designed to understand the basic concepts in Immunology. It is important to understand the structure of the cells and organs associated with the immune system to appreciate their function in fighting infections. So, the students will study their structure and the various receptors associated with them. They will be exposed to the concept of antigen antibody and the types of immune responses generated in the body. The recognition of the antigen by B and T cells and the role of Major histocompatibility complex in generation of immune response will be elaborated.

Learning outcomes

On successful completion of the course, students will be able to:

1. Explain the concept of innate and adaptive immunity.
2. Describe the structure and function of cells and organs of the immune system
3. Discuss the Attributes of an immunogen, structure and the functions associated with different isotypes of antibodies
4. Explain the humoral immune response and antibody diversity.
5. Explain the Antigen presentation mechanisms and generation of cell mediated immunity

SYLLABUS OF DSC-17

BCH-DSC-17 : BASICS OF IMMUNOLOGY
SEMESTER - VI

2.2 Theory (2 Credits)

Total Hours: 30

Unit 1 : Introduction to the Immune System: (8 Hours)

Historical Perspective, Innate and Adaptive immunity and their role in generation of immune response, Primary and Secondary Immune Response, Cells and Organs of the Immune System, Hematopoiesis, Antigens, Properties of Immunogen, Haptens, Adjuvants, B Cell and T Cell Epitopes, Structure and Effector Functions of Different Types of Antibodies, Biological Activities of Subclasses of Antibodies, Antigenic Determinants on Immunoglobulins, Immunoglobulin Superfamily, B cell receptor,

Unit 2 : **Innate Immunity:** **(6 Hours)**

Anatomical Barriers, Soluble and Membrane Bound Molecular Sensors (PRRs), Inflammation, Phagocytic cells and Innate Immunity, Toll like receptors, Activation Pathways of Complement System, Regulation and Biological Consequences of Complement Activation.

Unit 3 : **Humoral Immune Response** **(8 Hours)**

B Cell Development, Maturation & Differentiation, Clonal Selection theory, Genetic basis of Antibody Diversity, Class switching.

Unit 4 : **Cell mediated Immune Response** **(8 Hours)**

Major Histocompatibility, General Organization and Inheritance of the MHC, Antigen Presenting Cells, Processing and Presentation of Antigen by the endocytic and cytosolic pathways, Development, Maturation & Differentiation of T cells, Role of Cytotoxic T lymphocytes, T cell and B cell interactions

2.3 Practical (2 Credits)

Total Hours: 60

1. Immunodiffusion –Double immunodiffusion and Single radial immunodiffusion
2. Differential Leucocyte Count
3. Visualization of lymphoid Organs and lymphatic system (Videos)
4. Isolation of lymphocytes from blood/spleen
5. Complement mediated lysis.
6. Active and Passive agglutination reactions
7. Dot blot and ELISA

2.4 Essential readings:

1. Kuby Immunology (2007) 6th ed., Kindt, T.L., Goldsby, R.A. and Osborne, B.A., W.H. Freeman and Company (New York), ISBN:13: 978-0-7167-8590-3/ISBN: 10:0-7617-8590-0.
2. Immunology: A Short Course (2009) 6th ed., Coico, R. and Sunshine, G., John Wiley & sons, Inc. (New Jersey), ISBN: 978-0-470-08158-7.

Suggested Readings:

1. Janeway's Immunobiology (2012) 8th ed., Murphy, K., Mowar, A., and Weaver, C.T., Garland Science (London & New York), ISBN: 978-0-8153-4243-4
2. Cellular and Molecular Immunology (2021), 10th edition, Abbas, A.K., Lichtman, A.H., Shiv Pillai, Elsevier, ISBN: 9780323757485

3. Keywords:

Immunity, innate, adaptive, antibody, MHC, Humoral and Cell mediated immune response, Processing of antigens

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – (DSC-18)
FUNDAMENTALS OF RECOMBINANT DNA TECHNOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Fundamentals of Recombinant DNA Technology (BCH-DSC-603)	4	2L	0	2P	Class XII with Science and Biology	Basic course in Molecular Biology

Learning Objectives

The objective of the course is to teach the basics of theoretical and practical aspects of recombinant DNA technology and various techniques for DNA manipulation in prokaryotes and eukaryotes.

Learning outcomes

On successful completion of the course, students will be able to:

1. Perform restriction digestion of DNA samples.
2. Prepare genomic and cDNA libraries,
3. Perform basic cloning techniques to design a recombinant protein in a bacterial system.
4. Design primers for PCR, perform DNA amplification by PCR, and understand the principles of DNA sequencing.

SYLLABUS OF DSC-18

BCH-DSC-18 : FUNDAMENTALS OF RECOMBINANT DNA TECHNOLOGY
SEMESTER - VI

2.2 Course Contents

Theory (2 Credits)

Total 30 hours

Unit 1: Principles of gene cloning **(14 hours)**

Restriction and modification systems, restriction endonucleases and other enzymes used in gene cloning. Cloning vectors used in *E. coli*: plasmids pBR322, pUC, pGEM3Z. Ti-plasmid, and viral vectors (λ bacteriophage, CMV and SV40), high-capacity vectors BAC and YAC. Ligation of DNA molecules. Linkers, adapters and homopolymer tailing.

Unit 2: Selection for recombinants and clone identification (5 hours)

Uptake of DNA by cells and selection of recombinants. Making cDNA and Genomic DNA libraries. Clone identification by colony hybridization.

Unit 3: Expression of cloned genes (6 hours)

Vectors for expression of foreign genes in *E. coli,* expression cassettes: Hybrid promoters trc, tac. Challenges in producing recombinant protein in *E. coli.* Production of recombinant protein by eukaryotic cells. Fusion tags and their role in purification of recombinant proteins.

Unit 4: Polymerase chain reaction, DNA sequencing and Site Directed Mutagenesis

(5 hours)

Fundamentals of polymerase chain reaction, Types of PCR; reverse transcriptase PCR, Primer designing. DNA sequencing by Sanger's method including automated DNA sequencing, pyrosequencing. Site–directed mutagenesis (overlap extension method).

2.3 Practical (2 Credits)

Total: 60 hours

1. Isolation of plasmid DNA from *E. coli* cells.
2. Digestion of plasmid DNA with restriction enzymes.
3. Preparation of competent cells and transformation with plasmid DNA.
4. Amplification of a DNA fragment by PCR.
5. Alpha-Complementation of β−galactosidase for Blue and White selection.
6. Hyper expression of a recombinant protein (SDS PAGE).
7. Poly histidine-tagged recombinant protein and purification using Ni– affinity resin

2.4 Essential readings:

- Brown, T.A. (2016) Gene Cloning and DNA Analysis (7th ed.), Wiley-Blackwell publishing (Oxford, UK), ISBN: 978-1-4051-8173-0.
- Primrose, S.B., and Twyman, (2006) Principles of Gene Manipulation and Genomics (7th ed.), R. M., Blackwell publishing (Oxford, UK) ISBN:13: 978-1-4051-3544-3.
- Glick B.R., Pasternak, J.J. and Patten, C.L., (2010) *Molecular Biotechnology:* Principles and Applications of Recombinant DNA (4th ed.), ASM Press (Washington DC), ISBN: 978-1-55581-498-4 (HC).
- Michael R Green and J. Sambrook (2014) Molecular Cloning: A laboratory manual, (4th ed.), Cold spring Harbor laboratory press (3vol.), ISBN: 978-1-936113-42-2.

Suggested readings:

- Brown, T.A. (2007) Genomes (3rd ed.), Garland Science publishing, ISBN: ISBN 0 8153 4138 5.

3. Keywords

Genetic Engineering, cloning, Recombinant Protein expression and purification, Biotechnology.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

POOL OF DISCIPLINE SPECIFIC ELECTIVES

DISCIPLINE SPECIFIC ELECTIVE COURSE – (DSE-4)
BIOCHEMICAL MECHANISMS AND RESPONSES IN PLANTS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Biochemical Mechanisms and Responses in Plants (BCH-DSE-4)	04	02	00	02	Class XII with Science and Biology	Basic courses allied to biological sciences

Learning Objectives

The course aims to provide thorough understanding of metabolic processes in plants and the role of different biosynthetic pathways in growth and development of plants. The course will also impart basic concepts and applications of plant secondary metabolites.

Learning outcomes

On successful completion of the course students will be able to:

1. Describe the structure and function of plant cell organelles in plant metabolism.
2. Explain the various plant biochemical processes and metabolic pathways including photosynthesis, photorespiration, nitrogen fixation and assimilation and plant secondary metabolism and their biological significance.
3. Discuss the role of plant hormones in plant growth and development.
4. Evaluate the various plant responses to different abiotic and biotic stress conditions.
5. Plan and execute plant tissue culture.

SYLLABUS OF DSE-4

BCH-DSE-4 : BIOCHEMICAL MECHANISMS AND RESPONSES IN PLANTS
Semester – VI

2.2 Course Contents

Theory (Credits – 2)

Total Hours : 30

Unit I: Photosynthesis and Respiration **(8 Hours)**

Introduction to Plant cells, Cell wall, Vacuole and Tonoplast membrane, Plastids and Peroxisomes. Overview to photosynthesis and Carbon assimilation, Light reaction and photosystems, Cyclic and non-cyclic photophosphorylation, Calvin cycle and its regulation, C4 cycle and Crassulacean acid metabolism (CAM), Photorespiration. Photoinhibition. Glycolytic pathway and its alternative reactions in plants, Translocation of metabolites across mitochondrial membrane, TCA cycle, electron transport chain in plants, alternative NAD(P)H oxidative pathways.

Unit II: Nitrogen metabolism (7 Hours)

Nitrogen cycle; Biological nitrogen fixation; Structure and function of Nitrogenase complex. Nitrate assimilation: Nitrate and Nitrite reductase. Primary and secondary ammonia assimilation in plants; ammonia assimilation by glutamine synthetase-glutamine oxoglutarate aminotransferase (GS-GOGAT) pathway.

Unit III: Plant physiology and Secondary metabolites (10 Hours)

Plant vascular system; Plant hormones and their role in plant growth and development; Regulation of plant morphogenetic processes by light. Plant stress responses to abiotic and biotic stresses: Water deficit, temperature, salinity, insect manifestation. Secondary metabolites: types, structure and functions of Alkaloids, Phenolics and terpenoids.

Unit IV: Plant tissue culture (5 Hours)

Cell and tissue culture techniques, types of cultures: organ and explant culture, callus culture, cell suspension culture and protoplast culture. Plant regeneration pathways: organogenesis and somatic embryogenesis. Applications of cell and tissue culture and somaclonal variation. Germplasm storage and cryo-preservation. Brief introduction to transgenic plants.

2.3 Practical:

Credits: 2 Total Hours : 60

1. Induction of hydrolytic enzymes (proteases /amylases/lipase) in germinating wheat seeds.
2. Effect of plant hormones on plant growth (Phytochrome effects on lettuce germination/ Gibberellic acid effect on α-amylase secretion in barley seeds).
3. Extraction and assay of Urease from Jack bean.
4. Estimation of carotene/phenols/tannins in fruits and vegetables.
5. Estimation of ascorbic acid in fruits and vegetables.
6. Effect of light on chlorophyll production.
7. Separation and analysis of chloroplast proteins (Rubisco) using SDS-PAGE.
8. Plant tissue culture

2.4 Essential readings:

1. Buchann (2015). Biochemistry and Molecular Biology of plant. (2nd ed.). I K International. ISBN-10: 8188237116, ISBN- 978047 07 14218
2. Caroline Bowsher, Martin steer, Alyson Tobin (2008). Plant Biochemistry. Garland Science. ISBN 978-0-8153-4121-5.

3. Dey, P. M. and J.B. Harborne, J.B., (Editors) (1997). Plant Biochemistry. Academic Press. ISBN-10:0122146743, ISBN-13:978-0122146749. 94
4. Taiz, L. and Zeiger, E. (2010). Plant Physiology (5th ed.). Sinauer Associates Inc. ISBN-13: 978-0878938667, ISBN-10: 0878938664

3. Keywords

Plant cell, photosynthesis, respiration, nitrogen fixation and assimilation, secondary metabolism, stress biology.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – (DSE-5)
NUTRITIONAL BIOCHEMISTRY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Nutritional Biochemistry (BCH-DSE-5)	04	02	0	02	Class XII with Science and Biology	Basic courses allied to biological sciences

Learning Objectives

This course provides students with knowledge and understanding of the characteristics, function, metabolism and deficiency of macro and micronutrients in the human body. It involves integrated learning between the areas of Biochemistry and Nutrition.

Learning outcomes

On successful completion of the course students will be able to:

1. Critically analyse and evaluate concepts in nutritional biochemistry that are important for an understanding of human nutrition.
2. Demonstrate the relationship between nutrition and health.
3. Discuss the macro and micronutrients and their nutritional deficiencies.
4. Describe techniques used in the assessment of nutritional status and nutritional disorders.
5. Explain drug nutrient interactions.

SYLLABUS OF DSE-5

BCH-DSE-5 : NUTRITIONAL BIOCHEMISTRY
Semester – VI

2.2 Course Contents
Theory (Credits – 2)

Total Hours: 30

Unit I: Introduction to Nutrition and Energy Metabolism (4 Hours)

Defining nutrition, role of nutrients. Unit of energy, Food energy, SDA. Energy expenditure and its components, Energy Balance, Recommended Nutrient Intakes (RNI) and Recommended Dietary Allowances for different age groups.

Unit II: Macronutrients **(10 Hours)**

Food sources of carbohydrates, functions of carbohydrates, RDA, Factors affecting bioavailability, Glycemic index and glycemic load. Dietary fiber and the role of fibre in health. Role of Gut microbiome in maintaining health. Role of prebiotics and probiotics in nutritive health.

Essential Fatty Acids; Functions of EFA, AI, excess and deficiency of EFA, factors affecting bioavailability. Dietary implications of ratios of n6 and n3, MUFA, PUFA and SFA, Cholesterol in the body.

Functions of proteins in the body. RDA for different age groups. Essential and Nonessential amino acids. Complete and incomplete protein, Amino Acid Interactions: Antagonism, Toxicity, Imbalance, Amino acid complementation and Supplementation in foods. Protein quality determinants NPU, Biological Value, PDCAAS, Nitrogen balance. PEM: Marasmus and Kwashiorkor.

Unit III: Fat and water soluble Vitamins **(9 Hours)**

Vitamin A, D, E, K and dietary sources, RDA, Role of Vitamin A in Visual cycle and overview of other functions. Role of Vitamin K in Gamma carboxylation (blood clotting). Role of Vitamin E as an antioxidant. Role of Vitamin D in maintenance of bone physiology and overview of other functions. Vitamin C- Dietary sources, RDA, role in collagen synthesis. The B Complex vitamins- Dietary sources, RDA. Functions and role in metabolism, Role of Vitamin B12 and Folate in Haematopoiesis and Neurology. Biochemical basis for deficiency symptoms, Hypervitaminosis.

Unit IV: Minerals **(7 Hours)**

Minerals: Dietary Sources, RDA. Sodium, Potassium, Calcium, Iron, Chloride, Copper and Phosphorus- Function, metabolism, Excretion, Deficiency, Toxicity, Trace Elements Iodine, Fluoride, Mg, Zn, Se, Chromium, Molybdenum: Function, Metabolism, deficiency, Toxicity and Sources.

2.3 Practical:

Credits: 2 **Total Hours: 60**

1. Anthropometric identifications for nutrition related diseases, BMR calculation
2. Determination of oxidative stress: TBARS in serum, antioxidant enzymes in hemolysate/plant sources.
3. Estimation of A/E vitamin in serum.
4. Estimation of minerals in drugs/food/serum.
5. Determination of nutritive value of foods.
6. Understanding fortification and supplementation
7. Presentation and discussion on Food as medicine.
8. Group discussion on Nutrient-nutrient and drug-nutrient interactions
9. Case studies on nutritional disorders.

2.4 Essential Readings:

1. Coombs Jr. G. F., (2008). *The vitamins, Fundamental aspects in Nutrition and Health.* Elsevier's Publications. ISBN-13- 978-0-12- 183493-7.
2. Mahan, L.K., Strings, S.E., Raymond, J. (2012) *Krause's Food and Nutrition Care process.* Elsevier's Publications. ISBN: 978-1-4377-2233-8.
3. Rosalind Gibson (2005). *Principles of Nutritional Assessment.* Oxford University Press. ISBN: 9780195171693
4. Tom Brody (1999). *Nutritional Biochemistry* (2nd Ed). Harcourt Braces. ISBN:9814033251, 978981403325.
5. Malik, D., Narayanasamy, N., Vavilala, P., Takur, J., Sinha, N., (2022). Textbook of Nutritional Biochemistry. Springer Singapore, ISBN978-981-19-4149-8.

Suggested reading:

1. Devlin, T. M., (2011). *Textbook of Biochemistry with Clinical Correlations.* John Wiley & Sons, Inc. (New York), ISBN: 978-0-4710-28173-4.

3. Keywords

Nutrition, macronutrients, micronutrients, energy balance, nutrient deficiency

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – (DSE-7)
MOLECULAR BASIS OF NON-COMMUNICABLE HUMAN DISEASES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Molecular Basis of Non-communicable Human Diseases (BCH-DSE-7)	04	02	00	02	Class XII with Science and Biology	Course in human physiology

Learning Objectives

Non-communicable diseases are a diverse group of chronic diseases that are not transferred between individuals. NCDs have long-term health consequences and often create a need for long-term treatment and care. This course is aimed at providing the learner with an understanding of the multiple aetiological factors that lead to NCDs. It will also discuss the molecular and biochemical basis of the symptoms of major NCDs like Cardiovascular disease, Cancer, lifestyle disorders, chronic renal and lung disease. Apart from the major NCDs some other NCDs will also be taught. The practicals will address the diagnostics of some of these NCDs. The course will not only help students get an insight into some aspects of molecular medicine but will also give them some background if they wish to pursue a post-graduation in molecular medicine or any other relevant field.

Learning outcomes

On successful completion of the course students will be able to:

1. Discuss the relationship between lifestyle and noncommunicable diseases.
2. Analyze the various molecular and biochemical interactions that contribute to the cause of NCDs.
3. Explain the networking between different endogenous and exogenous factors that contribute to NCDs burden.
4. Describe specific biomarkers that can be used to diagnose a disease or Disorder.
5. Perform tests of various diagnostic parameters that are used to identify NCDs.
6. Discuss the disease burden in today's urban society and also understand the wide spectrum of symptom diversity that occurs in such diseases through case studies.

SYLLABUS OF DSC-7

BCH-DSC-7 : MOLECULAR BASIS OF NON-COMMUNICABLE HUMAN DISEASES
Semester – VI

2.2 Course Contents

Theory (Credits – 2)

Total Hours : 30

Unit 1: Multifactorial complex disorders (10 Hours)

Understanding the definition of multifactorial diseases. Polygenic diseases and the relationship of environmental factors and genetic makeup in the onset of diseases: Polycystic ovarian syndrome, COPD, ARDS, Emphysema, Chronic and acute renal failure, Glomerulonephritis; Cancer: Molecular basis for neoplastic growth, metastasis, and cancer pathology; Cancer immunity; Molecular approaches to cancer treatment: Cervical cancer and preventive vaccine, Biomarkers for early detection of cancer- breast, prostrate, hepatic.

Unit 2: Metabolic and Lifestyle disorders (10 Hours)

Obesity and eating disorders like Anorexia nervosa and Bulimia. Diabetes mellitus, Metabolic syndrome and the relationship with hypertension, hypothyroidism and stress. Cardiovascular disorders and Atherosclerosis-defining the broad spectrum of ailments that fall in this category, understanding the factors that contribute to the syndrome, stages of disorder and the management of the condition. Irritable bowel syndrome- biochemistry behind the disorder and the influence of diet, stress and environment on the condition.

Unit 3: Diseases due to misfolded proteins (5 Hours)

Introduction to protein folding and proteasome removal of misfolded proteins; Etiology and molecular basis for Alzheimer's, Prion diseases, Huntington's Chorea, Sickle cell Anemia, Thalassemia.

Unit 4: Monogenic diseases (5 Hours)

Inborn errors in metabolism: PKU, Alkaptonuria, Maple syrup urine disease; Receptor and transport defects: Cystic fibrosis, Long QT syndrome, familial hypercholesterolemia, and clotting disorders (Hemophilia and Deep vein Thrombosis).

2.3 Practicals

Credits: 2 **Total Hours: 60**

1. Assessment of Obesity and metabolic syndrome
2. Estimation of glycosylated haemoglobin
3. Permanent slides for different types of cancer
4. Diagnosis of Thalassemia / Sickle cell Anemia
5. D dimer test / CRP tests
6. Serum LDH isozymes as a diagnostic tool

7. TropT as a cardiac marker
8. Biomarkers used in cancer diagnosis (virtual)
9. Case Studies on NCDs
10. Role of vaccination in adults to prevent NCDs with age: Group discussion.

2.4 Essential readings:

1. Textbook of Biochemistry with Clinical Correlations (2011) Devlin, T.M. John Wiley & Sons, Inc. (New York), ISBN: 978-0-4710-28173-4.
2. Introduction to Human Physiology (2012) 8th edition; Lauralee Sherwood. Brooks/Cole, Cengage Learning. ISBN-13: 978-1133104544 ISBN-10: 1133104541
3. The World of the cell, 7th edition (2009). Lewis J. Kleinsmith, Jeff Hardin, Gr Wayne M. Becker. ISBN-13: 978-0805393934 ISBN-10: 0805393935.
4. The Cell: A Molecular Approach (2009) 5th ed., Cooper, G.M. and Hausman, R.E., ASM Press & Sunderland (Washington DC), Sinauer Associates, MA, ISBN:978-0-87893-300-6

Suggested readings:

1. Genetics (2012) 6th ed., Snustad, D.P. and Simmons, M.J., John Wiley & Sons. (Singapore), ISBN: 978-1-118-09242-2.
2. Guyton, A.C. and Hall, J.E., (2016) Reed Textbook of Medical Physiology 13th ed., Elseviers India Pvt. Ltd. (New Delhi). ISBN: 978-1455770052

3. Key words:

Non-communicable disease, Lifestyle disorders, cancer, Monogenic disease, Multifactoral disease, Misfolded proteins.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – (DSE-8)
RESEARCH METHODOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Research Methodology (BCH-DSE-8)	04	02	00	02	Class XII with Science and Biology	NIL

Learning Objectives

The main objective of this paper is to provide students with a general introduction to the methodological foundations and tools used in research for an understanding of the ways to identify problems, develop hypotheses and research questions and design research projects. The course will expose students to the range of designs used in research in laboratory, field experiments, surveys and content analysis. It will also provide an introduction to the concept of controls, statistical tools and computer applications used in research. In addition, the course will impart knowledge of scientific writing, oral presentation and the various associated ethical issues.

Learning outcomes

On successful completion of the course students will be able to:

1. Describe the importance of research in knowledge generation.
2. Explain the research process
3. Evaluate the importance of the major quantitative and qualitative research methods
4. Construct an effective research proposal
5. Examine the importance of research ethics
6. Record and analyse data using computer software
7. Prepare a Scientific presentation and article.

SYLLABUS OF DSE-8

BCH-DSE-8 : RESEARCH METHODOLOGY
Semester – VI

2.2 Course Contents

Theory (Credits – 2)

Total Hours: 30

Unit I: Introduction to Research (4 Hours)

Objectives and characteristics of research; significance of research, types of research methods-qualitative and quantitative; basic and applied; descriptive and analytical; various phases of research-problem identification, generation of hypothesis, experimental design, results and discussion. Writing a research proposal-schematic presentation.

Unit II: Basic principles of research design (8 Hours)

Review of literature using appropriate sources – reviews, patents, research papers, books and e-resources; Significance of controls in research, Types of research designs – exploratory, descriptive, experimental, survey and case study.

Unit III: Statistical tools and Report writing (12 Hours)

Data collection, analysis and graphical presentation; Sample – types and characteristics; Basic Statistical Tools - Measures of central tendency, Arithmetic mean, Median, Mode, Standard deviation, Co-efficient of variation (Discrete serious and continuous serious), Correlation, Regression, Multiple Regression, hypothesis testing, P-value, data analysis and interpretation; Report writing, format of publications and presentations-oral and poster.

Unit IV: Scientific conduct and ethics in Research (6 Hours)

Biosafety and Ethics - compliance and concerns; Plagiarism-Software tools and Creative Commons; Introduction to Intellectual Property Rights; Citation and acknowledgement, Impact factor, h-index, Indian and international funding agencies.

2.3 Practical:

Credits: 2 **Total Hours: 60**

1. Citation formats and citation generator
2. Plagiarism tools
3. Design of a research survey on a specific problem
4. Writing a concept note / research proposal
5. Writing of a mini-review paper
6. Systematic review, meta data analysis and presentation
7. Poster/oral presentations

2.4 Essential readings:

1. Cresswell, J. (2009) *Research Design: Qualitative and quantitative Approaches* Thousand Oaks CA, (3rd ed.), Sage Publications
2. Kothari, C.R. (2004) *Research Methodology: Methods and Techniques* (2nd ed.), New Age International Publishers.
3. Kumar, R. (2011) *Research Methodology: A Step-by-Step Guide for Beginners* (5th ed.), SAGE publisher
4. Walliman, N. (2017*) Research Methods: The Basics,* **(**2nd ed.), London; New York: Routledge
5. *WHO (2001) Health Research Methodology – A Guide for Training in Research Methods.*

3. Keywords

Research methodology; Patents; Plagiarism; Ethics; Biosafety; Report writing

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

POOL OF GENERIC ELECTIVES

GENERIC ELECTIVE COURSE - (GE-7)
CELLULAR COMMUNICATIONS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Cellular Communications (BCH-GE-7)	04	02	00	02	Class XII with Science and Biology	Basic course in Cell Biology

Learning Objectives

- Explain the concept of Cell-cell communication.
- Describe the various types of receptors, signal transduction pathways, second messengers and effector molecules.
- To understand how signalling pathways, regulate cell motility, metabolism, growth, organogenesis, and cell death.
- Discuss the crosstalk between signal transduction pathways crosstalk and are auto-regulated.
- To know about various diseases associated with cellular communication pathway defects.

Learning outcomes

On successful completion of the course, students will be able to:

1. Describe various types of cell - cell communication.
2. Discuss the various types of receptors and signal transduction pathways in bacteria, plants and animal system.
3. Explain the importance of various signalling pathways in the regulation of metabolism, growth, organogenesis and cell death.
4. Discuss the cellular communication defects that lead to various types of diseases including cancers.

SYLLABUS OF GE-7

BCH-GE-7 : CELLULAR COMMUNICATIONS
SEMESTER - VI

2.2 Course Contents

Theory (Credit 2)

Total Hours : 30

Unit: 1 Introduction to cell- cell communication. (2 Hours)

Chemical signalling - endocrine, paracrine, autocrine, intracrine and neuroendocrine mechanisms. Cognate signalling.

Unit: 2 Receptors and Signal transduction pathways (16 Hours)

Hormone receptors - extracellular and intracellular. Receptor - hormone binding, Scatchard analysis. G-Protein-coupled Receptors: Heterotrimeric G proteins, Second messengers: cAMP, cGMP, Lipid-derived Second Messengers (IP3, DAG) NO, Calcium Signalling. Effector systems - adenylyl cyclase, guanylyl cyclase, PDE, PLC. Protein kinases (PKA, PKB, PKC, PKG).

Enzyme linked receptors: Receptor Tyrosine Kinases: EGF, insulin and erythropoietin. Ras - MAP kinase cascade, and JAK - STAT pathway.
Ion-channel linked receptors; Neurotransmitter receptors (Acetylcholine receptor). Nerve transmission.

Intracellular receptors: Cytoplasmic and nuclear receptors. Steroid hormone, thyroid hormone receptors. Gene regulation.

Integrin receptors. Integrin signalling. Cell matrix communication Receptor Regulation. Cross talk.

Unit 3: Photoreceptors and signal transduction in plants (4 Hours)

Phytochromes, cryptochromes and phototropins signalling.

Unit 4: Cell death signalling (4 Hours)

Apoptosis, Autophagy

Unit 5: Bacterial signalling (4 Hours)

Quorum sensing, autoinducers, chemotaxis.

2.3 Practical

Credit: 2 **Total Hours : 60**

6. Yeast response to mating pherohormones .
7. Study of Chemotaxis response in Tetrahymena/ paramecium/ dictostylium
8. Study change in heart rate (sympathetic response) on exposure to caffeine (cAMP mediated) in zebrafish larvae.
9. Chemotaxis/ motility assay in microbes.
10. Effect of plant hormones on plant growth or photomorphogenesis in response to light. (Phytochrome effects on lettuce germination/ Gibberellic acid effect on α-amylase secretion in barley seeds)

Essential readings:

1. Lodish, U. H. (2016) Molecular Cell Biology. W.H. Freeman, 2016.
2. Nelson, D. L., & Cox, M. M. (2021). Lehninger principles of biochemistry (8th ed.). W.H. Freeman. ISBN:9781319230906
3. Lim, W., Mayer, B., & Pawson, T. (2015). Cell signaling: principles and mechanisms. New York: Garland Science, Taylor & Francis Group.
4. Kocher, S. L., and Gujral, S. K. (2020). Plant Physiology Theory and Application. Cambridge University Press DOI: https://doi.org/10.1017/9781108486392.018
5. Demuth, D., & Lamont, R. (Eds.). (2006). Bacterial Cell-to-Cell Communication: Role in Virulence and Pathogenesis (Advances in Molecular and Cellular Microbiology). Cambridge: Cambridge University Press. doi:10.1017/CBO9780511541506

Suggested readings:

1. ZFIN protocols
2. Harris UM. A., McGee, S. A., and Batzi J. M. (2018). Uncooking Yeast: Cells Signalling a Rise to Inquiry. Tested Studies for Laboratory Teaching. Proceedings of the Association for Biology Laboratory Education. 38 (9) 1-48
4. Plant physiology and biotechnology laboratory manual. Compiled by: David Law, Lada Malek and JoAnne Henderson. 2006. https://old.amu.ac.in/emp/studym/99997510.pdf

3. Keywords

Chemical signaling, Receptors, signal transduction, GPCRs, RTKs, Photoreceptors, cell death signaling, bacterial signalling

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES COURSE - (GE-8)
BIOCHEMICAL CORRELATION OF DISEASES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
BIOCHEMICAL CORRELATION OF DISEASES (BCH-GE-8)	04	02	00	02	Class XII with Science and Biology	XIIth pass with biology

Learning Objectives

The course aims to provide students with knowledge and understanding of the spectrum of human diseases. It will introduce the concept of a well-balanced diet, healthy lifestyle, the biochemical mechanism of diseases, treatment strategies, mechanism of action of drugs and drug resistance against various antimicrobials. The course also aims to outline the various strategies that could be employed for prevention of infectious and non-infectious diseases.

Learning outcomes

On successful completion of the course students will be able to:

1. Discuss the importance of a balanced diet, regular exercises and healthy lifestyle in leading a disease-free life.
2. Explain the functioning of the immune system and endocrine system and the basis of various autoimmune and hormonal disorders.
3. Correlate the genetic mutation and metabolic disorders.
4. Discuss the molecular mechanism of microbial pathogenicity, drug resistance and implications in public health management.

SYLLABUS OF GE-8

BCH-GE-8 : BIOCHEMICAL CORRELATION OF DISEASES
SEMESTER - VI

2.2 Course Contents

Theory (Credit 2)

Total Hours: 30

Unit I: Inherited Metabolic diseases and Hormonal disorders (9 Hours)

Introduction to inherited Metabolic diseases. Alkaptonuria, Phenylketonuria; Glycogen storage diseases (Von Gierke disease, Cori disease); Lipid storage diseases: Gaucher's disease; SCID. Overview of the endocrine disorders: Cushing's disease, Diabetes insipidus.

Unit II: Nutritional deficiency and lifestyle-based diseases (7 Hours)

Concept of nutrition and balanced diet; Protein-energy malnutrition: Kwashiorkor and Marasmus; Vitamin deficiency diseases: Beri-Beri, Scurvy, Pellagra, Nutritional deficiency Anemia, Night blindness, Rickets. Lifestyle-based diseases: Atherosclerosis, Diabetes Mellitus-II.

Unit III: Autoimmune diseases (6 Hours)

Concepts in immune recognition-self and non-self-discrimination, organ specific autoimmune diseases- Hashimoto's thyroiditis, Graves' disease, Myasthenia Gravis, Diabetes Melitus-I, Systemic diseases: Systemic lupus erythematosus (SLE), Rheumatoid arthritis.

Unit IV: Infectious diseases (8 Hours)

Classification of infectious diseases; Role of sanitation, drugs and vaccines in prevention, transmission and treatment of infectious diseases. Diseases caused by viruses: Polio, Influenza, HIV and COVID. Diseases caused by bacteria: Tetanus, Tuberculosis. Protozoan infections: Malaria; Parasitic infections: Kala Azar.

2.3 Practical:

Credits: 2 **Total Hours : 60**

8. Anthropometric measurements: BMI, Waist/Hip Ratio, Mid Arm Muscle Area (MAMA), Mid Arm Area (MAA).
9. Measurement of Blood pressure
10. Determination of blood Lipid Profile: Triglyceride, Cholesterol
11. Glucose tolerance test
12. Widal test
13. Permanent slides of malarial parasites/Leishmania
14. Case studies related to autoimmune diseases, life-style disorders and hormonal imbalance

2.4 Essential readings:

5. Berg, J.M., Tymoczko, J.L., Gatto, G.J., Stryer, L. (2019). Biochemistry (9th ed.). W.H Freeman and Company (New York). ISBN-13:9781319114671
6. Coico, R. (2021). Immunology: A Short Course (8th ed.). John Wiley & Sons, Inc (New Jersey). ISBN: 9781119551577.
7. Devlin, T. M., (2011). Textbook of Biochemistry with Clinical Correlations. John Wiley & Sons, Inc. (New York). ISBN: 978-0-4710-28173-4.
8. Willey, J., Sandman, K., Wood, D. (2019). Prescott's Microbiology (11th ed.). McGraw Hill International Edition (New York) ISBN: 9781260211887.

Suggested readings:

4. Sherwood, L. (2012). Introduction to Human Physiology (8th ed.). Brooks/Cole, Cengage Learning. ISBN-13: 978-1133104544 ISBN-10: 1133104541.
5. Hadley, M.E., Levine, J.E. (2007). Endocrinology (6th ed.). New Delhi, Pearson Education, Inc. ISBN: 978-81-317-2610-5.
6. Malik, D., Narayanasamy, N., Vavilala, P., Takur, J., Sinha, N., (2022). Textbook of Nutritional Biochemistry. Springer Singapore, ISBN978-981-19-4149-8.

3. Keywords

Lifestyle and metabolic disorders, nutritional deficiency, hormonal disorder, autoimmunity and infectious diseases.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES COURSE - (GE-11)
TOOLS OF GENETIC ENGINEERING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Tools for Genetic Engineering (BCH-GE-11)	04	02	00	02	Class XII with Science and Biology	Basic course in Molecular Biology

Learning Objectives

The objective of the course is to teach:

- Basics of theoretical and practical aspects of recombinant DNA technology.
- Various techniques for DNA manipulation in prokaryotes and eukaryotes.

Learning outcomes

On successful completion of the course, students will be able to:

1. Grow bacterial culture and obtain single isolated colonies
2. Estimate the concentration of DNA by UV spectroscopy
3. Extract plasmid DNA from recombinant *E. coli*
4. Perform restriction digestion and evaluate the end products by agarose gel electrophoresis
5. Perform Polymerase chain reaction and amplify a DNA fragment
6. Explain the various methods for expression of recombinant genes in *E.coli*
7. Perform gene cloning

SYLLABUS OF GE-11

BCH-GE-11 : TOOLS FOR GENETIC ENGINEERING
SEMESTER - VI

2.2 Course Contents

Theory (Credit 2)

Total Hours: 30

UNIT I: Introduction to recombinant DNA technology **(5 Hours)**

Overview of gene cloning. Restriction and Modification systems, Restriction endonucleases, DNA modifying enzymes (DNA polymerase I, Taq polymerase, DNAse I, DNA Ligase).

UNIT II: Cloning vectors for prokaryotes and eukaryotes **(6 Hours)**

Salient features of vectors (pBR322, pUC8, Lambda bacteriophage, Ti plasmid) used in cloning.

UNIT III: **Introduction of DNA into cells and selection of recombinants (9 Hours)**

Ligation of DNA molecules: linker, adapters, homopolymer tailing. Introduction of DNA into bacterial cells, selection of transformed cells, insertional inactivation. Identification of recombinant phages. cDNA and Genomic DNA libraries. Clone identification by colony and plaque hybridization.

UNIT IV: Basics of Polymerase Chain Reaction and DNA sequencing (5 Hours)

Fundamentals of polymerase chain reaction, designing primers for PCR. DNA sequencing by chain-termination method, pyrosequencing.

UNIT V: Expression of cloned genes (5 Hours)

Vectors for expression of foreign genes in *E. coli,* expression cassettes. Hybrid promoters trc, tac, λpL and T7 promoter-based expression–vectors. Challenges in producing recombinant protein in *E. coli.* Fusion tags (poly-histidine, GST) and their role in purification of recombinant proteins.

2.3 Practicals

Credits : 2 **Total Hours: 60**

1. Growing a culture of *E.coli* and obtaining isolated colonies by streak-plate method.
2. DNA estimation by UV spectrophotometry.
3. Isolation of plasmid DNA from *E. coli.*
4. Restriction digestion of plasmid DNA and agarose gel electrophoresis.
5. Amplification of a DNA fragment by PCR (demonstration)

2.4 Essential Readings

1. Gene Cloning and DNA Analysis (2016) 7th ed., Brown, T.A., Wiley Blackwell Publishing (Oxford, UK), ISBN: 978-1-119-07256-0.
2. Molecular Biotechnology: Principles and Applications of Recombinant DNA (2010) 4th ed., Glick B.R., Pasternak, J.J. and Patten, C.L., ASM Press (Washington DC), ISBN: 978-1-55581-498-4 (HC).

3. Key Words

Genetic Engineering, Recombinant Proteins, PCR, DNA Sequencing

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF MICROBIOLOGY
SEMESTER-IV
B.Sc. (Hons.) Microbiology

DISCIPLINE SPECIFIC CORE COURSE – 10: ADVANCES IN CELL BIOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
MICROB-DSC401: ADVANCES IN CELL BIOLOGY	4	3	0	1	Class XII pass with Biology/ Biotechnology/ Biochemistry	Basic Concepts of Cell Biology

Learning Objectives

The Learning Objectives of this course are as follows:

- The major objective of this course is to introduce the students to the essentials of eukaryotic cell biology.
- The students will gain knowledge about the physical and chemical architecture of cells as well as structural and functional details of different cell organelles.
- They will become familiar with cell cycle events, and mechanisms of cell communication and cell death.
- They will be educated about the hallmarks, etiology and diagnosis of cancers.
- They will be introduced to the cutting edge science of stem cell technology, their production and various applications.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Student will be able to describe the different components of cell signalling pathways used for cell communication.
- Student will be able to recall cell division, mechanisms of cell cycle regulation, and types of cell death.
- Student will be able to evaluate the importance of stem cells and their associated technologies and applications.

- Student will be able to describe the different types of cancers, their causes, characteristics, diagnosis, and treatment modalities.
- Student will be able to analyze DNA by Feulgen staining followed by microscopic observation. Student will be able to analyze the different stages of cell division: mitotic stages by temporary mount and meiosis stages by the permanent mount.
- Student will be able to evaluate chromosome polyploidy by colchicine treatment of plant material followed by staining.

SYLLABUS OF DSC-10

UNIT – I (20 hours)

Cell Signalling: Modes of cell-cell signalling: endocrine, paracrine, autocrine. Signalling molecules: nitric oxide, carbon monoxide, steroid hormones, neurotransmitters, peptide hormones and growth factors. Cell surface receptors and receptor-ligand interactions: G protein-coupled receptors, receptor protein tyrosine kinases, cytokine receptors. Signal transduction: cyclic AMP, cyclic GMP and MAP kinase pathways.

UNIT – II (10 hours)

Cell Cycle and Cell Death: Phases and regulation of eukaryotic cell cycle. Mitosis and meiosis. Types of cell death: necrosis, apoptosis and autophagy, mitophagy. Characteristics and pathways of apoptosis: intrinsic and extrinsic.

UNIT – III (5 hours)

Cell Renewal: Stem cells: characteristics and types: somatic stem cells, embryonic stem cells, induced pluripotent stem cells. Therapeutic applications of stem cells.

UNIT – IV (10 hours)

Cancer biology: Hallmarks of cancer. Causes of cancer: carcinogens, cancer-causing microorganisms. Proto-oncogenes and oncogenes. Tumor suppressor genes. Characteristic features of cancer cells. Types of cancers. Cancer stem cells. Approaches to cancer diagnosis. Currently available cancer treatment modalities (including bone marrow transplantation, immune cell and oncolytic viral therapies).

Practical component

UNIT 1: (20 hours)

Cell division and cytochemical analysis of DNA: Performance of cytochemical staining of DNA by Feulgen stain. Microscopic examination and analysis of the different stages of mitosis through temporary mounts of stained onion root tip. Microscopic examination and analysis of the different stages of meiosis through temporary mounts / permanent slides.

Unit 2: (10 hours)

Chromosome polyploidy and properties of cancer cells: Study of polyploidy in onion root tip by colchicine treatment followed by acetocarmine stain. Identification and

study of properties of different types of cancerous cells through light and electron micrographs.

Essential/recommended readings

Theory:

1. Molecular Cell Biology by H. Lodish, A. Berk, C. Kaiser, M. Krieger, A. Bretscher, H.Ploegh, A. Amon and K.C. Martin. 9th edition. W.H. Freeman, UK. 2021.
2. Essential Cell Biology by B. Alberts, K. Hopkin, A.D. Johnson, D. Morgan, and M. Raff. 5th edition. W.W. Norton & Co, USA. 2019.
3. Karp's Cell and Molecular Biology by G. Karp, J. Iwasa and W. Marshall. 9th edition. Wiley, USA. 2019.
4. The Cell: A Molecular Approach by G.M. Cooper. 8th edition. Sinauer Associates, UK. 2018.
5. The science of stem cells by J.M.W. Slack. 1st edition. John Wiley & Sons. 2018.
6. Cell Biology by T.D. Pollard, W.C. Earnshaw, J. Lippincott-Schwartz and G.T. Johnson. 3rd edition. Elsevier, USA. 2016.
7. Becker's World of the Cell by J. Hardin and G. Bertoni. 9th Edition. Pearson, USA. 2015.
8. Principles of stem cell biology and cancer: future applications and therapeutics by T. Regad, T. Sayers and R. Rees. 1st edition. John Wiley & Sons. 2015.
9. Essentials of stem cell biology edited by R. Lanza and A. Atala. 3rd edition. Academic Press. 2013.
10. Cell and Molecular Biology by E.D.P. De Robertis. 8th edition. Lippincott, Williams andWilkins, USA. 2006.

Practicals:

1. A Cell Biology Manual by J. Francis. Kendall/Hunt Publishing Co, USA. 2022.
2. Practical Laboratory Manual- Cell Biology by A. Gupta, B.K. Sati. Lambert Academic Publishing, USA. 2019.
3. Cell Biology Practical Manual by R. Gupta, S. Makhija and R. Toteja. Prestige Publishers, India. 2018.
4. Laboratory Manual of Cell Biology by R. Majumdar, R. Sisodia. Prestige Publishers, India. 2018.
5. Essential Cell Biology Vol 1: Cell Structure- A Practical Approach by J. Davey and M.Lord. Oxford University Press, UK. 2003.
6. Essential Cell Biology Vol 2: Cell Function- A Practical Approach by J. Davey and M. Lord. Oxford University Press, UK. 2003.

Suggestive readings

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE –11:
MICROBIAL PHYSIOLOGY AND METABOLISM- II

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
MICROB-DSC402: **MICROBIAL PHYSIOLOGY AND METABOLISM-II**	**4**	**3**	**0**	**1**	**Class XII pass with Biology/ Biotechnology/ Biochemistry**	**Microbial Physiology and Metabolism-I**

Learning Objectives

The Learning Objectives of this course are as follows:

- The main objective of this course is to enable students to understand the underlying mechanisms governing various physiological and metabolic features of prokaryotes.
- These include transport mechanisms for the uptake of nutrients, bacterial growth, and the diversity of prokaryotes due to (i) adaptations to the different habitats in which they grow and (ii) metabolic pathways for energy production and carbon and nitrogen assimilation.
- The course will build the strong foundation needed by the students for further studies in the advanced fields of microbiology including metabolic engineering.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Student will be able to elaborate on various pathways of fermentation in microbes.
- Student will be able to discuss the classification of chemolithotrophs and phototrophs along with mechanisms of energy production and cellular carbon synthesis.
- Student will be able to describe the nitrogen cycle and its assimilation and dissimilation by processes like nitrogen fixation, ammonia assimilation, nitrification, denitrification etc.

- Student will be able to evaluate the diversity of metabolic pathways in microbes by designing and formulation of microbial culture media and studying the effect of changing chemical environment on fungal growth using various carbon sources.
- Student will be able to evaluate the diversity of metabolic pathways in microbes by studying the effect of changing chemical environment on bacterial growth using various nitrogen sources.

SYLLABUS OF DSC-11

UNIT – I (8 hours)

Microbial fermentations: Principles of fermentation. Alcohol fermentation and Pasteur effect. Lactate fermentation (homofermentative and heterofermentative pathways). Concept of linear and branched fermentation pathways.

UNIT – II (12 hours)

Metabolism in chemolithotrophic autotrophs: Physiological groups of chemolithotrophs (aerobic and anaerobic). Detailed mechanism of energy production and generation of reducing power in H2 oxidizers and methanogens.

UNIT – III (13 hours)

Metabolism in phototrophic autotrophs: Families of phototrophic bacteria, bacterial photosynthetic pigments, generation of energy and reducing power in purple and green bacteria (anoxygenic photosynthesis) and cyanobacteria (oxygenic photosynthesis), photophosphorylation (cyclic and non- cyclic). Production of cellular carbon (C1 metabolism) in autotrophs by Calvin cycle & reductive TCA pathway and by acetyl-CoA in methanogens.

UNIT – IV (12 hours)

Nitrogen Metabolism: Biological nitrogen fixation: Diversity, mechanism of nitrogen fixation, nitrogenase activity and its physiological regulation, alternate nitrogenases, ammonia assimilation, assimilatory nitrate reduction. dissimilatory nitrate reduction (denitrification, nitrate/ nitrite and nitrate/ ammonia respiration).

Practical component

UNIT 1: (15 hours)

Carbon metabolism: Comparison of the growth of A. niger in minimal medium containing different carbon sources (glucose, fructose and lactose) on different days of growth using dry weight method.

Unit 2: (15 hours)

Nitrogen metabolism: Study of the effect of nitrogen sources (ammonium, nitrate and peptone) on the growth of E. coli. Investigation any one bacterium for its nitrifying / denitrifying properties

Essential/recommended readings

Theory:

1. Fundamentals of Bacterial Physiology and Metabolism by Rani Gupta and Namita Gupta. Springer Nature Singapore Pvt. Ltd., Singapore. 2021.
2. Lehninger Principles of Biochemistry by D.L. Nelson and M.M. Cox. 8th edition. W.H. Freeman and Company, UK. 2021.
3. Brock Biology of Microorganisms by M.T. Madigan,J. Aiyer,D. Buckley,W.Sattley and D. Stahl.16th edition. Pearson, USA. 2021.
4. Prescott's Microbiology by J. M. Willey, K. Sandman and D. Wood. 11th edition. McGrawHill Higher Education, USA. 2019.
5. Microbial Biochemistry by G.N. Cohen. 2nd edition. Springer, Germany. 2014.
6. The Physiology and Biochemistry of Prokaryotes by D. White, J. Drummond and C. Fuqua. 4th edition. Oxford University Press, UK. 2011.
7. Microbial Physiology by S.R. Reddy and S.M. Reddy. Scientific Publishers India. 2007.
8. Microbial Physiology by A.G. Moat, J.W. Foster and M.P. Spector. 4th edition. John Wiley& Sons, USA. 2002.

Practicals:

1. Essentials of Practical Microbiology by A. Sastry and S. Bhat. 2nd edition. Jaypee Brothers Medical Publishers, India. 2021.
2. Microbiology: A Laboratory Manual by J. Cappuccino and C.T. Welsh. 12th edition. Pearson Education, USA. 2020.
3. Laboratory Experiments in Microbiology by T. Johnson and C. Case. 12th Edition. Pearson Education, USA. 2019.
4. Microbiology Practical Manual edited by A. Jain, J. Agarwal, V. Venkatesh. Elsevier, India. 2018.
5. Applied Microbial Physiology: A Practical Approach by P. M. Rhodes and P. F. Stanbury. IRC Press. 1997.

Suggestive readings

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 12:
VIROLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
MICROB-DSC403: **VIROLOGY**	**4**	**3**	**0**	**1**	**Class XII pass with Biology/ Biotechnology/ Biochemistry**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- The major objective of this course is to make students aware of the extent to which the tiniest of microorganism (viruses) leave their impact on human and animal health as well as in agriculture.
- Students will get acquainted with the structures and replication strategies of bacterial, plant and human viruses.
- Students will gain in-depth knowledge of how viruses infect their host, spread across a population, and cause diseases.
- They will learn of preventive measures used for protection against viral infections, and control
- They will acquire knowledge of emerging and re- emerging viruses in context to public health threats taking coronavirus as the case study.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Student will be able to describe the nature, properties and structure of viruses, and be knowledgeable about sub-viral particles, giant viruses and viral taxonomy.
- Student will be able to discuss bacterial viruses, their salient features, and replication strategy of important bacteriophages.
- Elaborate on plant viruses, modes of transmission and their economic importance.
- Student will be able to evaluate the salient features and replication strategies of important human viruses, and will have understood the concept of oncogenesis, DNA and RNA cancer-causing viruses.
- Student will be able to describe how to prevent viral infections using vaccines and antiviral compounds.

- Student will be able to assess the problems of emerging and re-emerging viruses, having an understanding of the rise of coronavirus as the major public health crisis along with the implemented management protocols.

SYLLABUS OF DSC-12

UNIT – I (9 hours)

Introduction to Virology: History of virology. Nature and general properties of viruses, concept of viroids, virusoids, satellite viruses, prions, giant viruses (mama, mimi and pandora virus), virophages (Sputnik). Structure of viruses: Capsid symmetry, enveloped and non- enveloped viruses. Isolation, purification and cultivation of viruses. Viral taxonomy: Classification and nomenclature of different groups of viruses.

UNIT – II (8 hours)

Bacteriophages: Diversity, one step multiplication curve. T4 phage: Unusual bases, terminal redundancy, lytic cycle, assembly, maturation and release of progeny virions. Lambda phage: genome structure, concept of early and late proteins, lytic cycle and lysogeny. øX174 phage: Overlapping genes, and rolling circle replication.

UNIT – III (3 hours)

Plant Viruses: Diversity, modes of transmission (non-persistent, semi persistent and persistent), salient features of replication of Geminivirus. Economic importance of plant viruses : adverse and beneficial effects. Virus-like particles (VLPs) and their applications in medicine.

UNIT – IV (18 hours)

Human Viruses: Diversity, routes of transmission: vertical and horizontal (vector-borne, air-borne, oral-faecal borne) infection cycle. Replication of Human Immuno Deficiency Virus (HIV) and Polio Virus. Overlapping genes. Partial double stranded genomes: Hepatitis B. Segmented genomes: Influenza virus. Non-segmented genomes: Picornavirus. Assembly with example of Polio virus. Oncogenic viruses: types of oncogenic DNA and RNA viruses. Emerging and Re-emerging viruses: H1N1, Dengue, Ebola, Zika virus and associated pandemics and epidemics. Case study of the SARS-CoV2 Corona virus as the recent public health threat: emergence, epidemiology, management protocols, emergence of variants, global impact

UNIT – V (7 hours)

Prevention and Control of Viral Diseases: Antiviral compounds and their mode of action: AZT, ritonavir, lamivudine. Interferons and their mode of action. General principles of viral vaccines: live attenuated vaccines, inactivated viral vaccine, subunit vaccine, recombinant viral vaccine.

Practical component

UNIT 1: (22 hours)

Structure and isolation of viruses: Principle and use of electron microscopy to study virus structure. Use of electron micrographs for studying the structural characteristics of the following viruses: Bacterial viruses: ϕX174, T4, λ. Plant viruses: caulimo, gemini, tobacco ringspot, cucumber mosaic and alfalfa mosaic viruses. Human viruses: rhabdo, influenza, paramyxo, hepatitis B and retroviruses.

Isolation of bacterial and plant viruses: Isolation and enumeration of bacteriophages (PFU) from water/sewage samples using double agar layer technique. Qualitative analysis of lytic and lysogenic phage by observation of plaque phenotypes (clear versus turbid). Isolation of plant viruses from infected leaves followed by locally inoculating healthy plant leaves to confirm isolation and infectivity. Use of the local lesion assay to observe characteristic lesions formed on the plant leaves and measure of infectivity of the virus by enumeration of the number of local lesions on the inoculated leaves.

Unit 2: (8 hours)

Isolation and propagation of animal viruses: Principle and working method of using chick embryo cultivation technique. Demonstration of the method using videos. Cytopathic effects of viruses: observation of the physical attributes of virus-infected cells of different types with suitable photographs and images.

Essential/recommended readings

Theory:

1. Fields Virology: DNA Viruses (Vol 2) by P.M. Howley, D.M. Knipe, J.L. Cohen, B.A. Damania. 7th edition. Walters Kluwer, Netherlands. 2021.
2. Fields Virology: Emerging Viruses (Vol 1) by P.M. Howley, D.M. Knipe, S. Whelan. 7th edition. Walters Kluwer, Netherlands. 2020.
3. Principles of Virology, Molecular biology, Pathogenesis and Control by S. Flint, L. Enquist, R. Krug, V. Racaniello, A. Skalka. 5th edition. ASM press, USA. 2020.
4. Plant Viruses: Diversity, Interaction and Management by R.K. Gaur, S.M.P. Khurana, and Y. Dorokhov. CRC Press. Taylor & Francis Group. 2018.
5. Principles of Molecular Virology by A.J. Cann. 6th edition. Academic Press, Elsevier Netherlands. 2016.
6. Introduction to Modern Virology by N.J. Dimmock, A.L. Easton and K.N. Leppard. 7th edition.Wiley-Blackwell Publishing. 2016.
7. Understanding Viruses by Teri Shors Jones. 3rd edition. Jones and Bartlett Learning, USA. 2016.
8. Plant Virology by R. Hull. 5th edition. Academic Press, USA. 2014.
9. Virology: Principles and Applications by J. Carter and V. Saunders. 2nd edition. John Wiley andSons, UK. 2013.
10. Plant Viruses by M.V. Nayudu. Tata McGraw Hill, India. 2008.
11. Basic Virology by E.K. Wagner, M.J. Hewlett, D.C. Bloom. 3rd edition. Wiley-Blackwell Publishing. 2007.
12. Virology by J.A. Levy, H.F. Conrat and R.A. Owens. 3rd edition. Prentice Hall, USA. 2000.

Practicals:

1. Benson's Microbiological Applications, Laboratory Manual in General Microbiology by A. Brown and H. Smith. 15th edition. McGraw-Hill Education, USA. 2022.
2. Bacteriophages by D., Harper, S., Abedon, B., Burrowes, and M. McConville. 1st edition. Springer, Switzerland. 2021.
3. Freshney's Culture of Animal Cells by R. I., Freshney and A. Capes-Davis. John Wiley and Sons. U.K. 2021.
4. Microbiology: A Laboratory Manual by J. Cappuccino and C.T. Welsh. 12th edition. Pearson Education, USA. 2020.
5. Manual of Clinical Microbiology, 2 Volume set by K. C., Carroll, M. A., Pfaller, M. L., Landry, A. J., McAdam, R., Patel, S. S., Richter and D. W. Warnock. 12th edition. ASM Press. USA. 2019.
6. Experiments in Microbiology, Plant Pathology and Biotechnology by K. R. Aneja. 5th edition. New Age International Publishers, India. 2017.
7. Practical Plant Virology by J., Dijkstra and C., Jager. Springer Science and Business Media. Germany. 2012.
8. A Colour Atlas of Virology by J. Versteeg. Mosby International. Taiwan. 1990.

Suggestive readings

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER-V
B.Sc. (Hons.) Microbiology

DISCIPLINE SPECIFIC CORE COURSE – 13: PRINCIPLES OF MOLECULAR BIOLOGY-I

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
MICROB-DSC501: **PRINCIPLES OF MOLECULAR BIOLOGY-I**	**4**	**3**	**0**	**1**	**Class XII pass with Biology/ Biotechnology/ Biochemistry**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- The major objective of this course is for the student to gain comprehensive knowledge of the basic concepts of molecular biology.
- The student will become familiar with DNA-related cellular processes and will become aware of the central dogma of molecular biology, learning about the propagation of information through DNA replication and the unidirectional flow of information from DNA to RNA to proteins through transcription and translation

Learning outcomes

The Learning Outcomes of this course are as follows:

- Student will be able to describe DNA and RNA as genetic material and the structure and properties of the different DNA types as well as the various kinds of RNA.
- Student will be able to explain the process of propagation of information in prokaryotes and eukaryotes by DNA replication and the various enzymes and other proteins that modulate this process.
- Student will be able to describe the basic prokaryotic and eukaryotic transcription processes, including the RNA polymerases and general transcription factors involved, differentiate between the processes in prokaryotes and eukaryotes.
- Student will be able to evaluate the relevance of the double helical structure of DNA in the propagation of genetic material.
- Student will be able to demonstrate the isolation of genomic DNA and plasmid from bacterial cells, and analyze them through agarose gel electrophoresis.

SYLLABUS OF DSC-13

UNIT – I (12 hours)

Structure and properties of nucleic acids: Types of genetic material: DNA and RNA. Structure of DNA: characteristic features of double helix. Properties of different types of DNA: A, B and Z. Denaturation and renaturation of DNA, factors affecting renaturation kinetics, concept of Tm. Principle and method of cot curve analysis of DNA. Factors affecting DNA topology: role of topoisomerases I and II. Concept of linking number. Concept of concatenation and concatamerization. DNA organization in prokaryotes and eukaryotes. Structure and function of RNA: rRNA, tRNA and mRNA.

UNIT – II (17 hours)

Replication of DNA in prokaryotes and eukaryotes: Semi-conservative DNA replication. Unidirectional and bidirectional DNA replication. DNA replication modes with one example each: D-loop (mitochondrial), Θ (theta), rolling circle. Structure of origins of replication in prokaryotes versus eukaryotes, initiators and replicators. Mechanism of origin activation in prokaryotes (E.coli) and eukaryotes (S.cerevisiae). Mechanism of DNA replication: semi-discontinuous replication, leading and lagging strand synthesis. Replication machinery in prokaryotes and eukaryotes: primase, DNA polymerases, DNA ligase. Mechanisms for maintaining fidelity of replication. Differences in prokaryotic and eukaryotic DNA replication. Regulation of replication in prokaryotes and eukaryotes. Replication of chromosome ends: mechanism of action of telomerase, importance of telomerase in ageing.

UNIT – III (16 hours)

Transcription in prokaryotes and eukaryotes: Distinction between replication and transcription. Concept of transcription unit. Concept of operon and polycistronic transcription in prokaryotes. RNA polymerases in prokaryotes and eukaryotes. Structure and properties of promoter in prokaryotes and eukaryotes. Role of enhancers and silencers in gene regulation. General transcription factors in eukaryotes. Process of transcription initiation and elongation in prokaryotes and eukaryotes. Transcription termination: rho-dependent and rho-independent termination mechanisms. Inhibitors of transcription and their mechanism. Comparison of the transcription process in prokaryotes versus in eukaryotes

Practical component

UNIT 1: (12 hours)

Study of different types of DNA and RNA:

Student research study project: Discovery of DNA as genetic material. Discovery of structure of DNA: the double helix.

Study of the structure and properties of different types of DNA using micrographs and/or models: A-DNA, B-DNA and Z-DNA. Study of the structure and properties of various RNAs using micrographs: mRNA, rRNA, tRNA, miRNA, siRNA, guide RNA, xistRNA, snRNA, snoRNA. Discussion on the importance of the double helix

structure in DNA replication by semi- conservative mode: the Meselson & Stahl experiment.

Unit 2: (18 hours)

Isolation and analysis of DNA:

Isolation of genomic DNA from Escherichia coli cultures: cell lysis and DNA precipitation. Analysis of the isolated genomic DNA: principle and working method of agarose gel electrophoresis. Isolation of plasmid DNA using alkaline lysis method. Analysis of the isolated plasmid DNA by agarose gel electrophoresis. Identification of the different forms of plasmid DNA by agarose gel electrophoresis.

DNA estimation: colorimetric estimation of DNA using salmon sperm DNA or calf thymus DNA as standard: diphenylamine method. Spectrophotometric method using absorbance at 260 nm.

Essential/recommended readings

Theory:

1. Lewin's Essential Genes by J. Krebs, E. Goldstein and S. Kilpatrick. 4th edition. Jones andBartlett Publishers, USA. 2020.
2. Karp's Cell and Molecular Biology by G. Karp, J. Iwasa and W. Marshall. 9th edition. Wiley, USA. 2019
3. Molecular Biology by D. Clark, N. Pazdernik and M. McGehee. 3rd edition. Academic Cell, USA. 2018.
4. Lewin's Genes XII by J. Krebs, E. Goldstein and S. Kilpatrick. 12th edition. Jones and BartlettLearning, USA. 2017.
5. Becker's World of the Cell by J .Hardin and G.P. Bertoni. 9th edition. Pearson, USA. 2015.
6. Principles of Genetics by D.P. Snustad and M.J. Simmons. 7th edition. Wiley and Sons, UK. 2015.
7. Molecular Biology of the Gene by J.D. Watson, T.A. Baker, S.P. Bell, A. Gann, M. Levine and R. Losick. 7th edition. Pearson Education, USA. 2014.
8. Cell and Molecular Biology by E.D.P. De Robertis and E.M.F. De Robertis. 8th edition. Lippincott Williams and Wilkins, USA. 2006.

Practicals:

1. Molecular Cloning: A Laboratory Manual by M. Green and J. Sambrook Volumes 1-3. 4th edition. Cold Spring Harbor Laboratory Press, USA. 2012.
2. An Introduction to Practical Biochemistry by D. Plummer. 3rd edition. McGraw Hill Education, India. 2017.

Suggestive readings

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 14:
BASIC CONCEPTS OF IMMUNOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
MICROB-DSC502: **BASIC CONCEPTS OF IMMUNOLOGY**	**4**	**3**	**0**	**1**	**Class XII pass with Biology/ Biotechnology/ Biochemistry**	**None**

Learning Objectives

The Learning Objectives of this course are as follows:

- The main objective of this course is to give the students insight into how the human body tackles diseases and what mechanisms of defense are used in protection processes.
- The students will develop a clear understanding of the various components of the immune system and will become aware of the characteristics of antigens, their types and various antibodies produced by the system to defend us from the invading microorganisms.
- The student also learns about the major histocompatibility complex, the complement system, monoclonal antibodies and cytokines, which are of paramount importance in triggering an efficient immune response.

Learning outcomes

The Learning Outcomes of this course are as follows:

- The student will be able to describe various types of immune responses and the basic processes involved therein, how the immune system protects us from infection using various lines of defense.
- The student will be able to explain the characteristics and functions of the cells of the immune system as well as the structure and functioning of various organs of the immune system, and immunodiagnostic techniques.
- The student will be able to explain the important properties of antigens as well as how environmental factors affect antigen immunogenicity; the structure, types, and functions of antibodies, monoclonal and chimeric antibodies.

- The student will be able to describe the major histocompatibility complex proteins and their loci in the genome along with the two distinct pathways for processing and presentation of exogenous and endogenous antigens.
- The student will be able to discuss the mechanisms by which the complement system is activated via three distinct pathways so as to support the antibodies and phagocytes to clear microbes and damaged cells with utmost efficacy.

SYLLABUS OF DSC-14

UNIT – I (10 hours)

Basic Introduction to immune system: Components of innate immunity: Anatomical and physiological barriers, chemical mediators, non-specific defence mechanisms, inflammatory response, phagocytosis, Pattern Recognition Receptors (PRR). Features of Adaptive Immunity, Cytokines and cytokine receptor families with emphasis on IL-2R.

UNIT – II (10 hours)

Cells and organs of Immune System: Hematopoiesis, structures, functions and properties of cells of lymphoid lineage (T cell, B cell, NK cell) and myeloid lineage (macrophage, neutrophil, eosinophil, basophil, mast cell, dendritic cell). Separation of cells using Flow Cytometry. Primary and secondary immune organs (bone marrow, thymus, spleen, lymph nodes, GALT).

UNIT – III (15 hours)

Antigens and antibodies: Properties of Antigens: foreignness, molecular size, heterogeneity. Antigenicity and immunogenicity, environmental factors affecting immunogenicity of an antigen, adjuvants, epitopes of an antigen (T and B cell epitopes), T-dependent and T-independent antigens, haptens.

Elucidation of antibody structure; types, functions and properties of antibodies, antigenic determinants on antibodies (isotypic, allotypic, idiotypic), monoclonal and chimeric antibodies, immunoglobulin superfamily. Immunodiagnostics by SDS-PAGE, western blotting, ELISA and its types, immunofluorescence, immunoelectron microscopy.

UNIT – IV (5 hours)

T Cell Receptor, Major Histocompatibility Complex and Antigen Presentation: Structure and functions of TCR-CD3 complex, MHC I & MHC II molecules, organization of MHC locus (mouse and human), antigen processing pathways (cytosolic and endocytic).

UNIT – V (5 hours)

Complement and Activation Pathways: Components of complement system, Complement activation pathways (classical, alternative and lectin) and their biological consequences.

Practical component

UNIT 1: (18 hours)

Introduction to Immunology:

Student study research project: The contributions of the following scientists to the development of the field of immunology: Edward Jenner, Paul Ehrlich, Peter Medawar, MacFarlane Burnet, Neils K Jerne, Susumu Tonegawa, Jules Bordet, Peter C. Doherty & Rolf M. Zinkernagel, Cesar Milstein & Georges E. Kohler, and George Snell, Jean Dausset & Baruj Benacerraf.

Cells of Immune system:

Familiarizing students with the haemocytometer and its uses. Determining total leucocyte count in the given blood sample: making a smear of human blood and performing total and differential leukocyte count, determining percent count neutrophils, lymphocytes, eosinophils, basophils and monocytes. Study of the association of abnormal blood counts with diseases like leukopenia, leukocytosis, neutropenia.

Unit 2: (12 hours)

Basic Immunodiagnostic techniques:

Concepts of agglutination and identification of human blood groups. Understanding the concepts of immunoprecipitation by performing double immunodiffusion (Ouchterlony method). Principles, working methods and applications of Lateral Flow Test and Plate/ Dot ELISA. Performance of Plate/ Dot ELISA, and Lateral Flow Test using any diagnostic kit.

Essential/recommended readings

Theory:

1. Immunology: A short course by R. Coico. 8th edition. Wiley- BlackwellScientific Publication, UK. 2021
2. Cellular and Molecular Immunology by A.K. Abbas, A.H. Lichtman and S. Pillai. 10th edition.Elsevier, USA. 2021.
3. Kuby Immunology by J. Punt, S. Stranford, P. Jones and J. Owen. 8 th edition.
4. W.H. Freemanand Company, USA. 2018.
5. Roitt's Essential Immunology by P. Delves, S. Martin, D. Burton and I.M. Roitt. 13th edition.Wiley- Blackwell Scientific Publication, UK. 2017.
6. Janeway's Immunobiology by K. Murphy and C. Weaver. 9th edition. Garland Science Publishers, USA. 2016.
7. Basic and Clinical Immunology by M. Peakman and D. Vergani. 2nd edition. ChurchillLivingstone, UK. 2009.
8. Immunology by C. Richard and S. Geoffrey. 6th edition. Wiley- Blackwell Scientific Publication, UK. 2009.

Practicals:

1. A Handbook of Practical and Clinical Immunology Volumes I & 2 by G. P. Talwar and S.K. Gupta. 2nd edition. CBS Publishers, India. 2017.
2. Practical Immunology, A Laboratory Manual by S. Balakrishnan, K. Karthik and S. Duraisamy. Lambert Academic Publishing, India. 2017.

3. Microbiology: A Laboratory Manual by J. Cappuccino and C.T. Welsh. 11th edition. Pearson Education, USA. 2016.
4. Laboratory Manual on Immunology and Molecular Biology by D. Dwivedi and V. Singh. Lambert Academic Publishing, India. 2013.
5. Practical Immunology by F.C. Hay, M.R. Olwyn and M.R. Westwood. 4th edition. Wiley Blackwell Publishing. 2002.

Suggestive readings

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE –15: MEDICAL MICROBIOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
MICROB-DSC503: MEDICAL MICROBIOLOGY	4	3	0	1	Class XII pass with Biology/ Biotechnology/ Biochemistry	None

Learning Objectives

The Learning Objectives of this course are as follows:

- The main objective of this course is to introduce the students to the fundamental features of medical microbiology.
- Students will recognize the diversity of microbial pathogens and their virulence mechanisms. They will be introduced to specific infectious diseases of global relevance, diagnostic methods, and methods to manage infectious diseases.
- They will become familiar with the functional aspects of antimicrobial chemotherapy and anti- microbial resistance and will gain insights into the recent development of new molecular diagnostic methods as well as the global spread and emergence of infectious agents.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Student will be able to explain the terms in describing disease causalities, pathogenic features of microbial agents of disease, and their transmission, and will be able to describe the diverse nature of the human microbiome and its significance.
- Student will be able to describe the spectrum of diseases caused by bacterial pathogens, and the course of disease development and accompanying symptoms. Student will be able to to discuss the methods of transmission, epidemiological aspects, preventive measures, treatments.
- Student will be able to explain the human diseases caused by viruses including emerging viral pathogens, giving an understanding of the etiology, course of disease development, symptoms, diagnosis and management of these diseases.
- Student will be able to elaborate on the fungal and protozoan diseases with respect to their etiology, symptoms, transmission, diagnosis and control.
- Student will be able to explain the basic concepts of handling clinical specimens, and approaches used to aid in detection/ diagnosis of infectious agents using immunological and molecular biology-based methods.
- Student will be able to evaluate the mode of action of different antimicrobial agents, concept of antimicrobial resistance and immunization schedule followed in India.

SYLLABUS OF DSC-15

UNIT – I (7 hours)

Introduction to pathogenicity, infection and human microbiota: Commonly used terms and nomenclature: pathogen, infection, invasion, virulence and its determinants, endotoxins and exotoxins, carriers and their types. Opportunistic, nosocomial, acute, latent and chronic infections. Sepsis and septic shock. Modes of transmission of pathogens. Role of microbiome in human health. Factors governing the microbiota of skin, throat and upper respiratory tract, gastrointestinal tract, urogenital tract (with examples of microorganisms in each instance).

UNIT – II (12 hours)

Bacterial pathogens causing common diseases in humans: Symptoms, transmission, prophylaxis and treatment of the diseases caused by: Bacillus anthracis, Clostridium tetani, Clostridium difficile, Escherichia coli, Helicobacter pylori, Mycobacterium tuberculosis, Staphylococcus aureus, Salmonella enterica Typhi, Treponema pallidum, Vibrio cholerae

Unit III: (12 hours)

Viral diseases in humans: Etiology, symptoms, transmission, diagnosis, prophylaxis, and treatment of the following diseases: Polio, Chicken pox, Mumps, Measles, Herpes, Hepatitis, Rabies, AIDS, Influenza (swine flu and bird flu), Dengue, Japanese Encephalitis, Rota virus infections, COVID-19.

UNIT – IV (4 hours)

Protozoan and fungal diseases in humans: Etiology, symptoms, transmission, diagnosis and control of Malaria and Kala azar. Types of mycoses. Detailed study of certain mycoses. Cutaneous mycoses: Tinea pedis (Athlete's foot). Systemic mycoses: Aspergillosis. Opportunistic mycoses: Candidiasis, Mucormycosis.

UNIT – V (10 hours)

Diagnostics and therapeutics in infectious diseases:

Collection, transport and culturing of clinical samples. Principles of different diagnostic tests: Agglutination-based tests (Widal and VDRL test), lateral flow assay-based kits, immunofluorescence test for syphilis, Nucleic acid based diagnostic techniques: Rapid PCR and RT-PCR.

Anti-microbial chemotherapy: General characteristics and mode of action of anti-microbial agents. Antibacterial with one example each: inhibitor of nucleic acid synthesis, inhibitor of cell wall synthesis, inhibitor of cell membrane function, inhibitor of protein synthesis. Antifungal: mechanisms of action of amphotericin B, griseofulvin. Antiviral: mechanism of action of amantadine, tamiflu, acyclovir. Antimicrobial resistance: mechanisms of drug resistance, MDR, XDR, TDR, NDM-1, ESBL, MRSA, VRSA, ESKAPE pathogens.

Practical component

UNIT 1: (16 hours)

Identification and analysis of the cultural, morphological and biochemical characteristics of bacteria: E. coli, Salmonella, Pseudomonas, Staphylococcus, Bacillus, Klebsiella (any three).

Study of the composition and use of important differential media for identification of bacteria: mannitol salt agar, deoxycholate citrate agar / Salmonella Shigella (SS) agar, MacConkey / EMB Agar.

Identification of bacteria based on biochemical characteristics: IMViC (Indole test, Methyl Red test, Voges-Proskauer test, Citrate test), Triple Sugar Iron (TSI) test, nitrate reduction test, urease test and catalase test.

Group project: Study of skin microbiome: Study of the bacterial flora of skin by swab method: Isolation of bacteria from skin on general purpose media (nutrient agar) and/or selective media (mannitol salt agar). Study of colony characteristics of the obtained isolates followed by Gram staining and microscopy to determine the gram character, shape and arrangement of cells.

Unit 2: (14 hours)

Study of antibiotic sensitivity and rapid detection of infectious diseases: Principle and performance of antibacterial sensitivity test by Kirby-Bauer method. Concept of MIC values. Determining MIC of any two antibiotics for any two bacteria.

Principles and working of rapid antigen tests. Demonstration of lateral flow kit for rapid antigen detection of COVID19. Principle and working of antibody detection test: Dengue test / Widal test for typhoid.

Essential/recommended readings

Theory:

1. Brock Biology of Microorganisms by M.T. Madigan,J. Aiyer,D. Buckley,W.Sattley and D. Stahl.16th edition. Pearson, USA. 2021.
2. Prescott's Microbiology by J. M. Willey, K. Sandman and D. Wood. 11th edition. McGrawHill Higher Education, USA. 2019.
3. Textbook of Microbiology by R. Ananthanarayan and C.K.J. Paniker. 10th edition. Universities Press, India. 2017.
4. Jawetz, Melnick and Adelberg's Medical Microbiology by K.C. Carroll, S.A. Morse, T.A.Mietzner and S. Miller. 27th edition. McGraw Hill Education. 2016.
5. Microbiology: An Introduction by G.J. Tortora, B.R. Funke and C.L. Case. 9thedition.Pearson Education, USA. 2007.
6. DNA microarrays for the diagnosis of infectious diseases by E. Donatin E and M. Drancourt. Med Mal Infect. 2012; 42(10):453-459. Doi:10.1016/j.medmal.2012.07.017

Practicals:

1. A Handbook of Practical and Clinical Immunology Volumes I & 2 by G. P. Talwar and S.K. Gupta. 2nd edition. CBS Publishers, India. 2017.
2. Practical Immunology, A Laboratory Manual by S. Balakrishnan, K. Karthik and S. Duraisamy. Lambert Academic Publishing, India. 2017.
3. Microbiology: A Laboratory Manual by J. Cappuccino and C.T. Welsh. 11th edition. Pearson Education, USA. 2016.
4. Laboratory Manual on Immunology and Molecular Biology by D. Dwivedi and V. Singh. Lambert Academic Publishing, India. 2013.
5. Practical Immunology by F.C. Hay, M.R. Olwyn and M.R. Westwood. 4th edition. Wiley Blackwell Publishing. 2002.

Suggestive readings

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER-VI

B.Sc. (Hons.) Microbiology

DISCIPLINE SPECIFIC CORE COURSE – 16: PRINCIPLES OF MOLECULAR BIOLOGY-II

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
MICROB-DSC601: PRINCIPLES OF MOLECULAR BIOLOGY-II	4	3	0	1	Class XII pass with Biology/ Biotechnology/ Biochemistry	Principles of Molecular Biology-I

Learning Objectives

The Learning Objectives of this course are as follows:

- The major objective of this course is for the student to gain comprehensive knowledge of the basic concepts of molecular biology.
- The student will become familiar with DNA-related cellular processes and will become aware of the central dogma of molecular biology, learning about the propagation of information through DNA replication and the unidirectional flow of information from DNA to RNA to proteins through transcription and translation.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Student will be able to explain RNA processing events including capping, polyadenylation and splicing. Can discourse on the concepts of RNA interference through siRNA and miRNA.
- Student will be able to discuss the mechanisms of translation of proteins in both prokaryotes and eukaryotes, and convey information about the inhibitors of protein synthesis.
- Student will be able to analyze and explain various mechanisms of gene regulation in prokaryotes and eukaryotes at the level of transcription and post-transcriptional

processes, as well as epigenetic mechanisms of gene regulation through chromatin modifications, the role of lncRNAs in gene regulation.

- Student will be able to demonstrate the procedure of isolation and analyze RNA by colorimetric and spectrophotometric methods, resolve proteins by electrophoresis on SDS-PAGE.

SYLLABUS OF DSC-16

UNIT – I (15 hours)

RNA processing and its applications: Difference in structure of prokaryotic and eukaryotic mRNA. Split gene theory, introns and exons. Processing of eukaryotic mRNA: capping and polyadenylation mechanisms and enzymes involved. RNA splicing: Group I and Group II introns and the mechanisms of splicing linked to them. Spliceosome machinery. Concepts of alternative splicing and trans-splicing. Processing of rRNA. RNA interference and its significance. Brief overview of siRNA and miRNAs.

UNIT – II (14 hours)

Translation in prokaryotes and eukaryotes: Translational machinery: ribosome structure in prokaryotes and eukaryotes, tRNA structure, aminoacyl tRNA synthetases and charging of tRNA. Mechanism of initiation, elongation and termination of polypeptide synthesis in prokaryotes and eukaryotes, highlighting the differences in the processes between the two groups of organisms. Mechanisms for maintaining the fidelity of translation.

UNIT – III (16 hours)

Regulation of gene expression in prokaryotes and eukaryotes: Principles of transcriptional regulation in prokaryotes: negative versus positive regulation using lac, trp and ara operons as examples. Gene regulation during sporulation in Bacillus. Yeast mating-type switching. Mechanisms of epigenetic regulation of gene expression: regulation of gene expression by DNA methylation, histone acetylation and histone methylation. Regulation of gene expression by DNA methylation in prokaryotes versus in eukaryotes. Histone methylation as both, positive as well as negative regulator of gene expression. Gene regulation by long noncoding RNAs (lncRNAs).

Practical component

UNIT 1: (15 hours)

Analysis of RNA and its applications:

RNA isolation and estimation: Total RNA isolation from yeast / bacterial cells. Colorimetric analysis of RNA with yeast tRNA as standard, using orcinol reagent or UV spectrophotometry. Northern blot analysis of processed RNA through virtual lab.

Student group research study project: use of mRNA in vaccines – case study of the COVID19 mRNA vaccines: CCMB vaccine technology/platform (based on Pfizer-

BioNTech/Moderna technology) versus Gennova vaccine technology/platform (based on HDT Bio Corp technology)
or
Student group research study project: trans-splicing in trypanosomatids.

Unit 2: (15 hours)
Analysis of proteins:
Analysis of total cell protein of bacteria by SDS-PAGE.
Student group research study project: drugs that inhibit protein translation and their mechanism of action.

Essential/recommended readings

Theory:

1. Lewin's Essential Genes by J. Krebs, E. Goldstein and S. Kilpatrick. 4th edition. Jones andBartlett Publishers, USA. 2020.
2. Karp's Cell and Molecular Biology by G. Karp, J. Iwasa and W. Marshall. 9th edition. Wiley, USA. 2019
3. Molecular Biology by D. Clark, N. Pazdernik and M. McGehee. 3rd edition. Academic Cell, USA. 2018.
4. Lewin's Genes XII by J. Krebs, E. Goldstein and S. Kilpatrick. 12th edition. Jones and BartlettLearning, USA. 2017.
5. Becker's World of the Cell by J .Hardin and G.P. Bertoni. 9th edition. Pearson, USA. 2015.
6. Principles of Genetics by D.P. Snustad and M.J. Simmons. 7th edition. Wiley and Sons, UK. 2015.
7. Molecular Biology of the Gene by J.D. Watson, T.A. Baker, S.P. Bell, A. Gann, M. Levine and R. Losick. 7th edition. Pearson Education, USA. 2014.
8. Cell and Molecular Biology by E.D.P. De Robertis and E.M.F. De Robertis. 8th edition. Lippincott Williams and Wilkins, USA. 2006.

Practicals:

1. Molecular Cloning: A Laboratory Manual by M. Green and J. Sambrook Volumes 1-3. 4th edition. Cold Spring Harbor Laboratory Press, USA. 2012.
2. An Introduction to Practical Biochemistry by D. Plummer. 3rd edition. McGraw Hill Education, India. 2017.

Suggestive readings

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 17: ADVANCES IN IMMUNOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
MICROB-DSC602: **ADVANCES IN IMMUNOLOGY**	**4**	**3**	**0**	**1**	**Class XII pass with Biology/ Biotechnology/ Biochemistry**	**Basic concepts of Immunology**

Learning Objectives

The Learning Objectives of this course are as follows:

- The main objective of this course is to provide a detailed insight to the student about crucial roles played by human immune system in generation of an optimum immune response as well as in serious conditions arising by immune dysfunction such as infections, hypersensitivity, immunodeficiency and autoimmunity.
- Also the importance of immune system in cases of cancer and organ transplant. The course further enhances the student's understanding of how various immunodiagnostics and other advances in immunology have changed the face of modern medicine.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Student will be able to discuss the generation of humoral and cell-mediated immune response and the killing mechanisms available within the host body.
- Student will be able to describe immunity disorders like hypersensitivity, autoimmunity and immunodeficiency.
- Student will be able to explain organ transplantation and the role of the immune system in acceptance or rejection of the grafts, and ways to manage it.
- Student will be able to describe types of cancers, the antigens and immune response involved, tumor evasion mechanisms, diagnosis and treatment.
- Student will be able to describe vaccine formulation and its types, adjuvants, and National Immunization Schedule.

SYLLABUS OF DSC-17

UNIT – I (12 hours)

Generation of Immune Response: B cell development, generation of humoral immune response, primary and secondary immune response, generation of cell-mediated immune response (TCR, Self MHC restriction, T cell activation, co-stimulatory signals), killing mechanisms by CTL and NK cells.

UNIT – II (12 hours)

Immune Dysfunction: Types of hypersensitivities with one examples each, mechanism, manifestations and detection of type I hypersensitivity; Autoimmunity: types and mechanisms (Hashimoto's thyroiditis, Goodpasture's syndrome, IDDM, Rheumatoid arthritis, Multiple sclerosis, SLE); Immunodeficiency: Animal models (nude and SCID mice), disorders (SCID, DiGeorge syndrome, Chediak- Higashi syndrome, LAD, CGD).

UNIT – III (8 hours)

Transplantation Immunology: Types of grafts (autograft, isograft, allograft & xenograft), HLA typing, immunologic basis of graft rejection (sensitization & effector stages), role of T cells in graft rejection, GVHD, clinical manifestations of graft rejection (hyperacute, acute and chronic rejection), immunosuppressive therapies (general and specific), immunoprivileged sites

UNIT – IV (8 hours)

Cancer Immunology: Immune surveillance, types of cancers, malignant transformation of cells, tumor antigens (TATA and TSTA), immune response to cancer, tumor evasion, immunodiagnosis and cancer immunotherapy

UNIT – V (5 hours)

Vaccines: Active immunization, designing vaccines, boosters, types of vaccines: live attenuated, toxoid, conjugate/ multivalent, subunit, peptide, recombinant (vector based), DNA and RNA vaccines, use of adjuvants, National Immunization Schedule (NIS).

Practical component

UNIT 1: (20 hours)

Immunological techniques based on antigen - antibody interactions: Principles, working methods and applications of the following immunological techniques: ELISPOT, western blotting, immunofluorescence, flow cytometry, immunoelectron microscopy. Performance of SDS-PAGE to separate the different types of immunoglobulins. Detection of Type I hypersensitivity by RIST and RAST. MLR and Microcytotoxicity tests for HLA typing using pictures.

Unit 2: (12 hours)

Student group research studies:

Student group research project I: Experimental Systems in Immunology: Primary lymphoid cell culture systems. Animal models: Nude mouse, SCID mouse, SPF (Specific Pathogen Free) colony mice, dirty mice.

Student group research project II: short-term and long-term immune response to COVID-19 vaccines: case study of Covaxin.

Essential/recommended readings

Theory:

1. Immunology: A short course by R. Coico. 8th edition. Wiley- BlackwellScientific Publication, UK. 2021
2. Cellular and Molecular Immunology by A.K. Abbas, A.H. Lichtman and S. Pillai. 10th edition.Elsevier, USA. 2021.
3. Kuby Immunology by J. Punt, S. Stranford, P. Jones and J. Owen. 8 th edition.
4. W.H. Freemanand Company, USA. 2018.
5. Roitt's Essential Immunology by P. Delves, S. Martin, D. Burton and I.M. Roitt. 13th edition.Wiley- Blackwell Scientific Publication, UK. 2017.
6. Janeway's Immunobiology by K. Murphy and C. Weaver. 9th edition. Garland Science Publishers, USA. 2016.
7. Basic and Clinical Immunology by M. Peakman and D. Vergani. 2nd edition. ChurchillLivingstone, UK. 2009.
8. Immunology by C. Richard and S. Geoffrey. 6th edition. Wiley- Blackwell Scientific Publication, UK. 2009.

Practicals:

1. A Handbook of Practical and Clinical Immunology Volumes I & 2 by G. P. Talwar and S.K. Gupta. 2nd edition. CBS Publishers, India. 2017.
2. Practical Immunology, A Laboratory Manual by S. Balakrishnan, K. Karthik and S. Duraisamy. Lambert Academic Publishing, India. 2017.
3. Microbiology: A Laboratory Manual by J. Cappuccino and C.T. Welsh. 11th edition. Pearson Education, USA. 2016.
4. Laboratory Manual on Immunology and Molecular Biology by D. Dwivedi and V. Singh. Lambert Academic Publishing, India. 2013.
5. Practical Immunology by F.C. Hay, M.R. Olwyn and M.R. Westwood. 4th edition. Wiley Blackwell Publishing. 2002.

Suggestive readings

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE –18: INDUSTRIAL MICROBIOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
MICROB-DSC603: INDUSTRIAL MICROBIOLOGY	4	3	0	1	Class XII pass with Biology/ Biotechnology/ Biochemistry	None

Learning Objectives

The Learning Objectives of this course are as follows:

- The major objective of this course is to give students an overview of the applications of fermentation processes in industry.
- The students will gain in-depth knowledge of different types of fermentation processes, fermenter designs and operations. They will become aware of large scale culturing methods of microorganisms for production of bioactives of industrial importance.
- Students will also gain an insight into steroid biotransformation and enzyme immobilization

Learning outcomes

The Learning Outcomes of this course are as follows:

- Student will be able to describe important developments in industrial microbiology and explain different types of fermentation processes.
- Student will be able to discuss the design, operations and applications of different types of fermenters and the measurement and control of fermentation parameters.
- Student will be able to demonstrate use of various methods to isolate, screen, preserve and maintain industrially important microbial strains, the different types of media used in fermentation processes.
- Student will be able to demonstrate use of various techniques for the recovery and purification of industrial products produced by microorganisms.
- Student will be able to explain the principles of large-scale microbial production and recovery of industrial products.
- Student will be able to demonstrate microbiological transformations of steroids and use the methods of enzyme immobilization to exploit their advantages and applications in the industry.

SYLLABUS OF DSC-18

UNIT – I (7 hours)

Development of industrial microbiology: Important developments in industrial microbiology and contribution of following scientists: Louis Pasteur, Carl Wilhelm Scheele, Casimir Funk, Alexander Fleming, Selman A. Waksman, Howard W Florey and Ernst B Chain. Types of fermentation processes: aerobic and anaerobic fermentations, solid-state and liquid-state (stationary and submerged) fermentations, batch, fed-batch and continuous fermentations

UNIT – II (10 hours)

Bioreactors and analysis of fermentation parameters: Parts of a typical fermenter. Types of bioreactors and their applications: Laboratory, pilot-scale and production fermenters, continuously stirred tank reactor, air-lift fermenter. Measurement and control of parameters: pH, temperature, dissolved oxygen, foaming and aeration.

UNIT – III (7 hours)

Selection of industrially important microbial strains: Sources of industrially important microorganisms, their isolation and screening (primary and secondary). Preservation and maintenance of stock and working cultures. Crude and synthetic fermentation media, inoculum and production media. Crude media components: molasses, corn-steep liquor, sulphite- waste liquor, whey, yeast extract. , peptone and tryptone.

UNIT – IV (4 hours)

Recovery methods for fermentation products: Physiochemical and biological methods for cell disruption, centrifugation, batch filtration, precipitation, solvent-solvent extraction spray drying and lyophilization.

UNIT – V (17 hours)

Upstream and downstream processing of microbial products, steroid biotransformation and enzyme immobilization: Citric acid, ethanol, glutamic acid, Vitamin B12, Wine (white, rose & red), beer, antibiotics (penicillin,streptomycin) and enzymes (amylase, protease, lipase and glucose oxidase). Microbiological transformation of steroids and its applications. Methods of enzyme immobilization: cross linking, entrapment, adsorption and covalent bonding. Advantages and applications of immobilized enzymes: glucose isomerase and penicillin acylase

Practical component

UNIT 1: (18 hours)

Aerobic fermentation processes: Microbial production of enzymes (amylases/lipase/protease) by liquid-state static /submerged fermentation and its detection by plate-assay method using an agar-based medium. Estimation of enzyme activity spectrophotometrically. Production of amino acids (glutamic acid /lysine) using a suitable bacterial culture, its detection by paper chromatography and its

colorimetric estimation using buffered ninhydrin reagent. Microbial production of citric acid by solid-state /liquid state fermentation using Aspergillus niger, its detection by chromatographic techniques and its quantitative estimation by titration.

Unit 2: (12 hours)

Anaerobic fermentation processes: Ethanol production by submerged fermentation using Saccharomyces cerevisiae, its detection by qualitative tests and its estimation spectrophotometrically using a suitable reagent.

A visit to any educational institute/industry to understand different types of fermenters/ bioreactors: laboratory-scale, pilot-scale and production fermenter, and their components (spargers, baffles, impellers etc

Essential/recommended readings

Theory:

1. Industrial Microbiology by A.H. Patel. 2nd edition. Laxmi publication Pvt Ltd/Trinity Press. 2022.
2. Industrial Microbiology by L.E. Casida. 2nd edition. New Age International publisher. 2019.
3. Modern Industrial Microbiology and Biotechnology by N. Okafor and B.C. Okeke. 2nd edition. CRC press, UK. 2018.
4. Crueger's Biotechnology: A Textbook of Industrial Microbiology by W. Crueger,

A. Crueger and K.R.Aneja. 3rd edition. Medtech Publisher, India. 2017.

5. Biotechnology Industrial Microbiology. A textbook by W.Clarke. CBS Publishers, India.2016.
6. Industrial Microbiology by K.L. Benson. CBS Publishers & Distributors. 2016.
7. Principles of Fermentation Technology by P.F. Stanbury, A.Whitaker and S.J. Hall. 3rd edition. Elsevier Science Ltd, Netherlands. 2016.
8. Microbial technology. Vol I- Microbial processes and Vol II -Fermentation technology edited by H.J. Peppler and D. Perlman. 2nd edition. Academic Press, USA. 2009.
9. Industrial Microbiology: An Introduction by M.J. Waites, N.L. Morgan, J.S . Rockey and G.Higton. Wiley –Blackwell. 2001.
10. Microbial Biotechnology: Fundamentals of Applied Microbiology by A.N. Glazer and H.Nikaido. 1st edition. W.H. Freeman and Company, UK.1995.

Practicals:

1. Microbiology: A Laboratory Manual by J. Cappuccino and C.T. Welsh. 12th edition. Pearson Education, USA. 2020.
2. Laboratory manual of Microbiology and Biotechnology by K.R. Aneja. 2nd edition. Scientific International Pvt. Ltd., Delhi. 2018.
3. Manual of Industrial Microbiology and Biotechnology edited by R.H. Baltz, A.L. Demain, and J.E. Davies. 3rd edition. American Society for Microbiology. 2010.
4. Microbial technology. Vol I- Microbial processes and Vol II -Fermentation technologyedited by H.J. Peppler and D. Perlman. 2nd edition. Academic Press, USA. 2009.

Suggestive readings

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER -IV

DEPARTMENT OF ELECTRONIC SCIENCE

Category I

(B.Sc. Honours in Electronics)

DISCIPLINE SPECIFIC CORE COURSE – 10: Electrical Technology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Electrical Technology	4	3	-	1	Class XII passed with Physics + Mathematics/Applied Mathematics + Chemistry OR Physics + Mathematics/Applied Mathematics + Computer Science/Informatics Practices	Circuit Theory & Network Analysis (DSC-2, Sem I), Basic Instrumen-tation & Measure-ment Techniques (DSC-4, Sem II)

Learning Objectives

The Learning Objectives of this course are as follows:

The paper deals with Electrical and Electronic systems viz.; Working, construction and principle of DC and AC machines, transformers and polyphase circuits. The paper covers the related concepts such as control of speed, generation of Torque, various losses, efficiency and breaking mechanisms of various commonly used electromechanical systems such as stepper, induction and universal motors. The understanding of mathematical relations between the various parameters, imparts enough knowledge to optimize the output response under a given condition.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Discuss the working principle of a Transformer and analyze its specifications
- Understand the working of DC Machines, DC Generators and DC Motors
- Classify Induction motors into Polyphase and single phase motors and understand their working
- Evaluate the working of Synchronous generators and synchronous motors and their comparative study with induction motors

SYLLABUS OF ELDSC-10 **Total Hours- Theory: 45 Hours, Practicals: 30 Hours**

UNIT – I (10 Hours)

Transformers: Overview of types of transformers, EMF equation, Transformer Losses, No load operation, Operation under load, Phasor diagram, Equivalent circuit of transformer, Voltage regulation, Condition for maximum efficiency, All day efficiency, short circuit and open circuit tests.

Polyphase Circuits: Line and phase relations in three phase circuits.

DC Machines: Overview of Basic constructional features and physical principles involved in electrical machines, lap and wave connections.

UNIT – II (13 Hours)

D.C. Generators: Principle of operation, Concept of armature reaction and commutation, E.M.F. Equation, Methods of excitation, Characteristics of separately excited and Self excited (Shunt, Compound and Series) generators, Losses and efficiency.

D.C. Motors: Comparison of generator and motor action, Principle of operation, Back EMF, Maximum power, Torque and speed relation, Characteristics of series, shunt and Compound excited motors, Losses & efficiency, Three-point starter, Factors affecting speed of DC motors.

UNIT – III (12 Hours)

Poly Phase Induction Motors: General constructional features, Types of rotors, Rotating magnetic field (single phase, two phase and three phase), Ferrari's Principle, Production of torque, Slip, Starting Torque, Running Torque, Torque equation, Torque-slip characteristics (Breakdown Torque), factors affecting speed of Induction motor.

Single Phase Induction Motors: General constructional features, Study and applications: Split phase motors, Capacitor start & run motor, Reluctance Motor, Stepper Motor, Universal motor

UNIT – IV (10 Hours)

Synchronous Machines: Principle of operation and construction features of Alternators (synchronous generators), E.M.F. equation, Principle of synchronous motor, methods of starting, Power developed in Synchronous motor, factors for failure to start, applications, comparison of synchronous and induction motor

Practical component (if any) – Electrical Technology

(Hardware and Circuit Simulation Software)

Learning outcomes

The Learning Outcomes of this course are as follows:

- Understand the working of DC series, shunt and Induction motors
- Study the working of transformer
- Study of Stepper motor, Universal motor
- Write a technical report on the experiment performed.

LIST OF PRACTICALS (Total Practical Hours- 30 Hours)

1. Study of characteristics of DC Series motor.
2. Study of characteristics of DC Shunt motor.
3. Study of control of DC motor using SCR.
4. Study of characteristics of single-phase induction motor.
5. Study of Stepper motor.
6. Study of Universal motor.
7. Study of Open Circuit Test on single phase transformer.
8. Study of Short Circuit Test on single phase transformer.

Note: Students shall sincerely work towards completing all the above listed practicals for this course. In any circumstance, the completed number of practicals shall not be less than seven.

Essential/recommended readings

1. B.L. Thareja, A.K. Thareja, A Textbook of Electrical Technology-Vol-II, S.Chand
2. J.B. Gupta, Electrical Technology (Electrical Machines), Katsons
3. I. J. Nagrath and D. P. Kothari, Electrical Machines, Tata McGraw Hill
4. H. Cotton, Advanced Electrical Technology, CBS Publishers and Distributors, New Delhi
5. S. Ghose, Electrical Machines, Pearson Education

Suggestive readings

1. G. Mc. Pherson, An introduction to Electrical Machines & Transformers, John Wiley & Sons
2. N. K. De and P. K. De, Electric Drives, Prentice Hall of India

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 11: Microprocessor

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Microprocessor	**4**	**3**	**-**	**1**	**Class XII passed with Physics + Mathematics/Applied Mathematics + Chemistry OR Physics + Mathematics/Applied Mathematics + Computer Science/Informatics Practices**	**Digital Electronics (DSC 5, Sem II)**

Learning Objectives

The Learning Objectives of this course are as follows:

- To understand basic architecture of 8085 microprocessor.
- To understand the instruction set and write programs in assembly language.
- To interface 8085 microprocessor with common Programmable Peripheral Devices.
- To understand the differences in the architecture and addressing modes of 8 bit and 16 bit Microprocessor.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Understand the basic blocks of microcomputers i.e. CPU, Memory, I/O and architecture of microprocessors.
- Acquiring skills in writing assembly language program for 8085 microprocessor.
- Apply knowledge and demonstrate proficiency of designing hardware interfaces for memory, I/O and programmable peripheral interface devices with 8 bit microprocessor.
- Derive specifications of an 8 bit microprocessor based system as per required application.

SYLLABUS OF ELDSC-11 **Total Hours- Theory: 45 Hours, Practicals: 30 Hours**

UNIT – I (11 Hours)

Introduction to Microprocessor: Introduction, Applications, Basic block diagram, Speed, Word size, Memory capacity, Classification of microprocessors (mention of different microprocessors being used)

Microprocessor 8085: Features, Architecture -block diagram, General purpose registers, register pairs, flags, stack pointer, program counter, types of buses. Multiplexed address and data bus, generation of control signals, pin description of microprocessor 8085. Basic interfacing concepts, Memory mapped I/O and I/O mapped I/O.

UNIT – II (12 Hours)

8085 Instructions: Operation code, Operand & Mnemonics. Instruction set of 8085, instruction classification, addressing modes, instruction format. Data transfer instructions, arithmetic instructions, increment & decrement instructions, logical instructions, branch instructions and machine control instructions. Assembly language programming examples.

UNIT – III (11 Hours)

Stack operations, subroutine, call and return instructions. Delay loops, use of counters, timing diagrams-instruction cycle, machine cycle, T- states, time delay.

Interrupt structure of 8085A microprocessor, processing of vectored and non-vectored interrupts, latency time and response time; Handling multiple interrupts.

UNIT – IV (11 Hours)

Programmable Peripheral Interface (PPI): 8255- I/O interface, 8253/8254- Timer interface, 8259- Priority Interrupt Controller.

Designing of a microprocessor based system: Traffic Light Controller using PPI.

Comparison of 8085 Microprocessor with 8086 Microprocessor (Internal Architecture, Data Addressing Mode).

Practical component (if any) – Microprocessor

(Hardware and Assembly Language)

Learning outcomes

The Learning Outcomes of this course are as follows:

- Proficient in use of IDE's for designing, testing and debugging microprocessor based system.
- Interface various I/O devices and design and evaluate systems that will provide solutions to real-world problem.

- Prepare the technical report on the experiments carried.

LIST OF PRACTICALS (Total Practical Hours- 30 Hours)

8085 Assembly language programs:

1. Program to transfer a block of data.
2. Program for multibyte addition/subtraction.
3. Program to multiply two 8-bit numbers.
4. Program to divide a 16 bit number by 8 bit number.
5. Program to search a given number in a given list.
6. Program to generate terms of Fibonacci series.
7. Program to find minimum and maximum among N numbers.
8. Program to find the square root of an integer.
9. Program to find GCD of two numbers.
10. Program to sort numbers in ascending/descending order.
11. Program to verify the truth table of logic gates.
12. Interfacing using PPI 8255/8253/8259.

Note: Students shall sincerely work towards completing all the above listed practicals for this course. In any circumstance, the completed number of practicals shall not be less than eleven with hardware interfacing.

Essential/recommended readings

1. Microprocessor Architecture, Programming and Applications with 8085, Ramesh S. Gaonkar, Wiley Eastern Limited- IV Edition.
2. 8085 Microprocessor : Programming and Interfacing, N. K SRINATH, PHI Learning(2014).

Suggestive readings

1. 8085 Microprocessor and its Applications, A Nagoor Kani, Tata Mcgraw Hill, Third Edition.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 12: Communication Systems

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Principles of Communication Systems	4	3	-	1	Class XII passed with Physics + Mathematics/Applied Mathematics + Chemistry OR Physics + Mathematics/Applied Mathematics + Computer Science/Informatics Practices	Circuit Theory & Network Analysis (DSC-2, Sem I), Analog Electronics-I(DSC-6, Sem II) and Signals & Systems (DSC-9, Sem III)

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce concepts of various analog modulation techniques used in communication systems and analyse their comparative performance.
- To understand Pulse analog modulation and Pulse digital transmission techniques

Learning outcomes

The Learning Outcomes of this course are as follows:

- Be conversant with the requirements and the protocols employed in the fundamental components of a communication network.
- Understand the concept and basic circuits used in Continuous Wave analog modulation
- Understand the Principles of Sampling and Pulse Communication
- Insight on Digital Transmission.

SYLLABUS OF ELDSC-12 Total Hours- Theory: 45 Hours, Practicals: 30 Hours

UNIT – I (11 Hours)

Introduction: Block diagram of an electronic communication system, electromagnetic spectrum-band designations and applications, need for modulation, concept of channels and base-band signals. Block diagram of Transmitter and Super Heterodyne Receiver. Concept of Noise and Signal to noise ratio.

UNIT – II (11 Hours)

Amplitude Modulation: Concept of modulation index and frequency spectrum and Power Relations in AM. Generation of AM by Square Law and Collector Modulator, Diode Detection, Concept of Double side band suppressed carrier, Single side band suppressed carrier by Filter Method, Pilot Carrier Modulation, Vestigial Side Band modulation, and Independent Side Band Modulation.

UNIT – III (11 Hours)

Angle modulation: Frequency and Phase modulation, modulation index and frequency spectrum, equivalence between FM and PM, Generation of FM (Block diagram of direct and indirect methods), FM detector (PLL). Concept of Pre-emphasis and De-emphasis. Comparison between AM, FM and PM.

UNIT – IV (12 Hours)

Pulse Analog Modulation: Sampling theorem, Aliasing and Aperture Effect, PAM, PWM, PPM -Generation and detection techniques, Multiplexing-TDM and FDM.

Pulse Code Modulation: Need for digital transmission, Block Diagram of PCM, Uniform and Non- uniform Quantization, Quantization Noise, Companding, Line Coding. Introduction to Delta Modulation and DPCM.

Practical component (if any) – Principles of Communication Systems
(Hardware and Circuit Simulation Software)

Learning outcomes

The Learning Outcomes of this course are as follows:

- Understand basic elements of a communication system.
- Analyse the baseband signals in time domain and in frequency domain.
- Build understanding of various analog (CW) and Pulse modulation and demodulation techniques
- Prepare the technical report on the experiments carried

LIST OF PRACTICALS (Total Practical Hours- 30 Hours)

The practical needs to be performed on Scilab/ MATLAB/Multisim or any other equivalent software besides hardware.

1. Study of Amplitude Modulation.

2. Study of Frequency Modulation.
3. Study of AM Transmitter and Receiver.
4. Study FM Transmitter and Receiver.
5. Study of Pulse Amplitude Modulation
6. Study of Pulse Width Modulation
7. Study of Pulse Position Modulation.
8. Study of Pulse Code Modulation
9. Study of Delta Modulation

Note: Students shall sincerely work towards completing all the above listed practicals for this course. In any circumstance, the completed number of practicals shall not be less than eight.

Essential/recommended readings

1. Electronic Communication Systems Fourth Edition by George Kennedy and Bernard Davis.
2. Principles of Electronic Communication Systems Second Edition by Taub and Schilling.
3. Electronic Communication Systems Fifth Edition by Wayne Tomasi.

Suggestive readings

1. Principles of Electronic Communication Systems by Louis E. Frenzel
2. Communication Systems (Analog and Digital) by R.P.Singh and S.D.Sapre

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVES (DSE) COURSES OFFERED BY THE DEPARTMENT

DISCIPLINE SPECIFIC ELECTIVES (DSE-1)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Internet of Things	4	3	-	1	Class XII passed with Physics + Mathematics/Applied Mathematics + Chemistry OR Physics + Mathematics/Applied Mathematics + Computer Science/Informatics Practices	Digital Electronics (DSC-5 , Sem II) , Basic Instrumentation & Measurement Techniques (DSC-4, Sem 2)

Learning Objectives

This course describes the Internet of Things (IoT), the technology used to build these kinds of devices, how they communicate, how they store data, and the kinds of distributed systems needed to support them. Broad objectives are:

- To introduce the terminology, technology and its applications
- To introduce the concept of M2M (machine to machine) with necessary protocols
- To introduce the Python Scripting Language commonly used in IoT devices/systems
- To introduce the Arduino / Raspberry Pi platform, widely used in IoT applications
- To introduce the implementation of web-based services on IoT devices

Learning outcomes

The Learning Outcomes of this course are as follows:

- Understand internet of Things, its hardware and software components and the IoT value chain structure (device, data cloud).
- Interface I/O devices, sensors & communication modules.

- Understand IoT sensors and technological challenges faced by IoT devices, with a focus on wireless, energy, power, and sensing modules
- Remotely monitor data and control devices and develop real life IoT based projects.

SYLLABUS OF ELDSE-2A **Total Hours- Theory: 45 Hours, Practicals: 30 Hours**

UNIT – I (11 Hours)

Introduction to Internet of Things - Definition and Characteristics of IoT, Architectural overview (cellular, star, mesh, ring)

Physical design of IoT: Things in IoT, IoT protocols in Link Layer, Network/Internet Layer, Transport Layer, Application Layer (with specific reference to Communication protocols as MQTT, ZigBee, Bluetooth, CoAP, UDP, TCP, WebSocket etc.,), Basics of Networking, Security aspects in IoT.

Logical design of IoT: Functional blocks, Communication Models, Communication APIs, Enabling Technologies, IoT levels and deployment templates, Design principles

IoT and M2M- Definitions, differences between M2M & IoT systems, Software defined networks (SDN), network function virtualization (NFV), difference between SDN and NFV for IoT, Basics of IoT System Management with SNMP, NETCONF -YANG

UNIT – II (11 Hours)

Transducers, Sensors and Actuators: Review of Transducers, Concept of Sensing and Actuation, Sensor characteristics (static/dynamic), Sensor classification (passive/active, analog/digital, scalar/vector), Actuator classification (Electric/Fluid Power/ Linear Chain /Manual / Linear vs Rotary)

Types of Sensors: Contact and Proximity, Position, Velocity, Force, Humidity, Tactile unipolar and bipolar Stepper motors Sensors- Light sensor, temperature sensor, voltage sensor, ADC and DAC, Temperature and Humidity Sensor DHT11, Motion Detection Sensors, Wireless Bluetooth Sensors, Level Sensors, USB Sensors, Embedded Sensors, Distance Measurement with ultrasound sensor etc.

Selection of Transducers for various IoT applications, Wireless Sensor Networks

UNIT – III (12Hours)

Computing (using Arduino, Raspberry Pi), I/O interfaces.

Software components- Programming API's (using Python/Node.js/Arduino). Introduction to Arduino/Raspberry Pi- Installation, Interfaces (serial, SPI, I2C)

Raspberry Pi: Communication with devices through the pins of the Raspberry Pi, RPi. GPIO library, Python Functions, setting up the pins, General purpose IO Pins, Protocol Pins, GPIO Access, applying digital voltages, and generating Pulse Width Modulated signals, Tkinter Python library, accessing pins through a graphic user interface

OR

Arduino: Introduction to the Arduino environment, the Arduino board, the Arduino IDE, and the Arduino compatible shields together with their libraries. Arduino board main components, inputs, and outputs. Arduino Integrated Development Environment (IDE), Compiling Code, Arduino Shields and Libraries.

Basics of C programming, composition of an Arduino programs, Arduino tool chain, Arduino IDE, basic structure of a sketch, including the use of the setup() and loop() functions. Accessing the pins from a sketch for input and output, introduction on debugging embedded software on an Arduino, UART communication protocol, Synchronization, parity and stop, the use of the Serial library to communicate with the Arduino through the serial monitor.

Programming – Python programs with Arduino/Raspberry Pi with focus on interfacing external gadgets, controlling output, reading input from pins

Note: It is optional to choose either Arduino or Raspberry Pi environment

UNIT – IV (11 Hours)

IoT Physical Devices and Endpoints, Domain specific IoTs, IoT Physical Servers and Cloud Offerings

Cloud Computing: Characteristics, Introduction to Cloud Service models (SaaS, PaaS, IaaS, XaaS etc.,) Deployment models, Cloud storage APIs, IoT-Cloud convergence, Communication Enablers

Webservices – Web server for IoT, Python-Web frameworks, RESTful Web API, ThingSpeak API, MQTT, IoT security, Basics of symmetric and non-symmetric encryption standards

IoT Application Development - Solution framework for IoT applications- Implementation of Device integration, Data acquisition and integration

Device data storage- Unstructured data storage on cloud/local server, Authentication, authorization of devices.

IoT Case Studies based on Smart Environment, Industrial automation, Transportation, Agriculture, Healthcare, Home Automation

Practical component (if any) – Internet of Things

Learning outcomes

The Learning Outcomes of this course are as follows:

- Interfacing of various sensors using Arduino/Raspberry Pi
- Interfacing using Bluetooth, Web server, TCP, ThinkSpeak Cloud, MQTT broker

LIST OF PRACTICALS (Total Practical Hours- 30 Hours)

1. Connect an LED to GPIO pin 24 and a Switch to GPIO 25 and control the LED with the switch. The state of LED should toggle with every press of the switch.
2. To interface DHT11 sensor with Arduino/Raspberry Pi and write a program to print temperature and humidity readings.
3. To interface motor using relay with Arduino/Raspberry Pi and write a program to turn ON motor when push button is pressed.

4. To interface Bluetooth with Arduino/Raspberry Pi and write a program to send sensor data to smartphone using Bluetooth.
5. To interface Bluetooth with Arduino/Raspberry Pi and write a program to turn LED ON/OFF when '1'/'0' is received from smartphone using Bluetooth.
6. Create a traffic light signal with three colored lights (Red, Orange and Green) with a duty cycle of 5-2-10 seconds.
7. Create an application that has three LEDs (Red, Green and white). The LEDs should follow the cycle (All Off, Red On, Green On, White On) for each clap (use sound sensor).
8. Write a program on Arduino/Raspberry Pi to upload/retrieve temperature and humidity data using ThingSpeak cloud.
9. Write a program on Arduino/Raspberry Pi to publish/subscribe temperature data using MQTT broker.
10. To install MySQL database on Raspberry Pi and perform basic SQL queries.
11. Write a program to create TCP server on Arduino/Raspberry Pi and respond with humidity data to TCP client when requested.
12. Create a web application for the above applications wherever possible with functionalities to get input and send output.

Note: Students shall sincerely work towards completing all the above listed practicals for this course. In any circumstance, the completed number of practicals shall not be less than eleven.

Essential/recommended readings

1. Internet of Things - A Hands-on Approach, Arshdeep Bahga and Vijay Madisetti, Universities Press, 2015, ISBN: 9788173719547
2. Dr. SRN Reddy, Rachit Thukral and Manasi Mishra, "Introduction to Internet of Things: A practical Approach", ETI Labs
3. Getting Started with Raspberry Pi, Matt Richardson & Shawn Wallace, O'Reilly (SPD), 2014, ISBN: 9789350239759
4. Raspberry Pi Cookbook, Software and Hardware Problems and solutions, Simon Monk, O'Reilly (SPD), 2016, ISBN 7989352133895
5. Adrian McEwen, "Designing the Internet of Things", Wiley

Suggestive readings

1. Peter Waher, 'Learning Internet of Things', Packt Publishing, 2015 Editors Ovidiu Vermesan
2. Peter Friess,'Internet of Things – From Research and Innovation to Market Deployment', River Publishers, 2014
3. N. Ida, Sensors, Actuators and Their Interfaces, SciTech Publishers, 2014.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVES (DSE-2)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Operating Systems	**4**	**3**	**-**	**1**	**Class XII passed with Physics + Mathematics/Applied Mathematics + Chemistry OR Physics + Mathematics/Applied Mathematics + Computer Science/Informatics Practices**	**Programming Fundamentals using Python (DSC-1, Sem I)/ Algorithm Design and Analysis(DSE-1B, Sem III)**

Learning Objectives

COURSE OVERVIEW: Operating systems course is intended as a general introduction to the techniques used to implement operating systems and related kinds of systems software. The topics covered will be functions and structure of operating systems, process management (creation, synchronization, and communication); processor scheduling; deadlock prevention, avoidance, and recovery; main-memory management; virtual memory management (swapping, paging, segmentation and page-replacement algorithms); control of disks and file-system structure and implementation.

The Learning Objectives of this course are as follows:

- To explain main components of OS and their working
- To familiarize the operations performed by OS as a resource Manager
- To introduce various scheduling policies of OS.
- To teach the different memory management techniques.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Learn multiprogramming, multithreading concepts for a small operating system.
- Create, delete, and synchronize processes for a small operating system.
- Implement simple memory management techniques.
- Implement CPU and disk scheduling algorithms.
- Use services of modern operating system efficiently

- Learn basic file system.

SYLLABUS OF ELDSE-2B **Total Hours- Theory: 45 Hours, Practicals: 30 Hours**

UNIT – I (11 Hours)

Overview: Introduction, Computer-System Organization and Architecture, Multiprocessor and Clustered Systems, OS Operations, Multiprogramming and Multitasking, Resource management- process management, memory management, file-system management, Mass- storage management, I/O System management systems, protection and security. Virtualization, Distributed systems, Real Time Embedded Systems, Free and Open source Operating systems and Operating system services.

UNIT – II (12 Hours)

Process management: Basic concepts, Scheduling Criteria, Scheduling algorithms- FCFS, SJF, Priority, RR and Multilevel Queue. Process synchronization.

Concurrency and Synchronization: The Critical-section problem, Semaphores, Deadlock Characterization, Prevention, Avoidance, Detection and Recovery.

UNIT – III (12 Hours)

Memory management: Basic hardware, Address binding, Physical and Logical address space, Swapping, Memory allocation strategies -Fixed and Variable Partitions, Fragmentation, Paging, Segmentation, Demand Paging and virtual memory, Page Replacement Policies - FIFO, OPR, LRU.

UNIT – IV (10 Hours)

File system: Concept of a file, access methods, directory structure, file system mounting, file sharing, protection, file system structure, file system implementation, Directory implementation, allocation methods, free-space management, efficiency and performance, Disk scheduling algorithms- FCFS, SSTF, SCAN and C-SCAN.

Practical component (if any) – Operating Systems
(Python software)

Learning outcomes

The Learning Outcomes of this course are as follows:

- Implement various process scheduling algorithms
- Implement various priority based scheduling algorithms
- Implement various page replacement algorithms
- Implement various disk scheduling algorithms

LIST OF PRACTICALS (Total Practical Hours – 30 Hours)

1. Write a program to implement FCFS scheduling algorithm.
2. Write a program to implement Round Robin Process scheduling algorithm.

3. Write a program to implement SJF Process scheduling algorithm.
4. Write a program to implement non-preemptive priority-based scheduling algorithm.
5. Write a program to implement preemptive priority-based scheduling algorithm.
6. Write a program to implement SRJF scheduling algorithm.
7. Write a program to implement first-fit, best-fit and worst-fit allocation strategies.
8. Write a program to implement FIFO Page replacement algorithm.
9. Write a program to implement OPR Page replacement algorithm.
10. Write a program to implement LRU Page replacement algorithm.
11. Write a program to implement SCAN Disk Scheduling algorithm.
12. Write a program to implement SSTF Disk Scheduling algorithm.

Note: Students shall sincerely work towards completing all the above listed practicals for this course. In any circumstance, the completed number of practicals shall not be less than eleven.

Essential/recommended readings

1. Abraham Silberschatz, Peter Baer Galvin, Greg Gagne, "Operating Systems Concepts", Tenth Edition, John Wiley & Sons, 2018, ISBN:978-1-118-06333-0.
2. D.M.Dhamdhere, "Operating Systems", 2nd Edition, Tata McGraw Hill, 2011.

Suggestive readings

1. Andrew S Tanenbaum, Herbert Bos "Modern Operating Systems" , Fourth Edition, Pearson Education India, 2016. ISBN 978-9332575776.
2. William Stallings, "Operating Systems Internals and Design Principles", Seventh Edition, Pearson Education, 2018. ISBN 978-9352866717.
3. Garry Nutt, Nabendu Chaki, Sarmistha Neogy, "Operating Systems", Third Edition, Pearson Education.
4. Deitel & Deitel (2008), Operating systems, 3rd edition, Pearson Education, India
5. Achyut S Godbole, Atul Kahate, "Operating Systems", 3rd Edition, Tata McGraw Hill, 2011.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVES (DSE-3)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Network Synthesis	**4**	**3**	**-**	**1**	**Class XII passed with Physics + Mathematics/Applied Mathematics + Chemistry OR Physics + Mathematics/Applied Mathematics + Computer Science/Informatics Practices**	**Circuit Theory & Network Analysis (DSC-2, Sem I), Engineering Mathematics DSC(7, Sem III)/Signals and Systems (DSC-9, Sem III)**

Learning Objectives

The Learning Objectives of this course are as follows:

- To study the basic frequency domain techniques and two port network parameters.
- To study the elements of network synthesis.
- To study and synthesise the one port networks with two kinds of elements.
- To study the synthesis of transfer function.
- To study and design the filters

Learning outcomes

The Learning Outcomes of this course are as follows:

- Apply the knowledge of frequency domain techniques and two port network parameters.
- Understand the basic concepts of network synthesis.
- Synthesise the one-port networks and transfer function.
- Determine the frequency response of filters.

SYLLABUS OF ELDSE-2C Total Hours- Theory: 45 Hours, Practicals: 30 Hours

UNIT – I (12 Hours)

Circuit Analysis: Concept of Poles and Zeros in complex frequency/s-plane, Initial and Final Value Theorem, Representation of Circuit Elements in s-domain, Circuit Analysis using Laplace Transform Method, The System Function for R-C and R-L Networks and their Impulse and Step Responses.

Two Port Network Parameters: Impedance (Z) Parameters, Admittance (Y) Parameters, Transmission (ABCD) Parameters, Hybrid (h) Parameters.

UNIT – II (10 Hours)

Elements of Network Synthesis: Causality and Stability, Hurwitz Polynomial, Sturm's Theorem, Positive Real Functions, Basis Synthesis Procedures.

UNIT – III (11 Hours)

Synthesis of One Port Networks with Two Kinds of Elements: Properties of L-C Immittance Functions, Synthesis of L-C Driving-Point Immittances, Properties of R-C Driving Point Impedances, Synthesis of R-C Impedances or R-L Admittances, Properties of R-L Impedances and R-C Admittances, Synthesis of R-L-C Functions.

UNIT – IV (12 Hours)

Transfer Function Synthesis: Properties of Transfer Functions, Synthesis of L-C Ladder Network with a 1-ohm Resistive Termination, Synthesis of Constant-Resistance Networks (Bridge and Lattice Type).

Filter Design: Ideal Filters, Low Pass Filter Design using Butterworth and Chebyshev approximation and Comparison between them.

Practical component (if any) – Network Synthesis
(Hardware/Software/Simulation Software)

Learning outcomes

The Learning Outcomes of this course are as follows:

- Verify the operation and response of typical electrical circuits.
- Determine the various parameters for two-port networks.
- Prepare the technical report on the experiments carried.

LIST OF PRACTICALS (Total Practical Hours – 30 Hours)

1. Mesh and Node Analysis of circuits using AC Sources.
2. Computation and plot of Poles, Zeros and Stability of a Function.
3. Study of step response of RC Network.

4. Study of step response of RL Network
5. Computation and plot of Inverse-Laplace Transform of a Function.
6. Determination of Impedance (Z) and Admittance (Y) parameters of Two-Port Network.
7. Determination of ABCD Parameters of Two-Port Network.
8. Determination of Hybrid (h) Parameters of Two-Port Network.
9. Designing of a Low Pass Filter (Butterworth Approximation) and study of its Frequency Response.
10. Designing of a Low Pass Filter (Chebyshev Approximation) and study of its Frequency Response.

Note: Students shall sincerely work towards completing all the above listed practicals for this course. In any circumstance, the completed number of practicals shall not be less than nine.

Essential/recommended readings

1. Kuo, F. F., "Network Analysis and Synthesis", 2nd Ed., Wiley India (2013).
2. M. E. Van Valkenburg, "Introduction to Modern Network Synthesis", Wiley Eastern (1984).

Suggestive readings

1. Aatre, V. K., "Network Theory and Filter Design", 3rd Ed., New Age International (2014).

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES OFFERED BY THE DEPARTMENT

GENERIC ELECTIVES (GE-1)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Instrumentation	4	3	-	1	Class XII passed with Maths/Applied Maths	Idea about basic circuit elements like R, C and L, Ammeter, Voltmeter

Learning Objectives

The Learning Objectives of this course are as follows:

- Explain the importance and working principle of different electronic measuring instruments.
- Use the complete knowledge of various instruments and transducers to make measurements in the laboratory.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Familiarize with the working principle of different measuring instruments
- Understand measuring instruments used in the laboratory like oscilloscopes, signal generators
- Understand working principle of transducers
- Familiarize with the working principle of data acquisition devices and biomedical instruments.

SYLLABUS OF ELGE-4A Total Hours- Theory: 45 Hours, Practicals: 30 Hours

UNIT – I (10 Hours)

DC and AC indicating Instruments: Accuracy and precision, Types of errors, PMMC galvanometer, sensitivity, Loading effect , Conversion of Galvanometer into ammeter, Voltmeter and Shunt type ohmmeter, Multimeter.

UNIT – II (12 Hours)

Oscilloscopes: CRT, wave form display and electrostatic focusing, time base and sweep synchronisation, measurement of voltage, frequency and phase by CRO, Oscilloscope probes, Dual trace oscilloscope, DSO :Block diagram, principle and working, Advantages and applications, CRO specifications (bandwidth, sensitivity, risetime).

Signal Generators: Function generators.

UNIT – III (10 Hours)

Transducers: Basic requirements of transducers, Transducers for measurement of nonelectrical quantities: Types and their principle of working , measurement of Linear displacement, Acceleration, Flow rate, Liquid level, strain, Force, Pressure, Temperature.

UNIT – IV (13 Hours)

Data acquisition systems: Block diagram, brief description of preamplifier, signal conditioner, instrumentation amplifier, A/D and D/A converter blocks, computer-controlled test and measurement system.

Bio-medical instrumentation: Bio-Amplifiers: Different types of Bio-OP-Amps, Electrodes for ECG , block diagram of ECG system, brief analysis of graphs.

Practical component (if any) – Instrumentation
(Hardware and Circuit Simulation Software)

Learning outcomes

The Learning Outcomes of this course are as follows:

- To measure various electrical parameters.
- To measure characteristics of various sensors and transducers.
- Understand ECG pattern.
- Prepare the technical report on the experiments carried.

LIST OF PRACTICALS (Total Practical Hours – 30 Hours)

1. Design of ammeter and voltmeter using galvanometer.
2. To determine the Characteristics of resistance transducer - Strain Gauge
3. To determine the Characteristics of LVDT.
4. To determine the Characteristics of Thermistors and RTD.
5. Measurement of temperature by Thermocouples and study of transducers like AD590 (two terminal temperature sensor), PT-100, J- type, K-type.

6. Characterization of bio potential amplifier for ECG signals.
7. Measurement of heart sound using electronic stethoscope. Study on ECG heart rate monitor /simulator
8. Study of pulse rate monitor with alarm system.

Note: Students shall sincerely work towards completing all the above listed practicals for this course. In any circumstance, the completed number of practicals shall not be less than seven.

Essential/recommended readings

1. Electrical and Electronics Measurement and Instrumentation Sahwany A.K.
2. Handbook of biomedical instrumentation: Khandpur R S, TMH
3. Electron measurements and instrumentation techniques: Cooper W D and Helfric A D, PHI, 1989.
4. Biomedical instrumentation and measurements: Leslie-Cromwell, Fred J Weibell, Erich A Pfieffer, PHI, 1994.
5. Mechatronics – principles and applications, Godfrey C Onwubolu, Elsevier, 2006

Suggestive readings

1. Electrical Measurement in Measuring Instruments. Goldwing E.W. and Widdies
2. Measurement systems applications and design: Doeblin E O, McGraw Hill, 1990.
3. Instrumentation devices and systems: Rangan, Sarma, Mani, TMH
4. Instrumentation measurement and analysis: Nakra B C, Chaudry K K, TMH

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-2)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Mobile Application Development	**4**	**1**	**-**	**3**	**Class XII passed in any stream**	**Idea about the Computer System Configuration like processor, RAM, ROM, different Operating Systems etc.**

Learning Objectives

In this course, student will be developing foundational programming skills to support graphical element presentation and data manipulation from basic functions through to advance processing. You will continue to build your skill set to use and apply core graphics, touch handling and gestures, animations and transitions, alerts and actions as well as advanced algorithms, threading and more. By the end of this course, you will be able to develop a more advanced, fully functioning app. currently this course is taught using Flutter UI SDK.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Explain the concepts on: Elements of user interface, Model-View-Controller architecture, Data persistence and storage, Multithreading, Mobile web vs. mobile app, Services, broadcasts and notifications, Sensor management and location-based services.
- Describe different mobile application models/architectures and patterns.
- Familiarize with data type, data operators, exception handling and file management
- Describe the components and structure of a mobile development framework (Flutter SDK) in the development of a mobile application

SYLLABUS OF ELGE-4B Total Hours- Theory: 15 Hours, Practicals: 90 Hours

UNIT – I

Introduction: What is mobile Application Programming, Different Platforms, Architecture and working of Android, iOS and Windows phone 8 operating system, Comparison of Android, iOS and Windows phone 8.

About Flutter: Understanding Flutter, Flutter framework, Introduction to Android studio, Flutter SDK - Installing and Configuring, Introduction to Dart writing Dart code, Dart Pad, Installing Dart SDK.

UNIT – II

Basic DART Programming Concepts: Introduction, Main () function, Dart variables, Dart Data Types, Dart Conditional Operators: - if- Else statements, Loop operators, Break statements, switch case statements.

Dart Functions & Object -Oriented Programming: Functions- its structure, creating a function, function Return Data Types, Void function, variable scope, OOP- Objects and classes, creating a Class, Adding Methods to classes, Providing constructors for classes, Class – Getters and Setters, Class Inheritance, Abstract Class, Dart Project Structure and Dart Libraries.

UNIT – III

Flutter Widgets Fundamentals: Scaffold, Image, Container, Column and Row, Icon Widgets, Layouts, Card Widgets, App Icon for iOS and Android apps, Hot reload and Hot Restart, Stateful and Stateless Widgets, Using custom Font.

Navigation and Routing: Button, Floating Action Button

Visual, Behavioral and Motion- Rich Widgets Implementation: Bottom Navigation Bar, ListTile, ListView, Drawer, DataTable, Selectable Text, Stack, Input and Selections, Text field, Checkbox group and Radio Button, Date Picker, Time Picker, Slider, Switch, Dialogs, Alerts and Panels.

UNIT – IV

App testing & Publishing: Testing and feedback for your App, setting up a test environment, Usability Testing, starting your Test Session, Analyzing your Test, Publishing Flutter Apps, Publishing Android App on Google Play store.

Understanding Flutter Versions, Flutter macOS Setup, macOS development Environment, Publishing iOS app on Apple store.

Practical component (if any) – Mobile Application Development
(Flutter and Dart Software)

Learning outcomes

The Learning Outcomes of this course are as follows:

- Proficient in use of IDE‘s for designing and development of various android based applications.
- Design and developed various applications using various components GUI component, GPS, SD card.
- Prepare the technical report on the projects carried

LIST OF PRACTICALS (Total Practical Hours- 90 Hours)

1. Develop an application that uses GUI components, Font and Colors.
2. Develop an application that uses Layout Managers and event listeners.
3. Develop a native calculator application.
4. Write an application that draws basic graphical primitives on the screen.
5. Develop an application that makes use of database.
6. Implement an application that implements multi-threading.
7. Develop a native application that uses GPS location information.
8. Implement an application that writes data to the SD card.
9. Implement an application that creates an alert upon receiving a message.
10. Write a mobile application that creates alarm clock.
11. Develop an application for working with Menus and Screen Navigation.
12. Develop an application for working with Notifications

List of Projects: -

1. Counter App
2. Calculator App
3. Audio recorder App
4. Voice to text Converter
5. Tic-tac-toe Game

Note: Students shall sincerely work towards completing all the above listed practicals for this course. In any circumstance, the completed number of practicals shall not be less than eleven and Projects less than four.

Essential/recommended readings

1. Flutter for Beginners: A Genius guide to flutter App development, Edward Thornton.
2. Beginning App Development with Flutter Book, Rap Payne.
3. Quick Start Guide to Dart Programming, Sanjib Sinha, Apress Publication.
4. Dart Apprentice: Beginning Programming with Dart, Jonathan Sande and Matt Galloway.

Suggestive readings

1. Flutter Complete Reference: Create beautiful, fast and native apps for any device, Alberto Miola.
2. Beginning Flutter: A Hands-on Guide to App Development, Marco L. Napoli.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER-V
DEPARTMENT OF ELECTRONIC SCIENCE
Category I

(B.Sc. Honours in Electronics)

DISCIPLINE SPECIFIC CORE COURSE – 13: Embedded System

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Embedded System	4	3	-	1	Class XII passed with Physics + Mathematics/Applied Mathematics + Chemistry OR Physics + Mathematics/Applied Mathematics + Computer Science/Informatics Practices	Microprocessor (DSC 11, Sem IV)

Learning Objectives

The Learning Objectives of this course are as follows:
This course introduces the student to the fundamental understanding of an embedded system. It is designed to make student familiar with the features, architectures and design issues involved in embedded system. The course focuses both on hardware and software components. Important serial communication protocols are also included. Syllabus covers microcontroller programming in C, which is platform independent.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Describe the fundamental concepts and features related to embedded systems .
- Understand the AVR RISC architecture and Instruction set.
- Interface I/O devices with microcontroller using parallel ports, serial ports, ADC etc.
- Learn the concepts of hardware & software interrupts and Timer

- Design simple embedded systems including their hardware as well as software.

SYLLABUS OF ELDSC-13 Total Hours- Theory: 45 Hours, Practicals: 30 Hours

UNIT – I (11 Hours)

Introduction: Overview of Embedded Systems, Requirements and Applications, Introduction to microcontrollers, Harvard architecture and Von Neumann architecture, RISC and CISC microcontrollers.

AVR Microcontroller: ATMega32 AVR RISC microcontroller architecture, Status Register, General Purpose Register file, Program memory and data memory organisation, Reset sources (Power-on, Brownout & Watchdog Timer).

UNIT – II (11 Hours)

Instruction Set: Addressing Modes, Data Transfer Instructions, Arithmetic and Logic Instructions, Branch Instructions, Bit and Bit-test Instructions, MCU Control Instructions., Introduction to AVR Programming in C, C datatypes, operators for AVR, simple programs for control, loop, arithmetic & logical operations and bit manipulation.

UNIT – III (12 Hours)

Peripheral I: Configuring I/O ports, Pull-up resistors, reading and writing data to I/O ports. Introduction to Interrupts, interrupt vector address and priority, ISR, External Interrupts. Introduction to Timers, Timers as delay generators and event counters, Timer0 modes of operation.

UNIT – IV (11 Hours)

Peripheral II: Analog-to-Digital Converter (ADC), Basics of Serial Communication, Universal Synchronous and Asynchronous serial Receiver and Transmitter (USART), Serial Peripheral Interface (SPI), Two Wire Interface (TWI) / I2C bus.

Practical component (if any) – Embedded System

(Hardware and AVR studio or similar IDE Software)

(Students are required to perform listed experiments and make a Mini Project)

Learning outcomes

The Learning Outcomes of this course are as follows:

- Student will be able to program AVR microcontrollers using AVR studio/similar IDE.
- Learn different interfacing techniques and standards to control various input output devices with the microcontroller.
- Student will be equipped with sufficient knowledge to implement mini projects.

LIST OF PRACTICALS (Total Practical Hours- 30 Hours)

1. (i) Blink LED at a constant rate.
   (ii) Blink LED at linearly increasing rate until the LED appears always on.
2. Use LFSR (linear feedback shift register) based random number generator to generate a random number and display it.
3. To interface 4 Keys with Port A and Port B each. Write a program to read the data from Port A and Port B and display its sum (and other arithmetic & logical operations) on output device.
4. To interface a LED/Buzzer with an o/p pin of AVR microcontroller. Write a program to blink the LED / Beep the Buzzer at (i) a constant rate (ii) linearly increasing rate using Timer.
5. To interface a 4x4 Keypad/push button keys with I/O pins of AVR microcontroller. Write a program to display the number of the key pressed in Binary number format on LED array or decimal number format on 7-segment LED or text display on an LCD or Serial Monitor.
6. To interface a potentiometer with ADC of AVR microcontroller. Write a program to display the dc input voltage on an output device (LED array / 7-segment LED / LCD / Serial Monitor).
7. To control the intensity of an LED/pitch of buzzer using PWM mode of Timer 0.
8. To interface a DC motor or Stepper motor and to write a program to control its speed.

Mini Project

(Any one of the following mini project or on similar concepts incorporating data acquisition from sensors/ input device, data analysis & control and display of result on any output device) (individual project only)

Project Idea 1: Weather Monitoring System -
Input - Temperature, humidity, wind speed etc.
Output - Display instantaneous values, average value, MAX / MIN value and predicted value for the next hour

Project Idea 2: Electronic Voting Machine -
Input - 8 Voting keys, Control Keys (Master Clear, Display Result, etc)
Output - Display device showing instructions, messages and results in accordance to the key pressed

Project Idea 3: Health Monitoring System -
Input – Pulse rate, Blood Pressure, SpO2, etc.
Output - Display device showing results

Note: Students shall sincerely work towards completing all the above listed practicals for this course. In any circumstance, the completed number of practicals shall not be less than seven and make a Mini Project.

Essential/recommended readings

1. “AVR Microcontroller and Embedded Systems: Using Assembly and C”, Muhammad Ali Mazidi, Sarmad Naimi, Sepehr Naimi, PHI,2013
2. “Programming and Customizing the AVR Microcontroller”, D V Gadre, McGraw- Hill,2000
3. “Atmel AVR Microcontroller Primer: Programming and Interfacing”, Steven F. Barrett, Daniel J. Pack, Morgan & Claypool Publishers,2012
4. “Embedded system Design”, Frank Vahid and Tony Givargis, John Wiley, 2002

Suggestive readings

1. “An Embedded Software Primer”, David E Simon, Addison Wesley,1999
2. AVR Microcontroller Datasheet, Atmel Corporation, www.atmel.com

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 14: Electromagnetics

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Electromagnetics	**4**	**3**	**-**	**1**	**Class XII passed with Physics + Mathematics/ Applied Mathematics + Chemistry OR Physics + Mathematics/ Applied Mathematics + Computer Science/ Informatics Practices**	**Engineering Mathematics (DSC 7, Sem III)**

Learning Objectives

The Learning Objectives of this course are as follows:
The syllabus of the paper is very carefully framed with the objective to well verse the students of the programme about

- Ability to apply knowledge of mathematics in solving electromagnetic problems.
- To understand the concept of electromagnetic waves in low frequency and high frequency applications.
- This paper is the backbone in the development of new integrated devices and applications of electromagnetic principles in various allied disciplines such as communications, microwaves, radar, electromagnetic interference & electromagnetic compatibility, remote sensing and fibre optics.
- Basic laws of electromagnetics required for any student who wants to pursue his career in research

Learning outcomes

The Learning Outcomes of this course are as follows:

- Getting familiar with vector algebra, coordinate system and coordinate conversion
- Understanding electrostatic fields and magnetostatic fields.
- A balanced presentation of static and time-varying fields.

- Physical interpretation of Maxwell's equation and problem solving in different media
- Understanding of propagation of an electromagnetic wave.

SYLLABUS OF ELDSC-14 **Total Hours- Theory: 45 Hours, Practicals: 30 Hours**

UNIT – I (14 Hours)

Vector Analysis: Scalars and Vectors, Vector Algebra, Rectangular (Cartesian) Coordinate System, Vector Components and Unit Vector, Vector Field, Products, Cylindrical Coordinates, Spherical Coordinates, Differential Length, Area and Volume, Line Surface and Volume integrals, Del Operator, Gradient of a Scalar, Divergence and Curl of a Vector ,Divergence and Stokes Theorem, the Laplacian.

Electrostatic Fields: Coulomb's Law and Electric Field, Electric Potential, Electric Flux Density, Gauss's Law and Applications, Divergence Theorem and Maxwell's First Equation, Electric dipole. Electric Fields in Conductors, Current and Current Density, Continuity of Current, Metallic Conductor. Dielectric materials, Polarization in Dielectrics, Dielectric Constant, Isotropic and Anisotropic dielectrics. Electrostatic Energy, Boundary Condition, Poisson equation and Laplace equation, Uniqueness Theorem.

UNIT – II (10 Hours)

Magnetostatics: Biot Savert's law, Magnetic dipole, Ampere's Circuital Law, Maxwell's Equation, Magnetic Flux and Magnetic Flux Density, Scalar and Vector Magnetic Potentials. Magnetization in Materials and Permeability, Anisotropic materials. Magnetic Energy, Boundary Conditions

UNIT – III (10 Hours)

Time-Varying Fields and Maxwell's Equations: Faraday's Law of Electromagnetic Induction, stationary and moving loop in time varying magnetic field, Displacement Current, Maxwell's Equations in differential and integral form and Constitutive Relations. Time varying potential, Lorentz condition for potential. Wave Equation for Potentials. Time Harmonic Electromagnetic Fields and use of Phasors

UNIT – IV (11 Hours)

Electromagnetic Wave Propagation: The Electromagnetic Spectrum, Wave Equation in a source free isotropic homogeneous media, Uniform Plane Waves propagation in Lossless and Lossy unbounded homogeneous media, Plane Wave Propagation in Good conductor, wave Impedence, Skin Depth and skin effect, Wave Polarization: Linear, elliptical and Circular. Flow of Electromagnetic Power and Poynting Vector.

Practical component (if any) – Electromagnetics
(using Scilab/MATLAB/ any other similar freeware)

Learning outcomes

The Learning Outcomes of this course are as follows:

- Understand the plotting of vectors, and transformation among various coordinate systems in 2D and 3D.
- Understand the graphical representation of scalar and vector fields including gradient, divergence and curl.
- Understand the graphical representation of electric and magnetic fields for various types of charge and current distributions respectively.
- Understand the flow of energy and power associated with electromagnetic waves.

LIST OF PRACTICALS (Total Practical Hours- 30 Hours)

1. Understanding and Plotting Vectors.
2. Point to point and Vector Transformation from Cartesian to cylindrical co-ordinate system and vice versa.
3. Point to point and Vector Transformation from Cartesian to Spherical co-ordinate system and vice versa.
4. Point to point and Vector Transformation from Cylindrical to Spherical co-ordinate system and vice versa.
5. Representation of the Gradient of a scalar field, Divergence and Curl of Vector Fields.
6. Plots of Electric field due to charge distributions.
7. Find the Magnetic field from a given Electric field for a Uniform plane wave.
8. Find a Poynting Vector for a given electromagnetic field at a given point.

Note: Students shall sincerely work towards completing all the above listed practicals for this course. In any circumstance, the completed number of practicals shall not be less than seven.

Essential/recommended readings

1. Murray. R. Spiegel, Vector Analysis, Schaum series, Tata McGraw Hill (2006)
2. M. N. O. Sadiku, Elements of Electromagnetics, Oxford University Press (2001)
3. D. C. Cheng, Field and Wave Electromagnetics, Pearson Education (2001)
4. J. A. Edminster, Electromagnetics, Schaum Series, Tata McGraw Hill (2006)
5. Introduction to Electrodynamics, D.J. Griffiths, Pearson Education (2012)
6. Electromagnetic Wave and Radiating System, Jordan and Balmain, Prentice Hall (1979)

Suggestive readings

1. N. Narayan Rao, Elements of Engineering Electromagnetics, Pearson Education (2006)
2. W. H. Hayt and J. A. Buck, Engineering Electromagnetics, Tata McGraw Hill (2006)

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 15: Basic VLSI Design

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Basic VLSI Design	4	3	-	1	Class XII passed with Physics + Mathematics/Applied Mathematics + Chemistry OR Physics + Mathematics/Applied Mathematics + Computer Science/Informatics Practices	Semiconductor Devices(DSC 3, Sem I), Digital Electronics(DSC 5, Sem II)

Learning Objectives

The Learning Objectives of this course are as follows:
This course introduces the student to basic principle of MOS Transistor operation, SPICE model, MOS transistor and Inverter layout, CMOS layout, Inverter design, CMOS inverter, inverter characteristics and specifications. Static and Sequential MOS Logic design, pass transistor logic, static & dynamic latches, flip flops, static & dynamic registers, Monostable sequential circuits. MOS memory design, RAM & ROM cells, Logic families performance.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Understand the concept of models of MOS devices and their implementation in designing of CMOS inverter
- Measure the performance parameters like threshold voltage, noise margins, time delays etc.
- Familiarize with the techniques and components involved in combinational MOS circuit designs.
- Describe the various types of semiconductor memories and issues involved in them

SYLLABUS OF ELDSC-15 Total Hours- Theory: 45 Hours, Practicals: 30 Hours

UNIT – I (12 Hours)

Metal Oxide Semiconductor (MOS): Introduction to basic principle of MOS transistor, large signal MOS models (long channel) for digital design. MOS SPICE model, MOS Transistor layout(PMOS and NMOS)

UNIT – II (12 Hours)
MOS Inverter: Inverter principle, Depletion and enhancement load inverters, the basic CMOS inverter, transfer characteristics, logic threshold, Noise margins, Dynamic behaviour, Propagation Delay and Power Consumption.

UNIT – III (11 Hours)
Combinational MOS Logic Design: Static MOS design, Pass Transistor logic, complex logic circuits.
Sequential MOS Logic Design - Static latches, Flip flops & Registers, Dynamic Latches & Registers, Monostable sequential circuits.

UNIT – IV (10 Hours)
Memory Design: ROM & RAM cells design. Dynamic MOS design- Dynamic logic families and performances.
Design for testability: Introduction, Fault types and models, Controllability and observability, AdHoc Testable design techniques, Scan –based techniques.

Practical component (if any) – Basic VLSI Design
(PSpice/other Simulation Software)

Learning outcomes

The Learning Outcomes of this course are as follows:

- Reproduce the characteristics of digital circuits like inverter and other logic gates based on CMOS technology.
- Design the digital circuit components like latches, multiplexers etc.
- Perform experiments and the circuit design and collect and analyse the data
- Prepare the technical report on the experiments carried

LIST OF PRACTICALS (Total Practical Hours- 30 Hours)

1. To plot the (i) output characteristics & (ii) transfer characteristics of an n-channel and p-channel MOSFET.
2. To design and plot the static and dynamic characteristics of a digital CMOS inverter.
3. To design and plot the output characteristics of a 3-inverter ring oscillator.
4. To design and plot the dynamic characteristics of 2-input NAND, NOR, XOR and XNOR logic gates using CMOS technology.
5. To design and plot the characteristics of a 4x1 digital multiplexer using pass-transistor logic.
6. To design and plot the characteristics of a positive and negative latch/master-slave edge triggered registers based on multiplexers.

7. To prepare layout for given logic function and verify it with simulations.
   To measure propagation delay of a given CMOS Inverter circuit.

Note: Students shall sincerely work towards completing all the above listed practicals for this course. In any circumstance, the completed number of practicals shall not be less than six.

Essential/recommended readings

1. Weste and Eshraghian, —Principles of CMOS VLSI design, Addison-Wesley, 2002.
2. Basic VLSI design: Douglas A Pucknell, Kamran Eshraghian, PHI, 3rd edition

Suggestive readings

1. Kang & Leblebigi —CMOS Digital IC Circuit Analysis & Design- McGraw Hill, 2003.
2. Rabey, —Digital Integrated Circuits Design, Pearson Education, Second Edition, 2003.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVES (DSE) COURSES OFFERED BY THE DEPARTMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Computer Networks	4	3	-	1	Class XII passed with Physics + Mathematics/Applied Mathematics + Chemistry OR Physics + Mathematics/Applied Mathematics + Computer Science/Informatics Practices	Programming Language (DSC 1, Sem I)/ Algorithm Design and Analysis(DSE 1B, Sem III), Operating System(DSE 2B, Sem IV)

Learning Objectives

The course objectives include learning about computer network organization and implementation, obtaining a theoretical understanding of data communication and computer networks, and gaining practical experience. This course introduces the student to the fundamental understanding of the architecture and principles of today's computer networks. It introduces various protocols and their functionalities. This course will help to understand The Internet and its impact on the computer network architecture**.**

Learning outcomes

The Learning Outcomes of this course are as follows:

- Describing computer network in terms of a layered model.
- Implementing data link, network, and transport layer protocols in a simulated networking environment
- Determine different types of errors and data flow within networks.
- Planning logical sub-address blocks with a given address block.
- Describing the standard protocols involved with the INTERNET, TCP/IP, based communications.

SYLLABUS OF ELDSE-3A **Total Hours- Theory: 45 Hours, Practicals: 30 Hours**

UNIT – I (11 Hours)

Network Basics and Physical layer: Data Communication- Components, Network topologies, OSI Reference Model, Internet (TCP/IP) Model, Digital Signals, Digital-to-Digital Encoding, Transmission Media- Guided and Unguided, Addressing, Transmission Impairment, Nyquist Bit rate, Shannon Capacity and Line Codling Schemes, Switching-Circuit Switching, Message Switching and Packet Switching, Network Connecting Devices- Repeaters, Hubs, Switches, Bridges, Routers and Gateway.

UNIT – II (12 Hours)

Data Link Layer and MAC: Character and Bit Oriented Framing, Flow and Error Control, Error Detection and Correction Codes- Parity, Hamming Code, Cyclic Redundancy Check and Checksum, Stop and Wait Protocol, Sliding Window Protocol and Piggybacking, Go-Back-N ARQ, Selective Repeat ARQ. Random Access Protocols-ALOHA, CSMA, CSMA/CD, CSMA/CA, Controlled Access Protocols- Reservation, Token Passing and Polling, Channelization Protocols-FDMA, TDMA and CDMA.

UNIT – III (12Hours)

Network Layer: IPV4 Addresses- Classful and Classless, Subnet Addressing, NAT, Datagram Format, Internet Control Protocols- ARP, RARP and ICMP, Routing algorithms - Shortest Path and Distance Vector, Approaches to Congestion Control, IPV4 issues, Need for IPV6,IPv6 Packet Format, IPV6 Unicast and Multicast Addressing

UNIT – IV (10 Hours)

Transport and Application Layer: Transport Services, Connection management, TCP and UDP protocols, Congestion Control and Quality of Service, Application Layer-DNS, FTP, WWW and HTTP.

Practical component (if any) – Computer Networks

(The practical will need to be Simulated on Cisco Packet Tracer or an equivalent platform. All Programming experiments to be done with Python)

Learning outcomes

The Learning Outcomes of this course are as follows:

- Implement a simple network with hubs and switches.
- Understand the various LAN topologies
- Describe how packets are delivered in the Internet.
- Describe what classful addressing scheme is.
- Grasp the error detection and correction algorithms

LIST OF PRACTICALS (Total Practical Hours- 30 Hours)

1. Create a simple network with a switch and two end devices in Cisco Packet Tracer. Configure the PCs, set their IP address and capture Ping from one PC to the other and vice versa.. Mention the uses of PING command.
2. Study Network Commands: tracert, ipconfig and ipconfig/all.
3. Implement MESH/STAR/RING/BUS topology in Packet tracer.
4. Write a program to add a parity bit to a 7 bit data input by a user/ add redundant bits to a 7 bit data using Hamming Code to be implemented at the sender's site.
5. Write a program to detect and correct a single bit error while transmitting a 7-bit Hamming Code word to be implemented on the receiver side.
6. Write a program to implement CRC at the sender's site.
7. Write a program to show Byte and Bit stuffing in a frame.
8. Set a six-computer network with a switch using Packet Tracer and show Unicast and Broadcast addressing.
9. Connect two different networks using a router in Packet tracer and show movement of packets from one to the other.
10. Write a program to determine the class of the given IPV4 Address in Dotted Decimal or Binary Notation.
11. Implement FTP Server in Packet Tracer and show transfer of data.
12. Study HTTP /DNS on the Packet Tracer.

Note: Students shall sincerely work towards completing all the above listed practicals for this course. In any circumstance, the completed number of practicals shall not be less than eleven.

Essential/recommended readings

1. Behroz A. Forouzan, " Data Communication and Networking", TMH, 5th Edition.
2. A.S.Tanenbaum, " Computer Network", Pearson Education, 4th Edition.

Suggestive readings

1. James Kurose , "Computer Networking: A Top-Down Approach", Pearson Education, 7th Edition.
2. Douglas E. Comer, "Internetworking with TCP/IP Principles, Protocol and Architecture Volume 1" , 6th Edition
3. Peterson and Davis, "Computer Networks: A Systems Approach", Pearson, 5th edition
4. Fall Kevin and W. Richard Stevens , "TCP/IP Illustrated: The Protocols" Volume 1.
5. William Stallings, "Data and Computer Communication", Tenth Edition.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVES (DSE-2)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Quantum and Spintronics Devices	4	3	-	1	Class XII passed with Physics + Mathematics/Applied Mathematics + Chemistry OR Physics + Mathematics/Applied Mathematics + Computer Science/Informatics Practices	Semiconductor Devices(DSC 3, Sem I), Engineering Mathematics (DSC 7, Sem III)

Learning Objectives

The objective of the course is to make the students understand the inadequacies of Classical Physics and know the basic postulates of Quantum Mechanics. Spintronics, a portmanteau meaning "spin transport electronics", where both charge and spin degrees of freedom of electrons are employed simultaneously to produce a device with new functionality, is a fascinating and promising field of research. It has the potential to revolutionize the field of electronics. Two physical bases of Spintronics, i.e., GMR and TMR have already been commercialized in read heads of the hard disk drive. It is extremely important and necessary to have a clear concept of spintronics so that students get exposure to such modern-day cutting-edge technology. Students will also learn general concepts about Spin-based quantum computing which is a leading technology for the realization of scalable quantum computers and other sectors too.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Understand the limitation of classical physics and basic concepts of quantum Mechanics
- Understanding the concept of spintronics and spin-orbit
- Comprehend the spin relaxation and transport
- Design the spintronics devices using the laws
- Know the basic principles of various spintronic devices (sensors, memories, etc.)

SYLLABUS OF ELDSE-3B **Total Hours- Theory: 45 Hours, Practicals: 30 Hours**

UNIT – I (11 Hours)

Introduction to Quantum Mechanics: Inadequacies of Classical physics, Wave-particle duality, de Broglie waves, Schrödinger equation, expectation values, Uncertainty principle.

Basics of Quantum Mechanics: Solutions of the one-dimensional Schrödinger equation for a free particle, particle in a box, particle in a finite well. Reflection and transmission by a potential step and by a rectangular barrier. Basic understating of the Linear algebra of quantum computing.

UNIT – II (12 Hours)

History & Background of spintronics : GMR, Datta-Das, Spin relaxation, Spin injection, Spin detection

Electron Spin in Solids: Quantum Mechanics of spins, Pauli equation, Spin-Orbit coupling, Zeeman splitting, Current density, Magnetization, Bloch states with SO coupling, Electronic structure of GaAs, Dresselhaus and Rashba spin splitting, Optical orientation and spin pumping, Stern-Gerlach experiments with electron spins, Detection of free electron spin

UNIT – III (11 Hours)

Transport in magnetic materials and Spin injection: Materials for spin electronics, Nanostructures for spin electronics, Spin-polarized transport, Electrochemical potential, Spin accumulation, Spin diffusion, FN junction, Rashba formalism of linear spin injection, Equivalent circuit model, Silsbee-Johnson spin-charge coupling

UNIT – IV (11 Hours)

Spintronic Devices: Datta-Das spin-FET, P-N junctions, Magnetic bipolar diode, Magnetic bipolar transistor, Magnetic tunneling devices, MRAM, New memory technologies

Practical component (if any) – Quantum and Spintronics Devices
Hardware and Simulation-Based Lab Experiments
(Scilab/MATLAB/SPICE/Verilog A)

Learning outcomes

The Learning Outcomes of this course are as follows:

- Perform lab experiment on splitting of atomic energy levels under magnetic field by Zeeman Effect
- Perform simulations to under spin phenomenon using transport and magnetic elemental modules using Scilab/MATLAB/SPICE/Verilog A

- Extending use of elemental modules to build Spin Circuit Models for complex structures

LIST OF PRACTICALS (Total Practical Hours – 30 Hours)

1. Study of Zeeman Effect

Simulation using Transport and Magnetic Elemental Modules to understand Spin Phenomenon and build Spin Circuit Models using Scilab/MATLAB/SPICE/Verilog A (https://nanohub.org/groups/spintronics) for the following

2. Non Magnet
3. Ferromagnet
4. Magnetic Tunnel Junction
5. Rashba Spin Orbital
6. Giant Spin Hall Effect
7. Spin Pumping
8. Pure Spin Conductor
9. Magnetic Coupling

Note: Students shall sincerely work towards completing all the above listed practicals for this course. In any circumstance, the completed number of practicals shall not be less than eight.

Essential/recommended readings

1. Beiser, Concepts of Modern Physics, McGraw-Hill Book Company (1987)
2. Sadamichi Maekawa, —Concepts in Spin Electronics, Oxford University Press (2006).
3. Bandyopadhyay S, Cahay M. Introduction to Spintronics. CRC press; 2015.

Suggestive readings

1. Isaac Chuang and Michael Nielsen, Quantum Computation and Quantum Information, Cambridge University Press, 2000.
2. Supriyo Bandyopadhyay and Marc Cahay, Introduction to Spintronics, CRC press, 2008

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVES (DSE-3)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Telecommunication Switching Systems and Networks	**4**	**3**	**-**	**1**	**Class XII passed with Physics + Mathematics/Applied Mathematics + Chemistry OR Physics + Mathematics/Applied Mathematics + Computer Science/Informatics Practices**	**Principles of Communication System(DSC 12, Sem IV)**

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce and develop a conceptual understanding of telecommunication networks.
- To develop an understanding of basic traffic engineering and get familiar with the basics of modern telephone networks and data networks.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Understand the basics of various Switching Systems.
- Learn in detail about Time Division Switching.
- Understand the basics of Traffic Engineering.
- Learn the fundamentals of Data Networks.
- Understand the functionality of Telephone Networks and gain familiarity with ISDN.

SYLLABUS OF ELDSE-3C Total Hours- Theory: 45 Hours, Practicals: 30 Hours

UNIT – I (11 Hours)

Introduction: Evolution of Telecommunications, Simple Telephone Communication, Manual Switching System, Major Telecommunication Networks, Strowger Switching System, Crossbar Switching.
Electronic Space Division Switching: Stored Program Control, Centralized SPC, Distributed SPC, Enhanced Services, Multi-stage Switches.

UNIT – II (12 Hours)
Time Division Switching: Time Multiplexed Space Switching, Time Multiplexed Time Switching, Combination Switching, Three-stage Combination Switching, *n*-stage Combination Switching.
Traffic Engineering: Network Traffic Load and Parameters, Grade of Service and Blocking Probability, Modelling Switching Systems, Incoming Traffic and Service Time Characterization, Introduction to Blocking Models, Loss Estimates and Delay Systems.

UNIT – III (11 Hours)
Data Networks: Block diagram, features and working of EPABX systems. Data Transmission in PSTNs, Data Rates in PSTNs, Modems, Switching Techniques for Data Transmission, Circuit Switching, Store and Forward Switching. Data Communication Architecture, ISO-OSI Reference Model, Link to Link layers, Physical Layer, Data Link Layer, Network Layer, End to End Layers, Transport Layer, Session Layer, Presentation Layer, Satellite Based Data Networks, LAN, Metropolitan Area Network, Fibre Optic Networks, and Data Network Standards.

UNIT – IV (11 Hours)
Telephone Networks and ISDN: Subscriber Loop Systems, Switching Hierarchy and Routing, Transmission Plan, Transmission Systems, Numbering Plan, Charging Plan, Signalling Techniques, Inchannel Signalling, Common Channel Signalling, Cellular Mobile Telephony.
Integrated Services Digital Networks (ISDN): ISDN services, Network and Protocol Architecture, Transmission Channels.

Practical component (if any) – Telecommunication Switching Systems and Networks ***(MATLAB/SCILAB /Any other softwares)***

Learning outcomes

The Learning Outcomes of this course are as follows:

- To learn about the various switching networks.
- To learn about traffic in the context of Telecommunication Network.
- To design and study a Local Area Network.

LIST OF PRACTICALS (Total Practical Hours – 30 Hours)

1. Simulation of Basic Switching Systems.

2. Simulation of TDMA.
3. Simulation of basic traffic parameters.
4. Simulation of PCM.
5. To study and perform TDM-PCM.
6. Study of EPABX System and its features
7. Study of LAN Trainer Kit.
8. Study of Optical Fiber Communication System.

Note: Students shall sincerely work towards completing all the above listed practicals for this course. In any circumstance, the completed number of practicals shall not be less than seven.

Essential/recommended readings

1. Thiagarajan Viswanathan, Manav Bhatnagar, 'Telecommunication Switching Systems and Networks', Prentice Hall of India Learning Pvt. Ltd., 2015
2. J. E Flood, 'Telecommunications Switching, Traffic and Networks', Pearson Education, 2006
3. John C Bellamy, Digital Telephony, John Wiley International Student Edition, 3rd Edition, 2000
4. Tomasi, Introduction to Data Communication and Networking, Pearson Education, 1st Edition, 2007

Suggestive readings

1. Behrouz A. Forouzan, Data Communications and Networking, TMH, 2nd Edition, 2002

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES OFFERED BY THE DEPARTMENT

GENERIC ELECTIVES (GE-1)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Fundamentals of 8085 Microprocessor	**4**	**3**	**-**	**1**	**Class XII passed with Physics + Mathematics/Applied Mathematics + Chemistry OR Physics + Mathematics/Applied Mathematics + Computer Science/Informatics Practices**	**Working of different logic gates**

Learning Objectives

The Learning Objectives of this course are as follows:

- Various kinds of number systems and their basics.
- Fundamental understanding of the operations of microprocessors
- Assembly language programming
- Interfacing microprocessor with the real world.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Convert various number systems and operations thereof.
- Draw block diagrams after familiarization with internal architecture of 8085 microprocessor, its instruction set and basic programming.
- Write assembly language programs for 8085 microprocessor.
- Acquire skills in memory and peripheral interfacings to solve real world problems..

SYLLABUS OF ELGE-5A **Total Hours- Theory: 45 Hours, Practicals: 30 Hours**

UNIT – I (11 Hours)

Number systems: Binary, Hexadecimal - Conversion from Binary to Decimal and vice-versa, Binary to Hexadecimal and vice-versa, Decimal to Hexadecimal and vice versa, Addition and Subtraction of Binary Numbers and Hexadecimal Numbers. Subtraction using 2's Complement, Signed Number Arithmetic.

Introduction to Microprocessors: Introduction to Microprocessors, Microcontrollers and Microcomputers, Basic Block Diagram, Speed, Word Size, Memory Capacity, Classification of Microprocessors, Computer languages, Tri-state Logic, Address bus, Data bus and Control bus.

UNIT – II (12 Hours)

Microprocessor 8085: Features, Architecture, Pin Diagram, Block Diagram, Internal Registers, Microprocessor Operations – Microprocessor Initiated Operations, Internal Data and Peripheral or Externally Initiated Operations. Demultiplexing of Multiplexed Address and Data bus, Generation of Control Signals.

Interfacing of Memory Chips: Basic concepts in Memory Interfacing Structures, Address Allocation Technique, Address Decoding Techniques, Memory Map. Interfacing of I/O Devices with 8085, LEDs and Toggle-switches as examples, Memory-Mapped I/O and Peripheral-mapped I/O**.**

UNIT – III (11 Hours)

8085 Instructions: Instruction Set, Instruction Classification, Addressing Modes.

Data Transfer Instructions, Arithmetic Instructions, Increment & Decrement Instructions, Logical instructions, Branch instructions and Machine Control Instructions. Concept of Timing Diagram, Instruction cycle, Machine cycle and T- state. Assembly Language Programming Examples.

UNIT – IV (11 Hours)

Stack Operations: Stack, Subroutine, Call and Return operations, Advanced Subroutine Concepts.

Delay Loops: Looping, Counting and Indexing using Data Transfer, use of Counters. Time Delay Routines, Debugging Counter and Time Delay Programs.

Interrupt Structure of 8085 Microprocessor: Concept of Interrupt Mechanism, Hardware and Software Interrupt of 8085, Interrupts and Vector Locations, RST Instructions, Interrupt Related Instructions, SIM and RIM.

Introduction to Peripheral Programmble Interfacing Devices

Practical component (if any) – Fundamentals of 8085 Microprocessor
(Assembly Language Programming)

Learning outcomes

The Learning Outcomes of this course are as follows:

- Write simple programs to understand the instruction set of 8085 microprocessor.
- Interface various I/O devices with microprocessor.
- Prepare the technical report on the experiments carried out.

LIST OF PRACTICALS (Total Practical Hours – 30 Hours)

1. Program to transfer a block of data.
2. Program for multibyte addition.
3. Program for multibyte subtraction.
4. Program to multiply two 8-bit numbers.
5. Program to divide two 8-bit numbers.
6. Program to search a given number in a given list.
7. Program to generate terms of Fibonacci series.
8. Program to find the square root of an integer.
9. Program to sort numbers in ascending/descending order.

Note: Students shall sincerely work towards completing all the above listed practicals for this course. In any circumstance, the completed number of practicals shall not be less than eight.

Essential/recommended readings

1. Microprocessor Architecture, Programming and Applications with 8085, Ramesh S.Gaonkar - Wiley Eastern Limited- IV Edition.
2. Microprocessor 8085 and Its Interfacing, Sunil Mathur, PHI Learning Pvt. Ltd.

Suggestive readings

1. Fundamentals of Microprocessor & Microcomputer: B. Ram, Dhanpat Rai Publications.
2. Microcomputers and Microprocessors by John E Uffenbeck

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-2)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Artificial Intelligence and Machine Learning	**4**	**3**	**-**	**1**	**Class XII passed with Maths/Applied Maths**	**Python Programming fundamentals**

Learning Objectives

Artificial Intelligence (AI) has emerged as one of the most rapidly growing technology sectors in today's time. This fascinating technology area which deals with designing 'machines which can think' is finding widespread application in almost every industrial and domestic sector. Rapid advancement in the field of AI has also led to complete revolution in the other technology areas including Robotics, embedded systems and Internet of Things.

This course will give an opportunity to gain knowledge in some of the fundamental aspects of AI. The main objective of this well-structured classroom program is to cover all the main topics related to designing machines which can replicate human intelligence and its applications in industry, defence, healthcare, agriculture, and other areas. This course will give the students advanced and professional graduate-level foundation in Artificial Intelligence.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Build intelligent agents for search and games
- Solve AI problems through programming with Python
- Learning optimization and inference algorithms for model learning
- Design and develop programs for an agent to learn and act in a structured environment

SYLLABUS OF ELGE-5B Total Hours- Theory: 45 Hours, Practicals: 30 Hours

UNIT – I (11 Hours)

Introduction: Concept of AI, history, current status, scope, Modeling Techniques: Turing Test Approach, Cognitive Modeling Approach, Rational Agent Approach and Laws of Thought Approach, AI System Architecture: Concept of Agent & Environment, Types of Agents: Reactive Agent, Model based Reflex Agent, Omniscient Agent, Goal

Based Agent, Utility based Agent and Learning Agent, Types of Environment, PEAS representation of Intelligent Agents.

UNIT – II (12 Hours)

Problem Solving Agents: AI Problem Formulation, State space representation, Problem Solving Search Algorithms: Uninformed Search Algorithms: Breadth first search, Depth First Search, Depth Limited Search, Uniform Cost Search and Bidirectional Search, Heuristic Search Algorithms: concept of Heuristic Function, Greedy Best First Search and A* search algorithm.
Simple AI problems (such as Water Jug Problem, Maze Problem, 8-Tile Puzzle problem, Traveling Salesman Problem).

UNIT – III (11 Hours)

Game Search Algorithms: Minimax Search Algorithm and Alpha-Beta Pruning.
Probabilistic Reasoning Model: Probability, conditional probability, Bayes Rule, Bayesian Networks- representation, construction and inference, Temporal model: concept of Transition probability, Markov Model and Hidden Markov model.

UNIT – IV (11 Hours)

Introduction to Machine Learning: Overview of types of Machine Learning: Supervised Learning, Unsupervised Learning and Reinforcement Learning. Passive and Active Reinforcement Learning
Markov Decision Process Model: MDP formulation, utility theory, utility functions, value iteration, policy iteration and Q- Learning. Elements of MDP Model, concept of Sequential Decision Processing, Example of MDP Problem: Agent in a grid world

Practical component (if any) – Artificial Intelligence and Machine Learning
(Algorithms to be implemented in Python programming language)

Learning outcomes

The Learning Outcomes of this course are as follows:

- Implement AI algorithms to solve single player puzzles (problems)
- Implement Adversarial (Game search) to design an intelligent game playing system
- Apply Bayesian statistics to apply probabilistic reasoning models
- Analyze the given data sets using basic machine learning algorithms

LIST OF PRACTICALS (Total Practical Hours- 30 Hours)

1. Program to solve the given search tree using Breadth First Search
2. Program to solve the given search tree using Depth First Search
3. Program to solve the given search tree using Depth Limited Search
4. Program to solve the given search tree using Uniform Cost Search
5. Program to solve the given search tree using Greedy Best First Search

6. Program to solve the given search tree using A* Search
7. Program to solve the given game search tree using Minimax Search
8. Program for construction and inference of a Bayesian network
9. Write a Program to perform Regression on given data sets

Note: Students shall sincerely work towards completing all the above listed practicals for this course. In any circumstance, the completed number of practicals shall not be less than eight.

Essential/recommended readings

1. Stuart Russell and Peter Norvig, —Artificial Intelligence: A Modern Approach , 3rd Edition, Prentice Hall
2. Elaine Rich and Kevin Knight, —Artificial Intelligence, Tata McGraw Hill
3. Trivedi, M.C., —A Classical Approach to Artificial Intelligence, Khanna Publishing House, Delhi.
4. Introduction to Machine Learning with Python, by Andreas C. Müller, Sarah Guido, O'Reilly Media, Inc., 2016

Suggestive readings

1. David Poole and Alan Mackworth, —Artificial Intelligence: Foundations for Computational Agents, Cambridge University Press 2010
2. Saroj Kaushik, —Artificial Intelligence, Cengage Learning India, 2011

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER-VI
DEPARTMENT OF ELECTRONIC SCIENCE
Category I

(B.Sc. Honours in Electronics)

DISCIPLINE SPECIFIC CORE COURSE – 16: Digital Signal Processing

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Digital Signal Processing	4	3	-	1	Class XII passed with Physics + Mathematics/Applied Mathematics + Chemistry OR Physics + Mathematics/Applied Mathematics + Computer Science/Informatics Practices	Signals and Systems (DSC 9, Sem III)

Learning Objectives

The Learning Objectives of this course are as follows:
To introduce the techniques of modern digital processing that are fundamental to a wide variety of application areas. Special emphasis is placed on the basic concepts related to discrete-time signals and systems, the analysis of signals in time and frequency using Fourier and Z transform. Introduction to techniques involved in the architecture and design of digital filters.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Grasp fundamentals of discrete time signals, linear time-invariant systems, Z-transform and Fourier transform
- Analyze linear time-invariant systems using Fourier and Z transform

- Understand the Design techniques of Digital FIR and IIR filters using direct methods and methods involving conversion of the analog filter into the digital filter by various transformations.
- Use DFT to perform frequency analysis of signals and application of FFT algorithms.

SYLLABUS OF ELDSC-16 **Total Hours- Theory: 45 Hours, Practicals: 30 Hours**

UNIT – I (10 Hours)

Discrete Time Sequences and Systems: Introduction to Discrete Time sequences, Properties of DT systems.

Fourier Transform: Fourier Transform, Properties of Fourier Transform, Inverse Fourier Transform, Transfer Function of LSI systems.

UNIT – II (12 Hours)

Z-Transform: Definition, Unilateral Z- transform, Region of Convergence and its properties, Properties of Z-Transform, Initial and final value theorem.

Inverse Z Transform: Long division, Partial fraction, and Residual methods. Parseval's Theorem and applications.

System Function: Linear constant coefficient difference equation, Representation and analysis of Discrete Time Systems, Stability, Causality, Realisation of Digital Linear Systems: Block diagram, signal flow graph, structure for IIR and FIR systems

UNIT – III (12 Hours)

Discrete Fourier Transform: DFT assumptions and Inverse DFT, magnitude and phase representation Matrix relations, relationship with Fourier Transform, Linear and circular convolution, properties of DFT, Computation of DFT. FFT Algorithms- Decimation in time FFT. Decimation in frequency FFT, FFT using radix 2 FFT — Butterfly structure, Concept of Gibb's phenomenon and word length effects.

UNIT – IV (11 Hours)

Digital Filters: Comparison of Analog and Digital Filters, Types of Digital Filters: FIR and Hanning, Hamming, Blackman, Design of IIR Filters by Approximation of Derivates, Impulse Invariant Method, Bilinear Transformation, Butterworth Filter.

Practical component (if any) – Digital Signal Processing
(Scilab/MATLAB/Python other Mathematical Simulation software)

Learning outcomes

The Learning Outcomes of this course are as follows:

- Simulate, synthesize and process signals using a software tool.

- Apply transform methods for representing signals and systems in the time and frequency domain.
- Simulation and design of FIR and IIR Filters

LIST OF PRACTICALS (Total Practical Hours- 30 Hours)

1. Write a program to generate discrete time Unit Sample, Unit Step, Unit ramp and Sinusoidal sequences.
2. Write a program to find the Fourier Transform of a sequence.
3. Write a program to find the pole-zero plot of a function.
4. Write a program to find a function's Z transform and inverse Z transform.
5. Write a program to find the circular convolution of two sequences.
6. Write a program to find the DFT of a sequence using the direct method.
7. Write a program to find the DFT of a sequence using FFT.
8. Magnitude Response of Low Pass Filter and High Pass Filter.
9. Design FIR Filter using Window Function.
10. Convert Analog Filter to Digital IIR Filter

Note: Students shall sincerely work towards completing all the above listed practicals for this course. In any circumstance, the completed number of practicals shall not be less than nine.

Essential/recommended readings

1. A.V. Oppenheim and Schafer, Discrete Time Signal Processing, Prentice Hall, 1999.
2. John G. Proakis and D.G. Manolakis, Digital Signal Processing: Principles, Algorithms and Applications, Prentice Hall, 2007.

Suggestive readings

1. S. Salivahanan, Digital Signal Processing, McGraw Hill, 2015.
2. Tarun Kumar Rawat, Digital Signal Processing, Oxford University Press, 2015.
3. Monson Hayes, Digital Signal Processing: Second Edition, Schaum's Outline Series

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 17: Photonics

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Photonics	**4**	**3**	**-**	**1**	**Class XII passed with Physics + Mathematics/Applied Mathematics + Chemistry OR Physics + Mathematics/Applied Mathematics + Computer Science/Informatics Practices**	**Electro-magnetics (DSC 14, Sem V)**

Learning Objectives

The Learning Objectives of this course are as follows:

- This course introduces the student to the fundamental understanding of light as an electromagnetic wave and various phenomenon like interference, diffraction and polarization and their applications.
- Interaction between a photon and electron and its relevance to laser and various other optoelectronic devices.
- Understand the propagation of wave in planar optical waveguides and optical fibers.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Describe the optics and simple optical systems.
- Understand the concept of light as a wave and its propagation in optical fibres, and relevance of this to optical effects such as interference , diffraction, polarization and hence to lasers, holography and optical waveguides.
- Use mathematical methods to predict optical effects with e.g. light-matter interaction, wave propagation in guided media, dispersion, wave optics

SYLLABUS OF ELDSC-17 Total Hours- Theory: 45 Hours, Practicals: 30 Hours

UNIT – I (12 Hours)

Light as an Electromagnetic Wave: Plane waves in homogeneous media, concept of spherical waves. Reflection and transmission at an interface, total internal reflection, Brewster's Law.
Interference : Interference by division of wavefront, Young's double slit, Division of Amplitude, thin film interference, anti-reflecting films, Newton's rings.
Diffraction: Fraunhoffer Diffraction by a single slit, double slit, Diffraction grating: Resolving power and Dispersive power

UNIT – II (11 Hours)
Holography: Basic Principle , Construction and reconstruction of hologram.
Polarization: Linear, circular and elliptical polarization, polarizer-analyzer and Malus' law; Double refraction by crystals, Half wave and quarter wave plates. Electro optic Effect, Faraday Rotation
Liquid Crystal Displays: Types, Working Principle.

UNIT – III (11 Hours)
Light Emitting Diodes: Construction, materials and operation.
Lasers: Interaction of radiation and matter, Einstein coefficients, Condition for amplification, Laser cavity , Examples of common lasers. The semiconductor injection laser diode.
Photodetectors: Photo transistors and Photodiodes (p-i-n, avalanche), quantum efficiency and responsivity.

UNIT – IV (11 Hours)
Guided Waves and the Optical Fibre: Maxwell's Equations, TE modes in symmetric step index planar slab waveguides, effective index, field distributions, Step index optical fibre, total internal reflection, single mode and multimode fibres, attenuation and dispersion in optical fibres.

Practical component (if any) – Photonics
(Hardware Lab augmented with virtual lab)

Learning outcomes

The Learning Outcomes of this course are as follows:

- Perform experiments based on the phenomenon of light/photons.
- Measure the parameters such as wavelength, resolving power, numerical aperture etc. using the appropriate photonic/optical technique.
- Prepare the technical report on the experiments carried.

LIST OF PRACTICALS (Total Practical Hours- 30 Hours)

1. To determine Brewster's angle.
2. To determine wavelength of sodium light using Newton's Rings.
3. To determine the resolving power and Dispersive power of Diffraction Grating.
4. Diffraction experiments using a laser.

5. Viewing of different types of holograms.
6. To verify the law of Malus for plane polarized light.
7. Study of Faraday Rotation.
8. Study of Electro-optic Effect.
9. To determine characteristics of LEDs and Photo- detector.
10. To measure the numerical aperture of an optical fiber.

Note: Students shall sincerely work towards completing all the above listed practicals for this course. In any circumstance, the completed number of practicals shall not be less than nine.

In addition to the above hardware lab , teaching learning process can be further augmented using following/any other ONLINE virtual labs:

- Amrita Vishwa Vidyapeetham Virtual Lab https://vlab.amrita.edu/
- Virtual Labs ofcvlab.vesit.ves.ac.in

Essential/recommended readings

1. Ajoy Ghatak, Optics, Tata McGraw Hill, New Delhi (2005)
2. E. Hecht, Optics, Pearson Education Ltd. (2002)
3. Ghatak A.K. and Thyagarajan K., —Introduction to fiber optics, Cambridge Univ. Press. (1998)

Suggestive readings

1. J. Wilson and J. F. B. Hawkes, Optoelectronics: An Introduction, Prentice Hall India (1996)
2. S. O. Kasap, Optoelectronics and Photonics: Principles and Practices, Pearson Education (2009)

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 18: Semiconductor Device Technology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Semiconductor Device Technology	**4**	**3**	**-**	**1**	**Class XII passed with Physics + Mathematics/Applied Mathematics + Chemistry OR Physics + Mathematics/Applied Mathematics + Computer Science/Informatics Practices**	**Semi-conductor Devices (DSC 3, Sem I)**

Learning Objectives

The Learning Objectives of this course are as follows:

- The course deals with properties of materials required for Semiconductor Devices
- It deals with various processing steps
- It gives an account of how the Semiconductor Devices are fabricated (with details of all processes involved)

Learning outcomes

The Learning Outcomes of this course are as follows:

- Summarize the developments in the field of microelectronics technologies
- Describe the crystal growth, diffusion, oxidation, lithography, etching and various film deposition processes.
- Explain the process sequence for PN junction, BJT, CMOS and BiCMOS fabrication

SYLLABUS OF ELDSC-18 Total Hours- Theory: 45 Hours, Practicals: 30 Hours

UNIT – I (11 Hours)

Semiconductor materials: Single crystal, polycrystalline and amorphous forms. Properties of Silicon and Gallium Arsenide. Materials used for doping Silicon and Gallium Arsenide

Crystal growth techniques: Starting material (SiO_2), MGS, EGS, Growth of bulk Silicon single crystals using Czochralski (CZ) technique, Doping while crystal growth (Distribution of dopants, Effective Segregation Coefficient), Float Zone (FZ) technique, GaAs bulk single crystal growth by LEC technique, Bridgman-Stockbarger technique.
Wafer Cleaning Technology : Basic Concepts, Wet cleaning, Dry cleaning

UNIT – II (12 Hours)
Epitaxy Deposition: Vapor-Phase Epitaxy, Molecular Beam Epitaxy, Growth of GaAs films by MOCVD.
Oxidation: Importance of Silicon Dioxide in Silicon, Thermal Oxidation Process, Kinetics of Growth for thick and thin Oxide, Dry and Wet oxidation. Effects of high pressure and impurities on oxidation rates, Impurity redistribution during Oxidation, Oxide Quality, Chemical vapour deposition of silicon oxide, properties of silicon oxide, step coverage, P-glass flow

UNIT – III (11 Hours)
Diffusion: Thermal Diffusion, Diffusion Equation, Diffusion Profiles. Extrinsic Diffusion Concentration Dependent Diffusivity, Lateral Diffusion, Doping through Ion Implantation, and its comparison with Thermal Diffusion.
Lithography: Clean room, Optical Lithography, Electron beam lithography, Photoresist, Photo masks, Wet Chemical Etching, Common etchants

UNIT – IV (11 Hours)
Metallization: Filament evaporation, e-beam evaporation, sputtering techniques used for metals (Aluminium, Gold, Copper etc..) deposition on Silicon and GaAs
Process Integration (IC): Isolation techniques. Fabrication of Monolithic Resistor, Inductor, Capacitor. PN junction, BJT, NMOS, PMOS, CMOS structures.
Concept of Bipolar Technology and MOSFET Technology for Devices

Practical component (if any) – Semiconductor Device Technology
(Scilab/MATLAB/other Simulation Software)

Learning outcomes

The Learning Outcomes of this course are as follows:

- Operate the advanced computer simulations tools as well as visit research laboratories for better understanding of semiconductor fabrications processes.
- Perform the simulation of semiconductor crystal growth and device fabrication processes like oxidation and diffusion.
- Perform experiments to calculate the electronic parameters like resistivity, mobility, carrier concentration and band gap etc in semiconductors.
- Operate the deposition system for fabrications of thin films

LIST OF PRACTICALS (Total Practical Hours- 30 Hours)

1. To measure the resistivity of semiconductor crystal with temperature by four – probe method.

2. To determine the type (n or p) and mobility of semiconductor material using Hall effect.
3. CZ technique Simulation
4. Float zone technique Simulation
5. Oxidation process Simulation
6. Diffusion Process Simulation
7. To design a pattern using photolithographic process and its simulation
8. Process integration simulation
9. Determination of Optical Bandgap through transmission spectra.
10. Visit to Research Lab/institutions to see the live demonstrations of the processes and preparation of a report.

Note: Students shall sincerely work towards completing all the above listed practicals for this course. In any circumstance, the completed number of practicals shall not be less than nine.

Essential/recommended readings

1. Gary S.May and S.M.Sze , Fundamentals of Semiconductor Fabrication, John Wiley& Sons(2004)

Suggestive readings

3. Ludmila Eckertova, Physics of Thin films, 2nd Edition, Plenum Press (1986).

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVES (DSE) COURSES OFFERED BY THE DEPARTMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Medical Electronics & Instrumentation	**4**	**3**	**-**	**1**	**Class XII passed with Physics + Mathematics/Applied Mathematics + Chemistry OR Physics + Mathematics/Applied Mathematics + Computer Science/Informatics Practices**	**Basic Instrument-ation & Measure-ment Techniques (DSC 4, Sem II), Micro-processor (DSC 11, Sem IV)**

Learning Objectives

- This course introduces the student to the fundamental understanding of various types of Biomedical Signals and their physiological aspects.
- The students analyse the various types of Biomedical instruments and their working and practical implementation.
- Learn about Modern Imaging systems like CT and MRI techniques and various other cardiac instruments.
- Learn about Instrumentation for clinical lab: blood cell counter, oximeter, blood gas and blood ph analyser.
- Learn about the emerging fields like EEG, ECG, EMG etc.
- To learn about patient safety and precaution for instruments and electrodes.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Understand the basic knowledge of physiology and generation of bio electric signals (ECG, EMG, EEG etc.) in humans.
- Describe cardio vascular monitoring systems , Bed side monitor, ECG-Telemetry.
- Describe the basic knowledge on respiratory and pulmonary measurements.
- Describe modern methods of imaging techniques like CT, X-Ray, NMR and MRI.

- Describe conditions for patient safety
- Describe instrumentation for clinical Lab like Blood cell counters, oximeter, blood gas and blood pH analyser..

SYLLABUS OF ELDSE-4A **Total Hours- Theory: 45 Hours, Practicals: 30 Hours**

UNIT – I (10 Hours)
Biomedical signals and transducers
Physiological systems of human body: Introduction, Origin of biomedical signals, Use of microprocessors, Microcontrollers and computers in medical instruments, **Transducers:** Ultrasound transducer, Radiation and chemical thermometry, optical fibre sensor, biosensors, optical glucose sensor, Electrodes & its types: for ECG, EMG & EEG
.
UNIT – II (12 Hours)
Cardiovascular monitoring systems: Patient cardiovascular Monitoring systems Cardiovascular System, blood pressure measurement, cardiac rate and output measurement, Cardiac monitor- Waveforms, ECG amplifier, phonocardiography, Ballisto cardiography, Eco-Cardiograph, Bed side monitor –block diagram- measuring parameters-cardiac tachometer-Alarms-Lead fault indicator-central monitoring. Telemetry – modulation systems – choice of carrier frequency – single channel telemetry systems, Cardiac pacemakers: Introduction, Cardiac defibrillators

UNIT – III (12Hours)
Imaging Systems
X-rays: Properties and production, Block diagram of x-ray machine, Diagnostic radiology, Dental X-ray, Basic principle and components of X-Ray Computed Tomography (CT)
MRI: Principle and NMR imaging components
Introduction to Ultrasonic imaging system.

UNIT – IV (11 Hours)
Patient's safety: Precaution, safety codes for electro medical equipment, Electric safety analyser, Testing of biomedical equipment.
Instrumentation for Clinical Laboratory: Blood cell counters, Oximeter, Blood flow meter, Blood gas analysers, Blood pH analyser.
Measurement in Respiratory system: Physiology of respiratory system, Measurement of breathing mechanics Spiro meter, Respiratory therapy equipment Inhalators ventilators & Respirators, Humidifiers, Nebulizers Aspirators.

Practical component (if any) – Medical Electronics & Instrumentation

Learning outcomes

The Learning Outcomes of this course are as follows:

- Familiarize with functioning of biomedical instrumentation
- Perform experiments on the biomedical instruments, collect & analyze the data
- Prepare the technical report on the experiments carried

LIST OF PRACTICALS (Total Practical Hours- 30 Hours)

1. To simulate Bio potential Amplifier.
2. Study on ECG simulator.
3. Study on EEG simulator.
4. Study on EMG simulator.
5. Study of various leads and electrode position for ECG and EEG.
6. Study of pulse rate monitor (Pulse oximetry).
7. To simulate defibrillator.
8. Measurement of heart sound using electronic stethoscope.
9. Simulation of blood cell counter.
10. Study of NMR using virtual lab.
11. Visit to a Diagnostic lab/Pathology lab/Hospital to understand working of various instruments and preparation of a report.

Note: Students shall sincerely work towards completing all the above listed practicals for this course. In any circumstance, the completed number of practicals shall not be less than ten.

Essential/recommended readings

1. Khandpur R. S. - Handbook of Biomedical Instrumentation, TMH.
2. Joseph J. Carr & John M. Brown, Introduction to Biomedical Equipment Technology, Pearson.
3. Shakti Chatterjee, —Textbook of Biomedical Instrumentation System‖, Cengage Learning.
4. Prof. S.K.VenkataRam-Bio-Medical Electronics and Instrumentation, Galgotia Publications.

Suggestive readings

1. Bertil Jacobson & John G. Webster - Medicine and Clinical Engineering, PHI.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVES (DSE-2)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Advance Computer System Architecture	**4**	**3**	**-**	**1**	**Class XII passed with Physics + Mathematics/Applied Mathematics + Chemistry OR Physics + Mathematics/Applied Mathematics + Computer Science/Informatics Practices**	**Microprocessor (DSC 11, Sem IV) or equivalent to Computer System Architecture, Operating system(DSE 2B, Sem IV)**

Learning Objectives

- To give the students an elaborate idea about the different memory systems and buses.
- To introduce the advanced processor architectures to the students.
- To make the students know about the importance of multiprocessor and multicomputer.
- To study about data flow computer architectures
- To make students know about the Parallelism concepts

Learning outcomes

The Learning Outcomes of this course are as follows:

- Demonstrate concepts of parallelism in hardware/software.
- Discuss memory organization and mapping techniques.
- Describe architectural features of advanced processors.
- Interpret performance of different pipelined processors.
- Explain data flow in arithmetic algorithms
- Development of software to solve computationally intensive problems.

SYLLABUS OF ELDSE-4B Total Hours- Theory: 45 Hours, Practicals: 30 Hours

UNIT – I (10 Hours)

Computer Architecture & Organization: Instruction codes, Computer instructions, Basics of Input/Output & Interrupts, Complete computer description & design of basic

computer. Control Unit: Hardwired vs. Micro programmed control unit. Flynn's classification.

UNIT – II (11 Hours)

Memory Hierarchy: Hierarchical memory organization, Types of Cache Memory, Memory Interleaving, Replacement algorithms + write policy, Concept of Virtual Memory and Virtual Machine.

Parallel Processing: Definition, Theory of Parallelism. Parallel Computer Models, Implicit Parallelism vs. explicit parallelism, Levels of parallelism. Software Parallelism, Hardware Parallelism.

UNIT – III (12 Hours)

Pipelining: Basic Concepts of pipelining, Linear pipeline processor, Asynchronous and Synchronous models, speed up, Efficiency, Throughput, Instruction pipeline. Pipeline hazards and their Resolution Mechanisms like data forwarding, Delayed Branch, Branch Prediction, Dynamic Branch Prediction, Concept of Vector processing.

UNIT – IV (12 Hours)

Instruction Level Parallelism (ILP) Instruction-level Parallelism: Introduction, Challenges, Limitations, Basic Compiler Techniques for ILP, Branch Prediction, Out of order execution, Dynamic Scheduling, Limitations of ILP. Introduction to Thread Level Parallelism (TLP) and Data Level Parallelism (DLP). Introduction to Virtualisation Architecture, Virtualisation as a concept of Cloud Computing.

Practical component (if any) – Advance Computer System Architecture
(FPGA/Virtual Lab/Tejas Architecture Simulator)

LIST OF PRACTICALS (Total Practical Hours – 30 Hours)

1. To design a 4-bit common bus using 4:1 mux to transfer data from register to bus.
2. To design a 2-bit combinational shifter circuit which implements the logical shift, circular shift, arithmetic shift for both direction.
3. To design 2 bit arithmetic circuit which performs the following arithmetic operations add, add with carry, subtract, subtract with borrow, increment and decrement.
4. Design of Arithmetic Logical Unit ALU
5. Design of Memory: Design of a RAM cell
6. Design of Memory: Design of a 4X4 RAM
7. Design of Direct Mapped Cache
8. Design of Associative Cache
9. Using Architectural Simulator Tejas as
    a. Emulator
    b. Transfer Engine

c. Translational Modules
d. Micro architectural Simulation

Note: Students shall sincerely work towards completing all the above listed practicals for this course. In any circumstance, the completed number of practicals shall not be less than eight, experiment no. 9 is compulsory.

Essential/recommended readings

1. “Computer Architecture: A Quantitative Approach”, by John L. Hennessy and David A. Patterson, Morgan Kaufmann, 5th edition, 2011, ISBN: 9780123838728.
2. “Computer System Architecture” by M. Morris Mano (Pearson Publication)

Suggestive readings

1. “Computer Organization and Architecture”, William Stallings, Prentice Hall, 10th edition, 2015, ISBN-10: 013293633X, ISBN-13: 978-0132936330
2. "Advanced computer architecture", Kai Hwang, TMH. 2000

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVES (DSE-3)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Transmission Lines, Antenna and Wave Propagation	**4**	**3**	**-**	**1**	**Class XII passed with Physics + Mathematics/Applied Mathematics + Chemistry OR Physics + Mathematics/Applied Mathematics + Computer Science/Informatics Practices**	**Electromagnetics (DSC 14, Sem V)**

Learning Objectives

The Learning Objectives of this course are as follows:

- Fundamentals of propagation of electromagnetic waves.
- Basics of transmission lines along with its parameters.
- Wave propagation in different modes of the waveguides.
- Antenna parameters and its radiation mechanism.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Understand reflection and transmission of uniform plane wave.
- Explain the functioning of transmission line and its performance parameters.
- Understand wave propagation in waveguides and different modes of propagation.
- Explain the radiation mechanism and characteristics of an antenna.

SYLLABUS OF ELDSE-4C **Total Hours- Theory: 45 Hours, Practicals: 30 Hours**

UNIT – I (11 Hours)

Electromagnetic Wave Propagation: Plane Wave reflection at Oblique Incidence:- Laws of Reflection, Snell's Law of Refraction, Parallel and Perpendicular polarisations, Fresnel's Equations and Brewster Angle, Wave propagation in dispersive media, Concept of phase velocity and group velocity

UNIT – II (11 Hours)

Transmission Lines: Typical Transmission lines- Coaxial, Two-Wire, Microstrip and Coplanar, Transmission Line Parameters, Transmission Line Equations, Wave propagation in Transmission lines:- lossy, lossless and Distortionless lines, Input Impedance, Standing Wave Ratio, Power, Shorted Line, Open-Circuited Line and Matched Line, Quarter wave transformer as transmission line application.

UNIT – III (11 Hours)

Waveguides: Introduction to Parallel plate waveguide, Rectangular waveguide, Transverse Electromagnetic (TEM), Transverse Magnetic (TM) and Transverse Electric (TE) modes, cutoff frequency and dominant mode, Intrinsic Impedance, Power transmission and attenuation:- conductor loss and dielectric loss and Rectangular cavity resonator and its resonant frequency.

UNIT – IV (12 Hours)

Antenna: Concept of retarded potentials, Radiation Mechanism, types of antennas, power radiated by Hertzian dipole and its radiation resistance, qualitative analysis of half-wave dipole and quarter-wave monopole antenna, Antenna characteristics, Radiation Pattern, Beamwidth, Bandwidth, Radiation Intensity, Directive Gain, Directivity, Power Gain, Radiation Efficiency, Input Impedance, Effective Area and the Friis Transmission Equation.

Practical component (if any) – Transmission Lines, Antenna and Wave Propagation
(MATLAB/SCILAB /Any other softwares)

Learning outcomes

The Learning Outcomes of this course are as follows:

- Understand the phasor and its graphical representation for electromagnetic fields.
- Learn reflection and transmission of plane electromagnetic wave.
- Represent graphically various parameters of transmission line.
- Plot field configuration for different modes of the waveguide.
- Understand the radiation pattern and other characteristics of an antenna.

LIST OF PRACTICALS (Total Practical Hours – 30 Hours)

1. Program to determine the phasor of forward propagating field
2. Program to determine the instantaneous field of a plane wave
3. Program to find the electric and magnetic fields of reflected and transmitted wave at the interface of different types of media
4. Program to find the characteristic impedance and the phase constant of a distortionless line
5. Program to find the power dissipated of the lossy transmission line
6. Program to find the total power transmitted through the lossless transmission line
7. Program to plot the field configuration for TE and TM modes in waveguide
8. Program to determine the operating range of frequency for TE10 mode of air filled rectangular waveguide
9. Program to determine Directivity, Bandwidth and Beamwidth of an antenna.
10. Program to plot the radiation pattern of a Hertzian dipole and calculate its radiation resistance.

Note: Students shall sincerely work towards completing all the above listed practicals for this course. In any circumstance, the completed number of practicals shall not be less than nine.

Essential/recommended readings

1. M. N. O. Sadiku, Principles of Electromagnetics, Oxford University Press (2001)
2. Karl E. Longren, Sava V. Savov, Randy J. Jost., Fundamentals of Electromagnetics with MATLAB, PHI
3. J. A. Edminister, Electromagnetics, Schaum Series, Tata McGraw Hill (2006)
4. N. Narayan Rao, Elements of Engineering Electromagnetics, Pearson Education (2006)
5. G. S. N. Raju, Antennas and Propagation, Pearson Education (2001) Transmission Lines,

Suggestive readings

1. W. H. Hayt and J.A. Buck, Engineering Electromagnetics, Tata McGraw Hill (2006)
2. D. C. Cheng, Field and Wave Electromagnetics, Pearson Education (2001)

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES OFFERED BY THE DEPARTMENT

GENERIC ELECTIVES (GE-1)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Microcontroller Systems	**4**	**3**	**-**	**1**	**Class XII passed with Physics + Mathematics/Applied Mathematics + Chemistry OR Physics + Mathematics/Applied Mathematics + Computer Science/Informatics Practices**	**Basic C language program-ming**

Learning Objectives

The Learning Objectives of this course are as follows:

- Understand architecture of Microcontroller.
- Write assembly language / C programs for the microcontroller.
- Apply knowledge and demonstrate proficiency of designing hardware interfaces for memory and I/O.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Explain the concepts related to architecture of microcontrollers
- Demonstrate knowledge of the development tools for a microcontroller, and write assembly language code according to specifications
- Design systems for common applications like general I/O, counters, data acquisition etc.
- Interfacing the external devices to the controller according to the user requirements to create novel products and solutions for the real - time problems.

SYLLABUS OF ELGE-6A **Total Hours- Theory: 45 Hours, Practicals: 30 Hours**

UNIT – I (11 Hours)

Introduction to microcontroller: Introduction to Microcontroller based system, Difference between Microprocessor and Microcontroller, Classification of microcontrollers based on architecture and Instruction Set (Overview of Harvard architecture and Von Neumann architecture, RISC and CISC microcontrollers), Microcontroller Features - Brown out Detector, Watch Dog Timer.

UNIT – II (12 Hours)

Architectural Overview of AVR Microcontroller: Block diagram description of ATMEGA32, Pin Description of ATMEGA32, AVR status register, General Purpose Register File, X, Y & Z registers, Stack Pointer, System Clock and Clock Options in AVR, System Control and Reset, Sleep Modes, AVR ATmega32 Memories: Flash Program Memory, SRAM Data Memory, EEPROM Data Memory & I/O Memory.

UNIT – III (11 Hours)

Instruction set of AVR Microcontroller: Addressing modes, Instruction set of AVR microcontroller, Data transfer, Arithmetic, Logic and Compare, Rotate and Shift, Branch and Call instructions, Bit manipulation instructions, MCU Control Instructions, Simple programs in Assembly Language / C Language

UNIT – IV (11 Hours)

AVR on-chip peripherals: General purpose I/O Ports, AVR I/O Port Programming, Introduction to interrupts, External interrupts, 8 and 16-bit Timers, Timer programming.

Practical component (if any) – Microprocessor System
(Hardware and AVR Studio/ Other suitable IDE)

Learning outcomes

The Learning Outcomes of this course are as follows:

- Be proficient in use of IDE‘s for assembly/ C programming for the microcontroller.
- Interface various I/O devices to provide solutions to real-world problems.
- Prepare the technical report on the experiments carried.

LIST OF PRACTICALS (Total Practical Hours – 30 Hours)

1. Program to transfer a block of data.

2. Program to find the sum/subtraction of two 8-bit numbers.
3. Program to find the sum of N 8-bit numbers.
4. Program to find multiplication/ Division of two 8-bit numbers.
5. Program to find smallest of N numbers
6. Program to find the square root of 8-bit number.
7. Program to sort the numbers in ascending/ descending order.
8. Flash LED at observable rate.
9. Interface Input Switches and output LEDs.
10. Interface 7 segment display.

Note: Students shall sincerely work towards completing all the above listed practicals for this course. In any circumstance, the completed number of practicals shall not be less than nine.

Essential/recommended readings

1. Programming and Customizing the AVR Microcontroller, By Dhananjay Gadre, McGraw Hill Education

Suggestive readings

1. The AVR Microcontroller and Embedded Systems Using Assembly and C, By Muhammad Ali Mazidi, Sarmad Naimi and Sepehr Naimi, Pearson Education.
2. AVR ATmega32 data sheet- ATMEL Corporation

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-2)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Arduino/ Rpi App Development	4	2	-	2	Class XII passed with Maths/Applied Maths	Basic C language programming

Learning Objectives

This course introduces the student to the fundamental understanding of Arduino/Rpi processors. After completion of this course students should be well versed in programming the microcontroller. They should be able to use various sensors and make microcontroller respond to the external environment.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Understand the basic concepts of Arduino Uno / Raspberry Pi and the programming environments.
- Understand digital and analog ports of a microcontroller and their usage.
- Understand the working of various sensors and their application in robotics.
- Design different circuits and display their outputs using LCD and other indicator

SYLLABUS OF ELGE-6B Total Hours- Theory: 30 Hours, Practicals: 60 Hours

UNIT – I (8 Hours)

Basic functionality of the Arduino/ Rpi board and its processor, Setting and configuring the board: Pin diagram of Arduino/Rpi development board, Integrated Development Environment (IDE), IDEs like AVR Studio, WIN AVR, ARM 11, Installing and configuring for Robot programming, In System Programmer (ISP), loading programs on Robot, Differentiating Arduino board from Rpi board.

UNIT – II (8 Hours)

Introduction of Embedded C Programming and programming concepts for Arduino/ LINUX for Rpi, Digital Ports: Data Read and Write, Interfacing LEDs, Buzzer, Switches, 7 segment displays, LED dot matrix, Traffic lights, Introduction to 2 x 16 Characters LCD, Basic LCD control, Displaying message on LCD.

UNIT – III (6 Hours)

Sensors: IR range sensor of different range, Analog IR proximity sensors, Ultrasound scanner, LDR, Gyroscope and Accelerometer, Magnetometer, GPS receiver.

UNIT – IV (8 Hours)

Communication with Arduino/ Raspberry Pi : Wired RS232 (serial) Communication, Wireless ZigBee Communication, USB Communication, Simplex infrared Communication (IR remote to robot), Reading and writing to SD card.

Practical component (if any) – Arduino/Rpi App Development
(Supporting IDE)

Learning outcomes

The Learning Outcomes of this course are as follows:

- Familiarize with the Arduino/Rpi microcontroller development boards.
- Understand interfacing of various display devices viz. 7-segment display, LED dot matrix, LCD.
- Understand various sensors, their applications and designing control experiments using

LIST OF PRACTICALS (Total Practical Hours- 60 Hours)

1. To blink an LED/interface a Buzzer using a digital pin of the processor.
2. To display binary count on LEDs using digital port of the processor.
3. To display decimal count on a 7-segment display.
4. To read data from a digital port of the processor and then display it on other digital port.
5. To print a message on LCD.
6. To display different patterns on LED dot matrix.
7. To read the voltage of a potentiometer using analog port of the processor and depict the variation on LEDs/LCD.
8. To interface IR proximity sensor to determine if some obstacle is nearby.
9. To interface Ultrasonic sensor to determine if some object is in the facing direction.
10. To interface LDR and display if its dark or bright on 7 segment/LCD.
11. To design a Traffic Light System
12. To design a Voice Control Home Automation
13. To design a PWM based variable system
14. To design a wireless appliance controlling system.

Note: Students shall sincerely work towards completing all the above listed practicals for this course. In any circumstance, the completed number of practicals shall not be less than twelve.

Essential/recommended readings

1. Michal Mc Roberts “Beginning Arduino” Second Edition, Technology in Action
2. Massimo Banzi, “Getting started with Arduino” 2nd Edition, Orelly 2011
3. Richard Blum, “ Arduino Programming in 24 Hours”, Pearson Education, 1st edition, 2015.

Suggestive readings

1. Simon Monk, “Raspberry Pi Cookbook: Software and Hardware Problems and Solutions”, O'Reilly Reprints; Second edition 2016

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER-IV
DEPARTMENT OF INSTRUMENTATION
Category I

(B.Sc. Honours in Instrumentation)

DISCIPLINE SPECIFIC CORE COURSE – 10: Biomedical Instrumentation (INDSC4A)

CREDIT DISTRIBUTION, ELIGIBILITY, AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Biomedical Instrumentation (INDSC4A)	04	03	-	01	Class XII passed with Physics + Mathematics/Applied Mathematics + Chemistry/ Computer Science/Informatics Practices	Sensors and Transducers

Learning Objectives

The Learning Objectives of this course are as follows:

- To identify and describe various biomedical signals.
- To describe the origin of biopotentials and explain the role of biopotential electrodes.
- To understand the synchronization between the physiological systems of the body.
- To understand the basic measurement principles behind biomedical instrumentation.
- To realize the working principle of numerous biomedical imaging techniques.
- To analyze the applications of biosensing in different domains of healthcare.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Analyze the origin of various bioelectric signals (ECG, EEG) and the method of recording using different types of electrodes.
- Develop basic knowledge about the Cardiovascular, respiratory and nervous systems.

- Develop an understanding of the measurement principles of medical instrumentation including measurement of respiratory function, cardiac variables, blood pressure as well as medical devices.
- Design various biomedical instruments with the help of respective transducers.

SYLLABUS OF DSC-10

Unit-1 **(10 Hours)**

Biopotentials, Bio amplifiers, and Bioelectrodes: Introduction to bio-electric potential, bio- amplifier, components of man Instrument system, types of biomedical systems, design factors and limitations of biomedical instruments, terms, and transducers to measure various physiological events, types of bio-potential electrodes (Body surface electrodes, Internal electrodes, Microelectrodes), electrolyte interface, electrode circuit model, impedance and polarization, Properties of electrodes

Unit-2 **(13 Hours)**

Cardiac vascular system & measurements: ECG: origin, Instrumentation, the bipolar system lead system I, II, III, Einthoven's triangle, Augmented lead system, unipolar chest lead system, types of display. Blood pressure measurements: direct, indirect. Pacemakers- Internal, External

Unit-3 **(11 Hours)**

Respiratory Measurement Systems: Types of volume, types of measurements, Instrumentation of respiratory system, principle & types of pneumograph, Spirometer, pneumotachometers, nitrogen washout technique

Unit-4 **(11 Hours)**

Nervous system: Action potential of the brain, brain wave, Instrumentation of Electroencephalography (EEG), electrodes used for recording EEG analysis. Conventional X-ray, properties, generation of X-ray, Thermal imaging system, working, IR detectors, applications.

Practical component: **(30 hours)**

1. Characterization of biopotential amplifier for ECG signals.
2. Study on ECG simulator.
3. Recording of EEG.
4. Measurement of blood pressure and measurement of heart sound using a stethoscope.
5. Study of pulse rate monitor with alarm system.
6. Determination of pulmonary function using a spirometer.
7. Measurement of respiration rate using thermistor /other electrodes.
8. Study of Respiration Rate monitor/ apnea monitor.

Essential/recommended readings

1. Cromwell L., Wiebell F. J., Pfeiffer EA, Biomedical Instrumentation and Measurements, 2nd Edition, Prentice Hall (2010).
2. Carr J. J, Brown J. M. Introduction to Biomedical Equipment Technology, 4th Edition, Pearson Education Inc (2010).
3. Khandpur R.S., Handbook of Biomedical Instrumentation, 2nd Edition, Tata McGraw-Hill Publishing (2009).
4. Joseph D. Bronzino, The Biomedical Engineering Handbook, IEEE Press (2015), 4th edition, Volume 1.

Suggestive readings

1. Richard Aston, Principles of Biomedical Instrumentation & Measurement, 1st edition, Merrill Publishing Company (1990).
2. Mandeep Singh, Introduction to Biomedical Instrumentation, 2nd Edition, PHI learning private limited (2014).

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 11: Machine Learning (INDSC4B)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Machine Learning (INDSC4B)	**04**	**02**	**-**	**02**	**Class XII passed with Physics + Mathematics /Applied Mathematics + Chemistry/ Computer Science/Informatics Practices**	**Understanding of Mathematics & programming language**

Learning Objectives

The Learning Objectives of this course are as follows:

- Students have an understanding of issues and challenges of Machine Learning.
- Students should be able to select data, model selection, model complexity etc.
- Understanding of the strengths and weaknesses of many popular machine learning approaches.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Identify the characteristics of datasets and compare the trivial data and big data for various applications.
- Understand machine learning techniques and computing environments that are suitable for the applications under consideration .
- Solve problems associated with batch learning and online learning, and the big data characteristics such as high dimensionality, dynamically growing data and in particular scalability issues.
- Develop scaling up machine learning techniques and associated computing techniques and technologies for various applications.
- Implement various ways of selecting suitable model parameters for different machine learning techniques.
- Integrate machine learning libraries, and mathematical and statistical tools with modern

- technologies like hadoop distributed file system and mapreduce programming model
- Familiarize with Simple Linear Regression and Logistic Regression.
- Appreciate the various nuances of Multiple Regressions and Model Building.
- Identify and apply the Classification algorithms.
- Apply the Clustering algorithms for developing applications

SYLLABUS OF DSC-11

UNIT – 1 **(8 hours)**

Introduction to Machine Learning: varieties of machine learning, Supervised Learning, Unsupervised Learning, Reinforcement Learning. Dimensionality Reduction, Subset Selection, Shrinkage Methods, Principal Components Regression: Linear Classification, Logistic Regression, Linear Discriminant Analysis, Optimization, Classification-Separating Hyperplanes Classification.

UNIT – 2 **(8 hours)**

Learning input/output functions, sample application. Boolean functions and their classes, CNF, DNF, decision lists and Bias – Variance, Version spaces for learning, version graphs, learning search of a version space, candidate elimination methods.

UNIT – 3 **(8 hours)**

Artificial Neural Networks (Early models, Back Propagation, Initialization, Training & Validation) Parameter Estimation (Maximum Likelihood Estimation, Bayesian Parameter Estimation) Decision Trees: ID4, C4.5, CART, Evaluation Measures, Hypothesis Testing.

UNIT – 4 **(6 hours)**

Clustering, Gaussian Mixture Models, Spectral Clustering, Ensemble Methods Learning Theory, Graphical Models.

K-Nearest Neighbors: Computational geometry; Voronoi Diagrams; Delaunay Triangulations K-Nearest Neighbor algorithm; Wilson editing and triangulations. Aspects to consider while designing K-Nearest Neighbor, Support Vector Machines and its classifications. Linear learning machines and Kernel space, Making Kernels and working in feature space.

Practical component: **(60 hour)**

Hardware requirement: i5 Processor, 8GB RAM, Internet Connection

Software Environment: IDE recommended PYCHARM (Recommended), JUPYTER, VISUAL STUDIO

1. Introduction to pandas and NumPy
2. Prediction based on different dataset: Vegetable Quality Prediction, Housing Price Prediction, Air Quality Prediction, Car Price Prediction

3. Prediction of diseases e.g. Liver Disease Prediction, Heart Disease Prediction, Crop disease.
4. Credit Default Prediction, Airline Passengers Prediction, Stock Price Prediction.
5. Bank Marketing, Media Content Problem, Online Retail Case Study
6. Energy Efficiency Analysis, Movie Sentiment Analysis, Car Evaluation
7. Program to demonstrate Simple Linear Regression
8. Program to demonstrate Logistic Regression using SCIKIT learn
9. Program to demonstrate Logistic Regression
10. Program to demonstrate k-Nearest Neighbor flowers classification
11. Program to demonstrate Decision Tree – ID3 Algorithm
12. Program to demonstrate Naïve- Bayes Classifier
13. Program to demonstrate Back-Propagation Algorithm
14. Program to demonstrate k-means clustering algorithm
15. Program to demonstrate K-Means Clustering Algorithm on Handwritten Dataset
16. Program to demonstrate K-Medoid clustering algorithm
17. Program to demonstrate DBSCAN clustering algorithm
18. Program to demonstrate SVM based classification
19. Program to demonstrate PCA on face recognition
20. Program to demonstrate PCA and LDA on Iris dataset
21. Mini Project works shall be given with a batch of four students considering different datasets such as digit dataset, face dataset, flower dataset and micro-array dataset.

Essential/recommended readings

1. Introduction to Machine learning, Nils J.Nilsson
2. Pattern Recognition and Machine Learning. Christopher Bishop. First Edition, Springer, 2006.
3. Pattern Classification. Richard Duda, Peter Hart and David Stock. Second Edition, Wiley-Interscience, 2000.
4. Machine Learning. Tom Mitchell. First Edition, McGraw-Hill, 1997.
5. T. Hastie, R. Tibshirani, J. Friedman. The Elements of Statistical Learning, 2e, 2008.

Suggestive readings

1. Christopher Bishop. Pattern Recognition and Machine Learning. 2e.
2. Tom M. Mitchell, “Machine Learning”, McGraw-Hill, 2010
3. Bishop, Christopher. Neural Networks for Pattern Recognition. New York, NY: Oxford University Press, 1995.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 12: Optical Instrumentation (INDSC4C)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Optical Instrumentation (INDSC4C)	**04**	**03**	**-**	**01**	**Class XII passed with Physics + Mathematics/ Applied Mathematics + Chemistry/ Computer Science/Informatics Practices**	**Optics and Electronics**

Course Learning Objectives

The Learning Objectives of this course are as follows:

- To understand concepts of light and optical effects
- To impart in-depth knowledge of opto-electronic devices and optical measurements
- To provide basic knowledge of interferometry and refractometers
- To introduce the concept of optical fiber-based sensing and measurements

Course Learning Outcomes

The Learning Outcomes of this course are as follows:

- Explain different light phenomenon, optical effects and their applications
- Design photo detector circuits using LED and Lasers as sources
- Understand the optical measurements using interferometers
- Analyze Fiber optic fundamentals and Measurements

SYLLABUS OF DSC-12

Unit-1 **(12 hours)**

Light as Source and optical effects: Concept of light, coherent and incoherent light sources, classification of different light phenomenon (interference, diffraction and polarization), Diffraction grating, Electro-optic effect, Acousto-optic effect and Magneto-optic effect.

Unit-2 **(12 hours)**

Opto–Electronic Devices: Light emitting diode (LED), Materials used to fabricate LEDs, Characteristics of LEDs, LED based optical communication, Lasers: Concept of laser (Spontaneous emission, stimulated emission and stimulated absorption), Ruby laser, He-Ne laser, semiconductors laser. Detectors: Photo diode, PIN diode, Photo-conductors, Solar cells.

Unit-3 **(10 hours)**

Interferometry for optical measurements: Michelson's Interferometer and its application, Rayleigh's interferometers, Abbe Refractometer, Fabry-Perot Interferometer, Holography: Concept of holography in brief (Recording and reconstruction).

Unit-4 **(11 hours)**

Optical Fiber for sensing and measurements: Step index and graded index fibers, Single and multi-mode fibers, Characteristics of optical fiber, Fiber losses, Fiber optic communication system, Dispersion measurement, Active and passive optical fiber sensors, Single mode fiber sensor, Fiber-optic refractive index sensor

Practical component: **(30 hours)**

1. To study characteristics of LED
2. To determine the slit width using He-Ne laser
3. To determine the wavelength of monochromatic source using Michelson interferometer.
4. Determine the numerical aperture and bending loss of optical fiber
5. To find the wavelength of a laser using transmission diffraction grating
6. To measure the intensity pattern of a single slit using He-Ne laser
7. To find the I-V characteristics of a solar cell
8. To measure the refractive index of the prism using a spectrometer.

Essential/recommended readings

1. Ajoy Ghatak, Optics, Tata McGraw Hill, New Delhi (2008)
2. S. O. Kasap, Optoelectronics and Photonics: Principles and Practices, Pearson Education (2009)
3. E. Hecht, Optics, Pearson Education Ltd. (2002)
4. Rajpal S. Sirohi, Wave Optics and its Application, 1st ed. (2001)
5. Pollock, Fundamentals of OPTOELECTRONICS, (1994)
6. Photonic Devices and Systems –by Robert G. Hunsperger, Taylor & Francis, 1994,
7. G. Hebbar, "Optical Fiber Communication", Cengage

Suggestive reading

1. J. Wilson and J. F. B. Hawkes, Optoelectronics: An Introduction, Prentice H. India (1996)

2. Ghatak A.K. and Thyagarajan K., “Introduction to fiber optics,” Cambridge Univ.Press. (1998)
3. 10. A. Yariv, Optical Electronics/C.B.S. College Publishing, New York, (1985)

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVES (DSE) COURSES OFFERED BY THE DEPARTMENT

DISCIPLINE SPECIFIC ELECTIVE: Linear Integrated Circuits (INDSE4A)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Linear Integrated Circuits(INDSE4A)	04	03	-	01	Class XII passed with Physics + Mathematics/Applied Mathematics+ Chemistry / Computer Science/Informatics	Understanding of Analog electronics & Operational Amplifiers

Learning Objectives

The Learning Objectives of this course are as follows:

- Familiarity and designing of various non-linear circuits using op-amp
- Familiarity and designing of multivibrators using 555 timer.
- Use of op-amp in designing of D/A and A/D convertors.
- Familiarity with different Linear ICs like 380, 555, 565, 566, 78xx and 79xx.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Design and explain the working of log & anti-log amplifier, analog multiplier and precision rectifier using op-amp.
- Design and explain the working of D/A and A/D convertors using op-amp.
- Design and explain the working of different types of multivibrators using IC 555.
- Use the regulator ICs for regulation purposes.

SYLLABUS OF DSE-2

UNIT – 1 **(12 hours)**

Sample and hold circuits, logarithmic amplifiers, antilogarithmic amplifiers, analog multipliers, Precision rectifier circuit: Half wave rectifier, full wave rectifier, bridge rectifier, peak rectifier, clipper, clamping, and applications of precision rectifier circuits.

UNIT – 2 **(12 hours)**

D/A convertor: Binary weighted resistors, R/2R resistor. A/D convertor: Successive approximation.

Power Amplifiers: Monolithic power amplifier (IC 380), use of power boosters (IC 3329/03), application of power amplifiers

UNIT – 3 **(12 hours)**

Multivibrators (IC 555): Pin and block diagram, Astable and monostable multivibrator circuit, applications of astable and monostable multivibrators.

Phase locked loops (PLL): Block diagram, operating principle, phase detector types, monolithic phase locked loops (IC565). Application of PLL IC 565: Frequency multiplier and frequency shift keying. Voltage controlled oscillator (IC 566).

UNIT – 4 **(9 hours)**

Voltage Regulators IC: Fixed voltage regulator (IC 78xx and IC 79xx), adjustable voltage regulator (IC 317 and IC 337), switching regulator (IC 1723) and special regulator.

Practical component: **(30 hours)**

1. Designing of precision half wave rectifier circuit.
2. Designing of precision full wave rectifier circuit.
3. Designing of precision positive and negative clipper circuit.
4. Designing of precision positive and negative clamper circuit.
5. Designing of binary weighted D/A convertor OR R/2R resistor D/A convertor
6. Design an astable multivibrator using IC 555.
7. Design a monostable multivibrator using IC 555.
8. Design a voltage regulator circuit using voltage regulator IC.

Essential/recommended readings

1. Skoog &Lerry, Instrumental Methods of Analysis, Saunders College R. A. Gayakwad, Op-Amps and Linear IC's, Pearson Education 4th Edition, May 2015.

2. R. F. Coughlin and F. F. Driscoll, Operational amplifiers and Linear Integrated circuits, Pearson Education (2001).
3. J. Millman and C.C. Halkias, Integrated Electronics, Tata McGraw-Hill, (2001).
4. A.S. Sedra and K.C. Smith, Microelectronics Circuit, Oxford (2011).

Suggestive readings

1. A.P.Malvino, David J Bates, Electronic Principals, 7th Edition, Tata McGraw-Hil Education, (July 2017).

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE: Statistical Tools and Techniques (INDSE4B)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Statistical Tools and Techniques (INDSE4B)	04	03	-	01	Class XII passed with Physics + Mathematics/Applied Mathematics/Biology+ Chemistry / Computer Science/Informatics	Class X Mathematics

Learning Objectives

The Learning Objectives of this course are as follows:

- To develop the students' ability to deal with numerical and quantitative issues in industries.
- To enable the use of statistical, graphical, and algebraic techniques wherever relevant.
- To have a proper understanding of Statistical applications in different fields.
- To identify and discuss critically, the uses and limitations of statistical analysis.

Learning Outcomes

The Learning Outcomes of this course are as follows:

- Describe and discuss the key terminology, concepts tools, and techniques used in statistical analysis
- Understand the concept of probability and sampling distributions

- Perform different parametric and non-parametric tests for various statistical analysis.

SYLLABUS OF DSE-02

Descriptive statistics: Graphical and Tabular representation of data. Measures of Central Tendency, Measures of Dispersion, Measures of Skewness and Kurtosis.

Unit-1 **(13 hours)**

Correlation and Regression: Linear Regression and Correlation.

Unit-2 **(12 hours)**

Probability and Distributions: Introduction to probability, Experiment, sample space, event, probability, conditional probability, Baye's Theorem, Random Variables, Probability Distributions- Normal, Binomial, Poisson, Mathematical Expectation.

Unit-3 **(10 hours)**

Sampling and Sampling Distributions: Sampling distributions and Standard errors. One and two-sample estimation of means and proportions. One and two-sample tests of hypothesis- means, proportions and variances, t-test, Chi-square test.

Unit-4 **(10 hours)**

Nonparametric Statistics: Nonparametric tests, Sign test, Signed-Rank test, Rank-Sum test, Kruskal-Wallis test, Runs test.

Practical component: **(30 hours)**

1. Collection, tabulation, and statistical interpretation of data.
2. To study measures of central tendency- mean, median, mode.
3. To study measures of dispersion- range, standard deviation, variance.
4. To study the coefficient of variation.
5. To study measures of skewness.
6. To study the continuous and discrete distribution.
7. To study nonparametric tests.

Essential/recommended readings

1. Probability and Statistics for Engineers and Scientists by Walpole, Myers, Myers and Ye, 9th Edition, Pearson Education, 2012.
2. Mathematical Statistics and Applications by John E. Freund, 8th Edition, Prentice Hall, India, 2014.
3. Introduction to Statistical Quality Control by Montgomerry, 8th Edition, John Wiley and Sons, 2019.

Suggested Books:

4. Principles of Biostatistics by M. Pagano and K. Gauvrean: Thompson learning (2nd edition); 2018.
5. Biostatistics: A Foundation for Analysis in the Health Sciences by W. W. Daniel and Chad L. Cross; John Wiley and Sons Inc (11th edition); 2018 .

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE: Virtual Instrumentation (INDSE4C)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Virtual Instrumentation Techniques and Applications (INDSE4C)	04	02	-	02	Class XII passed with Physics + Mathematics/Applied Mathematics+ Chemistry / Computer Science/Informatics	Electronic Instruments & programming language

Learning Objectives

The Learning Objectives of this course are as follows:

- To understand the importance of Virtual Instrumentation and study its applications.
- To learn the basic programming concepts in LabVIEW.
- To understand the basics of data acquisition for designing a Virtual Instrument.
- To recognize the various building blocks of Virtual instrumentation and use them for PC-based Measurement.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Understand the importance and applications of Virtual Instrumentation.
- Learn the basic programming concepts in LabVIEW.
- Recognize the components of Virtual instrumentation and use them for PC Based Measurement.

SYLLABUS OF DSE-02

Unit 1 **(6 hours)**

Introduction to Virtual Instrumentation: Historical perspective, advantages, Block diagram and Architecture of a Virtual Instrument, Data Flow Techniques, Graphical programming in the data flow, comparison with Conventional programming.

Unit 2 **(10 hours)**

LabVIEW Programming Environment: Basic operations, Controls/ Indicators, Auto indexing, Debugging, Timing issues (counters).

VI Programming Techniques: Modular programming: VIS and sub-VIS, loops, Arrays, Clusters, Graphs, Charts, Case & Sequence structures. Formula nodes, Local and Global variables, String & file input.

Unit 3 **(10 hours)**

Instrument Control: GPIB Communication, Instrument I/O Assistant, Virtual Instrument Software Architecture (VISA), Instrument Drivers, Serial Port Communication

Data Acquisition Basics: Signals Handling and Classification, Signal Conditioning, Analog Interfacing (I/O), Counters & Timers, Digital (I/O) - DAQ Hardware, DAQ Software Architecture, DAQ Assistant

Unit 4 **(4 hours)**

Developing applications on LabVIEW: Process control, Waveform generator, Motion control using a stepper motor.

Practical Components **(60 hours)**

1. The length and breadth of a rectangle and the radius of a circle are inputs. Build a VI to calculate the area and perimeter of the rectangle and the area and circumference of the circle.
2. Convert a binary number to a decimal number.
3. Compute the equations (X1 + 2)*3 and 5 + X2*log(X2) using functions, Expression node, and Express Formula for the given inputs X1 and X2.
4. Build a VI to find the factorial of a number.
5. Create a VI to find the sum of first n natural numbers using a While Loop with a feedback node.
6. Write a program in LabVIEW to read a positive number n and to generate the following number series using (a) a For Loop and (b) a While Loop
   1, 22, 32, 42, …, n2
   0, 2, 4, 6, …, n
7. Create a VI to compare the element of two clusters if the value of the corresponding element is the same switch on LED in the output cluster.
8. Build an array of cluster controls in which each cluster consists of a numeric control and a 1D numeric array (with 5 elements). This forms a database of marks of students. The numeric control indicates the roll number and the array indicates the test marks of five subjects. Build logic to modify the mark in a particular subject of a particular student. Input the roll number, the subject in which the mark is to be changed, and the new marks. Display the changed database on a separate array indicator.
9. Create a 1D numeric array that consists of ten elements and rotate it ten times. For each rotation display the equivalent binary number of the first array element in the

form of a Boolean array. Also, display the reversed Boolean array. Provide delay to view the rotation.

10. Create two 2D numeric arrays and add them. Change the number of rows and number of columns of each array and see the result.
11. Create a 1D array and find its reverse.
12. Build a VI to plot a circle in the XY graph using a For Loop.
13. Build a VI that generates a 1D array of random numbers and sort the ascending descending array and also find the max. and min. value array element.
14. Build a cluster control that consists of a seven-segment LED display, a switch, a string control, and numeric control. Split the cluster elements using the Unbundle function and alter the values of some of the cluster controls. Bundle them again and display them in a cluster indicator.
15. Using a for loop determines the number of odd numbers between a range of numbers entered by the user.
16. Write a for loop which takes the given values of u from a numeric control labeled coefficient of kinetic friction. Calculate f‟ from theta=0 to 90 degree in 1-degree increment then display the resulting array f‟ values on a waveform graph.
17. Create a VI to check whether the cluster elements are in range or not. Specify the upper and lower limits. Display the coerced output and a cluster of LEDs to indicate whether a particular cluster element is in the range or not.
18. Split an input string into two outputs with reference to a separating character. Find the length of the input string and reverse the string.
19. Write a program to solve x2+bx+c=0.
20. Build a VI to generate two waveforms of different amplitude and frequency add the signal to find the resultant and plot it on the separate waveform graph.

Essential/recommended readings

1. John Essick , Hands-on Introduction to LabVIEW for Scientists and Engineers, 3rd Edition, 2015.
2. Gary Johnson, LABVIEW Graphical Programming, McGraw Hill, 4th Edition, 2006.
3. Lisa K. Wells and Jeffrey Travis, LABVIEW for Everyone, PHI, 3rd Edition, 2006.
4. James K, PC interfacing and data acquisition, 2002.
5. Skolkoff, Basic concepts of LABVIEW 4, PHI, 1998.

Suggested Books

1. Technical Manuals for DAS Modules of Advantech and National Instruments. L.T. Amy, Automation System for Control and Data Acquisition, ISA, 4thEdition, 1992.
2. S. Gupta, J.P. Gupta, PC Interfacing for Data Acquisition and Process Control, ISA, 2nd Edition, 2nd Edition, 1994.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES OFFERED BY THE DEPARTMENT

GENERIC ELECTIVE: Signal and image processing (INGE4A)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Signal and image processing (INGE4A)	04	03	-	01	Class XII passed with Mathematics/ Applied Mathematics/ Computer Science/Informatics Practices	Engineering Mathematics

Learning Objectives

The Learning Objectives of this course are as follows:

- To understand the fundamental concepts of signal and Image processing.
- To explore DFT for 1-D and 2-D signal and FFT for 1-D signal
- To apply processing techniques on 1-D and Image signals.
- To apply signal and image processing techniques for edge detection.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Apply the concept of DT Signal and DT Systems.
- Classify and analyze discrete time signals and systems
- Implements Digital Signal Transform techniques DFT and FFT.
- Use the enhancement techniques for digital Image Processing
- Differentiate between the advantages and disadvantages of different edge detection techniques
- Develop small projects of 1-D and 2-D Digital Signal Processing.

SYLLABUS OF GE-4

UNIT – 1 **(12 hours)**

Discrete Time Signals and Systems: Introduction, discrete time sequences, Examples of sequences – step, impulse, ramp, sine and exponential, properties of signals and sequences, interpolation and decimation, linear time invariant systems and their properties, stability, causality, system responses, convolution and correlation, sum, solutions of system using difference equations, ZIR, ZSR, natural and forced responses. Z-Transform.

UNIT – 2 **(11 hours)**

Discrete Fourier Transform: Introduction to DTFT and DFT, Relation between DFT and DTFT, IDFT, Properties of DFT without mathematical proof (Scaling and Linearity, Periodicity, Time Shift and Frequency Shift, Time Reversal, Convolution Property and Parsevals' Energy Theorem). DFT computation using DFT properties. Transfer function of DT System in frequency domain using DFT. Linear and Circular Convolution using DFT, Convolution of long sequences, Introduction to 2-D DFT.

UNIT – 3 **(11 hours)**

Fast Fourier Transform: Need of FFT, Radix-2 DIT-FFT algorithm, DIT-FFT Flow graph for N=4 and 8, Inverse FFT algorithm. Spectral Analysis using FFT. FIR and IIR filter.

Representation of Digital Image, Image File Formats, Fundamental steps in Digital Image Processing, Elements of visual perception, Image sensing and Acquisition, Image Sampling and Quantization, Imaging geometry.

UNIT – 4 **(11 hours)**

Image Enhancement:

Spatial Domain: Basic relationship between pixels- Basic Gray level Transformations Histogram Processing – Smoothing spatial filters- Sharpening spatial filters.

Frequency Domain: Smoothing frequency domain filters- sharpening frequency domain filters Homomorphic filtering, Image Compression and Image Segmentation

Practical component: **(30 hours)**

1. (a) Represent basic signals like:Unit Impulse, Ramp, Unit Step, Exponential.
   (b) To generate discrete sine and cosine signals with a given sampling frequency.
2. (a) To represent complex exponentials as a function of real and imaginary parts.
   (b) To determine impulse and step response of two vectors using MATLAB.
3. (a) To perform convolution between two vectors using MATLAB.
   (b) To perform cross correlation between two vectors using MATLAB.

4. To compute DFT and IDFT of a given sequence using MATLAB.
5. To perform linear convolution of two sequences using DFT using MATLAB.
6. (a) To determine z-transform from the given transfer function and its ROC using MATLAB.
   (b)To determine rational z-transform from the given poles and zeros using MATLAB.
7. To determine partial fraction expansion of rational z-transform using MATLAB
8. Implementation of Image negative, Gray level Slicing and Thresholding
9. Implementation of Contrast Stretching, Dynamic range compression & Bit plane Slicing
10. Implementation of Histogram Processing, Image smoothing/ Image sharpening

Essential/recommended readings

1. John G. Proakis, Dimitris and G.Manolakis, 'Digital Signal Processing: Principles, Algorithms, and Applications' 4th Edition 2007, Pearson Education.
2. A. Anand Kumar, 'Digital Signal Processing', PHI Learning Pvt. Ltd. 2013.
3. Rafel C. Gonzalez and Richard E. Woods, 'Digital Image Processing', Pearson Education Asia, 3rd Edition, 2009.
4. S. Sridhar, 'Digital Image Processing', Oxford University Press, Second Edition, 2012.

Suggestive readings

1. Sanjit K Mitra, 'Digital Signal Processing: A Computer Based Approach', TataMcGraw Hill, 3rd Edition.
2. S. Salivahanan, A. Vallavaraj, and C. Gnanapriya, 'Digital Signal Processing', Tata McGraw Hill Publication 1st Edition (2010).
3. S. Jayaraman, E. Esakkirajan and T. Veer Kumar, 'Digital Image Processing' TataMcGraw Hill Education Private Ltd, 2009.
4. Anil K. Jain, 'Fundamentals and Digital Image Processing', Prentice Hall of India Private Ltd, 3rd Edition.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVE : Nuclear and Biomedical Instrumentation (INGE4B)

CREDIT DISTRIBUTION, ELIGIBILITY, AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Nuclear and Biomedical Instrumentation (INGE4B)	04	03	-	01	Class XII passed with Physics+ Mathematics/Applied Mathematics/ Biology + Chemistry	Chemistry & Analog Electronics

Learning Objectives

The Learning Objectives of this course are as follows:

- To gain the basic technical knowledge of biomedical instrumentation.
- To familiarize with various bioelectric signals and understand their source of generation.
- To understand the working principle and applications of medical imaging instruments and the modalities involved in each technique.
- To apprehend the essential operation of the nuclear medicine system.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Learn the technical vocabulary associated with basic instrumentation and design and fundamental signal analysis
- Develop a clear understanding of the various bioelectric signals produced by the body which could be obtained and analyzed using the basic implementation of Instrumentation
- Explain and compare the origin, instrumentation, and analysis of biological signals produced by the cardiovascular, respiratory, and nervous system

- Understand the basic difference between the working principle, instrumentation, and application of different medical imaging systems such as ultrasound, X-ray, and Computed tomography
- Infer the measurement principle and operating conditions of various detectors used in a nuclear medicine system

SYLLABUS OF GE-4

UNIT – 1 **(7 hours)**

Introduction to bioelectric potential, bio-amplifier, components of man Instrument system, design factors of biomedical instruments, types of biopotential electrodes.

UNIT – 2 **(14 hours)**

Measurement of Biopotentials: Cardiac vascular system, Origin of (Electrocardiography) ECG signals, Instruments of ECG, bipolar system lead system I, II, III, Einthoven's triangle, Augmented lead system, unipolar chest lead system, types of display.

The nervous system, Action potential of the brain, brain wave, Instrumentation Electroencephalography (EEG).

Measurement of Physiological Parameter: Respiratory system, Types of volume, types of measurements, Instrumentations of the respiratory system, pneumograph, principle & types of pneumograph, Spirometer.

UNIT – 3 **(14 hours)**

Medical Imaging System: Ultrasound, properties, beam width, its generation & detection, types of transducers, diagnostic application – A Scan, B Scan, and M Scan

Radiography: Conventional X-ray, properties, generation of X-ray, X-ray Computed Tomography (CT scanner), and Computer-aided tomography (CAT).

UNIT – 4 **(10 hours)**

Medicine System: Introduction to nuclear medicine system, safety aspects, Nuclear detectors, Gas filled detectors: Ionization, Proportional, and Geiger Muller (GM) Counter, Scintillation counter – principle, operating condition.

Practical component: **(30 hours)**

1. Characterization of biopotential amplifier for ECG signals.
2. Study on ECG simulator.
3. Recording of EEG.
4. Heart sound measurement using an electronic stethoscope.
5. Study of pulse rate monitor with alarm system.
6. Determination of pulmonary function.
7. Study on ultrasound transducers based on the medical systems.
8. Study of Respiration Rate monitor/ apnea monitor.
9. Study of conventional X-ray and CT film.

Essential/recommended readings

1. Cromwell L., Wiebell F. J., Pfeiffer EA, Biomedical Instrumentation and Measurements, Prentice Hall, 2nd edition, 2010.
2. Carr J. J, Brown J. M. Introduction to Biomedical Equipment Technology, Fourth edition, Pearson Education, Inc, 4th edition, 2010.
3. Khandpur R.S., Handbook of Biomedical Instrumentation, Tata McGraw-Hill Publishing, India, 2nd edition, 2009.
4. Joseph D. Bronzino, The Biomedical Engineering Handbook, 4th Edition (2015), Volume 1, IEEE Press.

Suggestive readings

1. Richard Aston, Principles of Biomedical Instrumentation & Measurement, 1st edition, Merrill Publishing Company (1990).
2. Mandeep Singh, Introduction to Biomedical Instrumentation, 2nd Edition, PHI learning private limited (2014).

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER-V
DEPARTMENT OF INSTRUMENTATION
Category I

(B.Sc. Honours in Instrumentation)

DISCIPLINE SPECIFIC CORE COURSE – 13: Advance Biomedical Instrumentation (INDSC5A)

CREDIT DISTRIBUTION, ELIGIBILITY, AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Advance Biomedical Instrumentation (INDSC5A)	04	02	-	02	Class XII passed with Physics + Mathematics/Applied Mathematics + Chemistry/ Computer Science/Informatics Practices	Biomedical & Electronic Instrumentation

Learning Objectives

The Learning Objectives of this course are as follows:

- To realize the importance of the instruments used in critical care units of the hospital.
- To understand the principle behind the measurement of biochemical signals.
- To understand the concept of instruments used in medical imaging diagnostics and therapeutics.
- To appreciate the efficiency of the surgical and diathermy apparatus in the medical incision.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Understand instruments used in critical care and operating units of hospitals
- Gain knowledge of the instruments used for biochemical analysis in healthcare
- Understand the concepts of various medical imaging techniques and their applications

- Understand instruments used for medical assistance and therapy

SYLLABUS OF DSC-13

Unit-1 **(8 Hours)**

Ventilators: Basic principles and types of ventilators.

Anaesthesia Machine: Need of anaesthesia, anaesthesia delivery system, breathing circuits. **Clinical Laboratory Instruments**: General principle and working of Blood Gases Analyzer, Auto-analyser, Blood Cell Counters, ELISA reader.

Unit-2 **(8 Hours)**

Medical Imaging System: Ultrasound, properties, its generation & detection, types of transducers, real-time ultrasonic imaging, linear array scanners, X-ray computed tomography (CT Scanner) principle, contrast scale, scanning system, processing Unit, viewing, storage. Magnetic Resonance Imaging: Basic principle, working and construction.

Unit-3 **(6 Hours)**

Nuclear Medicine System: radioactive emissions, gamma camera, imaging system, ECT (emission coupled tomography) and its different approaches: positron emission tomography (PET), Single-photon emission computed tomography (SPECT).

Unit-4 **(8 Hours)**

Surgical Scopy and Diathermy Equipments: Fibre Optics- Endoscopes -light sources, video processors, camera, and fibre optic cable, Principles and applications. Diathermy: Working Principle, Construction, and different types (Infrared radiation (IR), ultraviolet (UV), short wave, microwave, ultrasonic, and Surgical Diathermy).

Practical component: **(60 Hours)**

1. Study of ultrasound transducers based on the medical system.
2. Study of vital organs (such as Heart, Kidney, liver, etc) using Ultrasonography.
3. Demonstration of X-ray/Computed Tomography/nuclear imaging.
4. Experiment based on clinical instruments such as Blood cell counter/ ELISA reader.
5. Estimation of serum total protein using a spectrometer.
6. Estimation of sodium and potassium in blood serum or urine sample.
7. Project based on designing and applications of Biomedical Instrumentation.

Essential/recommended readings

1. Carr J. J, Brown J. M. Introduction to Biomedical Equipment Technology, Fourth edition, Pearson Education Inc (2010), 2nd edition
2. Khandpur R.S., Handbook of Biomedical Instrumentation, Second edition, Tata McGraw- Hill Publishing (2009), 2nd edition

3. Joseph D. Bronzino, The Biomedical Engineering Handbook, IEEE Press (2015), 4th edition, Volume 1.
4. Richard Aston, Principles of Biomedical Instrumentation & Measurement, Merrill Publishing Company, (1990), 1st edition
5. Mandeep Singh, Introduction to Biomedical Instrumentation, PHI learning private limited (2014), 2nd Edition.
6. Cromwell L., Wiebell F. J., Pfeiffer EA, Biomedical Instrumentation and Measurements, Second edition, Prentice Hall (2010), 2nd Edition.

Suggestive readings

1. John G Webster, Medical Instrumentation Applications and Design, John Willey, 5th Edition, 2020.
2. L A Geddes, L E Baker, Principles of Applied Medical Instrumentation, John Wiley, Edition 3, 1989.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 14: Essentials of microprocessor 8085 & 8086 (INDSC5B)

CREDIT DISTRIBUTION, ELIGIBILITY, AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Essentials of microprocessor 8085 & 8086 (INDSC5B)	04	03	-	01	Class XII passed with Physics + Mathematics/Applied Mathematics + Chemistry/ Computer Science/Informatics Practices	Digital Electronics

Learning Objectives

- To understand the general architecture of a microcomputer system
- To comprehend the architecture and organization of 8085 and 8086 microprocessor
- To learn the Interfacing of 8-bit microprocessor with memory and peripheral chips involving system design
- To interpret and classify the instruction set of 8085 microprocessor and distinguish the use of different instructions and apply it in assembly language programming
- To understand difference between RISC and CISC based microprocessors

Learning outcomes

- Describe the general architecture of a microcomputer system
- Understand the architecture and organization of 8085 and 8086 microprocessor
- Learn the Interfacing of 8-bit microprocessor with memory and peripheral chips involving system design
- Interpret and classify the instruction set of 8085 microprocessor and distinguish the use of different instructions and apply it in assembly language programming
- Differentiate between RISC and CISC based microprocessors

- Understand the architecture and operation of Programmable Interface Devices and realize the programming & interfacing of it with 8085 microprocessor

SYLLABUS OF DSC-14

Unit-1 **(15 hours)**

8085 Microprocessor: Introduction to Microprocessor 8085, Pin description of 8085, Architecture, registers of 8085, addressing modes. Instruction Type and Instruction Set, Machine Cycle, Instruction Cycle, Timing Diagram, Memory System, Hardware Interfacing or Types of I/O Addressing-Interfacing Memory and Peripheral (I/o Mapped I/O and memory mapped I/O)

Unit-2 **(10 hours)**

Programming: Assembly Language Programming, Stacks and Subroutine

Interrupts of 8085: Hardware and Software interrupts, Difference between RISC and CISC Processor

Unit-3 **(10 hours)**

Interfacing ICs: Programmable Peripheral Interface: 8255, 8253

Unit-4 **(10 hours)**

Introduction to 8086 Microprocessor: Introduction to microprocessor 8086: Architecture of 8086, Pin Diagram, Physical memory organization, Memory Segmentation (8086), General bus operation, Minimum and Maximum Mode, Addressing modes (8086), Difference between microprocessor and microcontroller.

Practical component: **(30 hours)**

1. To write an assembly language program to perform-addition, subtraction.
2. To write an assembly language program to find count of even numbers/odd numbers from given block of data.
3. To write an assembly language program to find largest/smallest number in given block of data.
4. To write an assembly language program to perform-multiplication, division.
5. To write an assembly language program to convert a number from one number system to another.
6. To perform addition/subtraction by interfacing 8085 with 8255 in simple I/O and polling mode.
7. To generate a square/rectangular wave by interfacing 8253 with 8085.
8. To write an assembly language program to generate first N terms of an A.P. series.
9. To write an assembly language program to generate first N terms of Fibonacci series.
10. To write an assembly language program to arrange the given list of number in ascending / descending order.

Essential/recommended readings

1. Ramesh Gaonkar, Microprocessors architecture, programming and Applications, WileyEastern Ltd. (2013), 6th Edition.
2. P.K Ghosh & P.R Sridhar, 0000 to 8085 microprocessor, John Wiley & Sons, 2nd Edition.
3. Liu Gibson, Microprocessor Systems: The 8086/8088 family Architecture, Programming&Design, PHI, 2015, 2nd Edition.
4. K. Udaya Kumar & B.S. Uma Shankar, The 8085 Microprocessor: Architecture, Programming, and Interfacing", Pearson Education, 1st Edition, 2008.
5. Barry B. Brey and C R Sarma, The Intel Microprocessors 8086/8088, 80186/80188, 80286,80386, 80606, Pearson Education Limited, 8th Edition, 2005.
6. K. M. Bhurchandi, *Advanced Microprocessors & Peripherals*. Tata McGraw-Hill Education, 2013.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 15: Power devices and Electrical Machines (INDSC5C)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Power devices and Electrical Machines (INDSC5C)	04	03	-	01	Class XII passed with Physics + Mathematics/Applied Mathematics + Chemistry/ Computer Science/Informatics Practices	Semiconductor devices

Learning Objectives

The Learning Objectives of this course are as follows:

- Use of electronics for control and conversion of electrical power.
- To learn various high-power devices, their construction, and their applications.
- To understand the working, construction, and principle of DC and AC machines.
- To provide the clear understanding of working and construction of Transformer
- To give knowledge about different types of Power Supply.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Understand different power devices and study their construction, characteristics and turning on circuits.
- Understand the analysis of controlled rectifiers for different loads, inverters, DC choppers and AC voltage controllers.
- Familiarize with the basics of DC Machines, Generators and Motors.
- Acquire knowledge about fundamental of Transformer.

SYLLABUS OF DSC-15

Unit-1 **(13 Hours)**

Power Devices and their applications: SCR, structure, I-V characteristics, Turn-On and Turn-Off characteristics, ratings, Factors affecting the characteristics/ratings of SCR, and Gate-triggering circuits. Applications of SCR: Basic series inverter circuit, Chopper

circuit – Basic concept, step up and step-down choppers. Diac and Triac: Basic structure, working and I-V characteristic of, application of a Diac as a triggering device for a Triac.

Unit-2 **(13 Hours)**

Types of Motor: Comparison of the generator and motor action & interchangeability, the principle of operation, the significance of back EMF, maximum power, Torque and speed relation, Characteristics of series, shunt and Compound excited motors & applications, losses & efficiency, the necessity of motor starters, Three-point starter, Speed control of DC motors. Induction Motors, Single and three phase Motors, Stepper Motors, and Servo Motors.

Unit-3 **(10 Hours)**

Transformer: Types of transformers, Transformer Construction, E.M.F. equation, Transformer Losses, Condition for maximum efficiency, all day efficiency, Auto transformers.

Unit-4 **(9 Hours)**

Supplies: Regulated power supply, Uninterrupted power supply (UPS) and Switched mode power supply (SMPS).

Practical Components **(30 Hours)**

1. Study of I-V characteristics of DIAC
2. Study of I-V characteristics of a TRIAC
3. Study of I-V characteristics of an SCR.
4. Study of Load characteristics of D.C. motor.
5. Study of Speed control of D.C. motor.
6. Study of Load characteristics of Servomotor.
7. Study of speed control and blocked rotor test on single phase Inductor motor.

Essential/recommended readings

1. Electrical Technology, 25th Edition (2017), B. L. Thareja and A. K. Thareja, S. Chand & Sons.
2. Power Electronics: Circuits, Devices and Applications, 3rd Edition (2014), M.H. Rashid, Pearson Education
3. Power Electronics, 2nd Edition (2007), M. D. Singh, K. B. Khanchandani, Tata McGraw Hill.
4. Electronic Principles, 7th Edition (2007), A. Malvino, D. J. Bates, Tata McGraw Hill.
6. Power Electronics, 4th Edition (2002), P. S. Bimbhra, Khanna Publishers.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVES (DSE) COURSES OFFERED BY THE DEPARTMENT

DISCIPLINE SPECIFIC ELECTIVE COURSE: Reliability and Quality Control (INDSE5A)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Reliability and Quality Control (INDSE5A)	04	03	-	01	Class XII passed with Physics + Mathematics/Applied Mathematics/ + Chemistry/Computer Science/Informatics Practices	Statistics & probability

Learning Objectives

The Learning Objectives of this course are as follows:

- To provide the thorough understanding of concepts of reliability
- To clarify the basic knowledge of quality concepts and techniques for quality improvement
- To teach, how to use various control charts for improving the product quality
- To provide the clear understanding of different sampling plans and methods

Learning outcomes

The Learning Outcomes of this course are as follows:

- Acquire the basic knowledge of quality concepts and techniques for quality improvement
- Learn to use various control charts for improving the quality of products
- Describe and compare the different sampling plans and methods
- Understand the concepts of reliability

SYLLABUS OF DSE-3

UNIT – 1 **(12 hours)**

Quality Concepts: Meaning of Quality, Approaches- Deming's Approach, Juran's Approach, Quality of Product, Quality of Service, Cost of Quality, Value of Quality, Difference between Inspection, Quality Control and Quality Assurance, Evaluation of Quality control, Quality Improvement Techniques Pareto Diagrams, Cause-Effect Diagrams Quality Circles, Kaizen, six sigma.

UNIT – 2 **(11 hours)**

Control Charts: Chance and assignable causes, Statistical Basis of the Control Charts (basic principles, choices of control limits, sample size and sampling frequency, rational subgroups, analysis of pattern on control charts, warning limits, ARL, sensitizing rules for control charts, Control Charts for X-bar & R and control chart for attribute (p, np, c).

UNIT – 3 **(11 hours)**

Acceptance Sampling: Meaning, objective, and types of research, approaches, Principle of acceptance sampling, Producer's and consumer's risk. AOQL and LTPD, Sampling plans: single, double, OC curve.

UNIT – 4 **(11 hours)**

Reliability: Different types and modes of failure, causes of failure in electronic components, reliability theory, hazard rate, failure density function, availability, maintainability, mean time to failure and repair system structures: series, parallel, K-type, Fault tree analysis.

Practical component: **(30 hours)**

1. Descriptive statistics
2. Control charts for variable
3. Control charts for attribute
4. OC curve
5. Single sampling and double sampling
6. AOQ curve

Essential/recommended readings

1. D. C. Montgomery , Introduction to Statistical Quality Control, 8th edition, John Wiley and sons (2019).
2. Reliability Engineering by S.Shreenath, 4th Edition, East West Press (2008).
3. Statistical Quality Control by M. S. Mahajan, 1st Edition, Dhanpat Rai Publishing Co Pvt Ltd (2016).

Suggestive readings

1. Reliability Engineering and Quality Management by O.N. Pandey & Bhupesh Aneja, 1st Edition, 2011.
2. Modern Methods for Quality Control and Improvement, by Harrison M. Wadsworth, Kenneth S. Stephens, A. Blanton Godfrey, Second edition (17 May 2008)

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE : Communication Systems (INDSE5B)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Communication Systems (INDSE5B)	04	03	-	01	Class XII passed with Physics + Mathematics/ Applied Mathematics+ Chemistry /Computer Science/Informatics	Analog and Digital Electronics

Learning Objectives

The Learning Objectives of this course are as follows:

- Understand basic elements of a communication system.
- Analyze baseband signals in time and frequency domain.
- Understand various analog and digital modulation/demodulation techniques along with their performances in various transmission environments.
- To understand working of radio receivers and transmitters

Learning outcomes

The Learning Outcomes of this course are as follows:

- Learn in detail about the various components of communication systems like transmitter, modulator, channel, and receiver
- Gain in-depth knowledge of analog (amplitude, frequency, and phase) and digital modulation and demodulation techniques
- Understand different multiplexing techniques for efficient utilization of available bandwidth

SYLLABUS

Unit-1 **(10 hours)**

Basic communication system: Block diagram, Noise, Analog and digital communication, Types of communication systems: optical communication, cellular communication and satellite communication, LAN

Unit-2 **(11 hours)**

Amplitude Modulation, Frequency and phase modulation: Definition - AM waveforms - Frequency spectrum and bandwidth - Modulation index - DSB-SC, SSB-SC, Vestigial SB - Comparison and application of various AM schemes, Definition-Relationship between FM & PM - Frequency deviation - Spectrum and transmission BW of FM, comparison of AM and FM systems.

Unit-3 **(12 hours)**

Radio Transmitter and Receiver: AM transmitters-High level and low level transmitters - SSB transmitters - FM transmitters - Block diagram. AM receivers-operation - performance parameters - Communication Transceivers - Block diagram - SSB receiver - FM receivers - Block diagram.

Unit-4 **(12 hours)**

Digital Communication: Pulse Analog Modulation: Sampling theorem, Errors in Sampling. Pulse Amplitude Modulation (PAM), Time Division Multiplexing (TDM). Pulse Width Modulation (PWM) and Pulse Position Modulation(PPM). Generation and detection of PAM, PWM, PPM, PCM- Need for digital transmission, Quantizing, Uniform and Non-uniform Quantization, Quantization Noise, Companding, Coding, Digital Formats. Decoding, Regeneration, Transmission noise and Bit Error Rate. Differential Pulse Code Modulation, Delta Modulation, Quantization noise, Adaptive Delta Modulation.

Practical component: **(30 hours)**

1. Study of Amplitude Modulation and Demodulation
2. Study of Frequency Modulation and Demodulation
3. Study of Single Side Band Modulation and Demodulation
4. Study of AM Transmitter and Receiver
5. Study FM Transmitter and Receiver
6. Study of Pulse Amplitude Modulation
7. Study of Pulse Width Modulation
8. Study of Pulse Position Modulation
9. Study of Pulse Code Modulation

Essential/recommended readings

1. Electronic communication systems- Kennedy, 3rd edition, McGraw international publications
2. Principles of Electronic communication systems – L. E. Frenzel, 3rd edition, McGraw Hill
3. Modern Digital and Analog Communication Systems, B. P. Lathi (2nd Edition).
4. Communication systems, R.P.Singh and S.D.Sapre 2nd edition TMH 2008
5. Advanced electronic communications systems – Tomasi, 6th edition, PHI
6. L. W. Couch II, Digital and Analog Communication Systems, Pearson Education.
7. T. G. Thomas and S. Chandra Sekhar, Communication Theory, Tata McGraw Hill.

Suggestive readings

1. H. Taub and D. Schilling, Principles of Communication Systems, Tata McGraw Hill
2. W. Tomasi, Electronic Communication Systems: Fundamentals through Advanced, Pearson Education
3. S. Haykin, Communication Systems, Wiley India.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE : Computer Aided Design (INDSE5C)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Computer Aided Design (INDSE5C)	04	02	-	02	Class XII passed with Physics + Mathematics/Applied Mathematics+ Chemistry / Computer Science/Informatics	Analog and Digital Electronics

Learning Objectives

The Learning Objectives of this course are as follows:

- To familiarize with MultiSim and PSPICE circuit simulation tools
- To verify response of various analog and digital circuits
- To provide knowledge of Industry standard TCAD simulation tools like Silvaco-ATLAS and and Synopsis-SENTAURUS

Learning outcomes

The Learning Outcomes of this course are as follows:

- Simulate and verify the functionality of diodes and transistor circuits using MultiSim and PSpice software
- Design and verify devices/ circuits using TCAD tools

SYLLABUS OF DSE-3

UNIT – 1 **(6 hours)**

Introduction to Multisim software: MultiSim Environment: Design Process, setting environment preferences, Multisim GUI, Schematic capture of circuits: Placing components, wiring components, Measuring instruments in MultiSim, simulation and result display in MultiSim

UNIT – 2 **(6 hours)**

Electronics circuit design using Multisim: Resistive circuits, Design of Bridge rectifier, Half-Wave rectifier, clippers and clampers using a diode, DC transfer curve analysis, Transient analysis, simulation of digital circuits.

UNIT – 3 **(8 hours)**

Introduction to PSpice software Understanding the SPICE Environment, Schematic Designing Brief Introduction of p spice simulator, Using Model Editor, Understanding the PSPICE Environment, Using Magnetic Parts Editor, Using Stimulus Editor, Drawing a Circuit Preparation for Simulation: Preparing schematic for simulation, Understand the sources for simulation, Understand different markers and errors

UNIT – 4 **(10 hours)**

Introduction to Industry standard TCAD tools, Silvaco- ATLAS device simulation software, Synosis-SENTAURUS. Online Simulation resources-NANOHUB. Simulation of n-channel MOSFET; Silicon on Insulator.

Practical component: **(60 hours)**

1. Designing RC Low pass filter using MULTISIM
2. Designing active RC Low pass filter (OpAmp based) using MULTISIM
3. Half wave rectifier using MULTISIM
4. Wein bridge Oscillator using MULTISIM
5. Simulating high pass filter Circuit using PSPICE
6. Designing active RC High pass filter (OpAmp based) using PSPICE
7. Half wave rectifier using PSPICE
8. Designing and Simulating Full wave rectifier using PSPICE
9. Output characteristics of MOSFET using SILVACO-ATLAS/ Synopsis TCAD
10. Transfer characteristics of MOSFET using SILVACO-ATLAS/ Synopsis TCAD

Essential/recommended readings

1. Introduction To PSpice Using OrCADfor Circuits and Electronics, Muhammad H. Rashid,Paperback – Import,3rd Edition, 2003.
2. Electronic Devices and circuit theory, Robert Boylstead and Louis Nashelsky, PHI, 10th Edition, 2009.
3. https:i/nanohub.org/resources/tools
4. https ://www.silvaco. com/contenVkbase/device.pdf

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES OFFERED BY THE DEPARTMENT

GENERAL ELECTIVE COURSE : Industrial Safety Instruments (INGE5A)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Industrial Safety Instruments (INGE5A)	04	03	-	01	Class XII passed with Mathematics/Applied Mathematics/ Biology/+ Chemistry + Physics	Class XII Science

Learning Objectives

The Learning Objectives of this course are as follows:

- To provide knowledge on design features for a process industry and safety in the operation of various equipment in industry.
- To understand the various hazards and prevention in the commissioning stage of industry.
- To recognise and identify the safe operation of equipment in the process industry.
- To plan and train for emergency planning in a process industry.
- To get fundamental knowledge on safe storage of chemicals.

Learning outcomes

The Learning Outcomes of this course are as follows:

- This course would make them familiar with safe design of equipment which are essential to the chemical industry and leads to the design of entire process industries.
- Students would understand the problems and find innovative solutions while industries facing problems in commissioning and maintenance stages.

- Students would understand the chemical plant operations.
- Students can prepare emergency planning for chemical industry problems.
- Students would be able to create safe storage systems

SYLLABUS OF GE-5

UNIT – 1 **(11 hours)**

Need for safety. Safety and productivity. Definitions: Accident, Injury, Unsafe act, Unsafe Condition, Dangerous Occurrence, Reportable accidents. Theories of accident causation. Safety organization- objectives, types, functions, Role of management, supervisors, workmen, unions, government and voluntary agencies in safety. Safety policy. Safety Officer-responsibilities, authority. Safety committee-need, types, advantages. Design process, conceptual design and detail design.

UNIT – 2 **(11 hours)**

Personal protection in work environment

Personal protection in the work environment, Types of PPEs, Personal protective equipment respiratory and non-respiratory equipment. Standards related to PPEs. Monitoring Safety Performance: Frequency rate, severity rate, incidence rate, activity rate. Housekeeping: Responsibility of management and employees. Advantages of good housekeeping. 5 s of housekeeping. Work permit system- objectives, hot work and cold work permits. Typical industrial models and methodology. Entry into confined spaces.

UNIT – 3 **(12 hours)**

Electrical safety and hazards

Introduction – electrostatics, electromagnetism, stored energy, energy radiation and electromagnetic interference –Indian electricity act and rules-statutory requirements from electrical inspectorate- international standards on electrical safety – first aid-cardiopulmonary resuscitation (CPR). Primary and secondary hazards - shocks, burns, scalds, falls - Human safety in the use of electricity - Classes of insulation-voltage classifications -current surges- over current and short circuit current-heating effects of current electrical causes of fire and explosion. Lightning hazards, lightning arrestor, installation – earthing, specifications, earth resistance, earth pit maintenance.

UNIT – 4 **(11 hours)**

Hazard and risk, Types of hazards Classification of Fire, Types of Fire extinguishers, fire explosion and toxic gas release, Structure of hazard identification and risk assessment. Identification of hazards: Inventory analysis, Fire and explosion hazard rating of process plants - The Dow Fire and Explosion Hazard Index, Preliminary hazard analysis, Hazard and Operability study (HAZOP)) – methodology, criticality analysis, corrective action and follow-up. Control of Chemical Hazards, Hazardous properties of chemicals, Material Safety Data Sheets (MSDS)

Practical component: **(30 hours)**

1. Conduct the inspection and evaluate the hazards using analytical instruments and methods.
2. Conduct unaided safety inspection of a workplace, identifying the more common hazards, deciding whether they are adequately controlled and, where necessary, suggesting appropriate and cost effective remedial action.
3. At the end of the course a safety assessment report can be added in the Mini project report along with Industry inspection report.

Essential/recommended readings

1. R.K Jain (2000) Industrial Safety, Health and Environment management systems, Khanna Publications.
2. Paul S V (2000), Safety management System and Documentation training Programme handbook, CBS Publication.
3. Krishnan, N.V. (1997). Safety management in Industry. Jaico Publishing House, New Delhi.
4. John V. Grimaldi and Rollin H.Simonds. (1989) Safety management. All IndiaTraveller Book Seller, Delhi.
5. Ronald P. Blake. (1973). Industrial safety. Prentice Hall, NewDelhi.

Suggested books

1. Alan Waring. (1996). Safety management system. Chapman & Hall, England.
2. Vaid, K.N., (1988). Construction safety management. National Institute of Construction Management and Research, Mumbai
3. Montgomery, D.C., “Design and Analysis of experiments”, John Wiley and Sons, 8th edition, 2012.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERAL ELECTIVE COURSE : Instruments for chemical analysis (INGE5B)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Instruments for chemical analysis (INGE5B)	04	03	-	01	Class XII passed with Mathematics/Applied Mathematics/ Biology/ + Chemistry + Physics	Analog electronics and Chemistry till class XII

Learning Objectives

- To understand the principle, instrumentation, characteristics and working mechanisms of common spectroscopic, chromatographic, and potentiometric instruments
- To learn about the applications of potentiometry, GC and HPLC in different industries (food, chemical, pharmaceutical, petroleum, etc.)
- To understand the concept of qualitative and quantitative analysis
- To understand the planar and column chromatography for different applications

Learning outcomes

At the end of this course, students will be able to

- Understand the principle, instrumentation, characteristics and working mechanisms of common spectroscopic, chromatographic, and potentiometric analytical instruments.
- Explore the potential of analytical techniques of potentiometry, GC and HPLC in different industries (food, chemical, pharmaceutical, petroleum, etc.
- Carry out the qualitative and quantitative analysis of a given sample.
- Utilize planar and column chromatography for different applications.

SYLLABUS OF GE-5

Unit-1 **(11 hours)**

Molecular Spectroscopy: Ultraviolet-Visible (UV-Vis) spectroscopy: principle, instrumentation, and applications. Infra-Red spectroscopy: principle, instrumentation, and applications

Unit-2 **(10 hours)**

Atomic spectroscopy: Theory, instrumentation and application of flame photometry and atomic-absorption spectroscopy.

Unit-3 **(14 hours)**

Planar chromatography: Theory and application of paper and thin layer chromatography. Column chromatography: Principle, instrumentation and application of Gas Liquid Chromatography and High-Performance Liquid Chromatography.

Unit-4 **(10 hours)**

Potentiometry: Introduction, reference and indicator electrodes, ion selective electrodes: glass electrode and its applications.

Practical component: **(30 hours)**

1. Verification of Beer's Law and determination of concentration of the unknown solution using colorimeter.
2. Spectrometric determination of iron using a double beam spectrophotometer.
3. To learn the operation of a pH meter and determine pKa value for bromophenol blue using a double beam spectrophotometer.
4. To study the effect of organic solvents on membrane permeability of beetroot using colorimeter/ spectrophotometer.
5. Determination of concentration of solutes in a mixture using colorimeter.
6. Spectrum analysis using FT-IR (Qualitative analysis).
7. Determination of concentration of sodium, calcium, lithium and potassium in sample using flame photometer.
8. Paper chromatographic separation of samples from different origins (Biological/pharmaceutical/food).
9. Thin layer chromatographic (TLC) separation of samples from different origin (Biological/pharmaceutical/food).
10. Qualitative and quantitative analysis of organic compounds using Gas chromatography.

Essential/recommended readings

1. Skoog & Lerry, Instrumental Methods of Analysis, Saunders College Publications, New York, 4th edition, 1970.

2. H.H. Willard, L.L Merrit, J.A. Dean, F. A. Settle, Instrumental Methods of Analysis, CBS Publishers, 7th edition, 1988.
3. Skoog, Holler and Crouch, Principles of Instrumental Analysis, Cengage Learning, 6th edition, 2007
4. James W. Robinson, Eileen Skelly Frame, George M. Frame II, Undergraduate Instrumental Analysis, CRC Press, 7th edition, 2014
5. Vogel's Textbook of Qualitative Chemical Analysis, ELBS, 4th edition 1978.

Suggestive readings

1. W. Kemp, Organic Spectroscopy, ELBS, 3rd Edition, 1996.
2. R.S Khandpur, Handbook of Analytical Instruments, Tata McGraw-Hill, 3rd Edition 2006.
3. B.K Sharma, Instrumental Methods of Chemical Analysis, Krishna Prakashan Media, 1st Edition, 2011

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Semester-VI
ELECTRONIC SCIENCE

DEPARTMENT OF INSTRUMENTATION
Category I

(B.Sc. Honours in Instrumentation)

DISCIPLINE SPECIFIC CORE COURSE – 16: Analytical Instrumentation II (INDSC6A)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Analytical Instrumentation II (INDSC6A)	04	03	-	01	Class XII passed with Physics + Mathematics/Applied Mathematics + Chemistry/ Computer Science/Informatics Practices	Understanding of electronics and Chemistry till class XII

Learning Objectives

- To understand the perspective of different advanced analytical methods
- To understand the principle, instrumentation, and application of various electro analytical instruments
- To disseminate with principle and instrumentation of thermo analytical instruments along with their applications for analysing products of different origin
- To familiarize with detail principle, instrumentation, operation and applications of IR spectroscopy
- To differentiate between principle, instrumentation and operation of Atomic absorption and atomic emission spectroscopy.
- To understand the principle, instrumentation, and applications of Gas Chromatography (GC) and High-Performance Liquid Chromatography (HPLC)

Learning outcomes

At the end of this course, students will be able to

- Appreciate the potential of different analytical methods for resolving various scientific challenges.
- Describe the principle, instrumentation and application of electro analytical instruments.
- Understand the principle and instrumentation of thermo analytical instruments along with their applications for analyzing products of different origin.
- Understand the different terms, principle, instrumentation, operation, and applications of IR spectroscopy.
- Differentiate between principle, instrumentation and operation of atomic absorption spectroscopy and atomic emission spectroscopy.

SYLLABUS OF DSC-16

Unit-1 **(14 hours)**

Infrared Spectroscopy: Theory, diatomic molecule as a simple harmonic oscillator, instrumentation, sample handling techniques. Fourier Transform Infrared Spectroscopy (FTIR): instrumentation and advantages.

Atomic Spectroscopy: Principle, comparison of atomic and molecular spectroscopy, Atomic emission spectroscopy (AES): Flame photometer and its instrumentation, atomization process, types of flames- fuel/ oxidant combinations, instrumentation, Interferences and applications. Introduction to Atomic absorption spectroscopy (AAS).

Unit-2 **(10 hours)**

Electro analytical Methods of Analysis: Potentiometry: Introduction, reference electrode, indicator electrodes, ion-selective electrodes: glass electrode and liquid membrane electrode and their applications, potentiometric titrations.

Unit-3 **(12 hours)**

Gas Chromatography (GC): Principle, Carrier gasses, different types of injection systems, columns, stationary phases, and detectors. Isothermal mode, temperature-programming mode, applications.

Unit-4 **(9 hours)**

High Performance Liquid Chromatography (HPLC): mobile phase, isocratic and gradient elution, pumps, injection systems, columns, stationary phases, normal phase and reverse phase chromatography, detectors, and applications.

Practical component: **(30 hours)**

1. Determination of concentrations of sodium/calcium/lithium/potassium in sample using Flame Photometer.

2. Determination of concentration of sodium/calcium/lithium/potassium ions in sample by standard addition method using flame photometer
3. Spectrum interpretation using FTIR.
4. Qualitative/Quantitative analysis of samples using Gas chromatography.
5. Qualitative/Quantitative analysis of samples using High Performance Liquid Chromatography
6. Potentiometric titrations: (i) Strong acid with strong base (ii) weak acid with strong base and (iii) dibasic acid with strong base
7. Potentiometric titration of Mohr's salt with potassium dichromate
8. pH metric titrations of (i) strong acid and strong base (ii) weak acid and strong base

Essential/recommended readings

1. Skoog & Lerry, Instrumental Methods of Analysis, Saunders College Publications, New York, 4th edition, 1970.
2. H.H. Willard, L.L Merrit, J.A. Dean, F. A. Settle, Instrumental Methods of Analysis, CBS Publishers, 7th edition, 1988.
3. Skoog, Holler and Crouch, Principles of Instrumental Analysis, Cengage Learning, 6th edition, 2007
4. James W. Robinson, Eileen Skelly Frame, George M. Frame II, Undergraduate Instrumental Analysis, CRC Press, 7th edition, 2014
5. Vogel's Textbook of Qualitative Chemical Analysis, ELBS, 4th edition 1978.

Suggestive readings

1. W. Kemp, Organic Spectroscopy, ELBS, 3rd Edition, 1996.
2. R.S Khandpur, Handbook of Analytical Instruments, Tata McGraw-Hill, 3rd Edition 2006.
3. B.K Sharma, Instrumental Methods of Chemical Analysis, Krishna Prakashan Media, 1st Edition, 2011

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 17: Analog Devices and Circuits (INDSC6B)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Analog Devices and Circuits (INDSC6B)	04	03	-	01	Class XII passed with Physics + Mathematics/Applied Mathematics + Chemistry/ Computer Science/Informatics Practices	Semiconductor devices

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce different types of diodes like Tunnel diode, Varactor diode, Schottky diode, Photodiode etc.
- To explain construction and characteristics of JFETs, MOSFETs and UJT
- The student should be able to explain and calculate small signal parameters of MOSFET.
- To learn the basics of MOSFET Circuits.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Explain the operation of Tunnel diode, Varactor diode, Schottky diode, Photodiode etc.
- Reproduce the I-V characteristics of JFET, MOSFET and UJT.
- Analysis of the operation of MOS transistor
- Ability to understand the fundamentals of MOSFET circuits.

SYLLABUS OF DSC-17

UNIT – 1 **(8 hours)**

Special purpose electronic devices: Principal of operation and Characteristics of Tunnel Diode, Varactor Diode, Schottky Diode, Photo diode, Photoconductive cells, IR emitter, Liquid crystal displays, Solar cells, and Thermistor.

UNIT – 2 **(12 hour)**

Junction Field Effect Transistors (JFET): JFET, Construction, Idea of Channel Formation, Pinch-Off and Saturation Voltage, Current-Voltage Output Characteristics. FET Amplifiers: FET Common source Amplifier, Common Drain Amplifier, Generalized FET Amplifier, FET biasing.

UNIT – 3 **(13 hours)**

Metal Oxide Semiconductor Field Effect Transistor (MOSFET): Types of MOSFETs, Circuit symbols, Working and Characteristic curves of Depletion type MOSFET (both N channel and P Channel) and Enhancement type MOSFET (both N channel and P channel). Biasing of MOSFETs, Small Signal Parameters, Common Source amplifier circuit analysis.

UJT, Basic construction and working, Equivalent circuit, intrinsic Standoff Ratio, Characteristics, and Relaxation oscillator

UNIT – 4 **(12 hours)**

MOS Inverter: Introduction, Voltage Transfer Characteristic (VTC), Noise Immunity and Noise margins, Resistive-Load Inverter, CMOS Inverter, DC Characteristics of CMOS Inverter, Calculation of VIL, VIH, VOL, VOH and Vth, Design of CMOS Inverters, Supply Voltage Scaling in CMOS Inverters, Power, and Area considerations

Practical component: **(30 hours)**

1. To verify practically the response of various special purpose electronic devices.
2. To Study the I-V Characteristics of JFET.
3. To Study the I-V Characteristics of MOSFET
4. To obtain the frequency response of a MOSFET amplifier in common source configuration with given specifications.
5. To Study I-V Characteristics of the UJT.
6. NMOS inverter: (a)Transient analysis using Step input and Pulse input. (b) DC analysis (VTC).
7. CMOS inverter: (a)Transient analysis using Step input and Pulse input. (b) DC analysis (VTC).

Essential/recommended readings

1. R. L. Boylestad, L. Nashelsky, K. L. Kishore, Electronic Devices and Circuit Theory, Pearson Education (2006)
2. J. R. C. Jaegar and T. N. Blalock, Microelectronic Circuit Design, Tata McGraw Hill (2010)
3. Donald E. Neaman, “Electronic Circuit, Analysis and Design”, Tata McGraw Hill Publishing Company Limited, Second Edition, 2006.
4. J. Millman and C. C. Halkias, Integrated Electronics, Tata McGraw Hill (2001)
5. CMOS Digital Integrated circuits – Analysis and Design by Sung – Mo Kang, Yusuf Leblebici, TATA McGraw-Hill Pub. Company Ltd.

Suggestive readings

1. D. L. Schilling and C. Belove, Electronic Circuits: Discrete and Integrated, Tata McGraw Hill (2002)
2. Michael Shur, “Physics of Semiconductor Devices,” Prentice Hall
3. Thomas L. Floyd, David M. Buchla, Electronics Fundamentals: Circuits, Devices & Applications, 8th Edition, Pearson education, 2014.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC CORE COURSE – 18: Control Systems (INDSC6C)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Control Systems (INDSC6C)	04	03	-	01	Class XII passed with Physics + Mathematics/Applied Mathematics + Chemistry/ Computer Science/Informatics Practices	Engineering Mathematics

Learning Objectives

The Learning Objectives of this course are as follows:

- To study how to interpret and apply block diagram representations of control systems and design PID controllers based on empirical tuning rules
- To help the students understand and practice feedback and feed-forward control architecture and discuss the importance of performance, robustness and stability in control system design
- To teach about how to solve the steady state and transient analysis of a system for standard inputs
- Introduce students how to compute stability of linear systems using the Routh array test and use this to generate control design constraints
- To teach students the use Evans root locus techniques in control design for real world systems

Learning outcomes

The Learning Outcomes of this course are as follows:

- Interpret and apply block diagram representations of control systems and design PID controllers based on empirical tuning rules
- Define and explain feedback and feed-forward control architecture and discuss the importance of performance, robustness and stability in control system design
- Solve the steady state and transient analysis of a system for standard inputs

- Compute stability of linear systems using the Routh array test and use this to generate control design constraints
- Use Evans root locus techniques in control design for real world systems
- Compute gain and phase margins from Bode diagrams and Nyquist plots and understand their implications in terms of robust stability

SYLLABUS OF DSC-18

UNIT – 1 **(11 hours)**

Introduction to Control System: Introduction of open loop and closed loop control systems, mathematical modelling of physical systems (Electrical, Mechanical), derivation of transfer function, Armature controlled and field controlled DC servomotors, block diagram representation & signal flow graph, reduction technique, Mason's Gain Formula, effect of feedback on control systems.

UNIT – 2 **(11 hours)**

Time Domain Analysis: Time domain performance criteria, transient response of first, second, steady state errors and static error constants, performance indices.

Concept of Stability: Asymptotic stability and conditional stability, Routh – Hurwitz criterion, relative stability analysis, Root Locus plots and their applications.

UNIT – 3 **(12 hours)**

Frequency Domain Analysis: Frequency Domain Analysis: Correlation between time and frequency response, Polar plots, frequency domain specifications, Logarithmic plots (Bode Plots), gain and phase margins, Nyquist stability criterion, relative stability using Nyquist criterion.

UNIT – 4 **(11 hours)**

State Space Analysis: Definitions of state, state variables, state space, representation of systems, Solution of time invariant, homogeneous state equation, state transition matrix and its properties.

Controllers and Compensation Techniques: Basic Control Actions: Proportional, Integral and Derivative controls, response with P, PI and PID Controllers, Basic concept of compensation, Lag, Lead and Lag-Lead networks.

Practical component: **(30 hours)**

1. To study characteristics of :
   a. Synchro transmitter receiver
   b) Synchro as an error detector
1. To study position control of DC motor
2. To study speed control of DC motor
3. To find characteristics of AC servo motor
4. To study time response of type 0,1 and 2 systems
5. To study frequency response of first and second order systems

6. To study time response characteristics of a second order system.
7. To study effect of damping factor on performance of second order system
8. To study frequency response of Lead and Lag networks.
9. Study of P, PI and PID controller.

Essential/recommended readings

1. J. Nagrath& M. Gopal, Control System Engineering, New Age International, 2021, 7th Edition.
2. K. Ogata, Modern Control Engineering, Prentice Hall of India, 2015, 5th Edition.
3. B. C. Kuo , "Automatic control system", Prentice Hall of India, 2010, 9th Edition.
4. B. S. Manke, Linear Control Systems, Khanna Publishers, Delhi, 7th Edition.

Suggestive readings

1. N.K Jain, Automatic Control System Engineering, DhanpatRai Publication, 2019, Standard Edition.
2. Veenadevi S V and Sujatha Hiremath, Control System, I K International Publishing House Pvt Ltd, 2022.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVES (DSE) COURSES OFFERED BY THE DEPARTMENT

DISCIPLINE SPECIFIC ELECTIVE COURSE : Artificial Intelligence (INDSE6A)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Artificial Intelligence (INDSE6A)	04	03	-	01	Class XII passed with Physics + Mathematics /Applied Mathematics + Chemistry / Computer Science/Informatics Practices	Class XII Mathematics, Any programming language

Learning Objectives

The Learning Objectives of this course are as follows:

- To realize the significance of Artificial Intelligence and expert systems in today‟s era
- To study neural networks and become able to design neural network based algorithms
- To study fuzzy logic and use it as an alternative tool for modeling.
- To study genetic algorithms and learn about optimizing solutions using genetic algorithms
- Become able to apply the knowledge of artificial control tools to any control application
- To be able to work with imprecise and uncertain solution data for solving problems.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Realize the significance of Artificial Intelligence and expert systems

- Learn the neural network algorithms, modeling using fuzzy logic and optimizing
- solutions using genetic algorithms
- Apply the knowledge of artificial control tools to any control application
- Work with imprecise and uncertain solution data for solving problems

SYLLABUS OF DSE

UNIT – 1 **(12 hours)**

The concept and importance of Artificial Intelligence, human intelligence vs machine intelligence, General concept of knowledge, Acquisition, Knowledge representation and organization, Expert systems: advantages, disadvantages, Expert system architecture, functions of various parts, mechanism and role of inference engine, Role of expert systems in instrumentation and control.

UNIT – 2 **(11 hours)**

Neural Networks: Biological Neural-system, Mathematical Models of Neurons, ANN architecture, Artificial neuron models, Types of activation functions, Learning rules, Learning Paradigms-Supervised, Unsupervised and Reinforcement Learning, ANN training algorithms perceptron, training rules, Delta, Back Propagation Algorithm, parameters in BPN, Hopfield Networks, Recurrent networks, Associative Memories, Applications in identification, optimization, pattern recognition etc.

UNIT – 3 **(11 hours)**

Fuzzy Logic: Introduction to Fuzzy Logic, Classical and Fuzzy Sets, Membership Function, Fuzzy rule generation. Operations on Fuzzy Sets: Compliment, Intersections, Unions, Combinations of Operations, Approximate reasoning, Aggregation, Fuzzy logic modeling and control, fuzzification, inferencing and defuzzification, Linguistic Variables, Arithmetic Operations on Intervals & Numbers. Applications of Fuzzy Logic in process Control and motion control.

UNIT – 4 **(11 hours)**

Genetic Algorithm: An Overview: Introduction and concept as a process modeling tool, creation of off-springs, encoding, fitness function, reproduction, cross over, insertion, deletion and mutation scaling, Fitness, Implementation of Genetic algorithm, applications.

Hybrid Systems: Introduction to Neuro-fuzzy systems, Fuzzy-Expert system, Fuzzy-GA systems.

Practical component: **(30 hours)**

1. Implementation of perceptron learning model
2. Pattern recognition using Hopfield network
3. Identification using associative memories
4. Implement fuzzy logic operations on fuzzy sets

5. Implement conversion of given crisp temperature into its equivalent fuzzy variable
6. Implement conversion of error into its equivalent fuzzy variable
7. Design model of fuzzy logic PID controller
8. Design fuzzy logic based temperature control system
9. Design fuzzy logic based washing machine/aircraft landing system

Essential/recommended readings

1. Ross Timothy. J, Fuzzy logic with Engineering Applications, McGraw Hill, New York, 3rd Edition.
2. Hagan M.T , Demuth H.B, Beale M.H, Neural Network Design, PWS Publishing Company, Thomson Learning, 1st Edition.
3. N.P.Padhy, Artificial Intelligence and Intelligent Systems, Oxford University Press, 1st Edition.
4. Rajasekaran S., VijayalakshmiPai G. A., Neural Networks, PHI Learning Pvt. Ltd., 2003, 1st Edition.

Suggestive readings

1. Klir George J , Yuan B, Fuzzy Sets and Fuzzy Logic Theory and Applications, Prentice Hall PTR, 1st Edition.
2. J. Nilsson, “Artificial Intelligence: A new Synthesis”, Elsevier Publishers.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE: Process Control Dynamics (INDSE6B)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Process Control Dynamics (INDSE6B)	04	03	-	01	Class XII passed with Physics + Mathematics/ Applied Mathematics+ Chemistry / Computer Science/Informatics Practices	Control Systems and Mathematics

Learning Objectives

The Learning Objectives of this course are as follows:

- To study about the importance and application of good instrumentation system for the efficient design of process control loops for process engineering plants
- To teach students about the basic elements of process control including analysis, tuning and design of the control system using tools of differential equations and transfer functions, with the specific focus on PID control strategy
- To help students understand and discuss about the major issues in the control applications in chemical engineering processes with specific attention to reactor and distillation units
- To study additional techniques of frequency response for robust design based on stability margins. Also, to explore other advanced control strategies currently used in the process industries

Learning outcomes

The Learning Outcomes of this course are as follows:

- Understand the importance and application of good instrumentation system for the efficient design of process control loops for process engineering plants
- Know about the basic elements of process control including analysis, tuning and design of the control system using tools of differential equations and transfer functions, with the specific focus on PID control strategy

- Interpret the major issues in the control applications in chemical engineering processes with specific attention to reactor and distillation units
- Understand additional techniques of frequency response for robust design based on stability margins. Also, to explore other advanced control strategies currently used in the process industries

SYLLABUS OF DSE

UNIT – 1 **(12 hours)**

Introduction: Dynamics of Processes, Dead time processes, Inverse response behaviour of processes, Dynamic Behaviour of first and second order systems. Interacting and non-interacting Systems. Batch & Continuous Process, concept of self-regulation, Controller Principle, discontinuous, continuous and composite controller modes/actions (P, I, D, PI, PD and PID), Pneumatic, Hydraulic, Electronic controllers. Need for controller tuning.

UNIT – 2 **(11 hours)**

Controls: Cascade control, Selective control, Ratio Control, Split range control, feed forward control, Feed forward combined with feedback control, Inferential Control, dead time and inverse response compensators, selective control, Adaptive control, Examples from Distillation columns, Chemical Reactors, Heat Exchangers and Boiler.

UNIT – 3 **(11 hours)**

Discrete-State process control: Variables, process specification and event sequence description, Sampling and reconstruction, Transform analysis of sampled-data systems: z transform and its evaluation, inverse z transform, pulse transfer function, stability analysis in z-plane, implementation of digital controller. PLC Block Diagram, Scan cycle, memory organization, addressing, programming.

UNIT – 4 **(11 hours)**

Converters and Actuators: I/P, P/I converters, Final control elements, Pneumatic and electric actuators. Types of control valves, Valve positioner and its importance, Inherent and Installed characteristics of control valves.

Practical component: **(30 hours)**

1. Study of PID controller response and it‟s tuning
2. Study of ON-OFF and Proportional controller responses on temperature loop.
3. Analysis of Flow loop/Level loop/Temperature loop/Pressure loop.
4. Tuning of controllers on a pressure loop.
5. Control valve characteristics with and without positioner.
6. Study of cascade control
7. Study of ratio control/selective control
8. Study of feed forward control

9. Study of pneumatic/ hydraulic controllers
10. Problem solving/Ladder Programming in PLC.

Essential/recommended readings

1. Eckman. D.P, Automatic Process Control, Wiley Eastern Ltd., New Delhi, 1993, Original Edition.
2. Johnson C.D., Process Control Instrument Technology, Prentice Hall Inc. 1988, 7th Edition.
3. Bequette B. W., Process Control Modelling, Design and Simulation, PHI Learning, Original Edition.
4. Ogata K., Discrete Time Control Systems, Pearson Education, 2nd Edition.
5. Kuo B. C. , "Automatic control system", Prentice Hall of India, 2010, 9th Edition.
6. Nagrath I. J. and Gopal M., Control System Engineering, New Age International,2021, 7th Edition.
7. Stephanopoulis G., Chemical Process Control, Prentice Hall of India, New Delhi, 1990, Original Edition.
8. Liptak B.G., Instrument Engineers Handbook, Process Control, Chilton Book Company, 3rd Edition.

Suggestive readings

1. Harriott P., Process Control, Tata McGraw Hill, Edition 1972.
2. Anderson N.A., Instrumentation for Process Measurement and Control, Chilton company 1980, 3rd Edition.
3. Pollard A., Process Control, Heinemann educational books, London, 1971, Original Edition.
4. Smith C.L. and Corripio A. B., Principles and Practice of Automatic Process Control, John Wiley and Sons, New York, 2nd Edition.
5. Shinskey, Process Control Systems, McGraw Hill, Singapore, 1996, 4th Edition.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE: Research Methodology (INDSE6C)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Research Methodology (INDSE6C)	04	03	-	01	Physics + Mathematics /Applied Mathematics / Biology + Chemistry / Computer Science/Informatics Practices	Elementary Statistics

Learning Objectives

The Learning Objectives of this course are as follows:

- To understand some basic concepts of research and its methodologies
- To select and define appropriate research problem and parameters
- To write a research report and thesis

Learning outcomes

The Learning Outcomes of this course are as follows:

- Acquire the basic knowledge of quality concepts and techniques for quality improvement
- Learn to use various control charts for improving the quality of products
- Describe and compare the different sampling plans and methods
- Understand the concepts of reliability

SYLLABUS OF DSE

Unit -1 **(12 hours)**

Introduction and Design of research : Meaning, Objectives and Importance of Research, Types of research, need and purpose of research, approaches to research, components of the research problem, criteria for selecting the problem, necessity of defining the problem.

Unit – 2 **(10 hours)**

Importance of literature review in defining a problem, Critical literature review – Identifying gap areas from literature review - Development of working hypothesis, various tools for literature survey-Searching journals, metrics of Journals, e book, monograph, patents, Citations, Intellectual Property Rights.

Unit -3 **(12 hours)**

Data Collection and Analysis: Observation and Collection of data - Methods of data collection – Modeling, Mathematical Models for research, Sampling Methods- Data processing and Analysis strategies. Data Analysis with Statistical Packages – Hypothesis-testing, Sampling, Sampling Error, Statistical Methods/Tools - Measures of Central Tendency and Variation, Test of Hypothesis- z test, t test, F test, ANOVA, Chi square, correlation and regression analysis, Error Estimation.

Unit - 4 **(11 hours)**

Writing Research Articles and Thesis: Data Presentation- Types of tables and illustrations, Guidelines for writing the abstract, introduction, methodology, results and discussion, conclusion sections of a manuscript. References – Styles and methods, Citation and listing system of documents. Ethical considerations in Research, precautions in preparing report, plagiarism

Practical component: **(30 hours)**

Use latest software package like SPSS/any similar, to conduct experiments based on:

1. Measures of central tendency
2. Normal distribution
3. Chi square test
4. T test
5. Z-test

Essential/recommended readings

1. Ranjit Kumar, Research Methodology, A step by step guide for beginners, SAGE Publications (2015)
2. D. C. Montgomery, Introduction to Statistical Quality Control, 8th edition, John Wiley and sons (2019).
3. Leedy, P. D. and Ormrod, J. E., 2004 Practical Research: Planning and Design, Prentice Hall.
4. C.R Kothari, Research Methodology: Methods and Techniques, New Age International Publishers (2015)

Suggestive readings

1. Prabhat Pandey, Meenu Mishra Pandey, Research Methodology: Tools and Techniques, Bridge Center (2015)
2. S.P Gupta, Statistical Methods, 46th edition, Sultan Chand & Sons (2021)

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES OFFERED BY THE DEPARTMENT

GENERIC ELECTIVE : Standardization and Quality Control (INGE6A)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Standardization and Quality Control (INGE6A)	4	3	-	1	Class XII passed with Mathematics/ Applied Mathematics + Biology/ Computer Science/Informatics Practices	Probability and Statistics

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce the basic concepts of Total Quality Management.
- To enable the student on how to apply various Statistical Process Control (SPC) techniques to ensure the quality level of products.
- To understand the significance of Control Charts and Acceptance sampling in modern quality control systems.
- To make students learn the national and international quality assurance standards.

Course Learning Outcome

The Learning Outcomes of this course are as follows:

- Apply the principles and techniques of Total Quality Management in improving quality practices within an industrial or service organization

- Use statistical process control (SPC) techniques such as pareto charts, control charts and cause-effect diagrams recognized throughout industries to ensure the quality level of products
- Understand the role of Acceptance Sampling (AS) in modern quality control systems
- Develop an understanding of national and international quality assurance standards such as ISO 9000 and 14001

SYLLABUS OF GE

Unit-1 **(11 hours)**

Quality Concepts: Meaning of Quality, Dimensions of Quality, Quality Approaches-Deming's Approach, Juran's Approach, Difference between Inspection, Quality Control and Quality Assurance, Evaluation of Quality control, Quality Improvement Techniques-Quality Circles, Kaizen, Six Sigma.

Unit-2 **(12 hours)**

Quality Control: Graphical and Tabular representation of data, Measures of Central Tendency, Measures of Dispersion, Random Variables, Chance and assignable causes of variation, Quality Control Tools-Histogram, Pareto Chart, Cause-Effect Diagram, Control Charts. Control Chart for variables (X-bar & R), Control limits, Warning Limits, Process Capability, Sample Size and Sampling Frequency, Sensitizing rules for Control Charts, Control Chart for Attributes (p, np, c).

Unit-3 **(11 hours)**

Acceptance Sampling: Advantages and Disadvantages of Sampling, Types of Sampling, Lot formation, Principle of acceptance sampling, OC curve, Producer’s and consumer’s risk, Acceptable Quality Level, Lot Tolerance Percentage Defective, Sampling plans: single, double, Average outgoing Quality, AOQL.

Unit-4 **(11 hours)**

ISO 9001-2000 & 14000 Series of Standards: History and Evolution of ISO 9000 Series, Importance and overview of ISO 9000- 1998 Series standards, structure of ISO 9000-2000 Series standards, clauses of ISO 9000 series standards and their interpretation and implementation, quality system documentation and audit. Environmental management concepts, and requirement of ISO 14001, benefits of environmental management Systems.

Practical component: **(30 hours)**

Use latest statistical software package like SPSS to conduct experiments based on:

1. Descriptive statistics
2. Histogram
3. Pareto Chart
4. Control charts for variables
5. Control charts for attributes
5. OC curve
6. AOQ curve

Essential/recommended readings

1. D. C. Montgomery, Introduction to Statistical Quality Control, John Wiley and sons, 6th edition, 2008.
2. Subburaj Ramasamy, Total Quality management, Tata McGraw Hill, 2 nd Edition, 2012
3. E. L. Grant & R.S. Leavenworth-Statistical Quality Control, 7th Edition, 2000.
4. Kaoru Ishikawa-Guide to Quality Control, Asian Productivity Organization, Series, 1986

Suggestive readings

1. M. S. Mahajan, Statistical Quality Control, 1st Edition, Dhanpat Rai Publishing Co Pvt Ltd (2016).
2. Ranjit Kumar, Research Methodology, A step by step guide for beginners, SAGE Publications (2015)
3. Prabhat Pandey, Meenu Mishra Pandey, Research Methodology: Tools and Techniques, Bridge Center (2015)
4. S.P Gupta, Statistical Methods, 46th edition, Sultan Chand & Sons (2021)

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERAL ELECTIVE COURSE : Wireless Networks (INGE6B)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Wireless Networks (INGE6B)	**04**	**03**	**-**	**01**	**Class XII passed with Mathematics/Applied Mathematics/ + Computer Science/Informatics**	Mathematics in class XII and digital communication

Learning Objectives

The Learning Objectives of this course are as follows:

- To understand the concept about Wireless networks, protocol stack and standards
- To understand and analyze the network layer solutions for Wireless networks
- To study about fundamentals of 3G Services, its protocols and applications
- To have in depth knowledge on internetworking of WLAN
- To learn about evolution of 4G and 5G Networks, its architecture and applications

Learning outcomes

The Learning Outcomes of this course are as follows:

- Conversant with the latest 3G/4G networks and its architecture
- Design and implement wireless network environment for any application using latest wireless protocols and standards
- Ability to select the suitable network depending on the availability and requirement
- Implement different type of applications for smartphones and mobile devices with latest network strategies

SYLLABUS OF GE

UNIT – 1 **(12 hours)**

WIRELESS LAN

Introduction-WLAN technologies: Infrared, UHF narrowband, spread spectrum -IEEE 802.11: System architecture, protocol architecture, physical layer, MAC layer, 802.11b, 802.11a – Hiper LAN, BRAN (Broadband Radio Access Networks), HiperLAN2 Bluetooth: Architecture, Radio Layer, Baseband layer, Link manager Protocol, security IEEE 802.16-WIMAX: Physical layer, MAC, Spectrum allocation for WIMAX.

UNIT – 2 **(11 hours)**

MOBILE NETWORK LAYER

Introduction - Mobile IP: IP packet delivery, Agent discovery, tunneling and encapsulation, IPV6- Network layer in the internet- Mobile IP session initiation protocol - mobile ad-hoc network: Routing, Destination Sequenced distance vector, Dynamic source routing

UNIT – 3 **(11 hours)**

MOBILE TRANSPORT LAYER

TCP enhancements for wireless protocols - Traditional TCP: Congestion control, fast retransmit/fast recovery, Implications of mobility - Classical TCP improvements: Indirect TCP, Snooping TCP, Mobile TCP, Time out freezing, Selective retransmission, Transaction oriented TCP - TCP over 3G wireless networks.

UNIT – 4 **(11 hours)**

4G NETWORKS

Introduction – 4G vision – 4G features and challenges - Applications of 4G – 4G Technologies: Multicarrier Modulation, Smart antenna techniques, OFDM-MIMO systems, Adaptive Modulation and coding with time slot scheduler, Cognitive Radio.

5G NETWORKS

Introduction – 5G vision – 5G features and challenges - Applications of 5G – 5G Technologies

Practical component: **(30 hours)**

1. Program in NS 3 to connect WIFI TO BUS(CSMA)
2. Program in NS 3 to create WIFI SIMPLE INFRASTRUCTURE MODE
3. Program in NS 3 to create WIFI SIMPLE ADHOC MODE
4. Program in NS 3 to connect WIFI TO WIRED BRIDGING
5. Program in NS 3 to create WIFI TO LTE(4G) CONNECTION
6. Program in NS3 for CREATING A SIMPLE WIFI ADHOC GRID
7. Introduction to GSM Architecture

Essential/recommended readings

1. Wireless Communication and Networks, Second Edition, Williant Stallings.

2. Erik Dahlman, Stefan Parkvall, Johan Skold and Per Beming, "3G Evolution HSPA and LTE for Mobile Broadband", Second Edition, Academic Press, 2008.
3. Anurag Kumar, D.Manjunath, Joy kuri, "Wireless Networking", First Edition, Elsevier 2011.
4. Simon Haykin, Michael Moher, David Koilpillai, "Modern Wireless Communications", First Edition, Pearson Education 2013

Suggestive readings

1. Jochen Schiller, "Mobile Communications", Second Edition, Pearson Education 2012.
2. Vijay Garg, "Wireless Communications and networking", First Edition, Elsevier 2007.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

ANNEXURE-24

Sub: Amendment to Ordinance V

[E.C Resolution No. 27-1/ (27-1-13/-) dated 25.08.2023]

Following addition be made to Appendix-II-A to the Ordinance V (2-A) of the Ordinances of the University;

Add the following:

Following Value Addition Courses (VAC) have been added to the Pool of Value Addition Courses based on Undergraduate Curriculum Framework -2022 implemented from the Academic Year 2022-23 :

1. Vedic Mathematics -III
2. Vedic Mathematics – IV
3. VAC : National Cadet Corps – III

(Details are as per Annexure-I)

Annexure-I

Vedic Mathematics - III

Course Title and Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Prerequisite of the Course
		Lecture	Tutorial	Practical/ Practice		
Vedic Mathematics- III	02	1	0	1	Pass in Class 12th	Vedic Mathematics-II

Course Objectives:

- Foster the love for mathematics by creating a positive attitude through Vedic and Ancient Indian Mathematics
- Help students appreciate ancient Indian Mathematics and its contribution to the world.
- Enhance conceptual as well as computational proficiency in trigonometric ratios and complex numbers
- Understand the conceptual ideas of coordinate geometry as developed and used in Ancient and medieval India
- Discuss the rich heritage of mathematical temperament of Ancient India

Learning Outcomes:

- Improved critical as well as logical thinking
- Familiarity with the mathematical procedures of geometry
- Ability to perform calculations in trigonometric ratios with ease.
- Appreciate the Mathematical advancements of Ancient India.

Syllabus of *Vedic Mathematics - III*

Unit I: Contribution of Indian Mathematicians -**Trigonometry**	**Sessions/Lectures**
• Baudhayana • Apastamba • Aryabhata I, II • Bhaskara I, II • Lilavati	3
Unit II: **Trigonometric Ratios**	
• Introduction of Trigonometric ratios • Trigonometric Identities • BN of Complementary angles • BN of sum and difference ($\alpha \pm \beta$) of an angle	4
Unit III: **Real-life Applications of Trigonometry**	

• Application Trigonometry-Height and Distance • Inverse Trigonometric Function	3
Unit IV: Vedic **Geometry**	
• Angle between two lines • Perpendicular distance from point to line • Baudhayan Geometry • *Jyothishya Shastram*-Introduction of Astronomy, Astrology & Time Computation • *Shilpa Shastram*- Introduction of temple architecture and constructions	5

Note: **Some of the theoretical concepts would be dealt with during practice hours.**

Practical/ Practice Component (15 sessions of 2 hours each= 30 hours)

The students are expected to demonstrate the application of Vedic Maths: *Sutra* and *Upsutra*

- Conduct workshops under the supervision of the course teacher to spread awareness on the utility of Vedic Mathematics.
- Students may share their experience with the class teacher in the form of audio-video presentations of 15 minutes.
- If required, students can share their experiences in the form of a Project Report.
- Any other Practical/Practice as decided from time to time

Essential Readings

- Vedic Mathematics, Swami Bharati Krishna Trithaji, *Motilal Banarsidas, New Delhi.*
- The Power of Vedic Mathematics with Trigonometry, *Atul Gupta, Jaico Publishing house.*
- Vedic Mathematics For All Ages, Vandana Singhal, *Motilal Banarsidas Publishers.*
- Studies in Indian Mathematics and Astronomy, Aditya Kolachana, K. Mahesh, K. Ramasubramanian, *Springer, Singapore*
- Elements of Vedic Mathematics, Udayan S. Patankar, Sunil M. Patankar, TTU Press.
- Vedic Mathematics: The Problem Solver, Ronak Bajaj, *Black Rose Publications.*
- Vedic Geometry Course, S. K. Kapoor, *Lotus Press*
- Gardner, Robert and J.F. Staal. *Altar of Fire*. Documentary. The Film Study Center at Harvard University, 1976

Suggested Readings

- A Modern Introduction to Ancient Indian Mathematics, T S Bhanumurthy, *Wiley Eastern Limited, New Delhi*
- Essential of Vedic Mathematics, Rajesh Kumar Thakur, *Rupa Publications, New Delhi*
- Vedic Mathematics - Modern Research Methods, Tiwari P., *Cumpus Books International*
- A Treatise on Astronomy By Bhaskaracharya, *Cosmo Publication.*
- Astronomical Applications of Vedic Mathematics, K. R. Williams, *Motilal Banarsidass Publishers, Delhi.*

Assessment Method

Subject to directions from the Examination Branch/University of Delhi from time to time

****

Value Addition Course

Vedic Mathematics - IV

Course Title and Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Prerequisite of the Course
		Lecture	Tutorial	Practical/ Practice		
Vedic Mathematics- IV	02	1	0	1	Pass in Class 12th	Vedic Mathematics-III

Course Objectives:

- Foster the love for mathematics by creating a positive attitude through Vedic and Ancient Indian Mathematics
- Enhance conceptual as well as reduce its fear through Vedic Mathematics
- Understand application of triangular array of numbers with *Meru Prastar*
- To become computational proficiency in differential and integral calculus
- Appreciate the rigour in mathematics conceptual understanding that existing in ancient India

Learning Outcomes:

- Improved critical as well as logical thinking
- Familiarity with the mathematical procedures of Pingala's *Meru* Prastar
- Ability to perform differentiation and integration of expressions faster with ease.
- Appreciate the Mathematical advancements of Ancient India.

Syllabus of *Vedic Mathematics - IV*

Unit I: Contribution of Indian Mathematicians	**Sessions/Lectures**
• Pingala • Mahavira • Narayan Pandit • Jyesthadeva • Parmeshvaran • Madhavan	**3**
Unit II: **Wonder World of Indian Mathematics-*Meru Prastar***	
• Pingal's binary number system, • Different types of *Meru Prastar* (including Pascal triangle) • Applications of *Meru Prastar*	**4**
Unit III: **Lightening Complex numbers**	

• Introduction of Complex number • Baudhayan form of Complex • Addition & Subtraction of Complex Number • Multiplication of Complex numbers	4
Unit IV: **Enlighten Calculus**	
• Introduction to differentiation • Application of derivatives • Introduction to Integration • Application of Integration	4

Note: **Some of the theoretical concepts would be dealt with during practice hours.**
Practical/ Practice Component (15 sessions of 2 hours each= 30 hours)

The students are expected to demonstrate the application of Vedic Maths: *Sutra* and *Upsutra*

- Conduct workshops under the supervision of the course teacher to spread awareness on the utility of Vedic Mathematics.
- Students may share their experience with the class teacher in the form of audio-video presentations of 15 minutes.
- If required, students can share their experiences in the form of a Project Report.
- Any other Practical/Practice as decided from time to time

Essential Readings

- Vedic Mathematics, Swami Bharati Krishna Trithaji, *Motilal Banarsidas, New Delhi.*
- The Power of Vedic Mathematics with Trigonometry, *Atul Gupta, Jaico Publishing house.*
- Studies in Indian Mathematics and Astronomy, Aditya Kolachana, K. Mahesh, K. Ramasubramanian, *Springer, Singapore*
- Elements of Vedic Mathematics, Udayan S. Patankar, Sunil M. Patankar, TTU Press.
- Vedic Mathematics For All Ages, Vandana Singhal, *Motilal Banarsidas Publishers.*
- Vedic Geometry Course, S. K. Kapoor, *Lotus Press*

Suggested Readings

- A Modern Introduction to Ancient Indian Mathematics, T S Bhanumurthy, *Wiley Eastern Limited, New Delhi*
- Essential of Vedic Mathematics, Rajesh Kumar Thakur, *Rupa Publications, New Delhi*
- Learning Vedic Mathematics, S. K. Kapoor, *Lotus Press Publications*
- Vedic Mathematics Made Easy, Dahaval Bathia, *Jaico Publishing, New Delhi*

Assessment Method

Subject to directions from the Examination Branch/University of Delhi from time to time

****

VAC : NATIONAL CADET CORPS – III

Credit distribution, eligibility criteria and pre-requisites of the course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/Practice		
National Cadet Corps -III	2	1	0	1	Pass in Class 12th	Enrolled as NCC Cadet and in semester three.

Learning Objectives:

The course aims to:

- Provide understanding about the life history and leadership qualities of great leaders, sportsperson & entrepreneurs.
- Provide understanding of the various aspects of types of mindset.
- Provide understanding of the methods and qualities of public speaking.
- Provide knowledge about the organization related to disaster management and their functioning.
- Provide understanding about the various types of adventure activities.

Learning Outcomes:

After completing this course, the cadets will be able to:-

- Admire and get inspired from the accomplishments of leaders from various walks of life.
- Develop public speaking skills.
- Understand the importance of positive mindset and optimistic attitude in life.
- Appreciate the need & requirements for disaster management and their role in disaster management activities.

SYLLABUS OF NATIONAL CADET CORPS-II

Unit I: Personality Development (5 Weeks)

- Group Discussion- Change your Mindset
- Public Speaking

Unit II: Leadership (4 Weeks)

- Case Studies- APJ Abdul Kalam, Deepa Malik, Maharana Pratap, N.R. Narayana Murthy

Unit III: Disaster Management (4 Weeks)

- Organisation of NDMA
- Types of Disasters
- Essential Services
- Types of Assistance

Unit IV: Adventure Activities- (2Weeks)

- Parasailing
- Slithering
- Rock Climbing
- Cycling and Trekking

Practical Component: **(15 Weeks)**

- Drill
- Map Reading/Principles of Flight & Airmanship/Naval Communication, Navigation & Seamanship
- Weapon Training
- Field Craft & Battle Craft
- Social Service & Community Development
- Obstacle Training

Suggested Readings:

- DGNCC Cadet's Hand Book - Common Subjects -All Wings (in English)
- DGNCC Cadet's Hand Book - Common Subjects -All Wings(in Hindi)
- DGNCC Cadet's Hand Book — Specialised Subjects —Army, Navy and Air Wing

Examination scheme and mode: Subject to directions from the Examination Branch, University of Delhi from time to time.

ANNEXURE-25

Sub: Amendment to Ordinance V

[E.C Resolution No. 14-1/-(14-1-3/-) dated 09.06.2023]

Following addition be made to Appendix-II-A to the Ordinance V (2-A) of the Ordinances of the University;

Add the following:

Syllabi of Semester-IV, V and VI of the following departments under Faculty of Social Sciences based on Under Graduate Curriculum Framework -2022 implemented from the Academic Year 2022-23 :

(i) Political Science

(ii) Social Work

SEMESTER-IV
DEPARTMENT OF POLITICAL SCIENCE
Category I

Political Science Courses for Undergraduate Programme of study with Political Science as a Single Core Discipline
(B.A. Honours in Political Science in three years)

DISCIPLINE SPECIFIC CORE COURSE – 10: Public Administration in India

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Public Administration in India DSC-10	4	3	1	--	Passed Class XII	NIL

Learning Objectives
The paper seeks to provide an introduction to the different dimensions of public administration in India. It seeks to acquaint the student with an analytical and critical understanding of the institution of Indian bureaucracy, with issues of decentralization, financial management, public accountability, e-governance and some specific dimensions of citizens and social welfare policies.

Learning outcomes
With this course, we expect that students will be able to:
- Have a clear picture of the complex institutional structure of Indian administration at present
- Understand the building blocks of local governance, in rural and urban areas
- Explain the processes by which different budgeting systems work for this structure
- Analyse the processes of implementation of different social welfare policies by the administrative institutions.

SYLLABUS OF DSC-10

UNIT – I (8 Hours)
Indian Administration

a. Structure of the Civil Services: Evolution
   i. Historical Legacy
   ii. Civil Service in the Constitutional Framework; appointment training, promotion
b. PMO, Cabinet Secretariat
c. Major Initiatives in Administrative Reforms

UNIT – II (8 Hours)
Decentralization and Local Self Governance

a. Meaning and Types: Rural and Urban
b. PRIs and implementation of public policies

UNIT – III (7 Hours)
Budget

a. Concept of Budget and Budget Cycle in India
b. Types of Budget: Line Budget, Performance Planning Budget, Zero Based Budget
c. Budget making: role of the Finance Ministry

UNIT – IV (7 Hours)
Technology and Public Administration in India

a. E-Governance: The Journey of E-Governance in India
b. Models of E-Governance: Case-Study of Digital India Mission

UNIT – V (8 Hours)
Social Welfare Policies

a. Education: Right to Education
b. Health: National Health Mission
c. Food: Right to Food Security
d. Employment: MGNREGA

UNIT – VI (7 Hours)
Issues and Debates in Indian Administration

a. Ethics in Administration: Integrity vs. Corruption
b. Accountability: RTI, Lokpal, Citizens' Charter
c. Relationship between Political Executive and Permanent Executive
d. Generalists and Specialists
e. Gender sensitivity and gender participation

Essential/recommended readings

Unit 1. Indian Administration

Basic Readings

K.S. Chalam, 'Constitutional Status of Civil Service In India' in K.S. Chalam [ed.], Governance in South Asia: State of The Civil Services, Sage Publishers, 2014.

Devesh Kapur and Pratap Bhanu Mehta, Public Institutions in India: Performance and Design, Oxford University Press, 2007.

Second ARC Report, Report X, Personnel Administration and Scaling New Heights, 2005 [https://darpg.gov.in/sites/default/files/personnel_administration10.pdf]

Swarup, Anil, Ethical Dilemmas of a Civil Servant, Unique Publishers, 2021

Second ARC Report, 2005, Report IV, Ethics in Governance, [https://darpg.gov.in/sites/default/files/ethics4.pdf]

Bhure Lal, 'Civil Service Values and Neutrality' in K.S. Chalam [ed.], Governance in South Asia: State of The Civil Services, Sage Publishers, 2014

Additional Readings

Mathur, K. Recasting Public Administration in India: Reform, Rhetoric and Neo- liberalism New Delhi, Oxford University Press, 2019.

Chakrabarty, Bidyut and Mohit Bhattacharya, The Governance Discourse- A Reader, New Delhi: Oxford University Press, 2008

Gupta, Deepak, The Steel Frame: A History of the IAS, Roli Books, 2019.

Caiden, Gerald E., 2009, Administrative Reforms, Aldine Transaction, Chicago, 2009.

N. Bhaskar. Rao, Good Governance: Delivering Corruption-Free Public Services, Sage Publishers, 2013.

R. K. Sapru, Indian Administration: A Foundation of Governance, Sage, 2018.

Unit 2. Decentralization and Local Self Governance

Basic Readings

Bardhan, Pranab and Dilip Mookherjee, 'The Rise of Local Governments: An Overview', in Pranab Bardhan,And Dilip Mookherjee [eds.] Decentralisation and Local Governance in Developing Countries: A Comparative Perspective, Oxford University Press, 2007

Amitabh Kundu, 'Urban System in India: Trends, Economic Base, Governance, and a Perspective of Growth under Globalization' in Waquar Ahmed, Amitabh Kundu, Richard Peet [eds.] , India's New Economic Policy: A Critical Analysis, Routledge, 2010.

B.P. Syam Roy, Democratic Decentralization in West Bengal, in E. Venkatesu, Democratic Decentralisation in India: Experiences, Issues and Challenges, Routledge [South Asia Edition], 2016

Bhagidari Scheme in Delhi; Partnership Between Local Government and Non-State Agencies/Actors; https://egyankosh.ac.in/bitstream/123456789/25833/1/Unit-10.pdf

Jawed Alam Khan, 'Issues in Devolution of Functions, Functionaries and Funds to PRIs: A Comparative Assessment of UP, Rajasthan and Kerala in 2016', in E. Venkatesu, Democratic Decentralisation In India: Experiences, Issues And Challenges, Routledge, 2016

Lalita Chandrashekhar, 'Caste, Party and Democratic Decentralisation in Karnataka' in B.S. Baviskar and George Mathew [eds.] Inclusion and Exclusion in Local Governance: Field Studies from Rural India, Sage Publishers, 2009

Additional Readings

Jayal, N.G., Amit Prakash and P.K.Sharma, Local Governance in India: Decentralization and Beyond, New Delhi: Oxford University Press, 2006.

Satyajit Singh, The Local in Governance: Politics, Decentralisation and Environment, Oxford University Press, New Delhi, 2016.

Satyajit Singh and Pradeep K. Sharma [eds.] Decentralisation: Institutions and Politics in Rural India, Oxford University Press, 2007.

D. A. Rondinelli and S. Cheema, Decentralisation and Development, Beverly Hills: Sage Publishers, 1983.

Chandni Singh and Andaleeb Rehman, Urbanising the Rural: Reflections on India's National Rurban Mission, Asia and Pacific Policy Studies, March 2018

Dreze, Jean and Amartya Sen, India: Development and Participation, Oxford University Press, New York, 2002

Mehra, Diya, What Has Urban Decentralization Meant: A Case Study of Delhi, Pacific Affairs, Volume 86, No. 4, December 2013

Mary John, ‘Women in Power? Gender, Caste and The Politics of Local Urban Governance’, in T.R. Raghunandan [ed.] Decentralization and Local Government: The Indian experience, Orient BlackSwan, 2013

Unit 3. Budget

Basic Readings

Karnam, Gayithri (ed.), Public Budgeting in India, Principles and Practices, Springer, 2018.

Nicholas Henry, Public Administration and Public Affairs. New Jersey: Prentice Hall, 2012.

Rumki Basu, Public Administration: Concepts and Theories, Sterling Publishers, 2013.

Additional Readings

Green Budgeting in Annual Budget 2022; https://www.downtoearth.org.in/news/climate-change/how-green-is-union-budget-2022-23--81354

Green Budgeting; https://www.oecd.org/environment/green-budgeting/OECD-Green-Budgeting-Framework-Highlights.pdf

Handbook on Gender Budgeting.; https://wcd.nic.in/sites/default/files/GB%20-%20Handbook%20October%202015.pdf

Caiden, N., ‘Public Budgeting Amidst Uncertainty and Instability’, in Shafritz, J.M. & Hyde, A.C. (eds.) Classics of Public Administration, Belmont: Wadsworth, 2004

Siuli Sarkar, Public Administration In India, PHI Publishers,2010

Unit 4-6

Basic Readings

Shamshad Ahmad, Right to Information: Issues of Administrative Efficiency, Public Accountability and Good Governance in India, The Indian Journal of Public Administration, Vol LV, January- March, No. 3, 2009

Preeti D. Pohekar , A Study of Ombudsman System in India with Special Reference to Lokayukta in Maharashtra , Gyan Publishing House, 2010

Shivani Singh, Citizen’s Charter, in Governance: Issues and Challenges, Sage Publishers, 2016

Dhal, Sangita, 2022, E-Governance and Citizen Engagement: New Directions in Public Administration, Sage Publishers

Dhal, Sangita, ‘Situating Digital India Mission in Pursuit of Good Governance: A Study of Electronic Governance Initiatives’, Indian Journal of Public Administration, Sage Publication, January-March (66.1), pp 110-126, 2020

Tillin, Louise Rajeshwari Deshpande and K. K. Kailash [eds.], Politics of Welfare: Comparisons Across Indian States. Oxford: Oxford University Press, 2015

Khera, Reetika,(ed.), 2011, The Battle For Employment Guarantee, Oxford University Press, New Delhi, 2011

Additional Readings

N.Vittal, ‘Accountability in Public Service’in K.S. Chalam [ed.], Governance in South Asia: State of The Civil Services, Sage Publishers, 2014

Second ARC Report, Report 1, Right to Information, 2005, https://darpg.gov.in/sites/default/files/rti_masterkey1.pdf

Samuel Paul, India's Citizen's Charters: In Search of a Champion, Economic and Political Weekly, Vol. 43, No. 7, Feb. 16 - 22, 2008, pp. 67-73

Pippa Norris, Digital Divide: Civic Engagement, Information, Poverty and The Internet World Wide. Cambridge: Cambridge University Press, 2001

Chaudhuri, Bidisha, E-Governance In India-Interlocking, Politics, Technology and Culture, Routledge, New York, 2014

Dhal, Sangita, Enabling Social Rights through Proactive Public Policy: Auditing Education and Health Sectors in India, Indian Journal of Public Administration, Volume 52, No.1, New Delhi, 2016

Renu Srivastava, Impact of Central Sponsored Schemes on Women Empowerment with Special Reference to Health and Education, Kamlesh Gupta, State and Public Policy, Pentagon Press, 2018

Rukmini Banerji, 'Learning for All: Lessons from ASER and Pratham in India on the Role of Citizens and Communities in Improving Children's Learning' in Sungsup Ra, Shanti Jagannathan and Rupert Maclean, Powering a Learning Society During an Age of Disruption, Springer Publishers, 2021 [https://link.springer.com/chapter/10.1007/978-981-16-0983-1_13]

K. Lee and Mills, The Economic of Health in Developing Countries, Oxford: Oxford University Press, 1983

Vinod Kumar, Socio-Economic Impact of MGNREGA on Rural People: A Study in Mandi District of Himachal Pradesh, Indian Journal of Public Administration, Sage Publication, January-March (59.2), 2013 [https://doi.org/10.1177/0019556120130213]

Anjoo Sharan Upadhyaya, Ashild Kolas and Ruchita Beri, Food Governance in India: Rights, Security and Challenges in The Global Sphere, Routledge, 2022.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 11: Concepts in Comparative Political Analysis

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Concepts in Comparative Political Analysis DSC-11	4	3	1	-	Passed Class XII	NIL

Learning Objectives

This paper offers critical perspectives into salient concepts in comparative politics. These concepts provide the tools for understanding political processes and institutions through comparisons across political systems and political regimes. The course aims to make students familiar with electoral systems and party system to make sense of the different ways in the representation is achieved. The experiences with constitutionalism and constitutional designs which facilitate federal sharing of power, the ideas of nationalism in anti-colonial movements, and development models that have driven nation and state building processes across the world comprise the core themes of this course. The course attempts to cover these themes

by deploying concepts which provide the lens for understanding different political systems and processes reinforced with examples and case studies.

Learning outcomes

After studying this course, the students would

- acquire an understanding of a range of concepts such as nationalism and constitutionalism
- learn how to distinguish between different kinds of political systems based on their electoral design and party systems
- demonstrate knowledge of federal designs and ideas of political community based on different notions of nationalism
- understand development models historically and empirically

SYLLABUS OF DSC- 11

UNIT – I (6 Hours)

Socio-Economic Structures

Capitalism, Socialism, Colonialism and Neo-liberalism

UNIT – II (7 Hours)

Discourses on Nationalism

Civic and Ethnic nationalisms, Ideological basis of anti-colonial nationalism (Gandhi, Mao, Frantz Fanon and Amilcar Cabral)

UNIT – III (6 Hours)

Constitutionalism

Evolution of the idea of constitutionalism, post-colonial constitutionalism

UNIT – IV (7 Hours)

Federalism

Historical context

Federation and Confederation: debates around territorial division of power.

UNIT – V (7 Hours)

State and Regime types

Capitalist, Welfare, Populist and Security state

UNIT – VI (6 Hours)

Electoral System

Definition and procedures: Types of electoral systems (First Past the Post, Proportional Representation, Mixed Representation

UNIT – VII (6 Hours)

Party System

Historical contexts of emergence of political parties, types of parties and party systems.

Essential/recommended readings

1. Socio-Economic Structures

a. Capitalism

R. Suresh (2010) *Economy & Society -Evolution of Capitalism*, New Delhi, Sage Publications, pp.151-188; 235-268.

G. Ritzer (2002) 'Globalization and Related Process I: Imperialism, Colonialism, Development, Westernization, Easternization', in *Globalization: A Basic Text*. London: Wiley- Blackwell, pp. 63-84.

M. Dobb (1950) 'Capitalism', in *Studies in the Development of Capitalism*. London: Routledge and Kegan Paul Ltd, pp. 1-32.

E. Wood (2002) 'The Agrarian origin of Capitalism', in *Origin of Capitalism: A Long View*. London: Verso, pp. 91-95; 166-181.

A. Hoogvelt (2002) 'History of Capitalism Expansion', in *Globalization and Third World Politics* London: Palgrave, pp. 14-28.

b. Socialism

A. Brown (2009) 'The Idea of Communism', in *Rise and Fall of Communism,* Harpercollins, pp. 1-25; 587-601.

J. McCormick (2007) 'Communist and Post-Communist States', in *Comparative Politics in Transition*, United Kingdom: Wadsworth, pp. 195-209

R. Meek (1957) 'The Definition of Socialism: A Comment', *The Economic Journal*. 67 (265), pp.135-139.

2. Discourses on Nationalism

B. Anderson, *Imagined Communities: Reflections on the Origin and Spread of Nationalism*, Verso, 2006 (1983).

U. Ozkirimli (2010), *Theories of Nationalism: A Critical Introduction*, Palgrave Macmillan.

H.B. Davis, *Towards a Marxist Theory of Nationalism*, Monthly Review Press, New York, 1978 (Chapter 8: Social Classes and the Formation of Nation: Fanon, Cabral, and the African Liberation Struggle, pp. 202- 239)

3. Constitutionalism

C. Mcllwain (1940 [2007]), *Constitutionalism: Ancient and Modern*, Cornell University Press.

U. Baxi (2000) 'Postcolonial Legality', in Henry and Sangeeta Ray eds., *A Companion to Postcolonial Studies*, Blackwell, pp.540-555.

4. Federalism

M. Burgess (2006) *Comparative Federalism: Theory and Practice*. London: Routledge, pp. 135-161.

R. Watts (2008) 'Introduction', in *Comparing Federal Systems.* Montreal and Kingston: McGill Queen's University Press, pp. 1-27

R. Saxena (2011) 'Introduction', in Saxena, R (eds.) *Varieties of Federal Governance: Major Contemporary Models.* New Delhi: Cambridge University Press, pp. xii-x1.

5. State and Regime Types

Lindstaedt N. (2020) Authoritarian Regimes, in D. Caramani (ed.), Comparative Politics, Oxford University Press, Ch 6. Pp.103-115

Busch, Andreas (2015), The Changing Architecture of the National Security State', in Stephan Leibfried, Evelyn Huber, Mattew Large, Jonah D. Levy and John D. Stephens (eds.), *The Oxford Handbook of Transformations of State*, Oxford, Oxford University Press.

Webb, E. (2011) 'Totalitarianism and Authoritarianism', in Ishiyama, J. T. and Breuning, M.(eds.) *21st Century Political Science: A Reference Book*. Los Angeles: Sage, pp. 249-257.

Mudde Cas and Kaltwasser Cristóbal Rovira (2017), What is Populism (Ch 1), Populism around the world (Ch 2) in *Populism: A Very Short Introduction*, OUP

Garland, David (2016) Ch 1, Ch 6, Ch 7, in *The Welfare State: A Very Short Introduction*, OUP.

Hague, R. and Harrop, M. (2004) 'The state in a global context', in *Comparative Government and Politics: An Introduction.* London: Palgrave McMillan, pp. 17-34.

Kesselman, M. (2007) *The Politics of Globalization.* Boston: Houghton Mifflin Company, pp. 330- 339.

Rosenzweig, Paul (2016) Lecture 1- Security, Liberty, or Neither, and Lecture 4- Surveillance in America, in: *The Surveillance State, Big Data, Freedom, and You*, Course Guidebook, Teaching Company.

Mabee, B. (2009) The 'Security State' and the Evolution of Security Provision. in: *The Globalization of Security. New Security* Challenges Series. Palgrave Macmillan, London.

Kersbergen K V and Philip Manow (2020) The Welfare State in D Caramani (ed.), Comparative Politics, Oxford University Press, Ch.21, pp. 376-394

Mabee, B. (2009). The 'Security State' and the Evolution of Security Provision.in: *The Globalization of Security. New Security* Challenges Series. Palgrave Macmillan, London.

Miliband, Ralph (1973), *The State in Capitalist Society*, Quartet Books

Newton, K. and Deth, Jan W. V. (2010) Welfare (Ch 17), Foundations of Comparative Politics: Democracies of the Modern World. Cambridge: Cambridge University Press.

6. Electoral System

A. Heywood (2002) 'Representation, Electoral and Voting', in *Politics*. New York: Palgrave, pp 223-245.

Downs, W. M. (2011) 'Electoral Systems in Comparative Perspectives', in Ishiyama, J. T. and Breuning, M. (eds.) *21st Century Political Science: A Reference Book*. Los Angeles: Sage, pp. 159-167.

A. Evans (2009) 'Elections Systems', in J. Bara and M. Pennington (eds.) *Comparative politics*, New Delhi: Sage, pp. 93-119.

R. Moser, and S. Ethan (2004) 'Mixed Electoral Systems and Electoral System Effects: Controlled Comparison and Cross-national Analysis', in *Electoral Studies.* 23, pp. 575-599.

7. Party System

Caramani, D. (2020) 'Party Systems', in Caramani, D. (ed.) *Comparative Politics*. Oxford: Oxford University Press, Ch.13, pp. 231-251.

Choudhary, Sunil K. (2018), Theorizing Parties and Party Systems, in *The Changing Face of Parties and Party Systems, A Study of Israel and India*, Palgrave Macmillan.

A. Cole (2011) 'Comparative Political Parties: Systems and Organizations', in J. Ishiyama, and M. Breuning (eds) *21st Century Political Science: A Reference Book*. Los Angeles: Sage Publications, pp. 150-158.

A. Heywood (2002) 'Parties and Party System', in *Politics*. New York: Palgrave, pp. 247-268.

B. Criddle (2003) 'Parties and Party System', in R. Axtmann (ed.) *Understanding Democratic Politics: An Introduction*. London: Sage Publications, pp. 134-142.

Additional Readings:

Bara, J & Pennington, M. (eds.). (2009) *Comparative Politics*. New Delhi: Sage.

Caramani, D. (ed.). (2020) *Comparative Politics*. Oxford: Oxford University Press, Fifth Ed.

Hague, R. and Harrop, M. McCormick J. (2016) *Comparative Government and Politics: An Introduction* (Tenth Edition). London: Palgrave McMillan.

Ishiyama, J.T. and Breuning, M. (eds.). (2011) *21st Century Political Science: A Reference Book*. Los Angeles: Sage.

Newton, K. and Deth, Jan W. V. (2010) *Foundations of Comparative Politics: Democracies of the Modern World*. Cambridge: Cambridge University Press.

O'Neil, P. (2009) *Essentials of Comparative Politics* (3rd Edition). New York: WW. Norton & Company, Inc.

Roy Macridis (1966) The Study of Comparative Government, Random House.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 12: Global Politics

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Global Politics DSC 12	**4**	**3**	**1**	**-**	**Passed Class XII**	**NIL**

Learning Objectives

This course aims to familiarize the students with key concepts and issues of global politics by providing an overall frame that de-centres the Eurocentric notion of the origins and development of global politics and introduces students to the alternative locations of global politics through history as well as in the contemporary contexts. Through the conceptual frames of geo-politics, geo-economics and geo-strategy, students will learn about various dimensions of the contemporary dynamics of global politics. Students will debate questions of dominance, control, and identity by examining the cultural frames of global politics. The course also offers insights into key and pressing contemporary global issues ranging from climate change, nuclear proliferation and migration to the rise and impact of global terrorism and, human security. It also discusses politics at the grassroots level through the lens of global social movements in an interconnected world. Throughout, the course attempts to foreground the perspectives from the Global South in order to pluralize and truly globalize the domain of global politics.

Learning outcomes

At the end of the course, students would acquire

- a basic clarity on the meaning, nature and significance of global politics.
- ability to analyse global politics beyond its conventional Eurocentric accounts.
- conceptual tools to understand its dynamics in the contemporary context.
- an understanding of the debates on the changing nature of global politics in terms of de-globalization and post-globalization along with territorialization and deterritorialization.
- the ability to understand the operational aspects of geo-politics, geo-economics, and geo-strategy in the context of global politics.
- the skills to analyze discourses on cultural frames of global politics

- an enhanced understanding of contemporary global issues like- ecology, environment, proliferation of nuclear weapons, global terrorism, human security, and migration.

SYLLABUS OF DSC-12

UNIT – I (10 Hours)
Locating Global Politics

UNIT – II (12 Hours)
Changing Nature of Global Politics

a. Globalization to de-globalization, and post-globalization
b. Geo-politics, Geo-economics, and Geo-strategy
c. Territorialisation and De-territorialisation
d. Cultural Frames of Global Politics

UNIT – III (12 Hours)
Contemporary Global Issues

a. Ecological Issues: Climate Change, and International Environmental Agreements
b. Proliferation of Nuclear Weapons in Post- Cold War Era
c. Global Terrorism and Its Impact
d. Migration
e. Human Security

UNIT – IV (11 Hours)
Global Social Movements

a. Environment Movements
b. Women Movements
c. Peace Movements

Essential/recommended readings

Unit 1 Locating Global Politics

Essential readings:

Hobson, J.M. (2004). *The Eastern origins of Western civilization* (pp. 1-26). Cambridge: Cambridge University Press.

Acharya, Amitav (2014), "Who Are the Norm Makers? The Asian-African Conference in Bandung and the Evolution of Norms" in Special Section on "Principles from the Periphery: The Neglected Southern Sources of Global Norms", *Global Governance*, 20 (3): 405- 417.

Additional readings:

Hobson, J.M. (2020), "Globalization" in A. B. Tickner, & K. Smith (eds.), *International Relations from the Global South: Worlds of difference* (pp. 221-239). Routledge.

Pieterse, Jan Nederveen (2017), "Oriental Globalization: Past and Present", in Delanty, Gerard (eds.), *Europe and Asia Beyond East and West*, New York: Routledge, pp. 61-73.

Getachew, A. (2019), *Worldmaking after Empire: The rise and fall of self-determination (pp. 1-13).* Princeton: Princeton University Press.

Unit 2 Changing Nature of Global Politics

a. Globalization to de-globalization, and post-globalization

Essential readings:

Ritzer, G. (2010), *Globalization: A Basic Text, West* Sussex: Wiley-Blackwell, pp. 33-62.

Stager, M. (2009). *Globalization: A Very Short Introduction*, London: Oxford University Press, pp. 1-16.

Kornprobst, M. & Paul, T.V. (2021), "Globalization, deglobalization and the liberal international order", *International Affairs*, 97 (5): 1305-1316.

Flew, T. (2020). "Globalization, neo-globalization and post-globalization: The challenge of populism and the return of the national", *Global Media and Communication*, 16 (1): 19-39.

Additional Readings:

Held, D., & McGrew A. (2003), "The Great Globalization Debate: An introduction" in D. Held, & A. McGrew. (eds.), *Global Transformations Reader: Politics, Economics and Culture.* Cambridge: Polity Press, pp. 1-50.

Paul, T.V. (2021). "Globalization, deglobalization and reglobalization: Adapting liberal international order". *International Affairs*, 97 (5): 1599-1620.

James, Harold (2017), "Deglobalization as a Global Challenge", *Centre for International Governance Innovation (CIGI) Papers No. 135*, URL: https://www.cigionline.org/sites/default/files/documents/Paper%20no.135WEB_1.pdf

b. Geo-politics, Geo-economics, and Geo-strategy

Essential Readings:

Chaturvedi, S. (2012), "Geopolitics" in B.S. Chimni, & S. Mallavarapu (eds.), *International Relations: Perspectives for the Global South*, New Delhi: Pearson, pp: 149-166.

Wigell, Mikael et al. (2019) (eds.), *Geo-economics and Power Politics in the 21st Century: The Revival of Economic Statecraft*, London: Routledge, pp: 1-24.

Hobson, John M. (2021), *Multicultural Origins of the Global Economy: Beyond the Western-Centric Frontier*, Cambridge: Cambridge University Press, pp. 433-455.

Blouet, Brian W. (2005) (eds.), *Global Geostrategy: Mackinder and the defence of the West*, New York: Frank Cass, pp. 1-16; 137-141; 165-171.

Additional Readings:

Flint, C. (2022). *Introduction to Geopolitics* (4th Edition), London: Routledge, pp: 1-44.

Dodds, K. (2019), *Geopolitics: A Very Short Introduction* (3rd Edition), Oxford: Oxford University Press, pp. 1-14.

Luttwak, Edward N. (1998), "From Geopolitics to Geo-Economics: Logic of Conflict, Grammar of Commerce" in Tuathail, Gearoid O et al. (eds.), *The Geopolitics Reader,* London: Routledge, pp. 125-130.

Dorsman, Andre B et al. (2018) (eds.), *Energy economy, Finance and Geostrategy*, Cham (Switzerland): Springer, pp. 1-10.

c. Territorialisation and De-territorialisation

Essential Readings:

Sassen, Saskia (1996), "The State and the new geography of power", in *Losing Control? Sovereignty in an Age of Globalisation,* New York: Columbia University Press, pp. 1-32.

Elden, S. (2005), "Missing the Point: Globalization, Deterritorialization and the Space of the World", *Transactions of the Institute of British Geographers*, *30*(1), 8–19.

Additional Readings:

Scholte, J. A. (2003), "What is 'Global' about Globalization?" In D. Held & A. McGrew. (eds.), *Global Transformations: Politics, Economics and Culture,* Cambridge: Polity Press, pp. 84-91.

Appadurai, A. (1990), "Disjuncture and Difference in the Global Cultural Economy", *Theory Culture and Society, 7* (2-3): 295-310.

d. Cultural Frames of Global Politics (3 Lectures)

Essential Readings:

Harshe, R. (2006), "Culture, Identity and International Relations", *Economic and Political Weekly*, *41*(37), 3945–3951.

Lapid, Yosef (1996), "Culture's Ship: Returns and Departures in International Relations Theory", in Lapid, Yosef and Friedrich Kratochwil (eds.), *The Return of Culture and Identity in IR Theory,* London: Lynne Rienner Publishers, Inc., pp. 3-20.

Additional Readings:

Holton, Robert (2000), "Globalization's Cultural Consequences", *The Annals of the American Academy of Political and Social Science (ANNALS, AAPSS)*, 570: 140-152.

Gusterson, Hugh (2005), "The Seven Deadly Sins of Samuel Huntington", in Besteman, Catherine and Hugh Gusterson (eds.), *Why America's Top Pundits are Wrong*, Berkeley: University of California Press, pp. 24-42.

Chirico, JoAnn (2014), "Globalizing Culture: Change and Continuity", in *Globalization: Prospects and Problems*, Washington D.C.: Sage Publications, pp. 254-284.

Unit 3 Contemporary Global Issues

a. Ecological Issues: Climate Change, and International Environmental Agreements

***Essential Readings*:**

Heywood, A. (2011), "Global Environmental Issues" in *Global Politics*, New York: Palgrave, pp. 383-411.

Volger, J. (2011), 'Environmental Issues', in J. Baylis, S. Smith and P. Owens (eds.), *Globalization of World Politics*, New York: Oxford University Press, pp. 348-362.

***Additional Readings*:**

Kreienkamp, J. (2019), "The Long Road to Paris: The History of the Global Climate Change Regime", *Global Governance Institute Policy Brief Series* (pp. 1-24), London: University College. https://www.ucl.ac.uk/global-governance/sites/global-governance/files/the_long_road_to_paris_the_history_of_the_global_climate_change_regime.pdf

Death, Carl (2019), 'Can We Save the Planet?', in Edkins, Jenny & Maja Zehfuss (eds.), *Global Politics: A New Introduction (3rd edition)*, New York: Routledge, pp. 61-84.

Falkner, Robert (2012), "Global environmentalism and the greening of international society", *International Affairs,* 88 (3): 503-522.

b. Proliferation of Nuclear Weapons in Post- Cold War Era

Essential Readings:

D. Howlett (2011), "Nuclear Proliferation" in J. Baylis, S. Smith and P. Owens (eds.), *The Globalization of World Politics*: *An Introduction to International Relations,* New York: Oxford University Press, pp. 384-397.

Narang, Vipin (2017), "Strategies of Nuclear Proliferation: How States Pursue the Bomb", *International Security,* 41(3): 110-150.

Additional Readings:

Heywood, A. (2011), Nuclear Proliferation and Disarmament. In *Global Politics*, New York: Palgrave, pp. 263-281.

Chacko, Priya & Alexander E Davis (2018), "Resignifying 'responsibility': India, exceptionalism and nuclear non-proliferation", *Asian Journal of Political Science, pp. 1-19.* URL: https://doi.org/10.1080/02185377.2018.1486218

c. Global Terrorism and Its Impact

***Essential Readings*:**

Bajpai, K.P. (2012), "Terrorism" in B.S. Chimni and Siddharth Mallavarapu (eds.), *Handbook on International Relations: Essays from the Global South*. New Delhi: Pearson Education, pp. 312-327.

Gerges, F.A. (2005), *The Far Enemy: Why Jihad Went Global*, Cambridge: Cambridge University Press, pp. 119-150.

Additional Readings:

Heywood, A. (2011), "Terrorism" in *Global Politics*, New York: Palgrave, pp. 282-302.

Vanaik, A. (2007), *Masks of Empire*, New Delhi: Tulika, pp. 103-128.

Hoffman, Bruce (2002), "Rethinking Terrorism and Counterterrorism Since 9/11", *Studies in Conflict and Terrorism*, 25 (5): 303-316.

Barber, Benjamin (2010), "On Terrorism and New Democratic Realism", in Ritzer, George & Zenep Atalay (eds.), *Readings in Globalization: Key Concepts and Major Debates,* West Sussex: Wiley-Blackwell, pp. 305-306.

d. Migration

Essential Readings:

Castells, S. (2012), "Global Migration" In B.S. Chimni, & S. Mallavarapu (eds.), *International Relations: Perspectives for the Global South,* New Delhi: Pearson India Education, pp. 272-285.

Chirico, JoAnn (2014), "Transborder Threats to Human Well-Being: Inequality and Migration", in *Globalization: Prospects and Problems*, Washington D.C.: Sage Publications, pp. 368-382.

Additional Readings:

Aneesh, A. (2006), *Virtual Migration: The Programming of Globalization,* London: Duke University Press, pp. 67-99.

Ritzer, G. (2010), "Global Flows of People: Vagabonds and Tourists", in *Globalization: A Basic Text,* West Sussex: Wiley-Blackwell, pp. 297-321.

Moses, J. (2006), *International Migration: Globalization's Last Frontier,* London: Zed Books, pp. 1-17.

e. Human Security

Essential Readings:

Acharya, Amitav (2014), "Human Security" in Baylis, J. et al. (eds.), *The Globalization of World Politics: An Introduction to International Relations (6th edition)*, Oxford: Oxford University Press, pp. 448-462.

Tadjbakhsh, S. & Chenoy, Anuradha (2007), *Human Security*, London: Routledge, pp. 13-19; 123-127; 236-243.

Additional Readings:

Acharya, Amitav (2001), "Human Security: East versus West", *International Journal*, 56 (3): 442-460.

Cook, Alistair D.B. (2017), "Non-traditional Security and World Politics", in Beeson, Mark & Nick Bisley (eds.), *Issues in 21st Century World Politics (3rd edition),* New York: Palgrave-Macmillan, pp. 38-51.

UNDP (1994), "Human Development Report: New Dimensions of Human Security", https://www.hdr.undp.org/en/content/human-development-report-1994.

Unit 4 Global Social Movements

Essential Readings:

Fominaya, C. (2014), *Social Movements and Globalization- How Protests, Occupation and Uprisings are Changing the World (*Chapter 3), pp: 27-49, New York: Palgrave Macmillan.

Guidry, John A. et al. (2000) (eds.), *Globalizations and Social Movements: Culture, Power, and the Transnational Public Sphere*, Ann Arbor: University of Michigan Press, pp. 1-32.

Eschle, Catherine & Neil Stammers (2004), "Taking Part: Social Movements, INGOs, and Global Change", *Alternatives*, 29 (3): 333-372.

Additional Readings:

Moola, Sarifa (2004), "Contemporary Activism: Shifting Movements, Changing Actors", *Agenda: Empowering Women for Gender Equity*, 60: 39-46.

Maiba, Hermann (2005), "Grassroots Transnational Social Movement Activism: The Case of Peoples' Global Action", *Sociological Focus*: 38 (1): 41-63.

Laxer, Gordon & Sandra Halperin (2003) (eds.), *Global Civil Society and Its Limits*, New York: Palgrave Macmillan, pp: 1-21.

Additional References:

Tickner, Arlene B. & Karen Smith (2020) (eds.), *International Relations from the Global South: Worlds of Difference*, New York: Routledge.

Acharya, A. (2018), *Constructing Global Order: Agency and Change in World Politics*, Cambridge: Cambridge University Press.

Lechner, Frank J. & John Boli (2015) (eds.), *The Globalization Reader (5th edition)*, Oxford: Wiley Blackwell.

Schaeffer, Robert K. (2021), *After Globalization: Crisis and Disintegration,* New York: Routledge.

Stiglitz, Joseph E. (2018), *Globalization and Its Discontents Revisited: Anti- Globalization in the Era of Trump,* New York: W.W. Norton & Company.

Stuenkel, Oliver (2016), *Post Western World*: *How Emerging Powers are Remaking Global Order*, Cambridge: Polity.

Chari, Chandra (2008) (eds.), *War, Peace and Hegemony in a Globalized World: The Changing Balance of Power in the Twenty-first Century*, New York: Routledge.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Discipline Specific Elective (DSE) Courses for Sem – IV

DISCIPLINE SPECIFIC ELECTIVE COURSE – 2a: Gandhi and the Contemporary World

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Gandhi and the Contemporary World DSE-2a	4	3	1	-	Passed Class XII	NIL

Learning Objectives

The Course has been designed to acquaint student with the core foundations of Gandhi's thoughts, methods and his position on key important issues of national and global concern. These issues range from the social, political, cultural to religious and economic questions which engaged the intellectual minds in his times and even today. As a celebrated champion of non-violent struggle Gandhi is anonym for fight against injustice, discrimination and unfair treatments.

Learning outcomes

After reading this module the student will be able to answer:

- What are the core principles of Gandhian thought on which he scrutinizes all actions?
- How Gandhi applied those principles in shaping his positions on social, political, economic and religious questions?
- The students will be able to answer how Gandhi presented the critique of the Western Civilization.
- The students will be able to know the position of Gandhi on key questions of contemporary debates in India like Religious conversion, protection of cow, language issue and Hinduism.
- The student will be able to know how Gandhi's use of the term Swadeshi does not just limit to economic aspects but all gametes of national life.

SYLLABUS OF DSE-2a

UNIT – I (12 Hours)
Truth and Non-violence

UNIT – II (8 Hours)
Gandhian Thought: Theory and Action

a. Theory of Satyagraha
b. Satyagraha in Action: Peasant Satyagraha, Temple Entry and Critique of Caste, Social Harmony and Communal Unity

UNIT – III (9 Hours)
Gandhi on Modern Civilization and Ethics of Development

a. Conception of Modern Civilization and Alternative Modernity
b. Critique of Development

UNIT – IV (8 Hours)
Gandhi and the Idea of Political

a. Swaraj
b. Swadeshi

UNIT – V (8 Hours)
Gandhi's views on

a. Hinduism
b. Religious Conversion
c. Cow Protection
d. Language Questions

Essential/recommended readings

Unit I

Bilgrami, Akeel (2003) Gandhi, The Philosopher, Economic and Political Weekly, Vol. 38 (39), pp- (4159-416).

Veeravalli, Anuradha. (2014). Gandhi in political theory: Truth, law and experiment Ashgate, Farnham, UK and Burlington, USA.

Godrej Farah (2006). Nonviolence and Gandhi's Truth: A Method for Moral and Political Arbitration. The Review of Politics 68 pp- 287-317. USA. University of Notre Dame.

Allen, Douglas ((2007). 'Mahatma Gandhi on Violence and Peace Education'. Philosophy, East and West 57 (3):290-310.

Unit 2

Diwakar, R. R. (1969). Saga of Satyagraha. New Delhi: Gandhi Peace Foundation

Nayar, Sushila (1951,1989). Mahatma Gandhi, Volume IV, Satyagraha at Work. Ahmedabad: Navajivan Publishing House.

Pyarelal & Sushila Nayar (1965), 1986 Gandhi - Birth of Satyagraha: From Petitioning to Passive Resistance, Vol.3. Ahmedabad: Navajivan Publishing House.

P. Rao (2009) 'Gandhi, Untouchability and the Postcolonial Predicament: A Note'. Social Scientist.Vol.37(1/2). Pp.64-70.

B. Parekh,(1999)'DiscourseonUnsociability',inColonialism,TraditionandReform: An Analysis of Gandhi's Political Discourse, New Delhi: Sage Publication

Unit 3

B. Parekh (1997) 'The Critique of Modernity', in Gandhi: A Brief Insight, Delhi: Sterling Publishing Company, pp. 63-74.

K. Ishii (2001) 'The Socio-economic Thoughts of Mahatma Gandhi: As an Origin of Alternative'

Unit 4

D. Dalton (1996) 'Swaraj: Gandhi's Idea of Freedom' in Mahatma Gandhi: Selected Political Writings, USA: Hackett Publishing, pp. 95-148.

Ragi, Sangit K. (2022), RSS and Gandhi: The Idea of India, New Delhi: Sage [On Swadeshi: pp. 221-250]

R. Ramashray (1984) 'Liberty Versus Liberation', in Self and Society: A Study in Gandhian Thought, New Delhi: Sage Publication.

Kumar, Sanjeev (ed) (2020). 'Understanding Gandhi: Why Gandhi Matters Today 'in Gandhi and the Contemporary World. Oxon & New York: Routledge.PP-1-23.

Unit 5

Gandhi, Mahatma. (1994). What is Hinduism. National Book Trust, New Delhi,

Ragi, Sangit K. (2022), RSS and Gandhi: The Idea of India, New Delhi: Sage [On Hinduism: pp. 42-74; On Religious Conversion: pp. 75-114; On Cow Protection: 193-220; On Language Questions: pp. 160-192]

Mehta, Sandhya. (2002). Gandhiji On Religious Conversion Selected and Compiled, Ist Edition. Mumbai. Mani Bhavan Gandhi Sangrahalaya.

Gandhi (M.K.) . (1955), My Religion. Ahmedabad: Navajivan Trust.

Bilgrami, Akeel (2011), Gandhi's Religion and Its relation to his Politics. In: Brown, Judith M. and Parel, Anthony (ed.): The Cambridge Companion to Gandhi. Cambridge University Press, 93–116

S Radhakrishnan (2007): "Gandhi's Religion and Politics," in S Radhakrishnan (ed), Mahatma Gandhi: Essays and Reflections, Mumbai: Jaico Publication House.

D. Hardiman (2003) 'Fighting Religious Hatreds', in Gandhi in His Time and Ours. Delhi: Oxford University Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 2b: India's National Security: Major Challenges and Strategic Thinking

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
India's National Security: Major Challenges and Strategic Thinking DSE-2b	**4**	**3**	**1**	**-**	**Passed Class XII**	**NIL**

Learning Objectives

This course aims to link India's internal and external security challenges with its long term strategic thinking, approach and responses to the same. It introduces the historical dimensions of India's security challenges and the policy responses to students before equipping them with tools to conceptually analysing these. The course then discusses the intellectual foundations of India's strategic thinking drawn from both classical texts and past

practices. Students will also learn about the major contemporary debates on India's strategic culture. The course will engage students in understanding both internal and external dimensions of India's major security challenges. Some of the key external challenges, it focuses on, include India's securitized borders, maritime security threats, nuclearization, and terrorism. In the internal realm, issues pertaining to Jammu & Kashmir, the North-east, Naxalism, along with cyber and information warfare have been discussed. The final component of the course introduces the students to an array of India's strategic responses ranging from non-alignment, forging strategic partnerships and military responses to pursuing multilateral strategies in the contemporary world.

Learning outcomes

At the end of the course, students would acquire the ability to:

- Understand the ways in which, the security threats to India have evolved historically and how have these been met.
- Appreciate the intellectual and historical foundations of Indian strategic thinking.
- Develop a nuanced understanding of India's strategic culture.
- Learn about India's internal and external security threats in its multifarious dimensions.
- Understand how has India evolved a whole array of strategic responses such as nonalignment, forging strategic partnerships and bilateral as well as multilateral partnerships to address diverse challenges it faces.

SYLLABUS OF DSE-2b

UNIT – I (7 Hours)

Understanding India's National Security

1.1 India's Security Policy: A Historical Perspective

1.2 Contemporary Dimensions of India's National Security Framework

1.3 Conceptualizing India's National Security

UNIT – II (9 Hours)

Intellectual Foundations of India's Strategic Thinking

2.1 Textual Traditions: Ramayana & Mahabharata

2.2 Kautilya

2.3 Non-Textual Conceptualizations: Swaraj, Martial Culture

UNIT – III (7 Hours)

India's strategic culture

3.1 Evolution and conceptualization

3.2 Contemporary Trends

UNIT – IV (13 Hours)

India's National Security Challenges

4.1 External Challenges

4.1.1 India's Neighbourhood (Cross-border terrorism, securitised borders, water sharing conflicts and nuclearization

4.1.2 Maritime Security

4.2 Internal Challenges

4.2.1 Maoism/Naxalist Challenge

4.2.2 Separatist Movements (J&K and the Northeast)

4.2.3 Cyber Warfare

UNIT – V (9 Hours)
India's Strategic Responses

5.1 Non-Alignment
5.2 Strategic Partnerships
5.3 Military Responses
5.4 Multilateral Alliances

Essential/recommended readings

Unit wise reading list

Unit 1: Understanding India's National Security

1.1 India's Security Policy: A Historical Perspective

Essential Readings

Raju G C Thomas, "The Strategic Environment and Defence Policies" in *Indian Security Policy* (Princeton: Princeton University Press, 1986) pp. 10-49

Sanjay Chaturvedi, "Indian Geopolitics: 'Nation-State' and the Colonial Legacy" in Kanti Bajpai and Siddharth Mallavarapu (eds.) *International Relations in India: Theorising the Region and Nation* (Orient Longman, 2005) pp. 238-281

Additional Readings

David Malone, "History: A Vital Foundation of India's International Relations" in *Does the Elephant Dance: Contemporary Indian Foreign Policy* (Oxford University Press, 2011) pp. 19-46

Shyam Saran, "Sources of India's World View" in *How India Sees the World: Kautilya to the 21st Century* (Juggernaut, 2018) pp. 9-24

Shivshankar Menon, "The Stage and Inheritance" in *India and Asian Geopolitics: The Past, Present* (The Brookings Institutions, 2021) pp. 11-36

Sumit Ganguly, "India's National Securty" in David M. Malone, C. Raja Mohan, and Srinath Raghavan (eds.) *The Oxford Handbook of Indian Foreign Policy* (Oxford University Press, 2015) pp. 145-159

L.P. Singh, "Learning the Lessons of History" in Brahma Chellaney (eds.) *Securing India's Future in the New Millennium* (Orient Longman, 1999) pp. 1-22

Harsh Pant and Kartik Bommakanti, "India's national security: challenges and dilemmas", *International Affairs*, 95 (4) (2019):835-857.

1.2 Contemporary Dimensions of India's National Security Framework

Essential Readings

Kanti Bajpai "India: Modified Structuralism" in Muthaiah Alagappa (eds.) *Asian Security Practice* (Stanford University Press, 1998) pp. 157-197

Additional Readings

Arvind Gupta, "National Security Environment" and "Non-traditional Security Issues in National Security" in *How India Manages its National Security* (Penguin Random House, 2018).

Rohan Mukherjee & David M. Malone, "Indian Foreign policy and Contemporary Security Challenges", *International Affairs*, Volume 87 (1), pp. 87–104 (2011)

1.3 Conceptualizing India's National Security

Essential Readings

Anshuman Behera and Areeba Ahsanat Moazzam, “India’s National Security Discourse: A Conceptual Introduction”, in Anshuman Behera & Sitakanta Mishra (eds.), *Varying Dimensions of India’s National Security* (Springer 2022) pp. 3-18

P. S. Raghavan, “National Security Determinants of Foreign Policy”, in Arvind Gupta and Anil Wadhwa (Ed.*), India’s Foreign Policy: Surviving in a Turbulent World*, New Delhi: (Sage Publications, 2020) pp. 34-44

Additional Readings

Arvind Gupta, “How Good is India’s National Security System?” in *How India Manages its National Security* (Penguin Random House, 2018)

David M. Malone, “India’s Contemporary Security Challenges: More Internal than External?” in *Does the Elephant Dance? Contemporary Indian Foreign Policy* (Oxford University Press, 2011) pp. 47-74

Unit 2: Intellectual Foundations of India’s Strategic Thinking

2.1 Textual Traditions: Ramayana and Mahabharata

Essential Readings

Swarna Rajagopalan, “Grand Strategic Thought in the Ramayana and Mahabharata” in Kanti Bajpai, Saira Basit and V. Krishnappa (eds) *India’s Grand Strategy: History, Theory, Cases* (New Delhi: Rutledge, 2014) pp. 31-62

Additional Readings

Amrita Narlikar and Aruna Narlikar, “India’s Negotiation Strategy: The Heroism of Haed Bargaining?” in *Bargaining with a Rising India: Lessons from the Mahabharata* (Oxford: Oxford University Press, 2014) pp. 24-71.

Sharad Patil, “Myth and Reality of Ramayana and Mahabharata”, *Social Scientist*, Vol.4, No. 8 (1976): 68-72.

2.2 Kautilya

Essential Readings

Subrata K. Mitra, “Kautilya and the Strategic Culture of India” in Subrata K. Mitra and Michael Liebig (eds.) *Kautilya’s Arthashastra: An Intellectual Portrait* (Nomos, 2016) pp. 288-316

Additional Readings

Rashed Uz Zaman, “Kautilya: The Indian Strategic Thinker and Indian Strategic Culture”, *Comparative Strategy*, Volume 25, No. 3 (2006) 231-247

George Modelski, “Kautilya: Foreign Policy and International System in the Ancient Hindu World”, *The American Political Science Review*, Vol-58, No-3 (Sept., 1964). pp. 549-560.

2.3 Non-Textual Conceptualizations: Swaraj, Martial Culture

Essential Readings

Arpita Anand, ‘A ‘Regional’ Intervention in the Debate on India’s Strategic Culture: Maratha Statecraft in *Agyapatra*,’ *Journal of Defence Studies*, 15:3, July-September 2021. Available at: https://idsa.in/jds/a-regional-intervention-in-the-debate-on-indias-strategic-culture-aanant

Jayashree Vivekanandan, “Strategy, Legitimacy and the Imperium: Framing the Mughal Strategic Discourse,” in Kanti Bajpai, Saira Basit and V. Krishnappa (eds.) *India’s Grand Strategy: History, Theory, Cases* (New Delhi: Rutledge, 2014) pp. 63-85.

Unit 3: India's strategic culture (4 Lectures)

3.1. Evolution and conceptualization

Essential Readings

Kanti Bajpai and Amitabh Mattoo “Introduction” in *Kanti Bajpai, Amitabh Mattoo and George Tanham (eds.) Securing India: Strategic Thought and Practice* (New Delhi: Manohar, 1996) pp. 15-27

Jaswant Singh, “Strategic Culture” in *Defending India* (New Delhi: Palgrave Macmillan, 1999) pp. 1-60

3.2 Contemporary Trends

Essential Readings

Michael Liebig, ‘Interrogating ‘Hyphenated Cultures’: India’s Strategic Culture and Intelligence Culture’, *Journal of Defence Studies*, 15:3, July-September 2021. Available at: https://idsa.in/jds/interrogating-hyphenated-cultures-mliebig

Amrita Narlikar, “Peculiar Chauvinism or Strategic Calculation? Explaining the Negotiating Strategy of a Rising India”, in *International Affairs*, Vol. 82 (1) (2006): 59-76

Additional Readings

George K. Tanham, “Indian Strategic Thought: An Interpretive Essay” in *Kanti Bajpai, Amitabh Mattoo and George Tanham (eds.) Securing India: Strategic Thought and Practice* (New Delhi: Manohar, 1996) pp. 28-111

George K. Tanham, “Indian Strategy in Flux?” in *Kanti Bajpai, Amitabh Mattoo and George Tanham (eds.) Securing India: Strategic Thought and Practice* (New Delhi: Manohar, 1996) pp. 112-139

Unit 4: India’s National Security Challenges

4.1 External Challenges:

4.1.1 India’s Neighborhood

S. Muni, ‘Problem Areas in India’s Neighbourhood Policy’, *South Asian Survey*, Vol. 10 (2) (2003): 185-196.

i. Cross-Border terrorism:

Essential Readings

Sanjeev Kumar HM, Chp 3 in *The India-Pakistan Sub-conventional War: Democracy and Peace in South Asia* (New Delhi: Sage, 2022), pp. 162-192.

Additional Readings

K. Santhanam, “Sources of Terror: India” in *South Asia Post-9/11: Searching for stability* (Observer Research Foundation, 2003), pp. 31-35

S.D. Muni “Introduction” in *Responding to Terrorism in South Asia* (Manohar, 2006) pp. 11-29

ii. Securitised Borders

Essential Readings

Shyam Saran, “The Pakistan Puzzle” in *How India Sees the World: Kautilya to the 21st Century* (Juggernaut, 2018) pp. 77-106

Alka Acharya, "China" in Kanti Bajpai and Harsh Pant (eds.) *India's Foreign Policy* (Oxford University Press, 2013) pp. 356-369

Additional Readings

Shyam Saran, “The India-China Border Dispute and After” in *How India Sees the World: Kautilya to the 21st Century* (Juggernaut, 2018) pp. 123-149

Shiv Shankar Menon, “India and China” in *India and Asian Geopolitics: The Past, Present* (The Brookings Institution, 2021) pp. 317-339

Tanvi Madan, “China in Three Avatars in Kanti Bajpai, Saira Basit and V. Krishnappa (eds.) *India’s Grand Strategy: History, Theory, Cases* (New Delhi: Rutledge, 2014) pp. 308-359

Bharat Karnad, "An Elephant with a Small Footprint: The Realist Roots of India’s Strategic Thought and Policies" in Kanti Bajpai, Saira Basit and V. Krishnappa (eds.) *India’s Grand Strategy: History, Theory, Cases* (New Delhi: Rutledge, 2014) pp. 200-233

iii. Water Sharing

Essential Readings

Brahma Chellaney, “Water: The latest India-Pak Battle Line” in *Water: Asia’s New Battleground* (Georgetown University Press, 2011) pp. 286-296.

Medha Bisht, “From the edges of borders: reflections on water diplomacy in South Asia” *Water Policy* 21 (2019): 1123–1138

Jonathan Holslag, “Assessing the Sino-Indian Water Dispute,” *Journal of International Affairs*, 64:2, Spring/Summer 2011, pp. 19-35.

Additional Readings

K. Warikoo, “Perspectives of Indus Waters treaty” in Ranabir Samaddar and Helmut Reifeld (eds.) *Peace as Process: Reconciliation and conflict Resolution in South Asia* (Konrad Adenauer Foundation, 2001) pp. 281-298

Brahma Chellaney, “Nepal and Bhutan as Subregional Energy Hub” in *Water: Asia’s New Battleground* (Georgetown University Press, 2011) pp. 281-286

Brahma Chellaney, “Exploiting the Riparian Advantage: A key test case” in *Water: Asia’s New Battleground* (Georgetown University Press, 2011) pp. 141-197 (Includes Bangladesh)

iv. Nuclearization

Essential Readings

Ashley J. Tellis, *India’s Emerging Nuclear Doctrine: Exemplifying the Lessons of Nuclear revolution, NBR Analysis*, 12:2, May 2001, pp. 1-16; 103-110.

Sundaram, K. and MV Ramana. "India and the policy of no first use of nuclear weapons." *Journal of Peace and Nuclear Disarmament* 1, no. 1 (2018). Taylor & Francis: 152-68.

Additional Readings

Bharat Karnad, “New Attractions of the Bomb: The Nuclearized Twenty-First Century World” in *India's Nuclear Policy* (Praeger Security International, 2008) pp. 5-34

Rajesh Basrur, “India and China: A managed nuclear rivalry?” *Washington Quarterly*, 42, no. 3 (2019). Taylor & Francis: 151-70.

Harsh V. Pant and Yogesh Joshi, *Indian Nuclear Policy*, New Delhi, Oxford University Press, 2018.

Vipin Narang, “Introduction” in *Seeking the Bomb: Strategies of Nuclear Proliferation* (Princeton University Press, 2022) pp. 1-14

4.1.2 Maritime Security

Essential Readings

S. Jaishankar, Chapter 8, “The Pacific Indian: A Re-Emerging Maritime Outlook,” in *The India Way: Strategies for an Uncertain World* (New Delhi: Harper Collins, 2020), pp. 179-200.

Rajeswari Pillai Rajagopalan, “India’s maritime strategy”, in Anit Mukherjee and C. Raja Mohan (eds.) *India’s Naval Strategy and Asian Security* (London: Routledge, 2016) pp. 13-36.

Additional Readings

Rahul Roy Chaudhary “India’s Maritime Security” *India International Centre Quarterly*, Vol. 26, no. 1 (1999): 129-139

Vijay Sakhuja, “Maritime security order in Asia: a perspective from India” in Joachim Krause and Sebastian Bruns (eds.) *Routledge Handbook of Naval Strategy and Security* (London: Routledge, 2016) pp. 315-327

4.2 Internal Challenges

4.2.1 Naxalism/ Maoism

Essential Readings

P.V Ramana, “State Response to the Maoist Challenge: An Overview,” in V.R. Raghavan (ed.), *The Naxal Threat: Causes, State Responses and Consequences* (New Delhi: Vij Books, 2011), pp. 71-94.

Additional Readings

E. N. Rammohan, “Rise of Naxalism, its implications for National Security and the way Forward,” in V.R. Raghavan (ed.), *The Naxal Threat: Causes, State Responses and Consequences* (Mew Delhi: Vij Books, 2011), pp. 95-112.

Ramachandra Guha, “Adivasis, Naxalites and Indian Democracy” *Economic and Political Weekly* 42(32) (2007): 3305-3312

4.2.2 Separatist Movements (J&K/ Northeast)

Kashmir

Essential Readings

Navnita C. Behera, “India’s Political Gambit” in *Demystifying Kashmir* (Brookings, 2006) pp. 30-72

Additional Readings

Rekha Chowdhry, “India’s responses to the Kashmir Insurgency: A Holistic Perspective”, in Mooed Yusuf (eds.) *Insurgency and counter-Insurgency in India: Through a Peacebuilding Lens* (United States Institutes of Peace, 2014) pp. 45-76.

V.G. Patankar, “Insurgency, Proxy War and Insurgency in Kashmir,” in Sumit Ganguly and David P. Fidler (eds.), *India and Counterinsurgency: Lessons Learned* (New Delhi: Routledge, 2009), pp, 65-78.

Northeast

Essential Readings

Sanjib Baruah, “Regionalism and secessionism” in Niraja Gopal Jayal and Pratap Bhanu Mehta (eds.) *The Oxford Companion to Politics in India* (Oxford University Press, 2011) pp. 181-191

Additional Readings

Walter Ledweig, "Insights from the Northeast: Counterinsurgency in Nagaland and Mizoram”, in Sumit Ganguly and David P. Fidler (eds.) *India and Counterinsurgency: Lessons Learned* (USA, Canada: Routledge, 2009) pp. 45-62

4.2.3 Cyber Security and Information Warfare

Essential Readings

Whagre Prateek & Shibani Mehta, “India’s National Cybersecurity Policy Must Acknowledge Modern Realities” (Diplomat, 2019). https://thediplomat.com/2019/12/indias-national-cybersecurity-policy-must-acknowledge-modern-realities/

Martin C. Libicki, “The Convergence of Information Warfare”. *Strategic Studies Quarterly.* 11(1), 49-65. https://www.airuniversity.af.edu/Portals/10/SSQ/documents/Volume-11_Issue-1/Libicki.pdf

Additional Readings

S, Datta, Cybersecurity, Internet governance and India’s foreign policy: Historical antecedents (Internet Democracy Project 2016) https://internetdemocracy.in/reports/cybersecurity-ig-ifp-saikat-datta.

Mukerji, Amb (Retd) A. International Cooperation on Cyber Space: India’s role. (Ministry of External Affairs, 2018). https://www.mea.gov.in/distinguished-lectures-detail.htm?743

Unit 5: India’s Strategic Responses

5.1 Non-Alignment

Essential Readings

Rajen Harshe, “India’s Non-Alignment: An Attempt at Conceptual Reconstruction,” *Economic and Political Weekly,* 25:7-8, February 17-24, 1990, pp. 399-405.
Khilnani, S., Rajiv Kumar and Pratap Bhanu Mehta (eds.) (2013). Nonalignment 2.0: A Foreign & Strategic Policy for India in the 21st Century. Penguin.

Additional Readings

P. Srivastava, “From Non-Alignment to Strategic Partnerships” *Non-Alignment Movement: Extending Frontiers* (New Delhi: Kanishka Publishers, 2001) pp. 177-182.

C Rajamohan, “Beyond Non-Alignment” in *Crossing the Rubicon: The Shaping of India's new Foreign Policy* (Viking, 2003) pp. 29-56

Pant, H.V., & Super, J.M. (2015). India’s ‘non-alignment’ conundrum: a twentieth- century policy in a changing world. *International Affairs,* 91(4), 747-764.

5.2 Strategic Partnerships

Essential Readings

Rajiv Sikri, “India’s Strategic Choices” in *Challenge & Strategy in Rethinking India’s Foreign Policy* (Sage Publications, 2009) pp. 277-290

Ashley J. Tellis, “US-India Relations: The Struggle for an Enduring Partnership” in David M. Malone, C. Raja Mohan, and Srinath Raghavan (eds.) *The Oxford Handbook of Indian Foreign Policy* (Oxford University Press, 2015) pp. 481-494

Additional Readings

Teresita C. Schaffer & Howard B. Schaffer, “Indian Strategic Visions” *India at the Global High Table: The Quest for Regional Primacy & Strategic Autonomy* (Harper Collins India, 2016) pp. 60-81

C. Rajamohan, Chapter 6 on “Embracing America,” in *Modi’s World: Expanding India’s Sphere of Influence*, New Delhi: Harper Collins, 2015.

5.3 Military Responses

Essential Readings

Dasgupta, Sunil and Stephen P. Cohen. "Is India ending its strategic restraint doctrine?", *Washington Quarterly* 34, no. 2 (2011). Taylor & Francis: 163-77.

Tarapore, Arzan. *The Army in Indian Military Strategy: Rethink Doctrine or Risk Irrelevance*. New Delhi: Carnegie India Working Paper, 2020: 1-22.

Additional Readings

Rajpal Budania, “India’s Threat Perception and Policy Response” in *India’s National Security Dilemmas: Pakistan Factor* (Indus Publishing Company, 2001) pp. 216-269

Singh, Sushant K. “Military as an instrument of India's foreign policy: An expanding footprint”. In *The Routledge Handbook of Indian Defence Policy* (second edition) edited by Harsh V. Pant. New Delhi: Routledge, 2020.

Sumit Ganguly, “India’s Defence Policy” in Niraja Gopal Jayal & Pratap Bhanu Mehta The Oxford Companion to Politics in India (Oxford University Press, 2011, pp. 542-554.

5.4 Multilateral Alliances:

Essential Readings

David Malone “The evolution of Indian Multilateralism” in *Does the Elephant Dance: Contemporary Indian Foreign Policy* (Oxford University Press, 2011) pp. 249-273

Saran, Shyam (2013), India and Multilateralism: A Practitioner’s Perspective in Waheguru Pal Singh Sidhu, Pratap Bhanu Mehta, Bruce D. Jones (eds.), Shaping the Emerging World: India and the Multilateral Order, Washington DC: Brookings Institution Press, pp. 43-56

Additional Readings

Teresita C. Schaffer & Howard B. Schaffer, “Multilateral Negotiations,” *India at the Global High Table: The Quest for Regional Primacy & Strategic Autonomy* (Harper Collins India, 2016) pp. 213-247.

Sanjaya Baru, “The Economic Imperative for India’ s Multilateralism” in Waheguru Pal Singh Sidhu, Pratap Bhanu Mehta, Bruce D. Jones (eds.) *Shaping the Emerging World: India and the Multilateral Order* (Washington DC: Brookings Institution Press, 2013) pp. 75-92

Navroz K. Dubash and Lavanya Rajamani, “Multilateral Diplomacy on Climate Change,” in in David M. Malone, C. Raja Mohan, and Srinath Raghavan (eds.) *The Oxford Handbook of Indian Foreign Policy* (Oxford University Press, 2015) pp. 663-680.

Rajesh Rajagopalan, “Multilateralism in India’s Nuclear Policy: A Questionable Default Option,” in David M. Malone, C. Raja Mohan, and Srinath Raghavan (eds.) *The Oxford Handbook of Indian Foreign Policy* (Oxford University Press, 2015) pp. 650-662.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Common Pool of GE courses for Sem-IV is at the end of the document

Category II

Political Science Courses for Undergraduate Programme of study with Political Science as one of the Core Disciplines

(B.A. Programmes with Political Science as Major discipline)

DISCIPLINE SPECIFIC CORE COURSE (DSC-4A): Comparative Government and Politics

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Comparative Government and Politics MDSC-4A	4	3	1	-	Passed Class XII	NIL

Learning Objectives

The purpose of this course is to equip students to understand government and politics though a comparative perspective. The course aims at familiarising students with the manner in which comparison is used as a method to understand the historical transformations in governmental forms, regime types, and political systems. It also hopes to make students understand the different modalities through which power circulates and resides in society and the distinct mechanisms through which consent is elicited from the people. The course is expected to bring to the students a thorough understanding of the historical contexts in which political systems and institutional structures take distinct forms and acquire features that distinguish them. The course hopes to bring out the specificities of these forms not just through historical signposts but also across different political cultures in the global North and South.

Learning outcomes

On successful completion of the course, students would demonstrate:

- An in-depth understanding of nature and scope of comparative politics.
- Knowledge of regime forms as distinct from classification of political systems
- Knowledge of various kinds of electoral systems and party systems across countries
- An understanding of the manner in which power exists in society
- Analytical capacity to engage with contemporary debates on welfare, populism, and authoritarianism.

SYLLABUS OF MDSC-4A

UNIT – I (7 Hours)
The nature, scope and methods of comparative political analysis

UNIT – II (8 Hours)
Classifications of political systems

(a) Parliamentary and Presidential
(b) Federal and Unitary

UNIT – III (7 Hours)
Electoral Systems

First past the post, Proportional representation and Mixed systems

UNIT – IV (8 Hours)
Party Systems

Single-party, bi-party and multi-party systems

UNIT – V (7 Hours)
Structures of Power in Society

Classical elitist theory, power elites, pluralism and theory of ruling class

UNIT – VI (8 Hours)
Comparing Regimes

Democratic**,** Authoritarian, Welfare, Populism and Security Regimes

Essential/recommended readings

The nature, scope and methods of comparative political analysis

Bara, J. (2009) 'Methods for Comparative Analysis', in Bara, J. & Pennington, M. (eds.) *Comparative Politics*. New Delhi: Sage, pp. 40-65.

Blondel, J. (1996) 'Then and Now: Comparative Politics', *Political Studies*. Vol. 47, Issue 1, pp.152-160

Caramani, D. (2008) 'Introduction to Comparative Politics', in Caramani, D. (ed.) *Comparative Politics*. Oxford: Oxford University Press, pp. 1-23.

Mohanty, M. (1975) 'Comparative Political Theory and Third World Sensitivity', in *Teaching Politics.* Nos. 1 & 2, pp. 22-38.

Chandhoke, N. (1996) 'Limits of Comparative Political Analysis', *Economic and Political Weekly*. vol. 31, No. 4, (January 27), pp. PE 2-PE8.

Classifications of political systems

Hague, R. and Harrop, M. McCormick J. (2016) *Comparative Government and Politics: An Introduction*. (Tenth Edition). London: Palgrave McMillan. Ch11. Sub-national government.

Newton, K. and Deth, Jan W. V. (2010) Presidential and Parliamentary Government (Ch 5) in *Foundations of Comparative Politics: Democracies of the Modern World*. Cambridge: Cambridge University Press.

Patrick H O'Neil, Karl J Fields and Don Share, (2018 Edition), Models of Democracy: Parliamentary, Presidential and Semi-Presidential System, *Essentials of Comparative Politics with Cases*, pp. 150-156.

Robbins, J. W. (2011) 'Presidentialism Verses Parliamentarism', in Ishiyama, J. T. and Marijke,*21st Century Political Science: A Reference Book*. Los Angeles: Sage.

Saxena, Rekha (2011). Introduction. In R. Saxena (Ed.), *Varieties of Federal Governance: Major Contemporary Models* (pp. xiii-xl), Foundations Book.

Electoral Systems

Evans, Jocelyn A.J. (2009) 'Electoral Systems', in Bara, J. and Pennington, M. (eds.) *Comparative Politics*. New Delhi: Sage, pp. 93-119.

Downs, W. M. (2011) 'Electoral Systems in Comparative Perspectives', in Ishiyama, J. T. And Breuning, M. (eds.) *21st Century Political Science: A Reference Book*. Los Angeles: Sage, pp.159-167.

Party Systems

Caramani, D. (2020) 'Party Systems', in Caramani, D. (ed.) *Comparative Politics*. Oxford: Oxford University Press, Ch.13, pp. 231-251.

Choudhary, Sunil K. (2018), Theorizing Parties and Party Systems, in *The Changing Face of Parties and Party Systems, A Study of Israel and India*, Palgrave Macmillan.

Cole, A. (2011) 'Comparative Political Parties: Systems and Organizations', in Ishiyama, J.T. and Breuning, M. (eds.) *21st Century Political Science: A Reference Book*. Los Angeles: Sage,pp. 150-158.

Heywood, Andrew (2013) Parties and Party System, in Andrew Heywood, *Politics* (Fourth Edition), Palgrave.

Structures of Power in Society

Parry, Geraint. (1986) *Political Elites*, George Allen & Unwin, London.

Comparing Regimes

Hague, R. and Harrop, M. McCormick J. (2016) Ch 3- Democratic Rule and Ch.4- Authoritarian Rule. In *Comparative Government and Politics: An Introduction*. (Tenth Edition). London: Palgrave McMillan.

Heyword, Andrew (2013) Governments, Systems and Regimes, in Andrew Heywood, *Politics* (Fourth Edition), Palgrave.

Anibal Perez Linan. (2020) 'Democracracies', in Caramani, D. (ed.) *Comparative Politics*. Oxford: Oxford University Press, Ch.5, pp. 86-102.

Lindstaedt N. (2020) Authoritarian Regimes, in D Caramani (ed.), *Comparative Politics*, Oxford University Press, Ch 6. Pp.103-115

Mudde Cas and Kaltwasser Cristóbal Rovira (2017), What is Populism (Ch 1), Populism around the world (Ch 2) in *Populism: A Very Short Introduction*, OUP.

Webb, E. (2011) 'Totalitarianism and Authoritarianism', in Ishiyama, J. T. and Breuning, M. (eds.) *21st Century Political Science: A Reference Book*. Los Angeles: Sage, pp. 249-257.

Busch, Andreas (2015), The Changing Architecture of the National Security State', in Stephan Leibfried, Evelyn Huber, Mattew Large, Jonah D. Levy and John D. Stephens (eds.), *The Oxford Handbook of Transformations of State*, Oxford, Oxford University Press.

Garland, David (2016), Ch 1, 6, 7 in *The Welfare State: A Very Short Introduction*, OUP.

Kesselman, M. (2007) *The Politics of Globalization.* Boston: Houghton Mifflin Company, pp. 330- 339.

Aldrich,Richard J. (2009) The Security State, in Matthew Flinders, Andrew Gamble, Colin Hay, and Michael Kenny (Eds), *The Oxford Handbook of British Politics*, OUP.

Rosenzweig, Paul, (2016), Lecture 1- Security, Liberty, or Neither, and Lecture 4- Surveillance in America, in: *The Surveillance State, Big Data, Freedom, and You*, Course Guidebook, Teaching Company.

Mabee, B. (2009). The 'Security State' and the Evolution of Security Provision. in: *The Globalization of Security. New Security* Challenges Series. Palgrave Macmillan, London.

Additional Readings:

Bara, J & Pennington, M. (eds.). (2009) *Comparative Politics*. New Delhi: Sage.

Caramani, D. (ed.). (2008) *Comparative Politics*. Oxford: Oxford University Press.

Hague, R. and Harrop, M. (2010) *Comparative Government and Politics: An Introduction*. (EightEdition). London: Palgrave McMillan.

Ishiyama, J.T. and Breuning, M. (eds.). (2011) *21st Century Political Science: A Reference Book*. Los Angeles: Sage.

Newton, K. and Deth, Jan W. V. (2010) *Foundations of Comparative Politics: Democracies of the Modern World*. Cambridge: Cambridge University Press.

O'Neil, P. (2009) *Essentials of Comparative Politics*. (Third Edition). New York: WW. Norton& Company, Inc.

Roy Macridis: The Study of Comparative Government, Random House 1966/*'The modern Political Regimes: Patterns and Institutions*', 1986.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE (DSC-4B): Public Institutions in India

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Public Institutions in India MDSC-4B	**4**	**3**	**1**	**-**	**Passed Class XII**	**NIL**

Learning Objectives

The aim of this course is to familiarize students with institutions that are significant in the functioning of Indian democracy. It is designed to help students get a thorough understanding of the different functions performed by public institutions including maintaining law and order, eliciting accountability from the state, regulating the institutional space, and enhancing state accountability and its capacity to frame and implement social and economic policies. The purpose is to make students aware of the complex functions performed by the institutions of the state in contemporary contexts.

Learning outcomes

After completing this course, students will

- understand the design and performance of specific institutions
- become aware of the historical contexts in which institutions emerge
- develop the tools to understand the challenges faced by contemporary institutions
- acquire an understanding of what enhances institutional capacity of states

SYLLABUS OF MDSC-4B

UNIT – I (6 Hours)
Studying Public Institutions

UNIT – II (6 Hours)
Framing Public Policy

Niti Aayog

UNIT – III (6 Hours)
Conducting Elections

Election Commission of India (ECI)

UNIT – IV (6 Hours)
Securing Citizens

The Police

UNIT – V (7 Hours)
Ensuring Rights

National Human Rights Commission of India (NHRC)

UNIT – VI (7 Hours)
Regulatory Institutions

Reserve Bank of India (RBI)

UNIT – VII (7 Hours)
Transparency and Accountability

Comptroller and Auditor General (CAG)

Central Vigilance Commissioner (CVC)

Essential/recommended readings

Unit wise reading list

1. Studying Public Institutions

D. Kapur, P. B. Mehta and M. Vaishnav eds. (2017), *Rethinking Public Institutions in India*, Delhi, Oxford University Press, [Introduction, pp. 1-32].

D. Kapur and P. B. Mehta eds. (2005), *Public Institutions in India*, Delhi, Oxford University Press [Introduction, pp. 1-27].

2. Framing Public Policy: Niti Aayog

A. Rajan, (2016), 'The Institutional Identity of India's Niti Aayog', *Indian Journal of Public Administration*, Vol.LXII, No.1, January-March 2016, pp.111-117.

S. Mehrotra and S. Guichard eds. (2020), *Planning in the 20th Century and Beyond: India's Planning Commission and the Niti Aayog*, Cambridge, Cambridge University Press, [S. Guichard and S. Mehrotra, 'Planning for a 21st Century India' (Chapter One: pp. 1-22); P. Sen, 'Plan, but Do Not Over-plan: Lessons for Niti Aayog' (Chapter 13: pp. 264-282); S. Mehrotra,

'Why Does India Need a Central Planning Institution in the 21st Century' (Chapter 14: pp.283-217)

3. Conducting Elections: Election Commission of India

E. Sridharan and M. Vaishnav (2017), 'Election Commission of India', in D. Kapur, P.B. Mehta and M. Vaishnav (eds.) *Rethinking Public Institutions in India*, New Delhi, Oxford University Press, pp. 417-463.

U.K. Singh and A. Roy (2018), 'Regulating the Electoral Domain: The Election Commission of India',*Indian Journal of Public Administration*, 17 August 2018.

S. Kumar (2022), *Elections in India: An Overview*, Routledge, London and New York.

U. Singh and A. Roy (2019), *Election Commission of India: Institutionalising Democratic Uncertainties*, Oxford University Press, Delhi.

4. Securing Citizens: The Police

A. Verma, (2005), 'The Police in India', in D. Kapur and P. B. Mehta eds., *Public Institutions in India*, Delhi, Oxford University Press, pp. 194-257.

A. Verma, (2007), 'Police Agencies and Coercive Power', in S. Ganguli, L. Diamond and M. F. Plattner eds., *The State of India's Democracy*, Baltimore, Johns Hopkins University Press, pp.121-142.

R. K. Raghavan (2000), 'The India Police: Expectations of a Democratic Polity', in F. R. Frankel, Z. Hasan, R. Bhargava and B. Arora eds., *Transforming India: Social and Political Dynamics of Democracy*, Delhi, Oxford University Press, pp. 288-313.

B. Jauregui, (2017), *Provisional Authority: Public, Order, and Security in India*, Ranikhet, Permanent Black.

Second Administration Reforms Commission, (2007), 'Public Order' (Fifth Report), Delhi, ARC, Government of India.

5. Ensuring Rights: NHRC

S. Sen, (2018) *National Human Rights Commission*, Delhi, Aakaar Books.

U. K. Singh, (2018) 'The 'Inside-Outside' Body: National Human Rights Commission of India, *Economic and Political Weekly*, Vol. LIII, No. 5, 2018.

S. Cardenas (2014), *Chains of Justice*, Philadelphia, University of Pennsylvania Press.

Asian NGO Network on National Human Rights Institutions, (2019), Mission Report on the Performance of National Human Rights Commission of India, Bangkok and Geneva, Forum-Asia.

6. Regulatory Institutions: RBI

E. D'Souza, (2005), 'Reserve Bank of India: The Way Forward', in Devesh Kapur, Pratap Bhanu Mehta and Milan Vaishnav eds., *Rethinking Public Institutions in India*, Delhi, Oxford University Press, pp. 139-179.

D. Khatkhate, (2005), 'Reserve Bank of India: A Study in the Separation and Attrition of Powers', in Devesh Kapur and Pratap Bhanu Mehta eds., *Public Institutions in India*, Delhi, Oxford University Press, pp.320-350.

7. Public Accountability: CAG, CVC

E. Sridharan (2017), 'Institutions of Internal Accountability', in D. Kapur, P.B. Mehta and M. Vaishnav eds., *Rethinking Public Institutions in India*, Delhi, Oxford University Press, pp.269-296.

A. Mukhopadhyay, (2017) 'Foregrounding Financial Accountability in Governance', in D. Kapur, P. B. Mehta and M. Vaishnav eds., *Rethinking Public Institutions in India*, Delhi, Oxford University Press, pp.297-338.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category III

Political Science Courses for Undergraduate Programme of study with Political Science as one of the Core Disciplines

(B.A. Programmes with Political Science as non-Major or Minor discipline)

DISCIPLINE SPECIFIC CORE COURSE (DSC-4A): Comparative Government and Politics

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Comparative Government and Politics MDSC-4A	4	3	1	-	Passed Class XII	NIL

Learning Objectives

The purpose of this course is to equip students to understand government and politics though a comparative perspective. The course aims at familiarising students with the manner in which comparison is used as a method to understand the historical transformations in governmental forms, regime types, and political systems. It also hopes to make students understand the different modalities through which power circulates and resides in society and the distinct mechanisms through which consent is elicited from the people. The course is expected to bring to the students a thorough understanding of the historical contexts in which political systems and institutional structures take distinct forms and acquire features that distinguish them. The course hopes to bring out the specificities of these forms not just through historical signposts but also across different political cultures in the global North and South.

Learning outcomes

On successful completion of the course, students would demonstrate:

- An in-depth understanding of nature and scope of comparative politics.
- Knowledge of regime forms as distinct from classification of political systems
- Knowledge of various kinds of electoral systems and party systems across countries
- An understanding of the manner in which power exists in society
- Analytical capacity to engage with contemporary debates on welfare, populism, and authoritarianism.

SYLLABUS OF MDSC-4A

UNIT – I (7 Hours)

The nature, scope and methods of comparative political analysis

UNIT – II (8 Hours)

Classifications of political systems

(a) Parliamentary and Presidential

(b) Federal and Unitary

UNIT – III (7 Hours)
Electoral Systems

First past the post, Proportional representation and Mixed systems

UNIT – IV (8 Hours)
Party Systems

Single-party, bi-party and multi-party systems

UNIT – V (7 Hours)
Structures of Power in Society

Classical elitist theory, power elites, pluralism and theory of ruling class

UNIT – VI (8 Hours)
Comparing Regimes

Democratic**,** Authoritarian, Welfare, Populism and Security Regimes

Essential/recommended readings

The nature, scope and methods of comparative political analysis

Bara, J. (2009) 'Methods for Comparative Analysis', in Bara, J. & Pennington, M. (eds.) *Comparative Politics*. New Delhi: Sage, pp. 40-65.

Blondel, J. (1996) 'Then and Now: Comparative Politics', *Political Studies*. Vol. 47, Issue 1, pp.152-160

Caramani, D. (2008) 'Introduction to Comparative Politics', in Caramani, D. (ed.) *Comparative Politics*. Oxford: Oxford University Press, pp. 1-23.

Mohanty, M. (1975) 'Comparative Political Theory and Third World Sensitivity', in *Teaching Politics.* Nos. 1 & 2, pp. 22-38.

Chandhoke, N. (1996) 'Limits of Comparative Political Analysis', *Economic and Political Weekly*. vol. 31, No. 4, (January 27), pp. PE 2-PE8.

Classifications of political systems

Hague, R. and Harrop, M. McCormick J. (2016) *Comparative Government and Politics: An Introduction*. (Tenth Edition). London: Palgrave McMillan. Ch11. Sub-national government.

Newton, K. and Deth, Jan W. V. (2010) Presidential and Parliamentary Government (Ch 5) in *Foundations of Comparative Politics: Democracies of the Modern World*. Cambridge: Cambridge University Press.

Patrick H O'Neil, Karl J Fields and Don Share, (2018 Edition), Models of Democracy: Parliamentary, Presidential and Semi-Presidential System, *Essentials of Comparative Politics with Cases*, pp. 150-156.

Robbins, J. W. (2011) 'Presidentialism Verses Parliamentarism', in Ishiyama, J. T. and Marijke,*21st Century Political Science: A Reference Book*. Los Angeles: Sage.

Saxena, Rekha (2011). Introduction. In R. Saxena (Ed.), *Varieties of Federal Governance: Major Contemporary Models* (pp. xiii-xl), Foundations Book.

Electoral Systems

Evans, Jocelyn A.J. (2009) 'Electoral Systems', in Bara, J. and Pennington, M. (eds.) *Comparative Politics*. New Delhi: Sage, pp. 93-119.

Downs, W. M. (2011) 'Electoral Systems in Comparative Perspectives', in Ishiyama, J. T. And Breuning, M. (eds.) *21st Century Political Science: A Reference Book*. Los Angeles: Sage, pp.159-167.

Party Systems

Caramani, D. (2020) 'Party Systems', in Caramani, D. (ed.) *Comparative Politics*. Oxford: Oxford University Press, Ch.13, pp. 231-251.

Choudhary, Sunil K. (2018), Theorizing Parties and Party Systems, in *The Changing Face of Parties and Party Systems, A Study of Israel and India*, Palgrave Macmillan.

Cole, A. (2011) 'Comparative Political Parties: Systems and Organizations', in Ishiyama, J.T. and Breuning, M. (eds.) *21st Century Political Science: A Reference Book*. Los Angeles: Sage,pp. 150-158.

Heywood, Andrew (2013) Parties and Party System, in Andrew Heywood, *Politics* (Fourth Edition), Palgrave.

Structures of Power in Society

Parry, Geraint. (1986) *Political Elites*, George Allen & Unwin, London.

Comparing Regimes

Hague, R. and Harrop, M. McCormick J. (2016) Ch 3- Democratic Rule and Ch.4- Authoritarian Rule. In *Comparative Government and Politics: An Introduction*. (Tenth Edition). London: Palgrave McMillan.

Heyword, Andrew (2013) Governments, Systems and Regimes, in Andrew Heywood, *Politics* (Fourth Edition), Palgrave.

Anibal Perez Linan. (2020) 'Democracracies', in Caramani, D. (ed.) *Comparative Politics*. Oxford: Oxford University Press, Ch.5, pp. 86-102.

Lindstaedt N. (2020) Authoritarian Regimes, in D Caramani (ed.), *Comparative Politics*, Oxford University Press, Ch 6. Pp.103-115

Mudde Cas and Kaltwasser Cristóbal Rovira (2017), What is Populism (Ch 1), Populism around the world (Ch 2) in *Populism: A Very Short Introduction*, OUP.

Webb, E. (2011) 'Totalitarianism and Authoritarianism', in Ishiyama, J. T. and Breuning, M. (eds.) *21st Century Political Science: A Reference Book*. Los Angeles: Sage, pp. 249-257.

Busch, Andreas (2015), The Changing Architecture of the National Security State', in Stephan Leibfried, Evelyn Huber, Mattew Large, Jonah D. Levy and John D. Stephens (eds.), *The Oxford Handbook of Transformations of State*, Oxford, Oxford University Press.

Garland, David (2016), Ch 1, 6, 7 in *The Welfare State: A Very Short Introduction*, OUP.

Kesselman, M. (2007) *The Politics of Globalization.* Boston: Houghton Mifflin Company, pp. 330- 339.

Aldrich,Richard J. (2009) The Security State, in Matthew Flinders, Andrew Gamble, Colin Hay, and Michael Kenny (Eds), *The Oxford Handbook of British Politics*, OUP.

Rosenzweig, Paul, (2016), Lecture 1- Security, Liberty, or Neither, and Lecture 4- Surveillance in America, in: *The Surveillance State, Big Data, Freedom, and You*, Course Guidebook, Teaching Company.

Mabee, B. (2009). The 'Security State' and the Evolution of Security Provision. in: *The Globalization of Security. New Security* Challenges Series. Palgrave Macmillan, London.

Additional Readings:

Bara, J & Pennington, M. (eds.). (2009) *Comparative Politics*. New Delhi: Sage.

Caramani, D. (ed.). (2008) *Comparative Politics*. Oxford: Oxford University Press.

Hague, R. and Harrop, M. (2010) *Comparative Government and Politics: An Introduction*. (EightEdition). London: Palgrave McMillan.

Ishiyama, J.T. and Breuning, M. (eds.). (2011) *21st Century Political Science: A Reference Book*. Los Angeles: Sage.

Newton, K. and Deth, Jan W. V. (2010) *Foundations of Comparative Politics: Democracies of the Modern World*. Cambridge: Cambridge University Press.

O'Neil, P. (2009) *Essentials of Comparative Politics*. (Third Edition). New York: WW. Norton& Company, Inc.

Roy Macridis: The Study of Comparative Government, Random House 1966/*'The modern Political Regimes: Patterns and Institutions*', 1986.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Discipline Specific Elective (DSE) Courses for Sem – IV
[Category II and III – Multidisciplinary]

DISCIPLINE SPECIFIC ELECTIVE COURSE – 2a: Gandhi and the Contemporary World

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Gandhi and the Contemporary World MDSE-2a	4	3	1	-	Passed Class XII	NIL

Learning Objectives

The Course has been designed to acquaint student with the core foundations of Gandhi's thoughts, methods and his position on key important issues of national and global concern. These issues range from the social, political, cultural to religious and economic questions which engaged the intellectual minds in his times and even today. As a celebrated champion of non-violent struggle Gandhi is anonym for fight against injustice, discrimination and unfair treatments.

Learning outcomes

After reading this module the student will be able to answer:

- What are the core principles of Gandhian thought on which he scrutinizes all actions?
- How Gandhi applied those principles in shaping his positions on social, political, economic and religious questions?
- The students will be able to answer how Gandhi presented the critique of the Western Civilization.
- The students will be able to know the position of Gandhi on key questions of contemporary debates in India like Religious conversion, protection of cow, language issue and Hinduism.
- The student will be able to know how Gandhi's use of the term Swadeshi does not just limit to economic aspects but all gametes of national life.

SYLLABUS OF MDSE-2a

UNIT – I (12 Hours)

Truth and Non-violence

UNIT – II (8 Hours)

Gandhian Thought: Theory and Action

a. Theory of Satyagraha
b. Satyagraha in Action: Peasant Satyagraha, Temple Entry and Critique of Caste, Social Harmony and Communal Unity

UNIT – III (9 Hours)

Gandhi on Modern Civilization and Ethics of Development

a. Conception of Modern Civilization and Alternative Modernity
b. Critique of Development

UNIT – IV (8 Hours)

Gandhi and the Idea of Political

a. Swaraj
b. Swadeshi

UNIT – V (8 Hours)

Gandhi's views on

a. Hinduism
b. Religious Conversion
c. Cow Protection
d. Language Questions

Essential/recommended readings

Unit I

Bilgrami, Akeel (2003) Gandhi, The Philosopher, Economic and Political Weekly, Vol. 38 (39), pp- (4159-416).

Veeravalli, Anuradha. (2014). Gandhi in political theory: Truth, law and experiment Ashgate, Farnham, UK and Burlington, USA.

Godrej Farah (2006). Nonviolence and Gandhi's Truth: A Method for Moral and Political Arbitration. The Review of Politics 68 pp- 287-317. USA. University of Notre Dame.

Allen, Douglas ((2007). 'Mahatma Gandhi on Violence and Peace Education'. Philosophy, East and West 57 (3):290-310.

Unit 2

Diwakar, R. R. (1969). Saga of Satyagraha. New Delhi: Gandhi Peace Foundation

Nayar, Sushila (1951,1989). Mahatma Gandhi, Volume IV, Satyagraha at Work. Ahmedabad: Navajivan Publishing House.

Pyarelal & Sushila Nayar (1965), 1986 Gandhi - Birth of Satyagraha: From Petitioning to Passive Resistance, Vol.3. Ahmedabad: Navajivan Publishing House.

P. Rao (2009) 'Gandhi, Untouchability and the Postcolonial Predicament: A Note'. Social Scientist.Vol.37(1/2). Pp.64-70.

B. Parekh,(1999)'DiscourseonUnsociability',inColonialism,TraditionandReform: An Analysis of Gandhi's Political Discourse, New Delhi: Sage Publication

Unit 3

B. Parekh (1997) 'The Critique of Modernity', in Gandhi: A Brief Insight, Delhi: Sterling Publishing Company, pp. 63-74.

K. Ishii (2001) 'The Socio-economic Thoughts of Mahatma Gandhi: As an Origin of Alternative'

Unit 4

D. Dalton (1996) 'Swaraj: Gandhi's Idea of Freedom' in Mahatma Gandhi: Selected Political Writings, USA: Hackett Publishing, pp. 95-148.

Ragi, Sangit K. (2022), RSS and Gandhi: The Idea of India, New Delhi: Sage [On Swadeshi: pp. 221-250]

R. Ramashray (1984) 'Liberty Versus Liberation', in Self and Society: A Study in Gandhian Thought, New Delhi: Sage Publication.

Kumar, Sanjeev (ed) (2020). 'Understanding Gandhi: Why Gandhi Matters Today 'in Gandhi and the Contemporary World. Oxon & New York: Routledge.PP-1-23.

Unit 5

Gandhi, Mahatma. (1994). What is Hinduism. National Book Trust, New Delhi,

Ragi, Sangit K. (2022), RSS and Gandhi: The Idea of India, New Delhi: Sage [On Hinduism: pp. 42-74; On Religious Conversion: pp. 75-114; On Cow Protection: 193-220; On Language Questions: pp. 160-192]

Mehta, Sandhya. (2002). Gandhiji On Religious Conversion Selected and Compiled, Ist Edition. Mumbai. Mani Bhavan Gandhi Sangrahalaya.

Gandhi (M.K.) . (1955), My Religion. Ahmedabad: Navajivan Trust.

Bilgrami, Akeel (2011), Gandhi's Religion and Its relation to his Politics. In: Brown, Judith M. and Parel, Anthony (ed.): The Cambridge Companion to Gandhi. Cambridge University Press, 93–116

S Radhakrishnan (2007): "Gandhi's Religion and Politics," in S Radhakrishnan (ed), Mahatma Gandhi: Essays and Reflections, Mumbai: Jaico Publication House.

D. Hardiman (2003) 'Fighting Religious Hatreds', in Gandhi in His Time and Ours. Delhi: Oxford University Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 2b: India's National Security: Major Challenges and Strategic Thinking

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
India's National Security: Major Challenges and Strategic Thinking MDSE-2b	**4**	**3**	**1**	**-**	**Passed Class XII**	**NIL**

Learning Objectives

This course aims to link India's internal and external security challenges with its long term strategic thinking, approach and responses to the same. It introduces the historical dimensions of India's security challenges and the policy responses to students before equipping them with tools to conceptually analysing these. The course then discusses the

intellectual foundations of India's strategic thinking drawn from both classical texts and past practices. Students will also learn about the major contemporary debates on India's strategic culture. The course will engage students in understanding both internal and external dimensions of India's major security challenges. Some of the key external challenges, it focuses on, include India's securitized borders, maritime security threats, nuclearization, and terrorism. In the internal realm, issues pertaining to Jammu & Kashmir, the North-east, Naxalism, along with cyber and information warfare have been discussed. The final component of the course introduces the students to an array of India's strategic responses ranging from non-alignment, forging strategic partnerships and military responses to pursuing multilateral strategies in the contemporary world.

Learning outcomes

At the end of the course, students would acquire the ability to:

- Understand the ways in which, the security threats to India have evolved historically and how have these been met.
- Appreciate the intellectual and historical foundations of Indian strategic thinking.
- Develop a nuanced understanding of India's strategic culture.
- Learn about India's internal and external security threats in its multifarious dimensions.
- Understand how has India evolved a whole array of strategic responses such as nonalignment, forging strategic partnerships and bilateral as well as multilateral partnerships to address diverse challenges it faces.

SYLLABUS OF MDSE-2b

UNIT – I (7 Hours)

Understanding India's National Security

1.1 India's Security Policy: A Historical Perspective

1.2 Contemporary Dimensions of India's National Security Framework

1.3 Conceptualizing India's National Security

UNIT – II (9 Hours)

Intellectual Foundations of India's Strategic Thinking

2.1 Textual Traditions: Ramayana & Mahabharata

2.2 Kautilya

2.3 Non-Textual Conceptualizations: Swaraj, Martial Culture

UNIT – III (7 Hours)

India's strategic culture

3.1 Evolution and conceptualization

3.2 Contemporary Trends

UNIT – IV (13 Hours)

India's National Security Challenges

4.1 External Challenges

4.1.1 India's Neighbourhood (Cross-border terrorism, securitised borders, water sharing conflicts and nuclearization

4.1.2 Maritime Security

4.2 Internal Challenges

4.2.1 Maoism/Naxalist Challenge

4.2.2 Separatist Movements (J&K and the Northeast)

4.2.3 Cyber Warfare

UNIT – V (9 Hours)
India's Strategic Responses

5.1 Non-Alignment
5.2 Strategic Partnerships
5.3 Military Responses
5.4 Multilateral Alliances

Essential/recommended readings

Unit wise reading list

Unit 1: Understanding India's National Security

1.1 India's Security Policy: A Historical Perspective

Essential Readings

Raju G C Thomas, "The Strategic Environment and Defence Policies" in *Indian Security Policy* (Princeton: Princeton University Press, 1986) pp. 10-49

Sanjay Chaturvedi, "Indian Geopolitics: 'Nation-State' and the Colonial Legacy" in Kanti Bajpai and Siddharth Mallavarapu (eds.) *International Relations in India: Theorising the Region and Nation* (Orient Longman, 2005) pp. 238-281

Additional Readings

David Malone, "History: A Vital Foundation of India's International Relations" in *Does the Elephant Dance: Contemporary Indian Foreign Policy* (Oxford University Press, 2011) pp. 19-46

Shyam Saran, "Sources of India's World View" in *How India Sees the World: Kautilya to the 21st Century* (Juggernaut, 2018) pp. 9-24

Shivshankar Menon, "The Stage and Inheritance" in *India and Asian Geopolitics: The Past, Present* (The Brookings Institutions, 2021) pp. 11-36

Sumit Ganguly, "India's National Securty" in David M. Malone, C. Raja Mohan, and Srinath Raghavan (eds.) *The Oxford Handbook of Indian Foreign Policy* (Oxford University Press, 2015) pp. 145-159

L.P. Singh, "Learning the Lessons of History" in Brahma Chellaney (eds.) *Securing India's Future in the New Millennium* (Orient Longman, 1999) pp. 1-22

Harsh Pant and Kartik Bommakanti, "India's national security: challenges and dilemmas", *International Affairs*, 95 (4) (2019):835-857.

1.2 Contemporary Dimensions of India's National Security Framework

Essential Readings

Kanti Bajpai "India: Modified Structuralism" in Muthaiah Alagappa (eds.) *Asian Security Practice* (Stanford University Press, 1998) pp. 157-197

Additional Readings

Arvind Gupta, "National Security Environment" and "Non-traditional Security Issues in National Security" in *How India Manages its National Security* (Penguin Random House, 2018).

Rohan Mukherjee & David M. Malone, "Indian Foreign policy and Contemporary Security Challenges", *International Affairs*, Volume 87 (1), pp. 87–104 (2011)

1.3 Conceptualizing India's National Security

Essential Readings

Anshuman Behera and Areeba Ahsanat Moazzam, “India’s National Security Discourse: A Conceptual Introduction”, in Anshuman Behera & Sitakanta Mishra (eds.), *Varying Dimensions of India’s National Security* (Springer 2022) pp. 3-18

P. S. Raghavan, “National Security Determinants of Foreign Policy”, in Arvind Gupta and Anil Wadhwa (Ed.*), India’s Foreign Policy: Surviving in a Turbulent World*, New Delhi: (Sage Publications, 2020) pp. 34-44

Additional Readings

Arvind Gupta, “How Good is India’s National Security System?” in *How India Manages its National Security* (Penguin Random House, 2018)

David M. Malone, “India’s Contemporary Security Challenges: More Internal than External?” in *Does the Elephant Dance? Contemporary Indian Foreign Policy* (Oxford University Press, 2011) pp. 47-74

Unit 2: Intellectual Foundations of India’s Strategic Thinking

2.1 Textual Traditions: Ramayana and Mahabharata

Essential Readings

Swarna Rajagopalan, “Grand Strategic Thought in the Ramayana and Mahabharata” in Kanti Bajpai, Saira Basit and V. Krishnappa (eds) *India’s Grand Strategy: History, Theory, Cases* (New Delhi: Rutledge, 2014) pp. 31-62

Additional Readings

Amrita Narlikar and Aruna Narlikar, “India’s Negotiation Strategy: The Heroism of Haed Bargaining?” in *Bargaining with a Rising India: Lessons from the Mahabharata* (Oxford: Oxford University Press, 2014) pp. 24-71.

Sharad Patil, “Myth and Reality of Ramayana and Mahabharata”, *Social Scientist*, Vol.4, No. 8 (1976): 68-72.

2.2 Kautilya

Essential Readings

Subrata K. Mitra, “Kautilya and the Strategic Culture of India” in Subrata K. Mitra and Michael Liebig (eds.) *Kautilya’s Arthashastra: An Intellectual Portrait* (Nomos, 2016) pp. 288-316

Additional Readings

Rashed Uz Zaman, “Kautilya: The Indian Strategic Thinker and Indian Strategic Culture”, *Comparative Strategy*, Volume 25, No. 3 (2006) 231-247

George Modelski, “Kautilya: Foreign Policy and International System in the Ancient Hindu World”, *The American Political Science Review*, Vol-58, No-3 (Sept., 1964). pp. 549-560.

2.3 Non-Textual Conceptualizations: Swaraj, Martial Culture

Essential Readings

Arpita Anand, ‘A ‘Regional’ Intervention in the Debate on India’s Strategic Culture: Maratha Statecraft in *Agyapatra*,’ *Journal of Defence Studies*, 15:3, July-September 2021. Available at: https://idsa.in/jds/a-regional-intervention-in-the-debate-on-indias-strategic-culture-aanant

Jayashree Vivekanandan, “Strategy, Legitimacy and the Imperium: Framing the Mughal Strategic Discourse,” in Kanti Bajpai, Saira Basit and V. Krishnappa (eds.) *India’s Grand Strategy: History, Theory, Cases* (New Delhi: Rutledge, 2014) pp. 63-85.

Unit 3: India's strategic culture (4 Lectures)

3.1. Evolution and conceptualization

Essential Readings

Kanti Bajpai and Amitabh Mattoo “Introduction” in *Kanti Bajpai, Amitabh Mattoo and George Tanham (eds.) Securing India: Strategic Thought and Practice* (New Delhi: Manohar, 1996) pp. 15-27

Jaswant Singh, “Strategic Culture” in *Defending India* (New Delhi: Palgrave Macmillan, 1999) pp. 1-60

3.2 Contemporary Trends

Essential Readings

Michael Liebig, ‘Interrogating ‘Hyphenated Cultures’: India’s Strategic Culture and Intelligence Culture’, *Journal of Defence Studies*, 15:3, July-September 2021. Available at: https://idsa.in/jds/interrogating-hyphenated-cultures-mliebig

Amrita Narlikar, “Peculiar Chauvinism or Strategic Calculation? Explaining the Negotiating Strategy of a Rising India”, in *International Affairs*, Vol. 82 (1) (2006): 59-76

Additional Readings

George K. Tanham, “Indian Strategic Thought: An Interpretive Essay” in *Kanti Bajpai, Amitabh Mattoo and George Tanham (eds.) Securing India: Strategic Thought and Practice* (New Delhi: Manohar, 1996) pp. 28-111

George K. Tanham, “Indian Strategy in Flux?” in *Kanti Bajpai, Amitabh Mattoo and George Tanham (eds.) Securing India: Strategic Thought and Practice* (New Delhi: Manohar, 1996) pp. 112-139

Unit 4: India’s National Security Challenges

4.2 External Challenges:

4.1.1 India’s Neighborhood

S. Muni, ‘Problem Areas in India’s Neighbourhood Policy’, *South Asian Survey*, Vol. 10 (2) (2003): 185-196.

v. Cross-Border terrorism:

Essential Readings

Sanjeev Kumar HM, Chp 3 in *The India-Pakistan Sub-conventional War: Democracy and Peace in South Asia* (New Delhi: Sage, 2022), pp. 162-192.

Additional Readings

K. Santhanam, “Sources of Terror: India” in *South Asia Post-9/11: Searching for stability* (Observer Research Foundation, 2003), pp. 31-35

S.D. Muni “Introduction” in *Responding to Terrorism in South Asia* (Manohar, 2006) pp. 11-29

vi. Securitised Borders

Essential Readings

Shyam Saran, “The Pakistan Puzzle” in *How India Sees the World: Kautilya to the 21st Century* (Juggernaut, 2018) pp. 77-106

Alka Acharya, "China" in Kanti Bajpai and Harsh Pant (eds.) *India's Foreign Policy* (Oxford University Press, 2013) pp. 356-369

Additional Readings

Shyam Saran, “The India-China Border Dispute and After” in *How India Sees the World: Kautilya to the 21st Century* (Juggernaut, 2018) pp. 123-149

Shiv Shankar Menon, “India and China” in *India and Asian Geopolitics: The Past, Present* (The Brookings Institution, 2021) pp. 317-339

Tanvi Madan, “China in Three Avatars in Kanti Bajpai, Saira Basit and V. Krishnappa (eds.) *India’s Grand Strategy: History, Theory, Cases* (New Delhi: Rutledge, 2014) pp. 308-359

Bharat Karnad, "An Elephant with a Small Footprint: The Realist Roots of India’s Strategic Thought and Policies" in Kanti Bajpai, Saira Basit and V. Krishnappa (eds.) *India’s Grand Strategy: History, Theory, Cases* (New Delhi: Rutledge, 2014) pp. 200-233

vii. Water Sharing

Essential Readings

Brahma Chellaney, “Water: The latest India-Pak Battle Line” in *Water: Asia’s New Battleground* (Georgetown University Press, 2011) pp. 286-296.

Medha Bisht, “From the edges of borders: reflections on water diplomacy in South Asia” *Water Policy* 21 (2019): 1123–1138

Jonathan Holslag, “Assessing the Sino-Indian Water Dispute,” *Journal of International Affairs*, 64:2, Spring/Summer 2011, pp. 19-35.

Additional Readings

K. Warikoo, “Perspectives of Indus Waters treaty” in Ranabir Samaddar and Helmut Reifeld (eds.) *Peace as Process: Reconciliation and conflict Resolution in South Asia* (Konrad Adenauer Foundation, 2001) pp. 281-298

Brahma Chellaney, “Nepal and Bhutan as Subregional Energy Hub” in *Water: Asia’s New Battleground* (Georgetown University Press, 2011) pp. 281-286

Brahma Chellaney, “Exploiting the Riparian Advantage: A key test case” in *Water: Asia’s New Battleground* (Georgetown University Press, 2011) pp. 141-197 (Includes Bangladesh)

viii. Nuclearization

Essential Readings

Ashley J. Tellis, *India’s Emerging Nuclear Doctrine: Exemplifying the Lessons of Nuclear revolution, NBR Analysis*, 12:2, May 2001, pp. 1-16; 103-110.

Sundaram, K. and MV Ramana. "India and the policy of no first use of nuclear weapons." *Journal of Peace and Nuclear Disarmament* 1, no. 1 (2018). Taylor & Francis: 152-68.

Additional Readings

Bharat Karnad, “New Attractions of the Bomb: The Nuclearized Twenty-First Century World” in *India's Nuclear Policy* (Praeger Security International, 2008) pp. 5-34

Rajesh Basrur, “India and China: A managed nuclear rivalry?” *Washington Quarterly*, 42, no. 3 (2019). Taylor & Francis: 151-70.

Harsh V. Pant and Yogesh Joshi, *Indian Nuclear Policy*, New Delhi, Oxford University Press, 2018.

Vipin Narang, “Introduction” in *Seeking the Bomb: Strategies of Nuclear Proliferation* (Princeton University Press, 2022) pp. 1-14

4.1.2 Maritime Security

Essential Readings

S. Jaishankar, Chapter 8, “The Pacific Indian: A Re-Emerging Maritime Outlook,” in *The India Way: Strategies for an Uncertain World* (New Delhi: Harper Collins, 2020), pp. 179-200.

Rajeswari Pillai Rajagopalan, “India’s maritime strategy”, in Anit Mukherjee and C. Raja Mohan (eds.) *India’s Naval Strategy and Asian Security* (London: Routledge, 2016) pp. 13-36.

Additional Readings

Rahul Roy Chaudhary “India’s Maritime Security” *India International Centre Quarterly*, Vol. 26, no. 1 (1999): 129-139

Vijay Sakhuja, “Maritime security order in Asia: a perspective from India” in Joachim Krause and Sebastian Bruns (eds.) *Routledge Handbook of Naval Strategy and Security* (London: Routledge, 2016) pp. 315-327

4.2 Internal Challenges

4.2.1 Naxalism/ Maoism

Essential Readings

P.V Ramana, “State Response to the Maoist Challenge: An Overview,” in V.R. Raghavan (ed.), *The Naxal Threat: Causes, State Responses and Consequences* (New Delhi: Vij Books, 2011), pp. 71-94.

Additional Readings

E. N. Rammohan, “Rise of Naxalism, its implications for National Security and the way Forward,” in V.R. Raghavan (ed.), *The Naxal Threat: Causes, State Responses and Consequences* (Mew Delhi: Vij Books, 2011), pp. 95-112.

Ramachandra Guha, “Adivasis, Naxalites and Indian Democracy” *Economic and Political Weekly* 42(32) (2007): 3305-3312

4.2.2 Separatist Movements (J&K/ Northeast)

Kashmir

Essential Readings

Navnita C. Behera, “India’s Political Gambit” in *Demystifying Kashmir* (Brookings, 2006) pp. 30-72

Additional Readings

Rekha Chowdhry, “India’s responses to the Kashmir Insurgency: A Holistic Perspective”, in Mooed Yusuf (eds.) *Insurgency and counter-Insurgency in India: Through a Peacebuilding Lens* (United States Institutes of Peace, 2014) pp. 45-76.

V.G. Patankar, “Insurgency, Proxy War and Insurgency in Kashmir,” in Sumit Ganguly and David P. Fidler (eds.), *India and Counterinsurgency: Lessons Learned* (New Delhi: Routledge, 2009), pp, 65-78.

Northeast

Essential Readings

Sanjib Baruah, “Regionalism and secessionism” in Niraja Gopal Jayal and Pratap Bhanu Mehta (eds.) *The Oxford Companion to Politics in India* (Oxford University Press, 2011) pp. 181-191

Additional Readings

Walter Ledweig, "Insights from the Northeast: Counterinsurgency in Nagaland and Mizoram”, in Sumit Ganguly and David P. Fidler (eds.) *India and Counterinsurgency: Lessons Learned* (USA, Canada: Routledge, 2009) pp. 45-62

4.2.3 Cyber Security and Information Warfare

Essential Readings

Whagre Prateek & Shibani Mehta, “India’s National Cybersecurity Policy Must Acknowledge Modern Realities” (Diplomat, 2019). https://thediplomat.com/2019/12/indias-national-cybersecurity-policy-must-acknowledge-modern-realities/

Martin C. Libicki, “The Convergence of Information Warfare”. *Strategic Studies Quarterly.* 11(1), 49-65. https://www.airuniversity.af.edu/Portals/10/SSQ/documents/Volume-11_Issue-1/Libicki.pdf

Additional Readings

S, Datta, Cybersecurity, Internet governance and India’s foreign policy: Historical antecedents (Internet Democracy Project 2016) https://internetdemocracy.in/reports/cybersecurity-ig-ifp-saikat-datta.

Mukerji, Amb (Retd) A. International Cooperation on Cyber Space: India’s role. (Ministry of External Affairs, 2018). https://www.mea.gov.in/distinguished-lectures-detail.htm?743

Unit 5: India’s Strategic Responses

5.1 Non-Alignment

Essential Readings

Rajen Harshe, “India’s Non-Alignment: An Attempt at Conceptual Reconstruction,” *Economic and Political Weekly,* 25:7-8, February 17-24, 1990, pp. 399-405.
Khilnani, S., Rajiv Kumar and Pratap Bhanu Mehta (eds.) (2013). Nonalignment 2.0: A Foreign & Strategic Policy for India in the 21st Century. Penguin.

Additional Readings

P. Srivastava, “From Non-Alignment to Strategic Partnerships” *Non-Alignment Movement: Extending Frontiers* (New Delhi: Kanishka Publishers, 2001) pp. 177-182.

C Rajamohan, “Beyond Non-Alignment” in *Crossing the Rubicon: The Shaping of India's new Foreign Policy* (Viking, 2003) pp. 29-56

Pant, H.V., & Super, J.M. (2015). India’s ‘non-alignment’ conundrum: a twentieth- century policy in a changing world. *International Affairs,* 91(4), 747-764.

5.2 Strategic Partnerships

Essential Readings

Rajiv Sikri, “India’s Strategic Choices” in *Challenge & Strategy in Rethinking India’s Foreign Policy* (Sage Publications, 2009) pp. 277-290

Ashley J. Tellis, “US-India Relations: The Struggle for an Enduring Partnership” in David M. Malone, C. Raja Mohan, and Srinath Raghavan (eds.) *The Oxford Handbook of Indian Foreign Policy* (Oxford University Press, 2015) pp. 481-494

Additional Readings

Teresita C. Schaffer & Howard B. Schaffer, “Indian Strategic Visions” *India at the Global High Table: The Quest for Regional Primacy & Strategic Autonomy* (Harper Collins India, 2016) pp. 60-81

C. Rajamohan, Chapter 6 on “Embracing America,” in *Modi’s World: Expanding India’s Sphere of Influence*, New Delhi: Harper Collins, 2015.

5.3 Military Responses

Essential Readings

Dasgupta, Sunil and Stephen P. Cohen. "Is India ending its strategic restraint doctrine?", *Washington Quarterly* 34, no. 2 (2011). Taylor & Francis: 163-77.

Tarapore, Arzan. *The Army in Indian Military Strategy: Rethink Doctrine or Risk Irrelevance*. New Delhi: Carnegie India Working Paper, 2020: 1-22.

Additional Readings

Rajpal Budania, “India’s Threat Perception and Policy Response” in *India’s National Security Dilemmas: Pakistan Factor* (Indus Publishing Company, 2001) pp. 216-269

Singh, Sushant K. “Military as an instrument of India's foreign policy: An expanding footprint”. In *The Routledge Handbook of Indian Defence Policy* (second edition) edited by Harsh V. Pant. New Delhi: Routledge, 2020.

Sumit Ganguly, “India’s Defence Policy” in Niraja Gopal Jayal & Pratap Bhanu Mehta The Oxford Companion to Politics in India (Oxford University Press, 2011, pp. 542-554.

5.4 Multilateral Alliances:

Essential Readings

David Malone “The evolution of Indian Multilateralism” in *Does the Elephant Dance: Contemporary Indian Foreign Policy* (Oxford University Press, 2011) pp. 249-273

Saran, Shyam (2013), India and Multilateralism: A Practitioner’s Perspective in Waheguru Pal Singh Sidhu, Pratap Bhanu Mehta, Bruce D. Jones (eds.), Shaping the Emerging World: India and the Multilateral Order, Washington DC: Brookings Institution Press, pp. 43-56

Additional Readings

Teresita C. Schaffer & Howard B. Schaffer, “Multilateral Negotiations,” *India at the Global High Table: The Quest for Regional Primacy & Strategic Autonomy* (Harper Collins India, 2016) pp. 213-247.

Sanjaya Baru, “The Economic Imperative for India’ s Multilateralism” in Waheguru Pal Singh Sidhu, Pratap Bhanu Mehta, Bruce D. Jones (eds.) *Shaping the Emerging World: India and the Multilateral Order* (Washington DC: Brookings Institution Press, 2013) pp. 75-92

Navroz K. Dubash and Lavanya Rajamani, “Multilateral Diplomacy on Climate Change,” in in David M. Malone, C. Raja Mohan, and Srinath Raghavan (eds.) *The Oxford Handbook of Indian Foreign Policy* (Oxford University Press, 2015) pp. 663-680.

Rajesh Rajagopalan, “Multilateralism in India’s Nuclear Policy: A Questionable Default Option,” in David M. Malone, C. Raja Mohan, and Srinath Raghavan (eds.) *The Oxford Handbook of Indian Foreign Policy* (Oxford University Press, 2015) pp. 650-662.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

OFFERED BY THE DEPARTMENT OF POLITICAL SCIENCE

Pool of GE offered in Semester-I to III will also be available for Semester-IV to VI

GENERIC ELECTIVES (GE-1): Ideas in Indian Political Thought

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Ideas in Indian Political Thought GE-1	4	3	1	-	Passed class XII	NIL	Political Science

Learning Objectives

This paper is designed for students who are from other disciplines and wish to have a basic understanding of the various themes that has shaped Indian society and politics. It revolves around key concepts based on original texts which would help the students to critically engage with the ideas.

Learning outcomes

After completion of this course, students will be able to

- answer about the nature and form of statecraft that existed in Ancient India.
- explain how the texts in ancient India interpreted Dharma and Danda
- answer what were sources and mechanisms to practice Nyay in ancient India.
- make distinction between Rastra and Rajya.
- explain the meaning and foundations of Varna and how are they different from caste.

SYLLABUS OF GE-1

UNIT – I (7 Hours)
Dharma and Danda: Kautilya

UNIT – II (6 Hours)
Gender: Tarabai Shinde

UNIT – III (6 Hours)
Culture and Nationalism: Vivekananda

UNIT – IV (6 Hours)

Swaraj: Gandhi

UNIT – V (6 Hours)
Nyaya: Ambedkar

UNIT – VI (7 Hours)
Hindutva: Savarkar

UNIT – VII (7 Hours)
Integral Humanism: Deen Dayal Upadhyaya

Essential/recommended readings

1. Dharma and Danda: Kautilya

Mehta, V.R. (1992) 'The Pragmatic Vision: Kautilya and His Successor', in Foundations of Indian Political Thought, Delhi: Manohar, pp. 88- 109.

Sharma, R S (2005), Aspects of Political Ideas and Institutions in Ancient India, Motilal Banarsidass, New Delhi pp 143-164

2. Gender: Tarabai Shinde

O' Hanlon, Rosalind (2002) A comparison between women and men: Tarabai Shinde and the critique of Gender Relations in Colonial India. New Delhi: Oxford University Press.

Lele, Jayant (1998) Gender Consciousness in Mid-Nineteenth Century Maharashtra, in Anne Feldhaus *Images of women in Maharastrain Society*. The University of New York Press: New York

3. Culture and Nationalism: Vivekananda

Sen, Amiya P. (2011), 'Vivekanand: Cultural Nationalism', in M. P. Singh and Himanshu Roy (ed.), *Indian Political Thought: Themes and Thinkers* Delhi. Pearson

Kiggley, Dermot (1990) 'Vivekananda's western message from the East' in William Radice (ed) Swami Vivekananda and modernization of Hinduism, New Delhi: Oxford University Press.

4. Swaraj: Gandhi

Parel, A. (ed.) (2002), 'Introduction', in *Gandhi, freedom and Self Rule,* Delhi: Vistaar Publication.

Dalton, Denis (1982) Indian Idea of freedom, Gurgaon: Academic Press, pp 154-190

5. Nyaya: Ambedkar

Pantham, Thomas and Kenneth Deutsch (ed) (1986) Political Thought in Modern India, New Delhi: Sage, pp 161-175

Rodrigues, Valerian (2002) The Essential writings of B.R Ambedkar, Delhi: Oxford University Press, pp 1-44

6. Hindutva: Savarkar

Savarkar, Vinayak Damodar (1922-23) Essentials of Hindutva, 1922, available at: http://savarkar.org/en/encyc/2017/5/23/2_12_12_04_essentials_of_hindutva.v001.pdf_1.pdf

Sampath, Vikram (2021) Savarkar: A Contested Legacy, 1924-1966, Gurugram: Penguin Random House India

7. Integral Humanism: Deen Dayal Upadhyaya

Upadhyaya, Deendayal. (1964), Integral Humanism, Delhi: Bharatiya Jan Sangh.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

GENERIC ELECTIVES (GE-2) : Introduction to the Indian Constitution

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Introduction to the Indian Constitution GE-2	4	3	1	-	Passed Class XII	NIL

Learning Objectives

The course aims to introduce the students to the foundational text of constitutional democracy in India - the Indian Constitution. By providing an overview of the socio-political context of its origin and its basic tenets, which provide the organizing framework for democracy in India, the course expects to bring historical insights in making the constitutional text comprehensible. The course traces the history of the Constitution both in the colonial legislations and in the declaration and reports produced in the course of the Indian National Movement. It focuses on the creation and the working of the Constituent Assembly as part of a transformative vision for independent India. The basic features of the Constitution form the core themes of the course introducing students to the philosophy behind them and the final form in which they were adopted in the Indian Constitution to make it a document for social revolution. The course aims at providing students with both a textual and a contextual introduction to the Indian Constitution.

Learning outcomes

On successful completion of the course, the students will demonstrate

- Knowledge of the origin and contents of the Indian Constitution
- Awareness of the rights and duties of the citizens and the obligations of the state
- Familiarity with the functioning of constitutional governance in India and the division of power between different tiers of the government.

SYLLABUS OF GE-2

UNIT – I (8 Hours)

Constitutional antecedents and the making of the Constitution of India

UNIT – II (7 Hours)

Basic features of the Indian Constitution

UNIT – III (8 Hours)
Fundamental Rights

UNIT – IV (7 Hours)
Obligations of State and Duties of Citizens

UNIT – V (7 Hours)
Organs of Constitutional Governance- Legislature, Executive and Judiciary

UNIT – VI (8 Hours)
Centre-State Relations and Decentralization

Essential/recommended readings
Readings:

1. Constitutional antecedents and the making of the Constitution of India

(a) Constitutional antecedents

Shibani Kinkar Chaube, 2010, Pre History, in *The Making and Working of the Indian Constitution*, NBT, India.

Arun Thiruvengadam, 2018, Origin and Crafting of the Constitution (pp. 11 to 26), in *The Constitution of India, a Contextual Analysis*, Hart Publishing.

D D Basu, 2011, The Historical background,in *Introduction to the Constitution of India* (20thed.). Lexis Nexis, India.

(b) Making of the Constitution of India

Shibani Kinkar Chaube, 2000, Birth of the Constituent Assembly, in *Constituent Assembly of India: Springboard of Revolution*, Manohar.

Granville Austin, 1966, The Constituent Assembly- Microcosm in Action, in *Indian Constitution, Cornerstone of a Nation*, OUP.

Subhash Kashyap, 1994, Making of the Constitution, in *Our Constitution: An Introduction to India's Constitution and Constitutional Law*, NBT, India.

2. Basic Features of the Indian Constitution

B R Ambedkar, 2010, Basic features of the Indian Constitution, in Valerian Rodrigues (ed), *The essential writings of BR Ambedkar*. Oxford University Press, India.

D D Basu, 2011, Outstanding Feature of Our Constitution,in *Introduction to the Constitution of India* (20thed.). Lexis Nexis, India.

Ivor Jennings, 1953, Introduction, in *Some Characteristics of Indian Constitution,* G Cumberlege and Oxford University Press.

3. Fundamental Rights

Primary text: Article 14- 32, Part III, The Constitution of India

Granville Austin, 1966, The Conscience of the Constitution- Fundamental Rights and Directive Principles of State Policy- I (pp. 63-94), in*Indian Constitution, Cornerstone of a Nation*, OUP

Shibani Kinkar Chaube, 2010, Rights of Indians, in *The Making and Working of the Indian Constitution*, NBT, India.

D D Basu, 2011, Fundamental Rights and Duties (pp. 79- 142),in *Introduction to the Constitution of India* (20thed.). Lexis Nexis, India.

Arun Thiruvengadam, 2018, Fundamental rights, Directive Principles and the Judiciary (pp. 118-137), in *The Constitution of India, a Contextual Analysis*, Hart Publishing.

4. Obligations of State and Duties of Citizens

Primary text: Article 36- 51A, Part IV and IVA, The Constitution of India

Shibani Kinkar Chaube, 2010, Duties of State and Citizens, in *The Making and Working of the Indian Constitution*, NBT, India.

D D Basu, 2011, Directive Principles of State Policy (pp. 79- 142), in *Introduction to the Constitution of India* (20th ed.). Lexis Nexis, India.

Gautam Bhatia, 2016, Directive Principles of State Policy, in Sujit Choudhry, *et al*, *The Oxford Handbook of the Indian Constitution*, New Delhi: OUP

Ivor Jennings, 1953, Directives of Social Policy, in *Some Characteristics of Indian Constitution,* G Cumberlege and Oxford University Press.

5. Organs of Constitutional Governance- Legislature, Executive and Judiciary

Primary Text: Part V, The Constitution of India

S.K. Chaube, Union Government- 1: The Executive, in *The Making and Working of Indian Constitution*, NBT, India

S.K. Chaube, Union Government 2: The Legislature, in *The Making and Working of Indian Constitution*, NBT, India

Granville Austin, 1966, *Indian Constitution, Cornerstone of a Nation*, OUP, pp. 145- 230.

Arun Thiruvengadam, 2018, The Executive and the Parliament, in *The Constitution of India, a Contextual Analysis*, Hart Publishing

M.R. Madhavan, 2017, Parliament, in D. Kapur, P.B. Mehta and M Vaishnav (eds.), *Rethinking Public Institutions in India*, Oxford University Press

D.D. Basu, 2011, The Judicature (pp. 299- 313), in *Introduction to the Constitution of India (*20thed.). Lexis Nexis, India.

Pratap Bhanu Mehta, 2005, India's Judiciary: the Promise of Uncertainty, in *Public Institutions in India: Performance and Design*, OUP, India.

Punam S Khanna, 2008, The Indian Judicial system, in K Sankaran and U K Singh (eds), *Towards Legal Literacy: An Introduction to Law in India*, OUP.

6. Centre-State Relations and Decentralization

D D Basu, 2011, Distribution of Legislative and Executive Powers, in *Introduction to the Constitution of India (*20thed.). Lexis Nexis, India.

M.P. Singh and Rekha Saxena, 2013, Asymmetrical Federalism, in *Federalising India in the Age of Globalisation,* Primus

Ivor Jennings, 1953, Indian Federalism, in *Some Characteristics of Indian Constitution,* G Cumberlege and Oxford University Press.

S.K. Chaube, Local Government, in *The Making and Working of Indian Constitution*, NBT, India.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-3): Nationalism in India

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Nationalism in India GE-3	4	3	1	-	Passed Class XII	NIL

Learning Objectives

The course aims to help students understand the national movement in India. It looks at the movement from different theoretical perspectives that highlight its varied dimensions. The course begins by looking at the Indian responses to colonial dominance in the nineteenth century, and traces the development of the anti-colonial struggle up to the mid-20th century. It successively focuses on the events leading to the Partition and the Independence in 1947. In the process, the course also tries to focus on the various tensions and debates within nationalism in India as it engaged with the questions of communalism, class struggle, caste and gender.

Learning outcomes

On successful completion of the course, students would:

- Gain an understanding of the different theoretical views on the emergence and development of nationalism in India and the tensions that existed between them
- Demonstrate knowledge of the historical trajectory of the development of the nationalist movement in India, with specific focus on its different phases
- Understand the contribution of various social movements in the anti-colonial struggle
- Demonstrate awareness of the history of partition and independence

SYLLABUS OF GE-3

UNIT – I (8 Hours)

Approaches to the Study of Nationalism in India: Nationalist, Imperialist, Marxist, and Subaltern

UNIT – II (8 Hours)

Reformism and Anti-Reformism in the Nineteenth Century: Major Social and Religious Movements in 19th century

UNIT – III (11 Hours)

Nationalist Politics and Expansion of its Social Base

a. Phases of Nationalist Movement: Liberal Constitutionalists; Swadeshi; Revolutionaries, Socialists and Communists; Beginning of Constitutionalism in India
b. Gandhi and Mass Mobilisation: Non-Cooperation Movement, Civil Disobedience Movement, and Quit India Movement
c. Socio-cultural Organizations and National Movement

UNIT – IV (9 Hours)

Social Movements

Peasants, Tribals, Workers, Women and anti-caste movements

UNIT – V (9 Hours)

Partition, Independence and Integration of states

Communalism in Indian Politics, The Two-Nation Theory and Partition, Independence and Integration of Indian States

Essential/recommended readings

Approaches to the Study of Nationalism in India

S. Bandopadhyay (2004) *From Plassey to Partition: A History of Modern India*, New Delhi: Orient Longman, pp. 184-191.

R. Thapar (2000) 'Interpretations of Colonial History: Colonial, Nationalist, Post-colonial', in P. DeSouza (ed.) *Contemporary India: Transitions*, New Delhi: Sage Publications, pp. 25-36.

Reformism and Anti-Reformism in the Nineteenth Century

S. Bandopadhyay (2004) From Plassey to Partition: A History of Modern India, New Delhi: Orient Longman, pp.139-158, 234-276.

A. Sen (2007) 'The idea of Social Reform and its Critique among Hindus of Nineteenth Century India', in S. Bhattacharya (ed.) *Development of Modern Indian Thought and the Social Sciences*, Vol. X. New Delhi: Oxford University Press.

Nationalist Politics and Expansion of its Social Base

S. Bandopadhyay (2004) *From Plassey to Partition: A History of Modern India*. New Delhi: Orient Longman, pp. 279-311.

S. Sarkar (1983*) Modern India (1885-1947)*, New Delhi: Macmillan,

P. Chatterjee (1993) 'The Nation and its Pasts', in P. Chatterjee, *The Nation and its Fragments: Colonial and Postcolonial Histories*. New Delhi: Oxford University Press, pp. 76-115.

Social Movements

S. Bandopadhyay (2004) *From Plassey to Partition: A history of Modern India*. New Delhi: Orient Longman, pp. 342-357, 369-381.

Desai, A.R. (2019, reprint- 6th edition) Crusade Against Caste System, in *Social Background of Indian Nationalism*, Sage.

Desai, A.R. (2019, reprint- 6th edition) Crusade Against Untouchability, in *Social Background of Indian Nationalism*, Sage.

Desai, A.R. (2019, reprint- 6th edition) Movement for the Emancipation of Women, in *Social Background of Indian Nationalism*, Sage.

G. Shah (2002) *Social Movements and the State*, New Delhi: Sage, pp. 13-31

Partition, Independence and Integration of States

A. Jalal, and S. Bose (1997) *Modern South Asia: History, Culture, and Political Economy*. New Delhi: Oxford University Press, pp. 135-156.

A. Nandy (2005) *Rashtravadbanam Deshbhakti* Translated by A. Dubey, New Delhi: Vani Prakashan. pp. 23-33. (The original essay in English is from A. Nandy (1994) New Delhi: Oxford University Press, pp. 1-8.)

V P Menon (1956), CH I- Setting the Stage and Ch XXV- The Cost of Integration, in *The Story of the Integration of the Indian States*, Orient Longman.

Suggestive readings

B.Chakrabarty and R. Pandey (2010) *Modern Indian Political Thought,* New Delhi: Sage Publications.

P. Chatterjee (1993) *The Nation and its Fragments: Colonial and Postcolonial Histories*, New Delhi: Oxford University Press.

R. Pradhan (2008) *Raj to Swaraj*, New Delhi: Macmillan (Available in Hindi).

S. Islam (2006) *Bharat Mein Algaovaadaur Dharm*, New Delhi: Vani Prakashan.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-4): Understanding International Relations

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Understanding International Relations GE-4	4	3	1	-	Passed Class XII	NIL

Learning Objectives

This course aims to make students understand the intersections between politics, economics, culture and nature that shape human life in the contemporary world. These intersectional relations foreground the multiple interactions that constitute the reality of the group life of humans. The issues around which the course is designed consists of the role of state in international politics, cultural identities such as the nation and, issues such as global poverty and global inequalities. Additionally, the course dwells on the psycho-cultural and politico-economic causes of violence, oppression and injustices that make the world a contested space. It examines the ways in which information technology shapes the course of human life in the age of globalization and how the phenomenon of the international manifests both in the virtual and the material world. Going beyond the Westphalian conception of territoriality, the course looks at the ways in which International Relations manifests in the realm of art/cinema/museums.

Learning outcomes

On successful completion of the course, students would be able to:

- Understand the nature of the contemporary world in which we live through connected histories, economies and societies.
- Analyze the ways in which our world is shaped in both territorial and non-territorial forms leading to basic planetary understandings of both human and non-human relations.
- Enhance cognitive abilities to map out the multiple and complex interactions in international relations between peoples, histories and civilisations.

- To understand the role of the state and its interface with the market, probe into the cultural identities of a nation, analyse global poverty and climate change politics.
- To critically analyse the politics of 'common yet differentiated responsibilities.'
- Think critically about issues of global inequalities, violence, and injustices in the age of globalization.
- Appreciate the ways in which aesthetic articulation(s) problematize and interrogate the international and our ways of being therein.

SYLLABUS OF GE-4

UNIT – I (7 Hours)
Making Sense of the World

1.1 What is International Relations?
1.2 Understanding Space: How do we sense our planet
1.3 Ways of knowing and being: - Peoples, Histories and Civilisations

UNIT – II (12 Hours)
States, Nations and Markets

2.1 State and Diffusion of authority/power
2.2 Nations and Nationalism
2.3 States and Markets

UNIT – III (12 Hours)
Inequalities

3.1 Politico-military inequalities: big states, small states
3.2 Economic inequalities: rich states, poor states
3.3 Climate Change: Global commons and differentiated responsibilities

UNIT – IV (7 Hours)
Sites of Conflict and Forms of Violence

4.1 Changing Landscape/ Nature of Conflict
4.2 Forms of Violence

UNIT – V (7 Hours)
Knowing our Virtual and Creative World: The Visual Turn in International Relations

5.1 Internet
5.2 Museums
5.3 Cinemas

Essential/recommended readings

1.1. What is International Relations?

David Blaney, "Where, When and What is IR?" in Arlene B, Tickner and Karen Smith (eds.), *International Relations from the Global South: World of Difference,* New York: Routledge, 2020, pp. 38-55.

1.2. Understanding Space: How can we understand our planet.

Simon Dalby, "What happens if we don't take nature for granted," in Jenny Edkins and Maja Zehfuss (eds.), *Global Politics: A New Introduction*, New York: Routledge, 2008, pp. 39-60.

Dipesh Chakrabarty, 'The Climate of History in a Planetary Age,' London: University of Chicago Press, 2021, pp. 1-20.

1.3. Ways of knowing and being: - Peoples, Histories and Civilisations

Veronique Pin-Fat, "How do we begin to think about the world," in Jenny Edkins and Maja Zehfuss (eds.), *Global Politics: A New Introduction*, New York: Routledge, 2008, pp. 20-38. Tamara A. Trownsell, Amaya Querejazu, Giorgio Shani, Navnita Chadha Behera, Jarrad Reddekop and Arlene B. Tickner Recrafting International Relations through Relationality," *E-International Relations*, January 2019. https://www.e- ir.info/2019/01/08/recrafting-international-relations-through-relationality/.

Tamara A. Trownsell, Arlene B. Tickner, Amaya Querejazu, Jarrad Reddekop, Giorgio Shani, Kosuke Shimizu, Navnita Chadha Behera and Anahita Arian, 'Differing about difference: relational IR from around the world,' *International Studies Perspectives*, 22:1, February 2021, pp. 25-64.

Giorgio Shani, 'IR as inter-cosmological relations?' *International Politics Review,* 9 (2021) 306–312. https://doi.org/10.1057/s41312-021-00120-2.

Additional Readings:

Milja Kurki, "International Relations in a Relational Universe," *Oxford University Press* (2020) 1-16.

Arturo Escobar, 'Introduction: Another possible is possible,' and 'Theory and the un/real: Tools for rethinking "Reality" and the possible," in *Pluriversal Politics: The Real and the Possible,* Durham: Duke University Press, 2020, pp. 1-30.

Ashish Kothari, Ariel Salleh, Arturo Escobar, Federico Demaria, Albert Acosta, 'Introduction: Finding Pluriversal Paths', in Ariel Salleh, Arturo Escobar, Federico Demaria, Albert Acosta (eds.), '*Pluriverse: a post-development dictionary',* New Delhi: Tulika Books, 2019, pp. xxii-xl. Also, see, https://kalpavriksh.org/ourteam/ashish-kothari/

2.1 State and Diffusion of authority/power

Shibashish Chatterjee, 'Reconsidering the State in International Relations,' in Kanti and Siddharth Mallavarapu (eds.), *International Relations in India: Bringing Theory back home,* New Delhi: Orient Longman, 2005, pp. 451-489.

David Held, "The territorial State and Global Politics," in *Global Transformations: Politics, Economics and Culture*, USA: Stanford University Press, 1999, pp. 32-48.

Susan Strange, "The State of the State," in *The Retreat of the State: The Diffusion of Power in the World Economy*, Cambridge: Cambridge University Press, 1996, pp. 66- 88.

2.2 Nations and Nationalism

Andrew Heywood, "Nations and Nationalism" in *Politics*, China: Palgrave Macmillian, 2013, pp. 108-127.

Michael J. Shapiro, "Does the nation-state work?" in Jenny Edkins and Maja Zehfuss (eds.), *Global Politics: A New Introduction*, New York: Routledge, 2008, pp. 269- 287.

Elena Barabantseva, "How do people come to identify with nations?" in Jenny Edkins and Maja Zehfuss (eds.), *Global Politics: A New Introduction*, New York: Routledge, 2008, pp. 245-268.

Sanjay Chaturvedi, 'Indian Geo-politics: 'Nation-State and the Colonial Legacy' in Kanti Bajpai and Siddharth Mallavarapu (eds.), *International Relations in India: Theorising the Region and Nation*, New Delhi: Orient Longman, 2005, pp. 238-283.

2.3 States and Markets

Lavanya Rajamani,"The principle of common but differentiated responsibilities and respective capabilities in the international climate change regime" in Ludwig Kramer and Emanuela Orlando (eds.), *Principles of Environmental Law*, Sussex: Edward Elgar publishing, 2018, pp. 46-60.

David Held, Chapter five on "Corporate Power and Global Production Networks," in *Global Transformations: Politics, Economics and Culture*, Stanford: Stanford University Press, 1999, pp. 236-282.

Matthew Watson, 'Understanding the State within Modern Society' and 'Understanding the Market within Modern Society' in *Foundations of International Political Economy*, New York: Palgrave, 2005, pp. 161-196.

Additional Readings:

Thomas L. Friedman, *The World is Flat: A Brief History of the Twenty-First Century,* New York: Picador Publication, 2005, pp. 1-50.

Yuval Noah Harari, "Nationalism," in *21 Lessons for the 21st Century*, USA: Spiegel & Grau, Jonathan Cape, 2018, pp. 104-117.

Dr V. Basil Hans, 'State and the Market- Debate and Developments,' January 2014, http://dx.doi.org/10.2139/ssrn.2373827

Andrew Heywood, "Sovereignty, the Nation and Supranationalism," in *Political Ideas and Concept*, New York: St. Martin's Press,1994, pp. 48-77.

Stuart Elden, "Why the World Divided Territorially," in Jenny Edkins and Maja Zehfuss (eds.), *Global Politics: A New Introduction*, New York: Routledge, 2008, , pp. 220-244.

Robert Gilpin, "Nature of political economy," in *Global Political Economy: Understanding the International Economic Order*, Princeton: Princeton University Press, 2001, pp- 25-45.

Stephen D. Krasner, 'Sharing Sovereignty: New Institutions for Collapsed and Failing States,' *International Security*, 29: 2, 2004, pp. 85-120.

Susan Strange, Chapters 3-6, on 'The Security Structure', 'The Production Structure', 'The Financial Structure', 'The Knowledge Structure', in *States and Markets*, London: Bloomsbury, 2015,

Unit 3. Inequalities

Mohammad Ayoob, 'Inequality and Theorizing in International Relations: The Case for Subaltern Realism,' *International Studies review*, 4:3, 2002, pp. 27-48.

3.1 Mapping inequalities in IR

Joao Pontes Nogueira, "Inequality," in Arlene B, Tickner and Karen Smith (eds.), *International Relations from the Global South: World of Difference,* New York: Routledge, 2020, pp. 240-255.

Paul Cammack, "Why are Some People Better off than Others," in Jenny Edkins and Maja Zehfuss (eds.), *Global Politics: A New Introduction*, New York: Routledge, 2008, pp. 405-428.

3.2 Climate Change: Global commons and differentiated responsibilities

A. Damodaran, 'Encircling the Seamless- India, Climate Change, and the Global Commons,' Oxford University Press, 2010, India. Chapters 1 and 2.

Additional Readings:

Amartya Sen, "Capabilities and Resources," in *The Idea of Justice*, New York: Penguin Books, 2009, pp. 253-268.

Amartya Sen, "Measures of Inequality," in *On Economic Inequality*, New York: Clarendon Press Oxford, 1997, pp. 24-46.

Dipesh Chakrabarty, Chapter 7 on 'Anthropocene Time," in The Climate of History in a Planetary Age,' *University of Chicago Press London*, 2021, pp. 155-181.

Graham Thompson, "Global Inequality, Economic Globalization and Technological Change," Chapter Eleven in 'A World of Whose Making- Ordering the International: History, Change and Transformation' by William Brown, Simon Bromley, and Suma Athreye. Pluto Press, 2004, pp. 377-415.

Unit 4. Sites of Conflict and Forms of Violence

Arlene B. Tickner, "War and Conflict," in Arlene B, Tickner and Karen Smith (eds.), *International Relations from the Global South: World of Difference,* New York: Routledge, 2020, pp. 115-138.

4.1 Changing Landscape/ Nature of Conflict

Michael Dillon, "What makes the world dangerous," in Jenny Edkins and Maja Zehfuss (eds.), *Global Politics: A New Introduction*, New York: Routledge, 2008, pp. 519-538

Mary Kaldor, 'In Defense of New Wars', *Stability: International Journal of Security and Development*, 2:1, 2013, 1-16. http://dx.doi.org/10.5334/sta.at.

4.2 Forms of Violence

Joanna Bourke, "Why Does Politics Turns into Violence?" in Jenny Edkins and Maja Zehfuss (eds.), *Global Politics: A New Introduction*, New York: Routledge, 2008, pp. 472-495.

Anuradha M. Chenoy, "Militarization, Conflict and Women in South Asia," in Lois Ann Lorentzen and Jennifer Turpin (eds.), *The Women and War Reader*, New York: New York University Press, 1998, pp. 101-110.

Additional Readings:

Roland Bleiker, "Can we move beyond Conflict," in Jenny Edkins and Maja Zehfuss (eds.), *Global Politics: A New Introduction*, New York: Routledge, 2008, pp. 564- 589.

David Held, "Expanding reach of organized violence," in *Global Transformations: Politics, Economics and Culture*, Stanford: Stanford University Press, 1999, pp. 87- 92.

5.1 Internet

M. I. Franklin, "How does the way we use the Internet make a difference?" in Jenny Edkins and Maja Zehfuss (eds.), *Global Politics: A New Introduction*, New York: Routledge, 2008, pp. 176-199.

Jr. Harry M. Cleaver, 'The Zapatista Effect: The Internet and the Rise of an Alternative Political Fabric,' *Journal of International Affairs*, 51:2, 1998, pp. 621- 640.

5.2 Museums

Christine Sylvester, "Can International Relations and Art/Museums Come Together," in *Art/Museums: International Relations Where We Least Expect it*, New York: Routledge, 2016, pp. 1-24.

https://www.ushmm.org/teach/teaching-materials/holocaust

https://www.partitionmuseum.org/event/remembering-the-jallianwala-bagh-massacre-100-years-later/

5.3 Cinemas

Cynthia Weber, "Culture, Ideology, and the Myth Function in IR Theory," in *International Relations Theory: A Critical Introduction*, London: Routledge, 2013, pp. 1-12.

Cynthia Weber, "Case Study: Modernization and Development theory: is there a clash of civilizations? Movie analysis of East is East," in *International Relations Theory: A Critical Introduction*, London: Routledge, 2013, pp. 173-202.

Additional Readings:

Maria Elena Martinez- Torres, 'Civil Society, the Internet, and the Zapatistas,' *Journal of Social Justice*, 13:3, 2001, pp. 347-355.

Lene Hansen, Rebecca Adler-Nissen and Katrine Emelie Andersen, 'The visual international politics of the European refugee crisis: Tragedy, humanitarianism, borders,' *Cooperation and Conflict*, 56:44, 2021, pp. 367-393.

Mirzoeff, Nicholas, "Global Visual Cultures" in *An Introduction to Visual Culture* 2nd Edition, London: Routledge, 2009, pp. 1-16.

Azmat Rasul and Mudassir Mukhtar, 'Bollywoodization of foreign policy: How film discourse portrays tensions between states' *Journal of Media Critiques,* 1:1, June 2015, pp. 11-27.

Roland Bleiker, *Visual Global Politics*, London and New York: Routledge, 2018, pp.1-29.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-5): Governance: Issues and Challenges

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Governance: Issues and Challenges GE-5	4	3	1	-	Passed Class XII	NIL

Learning Objectives

This paper deals with concepts and different dimensions of governance highlighting the major debates in the contemporary times. There is a need to understand the importance of the concept of governance in the context of a globalising world, environment, administration, development. The essence of governance is explored through the various good governance initiatives introduced in India.

Learning outcomes

On successful completion of the course, the students will be

- acquainted with the changing nature of governance in the era of globalization.
- introduced to the most contemporary ideas of sustainable development and green governance.
- familiarised with a rigorous introduction to the best practices in India on good governance.

SYLLABUS OF GE-5

UNIT – I (10 Hours)

Government and Governance: Concepts

a) Role of State in The Era of Globalisation

b) State, Market and Civil Society

UNIT – II (8 Hours)

Governance and Development

Changing Dimensions of Development Strengthening Democracy through Good Governance

UNIT – III (8 Hours)

Environmental Governance

a) Human-Environment Interaction

b) Green Governance: Sustainable Human Development

UNIT – IV (9 Hours)

Local Governance

a) Democratic Decentralisation

b) People's Participation in Governance

UNIT – V (10 Hours)

Good Governance Initiatives in India: Best Practices

a) Public Service Delivery

b) Electronic Governance

c) Citizens Charter & Right to Information

d) Corporate Social Responsibility

Essential/recommended readings

Government and Governance: Concepts

B. Chakrabarty and M. Bhattacharya (eds.) The Governance Discourse. New Delhi: Oxford University Press,1998

Surendra Munshi and Biju Paul Abraham (eds.), Good Governance, Democratic Societies and Globalisation, Sage Publishers, 2004

United Nation Development Programme, Reconceptualising Governance, New York, 1997

Carlos Santiso, Good Governance and Aid Effectiveness: The World Bank and Conditionality, Johns Hopkins University, The Georgetown Public Policy Review, Volume VII, No.1, 2001

Vasudha Chotray and Gery Stroker, Governance Theory: A Cross Disciplinary Approach, Palgrave Macmillan, 2008

J. Rosenau, 'Governance, Order, and Change in World Politics', in J. Rosenau, and E. Czempiel (eds.) Governance without Government: Order and Change in World Politics, Cambridge: Cambridge University Press, 1992

B. Nayar (ed.), Globalization and Politics in India. Delhi: Oxford University Press, 2007 pp. 218-240.

Smita Mishra Panda, Engendering Governance Institutions: State, Market and Civil Society, Sage Publications, 2008

Neera Chandhoke, State and Civil Society Explorations in Political Theory, Sage Publishers, 1995

सिंह, अभय प्रसाद एवं कृष्ण मुरारी (2018), शासन: मुद्दे एवं चुनौतियाँ, ओरियंट ब्लैकस्वान, नई दिल्ली

चक्रबर्ती, बिद्युत, प्रकाश चंद (2018), वैश्वीकृत दुनिया में लोक प्रशासन, सेज भाषा, नई दिल्ली

सिन्हा, मनोज (2010) प्रशासन एवं लोकनीति, ओरियंट ब्लैकस्वान, नई दिल्ली

Governance and Development

B. C. Smith, Good Governance and Development, Palgrave, 2007

World Bank Report, Governance and Development, 1992

P. Bardhan, 'Epilogue on the Political Economy of Reform in India', in The Political Economy of Development in India. 6th edition, Delhi: Oxford University Press, 2005

J. Dreze and A. Sen, India: Economic Development and Social Opportunity. New Delhi: Oxford University Press, 1995

Niraja Gopal Jayal [ed.], Democracy in India, Oxford University Press, 2007

Environmental Governance

Ramachandra Guha, Environmentalism: A Global History, Longman Publishers, 1999
J.P. Evans, Environmental Governance, Routledge, 2012

Emilio F. Moran, Environmental Social Science: Human - Environment interactions and Sustainability, Wiley-Blackwell, 2010

Burns H Weston and David Bollier, Green Governance: Ecological Survival, Human Rights and the Law of the Commons, Cambridge University Press, 2013

Bina Agarwal, Gender And Green Governance, Oxford University Press, Oxford, 2013

J. Volger, 'Environmental Issues', in J. Baylis, S. Smith and P. Owens (eds.) Globalization of World Politics, New York: Oxford University Press, 2011, pp. 348-362.

A. Heywood, Global Politics, New York: Palgrave, 2011, pp. 383-411.

N. Carter, The Politics of Environment: Ideas, Activism, Policy, Cambridge: Cambridge University Press, 2007, pp. 13-81.

Local Governance

Pranab Bardhan and Dilip Mookherjee, Decentralization and Local Governance in Developing Countries: A Comparative Perspective, MIT Press, 2006

T.R. Raghunandan, Decentralization And Local Governments: The Indian Experience, Readings On The Economy, Polity And Society, Orient Blackswan, 2013

Pardeep Sachdeva, Local Government In India, Pearson Publishers, 2011

P. de Souza (2002) 'Decentralization and Local Government: The Second Wind of Democracy in India', in Z. Hasan, E. Sridharan and R. Sudarshan (eds.) India's Living
Constitution: Ideas, Practices and Controversies, New Delhi: Permanent Black, 2002

Mary John, 'Women in Power? Gender, Caste and Politics of Local Urban Governance', *Economic and Political Weekly*, Vol. 42(39), 2007

Good Governance Initiatives in India: Best Practices

Niraja Gopal Jayal, Democracy and the State: Welfare, Secularism, and Development in Contemporary India, Oxford University Press, 1999

Reetika Khera[ed.], The Battle for Employment Guarantee, Oxford University Press, 2011

Nalini Juneja, Primary Education for All in the City of Mumbai: The Challenge Set By Local Actors', International Institute For Educational Planning, UNESCO: Paris, 2001

Maxine Molyneux and Shahra Razavi, Gender, Justice, Development, and Rights, Oxford University Press, 2002

Jugal Kishore, National Health Programs of India: National Policies and Legislations, Century Publications, 2005

Jean Drèze and Amartya Sen, India, Economic Development and Social Opportunity, Oxford University Press, 1995

K. Lee and Mills, The Economic Of Health In Developing Countries, Oxford University Press, 1983

Marmar Mukhopadhyay and Madhu Parhar (eds.) Education in India: Dynamics of Development, Shipra Publications, 2007

K. Vijaya Kumar, Right to Education Act 2009: Its Implementation as to Social Development in India, Akansha Publishers, 2012

Amartya Sen and Jean Dreze, Omnibus: Poverty and Famines, Hunger and Public Action, India- Economic Development and Social Opportunity, Oxford University Press, 1998

Jean Dreze and Amartya Sen, An Uncertain Glory: India and Its Contradictions, Princeton University Press, 2013

Reetika Khera, 'Rural Poverty and Public Distribution System', Economic and Political Weekly, Vol-XLVIII, No.45-46, Nov 2013

Pradeep Chaturvedi, Women and Food Security: Role Of Panchayats, Concept Publishing House, 2002

Bidyut Mohanty, "Women, Right to Food and Role of Panchayats", Mainstream, Vol. LII, No. 42, October 11, 2014

D. Crowther, Corporate Social Responsibility, Deep and Deep Publishers, 2008

Sanjay K. Agarwal, Corporate Social Responsibility in India, Sage Publishers, 2008

Pushpa Sundar, Business & Community: The Story of Corporate Social Responsibility in India, New Delhi: Sage Publications, 2013.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-6): Western Political Philosophy

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Western Political Philosophy GE-6	4	3	1	-	Class XII	NIL

Learning Objectives

This course familiarizes the students with the manner in which the political questions are posed and answered normatively by select thinkers. The aim is to introduce to the students the questions, ideas and values of political philosophy addressed by political thinkers and juxtapose the same to contemporary political thinking.

Learning outcomes

By the end of the course students would be able to:

- Understand how to read and decode the classics and use them to engage contemporary socio-political issues.
- Connect with historically written texts and their interpretations.
- Clearly present their own arguments and thoughts about contemporary issues and develop ideas to engage with the latter.

SYLLABUS OF GE-6

UNIT – I (15 Hours)

Classical Political Philosophy

a) Plato
b) Aristotle

UNIT – II (30 Hours)

Renaissance and Modern Political Philosophy

a) Machiavelli
b) Hobbes
c) Rousseau
d) Mill
e) Marx

Essential/recommended readings

Unit 1

R. Kraut (1996) 'Introduction to the study of Plato', in R. Kraut (ed.) *The Cambridge Companion to Plato*. Cambridge: Cambridge University Press, pp. 1-50.

D. Boucher and P. Kelly (eds) *Political Thinkers: From Socrates to the Present,* Oxford: Oxford University Press, pp. 62-80

A. Skoble and T. Machan (2007) *Political Philosophy: Essential Selections*. New Delhi: Pearson Education pp. 53-64.

J. Barnes (ed.), *The Cambridge Companion to Aristotle*. Cambridge: Cambridge University Press.

Q. Skinner (2000) *Machiavelli: A Very Short Introduction*, Oxford: Oxford University Press, pp. 23-53

Unit 2

C. Macpherson (1962) *The Political Theory of Possessive Individualism: Hobbes to Locke*. Oxford University Press.

D. Boucher and P. Kelly (eds) *Political Thinkers: From Socrates to the Present.* Oxford: Oxford University Press, pp. 207-224

J. Coleman (2000) 'Introduction', in *A History of Political Thought: From Ancient Greece to Early Christianity,* Oxford: Blackwell Publishers.

I. Hampsher-Monk (2001) *A History of Modern Political Thought: Major Political Thinkers from Hobbes to Marx,* Oxford: Blackwell Publishers.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-7): Politics of Globalisation

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Politics of Globalisation GE-7	4	3	1	-	Passed Class XII	NIL

Learning Objectives

This course examines the paradoxes of contemporary globalisation. It has been crafted in a manner as to introduce to the students from diverse disciplinary backgrounds the complex multifaceted nature of the contemporary phenomenon of globalization. Students will learn about the evolution of globalization by examining whether globalization is a mere historical process, or, it is also a socio-cultural, politico-economic and, psychological phenomenon and, understand these through different conceptual frames. It then makes the students understand the debates that have been put forth for and against globalization. The course introduces the discourse regarding the Eurocentric formulations of globalization and the ways in which the non-European voices have historically been marginalized in the shaping of Western modernity. Students will also learn about the political, economic and cultural facets of globalization. As a political phenomenon, the course seeks to understand as to how globalization has impacted upon the functioning of the sovereignty of nation-states. In the realm of economy, it introduces the impact of time/space compression upon the macroeconomic structures of trade and finance as well as the structural transformation that information and communications technology has brought in the working of the global political economy. As a cultural phenomenon, the course also discusses the new global mobilizations in the form of global social movements, movements of people across borders and the political and economic impact of global epidemics.

Learning outcomes

Upon successful completion of this course, students will have the knowledge and skills to:

- Understand the nature, significance, and principal debates in the literature on globalisation and the concept of globalization as both a historical process and, a socio-cultural phenomenon.
- Study various approaches which will augment student's knowledge on international political economy.
- Demonstrate basic knowledge of the interconnectedness of global issues, processes, and dynamics.
- Develop insight into the alternative understanding of globalisation and various critical aspects related to it like who are the beneficiaries in this process.
- Understand diverse global challenges like global migration and epidemics.
- Learn the ways in which globalization holds promise for a better world and a developed world and, at the same time, understand how it is laden with deep-seated tendencies to engender strands of inequalities and spur erosion of local cultures.

SYLLABUS OF GE-7

UNIT – I (9 Hours)
Conceptualizing Globalisation

1.1 Is Globalisation New? Historical Perspectives
1.2 Approaches to Understand globalisation
1.3 The Globalisation Debate

UNIT – II (9 Hours)
Globalization: A Eurocentric Project?

2.1 The Question of Post-Coloniality
2.2 Making Sense of Globalization for the People at the Margins

UNIT – III (9 Hours)
Sovereign State in a Globalised World

3.1 Political Dimensions
3.2 Shift from State to Market?

UNIT – IV (9 Hours)
Role of International Institutions: Multi-dimensionality of Globalisation

4.1 World Bank, International Monetary Fund, World Trade Organisation and, G-20
4.2 The Globalisation of Trade
4.3 Global Epidemics and Working of World Health Organization

UNIT – V (9 Hours)
Responses and Resistances to Globalization

5.1 Global Social Movements
5.2 International Migration

Essential/recommended readings

Unit 1. Conceptualizing Globalisation

Essential Readings

1.1 Is Globalisation New? Historical Perspectives

Hirst, Paul and Thompson, G. "*Globalisation in Question*" (Third Edition), UK: Polity Press, 2009, pp. 25-52.

Ritzer, George and Paul D. Paul, *Globalization: A Basic Text* (Second Edition), UK: Wiley Blackwell, 2015, pp. 14-53.

1.2 Approaches to Understand Globalisation

Held, D and et. al. "Rethinking Globalisation" in Held, David and Anthony McGrew (eds.) *The Global Transformations Reader: An Introduction to the Globalisation Debate,*(Second Edition). Cambridge: Polity Press, Blackwell Publishing, 2003, pp. 60-67.

Ritzer, G and Dean, P. *Globalisation: The Essentials,* UK: Wiley-Blackwell*,* 2019, pp. 55-92.

1.3 The Globalisation Debate

Bishop, Matthew Louis & Anthony, "The political economies of different Globalizations: Theorising Reglobalization", *Globalizations,* Vol. 18, June 2020, pp. 1- 21.

Keohane, Robert O. and Nye Jr, Joseph S., "What's New? What's Not? (And So What?), in Held, D and McGrew, A (ed.), *The Global Transformations Reader: An Introduction to the Globalisation Debate (*2nd edition). Cambridge: Polity Press, Blackwell Publishing, 2003, pp. 75-84.

Additional Readings

Held, David and Anthony McGrew (eds.) *The Global Transformations Reader: An Introduction to the Globalisation Debate (*Second Edition). Cambridge: Polity Press, Blackwell Publishing, 2000, pp 1-42.

Bhagwati, J. "*In Defence of Globalisation",* UK: Oxford University Press, 2007, pp. 3-36, 199-220.

Dwivedi, Sangit S., "Localisation vs Globalisation: A Conscious Vision of India" in Tyagi, R., S. Mangla and Giri (eds.), *Glocalization and Federal Governance in India,* Bloomsbury. 2019, pp. 141-154.

Michie, Jonathan. (eds.), "Globalisation in Questions?", *Handbook of Globalisation*, UK, Edward Elgar, 2003, pp: 17-79.

Mcgrew, A. "Globalisation and Global Politics" in Baylis J., Smith and Owens (eds.), *The Globalisation of World Politics: An Introduction to International Relations,* New York: Oxford University Press. 2017, pp. 15-31.

Unit 2. Globalization: A Eurocentric Project?

Essential Readings

2.1 The Question of Post-Coloniality

Chatterjee, P. *Our Modernity (*SEPHIS) and (CODESRIA), Rotterdam/Dakar. 1997 pp. 3-20.

Sanjeev Kumar H.M., "Contesting Modernity: Crisis of Democratization in South Asia," *India Quarterly*, LXIV (4), October-December 2008, pp. 124-155.

2.2 Making Sense of Globalization for the People at the Margins

Vandana Shiva, "Ecological Balance in an Era of Globalisation," in Frank J. Lechner and John Boli (eds.), *The Globalization Reader*, Oxford: Blackwell, 2004: pp. 422-429.

Kirsten Foot, "Actors and Activities in the Anti-Human Trafficking Movement," in Jorge Heine and Ramesh Thakur (eds)., *The Dark Side of Globalization*, Tokyo: UN University Press, 2011, pp. 249-265.

Additional Readings

Sen, A. "Introduction" and "The Perspective of Freedom" *Development as freedom* (2nd ed.). New York: Oxford University Press. 2001 pp.1- 34.

Hirst, P. and Thompson, G. "The Future of Globalization", *Cooperation and Conflict,* Vol. 37, No. 3, Special Issue on Globalization, *Cooperation and Conflict*, September 2002, pp. 247-265.

Appadurai, Arjun. *Modernity at Large: Cultural Dimensions of Globalisation.* Minneapolis: University of Minnesota Press, 1996, pp. 66-88.

Ashcroft, Bill, Gareth Griffiths, and Helen Tiffins, eds. *The Empire Writes Back: Theory and Practice in Post-Colonial Literature.* London: Routledge, 1989, pp.1-32; 193-220.

Gustava Esteva and Madhu Suri Prakash, "From Global to Local: Beyond Neo-liberalism to International Hope," in Frank J. Lechner and John Boli (eds.), *The Globalization Reader*, Oxford: Blackwell, 2004: pp. 410-416.

Research Foundation for Science, Technology and Diversity, "Jaiv Panchayat: Biodiversity Protection at the Village Level," in Robin Broad (ed.), *Global Backlash: Citizen Initiatives for a Just World Economy,* Boulder: Rowman and Littlefield, 2002, pp. 269-272.

Unit 3. Sovereign State in a Globalised World

Essential Readings

3.1 Political Dimensions

Bull, Hedley. "Beyond the state system?" in Held, David and Anthony McGrew (eds.) *The Global Transformations Reader: An Introduction to the Globalisation Debate (*Second Edition). Cambridge: Polity Press, Blackwell Publishing, 2000, pp 577-582.

Elizabeth, A. and Ozioko, M. V, *Effect of Globalisation on Sovereignty of States,* UN Document, 2000, pp. 256-270.

3.2 Shift from State to Market?

Susan Strange, "The Declining Authority of States," in in Frank J. Lechner and John Boli (eds.), *The Globalization Reader*, Oxford: Blackwell, 2004: pp. 219-224.

Jessica T. Mathews, "Power Shift," in David Held and Anthony McGrew (eds.), *The Global Transformations Reader: An Introduction to the Globalisation Debate* (Second Edition). Cambridge: Polity Press, Blackwell Publishing, 2003, pp. 204-212.

Unit 4. Role of International Institutions: Multi-dimensionality of Globalisation

Essential Readings

4.1 World Bank, International Monetary Fund, World Trade Organisation and, G-20

Coffey Peter, Riley, Robert, *Reform of the International Institutions - The IMF, World Bank and the WTO*, Part-2, Edward Elgar Publishing, 2006, pp. 12-84.

Dash, P., Shaw, Khandelwal, "Evolution of G20 Process: From Crisis Management to Development Cooperation", *G 20 Digest,* pp. 5-12. Available at: https://www.g20-insights.org/wp-content/uploads/2020/01/Dash_Shaw_Khandelwal_Evolution_G20.pdf

4.2 The Globalisation of Trade

Woods, N. "International Political Economy in an Age of Globalisation", and Watson, M. "Global Trade and Global Finance", in Baylis J., Smith and Owens (eds.) *The Globalisation of World Politics: An Introduction to International Relations,* New York: Oxford University Press. 2017, pp. 243-257, 417-428.

4.3. Global Epidemics and Working of World Health Organization

Editors, CFR. "What does the World Health Organisation do?" *Council on Foreign Relations*, 29 Jan. 2021, New York: 1-14. https://www.cfr.org/backgrounder/what-does-world-health-organization-do

Lee, Kelley and Julliane Piper, "The WHO and Covid-19 Pandemic", *Global Governance and Review of Multilateral Organizations*, 2020. https://brill.com/view/journals/gg/gg-overview.xml

Additional Readings

Stiglitz, J. "The Promise of Global Institutions"*, Globalisation and its Discontents,* New York: Norton, 2002, pp. 3–22.

Cypher, J. and Dietz, J. “The International Monetary Fund, the World Bank and Foreign Aid”, *The Process of Economic Development.* New York: Routledge, 2009, pp. 555-591.

Oatley, Thomas, “Trade and Development: Import Substitution Industrialization”, *International Political Economy: Interests and Institutions in the Global Economy,* 2011. 5th ed, pp. 111-132.

Hoekman, B. and Kostecki, M, “The Trading System in Perspective”, *The Political Economy of the World Trading System: From GATT to WTO,* 3rd Ed, 2009, New York: OUP, pp. 7-57.

Friedman, T., *Lexus and the Olive Tree: Understanding Globalization,* 2000, New York: Anchor, pp. 101-142.

Gilpin, Robert, *The Challenge of Global Capitalism: The World Economy in the 21st Century,* USA: Princeton University Press, 2000, pp. 15-52, 293–324.

Charles, Clift. *The Role of the World Health Organisation in the International System*. London: Chatham House, 2013: 1-51.

Lorena, Barberia et.al. “The Political Science of Covid-19: An Introduction”, *Social Science Quarterly,* 2021. pp. 2045-2054.

Lebni Javed Y. and Abbas Jaffar et al., “How the COVID-19 pandemic affected economic, social, political, and cultural factors: A lesson from Iran”, *Journal of Social Psychiatry,* 2021, 63 (7). pp: 298-300

Unit 5. Responses and Resistances to Globalization

Essential Readings

5.1 Global Social Movements

Donatella della Porta, et al, “The Study of Social Movements: Recurring Questions” and “Social Movements and Democracy”, *Social Movements in a Globalising World,* UK: Macmillan, 1999, pp. 3-23; 223-248.

5.2 International Migration

Keeley, B. “International Migration: The Human Face of Globalisation”, OECD, 2009, pp: 9-40

Inglis Christine et al (edited), “Introduction,” in *The Handbook of International Migration,* New Delhi: Sage Publication, 2020, pp. 1-17

Additional Readings

Khagram, Sanjeev et al (ed.) “Women’s Rights are Human Rights”, and “Globalisation, Global Alliances, and the Narmada Movement”, *Restructuring World Politics: Transnational Social Movements: Social Movements, Protest, and Contention, Volume 14,* MN: University of Minnesota Press. 2002. pp. 96-122; pp. 231-244

Berger, S., “Globalisation and Politics”, *Annual Review of Political Science,* 2000, vol- 3, pp. 43-62.

Schaeffer, Robert K. *Social Movement and Global Social Change: The Rising Tide*, UK: Rowman & Littlefield, 2014, pp. 1-18.

Tarrow, S. “The Global in the Local: Global Framing”, *The New Transnational Activism,* New York: Cambridge University Press, 2005, pp 35-59.

Suggestive readings

Gottlieb, G. “*Nation against State: New Approach to Ethnic Conflicts and The Decline of Sovereignty*”, New York: Council on Foreign Press, 1993, pp: 6-47

Smith, G. and Naim, M. *Altered States: Globalization, Sovereignty and Governance,* IDRC, 2000. pp. 5-20.

Hardt, M. and Negri, A., “Passages of Sovereignty”, Empire, England: Harvard University Press, 2000 pp. 67-183.

Stiglitz, J. E., *Globalization and Its Discontents Revisited: Anti-Globalization in the Era of Trump,* New York: W.W. Norton & Company, 2018. pp. 89-132

कोर्स से सम्बन्धित हिंदी माध्यम की पुस्तकें

दुबे, अभय कुमार (संपादक),*भारत का भूमंडलीकरण, लोक चिंतन ग्रंथमाला*, नई दिल्ली: वाणी प्रकाशन, २००३

पंत, पुष्पेश, *भूमंडलीकरण एवं भारत*, नई दिल्ली: एक्सेसपब्लिशिंग, २०१६

खन्ना, वीएन, *अंतराष्ट्रीय सम्बन्ध*, नॉएडा (उप्र): विकास पब्लिशिंग हाउस, २०२०

चक्रवर्ती, बिद्युत एवं प्रकाश चंद कंडपाल, *वैश्वीकृत दुनिया में लोक प्रशासन: सिद्धांत और पद्धतियां*, २०१८

भार्गव, नरेश, *वैश्वीकरण: समाज शात्रीय परिप्रेक्ष्य,* २०१४

पांडेय, ब्रज कुमार , भूमंडलीकरण की समझ , महावीर प्रकाशन दिल्ली

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-8): Introduction to Public Policy

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Introduction to Public Policy GE-8	4	3	1	-	Passed Class XII	NIL

Learning Objectives

The paper seeks to provide an understanding to the concept of Public Policy. Public Policy is a proposed course of action of a government to realize its socio-economic objectives. The essence of public policy lies in its effectiveness in translating the governing philosophy into programmes and policies and making it a part of community living. This course will help to understand the complexities of public policy and its interaction with the socio-economic structure.

Learning outcomes

By the end of this course a student will acquire the following knowledge and skills.

a. Contextualization of knowledge;
b. Praxis and technique;
c. Critical Thinking;
d. Research and Communication

SYLLABUS OF GE-8

UNIT – I (10 Hours)

Public Policy

(a) Concept, Characteristics and Significance

(b) Determinants of Public Policy
(c) Policy Impact: Socio-Economic

UNIT – II (10 Hours)
Theoretical Approaches to Public Policy

(a) Elite Theory
(b) Group Theory
(c) Incremental Theory
(d) Rational Choice Theory

UNIT – III (10 Hours)
Process of Public Policy

(a) Policy Formulation
(b) Policy Implementation
(c) Policy Evaluation

UNIT – IV (15 Hours)
Public Policy: Case Studies

(a) Education – National Education Policy (NEP) 2020
(b) Health – National Health Mission (NHM)
(c) Employment – Mahatma Gandhi National Rural Employment Guarantee Act (MNREGA)
(d) Economic Empowerment – Pradhan Mantri Jan-Dhan Yogana (PMJDY), Direct Benefit Transfer (DBT)

Essential/recommended readings

Unit 1

Anderson, J. (1975) Public Policy making. New York: Thomas Nelson and Sons Ltd.

Dye, T. (2002) Understanding Public Policy. New Delhi: Pearson.

Unit 2

Henry, Nicholos (2019) Public Administration and Public Affairs. New York: Routledge.

Simon, Herbert A. (1997) Administrative Behavior. New York: MacMillan.

Unit 3

Sapru, R.K. (1996) Public Policy: Formulation, Implementation and Evaluation. New Delhi: Sterling.

Self, Peter (1972) Administrative Theories and Politics. London: Allen and Unwin.

Unit 4

National Education Policy (NEP) 2020, Ministry of Human Resource Development, Government of India.

National Health Mission, Ministry of Health, Government of India.

Mahatma Gandhi National Rural Employment Guarantee Act-2005, Ministry of Rural Development, Government of India.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

GENERIC ELECTIVES (GE-9): Women and Politics in India: Concepts and Debates

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Women and Politics in India: Concepts and Debates GE-9	4	3	1	-	Passed Class XII	NIL

Learning Objectives

The course attempts to bring together feminist theory and praxis by focussing on conceptual categories theorized by feminism and the mobilization of the feminist epistemology to focus on key concerns surrounding the everyday existence of women. This course would serve as the fundament introduction to the history of women's movement with particular emphasis on the women's movement in India. The course opens up the question of women's agency, taking it beyond the question of women empowerment and locates women as radical social agents. It attempts to question the complicity of social structures and relations in preserving gender inequality. This is extended to cover new forms of precarious work and labour under the new economy.

Learning outcomes

After completing this course, the students will be able to:

- Understand the concept of patriarchy, feminism, gender, etc.
- Understand the intersection between family, community and state in feminist debates
- Demonstrate awareness of the history of the women's movement in India
- Show familiarity with and awareness of the key issues taken up by the women's movement

SYLLABUS OF GE-9

UNIT – I (8 Hours)
Patriarchy and Feminism

a. Sex-Gender Debates
b. Public and Private Dichotomy
c. Power

UNIT – II (7 Hours)
Family and Community

UNIT – III (7 Hours)

Law, State and Women

UNIT – IV (8 Hours)
History of the Women's Movement in India

UNIT – V (7 Hours)
Violence against women

UNIT – VI (8 Hours)
Women and Labour: Unpaid labour, Reproductive and care work, Sex work

Essential/recommended readings

Patriarchy and Feminism

N. Menon (2008) 'Gender', in R. Bhargava and A. Acharya (eds), *Political Theory: An Introduction,* Delhi: Pearson

V Geetha (2002) *Gender,* Kolkata, Stree, pp. 1-20.

M. Kosambi (2007) *Crossing the Threshold,* New Delhi, Permanent Black, pp. 3-10; 40-46**.**

N. Menon (2008) 'Power', in R. Bhargava and A. Acharya (eds), *Political Theory: An Introduction,* Delhi: Pearson*,* pp.148-157

B. Hooks (2010) 'Feminism: A Movement to End Sexism', in C. McCann and S. Kim (eds), *The Feminist Reader: Local and Global Perspectives,* New York: Routledge, pp. 51-57.

R. Delmar (2005) 'What is Feminism?', in W. Kolmar & F. Bartkowski (eds) *Feminist Theory:A Reader,* pp. 27-37

N. Menon (2015), Is Feminism about 'Women'? A Critical View on Intersectionality from India, *International Viewpoint*, http://www.internationalviewpoint.org/IMG/article_PDF/article_a4038.pdf.

T. Shinde (1993) 'Stree Purusha Tulna', in K. Lalitha and Susie Tharu (eds), *Women Writing in India,* New Delhi, Oxford University Press, pp. 221-234

U. Chakravarti (2001) 'Pitrasatta Par ek Note', in S. Arya, N. Menon & J. Lokneeta (eds.) *Naarivaadi Rajneeti: Sangharsh evam Muddey,* University of Delhi: Hindi Medium Implementation Board, pp.1-7

Family and Community

R. Palriwala (2008) 'Economics and Patriliny: Consumption and Authority within the Household' in M. John. (ed) *Women's Studies in India,* New Delhi: Penguin, pp. 414-423

Saheli Women's Centre (2007) *Talking Marriage, Caste and Community: Women's Voices from Within,* New Delhi: monograph 114

U. Chakravarti (2003) *Gendering Caste through a Feminist Lens,* Kolkata, Stree, pp. 139- 159.

S. Rege (2005), A Dalit Feminist Standpoint, in Gender and Caste, in Anupama Rao (ed) *Gender and Caste*, Zed Books, pp. 90-101

Kumkum Sangari (1995) Politics of Diversity: Religious Communities and Multiple Patriarchies,*Economic and Political Weekly*, Vol. 30, No. 52,, pp. 3381-3389

Law, State and Women

C. MacKinnon, 'The Liberal State' from *Towards a Feminist Theory of State,* Available at http://fair-use.org/catharine-mackinnon/toward-a-feminist-theory-of-the-state/chapter-8

R. Kapur & B. Cossman (1999) ‘On Women, Equality and the Constitution: Through the Looking Glass of Feminism’ in Nivedita Menon (ed) *Gender and Politics in India*, Oxford University Press

C MacKinnon (2006) ‘Sex Equality under the Constitution of India: Problems, Prospects and Personal Laws’, *International Journal of Constitutional Law*, Volume 4, Issue 2, 181–202.

Ved Kumari (1999) ‘Gender Analyses of Indian Penal Code’ in Amita Dhanda, Archana Parashar(eds) *Engendering Law - Essays in Honour of Lotika Sarkar*, Eastern Book Company, 139-160

History of the Women’s Movement in India

Radha Kumar (1993), The History of Doing: An Illustrated Account of Movements for Women’s Rights and Feminism in India, 1800-1990, Zubaan

Anupama Roy (2010) Women's Movement in N.G. Jayal and P.B. Mehta (Ed.) *Oxford Companion to Indian Politics*, New Delhi, Oxford

I. Agnihotri and V. Mazumdar (1997) ‘Changing the Terms of Political Discourse: Women’s Movement in India, 1970s-1990s’, *Economic and Political Weekly*, 30 (29), pp. 1869-1878.

R. Kapur (2012) ‘Hecklers to Power? The Waning of Liberal Rights and Challenges to Feminism in India’, in A. Loomba *South Asian Feminisms,* Durham and London: Duke University Press, pp. 333-355

Violence against women

N. Menon (2004) ‘Sexual Violence: Escaping the Body’, in *Recovering Subversion,* New Delhi: Permanent Black, pp. 106-165

F. Agnes (1992), Protecting Women Against Violence – Review of a Decade of Legislation 1980-89, *Economic and Political Weekly*, Vol. 27, Issue No. 17, Apr. 25.

Sunita V S Bandewar, Amita Pitre & Lakshmi Lingam (2018) Five Years Post Nirbhaya: Critical Insights into the Status of Response to Sexual Assault, *in Indian Journal Of Medical Ethics*, available at https://pubmed.ncbi.nlm.nih.gov/29650498/

A. Verma, H. Qureshi & J.Y. Kim (2017) Exploring the trend of violence against women in India, *International Journal of Comparative and Applied Criminal Justice*, 41:1-2, 3-18

Women and Labour

P Swaminathan (2014) Outside the Realm of Protective Legislation: The Saga of Unpaid Work in India, in *Women and Law: Critical Feminist Perspective*: New Delhi: Sage, pp. 115-143

P. Swaminathan (2012) ‘Introduction’, in *Women and Work,* Hyderabad: Orient Blackswan, pp.1-17

J. Tronto (1996) ‘Care as a Political Concept’, in N. Hirschmann and C. Stephano, *Revisioning the Political*, Boulder: Westview Press, pp. 139-156.

Darbar Mahila Samanwaya Committee, Kolkata (2011) ‘Why the so-called Immoral Traffic (Preventive) Act of India Should be Repealed’, in P. Kotiswaran, *Sex Work,* New Delhi, Women Unlimited, pp. 259-262

N. Jameela (2011) ‘Autobiography of a Sex Worker’, in P. Kotiswaran, *Sex Work,* New Delhi: Women Unlimited, pp. 225-241

Suggestive readings

K. Millet (1968) *Sexual Politics,* http://www.marxists.org/subject/women/authors/millett-kate/sexualpolitics.htm

S. de Beauvoir (1997) *Second Sex,* London: Vintage.

F. Engles, *Family, Private Property and State*, http://readingfromtheleft.com/PDF/EngelsOrigin.pdf

S. Brownmiller (1975) *Against our Wills,* New York: Ballantine.

R. Hussain (1988) 'Sultana's Dream', in *Sultana's Dream and Selections from the Secluded Ones – translated by Roushan Jahan,* New York: The Feminist Press.

S. Ray 'Understanding Patriarchy', http://www.du.ac.in/fileadmin/DU/Academics/course_material/hrge_06.pdf,

C. Zetkin, 'Proletarian Woman', http://www.marxists.org/archive/zetkin/1896/10/women.htm

J. Ghosh (2009) *Never Done and Poorly Paid: Women's Work in Globalising India,* Delhi: Women Unlimited

Justice Verma Committee Report, http://nlrd.org/womensrightsinitiative/justiceverma-committee-report-download-full-report

N. Gandhi and N. Shah (1992) *Issues at Stake – Theory and Practice in the Women's Movement,* New Delhi: Kali for Women.

V. Bryson (1992) *Feminist Political Theory,* London*:* Palgrave-MacMillan, pp. 175-180; 196-200

M. Mies (1986) 'Colonisation and Housewifisation', in *Patriarchy and Accumulation on a World Scale* London: Zed, pp. 74-111, http://caringlabor.wordpress.com/2010/12/29/maria-mies-colonizationand-housewifization/

R. Ghadially (2007) *Urban Women in Contemporary India,* Delhi: Sage Publications.

Saheli Women's Centre (2001) 'Reproductive Health and Women's Rights, Sex Selection and feminist response' in S Arya, N. Menon, J. Lokneeta (eds), *NariwadiRajneeti,* Delhi, pp. 284-306

V. Bryson (2007) *Gender and the Politics of Time,* Bristol: Polity Press

Readings in Hindi:

D. Mehrotra (2001) *Bhartiya Mahila Andolan: Kal, Aaj aur Kal,* Delhi: Books for Change

G. Joshi (2004) *Bharat Mein Stree Asmaanta: Ek Vimarsh,* University of Delhi: Hindi Medium Implementation Board

N. Menon (2008) 'Power', in R. Bhargava and A. Acharya (eds) *Political Theory: An Introduction*, New Delhi: Pearson

N. Menon (2008) 'Gender', in R. Bhargava and A. Acharya (eds) *Political Theory: An Introduction,* New Delhi, Pearson

R. Upadhyay and S. Upadhyay (eds.) (2004) *Aajka Stree Andolan,* Delhi: Shabd Sandhan.

मेनन, निवेदिता, साधना आर्या और जिनी लोकनीता (ed.) नारीवादी राजनीति: संघर्ष एवं मुद्दे, दिल्ली: हिंदी माध्यम कार्यन्वय निदेशालय,2001.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-10): Digital Social Sciences

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Digital Social Sciences GE-10	4	3	1	-	Passed Class XII	NIL

Learning Objectives

Digital technology in the discipline of Social Science cannot be viewed only as a tool for research but as something that transforms the nature of Social Science and the object of its study- the society- in course of researching about it. This very aspect of digital technology and its capacity for social transformation is the mainstay of the emerging field of Digital Social Sciences. The course aims to introduce students to this field of Digital Social Science sby primarily focussing on two intertwined aspects of the field- first, impact of digital technologies on the society and two, the role of digital technologies in the study of Social Sciences or the study of society. The intertwined aspect of the twin focus can be alternately formulated as the attempt of the course to understand social change taking place under the impact of digital technology while digital technology providing with the tools to map out these changes. The course begins with a basic introduction to digital literacy and its contribution to pedagogic Social Science and proceeds by way of foundational introduction to prominent technologies and digital spaces through which the aspects of the social can be understood. The course throws light on how the digital turn has redefined the contours of debates surrounding personal identity and social identification through biometrical techniques having consequences both for social welfare and social surveillance; whether access to the digital spaces is impacting social cleavages, creating space for democracy or re-entrenching social inequality through the digital divide; is the digital economy offering new forms of employment or restructuring the vulnerability of the forms of labour; and how is algorithm driven digital space reformulating social choice and social classification. These are some of the illustrative questions through which the course intends to reflect upon the evolving relationship between digital technologies and social sciences.

Learning outcomes

On successful completion of the course, the students would demonstrate:

- An understanding of digital technology and the ways in which it shapes the society.
- An understanding into how digital tools are used as research and pedagogic devises to map out social changes
- Clarity on concepts of the digital world such as Big Data, Artificial Intelligence, Algorithm, etc.
- Familiarity with digital techniques such as the biometrics and digital spaces such as the Social Media in the sphere of communication or the Gig Economy in the market sphere

SYLLABUS OF GE-10

UNIT – I (6 Hours)
Digital Literacy in Social Sciences

UNIT – II (7 Hours)
Digital Information and Science of Society

UNIT – III (6 Hours)
Biometrics and identification

UNIT – IV (7 Hours)
Access to Technology and the Internet

UNIT – V (7 Hours)
Social Media and Public Sphere

UNIT – VI (6 Hours)
Labour in Digital Economy

UNIT – VII (6 Hours)
Artificial Intelligence and Algorithm

Essential/recommended readings

1. Digital Literacy in Social Sciences

Polizzi, Gianfranco, 'Information literacy in the digital age: why critical digital literacy matters for democracy.' In: Goldstein, Stéphane (ed.) *Informed societies: why information literacy matters for citizenship, participation and democracy*. Facet Publishing, London, UK (2020), 1-23.

Robert Todd Perdue & Joshua Sbicca (2013) "Public Access: For Socially Relevant. Knowledge Production and a Democratic Cybersphere", Fast Capitalism, Volume 10, Issue 1, 2013

2. Digital Information, Data and Society

Buckland, Michael. *Information and Society*. United Kingdom: MIT Press, 2017. (Chapter 1 and 2)

Sandeep Mertia (edited), Lives of Data: Essays on Computational Cultures from India. Netherlands: Institute of Network Cultures, 2020. (Introduction), pp. 9-25.

Holmes, Dawn E.. *Big Data: A Very Short Introduction*. United Kingdom: Oxford University Press, 2017.

Sinha, Amber (2019). "The Politics of India's Data Protection Ecosystem," *Economic and Political Weekly.* Vol. 54, Issue No. 49, 14 Dec, 2019.

3. Biometrics and identification

Fairhurst, Michael. *Biometrics: A Very Short Introduction*. United Kingdom: OUP Oxford, 2018.

Nayar, Pramod K., 'I Sing the Body Biometric': Surveillance and Biological Citizenship,' *Economic and Political Weekly*, Vol. 47, No. 32 (August 11, 2012)

Singh, P. 'Aadhaar: Platform over Troubled Waters.' In: Athique, A., Parthasarathi, V. (eds) *Platform Capitalism in India. Global Transformations in Media and Communication Research*, Palgrave Macmillan, 2020.

4. Access to Technology and the Internet

Agrawal, Ravi. 2018. *India Connected: How the Smartphone is Transforming the World's Largest Democracy*. New Delhi: Oxford University Press.

Jeffrey, Robin and AssaDoron. 2013. *Cell Phone Nation: How Mobile Phones Have Revolutionized Business, Politics and Ordinary Life in India*. Hachette India.

Narayanan Shalini and SunetraSen Narayan, *India Connected: Mapping the Impact of New Media*. India: SAGE Publications, 2016.

Venkatraman, Shriram. *Social Media in South India*. United Kingdom: UCL Press, 2017. (Chapter 6: *The Wider World: Social Media and Education in a Knowledge Economy*)

5. Social Mediaand Public Sphere

Sunstein, Cass R. *#Republic: Divided Democracy in the Age of Social Media*. United Kingdom: Princeton University Press, 2018.

Castells, Manuel. *Networks of Outrage and Hope: Social Movements in the Internet Age*. Germany: Polity Press, 2015. (Chapter 1)

Sinha, Amber. *The Networked Public: How Social Media Changed Democracy*. New Delhi: Rupa, 2019.

Philipose, Pamela. *Media's Shifting Terrain: Five Years that Transformed the Way India Communicates*. India: Orient BlackSwan, 2019.

Biju. P. R., *Political Internet: State and Politics in the Age of Social Media*. Taylor & Francis, 2016.

Rodrigues, U. (2020). Political Communication on Social Media Platforms. In: Athique, A., Parthasarathi, V. (eds) Platform Capitalism in India. Global Transformations in Media and Communication Research, Palgrave Macmillan, 2020.

6. Labour in Digital Economy

Chander, Anupam. *The Electronic Silk Road: How the Web Binds the World Together in Commerce*. United Kingdom: Yale University Press, 2013.

Dolber, Brian, ChenjeraiKumanyika, Michelle Rodino-Colocino, Todd Wolfson (edited*), The Gig Economy: Workers and Media in the Age of Convergence*. United Kingdom: Taylor & Francis, 2021. (Chapter 1 and 3)

Verma, Ravinder Kumar, P. Vigneswarallavarasan, and Arpan Kumar Kar, 'Inequalities in Ride-Hailing Platforms.' In: Athique, A., Parthasarathi, V. (eds) Platform Capitalism in India. Global Transformations in Media and Communication Research, Palgrave Macmillan, 2020.

7. **Artificial Intelligence and Algorithms**

Boden, Margaret A. *Artificial Intelligence: A Very Short Introduction*. London: Oxford University Press, 2018.

Frey, Carl Benedikt. *The Technology Trap: Capital, Labor, and Power in the Age of Automation*. United Kingdom: Princeton University Press, 2020. (Chapter 12: Artificial Intelligence)

Eubanks, Virginia. *Automating Inequality: How High-Tech Tools Profile, Police and Punish the Poor*. St Martin's Press. (2018) (Introduction: Red Flags)

Cheney-Lippold, J. *We Are Data: Algorithms and the Making of Our Digital Selves*. United States: NYU Press. (2017). (Introduction)

Pasquale, Frank. *The Black Box Society: The Secret Algorithms That Control Money and Information*. United States: Harvard University Press, 2015. (Introduction)

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

POLITICAL SCIENCE- SEMESTER-V

Category I

(B.A. Honours in Political Science in three years)

STRUCTURE OF FIFTH SEMESTER

DISCIPLINE SPECIFIC CORE COURSE – 13: Western Political Philosophy - I

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Western Political Philosophy - I DSC-13	4	3	1	-	Passed Class XII	NIL

Learning Objectives

This course goes back to Greek antiquity and familiarizes the students with the manner in which the political questions were first posed and answered normatively. The aim is to introduce to the students the questions, ideas and values of political philosophy addressed by political thinkers and juxtapose the same to contemporary political thinking. The course aims to provide a critical grasp of the philosophical issues at the heart of politics.

Learning outcomes

By the end of the course students would be able to:

- Understand how to read and decode the classics and use them to engage contemporary socio-political issues.
- Connect with historically written texts and their interpretations.
- Clearly present their own arguments and thoughts about contemporary issues and develop ideas to engage with the latter.

SYLLABUS OF DSC-13

UNIT – I (8 Hours)
Text and Interpretation

UNIT – II (14 Hours)
Antiquity

Plato

Philosophy and Politics, Virtues, Justice, Philosopher King/Queen, Communism, Plato on Democracy, Women and Guardianship, Philosophic Education and Good

Aristotle

Man as zoon politikon, State and Household, Citizenship, Justice, Virtue, Regimes

UNIT – III (8 Hours)

Interlude:

Machiavelli

Vice and Virtue, Power, Political ethics, Religion and morality, Republicanism, statecraft

UNIT – IV (15 Hours)

Possessive Individualism

Hobbes

Human nature, State of Nature, Social Contract and the role of consent, State and sovereignty

Locke

Laws of Nature, Natural Rights, Consent, Justification of Property, Right to Resist, Toleration

Essential/recommended readings

1. Text and Interpretation

T. Ball (2004) 'History and Interpretation' in C. Kukathas and G. Gaus (eds.) *Handbook of Political Theory*, London: Sage Publications Ltd. pp. 18-30.

Rawls, J. *Lectures on the History of Political Philosophy*, Harvard University Press, London, Introduction: 1-20.

Q. Skinner (2002) '*Vision of Politics'* Volume I, Meaning and understanding in the history of Ideas, Cambridge: Cambridge University Press, pp57-89

2. Antiquity

Plato, *Republic*, Chapters, trans. G.M.A Grube, revised by C.D.C. Reeve. Indianapolis: Hackett, 1992

Plato, https://plato.stanford.edu/entries/plato/, Sanford Encyclopaedia of Philosophy

A. Skoble and T. Machan (2007) *Political Philosophy: Essential Selections*. New Delhi: Pearson Education, pp. 9-32.

R. Kraut (1996) 'Introduction to the study of Plato', in R. Kraut (ed.) *The Cambridge Companion to Plato*. Cambridge: Cambridge University Press, pp. 1-50.

C. Reeve (2009) 'Plato', in D. Boucher and P. Kelly (eds) *Political Thinkers: From Socrates to the Present,* Oxford: Oxford University Press, pp. 62-80

Aristotle, *Politics*, Chapters, trans. C.D.C. Reeve (called "Politics") Indianapolis: Hackett,1998

Aristotle, https://plato.stanford.edu/entries/aristotle-politics/, Stanford Encyclopaedia of Philosophy

A. Skoble and T. Machan (2007) *Political Philosophy: Essential Selections*. New Delhi: Pearson Education, pp. 53-64.

T. Burns (2009) 'Aristotle', in D. Boucher, and P. Kelly (eds) *Political Thinkers: From Socrates to the Present.* Oxford: Oxford University Press, pp.81-99.

C. Taylor (1995) 'Politics', in J. Barnes (ed.), *The Cambridge Companion to Aristotle*. Cambridge: Cambridge University Press, pp. 232-258

3. Interlude

Machiavelli, *Republic*, Chapters XII, XVII, XXI, Mansfield, Harvey C. (1985) The University of Chicago Press: Chicago and London

Machiavelli, https://plato.stanford.edu/entries/machiavelli/, Stanford Encyclopaedia of Philosophy

A. Skoble and T. Machan (2007) *Political Philosophy: Essential Selections*. New Delhi: Pearson Education, pp. 124-130

Q. Skinner (2000) 'The Adviser to Princes', in *Machiavelli: A Very Short Introduction*, Oxford: Oxford University Press, pp. 23-53

J. Femia (2009) 'Machiavelli', in D. Boucher, and P. Kelly (eds) *Political Thinkers: From Socrates to the Present.* Oxford: Oxford University Press, pp. 163-184

4. Possessive Individualism

Hobbes, T. *Leviathan*, Chapters 1, 2, 3, Curley, Edwin (1994), Hackett Publishing Company, Inc: Indiana.

Rawls, J. *Lectures on the History of Political Philosophy*, Harvard University Press, London pp. 23-94

A. Skoble and T. Machan (2007) *Political Philosophy: Essential Selections*. New Delhi: Pearson Education pp. 131-157.

D. Baumgold (2009) 'Hobbes', in D. Boucher and P. Kelly (eds) *Political Thinkers: From Socrates to the Present.* Oxford: Oxford University Press, pp. 189-206.

C. Macpherson (1962) *The Political Theory of Possessive Individualism: Hobbes to Locke*. Oxford University Press, Ontario, pp. 17-29.

Locke, J. Two Treatise of Government (Cambridge: CUP, 1988), Book II, Chapter1-5

Rawls, J. *Lectures on the History of Political Philosophy*, Introduction: 103-38

A. Skoble and T. Machan (2007) *Political Philosophy: Essential Selections*. New Delhi: Pearson Education, pp. 181-209.

J. Waldron (2009) 'John Locke', in D. Boucher and P. Kelly (eds) *Political Thinkers: From Socrates to the Present.* Oxford: Oxford University Press, pp. 207-224

C. Macpherson (1962) *The Political Theory of Possessive Individualism: Hobbes to Locke*. Oxford University Press, Ontario, pp. 194-214.

Additional Resources:

J. Coleman (2000) 'Introduction', in *A History of Political Thought: From Ancient Greece to Early Christianity,* Oxford: Blackwell Publishers, pp. 1-20.

Q. Skinner (2010) 'Preface', in *The Foundations of Modern Political Thought Volume I,* Cambridge: Cambridge University Press pp. ix-xv.

S. Okin (1992) 'Philosopher Queens and Private Wives', in S. Okin *Women in Western Political Thought,* Princeton: Princeton University Press, pp. 28-50

R. Kraut (1996) 'The Defence of Justice in Plato's Republic', in R. Kraut (ed.) *The Cambridge Companion to Plato.* Cambridge: Cambridge University Press, pp. 311-337

T. Saunders (1996) 'Plato's Later Political Thought', in R. Kraut (ed.) *The Cambridge Companion to Plato.* Cambridge: Cambridge University Press, pp. 464-492.

J. Coleman (2000) 'Aristotle', in J. Coleman *A History of Political Thought: From Ancient Greece to Early Christianity,* Oxford: Blackwell Publishers, pp.120-186

D. Hutchinson (1995) 'Ethics', in J. Barnes (ed.), *The Cambridge Companion to Aristotle* Cambridge: Cambridge University Press, pp. 195-232.

I. Hampsher-Monk (2001) 'Thomas Hobbes', in *A History of Modern Political Thought: Major Political Thinkers from Hobbes to Marx,* Oxford: Blackwell Publishers, pp. 1-67.

A. Ryan (1996) 'Hobbes's political philosophy', in T. Sorell (ed.) *Cambridge Companion to Hobbes*. Cambridge: Cambridge University Press, pp. 208-245.

R. Ashcraft (1999) 'Locke's Political Philosophy', in V. Chappell (ed.) *The Cambridge Companion to Locke*, Cambridge. Cambridge University Press, pp. 226-251.

I. Hampsher-Monk (2001) *A History of Modern Political Thought: Major Political Thinkers from Hobbes to Marx,* Oxford: Blackwell Publishers, pp. 69-116.

Readings in Hindi

सी. एल. वेपर (1954), राज दर्शन का स्वाध्ययन, इलाहबाद: किताब महल.

जे. पी. सूद (1969), पाश्चात्य राजनीतिक चिंतन , जय प्रकाश नाथ और कंपनी.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 14: Modern Indian Political Thought

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Modern Indian Political Thought DSC-14	**4**	**3**	**1**	**-**	**Passed Class XII**	**NIL**

Learning Objectives

The objective of this course is to study important themes through individual thinkers. The course has been designed to give students a glimpse of the richness and diversity within Indian political thought. The thinkers have been consciously selected to represent a wide spectrum of ideologies and vantage points within the modern Indian thought tradition. Selected extracts from original texts are also included to be discussed in the class. This will help students to have experience in understanding how these thinkers build up their arguments and develop their views on the respective themes.

Learning outcomes

After studying this course, the students will be able to:

- Develop critical understanding about modern Indian thought.
- Thematically explore ideas in order to locate the topical debates on important subjects on a historical trajectory
- Reflect over the diverse possibilities exhibited in the writings of the respective thinkers.
- Think about issues and debates in contemporary India from multiple vantage points including its historical significance in the Indian tradition.

- Develop toleration and respect for diverse opinion and at the same time, to admire and appreciate the plurality within the modern Indian intellectual tradition.

SYLLABUS OF DSC- 14

UNIT – I (7 Hours)
Understanding Modern Indian Political Thought

UNIT – II (8 Hours)
Nation and Nationalism

Swami Vivekananda, Rabindranath Tagore and Gandhi

UNIT – III (7 Hours)
State and Democracy

Jawaharlal Nehru, Deendayal Upadhyay, Ram Manohar Lohia, and Bhimrao Ramji Ambedkar

UNIT – IV (7 Hours)
Rights

Rammohan Roy, Tarabai Shinde

UNIT – V (8 Hours)
Swaraj

Bal Gangadhar Tilak, Mohandas Karamchand Gandhi

UNIT – VI (8 Hours)
Hindutva and Hinduism

Savarkar

Essential/recommended readings

1. Understanding Modern Indian Political Thought

V. Mehta and T. Pantham (2006) *'A Thematic Introduction to Political Ideas in Modern India: Thematic Explorations, History of Science, Philosophy and Culture in Indian civilization'* Vol. 10, Part: 7 (New Delhi: Sage Publications), pp. xxvii-ixi.

D. Dalton (1982) 'Continuity of Innovation', in *Indian Idea of Freedom: Political Thought of Swami Vivekananda, Aurobindo Ghose, Rabindranath Tagore and Mahatma Gandhi* (Gurgaon: Academic Press), pp. 1-28.

R. Guha (2010) "Prologue: Thinking Through India", in Makers of Modern India, Penguin Books. pp.1-22

2. Nation and Nationalism

Sen, Amiya P. (2011), 'Vivekanand: Cultural Nationalism', in M. P. Singh and Himanshu Roy (ed.), *Indian Political Thought: Themes and Thinkers* (Delhi: Pearson)

Tagore: M. Radhakrishnan and Devasmita (2003), 'Nationalism is a great menace: Tagore and Nationalism', in P. Hogan, Coln and L. Pandit (ed.) *Rabindranath Tagore: Universality and Tradition* (London: Rosemont), pp. 29-39.

Guha, R (2010), "*The Rooted Cosmopolitan*" in the Makers of Modern India, Penguin, pp 185-203

3. State and Democracy

Parekh, B. (1991), 'Nehru and the National Philosophy of India', *Economic and Political Weekly*, vol. 26 (1/2), pp. 35-48.

Yadav, Y. (2010), 'What is Living and What is Dead in Ram Manohar Lohia?' *Economic and Political Weekly*, vol. XLV (40), pp. 107.

Deendayal Upadhyay (1964), Integral Humanism, Bharatiya Jana Sangha, Delhi.

Ambedkar, B.R. (2017) "The Challenges before the Parliamentary Democracy in India and their Remedies", in B.L.Mungekar, The Essential Ambedkar, Rupa, Chap-09

4. Rights

Mukherjee, S. (2014), 'The Social Implications of the Political Thought of Raja Rammohun Roy', *Sydney Studies in Society and Culture*, pp. 11-40.

O' Hanlon, Rosalind (2002) A comparison between women and men: Tarabai Shinde and the critique of Gender Relations in Colonial India Oxford University Press: New Delhi - Introduction

5. Swaraj

Parel, A. (ed.) (2002), 'Introduction', in *Gandhi, freedom and Self Rule,* Delhi: Vistaar Publication.

Inamdar, N.R. (1986), "The Political Ideas of Lokmanya Tilak" in Thomas Pantham and Kenneth Deutsch (ed.) Political thought in modern India, New Delhi: Sage pp. 110-121

Singh, S. P. (2017), 'Tilak's Nationalism and Swaraj', in M. P. Singh and Himanshu Roy (ed.), *Indian Political Thought: Themes and Thinkers* (Delhi: Pearson), pp. 194-205.

6. Hindutva and Hinduism

Savarkar, Vinayak Damodar. Essentials of Hindutva, 1922-23, available at: http://savarkar.org/en/encyc/2017/5/23/2_12_12_04_essentials_of_hindutva.v001.pdf_1.pdf

Sampath, Vikram (2021) Savarkar: A Contested Legacy, 1924-1966, Penguin Random House India: Gurugram

Additional Readings:

Mahopatra, Silika and Singh, Akash (2012), 'What is Indian Political Thought', in Self (ed.), *Indian Political Thought* (New York: Routledge).

Parekh, Bhikhu (2012), 'The Poverty of Indian Political Theory', in Akash Singh and Silika Mahopatra(ed.), *Indian Political Thought* (New York: Routledge), pp. 220-235.

Vivekananda, 'The Nature of British Rule in India- II', in Amiya P. Sen (ed.), *The Indispensable Vivekananda: An Anthology for Our Times* (New Delhi: Permanent Black), pp. 63-69.

Tagore, R (2018) 'Nationalism in India', in *Nationalism* (New Delhi: Macmillan), pp. 97-130.

Madani, M. (2005), *Composite Nationalism and Islam* (New Delhi: Manohar), pp. 66-91.

Gokhale, B. G. (1964), 'Swami Vivekananda and Indian Nationalism', *Journal of Bible and Religion*, vol. 32 (1), pp. 35-42.

Bhattacharya, S. (2016), 'Antinomies of Nationalism and Rabindranath Tagore', *Economic and Political Weekly*, Vol. 51 (6).

Nandy, A. (1994), 'Rabindranath Tagore & Politics of Self', in *Illegitimacy of Nationalism* (Delhi: Oxford University Press), pp. 1-50.

Nehru, J. (1991) 'Selected Works', in S. Hay (ed.), *Sources of Indian Tradition*, Vol. 2, Second Edition (New Delhi: Penguin), pp. 317-319.

Kothari, Rajni (1964), 'The Meaning of Jawaharlal Nehru', *The Economic Weekly*, pp. 1203-1207.

Jaffrelot C. and Kumar, N. (2018). *Dr. Ambedkar and Democracy: An Anthology* (Delhi: Oxford University Press).

Mukherjee, A. P. (2009), 'B. R. Ambedkar, John Dewey and the meaning of Democracy', *New Literary History*, vol. 40(2), pp. 345-370

Kumar, A. (2010), 'Understanding Lohia's Political Sociology: Intersectionality of Caste, Class, Gender and Language Issue', *Economic and Political Weekly*, vol. XLV (40), pp.64-70.

Roy, Rammohun (1902), 'Petitions against the Press Regulation to the Supreme Court, and to the Ring in Council, in J. C. Ghose (ed.), *The English Works of Raja Ram Mohun Roy* (Calcutta: S. K. Lahiri), pp. 278-321.

Lele, Jayant (1998) Gender Consciousness in Mid-Nineteenth- Century Maharashtra in Anne Feldhaus *Images of women in Maharashtrian Society*. The University of New York press: New York

Bayly, C. A. (2010), Ram Mohan and the Advent of Constitutional Liberalism in India; 1800 to 1830 in S. Kapila (ed.) An Intellectual History for India, New Delhi: Cambridge University Press: pp-18-34

Pantham, T. (1986) The socio-religious thought of Ram Mohan Roy in Thomas Pantham and Kenneth Deutsch (ed.) Political thought in modern India, New Delhi: Sage, pp-32-52

Chakravarti, U. (2007) *Pandita Ramabai - A Life and a Time*, New Delhi: Critical Quest, pp.1-40.

Omvedt, G. (2008) 'Ramabai: Women in the Kingdom of God', in *Seeking Begumpura*: *The Social Vision of Anti Caste Intellectuals,* New Delhi: Navayana. pp. 205-224.

Tilak, B. G. (1922) 'Karma yoga and Swaraj' and 'Swarajya speech at Godhra', in *Bal Gangadhar Tilak: His Writings and Speeches* (Madras: Ganesh & Co.), pp. 245-248; 292-298.

Gandhi, M. K. (2006), *Hind Swaraj* (Ahmedabad: Navajivan Publishing House).

Mukherjee, R. (2009), 'Gandhi's Swaraj', *Economic and Political Weekly*, vol. 44(50), pp. 34-39.

Kapila, Shruti (2010), 'Self, Spencer and *Swaraj*: Nationalist Thought And Critiques Of Liberalism, 1890–1920', in self (ed.) *An Intellectual History for India* (New Delhi: Cambridge University Press), pp. 109-127

Piney, Christopher (2011), 'The Tiger's Nature, but Not the Tiger: Bal Gangadhar Tilak as Mohandas Karamchand Gandhi's Counter-Guru', *Public Culture* 23(2), pp. 395-416.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 15: Political Process in India

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Political Process in India DSC 15	**4**	**3**	**1**	**-**	**Passed Class XII**	**NIL**

Learning Objectives

This course aims at familiarising the students with the processes through which politics makes itself manifest in India. It involves looking at the different modes through which power is exercised and dispersed in society along the axes of caste, class, religion, ethnicity and gender. It seeks insights from political sociology to understand how political process is mediated through and structured by various forms of social power. It enables students to comprehend the relationship between caste, religion and politics, the constitutional recognition and institutional arrangements for self-government, autonomy and development in the context of tribal communities as reflected in the Fifth and Sixth Schedules, and the various constitutional and legal provisions that enable the state to empower the marginalised and vulnerable in society. It also provides students with the analytical tools for understanding the different dimensions of the Indian state as it governs through regulation, welfare and coercion. The course enables the students to understand the party system in India, its changing form in response to democratic churnings and electoral competition, and the role played by them in the articulation of political power. It draws attention to the constitutional, statutory and institutional arrangements for regulating electoral competition through the study of electoral reforms and the Election Commission of India.

Learning outcomes

On successful completion of the course, the students will demonstrate:

- Understanding of political process in India and its interaction with social cleavages of caste, class, gender, ethnicity and religion
- Familiarity with the ways in which the state in India responds to social groups and vulnerable sections
- Knowledge of political parties and the party system in India
- Awareness of the manner in which representation and electoral competition play out in Indian politics

SYLLABUS OF DSC-15

UNIT – I (8 Hours)
Political Parties and the Party System

Political Parties: National and State Parties;
Trends in the Party System: From the Congress System to ascendancy of Bhartiya Janata Party

UNIT – II (7 Hours)
Elections and Electoral Processes

Electoral Process, Representation and social determinants of voting behaviour; Election Commission and Electoral Reforms

UNIT – III (8 Hours)
Religion and Politics

Debates on Secularism and Communalism

UNIT – IV (8 Hours)
Caste and Politics

Caste in Politics and the Politicization of Caste; Intersectionality of Caste, Class and Gender, reservation and affirmative action policies

UNIT – V (7 Hours)
Tribes and Politics

Policies and Challenges: Fifth and Sixth Schedules; Forest Rights Act; Development and Issues of Displacement

UNIT – VI (7 Hours)
Dimensions of the State in India

Welfare, Regulatory and Coercive

Essential/recommended readings

1. Political Parties and the Party System

R. Kothari (2002) 'The Congress System', in Z. Hasan (ed.) *Parties and Party Politics in India*, New Delhi: Oxford University Press, pp 39-55.

Pradeep Chibber and Rahul Verma (2019) 'The Rise of the Second Dominant Party System in India: BJPs New Social Coalition in 2019' in *Studies in Politics*, Vol. 7, No.2, Pp.131-148.

Y. Yadav and S. Palshikar (2006) 'Party System and Electoral Politics in the Indian States,1952-2002: From Hegemony to Convergence', in P.R. DeSouza and E. Sridharan (eds.) *India's Political Parties*, New Delhi: Sage Publications, pp. 73-115.

C. Jaffrelot and G. Verniers (2020), 'A New Party System of a New Political System?', *Contemporary South Asia*, Vol.28, No.2, pp. 141-154.

M. Vaishnav and J. Hintson (2019), 'The Dawn of India's Fourth Party System', *Carnegie Endowment for International Peace Paper*, 5 September.

K.C. Suri (2019), 'Social Change and the Changing Indian Voter: Consolidation of the BJP in India's 2019 Lok Sabha Election'*, Studies in Indian Politics*, Vol.7, Issue 2, pp.234-246.

2. Election and Electoral Process

N. G. Jayal (2006) *Representing India: Ethnic Diversity and the Governance of Public Institutions*, Palgrave Macmillan, London.

Yogendra Yadav (2010), 'Representation', in Niraja Gopal Jayal and Pratap Bhanu Mehta (eds), *The Oxford Companion to Politics in India*, New Delhi: Oxford University Press, 347-360.

E. Sridharan and M. Vaishnav (2017), 'Election Commission of India', in D. Kapur, P.B. Mehta and M. Vaishnav (eds.) *Rethinking Public Institutions in India*, New Delhi: Oxford University Press,pp. 417-463.

U.K. Singh and A. Roy (2018), 'Regulating the Electoral Domain: The Election Commission of India', *Indian Journal of Public Administration*, 17 August 2018.

U. Singh and A. Roy (2019), *Election Commission of India: Institutionalising Democratic Uncertainties*, Oxford University Press, Delhi.

S. Kumar (2022), *Elections in India: An Overview*, Routledge, London and New York

Y. Yadav (2000) 'Understanding the Second Democratic Upsurge', in F. Frankel, Z. Hasan, and R. Bhargava (eds.) *Transforming India: Social and Political Dynamics in Democracy*, New Delhi: Oxford University Press, pp. 120-145.

3. Religion and Politics

T. Pantham (2004) 'Understanding Indian Secularism: Learning from its Recent Critics', in

R. Vora and S. Palshikar (eds.) *Indian Democracy: Meanings and Practices,* New Delhi: Sage, pp. 235-256.

N. Chandhoke (2010) 'Secularism', in P. Mehta and N. Jayal (eds.) *The Oxford Companion to Politics in India*, New Delhi: Oxford University Press, pp. 333-346.

R Bhargava (ed.) (2006) *Secularism and its Critics*, Oxford India Paperbacks.

4. Caste and Politics

R. Kothari (1970) 'Introduction', in *Caste in Indian Politics*, Delhi: Orient Longman, pp.3-

25. M. Weiner (2001) 'The Struggle for Equality: Caste in Indian Politics', in Atul Kohli (ed.) *The Success of India's Democracy*, New Delhi: Cambridge University Press, pp. 193-225.

G. Omvedt (2002) 'Ambedkar and After: The Dalit Movement in India', in G. Shah (ed.) *Social Movements and the State*, New Delhi: Sage Publications, pp. 293-309.

M. Galanter (2002) 'The Long Half-Life of Reservations', in Z. Hasan, E. Sridharan and R.

Sudarshan (eds.) *India's Living Constitution: Ideas, Practices, Controversies*, New Delhi: Permanent Black, pp. 306-318.

C. Jaffrelot (2005) 'The Politics of the OBCs', in *Seminar,* Issue 549, pp. 41-45.

M. John (2011) 'The Politics of Quotas and the Women's Reservation Bill in India', in M. Tsujimura and J. Steele (eds.) *Gender Equality in Asia,* Japan: Tohoku University Press, pp. 169-195.

5. Tribes and Politics

B. Sharma (2010), 'The 1990s: Great Expectations'; 'The 2000s: Disillusionment Unfathomable', in *Unbroken History of Broken Promises: Indian State and Tribal People,* Delhi: Freedom Press and SahyogPustakKuteer, pp. 64-91.

V. Xaxa (2019) 'Isolation, Inclusion and Exclusion: the case of Adivasis in India', in V.S.Rao, *Adivasi Rights and Exclusion in India,* Oxon and New York: Routledge, pp.27-40

A. Kothari, N. Pathak and A. Bose (2011) 'Forests, Rights and Conservation: FRA Act 2006, India', in H. Scheyvens (ed.) *Critical Review of Selected Forest-Related Regulatory Initiatives: Applying a Rights Based Perspective*, Institute for Global Environmental Strategies, pp. 19-50

6. Dimensions of the State in India

A. Chakraborty (2019) 'From Passive Beneficiary to 'Rights Claimants': What Difference Does it Make', in A. P. D'Costa and A. Chakraborty eds., *Changing Contexts and Shifting Roles of the Indian State: New Perspectives on Development Dynamics*, Singapore: Springer, pp. 25-38.

P. Chatterjee (2010) 'The State', in N. G. Jayal and P. B. Mehta eds. The Oxford Companion to Politics in India, Delhi: Oxford University Press, pp. 3-14.

R. Khera (2020) 'India's Welfare State: A Halting Shift from Benevolence to Rights', *Current History*, April.

M. Khosla and M. Vaishnav (2021), 'The Three Faces of the Indian State', *Open Democracy*, 32(1), pp. 111-25.

M. Mohanty (1989) 'Duality of the State Process in India: A Hypothesis', *Bhartiya Samajik Chintan*, Vol. XII (1-2)

A. K. Thiruvengadam 'Flag-bearers of a New Era? The Evolution of New Regulatory Institutions in India (1991-2016)' in S. Rose-Ackerman, P.L. Lindseth and J. Emerson eds., *Comparative Administrative Law*, Cheltenham: Edward Elgar, pp.218-232.

L. Tillin, R. Deshpande and K.K. Kailash eds. (2015) *Politics of Welfare: Comparisons across Indian States*, Delhi: Oxford University Press, pp. 1-39.

L. Tillin (2021) 'Does India have Subnational Welfare Regimes? The Role of State Governments in Shaping Social Policy', *Territory, Politics, Governance*, 10 (1): 86-102.

A. Verma (2007) 'Police Agencies and Coercive Power', in S. Ganguly, L. Diamond and M. Plattner (eds.) *The State of India's Democracy*, Baltimore: John Hopkins University Press, pp. 130-139.

D. Kapur and M. Khosla (2019), *Regulation in India: Design, Capacity, Performance*, New Delhi and London: Bloomsbury [Chapter One: 'The Reality of Indian Regulation', pp. 3-29].

Y. Yadav (2020) *Making Sense of Indian Democracy*, Ranikhet: Permanent Black [Chapter 9: 'On Theories of the Indian State', pp. 236-248).

Hindi Readings:

अभय कुमार दुबे (सं०) राजनीति की किताब: रजनी कोठारी का कृतित्व, नई दिल्ली: वाणी प्रकाशन

आशुतोष वार्ष्णेय (2005), 'सांप्रदायिक हिंसा का चुनावी सिद्धांत', *शोधार्थी,* 1 (4), अक्तूबर-दिसंबर, पृष्ठ 28- 34.

आशुतोष वार्ष्णेय, अधूरी जीत: भारत का अप्रत्याशित लोकतंत्र, अनुवादक: जितेन्द्र कुमार, नई दिल्ली: ऑक्सफ़र्ड यूनिवर्सिटी प्रेस, 2018

एस०एम० माइकल (2015), आधुनिक भारत में दलित: दृष्टि एवं मूल्य, नई दिल्ली: सेज भाषा

कमल नयन चौबे (2013). 'दो प्रगतिशील कानूनों कि दास्तान: राज्य, जनांदोलन एवं प्रतिरोध, *प्रतिमान: समय समाज संस्कृति,* जनवरी-जून, वर्ष 1, खंड 1, अंक 1, पृष्ठ 149- 177.

गेल ओमवेट (2015), दलित और प्रजातांत्रिक क्रांति: उपनिवेशीय भारत में डॉ० अम्बेडकर एवं दलित आंदोलन, नई दिल्ली: सेज भाषा,

गोपाल गुरु (2002), 'अवमानना के आयाम' (सं) अभय कुमार दुबे, *आधुनिकता के आईने में दलित,* नयी दिल्ली: वाणी प्रकाशन.

जावीदआलम, लोकतंत्र के तलबगार?, अनुवादक: अभय कुमार दुबे, नई दिल्ली: वाणीप्रकाशन

धीरुभाई शेठ (2009). 'आरक्षण के पचास साल- एक धर्म-जाती निरपेक्ष नीति के विविध आयाम', 'आरक्षण विरोधियों के तर्कों कि असलियत', 'आरक्षण नीति: एक पुनःसंस्कार कि आवश्यकता', 'अति पिछड़ों और निजी क्षेत्र में आरक्षण का सवाल' (सं) अभय कुमार दुबे, *सत्ता और समाज: धीरू भाई सेठ,* नयी दिल्ली: वाणी प्रकाशन.

प्रकाश लुईस (2005), 'उत्तर भारत में दलित- पहचान : एक दृष्टि', *शोधार्थी,* अंक 1, संख्या 3, जुलाई- सितम्बर, पृष्ठ 39- 42.

प्रताप भानु मेहता (2005). 'राजनितिक दलों में सुधार को प्राथमिकता', *शोधार्थी,* जनवरी -मार्च 2005, अंक 1, संख्या 1, पृष्ठ 15-17.

फ़िलिप कॉटलर, लोकतंत्र का पतन: भविष्य का पुनर्निर्माण, नई दिल्ली: सेज भाषा, 2017

बिपन चन्द्र (2011), *साम्प्रदायिकता: एक परिचय* (अनु) आलोक तोमर, नयी दिल्ली: अनामिका पब्लिशर्स एंड डिस्ट्रीब्यूटर्स.

महेंद्र प्रसाद सिंह एवं हिमांशु रॉय (सं.), *भारतीय राजनीतिक प्रणाली: सरंचना, नीति एवं विकास, दिल्ली: हिन्दी माध्यम कार्यान्वयन निदेशालय, दिल्ली विश्वविद्यालय.*

माधव गोडबोले (2017) धर्मनिरपेक्षता: दोराहे पर भारत, नई दिल्ली: सेज भाषा

योगेन्द्र यादव एवं सुहास पल्शीकर (2006), 'पार्टी प्रणाली एवं चुनावी राजनीति', अरविन्द मोहन (सं.) *लोकतंत्र का नया लोक: चुनावी राजनीति में राज्यों का उभार, भाग-1,* नयी दिल्ली: वाणी प्रकाशन.

योगेन्द्र यादव (2002). 'कायापलट की कहानी: नया प्रयोग, नयी संभावनाएं, नये अंदेशे' (सं) अभय कुमार दुबे, *लोकतंत्र के सात अध्याय,* नयी दिल्ली: वाणी प्रकाशन.

रजनी कोठारी (1998), ' दलित उभार और जाति के सवाल पर जारी बहस' (अनु) ध्रुव नारायण, *साम्प्रदायिकता और भारतीय राजनीति,* दिल्ली: रेनबो पब्लिशर्स लि.

रजनी कोठारी (2003). 'कांग्रेस 'प्रणाली'', अभय कुमार दुबे (सं) *राजनीति की किताब,* नयी दिल्ली: वाणी प्रकाशन.

रजनी कोठारी (2005). 'जातियों का राजनीतिकरण', *भारत में राजनीति: कल और आज (*अनु) अभय कुमार दुबे, नयी दिल्ली: वाणी प्रकाशन.

राजीव भार्गव (2005), 'दक्षिण एशिया में समावेशन और बहिर्वेशन: धर्म की भूमिका', *शोधार्थी,* अंक 1, संख्या 4, अक्तूबर-दिसंबर, पृष्ठ 1- 14.

शम्सुल इस्लाम, भारत में अलगाववाद और धर्म, नई दिल्ली: वाणी प्रकाशन

सुखदेव थोरात (2017), भारत में दलित: एक समान नियति की तलाश, नई दिल्ली: सेज भाषा

सुषमा यादव (2013). 'चुनाव आयोग और चुनाव प्रक्रिया', महेंद्र प्रसाद सिंह एवं हिमांशु रॉय (सं.), *भारतीय राजनीतिक प्रणाली: सरंचना, नीति एवं विकास, दिल्ली: हिन्दी माध्यम कार्यान्वयन निदेशालय, दिल्ली विश्वविद्यालय.*

सुहास पलशिकर एवं योगेन्द्र यादव (2005) 'वर्चस्व से समाभिरुपकता तक: भारतीय राज्यों में दलीय व्यवस्था व चुनावी राजनीति', *शोधार्थी,* अंक 1, संख्या 2

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Discipline Specific Elective (DSE) Courses for Sem – V

DISCIPLINE SPECIFIC ELECTIVE COURSE – 3a: International Political Economy

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
International Political Economy DSE-3a	4	3	1	-	Passed Class XII	NIL

Learning Objectives

This course introduces to the students the significant linkages that exist between politics and economics in the domain of International Relations by apprising them about the meaning, nature and conceptual foundations of the field of International Political Economy. In doing this the course examines the structural functional linkages that exist between the macro-economic global structure and the systemic contours of global politics. Students will learn about the traditional as well as critical theoretical frameworks employed to examine the nature and functioning of international political economy. These theories include economic nationalism, liberalism and neo-Marxism on the one hand and historical sociology, feminism and postcolonialism on the other. Based on these conceptual and theoretical foundations, the course then attempts at delineating the major issues pertaining to the nature and functioning of the global political economy specially focusing on international trade, development and finance. The course also looks at the key constitutive elements of global economic governance including multilateral and regional institutions, regimes and multinational corporations. Further, the course introduces the students to key concerns pertaining to global economic crises, and the indicators of information communications technology (ICT), cyber economy and the global civil society.

Learning outcomes

By the completion of the course the students would be able to:

- Develop a basic understanding of the structural functional linkages that connect the realms of politics and economics.
- Learn to use the conceptual tools and theoretical frameworks for understanding the nature and basic functioning of the international political economy.
- Understand the structural drivers that determine the contours of international trade and finance.
- Develop an understanding about the Global South's contribution to this field both in the domain of ideas and working of the global political economy.
- Understand how our economic life is getting transformed on account of the information and communication technology, the cyber economy and interventions of the global civil society.

SYLLABUS OF DSE-3a

UNIT – I (2 Hours)

Introduction: Understanding the intersectionality between politics and economy

UNIT – II (14 Hours)

Theoretical Perspectives

a. Economic Nationalism, Liberalism and Structuralism
b. Historical Sociology, Feminism and Postcolonialism

UNIT – III (12 Hours)

International Trade and Development

a. International trade
b. Multinational corporations
c. Perspectives from the Global South and the Indian Story

UNIT – IV (8 Hours)

International Finance

a. International finance and monetary structure
b. International and regional financial institutions

UNIT – V (9 Hours)

New Directions and New Challenges

a. ICT and Cyber economy
b. Economic Crises
c. Global Civil Society

Essential/recommended readings

Unit 1. Introduction: Understanding the intersectionality between politics and economy

Essential Readings

Gilpin, Robert (2001), "The Nature of Political Economy", in *Global Political Economy: Understanding the International Economic Order*, Princeton, N.J.: Princeton University Press, pp. 25-45.

Balaam, David N. and Bradford Dillman (2014), "What Is International Political Economy?", in *Introduction to International Political Economy*, 6th edition, Boston: Pearson, pp. 2-24.

Additional Readings

Gilpin, Robert (2001), "Introduction: The Fragile Global Economy" and "The Second Great Age of Capitalism", in *The Challenge of Global Capitalism: The World Economy in the 21st Century*, Princeton, N.J.: Princeton University Press, pp. 3-51.

Frieden, Jeffrey and Lisa Martin (2002), "International Political Economy: Global and Domestic Interactions," in Ira Katznelson and Helen Milner, eds., *Political Science: The State of the Discipline,* New York & London: W. W. Norton & Co., pp. 118-146.

Hirst, Paul, Grahame Thompson and Simon Bromley (2009), "Globalization and the History of the International Economy", in *Globalization in Question*, third edition, Cambridge: Polity Press, pp.54-107.

Strange, Susan (1970), "International Economics and International Relations: A Case of Mutual Neglect", *International Affairs*, 46 (2): 304- 315.

Unit 2.a. Economic Nationalism, Liberalism and Structuralism

Essential Readings

Balaam, David N. and Bradford Dillman (2014), "Laissez-Faire: The Economic Liberal Perspective", "Wealth and Power: The Mercantilist Perspective", and "Economic Determinism

and Exploitation: The Structuralist Perspective", in *Introduction to International Political Economy*, 6th edition, Boston: Pearson, pp. 25-52; 53-77; 78-100.

Martinussen, John (1997), "Neo-Marxist Theories of Underdevelopment and Dependency", in *Society, State and Market: A guide to competing theories of development*, London: Zed Books Ltd., pp. 85-100.

Gilpin, Robert (1987), "Three Ideologies of Political Economy", in *The Political Economy of International Relations*, Princeton: Princeton University Press, pp. 25-64.

Strange, Susan (2003), "States, Firms, and Diplomacy", in Jeffry A. Frieden and David A. Lake (ed.) *International Political Economy: Perspectives on Global Power and Wealth*, Fourth Edition, London and New York: Routledge, pp. 60-68.

Additional Readings

O'Brien, Robert and Marc Williams (2016), "Theories of Global Political Economy", in *Global Political Economy: Evolution and Dynamics,* Fifth Edition, London: Palgrave, pp. 6-21.

Frank, Andre Gunder (1966) "The Development of Underdevelopment," *Monthly Review,* 18 (4): 17-31.

Wallerstein, Immanuel (1974), "The Rise and Future Demise of the World-Capitalist System: Concepts for Comparative Analysis", *Comparative Studies in Society and History*, 16 (4): 387-415.

Gilpin, Robert (2001), "The Neoclassical Conception of Economy", "The Study of International Political Economy", and "New Economic Theories", in *Global Political Economy: Understanding the International Economic Order*, Princeton, N.J.: Princeton University Press, pp. 46-128.

Shaikh, Anwar (2005), "The Economic Mythology of Neoliberalism", in Alfredo Saad-Filho and Deborah Johnston (eds.) *Neoliberalism: A Critical Reader*, London: Pluto Press, pp. 41-49.

Lenin, V.I. (1997), "The Export of Capital", and "Imperialism as a Special Stage of Capitalism", reproduced in George T. Crane and Abla Amawi (eds.) *The Theoretical Evolution of International Political Economy: A Reader*, New York: Oxford University Press, pp. 98-101.

Unit 2.b. Historical Sociology, Feminism and Postcolonialism

Essential Readings

Hobson, John M. (1997), "A sociology of international relations and an international relations of sociology", in *The Wealth of States: A Comparative Sociology of International Economic and Political Change*, Cambridge: Cambridge University Press, pp. 1-22.

Griffin, Penny (2017), "Gender and the Global Political Economy", *Oxford Research Encyclopedia of International Studies*, URL: https://doi.org/10.1093/acrefore/9780190846626.013.187

Bhambra, Gurminder K. (2020) "Colonial global economy: towards a theoretical reorientation of political economy", *Review of International Political Economy*, 28 (2): 3017-322.

Additional Readings

Escobar, Arturo (1984), "Discourse and Power in Development: Michel Foucault and the Relevance of his Work to the Third World", *Alternatives: Global, Local, Political*, 10 (3): 377-400.

Gill, Stephen and David Law (1993), "Global hegemony and the structural power of capital", in Stephen Gill (ed.) *Gramsci, Historical Materialism and International Relations*, Cambridge: Cambridge University Press, pp. 93-124.

Steans, Jill (1999), "The Private is Global: Feminist Politics and Global Political Economy," *New Political Economy*, Vol. 4, No. 1, pp.113-128.

Griffin, Penny (2007), "Refashioning IPE: and How Gender Analysis Teaches International (Global) Political Economy", *Review of International Political Economy*, Vol. 14, No. 4, pp. 719-736.

Rai, Shirin M. (2002), "Gender and Development: Theoretical Perspectives in Context", *Gender and the political economy of development: from nationalism to globalization*, Oxford: Polity, pp. 44-83.

Unit 3.a. International Trade

Essential Readings

O'Brien, Robert and Marc Williams (2016), "International Trade", in *Global Political Economy: Evolution and Dynamics,* Fifth Edition, London: Palgrave, pp. 102-124.

Krasner, Stephen D. (2003), "State Power and the Structure of International Trade", in Jeffry A. Frieden and David A. Lake (ed.) *International Political Economy: Perspectives on Global Power and Wealth*, Fourth Edition, London and New York: Routledge, pp. 19-36.

Additional Readings

Archer, Candace and Stefan Fritsch (2010) "Global fair trade: Humanizing globalization and reintroducing the normative to international political economy", *Review of International Political Economy*, 17: 103-128.

Gilpin, Robert (1987), "The Politics of International Trade", in *The Political Economy of International Relations*, Princeton: Princeton University Press, pp. 171-230.

Ruggie, John Gerard (1982) "International Regimes, Transactions, and Change: Embedded Liberalism in the Postwar Economic Order", *International Organization*, 36 (2): 379-415.

Baracuhy, Braz (2012), "The Geopolitics of Multilateralism: The WTO Doha Round Deadlock, the BRICs, and the Challenges of Institutionalised Power Transitions," *CRP Working Paper Series*, No. 4, January. URL: https://fdocuments.net/document/the-geopolitics-of-multilateralism-the-wto-doha-round-deadlock.html

Unit 3.b. Multinational corporations

Essential Readings

Hirst, Paul, Grahame Thompson and Simon Bromley (2009), "Multinational Companies and the Internationalization of Business Activity", in *Globalization in Question*, third edition, Cambridge: Polity Press, pp. 109-149.

Balaam, David N. and Bradford Dillman (2014), "Transnational Corporations: The Governance of Foreign Investment", in *Introduction to International Political Economy*, 6th edition, Boston: Pearson, pp. 432-457

Additional Readings

Gilpin, Robert (1987), "Multinational Corporations and International Production", *The Political Economy of International Relations*, Princeton: Princeton University Press, pp. 231-26.

Fieldhouse, David (2003) "'A New Imperial System'? The Role of the Multinational Corporations Reconsidered", in Jeffry A. Frieden and David A. Lake (ed.) *International Political Economy: Perspectives on Global Power and Wealth*, Fourth Edition, London and New York: Routledge.

Unit 3.c. Perspectives from Global South and the Indian Story

Essential Readings

Buzan, Barry and George Lawson (2016), "The Impact of the 'Global Transformation' on Uneven and Combined Development", in Alexander Anievas and Kamran Matin (eds.) *Historical Sociology and World History Uneven and Combined Development over the Longue Durée*, London: Rowman & Littlefield International, pp. 171-184.

David L. Blaney and Naeem Inayatullah (2016), "The Stakes of Uneven and Combined Development" in Alexander Anievas and Kamran Matin (eds.) *Historical Sociology and World History Uneven and Combined Development over the Longue Durée*, London: Rowman & Littlefield International, pp. 239-250.

Mukherjee, Aditya (2010) "Empire: How colonial India made modern Britain", *Economic and Political Weekly*, 45(50), 73– 82.

Dadabhai Naoroji (1901), "Deficit of Imports Compared with the exports of India"; "The Drain to England"; "Increase of the Drain"; "Small Amount of Imports from England"; "India's Tribute"; and "The Elements of the Drain", in *Poverty and Unbritish Rule in India*, London: Swan Sonnenschein & Co., Ltd, pp.28-34.

Subrahmanyam, Sanjay (1988) "Commerce and State Power in Eighteenth-Century India: Some Reflections", *South Asia Research* 8 (2): 97-110.

Additional Readings

Dutt, Romesh (1902), "External Trade", and "Finance And The Economic Drain, 1793-1837", in *The Economic History of India: Under Early British Rule, Vol.1: From The Rise Of The British Power In 1757 To The Accession Of Queen Victoria In 1837*, Great Britain: Kegan Paul, Trench, Trübner, pp. 291-302; 398-420.

Chaudhuri, K.N. (1983), "Foreign Trade and Balance of Payments (1757-1947)", in Dharma Kumar (ed.) *The Cambridge Economic History Of India, Volume 2: c.1757-c.1970*, Cambridge: Cambridge University Press, 804-877.

Shaikh, Anwar (2006), "Globalization and the myth of free trade", in Anwa rShaikh (ed.) *Globalization and the Myths of Free Trade*, London and New York: Routledge, pp. 50-68.

Acemoglu, Daron and James A. Robinson (2013), "Reversing Development" and "The Virtuous Circle", in *Why Nations Fail: The Origins of Power, Prosperity, and Poverty*. London: Profile Books, pp. 245-273, 302-334.

Chibber, Vivek (2003), "Late Development and State-Building", *Locked in Place: State-Building and Late Industrialization in India,* Princeton: Princeton University Press, pp. 13-48.

Daron Acemoglu and James A. Robinson (2017), "The economic impact of colonialism", in Stelios Michalopoulos and Elias Papaioannou (eds.) *The Long Economic and Political Shadow of History: Volume I. A Global View*, London: CEPR Press, pp. 81-88.

Unit 4.a. International finance and monetary structure

Essential Readings

Balaam, David N. and Bradford Dillman (2014), "The International Monetary and Finance Structure", in *Introduction to International Political Economy*, 6th edition, Boston: Pearson, pp. 151-177

Eric Helleiner (2017), "The Evolution of the International Monetary and Financial System", in John Ravenhill (ed.) *Global Political Economy*, fifth edition, Oxford: Oxford University Press, 119-224.

Additional Readings

Setser, Brad (2008),"A Neo-Westphalian International Financial System?", *Journal of International Affairs*, Vol. 62, No. 1, pp. 17-34.

Wade, Robert (2006), "Choking the South", *New Left Review*, Vol. 38, March/April, pp. 115-127.

Unit 4.b. International and regional financial institutions

Essential Readings

Williams, Marc (2012), "Global Economic Institutions" in Richard Devetak, Anthony Burke and Jim George (eds.) *An Introduction to International Relations*, second edition, Cambridge: Cambridge University Press, pp. 336-347.

Rana, Pradumna B. and Ramon Pacheco Pardo (2018), "Rise of Complementarity between Global and Regional Financial Institutions: Perspectives from Asia", *Global Policy*, 9 (2): 231-243.

Wihtol, Robert (1988), "The Asian Development Bank", in *The Asian Development Bank and Rural Development: Policy and Practice*, London: Macmillan Press, pp. 16-30.

Additional Readings

Vetterlein, Antje (2012), "Seeing Like the World Bank on Poverty," *New Political Economy*, Vol. 17, No. 1, pp. 35-58.

Picciotto, Robert (2003), "A New World Bank for a New Century", in C. Roe Goddard, Patrick Cronin and Kishore C. Dash (eds.) *International Political Economy: State-Market Relations in a Changing Global Order*, Boulder, Colo. : Lynne Rienner, pp. 341-352.

Cooper, Andrew F. (2017), "The BRICS' New Development Bank: Shifting from Material Leverage to Innovative Capacity", *Global Policy*, 8 (3): 275-284.

Lisa L. Martin (2006), "Distribution, Information, and Delegation to International Organizations: The Case of IMF Conditionality," in Darren G. Hawkins et al. (eds.) *Delegation and Agency in International Organizations*, Cambridge: Cambridge University Press, pp. 140-164.

Oatley, Thomas (2019), "Developing Countries and International Finance II: The Global Capital Flow Cycle", in *International Political Economy*, Sixth Edition, New York and London: Routledge, pp. 428-453.

Sinha, Aseema (2021) "Understanding the 'crisis of the institution' in the liberal trade order at the WTO", *International Affairs*, 97 (5): 1521–1540.

Nel, Philip (2010), "Redistribution and Recognition: What Emerging Regional Powers Want", *Review of International Studies,* Vol. 36, No. 4, pp. 951-974.

Unit 5.a. ICT and Cyber economy

Essential Readings

Brass, Irina and David J. Hornsby (2019), "Digital Technological Innovation and the International Political Economy", in T. M. Shaw et al. (eds.), *The Palgrave Handbook of Contemporary International Political Economy*, London: Palgrave Macmillan.

O'Brien, Robert and Marc Williams (2016) *Global Political Economy: Evolution and Dynamics,* Fifth Edition, London: Palgrave, pp. 266-268.

Additional Readings

Castells, Manuel (2010), "The New Economy: Informationalism, Globalization, Networking", in *The Rise of the Network Society, 2*nd edition, Malden, M.A.: Wiley Blackwell, pp. 77-162.

Dicken, Peter (2015), "Technological Change: 'Gales of Creative Destruction'", in *Global Shift: Mapping the Changing Contours of the World Economy*, 7th Edition, London: The Guilford Press, pp. 74-113.

Fidler, David (2021), "Cybersecurity, Global Commerce, and International Organizations", in Paul Cornish (ed.) *The Oxford Handbook of Cyber Security*, Oxford: Oxford University Press, pp. 497-513.

Wittel, Andreas (2013), “Counter-commodification: The economy of contribution in the digital commons”, *Culture and Organization*, 19:4, 314-331.

Unit 5.b. Economic Crises

Essential Readings

Hale, Thomas, David Held, Kevin Young (2013), “Economy”, in *Gridlock: Why Global Cooperation is Failing when We Need It Most*, London: Polity Press, 113-188.

Luis W. Pauly(2017), “The Political Economy of Global Financial Crises”, in John Ravenhill (ed.) *Global Political Economy*, fifth edition, Oxford: Oxford University Press, pp. 225-252.

Stiglitz, Joseph E. (2017),“The Burden of Debt”, in *Making Globalization Work: The Next Steps to Global Justice*, London: Allen Lane, pp. 211-244.

Wade, Robert and Frank Veneroso (1998), “The Asian Crisis: The High Debt Model Versus the Wall Street-Treasury-IMF Complex,” *New Left Review,* I/228, pp. 3-22.

Helleiner, Eric (2011) “Understanding the 2007-2008 Global Financial Crisis: Lessons for Scholars of International Political Economy?” *Annual Review of Political Science*, Vol. 14, pp. 67-87.

Additional Readings

O’Brien, Robert and Marc Williams (2016) *Global Political Economy: Evolution and Dynamics,* Fifth Edition, London: Palgrave, pp. 153-178.

Ferguson, Niall (2008), “Afterword: The Decent of Money”, in *The Ascent of Money: A Financial History of the World*, New York: The Penguin Press, pp. 341-358.

Lipson, Charles (1981),“The International Organization of Third World Debt”, *International Organization*, 35 (4): 603-631.

Unit 5.c. Global Civil Society

Essential Readings

Scholte, Jan Aart (2000), “Global Civil Society”, in Ngaire Woods (ed.) *The Political Economy of Globalization*, New Tork: St. Martin’s Press, pp. 173-201.

Cerny, Philip G. (2003), “Globalization and the Changing Logic of Collective Action”, in Jeffry A. Frieden and David A. Lake (ed.) *International Political Economy: Perspectives on Global Power and Wealth*, Fourth Edition, London and New York: Routledge, pp. 446-460.

Additional Readings

Nathan, Dev, D. Narasimha Reddy and Govind Kelkar (2008), “Addressing Crises and Change”, in*International Trade and Global Civil Society*, London and New York: Routledge, pp. 247-264.

Sen, Amartya (2009), “Human Rights and Global Imperatives”, and “Justice and the World”, in *The Idea of Justice*, Cambridge: The Belknap Press of Harvard University Press, pp. 355-416.

Reference Literature:

Gilpin, Robert (2001), *Global Political Economy: Understanding the International Economic Order*, Princeton, N.J.: Princeton University Press.

Grieco, Joseph M. and G. John Ikenberry (2003), *State, Power and World Markets: The International Political Economy*, New York: W.W. Norton & Co.

Hulsemeyer, Axel (2010), *International Political Economy: A Reader*, Oxford: Oxford University Press.

Oatley, Thomas (2019) *International Political Economy*, Sixth Edition, New York and London: Routledge.

Ravenhill, John (ed.) (2017) *Global Political Economy*, fifth edition, Oxford: Oxford University Press.

Strange, Susan (1994) *State and the Markets*, Second Edition, London and New York: Continuum.

Strange, Susan (1996) *The Retreat of the State: The Diffusion of Power in the World Economy*, Cambridge: Cambridge University Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 3b: Understanding Ambedkar

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Understanding Ambedkar DSE-3b	4	3	1	-	Passed Class XII	NIL

Learning Objectives

This course is broadly intended to introduce Ambedkar's ideas and their relevance in contemporary India, by looking beyond caste. Ambedkar's philosophical contributions towards Indian economy and class question, sociological interpretations on religion, gender, caste and cultural issues; ideas on politics such as concepts of nation, state, democracy, law and constitutionalism are to be pedagogically interrogated and interpreted. This will help students to critically engage themselves with the existing social concerns, state and economic structures and other institutional mechanisms. This also will facilitate them to strengthen their creative thinking with a collective approach to understand ongoing social, political, cultural and economic issues of the society.

Learning outcomes

The course is designed to provide students the original writings and ideas of Ambedkar on diverse issues beyond caste and equip them to critically engage with the ideas, interpretations. By engaging with the original sources as well as secondary writings on Ambedkar's ideas that cover, caste, class, gender, religion, state, democracy and constitution the students will be able to understand a thinker in the context and contemporaneity. At the end of the course, students shall be equipped with the method of understanding the ideas, philosophy and relevance of a particular thinker. Students shall also be able to reflect on the method of the thinker's engagement with the then context, issues and concepts. Finally, the students shall be equipped in understanding the conceptual and philosophical diversity, situatedness and significance of Ambedkar beyond his contribution in the sphere of social justice and drafting the Indian constitution. The course thus

provides an opportunity to the students to understand Ambedkar for his several important contributions in the field of religion, state, democracy, gender, economy and history.

SYLLABUS OF DSE-3b

UNIT – I (3 Hours)
Introducing Ambedkar

Approach to Study Polity, History, Economy, Religion and Society

UNIT – II (10 Hours)
Caste and Religion

Caste, Untouchability and Critique of Hindu Social Order
Islam and Partition of India
Religion and Conversion

UNIT – III (8 Hours)
Women's Question

Ambedkar on Women
Hindu Code Bill
Uniform Civil Code

UNIT – IV (8 Hours)
Political Vision

Nation and Nationalism
Democracy and Citizenship

UNIT – V (8 Hours)
Constitutionalism

Rights and Representations
Constitution as an Instrument of Social Transformation

UNIT – VI (8 Hours)
Economy and Class Question

Planning and Development
Land and Labour References

Essential/recommended readings

1. Introducing Ambedkar

G. Omvedt (2008) 'Phule-Remembering the Kingdom of Bali', Seeking Begumpura, Navyana, pp. 159-184.

M. Gore (1993) The Social Context of an Ideology: Ambedkar's Political and Social Thought, Delhi: Sage Publication, pp. 73-122; 196-225.

B. Ambedkar (1989) 'Annihilation of Caste with a Reply to Mahatma Gandhi', in Dr. Babasaheb Ambedkar Writings and Speeches: Vol. 1, Education Deptt., Government of Maharashtra, Mumbai, pp. 23-96.

2. Caste and Religion

The Untouchables Who were they and why they become Untouchables? Available at

http://www.ambedkar.org/ambcd/39A.Untouchables%20who%20were%20they_why%20they%20became%20PART%20I.htm

B. Ambedkar (1987) 'The Hindu Social Order: Its Essential Principles', in Dr. Babasaheb Ambedkar Writings and Speeches: Vol. 3, Education Deptt., Government of Maharashtra, 1989, pp. 95-129.

B. Ambedkar (2003) 'What way Emancipation?', in Dr. Babasaheb Ambedkar Writings and Speeches, Vol. 17-III, Education Deptt., Government of Maharashtra, Mumbai, pp-175-201.

B. Ambedkar (2015 paperback). Thoughts on Pakistan or Partition of India. Gautam Publication, Delhi.

3. Women's Question

S. Rege (2013) 'Against the Madness of Manu', in B. R. Ambedkar's Writings on Brahmanical Patriarchy, Navyana Publication, pp. 13-59 ; 191-232.

B. Ambedkar (2003) 'The Rise and Fall of Hindu Woman: Who was Responsible for It?', in Dr. Babasaheb Ambedkar Writings and Speeches Vol. 17- II, Education Deptt., Government of Maharashtra, Mumbai, pp. 109-129.

4. Political Vision

B. Ambedkar (1991) 'What Gandhi and Congress have done to the Untouchables', in Dr. Babasaheb Ambedkar Writings and Speeches, Education Deptt, Government of Maharashtra, Vol.9, pp. 40-102; 181-198; 274-297.

B. Ambedkar (2003) 'Conditions Precedent for the successful working of Democracy', in Dr. Babasaheb Ambedkar Writings and Speeches, Vol. 17-III, Education Deptt, Government of Maharashtra, Mumbai, pp. 472-486.

5. Constitutionalism

Ambedkar, Evidence before South Borough committee on Franchise, Available at http://www.ambedkar.org/ambcd/07.%20Evidence%20before%20the%20Southborough%20Committee.htm.

Constituent Assembly Debates, Ambedkar's speech on Draft Constitution on 4th November 1948, CAD Vol. VII, Lok Sabha Secretariat, Government of India, 3rd Print, pp. 31-41.

B. Ambedkar (2013), States and Minorities, Delhi: Critical Quest.

Ujjwal Singh and Anupama Roy (2017) B. R. Ambedkar and the Ideas of Constitutionalism and Constitutional Democracy, IIAS Simla,

6. Economy and Class Question

S. Thorat (2007) 'Economic System, Development and Economic Planning', in S. Thorat and Aryama (eds), Ambedkar in Retrospect: Essays on Economics, Politics and Society, Delhi: Rawat Publishers, pp. 25-48.

B. Ambedkar (1991) 'Labor and Parliamentary Democracy and Welfare', in Dr. Babasaheb Ambedkar Writings and Speeches, Vol. 10, Education Deptt., Government of Maharashtra, Mumbai, pp. 106-112; 139-143; 243-252

Additional Resources:

Classics

Ambedkar, B. R. (1987) 'The Women and the Counter-Revolution', in Dr. Babasaheb Ambedkar Writings and Speeches, Vol. 3, Education Deptt., Government of Maharashtra, Mumbai, pp. 427-437.

Ambedkar, B. R. (2003), 'I have no Homeland', in Dr. Babasaheb Ambedkar Writings and Speeches Vol- 17, Education Deptt., Government of Maharashtra, Mumbai, pp-51-58.

Ambedkar, B. R. (2003), 'Role of Dr. B. R. Ambedkar in Bringing The Untouchables on the Political Horizon of India and Lying A Foundation of Indian Democracy', in Dr. Babasaheb Ambedkar Writings and Speeches, Vol. 17-I, Education Deptt., Government of Maharashtra,

Mumbai, pp-63-178.

Ambedkar, B. R. (2003) 'Buddhism paved way for Democracy and Socialistic Pattern of Society', in Dr. Babasaheb Ambedkar Writings and Speeches, Vol. 17-III, Education Deptt., Government of Maharashtra, Mumbai, pp. 406-409.

Ambedkar, B. R. (2003) 'Failure of Parliamentary Democracy will Result in Rebellion, Anarchy and Communism', in Dr. Babasaheb Ambedkar Writings and Speeches, Vol. 17-III, Education Deptt., Government of Maharashtra, Mumbai, pp. 423-437.

Readings in Hindi

अम्बेडकर, बी.आर., डॉ० (2013). एक राष्ट्र का अपने घर के लिए आह्वान. In बाबासाहेब डॉ० अम्बेडकर सम्पूर्ण वांग्मय (Vol. 15, pp. 11-21). नई दिल्ली: डॉ० अम्बेडकर प्रतिष्ठान. सामाजिक न्याय और अधिकारिता मंत्रालय.

अम्बेडकर, बी.आर., डॉ० (2013). राज्य और अल्पसंख्यक. In बाबासाहेब डॉ० अम्बेडकर सम्पूर्ण वांग्मय (Vol. 2, pp. 167-240). नई दिल्ली: डॉ० अम्बेडकर प्रतिष्ठान. सामाजिक न्याय और अधिकारिता मंत्रालय.

अम्बेडकर, बी.आर., डॉ० (2013). कार्यपालिका. In बाबासाहेब डॉ० अम्बेडकर सम्पूर्ण वांग्मय (Vol. 17, pp. 17-18). नई दिल्ली: डॉ० अम्बेडकर प्रतिष्ठान. सामाजिक न्याय और अधिकारिता मंत्रालय.

अम्बेडकर, बी.आर., डॉ० (2013). भारत में छोटी जोतों की समस्या और उसका निवारण. In बाबासाहेब डॉ० अम्बेडकर सम्पूर्ण वांग्मय (Vol. 2, pp. 243-276). नई दिल्ली: डॉ० अम्बेडकर प्रतिष्ठान. सामाजिक न्याय और अधिकारिता मंत्रालय.

अम्बेडकर, बी.आर., डॉ० (2013). न्यायपालिका की स्वतंत्रता. In बाबासाहेब डॉ० अम्बेडकर सम्पूर्ण वांग्मय (Vol. 3, pp. 205-209). नई दिल्ली: डॉ० अम्बेडकर प्रतिष्ठान. सामाजिक न्याय और अधिकारिता मंत्रालय.

अम्बेडकर, बी.आर., डॉ० (2013). भारतीय-श्रमिक युद्ध जीतने के लिए क्यों दृढ़संकल्प है. In बाबासाहेब डॉ० अम्बेडकर सम्पूर्ण वांग्मय(Vol. 18, pp. 27-34). नई दिल्ली: डॉ० अम्बेडकर प्रतिष्ठान. सामाजिक न्याय और अधिकारिता मंत्रालय.

अम्बेडकर, बी.आर., डॉ० (2013). छोटे किसान राहत विधेयक. In बाबासाहेब डॉ० अम्बेडकर सम्पूर्ण वांग्मय (Vol. 3, pp. 146-155). नई दिल्ली: डॉ० अम्बेडकर प्रतिष्ठान. सामाजिक न्याय और अधिकारिता मंत्रालय.

अम्बेडकर, बी.आर., डॉ० (2013). हिन्दुत्व का दर्शन. In बाबासाहेब डॉ० अम्बेडकर सम्पूर्ण वांग्मय (Vol. 6, pp. 15-120). नई दिल्ली: डॉ० अम्बेडकर प्रतिष्ठान. सामाजिक न्याय और अधिकारिता मंत्रालय.

अम्बेडकर, बी.आर., डॉ० (2013). भारत में जातिप्रथा. In बाबासाहेब डॉ० अम्बेडकर सम्पूर्ण वांग्मय (Vol. 1, pp. 17-36). नई दिल्ली: डॉ० अम्बेडकर प्रतिष्ठान. सामाजिक न्याय और अधिकारिता मंत्रालय.

अम्बेडकर, बी.आर., डॉ० (2013). जातिप्रथा-उन्मूलन और महात्मा गांधी को दिया गया उत्तर. In बाबासाहेब डॉ० अम्बेडकर सम्पूर्ण वांग्मय (Vol. 1, pp. 37-51). नई दिल्ली: डॉ० अम्बेडकर प्रतिष्ठान. सामाजिक न्याय और अधिकारिता मंत्रालय.

अम्बेडकर, बी.आर., डॉ० (2013). हिन्दू समाज, व्यवस्था. In बाबासाहेब डॉ० अम्बेडकर सम्पूर्ण वांग्मय(Vol. 6, pp. 122-163). नई दिल्ली: डॉ० अम्बेडकर प्रतिष्ठान. सामाजिक न्याय और अधिकारिता मंत्रालय.

अम्बेडकर, बी.आर., डॉ० (2013). नारी और प्रतिक्रान्ति. In बाबासाहेब डॉ० अम्बेडकर सम्पूर्ण वांग्मय (Vol. 7, pp. 330-342). नई दिल्ली: डॉ० अम्बेडकर प्रतिष्ठान. सामाजिक न्याय और अधिकारिता मंत्रालय.

अम्बेडकर, बी.आर., डॉ० (2013). मजदूर और संसदीय लोकतंत्र. In बाबासाहेब डॉ० अम्बेडकर सम्पूर्ण वांग्मय (Vol. 18, pp. 95-101). नई दिल्ली: डॉ० अम्बेडकर प्रतिष्ठान. सामाजिक न्याय और अधिकारिता मंत्रालय.

अम्बेडकर, बी.आर., डॉ० (2013). कर्मचारी कल्याण और सामाजिक सुरक्षा. In बाबासाहेब डॉ० अम्बेडकर सम्पूर्ण वांग्मय (Vol. 18, pp. 309-312). नई दिल्ली: डॉ० अम्बेडकर प्रतिष्ठान. सामाजिक न्याय और अधिकारिता मंत्रालय.

डॉ० अम्बेडकर. (2015). जातिभेद का उच्छेद. दिल्ली: गौतम बुक सेन्टर.

तिलक, रजनी. (2012). डॉ० अम्बेडकर और महिला आन्दोलन. In डॉ० अम्बेडकर और महिला आन्दोलन (pp. 5-20). दिल्ली: बुक्स इंडिया.

दिसोदिया, रजनी. (2012). नारी क्रांति के अग्रदूतः डॉ० अंबेडकर. In डॉ० अम्बेडकर और महिला आन्दोलन (pp. 25-35). दिल्ली: बुक्स इंडिया.

परमार, डॉ० तारा. (2012). डॉ० बाबा साहेबअम्बेडकर का भारतीय नारी उत्थान में योगदान. Inडॉ० अम्बेडकर और महिला आन्दोलन (pp. 36-40). दिल्ली:बुक्स इंडिया.

मेघवाल, कुसुम. (2012). हिंदु कोड बिल और डॉ० अम्बेडकर. In डॉ० अम्बेडकर और महिला आन्दोलन (pp. 41-46). दिल्ली:बुक्स इंडिया.

तिलक, रजनी. (2012). महिला आंदोलन की रीढ़-सावित्रीबाई फूले. In डॉ० अम्बेडकर और महिला आन्दोलन (pp. 21-24). दिल्ली:बुक्स इंडिया.

मेघवाल, कुसुम. (1994). डॉ० अम्बेडकर और महिला जागरण (pp. 113-122); नारी स्वतंत्रता व समानता का शुभारंभ (pp. 123-128). In भारतीय नारी के उद्धारकः डॉ० बी. आर. अम्बेडकर. उदयपुरः राजस्थान दलित साहित्य अकादमी.

सोनटक्के, यशवंत. (2017). धर्मांतरण (pp. 320-333) ; राष्ट्र और राष्ट्रीयता (pp. 169-174) ; लोकतांत्रिक समाज (pp. 67-88) In बाबासाहेब डॉ० आंबेडकर के विचार. नई दिल्ली: सम्यक प्रकाशन.

जाटव, डी. आर., डॉ० (1996). 'श्रमिक वर्गः सुरक्षा एवं कल्याण' (pp. 67-77) 'आर्थिक विचारधारा की श्रृंखला में' (pp. 100-109) In डॉ० अम्बेडकर के आर्थिक विचार (प्रयोजन एवं प्रासंगिकता) जयपुर: समता साहित्य.

Additional Readings:

G. Omvedt, Liberty Equality and Community: Dr. Ambedkar's Vision of New Social Order, Available at http://www.ambedkar.org/research/LibertyEquality.htm

A. Gajendran (2007) 'Representation', in S. Thorat and Aryama (eds.), Ambedkar in Retrospect: Essays on Economics, Politics and Society, Delhi: Rawat Publishers, 184-194.

R. Ram (2010) 'Dr, Ambedkar, Neo Liberal Market-Economy and Social Democracy in India', in Human Rights Global Focus, Vol. V (384), pp. 12-38.

Teltumbde and S. Sen (eds), 'Caste Question in India', in Scripting the Change, Selected Writings of Anuradha Ghandi, pp. 62- 91

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Common Pool of GE courses for Sem-V [common for all semesters] is at the end of the document

Category II

Political Science Courses for Undergraduate Programme of study with Political Science as one of the Core Disciplines

(B.A. Programmes with Political Science as Major discipline)

DISCIPLINE SPECIFIC CORE COURSE (DSC-5A): Introduction to International Relations

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Introduction to International Relations MDSC-5A	4	3	1	-	Passed Class XII	Nil

Learning Objectives

This course introduces students to the historical and conceptual foundations of the discipline of IR. It discusses the evolution of the discipline in the aftermath of the Second World War with theories being its main foundation and the lens through which it understood and explained the world. The disputations and challenges to these theories led to the emergence of "debates" which are then discussed and understood as the disciplines' dominant 'self-image'. This is followed by an elaboration of the discipline's major theoretical frameworks, each giving a different picture of the world — realism/neorealism, liberalism/neoliberalism, Marxism/Neo-Marxism and feminism. The course then examines major concepts–such as power, state and human rights. Students will also learn about the global governance with a case study of climate change negotiations. Finally, the course introduces scholarship from India within the wider context of Global South towards the development of a more inclusive IR from a Non-Western perspective.

Learning outcomes

At the end of the course students will be able to:

- Understand the ways in which IR as a discipline evolved from a Eurocentric vantage point to the emergence of a critical movement to shape a more inclusive, historical and a global IR.
- Appreciate the ways in which scholarship from postcolonial countries such as India contribute to understanding the world around us.
- Analyse key concepts and concerns of IR such as war and peace, state, sovereignty and human rights to understand how these forces shape the world towards more efficient global governance.
- Develop critical understandings of power hierarchies and unequal relationships through the lens of feminism and Marxism.
- Understand the important aspects of Non-Western IR that can help students investigate and shape the future course of the discipline.
- Develop a basic understanding of the Indian contributions to the discipline of international relations.

SYLLABUS OF MDSC-5A

UNIT – I (9 Hours)
Disciplinary history of International Relations

1.1. What is International Relations?
1.2. Debates: Idealism/Realism & Science/Classical Methods, Inter-paradigm Debate

UNIT – II (16 Hours)
Theories of International Relations

2.1. Realpolitik/Realism/Neo-realism
2.2. Liberalism/Neo-liberalism
2.3. Marxism/Neo-Marxism
2.4. Feminism

UNIT – III (14 Hours)
Concepts & Issues

3.1. State and Sovereignty
3.2. War and Peace
3.3. Human Rights
3.4. Global governance: climate change negotiations

UNIT – IV (6 Hours)
IR Beyond Eurocentrism

4.1 Non-western Perspectives
4.2 Indian Contributions to International Relations

Essential/recommended readings

Unit 1. Disciplinary history of IR

1.1. What is IR?

Essential Readings

Grieco, Joseph, John Ikenberry and Michael Mastanduno, (2014) *Introduction to International Relations: Enduring Questions and Contemporary Perspectives*, New York: Palgrave Macmillan, Chapter one, pp. 2-30.

Devetak, Richard, Anthony Burke and Jim George, (2007), *An introduction to International Relations*, Cambridge: Cambridge University Press, Introduction, pp. 1-18.

Additional Readings

Mansbach, Richard W. and Kirsten L Taylor, 2008, *Introduction to Global Politics*, New York: Routledge, Chapter two, pp. 1-32.

Reus-Smit, Christian, 2020, *A Very short introduction to International Relations*, Oxford University Press, Chapter one, 7-27.

1.2. Debates: Idealism/Realism & Science/Classical Methods and Inter-paradigm Debate

Essential Readings

Tim Dunne, Milja Kurki, and Steve Smith, (eds.) (2013), *International Relations Theories, Discipline and Diversity*, Oxford University Press: UK, 3rd edition. Chapter one. pp. 1-13.

Mansbach, Richard W. and Kirsten L Taylor, (2008), *Introduction to Global Politics*, New York: Routledge, Chapter one. pp 9-24.

Waever, O., (1996). The rise and fall of the inter-paradigm debate. In S. Smith, K. Booth, & M. Zalewski (Eds.), International theory: Positivism and beyond. Cambridge: Cambridge University Press. pp. 149-185.

Additional Readings

Weber, Cynthia, (2005), *International Relations Theory: A Critical Introduction*, London: Routledge. Chapter one. pp. 1-12.

Mearsheimer, J. (2005), "E.H. Carr vs Idealism: The Battle Rages On", *International Relations,* 19(2), pp. 139-153.

Mingst A. Karen and Jack L. Snyder (2017*),* Woodrow Wilson: The Fourteen Points*, Essential Readings in World politics,* 6th edition, US: W.W. Norton and Company, pp. 32-34.

Unit 2: Theories of IR

2.1. Realpolitik/Realism/Neo-realism

Essential Readings

Nirmal Jindal, (2020). Kautilya's Realpolitik 'in Nirmal Jindal, Kamal Kumar, (eds.) International Relations: Theory and Practice, Sage Publications, India. Pp.151-170.

Baylis, John and Steve Smith (2001), "Realism", *The Globalisation of World Politics: An Introduction to International Relations*, New York: Oxford University Press. pp. 141-161.

Additional Readings

Malviya, Ritambhara (2020), "Realism and neorealism", in Nirmal Jindal, Kamal Kumar, (eds.) *International Relations: Theory and Practice*, Sage Publications, India. pp.151-170., Chapter 4, 59-74.

Richard Ned Lebow, "Classical Realism," and John J. Mearsheimer, "Structural Realism," in Tim Dunne, Milja Kurki, and Steve Smith, (eds.) (2013) *International Relations Theories, Discipline and Diversity*. Oxford University Press: UK, 3rd edition, pp. 59-93.

Waltz, Kenneth, *An Interview on a Theory of International Relations and the Role of structure*, Online at http://globetrotter.berkeley.edu/people3/Waltz/waltz-con0.html

2.2. Liberalism/Neo-liberalism

Essential Readings

Baylis, John and Steve Smith (2001), "Liberalism", *The Globalisation of World Politics: An Introduction to International Relations*, New York: Oxford University Press. pp. 162-181.

Robert Jackson, Georg Sørensen (2019). 'Liberalism 'in *Introduction to International Relations, Theories and Approaches*, Oxford University Press: New York, Chapter 4, pp.107-142.

Additional Readings

Jon C. W. Pavehouse and Joshua S. Goldstein, (2018). "Chapter 3-Liberal and Social Theories," in *International Relations*, 11th Edition, Pearson: New York, pp. 83-121.

Doyle, Michael W. (1986), "Liberalism and World Politics", *The American Political Science Review*, December, Vol. 80, no. 4, pp.1151-1169.

Keohane, Robert O. (2012), "Twenty Years of Institutional liberalism", *International Relations,* 26:2, pp. 125-138.

2.3. Marxism/Neo-Marxism

Essential Readings

Hobden Stephen and Richard Wyn Jones (2014), “Marxist theories of International Relations”, in John Baylis, Steve Smith and Patricia Owens (et.al), *The Globalization of World Politics*, Sixth Edition, UK: Oxford, pp.116-129.

Wallerstein, I. (2000), “The Rise and Future Demise of World Capitalist System: Concepts for Comparative Analysis”, in Michael Smith and Richard Little (eds), *Perspectives on World Politics*, New York: Routledge, pp. 305-317.

Additional Readings

Mark Rupert, (2013). ‘Marxism ’in Tim Dunne, Milja Kurki, and Steve Smith, (eds.) I*nternational Relations Theories, Discipline and Diversity.* Oxford University Press: UK, 3rd edition. pp.153-170.

Davenport, Andrew, “Marxism in IR: Condemned to a Realist Fate?”, *European Journal of International Relations,* 19 (1), 2013:27-48.

Goldstein, J. and Pevehouse, J. (2007), *International Relations*, New York: Pearson Longman, pp. 494-496; 500-503.

Wallerstein, Immanuel (1995) , “The Inter-State Structure of the Modern World System”, in: Steve Smith, Ken Booth and Marysia Zalewski (eds.), *International Theory: Positivism and Beyond*, Cambridge: Cambridge University Press, pp.87-107.

2.4. Feminism

Essential Readings

Ann Tickner, J., (2008). ‘Gender in World Politics’, in Baylis, J. and Smith, (et al.). *The Globalization of World Politics*. Oxford: Oxford University Press. pp. 262-277.

Peterson, V. Spike, ed. *Gendered States: Feminist (Re)Visions of International Relations Theory*. Boulder, CO: Lynne Rienner, 1992. Chapter one. pp. 31-64.

Additional Readings

Seema Narain, (2014) “Gender in International Relations: Feminist Perspectives of J. Ann Tickner” *Indian Journal of Gender Studies*, Vol 21 (2), pp. 179-197.

Steans, Jill (1998), *Gender and International Relations: An Introduction*, Cambridge, Blackwell publishers, pp.10-39.

Young, G. (2004), “Feminist International Relations: A Contradiction in Terms? Or: Why Women and Gender are Essential to Understanding the World ‘We ’Live,” *International Affairs*, 80 (1), pp.75-87.

Unit 3: Concepts & Issues

3.1. State and Sovereignty

Essential Readings

Navnita Chadha Behera, (2020). ‘State and Sovereignty, ’in Arlene B. Tickner and Karen Smith, eds., *International Relations from the Global South: Worlds of Difference*, London: Routledge: pp.139-160.

Reus-Smit, Christian, 2020, *A Very short introduction to International Relations*, Oxford University Press, Chapter four, 87-112.

Additional Readings

Lake, David A. (2008), "The State and International Relations", in *The Oxford Handbook of International Relations*, Christian Reus Smit and Duncan Snidal (ed), London: Oxford University Press.

Biersteker, Thomas, J, (2002), 'State, Sovereignty and Territory, '*Sage Handbook of International Relations*, London: Sage Publications. pp. 207-234.

Osiander, A. (2001), "Sovereignty, International Relations, and the Westphalian Myth", *International Organization*, [online] 55(2), pp.251-287. Available at: https://www.cambridge.org/core/journals/international-organization/article/sovereignty-international-relations-and-the-westphalian

3.2. War and Peace

Essential Readings

Joseph Grieco, G. John Ikenberry and Michael Mastanduno, (2015), Chapter 5 on "War and its Causes" and, Chapter 6 "Pathways to Interstate Peace," in *Introduction to International Relations: Enduring Questions and Contemporary Perspectives*, London: Palgrave 2015, pp. 137-204.

Additional Readings

Gray, Colin S. (2012), *War, Peace and International Relations: An Introduction to Strategic History*, London: Routledge, pp. 245-261, 279-306.

Robert Ayson, "The Changing Nature of Warfare," in Devetak, Richard, Anthony Burke and Jim George, (2007), *An introduction to International Relations*, Cambridge: Cambridge University Press, pp. 199-216.

Gurr, Ted and Barbara Hartff, (2018), *Ethnic Conflict in World Politics: Dilemmas in World Politics*, Chapter one. 24-55.

3.3. Human Rights

Essential Readings

Brown, Chris, "Human Rights," in Baylis, John and Steve Smith (2008), *The Globalisation of World Politics:* An Introduction to International Relations, 4th Edition, New York: Oxford University Press, pp. 506-521.

Baxi, Upendra (2002), "An Age of Human rights?" in Baxi, Upendra, *The Future of Human Rights*, Oxford University Press, Delhi, pp. 1-32

Additional Readings

Clapham, Andrew, (2015), *A very short introduction to human rights*, New Delhi: OUP. Chapter two and three - (The historical development of international human rights, Human rights foreign policy and the role of the United Nations pp. 22-80.

Anthony J. Langlois, "Human Rights," in Devetak, Richard, Anthony Burke and Jim George, (2007), *An introduction to International Relations*, Cambridge: Cambridge University Press, pp.440-449.

3.4. Global governance and climate change negotiations

Essential Readings

Weiss, Thomas G, (2013) "What is global governance" in *Global Governance: Why? What? Whither?*, New York: Polity, 90-127

Agarwal, Anil and Sunita Narain (1991), *Global Warming and Unequal World: A Case of Environmental Colonialism*, Centre for Science and Environment, Delhi, pp. 81-91.

Additional Readings

Heywood, Andrew, (2011) “Global Governance and the Bretton Woods System,” in *Global Politics*, New York: Palgrave Macmillan, pp. 461-484.

Sengupta, S. (2012), “International Climate Negotiations and India’s Role”, in N.K. Dubash (ed.), *Handbook of Climate Change and India: Development, Politics and Governance*, New Delhi, Routledge.

Andonova, L. B., Betsill, M. M., & Bulkeley, H. (2009), “Transnational climate governance”, *Global Environmental Politics*, 9 (2), 52-73.

Unit 4: IR Beyond Eurocentrism

4.1. Non-Western Perspectives

Essential Readings

Blaney, David L. and Inayatullah, Naeem (2009), “International Relations from Below” in Christian Reus Smit and Duncan Snidal, (ed.), *The Oxford Handbook of International Relations*, Oxford: Oxford University Press, 2008, pp. 663-674.

Amitav Acharya and Barry Buzan, “Why is there no non-Western international relations theory? An introduction”, *International Relations of the Asia-Pacific*, 7:3, September 2007, pp-287–312.

Additional Readings

Bilgin, Pinar. “Thinking Past Western IR,” *Third World Quarterly*, 29, no. 1 (2007): 5–23.

Capan, Z. (2016), “Decolonising International Relations?” *Third World Quarterly*, [online] 38(1), pp.1-15. Available at: https://www.tandfonline.com/doi/abs/10.1080/01436597.2016.1245100 [Accessed 10 Nov. 2018].

4.2. Indian Contributions to IR

Essential Reading(s)

Behera, N. C. (2013) “Introduction,” in *India Engages the World*. (*Political science: 4*.) New Delhi: Oxford University Press, pp. 1-55.

Additional Reading(s)

Kanti Bajpai and Siddharth Mallavarapu, (2019) (eds.), “Introduction,” in *India, the West and International Order,* New Delhi: Orient Black Swan, pp. 1-52.

A.K. Ramakrishnan, “The Gaze of Orientalism: Reflections on Linking Postcolonialism and International Relations,” in Kanti Bajpai and Siddharth Mallavarapu, (eds.), *International Relations in India: Bringing Theory Back Home*, New Delhi: Orient Longman, pp. 223-274.

Reference Literature:

Kumar, Mahendra (2017). *Theoretical Aspects of International Politics*. New Delhi, Shiva lal Agarwal Publication.

Held, D., Mc Grew, A. et al. (eds) (1999) *Global Transformation Reader: Politics, Economics and Culture*, Stanford: Stanford University Press.

Wenger, A. and Zimmermann, D. (eds.) (2003) *International Relations: From the Cold World War to the Globalized World*. London: Lynne Rienner.

Smith, M., Little, R. and Shackleton, M. (eds.) (1981) *Perspectives on World Politics*. London: Croom Helm.

Art, R. J. and Jervis, R. (eds.) (1999) *International Political Enduring: Concepts and Contemporary Issues*. 5th Edition. New York: Longman, pp. 7-14; 29-49; 119-126.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC CORE COURSE (DSC-5B): Modern Indian Political Thought

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Modern Indian Political Thought MDSC-5B	4	3	1	-	Passed Class XII	NIL

Learning Objectives

The objective of this course is to study important themes through individual thinkers. The course has been designed to give students a glimpse of the richness and diversity within Indian political thought. The thinkers have been consciously selected to represent a wide spectrum of ideologies and vantage points within the modern Indian thought tradition. Selected extracts from original texts are also included to be discussed in the class. This will help students to have experience in understanding how these thinkers build up their arguments and develop their views on the respective themes.

Learning outcomes

After reading this course, the students will be able to:

- Develop critical understanding about modern Indian thought.
- Thematically explore ideas in order to locate the topical debates on important subjects on a historical trajectory
- Reflect over the diverse possibilities exhibited in the writings of the respective thinkers.
- Think about issues and debates in contemporary India from multiple vantage points including its historical significance in the Indian tradition.
- Develop toleration and respect for diverse opinion and at the same time, to admire and appreciate the plurality within the modern Indian intellectual tradition.

SYLLABUS OF MDSC-5B

UNIT – I (4 Hours)
Understanding Modern Indian Political Thought

UNIT – II (8 Hours)
Nation and Nationalism

Swami Vivekananda, Rabindranath Tagore and Gandhi

UNIT – III (10 Hours)

State and Democracy

Jawaharlal Nehru, Deendayal Upadhyay, Ram Manohar Lohia, and Bhimrao Ramji Ambedkar

UNIT – IV (8 Hours)

Rights

Rammohan Roy, Tarabai Shinde

UNIT – V (8 Hours)

Swaraj

Bal Gangadhar Tilak, Mohandas Karamchand Gandhi

UNIT – VI (7 Hours)

Hindutva and Hinduism

Savarkar

Essential/recommended readings

Unit wise reading list

1. Understanding Modern Indian Political Thought

V. Mehta and T. Pantham (2006) *'A Thematic Introduction to Political Ideas in Modern India: Thematic Explorations, History of Science, Philosophy and Culture in Indian civilization'* Vol. 10, Part: 7 (New Delhi: Sage Publications), pp. xxvii-ixi.

D. Dalton (1982) 'Continuity of Innovation', in *Indian Idea of Freedom: Political Thought of Swami Vivekananda, Aurobindo Ghose, Rabindranath Tagore and Mahatma Gandhi* (Gurgaon: Academic Press), pp. 1-28.

R. Guha (2010) "Prologue: Thinking Through India", in Makers of Modern India, Penguin Books. pp.1-22

2. Nation and Nationalism

Sen, Amiya P. (2011), 'Vivekanand: Cultural Nationalism', in M. P. Singh and Himanshu Roy (ed.), *Indian Political Thought: Themes and Thinkers* (Delhi: Pearson)

Tagore: M. Radhakrishnan and Devasmita (2003), 'Nationalism is a great menace: Tagore and Nationalism', in P. Hogan, Coln and L. Pandit (ed.) *Rabindranath Tagore: Universility and Tradition* (London: Rosemont), pp. 29-39.

Guha, R (2010), "*The Rooted Cosmopolitan*" in the Makers of Modern India, Penguin, pp 185-203

3. State and Democracy

Parekh, B. (1991), 'Nehru and the National Philosophy of India', *Economic and Political Weekly*, vol. 26 (1/2), pp. 35-48.

Yadav, Y. (2010), 'What is Living and What is Dead in Ram Manohar Lohia?' *Economic and Political Weekly*, vol. XLV (40), pp. 107.

Deendayal Upadhyay (1964), Integral Humanism, Bharatiya Jana Sangha, Delhi.

Ambedkar, B.R. (2017) "The Challenges before the Parliamentary Democracy in India and their Remedies", in B.L.Mungekar, The Essential Ambedkar, Rupa, Chap-09

4. Rights

Mukherjee, S. (2014), 'The Social Implications of the Political Thought of Raja Rammohun Roy', *Sydney Studies in Society and Culture*, pp. 11-40.

O' Hanlon, Rosalind (2002) A comparison between women and men: Tarabai Shinde and the critique of Gender Relations in Colonial India Oxford University Press: New Delhi - Introduction

5. Swaraj

Parel, A. (ed.) (2002), 'Introduction', in *Gandhi, freedom and Self Rule,* Delhi: Vistaar Publication.

Inamdar, N.R. (1986), "The Political Ideas of Lokmanya Tilak" in Thomas Pantham and Kenneth Deutsch (ed.) Political thought in modern India, New Delhi: Sage pp. 110-121

Singh, S. P. (2017), 'Tilak's Nationalism and Swaraj', in M. P. Singh and Himanshu Roy (ed.), *Indian Political Thought: Themes and Thinkers* (Delhi: Pearson), pp. 194-205.

6. Hindutva and Hinduism: Savarkar

Savarkar, Vinayak Damodar. Essentials of Hindutva, 1922-23, available at: http://savarkar.org/en/encyc/2017/5/23/2_12_12_04_essentials_of_hindutva.v001.pdf_1.pdf

Sampath, Vikram (2021) Savarkar: A Contested Legacy, 1924-1966, Penguin Random House India: Gurugram

Additional Readings:

Mahopatra, Silika and Singh, Akash (2012), 'What is Indian Political Thought', in Self (ed.), *Indian Political Thought* (New York: Routledge).

Parekh, Bhikhu (2012), 'The Poverty of Indian Political Theory', in Akash Singh and Silika Mahopatra(ed.), *Indian Political Thought* (New York: Routledge), pp. 220-235.

Vivekananda, 'The Nature of British Rule in India- II', in Amiya P. Sen (ed.), *The Indispensable Vivekananda: An Anthology for Our Times* (New Delhi: Permanent Black), pp. 63-69.

Tagore, R (2018) 'Nationalism in India', in *Nationalism* (New Delhi: Macmillan), pp. 97-130.

Madani, M. (2005), *Composite Nationalism and Islam* (New Delhi: Manohar), pp. 66-91.

Gokhale, B. G. (1964), 'Swami Vivekananda and Indian Nationalism', *Journal of Bible and Religion*, vol. 32 (1), pp. 35-42.

Bhattacharya, S. (2016), 'Antinomies of Nationalism and Rabindranath Tagore', *Economic and Political Weekly*, Vol. 51 (6).

Nandy, A. (1994), 'Rabindranath Tagore & Politics of Self', in *Illegitimacy of Nationalism* (Delhi: Oxford University Press), pp. 1-50.

Nehru, J. (1991) 'Selected Works', in S. Hay (ed.), *Sources of Indian Tradition*, Vol. 2, Second Edition (New Delhi: Penguin), pp. 317-319.

Kothari, Rajni (1964), 'The Meaning of Jawaharlal Nehru', *The Economic Weekly*, pp. 1203-1207.

Jaffrelot C. and Kumar, N. (2018). *Dr. Ambedkar and Democracy: An Anthology* (Delhi: Oxford University Press).

Mukherjee, A. P. (2009), 'B. R. Ambedkar, John Dewey and the meaning of Democracy', *New Literary History*, vol. 40(2), pp. 345-370

Kumar, A. (2010), 'Understanding Lohia's Political Sociology: Intersectionality of Caste, Class, Gender and Language Issue', *Economic and Political Weekly*, vol. XLV (40), pp.64-70.

Roy, Rammohun (1902), 'Petitions against the Press Regulation to the Supreme Court, and to the Ring in Council, in J. C. Ghose (ed.), *The English Works of Raja Ram Mohan Roy* (Calcutta: S. K. Lahiri), pp. 278-321.

Lele, Jayant (1998) Gender Consciousness in Mid-Nineteenth- Century Maharashtra in Anne Feldhaus *Images of women in Maharashtrian Society*. The University of New York press: New York

Bayly, C. A. (2010), Ram Mohan and the Advent of Constitutional Liberalism in India; 1800 to 1830 in S. Kapila (ed.) An Intellectual History for India, New Delhi: Cambridge University Press: pp-18-34

Pantham, T. (1986) The socio-religious thought of Ram Mohan Roy in Thomas Pantham and Kenneth Deutsch (ed.) Political thought in modern India, New Delhi: Sage, pp-32-52

Chakravarti, U. (2007) *Pandita Ramabai - A Life and a Time*, New Delhi: Critical Quest, pp.1-40.

Omvedt, G. (2008) 'Ramabai: Women in the Kingdom of God', in *Seeking Begumpura*: *The Social Vision of Anti Caste Intellectuals,* New Delhi: Navayana. pp. 205-224.

Tilak, B. G. (1922) 'Karma yoga and Swaraj' and 'Swarajya speech at Godhra', in *Bal Gangadhar Tilak: His Writings and Speeches* (Madras: Ganesh & Co.), pp. 245-248; 292-298.

Gandhi, M. K. (2006), *Hind Swaraj* (Ahmedabad: Navajivan Publishing House).

Mukherjee, R. (2009), 'Gandhi's Swaraj', *Economic and Political Weekly*, vol. 44(50): 34-39.

Kapila, Shruti (2010), 'Self, Spencer and *Swaraj*: Nationalist Thought And Critiques Of Liberalism, 1890–1920', in self (ed.) *An Intellectual History for India* (New Delhi: Cambridge University Press), pp. 109-127

Piney, Christopher (2011), 'The Tiger's Nature, but Not the Tiger: Bal Gangadhar Tilak as Mohandas Karamchand Gandhi's Counter-Guru', *Public Culture* 23(2), pp. 395-416.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category III

Political Science Courses for Undergraduate Programme of study with Political Science as one of the Core Disciplines

(B.A. Programmes with Political Science as non-Major or Minor discipline)

DISCIPLINE SPECIFIC CORE COURSE (DSC-5A): Introduction to International Relations

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Introduction to International Relations MDSC-5A	4	3	1	-	Passed Class XII	NIL

Learning Objectives

This course introduces students to the historical and conceptual foundations of the discipline of IR. It discusses the evolution of the discipline in the aftermath of the Second World War with theories being its main foundation and the lens through which it understood and explained the world. The disputations and challenges to these theories led to the emergence of "debates" which are then discussed and understood as the disciplines' dominant 'self-image'. This is followed by an elaboration of the discipline's major theoretical frameworks, each giving a different picture of the world — realism/neorealism, liberalism/neoliberalism, Marxism/Neo-Marxism and feminism. The course then examines major concepts–such as power, state and human rights. Students will also learn about the global governance with a case study of climate change negotiations. Finally, the course introduces scholarship from India within the wider context of Global South towards the development of a more inclusive IR from a Non-Western perspective.

Learning outcomes

At the end of the course students will be able to:

- Understand the ways in which IR as a discipline evolved from a Eurocentric vantage point to the emergence of a critical movement to shape a more inclusive, historical and a global IR.
- Appreciate the ways in which scholarship from postcolonial countries such as India contribute to understanding the world around us.
- Analyse key concepts and concerns of IR such as war and peace, state, sovereignty and human rights to understand how these forces shape the world towards more efficient global governance.
- Develop critical understandings of power hierarchies and unequal relationships through the lens of feminism and Marxism.
- Understand the important aspects of Non-Western IR that can help students investigate and shape the future course of the discipline.
- Develop a basic understanding of the Indian contributions to the discipline of international relations.

SYLLABUS OF MDSC-5A

UNIT – I (9 Hours)
Disciplinary history of IR

1.1. What is International Relations?
1.2. Debates: Idealism/Realism & Science/Classical Methods, Inter-paradigm Debate

UNIT – II (16 Hours)
Theories of IR

2.1. Realpolitik/Realism/Neo-realism
2.2. Liberalism/Neo-liberalism
2.3. Marxism/Neo-Marxism
2.4. Feminism

UNIT – III (14 Hours)
Concepts & Issues

3.1. State and Sovereignty
3.2. War and Peace
3.3. Human Rights
3.4. Global governance: climate change negotiations

UNIT – IV (6 Hours)
IR Beyond Eurocentrism

4.1 Non-western Perspectives
4.2 Indian Contributions to IR

Essential/recommended readings

Unit 1. Disciplinary history of IR

1.1. What is IR?

Essential Readings

Grieco, Joseph, John Ikenberry and Michael Mastanduno, (2014) *Introduction to International Relations: Enduring Questions and Contemporary Perspectives*, New York: Palgrave Macmillan, Chapter one, pp. 2-30.

Devetak, Richard, Anthony Burke and Jim George, (2007), *An introduction to International Relations*, Cambridge: Cambridge University Press, Introduction, pp. 1-18.

Additional Readings

Mansbach, Richard W. and Kirsten L Taylor, 2008, *Introduction to Global Politics*, New York: Routledge, Chapter two, pp. 1-32.

Reus-Smit, Christian, 2020, *A Very short introduction to International Relations*, Oxford University Press, Chapter one, 7-27.

1.2. Debates: Idealism/Realism & Science/Classical Methods and Inter-paradigm Debate

Essential Readings

Tim Dunne, Milja Kurki, and Steve Smith, (eds.) (2013), *International Relations Theories, Discipline and Diversity*, Oxford University Press: UK, 3rd edition. Chapter one. pp. 1-13.

Mansbach, Richard W. and Kirsten L Taylor, (2008), *Introduction to Global Politics*, New York: Routledge, Chapter one. pp 9-24.

Waever, O., (1996). The rise and fall of the inter-paradigm debate. In S. Smith, K. Booth, & M. Zalewski (Eds.), International theory: Positivism and beyond. Cambridge: Cambridge University Press. pp. 149-185.

Additional Readings

Weber, Cynthia, (2005), *International Relations Theory: A Critical Introduction*, London: Routledge. Chapter one. pp. 1-12.

Mearsheimer, J. (2005), "E.H. Carr vs Idealism: The Battle Rages On", *International Relations,* 19(2), pp. 139-153.

Mingst A. Karen and Jack L. Snyder (2017*),* Woodrow Wilson: The Fourteen Points*, Essential Readings in World politics,* 6th edition, US: W.W. Norton and Company, pp. 32-34.

Unit 2: Theories of IR

2.1. Realpolitik/Realism/Neo-realism

Essential Readings

Nirmal Jindal, (2020). Kautilya's Realpolitik 'in Nirmal Jindal, Kamal Kumar, (eds.) International Relations: Theory and Practice, Sage Publications, India. Pp.151-170.

Baylis, John and Steve Smith (2001), "Realism", *The Globalisation of World Politics: An Introduction to International Relations*, New York: Oxford University Press. pp. 141-161.

Additional Readings

Malviya, Ritambhara (2020), "Realism and neorealism", in Nirmal Jindal, Kamal Kumar, (eds.) *International Relations: Theory and Practice*, Sage Publications, India. pp.151-170., Chapter 4, 59-74.

Richard Ned Lebow, "Classical Realism," and John J. Mearsheimer, "Structural Realism," in Tim Dunne, Milja Kurki, and Steve Smith, (eds.) (2013) *International Relations Theories, Discipline and Diversity*. Oxford University Press: UK, 3rd edition, pp. 59-93.

Waltz, Kenneth, *An Interview on a Theory of International Relations and the Role of structure*, Online at http://globetrotter.berkeley.edu/people3/Waltz/waltz-con0.html

2.2. Liberalism/Neo-liberalism

Essential Readings

Baylis, John and Steve Smith (2001), "Liberalism", *The Globalisation of World Politics: An Introduction to International Relations*, New York: Oxford University Press. pp. 162-181.

Robert Jackson, Georg Sørensen (2019). 'Liberalism 'in *Introduction to International Relations, Theories and Approaches*, Oxford University Press: New York, Chapter 4, pp.107-142.

Additional Readings

Jon C. W. Pavehouse and Joshua S. Goldstein, (2018). "Chapter 3-Liberal and Social Theories," in *International Relations*, 11th Edition, Pearson: New York, pp. 83-121.

Doyle, Michael W. (1986), "Liberalism and World Politics", *The American Political Science Review*, December, Vol. 80, no. 4, pp.1151-1169.

Keohane, Robert O. (2012), "Twenty Years of Institutional liberalism", *International Relations,* 26:2, pp. 125-138.

2.3. Marxism/Neo-Marxism

Essential Readings

Hobden Stephen and Richard Wyn Jones (2014), “Marxist theories of International Relations”, in John Baylis, Steve Smith and Patricia Owens (et.al), *The Globalization of World Politics*, Sixth Edition, UK: Oxford, pp.116-129.

Wallerstein, I. (2000), “The Rise and Future Demise of World Capitalist System: Concepts for Comparative Analysis”, in Michael Smith and Richard Little (eds), *Perspectives on World Politics*, New York: Routledge, pp. 305-317.

Additional Readings

Mark Rupert, (2013). ‘Marxism ’in Tim Dunne, Milja Kurki, and Steve Smith, (eds.) I*nternational Relations Theories, Discipline and Diversity.* Oxford University Press: UK, 3rd edition. pp.153-170.

Davenport, Andrew, “Marxism in IR: Condemned to a Realist Fate?”, *European Journal of International Relations,* 19 (1), 2013:27-48.

Goldstein, J. and Pevehouse, J. (2007), *International Relations*, New York: Pearson Longman, pp. 494-496; 500-503.

Wallerstein, Immanuel (1995) , “The Inter-State Structure of the Modern World System”, in: Steve Smith, Ken Booth and Marysia Zalewski (eds.), *International Theory: Positivism and Beyond*, Cambridge: Cambridge University Press, pp.87-107.

2.4. Feminism

Essential Readings

Ann Tickner, J., (2008). ‘Gender in World Politics’, in Baylis, J. and Smith, (et al.). *The Globalization of World Politics*. Oxford: Oxford University Press. pp. 262-277.

Peterson, V. Spike, ed. *Gendered States: Feminist (Re)Visions of International Relations Theory*. Boulder, CO: Lynne Rienner, 1992. Chapter one. pp. 31-64.

Additional Readings

Seema Narain, (2014) “Gender in International Relations: Feminist Perspectives of J. Ann Tickner” *Indian Journal of Gender Studies*, Vol 21 (2), pp. 179-197.

Steans, Jill (1998), *Gender and International Relations: An Introduction*, Cambridge, Blackwell publishers, pp.10-39.

Young, G. (2004), “Feminist International Relations: A Contradiction in Terms? Or: Why Women and Gender are Essential to Understanding the World ‘We ’Live,” *International Affairs*, 80 (1), pp.75-87.

Unit 3: Concepts & Issues

3.1. State and Sovereignty

Essential Readings

Navnita Chadha Behera, (2020). ‘State and Sovereignty, ’in Arlene B. Tickner and Karen Smith, eds., *International Relations from the Global South: Worlds of Difference*, London: Routledge: pp.139-160.

Reus-Smit, Christian, 2020, *A Very short introduction to International Relations*, Oxford University Press, Chapter four, 87-112.

Additional Readings

Lake, David A. (2008), “The State and International Relations”, in *The Oxford Handbook of International Relations*, Christian Reus Smit and Duncan Snidal (ed), London: Oxford University Press.

Biersteker, Thomas, J, (2002), ‘State, Sovereignty and Territory, ’*Sage Handbook of International Relations*, London: Sage Publications. pp. 207-234.

Osiander, A. (2001), “Sovereignty, International Relations, and the Westphalian Myth”, *International Organization*, [online] 55(2), pp.251-287. Available at:

https://www.cambridge.org/core/journals/international-organization/article/sovereignty-international-relations-and-the-westphalian

3.2. War and Peace

Essential Readings

Joseph Grieco, G. John Ikenberry and Michael Mastanduno, (2015), Chapter 5 on "War and its Causes" and, Chapter 6 "Pathways to Interstate Peace," in *Introduction to International Relations: Enduring Questions and Contemporary Perspectives*, London: Palgrave 2015, pp. 137-204.

Additional Readings

Gray, Colin S. (2012), *War, Peace and International Relations: An Introduction to Strategic History*, London: Routledge, pp. 245-261, 279-306.

Robert Ayson, "The Changing Nature of Warfare," in Devetak, Richard, Anthony Burke and Jim George, (2007), *An introduction to International Relations*, Cambridge: Cambridge University Press, pp. 199-216.

Gurr, Ted and Barbara Hartff, (2018), *Ethnic Conflict in World Politics: Dilemmas in World Politics*, Chapter one. 24-55.

3.3. Human Rights

Essential Readings

Brown, Chris, "Human Rights," in Baylis, John and Steve Smith (2008), *The Globalisation of World Politics:* An Introduction to International Relations, 4th Edition, New York: Oxford University Press, pp. 506-521.

Baxi, Upendra (2002), "An Age of Human rights?" in Baxi, Upendra, *The Future of Human Rights*, Oxford University Press, Delhi, pp. 1-32

Additional Readings

Clapham, Andrew, (2015), *A very short introduction to human rights*, New Delhi: OUP. Chapter two and three - (The historical development of international human rights, Human rights foreign policy and the role of the United Nations pp. 22-80.

Anthony J. Langlois, "Human Rights," in Devetak, Richard, Anthony Burke and Jim George, (2007), *An introduction to International Relations*, Cambridge: Cambridge University Press, pp.440-449.

3.4. Global governance and climate change negotiations

Essential Readings

Weiss, Thomas G, (2013) "What is global governance" in *Global Governance: Why? What? Whither?*, New York: Polity, 90-127

Agarwal, Anil and Sunita Narain (1991), *Global Warming and Unequal World: A Case of Environmental Colonialism*, Centre for Science and Environment, Delhi, pp. 81-91.

Additional Readings

Heywood, Andrew, (2011) "Global Governance and the Bretton Woods System," in *Global Politics*, New York: Palgrave Macmillan, pp. 461-484.

Sengupta, S. (2012), "International Climate Negotiations and India's Role", in N.K. Dubash (ed.), *Handbook of Climate Change and India: Development, Politics and Governance*, New Delhi, Routledge.

Andonova, L. B., Betsill, M. M., & Bulkeley, H. (2009), "Transnational climate governance", *Global Environmental Politics*, 9 (2), 52-73.

Unit 4: IR Beyond Eurocentrism

4.1. Non-Western Perspectives

Essential Readings

Blaney, David L. and Inayatullah, Naeem (2009), "International Relations from Below" in Christian Reus Smit and Duncan Snidal, (ed.), *The Oxford Handbook of International Relations*, Oxford: Oxford University Press, 2008, pp. 663-674.

Amitav Acharya and Barry Buzan, "Why is there no non-Western international relations theory? An introduction", *International Relations of the Asia-Pacific*, 7:3, September 2007, pp-287–312.

Additional Readings

Bilgin, Pinar. "Thinking Past Western IR," *Third World Quarterly*, 29, no. 1 (2007): 5–23.

Capan, Z. (2016), "Decolonising International Relations?" *Third World Quarterly*, [online] 38(1), pp.1-15. Available at: https://www.tandfonline.com/doi/abs/10.1080/01436597.2016.1245100 [Accessed 10 Nov. 2018].

4.2. Indian Contributions to IR

Essential Reading(s)

Behera, N. C. (2013) "Introduction," in *India Engages the World*. (*Political science: 4*.) New Delhi: Oxford University Press, pp. 1-55.

Additional Reading(s)

Kanti Bajpai and Siddharth Mallavarapu, (2019) (eds.), "Introduction," in *India, the West and International Order,* New Delhi: Orient Black Swan, pp. 1-52.

A.K. Ramakrishnan, "The Gaze of Orientalism: Reflections on Linking Postcolonialism and International Relations," in Kanti Bajpai and Siddharth Mallavarapu, (eds.), *International Relations in India: Bringing Theory Back Home*, New Delhi: Orient Longman, pp. 223-274.

Reference Literature:

Kumar, Mahendra (2017). *Theoretical Aspects of International Politics*. New Delhi, Shiva lal Agarwal Publication.

Held, D., Mc Grew, A. et al. (eds) (1999) *Global Transformation Reader: Politics, Economics and Culture*, Stanford: Stanford University Press.

Wenger, A. and Zimmermann, D. (eds.) (2003) *International Relations: From the Cold World War to the Globalized World*. London: Lynne Rienner.

Smith, M., Little, R. and Shackleton, M. (eds.) (1981) *Perspectives on World Politics*. London: Croom Helm.

Art, R. J. and Jervis, R. (eds.) (1999) *International Political Enduring: Concepts and Contemporary Issues*. 5th Edition. New York: Longman, pp. 7-14; 29-49; 119-126.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Discipline Specific Elective (DSE) Courses for Sem – V
[Category II and III – Multidisciplinary]

DISCIPLINE SPECIFIC ELECTIVE COURSE – 3a: International Political Economy

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
International Political Economy MDSE-3a	4	3	1	-	Passed Class XII	NIL

Learning Objectives

This course introduces to the students the significant linkages that exist between politics and economics in the domain of International Relations by apprising them about the meaning, nature and conceptual foundations of the field of International Political Economy. In doing this the course examines the structural functional linkages that exist between the macro-economic global structure and the systemic contours of global politics. Students will learn about the traditional as well as critical theoretical frameworks employed to examine the nature and functioning of international political economy. These theories include economic nationalism, liberalism and neo-Marxism on the one hand and historical sociology, feminism and postcolonialism on the other. Based on these conceptual and theoretical foundations, the course then attempts at delineating the major issues pertaining to the nature and functioning of the global political economy specially focusing on international trade, development and finance. The course also looks at the key constitutive elements of global economic governance including multilateral and regional institutions, regimes and multinational corporations. Further, the course introduces the students to key concerns pertaining to global economic crises, and the indicators of information communications technology (ICT), cyber economy and the global civil society.

Learning outcomes

By the completion of the course the students would be able to:

- Develop a basic understanding of the structural functional linkages that connect the realms of politics and economics.
- Learn to use the conceptual tools and theoretical frameworks for understanding the nature and basic functioning of the international political economy.
- Understand the structural drivers that determine the contours of international trade and finance.
- Develop an understanding about the Global South's contribution to this field both in the domain of ideas and working of the global political economy.
- Understand how our economic life is getting transformed on account of the information and communication technology, the cyber economy and interventions of the global civil society.

SYLLABUS OF MDSE-3a

UNIT – I (2 Hours)

Introduction: Understanding the intersectionality between politics and economy

UNIT – II (14 Hours)

Theoretical Perspectives

c. Economic Nationalism, Liberalism and Structuralism
d. Historical Sociology, Feminism and Postcolonialism

UNIT – III (12 Hours)

International Trade and Development

a. International trade
b. Multinational corporations
c. Perspectives from the Global South and the Indian Story

UNIT – IV (8 Hours)

International Finance

a. International finance and monetary structure
b. International and regional financial institutions

UNIT – V (9 Hours)

New Directions and New Challenges

a. ICT and Cyber economy
b. Economic Crises
c. Global Civil Society

Essential/recommended readings

Unit 1. Introduction: Understanding the intersectionality between politics and economy

Essential Readings

Gilpin, Robert (2001), "The Nature of Political Economy", in *Global Political Economy: Understanding the International Economic Order*, Princeton, N.J.: Princeton University Press, pp. 25-45.

Balaam, David N. and Bradford Dillman (2014), "What Is International Political Economy?", in *Introduction to International Political Economy*, 6th edition, Boston: Pearson, pp. 2-24.

Additional Readings

Gilpin, Robert (2001), "Introduction: The Fragile Global Economy" and "The Second Great Age of Capitalism", in *The Challenge of Global Capitalism: The World Economy in the 21st Century*, Princeton, N.J.: Princeton University Press, pp. 3-51.

Frieden, Jeffrey and Lisa Martin (2002), "International Political Economy: Global and Domestic Interactions," in Ira Katznelson and Helen Milner, eds., *Political Science: The State of the Discipline,* New York & London: W. W. Norton & Co., pp. 118-146.

Hirst, Paul, Grahame Thompson and Simon Bromley (2009), "Globalization and the History of the International Economy", in *Globalization in Question*, third edition, Cambridge: Polity Press, pp.54-107.

Strange, Susan (1970), "International Economics and International Relations: A Case of Mutual Neglect", *International Affairs*, 46 (2): 304- 315.

Unit 2.a. Economic Nationalism, Liberalism and Structuralism

Essential Readings

Balaam, David N. and Bradford Dillman (2014), "Laissez-Faire: The Economic Liberal Perspective", "Wealth and Power: The Mercantilist Perspective", and "Economic Determinism and Exploitation: The Structuralist Perspective", in *Introduction to International Political Economy*, 6th edition, Boston: Pearson, pp. 25-52; 53-77; 78-100.

Martinussen, John (1997), "Neo-Marxist Theories of Underdevelopment and Dependency", in *Society, State and Market: A guide to competing theories of development*, London: Zed Books Ltd., pp. 85-100.

Gilpin, Robert (1987), "Three Ideologies of Political Economy", in *The Political Economy of International Relations*, Princeton: Princeton University Press, pp. 25-64.

Strange, Susan (2003), "States, Firms, and Diplomacy", in Jeffry A. Frieden and David A. Lake (ed.) *International Political Economy: Perspectives on Global Power and Wealth*, Fourth Edition, London and New York: Routledge, pp. 60-68.

Additional Readings

O'Brien, Robert and Marc Williams (2016), "Theories of Global Political Economy", in *Global Political Economy: Evolution and Dynamics,* Fifth Edition, London: Palgrave, pp. 6-21.

Frank, Andre Gunder (1966) "The Development of Underdevelopment," *Monthly Review,* 18 (4): 17-31.

Wallerstein, Immanuel (1974), "The Rise and Future Demise of the World-Capitalist System: Concepts for Comparative Analysis", *Comparative Studies in Society and History*, 16 (4): 387-415.

Gilpin, Robert (2001), "The Neoclassical Conception of Economy", "The Study of International Political Economy", and "New Economic Theories", in *Global Political Economy: Understanding the International Economic Order*, Princeton, N.J.: Princeton University Press, pp. 46-128.

Shaikh, Anwar (2005), "The Economic Mythology of Neoliberalism", in Alfredo Saad-Filho and Deborah Johnston (eds.) *Neoliberalism: A Critical Reader*, London: Pluto Press, pp. 41-49.

Lenin, V.I. (1997), "The Export of Capital", and "Imperialism as a Special Stage of Capitalism", reproduced in George T. Crane and Abla Amawi (eds.) *The Theoretical Evolution of International Political Economy: A Reader*, New York: Oxford University Press, pp. 98-101.

Unit 2.b. Historical Sociology, Feminism and Postcolonialism

Essential Readings

Hobson, John M. (1997), "A sociology of international relations and an international relations of sociology", in *The Wealth of States: A Comparative Sociology of International Economic and Political Change*, Cambridge: Cambridge University Press, pp. 1-22.

Griffin, Penny (2017), "Gender and the Global Political Economy", *Oxford Research Encyclopedia of International Studies*, URL: https://doi.org/10.1093/acrefore/9780190846626.013.187

Bhambra, Gurminder K. (2020) "Colonial global economy: towards a theoretical reorientation of political economy", *Review of International Political Economy*, 28 (2): 3017-322.

Additional Readings

Escobar, Arturo (1984), "Discourse and Power in Development: Michel Foucault and the Relevance of his Work to the Third World", *Alternatives: Global, Local, Political*, 10 (3): 377-400.

Gill, Stephen and David Law (1993), "Global hegemony and the structural power of capital", in Stephen Gill (ed.) *Gramsci, Historical Materialism and International Relations*, Cambridge: Cambridge University Press, pp. 93-124.

Steans, Jill (1999), "The Private is Global: Feminist Politics and Global Political Economy," *New Political Economy*, Vol. 4, No. 1, pp.113-128.

Griffin, Penny (2007), "Refashioning IPE: and How Gender Analysis Teaches International (Global) Political Economy", *Review of International Political Economy*, Vol. 14, No. 4, pp. 719-736.

Rai, Shirin M. (2002), "Gender and Development: Theoretical Perspectives in Context", *Gender and the political economy of development: from nationalism to globalization*, Oxford: Polity, pp. 44-83.

Unit 3.a. International Trade

Essential Readings

O'Brien, Robert and Marc Williams (2016), "International Trade", in *Global Political Economy: Evolution and Dynamics,* Fifth Edition, London: Palgrave, pp. 102-124.

Krasner, Stephen D. (2003), "State Power and the Structure of International Trade", in Jeffry A. Frieden and David A. Lake (ed.) *International Political Economy: Perspectives on Global Power and Wealth*, Fourth Edition, London and New York: Routledge, pp. 19-36.

Additional Readings

Archer, Candace and Stefan Fritsch (2010) "Global fair trade: Humanizing globalization and reintroducing the normative to international political economy", *Review of International Political Economy*, 17: 103-128.

Gilpin, Robert (1987), "The Politics of International Trade", in *The Political Economy of International Relations*, Princeton: Princeton University Press, pp. 171-230.

Ruggie, John Gerard (1982) "International Regimes, Transactions, and Change: Embedded Liberalism in the Postwar Economic Order", *International Organization*, 36 (2): 379-415.

Baracuhy, Braz (2012), "The Geopolitics of Multilateralism: The WTO Doha Round Deadlock, the BRICs, and the Challenges of Institutionalised Power Transitions," *CRP Working Paper Series*, No. 4, January. URL: https://fdocuments.net/document/the-geopolitics-of-multilateralism-the-wto-doha-round-deadlock.html

Unit 3.b. Multinational corporations

Essential Readings

Hirst, Paul, Grahame Thompson and Simon Bromley (2009), "Multinational Companies and the Internationalization of Business Activity", in *Globalization in Question*, third edition, Cambridge: Polity Press, pp. 109-149.

Balaam, David N. and Bradford Dillman (2014), "Transnational Corporations: The Governance of Foreign Investment", in *Introduction to International Political Economy*, 6th edition, Boston: Pearson, pp. 432-457

Additional Readings

Gilpin, Robert (1987), "Multinational Corporations and International Production", *The Political Economy of International Relations*, Princeton: Princeton University Press, pp. 231-26.

Fieldhouse, David (2003) "'A New Imperial System'? The Role of the Multinational Corporations Reconsidered", in Jeffry A. Frieden and David A. Lake (ed.) *International Political Economy: Perspectives on Global Power and Wealth*, Fourth Edition, London and New York: Routledge.

Unit 3.c. Perspectives from Global South and the Indian Story

Essential Readings

Buzan, Barry and George Lawson (2016), “The Impact of the ‘Global Transformation’ on Uneven and Combined Development”, in Alexander Anievas and Kamran Matin (eds.) *Historical Sociology and World History Uneven and Combined Development over the Longue Durée*, London: Rowman & Littlefield International, pp. 171-184.

David L. Blaney and Naeem Inayatullah (2016), “The Stakes of Uneven and Combined Development” in Alexander Anievas and Kamran Matin (eds.) *Historical Sociology and World History Uneven and Combined Development over the Longue Durée*, London: Rowman & Littlefield International, pp. 239-250.

Mukherjee, Aditya (2010) “Empire: How colonial India made modern Britain”, *Economic and Political Weekly*, 45(50), 73– 82.

Dadabhai Naoroji (1901), “Deficit of Imports Compared with the exports of India”; “The Drain to England”; “Increase of the Drain”; “Small Amount of Imports from England”; “India's Tribute”; and “The Elements of the Drain”, in *Poverty and Unbritish Rule in India*, London: Swan Sonnenschein & Co., Ltd, pp.28-34.

Subrahmanyam, Sanjay (1988) “Commerce and State Power in Eighteenth-Century India: Some Reflections”, *South Asia Research* 8 (2): 97-110.

Additional Readings

Dutt, Romesh (1902), “External Trade”, and “Finance And The Economic Drain, 1793-1837”, in *The Economic History of India: Under Early British Rule, Vol.1: From The Rise Of The British Power In 1757 To The Accession Of Queen Victoria In 1837*, Great Britain: Kegan Paul, Trench, Trübner, pp. 291-302; 398-420.

Chaudhuri, K.N. (1983), “Foreign Trade and Balance of Payments (1757-1947)”, in Dharma Kumar (ed.) *The Cambridge Economic History Of India, Volume 2: c.1757-c.1970*, Cambridge: Cambridge University Press, 804-877.

Shaikh, Anwar (2006), “Globalization and the myth of free trade”, in Anwa rShaikh (ed.) *Globalization and the Myths of Free Trade*, London and New York: Routledge, pp. 50-68.

Acemoglu, Daron and James A. Robinson (2013), “Reversing Development” and “The Virtuous Circle”, in *Why Nations Fail: The Origins of Power, Prosperity, and Poverty*. London: Profile Books, pp. 245-273, 302-334.

Chibber, Vivek (2003), “Late Development and State-Building”, *Locked in Place: State-Building and Late Industrialization in India,* Princeton: Princeton University Press, pp. 13-48.

Daron Acemoglu and James A. Robinson (2017), “The economic impact of colonialism”, in Stelios Michalopoulos and Elias Papaioannou (eds.) *The Long Economic and Political Shadow of History: Volume I. A Global View*, London: CEPR Press, pp. 81-88.

Unit 4.a. International finance and monetary structure

Essential Readings

Balaam, David N. and Bradford Dillman (2014), “The International Monetary and Finance Structure”, in *Introduction to International Political Economy*, 6th edition, Boston: Pearson, pp. 151-177

Eric Helleiner (2017), “The Evolution of the International Monetary and Financial System”, in John Ravenhill (ed.) *Global Political Economy*, fifth edition, Oxford: Oxford University Press, 119-224.

Additional Readings

Setser, Brad (2008),“A Neo-Westphalian International Financial System?”, *Journal of International Affairs*, Vol. 62, No. 1, pp. 17-34.

Wade, Robert (2006), “Choking the South”, *New Left Review*, Vol. 38, March/April, pp. 115-127.

Unit 4.b. International and regional financial institutions

Essential Readings

Williams, Marc (2012), "Global Economic Institutions" in Richard Devetak, Anthony Burke and Jim George (eds.) *An Introduction to International Relations*, second edition, Cambridge: Cambridge University Press, pp. 336-347.

Rana, Pradumna B. and Ramon Pacheco Pardo (2018), "Rise of Complementarity between Global and Regional Financial Institutions: Perspectives from Asia", *Global Policy*, 9 (2): 231-243.

Wihtol, Robert (1988), "The Asian Development Bank", in *The Asian Development Bank and Rural Development: Policy and Practice*, London: Macmillan Press, pp. 16-30.

Additional Readings

Vetterlein, Antje (2012), "Seeing Like the World Bank on Poverty," *New Political Economy*, Vol. 17, No. 1, pp. 35-58.

Picciotto, Robert (2003), "A New World Bank for a New Century", in C. Roe Goddard, Patrick Cronin and Kishore C. Dash (eds.) *International Political Economy: State-Market Relations in a Changing Global Order*, Boulder, Colo. : Lynne Rienner, pp. 341-352.

Cooper, Andrew F. (2017), "The BRICS' New Development Bank: Shifting from Material Leverage to Innovative Capacity", *Global Policy*, 8 (3): 275-284.

Lisa L. Martin (2006), "Distribution, Information, and Delegation to International Organizations: The Case of IMF Conditionality," in Darren G. Hawkins et al. (eds.) *Delegation and Agency in International Organizations*, Cambridge: Cambridge University Press, pp. 140-164.

Oatley, Thomas (2019), "Developing Countries and International Finance II: The Global Capital Flow Cycle", in *International Political Economy*, Sixth Edition, New York and London: Routledge, pp. 428-453.

Sinha, Aseema (2021) "Understanding the 'crisis of the institution' in the liberal trade order at the WTO", *International Affairs*, 97 (5): 1521–1540.

Nel, Philip (2010), "Redistribution and Recognition: What Emerging Regional Powers Want", *Review of International Studies,* Vol. 36, No. 4, pp. 951-974.

Unit 5.a. ICT and Cyber economy

Essential Readings

Brass, Irina and David J. Hornsby (2019), "Digital Technological Innovation and the International Political Economy", in T. M. Shaw et al. (eds.), *The Palgrave Handbook of Contemporary International Political Economy*, London: Palgrave Macmillan.

O'Brien, Robert and Marc Williams (2016) *Global Political Economy: Evolution and Dynamics,* Fifth Edition, London: Palgrave, pp. 266-268.

Additional Readings

Castells, Manuel (2010), "The New Economy: Informationalism, Globalization, Networking", in *The Rise of the Network Society, 2*nd edition, Malden, M.A.: Wiley Blackwell, pp. 77-162.

Dicken, Peter (2015), "Technological Change: 'Gales of Creative Destruction'", in *Global Shift: Mapping the Changing Contours of the World Economy*, 7th Edition, London: The Guilford Press, pp. 74-113.

Fidler, David (2021), "Cybersecurity, Global Commerce, and International Organizations", in Paul Cornish (ed.) *The Oxford Handbook of Cyber Security*, Oxford: Oxford University Press, pp. 497-513.

Wittel, Andreas (2013), “Counter-commodification: The economy of contribution in the digital commons”, *Culture and Organization*, 19:4, 314-331.

Unit 5.b. Economic Crises

Essential Readings

Hale, Thomas, David Held, Kevin Young (2013), “Economy”, in *Gridlock: Why Global Cooperation is Failing when We Need It Most*, London: Polity Press, 113-188.

Luis W. Pauly(2017), “The Political Economy of Global Financial Crises”, in John Ravenhill (ed.) *Global Political Economy*, fifth edition, Oxford: Oxford University Press, pp. 225-252.

Stiglitz, Joseph E. (2017),“The Burden of Debt”, in *Making Globalization Work: The Next Steps to Global Justice*, London: Allen Lane, pp. 211-244.

Wade, Robert and Frank Veneroso (1998), “The Asian Crisis: The High Debt Model Versus the Wall Street-Treasury-IMF Complex,” *New Left Review,* I/228, pp. 3-22.

Helleiner, Eric (2011) “Understanding the 2007-2008 Global Financial Crisis: Lessons for Scholars of International Political Economy?” *Annual Review of Political Science*, Vol. 14, pp. 67-87.

Additional Readings

O’Brien, Robert and Marc Williams (2016) *Global Political Economy: Evolution and Dynamics,* Fifth Edition, London: Palgrave, pp. 153-178.

Ferguson, Niall (2008), “Afterword: The Decent of Money”, in *The Ascent of Money: A Financial History of the World*, New York: The Penguin Press, pp. 341-358.

Lipson, Charles (1981),“The International Organization of Third World Debt”, *International Organization*, 35 (4): 603-631.

Unit 5.c. Global Civil Society

Essential Readings

Scholte, Jan Aart (2000), “Global Civil Society”, in Ngaire Woods (ed.) *The Political Economy of Globalization*, New Tork: St. Martin’s Press, pp. 173-201.

Cerny, Philip G. (2003), “Globalization and the Changing Logic of Collective Action”, in Jeffry A. Frieden and David A. Lake (ed.) *International Political Economy: Perspectives on Global Power and Wealth*, Fourth Edition, London and New York: Routledge, pp. 446-460.

Additional Readings

Nathan, Dev, D. Narasimha Reddy and Govind Kelkar (2008), “Addressing Crises and Change”, in*International Trade and Global Civil Society*, London and New York: Routledge, pp. 247-264.

Sen, Amartya (2009), “Human Rights and Global Imperatives”, and “Justice and the World”, in *The Idea of Justice*, Cambridge: The Belknap Press of Harvard University Press, pp. 355-416.

Reference Literature:

Gilpin, Robert (2001), *Global Political Economy: Understanding the International Economic Order*, Princeton, N.J.: Princeton University Press.

Grieco, Joseph M. and G. John Ikenberry (2003), *State, Power and World Markets: The International Political Economy*, New York: W.W. Norton & Co.

Hulsemeyer, Axel (2010), *International Political Economy: A Reader*, Oxford: Oxford University Press.

Oatley, Thomas (2019) *International Political Economy*, Sixth Edition, New York and London: Routledge.

Ravenhill, John (ed.) (2017) *Global Political Economy*, fifth edition, Oxford: Oxford University Press.

Strange, Susan (1994) *State and the Markets*, Second Edition, London and New York: Continuum.

Strange, Susan (1996) *The Retreat of the State: The Diffusion of Power in the World Economy*, Cambridge: Cambridge University Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 3b: Understanding Ambedkar

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Understanding Ambedkar MDSE-3b	4	3	1	-	Passed Class XII	Nil

Learning Objectives

This course is broadly intended to introduce Ambedkar's ideas and their relevance in contemporary India, by looking beyond caste. Ambedkar's philosophical contributions towards Indian economy and class question, sociological interpretations on religion, gender, caste and cultural issues; ideas on politics such as concepts of nation, state, democracy, law and constitutionalism are to be pedagogically interrogated and interpreted. This will help students to critically engage themselves with the existing social concerns, state and economic structures and other institutional mechanisms. This also will facilitate them to strengthen their creative thinking with a collective approach to understand ongoing social, political, cultural and economic issues of the society.

Learning outcomes

The course is designed to provide students the original writings and ideas of Ambedkar on diverse issues beyond caste and equip them to critically engage with the ideas, interpretations. By engaging with the original sources as well as secondary writings on Ambedkar's ideas that cover, caste, class, gender, religion, state, democracy and constitution the students will be able to understand a thinker in the context and contemporaneity. At the end of the course, students shall be equipped with the method of understanding the ideas, philosophy and relevance of a particular thinker. Students shall also be able to reflect on the method of the thinker's engagement with the then context, issues and concepts. Finally, the students shall be equipped in understanding the conceptual and philosophical diversity, situatedness and significance of Ambedkar beyond his contribution in the sphere of social justice and drafting the Indian constitution. The course thus

provides an opportunity to the students to understand Ambedkar for his several important contributions in the field of religion, state, democracy, gender, economy and history.

SYLLABUS OF MDSE-3b

UNIT – I (3 Hours)
Introducing Ambedkar

Approach to Study Polity, History, Economy, Religion and Society

UNIT – II (10 Hours)
Caste and Religion

Caste, Untouchability and Critique of Hindu Social Order
Islam and Partition of India
Religion and Conversion

UNIT – III (8 Hours)
Women's Question

Ambedkar on Women
Hindu Code Bill
Uniform Civil Code

UNIT – IV (8 Hours)
Political Vision

Nation and Nationalism
Democracy and Citizenship

UNIT – V (8 Hours)
Constitutionalism

Rights and Representations
Constitution as an Instrument of Social Transformation

UNIT – VI (8 Hours)
Economy and Class Question

Planning and Development
Land and Labour References

Essential/recommended readings

1. Introducing Ambedkar

G. Omvedt (2008) 'Phule-Remembering the Kingdom of Bali', Seeking Begumpura, Navyana, pp. 159-184.

M. Gore (1993) The Social Context of an Ideology: Ambedkar's Political and Social Thought, Delhi: Sage Publication, pp. 73-122; 196-225.

B. Ambedkar (1989) 'Annihilation of Caste with a Reply to Mahatma Gandhi', in Dr. Babasaheb Ambedkar Writings and Speeches: Vol. 1, Education Deptt., Government of Maharashtra, Mumbai, pp. 23-96.

2. Caste and Religion

The Untouchables Who were they and why they become Untouchables? Available at http://www.ambedkar.org/ambcd/39A.Untouchables%20who%20were%20they_why%20they%20became%20PART%20I.htm

B. Ambedkar (1987) 'The Hindu Social Order: Its Essential Principles', in Dr. Babasaheb Ambedkar Writings and Speeches: Vol. 3, Education Deptt., Government of Maharashtra, 1989, pp. 95-129.

B. Ambedkar (2003) 'What way Emancipation?', in Dr. Babasaheb Ambedkar Writings and Speeches, Vol. 17-III, Education Deptt., Government of Maharashtra, Mumbai, pp-175-201.

B. Ambedkar (2015 paperback). Thoughts on Pakistan or Partition of India. Gautam Publication, Delhi.

3. Women's Question

S. Rege (2013) 'Against the Madness of Manu', in B. R. Ambedkar's Writings on Brahmanical Patriarchy, Navyana Publication, pp. 13-59 ; 191-232.

B. Ambedkar (2003) 'The Rise and Fall of Hindu Woman: Who was Responsible for It?', in Dr. Babasaheb Ambedkar Writings and Speeches Vol. 17- II, Education Deptt., Government of Maharashtra, Mumbai, pp. 109-129.

4. Political Vision

B. Ambedkar (1991) 'What Gandhi and Congress have done to the Untouchables', in Dr. Babasaheb Ambedkar Writings and Speeches, Education Deptt, Government of Maharashtra, Vol.9, pp. 40-102; 181-198; 274-297.

B. Ambedkar (2003) 'Conditions Precedent for the successful working of Democracy', in Dr. Babasaheb Ambedkar Writings and Speeches, Vol. 17-III, Education Deptt, Government of Maharashtra, Mumbai, pp. 472-486.

5. Constitutionalism

Ambedkar, Evidence before South Borough committee on Franchise, Available at http://www.ambedkar.org/ambcd/07.%20Evidence%20before%20the%20Southborough%20Committee.htm.

Constituent Assembly Debates, Ambedkar's speech on Draft Constitution on 4th November 1948, CAD Vol. VII, Lok Sabha Secretariat, Government of India, 3rd Print, pp. 31-41.

B. Ambedkar (2013), States and Minorities, Delhi: Critical Quest.

Ujjwal Singh and Anupama Roy (2017) B. R. Ambedkar and the Ideas of Constitutionalism and Constitutional Democracy, IIAS Simla,

6. Economy and Class Question

S. Thorat (2007) 'Economic System, Development and Economic Planning', in S. Thorat and Aryama (eds), Ambedkar in Retrospect: Essays on Economics, Politics and Society, Delhi: Rawat Publishers, pp. 25-48.

B. Ambedkar (1991) 'Labor and Parliamentary Democracy and Welfare', in Dr. Babasaheb Ambedkar Writings and Speeches, Vol. 10, Education Deptt., Government of Maharashtra, Mumbai, pp. 106-112; 139-143; 243-252

Additional Resources:

Classics

Ambedkar, B. R. (1987) 'The Women and the Counter-Revolution', in Dr. Babasaheb Ambedkar Writings and Speeches, Vol. 3, Education Deptt., Government of Maharashtra, Mumbai, pp. 427-437.

Ambedkar, B. R. (2003), 'I have no Homeland', in Dr. Babasaheb Ambedkar Writings and Speeches Vol- 17, Education Deptt., Government of Maharashtra, Mumbai, pp-51-58.

Ambedkar, B. R. (2003), 'Role of Dr. B. R. Ambedkar in Bringing The Untouchables on the Political Horizon of India and Lying A Foundation of Indian Democracy', in Dr. Babasaheb Ambedkar Writings and Speeches, Vol. 17-I, Education Deptt., Government of Maharashtra, Mumbai, pp-63-178.

Ambedkar, B. R. (2003) 'Buddhism paved way for Democracy and Socialistic Pattern of Society', in Dr. Babasaheb Ambedkar Writings and Speeches, Vol. 17-III, Education Deptt., Government of Maharashtra, Mumbai, pp. 406-409.

Ambedkar, B. R. (2003) 'Failure of Parliamentary Democracy will Result in Rebellion, Anarchy and Communism', in Dr. Babasaheb Ambedkar Writings and Speeches, Vol. 17-III, Education Deptt., Government of Maharashtra, Mumbai, pp. 423-437.

Readings in Hindi

अम्बेडकर, बी.आर., डॉ० (2013). एक राष्ट्र का अपने घर के लिए आह्वान. In बाबासाहेब डॉ० अम्बेडकर सम्पूर्ण वांग्मय (Vol. 15, pp. 11-21). नई दिल्ली: डॉ० अम्बेडकर प्रतिष्ठान. सामाजिक न्याय और अधिकारिता मंत्रालय.

अम्बेडकर, बी.आर., डॉ० (2013). राज्य और अल्पसंख्यक. In बाबासाहेब डॉ० अम्बेडकर सम्पूर्ण वांग्मय (Vol. 2, pp. 167-240). नई दिल्ली: डॉ० अम्बेडकर प्रतिष्ठान. सामाजिक न्याय और अधिकारिता मंत्रालय.

अम्बेडकर, बी.आर., डॉ० (2013). कार्यपालिका. In बाबासाहेब डॉ० अम्बेडकर सम्पूर्ण वांग्मय (Vol. 17, pp. 17-18). नई दिल्ली: डॉ० अम्बेडकर प्रतिष्ठान. सामाजिक न्याय और अधिकारिता मंत्रालय.

अम्बेडकर, बी.आर., डॉ० (2013). भारत में छोटी जोतों की समस्या और उसका निवारण. In बाबासाहेब डॉ० अम्बेडकर सम्पूर्ण वांग्मय (Vol. 2, pp. 243-276). नई दिल्ली: डॉ० अम्बेडकर प्रतिष्ठान. सामाजिक न्याय और अधिकारिता मंत्रालय.

अम्बेडकर, बी.आर., डॉ० (2013). न्यायपालिका की स्वतंत्रता. In बाबासाहेब डॉ० अम्बेडकर सम्पूर्ण वांग्मय (Vol. 3, pp. 205-209). नई दिल्ली: डॉ० अम्बेडकर प्रतिष्ठान. सामाजिक न्याय और अधिकारिता मंत्रालय.

अम्बेडकर, बी.आर., डॉ० (2013). भारतीय-श्रमिक युद्ध जीतने के लिए क्यों दृढ़संकल्प है. In बाबासाहेब डॉ० अम्बेडकर सम्पूर्ण वांग्मय(Vol. 18, pp. 27-34). नई दिल्ली: डॉ० अम्बेडकर प्रतिष्ठान. सामाजिक न्याय और अधिकारिता मंत्रालय.

अम्बेडकर, बी.आर., डॉ० (2013). छोटे किसान राहत विधेयक. In बाबासाहेब डॉ० अम्बेडकर सम्पूर्ण वांग्मय (Vol. 3, pp. 146-155). नई दिल्ली: डॉ० अम्बेडकर प्रतिष्ठान. सामाजिक न्याय और अधिकारिता मंत्रालय.

अम्बेडकर, बी.आर., डॉ० (2013). हिन्दुत्व का दर्शन. In बाबासाहेब डॉ० अम्बेडकर सम्पूर्ण वांग्मय (Vol. 6, pp. 15-120). नई दिल्ली: डॉ० अम्बेडकर प्रतिष्ठान. सामाजिक न्याय और अधिकारिता मंत्रालय.

अम्बेडकर, बी.आर., डॉ० (2013). भारत में जातिप्रथा. In बाबासाहेब डॉ० अम्बेडकर सम्पूर्ण वांग्मय (Vol. 1, pp. 17-36). नई दिल्ली: डॉ० अम्बेडकर प्रतिष्ठान. सामाजिक न्याय और अधिकारिता मंत्रालय.

अम्बेडकर, बी.आर., डॉ० (2013). जातिप्रथा-उन्मूलन और महात्मा गांधी को दिया गया उत्तर. In बाबासाहेब डॉ० अम्बेडकर सम्पूर्ण वांग्मय (Vol. 1, pp. 37-51). नई दिल्ली: डॉ० अम्बेडकर प्रतिष्ठान. सामाजिक न्याय और अधिकारिता मंत्रालय.

अम्बेडकर, बी.आर., डॉ० (2013). हिन्दू समाज, व्यवस्था. In बाबासाहेब डॉ० अम्बेडकर सम्पूर्ण वांग्मय(Vol. 6, pp. 122-163). नई दिल्ली: डॉ० अम्बेडकर प्रतिष्ठान. सामाजिक न्याय और अधिकारिता मंत्रालय.

अम्बेडकर, बी.आर., डॉ० (2013). नारी और प्रतिक्रान्ति. In बाबासाहेब डॉ० अम्बेडकर सम्पूर्ण वांग्मय (Vol. 7, pp. 330-342). नई दिल्ली: डॉ० अम्बेडकर प्रतिष्ठान. सामाजिक न्याय और अधिकारिता मंत्रालय.

अम्बेडकर, बी.आर., डॉ० (2013). मजदूर और संसदीय लोकतंत्र. In बाबासाहेब डॉ० अम्बेडकर सम्पूर्ण वांग्मय (Vol. 18, pp. 95-101). नई दिल्ली: डॉ० अम्बेडकर प्रतिष्ठान. सामाजिक न्याय और अधिकारिता मंत्रालय.

अम्बेडकर, बी.आर., डॉ० (2013). कर्मचारी कल्याण और सामाजिक सुरक्षा. In बाबासाहेब डॉ० अम्बेडकर सम्पूर्ण वांग्मय (Vol. 18, pp. 309-312). नई दिल्ली: डॉ० अम्बेडकर प्रतिष्ठान. सामाजिक न्याय और अधिकारिता मंत्रालय.

डॉ० अम्बेडकर. (2015). जातिभेद का उच्छेद. दिल्ली: गौतम बुक सेन्टर.

तिलक, रजनी. (2012). डॉ० अम्बेडकर और महिला आन्दोलन. In डॉ० अम्बेडकर और महिला आन्दोलन (pp. 5-20). दिल्ली: बुक्स इंडिया.

दिसोदिया, रजनी. (2012). नारी क्रांति के अग्रदूतः डॉ० अंबेडकर. In डॉ० अम्बेडकर और महिला आन्दोलन (pp. 25-35). दिल्ली: बुक्स इंडिया.

परमार, डॉ० तारा. (2012). डॉ० बाबा साहेबअम्बेडकर का भारतीय नारी उत्थान में योगदान. Inडॉ० अम्बेडकर और महिला आन्दोलन (pp. 36-40). दिल्ली:बुक्स इंडिया.

मेघवाल, कुसुम. (2012). हिंदु कोड बिल और डॉ० अम्बेडकर. In डॉ० अम्बेडकर और महिला आन्दोलन (pp. 41-46). दिल्ली:बुक्स इंडिया.

तिलक, रजनी. (2012). महिला आंदोलन की रीढ़-सावित्रीबाई फूले. In डॉ० अम्बेडकर और महिला आन्दोलन (pp. 21-24). दिल्ली:बुक्स इंडिया.

मेघवाल, कुसुम. (1994). डॉ० अम्बेडकर और महिला जागरण (pp. 113-122); नारी स्वतंत्रता व समानता का शुभारंभ (pp. 123-128). In भारतीय नारी के उद्धारकः डॉ० बी. आर. अम्बेडकर. उदयपुरः राजस्थान दलित साहित्य अकादमी.

सोनटक्के, यशवंत. (2017). धर्मांतरण (pp. 320-333) ; राष्ट्र और राष्ट्रीयता (pp. 169-174) ; लोकतांत्रिक समाज (pp. 67-88) In बाबासाहेब डॉ० आंबेडकर के विचार. नई दिल्ली: सम्यक प्रकाशन.

जाटव, डी. आर., डॉ० (1996). 'श्रमिक वर्गः सुरक्षा एवं कल्याण' (pp. 67-77) 'आर्थिक विचारधारा की श्रृंखला में' (pp. 100-109) In डॉ० अम्बेडकर के आर्थिक विचार (प्रयोजन एवं प्रासंगिकता) जयपुर: समता साहित्य.

Additional Readings:

G. Omvedt, Liberty Equality and Community: Dr. Ambedkar's Vision of New Social Order, Available at http://www.ambedkar.org/research/LibertyEquality.htm

A. Gajendran (2007) 'Representation', in S. Thorat and Aryama (eds.), Ambedkar in Retrospect: Essays on Economics, Politics and Society, Delhi: Rawat Publishers, 184-194.

R. Ram (2010) 'Dr, Ambedkar, Neo Liberal Market-Economy and Social Democracy in India', in Human Rights Global Focus, Vol. V (384), pp. 12-38.

Teltumbde and S. Sen (eds), 'Caste Question in India', in Scripting the Change, Selected Writings of Anuradha Ghandi, pp. 62- 91

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER-VI
DEPARTMENT OF POLITICAL SCIENCE
Category I

(B.A. Honours in Political Science in three years)

DISCIPLINE SPECIFIC CORE COURSE – 16: Public Policy

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Public Policy DSC-16	4	3	1	-	Passed Class XII	Nil

Learning Objectives

The success of government lay at good policy making and their effective implementation. Public policies are intended at securing a good life for the people and the citizens. The present course comprises of all aspects of the public policy i.e., how is it formed, what are the forces and factors that shape it, how is it monitored, implemented and evaluated. The module gives the conceptual understanding of public policy and provides insights to critically examine them in normative and empirical frameworks.

Learning outcomes

After reading this module students will learn:

- The meaning of public policy and how different theories have emerged to understand it.
- How public policies are formulated? What are the agencies involved in it?
- How Public policies are monitored and evaluated? What are the important tools for it?
- What are the principles that are normally employed to evaluate public policies?
- What is corporate social responsibility and why it is important for the corporates to take up this responsibility?

SYLLABUS OF DSC-16

UNIT – I (8 Hours)

Introduction

a. Formulation, implementation and evaluation
b. Theories of Public Policy: Elite Theory, Group Theory, Incremental Theory, Political System Theory, Public Process Theory

UNIT – II (14 Hours)

Public Policy Design and Implementation

a. Policy Design: What, Who, How and Why (Michael Howlett), Herbert Simon

b. Policy Monitoring: Tools and Techniques
c. Policy Implementation, Decentralization and Local Government in Public Policy implementation
d. State Capacity Building (Francis Fukuyama)

UNIT – III (8 Hours)

Public Policy Evaluation

a. Principles for evaluation
b. Methods and Techniques of Evaluation

UNIT – IV (15 Hours)

Politics of Policy

a. Normative analysis of policy issues
b. The interrelationship between Business and Government Policy, Corporate Social Responsibility
c. The interrelationship between Nongovernmental Organisations and Government Policy

Essential/recommended readings

Unit 1: Introduction

Howlett, M., Cashore, B. (2014). Conceptualizing Public Policy. In Engeli, I., Allison, C.R. (Eds.), *Comparative Policy Studies. Research Methods Series*. London: Palgrave Macmillan.

Kitschelt, H. (1986). Four Theories of Public Policy Making and Fast Breeder Reactor Development. *International Organization, 40*(1), pp. 65-104.

Mead, L. M. (2013). Teaching public policy: Linking policy and politics. *Journal of Public Affairs Education (19)*, pp. 389–403.

Teune, H. (1977). Macro Theoretical Approaches to Public Policy Analysis: The Fiscal Crisis of American Cities. *The Annals of the American Academy of Political and Social Science (434)*, pp. 174-185.

Unit 2: Public Policy Design and Implementation

Crawford, G., & Hartmann, C. (2008). Introduction: Decentralisation as a Pathway out of Poverty and Conflict? In Crawford, G., & Hartmann, C. (Eds.), *Decentralisation in Africa: A Pathway out of Poverty and Conflict?* Amsterdam: Amsterdam University Press, pp. 7-32.

Bandyopadhyay, D. (1996). Administration, Decentralisation and Good Governance. *Economic and Political Weekly, 31*(48), pp. 3109-3114.

Fukuyama, F. (2004). *State-building: governance and world order in the 21st century.* Ithaca, N.Y: Cornell University Press.

Fukuyama, F. (2004). The Imperative of State-Building*. Journal of Democracy*, 15 (2), pp. 17-31.

Howlett, M. (2014). Policy Design: What, Who, How and Why? In Charlotte, H, Pierre, L., & Patrick, L. G. (Eds.), *L'instrumentationetses effets.* Paris: Presses de Sciences Po, pp. 281-315.

Jones, B. (2002). Bounded Rationality and Public Policy: Herbert A. Simon and the Decisional Foundation of Collective Choice. *Policy Sciences, 35*(3), pp. 269-284.

Waterman, R., & Wood, B. (1993). Policy Monitoring and Policy Analysis. *Journal of Policy Analysis and Management, 12*(4), pp. 685-699.

Unit 3: Public Policy Evaluation

Anderson, C. (1979). The Place of Principles in Policy Analysis. *The American Political Science Review, 73*(3), pp. 711-723.

Linder, S., & Peters, B. (1984). From Social Theory to Policy Design. *Journal of Public Policy, 4*(3), pp. 237-259.

Provus, M. (1971). Evaluation as Public Policy. *Curriculum Theory Network (*8/9), pp. 33-44.

Purdon, S. et al. (2001). *Research Methods for Policy Evaluation*. Department for Work and Pensions, Research Working Paper No 2.

Unit 4: Politics of Policy

Guy Peters, B. *The Politics of Bureaucracy: An Introduction to Comparative Public Administration* New York, Routledge, 2018.

Lipsky, M. *Street-Level Bureaucracy: Dilemmas of the Individual in Public Services* New York, Russell sage Publications, 2010. Preface, xi-xx, Chapters 1(The Critical role of Street-Level Bureaucrats) and 2 (Street-Level Bureaucrats as Policy Makers), pp 3-26.

Mathur, K. & J. BJORKMAN Policy Making in India: Who Speaks? Who Listens? Har Anand Publishers, New Delhi, 2009.

Kochanek, S.A. Liberalisation and business lobbying in India *The Journal of Commonwealth and Comparative Politics* Vol 34, Issue 3, 1996, pp. 155-173.

Sinha, A. India's Porous State: Blurred Boundaries and the Business-State Relationship in Jaffrelot,C. A. Kohli, K. Murali eds. *Business and Politics in India* New York, Oxford University Press, 2019, pp. 50-94. Also, Introduction, pp.1-22.

Doh, J.P. &H. Teegen *Globalisation and NGOs: Transforming Business, Government and Society* Praeger, Westport, 2003. Ch 1: Nongovernmental Organisations, Corporate Strategy and Public Policy: NGOs as Agents of Change pp1-18.

Additional Readings

T. Dye, Understanding Public Policy, 5th Edition. U.S.A: Prentice Hall, 1984, pp. 1-44,

Xun Wu, M.Ramesh, Michael Howlett and Scott Fritzen ,The Public Policy Primer: Managing The Policy Process, Rutledge, 2010

Mary Jo Hatch and Ann.L. Cunliffe Organisation Theory: Modern, Symbolic and Postmodern Perspectives, Oxford University Press,2006

Michael Howlett, Designing Public Policies: Principles and Instruments, Rutledge, 2011

The Oxford Handbook of Public Policy, Oxford University Press, 2006

Prabir Kumar De, Public Policy and Systems, Pearson Education, 2012

R.V. Vaidyanatha Ayyar, Public Policy Making In India, Pearson,2009

Surendra Munshi and Biju Paul Abraham [Eds.] Good Governance, Democratic Societies and Globalisation, Sage Publishers, 2004

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 17: Comparative Political Systems

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Comparative Political Systems DSC-17	4	3	1	-	Passed Class XII	Nil

Learning Objectives

The aim of this course is to train students in the application of comparative methods to the study of different political systems with respect to institutions and their functioning in these countries from a comparative perspective.Students will be familiarised with the defining features like political tradition, state formation, constitution and division of power, structure of government, electoral system, political parties, party system, and the contemporary social and economic challenges in these societies.

Learning outcomes

This paper will provide students with a comprehensive understanding of a range ofpolitical systems fromdifferent continentsin a historical context. The students will engage in studying different countries in detail with reference to their political tradition and state formation, constitution and division of power, political parties and elections, political economy and contemporary challenges. The critical analysis of different political systems will delineate the institutional structures, processes and their functioning in these systems. The course content would also help students develop analytical skills to understand not just the similarities and differences but the uniqueness of some cases as well that highlight how the matrix of diverse determinants and variables result in different discourses in different countries.

SYLLABUS OF DSC- 17

UNIT – I (7 Hours)
United Kingdom

UNIT – II (7 Hours)
United States of America

UNIT – III (6 Hours)
Brazil

UNIT – IV (6 Hours)
Russia

UNIT – V (7 Hours)
China

UNIT – VI (6 Hours)
South Africa

UNIT – VII (6 Hours)
Israel

THEMES

A. Political Traditions and Constitutional Development

B. Society and Economy: Nature of state

C. Party and electoral system

D. Unitary and Federal System

Essential/recommended readings

Patrick H. O'Neil, Karl Fields and Don Share (2010), *Cases in Comparative Politics*, 3rd Ed., W. W. Norton & Company: New York and London. pp. 31-74 (Britain), 75-114 (US), 200-244 (Japan), 245-284 (Russia), 285-326 (China), 450-489 (Brazil), and 490-530 (South Africa).

John McCormick (2010), *Comparative Politics in Transition*, 6th Ed., Wadsworth: Boston, MA. pp. 50-97 (United States), 98-147 (Britain), 148-194 (Japan), 210-257 (Russia), 258-304 (China).

G. Bingham Powell, Jr., Russell J. Dalton, Kaare W. Strom (2015), *Comparative Politics Today: A World View*, 11th Ed., Pearson: Edinburgh Gate. 172-217 (Britain), 318-359 (Japan), 360-407 (Russia), 408-455 (China), 506-555 (Brazil), 702-749 (United States).

(Richard Rose, Dennis Kavanagh)

Unit 1. United Kingdom

P. Rutland (2007), 'Britain', in J. Kopstein and M. Lichbach. (eds.) *Comparative Politics: Interest, Identities and Institutions in a Changing Global Order*. Cambridge: Cambridge University Press, pp. 39-79.

Joel Krieger (2019), 'Britain', in Mark Kesselman, Joel Krieger and William A. Joseph (eds.), *Introduction to Comparative Politics: Political Challenge and Changing Agendas*, 8th Ed., Cengage Learning: Boston, MA, pp. 38-83.

Duncan Watts (2006), *British Government and Politics: A Comparative Guide*, Edinburgh University Press: Edinburgh.

Unit 2. United States of America

Louis DeSipio (2019), 'The United States', in Mark Kesselman, Joel Krieger and William A. Joseph (eds.), *Introduction to Comparative Politics: Political Challenge and Changing Agendas*, 8th Ed., Cengage Learning: Boston, MA, pp. 324-368.

John G. Geer, Wendy J. Schiller, Jeffrey A. Segal, and Dana K. Glencross (2012), *Gateways to Democracy: An Introduction to American Government*, The Essentials, Cengage Learning: Boston, MA, pp. 36-71 (The Constitution), 284-317 (Political Parties), 360-407 (Congress), 4-8-453 (The Presidency)

Unit 3. Brazil

Alfred P. Montero (2019), 'Brazil', in Mark Kesselman, Joel Krieger and William A. Joseph (eds.), *Introduction to Comparative Politics: Political Challenge and Changing Agendas*, 8th Ed., Cengage Learning: Boston, MA, pp. 369-414.

Frances Hagopian (2019), 'The Political Economy of Inequality', in Barry Ames (eds.), *Routledge Handbook of Brazilian Politics*, Routledge: New York, pp. 375-390.

Unit 4. Russia

Joan DeBardeleben (2019), 'The Russian Federation', in Mark Kesselman, Joel Krieger and William A. Joseph (eds.), *Introduction to Comparative Politics: Political Challenge and Changing Agendas*, 8th Ed., Cengage Learning: Boston, MA, pp. 555-606.

Eric Shiraev (2021), *Russian Government and Politics*, 3rd Ed., Red Globe Press: London, pp. 22-67 (Political and Tradition Soviet State), 71-88 (The Executive Branch), 119-132 (Political Parties).

Graeme Gill and James Young (eds.), *Routledge Handbook of Russian Politics and Society*, Routledge: Oxon, pp. 71-80 (The Russian Constitution), 81-91 (Presidency), 102-114 (The Duma's Electoral System), 115-128 (Political Parties).

Unit 5. China

William A. Joseph (2019), 'China', in Mark Kesselman, Joel Krieger and William A. Joseph (eds*.), Introduction to Comparative Politics: Political Challenge and Changing Agendas*, 8th Ed., Cengage Learning: Boston, MA, pp. 653-700.

Michael Dillon (2009), *Contemporary China: An Introduction*, Routledge: New York, pp. 10-20, 137-160.

Elizabeth Freund Larus (2012), *Politics and Society in Contemporary China*, Lynne Rienner Publisher: London, pp. 81-114

Unit 6. South Africa

Tom Lodge (2019), 'South Africa', in Mark Kesselman, Joel Krieger and William A. Joseph (eds.), *Introduction to Comparative Politics: Political Challenge and Changing Agendas*, 8th Ed., Cengage Learning: Boston, MA, pp. 462-508.

Anthony Butler (2004), *Contemporary South Africa*, Palgrave Macmillan: New York, pp. 6-30.

Unit 7. Israel

Don Peretz (1983) *The Government and Politics of Israel*, second ed., Wetview Press: Boulder.

Gregory S. Mahler (2016) *Politics and Government in Israel, The Maturation of Modern State*, third ed., Rowman and Littlefield, Lanham.

Sunil K. Choudhary (2018) *The Changing Face of Parties and Party Systems*, Palgrave Macmillan.

Additional Readings:

Kenneth Newton and Jan W. van Deth (2010), *Foundations of Comparative Politics: Democracies of the Modern World*, 2nd Ed., Cambridge University Press: Cambridge.

Jeffrey Kopstein and Mark Lichbach (eds.) (2005), *Comparative politics: Interests, identities, and Institutions in a Changing Global Order*, 2nd Ed., Cambridge University Press: Cambridge.

Robert Singh (2003), *American Government: A Concise Introduction*, SAGE Publications: London, pp. 25-45 (The US Constitution), 46-73 (Political Parties), 153-176 (Congress).

P. W. Preston (eds.) (2003*). Contemporary China: The Dynamics of Change at the start of new millennium*, Routledge Curzon: London.

Paul E. Johnson, Gary J. Miller, John H. Aldrich (1994), *American Government: People, Institutions and Policies*, Cengage Learning: Boston, MA.

Vicki L. Hesli (2007), *Governments and Politics in Russia and the Post-Soviet Region*, Houghton Mifflin Company: Boston.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 18: India's Foreign Policy: Challenges and Strategies

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
India's Foreign Policy: Challenges and Strategies DSC 18	**4**	**3**	**1**	**-**	**Passed Class XII**	**Nil**

Learning Objectives

This course seeks to equip students to engage with the key sources, theoretical underpinnings, and the structural/functional dimensions of the foreign policymaking processes in India. Theoretical grounding will apprise students about the shift in India's identity as a postcolonial state to an 'emerging power' in the contemporary multipolar world. It will familiarize the students with the domestic, regional and international drivers and constraints; how these intersect and have shaped the evolution and practice of India's foreign policy. Students will learn about critical issues and developments of its foreign policy at the bilateral, regional, and global levels with a special focus on India's bargaining strategies and positioning in international climate change negotiations, international economic governance and international security regimes. It will develop analytical skills among the students to comprehend the impending foreign policy conundrums and give students a basic yet nuanced understanding of India's opportunities and challenges in its foreign policymaking in the contemporary world.

Learning outcomes

At the end of this course, the students would have acquired:

- basic knowledge of the sources, theoretical perspectives and key drivers of India's foreign policy.
- analyse the opportunities and challenges India faces in securing its interests as an emerging global power.
- an insight about India's position in changing global power equations particularly its bilateral ties with powerful nations like the US and Russia along with India's largest neighbour, China.
- an enhanced understanding of India's sub-regional, regional, and global issues of concern.

- grasp of India's negotiation strategies in dealing with global trade, environment, and security regimes.
- recognise the ways in which India deploys its soft power in the world.

SYLLABUS OF DSC-18

UNIT – I (10 Hours)
India's Foreign Policy: As a postcolonial state

a. Sources of India's Foreign Policy
b. Theorizing India's Foreign Policy
c. Dimensions of India's Foreign Policy: Domestic and International
d. From Non-Alignment to Strategic Engagements in a Multipolar World

UNIT – II (9 Hours)
India and the Changing Global Power Equations

a. India and the USA
b. India and Russia
c. India and China

UNIT – III (9 Hours)
India in South Asia: Issues and Challenges

a. Issues: Land and boundary, Migration, and Refugee crisis
b. Debating Regional Strategies: SAARC and BIMSTEC

UNIT – IV (10 Hours)
Challenges of India's Foreign Policy in the Global Domain

a. Negotiating Styles and Strategies: Trade, Security and Climate Change
b. India's Engagements in Multilateral Forums: BRICS

UNIT – V (7 Hours)
India as an Emerging Power

a. India in the Changing International Order
b. Soft power diplomacy

Essential/recommended readings

Unit 1: India's Foreign Policy: As a postcolonial state

1.a. Sources of India's Foreign Policy

Essential Readings

Shahi, D. (2019). *Kautilya and Non-Western IR Theory*. Switzerland: Palgrave Pivot, pp. 95-126.

Rajagopalan, S. (2014). "Grand Strategic Thought" in the Ramayana and Mahabharata. In Kanti Bajpai, Saira Basit and V. Krishnappa (eds.), *India's Grand Strategy: History, Theory, Cases* (1st ed.,) (pp. 31-62). New Delhi: Routledge.

Additional Readings

Jaishankar, S. (2021). *The India Way: Strategies for an Uncertain World*. New Delhi: Harper Collins India, pp. 45-68.

Narlikar, A., & Narlikar, A. (2014). *Bargaining with a Rising India: Lessons from the Mahabharata*. Oxford: OUP, pp. 1-23.

Dixit, J.N. (1998). *Across Borders: Fifty Years of India's Foreign Policy.* New Delhi: Thomson Press, pp. 1-13.

Menon, S. (2021). *India and Asian Geopolitics: The Past, Present.* Penguin Random House. pp. 11-36.

1.b. Theorizing India's Foreign Policy

Essential Readings

Thakur, V. (2012). Indian Foreign Policy. In Bhupinder S. Chimni & Siddharth Mallavarapu (eds.), *International Relations: Perspectives for the Global South* (1st ed., pp. 39-53). New Delhi: Pearson.

Bajpai, K. (2015). Five Approaches to the Study of Indian Foreign Policy. In David M. Malone, C. Raja Mohan, & S. Raghavan (eds.), *The Oxford Handbook of Indian Foreign Policy* (pp. 21-34). Oxford: Oxford University Press.

Additional Readings

Mallavarapu, Siddharth. (2015). Theorizing India's Foreign Relations, in David M. Malone and C. Raja Mohan and S. Raghavan (eds.), *The Oxford Handbook of Indian Foreign Policy.* United Kingdom: Oxford University Press, pp. 35-48.

Chacko, Priya. 2019. Constructivism and Indian Foreign Policy. In Harsh Pant (ed.), *New Directions in India's Foreign Policy: Theory and Praxis* (pp. 48-66). Cambridge University Press.

1.c. Dimensions of India's Foreign Policy: Domestic and International

Essential Readings

Raghavan, P.S. (2020). National Security Determinants of Foreign Policy. In Arvind Gupta & Anil Wadhwa (eds.), *India's Foreign Policy: Surviving in a Turbulent World* (pp. 34-44). New Delhi: Sage Publications.

Bandyopadhyay, J. (2003) *Making of India's Foreign Policy.* New Delhi: Allied Publishers, pp. 29-80.

Additional Readings

Appadorai, A. (1981). *The Domestic Roots of India's Foreign Policy*. New Delhi: OUP, pp. 1-26.

Zajaczkowski, J. (2014). India's Foreign Policy Following the Cold War Year. In Jacub Zajaczkowski, Jivanta Schottli, & Manish Thapa (eds.), *India in the Contemporary World: Polity, Economy, and International Relations* (pp.265-308). New Delhi: Routledge.

Sahni, Varun. (2007). India's Foreign Policy: Key drivers. *The South African Journal of International Affairs*,14 (2), 21-35.

1.d. From Non-Alignment to Strategic Engagements in a Multipolar World

Essential Readings

Mishra, K.P. (1981). Towards Understanding Non-alignment. International Studies, 20 (1-2), 23-37.

Pant, H.V., & Super, J.M. (2015). India's 'non-alignment' conundrum: a twentieth- century policy in a changing world. *International Affairs,* 91(4), 747-764.

Hall, Ian (2019). *Modi and the Reinvention of Indian Foreign Policy*. Bristol: Bristol University Press, pp. 21-40.

Additional Readings

Kaura, V. (2021). Debating the Relevance of Non-alignment in Indian Diplomacy. *India Quarterly*, 77 (3), 501-506.

Tripathi, S. (2020). *India's Foreign Policy Dilemma over Non-Alignment 2.0*. Mathura Road: Sage Publications, pp. 99-145.

Saran, S. (2015). India's Contemporary Plurilateralism. In David M. Malone, C. Raja Mohan, & S. Raghavan (eds.), *The Oxford Handbook of Indian Foreign Policy* (pp.623-635), Oxford: OUP.

Roy, G. S. (2021). ASEAN in India's Act East Policy. In M. Mayilvaganan (ed.), *ASEAN and India–ASEAN Relations Navigating Shifting Geopolitics*. London: Routledge, pp. 91-106.

Panda, J. P. (2021). India's Indo-Pacific Prism Finding Strategic Autonomy in the Face of Chinese Adventurism. In Brendon J. Cannon & Kei Hakata (eds.), *Indo-Pacific Strategies Navigating Geopolitics at the Dawn of a New Age* (pp.62-80). London: Routledge.

Unit 2: India and the Changing Global Power Equations

2.a. India and the USA

Essential Readings

Tellis, Ashley J. (2013). The Transforming US-Indian Relationship and Its Significance for American Interests. In Kanti P. Bajpai and Harsh V. Pant (eds.), *India's Foreign Policy: A Reader* (pp. 303-320). New Delhi: Oxford University Press.

Pande, Aparna. (2021). Natural Allies. In Shweta Dhaliwal (ed.) , *Indo-US Relations: Steering through the Changing World Order (pp. 10-35)* . New York: Routledge.

Additional Readings

Hagerty, D. T. (2016). The Indo-US Entente: Committed Relationship or 'Friends with Benefits'? in Ganguly, Sumit (ed.), *Engaging the World: Indian Foreign Policy Since 1947* (pp. 133-155), New Delhi: Oxford University Press.

Madan, T. (2020). *Fateful Triangle: How China Shaped US-India Relations During the Cold War*. Washington D. C.: Brookings, pp. 1-13; 291-300.

Dhaliwal, S. (2021). Introduction. In Shweta Dhaliwal (ed.), I*ndo-US Relations: Steering through the Changing World Order* (pp. 1-9). New York: Routledge.

2.b. India and Russia

Essential Readings

Malhotra, A. (2020). India–Russia Ties: Exploring Convergences and Divergences. In Arvind Gupta & Anil Wadhwa (eds.), *India's Foreign Policy: Surviving in a Turbulent World* (pp. 266-280). New Delhi: Sage Publications.

Upadhyay, A. (2015). India and Russia in Changing World. *Economic and Political Weekly,* 50 (33). https://www.epw.in/journal/2015/33/commentary/india-and-russia-changing-world.html

Tellis, A.J. (2022). "What is in Our Interest": India and the Ukraine War. *Carnegie Endowment for International Peace.* https://carnegieendowment.org/2022/04/25/what-is-in-our-interest-india-and-ukraine-war-pub-86961

Additional Readings

Menon, R. (2015). India and Russia: The anatomy and Evolution of a Relationship. In David M. Malone, C. Raja Mohan, & S. Raghavan (eds.), *The Oxford Handbook of Indian Foreign Policy* (pp.509-523). Oxford: OUP.

Kapoor, N. (2019). India-Russia ties in a changing world order: In pursuit of a Special Strategic Partnership. *ORF Occasional Paper*. https://www.orfonline.org/research/india-russia-ties-in-a-changing-world-order-in-pursuit-of-a-special-strategic-partnership-56877/

Ollapally, Deepa M. (2010). The Evolution of India's Relations with Russia, In Sumit Ganguly (ed.), *India's Foreign Policy: Retrospect and Prospect* (pp. 226-247). New Delhi: Oxford University Press.

Singh, A.I. (1995). India's Relations with Russia and Central Asia. *International Affairs*, 71 (1), pp. 69-81.

2.c. India and China

Essential Readings

Tellis A., & Mirski S. (2013). Introduction. In A. Tellis and S. Mirski (eds.), *Crux of Asia: China, India, and the Emerging Global Order*, Washington: Carnegie Endowment for International Peace, pp. 3-44.

Gokhale, V. (2021). The Road from Galwan: The Future of India-China Relations. *Carnegie Endowment for International Peace*. https://carnegieindia.org/2021/03/10/road-from-galwan-future-of-india-china-relations-pub-84019

Additional Readings

Mansingh, S. (2016). Rising China and Emergent India in the Twenty-first century Friends or Rivals? In Kanti P. Bajpai & Harsh V Pant (eds.), *India's Foreign Policy: A Reader* (pp. 281-302). New Delhi: Oxford University Press.

Pardesi, M.S. (2016). India's China Policy. In Sumit Ganguly (ed.), *Engaging the World: India's Foreign Policy Since 1947* (pp.167-189). New Delhi: OUP.

Swaran, S. (2021).COVID-19 and India-China Equations: Examining their Interface in the Indian Ocean Region . *Chinese Studies Journal*, 15, 11-132. https://jnu.ac.in/Faculty/ssingh/Singh_Covid19%20and%20India%20China%20Equations_CSJ%20Vol%2015-2021.pdf

Unit 3: India in South Asia: Issues and Challenges

3.a. Land and Boundary, Migration, and Refugee crisis

Essential Readings

Muni, S.D. (2003). Problem Areas in India's Neighbourhood Policy. *South Asian Survey*,10 (2),185-196.

Tripathi, D. & Chaturvedi, S. (2020) South Asia: Boundaries, Borders and Beyond, *Journal of Borderlands Studies*, 35(2), 173-181. DOI: 10.1080/08865655.2019.1669483.

Shyam Saran, "Role of Border States in India's Foreign Policy," Speech at IIT Guwahati, 29 March 2016.

Chowdhory, N. Citizenship and Membership: Placing Refugees in India. In Nasir Uddin & Nasreen Chowdhory (eds.), *Deterritorialized Identity and Transborder Movementsin South Asia* (pp. 37-54). Singapore: Springer.

Ray Chaudhary, A.B., & Ghosh, A.K. (2021, April) *Trans-Border Migration: Bridging the Gap between State and Human Security.* Observer Research Foundation. https://www.orfonline.org/research/trans-border-migration-bridging-the-gap-between-state-and-human-security/

Additional Readings

Dubey, Muchkund. (2016). *Dealing with Neighbours in India's Foreign Policy: Coping with the Changing World.* Hyderabad: Orient Blackswan, pp.64-86.

Das, P. (2014). Issues in the Management of the Indo-Pakistan International border. *Strategic Analysis*, 38 (3), pp.307-324.

Ranjan, A. (2018) *India-Bangladesh Border Dispute: History and LBA Dynamics*. Singapore: Springer, pp. 65-88.

Sekhon, J.S., & Sharma, S. (2019). Involuntary Migration in the Border Belt of Indian Punjab. In Nasir Uddin & Nasreen Chowdhory (eds.), *Deterritorialized Identity and Transborder Movements in South Asia* (pp. 155-176). Singapore: Springer.

Chari, P.R. (2003). Missing Boundaries: Refugees, Migrants, Stateless and Internally Displaced Persons in South Asia: An Overview. In P.R. Chari, Mallika Joseph, & Suba Chandran (eds.), *Missing Boundaries: Refugees, Migrants, Stateless and Internally Displaced Persons in South Asia* (pp. 17-38). New Delhi: Manohar Publishers.

3.b. Debating Regional Strategies: SAARC and BIMSTEC

Essential Readings

Chatterjee, S. (2019). India and the SAARC: Security, Commerce, and Community. In Shibashis Chatterjee, Sumit Ganguly, & E. Sridharan (eds.), *India's Spatial Imaginations of South Asia: Power, Commerce, and Community*. Oxford Scholarship Online. DOI:10.1093/oso/9780199489886.003.0004

Gul, N. (2015). SAARC and the Regional Integration in South Asia. In Rajiv Bhatia, Swaran Singh, & Reena Marwah (eds.), *Transforming South Asia: Imperatives for Action* (pp. 159-174). New Delhi: KW Publishers & Indian Council of World Affairs.

Chakravarty, P. R. (2021). BIMSTEC: India's Foreign Policy Fulcrum. In Aparna Pande (ed.), *Routledge Handbook on South Asian Foreign Policy* (pp.183-201). New York: Routledge. https://doi.org/10.4324/9780429054808

Additional Readings

Parida, S.K. (2020). India, SAARC and the Covid-19 Pandemic. *World Affairs*, 24(4), 112-119.

Muni, S.D., & Jetley, R. (2010). SAARC Prospects: The Changing Dimensions. In S.D. Muni (ed.), *Emerging Dimensions of SAARC* (pp. 1-31). New Delhi: Foundation Books.

Seema Narain (2010), SAARC and South Asia Economic Integration. In S.D. Muni (ed.), *Emerging Dimensions of SAARC* (pp. 32-50). New Delhi: Foundation Books.

Omer, H. (2021). Perspective on BIMSTEC in transforming South Asia. In Adluri Subramanyam Raju & Anasua Basu Ray Chaudhury (eds.), *New Futures for BIMSTEC: Connectivity, Commerce and Security*. New York: Routledge.

Unit 4: Challenges of India's Foreign Policy in the Global Domain (9 Lectures)

4.a. Negotiating Styles and Strategies: Trade, Security and Climate Change

Essential Readings

Trade:

Mehta, S. P., & Chatterjee, B. (2015). India in the International TradingSystem. In David M. Malone, C. Raja Mohan & S. Raghavan (eds.), *The Oxford Handbook of Indian Foreign Policy* (pp. 636-649). Oxford: Oxford University Press.

Sharma, M. S., & Bhogal, P. (2022). India and Global Trade Governance: A Saga of Missed Opportunities. In Harsh V Pant (ed.), *India and Global Governance: A Rising Power and Its Discontents* (pp. 109-134). New York: Routledge.

Security

Narang, V. (2016). India's Nuclear Weapon Policy. In Sumit Ganguly (ed.), *Engaging the World-India's Foreign Policy Since 1947* (pp. 448-467). New Delhi: OUP.

Biswas, A. (2022). India's Rise in the Global Nuclear Governance Architecture: Principles, Exceptions, and Contradictions. In Harsh V Pant (ed.), *India and Global Governance: A Rising Power and Its Discontents* (pp. 17-27). New York: Routledge.

Climate Change

Dubash, K. N., & Rajamani, L. (2015). Multilateral Diplomacy on Climate Change. In David M. Malone, C. Raja Mohan, & S. Raghavan (eds.) *The Oxford Handbook of Indian Foreign Policy* (pp. 663-677). Oxford: Oxford University Press.

Sengupta, S. (2013). Defending 'Differentiation': India's Foreign Policy on Climate Change from Rio to Copenhagen. In Kanti P. Bajpai & Harsh V Pant (eds.), *India's Foreign Policy:A Reader* (pp. 389-411).New Delhi: Oxford University Press.

Additional Readings

Trade

Narlikar, A. (2021). India's foreign economic policy under Modi: negotiations and narratives in the WTO and beyond. *International Politics,* 59(1),148-166.

Mukherji, R. (2014). India and Global Economic Governance: From Structural Conflict to Embedded Liberalism. *International Studies Review*, doi: 10.1111/misr.12155

Security

Karnad, B. (2021, October 28). *Nuclear-wise, India is seriously handicapped (by govt!)*. https://bharatkarnad.com/2021/10/28/nuclear-wise-india-is-seriously-handicapped-by-govt/

Rajagopalan, R. (2005) *India's Nuclear Doctrine and The Nuclear Danger* New Delhi: Penguin Books India, pp. 67-88.

Sinha, U.K. (2020) Rebalancing Foreign Policy and Non-traditional Security Issues. In Arvind Gupta & Anil Wadhwa (eds.), *India's Foreign Policy: Surviving in a Turbulent World* (pp. 115-130). New Delhi: Sage Publications.

Climate Change

Nachiappan, K. (2019) Agenda-setting from behind: India and the Framework Convention on climate change. *India Review*, 18(5), 552-567.

Negi, A. (2014) India and the Climate Change Regime. In Amitabh Mattoo & Happymon Jacob (eds.), *India and the International System: Theory, Policy and Structure* (pp. 287-307). New Delhi: Australia-India Institute Series in Foreign Policy and International Relations and Manohar Publications.

Raghunandan, D. (2013). Rethinking India's Climate Policy and the Global Negotiations. *Oxfam India.* https://www.oxfamindia.org/sites/default/files/Raghu%27s%20paper.pdf

4.b. India's Engagements in Multilateral Forums: BRICS

Essential Readings

Sharma, R. K. (2022). BRICS in India's Vision for Global Governance. In Harsh V Pant (ed.), *India and Global Governance: A Rising Power and Its Discontents* (pp. 135-145). New York: Routledge.

Additional Readings

Sakhuja, V. (2014). BRICS: The Oceanic Connections. *Institute of Peace and Conflict Studies,* available at http://www.ipcs.org/comm_select.php?articleNo=4594

Unit 5: India as an Emerging Power (5 Lectures)

5.a. India in the Changing International Order

Essential Readings

Saran, S. (2017). *How India Sees the World: Kautilya to the 21st Centur*y. Juggernaut Books. pp. 258-275.

Menon, S. (2021). *India and Asian Geopolitics: The Past, Present*. Penguin Random House. pp.1-10, pp. 340-374.

Additional Readings

Rajgopalan, R., & Sahni, V. (2008). India and the Great Powers: Strategic Imperatives: Normative Necessities. *South Asian Survey,* 15 (1), 5–32.

Kukreja, V. (2017). Dynamics of Change and Continuity in India's Foreign Policy under Modi's Regime in Shantesh K Singh (ed.). *India's Foreign Policy Continuity with Difference Under Modi Government*, pp. 1-16). New Delhi: Manak Publications.

Raja Mohan, C. (2013). Changing Global Order: India's Perspective. In A. Tellis & S. Mirski (Eds.), *Crux of Asia: China, India, and the Emerging Global Order* (pp. 53-62). Washington: Carnegie Endowment for International Peace.

5.b. Soft power diplomacy

Essential Readings

Kugiel, P. (2012). India's Soft Power in South Asia. *International Studies*, 49 (3-4), 351-376.

Paul, T.V. (2014). Indian Soft Power in a Globalizing World. *Current History*, 113(762), 157-162.

Mazumdar, A. (2018). India's Soft Power Diplomacy under the Modi Administration: Buddhism, Diaspora, and Yoga. *Asian Affairs*, 49 (3), 468-49.

Additional Readings

Gupta, A.K. (2008). Commentary on India's Soft Power and Diaspora*. International Journal on World Peace,* 25(3), 61-68.

Sikri, Veena (2020). Strategizing Soft Power Projection. In Arvind Gupta & Anil Wadhwa (ed.), *India's Foreign Policy: Surviving in a Turbulent World* (pp. 45-61). New Delhi: Sage Publications.

Pathak, V. (2018). Indian Diaspora: A Strategic Asset for Indian Foreign Policy in the 21st Century. In Sangit K. Ragi (ed.), *Imagining India as a Global Power: Prospects and Challenges* (pp. 223-226). Oxon and New York: Routledge.

Reference Books/Literature

Malone, D. M. , & Raja Mohan, C. and Raghavan, S. (2015). *The Oxford Handbook of Indian Foreign Policy*. United Kingdom: Oxford University Press.

Ganguly, S. (2016). *Engaging the World-Indian Foreign Policy since 1947*. New Delhi: Oxford University Press.

Ragi, S. K. (2018). *Imagining India as a Global Power: Prospects and Challenge*s. New York: Routledge.

Malone, David M. (2011). *Does the Elephant Dance? Contemporary Indian Foreign Policy*, New Delhi: Oxford University Press.

Sikri, R. (2007). *Challenge & Strategy in Rethinking India's Foreign Policy.* Sage Publications.

Khilani. S., Mehta, R.K., Mehta, P. B. (eds.). (2012). *Non-Alignment 2.0.* https://cprindia.org/wp-content/uploads/2021/12/NonAlignment-2.pdf.

Dubey, M. (2015). *India's Foreign Policy: Coping with the Changing World*. Hyderabad: Orient BlackSwan.

Ganguly, S. (2019). *Indian Foreign Policy: Oxford India Short Introductions*. Oxford University Press.

Gupta, A. (2018) *How India manages its National Security*. Penguin Random House.

Cohen, S. (2002) *India: Emerging Power*. Brookings Institution Press.

Hall, I.(ed.). (2014). *The Engagement of India: Strategies and Responses.* Washington DC: Georgetown University Press.

Dutt, V.P. (1984) *India's Foreign Policy*. New Delhi: Vikas Publishing House.

Pande, A. (2020) I*ndia's Marathon: Reshaping the Post-Pandemic World Order.* Takshashila Institution.

Pande, A. (2017). *From Chanakya to Modi: Evolution of India's Foreign Policy*. New Delhi: HarperCollins Publishers.

हिंदी में किताबें और लेख

गांगुली, सुमित (2018) भारत की विदेश नीति : पुनरावलोकन एवं संभावनाएं , अनुवादक: अभिषेक चौधरी, नई दिल्ली : ऑक्सफोर्ड यूनिवर्सिटी प्रेस।

सीकरी, राजीव (2009) भारत की विदेश नीति : चुनौती और राजनीति। नई दिल्ली : सेज भाषा।

अरोड़ा, लिपाक्षी, खन्ना, वी.एन., कुमार लेस्ली के. (2019). भारत की विदेश नीति। नई दिल्ली : विकास प्रकाशन।

दीक्षित, जे.एन. (2020) भारतीय विदेश नीति। नई दिल्ली : प्रभात प्रकाशन।

मिश्रा, राजेश (2018) भारतीय विदेश नीति : भुमंडलीकरण के दौर में। नई दिल्ली : ओरिएंट ब्लैकस्वान।

पंत, हर्ष (2022) इस संकट में चीन के हाथों रूस को खो न दें हम!
https://www.orfonline.org/hindi/research/ukraine-crisis-russia-at-the-hands-of-china-in-this-crisis/

सरन, समीर (2022) 75 वर्ष का भारत : नैतिकता, अर्थव्यवस्था और मिसाल।
https://www.orfonline.org/hindi/research/india-75-ethic-economy-and-exemplar/

आर. एस . यादव (2013), भारत की विदेश नीति। नई दिल्ली : पियर्सन एजुकेशन।

पुष्पेश पन्त (2010), भारत की विदेश नीति। नई दिल्ली : मैकग्राहिल एजुकेशन।

दत्त, वी.पी. (2015), बदलते दुनिया में भारत की विदेश नीति (1987 से 2008 तक)। दिल्ली : हिंदी माध्यम निदेशालय, दिल्ली विश्वविद्यालय।

यादव, आर.एस. (2013) भारत की विदेश नीति। दिल्ली : पियर्सन।

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

Discipline Specific Elective (DSE) Courses for Sem – VI

DISCIPLINE SPECIFIC ELECTIVE COURSE – 4a: Understanding Security

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Understanding Security DSE-4a	4	3	1	-	Passed Class XII	Nil

Learning Objectives

This course is grounded in the field of security studies in international relations and, aims to provide the students a foundational understanding of the concept of security in the contemporary world. The conceptualisation of security has evolved over the past decades, encompassing diverse sectors, and incorporating referents from different levels. Students will learn about the traditional notions of security focusing on state and military as well as its individual and societal dimensions of security. In view of the fast-evolving global context, the course aims at explaining it in relation with other concepts such as power, peace and identity in international relations. The course introduces to students traditional as well as contemporary approaches to study the concept of security. Alongside the concerns of national security, the course apprises students about the emerging security issues ranging from energy security and cyber security to issues of public health. Finally, this course aims to familiarise students to the emerging non-western perspectives in the field of security studies.

Learning outcomes

By the end of the course the students would be able to:

- Develop a comprehensive understanding of the concept of security and how it relates to other key concepts such as power, peace and identity in International Relations.
- Learn about the traditional and non-traditional sectors and various levels of analysis of security
- Understand the traditional and contemporary approaches to study the concept of security
- Analyse the range of security issues and challenges in the contemporary world and nature of policy response to them
- Develop analytical skills to understand the non-western perspectives to the concept of security.

SYLLABUS OF DSE-4a

UNIT – I (14 Hours)

Conceptualizing Security

1.1. Security and core concepts in IR: Power, Peace and Identity
1.2. Sectors of Security: Traditional and Non-Traditional Security
1.3. Levels of Security Referents: Individual, State, Region, Society, Globe
1.4. Indian understanding of security

UNIT – II (14 Hours)

Major Approaches to Understanding Security

2.1. Traditional approaches (Realism, Liberalism)
2.2. Critical approaches to security
2.3. Constructivism and security
2.4. Gender and security
2.5. Securitization

UNIT – III (10 Hours)

Security Issues and Challenges in the Contemporary World

3.1. National Security: From within and outside
3.2. New Threats to Security (Energy Security, Cyber Security, Public Health)

UNIT – IV (7 Hours)

Non-western Perspectives

Essential/recommended readings

Unit 1: **Conceptualizing Security**

Williams, P.D. (ed.) (2008). *Security Studies: An Introduction*. Abingdon: Routledge, pp. 1-12

1.1. Security and core concepts in IR: Power, Peace and Identity

Essential readings

Buzan, Barry (1984). Peace, Power and Security: Contending Concepts in the Study of International Relations, *Journal of Peace Research*, *21:2*, pp. 109-125.

Bilgin, Pinar (2010). Identity/Security. In J.P. Burgess (Ed.), *The Routledge Handbook of New Security Studies* (1st ed.). Routledge. https://doi.org/10.4324/9780203859483

Additional Readings

Baldwin D. A. (1997). 'The Concept of Security, in *Review of International Studies*, *23*: 5-26.

Booth, Ken. (1991). Security and Emancipation, *Review of International Studies*, 17 (4): 313-326.

1.2. Sectors of Security: Traditional and Non-Traditional Security

Essential readings

Buzan, Barry & Lene Hansen (2009). Defining International Security Studies, in *The Evolution of International Security Studies*. Cambridge: Cambridge University Press. pp. 8-19

Mallavarappu, S. (2008). International relations theory and non-traditional approaches to security. *WISCOMP Perspectives* 27. http://wiscomp.org/Publications/141%20-%20Perspectives%2027%20-%20International%20Relations%20Theory%20and%20Non-Traditional%20Approaches%20to%20Security.pdf

Additional Readings

Buzan, Barry (1983). *People, states, and fear: The national security problem in international relations*. Brighton, Sussex: Wheatsheaf Books. pp. 18-52

Mathews, J. T. (1989). Redefining Security. *Foreign Affairs*, *68*(2), 162–177.

Wæver, Ole (2011), Politics, security, theory. *Security Dialogue*. *42 (4-5)*: 465-480.

1.3. Levels of Security Referents: Individual, Region, Society, Globe

Essential readings

Buzan, Barry and Ole Wæver (2003). Levels Distinguishing the regional from the global. In *Regions and Powers: The Structure of International Security*. Cambridge: Cambridge University Press. pp. 27-39

Bilgin, P. (2003). Individual and Societal Dimensions of Security. *International Studies Review*, *5* (2): 203–222.

Shahrbanou, Tadjbakhsh and Anuradha M Chenoy. (2007). *Human Security: Concepts and Implications*. Routledge. Part 1. pp. 7-123.

Buzan, Barry (1991). New patterns of global security in the twenty-first century, *International Affairs*, 67 (3): 431–451.

Additional Readings

Nizamani, HK (2008). Our region their theories: A case for critical security studies in South Asia. in N C Behera (ed.) *International Relations in South Asia: Search for an Alternative Paradigm.* New Delhi: SAGE, 90–109.

Roe, Paul (2007). Societal Security, in Alan, Collins., *Contemporary Security Studies*. Oxford: Oxford University Press.

Acharya, A. (2001). Human Security: East versus West. *International Journal*, *56*(3), 442–460. https://doi.org/10.2307/40203577

1.4. Indian understanding of security

Essential readings

More, Sachin (2015). "Kautilya on State Fragility in Contemporary Security Environment" in Pradip Kumar Gautam et.al. *Indigenous Historical Knowledge: Kautilya and His Vocabulary,* Vol.1. Pentagon Press. pp. 11-23

Olivelle , Patrick (2016) Economy, Ecology, and National Defence in Kauäilya's Arthasàstra in Pradip Kumar Gautam et.al. *Indigenous Historical Knowledge: Kautilya and His Vocabulary, Vol.*3, pp.3-15

Additional Readings

Jaishankar, S. (2020). "Krishna's Choice: The Strategic Culture of a Rising Power" in *The India Way: Strategies for an Uncertain World*. New Delhi: HarperCollins. pp. 45-68

Pratibha, M.S. (2017). "Kautilya and Sun Zi: A Comparative Philosophical Analysis", in Michael and Liebig and Saurabh Mishra (Ed*) The Arthashastra in a Transcultural Perspective: Comparing Kautilya with Sun Zi, Nizam ul- Mulk, Barani and Machiavelli.* Pentagon Press. pp. 222-240

Unit 2: Major Approaches to Security in International Relations

2.1. Traditional approaches (Realism, Liberalism)

Essential reading

Smith, Edward. (2015). "The Traditional Roots to Security: Realism and Liberalism", in Peter Hough, Shahin Malik, Andrew Moran and Bruce Pilbeam (Ed). *International Security Studies: Theory and Practice*. Routledge: New York. Pp. 12-30

Additional Readings

Charles L. Glaser (2013). Realism, in Alan Collins (eds.) *Contemporary Security Studies,* Oxford: Oxford University Press

Patrick Morgan (2013). Liberalism, in Alan Collins (eds.) *Contemporary Security Studies,* Oxford: Oxford University Press

2.2. Critical approaches to security

Essential reading

Peoples, Columba and Nick Vaughan-Williams (2010). Postcolonial Perspectives, in *Critical Security Studies: An Introduction*. Routledge: New York. *Chapter 1, Pp 17-32*

Additional Readings

Behera NC, Hinds K, Tickner AB (2021). Making amends: Towards an antiracist critical security studies and international relations. *Security Dialogue* 52 (1_suppl): 8-16.

Newman, E. (2010). Critical human security studies. *Review of International Studies*, *36*(1), 77-94.

2.3. Constructivism and security

Essential reading

Malik, Shahin (2015), Constructing Security, in Peter Hough, Shahin Malik, Andrew Moran and Bruce Pilbeam (Ed). *International Security Studies: Theory and Practice*, Routledge: New York. Pp. 72-84

Additional Reading

Agius, Christine (2013). *Social Constructivism* in Allan Collins *Contemporary Security Studies*, Oxford: Oxford University Press. pp 87-103

2.4. Gender and Security

Essential reading

Peoples, Columba and Nick Vaughan-Williams (2010). *Critical Security Studies: An Introduction*, Routledge: New York. *Chapter 2, Pp 33-46*

Additional Reading

Caroline Kennedy (2013). Gender and Security, in Alan Collins (eds.) *Contemporary Security Studies,* Oxford: Oxford University Press

2.5. Securitization

Essential reading

Wæver O. (1995). Securitization and De securitization, in Ronnie D Lipschutz (Ed) *On Security*. Columbia: Columbia University Press. pp. 46-86

Additional Reading

Ralf Emmers (2013). Securitization, in Alan Collins (eds.) *Contemporary Security Studies,* Oxford: Oxford University Press

Unit 3: Security Issues and Challenges in the Contemporary World/Global Politics

3.1. National Security: From within and outside

Essential readings

Buzan, B. (2011). The national security problem in international relations, in C.W. Hughes, & Y.M. Lai (Eds.). *Security Studies: A Reader* (1st ed.). Routledge.

Christian Fjäder (2014). The nation-state, national security and resilience in the age of globalisation, *Resilience, 2:2*, 114-129, DOI: 10.1080/21693293.2014.914771

Smith, Michael E (2017). *Terrorism. International Security: Politics, Policy, Prospects*. Palgrave: New York. *Chapter 7, Pp. 177-209*

Additional Readings

Wolfers, A. (1952). "National Security" as an Ambiguous Symbol. *Political Science Quarterly*, *67*(4), 481–502.

Picareli, John T. (2008). Transnational Organised Crime in P.D. Williams (ed.). *Security Studies: An Introduction*. Abingdon: Routledge

3.2. New Threats to Security (Energy Security, Cyber Security, Public Health)

Essential readings

Raphael, Sam and Doug Stokes (2013). Energy Security, in Allan Collins *Contemporary Security Studies*. Oxford University Press. pp 306-319.

Smith, Michael E (2017). Cyber-Security. International Security: Politics, Policy, Prospects. Palgrave: New York. *Chapter 8, Pp. 210-238*

Smith, Michael E (2017). Security and Public Health. International Security: Politics, Policy, Prospects. Palgrave: New York. *Chapter 12, Pp. 332-359*

Additional Readings

Bridge, G. (2015). Energy (in)security: world-making in an age of scarcity. *The Geographical Journal*, *181*(4), 328–339.

Qerimi, Q. (2020). Smart Technologies, Human Security and Global Justice" in *"Smart Technologies" for Society, State and Economy,* Swtizerland: Springer Nature.

Maurer, Tim. (2011). “Cyber Norm Emergence at the United Nations—An Analysis of the UN's Activities Regarding Cyber-security.” Discussion Paper, 2011-11, Science, Technology, and Public Policy Program, Belfer Center.

Mathew, Richard A. (2008). Resource Scarcity: Responding to the Security Challenge, Report of the International Peace Institute, New York, USA. URL: https://www.ipinst.org/wp-content/uploads/2015/06/rscar0408.pdf

Rushton S. (2011). Global Health Security: Security for whom? Security from what? Political Studies. 2011;59(4):779-796.

Unit 4: Non-western Perspectives (4 lectures)

Essential readings

Ayoob, Mohammad (1995). *The Third World Security Predicament: State making, regional conflict and international system,* London: Lynne Rienner Publishers. *Chapter 1, Pp. 1-20*

Barkawi T., and Laffey, M. (2006). The Postcolonial Moment in Security Studies, *Review of International Studies*, 32, pp.329-352.

Bilgin, P. (2010). The “Western-Centrism” of Security Studies: “Blind Spot” or Constitutive Practice? *Security Dialogue*, *41*(6), 615–622.

Additional readings

Achaarya, Amitav. (2011). Third World and Security Studies in Christopher W Hughes and Lai Yew Meng (Eds) *Security Studies: A Reader*. (Routledge: New York). Pp. 52-63

Behera, N.C. (2008). The Security Problematique in South Asia: Alternative Conceptualizations. In: , *et al.* Globalization and Environmental Challenges. Hexagon Series on Human and Environmental Security and Peace, vol 3. Springer, Berlin, Heidelberg.

Persaud, R (2018). Security studies, postcolonialism and the Third World, in Persaud, R, Sajed, A (eds) *Race, Gender, and Culture in International Relations*. London: Routledge, 155-179.

Barthwal-Datta, M., & Basu, S. (2017). Reconceptualizing regional security in South Asia: A critical security approach. Security Dialogue, 48(5), 393–409.

Further Readings

Dunn Cavelty, Myriam and Thierry Balzacq (2017). *The Routledge Handbook of Security Studies*. Routledge. 480pp

Jarvis, Lee and Jack Holland (2015). *Security: A Critical Introduction*, Palgrave Macmillan

Williams, P.D. (ed.) (2008). *Security Studies: An Introduction*. 568pp. Abingdon: Routledge

Thomas C. (1987). *In Search of Security: The Third World in International Relations*. Boulder CO: Lynne Rienner.

Job B.L., ed. (1992). *The Insecurity Dilemma: National Security of Third World States*. Boulder, CO: Lynne Rienner

Booth, K (2007). *Theory of World Security.* Cambridge: Cambridge University Press.

Rushton, Simon (2019). *Security and Public Health*. Wiley Online.

UNDP. (1994). Human Development Report 1994: *New Dimensions of Human Security*. http://www.hdr.undp.org/en/content/human-development-report-1994.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 4b: Understanding Savarkar

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Understanding Savarkar DSE-4b	4	3	1	-	Passed Class XII	Nil

Learning Objectives

Vinayak Damodar Savarkar was one of the important leaders of the Indian National movement. He was a revolutionary who gradually turned to lay the foundation of Hindu Nationalism in India after release from the jail at Andaman and Nicobar. He remained at the thick of controversies due to his opposition due to his thoughts on Indian Nationalism which was essentially against Gandhian methods and approach to making national movement hostage to the whims of a particular community. His works Hindutva still continues to dominate the discourse of Indian politics wherein he is referred to by both his opponents and the supporters. He was a prolific writer both in Marathi and English. He had a clearly defined socio-political thought which he articulated through his poems, essays, stories, plays and the political speeches. It is therefore it is important to study his revolutionary journey as well his political thoughts and his position on key issues of India both before and after independence.

Learning outcomes

At the end of the course:

- The students will be able to understand his role and contribution in the freedom movement**.**
- They will be able to contextualise his thoughts on Hindutva and differentiate it from Hinduism.
- Students will be able to answer what impact religious conversion has on the cultural and political geography of a nation.
- They will be able to understand how he differed from Ambedkar on caste and untouchability questions and what was his response to this important question.

SYLLABUS OF DSE-4b

UNIT – I (6 Hours)
Savarkar and Indian Historiography

UNIT – II (9 Hours)
Savarkar and Indian National Movement

UNIT – III (9 Hours)
Hindutva and Hinduism

UNIT – IV (7 Hours)
Savarkar and Language Questions in India

UNIT – V (7 Hours)
Religious Conversion

UNIT – VI (7 Hours)
Untouchability and Caste Questions

Essential/recommended readings

Unit 1: Savarkar and Indian Historiography

Savarkar, Vinayak Damodar (2018). Six Glorious Epochs of Indian History, Prabhat Prakashan, Delhi.

Savarkar, Vinayak Damodar. The Indian War of Independence, 1857. New Delhi: Rajdhani Granthnagar, 1970; 1st ed., 1908.

Kumar, M. (2006). History and Gender in Savarkar's Nationalist Writings. Social Scientist, 34(11/12), 33–50.

Raugh, H. E. (2017). The Battle of the Books: An Indian Mutiny Historiography Part 2. Journal of the Society for Army Historical Research, 95(381), 34–51.

Pati, B. (2007). Historians and Historiography: Situating 1857. Economic and Political Weekly, 42(19), 1686–1691.

Unit 2: Savarkar and Indian National Movement

Sampath, Vikram (2021). Savarkar: A Contested Legacy (1924-66). Penguin Random House India, New Delhi.

Gilmartin, D. (2015). The Historiography of India's Partition: Between Civilization and Modernity. The Journal of Asian Studies, 74 (1), 23–41.

Mahurkar, Uday and Pandit, Chirayu (2021). Veer Savarkar. Rupa Publications, New Delhi.

संपथ, विक्रम (२०२२), सावरकर एक विवादित विरासत ,१९२४-१९६६, पेंगुइन रैंडम हाउस इंडिया, गुरुग्राम

कौशिक, अशोक (२०१०) , युग पुरुष वीर सावरकर, सूर्यभारती प्रकाशन, दिल्ली

Keer, Dhananjay, Veer Savarkar, Popular Prakashan Pvt. Ltd

Unit 3: Hindutva and Hinduism

Sharma, A. (2002). On Hindu, Hindustan, Hinduism and Hindutva. Numen, 49(1), 1–36.

Savarkar, Vinayak Damodar (1928). Hindutva: Who is a Hindu? Nagpur.

Savarkar, Vinayak Damodar (1949) Hindu Rashtra Darshan: A Collection of Presidential Speeches Delivered from the Hindu Mahasabha Platform. Bombay: Khare.

Savarkar, Vinayak Damodar. Essentials of Hindutva, 1922-23, available at: http://savarkar.org/en/encyc/2017/5/23/2_12_12_04_essentials_of_hindutva.v001.pdf_1.pdf

Sampath, Vikram (2021) Savarkar: A Contested Legacy, 1924-1966, Gurugram: Penguin Random House India.

Unit 4: Savarkar and Language Questions in India

V. K. R. V. Rao. (1978). Many Languages, One Nation: Quest for an All-India Language. Economic and Political Weekly, 13(25), 1025–1030.

Surajkumar Thube (2020). VD Savarkar's language purification project was a precursor to creating a 'Hindu language'.

Savarkar V D (2014). Savarkar Samagra, Essays on Social Questions, Vol. 9&10. Prabhat Prakashan, Delhi.

Unit 5: Religious Conversion

Sareen, T R (2019). Hindu Mahasabha Tryst with United India. Life Span Publishers and Distributors, New Delhi.

Hindu Mahasabha Presidential Speech of VD Savarkar.

Unit 6: Untouchability and Caste Questions

Kanungo, P. (2007). Co-Opting Dalits into the Hindutva Fold [Review of Hindutva and Dalits: Perspectives for Understanding Communal Praxis, by Anand Teltumbde]. Economic and Political Weekly, 42(20), 1852–1854.

Savarkar, Vinayak Damodar (2014). Savarkar Samagra, Essays on Social Questions, Vol. 7. Prabhat Prakashan, Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 11: Research Methods in Politics

NOTE: 'Research Methodology' is offered as one of the DSE courses in VI and VII Semesters. Students can opt for it either in VI semester or VII semester

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Research Methods in Politics DSE-11	4	3	1	-	Passed Class XII	Nil

Learning Objectives

The course would serve as the first formal introduction to the basics of social science research in the specific context of the discipline of Political Science. As an elementary course to introduce the students to the fundamentals of research in the study of politics, the purpose of the course is twin-fold - first, two familiarise students with the different methodologies to study the discipline of politics; second, to walk them through the application of these methods through selected texts. By the time

this course is offered, the students would be familiar with the salient analytical frameworks and arguments in the discipline. This course offers the students the opportunity to understand the methods by which these frameworks were arrived, the tools that were used to make them comprehensible, and the debates that the arguments spawned. The course is divided into three parts. The first will introduce the student to some key debates. The second takes them through the praxis of research by asking elementary questions such as, how to conceptualize a research problem, how to formulate research questions, etc. The third aims to introduce them to specific methodologies by using the strategy of reading a well-known work to discern the method used accompanied by an article that reflects upon that method.

Learning outcomes

On successful completion of the course, students would demonstrate:

- Preliminary training in basic elements of social science research
- Familiarity with how to conceptualize a research problem
- Familiarity with diverse methodologies used in the study of politics
- Skills to identify and understand the use of specific methodologies in a text

SYLLABUS OF DSE-11

UNIT – I (12 Hours)

Introduction

a. Human Enquiry and Social Science Research
b. What is political inquiry? Why do we need it?
c. Issues of objectivity and Interpretation in political enquiry
d. Epistemological Debate- Quantitative and Qualitative analysis

UNIT – II (15 Hours)

Conceptualizing Research

a. Review of Literature
b. Formulation of a research problem
c. Framing research questions
d. Sources and citations

UNIT – III (18 Hours)

Methods in the study of politics and their application?

a. Empirical
b. Discourse Analysis
c. Archival
d. Ethnography

Essential/recommended readings

I. Introduction

G. King, R. Keohane, and S. Verba (1994) *Designing Social Inquiry: Scientific Inference in Qualitative Research,* Princeton, New Jersey: Princeton University Press, pp. 1-12.

A. MacIntyre (1971) 'Is the Science of Comparative Politics possible?', in *Against the Self Images ofAge, Essays on Ideology and Philosophy*, London: Schocken Books, pp.8-26.

E Babbie (2008) Human Enquiry and Science, in *The Basics of Social Research*(4th Edn.),Thomson Wordsworth pp. 3-29.

H. Sandra and O. Heath (2020), Objectivity and Values, in *Political Research: Methods and Practical Skills (revised edition),* Oxford: Oxford University Press, pp. 64-91.

A Bryman (1984), The Debate about Qualitative and Quantitative Research. A Question of Methods or Epistemology, *The British Journal of Sociology*, Vol. 35 , Issue 1, pp. 75- 92.

L. Rudolph and S. Rudolph (2010) 'An Intellectual History of the Study of Indian Politics', in N.Jayal and P. Mehta, *The Oxford Companion to Politics in India*, New Delhi: Oxford University Press,pp.555-586.

Sudipta Kaviraj (1978), 'How not to study method?', in S. Kaviraj, P. Chatterjee, S. K. Chaube, S. Datta Gupta eds., *The State of Political Theory: Some Marxist Essays*, Calcutta: Research India Publications, Calcutta, pp.1-33

D Vaid (2013), Perspectives on Methods in Political Science. *Studies in Indian Politics*, Vol 1(1), pp. 103-107.

2. Conceptualizing Research

Bala J (2020), An Overview of Longitudinal Research Designs in Social Sciences. *Studies in Indian Politics,* Vol. 8(1), pp. 105-114.

E Babbie (2008) Research Design, in *The Basics of Social Research* (4th Edn.), Thomson Wordsworth, pp. 94- 128.

H. Sandra and O. Heath (2020) Asking Questions: How to Find and Formulate Research Questions, in *Political Research: Methods and Practical Skills* (revised edition), Oxford: Oxford University Press, pp. 93-122.

M Mohanty, Preparing a Research Proposal, available at http://www.polscience.du.ac.in/web4/uploads/PDF/academics/PhD/Preparing%20a%20Research%20Proposal%20Manoranjan%20Mohanty.pdf

3. Methods in the study of politics and their application

Empirical

A. Datta and D Vaid (2018). Mind the Gap?: Navigating the Quantitative and the Qualitative in Survey Research. *Studies in Indian Politics*, Vol 6(1), pp. 140-145.

S. Kumar, & P. Rai (2013) *Measuring Voting Behaviour in India,* New Delhi: Sage Publications, pp.1-12.

FR Jensenius, G Verniers (2017) Studying Indian Politics with Large-scale Data: Indian Election Data 1961–Today. Studies in Indian Politics, Vol 5(2), pp. 269-275

N Ummareddy, and A. Alam. (2021) What Do Preambles Do? A Study of Constitutional Intent and Reality. *Studies in Indian Politics*. Vol 9 (2), pp. 221-238.

Discourse Analysis

J. Gee (2010) *An Introduction to Discourse Analysis: Theory and Method*, London: Routledge, pp.2-10.

H. Sandra and O. Heath (2020), Textual Analysis, in *Political Research: Methods and Practical Skills* (revised edition)*,* Oxford: OxfordUniversity Press, pp. 364-392**.**

A Phadnis and A. Kashyap. (2019), The Politics of Historical Personalities: Textual Analysis of Speeches by the Indian Prime Ministers, *Working Paper at IIM Indore*, WP/02/2018 19/HSS

Archival

K. Paul, G. Gray, and L. Melvin (eds.) (2009) 'Introduction', in *An American Political Archives Reader,* Maryland**:** The Scarecrow Press.

S. Hazareesingh and K. Nabulsi (2008) 'Using Archival Data to Theorise about Politics', in David Leopold and Mark Stears (eds.), *Political Theory: Methods and Approaches* Oxford: Oxford University Press, pp. 150-170.

Ethnography

H. Sandra & O. Heath (2012) *Political Research: Methods and Practical Skills*, Oxford: OxfordUniversity Press, pp. 287-304.

Y. Yadav (2020), 'On Ethnography: What Work Does "Fieldwork" Do in the Field of Elections', in Y. Yadav ed. *Making Sense of Indian Democracy*, Ranikhet: Permanent Black, pp. 300-324.

S Kumar (2014) The Promise of Ethnography for the Study of Politics. *Studies in Indian Politics*, Vol 2(2), pp. 237-242

Additional Reading:

D. Easton (1969) 'The New Revolution in Political Science', in *The American Political ScienceReview*, Vol. LXIII (4), pp.1051-1061.

S. Wolin (1969) 'Political Theory as a Vocation', in *The American Political Science Review*, Vol.LXIII (4), pp.1062-82.

D. Marsh and G. Stoker (2010) *Theory and Methods in Political Science*, 3rd Edition, Palgrave Macmillan.

D. E. McNabb (2009), Research Methods for Political Science: Quantitative and Qualitative Methods, Armonk: M.E. Sharpe [Eastern Economy Edition]

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category II

Political Science Courses for Undergraduate Programme of study with Political Science as one of the Core Disciplines

(B.A. Programmes with Political Science as Major discipline)

DISCIPLINE SPECIFIC CORE COURSE (DSC-6A): Perspectives on Public Administration

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Perspectives on Public Administration MDSC-6A	4	3	1	-	Passed Class XII	Nil

Learning Objectives

The course provides an introduction to the discipline of public administration. This paper encompasses public administration in its historical context with an emphasis on the various classical and contemporary administrative theories. The course also explores some of the non-mainstream trends, including feminism and perspectives from the Global South on public administration.

Learning outcomes

On completion of this course, the student can be expected to

- have a comprehensive understanding of the conceptual roots of the discipline of Public Administration
- understand how theorising is done in this discipline
- how new perspectives like that of gender influence the orientation of both theory and practice in the discipline.

SYLLABUS OF MDSC-6A

UNIT – I (9 Hours)

Public Administration as a Discipline

a. Ancient Roots of Public Administration: Perspectives from India (Kautilya's Arthashastra)
b. Modern PA: An overview of the theoretical journey
c. Principles of Public Administration
d. Theorising Public Administration

UNIT – II (16 Hours)

Mainstream/ Traditional Theoretical Perspectives:

a. Scientific management (F.W.Taylor)

b. Ideal-type bureaucracy (Max Weber)
c. Human relations theory (Elton Mayo)
d. Rational decision-making (Herbert Simon)
e. Ecological approach (Fred Riggs)

UNIT – III (14 Hours)

Contemporary Theoretical Perspectives

a. New Public Management, New Public Service
b. Multiple Perspectives on Governance: Good Governance, Collaborative Governance, Network Governance, Digital Governance

UNIT – IV (6 Hours)

Gender Perspectives on Public Administration

a. Gender and Governance
b. Gender sensitivity and participation in administration

Essential/recommended readings

Unit 1. Public Administration as a Discipline

a. Ancient Roots of Public Administration

Kumar, A. Administration in Kautilya's Arthashastra in M.M. Shankhder & G. Kaur *Politics in India* Deep and Deep Publicaitons, New Delhi, 2005, pp. 83-94.

Muniyapan, B. Kautilya's Arthashastra and Perspectives on Organizational Management *Asian Social Science* Vol. 4, No. 1 January 2008, PP. 30-34.

b. Modern PA: An overview of the theoretical journey

D. Rosenbloom, R. Kravchuk. and R. Clerkin (2022), Public Administration: Understanding Management, Politics and Law in Public Sector, 9th edition, Routledge, New York, pp. 1-40.

W. Wilson (2004) 'The Study of Administration', in B. Chakrabarty and M. Bhattacharya (eds), Administrative Change and Innovation: a Reader, New Delhi: Oxford University Press, pp. 85-101.

c. Principles of Public Administration

Nicholas Henry, Public Administration and Public Affairs, Prentice Hall, Ch 2 (Paradigms of Public Administration).

d. Theorising Public Administration

F. H. George, K. B. Smith, C. W. Larimer and M. J. Licari (2015) *The Public Administration Theory Primer, Chapter* Introduction: The Possibilities of Theory, Routledge.

Unit 2. Mainstream/ Traditional Theoretical Perspectives:

D. Gvishiani (1972) Organisation and Management, Moscow: Progress Publishers.

F. Taylor (2004), 'Scientific Management', in J. Shafritz, and A. Hyde (eds.) *Classics of Public Administration,* 5th Edition. Belmont: Wadsworth.

P. Mouzelis (2003), 'The Ideal Type of Bureaucracy' in B. Chakrabarty, And M. Bhattacharya (eds), *Public Administration: A Reader*, New Delhi: Oxford University Press.

D. Ravindra Prasad, Y. Pardhasaradhi, V. S. Prasad and P. Satyrnarayana (eds.) (2010), *Administrative Thinkers*, Sterling Publishers.

M. Weber (1946), 'Bureaucracy', in C. Mills, and H. Gerth, *From Max Weber: Essays in Sociology* Oxford: Oxford University Press.

Warren G. Bennis (1973), *Beyond Bureaucracy*, Mc Graw Hill.

R. Arora (2003) 'Riggs' Administrative Ecology' in B. Chakrabarty and M. Bhattacharya (eds), *Public Administration: A reader*, New Delhi, Oxford University Press.

F. Riggs (1964) *Administration in Developing Countries: The Theory of Prismatic Society* Boston: Houghton Miffin.

Unit 3. Contemporary Theoretical Perspectives

a. New Public Management, New Public Service

S.P. Osborne, & K. Mclaughlin, New Public Management in Context in S.P. Osborne, K. Mclaughlin & E. Ferlie (eds). *New Public Management: Current Trends and Future Prospects*, Routledge, London and New York, 2002, pp.7-33.

b. Multiple Perspectives on Governance

A. Manoharan and M. Holzer, *E-Governance and Civic Engagement: Factors and Determinants of E-Democracy*, IGI Global: PA, USA, 2012.

S. Dhal, *E-Governance and Citizen Engagement: New Directions in Public Administration*, New Delhi: Sage Publishers, 2022.

Unit 4. Gender Perspectives on Public Administration

C. Stivers, *Gender Images in Public Administration: Legitimacy and the Administrative State*, California: Sage, 2002, Introduction.

A. S. Wharton, *The Sociology of Gender*, West Sussex: Blackwell-Wiley Publishers, 2012.

S. Dhall, Public Policy Discourse and Sexual Minorities: Balancing Democratic Aspirations, Political Expediency and Moral Rights, *Indian Journal of Public Administration,* Jan-March 2022.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE (DSC-6B): Comparative Political Systems

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Comparative Political Systems MDSC-6B	4	3	1	-	Passed Class XII	Nil

Learning Objectives

The aim of this course is to train students in the application of comparative methods to the study of different political systems with respect to institutions and their functioning in these countries from a comparative perspective.Students will be familiarised with the defining features like political tradition, state formation, constitution and division of power, structure of government, electoral system, political parties, party system, and the contemporary social and economic challenges in these societies.

Learning outcomes

This paper will provide students with a comprehensive understanding of a range ofpolitical systems fromdifferent continentsin a historical context. The students will engage in studying different countries in detail with reference to their political tradition and state formation, constitution and division of power, political parties and elections, political economy and contemporary challenges. The critical analysis of different political systems will delineate the institutional structures, processes and their functioning in these systems. The course content would also help students develop analytical skills to understand not just the similarities and differences but the uniqueness of some cases as well that highlight how the matrix of diverse determinants and variables result in different discourses in different countries.

SYLLABUS OF MDSC- 6B

UNIT – I (7 Hours)
United Kingdom

UNIT – II (7 Hours)
United States of America

UNIT – III (6 Hours)
Brazil

UNIT – IV (6 Hours)
Russia

UNIT – V (7 Hours)
China

UNIT – VI (6 Hours)
South Africa

UNIT – VII (6 Hours)
Israel

THEMES
A. Political Traditions and Constitutional Development
B. Society and Economy: Nature of state
C. Party and electoral system
D. Unitary and Federal System

Essential/recommended readings

Patrick H. O'Neil, Karl Fields and Don Share (2010), *Cases in Comparative Politics*, 3rd Ed., W. W. Norton & Company: New York and London. pp. 31-74 (Britain), 75-114 (US), 200-244 (Japan), 245-284 (Russia), 285-326 (China), 450-489 (Brazil), and 490-530 (South Africa).

John McCormick (2010), *Comparative Politics in Transition*, 6th Ed., Wadsworth: Boston, MA. pp. 50-97 (United States), 98-147 (Britain), 148-194 (Japan), 210-257 (Russia), 258-304 (China).

G. Bingham Powell, Jr., Russell J. Dalton, Kaare W. Strom (2015), *Comparative Politics Today: A World View*, 11th Ed., Pearson: Edinburgh Gate. 172-217 (Britain), 318-359 (Japan), 360-407 (Russia), 408-455 (China), 506-555 (Brazil), 702-749 (United States).

(Richard Rose, Dennis Kavanagh)

Unit 1. United Kingdom

P. Rutland (2007), 'Britain', in J. Kopstein and M. Lichbach. (eds.) *Comparative Politics: Interest, Identities and Institutions in a Changing Global Order*. Cambridge: Cambridge University Press, pp. 39-79.

Joel Krieger (2019), 'Britain', in Mark Kesselman, Joel Krieger and William A. Joseph (eds.), *Introduction to Comparative Politics: Political Challenge and Changing Agendas*, 8th Ed., Cengage Learning: Boston, MA, pp. 38-83.

Duncan Watts (2006), *British Government and Politics: A Comparative Guide*, Edinburgh University Press: Edinburgh.

Unit 2. United States of America

Louis DeSipio (2019), 'The United States', in Mark Kesselman, Joel Krieger and William A. Joseph (eds.), *Introduction to Comparative Politics: Political Challenge and Changing Agendas*, 8th Ed., Cengage Learning: Boston, MA, pp. 324-368.

John G. Geer, Wendy J. Schiller, Jeffrey A. Segal, and Dana K. Glencross (2012), *Gateways to Democracy: An Introduction to American Government*, The Essentials, Cengage Learning: Boston, MA, pp. 36-71 (The Constitution), 284-317 (Political Parties), 360-407 (Congress), 4-8-453 (The Presidency)

Unit 3. Brazil

Alfred P. Montero (2019), 'Brazil', in Mark Kesselman, Joel Krieger and William A. Joseph (eds.), *Introduction to Comparative Politics: Political Challenge and Changing Agendas*, 8th Ed., Cengage Learning: Boston, MA, pp. 369-414.

Frances Hagopian (2019), 'The Political Economy of Inequality', in Barry Ames (eds.), *Routledge Handbook of Brazilian Politics*, Routledge: New York, pp. 375-390.

Unit 4. Russia

Joan DeBardeleben (2019), 'The Russian Federation', in Mark Kesselman, Joel Krieger and William A. Joseph (eds.), *Introduction to Comparative Politics: Political Challenge and Changing Agendas*, 8th Ed., Cengage Learning: Boston, MA, pp. 555-606.

Eric Shiraev (2021), *Russian Government and Politics*, 3rd Ed., Red Globe Press: London, pp. 22-67 (Political and Tradition Soviet State), 71-88 (The Executive Branch), 119-132 (Political Parties).

Graeme Gill and James Young (eds.), *Routledge Handbook of Russian Politics and Society*, Routledge: Oxon, pp. 71-80 (The Russian Constitution), 81-91 (Presidency), 102-114 (The Duma's Electoral System), 115-128 (Political Parties).

Unit 5. China

William A. Joseph (2019), 'China', in Mark Kesselman, Joel Krieger and William A. Joseph (eds.*), Introduction to Comparative Politics: Political Challenge and Changing Agendas*, 8th Ed., Cengage Learning: Boston, MA, pp. 653-700.

Michael Dillon (2009), *Contemporary China: An Introduction*, Routledge: New York, pp. 10-20, 137-160.

Elizabeth Freund Larus (2012), *Politics and Society in Contemporary China*, Lynne Rienner Publisher: London, pp. 81-114

Unit 6. South Africa

Tom Lodge (2019), 'South Africa', in Mark Kesselman, Joel Krieger and William A. Joseph (eds.), *Introduction to Comparative Politics: Political Challenge and Changing Agendas*, 8th Ed., Cengage Learning: Boston, MA, pp. 462-508.

Anthony Butler (2004), *Contemporary South Africa*, Palgrave Macmillan: New York, pp. 6-30.

Unit 7. Israel

Don Peretz (1983) *The Government and Politics of Israel*, second ed., Wetview Press: Boulder.

Gregory S. Mahler (2016) *Politics and Government in Israel, The Maturation of Modern State*, third ed., Rowman and Littlefield, Lanham.

Sunil K. Choudhary (2018) *The Changing Face of Parties and Party Systems*, Palgrave Macmillan.

Additional Readings:

Kenneth Newton and Jan W. van Deth (2010), *Foundations of Comparative Politics: Democracies of the Modern World*, 2nd Ed., Cambridge University Press: Cambridge.

Jeffrey Kopstein and Mark Lichbach (eds.) (2005), *Comparative politics: Interests, identities, and Institutions in a Changing Global Order*, 2nd Ed., Cambridge University Press: Cambridge.

Robert Singh (2003), *American Government: A Concise Introduction*, SAGE Publications: London, pp. 25-45 (The US Constitution), 46-73 (Political Parties), 153-176 (Congress).

P. W. Preston (eds.) (2003*). Contemporary China: The Dynamics of Change at the start of new millennium*, Routledge Curzon: London.

Paul E. Johnson, Gary J. Miller, John H. Aldrich (1994), *American Government: People, Institutions and Policies*, Cengage Learning: Boston, MA.

Vicki L. Hesli (2007), *Governments and Politics in Russia and the Post-Soviet Region*, Houghton Mifflin Company: Boston.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category III

Political Science Courses for Undergraduate Programme of study with Political Science as one of the Core Disciplines

(B.A. Programmes with Political Science as non-Major or Minor discipline)

DISCIPLINE SPECIFIC CORE COURSE (DSC-6A): Perspectives on Public Administration

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Perspectives on Public Administration MDSC-6A	4	3	1	-	Passed Class XII	Nil

Learning Objectives

The course provides an introduction to the discipline of public administration. This paper encompasses public administration in its historical context with an emphasis on the various classical and contemporary administrative theories. The course also explores some of the non-mainstream trends, including feminism and perspectives from the Global South on public administration.

Learning outcomes

On completion of this course, the student can be expected to

- have a comprehensive understanding of the conceptual roots of the discipline of Public Administration
- understand how theorising is done in this discipline
- how new perspectives like that of gender influence the orientation of both theory and practice in the discipline.

SYLLABUS OF MDSC-6A

UNIT – I (9 Hours)

Public Administration as a Discipline

a. Ancient Roots of Public Administration: Perspectives from India (Kautilya's Arthashastra)
b. Modern PA: An overview of the theoretical journey
c. Principles of Public Administration
d. Theorising Public Administration

UNIT – II (16 Hours)

Mainstream/ Traditional Theoretical Perspectives:

a. Scientific management (F.W.Taylor)
b. Ideal-type bureaucracy (Max Weber)
c. Human relations theory (Elton Mayo)
d. Rational decision-making (Herbert Simon)
e. Ecological approach (Fred Riggs)

UNIT – III (14 Hours)

Contemporary Theoretical Perspectives

a. New Public Management, New Public Service
b. Multiple Perspectives on Governance: Good Governance, Collaborative Governance, Network Governance, Digital Governance

UNIT – IV (6 Hours)

Gender Perspectives on Public Administration

a. Gender and Governance
b. Gender sensitivity and participation in administration

Essential/recommended readings

Unit 1. Public Administration as a Discipline

a. Ancient Roots of Public Administration

Kumar, A. Administration in Kautilya's Arthashastra in M.M. Shankhder & G. Kaur *Politics in India* Deep and Deep Publicaitons, New Delhi, 2005, pp. 83-94.

Muniyapan, B. Kautilya's Arthashastra and Perspectives on Organizational Management *Asian Social Science* Vol. 4, No. 1 January 2008, PP. 30-34.

b. Modern PA: An overview of the theoretical journey

D. Rosenbloom, R. Kravchuk. and R. Clerkin (2022), Public Administration: Understanding Management, Politics and Law in Public Sector, 9th edition, Routledge, New York, pp. 1-40.

W. Wilson (2004) 'The Study of Administration', in B. Chakrabarty and M. Bhattacharya (eds), Administrative Change and Innovation: a Reader, New Delhi: Oxford University Press, pp. 85-101.

c. Principles of Public Administration

Nicholas Henry, Public Administration and Public Affairs, Prentice Hall, Ch 2 (Paradigms of Public Administration).

d. Theorising Public Administration

F. H. George, K. B. Smith, C. W. Larimer and M. J. Licari (2015) *The Public Administration Theory Primer, Chapter* Introduction: The Possibilities of Theory, Routledge.

Unit 2. Mainstream/ Traditional Theoretical Perspectives:

D. Gvishiani (1972) Organisation and Management, Moscow: Progress Publishers.

F. Taylor (2004), 'Scientific Management', in J. Shafritz, and A. Hyde (eds.) *Classics of Public Administration,* 5th Edition. Belmont: Wadsworth.

P. Mouzelis (2003), 'The Ideal Type of Bureaucracy' in B. Chakrabarty, And M. Bhattacharya (eds), *Public Administration: A Reader*, New Delhi: Oxford University Press.

D. Ravindra Prasad, Y. Pardhasaradhi, V. S. Prasad and P. Satyrnarayana (eds.) (2010), *Administrative Thinkers*, Sterling Publishers.

M. Weber (1946), 'Bureaucracy', in C. Mills, and H. Gerth, *From Max Weber: Essays in Sociology* Oxford: Oxford University Press.

Warren G. Bennis (1973), *Beyond Bureaucracy*, Mc Graw Hill.

R. Arora (2003) 'Riggs' Administrative Ecology' in B. Chakrabarty and M. Bhattacharya (eds), *Public Administration: A reader*, New Delhi, Oxford University Press.

F. Riggs (1964) *Administration in Developing Countries: The Theory of Prismatic Society* Boston: Houghton Miffin.

Unit 3. Contemporary Theoretical Perspectives

a. New Public Management, New Public Service

S.P. Osborne, & K. Mclaughlin, New Public Management in Context in S.P. Osborne, K. Mclaughlin & E. Ferlie (eds). *New Public Management: Current Trends and Future Prospects*, Routledge, London and New York, 2002, pp.7-33.

b. Multiple Perspectives on Governance

A. Manoharan and M. Holzer, *E-Governance and Civic Engagement: Factors and Determinants of E-Democracy*, IGI Global: PA, USA, 2012.

S. Dhal, *E-Governance and Citizen Engagement: New Directions in Public Administration*, New Delhi: Sage Publishers, 2022.

Unit 4. Gender Perspectives on Public Administration

C. Stivers, *Gender Images in Public Administration: Legitimacy and the Administrative State*, California: Sage, 2002, Introduction.

A. S. Wharton, *The Sociology of Gender*, West Sussex: Blackwell-Wiley Publishers, 2012.

S. Dhall, Public Policy Discourse and Sexual Minorities: Balancing Democratic Aspirations, Political Expediency and Moral Rights, *Indian Journal of Public Administration,* Jan-March 2022.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Discipline Specific Elective (DSE) Courses for Sem – VI [Category II and III – Multidisciplinary]

DISCIPLINE SPECIFIC ELECTIVE COURSE – 4a: Gender in International Relations: Theories, Concepts and Practices

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Gender in International Relations: Theories, Concepts and Practices MDSE-4a	**4**	**3**	**1**	**-**	**Passed Class XII**	**Nil**

Learning Objectives

This paper engages with the need to study gender in International Relations (IR). It highlights the fact that gender and IR mutually constitute each other. Students are introduced to feminist theorizing to provide them with the tools to critically assess global problems and the way gender is currently being counted in IR. This paper focuses on concepts like State and Sovereignty; Nation and Nationalism and Security to expose and bridge the limitations of conventional IR. Finally, this paper emphasises the need to understand the role of gender in practising IR by looking into the spheres of foreign policy, international institutions, war and conflicts.

Learning outcomes

After completing this course, students would be able to:

- understand the issues of IR from a feminist perspective.
- hone their critical thinking skills by developing the ability to interpret, analyse, and assess international issues from this perspective.
- develop their research and writing skills to explore uncharted terrains in IR from a feminist perspective.

SYLLABUS OF MDSE-4a

UNIT – I (3 Hours)

Introduction

a. Why study gender in IR
b. How gender and IR mutually constitute each other

UNIT – II (14 Hours)

Gendering IR - I: Theoretical Contributions

a. The feminist challenge to mainstream/malestream IR theories

b. Masculinity and Hegemonic Masculinity
c. Queer theories and IR

UNIT – III (14 Hours)
Gendering IR - II: Conceptual Contributions

a. State and Sovereignty
b. Nation and Nationalism
c. Security

UNIT – IV (14 Hours)
Gendering IR practices

a. Gender and Foreign Policy
b. Gender and International Institutions
c. Gender, War and Conflicts

Essential/recommended readings

Unit 1

Primary Readings

G. Young, "Feminist International Relations: A Contradiction in Terms? Or: Why Women and Gender are Essential to Understanding the World 'We' Live," International Affairs, 80 (1), 2004, pp.75-87.

Keohane, Robert O, 'International relations theory: Contributions of a feminist standpoint,' Millennium, 18(2), 1989, pp. 245-254.

Tickner, J. Ann, "Ch.1. Engendered Insecurities: Feminist Perspectives on International Relations," in *Gender in International Relations: Feminist Perspectives on Achieving Global Security*, New York, Columbia university press,1992, pp. 1-25, http://www.ces.uc.pt/ ficheiros2/ files/ Short.pdf.

Hooper, C., *Manly states: Masculinities, International relations and gender politics*, New York: Columbia University Press, 2001, pp.53-58; pp.79-110.

Additional Readings

Shepherd, Laura, "Sex or Gender? Bodies in World Politics and Why Gender Matters," in Laura Shepherd (ed.) *Gender Matters in Global Politics: A Feminist Introduction to International Relations*, London: Routledge, 2010.

Jones, Adam, "Does gender make the world go round"? Feminist critiques of International Relations", *Review of International Studies*, 22(4):, 1996, pp. 405-29.

Tickner, Ann, *Gender in International Relations: Feminist Perspectives on Achieving Global Security (New Directions in World Politics)*. New York: Columbia University Press,1993.

Unit 2

Primary Readings

Tickner, Ann, "You Just Don't Understand: Troubled Engagements Between Feminists and IR Theorists," *International Studies Quarterly* 41(4), 1997.

Keohane, Robert, "Beyond Dichotomy: Conversations between International Relations and Feminist Theory," *International Studies Quarterly*, 42(1), 1998.

Steans, Jill, *Gender and International Relations: An Introduction*, Cambridge, Blackwell publishers Ltd, 1998, pp.10-39.

Whitworth, Sandra, *Feminism and International Relations*, Palgrave, Macmillan, UK, 1997, pp. 11-31.

Hooper, C. *Manly states: Masculinities, International relations and gender politics*, New York: Columbia University Press, 2001, pp.39-76.

Richter-Montpetit, Melanie, "Everything You Always Wanted to Know about Sex (in IR) But were Afraid to Ask: The 'Queer Turn' in International Relations." *Millennium: Journal of International Studies*. 46 (2): 220– 240, 2018

Puar, Jasbir K., *Terrorist Assemblages: Homonationalism in Queer Times*, Durham and London: Duke University Press, 2007. pp. 1-36.

Additional readings

Tickner, J. Ann, "Retelling IR's Foundational Stories: Some Feminist and Postcolonial Perspectives." *Global Change, Peace & Security* 23 (1), 2011, pp. 5–13.

Weber, Cynthia, *International Relations Theory: A Critical Introduction*, London and New York: Routledge, 2001.

Tickner, J. Ann, "What Is Your Research Program? Some Feminist Answers to International Relations Methodological Questions." *International Studies Quarterly*, 49 (1), 2005, pp.1–22.

Hooper, Charlotte, "Masculinities, IR and the 'gender variable': a Cost-benefit Analysis for (sympathetic) Gender Sceptics." *Review of International Studies*, 25 (03), 1999, pp.475–491.

Weber, Cynthia, "Queer Intellectual Curiosity as International Relations Method: Developing Queer International Relations Theoretical and Methodological Frameworks," *International Studies Quarterly*, 60: 11- 23, 2016.

Unit 3

Primary Readings

Hoffman, John, *Gender and Sovereignty: Feminism, the State and International Relations*, Palgrave, New York, 2001, pp. 1-18; pp. 111-128.

Young, Iris Marion, "The Logic of Masculinist Protection: Reflections on the Current Security States", *Journal of Women in Culture and Society*, Vol. 29, No. 1, 2003, pp. 1-26.

Nagel, Joane, "Masculinity and nationalism: gender and sexuality in the making of nations" in *Ethic and Racial Studies*, Vol.21, No.2, March 1998.

Enloe, Cynthia, "Nationalism and Masculinity: The Nationalist Story Is Not Over - and It Is Not a Simple Story" in *Bananas, Beaches and Bases: Making Feminist Sense of International Politics*, Second Edition, Berkeley: University of California Press, 2014.

Additional Readings

Wadley, Jonathan D., "Gendering the State: Performativity and Protection in International Security" in Lisa Sjoberg (ed.) *Gender and International Security: Feminist Perspectives*, New York: Routledge, 2010.

Maruska, Jennifer, "When are States Hypermasculine?" in Lisa Sjoberg (ed.) *Gender and International Security: Feminist Perspectives*, New York: Routledge, 2010.

Bloom, Mia, "Female Suicide Bombers: A Global Trend," *Daedalus ,*136 (1), 2007.

Wibben, Annick T.R., *Feminist Security Studies: A Narrative Approach*, 1 edition, London, New York: Routledge, 2011.

Unit 4

Primary readings

Scheyer, Victoria and Kumskova, Marina, Feminist Foreign Policy: A Fine Line Between "Adding Women" And Pursuing a Feminist Agenda, *Journal of International Affairs*,72 (2), 2019, pp. 57-76.

Rajagopalan, Swarna, "Reflections on Feminism and Foreign Policy", *India International Centre Quarterly*, Vol. 39, No. 1, 2012, pp. 93-102.

Snyder, Margaret, "Unlikely Godmother: The UN and the Global Women's Movement", in Ferree, Myra Marx, and Aili Mari Tripp, ed. *Global Feminism: Transnational Women's Activism, Organizing, and Human Rights*, New York University Press, 2006.

Shepherd, Laura J, "Sex, Security and Superhero(in)es: From 1325 to 1820 and Beyond," *International Feminist Journal of Politics,*13 (4), 2011, pp. 504–521.

Shepherd, Laura J, "Power and Authority in the Production of United Nations Security Council Resolution 1325," *International Studies Quarterly* 52 (2), 2008, pp. 383–404.

Sjoberg, Laura and Sandra Via, *Gender War and Militarism: Feminist Perspectives*, Praeger, England, 2010, pp. 16-29, pp.114-124.

Gerecke, Megan, "Explaining Sexual violence in Conflict Situations" in Laura Sjoberg and Sandra Via, *Gender War and Militarism: Feminist Perspectives*, Praeger, England, 2010, pp. 16-29, pp.114-124.

Sjoberg, Laura, and Caron E. Gentry, "Reduced to Bad Sex: Narratives of Violent Women from the Bible to the War on Terror" *International Relations,* 22 (1), March 1, 2008, pp. 5–23.

McKenzie, Megan H. "Women in Combat: Beyond 'can They?' or 'should They?': Introduction," *Critical Studies on Security* 1, no. 2, August 1, 2013, pp. 239–42. doi:10.1080/21624887.2013.814838.

Carpenter, R. Charli, "Recognizing Gender-Based Violence Against Civilian Men and Boys in Conflict Situations," *Security Dialogue*, 37 (1) March 1, 2006, pp. 83–103.

Additional readings

Cynthia Enloe, "All the Men are in the Militias, All the Women are Victims," in *The Curious Feminist: Searching for Women in a New Age of Empire*, Berkeley: University of California Press, 2004.

Report by Council on Foreign Relations, *Advancing Gender Equality in Foreign Policy* is available at https://www.cfr.org/report/advancing-gender-equality-foreign-policy, 2020.

Hoganson, Kristin, What's Gender Got to Do with It? Women and Foreign Relations History. OAH Magazine of History, Vol. 19, No. 2, Recent Directions in Gender and Women's History, 2005, pp. 14-18.

Reeves, Audrey, "Feminist Knowledge and Emerging Governmentality in UN Peacekeeping." *International Feminist Journal of Politics*, 14 (3), 2012, pp. 348–369.

Bedford, K. 'The Imperative of male Inclusion: How Institutional Context Influences World Bank Gender Policy', *International Feminist Journal of Politics*, 9 (3), 2007, pp. 289-311.

Krystalli, Roxanne. "Deconstructing the 2012 Human Security Report: Examining Narratives on Wartime Sexual Violence." *International Journal: Canada's Journal of Global Policy Analysis* 69, no. 4, December 1, 2014, pp. 574–93. doi:10.1177/0020702014544916.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 4b: Understanding Savarkar

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Understanding Savarkar MDSE-4b	4	3	1	-	Passed Class XII	Nil

Learning Objectives

Vinayak Damodar Savarkar was one of the important leaders of the Indian National movement. He was a revolutionary who gradually turned to lay the foundation of Hindu Nationalism in India after release from the jail at Andaman and Nicobar. He remained at the thick of controversies due to his opposition due to his thoughts on Indian Nationalism which was essentially against Gandhian methods and approach to making national movement hostage to the whims of a particular community. His works Hindutva still continues to dominate the discourse of Indian politics wherein he is referred to by both his opponents and the supporters. He was a prolific writer both in Marathi and English. He had a clearly defined socio-political thought which he articulated through his poems, essays, stories, plays and the political speeches. It is therefore it is important to study his revolutionary journey as well his political thoughts and his position on key issues of India both before and after independence.

Learning outcomes

At the end of the course:

- The students will be able to understand his role and contribution in the freedom movement.
- They will be able to contextualise his thoughts on Hindutva and differentiate it from Hinduism.
- Students will be able to answer what impact religious conversion has on the cultural and political geography of a nation.

- They will be able to understand how he differed from Ambedkar on caste and untouchability questions and what was his response to this important question.

SYLLABUS OF MDSE-4b

UNIT – I (6 Hours)
Savarkar and Indian Historiography

UNIT – II (9 Hours)
Savarkar and Indian National Movement

UNIT – III (9 Hours)
Hindutva and Hinduism

UNIT – IV (7 Hours)
Savarkar and Language Questions in India

UNIT – V (7 Hours)
Religious Conversion

UNIT – VI (7 Hours)
Untouchability and Caste Questions

Essential/recommended readings

Unit 1: Savarkar and Indian Historiography

Savarkar, Vinayak Damodar (2018). Six Glorious Epochs of Indian History, Prabhat Prakashan, Delhi.

Savarkar, Vinayak Damodar. The Indian War of Independence, 1857. New Delhi: Rajdhani Granthnagar, 1970; 1st ed., 1908.

Kumar, M. (2006). History and Gender in Savarkar's Nationalist Writings. Social Scientist, 34(11/12), 33–50.

Raugh, H. E. (2017). The Battle of the Books: An Indian Mutiny Historiography Part 2. Journal of the Society for Army Historical Research, 95(381), 34–51.

Pati, B. (2007). Historians and Historiography: Situating 1857. Economic and Political Weekly, 42(19), 1686–1691.

Unit 2: Savarkar and Indian National Movement

Sampath, Vikram (2021). Savarkar: A Contested Legacy (1924-66). Penguin Random House India, New Delhi.

Gilmartin, D. (2015). The Historiography of India's Partition: Between Civilization and Modernity. The Journal of Asian Studies, 74 (1), 23–41.

Mahurkar, Uday and Pandit, Chirayu (2021). Veer Savarkar. Rupa Publications, New Delhi.

संपथ, विक्रम (२०२२), सावरकर एक विवादित विरासत ,१९२४-१९६६, पेंगुइन रैंडम हाउस इंडिया, गुरुग्राम

कौशिक, अशोक (२०१०) , युग पुरुष वीर सावरकर, सूर्यभारती प्रकाशन, दिल्ली

Keer, Dhananjay, Veer Savarkar, Popular Prakashan Pvt. Ltd

Unit 3: Hindutva and Hinduism

Sharma, A. (2002). On Hindu, Hindustan, Hinduism and Hindutva. Numen, 49(1), 1–36.

Savarkar, Vinayak Damodar (1928). Hindutva: Who is a Hindu? Nagpur.

Savarkar, Vinayak Damodar (1949) Hindu Rashtra Darshan: A Collection of Presidential Speeches Delivered from the Hindu Mahasabha Platform. Bombay: Khare.

Savarkar, Vinayak Damodar. Essentials of Hindutva, 1922-23, available at: http://savarkar.org/en/encyc/2017/5/23/2_12_12_04_essentials_of_hindutva.v001.pdf_1.pdf

Sampath, Vikram (2021) Savarkar: A Contested Legacy, 1924-1966, Gurugram: Penguin Random House India.

Unit 4: Savarkar and Language Questions in India

V. K. R. V. Rao. (1978). Many Languages, One Nation: Quest for an All-India Language. Economic and Political Weekly, 13(25), 1025–1030.

Surajkumar Thube (2020). VD Savarkar's language purification project was a precursor to creating a 'Hindu language'.

Savarkar V D (2014). Savarkar Samagra, Essays on Social Questions, Vol. 9&10. Prabhat Prakashan, Delhi.

Unit 5: Religious Conversion

Sareen, T R (2019). Hindu Mahasabha Tryst with United India. Life Span Publishers and Distributors, New Delhi.

Hindu Mahasabha Presidential Speech of VD Savarkar.

Unit 6: Untouchability and Caste Questions

Kanungo, P. (2007). Co-Opting Dalits into the Hindutva Fold [Review of Hindutva and Dalits: Perspectives for Understanding Communal Praxis, by Anand Teltumbde]. Economic and Political Weekly, 42(20), 1852–1854.

Savarkar, Vinayak Damodar (2014). Savarkar Samagra, Essays on Social Questions, Vol. 7. Prabhat Prakashan, Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 11: Research Methods in Politics

NOTE: 'Research Methodology' is offered as one of the DSE courses in VI and VII Semesters. Students can opt for it either in VI semester or VII semester. However, a student pursuing multidisciplinary studies in three core disciplines shall have to choose research methodology in VI semester, if she/he wishes to Major in one of the three disciplines in the fourth year.

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Research Methods in Politics MDSE-11	4	3	1	-	Passed Class XII	Nil

Learning Objectives

The course would serve as the first formal introduction to the basics of social science research in the specific context of the discipline of Political Science. As an elementary course to introduce the students to the fundamentals of research in the study of politics, the purpose of the course is twin-fold - first, two familiarise students with the different methodologies to study the discipline of politics; second, to walk them through the application of these methods through selected texts. By the time this course is offered, the students would be familiar with the salient analytical frameworks and arguments in the discipline. This course offers the students the opportunity to understand the methods by which these frameworks were arrived, the tools that were used to make them comprehensible, and the debates that the arguments spawned. The course is divided into three parts. The first will introduce the student to some key debates. The second takes them through the praxis of research by asking elementary questions such as, how to conceptualize a research problem, how to formulate research questions, etc. The third aims to introduce them to specific methodologies by using the strategy of reading a well-known work to discern the method used accompanied by an article that reflects upon that method.

Learning outcomes

On successful completion of the course, students would demonstrate:

- Preliminary training in basic elements of social science research
- Familiarity with how to conceptualize a research problem
- Familiarity with diverse methodologies used in the study of politics
- Skills to identify and understand the use of specific methodologies in a text

SYLLABUS OF MDSE-11

UNIT – I (12 Hours)

Introduction

a. Human Enquiry and Social Science Research
b. What is political inquiry? Why do we need it?
c. Issues of objectivity and Interpretation in political enquiry
d. Epistemological Debate- Quantitative and Qualitative analysis

UNIT – II (15 Hours)

Conceptualizing Research

a. Review of Literature
b. Formulation of a research problem
c. Framing research questions
d. Sources and citations

UNIT – III (18 Hours)

Methods in the study of politics and their application?

a. Empirical
b. Discourse Analysis
c. Archival
d. Ethnography

Essential/recommended readings

I. Introduction

G. King, R. Keohane, and S. Verba (1994) *Designing Social Inquiry: Scientific Inference in Qualitative Research,* Princeton, New Jersey: Princeton University Press, pp. 1-12.

A. MacIntyre (1971) 'Is the Science of Comparative Politics possible?', in *Against the Self Images ofAge, Essays on Ideology and Philosophy*, London: Schocken Books, pp.8-26.

E Babbie (2008) Human Enquiry and Science, in *The Basics of Social Research*(4th Edn.),Thomson Wordsworth pp. 3-29.

H. Sandra and O. Heath (2020), Objectivity and Values, in *Political Research: Methods and Practical Skills (revised edition),* Oxford: Oxford University Press, pp. 64-91.

A Bryman (1984), The Debate about Qualitative and Quantitative Research. A Question of Methods or Epistemology, *The British Journal of Sociology*, Vol. 35 , Issue 1, pp. 75- 92.

L. Rudolph and S. Rudolph (2010) 'An Intellectual History of the Study of Indian Politics', in N.Jayal and P. Mehta, *The Oxford Companion to Politics in India*, New Delhi: Oxford University Press,pp.555-586.

Sudipta Kaviraj (1978), 'How not to study method?', in S. Kaviraj, P. Chatterjee, S. K. Chaube, S. Datta Gupta eds., *The State of Political Theory: Some Marxist Essays*, Calcutta: Research India Publications, Calcutta, pp.1-33

D Vaid (2013), Perspectives on Methods in Political Science. *Studies in Indian Politics*, Vol 1(1), pp. 103-107.

2. Conceptualizing Research

Bala J (2020), An Overview of Longitudinal Research Designs in Social Sciences. *Studies in Indian Politics,* Vol. 8(1), pp. 105-114.

E Babbie (2008) Research Design, in *The Basics of Social Research* (4th Edn.), Thomson Wordsworth, pp. 94- 128.

H. Sandra and O. Heath (2020) Asking Questions: How to Find and Formulate Research Questions, in *Political Research: Methods and Practical Skills* (revised edition), Oxford: Oxford University Press, pp. 93-122.

M Mohanty, Preparing a Research Proposal, available at http://www.polscience.du.ac.in/web4/uploads/PDF/academics/PhD/Preparing%20a%20Research%20Proposal%20Manoranjan%20Mohanty.pdf

3. Methods in the study of politics and their application

Empirical

A. Datta and D Vaid (2018). Mind the Gap?: Navigating the Quantitative and the Qualitative in Survey Research. *Studies in Indian Politics*, Vol 6(1), pp. 140-145.

S. Kumar, & P. Rai (2013) *Measuring Voting Behaviour in India,* New Delhi: Sage Publications, pp.1-12.

FR Jensenius, G Verniers (2017) Studying Indian Politics with Large-scale Data: Indian Election Data 1961–Today. Studies in Indian Politics, Vol 5(2), pp. 269-275

N Ummareddy, and A. Alam. (2021) What Do Preambles Do? A Study of Constitutional Intent and Reality. *Studies in Indian Politics*. Vol 9 (2), pp. 221-238.

Discourse Analysis

J. Gee (2010) *An Introduction to Discourse Analysis: Theory and Method*, London: Routledge, pp.2-10.

H. Sandra and O. Heath (2020), Textual Analysis, in *Political Research: Methods and Practical Skills* (revised edition)*,* Oxford: OxfordUniversity Press, pp. 364-392**.**

A Phadnis and A. Kashyap. (2019), The Politics of Historical Personalities: Textual Analysis of Speeches by the Indian Prime Ministers, *Working Paper at IIM Indore*, WP/02/2018 19/HSS

Archival

K. Paul, G. Gray, and L. Melvin (eds.) (2009) 'Introduction', in *An American Political Archives Reader,* Maryland**:** The Scarecrow Press.

S. Hazareesingh and K. Nabulsi (2008) 'Using Archival Data to Theorise about Politics', in David Leopold and Mark Stears (eds.), *Political Theory: Methods and Approaches* Oxford: Oxford University Press, pp. 150-170.

Ethnography

H. Sandra & O. Heath (2012) *Political Research: Methods and Practical Skills*, Oxford: OxfordUniversity Press, pp. 287-304.

Y. Yadav (2020), 'On Ethnography: What Work Does "Fieldwork" Do in the Field of Elections', in Y. Yadav ed. *Making Sense of Indian Democracy*, Ranikhet: Permanent Black, pp. 300-324.

S Kumar (2014) The Promise of Ethnography for the Study of Politics. *Studies in Indian Politics*, Vol 2(2), pp. 237-242

Additional Reading:

D. Easton (1969) 'The New Revolution in Political Science', in *The American Political ScienceReview*, Vol. LXIII (4), pp.1051-1061.

S. Wolin (1969) 'Political Theory as a Vocation', in *The American Political Science Review*, Vol.LXIII (4), pp.1062-82.

D. Marsh and G. Stoker (2010) *Theory and Methods in Political Science*, 3rd Edition, Palgrave Macmillan.

D. E. McNabb (2009), Research Methods for Political Science: Quantitative and Qualitative Methods, Armonk: M.E. Sharpe [Eastern Economy Edition]

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF SOCIAL WORK

Category I

Semester- IV

[UG Programme for Bachelor in Social Work (Honours) degree in three years]

DISCIPLINE SPECIFIC CORE COURSE -10 (DSC-10) – : UDERSTANDING SOCIAL PSYCHOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
UDERSTANDING SOCIAL PSYCHOLOGY DSC 10	4	3	0	1	12th Pass	NIL

Learning Objectives

The learning objectives of this course are as follows:

- To understand the fundamentals of social psychology and its relevance to social work practice
- To understand interpersonal and societal issues related with individual, groups and communities
- To understand group behaviour, interaction processes to guide the social work practice

Learning Outcomes

At the end of the semester, the student will be able to

- Describe the basic concepts and processes of social psychology
- Identify various factors influencing group behaviour in the society
- Demonstrate the application of various concepts of social psychology in field work settings

SYLLABUS OF DSC-10

Unit I : Nature and Scope of Social Psychology **15 Hours**

Unit Description: This unit will provide a conceptual understanding of the methods of social psychology. It will also cover significance of social psychology for social work profession.

Subtopics:

- Social psychology: definition, concept and scope
- Methods of social psychology: Interview schedule, questionnaire, observation, experimentation and socio-metric method
- Relevance of social psychology to social work practice

Unit II: Processes in Social Psychology

Unit Description: This unit will introduce the students to the basic processes of social psychology. This will enhance the knowledge of the students to learn various aspects influencing the individual, group and community behaviour. **15 Hours**

Subtopics:

- Social perception, Social influence & Interpersonal attraction
- Public opinion, propaganda, prejudice and stereotypes
- Social attitudes: Definition, features, formation and change

Unit III: Understanding Groups and Crowds **15 Hours**

Unit Description: This unit will help to learn about the group, crowd and mob behaviour and their influence on the life of people in the community.

Subtopics:

- Group: Definition, types and functions, stages and process
- Crowd and mob: Characteristics, behaviour and dynamics
- Leaderships: Traits, styles and types

Practical component **30 Hours**

Unit IV: Application of Social Attitudes and Leadership

Unit Description: This unit will focus on the application aspects of social attitude, leadership, prejudice and stereotypes prevailing in the society. The student will learn to integrate social psychology into practice.

Subtopics:

- Project on implimentation any one measurement of scale
- Case studies (1-2) on prejudice and stereotypes from the field settings /media
- Project on leadership styles from field settings/ workshop/media/interative sessions

Essential readings

- Aronson, E., Wilson, T. D., & Akert, R. M. (2015). *Social Psychology* (9th ed.). Boston, MA: Pearson/Allyn and Bacon.
- Baron, R. A., & Branscombe, N. R. (2016). *Social Psychology* (14th ed.). Boston, MA: Pearson/Allyn and Bacon.

- Baron, R.A , Byrne, D. & Bhardwaj. G (2014). *Social Psychology (12th Ed.)*. London: Pearson Education Inc.
- Barrett, W.D. (2016). *Social Psychology-Core Concepts and Emerging Trends*. London: Sage Publications.
- Chowdhary, R. (2013). *Samajik Manovigyan – Ek Parichay*. New Delhi: The Book Line Publisher
- Crisp, R. J. & N Turner, R. N. (2014). *Essential Social Psychology*. London: Sage Publications.
- Myers,D.G. (2010). *Social Psychology (10th,Edition).* New York: McGraw-Hill.
- Paliwal, S. (2002). *Social Psychology*. Jaipur : RBS Publishers

Suggested Readings

- Aronson, E.,Wilson,T.D., &Akert, R.M. (2007). *Social Psychology (6th Ed.).* New Jersey: Prentice Hall.
- Feldman, R. S. (2001*). Social Psychology (3rd Ed.).* USA: Pearson
- Franzoi, S. (2009). *Social Psychology(5th Ed.)*. New York : McGraw-Hill.
- Jowett, G. & O'Donnell. V.(2018). *Propaganda and Persuasion*,7th ed. London: Sage Publications.
- Kuppuswami.B. (1994). *Social Psychology*. Bombay : Asia Publishing House.
- Lindgren, H.C.(1962). *Introduction to Social Psychology.* New Jersey: John wiley and Sons.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 11 (DSC-11): WORKING WITH COMMUNITIES

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
WORKING WITH COMMUNITIES DSC 11	4	3	0	1	12th Pass	NIL

Learning Objectives

The learning objectives of this course are as follows:

- To understand community dynamics and community organization as a method of social work.
- To understand different aspects of community in the context of community organization.
- To enhance understanding of models, strategies and process involved in working with communities.

Learning Outcomes

At the end of the semester, the student will be able to:

- Identify the community power structure and various programmes of community development.
- Apply the tools, techniques and skills to work directly in the communities.
- Demonstrate familiarity with community organization as a macro method of social work.

SYLLABUS OF DSC- 11

Unit I: Understanding Community **15 Hours**

Unit Description: This unit will provide a conceptual understanding about the community. It will also explain the various types, functions and power structures of the community.

Subtopics:

- Concept of community: meaning, definitions and elements
- Types of community: Urban, rural, tribal, functional and virtual communities
- Functions of the community, community power structure and diversities

Unit II: Introducing Community Practice **15 Hours**

Unit Description: This unit will give an opportunity to the students to learn about the community practice as a macro method of social work. The unit will also discuss the basic assumptions and principles of community organization and people's participation as a key feature.

Subtopics:

- Concept of community organization: Nature, evolution, characteristics, basic assumptions and principles of community organization
- Community development: Concept, aims, objectives, basic elements and community development as a goal of community organization
- People's participation: Rationale, types and methods

Unit III: Processes of Community Practice **15 Hours**

Unit Description: This unit will introduce the students to the various steps involved in the process of community practice. The unit will also cover various models and approaches of community organization.

Subtopics:

- Steps of community organization, Role of community organizer
- Models: Locality Development, Social Planning and Social Action
- Approaches: Welfarist, Social Development and Empowerment

Practical component **30 Hours**

Unit IV: Application of Community Practice

Unit Description: This unit will engage the students in practice-learning activities related to community development programme and micro-planning for various issues.

Subtopics:

- Identification of the needs/problems and assessment of a community (field settings/own neighbourhood) by using participatory methods (assignment/project work).
- Programme planning/micro-planning and preparation of action plan for taking action in a short-term and long term manner (assignment/project work).
- Best practices of community empowerment programme and success stories of civic driven initiatives or people's participation for extending cooperation and collaboration towards community development (assignment/project work/case study).

Essential Readings

- Gangrade, K.D. (1971). *Community Organization in India*. Mumbai: Popular Prakashan.
- Gangrade, K.D. (2001). *Working with community at the grassroots level: Strategies and programmes.*New Delhi:Radha Publications.

- Lee, Judith. (2001). *The Empowerment Approach to Social Work Practice: Building the Beloved Community*. Columbia Press.
- Ross, M.G. (1967). Community Organization: Theory, Principles and Practice. New York: Harper & Row.
- Siddiqui, H.Y. (1997). *Community Organization in India.* New Delhi: Harnam.
- Verma, R.B.S. & Singh, A. P. (2015). *Samudayik Sangathan Evam Abhyaas* (Hindi). Lucknow: New Royal Book Company.
- Weil, M.(2005).*Handbook of Community Practice*.London: Sage.

Suggested Readings

- Hardina, D.(2002). Analytical skills for community organization practice. Columbia University Press.
- Kumar, Somesh. (2002). *Methods for Community Participation: A Complete Guide for Practitioners.* New Delhi: Sage Publication (Vistaar).
- Raju, M. Lakshmipathi. (2012). *Community Organization and Social Action: Social Work Methods and Practices.* New Delhi: Regal Publications
- Stepney P. & Popple K.(2008). *Social work and the community: A critical context for practice*. Basingstoke:Palgrave Macmillan.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE– 12 (DSC-12): FIELD WORK PRACTICUM- IV

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
FIELD WORK PRACTICUM IV **DSC 12**	**4**	**0**	**0**	**4**	**12th Pass**	**NIL**

Learning Objectives

The learning objectives of this course are as follows:

- To learn to mobilize clients/beneficiaries to utilize the services provided by the agency.
- To coordinate the services provided by governmental and non-governmental organizations in meeting the additional needs of the clients/beneficiaries.
- To learn to apply theoretical base i.e. methods, principles, approaches, models, skills and techniques while working with individuals, families and groups.

Learning Outcomes:

At the end of the semester, the students will be able to:

- Mobilize clients/beneficiaries to create awareness about needs, problems, rights, responsibilities etc.
- Coordinate the services provided by governmental and non-governmental organizations/institutions in meeting the felt needs of the clients/beneficiaries.
- Demonostrate sensitivity towards the issues related to social justice, human rights for marginalized groups and develop skills of writing effective field work records.

SYLLABUS OF DSC-12

Practical component– 100% Field work (Direct field work: 120 hours)

Tasks/Activities:

1. Perform the assigned tasks during scheduled concurrent field work. The field work agency will remain the same in an academic year. Every student will be assigned a College supervisor for personalized learning and mentoring throughout the academic year.

2. Field work includes- observation visits, orientation programmes, task-based field visits, individual conferences/ mentoring, group conference scientific or experienced based paper presentation, report writing, critical discussion of the reports, workshops, seminars and skill-oriented sessions. Direct field work hours have to be 120 hours in a semester.
3. Establish contact and develop rapport with the agency personnel& volunteers, individuals, families and groups and perform the assigned tasks during concurrent field work.
4. Work with individuals, families and groups alongwith volunteers, paraprofessionals/outreach workers in the agency and/or community and deal with cases (3-4), work with families (3-4) and form group/s.
5. Work with volunteers, para-professionals/outreach workers in the field work agency such as - non-governmental organisations (NGOs) or voluntary organisations (VOs) and governmental organisations (GOs); and/or community.
6. Student will perform the agency-based field work tasks assigned by the respective Agency Supervisor.
7. Regular reporting to all concerned persons (both at agency and college level) during scheduled field visits, meetings and supervisory/individual conferences to seek regular guidance. Minimum 80% of attendance is required in each components of field work.
8. Prepare daily report in prescribed format and submit to the college supervisor on weekly basis. Prepare learning plan, agency/community profile in a timely and appropriate manner to both the College and Agency Supervisor. Students will engage in 3 hours of report writing per week.
9. The field work reports and progress of the student should be discussed during the scheduled Individual Conference (IC) with the college supervisor on weekly basis. The student must attend Group conferences (GC), prepare group conference paper in consultation with college supervisor, thus learning the roles of presenter, chairperson, and recorder. The individual mentoring (IC & GC) to students by the college supervisor will include 1 hour per week.
10. Attend skill development workshops in which the values, principles, methods, techniques, tools etc. are translated into practice skills, i.e. “learning by doing“. The skill workshop will target: (i) Role Plays; (ii) Use of motivational songs and other interactive visual media; (iii) Preparation for street plays including script writing/street theatre; (iv) Simulation exercises; (v) Films screening; (vi) Practice of counselling techniques; (vii)

Practice of participative techniques; (viii) Communication; (ix) Mock interviews; and (x) Strategic planning for advocacy.

11. The students are required to submit self-evaluation report in the prescribed format for term end examination. Field work practicum follows continuous evaluation by the supervisor.

Students shall invest 60 hours out of class/field for the purpose of writing report of the field work separately.

Essential Readings

- Bhanti, R. (1996). *Field Work in Social Work Perspective*. Udaipur: Hiamanshu Publications
- Brown, S.C. & Gloyne, E.R. (1966). *The Field Training of Social Workers: A Survey*. London: George Allen and Unwin Ltd
- Dash, B.M. & Roy, S. (2020). *Field Work Training in Social Work*. London: Routledge
- Doel, M., Shardlow, S. M., & Johnson, P. G. (2011). *Contemporary Field Social Work: Integrating Field and Classroom Experience.* Thousand Oaks, CA: Sage.
- Garthwarf, E. (2005). *The Social Work Practicum*. Boston: Pearson Education.
- Roy, S. (2012). *Field Work in Social Work*. Jaipur: Rawat Publication
- Singh, R. R. (1985). *Field Work in Social Work Education*. New Delhi: Concept Publishing Company.
- Singh, A.P. & Girotra, T. (2018). *Case Records in Social Work*. Lucknow, India: Rapid Book Service.
- Singh, A.P. (2017). *Strengthening Field Work in Social Work Education*. Lucknow, India: Rapid Book Service.
- Subhedar, I. S. (2001). *Field Work Training in Social Work*. New Delhi: Rawat Publications.

Suggested Readings

- Verma, R.B.S. & Singh, A.P. (2013). *Standard Manual for Field Work Practicum in Social Work*. Lucknow, India: New Royal Book Company.
- Tsui, M. S. (2005). *Social Work Supervision: Contexts and Concepts.* New Delhi: Sage Publications.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

GENERIC ELECTIVES (GE-7): HUMAN RIGHTS AND SOCIAL JUSTICE

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
HUMAN RIGHTS AND SOCIAL JUSTICE GE 7	4	3	1	0	12th Pass	NIL	Social Work

Learning Objectives

The Learning objectives of this course are as follows:

- To understand basic concepts of human rights and social justice
- To understand various human rights concerns in national and international contexts.
- To learn features of legal measures and international conventions to protect human rights and ensure social justice.

Learning Outcomes

At the end of the semester, the student will be able to:

- Describe the basic concept and meaning of human rights and theories of social justice
- Identify and critically analyse various human rights issues in the national and international context
- Describe and critically evaluate the role of various national and international organisations in protection of human rights and ensure social justice

SYLLABUS OF GE-7

Unit-I: Understanding Human Rights **15 Hours**

Unit Description: This unit will provide a conceptual understanding of human rights. The unit will also cover the various human rights conventions.

Subtopics:

- Human rights: Concept, Genesis of human rights, Historical development of Human Rights
- The Universal Declaration of Human Rights 1948
- UN Conventions and International covenants: International Covenants on Civil and Political Rights, International Covenant on Economic, Social, and Cultural Rights

Unit II: Human rights concerns: National and international perspective **10 Hours**

Unit Description: This unit will discuss various human rights issues in Indian and international context.

Subtopics:

- Human right issues in Indian context : Gender, caste, oppression, minority, indigenous people, forced labour, and human rights violations in contemporary India
- Human right issues in global context: war, human trafficking, unrest, genocide, refugees, global warming and climate change
- Globalization and Human Rights: Environment, Hunger, Poverty, Migrant workers, Inequality, Labour rights and Unorganised sector

Unit III: Social Justice and human rights approaches **10 Hours**

Unit Description: This unit will provide a conceptual understanding of social justice. The unit will also cover human rights approaches to ensure social justice in the society.

Subtopics:

- Social Justice: meaning, philosophy, forms
- Historical development of social movements in India; Gandhi, Ambedkar and Nelson Mandela's views on social Justice
- Instruments to social justice in the Indian context : fundamental rights and Directive principle of state policy, Right to Information Act (RTI), Public Interest Litigation (PIL), Free Legal Aid, Crime against women cell, (CAW Cell)

Unit IV: Legal measures and social work approaches **10 Hours**

Unit Description: This unit will discuss the social work approach towards human rights. It also discusses the role of civil society organisations and professional social worker in protection of human rights.

Subtopics:

- Legal measures: The Protection of Human Rights Act 199
- Role of National bodies: National Human right commission, National commission for Women, National commission for Scheduled Caste , National commission for Scheduled Tribes, National commission for minorities, National commission for Other Backward communities
- Role of United Nations (UN) and its agencies in promoting human rights

Practical component (if any) - NIL

Essential Readings

- Balakrishnan, R., Heintz, J., & Elson, D. (2016). Rethinking Economic Policy for Social Justice: The radical potential of human rights. Routledge.
- Capeheart L. & Milovanovic D. (2007). Social justice: Theories, issues and movements. Rutgers University Press.
- Gangrade K.D. (2011).Social Legislation in India. Concept: New Delhi.
- Ife, J.(2001). Human Rights and Social Work: Towards Rights-based Practice. UK: Cambridge University Press.
- Krishnan, P. S. (2017). Social exclusion and justice in India. Routledge India.
- Motilal, S., & Nanda, B. (2006). Human rights, gender and environment. Allied Publishers.
- Oommen, T. K. (2014). Social inclusion in independent India: Dimensions and approaches. Orient Blackswan.
- Reichert, E.(2003). Social work and Human Rights A Foundation for Policy and Practice. Jaipur & New Delhi: Rawat Publication.
- Sandel J. Michael (2010). Justice: what's the right thing to do?. New Delhi: Penguin,
- Singh, A. K. (2014).Human Rights and Social Justice. India VL Media Solutions.
- Teltumbde, A. (2017).Dalit: Past, Present & Future, London: Routledge.
- Tripathy, R.N. (2019).Human Rights Gender and Environment. New Delhi: MKM Publishers Pvt. Ltd.
- Watts, L., & Hodgson, D. (2019). Social justice theory and practice for social work. Springer.

Suggested Readings

- Ambedkar, B. R. (1944). Annihilation of caste with a reply to Mahatma Gandhi. YB Ambedkar, Bombay.
- Ambedkar, B. R. (2014). Annihilation of caste. Verso Books.
- GOI. (2022) The Protection of Human Rights Act, 1993 (BARE Act), Delhi: Universal Law Publishing.
- Borgohain, B. (1999). Human Rights – Social Justice and Political Challenges. New Delhi: Kanishka Publishers
- Janusz, S. & Volodin, V. (ed.) (2001). A Guide to Human Rights: Institutions, Standards, Procedures. Paris: UNESCO Publishing
- Kothari, S. & Sethi, H (ed.) (1991). Rethinking Human Rights – Challenges for Theory and Action, New Delhi: Lokayan Publications.
- Mohapatra, A.R. (2001). Public Interest Litigation and Human Rights in India, New Delhi: Radha publications.
- Rehman, K. (2002). Human Rights and the Deprived, New Delhi: Commonwealth publishers.
- Singh, M. P. (2019). VN Shukla's Constitution of India. Eastern Book Company.
- Subramanian, S (1997). Human Rights: International Challenges, New Delhi: Manas Publications.
- Waghmare, B.S. (2001). Human Rights – Problems and Prospects, Delhi: Kalinga Publications.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-8): ENVIRONMENT AND SOCIAL WORK

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
ENVIRONMENT AND SOCIAL WORK GE 8	4	3	1	0	12th Pass	NIL	Social Work

Learning Objectives

The learning objectives of this course are as follows:

- To gain insight about the global environmental issues and concerns.
- To understand the relationship between environment and development and relate the same to sustainable development.
- To critically assess the constitutional provisions, policies and legislative framework for the conservation of environment in India.

Learning Outcomes

At the end of the semester the students will be able to

- Appraise the interdepending relationship between environment and human society.
- Enumerate global environmental concerns and critically examine India's initiatives towards the protection and conservation of environment.
- Evaluate the nature and scope of green social work and critically appraise the role of civil society organisations.

SYLLABUS OF GE-8

Unit I: Understanding Environment **15 Hours**

Unit Description: This unit will help students to understand about the environment and its linkages human beings. The students will critical assess the vital role of environment in human development.

Subtopics:

- Environment: meaning, nature and components
- Environment, ecology and their linkages with human beings
- Environment and society- Changing patterns- from survival needs to emerging consumerism, Energy intensive life-style

Unit II: Environmental Issues and Concerns **10 Hours**

Unit Description: This unit will emphasize on emerging environmental issues and concerns. The unit will also discuss the global environmental issues such as climate change and greenhouse effect.

Subtopics:

- Global environmental issues and concerns- Greenhouse effect, climate change and Ozone layer depletion
- Environmental imbalance: Issues of environmental degradation and pollution; nature, causes and impact
- Social implications and consequences of environmental imbalance- loss of livelihood, disasters; food shortages; migration, and conflict

Unit III: Interface between Development and Environment **10 Hours**

Unit Description: This unit will define the meaning and concept of sustainable development and related issues. Students will learn about the various environmental movements in India. It also cover the constitutional provisions, policies and legislative framework related to environment protection in India.

Subtopics:

- Sustainable Development: Concept, potentialities and challenges
- Environmental movements: Chipko Movement, Mitti Bachao Andolan, Movements against big dams-Narmada and Tehri, Eco farming-natural farming efforts
- Constitutional provisions, policies and legislative framework pertaining to environment protection in India

Unit IV: Social Work Response to Environment Protection and Development **10 Hours**

Unit Description: In this unit the student will learn about the role of social workers in addressing the environmental issues, role of civil society organizations and green social work.

Subtopics:

- Approaches to environmental conservation, community based natural resource management
- Role of civil society organisations in environment conservation
- Green Social Work and environment protection: concept, nature objectives, importance and initiatives

Practical component (if any) - NIL

Essential readings

- Arnold, David and Ramchandra Guha (eds.), Nature, Culture, Imperialism; Essays on the Environmental History of South Asia, Delhi, OUP, 199. 9
- Das, R.C., Barul , J.K. Sahu , N.C. & Mishra ,M.K. (1998) The Environment divide: the Dilemma of Developing Countries. New Delhi: Indus Publishing co.
- Dominelli Lena (2021) Green Social Work: From Environmental Crises to Environmental Justice. Polity Press UK.
- Gadgil, Madhav and Ramchandra Guha, Ecology and Equity; the use and Abuse of Nature in Contemporary India, Penguin, Delhi, 1995.
- Gadgil, Madhav and Ramchandra Guha, This fissured Land: An ecological History of India, Delhi, OUP, 1994.
- Goldsmith, E. And Hildyard, N. (ed.) the Social and Environmental Effects of Large Dams; Vol. I-III (Overview, Case studies and Bibliography), Wadebridge Ecological Centre U.K.
- Guha Ramchandra, The Unquiet woods, Ecological Change and Peasant Resistance in the Himalayas, Delhi: OUP, 1991.
- Gupta, K.R. (ed.) (2005) Environment: Problems & Policies, Vol. I & II. New Delhi: Atlantic Publications.
- Hoff. M.D. & Mc Nutt, J.G. (1992). The Global Environmental Crisis: Implications for Social Welfare and Social Work. Hong Kong: Avebury, Aldershot and Brookfield.
- Jana, M.M. (1991) Environmental Degradation and Developmental Strategies in India. New Delhi: Ashish Publications.
- Krishna, Sumi, Environmental Politics; People's lives and Developmental Choices, Delhi, Sage, 1996.
- Reid, D.E. (1995) Sustainable Development: An Introductory Guide. London: Earthscan Publications.
- Sundaram K.V. Jha, M.M & Mrityunjay , M.(ed.) (2004) Natural resources management and livelihood security: survival strategies & sustainable policies. New Delhi: Concept publishing co.
- Verma Alka (2015) Green Social Work Environmental Protection. Pentagon Press India.

Suggested readings

- Aggarwal, A. & Narain, S. (1989) Towards Green Villages: A strategy for Environmentally Sound and Participatory Rural Development. New Delhi: Centre for Science and Environment.
- Centre or Science and Environment, The State of India's Environment: the Citizens Reports Vol. I-IV, New Delhi.
- Hermath S.R. Krishnan B.J., All about Convention on Biological Diversity (CBD). 13. Kothari, Ashish, Meera, People and Protected Areas.
- Hoff. M.D. & Mc Nutt, J.G. (1992). The Global Environmental Crisis: Implications for Social Welfare and Social Work. Hong Kong: Avebury, Aldershot and Brookfield.
- Mishra Anupam, Aaj bhi Khare hain Talab (in Hindi), Gandhi Peace foundation, New Delhi.
- Owen, D.F., What is Ecology, Oxford University Press Oxford, 1980.
- Vettivel, S.K. (1993) Participation and Sustainable Development. New Delhi: Vetri Publishers.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 4 (DSE-4): CRIMINAL JUSTICE AND SOCIAL WORK

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
CRIMINAL JUSTICE AND SOCIAL WORK DSE 4	4	3	0	1	12th Pass	NIL

Learning Objectives

The learning objectives of this course are as follows:

- Develop understanding of the concept and philosophy of social defence and correctional services.
- Develop practice skills in prevention, correction and rehabilitation work in social defence.
- Develop understanding about the social defence legislations and criminal justice system.

Learning Outcomes

At the end of the semester the students will be able to:

- Describe the concept of crime, social defence and correctional services.
- Critically assess the social justice system and social defence legislations.
- Appraise the siginifcance of Institutional and Non-Institutional correctional services in Indian context.

SYLLABUS OF DSE- 4

Unit I : Crime and Correctional Services **15 Hours**

Unit Description: The unit will introduce students with the concept and understanding of crime and correctional services.

Subtopics:

- Crime: concept, causation and its relation to social problems
- Changing dimensions of crime, Theories of crime and punishment
- Correctional services: concept, philosophy and changing perspectives

Unit II: Concept and Scope of Social Defence **15 Hours**

Unit Description: The unit will introduce students with the concept and understanding of Social defence and its relevance in society.

Subtopics:

- Concept and Approaches of Social Defence, Historical development of social defence services in India
- Crimes against children, children in need of care and protection, children in conflict with law, street and working children
- Crime against women and older persons, alcoholism and drug abuse

Unit III: Social Defence Legislations and Criminal Justice System **15 Hours**

Unit Description: The unit will introduce students with the Criminal Justice system and related legislations.

Subtopics:

- Components Processes and Perspectives of Criminal justice system : Police, Judiciary and Correctional institutions.
- Introduction to Indian Penal Code, Criminal Procedure Code, Indian Evidence Act
- Juvenile Justice (Care and Protection of Children) Act 2015, The Immoral Traffic (Prevention) Act 1956, Probation of Offenders Act, 1958, Narcotic Drugs and Psychotropic Substances Act 1985

Practical component **30 Hours**

Unit IV: Correctional Services

Unit Description: The unit will introduce students with the concept and types of Institutional and Non-Institutional Correctional services. The unit will be application based.

Subtopics:

- Project report/ case study on any one social legislation related to children or women.
- Project report/ case study on Institutional Correctional Services: Prisons, Observation Homes, Children homes, Special homes, Protective homes, Beggar homes, De-addiction centers
- Project report/ case study on Non-Institutional Services: Probation and Parole, Adoption, Foster Care, sponsorship, crisis intervention centres

Essential readings

- Alder, F, M. & Laufer, W. (2007). Criminology. New York: McGraw Hill.
- Bhattacharya, S.K.(2003).*Social Defence: An Indian Perspective.* New Delhi: Regency

Publications.

- Chong, M. D. & Francis, A. P. (2016). Demystifying Criminal Justice Social Work in India. New Delhi: Sage Publications Pvt. Ltd.
- Devasia, V.V. (1992).*Criminology, Victimology and Corrections.* New Delhi: Ashish Publishing House.
- Gaur, K.D. (2002).*Criminal Law, Criminology and Criminal Administration*. New Delhi: Deep and Deep Publications.
- Holtzhausen, L. (2012). Criminal Justice Social Work. Claremont, South Africa: Juta.
- Robert, A. R., & Springer, D. W. (2007). Social Work in Juvenile & Criminal Justice Settings (3rd ed.). Springfield, USA: Charles C Thomas Publisher.
- Strang, H., &Braithwaite, J.(2003)*Restorative Justice and Civil Society*. Cambridge University Press
- Valier, C.(2001)*Theories of Crime and Punishment.* Essex: Longman.

Suggested readings

- Callen, F.T. & Agrew, R. (2005). Criminological Theories, Past to Present. Los Angeles: Roxbury Publishing.
- Chakrabarti, N.K. (ed.)(1999). Institutional Corrections in the Administration of Criminal Justice. New Delhi: Deep & Deep Publications.
- Kumari, V. (2004). Juvenile Justice in India: From Welfare to Rights. New Delhi: Oxford University Press.
- Smith, P. D. &Natalier, K. (2005). Understanding Criminal Justice: Sociological Perspectives. London :Sage Publication.
- Tandon, S.L.(1990)Probation: A New Perspective. New Delhi: Reliance Publishing
- United Nations (1980).Principles on Linking the Rehabilitation of Offenders to Related Social Services. New York: United Nations.
- United Nations (1985). Alternatives to Imprisonment and Measures for the Social Resettlement of Prisoners. New York: United Nations.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 5 (DSE-5): SOCIAL WORK WITH FAMILIES AND CHILDREN

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
SOCIAL WORK WITH FAMILIES AND CHILDREN **DSE 5**	**4**	**3**	**0**	**1**	**12th Pass**	**NIL**

Learning Objectives

The learning objectives of this course are as follows:

- To understand families as social systems and comprehend the factors affecting family functioning
- To develop the skills, techniques and practices of therapies required for working with the families and children
- To understand the government and non-government efforts for the welfare of the family and children

Learning outcomes

At the end of the semester the students will be able to

- Describe the changing nature of family system and its signifcance in child development
- Critically evaluate the policies, programmes and services related to family and children
- Apply the skills, techniques and therapies of social work profession in working with family and children

SYLLABUS OF DSE- 5

Unit I: Understanding dynamics of family system **15 Hours**

Unit Description: This unit will provide a conceptual understanding of family as an institution and its importance. This will also focus on problems of families.

Subtopics:

- Family as an Institution – importance, functions, developmental stages, family patterns and changing trends
- Marriage: concept, relevance, structures and functions
- Family Disorganization and Family Problems

Unit II: Social Work with families **15 Hours**

Unit Description: This unit will introduce the social work intervention in family issues and concerns. This will enhance the skills of the students to learn about family counselling skills, family therapies with understanding of government and non-government initiatives for family welfare.

Subtopics:

- Family counselling and family therapy
- Skills and techniques of working with families
- Voluntary and Government agencies for Family Welfare

Unit III: Child Development: Issues and Concerns

Unit Description: This unit will help to know about the concept of child development, needs and problems of children. This will also give an understanding of the evolution of welfare services at national and international level. **15 Hours**

Subtopics:

- Nature and extent of Child development – demographic profile, needs and problems of children
- Early childhood care and development, Child rearing practices and implications
- Evolution of child welfare services in India and abroad, types of Child Welfare Services and the changing trends in child welfare services.

Practical component **30 Hours**

Unit IV: Social Work with Children in difficult circumstances

Unit Description: This unit will focus on the application and practice-based approach where students will learn to integrate theory and practice.

Subtopics:

- Case Studies (1-2): Children in difficult circumstances: disability, poverty, migration, orphaned, child trafficking, child abuse
- Project report (1-2): Child Development programme, polices, constitutional provisions,

- Obsverational Report (1-2): Child related Institutional and non-institutional services

Essential readings

- Adams, Robert et al. (2002): Social Work: Themes, Issues and Critical Debates. Second Ed. Sage London.
- Bajpai, A. (2003). Child Rights in India – Law, Policy and Practice. Delhi: Oxford University press.
- Davies, M. (2012). Social work with children and families, UK: Palgrave Macmillan
- Enakshi, G.T. (ed) .(2002). Children in Globalising India – Challenging Our Conscience. New Delhi: HAQ Centre for child Rights.
- Maluccio, A.N., Pine, B.A. &Tracy, E.M. (2002). Social Work Practice with Families and Children, New York: Columbia University Press.
- McClennen, J.C. (2010) Social work & family violence: theories, assessment and intervention. New York: Springer Publishing Company
- Patricia, M. & Hook, V. (2016). Social Work Practice with Families: A Resiliency based Approach.UK: Oxford University Press
- Tata Institute of Social Sciences. (1994). Enhancing the Role of Family as an Agency for Social and Economic Development. Mumbai: Unit for Family Studies, TISS.
- Unwin, P. & Hogg, R. (2012). Effective Social Work with Children and Families: A Skills Handbook. London: Sage Publication.
- Williams, L. Edward, T.M., Patterson, J. & Chamow, L. (2014). Essential assessment skills for couple & family therapists. New York: Guilford Press.

Suggested Readings

- Boss, P.G., Doherty, W.J., LaRossa, R., Schumm, W.R., &Steinmetz, S.K.(2009). Source Book of Family Theories and Methods: A Contextual Approach. New York: Springer.
- Kumari, V. & Brooks, S.L. (2004).Creative Child Advocacy – Global Perspectives, New Delhi: Sage Publications
- Patrick, C.M. (2005) Families and Change (3rd Edition) Coping with Stressful Events and Transitions. London: Sage Publications.
- Petr, C.G. (2004). Social Work with Children and Their Families: Pragmatic Foundations (2nd ed.), New York: Oxford University Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 6 (DSE-6): COUNSELLING AND THERAPEUTIC INTERVENTIONS

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
COUNSELLING AND THERAPEUTIC INTERVENTIONS DSE 6	4	3	0	1	12th Pass	NIL

Learning Objectives

The learning objectives of this course are as follows:

- To understand concept and process of counselling.
- To understand therapeutic relationships and the ethical principles associated with good practice.
- To learn skills and techniques of counselling and responsibilities of counsellors in therapeutic relationships.

Learning Outcomes

At the end of the semester the students will be able to

- Reflect conceptual clarity on counselling and associated concepts
- Domenostrate skills and techniques for practice of counselling and therapeutic sessions.
- Evaluate the value of therapeutic relationships and recognize ethical issues in counselling

SYLLABUS OF DSE- 6

Unit I: Conceptual Framework: Counselling **15 Hours**

Unit Description: To introduce students to the concept, stages, process of counselling and role of counsellors

Subtopics:

- Counselling: Concept, elements, stages and process
- Therapeutic relationships and ethical principles for good practice in counselling
- Role of counsellors in providing effective counselling

Unit II: Developing counselling Skills **15 Hours**

Unit Description: To learn skills in effective listening, questioning and practice of counselling.

Subtopics:

- Developing effective listening skills, Barriers in listening
- Use of empathy, questioning and probing in counselling
- Reflection, Paraphrasing, Confronting, Summarising, counselling records

Unit III: Therapeutic Interventions with Various Groups **15 Hours**

Unit Description: To gain insights into therapeutic interventions and enhance professional practice in counselling

Subtopics:

- Children, Youth, Distressed Women, Pre-marital Counselling, Grief and Bereavement Counselling
- Family Therapy and family counselling, Marital discord counselling
- Therapeutic approaches: Behaviour modification, Crisis intervention and Art therapy

Practical component **30 Hours**

Unit IV: Practice of counselling and therapeutic Interventions

Unit Description: To gain insights into the important therapeutic interventions and enhance professional practice in counselling.

Subtopics:

- Case study/observation report higlighting concerns and issues of a child/youth/woman in distress
- Project report/case study: any one therapeutic approach (Behaviour modification, Crisis intervention & Art therapy)
- Counselling records highlighting counselling skills and process

Essential readings

- Evans, D.R., Hearn, M.T., Uhlemann, M.R., & Ivey, A.E. (2008). Essential Interviewing: A Programmed Approach to Effective Communication. Thomson: Brooks/Cole.
- Evans, T. (2015). Counselling skills for Becoming A wiser Practitioner-Tools, techniques and reflections For building practice wisdom. Jessica Kingsley Publishers.
- Feltham, C. (2007). Professional skills for counsellors – understanding the counselling relationships. Sage publication
- Goud, N. & Arko, A. (2006). Psychology and personal growth. Pearson, MA.
- Inskipp, F. (2004). Skills training for Counselling. Sage publications.
- Ivey, A.E., & Ivey, M.B.(2007). Intentional Interviewing and Counselling. Thomson: Brooks/Cole.

- Jones, R. N. (2005). Practical counselling and helping skills - text and activities for the life skills counselling model. (5th ed). Sage publications.
- Nair. A. Radhakrishnan, (2010). Life Skills Training for Positive Behaviour, Rajiv Gandhi National Institute of Youth Development, Tamil Nadu
- Nelson-Jones, R. (2008). Basic Counselling Skills: A Helper's Manual. Sage Publications.

Suggested readings

- Bond, T. (1997). Standards and Ethics for counsellors in action. Sage
- Charles, G.J., & Bruce, F.R. (1995). Counselling Psychology. Harcourt Brace Publishers Essential Reading / Recommended Reading ·
- Corey, G. (2008). Student manual for Theory and Practice of Counselling and Psychotherapy (8th ed.). CA: Brooks/Cole.
- Corey, G. (2012). Theory and practice of counselling and psychotherapy (9th ed.). Belmont, CA: Brooks/Cole.
- Felthman, C., & Horton, I. (2000). Handbook of Counselling and Psychotherapy. Sage
- Gilland, B.E., & James, R.K. (1998). Theories and Strategies in Counselling and Psychotherapy. Singapore: Allyn and Bacon.
- Neukrug, E. (2011). The world of the counsellor: An introduction to the counselling profession. Nelson Education.
- Robert, G. L., & Marianne, M.H. (2003). Introduction to Counselling and Guidance. Pearson education, Inc.
- Sharma, R .N.,& Sharma,R. (2004). Guidance and Counselling in India

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SUMMER INTERNSHIP/ FIELD WORK PRACTICUM/BLOCK PLACEMENT

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
SUMMER INTERNSHIP/ FIELD WORK PRACTICUM/BLOCK PLACEMENT	**2**	**0**	**0**	**2**	**12th pass**	**NIL**

Learning Objectives

The learning objectives of this course are as follows:

- To understand field work organization's philosophy, structure, functions and service delivery system.
- To undertake need assessment of the target group using social work theoretical approaches.
- To undertake projects to address identified needs of the target groups.

Learning Outcomes:

At the end of the semester, the students will be able to:

- Describe organization's nature of work and service delivery system.
- Demonstrate their skills, techniques, methods and principles in meeting the felt needs of the clients/beneficiaries.
- Acquire a training completion certificate from the organization.

Tasks/Activities:

1. Students will be required to undergo two-weeks block placement training in a social welfare agency or Government organizations in or outside Delhi. The block placement agencies/projects will be selected with the consent/choice of students.

2. Identification and assessment of needs/problems, ability to integrate theoretical knowledge with field practice (i.e. methods, principles, skills, techniques)in accordance with learning plan, ability to utilize administrative skills etc.
3. Independent planning and execution of any one or two selected projects.
4. Block placement reports will be submitted to the college supervisor in the form of project file at the completion of the training. The student shall invest additional 20 hours for project file completion.
5. A confidential report from the concerned organization will be required for successful completion of the training.
6. The college may organize presentation of the learning from block placement/summer training of the students after the completion for assessment.

Assessment will be done by the college based on project report, presentation and confidential report from the concerned organization.

SEMESTER- V

DEPARTMENT OF Social Work

Category I

[UG Programme for Bachelor in Social Work (Honours) degree in three years]

DISCIPLINE SPECIFIC CORE COURSE -13 (DSC-13) – : ADMINISTRATION OF WELFARE AND DEVELOPMENT SERVICES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
ADMINISTRATION OF WELFARE AND DEVELOPMENT SERVICES DSC 13	**4**	**3**	**0**	**1**	**12th Pass**	**NIL**

Learning Objectives

The learning objectives of this course are as follows:

- To understand concept, principles and components of social welfare administration.
- To develop understanding of social welfare administration as a method of social work profession.
- To acquire competence in implemenatation of social welfare and development services.

Learning Outcomes

At the end of the semester, the student will be able to

- Evalaute the process and implementation of social welfare administration in government and non-government organizations.
- Demonstrate the practical aspects of registration of social welfare organizations.
- Utilize their skills in human resource management and prepare fund raising proposal.

SYLLABUS OF DSC-13

Unit I : Introduction to Social Welfare Administration **15 Hours**

Unit Description: This unit will provide a conceptual understanding and components of social welfare administration.

Subtopics:

- Concept, nature and components of social welfare administration
- History of social welfare administration
- Principles of social welfare administration

Unit II: Structures and Processes **15 Hours**

Unit Description: This unit will introduce the students to the basic structure and process of registration for the NGOs, Trust, Civil society.

Subtopics:

- Central and State Social welfare boards, Ministry of Women and Children, Directorate of Social welfare.
- Registration of social welfare organizations: Societies Registration Act, Indian Trust Act, Companies Act, Cooperatives Act
- NGOs and GOs as service providers

Unit III: Organization of Human Services **15 Hours**

Unit Description: This unit will help to learn about the various methods of funding and as well as process of decision-making and communication in social welfare administration.

Subtopics:

- Management of human service organizations, Fund-raising, Grant-in-aids, Resource mobilization, Social marketing
- Decision making processes, Role of communication in administration
- Group processes in welfare administration

Practical component **30 Hours**

Unit IV: Application of Social Welfare Administration

Unit Description: This unit will focus on the application aspects of implementation of fund-raising strategies and service providing procedures.

Subtopics:

- Project Proposal: Fund Raising Campaign (any one)
- Case study: Practice of Social Welfare Administration in different settings.
- Project Report: Observe and evaluate the functioning of NGOs or Government Organizations (any one)

Essential Readings:

- Bhattacharya, S (2006) Social Work Administration & Development, New Delhi: Rawat Publications

- Goel, S.L. & Jain, R.K (1988).Social Welfare Administration, Vol. I and II. New Delhi: Deep Publication.
- Kaushik, A. (2012) Welfare and Development Administration in India, Global Vision.New Delhi: Publishing House. p.p.1-41,181-206.
- Kettner, P. M., Moroney, R. M., &Martin, L. L.(2017) Designing and Managing Programs: An Effectiveness based Approach (5th Ed.). Thousands Oaks, CA: Sage Publications
- Padaki, V. &Vaz, M.(2004)Management Development and Non-profit Organizations, New Delhi: Sage publications.
- Palekar, S.A.(2012) Development Administratio. New Delhi: PHI Publications
- Patti, R.J.(2008) The Handbook of Human Service Management.USA: Sage Publications
- Siddiqui, H.Y (1990).Social Welfare in India, New Delhi:Harnam Publications.

Suggested Readings:

- Chandra, S.(2001) Non-Governmental Organizations: Structure, Relevance and Function. New Delhi: Kanishka Publishers
- Goel& Kumar (2004) Administration and Management of NGOs, New Delhi : Deep and Deep publication.
- Naidu, S.P. (1996).Public Administration Concept and Theorie. New Delhi: New Age International Publishers.
- Norton. M. &Culshaw.M.(2000).Getting Started in Fund Raising.New Delhi: Sage Publications.
- Verma R.B.S. (2014). Introduction to Social Administration.Delhi: Shipra Publications, 1-42, 72-184,

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 14 (DSC-14): SOCIAL ACTION AND MOVEMENTS

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
SOCIAL ACTION AND MOVEMENTS DSC 14	4	3	0	1	12th Pass	NIL

Learning Objectives

The Learning objectivs of this course are as follows:

- To understand conceptual issues in defining social action and social movements.
- To learn various theoretical perspectives on social movements.
- To understand various conventional and contemporary approaches to social action and movements.

Learning outcomes

At the end of the semester the students will be able to

- Describe conceptual issues related with social action and movements
- Evaluate the approaches of social action and its relevance to social work profession
- Critically appraise various social movements and their impact on Indian social structure.

SYLLABUS OF DSC- 14

Unit I : Basic Concepts of Social Action and Social Movements **15 Hours**

Unit Description: This unit will provide a conceptual understanding of meaning, goals and scope of social action and movements.

Subtopics:

- Concept, definitions, scope and relevance of social action
- Models of social action, Strategies, and skills for social action
- Social Movements: Concept, nature, component and stages.

Unit II: Social Work and Social Action **15 Hours**

Unit Description: This unit will introduce students to the basic fundamentals of social action for various types of professional social work practice.

Subtopics:

- Critical Social Work practice: conscientisation and critical awareness
- Radical social work practice
- Structural Social Work practice

Unit III: Approaches of Social Action **15 Hours**

Unit Description: This unit will focus on various approaches to social action. It will help students to develop a perspective and take an approach as suitable to the situation.

Subtopics:

- Anti-oppressive social work practice
- Paulo Friere and Saul Alinskey's contribution to Social Action
- Gandhian contribution to social action –Stages and tactics

Practical component **30 Hours**

Unit IV: Interface between social movements and social work

Unit Description: This unit will focus on the application and practice-based approach where students will learn to integrate theory and practice of social action into real life situation.

Subtopics:

- Project report on any one of following movements : Feminist movement, J.P movement, Anti corruption movement, Water Movement in India.
- Project report on any one of the socially disadvantage groups: SC & ST, Dalits, indigenous movements, LGBTQIA+
- Project Report on any one of the environmental movements: Narmada Bachao Andolan , Tehri, Chipko Andolan

Essential Readings:

- Alinskey, S. (1989) Rules for Radicals: A Practical Primer for Realistic Radicals.New York : Vintage Books,.
- Bailey, R& Brake, M. (1975) Radical Social Work, London:Edward Arnold,. pp 1-11, 53-61, 76-95.
- Freire, P (2005) Pedagogy of the Oppressed.New York : Continuum,. pp 43-100 110
- Katherinevan W., Laura K., & Cindy J.(2012) Confronting Oppression, Restoring Justice: From Policy Analysis to Social Action. USA: CSWE Press
- Khinduka S.K. & Coughlin, B. J (1975) A Conceptualisation of Social Action.The Social Review, 49(1), 1-14.
- Porta D.D. & Diani, M. (Eds) (2015). The Oxford Handbook of Social Movements.New York: Oxford University Press

- Shah, G. (2002) Social Movements and the State,New Delhi:Sage Publications.
- Siddiqui, H.Y. (1984). Social Work and Social Action. New Delhi: Harnam Publications.
- Singh, R. (2001) Social Movements, Old and New:A post- Modern Critique.NewDelhi:Sage Publications.

Suggested Readings:

- Berger, S. &Nehring, H. (Eds.)(2017). The History of Social Movements in Global Perspective, A Survey. London: Palgrave Macmilian.
- Domeilli, L. (2002) Anti Oppressive Social Work ; Theory And Practice. Basingstoke, UK: Macmillan Publications.
- Laird, S. (2007) Anti Oppressive Social Work. London: Sage Publications.
- Lakshmanna, C. &Srivastava, R. (1990), Social Action and Social Change. Delhi: Ajanta Publications.
- Langman, M. Lee, P (Eds) (1989) Radical Social Work.Boston: UnwinHyman.
- Shabbir. M. (Eds)(2017).Ambedkar on law constitution and social justice.Jaipur: Rawat Publications .
- Singh A. (eds) (2019)Relevance of Dr Ambedkar in modern India. New Delhi: Century Publications.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE– 15 (DSC-15): FIELD WORK PRACTICUM- V

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
FIELD WORK PRACTICUM V **DSC 12**	**4**	**0**	**0**	**4**	**12th Pass**	**NIL**

Learning Objectives

The learning objectives of this course are as follows:

- To learn to mobilize clients/beneficiaries to utilize the services provided by the agency and improve skills in communication and networking with other organizations.
- To coordinate the services provided by governmental and non-governmental organizations in meeting the additional needs of the clients/beneficiaries.
- To learn to apply theoretical base i.e. methods, principles, approaches, models, skills and techniques while working with individuals, families and groups.

Learning Outcomes:

At the end of the semester, the students will be able to:

- Mobilize clients/beneficiaries to create awareness about needs, problems, rights, responsibilities, etc.
- Coordinate the services provided by governmental and non-governmental organizations/institutions in meeting the felt needs of the clients/beneficiaries.
- Demonstrate sensitivity towards the issues related to social justice, human rights for marginalized groups in urban and rural settings and develop skills of writing effective field work records

SYLLABUS OF DSC-15

Practical component– 100% Field work (Direct field work: 120 hours)

Tasks/Activities:

1. Perform the assigned tasks during scheduled concurrent field work. The field work agency will remain the same in an academic year. Every student will be assigned a College supervisor for personalized learning and mentoring throughout the academic year.

2. Field work includes- observation visits, orientation programmes, task-based field visits, individual conferences/ mentoring, group conference scientific or experienced based paper presentation, report writing, critical discussion of the reports, workshops, seminars and skill-oriented sessions. Direct field work hours have to be 120 hours in a semester.
3. Establish contact and develop rapport with the agency personnel& volunteers, individuals, families and groups and perform the assigned tasks during concurrent field work.
4. Work with individuals, families and groups along with volunteers, paraprofessionals/outreach workers in the agency and/or community and deal with cases (3-4), work with families (3-4) and form group/s.
5. Work with volunteers, para-professionals/outreach workers in the field work agency such as - non-governmental organisations (NGOs) or voluntary organisations (VOs) and governmental organisations (GOs); and/or community.
6. Student will perform the agency-based field work tasks assigned by the respective Agency Supervisor.
7. Regular reporting to all concerned persons (both at agency and college level) during scheduled field visits, meetings and supervisory/individual conferences to seek regular guidance. Minimum 80% of attendance is required in each components of field work.
8. Prepare daily report in prescribed format and submit to the college supervisor on weekly basis. Prepare learning plan, agency/community profile in a timely and appropriate manner to both the College and Agency Supervisor. Students will engage in 3 hours of report writing per week.
9. The students must get the reports checked during the scheduled Individual Conference (IC) with the college supervisor on weekly basis. Attend Group conferences (GC), prepare group conference paper in consultation with college supervisor, thus learning the roles of presenter, chairperson, and recorder. The individual mentoring (IC & GC) to students by the college supervisor will include 1 hour per week.
10. Attend skill development workshops in which the values, principles, methods, techniques, tools etc. are translated into practice skills, i.e. “learning by doing“. The skill workshop will target: (i) Role Plays; (ii) Use of motivational songs and other interactive visual media; (iii) Preparation for street plays including script writing/street theatre; (iv) Simulation exercises; (v) Films screening; (vi) Practice

of counselling techniques; (vii) Practice of participative techniques; (viii) Communication; (ix) Mock interviews; and (x) Strategic planning for advocacy.

11. Organize programme with organizations/community by using programme media and prepare a report on community dynamics including - demography, power structure, diversity/identity (gender, age, occupation, linguistic etc.). Mobilize community resources and develop network/linkages in implementation of programmes.
12. Attending five-days 'Rural Camp' for exposure about the socio-economic, political, cultural situations and problems of rural life. The rural camp will be organized under the guidance of the faculty members. Attending rural camp is compulsory and performance of the students will counted towards the final award of marks in field work evaluation.
13. The students are required to submit self-evaluation report in the prescribed format for term end examination. Field work practicum follows continuous evaluation by the supervisor.

Students shall invest 60 hours out of class/field for the purpose of writing report of the field work separately.

Essential Readings

- Bhanti, R. (1996). *Field Work in Social Work Perspective*. Udaipur: Hiamanshu Publications
- Brown, S.C. & Gloyne, E.R. (1966). *The Field Training of Social Workers: A Survey*. London: George Allen and Unwin Ltd
- Dash, B.M. & Roy, S. (2020). *Field Work Training in Social Work*. London: Routledge
- Doel, M., Shardlow, S. M., & Johnson, P. G. (2011). *Contemporary Field Social Work: Integrating Field and Classroom Experience.* Thousand Oaks, CA: Sage.
- Garthwarf, E. (2005). *The Social Work Practicum*. Boston: Pearson Education.
- Roy, S. (2012). *Field Work in Social Work*. Jaipur: Rawat Publication
- Singh, R. R. (1985). *Field Work in Social Work Education*. New Delhi: Concept Publishing Company.
- Singh, A.P. & Girotra, T. (2018). *Case Records in Social Work*. Lucknow, India: Rapid Book Service.
- Singh, A.P. (2017). *Strengthening Field Work in Social Work Education*. Lucknow, India: Rapid Book Service.
- Subhedar, I. S. (2001). *Field Work Training in Social Work*. New Delhi: Rawat Publications.

Suggested Readings

- Verma, R.B.S. & Singh, A.P. (2013). *Standard Manual for Field Work Practicum in Social Work*. Lucknow, India: New Royal Book Company.
- Tsui, M. S. (2005). *Social Work Supervision: Contexts and Concepts.* New Delhi: Sage Publications.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

GENERIC ELECTIVES (GE-9) : SOCIAL WORK RESPONSE TO SUBSTANCE

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
SOCIAL WORK RESPONSE TO SUBSTANCE ABUSE GE 9	4	3	1	0	12th Pass	NIL	Social Work

Learning Objectives

The learning objectives of this course are as follows:

- To build a basic understanding of the concept of substance abuse
- To understand the impact of substance abuse on individual and society
- To learn various programmes and legal measures to control substance abuse by government and non-government organizations.

Learning outcomes

At the end of the semester, the student will be able to:

- Evaluate the impact of substance abuse on health of individuals and society.
- Critically assess various programmes of government and Non Government Organization to prevent and control substance abuse.
- Critically appraise the functioning of drug de-addiction centres and role of social work profession.

SYLLABUS OF GE-9

Unit I: Understanding Substance Abuse **15 Hours**

Unit Description: This unit will describe various concepts related to substance abuse. The students will also learn about various theories and socio-cultural perspectives of addictive behaviour.

Subtopics:

- Substance abuse: Meaning, Definition and its causes
- Types of substance abuse and related risk factors
- Theories of addiction, social, cultural and psychological perspectives of addiction

Unit II: Psychoactive substances and impact **10 Hours**

Unit Description: To familiarize students with various psychoactive substances and their impact on physical, mental and social health of individuals and families.

Subtopics:

- Categories of psychoactive substances
- Impact of Substance abuse on Physical Health, Mental Health, Social relationship
- Crime and Substance abuse

Unit III: Policies, Programmes and Substance abuse **10 Hours**

Unit Description: This unit will describe various programmes and legislations to curb substance abuse in Indian context.

Subtopics:

- Prevention and control of substance abuse : Role of educational institutions, families, Government and Non-Government Organizations
- Drug De-addiction centres: functioning and approaches, Ways to say no to drugs, Alcohol Anonymous groups, peer support groups for recovery addicts
- Narcotic Drugs & Psychotropic substance Act 1985

Unit IV: Social Work Intervention in Substance Abuse **10 Hours**

Unit Description: This unit will introduce the role of social work profession in addressing the issues related to substance abuse.

Subtopics:

- Role of Social Worker in prevention and control of substance abuse: Individual ,Group and Community level
- Cognitive and Dialectical behaviour theory
- Family practice and Group Work in the field of Addiction

Practical component (if any) - NIL

Essential readings

- Anthony. G., (2013): Social Work with Drug, Alcohol and Substance Misusers: SAGE Publications, Ltd
- Fitzgerald E.H. & Puttler I. L. (2018): Alcohol Use Disorders: A Developmental Science Approach to Etiology, New York: Oxford University Press.
- Korsmeyer, P et.al.(2008): Encyclopedia of Drugs, Alcohol and Addictive Behavior,MI: Macmillan Reference (Gale/Cengage) .
- Palmer. D. S., (2021) Social Work in Mental Health and Substance Abuse: Apple Academic Press

Suggested readings

- Madan,G.R.(1973): Indian Social Problems,Vol.1&2. Mumbai:Allied publication.
- Merton, R.K. (1971) Contemporary Social Problems, NewYork: Harcourt Brace Jovanovickand Nisbet.
- Zastrow, C (1999): Social Problems, Issues and Solution,Canada:Wadsworth Thomson, Learning Publication.
- WHO: https://www.who.int/docs/default-source/substance-use/who-psa-93-10.pdf

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-10):GLOBAL SOCIAL CONCERNS AND INTERNATIONAL SOCIAL WORK

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
GLOBAL SOCIAL CONCERNS AND INTERNATIONAL SOCIAL WORK GE 10	4	3	1	0	12th Pass	NIL	Social Work

Learning Objectives

The Learning Objectives of this course are as follows:

- To understand the scenario of global social work.
- To learn about the functioning of major International social welfare organizations.
- To understand the various approaches and practice of social work at global level.

Learning Outcomes

At the end of the semester the students will be able to:

- Identify contemporary social issues and concerns prevailing at global level
- Evaluate the role of various international organizations to enhance well-being of the people around the world.
- Critically appraise integrated social work practice approach in global context.

SYLLABUS OF GE-10

Unit-1: Contemporary Issues at Global Level **15 Hours**

Unit Description: This unit will provide a conceptual understanding about the contemporary issues and concerns prevailing at global level.

Subtopics:

- Global spread of social work: origin, expansion and recent trends
- Global Issues: poverty, environment & climate change and pandemic
- Social Work with family issues and homeless people

Unit II: Empowering Approach to Social Work **10 Hours**

Unit Description: This unit will introduce the students to the emerging approach to social work profession. This will also explain various elements, basic strategies, phases, functions, role and client system.

Subtopics:

- Elements and basic strategies of empowering approach
- Phases of empowering practice
- Social work functions and role in empowering process

Unit III: Integrated-Perspective Approach to Social Work **10 Hours**

Unit Description: This unit will discuss the integrated-perspective approach to social work. This unit will also discuss about various viewpoints and social justice and human rights perspective.

Subtopics:

- Social Justice and Human Rights in Global perspective
- The Social System View, The Ecological Perspective and the Ecosystem View, Integrated perspective approach to social Work
- Comparison of contemporary social work practice in UK, USA and India

Unit IV: International Organizations of Social Work and Social Welfare **10 Hours**

Unit Description: This unit will focus on the international organizations of social work and social welfare through which the students will learn about various international collaborations to enhance well-being and welfare of the people.

Subtopics:

- International organizations of social work: International Association of schools of Social Work (IASSW), International Federation of Social Workers (IFSW) and International Council on Social Welfare (ICSW)
- UN agencies and International NGOs: UNICEF, WHO, UNDP, Red Cross, YMCA/YWCA
- International-domestic practice interface and global interdependence of social work

Practical component (if any) – NIL

Essential Readings

- Bettmann, J., Jacques, G. & Frost, C. (2012). International Social Work Practice: Case Studies from a Global Context. Routledge.
- Cox, David & Pawar, M. (2006). International Social Work: Issues, Strategies and Programmes. New Delhi: Vistaar Publications.
- Dubois, Brenda & Miley, Karla Krogsrud (1999): Social Work: An Empowering Profession. London: Allyn and Bacon.
- Elisabeth, R. (2003). Social Wok and Human Rights: A Foundation for Policy and Practice. New York: Columbia University Press.
- Healy, L. (2008). International Social Work. New York: Oxford University Press.

- Hugman, R. (2010). Understanding International Social Work: A Critical Analysis. New York: Palgrave MacMillan.
- Lee, J.A. (2001). The Empowerment Approach to Social Work Practice. New York: Columbia University Press.

Suggested Readings

- Louise C. Johnson (1998): Social Work Practice A Generalist Approach, Allyn Bacon.
- Miley, Karla Krogsrud, O' Melia , Michael and Dubious, Brenda (1998): Generalist Social Work Practice: An Empowering Approach. London, Allyn Bacon.
- Singh, A. P. (2012): United Nations International Children's Fund (UNICEF): An Overview. *Encyclopedia of Social Work in India*. Third Edition. New Royal Book Company. Lucknow.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 7 (DSE-7): DISASTER MANAGEMENT AND SOCIAL WORK

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DISASTER MANAGEMENT AND SOCIAL WORK DSE 7	4	3	0	1	12th Pass	NIL

Learning Objectives

The learning objectives of this course are as follows:

- To learn the basic concept, typology and impact of disaster
- To understand the process of mitigation and management of disasters
- To acquire critical understanding of the disaster management policy and programmes in India.

Learning outcomes

At the end of the semester the students will be able to

- Apply the methods, values and ethics of social work profession in the field of disaster management.
- Critically appraise the national disaster management policy and programmes in India.
- Demonstrate skills and sensitivity to work with different organizations for disaster management.

SYLLABUS OF DSE- 7

Unit I : Basic Conceptual Framework **15 Hours**

Unit Description: This unit will provide a conceptual understanding of various types of disasters and related impact on individuals and communities.

Subtopics:

- Basic concept: Disaster, Hazard, Risk, Vulnerability
- Types of disasters: natural (famine, drought, flood, cyclone, tsunami, earthquake) and manmade disasters (riots, industrial, militancy)

- Impact of disasters: Physical, Socio-economic, ecological, political and psychological

Unit II: Disaster Management in Different Phases **15 Hours**

Unit Description: This unit will introduce the students to the different phases of disaster management. This will also help students to learn about post disaster measures in reconstruction, rehabilitation and recovery.

Subtopics:

- Pre-disaster: Prevention, mitigation and preparedness
- During disaster: search, rescue, evacuation, relief mobilization and management
- Post-disaster: Reconstruction, rehabilitation and recovery

Unit III: Disaster Management Policy and Programmes **15 Hours**

Unit Description: This unit will help to learn about the different policies and programmes for prevention. It also cover the different guidelines set up at National and International level.

Subtopics:

- Disaster management policy and programmes in India
- National disaster management framework; administrative and institutional structure for disaster management
- International and National Techno-legal framework: Yokohama Strategy, Hyogo Framework for Action, Sendai framework; Disaster Management Act, 2005, National guidelines for disaster management

Practical component **30 Hours**

Unit IV: Social Work Intervention in Emergencies and Disaster

Unit Description: This unit will focus on the application and practice-based approach where students will learn to integrate theory and practice in emergencies and disasters.

Subtopics:

- Project Report/Case Study: Social Work Intervention: Contingency planning, fund raising, mobilization, management of human resource, relief material procurement, crisis management, rapid health assessment, emergency health management, livelihood security and social justice concerns.
- Project Report/Case Study: Community based disaster preparedness (CBOP) and managements (CBDM)
- Project Report/Case Study: Post-disaster trauma care and counselling including grief counselling

Essential readings

- Abarquez, I., &Murshed, Z. (2004).Community-Based Disaster Risk Management: Field Practitioners' Handbook. New Delhi: Asian Disaster Preparedness Center.
- Blaikie, P., Cannon, T., Davis, I., & Wisner, B. (2004). At risk: Natural hazards, people's Vulnerability and Disaster. London: Routledge.

- Carter, I. (2002). Preparing for disaster, PILLARS Guide. UK: Tearfund.
- Carter, I. (2003). Mobilising the community, PILLARS Guide. UK: Tearfund.
- Department of Social Work. Monograph: University for Development and integrated Learning (UDAI-I) 2003 and (UDAI-II) Sahyatri. University of Delhi: Department of Social Work. 2010
- Jamshed JI Tata Centre for Disaster Management Working Papers series 2007-2009, Tata Institute of Social Sciences, Mumbai.
- Joint Assistance Centre. (1980). Natural Disaster, New Delhi: AdhyatmaSadhana Kendra.
- Maskrey, A. (1989). Disaster Mitigation: A Community Based Approach, Oxford: Oxfarm.
- Miller J. L. (2012) Psycho Social Capacity Building in Response to Disasters, Columbia University Press, New York.
- Ministry of Home Affairs, Government of India, (2011) United Nation Development Programmes, Disaster Management in India.

Suggested Readings:

- Mohan, M., Clarke, C. (1992). Disaster Prevention for Sustainable Development, Economic and Policy Issues. Geneva: World Bank
- Parasuraman, S. and Unnikrishnan, P.V. (2000). India Disasters Report: Towards Policy Initiative, New Delhi: Oxford University Press.
- Shaw R. Krishnamurthy, R.R. (2009) Disaster Management –Global Challenges and local Solutions, University Press, Hyderabad
- Singh, Atul Pratap (2013). Community Based Disaster Management: An Initiative of Social Work Professionals in Bihar Fflood, 2008. In Mishra, A., & Singh, A. K. (eds.). New Dimensions of Disaster Management in India. Vol. II. New Delhi: Serials Publications.
- Singh, R.B. (ed.). (2000). Disaster Management, New Delhi: Rawat Publications.
- Siporin, M. (1966). The experience of aiding the victims of Hurricane Betsy social service review, vol. 10. • Tata Institute of Social Sciences. (2002). Special Volume on Disaster Management, Indian Journal of Social Work, Vol.63, Issue 2, April.
- United Nation Development Programmes- India & international recovery Platform (IRP), 2010 Guidance Note on recovery : Psycho Social

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 8 (DSE-5): SOCIAL LEGISLATIONS AND HUMAN RIGHTS

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
SOCIAL LEGISLATIONS AND HUMAN RIGHTS DSE 8	4	3	0	1	12th Pass	NIL

Learning Objectives

The learning objectives of this course are as follows:

- To develop insight into social legislations related to weaker sections and marginalised groups
- To learn about various constitutional and legal measures to safeguard the rights of different groups in Indian context
- To understand the relevance of social legislations to safeguard the human rights of the people

Learning outcomes

At the end of the semester the students will be able to

- Critically evaluate various social legislations related to different social groups
- Critically appraise constitutional provisions and other legal measures safeguarding rights of the people in Indian context
- Identify and evaluate various civil society initiatives for safeguarding human rights

SYLLABUS OF DSE- 8

Unit I: Social Legislations in India **15 Hours**

Unit Description: This unit will discuss the nature, scope and impact of social legislations. The unit will also discuss various social legislations related to weaker sections and marginalised groups.

Subtopics:

- Social Legislations: Nature, scope and impact
- Social Legislations for Women, Children, Elderly, differently abled, Marginalized Groups (SC, ST, OBC& Minorities)
- Social legislations related to family (Marriage, succession and adoption)

Unit- II: Indian Legal System **15 Hours**

Unit Description: This unit will introduce basic concepts of law and society. This unit will also discuss various constitutional and legal measures to safeguard human rights in India.

Subtopics:

- Law, Society and Social Change
- Constitution of India: The Preamble, Fundamental Rights, Fundamental Duties and the Directive Principles of state policy
- Salient provisions in the Indian Penal Code (IPC) related to crime against women, children and other weaker sections

Unit III: Understanding Human Rights **15 Hours**

Unit Description: This unit will introduce the concept and historical development of human rights. The will also discuss international declarations and various covenants on human rights.

- Human rights: Concept, three generations of human rights, Historical development of Human Rights
- The Universal Declaration of Human Rights 1948
- UN Conventions and International covenants: International Covenants on Civil and Political Rights, International Covenant on Economic, Social, and Cultural Rights

Practical component **30 Hours**

Unit IV: Human Rights movements and instruments

Unit Description: This unit will focus on human rights movements and civil societies in India. This will also analyse statutory provisions on human rights in India.

Subtopics:

- Project report/ case study: Human rights movements in India: Initiatives of Civil Society, relation between social legislations and human right issues

- Project report/ observation visit report: Statutory Provisions- National Human Rights Commission, Protection of Human Rights Act
- Project report/ case study: Human right Instruments- Public Interest Litigation and Right to Information Act

Essential readings

- Bakshi, P.M., (2007) Constitution of India. Delhi: Universal Law Publishing House
- Baxi, U.(1988)Law and Poverty – Critical essay, Bombay, M.N. Tripathi PVT. Ltd.
- Carr, H. & Goosey, D. (2017).Law for Social Workers. Oxford: Oxford University Press.
- Gangrade, K.D.(2011).Social Legislation in India. Delhi: Concept Publishing Company
- Ife, J.(2001).Human Rights and Social Work: Towards Rights-based Practice. UK: Cambridge University Press.
- Reichert, E.(2003). Social work and Human Rights: A Foundation for Policy and Practice. Jaipur & New Delhi : Rawat Publication.
- Singh, A. K. (2014).Human Rights and Social Justice. India VL Media Solutions.
- Teltumbde, A.(2017).Dalit: Past, Present & Future, London: Routledge.
- Tripathy, R.N.(2019).Human Rights Gender and Environment. New Delhi: MKM Publishers pvt. Ltd

Suggested readings

- Bare Act (2016) The Protection of women from Domestic Violence Act 2005, Delhi, Universal Publishing
- Bare Act. (2016) The Maintenance and Welfare of Parents and Senior Citizens Act 2007. Delhi: Universal Law Publishing.
- Bare Act. (2016) The scheduled Castes and Scheduled Tribes Prevention of Atrocities Act, 1989. Delhi: Universal Law Publishing.
- Bare Act.(2015) The Juvenile Justice: Care and Protection of Child Act 2015 (J-1). Delhi: Universal Law Publishing.
- Bare Act.(2016) Muslim Laws. Delhi: Universal Law Publishing.

- Bare Act.(2016) The Dowry Prohibition Act, 1961. Delhi: Universal Law Publishing.
- Bare Act.(2016) The Hindu Adoption and Maintenance Act, 1956. Delhi: Universal Law Publishing.
- Bare Act.(2016) The Hindu Marriage Act, 1955. Delhi: Universal Law Publishing.
- Bare Act.(2016) The Immoral Traffic (Prevention) Act 1956. Delhi: Universal Law Publishing.
- Bare Act.(2016) The Indecent Representation of Women (Prohibition) Act, 1986. Delhi: Universal Law Publishing.
- Bare Act.(2016) The Protection of Children from Sexual Offences Act, 2012. Delhi: Universal Law Publishing.
- Bare Act.(2016) The Protection of Civil Rights Act, 1955. Delhi: Universal Law Publishing.
- Bare Act.(2016) The Right to Information Act, 2005. Delhi: Universal Law Publishing.
- Bare Act.(2018) The Rights of the Persons with Disabilities Act 2016. Delhi: Universal Law Publishing.
- Bare Act.(2018) The Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act 2013. Delhi: Universal Law Publishing.
- Kohli, A.S. (2004).Human Rights and Social Work Issues -Challenges and response. New Delhi: Kanishka Publishers Distributors.
- Mallicot, S. L.(2012).Women & Crime. New Delhi: Sage Publication.
- Mathew, P.D. (1995).Family Court. New Delhi: Indian Social Institute.
- Mathew, P.D. (1998)Public Interest Litigation. New Delhi: Indian Social Institute,
- Nirmal C.J.(1999).Human rights in India –Historical, Social and Political Perspectives. Delhi: Oxford University Press.
- Stammers N.(2004).Human Rights and Social Movements. London & New York: Pluto Press,

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 9 (DSE-9): DISABILITY AND SOCIAL WORK

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DISABILITY AND SOCIAL WORK DSE 9	4	3	0	1	12th Pass	NIL

Learning Objectives

The learning objectives of this course are as follows:

- To understand the concept of disability, needs and challenges of persons with disability (PWDs)
- To familiarize students with the functioning of various government and non-government organisations working with PWDs
- To develop understanding of various approaches, strategies and models for working with PWDs and promoting an inclusive society

Learning outcomes

At the end of the semester the students will be able to

- Describe the concept, types and the causes of disability and develop skills to analyse the issues of PWDs
- Critically appraise different international, government, civil society initiatives for PWDs
- Demonstrate sensitivity and required skills for working with persons with disability.

SYLLABUS OF DSE- 9

Unit I: Understanding Disability **15 Hours**

Unit Description: The students will learn about various types of disability and be sensitized to the needs and concerns of persons with disability (PWD).

Subtopics:

- Disability, Impairment, Handicap: Concept, Meaning, magnitude and Causes
- Categories of persons with disability - physical, sensory, neurological/mental, blood related disorders and multiple disability
- Genesis and development of categorization of PWDs, Needs and challenges of persons with disability

Unit II: Models and programmes for PwDs **15 Hours**

Unit Description: This unit will introduce various models of disability and programmes for the benefit of PWDs. The learners will understand the process of inclusion through affirmative actions of persons with disability as a stakeholder in the development process.

Subtopics:

- Models of Disability: Biomedical, cultural, empowerment, moral, charity, economic, social, diversity
- Assistance to Disabled persons for purchasing / fitting of aids/ appliances (ADIP) Scheme, Rehabilitation Centres, District primary education programme, Sarv Shiksha Abhiyan, Inclusive education and Higher education Service delivery: Disability certification, pension, travel concessions, employment/entrepreneurship for PWDs
- Equal opportunity cells: Roles, functions, barrier free physical infrastructures in institutions and public places

Unit III: Mainstreaming Disability **15 Hours**

Unit Description: Students will learn about national and international measures towards mainstreaming persons with disability and developing inclusive societies.

Subtopics:

- UN Convention on the Rights of Persons with Disabilities,
- Rights of the persons with Disability Act (RPWD Act)2016, Rehabilitation Council Act 1992, The Mental Health Act 2017
- Constitutional Provisions, Legal Jurisprudence and relevant judgements to ensure the Rights of Persons with Disabilities

Practical component **30 Hours**

Unit IV: Disability and Social Work Profession

Unit Description: This unit will focus on the relevance of social work profession for the empowerment of persons with disabilities. The students will be introduced to the government departments and civil society organizations working with PWDs.

Subtopics:

- Project report: Principles, ethics and practice of rehabilitation (Social, Economic and Community based), Role of a Social worker in various settings related to disabilities, Formation of alliances, networks and advocacy groups of PWDs
- Project Report/ Observation visit report: Government Institutions: Department of Empowerment of Persons with Disability (Divyangjan), Ministry of Social Justice & Empowerment, The National Trust, National Institute for Empowerment of Persons with Multiple Disabilities (NIEPMD), Pt. Deendayal Upadhyaya National Institute for Persons with Physical Disabilities (PDUNIPPD), National Institute for Locomotor Disabilities (NILD), Indian Sign Language, Research & Training Centre (ISLRTC)
- Case Study: Civil Society Organizations for PWDs: Functions, programmes and Challenges

Essential readings

- Albrecht, G.L., Seelman, K.D., & Bury, M (2001). Handbook of Disability Studies. California: Sage Publications
- Albrecht, G.L., Seelman, K.D., & Bury, M. (eds.) (2001). Handbook of Disability Studies. California: Sage Publications.
- Chavan, B.S., Ahmad, W., Gupta, R.K. (2022): Comprehensive Textbook on Disability. Jaypee Brothers Medical Publishers; New Delhi, India.
- Kundu C.L (ed) (2003).Disability status India, New Delhi, Rehabilitation Council of India.
- Oliver, M., & Sapey, B. (eds.) (1998).Social Work with Disabled People. London: Palgrave Macmillan.
- Puri, M. & Abraham, G. (eds.) (2004). Handbook of Inclusive Education for Educators, Administrators and Planners: Within Walls, Without Boundaries. New Delhi: Sage Publications.
- Sen, A. (1988).Psycho-Social Integration of the Handicapped: A Challenge for Society. New Delhi: Mittal Publishers.

Suggested readings

- Addlakha, R. (2020). *Disability Studies in India*. Routledge India.
- Batra, S. (2004). Rehabilitation of the Disabled: Involvement of Social Work Professionals. New Delhi: RCI

- GOI (2018).The Rights of the Persons with Disabilities Act, BARE ACT 2016.
- GOI (2022): Ministry of Social Justice and Empowerment. National Institutes | Department of Empowerment of Persons with Disabilities | MSJE | Government of India (disabilityaffairs.gov.in)
- Karna, G.N.(1999).United Nations and the Rights of Disabled Persons: A Study In Indian Perspective. New Delhi: APH Publishing Corporation.
- The World Bank (2007). Disability in India: From Commitments to Outcomes. Available on People with disabilities in India: from commitments to outcomes (worldbank.org)
- World Health Organization (2011). World Report on Disability. Available on https://www.who.int/disabilities/world_report/2011/report.pdf

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER- VI

DEPARTMENT OF Social Work

Category I

[UG Programme for Bachelor in Social Work (Honours) degree in three years]

DISCIPLINE SPECIFIC CORE COURSE -16 (DSC-16)– : SOCIAL POLICY AND DEVELOPMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
SOCIAL POLICY AND DEVELOPMENT DSC 16	4	3	0	1	12th Pass	NIL

Learning Objectives

The learning objectives of this course are as follows:

- To develop understanding of social policy and social planning.
- To understand the concept, process, indicators and determinants of social development.
- To develop capacity to formulate strategies necessary for social development.

Learning outcomes

At the end of the semester, the student will be able to

- Describe various concepts related to social policy and social planning
- Enumerate factors related to social and human development
- Apply the knowledge of various concepts of social policy and development in field practice.

SYLLABUS OF DSC-16

Unit I : Understanding Social Policy **15 Hours**

Unit Description: This unit will provide a conceptual understanding, significance and principles of social policy. It will also cover legislative framework contributing to social policy in India.

Subtopics:

- Social policy: Concept, significance and process
- Principles and models of social policy
- Social Policy and Indian Constitution: Fundamental Rights, Fundamental Duties and Directive Principles of State Policy(DPSP).

Unit II: Social Planning **15 Hours**

Unit Description: This unit will introduce the students to the basic concept of social planning. This will enhance the knowledge of the students to learn various aspects related to social planning.

Subtopics:

- Social Planning: Concept, scope, principles and types
- Inter-relationship between social policy, planning and development
- Planning Commission, Niti Aayog and social planning in India

Unit III: Introduction to Social and Human Development **15 Hours**

Unit Description: This unit will help to learn about the concept of social development and other factors contributing to human development.

Subtopics:

- Social Development: concept, dimensions, prerequisites, strategies, indicators and models of Development (capitalism, socialism and mixed economy)
- Factors of Development: Economic, social, cultural, political, sustainable development, MDGs and SDGs
- Human Development: Concept, definitions, objectives and Human Development Index (HDI) by UNDP

Practical component **30 Hours**

Unit IV: Application of social policy in social work

Unit Description: This unit will focus on various aspects of practical and field experiences with respect to formulation and implementation of social policy.

Subtopics:

- Process of social policy formulation: case study/report based on experiencial sharing by NGOs professionals/bureaucrats
- Project work: specific programmes and schemes related to any one social policy
- Case study related to implementation of social policy (any one)

Essential Readings

- Alcock, P. Haux, T., May, M.& Wright, S. (2016). *The Student's Companion to Social Policy. (5th Ed.).* Oxford: Blackwell /Social Policy Association

- Bhartiya, A.K. & Singh, D.K. (2009). *Social Policy in India*. Lucknow : New Royal Book Compancy.
- Booth, D. (1994). *Rethinking Social Development*. London :Longman.
- Datt, G. & Mahajan, A. (2020). *Indian Economy (73rd edition)*. New Delhi: S Chand & Co Ltd
- Gore, M.S. (1973). *Aspects of Social Development*. Bombay: TISS.
- Kulkarni, P.D. & Nanavatty, M.C. (1997). *Social Issues in Development*. Delhi: Uppal Publications.
- Livingstone, A.(2011). *Social Policy in Developing countries*. UK: Routledge.
- McMichael, Philip. (2012). *Development and Social Change: A Global Perspective (5th Edition).* Thousand Oaks, CA: Sage Publications Inc.
- Midgley, J. &Livermore M. (2009). *The handbook of Social Policy*. USA: Sage Publications.
- Midgley, J. (2014). *Social Development: Theory and Practice*. Thousand Oaks, CA: Sage Publications.
- Miles, I. (1985). *Social Indicators for Human Development*. London: Frances Pinter.
- Pathak, S.H. (2013). *Social Policy, Social Welfare and Social Development*. Bangalore: Niruta Publishers
- Titmuss, R. (1974). *Social Policy*. London: Routledge

Suggested Readings

- Drez, J. &Sen, A. (2007). *Indian Development*. New Delhi: Oxford University Press.
- Ghai, D. (2000). *Social Development and Public Policy: A Study of Some Successful Experiences.* Geneva: UNRISD.
- Larrain, J. (2013). *Theories of Development: Capitalism, Colonialism and Dependency*. John Willey and Sons
- Peet, R. & Hartwick, E. (2015). *Theories of development: Contentions, arguments, alternatives.* NY, London: Guilford Publications
- Sikka, P. (2012). *Planning in India: Scientific Developments with National Five-Year Plans*. New Delhi: Uppal Publishing House.
- Sinha, R.K.& Das, D.K. (2000). Development Paradigms: Indian Development Experience. New Delhi:Deep and Deep Publishers.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 17 (DSC-17): UNDERSTANDING RESEARCH IN SOCIAL WORK

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
UNDERSTANDING RESEARCH IN SOCIAL WORK DSC 17	4	3	0	1	12th Pass	NIL

Learning Objectives

The learning objectivs of this course are as follows:

- To familiarize students with the nature of social science research and its application in the study of social phenomena.
- To help students learn the research process and develop abilities to prepare research design.
- To learn the process of data collection, organization, presentation, analysis and report writing.

Learning outcomes

At the end of the semester the students will be able to:

- Describe the basic steps involved in research process.
- Identify the process involved in tools designing and their implementation for data collection
- Demonstrate skills in drafting research proposal.

SYLLABUS OF DSC- 17

Unit I : Research as Scientific Method **15 Hours**

Unit Description: This unit will introduce students to the basics of research in social sciences, its principles and ethics in research.

Subtopics:

- Basics of Research: Meaning, definition, nature, types of research- Basic and applied, application of research in social sciences
- Social science research and social work research : Meaning, nature, significance and difference
- Research as scientific exercise: Principles of scientific methods, Ethics of social research

Unit II: Research Process **15 Hours**

Unit Description: This unit will focus on introducing the students with formulating research problem and hypothesis as well as types of research designs.

Subtopics:

- Formulation of research problem, Review of literature, Hypotheses: concept, meaning and process of formulation, Referencing and report writing,
- Research design: exploratory, descriptive, experimental
- Concept of universe, sample, sampling unit and source list, Types of sampling framework – Probability and non-probability

Unit III: Data collection and management **15 Hours**

Unit Description: This unit will help students to know about the data collection tools and statistical method to analyse the data.

Subtopics:

- Sources of data (primary and secondary), Methods of data collection(interview, observation, case study and focus group discussion)
- Tools of data collection- interview schedule, interview guide, questionnaire, observation guide, FGD guideline.
- Science of statistics- concept, definition, functions and limitations, Descriptive statistics – measures of central tendency (mean, median, mode), Descriptive Analysis : Measures of dispersion (range, mean deviation, standard deviation, coefficient of variation)

Practical component **30 Hours**

Unit IV: Application of Research methods

Unit Description: This unit will focus on practical and hands on experience in the development of research tools, data collection and management.

Subtopics:

- Project work: development of any one tool of data collection
- Project work: Proposal formulation, tool administration and data collection
- Project Work: Data editing, classification, presentation and Analysis

Essential readings

- Bordens, K. S.& Abbott, B. B.(2018): *Research Design and Methods: A Process Approach, 10th ed.* New York: McGraw-Hill.
- Bryman, A.(2012): *Social Research Methods, 4th ed.* New Delhi: Oxford.
- Crano, W. D.,Brewer, M. B. & Lac, A. (2015).*Principles and Methods of Social Research, 3rd ed.* New Delhi: Routledge.
- Gaur, A.S.& Gaur, S.S. (2006). *Statistical Methods for practice and research- a guide to data analysis using SPSS*. New Delhi:Response Books.
- Goode, W. J. & Hatt, P. K. (1952). *Methods in social research.* New York: McGraw Hills.
- Rubin, A., & Babbie, E. (2011). *Research methods for social work.* Pacific Grove, CA: Brooks

Suggested Readings

- Ahuja,R. (2008). *Research methods,* Jaipur: Rawat Publications.
- Gupta, S.C. (2012).*Fundamentals of Statistics,* 7th revised ed. New Delhi : Himalaya Publishing House.
- Gupta, S.P. (2012). *Statistical methods*(2nd ed.). New Delhi: Sultan Chand & Sons.
- Hardwick, L. Smith, R. & Worsley, A.(2016). *Innovations in Social Work Research: Using Methods Creatively.* London: Jessica Kingsley.
- Kothari C. R. (2009). *Research methodology: methods & techniques* (2nd ed.).New Delhi: New Age International Publishers.
- Kumar, R. (2006). *Research methodology* (2nd ed.). New Delhi: Pearson Education.
- Laldas, D. K., 2000. *Practice of Social Research. Jaipur:* Rawat Publication.
- Singleton ,R. A., & Straits,B. C. (1999). *Approaches to social research*. New York: Oxford University Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC CORE COURSE– 18 (DSC-18): FIELD WORK PRACTICUM- VI

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
FIELD WORK PRACTICUM VI **DSC 18**	**4**	**0**	**0**	**4**	**12th Pass**	**NIL**

Learning Objectives:

The learning objectives of this course are as follows:

- Develop ability to affect changes in improving service delivery by introducing innovations in practice.
- Improve skills in communication and networking with other organizations.
- Learn to make use of practice-learning instructions.

Learning Outcomes:

At the end of the semester, the students will be able to:

- Perform assigned tasks in order to imbibe core competencies required for an efficient social work practitioner.
- Engage in meaningful discussions during supervisory conferences/interactions.
- Develop an ability to narrate the learning experiences, assessment of services and resources and participate in service delivery.
- Imbibe the ethics and values of Social Work profession including attributes for the same.

SYLLABUS OF DSC-18

Practical component– 100% Field work (Direct field work: 120 hours)

Tasks/Activities:

1. The field work agency will remain the same in an academic year. Every student will be assigned a College supervisor for personalized learning and mentoring throughout the academic year.
2. Student will perform the agency-based field work tasks assigned by the respective Agency Supervisor.
3. Field work includes- observation visits, orientation programmes, task-based field visits, individual conferences/ mentoring, group conference scientific or experienced based paper presentation, report writing, critical discussion of the reports, workshops,

seminars and skill-oriented sessions. Direct field work hours have to be 120 hours in a semester.

4. Establish contact and develop rapport with the agency personnel & volunteers, individuals, families and groups and perform the assigned tasks during concurrent field work.
5. Perform the assigned tasks during scheduled concurrent field work.
6. Work with individuals, families and groups along with volunteers, paraprofessionals/outreach workers in the agency and/or community and deal with cases (2-3), work with families (3-4) and form group/s.
7. Work with volunteers, para-professionals/outreach workers in the field work agency such as - non-governmental organisations (NGOs) or voluntary organisations (VOs) and governmental organisations (GOs); and/or community.
8. Organize programme with them by using programme media and prepare a report on community dynamics including - demography, power structure, diversity/identity (gender, age, occupation, linguistic etc.).
9. Regular reporting to all concerned persons (both at agency and college level) during scheduled field visits, meetings and supervisory/individual conferences to seek regular guidance. Minimum 80% of attendance is required in each components of field work.
10. Prepare learning plan, agency/community profile in a timely and appropriate manner to both the College and Agency Supervisor. Students will engage in 3 hours of report writing per week.
11. Make use of practice-learning instructions given by the agency and college supervisor and mobilize resources and develop network.
12. Prepare field work reports in prescribed format and submit to the college supervisor on weekly basis.
13. The students must get the reports checked during the scheduled Individual Conference (IC) with the college supervisor on weekly basis. Attend Group conferences (GC), prepare group conference paper in consultation with college supervisor, thus learning the roles of presenter, chairperson, and recorder. The individual mentoring (IC & GC) to students by the college supervisor will include 1 hour per week.
14. Attend skill development workshops in which the values, principles, methods, techniques, tools etc. are translated into practice skills, i.e. “learning by doing“. The skill workshop will target: (i) Role Plays; (ii) Use of motivational songs and other interactive visual media; (iii) Preparation for street plays including script writing/street theatre; (iv) Simulation exercises; (v) Films screening; (vi) Practice of counselling techniques; (vii) Practice of participative techniques; (viii) Communication; (ix) Mock interviews; and (x) Strategic planning for advocacy.
15. The students are required to submit self-evaluation report in the prescribed format for term end examination. Field work practicum follows continuous evaluation by the supervisor.

Students shall invest 60 hours out of class/field for the purpose of writing report of the field work separately.

Essential Readings

- Bhanti, R. (1996). *Field Work in Social Work Perspective*. Udaipur: Hiamanshu Publications
- Brown, S.C. & Gloyne, E.R. (1966). *The Field Training of Social Workers: A Survey*. London: George Allen and Unwin Ltd
- Dash, B.M. & Roy, S. (2020). *Field Work Training in Social Work*. London: Routledge
- Doel, M., Shardlow, S. M., & Johnson, P. G. (2011). *Contemporary Field Social Work: Integrating Field and Classroom Experience.* Thousand Oaks, CA: Sage.
- Garthwarf, E. (2005). *The Social Work Practicum*. Boston: Pearson Education.
- Roy, S. (2012). *Field Work in Social Work*. Jaipur: Rawat Publication
- Singh, R. R. (1985). *Field Work in Social Work Education*. New Delhi: Concept Publishing Company.
- Singh, A.P. & Girotra, T. (2018). *Case Records in Social Work*. Lucknow, India: Rapid Book Service.
- Singh, A.P. (2017). *Strengthening Field Work in Social Work Education*. Lucknow, India: Rapid Book Service.
- Subhedar, I. S. (2001). *Field Work Training in Social Work*. New Delhi: Rawat Publications.

Suggested Readings

- Verma, R.B.S. & Singh, A.P. (2013). *Standard Manual for Field Work Practicum in Social Work*. Lucknow, India: New Royal Book Company.
- Tsui, M. S. (2005). *Social Work Supervision: Contexts and Concepts.* New Delhi: Sage Publications.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

GENERIC ELECTIVES (GE-11):SOCIAL WORK WITH FAMILIES

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
SOCIAL WORK WITH FAMILIES GE 11	4	3	1	0	12th Pass	NIL	Social Work

Learning Objectives

The Learning Objectives of this course are as follows:

- To understand families as social systems and factors affecting family functioning
- To understand the government and non-government efforts for the welfare of the families
- To sharpen the skills, techniques, knowledge and therapies required for working with the families

Learning outcomes

At the end of the semester, the student will be able to:

- Describe concepts of family structure, issues and challenges in contemporary context
- Critically appraise the policies, programmes and services related to family
- Apply the skills, techniques and therapies of social work profession while working with families

SYLLABUS OF GE-11

Unit I: Understanding Family **15 Hours**

Unit Description: This unit will provide a conceptual understanding of family as an institution and its importance in society.

Subtopics:

- Family– Concept, Definition, types of families, Social functions of families
- Changing structure and functioning of family system
- Impact of urbanization on Family

Unit II: Understanding Family Issues and Concerns **10 Hours**

Unit Description: This unit will focus on the concept of marriage, relationships and issues faced by families in contemportary context.

Subtopics:

- Stress and change over the family life cycle: Marital problems, Work and family stresses
- Divorce, Remarriage and live-in-relationships, Family violence, Abuse and neglect
- Dealing with children, adolescents, coping with ageing, Drug and Alcohol abuse,

Unit III: Family Welfare and Services **10 Hours**

Unit Description: This unit will provide an understanding of strengthening family system through various government and non-government initiatives.

Subtopics:

- Family Management- nature, principles and family budgeting
- Family Welfare Policy and Programmes
- Family Life Education – objectives, process, method, pre-marital counselling

Unit IV: Social Work intervention with families **10 Hours**

Unit Description: This unit will introduce the social work intervention to handle family issues and concerns. This will enhance the competency of the students to learn about family counselling skills and family therapies.

Subtopics:

- Skills and techniques of working with families
- Ecological approach, system approach to family needs assessment and interventions
- Family counselling and family therapy

Practical component (if any) - NIL
Essential readings

- Charles H. Zastrow. (2009) Social Work with Groups, New Delhi: Cenage Learning India Pvt.Ltd
- Davies, M. (2012). Social work with children and families, UK: Palgrave Macmillan

- Maluccio, A.N., Pine, B.A. &Tracy, E.M. (2002). Social Work Practice with Families and Children, New York: Columbia University Press.
- McClennen, J.C. (2010)Social work & family violence: theories, assessment and intervention. New York: Springer Publishing Company
- M.Haralambus & R.M Heald,(2009) Sociology Themes and Perspectives. Oxford University Press
- Patricia, M. & Hook, V. (2016). Social Work Practice with Families: A Resiliency based Approach.UK: Oxford University Press
- Tata Institute of Social Sciences. (1994). Enhancing the Role of Family as an Agency for Social and Economic Development. Mumbai: Unit for Family Studies, TISS.
- Unwin, P. & Hogg, R. (2012). EffectiveSocial Work with Children and Families: A Skills Handbook. London: Sage Publication.
- Williams, L. Edward, T.M., Patterson, J. &Chamow, L. (2014). Essential assessment skills for couple & family therapists. New York:Guilford Press.

Suggested readings

- Boss, P.G., Doherty, W.J., LaRossa, R., Schumm, W.R., &Steinmetz, S.K.(2009). Source Book of Family Theories and Methods: A Contextual Approach. New York: Springer.
- Kumari, V. &Brooks, S.L. (2004).Creative Child Advocacy – Global Perspectives, New Delhi: Sage Publications
- Patrick, C.M. (2005)Families and Change (3rd Edition) Coping with Stressful Events and Transitions.London: Sage Publications.
- Petr, C.G. (2004). Social Work with Children and Their Families: Pragmatic Foundations (2nd ed.), New York: Oxford University Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-12):EMERGING AREAS OF SOCIAL WORK PRACTICE

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
EMERGING AREAS OF SOCIAL WORK PRACTICE GE 12	4	3	1	0	12th Pass	NIL

Learning Objectives

The learning objectives of this course are as follows:

- To learn the issues and challenges faced by individuals and communities in contemporary context
- To learn the specific skills for working in various settings namely health, CSR, Environment and disability
- To understand the role of social work profession in addressing the contemporary concerns in emerging settings

Learning outcomes

At the end of the semester the students will be able to:

- Describe the issues and challenges faced by individuals and communities in contemporary context
- Demonostrate specific skills required for working with various settings namely health, CSR, Environment and disability
- Critically appraise the social work interventions for working with emerging social work areas

SYLLABUS OF GE-12

Unit I : Health and social work **15 Hours**

Unit Description: This unit will provide a conceptual understanding of health. This will also focus on emerging health issues and approaches of social work in health setting.

Subtopics:

- Meaning and definition of health (Physical and mental health), Social work in pandemic time, Pollution and health concerns
- Lifestyle diseases: communicable and non-communicable (HIV/AIDS, T.B., Cancer, diabetes, obesity, PCOD)
- Field of gerontology and chronic illness: Needs of older persons, physical and mental concerns of older persons, Palliative and hospice care,

Unit II: Social Work and Corporate Social Responsibility (CSR) **10 hours**

Unit Description: This unit will introduce concept of CSR and industry participation in development.

Subtopics:

- Corporate Social Responsibility (CSR), case studies of CSR in India.
- Prevention of human exploitation in industries, concept of welfare in capitalist order, labour issues and trade unions
- Critical reflection on inequality and poverty in capitalist system, Resistance against exploitation of MNCs and corporates

Unit III: Environmental social work **10 Hours**

Unit Description: This unit will introduce definition and components of environment and various environmental issues and the role of civil society organisations in environment conservation.

Subtopics:

- Environment: Definition and components, Global and local environmental issues, concept of Green social work
- Sustainable Development: Concept, potentialities and challenges, sustainable development and technology.
- Environmental movements and Role of civil society organisations in environment conservation. case studies: NBA, Chipko movement, Niyamgiri movement, Plachimada Strike against MNC.

Unit IV: Disability and Social Work **10 Hours**

Unit Description: This unit will focus on concerns of people with disabilities. This will also cover various programmes for rehabiliataion and mainsteaming of PWDs.

Subtopics:

- Concept and meaning: Disability, Impairment, Handicap, and differently abled
- Causes of disability, Categories of persons with disability: Physical, orthopaedic, visual, motor and sensory, intellectual and multiple disability, Needs and problems of persons with disability
- Prevention of Disability, Rehabilitation programmes for the PWDs, Mainstreaming PWDs as empowerment ideology

Practical component (if any) - NIL

Essential readings

- Agarwal, B. (2015). Gender and green governance: the political economy of women's presence within and beyond community forestry. Oxford: Oxford University Press.
- Albrecht, G.L., Seelman, K.D., & Bury, M (2001). Handbook of Disability Studies. California: Sage Publications
- Albrecht, G.L., Seelman, K.D., & Bury, M. (eds.) (2001).Handbook of Disability Studies. California: Sage Publications.
- Bare Act.(2018) The Rights of the Persons with Disabilities Act 2016. Delhi: Universal Law Publishing.
- Berkman, B. (2006).Handbook of Social Work in Health and Aging.New York: Oxford University Press.
- Carter, N. (2007).The Politics of the Environment: Ideas, Activism, Policies (2nd edition).London: Cambridge University Press.
- Chauhan, D. (1997). Health care in India: A profile. Mumbai: Foundation for Research in Community Health.
- Corrigan, P., & Leonard, P. (1978). Social work practice under capitalism: A Marxist approach. Springer.
- Crane, A., McWilliams, A., Matten, D., Moon, J., & Siegel, D. S. (Eds.). (2008). The Oxford handbook of corporate social responsibility. OUP Oxford.
- Dhooper, S. S. (1997).Social work in Health Care in the 21st Century. Thousand Oaks, CA.: Sage Publications.
- Dominelli, L. (2012). Green Social Work –From Environmental Crises to Environmental Justice. Cambridge: Polity Press.
- Fort Cowles, L. A. (2000).Social Work in the Health Field: A Care Perspective. Binghamton, NY: The Haworth Press.

- Gadgil, M. & Guha, R. (1995). Ecology and Equity: The Use and Abuse of Nature in Contemporary India. London: Routledge.
- Gehlert, S. (2012).Hand Book of health Social Work, New Jersey: John Wiley & Sons.
- Grey, M., Coates, J., & Hetherington, T. (2013). Environmental Social Work. New York: Routledge.
- Guha, R., & Alier, J. (1997). Varieties of environmentalism: essays north and south. New York: Routledge.
- Harvey, D. (2005). From globalization to the new imperialism. Critical globalization studies, 91, 100.
- Ife, J.(2001).Human Rights and Social Work: Towards Rights-based Practice. UK: Cambridge University Press.
- Joseph, E. S. (2002). Globalization and its discontents.
- Kohli, A.S. (2004).Human Rights and Social Work Issues -Challenges and response. New Delhi: Kanishka Publishers Distributors.
- Kundu C.L (ed) (2003).Disability status India, New Delhi, Rehabilitation Council of India.
- Oliver, M., & Sapey, B. (eds.) (1998).Social Work with Disabled People. London: Palgrave Macmillan.
- Park, K.(2006). Preventive and Social Medicine. Jabalpur, India: Banarasi Das Bhanot Publishers.
- Ramachandras, L. (1990).Health Education: A New Approach. New Delhi:Vikas Publishing House Pvt. Ltd.
- Rangarajan, M. (2006). Environmental issues in India. New Delhi: Pearsons
- Reichert, E.(2003). Social work and Human Rights: A Foundation for Policy and Practice. Jaipur & New Delhi: Rawat Publication.
- Reisch, M., & Jani, J. S. (2012). The new politics of social work practice: Understanding context to promote change. The British Journal of Social Work, 42(6), 1132-1150.
- Rogers, P., Jalal, K., &Boyd, J. (2008). An Introduction to Sustainable Development. London: Earthscan.
- Rothman, J.C. (2003). Social Work Practice Across Disability. Boston: Allyn & Bacon
- Sen, A. (1988).Psycho-Social Integration of the Handicapped: A Challenge for Society. New Delhi: Mittal Publishers.
- Singh, A. K. (2014).Human Rights and Social Justice. India VL Media Solutions.

- Tripathy, R.N.(2019).Human Rights Gender and Environment. New Delhi: MKM Publishers Pvt. Ltd

Suggested Readings

- Nirmal C.J.(1999).Human rights in India –Historical, Social and Political Perspective. Delhi: Oxford University Press.
- Stammers N.(2004).Human Rights and Social Movements. London & New York: Pluto Press,
- Talwar, R. (1999). The third sex and Human Rights. New Delhi: Gyan Publishing House.
- Somayaji, S., &Talwar, S. (2011). Development induced displacement, rehabilitation and resettlement in India: current issues and challenges. London: Routledge
- Sharma S.L. (2000) Gender Discrimination and Human Rights, New Delhi: K.K. Publication.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 10 (DSE-10): QUANTITATIVE, QUALITATIVE AND MIXED RESEARCH METHODS

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
QUANTITATIVE, QUALITATIVE AND MIXED RESEARCH METHODS DSE 10	4	3	0	1	12th Pass	NIL

Learning Objectives

The learning objectives of this course are as follows:

- To understand the nature, scope and significance of research in social work practice
- To develop an ability to see the linkages between practice, research and theory
- To learn the process of data collection, organization, presentation, analysis and report writing

Learning outcomes

At the end of the semester the students will be able to

- Enumerate the concept of quantitative and qualitative research and its significance in field practice
- Draft research proposal and apply research process in practice/field
- Demonstrate skills, techniques and integrate theories of social work resesch in field work and research practice

SYLLABUS OF DSE- 10

Unit I: Quantitative Research Method **15 Hours**

Unit Description: This unit will introduce the quantitative research method, data processing and data analysis with different types of methods.

Subtopics:

- Quantitative Research Methods- Scales, Questionnaire, interview schedule, statistical Data processing.
- Tabulation and presentation of Statistics: (1) Measures of Central Tendency- Mean, Median, Mode (2) Measures of Variability: Standard Deviation and Mean Deviation.
- Correlation-Meaning and Scope Significance Tests: Pearson's Chi-Square and 't' test.

Unit II: Qualitative Research Methods **15 Hours**

Unit Description: This unit will help to learn about the qualitative research methods and tools of data collection. The unit will also cover different measures of analysing the data and report writing.

Subtopics:

- Qualitative Research Methods- Nature, Concept and Definition of Qualitative Research, Advantages and disadvantages of Qualitative Research
- Tools of Data Collection in Qualitative Research: Observation, Focus Group Discussion, In-depth Interview, Case Studies.
- Analysis of qualitative data, Possible biases and measures to ensure objectivity, Content analysis, framework analysis

Unit III: Mixed Research Method **15 Hours**

Unit Description: This unit will focus on the mixed research methods. This will also emphasize on validity and reliability of this method as well as report writing and evaluation.

Subtopics:

- Integration/mixing quantitative and qualitative data, Triangulation
- Validity and Reliability in Mixed Methods Research
- Reporting and Evaluating: Quantitative, Qualitative and Mixed Methods Research

Practical component **30 Hours**

Unit IV: Report prepartion and plagiarism check

Unit Description: This unit will provide hands on experience of preparing reports based on quantative and qualitative data. The unit also covers process of plagiarism check and its siginifcance.

Subtopics:

- Project work: Quantative data collection and analysis using statistical measures
- Project Work: Qualiatative data collection, transcription and analysis
- Project Work: Report preparation, plagiarism checking using software

Essential readings

- Babbie, E. (2015). Basics of Social Research, Rawat Publications, Jaipur.
- Babbie, E .(2014). Practice of Social Research, Rawat Publications, Jaipur

- Bajpai S.R. (1976). Methods of Social survey and Research, Kitab Ghar, Kanpur
- Bhattacharyya, D.K., (2009). Research Methodology, Excel Publications,New Delhi.Maluccio
- Creswell, J. W. (2014). Research Design: Qualitative, Quantitative, and Mixed Methods Approaches. New Delhi: Sage.
- Leavy, P. (2017). Research Design: Quantitative, Qualitative, Mixed Methods, Arts-Based, and Community-Based Participatory Research Approaches. New York: Guilford Press
- Martin, W. E.; & Bridgmon, K. D. (2012). Quantitative and Statistical Research Methods: From Hypothesis to Results. San Francisco: Jossey-Bass.
- Rajaretnam, T. (2015). Statistics for Social Sciences. New Delhi: Sage

Suggested Readings:

- Atkinson, P. & Delamont, S. (2011). Sage Qualitative Research Methods. New Delhi: Sage.
- Bandalos, D. L. (2018). Measurement Theory and Applications for the Social Sciences. New York: The Guilford Press.
- Goodwin, C. J. (2010). Research in Psychology Methods and Design, 6th ed. New Jersey: John Wiley & Sons.
- Hammersley, M. (2013). What is Qualitative Research? New York: Bloomsbury.
- Hays, William L (1973). Statistics for the social sciences. New York: Rinchart and Winston
- Mcnemar, Q (1949). Psychological Statistics. New York: John Willey
- Mitchell, M. L.; & Jolley, J. M. (2013). Research Design Explained, 8th ed. New Delhi: Wadsworth, Cengage Learning.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 11 (DSE-11): PUBLIC HEALTH POLICIES AND PROGRAMMES

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
PUBLIC HEALTH POLICIES AND PROGRAMMES DSE 11	4	3	0	1	12th Pass	NIL

Learning Objectives

The learning objectives of this course are as follows:

- To develop capacity to apply conceptual framework of public health system in India
- To understand public health programs for children, women and elderly
- To gain a critical perspective towards national health policy, programs and legislations.

Learning outcomes

At the end of the semester the students will be able to

- Evalute health care system and develop competencies in managing health systems at different levels.
- Develop action plan for identified public health issues according to national health programs.
- Apply conceptual framework to understand national policy in health care.

SYLLABUS OF DSE- 11

Unit I: Public Health **15 Hours**

Unit Description: To understand the concept of public health and introduce different types of health systems in India.

Subtopics:

- Public Health: Definition, principles, Social determinants of Health
- Public health system in India
- Present health scenario in India

Unit II: Basic Epidemiology and National Policy for health, programs and Legislations **15 Hours**

Unit Description: To comprehend the basic epidemiology in order to understand the national policies, programs and legislations.

Subtopics:

- National Health Policy 2017, Government health schemes and Programmes.
- Non-Communicable Diseases- (Cancer, Diabetes) and Communicable disease- (Tuberculosis, STI, HIV/AIDS)
- Epidemic Diseases Act, 1897, the Disaster Management Act of 2005, Draft of the Public Health (Prevention, Control and Management of Epidemics, Bio-terrorism and Disasters) Act, 2017 in the light of Public Health Emergency

Unit III: National Health Programmes in India-I

Unit Description: To develop an understanding about the objectives, action plan, achievements and constraints of various National Health Programmes. **15 Hours**

Subtopics:

- National Rural Health Mission,
- RMNCH +A
- National Urban Health Mission.

Practical component

Unit IV: **Social work applications in health care** **30 Hours**

Unit Description: To develop an understanding about the objectives, action plan, achievements and constraints of various National Health Programmes.

Subtopics:

- Case study of Universal Immunization Programme and/or Integrated Child Development Scheme
- Project Work: Analysis on the field of the Water supply and Sanitation program
- Project Work/Case Study: Understanding the ground realities of the program with its challenges and concerns

Essential readings

- Banerjee, B. (2018). D.K. Taneja's Health Policies, Programmes in India. New Delhi, Jaypee Brothers Medical Publishers.
- Duggal, R. (2014). Health planning in India. Accessed from http://www.cehat.org/cehat/uploads/files/a168.pdf
- Government of India (2017). National health policy 2017. Ministry of health and family welfare, pp 1–31.

- Government of India (2017). Situation analysis: backdrop to the national health policy 2017, Ministry of Health and Family welfare. Accessed from https://mohfw.gov.in/sites/default/files/71275472221489753307.pdf.
- Gupta, M.C. (2002). Health and law: a guide for professionals and activists. New Delhi, Kanishka Publishers.
- Kadri, A. M., Khan, A.M., Kakkar, R. (2019). IAPSM's Textbook of Community Medicine. New Delhi, Jaypee Brothers Medical Publishers.
- Kawachi, I., Lang, I., Ricciardi, W. (Eds.) (2020). Oxford Handbook of Public Health Practice. Oxford, Oxford University Press.
- Kishore, J. (2012). National Health Programs of India. New Delhi, Century Publications.
- Park, K. (2015). Preventive and Social Medicines. M/S Banarsidas Bhanot, Jabalpur.
- Patel, R. K. (2015). Health status and programmes in India. New Delhi, New Century Publications.
- Sharma, K.K. (2017). Government programmes to improve health and environment. Ministry of Health and Family Welfare, Government of India. Accessed from www.nams-india.in/downloads/CME-NAMSCON2017/9M2017.pdf
- Sundar, D. K., Garg, S., Garg, I. (2015). Public Health in India: Technology, governance and service delivery. India, Routledge.
- National Healh Policy 2022 accessed from https://nhm.gov.in/images/pdf/guidelines/nrhm-guidelines/national_health_policy_2002.pdf.

Suggested readings

- Central Bureau of health Intelligence (2016). National health profile 2016.
- Directorate General of Health Services, Ministry of Health and Family Welfare. Accessed from http://www.indiaenvironmentportal.org.in/files/file/National%20Health%20Profile%202016212.pdf
- Central Bureau of health Intelligence (2018). National health profile 2018. Directorate General of Health Services, Ministry of Health and Family Welfare Accessed from http://www.cbhidghs.nic.in/WriteReadData/l892s/Before%20Chapter1.pdf
- Government of India (2015). Manual on health statistics in India. Ministry of Statistics and Programme Implementation. Accessed

from http://www.mospi.gov.in/sites/default/files/publication_reports/Manual-Health-S tatistics_5june15.pdf.

- Planning Commission (2012). Report of the steering committee on health for the 12th five year plan. Health division, Government of India, pp 1–77.
- Planning Commission (2013a). Twelfth five year plan (2012–2017) faster, more inclusive and sustainable growth, 1:1–370. Accessed from http://planningcommission.gov.in/plans/planrel/12thplan/pdf/12fyp_vol1.pdf
- Planning Commission (2013b). Twelfth five year plan (2012–2017) faster, more inclusive and sustainable growth, 2:1–438. Accessed from http://planningcommission.gov.in/plans/planrel/12thplan/pdf/12fyp_vol2.pdf

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 12 (DSE-12): PEACE BUIDLING AND CONFLICT RESOLUTION

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
PEACE BUIDLING AND CONFLICT RESOLUTION DSE 12	4	3	0	1	12th Pass	NIL

Learning Objectives

The learning objectives of this course are as follows:

- To develop an understanding about the theories of peace and conflict and to conceptualise key issues and debates around it.
- To develop knowledge about various peace processes in resolving conflict in India and international levels.
- To develop an ability to work on peace building and conflict resolution.

Learning outcomes

At the end of the semester the students will be able to

- Describe the emergence of various social conflicts and their impact on society
- Critically examine the role of professional social workers in peace building processes.
- Evaluate indigenous and international initiatives for peace building and conflict resolution.

SYLLABUS OF DSE- 12

Unit I : Conceptual Framework of Peace Building and Conflict Resolution **15 Hours**

Unit Description: This unit will provide a conceptual understanding of indigenous and international approaches to theorise peace and social conflict.

Subtopics:

- Definition, conceptual framework and context of Conflict
- Social Conflicts in India – Land and Agrarian Conflict, Caste, Communalism, Gender based Conflict, Regionalism and Armed Conflict
- International Conflicts – Inter State and Intra State conflict, Ethnic, Territorial, Communal, Economic, Armed Conflict

Unit II: Conflict Analysis: Strategy and Skills **15 Hours**

Unit Description: This unit will focus on developing an understanding about diverse set of strategies, values and skills essential in building peace and resolving conflicts.

Subtopics:

- Conflict Audit - Stages of Conflict, steps of conflict audit, Mapping entry points, role of actors.
- Conflict induced Trauma and Social Work Interventions
- Case Reflections from India's experience as Multi-Cultural Society : Significance of decentralization and Conscientisation

Unit III: Peace building : Definition, Structures and Contestations

Unit Description: This unit will help students in developing an understanding about concept of building peace, steps, processes and structures that play significant role in peace building. **15 Hours**

Subtopics:

- Restoration and Rebuilding – Role of National-Regional-Local structures, key actors from civil society.
- Peace Building – Social Inclusion, Community Mobilisation and Social Movements, response of Civil Society, role of National and international organisations
- Case reflections from State Human Rights Commission, UNHCR, Grass root and indigenous organisations in peace building, Gandhian Thought and Mobilisation

Practical component **30 Hours**

Unit IV: Role of Social Work in Peace building

Unit Description: This unit will help to learn about role of social workers in peace building and conflict resolution.

Subtopics:

- Project Work/Case Study: Conflict management and conflict resolution Approaches (Analytical, problem solving, conflict transformation and inter personal mediation)
- Project Work/Case Study: Models of Conflict mitigation for Peace building, Building Resilience, Social Analysis - Dialogue, Representation and Social Inclusivity
- Project Work/Case Study: Anti-Oppressive Social Work : Redefining Nature of Engagement and People's Participation

Essential readings

- Adair, W., Brett, J., Lempereur, A., et al. (2004). Culture and negotiation strategy. Negotiation Journal, 20(1). 87-111

- Avruch, K . (2000). The complexity of cooperation: Agent-based models of competition and collaboration. Princeton, N.J : Princeton University Press.
- Axelrod, R. (2000). On six advance in cooperation theory. Unpublished manuscript. 1-39
- Barash, D., & Webel, C. (2002). Peace and conflict studies. Thousand Oaks, CA: Sage
- Basu, A. and A. Kohli (eds.), Community Conflicts and the State in India. Delhi: Oxford University Press, 1998. Basu, D.D. Introduction to the Constitution of India. New Delhi: Prentice Hall of India, 1997.
- Behera, N.C. "India Prospects for Conflict and Peace, Country Risk Profile." In India's Democracy: An analysis of Changing State-Society Relations, edited by Atul Kohli. New Delhi: Orient Longman, 2000, p. 311.
- Bose, S. (1999). Kashmir: sources of conflict, dimensions of peace. Economic and Political Weekly Vol. 34, Issue No. 13, 27 Mar, 1999
- Brancati, D. Peace by Design: Managing Intrastate Conflict Through Decentralization. Oxford: Oxford University Press, 2009.
- Brouwer, J. "Multiculturalism as a Modern and an Indigenous Concept in India." In Mapping Multiculturalism, edited by K. Deb. New Delhi: Rawat Publications, 2002, 276–294
- Collected Works of Mahatma Gandhi, Vol. LXXXVIII, May 25, 1947 to July 31, 1947, New Delhi: Publication Division, Ministry of Information and Broadcasting, Govrnment of India, 1983.
- Chandhoke, N., & Priyadarshi, P. (2006). Electoral politics in post-conflict societies: case of Punjab. Economic and Political Weekly, Vol.41, Issue No. 09
- Das, J.K. Human Rights and Indigenous Peoples. New Delhi: A.P.H. Publishing Corporation, 2001.
- Erin, M., & Rogan, J. (2013). Brining peace closer to the people: The role of social services in peace-building. Journal of Peace Building and Development, 8 (3), 1-6.
- Gopal, S. Jawaharlal Nehru: A Biography Volume II (1947–1956). New Delhi: Oxford University Press, 1979Lombard, A. (2015). Global agenda for social work and social development: A path towards sustainable social work. Social Work (Stellenbosch. Online), 51.4. 3- 462.
- Jha, M.K. (2009). Riots as Rituals, Manak Publishers, New Delhi
- Jha, M.K. (2009). In Opposition to Silence, AlterNotes Press, New Delhi.

- Jha, M.K. (2007) Understanding Political Discourse, UNAIDS Publication, Washington DC.
- Jha, M.K. (2006). Peace is Possible, Oxfam-GB, Year-2007 5. Prospects for Peace amidst chaotic conflict, Oxfam-GB and GD Publishers.
- Jha, M.K. (2005). Communal Violence and Social Work: Arguments for Paradigm Shift in Singh S. and Srivastava SP(Eds.)- Social Work: Issues and Challenges. N.R. Book Company.
- Kothari, R. "The Problem." Seminar, 357, May, 1989. "Issues in Decentralized Governance." In Decentralized Governance in Asian Countries, edited by A. Aziz and D.D. Arnold. New Delhi: SAGE Publications, 1996, pp. 34–41
- Manchanda, R. (2005). Women's agency in peace building. Economic and Political Weekly Vol.40, Issue No. 44-45, 29 Oct, 2005
- Nagaraj, V. K. (2015). Towards reimagining dominant approaches war, conflict and development. Economic and Political Weekly, Vol.50, No. 9,
- Noorani, A. G. (1991). Human rights during armed conflicts. Economic and Political Weekly Vol. 26, Issue No. 17, 27 Apr, 1991
- Pureza, J. M., & Cravo, T. (2009). Critical edge and legitimation in peace studies. RCCS Annual Review
- Ryan, R. (2014). Peace and conflict review. Volume 8, Issue 1
- Sarma, N., & Motiram, S. (2014). Reflections on violent social conflict in western Assam the tragedy of identity. Economic and Political Weekly, Vol.49, No. 11
- Shah, R . A . (2017). R e-reading t he field in conflict z ones: Experiences f rom Kashmir Valley. Economic and Political Weekly, Vol.52, No. 12
- Skelton, W. B., Woehrle, L. M., & Blakeman, K. (2012). Journal for the Study of Peace and Conflict
- UNSSC (2016). Conflict analysis handbook. Turin, Italy: UNSSC
- Webel, C., & Galtung, J. (2007). Handbook on conflict and peace building. London: Routledge

Suggested Readings

- Adeney, K. Regionalism, Identity and Reconciliation: Federalism in India and Pakistan. UK: Political Studies Association, 2000.
- Agnihotri, S.K. "District Councils under the Sixth Schedule." In The Autonomous District Councils, edited by L.S. Gassah. New Delhi: Omsons Publications, 1997, pp. 39–53.

- Ahmad, I. P.S. Ghosh, and Helmut, R. (eds.), Pluralism and Equality: Values in Indian Society and Politics. New Delhi: SAGE Publications, 2000.
- Alam, J. "Public Sphere and Democratic Governance in Contemporary India." In Multiculturalism, Liberalism and Democracy, edited by R. Bhargava, A. Bagchi, and R. Sudarshan. Delhi: Oxford University Press, 1999, pp. 323–347.
- Ambedkar, B.R. "Need for Checks and Balances: Articles on Linguistic States" The Times of India, April 23, 1953.
- Anand, V.K. "Nagaland in Transition." In Ethnicity and Nation-Building in India: The Naga Experience, edited by Suranjan Das. Presidential Address, Indian History Congress, Mysore University, Mysore, 2003, p. 37.
- Annamalai, E. Language Movements in India. Mysore: Central Institute of Indian Languages, 1979.
- Arora, G.K. Globalisation, Federalism and Decentralization: Implications for India. New Delhi: Bookwell, 2002.
- Austin, G. The Indian Constitution: Cornerstone of a Nation. New Delhi: Oxford University Press, 1999. Aziz, A. and D.D. Arnold (eds.) Decentralized Governance in Asian Countries. New Delhi: SAGE Publications, 1996.
- Bader, V. "Dilemmas of Multiculturalism: Finding or Losing Our Way." Canadian Diversity, 4: 1 Winter (2005), pp. 86–89.
- Baruah, S. Durable Disorder: Understanding the Politics of Northeast India. New Delhi: Oxford University Press, 2005.
- Gray, M. (2002). Developmental social work: A 'Strengths' praxis for social development. Social Development Issues, 24(1), 4-14.
- Grewal, J.S. The New Cambridge History of India, II.3, The Sikhs of the Punjab. Cambridge: Cambridge University Press, 1998.
- Morgaine, K. (2014). Conceptualising social justice in social work: Are social workers 'too bogged down in the trees?' Journal of Social Justice, 4, 2164-7100.
- Yesufu, A. (2009). 'A peace paradigm in social Work' Socialist Studies/Etudes Socialistes, 2, 2.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

ANNEXURE-26

Sub: Amendment to Ordinance V

[E.C Resolution No. 14/ (14-1-7/) and 27-1-2/ dated 09.06.2023 and 25.08.2023 respectively]

Following addition be made to Appendix-II-A to the Ordinance V (2-A) of the Ordinances of the University;

Add the following:

Syllabi of Semester-IV, V and VI of the following departments under Faculty of Mathematical Sciences based on Under Graduate Curriculum Framework -2022 implemented from the Academic Year 2022-23.

FACULTY OF MATHEMATICAL SCIENCES

1. Department of Mathematics
2. Department of Statistics
3. Department of Operational Research
4. Department of Computer Science

DEPARTMENT OF MATHEMATICS

Category-I

B.Sc. (Hons.) Mathematics, Semester-IV

DISCIPLINE SPECIFIC CORE COURSE – 10: SEQUENCES AND SERIES OF FUNCTIONS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Sequences and Series of Functions	4	3	1	0	Class XII pass with Mathematics	DSC-2: Real Analysis DSC-5: Calculus DSC-8: Riemann Integration

Learning Objectives: The objective of the course is to introduce:

- The sequences and series of real-valued functions as a generalization to the sequences and series of real numbers.
- The situations under which the process of convergence of a sequence and series of real-valued functions may commute with the processes of calculus while taking differentiation, or integration.
- An important class of series functions (i.e., power series), and the elementary functions-exponential, logarithmic and trigonometric.

Learning Outcomes: This course will enable the students to:

- Learn about Cauchy criterion for uniform convergence and Weierstrass *M*-test for uniform convergence of series of real-valued functions.
- Know about the constraints for the inter-changeability of differentiation, and integration with infinite sum of a series of functions.
- Handle the convergence of power series and properties of the limit function, including differentiation and integration of power series.
- Appreciate utility of polynomials in the space of continuous functions.

SYLLABUS OF DSC-10

UNIT – I: Sequences of Functions **(18 hours)**

Pointwise and uniform convergence of sequence of functions, The uniform norm, Cauchy criterion for uniform convergence, Continuity of the limit function of a sequence of functions, Interchange of the limit and derivative, and the interchange of the limit and integral of a sequence of functions, Bounded convergence theorem.

UNIT – II: Series of Functions **(12 hours)**

Pointwise and uniform convergence of series of functions, Theorems on the continuity, differentiability and integrability of the sum function of a series of functions, Cauchy criterion and the Weierstrass *M*-test for uniform convergence.

UNIT – III: Power Series **(15 hours)**

Definition of a power series, Radius of convergence, Absolute convergence (Cauchy-Hadamard theorem), Differentiation and integration of power series, Abel's theorem, Weierstrass's approximation theorem; The exponential, logarithmic and trigonometric functions: Definitions and their basic properties.

Essential Readings

1. Bartle, Robert G., & Sherbert, Donald R. (2011). Introduction to Real Analysis (4th ed.). Wiley India Edition. Indian Reprint.
2. Ross, Kenneth A. (2013). Elementary Analysis: The Theory of Calculus (2nd ed.). Undergraduate Texts in Mathematics, Springer. Indian Reprint.

Suggestive Readings

- Bilodeau, Gerald G., Thie, Paul R., & Keough, G. E. (2010). An Introduction to Analysis (2nd ed.). Jones and Bartlett India Pvt. Ltd. Student Edition. Reprinted 2015.
- Denlinger, Charles G. (2011). Elements of Real Analysis. Jones and Bartlett India Pvt. Ltd. Student Edition. Reprinted 2015.

DISCIPLINE SPECIFIC CORE COURSE – 11: MULTIVARIATE CALCULUS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Multivariate Calculus	4	3	1	0	Class XII pass with Mathematics	DSC-2: Real Analysis DSC-5: Calculus DSC-8: Riemann Integration

Learning Objectives: The primary objective of this course is to introduce:

- The extension of the studies of single variable differential and integral calculus to functions of two or more independent variables.
- The geometry and visualisation of curves and surfaces in two dimensions (plane) and three dimensions (space).
- The techniques of integration to functions of two and three independent variables.
- The applications of multivariate calculus tools to physics, economics, optimization etc.

Learning Outcomes: This course will enable the students to:

- Learn the conceptual variations when advancing in calculus from one variable to multivariable discussion.
- Understand the maximization and minimization of multivariable functions subject to the given constraints on variables.
- Learn about inter-relationship amongst the line integral, double, and triple integral formulations.
- Familiarize with Green's, Stokes' and Gauss divergence theorems, and learn applications.

SYLLABUS OF DSC-11

UNIT – I: Calculus of Functions of Several Variables (18 hours)

Basic concepts, Limits and continuity, Partial derivatives, Tangent planes, Total differential, Differentiability, Chain rules, Directional derivatives and the gradient, Extrema of functions of two variables, Method of Lagrange multipliers with one constraint.

UNIT – II: Double and Triple Integrals (15 hours)

Double integration over rectangular and nonrectangular regions, Double integrals in polar co-ordinates, Triple integrals over a parallelopiped and solid regions, Volume by triple integrals, Triple integration in cylindrical and spherical coordinates, Change of variables in double and triple integrals.

UNIT – III: Green's, Stokes' and Gauss Divergence Theorem (12 hours)

Vector field, Divergence and curl, Line integrals and applications to mass and work, Fundamental theorem for line integrals, Conservative vector fields, Green's theorem, Area as a line integral, Surface integrals, Stokes' theorem, Gauss divergence theorem.

Essential Reading

1. Strauss, Monty J., Bradley, Gerald L., & Smith, Karl J. (2007). Calculus (3rd ed.). Dorling Kindersley (India) Pvt. Ltd. Pearson Education. Indian Reprint.

Suggestive Reading

- Marsden, J. E., Tromba, A., & Weinstein, A. (2004). Basic Multivariable Calculus. Springer (SIE). Indian Reprint.

DISCIPLINE SPECIFIC CORE COURSE – 12: NUMERICAL ANALYSIS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Numerical Analysis	4	3	0	1	Class XII pass with Mathematics	DSC-2: Real Analysis DSC-5: Calculus

Learning Objectives: The main objective of this course is to introduce:

- Various computational techniques to find approximate value for possible root(s) of algebraic and non-algebraic equations.
- Methods to solve system of linear equations and ordinary differential equations.
- The use of computer algebra system (CAS) by which the numerical problems can be solved both numerically and analytically, and to enhance the problem-solving skills.

Learning Outcomes: This course will enable the students to:

- Learn some numerical methods to find the zeroes of nonlinear functions of a single variable, up to a certain given level of precision.
- Learn Gauss−Jacobi, Gauss−Seidel methods to solve system of linear equations.
- Get aware of using interpolation techniques, for example in finding values of a tabulated function at points which are not part of the table.
- Learn finding numerical solutions of difference equations which are obtained converting differential equations using techniques from calculus.

SYLLABUS OF DSC-12

UNIT – I: Methods for Solving Algebraic and Transcendental Equations (12 hours)

Rate and order of convergence; Bisection method, Method of false position, Fixed point iteration method, Newton's method, and Secant method, their order of convergence and convergence analysis.

UNIT – II: Techniques to Solve Linear Systems and Interpolation (15 hours)

LU decomposition and its applications; Iterative methods: Gauss−Jacobi, Gauss−Seidel methods; Lagrange and Newton interpolation, Piecewise linear interpolation.

UNIT – III: Numerical Differentiation and Integration (18 hours)

First and higher order approximation for the first derivative, Approximation for the second derivative; Numerical integration by closed Newton−Cotes formulae: Trapezoidal rule, Simpson's rule and its error analysis; Euler's method to solve ODE's, Modified Euler method, Runge−Kutta Method (fourth-order).

Essential Reading

1. Bradie, Brian. (2006). A Friendly Introduction to Numerical Analysis. Pearson Education India. Dorling Kindersley (India) Pvt. Ltd. Third impression 2011.

Suggestive Readings

- Gerald, Curtis F., & Wheatley, Patrick O. (2007). Applied Numerical Analysis (7th ed.). Pearson Education. India.
- Jain, M. K., Iyengar, S. R. K., & Jain, R. K. (2012). Numerical Methods for Scientific and Engineering Computation. (6th ed.). New Age International Publisher, India, 2016.

Note: Non programmable scientific calculator may be allowed in the University examination.

Practical (30 hours)- Practical / Lab work to be performed in Computer Lab: Use of computer algebra system (CAS) software: Python/SageMath/Mathematica/MATLAB/Maple/Maxima/ Scilab etc., for developing the following numerical programs:

1. Bisection method.

2. Newton-Raphson method.
3. Secant method.
4. LU decomposition method.
5. Gauss−Jacobi method.
6. Gauss−Seidel method.
7. Lagrange interpolation.
8. Newton interpolation.
9. Trapezoidal rule.
10. Simpson's rule.
11. Euler's method.
12. Runge−Kutta Method (fourth-order).

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.Sc. (Hons) Mathematics, Semester-IV, DSE-Courses

DISCIPLINE SPECIFIC ELECTIVE COURSE – 2(i): BIOMATHEMATICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Biomathematics	4	3	1	0	Class XII pass with Mathematics	DSC-6: Ordinary Differential Equations

Learning Objectives: The main objective of this course is to:

- Develop and analyse the models of the biological phenomenon with emphasis on population growth and predator-prey models.
- Interpret first-order autonomous systems of nonlinear differential equations using the Poincaré phase plane.
- Apply the basic concepts of probability to understand molecular evolution and genetics.

Learning Outcomes: This course will enable the students to:

- To learn and appreciate study of long-term behavior arising naturally in study of mathematical models and their impact on society at large.
- To understand spread of epidemic technically through various models and impact of recurrence phenomena.
- Learn what properties like Chaos and bifurcation means through various examples and their impact in Bio-Sciences.

SYLLABUS OF DSE-2(i)

UNIT – I: Mathematical Modeling for Biological Processes (15 hours)

Formulation a model through data, A continuous population growth model, Long-term behavior and equilibrium states, The Verhulst model for discrete population growth, Administration of drugs, Differential equation of chemical process and predator-prey model (Function response: Types I, II and III).

UNIT – II: Epidemic Model: Formulation and Analysis (15 hours)

Introduction to infectious disease, The SIS, SIR and SEIR models of the spread of an epidemic, Analyzing equilibrium states, Phase plane analysis, Stability of equilibrium points, Classifying the equilibrium state; Local stability, Limit cycles, Poincaré-Bendixson theorem.

UNIT – III: Bifurcation, Chaos and Modeling Molecular Evolution (15 hours)

Bifurcation, Bifurcation of a limit cycle, Discrete bifurcation and period-doubling, Chaos,

Stability of limit cycles, Introduction of the Poincaré plane; Modeling molecular evolution: Matrix models of base substitutions for DNA sequences, Jukes-Cantor and Kimura models, Phylogenetic distances.

Essential Readings

1. Robeva, Raina S., et al. (2008). An Invitation to Biomathematics. Academic press.
2. Jones, D. S., Plank, M. J., & Sleeman, B. D. (2009). Differential Equations and Mathematical Biology (2nd ed.). CRC Press, Taylor & Francis Group.
3. Allman, Elizabeth S., & Rhodes, John A. (2004). Mathematical Models in Biology: An Introduction. Cambridge University Press.

Suggestive Readings

- Linda J. S. Allen (2007). An Introduction to Mathematical Biology. Pearson Education.
- Murray, J. D. (2002). Mathematical Biology: An Introduction (3rd ed.). Springer.
- Shonkwiler, Ronald W., & Herod, James. (2009). Mathematical Biology: An Introduction with Maple and MATLAB (2nd ed.). Springer.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 2(ii): MATHEMATICAL MODELING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Mathematical Modeling	4	3	0	1	Class XII pass with Mathematics	DSC-6: Ordinary Differential Equations

Learning Objectives: Primary objective of this course is to introduce:

- Mathematical modeling as the representation of a system by a set of mathematical relations or equations.
- Mathematical epidemiological models susceptible-infectious-recovered (SIR) and its variant SEIR (S-Exposed-IR) for the spread of diseases.
- Monte Carlo simulation techniques, and simplex method for solving linear programming problems.

Learning Outcomes: This course will enable the students to:

- Understand the methodology of solving SIR models for disease spread.
- Learn significance of dieting model that provides important insights and guides to a biomedical issue that is of interest to the general public.
- Understand nonlinear systems and phenomena with stability analysis ranges from phase plane analysis to ecological and mechanical systems.

- Use Monte Carlo simulation technique to approximate area under a given curve, and volume under a given surface.

SYLLABUS OF DSE-2(ii)

UNIT – I: Mathematical Epidemiological and Dieting Models (15 hours)

Modeling concepts and examples, Scaling of variables, and approximations of functions; SIR and SEIR models for disease spread: Methodology, Standard and solvable SIR models, Basic reproduction number; Dieting model with analysis and approximate solutions.

UNIT – II: Modeling with Nonlinear Systems and Phenomena (15 hours)

Stability and the phase plane, Almost linear systems; Ecological models: Predators and competitors, Critical points, Oscillating populations, Survival of single species, Peaceful coexistence of two species, Interaction of logistic populations, Wildlife conservation preserve; Nonlinear mechanical systems: Hard and soft spring oscillations, Damped nonlinear vibrations.

UNIT – III: Simulation and Optimization Modeling (15 hours)

Monte Carlo simulating deterministic, and probabilistic behavior, Generating random numbers; Linear programming model: Geometric and algebraic solutions, Simplex method and its tableau format, Sensitivity analysis.

Essential Readings

1. Mickens, Ronald E. (2022). Mathematical Modelling with Differential Equations. CRC Press, Taylor & Francis Group.
2. Edwards, C. Henry, Penney, David E., & Calvis, David T. (2023). Differential Equations and Boundary Value Problems: Computing and Modeling (6th ed.). Pearson.
3. Giordano, Frank R., Fox, William P., & Horton, Steven B. (2014). A First Course in Mathematical Modeling (5th ed.). Brooks/Cole, Cengage Learning India Pvt. Ltd.

Suggestive Readings

- Barnes, Belinda & Fulford, Glenn R. (2015). Mathematical Modeling with Case Studies, Using Maple and MATLAB (3rd ed.). CRC Press. Taylor & Francis Group.
- Ross, Shepley L. (2014). Differential Equations (3rd ed.). Wiley India Pvt. Ltd.
- Simmons, George F. (2017). Differential Equations with Applications and Historical Notes (3rd ed.). CRC Press. Taylor & Francis Group.

Practical (30 hours)- Practical work to be performed in Computer Lab: Modeling of the following problems using: R/Python/SageMath/Mathematica/MATLAB/Maxima/Scilab etc.

1. a) Simulation of SIR model and its variants using some initial parameter values, and finding basic reproduction number for analysis.
   b) Analysis of the dieting process, which includes both body-mass loss and gain.
2. Nonlinear Systems and Phenomena.
   a) Plot phase plane portraits and solutions of first-order equations.
   b) Obtain interesting and complicated phase portraits for almost linear systems.

c) Discuss large wildlife conservation preserve model and obtain (i) The period of oscillation of the rabbit and fox populations, (ii) The maximum and minimum numbers of rabbits and foxes.

d) Discuss the Rayleigh and van der Pol models.

3. (i) Random number generation and then use it for the following:
   a) Simulate area under a given curve.
   b) Simulate volume under a given surface.

   (ii) [2] Chapter 7 (Projects 7.4 and 7.5).

DISCIPLINE SPECIFIC ELECTIVE COURSE – 2(iii): MECHANICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Mechanics	4	3	1	0	Class XII pass with Mathematics	DSC-5: Calculus DSC-6: Ordinary Differential Equations

Learning Objectives: The main objective of this course is to:

- Starting Newtonian laws, learning various technical notions which explains various states of motion under given forces.
- Deals with the kinematics and kinetics of the rectilinear and planar motions of a particle including constrained oscillatory motions of particles, projectiles, and planetary orbits.
- Understand hydrostatic pressure and thrust on plane surfaces.

Learning Outcomes: This course will enable the students to:

- Understand necessary conditions for the equilibrium of particles acted upon by various forces and learn the principle of virtual work for a system of coplanar forces.
- Apply the concepts of center of gravity, laws of static and kinetic friction.
- Learn that a particle moving under a central force describes a plane curve and know the Kepler's laws of the planetary motions.
- Evaluate the hydrostatic pressure at any given depth in a heavy homogeneous liquid at rest under gravity.

SYLLABUS OF DSE-2(iii)

UNIT – I: Statics **(15 hours)**

Fundamental laws of Newtonian mechanics, Law of parallelogram of forces, Equilibrium of a particle, Lamy's theorem, Equilibrium of a system of particles, External and internal forces, Couples, Reduction of a plane force system, Work, Principle of virtual work, Potential energy and conservative field, Mass centers, Centers of gravity, Friction.

UNIT – II: Dynamics (18 hours)

Kinemetics of a particle, Motion of a particle, Motion of a system, Principle of linear momentum, Motion of mass center, Principle of angular momentum, Motion relative to mass center, Principle of energy, D'Alembert's principle; Moving frames of reference, Frames of reference with uniform translational velocity, Frames of reference with constant angular velocity; Applications in plane dynamics- Motion of a projectile, Harmonic oscillators, General motion under central forces, Planetary orbits.

UNIT – III: Hydrostatics (12 hours)

Shearing stress, Pressure, Perfect fluid, Pressure at a point in a fluid, Transmissibility of liquid pressure, Compression, Specific gravity, Pressure of heavy fluid- Pressure at all points in a horizontal plane, Surface of equal density; Thrust on plane surfaces.

Essential Readings

1. Synge, J. L., & Griffith, B. A. (2017). Principles of Mechanics (3rd ed.). McGraw-Hill Education. Indian Reprint.
2. Ramsey, A. S. (2017). Hydrostatics. Cambridge University Press. Indian Reprint.

Suggestive Readings

- Roberts, A. P. (2003). Statics and Dynamics with Background Mathematics. Cambridge University Press.
- Ramsey, A. S. (1985). Statics (2nd ed.). Cambridge University Press.

B.A. (Prog.) Semester-IV with Mathematics as Major
Category-II

DISCIPLINE SPECIFIC CORE COURSE (DSC-4): INTRODUCTION TO GRAPH THEORY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Introduction to Graph Theory	4	3	1	0	Class XII pass with Mathematics	NIL

Learning Objectives: The primary objective of this course is to introduce:

- Problem-solving techniques using various concepts of graph theory.
- Various properties like planarity and chromaticity of graphs.
- Several applications of these concepts in solving practical problems.

Learning Outcomes: This course will enable the students to:

- Good familiarity with all initial notions of graph theory and related results and seeing them used for some real-life problems.
- Learning notion of trees and their enormous usefulness in various problems.
- Learning various algorithms and their applicability.
- Studying planar graphs, Euler theorem associated to such graphs and some useful applications like coloring of graphs.

SYLLABUS OF DSC-4

UNIT-I: Graphs, Types of Graphs and Basic Properties (12 hours)

Graphs and their representation, Pseudographs, Subgraphs, Degree sequence, Euler's theorem, Isomorphism of graphs, Paths and circuits, Connected graphs, Euler trails and circuits, Hamiltonian paths and cycles, Adjacency matrix, Weighted graphs, Travelling salesman problem, Dijkstra's algorithm.

UNIT-II: Directed Graphs and Applications, Trees (18 hours)

The Chinese postman problem; Digraphs, Bellman-Ford algorithm, Tournaments, Directed network, Scheduling problem; Trees and their properties, Spanning trees, Kruskal's algorithm, Prim's algorithm, Acyclic digraphs and Bellman's algorithm.

UNIT-III: Planar Graphs, Graph Coloring and Network Flows (15 hours)

Planar graphs, Euler's formula, Kuratowski theorem, Graph coloring, Applications of graph

coloring, Circuit testing and facilities design, Flows and cuts, Max flow-min cut theorem, Matchings, Hall's theorem.

Essential Reading

1. Goodaire, Edgar G., & Parmenter, Michael M. (2011). Discrete Mathematics with Graph Theory (3rd ed.). Pearson Education Pvt. Ltd. Indian Reprint.

Suggestive Readings

- Bondy, J. A. & Murty, U.S.R. (2008), Graph Theory with Applications. Springer.
- Chartrand, Gary, & Zhang, P. (2012). A First Course in Graph Theory. Dover Publications.
- Diestel, R. (1997). Graph Theory (Graduate Texts in Mathematics). Springer Verlag.
- West, Douglas B. (2001). Introduction to graph theory (2nd ed.). Pearson India.

DISCIPLINE SPECIFIC CORE COURSE – 4 (Discipline A-4): ABSTRACT ALGEBRA

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Abstract Algebra	4	3	1	0	Class XII pass with Mathematics	NIL

Learning Objectives: The primary objective of the course is to introduce:

- Modular arithmetic, fundamental theory of groups, rings, integral domains, and fields.
- Symmetry group of a plane figure, and basic concepts of cyclic groups.
- Cosets of a group and its properties, Lagrange's theorem, and quotient groups.

Learning Outcomes: This course will enable the students to:

- Appreciate ample types of groups present around us which explains our surrounding better, and classify them as abelian, cyclic and permutation groups.
- Explain the significance of the notion of cosets, normal subgroups and homomorphisms.
- Understand the fundamental concepts of rings, subrings, fields, ideals, and factor rings.

SYLLABUS OF DISCIPLINE A-4

UNIT-I: Introduction to Groups (12 hours)

Modular arithmetic; Definition and examples of groups, Elementary properties of groups, Order of a group and order of an element of a group; Subgroups and its examples, Subgroup tests; Center of a group and centralizer of an element of a group.

UNIT-II: Cyclic Groups, Permutation Groups and Lagrange's Theorem (18 hours)

Cyclic groups and its properties, Generators of a cyclic group; Group of symmetries; Permutation groups, Cyclic decomposition of permutations and its properties, Even and odd

permutations and the alternating group; Cosets and Lagrange's theorem; Definition and examples of normal subgroups, Quotient groups; Group homomorphisms and properties.

UNIT-III: Rings, Integral Domains and Fields (15 hours)

Definition, examples and properties of rings, subrings, integral domains, fields, ideals and factor rings; Characteristic of a ring; Ring homomorphisms and properties.

Essential Reading

1. Gallian, Joseph. A. (2017). Contemporary Abstract Algebra (9th ed.). Cengage Learning India Private Limited, Delhi. Indian Reprint (2021).

Suggestive Reading

- Beachy, John A., & Blair, William D. (2006). Abstract Algebra (3rd ed.). Waveland Press.

B.Sc. (Prog.)/ BA (Prog.) Semester-IV with Mathematics as non-Major

Category-III

DISCIPLINE SPECIFIC CORE COURSE – 4 (Discipline A-4): ABSTRACT ALGEBRA

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Abstract Algebra	4	3	1	0	Class XII pass with Mathematics	NIL

Learning Objectives: The primary objective of the course is to introduce:

- Modular arithmetic, fundamental theory of groups, rings, integral domains, and fields.
- Symmetry group of a plane figure, and basic concepts of cyclic groups.
- Cosets of a group and its properties, Lagrange's theorem, and quotient groups.

Learning Outcomes: This course will enable the students to:

- Appreciate ample types of groups present around us which explains our surrounding better, and classify them as abelian, cyclic and permutation groups.
- Explain the significance of the notion of cosets, normal subgroups and homomorphisms.
- Understand the fundamental concepts of rings, subrings, fields, ideals, and factor rings.

SYLLABUS OF DISCIPLINE A-4

UNIT-I: Introduction to Groups (12 hours)

Modular arithmetic; Definition and examples of groups, Elementary properties of groups, Order of a group and order of an element of a group; Subgroups and its examples, Subgroup tests; Center of a group and centralizer of an element of a group.

UNIT-II: Cyclic Groups, Permutation Groups and Lagrange's Theorem (18 hours)

Cyclic groups and its properties, Generators of a cyclic group; Group of symmetries; Permutation groups, Cyclic decomposition of permutations and its properties, Even and odd permutations and the alternating group; Cosets and Lagrange's theorem; Definition and examples of normal subgroups, Quotient groups; Group homomorphisms and properties.

UNIT-III: Rings, Integral Domains and Fields (15 hours)

Definition, examples and properties of rings, subrings, integral domains, fields, ideals and factor rings; Characteristic of a ring; Ring homomorphisms and properties.

Essential Reading

1. Gallian, Joseph. A. (2017). Contemporary Abstract Algebra (9th ed.). Cengage Learning India Private Limited, Delhi. Indian Reprint (2021).

Suggestive Reading

- Beachy, John A., & Blair, William D. (2006). Abstract Algebra (3rd ed.). Waveland Press.

B.Sc. (Physical Sciences/Mathematical Sciences) Semester-IV with Mathematics as one of the Core Discipline

Category-III

DISCIPLINE SPECIFIC CORE COURSE – 4 (Discipline A-4): ABSTRACT ALGEBRA

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Abstract Algebra	4	3	1	0	Class XII pass with Mathematics	NIL

Learning Objectives: The primary objective of the course is to introduce:

- Modular arithmetic, fundamental theory of groups, rings, integral domains, and fields.
- Symmetry group of a plane figure, and basic concepts of cyclic groups.
- Cosets of a group and its properties, Lagrange's theorem, and quotient groups.

Learning Outcomes: This course will enable the students to:

- Appreciate ample types of groups present around us which explains our surrounding better, and classify them as abelian, cyclic and permutation groups.
- Explain the significance of the notion of cosets, normal subgroups and homomorphisms.
- Understand the fundamental concepts of rings, subrings, fields, ideals, and factor rings.

SYLLABUS OF DISCIPLINE A-4

UNIT-I: Introduction to Groups (12 hours)

Modular arithmetic; Definition and examples of groups, Elementary properties of groups, Order of a group and order of an element of a group; Subgroups and its examples, Subgroup tests; Center of a group and centralizer of an element of a group.

UNIT-II: Cyclic Groups, Permutation Groups and Lagrange's Theorem (18 hours)

Cyclic groups and its properties, Generators of a cyclic group; Group of symmetries; Permutation groups, Cyclic decomposition of permutations and its properties, Even and odd

permutations and the alternating group; Cosets and Lagrange's theorem; Definition and examples of normal subgroups, Quotient groups; Group homomorphisms and properties.

UNIT-III: Rings, Integral Domains and Fields (15 hours)

Definition, examples and properties of rings, subrings, integral domains, fields, ideals and factor rings; Characteristic of a ring; Ring homomorphisms and properties.

Essential Reading

1. Gallian, Joseph. A. (2017). Contemporary Abstract Algebra (9th ed.). Cengage Learning India Private Limited, Delhi. Indian Reprint (2021).

Suggestive Reading

- Beachy, John A., & Blair, William D. (2006). Abstract Algebra (3rd ed.). Waveland Press.

DSE Courses of B.Sc. (Physical Sciences/Mathematical Sciences) Semester-IV

Category-III

DISCIPLINE SPECIFIC ELECTIVE COURSE – 2(i): ELEMENTS OF DISCRETE MATHEMATICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Elements of Discrete Mathematics	4	3	1	0	Class XII pass with Mathematics	NIL

Learning Objectives: Students are introducing to:

- Order (or partial order) and related properties.
- Notion of a lattice which is also a step towards abstract algebra.
- Concept of Boolean algebra and its applications to minimizing a Boolean polynomial and switching circuits, which has further applications in computer science.

Learning Outcomes: This course will enable the students to:

- Understand the basic concepts of sets, relations, functions, and induction.
- Understand mathematical logic and logical operations to various fields.
- Understand the notion of order and maps between partially ordered sets.
- Minimize a Boolean polynomial and apply Boolean algebra techniques to decode switching circuits.

SYLLABUS OF DSE-2(i)

UNIT-I: Sets, Relations and Functions (18 hours)

Sets, Propositions and logical operations, Conditional statements, Mathematical induction, Relations and equivalence relation, Equivalence classes, Partial order relation, Partially ordered set, Hasse diagrams, Chain, Maximal and minimal elements, least and greatest elements, Least upper bound, Greatest lower bound, Zorn's lemma, Functions and bijective functions, Functions between POSETS, Order isomorphism.

UNIT-II: Lattices (12 hours)

Lattice as a POSET, Lattice as an algebra and their equivalence, Bounded lattices, Sublattices, Interval in a lattice, Products and homomorphism of lattices, Isomorphism of lattices; Distributive, Complemented, Partition and pentagonal lattices.

UNIT-III: Boolean Algebra and Switching Circuits (15 hours)

Boolean algebra, De Morgan's laws, Boolean expressions, Truth tables, Logic diagrams, Boolean functions, Disjunctive normal forms (as join of meets), Minimal forms of Boolean

polynomials, Quine Mc-Cluskey method, Karnaugh maps, Switching circuits, Applications of switching circuits.

Essential Readings

1. Rudolf Lidl, & Gunter Pilz (2004). Applied Abstract Algebra (2nd ed.). Undergraduate text in Mathematics, Springer (SIE), Indian Reprint.
2. Bernard Kolman, Robert C. Busby, & Sharon Cutler Ross (2009). Discrete Mathematical Structures (6th ed.). Pearson education Inc., Indian reprint.

Suggestive Reading

- Rosen, Kenneth H. (2017). Discrete Mathematics and its applications with combinatorics and Graph Theory (7th ed.). McGraw Hill Education.

DISCIPLINE SPECIFIC ELECTIVE COURSE-2(ii): INTRODUCTION TO GRAPH THEORY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Introduction to Graph Theory	4	3	1	0	Class XII pass with Mathematics	NIL

Learning Objectives: The primary objective of this course is to introduce:

- Problem-solving techniques using various concepts of graph theory.
- Various properties like planarity and chromaticity of graphs.
- Several applications of these concepts in solving practical problems.

Learning Outcomes: This course will enable the students to:

- Good familiarity with all initial notions of graph theory and related results and seeing them used for some real-life problems.
- Learning notion of trees and their enormous usefulness in various problems.
- Learning various algorithms and their applicability.
- Studying planar graphs, Euler theorem associated to such graphs and some useful applications like coloring of graphs.

SYLLABUS OF DSE-2(ii)

UNIT-I: Graphs, Types of Graphs and Basic Properties (12 hours)

Graphs and their representation, Pseudographs, Subgraphs, Degree sequence, Euler's theorem, Isomorphism of graphs, Paths and circuits, Connected graphs, Euler trails and

circuits, Hamiltonian paths and cycles, Adjacency matrix, Weighted graphs, Travelling salesman problem, Dijkstra's algorithm.

UNIT-II: Directed Graphs and Applications, Trees (18 hours)

The Chinese postman problem; Digraphs, Bellman-Ford algorithm, Tournaments, Directed network, Scheduling problem; Trees and their properties, Spanning trees, Kruskal's algorithm, Prim's algorithm, Acyclic digraphs and Bellman's algorithm.

UNIT-III: Planar Graphs, Graph Coloring and Network Flows (15 hours)

Planar graphs, Euler's formula, Kuratowski theorem, Graph coloring, Applications of graph coloring, Circuit testing and facilities design, Flows and cuts, Max flow-min cut theorem, Matchings, Hall's theorem.

Essential Reading

1. Goodaire, Edgar G., & Parmenter, Michael M. (2011). Discrete Mathematics with Graph Theory (3rd ed.). Pearson Education Pvt. Ltd. Indian Reprint.

Suggestive Readings

- Bondy, J. A. & Murty, U.S.R. (2008), Graph Theory with Applications. Springer.
- Chartrand, Gary, & Zhang, P. (2012). A First Course in Graph Theory. Dover Publications.
- Diestel, R. (1997). Graph Theory (Graduate Texts in Mathematics). Springer Verlag.
- West, Douglas B. (2001). Introduction to graph theory (2nd ed.). Pearson India.

DISCIPLINE SPECIFIC ELECTIVE COURSE-2(iii): LINEAR PROGRAMMING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Linear Programming	4	3	1	0	Class XII pass with Mathematics	NIL

Learning Objectives: The primary objective of this course is to introduce:

- The solution of linear programming problem using simplex method.
- The solution of transportation and assignment problems.
- Game theory which makes possible the analysis of the decision-making process of two interdependent subjects.

Learning Outcomes: This course will enable the students to:

- Learn about the simplex method used to find optimal solutions of linear optimization problems subject to certain constraints.
- Write the dual of a linear programming problem.

- Solve the transportation and assignment problems.
- Learn about solution of rectangular games using graphical method and dominance.
- Formulate game to a pair of associated prima-dual linear programming problems.

SYLLABUS OF DSE-2(iii)

UNIT-I: Linear Programming Problem, Simplex Method, and Duality (18 hours)

Standard form of the LPP, graphical method of solution, basic feasible solutions, and convexity; Introduction to the simplex method**:** Optimality criterion and unboundedness, Simplex tableau and examples, Artificial variables; Introduction to duality, Formulation of the dual problem with examples.

UNIT-II: Transportation and Assignment Problems (15 hours)

Definition of transportation problem, finding initial basic feasible solution using Northwest-corner method, Least-cost method, and Vogel approximation method; Algorithm for solving transportation problem; Hungarian method of solving assignment problem.

UNIT-III: Two-Person Zero-Sum Games (12 hours)

Introduction to game theory, rectangular games, Mixed strategies, Dominance principle; Formulation of game to primal and dual linear programming problems.

Essential Readings

1. Thie, Paul R., & Keough, G. E. (2014). An Introduction to Linear Programming and Game Theory. (3rd ed.). Wiley India Pvt. Ltd.
2. Taha, Hamdy A. (2017). Operations Research: An Introduction (10th ed.). Pearson.

Suggestive Readings

- Hadley, G. (1997). Linear Programming. Narosa Publishing House. New Delhi.
- Hillier, F. S., & Lieberman, G. J. (2021). Introduction to Operations Research (11th ed.). McGraw-Hill Education (India) Pvt. Ltd.

COMMON POOL OF GENERIC ELECTIVES (GE) Semester-IV COURSES OFFERED BY DEPARTMENT OF MATHEMATICS

Category-IV

GENERIC ELECTIVES (GE-4(i)): ELEMENTS OF REAL ANALYSIS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Elements of Real Analysis	4	3	1	0	Class XII pass with Mathematics	NIL

Learning Objectives: The primary objective of this course is to introduce:

- The real line with algebraic, order and completeness properties.
- Convergence and divergence of sequences and series of real numbers with applications.

Learning Outcomes: This course will enable the students to:

- Understand the basic properties of the set of real numbers, including completeness and Archimedean with some consequences.
- Recognize bounded, convergent, monotonic and Cauchy sequences
- Learn to apply various tests such as limit comparison, ratio, root, and alternating series tests for convergence and absolute convergence of infinite series of real numbers.

SYLLABUS OF GE-4(i)

UNIT-I: Basic Properties of the Set of Real Numbers (12 hours)

Field and order properties of $\mathbb{R}$, basic properties and inequalities of the absolute value of a real number, bounded above and bounded below sets, Suprema and infima, The completeness axiom and the Archimedean property of $\mathbb{R}$.

UNIT-II: Real Sequences (18 hours)

Convergence of a real sequence, Algebra of limits, The squeeze principle and applications, Monotone sequences, Monotone convergence theorem and applications, Cauchy sequences, Cauchy criterion for convergence and applications.

UNIT-III: Infinite Series of Real Numbers (15 hours)

Convergence and divergence of infinite series of real numbers, Necessary condition for convergence, Cauchy criterion for convergence of series, Tests for convergence of positive term series, Applications of the integral test, Comparison tests, D'Alembert's ratio test, Cauchy's *n*th root test, Raabe's test; Alternating series, Leibniz alternating series test, Absolute and conditional convergence.

Essential Reading

1. Denlinger, Charles G. (2011). Elements of Real Analysis. Jones & Bartlett India Pvt. Ltd. Student Edition. Reprinted 2015.

Suggestive Readings

- Bartle, Robert G., & Sherbert, Donald R. (2011). Introduction to Real Analysis (4th ed.). John Wiley & Sons. Wiley India Edition 2015.
- Bilodeau, Gerald G., Thie, Paul R., & Keough, G. E. (2010). An Introduction to Analysis (2nd ed.). Jones & Bartlett India Pvt. Ltd. Student Edition. Reprinted 2015.

GENERIC ELECTIVES (GE-4(ii)): LINEAR PROGRAMMING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Linear Programming	4	3	1	0	Class XII pass with Mathematics	NIL

Learning Objectives: The primary objective of this course is to introduce:

- The solution of linear programming problem using simplex method.
- The solution of transportation and assignment problems.
- Game theory which makes possible the analysis of the decision-making process of two interdependent subjects.

Learning Outcomes: This course will enable the students to:

- Learn about the simplex method used to find optimal solutions of linear optimization problems subject to certain constraints.
- Write the dual of a linear programming problem.
- Solve the transportation and assignment problems.
- Learn about solution of rectangular games using graphical method and dominance.
- Formulate game to a pair of associated prima-dual linear programming problems.

SYLLABUS OF GE-4(ii)

UNIT-I: Linear Programming Problem, Simplex Method, and Duality (18 hours)

Standard form of the LPP, graphical method of solution, basic feasible solutions, and convexity; Introduction to the simplex method: Optimality criterion and unboundedness, Simplex tableau and examples, Artificial variables; Introduction to duality, Formulation of the dual problem with examples.

UNIT-II: Transportation and Assignment Problems (15 hours)

Definition of transportation problem, finding initial basic feasible solution using Northwest-corner method, Least-cost method, and Vogel approximation method; Algorithm for solving transportation problem; Hungarian method of solving assignment problem.

UNIT-III: Two-Person Zero-Sum Games (12 hours)

Introduction to game theory, rectangular games, Mixed strategies, Dominance principle; Formulation of game to primal and dual linear programming problems.

Essential Readings

1. Thie, Paul R., & Keough, G. E. (2014). An Introduction to Linear Programming and Game Theory. (3rd ed.). Wiley India Pvt. Ltd.
2. Taha, Hamdy A. (2017). Operations Research: An Introduction (10th ed.). Pearson.

Suggestive Readings

- Hadley, G. (1997). Linear Programming. Narosa Publishing House. New Delhi.
- Hillier, F. S., & Lieberman, G. J. (2021). Introduction to Operations Research (11th ed.). McGraw-Hill Education (India) Pvt. Ltd.

DEPARTMENT OF MATHEMATICS

Category-I

B.Sc. (Hons.) Mathematics Semester-V

DISCIPLINE SPECIFIC CORE COURSE – 13: METRIC SPACES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Metric Spaces	4	3	1	0	Class XII pass with Mathematics	DSC-2: Real Analysis DSC-5: Calculus

Learning Objectives: The objective of the course is to introduce:

- The usual idea of distance into an abstract form on any set of objects, maintaining its inherent characteristics, and the resulting consequences.
- The two important topological properties, namely connectedness, and compactness of metric spaces with their characterizations.

Learning Outcomes: This course will enable the students to:

- Learn various natural and abstract formulations of distance on the sets of usual or unusual entities. Become aware one such formulations leading to metric spaces.
- Analyse how a theory advances from a particular frame to a general frame.
- Appreciate the mathematical understanding of various geometrical concepts, viz. balls or connected sets etc. in an abstract setting.
- Know about Banach fixed point theorem, whose far-reaching consequences have resulted into an independent branch of study in analysis, known as fixed point theory.

SYLLABUS OF DSC-13

UNIT – I: Topology of Metric Spaces (18 hours)

Definition, examples, sequences and Cauchy sequences, Complete metric space; Open and closed balls, Neighborhood, Open set, Interior of a set, Limit point of a set, Derived set, Closed set, Closure of a set, Diameter of a set, Cantor's theorem, Subspaces.

UNIT – II: Continuity and Uniform Continuity in Metric Spaces (15 hours)

Continuous mappings, Sequential criterion and other characterizations of continuity, Uniform continuity; Homeomorphism, Isometry and equivalent metrics, Contraction mapping, Banach fixed point theorem.

UNIT – III: Connectedness and Compactness (12 hours)

Connectedness, Connected subsets of $\mathbb{R}$, Connectedness and continuous mappings, Compactness and boundedness, Characterizations of compactness, Continuous functions on compact spaces.

Essential Reading

3. Shirali, Satish & Vasudeva, H. L. (2009). Metric Spaces. Springer. Indian Reprint 2019.

Suggestive Readings

- Kumaresan, S. (2014). Topology of Metric Spaces (2nd ed.). Narosa Publishing House. New Delhi.
- Rudin, Walter. Principles of mathematical Analysis (3rd ed.).
- Simmons, George F. (2004). Introduction to Topology and Modern Analysis. McGraw-Hill Education. New Delhi.

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

DISCIPLINE SPECIFIC CORE COURSE – 14: RING THEORY

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Ring Theory	4	3	1	0	Class XII pass with Mathematics	DSC-7: Group Theory

Learning Objectives: The primary objective of this course is to:

- Introduce the fundamental theory of rings, and their homomorphisms.
- Develop the basic concepts of polynomial rings and irreducibility tests for polynomials over the ring of integers, and rational numbers.
- Introduce polynomial analog of a prime number.
- Describe polynomial rings, principal ideal domains, Euclidean domains and unique factorization domains, and their relationships.

Learning Outcomes: This course will enable the students to:

- Learn about the fundamental concept of rings, integral domains, and fields.
- Know about ring homomorphisms and isomorphisms theorems of rings, and construct quotient fields for integral domains.
- Appreciate the significance of unique factorization in rings and integral domains.
- Apply several criteria for determining when polynomials with integer coefficients have rational roots or are irreducible over the field of rational numbers.

SYLLABUS OF DSC-14

UNIT – I: Introduction to Rings and Ideals (18 hours)

Definition and examples of rings, Properties of rings, Subrings, Integral domains and fields, Characteristic of a ring; Ideals, operations on ideals, ideal generated by a set and properties, Factor rings, Prime ideals and maximal ideals, Principal ideal domains.

UNIT – II: Ring Homomorphisms and Polynomial Rings (15 hours)

Definition, examples and properties of ring homomorphisms; First, second and third

isomorphism theorems for rings; The field of quotients; Polynomial rings over commutative rings, Division algorithm and consequences.

UNIT–III: Unique Factorization Domain and Divisibility in Integral Domains (12 hours)
Factorization of polynomials, Reducibility tests, Mod *p* Irreducibility test, Eisenstein's criterion, Unique factorization in $\mathbb{Z}[x]$; Divisibility in integral domains, Irreducibles, Primes, Unique factorization domains, Euclidean domains.

Essential Readings

1. Gallian, Joseph. A. (2017). Contemporary Abstract Algebra (9th ed.). Cengage Learning India Private Limited, Delhi. Indian Reprint 2021.
2. Dummit, David S. & Foote, Richard M. (2016). Abstract Algebra (3rd ed.). Student Edition. Wiley India.

Suggestive Readings

- Herstein, I. N. (2006). Topics in Algebra (2nd ed.). Wiley Student Edition. India.
- Hungerford, Thomas W. (2012). Abstract Algebra: An Introduction (3rd ed.). Cengage Learning.

DISCIPLINE SPECIFIC CORE COURSE – 15: PARTIAL DIFFERENTIAL EQUATIONS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Partial Differential Equations	4	3	0	1	Class XII pass with Mathematics	DSC-6: Ordinary Differential Equations

Learning Objectives: The main objective of this course is to introduce:

- Basic concepts of first and second order linear/nonlinear partial differential equations.
- Modeling of wave equation, heat equation, Burgers equation, traffic flow and their solutions.

Learning Outcomes: The course will enable the students to learn:

- The method of characteristics and reduction to canonical forms to solve first and second order linear/nonlinear partial differential equations.
- The macroscopic modeling of the traffic flow, where the focus will be on modeling the density of cars and their flow, rather than modeling individual cars and their velocity.
- The Cauchy problem and solutions of wave equations with initial boundary-value problems, and non-homogeneous boundary conditions.

SYLLABUS OF DSC-15

UNIT – I: First Order Partial Differential Equations (15 hours)
Basic concepts, classification, construction, and geometrical interpretation; Method of characteristics and general solutions, Cauchy problem for a first-order PDE, Canonical

forms of first-order linear equations; Method of separation of variables; Charpit's method for solving non-linear PDEs.

UNIT – II: Classification and Solutions of Second-Order Linear PDEs (12 hours)

Classification (hyperbolic, parabolic, and elliptic), reduction to canonical forms, and general solutions of second-order linear PDEs; Higher order linear partial differential equations with constant coefficients.

UNIT – III: Applications of Partial Differential Equations (18 hours)

Mathematical models: The vibrating string, vibrating membrane, conduction of heat in solids, the gravitational potential, conservation laws and the Burgers equation, Traffic flow; Cauchy problem and wave equations: Solutions of homogeneous wave equations with initial boundary-value problems, and non-homogeneous boundary conditions, Cauchy problem for non-homogeneous wave equations.

Essential Readings

1 Myint-U, Tyn & Debnath, Lokenath. (2007). Linear Partial Differential Equations for Scientists and Engineers (4th ed.). Birkhäuser. Indian Reprint.

2 Sneddon, Ian N. (2006). Elements of Partial Differential Equations, Dover Publications. Indian Reprint.

Suggestive Readings

- Abell, Martha & Braselton, J.P. (2004) Differential Equations with Mathematica, Elsevier, Academic Press, Third Edition.
- Stavroulakis, Ioannis P & Tersian, Stepan A. (2004). Partial Differential Equations: An Introduction with Mathematica and MAPLE (2nd ed.). World Scientific.

Practical (30 hours)- Practical / Lab work to be performed in a Computer Lab:

Modeling of the following similar problems using SageMath/Python/Mathematica/ MATLAB/Maple/Maxima/Scilab:

1. General solution of first and second order partial differential equations.
2. Solution and plotting of Cauchy problem for first order PDEs.
3. Plotting the characteristics for the first order partial differential equations.
4. Solution of vibrating string problem using D'Alembert formula with initial conditions.
5. Solution of heat equation $u_t = k\, u_{xx}$ with initial conditions.
6. Solution of one-dimensional wave equation with initial conditions:
   i. $u(x,0) = f(x),\ u_t(x,0) = g(x),\ x \in \mathbb{R}, t > 0$
   ii. $u(x,0) = f(x),\ u_t(x,0) = g(x),\ u(0,t) = 0,\ x \in \mathbb{R}, t > 0$
   iii. $u(x,0) = f(x),\ u_t(x,0) = g(x),\ u_x(0,t) = 0,\ x \in \mathbb{R}, t > 0$
7. Solution of traffic flow problem with given initial conditions, and plotting of the characteristic base curves and the traffic density function.

B.Sc. (Hons) Mathematics, Semester-V, DSE-Courses

DISCIPLINE SPECIFIC ELECTIVE COURSE – 3(i): MATHEMATICAL DATA SCIENCE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title &	Credits	Credit distribution of the course	Eligibility	Pre-requisite of

Code		Lecture	Tutorial	Practical/ Practice	criteria	the course (if any)
Mathematical Data Science	4	3	0	1	Class XII pass with Mathematics	Basic knowledge of R/Python DSC-3: Probability & Statistics

Learning Objectives: The main objective of this course is to:

- Introduce various types of data and their sources, along with steps involved in data science case-study, including problems with data and their rectification and creation methods.
- Cover dimensionality reduction techniques, clustering algorithms and classification methods.

Learning Outcomes: The course will enable the students to:

- Gain a comprehensive understanding of data science, its mathematical foundations including practical applications of regression, principal component analysis, singular value decomposition, clustering, support vector machines, and *k*-NN classifiers.
- Demonstrate data analysis and exploration, linear regression techniques such as simple, multiple explanatory variables, cross-validation and regularization using R/Python.
- Use real-world datasets to practice dimensionality reduction techniques such as PCA, SVD, and multidimensional scaling using R/Python.

SYLLABUS OF DSE-3(i)

UNIT-I: Principles of Data Science (12 hours)

Types of Data: nominal, ordinal, interval, and ratio; Steps involved in data science case-study: question, procurement, exploration, modeling, and presentation; Structured and unstructured data: streams, frames, series, survey results, scale and source of data – fixed, variable, high velocity, exact and implied/inferred; Overview of problems with data – dirty and missing data in tabular formats – CSV, data frames in R/Pandas, anomaly detection, assessing data quality, rectification and creation methods, data hygiene, meta-data for inline data-description-markups such as XML and JSON; Overview of other data-source formats – SQL, pdf, Yaml, HDF5, and Vaex.

Unit-II: Mathematical Foundations (15 hours)

Model driven data in R^n, Log-likelihoods and MLE, Chebyshev, and Chernoff-Hoeffding inequalities with examples, Importance sampling; Norms in Vector Spaces– Euclidean, and metric choices; Types of distances: Manhattan, Hamming, Mahalanobis, Cosine and angular distances, KL divergence; Distances applied to sets– Jaccard, and edit distances; Modeling text with distances; Linear Regression: Simple, multiple explanatory variables, polynomial, cross-validation, regularized, Lasso, and matching pursuit; Gradient descent.

Unit-III: Dimensionality Reduction, Clustering and Classification (18 hours)

Problem of dimensionality, Principal component analysis, Singular value decomposition (SVD), Best *k*-rank approximation of a matrix, Eigenvector and eigenvalues relation to SVD, Multidimensional scaling, Linear discriminant analysis; Clustering: Voronoi diagrams, Delaunay triangulation, Gonzalez's algorithm for *k*-center clustering, Lloyd's algorithm for *k*-means clustering, Mixture of Gaussians, Hierarchical clustering, Density-based clustering

and outliers, Mean shift clustering; Classification: Linear classifiers, Perceptron algorithm, Kernels, Support vector machines, and *k*-nearest neighbors (*k*-NN) classifiers.

Essential Readings

1. Mertz, David. (2021). Cleaning Data for Effective Data Science, Packt Publishing.
2. Ozdemir, Sinan. (2016). Principles of Data Science, Packt Publishing.
3. Phillips, Jeff M. (2021). Mathematical Foundations for Data Analysis, Springer. (https://mathfordata.github.io/).

Suggestive Readings

- Frank Emmert-Streib, et al. (2022). Mathematical Foundations of Data Science Using R. (2nd ed.). De Gruyter Oldenbourg.
- Wes McKinney. (2022). Python for Data Analysis (3rd ed.). O'Reilly.
- Wickham, Hadley, et al. (2023). R for Data Science (2nd ed.). O'Reilly.

Practical (30 hours)- Practical work to be performed in Computer Lab using R/Python:

1. To explore different types data (nominal, ordinal, interval, ratio) and identify their properties.
2. To deal with dirty and missing data, such as imputation, deletion, and data normalization.
3. Use the real-world datasets (https://data.gov.in/) to demonstrate the following:
   a) Data analysis and exploration, linear regression techniques such as simple, multiple explanatory variables, cross-validation, and regularization.
   b) Dimensionality reduction techniques such as principal component analysis, singular value decomposition (SVD), and multidimensional scaling.
   c) Clustering algorithms such as *k*-means, hierarchical, and density-based clustering and evaluate the quality of the clustering results.
   d) Classification methods such as linear classifiers, support vector machines (SVM), and *k*-nearest neighbors (*k*-NN).

DISCIPLINE SPECIFIC ELECTIVE COURSE – 3(ii): LINEAR PROGRAMMING AND APPLICATIONS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Linear Programming and Applications	4	3	1	0	Class XII pass with Mathematics	DSC-4: Linear Algebra

Learning Objectives: Primary objective of this course is to introduce:

- Simplex Method for linear programming problems.
- Dual linear programming problems.
- The applications of linear Programming to transportation, assignment, and game theory.

Learning Outcomes: The course will enable the students to:

- Learn about the basic feasible solutions of linear programming problems.
- Understand the theory of the simplex method to solve linear programming problems.
- Learn about the relationships between the primal and dual problems.
- Solve transportation and assignment problems.
- Understand two-person zero sum game, games with mixed strategies and formulation of game to primal and dual linear programing problems to solve using duality.

SYLLABUS OF DSE-3(ii)

UNIT– I: Introduction to Linear Programming (12 hours)

Linear programming problem: Standard, Canonical and matrix forms, Geometric solution; Convex and polyhedral sets, Hyperplanes, Extreme points; Basic solutions, Basic feasible solutions, Correspondence between basic feasible solutions and extreme points.

UNIT– II: Optimality and Duality Theory of Linear Programming Problem (18 hours)

Simplex method: Optimal solution, Termination criteria for optimal solution of the linear programming problem, Unique and alternate optimal solutions, Unboundedness; Simplex algorithm and its tableau format; Artificial variables, Two-phase method, Big-M method. Duality Theory: Motivation and formulation of dual problem, Primal-Dual relationships, Fundamental theorem of duality; Complementary slackness.

UNIT – III: Applications (15 hours)

Transportation Problem: Definition and formulation, Northwest-corner, Least- cost, and Vogel's approximation methods of finding initial basic feasible solutions; Algorithm for solving transportation problem.

Assignment Problem: Mathematical formulation and Hungarian method of solving.

Game Theory: Two-person zero sum game, Games with mixed strategies, Formulation of game to primal and dual linear programming problems, Solution of games using duality.

Essential Readings

1. Bazaraa, Mokhtar S., Jarvis, John J., & Sherali, Hanif D. (2010). Linear Programming and Network Flows (4th ed.). John Wiley and Sons. Indian Reprint.
2. Hillier, Frederick S. & Lieberman, Gerald J. (2021). Introduction to Operations Research (11th ed.). McGraw-Hill Education (India) Pvt. Ltd.
3. Taha, Hamdy A. (2017). Operations Research: An Introduction (10th ed.). Pearson.

Suggestive Readings

- Hadley, G. (1997). Linear Programming. Narosa Publishing House. New Delhi.
- Thie, Paul R., & Keough, G. E. (2008). An Introduction to Linear Programming and Game Theory. (3rd ed.). Wiley India Pvt. Ltd. Indian Reprint 2014.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 3(iii): MATHEMATICAL STATISTICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/		

				Practice		
Mathematical Statistics	**4**	**3**	**1**	**0**	**Class XII pass with Mathematics**	**DSC-3: Probability & Statistics DSC-11: Multivariate Calculus**

Learning Objectives: The main objective of this course is to introduce:

- The joint behavior of several random variables theoretically and through illustrative practical examples.
- The theory underlying modern statistics to give the student a solid grounding in (mathematical) statistics and the principles of statistical inference.
- The application of the theory to the statistical modeling of data from real applications, including model identification, estimation, and interpretation.
- The idea of Fisher information to find the minimum possible variance for an unbiased estimator, and to show that the MLE is asymptotically unbiased and normal.

Learning Outcomes: The course will enable the students to:

- Understand joint distributions of random variables including the bivariate normal distribution.
- Estimate model parameters from the statistical inference based on point estimation and hypothesis testing.
- Apply Rao-Blackwell theorem for improving an estimator, and Cramér-Rao inequality to find lower bound on the variance of unbiased estimators of a parameter.
- Understand the theory of linear regression models and contingency tables.

SYLLABUS OF DSE - 3(iii)

UNIT–I: Joint Probability Distributions (15 hours)

Joint probability mass function for two discrete random variables, Marginal probability mass function, Joint probability density function for two continuous random variables, Marginal probability density function, Independent random variables; Expected values, covariance, and correlation; Linear combination of random variables and their moment generating functions; Conditional distributions and conditional expectation, Laws of total expectation and variance; Bivariate normal distribution.

UNIT-II: Sampling Distributions and Point Estimation (15 hours)

Distribution of important statistics such as the sample totals, sample means, and sample proportions, Central limit theorem, Law of large numbers; Chi-squared, *t*, and *F* distributions; Distributions based on normal random samples; Concepts and criteria for point estimation, The methods of moments and maximum likelihood estimation (MLE); Assessing estimators: Accuracy and precision, Unbiased estimation, Consistency and sufficiency, The Neyman factorization theorem, Rao-Blackwell theorem, Fisher Information, The Cramér-Rao inequality, Efficiency,

UNIT-III: Confidence Intervals, Tests of Hypotheses and Linear Regression Analysis (15 hours)

Interval estimation and basic properties of confidence intervals, One-sample *t* confidence interval, Confidence intervals for a population proportion and population variance.
Statistical hypotheses and test procedures, One-sample tests about a population mean and a population proportion, *P*-values for tests; The simple linear regression model and its estimating parameters; Chi-squared goodness-of-fit tests, Two-way contingency tables.

Essential Reading

1. Devore, Jay L., Berk, Kenneth N. & Carlton Matthew A. (2021). Modern Mathematical Statistics with Applications. (3rd ed.). Springer.

Suggestive Readings

- Devore, Jay L. (2016). Probability and Statistics for Engineering and the Sciences. Ninth edition, Cengage Learning India Private Limited, Delhi. Fourth impression 2022.
- Hogg, Robert V., McKean, Joseph W., & Craig, Allen T. (2019). Introduction to Mathematical Statistics. Eighth edition, Pearson. Indian Reprint 2020.
- Mood, A.M., Graybill, F.A., & Boes, D.C. (1974). Introduction the Theory of Statistics (3rd ed.). Tata McGraw Hill Pub. Co. Ltd. Reprinted 2017.
- Wackerly, Dennis D., Mendenhall III, William & Scheaffer, Richard L. (2008). Mathematical Statistics with Applications. 7th edition, Cengage Learning.

B.A. (Prog.) Semester-V with Mathematics as Major

Category-II

DISCIPLINE SPECIFIC CORE COURSE (DSC-5): LINEAR PROGRAMMING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Linear Programming	4	3	1	0	Class XII pass with Mathematics	NIL

Learning Objectives: The primary objective of this course is to introduce:

- The solution of linear programming problem using simplex method.
- The solution of transportation and assignment problems.
- Game theory which makes possible the analysis of the decision-making process of two interdependent subjects.

Learning Outcomes: This course will enable the students to:

- Learn about the simplex method used to find optimal solutions of linear optimization problems subject to certain constraints.
- Write the dual of a linear programming problem.
- Solve the transportation and assignment problems.
- Learn about solution of rectangular games using graphical method and dominance.
- Formulate game to a pair of associated prima-dual linear programming problems.

SYLLABUS OF DSC-5

UNIT-I: Linear Programming Problem, Simplex Method, and Duality (18 hours)

Standard form of the LPP, graphical method of solution, basic feasible solutions, and convexity; Introduction to the simplex method**:** Optimality criterion and unboundedness, Simplex tableau and examples, Artificial variables; Introduction to duality, Formulation of the dual problem with examples.

UNIT-II: Transportation and Assignment Problems (15 hours)

Definition of transportation problem, finding initial basic feasible solution using Northwest-corner method, Least-cost method, and Vogel approximation method; Algorithm for solving transportation problem; Hungarian method of solving assignment problem.

UNIT-III: Two-Person Zero-Sum Games (12 hours)

Introduction to game theory, rectangular games, Mixed strategies, Dominance principle; Formulation of game to primal and dual linear programming problems.

Essential Readings

3. Thie, Paul R., & Keough, G. E. (2014). An Introduction to Linear Programming and Game Theory. (3rd ed.). Wiley India Pvt. Ltd.
4. Taha, Hamdy A. (2017). Operations Research: An Introduction (10th ed.). Pearson.

Suggestive Readings

- Hadley, G. (1997). Linear Programming. Narosa Publishing House. New Delhi.
- Hillier, F. S., & Lieberman, G. J. (2021). Introduction to Operations Research (11th ed.).McGraw-Hill Education (India) Pvt. Ltd.

DISCIPLINE SPECIFIC CORE COURSE – 5 (Discipline A-5): ELEMENTS OF REAL ANALYSIS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Elements of Real Analysis	4	3	1	0	Class XII pass with Mathematics	NIL

Learning Objectives: The primary objective of this course is to introduce:

- The real line with algebraic, order and completeness properties.
- Convergence and divergence of sequences and series of real numbers with applications.

Learning Outcomes: This course will enable the students to:

- Understand the basic properties of the set of real numbers, including completeness and Archimedean with some consequences.
- Recognize bounded, convergent, monotonic and Cauchy sequences
- Learn to apply various tests such as limit comparison, ratio, root, and alternating series tests for convergence and absolute convergence of infinite series of real numbers.

SYLLABUS OF DISCIPLINE A-5

UNIT-I: Basic Properties of the Set of Real Numbers (12 hours)

Field and order properties of $\mathbb{R}$, basic properties and inequalities of the absolute value of a real number, bounded above and bounded below sets, Suprema and infima, The completeness axiom and the Archimedean property of $\mathbb{R}$.

UNIT-II: Real Sequences (18 hours)

Convergence of a real sequence, Algebra of limits, The squeeze principle and applications, Monotone sequences, Monotone convergence theorem and applications, Cauchy sequences, Cauchy criterion for convergence and applications.

UNIT-III: Infinite Series of Real Numbers (15 hours)

Convergence and divergence of infinite series of real numbers, Necessary condition for convergence, Cauchy criterion for convergence of series, Tests for convergence of positive term series, Applications of the integral test, Comparison tests, D'Alembert's ratio test, Cauchy's *n*th root test, Raabe's test; Alternating series, Leibniz alternating series test, Absolute and conditional convergence.

Essential Reading

1. Denlinger, Charles G. (2011). Elements of Real Analysis. Jones & Bartlett India Pvt. Ltd. Student Edition. Reprinted 2015.

Suggestive Readings

- Bartle, Robert G., & Sherbert, Donald R. (2011). Introduction to Real Analysis (4th ed.). John Wiley & Sons. Wiley India Edition 2015.
- Bilodeau, Gerald G., Thie, Paul R., & Keough, G. E. (2010). An Introduction to Analysis (2nd ed.). Jones & Bartlett India Pvt. Ltd. Student Edition. Reprinted 2015.

DSE Courses of B.A. (Prog.) Semester-V
Category-II

DISCIPLINE SPECIFIC ELECTIVE COURSE – 1(i): COMBINATORICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Combinatorics	4	3	1	0	Class XII pass with Mathematics	NIL

Learning Objectives: The primary objective of this course is to:

- Introduce various techniques of permutations, combinations, and inclusion-exclusion.
- Learn basic models of generating functions and recurrence relations in their application to the theory of integer partitions.

Learning Outcomes: After completing the course, student will:

- Enhance the mathematical logical skills by learning different enumeration techniques.
- Be able to apply these techniques in solving problems in other areas of mathematics.
- Be trained to provide reasoning and arguments to justify conclusions.

SYLLABUS OF DSE-1(i)

UNIT – I: Basics of Combinatorics **(15 hours)**

Basic counting principles, Permutations and Combinations (with and without repetitions), Binomial coefficients, Multinomial coefficients, Counting subsets of size k; Set-partitions, The inclusion-exclusion principle and applications.

UNIT – II: Generating Functions and Recurrence Relations **(18 hours)**

Generating functions: Generating function models, Calculating coefficients of generating functions, Polynomial expansions, Binomial identity, Exponential generating functions. Recurrence relations: Recurrence relation models, Divide-and-conquer relations, Solution of linear recurrence relations, Solutions by generating functions.

UNIT – III: Partition **(12 hours)**

Partition theory of integers: Ordered partition, Unordered partition, Ferrers diagram, Conjugate of partition, Self-conjugate partition, Durfee square, Euler's pentagonal theorem.

Essential Readings

1. Sane, Sharad S. (2013). Combinatorial Techniques. Hindustan Book Agency (India).
2. Tucker, Alan (2012). Applied Combinatorics (6th ed.). John Wiley & Sons, Inc.

Suggestive Readings

- Brualdi, Richard A. (2009). Introductory Combinatorics (5th ed.). Pearson Education.
- Cameron, Peter J. (1994). Combinatorics: Topics, Techniques, Algorithms. Cambridge University Press.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 1(ii): ELEMENTS OF NUMBER THEORY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Elements of Number Theory	4	3	1	0	Class XII pass with Mathematics	NIL

Learning Objectives: The primary objective of this course is to introduce:

- The Euclidean algorithm and linear Diophantine equations, the Fundamental theorem of arithmetic and some of the open problems of number theory viz. the Goldbach conjecture.
- The modular arithmetic, linear congruence equations, system of linear congruence equations, arithmetic functions, and multiplicative functions, e.g., Euler's Phi-function.
- Introduction of the simple encryption and decryption techniques, and the numbers of specific forms viz. Mersenne numbers, Fermat numbers etc.

Learning Outcomes: This course will enable the students to:

- Get familiar with the basic number-theoretic techniques.
- Comprehend some of the open problems in number theory.
- Learn the properties and use of number-theoretic functions and special types of numbers.
- Acquire knowledge about public-key cryptosystems, particularly RSA.

SYLLABUS OF DSE-1(ii)

UNIT – I: Divisibility and Prime Numbers (12 hours)

Revisiting: The division algorithm, divisibility and the greatest common divisor. Euclid's lemma; The Euclidean algorithm, Linear Diophantine equations; The Fundamental theorem of Arithmetic, The sieve of Eratosthenes, Euclid theorem and the Goldbach conjecture; The Fibonacci sequence and its nature.

UNIT – II: Theory of Congruences and Number-Theoretic Functions (21 hours)

Congruence relation and its basic properties, Linear congruences and the Chinese remainder theorem, System of linear congruences in two variables; Fermat's little theorem and its generalization, Wilson's theorem and its converse; Number-theoretic functions for sum and the number of divisors of a positive integer, Multiplicative functions, The greatest integer function; Euler's Phi-function and its properties.

UNIT – III: Public Key Encryption and Numbers of Special Form (12 hours)

Basics of cryptography, Hill's cipher, Public-key cryptosystems and RSA encryption and decryption technique; Introduction to perfect numbers, Mersenne numbers and Fermat numbers.

Essential Reading

1. Burton, David M. (2011). Elementary Number Theory (7th ed.). McGraw-Hill Education Pvt. Ltd. Indian Reprint 2017.

Suggestive Readings

- Jones, G. A., & Jones, J. Mary. (2005). Elementary Number Theory. Springer Undergraduate Mathematics Series (SUMS). Indian Reprint.
- Robbins, Neville (2007). Beginning Number Theory (2nd ed.). Narosa Publishing House Pvt. Ltd. Delhi.
- Rosen, Kenneth H. (2011). Elementary Number Theory and its Applications (6th ed.). Pearson Education. Indian Reprint 2015.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 1(iii): MATHEMATICAL PYTHON

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Mathematical Python	4	3	0	1	Class XII pass with Mathematics	Basic knowledge of Python

Learning Objectives: The Learning Objectives of this course are as follows:

- To be able to model and solve mathematical problems using Python Programs.
- To experience utility of open-source resources for numerical and symbolic mathematical software systems.

Learning Outcomes: This course will enable the students to use Python:

- For numerical and symbolic computation in mathematical problems from calculus, algebra, and geometry.
- To tabulate and plot diverse graphs of functions and understand tracing of shapes, geometries, and fractals.
- To prepare smart documents with LaTeX interface.

SYLLABUS OF DSE - 1(iii)

Theory

UNIT – I: Drawing Shapes, Graphing and Visualization (15 hours)

Drawing diverse shapes using code and Turtle; Using matplotlib and NumPy for data organization, Structuring and plotting lines, bars, markers, contours and fields, managing subplots and axes; Pyplot and subplots, Animations of decay, Bayes update, Random walk.

UNIT – II: Numerical and Symbolic Solutions of Mathematical Problems (18 hours)

NumPy for scalars and linear algebra on *n*-dimensional arrays; Computing eigenspace, Solving dynamical systems on coupled ordinary differential equations, Functional programming fundamentals using NumPy; Symbolic computation and SymPy: Differentiation and integration of functions, Limits, Solution of ordinary differential equations, Computation of eigenvalues, Solution of expressions at multiple points (lambdify), Simplification of expressions, Factorization, Collecting and canceling terms, Partial fraction decomposition, Trigonometric simplification, Exponential and logarithms, Series expansion and finite differences, Solvers, Recursive equations.

UNIT – III: Document Generation with Python and LaTeX (12 hours)

Pretty printing using SymPy; Pandas API for IO tools: interfacing Python with text/csv, HTML, LaTeX, XML, MSExcel, OpenDocument, and other such formats; Pylatex and writing document files from Python with auto-computed values, Plots and visualizations.

Practical (30 hours): Software labs using IDE such as Spyder and Python Libraries.

- Installation, update, and maintenance of code, troubleshooting.
- Implementation of all methods learned in theory.
- Explore and explain API level integration and working of two problems with standard Python code.

Essential Readings

1. Farrell, Peter (2019). Math Adventures with Python. No Starch Press. ISBN Number: 978-1-59327-867-0.
2. Farrell, Peter and et al. (2020). The Statistics and Calculus with Python Workshop. Packet Publishing Ltd. ISBN: 978-1-80020-976-3.
3. Saha, Amit (2015). Doing Math with Python. No Starch Press. ISBN: 978-1-59327-640-9

Suggestive Readings

- Morley, Sam (2022). Applying Math with Python (2nd ed.). Packet Publishing Ltd. ISBN: 978-1-80461-837-0
- Online resources and documentation on the libraries, such as:
    - https://matplotlib.org
    - https://sympy.org
    - https://pandas.pydata.org
    - https://numpy.org
    - https://pypi.org
    - https://patrickwalls.github.io/mathematicalpython/

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.Sc. (Prog.)/ BA (Prog.) Semester-V with Mathematics as non-Major

Category-III

DISCIPLINE SPECIFIC CORE COURSE – 5 (Discipline A-5): ELEMENTS OF REAL ANALYSIS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Elements of Real Analysis	4	3	1	0	Class XII pass with Mathematics	NIL

Learning Objectives: The primary objective of this course is to introduce:

- The real line with algebraic, order and completeness properties.
- Convergence and divergence of sequences and series of real numbers with applications.

Learning Outcomes: This course will enable the students to:

- Understand the basic properties of the set of real numbers, including completeness and Archimedean with some consequences.
- Recognize bounded, convergent, monotonic and Cauchy sequences
- Learn to apply various tests such as limit comparison, ratio, root, and alternating series tests for convergence and absolute convergence of infinite series of real numbers.

SYLLABUS OF DISCIPLINE A-5

UNIT-I: Basic Properties of the Set of Real Numbers (12 hours)

Field and order properties of $\mathbb{R}$, basic properties and inequalities of the absolute value of a real number, bounded above and bounded below sets, Suprema and infima, The completeness axiom and the Archimedean property of $\mathbb{R}$.

UNIT-II: Real Sequences (18 hours)

Convergence of a real sequence, Algebra of limits, The squeeze principle and applications, Monotone sequences, Monotone convergence theorem and applications, Cauchy sequences, Cauchy criterion for convergence and applications.

UNIT-III: Infinite Series of Real Numbers (15 hours)

Convergence and divergence of infinite series of real numbers, Necessary condition for convergence, Cauchy criterion for convergence of series, Tests for convergence of positive term series, Applications of the integral test, Comparison tests, D'Alembert's ratio test, Cauchy's *n*th root test, Raabe's test; Alternating series, Leibniz alternating series test, Absolute and conditional convergence.

Essential Reading

1. Denlinger, Charles G. (2011). Elements of Real Analysis. Jones & Bartlett India Pvt. Ltd. Student Edition. Reprinted 2015.

Suggestive Readings

- Bartle, Robert G., & Sherbert, Donald R. (2011). Introduction to Real Analysis (4th ed.). John Wiley & Sons. Wiley India Edition 2015.
- Bilodeau, Gerald G., Thie, Paul R., & Keough, G. E. (2010). An Introduction to Analysis (2nd ed.). Jones & Bartlett India Pvt. Ltd. Student Edition. Reprinted 2015.

B.Sc. (Physical Sciences/Mathematical Sciences) Sem-V with Mathematics as one of the Core Discipline

Category-III

DISCIPLINE SPECIFIC CORE COURSE – 5 (Discipline A-5): ELEMENTS OF REAL ANALYSIS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Elements of Real Analysis	4	3	1	0	Class XII pass with Mathematics	NIL

Learning Objectives: The primary objective of this course is to introduce:

- The real line with algebraic, order and completeness properties.
- Convergence and divergence of sequences and series of real numbers with applications.

Learning Outcomes: This course will enable the students to:

- Understand the basic properties of the set of real numbers, including completeness and Archimedean with some consequences.
- Recognize bounded, convergent, monotonic and Cauchy sequences
- Learn to apply various tests such as limit comparison, ratio, root, and alternating series tests for convergence and absolute convergence of infinite series of real numbers.

SYLLABUS OF DISCIPLINE A-5

UNIT-I: Basic Properties of the Set of Real Numbers (12 hours)

Field and order properties of $\mathbb{R}$, basic properties and inequalities of the absolute value of a real number, bounded above and bounded below sets, Suprema and infima, The completeness axiom and the Archimedean property of $\mathbb{R}$.

UNIT-II: Real Sequences (18 hours)

Convergence of a real sequence, Algebra of limits, The squeeze principle and applications, Monotone sequences, Monotone convergence theorem and applications, Cauchy sequences, Cauchy criterion for convergence and applications.

UNIT-III: Infinite Series of Real Numbers (15 hours)

Convergence and divergence of infinite series of real numbers, Necessary condition for convergence, Cauchy criterion for convergence of series, Tests for convergence of positive term series, Applications of the integral test, Comparison tests, D'Alembert's ratio test, Cauchy's *n*th root test, Raabe's test; Alternating series, Leibniz alternating series test, Absolute and conditional convergence.

Essential Reading

1. Denlinger, Charles G. (2011). Elements of Real Analysis. Jones & Bartlett India Pvt. Ltd. Student Edition. Reprinted 2015.

Suggestive Readings

- Bartle, Robert G., & Sherbert, Donald R. (2011). Introduction to Real Analysis (4th ed.). John Wiley & Sons. Wiley India Edition 2015.
- Bilodeau, Gerald G., Thie, Paul R., & Keough, G. E. (2010). An Introduction to Analysis (2nd ed.). Jones & Bartlett India Pvt. Ltd. Student Edition. Reprinted 2015.

DSE Courses of B.Sc. (Physical Sciences/Mathematical Sciences) Semester-V

Category-III

DISCIPLINE SPECIFIC ELECTIVE COURSE – 3(i): BIOMATHEMATICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Biomathematics	4	3	1	0	Class XII pass with Mathematics	Discipline A-3: Differential Equations

Learning Objectives: The main objective of this course is to:

- Develop and analyse the models of the biological phenomenon with emphasis on population growth and predator-prey models.
- Interpret first-order autonomous systems of nonlinear differential equations using the Poincaré phase plane.
- Apply the basic concepts of probability to understand molecular evolution and genetics.

Learning Outcomes: The course will enable the students to:

- Get a better comprehension of mathematical models, utilised in biology.
- To identify and explain the findings from models of population studies, species' communication, adaptation, and dynamics of disorder.
- Create a basic model of molecular evolution by making use of probability and matrices.

SYLLABUS OF DSE-3(i)

UNIT – I: Mathematical Modeling for Biological Processes (15 hours)

Formulation a model through data, A continuous population growth model, Long-term behavior and equilibrium states, The Verhulst model for discrete population growth,

Administration of drugs, Differential equation of chemical process and predator-prey model (Function response: Types I, II and III).

UNIT – II: Epidemic Model: Formulation and Analysis (15 hours)

Introduction to infectious disease, The SIS, SIR and SEIR models of the spread of an epidemic, Analyzing equilibrium states, Phase plane analysis, Stability of equilibrium points, Classifying the equilibrium state; Local stability, Limit cycles, Poincaré-Bendixson theorem.

UNIT – III: Bifurcation, Chaos and Modeling Molecular Evolution (15 hours)

Bifurcation, Bifurcation of a limit cycle, Discrete bifurcation and period-doubling, Chaos, Stability of limit cycles, Introduction of the Poincaré plane; Modeling molecular evolution: Matrix models of base substitutions for DNA sequences, Jukes-Cantor and Kimura models, Phylogenetic distances.

Essential Readings

4. Robeva, Raina S., et al. (2008). An Invitation to Biomathematics. Academic press.
5. Jones, D. S., Plank, M. J., & Sleeman, B. D. (2009). Differential Equations and Mathematical Biology (2nd ed.). CRC Press, Taylor & Francis Group.
6. Allman, Elizabeth S., & Rhodes, John A. (2004). Mathematical Models in Biology: An Introduction. Cambridge University Press.

Suggestive Readings

- Linda J. S. Allen (2007). An Introduction to Mathematical Biology. Pearson Education.
- Murray, J. D. (2002). Mathematical Biology: An Introduction (3rd ed.). Springer.
- Shonkwiler, Ronald W., & Herod, James. (2009). Mathematical Biology: An Introduction with Maple and MATLAB (2nd ed.). Springer.

DISCIPLINE SPECIFIC ELECTIVE COURSE-3(ii): MATHEMATICAL PYTHON

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Mathematical Python	4	3	0	1	Class XII pass with Mathematics	Basic knowledge of Python

Learning Objectives: The Learning Objectives of this course are as follows:

- To be able to model and solve mathematical problems using Python Programs.
- To experience utility of open-source resources for numerical and symbolic mathematical software systems.

Learning Outcomes: This course will enable the students to use Python:

- For numerical and symbolic computation in mathematical problems from calculus, algebra, and geometry.
- To tabulate and plot diverse graphs of functions and understand tracing of shapes, geometries, and fractals.
- To prepare smart documents with LaTeX interface.

SYLLABUS OF DSE - 3(ii)

Theory

UNIT – I: Drawing Shapes, Graphing and Visualization (15 hours)

Drawing diverse shapes using code and Turtle; Using matplotlib and NumPy for data organization, Structuring and plotting lines, bars, markers, contours and fields, managing subplots and axes; Pyplot and subplots, Animations of decay, Bayes update, Random walk.

UNIT – II: Numerical and Symbolic Solutions of Mathematical Problems (18 hours)

NumPy for scalars and linear algebra on *n*-dimensional arrays; Computing eigenspace, Solving dynamical systems on coupled ordinary differential equations, Functional programming fundamentals using NumPy; Symbolic computation and SymPy: Differentiation and integration of functions, Limits, Solution of ordinary differential equations, Computation of eigenvalues, Solution of expressions at multiple points (lambdify), Simplification of expressions, Factorization, Collecting and canceling terms, Partial fraction decomposition, Trigonometric simplification, Exponential and logarithms, Series expansion and finite differences, Solvers, Recursive equations.

UNIT – III: Document Generation with Python and LaTeX (12 hours)

Pretty printing using SymPy; Pandas API for IO tools: interfacing Python with text/csv, HTML, LaTeX, XML, MSExcel, OpenDocument, and other such formats; Pylatex and writing document files from Python with auto-computed values, Plots and visualizations.

Practical (30 hours): Software labs using IDE such as Spyder and Python Libraries.

- Installation, update, and maintenance of code, troubleshooting.
- Implementation of all methods learned in theory.
- Explore and explain API level integration and working of two problems with standard Python code.

Essential Readings

1. Farrell, Peter (2019). Math Adventures with Python. No Starch Press. ISBN Number: 978-1-59327-867-0.
2. Farrell, Peter and et al. (2020). The Statistics and Calculus with Python Workshop. Packet Publishing Ltd. ISBN: 978-1-80020-976-3.
3. Saha, Amit (2015). Doing Math with Python. No Starch Press. ISBN: 978-1-59327-640-9

Suggestive Readings

- Morley, Sam (2022). Applying Math with Python (2nd ed.). Packet Publishing Ltd. ISBN: 978-1-80461-837-0
- Online resources and documentation on the libraries, such as:
  - https://matplotlib.org
  - https://sympy.org
  - https://pandas.pydata.org
  - https://numpy.org
  - https://pypi.org
  - https://patrickwalls.github.io/mathematicalpython/

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE-3(iii): MECHANICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Mechanics	4	3	1	0	Class XII pass with Mathematics	Discipline A-1: Topics in Calculus Discipline A-3: Differential Equations

Learning Objectives: The main objective of this course is to:

- Starting Newtonian laws, learning various technical notions which explains various states of motion under given forces.
- Deals with the kinematics and kinetics of the rectilinear and planar motions of a particle including constrained oscillatory motions of particles, projectiles, and planetary orbits.
- Understand hydrostatic pressure and thrust on plane surfaces.

Learning Outcomes: This course will enable the students to:

- Understand necessary conditions for the equilibrium of particles acted upon by various forces and learn the principle of virtual work for a system of coplanar forces.
- Apply the concepts of center of gravity, laws of static and kinetic friction.
- Learn that a particle moving under a central force describes a plane curve and know the Kepler's laws of the planetary motions.
- Evaluate the hydrostatic pressure at any given depth in a heavy homogeneous liquid at rest under gravity.

SYLLABUS OF DSE-3(iii)

UNIT – I: Statics (15 hours)

Fundamental laws of Newtonian mechanics, Law of parallelogram of forces, Equilibrium of a particle, Lamy's theorem, Equilibrium of a system of particles, External and internal forces, Couples, Reduction of a plane force system, Work, Principle of virtual work, Potential energy and conservative field, Mass centers, Centers of gravity, Friction.

UNIT – II: Dynamics (18 hours)

Kinemetics of a particle, Motion of a particle, Motion of a system, Principle of linear momentum, Motion of mass center, Principle of angular momentum, Motion relative to mass center, Principle of energy, D'Alembert's principle; Moving frames of reference, Frames of reference with uniform translational velocity, Frames of reference with constant angular velocity; Applications in plane dynamics- Motion of a projectile, Harmonic oscillators, General motion under central forces, Planetary orbits.

UNIT – III: Hydrostatics (12 hours)

Shearing stress, Pressure, Perfect fluid, Pressure at a point in a fluid, Transmissibility of liquid pressure, Compression, Specific gravity, Pressure of heavy fluid- Pressure at all points in a horizontal plane, Surface of equal density; Thrust on plane surfaces.

Essential Readings

3. Synge, J. L., & Griffith, B. A. (2017). Principles of Mechanics (3rd ed.). McGraw-Hill Education. Indian Reprint.
4. Ramsey, A. S. (2017). Hydrostatics. Cambridge University Press. Indian Reprint.

Suggestive Readings

- Roberts, A. P. (2003). Statics and Dynamics with Background Mathematics. Cambridge University Press.
- Ramsey, A. S. (1985). Statics (2nd ed.). Cambridge University Press.

COMMON POOL OF GENERIC ELECTIVES (GE) Semester-V COURSES OFFERED BY DEPARTMENT OF MATHEMATICS

Category-IV

GENERIC ELECTIVES (GE-5(i)): NUMERICAL METHODS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Numerical Methods	4	3	0	1	Class XII pass with Mathematics	NIL

Learning Objectives: The core purpose of the course is to:

- Acquaint students with various topics in numerical solutions of nonlinear equations in one variable, interpolation and approximation, numerical differentiation and integration, direct methods for solving linear systems, numerical solution of ordinary differential equations using Computer Algebra System (CAS).

Learning Outcomes: The course will enable the students to:

- Find the consequences of finite precision and the inherent limits of numerical methods.
- Appropriate numerical methods to solve algebraic and transcendental equations.
- Solve first order initial value problems of ODE's numerically using Euler methods.

SYLLABUS OF GE-5(i)

UNIT-I: Errors and Roots of Transcendental and Polynomial Equations (12 hours)

Errors: Roundoff error, Local truncation error, Global truncation error; Order of a method, Convergence, and terminal conditions; Bisection method, Secant method, Regula−Falsi method, Newton−Raphson method.

UNIT-II: Algebraic Linear Systems and Interpolation (18 hours)

Gaussian elimination method (with row pivoting); Iterative methods: Jacobi method, Gauss−Seidel method; Interpolation: Lagrange form, Newton form, Finite difference operators.

UNIT-III: Numerical Differentiation, Integration and ODE (15 hours)

First and second order numerical derivatives; Trapezoidal rule, Simpson's rule for numerical integration; Ordinary differential equation: Euler's, and Runge-Kutta method.

Essential Readings

1. Chapra, Steven C. (2018). Applied Numerical Methods with MATLAB for Engineers and Scientists (4th ed.). McGraw-Hill Education.
2. Fausett, Laurene V. (2009). Applied Numerical Analysis Using MATLAB. Pearson. India.
3. Jain, M. K., Iyengar, S. R. K., & Jain R. K. (2012). Numerical Methods for Scientific and Engineering Computation (6th ed.). New Age International Publishers. Delhi.

Suggestive Reading

- Bradie, Brian (2006). A Friendly Introduction to Numerical Analysis. Pearson Education India. Dorling Kindersley (India) Pvt. Ltd. Third Impression, 2011.

Note: Non programmable scientific calculator may be allowed in the University examination.

Practical (30 hours): Practical/Lab work to be performed in Computer Lab: Use of computer algebra software (CAS), for example Python/SageMath/Mathematica/MATLAB/ Maple/ Maxima/Scilab etc., for developing the following numerical programs:

1. Bisection method
2. Secant method and Regula−Falsi method
3. Newton-Raphson method
4. Gauss−Jacobi method and Gauss−Seidel method
5. Lagrange interpolation and Newton interpolation
6. Trapezoidal rule and Simpson's rule
7. Euler's, and Runge-Kutta methods for solving first order initial-value problems of ordinary differential equations.

GENERIC ELECTIVES (GE-5(ii)): MATHEMATICAL PYTHON

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Mathematical Python	4	3	0	1	Class XII pass with Mathematics	Basic knowledge of python

Learning Objectives: The Learning Objectives of this course are as follows:

- To be able to model and solve mathematical problems using Python Programs.
- To experience utility of open-source resources for numerical and symbolic mathematical software systems.

Learning Outcomes: This course will enable the students to use Python:

- For numerical and symbolic computation in mathematical problems from calculus, algebra, and geometry.
- To tabulate and plot diverse graphs of functions and understand tracing of shapes, geometries, and fractals.
- To prepare smart documents with LaTeX interface.

SYLLABUS OF GE-5(ii)

Theory

UNIT – I: Drawing Shapes, Graphing and Visualization (15 hours)

Drawing diverse shapes using code and Turtle; Using matplotlib and NumPy for data organization, Structuring and plotting lines, bars, markers, contours and fields, managing subplots and axes; Pyplot and subplots, Animations of decay, Bayes update, Random walk.

UNIT – II: Numerical and Symbolic Solutions of Mathematical Problems (18 hours)

NumPy for scalars and linear algebra on *n*-dimensional arrays; Computing eigenspace, Solving dynamical systems on coupled ordinary differential equations, Functional programming fundamentals using NumPy; Symbolic computation and SymPy: Differentiation and integration of functions, Limits, Solution of ordinary differential equations, Computation of eigenvalues, Solution of expressions at multiple points (lambdify), Simplification of expressions, Factorization, Collecting and canceling terms, Partial fraction decomposition, Trigonometric simplification, Exponential and logarithms, Series expansion and finite differences, Solvers, Recursive equations.

UNIT – III: Document Generation with Python and LaTeX (12 hours)

Pretty printing using SymPy; Pandas API for IO tools: interfacing Python with text/csv, HTML, LaTeX, XML, MSExcel, OpenDocument, and other such formats; Pylatex and writing document files from Python with auto-computed values, Plots and visualizations.

Practical (30 hours): Software labs using IDE such as Spyder and Python Libraries.

- Installation, update, and maintenance of code, troubleshooting.
- Implementation of all methods learned in theory.
- Explore and explain API level integration and working of two problems with standard Python code.

Essential Readings

1. Farrell, Peter (2019). Math Adventures with Python. No Starch Press. ISBN Number: 978-1-59327-867-0.
2. Farrell, Peter and et al. (2020). The Statistics and Calculus with Python Workshop. Packet Publishing Ltd. ISBN: 978-1-80020-976-3.
3. Saha, Amit (2015). Doing Math with Python. No Starch Press. ISBN: 978-1-59327-640-9

Suggestive Readings

- Morley, Sam (2022). Applying Math with Python (2nd ed.). Packet Publishing Ltd. ISBN: 978-1-80461-837-0
- Online resources and documentation on the libraries, such as:
    - https://matplotlib.org
    - https://sympy.org
    - https://pandas.pydata.org
    - https://numpy.org
    - https://pypi.org
    - https://patrickwalls.github.io/mathematicalpython/

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF MATHEMATICS

Category-I

B.Sc. (Hons.) Mathematics, Semester-VI

DISCIPLINE SPECIFIC CORE COURSE – 16: ADVANCED GROUP THEORY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Advanced Group Theory	4	3	1	0	Class XII pass with Mathematics	DSC-7: Group Theory

Learning Objectives: The objective of the course is to introduce:

- The concept of group actions.
- Sylow's Theorem and its applications to groups of various orders.
- Composition series and Jordan-Hölder theorem.

Learning Outcomes: This course will enable the students to:

- Understand the concept of group actions and their applications.
- Understand finite groups using Sylow's theorem.
- Use Sylow's theorem to determine whether a group is simple or not.
- Understand and determine if a group is solvable or not.

SYLLABUS OF DSC-16

UNIT – I: Group Actions **(18 hours)**

Definition and examples of group actions, Permutation representations; Centralizers and Normalizers, Stabilizers and kernels of group actions; Groups acting on themselves by left multiplication and conjugation with consequences; Cayley's theorem, Conjugacy classes, Class equation, Conjugacy in S_n, Simplicity of A_5.

UNIT – II: Sylow Theorems and Applications **(15 hours)**

p-groups, Sylow p-subgroups, Sylow's theorem, Applications of Sylow's theorem, Groups of order pq and p^2q (p and q both prime); Finite simple groups, Nonsimplicity tests.

UNIT – III: Solvable Groups and Composition Series **(12 hours)**

Solvable groups and their properties, Commutator subgroups, Nilpotent groups, Composition series, Jordan-Hölder theorem.

Essential Readings

1. Dummit, David S., & Foote, Richard M. (2004). Abstract Algebra (3rd ed.). John Wiley & Sons. Student Edition, Wiley India 2016.
2. Gallian, Joseph. A. (2017). Contemporary Abstract Algebra (9th ed.). Cengage Learning India Private Limited, Delhi. Indian Reprint 2021.
3. Beachy, John A., & Blair, William D. (2019). Abstract Algebra (4th ed.). Waveland Press.

Suggestive Readings

- Fraleigh, John B., & Brand Neal E. (2021). A First Course in Abstract Algebra (8th ed.). Pearson.
- Herstein, I. N. (1975). Topics in Algebra (2nd ed.). Wiley India. Reprint 2022.
- Rotman, Joseph J. (1995). An Introduction to the Theory of Groups (4th ed.). Springer.

DISCIPLINE SPECIFIC CORE COURSE – 17: ADVANCED LINEAR ALGEBRA

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Advanced Linear Algebra	4	3	1	0	Class XII pass with Mathematics	DSC-4: Linear Algebra

Learning Objectives: The objective of the course is to introduce:

- Linear functionals, dual basis and the dual (or transpose) of a linear transformation.
- Diagonalization problem and Jordan canonical form for linear operators or matrices using eigenvalues.
- Inner product, norm, Cauchy-Schwarz inequality, and orthogonality on real or complex vector spaces.
- The adjoint of a linear operator with application to least squares approximation and minimal solutions to linear system.
- Characterization of self-adjoint (or normal) operators on real (or complex) spaces in terms of orthonormal bases of eigenvectors and their corresponding eigenvalues.

Learning Outcomes: This course will enable the students to:

- Understand the notion of an inner product space in a general setting and how the notion of inner products can be used to define orthogonal vectors, including to the Gram-Schmidt process to generate an orthonormal set of vectors.
- Use eigenvectors and eigenspaces to determine the diagonalizability of a linear operator.
- Find the Jordan canonical form of matrices when they are not diagonalizable.

- Learn about normal, self-adjoint, and unitary operators and their properties, including the spectral decomposition of a linear operator.
- Find the singular value decomposition of a matrix.

SYLLABUS OF DSC-17

UNIT-I: Dual Spaces, Diagonalizable Operators and Canonical Forms (18 hours)

The change of coordinate matrix; Dual spaces, Double dual, Dual basis, Transpose of a linear transformation and its matrix in the dual basis, Annihilators; Eigenvalues, eigenvectors, eigenspaces and the characteristic polynomial of a linear operator; Diagonalizability, Direct sum of subspaces, Invariant subspaces and the Cayley-Hamilton theorem; The Jordan canonical form and the minimal polynomial of a linear operator.

UNIT-II: Inner Product Spaces and the Adjoint of a Linear Operator (12 hours)

Inner products and norms, Orthonormal basis, Gram-Schmidt orthogonalization process, Orthogonal complements, Bessel's inequality; Adjoint of a linear operator with applications to least squares approximation and minimal solutions to systems of linear equations.

UNIT-III: Class of Operators and Their Properties (15 hours)

Normal, self-adjoint, unitary and orthogonal operators and their properties; Orthogonal projections and the spectral theorem; Singular value decomposition for matrices.

Essential Reading

1. Friedberg, Stephen H., Insel, Arnold J., & Spence, Lawrence E. (2019). Linear Algebra (5th ed.). Pearson Education India Reprint.

Suggestive Readings

- Hoffman, Kenneth, & Kunze, Ray Alden (1978). Linear Algebra (2nd ed.). Prentice Hall of India Pvt. Limited. Delhi. Pearson Education India Reprint, 2015.
- Lang, Serge (1987). Linear Algebra (3rd ed.). Springer.

DISCIPLINE SPECIFIC CORE COURSE – 18: COMPLEX ANALYSIS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Complex Analysis	4	3	0	1	Class XII pass with Mathematics	DSC-2 & 11: Real Analysis, Multivariate Calculus

Learning Objectives: The main objective of this course is to:

- Acquaint with the basic ideas of complex analysis.
- Learn complex-valued functions with visualization through relevant practicals.

- Emphasize on Cauchy's theorems, series expansions and calculation of residues.

Learning Outcomes: The accomplishment of the course will enable the students to:

- Grasp the significance of differentiability of complex-valued functions leading to the understanding of Cauchy-Riemann equations.
- Study some elementary functions and evaluate the contour integrals.
- Learn the role of Cauchy-Goursat theorem and the Cauchy integral formula.
- Expand some simple functions as their Taylor and Laurent series, classify the nature of singularities, find residues, and apply Cauchy Residue theorem to evaluate integrals.

SYLLABUS OF DSC-18

UNIT – I: Analytic and Elementary Functions (15 hours)

Functions of a complex variable and mappings, Limits, Theorems on limits, Limits involving the point at infinity, Continuity and differentiation, Cauchy-Riemann equations and examples, Sufficient conditions for differentiability, Analytic functions and their examples; Exponential, logarithmic, and trigonometric functions.

UNIT – II: Complex Integration (15 hours)

Derivatives of functions, Definite integrals of functions; Contours, Contour integrals and examples, Upper bounds for moduli of contour integrals; Antiderivatives; Cauchy-Goursat theorem; Cauchy integral formula and its extension with consequences; Liouville's theorem and the fundamental theorem of algebra.

UNIT – III: Series and Residues (15 hours)

Taylor and Laurent series with examples; Absolute and uniform convergence of power series, Integration, differentiation and uniqueness of power series; Isolated singular points, Residues, Cauchy's residue theorem, Residue at infinity; Types of isolated singular points, Residues at poles and its examples, An application to evaluate definite integrals involving sines and cosines.

Essential Reading

1. Brown, James Ward, & Churchill, Ruel V. (2014). Complex Variables and Applications (9th ed.). McGraw-Hill Education. Indian Reprint.

Suggestive Readings

- Bak, Joseph & Newman, Donald J. (2010). Complex Analysis (3rd ed.). Undergraduate Texts in Mathematics, Springer.
- Mathews, John H., & Howell, Rusell W. (2012). Complex Analysis for Mathematics and Engineering (6th ed.). Jones & Bartlett Learning. Narosa, Delhi. Indian Edition.
- Zills, Dennis G., & Shanahan, Patrick D. (2003). A First Course in Complex Analysis with Applications. Jones & Bartlett Publishers.

Practical (30 hours)- Practical / Lab work to be performed in Computer Lab:

Modeling of the following similar problems using SageMath/Python/Mathematica/Maple/ MATLAB/Maxima/ Scilab etc.

1. Make a geometric plot to show that the *n*th roots of unity are equally spaced points that lie on the unit circle $C_1(0) = \{z : |z| = 1\}$ and form the vertices of a regular polygon with *n* sides, for *n* = 4, 5, 6, 7, 8.
2. Find all the solutions of the equation $z^3 = 8i$ and represent these geometrically.
3. Write parametric equations and make a parametric plot for an ellipse centered at the origin with horizontal major axis of 4 units and vertical minor axis of 2 units.
   Show the effect of rotation of this ellipse by an angle of $\frac{\pi}{6}$ radians and shifting of the centre from (0,0) to (2,1), by making a parametric plot.
4. Show that the image of the open disk $D_1(-1-i) = \{z : |z+1+i| < 1\}$ under the linear transformation $w = f(z) = (3 - 4i)\, z + 6 + 2i$ is the open disk:
   $$D_5(-1 + 3i) = \{w: |w + 1 - 3i| < 5\}.$$
5. Show that the image of the right half-plane Re $z = x > 1$ under the linear transformation $w = (-1 + i)z - 2 + 3i$ is the half-plane $v > u + 7$, where $u = \text{Re}(w)$, etc. Plot the map.
6. Show that the image of the right half-plane A = {z: Re $z \geq \frac{1}{2}$} under the mapping $w = f(z) = \frac{1}{z}$ is the closed disk $\overline{D_1(1)} = \{w: |w - 1| \leq 1\}$ in the w- plane.
7. Make a plot of the vertical lines $x = a$, for $a = -1, -\frac{1}{2}, \frac{1}{2}, 1$ and the horizontal lines $y = b$, for $b = -1, -\frac{1}{2}, \frac{1}{2}, 1$. Find the plot of this grid under the mapping $f(z) = \frac{1}{z}$.
8. Find a parametrization of the polygonal path $C = C_1 + C_2 + C_3$ from $-1 + i$ to $3 - i$, where C_1 is the line from: $-1 + i$ to -1, C_2 is the line from: -1 to $1 + i$ and C_3 is the line from $1 + i$ to $3 - i$. Make a plot of this path.
9. Plot the line segment '*L*' joining the point $A = 0$ to $B = 2 + \frac{\pi}{4} i$ and give an exact calculation of $\int_L e^z dz$.
10. Evaluate $\int_C \frac{1}{z-2} dz$, where *C* is the upper semicircle with radius 1 centered at $z = 2$ oriented in a positive direction.
11. Show that $\int_{C_1} z dz = \int_{C_2} z dz = 4 + 2i$, where C_1 is the line segment from $-1 - i$ to $3 + i$ and C_2 is the portion of the parabola $x = y^2 + 2y$ joining $-1 - i$ to $3 + i$.
    Make plots of two contours C_1 and C_2 joining $-1 - i$ to $3 + i$.
12. Use the ML inequality to show that $\left|\int_C \frac{1}{z^2+1} dz\right| \leq \frac{1}{2\sqrt{5}}$, where *C* is the straight-line segment from 2 to $2 + i$. While solving, represent the distance from the point z to the points i and $-i$, respectively, i.e., $|z - i|$ and $|z + i|$ on the complex plane $\mathbb{C}$.
13. Find and plot three different Laurent series representations for the function:
    $f(z) = \frac{3}{2+z-z^2}$, involving powers of z.
14. Locate the poles of $f(z) = \frac{1}{5z^4+26z^2+5}$ and specify their order.
15. Locate the zeros and poles of $g(z) = \frac{\pi \cot(\pi z)}{z^2}$ and determine their order. Also justify that Res (g, 0) = $-\pi^2/3$.

16. Evaluate $\int_{C_1^+(0)} \exp\left(\frac{2}{z}\right) dz$, where $C_1^+(0)$ denotes the circle $\{z: |z| = 1\}$ with positive orientation. Similarly evaluate $\int_{C_1^+(0)} \frac{1}{z^4+z^3-2z^2} dz$.

B.Sc. (Hons) Mathematics, Semester-VI, DSE-Courses

DISCIPLINE SPECIFIC ELECTIVE COURSE – 4(i): MATHEMATICAL FINANCE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Mathematical Finance	4	3	0	1	Class XII pass with Mathematics	DSC-3, 11, & 15: Probability and Statistics, Multivariate Calculus, & PDE's

Learning Objectives: The main objective of this course is to:

- Introduce the application of mathematics in the financial world.
- Understand some computational and quantitative techniques required for working in the financial markets and actuarial sciences.

Learning Outcomes: The course will enable the students to:

- Know the basics of financial markets and derivatives including options and futures.
- Learn about pricing and hedging of options.
- Learn the Itô's formula and the Black–Scholes model.
- Understand the concepts of trading strategies.

SYLLABUS OF DSE-4(i)

Unit - I: Interest Rates, Bonds and Derivatives (15 hours)

Interest rates, Types of rates, Measuring interest rates, Zero rates, Bond pricing, Forward rates, Duration, Convexity, Exchange-traded markets and Over-the-counter markets, Derivatives, Forward contracts, Futures contracts, Options, Types of traders, Hedging, Speculation, Arbitrage, No Arbitrage principle, Short selling, Forward price for an investment asset.

Unit - II: Properties of Options and the Binomial Model (15 hours)

Types of options, Option positions, Underlying assets, Factors affecting option prices, Bounds for option prices, Put-call parity (in case of non-dividend paying stock only), Early exercise, Trading strategies involving options (except box spreads, calendar spreads and diagonal spreads), Binomial option pricing model, Risk-neutral valuation (for European and American options on assets following binomial tree model).

Unit - III: The Black-Scholes Model and Hedging Parameters (15 hours)

Brownian motion (Wiener Process), Geometric Brownian Motion (GBM), The process for a stock price, Itô's lemma, Lognormal property of stock prices, Distribution of the rate of return, Expected return, Volatility, Estimating volatility from historical data, Derivation of the Black-Scholes-Merton differential equation, Extension of risk-neutral valuation to assets following GBM (without proof), Black–Scholes formulae for European options, Hedging parameters - The Greek letters: Delta, Gamma, Theta, Rho and Vega; Delta hedging, Gamma hedging.

Essential Readings

1. Hull, John C., & Basu, S. (2022). Options, Futures and Other Derivatives (11th ed.). Pearson Education, India.
2. Benninga, S. & Mofkadi, T. (2021). Financial Modeling, (5th ed.). MIT Press, Cambridge, Massachusetts, London, England.

Suggestive Readings

- Luenberger, David G. (2013). Investment Science (2nd ed.). Oxford University Press.
- Ross, Sheldon M. (2011). An elementary Introduction to Mathematical Finance (3rd ed.). Cambridge University Press.
- Day, A.L. (2015). Mastering Financial Mathematics in Microsoft Excel: A Practical Guide for Business Calculations (3rd ed.). Pearson Education Ltd.

Note: Use of non-programmable scientific calculator is allowed in theory examination.

Practical (30 hours)- Practical/Lab work using Excel/R/Python/MATLAB/MATHEMATICA

1. Computing simple, nominal, and effective rates. Conversion and comparison.
2. Computing price and yield of a bond.
3. Comparing spot and forward rates.
4. Computing bond duration and convexity.
5. Trading strategies involving options.
6. Simulating a binomial price path.
7. Computing price of European call and put options when the underlying follows binomial model (using Monte Carlo simulation).
8. Estimating volatility from historical data of stock prices.
9. Simulating lognormal price path.
10. Computing price of European call and put options when the underlying follows lognormal model (using Monte Carlo simulation).

11. Implementing the Black-Scholes formulae.
12. Computing Greeks for European call and put options.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 4(ii): INTEGRAL TRANSFORMS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Integral Transforms	4	3	1	0	Class XII pass with Mathematics	DSC-6,15: ODE's, PDE's DSC-8, 10: Riemann Integration, Sequences & Series of Functions

Learning Objectives: Primary objective of this course is to introduce:

- The basic idea of integral transforms of functions and their applications through an introduction to Fourier series expansion of a periodic function.
- Fourier transform and Laplace transform of functions of a real variable with applications to solve ODE's and PDE's.

Learning Outcomes: The course will enable the students to:

- Understand the Fourier series associated with a periodic function, its convergence, and the Gibbs phenomenon.
- Compute Fourier and Laplace transforms of classes of functions.
- Apply techniques of Fourier and Laplace transforms to solve ordinary and partial differential equations and initial and boundary value problems.

SYLLABUS OF DSE-4(ii)

UNIT-I: Fourier Series and Integrals (18 hours)

Piecewise continuous functions and periodic functions, Systems of orthogonal functions, Fourier series: Convergence, examples and applications of Fourier series, Fourier cosine series and Fourier sine series, The Gibbs phenomenon, Complex Fourier series, Fourier series on an arbitrary interval, The Riemann-Lebesgue lemma, Pointwise convergence, uniform convergence, differentiation, and integration of Fourier series; Fourier integrals.

UNIT-II: Integral Transform Methods (15 hours)

Fourier transforms, Properties of Fourier transforms, Convolution theorem of the Fourier transform, Fourier transforms of step and impulse functions, Fourier sine and cosine

transforms, Convolution properties of Fourier transform; Laplace transforms, Properties of Laplace transforms, Convolution theorem and properties of the Laplace transform, Laplace transforms of the heaviside and Dirac delta functions.

UNIT-III: Applications of Integral Transforms (12 hours)

Finite Fourier transforms and applications, Applications of Fourier transform to ordinary and partial differential equations; Applications of Laplace transform to ordinary differential equations, partial differential equations, initial and boundary value problems.

Essential Readings

1. Tyn Myint-U & Lokenath Debnath (2007). Linear Partial Differential Equations for Scientists and Engineers (4th ed.). Birkhauser. Indian Reprint.
2. Lokenath Debnath & Dambaru Bhatta (2015). Integral Transforms and Their Applications (3rd ed.). CRC Press Taylor & Francis Group.

Suggestive Readings

- Baidyanath Patra (2018). An Introduction to Integral Transforms. CRC Press.
- Joel L. Schiff (1999). The Laplace Transform-Theory and Applications. Springer.
- Rajendra Bhatia (2003). Fourier Series (2nd ed.). Texts and Readings in Mathematics, Hindustan Book Agency, Delhi.
- Yitzhak Katznelson (2004). An Introduction to Harmonic Analysis (3rd ed.). Cambridge University Press.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 4(iii): RESEARCH METHODOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Research Methodology	4	3	0	1	Class XII pass with Mathematics	NIL

Learning Objectives: The main objective of this course is to:

- Prepare the students with skills needed for successful research in mathematics.
- Develop a basic understanding of how to pursue research in mathematics.
- Prepare students for professions other than teaching, that requires independent mathematical research, critical analysis, and advanced mathematical knowledge.
- Introduce some open source softwares to carry out mathematical research.
- Impart the knowledge of journals, their rankings and the disadvantages of rankings.

Learning Outcomes: The course will enable the students to:

- Develop researchable questions and to make them inquisitive enough to search and verify new mathematical facts.
- Understand the methods in research and carry out independent study in areas of mathematics.
- Write a basic mathematical article and a research project.
- Gain knowledge about publication of research articles in good journals.
- Communicate mathematical ideas both in oral and written forms effectively.

SYLLABUS OF DSE - 4(iii)

UNIT– I: How to Learn, Write, and Research Mathematics (17 hours)

How to learn mathematics, How to write mathematics: Goals of mathematical writing, general principles of mathematical writing, avoiding errors, writing mathematical solutions and proofs, the revision process, What is mathematical research, finding a research topic, Literature survey, Research Criteria, Format of a research article (including examples of mathematical articles) and a research project (report), publishing research.

UNIT- II: Mathematical Typesetting and Presentation using LaTeX (16 hours)

How to present mathematics: Preparing a mathematical talk, Oral presentation, Use of technology which includes LaTeX, PSTricks and Beamer; Poster presentation.

UNIT- III: Mathematical Web Resources and Research Ethics (12 hours)

Web resources- MAA, AMS, SIAM, arXiv, ResearchGate; Journal metrics: Impact factor of journal as per JCR, MCQ, SNIP, SJR, Google Scholar metric; Challenges of journal metrics; Reviews/Databases: MathSciNet, zbMath, Web of Science, Scopus; Ethics with respect to science and research, Plagiarism check using software like URKUND/Ouriginal by Turnitin.

Essential Readings

1. Bindner, Donald, & Erickson Martin (2011). A Student's Guide to the Study, Practice, and Tools of Modern Mathematics. CRC Press, Taylor & Francis Group.
2. Committee on Publication Ethics- COPE (https://publicationethics.org/)
3. Declaration on Research Assessment. https://en.wikipedia.org/wiki/San_Francisco_Declaration_on_Research_Assessment
4. Evaluating Journals using journal metrics; (https://academicguides.waldenu.edu/library/journalmetrics#s-lg-box-13497874)
5. Gallian, Joseph A. (2006). Advice on Giving a Good PowerPoint Presentation (https://www.d.umn.edu/~jgallian/goodPPtalk.pdf). MATH HORIZONS.
6. Lamport, Leslie (2008). LaTeX, a Document Preparation System, Pearson.
7. Locharoenrat, Kitsakorn (2017). Research Methodologies for Beginners, Pan Stanford Publishing Pte. Ltd., Singapore.
8. Nicholas J. Higham. Handbook for writing for the Mathematical Sciences, SIAM, 1998.
9. Steenrod, Norman E., Halmos, Paul R., Schiffer, M. M., & Dieudonné, Jean A. (1973). How to Write Mathematics, American Mathematical Society.

10. Tantau, Till,Wright, Joseph, & Miletić, Vedran (2023). The BEAMER class, Use Guide for Version 3.69. TeX User Group. (https://tug.ctan.org/macros/latex/contrib/beamer/doc/beameruserguide.pdf)
11. University Grants Commission (Promotion of Academic Integrity and Prevention of Plagiarism in Higher Educational Institutions) Regulations 2018 (The Gazette of India: Extraordinary, Part-iii-Sec.4)

Practical (30 hours): Practical work to be performed in the computer lab of the following using any TeX distribution software:

1. Starting LaTeX, Preparing an input file, Sequences and paragraphs, Quotation marks, Dashes, Space after a period, Special symbols, Simple text- generating commands, Emphasizing text, Preventing line breaks, Footnotes, ignorable input.
2. The document, The document class, The title page, Sectioning, Displayed material, Quotations, Lists, Displayed formulas, Declarations.
3. Running LaTeX, Changing the type style, Accents, Symbols, Subscripts and superscripts, Fractions, Roots, Ellipsis.
4. Mathematical Symbols, Greek letters, Calligraphic letters, Log-like functions, Arrays, The array environment, Vertical alignment, Delimiters, Multiline formulas.
5. Putting one thing above another, Over and underlining, Accents, Stacking symbols, Spacing in math mode, Changing style in math mode, Type style, Math style.
6. Defining commands, Defining environments, Theorems.
7. Figure and tables, Marginal notes, The tabbing environment, The tabular environment.
8. The Table and contents, Cross-references, Bibliography and citation.
9. Beamer: Templates, Frames, Title page frame, Blocks, Simple overlays, Themes.
10. PSTricks
11. Demonstration of web resources.

B.A. (Prog.) Semester-VI with Mathematics as Major
Category-II

DISCIPLINE SPECIFIC CORE COURSE (DSC-6): ELEMENTARY MATHEMATICAL ANALYSIS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Elementary Mathematical Analysis	4	3	1	0	Class XII pass with Mathematics	Discipline A-5: Elements of Real Analysis

Learning Objectives: The primary objective of this course is to introduce:

- Sequential criterion for limits and continuity of real-valued functions.
- Riemann integral of real-valued function f on $[a, b]$ using Darboux sums.
- Pointwise and uniform convergence of sequences and series of functions.

Learning Outcomes: This course will enable the students to:

- Apply sequential continuity criterion for the proof of intermediate value theorem.
- Understand the basic tool used to calculate integrals.
- Apply uniform convergence for term-by-term integration in power series expansion.

SYLLABUS OF DSC-6

UNIT-I: Continuous Functions **(12 hours)**

Sequential criterion for limits and continuity of functions, Continuity on intervals, Intermediate value theorem and applications; Uniform continuity.

UNIT-II: The Riemann Integral **(15 hours)**

Riemann integration, criterion for integrability and examples; Integrability of continuous and monotone functions, Algebraic properties of the Riemann integral, Fundamental theorem of calculus (first form).

UNIT-III: Uniform Convergence **(18 hours)**

Sequences and series of functions: Pointwise and uniform convergence, Uniform Cauchy criterion, Weierstrass M-test, Implications of uniform convergence in calculus; Power series, Radius and interval of convergence, Applications of Abel's theorem for power series.

Essential Reading

1. Denlinger, Charles G. (2011). Elements of Real Analysis. Jones & Bartlett India Pvt. Ltd. Student Edition. Reprinted 2015.

Suggestive Readings

- Bartle, Robert G., & Sherbert, Donald R. (2011). Introduction to Real Analysis (4th ed.). John Wiley & Sons. Wiley India Edition 2015.
- Ross, Kenneth A. (2013). Elementary Analysis: The Theory of Calculus (2nd ed.). Undergraduate Texts in Mathematics, Springer. Indian Reprint.

DISCIPLINE SPECIFIC CORE COURSE – 6 (Discipline A-6): PROBABILITY AND STATISTICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Probability and Statistics	4	3	0	1	Class XII pass with Mathematics	NIL

Learning Objectives: The primary objective of this course is to:

- Make the students familiar with the basic statistical concepts and tools which are needed to study situations involving uncertainty or randomness.
- Render the students to several examples and exercises that blend their everyday experiences with their scientific interests to form the basis of data science.

Learning Outcomes: This course will enable the students to:

- Understand some basic concepts and terminology-population, sample, descriptive and inferential statistics including stem-and-leaf plots, dotplots, histograms and boxplots.
- Learn about probability density functions and various univariate distributions such as binomial, hypergeometric, negative binomial, Poisson, normal, exponential, and lognormal.
- Understand the remarkable fact that the empirical frequencies of so many natural populations, exhibit bell-shaped (i.e., normal) curves, using the Central Limit Theorem.
- Measure the scale of association between two variables, and to establish a formulation helping to predict one variable in terms of the other, i.e., correlation and linear regression.

SYLLABUS OF DISCIPLINE A-6

UNIT-I: Descriptive Statistics, Probability, and Discrete Probability Distributions (15 hours)

Descriptive statistics: Populations, Samples, Stem-and-leaf displays, Dotplots, Histograms, Qualitative data, Measures of location, Measures of variability, Boxplots; Sample spaces

and events, Probability axioms and properties, Conditional probability, Bayes' theorem, and independent events; Discrete random variables & probability distributions, Expected values; Probability distributions: Binomial, geometric, hypergeometric, negative binomial, Poisson, and Poisson distribution as a limit.

UNIT-II: Continuous Probability Distributions **(15 hours)**

Continuous random variables, Probability density functions, Uniform distribution, Cumulative distribution functions and expected values, The normal, exponential, and lognormal distributions.

UNIT-III: Central Limit Theorem and Regression Analysis **(15 hours)**

Sampling distribution and standard error of the sample mean, Central Limit Theorem, and applications; Scatterplot of bivariate data, Regression line using principle of least squares, Estimation using the regression lines; Sample correlation coefficient and properties.

Practical (30 hours): Software labs using Microsoft Excel or any other spreadsheet.

1) Presentation and analysis of data (univariate and bivariate) by frequency tables, descriptive statistics, stem-and-leaf plots, dotplots, histograms, boxplots, comparative boxplots, and probability plots ([1] Section 4.6).
2) Fitting of binomial, Poisson, and normal distributions.
3) Illustrating the Central Limit Theorem through Excel.
4) Fitting of regression line using the principle of least squares.
5) Computation of sample correlation coefficient.

Essential Reading

1. Devore, Jay L. (2016). Probability and Statistics for Engineering and the Sciences (9th ed.). Cengage Learning India Private Limited. Delhi. Indian Reprint 2022.

Suggestive Reading

- Mood, A. M., Graybill, F. A., & Boes, D. C. (1974). Introduction to the Theory of Statistics (3rd ed.). Tata McGraw-Hill Pub. Co. Ltd. Reprinted 2017.

DSE Courses of B.A. (Prog.) Semester-VI

Category-II

DISCIPLINE SPECIFIC ELECTIVE COURSE – 2(i): DISCRETE DYNAMICAL SYSTEMS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		

Discrete Dynamical Systems	**4**	**3**	**0**	**1**	**Class XII pass with Mathematics**	**NIL**

Learning Objectives: The primary objective of this course is to introduce:

- The fundamental concepts of discrete dynamical systems and emphasis on its study through several applications.
- The concepts of the fixed points, chaos and Lyapunov exponents for linear and nonlinear equations have been explained through examples.
- Various applications of chaos in higher dimensional models.

Learning Outcomes: This course will enable the students to:

- Understand the basic concepts of difference equation, chaos and Lyapunov exponents.
- Obtain fixed points and discuss the stability of the dynamical system.
- Find Lyapunov exponents, Bifurcation, and Period-doubling for nonlinear equations.
- Analyze the behavior of different realistic systems with chaos cascade.

SYLLABUS OF DSE-2(i)

UNIT-I: Discrete-time Models (12 hours)

Dynamical systems concepts and examples; Some linear models: Bouncing ball, investment growth, population growth, financial, economic and linear price models; Nonlinear models: Density-dependent population, contagious-disease, economic and nonlinear price models; Some linear systems models: Prey-predator, competing species, overlapping-generations, and economic systems.

UNIT-II: Linear Equations, Systems, their Solutions and Dynamics (18 hours)

Autonomous, non-autonomous linear equations and their solutions, time series graphs; Homogenous, non-homogeneous equations and their solutions with applications; Dynamics of autonomous linear equations, fixed points, stability, and oscillation; Homogeneous, non-homogeneous linear systems and their dynamics, solution space graphs, fixed points, sinks, sources and saddles.

UNIT-III: Nonlinear Equations, their Dynamics and Chaos (15 hours)

Autonomous nonlinear equations and their dynamics: Exact solutions, fixed points, stability; Cobweb graphs and dynamics: Linearization; Periodic points and cycles: 2-cycles, m-cycles, and their stability; Parameterized families; Bifurcation of fixed points and period-doubling; Characterizations and indicators of chaos.

Practical (30 hours)- Use of Excel/SageMath/MATHEMATICA/MATLAB/Scilab Software:

1. If Rs. 200 is deposited every 2 weeks into an account paying 6.5% annual interest compounded bi-weekly with an initial zero balance:
   (a) How long will it take before Rs. 10,000/- is in account?
   (b) During this time how much is deposited and how much comes from interest?

(c) Create a time series graph for the bi-weekly account balances for the first 40 weeks of saving scenario.

[1] Computer Project 2.5 pp. 68

2. (a) How much can be borrowed at an annual interest rate of 6% paid quarterly for 5 years in order to have the payments equal Rs. 1000/- every 3 months.
   (b) What is the unpaid balance on this loan after 4 years.
   (c) Create a time series graph for the unpaid balances each quarter for the loan process.
   [1] Computer Project 2.5 pp. 68
3. Four distinct types of dynamics for any autonomous linear equation:
   $x_{n+1} = a\, x_n + b$ for different values of a and b.
   [1] Dynamics of autonomous linear equation, pp. 74
4. Find all fixed points and determine their stability by generating at least the first 100 iterates for various choices of initial values and observing the dynamics
   a. $I_{n+1} = I_n - r\, I_n + s\, I_n\,(1 - I_n\, 10^{-6})$
      for: (i) $r = 0.5, s = 0.25$, (ii) $r = 0.5, s = 1.75$, (iii) $r = 0.5, s = 2.0$.
   b. $P_{n+1} = \frac{1}{P_n} + 0.75\, P_n + c$
      for: $(i)\ c = 0$; $(ii)\ c = -1$; $(iii)\ c = -1.25$; $(iv)\ c = -1.38$.
   c. $x_{n+1} = a\, x_n\,(1 - x_n^2)$
      for: $(i)\ a = 0.5$; $(ii)\ a = 1.5$; $(iii)\ a = 2.25$; $(iv)\ a = 2.3$.

   [1] Computer Project 3.2 pp. 110
5. Determine numerically whether a stable cycle exists for the given parameter values, and if so, its period. Perform at least 200 iterations each time and if a cycle is found (approximately), use the product of derivatives to verify its stability.
   a. $P_{n+1} = r\, P_n\, \left(1 - \frac{P_n}{5000}\right)$, for: $(i)\ r = 3.4$; $(ii)\ r = 3.5$;
      $(iii)\ r = 3.566$; $(iv)\ r = 3.569$; $(v)\ r = 3.845$.
   b. $P_{n+1} = r\, P_n\, e^{-P_n/1000}$
      for: $(i)\ r = 5$; $(ii)\ r = 10$; $(iii)\ r = 14$; $(iv)\ r = 14.5$; $(v)\ r = 14.75$.

   [1] Computer Project 3.5 pp. 154
6. Find through numerical experimentation the approximate intervals of stability of the (a) 2-cycle; (b) 4-cycle; (c) 8-cycle; (d) 16-cycle; (e) 32-cycle for the following
   a. $f_r(x) = r\, x\, e^{-x}$
   b. $f_r(x) = r\, x^2\,(1 - x)$
   c. $f_a(x) = x\,(a - x^2)$
   d. $f_c(x) = \frac{2}{x} + 0.75\, x - c$

   [1] Computer Project 3.6 pp. 164
7. Through numerical simulation, show that each of the following functions undergoes a period doubling cascade: (**[1] Computer Project 3.7 pp.175**)
   a. $f_r(x) = r\, x\, e^{-x}$
   b. $f_r(x) = r\, x^2\,(1 - x)$
   c. $f_r(x) = r\, x\, e^{-x^2}$
   d. $f_r(x) = \frac{r\, x}{(x^2+1)^2}$
   e. $f_a(x) = x\,(a - x^2)$

8. Discuss (a) Pick two initial points close together, i.e., that perhaps differ by 0.001 or 0.00001, and perform at least 100 iterations of $x_{n+1} = f(x_n)$. Do solutions exhibit sensitive dependence on initial conditions?
   (b) For several random choices of x_0 compute at least 1000 iterates x_n and draw a frequency distribution using at least 50 sub-intervals. Do dense orbits appear to exit?
   (c) Estimate the Lyapunov exponent L by picking several random choices of x_0 and computing $\frac{1}{N}\sum_{n=1}^{N} \ln|f'(x_n)|$ for $N = 1000, 2500, 5000, etc.$
   Does L appear to be positive? i). $f(x) = 2 - x^2$ ii). $f(x) = \frac{2}{x} + \frac{3x}{4} - 2.$
   [1] Computer Project 3.8 pp. 187
9. Show that $f(x) = r\,x\,(1-x)$ for $r > 4$ and $f(x) = 6.75\,x^2\,(1-x)$ have horseshoes and homoclinic orbits, and hence chaos. **[1] Computer Project 3.8 pp. 188**
10. Find the fixed point and determine whether it is a sink, source or saddle by iterating and graphing in solution space the first few iterates for several choices of initial conditions. **[1] Computer Project 4.2 pp. 207**
    a. $x_{n+1} = x_n - y_n + 30$
       $y_{n+1} = x_n + y_n - 20.$
    b. $x_{n+1} = x_n + y_n$
       $y_{n+1} = x_n - y_n.$

Essential Reading

1. Marotto, Frederick R. (2006). Introduction to Mathematical Modeling Using Discrete Dynamical Systems. Thomson, Brooks/Cole.

Suggestive Readings

- Devaney, Robert L. (2022). An Introduction to Chaotic Dynamical Systems (3rd ed.). CRC Press, Taylor & Francis Group, LLC.
- Lynch, Stephen (2017). Dynamical Systems with Applications using Mathematica® (2nd ed.). Birkhäuser.
- Martelli, Mario (1999). Introduction to Discrete Dynamical Systems and Chaos. John Wiley & Sons, Inc., New York.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 2(ii): INTRODUCTION TO MATHEMATICAL MODELING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		

Introduction to Mathematical Modeling	**4**	**3**	**0**	**1**	**Class XII pass with Mathematics**	**Discipline A-3: Differential Equations**

Learning Objectives: The main objective of this course is to introduce:

- Compartmental models and real-life case studies through differential equations, their applications and mathematical modeling.
- Choosing the most appropriate model from competing types that have been fitted.
- Fitting a selected model type or types to the data and making predictions from the collected data.

Learning Outcomes: The course will enable the students to:

- Learn basics of differential equations and compartmental models.
- Formulate differential equations for various mathematical models.
- Construct normal equation of best fit and predict the future values.

SYLLABUS OF DSE-2(ii)

UNIT-I: Compartmental Models (15 hours)

Compartmental diagram and balance law; Exponential decay, radioactive dating, and lake pollution models; Case study: Lake Burley Griffin; Drug assimilation into the blood; Case study: Dull, dizzy or dead; Exponential growth, Density-dependent growth, Equilibrium solutions and stability of logistic equation, Limited growth with harvesting.

UNIT-II: Interacting Population Models and Phase-plane Analysis (15 hours)

SIR model for influenza, Predator-prey model, Ecosystem model of competing species, and model of a battle.

UNIT-III: Analytic methods of model fitting and Simulation (15 hours)

Fitting models to data graphically; Chebyshev approximation criterion, Least-square criterion: Straight line, parabolic, power curve; Transformed least-square fit, Choosing a best model. Monte Carlo simulation modeling**:** Simulating deterministic behavior (area under a curve, volume under a surface); Generating random numbers: middle-square method, linear congruence; Simulating probabilistic behavior.

Essential Readings

1. Barnes, Belinda & Fulford, Glenn R. (2015). Mathematical Modelling with Case Studies, Using Maple and MATLAB (3rd ed.). CRC Press, Taylor & Francis Group.
2. Giordano, Frank R., Fox, William P., & Horton, Steven B. (2014). A First Course in Mathematical Modeling (5th ed.). CENGAGE Learning India.

Suggestive Readings

- Albright, Brian, & Fox, William P. (2020). Mathematical Modeling with Excel (2nd ed.). CRC Press, Taylor & Francis Group.

- Edwards, C. Henry, Penney, David E., & Calvis, David T. (2015). Differential Equations and Boundary Value Problems: Computing and Modeling (5th ed.). Pearson.

Practical (30 hours)- Practical / Lab work to be performed in Computer Lab:

Modeling of the following problems using Mathematica/MATLAB/Maple/Maxima/Scilab etc.

1. Plotting the solution and describe the physical interpretation of the Mathematical Models mentioned below:
   a. Exponential decay and growth model.
   b. Lake pollution model (with constant/seasonal flow and pollution concentration).
   c. Case of single cold pill and a course of cold pills.
   d. Limited growth of population (with and without harvesting).
   e. Predatory-prey model (basic volterra model, with density dependence, effect of DDT, two prey one predator).
   f. Epidemic model of influenza (basic epidemic model, contagious for life, disease with carriers).
   g. Ecosystem model of competing species
   h. Battle model

2. Random number generation and then use it to simulate area under a curve and volume under a surface.
3. Write a computer program that finds the least-squares estimates of the coefficients in the following models.
   a. $y = a\,x^2 + b\,x + c$
   b. $y = a\,x^n$

4. Write a computer program that uses Equations (3.4) in [3] and the appropriate transformed data to estimate the parameters of the following models.
   a. $y = b\,x^n$
   b. $y = b\,e^{a\,x}$
   c. $y = a \ln x + b$
   d. $y = a\,x^2$
   e. $y = a\,x^3$.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 2(iii): RESEARCH METHODOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/		

				Practice		
Research Methodology	**4**	**3**	**0**	**1**	**Class XII pass with Mathematics**	**NIL**

Learning Objectives: The main objective of this course is to:

- Prepare the students with skills needed for successful research in mathematics.
- Develop a basic understanding of how to pursue research in mathematics.
- Prepare students for professions other than teaching, that requires independent mathematical research, critical analysis, and advanced mathematical knowledge.
- Introduce some open source softwares to carry out mathematical research.
- Impart the knowledge of journals, their rankings and the disadvantages of rankings.

Learning Outcomes: The course will enable the students to:

- Develop researchable questions and to make them inquisitive enough to search and verify new mathematical facts.
- Understand the methods in research and carry out independent study in areas of mathematics.
- Write a basic mathematical article and a research project.
- Gain knowledge about publication of research articles in good journals.
- Communicate mathematical ideas both in oral and written forms effectively.

SYLLABUS OF DSE - 2(iii)

UNIT– I: How to Learn, Write, and Research Mathematics (17 hours)

How to learn mathematics, How to write mathematics: Goals of mathematical writing, general principles of mathematical writing, avoiding errors, writing mathematical solutions and proofs, the revision process, What is mathematical research, finding a research topic, Literature survey, Research Criteria, Format of a research article (including examples of mathematical articles) and a research project (report), publishing research.

UNIT- II: Mathematical Typesetting and Presentation using LaTeX (16 hours)

How to present mathematics: Preparing a mathematical talk, Oral presentation, Use of technology which includes LaTeX, PSTricks and Beamer; Poster presentation.

UNIT- III: Mathematical Web Resources and Research Ethics (12 hours)

Web resources- MAA, AMS, SIAM, arXiv, ResearchGate; Journal metrics: Impact factor of journal as per JCR, MCQ, SNIP, SJR, Google Scholar metric; Challenges of journal metrics; Reviews/Databases: MathSciNet, zbMath, Web of Science, Scopus; Ethics with respect to science and research, Plagiarism check using software like URKUND/Ouriginal by Turnitin.

Essential Readings

1. Bindner, Donald, & Erickson Martin (2011). A Student's Guide to the Study, Practice, and Tools of Modern Mathematics. CRC Press, Taylor & Francis Group.
2. Committee on Publication Ethics- COPE (https://publicationethics.org/)
3. Declaration on Research Assessment. https://en.wikipedia.org/wiki/San_Francisco_Declaration_on_Research_Assessment
4. Evaluating Journals using journal metrics; (https://academicguides.waldenu.edu/library/journalmetrics#s-lg-box-13497874)
5. Gallian, Joseph A. (2006). Advice on Giving a Good PowerPoint Presentation (https://www.d.umn.edu/~jgallian/goodPPtalk.pdf). MATH HORIZONS.
6. Lamport, Leslie (2008). LaTeX, a Document Preparation System, Pearson.
7. Locharoenrat, Kitsakorn (2017). Research Methodologies for Beginners, Pan Stanford Publishing Pte. Ltd., Singapore.
8. Nicholas J. Higham. Handbook for writing for the Mathematical Sciences, SIAM, 1998.
9. Steenrod, Norman E., Halmos, Paul R., Schiffer, M. M., & Dieudonné, Jean A. (1973). How to Write Mathematics, American Mathematical Society.
10. Tantau, Till,Wright, Joseph, & Miletić, Vedran (2023). The BEAMER class, Use Guide for Version 3.69. TeX User Group. (https://tug.ctan.org/macros/latex/contrib/beamer/doc/beameruserguide.pdf)
11. University Grants Commission (Promotion of Academic Integrity and Prevention of Plagiarism in Higher Educational Institutions) Regulations 2018 (The Gazette of India: Extraordinary, Part-iii-Sec.4)

Practical (30 hours): Practical work to be performed in the computer lab of the following using any TeX distribution software:

1. Starting LaTeX, Preparing an input file, Sequences and paragraphs, Quotation marks, Dashes, Space after a period, Special symbols, Simple text- generating commands, Emphasizing text, Preventing line breaks, Footnotes, ignorable input.
2. The document, The document class, The title page, Sectioning, Displayed material, Quotations, Lists, Displayed formulas, Declarations.
3. Running LaTeX, Changing the type style, Accents, Symbols, Subscripts and superscripts, Fractions, Roots, Ellipsis.
4. Mathematical Symbols, Greek letters, Calligraphic letters, Log-like functions, Arrays, The array environment, Vertical alignment, Delimiters, Multiline formulas.
5. Putting one thing above another, Over and underlining, Accents, Stacking symbols, Spacing in math mode, Changing style in math mode, Type style, Math style.
6. Defining commands, Defining environments, Theorems.
7. Figure and tables, Marginal notes, The tabbing environment, The tabular environment.
8. The Table and contents, Cross-references, Bibliography and citation.
9. Beamer: Templates, Frames, Title page frame, Blocks, Simple overlays, Themes.
10. PSTricks
11. Demonstration of web resources.

B.Sc. (Prog.)/ BA (Prog.) Semester-VI with Mathematics as non-Major

Category-III

DISCIPLINE SPECIFIC CORE COURSE–6 (Discipline A-6): PROBABILITY AND STATISTICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Probability and Statistics	4	3	0	1	Class XII pass with Mathematics	NIL

Learning Objectives: The primary objective of this course is to:

- Make the students familiar with the basic statistical concepts and tools which are needed to study situations involving uncertainty or randomness.
- Render the students to several examples and exercises that blend their everyday experiences with their scientific interests to form the basis of data science.

Learning Outcomes: This course will enable the students to:

- Understand some basic concepts and terminology-population, sample, descriptive and inferential statistics including stem-and-leaf plots, dotplots, histograms and boxplots.

- Learn about probability density functions and various univariate distributions such as binomial, hypergeometric, negative binomial, Poisson, normal, exponential, and lognormal.
- Understand the remarkable fact that the empirical frequencies of so many natural populations, exhibit bell-shaped (i.e., normal) curves, using the Central Limit Theorem.
- Measure the scale of association between two variables, and to establish a formulation helping to predict one variable in terms of the other, i.e., correlation and linear regression.

SYLLABUS OF DISCIPLINE A-6

UNIT-I: Descriptive Statistics, Probability, and Discrete Probability Distributions (15 hours)
Descriptive statistics: Populations, Samples, Stem-and-leaf displays, Dotplots, Histograms, Qualitative data, Measures of location, Measures of variability, Boxplots; Sample spaces and events, Probability axioms and properties, Conditional probability, Bayes' theorem, and independent events; Discrete random variables & probability distributions, Expected values; Probability distributions: Binomial, geometric, hypergeometric, negative binomial, Poisson, and Poisson distribution as a limit.

UNIT-II: Continuous Probability Distributions (15 hours)
Continuous random variables, Probability density functions, Uniform distribution, Cumulative distribution functions and expected values, The normal, exponential, and lognormal distributions.

UNIT-III: Central Limit Theorem and Regression Analysis (15 hours)
Sampling distribution and standard error of the sample mean, Central Limit Theorem, and applications; Scatterplot of bivariate data, Regression line using principle of least squares, Estimation using the regression lines; Sample correlation coefficient and properties.

Practical (30 hours)

Software labs using Microsoft Excel or any other spreadsheet.

1) Presentation and analysis of data (univariate and bivariate) by frequency tables, descriptive statistics, stem-and-leaf plots, dotplots, histograms, boxplots, comparative boxplots, and probability plots ([1] Section 4.6).
2) Fitting of binomial, Poisson, and normal distributions.
3) Illustrating the Central Limit Theorem through Excel.
4) Fitting of regression line using the principle of least squares.
5) Computation of sample correlation coefficient.

Essential Reading

1. Devore, Jay L. (2016). Probability and Statistics for Engineering and the Sciences (9th ed.). Cengage Learning India Private Limited. Delhi. Indian Reprint 2022.

Suggestive Reading

- Mood, A. M., Graybill, F. A., & Boes, D. C. (1974). Introduction to the Theory of Statistics (3rd ed.). Tata McGraw-Hill Pub. Co. Ltd. Reprinted 2017.

B.Sc. (Physical Sciences/Mathematical Sciences) Semester-VI with Mathematics as one of the Core Discipline

Category-III

DISCIPLINE SPECIFIC CORE COURSE – 6 (Discipline A-6): PROBABILITY AND STATISTICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Probability and Statistics	4	3	0	1	Class XII pass with Mathematics	NIL

Learning Objectives: The primary objective of this course is to:

- Make the students familiar with the basic statistical concepts and tools which are needed to study situations involving uncertainty or randomness.
- Render the students to several examples and exercises that blend their everyday experiences with their scientific interests to form the basis of data science.

Learning Outcomes: This course will enable the students to:

- Understand some basic concepts and terminology-population, sample, descriptive and inferential statistics including stem-and-leaf plots, dotplots, histograms and boxplots.
- Learn about probability density functions and various univariate distributions such as binomial, hypergeometric, negative binomial, Poisson, normal, exponential, and lognormal.
- Understand the remarkable fact that the empirical frequencies of so many natural populations, exhibit bell-shaped (i.e., normal) curves, using the Central Limit Theorem.
- Measure the scale of association between two variables, and to establish a formulation helping to predict one variable in terms of the other, i.e., correlation and linear regression.

SYLLABUS OF DISCIPLINE A-6

UNIT-I: Descriptive Statistics, Probability, and Discrete Probability Distributions (15 hours)

Descriptive statistics: Populations, Samples, Stem-and-leaf displays, Dotplots, Histograms, Qualitative data, Measures of location, Measures of variability, Boxplots; Sample spaces and events, Probability axioms and properties, Conditional probability, Bayes' theorem, and independent events; Discrete random variables & probability distributions, Expected values; Probability distributions: Binomial, geometric, hypergeometric, negative binomial, Poisson, and Poisson distribution as a limit.

UNIT-II: Continuous Probability Distributions (15 hours)

Continuous random variables, Probability density functions, Uniform distribution, Cumulative distribution functions and expected values, The normal, exponential, and lognormal distributions.

UNIT-III: Central Limit Theorem and Regression Analysis (15 hours)

Sampling distribution and standard error of the sample mean, Central Limit Theorem, and applications; Scatterplot of bivariate data, Regression line using principle of least squares, Estimation using the regression lines; Sample correlation coefficient and properties.

Practical (30 hours)

Software labs using Microsoft Excel or any other spreadsheet.

1) Presentation and analysis of data (univariate and bivariate) by frequency tables, descriptive statistics, stem-and-leaf plots, dotplots, histograms, boxplots, comparative boxplots, and probability plots ([1] Section 4.6).
2) Fitting of binomial, Poisson, and normal distributions.
3) Illustrating the Central Limit Theorem through Excel.
4) Fitting of regression line using the principle of least squares.
5) Computation of sample correlation coefficient.

Essential Reading

1. Devore, Jay L. (2016). Probability and Statistics for Engineering and the Sciences (9th ed.). Cengage Learning India Private Limited. Delhi. Indian Reprint 2022.

Suggestive Reading

- Mood, A. M., Graybill, F. A., & Boes, D. C. (1974). Introduction to the Theory of Statistics (3rd ed.). Tata McGraw-Hill Pub. Co. Ltd. Reprinted 2017.

DSE Courses of B.Sc. (Physical Sciences/Mathematical Sciences) Sem-VI

Category-III

DISCIPLINE SPECIFIC ELECTIVE COURSE – 4(i): ELEMENTARY MATHEMATICAL ANALYSIS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Elementary Mathematical Analysis	4	3	1	0	Class XII pass with Mathematics	Discipline A-5: Elements of Real Analysis

Learning Objectives: The primary objective of this course is to introduce:

- Sequential criterion for limits and continuity of real-valued functions.
- Riemann integral of real-valued function *f* on [a, b] using Darboux sums.
- Pointwise and uniform convergence of sequences and series of functions.

Learning Outcomes: This course will enable the students to:

- Apply sequential continuity criterion for the proof of intermediate value theorem.
- Understand the basic tool used to calculate integrals
- Apply uniform convergence for term-by-term integration in power series expansion.

SYLLABUS OF DSE-4(i)

UNIT-I: Continuous Functions (12 hours)

Sequential criterion for limits and continuity of functions, Continuity on intervals, Intermediate value theorem and applications; Uniform continuity.

UNIT-II: The Riemann Integral (15 hours)

Riemann integration, criterion for integrability and examples; Integrability of continuous and monotone functions, Algebraic properties of the Riemann integral, Fundamental theorem of calculus (first form).

UNIT-III: Uniform Convergence (18 hours)

Sequences and series of functions: Pointwise and uniform convergence, Uniform Cauchy criterion, Weierstrass M-test, Implications of uniform convergence in calculus; Power series, Radius and interval of convergence, Applications of Abel's theorem for power series.

Essential Reading

1. Denlinger, Charles G. (2011). Elements of Real Analysis. Jones & Bartlett India Pvt. Ltd. Student Edition. Reprinted 2015.

Suggestive Readings

- Bartle, Robert G., & Sherbert, Donald R. (2011). Introduction to Real Analysis (4th ed.). John Wiley & Sons. Wiley India Edition 2015.
- Ross, Kenneth A. (2013). Elementary Analysis: The Theory of Calculus (2nd ed.). Undergraduate Texts in Mathematics, Springer. Indian Reprint.

DISCIPLINE SPECIFIC ELECTIVE COURSE-4(ii): INTRODUCTION TO MATHEMATICAL MODELING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Introduction to Mathematical Modeling	4	3	0	1	Class XII pass with Mathematics	Discipline A-3: Differential Equations

Learning Objectives: The main objective of this course is to introduce:

- Compartmental models and real-life case studies through differential equations, their applications and mathematical modeling.
- Choosing the most appropriate model from competing types that have been fitted.
- Fitting a selected model type or types to the data and making predictions from the collected data.

Learning Outcomes: The course will enable the students to:

- Learn basics of differential equations and compartmental models.
- Formulate differential equations for various mathematical models.
- Construct normal equation of best fit and predict the future values.

SYLLABUS OF DSE-4(ii)

UNIT-I: Compartmental Models (15 hours)

Compartmental diagram and balance law; Exponential decay, radioactive dating, and lake pollution models; Case study: Lake Burley Griffin; Drug assimilation into the blood; Case study: Dull, dizzy or dead; Exponential growth, Density-dependent growth, Equilibrium solutions and stability of logistic equation, Limited growth with harvesting.

UNIT-II: Interacting Population Models and Phase-plane Analysis (15 hours)

SIR model for influenza, Predator-prey model, Ecosystem model of competing species, and model of a battle.

UNIT-III: Analytic methods of model fitting and Simulation (15 hours)

Fitting models to data graphically; Chebyshev approximation criterion, Least-square criterion: Straight line, parabolic, power curve; Transformed least-square fit, Choosing a best model. Monte Carlo simulation modeling**:** Simulating deterministic behavior (area under a curve, volume under a surface); Generating random numbers: middle-square method, linear congruence; Simulating probabilistic behavior.

Essential Readings

1. Barnes, Belinda & Fulford, Glenn R. (2015). Mathematical Modelling with Case Studies, Using Maple and MATLAB (3rd ed.). CRC Press, Taylor & Francis Group.
2. Giordano, Frank R., Fox, William P., & Horton, Steven B. (2014). A First Course in Mathematical Modeling (5th ed.). CENGAGE Learning India.

Suggestive Readings

- Albright, Brian, & Fox, William P. (2020). Mathematical Modeling with Excel (2nd ed.). CRC Press, Taylor & Francis Group.
- Edwards, C. Henry, Penney, David E., & Calvis, David T. (2015). Differential Equations and Boundary Value Problems: Computing and Modeling (5th ed.). Pearson.

Practical (30 hours)- Practical / Lab work to be performed in Computer Lab:

Modeling of the following problems using Mathematica/MATLAB/Maple/Maxima/Scilab etc.

1. Plotting the solution and describe the physical interpretation of the Mathematical Models mentioned below:
   a. Exponential decay and growth model.
   b. Lake pollution model (with constant/seasonal flow and pollution concentration).
   c. Case of single cold pill and a course of cold pills.
   d. Limited growth of population (with and without harvesting).
   e. Predatory-prey model (basic volterra model, with density dependence, effect of DDT, two prey one predator).
   f. Epidemic model of influenza (basic epidemic model, contagious for life, disease with carriers).
   g. Ecosystem model of competing species
   h. Battle model

2. Random number generation and then use it to simulate area under a curve and volume under a surface.
3. Write a computer program that finds the least-squares estimates of the coefficients in the following models.
   a. $y = a\,x^2 + b\,x + c$
   b. $y = a\,x^n$

4. Write a computer program that uses Equations (3.4) in [3] and the appropriate transformed data to estimate the parameters of the following models.
   a. $y = b\,x^n$
   b. $y = b\,e^{a\,x}$
   c. $y = a \ln x + b$
   d. $y = a\,x^2$
   e. $y = a\,x^3$.

DISCIPLINE SPECIFIC ELECTIVE COURSE-4(iii): RESEARCH METHODOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Research Methodology	4	3	0	1	Class XII pass with Mathematics	NIL

Learning Objectives: The main objective of this course is to:

- Prepare the students with skills needed for successful research in mathematics.
- Develop a basic understanding of how to pursue research in mathematics.
- Prepare students for professions other than teaching, that requires independent mathematical research, critical analysis, and advanced mathematical knowledge.
- Introduce some open source softwares to carry out mathematical research.
- Impart the knowledge of journals, their rankings and the disadvantages of rankings.

Learning Outcomes: The course will enable the students to:

- Develop researchable questions and to make them inquisitive enough to search and verify new mathematical facts.
- Understand the methods in research and carry out independent study in areas of mathematics.
- Write a basic mathematical article and a research project.
- Gain knowledge about publication of research articles in good journals.
- Communicate mathematical ideas both in oral and written forms effectively.

SYLLABUS OF DSE - 4(iii)

UNIT– I: How to Learn, Write, and Research Mathematics (17 hours)

How to learn mathematics, How to write mathematics: Goals of mathematical writing, general principles of mathematical writing, avoiding errors, writing mathematical solutions and proofs, the revision process, What is mathematical research, finding a research topic, Literature survey, Research Criteria, Format of a research article (including examples of mathematical articles) and a research project (report), publishing research.

UNIT- II: Mathematical Typesetting and Presentation using LaTeX (16 hours)

How to present mathematics: Preparing a mathematical talk, Oral presentation, Use of technology which includes LaTeX, PSTricks and Beamer; Poster presentation.

UNIT- III: Mathematical Web Resources and Research Ethics (12 hours)

Web resources- MAA, AMS, SIAM, arXiv, ResearchGate; Journal metrics: Impact factor of journal as per JCR, MCQ, SNIP, SJR, Google Scholar metric; Challenges of journal metrics; Reviews/Databases: MathSciNet, zbMath, Web of Science, Scopus; Ethics with respect to science and research, Plagiarism check using software like URKUND/Ouriginal by Turnitin.

Essential Readings

1. Bindner, Donald, & Erickson Martin (2011). A Student's Guide to the Study, Practice, and Tools of Modern Mathematics. CRC Press, Taylor & Francis Group.
2. Committee on Publication Ethics- COPE (https://publicationethics.org/)
3. Declaration on Research Assessment. https://en.wikipedia.org/wiki/San_Francisco_Declaration_on_Research_Assessment
4. Evaluating Journals using journal metrics; (https://academicguides.waldenu.edu/library/journalmetrics#s-lg-box-13497874)
5. Gallian, Joseph A. (2006). Advice on Giving a Good PowerPoint Presentation (https://www.d.umn.edu/~jgallian/goodPPtalk.pdf). MATH HORIZONS.
6. Lamport, Leslie (2008). LaTeX, a Document Preparation System, Pearson.
7. Locharoenrat, Kitsakorn (2017). Research Methodologies for Beginners, Pan Stanford Publishing Pte. Ltd., Singapore.
8. Nicholas J. Higham. Handbook for writing for the Mathematical Sciences, SIAM, 1998.
9. Steenrod, Norman E., Halmos, Paul R., Schiffer, M. M., & Dieudonné, Jean A. (1973). How to Write Mathematics, American Mathematical Society.
10. Tantau, Till,Wright, Joseph, & Miletić, Vedran (2023). The BEAMER class, Use Guide for Version 3.69. TeX User Group. (https://tug.ctan.org/macros/latex/contrib/beamer/doc/beameruserguide.pdf)
11. University Grants Commission (Promotion of Academic Integrity and Prevention of Plagiarism in Higher Educational Institutions) Regulations 2018 (The Gazette of India: Extraordinary, Part-iii-Sec.4)

Practical (30 hours): Practical work to be performed in the computer lab of the following using any TeX distribution software:

1. Starting LaTeX, Preparing an input file, Sequences and paragraphs, Quotation marks, Dashes, Space after a period, Special symbols, Simple text- generating commands, Emphasizing text, Preventing line breaks, Footnotes, ignorable input.

2. The document, The document class, The title page, Sectioning, Displayed material, Quotations, Lists, Displayed formulas, Declarations.
3. Running LaTeX, Changing the type style, Accents, Symbols, Subscripts and superscripts, Fractions, Roots, Ellipsis.
4. Mathematical Symbols, Greek letters, Calligraphic letters, Log-like functions, Arrays, The array environment, Vertical alignment, Delimiters, Multiline formulas.
5. Putting one thing above another, Over and underlining, Accents, Stacking symbols, Spacing in math mode, Changing style in math mode, Type style, Math style.
6. Defining commands, Defining environments, Theorems.
7. Figure and tables, Marginal notes, The tabbing environment, The tabular environment.
8. The Table and contents, Cross-references, Bibliography and citation.
9. Beamer: Templates, Frames, Title page frame, Blocks, Simple overlays, Themes.
10. PSTricks
11. Demonstration of web resources.

COMMON POOL OF GENERIC ELECTIVES (GE) Semester-VI COURSES OFFERED BY DEPARTMENT OF MATHEMATICS

Category-IV

GENERIC ELECTIVES (GE-6(i)): INTRODUCTION TO MATHEMATICAL MODELING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Introduction to Mathematical Modeling	4	3	0	1	Class XII pass with Mathematics	GE-3(i): Differential Equations

Learning Objectives: The main objective of this course is to introduce:

- Compartmental models and real-life case studies through differential equations, their applications and mathematical modeling.
- Choosing the most appropriate model from competing types that have been fitted.
- Fitting a selected model type or types to the data and making predictions from the collected data.

Learning Outcomes: The course will enable the students to:

- Learn basics of differential equations and compartmental models.
- Formulate differential equations for various mathematical models.
- Construct normal equation of best fit and predict the future values.

SYLLABUS OF GE-6(i)

UNIT-I: Compartmental Models (15 hours)

Compartmental diagram and balance law; Exponential decay, radioactive dating, and lake pollution models; Case study: Lake Burley Griffin; Drug assimilation into the blood; Case study: Dull, dizzy or dead; Exponential growth, Density-dependent growth, Equilibrium solutions and stability of logistic equation, Limited growth with harvesting.

UNIT-II: Interacting Population Models and Phase-plane Analysis (15 hours)

SIR model for influenza, Predator-prey model, Ecosystem model of competing species, and model of a battle.

UNIT-III: Analytic methods of model fitting and Simulation (15 hours)

Fitting models to data graphically; Chebyshev approximation criterion, Least-square criterion: Straight line, parabolic, power curve; Transformed least-square fit, Choosing a best model. Monte Carlo simulation modeling**:** Simulating deterministic behavior (area under a curve, volume under a surface); Generating random numbers: middle-square method, linear congruence; Simulating probabilistic behavior.

Essential Readings

1. Barnes, Belinda & Fulford, Glenn R. (2015). Mathematical Modelling with Case Studies, Using Maple and MATLAB (3rd ed.). CRC Press, Taylor & Francis Group.
2. Giordano, Frank R., Fox, William P., & Horton, Steven B. (2014). A First Course in Mathematical Modeling (5th ed.). CENGAGE Learning India.

Suggestive Readings

- Albright, Brian, & Fox, William P. (2020). Mathematical Modeling with Excel (2nd ed.). CRC Press, Taylor & Francis Group.
- Edwards, C. Henry, Penney, David E., & Calvis, David T. (2015). Differential Equations and Boundary Value Problems: Computing and Modeling (5th ed.). Pearson.

Practical (30 hours)- Practical / Lab work to be performed in Computer Lab: Modeling of the following problems using Mathematica/MATLAB/Maple/Maxima/Scilab etc.

1. Plotting the solution and describe the physical interpretation of the Mathematical Models mentioned below:
   a. Exponential decay and growth model.
   b. Lake pollution model (with constant/seasonal flow and pollution concentration).
   c. Case of single cold pill and a course of cold pills.
   d. Limited growth of population (with and without harvesting).
   e. Predatory-prey model (basic volterra model, with density dependence, effect of DDT, two prey one predator).
   f. Epidemic model of influenza (basic epidemic model, contagious for life, disease with carriers).
   g. Ecosystem model of competing species
   h. Battle model
2. Random number generation and then use it to simulate area under a curve and volume under a surface.
3. Write a computer program that finds the least-squares estimates of the coefficients in the following models.
   a. $y = a\,x^2 + b\,x + c$
   b. $y = a\,x^n$
4. Write a computer program that uses Equations (3.4) in [3] and the appropriate transformed data to estimate the parameters of the following models.
   a. $y = b\,x^n$
   b. $y = b\,e^{a\,x}$
   c. $y = a \ln x + b$
   d. $y = a\,x^2$
   e. $y = a\,x^3$.

GENERIC ELECTIVES (GE-6(ii)): DISCRETE DYNAMICAL SYSTEMS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Discrete Dynamical Systems	4	3	0	1	Class XII pass with Mathematics	NIL

Learning Objectives: The primary objective of this course is to introduce:

- The fundamental concepts of discrete dynamical systems and emphasis on its study through several applications.
- The concepts of the fixed points, chaos and Lyapunov exponents for linear and nonlinear equations have been explained through examples.
- Various applications of chaos in higher dimensional models.

Learning Outcomes: This course will enable the students to:

- Understand the basic concepts of difference equation, chaos and Lyapunov exponents.
- Obtain fixed points and discuss the stability of the dynamical system.
- Find Lyapunov exponents, Bifurcation, and Period-doubling for nonlinear equations.
- Analyze the behavior of different realistic systems with chaos cascade.

SYLLABUS OF GE-6(ii)

UNIT-I: Discrete-time Models (12 hours)

Discrete dynamical systems concepts and examples; Some linear models: Bouncing ball, investment growth, population growth, financial, economic and linear price models; Nonlinear models: Density-dependent population, contagious-disease, economic and nonlinear price models; Some linear systems models: Prey-predator, competing species, overlapping-generations, and economic systems.

UNIT-II: Linear Equations, Systems, their Solutions and Dynamics (18 hours)

Autonomous, non-autonomous linear equations and their solutions, time series graphs; Homogenous, non-homogeneous equations and their solutions with applications; Dynamics of autonomous linear equations, fixed points, stability, and oscillation; Homogeneous, non-homogeneous linear systems and their dynamics, solution space graphs, fixed points, sinks, sources and saddles.

UNIT-III: Nonlinear Equations, their Dynamics and Chaos (15 hours)

Autonomous nonlinear equations and their dynamics: Exact solutions, fixed points, stability; Cobweb graphs and dynamics: Linearization; Periodic points and cycles: 2-cycles, m-cycles,

and their stability; Parameterized families; Bifurcation of fixed points and period-doubling; Characterizations and indicators of chaos.

Practical (30 hours)- Use of Excel/SageMath/MATHEMATICA/MATLAB/Scilab Software:

1. If Rs. 200 is deposited every 2 weeks into an account paying 6.5% annual interest compounded bi-weekly with an initial zero balance:
   (a) How long will it take before Rs. 10,000/- is in account?
   (b) During this time how much is deposited and how much comes from interest?
   (c) Create a time series graph for the bi-weekly account balances for the first 40 weeks of saving scenario.
   [1] Computer Projects 2.5 pp. 68
2. (a) How much can be borrowed at an annual interest rate of 6% paid quarterly for 5 years in order to have the payments equal Rs. 1000/- every 3 months.
   (b) What is the unpaid balance on this loan after 4 years.
   (c) Create a time series graph for the unpaid balances each quarter for the loan process.
   [1] Computer Projects 2.5 pp. 68
3. Four distinct types of dynamics for any autonomous linear equation:
   $x_{n+1} = a\, x_n + b$ for different values of a and b.
   [1] Dynamics of autonomous linear equation, pp. 74
4. Find all fixed points and determine their stability by generating at least the first 100 iterates for various choices of initial values and observing the dynamics
   a. $I_{n+1} = I_n - r\, I_n + s\, I_n\,(1 - I_n\, 10^{-6})$
      for: (i) $r = 0.5, s = 0.25$, (ii) $r = 0.5, s = 1.75$, (iii) $r = 0.5, s = 2.0$.
   b. $P_{n+1} = \frac{1}{P_n} + 0.75\, P_n + c$
      for: $(i)\ c = 0$; $(ii)\ c = -1$; $(iii)\ c = -1.25$; $(iv)\ c = -1.38$.
   c. $x_{n+1} = a\, x_n\,(1 - x_n^2)$
      for: $(i)\ a = 0.5$; $(ii)\ a = 1.5$; $(iii)\ a = 2.25$; $(iv)\ a = 2.3$.
   [1] Computer Projects 3.2 pp. 110
5. Determine numerically whether a stable cycle exists for the given parameter values, and if so, its period. Perform at least 200 iterations each time and if a cycle is found (approximately), use the product of derivatives to verify its stability.
   a. $P_{n+1} = r\, P_n\left(1 - \frac{P_n}{5000}\right)$, for: $(i)\ r = 3.4$; $(ii)\ r = 3.5$;
      $(iii)\ r = 3.566$; $(iv)\ r = 3.569$; $(v)\ r = 3.845$.
   b. $P_{n+1} = r\, P_n\, e^{-P_n/1000}$
      for: $(i)\ r = 5$; $(ii)\ r = 10$; $(iii)\ r = 14$; $(iv)\ r = 14.5$; $(v)\ r = 14.75$.
   [1] Computer Projects 3.5 pp. 154
6. Find through numerical experimentation the approximate intervals of stability of the (a) 2-cycle; (b) 4-cycle; (c) 8-cycle; (d) 16-cycle; (e) 32-cycle for the following
   a. $f_r(x) = r\, x\, e^{-x}$
   b. $f_r(x) = r\, x^2\,(1 - x)$
   c. $f_a(x) = x\,(a - x^2)$
   d. $f_c(x) = \frac{2}{x} + 0.75\, x - c$

[1] Computer Projects 3.6 pp. 164

7. Through numerical simulation, show that each of the following functions undergoes a period doubling cascade:
   a. $f_r(x) = r\,x\,e^{-x}$
   b. $f_r(x) = r\,x^2\,(1-x)$
   c. $f_r(x) = r\,x\,e^{-x^2}$
   d. $f_r(x) = \frac{r\,x}{(x^2+1)^2}$
   e. $f_a(x) = x\,(a-x^2)$

   [1] Computer Projects 3.7 pp. 175
8. Discuss (a) Pick two initial points close together, i.e., that perhaps differ by 0.001 or 0.00001, and perform at least 100 iterations of $x_{n+1} = f(x_n)$. Do solutions exhibit sensitive dependence on initial conditions?
   (b) For several random choices of x_0 compute at least 1000 iterates x_n and draw a frequency distribution using at least 50 sub-intervals. Do dense orbits appear to exit?
   (c) Estimate the Lyapunov exponent L by picking several random choices of x_0 and computing $\frac{1}{N}\sum_{n=1}^{N} \ln|f'(x_n)|$ for $N = 1000, 2500, 5000, etc.$
   Does L appear to be positive? i). $f(x) = 2 - x^2$ ii). $f(x) = \frac{2}{x} + \frac{3x}{4} - 2.$
   [1] Computer Projects 3.8 pp. 187
9. Show that $f(x) = r\,x\,(1-x)$ for $r > 4$ and $f(x) = 6.75\,x^2\,(1-x)$ have horseshoes and homoclinic orbits, and hence chaos. **[1] Computer Projects 3.8 pp. 188**
10. Find the fixed point and determine whether it is a sink, source or saddle by iterating and graphing in solution space the first few iterates for several choices of initial conditions.
    a. $x_{n+1} = x_n - y_n + 30$
       $y_{n+1} = x_n + y_n - 20.$
    b. $x_{n+1} = x_n + y_n$
       $y_{n+1} = x_n - y_n.$

    [1] Computer Projects 4.2 pp. 207

Essential Reading

1. Marotto, Frederick R. (2006). Introduction to Mathematical Modeling Using Discrete Dynamical Systems. Thomson, Brooks/Cole.

Suggestive Readings

- Devaney, Robert L. (2022). An Introduction to Chaotic Dynamical Systems (3rd ed.). CRC Press Taylor & Francis Group, LLC.
- Lynch, Stephen (2017). Dynamical Systems with Applications using Mathematica® (2nd ed.). Birkhäuser.
- Martelli, Mario (1999). Introduction to Discrete Dynamical Systems and Chaos. John Wiley & Sons, Inc., New York.

Semester 4

DEPARTMENT OF STATISTICS

B. Sc. (H) Statistics

Category I

DISCIPLINE SPECIFIC CORE COURSE-10: SAMPLING DISTRIBUTIONS

CREDIT DISTRIBUTION, ELIGIBILITY, AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
Sampling Distributions	4	3	0	1	Class XII with Mathematics	Basic knowledge of probability and probability distributions

Learning Objectives:

The learning objectives of this course are as follows:

- To introduce the modes of convergence and their relation to limit laws, with a focus on the central limit theorem.
- To introduce the concept of sampling distributions and their applications in statistical inference.
- To describe the statistical ideas behind the procedure of hypothesis testing.
- To explain the assumptions and conditions under which to apply different tests of hypothesis about population parameters and draw appropriate conclusions from the analysis.

Learning Outcomes:

After successful completion of this course, students will be able to:

- Understand the basics of convergence theory and its importance in limit laws.
- Apply the concept of the central limit theorem and the relevance of the theorem in inferential statistics.
- Analyze data by using suitable hypothesis testing procedures in real-life applications related to large and small samples.
- Apply the knowledge of the idea of sampling distributions and appreciate their importance in the field of statistics.
- Integrate the knowledge of various sampling distributions like chi-square, t, and F distributions in hypothesis testing problems.

SYLLABUS OF DSC-10

Theory

UNIT I **(10 Hours)**

Modes of Convergence and Central Limit Theorem

Convergence in probability, convergence with probability one, convergence in the mean square, convergence in distribution – definitions and relations between the various modes.

Chebyshev's inequality, Weak Law of Large Numbers (WLLN), and Strong Law of Large Numbers (SLLN) along with examples and applications.

Basic idea and relevance of Central Limit Theorem (CLT), De-Moivre Laplace theorem, Lindeberg Levy theorem, Liapunov Theorem (only statement), and applications of CLT.

UNIT II **(4 Hours)**

Order Statistics

Basic concept and discussion on the area of applications, probability distribution and cumulative distribution function of a single order statistic, joint probability distribution of two and the general case of all order statistics, distribution of range, and distribution of sample median.

UNIT III **(9 Hours)**

Sampling Distributions and Test of Hypotheses

Concepts of parameter, statistic, sampling distribution of a statistic, standard error. Sampling distribution of sample mean, standard errors of the sample mean, sample variance, and sample proportion.

Null and alternative hypotheses, level of significance, Type I and Type II errors, their probabilities and critical region, determination of sample size, confidence intervals, and p-value.

Tests of significance and confidence intervals for - single proportion, difference of two proportions, single mean, difference of two means, and difference of two standard deviations.

UNIT IV **(10 Hours)**

Exact Sampling Distribution

Chi-Square distribution: Definition and derivation of the probability distribution of Chi-square distribution with n degrees of freedom, nature of the curve for different degrees of freedom, mean, mode, variance, moment generating function, cumulant generating function, additive property, and limiting form of the Chi-square distribution, Applications of Chi-Square distribution.

UNIT V **(12 Hours)**

Exact Sampling Distributions (continued)

Student's t-statistic and Fishers t-statistic: definition and derivation of their sampling distributions, nature and characteristics of graph of t distribution, moments, limiting form and applications of the t distribution.

F-statistic: Definition and derivation of the sampling distribution, the graph of F distribution, moments, and applications of the F distribution. Relationship between t, F, and Chi-square distributions.

PRACTICAL / LAB WORK – 30 Hours

List of Practicals:

1. Large Sample Tests:
   a) Testing of significance and confidence intervals for single proportion and difference of two proportions.
   b) Testing of significance and confidence intervals for single mean and difference of two means.
   c) Testing of significance and confidence intervals for the difference of two standard deviations.
2. Tests based on Chi-Square Distribution:
   a) Testing of significance and confidence intervals for the population variance has a specific value.
   b) Testing for the goodness of fit.
   c) Testing of significance for the independence of attributes.
   d) Testing based on a 2 x 2 contingency table without and with Yates' corrections.
3. Tests based on t- Distribution and F- Distribution:
   a) Testing of significance and confidence intervals for single mean and difference of two means and paired t-test.
   b) Testing of significance and confidence intervals of an observed sample correlation coefficient.
   c) Testing and confidence intervals of equality of two population variances.

Practical work to be conducted using electronic spreadsheet / EXCEL/ Statistical Software Package/ SPSS/ calculators.

ESSENTIAL READINGS

- Gupta, S. C. and Kapoor, V. K. (2020). Fundamentals of Mathematical Statistics, Twelfth Edition, S. Chand and Sons. Delhi.
- Goon, A.M., Gupta, M.K. and Dasgupta, B. (2016). An Outline of Statistical Theory, Volume I, The World Press, Kolkata.
- Mukhopadhyay, P. (2016). Mathematical Statistics, Books and Allied, India.
- Hogg, R.V., Tanis, E.A. and Rao, J.M. (2009). Probability and Statistical Inference, Seventh Edition, Pearson Education, New Delhi.
- Miller, I. and Miller, M. (2006). John E. Freund's Mathematical Statistics with Applications, Eight Edition, Pearson Education, Asia.
- Johnson, R.A. and Bhattacharya, G.K. (2001). Statistics-Principles and Methods, Fourth Edition, John Wiley and Sons.

SUGGESTED READINGS

- Bhat, B.R. (2016). Modern Probability Theory- An Introductory Textbook, Fourth Edition, New Age International Publishers.
- Rohatgi, V. K and Saleh M. E. (2015). An Introduction to Probability and Statistics, Third Edition, John Wiley and Sons, Inc., New Jersey.
- Mood, A.M. Graybill, F.A. and Boes, D.C. (2007). Introduction to the Theory of Statistics, Third Edition, (Reprint), Tata McGraw-Hill Pub. Co. Ltd.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE-11: TOTAL QUALITY MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY, AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
Total Quality Management	4	3	0	1	Class XII with Mathematics	Introductory statistics and familiarity probability distributions

Learning Objectives:

The learning objectives of this course are as follows:

- To introduce statistical and management techniques,
- To explain the approach of Quality control being used in industry to manufacture goods and services of high quality at low cost.
- To introduce Six-sigma, TQM which is in high demand in the market both in the manufacturing as well as the service sector

Learning Outcomes:

After completing this course, students will be able to:

- Understand the concept of quality, its historical background, and ISO standards.
- Apply the statistical process control tools and product control tools.
- Understand the idea of Six sigma- Lean manufacturing, TQM
- Comprehend the Six sigma training plans, Voice of customers (VOC), Critical to Quality (CTQ)
- Analyze the data to find the root cause of defects through DMAIC (Define-Measure-Analyze-Improve-Control).

SYLLABUS OF DSC-11

Theory

UNIT I **(9 Hours)**

Basics of Quality Management

Quality: Definition, dimensions of quality, its concept, application, and importance. Brief historical perspective of quality control and improvements, Quality Gurus, and Quality Hall of Fame. Quality system and standards: Introduction to ISO quality standards, Quality registration.

Introduction to Process and Product Control, Statistical Process Control - Seven tools of SPC, Chance and Assignable causes of quality variation.

UNIT II **(12 Hours)**

Statistical Control Charts

Statistical Control Charts- Construction and Statistical basis of 3-σ Control charts,. Control charts for variables: X-bar & R-chart, X-bar & s-chart. Rational Sub-grouping, Revised and Modified Control Limits. Control charts for attributes: np-chart, p-chart, c-chart and u-chart. Comparison between control charts for variables and control charts for attributes. Analysis of patterns on a control chart, estimation of process capability.

UNIT III **(12 Hours)**

Sampling Plans

Acceptance sampling plan: Principle of acceptance sampling plans. Single and Double sampling plans, their Operating Characteristic (OC), Acceptance Quality Level (AQL), Lot Tolerance Percent Defective (LTPD), Average Outgoing Quality (AOQ), Average Outgoing Quality Limit (AOQL), Average Sample Number (ASN), and Average Total Inspection (ATI) functions with graphical interpretation, use, and interpretation of Dodge and Romig's sampling inspection plan tables.

UNIT IV **(12 Hours)**

Six-Sigma

Overview of Six Sigma, Lean Manufacturing, and Total Quality Management (TQM). Organizational Structure and Six Sigma training plans- Selection Criteria for Six Sigma roles and training plans. Voice of customers (VOC): Importance and VOC data collection. Critical to Quality (CTQ), Introduction to DMAIC (Define-Measure-Analyze-Improve-Control).

PRACTICAL / LAB WORK – 30 Hours

List of Practical:

1. Construction and interpretation of statistical control charts for
   a) $\bar{X}$ and R-chart for known parameters.
   b) $\bar{X}$ and R-chart with revised control limits for unknown parameters.
   c) $\bar{X}$ and s-chart
   d) np-chart
   e) p-chart with fixed sample size
   f) p-chart with variable sample size.
   g) c-chart
   h) u-chart
2. Construction and interpretation of OC, AQL, LTPD, ASN, ATI, AOQ, and AOQL curves under a Single sample inspection plan
3. Construction and interpretation of OC, AQL, LTPD, ASN, ATI, AOQ, and AOQL curves under a Single sample inspection plan for varying acceptance numbers.
4. Calculation of process capability and comparison of 3-sigma control limits with specification limits.

5. Plan a single sampling plan using Dodge and Romig sampling inspection tables.

Practical work to be conducted using electronic spreadsheet / EXCEL/ Statistical Software Package/ SPSS/ calculators.

ESSENTIAL READINGS:

- Goon A M, Gupta M K and Dasgupta B (2018): Fundamentals of Statistics, Volume I & II, 9th Edition and 4th reprint.
- Montogomery, D. C. (2009): Introduction to Statistical Quality Control, 6th Edition, Wiley India Pvt. Ltd.
- Ehrlich, B. Harris (2002): Transactional Six Sigma and Lean Servicing, 2nd Edition, St. Lucie Press.

SUGGESTED READING:

- Gupta S.C., Kapoor V.K.(2007): Fundamentals of Applied Statistics. 4th Edition, Sultan Chand and Sons., New Delhi.
- Hoyle, David (1995): ISO Quality Systems Handbook, 2nd Edition, Butterworth Heinemann Publication.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE-12: TIME SERIES ANALYSIS

CREDIT DISTRIBUTION, ELIGIBILITY, AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical / Practice		
Time Series Analysis	4	3	0	1	Class XII with Mathematics	Introductory probability theory and statistics, Calculus, and matrix algebra

Learning Objectives:

The learning objectives of this course are as follows:

- To introduce basic time series analysis, trend, and seasonality,
- To understand spectral analysis,
- To familiarise students with stationary processes,
- To understand various time series models,

- To use nonstationary and seasonal time series models,
- To introduce forecasting techniques and forecasting methods.

Learning Outcomes:

After successful completion of this course, students will be able to:

- Understand the important time series models and their applications in various fields.
- Formulate real-life problems using time series models.
- Use statistical software to estimate the models from real data, and draw conclusions and develop solutions from the estimated models.
- Use visual and numerical diagnostics to assess the soundness of their models.
- Communicate the statistical analyses of substantial data sets through explanatory text, tables, and graphs.
- Combine and adapt different statistical models to analyze larger and more complex data.
- Possess skills to understand the components and forecast values of a time series at future time points.

SYLLABUS OF DSC-12

Theory

UNIT I **(6 Hours)**

Time Series Data and its Components

Introduction to times series data and its applications; Components of a time series and its decomposition; Estimation of trend and the seasonal component.

.

UNIT II **(9 Hours)**

Spectral Analysis and Stationarity

Simple sinusoidal model; Periodogram, and Harmonic Analysis; Variate-difference method; Time series, and Stochastic process; Stationarity; Autocorrelation; meaning, definition, causes, the consequence, and test for autocorrelation.

UNIT III **(15 Hours)**

Time Series Models

Stochastic Models: White noise Process, Random walk, Moving Average (MA), Auto-Regressive (AR), Auto-Regressive Moving Average (ARMA) models, and their properties using correlogram, ACF, and PACF, Yule walker equations; Fitting of AR(1), AR(2), MA(1), MA(2), and ARMA(1,1) processes. Non-Stationary models: Auto-Regressive Integrated Moving Average (ARIMA) and Seasonal Auto-Regressive Integrated Moving Average (SARIMA) models; Dicky Fuller test, Augmented Dickey-Fuller test. Wold's Decomposition Theorem; Non-linear time series models: Auto-Regressive Conditional Heteroskedasticity (ARCH) and Generalized Auto-Regressive Conditional Heteroskedasticity (GARCH) Process.

UNIT IV **(12 Hours)**

Univariate Forecasting Procedures

Principles of Forecasting; Performance Evaluation; Extrapolation of Trend Curves; Exponential smoothing; Holt-Winter's; Box- Jenkins' Methodology.

PRACTICAL / LAB WORK – 30 hours

List of Practicals:

1. Fitting and plotting of modified exponential curves by different methods.
2. Fitting and plotting of Gompertz curve by different methods.
3. Fitting and plotting of logistic curves by different methods.
4. Fitting of the trend by the Moving Average Method for a given extent and for an estimated extent.
5. Measurement of Seasonal indices: a) Fixed and b) Changing Patterns
6. Construction of Periodogram and Harmonic Analysis
7. Estimation of variance of the random component
8. Construction of Correlogram for given AR(1), AR(2), MA(1), MA(2), and ARMA(1,1) processes.
9. Fitting of AR(1), AR(2), MA(1), MA(2), and ARMA(1,1) processes for given datasets.
10. Forecasting by various exponential smoothing procedures.
11. Forecasting by Box-Jenkins methodology.

Practical work to be conducted using electronic spreadsheet / EXCEL/ Statistical Software Package/ SPSS/ calculators.

ESSENTIAL READINGS:

- Goon A M, Gupta M K and Dasgupta B (2018): Fundamentals of Statistics, Volume II, 9th Edition and 4th reprint.
- Galit Shmueli and Kenneth C. Lichtendahl Jr (2016): Practical Time Series Forecasting with R: A Hands-On Guide, 2nd Edition, Axelrod Schnall Publishers
- James D. Hamilton (2012): Time Series Analysis, 1st Indian Edition, Princeton University Press, Levant Books Kolkata.
- Chatfield, C. (1996): The Analysis of Time Series, 5th Edition, Chapman and Hall, New York.

SUGGESTED READING:

- Shumway and Stoffer (2011): Time Series Analysis and its applications, with examples in R, 3rd Edition, Springer.
- Brockwell, Peter J., and Davis, Richard A. (2002). Introduction to Time Series and Forecasting, 2nd edition. Springer-Verlag, New York.
- Montgomery D. C. and Johnson, L A. and (1967): Introduction to Time Series Analysis And Forecasting, 2nd ed. McGraw-Hill, New York.
- Kendall M.G. (1976): Time Series, Charles Griffin.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch University of Delhi, from time to time.

B.Sc. (P)/B.A(P) with Statistics as Major

Category II

DISCIPLINE SPECIFIC CORE COURSE-7: ELEMENTS OF STATISTICAL INFERENCE

CREDIT DISTRIBUTION, ELIGIBILITY, AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
Elements of Statistical Inference	4	3	0	1	Class XII with Mathematics	Basic probability, probability distributions and sampling distributions

Learning Objectives:

The learning objectives of this course are as follows:

- To understand the concept of estimation theory and testing of hypothesis.
- To draw inferences about the unknown population parameters based on random samples.
- To validate the estimation/ inference about the population using hypothesis testing.

Learning Outcomes:

After successful completion of this course, students will be able to:

- Understanding of estimation theory, Point and interval estimations.
- Characteristics of a good estimator and different methods of estimation.
- Demonstrate the use of these techniques in data analysis.
- Develop the best/most powerful statistical tests to test the hypotheses regarding unknown population parameters by using Neyman-Pearson theory.

SYLLABUS OF DSC-7

Theory

UNIT I **(15 hours)**

Estimation Theory

Parameter space, sample space, point estimation, requirement of a good estimator, consistency, unbiasedness, efficiency, sufficiency, Minimum variance unbiased estimators, Factorization theorem, Fisher- Neyman Criterion: statement and applications, Cramer- Rao inequality:

statement and application, MVB estimators and their applications, Statement of Rao-Blackwell theorem and Lehmann-Scheffe theorem..

UNIT II **(15 hours)**

Method of Estimation

Maximum likelihood, least squares and minimum variance, Properties of maximum likelihood estimators (illustration), Interval Estimation: confidence interval and confidence limits for the parameters of normal distribution, confidence intervals for large samples.

UNIT III **(15 hours)**

Test of Significance

Principles of test of significance: Null and alternative hypotheses, simple and composite, Type-I and Type-II errors, critical region, level of significance, power of the test, best critical region, most powerful test, uniformly most powerful test, uniformly most powerful unbiased (UMPU) critical region, Neyman- Pearson Lemma: statement and its applications to construct most powerful test.

PRACTICAL / LAB WORK – 30 hours

List of Practical

Practical Based on:

1. Unbiased estimators and consistent estimators.
2. Efficient estimators and relative efficiency of estimators.
3. Sufficient estimators and factorization theorem.
4. Cramer- Rao inequality and MVB estimators.
5. Method of maximum likelihood estimation.
6. Method of least squares and minimum variance.
7. Confidence interval and confidence limits for the parameters of normal distribution.
8. Confidence intervals in case of large samples.
9. Type I and Type II errors, power of the test.
10. Most powerful critical region (NP Lemma).

Practical work to be conducted using electronic spreadsheet / EXCEL/ Statistical Software Package/ SPSS/ calculators.

ESSENTIAL READINGS:

- Gupta, S.C. and Kapoor, V. K. (2020): Fundamentals of Mathematical Statistics, 12th Ed., Sultan Chand and Sons.
- Miller, I. and Miller, M. (2013). John E. Freund's Mathematical Statistics, 8th Ed., Prentice Hall of India.
- Hogg, R. V., Craig, A. T., and Mckean, J. W. (2005): Introduction to Mathematical Statistics, 6th Edition, Pearson Education.
- Goon, A.K., Gupta, M. K. and Das Gupta, B. (2003): An Outline of Statistical Theory (Vol. II), 4th Edition., World Press, Kolkata.

SUGGESTED READINGS:

● Rohtagi, V. K. and Md., A. K. Saleh, E. (2009): An Introduction to Probability and Statistics, 2nd Edition, John Wiley and Sons.
● Casella, G. and Berger, R. L. (2002): Statistical Inference, 2nd Edition, Thomson Duxbury.
● Mood A.M., Graybill F.A. and Boes D.C. (1974). Introduction to the Theory of Statistics, McGraw Hill.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE-8: INTRODUCTION TO VITAL STATISTICS AND DEMOGRAPHY

CREDIT DISTRIBUTION, ELIGIBILITY, AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
Introduction to Vital Statistics and Demography	4	3	0	1	Class XII with Mathematics	knowledge of basic statistics

Learning Objectives:

The learning objectives of this course are as follows:

- To collect valid Demographic data using different methods.
- To learn basic measures of Mortality, Fertility, and Population Growth.
- To construct life tables.

Learning Outcomes:

After successful completion of this course, students will be able to:

- Distinguish between Vital Statistics and Demography.
- Understand errors in Demographic data.
- Comprehend sources of data collection on Vital Statistics and errors therein.
- Use methods for measurement of Population.
- Distinguish between Rate and Ratio.
- Understand the basic measures of Mortality.
- Describe and apply the concepts of Stable and Stationary Populations.
- Understand the concept of Life Tables and their construction.
- Understand the basic measures of Fertility.
- Apply measures of Population Growth.

SYLLABUS OF DSC-8

Theory

UNIT I **(10 Hours)**

Introduction to Vital Statistics

Introduction and sources of collecting data on vital statistics, errors in the census, and registration data. Measurement of population, rate, and the ratio of vital events.

UNIT II **(12 Hours)**

Measurements of Mortality

Crude Death Rate (CDR), Specific Death Rate (SDR), Infant Mortality Rate (IMR), and Standardized Death Rates. Stationary and Stable population, Central Mortality Rates, and Force of Mortality.

UNIT III **(10 Hours)**

Life Tables

Life(Mortality) Tables: Assumption, description, construction of Life Tables, and Uses of Life Tables.

UNIT IV **(13 Hours)**

Measurements of Fertility

Crude Birth Rate (CBR), General Fertility Rate (GFR), Specific Fertility Rate (SFR), and Total Fertility Rate (TFR). Measurement of Population Growth: Crude rates of natural increase, Pearl's Vital Index, Gross Reproduction Rate (GRR), and Net Reproduction Rate (NRR).

PRACTICAL/LAB WORK - 30 hours

List of Practicals:

1. To calculate CDR and Age Specific death rate for a given set of data.
2. To find a standardized death rate by (i) Direct method and (ii) Indirect method.
3. To construct a complete life table.
4. To fill in the missing entries in a life table.
5. To calculate CBR, GFR, SFR, TFR for a given set of data.
6. To calculate Crude rate of Natural Increase and Pearle's Vital Index for a given set of data.
7. Calculate GRR and NRR for a given set of data and compare them.

Practical work to be conducted using electronic spreadsheet / EXCEL/ Statistical Software Package/ SPSS/ calculators.

ESSENTIAL READINGS:

- Gun, A.M., Gupta, M.K. and Dasgupta, B. (2008). Fundamentals of Statistics, Vol. II, 9thEd., World Press.
- Biswas, S. (1988). Stochastic Processes in Demography & Application, Wiley Eastern Ltd.

SUGGESTED READING:

- Mukhopadhyay, P. (1999). Applied Statistics, Books and Allied (P) Ltd.

● Keyfitz, N. and Beekman,J.A. (1985). Demography through Problems. S-Verlag, New York.
● Croxton, Fredrick, E. Cowden, Dudley J. and Klein, S. (1973). Applied General Statistics, 3rd Ed., Prentice Hall of India Pvt. Ltd.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch University of Delhi, from time to time.

B.Sc. (P)/B.A(P) with Statistics as Non- Major
Category III

DISCIPLINE SPECIFIC CORE COURSE 4: ELEMENTS OF STATISTICAL INFERENCE

CREDIT DISTRIBUTION, ELIGIBILITY, AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
Elements of Statistical Inference	4	3	0	1	Class XII with Mathematics	Basic probability, probability distributions and sampling distributions

Learning Objectives:
The learning objectives of this course are as follows:
- To understand the concept of estimation theory and testing of hypothesis.
- To infer about the unknown population parameters based on random samples.
- To validate the estimation/ inference about the population using hypothesis testing.

Learning Outcomes:
After successful completion of this course, students will be able to:
- Understand estimation theory, point and interval estimations.
- Comprehend the characteristics of a good estimator and different methods of estimation.
- Apply the techniques in data analysis.
- Develop the best/most powerful statistical tests to test the hypotheses regarding unknown population parameters by using the Neyman-Pearson theory.

SYLLABUS OF DSC-4
Theory

UNIT I: **(15 hours)**

Estimation Theory:

Estimation: Parameter space, sample space, point estimation, requirement of a good estimator, consistency, unbiasedness, efficiency, sufficiency, Minimum variance unbiased estimators, Factorization theorem, Fisher- Neyman Criterion: statement and applications, Cramer- Rao inequality: statement and application, MVB estimators and their applications, Statement of Rao-Blackwell theorem and Lehmann-Scheffe theorem..

UNIT II **(15 hours)**

Methods of estimation:

Maximum likelihood, least squares and minimum variance, Properties of maximum likelihood estimators (illustration), Interval Estimation: confidence interval and confidence limits for the parameters of normal distribution, confidence intervals for large samples.

UNIT III **(15 hours)**

Test of significance

Principles of test of significance: Null and alternative hypotheses, simple and composite, Type-I and Type-II errors, critical region, level of significance, power of the test, best critical region, most powerful test, uniformly most powerful test, uniformly most powerful unbiased critical region (UMPU), Neyman- Pearson Lemma: statement and its applications to construct most powerful test.

Practical / Lab Work: - 30 hours

List of Practicals: Practicals based on

1. Unbiased estimators and consistent estimators.
2. Efficient estimators and relative efficiency of estimators.
3. Sufficient estimators and factorization theorem.
4. Cramer- Rao inequality and MVB estimators.
5. Method of maximum likelihood estimation.
6. Method of least squares and minimum variance.
7. Confidence interval and confidence limits for the parameters of normal distribution.
8. Confidence intervals in case of large samples.
9. Type I and Type II errors, power of the test.
10. Most powerful critical region (NP Lemma).

Practical work to be conducted using electronic spreadsheet / EXCEL/ Statistical Software Package/ SPSS/ calculators.

ESSENTIAL READINGS:

- Gupta, S.C. and Kapoor, V. K. (2020): Fundamentals of Mathematical Statistics, 12th Ed., Sultan Chand and Sons.
- Miller, I. and Miller, M. (2013). John E. Freund's Mathematical Statistics, 8th Ed., Prentice Hall of India.
- Hogg, R. V., Craig, A. T., and Mckean, J. W. (2005): Introduction to Mathematical Statistics, 6th Edition, Pearson Education.
- Goon, A.K., Gupta, M. K. and Das Gupta, B. (2003): An Outline of Statistical Theory (Vol. II), 4th Edition., World Press, Kolkata.

SUGGESTED READINGS:

- Rohtagi, V. K. and Md., A. K. Saleh, E. (2009): An Introduction to Probability and Statistics, 2nd Edition, John Wiley and Sons.
- Casella, G. and Berger, R. L. (2002): Statistical Inference, 2nd Edition, Thomson Duxbury.
- Mood A.M., Graybill F.A. and Boes D.C. (1974). Introduction to the Theory of Statistics, McGraw Hill.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch University of Delhi, from time to time.

Discipline Specific Elective
Category-V

DISCIPLINE SPECIFIC ELECTIVE COURSE-2A: COMPUTER PROGRAMMING IN C

CREDIT DISTRIBUTION, ELIGIBILITY, AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical / Practice		
Computer Programming in C	4	3	0	1	Class XII with Mathematics	NIL

Learning Objectives:

The learning objectives of this course are as follows:

- To introduce computer programming and its roles in problem-solving.
- To describe data structures
- To develop logics that will help to create well-structured programs using C language

Learning Outcomes:

After successful completion of this course, students will be able to:

- Understand various data types, operators, library functions, Input/Output operations.
- Decision making and branching and looping.
- Use Arrays, Characters, and strings.
- Understand user-defined functions, and recursive functions.
- Storage class of Variables
- Apply Pointers and Structure
- Pre-processors: Macro substitution, macro with argument
- File inclusion in C, I/O operations on files.

SYLLABUS OF DSE-2A

Theory

UNIT I **(6 hours)**

Introduction to C

History and importance of C. Components, basic structure programming, character set, C tokens, Keywords and Identifiers and execution of a C program. Data types: Basic data types, Enumerated data types, derived data types. Constants and variables: declaration and assignment of variables, Symbolic Constants, overflow and underflow of data.

UNIT II **(9 hours)**

Expressions and I/O functions

Operators and Expressions: Arithmetic, relational, logical, assignment, increment/decrement and conditional operators, precedence of operators in an expression. Managing input and output from the standard devices.

UNIT III **(12 hours)**

Branching and Arrays

Decision making and branching - if…else, nesting of if…else, else if ladder, switch. Looping in C: for, while, do…while, jumps in and out of loops.

Arrays: Declaration and initialization of one-dim and two-dim arrays. Character arrays and strings: Declaring and initializing string variables, reading and writing strings from Terminal (using scanf and printf only).

UNIT IV **(9 hours)**

Functions and Storage class

User- defined functions: definition of functions, return values and their types, function prototypes and calls. Category of Functions and recursive function. Passing arrays to functions, Storage class of Variables.

UNIT V **(9 hours)**

Pointers, Macros and Files

Pointers: Declaration and initialization of pointer variables, accessing the address of a variable, accessing a variable through its pointer, pointer expressions, pointer increments/decrement and scale factor. Pointers and arrays, functions returning pointers. Introduction of structure. Pre-processors: Macro substitution, macro with argument, file inclusion in C. Defining and opening a file (only r, w and a modes), closing a file, I/O operations on files-fscanf and fprintf functions.

PRACTICAL/LAB WORK – 30 Hours

List of Practicals:

1. Roots of a quadratic equation (with imaginary roots also)
2. Sorting of an array and hence finding median
3. Mean, Median and Mode of a Grouped Frequency Data
4. Variance and coefficient of variation of a Grouped Frequency Data
5. Preparing a frequency table
6. Value of n! using recursion
7. Random number generation from exponential, normal (using CLT) and gamma distribution calculate sample mean and variance.
8. Matrix addition, subtraction, multiplication, Transpose and Trace
9. Fitting of Binomial distribution and apply Chi-square test for goodness of fit
10. Chi-square contingency table
11. t-test for difference of means
12. Paired t-test
13. F-ratio test
14. Multiple and Partial correlation.
15. Compute ranks and then calculate rank correlation(without tied ranks)

16. Fitting of lines of regression

Practical work to be conducted using electronic spreadsheet / EXCEL/ Statistical Software Package/ SPSS/ calculators.

ESSENTIAL READINGS:

- Balagurusamy, E. (2019): Programming in ANSI C, 8th Edition, Tata McGraw Hill.
- Gottfried, B.S. (1998): Schaum's Outlines: Programming with C, 2nd Edition, Tata McGraw Hill
- Kernighan, B.W. and Ritchie, D. (1988): C Programming Language, 2ndEdition,Prentice Hall.

SUGGESTED READING:

- Kanetkar, Y. (2020) : Let Us C, 18th Edition, BPB Publications
- Perry, G. and Miller, D. (2015) : C Programming Absolute Beginner's Guide, 3rd Edition, Pearson Publications

Note: Examination scheme and mode shall be as prescribed by the Examination Branch University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE-2B: ADVANCED TECHNIQUES OF SAMPLE SURVEYS

CREDIT DISTRIBUTION, ELIGIBILITY, AND PRE-REQUISITES OF THE COURSE

Course title and code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lectures	Tutorials	Practical/ Practice		
Advanced Techniques of Sample Surveys	4	3	0	1	Class XII with Mathematics	Knowledge of sample surveys

Learning Objectives:

The learning objectives of this course are as follows:

- To introduce advanced techniques relating to stratified and systematic sampling, ratio and regression methods of estimation.
- To introduce cluster and two-stage sampling when the population is divided into groups.
- To describe the errors due to factors other than the inductive process of inferring about the population from a sample.

Learning Outcomes:

After successful completion of this course, students will be able to:

- Understand Post Stratification,
- Determine the optimum number of strata and their construction
- Comprehend Circular systematic sampling

- Apply Ratio and Regression method of estimation under the Superpopulation model
- Use Cluster sampling, and Two-stage sampling
- Classify non-sampling errors

SYLLABUS OF DSE-2B

Theory

UNIT I **(15 Hours)**

Stratified and Systematic Sampling

Stratified Sampling: Post Stratification, effect of increasing the number of strata, determination of optimum number of strata, construction of strata (Neyman allocation, Proportional allocation and approximate method by Dalenius and Hodges), method of collapsed strata, allocation requiring more than 100% sampling.

Systematic Sampling: Circular systematic sampling, Yates' and Cochran method of estimation of sampling variance.

UNIT II **(15 Hours)**

Superpopulation Model and Cluster Sampling

Superpopulation model, Ratio method of estimation under superpopulation model, regression method of estimation under superpopulation model.

Cluster Sampling (equal-sized clusters): Estimation of population mean and its variance, efficiency of cluster sampling, the effect of formation of clusters randomly, efficiency of cluster sampling in terms of intra-class correlation, estimation of efficiency, optimum size of cluster.

UNIT III **(15 Hours)**

Two-Stage Sampling and Non-Sampling Errors

Two-stage sampling/sub-sampling (Equal first stage units): Estimation of population mean and its variance, Estimator of variance of the sample mean, allocation of sample to two-stages, comparison of two-stage with one-stage sampling.

Non-sampling errors: Classification of non-sampling errors, types of non-sampling errors, bias due to non-response, Hansen and Hurwitz technique, comparison of Hansen and Hurwitz technique with SRS under a cost constraint

PRACTICAL/LAB WORK – 30 Hours

List of Practicals:

Practical Work based on:

1. Dalenius and Hodges method of construction of strata
2. Determination of optimum number of strata
3. Cluster sampling
4. Circular systematic sample
5. Ratio method of estimation under superpopulation model
6. Regression method of estimation under superpopulation model
7. Two-stage sampling

Practical work to be conducted using electronic spreadsheet / EXCEL/ Statistical Software Package/ SPSS/ calculators.

ESSENTIAL READINGS:

- Cochran, W.G. (2011): Sampling Techniques (3rd Ed.), Wiley Eastern John Wiley and Sons..
- Sukhatme, P. V., Sukhatme, B. V., Sukhatme, S., Asok, C.(1984). Sampling Theories of Survey with Application, IOWA State University Press and Indian Society of Agricultural Statistics.
- Gupta, S.C. and Kapoor, V.K. (2007): Fundamentals of Applied Statistics, Sultan Chand and Sons.
- Singh, D. and Chaudhary, F. S. (2015): Theory and Analysis of Sample Survey Designs.

SUGGESTED READING:

- Murthy M.N. (1977): Sampling Theory & Statistical Methods, Statistical Pub. Society, Calcutta.
- Des Raj and Chandhok P. (1998): Sample Survey Theory, Narosa Publishing House.
- Goon, A. M., Gupta, M. K. and Dasgupta, B. (2001): Fundamentals of Statistics (Vol.2), World Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE-2C: DEMOGRAPHY (Not for category II)

CREDIT DISTRIBUTION, ELIGIBILITY, AND PRE-REQUISITES OF THE COURSE

Course title and code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lectures	Tutorials	Practical/ Practice		
Demography	4	3	0	1	Class XII with Mathematics	knowledge of basic statistics

Learning Objectives:

The learning objectives of this course are as follows:

- To introduce various demographic concepts and to explain the nature and scope of population studies.
- To explain evaluation and adjustments in age data using different indices.
- To introduce the construction of abridged life tables and the estimation and projection of population by different methods.
- To describe the Graduation of mortality rates by different methods.

Learning Outcomes:

After successful completion of this course, students will be able to:

- Understand the various components of Demography, sources of demographic data collection and errors therein.
- Comprehend population potential, density and concentration.
- Analyse the completeness of registration data using the Chandrasekharan-Deming formula.
- Use concepts of Stable and Stationary Populations.
- Use Balancing Equations.

- Use Myer's and UN indices in evaluating age data.
- Apply measures of the aging of population.
- Understand the concept of Abridged life tables and their construction by Reed and Merrell method and Greville's method.
- Synthesize population estimation and projection by different methods.
- Use Graduation of mortality rates by Makeham's and Gompertz graduation formula.
- Fit of Logistic curve and Makeham's formula.
- Understand the scope of population studies and its relationship with other disciplines.

SYLLABUS OF DSE-2C

Theory

UNIT I: (15 Hours)

Demographic concepts

Definition of demography and its various components, Major sources of demographic data collection and errors therein; Coverage and content errors, Rate of population change, Population density, Population potential, Population composition, Scale of urbanization and scale of population concentration, Concept of Stationary and stable populations, Nature and scope of population studies and its relationship with other disciplines. Balancing equations and its uses.

UNIT II: (15 Hours)

Adjustment of demographic data and abridged life tables

Measures of aging of population: Aged-child ratio, Old-age dependency ratio, Child dependency ratio, Age-dependency ratio, Adjustment of age data at younger age groups and adult ages. Chandrasekharan-Deming formula to check completeness of registration data. Myer's index, United Nation's index.

Abridged life tables: Concept and its construction by Reed-Merrell method and Greville's method.

UNIT III (15 Hours)

Population Estimates and Projections and Graduation of Mortality Rates:

Inter-censal and post-censal estimates by mathematical and component method ; Population Projection by the mathematical method: Logistic curve and its fitting by Pearl and Reed method and Rhodes method. Graduation of mortality rates: Makeham's and Gompertz graduation formula. Fitting of Makeham's formula.

PRACTICAL/LAB WORK - 30 hours

List of Practicals:

1. To find the Population density of a place.
2. To find Population Potential.
3. To find Rate of population change
4. To find Age Dependency ratio.
5. To find Aged Child ratio.
6. To find Child Dependency ratio.
7. To construct Abridged Life Table by Reed and Merrell method.
8. To Construct Abridged Life Table by Greville's method.

9. To fit Logistic curve by Pearl and Reed method.
10. To fit Logistic curve by Rhode's method.
11. To fit Makeham's formula by the method of Four Selected Points.
12. To fit Makeham's formula by the method of Partial Sums.

Practical work to be conducted using electronic spreadsheet / EXCEL/ Statistical Software Package/ SPSS/ calculators.

ESSENTIAL READINGS:

- Gun, A.M., Gupta, M.K. and Dasgupta, B. (2008): Fundamentals of Statistics, Vol. II, 9th Edition, World Press.
- Mukhopadhyay P. (1999): Applied Statistics, Books and Allied (P) Ltd.
- Biswas, S. (1988): Stochastic Processes in Demography & Application, Wiley Eastern Ltd.
- Pathak, K. B. and F. Ram (1998), *Techniques of Demographic Analysis*, 2nd Edition, Himalaya Publishing House, Bombay.

SUGGESTED READINGS:

- Croxton, Fredrick E., Cowden, Dudley J. and Klein, S. (1973): Applied General Statistics, 3rd Edition. Prentice Hall of India Pvt. Ltd.
- Keyfitz N., Beckman John A. (1985): Demography through Problems S-Verlag New York
- Ramakumar R. (1986): Technical Demography. Wiley Eastern Limited.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES OFFERED BY DEPARTMENT OF STATISTICS CATEGORY-VI

GENERIC ELECTIVE 4A: BASICS OF STATISTICAL INFERENCE

CREDIT DISTRIBUTION, ELIGIBILITY, AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
Basics of Statistical Inference	4	3	0	1	Class XII with Mathematics	Basic knowledge of probability, probability distributions and sampling distributions

Learning Objectives:

The learning objectives of this course are as follows:

- To introduce the concept of estimation theory and testing of hypothesis.
- To infer about the unknown population parameters based on random samples.
- To introduce the estimation/ inference about the population using hypothesis testing.

Learning Outcomes:

After successful completion of this course, students will be able to:

- Understanding of estimation theory, Point and interval estimations.
- Characteristics of a good estimator and different methods of estimation.
- Demonstrate the use of these techniques in data analysis.
- Develop the best/most powerful statistical tests to test the hypotheses regarding unknown population parameters by using the Neyman-Pearson theory.

SYLLABUS OF GE 4A

Theory

UNIT I: **(15 Hours)**

Estimation Theory

Estimation: Parameter space, sample space, point estimation, requirement of a good estimator, consistency, unbiasedness, efficiency, sufficiency, Minimum variance unbiased estimators, Factorization theorem, Fisher- Neyman Criterion: statement and applications, Cramer- Rao inequality: statement and application, MVB estimators and their applications, Statement of Rao-Blackwell theorem and Lehmann-Scheffe theorem..

UNIT II: (15 Hours)

Methods of Estimation

Methods of estimation: maximum likelihood, least squares and minimum variance, Properties of maximum likelihood estimators (illustration), Interval Estimation: confidence interval and confidence limits for the parameters of normal distribution, confidence intervals for large samples.

UNIT III: (15 Hours)

Test of Significance

Principles of test of significance: Null and alternative hypotheses, simple and composite, Type-I and Type-II errors, critical region, level of significance, power of the test, best critical region, most powerful test, uniformly most powerful test, uniformly most powerful unbiased critical region (UMPU), Neyman- Pearson Lemma: statement and its applications to construct most powerful test.

PRACTICAL/LAB WORK – 30 Hours

List of Practical / Lab Work:

1. Unbiased estimators and consistent estimators.
2. Efficient estimators and relative efficiency of estimators.
3. Sufficient estimators and factorization theorem.
4. Cramer- Rao inequality and MVB estimators.
5. Method of maximum likelihood estimation.
6. Method of least squares and minimum variance.
7. Confidence interval and confidence limits for the parameters of normal distribution.
8. Confidence intervals in case of large samples.
9. Type I and Type II errors, power of the test.
10. Most powerful critical region (NP Lemma).

Practical work to be conducted using electronic spreadsheet / EXCEL/ Statistical Software Package/ SPSS/ calculators.

ESSENTIAL READINGS:

- Miller, I. and Miller, M. (2013). John E. Freund's Mathematical Statistics, 8th Ed., Prentice Hall of India.
- S.C. Gupta and V.K. Kapoor (2020): Fundamentals of Mathematical Statistics, 12th Ed., Sultan Chand and Sons.
- R.V. Hogg, A.T. Craig and J.W. Mckean (2005): Introduction to Mathematical Statistics, 6th Edition, Pearson Education.

● A.M. Goon, M.K. Gupta and B. Das Gupta (2003): An Outline of Statistical Theory (Vol. II), 4th Ed.,World Press, Kolkata.

SUGGESTED READING:

● G. Casella and R.L. Berger (2002): Statistical Inference, 2nd Edition, Thomson Duxbury.
● E.J. Dudewicz and S.N. Mishra (1988): Modern Mathematical Statistics, John Wiley and Sons.
● V.K. Rohtagi and A.K. Md. E. Saleh (2009): An Introduction to Probability and Statistics, 2nd Edition, John Wiley and Sons.
● Mood A.M., Graybill F.A. and Boes D.C. (1974). Introduction to the Theory of Statistics, McGraw Hill.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch University of Delhi, from time to time.

GENERIC ELECTIVE 4B: STATISTICAL COMPUTING USING R

CREDIT DISTRIBUTION, ELIGIBILITY, AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Statistical Computation using R	**4**	**2**	0	**2**	Class XII pass with Mathematics.	Basic knowledge of computers and basics of Statistics

Learning Objectives:

The learning objectives of this course are as follows:

- Review and expand upon core topics in probability and statistics.
- Practice of graphical interpretation, probability distribution and data analysis using `R'.

Learning Outcomes:

After completing this course, students would have developed a clear understanding of:

- Various Graphical representation and interpretation of data.
- Automated reports giving detailed descriptive statistics.
- Understanding data and fitting suitable distribution.
- Testing of hypothesis, p-value and confidence interval.

- Random number generation and sampling procedures.
- Importing data, Code editing in R and flow controls if (), for (), while ()

SYLLABUS OF GE 4B

Theory

UNIT I **(07 hours)**

Overview of the R language

Installing R and R studio; working on R studio, scripts and text editors, creating and saving R workspaces, installing packages and loading libraries.

Data types in R (Numeric, Integer, Character, Logical, and Complex) Data structures in R (Vector, Matrix, Data frames, List). Mathematical operators, Relational Operators, and Logical operators and use of functions: class(), names(), head(), tail(),rbind(), cbind(), rownames(), colnames() etc. Learn how to load data, importing a data file viz. .xlsx. handling missing data in R

UNIT II **(10 hours)**

Descriptive statistics and Graphs

Generate automated reports giving detailed descriptive statistics mean, median, mode, variance, skewness, five-point summary , frequency table. Statistical/mathematical functions, scan(), summary(),str(), table(), cut(),cumsum(), cumprod()etc.

Graphical representation of data: bar-plot, pie-chart, boxplot, frequency polygon, ogives , scatter plot, Fitting of curve lm(): linear, quadratic, exponential functions, correlation, and linear and multiple regression with the interpretation of results.

UNIT III **(10 hours)**

Decision-making and distributions

Introduction to flow control: if, if-else, while, and for loops, simple coding. Distribution functions(r,d,p,q) for Binomial, Poisson, Exponential, and Normal . Data distribution: qqplot(), qqnorm()

UNIT IV **(08 hours)**

Testing of Hypothesis and Time series

Basics of statistical inference in order to understand hypothesis testing, and compute p-values and confidence intervals. Applications on t-test, F-test, and Chi-square test with the interpretation of results. Time series analysis, components of a time series data, time series model, ts(), decomposition(), and smoothing with the interpretation of results.

PRACTICAL/LAB WORK – 30 Hours

List of Practical / Lab Work:

1. Graphical representation of data with bar-plot, pie-chart, and boxplot.
2. Histogram with equal and unequal class intervals, frequency polygon
3. Less than and more than Ogives.
4. Fitting of curve linear, quadratic, exponential functions,
5. Scatter plots, correlation
6. Linear and multiple regression

7. Drawing sample using SRSWR, SRSWOR
8. Drawing sample using stratified under proportion allocation and systematic sampling,
9. functions(r,d,p,q) for discrete distributions viz. Binomial, Poisson.
10. functions(r,d,p,q) for continuous distribution viz. Uniform,Exponential, and Normal .
11. Test the goodness of fit for Binomial, Poisson distribution.
12. Chi- Square test for independence of attributes.
13. Single, paired and independent samples t-test.
14. Components of a time series data.
15. decomposition(), and smoothing() under time series data

ESSENTIAL READINGS:

- Braun, W. J., and Murdoch, D. J. (2007). A First Course in Statistical Programming with R. Cambridge University Press. New York.
- Gardener, M. (2012). Beginning R: The Statistical Programming Language, Wiley Publications.

SUGGESTIVE READING:

- Crawley, M. J. (2012). The R Book. 2nd Ed., John Wiley & Sons.
- Dalgaard, P. (2008). Introductory Statistics with R. 2nd Ed., Springer.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch University of Delhi, from time to time.

Semester 5

DEPARTMENT OF STATISTICS

B. Sc. (H) Statistics

Category I

DISCIPLINE SPECIFIC CORE COURSE – 13: THEORY OF ESTIMATION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Theory of Estimation	4	3	0	1	Class XII pass with Mathematics	Basic knowledge of probability, probability distributions and sampling distributions

Learning Objectives

The learning objectives include:

- Characterisation of the population based on sample information
- Understanding process of learning and determining the population characteristics based the available data.
- Strength and weakness of various methods for obtaining point and interval estimators with respect to optimal/desirable properties.

Learning Outcomes:

After completing this course, students will develop a clear understanding of:

- List desirable properties of point estimators based on an unknown parameter of a distribution viz. Unbiasedness, Consistency, Efficiency and Sufficiency.
- Derive the UMVUE of a parameter or function of a parameter (Using Cramer- Rao inequality, Rao-Blackwell theorem, and Lehmann- Scheffé Theorem).
- Understand and apply different techniques of finding optimal point estimators such as Maximum Likelihood Estimation, Method of Least Squares, Method of moments and the method of minimum chi-Squares

- Construct interval estimators, pivot method (Confidence Intervals) for unknown population parameters.

SYLLABUS OF DSC-13

Theory

UNIT I **(18 hours)**

Estimation

Estimation: Concepts of estimation, unbiasedness, sufficiency, consistency and efficiency. Fisher-Neyman Criterion (statement and applications), Factorization theorem. Complete statistic, Minimum variance unbiased estimator (MVUE), Rao-Blackwell and Lehmann-Scheffe theorems and their applications. Cramer-Rao inequality, Minimum Variance Bound estimators (MVBE) and their applications.

UNIT II **(10 hours)**

Methods of Estimations

Methods of Estimation: Method of moments, method of maximum likelihood estimation and method of minimum Chi-square.

UNIT III **(12 hours)**

Interval estimation

Interval estimation - Confidence intervals for parameters of various distributions, confidence interval for Binomial proportion, confidence interval for population correlation coefficient for Bivariate Normal distribution, pivotal quantity method of constructing confidence intervals, shortest length confidence intervals, large sample confidence intervals.

UNIT IV **(5 hours)**

Censored Data

Failure censored samples, time censored sample, estimation of expected lifetime in failure censored samples for one parameter exponential lifetime distribution

PRACTICAL/LABWORK (30 hours):

List of Practical

1. Unbiased estimators (including unbiased but absurd estimators)
2. Consistent estimators, efficient estimators and relative efficiency of estimators.
3. Cramer-Rao inequality and MVB estimators
4. Sufficient Estimators – Factorization Theorem, Complete Sufficient estimators, Rao-Blackwell theorem.
5. Lehman-Scheffe theorem and UMVUE
6. Maximum Likelihood Estimation
7. Asymptotic distribution of maximum likelihood estimators
8. Estimation by the method of moments,
9. Estimation by method of minimum Chi-square
10. Confidence interval based on large sample test
11. Confidence interval based on exact sample test

Practical work to be conducted using electronic spreadsheet / EXCEL/ Statistical Software Package/ SPSS/ calculators.

ESSENTIAL READINGS:

- Goon, A.M.; Gupta, M.K.; Dasgupta, B. (2013).: An Out Line of Statistical Theory, Volume 2, The World Press, Kolkata.
- Gupta, S.C. and Kapoor, V.K.(2020): Fundamental of Mathematical Statistics, 12th Edn. Sultan Chand and Sons.
- Sinha, S.K. (1986):Reliability and Life testing; Wiley Eastern.

SUGGESTIVE READINGS:

- Hogg, R.V. and Craig, A.T (2018): Introduction to Mathematical Statistics, 8th Edn. Pearson Education.
- Casella, G. and Berger, R.L. (2002): Statistical Inference. 2nd Edition, Duxbury Press, Pacific Grove.
- Hogg, R.V. and Tanis, E.A. (1988): Probability and statistical Inference, 6th Edn. Pearson Education
- Rohatgi V.K, (2013): Statistical Inference- Dover Publication, New York.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE-14: LINEAR MODELS

CREDIT DISTRIBUTION, ELIGIBILITY, AND PRE-REQUISITES OF THE COURSE

Course title & code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lectures	tutorials	practical		
Linear Models	4	3	0	1	Class XII pass with Mathematics	Basic knowledge of matrix theory, probability distributions and sampling distributions

Learning Objectives:

learning objectives include:

- Developing a clear understanding of the fundamental concepts of linear models.
- Developing associated skills allowing the students to work effectively with them.

Learning Outcomes:

After completion of this course, students will develop a clear understanding of:

- Theory and estimation of Linear Models.
- Gauss-Markov Theorem and its use.
- Distribution of quadratic forms.
- Simple and Multiple linear regression models and their applications.

- Fitting of these models to real or synthetic data, derivation of confidence and prediction intervals, and a sound scientific interpretation of the results.
- Techniques of Analysis of Variance and Covariance under fixed effects model.
- Assessment of the quality of the fit using classical diagnostics, awareness of potential problems (outliers, etc.) and application of remedies to deal with them.

SYLLABUS OF DSC-14

THEORY

UNIT I **(10 Hours)**

Estimation theory and Distribution of Quadratic forms

Gauss-Markov setup, Theory of linear estimation, Estimability of linear parametric functions, Method of least squares, Gauss-Markov theorem, Estimation of error variance. Cochran's theorem and distribution of quadratic forms.

UNIT II **(10 Hours)**

Analysis of Variance

Definition of fixed, random, and mixed effect models, Technique of ANOVA, assumptions for its validity, analysis of variance in one-way classified data and in two-way classified data with an equal number of observations per cell for fixed effect models.

UNIT III **(14 Hours)**

Regression analysis:

Estimation and hypothesis testing in case of simple and multiple linear regression analysis, Confidence intervals, and Prediction intervals, Concept of model matrix and its use in estimation. Effect of orthogonal columns in the X matrix, Partial F-test and Sequential F-test, Bias in regression estimates.

UNIT IV **(4 Hours)**

Analysis of Covariance:

Technique of ANOCOVA, assumptions for its validity, use, and analysis of covariance in one-way classified data with a single concomitant variable.

UNIT V **(7 Hours)**

Model checking and Model Building

Prediction from a fitted model, Residuals and Outliers, Lack of fit and pure error, Violation of usual assumptions concerning normality, Homoscedasticity, and collinearity, Diagnostics using quantile-quantile plots. Techniques for Variable selection. Polynomial Regression models: Orthogonal Polynomials.

PRACTICAL/LABWORK -30 Hours

List of Practicals

1. Estimability when X is a full rank matrix.
2. Estimability when X is not a full rank matrix.
3. Distribution of Quadratic forms.
4. Simple Linear Regression.
5. Multiple Regression.
6. Tests for Linear Hypothesis.
7. Bias in regression estimates.
8. Lack of fit.
9. Stepwise regression procedure.

10. Analysis of Variance of a one-way classified data.
11. Analysis of Variance of two-way classified data with one observation per cell.
12. Analysis of Variance of two-way classified data with m (> 1) observations per cell.
13. Analysis of Covariance of a one-way classified data.
14. Residual Analysis.
15. Orthogonal Polynomials.

Practical work to be conducted using electronic spreadsheet / EXCEL/ Statistical Software Package/ SPSS/ calculators.

ESSENTIAL READINGS

- Montgomery, D. C., Peck, E. A. and Vining, G. G. (2012): Introduction to Linear Regression Analysis, 5th Ed., John Wiley and Sons.
- Rencher, A. C. and Schaalje, G. B. (2008): Linear Models in Statistics, 2nd Ed., John Wiley and Sons.
- Draper, N. R. and Smith, H. (1998): Applied Regression Analysis, 3rd Ed., John Wiley and Sons.

SUGGESTIVE READINGS:

- Weisberg, S. (2005): Applied Linear Regression, 3rd Ed., John Wiley and Sons.
- Rawlings, John O. Pantula Sastry G. Dickey, David A. (1998) Applied Regression Analysis: A Research Tool, Second Edition
- Bapat, R.B.(1993): Linear Algebra and Linear Models, Hindustan Book Agency.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE 15 –: STOCHASTIC PROCESSES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Stochastic Processes	4	3	0	1	Class XII pass with Mathematics.	Knowledge of probability, probability distributions, and sampling distributions

Learning Objectives:

- To define, design and model

- To analyze transitions through Markov chains
- To identify the real life applications of stochastic processes

Learning Outcomes:

After completing this course, students will develop a clear understanding of:

- The fundamental concepts of stochastic processes.
- Tools needed to analyze stochastic processes.
- Markov processes and Markov chains.
- Markov chain applications.
- Poisson process and its variations.
- Random walk and ruin theory

SYLLABUS OF DSC-15

Theory

UNIT I **(13 hours)**

Introduction of Stochastic Process

Probability Distributions: Generating functions, Bivariate probability generating functions, and their application.

Stochastic Process: Introduction, Covariance stationary, and Stationary Process.

UNIT II **(15 hours)**

Markov Chains

Markov Chains: Definition of Markov Chain, transition probability matrix, order of Markov chain, Markov chain as graphs, higher transition probabilities.

Classification of states and chains, stationary process, and stability of Markov system. Generalization of independent Bernoulli trials,

UNIT III **(12 hours)**

Poisson Process

Poisson Process: postulates of Poisson process, and properties of Poisson process and applications.

Gambler's Ruin Problem: Classical ruin problem, expected duration of the game.

PRACTICAL/LAB WORK – (30 hours)

List of Practical:

1. Applications of Partial Fraction Theorem.
2. Problems based on (covariance) stationary processes.
3. Simulation of Markov chains.
4. Calculation of transition probability matrices.
5. To check whether the given chain is irreducible or not.
6. Classification of states.
7. Computation of probabilities in case of generalizations of independent Bernoulli trials.
8. Simulation and applications of Poisson processes.
9. Transition Markov chain in case of gambler's ruin problem .
10. Calculation of probabilities for ruin problems.

Practical work to be conducted using electronic spreadsheet / EXCEL/ Statistical Software Package/ SPSS/ calculators.

ESSENTIAL READINGS

- Feller, W. (1968). Introduction to probability Theory and Its Applications, Vol I, 3rd Ed., Wiley International.
- Medhi, J. (2019). Stochastic Processes,4th Ed., Reprint, New Age International Publishers.

SUGGESTIVE READINGS:

- Sheldon M. Ross (2007) : Introduction to Probability Models, 9th edition, Academic Press publications
- Karlin & Taylor (1975) : A first course in stochastic processes, 2nd edition, Academic Press publications
- Basu, A.K. (2005). Introduction to Stochastic Processes, Narosa Publishing.
- P. G. Hoel, S. C. Port and C. J. Stone: Introduction to Stochastic Processes.
- J. G. Kemeny, J. L. Snell and A. W. Knapp: Finite Markov Chains.
- Geoffrey R, Grimmett & David R. Stirzaker : Probability and Random Processes
- Bhat,B.R. (2000). Stochastic Models: Analysis and Applications, New Age International Publishers.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch University of Delhi, from time to time.

B.Sc. (P)/B.A(P) with Statistics as Major

Category II

DISCIPLINE SPECIFIC CORE COURSE - 9: INTRODUCTION TO DESIGN OF EXPERIMENTS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Introduction to Design of Experiments	4	3	0	1	Class XII pass with Mathematics	knowledge of inferential statistics, and ANOVA

Learning Objectives:

The learning objectives include

- To design and conduct experiments.
- To analyze and interpret data.

Learning Outcomes:

After completing this course, students will developed a clear understanding of

- The fundamental concepts of Design of Experiments.
- Introduction to planning valid and economical experiments.
- Completely randomized design.
- Randomized block design.
- Latin square design.
- Balanced incomplete block design.
- Full and confounded factorial designs with two levels.
- Fractional factorial designs with two levels.

SYLLABUS OF DSC-9

Theory

UNIT I **(15 hours)**

Experimental designs

Experimental designs: Role, historical perspective, terminology, experimental error, basic principles, uniformity trials, fertility contour maps, choice of size and shape of plots and blocks. Basic designs: Completely Randomized Design (CRD), Randomized Block Design (RBD), Latin Square Design (LSD) - layout, model and statistical analysis, relative efficiency.

UNIT II **(09 hours)**

Balanced Incomplete Block Designs

Balanced Incomplete Block Design (BIBD)- parameters, relationships among its parameters, incidence matrix and its properties, Symmetric BIBD, Resolvable BIBD, Affine Resolvable BIBD.

UNIT III **(15 hours)**

Factorial experiments

Factorial experiments**:** Concepts, notations and advantages, 2^2, $2^3 \ldots 2^n$ factorial experiments, design and analysis, Total and Partial confounding for 2^n ($n \leq 5$). Factorial experiments in a single replicate.

UNIT IV **(06 hours)**

Fractional factorial experiments

Fractional factorial experiments**:** Construction of one-half and one-quarter fractions of 2^n ($n \leq 5$) factorial experiments, Alias structure, Resolution of a design.

PRACTICAL/LAB WORK – (30 hours)
List of Practical:

1. Analysis of CRD, RBD & LSD.
2. Analysis of 2^2 and 2^3 factorial experiments in CRD and RBD.
3. Analysis of a completely confounded two level factorial designs in 2 and 4 blocks.
4. Analysis of a partially confounded two level factorial design.
5. Analysis of a single replicate of a 2^n design.
6. Analysis of one-half and one-quarter fractions of 2^n factorial design.

Practical work to be conducted using electronic spreadsheet / EXCEL/ Statistical Software Package/ SPSS/ calculators.

ESSENTIAL READINGS

- Goon, A.M., Gupta, M.K. and Dasgupta, B. (2005): Fundamentals of Statistics, Vol. II, 8thEd. World Press, Kolkata.
- Montgomery, D. C. (2008): Design and Analysis of Experiments, John Wiley.
- Das., M.N. and Giri, N.C. (1986): Design and Analysis of Experiments, Wiley Eastern.
- Mukhopadhyay, P (2011): Applied Statistics, 2nd edition revised reprint, Books and Allied (P) Ltd.

SUGGESTIVE READINGS

- Cochran, W.G. and Cox, G.M. (1959): Experimental Design, Asia Publishing House.
- Kempthorne, O. (1965): The Design and Analysis of Experiments, John Wiley.
- Joshi, D.D. (1987): Linear Estimation and Design of Experiments, John Wiley & Sons.
- Dey, Aloke (1986): Theory of Block Designs, Wiley Eastern Ltd.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE– 10: STATISTICAL SIMULATION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Statistical Simulation	4	3	0	1	Class XII pass with Mathematics	knowledge of basic statistics

Learning Objectives

The learning objectives include:

- Concept of simulation and simulation modelling.
- Generation of Pseudo random number generators as well as from standard statistical distributions. Monte-Carlo simulation technique.
- Application of simulation techniques.

Learning Outcomes

After completing this course, students will possess skills concerning:

- How simulation may be used to understand the behavior of real world systems by utilizing mathematical models with an emphasis on simulation.
- How to generate random numbers by the different methods.
- Hands-on experience in using simulation software packages/structured programming languages.

SYLLABUS OF DSC- 10

Theory

UNIT I **(12 Hours)**

Introduction to simulation:

Introduction, Definitions of simulation, Need for simulation, general principles, types of simulation, Simulation models, Phases in simulation models, Event type simulation, Monte Carlo simulation technique.

UNIT II **(18 Hours)**

Random numbers generation:

Methods for the generation of Random numbers, Pseudo random number generators, Mid square method for the generation of random number and its limitations, the inverse transform method; Generating the Discrete and Continuous random variables.

UNIT III **(15 Hours)**

Applications of simulation:

Applications of simulation in different fields of study, simulation of Inventory problems and simulation of Queueing problems. Advantages and disadvantages of simulation, Simulation languages, Scope of simulation techniques.

Practical/Lab Work – (30 hours)

List of Practical:

1. Pseudo random number generators;
2. Generation of U(0,1).
3. Generation using the inverse transform method applied to:
   (a) Discrete distribution and
   (b) Continuous distribution.
4. Monte Carlo simulation method and applications.
5. Problems based on Queueing systems.
6. Problems based on Inventory Controls, etc.

Practical work to be conducted using electronic spreadsheet / EXCEL/ Statistical Software Package/ SPSS/ calculators.

ESSENTIAL READING:

- Sheldon M. Ross (2022) Simulation, Sixth Edition, Elsevier Academic press publication.
- Taha, H. A. (2010). Operations Research. An Introduction, 9th Ed, Pearson.
- Swarup, K. Gupta, P.K. and Mohan, M. (2019). Operations Research, 15th Ed, Sultan Chand & Sons.

SUGGESTED READINGS:

- Voss, J. (2013). An introduction to statistical computing: A simulation-based approach, 1st Ed., Wiley series in computational statistics.
- Sharma, J. K. (2017). Operations Research: Theory and applications, 6th Edition, Trinity Press.
- Payer T.A. (1982). Introduction to simulation, McGraw Hill.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch University of Delhi, from time to time.

B.Sc. (P)/B.A(P) with Statistics as Non- Major

Category III

DISCIPLINE SPECIFIC CORE COURSE - 5: INTRODUCTION TO DESIGN OF EXPERIMENTS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Introduction to Design of Experiments	4	3	0	1	Class XII pass with Mathematics	knowledge of inferential statistics, and ANOVA

Learning Objectives:

The learning objectives include

- To design and conduct experiments.
- To analyze and interpret data.

Learning Outcomes:

After completing this course, students will develop a clear understanding of

- The fundamental concepts of Design of Experiments.
- Introduction to planning valid and economical experiments.
- Completely randomized design.
- Randomized block design.
- Latin square design.
- Balanced incomplete block design.
- Full and confounded factorial designs with two levels.
- Fractional factorial designs with two levels.

SYLLABUS OF DSC-5

Theory

UNIT I **(15 hours)**

Experimental designs

Experimental designs: Role, historical perspective, terminology, experimental error, basic principles, uniformity trials, fertility contour maps, choice of size and shape of plots and blocks. Basic designs: Completely Randomized Design (CRD), Randomized Block Design (RBD), Latin Square Design (LSD) - layout, model and statistical analysis, relative efficiency.

UNIT II **(09 hours)**

Balanced Incomplete Block Designs

Balanced Incomplete Block Design (BIBD)- parameters, relationships among its parameters, incidence matrix and its properties, Symmetric BIBD, Resolvable BIBD, Affine Resolvable BIBD.

UNIT III **(15 hours)**

Factorial experiments

Factorial experiments**:** Concepts, notations and advantages, 2^2, $2^3 \ldots 2^n$ factorial experiments, design and analysis, Total and Partial confounding for 2^n ($n \leq 5$). Factorial experiments in a single replicate.

UNIT IV **(06 hours)**

Fractional factorial experiments

Fractional factorial experiments**:** Construction of one-half and one-quarter fractions of 2^n ($n \leq 5$) factorial experiments, Alias structure, Resolution of a design.

PRACTICAL/LAB WORK – (30 hours)
List of Practical:

1. Analysis of CRD, RBD & LSD.
2. Analysis of 2^2 and 2^3 factorial experiments in CRD and RBD.
3. Analysis of a completely confounded two level factorial designs in 2 and 4 blocks.
4. Analysis of a partially confounded two level factorial design.
5. Analysis of a single replicate of a 2^n design.
6. Analysis of one-half and one-quarter fractions of 2^n factorial design.

Practical work to be conducted using electronic spreadsheet / EXCEL/ Statistical Software Package/ SPSS/ calculators.

ESSENTIAL READINGS

- Goon, A.M., Gupta, M.K. and Dasgupta, B. (2005): Fundamentals of Statistics, Vol. II, 8thEd. World Press, Kolkata.
- Montgomery, D. C. (2008): Design and Analysis of Experiments, John Wiley.
- Das., M.N. and Giri, N.C. (1986): Design and Analysis of Experiments, Wiley Eastern.
- Mukhopadhyay, P (2011): Applied Statistics, 2nd edition revised reprint, Books and Allied (P) Ltd.

SUGGESTIVE READINGS

- Cochran, W.G. and Cox, G.M. (1959): Experimental Design, Asia Publishing House.
- Kempthorne, O. (1965): The Design and Analysis of Experiments, John Wiley.
- Joshi, D.D. (1987): Linear Estimation and Design of Experiments, John Wiley & Sons.
- Dey, Aloke (1986): Theory of Block Designs, Wiley Eastern Ltd.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch University of Delhi, from time to time.

Discipline Specific Elective
Category-V

DISCIPLINE SPECIFIC ELECTIVE COURSE – 3A: ACTUARIAL STATISTICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Actuarial Statistics	4	**3**	0	1	Class XII pass with Mathematics	**NIL**

Learning Objectives

The learning objectives include:

· To learn basics of Actuarial Science.

· To learn advanced techniques in Actuarial Science with practical applications in daily life.

Learning Outcomes:

After completing this course, students will develop a clear understanding of:

· Basics of Actuarial Science.

· Tools for applying actuarial methods in phenomena for financial research and insurance.

· computation of premiums and settlement of claims

SYLLABUS OF DSE-3A

Theory

UNIT I **(9 Hours)**

Introductory Statistics and Insurance Applications

Introductory Statistics and Insurance Applications: Discrete, continuous and mixed probability distributions. Insurance applications, sum of random variables. Utility theory: Utility functions, expected utility criterion, types of utility function, insurance and utility theory.

UNIT II **(12 Hours)**

Principles of Premium Calculation

Principles of Premium Calculation**:** Properties of premium principles, examples of premium principles. Individual risk models: models for individual claims, the sum of independent claims, approximations and their applications.

UNIT III **(6 Hours)**

Survival Distribution and Life Tables:

Survival Distribution and Life Tables: Uncertainty of age at death, survival function, time-until-death for a person, curate future lifetime, force of mortality, life tables with examples, deterministic survivorship group, life table characteristics

UNIT IV **(15 Hours)**

Life Insurance
Life Insurance: Models for insurance payable at the moment of death, insurance payable at the end of the year of death and their relationships. Life annuities: continuous life annuities, discrete life annuities. Premiums: continuous and discrete premiums.

PRACTICAL/LAB WORK – (30 hours)
List of Practical:
1. Risk computation for different utility models.
2. Discrete and continuous risk calculations.
3. Calculation of aggregate claims for collective risks.
4. Calculation of aggregate claim for individual risks.
5. Computing Ruin probabilities and aggregate losses.
6. Annuity and present value of contract.
7. Computing premium for different insurance schemes.
8. Practical based on life models and tables.

Practical work to be conducted using electronic spreadsheet / EXCEL/ Statistical Software Package/ SPSS/ calculators.

ESSENTIAL READINGS

- Dickson, C. M. D. (2005): Insurance Risk And Ruin (International Series On Actuarial Science), Cambridge University Press. Bowers, N. L., Gerber, H. U., Hickman,
- Atkinson, M.E. and Dickson, D.C.M. (2011): An Introduction to Actuarial Studies, Elgar Publishing.

SUGGESTIVE READINGS

- J. C., Jones, D. A. And Nesbitt, C. J. (1997): .Actuarial Mathematics, Society Of Actuaries, Itasca, Illinois, U.S.A.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE– 3B: SIMULATION TECHNIQUES IN STATISTICS (Not for category II)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Simulation Techniques in Statistics	4	3	0	1	Class XII pass with Mathematics	knowledge of basic statistics

Learning Objectives

The learning objectives include:

- The objective of this course is to introduce the nuances of techniques involved in simulation studies as applicable to modeling of systems.
- The programming implementations will be completed using C/MATLAB/R/Python.

Learning Outcomes

After completing this course, students will possess skills concerning:

- Use of simulation to understand the behavior of real world systems.
- Ability to generate Pseudo-random numbers by the different methods.
- Random variable generation from theoretical distributions.
- Use of Monte Carlo methods and regenerative simulation.
- Ability to develop programs for the purpose of simulation.

SYLLABUS OF DSE- 6d

Theory

UNIT I **(12 Hours)**

Introduction to simulation

Introduction, Systems, Simulation models, Classification of simulation models; Simulation and Monte Carlo Methods, Pseudo-random number generators; Statistical tests of Pseudo-random numbers.

UNIT II **(18 Hours)**

Generation of random numbers

Random number generation. Random variable generation- Inverse transform method, Composition method, Acceptance-Rejection method. Generating from common statistical distributions- Discrete and Continuous. Simulation of random vectors, Generating Poisson processes and Markov chain.

UNIT III **(15 Hours)**

Applications of simulation

Discrete event simulation; Monte Carlo integration; Variance reduction techniques; Applications to statistical inference; Point Estimators, Confidence Intervals and hypothesis tests.

Practical work to be conducted using electronic spreadsheet / EXCEL/ Statistical Software Package/ SPSS/ calculators.

PRACTICAL/ LAB WORK – (30 hours)

List of Practical:

1. Pseudo random number generators.
2. Generation of U (0, 1).
3. Problems based on statistical tests.
4. Application to standard statistical distributions (discrete and continuous):
   (a) The inverse transforms method.

(b) Acceptance-Rejection method.

5. Problems based on Composition Method.
6. Problems based on Monte Carlo integration.
7. Problems based on Regenerative methods.

ESSENTIAL READINGS:

- Rubinstein, R.Y. (2017). Simulation and the Monte Carlo Methods, Wiley.
- Voss, J. (2014). An introduction to statistical computing: a simulation-based approach, Wiley series in computational statistics.
- Sheldon M. Ross (2022) Simulation, Sixth Edition, Elsevier Academic press publication.
- Averill M. Law and W. David Kelton (1991). Simulation modeling and analysis: McGraw-Hill, Inc., New York.

SUGGESTED READINGS:

- Reitman, J. (1971). Computer simulation Applications, John Wiley & Sons.
- Swarup, K. Gupta, P.K. and Mohan, M. (2014). Operations Research, 15th Ed, Sultan Chand & Sons.
- Fishman, G.S. (1996). Monte Carlo-Concepts, Algorithms and Applications, Springer.
- Sheskin, D. J. (2011). Handbook of parametric and nonparametric statistical procedures, CRC Press. Boca Raton, FL.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch University of Delhi, from time to time.

DISCIPLINE-SPECIFIC ELECTIVE COURSE–3C: ENVIRONMENTAL STATISTICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Environmental Statistics	4	3	0	1	Class XII pass with Mathematics	knowledge of sampling distributions and linear models

Learning Objectives

The learning objectives include:

· To study the role of Statistics in Environmental Science.

· To study different Statistical distributions, sampling procedures, linear models and analysis of variance.
- To study environmental monitoring.
- To study time-series analysis and Spatial-data analysis.
- To learn about censored data and risk assessment.

Learning Outcomes:

After completing this course, students will develop a clear understanding of:

- The role of Statistics in Environmental Science.
- Uses and applications of different Statistical distributions, sampling procedures, linear models and analysis of variance.
- Environmental monitoring.
- Time-series analysis and Spatial-data analysis.
- Censored data and risk assessment.
- They will be able to do risk analysis using spreadsheet.

SYLLABUS OF DSE – 3C

Theory

UNIT I: (9 hours)

Introduction

The Role of Statistics in Environmental Science: Introduction, Examples, Base-line, Targeted, Regular monitoring, Role of Statistics in Environmental Science. Environmental Sampling: Introduction, Sampling Procedures, Sampling in the wild.

UNIT II: (9 hours)

Models for Data and Environmental Monitoring

Models for Data: Statistical models, Discrete statistical distribution, Continuous statistical distributions, Linear Models, ANOVA. Environmental Monitoring: Detection of changes by ANOVA, Detection of changes using control chart, Chi squared tests for a change in a distribution.

UNIT III: (9 hours)

Time Series and Spatial-Data Analysis

Introduction to Time Series Analysis, Components of Time Series, Serial correlation. Introduction to Spatial-Data Analysis, Types of spatial data, Spatial Patterns in quadrat counts, and Correlation between quadrat counts.

UNIT IV: (9 hours)

Censored Data and Risk Assessment:

Introduction to Censored Data, Single sample estimation, Types of censoring. Introduction to Risk Assessment, Principles for Monte Carlo Risk Assessment, Risk Analysis using spreadsheet.

PRACTICAL/LAB WORK - (30 HOURS)

List of Practical:

1. Collection of environmental data.

2. Fitting different discrete distributions. Case: Estimate the survival rates of salmon in rivers and continuous distributions,
3. Fitting regression model (simple and multiple), Case: Chlorophyll-a in lakes/rivers as an indicator of lake/river water quality, Soil, and Vegetation data.
4. Change detection in the environment using ANOVA, Control Charts, Hypotheses testing- Case: pH values, SO_4 concentrations etc in lakes/rivers, Annual ring widths in trees,
5. Time series analysis- Case: World Temperature data, Annual sunspot data, Rainfall data, or on any environmental issues.
6. Serial correlation- Case: Northern and Southern Hemisphere temperatures
7. Single sample estimation,
8. Correlation between quadrats counts- Case: Correlation between counts for two different species in a water body.
9. Analysis of censored environmental data,
10. Risk analysis- Case: Contaminant uptake in Tap-water

Practical work to be conducted using electronic spreadsheet / EXCEL/ Statistical Software Package/ SPSS/ calculators.

ESSENTIAL READINGS:

- Bryan F. J. Manly (2009): Statistics for Environmental Science and Management, 2nd Edition, Chapman and Hall.
- Barnett, Vic (2006): Environmental Statistics: Methods and Applications, Reprinted 2004, Wiley.

SUGGESTED READINGS:

- Milalrd, Steben P. and Neeranchal, Nagaraj K (2000): Environmental Statistics with S-plus, CRC Press.
- Gelfand Alan E. (2019): Handbook of Environmental and Ecological Statistics, Chapman and Hall, CRC Press.
- David Valerie (2019): Statistics in Environmental Sciences, Wiley.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 3d: REGRESSION ANALYSIS (Not for category I)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Regression Analysis	4	3	0	1	Class XII pass with Mathematics	knowledge of sampling distributions and matrix theory

Learning Objectives

The learning objectives include:

- Be able to carry out and interpret Correlation Analysis
- Be able to carry out and interpret inference procedures for simple linear regression.
- Know the simple and multiple linear regression models, and be able to state and explain the standard methods of estimation for these models.

Learning Outcomes:

After completing this course, students will develop a clear understanding of:

- Basic concept of matrix, its types and operations,
- correlation and regression techniques, the two very powerful tools in statistics,
- Linear and Multiple Linear regression,
- regression diagnostics, multicollinearity, residual plots and estimation and tests for regression coefficients.
- concept of coefficient of determination and inference on partial and multiple correlation coefficients.

SYLLABUS OF DSE-3d

Theory

UNIT I **(15 hours)**

Introduction

Correlation, Types of correlation, Methods of studying simple correlation - Scatter diagram, Covariance between two variables: Definition, computation, effect of change of origin and scale, Karl Pearson's coefficient of correlation, Spearman's Rank correlation coefficient.

UNIT II **(15 hours)**

Linear Regression

Linear Regression: Meaning of regression, difference between correlation and regression, simple linear regression model, Estimation of regression parameters by least squares method (fitting of regression

model), Interpretation of parameters. Test of significance of regression and confidence interval, Concept of residual, Residual plots, comparison of two models on the basis of residual sum of squares.

UNIT III **(15 hours)**

Multiple Linear Regression

Multiple linear regression: Estimation of regression parameters by least square method and their properties, Interpretation of parameters. Concept of coefficient of determination R^2 and adj R^2. Testing of hypothesis and bias in regression estimates.

PRACTICAL/LAB WORK – (30 hours)

List of Practical:

1. Computation of covariance, coefficient of correlation, checking for independence and uncorrelatedness of two variables.
2. Lines of regression, angle between lines and estimation of parameters.
3. Lines of regression and regression coefficients.
4. Spearman rank correlation with/without ties.
5. Fitting of simple linear regression model
6. Testing of hypothesis in SLRM
7. Fitting of multiple linear regression model
8. Testing of hypothesis in MLRM
9. Bias in regression parameters

Practical work to be conducted using electronic spreadsheet / EXCEL/ Statistical Software Package/ SPSS/ calculators.

ESSENTIAL READINGS

- Draper, N. R. and Smith, H. (1998). Applied Regression Analysis. 3rdEdition. John Wiley.
- Montgomery, D. C., Peck, E. A. and Vining, G. G. (2013). Introduction to Linear Regression Analysis. 5th Edition. Wiley.

SUGGESTIVE READINGS:

- Hosmer, D. W., Lemeshow, S. and Sturdivant R.X. (2013). Applied Logistic Regression, Wiley Blackwell.
- Neter, J., Kutner, M. H., Nachtsheim, C.J. and Wasserman, W. (1996). Applied Linear Statistical Models, 4th Edition, Irwin USA.
- Gun, A.M., Gupta, M.K. and Dasgupta, B. (2005). An Outline of Statistical Theory, Volume II, World Press.
- Arora, S. and Bansi, L. (1968). New Mathematical Statistics, 1st Ed., Vanita Printers.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES
OFFERED BY DEPARTMENT OF STATISTICS
CATEGORY-VI

GENERIC ELECTIVE -5A: INTRODUCTION TO STATISTICAL LINEAR MODELS

CREDIT DISTRIBUTION, ELIGIBILITY, AND PRE-REQUISITES OF THE COURSE

Course title & code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lectures	tutorials	practical		
Introduction to Statistical Linear Models	4	3	0	1	Class XII pass with Mathematics	knowledge of sampling distributions and matrix theory

Learning Objectives:
learning objectives include:

- Developing a clear understanding of the fundamental concepts of linear models.
- Developing associated skills allowing the students to work effectively with them.

Learning Outcomes:
After completion of this course, students will have developed a clear understanding of:

- Theory and estimation of Linear Models.
- Gauss-Markov Theorem and its use.
- Distribution of quadratic forms.
- Simple and Multiple linear regression models and their applications.
- Fitting of these models to real or synthetic data, derivation of confidence and prediction intervals, and a sound scientific interpretation of the results.
- Techniques of Analysis of Variance under fixed effects model.
- Assessment of the quality of the fit using classical diagnostics,

SYLLABUS OF GE-5A
THEORY

UNIT I: **(12 hours)**

Introduction:

Statistical linear models and their classification, Estimability of linear parametric functions, Gauss-Markov set-up, Normal equations, and Gauss-Markov theorem: full rank case and non-full rank case (without proof).

UNIT II: **(8 hours)**

Distribution of Quadratic Forms:

Cochran's theorem (without proof), Necessary and sufficient conditions for the mutual independence of quadratic forms and for the mutual independence of a linear function and a quadratic form.

UNIT III: **(13 hours)**

Regression Analysis:

Simple and Multiple linear regression: Estimation and testing of hypothesis, confidence interval, bias in regression estimates, Lack of fit and pure error, Residuals, and their plot. Techniques for Variable selection. Polynomial Regression models: Orthogonal Polynomials.

UNIT IV: **(12 hours)**

Analysis of Variance (ANOVA):

The technique of ANOVA for one-way and two-way classifications with an equal number of observations per cell under a fixed effects model.

PRACTICAL/LABWORK -30 Hours

List of Practicals

1. Estimability when X is a full rank matrix
2. Estimability when X is not a full rank matrix
3. Distribution of Quadratic forms
4. Simple Linear Regression
5. Multiple Regression
6. Tests for Linear Hypothesis
7. Bias in regression estimates
8. Lack of fit
9. Orthogonal Polynomials
10. Analysis of Variance of a one-way classified data.
11. Analysis of Variance of a two-way classified data with one observation per cell.
12. Analysis of Variance of two-way classified data with m (> 1) observations per cell.

Practical work to be conducted using electronic spreadsheet / EXCEL/ Statistical Software Package/ SPSS/ calculators.

ESSENTIAL READINGS

- Montgomery, D. C., Peck, E. A. and Vining, G. G. (2012): Introduction to Linear Regression Analysis, 5th Ed., John Wiley and Sons.
- Rencher, A. C. and Schaalje, G. B. (2008): Linear Models in Statistics, 2nd Ed., John Wiley and Sons.
- Draper, N. R. and Smith, H. (1998): Applied Regression Analysis, 3rd Ed., John Wiley and Sons.

SUGGESTIVE READINGS:

- Weisberg, S. (2005): Applied Linear Regression, 3rd Ed., John Wiley and Sons.
- Rawlings, John O. Pantula Sastry G. Dickey, David A. (1998) Applied Regression Analysis: A Research Tool, Second Edition
- Bapat, R.B.(1993): Linear Algebra and Linear Models, Hindustan Book Agency.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch University of Delhi, from time to time.

GENERIC ELECTIVE – 5b: STATSTICAL TECHNIQUES FOR QUALITY CONTROL

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Statistical Techniques for Quality Control	4	3	0	1	Class XII pass with Mathematics	knowledge of basic statistics

Learning Objectives

The learning objectives include:

- This course will help students to learn techniques and approach of SQC being used in industry to manufacture goods and services of high quality at low cost.
- This course will also give exposure to Sampling Inspection Plan.

Learning Outcomes:

After completing this course, students will develop a clear understanding of:

- Quality, Historical background, ISO standards.
- Statistical process control tools- Control charts for variables, attributes.
- Statistical product control tools- Sampling inspection plans, Dodge and Romig plans.

SYLLABUS OF GE-5b

Theory

UNIT I **(10 hours)**

Introduction, historical perspective and ISO Quality Standards

Quality: Definition, dimensions of quality, its concept, application and importance. Brief historical perspective of quality control and improvements. Quality system and standards: Introduction to ISO quality standards. Introduction to Process and Product Control, Statistical Process Control, Chance and Assignable causes of variation.

UNIT II **(20 hours)**

Statistical Control Charts

Construction and Statistical basis of 3-σ Control charts. Control charts for variables: X-bar & R-chart, X-bar & s-chart. Rational Sub-grouping, Revised and Modified Control Limits. Control charts for attributes: np-chart, p-chart, c-chart and u-chart. Comparison between control charts for variables and control charts for attributes. Analysis of patterns on control chart, estimation of process capability.

UNIT III **(15 hours)**

Acceptance sampling plan

Principle of acceptance sampling plans. Single sampling plans their OC, AQL, LTPD, AOQ, AOQL, ASN, ATI functions with graphical interpretation, use and interpretation of Dodge and Romig's sampling inspection plan tables.

PRACTICAL/LAB WORK – (30 hours)

List of Practical:

1. Construction and interpretation of statistical control charts $\bar{X}$& R-chart for known parameters.
2. Construction and interpretation of statistical control charts $\bar{X}$ & R-chart with revised control limits for unknown parameters.
3. Construction and interpretation of statistical control charts $\bar{X}$ & s-chart with revised control limits for unknown parameters.
4. Construction and interpretation of statistical control charts np chart.
5. Construction and interpretation of statistical control charts p-chart with fixed sample size.
6. Construction and interpretation of statistical control charts p-chart with variable sample size.
7. Construction and interpretation of statistical control charts c-chart.
8. Construction and interpretation of statistical control charts u-chart.
9. Single sample inspection plan: Construction and interpretation of OC, AQL, LTPD, ASN, ATI, AOQ, AOQL curves.
10. Single sample inspection plan: Construction and interpretation of OC, AQL, LTPD, ASN, ATI, AOQ, AOQL curves for varying acceptance number.
11. Calculation of process capability and comparison of 3-sigma control limits with specification limits.

Practical work to be conducted using electronic spreadsheet / EXCEL/ Statistical Software Package/ SPSS/ calculators.

ESSENTIAL READINGS

- Montogomery, D. C. (2013). Introduction to Statistical Quality Control, 7th Edition, Wiley India Pvt. Ltd.

SUGGESTIVE READINGS:

- Goon A.M., Gupta M.K. and Dasgupta B. (2002): Fundamentals of Statistics, Vol. I & II, 8th Edn. The World Press, Kolkata.
- Gupta S.C., Kapoor V.K.(2007): Fundamentals of Applied Statistics. 4th Edition, Sultan Chand and Sons., New Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch University of Delhi, from time to time.

Semester 6

DEPARTMENT OF STATISTICS

B. Sc. (H) Statistics

Category I

DISCIPLINE SPECIFIC CORE COURSE – 16: TESTING OF HYPOTHESIS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Testing of Hypothesis	4	3	0	1	Class XII pass with Mathematics	Basic knowledge of sampling distributions

Learning Objectives

The learning objectives of this course are to introduce:

- Hypothesis testing as a statistical procedure for testing whether chance is a plausible explanation of a random experiment
- The logic of hypothesis testing with focus on theory and implementation of hypothesis testing with knowledge about types of error type, power and the correct computation and interpretation of p-values
- Use of nonparametric test as an alternative when assumptions of parameterization of distribution or the family itself is violated.
- Sequential Probability Ratio test with its entities like OC Curve, ASN etc.

Learning Outcomes:

After completing this course, students will develop a clear understanding of:

- The notion of statistical hypothesis test, error and its nature and the idea of acceptance and rejection region.
- Identify simple and composite hypothesis. Find critical region, size and power of the test.
- Apply Neymann-Pearson lemma to find most powerful test. Find UMP and UMPU test. Make use of likelihood ratio principle for testing of hypothesis
- Make distinction between parametric and nonparametric test. Identify suitable nonparametric test for both location and scale (Kolmogorov- Smirnov one sample and two sample tests, sign test, Wilcoxon signed rank test, run test. Median test, Kruskal-Wallis one-way analysis of variance by ranks, Friedman two way analysis of variance by ranks).
- Derive SPRT for test the parameters of normal distribution, binomial and Poisson distributions also find OC function, Average sample Number etc. of a SPRT.

SYLLABUS OF DSC-16

Theory

UNIT I **(15 hours)**

Principles of test of significance

Principles of test of significance: Null and alternative hypotheses (simple and composite), Type-I and Type-II errors, critical region, level of significance, size and power, best critical region, most powerful test, uniformly most powerful test, uniformly most powerful unbiased critical region (UMPU). Neyman Pearson Lemma and its application to construct most powerful tests.

Unit II **(10 hours)**

Likelihood ratio test

Likelihood ratio test and its application, properties of likelihood ratio tests (without proof).

UNIT III **(10 hours)**

Sequential Probability Ratio Test

Sequential Probability Ratio Test. Determination of stopping bounds A and B, OC and ASN functions of SPRT.

UNIT IV **(10 hours)**

Non-Parametric tests

Non-Parametric tests. Empirical distribution function, one sample and two-sample sign test. Wald-Wolfowitz run test. Run test for randomness, Median test, Wilcoxon-Mann-Whitney U-test. Kolmogorov-Smirnov one-sample test, Kruskal-Walli's test.

PRACTICAL/LAB. WORK(30 hours):

List of Practical

1. Type I and Type II errors
2. Most powerful critical region (NP Lemma)
3. Uniformly most powerful critical region
4. Unbiased critical region
5. Power curves of hypothesis tests.
6. Likelihood ratio test
7. Non Parametric test based on quantile and Empirical distribution
8. Test for location and scale both one and two samples
9. Test of Association for bivariate samples
10. SPRT for binomial, Poisson and Normal distribution
11. OC Curve and ASN function

Practical work to be conducted using electronic spreadsheet / EXCEL/ Statistical Software Package/ SPSS/ calculators.

ESSENTIAL READINGS:

- Goon, A.M., Gupta, M.K., and Dasgupta, B. (2005).: An Out Line of Statistical Theory, Volume 2, Third Edition.
- Gupta, S.C. and Kapoor, V.K.(2020): Fundamental of Mathematical Statistics, 12^{h} Edn. Sultan Chand and Sons.

SUGGESTIVE READINGS:

- Hogg, R.V, McKean, J. and Craig, A.T. (2012): Introduction to Mathematical Statistics, 7th Edn. Pearson Education.
- Casella, G. and Berger, R.L. (2002): Statistical Inference. 2nd Edition, Duxbury Press, Pacific Grove.
- Siegel, S. (1956). Nonparametric statistics for the behavioral sciences. McGraw-Hill.
- Lehmann, E. and Romano. J. (2005): Testing statistical hypotheses,3rd Edn. Springer, New York.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE –17: DESIGN OF EXPERIMENTS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Design of Experiments	4	3	0	1	Class XII pass with Mathematics	knowledge of sampling distributions and linear models

Learning Objectives

The learning objectives include:

- To design and conduct experiments.
- To analyze and interpret data.

Learning Outcomes:

After completing this course, students will develop a clear understanding of:

- The fundamental concepts of design of experiments.
- Introduction to planning valid and economical experiments within given resources.
- Completely randomized design.
- Randomized block design.
- Latin square design.
- Balanced incomplete block design.
- Full and confounded factorial designs with two levels.
- Introduction to factorial designs at three levels.
- Fractional factorial designs with two levels

SYLLABUS OF DSC-17

Theory

UNIT I **(13 hours)**

Experimental designs

Role, historical perspective, terminology, experimental error, basic principles, uniformity trials, fertility contour maps, choice of size and shape of plots and blocks. Basic designs: Completely Randomized Design (CRD), Randomized Block Design (RBD), Latin Square Design (LSD) – layout, model and statistical analysis, relative efficiency, analysis with one missing observation in case of RBD.

UNIT II **(10 hours)**

Incomplete Block Designs

Balanced Incomplete Block Design (BIBD) – parameters, relationships among its parameters, incidence matrix and its properties, Symmetric BIBD, Resolvable BIBD, Affine Resolvable BIBD, Complimentary BIBD, Residual BIBD, Dual BIBD, Derived BIBD.

UNIT III **(12 hours)**

Factorial experiments

advantages, notations and concepts, 2^2, 2^3,…, 2^n, 3^2 factorial experiments, design and analysis, Total and Partial confounding for 2^n ($n \leq 6$), Factorial experiments in a single replicate.

UNIT IV **(10 hours)**

Fractional factorial experiments: Construction of one-half and one-quarter fractions of 2^n ($n \leq 6$) factorial experiments, Alias structure, Resolution of a design.

PRACTICAL/LAB WORK – (30 hours)

List of Practical:

1. Analysis of a CRD with equal and unequal replicates.
2. Analysis of RBD.
3. Analysis of LSD.
4. Analysis of RBD with one missing observation.
5. Analysis of 2^2 and 2^3 factorial in CRD, RBD and LSD.
6. Analysis of 3^2 factorial in CRD, RBD.
7. Analysis of a completely confounded two level factorial design in 2 blocks.
8. Analysis of a completely confounded two level factorial design in 4 blocks.
9. Analysis of a partially confounded two level factorial design.
10. Analysis of a single replicate of a 2^n design.
11. Analysis of one half fraction of 2^n factorial design.
12. Analysis of one quarter fraction of 2^n factorial design.

Practical work to be conducted using electronic spreadsheet / EXCEL/ Statistical Software Package/ SPSS/ calculators.

ESSENTIAL READINGS

- Das., M.N. and Giri, N.C. (1986): Design and Analysis of Experiments. Wiley Eastern.
- Goon, A.M., Gupta, M.K. and Dasgupta, B. (2005): Fundamentals of Statistics. Vol. II, 8th Edition. World Press, Kolkata.
- Montgomery, D. C. (2008): Design and Analysis of Experiments. John Wiley.
- Mukhopadhyay, P (2011): Applied Statistics, 2nd edition revised reprint, Books and Allied(P) Ltd.

SUGGESTIVE READINGS:

- Cochran, W.G. and Cox, G.M. (1959): Experimental Design. Asia Publishing House.
- Kempthorne, O. (1965): The Design and Analysis of Experiments. John Wiley.
- Federer, W. T. (1955): Experimental Design, Macmillan, N. Y.
- Anderson, V. L. and McLean, R. A. (1974): Design of Experiments, Marcel Dekker, Inc., N. Y.

● Dean, A. and Voss, D. (1999). Design and Analysis of Experiments, Springer. First Indian Reprint 2006

Note: Examination scheme and mode shall be as prescribed by the Examination Branch University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE –18: ECONOMETRICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Econometrics	4	3	0	1	Class XII pass with Mathematics	knowledge of sampling distributions and linear models

Learning Objectives

A broad knowledge of regression analysis relevant for analyzing economic data.

- Interpretation and critical evaluation of the outcomes of empirical analysis.
- Distinguish the results of violating the assumptions of a classical regression model.
- To judge the validity of the economic theories and carry out their evaluation in numerical terms.
- To extract useful information about important economic policy issues from the available data.
- The course is designed to provide the students with the basic quantitative techniques needed to undertake applied research projects.
- The students learn to quantify and examine economic relationships employing statistical methods based on observed data.

Learning Outcomes:

After completing this course, students will develop a clear understanding of:

- Students will be trained to write a good quality undergraduate research paper in applied statistics using the econometric methods taught in this class.
- The fundamental concepts of econometrics.
- Specification of the model.
- Multiple Linear Regression.
- Multicollinearity.
- Heteroscedasticity.
- Autocorrelation.
- Autoregressive and Lag models

SYLLABUS OF DSC-18

Theory

UNIT I **(15 hours)**

Introduction

Objective behind building econometric models, Nature and scope of econometrics, model building, role of econometrics. General linear model (GLM). Estimation under linear restrictions.

UNIT II **(10 hours)**

Multicollinearity

Introduction and concepts, detection of multicollinearity, consequences, remedies Multicollinearity, tests and solutions of multicollinearity.

UNIT III **(10 hours)**

Generalized least squares and Autocorrelation

Generalized least squares estimation, Aitken estimators. Autocorrelation: concept, consequences of autocorrelated disturbances, detection and solution of autocorrelation.

UNIT IV **(10 hours)**

Heteroscedastic disturbances

Heteroscedastic disturbances: Concepts and efficiency of Aitken estimator with OLS estimator under heteroscedasticity. Consequences of heteroscedasticity. Tests and solutions of heteroscedasticity. Qualitative Forecasting Methods.

PRACTICAL/LAB WORK – (30 hours)

List of Practical:

1. Problems based on estimation of General linear model.
2. Testing of parameters of General linear model.
3. Forecasting of General linear model.
4. Problems related to consequences of Multicollinearity.
5. Diagnostics of Multicollinearity.
6. Problems related to consequences of Autocorrelation (AR(I)).
7. Diagnostics of Autocorrelation.
8. Estimation of General linear model under Autocorrelation.
9. Problems related to consequences Heteroscedasticity.
10. Diagnostics of Heteroscedasticity.
11. Estimation of problems of General linear model under Heteroscedastic disturbance terms.
12. Problems concerning specification errors as a reason for induction of Autocorrelation, Heteroscedasticity and Multicollinearity.
13. Problems related to General linear model under (Aitken Estimation).
14. Forecasting methods.

Practical work to be conducted using electronic spreadsheet / EXCEL/ Statistical Software Package/ SPSS/ calculators.

ESSENTIAL READINGS

- Gujarati, D. and Guneshker, S. (2007). Basic Econometrics, 4th Ed., McGraw Hill Companies.
- Johnston, J. (1972). Econometric Methods, 2nd Ed., McGraw Hill International.

SUGGESTED READINGS:

- Koutsoyiannis, A. (2004). Theory of Econometrics, 2 Ed., Palgrave Macmillan Limited.
- Maddala, G.S. and Lahiri, K. (2009). Introduction to Econometrics, 4 Ed., John Wiley & Sons.
- Greene, W. H. (2002) Econometric Analysis.5th Edition, Prentice Hall.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch University of Delhi, from time to time.

B.Sc. (P)/B.A(P) with Statistics as Major

Category II

DISCIPLINE SPECIFIC ELECTIVE COURSE –: 11 SURVEY SAMPLING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Survey Sampling	4	3	0	1	Class XII pass with Mathematics	knowledge of basic statistics

Learning Objectives:

The learning objectives of this course are to introduce:

- Tools and techniques for selecting a representative sample from a target population keeping in mind the objectives to be fulfilled.
- Obtain an estimator of the population parameter on the basis of the selected sample and study its properties.

Learning Outcomes:

After successful completion of this course, students should be able to:

- Understand the fundamental concepts of population and sample and the principles of sample survey
- Describe the value and methodologies for sample surveys versus other approaches to collecting information from populations.
- Determine the appropriate sample size and its allocation for nationwide sample surveys or for surveys to be conducted in a program area.
- Identify a proper sampling frame and select primary sample points.
- Apply steps involved in selecting a sample using Simple Random Sampling with or without replacement, Stratified Sampling, Systematic Sampling and Ratio and Regression Methods of Estimation

SYLLABUS OF DSC-11

Theory

Unit I **(15 Hours)**

Basic Concepts and Simple Random Sampling

Concept of population and sample, complete enumeration versus sampling, sampling and non-sampling errors. Types of sampling: non-probability and probability sampling basic principles of sample survey, Steps involved in survey sampling.

Simple random sampling (SRS)with and without replacement, their properties, procedures of selecting a simple random sample, estimation of population mean, and total sampling for proportions, determination of sample size.

Unit 2 **(10 Hours)**

Stratified random sampling:

Estimation of population mean and its variance. Allocation of samples in different strata using equal, proportional, and Neyman allocation. Comparison of Stratified sampling under proportional and Neyman allocation with SRSWOR. Practical difficulties in adopting Neyman allocation.

Unit 3 **(10 Hours)**

Systematic sampling:

Estimation of population mean, and total. Comparison of systematic sampling with simple random sampling and stratified sampling in the presence of linear trend. Definition and concept of circular systematic sampling.

Unit 4 **(10 Hours)**

Introduction to Indian Official Statistics:

Present official Statistical System in India, Methods of collection official statistics, their reliability and limitations. Role of Ministry of Statistics and Programme Implementation (MOSPI), Central Statistical Office CSO, NSSO.

PRACTICAL/LAB.. WORK: (30 Hours)

List of Practicals:

1. To select SRS with and without replacement.
2. For a population of size 5, estimate population mean, population mean square, and population variance. Enumerate all possible samples of size 2 by WR and WOR.
3. Estimate mean standard error and the sample size for SRSWOR.
4. Allocation of sample to strata by proportional method.
5. Allocation of sample to strata by Neyman methods.
6. Compare the efficiencies of proportional and Neyman allocation relative to SRS.
7. Comparison of systematic sampling with stratified sampling and SRS in the presence of a linear trend.

Practical work to be conducted using electronic spreadsheet / EXCEL/ Statistical Software Package/ SPSS/ calculators.

Essential Readings:

- Cochran WG (2011) Sampling techniques (3rd edition) Wiley Eastern John Wiley and sons.
- Goon AM Gupta MK and Dasgupta B. (2001) Fundamentals of statistics, volume 2, World Press Gupta SC and Kapoor VK (2007) Fundamentals of Applied Statistics, Sultan Chand and sons.
- Murthy MN (1977) Sampling theory and sampling methods, Statistical Pub. Society, Calcutta.
- Singh D and Chaudhary FS (2015): Theory and Analysis of Sample Survey Designs.

- Sukhatme PV Sukhatme BV, Sukhatme S, Asok C (1984) Sampling Theories of Survey with Application, Iowa State University press and Indian Society of agricultural statistics.
- Guide to current official statistics CSO, GOI, New Delhi

Note: Examination scheme and mode shall be as prescribed by the Examination Branch University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE –: 12 STATISTICAL METHODS FOR PSYCHOLOGY AND EDUCATION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Statistical Methods in Psychology and Education	4	3	0	1	Class XII pass with Mathematics	knowledge of basic statistics

Learning Objectives:

The learning objectives include:
- To measure psychological traits and mental abilities
- To learn basic methods of test construction, item writing and item analysis
- To check the reliability and validity of test scores.

Learning Outcomes:

After successful completion of this course, students should be able to:
- Distinguish between Psychological measurement and physical measurement.
- Understand the meaning of Tests in Psychology and Education.
- Appreciate the uses and limitations of Psychological tests.
- Learn the meaning and purpose of Item writing and analysis.
- Understand concepts of reliability and validity of test scores and their differences.
- Convert raw scores into different transformed scores.
- Apply Scaling rankings and ratings in terms of the Normal Probability Curve.

SYLLABUS OF DSC-12

Theory

Unit 1: **(15 Hours)**

Importance of statistics in psychology and education.

Importance of statistics in psychology and education. Levels of measurement: nominal ordinal interval and ratio scales. Distinction between psychological and physical measurements. General problems and sources of errors in measurements.
Meaning and types of tests in psychology and education. History of psychological measurement and testing. Uses and limitations of tests. Varieties of tests. Characteristics of a good test. General steps of test construction. Test administration and scoring.
Item writing and item analysis: Meaning and types of test items, Purpose and methods for evaluating test items.

Unit 2: (15 Hours)

Reliability and Validity:

Reliability: definition Methods of determining reliability: Test-retest, Alternate or parallel forms, Split half technique, Rational equivalence. Effect upon reliability of lengthening or repeating or test. Reliability coefficient as a measure of true variance. Estimating true scores by way of regression equation and reliability coefficient. Index of reliability.
Validity: meaning; Estimation of validity; Types of validity: validity and test length; comparison between reliability and validity.

Unit 3: (15 Hours)

Test Scores:

Meaning and differences between norm referencing and criterion referencing.
Raw score transformations- percentile scores, standard score, normalised standard scores, T- scores and Stanine scores.
Intelligence: definition. Types of intelligence test scores. Psychological scaling methods- scaling of individual test items in terms of difficulty, scaling of rankings and ratings in terms of the normal probability curve.

PRACTICAL LAB WORK (30 hours)

List of Practical:

1. Computation of reliability by Rulon and Kuder Richardson formulas.
2. Computing reliability of a test whose length is increased/decreased.
3. Computing index of reliability standard error of measurement.
4. Computing validity oblique maximum validity then test length is increased.
5. Computing relative difficulty of questions difference in difficulty between different tests.
6. Problem based on Z scores.
7. Problem based on t scores.
8. Problem based on Stanine scales.
9. Problem based on percentile scores.
10. Computing numerical scores corresponding to grades or ratings.

Practical work to be conducted using electronic spreadsheet / EXCEL/ Statistical Software Package/ SPSS/ calculators.

ESSENTIAL READINGS:

- Anastasia, A. and Urbina, S. (1997) Psychological testing (7th edition), Prentice Hall
- Garrett H.E. (2021), Statistics in Psychology and Education. Nation press.
- Gregory RJ (2016), Psychological testing: History, Principles and Applications. (updated 7th edition) Pearson
- Singh, A.K. (2006)Test, Measurements and Research in Behavioural Sciences Bharati bhavan
- Mangal S.K. (2016) Statistics in Psychology and Education. PHI learning Pvt ltd.

SUGGESTED READINGS:

- Gupta S.C. and Kapoor V.K. (2019) Fundamentals of Applied statistics, Sultan Chand and sons.
- Goon A.M., Gupta M.K. and Dasgupta, B. (2001) Fundamental of Statistics, Volume 2, World Press Pvt ltd.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch University of Delhi, from time to time.

B.Sc. (P)/B.A(P) with Statistics as Non- Major

Category III

DISCIPLINE SPECIFIC CORE COURSE –: 6 SURVEY SAMPLING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Survey Sampling	4	3	0	1	Class XII pass with Mathematics	knowledge of basic statistics

Learning Objectives:

The learning objectives of this course are to introduce:

- Tools and techniques for selecting a representative sample from a target population keeping in mind the objectives to be fulfilled.
- Obtain an estimator of the population parameter on the basis of the selected sample and study its properties.

Learning Outcomes:

After successful completion of this course, students should be able to:

- Understand the fundamental concepts of population and sample and the principles of sample survey
- Describe the value and methodologies for sample surveys versus other approaches to collecting information from populations.
- Determine the appropriate sample size and its allocation for nationwide sample surveys or for surveys to be conducted in a program area.
- Identify a proper sampling frame and select primary sample points.

- Apply steps involved in selecting a sample using Simple Random Sampling with or without replacement, Stratified Sampling, Systematic Sampling and Ratio and Regression Methods of Estimation

SYLLABUS OF DSC-6

Theory

Unit I **(15 Hours)**

Basic Concepts and Simple Random Sampling

Concept of population and sample, complete enumeration versus sampling, sampling and non-sampling errors. Types of sampling: non-probability and probability sampling basic principles of sample survey, Steps involved in survey sampling.

Simple random sampling (SRS)with and without replacement, their properties, procedures of selecting a simple random sample, estimation of population mean, and total sampling for proportions, determination of sample size

Unit 2 **(10 Hours)**

Stratified random sampling:

Estimation of population mean and its variance. Allocation of samples in different strata using equal, proportional, and Neyman allocation. Comparison of Stratified sampling under proportional and Neyman allocation with SRSWOR. Practical difficulties in adopting Neyman allocation.

Unit 3 **(10 Hours)**

Systematic sampling:

Estimation of population mean, and total. Comparison of systematic sampling with simple random sampling and stratified sampling in the presence of linear trend. Definition and concept of circular systematic sampling.

Unit 4 **(10 Hours)**

Introduction to Indian Official Statistics:

Present official Statistical System in India, Methods of collection official statistics, their reliability and limitations. Role of Ministry of Statistics and Programme Implementation (MOSPI), Central Statistical Office CSO, NSSO.

PRACTICAL/ LAB WORK (30 HOURS)

List of Practicals:

1. To select SRS with and without replacement.
2. For a population of size 5, estimate population mean, population mean square, and population variance. Enumerate all possible samples of size 2 by WR and WOR.
3. Estimate mean standard error and the sample size for SRSWOR.
4. Allocation of sample to strata by proportional method.
5. Allocation of sample to strata by Neyman methods.
6. Compare the efficiencies of proportional and Neyman allocation relative to SRS.
7. Comparison of systematic sampling with stratified sampling and SRS in the presence of a linear trend.

Practical work to be conducted using electronic spreadsheet / EXCEL/ Statistical Software Package/ SPSS/ calculators.

ESSENTIAL READINGS:

- Cochran WG (2011) Sampling techniques (3rd edition) Wiley Eastern John Wiley and sons.

- Goon AM Gupta MK and Dasgupta B. (2001) Fundamentals of statistics, volume 2, World Press Gupta SC and Kapoor VK (2007) Fundamentals of Applied Statistics, Sultan Chand and sons.
- Murthy MN (1977) Sampling theory and sampling methods, Statistical Pub. Society, Calcutta.
- Singh D and Chaudhary FS (2015): Theory and Analysis of Sample Survey Designs.
- Sukhatme PV Sukhatme BV, Sukhatme S, Asok C (1984) Sampling Theories of Survey with Application, Iowa State University press and Indian Society of agricultural statistics.
- Guide to current official statistics CSO, GOI, New Delhi

Note: Examination scheme and mode shall be as prescribed by the Examination Branch University of Delhi, from time to time.

Discipline Specific Elective
Category V

DISCIPLINE SPECIFIC ELECTIVE COURSE –4A: BIOSTATISTICS

CREDIT DISTRIBUTION, ELIGIBILITY, AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Biostatistics	**4**	**3**	0	**1**	Class XII pass with Mathematics .	knowledge of Statistical Inference and stochastic processes

Learning objectives:

- Parametric Models for Survival data.
- Different types of censoring and its application in public health.
- Estimation of death probabilities by using the theory of competing risks.
- Non-parametric methods for incomplete survival data.
- Computation of the probability of gametes in different generations under random mating.

Learning Outcomes:

After completing this course, students will develop a clear understanding of:

- The fundamental concepts of survival functions and their interrelationship.
- Survival models and their applications.
- Handling censored data and estimating mean survival time of the patients.
- Actuarial and Kaplan-Meier methods.
- Competing Risk Theory.
- Basic concept of Statistical genetics.

SYLLABUS OF DSE-4A

Theory

UNIT I **(11 Hours)**

Survival Analysis

Survival Analysis: Functions of survival times, survival distributions and their applications exponential, gamma, Weibull, Rayleigh, lognormal, death density function for a distribution having bath-tub shaped hazard function.

UNIT II **(13 Hours)**

Censoring Schemes

Censoring Schemes: Type I, Type II and progressive or random censoring with biological examples. Estimation of mean survival time and variance of the estimator for Type I and Type II censored data with numerical examples. Non-parametric methods: Actuarial and Kaplan-Meier methods for estimating survival function and variance of the Estimator.

UNIT III **(10 Hours)**

Competing Risk Theory:

Indices for measurement of the probability of death under competing risks and their inter-relations. Estimation of probabilities of death using maximum likelihood method and modified chi squire method.

UNIT IV **(11 Hours)**

Statistical Genetics:

Statistical Genetics: Introduction, concepts-Genotype, Phenotype, Dominance, Recessiveness, Linkage and Recombination, Coupling, and Repulsion. Mendelian laws of Heredity, Random mating, Gametic array, Genotypic array, Relation between genotypic array and gametic array under random mating. Distribution of genotypes under random mating. Hardy-Weinberg law. Concept of gene frequencies.

PRACTICAL/ LAB. WORK (30 HOURS)

List of Practical:

1. Estimation of survival function, death density function and hazard function.
2. Estimation of mean survival time using various parametric survival models.
3. To Identify and analyse type-I censored data.
4. To Identify and analyse type-II censored data.
5. To Identify and analyse progressively type I censored data.
6. Estimation of mean survival time and variance of the estimator for type I censored data.
7. Estimation of mean survival time and variance of the estimator for type II censored data.
8. Estimation of mean survival time and variance of the estimator for progressively type I censored data.
9. To estimate the survival function and variance of the estimator using Actuarial methods.
10. To estimate the survival function and variance of the estimator using Kaplan-Meier method.
11. To estimate Crude probability of death.
12. To estimate Net-type I probability of death.
13. To estimate Net-type II probability of death.
14. To estimate partially crude probability of death.
15. To estimate gene frequencies.

Practical work to be conducted using electronic spreadsheet / EXCEL/ Statistical Software Package/ SPSS/ calculators.

ESSENTIAL READINGS:

- Biswas, S. (2007). Applied Stochastic Processes: A Biostatistical and Population Oriented Approach, Reprinted 2nd Ed., New Central Book Agency.
- Lee, E.T. and Wang, J.W. (2003). Statistical Methods for Survival data Analysis, 3rd Ed., John Wiley & Sons.
- Indrayan, A. (2008). Medical Biostatistics, 2nd Ed., Chapman and Hall/CRC.

SUGGESTIVE READINGS:

- Narayan P. (1999). Statistical Genetics, New Age International Pvt. Ltd.
- Miller, R. G. (2011). Survival Analysis. John Wiley & Sons.
- Elandt-Johnson R.C (1971).Probability models and Statistical Methods in Genetics, John Wiley & Sons.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 4b: ORDER STATISTICS AND ITS APPLICATIONS

CREDIT DISTRIBUTION, ELIGIBILITY, AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Order Statistics and its Applications	4	3	0	1	Class XII pass with Mathematics	knowledge of statistical distributions and stochastic processes

Learning Objectives

The learning objective of this course is to make the students aware of the properties and applications of order statistics.

Learning Outcomes:

On successful completion of the course, the student will be able to:

- Find joint, marginal distributions and conditional distributions of order statistics in the continuous and discrete case.
- Find the distribution of sample range and other systematic statistics in case of sampling from an arbitrary continuous population and from some specific continuous distributions such as uniform and exponential.
- Understand the Markov Chain property of order statistics in the continuous case.
- Learn how to obtain distribution-free confidence intervals for population quantile for population distributions based on order statistics.
- Understand the distribution-free bounds for moments of order statistics and of the range.
- Derive the recurrence relations and identities for moments of order statistics drawn from an arbitrary population (discrete or continuous), as well as from some specific distributions.
- Understand the concept of L-moments and L-moments estimation of parameters.
- Derive the Linear estimation of location and scale parameters based on the moments of order statistics.

SYLLABUS OF DSE-4b

Theory

UNIT I **(15 hours)**
Introduction to Order Statistics

Definition and applications of order statistics. Basic distribution theory. Joint and marginal distributions of order statistics in the continuous case. Distribution of the median, range and other systematic statistics. Order statistics for a discrete parent. Examples based on discrete and continuous distributions.

UNIT II **(10 hours)**

Conditional distribution of order statistics

Conditional distribution of order statistics. Order statistics as a Markov Chain. Distribution-free confidence intervals for population quantiles. Distribution-free bounds for moments of order statistics and of the range.

UNIT III **(10 hours)**

Moments of order statistics

Moments of order statistics. Recurrence relations and identities for moments of order statistics from an arbitrary distribution. Recurrence relations for moments of order statistics from some specific distributions.

UNIT IV **(10 hours)**

Order statistics in statistical inference

Order statistics in statistical inference. L-moments and L-moments estimation. Linear estimation based on order statistics. Examples based on some specific continuous distributions.

PRACTICAL/LAB WORK – (30 hours)

List of Practical:

1. Problem-solving using joint, marginal, and conditional distributions of order statistics for some specific continuous distributions.
2. Distribution-free confidence intervals for population quantiles for various distributions.
3. Calculating Means, variances, and covariances by using exact expressions for the moment of order statistics for some specific continuous distribution.
4. Calculating Means, variances, and covariances by using recurrence relations for some specific continuous distributions.
5. Calculation of L-moments for some specific continuous distributions.
6. L-moments estimation of parameters for some specific continuous distributions.
7. Calculation of linear unbiased estimation for location and scale parameters for some specific continuous distributions.

Practical work to be conducted using electronic spreadsheet / EXCEL/ Statistical Software Package/ SPSS/ calculators.

ESSENTIAL READINGS

- David, H. A. and Nagaraja, H. N. (2003). Order Statistics, 3rd ed., John Wiley & Sons.

SUGGESTIVE READINGS:

- Arnold, B. C., Balakrishnan, N. and Nagaraja H. N. (2008). A First Course in Order Statistics, SIAM Publishers.
- Arnold, B.C. and Balakrishnan, N. (1989). Relations, Bounds and Approximations for Order Statistics, Vol. 53, Springer-Verlag.
- Ahsanullah, M., Nevzorav, V.B. and Shakil, M. (2013). An Introduction to Order Statistics, Atlantis Studies in Probability and Statistics, Vol. III. Atlantis Press.
- Gibbons, J.D. and Chakraborti, S. (1992). Nonparametric Statistical Inference, 3rd ed., Marcel Dekker.

- Shahbaz, M. Q., Ahsanullah, M., Shahbaz, S. H. and Al-Zahrani, B. M. (2016). Ordered Random variables: Theory and Applications. Springer.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 4c: STATISTICAL COMPUTING AND BASIC DATA MINING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Statistical Computing and Basic Data Mining	4	3	0	1	Class XII pass with Mathematics	Knowledge of MATLAB / OCTAVE / R / Python / C

Learning Objectives

learning objectives include:

- Understand the theoretical foundations and practical aspects of statistical computing and data mining.
- Develop skills in the use of statistical computing and data mining software to solve problems and analyze data. The programming implementations will be completed using MATLAB/OCTAVE/R/Python/C.

Learning Outcomes:

After completion of this course, students will develop a clear understanding of:

- Apply knowledge of statistical computing and data mining techniques to solve problems and analyze data.
- Communicate effectively about statistical computing and data mining concepts and techniques both orally and in writing.
- Develop ability for programming implementation using MATLAB/OCTAVE/R/Python/C.

SYLLABUS OF DSE-4C

Theory

UNIT I **(15 hours)**

Simulation techniques
Random number generation: Review; Simulating multivariate distributions; Simulating stochastic processes. Variance reduction methods.

UNIT II **(12 hours)**
Markov Chain Monte Carlo methods
Markov Chain Monte Carlo methods: The Metropolis–Hastings Algorithm; Gibbs sampling.

UNIT III **(18 hours)**
Data Mining and its applications
Introduction to Data Mining and its Applications. Data Pre-processing Techniques: Data Cleaning, Data Integration, Data Transformation, and Data Reduction. Exploratory Data Analysis. Classification Techniques: Decision Trees, Naive Bayes, k-Nearest Neighbors (k-NN). Clustering Techniques: K-Means, Hierarchical Clustering. Association rule mining. Evaluation of Data Mining Models.

PRACTICAL/LAB WORK – (30 hours)
List of Practical:

1. Practical based on random number generation: univariate and multivariate distributions.
2. Practical on simulating stochastic processes; variance reduction.
3. Simple practical problems on MCMC.
4. Practical based on Data pre-processing, transformation, reduction.
5. Practical based on classification and clustering.

Practical work to be conducted using electronic spreadsheet / EXCEL/ Statistical Software Package/ SPSS/ calculators.

ESSENTIAL READINGS

- Rubinstein, R.Y. (2017). Simulation and the Monte Carlo Methods, Wiley.
- Voss, J. (2014). An introduction to statistical computing: a simulation-based approach,Wiley series in computational statistics.
- Tan, P. N., Steinbach, M., & Kumar, V. (2016). Introduction to data mining. Pearson Education India.
- Han, J., Kamber, M., & Pei, J. (2012). Data mining concepts and techniques third edition. University of Illinois at Urbana-Champaign Micheline Kamber Jian Pei Simon Fraser University.
- Witten, I. H., Frank, E., Hall, M. A., & Pal, C. J. (2017). Data Mining: Practical machine learning tools and techniques, Elsevier Inc.

SUGGESTIVE READINGS:

- Vetterling, William T., Saul A. Teukolsky, William H. Press, and Brian P. Flannery. Numerical recipes in C: the art of scientific computing. Cambridge university press, 1999.
- Christian, P. R., & George, C. (1999). Monte Carlo statistical methods. Springer Texts in Statistics.
- Hancock, M. F. (2012). Practical data mining. CRC Press.
- Shmueli, G., Bruce, P. C., Yahav, I., Patel, N. R., & Lichtendahl Jr, K. C. (2017). Data mining for business analytics: concepts, techniques, and applications in R. John Wiley & Sons.
- Shmueli, G., Bruce, P. C., Gedeck, P., & Patel, N. R. (2019). Data mining for business analytics: concepts, techniques and applications in Python. John Wiley & Sons.
- Hastie, T., Tibshirani, R., Friedman, J. (2008). The Elements of Statistical Learning: Data Mining, Inference and Prediction, 2nd ed., Springer.
- Murphy, K. P. (2012). Machine Learning: A Probabilistic Perspective. United States: MIT Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 4d : RESEARCH METHODOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Research Methodology	4	3	0	1	Class XII pass with Mathematics	Nil

Learning Objectives:

The learning objectives include

- To provide scientific approaches to develop the domain of human knowledge through empirical studies.
- To enable the student researchers to understand basic concepts and aspects related to research, data collection, analyses, interpretation and report writing.

Learning Outcomes:

After completion of this course, students will develop a clear understanding of

- Research Methods.

- Research Problems.
- Research Designs.
- Comparative study of different methods of data collection.
- Guidelines for construction of questionnaires.
- Processing and Analysis of data.
- Interpretation and Report writing.

SYLLABUS OF DSE – 4D

Theory

UNIT I **(09 hours)**

Introduction to Research:

Importance and need for research ethics, Objectives of research, Types of research, Research approaches, Review of literature, Mode of literature survey: Books and Monographs, Journals, Conference proceedings, Abstracting and Indexing Journals, E-Journals/Books, Formulation of a research problem, Identifying variables, Constructing hypothesis, Conceptualization of a research design.

UNIT II **(09 hours)**

Methods & Techniques of Data Collection:

Survey methodology and Data collection, Source of data collection-Use of secondary data, Methods of collecting primary data, Develop a questionnaire, Questions and answers in surveys, Non-response, Errors in surveys, Sample size, sampling frames and coverage error.

UNIT III **(15 hours)**

Data Processing & Analysis:

Data processing, Exploratory data analysis, Review of various techniques (Parametric and Nonparametric tests, Correlation and Regression analysis, ANOVA, Multivariate Techniques) for data analysis covered in core statistics papers, Techniques of interpretation, Precaution in interpretation.

Report writing:

Discussions, Conclusions, Referencing and various formats for reference writing, Bibliography, Thesis writing, Formats of publications in research journals including subject classification, Impact factor, Citation index.

UNIT IV **(12 hours)**

Computer Application:

Data Communication and networks, Website, Webpage, Search Engines, Scientific search engines. Scientific Word Processing with LaTeX and MS-Word, MS Equation editor, Slides making-Power Point Features, Slide preparation, SPSS, Statistical Programming with R, Simulation.

PRACTICAL/LAB WORK – (30 hours)

PROJECT WORK (using a spreadsheet, Scientific Word Processing with LaTeX and MS-Word, MS Equation editor, Slides making-Power Point Features, Slide preparation, SPSS, Statistical Programming with R, Simulation.)

ESSENTIAL READINGS

- Kothari, C.R., Garg, Gaurav (2015): Research Methodology: Methods and Techniques, 3rd Edition (Reprint), New Age International Publishers.
- Kumar, R. (2011): Research Methodology: A Step-by-Step Guide for Beginners, SAGE publications.

- Anderson, J., Durston, B.H., Pooole, M. (1970): Thesis and Assignment Writing, Wiley Eastern. Ltd., New Delhi.
- Braun, J., Duncan, W. and Murdock, J. (2008): A First Course in Statistical Programming with R, Cambridge University Press, London.
- Lamport, L. (1999): LATEX: A Document Preparation System, Addison, Wesley, 2nd Edition, New York.
- Cunningham, B.J. (2012): Using SPSS: An Interactive Hands-On Approach, SAGE South Asia Edition.
- Voss, J. (2014): An Introduction to Statistical Computing: A Simulation-based Approach, Wiley series in computational statistics.

SUGGESTIVE READINGS

- Pannerselvan, R. (2006): Research Methodology, Prentice-Hall of India Pvt., New Delhi.
- Landau, Sabine and Everitt, Brian S. (2004): A Handbook of Statistical Analyses using SPSS, Chapman & Hall/CRC.
- Dalgaard, P. (2008): Introductory Statistics with R, Springer Science, New York.
- Gardener, M. (2012): Beginning R: The Statistical Programming Language, Wiley Publications.
- Robert, C.P. and Casella, G. (2004): Monte Carlo Statistical Methods, Springer Science, New York.
- Rubinstein, R.Y. (1981): Simulation and the Monte Carlo Methods, Wiley.
- Venkataraman, M.K. (1998): Numerical Methods in Science and Engineering, The National Publishing Company, Chennai.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

OFFERED BY DEPARTMENT OF STATISTICS

Category VI

GENERIC ELECTIVE COURSE – 6a: SURVEY SAMPLING AND DESIGN OF EXPERIMENTS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Survey Sampling and Design of Experiments	4	3	0	1	Class XII pass with Mathematics	knowledge of basics statistics

Learning Objectives

The learning objectives include:

- To learn about sample surveys, its need and objectives.
- To learn to draw appropriate sample and interpret the result.
- To learn to design and conduct experiments.
- To analyse and interpret the data.

Learning Outcomes:

After completing this course, students will develop a clear understanding of:

- The basic concept of sample survey and its need.
- Simple random sampling.
- Stratified random sampling
- One-way and two-way analysis of variance.
- Basic concepts of design of experiments.
- Completely randomized design.
- Randomized design.
- Latin square design.
- Factorial experiments.

SYLLABUS OF GE-6a

Theory

UNIT I **(11 hours)**

Sample Surveys

Basic concepts of sample survey, concept of sampling, need for sampling, complete enumeration v/s sampling, principles of sampling theory, principal steps in a sample surveys, planning and organization of a sample survey, sampling and non-sampling errors.
Simple random sampling (SRSWR and SRSWOR): Definition and procedures of selecting a sample, properties of simple random sample, estimation of mean and sampling variance of sample mean.

UNIT II **(12 Hours)**

Stratified random sampling

Introduction, estimation of population mean and its variance, choice of sample sizes in different strata, comparison of stratified sampling under proportional and Neyman allocation with SRSWOR in terms of precision.

Unit III **(12 Hours)**

Analysis of variance and Design of experiments

One-way and two-way classified data with one observation per cell only. Design of experiments: Principles of Design of experiments, uniformity trails, completely randomized, Randomized block and Latin square designs.

Unit IV **(10 Hours)**

Factorial Experiments and Designs

Factorial experiments: 2^2 and 2^3, Factorial Design: construction and analysis.

PRACTICAL/LAB WORK – (30 hours)
List of Practical:

1. Select a SRS with and without replacement.
2. For a population of size 5, estimate population means, the population mean square and population variance. Enumerate all possible samples of size 2 by WR and WOR and establish all properties relative to SRS.
3. For SRSWOR, estimate mean, standard error, the sample size.
4. Stratified Sampling: allocation of sample to strata by proportional and Neyman's methods Compare the efficiencies of the above two methods relative to SRS.
5. Estimation of gain in precision in stratified sampling.
6. Analysis of Variance of one-way classified data
7. Analysis Variance of two-way classified data
8. Analysis of CRD
9. Analysis of RBD.
10. Analysis of LSD.
11. Analysis of 2^2 and 2^3 factorial in CRD and RBD.

Practical work to be conducted using electronic spreadsheet / EXCEL/ Statistical Software Package/ SPSS/ calculators.

Essential Readings:

- Goon, A.M., Gupta, M.K. and Dasgupta, B. (2005). Fundamentals of Statistics, Vol. II, 8th Ed., World Press, Kolkata.
- Goon, A.M., Gupta, M.K. and Dasgupta, B. (2005). An Outline of Statistical Theory, Vol. II, 3rd Ed., World Press, Kolkata.
- Gupta, S.C. and Kapoor, V.K. (2008). Fundamentals of Applied Statistics, 4th Ed., Sultan Chand and Sons.

Suggested Readings:

- Sukhatme, P.V., Sukhatme, B.V., Sukhatme, S. and Ashok, C. (1984). Sampling Theory of Surveys with Applications, Iowa State University Press, Iowa, USA.
- Mukhopadhyay, P. (1998). Theory and Methods of Surveys Sampling, Prentice Hall of India.
- Montgomery, D.C. (2001). Designs and Analysis of Experiments, John Wiley and Sons, New York.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch University of Delhi, from time to time.

GENERIC ELECTIVE COURSE – 6B: Statistics in Actuaries

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Statistics in Actuaries	4	3	0	1	Class XII pass with Mathematics	Nil

Learning Objectives

The learning objectives include:

- To learn about Utility theory
- To learn the principles of premium calculations
- To understand the survival distribution and life tables
- To learn Life Insurance models and life annuities

Learning Outcomes:

After completing this course, students will develop a clear understanding of:

- Statistics and Insurance applications
- Utility theory
- Principles of premium calculations
- Survival distribution and life tables
- Life insurance models and Life annuities.

SYLLABUS OF GE-6B

Theory

UNIT I **(11 hours)**

Introductory Statistics and Insurance applications

Introductory Statistics and Insurance applications: discrete, continuous, and mixed probability distributions. Insurance applications, sum of random variables. Utility theory: Utility functions expected utility criterion, types of utility function, insurance and utility theory.

UNIT II **(12 Hours)**

Principles of premium calculation
Principles of premium calculation: Properties of premium principles, examples of premium principles

Unit III **(12 Hours)**
Survival distribution and life tables
Survival distribution and life tables: Uncertainty of age and death, survival function, time-until-death for a person, curate future lifetime, the force of mortality, life tables with examples

Unit IV **(10 Hours)**
Life Insurance and annuities
Life insurance: Models for insurance payable at the moment of death, insurance payable at the end of the year of death, and their relationships. Life annuities: continuous life annuities, discrete life annuities.

PRACTICAL/LAB WORK – (30 hours)
List of Practical:
1. Risk computation for different utility models
2. Discrete and continuous risk calculations
3. Calculation of aggregate claims for collective risks
4. Calculation of aggregate claim for individual risks
5. Computing ruin probabilities and aggregate losses
6. Annuity and present value of contract
7. Computing premium for different insurance schemes
8. Practical based on life models and tables

Practical work to be conducted using electronic spreadsheet / EXCEL/ Statistical Software Package/ SPSS/ calculators.

Essential Readings:

- Dixon C. M. D. (2005) Insurance Risk and Ruin (International Series on Actuarial Science), Cambridge University Press.
- Atkinson M.E. and Dickson, D.C.M. (2011): An Introduction to Actuarial Studies, Elgar Publishing.

Suggested Readings:

- Bowers N.L., Gerber H.U., Hickman J.C., Jones D.A., and Nesbitt C.J. (1997): Actuarial Mathematics, Society of Actuaries, Itasca, Illinois USA.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch University of Delhi, from time to time.

SEMESTER-IV

(B.Sc. Honours in Operational Research)

DISCIPLINE SPECIFIC CORE COURSE – 10: SCHEDULING TECHNIQUES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Scheduling Techniques (DSC-10)	4	3	0	1	Class XII with Maths	Nil

Learning Objectives

The objective of this course is to acquaint students with various scheduling problems and their real-life applications.

Learning outcomes

After completion of the course, students will possess knowledge and skills required to

- Gain an understanding of network analysis and related mathematical models.
- Use standard methodologies for solving network flow problems.
- Manage projects with deterministic and probabilistic activity times.
- Carry out time-cost trade-off analysis in a project.
- Understand the utility of some sequencing problems.

SYLLABUS OF DSC-10

Unit I: Introduction to Network Analysis **(12 hours)**

Meaning and application of a network diagram, Construction of a network diagram, time estimates in network analysis, float and slack analysis, critical path analysis, Critical path method (CPM) for project management.

Unit II: Project Scheduling **(12 hours)**

Program Evaluation and Review Technique (PERT) for project management, three time estimates in PERT, Expected completion time and standard deviation of completion time in PERT, probability of project completion within scheduled time.

Unit III: Project Crashing **(12 hours)**

Project time crashing (time-cost trade off analysis): meaning and significance for project management, direct and indirect costs, finding optimal completion time of project by doing time-cost trade off analysis.

Unit IV: Theory of sequencing **(9 hours)**

Basic concepts: sequencing of jobs through machines; total elapsed time; idle time on a machine; Gantt chart, Flow shop problem, Johnsons' optimality rule, parallel processing.

Practical component (if any) [30 Hours] -

Practical/Lab to be performed on a computer using OR/Statistical packages

- Construct the network of a project with deterministic activity times.
- Finding different types of floats involved in a project network.
- Conduct time-cost trade off analysis in the context of a project network.
- Construct the network of a project with probabilistic activity times.
- Finding expected completion time and variance of completion time in PERT.
- Finding probability of completing the project within scheduled time in PERT.
- Flow shop problem: processing of n Jobs through 2 machines.
- Flow shop problem: processing of n Jobs through 3 machines.
- Flow shop problem: parallel processing.

Essential/recommended readings

- Elmaghraby, S. E. (1977). Activity networks: project planning and control by network models. John Wiley & Sons.
- Ford Jr, L. R., & Fulkerson, D. R. (2015). Flows in networks. Princeton University Press.
- Levy, F. K., & Wiest, J. D. (2016). Management guide to PERT/CPM; with GERT/PDM/DCPM and other networks. Prentice-Hall of India.
- Swarup, K., & Gupta, P. K., & Mohan, M. (2019). Operations Research (Introduction to Management Science). Sultan Chand and Sons.

Suggestive readings Nil

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 11: STATISTICAL INFERENCE

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Statistical Inference (DSC-11)	4	3	0	1	class XII with Maths	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- To acquaint the students with how to infer about the population using a sample drawn from it
- To explain how different parametric tests can be used in real life.

Learning outcomes

Upon successful completion of this course the student will be able to:

- Analyze the population or phenomenon from which the sample is drawn.
- Examine inferential methods wherein the distributional form of population or phenomenon from which the sample is drawn is known (parametric) .
- Conduct parametric tests of hypotheses

SYLLABUS OF DSC-11

Unit I: Introduction (12 Hours)
Concept of Inductive inference, Population and samples, Distribution of sample, statistic and sample moments, Sampling from Normal Distributions: Chi-Square, t and F-distributions, basic concepts of order statistics.

Unit II: Parametric Point Estimation (12 Hours)
Properties of point estimators- unbiasedness, consistency, sufficiency, efficiency, method of maximum likelihood for finding estimators, properties of maximum likelihood estimators, method of moments for finding estimators.

Unit III: Tests of Hypotheses (12 Hours)
Simple and Composite Hypotheses; Likelihood Ratio Tests; Construction of Confidence Intervals.

Unit IV: Parametric and Nonparametric Tests (9 Hours)
Normal tests for proportion and mean based on single sample ; Chi-Square test for variability; t-test for single mean; t-test for difference of means; paired t-test; F test for equality of variances, Chi-Square test for goodness of fit, sign test, Wilcoxon Signed Rank Test, Median Test.

Practical component (if any) [30 Hours] –

- Practicals based on applications of t-tests
- Practicals based on applications of F-tests
- Practicals based on applications of chi-square tests
- Practicals based on sign test, Wilcoxon Signed Rank Test,
- Practicals based on Median Test.

Essential/recommended readings

- Dudewicz, E. J., & Misra S. N. (1988). Modern mathematical statistics, Wiley.
- Fruend, J. E. (2013). Mathematical statistics with applications (8th ed.). Pearson Education India.
- Levin, R. I., Masood, H. S., Rubin, S. D., & Rastogi, S. (2017). Statistics for management (8th ed.). Pearson Education.
- Mood, A. M., Grabill, F. A., & Boes, D. C. (1974). Introduction to the theory of statistics (3rd ed.). McGraw Hill.

Suggestive readings:

- Goon, A. M., Gupta, A. K., & Dasgupta, B. (1989). An outline of statistical theory (volume 1) (2nd ed.). World Press Pvt. Ltd.
- Rohatgi, V. K., & Ehsanes Saleh, A. K. Md. (2000). An introduction to probability and statistics (2nd ed.). Wiley.

DISCIPLINE SPECIFIC CORE COURSE – 12: DATABASE MANAGEMENT SYSTEM

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Database Management System (DSC-12)	4	3	0	1	class XII with Maths	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- To make students understand the basics of database management systems.
- To acquaint them with fundamental concepts, functions and applications of the discipline, so as to deal with different types of problems faced by database managers.

Learning Outcomes

Students completing this course will be able to:

- Gain an understanding of basic concepts of database management and differentiate between DBMS and RDBMS.
- Know the importance of ER Diagrams and their relative conversions.
- Recognize the significance of Functional Dependencies and related concepts for businesses and organizations.
- Understand the utility of structured query language (SQL) for managing databases.

SYLLABUS OF DSC-12

Unit I: Fundamentals of DBMS **(9 Hours)**

Introduction to Database Management System, Purpose and characteristics of Database approach, Data Models, Database Languages, Database Users, Database Management System Architecture, Data Independence.

Unit II: Understanding Entity Relationship (ER) Modeling **(6 Hours)**

Entity Relationship (ER) Modeling: Entity, Attribute, Relationship, Entity Relationship (ER) diagram, designing a database using ER-diagrams.

Unit III: Normalization Concepts **(15 Hours)**

Relational Model concepts, Relational Algebra, Functional Dependencies, Normalization: 1NF, 2NF and 3NF.

Unit IV: Structured Query Language (SQL) **(15 Hours)**
Introduction, purpose and application. Queries in SQL. Transaction Processing: ACID properties, concurrency control.

Practical component (if any) [30 Hours]-

Practical/Lab to be performed on a computer using MS SQL Server/MySQL package

- Using DDL commands of create table, alter table, drop table.
- Utilization of DML commands of select, insert, update, delete.
- Understanding of condition specification using Boolean and comparison operators (AND,
- OR, =, >, < etc.) .
- Utility of arithmetic operators and aggregate functions (COUNT, SUM, AVG etc.).
- Application of Join condition on different tables and same table.
- Using nested select statements for database management.
- Dealing with Null values.
- Sorting of data in ascending or descending order using ORDERBY clause.
- Grouping of similar data using GROUPBY clause and application of HAVING condition.

Essential/recommended readings

- Date, C. J. (2003). Addison-Wesley, Introduction to Database Systems 8TH Edition, Pearson Education.
- Elmasri, R., & Navathe, S. B. (2017). Fundamentals of Database Systems 7 th Edition. Pearson Education
- Silberschatz, A., Korth, H. F., & Sudarshan, S. (2002). Database system concepts (Vol. 5). New York: McGraw-Hill.

- Ramakrishnan, R., Gehrke, J., & Gehrke, J. (2003). Database management systems (Vol. 3). New York: McGraw-Hill.

Suggestive readings Nil

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category II

Operational Research Courses for Undergraduate Programme of study with Operational Research as one of the Core Disciplines

(B.A. Programme with Operational Research as Major discipline)

DISCIPLINE SPECIFIC CORE COURSE – 7: Optimization Techniques

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Optimization Techniques (DSC-7)	4	3	1	0	Class XII with Maths	Nil

Learning Objectives:
To impart knowledge about the formulations and solution techniques of integer linear and multi-objective goal programming problems.

Learning Outcomes:
Students completing this course will be able to:

- Identify different types of optimization problems and their characteristics in real life.
- Explain the theoretical concepts related to unconstrained optimization problems and demonstrate optimality conditions and solution approaches for them.
- Develop the concepts of a multi-objective programming problem and demonstrate its solution using goal programming.
- Formulate real-life problems as integer linear programming problems and solve them using Branch and Bound method.

SYLLABUS OF DSC-7

Unit I: Unconstrained Optimization **(10 Hours)**

Single and multiple variable problems, First and Second order necessary and sufficient conditions for finding extrema, Solution methods: Newton, Gradient search.

Unit II: Convex Functions **(10 Hours)**

Local and global maxima/minima for functions of one and two variables, inflection point, positive/negative definite and semi-definite matrices, convex/concave functions, and their properties, Verifying convexity/concavity through a Hessian matrix.

Unit III: Goal Programming **(12 Hours)**

Goal Programming: Basics of goal programming, Weighted and pre-emptive goal programming, Formulation of a goal programming problem, Graphical solution method, Modified Simplex method.

Unit IV: Integer Linear Programming **(13 Hours)**

Introduction to Integer linear programming problem (ILPP), Pure ILPP, Mixed ILPP, and 0-1 ILPP, Formulation of real life ILPPs, Branch and bound solution method.

Practical component (if any) – NIL
Tutorial : [30 hours]

Essential/recommended readings

- Chandra, S., Jayadeva, & Mehra, A. (2013). *Numerical optimization with applications.* New Delhi: Narosa Publishing House.
- Ravindran, A., Phillips, D. T., & Solberg, J. J. (2007). *Operations research- principles and practice* (2nd ed.). New Delhi: Wiley India (Indian print).
- Taha , H.(2019). Operations Research-An Introduction, 10th edn., Pearson.
- Wayne, Winston, L. (2003). *Operations research: applications and algorithms,* (4th ed.). Duxbury Press.

Suggestive readings Nil

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 8: Statistical Inference

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Statistical Inference (DSC-8)	4	3	0	1	Class XII with Maths	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- To acquaint the students with how to infer about the population using a sample drawn from it

- To explain how different parametric tests can be used in real life.

Learning outcomes

Upon successful completion of this course the student will be able to:

- Analyze the population or phenomenon from which the sample is drawn.
- Examine inferential methods wherein the distributional form of population or phenomenon from which the sample is drawn is known (parametric) .
- Conduct parametric tests of hypotheses

SYLLABUS OF DSC-8

Unit I: Introduction **(12 Hours)**
Concept of Inductive inference, Population and samples, Distribution of sample, statistic and sample moments, Sampling from Normal Distributions: Chi-Square, t and F-distributions, basic concepts of order statistics.

Unit II: Parametric Point Estimation **(12 Hours)**
Properties of point estimators- unbiasedness, consistency, sufficiency, efficiency, method of maximum likelihood for finding estimators, properties of maximum likelihood estimators, method of moments for finding estimators.

Unit III: Tests of Hypotheses **(12 Hours)**
Simple and Composite Hypotheses; Likelihood Ratio Tests; Construction of Confidence Intervals.

Unit IV: Parametric and Nonparametric Tests **(9 Hours)**
Normal tests for proportion and mean based on single sample ; Chi-Square test for variability; t-test for single mean; t-test for difference of means; paired t-test; F test for equality of variances, Chi-Square test for goodness of fit, sign test, Wilcoxon Signed Rank Test, Median Test.

Practical component (if any) [30 Hours] –

- Practicals based on applications of t-tests
- Practicals based on applications of F-tests
- Practicals based on applications of chi-square tests
- Practicals based on sign test, Wilcoxon Signed Rank Test,
- Practicals based on Median Test.

Essential/recommended readings

- Dudewicz, E. J., & Misra S. N. (1988). Modern mathematical statistics, Wiley.
- Fruend, J. E. (2013). Mathematical statistics with applications (8th ed.). Pearson Education India.
- Levin, R. I., Masood, H. S., Rubin, S. D., & Rastogi, S. (2017). Statistics for management (8th ed.). Pearson Education.

- Mood, A. M., Grabill, F. A., & Boes, D. C. (1974). Introduction to the theory of statistics (3rd ed.). McGraw Hill.

Suggestive readings:

- Goon, A. M., Gupta, A. K., & Dasgupta, B. (1989). An outline of statistical theory (volume 1) (2nd ed.). World Press Pvt. Ltd.
- Rohatgi, V. K., & Ehsanes Saleh, A. K. Md. (2000). An introduction to probability and statistics (2nd ed.). Wiley.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category III

Operational Research Courses for Undergraduate Programme of study with Operational Research as one of the Core Disciplines

(B.A Programme with Operational Research as non-Major or Minor discipline)

DISCIPLINE SPECIFIC CORE COURSE – 4: Optimization Techniques

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Optimization Techniques (DSC-4)	4	3	0	1	Class XII with Maths	Nil

Learning Objectives:
To impart knowledge about the formulations and solution techniques of integer linear and multi-objective goal programming problems.

Learning Outcomes:
Students completing this course will be able to:

- Identify different types of optimization problems and their characteristics in real life.
- Explain the theoretical concepts related to unconstrained optimization problems and demonstrate optimality conditions and solution approaches for them.
- Develop the concepts of a multi-objective programming problem and demonstrate its solution using goal programming.
- Formulate real-life problems as integer linear programming problems and solve them using Branch and Bound method.

SYLLABUS OF DSC-4

Unit I: Unconstrained Optimization **(10 Hours)**

Single and multiple variable problems, First and Second order necessary and sufficient conditions for finding extrema, Solution methods: Newton, Gradient search.

Unit II: **Convex Functions** **(10 Hours)**

Local and global maxima/minima for functions of one and two variables, inflection point, positive/negative definite and semi-definite matrices, convex/concave functions, and their properties, Verifying convexity/concavity through a Hessian matrix.

Unit III: Goal Programming **(12 Hours)**

Goal Programming: Basics of goal programming, Weighted and pre-emptive goal programming, Formulation of a goal programming problem, Graphical solution method, Modified Simplex method.

Unit IV: Integer Linear Programming (13 Hours)

Introduction to Integer linear programming problem (ILPP), Pure ILPP, Mixed ILPP, and 0-1 ILPP, Formulation of real life ILPPs, Branch and bound solution method.

Practical component (if any) – NIL
Tutorial: [30 Hours]

Essential/recommended readings

- Chandra, S., Jayadeva, & Mehra, A. (2013). *Numerical optimization with applications.* New Delhi: Narosa Publishing House.
- Ravindran, A., Phillips, D. T., & Solberg, J. J. (2007). *Operations research- principles and practice* (2nd ed.). New Delhi: Wiley India (Indian print).
- Taha , H.(2019). Operations Research-An Introduction, 10th edn., Pearson.
- Wayne, Winston, L. (2003). *Operations research: applications and algorithms,* (4th ed.). Duxbury Press.

Suggestive readings Nil

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category IV

BSc. Physical Sciences/ Mathematical Sciences with Operational Research as one of the three Core Disciplines
CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

DISCIPLINE SPECIFIC CORE COURSE – 4: OPTIMIZATION TECHNIQUES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Optimization Techniques (DSC-4)	4	3	1	0	Class XII with Maths	Nil

Learning Objectives:
To impart knowledge about the formulations and solution techniques of integer linear and multi-objective goal programming problems.

Learning Outcomes:
Students completing this course will be able to:

- Identify different types of optimization problems and their characteristics in real life.
- Explain the theoretical concepts related to unconstrained optimization problems and demonstrate optimality conditions and solution approaches for them.
- Develop the concepts of a multi-objective programming problem and demonstrate its solution using goal programming.
- Formulate real-life problems as integer linear programming problems and solve them using Branch and Bound method.

SYLLABUS OF DSC-4

Unit I: Unconstrained Optimization **(10 Hours)**

Single and multiple variable problems, First and Second order necessary and sufficient conditions for finding extrema, Solution methods: Newton, Gradient search.

Unit II: Convex Functions **(10 Hours)**

Local and global maxima/minima for functions of one and two variables, inflection point, positive/negative definite and semi-definite matrices, convex/concave functions, and their properties, Verifying convexity/concavity through a Hessian matrix.

Unit III: Goal Programming **(12 Hours)**

Goal Programming: Basics of goal programming, Weighted and pre-emptive goal programming, Formulation of a goal programming problem, Graphical solution method, Modified Simplex method.

Unit IV: Integer Linear Programming **(13 Hours)**

Introduction to Integer linear programming problem (ILPP), Pure ILPP, Mixed ILPP, and 0-1 ILPP, Formulation of real life ILPPs, Branch and bound solution method.

Practical component (if any) – NIL
Tutorial:[30 Hours]

Essential/recommended readings

- Chandra, S., Jayadeva, & Mehra, A. (2013). *Numerical optimization with applications.* New Delhi: Narosa Publishing House.
- Ravindran, A., Phillips, D. T., & Solberg, J. J. (2007). *Operations research- principles and practice* (2nd ed.). New Delhi: Wiley India (Indian print).
- Taha , H.(2019). Operations Research-An Introduction, 10th edn., Pearson.
- Wayne, Winston, L. (2003). *Operations research: applications and algorithms,* (4th ed.). Duxbury Press.

Suggestive readings Nil

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

CATEGORY-V

COMMON POOL OF DISCIPLINE SPECIFIC ELECTIVES (DSE) COURSES OF

(i) B.Sc.(H) OR

(ii) B Sc (Physical Sciences/Mathematical Sciences) with OR as one of the

DISCIPLINE SPECIFIC ELECTIVE (DSE-2 (a)): Introduction to Stochastic Processes

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Introduction to Stochastic Processes (DSE-2(a))	4	3	1	0	Class XII with Maths	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- To acquaint students with the basic concepts of stochastic processes and its mathematical framework.
- To introduce some standard stochastic processes and their properties.
- To provide students necessary mathematical support and confidence to analyze the probabilistic evolution of randomly evolving systems.

Learning outcomes

Students completing this course will be able to:

- Elucidate the power of stochastic processes and their range of applications.
- State the defining properties of various stochastic process models.
- Demonstrate essential stochastic modeling tools.
- Identify appropriate stochastic process model(s) for a given research or applied problem.
- Formulate and solve problems which involve setting up stochastic models.

SYLLABUS OF DSE-2(a)

Unit I: Introduction to Stochastic processes (6 hours)

Definition, specification of stochastic processes, stationary processes, martingales.

Unit II: Markov chains (12 hours)
Introduction, Classification of states, Limiting behaviour, Applications to Queueing Theory.

Unit III: Markov Processes (12 hours)
Introduction, Structure of Markov Processes, Limit Theorems, Birth and Death Processes.

Unit IV: Counting Processes (15 hours)
Introduction, Types of counting processes, Poisson process: definition and examples, Markov property of Poisson process, superposition of Poisson processes, thinning of Poisson processes, basics of ordinary renewal processes and non-homogenous Poisson processes, Applications in Reliability and Maintenance Theory.

Practical component (if any) – NIL
Tutorial: [30 Hours]

Essential/recommended readings :

- Kulkarni, V. G. (2011), *Modeling and Analysis of Stochastic Systems*, (2nd edition), CRC Press.
- Ross, Sheldon, M. (1995). *Stochastic Processes* (2nd edition), John Wiley.
- Pinsky, Mark A. and Karlin, Samuel. (2011), *An Introduction to Stochastic Modeling*, Elsevier.
- Blanco, L., Arunachalam, V. and Dharmaraja S. (2016), *Introduction to Probability and Stochastic Processes with Applications,* Castaneda, Wiley, Asian Edition.

Suggestive readings:

- Medhi, J. (2009), *Stochastic Processes* (3rd edition), New Age International Publishers.
- Trivedi, K. S. (2016), *Probability & Statistics with Reliability, Queuing & Computer Science Applications* (2nd edition), New Jersey, John Wiley & Sons, Inc.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE (DSE-2 (b)): Multivariate Data Analysis

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Multivariate Data Analysis & DSE 2(b)	4	3	0	**1**	Class XII with Mathematics	Knowledge of elementary descriptive and inferential Statistics

Learning Objectives

The primary objective of this course is to introduce:

- Understanding the principles and concepts of multivariate data analysis.
- Developing skills in using statistical software to analyze and interpret multivariate data.
- Familiarizing with different types of multivariate techniques.

Learning outcomes

Students completing this course will be able to:

- To examine the difference between univariate and multivariate data analysis.
- To analyse data using quantitative and qualitative response regression modelsregression models.
- To conduct factor analysis.

SYLLABUS OF DSE-2(b)

Unit I: Exploring Multivariate Data **(6 Hours)**

The aims of multivariate analysis, basics of matrix and vector algebra, positive definite matrices, random vectors, and matrices, mean vectors and covariance matrices, Types of Data; Organization of data- Arrays, Descriptive Statistics, Graphical Techniques- The scatterplot, The scatterplot matrix, multiple box plots, concept of distance in multivariate techniques, checking distributional assumptions using probability plots.

Unit II: Regression and the Analysis of variance **(15 Hours)**

Multiple Regression Models: Assumptions, Estimation, Testing of Hypotheses, ANOVA models, MANOVA(one-way classification)

Unit III: Qualitative Response Regression Models: **(12 Hours)**

Introduction, Binary Logistic Regression, Estimation, Goodness of fit, ROC curves, basics of multinomial logistic regression, use of logistic regression for classification, 2 x 2 contingency and three - way table.

Unit IV: Factor analysis **(12 Hours)**

Introduction, Exploratory factor analysis, reliability of factor scales: internal consistency of scales, Confirmatory factor analysis, Structural equation modelling.

Practical Component (if any) [30 Hours]:

- Practical based on multiple regression
- Practical based on ANOVA & MANOVA – one way classification
- Practical based on ANOVA – two way classification
- Practical based on Logistic Regression
- Practical based on Factor Analysis

Essential/recommended readings:

- Cleff, T. (2019). Applied Statistics and Multivariate Data Analysis for Business and Economics- A Modern Approach Using SPSS, Stata, and Excel, Springer Nature, Switzerland.

- Hardle, W. K. and Simar, L. (2015). Applied Multivariate Statistical Analysis, 4th Edn., Springer.

- Johnson, R. A. and Wichern, D. W. (2015). Applied Multivariate Statistical Analysis, 6th Edn., Pearson Education India.

- Joseph F. Hair Jr., Black,W.C., Babin,B.J., and Anderson, R.E. (2019). Multivariate Data Analysis, 8th edition, Cengage Learning, UK.

- Kshirsagar, A. M. (1996). Multivariate Analysis, 2nd ed., Marcel Dekker.

Suggestive Readings:Nil

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE (DSE-2 (c)): INTRODUCTION TO SOCIAL MEDIA ANALYTICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
INTRODUCTION TO SOCIAL MEDIA ANALYTICS (DSE-2(c))	4	3	0	1	Class XII with Maths	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- To make students understand the basic types of social media platform.
- To equip students with skills to collect, analyse and derive actionable insights from social media websites.
- To impart knowledge of methods of social media marketing and related analytical central concepts.

Learning Outcomes

Students completing this course will be able to:

- Understand the role of social media data and analytics in helping organizations achieve their goals.
- Identify and select key performance indicators to accurately measure the success of social media efforts.
- Analyze social media data using native analytics (e.g. YouTube, Facebook, Twitter, Instagram) and social media measurement tools.
- Draw meaningful insights and provide actionable and strategic recommendations based on social media data analysis.

SYLLABUS OF DSE 2(C)

Unit I: Introduction **(9 Hours)**

Difference between social network data, Nodes, Relations, Scales of measurement, statistics and social network data., Introduction to formal methods, efficiency, using computers, seeing patterns.

Unit II: Graphs and Sociograms (12 Hours)

Introduction to graphs, sociograms, kinds of graphs. Working with NetDraw to visualize graphs: Introduction, node attributes, relation properties, location, highlighting parts of the network.

Knowledge of Network models, degree of separation, Tools for Social Network Visualization

Unit III: Ego Networks and Centrality (12 Hours)

Fundamentals of Ego network, Introduction to Degree centrality, closeness centrality, between-ness centrality, Concept of Link Analysis.

Unit IV: Concept of Virality, broadcasting and Information Diffusion (12 Hours)

Quantification of virality of information in online Social Networks, Modeling of View Count Dynamics, life cycle of a video and viewers cataloguing, Information Diffusion: Probabilistic Models of Information Flow, Cascading Behavior: Decision Based Models of Cascades and epidemic modeling to understand the spread of information.

Practical component (if any) [30 Hours]–

- Analyze the degree distribution of any social network
- Analyze various centrality measures of any Social Network using UCINET tool
- Examine the clustering coefficient of any network
- Analyze the diameter, path length
- Analyze the ego networks and evaluate them
- Apply centrality metrics (Degree, between-ness, closeness) and related algorithms to determine the topological significance of the nodes in a network.
- Extract clusters of related nodes using efficient community detection algorithms and evaluate the effectiveness of the partitioning.

Essential/recommended readings

- Hitzler, Pascal, Markus Krotzsch, and Sebastian Rudolph. (2011). Foundations of semantic web technologies. CRC Press.
- Charu.C. Aggarwal, (2011). Social Network Data Analytics, Springer.
- Easley, David, Jon Kleinberg. (2010). Networks, Crowds, and Markets: Reasoning about a Highly Connected World. New York, NY: Cambridge University Press.
- King, Andrew B. (2008). Website optimization. "O'Reilly Media, Inc."
- Jackson, Matthew O. (2008). Social and Economic Networks. Princeton, NJ: Princeton University Press.
- Liu, Bing. (2007). Web data mining. Springer-Verlag Berlin Heidelberg.

Suggestive readings: Nil

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

CATEGORY-VI

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES OFFERED BY THE DEPARTMENT

GENERIC ELECTIVES (GE-4): CONVEX AND DISCRETE OPTIMIZATION

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Convex and Discrete Optimization (GE-4)	4	3	1	0	Class XII with Maths	Nil

Learning Objectives:
To impart knowledge about the formulations and solution techniques of integer linear and multi-objective goal programming problems.

Learning Outcomes:
Students completing this course will be able to:

- Identify different types of optimization problems which occur in real life and their characteristics.
- Explain the theoretical concepts related to unconstrained optimization problems and demonstrate optimality conditions and solution approaches for them.
- Develop the concepts of a multi-objective programming problem and demonstrate its solution using goal programming.
- Formulate real-life problems as integer linear programming problems and solve them using Branch and Bound method.

SYLLABUS OF GE 4

Unit I: Unconstrained Optimization **(10 Hours)**

Single and multiple variable problems, Necessary and sufficient conditions for finding extrema, Solution methods: Bisection, Newton, Golden section, Gradient search.

Unit II: **Convex Functions** **(10 Hours)**

Local and global maxima/minima for functions of one and two variables, inflection point, positive/negative definite and semi-definite matrices, convex/concave functions, and their properties, Verifying convexity/concavity through a Hessian matrix.

Unit III: Goal Programming (10 Hours)

Goal Programming: Basics of goal programming, Weighted and pre-emptive goal programming, Formulation of a goal programming problem, Graphical solution method, Modified Simplex method.

Unit IV: Integer Linear Programming (15 Hours)

Introduction to Integer linear programming problem (ILPP), Pure ILPP, Mixed ILPP, and 0-1 ILPP, Applications of ILPP: Capital budgeting, problem Fixed charge problem, Travelling salesman problem, Media allocation, Knapsack problem, Gomory's cutting plane method, Branch and bound method.

Essential/recommended readings :

- Chandra, S., Jayadeva, & Mehra, A. (2013). *Numerical optimization with applications.* New Delhi: Narosa Publishing House.
- Ravindran, A., Phillips, D. T., & Solberg, J. J. (2007). *Operations research- principles and practice* (2nd ed.). New Delhi: Wiley India (Indian print).
- Sinha, S. M. (2006). *Mathematical programming- theory and methods* (1st ed.). New Delhi: Elsevier Science (Indian print).

Practical component (if any) – NIL
Tutorial: [30 Hours]

Essential Readings:

- Bazaraa, M. S., Sherali, H. D., & Shetty, C. M. (2006). *Nonlinear programming-Theory and algorithms (3rd ed.).* New Delhi: John Wiley & Sons (Indian print).
- Chandra, S., Jayadeva, & Mehra, A. (2009). *Numerical optimization with applications*. New Delhi: Narosa Publishing House.

Suggested Readings:

- Antoniou, A., & Lu, Wu-Sheng (2007). *Practical optimization- Algorithms and engineering applications*. New York: Springer.
- Hillier, F. S., & Lieberman, G. J. (2010). *Introduction to operations research- Concepts and cases (9th ed.).* New Delhi: Tata McGraw Hill (Indian print).

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER-V

Category I

(B.Sc. Honours in Operational Research)

DISCIPLINE SPECIFIC CORE COURSE – 13: NONLINEAR AND DYNAMIC PROGRAMMING (THEORY AND PRACTICAL)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Nonlinear and Dynamic Programming (DSC-13)	4	3	1	0	Class XII with Maths	Nil

Learning Objectives:

- To impart knowledge about the formulations and solution techniques of nonlinear and dynamic programming.

Learning Outcomes:

Students completing this course will be able to:

- Identify different optimization problems and their characteristics in real-life to be formulated as nonlinear programming problems.
- Explain the theoretical concepts of nonlinear programming problems and demonstrate solution approaches.
- Understand the basics of Quadratic programming problems and describe their various applications. Then, demonstrate solution methods for these problems.
- Formulate and solve nonlinear programming problems in which the objective function and constraints are separable functions using concepts of separable programming.
- Solve different types of real-life problems using Dynamic programming.

SYLLABUS OF DSC-13

Unit I: **Nonlinear Programming (NLP)** **(15 Hours)**

Basics of NLP, Method of Lagrange multiplier, Fritz John optimality conditions, Karush-Kuhn-Tucker (KKT) optimality conditions, Verification of sufficient optimality conditions.

Unit II: Special Nonlinear Programming Problems **(15 Hours)**

Basics of Quadratic programming problem (QPP), Applications of QPP, Wolfe's method, Beale's method, Duality**,** Separable programming problem and its solution using piece-wise linear approximation.

Unit III: **Dynamic programming** **(15 Hours)**

Multistage decision processes, Recursive nature of computations, Forward and backward recursion, Bellman's principle of optimality, Selective dynamic programming applications and their solutions involving additive and multiplicative separable returns for objective as well as constraint functions, Problem of dimensionality.

Practical component (if any) – NIL
Tutorial: [30 Hours]

Essential/recommended readings

- Chandra, S., Jayadeva, & Mehra, A. (2013). *Numerical optimization with applications.* New Delhi: Narosa Publishing House.
- Ravindran, A., Phillips, D. T., & Solberg, J. J. (2007). *Operations research- principles and practice* (2nd ed.). New Delhi: Wiley India (Indian print).
- Sinha, S. M. (2006). *Mathematical programming- theory and methods* (1st ed.). New Delhi: Elsevier Science (Indian print).
- Wayne, Winston, L. (2003). *Operations research: applications and algorithms,* (4th ed.). Duxbury Press.

Suggestive readings: Nil

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 14: Reliability Theory

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Reliability Theory (DSC-14)	4	3	0	1	Class XII with Maths	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce students about the key concepts and methods in reliability engineering.

- To explain reliability modelling of systems with different configurations
- To explain concept of repair and its impact on the performance of the system along with formulation of maintenance and replacement policies

Learning outcomes

Upon successful completion of this course the student will be able to:

- To develop reliability models for non-repairable systems with different configurations
- Develop models for repairable systems using renewal process , Non Homogenous Poisson Process and State- space method
- Formulate system maintenance strategies.

SYLLABUS OF DSC-14

Unit I: Introduction (12 Hours)
Basics of reliability, Classes of life distributions based on notion of aging, concepts of structure function, coherent systems, cut sets, path sets, reliability of series, parallel, k-out-of-n, series-parallel, parallel-series, bridge structure, standby systems

Unit II: Repairable Systems (15 Hours)
Types of Repair, Availability theory, types of Availability measures, Perfect Repair Models: Introduction to Renewal theory, Types of Renewal Processes and their Asymptotic Properties, Reward Renewal Processes, Minimal Repair Models: Introduction to Non Homogenous Poisson Process, Power Law Process

Unit III: State Space Models for System Performance Analysis (10 Hours)
Markovian approach for reliability/ availability analysis of repairable series and parallel systems.

Unit IV: Maintenance Policies (8 Hours)
Types of Maintenance: Corrective Maintenance; Preventive Maintenance, Age Replacement Policy: cost type criterion, Block Replacement Policy: Cost-type criterion

Practical component (if any) [30 Hours]–

- Practicals based on computation of reliability of systems with various configurations
- Practicals based on finding reliability and availability measures of repairable series and parallel systems
- Practicals based on formulation of age and block replacement policies

Essential/recommended readings

- Barlow, R. E., & Proschan, F. (1975). Statistical theory of reliability and life testing. Holt, Rinehert & Winston Inc.
- Gertsbakh, I. (2013). Reliability theory with applications to preventive maintenance. Springer.
- Nakagawa, T. (2005). Maintenance theory on reliability. London: Springer-Verlag.

- Rau, J. G. (1970). Optimization and probability in systems engineering. V.N. Reinhold Co.
- Rausand, M., & Hoyland, A. (2003). System reliability theory: models, statistical methods, and applications. John Wiley & Sons.

Suggestive readings: Nil

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 15: QUANTITATIVE FINANCE

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Quantitative Finance (DSC-15)	4	3	1	0	Class XII with Maths	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- To make students understand the basics of Quantitative finance.
- To familiarize them with the principles, practices, techniques and applications of quantitative finance, so as to enable them to deal with various business decisions in an efficient manner.

Learning Outcomes

Students completing this course will be able to:

- Relate financial knowledge to varied decisions in a business environment.
- Gain an understanding of financial assets.
- Utilize the concepts, techniques and methods of finance for quantitative analysis.
- Convey financial information and prepare financial management solutions.

SYLLABUS OF DSC-15

Unit I: Introduction to finance functions (6 hours)

Purpose and objectives of Quantitative finance, financial markets, Functions of finance: Investment, Financing and Dividend decisions, roles and responsibilities of a finance manager.

Unit II: Time value of money **(9 hours)**

Time value of money: Present value and Future value; Ordinary Annuity, Annuity Due and Perpetuity, Valuation of securities: Bonds and their valuation, Bond Yields, Common and preferred stock and their valuation.

Unit III: Risk-Return trade-off **(9 hours)**

Introduction to Risk and Return: Concept and significance, application of standard deviation and coefficient of variation, systematic and unsystematic risks, risk and return in a portfolio context, Capital Asset Pricing Model (CAPM), alternatives to CAPM.

Unit IV: Financial statement analysis **(12 hours)**

Financial statements: Balance sheet, Income statement, Cash flows statement. Analysis of financial statements: Ratio analysis, Du Pont equations.

Unit V: Capital Budgeting and Working Capital Management **(9 hours)**

The long term investment decision: Capital budgeting, Estimation of cash flows. Capital budgeting methods: Discounted and non-discounted cash flow based techniques. Interpretation and significance of working capital, permanent and temporary working capital, determinants of working capital, Goal Programming model of working capital management, Cash management: motives and objectives; Baumol's model of cash management.

Practical component (if any) – Nil

Tutorial: [30 Hours]

Essential/recommended readings

- Gitman, L. J., Juchau, R., & Flanagan, J. (2015). *Principles of managerial finance*. Pearson Higher Education AU.
- Koller, T., Dobbs, R., & Huyett, B. (2010). *Value: The four cornerstones of corporate finance*. John Wiley & Sons.
- Levy, H., & Sarnat, M. (1988). *Principles of financial management*. Prentice Hall.
- Ross, S. A., Westerfield, R., & Jaffe, J. F. (1999). *Corporate finance*. Irwin/McGraw-Hill.
- Van Horne, J. C., & Wachowicz, J. M. (2008). *Fundamentals of financial management* (13th ed.). Harlow: Prentice Hall Inc.

Suggestive readings

- Blyth, S. (2013). *An introduction to quantitative finance*. Oxford University Press.
- Wilmott, P. (2013). *Paul Wilmott on quantitative finance*. John Wiley & Sons.

Suggestive readings: Nil

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category II

Operational Research Courses for Undergraduate Programme of study with Operational Research as one of the Core Disciplines

(B.A. Programme with Operational Research as Major discipline)

DISCIPLINE SPECIFIC CORE COURSE – 9: Quantitative Finance and Marketing

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Quantitative Finance and Marketing (DSC-9)	4	3	1	0	Class XII with Maths	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- To make students understand the basics of Financial Management.
- To impart knowledge of central concepts and methods of marketing and related optimization problems.
- To familiarize them with the principles, practices, techniques and applications of financial management, so as to enable them to deal with various business decisions in an efficient manner.

Learning Outcomes

Students completing this course will be able to:

- Relate financial knowledge to varied decisions in a business environment.
- Gain an understanding of financial assets.
- Utilize the concepts, techniques and methods of finance for quantitative analysis.
- Convey financial information and prepare financial and other management solutions.

SYLLABUS OF DSC- 9

Unit I: Introductory concepts in Quantitative finance (9 Hours)

Meaning, significance and scope of finance, profit maximization versus wealth maximization, Interpretation of finance function: Investment, financing and dividend decisions, Time value of money: Present Value and Future Value, Valuation of bonds, Risk and return: Capital Asset Pricing Model, Financial statements: Balance sheet, Income statement and Cash flows statement.

Unit II: Capital Budgeting and Working Capital Management (12 Hours)

The long term investment decision: Capital budgeting, Estimation of cash flows. Capital budgeting methods: Discounted and non-discounted cash flow based techniques. Interpretation and significance of working capital, permanent and temporary working capital, determinants of working capital, Goal Programming model of working capital management, Cash management: motives and objectives; Baumol's model of cash management.

Unit III: Market Analysis (12 Hours)

Concept of Marketing, Marketing Orientation and related concepts, Decision Making: A Quantitative Approach: Business Decisions, Abstraction, Model Building, Solutions, Errors, Model-Building Techniques, Marketing Mix-The Traditional 4 Ps, Marketing Mix- The Modern Concept, Diffusion Modeling, Buyers and Adopters, Mathematical Models for Consumer Buying Behaviour.

Unit IV: New Product Development and Management (12 Hours)

Product Life Cycle (PLC), Product line, Product mix strategies, New product development, , Brand switching analysis, Types of Competition: Perfect and Imperfect., Promotional Efforts and related Models

Practical component (if any) - Nil

Tutorial : [30 Hours]

Essential/recommended readings

- Curtis, A. (2008). Marketing for engineers, scientists and technologists. John Wiley & Sons.
- Gitman, L. J., Juchau, R., & Flanagan, J. (2015). *Principles of managerial finance*. Pearson Higher Education AU.
- Koller, T., Dobbs, R., & Huyett, B. (2010). *Value: The four cornerstones of corporate finance*. John Wiley & Sons.
- Levy, H., & Sarnat, M. (1988). *Principles of financial management*. Prentice Hall.
- Lilien, G. L., Kotler, P., & Moorthy, K. S. (2003). Marketing models. Prentice-Hall of India.
- Ross, S. A., Westerfield, R., & Jaffe, J. F. (1999). *Corporate finance*. Irwin/McGraw-Hill.
- Van Horne, J. C., & Wachowicz, J. M. (2008). *Fundamentals of financial management* (13th ed.). Harlow: Prentice Hall Inc.

Suggestive readings

- Blyth, S. (2013). *An introduction to quantitative finance*. Oxford University Press.
- Kotler, P., & Keller, K. L. (2009). Marketing management. Prentice-Hall.
- Wilmott, P. (2013). *Paul Wilmott on quantitative finance*. John Wiley & Sons.

Suggestive readings: Nil

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 10: Stochastic Modelling and Applications

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Stochastic Modelling and Applications (DSC-10)	4	3	0	1	Class XII with Maths	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- To make the students familiar with the concept of stochastic modeling and its applications in the field of queueing theory, reliability theory and inventory management.
- To provide students a rigorous mathematical framework to develop mathematical models for different queueing systems.
- To introduce students with the concept of system reliability and make them learn to evaluate reliability of various system configurations.
- To make students learn how to model uncertainties in demand in inventory management problems.
- To provide students hands-on experience of analyzing queueing, reliability and inventory models through practical sessions using certain software.

Learning Outcomes

Students completing this course will be able to:

- Learn the concepts of stochastic processes, Markov processes, Markov chains and apply these mathematical models in real-life problems.
- Understand the concepts and mathematical theory related to queuing systems & system reliability required to understand, analyse and solve any real-world problem.
- Evaluate the performance metrics of any queuing system.
- Compute the system reliability of any type of system-configuration.
- Understand and develop stochastic inventory models.
- Make use of software for problem analysis.

Syllabus of DSC-10

Unit I: Introduction **(9 Hours)**

Basics of random variables, Probability distributions and their moments, Some standard probability distributions: Binomial, Poisson, Normal, Exponential, Random (stochastic) processes, Lack of memory property of exponential distribution, Markov process, Pure-birth process, Pure-death process.

Unit II: Introduction to Queueing Systems **(12 Hours)**

Characteristics of a queueing system, Kendall's notation, Performance measures of a queueing system, Markovian queueing models with single & multiple servers, and finite & infinite system capacity – M/M/1, M/M/c.

Unit III: System Reliability **(12 Hours)**

Introduction to reliability, Reliability function and related concepts like hazard rate, mean time to failure (MTTF), and mean time before failure (MTBF), Classes of lifetime distributions, Hazard rate of exponential and Weibull distributions, Reliability of various system configurations- series, parallel, mixed configuration, k out of n system and stand-by systems.

Unit IV: Stochastic inventory models **(12 Hours)**

Introduction to stochastic inventory models, Single period probabilistic inventory models with discrete and continuous demand.

Practical component (if any) [30 Hours]:

Practical/Lab to be performed using OR/Statistical packages

- Finding measures of performance for deterministic queuing system.
- Finding measures of performance for M/M/1 queuing system with infinite capacity.
- Finding measures of performance for M/M/1 queuing system with finite capacity.
- Finding measures of performance for M/M/c queuing system with infinite capacity.
- Measuring reliability of different types of system configuration.
- Measuring reliability, hazard rate and MTSF of different types of system configuration.
- Finding optimal inventory policy for probabilistic inventory model with discrete demand.

- Finding optimal inventory policy for probabilistic inventory model with continuous demand.

Essential/recommended readings

- Gross, D., Shortle, J. F, Thompson J. M., & Harris, C. M. (2008), *Fundamentals of Queuing Theory* (4th edition), New Jersey, John Wiley & Sons, inc.
- Rausand, M. & Hoyland, A. (2003), *System Reliability Theory: Models, Statistical Methods & Applications* (2nd edition), New Jersey, John Wiley & Sons, Inc.
- Rau, John G. (1970), *Optimization and Probability in Systems Engineering,* New York, Van Nostrand Reinhold Inc., U.S.
- Ross, S.N. (2008), *Stochastic Processes* (2nd edition), Wiley India Pvt. Ltd.
- Water, D. (2008). *Inventory control and management.* (2nd Edition). John Wiley & Sons.

Suggestive readings

- Hadley, G. and Whitin, T. M. (1979), *Analysis of Inventory Systems*, D. B. Taraporevala and Sons, Published by arrangement with Prentice Hall Inc.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category III

Operational Research Courses for Undergraduate Programme of study with Operational Research as one of the Core Disciplines

(B.A Programme with Operational Research as non-Major or Minor discipline)

DISCIPLINE SPECIFIC CORE COURSE – 5: Stochastic Modelling and Applications

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Stochastic Modelling and Applications (DSC-5)	**4**	**3**	**0**	**1**	**Class XII with Maths**	**Nil**

Learning Objectives

The Learning Objectives of this course are as follows:

- To make the students familiar with the concept of stochastic modeling and its applications in the field of queueing theory, reliability theory and inventory management.
- To provide students a rigorous mathematical framework to develop mathematical models for different queueing systems.
- To introduce students with the concept of system reliability and make them learn to evaluate reliability of various system configurations.
- To make students learn how to model uncertainties in demand in inventory management problems.
- To provide students hands-on experience of analyzing queueing, reliability and inventory models through practical sessions using certain software.

Learning Outcomes

Students completing this course will be able to:

- Learn the concepts of stochastic processes, Markov processes, Markov chains and apply these mathematical models in real-life problems.
- Understand the concepts and mathematical theory related to queuing systems & system reliability required to understand, analyse and solve any real-world problem.
- Evaluate the performance metrics of any queuing system.
- Compute the system reliability of any type of system-configuration.

- Understand and develop stochastic inventory models.
- Make use of software for problem analysis.

Syllabus of DSC-5

Unit I: Introduction **(9 Hours)**

Basics of random variables, Probability distributions and their moments, Some standard probability distributions: Binomial, Poisson, Normal, Exponential, Random (stochastic) processes, Lack of memory property of exponential distribution, Markov process, Pure-birth process, Pure-death process.

Unit II: Introduction to Queueing Systems **(12 Hours)**

Characteristics of a queueing system, Kendall's notation, Performance measures of a queueing system, Markovian queueing models with single & multiple servers, and finite & infinite system capacity – M/M/1, M/M/c.

Unit III: System Reliability **(12 Hours)**

Introduction to reliability, Reliability function and related concepts like hazard rate, mean time to failure (MTTF), and mean time before failure (MTBF), Classes of lifetime distributions, Hazard rate of exponential and Weibull distributions, Reliability of various system configurations- series, parallel, mixed configuration, k out of n system and stand-by systems.

Unit IV: Stochastic inventory models **(12 Hours)**

Introduction to stochastic inventory models, Single period probabilistic inventory models with discrete and continuous demand.

Practical component (if any) [30 Hours]:

Practical/Lab to be performed using OR/Statistical packages

- Finding measures of performance for deterministic queuing system.
- Finding measures of performance for M/M/1 queuing system with infinite capacity.
- Finding measures of performance for M/M/1 queuing system with finite capacity.
- Finding measures of performance for M/M/c queuing system with infinite capacity.
- Measuring reliability of different types of system configuration.
- Measuring reliability, hazard rate and MTSF of different types of system configuration.
- Finding optimal inventory policy for probabilistic inventory model with discrete demand.
- Finding optimal inventory policy for probabilistic inventory model with continuous demand.

Essential/recommended readings

- Gross, D., Shortle, J. F, Thompson J. M., & Harris, C. M. (2008), *Fundamentals of Queuing Theory* (4th edition), New Jersey, John Wiley & Sons, inc.
- Rausand, M. & Hoyland, A. (2003), *System Reliability Theory: Models, Statistical Methods & Applications* (2nd edition), New Jersey, John Wiley & Sons, Inc.

- Rau, John G. (1970), *Optimization and Probability in Systems Engineering,* New York, Van Nostrand Reinhold Inc., U.S.
- Ross, S.N. (2008), *Stochastic Processes* (2nd edition), Wiley India Pvt. Ltd.
- Water, D. (2008). *Inventory control and management.* (2nd Edition). John Wiley & Sons.

Suggestive readings

- Hadley, G. and Whitin, T. M. (1979), *Analysis of Inventory Systems*, D. B. Taraporevala and Sons, Published by arrangement with Prentice Hall Inc.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category IV

BSc. Physical Sciences/ Mathematical Sciences with Operational Research as one of the three Core Disciplines
CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

DISCIPLINE SPECIFIC CORE COURSE – 5: STOCHASTIC MODELLING AND APPLICATIONS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Stochastic Modelling and Applications (DSC-5)	4	3	0	1	Class XII with Maths	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- To make the students familiar with the concept of stochastic modeling and its applications in the field of queueing theory, reliability theory and inventory management.
- To provide students a rigorous mathematical framework to develop mathematical models for different queueing systems.
- To introduce students with the concept of system reliability and make them learn to evaluate reliability of various system configurations.
- To make students learn how to model uncertainties in demand in inventory management problems.
- To provide students hands-on experience of analyzing queueing, reliability and inventory models through practical sessions using certain software.

Learning Outcomes

Students completing this course will be able to:

- Learn the concepts of stochastic processes, Markov processes, Markov chains and apply these mathematical models in real-life problems.
- Understand the concepts and mathematical theory related to queuing systems & system reliability required to understand, analyse and solve any real-world problem.
- Evaluate the performance metrics of any queuing system.

- Compute the system reliability of any type of system-configuration.
- Understand and develop stochastic inventory models.
- Make use of software for problem analysis.

Syllabus of DSC-5

Unit I: Introduction **(9 Hours)**

Basics of random variables, Probability distributions and their moments, Some standard probability distributions: Binomial, Poisson, Normal, Exponential, Random (stochastic) processes, Lack of memory property of exponential distribution, Markov process, Pure-birth process, Pure-death process.

Unit II: Introduction to Queueing Systems **(12 Hours)**

Characteristics of a queueing system, Kendall's notation, Performance measures of a queueing system, Markovian queueing models with single & multiple servers, and finite & infinite system capacity – M/M/1, M/M/c.

Unit III: System Reliability **(12 Hours)**

Introduction to reliability, Reliability function and related concepts like hazard rate, mean time to failure (MTTF), and mean time before failure (MTBF), Classes of lifetime distributions, Hazard rate of exponential and Weibull distributions, Reliability of various system configurations- series, parallel, mixed configuration, k out of n system and stand-by systems.

Unit IV: Stochastic inventory models **(12 Hours)**

Introduction to stochastic inventory models, Single period probabilistic inventory models with discrete and continuous demand.

Practical component (if any) [30 Hours]:

Practical/Lab to be performed using OR/Statistical packages

- Finding measures of performance for deterministic queuing system.
- Finding measures of performance for M/M/1 queuing system with infinite capacity.
- Finding measures of performance for M/M/1 queuing system with finite capacity.
- Finding measures of performance for M/M/c queuing system with infinite capacity.
- Measuring reliability of different types of system configuration.
- Measuring reliability, hazard rate and MTSF of different types of system configuration.
- Finding optimal inventory policy for probabilistic inventory model with discrete demand.
- Finding optimal inventory policy for probabilistic inventory model with continuous demand.

Essential/recommended readings

- Gross, D., Shortle, J. F, Thompson J. M., & Harris, C. M. (2008), *Fundamentals of Queuing Theory* (4th edition), New Jersey, John Wiley & Sons, inc.
- Rausand, M. & Hoyland, A. (2003), *System Reliability Theory: Models, Statistical Methods & Applications* (2nd edition), New Jersey, John Wiley & Sons, Inc.

- Rau, John G. (1970), *Optimization and Probability in Systems Engineering,* New York, Van Nostrand Reinhold Inc., U.S.
- Ross, S.N. (2008), *Stochastic Processes* (2nd edition), Wiley India Pvt. Ltd.
- Water, D. (2008). *Inventory control and management.* (2nd Edition). John Wiley & Sons.

Suggestive readings

- Hadley, G. and Whitin, T. M. (1979), *Analysis of Inventory Systems*, D. B. Taraporevala and Sons, Published by arrangement with Prentice Hall Inc.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

CATEGORY-V

COMMON POOL OF DISCIPLINE SPECIFIC ELECTIVES (DSE) COURSES OF

(i) B.Sc.(H) OR

(ii) BA(P)with OR Major & Minor

(iii) B.Sc. (Physical Sciences/Mathematical Sciences) with OR as one of

DISCIPLINE SPECIFIC ELECTIVE (DSE-3 (a)): Software Engineering

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Software Engineering (DSE-3(a))	4	3	0	1	Class XII Pass with Mathematics as one of the papers in Class XII	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce the basic concepts of Software Engineering and related terminologies
- The students will be made familiar with the concepts of software development process, various life cycles and reliability assessment.
- To introduce various approaches for software project planning, Risk assessment & mitigation

Learning outcomes

Upon successful completion of this course the student will be able to:

- Understand software development life cycle, its various stages, and different approaches for software development projects.
- Know about Software Project management activities including planning, scheduling, risk management, etc.
- Comprehend various software testing approaches.
- Understand about the mathematical models for software reliability assessment and prediction
- Gain knowledge about tools and techniques of large-scale software systems development.

SYLLABUS OF DSE-3(a)

Unit I: Introduction (12 Hours)
Software Scope, Software Development Challenges, Software Engineering Discipline, Software Methodologies and Software development life-cycle Models, Introduction to Agile Software Engineering.

Unit II: Software Requirement Management, System Design and Testing (12 Hours)
Requirement Analysis and Modeling, Techniques, SRS: Needs, Characteristics and its Components, Design Principles, design specification, Cohesiveness and Coupling, Software Testing Fundamentals, , Software testing strategies, Validation Testing, System Testing, Black-Box Testing, White-Box Testing and their types.

Unit III: Software Project Management (9 Hours)
Estimation in Project Planning Process, Project Scheduling, Software Risks, Risk Identification, Risk Projection and Risk Refinement, Risk mitigation, monitoring & management-The RMMM Plan

Unit IV: Understanding Software Reliability (12 Hours)
Introduction to Software Reliability, Difference between Hardware and Software Reliability, Non-homogeneous Poisson Process based modeling, Software Quality Assurance, Quality Standards ISO 9000, Capability Maturity Model (CMM)

Practical component (if any) [30 Hours]:

Practical/Lab to be performed using OR/Statistical packages

- Problems related to Process Model
- Problems related to Requirement Analysis
- Problems related to Design Engineering
- Problems related to Project Management
- Problems related to Project Effort Estimation
- Problems related to Project Risk Management
- Problems related to Software Testing
- Problems related to Software Quality Assurance
- Software Reliability Prediction using mathematical models

Essential/recommended readings

- Aggarwal, K. K., & Singh Y. (2005). Software engineering, New Age International.
- Bell, D. (2005). Software Engineering for students. Pearson Education.
- Jalote, P. (2012). An integrated approach to software engineering. Springer Science & Business Media.
- Pressman, R. S. (2005). Software engineering: a practitioner's approach. Palgrave Macmillan.
- Yamada, S. (2014). Software reliability modeling: fundamentals and applications. Tokyo: Springer.

Suggestive readings: Nil

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE (DSE-3 (b)): Managerial Economics

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Managerial Economics & DSE 3(b)	4	3	1	0	Class XII with Maths	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To make students understand the concepts and techniques used in Micro-economic theory necessary for evaluating business decisions.
- To explain the importance and application of tools of micro economic theory in managerial decision-making.

Learning Outcomes

Students completing this course will be able to:

- Understand the application of economics principles most relevant to managers.
- Develop an understanding of basic concepts and issues in Managerial Economics and their applications in managerial decisions.
- Identify different economic factors and their importance in managerial decision making.
- Understand, evaluate and forecast demand and production functions in economics.
- Design competitive strategies according to the market structure.

SYLLABUS OF DSE-3 (b)

Unit I: Fundamentals of Managerial Economics (6 hours)
Introduction, scope and significance of managerial economics, circular flow in an economy, roles and responsibilities of managerial economist, theory and objectives of the firm, Managerial economics: Microeconomics and Macroeconomics.

Unit II: Demand and Supply analysis (15 hours)
Demand theory and determinants of demand, Law of demand, theory of consumer behavior, Price elasticity of demand, factors affecting price elasticity of demand, Income elasticity of demand, Cross price elasticity of demand, Determinants of Supply, Law of supply, elasticity of supply, Concept, significance and methods of demand forecasting.

Unit III: Cost and Production analysis (15 hours)
Meaning and significance of production, factors of production and production function, Production functions in the short run and long run, Concept and significance of cost, determinants of cost, cost function, types of cost, Economies and diseconomies of scale.

Unit IV: Market structures and pricing (9 hours)
Perfect competition: features and pricing under perfect competition, Monopoly: features and pricing under monopoly, Monopolistic competition: features and pricing under monopolistic competition, Oligopoly: features and pricing under oligopoly.

Practical component (if any) : NIL
Practical/Lab to be performed using OR/Statistical packages
Tutorial : [30 Hours]

Essential/recommended readings

- Mankiw, N. G. (2020). *Principles of economics*. Cengage Learning.
- Peterson, H. C., & Jain, S.K., & Lewis, W.C. (2006). *Managerial Economics* (4/e). Pearson Education.
- Salvator, D., & Rastogi, S.K. (2016). *Managerial Economics: Principles and Worldwide Applications* (8th Ed.). Oxford University Press.
- Samuelson, P., & Nordhaus, W. (2010). *Economics* (19th Ed.). McGraw Hill.
- Thomas, C. R., & Maurice, S. C. (2020). *Managerial economics* (12th Ed.). McGraw-Hill.

Suggestive readings Nil

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE (DSE-3 (c)): HEALTH SYSTEMS MODELLING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Health Systems Modelling (DSE-3(c))	4	3	1	0	Class XII with Maths	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- This course aims at providing a useful tool to bridge the ongoing trends of the health care system with the operational research techniques and methods by tackling problems through the integration of quantitative methods and operational research methodology.
- Use of common spreadsheet software, data modelling applications will prove to be the catalysts used for the management of health care system in a more practical environment.

.

Learning Outcomes

Students completing this course will be able to:

- Apply their analytical skills and acknowledge the techniques underlining the decisions about delivering the healthcare of supreme quality.
- Review and describe the key roles and responsibilities of health care managers.
- Understand, brainstorm, and implement the scope of health services and follow the footprints of the recent trend in healthcare.
- Create a connection between the people's expectations and what the health care industry has to offer in the clearest way.
- Work on reducing regularity, risks and implementing measures to improve people's health and safety.
- Promote ethics and social responsibility at all levels of health services and management.

SYLLABUS OF DSE-3 (c)

Unit I: Health Care Business Operations & Role of Quantitative Methods (6 Hours)

Health care operations management: role, functions and need, Factors driving increased health care cost, Financial distress in health care, Characteristics of health care services and its management, Implications of operations and logistics management, importance of quantitative methods in health care management.

Unit II: Decision Making in Health Care and Quality Improvement (12 Hours)
Decision making under uncertainty and risk, sensitivity analysis, clinical decision making and its implications for management, Quantitative analysis in strategic planning. Business process map and its improvement methodology, service improvement, six sigma.

Unit III: Facility Location and Layout (6 Hours)
Location methods: Factor rating and center of gravity methods, GIS in health care, product layout**.**

Unit IV: Process Flow Optimization and Resource Optimization (16 Hours)
Discrete Event Simulation Methodology, Queuing analytics, Capacity problems: outpatient clinic, ICU capacity, operating rooms, daily load levelling of elective procedures, scheduling and staffing problems. Forecasting Time series and Regression analysis: patients' volume forecasting. Resource allocation problems: patients service volume, clinical unit staffing, resident physician restricted work hours, patients discharged from ED.

Unit V: Material Management (5 Hours)
Customer service in material management, Laundry and Linen, Role of Inventory in healthcare, inventory planning and policies**.**

Practical component (if any): NIL
Tutorial:[30 Hours]
Essential/recommended readings

- Denton, B. T. (2013). Handbook of healthcare operations management. New York: Springer, 10(978-1), 9.
- Kolker, A. (2011). Healthcare management engineering: What does this fancy term really mean?: The use of operations management methodology for quantitative decision-making in healthcare settings. Springer Science & Business Media.
- Langabeer, J. R. (2008). Health care operations management: a quantitative approach to business and logistics. Jones & Bartlett Learning.
- Lewis, J. B., McGrath, R. J., & Seidel, L. F. (2009). Essentials of applied quantitative methods for health services managers. Jones & Bartlett Publishers.
- Ozcan, Y. A. (2017). Analytics and decision support in health care operations management. John Wiley & Sons.
- Ozcan, Y. A. (2009). Quantitative methods in health care management: techniques and applications (2nd ed.). California: John Wiley & Sons.

Suggestive readings Nil

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

CATEGORY-VI

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES OFFERED BY THE DEPARTMENT

GENERIC ELECTIVES (GE-5): SCHEDULING TECHNIQUES

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Scheduling Techniques (GE-5)	4	3	0	1	Class XII with Maths	Nil

Learning Objectives

- To acquaint students with various scheduling problems and their real-life applications.

Learning outcomes

After completion of the course, students will possess knowledge and skills required to

- Gain an understanding of network analysis and related mathematical models.
- Use standard methodologies for solving network flow problems.
- Manage projects with deterministic and probabilistic activity times.
- Carry out time-cost trade-off analysis in a project.
- Understand the utility of some sequencing problems.

SYLLABUS OF GE-5

Unit I: Introduction to Network Analysis **(12 hours)**

Meaning and application of a network diagram, Construction of a network diagram, time estimates in network analysis, float and slack analysis, critical path analysis, Critical path method (CPM) for project management.

Unit II: Project Scheduling **(12 hours)**

Program Evaluation and Review Technique (PERT) for project management, three time estimates in PERT, Expected completion time and standard deviation of completion time in PERT, probability of project completion within scheduled time.

Unit III: Project Crashing **(12 hours)**

Project time crashing (time-cost trade off analysis): meaning and significance for project management, direct and indirect costs, finding optimal completion time of project by doing time-cost trade off analysis.

Unit IV: Theory of sequencing **(9 hours)**

Basic concepts: sequencing of jobs through machines; total elapsed time; idle time on a machine; Gantt chart, Flow shop problem, Johnsons' optimality rule, parallel processing.

Practical component (if any) [30 Hours]–

Practical/Lab to be performed on a computer using OR/Statistical packages

- Construct the network of a project with deterministic activity times.
- Finding different types of floats involved in a project network.
- Conduct time-cost trade off analysis in the context of a project network.
- Construct the network of a project with probabilistic activity times.
- Finding expected completion time and variance of completion time in PERT.
- Finding probability of completing the project within scheduled time in PERT.
- Flow shop problem: processing of n Jobs through 2 machines.
- Flow shop problem: processing of n Jobs through 3 machines.
- Flow shop problem: parallel processing.

Essential/recommended readings

- Elmaghraby, S. E. (1977). Activity networks: project planning and control by network models. John Wiley & Sons.
- Ford Jr, L. R., & Fulkerson, D. R. (2015). Flows in networks. Princeton University Press.
- Levy, F. K., & Wiest, J. D. (2016). Management guide to PERT/CPM; with GERT/PDM/DCPM and other networks. Prentice-Hall of India.
- Swarup, K., & Gupta, P. K., & Mohan, M. (2019). Operations Research (Introduction to Management Science). Sultan Chand and Sons.

Suggestive readings: **Nil**

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Semester-VI

Category I

(B.Sc. Honours in Operational Research)

DISCIPLINE SPECIFIC CORE COURSE – 16: QUALITY MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Quality Management (DSC-16)	4	3	1	0	Class XII with Maths	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- To impart knowledge of concepts related to quality management.
- To impart knowledge of popularly used tools for quality control and management of a plan.
- To develop practical skills for continuous quality improvement.

Learning outcomes

Students completing this course will be able to:

- Demonstrate understanding of total quality management philosophies, concepts, organization, practices, framework, and quality standards.
- Demonstrate understanding of quality management and problem-solving tools and techniques for product and process design.
- Apply statistical analysis tools for measuring and controlling quality.
- Illustrate use of process improvement methods and tools for process analysis and improvement to achieve performance excellence.
- Describe the concept and role of six sigma along with theoretical workings of the implementation of six sigma.

SYLLABUS OF DSC 16

Unit I: Introduction to Quality Management (8 Hours)
Concept of quality management, History, evolution, and importance of quality in organizations, Concepts of product and service quality, Principles, practices and techniques of quality management, Philosophies and frameworks of quality given by various Quality Gurus.

Unit II: Tools and Techniques for Quality Improvement (12 Hours)
Designing quality goods and services, Designing quality processes, Process control and improvement, Cost of quality, Tools: check sheet, flow charts, histograms, pareto analysis, Ishikawa diagram, scatter diagram, PDCA cycle.

Unit III: Statistical Quality Control (15 Hours)
Variation, Causes of variations (natural and assignable), Measurement system analysis, Statistical process control, Process capability measurement, Control charts for variable: mean charts, range charts, Control charts for attributes: p-charts, np-charts, c-charts, u-charts, Product control, Acceptable quality level, Average outgoing quality, Average outgoing quality limit, OC curve, Consumers risk, Producers risk, Acceptable sampling plan: Single sampling plan, Double sampling plan, Sequential sampling plan.

Unit IV: Six Sigma (10 Hours)
Introduction to six-sigma, Evolution of six-sigma, Principles of six-sigma, Statistical basis of 3.4 DPMO, Implementing six-sigma, Application of DMAIC, DMADV, Lean six-sigma and Lean six-sigma in services.

Practical component (if any) – Nil
Tutorial: [30 Hours]

Essential Readings:

- Charantimath, P. M. (2011). *Total Quality Management.* Pearson Education India: India.
- Gupta, S. C., & Kapoor, V. K. (2009). *Fundamentals of applied statistics*. India: Sultan Chand & Sons.
- Besterfield, D. H., Besterfield-Michna, C., Besterfield, G. H., Besterfield-Sacre, M., Urdhwareshe, H., & Urdhwareshe, R. (2014). *Total Quality Management (5th ed.).* Pearson Education India.

Suggested Readings:

- Montgomery, D. C. (2009). *Introduction to statistical quality control.* New York: John Wiley & Sons.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 17: Quantitative Models in Marketing

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Quantitative Models in Marketing (DSC-17)	4	3	1	0	Class XII with Maths	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- To impart knowledge of central concepts and methods of marketing and related optimization problems.
- To impart knowledge of mathematical models available in handling real life situations.
- Formulations of various real-world problems arising in science, engineering, and management.

Learning outcomes

Students completing this course will be able to:

- Understand the concepts related to aid management decision making.
- Analyse the difference between different analytical perspectives, management decision tools used in businesses
- Apply their learning by formulating real-world problems under different categories
- Describe the theoretical workings of the producer as well as consumer
- Describe the theoretical workings of the innovation diffusion process and do sales forecasting for new products

SYLLABUS OF DSC-17

Unit I: Scientific Marketing Analysis **(8 Hours)**

Concept of Marketing, Marketing Orientation and related concepts, Decision Making: A Quantitative Approach: Business Decisions, Abstraction, Model Building, Solutions, Errors, Model-Building Techniques, Marketing Mix-The Traditional 4 Ps, Marketing Mix- The Modern Concept.

Unit II: Models of Consumer Behaviour (9 Hours)
Consumer Behaviour, Consumer buying process models, What Influences Consumer Behaviour, Key Psychological Processes, The Buying Decision Process: The Five Stage Model, Other Theories of Consumer Decision Making, External-Internal Influence Diffusion Model, The Howard-Sheth model of Buying Behaviour

Unit III: Theory of Pricing (9 Hours)
Product Markets: Perfect competition, Monopoly, Monopolistic competition, Oligopoly; Equilibrium determination and pricing under different market structures.

Unit IV: New Product Development and Management (9 Hours)
Product Life Cycle (PLC), Product line, Product mix strategies, New product development, Brand, Brand name selection, Brand equity, Brand switching analysis

Unit V: Promotional Management (10 Hours)
Promotion Mix, Push vs. Pull Strategy, Promotional Objectives, Advertising- Meaning and Importance, Types, Media Decisions (Mathematical Model for Media Allocation), Optimal Allocation of Advertising expenditure, Sales Promotion – Purpose and Types, Sales Response to Advertising in Presence of Competition.

Practical component (if any) – Nil
Practical/Lab to be performed on a computer using OR/Statistical packages
Tutorial :[30 Hours]

Essential Readings:

- Hooley G. J., & Hassey, M. K., (1999). Quantitative methods in marketing. International Thomson Business Press.
- Curtis, A. (2008). Marketing for engineers, scientists and technologists. John Wiley & Sons.
- Kotler, P., & Keller, K. L. (2009). Marketing management. Prentice-Hall.
- Lilien, G. L., Kotler, P., & Moorthy, K. S. (2003). Marketing models. Prentice-Hall of India.

Suggested Readings:

- Armstrong, G., Adam, S., Denize, S., & Kotler, P. (2014). Principles of marketing. Australia: Pearson.
- Dowling, G. R., & Dowling, G. R. (2004). The art and science of marketing: marketing for marketing managers. USA: Oxford University Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 18: MACHINE LEARNING

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Machine Learning (DSC-18)	4	3	0	1	Class XII with Maths	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- This course will present foundations of Machine Learning algorithms, as well as their real-world applications.
- The course will cover two major learning approaches: supervised and unsupervised.

Learning outcomes

Upon successful completion of this course the student will be able to:

- Differentiate between supervised and unsupervised learning tasks.
- Normalize the data and perform outlier analysis.
- Execute various machine learning algorithms learnt in the course.
- Understand the concepts of regression, clustering and dimensionality reduction.

SYLLABUS OF DSC-18

Unit I: Introduction to Machine Learning (8 Hours)

Definition, History, Future and basic concepts of Machine Learning, Statistical learning vs machine learning, Key elements of Machine Learning, Supervised vs. Unsupervised Learning, Data measurement scales, Feature Engineering: normalizing data, missing value treatment, outliers. Creating graphs (bar/line/pie/boxplot/histogram, etc.), summarizing data, descriptive statistics, univariate analysis (distribution of data), bivariate analysis (cross tabs, distributions and relationships, graphical analysis), Splitting dataset into training and test set.

Unit II: Supervised Learning- I (12 Hours)

Linear Regression: Regression with one variable, multiple variables, over-fitting, regularization. Regression evaluation metrics. Logistic Regression, Discriminant Analysis,

Unit III: Supervised Learning- II (12 Hours)

k-nearest neighbor classifier, Naive Bayes classifier, Neural networks, Boosting, Support vector Machines, Decision trees, Bagging, Ensemble of Trees, Evaluating a Classification Model Performance, K-fold Cross-validation, ROC Curve

Unit IV: Unsupervised Learning (13 Hours)

Clustering: Approaches for clustering, distance metrics, K-means clustering, hierarchical clustering, and feature selection methods. Dimensionality reduction (Principal Component Analysis). Association Rules Analysis.

Practical component (if any) [30 Hours]–

Use Python for practical labs for Machine Learning.

List of Practicals:

- Normalizing Data by Min-Max scaling
- Split datasets into training and test sets and evaluate the decision models.
- Summarizing Data through graphs and descriptive analysis.
- Create Prediction Model for linear regression.
- Make Prediction Model for logistic regression.
- Make prediction models for Naïve Bayes Classifier
- Implement Decision Tree
- Implement SVM classification.
- Perform K-means clustering.
- Perform Principal Component analysis.

Essential Readings

- Alpaydin, E. (2020). Introduction to machine learning. MIT press.
- Brownlee, J. (2018). Statistical methods for machine learning: Discover how to transform data into knowledge with Python. Machine Learning Mastery.
- James, G., Witten, D., Hastie, T., & Tibshirani, R. (2013). An introduction to statistical learning (Vol. 112, p. 18). New York: springer.
- Raschka, S., & Mirjalili, V. (2019). Python machine learning: Machine learning and deep learning with Python, scikit-learn, and TensorFlow 2. Packt Publishing Ltd.
- Shalev-Shwartz, S., & Ben-David, S. (2014). Understanding machine learning: From theory to algorithms. Cambridge university press.

Suggested Readings: **NIL**

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category II

Operational Research Courses for Undergraduate Programme of study with Operational Research as one of the Core Disciplines

(B.A. Programme with Operational Research as Major discipline)

DISCIPLINE SPECIFIC CORE COURSE – 11: Project Management

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Project Management (DSC-11)	4	3	0	1	Class XII with Maths	Nil

Learning Objectives

The objective of this course is to acquaint students with the fundamental concepts of project planning and management.

Learning outcomes

After completion of the course, students will possess knowledge and skills required to

- Formulate, evaluate, monitor and control a project.
- Gain an understanding of tools and techniques for project management.
- Use network analysis techniques to solve problems related to project management.
- Manage projects with deterministic and probabilistic activity times.
- Carry out time-cost trade-off analysis in a project.
- Understand the utility of some real-life applications of project management problems.

SYLLABUS OF DSC-11

Unit I: Introduction **(6 hours)**

Meaning of a project, project classification, Lifecycle and phases of a project, Concept of project management, Objectives and significance of project management, Roles and responsibilities of a project manager, Tools and techniques of project management.

Unit II: Project Appraisal **(12 hours)**

Market feasibility analysis: Market and demand analysis, collection of primary and secondary information, demand forecasting. Technical feasibility analysis: Material input and manufacturing process, selection of locations, Technology selection. Financial feasibility

analysis: Project cost estimation and working capital requirements, sources of financing, financial risk analysis using payback period and net present value techniques.

Unit III: Project Scheduling and Network analysis (12 hours)
Steps involved in project scheduling, Meaning and application of a network diagram, Construction of a network diagram for a project, time estimates in network analysis, float and slack analysis, critical path analysis, Introduction to Critical path method (CPM) and Program Evaluation and Review Technique (PERT) for project management.

Unit IV: Project Time Crashing (9 hours)
Project time crashing (time-cost trade off analysis): meaning and significance for project management, direct and indirect costs, finding optimal completion time of project by doing time-cost trade off analysis.

Unit V: Project Monitoring, Control and termination: (6 hours)
Data collection and reporting for project evaluation, Social cost-benefit analysis and Abandonment analysis. Project Termination: types of terminations, project termination process.

Practical component (if any) [30 Hours]-

Practical/Lab to be performed on a computer using OR/Statistical packages

- Construction of a network.
- Construct the network of a project with deterministic activity times.
- Finding different types of floats involved in a project network.
- Conduct time-cost trade off analysis in the context of a project network.
- Construct the network of a project with probabilistic activity times.
- Finding expected completion time and variance of completion time in PERT.
- Finding probability of completing the project within scheduled time in PERT.

Essential/recommended readings

- Bazaraa, M. S., Jarvis, J. J., & Sherali, H. D. (2011). Linear programming and network flows. John Wiley & Sons.
- Bertsekas, D. (1998). Network optimization: continuous and discrete models (Vol. 8). Athena Scientific.
- Elmaghraby, S. E. (1977). Activity networks: project planning and control by network models. John Wiley & Sons.
- Kerzner, H. (2017). *Project management: a systems approach to planning, scheduling, and controlling*. John Wiley & Sons.
- Larson, E. W., & Gray, C. F. (2021). Project management: The managerial process. 8th edition. McGraw-Hill Education.
- Levy, F. K., & Wiest, J. D. (2016). Management guide to PERT/CPM; with GERT/PDM/DCPM and other networks. Prentice-Hall of India.

Suggestive readings

Nil

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 12: Quality Management

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Quality Management (DSC-12)	4	3	1	0	Class XII with Maths	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- To impart knowledge of concepts related to quality management.
- To impart knowledge of popularly used tools for quality control and management of a plan.
- To develop practical skills for continuous quality improvement.

Learning outcomes

Students completing this course will be able to:

- Demonstrate understanding of total quality management philosophies, concepts, organization, practices, framework, and quality standards.
- Demonstrate understanding of quality management and problem-solving tools and techniques for product and process design.
- Apply statistical analysis tools for measuring and controlling quality.
- Illustrate use of process improvement methods and tools for process analysis and improvement to achieve performance excellence.
- Describe the concept and role of six sigma along with theoretical workings of the implementation of six sigma.

SYLLABUS OF DSC 12-

Unit I: Introduction to Quality Management (8 Hours)

Concept of quality management, History, evolution, and importance of quality in organizations, Concepts of product and service quality, Principles, practices and techniques of quality management, Philosophies and frameworks of quality given by various Quality Gurus.

Unit II: Tools and Techniques for Quality Improvement (12 Hours)

Designing quality goods and services, Designing quality processes, Process control and improvement, Cost of quality, Tools: check sheet, flow charts, histograms, pareto analysis, Ishikawa diagram, scatter diagram, PDCA cycle.

Unit III: Statistical Quality Control **(15 Hours)**

Variation, Causes of variations (natural and assignable), Measurement system analysis, Statistical process control, Process capability measurement, Control charts for variable: mean charts, range charts, Control charts for attributes: p-charts, np-charts, c-charts, u-charts, Product control, Acceptable quality level, Average outgoing quality, Average outgoing quality limit, OC curve, Consumers risk, Producers risk, Acceptable sampling plan: Single sampling plan, Double sampling plan, Sequential sampling plan.

Unit IV: Six Sigma **(10 Hours)**

Introduction to six-sigma, Evolution of six-sigma, Principles of six-sigma, Statistical basis of 3.4 DPMO, Implementing six-sigma, Application of DMAIC, DMADV, Lean six-sigma and Lean six-sigma in services.

Practical component (if any) – Nil

Tutorial: [30 Hours]

Essential Readings:

- Charantimath, P. M. (2011). *Total Quality Management.* Pearson Education India: India.
- Gupta, S. C., & Kapoor, V. K. (2009). *Fundamentals of applied statistics*. India: Sultan Chand & Sons.
- Besterfield, D. H., Besterfield-Michna, C., Besterfield, G. H., Besterfield-Sacre, M., Urdhwareshe, H., & Urdhwareshe, R. (2014). *Total Quality Management (5th ed.).* Pearson Education India.

Suggested Readings:

- Montgomery, D. C. (2009). *Introduction to statistical quality control.* New York: John Wiley & Sons.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category III

Operational Research Courses for Undergraduate Programme of study with Operational Research as one of the Core Disciplines

(B.A Programme with Operational Research as non-Major or Minor discipline)

DISCIPLINE SPECIFIC CORE COURSE – 6: Project Management

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Project Management (DSC-6)	4	3	0	1	Class XII with Maths	Nil

Learning Objectives

The objective of this course is to acquaint students with the fundamental concepts of project planning and management.

Learning outcomes

After completion of the course, students will possess knowledge and skills required to

- Formulate, evaluate, monitor and control a project.
- Gain an understanding of tools and techniques for project management.
- Use network analysis techniques to solve problems related to project management.
- Manage projects with deterministic and probabilistic activity times.
- Carry out time-cost trade-off analysis in a project.
- Understand the utility of some real-life applications of project management problems.

SYLLABUS OF DSC-6

Unit I: Introduction **(6 hours)**

Meaning of a project, project classification, Lifecycle and phases of a project, Concept of project management, Objectives and significance of project management, Roles and responsibilities of a project manager, Tools and techniques of project management.

Unit II: Project Appraisal **(12 hours)**

Market feasibility analysis: Market and demand analysis, collection of primary and secondary information, demand forecasting. Technical feasibility analysis: Material input and manufacturing process, selection of locations, Technology selection. Financial feasibility

analysis: Project cost estimation and working capital requirements, sources of financing, financial risk analysis using payback period and net present value techniques.

Unit III: Project Scheduling and Network analysis (12 hours)
Steps involved in project scheduling, Meaning and application of a network diagram, Construction of a network diagram for a project, time estimates in network analysis, float and slack analysis, critical path analysis, Introduction to Critical path method (CPM) and Program Evaluation and Review Technique (PERT) for project management.

Unit IV: Project Time Crashing (9 hours)
Project time crashing (time-cost trade off analysis): meaning and significance for project management, direct and indirect costs, finding optimal completion time of project by doing time-cost trade off analysis.

Unit V: Project Monitoring, Control and termination (6 hours)
Data collection and reporting for project evaluation, Social cost-benefit analysis and Abandonment analysis. Project Termination: types of terminations, project termination process.

Practical component (if any) [30 Hours] -
Practical/Lab to be performed on a computer using OR/Statistical packages

- Construction of a network.
- Construct the network of a project with deterministic activity times.
- Finding different types of floats involved in a project network.
- Conduct time-cost trade off analysis in the context of a project network.
- Construct the network of a project with probabilistic activity times.
- Finding expected completion time and variance of completion time in PERT.
- Finding probability of completing the project within scheduled time in PERT.

Essential/recommended readings

- Bazaraa, M. S., Jarvis, J. J., & Sherali, H. D. (2011). Linear programming and network flows. John Wiley & Sons.
- Bertsekas, D. (1998). Network optimization: continuous and discrete models (Vol. 8). Athena Scientific.
- Elmaghraby, S. E. (1977). Activity networks: project planning and control by network models. John Wiley & Sons.
- Kerzner, H. (2017). *Project management: a systems approach to planning, scheduling, and controlling*. John Wiley & Sons.
- Larson, E. W., & Gray, C. F. (2021). Project management: The managerial process. 8th edition. McGraw-Hill Education.
- Levy, F. K., & Wiest, J. D. (2016). Management guide to PERT/CPM; with GERT/PDM/DCPM and other networks. Prentice-Hall of India.

Suggestive readings: Nil

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category IV

BSc. Physical Sciences/ Mathematical Sciences with Operational Research as one of the three Core Disciplines

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

DISCIPLINE SPECIFIC CORE COURSE – 6 Project Management

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Project Management (DSC-6)	4	3	0	1	Class XII with Maths	Nil

Learning Objectives

The objective of this course is to acquaint students with the fundamental concepts of project planning and management.

Learning outcomes

After completion of the course, students will possess knowledge and skills required to

- Formulate, evaluate, monitor and control a project.
- Gain an understanding of tools and techniques for project management.
- Use network analysis techniques to solve problems related to project management.
- Manage projects with deterministic and probabilistic activity times.
- Carry out time-cost trade-off analysis in a project.
- Understand the utility of some real-life applications of project management problems.

SYLLABUS OF DSC-6

Unit I: Introduction **(6 hours)**

Meaning of a project, project classification, Lifecycle and phases of a project, Concept of project management, Objectives and significance of project management, Roles and responsibilities of a project manager, Tools and techniques of project management.

Unit II: Project Appraisal **(12 hours)**

Market feasibility analysis: Market and demand analysis, collection of primary and secondary information, demand forecasting. Technical feasibility analysis: Material input and manufacturing process, selection of locations, Technology selection. Financial feasibility

analysis: Project cost estimation and working capital requirements, sources of financing, financial risk analysis using payback period and net present value techniques.

Unit III: Project Scheduling and Network analysis (12 hours)
Steps involved in project scheduling, Meaning and application of a network diagram, Construction of a network diagram for a project, time estimates in network analysis, float and slack analysis, critical path analysis, Introduction to Critical path method (CPM) and Program Evaluation and Review Technique (PERT) for project management.

Unit IV: Project Time Crashing (9 hours)
Project time crashing (time-cost trade off analysis): meaning and significance for project management, direct and indirect costs, finding optimal completion time of project by doing time-cost trade off analysis.

Unit V: Project Monitoring, Control and termination (6 hours)
Data collection and reporting for project evaluation, Social cost-benefit analysis and Abandonment analysis. Project Termination: types of terminations, project termination process.

Practical component (if any) [30 Hours] -
Practical/Lab to be performed on a computer using OR/Statistical packages

- Construction of a network.
- Construct the network of a project with deterministic activity times.
- Finding different types of floats involved in a project network.
- Conduct time-cost trade off analysis in the context of a project network.
- Construct the network of a project with probabilistic activity times.
- Finding expected completion time and variance of completion time in PERT.
- Finding probability of completing the project within scheduled time in PERT.

Essential/recommended readings

- Bazaraa, M. S., Jarvis, J. J., & Sherali, H. D. (2011). Linear programming and network flows. John Wiley & Sons.
- Bertsekas, D. (1998). Network optimization: continuous and discrete models (Vol. 8). Athena Scientific.
- Elmaghraby, S. E. (1977). Activity networks: project planning and control by network models. John Wiley & Sons.
- Kerzner, H. (2017). *Project management: a systems approach to planning, scheduling, and controlling*. John Wiley & Sons.
- Larson, E. W., & Gray, C. F. (2021). Project management: The managerial process. 8th edition. McGraw-Hill Education.
- Levy, F. K., & Wiest, J. D. (2016). Management guide to PERT/CPM; with GERT/PDM/DCPM and other networks. Prentice-Hall of India.

Suggestive readings: Nil

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

CATEGORY-V

COMMON POOL OF DISCIPLINE SPECIFIC ELECTIVES (DSE) COURSES

(i)B.Sc. (H) OR

(ii)BA(P)with OR AS Major & Minor DISCIPLINE

(iii)B.Sc. (Physical Sciences/Mathematical Sciences) with OR as one of the

DISCIPLINE SPECIFIC ELECTIVE (DSE-4 (a)): Econometric Modelling

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Econometric Modelling (DSE-4(a))	4	3	0	1	Class XII with Maths	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- To explain the meaning of econometrics-the social science in which the tools of economic theory, mathematics and statistical inference are applied to study economic phenomena.
- To explain the need and concept behind single equation regression models – Single and Multiple Linear Regression Models and also underlying methodology
- To explain Time Series modelling and forecasting.
- To explain the purpose, concept and methodology behind simultaneous equation models.

Learning Outcomes

Students completing this course will be able to:

- Understand concepts, issues and applications of econometric modelling.
- Analyse Econometric model involving single equation with single response variable.
- Analyse Econometric model involving single equation with multiple response variables.
- Analyse time series and simultaneous equation models.

SYLLABUS OF DSE-4(a)

Unit I: Introduction to Econometrics (6 hours)
The nature and scope of Econometrics, The Methodology of Econometrics, Types of data: Time series data, Cross-sectional data, Panel data

Unit II: Regression Analysis (15 hours)
Classical Linear Regression Models (CLRMs): Single and Multiple linear regression, Model coefficients, Ordinary least squares estimation, Residuals, fitted values, goodness of fit, Violating the assumptions of CLRMs: Multicollinearity; Hetreoscedasticity; Autocorrelation, Step-wise regression.

Unit III: Time Series Modelling (12 hours)
Stationary and non-stationary time series, Consequences and detection of non-stationarity, Introduction to AR, MA and ARMA models, ARIMA model, Box Jenkins approach to forecasting.

Unit IV: Simultaneous Equations Modelling (12 hours)
Simultaneous equations models: Basic definitions, Identification problem, Estimation, Forecasting from a simultaneous model

Practical component (if any) [30 Hours]-

Practical/Lab to be performed on a computer using OR/Statistical packages

- Fitting of a single linear regression model using ordinary least squares estimation.
- Fitting of a multiple linear regression model having two explanatory variables using ordinary least squares estimation.
- Fitting of a multiple linear regression model having more than two explanatory variables using ordinary least squares estimation.
- Testing for the presence of Multicollinearity.
- Testing for the presence of Heteroscedasticity.
- Testing for the presence of Autocorrelation.
- Testing for stationary and non-stationary time series.
- Estimating a simultaneous equations model.
- Forecasting from a simultaneous equations model.

Essential/recommended readings

- Dougherty, C. (2011). Introduction to econometrics (4th ed.). New York: Oxford University Press.
- Gujarati , D.N., Porter, D.C., and Pal, M.(2020) Basic Econmerics , McGraw Hill Publications.
- Johnston, J. (1984). Econometric methods (3rd ed.). New York: Mc-Graw Hill.
- Koutsoyiannis, A. (2001). Theory of econometrics (2nd ed.). New York: Palgrave Macmillan.

Suggestive readings: Nil

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE (DSE-4 (b)): Research Methodology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Research Methodology & DSE 4(b)	4	3	0	1	Class XII with Maths	NIL

Learning Objectives

- To give students an understanding of quantitative and qualitative research's basic techniques and tools.
- To provide exposure to the students about the nature and extent of research orientation, which they are expected to possess for higher studies, research, and the job market.

Learning outcomes

Upon successful completion of this course, the student will be able to:

- Identity and analyse research problems.
- Understand and apply the types of research designs and research tools.
- Do data collection and formulate research questionnaires and conduct surveys.
- Present research reports.

SYLLABUS OF DSC 4(b)

Unit I : Research : Role and Scope **(6 Hours)**

Nature and scope of Research – Role of Research in decision making. Applications of research in various disciplines. The Research Process – Steps in the research process; the research proposal.

Unit II: Research Design and Documentation (12 Hours)
Research Design: Exploratory, Descriptive, Causal. Secondary Data Research: Advantages & Disadvantages of Secondary Data, Criteria for evaluating secondary sources, secondary sources of data in Indian Context, Syndicated Research (in India).

Unit III: Data and Scaling (14 Hours)
Primary Data Collection: Survey vs. Observations. Qualitative Research Tools: Depth Interviews focus groups and projective techniques; Measurement & Scaling: Primary scales of Measurement-Nominal, Ordinal, Interval& Ratio. Scaling techniques- paired comparison, rank order scale, constant sum scale, semantic differential scale, itemized ratings, scale, Likert Scale; Questionnaire- form & design**.**

Unit IV: Sampling (13 Hours)
Sampling: Sampling techniques, Data Analysis: Chi-square test, non-parametric test: Mann Whitney U test, Wilcoxon Signed-Rank test for paired samples, One-Way ANOVA Analysis, Factor Analysis and Discriminant Analysis. Conjoint Analysis, Report writing.

Practical component (if any) [30 Hours] –
Use Microsoft Excel/SPSS for practical labs for Research Methodology

List of Practicals:
- Chi-square Test
- Mann Whitney U test.
- Wilcoxon Signed-Rank Test.
- One Way ANOVA
- Factor Analysis (PCA)
- Discriminant Analysis (LDA)

Essential/recommended readings

- Cooper, D. R., & Schindler, P. S. (2003). Business research methods, McGraw- Hill Education, India
- Malhotra, N. K. (2019). Marketing Research: An Applied Orientation (7th Ed.). Pearson India.
- Chawla, D., & Sondhi, N. (2016). Research Methodology: Concepts and Cases, Vikas Publishing House, India

Suggestive readings:

- Winston, W. L. (2014). *Marketing analytics: Data-driven techniques with Microsoft Excel*. John Wiley & Sons.

DISCIPLINE SPECIFIC ELECTIVE (DSE-4 (c)): INDUSTRIAL PROJECT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Industrial Project (DSE-4(c))	4	0	0	4	Class XII with Maths	Nil

A Student will be required to do an industrial project

CATEGORY-VI

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES OFFERED BY THE DEPARTMENT

GENERIC ELECTIVES (GE-6): QUANTITATIVE MODELS IN MARKETING

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Quantitative Models in Marketing (GE-6)	4	3	1	0	Class XII with Maths	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- To impart knowledge of central concepts and methods of marketing and related optimization problems.
- To impart knowledge of mathematical models available in handling real life situations.
- Formulations of various real-world problems arising in science, engineering, and management.

Learning outcomes

Students completing this course will be able to:

- Understand the concepts related to aid management decision making.
- Analyse the difference between different analytical perspectives, management decision tools used in businesses
- Apply their learning by formulating real-world problems under different categories
- Describe the theoretical workings of the producer as well as consumer
- Describe the theoretical workings of the innovation diffusion process and do sales forecasting for new products

SYLLABUS OF GE-6

Learning Objectives

The Learning Objectives of this course are as follows:

- To impart knowledge of central concepts and methods of marketing and related optimization problems.
- To impart knowledge of mathematical models available in handling real life situations.
- Formulations of various real-world problems arising in science, engineering, and management.

Learning outcomes

Students completing this course will be able to:

- Understand the concepts related to aid management decision making.
- Analyse the difference between different analytical perspectives, management decision tools used in businesses
- Apply their learning by formulating real-world problems under different categories
- Describe the theoretical workings of the producer as well as consumer
- Describe the theoretical workings of the innovation diffusion process and do sales forecasting for new products

SYLLABUS OF GE-6

Unit I: Scientific Marketing Analysis (8 Hours)
Concept of Marketing, Marketing Orientation and related concepts, Decision Making: A Quantitative Approach: Business Decisions, Abstraction, Model Building, Solutions, Errors, Model-Building Techniques, Marketing Mix-The Traditional 4 Ps, Marketing Mix- The Modern Concept.

Unit II: Models of Consumer Behaviour (9 Hours)
Consumer Behaviour, Consumer buying process models, What Influences Consumer Behaviour, Key Psychological Processes, The Buying Decision Process: The Five Stage Model, Other Theories of Consumer Decision Making, External-Internal Influence Diffusion Model, The Howard-Sheth model of Buying Behaviour

Unit III: Theory of Pricing (9 Hours)
Product Markets: Perfect competition, Monopoly, Monopolistic competition, Oligopoly; Equilibrium determination and pricing under different market structures.

Unit IV: New Product Development and Management (9 Hours)
Product Life Cycle (PLC), Product line, Product mix strategies, New product development, Brand, Brand name selection, Brand equity, Brand switching analysis

Unit V: Promotional Management (10 Hours)
Promotion Mix, Push vs. Pull Strategy, Promotional Objectives, Advertising- Meaning and Importance, Types, Media Decisions (Mathematical Model for Media Allocation), Optimal Allocation of Advertising expenditure, Sales Promotion – Purpose and Types, Sales Response to Advertising in Presence of Competition.

Practical component (if any) – NA

Practical/Lab to be performed on a computer using OR/Statistical packages
Tutorial: [30 Hours]
Essential Readings:

- Hooley G. J., & Hassey, M. K., (1999). Quantitative methods in marketing. International Thomson Business Press.
- Curtis, A. (2008). Marketing for engineers, scientists and technologists. John Wiley & Sons.
- Kotler, P., & Keller, K. L. (2009). Marketing management. Prentice-Hall.
- Lilien, G. L., Kotler, P., & Moorthy, K. S. (2003). Marketing models. Prentice-Hall of India.

Suggested Readings:

- Armstrong, G., Adam, S., Denize, S., & Kotler, P. (2014). Principles of marketing. Australia: Pearson.
- Dowling, G. R., & Dowling, G. R. (2004). The art and science of marketing: marketing for marketing managers. USA: Oxford University Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER-4

DEPARTMENT OF COMPUTER SCIENCE
[UG Programme for Bachelor in Computer Science (Honours)]

DISCIPLINE SPECIFIC CORE COURSE - 10 (DSC-10) : Design and Analysis of Algorithms

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 10 Design and Analysis of Algorithms	**4**	**3**	**0**	**1**	Pass in Class XII	DSC 07 Data Structures with C++

Learning Objectives

The course is designed to develop understanding of different algorithm design techniques and use them for problem solving. The course shall also enable the students to verify correctness of algorithms and analyze their time complexity.

Learning outcomes

On successful completion of the course, students will be able to:

- Compute and compare the asymptotic time complexity of algorithms.
- Prove correctness of algorithms.
- Use appropriate algorithm design technique(s) for solving a given problem.
- Distinguish between tractable and intractable problems.

Unit 1 (10 hours)

Searching, Sorting, Selection: Linear Search, Binary Search, Insertion Sort, Selection Sort, Bubble Sort, Heapsort, Linear Time Sorting, Selection Problem, running time analysis and correctness.

Unit 2 (5 hours)

Graphs: Review of graph traversals**,** graph connectivity, testing bipartiteness, Directed Acyclic Graphs and Topological Ordering.

Unit 3 (10 hours)

Divide and Conquer: Introduction to divide and conquer technique, Merge Sort, Quick Sort, Maximum-subarray problem, Strassen's algorithm for matrix multiplication.

Unit 4 (5 hours)

Greedy algorithms: Introduction to the Greedy algorithm design approach, application to minimum spanning trees, fractional knapsack problem, etc. with correctness, and analysis of time complexity.

Unit 5 (5 hours)

Dynamic Programming: Introduction to the Dynamic Programming approach, application to subset sum, integer knapsack problem etc., correctness, and analysis of time complexity.

Unit 6 (5 hours)

Intractability: Concept of polynomial time computation, polynomial time reductions, decision vs optimization problems, Introduction to NP, NP-hard and NP-Complete classes.

Unit 7 (5 hours)

Advanced Analysis of Algorithms: Amortized Analysis.

Essential/recommended readings

1. Cormen, T.H., Leiserson, C.E., Rivest, R. L., Stein C. *Introduction to Algorithms*, 4th edition, Prentice Hall of India, 2022.
2. Kleinberg, J., Tardos, E. *Algorithm Design,* 1st edition, Pearson, 2013.

Additional references

1. Basse, S., Gelder, A. V., *Computer Algorithms: Introduction to Design and Analysis,* 3rd edition, Pearson, 1999.

Practical List (If any): (30 Hours)

1. i. Write a program to sort the elements of an array using Insertion Sort (The program should report the number of comparisons).
   ii. Write a program to sort the elements of an array using Merge Sort (The program should report the number of comparisons).
2. Write a program to sort the elements of an array using Heap Sort (The program should report the number of comparisons).
3. Write a program to multiply two matrices using the Strassen's algorithm for matrix multiplication.

4. Write a program to sort the elements of an array using Radix Sort.
5. Write a program to sort the elements of an array using Bucket Sort.
6. Display the data stored in a given graph using the Breadth-First Search algorithm.
7. Display the data stored in a given graph using the Depth-First Search algorithm.
8. Write a program to determine a minimum spanning tree of a graph using the Prim's algorithm.
9. Write a program to implement Dijkstra's algorithm to find the shortest paths from a given source node to all other nodes in a graph.
10. Write a program to solve the weighted interval scheduling problem.
11. Write a program to solve the 0-1 knapsack problem.

For the algorithms at S.No 1 and 2, test run the algorithm on 100 different input sizes varying from 30 to 1000. For each size find the number of comparisons averaged on 10 different input instances; plot a graph for the average number of comparisons against each input size. Compare it with a graph of nlogn.

DISCIPLINE SPECIFIC CORE COURSE – 11 (DSC11): Database Management Systems

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 11 Database Management Systems	**4**	**3**	**0**	**1**	Pass in Class XII	DSC01 Programming using Python / A course in Python at plus 2 level, DSC08

Learning Objectives

The course introduces the students to the fundamentals of database management system and its architecture. Emphasis is given on the popular relational database system including data models and data manipulation. Students will learn about the importance of database structure and its designing using conceptual approach using Entity Relationship Model and formal approach using Normalization. The importance of file indexing and controlled execution of transactions will be taught. The course would give students hands-on practice of structured query language in a relational database management system and glimpse of basic database administration commands.

Learning outcomes

On successful completion of the course, students will be able to:

- Use database management system software to create and manipulate the database.
- Create conceptual data models using entity relationship diagrams for modeling real-life situations and designing the database schema.
- Use the concept of functional dependencies to remove redundancy and update anomalies.
- Apply normalization theory to get a normalized database scheme.
- Write queries using relational algebra, a procedural language.

SYLLABUS OF DSC11

Unit 1 (5 hours)

Introduction to Database: Purpose of database system, Characteristics of database approach, data models, database management system, database system architecture, three-schema architecture, components of DBMS, data independence, and file system approach vs database system approach.

Unit 2 (7 hours)

Entity Relationship Modeling: Conceptual data modeling - motivation, entities, entity types, attributes, relationships, relationship types, constraints on relationship, Entity Relationship diagram notation.

Unit 3 (7 hours)

Relational Data Model: Update anomalies, Relational Data Model - Concept of relations, schema-instance distinction, keys, relational integrity constraints, referential integrity and foreign keys, relational algebra operators and queries.

Unit 4 (10 hours)

Structured Query Language (SQL): Querying in SQL, DDL to create database and tables, table constraints, update database-update behaviors, DML, aggregation functions group by

and having clauses, retrieve data from the database, generate and query views. Access and manipulate databases using ODBC. Basic Database administration SQL commands.

Unit 5 (8 hours)

Database Design: Mapping an Entity Relationship model to relational database, functional dependencies and Normal forms, 1NF, 2NF, 3NF and BCNF decompositions and desirable properties of them.

Unit 6 (8 hours)

File indexing and Transaction Processing: Data Storage and Indexes- Need of file indexes, file organizations, index structures, single- and multi-level indexing, concurrent execution of transactions, ACID properties, need of data recovery and log file.

Essential/recommended readings

1. Elmasri, R., Navathe, B. S. *Fundamentals of Database Systems*, 7th Edition, Pearson Education, 2015.
2. Krogh, J. W. *MySQL Connector/Python Revealed: SQL and NoSQL Data Storage Using MySQL for Python Programmers*, Apress, 2018.
3. Murach J. *Murach's MySQL,* 3rd edition, Pearson, 2019.

Additional References

1. Ramakrishnan, R., Gehrke J. *Database Management Systems*, 3rd Edition, McGraw-Hill, 2014.
2. Silberschatz, A., Korth, H. F., Sudarshan S. *Database System Concepts*, 7th Edition, McGraw Hill, 2019.
3. Connolly, T. M., Begg, C. E. *Database Systems: A Practical Approach to Design, Implementation, and Management*, 6th edition, Pearson, 2019.

Suggested Practical List (If any): (30 Hours)

Practical exercises such as

It has three components.

I. Create and use the following student-society database schema for a college to answer the given (sample) queries using the standalone SQL editor.

STUDENT	**Roll No**	**StudentName**	**Course**	**DOB**
	Char(6)	Varchar(20)	Varchar(10)	Date

SOCIETY	SID	SocName	MentorName	TotalSeats
	Char(6)	Varchar(20)	Varchar(15)	Unsigned int

ENROLLMENT	Roll No	SID	DateOfEnrollment
	Char(6)	Char(6)	Date

Here Rollno (ENROLLMENT) and SID (ENROLLMENT) are foreign keys.

1. Retrieve names of students enrolled in any society.
2. Retrieve all society names.
3. Retrieve students' names starting with letter ‘A’.
4. Retrieve students' details studying in courses ‘computer science’ or ‘chemistry’.
5. Retrieve students’ names whose roll no either starts with ‘X’ or ‘Z’ and ends with ‘9’
6. Find society details with more than N TotalSeats where N is to be input by the user
7. Update society table for mentor name of a specific society
8. Find society names in which more than five students have enrolled
9. Find the name of youngest student enrolled in society ‘NSS’
10. Find the name of most popular society (on the basis of enrolled students)
11. Find the name of two least popular societies (on the basis of enrolled students)
12. Find the student names who are not enrolled in any society
13. Find the student names enrolled in at least two societies
14. Find society names in which maximum students are enrolled
15. Find names of all students who have enrolled in any society and society names in which at least one student has enrolled
16. Find names of students who are enrolled in any of the three societies ‘Debating’, ‘Dancing’ and ‘Sashakt’.
17. Find society names such that its mentor has a name with ‘Gupta’ in it.
18. Find the society names in which the number of enrolled students is only 10% of its capacity.
19. Display the vacant seats for each society.
20. Increment Total Seats of each society by 10%
21. Add enrollment fees paid (‘yes’/’No’) field in the enrollment table.
22. Update date of enrollment of society id ‘s1’ to ‘2018-01-15’, ‘s2’ to current date and ‘s3’ to ‘2018-01-02’.
23. Create a view to keep track of society names with the total number of students enrolled in it.
24. Find student names enrolled in all the societies.
25. Count number of societies with more than 5 student enrolled in it
26. Add column Mobile number in student table with default value ‘9999999999’
27. Find the total number of students whose age is > 20 years.
28. Find names of students who are born in 2001 and are enrolled in at least one society.
29. Count all societies whose name starts with ‘S’ and ends with ‘t’ and at least 5 students are enrolled in the society.
30. Display the following information:

Society name Mentor name Total Capacity Total Enrolled Unfilled Seats

II. Do the following database administration commands:
create user, create role, grant privileges to a role, revoke privileges from a role, create index

II. Execute queries given in part I through a high-level language using ODBC connection.

DISCIPLINE SPECIFIC CORE COURSE– 12 (DSC-12): Computer Networks

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits				Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC12 Computer Networks	**4**	**3**	**0**	**1**	Pass in Class XII	DSC 04 Object Oriented Programming with C++/ GE 1a Programming using C++ / GE1b Programming with Python/ DSC 01 Programming using Python/ GE 3b: Java Programming

Learning Objectives
The course objectives of this paper are to:

- Understand the concepts behind computer networks and data communication.
- Learn the different types of networks, network topologies and their characteristics.
- Learn the working of protocols used at various layers.
- Understand the utility of different networking devices.

Learning outcomes

Upon successful completion of the course, students will be able to:

- differentiate between various types of computer networks and their topologies.
- understand the difference between the OSI and TCP/IP protocol suit.

- distinguish between different types of network devices and their functions.
- design/implement data link and network layer protocols in a simulated networking environment.

SYLLABUS OF DSC06

Unit 1 (8 hours)
Introduction: Types of computer networks, Internet, Intranet, network topologies (bus, star, ring, mesh, tree, hybrid topologies), network classifications. layered architecture approach, OSI Reference Model, TCP/IP Reference Model. Transmission Modes: simplex, half duplex and full duplex.

Unit 2 (9 hours)
Physical Layer: Analog signal, digital signal, the maximum data rate of a channel, transmission media (guided transmission media, wireless transmission, satellite communication), multiplexing (frequency division multiplexing, time-division multiplexing, wavelength division multiplexing). Guided Media (Wired) (Twisted pair, Coaxial Cable, Fiber Optics. Unguided Media (Radio Waves, Infrared, Micro-wave, Satellite).

Unit 3 (10 hours)
Data Link and MAC Layer: Data link layer services, error detection and correction techniques, error recovery protocols (stop and wait, go back n, selective repeat), multiple access protocols with collision detection, MAC addressing, Ethernet, data link layer switching, point-to-point protocol.

Unit 4 (8 hours)
Network layer: Networks and Internetworks, virtual circuits and datagrams, addressing, subnetting, Dijkstra Routing algorithm, Distance vector routing, Network Layer protocol- (ARP, IPV4, ICMP).

Unit 5 (10 hours)
Transport and Application Layer: Process to process Delivery- (client-server paradigm, connectionless versus connection-oriented service); User Datagram Protocols, TCP/IP protocol, Flow Control. FTP (File Transfer Protocol), SMTP (Simple Mail Transfer Protocol), Telnet (Remote login protocol), WWW (World Wide Web), HTTP (HyperText Transfer Protocol), URL (Uniform Resource Locator).

Essential/recommended readings

1. Tanenbaum, A.S. & Wethrall, D.J.. *Computer Networks*, 5th edition, Pearson Education, 2012.

2. Forouzan, B. A.. *Data Communication and Networking*, 4th edition, McGraw-Hill Education, 2017.

Additional References

1. Comer, D. E.. *Computer Networks and Internet,* 6th edition, Pearson education, 2015.

2. Stallings, W., *Data and Computer Communications,* 10th edition, Pearson education India, 2017.

Suggested Practical List :

Practical exercises such as

Introduce students to any network simulator tool and do the following:

1. To Study basic network command and Network configuration commands.
2. To study and perform PC to PC communication.
3. To create Star topology using Hub and Switch.
4. To create Bus, Ring, Tree, Hybrid, Mesh topologies.
5. Perform an initial Switch configuration.
6. Perform an initial Router configuration.
7. To implement Client Server Network.
8. To implement connection between devices using router.
9. To perform remote desktop sharing within LAN connection.

Computer Science Courses for Undergraduate Programme of study with Computer Science discipline Elective

DISCIPLINE SPECIFIC ELECTIVE COURSE: Data Mining - I

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Data Mining - I	**4**	**3**	**0**	**1**	Pass in Class XII	DSC01 Programming using Python / GE1b Programming with Python

Learning Objectives

This course aims to introduce data mining techniques and their application on real-life datasets. The students will learn to pre-process the dataset and make it ready for application of data mining techniques. The course will focus on three main techniques of data mining i.e. Classification, Clustering and Association Rule Mining. Different algorithms for these techniques will be discussed along with appropriate evaluation metrics to judge the performance of the results delivered.

Learning outcomes

On successful completion of the course, students will be able to :

1. Pre-process the data for subsequent data mining tasks
2. Apply a suitable classification algorithm to train the classifier and evaluate its performance.
3. Apply appropriate clustering algorithm to cluster the data and evaluate clustering quality
4. Use association rule mining algorithms and generate frequent item-sets and association rules

SYLLABUS OF DSE

Unit 1 (5 hours)

Introduction to Data Mining: Motivation and challenges for data mining, Types of data mining tasks, Applications of data mining, Data measurements, Data quality, Supervised vs. unsupervised techniques

Unit 2 (10 hours)

Data Pre-processing: Data aggregation, sampling, dimensionality reduction, feature subset selection, feature creation, variable transformation.

Unit 3 (10 hours)

Cluster Analysis: Basic concepts of clustering, measure of similarity, types of clusters and clustering methods, K-means algorithm, measures for cluster validation, determine optimal number of clusters

Unit 4 (10 hours)

Association Rule mining: Transaction data-set, frequent itemset, support measure, rule generation, confidence of association rule, Apriori algorithm, Apriori principle

Unit 5 (10 hours)

Classification: Naive Bayes classifier, Nearest Neighbour classifier, decision tree, overfitting, confusion matrix, evaluation metrics and model evaluation.

Essential/recommended readings

1. Tan P.N., Steinbach M, Karpatne A. and Kumar V. *Introduction to Data Mining,* 2nd edition, Pearson, 2021.
2. Han J., Kamber M. and Pei J. *Data Mining: Concepts and Techniques*, 3rd edition, 2011, Morgan Kaufmann Publishers.
3. Zaki M. J. and Meira J. Jr. *Data Mining and Machine Learning: Fundamental Concepts and Algorithms*, 2nd edition, Cambridge University Press, 2020.

Additional References

1. Aggarwal C. C. *Data Mining: The Textbook*, Springer, 2015.
2. Dunham M. *Data Mining: Introductory and Advanced Topics,* 1st edition, Pearson Education India, 2006.

Suggested Practical List (If any): (30 Hours)

Practical exercises such as

All topics covered in theory will be implemented using Python. The operations may be performed on the datasets loaded through scikit, seaborn libraries or can be downloaded from from Open Data Portal (https:// data.gov.in/, UCI repository http://archive.ics.uci.edu/ml/).

Recommended Datasets for :

Classification: Abalone, Artificial Characters, Breast Cancer Wisconsin (Diagnostic)

Clustering: Grammatical Facial Expressions, HTRU2, Perfume data

Association Rule Mining: MovieLens, Titanics

Additional Suggested Practicals List

1. Apply data cleaning techniques on any dataset (e,g, wine dataset). Techniques may include handling missing values, outliers, inconsistent values. A set of validation rules can be prepared based on the dataset and validations can be performed.
2. Apply data pre-processing techniques such as standardization / normalization, transformation, aggregation, discretization/binarization, sampling etc. on any dataset
3. Run Apriori algorithm to find frequent itemsets and association rules on 2 real datasets and use appropriate evaluation measures to compute correctness of obtained patterns
    a) Use minimum support as 50% and minimum confidence as 75%
    b) Use minimum support as 60% and minimum confidence as 60 %

4. Use Naive bayes, K-nearest, and Decision tree classification algorithms and build classifiers on any two datasets. Divide the data set into training and test set. Compare the accuracy of the different classifiers under the following situations:
    I. a) Training set = 75% Test set = 25% b) Training set = 66.6% (2/3rd of total), Test set = 33.3%
    II. Training set is chosen by i) hold out method ii) Random subsampling iii) Cross-Validation. Compare the accuracy of the classifiers obtained.

    Data is scaled to standard format.
5. Use Simple K-means algorithm for clustering on any dataset. Compare the performance of clusters by changing the parameters involved in the algorithm. Plot MSE computed after each iteration using a line plot for any set of parameters.

Project: Students should be promoted to take up one project on any UCI/kaggle/data.gov.in or a dataset verified by the teacher. Preprocessing steps and at least one data mining technique should be shown on the selected dataset. This will allow the students to have a practical knowledge of how to apply the various skills learnt in the subject for a single problem/project.

DISCIPLINE SPECIFIC ELECTIVE COURSE: Combinatorial Optimization

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Combinatorial Optimization	**4**	**3**	**1**	**0**	Pass in Class XII	NIL

Learning Objectives

This course is designed to introduce the fundamentals of combinatorial optimization to the students in terms of both theory and applications, so as to equip them to explore the more advanced areas of convex and non-convex optimizations.

Learning outcomes

On successful completion of the course, students will be able to:

- Model problems using linear and integer programs
- Apply polyhedral analysis to develop algorithms for optimization problems
- Use the concept of duality for design of algorithms

SYLLABUS OF DSE

Unit 1 (9 hours)

Introduction: Introduction to Combinatorial Optimization Problems, Linear and Integer Programs- LP Formulation, understanding integer programs, computational complexities of IP vs LP, using LP to find optimal or approximate integral solutions, concept of integrality gap.

Unit 2 (14 hours)

Theory of Linear Programming and Algorithmic Perspective to Simplex Method: standard vs. equational form, basic feasible solutions, convexity and convex polyhedra, correspondence between vertices and basic feasible solutions, geometry of Simplex algorithm, exception handling (unboundedness, degeneracy, infeasibility), Simplex algorithm, avoiding cycles.

Unit 3 (12 hours)

Primal-Dual Algorithms: interpretation of dual, optimality conditions for primal and dual, weak and strong duality, complementary slackness, primal-dual algorithm for the shortest path problem.

Unit 4 (10 hours)

Network Flows: linear programming formulations for network flows and bipartite matching, totally unimodular matrices.

Essential/recommended readings

2. Papadimitriou, C.H. & Steiglitz, K. *Combinatorial Optimization: Algorithms and complexity***,** New edition, Dover Publications inc., 2000.

Additional References

(i) Bazaraa, M.S., Jarvis, J.J., & and Sherali, H.D. *Linear Programming and Network Flows*, 4th edition, Wiley, 2010.
(ii) Korte, B., & Vygen, J. *Combinatorial Optimization,* 6th edition, Springer, 2018.

Tutorials

Tutorials based on Theory

DISCIPLINE SPECIFIC ELECTIVE COURSE: Network Security

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Network Security		**3**	**1**	**0**	Pass in Class XII	DSC 04 Object Oriented Programming with C++/ GE 1a Programming using C++ / GE1b Programming with Python/ DSC 01 Programming using Python/ GE 3b: Java Programming

Learning Objectives

This course will provide students with an understanding of the fundamental concepts, principles, and techniques of network security. Students will learn how to assess, design, and implement secure networks using various tools and technologies.

Learning outcomes

On successful completion of the course, students will be able to:

- Describe the importance of network security and the principles of the CIA triad (confidentiality, integrity, and availability), types of security threats and attacks
- Describe the basics of cryptography, including symmetric and asymmetric encryption, hash functions, digital signatures, and public key infrastructure (PKI).
- Apply authentication and access control techniques, including password-based, token-based, and biometric authentication, as well as authorization models and single sign-on (SSO).
- Design and implement secure networks using network segmentation, security zones, and VPNs for remote access.

- Implement and manage firewalls, intrusion detection systems (IDS), and intrusion prevention systems (IPS) to protect network resources, secure wireless networks,
- Implement endpoint security and malware protection measures, including antivirus, patch management, and host-based firewalls.

SYLLABUS OF DSE

Unit 1 (10 hours)

Introduction to Network Security and Network Fundamentals: Importance of network security, Confidentiality, integrity, and availability (CIA) triad, Types of security threats and attacks. OSI and TCP/IP models. IP addressing and subnetting. Networking devices (hubs, switches, routers, firewalls). Network protocols and services (HTTP, HTTPS, FTP, SSH, etc.).

Unit 2 (12 hours)

Cryptography Basics, Authentication and Access Control, Secure Network Design: Symmetric and asymmetric encryption, Hash functions and digital signatures, Public key infrastructure (PKI), Common cryptographic algorithms (AES, RSA, SHA, etc.). Authentication techniques (passwords, tokens, biometrics), Authorization and access control models (RBAC, ABAC, MAC, DAC), Single sign-on (SSO) and multi-factor authentication (MFA). Defense-in-depth strategy, Network segmentation and isolation, Security zones and DMZ, VPNs and secure remote access.

Unit 3 (12 hours)

Firewalls and Intrusion Detection/Prevention Systems, Wireless Network Security: Types of firewalls (packet filtering, stateful inspection, application layer), IDS and IPS concepts and deployment, Signature-based and anomaly-based detection, Honeypots and honeynets. Wireless standards and technologies (802.11, Bluetooth, RFID), Wireless security protocols (WEP, WPA, WPA2, WPA3), Rogue access points and wireless attacks, Securing wireless networks.

Unit 4 (8 hours)

Endpoint Security and Malware Protection, Security Monitoring and Incident Response: Antivirus and antimalware solutions, Patch management and software updates, Host-based firewalls and intrusion detection, Mobile device management (MDM). Security Information and Event Management (SIEM) systems, Log management and analysis, Incident response process and procedures, Forensic analysis and evidence handling.

Unit 5 (3 hours)

Network Security Best Practices and Compliance: Security policies and procedures, Risk assessment and management, Security awareness training, Regulatory compliance (HIPAA, GDPR, PCI-DSS, etc.).

Essential/recommended readings

1. Behrouz Forouzan, Cryptography and network security. 3rd edition (2015), McGraw Hill Education.

2. Stallings, W. (2021). Cryptography and Network Security: Principles and Practice (8th Edition). Pearson.
3. Harris, S. (2018). All-in-One CISSP Exam Guide (8th Edition). McGraw-Hill Education.
4. Atul Kahate, Cryptography and Network Security, McGraw-Hill; Fourth edition (8 May 2019); McGraw Hill Education (India).

Additional References

i. Conklin, W. A., White, G., Williams, D., Davis, R., & Cothren, C. (2021). Principles of Computer Security: CompTIA Security+ and Beyond (6th Edition). McGraw-Hill Education.
ii. Chapple, M., & Seidl, D. (2020). Network Security For Dummies. Wiley.
iii. Gibson, D. (2021). CompTIA Security+ Get Certified Get Ahead: SY0-601 Study Guide. YCDA Publishing.

Online Additional Reference Materials:

1. NIST Special Publications: https://csrc.nist.gov/publications/sp
   a. SP 800-53: Security and Privacy Controls for Federal Information Systems and Organizations
   b. SP 800-82: Guide to Industrial Control Systems (ICS) Security
   c. SP 800-115: Technical Guide to Information Security Testing and Assessment
2. ISO/IEC 27000 series: Information Security Management Systems (ISMS)
   a. ISO/IEC 27001: Information Security Management
   b. ISO/IEC 27002: Code of Practice for Information Security Controls
   c. ISO/IEC 27005: Information Security Risk Management
3. Center for Internet Security (CIS) Critical Security Controls: https://www.cisecurity.org/controls/
   a. A prioritized set of actions to improve network security.
4. OWASP Top Ten Project: https://owasp.org/www-project-top-ten/
   a. A list of the most critical web application security risks.
5. SANS Institute Reading Room: https://www.sans.org/reading-room/
   a. A collection of whitepapers and articles on various network security topics.
6. Vendor documentation and best practices guides (Cisco, Juniper, Palo Alto Networks, etc.)

DISCIPLINE SPECIFIC ELECTIVE COURSE: Introduction to Web Programming

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Introduction to web programming	**4**	**3**	**0**	**1**	Pass in Class XII	NIL

Learning Objectives

The course aims at introducing the basic concepts and techniques of client side web programming. The student shall be able to develop simple websites using HTML, CSS and Javascript.

Learning outcomes

On successful completion of the course, students will be able to :

- Build websites using the elements of HTML.
- Build dynamic websites using the client side programming techniques with CSS, Javascript and jQuery.
- Learn to validate client-side data.

SYLLABUS OF DSE

Unit 1 (5 hours)

Introduction: Introduction to Internet and web design. Basic concepts of web architecture.

Unit 2 (12 hours)

HTML: Introduction to hypertext mark-up language (html), creating web pages, lists, hyperlinks, tables, web forms, inserting images, frames.

Unit 3 (8 hours)

Cascading style sheet (CSS): Concept of CSS, creating style sheet, Importing style sheets, CSS properties, CSS styling (background, text format, controlling fonts), CSS rules, Style Types, CSS Selectors, CSS cascade, working with block elements and objects, working with lists and tables, CSS id and class, box model (introduction, border properties, padding

properties, margin properties).

Unit 4 (10 hours)

Javascript: Document object model, data types and variables, functions, methods and events, controlling program flow, JavaScript object model, built-in objects and operators, validations.

Unit 5 (10 hours)

jQuery and JSON: Introduction to jQuery, syntax, selectors, events. JSON file format for storing and transporting data.

Essential/recommended readings

1. Nixon, R. *Learning PHP, MySQL & JavaScript with jQuery, CSS and HTML5*, O'Rielly, 2018.
2. Powell, T.A. *HTML & CSS: The Complete Reference, 5th edition*, Tata McGrawHill, 2010.
3. Duckett, J. *JavaScript and JQuery: Interactive Front-End Web Development*, Wiley, 2014.

Additional References

1. Minnick, J. *Web Design with HTML5 and CSS3*, 8th edition, Cengage Learning, 2015.
2. Boehm, A., & Ruvalcaba, Z. *Munarch's HTML5 and CCS,* 4th edition, Mike Murach & Associates, 2018.
3. J. A. Ramalho *Learn Advanced HTML 4.0 with DHTML*, BPB Publications, 2007.
4. Ivan Bayross *Web Enabled Commercial Application Development Using Html, Dhtml, Javascript, Perl CGI*, BPB Publications, 2009.

Suggested Practical List (If any): (30 Hours)

Practical exercises such as

HTML

1. Create an HTML document with following formatting – Bold, Italics, Underline, Colors, Headings, Title, Font and Font Width, Background, Paragraph, Line Brakes, Horizontal Line, Blinking text as well as marquee text.
2. Create an HTML document with Ordered and Unordered lists, Inserting Images, Internal and External linking
3. Create an HTML displaying this semester's time table.
4. Create a website with horizontal and vertical frames. Top horizontal frame showing your college's name and logo. Bottom horizontal frame split into two vertical frames. The left frame with hyperlinks to pages related to faculty, courses, student activities, etc. The right frame showing corresponding pages based on the link clicked on the left frame.
5. Create a student registration form using HTML which has the following controls:

I. Text Box
II. Dropdown box
III. Option/radio buttons
IV. Check boxes
V. Reset and Submit button

CSS

Create a webpage for your department with drop down navigation menu for faculty, courses, activities, etc.. Implement the webpage using styles, rules, selectors, ID, class.

Javascript

1. Create event driven programs for the following:
    a. Enter a number and on click of a button print its multiplication table.
    b. Print the largest of three numbers entered by the user.
    c. Find the factorial of a number entered by the user.
    d. Enter a list of positive numbers using the prompt terminated by a zero. Find the sum and average of these numbers.
2. Create a student registration form using text, radio button, check box, drop down box, text field and all other required HTML elements. Customise the CSS and javascript to input and validate all data. Create functions to perform validation of each element, example:
    a. Roll number is a 7-digit numeric value
    b. Name should be an alphabetical value(String)
    c. Non-empty and valid fields like DOB

jQuery and JSON

1. Change text color and contents using button click events using jQuery
2. Select elements using ID, class, elements name, attribute name
3. Run code on click events in jQuery
4. Handle HTML form, store the data in JSON object, pass them to another page and display it there using jQuery/Javascript

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

GENERIC ELECTIVES (GE-4a): Data Structures using C++

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
GE4a Data Structures using C++	**4**	**3**	**0**	**1**	Pass in Class XII	NIL

Learning Objectives

The course aims at developing the ability to use basic data structures like arrays, stacks, queues, lists, trees to solve problems. C++ is chosen as the language to understand implementation of these data structures.

Learning outcomes

On successful completion of the course, students will be able to:

- Compare two functions for their rates of growth.
- Understand abstract specification of data-structures and their implementation.
- Compute time and space complexity of operations on a data-structure.
- Identify the appropriate data structure(s) for a given application and understand the trade-offs involved in terms of time and space complexity.
- Apply recursive techniques to solve problems.

SYLLABUS OF GE-4a

Unit 1 (7 hours)

Growth of Functions, Recurrence Relations: Functions used in analysis, asymptotic notations, asymptotic analysis, solving recurrences using recursion tree, Master Theorem.

Unit 2 (14 hours)

Arrays, Linked Lists, Stacks, Queues, Deques: Arrays: array operations, applications, sorting, two-dimensional arrays, dynamic allocation of arrays; Linked Lists: singly linked lists, doubly linked lists, circularly linked lists, Stacks: stack as an ADT, implementing stacks using arrays, implementing stacks using linked lists, applications of stacks; Queues: queue as an ADT, implementing queues using arrays, implementing queues using linked lists, double-ended queue as an ADT. Time complexity analysis of operations on all data structures.

Unit 3 (4 hours)

Sorting: Insertion Sort, Count Sort and their complexity analysis.

Unit 4 (4 hours)

Recursion: Recursive functions, linear recursion, binary recursion.

Unit 5 (10 hours)

Trees, Binary Trees: Trees: definition and properties, binary trees: definition and properties, traversal of binary trees and their time complexity analysis. Binary Search Trees: insert, delete (by copying), search operations, time complexity analysis of these operation.

Unit 6 (6 hours)

Binary Heap, Priority Queue: Binary Heaps: motivation and introduction, application of heaps - Priority Queues.

Essential/recommended readings

1. Goodrich, M.T, Tamassia, R., & Mount, D., *Data Structures and Algorithms Analysis in C++,* 2nd edition, Wiley, 2011.
2. Cormen, T.H., Leiserson, C.E., Rivest, R. L., Stein C., Introduction to Algorithms. 4th edition. Prentice Hall of India. 2022.
3. Drozdek, A., *Data Structures and Algorithms in C++*, 4th edition, Cengage Learning, 2012.

Additional References

1. Sahni, S. *Data Structures, Algorithms and applications in C++*, 2nd edition. Universities Press, 2011.
2. Langsam Y., Augenstein, M. J., & Tanenbaum, A. M. *Data Structures Using C and C++*, 2nd edition, Pearson, 2009.

Suggested Practical List (If any): (30 Hours)

Practical exercises such as

1. Perform matrix addition and multiplication.
2. Implement following recursive functions:
    a. Factorialof a number
    b. N^{th} fibonacci number
    c. Power function: x^y
3. Implement singly linked lists.
3. Implement doubly linked lists.

4. Implement circular linked lists.
5. Implement stack data structure and its operations using arrays.
6. Implement stack data structure and its operations using linked lists.
7. Convert Prefix expression to Infix and Postfix expressions, and evaluate.
8. Implement queue data structure and its operations using arrays.
9. Implement queue data structure and its operations using linked lists.
10. Implement Binary Trees and its traversals.

GENERIC ELECTIVES (GE-4b): Introduction to Web Programming

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
GE4b: Introduction to Programming	**4**	**3**	**0**	**1**	Pass in Class XII	NIL

Learning Objectives

The course aims at introducing the basic concepts and techniques of client side web programming. The student shall be able to develop simple websites using HTML, CSS and Javascript.

Learning outcomes

On successful completion of the course, students will be able to :

- Build websites using the elements of HTML.
- Build dynamic websites using the client side programming techniques with CSS, Javascript and jQuery.
- Learn to validate client-side data.

SYLLABUS OF GE4b

Unit 1 (5 hours)

Introduction: Introduction to Internet and web design. Basic concepts of web architecture.

Unit 2 (12 hours)

HTML: Introduction to hypertext mark-up language (html), creating web pages, lists,

hyperlinks, tables, web forms, inserting images, frames.

Unit 3 (8 hours)

Cascading style sheet (CSS): Concept of CSS, creating style sheet, Importing style sheets, CSS properties, CSS styling (background, text format, controlling fonts), CSS rules, Style Types, CSS Selectors, CSS cascade, working with block elements and objects, working with lists and tables, CSS id and class, box model (introduction, border properties, padding properties, margin properties).

Unit 4 (10 hours)

Javascript: Document object model, data types and variables, functions, methods and events, controlling program flow, JavaScript object model, built-in objects and operators, validations.

Unit 5 (10 hours)

jQuery and JSON: Introduction to jQuery, syntax, selectors, events. JSON file format for storing and transporting data.

Essential/recommended readings

1. Nixon, R. *Learning PHP, MySQL & JavaScript with jQuery, CSS and HTML5*, O'Rielly, 2018.
2. Powell, T.A. *HTML & CSS: The Complete Reference, 5th edition*, Tata McGrawHill, 2010.
3. Duckett, J. *JavaScript and JQuery: Interactive Front-End Web Development*, Wiley, 2014.

Additional References

1. Minnick, J. *Web Design with HTML5 and CSS3*, 8th edition, Cengage Learning, 2015.
2. Boehm, A., & Ruvalcaba, Z. *Munarch's HTML5 and CCS,* 4th edition, Mike Murach & Associates, 2018.
3. J. A. Ramalho *Learn Advanced HTML 4.0 with DHTML*, BPB Publications, 2007.
4. Ivan Bayross *Web Enabled Commercial Application Development Using Html, Dhtml, Javascript, Perl CGI*, BPB Publications, 2009.

Suggested Practical List (If any): (30 Hours)

Practical exercises such as

HTML

1. Create an HTML document with following formatting – Bold, Italics, Underline, Colors, Headings, Title, Font and Font Width, Background, Paragraph, Line Brakes, Horizontal Line, Blinking text as well as marquee text.
2. Create an HTML document with Ordered and Unordered lists, Inserting Images, Internal and External linking
3. Create an HTML displaying this semester's time table.
4. Create a website with horizontal and vertical frames. Top horizontal frame showing

your college's name and logo. Bottom horizontal frame split into two vertical frames. The left frame with hyperlinks to pages related to faculty, courses, student activities, etc. The right frame showing corresponding pages based on the link clicked on the left frame.

5. Create a student registration form using HTML which has the following controls:
   I. Text Box
   II. Dropdown box
   III. Option/radio buttons
   IV. Check boxes
   V. Reset and Submit button

CSS

Create a webpage for your department with drop down navigation menu for faculty, courses, activities, etc.. Implement the webpage using styles, rules, selectors, ID, class.

Javascript

1. Create event driven programs for the following:
   e. Enter a number and on click of a button print its multiplication table.
   f. Print the largest of three numbers entered by the user.
   g. Find the factorial of a number entered by the user.
   h. Enter a list of positive numbers using the prompt terminated by a zero. Find the sum and average of these numbers.
2. Create a student registration form using text, radio button, check box, drop down box, text field and all other required HTML elements. Customise the CSS and javascript to input and validate all data. Create functions to perform validation of each element, example:
   d. Roll number is a 7-digit numeric value
   e. Name should be an alphabetical value(String)
   f. Non-empty and valid fields like DOB

jQuery and JSON

1. Change text color and contents using button click events using jQuery
2. Select elements using ID, class, elements name, attribute name
3. Run code on click events in jQuery

(Computer Science Courses for Undergraduate Programme of study with Computer Science discipline as one of the three Core Disciplines)

DISCIPLINE SPECIFIC CORE COURSE (DSC04): Operating Systems

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC04: Operating Systems	**4**	**3**	**0**	**1**	Pass in Class XII	DSC 01 Programming using Python/ A course in C/C++/Python at plus 2 level.

Learning Objectives

This course introduces the students to Operating Systems and its importance in computer systems. The focus is to explain the common services provided by an operating system like process management, memory (primary, secondary & virtual) management, I/O management, file management. The course talks about the various functional components of the operating and their design.

Learning outcomes

On successful completion of the course, students will be able to

- gain knowledge of different concepts of the operating System and its components.
- learn about shell scripts and would be able to use the system in an efficient manner.

SYLLABUS OF DSC04

Unit 1 (4 hours)

Introduction: Operating Systems (OS) definition and its purpose, Multiprogrammed and Time Sharing Systems, OS Structure, OS Operations: Dual and Multi-mode, OS as resource manager.

Unit 2 (10 hours)

Operating System Structures: OS Services, System Calls: Process Control, File Management, Device Management, and Information Maintenance, Inter-process Communication, and Protection, System programs, OS structure- Simple, Layered, Microkernel, and Modular.

Unit 3 (9 hours)

Process Management: Process Concept, States. Process Control Block, Context Switch, Process scheduling, Schedulers, Overview of threads and Scheduling Algorithms: First Come First Served, Shortest-Job-First, Priority & Round-Robin.

Unit 4 (9 hours)

Memory Management: Physical and Logical address space, Swapping Contiguous memory allocation strategies - fixed and variable partitions, Segmentation, Paging, virtual memory: Demand Paging.

Unit 5 (8 hours)

File and Input / Output Device Management: File Concepts, File Attributes, File Access Methods, Directory Structure: Single-Level, Two-Level, Tree-Structured, and Acyclic-Graph Directories, Magnetic Disks, Solid-State Disks, Magnetic Tapes.

Unit 6 (5 hours)

Shell Scripting: Shell variables, parameter passing conditional statements, iterative statements, writing and executing shell scripts, utility programs (cut, paste, grep, echo, pipe, filter etc.)

Essential/recommended readings

1. Galvin, S. P. B., Gagne, G., *Operating System Concepts*, 9th edition, John Wiley Publications, 2016.
2. G. Nutt, Operating Systems, Pearson, 2009
3. Das, S., *Unix: Concepts and Applications*, 4th edition, TMH, 2009.

Additional References

1. Dhamdhere, D. M., *Operating Systems: A Concept-based Approach,* 2nd edition, Tata McGraw-Hill Education, 2017.
2. Kernighan, B. W., Pike, R., *The Unix Programming Environment*, Englewood Cliffs, NJ: Prentice-Hall, 1984.
3. Stallings, W., *Operating Systems: Internals and Design Principles*, 9th edition, Pearson Education, 2018.
4. Tanenbaum, A. S., *Modern Operating Systems.* 3rd edition, Pearson Education, 2007.

Suggested Practical List (If any): (30 Hours)

Practical exercises such as

1. Execute various LINUX commands for:
   i. Information Maintenance: wc, clear, cal, who, date, pwd
   ii. File Management: cat, cp, rm, mv, cmp, comm, diff, find, grep
   iii. Directory Management : cd, mkdir, rmdir, ls

2. Execute various LINUX commands for:
   i. Process Control: fork, getpid, ps
   ii. Communication: Input-output redirection, Pipe
   iii. Protection Management: chmod, chown, chgrp
3. Write a program(using fork() and/or exec() commands) where parent and child execute:
   i. same program, same code.
   ii. same program, different code.
   iii. before terminating, the parent waits for the child to finish its task.
4. Write a program to calculate sum of n numbers using Pthreads.
5. Write a program to generate a Fibonacci Series of numbers using Pthreads.
6. Write a program to implement best-fit and worst-fit allocation strategies
7. Write a program to copy files using system calls and using pthreads and compare timings.
8. Write a program to implement FCFS scheduling algorithm.
9. Write a program to implement SJF scheduling algorithm.
10. Write a program to implement non-preemptive priority based scheduling algorithm.

Computer Science Courses for Undergraduate Programme of study with Computer Science discipline as one of the two Core Disciplines
(For e.g. courses for B.A. Programmes with Computer Science as Major discipline)

Computer Science Major

DISCIPLINE SPECIFIC CORE COURSE (DSC04): Operating Systems

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC04: Operating Systems	**4**	**3**	**0**	**1**	Pass in Class XII	DSC 01 Programming using Python/ A course in C/C++/Python at plus 2 level

Learning Objectives

This course introduces the students to Operating Systems and its importance in computer systems. The focus is to explain the common services provided by an operating system like process management, memory (primary, secondary & virtual) management, I/O management, file management. The course talks about the various functional components of the operating and their design.

Learning outcomes

On successful completion of the course, students will be able to

- gain knowledge of different concepts of the operating System and its components.
- learn about shell scripts and would be able to use the system in an efficient manner.

SYLLABUS OF DSC04

Unit 1 (4 hours)

Introduction: Operating Systems (OS) definition and its purpose, Multiprogrammed and Time Sharing Systems, OS Structure, OS Operations: Dual and Multi-mode, OS as resource manager.

Unit 2 (10 hours)

Operating System Structures: OS Services, System Calls: Process Control, File Management, Device Management, and Information Maintenance, Inter-process Communication, and Protection, System programs, OS structure- Simple, Layered, Microkernel, and Modular.

Unit 3 (9 hours)

Process Management: Process Concept, States. Process Control Block, Context Switch, Process scheduling, Schedulers, Overview of threads and Scheduling Algorithms: First Come First Served, Shortest-Job-First, Priority & Round-Robin.

Unit 4 (9 hours)

Memory Management: Physical and Logical address space, Swapping Contiguous memory allocation strategies - fixed and variable partitions, Segmentation, Paging, virtual memory: Demand Paging.

Unit 5 (8 hours)

File and Input / Output Device Management: File Concepts, File Attributes, File Access Methods, Directory Structure: Single-Level, Two-Level, Tree-Structured, and Acyclic-Graph Directories, Magnetic Disks, Solid-State Disks, Magnetic Tapes.

Unit 6 (5 hours)

Shell Scripting: Shell variables, parameter passing conditional statements, iterative statements, writing and executing shell scripts, utility programs (cut, paste, grep, echo, pipe, filter etc.)

Essential/recommended readings

1. Galvin, S. P. B., Gagne, G., *Operating System Concepts*, 9th edition, John Wiley Publications, 2016.
2. G. Nutt, Operating Systems, Pearson, 2009
3. Das, S., *Unix: Concepts and Applications*, 4th edition, TMH, 2009.

Additional References

1. Dhamdhere, D. M., *Operating Systems: A Concept-based Approach,* 2nd edition, Tata McGraw-Hill Education, 2017.
2. Kernighan, B. W., Pike, R., *The Unix Programming Environment*, Englewood Cliffs, NJ: Prentice-Hall, 1984.
3. Stallings, W., *Operating Systems: Internals and Design Principles*, 9th edition, Pearson Education, 2018.
4. Tanenbaum, A. S., *Modern Operating Systems.* 3rd edition, Pearson Education, 2007.

Suggested Practical List (If any): (30 Hours)

Practical exercises such as

1. Execute various LINUX commands for:
   i. Information Maintenance: wc, clear, cal, who, date, pwd
   iv. File Management: cat, cp, rm, mv, cmp, comm, diff, find, grep
   v. Directory Management : cd, mkdir, rmdir, ls
2. Execute various LINUX commands for:
   iv. Process Control: fork, getpid, ps
   v. Communication: Input-output redirection, Pipe
   vi. Protection Management: chmod, chown, chgrp
3. Write a program(using fork() and/or exec() commands) where parent and child execute:
   iv. same program, same code.
   v. same program, different code.
   vi. before terminating, the parent waits for the child to finish its task.
4. Write a program to calculate sum of n numbers using Pthreads.
5. Write a program to generate a Fibonacci Series of numbers using Pthreads.
6. Write a program to implement best-fit and worst-fit allocation strategies
7. Write a program to copy files using system calls and using pthreads and compare timings.
8. Write a program to implement FCFS scheduling algorithm.
9. Write a program to implement SJF scheduling algorithm.
10. Write a program to implement non-preemptive priority based scheduling algorithm.

DISCIPLINE SPECIFIC CORE COURSE (A4): Data Mining-II

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
A4: Data Mining - II	**4**	**3**	**0**	**1**	Pass in Class XII	DSC01 Programming using Python, / GE1b

						Programming with Python / A1 Programming Fundamentals using Python ,Data Mining-I

Learning Objectives

The course introduces the students to the supervised and unsupervised learning techniques. Students will learn about the importance of ensemble methods, cluster analysis, anomaly detection and their applicability in mining patterns in real applications. At the end students will be exposed to two advanced topics: text mining and time-series mining. Students will use the learned topics in solving real applications using open-source software.

Learning outcomes

On successful completion of the course, students will be able to:

- Differentiate between partition-based, density-based and hierarchical clustering
- Build ensemble models to improve predictive performance of the classifier
- Identify anomalies and outliers using supervised and unsupervised techniques
- Analyze time-series data and extract patterns from the stamped data
- Mine textual data and do topic modeling

SYLLABUS OF A4

Unit 1 (9 hours)

Clustering: Partitioning Methods, Hierarchical Methods, Density-Based Methods, Comparison of different methods

Unit 2 (8 hours)

Ensemble Methods: Need of ensemble, Random Forests, Bagging and Boosting

Unit 3 (10 hours)

Anomaly Detection: Outliers and Outlier Analysis, Outlier Detection Methods, Statistical Approaches, Proximity-based and density-based outlier detection, Clustering-based approaches

Unit 4 (8 hours)

Mining Text Data: Document Preparation and Similarity, Clustering Methods for Text, Topic Modeling

Unit 5 (10 hours)

Stream Mining: Time series basics, Date Ranges, Frequencies, and Shifting, Resampling and moving windows functions, Decay function, Clustering stamped data: STREAM and CluStream

Essential/recommended readings

1. Tan P.N., Steinbach M, Karpatne A. and Kumar V. *Introduction to Data Mining,* 2nd edition, Pearson, 2019.
2. Zaki M. J. and Meira J. Jr. *Data Mining and Machine Learning: Fundamental Concepts and Algorithms*, 2nd edition, Cambridge University Press, 2020.
3. Aggarwal C. C. *Data Mining: The Textbook*, Springer, 2015.

Additional References

1. Han J. Kamber M. and Pei J. *Data Mining: Concepts and Techniques*, Morgan Kaufmann Publishers, 2011.
2. Dunham M. *Data Mining: Introductory and Advanced Topics*, Pearson, 2006.

Suggested Practicals List (If any): (30 Hours)

Practical exercise such as

1. Apply Partitioning Methods, Hierarchical Methods, Density-Based Methods for clustering on a data set and compare the performance of the obtained results using different metrics
2. Create an ensemble using Random Forest and show the impact of bagging and boosting on the performance
3. Apply different outlier-detection methods on a noisy dataset and compare their effectiveness in terms of outliers reported
4. Compute similarity between two documents after required document preparation
5. Considering a time-stamped data (sales data/weather data), compare the aggregate values visually using different moving windows function
6. Write a program to find the latent topics in a document using any topic modeling method and display top 5 terms that contribute to each topic along with their strength. Also, visualize the distribution of terms contributing to the topics.

Project: Students should be promoted to take up one project covering at least one unit of the syllabus on any UCI/kaggle/data.gov.in or a dataset verified by the teacher. This will allow the students to have a practical knowledge of how to apply the various skills learnt in the subject for a single problem/project.

Computer Science Courses for Undergraduate Programme of study with Computer Science discipline as one of the two Core Disciplines
(For e.g. courses for B.A. Programmes with Computer Science as Non-major discipline)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC04: Operating Systems	**4**	**3**	**0**	**1**	Pass in Class XII	DSC 01 Programming using Python/ A course in C/C++/Python at plus 2 level

Learning Objectives

This course introduces the students to Operating Systems and its importance in computer systems. The focus is to explain the common services provided by an operating system like process management, memory (primary, secondary & virtual) management, I/O management, file management. The course talks about the various functional components of the operating and their design.

Learning outcomes

On successful completion of the course, students will be able to

- gain knowledge of different concepts of the operating System and its components.
- learn about shell scripts and would be able to use the system in an efficient manner.

SYLLABUS OF DSC04

Unit 1 (4 hours)

Introduction: Operating Systems (OS) definition and its purpose, Multiprogrammed and Time Sharing Systems, OS Structure, OS Operations: Dual and Multi-mode, OS as resource manager.

Unit 2 (10 hours)

Operating System Structures: OS Services, System Calls: Process Control, File Management, Device Management, and Information Maintenance, Inter-process Communication, and Protection, System programs, OS structure- Simple, Layered, Microkernel, and Modular.

Unit 3 (9 hours)

Process Management: Process Concept, States. Process Control Block, Context Switch, Process scheduling, Schedulers, Overview of threads and Scheduling Algorithms: First Come First Served, Shortest-Job-First, Priority & Round-Robin.

Unit 4 (9 hours)

Memory Management: Physical and Logical address space, Swapping Contiguous memory allocation strategies - fixed and variable partitions, Segmentation, Paging, virtual memory: Demand Paging.

Unit 5 (8 hours)

File and Input / Output Device Management: File Concepts, File Attributes, File Access Methods, Directory Structure: Single-Level, Two-Level, Tree-Structured, and Acyclic-Graph Directories, Magnetic Disks, Solid-State Disks, Magnetic Tapes.

Unit 6 (5 hours)

Shell Scripting: Shell variables, parameter passing conditional statements, iterative statements, writing and executing shell scripts, utility programs (cut, paste, grep, echo, pipe, filter etc.)

Essential/recommended readings

1. Galvin, S. P. B., Gagne, G., *Operating System Concepts*, 9th edition, John Wiley Publications, 2016.
2. G. Nutt, Operating Systems, Pearson, 2009
3. Das, S., *Unix: Concepts and Applications*, 4th edition, TMH, 2009.

Additional References

1. Dhamdhere, D. M., *Operating Systems: A Concept-based Approach,* 2nd edition, Tata McGraw-Hill Education, 2017.
2. Kernighan, B. W., Pike, R., *The Unix Programming Environment*, Englewood Cliffs, NJ: Prentice-Hall, 1984.
3. Stallings, W., *Operating Systems: Internals and Design Principles*, 9th edition, Pearson Education, 2018.
4. Tanenbaum, A. S., *Modern Operating Systems.* 3rd edition, Pearson Education, 2007.

Suggested Practical List (If any): (30 Hours)

Practical exercises such as

1. Execute various LINUX commands for:
   i. Information Maintenance: wc, clear, cal, who, date, pwd
   vi. File Management: cat, cp, rm, mv, cmp, comm, diff, find, grep
   vii. Directory Management : cd, mkdir, rmdir, ls

2. Execute various LINUX commands for:

vii. Process Control: fork, getpid, ps

viii. Communication: Input-output redirection, Pipe

ix. Protection Management: chmod, chown, chgrp

3. Write a program(using fork() and/or exec() commands) where parent and child execute:

vii. same program, same code.

viii. same program, different code.

ix. before terminating, the parent waits for the child to finish its task.

4. Write a program to calculate sum of n numbers using Pthreads.

5. Write a program to generate a Fibonacci Series of numbers using Pthreads.

6. Write a program to implement best-fit and worst-fit allocation strategies

7. Write a program to copy files using system calls and using pthreads and compare timings.

8. Write a program to implement FCFS scheduling algorithm.

9. Write a program to implement SJF scheduling algorithm.

10. Write a program to implement non-preemptive priority based scheduling algorithm.

SEMESTER-5

DEPARTMENT OF COMPUTER SCIENCE
[UG Programme for Bachelor in Computer Science (Honours)]

DISCIPLINE SPECIFIC CORE COURSE - 13 (DSC-13) : Algorithms and Advanced Data Structures

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSC 13 Algorithms and Advanced Data Structures	**4**	**3**	**0**	**1**	Pass in Class XII	DSC 07 Data Structures with C++, DSC 10 Design and Analysis of Algorithms

Learning Objectives

This course is designed to build upon the fundamentals in data structures and algorithm design and gain exposure to more data structures and algorithms for new problems.

Learning outcomes

On successful completion of the course, students will be able to:

- Comprehend and use data structures for lists.
- Use hash tables for dictionaries.
- Comprehend and use data structures and algorithms for string matching.
- Apply disk based data structures.
- Implement and analyze advanced data structures and algorithms for graphs.
- Describe the purpose of randomization in data structures and algorithms.

Unit 1 (4 hours)

List and Iterator ADTs: Vectors, Lists, Sequences

Unit 2 (6 hours)

Hash Tables, Dictionaries: Hash Functions, Collision resolution schemes.

Unit 3 (8 hours)

Strings: String Matching: KMP algorithm; Tries: Standard Tries, Compressed Tries, Suffix Tries, Search Engines

Unit 4 (8 hours)

More on Trees: 2-4 Trees, B Trees

Unit 5 (8 hours)

More on Graphs: Bellman Ford Algorithm, Union Find Data Structures - application Kruskal's algorithm

Unit 6 (6 hours)

Randomization: Randomized Quicksort, Randomized Select, Skip lists

Unit 7 (5 hours)

Network Flows: Ford Fulkerson algorithm for max flow problem.

Essential/recommended readings

1. Goodrich, M.T, Tamassia, R., & Mount, D. *Data Structures and Algorithms Analysis in C++*, 2nd edition, Wiley, 2011.
2. Cormen, T.H., Leiserson, C.E., Rivest, R. L., Stein C. *Introduction to Algorithms*, 4th edition, Prentice Hall of India, 2022.
3. Kleinberg, J., Tardos, E. *Algorithm Design*, 1st edition, Pearson, 2013.
4. Drozdek, A. *Data Structures and Algorithms in C++*, 4th edition, Cengage Learning. 2012.

Practical List : (30 Hours)

Practical exercises such as

1. Write a program to sort the elements of an array using Randomized Quick sort (the program should report the number of comparisons).
2. Write a program to find the ith smallest element of an array using Randomized Select.
3. Write a program to determine the minimum spanning tree of a graph using Kruskal's algorithm.
4. Write a program to implement the Bellman Ford algorithm to find the shortest paths from a given source node to all other nodes in a graph.

5. Write a program to implement a B-Tree.
6. Write a program to implement the Tree Data structure, which supports the following operations:
   I. Insert
   II. Search
7. Write a program to search a pattern in a given text using the KMP algorithm.
8. Write a program to implement a Suffix tree.

DISCIPLINE SPECIFIC CORE COURSE – 14 (DSC-14): Theory of Computation

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSC 14 Theory of Computation	**4**	**3**	**0**	**1**	Pass in Class XII	DSC04 Object Oriented Programming with C++ / GE1a Programming using C++ /A course in C/C++ at plus 2 level

Learning Objectives

This course introduces formal models of computation, namely, finite automaton, pushdown automaton, and Turing machine; and their relationships with formal languages. make students aware of the notion of computation using abstract computing devices. Students will also learn about the limitations of computing machines as this course addresses the issue of which problems can be solved by computational means (decidability vs undecidability

Learning outcomes

On successful completion of the course, students will be able to:

- design a finite automaton, pushdown automaton or a Turing machine for a problem at hand.

- apply pumping lemma to prove that a language is non-regular/non-context-free.
- describe limitations of a computing machines and
- recognize what can be solved and what cannot be solved using these machines.

SYLLABUS OF DSC 14

Unit 1 (7 hours)

Introduction: Alphabets, string, language, basic operations on language, concatenation, union, Kleene star.

Unit 2 (15 hours)

Finite Automata and Regular: Regular expressions, Deterministic Finite Automata (DFA), Non-deterministic Finite Automata (NFA), relationship between NFA and DFA, Transition Graphs (TG), properties of regular languages, the relationship between regular languages and finite automata, pumping lemma, Kleene's theorem.

Unit 3 (15 hours)

Context-Free Languages (CFL): Context-Free Grammars (CFG), deterministic and non-deterministic Pushdown Automata (PDA), relationship between CFG and PDA, parse trees, leftmost derivation, Ambiguities in grammars, pumping lemma for CFL, properties of CFL, Chomsky Normal Form.

Unit 4 (8 hours)

Turing Machines and Models of Computations: Turing machine as a model of computation, configuration of Turing machine, Recursive and recursively enumerable languages, Church Turing Thesis, Universal Turing Machine, decidability, Halting problem.

Essential/recommended readings

1. Harry R. Lewis and Christos H. Papadimitriou, *Elements of the Theory of Computation*, 2nd Edition, Prentice Hall of India (PHI), 2002
2. Daniel I.A. Cohen, *Introduction to Computer Theory*, 2nd Edition, Wiley India Pvt. Ltd., 2011.

Additional References

1. J.E. Hopcroft, R. Motwani, and J.D. Ullman, *Introduction to Automata Theory, Languages and Computation*, 3rd edition, Addison Wesley, 2006.
2. Peter Linz, *An Introduction to Formal Languages and Automata*, 6th edition, Jones & Bartlett Learning, 2017.
3. Michael Sipser, *Introduction to the Theory of Computation*, Cengage, 2014

DISCIPLINE SPECIFIC CORE COURSE– 15 (DSC-15): Software Engineering

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSC 15 Software Engineering		**3**	**0**	**1**	Pass in Class XII	DSC01 Programming using Python/ DSC04 Object Oriented Programming with C++/A course in C/C++ or Python at plus 2 level

Learning Objectives

This course will acquaint the student with different approaches and techniques used to develop good quality software. The course includes learning of various software development process frameworks, requirement analysis, design modeling, qualitative and quantitative software metrics, risk management, and testing techniques.

Learning outcomes

On successful completion of the course, a student will be able to:

- describe the software development models.
- analyse and model customer requirements and build design models.
- estimate and prepare schedule for software projects.
- analyse the impact of risks involved in software development.
- design and build test cases, and perform software testing.

SYLLABUS OF DSC 15

Unit 1 (9 hours)

Introduction: Software Engineering - A Layered Approach; Software Process – Process Framework, Umbrella Activities; Process Models – Waterfall Model, Incremental Model, and Evolutionary process Model (Prototyping, Spiral Model); Introduction to Agile, Agile Model – Scrum.

Unit 2 (6 hours)

Software Requirements Analysis and Specification: Use Case Approach, Software Requirement Specification Document, Flow-oriented Model, Data Flow Model

Unit 3 (8 hours)

Design Modeling: Translating the Requirements model into the Design Model, The Design Process, Design Concepts - Abstraction, Modularity and Functional Independence; Structure Charts.

Unit 4 (7 hours)

Software Metrics and Project Estimation: Function based Metrics, Software Measurement, Metrics for Software Quality; Software Project Estimation (FP based estimations); Project Scheduling (Timeline charts, tracking the schedule).

Unit 5 (5 hours)

Quality Control and Risk Management: Quality Control and Quality Assurance, Software Process Assessment and Improvement; Software Risks, Risk Identification, Risk Projection, Risk Mitigation, Monitoring and Management.

Unit 6 (10 hours)

Software Testing: Strategic Approach to Software Testing, Unit Testing, Integration Testing, Validation Testing, System Testing; Black-Box and White Box Testing, Basis Path Testing.

Essential/recommended readings

1. Pressman, R.S. *Software Engineering: A Practitioner's Approach*, 9th edition, McGraw-Hill, 2020.
2. Aggarwal, K.K., Singh, Y. *Software Engineering*, 3rd edition, New Age International Publishers, 2007.
3. Jalote, P. An Integrated Approach to Software Engineering, 3rd Edition, Narosa Publishing House, 2005.

Additional References

1. Sommerville, I. *Software Engineering*, 9th edition, Addison Wesley, 2011.
2. *The Definitive Guide to Scrum: The Rules of the Game*, Ken Schwaber, Jeff Sutherland, July 2016.

Suggested Practical List :(30 Hours)

Practical exercises such as

The students document, design and code a module of a Software Project using an appropriate Software Process model. The Software Project should include the use of software engineering tools and include.

1. Problem Statement, Process Model
2. Requirement Analysis: Create Data Flow, Data Dictionary, Use Cases, Sequence Diagram, Software Requirement Specification Document
3. Project Management: Timeline Chart, Compute FP, Effort, Cost, Risk Table.
4. Design Engineering: Architectural Design, Pseudocode of a small module.
5. Coding: Develop at least a single module using any programming Language
6. Testing: Compute Basic path set for at least one module from a project, Generate test cases.

Some of the sample projects are given below:

1. Criminal Record Management: Implement a criminal record management system for jailers, police officers and CBI officers
2. DTC Route Information: Online information about the bus routes and their frequency and fares.
3. Car Pooling: To maintain a web-based intranet application that enables the corporate employees within an organization to avail the facility of carpooling effectively.
4. Patient Appointment and Prescription Management System
5. Organized Retail Shopping Management Software
6. Online Hotel Reservation Service System
7. Examination and Result computation System
8. Automatic Internal Assessment System
9. Parking Allocation System

Computer Science Courses for Undergraduate Programme of study with Computer Science discipline Elective

DISCIPLINE SPECIFIC ELECTIVE COURSE: Data Mining-II

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Data Mining-II	**4**	**3**	**0**	**1**	Pass in Class XII	DSC01 Programming using Python, / GE1b Programming with Python / A1 Programming Fundamentals using Python ,Data Mining-I

Learning Objectives

The course introduces the students to the important supervised and unsupervised learning techniques. Students will learn about the importance of ensemble methods, cluster analysis, anomaly detection and their applicability in mining patterns in real applications. At the end students will be exposed to two advanced topics: text mining and time-series mining. Students will use the learned topics in solving real applications using Open-source software.

Learning outcomes

On successful completion of the course, students will be able to:

- Differentiate between partition-based, density-based and hierarchical clustering.
- Build ensemble models to improve predictive performance of the classifier.
- Identify anomalies and outliers using supervised and unsupervised techniques.
- Analyze time-series data and extract patterns from the stamped data.
- Mine textual data and do topic modelling.

SYLLABUS OF DSE

Unit 1 (10 hours)

Clustering: Partitioning Methods, Hierarchical Methods, Density-Based Methods, Comparison of different methods

Unit 2 (8 hours)

Ensemble Methods: Need of ensemble, Random Forests, Bagging and Boosting

Unit 3 (10 hours)

Anomaly Detection: Outliers and Outlier Analysis, Outlier Detection Methods, Statistical Approaches, Proximity-based and density-based outlier detection, Clustering-based approaches

Unit 4 (7 hours)

Mining Text Data: Document Preparation and Similarity, Clustering Methods for Text, Topic Modeling

Unit 5 (10 hours)

Stream Mining: Time series basics, Date Ranges, Frequencies, and Shifting, Resampling and moving windows functions, Decay function, Clustering stamped data**:** STREAM and CluStream

Essential/recommended readings

1. Tan P.N., Steinbach M, Karpatne A. and Kumar V. *Introduction to Data Mining,* 2nd edition, Pearson, 2019.
2. Zaki M. J. and Meira J. Jr. *Data Mining and Machine Learning: Fundamental Concepts and Algorithms*, 2nd edition, Cambridge University Press, 2020.
3. Aggarwal C. C. *Data Mining: The Textbook*, Springer, 2015.

Additional References

1. Han J. Kamber M. and Pei J. *Data Mining: Concepts and Techniques*, Morgan Kaufmann Publishers, 2011.
2. Dunham M. *Data Mining: Introductory and Advanced Topics*, Pearson, 2006.

Suggested Practical List : (30 Hours)

Practical exercises such as

Use a dataset of your choice from Open Data Portal (https:// data.gov.in/, UCI repository or a dataset verified by the teacher) or load from scikit, seaborn library for the following exercises to practice the concepts learnt.

1. Apply Partitioning Methods, Hierarchical Methods, Density-Based Methods for clustering on a data set and compare the performance of the obtained results using different metrics.
2. Create an ensemble using Random Forest and show the impact of bagging and boosting on the performance.

3. Apply different outlier-detection methods on a noisy dataset and compare their effectiveness in terms of outliers reported.
4. Compute similarity between two documents after required document preparation.
5. Considering a time-stamped data (sales data/weather data), compare the aggregate values visually using different moving windows function.
6. Write a program to find the latent topics in a document using any topic modeling method and display top 5 terms that contribute to each topic along with their strength. Also, visualize the distribution of terms contributing to the topics.

Project: Students are encouraged to work on a good dataset in consultation with their faculty and apply the concepts learned in the course.

DISCIPLINE SPECIFIC ELECTIVE COURSE: Data Privacy

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Data Privacy	**4**	**3**	**0**	**1**	Pass in Class XII	NIL

Learning Objectives

This course aims to provide students with an ability to identify privacy related aspects of data uses(including attacks on data privacy), evaluate proposed mechanisms for privacy protection and relate to ethical issues related to data privacy.

On successful completion of the course, students will be able to:

- Understand the basic principles of data privacy and the implications of data breaches.
- Identify and evaluate different methods of protecting sensitive data.
- Explain the role of privacy regulations in safeguarding personal information.
- Implement basic cryptographic techniques to secure data.
- Apply data anonymization techniques to protect personal information.
- Analyze the ethical considerations in data privacy

SYLLABUS OF DSE

Unit 1 (10 hours)

Introduction to Data Privacy and Privacy Regulations: Notion of data privacy, Historical context of data privacy, Types of sensitive data, Privacy laws and regulations.

Unit 2 (15 hours)

Data Privacy Attacks, Cryptography and Data Protection: Type of Attacks/ Data Breaches on Data Privacy, Impact of Data Breaches / Attacks, Introduction to cryptography, Symmetric and asymmetric encryption, Hashing and digital signatures.

Unit 3 (10 hours)

Data Collection, Use and Reuse: Harms Associated with Data collections, use and reuse, Introduction to data anonymization, Data Anonymization Techniques for anonymizing data, Challenges in anonymizing data

Unit 4 (10 hours)

Ethical considerations in Data Privacy: Privacy and Surveillance, Ethics of Data Collection and Use, Bias and discrimination in data analysis

Essential/recommended readings

1. Ronald Leenes, Rosamunde van Brakel, and Serge Gutwirth: *Data Protection and Privacy: The Age of Intelligent Machines*, Hart Publishing, 2017.
2. Naavi: *Personal Data Protection Act of India (PDPA 2020)*: Be Aware, Be Ready and Be Compliant, Notion Press, 2020.
3. Ravinder Kumar Gaurav Goyal, *The Right to Privacy in India: Concept and Evolution*, Publisher: Lightning Source, 2016.

Additional References

1. https://onlinecourses.nptel.ac.in/noc22_cs37/preview
2. https://www.coursera.org/learn/northeastern-data-privacy/home/info

Suggested Practical List : (30 Hours)

Practical exercises such as

1. Data Privacy Audit: Students can conduct a data privacy audit of a company or organization to identify potential vulnerabilities and risks in their data privacy practices.

2. Privacy Impact Assessment: Students can conduct a privacy impact assessment (PIA) of a new technology or system to identify potential privacy risks and develop strategies to mitigate them.
3. Regulation Compliance: Students can explore the requirements of the Data Protection Regulations and develop a plan for ensuring compliance with the regulation.
4. Cryptography: Students can learn about different cryptographic techniques and tools, such as encryption, hashing, and digital signatures, and implement them in practice.
5. Anonymization Techniques: Students can learn about data anonymization techniques, such as k-anonymity, differential privacy, and data masking, and apply them to a real-world dataset.
6. Privacy Policy Analysis: Students can analyze the privacy policies of different companies and identify gaps or areas for improvement.
7. Privacy-Enhancing Technologies: Students can explore privacy-enhancing technologies (PETs), such as virtual private networks (VPNs), Tor, and secure messaging apps, and evaluate their effectiveness in protecting privacy.
8. Privacy Breach Response Plan: Students can develop a privacy breach response plan for a company or organization, including steps to take in the event of a data breach and strategies for communicating with affected parties.
9. Ethical Considerations: Students can explore ethical considerations in data privacy, such as the balance between privacy and security, the impact of data collection and analysis on marginalized communities, and the role of data ethics in technology development.
10. Case Studies: Students can analyze case studies of privacy breaches or successful privacy protection strategies, and identify key lessons and takeaways.

DISCIPLINE SPECIFIC ELECTIVE COURSE: Unix Network Programming

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	
		Lecture	Tutorial	Practical/ Practice		
Unix Network Programming	**4**	**3**	**0**	**1**	Pass in Class XII	DSC 04 Object Oriented Programming with C++/ GE 1a Programming using C++ / GE1b Programming with Python/ DSC 01 Programming using Python/ GE 3b: Java Programming

Learning Objectives

This course introduces the concepts of Internet protocols, ports used during communication, Client/Server concepts and various transport protocols used in computer network applications and services. The objective is to equip the students with technical knowledge of it comprises of the study of the sockets used with TCP and UDP.

Learning outcomes

On successful completion of the course, students will be able to:

- Describe and analyze the various Internet Transport layer protocols used in TCP AND UDP.
- Comprehend the concepts and structures of both TCP based connection-oriented and UDP based connectionless client server applications.
- Write various real-life client-server applications using socket programming.
- Modify, maintain and extend the present internet client-server applications and write any new type of internet applications to suit the current needs of Internet users.

SYLLABUS OF DSE

Unit 1 (6 hours)

Introduction Basics of Client Server applications, Example of day time client server, concurrent servers, protocols, sockets, port numbers.

Unit 2 (17 hours)

Connection-oriented Socket Applications: Elementary TCP sockets – Socket, connect, bind, listen, accept, fork and exec function, close function, Socket Address Structures, Byte Ordering and Manipulation Functions, TCP Client and Server for Echo, Signal Handling in case of crashing and rebooting of server, Shutdown process function. Socket Options: Getsockopt and stockpot functions, Socket states, Generic socket option.

Unit 3 (15 hours)

Connectionless Socket Applications: TCP-oriented basic concurrent client server applications, UDP oriented Echo client and server application, Handling of errors like lost datagram, Lack of flow control with UDP, determining outgoing interface with UDP.

Unit 4 (7 hours)

Elementary name and Address conversions: Domain Name System, socket functions like gethostbyname, gethostbyname2, gethostbyaddr function, uname function, gethostname function, getservbyname and getservbyport functions.

Essential/recommended readings

1. W. Richard Stevens, Bill Fenner, Andrew M. Rudoff, *Unix Network Programming*, The sockets Networking API, Vol. 1, 3rd Edition, PHI.
2. B. A. Forouzan: *Data Communications and Networking*, THM Publishing Company Ltd
3. R. Stevens, *Unix Network Programming*, PHI 2nd Edition

Suggested Practical List : (30 Hours)

Practical exercises such as

1. Implement TCP Echo client and TCP Echo server (Iterative).
2. Implement TCP Echo client and TCP Echo server (Concurrent).
3. Implement TCP daytime client and TCP daytime server (Iterative).
4. Implement TCP daytime client and TCP daytime server (concurrent).
5. Implement UDP Echo Client and UDP Echo Server.
6. Implement UDP daytime Client and UDP daytime server.
7. Implement TCP client and server (concurrent) where client gets input from the user and sends it to server. Server displays it on the screen. Server then gets another input from the user and sends it to client. Client displays it on the screen. The process continues till server or client sends “bye” to the other party.
8. Implement TCP client and server (concurrent) where client requests server to transfer a file. Assume file is smaller than 1K size. If the file is present on the server, it is sent to the client otherwise an error message is sent to client. Client copies the file on the hard disk and disconnects.
9. Implement UDP client and UDP server where server displays the IP address and port number of the client sending the datagram. Client sends a datagram (size 64 bytes) three times to the same server. Server sends the message back to client. Client reports the time elapsed in sending and receiving of the message. Use connected UDP sockets.
10. Write a program to
    a) display name of the host
    b) all IP addresses of the host.
    c) Check whether FTP and HTTP services are running on the system.
    d) Display the name of the service running on port number specified by user.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

(For all the Generic Elective courses offered by your department, please put it in the format provided below)

GENERIC ELECTIVES (GE-5a): Operating Systems

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
GE-5a Operating Systems	**4**	**3**	**0**	**1**	Pass in Class XII	Knowledge of Programming in C/C++/Java/Python at class XII level or above

Learning Objectives

The course introduces Operating System and its importance in computer systems. The focus is to explain the common services provided by an operating system like process management, memory (primary, secondary & virtual) management, I/O management, file management. The course talks about the various functional components of the operating and their design.

Learning outcomes

On successful completion of the course, students will be able to gain knowledge of different concepts of the operating System and its components. They would learn about shell scripts and would be able to use the system in an efficient manner.

SYLLABUS OF GE-5a

Unit 1 (5 hours)

Introduction: Operating Systems (OS) definition and its purpose, Multiprogrammed and Time-Sharing Systems, OS Structure, OS Operations: Dual and Multi-mode, OS as resource manager.

Unit 2 (6 hours)

Operating System Structures: OS Services, System Calls: Process Control, File Management, Device Management, and Information Maintenance, Inter-process Communication, and Protection, System programs, OS structure- Simple, Layered, Microkernel, and Modular.

Unit 3 (10 hours)

Process Management: Process Concept, States. Process Control Block, Context Switch, Process scheduling, Schedulers, Overview of threads and Scheduling Algorithms: First Come First Served, Shortest-Job-First, Priority & Round-Robin.

Unit 4 (10 hours)

Memory Management: Physical and Logical address space, Swapping Contiguous memory allocation strategies - fixed and variable partitions, Segmentation, Paging, virtual memory: Demand Paging.

Unit 5 (8 hours)

File and Input / Output Device Management: File Concepts, File Attributes, File Access Methods, Directory Structure: Single-Level, Two-Level, Tree-Structured, and Acyclic-Graph Directories, Magnetic Disks, Solid-State Disks, Magnetic Tapes.

Unit 6 (6 hours)

Shell Scripting: Shell variables, parameter passing conditional statements, iterative statements, writing and executing shell scripts, utility programs (cut, paste, grep, echo, pipe, filter etc.)

Essential/recommended readings

1. Galvin, S. P. B., Gagne, G., *Operating System Concepts*, 9th edition, John Wiley Publications, 2016.
2. G. Nutt, Operating Systems, Pearson, 2009

Additional References

1. Dhamdhere, D. M., *Operating Systems: A Concept-based Approach,* 2nd edition, Tata McGraw-Hill Education, 2017.
2. Kernighan, B. W., Pike, R., *The Unix Programming Environment*, Englewood Cliffs, NJ: Prentice-Hall, 1984.
3. Stallings, W., *Operating Systems: Internals and Design Principles*, 9th edition, Pearson Education, 2018.
4. Tanenbaum, A. S., *Modern Operating Systems.* 3rd edition. Pearson Education, 2007.

Suggested Practical List : (30 Hours)

Practical exercises such as

1. Usage of following commands: ls, pwd, cat, who, rm, mkdir, rmdir,cd.

2. Usage of following commands: cal, cat(append), cat(concatenate), mv, cp, man, date.
3. Usage of following commands: chmod, grep, bc.
4. Write a shell script to display date in the mm/dd/yy format.
5. Write a shell script to display the multiplication table any number.
6. Write a shell script to find the factorial of a given number.
7. Program to show the pyramid of special character "*".
8. Write a shell script to find the sum of digits of a given number.
9. Write a shell script to perform the tasks of basic calculator.
10. Write a shell script to find the power of a given number.
11. Write a shell script to check whether the number is Armstrong or not.
12. Write a shell script to find the GCD (greatest common divisor) of two numbers.
13. Write a shell script to check if the number entered at the command line is prime or not.
14. Write a shell script to display on the screen sorted output of "who" command along with the total number of users.
15. Write a shell script to accept a login name. If not a valid login name display message – "Entered login name is invalid".
16. Write a shell script to compare two files and if found equal asks the user to delete the duplicate file.
17. Write a shell script to merge the contents of three files, sort the contents and then display them page by page.
18. Write a shell script to check whether the file have all the permissions or not.
19. Write a shell script to modify "cal" command to display calendars of the specified months.
20. Write a shell script to modify "cal" command to display calendars of the specified range of months.

GENERIC ELECTIVES (GE-5b): Advanced Web Programming

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
GE5b: Advanced Web Programming	**4**	**3**	**0**	**1**	Pass in Class XII	Knowledge of HTML, CSS

Learning Objectives

The course aims to familiarize the students with the concepts and techniques of server side web programming. This will enable the students to create dynamically generated web pages using HTML, PHP, MySql and JQuery.

Learning outcomes

On completion of this course, the student will be able to:

- develop interactive and dynamic websites.
- write programs to communicate with the server using GET and POST methods
- learn to connect and manipulate databases using MySql
- validate server-side/backend data

SYLLABUS OF GE-5b

Unit 1 (7 hours)

Introduction to PHP: Basic syntax, defining variables and constants, data types including arrays, operators and expressions, decision making statements, constructs for iterations.

Unit 2 (5 hours)

String Handling: Creating a string and accessing its content, searching and replacing content of a string, and other built-in functions.

Unit 3 (12 hours)

Handling HTML Form with PHP: Creating a form, submitting data to the server at the backend using GET and POST methods, GET vs POST methods, PHP global functions.

Unit 4 (15 hours)

Database: Connectivity with MySQL: Connectivity with database, database creation, creating tables, create, retrieve, update, and delete (CRUD) operations

Unit 5 (6 hours)

jQuery and JSON: Introduction to jQuery syntax (selectors, events, AJAX, JSON).

Essential/recommended readings

1. Nixon, R. Learning PHP, MySQL & JavaScript with jQuery, CSS and HTML5, O'Reilly, 2018.
2. Holzner S. PHP: The Complete Reference, McGraw Hill, 2017
3. Murach J, Murach's PHP and MySQL, 2nd edition, Mike Murach & Associates, 2014.
4. Duckett, J. JavaScript and JQuery: Interactive Front-End Web Development, Wiley, 2014.

Additional References

1. https://www.w3schools.com/php/default.asp

2. https://www.tutorialspoint.com/php/index.htm

Suggested Practical List : (30 Hours)

Practical exercises such as

1. Write a PHP script to reverse the digits of a number.
2. Create a web page containing two text boxes and a button named "Evaluate". When the user enters numbers in the text boxes and clicks on the "Evaluate" button, a function should evaluate the sum of the numbers and display the result.
3. Write a PHP script to perform following string operations using in-built functions and built an interactive web page having buttons for each of the following operation:
    a. Find the length of a string
    b. Find a substring from a string
    c. Replace text within a string
    d. Remove whitespace and other predefined characters from both sides of a string.
    e. Check if a value is a string
    f. Convert the first character of each word in a string into uppercase.
4. Design a Login form and validate that form using PHP code. Display error message box when data is not valid otherwise redirect to the next page and display "Welcome username!".
5. Design a student registration form, using appropriate input fields consisting of following:
    a. First Name
    b. Last Name
    c. Gender
    d. Roll Number
    e. Phone Number
    f. Course

Submit and retrieve the form data using $_POST, $_GET variable.

6. Write PHP Code to make connection to MySql database, create database and tables and perform insertion, deletion, and retrieval of the data (Using SQL operations like .JOIN, ORDER BY, GROUP BY) Display the messages such as "The record is added in the database!" when data is inserted into the database, "A record is deleted from the database" when data is deleted from the database. Use appropriate button names such as Add Data, Delete Data, and Display Data.

jQuery and JSON

1. Change text color and contents using button click events using jQuery
2. Select elements using ID, class, elements name, attribute name
3. Run code on click events in jQuery

4. Handle HTML form, store the data in JSON object, pass them to another page and display it there using jQuery/Javascript

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
GE5c: Java Based Web App Development	**4**	**3**	**0**	**1**	Pass in Class XII	DSC 04 Object Oriented Programming with C++/ GE 1a Programming using C++ / GE1b Programming with Python/ DSC 01 Programming using Python/ GE 3b: Java Programming / A programming course at class XII level

Learning Objectives

The course aims to familiarize the students with the concepts and techniques of web app development based on Java. The students will learn about database connectivity, use of HTTP protocol, client side programming, and use of servlets and JSP for server side programming.

Learning outcomes

On successful completion of this course, students will be able to:

- develop an understand of client-server architecture, HTTP protocol, and web application components.
- connect an application to database and perform basic database operations.
- create servlets and JSP for web applications
- deploy web applications

SYLLABUS OF GE-5c

Unit 1 (8 hours)

Review of Programming Language: Programming Constructs, Data types, Operators, Concepts of Class, Interface, Inheritance, Exception Handling, Util package, Multithreading, event handling.

Unit 2 (10 hours)

Java Database Connections: Database connectivity, Connection, statement, result set object, Metadata, Connection pooling, CRUD operations, Prepared and callable statements

Unit 3 (15 hours)

Introduction to servlets: Concepts of Streams, events and listener, recap of HTML, CSS, XML, Servlet package and interface, life cycle of servlet, deployment descriptor, Filters, HHTP and Generic servlet, request dispatcher, Request Response classes, Dynamic page designing using servlet.

Unit 4 (12 hours)

Introduction to JSP: JSP Life cycle, tags in JSP, custom tags, Expression Language, Introduction to Struts Framework, Implicit objects, database access using JSP

Essential/recommended readings

1. Herbert Schildt, *Java : The Complete Reference***,** 12th edition, McGraw-Hill Education, 2021.
2. Hans Bergsten, *Java Server Pages*, 3rd edition, O′Reilly, 2003.
3. Jim Keogh, *The Complete Reference J2EE*, 1st edition, McGraw-Hill Education, 2017.

Suggested Practical List : (30 Hours)

Practical exercises such as

1. Setting up the development environment: Install Java Development Kit (JDK), Eclipse IDE, and Apache Tomcat web server. Create a new web project in Eclipse.
2. Writing and deploying a "Hello World" servlet: Create a simple servlet that prints "Hello World" on the web page. Deploy the servlet on Tomcat and test it in a web browser.
3. Handling HTTP requests and responses: Write a servlet that reads input from HTTP requests and sends output as HTTP responses.
4. Creating a JSP page: Create a JSP page that displays dynamic.
5. Write a servlet that handles form submissions and saves the data to a database using JDBC.
6. Write a servlet that implements user authentication and authorization using a database.
7. Creating a web application using MVC architecture: Create a web application using Model-View-Controller (MVC) architecture. Use servlets as controllers, JSP pages as views.
8. Deploying a web application to a server: Configure and deploy a web application to a server using Apache Tomcat Manager or other deployment tools.

(Computer Science Courses for Undergraduate Programme of study with Computer Science discipline as one of the three Core Disciplines)

DISCIPLINE SPECIFIC CORE COURSE (DSC-5): Database Management Systems

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSC 5: Database Management Systems	**4**	**3**	**0**	**1**	Pass in Class XII	NIL

Learning Objectives

The course introduces the students to the fundamentals of database management system and its applications. Emphasis is given on the popular relational database system. Students will learn about the importance of database structure and its designing using Entity Relationship diagram and formal approach using normalization. Basic concepts of file indexing and transaction processing will be taught. The course would give students hands-on practice of structured query language to create, manipulate and implement a relational database.

Learning outcomes

On successful completion of the course, students will be able to:

- Use relational database management software to create and manipulate the database.
- Create conceptual data models using entity relationship diagrams for modeling real-life situations and map it to corresponding relational database schema.
- Use the concept of functional dependencies to remove redundancy and update anomalies.
- Apply normalization theory to get a normalized database scheme to get anomalies free database.
- Write queries in relational algebra.
- Implement relational databases and formulate queries for data retrieval and data update problems using SQL.
- Learn the importance of index structures and concurrent execution of transactions in database systems.

SYLLABUS OF DSC-5

Unit 1 (5 hours)

Introduction to Database: Database, characteristics of database approach, data models, database management system, three-schema architecture, components of DBMS, data independence, and file system approach vs database system approach.

Unit 2 (6 hours)

Entity Relationship Modeling: Conceptual data modeling - motivation, entities, entity types, attributes, relationships, relationship types, constraints on relationship, Entity Relationship diagram as conceptual data model.

Unit 3 (6 hours)

Relational Data Model: Data anomalies, Relational Data Model - Characteristics of a relation, schema-instance distinction, types of keys, relational integrity constraints. Relational algebra operators like selection, projection, cartesian product, join and write queries using them.

Unit 4 (8 hours)

Structured Query Language (SQL): DDL to create database and tables, table constraints, DML, Querying in SQL to retrieve data from the database, aggregation functions group by and having clauses, generate and query views.

Unit 5 (10 hours)

Database Design: Mapping an Entity Relationship diagram to corresponding relational database scheme, functional dependencies and Normal forms, 1NF, 2NF, and 3NF decompositions and desirable properties of them.

Unit 6 (10 hours)

File indexing and Transaction Processing: Need of file indexes, types of indexes, file organizations, single- and multi-level indexing, concurrent execution of transactions, ACID properties, need of data recovery.

Essential/recommended readings

1. Elmasri, R., Navathe, B. S., *Fundamentals of Database Systems*, 7th edition, Pearson Education, 2016.
2. Murach, J., *Murach's MySQL,* 3th edition, Pearson, 2019.

Additional References

1. Connolly, T. M., Begg, C. E., *Database Systems: A Practical Approach to Design, Implementation, and Management*, 6th edition, Pearson, 2019.
2. Ramakrishnan, R., Gehrke, J., *Database Management Systems*, 3rd edition, McGraw-Hill, 2014.
3. Silberschatz, A., Korth, H.F., Sudarshan S., *Database System Concepts*, 7th edition, McGraw Hill, 2019.

Suggested Practical List : (30 Hours)

Practical exercises such as

Create and use the following student-course database schema for a college to answer the given queries using the standalone SQL editor.

STUDENT	**Roll No**	**StudentName**	**CourseID**	**DOB**
	Char(6)	Varchar(20)	Varchar(10)	Date

COURSE	**CID**	**CourseName**	**Course Type**	**Teacher-in-charge**	**TotalSeats**	**Duration**
	Char(6)	Varchar (20)	Char (8)	Varchar (15)	Unsigned int	Unsigned int

ADMISSION	**Roll No**	**CID**	**DateOfAdmission**
	Char(6)	Char(6)	Date

Here Rollno (ADMISSION) and SID (ADMISSION) are foreign keys. Note that course type may have two values viz. Fulltime and Parttime and a student may enroll in any number of courses

1. Retrieve names of students enrolled in any course.

3. Retrieve students' names starting with letter ‘A’.
4. Retrieve students' details studying in courses ‘computer science’ or ‘chemistry’.
5. Retrieve students’ names whose roll no either starts with ‘X’ or ‘Z’ and ends with ‘9’
6. Find course details with more than N students enrolled where N is to be input by the user
7. Update student table for modifying a student name.
8. Find course names in which more than five students have enrolled
9. Find the name of youngest student enrolled in course ‘BSc(P)CS’
10. Find the name of most popular society (on the basis of enrolled students)
11. Find the name of two popular part time courses (on the basis of enrolled students)
12. Find the student names who are admitted to full time courses only.
13. Find course names in which more than 30 students took admission

14. Find names of all students who took admission to any course and course names in which at least one student has enrolled
15. Find course names such that its teacher-in-charge has a name with 'Gupta' in it and the course is full time.
16. Find the course names in which the number of enrolled students is only 10% of its total seats.
17. Display the vacant seats for each course
18. Increment Total Seats of each course by 10%
19. Add enrollment fees paid ('yes'/'No') field in the enrollment table.
20. Update date of admission of all the courses by 1 year.
21. Create a view to keep track of course names with the total number of students enrolled in it.
22. Count the number of courses with more than 5 students enrolled for each type of course.
23. Add column Mobile number in student table with default value '9999999999'
24. Find the total number of students whose age is > 18 years.
25. Find names of students who are born in 2001 and are admitted to at least one part time course.
26. Count all courses having 'science' in the name and starting with the word 'BSc'.

Students are also encouraged to implement the database given in the textbook and do the related queries.

Computer Science Courses for Undergraduate Programme of study with Computer Science discipline as one of the two Core Disciplines
(For e.g. courses for B.A. Programmes with Computer Science as Major discipline)

Computer Science Major

DISCIPLINE SPECIFIC CORE COURSE (DSC-5): Database Management System

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSC05: Database Management System	**4**	**3**	**0**	**1**	Class XII Passed	NIL

Learning Objectives

The course will give an overview of categories of data models used by database management systems and writing queries in relational algebra. The importance of file indexing and controlled execution of transactions will be taught. The course would give students hands-on practice to write complex queries, nested queries using aggregate functions in SQL and to use basic database administration commands.

Learning outcomes

On successful completion of the course, students will be able to:

- Write queries using relational algebra, a procedural language.
- Use the concept of functional dependencies to remove data anomalies and arrive at normalized database design.
- Understand the data storage system, file organization and need of file indexing.
- Learn the importance of transaction processing and concurrency control.
- Write complex and nested SQL queries, and learn basic database administration commands.
- Acquire information about emerging technologies.

SYLLABUS OF DSC 05

Unit 1 (6 hours)

Data models and Relational Algebra: Categories of data models, types of database users, Relational Algebra Operations from SET Theory, SELECT, PROJECT, JOIN, DIVISION Operations.

Unit 2 (8 hours)

Normalization: Functional dependencies, minimal cover, normalizing database with multiple keys till 3NF, Boyce-Codd Normal Form

Unit 3 (8 hours)

Database Storage and index Structures: Storage of data, file structure, file organization and its types: Sequential, Heap and Indexed, Hash file, need for file Indexing, single- and multi-level indexing.

Unit 4 (8 hours)

Transaction Processing: Concurrent execution of transactions and their handling, ACID properties, need of data recovery and log files.

Unit 5 (8 hours)

Advanced SQL: Nested and complex queries using Inner JOIN, Left JOIN, Right JOIN, Full JOIN, views, Database Administration Commands: COMMIT, ROLLBACK, drop database, control permissions etc.

Unit 6 (7 hours)

Emerging Technology: Distributed Database Concepts, Introduction to emerging technologies like Data Warehousing and OLAP, Data Mining.

Essential/recommended readings

1. Elmasri R. and Navathe B. S. *Fundamentals of Database Systems*, 7th Edition, Pearson Education, 2016.
2. Murach J. *Murach's MySQL,* 3th Edition, Pearson, 2019.

Additional References

1. Silberschatz, A., Korth, H.F., & Sudarshan, S. Database System Concepts, 8th Edition, McGraw Hill, 2019.

2. Ramakrishnan, R. & Gehrke, J. Database Management Systems, 3rd Edition, Tata McGraw Hill Education, 2014.

Suggested Practical List : (30 Hours)

MySQL might be used for practical purposes.

The following concepts must be introduced to the students:

1. Multiple table queries (join on different and same tables)
2. Nested select statements
3. Set manipulation using (any, in, contains, all, not in, not contains, exists, not exists union, intersect, minus, etc.)
4. Categorization using group by... having
5. Arranging using order by

List of sample queries to be done using the above schema.

Create tables with relevant column and integrity constraints and populate the tables with data.

Perform the following queries on the database:

1. Display all the details of all employees working in the company.
2. Display ssn, lname, fname, address of employees who work in department no 7.
3. Retrieve the birthdate and address of the employee whose name is 'Franklin T. Wong' and who is a manager
4. Retrieve the name and salary of every employee working in department ‘Production’
5. Display maximum and minimum salaries of each department
6. Retrieve all employee names whose address is in ‘Bellaire’ and working on at least one project
7. Modify the datatype of hours column to float in works_on table.
8. Retrieve all employees who age is more than 35 years
9. Retrieve all employees in department 5 whose salary is between 50,000 and 60,000(inclusive)
10. Add another column named “Join_Date” in the employee table and “Address” in the department table
11. Retrieve the names of all employees who do not have supervisors
12. Retrieve SSN and department name for all employees
13. Retrieve the name and address of all employees who work for the 'Research' department
14. For every project located in 'Stafford', list the project number, the controlling department number, and the department manager's last name, address, and birthdate

15. For each employee, retrieve the employee's name, and the name of his or her immediate supervisor
16. Retrieve all combinations of Employee Name and Department Name
17. Make a list of all project numbers for projects that involve an employee whose last name is 'Narayan' either as a worker or as a manager of the department that controls the project
18. Increase the salary of all employees working on the 'ProductX' project by 15%. Retrieve employee name and increased salary of these employees
19. Retrieve a list of employees and the project name each works in, ordered by the employee's department, and within each department ordered alphabetically by employee first name
20. Select the names of employees whose salary does not match with salary of any employee in department 10
21. Drop the column "Join_Date" from the employee table
22. Retrieve the name of each employee who has a dependent with the same first name and same sex as the employee
23. Retrieve the employee numbers of all employees who work on project located in Bellaire, Houston, or Stafford.
24. Change the name of existing table DEPT_LOCATIONS to DLOCATIONS
25. Find the sum of the salaries of all employees, the maximum salary, the minimum salary and the average salary for each department. Display with proper headings
26. Find the sum of the salaries and number of employees of the 'Marketing' department, as well as the maximum salary, the minimum salary, and the average salary in this department
27. Select the names of employees whose salary is greater than the average salary of all employees in department 10
28. For each department, retrieve the department number, the number of employees in the department and their average salary
29. For each project, retrieve the project number, the project name, and the number of employees who work on that project for more than 10 hours
30. Change the location and controlling department number for all projects having more than 5 employees to 'Bellaire' and 6 respectively
31. For each department having more than 10 employees, retrieve the department name, number of employees drawing more than 40,000 as salary
32. Display employee names having no dependent in descending order along with their age
33. For each department, find the number of female and number of male employees along with name of manager of that department
34. Find the name and age of youngest employee in each department
35. Change the name of MINIT attribute of an employee table to MNAME using alter command
36. Create a view to keep names of employees and their department names if they are not working on any project
37. Create a view to keep track of all employee names who are working on same projects as that of employee 'Franklin T. Wong'
38. Execute system administrative commands like commit, rollback, granting control permissions, etc.

DISCIPLINE SPECIFIC CORE COURSE (A5): Machine Learning

0CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
A5: Machine Learning	**4**	**3**	**0**	**1**	Pass in Class XII	A1 Programming Fundamentals using Python, A2 Data Visualization using Python

Learning Objectives

The course aims at introducing the basic concepts and techniques of machine learning so that a student can apply machine learning techniques to a problem at hand.

Learning outcomes

On successful completion of the course, students will be able to:

- Differentiate between supervised and unsupervised learning tasks.
- Appreciate the need of preprocessing, feature scaling and feature selection.
- Understand the fundamentals of classification, regression and clustering
- Implement various machine learning algorithms learnt in the course.

SYLLABUS OF A5

Unit 1 (8 hours)

Introduction: Basic definitions and concepts, key elements, supervised and unsupervised learning, introduction to reinforcement learning, applications of ML.

Unit 2 (10 hours)

Preprocessing: Feature scaling, feature selection methods. dimensionality reduction (Principal Component Analysis).

Unit 3 (12 hours)

Regression: Linear regression with one variable, linear regression with multiple variables, gradient descent, over-fitting, regularization. Regression evaluation metrics.

Unit 4 (15 hours)

Classification: Decision trees, Naive Bayes classifier, logistic regression, k-nearest neighbor classifier, perceptron, multilayer perceptron, neural networks, Support Vector Machine (SVM). Classification evaluation metrics.

Essential/recommended readings

1. Mitchell, T.M. *Machine Learning*, McGraw Hill Education, 2017.
2. James, G., Witten. D., Hastie. T., Tibshirani., R. *An Introduction to Statistical Learning with Applications in R*, Springer, 2014.
3. Alpaydin, E. *Introduction to Machine Learning*, MIT press, 2009.

Additional References

1. Flach, P., *Machine Learning: The Art and Science of Algorithms that Make Sense of Data*, Cambridge University Press, 2015.
2. Christopher & Bishop, M., *Pattern Recognition and Machine Learning*, New York: Springer-Verlag, 2016.
3. Sebastian Raschka, *Python Machine Learning,* Packt Publishing Ltd, 2019.

Suggested Practicals List : (30 Hours)

Practical exercise such as

Use Python for practical labs for Machine Learning. Utilize publically available datasets from online repositories like https://data.gov.in/ and https://archive.ics.uci.edu/ml/datasets.php

For evaluation of the regression/classification models, perform experiments as follows:

i. Scale/Normalize the data
ii. Reduce dimension of the data with different feature selection techniques

iv. Perform k-cross-validation on datasets for evaluation

Report the efficacy of the machine learning models as follows:

i. MSE and R^2 score for regression models
ii. Accuracy, TP, TN, FP, TN, error, Recall, Specificity, F1-score, AUC for classification models

For relevant datasets make prediction models for the following

1. Naïve Bayes Classifier
2. Simple Linear Regression multiple linear regression
3. Polynomial Regression
4. Lasso and Ridge Regression
5. Logistic regression
6. Artificial Neural Network
7. *k*-NN classifier
8. Decision tree classification
9. SVM classification
10. K-Means Clustering
11. Hierarchical Clustering

Computer Science Courses for Undergraduate Programme of study with Computer Science discipline as one of the two Core Disciplines
(For e.g. courses for B.A. Programmes with Computer Science as Non-major discipline)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSC05: Database Management System	**4**	**3**	**0**	**1**	Pass in Class XII	NIL

Learning Objectives

The course will give an overview of categories of data models used by database management systems and writing queries in relational algebra. The importance of file indexing and controlled execution of transactions will be taught. The course would give students hands-on practice to write complex queries, nested queries using aggregate functions in SQL and to use basic database administration commands.

Learning outcomes

On successful completion of the course, students will be able to:

- Write queries using relational algebra, a procedural language.
- Use the concept of functional dependencies to remove data anomalies and arrive at normalized database design.
- Understand the data storage system, file organization and need of file indexing.
- Learn the importance of transaction processing and concurrency control.
- Write complex and nested SQL queries, and learn basic database administration commands.
- Acquire information about emerging technologies.

SYLLABUS OF DSC 05

Unit 1 (6 hours)

Data models and Relational Algebra: Categories of data models, types of database users, Relational Algebra Operations from SET Theory, SELECT, PROJECT, JOIN, DIVISION Operations.

Unit 2 (8 hours)

Normalization: Functional dependencies, minimal cover, normalizing database with multiple keys till 3NF, Boyce-Codd Normal Form

Unit 3 (8 hours)

Database Storage and index Structures: Storage of data, file structure, file organization and its types: Sequential, Heap and Indexed, Hash file, need for file Indexing, single- and multi-level indexing.

Unit 4 (8 hours)

Transaction Processing: Concurrent execution of transactions and their handling, ACID properties, need of data recovery and log files.

Unit 5 (8 hours)

Advanced SQL: Nested and complex queries using Inner JOIN, Left JOIN, Right JOIN, Full JOIN, views, Database Administration Commands: COMMIT, ROLLBACK, drop database, control permissions etc.

Unit 6 (7 hours)

Emerging Technology: Distributed Database Concepts, Introduction to emerging technologies like Data Warehousing and OLAP, Data Mining.

Essential/recommended readings

1. Elmasri R. and Navathe B. S. *Fundamentals of Database Systems*, 7th Edition, Pearson Education, 2016.
2. Murach J. *Murach's MySQL,* 3th Edition, Pearson, 2019.

Additional References

1. Silberschatz, A., Korth, H.F., & Sudarshan, S. Database System Concepts, 8th Edition, McGraw Hill, 2019.

Suggested Practical List : (30 Hours)

MySQL might be used for practical purposes.

The following concepts must be introduced to the students:

1. Multiple table queries (join on different and same tables)
2. Nested select statements
3. Set manipulation using (any, in, contains, all, not in, not contains, exists, not exists union, intersect, minus, etc.)
4. Categorization using group by.....having
5. Arranging using order by

List of sample queries to be done using the above schema.

Create tables with relevant column and integrity constraints and populate the tables with data.

Perform the following queries on the database:

1. Display all the details of all employees working in the company.
2. Display ssn, lname, fname, address of employees who work in department no 7.
3. Retrieve the birthdate and address of the employee whose name is 'Franklin T. Wong' and who is a manager
4. Retrieve the name and salary of every employee working in department ‘Production’
5. Display maximum and minimum salaries of each department
6. Retrieve all employee names whose address is in ‘Bellaire’ and working on at least one project
7. Modify the datatype of hours column to float in works_on table.
8. Retrieve all employees who age is more than 35 years
9. Retrieve all employees in department 5 whose salary is between 50,000 and 60,000(inclusive)
10. Add another column named “Join_Date” in the employee table and “Address” in the department table
11. Retrieve the names of all employees who do not have supervisors
12. Retrieve SSN and department name for all employees
13. Retrieve the name and address of all employees who work for the 'Research' department
14. For every project located in 'Stafford', list the project number, the controlling department number, and the department manager's last name, address, and birthdate
15. For each employee, retrieve the employee's name, and the name of his or her immediate supervisor
16. Retrieve all combinations of Employee Name and Department Name
17. Make a list of all project numbers for projects that involve an employee whose last name is 'Narayan’ either as a worker or as a manager of the department that controls the project
18. Increase the salary of all employees working on the 'ProductX' project by 15%. Retrieve employee name and increased salary of these employees
19. Retrieve a list of employees and the project name each works in, ordered by the employee's department, and within each department ordered alphabetically by employee first name

20. Select the names of employees whose salary does not match with salary of any employee in department 10
21. Drop the column “Join_Date” from the employee table
22. Retrieve the name of each employee who has a dependent with the same first name and same sex as the employee
23. Retrieve the employee numbers of all employees who work on project located in Bellaire, Houston, or Stafford.
24. Change the name of existing table DEPT_LOCATIONS to DLOCATIONS
25. Find the sum of the salaries of all employees, the maximum salary, the minimum salary and the average salary for each department. Display with proper headings
26. Find the sum of the salaries and number of employees of the ‘Marketing’ department, as well as the maximum salary, the minimum salary, and the average salary in this department
27. Select the names of employees whose salary is greater than the average salary of all employees in department 10
28. For each department, retrieve the department number, the number of employees in the department and their average salary
29. For each project, retrieve the project number, the project name, and the number of employees who work on that project for more than 10 hours
30. Change the location and controlling department number for all projects having more than 5 employees to ‘Bellaire’ and 6 respectively
31. For each department having more than 10 employees, retrieve the department name, number of employees drawing more than 40,000 as salary
32. Display employee names having no dependent in descending order along with their age
33. For each department, find the number of female and number of male employees along with name of manager of that department
34. Find the name and age of youngest employee in each department
35. Change the name of MINIT attribute of an employee table to MNAME using alter command
36. Create a view to keep names of employees and their department names if they are not working on any project
37. Create a view to keep track of all employee names who are working on same projects as that of employee ‘Franklin T. Wong’
38. Execute system administrative commands like commit, rollback, granting control permissions, etc.

Semester-VI

DEPARTMENT OF COMPUTER SCIENCE

[UG Programme for Bachelor in Computer Science (Honours)]

DISCIPLINE SPECIFIC CORE COURSE – 16 (DSC-16) : Artificial Intelligence

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSC-16 Artificial Intelligence	**4**	**3**	**0**	**1**	Pass in Class XII	DSC 04 Object Oriented Programming with C++/ GE 1a Programming using C++ / GE1b Programming with Python/ DSC 01 Programming using Python/ GE 3b: Java Programming

Learning Objectives

The course objectives of this course are to:

- To introduce basic concepts and techniques of Artificial Intelligence (AI).
- To apply informed search techniques for different applications.
- To learn various knowledge representation techniques and writing Prolog programs.
- To learn about the latest techniques for developing AI systems.

Learning outcomes

On successful completion of this course, students will be able to:

- identify problems that are amenable to solutions by specific AI methods.
- state the utility of different types of AI agents.
- apply different informed search techniques for solving real world problems.
- use knowledge representation techniques for AI systems.

SYLLABUS OF DSC-16

Unit 1 6 Hours

Introduction: Introduction to artificial intelligence, background and applications, Turing test, Weak AI, Strong AI, Narrow AI, Artificial General Intelligence, Super AI, rational agent

approaches to AI, introduction to intelligent agents, their structure, behavior and task environment.

Unit 2 12 Hours

Problem Solving and Searching Techniques: Problem characteristics, production systems, control strategies, breadth-first search, depth-first search, hill climbing and its variations, heuristics search techniques: best-first search, A* algorithm, constraint satisfaction problem, means-end analysis, introduction to game playing, min-max and alpha-beta pruning algorithms.

Unit 3 16 Hours

Knowledge Representation: Propositional logic, First-Order Predicate logic, resolution principle, unification, semantic nets, conceptual dependencies, frames, and scripts, production rules, Introduction to Programming in Logic (PROLOG).

Unit 4 8 Hours

Understanding Natural Languages: Components and steps of communication, the contrast between formal and natural languages in the context of grammar, Chomsky hierarchy of grammars, parsing, and semantics, Parsing Techniques, Context-Free and Transformational Grammars, Recursive and Augmented transition nets.

Unit 5 3 Hours

AI The Present and the Future: Symbolic AI, Data-driven AI and Machine Learning, Introduction to Machine Learning and Deep Learning based AI, some applications of symbolic and data driven AI, Interpretable and Explainable AI, Ethics of AI: benefits and risks of AI.

Essential/recommended readings

1. Russell, Stuart, J. and Norvig, Peter, *Artificial Intelligence - A Modern Approach*, Pearson, 4th edition, 2020..
2. Bratko, Ivan, *Prolog Programming for Artificial Intelligence*, Addison-Wesley, Pearson Education, 4th edition, 2012.
3. Patterson, DAN,W, *Introduction to A.I. and Expert Systems* – PHI, 2007.
4. Clocksin, W., F. and Mellish, *Programming in PROLOG*, 5th edition, Springer, 2003.

Additional references

1. Kaushik, Saroj, *Artificial Intelligence*, Cengage Learning India, 2011.
2. Rich, Elaine and Knight, Kelvin, *Artificial Intelligence*, 3rd edition, Tata McGraw Hill, 2010

Practical List :

Practical exercises such as

1. Write a program in Prolog to implement TowerOfHanoi(N) where N represents the number of disks.
2. Write a program to implement the Hill climbing search algorithm in Prolog.
3. Write a program to implement the Best first search algorithm in Prolog.
4. Write a program to implement A* search algorithm in Prolog.
5. Write a program to implement the min-max search algorithm in Prolog.

6. Write a program to solve the Water-Jug Problem in Prolog.
7. Implement sudoku problem (minimum 9×9 size) using constraint satisfaction in Prolog.
8. Write a Prolog program to implement the family tree and demonstrate the family relationship.
9. Write a Prolog program to implement knowledge representation using frames with appropriate examples.
10. Write a Prolog program to implement conc(L1, L2, L3) where L2 is the list to be appended with L1 to get the resulted list L3.
11. Write a Prolog program to implement reverse(L, R) where List L is original and List R is reversed list.
12. Write a Prolog program to generate a parse tree of a given sentence in English language assuming the grammar required for parsing.
13. Write a Prolog program to recognize context free grammar $a^n b^n$.

DISCIPLINE SPECIFIC CORE COURSE – 17 (DSC-17): Machine Learning

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSC-17 Machine Learning	**4**	**3**	**0**	**1**	Pass in Class XII	DSC01 Programming using Python / A course in Python at plus 2 level

Learning Objectives

The course aims at introducing the basic concepts and techniques of machine learning so that a student can apply machine learning techniques to a problem at hand.

Learning outcomes

On successful completion of the course, students will be able to:

- Differentiate between supervised and unsupervised learning tasks.
- State the need of preprocessing, feature scaling and feature selection.
- Formulate classification, regression and clustering problems as optimization problems
- Implement various machine learning algorithms learnt in the course.

SYLLABUS OF DSC-17

Unit 1 (5 Hours)

Introduction: Basic definitions and concepts, key elements, supervised and unsupervised learning, introduction to reinforcement learning, applications of ML.

Unit 2 (8 Hours)

Preprocessing: Feature scaling, feature selection methods. dimensionality reduction (Principal Component Analysis).

Unit 3 (12 Hours)

Regression: Linear regression with one variable, linear regression with multiple variables, gradient descent, over-fitting, regularization. Regression evaluation metrics.

Unit 4 (12 Hours)

Classification: Decision trees, Naive Bayes classifier, logistic regression, k-nearest neighbor classifier, perceptron, multilayer perceptron, neural networks, back-propagation algorithm, Support Vector Machine (SVM). Classification evaluation metrics.

Unit 5 (8 Hours)

Clustering: Approaches for clustering, distance metrics, K-means clustering, hierarchical clustering.

Essential/recommended readings

1. Mitchell, T.M. *Machine Learning*, McGraw Hill Education, 2017.
2. James, G., Witten. D., Hastie. T., Tibshirani., R. *An Introduction to Statistical Learning with Applications in R*, Springer, 2014.
3. Alpaydin, E. *Introduction to Machine Learning*, MIT press, 2009.

Additional References

1. Flach, P., *Machine Learning: The Art and Science of Algorithms that Make Sense of Data*, Cambridge University Press, 2015.
2. Christopher & Bishop, M., *Pattern Recognition and Machine Learning*, New York: Springer-Verlag, 2016.
3. Sebastian Raschka, *Python Machine Learning,* Packt Publishing Ltd, 2019

Suggested Practical List:

Practical exercises such as

Use Python for practical labs for Machine Learning. Utilize publicly available datasets from online repositories like https://data.gov.in/ and https://archive.ics.uci.edu/ml/datasets.php

For evaluation of the regression/classification models, perform experiments as follows:

- Scale/Normalize the data
- Reduce dimension of the data with different feature selection techniques
- Split datasets into training and test sets and evaluate the decision models
- Perform k-cross-validation on datasets for evaluation

Report the efficacy of the machine learning models as follows:

- MSE and R^2 score for regression models
- Accuracy, TP, TN, FP, TN, error, Recall, Specificity, F1-score, AUC for classification models

For relevant datasets make prediction models for the following

1. Naïve Bayes Classifier
2. Simple Linear Regression multiple linear regression
3. Polynomial Regression
4. Lasso and Ridge Regression
5. Logistic regression
6. Artificial Neural Network
7. *k*-NN classifier
8. Decision tree classification
9. SVM classification
10. K-Means Clustering
11. Hierarchical Clustering

DISCIPLINE SPECIFIC CORE COURSE– 18 (DSC-18): Introduction to Parallel Programming

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSC-18 Introduction to Parallel Programming	**4**	**3**	**0**	**1**	Pass in Class XII	DSC-02 Computer Systems Architecture DSC04 /A course in C/C++ at plus 2 level, DSC-07 Data Structures with C++, DSC-08 Operating Systems

Learning Objectives

The course introduces the students to the basic concepts and techniques of parallel programming. It enables them to design and implement parallel algorithms. The course would give the students hands-on practice to write parallel programs using shared and distributed memory models using OpenMP and Message Passing Interface (MPI).

Learning outcomes

On successful completion of this course, the student will be able to:

- State the need of Parallel algorithms
- Describe architectures for parallel and distributed systems.
- Develop elementary parallel algorithms for shared memory models.
- Develop elementary parallel algorithms for distributed memory models.

SYLLABUS OF DSC-18

Unit 1 (6 Hours)

Introduction to Parallel Computing: Trends in microprocessor architectures, memory system performance, dichotomy of parallel computing platforms, physical organization of parallel platforms, communication costs in parallel machines, SIMD versus MIMD architectures, shared versus distributed memory, PRAM shared-memory model, distributed-memory model.

Unit 2 (15 Hours)

OpenMP programming for shared memory systems: Thread Basics, Controlling Thread and Synchronization Attributes, Multi-thread and multi-tasking, Context Switching, Basic OpenMP thread functions, Shared Memory Consistency Models and the Sequential Consistency Model, Race Conditions, Scoping variables, work-sharing constructs, critical sections, atomic operations, locks, OpenMP tasks, Introduction to tasks, Task queues and task execution, Accessing variables in tasks, Completion of tasks and scoping variables in tasks, Recursive task spawning and pitfalls

Unit 3 (15 Hours)
MPI programming for distributed memory systems: MPI basic communication routines (Introduction to MPI and basic calls, MPI calls to send and receive data, MPI call for broadcasting data, MPI Non-blocking calls, MPI Collectives (MPI Collectives and MPI broadcast, MPI Gathering and scattering collectives, MPI reduction and Alltoall collectives, MPI collectives design), Types of interconnects (Characterization of interconnects, Linear arrays, 2D mesh and torus, cliques)

Unit 4 (9 Hours)
Applications: Matrix-matrix multiply, Odd-Even sorting, distributed histogram, Breadth First search, Dijkstra's algorithm

Essential/recommended readings

1. Grama, A., Gupta, A., Karypis, G., Kumar, V., *Introduction to Parallel Computing*, 2nd edition, Addison-Wesley, 2003.
2. Quinn, M. *Parallel Programming in C with MPI and OpenMP*, 1st Edition, McGraw-Hill, 2017.
3. Revdikar, L., Mittal, A., Sharma, A., Gupta, S., *A Naïve Breadth First Search Approach Incorporating Parallel Processing Technique For Optimal Network Traversal*, International Journal of Advanced Research in Computer and Communication Engineering Vol. 5, Issue 5, May 2016.

Additional References

No additional references mentioned

Suggested Practical List :

Practical exercises such as

1. Implement Matrix-Matrix Multiplication in parallel using OpenMP
2. Implement distributed histogram Sorting in parallel using OpenMP
3. Implement Breadth First Search in parallel using OpenMP
4. Implement Dijkstra's Algorithm in parallel using OpenMP

DISCIPLINE SPECIFIC ELECTIVE COURSES

DISCIPLINE SPECIFIC ELECTIVE COURSE: Social Network Analytics

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Social Network Analytics	**4**	**3**	**0**	**1**	Pass in Class XII	DSC 01 Programming using Python, DSC03 Mathematics for Computing

Learning Objectives

The course introduces basic graph theory and draws distinction between graph as an abstract structure and real-life situation modelled as network. This course aims to expose the students to the strengths and capabilities of network analysis and their applications through the use of open source software.

Learning outcomes

On successful completion of the course, students will be able to :

- Model real life situation as networks
- Identify and apply quantitative network measures to characterize social networks at the local and global level
- Generate synthetic networks that satisfy properties of real world networks
- Discover, analyse and evaluate the intrinsic community structure of networks
- Model an information diffusion process for predictive analysis of networks

SYLLABUS OF DSE

Unit 1 (7 Hours)

Introduction to Social Network Analysis: Graph theory, random walk, degree distribution, mapping of real world situation into networks and applications of social network analysis, types of networks

Unit 2 (10 Hours)

Network Measures: Centrality measures, Page Rank, Hubs and Authority, Assortativity, Transitivity and Reciprocity, Similarity and Structural Equivalence

Unit 3 (10 Hours)

Network Models: Properties of Real-World Networks, Random Network Model, Small World Network Model, Preferential Attachment Model

Unit 4 (10 Hours)

Community Structure in Networks: Types of Communities, Community Detection algorithms and evaluation of communities obtained

Unit 5 (8 Hours)

Information Diffusion in Social Media: Information Cascades, Diffusion of Innovations, Basic Epidemic Models

Essential/recommended readings

1. Chakraborty T. *Social Network Analysis***,** 1st edition, Wiley India Pvt. Ltd., 2021.
2. Zafarani R., Abbasi M. A., Liu H. *Social Media Mining: An Introduction***,** 1st edition, Cambridge University Press, 2014.
3. Barabási A. L. , Pósfai M. *Network Science*, 1st edition, Cambridge University Press, 2016.

Additional References

1. Easley, Kleinberg J. *Networks, Crowds, and Markets: Reasoning About a Highly Connected World***,** 1st edition, Cambridge University Press, 2012.

Suggested Practical List :

Practical exercises such as

Python Packages like igraph, NetworkX, NDlib etc. may be used for programming

1. Plot a weighted directed network such that node size and edge width is proportional to their degree and edge weight respectively
2. Compute and plot degree distribution of a real-world network. Also compute its local and global properties.
3. Generate three networks of 1000 nodes each using Random Network Model, Small World Network Model, Preferential Attachment Model and compare their characteristics.
4. Compute different centrality measures to identify top-N nodes and compare their ranks with those obtained by PageRank method.
5. Apply community detection algorithms on a small real-world network (e.g. Karate club) and compare modularity using bar plot. Also plot the communities revealed with different colors.
6. Simulate diffusion trends for different epidemic models and present results using appropriate visuals.

DISCIPLINE SPECIFIC ELECTIVE COURSE: Computer Graphics

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Computer Graphics	**4**	**3**	**1**	**0**	Pass in Class XII	DSC 03 (Mathematics for Computing - I), DSC 04 Object Oriented Programming with C++/ GE 1a Programming using C++ / GE1b Programming with Python/ DSC 01 Programming using Python/ GE 3b Java Programming

Learning Objectives

This course introduces fundamental concepts of Computer Graphics with focus on modeling, rendering and interaction aspects of computer graphics. The course emphasizes the basic principles needed to design, use and understand computer graphics system.

Learning outcomes

On successful completion of the course, students will be able to:

- Describe Standard raster and vector scan devices as well as Graphical Input and output devices
- Implement algorithms for drawing basic primitives such as line, circle and ellipse.
- Implement algorithms for line clipping, polygon clipping and polygon filling.
- Implement a 3D object representation scheme, carryout 2D and 3D transformation, 3D projections
- Implement visible surface determination algorithms, Illumination models and surface rendering methods
- Implement a simple computer animation algorithm

SYLLABUS OF DSE

Unit 1 (8 Hours)

Introduction: Introduction to Graphics systems, Basic elements of Computer graphics, Applications of computer graphics. Architecture of Raster and Random scan display devices, input/output devices.

Unit 2 (8 Hours)
Drawing and clipping primitives: Raster scan line, circle and ellipse drawing algorithms, Polygon filling, line clipping and polygon clipping algorithms

Unit 3 (12 Hours)
Transformation and Viewing: 2D and 3D Geometric Transformations, 2D and 3D Viewing transformations (Projections- Parallel and Perspective), Vanishing points.

Unit 4 (9 Hours)
Geometric Modeling: Polygon Mesh Representation, Cubic Polynomial curves (Hermite and Bezier).

Unit 5 (8 Hours)
Visible Surface determination and Surface Rendering: Z-buffer algorithm, List-priority algorithm and area subdivision algorithm for visible surface determination. Illumination and shading models, RGB Color model and Basics of Computer Animation.

Essential/recommended readings

1. Hearn, D & Baker, M.P. *Computer Graphics*, 2nd edition, Prentice Hall of India, 2009.
2. Foley, J. D., Dam, A.V, Feiner, S. K., & Hughes, J. F. *Computer Graphics: Principles and Practice in C*, 2nd edition, Pearson education, 2002.
3. Rogers, D. F. *Mathematical Elements for Computer Graphics*, 2nd edition, McGraw Hill Education, 2017.

Additional References

1. Bhattacharya, S. *Computer Graphics*, Oxford University Press, 2018.
2. Marschner, S., & Shirley, P. *Fundamentals of Computer Graphics,* 4th edition CRC Press, 2017.

Suggested Practical List :

Practical exercises such as

1. Write a program to implement Bresenham's line drawing algorithm.
2. Write a program to implement a midpoint circle drawing algorithm.
3. Write a program to clip a line using Cohen and Sutherland line clipping algorithm.
4. Write a program to clip a polygon using Sutherland Hodgeman algorithm.
5. Write a program to fill a polygon using the Scan line fill algorithm.
6. Write a program to apply various 2D transformations on a 2D object (use homogeneous Coordinates).
7. Write a program to apply various 3D transformations on a 3D object and then apply parallel and perspective projection on it.
8. Write a program to draw Hermite /Bezier curve.

DISCIPLINE SPECIFIC ELECTIVE COURSE: Deep Learning

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Deep Learning	**4**	**3**	**0**	**1**	Pass in Class XII	DSC03 Mathematics for Computing - I, DSC17 Machine Learning

Learning Objectives

The objective of this course is to introduce students to deep learning algorithms and their applications in order to solve real problems.

Learning outcomes

On successful completion of this course, the student will be able to:

- Describe the feed-forward and deep networks.
- Design single and multi-layer feed-forward deep networks and tune various hyper-parameters.
- Implement deep neural networks to solve a problem
- Analyze performance of deep networks.
- Use pre-trained models to solve a problem.

SYLLABUS OF DSE

Unit 1 (8 Hours)

Introduction to neural networks: Artificial neurons, perceptron, computational models of neurons, Structure of neural networks, Multilayer feedforward neural networks (MLFFNN), Backpropagation learning, Empirical risk minimization, bias-variance tradeoff, Regularization, output units: linear, softmax , hidden units:tanh, RELU

Unit 2 (8 Hours)

Deep neural networks: Difficulty of training DNNs, Greedy layerwise training, Optimization for training DNN's, Newer optimization methods for neural networks(AdaGrad, RMSProp, Adam), Regularization methods(dropout, drop connect, batch normalization).

Unit 3 (8 Hours)

Convolution neural networks(CNNs): Introduction to CNN - convolution, pooling, Deep CNNs - LeNet, AlexNet. Training CNNs, weights initialization, batch normalization, hyperparameter optimization, Understanding and visualizing CNNs, Using a pre trained convnet

Unit 4 (8 Hours)
Recurrent neural networks (RNNs): Sequence modeling using RNNs, Backpropagation through time, LongShort Term Memory (LSTM), Bidirectional RNN, Bidirectional LSTM
Unit 5 (8 Hours)
Unsupervised deep learning: Autoencoders, Generative Adversarial Networks.

Unit 6 (5 Hours)
Applications: Computer vision, Speech recognition and NLP.

Essential/recommended readings

1. Ian Goodfellow, Yodhua Bengio and Aaron Courville, *Deep Learning,* MIT Press Book**,** 2016.
2. Francois Chollet, *Deep Learning with python***,** *2nd edition*, Meaning Publications Co, 2021.

Additional References

1. Bunduma, N., *Fundamentals of Deep Learning*, 1st edition, O'reilly Books, 2017.
2. Heaton, J., *Deep Learning and Neural Networks*, 1st edition, Heaton Research Inc., 2015.

Suggested Practical List :

Practical exercises such as

The following practicals are to be conducted using Python.

1. Implement a feed-forward neural networks for classifying movie reviews as positive or negative(using IMDB dataset)
2. Implement a deep-neural feed-forward network for estimating the price of house, given real-estate data(Boston Housing Price)
3. Implement a deep-neural network for classifying news wires by topic (Reuters dataset).
4. Implement CNN for classifying MNIST dataset
5. Create a model for time-series forecasting using RNN/LSTM
6. Implement an auto-encoder

DISCIPLINE SPECIFIC ELECTIVE COURSE: Ethical Hacking

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Ethical Hacking	**4**	**3**	**0**	**1**	Pass in Class XII	Any Programming Language at plus 2 level or above

Learning Objectives

The objective of this course is to enable students to be part of such a team that can conduct the security assessment of an organization through the process of ethical hacking. This course will introduce the students, the idea of security assessment of systems and networks under investigation and how to perform them under the legal and ethical framework. Further, this course will outline the importance of various stages of ethical hacking, including but not limited to tasks such as penetration testing, and usage of various tools at each stage.

Learning outcomes

On successful completion of this course, the student will be able to:

- Understand and acknowledge the relevance of legal, ethical, and professional challenges faced by an ethical hacker.
- Apply fundamental principles of system, application, and network security to ethically attack / penetrate the system to uncover the security flaws.
- Perform evaluation of security systems through a systematic ethical hacking process and recommend countermeasures to improve security.
- Understand and use various tools and techniques used in various stages of the ethical hacking process.

SYLLABUS OF DSE

Unit 1 (4 Hours)

Introduction: Overview of information security threats and attack vectors, vulnerability assessment and penetration testing concepts, information security controls, security laws and standards. OWASP.

Unit 2 (6 hours)

Footprinting and Reconnaissance: Introduction to network reconnaissance tools such ipconfig, ifconfig, domain tools, nmap, Wireshark, etc.

Unit 3 (6 hours)

Scanning and Enumeration: Network penetration testing, Password cracking techniques and countermeasures, NetBIOS tools

Unit 4 (6 hours)

Gaining and Maintaining Access: Network level attacks and countermeasures, Metasploit framework, Burp Suite

Unit 5 (6 hours)

Exploitation and Covering Tracks: Privilege escalation, social Engineering**,** identity theft, countermeasures, Covering tracks using attrib command and creating Alternate Data Stream (ADS) in Windows, Erasing evidence from Windows logs, Strategies for maintaining access.

Unit 6 (6 hours)

Advanced stages: Denial of service, Session hijacking, hacking web servers, hacking web applications, sql injection etc.

Unit 7 (6 hours)

NIST Cybersecurity framework and ISO standards: NIST cybersecurity framework, Cyber Kill chain, ISO/IEC 27001 and related standards.

Unit 8 (5 Hours)

Cyber Defense and Reporting: Preparing vulnerability assessment reports, presenting post testing findings, preparing recommendations

Essential/recommended readings

1. Patrick Engbretson, The Basics of Hacking and Penetration Testing, 2nd Edition, Syngress, 2013.
2. Georgia Weidman, Penetration TEsting: A Hands-On Introduction to Hacking, 1st Edition, No Starch Press, 2014.

Additional References

1. Peter Kim, The Hacker Playbook 3: Practical Guide to Penetration Testing, Zaccheus Entertainment, 2018.
2. Jon Erickson, Hacking: The Art of Exploitation, No Starch Press, 2008.
3. Online Resources:
    a. https://www.sans.org/cyberaces/
    b. https://skillsforall.com/
    c. https://www.hackingloops.com/ethical-hacking/

Suggested Practical List

Practical exercises such as

Perform the following activities.

(NOTE: Exercise extra caution while performing these exercises and codes)

1. Perform various Virtual Machine based exercises on https://vulnhub.com/
2. Perform exercises from https://www.hacker101.com/
3. Follow the lessons and activities from https://www.hackingloops.com/ethical-hacking/
4. Activities on Google site for hacking https://google-gruyere.appspot.com/
5. ACtivities on OWASP WebGoat https://github.com/WebGoat/WebGoat

DISCIPLINE SPECIFIC ELECTIVE COURSE: Cloud Computing

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Cloud Computing	**4**	**3**	**0**	**1**	Pass in Class XII	NIL

Learning Objectives

The objective of an undergraduate cloud computing course is to provide students with a comprehensive understanding of cloud computing technologies, services, and applications.

Learning outcomes

On successful completion of this course, the student will be able to:

- Knowledge of the fundamental concepts and principles of cloud computing, including virtualization, scalability, reliability, and security.
- Ability to design, develop, and deploy cloud-based applications using popular cloud platforms and services.
- Familiarity with cloud computing architectures, including Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS).
- Understanding of the economic, legal, and ethical implications of cloud computing, including issues related to data privacy, ownership, and security.
- Ability to evaluate and select cloud-based solutions based on their technical, economic, and business requirements.
- Understanding of the broader societal and environmental impacts of cloud-based services and applications.

SYLLABUS OF DSE

Unit 1

Overview of Computing Paradigm: Recent trends in Computing : Grid Computing, Cluster Computing, Distributed Computing, Utility Computing, Cloud Computing,

Unit 2

Introduction to Cloud Computing: Introduction to Cloud Computing, History of Cloud Computing, Cloud service providers, Benefits and limitations of Cloud Computing,

Unit 3

Cloud Computing Architecture: Comparison with traditional computing architecture (client/server), Services provided at various levels, Service Models- Infrastructure as a Service(IaaS), Platform as a Service(PaaS), Software as a Service(SaaS), How Cloud Computing Works, Deployment Models- Public cloud, Private cloud, Hybrid cloud, Community cloud, Case study of NIST architecture.

Unit 4

Case Studies: Case study of Service model using Google Cloud Platform (GCP), Amazon Web Services (AWS), Microsoft Azure, Eucalyptus.

Unit 5

Cloud Computing Management: Service Level Agreements(SLAs), Billing & Accounting, Comparing Scaling Hardware: Traditional vs. Cloud, Economics of scaling.

Unit 6

Cloud Computing Security: Infrastructure Security- Network level security, Host level security, Application level security, Data security and Storage- Data privacy and security Issues, Jurisdictional issues raised by Data location, Authentication in cloud computing.

Essential/recommended readings

1. Thomas Erl, Ricardo Puttini and Zaigham Mahmood, Cloud Computing: Concepts, Technology and Architecture, Publisher: PHI, 2013.
2. Rajkumar Buyya, James Broberg, and Andrzej Goscinski, Cloud Computing: Principles and Paradigms, Wiley, 2013.
3. Boris Scholl, Trent Swanson, and Peter Jausovec, Cloud Native: Using Containers, Functions, and Data to Build Next-Generation Applications, Publisher : Shroff/O'Reilly, 2019.

Additional References

1. *Cloud Computing Bible,* Barrie Sosinsky*, Wiley-India,* 2010
2. *Cloud Computing: Principles and Paradigms,* Editors: Rajkumar Buyya, James Broberg, Andrzej M. Goscinski*, Wile,* 2011
3. *Cloud Computing: Principles, Systems and Applications, Editors:* Nikos Antonopoulos, Lee Gillam*, Springer,* 2012
4. *Cloud Security: A Comprehensive Guide to Secure Cloud Computing,* Ronald L. Krutz, Russell Dean Vines*, Wiley-India,* 2010

Suggested Practical List:

Practical exercises such as

1. Create virtual machines that access different programs on same platform.
2. Create virtual machines that access different programs on different platforms

3. Working on tools used in cloud computing online:
    a. Storage
    b. Sharing of data
    c. manage your calendar, to-do lists,
    d. a document editing tool
4. Exploring Google cloud
5. Exploring Microsoft cloud
6. Exploring Amazon cloud

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

GENERIC ELECTIVES (GE-6a): Computer Networks

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
GE6a Computer Networks	**4**	**3**	**0**	**1**	Pass in Class XII	DSC 04 Object Oriented Programming with C++/ GE 1a Programming using C++ / GE1b Programming with Python/ DSC 01 Programming using Python/ GE 3b Java Programming

Learning Objectives

The course objectives of this paper are to understand the concepts behind computer networks and data communication. learn the different types of networks, network topologies and their characteristics. learn the working of protocols used at various layers. understand the utility of different networking devices.

Learning outcomes

On successful completion of the course, students will be able to:

- differentiate between various types of computer networks and their topologies.
- understand the difference between the OSI and TCP/IP protocol suit.
- distinguish between different types of network devices and their functions.
- design/implement data link and network layer protocols in a simulated networking environment.

SYLLABUS OF GE-6a

Unit 1

Introduction: Types of computer networks, Internet, Intranet, network topologies (bus, star, ring, mesh, tree, hybrid topologies), network classifications. layered architecture approach, OSI Reference Model, TCP/IP Reference Model. Transmission Modes: simplex, half duplex and full duplex.

Unit 2

Physical Layer: Analog signal, digital signal, the maximum data rate of a channel, transmission media (guided transmission media, wireless transmission, satellite

communication), multiplexing (frequency division multiplexing, time-division multiplexing, wavelength division multiplexing). Guided Media (Wired) (Twisted pair, Coaxial Cable, Fiber Optics. Unguided Media (Radio Waves, Infrared, Micro-wave, Satellite).

Unit 3

Data Link and MAC Layer: Data link layer services, error detection and correction techniques, error recovery protocols (stop and wait, go back n, selective repeat), multiple access protocols with collision detection, MAC addressing, Ethernet, data link layer switching, point-to-point protocol.

Unit 4

Network layer: Networks and Internetworks, virtual circuits and datagrams, addressing, subnetting, Dijkstra Routing algorithm, Distance vector routing, Introduction to Network Layer protocol- (ARP, IPV4, ICMP).

Unit 5

Introduction to Transport and Application Layer: Introduction to Process to process Delivery- (client-server paradigm, connectionless versus connection-oriented service); User Datagram Protocols, TCP/IP protocol, Flow Control. FTP (File Transfer Protocol), SMTP (Simple Mail Transfer Protocol), Telnet (Remote login protocol), WWW (World Wide Web), HTTP (HyperText Transfer Protocol), URL (Uniform Resource Locator).

Essential/recommended readings

1. Tanenbaum, A.S. & Wetherall, D.J., *Computer Networks*, *5th edition*, Pearson Education, 2012.

2. Forouzan, B. A., *Data Communication and Networking*, *4th edition*, McGraw-Hill Education, , 2017.

Additional References

1. Comer, D. E., *Computer Networks and Internet,* 6th edition*,* Pearson Publication, 2015.

2. (ii) Stallings, W., *Data and Computer Communications*, 10th edition, Pearson education India, 2017.

Suggested Practical List :

Practical exercises such as

Introduce students to CISCO Packet Tracer and do the following:

1. To Study basic network command and Network configuration commands.
2. To study and perform PC to PC communication.
3. To create Star topology using Hub and Switch.
4. To create Bus, Ring, Tree, Hybrid, Mesh topologies.
5. Perform an initial Switch configuration.
6. Perform an initial Router configuration.
7. To implement Client Server Network.
8. To implement connection between devices using router.
9. To perform remote desktop sharing within LAN connection.

GENERIC ELECTIVES (GE-6b): Internet Technologies: Web App Design and Development

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
GE6b: Internet Technologies: Web App Design and Development	**4**	**3**	**0**	**1**	Pass in Class XII	NIL

Learning Objectives

The course aims at:

- Develop understanding of Web Development Architecture.
- Using React components in Web applications
- Introduce REST APIs Design
- Understanding of Angular Architecture, data-binding and dependency injection
- Understand form validations and application of templates

Learning outcomes

On successful completion of the course students will be able to

- Develop interfaces for single page applications
- Develop a complete client side solutions using angular js
- Develop a RESTful web services.
- Apply form validations

SYLLABUS OF GE-6b

Unit 1

Introduction to React: Definition of React, React library, React Developer tools, Introduction to ES6, Declaring variables, Arrow Functions, Objects and Arrays, modules, Introduction to AJAX, Functions in AJAX Pure React: Page setup, virtual DOM, React Element, React DOM, Constructing Elements with Data, React Components, DOM Rendering, First React Application using Create React App, React with JSX, React Element as JSX Props, State and Component Tree: Property Validation, Validating Props with createClass, Default Props, ES6 Classes and stateless functional components, React state management, State within the component tree, state vs props, Forms in React

Unit 2

Rest APIs: JSON: Introduction, Syntax, Data Types, Objects, Schema. REST API:

Introduction, WRML, REST API Design, Identifier Design with URIs, Interaction Design with HTTP, Representation Design, Caching, Security.

Unit 3

Angular.js.: Introduction to Angular: Angular architecture; introduction to components, component interaction and styles; templates, interpolation and directives; forms, user input, form validations; data binding and pipes; retrieving data using HTTP; Angular modules

Essential/recommended readings

1. D. Brad, B. Dayley and C. Dayley, *Node. js, MongoDB and Angularjs Web Development: The definitive guide to using the MEAN stack to build web applications*, 2nd edition, Addison-Wesley, 2018.
2. D. Herron, *Node.js Web Development*, 5th edition, Packt Publishing, 2020.
3. A. Banks and E. Porcello, *Learning React: Functional Web Development with React and Redux*, 1st edition, O'Reilly, 2017.
4. M. Masse, *REST API – Design Rulebook*, 1st edition, O'Reilly, 2011.

Additional References

No additional references mentioned.

Suggested Practical List :

Practical exercises such as

1. Angular.js:
a. Build a simple Angular.js application that displays a list of items.
b. Create a form in Angular.js to add new items to the list.
c. Implement filtering and sorting functionality in Angular.js to manipulate the displayed list.
d. Integrate Angular.js with a RESTful API to fetch data and display it in the application.
e. Implement authentication and authorization using Angular.js routing and services.

2. React:
a. Create a basic React component that displays "Hello, World!" on the screen.
b. Build a React application that fetches data from a REST API and renders it in a list.
c. Implement form handling in React to create, update, and delete items from the list.
d. Create a search functionality using React to filter the displayed list based on user input.
e. Implement routing in React to navigate between different pages within the application.

3. REST API:
a. Build a simple REST API using a framework like Node.js and Express.
b. Create endpoints to perform CRUD operations (Create, Read, Update, Delete) on a specific resource (e.g., users, products).
c. Implement authentication and authorization mechanisms using JSON Web Tokens (JWT) to secure the API.
d. Develop endpoints that handle file uploads and downloads.

GENERIC ELECTIVES (GE-6c): Artificial Intelligence

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
GE6c: Artificial Intelligence	**4**	**3**	**0**	**1**	Pass in Class XII	DSC 04 Object Oriented Programming with C++/ GE 1a Programming using C++ / GE1b Programming with Python/ DSC 01 Programming using Python/ GE 3b: Java Programming

Learning Objectives

The course objectives of this course are to:

- To introduce basic concepts and techniques of Artificial Intelligence (AI).
- To apply informed search techniques for different applications.
- To learn various knowledge representation techniques and writing Prolog programs.
- To learn about the latest techniques for developing AI systems.

Learning outcomes

On successful completion of this course, students will be able to:

- identify problems that are amenable to solutions by specific AI methods.
- state the utility of different types of AI agents.
- apply different informed search techniques for solving real world problems.
- use knowledge representation techniques for AI systems.

SYLLABUS OF GE-6c

Unit 1 6 Hours

Introduction: Introduction to artificial intelligence, background and applications, Turing test, Weak AI, Strong AI, Narrow AI, Artificial General Intelligence, Super AI, rational agent approaches to AI, introduction to intelligent agents, their structure, behavior and task environment.

Unit 2 12 Hours

Problem Solving and Searching Techniques: Problem characteristics, production systems, control strategies, breadth-first search, depth-first search, hill climbing and its variations, heuristics search techniques: best-first search, A* algorithm, constraint satisfaction problem, means-end analysis, introduction to game playing, min-max and alpha-beta pruning algorithms.

Unit 3 16 Hours

Knowledge Representation: Propositional logic, First-Order Predicate logic, resolution principle, unification, semantic nets, conceptual dependencies, frames, and scripts, production rules, Introduction to Programming in Logic (PROLOG).

Unit 4 8 Hours

Understanding Natural Languages: Components and steps of communication, the contrast between formal and natural languages in the context of grammar, Chomsky hierarchy of grammars, parsing, and semantics, Parsing Techniques, Context-Free and Transformational Grammars, Recursive and Augmented transition nets.

Unit 5 3 Hours

AI The Present and the Future: Symbolic AI, Data-driven AI and Machine Learning, Introduction to Machine Learning and Deep Learning based AI, some applications of symbolic and data driven AI, Interpretable and Explainable AI, Ethics of AI: benefits and risks of AI.

Essential/recommended readings

1. Russell, Stuart, J. and Norvig, Peter, *Artificial Intelligence - A Modern Approach*, Pearson, 4th edition, 2020..
2. Bratko, Ivan, *Prolog Programming for Artificial Intelligence*, Addison-Wesley, Pearson Education, 4th edition, 2012.
3. Patterson, DAN,W, *Introduction to A.I. and Expert Systems* – PHI, 2007.
4. Clocksin, W., F. and Mellish, *Programming in PROLOG*, 5th edition, Springer, 2003.

Additional references

1. Kaushik, Saroj, *Artificial Intelligence*, Cengage Learning India, 2011.
2. Rich, Elaine and Knight, Kelvin, *Artificial Intelligence*, 3rd edition, Tata McGraw Hill, 2010

Practical List :

Practical exercises such as

14. Write a program in Prolog to implement TowerOfHanoi(N) where N represents the number of disks.
15. Write a program to implement the Hill climbing search algorithm in Prolog.
16. Write a program to implement the Best first search algorithm in Prolog.
17. Write a program to implement A* search algorithm in Prolog.
18. Write a program to implement the min-max search algorithm in Prolog.
19. Write a program to solve the Water-Jug Problem in Prolog.
20. Implement sudoku problem (minimum 9×9 size) using constraint satisfaction in Prolog.
21. Write a Prolog program to implement the family tree and demonstrate the family relationship.
22. Write a Prolog program to implement knowledge representation using frames with appropriate examples.
23. Write a Prolog program to implement conc(L1, L2, L3) where L2 is the list to be appended with L1 to get the resulted list L3.
24. Write a Prolog program to implement reverse(L, R) where List L is original and List R is reversed list.
25. Write a Prolog program to generate a parse tree of a given sentence in English language assuming the grammar required for parsing.
26. Write a Prolog program to recognize context free grammar $a^n b^n$.

(Computer Science Courses for Undergraduate Programme of study with Computer Science discipline as one of the three Core Disciplines)

DISCIPLINE SPECIFIC CORE COURSE (DSC06): Computer Networks

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSC06: Computer Networks	**4**	**3**	**0**	**1**	Pass in Class XII	DSC 04 Object Oriented Programming with C++/ GE 1a Programming using C++ / GE1b Programming with Python/ DSC 01 Programming using Python/ GE 3b: Java Programming

Learning Objectives
The course objectives of this paper are to:

- Understand the concepts behind computer networks and data communication.
- Learn the different types of networks, network topologies and their characteristics.
- Learn the working of protocols used at various layers.
- Understand the utility of different networking devices.

Learning outcomes

Upon successful completion of the course, students will be able to:

- differentiate between various types of computer networks and their topologies.
- understand the difference between the OSI and TCP/IP protocol suit.
- distinguish between different types of network devices and their functions.
- design/implement data link and network layer protocols in a simulated networking environment.

SYLLABUS OF DSC06

Unit 1 (8 hours)
Introduction: Types of computer networks, Internet, Intranet, network topologies (bus, star, ring, mesh, tree, hybrid topologies), network classifications. layered architecture approach,

OSI Reference Model, TCP/IP Reference Model. Transmission Modes: simplex, half duplex and full duplex.

Unit 2 (9 hours)
Physical Layer: Analog signal, digital signal, the maximum data rate of a channel, transmission media (guided transmission media, wireless transmission, satellite communication), multiplexing (frequency division multiplexing, time-division multiplexing, wavelength division multiplexing). Guided Media (Wired) (Twisted pair, Coaxial Cable, Fiber Optics. Unguided Media (Radio Waves, Infrared, Micro-wave, Satellite).

Unit 3 (10 hours)
Data Link and MAC Layer: Data link layer services, error detection and correction techniques, error recovery protocols (stop and wait, go back n, selective repeat), multiple access protocols with collision detection, MAC addressing, Ethernet, data link layer switching, point-to-point protocol.

Unit 4 (8 hours)
Network layer: Networks and Internetworks, virtual circuits and datagrams, addressing, subnetting, Dijkstra Routing algorithm, Distance vector routing, Network Layer protocol- (ARP, IPV4, ICMP).

Unit 5 (10 hours)
Transport and Application Layer: Process to process Delivery- (client-server paradigm, connectionless versus connection-oriented service); User Datagram Protocols, TCP/IP protocol, Flow Control. FTP (File Transfer Protocol), SMTP (Simple Mail Transfer Protocol), Telnet (Remote login protocol), WWW (World Wide Web), HTTP (HyperText Transfer Protocol), URL (Uniform Resource Locator).

Essential/recommended readings

1. Tanenbaum, A.S. & Wethrall, D.J.. *Computer Networks*, 5th edition, Pearson Education, 2012.

2. Forouzan, B. A.. *Data Communication and Networking*, 4th edition, McGraw-Hill Education, 2017.

Additional References

1. Comer, D. E.. *Computer Networks and Internet,* 6th edition*,* Pearson education, 2015.

2. Stallings, W., *Data and Computer Communications,* 10th edition, Pearson education India, 2017.

Suggested Practical List :

Practical exercises such as

Introduce students to any network simulator tool and do the following:

1. To Study basic network command and Network configuration commands.
2. To study and perform PC to PC communication.

3. To create Star topology using Hub and Switch.
4. To create Bus, Ring, Tree, Hybrid, Mesh topologies.
5. Perform an initial Switch configuration.
6. Perform an initial Router configuration.
7. To implement Client Server Network.
8. To implement connection between devices using router.
9. To perform remote desktop sharing within LAN connection.

(B.A. Programmes with Computer Science as Major discipline)

Computer Science Major

DISCIPLINE SPECIFIC CORE COURSE (DSC06): Computer Networks

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSC06 Computer Networks	**4**	**3**	**0**	**1**	Pass in Class XII	DSC 04 Object Oriented Programming with C++/ GE 1a Programming using C++ / GE1b Programming with Python/ DSC 01 Programming using Python/ GE 3b: Java Programming

Learning Objectives
The course objectives of this paper are to:

- Understand the concepts behind computer networks and data communication.
- Learn the different types of networks, network topologies and their characteristics.
- Learn the working of protocols used at various layers.
- Understand the utility of different networking devices.

Learning outcomes

Upon successful completion of the course, students will be able to:

- differentiate between various types of computer networks and their topologies.
- understand the difference between the OSI and TCP/IP protocol suit.
- distinguish between different types of network devices and their functions.
- design/implement data link and network layer protocols in a simulated networking environment.

SYLLABUS OF DSC06

Unit 1 (8 hours)
Introduction: Types of computer networks, Internet, Intranet, network topologies (bus, star, ring, mesh, tree, hybrid topologies), network classifications. layered architecture approach,

OSI Reference Model, TCP/IP Reference Model. Transmission Modes: simplex, half duplex and full duplex.

Unit 2 (9 hours)
Physical Layer: Analog signal, digital signal, the maximum data rate of a channel, transmission media (guided transmission media, wireless transmission, satellite communication), multiplexing (frequency division multiplexing, time-division multiplexing, wavelength division multiplexing). Guided Media (Wired) (Twisted pair, Coaxial Cable, Fiber Optics. Unguided Media (Radio Waves, Infrared, Micro-wave, Satellite).

Unit 3 (10 hours)
Data Link and MAC Layer: Data link layer services, error detection and correction techniques, error recovery protocols (stop and wait, go back n, selective repeat), multiple access protocols with collision detection, MAC addressing, Ethernet, data link layer switching, point-to-point protocol.

Unit 4 (8 hours)
Network layer: Networks and Internetworks, virtual circuits and datagrams, addressing, subnetting, Dijkstra Routing algorithm, Distance vector routing, Network Layer protocol- (ARP, IPV4, ICMP).

Unit 5 (10 hours)
Transport and Application Layer: Process to process Delivery- (client-server paradigm, connectionless versus connection-oriented service); User Datagram Protocols, TCP/IP protocol, Flow Control. FTP (File Transfer Protocol), SMTP (Simple Mail Transfer Protocol), Telnet (Remote login protocol), WWW (World Wide Web), HTTP (HyperText Transfer Protocol), URL (Uniform Resource Locator).

Essential/recommended readings

3. Tanenbaum, A.S. & Wethrall, D.J.. *Computer Networks*, 5th edition, Pearson Education, 2012.

4. Forouzan, B. A.. *Data Communication and Networking*, 4th edition, McGraw-Hill Education, 2017.

Additional References

3. Comer, D. E.. *Computer Networks and Internet,* 6th edition*,* Pearson education, 2015.

4. Stallings, W., *Data and Computer Communications,* 10th edition, Pearson education India, 2017.

Suggested Practical List :

Practical exercises such as

Introduce students to any network simulator tool and do the following:

1. To Study basic network command and Network configuration commands.
2. To study and perform PC to PC communication.

3. To create Star topology using Hub and Switch.
4. To create Bus, Ring, Tree, Hybrid, Mesh topologies.
5. Perform an initial Switch configuration.
6. Perform an initial Router configuration.
7. To implement Client Server Network.
8. To implement connection between devices using router.
9. To perform remote desktop sharing within LAN connection.

DISCIPLINE COURSE (A6): Deep Learning

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
A6: Deep Learning	**4**	**3**	**0**	**1**	Pass in Class XII	A5 Machine Learning

Learning Objectives

The objective of this course is to introduce students to deep learning algorithms and their applications in order to solve real problems.

Learning outcomes

On successful completion of this course, the student will be able to:

- Describe the feed-forward and deep networks.
- Design single and multi-layer feed-forward deep networks and tune various hyper-parameters.
- Implement deep neural networks to solve a problem
- Analyze performance of deep networks.
- Use pre-trained models to solve a problem.

SYLLABUS OF A6

Unit 1 (15 hours)
Introduction to neural networks: Artificial neurons, perceptron, computational models of neurons, Structure of neural networks, Multilayer feedforward neural networks (MLFFNN), Backpropagation learning, Empirical risk minimization, bias-variance trade-off, Regularization, output units: linear, softmax, hidden units:tanh, RELU

Unit 2 (15 hours)
Deep neural networks: Difficulty of training DNNs, Greedy layerwise training, Optimization for training DNN's, Newer optimization methods for neural networks (AdaGrad, RMSProp, Adam), Regularization methods (dropout, drop connect, batch normalization).

Unit 3 (15 hours)
Convolution neural networks (CNNs): Introduction to CNN - convolution, pooling, Deep CNNs - LeNet, AlexNet. Training CNNs, weights initialization, batch normalization, hyperparameter optimization, Understanding and visualizing CNNs, Using a pre-trained convnet

References

1. Heaton, J., Deep Learning and Neural Networks, 1st edition, Heaton Research Inc., 2015.
2. Francois Chollet, *Deep Learning with python***,** *2nd edition*, Meaning Publications Co, 2021.

Additional References

(i) Ian Goodfellow, Yodhua Bengio and Aaron Courville, *Deep Learning,* MIT Press Book**,** 2016.

(ii) Bunduma, N., *Fundamentals of Deep Learning*, 1st edition, O'reilly Books, 2017.

Suggested Practical List

The following practicals are to be conducted using Python.

1. Implement a feed-forward neural networks for classifying movie reviews as positive or negative (using IMDB dataset)
2. Implement a deep-neural feed-forward network for estimating the price of house, given real-estate data (Boston Housing Price)
3. Implement a deep-neural network for classifying news wires by topic (Reuters dataset).
4. Implement CNN for classifying MNIST dataset.

Computer Science Courses for Undergraduate Programme of study with Computer Science discipline as one of the two Core Disciplines: non-Major
(For e.g. courses for B.A. Programmes with Computer Science as Non-major discipline)

DISCIPLINE SPECIFIC CORE COURSE (DSC06): Computer Networks

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSC06 Computer Networks	**4**	**3**	**0**	**1**	Pass in Class XII	DSC 04 Object Oriented Programming with C++/ GE 1a Programming using C++ / GE1b Programming with Python/ DSC 01 Programming using Python/ GE 3b: Java Programming

Learning Objectives

The course objectives of this paper are to:

- Understand the concepts behind computer networks and data communication.
- Learn the different types of networks, network topologies and their characteristics.
- Learn the working of protocols used at various layers.
- Understand the utility of different networking devices.

Learning outcomes

Upon successful completion of the course, students will be able to:

- differentiate between various types of computer networks and their topologies.
- understand the difference between the OSI and TCP/IP protocol suit.
- distinguish between different types of network devices and their functions.
- design/implement data link and network layer protocols in a simulated networking environment.

SYLLABUS OF DSC06

Unit 1

Review of: Types of computer networks, Internet, Intranet, network topologies (bus, star, ring, mesh, tree, hybrid topologies), network classifications. layered architecture approach,

OSI Reference Model, TCP/IP Reference Model. Transmission Modes: simplex, half duplex and full duplex.

Unit 2

Physical Layer: Analog signal, digital signal, the maximum data rate of a channel, transmission media (guided transmission media, wireless transmission, satellite communication), multiplexing (frequency division multiplexing, time-division multiplexing, wavelength division multiplexing). Guided Media (Wired) (Twisted pair, Coaxial Cable, Fiber Optics. Unguided Media (Radio Waves, Infrared, Micro-wave, Satellite).

Unit 3

Data Link and MAC Layer: Data link layer services, error detection and correction techniques, error recovery protocols (stop and wait, go back n, selective repeat), multiple access protocols with collision detection, MAC addressing, Ethernet, data link layer switching, point-to-point protocol.

Unit 4

Network layer: Networks and Internetworks, virtual circuits and datagrams, addressing, subnetting, Dijkstra Routing algorithm, Distance vector routing, Network Layer protocol- (ARP, IPV4, ICMP).

Unit 5

Transport and Application Layer: Process to process Delivery- (client-server paradigm, connectionless versus connection-oriented service); User Datagram Protocols, TCP/IP protocol, Flow Control. FTP (File Transfer Protocol), SMTP (Simple Mail Transfer Protocol), Telnet (Remote login protocol), WWW (World Wide Web), HTTP (HyperText Transfer Protocol), URL (Uniform Resource Locator).

Essential/recommended readings

1. Tanenbaum, A.S. & Wethrall, D.J. *Computer Networks*, 5th edition. Pearson Education, 2012

2. Forouzan, B. A. *Data Communication and Networking*, 4th edition. McGraw-Hill Education, 2017

Additional References

1. Comer, D. E. *Computer Networks and Internet,* 6th edition. Pearson Education, 2015.

2. Stallings, W. *Data and Computer Communications,* 10th edition. Pearson education India, 2017.

Suggested Practical List :

1. Simulate Cyclic Redundancy Check (CRC) error detection algorithm for noisy channel.
2. Simulate and implement stop and wait protocol for noisy channel.
3. Simulate and implement go back n sliding window protocol.
4. Simulate and implement selective repeat sliding window protocol.
5. Simulate and implement distance vector routing algorithm.
6. Simulate and implement the Dijkstra algorithm for shortest-path routing.

ANNEXURE-27

Sub: Amendment to Ordinance V

[E.C Resolution No. 14-1/ (14-1-12) and 27-1 (27-1-14) dated 09.06.2023 and 25.08.2023]

Following addition be made to Appendix-II-A to the Ordinance V (2-A) of the Ordinances of the University;

Add the following:

Skill Enhancement Courses (SECs)
Under UGCF-2022
Listed under Appendix-II-A to the Ordinance V (2-A) of the Ordinances of the University
(with effect from Academic Year 2022-23)

A student who pursues any undergraduate programme in the University and its Colleges is offered a pool of Skill Enhancement Courses. A list of such courses as passed by the Executive Council in its meeting dated 09.06.2023 and 25.08.2023 is as below:

1) Plant Tissue Culture
2) Application of Plant Tissue Culture
3) Exploring medicinal plants: from cultivations to applications
4) DNA barcoding of medicinal/ commercially important plants
5) Cultivation of Lac: an eco-friendly multiuse wonder product of nature
6) Lac Characterization and Processing
7) Drosophila and Zebrafish model organism in biological studies
8) Isolation and characterization of Plasmid DNA
9) Isolation, characterization and quality check of Genome DNA
10) Polymerase chain reaction (PCR) and its applications
11) CAD (Computer aided Jewellery Design-I)
12) CAD (Computer aided Jewellery Design-II)
13) CAD (Computer aided Jewellery Design-III)
14) CAD (Computer aided Jewellery Design-IV)
15) Harmonium -II- Study of Harmonium
16) Reading & Writing skills in Brahmi Scripts

17) Acting Skills in Sanskrit Dramaturgy
18) Script writing skills in Sanskrit Dramaturgy
19) Fundamentals of Indian Manuscriptology
20) Traditional Indian Gastronomy
21) E-Learning Tools and Techniques for Sanskrit
22) Practices in Horoscopes -I
23) Basics of Food Science and Nutrition
24) Basic Forensic science
25) Basic Laboratory Techniques
26) Public health, hygiene and nutrition
27) LaTeX Typesetting for Beginners
28) Mathematical Modeling with Excel
29) Financial Modeling with Excel
30) Network Flows
31) R-Shiny: Powerful Web Apps for Everyone
32) Spoken Persian: Elementary level

Plant Tissue Culture

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Plant Tissue Culture	**2**	**NIL**	**NIL**	**2**	**Class XII**	**NIL**

Learning Objectives

The learning objectives of this course are as follows:

- To discuss the principle of Plant Tissue Culture
- To understand the importance of Plant Tissue Culture and its applications
- To impart hands-on training on various aspects of Tissue Culture
- To understand the importance of aseptic culturing techniques
- To equip the learner to effectively utilize the techniques in various areas like basic research, genetic transformation studies, secondary metabolite production, pharmaceuticals etc

Learning Outcomes

By the end of this course, students will

- Get familiarized with aseptic culture techniques
- Be able to prepare stock solutions and media for experimental purposes
- Comprehend different modes of regeneration
- Have understood the micro propagation mechanism and its intricacies.
- Be able to establish a regeneration protocol using different explant material
- Students will be able to appreciate the applications of plant tissue culture in various domains.
- An industrial visit will give them the required exposure for their holistic understanding of the commercial applications and entrepreneurship avenues in this field of plant tissue culture

Skill development and job opportunities

After completion of this course students may be engaged in following opportunities:

- Entrepreneurship development: Students can start their own Tissue culture set-up
- Tissue culture industry: Individuals can work as researchers, technicians and support staff at tissue culture based industries
- Academia: Individuals can pursue higher education and research opportunities in the field of tissue culture and genetic transformation in universities and research institutions.

SYLLABUS 60 hours

Unit 1: Introduction to Plant tissue Culture 8 hours

Introduction to Plant Tissue culture, Terms and definitions, Historical background, laboratory organization: Design and layout for wash area, media preparation, methods of sterilization, transfer area for aseptic manipulations, Culture rooms, and observation/data collection areas.

Practical:

1. Familiarization with the tissue culture laboratory set-up
2. Familiarization with basic equipment in tissue culture techniques- Autoclave, Laminar Air Flow
3. To understand history, theory and principles of plant tissue culture and concept of cellular totipotency.

Unit 2: Tissue Culture Media 12 hours

Introduction, Types of Media and its importance; Preparation of stock solutions of macronutrients, micronutrients, PGRs and vitamins. pH and buffers- their significance in media. Plant Growth Regulators: Role of PGRs (auxins, cytokinins, abscissic acid, ethylene and Gibberellins) in plant development

Practical:

4. Preparation of stock solutions- Macronutrients, Micronutrients and PGRs
5. Preparation of Murashige and Skoogs medium

Unit 3: Aseptic Techniques 12 hours

Methods of sterilization of equipment's, culture media and explants:-Washing and preparation of glassware's, packing and sterilization, media sterilization, surface sterilization. Precautions to maintain aseptic conditions.

Practical:

6. Study of methods of sterilization A) Moist heat sterilization B) Dry heat sterilization C) Filter sterilization
7. Sterilization of MS medium
8. Surface sterilization of Explant Material

Unit 4: Initiation of Cultures 12 hours

Callus Induction and growth parameters, Callus subculture and maintenance, growth measurements, morphogenesis in callus culture – organogenesis, somatic embryogenesis

Practical:

9. Establishment of callus cultures
10. Establishment of suspension cultures from callus
11. Characterization and sub-culturing of Callus cultures

Unit 5: Micropopagation 12 hours

Micropropagation – stages, advantages, applications, Somatic embryogenesis-induction, factors, comparison with zygotic embryogenesis.

Practical:

12. Establishment of cultures using shoot tip and nodal explants (axillary proliferation)
13. Visit to a Tissue Culture Set-up/ Industry

Unit 6: *Agrobacterium*-mediated genetic transformation **4 hours**

Agrobacterium-the natural plant genetic engineer, understanding the Ti plasmid, selection of recombinants by selectable marker and reporter genes (GUS, luciferase, GFP). Applications.

Recommended Books:

1. Bhojwani, S. S., & Razdan, M. K. (1986). *Plant tissue culture: theory and practice*. Elsevier.
2. Razdan, M. K. (2002). *Introduction To Plant Tissue Culture, 2/E*. Oxford and IBH publishing.
3. Gamborg, O., & Phillips, G. C. (Eds.). (2013). *Plant cell, tissue and organ culture: fundamental methods*. Springer Science & Business Media.
4. Taji, A., Dodd, W. A., & Williams, R. R. (1992). *Plant tissue culture practice*. University of New England.
5. Smith, R. H. (2012). Plant tissue culture: techniques and experiments. Academic press.

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

Applications of Plant Tissue Culture

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Applications of Plant Tissue Culture	**2**	**NIL**	**NIL**	**2**	**Class XII**	**NIL**

Learning Objectives

The learning objectives of this course are as follows:

- To discuss the principle of Plant Tissue Culture
- To understand the importance of Plant Tissue Culture and its applications
- To impart hands-on training on various aspects of Tissue Culture
- To understand the importance of aseptic culturing techniques
- To equip the learner to effectively utilize the techniques in various areas like basic research, genetic transformation studies, secondary metabolite production, pharmaceuticals etc

Learning Outcomes

By the end of this course, students will

- Get familiarized with aseptic culture techniques
- Be able to prepare stock solutions and media for experimental purposes
- Have understood the micro propagation mechanism and its intricacies.
- Be able to establish a regeneration protocol using different explant material
- Students will be able to appreciate the applications of plant tissue culture in various domains.
- Able to do mass propagation of true to type and disease free, quality medicinal plants/ornamental plants,/fruit and forest trees through tissue culture

Skill development and job opportunities

After completion of this course students may be engaged in following opportunities:

- Entrepreneurship development: Students can start their own Tissue culture set-up and do mass propagation of true to type and disease free, quality medicinal plants/ornamental plants,/fruit and forest trees through tissue culture
- Tissue culture industry: Individuals can work as researchers, technicians and support staff at tissue culture based industries
- Academia: Individuals can pursue higher education and research opportunities in the field of tissue culture and genetic transformation in universities and research institutions.

SYLLABUS 60 hours

Micropropagation of medicinally/economically important plants **32 hours**

1. Preparation of stock solutions of macronutrients, micronutrients, vitamins, PGRs
2. Preparation of MS medium fortified with the appropriate PGR for explant culture
3. Preparation of the explant material (shoot tips/nodal segments/leaf discs etc.) - excising the material and surface sterilization
4. Culturing of the explant on MS medium
5. Sub-culturing on maintenance medium / rooting medium
6. Acclimatization of the micropropagated plantlets
7. Transfer of plantlets to pots

Anther Culture for production of Adrogenic haploids **28 hours**

8. Identification of unicellular microspore stage of the anther
9. Media Preparation
10. Anther culture (*Datura innoxia)*
11. Complete regeneration of Haploid Plants

Recommended Books:

1. Bhojwani, S. S., & Razdan, M. K. (1986). *Plant tissue culture: theory and practice*. Elsevier.
2. Razdan, M. K. (2002). *Introduction To Plant Tissue Culture, 2/E*. Oxford and IBH publishing.
3. Gamborg, O., & Phillips, G. C. (Eds.). (2013). *Plant cell, tissue and organ culture: fundamental methods*. Springer Science & Business Media.
4. Taji, A., Dodd, W. A., & Williams, R. R. (1992). *Plant tissue culture practice*. University of New England.
5. Smith, R. H. (2012). Plant tissue culture: techniques and experiments. Academic press.

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

Exploring Medicinal Plants: From Cultivation to Applications

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Exploring Medicinal Plants: From Cultivation to Applications	**2**	**0**	**0**	**2**	**Class XII**	**NIL**

Learning Objectives:

The learning objectives of this course are as follows:

- To learn various methods of propagating medicinal plants, such as seed germination, stem cuttings, and division.
- To develop the ability to observe and document macroscopic characteristics of herbal materials.
- To learn the microscopic techniques for examination of plant materials.
- To learn the different methods used in extracting bioactive compounds from medicinal plants and the factors to be considered in choosing the appropriate method.
- To conduct phytochemical screening tests to detect the presence of various compounds in medicinal plant extracts.
- To analyze the separated compounds from medicinal plant extracts using Thin Layer Chromatography (TLC).

Learning Outcomes:

By studying this course, students will be able to:

- acquire knowledge of proper care and maintenance of medicinal plants during cultivation.
- learn to identify and describe variations in size, color, odor, and surface texture among different plant specimens.
- acquire the skills to observe and count stomata, the tiny openings on leaf surfaces.
- perform commonly used phytochemical screening methods such as the alkaloid test, glycoside test, steroid and triterpenoid test, tannin test, flavonoid test, and phenol test and interpret the results
- use Thin Layer Chromatography (TLC) to separate compounds from a medicinal plant extract and analyze the separated compounds.
- evaluate the current research and developments in the field of medicinal plants.

PRACTICAL **(60 hours)**

1. Cultivate and monitor medicinal plants to learn propagation techniques.
2. Conduct macroscopic examination of herbal material based on their size, color, odor, and surface texture.
3. Perform microscopic examination to determine stomatal number and index.
4. Conduct microscopic examination to measure the size of calcium oxalate crystals.
5. Determine the moisture content of crude medicinal plant extract.
6. Determine the alcohol-soluble extractive value of medicinal plant extract.
7. Determine the water-soluble extractive value of medicinal plant extract.
8. Perform solvent extraction of bioactive compounds from medicinal plants.
9. Perform phytochemical screening tests for alkaloids, glycosides, tannins, flavonoids, and phenols.
10. Conduct fractionation and purification using chromatographic technique (TLC) to separate compounds from medicinal plant extracts.
11. Visit industries/institutes and prepare a report based on your observations and learning.

Essential/ Recommended Readings:

1. Harborne J. B. (1998) Phytochemical Methods: A guide to modern techniques for plant analysis. Publisher: Champman and Hall.
2. N. Raaman (2006) Phytochemical Techniques. Publisher: New India Publishing Agency. ISBN: 9788189422301, 8189422308.
3. Joseph Sherma, Monika Waksmundzka-Hajnos, Teresa Kowalska (2008) Thin Layer Chromatography in Phytochemistry. Publisher: CRC Press. ISBN: 9781420046786, 1420046780.
4. Alex Gardner (2014) DIY Herbal Gardening. Publisher: CreateSpace Independent Publishing Platform. ISBN: 9781505672473, 1505672473.
5. L. D. Kapoor (2001) Handbook of Ayurvedic Medicinal Plants. Publisher: Taylor & Francis. ISBN: 9780849329296, 0849329299.

6. Raphael and Ikan (2013) "Natural Products: A Laboratory Guide" by Publisher: Academic Press ISBN 978-0123705518.
7. Nava and Dayan (2011) Formulation, Development and Production of Herbal Personal Care Products. Publisher: John Wiley and Sons Inc. ISBN-10: 047048408X.
8. Sanjay Sharma (2015) Current status of herbal product: Regulatory overview. J Pharm Bioallied Sci. 7(4): 293–296. doi: 10.4103/0975-7406.168030
9. WHO (1998) Quality control methods for medicinal plant materials. WHO Library Cataloguing-in-Publication Data. ISBN 978 92 4 150073 9.

Suggestive Reading:

1. Mohar Singh, Nikhil Malhotra (2021) Himalayan Medicinal Plants: Advances in Botany, Production & Research. Publisher: Elsevier Science, ISBN: 9780128234303, 012823430X.
2. H. S. Puri (2003) Rasayana: Ayurvedic Herbs for Longevity and Rejuvenation (Traditional Herbal Medicines for Modern Times Book 2). Publisher: CRC Press. ISBN-13: 978-0415284899.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DNA barcoding of medicinal/commercially important plants

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DNA barcoding of medicinal/commercially important plants	**2**	**NIL**	**NIL**	**2**	**Class XII**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- To give laboratory based first-hand training in various steps involved in DNA barcoding.
- To gain computational laboratory (Bioinformatics) based hands-on-training for DNA barcoding.
- To understand the importance of medicinal/herbal plants in Ayurveda, Unani, Siddha and Homeopathy and other commercially important plants.
- To gather knowledge of the potential adulterants and their harmful effect in medicinal/herbal/commercially important plant formulations as well as herbal trade.
- To gain experience in the management for identifying herbal plant parts vs their potential adulterants.

Learning Outcomes

By the end of the course, the students will be able to:

- Learn DNA barcoding technology.
- Apply DNA barcoding technique in identification of herbal plant/parts and commercially important plant/parts from their potential adulterants.
- Familiarize with the applications of medicinal/herbal plants in Ayurveda, Unani, Siddha and Homeopathy.
- Identify and understand about potential adulterants of medicinal/herbal plant formulations as well as in herbal trade.

Skill development and job opportunities

After completion of this course students may be

- Employed in various herbal plant-based companies.
- Employed in various trade companies related to medicinal/herbal plants.
- Setup a laboratory for DNA barcoding and provide the DNA barcode for herbal plants/ commercially important plants and generate employments.

SYLLABUS 60 hours

Unit 1: Medicinal/Commercially important plant parts and their potential adulterants. 8 hours

Overview of Medicinal/herbal plants and other commercially important plants and their parts, applications of medicinal plants and plant parts such leaves, bark, flower, roots etc. in Ayurveda, Unani, Siddha and Homeopathy. Adulteration in the herbal formulations and herbal trade, applications of DNA barcoding in distinguishing plants/parts/powder from their potential adulterants.

Experiments:

1. Collection of selected medicinally important plant parts/commercially important plant parts and their potential adulterants for DNA isolation.
2. Visit a herbal garden/industry.

Unit 2: DNA barcoding 36 hours

Overview of DNA barcoding, Plant, chloroplast and mitochondrial genomes and genes, structure of nucleic acids, DNA denaturation and renaturation kinetics, melting temperature (Tm) of DNA, primer designing, potential loci for DNA barcoding, DNA sequencing methods.

Experiments:

3. DNA isolation of selected medicinal plant part and other commercially important plant parts and their potential adulterants using CTAB and other methods.
4. Qualitative analysis of isolated DNA using Gel electrophoresis.
5. Qualitative (A^{260}/A^{280}) and quantitative analysis of DNA using *UV-VIS* Spectrophotometer.
6. PCR amplification of loci for plant DNA barcoding using specific primers.
7. Analysis of PCR product by Gel electrophoresis.
8. PCR amplified product sequencing.

Unit 3: Bioinformatics for DNA barcoding 16 hours

Introduction of biological databases, The Barcode of Life Datasystems (BOLD), Medicinal Materials DNA Barcode Database (MMDBD) https://rdccm.cuhk.edu.hk/mherbsdb/, Primer designing tools, The Basic Local Alignment Search Tool (BLAST) and its application in DNA barcoding, Sequence alignment and construction of tree.

Experiments:

9. Biological databases including DNA barcode databases.
10. Primer designing for DNA barcode using primer 3 plus and other tools.
11. Analysis of DNA barcode sequence using The Basic Local Alignment Search Tool (BLAST).
12. Sequence alignment and construction of tree

Recommended Books:

1. W. John Kress and David L. Erickson (2012) DNA Barcodes: Methods and Protocols. Humana Totowa, NJ. https://doi.org/10.1007/978-1-61779-591-6.

2. Subrata Trivedi, Hasibur Rehman, Shalini Saggu, ChellasamyPanneerselvam, Sankar K. Ghosh (2020) DNA Barcoding and Molecular Phylogeny, Springer Nature Switzerland AG 2020, Springer Cham. https://doi.org/10.1007/978-3-030-50075-7
3. Shaheen, Shabnum/ Ramzan, Sehrish/ Khan, Farah/ Ahmad, Mushtaq (2020) Adulteration in Herbal Drugs: A Burning Issue. ISBN 10: 3030280365, ISBN 13: 9783030280369, Publisher: Springer Nature

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

Cultivation of Lac: An eco-friendly multiuse wonder product of nature

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Cultivation of Lac: An eco-friendly multiuse wonder product of nature	**2**	**1**	**NIL**	**1**	**Class XII**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- Understanding the basic principles and concepts of lac cultivation, such as the life cycle of lac insects, methods of propagation, and cultivation techniques.
- Acquiring knowledge of the different species of lac insects, their characteristics, and their ecological requirements.
- Learning about the various methods of harvesting lac, including timing, collection, and processing techniques.
- Developing practical skills in the management of lac plantations, such as pest and disease control, irrigation, and fertilization.
- Understanding the ecological and environmental impacts of lac cultivation and its sustainability.

Learning Outcomes

By the end of the course, the students will be able to:

- understand the basic principles and concepts of lac cultivation, including the life cycle of lac insects, methods of propagation, and cultivation techniques.
- distinguish the different species of lac insects, their characteristics, and their ecological requirements.
- demonstrate proficiency in the methods of harvesting lac, including timing, collection, and processing techniques.
- apply quality control and assurance measures in lac cultivation.
- attain practical skills in the management of lac plantations, such as pest and disease control, irrigation, and fertilization.
- communicate effectively with stakeholders such as farmers, policymakers, and researchers in the field of lac cultivation.
- analyse and evaluate the challenges and opportunities in lac cultivation and proposing innovative solutions.

Skill development and job opportunities

After completion of this course students may be engaged in following job opportunities:

- Entrepreneurship development: Students can start their own entrepreneurship of scientific lac cultivation.
- Lac cultivation and processing industry: Individuals can work in the lac cultivation and processing industry as plantation managers, quality control supervisors, production supervisors, etc.
- NGOs and development agencies: Individuals can work with NGOs and development agencies to promote sustainable lac cultivation practices and provide technical support to small-scale lac farmers.
- Government agencies: Individuals can work with government agencies involved in the promotion and regulation of the lac cultivation industry.
- Academia: Individuals can pursue higher education and research opportunities in the field of lac cultivation in particular and economically important trans-kingdom interactions in general in universities and research institutions.

SYLLABUS

Unit 1: Lac: Composition and their applications **2 hours**

Historical introduction of lac, Types of lac and its composition, industrial applications of lac viz. resin, dye, wax, various chemicals of lac cultivation, Socioeconomic aspects of lac.

Unit 2: Lac production: multiple partners involved and their role **5 hours**

Major and minor lac host pants, Raising major lac host plantations of *Schleichera oleosa*, *Butea monosperma* and *Ziziphus mauritiana*, Selection of suitable host plant, Raising plantations of bushy lac host taxa namely, *Flemingia* sp. and *Calliandra* sp. for intensive lac cultivation, Pruning management of host plants, Integrated nutrient management of host plants. Morphology and lifecycle of lac insect, Crop cycle on host plant, multiparter interactions involving plant host-lac insect- endosymbiont and their role, implications of endosymbionts in lac production.

Practical: **12 hours**

1. How to select suitable lac host plant
2. Scientific pruning techniques of lac host plants
3. Methods and techniques of nutrient management of host plants
4. Study of morphology and life stages of lac insect
5. Crop cycles of lac on different host plants

Unit 3: Pests and diseases in lac ecosystem and their management **1 hours**

Pests and diseases of lac host plants and lac insects; pest management in lac.

Practical: **4 hours**

6. Identification of lac insect pests and diseases
7. Techniques of pest management in lac

Unit 4: Broodlac and inoculation management **2 hours**

Selection, procurement, storing and transport of brood lac, brood Lac Inoculation Methods and inoculation management.

Practical: **4 hours**

8. Methods of determination of brood lac maturity
9. Scientific Brood Lac Inoculation Methods

Unit 5: Scientific lac production methods **4 hours**

Rangini lac production on *Butea monosperma*, Rangini lac production on *Ziziphus mauritiana*, Kusmi lac production on *Schleichera oleosa*, Winter Kusmi lac production on *Ziziphus mauritiana*, Coupe system of lac cultivation, Utilizing multiple lac hosts through coupe system, Intensive lac production on bushy lac host *Flemingia* sp. and *Calliandra* sp., Lac integrated farming system, Alternation of conventional host for sustainable brood lac quality.

Practical: **8 hours**

10. Designing of coupe system of lac cultivation
11. How to formulate lac integrated farming system
    - Students visit to an Institute/Field and Prepare a report.

Unit 6: Harvesting and post-harvest management of lac **1 hours**

Harvesting of lac, harvest management of lac.

Practical: **2 hours**

12. How to harvest lac and harvesting tools
13. Methods of post-harvest management of lac

Recommended Books:

1. Sharma, K.K. & Ramani, R. (Eds.). (2011). *Recent advances in lac culture*. ICAR-IINRG publications.
2. Mathur, P. N., & Lal, S. B. (1993). *Lac Production, Processing and Marketing*. Indian Council of Agricultural Research.
3. Agarwal, J. P., & Gupta, R. K. (2006). *Lac Culture in India*. Daya Publishing House.
4. Agrawal, K. C., & Bhatnagar, S. K. (2009). *Lac Insect and Lac Culture*. Westville Publishing House.
5. Mattu, V. K., & Mathur, P. C. (2005). *Handbook of Lac Production Technology*. Indian Lac Research Institute.
6. Roy, D., & Dasgupta, P. (Eds.). (2016). *Lac Insect (Kerria lacca) Cultivation*, Processing and Uses. CRC Press.

Examination Scheme and mode: Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

Lac Characterization and Processing

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Lac Characterization and Processing	**2**	**NIL**	**NIL**	**2**	**Class XII**	**NIL**

Learning Objectives

This course's Learning Objectives are as follows:

- To provide first-hand laboratory training in the various steps involved lac processing.
- To gain laboratory experience in characterization of various types of lac.
- To develop skills in isolating lac wax and lac dye.
- To acquire practical laboratory experience characterising these substances.
- To gain the knowledge of industrial applications lac.
- To give students hands-on experience in the lab isolating a high-value product, aleuritic acid.

Learning Outcomes

By the end of this course, students will

- Be familiar with various steps of lac processing.
- Learn how to characterise different kinds of lac in the lab.
- Be trained in separation of lac wax and lac dye.
- Gain hands-on experience in characterising these compounds in the lab.
- Have real-world laboratory experience in separating a valuable compound (aleuritic acid).

Skill development and job opportunities

Students who successfully complete this course may be qualified for the following positions:

- Students can enhance their entrepreneurial skills by starting their own scientific lac processing unit and lac export unit.
- Quality control supervisors, production supervisors, etc. are only few of the jobs available in the lac processing business.
- Students can collaborate with non-governmental organisations (NGOs) and development agencies (DAs) to disseminate information on sustainable lac farming practises and offer assistance to local lac farmers.

- Employment opportunities exist in government entities that promote and regulate the lac sector.

SYLLABUS

Practical **60 hours**

1. Collection of lac stick from the host plants and scrapping of stick lac
2. Primary processing of stick lac to seed lac
3. Processing of stick lac to seed lac
4. Characterization of the seed lac
5. Processing of seed lac to button lac/ shellac
6. Characterization of button lac /shellac
7. Extraction and purification of lac dye
8. Estimation of lac dye content and its characterization
9. Extraction of lac wax and its characterization
10. Isolation of Aleuritic acid from lac, value added lac product.
11. Project: Applications, Industries, Export and Marketing strategies of lac
12. Industry/ Institute Visit and prepare a report.

Recommended Books:

1. Bangali babu and D.N. Goswami (2010) Processing, chemistry and applications of lac. ICAR publication. ISBN 978-81-7164-065-2.
2. Natural material and products from insects: Chemistry and applications (2020) ed. Dhiraj Kumar and Mohammad Shahid. Springer. ISBN 978-3-030-36610-0
3. Y. Sankaranarayanan (1968) Shellac: Modifications and Compositions. Indian Lac Research Institute, Namkum, Rachi, India.

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

SKILL ENHANCEMENT ELECTIVE (SEC) COURSES

Drosophila and Zebrafish model organism in Biological Studies

(CREDITS: PRACTICAL-2)

Course Title & Code	**Credits**	**Credit distribution of the course**			**Eligibility criteria**	**Pre-requisite of the course (if any)**
		Lecture	**Tutorial**	**Practical / Practice**		
Drosophila and Zebrafish model organism in Biological studies	**2**			**2**	12th pass with Biology	NIL

LEARNING OBJECTIVES:

The course will help students to understand the skills required to work with model organisms. To learn the use of model organisms such as Drosophila and Zebrafish in understanding the Biological concepts and processes and its applications in biomedical and Pharma research and industry. The specific objectives of the course are:

- To learn basic requirements for setting up Drosophila and Zebrafish lab.
- To learn to handle, breed and maintain Drosophila and Zebrafish model organism.
- To learn more about biological processes, genetics, drug discovery, toxicology and human diseases using these model organisms.
- To learn to design experiments using these model organisms.

COURSE OUTCOMES

Upon completion of this course students will be skill trained in Drosophila and Zebrafish model system and its applications in Bioscience education, research and Pharmacology and Biotechnology industry.

- Will be able to set up Drosophila and zebrafish lab.
- Will be skilled trained in maintenance of Drosophila stocks and propagation and zebrafish husbandary.

- Have knowledge of designing experiments in genetics, toxicology, behavioural and human disease modelling using these model systems.
- Analyze and interpret the data collected in the laboratory experiments.

Practical (2 credits) **Total 15 weeks**

Total hours: 60

Unit I: Introduction to Drosophila model system (4 weeks)

- Introduction to different model organisms, advantage and disadvantage of using various model organisms, animal ethics.
- Study of life cycle and developmental stages of Drosophila melanogaster
- Male female differentiation
- Study of various mutants
- TLC of eye pigments
- Study of polytene chromosome in Drosophila

Unit II: Mendelian and non Mendelian Genetics (3 weeks)

Drosophila as a model organism to study different principles of genetics

- Collection of virgin fly
- Setting up of crosses in Drosophila
- Scoring of F1 and F2 population, chi-square test

Unit III: Introduction to Zebrafish model system (3 weeks)

Advantages of zebrafish model organism. Basic requirement to set up zebrafish lab. Zebrafish husbandry. Study development stages and developmental phenotypic end points.

- Handling zebrafish, identify male and female zebrafish, and breeding setup.
- To prepare Zebrafish feed and culture Pramecium and Artemia.
- Egg collection and study of developmental stages starting from the zygote - cleavage - blastula - gastrula - segmentation, pharyngula, hatching and early larval development.

Unit IV: Zebrafish as a research and education model (5 weeks)

Importance of zebrafish as a versatile research and education model. Genetic and morphological homology with humans.

- Query based experimental design using zebrafish model system.
- Perform Toxicological assays.
- Perform Behavioral assays.
- Create Human disease models in zebrafish
- Use of transgenic reporter lines.

Essential Reading

- Lakhotia S. C. and Ranganath H. A. (2021) Experiments with Drosophila for Biology Courses, Indian Academy of Sciences, Bengaluru, India, ISBN: 978-81-950664-2-1
- Sunita Joshi, S. and Dhamija, N. (2016) Rediscovering Genetics, IK International, 1st edition, ISBN: 9789384588984
- Westerfield, M. (2000). The Zebrafish book. A guide for laboratory use of Zebrafish (Danio rerio). 4th ed., Univ. of Oregon Press, Eugene. USA
- Mudgal, P., Bhasin, C., Joshi A., Gupta, R. (2021) Zebrafish, a versatile learning tool. Resonance: Journal of science education, 26(11), 1499-1521

Suggested Readings

- Kimmel, C.B., Ballard, W.W., Kimmel, S.R., Ullmann, B. and Schilling, T.F. (1995), Stages of embryonic development of the zebrafish. Dev. Dyn., 203: 253-310. https://doi.org/10.1002/aja.1002030302
- zfin.org

Isolation and characterisation of Plasmid DNA

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Isolation and characterisation of Plasmid DNA	**2**		**NIL**	**2**	**Class XII**	**NIL**

Learning Objectives:

Students of this course should be able to learn:

- Fundamentals of nucleic acid molecules.
- Handling and growing of non-pathogenic bacterial strains of E. coli for recombinant DNA work.
- Basics of Plasmids and its isolation from the culture using different methods.
- Basics of electrophoresis techniques employed for the separation of Nucleic acid molecules.

Learning Outcomes:

At the end of this course, students should be able to learn and perform in Hands-on mode:

- Fundamentals of operation of different types of centrifuges, Electrophoresis, Spectrophotometer and about Good Laboratory Practices and working environment of Genomic Laboratory.
- Use of micropipettes, preparation of solutions, media and sterilisation.
- Basics of different types of nucleic acids
- Handle bacterial strains of E. coli for the isolation of single colony and growth in liquid media.
- Isolate Plasmids using different methods and characterise by agarose gel electrophoresis.

Unit 1: Basic microbiological techniques for culturing and growth of bacteria (16 hours)

Information on general and molecular biology laboratory practices including Biosafety, Information about important strains E. coli used in recombinant DNA work; chemical composition of media used for growing E. coli both on solid surface and in liquid culture.

Practical:

1.1 Pipetting using macro and micro pipettes, macro and micro weighing, measurement of pH, preparation of buffers and other solutions.

1.2 Preparation of solid and liquid media for growing E. coli, sterilization using autoclave and use of Biosafety cabinet.

1.3 Pouring of Petri plates with solid agar media and streaking of E. coli to isolate single colonies.

1.4 Inoculation of E. coli from streaked plate to obtain grown culture.

Unit 2: Isolation of Plasmids and their characterisation (32 hours)

Definition and Features of a plasmid, Comparative description of different plasmids in respect of copy number, compatibility and antibiotics resistance markers, various plasmid isolation methods, Gel electrophoresis for nucleic acids.

Practical:

2.1 Isolation of plasmid DNA using the available culture by alkaline lysis method

2.2 Preparation of agarose gel, electrophoresis and visualization of plasmid DNA on the gel using transilluminator, characterisation of different forms of plasmid DNA.

Unit 3: Isolation and characterization of plasmid DNA by use of column (16 hours)

Technology for isolation of nucleic acids using column, principle of binding and elution of DNA from column. Chromatographic techniques for isolation of nucleic acids.

Practical:

3.1 Isolation of plasmid DNA using the self-grown culture by spin column method.

3.2 Preparation of agarose gel, electrophoresis and visualization of plasmid DNA on the gel, characterisation of different forms of plasmid DNA.

3.3 Documentation of the gel using gel documentation system.

Essential/ Recommended Readings:

1. Sambrook J, Fritsch EF & Maniatis T. Molecular Cloning. A laboratory Manual. 3rd Edition. Cold Spring Harbor Laboratory Press. New York.

Suggestive Reading:

1. Ausubel FM, Brent R, Kingston RE, Moore DD, Seidman JG, Smith JA, Struhl K. Current Protocols in Molecular Biology. (eds.) John Wiley & Sons, Inc. New York.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Isolation, characterisation and Quality Check of Genomic DNA

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Isolation, characterisation and Quality Check of Genomic DNA	**2**	**NIL**	**NIL**	**2**	**Class XII**	**NIL**

Learning Objectives:

Students of this course should be able to learn:

- Basics of Genomic DNA, need for isolation of genomic DNA and different methods for its isolation.
- Problems due to RNA contamination in further use of genomic DNA and Methods for elimination of contaminating RNA.
- Use of electrophoresis and spectrophotometric techniques for the quantification and quality check of DNA

Learning Outcomes:

At the end of this course, students should be able to learn and perform in Hands-on mode:

- Different methods for isolation of genomic DNA from prokaryotic and eukaryotic cells.
- Handle prokaryotic and eukaryotic cell samples.
- Isolate Genomic DNA and characterise by agarose gel electrophoresis
- Remove RNA contamination from genomic DNA
- Quantify and check quality of DNA by spectrophotometric technique.

Unit 1: Isolation of Genomic DNA from prokaryotic cell (24 hours)

Information on differences between eukaryotic and prokaryotic cells wrt lysis of cells and extraction of DNA, different methods used for isolation of genomic DNA; different kinds of samples as starting material for extraction of DNA.

Practical: Isolation of Genomic DNA

1.1 Composition and preparation of required reagents.

1.2 Isolation of genomic DNA from E. coli culture.

1.3. Gel electrophoresis for isolated genomic DNA

Unit 2: Isolation of Genomic DNA from eukaryotic cell (24 hours)

Different methods used for isolation of genomic DNA; different kinds of samples as starting material for extraction of DNA.

Practical: Isolation of Genomic DNA

2.1 Composition and preparation of required reagents.

2.2 Isolation of genomic DNA from Blood sample etc.

2.3. Gel electrophoresis for isolated genomic DNA

Unit 3: Elimination of RNA contamination followed by quantitation and quality check (16 hours)

Problems due to RNA contamination in further use of genomic DNA in different applications, various methods for removal of RNA from genomic DNA preparation, Gel electrophoresis and UV-visible spectrophotometry-based quantification and quality check of DNA. Other automated systems of quality check for nucleic acids.

Practical Session:

3.1 Removal of RNA from genomic DNA preparation

3.2 Gel electrophoresis of the genomic DNA preparation

3.3 Spectrophotometry-based quantification and quality check of DNA

Essential/ Recommended Readings:

1. Sambrook J, Fritsch EF & Maniatis T. Molecular Cloning. A laboratory Manual. 3rd Edition. Cold Spring Harbor Laboratory Press. New York.
2. Ausubel FM, Brent R, Kingston RE, Moore DD, Seidman JG, Smith JA, Struhl K. Current Protocols in Molecular Biology. (eds.) John Wiley & Sons, Inc. New York.

Suggestive Reading:

1. Alberts, B.,Bray, D, Lewis, J., et al. The Molecular Biology of the Cell. Garland Publishing, New York.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Polymerase chain reaction (PCR) and its applications

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Polymerase chain reaction (PCR) and its applications	2	NIL	NIL	2	Class XII	NIL

Learning Objectives:

Students of this course should be able to learn:

- Concept of PCR and different types of PCR.
- Principles of oligonucleotide (primer) synthesis and purification
- Designing of Primers for PCR.
- Hands-on setting up of PCR reaction and analysis of the amplified product.
- Purification of PCR product

Learning Outcomes:

At the end of this course, students should be able to learn and perform:

- PCR and its application for research.
- Designing of Primers for PCR and obtaining Primers as synthetic oligonucleotides of
- appropriate quality from commercial sources.
- Designing conditions for setting up a PCR and perform analysis of amplified DNA.
- Purification of PCR-amplified DNA using columns for downstream application.

Unit 1 Concept of PCR and different types of PCR with some applications (12 hours)

Principle of Polymerase Chain reaction and amplification process, use of thermocycler and other equipment required to perform PCR and analysis of amplified DNA, use of synthetic oligonucleotide as primers in PCR.

Practical:

1.1 Demonstration of thermocycler, setting of conditions for a PCR for different types of templates and understanding the reagents used in PCR.

1.2 Chemistry of oligonucleotide synthesis and purification techniques, designing the Primer sequence for PCR through the use of online free software. Handling and storage of Primers for long term use.

Unit 2: PCR reaction for amplification and analysis of the amplified product (32 hours)

Designing and Setting up PCR, understanding about different reaction components, use of different types of polymerases for different length of amplicons, concept of fidelity and processivity of polymerases.

Practical:

2.1 Demonstration of a PCR to explain all the steps required for setting up the reaction and analysis of the amplified product.

2.2 Designing and setting up a PCR individually to amplify a 500 bp product and analysis of the amplified product using agarose gel electrophoresis.

2.3. Designing and setting up a PCR individually to amplify a 1500 bp product and analysis of the amplified product using agarose gel electrophoresis.

Unit 3: Purification of PCR-amplified DNA and downstream applications (20 hours)

Purpose of purification of PCR product, methods for purification, downstream applications of PCR products.

Practical:

3.1 Purification of PCR products by spin column method

3.2 Agarose gel electrophoresis and visualization of the product after purification.

Essential/ Recommended Readings:

1. Sambrook J, Fritsch EF & Maniatis T. Molecular Cloning. A laboratory Manual. 3rd Edition. Cold Spring Harbor Laboratory Press. New York.
2. Ausubel FM, Brent R, Kingston RE, Moore DD, Seidman JG, Smith JA, Struhl K. Current Protocols in Molecular Biology. (eds.) John Wiley & Sons, Inc. New York.

Suggestive Reading:

1. Alberts, B.,Bray, D, Lewis, J., et al. The Molecular Biology of the Cell. Garland Publishing, New York.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

CAD (Computer aided Jewellery Design-I) Coral Draw

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
CAD (Computer aided Jewellery Design-I)	2	0	0	2	Class XII	NIL

Learning Objective:

This course will enable the students to -

- Acquire proficiency in computer application in jewellery designing.
- Introduction about various tools used in coral draw.
- Prepare computer sketches on specified themes.

Learning outcomes

The students will be able to –

- Demonstrate knowledge of technical. Specification using appropriate Coral Draw software
- Competency of modelling & product presentation on this Software.
- Creating Jewellery Designs using this software.
- Develop digital portfolio & show reel.

UNIT 1

Introduction to Corel Draw, Basic Tools in Coral Draw, Various Shapes.

UNIT 2

Drawing & Shaping Objects, Transforming Objects, Corel Draw Effects, Working with Layer, Design Development, Colour Fills and Outlines Tools, Gold Colour Creation.

UNIT 3

Motif Development to Make jewellery, Interactive Blend Tool, Diamond with Measurement, Stone Setting, Creating Shapes & Painting

UNIT 4

Theme Based Designing-Earrings, Bracelets, Pendants, Ring, Brooch, Necklace

UNIT 5

Special Effects to Images-Backgrounds, Text Option, Detail Of jewellery Piece

TEXT BOOKS/WEBSITE

• http://product.corel.com/help/CorelDRAW/540229932/Main/EN/User Guide/CorelDRAWX7.pdf

• http://howto.corel.com/

• http://www.insidegraphics.com/corel_basics/corel_draw_guidelines.asp

• An Introduction to computer aided design for jewellery casting by Lucian Taylor

• Corel Draw 11: the official guide dream tech publishers

CAD (Computer aided Jewellery Design-II) Coral Draw

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
CAD (Computer aided Jewellery Design-II)	2	0	0	2	Class XII	NIL

Learning Objectives:

This course will enable the students to –

- Learn how to convert Manual Design to Digital Form with Exact Measurements using Corel.
- Learn about creating variation and Orthography in this module.
- Additionally, learn how to apply the 3D rendering Effect in Photoshop

Learning Outcomes:

Students will learn the basics of jewellery Design Software “Coral Draw”.

• Each section will include a thorough examination of 2D design research conducted with Coral Draw.

• By visiting PCSIR and PGJDC, students will gain knowledge of the CAM manufacturing process.

• Examining various perspectives regarding jewellery, including traditional and contemporary perspectives.

• Learning to create two-dimensional illustrations.

Each endeavor requires research and documentation.

• Submissions: PowerPoint presentation with digital prints.

UNIT 1

Corel Draw, Photoshop, Creating & Editing 3-D Images.

UNIT 2

Introduction to Corel Draw, Drawing & Shaping Objects, Transforming Objects, Corel Draw Effects.

UNIT 3

Working with Layer, Creating Shapes & Painting, Concept of Orthography by Corel.

UNIT 4

Gold Color Creation, Stone Setting.

UNIT 5

Color & Element Variation, 3D Rendering.

TEXT BOOKS/WEBSITE

• http://product.corel.com/help/CorelDRAW/540229932/Main/EN/User Guide/CorelDRAWX7.pdf

• http://howto.corel.com/

• http://www.insidegraphics.com/corel_basics/corel_draw_guidelines.asp

• An Introduction to computer aided design for jewellery casting by Lucian Taylor

• Corel Draw 11: the official guide dream tech publishers

CAD (Computer aided Jewellery Design-III) RHINO

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
CAD (Computer aided Jewellery Design-III) RHINO	2	0	0	2	Class XII	NIL

Learning Objectives:

Students will learn the advance level of tools by learning Jewelry Design Software "RHINO"

• Each content will cover the meticulous research about the 3D design by using Rhino

• Students will learn the process of manufacturing through CAM by visiting PCSIR and PGJDC

• Investigating different perceptions about jewellery including traditional and contemporary

• Learning how to develop 3D perspectives and execution of CAD.

• Research and documentation of each project with the final 3D processing

• The Final outcome in result of CAM.

Learning Outcomes:

At the end students will:

- Understand use of specialist 3D technology and processes in chosen pathway
- Be able to apply understanding of specialist processes to produce design work
- Be able to produce outcomes using specialist 3D technology and processes
- Be able to evaluate own work

UNIT 1

Introduction To Rhino, Surfacing, Stone Setting, Texture

UNIT 2

Text Surfacing, Scooping, Creating Gallery & J-Bag,

UNIT 3

Gold Weight Controlling,

UNIT 4

Creating Human Figure in Rhino

UNIT 5

Converting In to Dye Format, Casting Through CAD-CAM Process.

TEXT BOOKS/WEBSITE

- Rhino for Jewelry Paperback – 2 Jul 2010 by Dana Buscaglia (Author)

CAD (Computer aided Jewellery Design-IV) RHINO

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
CAD (Computer aided Jewellery Design-IV) RHINO	**2**	**0**	**0**	**2**	**Class XII**	**NIL**

Learning Objectives:

Each content will cover the meticulous research about the 3D design by using "RHINO"

• Students will learn the process of manufacturing through CAM by visiting PCSIR and PGJDC

• Investigating different perceptions about jewellery including traditional and contemporary

• Learning how to develop 2D drawings in multiple 3D perspectives and execution of CAD

• Research and documentation of each project with the final 3D processing

• The Final outcome in result of CAM

Learning Outcomes:

At the end students will be:

Able to develop 3D Design with Rendering.

Able to develop exact setting in Design.

Able to Gold Controlling.

Able to Create Master Model & Rubber Dye to Create Different Joints for flexibility.

UNIT 1

Concept Of 3D & 3Design, Concept of Surfacing,

UNIT 2

Stone Setting, Texture Concept, Text Surfacing

UNIT 3

Stone Setting, Texture Concept, Text Surfacing, Concept of Scooping, Concept of Beezal Creating

UNIT 4

Concept of Gold Weight Controlling, Concept of Human Design Creating by Shaper

UNIT 5

Real 3D Rendering, Video Creating, Concept of Converting in Dye Formatting,

Concept Of Casting Through CAD-CAM Process.

TEXT BOOKS

• Cadd3designhelp/Guide/Tutorial

B.A. (Hons.) I Music - Hindustani Music
Vocal/Instrumental (Sitar/Sarod/Guitar/Violin/Santoor)

Syllabus for SEC Papers

SEMESTER - II

SEC – : HARMONIUM - II

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		L	T	P		
Study of Harmonium (201)	2	1	0	1	Class XII Pass	Nil

Learning Objectives:

- To throw light on the structure,origin and parts of Harmonium.
- To discuss the notation system
- To understand the different ragas and talas.

Learning Outcomes:

- Students learn the origin and initial form of Harmonium.
- Students are able to demonstrate the various talas and their layakaries.
- Students are able to understand the notation system.

Unit – I (4 weeks)

Study of the origin of Harmonium.

Unit – II (4 weeks)

Study of the structure of the Harmonium.

Unit – III (2 weeks)

Use of Harmonium in various forms of Indian music.

Unit – IV (2 weeks)

Writing notation of compositions in prescribed ragas

Unit V (2 weeks)

Writing notation of Talas with Thah, Dugun, Tigun and Chaugun – Dadra

Unit VI (2 weeks)

Theoretical knowledge of the prescribed ragas

Suggestive readings:

1. Bhartiya Sangeet Ka Itihasa – Dr. Sharad Chandra.Shridhar. Paranjape :- Madhye Pradesh Hindi Granth Acadamy , Bhopal, 2nd Edition: 1985
2. Bhartiye Sangeet Ka Itihasa – Dr. Thakur Jaidev Singh:- Sangeet Research, Kolkatta, Editor: Premlata Sharma, 1st Edition: 1994
3. Sangeet Bodh : Dr. Sharad Chandra Shridhar Paranjape, Madhye Pradesh, Hindi Academy, Bhopal, 1st Edition: 1972
4. Kramik Pustak Malika Part- II , III & IV: - V.N Bhatkhande, Sangeet Karyalaya, Hathras, Jan-2008, Editor: Dr. Laxminarayan Garg
5. Harmonium: Vividh Aayam: Dr. Vinay Kumar Mishra :- Akanksha Publication, New Delhi, 1stEditon: 2015
6. Taal Parichay Part III, Girish Chandra Srivastava, Rubi Prakashan , New Delhi, 2ndEditon: June-2002

SEC – Stage Performance and Viva Voce

Learning Objectives:

- To continue to focus on the basics of playing the Harmonium.
- To encourage the student to attempt to improvise while playing the instrument
- To focus on his learning of newer talas
- To further his training in performance, with other basic ragas as prescribed

Learning Outcomes:

- The basics of the student will get further strengthened
- The student will start to gain self-belief and make attempts to improvise while performing a raga.
- The student will begin to gain some command over increasingly complex talas
- With other basic ragas, the student will understand how to use the flat and sharp notes in ragas with varied tonal phrases
- He will gain confidence of playing with the Tabla

Syllabus:

Prescribed ragas:

1. Bhairav
2. Bhupali
3. Kafi

Unit – I (2 weeks)

Five alankars to be presented in the prescribed ragas.

Unit -II (2 weeks)

One Sargam Geet each in the prescribed ragas

Unit -III (2 weeks)

One Lakshan Geet each in the prescribed ragas

Unit- IV (2 weeks)

Two Drut Khyals with elaborations in any of the prescribed ragas

Unit - V (2 weeks)

Ability to play a Dhun in raga Kafi

Unit - VI (2 weeks)

In-depth knowledge of the prescribed ragas

Unit - VII (2 weeks)

Knowledge and demonstration of the following tala with dugun, tigun and chaugun - Dadra

Unit- VIII (2 weeks)

Basic knowledge of Harmonium and its various parts

Suggestive readings:

- Bhartiya Sangeet Ka Itihasa – Dr. Sharad Chandra.Shridhar. Paranjape :- Madhye Pradesh Hindi Granth Acadamy , Bhopal, 2nd Edition: 1985
- Bhartiye Sangeet Ka Itihasa – Dr. Thakur Jaidev Singh:- Sangeet Research, Kolkatta, Editor: Premlata Sharma, 1st Edition: 1994
- Sangeet Bodh : Dr. Sharad Chandra Shridhar Paranjape, Madhye Pradesh, Hindi Academy, Bhopal, 1st Edition: 1972
- Kramik Pustak Malika Part- II , III & IV: - V.N Bhatkhande, Sangeet Karyalaya, Hathras, Jan-2008, Editor: Dr. Laxminarayan Garg
- Harmonium: Vividh Aayam: Dr. Vinay Kumar Mishra :- Akanksha Publication, New Delhi, 1stEditon: 2015
- Taal Parichay Part III, Girish Chandra Srivastava, Rubi Prakashan , New Delhi, 2nd Edition: June-2002

SEC-1: Reading & Writing Skills in Brahmi Scripts

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Reading & Writing Skills in Brahmi Scripts	**02**	**1**		**1**	**Class XII Pass**	**Nil**

Learning Objectives

Course of Epigraphy & script is an inter-disciplinary course within Sanskrit. The Brahmi script used in Indian inscriptions was developed into all modern Indian scripts like Tamil, Malayalam, Oriya, Bangali, Gurmukhi, among others. Study of inscriptions written mostly in Sanskrit languages, helps in preparation of ancient history.

Learning outcomes

This course is helpful for students to investigate how actually Brahmi script developed and transformed into a wide variety at a time when mode and means of transport and communication were extremely slow. After acquiring knowledge of its variation, it will certainly be helpful in ascertaining to understand period of an inscription whose date is uncertain. This course is highly helpful for the students willing to adopt archaeology as their occupation with a background of Sanskrit.

Detailed Syllabus

Unit I
Introduction to Brahmi Script

Introduction to Brahmi Script (Origin and Development)
Early Brahmi alphabet Aśokan period

Unit II
Translation

Translation to variations up to 4th century C.E.
Reading Asokan Inscriptions

Essential/recommended readings

1. Dani, A.H.: Indian Paleography, 1963

2. Upasak, C.S.: History & Paleography of Mauryan Brahmi Script, 1960

3. Verma, T.P.: Paleography of Brahmi script in North India, 1971

4. ओझा, गौ. ही. भारतीय प्राचीन प्रमाला

5. पाण्डेय, राजबली अशोक के आभलेख 1967

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

SEC-2: Acting Skills in Sanskrit Dramaturgy

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Acting Skills in Sanskrit Dramaturgy	**02**	**1**		**1**	**Class XII Pass**	**Nil**

Learning Objectives

The idea of acting has its connection with the practical aspects of the play related literary works. This paper aims at teaching the fundamental notions that go with the performance of a play on the stage. The practice of performance of drama can further enhance performance's hidden and natural talent. This paper deals with the rules of performance of play (acting) and aims at sharpening the dramatic talent of the students.

Learning outcomes

After the completion of this course the students will be able to know about the various aspects of performance of the dramatic arts in the Indian context. The course will make the students inspired and encouraged for performing the dramatic arts on the stage.

Detailed Syllabus

Unit I

Some Theatrical rules

Competent person for Acting.
Nāṭya-prayoktās-gaṇa (Members of theatrical group) : sūtradhāra nāṭyakāra, naṭa, kuśīlava, bharata, nartaka, vidūṣaka etc.
General and particular rules of assigning the roles.

Unit II

Types of Abhinaya

Lokadharmī and Nātyadharmī Abhinaya.
Types of four Abhinyas with various forms.
Analysis of acting in the context of Abhijñānaśākuntalam

Essential/recommended readings

1. Ghosh, M.M.: ***Nāṭyaśāstra ,*** Bharata, vol-1, Manisha Granthalaya, Calcutta, 1967.
   Hass, **The Daśarūpaka : A Treatise on Hindu Dramaturgy,** Columbia University, NewYork , 1912.

2. Adyarangachrya, ***Introduction to Bharata's Nāṭyaśāstra*,** Popular Prakashan Bombay, 1966.
3. मीरा द्विवेदी , ***संस्कृत नाट्य : अभिनय एवं पटकथा लेखन***, परिमल पब्लिकेशन्स,दिल्ली,2018
4. द्विवेदी,हजारी प्रसाद, ***नाट्यशास्त्र की भारतीय परम्परा और दशरूपक***, राजकमल प्रकाशन दिल्ली,1963.

Additional Resources:

1. सीताराम, झा, ***नाटक और रंगमंच*,** बिहार राष्ट्रभाषा परिषद्, पटना, 1981.
2. राधावल्लभ, त्रिपाठी, ***भारतीय नाट्य****: स्वरूप और परंपरा*, हरिसिंह गौर विश्वविघालय, सागर, 1988.
3. वाचस्पति, गैरोला — ***भारतीय नाट्यपरम्परा और अभिनयदर्पण***, इलाहाबाद, 1967.

त्रिपाठी, राधावल्लभ, ***भारतीय नाट्यशास्त्र की परम्परा और विश्व रंगमंच***, प्रतिभा प्रकाशन, दिल्ली,1999.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

SEC-3: Script Writing Skills in Sanskrit Dramaturgy

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Script Writing Skills in Sanskrit Dramaturgy	02	1		1	Class XII Pass	Nil

Learning Objectives

The script writing forms as essential point in developing a plot into play relates to the practical aspects of theatre skill. It has a close relationship with Acting. This paper aims at acquainting the learners with the basic notions and aspects of the performing art especially of Drama. The practice in composition of drama can enhance one's natural talent. This paper deals with the rules, skills and practices of dramatic composition (script writing) and aims at sharpening the dramatic talent of the students.

Learning outcomes

After complete this course the students are supposed to be able in developing a plot into a dramatic composition in context to the Indian Dramaturgy. They will learn the skills of constructing a story or an incident into script of a play. The Students will also be inspired and encouraged to prepare the scripts for drama.

Detailed Syllabus

Unit I

Some Components of Scripts

Development of plot

Types of dramatic production:
Sukumāra (Delicate), Āviddha (Energetic
Various kinds of of plot (Vastu):.
Dṛsya (presentable) and Sūchya (Restricted scenes)
Starting of a play by using Pūrvaraṅga-
Raṅgadvāra, Nāndī, Prastāvanā and Prarocanā.
Sources and objectives of play:
Sources : Prakhyat (Historic), Utpaddya (Imaginary), Mishra
Objectives : Dharm, Artha & kaama
Steps of developing a Plot :
(i.)Elements for Developing a plot **:**

- Arthaprakṛtis (caustations),
- Kāryāvasthā (stages of the actions)

- Sandhi (junctures) and

Arthopakṣepaka(interludes)- praveshaka etc.

Unit II

Dialogues and Three Unities

A. Kinds of saṁvāda(Dialogue):

- Sarvaśrāvya or Prakāśa,
- Aśrāvya or Svagata (aside)
- Niyataśrāvya :
    - Janāntika (personal address),
    - Apavārita (confidential),
    - Ākāśabhāṣita (conversation with imaginary person).

B. Arrangement of a play by Three Unities :

Time, Actions and place

C. Analysis of Script Writing in the context of Abhijñānaśākuntalam

Essential/recommended readings

1. Ghosh, M.M.: *Nāṭyaśāstra* , Bharata, vol-1, Manisha Granthalaya, Calcutta, 1967. Hass, The Daśarūpaka : A Treatise on Hindu Dramaturgy, Columbia University, NewYork , 1912.
2. Adyarangachrya*, Introduction to Bharata's Nāṭyaśāstra*, Popular Prakashan Bombay, 1966.
3. मीरा द्विवेदी , *संस्कृत नाट्य : अभिनय एवं पटकथा लेखन,* परिमल पब्लिकेशन्स,दिल्ली,2018

द्विवेदी,हजारी प्रसाद, *नाट्यशास्त्र की भारतीय परंपरा और दशरूपक*, राजकमल प्रकाशन दिल्ली,1963.

Additional Resources:

1. सीताराम, झा, *नाटक और रंगमंच*, बिहार राष्ट्रभाषा परिषद्, पटना, 1981.
2. राधावल्लभ, त्रिपाठी, *भारतीय नाट्यः स्वरूप और परंपरा*, हरिसिंह गौर विश्वविघालय, सागर, 1988.
3. वाचस्पति, गैरोला — *भारतीय नाट्यपरम्परा और अभिनयदर्पण*, इलाहाबाद, 1967.
4. त्रिपाठी, राधावल्लभ, *भारतीय नाट्यशास्त्र की परम्परा और विश्व रंगमंच*, प्रतिभा प्रकाशन, दिल्ली,1999.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

SEC-4: Fundamentals of Indian Manuscriptology

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Fundamentals of Indian Manuscriptology	02	1		1	Class XII Pass	Nil

Learning Objectives

The manuscript repository of India, having more than 10 million codices, is an embodiment of its knowledge tradition. In order to make India a knowledge driven society, it is inevitable that the new generation understand important aspects of manuscripts and by treating and preserving the same may exert to find out and publish hitherto unexplored wisdom lying therein

Learning outcomes

(i) This course will enable the students to discern importance of the manuscripts and instant need of curating and editing the same.
(ii) The student will be able to understand the process of treating the manuscripts of different nature.
(iii) The student will be aware of the process of preserving the manuscripts for coming generations.

Detailed Syllabus

Unit I

Some Components of Scripts

(i) Importance of manuscripts for unleashing India's greatness.
(ii) Salient features of Indian manuscriptology.
(iii) Sources for Indian Manuscripts – different catalogues and Reports.
(iv) Important manuscript reservoirs in India and abroad and methodology of accessing them

Unit II

Dialogues and Three Unities

(i) Dire and Instant need of treating Indian manuscripts.
(ii) Process of treatment of Indian manuscripts and their preservation.
(iii) Modes operandi of Mass awareness for preservation of the manuscripts.
(iv) Basics of critical edition of a text- Identifying various corruptions and their removal.

Essential/recommended readings

1. Chaubey , B.B. *Manuscriptology: Past and Present* . Poona Orientalia, V0l, V, Pg.49

2. Katre, S.M. 1941. *Introduction to Indian textual Criticism*. Bombay : Karnataka Publishing House.
3. लक्ष्मीनरसिंहभट्ट:, जा. रामकृष्ण:, विरूपाक्ष वि. जड्डीपाल: (अनुवादकौ) *भारतीयग्रन्थसम्पादनशास्त्रप्रवेशिनी* (आङ्ग्लमूलप्रणेता – आचार्य एस. एम. कत्रे), २००२. तिरुपति : राष्ट्रिय संस्कृत विद्यापीठम्.
4. Sankrityayana, Rahula.1938. "Search for Sanskrit MSS. In Tibet." In *Journal of the Bihar and Orissa Research Society*.Vol.XXIV Part IV. 137-163.
5. सत्येन्द्र. १९७८. *पाण्डुलिपि विज्ञान.* जयपुर : राजस्थान हिन्दी ग्रन्थ अकादमी.
6. Sharma, K.V. 2007. *Manuscriptology of India* in "New Lights on Manuscriptology" Pg.2-4
7. Shasri, P.P.S. 1930. *A Descriptive Catalogue of Sanskrit Manuscripts in the Tanjore Maharaja Sarfoji's Saraswati Mahal Library.* Shrirangam : Sri Vani Vilas Press.
8. Tripathi, Dipti. 2018. "Reflections on Manuscriptology: Forays into Indian Paradigms of Knowledge managemnet" in *Sambodhi* XLI : 1-10

Additional Resources:

https://www.jainfoundation.in/JAINLIBRARY/books/sambodhi_2018_vol_41_520791_hr6.pdfhttps://www.aanandashram-sanstha.org/
https://www.ssvv.ac.in/about-library
https://www.namami.gov.in/manuscript-resource-centres
http://ignca.gov.in/online-digital-resources/manuscripts/
https://vedabase.io/en/library/sb/11/5/34/

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

SEC-5: Traditional Indian Gastronomy (Bhāratīya Pāka Śāstra)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Traditional Indian Gastronomy (Bhāratīya Pāka Śāstra)	02	1		1	Class XII Pass	Nil

Learning Objectives

To train and develop students in Indian Cuisine and Food Culture through Industry Interface and Culinary experts. To strengthen students' Knowledge and skills with instruction based on Indian tradition and culture. The course also aims at enhancing learning menu planning as per festival, quantity preparations and management of resources. To develop competencies to understand Ayurveda and wellness cooking.

Learning outcomes

Acquire knowledge and skill in Indian culinary practices.
Identify and apply contemporary food safety and sanitation practices along with traditional principles of wellness and Ayurveda.

Detailed Syllabus

Unit I
Pāka Kalā in Sanskrit Sāhitya
***Pāka Kalā* (The art of Indian Cuisine):** Ancient Indian food culture, Characteristics of Indian Cuisine and food commodities, Indian culinary terminology.

***Āhāra in Sanskrit Sāhitya* (Food in Sanskrit Literature) :**Food **divisions in Sanskrit literature, Food and Drinks in ancient India, diet in Vedic period , food and related art in the Vedic age, food in Sanskrit poetry.**

***Swastha Āhāra* (Food and Ayurveda) :** Fundamentals of Ayurveda, Identifying the various constituents of Ayurveda and their characteristics, Outline the Three Vital essence (Tridoṣa) of

Ayurveda, Prakriti and Vikriti, Identify the concept about Rasa, Virya, Vipakah and Prabha, Dietary recommendations for Vāta doṣa, Pitta doṣa, Kapha doṣa.

Unit II

Āhāra

1. ***Prādeśika Āhāra* (Regional Food):** Cuisines of North India, Cuisines of East India, Cuisines of North India, Cuisines of South India.
2. ***Pāka evam Paryaṭana* (Travel and Food):** Culinary journey of India, various types of food travel.
3. ***Prasād Paramparā (*Ritual food tradition*):***Tradition of prasad culture inVaishnav, Shaiva and Shakt sects of Hindu religion.

4.*Pūrva tathā Paścima* (Cuisines of East and West*):***Specialty cuisines, staple diets, festival and signature dishes of different regions, various cooking methods and techniques used in different regions, preparation, classic recipes**.

Essential/recommended readings

1. *Ayurvedic Science Of Food And Nutrition* by Sanjeev Rastogi , Springer (2014).
2. *Feast and Fasts: A History of Food in India* by Colleen Taylor Sen, (2016).
3. *Aahara : Ancient Secret of Diet in Ayurveda & Yoga* by Dr Pradipkumar R. Suryawanshi (2018).
4. *Indian food: A Historical Companion* by K.T.Achaya, Indian food: A Historical Companion, Oxford UniversityPress, 1998.
5. *Food and Drinks in Ancient India* (Based on Original Sanskrit Sources) by R Mitra, COSMO PUBLICATIONS, NEW DELHI, (2007).
6. *Prasāda, the Gracious Gift, in Contemporary and Classical South Asia* by Andrea Marion Pinkney. Journal of the American Academy of Religion, September 2013, Vol. 81, No. 3, pp. 734–756.
7. *From the God's Kitchen: The Mahāprasād In Shri Jagannāth Temple*, Puri, India, by Sili Rout, SHSS XXIX, NUMBER 1, Summer 2022.
8. *From the Earliest Times to the Sixth Century*, B.C.by Romesh Chunder Dutt, C.I.E.1906. (Chapter 4 – Food and Art in the Vedic age).
9. *Food and Love in Sanskrit Poetry: On the Margin of Desires* by Danielle Feller. Cracow Indological Studies Vol. XXI, No. 2 (2019), pp. 69–124.
10. *पाकशास्त्र.* यशोदा देवी. बनिता हितैषी प्रेस. प्रयागराज, १९१३
11. *पाकशास्त्र.* कान्ति पाण्डेय. बिहार हिन्दी ग्रन्थ अकादमी. २०१३
12. *आहारशास्त्र.* दामोदर वासुदेव. दत्तात्रेय कृष्ण साहू ब्रदर्स, आर्यौषधि कारखाना. १८५६.
13. *आहारशास्त्र.* जयनारायण. जीवन दृष्टि प्रकाशन, आरोग्यमन्दिर, यवतमाल-वर्धा. १९७३

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

SEC-6: E-Learning Tools and Techniques for Sanskrit

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
E-Learning Tools and Techniques for Sanskrit	**02**	**1**		**1**		**Nil**

Learning Objectives

This course will introduce the current resea
rch and development in Sanskrit computing. Primary emphasis will be on tools and techniques developed under government and private funding and to explore new technologies for Sanskrit. Special focus will be on e-learning and interacting tools, web application for Sanskrit, Unicode Devanagari typing tools and language computing. HTML will be taught for web application.

Learning outcomes

The course-level learning outcomes that a student of this course is required to demonstrate are indicated below:

- Learn the basic Interactive Sanskrit Teaching Learning Tools.
- Learn the Basics of Multimedia, Web based tools development.
- Working knowledge of HTML and web page development.
- Working with Unicode Typing in Devanagari Scripts.
- Learn the Various Typing Tools and Software for Devanagari Unicode.
- Learn the Text preservation techniques and web publishing.

Detailed Syllabus

Unit I

Interactive Sanskrit Teaching Learning Tools and Typing Tools:

Basics of Multimedia, Web based tools development.
Basics of HTML and web technology
Standard for Indian Languages (Unicode)
Unicode Typing in Devanagari Scripts, Various Typing Tools and Software for Devanagari Script: Baraha, Google Input Tools, Google Assistant

Unit II

Survey of Various developed Computational Tools for Sanskrit:

Sanskrit Grammar Tools
Sanskrit Text Preservation and Search
Online Indexing Tools for Sanskrit Texts

Machine Translation for Sanskrit
Text Preservation: Databases and Text Files

Essential/recommended readings

1. Bharti A., R. Sangal, V. Chaitanya, “NL, Complexity Theory and Logic” in Foundations of Software Technology and Theoretical Computer Science, Springer, 1990.
2. E-Content suggested by Teacher
3. Tools developed by Computational Linguistics Group, Department of Sanskrit, University of Delhi, Delhi-110007 available at: http://sanskrit.du.ac.in
4. Basic concept and issues of multimedia: http://www.newagepublishers.com/samplechapter/001697.pdf
5. Content creation and E-learning in Indian languages: a model: http://eprints.rclis.org/7189/1/vijayakumarjk_01.pdf
6. HTML Tutorial - W3Schools: www.w3schools.com/html
7. The Unicode Consortium: http://unicode.org
8. http://baraha.com/v10/help/Keyboards/kan_phonetic.htm
9. https://www.google.co.in/inputtools/try/

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

SEC-7: Practices in Horoscope-I

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Practices in Horoscope-I	**02**	**1**		**1**		**Nil**

Learning Objectives

The objective of this paper is to teach the students about basic principles for horoscope and develop the ability/skill for making Horoscope.

Learning outcomes

After studying this course students:
Will be able to know the concept behind Panchanga.
Will be able to know the concept of Horoscope.
Will be able to get Knowledge about how to make a horoscope.

Detailed Syllabus

Unit I

सौरपरिवार का सामान्य परिचय,काल के भेद, पञ्चाङ्ग परिचय,द्वादशभाव परिचय।
ग्रहों का स्वरूप, ग्रहों की उच्च-नीच एवं मूलत्रिकोण राशियाँ, ग्रहदृष्टिविचार।
ग्रहमैत्री विचार, चर एवं स्थिरकारक ग्रह, राशियों के गुणधर्म एवं स्वामी।

Unit II

समयज्ञान, मानक, स्थानीय सूर्योदय, सूर्यास्त, दिनमान
इष्टकाल, चालन, भयात्-भभोग साधन, स्पष्टग्रहसाधन, चन्द्र स्पष्टीकरण
अयनांश साधन, पलभा ज्ञान, चर-खण्ड ज्ञान, लंकोदयमान, स्वोदयमान
लग्नसाधन, ससन्धिद्वादशभावसाधन

Essential/recommended readings

1. भारतीयकुण्डलीविज्ञानम् – मीठालालहिम्मतराम ओझा, देवर्षिप्रकाशन, वाराणसी।
2. भारतीयज्योतिषम् - शिवनाथझारखण्डी, उत्तरप्रदेशहिन्दीसंस्थान, लखनऊ, 2010
3. भारतीयज्योतिषम् – नेमिचंद्र शास्त्री, भारतीय ज्ञानपीठ प्रकाशन, दिल्ली, 1992

4. ज्योतिष सर्वस्व- सुरेश चन्द्र मिश्र, रंजन पब्लिकेशन, दिल्ली, 2022
5. भारतीय ज्योतिष का इतिहास-गोरखप्रसाद, उत्तरप्रदेशहिन्दीसंस्थान, लखनऊ, 2010

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

SEC- : Basics of Food Science and Nutrition

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Basics of Food Science and Nutrition	**2**			**2**	XIIth pass	NIL

Learning Objectives

1. The primary objective of this course is to provide an understanding to the students of the types and biological importance of macro and micronutrients found in the dietary sources.
2. The students will get an opportunity to understand the integrated learning between the areas of Food science and Nutrition.
3. The course will also provide hands-on experience of different methods used to estimate different types of nutrients that will help the students learn the concept nutrition and health.

Learning Outcomes

Learners will be able to:

1. Analyse and evaluate concepts in human nutrition and its relation with food and health
2. Understand the concept of food exchange and meal planning
3. Understand the essentiality of macro and micronutrients in food items
4. Assess the quality and nutritive value of food.

Skill development and job opportunities:

Students will be able to take up jobs in public and community health schemes where food assessment is done. They can also as serve as assistants in program where meal planning is done like home care facilities, schools, hostels, old age homes. It will provide them the training to apply for jobs in any business establishments concerning food processing, packaging and production. After completion of the entire series, students will be able to take up job opportunities in any business involved with advanced food processing. They would also be eligible to get placements in food and drug assessment centres. The course will also enable student to apply to advance food science and tech courses.

SYLLABUS OF SEC- :

Unit I **4 weeks**

Introduction to nutrition and food science: Defining nutrition, nutrients and role of nutrients. Food groups- Grouping of foods based on composition. Classification of nutrients: Macronutrients and Micronutrients. Food Energy and the concept of Energy Balance. Principals of meal planning, food exchanges and Balanced diet.

Practical Exercises:

- Determination of calorie content and nutritive value of different food items.
- Estimation of Total moisture and ash content in the food items.
- Meal planning for healthy individuals depending on adult men and women.

Unit II: Macronutrients in food **5 weeks**

Introduction to Dietary Carbohydrates, Proteins and Fats and their roles in body functions, dietary sources and RDA

Practical Exercises:

- Estimation of Total Carbohydrate content in food by Molisch's test, Hanes method or Folin and Wu
- Estimation of Total lipid content in food by Soxhlet extraction or Bligh and Dyer method
- Estimation of Total protein content in food by modified Lowry's method.

Unit III: Micronutrients **6 weeks**

Introduction to water- and fat-soluble vitamins, brief overview of functions, dietary sources and RDA. Introduction to minerals, brief overview of functions, dietary sources and RDA

Practical Exercises:

- Quantitative estimation of Vitamin C in foods by titration
- Quantitative estimation of Vitamin A/E in oils by spectrophotometric methods
- Quantitative of Estimation of mineral content in food. (Ca, P/ Na/K and Fe)

Essential Reading

- Plummer, D. T. (1998) *An Introduction to Practical Biochemistry* (3rd ed.), Tata McGraw Hill Education Pvt. Ltd. (New Delhi); ISBN: 13: 978-0-07-099487-4 / ISBN:10: 0-07-099487-0.
- Cooper, T. G. (2011) *The Tools of Biochemistry* (2nd ed.), Wiley-Interscience Publication (New Delhi); ISBN: 13:9788126530168.
- Raymond, J. L., & Morrow, K. (2020). *Krause's food & the nutrition care process* (15th ed.). Saunders.

- Vasudevan, D. M., & Das, K. S. (2020). *Practical textbook of biochemistry for medical students* (3rd ed.). Jaypee Brothers Medical.
- Manay, N. S. O. (2001). Food: facts and principles. New Age International.

Suggested Readings

- Practical Biochemistry, Damodaran Geetha K, Jaypee Brothers Medical Publishers Private Limited; 1st edition (1 January 2011), ISBN: 9789350251416
- Mahan, L. K., & Raymond, J. L. (2016). Krause's food & the nutrition care process. Elsevier Health Sciences.
- Malik, D., Narayanasamy, N., Vavilala, P., Takur, J., Sinha, N., (2022). Textbook of Nutritional Biochemistry. Springer Singapore, ISBN978-981-19-4149-8.

Examination scheme and mode:

Total Marks: 50
Internal Assessment (Practical): 25 marks
End Semester Practical Exam*: 25 marks

The Internal Assessment for the course may include Class participation, Assignments, Class tests, Projects, Field Work, Presentations, amongst others as decided by the faculty.

SEC- : Basic Forensic science: crime scene investigation and evidence collection

CREDIT DISTRIBUTION, ELIGIBILITY, AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Basic Forensic science	2			2	Class XII	-

Learning Objectives

Forensic science is an essential part of the criminal and civil justice system. Forensic scientists collect and analyze evidences from crime scene and elsewhere. The objective of this analysis is to provide data that can assist in criminal or civil investigation, so that prosecution of suspects of the crime is done or an innocent person is cleared off the crime beyond any reasonable doubt. The specific objectives of this course are as follows:

- To provide an understanding of the sanctity of crime scene
- To understand collection and preservation of forensic evidence.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Comprehend the developments in the field of forensic sciences; learn to observe a crime scene for identification of relevant evidences and samples for forensic analysis.
- Understand the importance of collection, packaging and preservation of samples to ensure reliability of data generated.

Skill development and job opportunities

- After completion of this course students would obtain the training in collection, documentation, and analysis of physical evidences. They will be encouraged to do short internships in police station, forensic laboratories and research institutes.
- The students will also able to take a job in a forensic laboratories or police station even after completing a one-year course as they are able to collection, preservation and documentation of evidence, drawing a crime scene and doing preliminary analysis at crime scene.

SYLLABUS OF SEC-

Unit 1: Basic Forensic **1 week**

Introduction, need, scope and Significance of forensic science, History, laws and basic principles of forensic science. Branches of forensic science. Organizational set up of forensic science laboratories.

Practical Exercise

- Understanding a crime using case studies.

Unit 2: Crime scene investigation **6 weeks**

Definition, Identification, Mapping, and preservation of a crime scene, Classification in a crime scene.Precautions to ensure credibility of a crime scene. Investigative strategies and eye witness report.

Practical exercises:

- Drawing a crime scene.
- Drawing and mapping a crime scene of an unusual case (fire, blast, water)
- Case studies in different indoor and outdoor primary and secondary crime scenes
- Documenting and reconstructing a crime scene.
- Virtual exercise / field trip to a crime scene

Unit 3: Forensic evidences **8 weeks**

Definition of a forensic evidence. Classification based on legal and forensic value Understanding chain of custody. Collection, Preservation, Packaging, and Labeling of chemical, physical evidence and biological evidence (blood, semen and other biological fluids, hair, fibers and fabrics, pollen) for forensic investigation.

Practical exercises:

- Collection and preservation of a fresh and dried body fluid sample
- Collection of tissues post mortem.
- Collection of a trace evidence like hair, fiber and pollenfrom crime scene and during autopsy
- Collection and preservation of a soil sample from crime scene and during autopsy
- Collection of a hand or foot print, tyre-print, fingerprint
- Collection and preservation of evidence for chemical/ballistic analysis.

Essential/ recommended readings

- James, S.H., Nordby, J.J. & Bell, S. (2014). *Forensic Science: An Introduction to Scientific and Investigative Techniques, Fourth Edition*: Taylor & Francis. ISBN 9781439853832
- Jones, P., & Williams, R.E. (2009). *Crime Scene Processing and Laboratory Workbook First Edition*: CRC Press. ISBN 9780429249976

- Saferstein, R. (2018). *Criminalistics: An Introduction to Forensic Science, Twelfth edition*: Pearson Education. ISBN 10:0134477596, ISBN 13: 9780134477596
- Lee, H., Palmbach, T. & Miller, M. (2001). *Henry Lee's crime scene handbook, First Edition*: Academic Press ISBN 9780080507989
- Parikh, C.K. (2016). *Parikh's textbook of medical jurisprudence, forensic medicine and toxicology: for classrooms and courtrooms*, *Seventh Edition*: CBS Publishers and Distributors. ISBN 9788123926469

Note: Learners are advised to use the latest edition of readings.

Examination scheme and mode:

Total Marks: 50

Internal Assessment: 25 marks

Practical Exam (Internal): 25 marks

The Internal Assessment for the course may include Class participation, Assignments, Class tests, Projects, Field Work, Presentations, amongst others as decided by the faculty.

SEC : Basic Laboratory Techniques

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Basic Laboratory Techniques	**2**			**2**	XII pass	

Learning Objectives

This course will help students understand skills required for working in Laboratories. To comprehend the standard operating procedures for laboratory chemicals, autoclave and water wash applications. The specific objectives of the course are:

- To be familiar with laboratory safety manual and GLPs and regulatory requirements.
- To learn about use and working of lab instruments such as pH meters, auto clave, laminar flow, microscopes, spectrophotometers, centrifuges and incubators.
- knowledge of preparation and testing of reagent water in the laboratory Learn how to make solutions and buffers
- Learn about microbiological techniques

Learning outcomes

At the end of the course the students will be

- Trained in best lab practices
- Able to use lab instruments such as pH meters, auto clave, laminar flow, microscopes, spectrophotometers, centrifuges and incubators
- Able to prepare solutions and buffers
- Able to prepare media and grow microbial culture in aseptic conditions

Job opportunities:

Students trained in lab skills will be employable in research labs, R & D labs in Pharma and Biotechnology industry and Diagnostic labs

SYLLABUS OF SEC-

Unit 1 – Laboratory safety and standards **2 weeks**

- Precision, accuracy and sensitivity

Unit 2– Preparation of solutions/ media **2 weeks**

- Preparation of solution (w/w, w/v, Molar, Normal, Stock, standard and serial dilutions)
- Preparation of buffer solution, pH scale, pH meter, Henderson-Hasselbalch equation, pK, (acetate/ phosphate buffer)

Unit 3– Microbial Techniques **6 weeks**

Instrumentation (Microscopy, Laminar Hood, autoclave, shaker incubator, BOD incubator hot air oven)

- Sterilization methods
- Types of Microbial media: Microbial growth media: Minimal Media, Defined media, Complex media, Enriched media, Selective media, and Differential media.
- Staining techniques for microbes
- Isolation of pure cultures of bacteria by streaking method.
- Enumeration of colony forming units (CFU) count by spread plate method
- Growth curve of bacteria
- Culture transfer Techniques: Streaking, Serial dilution and Plating methods. Phases of bacterial growth

Unit 4 – Bioinstrumentation for Separation techniques **5 weeks**

Chromatography

- Separate biomolecules/dyes using paper/thin layer and column chromatography to illustrate the principle and application of chromatography. Calculate the Rf value of each component.

Centrifugation

- Principle of centrifugation, Basics of sedimentation, Sedimentation coefficient, Factors affecting sedimentation.
- Types of centrifuges and rotors. Microfuges
- Separation plasma and blood cells/ cell fractionation

Spectroscopy:

- Principle of UV-visible absorption spectrophotometry, Lambert's Law, Beer's Law, Working of a spectrophotometer.
- Determination of absorption maxima (λmax).

- Verification of Lambert's and Beer's law

Gel Electrophoresis

- Principle, instrumentation, application and maintenance of horizontal and vertical electrophoresis.
- Separation of protein sample in denaturing condition and calculation of its molecular weight and mobility.
- Demonstration of separation of nucleic acids using agarose gel electrophoresis.

Essential/Recommended readings

- Biochemistry Laboratory: Modern Theory and Techniques, (6th edition), Boston, Mass: Prentice Hall; ISBN-13:978-0136043027Boyer, R.F. (2012).
- An Introduction to Practical Biochemistry (1998) 3rd ed., Plummer D. T., Tata McGraw Hill Education Pvt. Ltd. (New Delhi), ISBN:13: 978-0-07-099487-4/ ISBN:10: 0-07-099487-0.
- Cappucino, J. and Sherman, N. (2013). Microbiology: A Laboratory Manual. (10th ed.) Pearson Education Limited; ISBN 13: 9780321840226 Additional Resources: 1. Madigan, M.T., Martinko, J.M., Dunlap, P.V. and Clark, D.P. (2010).

Examination scheme and mode:

Total Marks: 50
Internal Assessment: 25
Practical: 25
Exam (Internal): NIL
End Semester University Exam: NO End Term Exam
The Internal Assessment for the course may include Class participation, Assignments, Class tests, Projects, Field Work, Presentations, amongst others as decided by the faculty.

SEC : Public health, hygiene and nutrition

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Creditdistributionofthecourse			Eligibilitycriteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
SEC-	2	0	NIL	2	Class XII	NIL

Learning Objectives

In the post covid scenario, the students have experienced live the various area where public health is of primary importance. The present course attempts to provide an interdisciplinary understanding of public health issues in India. Learning about processes of proper waste disposal and management of water will have great impact on human health as unsafe drinking water and sanitation was the second leading risk responsible for disease burden in India, mainly through diarrhea and other infections. The specific objectives of the course are:

- To provide a basic understanding of the scope of public health issues, particularly related to collection of primary data in the area of public health nutrition, infectious biology and sanitation, social and preventive medicine, and the environmental issues that affect public health.
- To generate a discussion platform that would encourage a healthy inter- and multidisciplinary interaction amongst the students to get a holistic view of public health issues in India.
- A mini research project on any relevant topic related to public health will be taken up after completing the course.
- After completing the course, the students can also apply for some higher-level courses in different areas of public health as the course helps in building a basic understanding on different aspects related to public health

Eligibility: Being interdisciplinary in its nature and scope, the course will be equally engaging and beneficial for students of all subject streams.

Learning Outcomes

By the end of the course, the students will be able to:

- get a holistic overview of the inter disciplinary nature of Public health. They will be able to understand and address behavioral, social and cultural factors that impact individual and population health disparities.
- understand public health issues in India particularly related to Malnutrition,

sanitation issues and related burden of infectious disease, and the role of pollution as a public health concern.

- gets hands-on training on preparation of questionnaire and collection of primary and secondary data relevant to public health issues. They will be trained to use epidemiological methods to analyze patterns of disease progression in a population and describe applications and programs that can help address or mitigate the issue.
- To study various factors deteriorating quality of water by collecting samples from various parts of cities. Check TDS, pH, colour, odour, and transparency of water sample.
- Study of probable causes of stress and mental health problems. Design of some remedial strategies to overcome these problems.
- They will also learn to present the relevant data after subjecting it to statistical analysis. They will be able to identify and apply the appropriate statistical method needed to analyze and describe a public health problem.

Skill development and job opportunities:

Public health professionals are involved in everything from identifying diseases to creating public policy to helping refugees integrate into new communities. Now more than ever most of the world has witnessed first-hand a public health crisis and there will be no shortage or demand for well-trained public health professionals.

- After completion the course, students will be able to have career opportunities that include Medical and Health Services Manager, Biostatistician, Health care consultant, Epidemiologist, Occupational Health and Safety Specialist, Social and Community Service Manager, Health Education Special

SYLLABUS OF SEC

Unit I: Introduction to public health and hygiene **3 weeks**

Significance of public health, and hygiene to prevent spread of diseases (e.g. TB, leprosy, cholera, food poisoning etc.). Introduction to health care and **WASH** (Water, Sanitation and Hygiene)

Practical exercises:

1. To study various hygiene practices like personal, menstrual, oral and hand hygiene etc.

2. Field visit for understanding the health programs and hygiene like Asha worker interviews/Sulabh international museum of toilets/Water Treatment Plant (any one)

Unit II: Public health Biology **7 weeks**

What is public health nutrition? Application of nutrition concepts to design programs of public health concern, What are communicable diseases?

Understanding the biology, socioeconomic factors and other environmental conditions that influence the transmission and infection by pathogenic (disease-causing) bacteria, viruses, parasites, and fungi.

Practical exercises

Assessment of nutritional status using anthropometric indices like BMI, WHR.
Assessment of Nutritional status by a survey of clinical and non-invasive biochemical parameters.

- To study the following medically important organisms like mosquito, house fly cockroach and rats as transmission vectors for infectious disease
- Measuring blood pressure and correlating it with lifestyle.
- Case study of a disease (Nutritional, infectious and lifestyle) along with the public health data with analysis and discussion

Unit III: Environmental determinants of Public Health 5 weeks

Determinants of Environmental Health: factors that affect environmental health; Occupational environment and health concerns; Understanding effect of air, water and soil Pollution on health.

Practical exercises:

- To determine the portability of water using, pH, BOD, COD and MPN of the water sample from different sources.
- Collecting secondary data on AQI from different areas and correlate with health indices in that area.
- Field visits to nearby health care center to collect some data on the rate of a particular disease over past few months or years.

Essential/Recommended readings

1. Aschengrau A, Seage G.R., (2013) Essentials Of Epidemiology In Public Health Jones and Bartlett Publishers, Inc; 3rd edition
2. Bamji MS, Rao NP, Reddy V.(2017).Textbook of human nutrition. (4thed). Delhi: Oxford and IBH Publishing co. (P) Ltd.
3. Environmental Microbiology edited by I.L. Pepper, C.P. Gerba, T.J. Gentry. 3rd edition. Academic Press, USA. 2014.

Suggested readings:

1. Gibney et al.(2004). Public health nutrition. Hoboken, NJ: Blackwell Publishing
2. N. Okafor. (2011) Environmental Microbiology of Aquatic and Waste Systems by Springer, USA.
3. Waste Water Microbiology by D.H. Bergey. 2nd Edition. Medtech, India. 2019.
4. Park, K. (2017), Preventive and Social Medicine, B.B. Publishers.

5. Engelkirk P.G. and Duben-Engelkirk J. (2015) Burton's Microbiology for the HealthSciences, 10th Edn. Wolters Kluwer Health.
6. Shanmugavel, G. and George, B. Textbook of public health and hygiene. Darshan Publishers, 25-Jan-2021

Examination scheme and mode:

Total Marks: 50
Internal Assessment (Practical): 25 marks
End Semester Practical Exam*: 25 marks

The Internal Assessment for the course may include Class participation, Assignments, Class tests, Projects, Field Work, Presentations, amongst others as decided by the faculty.
For End Semester Practical Exam External to be appointed by the parent Department.

LaTeX TYPESETTING FOR BEGINNERS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
LaTeX Typesetting for Beginners	2	0	0	2	Class XII	NIL

Learning Objectives: The objective of this course is to introduce:

- LaTeX, a high-quality open-source typesetting software that produces professional prints and PDF files for research articles and books in all subjects, and languages.
- Typesetting in Indian languages using LaTeX by transliteration and ITRANS packages.

Learning Outcomes: After completion of the course the learner will be able to:

- Prepare a LaTeX document with title page including contents, references, and index.
- Understand the Indian language transliteration package (ITRANS-processor) for typesetting Sanskrit, Hindi, Punjabi, Malayalam, etc. using LaTeX.

UNIT-I: Getting Started with LaTeX (24 hours)

Installing and using LaTeX for creating a first LaTeX document; Formatting text and understanding LaTeX commands and environments; Designing pages, Creating a book with chapters and table of contents, Creating and customizing lists, Including images, and creating tables with captions.

UNIT-II: Cross-References, Index, Bibliography and Large Documents (16 hours)

Setting labels and references, Hyperlinks; Customizing the table of contents, Generating an index, Creating a bibliography; Writing basic math formulas and equations; Developing large documents by splitting the input and creating front/back matter.

UNIT-III: Typesetting in Indian Languages using LaTeX (20 hours)

Transliteration symbols with illustrative examples of the Indian languages, such as Sanskrit, Hindi (Devanagari), Punjabi, and Malayalam; Creation of the transliterated document for typesetting in Devanagari (for Sanskrit, Hindi, and Marathi), Gurumukhi (for Punjabi), and Rachana (for Malayalam); ITRANS pre-processor package to convert English-encoded text into various Indian language script such as Gujarati, Bengali, Kannada, Tamil, Telugu, etc.

Essential Readings

1. Kottwitz, Stefan (2021). LaTeX Beginner's Guide (2nd ed.). Packet Publishing Ltd.
2. Nambudiripad, K.B.M. (2014). LaTeX for Beginners. Narosa Publishing House, Delhi.
3. https://ctan.org/pkg/devanagari; https://www.ctan.org/pkg/gurmukhi-singh
4. https://ctan.org/tex-archive/language/indian/itrans

Suggested Reading

- Lamport, Leslie (1994). LaTeX: A Document Preparation System, User's Guide and Reference Manual (2nd ed.). Pearson Education. Indian Reprint.

Practical Exercises: Getting started with free open-source software LaTeX for typesetting documents from chapter 1 of the text book [1]: LaTeX Beginner's Guide (2nd ed.) by Stefan Kottwitz for installing and using LaTeX. Learners are required to:

- Design a LaTeX document by choosing title, author, date, address, page dimensions, margins, adjust line spacing, add footnotes, and orientation.
- Create a document with bulleted lists, numbered lists, and definition lists. Furthermore, modify the document with compact and customized versions of such lists, including spacing adjustments and interrupting and resuming.
- Create tables, adding captions to tables, putting text into columns, spanning columns and rows, using LaTeX packages to auto-fit columns.
- Generate a document by customizing the table of contents, lists of figures and tables, producing an index pointing to relevant information for keywords and phrases.
- Typesetting fine-tune math expressions, align and number equations, and use various math symbols from the amsmath package in LaTeX.
- Generate a list of five books related to your field of interest under an automatically generated title 'Bibliography', using thebibliography command in LaTeX. Illustrate how these references are cited in the body of a document.
- Create a LaTeX file to manage large documents consisting of several LaTeX files by splitting the input, including front and back matter and a separate title page.
- Transliterate these six names: Aryabhata, Arthashastra, Bhaskaracharya, Chanakya, Ganita Bharati, and Shankaracharya, and write them in itemize form using Devanagari package in LaTeX. Also use the verbatim environment to display the LaTeX code.
- Typeset ten words of your choice using ITRANS pre-processor package in LaTeX to convert English-encoded text into any one Indian language script.

Teaching Plan (SEC Paper: LaTeX Typesetting for Beginners)

Week 1: Installing and using LaTeX for creating a first LaTeX document. **[1]**: **Chapter 1**.
Week 2: Formatting text and understanding LaTeX commands and environments. [1]: **Chapter 2**.
Week 3: Designing pages, Creating a book with chapters and table of contents. [1]: **Chapter 3**.
Week 4: Creating and customizing lists. [1]: **Chapter 4**.
Week 5: Including images. [1]: **Chapter 5**.
Week 6: Creating tables with captions. [1]: **Chapter 6**.
Week 7: Setting labels and references, Hyperlinks. [1]: **Chapter 7**.
Week 8: Customizing the table of contents, Generating an index, Creating a bibliography. [1]: **Chapter 8**.
Week 9: Writing basic math formulas and equations. [1]: **Chapter 9**.
Week 10: Developing large documents by splitting the input and creating front/back matter. [1]: **Chapter 11**.
Weeks 11, and 12: Transliteration symbols with illustrative examples of the Indian languages, such as Sanskrit, Hindi (Devanagari), Punjabi, and Malayalam. [2]: **Chapter 9**; and **gurmukhi**
Weeks 13, and 14: Creation of transliterated document for typesetting in Devanagari (Sanskrit, Hindi and Marathi), Gurumukhi (Punjabi), and Rachana (Malayalam). [2]: **Chapter 10**; [3]: **Devanagari**, and **Gurmukhi**.
Week 15: ITRANS pre-processor package to convert English-encoded text into various Indian language script such as Gujarati, Bengali, Kannada, Tamil, Telugu, etc. [4]: **Itrans: Indian languages**

MATHEMATICAL MODELING WITH EXCEL

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Mathematical Modeling with Excel	2	0	0	2	Class XII pass with Mathematics	NIL

Learning Objectives: The objective of this course is to introduce:

- The importance and significance of assumptions behind a mathematical model.
- The long–term behavior of discrete dynamical systems numerically and graphically.
- Monte Carlo simulations with real-life examples.
- Linear programming, transportation, assignment and traveling salesman problems.

Learning Outcomes: After completion of the course the learner will be able to:

- Understand the purpose and process of mathematical modeling.
- Model different scenarios with linear discrete dynamical systems.
- Formulate and solve LP, transportation and assignment problems using Excel Solver.

UNIT-I: Modeling with Proportionality and Geometric Similarity (20 hours)

Definition, purpose, process, assumptions, and examples of mathematical modeling; Charts in excel using given data, Modeling with proportionality: Population growth, Radioactive decay, and Free-falling object; Fitting straight lines analytically, Geometric similarity, and Linearizable models.

UNIT-II: Discrete-time Models (16 hours)

Discrete dynamical system concepts and examples; Long-term behavior and equilibria, Discrete logistic equation, Linear predator-prey model, SIR model of epidemics, SIS model.

UNIT-III: Simulations and Linear Optimization (24 hours)

Monte Carlo simulation: Flipping a coin, Area under a curve, Car dealership contest, and the birthday problem; Formulation of linear programming, transportation and assignment problems and their solutions using Excel Solver tool; Traveling salesman problem.

Essential Reading

1. Albright, Brian, & Fox, William P. (2020). Mathematical Modeling with Excel (2nd ed.). CRC Press, Taylor & Francis Group.

Suggested Reading

- Giordano, Frank R., Fox, William P., & Horton, Steven B. (2014). A First Course in Mathematical Modeling (5th ed.). CENGAGE Learning India.

Practical Exercises: Practical work to be performed using Excel spreadsheets for the modeling of the following type of problems:

- The data given below measures shoe length (to the nearest quarter of an inch) and height (to the nearest half inch) of ten persons, to determine if there is a relationship between shoe length and height of a person. Graph Height vs. Shoe Length and fit a straight line to the data. How well does this model fit the data?

Shoe Length	9	10	10.5	11	11.5	11.75	12	12.5	12.75	13
Height	62	64	64.5	69	70	73	72	75	74	77

- The table below contains the total length and weight of 10 black bears. Graph weight vs. length, fit different linearizable models to the data, and select the one that best fits the data. Explain.

Length	139	138	139	120.5	149	141	150	166	180	129.5
Weight	110	60	90	60	85	95	85	155	220	105

- The table below contains data on the population of foxes in a forest over a period of several years. Fit a discrete logistic equation to the data. How well does the model fit the data?

n	0	1	2	3	4	5	6	7	8	9	10
a_n	50	85	110	130	175	200	215	221	228	232	234

- Consider a disease such as the common cold where a person is *not* immune once they are 'healed.' Once healed, a person becomes susceptible again. Such a disease could be modeled with an SIS model. Implement your model in an Excel worksheet to describe the spread of the common cold through a population of 1,000 where initially 4 people have the cold and assuming that the cold lasts an average of 2 weeks (use α = 0.00167). What do you observe?
- Random number generation in Excel and then use it to simulate area under a given curve.
- An automobile repair company performs paint-less dent removal from hail damaged cars and trucks. Each vehicle must be processed in both the body assembly shop and the finishing shop. In the body shop it takes 0.5 man-hours to repair a car and 0.5 man-hours to repair a truck. There are 25 body shop man-hours available per day. In the finishing shop it takes 0.4 man-hours to finish a car and 0.6 man-hours to finish a truck. There are 24 finishing man hours available per day. Each car contributes Rs. 20000 to overall profit, and each truck contributes Rs. 22500 to overall profit. Find number of cars & trucks the company can service a day to maximize overall profit, using Solver.

Teaching Plan (SEC Paper: Mathematical Modeling with Excel)

Week 1: Definition, purpose, process, assumptions, and examples of mathematical modeling; **[1]**:Chapter 1.

Week 2: Charts in excel using given data. **[1]**: Chapter 2 (Sections 2.1, and 2.2).

Week 3: Modeling with proportionality: Population growth, Radioactive decay, and Free-falling object. [1]: Chapter 2 (Section 2.3).

Weeks 4 and 5: Fitting straight lines analytically, Geometric similarity, and Linearizable models. [1]: Chapter 2 (Sections 2.4 to 2.6).

Weeks 6, and 7: Discrete dynamical system concepts and examples; Long-term behavior and equilibria, Discrete logistic equation. [1]: Chapter 4 (Sections 4.1 to 4.3).

Weeks 8, and 9: Linear predator-prey model, SIR model of epidemics, and SIS model. [1]: Chapter 4 (Sections 4.4, and 4.6).

Weeks 10, and 11: Monte Carlo simulation: Flipping a coin, Area under a curve, Car dealership contest, and the birthday problem. [1]: Chapter 6 (Section 6.2), and Section 6.3 (Example 6.3.2 and Exercise 6.3.4 only).

Weeks 12 to 14: Formulation of linear programming, transportation and assignment problems and their solutions using Excel Solver tool. [1]: Chapter 7 (Sections 7.2 to 7.4).

Week 15: Traveling salesman problem. [1]: Chapter 8 (Section 8.8).

FINANCIAL MODELING WITH EXCEL

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Financial Modeling with Excel	2	0	0	2	Class XII	NIL

Learning Objectives: The objective of this course is to:

- Build financial models using Excel functions to solve some real-life financial problems.
- Acquire practical skills and knowledge that are useful for investment banking.

Learning Outcomes: After completion of the course the learner will be able to:

- Compute present value and future value of a cashflow or annuity.
- Create loans and amortization tables, and find price, yield, and duration of a bond.
- Draw option payoff diagrams and option strategy diagrams.
- Find option price using Black-Scholes, and binomial models.

UNIT-I: Time Value of Money (28 hours)

Building good financial models, Interest rates, Future value, Present value, Annuity, Perpetuity, Present value of an annuity, Present value of a perpetuity, Present value of non-annuity cash flows; Net present value (NPV), Internal rate of return (IRR), NPV vs IRR; Loans and amortization tables, Interest-only loan, An equal amortization term loan, Mortgage; Effective interest rates, Cost of a mortgage, Continuous compounding and discounting.

UNIT-II: Bond Pricing and Duration (12 hours)

Characteristics of bonds, Zero-coupon bond, Bond valuation, Yield to maturity, Yield curve and forward rates; Macaulay duration, Modified duration, and convexity.

UNIT-III: Options, Black-Scholes, and Binomial Models (20 hours)

Call and put options, Option strategies, Put-call parity, Black-Scholes formulae for prices of call and put options; Binomial option pricing model, and two-period binomial model.

Essential Readings

1. Benninga, Simon & Mofkadi, Tal (2018). Principles of Finance with Excel (3rd ed.). Oxford University Press, New York.
2. Sengupta, Chandan (2004). Financial Modeling using Excel and VBA. John Wiley.

Suggested Readings

- Day, Alastair L. (2015). Mastering Financial Mathematics in Microsoft Excel (3rd ed.). Pearson Education Ltd.
- Luenberger, David G. (2014). Investment Science (2nd ed.). Oxford University Press.

Practical Exercises: Review of Excel spreadsheets concepts including functions and graphs from [1]: Part Five Excel Skills. Practical work to be performed using Excel spreadsheets for the modeling of the following type of problems:

1. Calculating future value, present value, and present value of an annuity. Use of Excel functions **FV**, **PV, NPV, and PMT**. [1]: Chapter 2, Exercises 1,3,5, and 7 pages 46-47.
2. Calculating net-present value (NPV) and internal rate of return (IRR). NPV vs IRR. Use of Excel functions **NPV** and **IRR.** [1]: Chapter 3, Exercises 1 to 3 pages 99-100.
3. Creating loan and amortization table. Use of Excel functions **IPMT** and **PPMT**. [1]: Chapter 4, Exercises 1 to 3 pages 132-133.
4. Computing effective annual interest rate (EAIR), using function **IRR**, and **XIRR** (for dates, not evenly spaced). [1]: Chapter 5, Exercises 1, 4, 7, and 9 pages 169-171.
5. Calculating bond price and yield to maturity (YTM) of a bond. Use of Excel functions **PRICE**, **YIELD**, **IRR**, and **XIRR** (for non-periodic cash flows). [2]: Models 2, and 3 pages 276-279.
6. Computing duration, modified duration, and convexity of a bond. Use of Excel functions **DURATION,** and **MDURATION.** [2]: Models 4, and 5 pages 280-284.
7. Computing payoffs of call and put options, and draw profit diagrams in Excel. [1]: Chapter 17, Exercises 1 to 4 pages 572-574.
8. Studying and comparing option strategies: Bear spread, Bull spread, and Butterfly spread, and draw corresponding profit diagrams in Excel. [1]: Chapter 17, Exercises 18, 19, and 21 pages 581-583.
9. Using Black-Scholes formulae to find prices of call and put options. [1]: Chapter 19, Exercises 1 to 4 page 626.
10. Using binomial model to find prices of call and put options, and Excel tree diagram. [1]: Chapter 20, Exercises 3 to 5 page 653.

Teaching Plan (SEC Paper: Financial Modeling with Excel)

Week 1: Excel Skills, Building good financial models.
[1]: Review of Excel basics and functions from Chapters 21 to 23, and Chapter 1(Section 1.4).
Week 2: Interest rates, Future value. [1]: Chapter 2 (Section 2.1).
Weeks 3, and 4: Present value, Annuity, Perpetuity, Present value of an annuity, Present value of a perpetuity, Present value of non-annuity cash flows. [1]: Chapter 2 (Section 2.2).
Week 5: Net present value (NPV), Internal rate of return (IRR), NPV vs IRR.[1]: Chapter 3 (3.1 to 3.3).
Week 6: Loans and amortization tables, Interest-only loan, An equal amortization term loan, Mortgage. [1]: Chapter 4 (Sections 4.2 to 4.5).
Week 7: Effective interest rates, Cost of a mortgage, Continuous compounding and discounting.
[1]: Chapter 5 (Sections 5.1, 5.2, and 5.7).
Weeks 8 to 10: Characteristics of bonds, Zero-coupon bond, Bond valuation, Yield, Yield curve and forward rates; Macaulay duration, Modified duration, and convexity. **[2]**: Chapter 10.
Weeks 11 to 13: Call and put options, Option strategies, Put-call parity.
[1]: Chapter 17, and Chapter 18 (Section 18.3, and Exercises 4 to 6, page 602).
Week 14: Black-Scholes formulae for prices of call and put options. [1]: Chapter 19 (Section 19.1).
Week 15: Binomial option pricing model, Two-period binomial model. [1]: Chapter 20 (20.1 to 20.3).

NETWORK FLOWS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Network Flows	2	0	0	2	Class XII	NIL

Learning Objectives: The objective of this course is to:

- Introduce the transportation and assignment problems as network models.
- Learn more about network optimization models and describe the characteristics of various network flow problems.
- Understand the critical path method (CPM) designed to assist in the planning, scheduling, and control of projects.

Learning Outcomes: After completion of the course the learner will be able to:

- Formulate and solve transportation and assignment problems using Excel.
- Understand the network flow problem of types - shortest-path problem, minimum spanning tree problem, maximum flow, and minimum cost flow problems, and their optimum solutions using Excel spreadsheet.
- Apply the critical path method (CPM) of time-cost trade-offs for project management.

UNIT-I: Transportation and Assignment Problems (20 hours)

Network representation of the transportation and assignment problems, Formulate transportation and assignment problems, and solve using Excel.

UNIT-II: Network Optimization Models (24 hours)

Terminology of networks; Formulate and use Excel to solve shortest-path, minimum spanning tree, maximum flow, and minimum cost flow problems; Critical path method (CPM) of time-cost trade-offs using Excel spreadsheet.

UNIT-III: Case Studies (16 hours)

Shipping wood to market, Project pickings, Money in motion, Steps to success.

Essential Reading

1. Hillier, Frederick S., & Lieberman, Gerald J. (2021). Introduction to Operations Research, (11th ed.). McGraw-Hill Education.

Suggested Readings

- Ragsdale, Cliff T. (2022). Spreadsheet Modeling and Decision Analysis: A Practical Introduction to Business Analytics (9th ed.). CENGAGE Learning.
- Taha, Hamdy A. (2017). Operations Research: An Introduction (10th ed.). Pearson Education Limited.

Practical Exercises: Use Excel spreadsheet to solve transportation, and assignment problems, shortest-path problem, maximum flow problem, minimum cost flow problem, and CPM calculations of following type of exercises from the chapters 9 and 10 of [1].

- 9.1-1, 9.3-1, Case 9.1 (Shipping Wood to Market), and Case 9.3 (Project Pickings).
- 10.3-2, 10.3-6, 10.5-3, 10.6-5, 10.8-1, Case 10.1 (Money in motion), and Case 10.3 (Steps to success).

Teaching Plan (SEC Paper: Network Flows)

Weeks 1 to 5: Network representation of the transportation and assignment problems, Formulate transportation and assignment problems, and solve using Excel.
[1]: Chapter 9 (Sections 9.1, and 9.3).
Weeks 6, and 7: Terminology of networks, Formulate and use Excel to solve Shortest-path problem.
[1]: Chapter 10 (Sections 10.2, and 10.3).
Week 8: The minimum spanning tree problem. [1]: Chapter 10 (Section 10.4).
Weeks 9, and 10: Formulate maximum flow, and minimum cost flow problems and solve using Excel.
[1]: Chapter 10 [Sections 10.5, and 10.6 (including special cases fit into the network format of the minimum cost flow problems, pages 388-390)].
Week 11: Critical path method (CPM) of time-cost trade-offs using Excel spreadsheet.
[1]: Chapter 10 (Section 10.8).
Week 12: Shipping wood to market. [1]: Chapter 9 (Case 9.1).
Week 13: Project pickings. [1]: Chapter 9 (**Case 9.3**).
Week 14: Money in motion. [1]: Chapter 10 (Case 10.1).
Week 15: Steps to success. [1]: Chapter 10 (**Case 10.3**).

R-SHINY: POWERFUL WEB APPS FOR EVERYONE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
R-Shiny: Powerful Web Apps for Everyone	2	0	0	2	Class XII	NIL

Learning Objectives: The objective of this course is to:

- Build interactive web applications for charts, tables, graphs, and maps using R Shiny.
- Create, develop, and deploy Shiny web applications using reactive components.
- Customize the appearance of Shiny web apps using Shiny in R Markdown.

Learning Outcomes: After completion of the course the learner will be able to:

- Understand the fundamentals of Shiny and develop interactive web applications.
- Understand reactive programming concepts and building reactive web applications.
- Learn R Markdown and deploy Shiny apps locally and to the web with flexdashboard.

UNIT-I: Introduction to Shiny and Basic User Interface (UI) components (20 hours)

What is Shiny? How Shiny works with R; Create Shiny app directory and file, Adding UI controls, and behaviour; Building the UI using the fluidPage(), Input, and Output functions, and deploy Shiny apps locally using server function.

UNIT-II: Reactive Programming in Shiny (20 hours)

Basic reactivity: The server function and creating reactive outputs using Shiny's render functions, Reactive programming, Reactive graph, and reactive expressions.

UNIT-III: Shiny in R Markdown (20 hours)

R Markdown: Installation, Basics**,** Shiny with flexdashboard**,** Building Shiny documents by adding the option 'runtime: shiny' to the YAML metadata; Deploy Shiny apps to the web, Embedded Shiny apps, and Shiny widgets.

Essential Readings

1. Wickham, Hadley (2021). Mastering Shiny: Building Interactive Apps, Reports, and Dashboards Powered by R. O'Reilly Media. (https://mastering-shiny.org/)
2. https://shiny.rstudio.com/tutorial/
3. Xie, Yihui, Allaire, J.J, & Grolemund, Garrett (2019). R Markdown: The Definitive Guide. CRC Press, Taylor & Francis Group. (https://bookdown.org/yihui/rmarkdown/)

Suggested Reading

- Granjon, David (2022). Outstanding User Interfaces with Shiny. CRC Press.

Practical Exercises: Practice exercises from first three chapters of Hadley's Mastering Shiny.

Teaching Plan (SEC Paper: R-Shiny: Powerful Web Apps for Everyone)

Weeks 1, and 2: What is Shiny? How Shiny works with R; Create Shiny app directory and file, Adding UI controls, and behaviour. **[1]**: Preface, and Chapter 1.
[2]: Welcome to Shiny: **Lesson1**, and **getting started**
Weeks 3 to 5: Basic UI: Building the UI using the fluidPage(), Input, and Output functions, and deploy Shiny apps locally using server function. [1]: Chapter 2
[2]: Build a UI and control widgets: **Lesson2**, and **Lesson3**
[2]: **User Interface and server function**
Weeks 6 to 8: Basic reactivity: The server function and creating reactive outputs using Shiny's render functions. [1]: Chapter 3 (pages 27-30); [2]: Reactive output: **Lesson4**
[2]: **Reactive Flow**, and **Reactive Elements**
Weeks 9, and 10: Reactive programming, Reactive graph, and reactive expressions.
[1]: Chapter 3 (pages 30-35).
[2]: Reactive expressions: **Lesson6**
Weeks 11, and 12: R Markdown: Installation, Basics, Shiny with flexdashboard.
[3]: Chapter 1, Chapter 2 (p. 5-8, and section 2.8.2, p. 42-45), Chapter 5 (Section 5.3, p. 131-135).
Weeks 13 to 15: Building Shiny documents by adding the option 'runtime: shiny' to the YAML metadata; Deploy Shiny apps to the web, Embedded Shiny apps, and Shiny widgets.
[3]: Chapter 19 (Sections 19.1 to 19.4, pages 283-293); [2]: Share Shiny Apps: **Lesson7**

COMMON POOL OF SKILL ENHANCEMENT COURSES (SECs) OFFERED BY THE DEPARTMENTS in 1st SEMESTER

(SEC-1): Spoken Persian – Elementary level

Credit distribution, Eligibility and Pre-requisites of the Course:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Spoken Persian: Elementary level	2	2	Nil	Nil	12th Class Pass	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- To enable the students to speak daily usage spoken Persian

Learning outcomes

The Learning Outcomes of this course are as follows:

- By learning this course, the students will be able to speak in commonly spoken Persian language
- By learning this course, the students may get a chance to work as a tourist guide.

SYLLABUS OF SEC-1

UNIT – I (3 Weeks)

- Applied Grammar

UNIT – II (3 Weeks)

- Persian conversation techniques

UNIT – III (2 Weeks)

- Translation from Persian to English and vice-versa

Essential/recommended readings

1. Let's Learn Persian (first half of the book; pp. 1-103) NCPUL, MHRD, New Delhi.

2. Gargesh, R. Goswami, Translation and Interpretation, University of Delhi, Delhi.
3. Kumar, Rajinder, Elementary Persian Grammar, Great Book Contractor, Lal Kuan, Delhi-110006, 2018.
4. English Farsi Phrasebook with useful wordlist, US Department of State, Washington DC.
5. Sufi, Abdul Aziz, Essentials of Persian Translation, Indo-Iran Society, Lal Kuan, Delhi-06, 1999.

ANNEXURE-28

Sub: Amendment to Ordinance V

[E.C Resolution No. 27-1-9/- dated 25.08.2023]

Following addition be made to Appendix-II-A to the Ordinance V (2-A) of the Ordinances of the University;

Add the following:

Following courses have been included in the Pool of Generic Electives offered by Delhi School for Skill Enhancement and Entrepreneurship Development (DSSEED) for Entrepreneurship and Delhi School of Analytics for Data Analytics :

Generic Elective (Entrepreneurship) offered by DSSEED	**Generic Elective (Data Analytics) offered by Delhi School of Analytics**
1. Entrepreneurship Essentials – 1 2. Entrepreneurship Essentials – 2 3. Creativity and Innovation 4. Fundraising and Management for Entrepreneurs 5. Marketing and Sales for Entrepreneurs 6. Startup Operations and Future-proofing 7. Social Entrepreneurship and Social Innovation	1. Python and data fundamentals 2. Machine Learning and Applications 3. Deep Learning and Application 4. Natural Language Processing 5. Financial Analytics 6. Marketing Analytics 7. Accounting Analytics 8. Human Resource Analytics 9. Social Media Analytics

POOL OF GENERIC ELECTIVES (ENTREPRENEURSHIP)
OFFERED BY DELHI SCHOOL FOR SKILL ENHANCEMENT AND ENTREPRENEURSHIP DEVELOPMENT (DSEEED)

GENERIC ELECTIVE (GE-1)

Credit distribution, Eligibility and Pre-requisites of the Course						
Course title	**Credits**	**Credit distribution of the course**			**Eligibility criteria**	**Pre-requisite of the course**
		Lecture	**Tutorial**	**Practical/ Practice**		
Entrepreneurship Essentials - 1	**4**	**2**		**2**	**Class XII pass**	**Nil**

Course Description:
This course provides an overview of the essential aspects of entrepreneurship, equipping students with the knowledge and skills required to identify opportunities, develop innovative business models, and launch successful ventures. The course combines theoretical lectures with practical Session, enabling students to gain hands-on experience in developing their entrepreneurial projects.

Learning Objectives
Students of this course should be able to:

- Understand fundamental concepts and principles of entrepreneurship, including opportunity recognition and value creation.
- Develop an entrepreneurial mindset and skills that will enable them to identify, evaluate, and pursue viable business opportunities with confidence.
- Formulate comprehensive business plans that address key elements such as market analysis, product/service development, marketing strategy, sales strategy, and financial planning.
- Enhance leadership and team management capabilities, empowering them to foster a positive and productive work environment within their ventures.
- Acquire knowledge and skills in marketing aspects of entrepreneurship, including branding, positioning, sales techniques, digital marketing, and networking.

Learning outcomes
At the end of this course, students should be able to:

- Understand the fundamental of entrepreneurship, importance of opportunity recognition and value creation in entrepreneurship.
- Interpret and analyze market research data and customer analysis to make informed business decisions.
- Apply entrepreneurial thinking and skills to identify and evaluate business opportunities.
- Evaluate financial data and projections to make informed financial decisions and manage cash flow effectively.

- Develop effective marketing and sales strategies by combining knowledge of customer analysis, branding, and positioning.

SYLLABUS

Unit 1: Introduction to Entrepreneurship and Opportunity Recognition (16 hours)
Classroom Sessions:

1.1.1 Understanding Entrepreneurship: Concepts and Importance
1.1.2 Why be an Entrepreneur?
1.1.3 Traits of Successful Entrepreneurs, Types of Entrepreneurs (entrepreneurs as leaders)
1.1.4 Entrepreneurial Ecosystem in India

Practical Sessions:

1.1.1 Guest Speaker Session
1.1.2 Entrepreneurial Mindset Assessment (GETT)
1.1.3 Entrepreneurial Traits Analysis and Role Play
1.1.4 A field trip to a local startup incubator

Essential Readings:

1.1.1 Baron, R. A., & Shane, S. A. (2008). Entrepreneurship: A process perspective. Cengage Learning. .
1.1.2 Hisrich, R. D., Peters, M. P., & Shepherd, D. A. (2019). Entrepreneurship (11th ed.). McGraw-Hill Education.

Suggested Readings:

1.1.1 Shane, S. A. (2003). A general theory of entrepreneurship: The individual-opportunity nexus. Edward Elgar Publishing. .
1.1.2 Gupta, V. K., & Batra, S. (2019). Entrepreneurship: New Venture Creation (2nd ed.). Pearson.

Suggested Case Studies (Indian Context):

1.1.1 Online e-commerce websites like Flipkart etc. (Focus on Laying the foundations)
1.1.2 Online Fintect providers like Paytm etc. (Focus on Launching Digital Wallets in India)
1.1.3 Online hotel room agrregators like OYO etc. (Focus on Starting small in an unorganised sector)

Unit 2: Entrepreneurial Mindset (16 hours)
Classroom Sessions:

1.2.1 Introduction to Entrepreneurial Mindset
1.2.2 Key Dimensions of Entrepreneurial Mindset and its role in Entrepreneurial Success
1.2.3 Developing & Cultivating an Entrepreneurial Mindset
1.2.4 Ethical Considerations for Entrepreneurs

Practical Sessions:

1.2.1 Mindset Reflection Exercise (Gratitude Journal, SWOT analysis, Failures and Learnings)
1.2.2 Interaction with a successful entrepreneur
1.2.3 Personal Growth Plan
1.2.4 Case Study Analysis

Essential Readings:

1.2.1 Neck, H. M., Neck, C. P., & Murray, E. L. (2017). Entrepreneurship: The practice and mindset. SAGE Publications. .

1.2.2 Dweck, C. S. (2006). Mindset: The new psychology of success. Ballantine Books.

Suggested Readings:

1.2.1 Sarasvathy, S. D. (2009). Effectuation: Elements of entrepreneurial expertise. Edward Elgar Publishing. .

1.2.2 Morris, M. H., Kuratko, D. F., & Covin, J. G. (2020). Corporate entrepreneurship: Entrepreneurial development within organizations. Cengage Learning.

Suggested Case Studies (Indian Context):

1.2.1 Influential Indian entrepreneurs like Dhirubhai Ambani etc.

1.2.2 Industry leaders like Narayana Murthy etc. (Focus on building businesses from Scratch)

1.2.3 Important corporate scandals in India like the Satyam Scandal (Focus on Lessons in Corporate Ethics)

Unit 3: Business Opportunities Identification (12 hours)

Classroom Sessions:

1.3.1 Identifying, Evaluating Business Opportunities and Generating Ideas

1.3.2 Concept of Empathy and Design Thinking

1.3.3 Identifying opportunities for social entrepreneurship

1.3.4 Feasibility & Viability Analysis

Practical Sessions:

1.3.1 Opportunity Scanning and Idea Generation Workshop

1.3.2 Design Thinking Challenge

1.3.3 Social Impact Assessment Workshop

1.3.4 Feasibility Study Simulation

Essential Readings:

1.3.1 Ries, E. (2011). The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses. Crown Business.

1.3.2 Bornstein, David. (2003). How to change the world : social entrepreneurs and the power of new ideas. Oxford ; New York : Oxford University Press.

Suggested Readings:

1.3.1 Baron, R. A. (2018). Opportunity recognition as pattern recognition: How entrepreneurs "connect the dots" to identify new business opportunities. Academy of Management Perspectives, 32(3), 332-345.

1.3.2 Timmons, J. A., & Spinelli, S. (2019). New venture creation: Entrepreneurship for the 21st century. McGraw-Hill Education.

Suggested Case Studies (Indian Context):

1.3.1 Online Cab aggregators like Ola Cabs (Focus on Revolutionizing the Taxi Industry)

1.3.2 Social upliftment ventures like Project Chirag etc. (Focus on Empowering Rural India)

1.3.3. Online food delivery aggregators like Zomato (Focus on making the move from Start-up to Unicorn)

Unit 4: Market Analysis & Customer Research (16 hours)

Classroom Sessions:

1.4.1 Know your customers: Basics of Segmenting the customer and the market

1.4.2 Identifying Customer Segmentation and Conducting Market Research

1.4.3 Customer Value Proposition

1.4.4 Moving ahead with customer targeting

Practical Sessions:

1.4.1 Market Segmentation Activity

1.4.2 Designing a Market Research Plan

1.4.3 Crafting a Unique Value Proposition

1.4.4 Customer Targeting Simulation

Essential Readings:

1.4.1 Kotler, P., Keller, K.L., & Cunningham, P.H. (2018). Marketing Management. Pearson .

McDonald, M., & Dunbar, I. (2012). Market segmentation: How to do it, how to profit from it. John Wiley & Sons.

1.4.2 Osterwalder, A., Pigneur, Y., Bernarda, G., & Smith, A. (2014). Value proposition design: How to create products and services customers want. John Wiley & Sons. .

Suggested Readings:

1.4.1 Zeithaml, V. A. (1988). Consumer perceptions of price, quality, and value: A means-end model and synthesis of evidence. Journal of Marketing, 52(3),

1.4.2 Dibb, S., Simkin, L., Pride, W. M., & Ferrell, O. C. (2019). Marketing concepts and strategies. Cengage Learning. .

Suggested Case Studies (Indian Context):

1.4.1 Dairy co-operatives in India like Amul etc. (Focus on Targeting Different Customer Segments)

1.4.2 Online e-commerce websites like Flipkart etc. (Focus on Crafting a Customer-Centric Value Proposition)

1.4.3 Online food delivery aggregators like Swiggy etc. (Focus on Revolutionizing Food Delivery through Targeted Marketing)

GENERIC ELECTIVE (GE-2)

Credit distribution, Eligibility and Pre-requisites of the Course						
Course title	**Credits**	**Credit distribution of the course**			**Eligibility criteria**	**Pre-requisite of the course**
		Lecture	**Tutorial**	**Practical/ Practice**		
Entrepreneurship Essentials - 2	**4**	**2**		**2**	**Class XII pass**	**Entrepreneurship Essentials - 1**

Course Description:

Course Description:

This course provides a comprehensive understanding of key concepts and strategies in entrepreneurship and innovation. It covers various aspects of starting and growing a business, including business models, funding and financial management, marketing, and scaling the venture. Through a combination of theoretical knowledge and practical applications, learners will develop the necessary skills to identify opportunities, create value propositions, and navigate the challenges of entrepreneurship.

Learning Objectives:

Students of this course should be able to:

- Understand the fundamentals of business models, lean startup methodology, competitive analysis, and go-to-market strategies.
- Explore different funding sources for startups and evaluate financing options available, including government and non-government schemes.
- Develop skills in financial planning, projection, and project evaluation to make informed financial decisions.
- Gain insights into branding, positioning, sales techniques, customer acquisition strategies, and the use of social media and digital marketing for entrepreneurial success.
- Learn how to build strategic partnerships and alliances, manage operations, and navigate legal and intellectual property considerations.
- Explore growth strategies, business expansion, and scaling techniques, while understanding exit strategies and preparing for potential exits.

Learning Outcomes:

At the end of this course, students will be able to:

- Analyze and create business models using the Business Model Canvas framework, incorporating lean startup principles and competitive analysis.
- Identify and evaluate different funding sources and financing options suitable for startups, and develop financial plans and projections.
- Apply marketing techniques to effectively brand, position, and promote products or services, utilizing social media and digital marketing channels.

- Employ sales techniques and customer acquisition strategies to drive business growth and profitability.
- Understand the importance of networking and collaboration for business growth, and build strategic partnerships and alliances.
- Demonstrate knowledge of operational management considerations, including organizing, staffing, and legal and intellectual property rights.
- Evaluate growth strategies, expansion opportunities, and scaling techniques to sustain and develop the venture.
- Identify exit strategies and effectively plan for an exit, considering various factors such as valuation and succession planning.
- Following Bloom's Taxonomy, the learning outcomes cover various cognitive levels, including understanding, applying, analyzing, evaluating, and creating.

SYLLABUS

Unit 1: Business Models & Go-to-Market (16 hours)

Classroom Sessions:

2.1.1 Introduction to Business Models and Business Model Canvas
2.1.2 Lean Business model and its key components
2.1.3 Competitive Analysis and Market Positioning
2.1.4 Go-to-Market and Pricing Strategies

Practical Sessions:

2.1.1 Business Model Canvas Workshop
2.1.2 Lean Business Model Simulation Game
2.1.3 Competitive Analysis and Positioning Exercise
2.1.4 Go-to-Market Strategy Simulation

Essential Readings:

2.1.1 Osterwalder, A., & Pigneur, Y. (2010). Business model generation: A handbook for visionaries, game changers, and challengers. Wiley.
2.1.2 Mullins, J.W., & Komisar, R. (2009). Getting to Plan B: Breaking Through to a Better Business Model. Harvard Business Press.
2.1.3. Ries, E. (2011). The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses. Crown Business.

Suggested Readings:

2.1.1. Amit, R., & Zott, C. (2012). Creating value through business model innovation. MIT Sloan Management Review, 53(3), 41-49.
2.1.2 McGrath, R. G. (2010). Business models: A discovery driven approach. Long Range Planning, 43(2-3), 247-261.

Suggested Case Studies (Indian Context):

2.1.1 Online e-commerce websites like Flipkart etc. (Focus on Business Models)
2.1.2 Focus on Indian FMCG companies like Patanjali Ayurved etc. (Focus on Disrupting the FMCG Sector in India)
2.1.3 Online hotel room aggregators like OYO (Focs on Revolutionizing the Hospitality Industry with a Lean Business Model)

Unit 2: Funding and Financial Management (16 hours)

Classroom Sessions:

2.2.1 Funding Sources for startups (Bootstrapping, Venture Capital, Angel Investors, Crowdfunding)

2.2.2 Funding Schemes and Financing Options for Startups (govt and non-govt)

2.2.3 Financial Planning and Projections

2.2.4 Project Evaluation and Break-even Analysis

Practical Sessions:

2.2.1 Developing investor pitch

2.2.2 Exploring Suitable Government and Non-Government Financing Programs for specific Business Model.

2.2.3 Developing Financial Projections for Your idea

2.2.4 Analysing Cash Flow and Break-even Scenarios

Essential Readings:

2.2.1 Hisrich, R. D., & Ramadani, V. (2017). Financing Entrepreneurship and Innovation in Emerging Markets. Springer.

2.2.2 Megginson, W. L., Byrd, J. W., & Megginson, L. C. (2015). Small Business Management: An Entrepreneur's Guidebook. McGraw-Hill Education.

2.2.3 Gompers, P. A., & Lerner, J. (2004). The Money of Invention: How Venture Capital Creates New Wealth. Harvard Business Press.

Suggested Readings:

2.2.1 John Wiley & Sons.Moyer, R.C., McGuigan, J.R., & Kretlow, W.J. (2018). Contemporary Financial Management. Cengage Learning.

2.2.2 Blank, S., & Dorf, B. (2012). The Startup Owner's Manual: The Step-by-Step Guide for Building a Great Company. K&S Ranch. .

Suggested Case Studies (Indian Context):

2.2.1 Online room aggregtaors like Treebo and OYO etc. (Focus on moving from Bootstrapping to Unicorn)

2.2.2 Govt. schemes like Startup India (Focus on Boosting Entrepreneurship in India)

2.2.3 Govt intitiatives in Fintech sector like BHIM App (Focus on Government Initiative for Digital Payments and Startup Funding)

Unit 3: Marketing Aspects of Entrepreneurship (12 hours)

Classroom Sessions:

2.3.1 Branding and Positioning

2.3.2 Sales techniques and customer acquisition strategies

2.3.3 Social Media and Digital Marketing for Entrepreneurs

2.3.4 Networking and Collaborating for Business Growth

Practical Sessions:

2.3.1 Discuss a case study on brand building

2.3.2 Sales Role-Play Exercise

2.3.3 Social Media Campaign Development

2.3.4 Networking and Negotiations exercise

Essential Readings:

2.3.1 Keller, K. L. (2013). Strategic brand management: Building, measuring, and managing brand equity. Pearson.

2.3.2 Chaffey, D., & Ellis-Chadwick, F. (2019). Digital marketing: Strategy, implementation, and practice. Pearson.

Suggested Readings:

2.3.1 Qualman, E. (2019). Socialnomics: How social media transforms the way we live and do business. Wiley.

2.3.2 Zig Ziglar. (1984). Secrets of Closing the Sale. Revell.

Suggested Case Studies (Indian Context):

2.3.1 Dairy co-operatives like Amul etc. (Focus on Branding and Positioning)

2.3.2 Online e-commerce providers like Amazon India etc. (Focus on Revolutionizing E-commerce Sales in India)

2.3.3 Online food delivery aggregators like Zomato etc. (Focus on Leveraging Social Media for Growth)

Unit 4: Scaling the Venture and Growth Strategies (16 hours)

Classroom Sessions:

2.4.1 Growth Strategies and Business Expansion

2.4.2 Building Strategic Partnerships and Alliances

2.4.3 Operational Management Considerations (Organizing, Staffing, Legal, IPR)

2.4.4 Exit Strategies and Preparing for an Exit

Practical Sessions:

2.4.1 Analysing Growth Strategies and Business Expansion Options

2.4.2 Designing the Operational Framework for a Startup

2.4.3 Identifying and Evaluating Potential Strategic Partnerships and Alliances

2.4.4 Exit Planning and Valuation Simulation

Essential Readings:

2.4.1 Christensen, C.M., & Raynor, M.E. (2013). The Innovator's Solution: Creating and Sustaining Successful Growth. Harvard Business Review Press.

2.4.2 Collis, D. J., & Montgomery, C. A. (2008). Competing on resources: Strategy in the 1990s. Harvard Business Review, 73(4), 118-128.

Suggested Readings:

2.4.1 Das, T. K., & Teng, B. (2001). Trust, control, and risk in strategic alliances: An integrated framework. Organization Studies, 22(2), 251-283.

2.4.2 Huse, M., & Ovesen, G. H. (2016). Preparing for exit: A qualitative study of business exit in SMEs. Journal of Small Business and Enterprise Development, 23(3), 706-724.

Suggested Case Studies (Indian Context):

2.4.1 Dairy co-operatives like Amul etc. (Focus on taking Indian dairy brand products Global)

2.4.2 Coffee chains like Tata Starbucks (Focus on Strategic Alliances for Market Penetration)

2.4.3 Online fintech service providers like Paytm etc. (Focus on Managing Operations)

GENERIC ELECTIVE (GE-3)

Credit distribution, Eligibility and Pre-requisites of the Course						
Course title	**Credits**	**Credit distribution of the course**			**Eligibility criteria**	**Pre-requisite of the course**
		Lecture	**Tutorial**	**Practical/ Practice**		
Creativity, and Innovation	**4**	**2**		**2**	**Class XII pass**	**Nil**

Course Description:
This engaging course combines creativity, innovation, and Lean Startup principles to equip entrepreneurs with the tools to turn ideas into successful businesses. Participants will learn to foster a creative mindset, implement innovative solutions, and use Lean Startup techniques such as MVPs and the build-measure-learn feedback loop. The blend of classroom sessions, practical activities, and case studies ensures that participants can apply these strategies to their own ventures in today's competitive business environment.

Learning Objectives:
Students of this course should be able to:

- Identify with a creative mindset that can help enhance creative problem-solving skills.
- Examine the importance of innovation in business success.
- Apply tools and techniques to foster creativity and innovation within their organizations.
- Evaluate the key principles of the Lean Startup methodology.
- Experiment to test Minimum Viable Products (MVPs) and validate business ideas.
- Formulate a Build-Measure-Learn feedback loop for continuous improvement.
- Assemble customer feedback and data-driven decisions to scale and pivot the business.

Learning Outcomes:
At the end of this course, students should be able to:

- Enhanced creative thinking and problem-solving skills to generate innovative ideas and solutions.
- Use their understanding of the role innovation plays in driving business success.
- Judge the application of suitable tools and techniques to foster creativity and innovation within their organizations.
- Set up the implementation of the Lean Startup methodology and its principles for efficient business development.
- Select specific measures to design, test, and validate Minimum Viable Products (MVPs) to assess business ideas.
- Interpret the learnings from the build-measure-learn feedback loop to facilitate continuous improvement and learning.

SYLLABUS

Unit 1: Foundations of Creativity and Innovation (16 hours)

Classroom Sessions:

3.1.1 Foundations of Creativity and Innovations

3.1.2 Creative thinking process, Developing a creative mindset, and Overcoming creative blocks

3.1.3 Types of Innovation: Incremental, Disruptive, and Radical, The Innovation Process: from idea to execution

3.1.4 Managing risk and uncertainty in innovation, measuring innovation success

Practical Sessions:

3.1.1 Creativity and Idea Generation Exercises like Brainstorming, SCAMPER, and Random word association etc.

3.1.2 Exploring Types of Innovation through Case Studies

3.1.3 Idea evaluation and selection exercises

3.1.4 Risk assessment and mitigation workshops

Essential Readings:

3.1.1 Csikszentmihalyi, M. (1996). Creativity: Flow and the Psychology of Discovery and Invention. HarperCollins.

3.1.2 Tidd, J., & Bessant, J. (2018). Managing Innovation: Integrating Technological, Market and Organizational Change. John Wiley & Sons.

3.1.3 Christensen, C.M. (2016). The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail. Harvard Business Review Press.

Suggested Readings:

3.1.1 Dyer, J., Gregersen, H., & Christensen, C.M. (2011). The Innovator's DNA: Mastering the Five Skills of Disruptive Innovators. Harvard Business Review Press.

3.1.2 Kelley, T., & Littman, J. (2001). The Art of Innovation: Lessons in Creativity from IDEO, America's Leading Design Firm. Currency.

Suggested Case Studies (Indian Context):

3.1.1 Dairy co-operatives like Amul etc. (Focus on Growing through Cooperative Innovation)

3.1.2 Video-on-demand service providers like The Viral Fever (TVF) etc. (Focus on Redefining Indian Digital Entertainment)

3.1.3 Food start-ups like ID Fresh Food etc. (Focus on Disrupting the Indian Food Market)

Unit 2: Design Thinking and Prototyping (16 hours)

Classroom Sessions:

3.2.1 Introduction to Design Thinking: Principles and Process

3.2.2 Empathy and Understanding User Needs

3.2.3 Ideation, Concept Development, and Selection

3.2.4 Prototyping, Testing, and Iteration

Practical Sessions:

3.2.1 Design Thinking Workshop: Defining a Problem or Opportunity

3.2.2 Empathy Mapping and User Research

3.2.3 Ideation and Concept Development Exercises

3.2.4 Prototyping, Testing, and Iteration

Essential Readings:

3.2.1 Brown, T. (2009). Change by Design: How Design Thinking Transforms Organizations and Inspires Innovation. Harper Business.

3.2.2 Liedtka, J., & Ogilvie, T. (2011). Designing for Growth: A Design Thinking Tool Kit for Managers. Columbia University Press.

Suggested Readings:

3.2.1 Norman, D. A. (2013). The Design of Everyday Things: Revised and Expanded Edition. Basic Books.

3.2.2 Ries, E. (2011). The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses. Crown Business.

Suggested Case Studies (Indian Context):

3.2.1 Online fintech providers like Razorpay etc. (Focus on Digital Payments for a large user base)

3.2.2 Online education providers like Unacademy etc. (Focus on Online Learning)

3.3.3 IT Start-ups like Khatabook etc. (Focus on Digitizing India's Small Businesses)

3.3.4 Online fintech providers like CRED etc. (Focus on Building Trust and growing the business)

Unit 3: Innovate and Iterate: The Power of Lean Startups (12 hours)

Classroom Sessions:

3.3.1 Overview of the Lean Startup Methodology and its Principles

3.3.2 Understanding the concepts like Split Testing, Pivot, Business-Measure-Learn (BML) and Minimum Viable Product (MVP)

3.3.3 Designing market scenarios to test hypotheses

3.3.4 Analysing results and making data-driven decisions

Practical Sessions:

3.3.1 Identifying customer needs and problems to solve

3.3.2 Designing a Value Proposition and Defining Customer Segments

3.3.3 Developing an MVP for your business idea, conducting experiments and gathering customer feedback

3.3.4 Measuring the success of your MVP and experiments, Iterating and refining your business idea based on feedback

Essential Readings:

3.3.1 Ries, E. (2011). The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses. Crown Business.

3.3.2 Maurya, A. (2012). Running Lean: Iterate from Plan A to a Plan That Works. O'Reilly Media.

Suggested Readings:

3.3.1 Blank, S., & Dorf, B. (2012). The Startup Owner's Manual: The Step-by-Step Guide for Building a Great Company. K&S Ranch.

3.3.2 Osterwalder, A., Pigneur, Y., & Papadakos, T. (2014). Value Proposition Design: How to Create Products and Services Customers Want. John Wiley & Sons.

Suggested Case Studies (Indian Context):

3.3.1 Online hotel room aggregators like OYO etc. (Focus on Embracing Lean Startup Principles in the Indian Hospitality Industry)

3.3.2 Online food delivery aggregators like Zomato etc. (Focus on Scaling with Lean Startup Methodology)
3.3.3 Online grocery delivery providers like Grofers etc. (Focus on Adapting and Growing with a Lean Approach)
3.3.4 Online car rental providers like Zoomcar etc. (Focus on Navigating the Car Rental Industry with Lean Startup Principles)

Unit 4: Launching and Scaling Innovative Ventures (16 hours)

Classroom Sessions:

3.4.1 Innovating for Social Causes
3.4.2 New Product development and testing
3.4.3 Growth Strategies for Innovative Businesses
3.4.4 Managing Innovation and Building an Innovative Culture

Practical Sessions:

3.4.1 Identifying Funding and Financing Options for Your Venture
3.4.2 Identifying new product development processes and benchmarks and testing plans and parameters
3.4.3 Designing a Growth Strategy for Your Innovative Venture
3.4.4 Creating an Action Plan for Building an Innovative Culture

Essential Readings:

3.4.1 Kawasaki, G. (2015). The Art of the Start 2.0: The Time-Tested, Battle-Hardened Guide for Anyone Starting Anything. Portfolio.
3.4.2 Blank, S., & Dorf, B. (2012). The Startup Owner's Manual: The Step-by-Step Guide for Building a Great Company. K&S Ranch.

Suggested Readings:

3.4.1 Hoffman, R., & Casnocha, B. (2012). The Start-up of You: Adapt to the Future, Invest in Yourself, and Transform Your Career. Crown Business.
3.4.2 Thiel, P., & Masters, B. (2014). Zero to One: Notes on Startups, or How to Build the Future. Crown Business.

Suggested Case Studies (Indian Context):

3.4.1 EdTech service providers like Byju's etc. (Focus on Disrupting the EdTech Space with Personalized Learning)
3.4.2 Online hyperlocal delivery providers like Dunzo etc. (Focus on Transforming Hyperlocal Delivery through Technology)

GENERIC ELECTIVE (GE-4)

Credit distribution, Eligibility and Pre-requisites of the Course						
Course title	**Credits**	**Credit distribution of the course**			**Eligibility criteria**	**Pre-requisite of the course**
		Lecture	**Tutorial**	**Practical/ Practice**		
Fundraising and Management for Entrepreneurs	**4**	**2**		**2**	**Class XII pass**	**Nil**

Course Description:
This course explores various fundraising strategies and techniques for entrepreneurs while emphasizing effective management of acquired funds. Students will learn about different sources of funding, investor relations, financial planning, and budgeting. The course combines classroom lectures with hands-on Practical Session, providing students with practical experience in fundraising and financial management.

Learning Objectives:
Students of this course should be able to:

- Describe the key concepts, principles, and strategies related to fundraising and financial management for entrepreneurial ventures.
- Compare various funding sources, including angel investors, venture capitalists, grants, and crowdfunding platforms, and determine the most suitable options for their businesses.
- Devise and create compelling investor pitches, develop financial projections, and effectively manage their venture's financial resources.
- Assemble some real-world examples and case studies that will help them understand the practical aspects of fundraising and financial management in the context of entrepreneurship.
- Assess their critical thinking, problem-solving, and decision-making skills.

Learning Outcomes:
At the end of this course, students should be able to:

- Recognize various fundraising strategies and techniques, enabling students to choose the most appropriate funding sources for their entrepreneurial ventures.
- Sketch effective pitches and fundraising campaigns tailored to different types of investors and funding sources, ensuring successful capital-raising efforts.
- Manage strong investor relationships through effective communication and reporting, fostering trust and ongoing support.
- Prepare comprehensive financial plans and budgets for their businesses, supporting both short-term and long-term financial goals.
- Test to determine optimal cash flows and working capital management, that will help ensure the financial sustainability and growth of their ventures.

SYLLABUS

Unit 1: Fundraising Strategies and Sources (16 hours)

Classroom Sessions:

4.1.1 Introduction to Fundraising for Entrepreneurs

4.1.2 Bootstrapping and Self-Financing

4.1.3 Financial Planning and Budgeting for Entrepreneurs

4.1.4 Cash Flow Management and Working Capital Optimization

Practical Sessions:

4.1.1 Evaluating Different Fundraising Strategies

4.1.2 Developing a Self-Financing Plan

4.1.3 Crafting an Effective Pitch for Investors

4.1.4 Analysing Debt Financing Options

Essential Readings:

4.1.1 Gompers, P.A., & Lerner, J. (2004). The Venture Capital Cycle. MIT Press.

4.1.2 Bhide, A. (2000). The Origin and Evolution of New Businesses. Oxford University Press.

Suggested Readings:

4.1.1 Bygrave, W.D., & Zacharakis, A. (2014). Entrepreneurship. Wiley.

4.1.2 Dorsey, D. (2003). Bootstrap Business. Adams Media.

Suggested Case Studies (Indian Context):

4.1.1 Online food delivery aggregators like Zomato etc. (Focus on Navigating the venture capital landscape)

4.1.2 Online cab aggregators like Ola Cabs etc. (Focus on Raising capital through multiple funding rounds)

4.1.3 Indian FMCG companies like Patanjali Ayurveda etc. (Focus on Bootstrapping and organic growth in the FMCG sector)

Unit 2: Crowdfunding and Alternative Financing (16 hours)

Classroom Sessions:

4.2.1 Crowdfunding: Types, Platforms, and Best Practices

4.2.2 Peer-to-Peer Lending, Microfinancing and Social Stock Exchange

4.2.3 Strategic Partnerships and Joint Ventures

4.2.4 Social Impact Investing and Corporate Social Responsibility

Practical Session:

4.2.1 Developing a Crowdfunding Campaign

4.2.2 Exploring Peer-to-Peer Lending and Microfinancing Platforms

4.2.3 Identifying Potential Strategic Partners and Joint Ventures

4.2.4 Assessing Social Impact Investment Opportunities

Essential Readings:

4.2.1 Macht, S.A. (2014). The Crowdfunding Revolution: Social Networking Meets Venture Financing. CreateSpace Independent Publishing Platform.

4.2.2 Yunus, M., Moingeon, B., & Lehmann-Ortega, L. (2010). Building Social Business: The New Kind of Capitalism that Serves Humanity's Most Pressing Needs. Public Affairs.

Suggested Readings:

4.2.1 Mollick, E. (2014). The Dynamics of Crowdfunding: An Exploratory Study. Journal of Business Venturing.

4.2.2 Morduch, J., & Haley, B. (2002). Analysis of the Effects of Microfinance on Poverty Reduction. NYU Wagner Working Paper.

Suggested Case Studies (Indian Context):

4.2.1 Online donation services providers like Ketto etc. (Focus on Success and challenges of crowdfunding in India)

4.2.2 Online fintech services providers like Milaap etc. (Focus on the Impact of peer-to-peer lending and microfinancing in India)

4.2.3 Electricity generation and service providers like Tata Power etc. (Focus on Strategic partnerships and joint ventures in the renewable energy sector)

Unit 3: Investor Relations and Communications (12 hours)

Classroom Sessions:

4.3.1 Building and Maintaining Investor Relationships

4.3.2 Effective Communication Strategies for Investors

4.3.3 Reporting Financial Performance and Progress

4.3.4 Navigating Difficult Conversations and Negotiations

Practical Session:

4.3.1 Role-Playing Investor Meetings

4.3.2 Creating an Investor Relations Communications Plan

4.3.3 Preparing Financial Reports for Investors

4.3.4 Practicing Difficult Conversations and Negotiations with Investors

Essential Readings:

4.3.1 Mahon, J.F., & Wartick, S.L. (2003). Dealing with Stakeholders: How Reputation, Credibility, and Framing Influence the Game. Corporate Reputation Review.

4.3.2 Goleman, D., Boyatzis, R., & McKee, A. (2013). Primal Leadership: Unleashing the Power of Emotional Intelligence. Harvard Business Review Press.

Suggested Readings:

4.3.1 Fisher, R., Ury, W., & Patton, B. (2011). Getting to Yes: Negotiating Agreement Without Giving In. Penguin Books.

4.3.2 Gallo, C. (2014). Talk Like TED: The 9 Public Speaking Secrets of the World's Top Minds. St. Martin's Press.

Suggested Case Studies (Indian Context):

4.3.1 Online e-commerce providers like Flipkart etc. (Focus on Investor relations)

4.3.2 Online fintech providers like Paytm etc. (Focus on Investor Communications)

4.3.3 Online hotel room aggregators like OYO Rooms etc. (Focus on Managing investor expectations amidst global expansion)

Unit 4: Financial Management and Budgeting (16 hours)

Classroom Sessions:

4.4.1 Equity Financing: Seed Fund, Angel Investors and Venture Capital

4.4.2 Debt Financing: Loans, Grants, and Government Schemes

4.4.3 Monitoring and Controlling Expenditure

4.4.4 Financial Performance Analysis and Benchmarking

Practical Sessions:

4.4.1 Creating a Financial Plan and Budget for a Business

4.4.2 Analysing Cash Flow and Working Capital Management

4.4.3 Implementing Cost Control Measures

4.4.4 Conducting Financial Performance Analysis and Benchmarking

Essential Readings:

4.4.1 Brigham, E.F., & Ehrhardt, M.C. (2016). Financial Management: Theory & Practice. Cengage Learning.

4.4.2 Atrill, P., & McLaney, E. (2018). Accounting and Finance for Non-Specialists. Pearson.

Suggested Readings:

4.4.1 Horngren, C.T., Sundem, G.L., Schatzberg, J.O., & Burgstahler, D. (2017). Introduction to Management Accounting. Pearson.

4.4.2 Gitman, L.J., & Zutter, C.J. (2018). Principles of Managerial Finance. Pearson.

Suggested Case Studies (Indian Context):

4.4.1 Online FMCG and grocery delivery providers like BigBasket etc. (Focus on Financial management during rapid growth and increased competition)

4.4.2 Personal care service providers like Nykaa (Focus on Balancing growth and profitability in the Indian e-commerce space)

4.4.3 Online food delivery aggregators like Swiggy (Focus on Cash flow management and working capital optimization in the food delivery industry)

GENERIC ELECTIVE (GE-5)

Credit distribution, Eligibility and Pre-requisites of the Course						
Course title	**Credits**	**Credit distribution of the course**			**Eligibility criteria**	**Pre-requisite of the course**
		Lecture	**Tutorial**	**Practical/ Practice**		
Marketing and Sales for Entrepreneurs	**4**	**2**		**2**	**Class XII pass**	**Nil**

Course Description:
This Marketing and Sales for Entrepreneurs course focuses on marketing and sales fundamentals, tailored specifically for entrepreneurs. Students will learn about marketing strategies, customer acquisition, and sales techniques to effectively promote and sell their products or services. The course combines classroom lectures with hands-on Practical Session, providing students with practical experience in marketing and sales.

Learning Objectives:
Students of this course should be able to:

- Describe the key concepts, principles, and strategies related to marketing and sales for entrepreneurial ventures.
- Construct, develop and execute effective marketing campaigns, leveraging digital marketing tools and techniques.
- Discover the skills and knowledge needed to master the sales process, build lasting customer relationships, and achieve customer retention.
- Compare real-world examples and case studies to enable better understanding of the practical aspects of marketing and sales in the context of entrepreneurship.

Learning outcomes:
At the end of this course, students should be able to:

- Recall the fundamentals of marketing and sales in the entrepreneurial context.
- Use tailored marketing strategies, including segmentation, targeting, and positioning.
- Test and implement digital marketing techniques like social media, content marketing, and SEO.
- Set up and maintain strong customer relationships.
- Manage customer retention and business development strategies.

SYLLABUS

Unit 1: Marketing Basics and Strategy for Entrepreneurs (16 hours)
Classroom Sessions:

5.1.1 Marketing Fundamentals for Entrepreneurs
5.1.2 Market Segmentation, Targeting, and Positioning

5.1.3 Creating a Unique Selling Proposition (USP)
5.1.4 Developing a Marketing Strategy and Marketing Mix

Practical Sessions:

5.1.1 Identifying Target Markets and Customer Profiles
5.1.2 Developing a USP and Positioning Statement
5.1.3 Crafting a Marketing Strategy
5.1.4 Analysing the Marketing Mix (Product, Price, Place, Promotion)

Essential Readings:

5.1.1 Kotler, P., & Armstrong, G. (2020). Principles of Marketing. Pearson.
5.1.2 Godin, S. (2003). Purple Cow: Transform Your Business by Being Remarkable. Portfolio.
Suggested Readings:

Suggested Readings:

5.1.1 Ries, E. (2017). The Startup Way: How Modern Companies Use Entrepreneurial Management to Transform Culture and Drive Long-Term Growth. Currency.
5.1.2 McCarthy, J., & Perreault, W. (2008). Basic Marketing: A Global-Managerial Approach. McGraw-Hill.

Suggested Case Studies (Indian Context):

5.1.1 Dairy co-operatives like Amul etc. (Focus on Building a strong brand through cooperative marketing)
5.1.2 Food start-ups like Paper Boat etc. (Focus on Nostalgia-driven marketing in the Indian beverage industry)
5.1.3 Online food delivery aggregators like Zomato etc. (Focus on Harnessing digital marketing for growth in the food delivery space)

Unit 2: Digital Marketing for Entrepreneurs (16 hours)

Classroom Sessions:

5.2.1 Introduction to Digital Marketing
5.2.2 Social Media Marketing and Advertising
5.2.3 Search Engine Optimization (SEO) and Online Advertising.
5.2.4 Content and Email Marketing.

Practical Sessions:

5.2.1 Developing a Digital Marketing Strategy
5.2.2 Creating Social Media Marketing Campaigns
5.2.3 Implementing Content Marketing and SEO Techniques
5.2.4 Designing Email Marketing Campaigns and Online Advertising

Essential Readings:

5.2.1 Ryan, D. (2019). Digital Marketing: Strategy, Implementation, and Practice. Pearson.
5.2.2 Halligan, B., & Shah, D. (2014). Inbound Marketing: Attract, Engage, and Delight Customers Online. Wiley.

Suggested Readings:

5.2.1 Chaffey, D., & Ellis-Chadwick, F. (2019). Digital Marketing. Pearson.
5.2.2 Patel, N., & Hines, K. (2018). The Definitive Guide to Growth Hacking. Quick Sprout.

Suggested Case Studies (Indian Context):

5.2.1 Online e-commerce providers like Flipkart etc. (Focus on Pioneering e-commerce marketing in India)

5.2.2 Personal care services providers Nykaa (Leveraging social media and content marketing to build a beauty empire)

5.2.3 EdTech service providers like Byju's etc. (Focus on Scaling an ed-tech startup through online advertising and app marketing)

Unit 3: Sales and Business Development (12 hours)

Classroom Sessions:

5.3.1 Sales Fundamentals for Entrepreneurs

5.3.2 The Sales Process and Sales Techniques

5.3.3 Negotiation Skills and Closing Deals

5.3.4 Business Development and Strategic Partnerships

Practical Sessions:

5.3.1 Creating a Sales Plan and Setting Sales Goals

5.3.2 Role-playing Sales Scenarios and Techniques

5.3.3 Practicing Negotiation Skills and Closing Techniques

5.3.4 Identifying Business Development Opportunities and Partnerships

Essential Readings:

5.3.1 Tracy, B. (2006). The Psychology of Selling: Increase Your Sales Faster and Easier Than You Ever Thought Possible. HarperCollins Leadership.

5.3.2 Gitomer, J. (2004). The Little Red Book of Selling: 12.5 Principles of Sales Greatness. Bard Press.

Suggested Readings:

5.3.1 Pink, D. H. (2012). To Sell Is Human: The Surprising Truth About Moving Others. Riverhead Books.

5.3.2 Rackham, N. (1988). SPIN Selling. McGraw-Hill.

Suggested Case Studies (Indian Context):

5.3.1 Online cab aggregators like Ola Cabs etc. (Focus on Sales and business development strategies in the Indian ride-hailing market)

5.3.2 Optical services provider start-ups like Lenskart etc. (Focus on Expanding through online and offline sales channels)

5.3.3 Software services providers like Zoho etc. (Focus on Global growth and business development in the software industry)

Unit 4: Customer Relationship Management (CRM) and Retention (16 hours)

Classroom Session:

5.4.1 Introduction to Customer Relationship Management (CRM)

5.4.2 Building and Maintaining Customer Relationships

5.4.3 Customer Retention Strategies and Loyalty Programs

5.4.4 Measuring Customer Satisfaction, Customer Acquisition Cost (CAC) and Customer Lifetime Value (CLV)

Practical Session:

5.4.1 Exploring CRM Tools and Techniques

5.4.2 Designing Customer Engagement and Communication Plans

5.4.3 Developing Customer Retention Strategies and Loyalty Programs

5.4.4 Analysing Customer Satisfaction Metrics and CLV

Essential Readings:

5.4.1 Peppers, D., & Rogers, M. (2016). Managing Customer Experience and Relationships: A Strategic Framework. Wiley.

5.4.2 Reichheld, F.F. (2003). The Loyalty Effect: The Hidden Force Behind Growth, Profits, and Lasting Value. Harvard Business Review Press.

Suggested Readings:

5.4.1 Blattberg, R.C., Malthouse, E.C., & Neslin, S.A. (2009). Customer Lifetime Value: Reshaping the Way We Manage to Maximize Profits. Wiley.

5.4.2 Gartner, A. (2014). Customer Success: How Innovative Companies Are Reducing Churn and Growing Recurring Revenue. Wiley.

Suggested Case Studies (Indian Context):

5.4.1 Online fintech services providers like Paytm etc. (Focus on Enhancing customer engagement and loyalty through innovative CRM strategies)

5.4.2 Online FMCG and grocery delivery providers like BigBasket etc. (Focus on Building customer retention in the competitive online grocery market)

5.4.3 Online food derlivery aggregators like Swiggy etc. (Focus on Balancing customer satisfaction and operational efficiency in food delivery)

GENERIC ELECTIVE (GE-6)						
Credit distribution, Eligibility and Pre-requisites of the Course						
Course title	**Credits**	**Credit distribution of the course**			**Eligibility criteria**	**Pre-requisite of the course**
		Lecture	**Tutorial**	**Practical/ Practice**		
Startup Operations and Future-proofing	**4**	**2**		**2**	**Class XII pass**	**Nil**

Course Description:

This course focuses on the operational aspects of starting and running a successful startup venture. Students will learn how to protect their intellectual property, navigate legal channels, and future-proof their business. The course combines theoretical lectures with practical sessions, enabling students to gain hands-on experience in developing their startup operations.

Learning Objectives:

Students of this course should be able to:

- Describe the key operational aspects of starting and running a successful startup venture.
- Assess the importance of safeguarding innovation and intellectual property.
- Assemble knowledge of legal and regulatory requirements for startups, including compliance with relevant regulations.
- Devise ways to future-proof their business and adapt to changing market conditions.

Learning Outcomes:

At the end of this course, students should be able to:

- Recognize the key operational aspects of starting and running a successful startup venture.
- Sketch out an effective understanding of how to protect their innovation and intellectual property.
- Manage legal and regulatory requirements and compliances for startups.
- Prepare strategies to future-proof their business and adapt to changing market conditions.

SYLLABUS

Unit 1: Introduction to Startup Operations (16 hours)

Classroom Sessions:

6.1.1 Introduction to Startup Operations, Key Operational Challenges for Startups

6.1.2 Operations Strategy: Aligning operations with business goals

6.1.3 Key Operational Functions: Production, Supply Chain and Quality Management

6.1.4 Operational Resilience: Concept and Implementation

Practical Sessions:

6.1.1 Identifying Key Operational Challenges for Startups

6.1.2 Developing Operational Plans

6.1.3 Evaluating Operational Risks and Challenges

6.1.4 Building Operational Resilience, Mapping Start-up value streams and identifying improvement areas.

Essential Readings:

6.1.1 Blank, S. (2012). The Four Steps to the Epiphany. K&S Ranch.

6.1.2 Eisenmann, T. (2012). Entrepreneurship: Starting, Developing, and Managing a New Enterprise. Pearson.

6.1.3 Campbell, A., Gutierrez, M., & Lancelott, M. (2017). Operating Model Canvas: Aligning Operations and Organization with Strategy. Van Haren Publishing.

Suggested Readings:

6.1.1 Osterwalder, A. (2014). Value Proposition Design: How to Create Products and Services Customers Want. Wiley.

6.1.2 Maurya, A. (2012). Running Lean: Iterate from Plan A to a Plan That Works. O'Reilly Media.

Relevant Case Studies:

6.1.1 Online homestay aggregators like Airbnb etc. (Focus on Building Operational Resilience through Crisis Management)

6.1.1 Online cab aggregators like Uber etc. (Focus on Managing Rapid Growth and Operational Scale)

Unit 2: Safeguarding Innovation and IPR (12 hours)

Classroom Sessions:

6.2.1 Importance of Innovation and Intellectual Property

6.2.2 Types of Intellectual Property

6.2.3 Intellectual Property Protection Strategies

6.2.4 Intellectual Property Management

Practical Session:

6.2.1 Identifying Intellectual Property

6.2.2 Developing an Intellectual Property Strategy

6.2.3 Filing for Intellectual Property Protection

6.2.4 Intellectual Property Management

Essential Readings:

6.2.1 Chesbrough, H.W. (2010). Open Business Models: How to Thrive in the New Innovation Landscape. Harvard Business Press.

6.2.2 Furr, N., & Dyer, J.H. (2014). The Innovator's Method: Bringing the Lean Start-up into Your Organization. Harvard Business Review Press.

Suggested Readings:

6.2.1 Gassmann, O., Frankenberger, K., & Csik, M. (2014). The Business Model Navigator: 55 Models That Will Revolutionize Your Business. Pearson.

6.2.2 Harreld, J.B., O'Reilly III, C.A., & Tushman, M.L. (2018). Winning Now, Winning Later: How Companies Can Succeed in the Short Term While Investing for the Long Term. Crown Business.

Relevant Case Studies:

6.2.1 Start-up electric vehicle manufacturers like Tesla etc. (Focus on Protecting Innovation through Intellectual Property)

6.2.2 Beverage manufacturers like Coca-Cola etc. (Focus on Managing Trademark Protection and Brand Value)

Unit 3: Navigating Legal Channels (16 hours)

Classroom Sessions:

6.3.1 Introduction to Legal Channels for Startups
6.3.2 Legal Structures for Startups
6.3.3 Contracts and Agreements for Startups
6.3.4 Compliance and Regulations for Startups

Practical Session:

6.3.1 Choosing a Legal Structure for Your Startup
6.3.2 Drafting Contracts and Agreements
6.3.3 Understanding Compliance and Regulations
6.3.4 Legal Due Diligence and Risk Management

Essential Readings:

6.3.1 Bagley, C.E., & Dauchy, C.E. (2011). The Entrepreneur's Guide to Business Law. Cengage Learning.
6.3.2 Kohlhagen, R.W. (2018). Business Law: An Introduction. Cengage Learning.

Suggested Readings:

6.3.1 Bygrave, W.D., & Zacharakis, A. (2013). Entrepreneurship: A Process Perspective. Cengage Learning.
6.3.2 Macey, J.R. (2010). Macey on Corporation Laws. Aspen Publishers.

Relevant Case Studies:

6.3.1 Tech and IT Device manufacturers like Apple etc. (Navigating Legal Issues for a Tech Startup)
6.3.2 Search engine services like Google etc. (Legal Due Diligence for Acquisitions and Partnerships)

Unit 4: Future-Proofing the Business (16 hours)

Classroom Sessions:

6.4.1 Understanding Market Trends and Disruptions
6.4.2 Innovation and Adaptability for Startups
6.4.3 Building a Resilient Business Model
6.4.4 Strategies for Growth and Expansion

Practical Sessions:

6.4.1 Analysing Market Trends and Disruptions
6.4.2 Developing Innovation and Adaptability Strategies
6.4.3 Building a Resilient Business Model
6.4.4 Planning for Growth and Expansion

Essential Readings:

6.4.1 Christensen, C.M. (2016). The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail. Harvard Business Review Press.
6.4.2 Moore, G.A. (2014). Crossing the Chasm: Marketing and Selling High-Tech Products to Mainstream Customers. HarperCollins.

Suggested Readings:

6.4.1 Blank, S. (2012). The Four Steps to the Epiphany. K&S Ranch.

6.4.2 Furr, N., & Dyer, J.H. (2014). The Innovator's Method: Bringing the Lean Start-up into Your Organization. Harvard Business Review Press.

Relevant Case Studies:

6.4.1 Online e-commerce providers like Amazon etc. (Focus on Innovation and Adaptability in the E-Commerce Industry)

6.4.2 OTT entertainment providers like Netflix etc. (Focus on Building a Resilient Business Model through Disruptive Innovation)

GENERIC ELECTIVE (GE-7)

Credit distribution, Eligibility and Pre-requisites of the Course						
Course title	**Credits**	**Credit distribution of the course**			**Eligibility criteria**	**Pre-requisite of the course**
		Lecture	**Tutorial**	**Practical/ Practice**		
Social Entrepreneurship and Social Innovation	**4**	**2**		**2**	**Class XII pass**	**Nil**

Course Description:

The course provides students with the knowledge and skills needed to create and manage ventures that address social, environmental, or cultural issues. Students will explore the principles of social entrepreneurship, learn how to develop innovative solutions to pressing social challenges and understand the unique business models, funding strategies, and impact measurement approaches used by social enterprises. Through case studies, interactive lectures, and practical exercises, students will gain the expertise required to turn their passion for social change into viable, sustainable, and impactful ventures.

Learning Objectives:

Students of this course should be able to:

- Identify the key concepts, principles, and strategies related to social entrepreneurship and social innovation.
- Discover how to identify social, environmental, or cultural issues and develop innovative solutions using entrepreneurial approaches.
- Classify the skills and knowledge needed to create, manage, and scale social enterprises, including unique business models, funding strategies, and impact measurement approaches.
- Examine real-world examples and case studies, helping them understand the practical aspects of social entrepreneurship and social innovation.
- Assemble tools that help the students develop critical thinking, problem-solving, and decision-making skills; thus, enabling them to better navigate the complex landscape of social entrepreneurship and create meaningful social impact.

Learning Outcomes:

At the end of this course, students will be able to:

- Match and apply the key concepts and principles of social entrepreneurship and social innovation in various contexts.
- Inspect social, environmental, or cultural issues and develop innovative solutions using entrepreneurial approaches.
- Manage, create and scale social enterprises
- Select the various critical thinking, problem-solving, and decision-making skills that they have absorbed to navigate the complex landscape of social entrepreneurship and create meaningful social impact

SYLLABUS

Unit 1: Introduction to Social Entrepreneurship and Social Innovation (16 hours)

Classroom Sessions:

7.1.1 Understanding Social Entrepreneurship and Social Innovation

7.1.2 The Social Entrepreneurial Mindset and Skills

7.1.3 Identifying Social Needs and Opportunities

7.1.4 Social Enterprise Models and Legal Structures

Practical Sessions:

7.1.1 Assessing Personal Social Entrepreneurial Mindsets

7.1.2 Identifying Social Needs and Opportunities

7.1.3 Evaluating Social Business Models

7.1.4 Selecting Social Enterprise Legal Structures

Essential Readings:

7.1.1 Bornstein, D., & Davis, S. (2010). Social Entrepreneurship: What Everyone Needs to Know. Oxford University Press.

7.1.2 Mair, J., & Marti, I. (2006). Social Entrepreneurship Research: A Source of Explanation, Prediction, and Delight. Journal of World Business.

Suggested Readings:

7.1.1 Dees, J. G., Emerson, J., & Economy, P. (2002). Enterprising Nonprofits: A Toolkit for Social Entrepreneurs. Wiley.

7.1.2 Nicholls, A. (2008). Social Entrepreneurship: New Models of Sustainable Social Change. Oxford University Press.

Suggested Case Studies (Indian Context):

7.1.1 Social start-ups like SELCO India etc. (Focus on Pioneering off-grid solar energy solutions)

7.1.2 Social healthcare providers like Aravind Eye Care System etc. (Accessible eye care for all)

7.1.3 Furnishings start-ups like Jaipur Rugs etc. (Empowering rural artisans through a sustainable supply chain)

Unit 2: Designing and Implementing Social Innovation (16 hours)

Classroom Sessions:

7.2.1 The Social Innovation Process

7.2.2 Human-Centred Design for Social Impact

7.2.3 Prototyping and Testing Social Innovations

7.2.4 Measuring and Evaluating Social Impact

Practical Sessions:

7.2.1 Understanding the Social Innovation Process

7.2.2 Applying Human-Centred Design for Social Impact

7.2.3 Prototyping and Testing Social Innovations

7.2.4 Measuring and Evaluating Social Impact

Essential Readings:

7.2.1 Mulgan, G. (2018). The Process of Social Innovation. MIT Press.

7.2.2 Brown, T., & Wyatt, J. (2010). Design Thinking for Social Innovation. Stanford Social Innovation Review.

Suggested Readings:

7.2.1 Altringer, B. (2019). The Design Thinking Playbook. MIT Press.

7.2.2 Pol, E., & Ville, S. (2009). Social Innovation: Buzzword or Enduring Term? The Journal of Socio-Economics.

Suggested Case Studies (Indian Context):

7.2.1 Social start-ups like Pratham etc. (Focus on Innovative education models to address illiteracy in India)

7.2.2 Social start-ups like SEWA etc. (Focus on Empowering women through skill development and microfinance)

7.2.3 Social start-ups like Gram Vikas etc. (Focus on Sustainable and inclusive rural development)

Unit 3: Funding and Scaling Social Enterprises and Innovations (12 hours)

Classroom Sessions:

7.3.1 Funding Sources for Social Enterprises and Innovations

7.3.2 Impact Investing and Social Venture Capital

7.3.3 Grant Funding and Philanthropy

7.3.4 Scaling Strategies for Social Enterprises and Innovations

Practical Sessions:

7.3.1 Identifying Funding Sources for Social Enterprises and Innovations

7.3.2 Exploring Impact Investing and Social Venture Capital

7.3.3 Securing Grant Funding and Philanthropic Support

7.3.4 Developing a Scaling Strategy for Social Enterprises and Innovations

Essential Readings:

7.3.1 Bugg-Levine, A., & Emerson, J. (2011). Impact Investing: Transforming How We Make Money While Making a Difference. Wiley.

7.3.2 Epstein, M.J., & Yuthas, K. (2014). Measuring and Improving Social Impacts: A Guide for Nonprofits, Companies, and Impact Investors. Berrett-Koehler Publishers.

Suggested Readings:

7.3.1 Clark, C., Emerson, J., & Thornley, B. (2012). The Impact Investor: Lessons in Leadership and Strategy for Collaborative Capitalism. Jossey-Bass.

7.3.2 Reis, T., & Clohesy, S. (2001). Unleashing New Resources and Entrepreneurship for the Common Good: A Scan, Synthesis and Scenario for Action. W.K. Kellogg Foundation.

Suggested Case Studies (Indian Context):

7.3.1 Social start-ups like Pratham etc. (Focus on Scaling educational impact through partnerships)

7.3.2 Social start-ups like Waste Ventures India etc. (Focus on Tackling waste management through innovative business models)

7.3.3 Social start-ups like WaterHealth International etc. (Focus on Providing clean water to rural communities)

Unit 4: Collaborations and Partnerships for Social Impact (16 hours)

Classroom Sessions:

7.4.1 Public-Private Partnerships for Social Impact

7.4.2 Collaborating with NGOs and Nonprofits

7.4.3 Cross-sector Collaboration and Collective Impact

7.4.4 Networking and Building Partnerships for Social Enterprises and Innovations

Practical Sessions:

7.4.1 Analysing Public-Private Partnerships for Social Impact

7.4.2 Exploring Collaborations with NGOs and Nonprofits

7.4.3 Designing Cross-sector Collaboration and Collective Impact Initiatives

7.4.4 Practicing Networking and Partnership Building Skills

Essential Readings:

7.4.1 Austin, J.E., & Seitanidi, M.M. (2012). Collaborative Value Creation: A Review of Partnering Between Nonprofits and Businesses. Nonprofit and Voluntary Sector Quarterly.

7.4.2 Kania, J., & Kramer, M. (2011). Collective Impact. Stanford Social Innovation Review.

Suggested Readings:

7.4.1 Selsky, J.W., & Parker, B. (2005). Cross-sector Partnerships to Address Social Issues: Challenges to Theory and Practice. Journal of Management.

7.4.2 Waddell, S., Waddock, S., Cornell, S., Dentoni, D., McLachlan, M., & Meszoely, G. (2015). Large Systems Change: An Emerging Field of Transformation and Transitions. Journal of Corporate Citizenship.

Suggested Case Studies (Indian Context):

7.4.1 Social service providers like Akshaya Patra etc. (Focus on Public-private partnership for school meal programs)

7.4.2 Social education start-ups like Barefoot College etc. (Empowering rural communities through education and skill development)

7.4.3 Social NGOS' like Goonj etc. (Focus on Cross-sector collaboration for resource management and upcycling)

Pedagogy and Course Operations

1. **Course Credits:** Taking all 7 courses on offer under this GE will allow the student to earn 28 credits, thus conferring a Minor specialisation upon the student for their regular course.
2. **Interactive Classroom Sessions:** Classroom Sessions should incorporate real-life examples, case studies, and multimedia elements to facilitate learning.
3. **Group Discussions:** Students will participate in group discussions during class, sharing their insights, experiences, and ideas to enhance collective learning and promote critical thinking.
4. **In-class Exercises:** Students will engage in practical exercises and activities designed to reinforce the concepts and skills taught in the Classroom Sessions. These may include individual or group work, brainstorming sessions, or problem-solving exercises.
5. **Case Studies:** Suggested Case Studies will be integrated into the curriculum to help students analyse and understand real-world entrepreneurial challenges and opportunities. Students will be encouraged to dissect the cases, propose solutions, and learn from the experiences of other entrepreneurs.
6. **Practice Labs:** Students will participate in hands-on practical sessions; working on projects or assignments that apply entrepreneurship concepts learned in class. These sessions will allow students to develop and refine their entrepreneurial skills through practical experience.
7. **Student Presentations:** The students will be encouraged to present their ideas and projects in workshops and seminars.

8. **Reflection Activities:** Regular reflection activities will be incorporated into the course, encouraging students to assess their progress, identify areas for improvement, and develop a deeper understanding of their entrepreneurial journey.
9. **Mentorship and Feedback:** Instructors and/or industry mentors will provide ongoing guidance, support, and feedback to students, helping them navigate challenges and make informed decisions.
10. **Assessment and Evaluation:** A combination of assignments, quizzes, exams, and project work will be used to evaluate students' understanding of the course material and their ability to apply entrepreneurial principles and practices effectively.
11. **Course Improvements:** This is a new course thus regular evolution is needed. The course contents would need to thus modified. DSSEED would constitute a Course Improvement Committee which should be able to monitor and implement changes upto 20% of the course content without the need to seek approval from the statutory bodies of the University of Delhi.
12. **Teachers:** The course teaching will be supplemented by practitioners and industry experts to enhance the learning experience.

List of Additional Case Studies

(Indian and International Context)

1. Blue Tokai Coffee Roasters
2. Narayana Hrudalaya
3. GoJek
4. Rapido
5. BluSmart
6. Mamaearth
7. BharatPe
8. Housing.com
9. GoMechanic
10. Unacademy
11. WeWork
12. OceanGate
13. BYD
14. NIO
15. Country Delight
16. Zepto
17. Urban Company
18. Burger Singh
19. RedBus
20. Akasa Air
21. Okinawa Motors
22. Treebo
23. Uniqlo
24. The Baker’s Dozen
25. Theranos

POOL OF GENERIC ELECTIVES (DATA ANALYTICS)

OFFERED BY DELHI SCHOOL OF ANALYTICS

GENERIC ELECTIVES (GE-1)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Python and data fundamentals	4	3	0	1	12th Pass	Basic understanding of statistics

Learning Objectives

The Learning Objectives of this course are as follows:

1. Understand the context of machine learning.
2. Know how to use python/R for machine learning

Learning outcomes

The Learning Outcomes of this course are as follows:

1. Understand the data needs of generalised machine learning algorithms.
2. Have a working knowledge of machine learning algorithms.

SYLLABUS OF GE-1

Unit 1 (3 weeks)

Fundamentals of python for machine learning: Basic operations and functions, loops, assign variables, python data types, tuples, lists, dictionary, slicing, if statements, arrays, python libraries and their use- pandas, numpy, matplotlib, sci-kit learn, pyspark, reading and manipulating data -selecting rows/columns, merging data, OOPS in python

Unit 2 (3Weeks)

Machine Learning: Introduction, Definitions and types of machine learning

Foundation of Data Analytics: – Introduction, Evolution, Concept and Scopes, Data, Big Data, Metrics and Data classification, Data Reliability & Validity, Introduction to Descriptive Analytics, Predictive Analytics and Prescriptive Analytics.

Unit 3 (4 Weeks)

Data pre-processing and cleaning: data manipulation steps (sorting, filtering, duplicates, merging, appending, subsetting, derived variables, data type conversions, renaming,

formatting, etc.), normalizing data, sampling, missing value treatment, outliers, coding nominal and ordinal variables.

Unit 4 (4 weeks)

Exploratory data analysis: Data visualization using matplotlib, seaborn libraries, creating graphs (bar/line/pie/boxplot/histogram, etc.), summarizing data, descriptive statistics, univariate analysis (distribution of data), bivariate analysis (cross tabs, distributions and relationships, graphical analysis)

Practical component (if any) - The entire syllabus is based on practical exercise i.e. learning through specified software's like Python or R.

Essential/recommended readings

1. Machine Learning using Python, Manaranjan Pradhan, U Dinesh Kumar, ISBN: 9788126579907

2. Ethem Alpaydin, "Introduction to Machine Learning" 2nd Edition, The MIT Press, 2009.

3. Tom M. Mitchell, "Machine Learning", First Edition by Tata McGraw-Hill Education, 2013.

4. Christopher M. Bishop, "Pattern Recognition and Machine Learning" by Springer, 2007.

5. Mevin P. Murphy, "Machine Learning: A Probabilistic Perspective" by The MIT Press, 2012.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-2)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Machine Learning and Applications	**4**	**3**	**0**	**1**	**12th Pass**	**Basic understanding of statistics**

Learning Objectives

The Learning Objectives of this course are as follows:

1. Understand the various machine learning algorithms
2. Understand their applicability and context

Learning outcomes

The Learning Outcomes of this course are as follows:

1.Have a working knowledge of machine learning algorithms.
2. Understand how to evaluate performance of the algorithms

SYLLABUS OF GE-2

Unit 1 (5 Weeks)

Supervised Machine Learning: Linear Regression, Multiple Linear Regression, Logistic Regression, Application to multi-class classification, Overfitting and Regularization. Classification using K-Nearest Neighbourhood algorithm, Naive Bayes classifier, Decision Trees (CHAID Analytics), Support Vector Machines. Handling class imbalance in classification problems, Performance metrics for classification and regression problems-their meaning, understanding and application

Unit 2 (5 Weeks)

Unsupervised Machine Learning: Introduction, Clustering, K-Means algorithm, Affinity Propagation, Agglomerative Hierarchical, DBSCAN, Dimensionality Reduction using Principal Component Analysis. Detailed understanding of the performance metrics for these algorithms.

Unit 3 (4 Weeks)

Handling standard datasets available at machine learning repositories for classification and regression problems. Handling unsupervised problems in real datasets

Practical component (if any) - The entire syllabus is based on practical exercise i.e. learning through specified software's like Python or R.

Essential/recommended readings

1. Machine Learning using Python, Manaranjan Pradhan, U Dinesh Kumar, ISBN: 9788126579907

2. Ethem Alpaydin, "Introduction to Machine Learning" 2nd Edition, The MIT Press, 2009.

3. Tom M. Mitchell, "Machine Learning", First Edition by Tata McGraw-Hill Education, 2013.

4. Christopher M. Bishop, "Pattern Recognition and Machine Learning" by Springer, 2007.

5. Mevin P. Murphy, "Machine Learning: A Probabilistic Perspective" by The MIT Press, 2012.

Practical:
The entire syllabus is based on practical exercise i.e. learning through specified software's like Python or R.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-3)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Deep Learning and Application	4	3	0	1	12th Pass	Basic understanding of Statistics

Learning Objectives

This course focuses on the most recent advances in Deep Learning and Artificial Intelligence. In understandable steps, this course builds from a one node neural network to multiple features, multiple output neural networks.

Learning outcomes

- Understand the context of neural networks and deep learning.
- Know how to use a neural network.
- Understand the data needs of generalised deep learning algorithms.
- Have a working knowledge of neural networks and Reinforcement learning algorithms.
- Explore the parameters for neural networks.

SYLLABUS OF GE-3

Unit 1 (4 Weeks)

An introduction to Neural Networks: The basic architecture of neural network, single computational layer: the perceptron, objective function, choice of activation and loss function, choice of number of output nodes, some useful activation functions

Multilayer Neural Networks: Basics, computational graph, training a neural network with backpropagation, the problem of overfitting, difficulties in convergence

Common Neural Architectures: Radial Basis Function Network, Recurrent Neural Networks, Convoluted Neural Networks. (Theory Only) *Practical in Python on the following - Using SVM -Building a Perceptron , choosing loss functions*

Unit 2 Shallow Neural Networks (3 Weeks)

Neural Architecture for Binary Classification models: Least square regression (Widrow- Hoff Learning), Logistic Regression, SVM

Neural Architectures for Multiclass Models: Multiclass Perceptron, Weston- Watkins SVM, SoftMax Classifier, Hierarchical SoftMax for many classes, backpropagated Saliency for feature selection. *Practical in Python on the following: - Multiclass Perceptron- Hierarchical SoftMax for many classes*

Unit 3 Autoencoders (3 Weeks)

Principal Component Analysis and its interpretations, Singular Value Decomposition, Autoencoders with single hidden layer, sharing weights in encoder and decoder, Matrix factorization with Autoencoders, non-linear activation, application in outlier detection Practical *in Python on the following:* -Matrix factorization with Autoencoders - Backpropagation

Unit 4 (4 Weeks)

Generalised Deep Learning

Fundamentals: Bias- Variance Trade-Off, Penalty based regularisation: L1, L2 Regularisation, Lasso Regression, Ridge regression

Reinforcement Learning: basic framework of Reinforcement learning, challenges in reinforcement learning, Naïve Algorithm, epsilon- greedy algorithm, upper bounding methods

Practical component (if any) - The entire syllabus is based on practical exercise i.e. learning through specified software's like Python or R.

Essential/recommended readings

Neural Networks and Deep Learning: A Textbook by Charu C Aggarwal, Springer (ISBN 978-3-319-94462-3)

Suggestive readings

1. Deep Learning- Ian Goodfellow, Yoshua Benjio, Aaron Courville, The MIT Press
2. Pattern Classification- Richard O. Duda, Peter E. Hart, David G. Stork, John Wiley & Sons Inc.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-4)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Natural Language Processing	4	3	0	1	12th Pass	Basic understanding of statistics

Learning Objectives

Natural language processing deals with written text. Students will learn how to process written text from basic of fundamental knowledge starts with Finite automata, Regular expression and probabilistic model with n-grams. Recognizing Speech and parsing with grammar. We will focus on the computational properties of natural languages and of the algorithms used to process them, as well as the match between grammar formalisms and the linguistic data that needs to be covered.

Learning outcomes

- Explain the advantages and disadvantages of different NLP technologies and their applicability in different business situations.

- Use NLP technologies to explore and gain a broad understanding of text data.
- Use NLP methods to analyse sentiment of a text document.
- Learn both a linguistic and an algorithmic perspective

SYLLABUS OF GE-4

Unit 1 Introduction (3 Weeks)

Introduction: What is NLP, Origins, Challenges, Language and Grammar, NLP Applications, some successful early NLP systems, Information retrieval Language Modelling: Introduction, Grammar based language models, statistical language models

Unit 2 Word Analysis (3 Weeks)

Word Level Analysis : Regular Expressions, finite state automata, morphological parsing, spelling error detection and correction, words and word classes ,part of speech tagging Syntactic and Semantic Analysis : Context- free grammar, parsing, probabilistic parsing, lexical semantics, ambiguity, word sense disambiguation

Unit 3 Information Retrieval (4 Weeks)

Information Retrieval: Design Features of Information Retrieval systems , information retrieval models, classical information retrieval models, natural language processing in IR, relational matching, knowledge-based approaches , conceptual graphs in IR.

Unit 4 Text Analysis- Practical Unit (4 Weeks)

Overview, Sentiment Classification (Loading, Exploring) Pre-processing of data: Bag-of-Words(BoW) Model, Creating Count Vectors, displaying document vectors, understanding and removing low-frequency words, understanding and removing stop words, creating count vectors, distribution of words across different sentiments Naive Bayes Model: Fundamentals of Naive Bayes, building the Naive Bayes model, making prediction on test case, model accuracy Using TF-IDF Vectorizer, n-grams, building model using n-grams.

Essential/recommended readings

1. Natural Language Processing and Information Retrieval, by Tanveer Siddiqui and U.S Tiwary , Oxford Higher Education
2. Machine Learning using Python by Manaranjan Pradhan and U Dinesh Kumar , Wiley Publishing

Suggestive readings

1. Natural Language Processing Crash Course for Beginners: Theory and Applications of NLP using TensorFlow 2.0 and Keras by AI Publishing
2. Practical Natural Language Processing: A Comprehensive Guide to Building Real-World NLP Systems (Greyscale Indian Edition

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-5)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Financial Analytics	4	3	0	1	12th Pass	Basic understanding of statistics

Learning Objectives

Nearly every industry is generating a vast amount of data and nearly every business leader today understands the importance of making sense out of that data to drive business strategy. Companies need more from finance than just accurate financial statement analysis. They need predictive insights which can improve their real-time day to day decision making. Finance analytics enables to combine internal financial information with external information by using social media and big data to provide predictive insights. Whether it is with respect to stock market prediction or customer profitability, finance analytics enables to provide a direction in predicting all.

Learning outcomes

1. Understand Importance of analysing data in designing business strategy
2. Apply the knowledge to perform the required financial analytics using powerful tools like R and/or python

SYLLABUS OF GE-5

Unit – 1 (3 Weeks)

Introduction to R. Introduction to Finance. Accounting Data Analysis. Understanding data in finance, sources of data, cleaning and pre-processing data. Use of Machine Learning models in Finance.

Unit – 2 (4 Weeks)

Building Models Using Accounting Data, Modelling and forecasting of financial statements, Fraud Analytics, News Analytics, Sentiment Analysis.

Unit – 3 (4 Weeks)

Time Series Analysis in R/python, Understanding stock price behaviour, Introduction to Technical Analysis and Back-testing Trading Models.

Unit – 4 (3 Weeks)

Introduction to Algorithmic Trading and Building stock prices forecasting models using Machine Learning and Deep learning

Practical component (if any) - The entire syllabus is based on practical exercise i.e. learning through R /python software.

Essential/recommended readings

1. Financial Analytics with R: Building a Laptop Laboratory for Data Science Book by Dirk L. Hugen and Mark Joseph
2. Python for Finance: Mastering Data-Driven Finance by Yves Hilpisch.
3. Basic R for Finance by Diethelm Wurtz, Longhow Lam, Andrew Ellis and Yohan Chalabi

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-6)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Marketing Analytics	4	3	0	1	12th Pass	Basic understanding of statistics

Learning Objectives

Marketing and Retail analytics is the process of measuring, managing, and analyzing marketing performance to maximize effectiveness and optimize investment return. This supports the business to improve its operations and customer experience by providing a 360-degree view of the customer's needs. The course focuses on the application of Analytics from a business perspective. It focuses on the concepts and the understanding of applications. .

Learning outcomes

- By the end of this course, participants will be able to:•Understand the “WHY”, WHERE” and “HOW” of Analytics in Marketing and retail.
- “Why” Analytics has now become imperative for businesses
- “Where” you can apply Analytics
- “How” you can apply Analytics
- Learn how to plan and implement Analytics projects
- Move beyond predictive analytics into prescriptive analytics• Choose the appropriate analytic technique to solve specific business problems

SYLLABUS OF GE-6

Unit 1 Digital Analytics (3 Weeks)

Introduction, Data collection, Key metrics, outcome analysis (conversion rate, average order value, multi-channel funnel), experience analysis, making web analytics actionable, dashboard creation Segmentation: fundamentals of PCA, Factor Analysis, choice modelling and classification, principal component analysis, cluster and conjoint analysis, K-means clustering, Hierarchical clustering, DBSCAN

Unit 2 Affiliates and Attribution Modelling (3 Weeks)

what is Affiliate marketing, how affiliates get paid Multi-channel attribution , last interaction attribution model, first interaction attribution model, time decay attribution mode, position based attribution model, multi-channel funnel report Marketing Mix: Introduction, Market Mix Modelling, Variables in Market Mix Modelling, Techniques of Market Mix Modelling *Practical- LTA model in R/Python-FTA model in R/Python*

Unit 3

Customer Analysis (4 Weeks)

Customer Journey: Introduction, Importance of Customer Journey, What is Customer Journey Mapping?, Customer Journey Mapping and Use of Analytics, How to Map a Customer’s Journey?, What Does Analytics with Customer Journeys Involve?, Customer Journey Use Case for a Beverage Brand, Journey of a Loyal Customer, Applying Principal Components to Brand Nurturing Customers: Introduction, Metrics for Tracking Customer Experience

Upgrading Customers: Use Case of Upselling, Logistic Regression Analysis, Use of Logistic Regression as a Classification Technique Customer Analytics: Introduction, Customer Lifetime Value, Churn Analytics

Unit 4 Learning KNIME tool (4 Weeks)

This unit is primarily practical

Installation and the KNIME Workspace, Virtual Tour Through KNIME Analytics Platform, Analytics Platform Welcome Page, Workbench,Node,Workflow, Workflows and Workflow Groups, The Node Repository, Importing and Exporting Workflows, Node Creation and Basic Commands, Data Table Structure, Annotations and Comments, Customizing KNIME Analytics Platform, Installing Extensions, Simple Metanodes and Wrapped Metanodes

Blending: Data Access with KNIME,The KNIME Protocol, The Excel Reader Node, The File Reader Node, The Table Reader Node, The Join Operation and Methods, The Joiner Node, What is Concatenation

Data Manipulation: Row Filtering Based on Pattern Matching, Row Filtering Based on Numerical Values, Row Filtering Based on Row ID, What is a Column Filter?, The Column Filter Node, Numbers, Strings, and Rules, What is Data Aggregation?, The Group By Node, Advanced Aggregation with the Group By Node, The Pivoting Node

Practical component (if any) - The entire syllabus is based on practical exercise i.e. learning through specified software's like Python or R.

Essential/recommended readings

1. Digital Marketing 2nd Edition by Seema Gupta, McGraw Hill
2. Marketing Analytics by Seema Gupta and Avadhoot Jathar, Wiley Analytics Series for Management
3. Learning Material :https://www.knime.com/learning

Suggestive readings

1. Marketing Analytics - For Strategic Decision-Making by Moutusy Maity and Pavankumar Gurazada, Oxford Publishing

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-7)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Accounting Analytics	4	3	0	1	12th Pass	Basic understanding of statistics

Learning Objectives

This course provides the analytics knowledge, skills, and competencies to address earnings management issues in organisations. It introduces the central concepts of accounting analytics and via hands-on exercises, builds skills and competencies around the management, analysis and representation of data.

Learning outcomes

- Students are able to do a ratio analysis of a company to identify the sources of its competitive advantage (or red flags of potential trouble), and then use that information to forecast its future financial statements**.**
- How to spot earnings management and get a more accurate picture of earnings, so that students are able to catch some bad guys in finance reporting.
- Students will have a knowledge of a very strong tool kit that will help to detect financial statements that may have been manipulated by managers.
- How predictive analytics can be used to determine what you should be measuring, how to weigh very, very different performance measures when trying to analyse potential financial results, how to make trade-offs between short-term and long-term objectives, and how to set performance targets for optimal financial performance.

SYLLABUS OF GE- 7

Unit 1 - Ratios and Forecasting (3 Weeks)

Review financial statements and sources of financial statement information. The company's strategy and business model and Du-pont analysis. Ratio analysis – short term solvency ratios, long term solvency ratios, turnover ratios and profitability ratios (Historical ratio analysis of real company using Excel). How to use all the ratios, to forecast future financial statements. Accounting based valuation.

Unit 2 - Earnings Management (4 Weeks)

Overview of earnings management: Means, motive, opportunity, how managers actually make their earnings look better, their incentives for manipulating earnings, and how they get away with it. Revenue recognition red flags: revenue before cash collection. Revenue recognition red flags: revenue after cash collection. Expense recognition red flags: capitalizing vs. expensing. Expense recognition red flags: reserve Accounts and write-offs.

Unit 3 - Big Data and Prediction Models (4 Weeks)

Overview big data and prediction models. Discretionary accruals models: model the non-cash portion of earnings or accruals. Discretionary expenditure Models: model the cash portion of earnings. Fraud prediction models and Benford's law.

Unit – 4 Non-financial Metrics and Financial Performance (3 Weeks)

Introduction: Connecting numbers to non-financial performance measures. Linking non-financial metrics to financial performance: Overview and steps. Targets setting, incorporation of analysis results in financial models and how to use analytics to choose action plans.

Practical component (if any) - PYTHON/R

Essential/recommended readings

1. Introduction to Earnings Management by Malek El Diri
2. Data Analytics for Accounting by Vernon J. Richardson (Author), Ryan A. Teeter, Katie L. Terrell, Partha Sarathi Mohapatra.
3. Predictive Analytics for Business Strategy - Reasoning from Data to Actionable Knowledge by Jeffrey T. Prince, Amarnath Bose

Practical component (if any) - The entire syllabus is based on practical exercise or case studies i.e. learning through specified software's like Python, R and Stata

Essential/recommended readings:

1. Introduction to Earnings Management by Malek El Diri

2. Data Analytics for Accounting by Vernon J. Richardson (Author), Ryan A. Teeter, Katie L. Terrell, Partha Sarathi Mohapatra.

3. Predictive Analytics for Business Strategy - Reasoning from Data to Actionable Knowledge by Jeffrey T. Prince, Amarnath Bose

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-8)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Human Resource Analytics	4	3	0	1	12th Pass	Basic understanding of statistics

Learning Objectives

This course provides the analytics knowledge, skills, and competencies to address human resource issues in organisations. It introduces the central concepts of people orientated analytics and via hands-on exercises, builds skills and Competencies around the management, analysis and representation of data.

Learning outcomes

- Understand and discuss the value of human capital analytics concepts
- Understand and discuss the value of methodological concepts relevant to analytics
- Demonstrate skills in implementing analytics to solve HR issues
- Persuasively communicate appropriate (i.e., theoretically sound and practical) recommendations

SYLLABUS OF GE-8

Unit 1

HR Analytics Using Basic Statistical Techniques (3 weeks)

Design Compensation and Benefit Plan Using Conjoint Analysis, Forecast HR Cost Using Time Series Modelling (ARIMA), Manpower Planning Using Monte Carlo Simulation and Markov Chain

Unit 2

HR Analytics Using Unsupervised Machine Learning (3 weeks)

Identify Association of Employee Job Satisfaction Using Association Rule, Determine Factors of Performance Appraisal System Using Dimension Reduction Algorithms, Assess Employee Absenteeism Using Clustering Techniques

Unit 3

HR Analytics Using Supervised Machine Learning (4 weeks)

Predict Employee Salary/Pay Rate Using Supervised Machine Learning Regression Techniques, Predict Employee Attrition Using Supervised Machine Learning Classification Techniques, Predict Employee Promotion Using Neural Network Model

HR Analytics: Practical Approach Using Python by Bharti Motwani, Wiley
Chapter 12, Chapter 13, Chapter 14

Unit 4

HR Analytics for Text Data (4 weeks)

Review Resume Using Text Mining, Evaluate Employee Reviews Using Sentiment Analysis, Automate HR Help Desk Using Chatbots, Employee Recruitment and Selection Using Recommendation System

Practical component (if any) - The entire syllabus is based on practical exercise i.e. learning through specified software's like Python or R.

Essential/recommended readings

1. Motwani,B. (2021). HR Analytics: Practical Approach Using Python, Wiley. ISBN:9789354240027
2. Ng, M.S. (2019) Predictive HR Analytics, Text Mining & Organizational Network Analysis: with Excel, Amazon Digital Services LLC .ISBN: 9781077226906

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-9)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Social Media Analytics	4	3	0	1	12th Pass	Basic understanding of statistics

Learning Objectives

Web Analytics, Social Media Analytics, Network Analytics, Mobile Analytics, Influencer Marketing. This course tries to address questions on how organisations can use the wealth of

available data to devise a more result-oriented marketing strategy and leverage digital marketing to enjoy greater ROI.

Learning outcomes

- Understand the concept of digital marketing and its real-world iterations
- Articulate innovative insights of digital marketing enabling a competitive edge
- Understand how to create and run digital media based campaigns
- Identify and utilise various tools such as social media etc.

SYLLABUS OF GE- 9

Unit 1 Social Media Marketing (4 Weeks)

Social Media Marketing: Introduction, Process – Goals, Channels, Implementation, Analyze. Tools: Google and the Search Engine, Facebook, Twitter, YouTube and LinkedIn. Issues: Credibility, Fake News, Paid Influencers; social media and Hate/ Phobic campaigns. Analytics and linkage with social media. The Social Community.

Unit 2 Email Marketing (3 Weeks)

Introduction, email marketing process, design and content, delivery, discovery. Mobile Marketing: Introduction and concept, Process of mobile marketing: goals, setup, monitor, analyse

Unit 3 Mobile Marketing (4 Weeks)

Introduction and concept, Process of mobile marketing: goals, setup, monitor, analyze; Enhancing Digital Experiences with Mobile Apps. Pros and Cons; Targeted advertising. Issues: Data Collection, Privacy, Data Mining, Money and Apps, Security, Spam. Growth Areas.

Unit 4 Managing Digital Marketing (3 Weeks)

Content Production; Video based marketing; Credibility and Digital Marketing; IoT; User Experience; Future of Digital Marketing.

Practical component (if any) - NIL

Essential/recommended readings

1. Dodson, Ian: The Art of Digital Marketing. Wiley
2. Ryan, Damien: Understanding Digital Marketing. Kogan Page Limited

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

ANNEXURE-29

Sub: Amendment to Ordinance V

[E.C Resolution No. 14-1/-(14-1-3/-) dated 09.06.2023 and
EC Resolution No.27-1 (27-1-5) dated 25.08.2023]

Following addition be made to Appendix-II-A to the Ordinance V (2-A) of the Ordinances of the University;

Add the following:

Syllabi of Semester-IV, V and VI of the following departments under Faculty of Social Sciences based on Under Graduate Curriculum Framework -2022 implemented from the Academic Year 2022-23 :

(i) History
(ii) Geography
(iii) Sociology
(iv) Economics

SEMESTER – IV

DEPARTMENT OF HISTORY

Category I

BA (Hons.) History

DISCIPLINE SPECIFIC CORE COURSE -1 (DSC-1) – : History of India – IV: c.1200 – 1500

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisiteof the course (if any)
		Lecture	Tutorial	Practical/ Practice		
History of India – IV: c.1200 – 1500	4	3	1	0	12th Pass	Should have studied History of India- III : 750-1200

Learning Objectives

This course seeks to engage students in an analytical understanding of the varied perspectives from which historians study the three centuries between the thirteenth and the fifteenth centuries. It provides them with a basic understanding of the political,economic and socio-cultural processes of the time especially with reference to Gujarat sultanate, Vijayanagara state as well as the Delhi Sultanate. Sufism and major trends in bhakti 'movement' are explained to the stu-dents. Learners are also encouraged to engage with diverse corpus of sources available to historians for the period under study.

Learning outcomes

On completion of this course, the students shall be able to:

- Discuss different kinds of sources available for writing histories of various aspects of life during the thirteenth to the fifteenth centuries.
- Critically evaluate the multiple perspectives from which historians have studied the politics, cultural developments and economic trends in India during the period of study.
- Appreciate the ways in which technological changes, commercial developments and challenges to patriarchy by certain women shaped thetimes.

SYLLABUS OF DSC-1

Unit I: Survey of sources

1. Persian ta'rīkh traditions
2. Malfuzat and premakhyans

3. Inscriptions and regional identity: Kakatiyas

Unit II: Political structures

1. Sultanates of Delhi: transitions in ruling elites, service cultures, iqtas
2. Articulating political authority: monuments and rituals
3. Political cultures: Vijayanagara and **'Surāṣṭrān'**

Unit III: Society and economy

1. Agricultural production,
2. Technology and changes in society
3. Monetization; market regulations; urban centres; trade and craft

Unit IV: Religion, society and cultures

1. Sufi silsilas: Chishtis and Suhrawardis; doctrines and practices; social roles
2. Bhakti; Sant tradition: Kabir and Nanak, **Jnanaeshwar. and Namdev** cults: Jagannath and Warkari
3. Gender roles: women bhaktas and rulers

Practical component (if any) – NIL

Essential/Recommended Readings

Unit I: This unit will familiarise students with the range of sources available for the period of study in the paper. It also aims to apprise them of the varied ways inwhich historians interpret these sources. (**Teaching Time: 12 hrs. Approx**.)

- Habib, Irfan. (1981). "Barani's Theory of the History of the Delhi Sultanate", Indian Historical Review, vol. 7, pp. 99-115.
- Alam, Muzaffar. (2004). The Languages of Political Islam in India, Delhi: Permanent Black. The sections most useful for our present topic can be found on pp. 1-98. Particularly im-portant is the section on Zia Barani.
- Kumar, Sunil. (2007). Appendix: 'Persian Literary Traditions and Narrativizing the Del-hi Sultanate'. In The Emergence of the Delhi Sultanate 1192-1286, by Sunil Kumar, Ranikhet: Per-manent Black, pp. 362-77.
- Hardy, Peter. (1962). 'Some Studies in Pre-Mughal Muslim Historiography', in Historians of India, Pakistan and Ceylon, edited by C.H. Philips, pp. 115-27. (Alternatively, you may find Hardy's views in the relevant chapter in his book entitled Historians of Medieval India.)
- Ernst, Carl W. (1992). Eternal Garden: Mysticism, History and Politics at a South Asian Sufi Center. Albany: State University of New York Press, 1992. Therelevant portion is Chapter 4, entitled 'The Textual Formation of Oral Teachings in the Early Chishtī Order', pp. 62-84.
- Trivedi, Madhu. (2008). 'Images of Women from the Fourteenth to the Sixteenth centu-ry: A Study of Sufi Premakhyans'. In Rethinking A Millennium: Perspectives

on Indian History from Eighth to the Eighteenth Century, edited by Rajat Datta, Delhi: Aakar Books, pp. 198-221.

- Behl, Aditya. 2012. Love's Subtle Magic: An Indian Islamic Literary Tradition 1379–1545, edited by Wendy Doniger, New York: Oxford University Press, pp. 286-338 (chap. 9-10: 'Hier-archies of Response' and 'The Story of Stories').
- Orsini, Francesca. (2012). 'How to Do Multilingual Literary History? Lessons from fifteenth- and sixteenth-century north India', Indian Economic and SocialHistory Review, vol. 49 (2), pp. 225-46.
- Talbot, Cynthia. (2001). Precolonial India in Practice: Society, Region and Identity in Medieval Andhra, Delhi: Oxford University Press. See especially, 'Introduction: Medieval India, a history in transition', pp. 1-17 and 'Conclusion: Toward a New Model of Medieval India', pp. 208-215.

- हबीब, मोहम्मम. (2014). 'सल्तनत काल के रतया सी म् स्तावेज़ ', मध्यकालीन -9, रम् ल्ली: राजकमल प्रकाशन, सल्तनत का राजतनततक तसद् ा:ग्रंथशल्पी.
- :ततआउद्दीन बरनी के फतवा- ए जहा ा दारी के अनुवाद सतहत , र् ल्ली
- ररज़वी, सैतय अतहर अब्बास. (1957). तुग़लक़ कालीन भारत, भाग -2, ,राजकमल प्रकाशन, प्रासंगक भाग; 'अनरु् त ग्रंथो की समीक्षा', पष्ठ संख्या -क -ढ़.
- बहल, आर् त्य. (2012). 'मायावी मगृ ी: एक हचन् वी सूफ़ी ेमाख्यान (1503 ई), मध्यकालीन भारत का सांस्कृ ततक इततहास (सं.) मीनाक्षी खन्ना, ओररएंट ब्लैकस्वॉन,पष्ठ सखं् या.185-218.

Unit II: Students will critically interact, in this unit, with the rather uneven historiography on political structures and cultures across different realms of the Delhi Sultanate and Vijayanagara. (**Teaching Time: 12 hrs. approx**.)

- Habib, Irfan. (1992). 'Formation of the Sultanate Ruling Class of the Thirteenth Centu-ry', In Medieval India: Researches In The History Of India 1200-1750, Vol. I, Edited By Irfan Habib, New Delhi: Oxford University Press, Pp. 1-21.
- Kumar, Sunil. (1992). 'When Slaves Were Nobles: The Shamsi Bandagān In The Early Delhi Sultanate', Studies In History, Vol. 10, Pp. 23-52.
- Kumar, Sunil. (2009). 'The Ignored Elites: Turks, Mongols and A Persian Secretarial Class In The Early Delhi Sultanates, 13th – 16th Centuries', Modern Asian Studies, Vol. 43, No. 1, Pp. 45-77.
- Kumar, Sunil. (2011). 'Courts, Capitals and Kingship: Delhi and Its Sultans inthe Thirteenth and Fourteenth Centuries Ce', In Court Cultures In The Muslim World: Seventh To Nine-teenth Centuries, Edited By Albrecht Fuess And Jan Peter Hartung, London: Routledge, Pp. 123-48.
- Kumar, Sunil. (2014). 'bandagi And Naukari: Studying Transitions In Political Culture And Service Under The North Indian Sultanates, 13th-16th Centuries', In After Timur Left, Edited By Francesca Orsini And Samira Sheikh, Delhi:Oxford University Press, Pp. 60- 108.
- Ali, Athar. (1981). 'Nobility Under Mohammad Tughluq', Proceedings Of The Indian History Congress, Vol. 42, Pp. 197-202.
- Habib, Irfan. (1982). 'iqta', In Cambridge Economic History Of India, Vol. 2, Edited By Tapan Raychaudhuri And Irfan Habib, Cambridge: Cambridge University Press, Pp. 68-75. Note That The Entire Section On Agrarian Economy (Pp. 48-75) Should Be Read For A Fuller Understanding.
- Moreland, W.H. (1929). Agrarian System of Moslem India: A Historical Essay With Appendices, Allahabad: Central Book Depot. See Especially Chapter 2 And Appendix B & C.
- Hardy, Peter. (1998). 'growth Of Authority Over A Conquered Political Elite: Early Del-hi Sultanate As A Possible Case Study', In Kingship And Authority In South Asia,

Edited By J. F. Richards, Delhi: Oxford University Press. (First Published, 1978).

- Kumar, Sunil. (2001). 'qutb And Modern Memory' In Partitions Of Memory: The After-life Of The Division Of India, Edited By Suvir Kaul. Delhi: Permanent Black, Pp. 140-82. (Re-printed In Sunil Kumar's The Present In Delhi's Pasts, Delhi: Three Essays Press, 2002, Pp. 1-61.)
- Meister, Michael W. (1972). 'the Two-And-A-Half-Day Mosque', Oriental Art, Vol. 18, Pp. 57-63. Reproduced In Architecture In Medieval India: Forms, Contexts, Histories, Edited By Monica Juneja, New Delhi: Permanent Black, 2001, Pp. 303-314.
- Wagoner, Philip.(1996). 'sultan Among Hindu Kings: Dress, Titles, And The Islamiciza-tion Of Hindu Culture At Vijayanagara', Journal Of Asian Studies,Vol. 55, No. 4, Pp. 851-80.
- Sheik, Samira. (2010). Forging A Region: Sultans, Traders And Pilgrims In Gujarat, 1200- 1500. Delhi: Oxford University Press.
- हबीब, इरफ़ान. 2007. '13वी ससी में सल्तनत के शासक वगग का वकास ', मध्यक़ालीन भारत, अक - 7, (संपाम् क.) इरफ़ान हबीब, र्म् ल्ली: राजकमल प्रकाशन.
- ईटन, ररर्डि. 2012. 'मध्यकालीन म् क्कन में इस्लामक स्थान की अभव्यरम्
- मध्यकालीनभारत का सांस्कृ ततक इततहास, (सं.) मीनाक्षी खन्ना
- ,ओररएंटब्लैकस्वॉन, पष्ठ सख ं या. 134-53.

Unit III: This unit will apprise students of the economic and technological changes during this period and explore the interlinkages between them. **(Teaching Time: 9 hrs. approx.)**

Habib, Muhammad. (1974). 'introduction' To Elliot and Dowson's History Of India Vol. Ii. Reprinted In Politics and Society During the Early Medieval Period: Collected Works Of Professor Habib, Vol. 1, Edited By K.A. Nizami. New Delhi: People's Publishing House, Pp. 33-110.

- Moreland, W.H. (1988 Reprint). 'Chapter 2: The Thirteenth and Fourteenth Centuries', In
- Agrarian System Of Moslem India. Delhi: Kanti Publications. Reprint, Pp. 21- 66.
- Habib, Irfan. (1991). 'Agricultural Production', In the Cambridge EconomicHistory of India, Vol. I, Edited by I. Habib and T. Raychaudhuri, 48-53. Delhi: Orient Longman Reprint.
- Habib, Irfan. (1969). 'Technological Changes and Society, Thirteenth and Fourteenth Centuries', Presidential Address, Section Ii. Proceedings Of the Indian History Congress, Vol. 31, Pp. 139-161.
- Siddiqui, I.H. (1992). 'Social Mobility In The Delhi Sultanate', In Medieval India1: Re-searches In The History Of India 1200-1750, Edited By Irfan Habib. New Delhi: Oxford University Press, Pp. 22-48.
- Habib, Irfan. (1984). 'Price Regulations Of Alauddin Khalji – A Defence Of Zia Barani',
- Indian Economic And Social History Review, Vol. 21, No. 4, Pp. 393-414. Also Reprinted In Money And The Market In India: 1100-1700, Edited By Sanjay

Subrahmanyam, New Delhi: Oxford University Press, 1994, Pp. 85-111.

- Habib, Irfan. (1978). “Economic History Of The Delhi Sultanate – An Essay In Interpre-tation”, Indian Historical Review Vol. 4, Pp. 287-303.
- Sinopoli, Carla. (2003). Political Economy of Craft Production: Crafting Empire in South India, 1350-1650. Cambridge: Cambridge University Press, Pp. 156- 294 (Chapters 6-7).
- Phillip B. Wagoner, ‘money Use in The Deccan, C. 1350–1687: The Role Of Vijayanaga-ra Hons In The Bahmani Currency System’, Indian Economic And Social History Review 51, No. 4 (2014).
- Subrahmanyam, Sanjay. (1994). ‘introduction’ To Money And The Market In India 1100- 1700, Edited By Sanjay Subrahmanyam, New Delhi: Oxford University Press, Pp. 1-56.
- Digby, Simon. (1982). Chapter V: ‘the Maritime Trade Of India’, In Cambridge Econom-ic History Of India, Edited By Irfan Habib &Tapan Raychaudhuri, Hyderabad: Orient Longman, Pp. 121-159.
- हबीब, इरफान. (2016). मध्यकालीन भारत में प्रद्योतगकी: नई र्ल्ली: राजकमल.
- हबीब, इरफान. (2017). मध्यका
- लीन भारत का आतथवक इततहास: एक सवेक्षण. नई र्ल्ली: राजकमल.
- म्ग, एस. सी. (2014.) 'मगु ल पवू व भारत में सामाजकगतशीलता ', मध्यकालीन
- भारत, अक-9, (सं.) इरफ़ान हबीब, र्ल्ली: राजकमल प्रकाशन. पष्ठ सखं्या.51-58.
- हबीब, इरफान. (1999). ‘म्उर भारत में सामाजऔर आगथकरवततन (1200-1500
- ई.)’, भारतीय इततहास में मध्यकाल, (सं.) इरफ़ान हबीब: नई र्ल्ली: सफ़र हातमी मेमोररयल रस्ट पष्ठ सखं्या. 159-68.
- हबीब, इरफान. (2016). ‘र्ल्ली सल्तनत का आगथमध्यकालीन भारत, खंि-9 पष्ठ सखं्या- 35-67.इतहास: एक व्याख्या लेख’,
- हबीब, मोहम्मम. (2014). ' म्उरी भारत में नगरीय क्ांतच ', मध्यकालीन भारत, असं.) इरफ़ान हबीब, र्ल्ली: राजकमल प्रकाशन. पष्ठ संख्या.51-58.

- हबीब, इरफान. (1992). 'अलाउद्दीन खली के मलू य नयंत्रण को उपाय: ज़या बरनी के समगथन में, मध्यकालीन भारत, अप्रकाशन , पष्ठ सखं्या 24-46. -4.(सं). इरफ़ान हबीब, र्ल्ली, राजकमल

Unit IV: This unit is chiefly focussed on the religious-cultural sphere with regard especially to Sufi and Bhakti doctrines and practices, but also with regard to gender roles. **(Teaching Time: 12 hrs. approx.)**

- Rizvi, S.A.A. (1978). A History of Sufism, vol. 1. Delhi: Munshiram Manoharlal.
- Digby, Simon. (1986). 'The Sufi Shaykh as a Source of Authority in Medieval India', Purusartha, vol. 9, pp. 57-78. Reprinted in India's Islamic Traditions, 711-1750, edited by Richard M. Eaton, New Delhi: Oxford University Press, 2003, pp. 234-62.
- Digby, Simon. (1990). 'The Sufi Shaykh and the Sultan: A Conflict of Claims to Authority in Medieval India', Iran, vol. 28, pp. 71-81.
- Kumar, Sunil. (2000). 'Assertions of Authority: A Study of the Discursive Statements of Two Sultans of Delhi', in The Making of Indo-Persian Culture: Indian and French Studies, edited by Muzaffar Alam, N. Delvoye& Marc Gaborieau. Delhi: Manohar, pp. 37-65.
- Sharma, Krishna. (2002). Bhakti and the Bhakti Movement: A New Perspective. Delhi: Munshiram Manoharlal. Especially useful is 'Chapter I: Towards a New Perspective', pp. 1-38.
- Kulke, Hermann. (1993). Kings and Cults: State Formation and Legitimation in India and Southeast Asia , South Asia Books.
- Grewal, J.S. (1993). Contesting Interpretations of Sikh Tradition. New Delhi: Manohar.
- Vaudeville, C. (1996). Myths, Saints and Legends in Medieval India. New Delhi:Ox-ford University Press.
- Ramaswamy,Vijaya.(1997).Walking Naked :Women, Society, Sprituality in South India. Shimla: Indian Institute for Advanced Study, Simla.
- Manushi: Women Bhakta Poets (1989) ,Nos. 50-51-52, (January- June1989),New Delhi , Manushi Trust, 1989.
- **Christian Lee Novetzke, *The Quotidian Revolution: Vernacularization, Religion, and the Premodern Public Sphere in India*. Chapter 3 and Chapter 4 will be good enough for Jnanadev.**
- **For Namdev., Christian Lee Novetzke, *Religion and public memory: a cultural history of Saint Namdev in India*, Chapter 1: A Sant between Memory and History, pp. 35-73**
- हबीब, इरफान. (1999). 'मध्यकालीन लोकवाम् ी एके म् रवाम् का मानवीय स्वरूप
- और ऐतहासक पररवेश', भारतीय इततहास मेें मध्यकाल, (सं.) इरफ़ान हबीब, र्ा ल्ली:
- राजकमल प्रकाशन. पष्ठ सखं्या.145-58.
- रंद्र, सतीश (1999). 'म्उर भारत मेें भर्ा आंम् ोलन के म्उय की ऐतहासक पष्ठृ भर
- म', मध्यकालीन भारत मेें इततहास लेखन, धमव और राज्य का स्वरुप, र्ा ल्ली:
- ग्रंथशल्पी. पष्ठ संख्या. 83-97.
- बहुगुणा, आर. पी. (2009). मध्यकालीन भारत में भतक्त और स ी आदं ोलन, र्ा ल्ली: ग्रंथशल्पी.

- लॉरेंजन ि्वष्णि. (2010). नगुम् ण संतोंके स्वपन्. र्ह् ल्ली:राजकमल प्रकाशन.

Suggestive readings

- Asher, C.B. and C. Talbot, eds. (2006). India before Europe. Cambridge: Cambridge University Press.
- Behl, Aditya. (2007). 'Presence and Absence in Bhakti', International Journal of Hindu Studies, vol. XI, no. 3, pp. 319-24.
- Chekuri, Christopher. (2012). '"Fathers" and "Sons": Inscribing Self and Empire at Vijayanagara, Fifteenth and Sixteenth Centuries', Medieval History Journal 15, no. 1.
- Digby, Simon. (2004). 'Before Timur Came: Provincialization of the Delhi Sultanate through the Fourteenth Century', Journal of the Economic and Social History of the Orient 47, no. 3.
- Eaton, R.M. & P.B. Wagoner. (2014.) Power, Memory and Architecture: Contested Sites on India's Deccan Plateau, 1300-1600. New Delhi: Oxford University Press.
- Eaton, R.M. (2000). Essays on Islam and Indian History. New Delhi: Oxford University Press
- Eaton, R.M.,ed .(2003). India's Islamic Traditions.711-1750. New Delhi: Oxford Uni-versity Press. http://www.vijayanagara.org/default.htmlfor the valuable website on excavations, sur-vey and restoration work in Hampi, the capital of Vijayanagara.
- Flood, F.B., ed. (2008). Piety and Politics in the Early Indian Mosque. New Delhi: Oxford University Press.
- Habib, I. ed. (1992). Medieval India1: Researches in the History of India 1200- 1750. New Delhi: Oxford University Press.
- Jackson, P. (1999). The Delhi Sultanate: A Political and Military History. Cambridge: Cambridge University Press.
- Jha, Pankaj. (2016). 'Literary Conduits for "Consent": Cultural Groundwork of the Mughal State in the Fifteenth Century', Medieval History Journal, vol. 19, no. 2, pp. 322-50.
- Juneja, M., ed. (2001). Architecture in Medieval India: Forms, Contexts, Histories. Del-hi: Permanent Black.
- Kapadia, Aparna, (2013). 'The Last Chakravartin? The Gujarat Sultan as "Universal King" in Fifteenth Century Sanskrit Poetry', Medieval History Journal 16, no. 1, pp. 63– 88.
- Karashima, N. (2002). A Concordance of Nayakas: The Vijayanagara Inscriptions in South India. Delhi: Oxford University Press.
- Kolff, Dirk H. A. (1990). Naukar, Sepoy and Rajputs: The Ethnohistory of the Military Labour Market in Hindustan, Cambridge: Cambridge University Press, pp. 1-31
- Kumar, Sunil. (2007). The Emergence of the Delhi Sultanate, 1192- 1286.Ranikhet: Permanent Black.
- Lal, K.S. (1980). Twilight of the Sultanate. Delhi: Munshiram Manoharlal Publishers Pvt. Ltd.
- Lorenzen, David N. (2004). Religious Movements in South Asia 600-1800. New Delhi: Oxford University Press. [Paperback edition, 2005]
- Pollock, Sheldon. (1998). 'The Cosmopolitan Vernacular', The Journal of Asian Studies, vol. 57, no. 1, pp. 6-37.
- Prasad, P. (1990). Sanskrit Inscriptions of Delhi Sultanate, 1191-1526. Delhi: Oxford

University Press.

- Ramaswamy,Vijaya.(1991). 'Anklets on the Feet: Women Saints in Medieval Indian Society', The Indian Historical Review, vol. XVII, NOS.1-2,60-89.
- Rao, Ajay. (2011). 'A New Perspective on the Royal Rama Cult at Vijayanagara', in Yigal Bronner, Whitney Cox and Lawrence McCrea (eds), South Asian Texts in History: Critical Engagements with Sheldon Pollock Ann Arbor: Association for Asian Studies.
- Sangari, Kumkum.(1990) 'Mirabai and the Spiuritual Economy of Bhakti', Economic & Political Weekly,,Vol.25, Issue No. 28.
- Schomer, K. and W.H. McLeod, eds. (1987). The Sants: Studies in a Devotional Tradi-tion of India. Delhi: Motilal Banarsidas Publishers.
- Sharma, Sunil (2005). Amir Khusraw: The Poet of Sultans and Sufis. Oxford: One World.
- रंद्र, सतीश. मध्यकालीन भारत: सल्तनत से मगु ल काल तक(1206-1526) , भाग -1,जवाहर पब्लशसस एंि िस्रीब्यटू सस पब्लके शन.
- तारारंम् . (2006). भारतीय ससं ृ कृ तत पर इस्लाम का प्रभाव, नई रम् ल्ली, ग्रंथशल्पी. वमाम् , हररश्रंद्र(सं). मध्यकालीन भारत , भाग -1 -(750-1540), हिं ी माध्यम
- कायाम् न्वय तनिेशालय , रम् ल्ली वववद्यालय .
- हबीब, मोहम्मम और ख़लीक अहसम नज़ामी.(1998).(सं.). तदल्ली सल्तनत, तदल्ली मैकमलन

Note: Examination scheme and mode shall be as prescribed by the ExaminationBranch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 2 (DSC-2): Rise of the Modern West – II

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Rise of the Modern West – II	4	3	1	0	12th Pass	Should have studied Rise of the Modern West – I

Learning Objectives

This paper offers an in-depth historical analysis of economic, political and social transformations in Europe during the 17th and 18th centuries. Cyclical and secular trends in history, important political shifts, modern scientific views, and intellectual developments of the 17th and 18th centuries will be analysed closely. The paper will trace the development of socio-economic and technological forces which went into the making of the Industrial Revolution in late 18th century Britain. The role of trade and empire,colonial networks, and slavery will be examined to emphasize their contribution to industrial capitalism. The divergence debate will further help draw parallels and subsequent differences between Europe and Asia, and broaden our understanding of early modern Europe.

Learning outcomes

Upon completion of this course the student shall be able to:

- Explain major economic, social, political and intellectual developments inEurope during the 17th and 18th centuries.
- Contextualize elements of modernity in these realms.
- Discuss the features of Europe's economy and origins of the IndustrialRevolution.
- Analyse the relationship between trade, empire, and slavery and industrialcapitalism. Examine the divergence debate.

SYLLABUS OF DSC- 2

Unit 1: The 17th century European crisis: economic, social, and political dimensions.

Unit 2: The English Revolution (1603-1688): major issues, strands and implications.

Unit 3: Mercantilism and European economies: Trade and Empire - 17th - 18thcenturies.
Unit 4: Scientific Revolution. Enlightenment: political, economic and social ideas.
Unit 5: Origins of the Industrial Revolution and the Divergence debate.

Practical component (if any) - NIL

Essential/recommended readings

Unit 1: The Unit examines various aspects of the 17th century crisis and economic recovery in differ-ent parts of Europe. **(Teaching period: 9hrs. approx.)**

- Benedict, Philip and Myron P. Gutmann, (Eds.). (2006) Early Modern Europe:From Crisis
- to Stability. Newark: University of Delaware Press.
- Black, Jeremy. (2002) Europe and the World, 1650-1830. New York:Routledge.
- Parker, G. and L.M. Smith, (Eds.). (1997). The General Crisis of theSeventeenth Century.
- London: Routledge. (Introduction ,Chapters: 2,4, 5 & 7)
- de Vries, Jan. (1976). Economy of Europe in an Age of Crisis 1600-1750.Cambridge: Cambridge University Press.
- Wallerstein, Immanuel. (1980). The Modern World System, Vol. II, Mercantilism and the
- Consolidation of the European World Economy, 1600-1750. New York:Academic Press.

Unit-II: The unit examines the social origins of the English Revolution. Important strands within the Revolution and their outcomes will be analysed. **(Teaching period:9 hrs. approx.)**

- Gaunt, Peter, (Ed.). (2000). The English Civil War: The Essential Readings. Oxford: Blackwell Publishers Limited.
- Hill, Christopher. (1985). The Collected Essays of Christopher Hill, Vol. 2, Religion and
- Politics in Seventeenth-Century England. Amherst: The University of Massachusetts Press.
- Hill, Christopher. (1986). The Collected Essays of Christopher Hill, Vol. 3, People and Ideas in Seventeenth-Century England. Amherst: The University of Massachusetts Press.
- Kennedy, Geoff. (2008). Diggers, Levellers, and Agrarian Capitalism: Radical Political Thought in Seventeenth-Century England. Lexington: LexingtonBooks.

Unit-III: The Unit will define the concept and features of Mercantilism. Trade and Empire and their impact on Europe and the periphery will be dealt with in detail. **(Teaching period: 9 hrs. approx.)**

- Stern, Philip J and Carl Wennerlind, (Eds.). (2013). Mercantilism Reimagined: Political Economy in Early Modern Britain and its Empire. Oxford: Oxford University Press.
- Solow, Barbara L. (Ed.). (1991). Slavery and the Rise of the Atlantic System. Cambridge:
- Cambridge University Press.
- Solow, Barbara L. and Stanley L. Engerman, (Eds.). (1987). British Capitalismand Caribbean Slavery. Cambridge: Cambridge University Press.
- Mintz, Sidney W. (1986). Sweetness and Power: The Place of Sugar in Modern History. NewYork: Penguin Books.
- Beckert, Sven. (2013). The Empire of Cotton: A New History of GlobalCapitalism, Penguin Random House.

Unit-IV: The origins of modern science will be explained with its linkages to society, economy, and Enlightenment. Scientific advances and their relationship with the rise of Modern West will be highlighted. The unit will also define the phenomenon of Enlightenment. Main thinkers and their ideas, and the connection betweenEnlightenment and modernity will be analysed. **(Teaching period: 9 hrs. approx.)**

- Hellyer, Marcus, (Ed.) (2003). The Scientific Revolution. The Essential Readings. Oxford:
- Blackwell Publishers Limited.
- Henry, John. (2008). The Scientific Revolution and the Origin of ModernScience. London: Palgrave.
- Conrad, Sebastian. (2012). Enlightenment in Global History: A Historiographical Critique.
- American Historical Review, Vol. 117, Issue 4, October, pp. 999-1027.
- Fitzpatrick, Martin, et. al. (Ed.). (2004). The Enlightenment World. London: Routledge.
- Pagden, Anthony. (2013). The Enlightenment: And Why it Still Matters.Oxford: Oxford University Press. (Introduction and conclusion).

Unit-V: The Unit will trace the causes of Industrial Revolution in Britain and the contribution of colonial networks, exploitation and slavery to industrial capitalism in Europe. The divergence debate will broaden the understanding of the path to industrialization. **(Teaching period: 9 hrs. approx.)**

- Deane, Phyllis. (1965). The First Industrial Revolution. Cambridge: Cambridge University Press.
- Hobsbawm, E. J.(1999). Industry and Empire. London: Penguin Books.
- Inikori, Joseph E. (2002). Africans and Industrial Revolution in England - A Study in International Trade and Economic Development. Cambridge: Cambridge University Press.
- Parthasarathi, Prasannan. (2011). Why Europe Grew Rich and Asia Did Not: Global Economic Divergence, 1600-1800. Cambridge: Cambridge UniversityPress.

- Pomeranz, Kenneth. (2000). The Great Divergence: China, Europe and the Making of the Modern World. Princeton: Princeton University Press.

Suggestive readings (if any)

- Anderson, M. S. (1976). Europe in the Eighteenth Century, 1713-1783. Oxford: Oxford University Press.
- Canny, Nicholas. (Ed.). (1998). The Oxford History of the British Empire, Vol. I,The Origins
- of Empire, British Overseas Enterprise to the Close of the SeventeenthCentury. Oxford: Oxford University Press.
- Coleman, D.C. (Ed.). (1969). Revisions in Mercantilism. London: MethuenYoung Books.
- Floud, Roderick, and D.N. McCloskey (Eds.). (1997). The Economic History ofBritain Since 1700, Vol. I: 1700-1860. Cambridge: Cambridge University Press.
- Henry, John. (2011). A Short History of Scientific Thought. London. Macmillan International.
- Hill, Christopher. (1997). Puritanism and Revolution: Studies in the Interpretation of the
- English Revolution of the 17th Century. London/New York: Palgrave Macmillan.
- Huff, Toby E. (2003). The Rise of Early Modern Science: Islam, China and theWest. Cambridge: Cambridge University Press (2nd edition).
- Marshall, P. J. (Ed.). (1998). The Oxford History of the British Empire, Vol. II,The Eighteenth Century. Oxford: Oxford University Press.
- Mathias, Peter. (2001). The First Industrial Nation. London: Routledge.
- Stone, Lawrence. (2002). The Causes of the English Revolution, 1529-1642. New York: Routledge.
- Studer, Roman. (2015). The Great Divergence Reconsidered - Europe, India, and the Rise to Global Economic Power. Cambridge: Cambridge University Press.
- de Vries, Jan. (2008). The Industrious Revolution: Consumer Behaviour andthe Household Economy, 1650 to the Present. Cambridge: CambridgeUniversity Press.
- Williams, Eric. (1944). Capitalism and Slavery. Chapel Hill: University of North Carolina Press.

Note: Examination scheme and mode shall be as prescribed by the ExaminationBranch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE– 3 (DSC-3): History of Modern Japan (c. 1868 – 1950s)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
History of Modern Japan (c. 1868 – 1950s)	**4**	**3**	**1**	**0**	**12 th Pass**	**NIL**

Learning Objectives

The course studies the transition of Japan from quasi-feudalism to a modern industrialised capitalist nation. It focuses on the political and economic strategies adopted by Japan to meet the challenges posed by western imperialistic intrusions. It facilitates an understanding of Japan's emergence as a major non-European power withinan international order dominated by western imperial powers. It studies the trajectory of Japan towards ultra-nationalism and militarism in the context of a failed parliamentary democracy, eventually leading to disaster in the Second World War. The course aims to pay close attention to historiographical shifts, contextualizing these against the backdrop of their contemporary history and politics.

Learning outcomes

Upon the completion of this course the student shall be able to:

- Explain Japan's attempts to create new institutional structures and recasttraditions to encounter challenges of the west.
- Analyse historiographical shifts in Japanese history in the context of global politics. Examine the divergent pathways to modernity followed by Japan.
- Locate and contextualise the history of Japan in world politics.
- Critically discuss contemporary international studies with much greater claritybased on the knowledge of history and culture of Japan.

SYLLABUS OF DSC-3

Unit 1: Transition from Feudalism to Capitalism

1. Crisis of the Tokugawa Bakuhan System
2. The Meiji Restoration: Nature and Significance; Early Meiji Reforms
3. Economic Development in the Meiji Era

Unit 2: Democracy and Militarism

1. Meiji Constitution
2. Failure of Parliamentary Democracy; Militarism and Fascism

Unit 3: Imperialistic Expansion

1. Korea
2. Manchuria
3. China

Unit 4: American Occupation, post-War Reconstruction

Practical component (if any) – NIL

Essential/recommended readings

Unit 1: This unit will introduce students to the history of Japan's transition from feudalism to capitalism. The Unit will also examine historical processes which led to Meiji Restoration and its impact on the economy of Japan. **(Teaching Time: 9 hrs. approx.)**

- Gordon, A. (2003). A Modern History Of Japan- From Tokugawa Times To The Present. New York: Oxford University Press, Chapter 3- The Intellectual World Of Late Tokugawa &Chapter 4- Overthrow Of The Tokugawa.
- Hall, J.W. (1991). (Ed.). Cambridge History Of Japan. Volume Iv: Early Modern Japan.
- Cup. Cambridge.
- Jansen, M.B. (2000). The Making Of Modern Japan. Cambridge: HarvardUniversity Press.
- Jansen. M.B. And Gilbert Rozman. (1986). Japan In Transition From TokugawaTo Meiji. Princeton, Princeton University Press
- Livingston, J. Et Al. (1974). The Japan Reader: Volume I- Imperial Japan: 1800-1945. Pantheon Asia Library, 1974.
- Mcclain, J.L. (2002). Japan – A Modern History. W.W. Norton And Company.Chapter 3- Self And Society.
- Pyle, K.B. (1995). The Making Of Modern Japan. Lexington: D.C. Heath.
- Sansom, G.B. (2015). The Western World And Japan-- A Study In The Interaction Of European And Asiatic Cultures. Bibliolife Dba Of Biblio Bazaar Ii Llc. Chapters 14 And 15.
- Totman, C. (1980). Collapse Of The Tokugawa Bakufu.1862-1868. University OfHawaii Press.

Unit 2: This unit deals with the emergence and growth of democratic governance in Japan.

The polemics of Meiji Constitution, and failure of democracy and subsequent rise of Militarism have been examined in this unit. **(Teaching Time: 12 hrs. approx.)**

- Moore Jr., Barrington. (2015). Social Origins of Dictatorship and Democracy: Lord and Peasant in the Making of the Modern World. Boston: Beacon Press.
- Beasley, W.G. (2000). The Rise of Modern Japan: Political, Economic and SocialChange Since 1850. Palgrave Macmillan. Chapter 6- Protest and Dissent.
- Beckmann, G.M. (1957). The Making of the Meiji Constitution: The Oligarchs and the Constitutional Development of Japan, 1868-1891. University of KansasPress.
- Jansen, M. B. et. al ed. (1988). Cambridge History of Japan. Volume V: The Twentieth Century. Cambridge, CUP.
- Fairbank, J.K., E.O. Reischauer and A. M. Craig. (1998). East Asia: Tradition and Transformation. New Jersey: Houghton Mifflin. Chapter 23- Imperial Japan: Democracy and Militarism.
- Gordon, A. (2003). A Modern History of Japan- From Tokugawa Times to the Present. New York: Oxford University Press. pp 88-91.
- Ike, N. The Beginnings of Political Democracy in Japan. Praeger, 1969.
- Jansen, M.B. (1988). Cambridge History of Japan. Volume V: The Nineteenth Century. Cambridge: Cambridge University Press. pp 651-673
- Hall, J.W. (1970). Japan from Pre-history to Modern Times. Centre for Japanese Studies, the University of Michigan. Chapter 16- The Meiji Constitution and the Emergence of Imperial Japan. Chapter 17- The Decade of the 20's- Political Parties and Mass Movements.

Unit 3: This unit will enable students to understand the imperialistic designs of Japan and the role of nationalism in its conception. It will also examine the nature and consequences of Japanese colonialism in Korea, Manchuria and China. **(Teaching Time: 12 hrs. approx.)**

- Beasley, W.G. (1987) Japanese Imperialism 1894-1945. Oxford: Clarendon Press.
- Fairbank, J.K., E.O. Reischauer and A. M. Craig. (1998). East Asia: Tradition and Transformation. New Jersey, Houghton Mifflin, 1998, Chapter 26- The New Japan.
- Hall, J.W. (1970). Japan from Pre-history to Modern Times. Centre for Japanese Studies, the University of Michigan. Chapter 18- From Manchuria to War in the Pacific.
- Iriye, A. (1981). Power and Culture, The Japanese-American War, 1941-1945. Harvard University Press.
- Jansen, M.B. (1975). Japan and China: From War to Peace, 1894-1972. Princeton University: Rand McNally College Publishing Company/Chicago. Chapter 4- Japan and Change in Korea, Chapter 7-The New Generation, pp 241-247, Chapter 10-The Road to the Pacific War.
- Mayo, J.M.(Ed.). (1970). The Emergence of Imperial Japan-Self Defence or Calculated Aggression? Lexington, Massachusetts: D.C. Heath and Company. pp 19-24, 25-30, 47- 53, 55- 58, 69-73.
- Morley, J.W. (Ed). (1971). Dilemmas of Growth in Pre-war Japan. Princeton, New Jersey: Princeton University Press. Chapter I- introduction: Choice and

- Consequence, Chapter IVThe Failure of Military Expansionism, Chapter VI- Rural origins of Japanese Fascism, Chapter IX- Intellectuals as Visionaries ofthe New Asian Order, Chapter XIII- What Went Wrong?.

Unit 4: This unit deals with the American occupation of Japan after World War-II and the post-war reconstruction. **(Teaching Time: 12 hrs. approx)**

- Dower, J.W. (1999). Embracing Defeat: Japan in the Wake of World War II. New York.W.W. Norton & Company.
- Duus, P. (1997). Modern Japan. Boston. Houghton Mifflin
- Jansen, M.B. (1975). Japan and China: From War to Peace, 1894-1972. Princeton University: Rand McNally College Publishing Company/Chicago. Chapter 12- The Postwar Era, pp 447-462.
- Porter, E.A. and Porter, Ran Ying, (2018) Japanese Reflections on World War II and the American Occupation. Amsterdam, Amsterdam University Press.
- Takemae, E. (2002). The Allied Occupation of Japan. New York, London: The Continuum International publishing group.

Suggested Readings:

- Akita, G. (1967). Foundations of the Constitutional Government in Japan, 1868-1900. Harvard East Asian Series, 23. Cambridge, Mass: Harvard University Press.
- Allen, G.C. (1946). A Short Economic History of Modern Japan 1867-1937. London: Allen &Unwin. (Chapter 2).
- Allen, G.C. (1946). A Short Economic History of Modern Japan 1867-1937. London: Allen & Unwin, 1946, Chapter 2.
- Barnhart, M.A. (1995). Japan and the World since 1868. New York: Edward Arnold. Beasley, W.G. (1963). The Making of Modern Japan. London:Werdenfield and Nicolson, 1963, Chapter VI- New Men and New Methods 1868-1873.
- Beasley, W.G. (1972). The Meiji Restoration. Stanford University Press.
- Borton, H. (1955). Japan's Modern Century. New York: Ronald Press Co.
- Chatterji, B.R. (1966). Modern Japan: Perry to Sato. Meerut, Meenakshi Prakashan, India.
- Duus, P. (1968). Party Rivalry and Political Change in Taisho Japan. Harvard: Harvard University Press.
- Fairbank, J.K., E.O. Reischauer and A. M. Craig. (1998). East Asia: Tradition and Transformation. New Jersey: Houghton Mifflin, Chapter 15-Tokugawa Japan: A Centralized Feudal State, Chapter 17- Japan's Response to the West, andChapter 18-Modernization in Meiji Japan.
- Hall, J.W. (1970). Japan from Pre-history to Modern Times. Centre for Japanese Studies, the University of Michigan.
- Hall, J.W. (1991). ed. Cambridge History of Japan. Volume IV: Early Modern Japan. Cambridge University Press. Beasley, W.G. (1963). The Making of

- Modern Japan. London: Werdenfield and Nicolson Chapter 1- Japan in theEarly 19th Century.
- Hane, M. (1992). Modern Japan: A Historical Survey. Avalon Publishing.
- Ike, N. (1969). The Beginnings of Political Democracy in Japan. Praeger.
- Jansen, M.B. (1965). ed. Changing Japanese Attitudes toward Modernization. Princeton: Princeton University Press.
- Jansen, M.B. (1988). ed. The Cambridge History of Japan. Volumes IV, V and
- VI. Cambridge, Cambridge University Press.
- Jansen, M.B. and Gilbert Rozmaned, (1986). Japan in Transition: From Tokugawa to Meiji. Princeton, New Jersey: Princeton University Press.
- Karlin, J.G. (2014). Gender and Nation in Meiji Japan: Modernity, Loss, And The Doing of History. Honolulu: University of Hawai'i Press, 2014.
- Kiguchi, Junko. Japanese Women's Rights in the Meiji Era. https://www.soka.ac.jp Kunio
- Y. (1967). Japanese Economic Development: A Short Introduction. Oxford University Press. Third edition 1995.
- Lockwood, W.W. (1954). The Economic development of Japan: Growth and Structural Change, 1868-1938. Princeton, N.J.: Princeton University press.
- Lockwood, W.W. (1965). The State and Economic Enterprise in Japan. Part I and II. Princeton: Princeton University Press.
- McClain, J.L. (2002). Japan – A Modern History. Boston.W.W. Norton andCompany.
- McLaren, W.W. (1923). A Political History of Japan during the Meiji Era 1867- 1912. Reproduction by Nabu Press, 2000.
- Morris I. (Ed.). (1963). Japan 1931-1945: Militarism, Fascism, Japanism? D.C. Heath and Company.
- Myers, R.H. and Mark R. Peattie (Ed.). (1984). The Japanese Colonial Empire, 1895-1945. Princeton University Press.
- Norman, E.H. (1940). Japan's Emergence as a Modern State. New York: International Secretariat, Institute of Pacific Relations, First Indian Reprint1977, Khosla and Co., Chapter III The Restoration.
- Peffer, N. (1958). The Far East: A Modern History. University of Michigan Press. Chapter 14- Constitutionalism, Japanese Style.
- Sansom, G.B. (1931). Japan: A Short Cultural History. London and New York: Cresset Press and D. Appleton.
- Scalapino, R.A. (1953). Democracy and Party Movement in Pre-War Japan: theFailure of the First Attempt. Berkeley: California University Press.
- Smethurst, R.J. (1974). A Social Basis for Pre-War Japanese Militarism: The Army and the Rural Community. University of California Press.
- Storry, R. (1991). A History of Modern Japan. Original Publication 1961. Penguin Publishing Group.
- Tipton, E.K. (2002) Modern Japan: A Social and Political History. London and New York: Routledge.

- Tsutsui, W.M. (2009). ed. A Companion to Japanese History. Oxford: Wiley- Blackwell.
  Wray, H. and H. Conroy. (1983). Japan Examined: Perspectives on Modern Japanese History. University of Hawaii Press, Honolulu.
- Yanaga, C. (1949). Japan since Perry. New York: McGraw-Hill Book Company.
- लातोरेत, को नेथ ,कॉट. (1965) जापान का इ9तहास. <म् >ल?: वैC ाI9नक तथा तकनीकE शGम् ावल? आयोग, भारत सरकार.
- पणु तांबेकर, P ीक Rण वSकटेश.(1967) एVशया कE Wवकासोxमख ु एकता. लखनऊ : <हXम् ? सVम9त, सर ू ना Wवभाग, उ_र`म् ेश.
- Wवनाके , हरे >ि एम. (1974). पव ू एc Vशया का आधुनक इ9तहास. लखनऊ: <हXम् ?
- सVम9त सर ू ना Wवभाग.
- तवार?, ` ेमशंकर. (2005). जापान का इ9तहास. Wवgव भारती: Wवgव भारतीपGलके शxस. ुन्नक जापान का इ9तहास. <म् >ल?: खोसला पGलVशगं हाउस.
- नॉमनc , ई. एर्. (2015) आध
- सराओ, के. ट?. एस. (2015) आधुनक जापान का इ9तहास. <म् >ल? WवgवWवkयालय: <हXम् ? माायम कायाIcXवयन9तनेशालय
- Wवkयालंकार, समयके त. ु (2015). एVशया का आधुनक इ9तहास, मसर ू ?: P ी सर,वती ससन.
- पांिये , धनप9त. (2017). आधुनक एVशया का इ9तहास. <म् >ल?: मोतीलाल बनारसीम् ास

Note: Examination scheme and mode shall be as prescribed by the ExaminationBranch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE– 4 (DSE): Environmental History of the Indian Subcontinent

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Environmental History of the Indian Subcontinent	**4**	**3**	**1**	**0**	**12 th Pass**	**NIL**

Learning Objectives

This course aims to introduce the students to the environmental historiography ofthe Indian subcontinent. The idea is to familiarize the students to the recent interventions in the methodologies, theories, and concepts of doing environmental history. The course has the following broad objectives: To introduce historical studies that explores the long-term trajectories of man-nature interactions and revise the political history-based periodization of the sub- continent's past as self-contained ancient, medieval, and modern periods. The course also introduces inter-disciplinary approaches- cartographic, geological, zoological, ecological knowledge -that helps historians study the crucial role played by ecology in the shaping of past societies.The themes and issues discussed in this course familiarizes the students to the methods of using archaeological, bio and geo-archival sources, artistic depictions andoral history sources to study the past relationship between human and environment.This will also enable students to situate the environmental historiography that revises the colonial notion of depicting pre-colonial India as an unchanging landscape.

Learning outcomes

After completing this course, students should be able to -

- Understand the historical methodologies and concepts to explain theenvironmental contexts of the past social and cultural transformations.
- Develop a historical perspective on the complex relationship between society and nature from prehistory to the present in the context of the Indian subcontinent.
- Discuss how societies developed technologies, sources of energy, and modes of organising lives to adapt to varied ecological landscapes.
- Discuss environmental issues within a socio-cultural framework.

- Examine the social, political and economic contexts of creating inequalities in resource use, with reference to the case studies regarding water rights, forest rights, and the right to have liveable cities.
- Locate solutions to environmental problems within a framework of greater democratisation of resource use.

SYLLABUS OF DSE

Unit 1: Introduction to the Environmental History of the Indian Subcontinent

1. Doing Environmental History: Issues and Perspectives, Historiography
2. Sources: Archaeological, Bio and Geo-Archives, Arts and Crafts, and OralHistory

Unit 2: Living with Nature

1. Environment and Early Urban Societies: Harappan Civilization
2. Beliefs, Practices, and Natural Resources

Unit 3: Environment and Livelihood in Medieval Times

1. Pastoralism, Animal Husbandry, and Agriculture
2. Forests and Tribal Groups

Unit 4: Colonial Capitalism and Natural Resources

1. Changing Energy Regimes; Railway and Deforestation, Dams and HydroelectricPower
2. Rivers, Canals, and Embankments

Unit 5: Environmental Crisis and the Future

1. Factories and Urban Spaces; Bombay, Calcutta and Delhi
2. Industrial Agriculture; Biodiversity Loss; Species Extinction

Practical component (if any) - NIL

Essential/recommended readings

Unit 1: This unit provides an overview of environmental historiography of the Indian subcontinent. The first rubric introduces the methods, theoretical concepts, and the major sub- fields of environmental history. The second rubric explores how archeological records, bio-mass, artistic depictions of nature, and oral history sources are integrated into environmental history narratives. **(Teaching time: 9 hrs. approx.)**

- Mann, Michael (2013), "Environmental History and Historiography on South Asia: Context and some Recent Publications," South Asia Chronicle, Vol. 3, pp. 324-357.
- Rangarajan, Mahesh (2015), Nature and Nation: Essay on Environmental History. Ranikhet: Permanent Black, pp. 1-45 [Chapter 1: "Introduction: Issues in the Writing of Environmental History"]

- Rangarajan, Mahesh (2002), “Polity, Ecology and Landscape: Fresh Writing on South Asia’s Past,” Studies in History, Vol 17, No. 1, pp. 135-48.
- Arnold, David and Ramachandra Guha (1995), “Themes and Issues in the Environmental History of South Asia,” In David and Ramachandra Guha, eds, Nature, Culture, Imperialism: Essays on the Environmental History of South Asia. Delhi: Oxford University Press, pp. 1-20.

Unit 2: This unit gives a synoptic overview of human interaction with the animals, plants, and natural elements that sustained life. It shows how from the times of gathering, scavenging and hunting to the beginning of agriculture, humans adapted to the environment even as they tried to manipulate it, and maintained harmonywith it and advocated conservation of earthly resources**. (Teaching time: 9 hrs.approx)**

- Mishra, V. N. (2008), “Climate, a Factor in the Rise and Fall of the IndusCivilization: Evidence from Rajasthan and Beyond,” In Rangarajan, Mahesh, Environmental Issues in India: A Reader. Delhi: Pearson, pp. 7-16.
- Lal, Makkhan (2008), “Iron Tools, Forest Clearance and Urbanization in the Gangetic Plains,” In Mahesh Rangarajan, Environmental Issues in India: A Reader. Delhi: Pearson, pp. 18-32.
- Thapar, Romila (2008), “Forests and Settlements,” In Mahesh Rangarajan, Environmental Issues in India: A Reader. Delhi: Pearson, pp. 33-41.
- Gosling, David L. (2001), Religion and Ecology in India and Southeast Asia. London: Routledge.
- Hughes, Donald J. (1998), “Early Ecological Knowledge of India from Alexanderto Aristotle to Aelian,” In Richard Grove, Vinita Damodaran, and Satpal Sangwan, Nature and the Orient: The Environmental History of South and Southeast Asia. Delhi: Oxford University Press, pp. 70-86.

Unit 3: This unit explores the patterns and processes of the expansion of agrarian landscapes, pastoralism, and forest economies in India up to the eighteenth century. Providing an overview of the dynamics of human-nature interaction during the medieval times will help students to challenge the notions of considering pre- modern environments as a timeless continuum. **(Teaching time: 9 hrs. approx.)**

- Murty, M. L. K, (2012), “Sheep/Goat Pastoral Cultures in the South Decan: The Narrative as a Metaphor,” In Rangarajan, Mahesh and K. Sivaramakrishanan, eds (2014), India’s Environmental History: A Reader. Ranikhet: PermanentBlack.
- Guha, Sumit (2008), “A Historical Study of the Control of Grass and Fodder Resources in Eighteenth-Century Maharashtra,” In Rangarajan, Mahesh, Environmental Issues in India: A Reader, pp. 97-106.
- Singh, Chetan, (1995), “Forests, Pastoralists and Agrarian Society in Mughal India,” In David Arnold & Ramachandra Guha, eds., Nature, Culture, Imperialism: Essays on the Environmental History of South Asia. Delhi: Oxford University Press, pp. 21-48.

- Murali, Atluri (1995), “Whose Trees? Forest Practices and Local Communities in Andhra, 1600-1922,” In David Arnold & Ramachandra Guha, eds., Nature, Culture, Imperialism: Essays on the Environmental History of South Asia. Delhi: Oxford University Press, pp. 86-122.

Unit 4: This unit explores how colonial capitalism as a powerful agent ofenvironmental transformations made fundamental changes to the land use patterns and livelihood resources. The first rubric explores the environmental history of the colonial appropriation of forests as raw material for railways expansion and rivers as dams and other hydraulic infrastructures for industrial production and long-distance transportation. The second rubric elaborates how the colonial appropriation of waterbodies and common lands through the new revenue policies, acts and regulations affected indigenous fishing and other livelihood patterns based on hydraulic resources. **(Teaching time: 9 hrs. approx.)**

- Gadgil, Madhav and Guha, Ramachandra. (1992). “Conquest and control.” In Madhav Gadgil and Ramachandra Guha, eds., This Fissured Land: AnEcological History of India. Delhi: OUP, pp. 113- 145.
- Guha, Ramchandra (1983), “Colonialism, Capitalism and Deforestation,” Social Scientist,
- Vol. 11, No.4, pp.61-64.
- Das, Pallavi (2013), “Railway fuel and its impact on the forests in colonialIndia: The case of the Punjab, 1860– 1884”, Modern Asian Studies, Vol.47, No.4, pp.1283-1309.
- Morrison, Kathleen D. (2010), “Dharmic Projects, Imperial Reservoirs, and New Temples of India: An Historical Perspective on Dams in India,” Conservation and Society, Vol. 8, No. 3, pp. 182-195.
- Singh, Vipul (2018), Speaking Rivers: Environmental History of a Mid-Ganga Flood Country, 1540-1885. Delhi: Primus Books, pp. 122-158 [Chapter 6: “Decommonization of the River”].
- D’Souza, Rohan, (2012), “Damming the Mahanadi River: The Emergence of Multi-Purpose River Valley Development in India (1943-946),” In MaheshRangarajan & K. Sivaramakrishnan, eds., India’s Environmental History: Colonialism, Modernity, and the Nation. Ranikhet: Permanent Black, pp. 550- 583.
- Rao, G. N. (1988), “Canal Irrigation and Agrarian Change in Colonial Andhra: A Study of Godavari District, c. 1850-1890, Indian Economic and Social History Review, Vol. 25, No. 1, pp. 25-60.
- Hardiman, David (1996), ‘Small-dam Systems of the Sahyadris,” in David and Ramachandra Guha, eds, Nature, Culture, Imperialism: Essays on the Environmental History of South Asia. Delhi: Oxford University Press, pp. 185- 209.
- Gilmartin, David (1996), “Models of the Hydraulic Environment: Colonial Irrigation, State Power and Community in the Indus Basin, In David Arnold & Ramachandra Guha, eds, Nature, Culture, Imperialism: Essays on the

Environmental History of South Asia. Delhi: Oxford University Press, pp. 210-36.

Unit 5: Historical thinking and writing on climate change help to provide a long-term perspective on contemporary social, ecological, economic crisis with the question of socio-environmental justice as a central concern. By focusing on the specific contextsof Bombay, Calcutta and Delhi, the first rubric provides a historical perspective to the contemporary urban problems of air and water pollution, and issues related to access to energy sources as social issues of urbanized environment. The second rubric explains how the issues of biodiversity loss, species extinction, and the industrialization of agricultural production transforms livelihood patterns and cultural landscapes. **(Teaching time: 9 hrs. approx)**

- Awadhendra B. Sharan. In the City, Out of Place: Nuisance, Pollution, and Dwelling in Delhi, c. 1850-2000. Delhi: Oxford University Press, 2014[Introduction; Chapter 4: Pollution]
- Agarwal, Ravi (2010), "Fight for a Forest," In Seminar, No. 613, pp. 48-52.
- Riding, Tim (2018), "'Making of Bombay Island': Land Reclamation and Geographical Conception of Bombay, 1661-1728, Journal of Historical Geography, Vol. 59, pp. 27-39.
- Klein, Ira (1986), "Urban Development and Death: Bombay City, 1870-1914", Modern Asian Studies, Vol.20, No.4, pp.725-754.
- Mann, Michael (2007), "Delhi's Belly: The Management of Water, Sewerage and Excreta in a Changing Urban Environment during the Nineteenth Century, Studies in History, Vol. 23, No. 1, pp. 1-31.
- Shiva, Vandana (2016), Stolen Harvest: The Hijacking of the Global Food Supply. Kentucky: The University Press of Kentucky, Chapter 1: "The Hijacking of the Global Food Supply", pp. 5-20.
- Adve, Nagraj (2022), Global Warming in India: Science, Impacts, and Politics. Bhopal: Eklavya Foundation.

Suggested Readings:

- Bhattacharya, Neeladri (1992), 'Colonial State and Agrarian Society,' In Burton Stein, ed. The Making of Agrarin Policy in British India, 1770-1900. Delhi:Oxford University Press.
- Bulliet, Richard. (2005). Hunters, Herders and Hamburgers: The Past and Future of Human-Animal Relationships. New York: Colombia University Press. pp. 205 -224.
- Chakravarti, Ranabir, (1998), "The Creation and Expansion of Settlements and Managements of Hydraulic Resources in Ancient India," In Richard Grove, et al, eds, Nature and the Orient: The Environmental History of South and Southeast Asia. Oxford: Oxford University Press, pp. 87-105.
- D'souza, Rohan (2006), Drowned and Dammed: Colonial Capitalism and Flood Control in Eastern India. New Delhi: Oxford University Press.

- Erdosy, George (1998), “Deforestation in Pre and Proto Historic South Asia,” InRichard Grove, Vinita Damodaran, and Satpal Sangwan, Nature and the Orient: The Environmental History of South and Southeast Asia. Delhi: Oxford University Press.
- Fisher, Michael H. (2018), An Environmental History of India: From Earliest Times to the Twenty-first Century. New York: Cambridge University Press.
- Gadgil, Madhav and Ramachandra Guha (2000), The Use and Abuse of Nature.Delhi: Oxford University Press.
- Grove, Richard (1997), Ecology, Climate and Empire. Delhi: Oxford University Press.
- Hughes, Donald (2006), What is Environmental History?. Cambridge: Polity Press. Chapter 1: Defining Environmental History: pp. 1-17
- Malamoud, Charles (1998), Village and Forest in Ancient India. Delhi: Oxford University Press.
- Meadow, R. H. (1981), “Early Animal Domestication in South Asia: A First Report of Faunal Remains from Mehrgarh, Pakistan,” In H. Hartel, ed. South Asian Archaeology. Berlin: Dietrich Reimer Verlag, pp. 143-79.

- Rangarajan, Mahesh (2008), “The Forest and the field in Ancient India,” In Rangarajan, Mahesh, Environmental Issues in India: A Reader. Delhi: Pearson, pp. 42-48.
- Rangarajan, Mahesh and K. Sivaramakrishanan, eds (2014), India’s Environmental History: A Reader. Ranikhet: Permanent Black [Introduction]
- Rodrigues, Louiza (2019), Development and Deforestation: The Making of Urban Bombay, C. 1800-1880. Delhi: Primus Books.
- Satya, Laxman D. (1997), Cotton and Famine in Berar, 1850-1900, Delhi: Manohar Publishers.
- Thapar, Romila, (2008), “Perceiving the Forest: Early India,” In Rangarajan, Mahesh and
- K. Sivaramakrishanan, eds (2014), India’s Environmental History: A Reader. Ranikhet: Permanent Black.
- Shiva, Vandana. (1988). “Women in the Food Chain” (Ch.5) in Vandana Shiva, Staying Alive: Women, Ecology and Survival in India. New Delhi: Kali for Women. pp.96-178.
- Singh, Satyajit K. (1990), “Evaluating Large Dams in India,” Economic and Political Weekly, Vol. 25, No. 11, pp. 561-574.
- Singh, Vipul (2018), Speaking Rivers: Environmental History of a Mid-Ganga Flood Country, 1540-1885. Delhi: Primus Books.

Note: Examination scheme and mode shall be as prescribed by the ExaminationBranch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE– 1 (DSE): History of South East Asia – II

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
History of South East Asia – II	**4**	**3**	**1**	**0**	**12th Pass**	**Should have studied History of South East Asia – I**

Learning Objectives

This paper offers an overview of modern Southeast Asian history to students who could be familiar or unfamiliar with the region. A study of the social, economic, and political transformations in Southeast Asia during the colonial period will enable students to develop a critical and comparative approach, given their in-depth study of South Asian history. In this paper students will learn how to engage with recent historiographical developments, especially on themes of education, gender, race, historical anthropology, and maritime history. The paper offers analysis of impact of colonialism and the process of decolonisation on the region. The student shall analyse the establishment and changing character of the European presence from a commercial enterprise to a colonial state; the transformation of local society and the emergence of anti-colonial movements; and the transformations in the region since the Second World War.

Learning outcomes

Upon the completion of this course the student shall be able to:

- Explain the character and functioning of colonial state and society.
- Analyse the impact of the European presence on maritime and agrarianeconomy of the region.
- Examine the impact of maritime activity of local society and polity and the developments in the economic and architectural history of the region.
- Discern the influences of new forms of knowledge, Euro-centric notions of modernity and how ideas of race defined local religion.
- Illustrate the transformation of the local agrarian and labour economy.
- Interpret the history of popular movements and peasant revolts
- Describe the historiographical trends to study history of Southeast Asia

SYLLABUS OF DSC-3

Unit 1: From Commerce to Colonialism:

1. The Dutch and English ascendancy
2. Changing Patterns of Maritime Trade: The Straits of Malaka

Unit II: Colonialism in Dutch Indonesia, British Burma: The 19th and 20th centuries

1. The Colonial State: Traditional elite, Race and the Legal Order
2. Agrarian Transformation: Plantation Economy, Peasant Protests
3. Colonial Modernity: Education and religion in the early twentieth century

Unit III: Southeast Asia: Nationalism, Anti-Colonial Movements 1900-1970s

1. Burma: From Independence to the Revolutionary Council
2. Indonesia: The Revolution, the making of Indonesia, Sukarno

Unit IV: Post War Southeast Asia

1. Language and Politics in Modern Southeast Asia: The Malay and the making ofmodern Malaysia
2. The Port and City in Southeast Asia: Singapore

Practical component (if any) - NIL

Essential/recommended readings

Unit-I: The student will be able to demonstrate their understanding of the beginningsof European Colonialism in the region by specifically taking up the case studies of theEnglish and Dutch East India Companies in the 17th and 18th centuries. They will alsodemonstrate an understanding of how ethnic communities like those in the straits of Melaka responded to the changes in trade and politics. **(Teaching time: 6 hrs. approx.)**

- Tarling, Nicholas. (1993). Cambridge History of South East Asia, Volume I & II, Cambridge: Cambridge University Press
- Reid, Anthony. (1993). Southeast Asia in Early Modern era: Trade, Power andBelief,
- Ithaca and London: Cornell University Press
- Goor, Jurrien van. (2004). Prelude to Colonialism: The Dutch in Asia,Hilversum: Uitgeverij Verloren

Unit- II: At the end of this rubric the students will be able to demonstrate an understanding of the nature of the colonial state in Southeast Asia. They will throughthe case studies of Dutch Indonesia and British Burma learn about the structure and organization of the colonial state and how the agrarian plantation economy altered the political and economic landscape of the region during this period. They will also through a specific case study of Indonesia, show how certain policies of the colonial state and western notions of modernity impacted local society and Islam. **(Teaching time: 15 hrs. approx.)**

- Tarling, Nicholas. (1993). Cambridge History of South East Asia, Volume II, Cambridge: Cambridge University Press
- Saha, Jonathan. (2013). Law, Disorder and the State: Corruption in Burma c.1900, New York: Palgrave Macmillan
- Keck, Stephen L. (2015). British Burma in the New Century, 1895-1918, London: Palgrave Macmillan
- Vickers, Adrian. (2015). A History of Modern Indonesia, Cambridge: Cambridge University Press
- Bosma Ulbe and Raben Remco. (2008). Being "Dutch" in the Indies: A history of creolization and Empire, 1500-1920 (trans. Wendie Shaffer), Singapore:Ohio University Press and National University of Singapore
- Breman, Jan. (1989). Taming the Coolie Beast: Plantation Society and the Colonial Order in South East Asia, Delhi: Oxford University Press
- Scott, James. (1976). Moral Economy of the Peasant: Rebellion and Subsistence in Southeast Asia, New Haven: Yale University Press
- Ann Stoler, 'Plantation, Politics and Protest on Sumatra's East Coast', Journal of Pesant Studies, Vol.13, No.2, 1986
- Pannu, Paula, Production and Transmission of Knowledge in Colonial Malaya, Asian Journal of Social Science, Vol 37, No 3, Special Focus, Beyond Sociology, 2009, pp.427- 451
- Laffan, Michael. (2011). The Makings of Indonesian Islam: Orientalism and the Narration of a Sufi past, Princeton: Princeton University Press
- Ali, Muhammad. (2016). Islam and Colonialism: Becoming Modern in Indonesia and Malaya, Edinburgh: Edinburgh University Press

Unit-III: After completing this rubric, the students will demonstrate a detailed understanding of the nationalist and anti colonial movements in Southeast Asiathrough the case studies of Indonesia, Vietnam and Burma. They will also be expected to demonstrate an understanding of how the nationalist movements and post war politics in the region came to shape these countries in the early decades after independence (in the 1950s and 70s). **(Teaching time: 15 hrs. approx.)**

- Christie, Clive J. (2000). A Modern History of Southeast Asia: Decolonization, Nationalism and Separatism, London: I.B. Tauris
- Tarling, Nicholas. (1993). Cambridge History of South East Asia, Volume II, Cambridge: Cambridge University Press
- Tarling, Nicholas. (1998). Nations and States in Southeast Asia, Cambridge: Cambridge University Press
- Callahan, Mary P. (2003). Making Enemies: War and State Building in Burma, Ithaca: Cornell University Press
- Myint-U, Thant. (2001). The Making of Modern Burma, Cambridge: Cambridge University Press
- Vickers, Adrian. (2015). A History of Modern Indonesia, Cambridge: Cambridge University Press

- Elson, R.E. (2008). The Idea of Indonesia: A History, Cambridge: Cambridge University Press

Unit-IV: At the end of this rubric the students will be expected to demonstrate an understanding of how the colonialism has impacted the nature of post colonialpolitics. Examining Malaysia and Singapore as case studies, they will show how, decolonization and modern state building have required certain approaches towards remembering the past and projecting the future. **(Teaching time: 9 hrs. approx.)**

- Harper, T.N. (1999). The End of Empire and the Making of Malaya, Cambridge: Cambridge University Press
- Ali, Muhammad. (2016). Islam and Colonialism: Becoming Modern in Indonesia and Malaya, Edinburgh: Edinburgh University Press
- Kevin Blackburn and ZongLun Wu. (2019). Decolonising the History Curriculum in Malaysia and Singapore, London: Routledge
- Ahmad, Abu Talib. (2015) Museums, History and Culture in Malaysia. Singapore: National University of Singapore Press

Suggested Readings:

- Adas, Michael. (1974). Burma Delta: Economic Development and Social Change on the Rice Frontier, 1852-1941, Wisconsin: University of Wisconsin Press
- Bloembergen Marieke. (2006). Colonial Spectacles: The Netherlands and the Dutch East Indies at the World Exhibitions, 1880-1931, (trans. Beverley Jackson) Singapore: Singapore National University Press
- Blusse, Leonard. (1981). 'Batavia, 1619-1740: The Rise and Fall of a Chinese Colonial Town', Journal of Southeast Asian Studies, Vol.12, No.1, Ethnic Chinese in Southeast Asia, pp.159-178
- Charney, Michael W. (2010). A History of Modern Burma, Cambridge: Cambridge University Press
- Christie, Clive. (2001). Ideology and Revolution in Southeast Asia 1900-1980: Political Ideas of the Anti-Colonial era, London: Curzon
- Day, Tony. (2002). Fluid Iron: State formation in Southeast Asia, Honolulu: University of Hawaii Press Honolulu
- Goscha, Christopher. (2016). The Penguin History of Modern Vietnam, London: Penguin
- Gouda, Francis. (2008). Dutch Culture Overseas; Colonial Practice in the Netherlands Indies 1900-1942, Jakarta: Equinox Publishing
- Keyes, Charles F., E. Jane Keyes and Nancy Donnelly. (1991). ,Reshaping Local Worlds: Formal Education and Cultural Change in Rural Southeast Asia, New Haven: Yale University Press
- Knapman, Gareth. (2016). Race and British Colonialism in South-East Asia, 1770-1870: John Crawford and the Politics of Equality, London: Routledge
- Laffan, Michael Francis. (2003). Islamic Nationhood ad Colonial Indonesia: The umma below the winds, London: Routledge

- Owen, Norman G. (2014). Routledge Handbook of Southeast Asian History, London: Routledge
- Phongpaichit, Pasuk, Chris Baker, Christopher John Baker. (2005). A History of Thailand, Cambridge: Cambridge University Press
- Rachael Loew. (2016). Taming Babel: Language in the Making of Malaysia, Cambridge: Cambridge University Press
- Sardesai, D.R. (1997). Southeast Asia: Past and Present, New Delhi: Harper Collins
- Scott, James. (2009). The Art of Not Being Governed: An Anarchist History of Upland Southeast Asia', Yale University Press
- Seekins, Donald M. (2011). State and Society in Modern Rangoon, London: Routledge
- Segawa, Noriyuki. (2019). National Identity, Language and Education in Malaysia: Search for a Middle Ground between Malay Hegemony and Equality, London: Routledge
- Shiraishi, Saya and Takashi Shiraishi (ed.) (1993). The Japanese in Colonial Southeast Asia, Ithaca: Cornell University Press
- Tarling Nicholas. (2001). Imperialism in Southeast Asia: A Fleeting, Passing Phase,
- London: Routledge
- Tiffin Sarah. (2016). Southeast Asia in Ruins: Empire in the early 19th century, Singapore: National University of Singapore
- Trocki, Carl A. (2006). Singapore: Wealth, Power and the culture of control, London: Routledge
- Tucker, Shelby. (2002). Burma: The Curse of Independence, New Delhi: Penguin

Note: Examination scheme and mode shall be as prescribed by the ExaminationBranch, University of Delhi, from time to time.

DSE for BA (Hons.)

DISCIPLINE SPECIFIC ELECTIVE COURSE (DSE): History of Vernacular Literature

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE- History of Vernacular Literature	**4**	**3**	**1**	**0**	**12th Pass**	**-**

Learning Objectives

In their peregrinations across the globe, humans have created thousands of languages. Yet all languages are not equal. In each region, there are dominant languages with better standardisation of the rules for writing and articulation, and other languages. The elite languages tend to be spoken by a minority and other languages, of peoples who interact with the speakers of the elite/cosmopolitan language, evolve interacting with those languages. In ancient Europe, Latin was the cosmopolitan language, the languages of the regions conquered or influenced by Rome, such as the Germanic realms, England, Gaul and Iberia were deemed vernaculars. Over time, these vernaculars, German, French, English and Spanish evolved into fully articulated languages of high status in their own right and serving as the cosmopolitan language of the colonies of their respective empires.

In the Indian subcontinent, too, it is possible to see a similar evolution of different languages in different parts of the country. Sanskrit, the name itself meaning refined, was the elite language for exacting standards of scientific inquiry, administration, and aesthetic exploration, whereas assorted Prakrit grew into what came to be called Indian vernaculars. While Sanskrit had a pan-India presence, Southern India saw Tamil serving in that role for the region's other languages such as Kannada, Telugu and Malayalam, all of which interacted with Sanskrit as well.

The evolution of these languages — some developed elaborate grammar and capacity to become the written standard for assorted variations and dialects, others live on without a written form — played a huge role in shaping the histories of India's regions. The Indian Constitution's recognition of 22 languages in the Eighth Schedule is testimony to how core these languages are to the identities of their speakers.

Learning Outcomes

This paper would help the student perceive the historical development of different regions and their particular languages. A defining characteristic of humans is language, the medium for communication, coherent conceptualisation, accumulation and development as well as revision of knowledge, creation of culture and its transmission across geography and generations. Language plays a big role in constituting identity – of the self and of imagined communities.

SYLLABUS OF DSC-3

Unit 1: Debating the Vernacular and its significance for History
Unit 2: Language Culture and Histories from the South

Unit 3: The Early Modern Context of Language and Region
Unit 4: The Colonial Context

Practical component (if any) – NIL

Essential/recommended readings

Unit 1: Debating the Vernacular and its significance for History: This section would introduce students to appreciating India's history by looking at different regional histories through the prism of their languages. A discussion of the debates relating to the use of the terminology 'vernacular' and its meanings in the Indian context would be the focal point. (Teaching Hours: 09 hours)

Essential Readings

- Orsini, Francesca, "How to do Multi-lingual Literary History? Lessons from Fifteenth- and Sixteenth-century North India", The Indian Economic & Social History Review, June 2012, pp. 225-246.
- Partha Chatterjee and Raziuddin Aquil (eds), History in the Vernacular, Permanent Black, Ranikhet/New Delhi, 2008 (Introduction).
- Pollock, Sheldon, "The Cosmopolitan Vernacular", The Journal of Asian Studies, Vol. 57, No. 1, February 1998, pp. 6-37.
- Zutshi, Chitralekha, "Translating the Past: Rethinking 'Rajatarangini' Narratives in Colonial India, The Journal of Asian Studies, Vol. 70, No. 1, February 2011, pp. 5-27.

Unit 2: Language Culture and Histories from the South: In the context of Indian History, the significance of the continuities and discontinuities that constitute the concept of the Tamil region and its dynamics of regional histories. The connections between Sanskrit and early Kannada scholarship would be a point of discussion for studying the Kannadiga region. (Teaching time: 09 hours)

1. Tamizhakkam
2. Kannada and state patronage

Essential Readings

- Ganesh, K.N., "Spaces in History: A Study in Human Geography in the Context of Sangam Texts", Human Geography in the Context of Sangam Texts", Studies in History, 25(2), 151–195, 2009
- Pollock, Sheldon, "The Cosmopolitan Vernacular Author", The Journal of Asian Studies, Vol. 57, No. 1, February 1998, pp. 6-37.
- Ramaswamy, Sumathi, "Language of the People in the World of Gods: Ideologies of Tamil before the Nation", Journal of Asian Studies, Vol. 57, No. 1, February 1998, pp. 66-92.
- Ramaswamy, Sumathi, Passions of the Tongue Language Devotion in Tamil India, 1891–1970, University of California Press, 1997.

Unit 3: In this section, the student will engage with the formation of regional languages and identities through some case studies. Promising areas of language and literature shaping the voice of the region will induce exciting conversations. (Teaching time: 09 hours)

The Early Modern Context of Language and Region:

1. Marathas and Marathi
2. Hindavi/ Awadhi
3. Braj and the Vernacular debate

Essenatial Readings

- Busch, Allison, "Hidden in Plain View: Brajbhasha Poets at the Mughal Court", Modern Asian Studies, Vol. 44, No. 2, 2010, pp. 267-309.
- Deshpande, Prachi, Creative Pasts: Historical Memory and Identity in Western India, 1700-1960, Columbia University Press, 2007.
- Narayanan, Varadarajan and Prakash, Rabi, "Emerging Scholarship on Vernacular Languages in Early Modern North India: A Conversation with Imre Bangha", in Economic & Political Weekly, Vol. 56, No. 02, January 2021, Engage (Online), accessed on 6th May 2022.
- Pollock, Sheldon, "India in the Vernacular Millenium: Literary Culture and Polity, 1000-1500," Daedalus, Vol. 127, No. 3, Early Modernities, 1998, pp. 41-74.

Unit 4: The period of the nineteenth and the twentieth centuries in some ways is also about the making of the idea of India. The mingling of languages, the firming of scripts, selections and eliminations, and overall standardisation of the languages became the turf of immense discussion and debate, indicating moments of crisis and shifts. The period became a site of contestation in the making of the region and the nation. (Teaching Time:18 hours)

The Colonial Context:

1. Standardisation of Language
2. Language Movements and Identities: Odia/ North East (Kuki or Assamese)
3. Vernacular to National

Essential Readings

- Dalmia, Vasudha, Nationalisation of Hindu Traditions: Bharatendu Harishchandra and Nineteenth-century Banaras, Oxford India Paperbacks, 1999.
- Guite, Jangkhomang, "Colonialism and Its Unruly? - The Colonial State and Kuki Raids in Nineteenth Century Northeast India", Modern Asian Studies, Vol. 48, No. 5, September 2014, pp.1188-1232.
- Guite, Jangkhomang, "Memory and Forgetting in Postcolonial North-East India", Economic & Political Weekly, Vol. 46, No. 8, February 2011, pp. 56-64.
- Mishra, Pritipuspa, Language and the Making of Modern India: Nationalism and the Vernacular in Colonial Odisha, 1803–1956, Cambridge University Press, 2020.
- Misra, Salil, 'Transition from the Syncretic to the Plural: the World of Hindi and Urdu', Jamal Malik and Helmut Reifeld (ed.) Religious Pluralism in South Asia and Europe, New Delhi, OUP, 2005, pp. 268-97.
- Tuteja, K.L., Religion, Community and Nation: Hindu Consciousness And Nationalism in Colonial Punjab, Primus Books, 2021.

Suggested Readings:

- Borek, Piotr, "Indian Vernacular History-writing and Its Ideological Engagement: A Contemporary Account on Shivaji's Visit to Agra (1666) in Brajbhāṣā Verse", Cracow Indological Studies, Vol. XXII, No. 1, 2020, pp. 1–17.
- Mantena, Rama Sundari, "Vernacular Publics and Political Modernity: Language and Progress in Colonial South India", Modern Asian Studies, Vol. 47, No. 5, 2013, pp. 1678-1705.
- Pandian, M.S., Brahmin and Non-Brahmin: Genealogies of the Tamil Political Present, Permanent Black, 2007.
- Rai, Amrit, The Origin and Development of Hindi/Hindavi, Oxford University Press, Delhi, 1984.
- Sahu, B. P., The Making of Regions in Indian History: Society, State and Identity in Pre-modern Orissa, Primus Books, Delhi, 2019.
- Sardesai, Govind Sakharam, New History of the Marathas, Vol. 1, 2 and 3, Phoenix Publications, Bombay, 2018.

- Thakur, Gautam Basu, "Vernacular Objects | Indian Mutiny | Imperial Panic: Victorian Literature and Culture", Vol. 44, No. 3, 2016, pp. 557-576.

Note: Examination scheme and mode shall be as prescribed by the examinationBranch, University of Delhi, from time to time.

DSE for BA (Hons.)

DISCIPLINE SPECIFIC ELECTIVE COURSE (DSE): Delhi Through the Ages

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE- Delhi Through the Ages	**4**	**3**	**1**	**0**	**12th Pass**	

Course Objective

This introductory course looks at watershed moments in Delhi's historical past concerning politics, urbanization, culture, and crisis to provide a background to Delhi's significance and dilemmas today.

Learning Outcome

Upon completion of this course, the student shall be able to:

• To provide a framework within which to locate and study the history of Delhi till the early modern period.

• Analyse and comprehend the challenges of Delhi through the study of the history of its political, urban, and socio-cultural developments and changes

Course Content

Unit I: The Historical Polities of Delhi:

a) Indraprastha: from Earliest time to 1000CE
b) Delhi in the Tomar-Chauhan period
c) Sultanate Delhi
d) Shahjahanabad
e) The colonial capital

Unit II: Delhi's Urbanization and its Challenges:

a) Lal Kot to Tughluqabad
b) Delhi under the Mughals
c) Delhi's modern transformation in the 20 th Century

Unit III: The Syncretic and Changing Culture of Delhi:

a) Ashokan Edicts and Iron Pillars
b) Hazrat-i Delhi: Nizamuddin Auliya and Nasiruddin Chirag Delhi
c) Humayun Tomb
d) Growth of Urdu language and literature in 18 th -19 th Century Delhi
e) Delhi University

Unit IV: A City of Crises, Resilience and Transition

a) The Mongols Invasions
b) Delhi when it was not the Mughal capital
c) 'Crisis' of the 18 th Century?
d) Delhi in the 19 th Century: Between the Mughals and the Colonial
e) The Revolt of 1857
f) Delhi in 1947

Practical component (if any) – NIL

Essential/recommended readings

Unit 1: This unit will seek to introduce the students to the various significant historical political formations that emerged in Delhi by focusing on the debate on Indraprastha; evidence for Lalkot-Rai Pithora; the nature of the Sultanate polity and the city; the imperial design of Shahjahanabad and the British conception of the city as an imperial capital. (Teaching Time: 12 hoursApprox.)

Essential Reading

- Singh, Upinder. 2006. Ancient Delhi, Delhi: Oxford University Press
- R., Mani B., and I. D. Dwivedi 2006. 'Anangpur Fort: The Earliest Tomar Settlements, Near Delhi,' in Upinder Singh, ed., Delhi: Ancient History, Social Science Press, New Delhi, pp 200–204.
- Mani, B.R. 1997. Delhi: Threshold of the Orient; (Studies in Archaeological
- Investigations), Aryan Books International
- Kumar, Sunil. 2011. ";Courts, Capitals and Kingship: Delhi and its Sultans in the Thirteenth and Fourteenth Centuries CE"; in Albrecht Fuess and Jan Peter Hartung. (eds.).Court Cultures in the Muslim World: Seventh to Nineteenth Centuries, London:
- Routledge, pp. 123-148
- Kumar, Sunil. (2009) 'Qutb in Modern Memory.' In: Kaul, Suvir, (ed.), Partitions of Memory. Delhi: Permanent Black, pp. 140–182.
- Blake, Stephen, 1985. ";Cityscape of an Imperial City: Shahjahanabad in 1739";, in R.E. Frykenberg, Delhi Through the Ages: Essays in Urban History, Culture and Society, Oxford University Press, pp. 66-99
- Metcalf, Thomas. 1989. Imperial Visions. Delhi: Oxford University Press, 211–239, (Ch.7 & 39; New Delhi: The Beginning of the End').

Unit II: This unit will briefly explore significant periods of urbanization in Delhi and some of the challenges faced during these developments. It will trace the early urbanization of Delhi from Lal Kot to Tughluqabad, the changes during the Mughal Period, Marathas and Sikhs in Delhi and finally, the transformation of Delhi in the 20 th Century, focusing on migration and displacement. (Teaching Time: 12 hours Approx.)

Essential Readings:

- Ali, Athar. 1985; Capital of the Sultans: Delhi through the 13th and 14th Centuries, in R.E. Frykenberg, ed., Delhi Through the Age: Essays in Urban History, Culture
- and Society, Delhi: Oxford University Press, pp. 34-44
- Shokoohy, Mehrdad. 2007. Tughluqabad: a paradigm for Indo-Islamic Urban
- Planning and its architectural components. London: Araxus Books.
- Welch, Anthony and Howard Crane. (1983). "The Tughluqs: Master Builders of the Delhi Sultanate": Muqarnas, vol. 1 pp. 123-166.
- Hasan, Nurul, S. (1991). "The Morphology of a Medieval Indian City: A Case Study of Shahjahanabad", In Indu Banga (ed.). The City in Indian History, Delhi: Manohar, pp. 87-98.
- Gupta. Narayani. (1993). "The Indomitable City," in Eckart Ehlers and Thomas
- Krafft, eds., Shahjahanabad / Old Delhi: Tradition and Change. Delhi: Manohar, pp. 29-44.
- Rezavi, Syed Ali Nadeem, (2010). "The Mighty Defensive Fort': Red Fort at Delhi
- Under Shahjahan -- Its Plan and Structures as Described by Muhammad Waris."
- Proceedings of the Indian History Congress 71, pp. 1108–1121.
- Chenoy, Shama Mitra. (1998). Shahjahanabad, a City of Delhi, 1638-1857. New
- Delhi: Munshiram Manohar Lal Publishers.
- Datta, V N. 1986.; Punjabi Refugees and the Urban Development of Greater Delhi, ; in Robert Frykenberg(ed), Delhi Through the Ages: Essays in Urban History Culture and Society. Delhi: OUP, 442–462.
- Tarlo, Emma. 2001. Welcome to History: A Resettlement Colony in the Making.
- Manohar Publishers and Distributors, 51-69.

Unit III: This unit will touch upon some episodes in the past of Delhi that show the historical shaping and reshaping of a syncretic culture over time, with a focus on the names of Delhi, beliefs about the Iron Pillar, Ashokan Edict, the emergence of Sufi tradition in Sultanate Delhi, Mughal architecture, Urdu language and literature in the 18 th - 19 th Century Delhi Renaissance and the emergence of Delhi University. (Teaching Time: 9 Hours Approx.)

Essential Reading:

- Richard J. Cohen, "An Early Attestation of the Toponym Ḍhillī," Journal of the American Oriental Society, Vol. 109 (1989), pp. 513–519.
- Singh, Upinder. 2006. Ancient Delhi, Delhi: Oxford University Press
- Haidar, Najaf. 2014;Persian Histories and a Lost City of Delhi,' Studies in People History, vol. 1, pp. 163–171
- Pinto, Desiderios. J. (1989). "The Mystery of the Nizamuddin Dargah: the Account of Pilgrims," in Christian W. Troll, ed., Muslim Shrines in India, Delhi: Oxford University Press, pp. 112–124.
- Aquil, R. 2008.;Hazrat-i-Dehli: The Making of the Chishti Sufi Centre and the Stronghold of Islam, South Asia Research 28: 23–48.
- Sunil Kumar, The Pir's Barakat and the Servitor's Ardour: The Contrasting History of the two Sufi Shrines in Delhi in Mala Dayal ed. Celebrating Delhi, Penguin, 2010.
- Lowry, Glenn D. 1987. Humayun's Tomb: Form, Function, and Meaning in Early Mughal Architecture. Muqarnas, Vol. 4, pp. 133-148
- Koch, Ebba. (1994). "Diwan-i'Amm and Chihil Sutun: The Audience Halls of Shah Jahan". Muqarnas, vol. 11, pp. 143-165.
- Alam, Muzaffar. 2013; Introduction to the second edition: Revisiting the Mughal Eighteenth Century"; in The Crisis of Empire in Mughal North India: Awadh and the Punjab 1707-1748, Delhi: Oxford University Press, pp. xiii-lxiv
- Shamsur Rahman Faruqi. A Long History of Urdu Literary Culture, Part 1: Naming and Placing a Literary Culture in Sheldon Pollock ed. Literary Cultures in History: Reconstruction from South Asia, University of California Press, 2003, pp. 803-863.
- Hardeep Puri, DELHI UNIVERSITY: Celebrating 100 Glorious Years, Delhi, 2022
- Naim, C. M. 2004. Ghalib';s Delhi: A Shamelessly Revisionist Look at Two Popular Metaphors ; in Urdu Texts and Contexts: The Selected Essays of C. M. Naim, Delhi: Permanent Black, pp. 250–279.
- Verma, Pavan K. (2008). Ghalib: The Man, the Times, Penguin India.
- Basu, Aparna. 1986; The Foundations and Early History of Delhi University ; in
- Robert Frykenberg ed, Delhi Through the Ages: Essays in Urban History Culture and Society, Delhi: Oxford University Press, pp 401-430

Unit IV: This unit will examine a few exceptional periods of crisis in the history of Delhi and how these phenomena shaped the city over time. (Teaching Time: 12 hours Approx.)

Essential Readings:

- Jackson, Peter. 1986. 'Delhi: The Problem of a Vast Military Encampment,' in: R.E. Frykenberg (ed.). Delhi Through the Ages: Essays in Urban History, Culture, and Society, New Delhi: Oxford University Press, 1986), 18–33.
- Ojha, Archana, Impact of Mongol Invasions on the Delhi Sultanate, Proceedings of Indian History Congress, no. 52, 1991, pp. 245-248.
- Chandra, Satish. 1991; Cultural and Political Role of Delhi, 1675-1725";, in R.E. Frykenberg, Delhi through the Ages: Essays in Urban History, Culture and Society, Delhi: Oxford University Press, 106–116.
- Spear, TGP. Twilight of the Mughals. Alam, Muzaffar. 2013, "Introduction to the second edition: Revisiting the Mughal Eighteenth Century" in The Crisis of Empire in Mughal North India: Awadh and the Punjab 1707-1748, Delhi: Oxford University Press, pp. xiii-Ixiv
- Liddle Swapna, The Broken Script: Delhi Under the East India Company and the Fall of the Mughal Dynasty 1803-1857, Speaking Tiger Books, 2022.

- Lahiri, Nayanjot. 2003; Commemorating and Remembering 1857: The Revolt in Delhi and its Afterlife ; World Archaeology, vol. 35, no.1, 35–60.
- Pandey, Gyan. 2001. Remembering Partition, Cambridge: Cambridge University
- Press. (Chapter 6: Folding the National into the Local: Delhi 1947-1948, pp. 121–151.

Suggested Readings

- Anthony Welch, 'The Shrine of the Holy Footprint in Delhi', Muqarnas, 14 (1997): 116-178;
- Asher, Catherine B. 2000. ";Delhi Walled: Changing Boundaries"; in James D. Tracy, City Walls: The Urban Enceinte in Global Perspective, Cambridge: Cambridge University Press, pp. 247–281.
- Bayly, Christopher Alan. (1986). "Delhi and Other Cities of North India during the 'Twilight,'" in Delhi through the Ages: Essays in Urban History, Culture, and Society, edited by Robert Eric Frykenberg, Delhi: Oxford University Press, pp. 221–36.
- Blake, Stephen P. 1991. Shahjahanabad: The Sovereign City in Mughal India, 1639- 1739. Cambridge; New York: Cambridge University Press.
- Hasan, Zafar. 1922. A Guide to Nizamu-d Din. New Delhi: Memoirs of the Archaeological Survey of India,
- Habib, Irfan. 1978. 'Economic History of the Delhi Sultanate -- an Essay in Interpretation', Indian Historical Review, vol. 4, pp. 287-303.
- Flood, Finbarr B. 2008. "Introduction"; in Finbarr B. Flood, Piety and Politics in the Early Indian Mosque, Delhi: Oxford University Press, pp. xi-lxxviii
- Page, J.A. 1926. A Historical Memoir on the Qutb. New Delhi: Memoirs of the Archaeological Survey of India No,22
- Page, J.A. 1937. A Memoir on Kotla Firoz Shah, Delhi. New Delhi: Memoirs of the Archaeological Survey of India #52
- Shamsur Rahman Faruqi, (2001). "A True Beginning in the North" and "A Phenomenon called 'Vali'" in Early Urdu Literary Culture and History, Delhi: Oxford University Press, pp. 109-126, 129-142.
- Singh, Upinder. Ed., (2006) Delhi: Ancient History, Delhi: Social Science Press
- Flood, Finbarr B. 2003. ";Pillars, Palimpsests, and Princely Practices: Translating the past in Sultanate Delhi; RES: Anthropology and Aesthetics, No. 43, Islamic Arts, pp. 95–116.
- Anand Taneja. Saintly Visions: Other Histories and History's Others in the Medieval Ruins of Delhi; IESHR, 49 (2012).
- Pinto, Desiderios. J. (1989). The Mystery of the Nizamuddin Dargah: the Account of Pilgrims," in Christian W. Troll, ed., Muslim Shrines in India, Delhi: Oxford University Press, pp. 112–124.
- Frances W. Pritchett, A Long History of Urdu Literary Culture, Part 2: Histories, Performances, and Masters in Sheldon Pollock ed. Literary Cultures in History: Reconstruction from South Asia, University of California Press, 2003, pp. 864–911.
- Upinder Singh, Discovering Ancient in Modern Delhi. In Mala Dayal ed. Celebrating Delhi, Penguin, 2010.
- Farooqui, Mahmood. 2013. Besieged: Voices from Delhi, 1857. Delhi: Penguin.
- (Dateline pp. xix-xxvii; In the Name of the Sarkar, pp 407-432.)
- Mann, Michael. 2005. Turbulent Delhi: Religious Strife, Social Tension and Political Conflicts, 1803-1857 ; South Asia: Journal of South Asian Studies, vol.28, no.1, pp. 5-34
- Pilar, Maria Guerrieri, (2017). 'The Megacity of Delhi: Colonies, Hybridisation and Old New Paradigms,' in Rethinking, Reinterpreting and Restructuring Composite Cities edited by Gülsün Sağlamer, Meltem Aksoy, Fatima Erkök, Cambridge: Cambridge Scholars Publishing, pp. 18-33
- Russell, Ralph. 1998. "Ghalib: A Self Portrait," in Ralph Russell, Ghalib: The Poet and His Age. Delhi: OUP. Also available at: http://www.columbia.edu/itc/mealac/pritchett/00ghalib/texts/txt_ralphrussell_1972.pdf
- Vazira, Fazila Yacoobali Zamindar. (2007). The Long Partition and the Making of South Asia: Refugees, Boundaries, Histories. New York: Columbia University Press. (Chapter I: Muslim Exodus from Delhi.)

Note: Examination scheme and mode shall be as prescribed by the examination Branch, University of Delhi, from time to time.

Category II

BA (Prog.) with History as Major

DISCIPLINE SPECIFIC CORE COURSE -1 (DSC-1) – : History of India c.1550 – 1700

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
History of India c. 1550 – 1700	4	3	1	0	12 th Pass	Should have studied History of India, 1200-1550

Learning Objectives

This course provides an analytical study of the history of India from 1550 to 1700 CE. It introduces students to a thematic study of the main aspects of the period delineating major transitions, changes and developments that include the establishment of the Mughal state and Rajput polities, encompassing political, administrative, cultural and economic aspects. Through select regional case studies it also underlines the interconnectedness of the subcontinental region in its transition.

Learning outcomes

After the successful completion of this Course, the students will be able to:

- Identify the major political developments in the history of India during the period between the sixteenth century and between the beginning of the eighteenth century.
- Outline the changes and continuities in the field of culture, especially with regard to art, architecture and Sufi movement.
- Discuss the economic history of the period under study in India especially, where agrarian production and its implications are concerned.
- Delineate the development of trade and urban complexes during this period.

SYLLABUS OF DSC-1

Unit I: Foundation, expansion and consolidation of the Mughal State, c.16th to 17th century: Expansion and consolidation; Administrative structures: Mansabdari and Jagirdari.
Unit II: Akbar to Aurangzeb: Rajputs, imperial ideology; religious policy.
Unit III: 17th century transition: Marathas, Sikhs.
Unit IV: Art and architecture: Taj Mahal and Red Fort; Mughal painting.
Unit V: Society, culture and religion: Sufism: Naqshbandi; popular literature from theDeccan: Chakki-Nama and Charkha-Nama.
Unit VI: Economy and integrated patterns of exchange: Inland and maritime trade; non-agrarian production.

Practical component (if any) - NIL

Essential/recommended readings

Unit I: This unit would have taught students about the complex political, cultural and social world constructed under the Mughal regime. It will also introduce students to the administrative structure of the Mughal state. **(Teaching Time: 9 hrs)**

- Alam, M., and S. Subrahmanayam. (1998). The Mughal State 1526-1750. Delhi:Oxford University Press.
- Richards, J F. (1996). The New Cambridge History of India: The Mughal Empire.
- Cambridge: Cambridge University Press.
- Raychaudhuri, T. and I. Habib. (Eds.). (1982). The Cambridge Economic Historyof India, Vol.1: c1200-1750. Delhi: Orient Longman, pp. 163-192.
- Bhargava, Meena. ed. (2010). Exploring Medieval India: Sixteenth to theEighteenth centuries, Delhi: Orient Black Swan.
- Habib, I. (Ed.). (1997). Akbar and his India, Delhi: Oxford University Press. (Relevant chapters).
- Habib. I. (Ed.). (2016). Akbar aur Tatkalin Bharat, Delhi: Rajkamal Prakashan Samuh.(Relevant Chapters).
- Verma, H.C. (Ed.). (2003). Madhyakalin Bharat, Bhag 2, Delhi: Hindi Madhyam Karyanvan Nideshalaya, Delhi University.
- Ali, M. Athar. (1996). Mughal Nobility under Aurangzeb, Delhi: OxfordUniversity Press.
- Habib, I. (1999). The Agrarian System of Mughal India, 1554-1707. Delhi:Oxford University Press.

Unit II: This unit would have taught students about the Mughal relation with the Rajputs along with their religious ideas which shaped the Mughal state. It will also introduce students to the diverse ways in which Mughal imperial ideology came tobe constructed. **(Teaching Time: 12 hrs. approx.)**

- Ali, S Athar. (2008). 'Sulh-i-Kul and Religious Ideas of Akbar' in Mughal India: Studies in Polity, Ideas, Society and Culture, Delhi, OUP.

- Butler-Brown, Katherine. (2007). "Did Aurangzeb Ban Music? Questions for the historiography of his reign," Modern Asian Studies vol. 41, no.1, pp. 77- 120.
- Sreenivasan, Ramya. (2014) 'Faith and allegiance in the Mughal Era: Perspectives from Rajasthan' in Vasudha Dalmia and Munis D Faruqi, ReligiousInteractions in Mughal India, Delhi. OUP.
- Trushke, Audre. (2017). Aurangzeb: The Man and the Myth, Delhi: Penguin.
- Ziegler. P Norman. (1998). Some Aspects on Rajput Loyalties during the Mughal period'.in J F Richards (ed.) Kingship and Authority in South East Asia. Delhi. OUP.

Unit III: This unit would have taught students about emerging political formation in the Deccan. Through a study of the Marathas and Sikhs they would develop a better understanding of how the competition for resources in the seventeenth century contributed to the emergence of a new body of elites with political aspirations. **(Teaching Time: 6 hrs. approx.)**

- Gordon, S. (1993). The New Cambridge History of India: The Marathas, 1600- 1818.
- Cambridge: Cambridge University Press.
- Wink, Andre. (1986). Land and Sovereignty in India: Agrarian Society and Politics under the Eighteenth Century Maratha Svarajya. Delhi: OrientLongman, pp. 51 – 65.
- Grewal, J.S. (1986). The New Cambridge History of India: The Sikhs. Delhi: Cambridge University Press.
- Singh, Chetan. (1991). Region and Empire: Punjab in the Seventeenth Century.Delhi: Oxford University Press.

Unit IV: This unit would have taught students about the architectural and painting traditions in the Mughal period. The student would be expected to appreciate the political and artistic complexities that played an important role during the period. This will be achieved through case studies of a tomb (the Taj Mahal), imperial fort (Red Fort) and Mughal paintings. **(Teaching Time: 7 hrs. approx.)**

- Koch, Ebba. (2006). The Complete Taj Mahal and the river front gardens of Agra, London. Thames & Hudson.
- Asher, Catherine B. (1992). The New Cambridge History of India, The Architecture of Mughal India, Part 1, Vol. 4, Cambridge: Cambridge University Press, pp. 169-215. (Chapter-5: Shah Jahan and the crystallization of Mughal style)
- Koch, Ebba. (2001). Mughal Art and Imperial Ideology: Collected Essays. Delhi: Oxford University Press. pp. 1-11 & 130-162.
- Blake, Stephen, (1985). "Cityscape of an Imperial City: Shahjahanabad in 1739", in R.E. Frykenberg, Delhi through the Ages: Essays in Urban History, Culture and Society, Oxford University Press, pp. 66-99.
- Koch, Ebba. (1990). Mughal Architecture. Delhi: Oxford University Press. pp. 97-115.

- Rezavi, Syed Ali Nadeem, (2010). "'The Mighty Defensive Fort': Red Fort at Delhi under Shahjahan -- Its Plan and Structures as Described by Muhammad Waris." Proceedings of the Indian History Congress 71, pp. 1108–1121.
- Desai, Vishaka N. (1990). "Painting and politics in Seventeenth Century North India: Mewar, Bikaner and the Mughal Court." Art journal vol. no.4, pp.370- 378.
- Verma, Som Prakash. (2009). Interpreting Mughal Painting: Essays on Art,Society, and Culture. Delhi: Oxford University Press.

Unit V: This unit would have taught students about the cultural traditions in the Mughal period with special reference to Naqshbandi, Sufi and popular mystic literature from the South. **(Teaching Time: 5 hrs. approx.)**

- Eaton, Richard M. (1974, 2000). "Sufi Folk Literature and the Expansion of Islam," History of Religion vol. 14, pp.117-127. (Also available as Essays on Islam and Indian History. Delhi: Oxford University Press, pp.189-199.).
- Habib, Irfan. (1981), 'The Political Role of Sheikh Ahmad Sirhindi and Shah Waliullah'.
- Proceedings of Indian History Congress.
- Hasan, Nurul. (2005). 'Shaikh Ahmad Sirhindi and Mughal Politics' in SatishChandra (ed.),
- Religion State and Society in Medieval India: Collected works of Nurul Hasan,New Delhi.
- Nizami, K A. "Naqshbandi Influence on Mughal rulers and politics', IslamicCulture, 39, 1(1965): pp. 41-52.
- Schimmel, Annemarie. (1973). "The Sufi Ideas of Shaykh Ahmad Sirhindi", DieWelt des Islams, New Series, Vol. 14, Issue ¼. Pp.199-203.

Unit VI: This unit would have taught students about the gradual integrations of agricultural and artisanal production, and the establishment of circuits of exchange during Mughal period. They will also be able to develop an understanding of Inland as well as Indian Ocean trade and its impact on the South Asian economy. **(Teaching Time: 6hrs. approx.)**

- Raychaudhuri, T and I. Habib. (Eds.). (1982). The Cambridge Economic History of India, Vol.1: c1200-1750. Delhi: Orient Longman, pp. 214-434.
- Bhargava, Meena. (Ed.). (2010). Exploring Medieval India: sixteenth to the eighteenth centuries. Delhi: Orient BlackSwan, pp. 307-327.
- Prakash, Om. (1998). The New Cambridge History of India: European Commercial Enterprise in Pre-Colonial India. Delhi: Cambridge University Press.
- Gupta, Ashin Das and M.N. Pearson. (1997) India and the Indian Ocean 1500- 1800. Delhi: Oxford University Press.

Suggestive readings

- Asher, Catherine B. and Cynthia Talbot. (2006). India before Europe. Cambridge: Cambridge University Press.

- Chandra, S. (2004). Medieval India: From Sultanate to the Mughals, Part 2.Delhi: Haranand Publications.
- Chandra, S. (2004). Madhyakalin Bharat: Sultanate se Mughal tak, Bhag 2.Delhi: Jawahar Publishers.
- Chandra, S. (2007). History of Medieval India (800-1700). Delhi: OrientLongman.
- Chandra, S. (2007). Madhyakalin Bharat: Rajniti, Samaj aur Sanskriti, Aathwi se Satrahvis shtabditak. Delhi: Orient Black Swan.
- Eaton, Richard M. (1996). The Sufis of Bijapur, 1300-1700: Social Roles of Sufisin Medieval India. Princeton: Princeton University Press.
- Faruqui, Munis D. (2012) The Princes of the Mughal Empire, 1504-1719.Cambridge: Cambridge University Press
- Green, Nile. (2002). Sufis and Settlers in the Early Modern Deccan, Delhi:Oxford University Press.
- Habib, I. (2003). Madhyakalin Bharat ka Arthik Itihas Ek Sarvekshan. Delhi: Rajkamal, 2003.
- Habib, I. (Ed.). (1981-2003). Madhyakalin Bharat. 10 volumes. Delhi; Rajkamal.
- Hasan, S. Nurul. (2008). Religion, State and Society in Medieval India. Delhi:Oxford University Press.
- Khanna, M. (2007). Cultural History of Medieval India. Delhi: Social Science Press.pp.203- 236.
- Khanna, M. (2012). Madhyakalin Bharat Ka Sanskritik Itihas. Delhi: Orient Black Swan.pp219-254.

- Koch, Ebba. (2013). Mughal Architecture: An Outline of its History and Development (1526- 1858). Delhi: Primus.
- Moosvi, Shrieen.(2007), 'The Road to Sulh-i-Kul Akbar's Alienation from Theological Islam in Irfan Habib (ed.) Religion in Indian History. Delhi. Tulika Books.
- Moosvi, Shireen. (1987). The Economy of the Mughal Empire. Delhi: Oxford University Press.
- Rizvi, SAA. (1993). Muslim Revivalist Movements in Northern India during 16thand 17th centuries. Delhi: Munshiram Manoharlal.
- Vaniana, Eugenia. (2004). Urban Crafts and Craftsmen in Medieval India (Thirteenth-Eighteenth Centuries). Delhi: Munshiram Manoharlal.

Note: **Examination scheme and mode shall be as prescribed by the ExaminationBranch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC CORE COURSE (DSC -2): Cultural Transformations in Early Modern Europe – II

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Cultural Transformations in Early Modern Europe – II	4	3	1	0	12th Pass	Should have studied Cultural Transformations in Early Modern Europe – I

Learning Objectives

The objective of the course is designed to make the students familiar with theessential transitions and transformations in early modern European socio-cultural life, economy and polity. The first unit aims to critically examine the dynamics of Scientific Revolution and the Enlightenment in Europe that emerged from the MiddleAge. The second unit deals with the Literary and artistic developments which focuseson the developments in art, literature, science and philosophy and al-so deals with women and the new Public Sphere. The content in the third unit will enable them to understand the spread of popular culture and the mentalities of the Europeans and its cultural im-pact. The idea is to give them European perspective of cultural transformations in early modern Europe.

Learning outcomes

After completing this course, students will be able to:

- Understand the different perspectives of Cultural and Scientific developments in Europe.
- Explain the impact of Renaissance in the realm of art, literature, science andphilosophy and the processes by which major transformation unfolded inEuropean society and culture.
- Trace the developments in Literacy and artistic field.
- Identify the social and cultural aspects after the transitions in popular culture and mentalities.

SYLLABUS OF DSC

Unit-I: The Scientific Revolution and the Enlightenment

1. A new view of the universe and matter[b] Reflections on the scientificmethod.
2. Hobbes, Locke and the Philosophes and the ideas of Enlightenment

Unit-II: Literary and artistic Developments

1. Literary trends from Dante to Shakespeare
2. Art from Baroque to Rococo and Neoclassicism
3. Novels as an art form
4. Women and the new Public Sphere

Unit-III: Transitions in popular culture and mentalities c. 1550-1780

1. Family and marriage patterns
2. The decline of magic, the rise of witch trials
3. Changing mentalities and popular protests: Jacqueries, food riots and thecrowd

Practical component (if any) - NIL

Essential/recommended readings

Unit-I: The Unit will give concepts and explanations behind the rise of Scientific Revolution and the Enlightenment during the early Modern Europe. The dominant ideas of Hobbes, Locke, and the philosophes will be introduced to the students. **(Teaching Time: 15 hrs. approx.)**

- Anderson, M.S. Europe in the Eighteenth Century, 1713-1783. New York:Longman
- Burke, Peter. Popular Culture in Early Modern Europe. UK: Ashgate, 2009.
- Davies, Norman, Europe: A History. New York: Harper Collins, 1998.

Unit-II: This Unit imparts the understanding of the literary and artistic developments during c. 1500- 1800. **(Teaching Time: 15 hrs. approx.)**

- Burckhardt, Jacob. The Civilisation of the Renaissance in Italy. University of Virginia: Phaidon Press, 1965.
- Burke, Peter. (1999). The Italian Renaissance, Culture and Society in Italy. Princeton: Princeton University Press. (Chpts: Introduction, chpts:1, 2, 3, 4 & 6)
- Kaborycha, Lisa. (2011). A Short History of Renaissance Italy. New York: Pearson
- Nauert, C.G. (2006) Humanism and the culture of Renaissance Europe. Cambridge University Press.
- Kraye, J. and Jill, K. eds. (1996) The Cambridge companion to Renaissance humanism. Cambridge University Press.

Unit-III: The Unit emphasises different dimensions of popular culture and the mentalities of the early Modern Europeans that helps in learning the challenges and changes in the socio-economic, religious and political sphere and their influences on the lives of the people in various regions of Europe. **(Teaching Time: 15 hrs**

- King, Margaret L. Western Civilisation: A Social and Cultural History. New York: Prentice- Hall, 1999
- Parish, Helen L. (2018). A Short History of the Reformation. London, New York:
    - B. Tauris.
- Mac Culloch, Diarmaid. (2004). Reformation: Europe's House Divided, 1490-1700. London: Penguin Books Ltd.
- Cameron, E. (2012) The European Reformation. Oxford University Press. MacCulloch, D. (2005) The reformation.
- Anderson, M.S. Europe in the Eighteenth Century, 1713-1783. 2nd and. NewYork: Longman
- Burke, Peter. Popular Culture in Early Modern Europe. UK: Ashgate, 2009.
- Davies, Norman, Europe: A History. New York: Harper Collins, 1998
- Burns, E. M., Ralph, P. L., Lerner, R. E., & Meacham, S. (1986).Worldcivilisation, vol. AWW Norton & Co., New York, NY.

Suggested Readings:

- Anderson, Perry. Lineages of the Absolutist State. London: New Left books, 1974.
- Braudel, Ferdinand. Civilisation and Capitalism- 15th to 18th century Vol. I. California: University of California Press, 1992 (paperback).
- Burckhardt, Jacob. The Civilisation of the Renaissance in Italy. University of Virginia: Phaidon Press, 1965.
- Chartier, Roger. Arthur Goldhammer, Phillippe Aries and George Duby, eds. A History of Private Life, Vol III: Passions of the Renaissance. U.S.A.: Harvard University Press, 1988.
- Davis, Natalie Zemon. The Return of Martin Guerre, Massachusetts, London: Harvard University Press, 1983. • Gay, Peter. The Enlightenment: AnInterpretation. New York: Alfred K. Knopf, 1966
- Ginsberg, Carlo. The Cheese and the Worms. U.S.A.: John Hopkins University Press (JHUP) 1983
- Huizinga, J. The Waning of the Middle Ages. New York: Dover Publications,1999.
- Jacob, Margaret C. The Cultural Meaning of the Scientific Revolution, U.S.A.: Temple University Press, 1988.
- Kearney, Hugh. Science and Social Change 1500 – 1700. University ofWisconsin-Madison: McGraw- Hill, 1971.
- Thomas, Keith. Religion and the Decline of Magic. England: Penguin Books,1991.
- Ladurie, Emmanuel Le Roy. The Peasants of Languedoc. Urbana and Chicago: University of Illinois Press, 1974.

- Merriman,J. (2009) A History of Modern Europe: from the Renaissance to the Present (Vol. 1). WW Norton & Company.
- Merriman, J. (2019) A History of Modern Europe: Volume 2 (Vol. 2). WW Norton & Company.
- संक्ांतकलीन र ूरोप : अरतवंम् तसन्हा , ग्रंथ तशल्पी प्राइवटे तलतमट, 2015.
- आधुतनक र ोप का इततहास : आर ाम एवं ततशाए : म् वेश मीना तवर,

  भारद्वाम् एवं वंम् ना र्ौधरी
- आधुतनक र ूरोप का इततहास: आर ाम एवम ततशाएं] (सह-संपाम् न), तहन्दी माध्यम कार ा ान्वनच ततनशे ालर ्ततल्ली-7, 2010 (revised second edition, 2013)
- र ोपीर् स ंस्कृ तत (1400-1800): म् वेश तवर् संपाततत, तहन्दी माध्यम

  कार ा ान्वनच ततनशे ालर, ततल्ली- 7, 2006,2010.
- आधुतनक पतश्रम के म्उर् का इततहास , मीनाक्षी फूकन, लक्ष्मी पमभब्लक शन,2012.
- आधुतनक पतश्रम के म्उर् , पाथासारतथ गुप्ता, तहन्दी माध्यम ा ान्वन कारततने शालर् ,ततल्ली-7, 2015(New Edition).

Note: Examination scheme and mode shall be as prescribed by the ExaminationBranch, University of Delhi, from time to time.

Category III

BA (Prog.) with History as Non-Major

DISCIPLINE SPECIFIC CORE COURSE (DSC-1): History of India c. 1550 – 1700

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
History of India c. 1550 – 1700	4	3	1	0	12 th Pass	Should have studied History of India c. 1200-1550

Learning Objectives

This course provides an analytical study of the history of India from 1550 to 1700 CE. It introduces students to a thematic study of the main aspects of the period delineating major transitions, changes and developments that include the establishment of the Mughal state and Rajput polities, encompassing political, administrative, cultural and economic aspects. Through select regional case studies it also underlines the interconnectedness of the subcontinental region in its transition.

Learning outcomes

After the successful completion of this Course, the students will be able to:

- Identify the major political developments in the history of India during the period between the sixteenth century and between the beginning of the eighteenth century.
- Outline the changes and continuities in the field of culture, especially with regard to art, architecture and Sufi movement.
- Discuss the economic history of the period under study in India especially, where agrarian production and its implications are concerned.
- Delineate the development of trade and urban complexes during this period.

SYLLABUS OF DSC-1

Unit I: Foundation, expansion and consolidation of the Mughal State, c.16th to 17th century: Expansion and consolidation; Administrative structures: Mansabdari and Jagirdari.
Unit II: Akbar to Aurangzeb: Rajputs, imperial ideology; religious policy.
Unit III: 17th century transition: Marathas, Sikhs.
Unit IV: Art and architecture: Taj Mahal and Red Fort; Mughal painting.
Unit V: Society, culture and religion: Sufism: Naqshbandi; popular literature from theDeccan: Chakki-Nama and Charkha-Nama.
Unit VI: Economy and integrated patterns of exchange: Inland and maritime trade; non-agrarian production.

Practical component (if any) - NIL

Essential/recommended readings
Unit I: This unit would have taught students about the complex political, cultural and social world constructed under the Mughal regime. It will also introduce students tothe administrative structure of the Mughal state. **(Teaching Time: 9 hrs. approx.)**

- Alam, M., and S. Subrahmanayam. (1998). The Mughal State 1526-1750. Delhi:Oxford University Press.
- Richards, J F. (1996). The New Cambridge History of India: The Mughal Empire.
- Cambridge: Cambridge University Press.
- Raychaudhuri, T. and I. Habib. (Eds.). (1982). The Cambridge Economic Historyof India, Vol.1: c1200-1750. Delhi: Orient Longman, pp. 163-192.
- Bhargava, Meena. ed. (2010). Exploring Medieval India: Sixteenth to theEighteenth centuries, Delhi: Orient Black Swan.
- Habib, I. (Ed.). (1997). Akbar and his India, Delhi: Oxford University Press. (Relevant chapters).
- Habib. I. (Ed.). (2016). Akbar aur Tatkalin Bharat, Delhi: Rajkamal Prakashan Samuh.(Relevant Chapters).
- Verma, H.C. (Ed.). (2003). Madhyakalin Bharat, Bhag 2, Delhi: Hindi Madhyam Karyanvan Nideshalaya, Delhi University.
- Ali, M. Athar. (1996). Mughal Nobility under Aurangzeb, Delhi: OxfordUniversity Press.
- Habib, I. (1999). The Agrarian System of Mughal India, 1554-1707. Delhi:Oxford University Press.

Unit II: This unit would have taught students about the Mughal relation with the Rajputs along with their religious ideas which shaped the Mughal state. It will also introduce students to the diverse ways in which Mughal imperial ideology came tobe constructed. **(Teaching Time: 12 hrs. approx.)**

- Ali, S Athar. (2008). 'Sulh-i-Kul and Religious Ideas of Akbar' in Mughal India: Studies in Polity, Ideas, Society and Culture, Delhi, OUP.

- Butler-Brown, Katherine. (2007). "Did Aurangzeb Ban Music? Questions for the historiography of his reign," Modern Asian Studies vol. 41, no.1, pp. 77- 120.
- Sreenivasan, Ramya. (2014) 'Faith and allegiance in the Mughal Era: Perspectives from Rajasthan' in Vasudha Dalmia and Munis D Faruqi, ReligiousInteractions in Mughal India, Delhi. OUP.
- Trushke, Audre. (2017). Aurangzeb: The Man and the Myth, Delhi: Penguin.
- Ziegler. P Norman. (1998). Some Aspects on Rajput Loyalties during the Mughal period'.in J F Richards (ed.) Kingship and Authority in South East Asia. Delhi. OUP.

Unit III: This unit would have taught students about emerging political formation in the Deccan. Through a study of the Marathas and Sikhs they would develop a better understanding of how the competition for resources in the seventeenth century contributed to the emergence of a new body of elites with political aspirations. **(Teaching Time: 6 hrs. weeks approx.)**

- Gordon, S. (1993). The New Cambridge History of India: The Marathas, 1600- 1818.
- Cambridge: Cambridge University Press.
- Wink, Andre. (1986). Land and Sovereignty in India: Agrarian Society and Politics under the Eighteenth Century Maratha Svarajya. Delhi: OrientLongman, pp. 51 – 65.
- Grewal, J.S. (1986). The New Cambridge History of India: The Sikhs. Delhi: Cambridge University Press.
- Singh, Chetan. (1991). Region and Empire: Punjab in the Seventeenth Century.Delhi: Oxford University Press.

Unit IV: This unit would have taught students about the architectural and painting traditions in the Mughal period. The student would be expected to appreciate the political and artistic complexities that played an important role during the period. This will be achieved through case studies of a tomb (the Taj Mahal), imperial fort (Red Fort) and Mughal paintings. **(Teaching Time: 7 hrs. approx.)**

- Koch, Ebba. (2006). The Complete Taj Mahal and the river front gardens of Agra, London. Thames & Hudson.
- Asher, Catherine B. (1992). The New Cambridge History of India, The Architecture of Mughal India, Part 1, Vol. 4, Cambridge: Cambridge University Press, pp. 169-215. (Chapter-5: Shah Jahan and the crystallization of Mughal style)
- Koch, Ebba. (2001). Mughal Art and Imperial Ideology: Collected Essays. Delhi: Oxford University Press. pp. 1-11 & 130-162.
- Blake, Stephen, (1985). "Cityscape of an Imperial City: Shahjahanabad in 1739", in R.E. Frykenberg, Delhi through the Ages: Essays in Urban History, Culture and Society, Oxford University Press, pp. 66-99.
- Koch, Ebba. (1990). Mughal Architecture. Delhi: Oxford University Press. pp. 97-115.

- Rezavi, Syed Ali Nadeem, (2010). "'The Mighty Defensive Fort': Red Fort at Delhi under Shahjahan -- Its Plan and Structures as Described by Muhammad Waris." Proceedings of the Indian History Congress 71, pp. 1108–1121.
- Desai, Vishaka N. (1990). "Painting and politics in Seventeenth Century North India: Mewar, Bikaner and the Mughal Court." Art journal vol. no.4, pp.370- 378.
- Verma, Som Prakash. (2009). Interpreting Mughal Painting: Essays on Art,Society, and Culture. Delhi: Oxford University Press.

Unit V: This unit would have taught students about the cultural traditions in the Mughal period with special reference to Naqshbandi Sufi and popular mystic literature from the South. **(Teaching Time: 5 hrs. approx.)**

- Eaton, Richard M. (1974, 2000). "Sufi Folk Literature and the Expansion of Islam," History of Religion vol. 14, pp.117-127. (Also available as Essays on Islam and Indian History. Delhi: Oxford University Press, pp.189-199.).
- Habib, Irfan. (1981), 'The Political Role of Sheikh Ahmad Sirhindi and Shah Waliullah'.
- Proceedings of Indian History Congress.
- Hasan, Nurul. (2005). 'Shaikh Ahmad Sirhindi and Mughal Politics' in SatishChandra (ed.),
- Religion State and Society in Medieval India: Collected works of Nurul Hasan,New Delhi.
- Nizami, K A. "Naqshbandi Influence on Mughal rulers and politics', IslamicCulture, 39, 1(1965): pp. 41-52.
- Schimmel, Annemarie. (1973). "The Sufi Ideas of Shaykh Ahmad Sirhindi", DieWelt des Islams, New Series, Vol. 14, Issue ¼. Pp.199-203.

Unit VI: This unit would have taught students about the gradual integrations of agricultural and artisanal production, and the establishment of circuits of exchange during Mughal period. They will also be able to develop an understanding of Inland as well as Indian Ocean trade and its impact on the South Asian economy. **(Teaching Time: 6 hrs. approx.)**

- Raychaudhuri, T and I. Habib. (Eds.). (1982). The Cambridge Economic History of India, Vol.1: c1200-1750. Delhi: Orient Longman, pp. 214-434.
- Bhargava, Meena. (Ed.). (2010). Exploring Medieval India: sixteenth to the eighteenth centuries. Delhi: Orient BlackSwan, pp. 307-327.
- Prakash, Om. (1998). The New Cambridge History of India: European Commercial Enterprise in Pre-Colonial India. Delhi: Cambridge University Press.
- Gupta, Ashin Das and M.N. Pearson. (1997) India and the Indian Ocean 1500- 1800. Delhi: Oxford University Press.

Suggestive readings

- Asher, Catherine B. and Cynthia Talbot. (2006). India before Europe. Cambridge: Cambridge University Press.

- Chandra, S. (2004). Medieval India: From Sultanate to the Mughals, Part 2.Delhi: Haranand Publications.
- Chandra, S. (2004). Madhyakalin Bharat: Sultanate se Mughal tak, Bhag 2.Delhi: Jawahar Publishers.
- Chandra, S. (2007). History of Medieval India (800-1700). Delhi: OrientLongman.
- Chandra, S. (2007). Madhyakalin Bharat: Rajniti, Samaj aur Sanskriti, Aathwi se Satrahvis shtabditak. Delhi: Orient Black Swan.
- Eaton, Richard M. (1996). The Sufis of Bijapur, 1300-1700: Social Roles of Sufisin Medieval India. Princeton: Princeton University Press.
- Faruqui, Munis D. (2012) The Princes of the Mughal Empire, 1504-1719.Cambridge: Cambridge University Press
- Green, Nile. (2002). Sufis and Settlers in the Early Modern Deccan, Delhi:Oxford University Press.
- Habib, I. (2003). Madhyakalin Bharat ka Arthik Itihas Ek Sarvekshan. Delhi: Rajkamal, 2003.
- Habib, I. (Ed.). (1981-2003). Madhyakalin Bharat. 10 volumes. Delhi; Rajkamal.
- Hasan, S. Nurul. (2008). Religion, State and Society in Medieval India. Delhi:Oxford University Press.
- Khanna, M. (2007). Cultural History of Medieval India. Delhi: Social Science Press.pp.203- 236.
- Khanna, M. (2012). Madhyakalin Bharat Ka Sanskritik Itihas. Delhi: Orient Black Swan.pp219-254.
- Koch, Ebba. (2013). Mughal Architecture: An Outline of its History and Development (1526- 1858). Delhi: Primus.
- Moosvi, Shrieen.(2007), 'The Road to Sulh-i-Kul Akbar's Alienation from Theological Islam in Irfan Habib (ed.) Religion in Indian History. Delhi. Tulika Books.
- Moosvi, Shireen. (1987). The Economy of the Mughal Empire. Delhi: Oxford University Press.
- Rizvi, SAA. (1993). Muslim Revivalist Movements in Northern India during 16thand 17th centuries. Delhi: Munshiram Manoharlal.
- Vaniana, Eugenia. (2004). Urban Crafts and Craftsmen in Medieval India (Thirteenth-Eighteenth Centuries). Delhi: Munshiram Manoharlal.

Note: Examination scheme and mode shall be as prescribed by the ExaminationBranch, University of Delhi, from time to time.

Pool of DSE for BA (prog.)

DISCIPLINE SPECIFIC ELECTIVE COURSE (DSE): Cultures in Indian Subcontinent – II

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Cultures in Indian Subcontinent – II	**4**	**3**	**1**	**0**	**12 th Pass**	**Should have studied Cultures in Indian Subcontinent – I**

Learning Objectives

This course aims to provide an overview of cultures of the Indian subcontinent. It will help the students to understand different traditions of sculpture, painting, etc. along withvaried popular cultures through the ages in India. This paper also aims to acquaint students with the social aspects like the role of different classes which extended patronage to varied activities in different periods of Indian history. It will also elucidate the cultural issues and the institutions of cultural practices in colonial and post-colonial India, which cemented the sentiments of Nationalism among Indians.

Learning outcomes

After studying this lesson, the students will be able to comprehend:

- The various schools of Sculpture over the ages in India;
- The evolution of Painting from the ancient, medieval to modern period;
- Folklores and oral traditions of kathas;
- Festivals, fairs and fasts;
- Textiles and crafts;
- Culture of food;
- Issues of culture and the concept of Nationalism

SYLLABUS OF DSE-2

Unit - I: Visual Cultures: Perceptions of visual Past and Present

1. Silpashastric normative tradition;

2. Indian Sculpture: Classicism- Mathura, Gandhara and Amravati Schools, Guptaperiod; late Classicism: Pallava and Chola.;
3. Indian Painting: Classicism -Narrative Mural and Fresco paintings; late Classicism: Pallava- Chola;
4. Medieval idioms-Mughal painting: Rajput and Pahari miniature paintings
5. Modern-Company school, Raja Ravi Varma, Bengal school, Amrita Sher-Gil and Progressive Artists Group.

Unit-II: Popular Culture

1. Folklore and Oral tradition of Kathas, narratives, legends and proverbs;Linkages of bardic and literary traditions.
2. Festivals, fairs and fasts; Links with tirtha, pilgrimage and localities.
3. Textile and Crafts; the Culture of Food.

Unit-III: Communication, Patronage and Audiences

1. Royalty, Merchants groups, Religious communities and Commoners
2. Culture as communication.
3. Nationalism and the issues of Culture; Institutions of Cultural Practices-Colonial and Post- Colonial.

Practical component (if any) - NIL

Essential/recommended readings

Unit-I: This unit will give an insight to the students about evolution of sculpture and painting right from the ancient to modern period and will help in understanding marked variations at different stages in Indian context. **(Teaching Time: 21 hrs.approx.)**

- Basham, A.L. The Wonder That Was India. Vol I, Rupa & Co., Delhi, 1991. (in Hindi:Adhbhut Bharat)
- Coomaraswami, Anand K. Introduction to Indian Art, Munshiram Manoharlal,New Delhi, 1999.
- Kramrisch, Stella. The Art of India. Orient Book Depot, Delhi, 1987.
- Harle, J.C. The Art and Architecture of Indian Subcontinent. Penguin Books,New York, 1990.
- Huntington, Susan L. The Art of Ancient India: Buddhist Hindu and Jain.Wathear Hill, New York, 1985.
- Maxwell, T.S. Gods of Asia: Text, Image and Meaning. OUP, New Delhi, 1996.
- Miller, Barbara Stoler. The Power of Art: Patronage in Indian Culture. OUP,Delhi, 1992.
- Mitter, Partha. Indian Art. OUP, Delhi, 2011.
- Ray, Nihar Ranjan. Maurya and Shunga Art. Indian Studies, Calcutta, 1965.
- Rizvi, S.A.A. The Wonder that Was India. Vol. II, Picador, India, 2001.
- Welch, Stuart Carey. Imperial Mughal Paintings. New York,1978.

- Thakran, R.C., Sheo Dutt, Sanjay Kumar. Bhartiye Upmahadvip Ki Sanskritiyan. Vol. II, Hindi Madhyam Karyanvay Nideshalaya, University of Delhi, Delhi, 2013.

Unit-II: This unit will enable students to know about the rich traditions of popular culture of India in three sub-sections covering almost every aspect of our day to day life. **(Teaching Time: 12 hrs. approx.)**

- Acharya, K.T. A Historical Dictionary of Indian Food. OUP, 1998.
- Dhali, Rajshree. 'Perspectives on Pilgrimage to Folk Deities', InternationalJournal of Religious Tourism and Pilgrimage, Vol VIII, Issue I,2020.
- Dubey, Shyam Charan. Manav aur Sanskriti. Rajkamal Prakashan, New Delhi,2010.
- Gupta, Shakti M. Festivals, Fairs and Fast of India. Clarian Books, New Delhi,1990.
- Gupta, Ved Prakash. Bhartiye Melon aur Utsavon ke divyadarshan. Jivan Jyoti Prakashan,1995.
- Jain, Shanti. Vrat aur Tyohar Pauranik avam Sanskritik Pristhabhumi.Hindustani Academy, Allahabad,1988.
- Jaitly, Jaya. The Craft Tradition of India. NCERT, Delhi,1990.
- Kidd Warren. Culture and Identity. Palgrave, 2002.
- Strinati, Dominic. An Introduction to Theories of Popular Culture. Routledge, London, 2000.
- Thakran, R.C., Sheo Dutt, Sanjay Kumar. Bhartiye Upmahadvip Ki Sanskritiyan. Vol. II, Hindi Madhyam Karyanvay Nideshalaya, University of Delhi, Delhi, 2013.
- Verma, Lal Bahahur. Bharat ki Jankatha. Itihasbodh Prakashan, Allahabad, 2012.

Unit-III: This unit will provide students the knowledge about the individuals as well associal classes which used to give exclusive patronage to art and culture leading to its evolution in India. What kind of message was carried or permeated to the society by the rise and growth of art and culture and how it paved the way for the growth of cultural nationalism in India will also be covered under this broad topic. **(Teaching Time: 12 hrs. approx.)**

- Mitter, Partha. Art and Nationalism in Colonial India.OUP, Delhi,1994.
- Thakran, R.C., Sheo Dutt, Sanjay Kumar. Bhartiye Upmahadvip Ki Sanskritiyan. Vol. II, Hindi Madhyam Karyanvay Nideshalaya, University of Delhi, Delhi, 2013.

Websites:

- http:kasi.nic.in
- http:kasi.legislation.asp
- www.iccrindia.org
- http:www.indiaculture.nic.in

Suggestive readings

- Acharya, K.T. A Historical Dictionary of Indian Food. OUP, 2001.
- Agarwala, Vasudev Sharan. Bhartiya Kala (in Hindi), Prithvi Prakashan,Delhi,2020.
- Asher,Catherine B (ed.):Perceptions of India's Visual Past,American Institute ofIndian Studies,Delhi,1994
- Basham,A.L.The Wonder that was India.Volume I, Rupa & Co.,NewDelhi, 1981.(in Hindi
- : Adhbhut Bharat)
- Chopra, P.N. (ed.), The Gazetteer of India, History and Culture, Vol. II, Publication Division, Govt. of India, 1988.
- Cohn,Bernard S.India:The Social Anthropology of a Civilization in Bernard Cohn Omnibus,Oxford University Press,2004.
- Dhali, Rajshree. 'Pilgrimage to the Abode of a Folk Deity', International Journalof Religious Tourism and Pilgrimage. Vol. 4,Issue 6, Art. 8, 2016.
- Harle, J.C, The Art and Architecture of Indian Subcontinent, Penguin Books, 1986.Huntington, Susan L. The Art of Ancient India: Buddhist Hindu and Jain. Wathear Hill, New York, 1985.
- Jaitly, Jaya. The Craft Tradition of India. Delhi,1990.
- Khanna, Meenakshi, Madhyakalin Bharat Ka Saanskritic Iihas,(translated inHindi by Umashankar Sharma), Orient Blackswan, Delhi, 2012.
- Majumdar, R.C. ed. The History and Culture of the Indian People, Vol. 3 (The Classical Age), Bhartiya Vidya Bhawan, Bombay, 1954. (chapters XV, XIX) (in Hindi: Shrenya Yug translated by Shivdaan Singh Chauhan, Motilal Banarsidass, 1984)
- Maxwell,T.S.Image:TextandMeaning:GodsofSouthAsia,Oxford University Press,Delhi, 1997.
- Miller, Barbara Stoler. The Power of Art: Patronage in Indian Culture. OUP, Delhi, 1992.
- Mitter, Partha. Indian Art. OUP, Delhi, 2011.

- Strinati, Dominic. An Introduction to Theories of Popular Culture. Routledge, London, 2000.
- Thakaran, R.C, Sheo Dutt and Sanjay Kumar, ed. Bhartiya Upamahadvip ki Sanskritiyan,Vol. I and II (in Hindi), Hindi Madhayam Karyanvay Nideshalaya, University of Delhi, Delhi, 2013.
- Verma, Lal Bahahur. Bharat ki Jankatha. Itihasbodh Prakashan, Allahabad, 2012.
- Zimmer,H.MythsandSymbolisminIndianArtandCivilization,PrincetonPress,New Jersey, 1992.

Note: Examination scheme and mode shall be as prescribed by the ExaminationBranch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE (DSE): Popular Culture

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Popular Culture	**4**	**3**	**1**	**0**	**12th Pass**	**NIL**

Learning Objectives

One of the purposes of learning History is to evolve a critical lens with which one can make sense of one's immediate and lived experience. Popular culture happens to be a significant component of that experience surrounding us, particularly since it is easy to access. This course aims to provide students with a critical understanding of popular culture. One of the course objectives is to help the student attempt to define popular culture through a study of the complex theoretical discussion on the subject. This theoretical engagement is expected to enable learners to comprehend various aspects of popular culture both in non-Indian and Indian contexts focusing particularly on themes about religion, performative traditions, food cultures as well as the constitution of a 'new public' concerning its patterns of consumption of culture, in contemporary times.

Learning outcomes

Upon successful completion of the course, students will be able to:

- Engage with a range of theoretical perspectives in an attempt to define popular culture,
- Describe the methodological issues involved in a historical study of popular culture,
- Identify the relevant archives necessary for undertaking a study of popular culture while pointing out the problems with conventional archives and the need to move beyond them,
- Interpret the above theoretical concerns to actual historical studies through a case study,
- Estimate the popular aspects of the everyday experience of religion and religiosity through a wide range of case studies relating to festivals and rituals,healing practices as well as pilgrimage and pilgrim practices,
- Examine the role of orality and memory in popular literary traditions,
- Demonstrate the evolution of theatre and dance within the popular performative traditions,
- Analyse the role of technology in the transformation of music from elite to popular forms,
- Examine the relationship between recipes/recipe books and the construction of national/regional identities,
- Identify the history of the cultures of food consumption and its relationship with the

constitution of a modern bourgeoisie,

- Examine the process of emergence of a pattern of 'public consumption' of culture in contemporary times, with specific reference to art, media and cinema

SYLLABUS OF DSE-3

Unit I: Defining Popular Culture:

1. Popular Culture as Folk Culture,
2. Mass Culture- High Culture,
3. People's culture

Unit II: Popular Culture and Visual Expressions:

1. Folk art, calendar art, photography, advertisements;
2. Cinema (themes and trends like freedom struggle and nation-building),television (Case study of televised serials, Ramayana and Chanakya)
3. Internet: Digital age and popular culture

Unit III: Performative traditions, fairs, festivals and pilgrimage:

1. Folktales & folk theatre: swang and nautanki;
2. Music- folksongs and folk dances
3. Festivals and Rituals: Case studies of Navaratri in Madras / Urs in Ajmer /Kumbh Mela

Unit IV: Cuisine as an expression of culture:

1. Food and Public Cultures of Eating
2. Regional cuisines
3. Cultures of Consumption

Practical component (if any) - NIL

Essential/recommended readings

Unit I: This unit intends to apprise students of the conceptual and theoretical categories that scholars deploy to classify and analyse various forms of popularculture. **(Teaching Time: 12 hrs. approx.)**

- Fiske, John. (2010) *Understanding popular culture*. Routledge.
- Storey, J. (2001) *Cultural Theory and Popular Culture*. London: Routledge. (Chap. 1, 'What is Popular Culture', pp. 1-17)
- Dubey, Shyam Charan. Manav aur Sanskriti. Rajkamal Prakashan, NewDelhi, 2010.

Unit II: This unit focuses on a study of the various audio and visual forms of popular culture. It also explores the more recent forms of popular culture as embodied in the new age technologies of communication. **(Teaching Time: 12 hrs. approx.)**

- Dissanayake W. and K.M. Gokul Singh, (1998). *Indian Popular Cinema, A Narrative of Cultural Change*. New Delhi: Orient Longman.
- Fiske, John. (2001) *Television Culture: Popular Pleasures and Politics*. London: Routledge.
- Spracklen, Karl. (2015) *Digital Leisure, the Internet and Popular Culture: Communities and identities in a Digital Ag*e. London: Palgrave Macmillan, pp. 1-52.

Unit III: The Indian subcontinent is rich in diverse beliefs and practices of rituals, pilgrimages, and performative traditions. This unit will focus on exploring the meanings of performative traditions (folk music, folk tales, etc.), rituals, pilgrimages, etc. **(Teaching Time: 12 hrs. approx.)**

- Bharucha, Rustam. (2003) *Rajasthan: An Oral History, Conversations with Komal Kothari*, Delhi: Penguin, chap 1, 'The Past in the Present: Women's Songs', pp. 16-35.
- शकु धव. (2015). 'लोक - आखान: यशकीघोषणा' , तानाबाना, प्रवेशांक, pp. 19-26.

Unit IV: The focus of this unit will be on food and its history. The units will encourage students to think about cooking and eating habits of 'people' as historical, subject to change and embodying social and political significations that go much beyond individual initiatives**. (Teaching Time: 9 hrs. approx.)**

- Appadurai, Arjun. (1988) 'How to Make a National Cuisine: Cookbooks in Contemporary India', *Comparative Studies in Society and History*, Vol. 30, No. 1, pp. 3-24.
- Ray, Utsa. (2014) *Culinary Culture in Colonial India: A Cosmopolitan Platter and the Middle Class*, Cambridge: Cambridge University Press

Suggestive readings

- Kasbekar, Asha. (2006). Popular Culture India!: Media, Arts and Lifestyle. Santa Barbara: ABC-CLIO, 2006.
- Chauhan, V. (2019) From Sujata to Kachra: Decoding Dalit representation in popular Hindi cinema. South Asian Popular Culture, 17(3), pp.327-336.
- Lichtner, G. and Bandyopadhyay, S. (2008) Indian Cinema and the Presentist Use of History: Conceptions of ""Nationhood"" in Earth and Lagaan. Asian Survey, 48(3), pp.431-452.
- Sen, C.T. (2004) Food culture in India. Greenwood publishing group.
- Thakurta, T.G. (1991) Women as 'calendar art' icons: Emergence of pictorial stereotype in colonial India. Economic and Political Weekly, pp.WS91-WS99.
- Vatuk, Ved Prakash. (1979) Studies in Indian Folk Traditions. New Delhi: Manohar, 1979.
- कु मार, इला(2015). 'संस्कृ तत काम बोध', तानाबाना, प्रवेशांक, pp. 102-104.

Suggested weblinks:

- http://visionsofindia.blogspot.in/p/history-of-photography-in-india.html
- https://lens.blogs.nytimes.com/2015/06/18/indias-earliest-photographers/
- http://www.bjp-online.com/2015/06/the-new-medium-exhibiting-the-first-photographs- ever-taken-in-india/
- http://ccrtindia.gov.in/performingart.php

Note: Examination scheme and mode shall be as prescribed by the ExaminationBranch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

GENERIC ELECTIVES (GE-1): Religious Traditions in the Indian Subcontinent

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Religious Traditions in the Indian Subcontinent	**4**	**3**	**1**	**0**	**12 th Pass**	**NIL**

Learning Objectives

This course seeks to provide an understanding of (a) multiple religious traditions that flourished through the ages in the Indian subcontinent; (b) how each religious tradition is dynamic and changing in relation to each other and in relation to its own past; (c) the ways in which each ex-panded or contracted; (d) how the modern Indian state and its constitution dealt with the issue of multiplicity of beliefs; and (e) to understand the varied approaches to each of the issues out-lined above.

Learning outcomes

Upon completion of this course the student shall be able to:

- Describe the basic chronological, spatial and substantive contours of each of the religious traditions as well as certain intellectual currents that questioned them.
- Analyse and articulate the long-term changes that each religious tradition undergoes in a dynamic relationship with its own past, with non-religious aspects of life, and with other religious traditions. · Identify and describe the formation of religious identities and the scope for the liminal spaces in between.
- Appreciate, examine and relate to the debates on the ways in which the modern Indian state and its constitution must deal with the issue of plurality of religious beliefs and practices.

SYLLABUS OF GE

Unit-I: Major Religious Traditions in Ancient India

1. Vedic and Puranic traditions

2. Schools of Buddhism and Jainism

Unit-II: Major Religious Traditions in Medieval India

1. Bhakti traditions: Saguna; Nirguna
2. Sufi traditions: Development of Chishtiyya and Suhrawardiyya
3. Emergence of Sikhism

Unit-III: Socialisation and Dissemination from the Early Medieval to Early Modern Era

1. Approaches to Shaiva, Shakta and Vaishnava in the Early Medieval Era
2. Approaches to Islamisation in the Medieval Period

Unit-IV: Modernity and Religion

1. Making of Sacred Spaces: Banaras; Modern Religious Identities
2. Debates on Secularism and the Indian Constitution

Practical component (if any) - NIL

Essential/recommended readings

Unit-I. The unit should familiarise students with diverse religious traditions thatoriginated in the Indian–subcontinent. It also explores intellectual currents that questioned them. **(Teaching Time: 12 hrs. approx.)**

- Shrimali, K. M. (1998). 'Religion, Ideology and Society', Proceedings of Indian History Congress, General Presidential Address, 66th Session. यह ल ख हह म् म प . शम ल क ह एक हकत ब म स कहलत ह .शम ल, क षम हन.
- (2005).धम ,सम ज और स स हत, नई हेल: ग थह$ल. (अध य 6:धम , ह(र् रध रऔर सम ज,
- pp. 196-258).
- Chakrabarti, Kunal. (2001). Religious Process: The Puranas and the Making of a Regional Tradition, New Delhi: Oxford University Press, Chapter 2, pp. 44-80.
- Basham, A. L. (1954). The Wonder that was India, Calcutta: Rupa. Reprint, 1982. (Available online at the url:
- https://archive.org/details/TheWonderThatWasIndiaByALBasham). Also available in hindi, ब $म, ए.एल. (1996). म्अ* +,त + रत, आगर :ह$(ल लअग(ल ए ि क पन.
- Sharma, R.S.(2006). India's Ancient Past, Oxford University Press, Relevant part is Chapter-14 ' Jainism and Budhhism'.यह ल ख हह म् म प . र म$रण $मक ह एक हकत ब म स कहलत ह .$म , र म$रण (2016), प र ह+क + रत क पररर्य, ओररए ट ब कस न , (अध य -14: ज न और ब7म् धम , pp.132-146).
- Schopen, G. (1997). Bones, Stones, and Buddhist Monks: Collected Papers on the Archaeology, Epigraphy, and Texts of Monastic Buddhism in India, Honolulu:

University of Hawaii Press. (Especially relevant is in Chapter-I 'Archaeology and the Protestant Presuppositions in the Study of Indian Buddhism', pp 1 – 22.)

- Jaini, P. S. (1979). The Jaina Path of Purification, Berkeley: University of California Press.(The most relevant portion is to be found in the 'Introduction').

Unit II. The unit equips students to analyse and articulate the long-term changes thateach religious tradition undergoes in a dynamic relationship with its own past, with non-religious aspects of life, and with other religious traditions. **(Teaching Time: 12 hrs. approx.)**

- Rizvi, S.A.A. (1978). A History of Sufism, vol. 1. Delhi: MunshiramManoharlal. (The chapters on Chishtiyya and Suhrawardiyya are useful)
- Digby, Simon. (1986). 'The Sufi Shaykh as a Source of Authority in Medieval India', Purusartha, vol. 9, pp. 57-78. Reprinted in India's Islamic Traditions, 711-1750, edited by Richard M. Eaton, New Delhi: Oxford University Press, 2003, pp. 234-62.
- Digby, Simon. (1990). 'The Sufi Shaykh and the Sultan: A Conflict of Claims to Authority in Medieval India', Iran, vol. 28, pp. 71-81. · Sharma, Krishna. (2002). Bhakti and the Bhakti Movement : A New Perspective. Delhi : Munshiram Manoharlal. Especially useful is 'Chapter-1: Towards a NewPerspective', pp.1-38.
- Habib. Irfan. (2007). 'Kabir: The Historical Setting', in Religion in Indian History edited by Irfan Habib, New Delhi , Tulika Books , 2007, pp.142-157. Also available in hindi , इरफ न हबब , ' मधक लन ल क(म् एक शर(म् क म

  न(य सरप और ऐहतह हसक परर($ ' , + रतय इहतह स म मधक ल (स .) इरफ़ नहबब ,

  सहमत, 1999 , प . स . 145 -158.
- बहग,ण ,आर. प. (2009). मधAकलन + रत म +कC और सDफ़ आन लन , ईल ,

  गनह$ल.

  ल र नज* न ,ि◌ह(ि◌ .एन.(2010), हनग, ण सन क सपन, ईल, र जकमल पक $न. ·
- Grewal, J. S. (1993). Contesting Interpretations of the Sikh Traditions, Delhi: Manohar.

Unit-III. The segment enquires into varied scholarly approaches to the issues pertaining to multiple religious traditions that flourished through the ages and how each religious tradition is changing in relation to each other and in the ways in which each expanded or contracted. **(Teaching Time: 12 hrs. approx.)**

- Chakrabarti, Kunal. (1992). 'Anthropological Models of Cultural Interaction and the Study of Religious Process', Studies in History, vol. 8 (1), pp. 123-49.
- Chattopadhyaya, B.D.(1994). 'Political Processes and the Structure of Polity in Early Medieval India' , in idem The Making of Early Medieval India,Oxford University Press.
- Eaton, Richard. (1987). 'Approaches to the Study of Conversion to Islam in India', in Islam in Religious Studies, edited by Richard C. Martin, New York: One World Press, pp. 106- 23.

- Wagoner, Philip. (1996). 'Sultan among Hindu Kings: Dress, Titles, and the Islamicization of Hindu Culture at Vijayanagara,' Journal of Asian Studies, vol. 55, no. 4, pp. 851-80.

Unit IV: This section should apprise students about the making of sacred spaces and to Identify and describe the formation of religious identities .Besides the focus is on how the modern Indian state and its constitution dealt with the issue of multiplicity of beliefs and practices**.(Teaching Time: 9 hrs. approx.)**

- Eck, Diana L. (1999). Banaras: City of Light, Columbia University Press , Revised edition.
- Oberoi, Harjot. (1994). The Construction of Religious Boundaries: Culture, Identity and Diversity in the Sikh Tradition, Delhi: OUP. (Particularly relevant is pp. 1-40).
- Pandey, Gyanendra. (2000). 'Can a Muslim be an Indian', Comparative Studies in Society and History, vol. 41, no. 4, pp. 608- 629.
- Jha, Shefali. (2002). 'Secularism in the Constituent Assembly Debates, 1946-1950',Economic and Political Weekly, vol. 37, no. 30, pp. 3175- 3180.

Suggestive readings - NIL

- Bailey, G. & I. Mabbett. (2003). The Sociology of Early Buddhism, Cambridge: CUP. (The Introduction (pp. 1-12) and Chapter 1: The Problem: Asceticism and Urban Life, (pp. 13- 26) of the book are most relevant.)
- Eaton, Richard.M. (2000). ' Sufi Folk Literature and the Expansion of Indian Islam', in idem, Essays on Islam and Indian History , Delhi: OUP, pp.189-202.
- ईटन , ररर्ि एम. (2012). ' मधक लन म् कन म इस हमक सथ न क अह+वकC ', मन क खन(स), मधक लन + रत क स स हतक इहतह स,नय र्हल , ओररए ट ब कस न , 4
- Ernst, Carl. (2011). Sufism: An Introduction to the Mystical Tradition of Islam , Shambhala; Reprint .
- Habib, Irfan.(ed.).(2007). Religion in Indian History,New Delhi , Tulika Books.
- Hawley , J.S.(2005). Three Bhakti Voices : Mirabai, Surdas, and Kabir in theirTime and Ours, New Delhi , OUP.
- Mukul, Akshay. (2015). Geeta Press and the Making of Hindu India, Delhi: Harper Collins. (More important portions on pp. 287-344.)
- Rodrigues, Hillary P. (ed.). (2011). Studying Hinduism in Practice, Abingdon: Routledge (especially Chapter 4).
- Sahu, B. P. (2015). Society and Culture in Post-Mauryan India, c. 200 BC – AD 300. New Delhi: Tulika Books. (See especially the Chapter on Religion, pp. 20 – 37. And sections on Buddhism, Jainism, Brahmanism, their chronologies and extracts from the Dhammapada. Also, 2.1. – 'Religion in History' and, 2.2. – Bibliographical Note.)

Note: Examination scheme and mode shall be as prescribed by the ExaminationBranch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-2): Sacred Spaces, Temple and Temple Economy (North and South Indian Traditions)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Sacred Spaces, Temple and Temple Economy (North and South Indian Traditions)	4	3	1	0	12 th Pass	NIL

Learning Objectives

The course seeks to inculcate an appreciation for sacred spaces in Indian context with its multi-facetness and complexity. The idea is to treat sacred space not only as a geographical entity but as vibrant texts which have multi-layered histories and give us an insight how communities and individuals relate with them over time. Sacred spaces are demarcated or conceptualized with the establishment of temples which are also architectural embodiments of divinity. The course begins with the conceptualization of sacred space and how they were thoroughly enmeshed in their respective temples spatially and temporally. The next unit intends to study in brief the meanings and normative models of temple style. Another area of exploration is how temples have played the role in legitimization of political institutions, patronage patterns and the how pilgrimages, rituals and festivals are embedded in sacred spaces within which they are generated and persists. Highlighting the political and social significance of temple the template is set to study the role of temple complexes as major instruments of integration and economic development. Apart from situating temples in historical context it's significance in contemporary times is also explored. Skilled with this knowledge, the student can be employed in fields of tourism, journalism and other like industries, besides being aware of significant temple towns and country's rich heritage.

Learning outcomes

At the end of the course, the student should be able to:

- Understand the concept of sacred spaces and the role of temples in definingand ensuring longevity of those spaces.
- Differentiate between various styles of temples.
- Discuss the themes of legitimization and sacred kingship in historical temples.
- Understand patronage patterns, deity- patron relationship and gender roles intemple.
- Comprehend the ideas disseminated by sculptures.

- Point out the regional variations and cultural diversity in temple traditions.
- Linking historical sacred spaces to their contemporary times.

SYLLABUS OF GE

Unit I: Defining Sacred Spaces: Sacred Sites, Forests Hills and Rivers

Unit II: Sacred spaces and Monumentality: Temple

1. Structure and Forms
2. Ecological dimension
3. Temple and sacred kingship

Unit III: Royal patronage and community integration

1. Patronage patterns and power affiliations
2. Pilgrimage, Rituals and festivals
3. Temple spaces and gender roles

Unit IV: Temple Towns and Economy

1. Interconnecting temples, corresponding towns and urbanism.
2. Urbanization and economic growth
3. Situating Temple in contemporary spaces

Practical component (if any) - NIL

Essential/recommended readings

Unit I: The unit will introduce the meaning of sacred spaces along with the inherent understanding of sacred and profane. The dominant paradigms for conceptualizing sacred space in a given context will also be examined as they are historically contingent and constructed by specific circumstances and perspectives. **(Teaching time: 12 hrs. approx.)**

- S.Verma and H.P.Ray, (2017)The Archaeology of Sacred Spaces- Introduction, Routledge, New York.
- Vinayak Bharne and Krupali Krusche (2012) Rediscovering the Hindu Temple: The Sacred Architecture and Urbanism of India, Cambridge Scholars Publishing, Chapter 1 ,5,8,9,11 (Relevant for all the rubrics).
- Baidyanath, Sarawati (1984) The Spectrum of the Sacred: Essays on the Religious Traditions of India, Concept Publishing Company, New Delhi.
- Eck, Diana L, (1998), The Imagined Landscape in Pattern in Construction of Hindu Sacred Geography, CIS, (32) (2).

UNIT II: Under this rubric an attempt is made to study temple's meaning and forms encompassing the regional variation which also articulate the tangible and symbolic authority of the sacred spaces. Temples in different spaces and time cannot be treated in isolation from

other processes and discourses on power and legitimization.The evolution of temple tradition also needs to be highlighted right from the stage ofit's inception to formalized structure of worship. One also needs to highlight how temples depicts the political processes particularly the changing nature of kingship, glorified the ruler and legitimized power in the domain of deity. **(Teaching time: 12 hrs. approx.)**

- George Michell, (1977) The Hindu Temple: An Introduction to its Meaning and Forms, New Delhi, B.I Publications.
- B.D.Chattopadhaya, (1993), Historiography, History and Religious centres: Early medieval North India, ad 700-1200 in V.N.Desai and Darielle Mason (ed) Gods, Guardians and Lovers: Temple Sculptures from North India A.D 700- 1200 A.D., New York: The Asia Society Galleries, pp.32-48.
- Appadurai, Arjun, "Kings, Sects and Temples in South India, 1350-1700 A.D.", Indian Economic and Social History Review, 14, 1977, pp. 47-73
- M.Willis, Religious and royal patronage in North India, in V.N.Desai and Darielle Mason (ed) Gods, Guardians and Lovers: Temple Sculptures fromNorth India A.D 700-1200 A.D., New York: The Asia Society Galleries, 1993, pp.49-65.
- Kaimal, Padma, "Early Chola Kings and Early Chola Temples: Art and the Evolution of Kingship", Artibus Asiae, Vol. 56, No. 1-4, 1996, pp.33-66.

Unit III: This unit will discuss the patterns of patronage and how power of thepatrons are reflected in the temples they built. Another area of study would be how temples tend to create their respective pilgrim fields and their rituals, festivals integrate individual into society by symbolically articulating social patterns and relationships. The nature of activities and roles played by women in these sacred spaces is also explored. It is also intended to examine how sculptural panels transmit ideas which can be a useful source of historical knowledge. (Teaching time: 12 hrs. approx.)

- Devangana Desai, 'The Patronage of Lakshamana Temple at Khajuraho', in B. Stoler Miller, The Powers of Art: Patronage in Indian Culture, New Delhi OUP, 1992, pp 78-88
- Stein, B., "Patronage and Vijayanagara Religious Foundations", in B.S. Miller (ed.), Powers of Art: Patronage in Indian Culture, Oxford University Press, Delhi, 1992, pp 160-167.
- Behera,D.K. Pilgrimage: Some Theoretical Perspectives in Makhan Jha(ed.), Pilgrimages: Concepts, Themes, Issues, Inter India Publication, New Delhi, 1995 pp.44-64.
- Mack, Alexandra, Spiritual Journey, Imperial city: Pilgrimages to the temple of Vijayanagara.
- H.Kulke- Rathas and Rajas- Car festival at Puri in H.Kulke (ed.) Kings and Cults : State Formation and Legitimation in India and Southeast Asia, pp 66-81.
- Leslie C.Orr, Donors, Devotees and Daughters of God: Temple Women inMedieval Tamil Nadu.Ch 1,3,6.
- Seema Bawa, Visualizing the Ramayana: Power, Redemption and Emotion in early

Narrative Sculptures (c.Fifth to Sixth Centuries CE), Indian Historical Review 45(1) 92-123.

Unit 4: This unit will emphasize that temples are also integral to the towns that surround them. Temple and it's related activities are of significance for the entry it provides in the construction of social, cultural and religious dimensions of any sanctified place. With the help of case studies, it would be demonstrated that templewas a major instrument of agrarian expansion and integration. An attempt would also be made to situate temples in its contemporality reinforcing that sacredness stillplays a pivotal role in the shaping of towns and cities**. (Teaching time: 9 hrs.approx.)**

- George Michell, (1993) Temple Towns of Tamil Nadu, Marg Publication.
- D. N.Jha, (1974) Temple as Landed Magnates in Early Medieval South India(AD700-1300) in R. S .Sharma(ed.), Indian Society Historical Probings, Delhi, pp.202-16.
- Dilip K. Chakravarti (2019), Ancient Rajasthan- Research Developments, Epigraphic Evidence on Political Power Centres and Historical Perspectives, Aryan Book International.
- Hall, Kenneth, R., "Merchants, Rulers and Priests in an Early Indian Sacred Centres", in K. Hall (ed.), Structure and Society in Early South India – Essays in Honour of Noboru Karashima, Oxford University Press, New York, 2001.
- John Stratton Hawley, (2019) "Vrindavan and the drama of Keshi Ghat inAnnapurna Garimella, Shriya Sridharan, A.Srivathsan The Contemporary Hindu temple: Fragments for a History, The Marg Foundation.

Suggestive readings:

- Preston, James J., "Sacred Centres and Symbolic Networks in India" in Sitakant Mahapatra (ed.), The Realm of the Sacred, Oxford University Press, Delhi, 1992.
- Talbot, Cynthia, "Temples, Donors and Gifts: Patterns of Patronage in Thirteenth Century South India", Journal of Asian Studies, 50, no. 2, 1991.
- Paul Yonger, Playing Host to Deity: Festival Religion in the South Indian Tradition, Oxford University Press, 1992. Introduction.
- K.Raman, Temple. Art, Icons and Culture of India and South East Asia, 2006, Sharda, CH- 3, The Role of Temple in the socio- economic life of the people.
- Appadurai, A. and Breckenridge, C., "The South Indian Temple: Authority,Honour and Redistribution", Contributions to Indian Sociology (NS), 10(2),1976.
- Bhardwaj, Surinder Mohan, Hindu Places of Pilgrimage in India, University of California Press, Berkeley, 1973.
- Holly B. Reynolds and Bardwell L. Smith, City as a Sacred Centre, Essays on Six Asian Contexts, E.J. Brill, Leiden, 1987.
- Heitzman, James, "Ritual Policy and Economy: The Transactional Network of an Imperial Temple in Medieval South India", Journal of Economic and Social History of the Orient, Vol. 24, 1991.
- _____, "Temple Urbanism in Medieval South India", Journal of Asian Studies,

Vol. 46, No. 4, 1987.

- Christophe Hioco and Luca Poggi (ed.) (2021) Hampi- Sacred India, Glorious India by Pierre-Sylvain Filliozat and Vasundhara Filliozat, 5 Continents Edn, Milan, Italy.
- Radha Madhav Bahradwaj (2015), Vratas and Utsava in North and Central India (Literary and Epigraphic sources: c. A.D 400-1200), Eastern Book Linkers, Delhi, ch-5,pp.255-352.

Hindi readings:

- Hiralal Pandey (1980), Uttabharatiya Rajo ki dharmic niti, Janaki Prakashan,Patna.
- Jagdeesh Chandra Jain (1952), Bharat key Prachin Jain Tirtha.
- Vasudev Agarwal, (2008) Prachen Bharatiya Stupa, Guh aaivam Mandir, Bihar Granth Academy, Patna.

Field trips/Project work

- Visit to the temple towns to gain a hands-on knowledge are part of thecourse. Some suggested samples for projects:
- How are modern day temples, like the Birla Mandir and the Akshardham Mandir different/similar from/to the Khajuraho assemblage and the Tanjore?
- Comparison of festivals and rituals in both North and South Indian tradition appreciating the plurality of traditions.
- To look into the possibilities of preservation and conservation of sacredspaces.

Note: Examination scheme and mode shall be as prescribed by the ExaminationBranch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-3): Climate Change and Human History

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Climate Change and Human History	4	3	1	0	12 th Pass	NIL

Learning Objectives

Climate change is an urgent and significant global challenge that has far-reaching implications for human societies. This course explores the historical dimensions of climate change and its impact on human civilizations. By examining the complex relationship between climate, global warming and cooling, and human societies, students will gain a comprehensive understanding of how we arrived at the current state of the climate crisis, which is considered a defining feature of the Anthropocene era. By introducing students to interdisciplinary, it welcomes students from various academic backgrounds, including humanities and social sciences. By integrating perspectives from different disciplines, we aim to foster a comprehensive understanding of climate change as a multifaceted issue with profound implications for human societies. The course critically analyzes climate change denialism, exploring its historical roots, ideological underpinnings, and its impact on public discourse and policy-making.

Learning outcomes

After completing this course, students should be able to -

- Understand the historical relationship between climate and human societies.
- Explore climate as an active historical actor rather than a passive backdrop.
- Examine case studies from around the world to illustrate the impact of climate on human civilizations.
- Gain insights into the history of weather and climate.
- Analyze the phenomenon of climate change denialism and its historical and ideological roots.
- Foster interdisciplinary dialogue and collaboration among students from different academic backgrounds.

SYLLABUS OF GE

Unit 1: Anthropogenic Climate Change and Studying History
Unit 2: End of the Ice Age and the Early Holocene Human History; Plant and Animal Domestication; Civilisations; Mining
Unit 3: Climate Disasters and Social Transformations-Empires; Wars; Famine: Population Movements and Migrations
Unit 4: Little Ice Age and Seventeenth Century Crisis
Unit 5: Capitalism and Nature- Climate Change Denialism vs. Climate Justice; Metabolic Rift; Planetary Boundaries.

Practical component (if any) - NIL

Essential/recommended readings

Unit 1: The unit explains the concept of climate change and how climate can be studied as a historical actor. The unit is also aimed to evaluate the various scientific traditions that engage anthropogenic climate change. This will enable the students to appreciate the history of scientific ideas on the issues of global warming and the Anthropocene. (Teaching time: 9 hours approx.)

Readings:

- James R. Fleming, "Climate, Change and History", Environment and History, Vol. 20, No. 4, (November 2014), pp. 577-586
- David Wallace-Wells, The Uninhabitable Earth: Life After Warming (New York: Tim Duggan Books, 2019).
- Steffen, Will, Crutzen, Paul J and McNeill J. R. (2008). "The Anthropocene: Are Humans Now Overwhelming the Great Forces of Nature", Ambio, Vol. 36, No.8, pp. 614-621.
- Michael E. Mann, The Madhouse Effect: How Climate Change Denial Threatening Our Planet (New York: Columbia University Press, 2016), Chapter 2, pp. 15-29;

Unit 2: This unit will examine the influence of climate on human civilisations, including the ecological, migratory, and cultural implications of changing climate conditions. They provide a deeper understanding of how past climatic shifts have impacted the trajectory of human societies. This unit shall provide overview on how domestication and agriculture began with the end of the Ice Age and what was the influence of climate on human civilisations. (Teaching time: 3 weeks approx..- 9 lectures)

Readings:

- R. Fleming, Historical Perspectives on Climate Change (New York: Oxford University Press, 1998).
- John L.Brooke, Climate Change and the Course of Global History (New York: Cambridge University Press, 2014), Chapter 7.
- Vardy, Mark, Michael Oppenheimer, Navroz K. Dubash, Jessica O'Reilly, and Dale Jamieson. "The Intergovernmental Panel on Climate Change: Challenges and Opportunities." Annual Review of Environment and Resources, Vol. 42, No.1, (2017), pp. 55–75.

Unit 3: The unit examines how shifts in climate, including cooling temperatures and droughts, disrupted agricultural production, weakened the empire's economy, and contributed to social and political instability. The unit also considers the role of climate change as contributing factor to the collapse of the empires of the past centuries. (Teaching time: 9 houes approx.)

Readings:

- Kyle Harper, The Fate of Rome: Climate, Disease, and the End of an Empire
- Jared Diamond, Collapse: How Societies Choose to Fail or Succeed. New York: Viking 2005, pp. 157-177.
- Joseph Tainter, Collapse of Complex Societies. Cambridge: CUP, 1988, pp. 1-21.
- Brian M. Fagan. Floods, Famines and Emperors: El Nino and the Fate of Civilizations. Basic Books, 1999.
- Vasile Ersek, How climate change caused the world's first ever empire to collapse, Future of the Environment , 9th January 2019, https://www.weforum.org/agenda/2019/01/how-

climate-change-caused-the-world-s-first-ever-empire-to-collapse/

Unit 4: This unit enquires into the Seventeenth Century Crisis that coincided with the peak of the Little Ice Age and refers to a period of widespread political, social, and economic turmoil that occurred in Europe during the 17th century. The unit will also explain to the students how its impact varied across different regions. (Teaching time: 3 weeks approx..- 9 lectures)

Readings:

- John L.Brooke, Climate Change and the Course of Global History (New York: Cambridge University Press, 2014), pp.444-466.
- Dagmore Degroot, The Frigid Golden Age: Climate Change, the Little Ice Age, and the Dutch Republic, 1560–1720 (Cambridge: Cambridge University Press, 2018).
- Wolfgang Behringer, A Cultural History of Climate. Cambridge: Polity. Chapters 2 & 3.
- G. Parker, Global Crisis, War, Climate Change and Catastrophe in the Seventeenth Century. Yale University Press, 2013, [Introduction and chapter 1]

Unit 5: The use of fossil fuels as the main source of energy has fundamentally redefined human relationships with nature. By exploring the link between the use of fossil fuels and the emergence of capitalism, this unit explores how industrialisation did play a central role in anthropogenic climate change. It also introduces and elaborates on two key theoretical concepts- the Metabolic Rift and Planetary Boundaries to understand how climate change reproduces class, gender, and race. It also elaborates on the nature of the ongoing debates on the issues of climate change, including the powerful tendency to deny climate change as well as the strengthening of climate justice movements in the global peripheries. (Teaching time: 9 hours approx.)

Readings:

- Michael E. Mann, The Madhouse Effect: How Climate Change Denial Threatening Our Planet (New York: Columbia University Press, 2016).
- "The Intergovernmental Panel on Climate Change: Challenges and Opportunities" by Diana Liverman and Ronald L. Mitchell, Annual Review of Environment and Resources.
- J. N. Foster, The Vulnerable Planet: A Short Economic History of the Environment. New York: Monthly Review Press, 1999.
- J. B. Clark, "Ecological Imperialism and the Global Metabolic Rift: Unequal Exchange and the Guano Nitrates Trade," International Journal of Comparative Sociology, 50, 2009, 311-334.
- Vardy, Mark, Michael Oppenheimer, Navroz K. Dubash, Jessica O'Reilly, and Dale Jamieson. "The Intergovernmental Panel on Climate Change: Challenges and Opportunities." Annual Review of Environment and Resources, Vol. 42, No.1, (2017), pp. 55–75.

Suggestive readings:

- Ashley Dawson. Extinction: A Radical History. New York: OR Books, 2016.
- Amitav Ghosh. The Great Derangement: Climate Change and the Unthinkable. Chicago: The University of Chicago Press, 2017.
- Amitav Ghosh. The Nutmeg's Curse: Parables for a Planet in Crisis. Chicago: The University of Chicago Press, 2021.
- Awadhendra B. Sharan. In the City, Out of Place: Nuisance, Pollution, and Dwelling in Delhi, c. 1850-2000. Delhi: Oxford University Press, 2014.
- B. L Turner and Jeremy A. Sabloff. "Classic Period Collapse of the Central Maya Lowlands: Insights About Human-Environmental Relationship for Sustainability," Proceedings of the National Academy of Sciences, 109, (2012), 13908-14.

- Bhattacharya, Neeladri. "Pastoralists in a Colonial World", in David Arnold & Ramachandra Guha, eds., Nature, Culture, Imperialism: Essays on the Environmental History of South Asia. Delhi: Oxford University Press, 1995. pp. 49-85.
- C. Merchant, Ecological Revolutions: Nature, Gender, and Science in New England. University of North Carolina Press, 1989.
- Carolyn Merchant. The Death of Nature: Women, Ecology and the Scientific Revolution. San Francisco: Harper, 1980.
- Christian Parenti. Tropic of Chaos: Climate Change and the New Geography of Violence. New York: Nation Books, 2011.
- Dipesh Chakraborty. "The Climate of History: Four Theses." Critical Inquiry 35, no. 2 (213), 197-222.
- Edmund Burke III. "The Big Story: Human History, Energy Regime and the Environment" in Edmund Burke III and Kenneth Pomeranz, eds., the Environment and World History. Berkeley: University of California Press, 2009. pp. 33-53.
- Eileen Crist. and Helen Kopnina. "Unsettling Anthropocentrism", Dialectical Anthropology, Vol. 38, No 4, (2014) pp. 387-396.
- J. R. McNeil and Mauldin. A Companion to Global Environmental History. Oxford: Wiley-Blackwell, 2012. Introduction pp. xvi-xxiv.
- J. R. Stewart and C. B. Stringer. "Human Evolution Out of Africa: The Role of Refugia and Climate Change." Science 335, no 6074 (2012), 1317-1321.
- Jason Moore. Capitalism in the Web of Life: Ecology and the Accumulation of Capital. London: Verso, 2015.
- Joshua P. Howe, Behind the Curve: Science and Politics of Global Warming. Seattle: University of Washington Press, 2014.
- Lamb, Helmut H., Climate History and the Modern World, London, 1995.
- Mike Davis. Late Victorian Holocausts: El Nino Famines and the Making of the Third World. London: Verso, 2001.
- Naomi Klein. This Changes Everything: Capitalism vs the Climate. London: Allen Lane, 2014.
- Richard Bulliet. Hunters, Herders and Hamburgers: The Past and Future of Human-Animal Relationships. New York: Colombia University Press, 2005, pp. 205 -224.
- Shiva, Vandana. Soil, not Oil. Climate Change, Peak Oil and Food Security. Zed Books, 2009.
- Timothy Mitchell. Carbon Democracy: Political Power in the Age of Oil. London: Verso, 2011.
- Timothy Mitchell. Carbon Democracy: Political Power in the Age of Oil. London: Verso, 2011. pp. 231-254.
- Vaclav Smil. Energy and Civilisation Cambridge: MIT, 2007. pp. 127-224.
- William Dickinson. "Changing Times: the Holocene Legacy" in J. R. McNeil and Alan Roe, eds., Global Environmental History: An Introductory Reader. London: Routledge, 2013. pp 3-23.
- Weart, Spencer, The Discovery of Global Warming. Cambridge, MA, 2003.
- White, Sam,'Climate Change in Global Environmental History' in J. R. McNeill and E. S. Maudlin, eds., Companion to Environmental History, (Oxford: Blackwell, 2012) pp. 394-410.
- Wolfgang Behringer, "Weather, Hunger and Fear: Origins of the European Witch-Hunts in Climate", Society and Mentality, German History, Vol. 13, No. 1, (January 1995), pp. 1–27

Note: Examination scheme and mode shall be as prescribed by the ExaminationBranch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-4): Educational Arrangements and Knowledge in Modern India

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Educational Arrangements and Knowledge in Modern India	**4**	**3**	**1**	**0**	**12th Pass**	**NIL**

Learning Objectives

This course will provide students a critical understanding of different historical traditions of transmission of learning and educational apparatus in India from indigenous to colonial and their socio-political aspects.

Learning outcomes

- The course will allow them to understand the diverse manner in which production of knowledge and its preservation and transmission took place through formal and informal
- socio-cultural networks within indigenous education in India at the eve of colonial encounter.
- It will enhance learners' comprehension of the complex historical trajectories of the expansion as well as limitations of educational opportunities in India during colonial and post-colonial periods.
- It will help them to engage with the issues of contemporary education in light of colonial trajectories of our historical development.

SYLLABUS OF GE

Unit 1. Debates on Forms of Knowledge, nature of institutions, pedagogy and social participation within Indigenous Education in India and its interface with colonialism.
Unit 2. Colonial Education in India.
Unit 3. Chief characteristic features of educational discourse of Freedom Struggle in India.
Unit 4. Critical appraisal of educational policies, institutions and practices in Independent India from 1947 to 1990s.

Practical component (if any) - NIL

Essential/recommended readings

Unit 1. This unit will familiarize students with different forms of knowledge and institutions of learning that were prevalent in India during late 18th and 19th centuries. It will engage with the question of their decline in relation with the different historiographical debates. It shows how the two systems, indigenous and colonial interfaced or encountered with each other during 18th and 19th century. How this impacted upon different spheres of knowledge formation and forms of transmission or pedagogy within informal as well as formal centres of learning. (Ten hours)

Essential Readings:

- Acharya, Poromesh. (2000), *Desaj Siksha, Aupniveshik Virasat and Jatiya Vikalp*, (translated in Hindi by Anil Rajimwale), Granth Shilpi, New Delhi. Alternatively, Acharya, Poromesh. (1978) 'Indigenous Vernacular Education in Pre-British Era: Traditions and Problems', *Economic and Political Weekly,* 13, 1983-88.
- Dharampal. (1971), Indian Science and Technology in the Eighteenth Century: Some Contemporary European Accounts, Delhi: Impex India. (Especially Introduction, pp. 1-36).
- Dharampal (ed.). (1983), *The Beautiful Tree*: *Indigenous Education in the Eighteenth Century*, New Delhi, Biblia Impex, (Specially Introduction, pp. 7-80).
- Dibona, Joseph (ed.). (1983), *One Teacher One School*, New Delhi, Biblia Impex (Specially Introduction, pp. 4-40).
- Rajan, Janaki. (2022), 'The School Teacher in India', in Vikas Gupta, Rama Kant Agnihotri & Minati Panda, (eds.), *Education and Inequality: Historical Trajectories and Contemporary Challenges*, Hyderabad: Orient Blackswan, pp. 135-159.
- Farooqui, Amar. (2021), 'Some Aspects of Education and Knowledge Formation in Nineteenth-Century Delhi', in Vikas Gupta, Rama Kant Agnihotri & Minati Panda, (eds.), *Education and Inequality: Historical Trajectories and Contemporary Challenges*, Hyderabad: Orient Blackswan, pp. 211-224.
- Shukla, Suresh Chandra. (1959), *Elementary Education in British India during Later Nineteenth Century*, New Delhi: Central institute of Education.

Unit 2. This unit explores how a complex relationship of coalition and conflict emerged between European officers and upper classes and castes of Indian society with the arrival of European trading companies and Christian Missionaries and how it reordered the arrangements of knowledge and learning in India. What kind of structure of curricular knowledge and formal education emerged out of this coalition and interface? What were its implications for knowledge formation and languages of its transmission? The unit also examines the efforts made by non-state agencies like Christian Missionaries and social reformers for spreading this knowledge to backward castes, Muslims and women. (Thirteen Hours)

Essential Readings:

- Bhattacharya, Sabyasachi (ed.), (2002), *Education and the Disprivileged: Nineteenth and Twentieth Century India*, New Delhi: Orient Longman Private Limited.
- Constable, Philip. (2000), 'Sitting on the School Verandah: The ideology and Practice of 'Untouchable' Educational protest in late Nineteenth-Century Western India', *IESHR*, Vol. 37, No. 4, pp. 383-422.
- Dewan, Hariday Kant, Agnihotri, Rama Kant, Chaturvedi Arun, Sudhir, Ved Dan and Dwivedi Rajni, eds., (2017), *Macaulay, Elphinstone Aur Bhartiya Shiksha*, New Delhi: Vani Prakashan.
- Frykenberg, R. E. (1986), 'Modern Education in South India, 1784-1854: Its Roots and Role as a Vehicle of Integration under Company Raj', *American Historical Review*, Vol. 91, No. 1, February, pp. 37-65.
- Gupta, Vikas. Agnihotri, Rama Kant and Panda Minati (eds.). (2021), Education and Inequality: Historical and Contemporary Trajectories', Hyderabad: Orient Blackswan. (Parts I and II, pp. 1-312).
- Gupta, Vikas. (2012), 'Pluralism versus Contest of Identities', Seminar, no. 638, (Oct.), pp. 30–36.
- Hardy, Peter. (1972), *Muslims of British India*, Cambridge: Cambridge University Press. (Especially Chapters 2, 3 and 4, pp. 31-115).

- Kumar, Krishna. (2014), *Politics of Education in Colonial India*, New Delhi, Routledge.
- Kumar, Krishna and Oesterheld, Joachem (eds.). (2007), *Education and Social Change in South Asia*, New Delhi, Orient Longman (Essays by Sanjay Seth, Heike Liebau, Sonia Nishat Amin, and Margret Frenz).
- Minault, Gail. (2003), 'Master Ramchandra of the Delhi College: Teacher, Journalist, and Cultural
- Intermediary', Annual of Urdu Studies 18: 95–104.
- Nambissan, Geetha B. (1996), 'Equity in Education? Schooling of Dalit Children in India', *EPW* 31, pp. 1011-24.
- Raina Dhruv. (2021), Transcultural Networks and Connectivities: The Circulation of Mathematical Ideas between India and England in the Nineteenth Century, Contemporary Education Dialogue.
- Rao, Parimala V. (2020), *Beyond Macaulay: Education in India, 1780-1860*, New York, Routledge.
- Sangwan, Satpal. (1990), 'Science Education in India under Colonial Constraints, 1792-1857', Oxford Review of Education, vol. 16, no. 1.
- Shetty, Parinita. (2008), 'Missionary pedagogy and Christianization of the heathens: The educational institutions introduced by the Basel Mission in Mangalore', *Indian Economic Social History Review,* Vol. 45, pp. 509-51.
- Zelliot, Eleanor. (2014), 'Dalit Initiatives in Education, 1880-1992', in Parimala V. Rao, (ed.), *New Perspectives in the History of Indian Education*, New Delhi, Orient BlackSwan, pp. 45-67.

Unit 3. This unit explores various educational demands as articulated during freedom struggle as a critique of colonial as well as internal social hegemony. It also critically examines the politics, fate and legacy of specific education movements and experiments, such as Swadeshi, Nai Talim and the campaign for compulsory elementary education. (Ten hours)

Essential Readings:

- Acharya, Poromesh. (1997), 'Educational Ideals of Tagore and Gandhi: A Comparative Study', EPW, 32, pp 601-06.
- Bhattacharya, Sabyasachi (ed.). (1998.), The Contested Terrain: Perspective on Education in India, Orient Longman, New Delhi, (Especially Introduction pp. 3-26; Chapter 1 pp. 29-53; Chapters 11 and 12 pp. 255-274; Chapter 14 pp. 290-302; and Chapter 18 pp. 357-379).
- Bhattacharya, Sabyasachi, Bara, Joseph and Yagati, Chinna Rao (eds.). (2003), Educating the Nation: Documents on the Discourse of National Education in India (1880-1920), Kanishka Publishers Distributors. (Specially Introduction, pp. vii-xxviii).
- Bhattacharya, Sabyasachi (ed.). (2001), Development of Women's Education in India 1850-1920 (A collection of Documents), Kanishka Publications, New Delhi (Introduction pp. ix-xlviii).
- Chatterji, Basudev (ed.). (1999), 'Towards Freedom (1938 Watershed)' Oxford University Press for ICHR, (Vol. I. chapter 8 pp. 754-836).
- Gupta, Vikas. (2018), 'Bhaurao Patil's Educational Work and Social Integration', Inclusive, Vol. 1, Issue 12. (January), 2018. http://www.theinclusive.org/posts/2018-01-spart-04.html
- Mondal, Ajit and Mete, Jayanta. (2016), Right to Education in India (two Volumes), Delhi: Gyan Publishing House.
- Rao, Parimala V. (2013) 'Compulsory Education and the Political Leadership in Colonial India, 1840-1947' in Parimala V. Rao (ed.), New Perspectives in the History of Indian Education, New Delhi, Orient BlackSwan, pp. 151-175.

- Sarkar, Sumit. (1973), Swadeshi Movement in Bengal (1903-1908), People's Publishing House, (Chapter 4, pp. 149-181).

Unit 4. Focussing upon post-independence period, this unit makes a critical appraisal of the Constitutional values and framework for education; foundation of newer educational-cultural institutions; national integration of communities; promotion of science and technology; national education policies, schemes and amendments (issues of access, participation, equity and governance); debates on the medium of education and 3 language formula; and the social context of learning. (Twelve hours)

Essential Readings:

- Agnihotri, R. K. (2015), 'Constituent Assembly Debates on Language', *Economic & Political Weekly*, vol. no. L 8, (February 21), pp. 47-56.
- Kumar, Krishna. (1983) 'Educational Experience of Scheduled Castes and Tribes,' *Economic and Political Weekly*, vol. 18, no. 36, pp. 1566–1572.
- Gupta, Vikas. (2014), 'Changing Discourses on Inequality and Disparity: From Welfare State to Neoliberal Capitalism', in Ravi Kumar, (Ed.), Education, State and Market: Anatomy of Neoliberal Impact, Aakaar, pp. 19-57.
- Naik, J.P. (1975), *Equality, Quality and Quantity: The Elusive Triangle in Indian Education*, New Delhi, Allied Publishers.
- Naik, J.P. (1982). The education commission and after. APH Publishing.
- Pathak, Avijit. (2002), *Social Implications of schooling: Knowledge, Pedagogy and Consciousness*, Rainbow Publishers, Delhi.
- Pandey, R.S. And Advani, Lal. (1995), *Perspectives in Disability and Rehabilitation*, New Delhi, Vikas Publishing House.
- Raina, Dhruv. (2006), 'Science since Independence', *India International Centre Quarterly,* 33, no. 3/4: 182–95. http://www.jstor.org/stable/23006080.
- Vaugier-Chatterjee, Anne. (2004), *Education and Democracy in India*, New Delhi, Manohar.
- Qaiser, Rizwan. (2013), 'Building Academic, Scientific and Cultural Institutions, 1947-1958' in his *Resisting Colonialism and Communal Politics*, Delhi, Manohar, (First published 2011). pp. 179-240.

Suggestive readings:

- Crook, Nigel. (ed.). (1996), *The Transmission of Knowledge in South Asia*: *Essays on Education, Religion, History, and Politics, Delhi*, Oxford University Press.
- Das Gupta, Jyotirindra. (2018), Language Conflict and National Development: Group Politics and National Language Policy in India. University of California Press. First published, 1970.
- Gandhi, Mahatma. (1938), *Educational Reconstruction*, Wardha, Hindustani Talimi Sangh.
- Ghosh, S. C. (2007), *History of education in India*, Rawat Publications.
- Gupta, Vikas. (2017a), 'Cultural Marginality and Reproduction of Stereotypes: An Insider's View on Practices of School' in Manoj Kumar Tiwary, Sanjay Kumar and Arvind Mishra (eds.), *Social Diversity, Inclusive Classroom and Primary Education in India*, New Delhi, Orient Blackswan.
- Habib, S. Irfan and Raina, Dhruv (eds.). (2007), Social History of Science in Colonial India. India, Oxford University Press.
- Hunter, William Wilson. (1883), *Report of the Indian Education Commission*, Calcutta, Superintendent of Government Printing, (Specially Chapter 3, pp. 55-79).
- Kumar, Krishna. (2009), 'Listening to Gandhi' in his what is Worth Teaching? Orient

Longman, (Third Edition), Ch. 9, pp 111-128.
- Minault, Gail. (1998), *Secluded Scholars: Women's Education and Muslim Social Reform in Colonial India*. Delhi: Oxford University Press.
- Naik, J.P. & Nurullah, Syed. (2004), *A Students' History of Education in India, (1800-1973)*, Delhi, Macmillan India Ltd, First Published 1945, Sixth Revised Edition 1974, Reprinted 2004. (Also available in Hindi).
- Naik, J.P. (1941), 'Compulsory Primary Education in Baroda State: Retrospect and Prospect' (First published in the Progress of Education, Poona, and thereafter published in book form).
- Oesterheld, Joachim. (2009) 'National Education as a Community Issue: The Muslim Response to the Wardha Scheme', in Krishna Kumar and Joachem Oesterheld, (eds.), Education and Social Change in South Asia, New Delhi, Orient Longman, pp. 166-195.
- Rai, Lajpat. (1966), The Problem of National Education in India, Publications Division, New Delhi.
- Sarangapani, Padma M. and Pappu Rekha. (2021), *Handbook of education systems in South Asia, Singapore*: Spingar Nature. (Volume 1).
- Seth, Sanjay. (2008), *Subject Lessons*: *The Western Education of Colonial India*, Delhi, OUP, pp. 17-46.
- Suman, Amit K. (2014), 'Indigenous Educational Institutions in Upper Gangetic Valley: Curriculum, Structure and Patronage, Social Scientist, vol.42, no.3-4, March-April.
- Suman, Amit K. (2018), 'The Quest for Education: An Insight into the Educational Theories and Practices of the Colonial Government in Bengal Presidency', in the Indian Historical Review, vol. 45, issue 2, Sage Publications, pp. 1-16.
- Venkatanarayanan, S. (2013), "Tracing the Genealogy of Elementary Education Policy in India Till Independence" SAGE Open, Sage Publications

Note: Examination scheme and mode shall be as prescribed by the ExaminationBranch, University of Delhi, from time to time.

SEMESTER – V

DEPARTMENT OF HISTORY

COURSES OFFERED BY DEPARTMENT OF HISTORY

Category I

[UG Programme for Bachelor in History (Honours) degree in three years]

DISCIPLINE SPECIFIC CORE COURSE -1 (DSC-1) – : History of India – V: c. 1500 – 1600

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
History of India – V: c. 1500 – 1600	4	3	1	0	12 th Pass	Should have studied History of India – IV: c. 1200 – 1500

Learning Objectives

The course is intended to engage students into a critical discussion of political, institutional and cultural processes that led to the establishment and consolidation of theMughal state in India. It also provides a basic understanding of major developments in other regions of the Indian sub-continent not ruled by the Mughals in the sixteenth century. The students would familiarise themselves with the nature and variety of sources as well as the diverse and uneven ways in which historians have treated and interpreted them

Learning outcomes

Upon completion of this course the student shall be able to:

- Critically evaluate major sources available in Persian and vernacular languages forthe period under study
- Compare, discuss and examine the varied scholarly perspectives on the issues ofthe establishment and consolidation of the Mughal state.
- Explain the religious milieu of the time by engaging with some prominent religious traditions.
- Discuss how different means such as visual culture was used to articulate authorityby the rulers
- Discern the nuances of the process of state formation in the areas beyond thedirect control of the Mughal state.

SYLLABUS OF DSC

Unit I: Sources and Historiography

1. An overview of Persian Literary Traditions
2. Vernacular Literature- Brajbhasha and Telugu/Tamil

Unit II: Political Formations and Institutions

1. Mughal state- Role of Military tactics and technology; Changing notions ofKingship ; Institutions (Evolution of Mansab, Jagir and land revenue system)
2. Rajput and Ahom Political culture
3. Formation of Nayaka states of Madurai, Thanjavur and Jinji

Unit III: Political and Religious Ideas

1. Sulh-i-kul and Akhlaqi tradition; Ideological challenges
2. Vaishnava Bhakti Traditions of North India
3. Shaivite traditions

Unit IV: Visual culture and articulation of Authority

1. Fatehpur Sikri.
2. Chittor Fort.
3. Temples and Gopurams of the Nayakas: Meenakshi temple

Practical component (if any) – NIL

Essential/recommended readings

Unit I. This unit introduces students to the available Persian and vernacular literary sources for the study of the period under study. It also provides an opportunity to the students to critically analyse these sources based on their modern historiographical interpretations. **(Teaching Time: 9 hrs. approx.)**

Essential Readings:

- Rizvi, S. A. A. (1975)- Religious and Intellectual History of the Muslims During the Reign of Akbar (1556-1605), Delhi: Munshiram Manoharlal
- Truschke, Audrey (2016). Culture of Encounters, New Delhi: Penguin Allen Lane, (Chapter 4 'Abul Fazl Redefines Islamicate Knowledge and Akbar's Sovereignty', pp. 142- 165)
- Alam, Muzaffar (2004). Languages of Political Islam, Delhi: Permanent Black, (Chapter 4, 'Language and Power', pp. 115-140)
- Ali, S Athar. (1992). "Translations of Sanskrit Works at Akbar's Court" Social Scientist, vol. 20 no.9, pp, 38-45
- Busch, Allison (2005), "Literary Responses to the Mughal Imperium: the Historical Poems of Kesavdas" in South Asia Research, Vol. 25, No.1, pp 31-54
- Busch, Allison (2010) "Hidden in Plain view: Brajbhasha poets at the MughalCourt"
- Modern Asian Studies. Vol. 44, No.2, pp 267-309
- Sharma, Sandhya (2011). Literature, Culture and History in Mughal NorthIndia, 1550- 1800, Delhi: Primus (Introduction and Chapter 5)
- Rao, V N, David Shulman, and Sanjay Subrahmanyam (eds.) (2001). Textures ofTime: Writing History in South India 1600-1800, Delhi: Permanent Black
- Sreenivasan, Ramya (2014) "Rethinking Kingship and Authority in South Asia: Amber (Rajasthan), Ca. 1560-1615." Journal of the Economic and Social History of the Orient 57, no. 4, pp 549–86

Unit II. This unit enables students to understand the various contexts and processes involved in the establishment and consolidation of the Mughal state encompassing such themes as the role of military tactics and technology,legitimacy through innovative notions of kingship and administrative institutions. Besides the Mughal state, it also discusses other political formations, some of considerable resilience and importance that complicated the processes of imperial integration. To provide a rounded picture of these developments the unit also discusses the histories of the emerging Rajput regimes. To underline the variegated nature of politics of this period, the unit also studies the Nayaka state formation in South India. **(Teaching Time- 15 hrs. approx.)**

- Gommans, Jos J L. (2002). Mughal Warfare: Indian Frontiers and Highroads to Empire, 1500-1700, London and New York: Routledge
- Gommans, Jos J L & Dirk H A Kolff, eds. (2001). Warfare and Weaponry inSouth Asia 1000-1800, New Delhi: OUP, (Introduction)
- Streusand, Douglas E. (1989). The Formation of the Mughal Empire, Delhi: Oxford University Press
- Tripathi, R P. (1959). Some Aspects of Muslim Administration. Allahabad: TheIndian Press. (Chapter on 'Turko-Mongol Theory of Kingship')
- Khan, I.A. (1972). "The Turko-Mongol Theory of Kingship", in K A Nizami (Ed.).
- Medieval India-A Miscellany, Vol. II, London: Asia Publishing House.
- Richards, J F. (1996). The Mughal Empire, Cambridge, Cambridge University Press. (Introduction & Chapters 1-4)
- Alam, M and S Subrahmanyam (eds.) (1998). The Mughal State, 1526-1750, Delhi: OUP, (Introduction)
- Ali, S Athar (Revised 1997) -The Mughal Nobility Under Aurangzeb, Delhi:Oxford University Press (Chapter 2)
- Moosvi, Shireen. (1981). "The Evolution of the Mansab System under Akbar until 1596- 97", Journal of the Royal Asiatic Society of Great Britain & Ireland, Vol. 113 No. 2, pp. 173-85,
- Habib, Irfan (1999), The Agrarian System of Mughal India (1556-1707), OUP, New Delhi (Chapter 6)
- Khan, IqtidarAlam (1968). "The Nobility Under Akbar and the Development of his Religious Policy ,1560-80", Journal of Royal Asiatic Society, No 1-2 , pp.29- 36
- Ziegler, Norman P (1998)- "Some Notes on Rajput Loyalties During the MughalPeriod" in John F. Richards, (Ed.). Kingship and Authority in South Asia, Delhi: Oxford University Press, pp. 242-284.
- Zaidi, S Inayat A. (1997). "Akbar and Rajput Principalities- Integration into Empire" in Irfan Habib (ed.) Akbar and His India, Delhi: Oxford University Press
- Chandra, Satish. (1993). Mughal Religious Policies, The Rajputs and The Deccan, Delhi: Vikas Publishing House.
- Balabanlilar, Lisa (2013). Imperial Identity in the Mughal Empire, New Delhi: Viva Books. (Introduction and Chapters 1 and 2)
- Rao, V N, David Shulman, and S. Subrahmanyam (1992). Symbols ofSubstance: Court and State in Nayaka Period Tamilnadu, Delhi: Oxford University Press
- Rao, V, & Subrahmanyam, S. (2012). 'Ideologies of state building in Vijayanagara and post-Vijayanagara south India: Some reflections' In P. Bang& D. Kolodziejczyk (Eds.), Universal Empire: A Comparative Approach to Imperial Culture and Representation in Eurasian History, Cambridge,Cambridge University Press, pp 210-232

- Dirks, Nicholas B (2007). The Hollow Crown. Ethnohistory of an Indian Kingdom,
- Cambridge: Cambridge University Press (Introduction)
- Howes, Jennifer (2003). The Courts of Pre-colonial South India, London: Routledge. (Introduction and Chapter 3)
- Karashima, Noboru (1985). "Nayaka Rule in North and South Arcot Districts in South India During the 16th Century", Acta Asiatica, Vol. 48, pp. 1-25

UNIT III: This unit seeks to capture the political and religious milieu of the times focussing on developments in Indian Islam as well as more generally on cross- cutting ideas in circulation in north India manifested in the teachings of Vaishnava Bhakti saints. **(Teaching Time: 12 hrs. approx.)**

- Rizvi, S.A.A. (1975). Religious and Intellectual History of the Muslims During the Reign of Akbar (1556-1605). New Delhi: Munshiram Manoharlal
- Alam, Muzaffar (2004). The Languages of Political Islam: India (1200-1800), Delhi: Permanent Black (Introduction, Chapters 2 and 5)
- Ali, S Athar (2008), "Sulh-i-Kul and Religious Ideas of Akbar" in Mughal India: Studies in Polity, Ideas, Society and Culture, Delhi: Oxford University Press
- Moosvi, Shireen (2007). "The Road to Sulh-i-Kul: Akbar's Alienation from Theological Islam" in Irfan Habib (ed.) Religion in History, Delhi: Tulika
- Friedman, Yohanan (1971), Shaykh Ahmad Sirhindi: An Outline of His Thought and a Study of His Image in the Eyes of Posterity, McGill- Queen's University Press, Montreal (Introduction)
- Lorenzen, David N. (1995). Bhakti Religion in North India: Community Identity and Political Action, New York: State University of New York Press (Introduction)
- Chatterjee, K. (2009). "Cultural Flows and Cosmopolitanism in Mughal India: The Bishnupur Kingdom", Indian Economic and Social History Review, vol. 46, No. 2, pp. 147- 82.
- Dalmia, Vasudha (2015), 'Hagiography and the "other" in the Vallabha Sampradaya' in Vasudha Dalmia and Munis D Faruqi (eds), Religious Interactions in Mughal India, New Delhi, OUP.
- Stewart, Tony K (2013), 'Religion in Subjunctive: Vaishnava Narrative Sufi Counter-Narrative in Early Modern Bengal', The Journal of Hindu Studies, Vol 6, pp 52-72

Unit IV: This unit focuses on the nuanced usage of visual culture (particularly architecture) an effective means to articulate authority by rulers of different backgrounds and political ambitions. **(Teaching Time: 9 hrs. approx.)**

- Asher, Catherine B. (1992). Architecture of Mughal India, Cambridge: Cambridge University Press (PP 51-74)
- Brand, Michael, and Glen D Lowry (Eds.). (1987). Fatehpur Sikri, Bombay: Marg Publications (Chapters 2-7)
- Koch, Ebba. (2002). Mughal Architecture: An Outline of its History and Development, 1526-1858, New Delhi, New York: Oxford University Press (Introduction, Chapter on Akbar)
- Sharma, Rita and Sharma, Vijay (2020), Forts of Rajasthan, Rupa Publications
- Jaweed, Md Salim (2012), 'Rajput Architecture of Mewar From 13th to 18th Centuries",
- PIHC, Vol 73, pp 400-407

- Asher, Catherine B (2020), 'Making Sense of Temples and Tirthas: Rajput Construction Under Mughal Rule', The Medieval History Journal, Vol 23, Part1, pp 9-49
- Tillotson, Giles Henry Rupert (1987). The Rajput Palaces: The development of an architectural style, 1450-1750. Yale Univ. Press, (Chapters 1-3)
- Mitchell, George. (1995). Architecture and Art of Southern India: Vijayanagara and the Successor States 1350-1750, Cambridge: Cambridge University Press
- Eaton, Richard M. And Phillip B. Wagoner. (2014). Power, Memory, Architecture: Contested Sites on India's Deccan Plateau, 1300-1600. New Delhi:Oxford University Press. (Chapters 2 and 3)
- Karashima, Noboru (2014). A Concise History of South India: Issues and Interpretations,
- New Delhi,Oxford University Press. (Section 6.1-6.6)
- Rao, V N, David Shulman, and S. Subrahmanyam. (1992). Symbols of Substance: Court and State in Nayaka Period Tamilnadu, Delhi: Oxford University Press

Suggestive readings

- Eaton, Richard (2019). India in the Persianate Age, 1000-1765, New Delhi, Penguin Allen Lane (Chapter 5).
- Kolff, Dirk H.A. (1990). Naukar, Rajput and Sepoy: the Ethnohistory of the military labour market in Hindustan, 1450-1850. Cambridge: Cambridge University Press, pp. 1-116 (valuable for the social contexts of political and military expansion in the 16th century).
- Talbot, Cynthia (2013), 'Becoming Turk the Rajput Way: Conversion & Identity in an Indian Warrior Narrative', Richard Eaton et al, Expanding Frontiers in South Asian and World History, Essays in Honour of JF Richards, Cambridge University Press
- RaziuddinAquil. (2007). Sufism, Culture and Politics: Afghans and Islam in Medieval North India, Oxford: Oxford University Press.
- Richards, J F. (1998). "The Formulation of Imperial Authority under Akbar and Jahangir" in Kingship and Authority in South Asia, Delhi: Oxford University Press, pp. 285-326.
- Sharma, Krishna (2003). Bhakti and Bhakti Movement, Delhi: Munshiram Manoharlal Publishers
- Habib, Irfan (ed.1997) Akbar and His India, Delhi: Oxford University Press
- Siddiqui, N A. (reprint 1989). Land Revenue Administration under the Mughals(1700-1750). New Delhi: Munshiram Manoharlal Publishers
- Chandra, Satish. (Ed.) (2005). Religion, State and Society in Medieval India: Collected Works of Nurul Hasan, Delhi: Oxford University Press
- Aquil, Raziuddin and Kaushik Roy (2012)- Warfare, Religion and Society in Indian History, Delhi: Manohar publishers and Distributors (Chapters 3 and 4)
- Nizami, K A (1983). On History and Historians of Medieval India, New Delhi: Vedic Books
- Spear, Percival (2009). "The Mughal Mansabdari System" in Edmund Leechand S N Mukherjee (eds.) Elites in South Asia, Cambridge: Cambridge University Press
- Alam, Muzaffar (2021). The Mughal and the Sufis: Islam and Political Imagination in India, Ranikhet: Permanent Black, pp 1-93 (Chapters 1 and 2)
- Talbot, Cynthia, and Catherine B Asher (2006). India Before Europe, Cambridge: Cambridge University Press

- Bahugana, R.P. (2008). “Kabir and other Medieval Saints in Vaishnava Tradition”, PIHC, Vol. 69, pp 373-383
- Rezavi, Nadeem, (2013) Fatehpur Sikri Revisited, OUP. Readings in Hindi Medium
- Chandra, Satish (2018). Madhyakalin Bharat (Part II), Sultanat se Mughal Ka lTak, New Delhi: Jawahar Publishers & Distributors
- Habib, Irfan (Ed.).(2000). Madhyakalin Bharat, (Vols. 1-8, relevant articles), New Delhi: Rajkamal Prakashan
- Habib, Irfan (Ed.). (2016). Akbar Aur Tatkaleen Bharat, New Delhi: Rajkamal Prakashan
- Habib, Irfan. (2017). Madhyakalin Bharat ka ArthikItihas: Ek Sarvekshan, NewDelhi: Rajkamal Prakashan
- Verma H C. (Ed.) (2017). Madhyakalin Bharat (Vol. II) 1540-1761, HindiMadhyam Karyanvan Nideshalaya, Delhi University
- Mukhia Harbans (2008), Bhartiya Mughal, Urdu Bazaar, New Delhi

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 2 (DSC-2): History of India – VI: c. 1750 – 1857

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
History of India – VI: c. 1750 – 1857	4	3	1	0	12 th Pass	Should have studied History of India – IV: c. 1200 – 1500

Learning Objectives

The paper introduces students to key features of the 18th century in the Indian subcontinent. It analyses the interface between the 18th century kingdoms and the early colonial state. The pa-per also discusses the processes by which the British East India Company transformed itself into a state and gradually consolidated its position over a vast expanse. Apart from the evolution of colonial institutions of governance and developing forms of colonial exploitation, the paper also highlights the interface between Company Raj and indigenous elite on various social issues. The paper concludes with a critical survey of peasant resistance to colonial agrarian policies, and the 1857 revolt against the Company Raj.

Learning outcomes

Upon completion of this course the student shall be able to:

- Outline key developments of the 18th century in the Indian subcontinent.
- Explain the establishment of Company rule and important features of theearly colonial regime.
- Explain the peculiarities of evolving colonial institutions and their impact.
- Elucidate the impact of colonial rule on the economy.
- Discuss the social churning on questions of tradition, reform, etc. during thefirst century of British colonial rule.
- Assess the issues of landed elites, and those of struggling peasants, tribals and artisans during the Company Raj.

SYLLABUS OF DSC

Unit I: India in the mid-18th Century: society, economy, polity and culture

1. Issues and Debates
2. Continuity and change

Unit II: Colonial expansion: policies and methods with reference to any two of the following Bengal, Mysore, Marathas, Awadh, Punjab and the North- East

Unit III: Colonial state and ideology

1. Imperial ideologies: Orientalism, Utilitarianism, and Evangelicalism
2. Indigenous and colonial education

Unit IV: Economy and Society

1. Land revenue systems and its impact
2. Commercialization of agriculture
3. De-industrialization

Unit V: 19th Century: Reforms and Revival

1. Young Bengal, Brahmo Samaj, Prathana Samaj, Faraizis and Wahabis, AryaSamaj
2. Discourse on Gender and Caste in Reform and revival movement

Unit VI: Popular resistance

1. The Uprising of 1857
2. Peasant resistance to colonial rule: Santhal Uprising (1856); Indigo Rebellion(1860). Kol Uprising (1830-32)

Practical component (if any) - NIL

Essential/recommended readings

Unit-I: This Unit enables the students to outline key developments of the 18th century in the Indian subcontinent. These developments are discussed through key debates on the varied historical evidence used by historians when examining the weakening Mughal state, growth of regional kingdoms, changing dynamics of the economy, evolving social structures, cultural patterns, etc. **(Teaching Time: 9 hrs. approx.)**

- Alavi, Seema(ed.). (2002). The Eighteenth Century in India. New Delhi: OUP (Introduction).
- Bayly, C.A. 1988. Indian Society and the making of the British Empire. Cambridge: CUP (Chapter1, pp. 7- 44).
- Parthasarathi, Prasannan. 2011. Why Europe Grew Rich and Asia Did Not: Global Economic Divergence, 1600- 1850. Cambridge: CUP (Introduction and Part I, pp. 1-88; Part III, pp. 185- 269).
- Faruqui, Munis D. 2013. “At Empire’s End: The Nizam, Hyderabad and Eighteenth Century India,” In Richard M. Eaton, Munis D. Faruqui, David Gilmartin and Sunil Kumar (Eds.), Expanding Frontiers in South Asian andWorld History: Essays in Honour of John

- F. Richards (pp. 1- 38).

Unit- II: This Unit introduces the students to the political process by which Company rules was established in the Indian subcontinent. The unit shall also acquaint students with the important features of the 18th century states and how they came to be positioned vis-à-vis an expanding Company state. **(Teaching Time: 6 hrs. approx.)**

- Bandyopadhyay, Sekhar. (2004). From Plassey to Partition: A History of Modern India. New Delhi: Orient Blackswan (Chapter 1, 'Transition to the Eighteenth Century', pp. 37- 62).
- Bayly, C. A. (2008). Indian Society and the making of the British Empire. Cambridge: CUP (Chapter 2, 'Indian Capital and the Emergence of Colonial Society' pp. 45- 78; Chapter 3, 'The Crisis of the Indian State', pp. 79- 105).
- Fisher, Michael H. (1996).The Politics of British Annexation of India 1757-1857. Oxford: OUP (Introduction).
- Marshall, P.J. (1990). Bengal: The British Bridgehead. Cambridge: CUP.
- Cederlof, Gunnel. (2014). Founding an Empire on India's North- Eastern Frontiers 1790- 1840: Climate, Commerce, Polity. OUP.
- Farooqui, Amar, (2013), Zafar and The Raj: Anglo- Mughal Delhi c. 1800-1850, Primus Books, Delhi.

Unit-III: The unit shall discuss in detail and familiarise students with the evolving ideological underpinnings of the Company state, the idea of difference which developed within the imperial discourse and the manner in which colonial education policy and system evolved. **(Teaching Time: 6 hrs. approx.)**

- Metcalf, Thomas R. (2007 reprint). Ideologies of the Raj, Cambridge: CUP(Chapters 1,2 & 3).
- Wagoner, Phillip B. (October 2003). "Pre- colonial Intellectuals and the Production of Colonial Knowledge". Comparative Studies in Society and History, 45 (4), pp. 783- 814.
- Stokes, Eric. (1982 reprint). The English Utilitarians and India. Oxford: OUP (Chapter 'Doctrine and its Setting')
- Rocher, Rosanne. (1993). "British Orientalism in the Eighteenth Century: The Dialectics of Knowledge and Government", in Peter van der Veer and Carol Breckenridge eds. Oriental- ism and the Post- colonial Predicament: Perspectives on South Asia. University of Pennsylvania Press, pp. 215-250.
- Viswanathan, Gauri. (2014 reprint). Masks of Conquest: Literary Study and British Rule in India. New York: Columbia University Press (Introduction and Chapters 1 to 4).
- Copland, Ian. (2007). "The Limits of Hegemony: Elite Responses to Nineteenth-Century Imperial and Missionary Acculturation Strategies in India". Comparative Studies in Society and History. Vol. 49. No. 3. (637- 665).
- Bhattacharya, Sabyasachi (ed.). (1998). The Contested Terrain: Perspectives on Education in India. New Delhi: Orient Blackswan ("Introduction").
- Dharampal. The Beautiful Tree: Indigenous Indian Education in the Eighteenth Century. Vol III, Goa, Other India Press

Unit-IV: This Unit shall familiarise students with the key debates on the economic impact of Company Raj. Students shall assess this impact by looking at changing agrarian relations, crop cultivation, and handicraft production. **(Teaching Time: 9 hrs.approx.)**

- Stein, Burton. (ed.). (1992).The Making of Agrarian Policy in British India 1770-1900. Ox- ford: OUP (Introduction (pp.1-32)& Chapter 4(pp.113-149)).
- Tomlinson, B.R. (2005).The Economy of Modern India 1860-1970. Cambridge: CUP (Chapter 2, pp.47- 67)
- Bose, Sugata. (Ed.). (1994).Credit, Markets and the Agrarian Economy of Colonial India. New Delhi: Oxford University Press (Introduction (pp. 1-28) & Chapter 2 (pp. 57-79)).
- Chandra, Bipan. (1999). "Colonialism, Stages of Colonialism and the Colonial State", in- Bipan Chandra, Essays on Colonialism, New Delhi: Orient Longman, pp. 58-78.
- Ray, Indrajit. (2016). "The Myth and Reality of Deindustrialization in Early Modern India", in LatikaChaudhary et al. (Eds.) A New Economic History of Colonial India. New York: Routledge. (52- 66).
- Sumit Sarkar (2014) Modern Times, India 1880s – 1950s, Permanent Black, New Delhi. Chapters 3 & 4
- Shrivastava, Sharmila, Slopes of struggle: Coffee on Baba Budan hills, Indian Economic and Social History Review, Volume LVII, Number 2, (April – June 2020) pp. 199 - 228

Unit-V: This Unit shall acquaint students with the social churning on questions of tradition, modernity, reform, etc. that unfolded during first century of British colonialrule. Through special focus on gender concerns, gender roles in the household and ideas of 'ideal womanhood', the unit shall enable students to contextualize theendeavours of nineteenth-century social reformers and nationalists. (**Teaching Time: 9 hrs. approx.)**

- Jones, Kenneth. (2003). Socio-Religious Reform Movements in British India(pp. 15-47; pp. 122- 131).
- Joshi, V.C. (ed.). (1975).Rammohun Roy and the Process of Modernization in India. Vikas Publishing House (essays by A.K. Majumdar and Sumit Sarkar).
- Singh, Hulas. (2015). Rise of Reason: Intellectual History of 19th-century Maharashtra. Taylor and Francis (pp. 1- 197).
- Sarkar, Sumit and Tanika Sarkar (eds.).(2008). Women and Social Reform in India: A Reader. Bloomington and Indianapolis: Indiana University Press (Chapters 1, 2 and 4).
- Loomba, Ania. (Autumn 1993). "Dead Women Tell No Tales: Issues of Female Subjectivity, Subaltern Agency and Tradition in Colonial and Post- Colonial Writings on Widow Immola- tion in India".History Workshop, 36, pp.209–227.
- Kopf, David. (1969). British Orientalism and the Bengal Renaissance: The Dynamics of Modernization. Berkeley, Los Angeles: University of California Press (Introduction).

- Panikkar, K.N. (1995). Culture, Ideology, Hegemony: Intellectuals and Social Consciousness in Colonial India. New Delhi: Tulika(pp. 1-26 & pp. 47-53).
- Chakravarti, Uma. (1998). Rewriting History: The Life and Times of Pandita Ramabai. New Delhi: Kali for Women (Chapter, 'Caste, Gender and the State in Eighteenth Century Maha- rashtra', pp. 3-42).

Unit-VI: This Unit shall enable students to identify and discuss the issues reflected in the major uprisings of the nineteenth century. In the context of heavy revenue assessment, changing land rights, deepening stratification within the rural society, emergence of new social forces in agrarian economy, etc., students shall discuss the discontent of the landed elite, and those of struggling peasants and tribals during the Company Raj. **(Teaching Time: 6 hrs. approx.)**

- Stokes, Eric and C.A. Bayly. (1986). The Peasant Armed: the Indian Revolt of 1857. Claren- don Press (Introduction).
- Mukherjee, Rudrangshu. (1993). "The Sepoy Mutinies Revisited", in Mushirul Hasan and
- Narayani Gupta (Eds.), India's Colonial Encounter, New Delhi: Manohar
- David, Saul. (2010). "Greased Cartridges and the Great Mutiny of 1857: A Pretext to Rebel or the Final Straw", In Kaushik Roy (ed.)War and Society in Colonial India(82-113).
- Hardiman, David. (1993). Peasant Resistance in India, 1858- 1914. New Delhi: OUP. Introduction & pp. 1-125.
- Desai, A.R. (ed.) (1979). Peasant Struggles in India. Bombay: UP.(136- 158)
- Mukherjee, Rudrangshu. (1984) Awadh in Revolt 1857-1858. New Delhi: Oxford University Press.

Suggestive readings (if any)

- Alavi, Seema ed. (2002).The Eighteenth Century in India. New Delhi: OUP. Bara, Joseph (2002) "Tribal Education, the Colonial State and Christian Missionaries: Chotanagpur 1839-1870." In Education and the Disprivileged : Nineteenth and Twentieth Century India, edited by Sabyasachi Bhattacharya. New Delhi: Orient Longman, pp. 123-152.
- Bayly, Susan. (1999). "Chapter 2: Kings and Service People 1700-1830." Caste, Society and Politics in India from the 18th Century to the Modern Age. Cambridge: Cambridge University Press. The New Cambridge History of India Series, pp. 64-79.
- Bhattacharya, Sabyasachi ed. (2007).Rethinking 1857. Delhi: Orient Longman. Chaudhury, Sushil. (2000). The Prelude to Empire: Plassey Revolution of 1757. Delhi: Man- ohar.
- Constable, Philip. (2001). "The Marginalization of a Dalit Martial Race in the Late Nineteenth and Early Twentieth Century Western India".Journal of Asian Studies, 60 (2), pp. 439- 78.
- Dirks, Nicholas B. (2001).Castes of Mind.Princeton, New Jersey: Princeton University Press,

- Green, William A. et al.(Spring 1985). “Unifying Themes in the History ofBritish India, 1757-1857: An Historiographical Analysis”Albion: A QuarterlyJournal Concerned with British Studies, 17 (1), pp. 15-45. [pp. 20-24 is a surveyof British strategy/calculations during its territorial expansion]
- Guha, Ranajit.(1983) Elementary Aspects of Peasant Insurgency in Colonial India. New Delhi: Oxford University Press (Introduction & Chapter ‘Territoriality’).
- Hutchins, Francis. (1967). The Illusion of Permanence. Princeton, New Jersey: Princeton University Press.
- Jones, Kenneth. (2003)Socio-Religious Reform Movements in British India. New Cambridge
- History of India, Vol.3.1. Cambridge: Cambridge University Press.
- Kapila, Shruti ed. (2010). An Intellectual History for India.Delhi: Cambridge University Press.
- Ludden, David ed. (2005). Agricultural Production and South Asian History. New Delhi: Oxford University Press.
- Metcalf, Thomas. (1995). Ideologies of the Raj. Cambridge: Cambridge University Press (Chapter 4, Ordering Difference, pp. 92-.128).
- Mukherjee, Mithi. (2010) India in the Shadows of Empire: A Legal and Political History 1774- 1950. New Delhi: Oxford University Press (Introduction andChapter 1, ‘The Colonial and the Imperial’, pp. 1- 44).
- Mukherjee, Rudrangshu. (2018). “The Azimgarh Proclamation and Some Questions on the Revolt of 1857 in the North western Provinces”. The Year of Blood: Essays on the Revolt of 1857. New Delhi: Social Science Press and Routledge.
- Pollock, Sheldon ed. (2011). Forms of Knowledge in Early Modern Asia. Delhi: Manohar. Introduction (1- 16).
- Parthasarathi, Prasannan. (2001). The Transition to a Colonial Economy: Weavers, Mer- chants and Kings in South India, 1720-1800. Cambridge: Cambridge University Press.
- Raj, K N. et al ed. (1985). Essays on the Commercialization of Indian Agriculture. New Delhi: Oxford University Press.
- Robb, Peter, ed. (1993). Dalit movements and the meanings of labour in India. New Delhi: Oxford University Press.
- Roy, Tirthankar. (2010). Company of Kinsmen: Enterprise and Community in South Asian History 1700-1940. New Delhi: OUP (Chapter 6, pp. 190- 219).
- Skuy, David. (July 1998). “Macaulay and the Indian Penal Code of 1862: The Myth of the Inherent Superiority and Modernity of the English Legal System Compared to India's Legal System in the Nineteenth Century”, Modern Asian Studies, 32 (3), pp. 513-557.
- Stein, Burton (ed.) (1992). The Making of Agrarian Policy in British India, 1770-1900. Delhi: Oxford University Press.
- Stern, Phillip. (2011). The Company-State: Corporate Sovereignty and the Early Modern Foundations of the British Empire in India. New York: Oxford University Press.

- Stokes, Eric. (1986). The Peasant Armed: The Indian Rebellion of 1857 InC.A. Bayly (ed.). New Delhi: Oxford University Press.
- Tilak, Lakshmibai. (2017, 1973). Smritichitre: The Memoirs of a Spirited Wife. New Delhi: Speaking Tiger. (Translated by Shanta Gokhale).
- Rosanne Rocher, "British Orientalism in the Eighteenth century: The Dialectics of Know-
- ledge and Government", in Peter van der Veer and Carol Breckenridge eds. Orientalism and the Postcolonial Predicament: Perspectives on South Asia, University of Pennsylvania Press, 1993.
- Books in Hindi:
- Bandyopadhyay, Sekhar, (2007), Plassey se vibhajan tak aur uske baad, Orient Blackswan, New Delhi
- Shukla, R. L. (ed). Adhunik Bharat Ka Itihas, Hindi Madhyam KaryanvayanNideshalay, Delhi University
- Bipan Chandra, Mridula Mukherjee, Aditya Mukherjee, K. N. Panikkar, Sucheta Mahajan, Bharat ka Swatantrata Sangharsh Hindi Madhyam Karyanvayan Nideshalay, Delhi University
- Sumit Sarkar, Adhunik Bharat (1885 – 1947) Rajkamal Prakashan
- Sumit Sarkar, Adhunik Kaal (1880 – 1950), Rajkamal Prakashan
- Bipan Chandra, Adhunik Bharat Ka Itihas, Orient Blackswan
- Bipan Chandra, Adhunik Bharat Mein Upniveshvad aur Rashtravad, Medha Publishing House
- B. L. Grover, Alka Mehta, Yashpal, Adhunik Bharat Ka Itihas, S. Chand
- Lakshami Subramanian, Bharat Ka Itihas: 1707 – 1857, Orient Blackswan

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE– 3 (DSC-3): History of Modern Europe – I

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
History of Modern Europe – I	**4**	**3**	**1**	**0**	**12 th Pass**	**Nil**

Learning Objectives

This paper shall provide a critical overview of the French Revolution, and acquaint the students with the repercussions of the revolution, both within and beyond France. It shallalso trace the patterns and outcomes of social upheaval throughout Europe in the first half of the 19th century. The debates on the development and impact of industrialcapitalism shall be discussed. The birth of new social movements, political ideas and structures shall be contextualised within developing capitalism of the nineteenth century.

Learning outcomes

On completing this course, the students will be able to:

- Identify what is meant by the French Revolution.
- Trace short-term and long-term repercussions of revolutionary regimes andEmpire-building by France.
- Explain features of revolutionary actions and reactionary politics of threatened monarchical regimes.
- Delineate diverse patterns of industrialization in Europe and assess the socialimpact of capitalist industrialization.
- Analyse patterns of resistance to industrial capital and the emerging politicalassertions by new social classes.

SYLLABUS OF DSC-3

Unit I: The French Revolution

1. The Enlightenment, political and economic crisis of the Ancien Regime
2. A new political culture and transformations: Democratisation of polity and academies, changing social relations
3. Historiographical Perspectives on the French Revolution

Unit II: Continuity and change in the early nineteenth century

1. First French empire and monarchical consolidation
2. Revolutions 1830s-1850s

Unit III: Industrial Revolution and Social Transformation (the 19th century)

1. Experience of Industrialisation France, Germany and Eastern / SouthernEurope
2. Impact of the Industrial Revolution: Work, Family and Gender

Unit IV: Political movements in the 19th century

1. Parliamentary and institutional reforms in Britain, chartists & suffragettes
2. Industrial unrest, development of socialism: Utopians, Marxism, the International working class movement and social democracy

Unit V: Culture and Society: 1789-1850s

1. Popular Consumption of Culture: Neo Classical Art, Romanticism and Realism in art and literature
2. The City in the age of Industrialization

Practical component (if any) - NIL

Essential/recommended readings

Unit 1: In this rubric the students would have learnt about the origins of the French Revolution and political transformation in late eighteenth century France. They would have explored various themes linking the phases of the revolution with various key developments during the revolutionary years, transformation of institutions and social relations. **(Teaching time: 15 hrs. approx.)**

- McPhee, Peter. (2002).The French Revolution 1789-1799. New York: Oxford University Press (Chs.1 -- 9) E book by Peter Mc. Phee
- Campbell, Peter R. (Ed.).(2006). The Origins of the Revolution. New York:Palgrave Macmillan, pp. 1-34, 139-159 (Introduction and Ch.5).
- Rude, George (2000).Revolutionary Europe1783-1815. Somerset, New Jersey, U.S.A.: Wiley-Blackwell (Ch.1).
- Furet, Francois, (1988). The French Revolution 1770-1814. Oxford: Blackwell, pp.3-100 and 211-66.
- Landes, Joan B. (1988). Women and the Public Sphere in the Age of the French Revolution. Ithaca, London: Cornell University Press,
- Darnton, Robert. (1996). “What was Revolutionary About the French Revolution.” in Peter Jones, (Ed.).The French Revolution in Social and Political Perspective. London: Edward Arnold, pp. 18-29.
- Kates, Gary. (Ed.).(1998).The French Revolution: Recent debates and Controver- sies. London and New York: Routledge.
- Frey, Linda S. and Marsha S. Frey.(2004). The French Revolution, Westport, CT: Greenwood Press, pp. 37-46 (“A New Political Culture”).
- Kennedy, Emmet. (1989).A Cultural History of the French Revolution. New Haven and London: Yale University Press. Chapter 9

- Hunt, Lynn.(2004).Politics, Culture, and Class in the French Revolution. Oakland: University of California Press.
- Hunt, Lynn.(1989). “Introduction: The French Revolution in Culture, New Ap- proaches and Perspectives.”Eighteenth-Century Studies 22(3), Special Issue: The French Revolution in Culture, Spring.
- लालबहादुर वर्मा। यूरोप का इतिहास: फ्रांसीसी क्रांति से विश्वयुद्ध तक।
- पाठ्यसामग्री (संपादित)। यूरोप का इतिहास। Hindi Madhyam Karyanvaya Nideshalaya, DU.

At the end of this rubric students would have developed an understanding of the significant transformations in European polity and society till the mid nineteenth century. They would have studied about the establishment of Napoleonic Empire, its impact on France and Europe. They would have read about the consolidation of monarchical power and about events leading up to the revolutions 1848. **(Teaching time: 6 hrs. approx.)**

- Grabb, Alexander.(2003).Napoleon and the Transformation of Europe. NewYork: Palgrave Macmillan (Ch. 2 &Ch.3).
- Lyons, Martin. (2006).Post-Revolutionary Europe, 1815-1856, New York:Palgrave Macmillan.
- Price, Roger (1988).The Revolutions of 1848. London: Macmillan.
- David Thomson, Europe since Napoleon, 1957, Part-II Chapter 6 and 7
- Sperber, Jonathan (2005). The European Revolutions, 1848-1851. Cambridge:Cam- bridge University Press.
- लाल बहादुर वर्मा। यूरोप का इतिहास: फ्रांसीसी क्रांति से विश्वयुद्ध तक।
- पाठ्यसामग्री (संपादित)। यूरोप का इतिहास। Hindi Madhyam Karyanvaya Nideshalaya, DU.

Unit III: In this Unit the student would learn about the social and economic changesin Europe during the nineteenth century. The student would be expected to develop on her/his understand- ing of the social and economic dimensions of the Industrial revolution in eighteenth century Britain to compare and understand the specific case studies of France, Germany and Russia in the nineteenth century. **(Teaching time: 9 hrs. approx.)**

- Stearns, Peter N.(2013).The Industrial Revolution in World History. Boulder: West- view Press.
- Trebilcock, Clive. (2000). “Industrialization of Modern Europe 1750-1914.” in T.C.W. Blanning (Ed.).The Oxford History of Modern Europe. Oxford: OxfordUni- versity Press, pp. 46-75.
- Cameron, Rondo. (1985). “A New View of European Industrialization.”Economic History Review 38 (1), pp. 1-23.
- Beaudoin, Steven M.(2003).The Industrial Revolution. Boston, New York:Houghton Mifflin Company (Ch.4 & Ch.5)
- Simonton, Deborah. (1998).The Routledge History of Women in Europe since1700, London and New York: Routledge, pp.134-176 (Ch.5).
- Louise Tilly and Joan Scott, Women, Work and Family, 1978 Routledge,London and New York

- Tom Kemp, Industrialisation in Nineteenth Century Europe, 1974, Routledge
- लाल बहादुर वर्मा। यूरोप का इतिहास: फ्रांसीसी क्रांति से रूसी क्रांति तक।
- पाठ्यसामग्री (संपादक)। यूरोप का इतिहास। Hindi Madhyam Karyanvaya Nideshalaya, DU.
- रूपरेखा वर्जय, मीना भारद्वाज, वंदना चौधरी (संपादक)। आधुनिक यूरोप का इतिहास: आयाम और दिशाएं। Hindi Madhyam Karyanvaya Nideshalaya, DU

Unit IV: At the end of this rubric the student will be expected to demonstrate an understanding of the transformations of the political systems in nineteenth century Europe. Taking up the case study of nineteenth century Britain the student will study the development of parliamentary institutions alongside a new politically assertive working class. The student will also be expected to bring together her/his understanding of the economic and political transformations in this period when exploring the emergence of socialist thought and critique of capitalism. **(Teaching time: 9 hrs. approx.)**

- Lang, Sean (2005).Parliamentary Reform, 1785-1928. London and New York: Routledge.
- Willis, Michael. (1999). Democracy and the State, 1830-1945.Cambridge: Cam-bridge University Press.
- Walton, John K.(1999).Chartism, London and New York: Routledge.
- Geary, Dick (1981).European Labour Protest 1848-1939. London: Croom Helm London
- Kolakowski, Leszec. (1978).Main Currents of Marxism. Volume I. Oxford:Claren-don Press.
- Lichthem, George. (1970). A Short History of Socialism. London: Weidenfieldand Nicolson.
- Joll, James. (1990).Europe Since1870.New York: Penguin Books, pp. 49-77
- लालबहादुरवर्मा।यूरोपकाइतिहास: फ्रांसीसी क्रांति से रूसी क्रांति तक।
- पाठ्यसामग्री (संपादक)। यूरोप का इतिहास। Hindi Madhyam Karyanvaya Nideshalaya, DU.
- रूपरेखावर्जय, मीनाभारद्वाज, वंदनाचौधरी (संपादक)। आधुनिक यूरोप का इतिहास: आयामऔरदिशाएं।Hindi Madhyam Karyanvaya Nideshalaya, DU

Unit V: Culture and Society: 1789-1850s: Approx. In this Unit the student will be expected to link various themes from the earlier rubrics and develop an understanding of the cultural, artistic and urban transformations in nineteenth century Europe. The student will be expected to develop a competent understanding of the emergence of new art forms, reformation of various art and cultural academies, the developing notions of consumption of culture and the changing patterns of urbanism. **(Teaching time: 6 hrs. approx.)**

- Blanning, T.C.W. (2000). "The Commercialization and Sacralization of European Culture in the Nineteenth Century." in T.C.W. Blanning, (ed.).The Oxford History of Modern Europe. Oxford: Oxford University Press, pp. 101- 125 &126-152.
- Blanning, T.C.W. (2010). The Romantic Revolution: A History. London: George Weidenfeld & Nicholson.
- Blanning, T.C.W. (ed.) (2000). Nineteenth Century Europe, Short Oxford History of Europe, Oxford: Oxford University Press (Chapter 4)

- Schneider, Joan, (2007) The Age of Romanticism, Greenwood Guides to Historical Events 1500-1900, Greenwood Press, London
- Lees, Andrew and Lynn Hollen Lees.(2007).Cities and the Making of Modern Europe 1750-1914. Cambridge: Cambridge University Press.
- लालबहादुर वर्मा (संपादक)। यूरोप का इतिहास: फ्रांसीसी क्रांति से द्वितीय विश्वयुद्ध तक।
- पाठ्यसामग्री (संपादक)। यूरोप का इतिहास। Hindi Madhyam Karyanvaya Nideshalaya, DU.
- श्रीवास्तव, मीनाक्षी भारद्वाज, विनोद चौधरी (संपादक)। आधुनिक यूरोप का इतिहास: आयाम और रुझान। Hindi Madhyam Karyanvaya Nideshalaya, DU

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE ELECTIVE CORE COURSE– 1 (DSE): History of the USSR: From Revolution to Disintegration (c. 1917 – 1991)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
History of the USSR: From Revolution to Disintegration (c. 1917 –1991)	**4**	**3**	**1**	**0**	**12 th Pass**	**NIL**

Learning Objectives

The course introduces students to the history of the USSR from the two revolutions of 1917 to the disintegration of USSR. Students study the various challenges faced by the Bolsheviks and the steps taken to resolve these issues. Students will also trace the evolution of new institutions and ways of organizing production both in the factory and at the farm. They will also evaluate important foreign policy issues and the Soviet Union's involvement and role in the World War II. The course studies the most dramatic years in the history of the USSR i.e., the period between 1945 to 1991. The extent of major economic and political changes between 1956 and 1991 will be examined and the period of reconstruction , stagnation and growth will be examined. The reforms of the Gorbachev era will provide some of the contexts for the study of the larger [global] processes that led to the dissolution of the Soviet Union.

Learning outcomes

On completion of this course students shall be able to

- Explain how USSR emerged out of Imperial Russia.
- Explain the new organization of production in the fields and in the factory.
- Outline and explain key developments in the history of the USSR between 1917 and 1991.
- Examine Soviet policies for the period of the course in relation to nationalities and gender questions.
- Outline Soviet foreign policy issues.
- Analyse the factors leading to disintegration of the Soviet Union and the formation of
- Confederation of Independent States.

SYLLABUS OF DSE

I. The Russian Revolutions of February and October 1917; Background, Causes and Outbreak.

II. Aspects of Socialist Industrialization -Ideas, Debates and Planning
   a) War Communism, NEP, Great Debate
   b) Collectivization
   c) Industrialization and Planning

III. Soviet Foreign Policy from World War II to Cold War – (1930s-64)

IV. Soviet Union from Reconstruction to Stagnation to Recovery
a) Khrushchev
b) Brezhnev
c) Gorbachev

V. Question of Nationalism and Disintegration of USSR

VI. Aspects of Culture in Soviet Union
a) Gender 1917-45
b) Literature and Arts 1917-64
c) Cinema and Sports 1920s-91

Essential Readings and Unit Wise Teaching Outcomes:

Unit I: In this unit students will learn about the background to the Russian Revolutions of February and October 1917 its causes and outbreak.

- Acton, Edward, Vladimir Cherniaev and William Rosenberg eds. (1997). Critical
- Companion to the Russian Revolution, 1914-1921. London: Arnold. Pp.3 -34
- Figes, Orlando. (1996). A People's Tragedy: A History of the Russian Revolution.
- London: Jonathan Cape. PART TWO THE CRISIS OF AUTHORITY (1891-1917) pp.
- 157- 305
- Kenez, Peter. (1999). A History of the Soviet Union from the beginning to the end.
- Cam- bridge: Cambridge University Press. Chapters 1and 2, pp. 1- 40
- Suny, Ronald Grigor, ed. (2006). Cambridge History of Russia. Volume 3. Cambridge:
- Cam- bridge University Press. Chapters 1 to 4, pp 5- 139
- करुणा कौशिक: साम्राज्यवादी एवं साम्यवादी रूस 1861 ई - 1965 ई। खंड 1: साम्राज्यवादी रूस; अध्याय
- ती न- 1905 की क्रांति और उसके बाद की स्तिथि 1905 - 1914, अध्याय चार- प्रथम विश्व युद्ध से लेकर
- बोल्शेविक क्रांति तक।

Unit II: In this unit students will learn about economic policies of the Bolsheviks and associated debate in the 1920s. The students will students will also learn about the issues related to processes of Collectivisation and Industrialisation in Russia.

- Fitzpatrick, Sheila. (2001). The Russian Revolution 1917-1932. New York, USA:
- Oxford University Press. Chapter 3: The Civil War, Chapter 4: NEP and Future of the Revolution. Pp 68- 119
- Nove, Alec. (1993). An Economic History of the USSR, 1917-1991.London: Penguin Books, (revised edition), Chapters 3 to 6, pp 39- 158
- Kenez, Peter. (1999). A History of the Soviet Union from the beginning to the end.
- Cam- bridge: Cambridge University Press. Chapters 2 and 3, pp 14- 78, Chapters 7 to 9, pp 159- 272
- Suny, Ronald Grigor, ed. (2006). Cambridge History of Russia. Volume 3. Cambridge:Cambridge University Press. Chapters 5 and 6, pp 140- 191
- करुणा कौशिक: साम्राज्यवादी एवं साम्यवादी रूस 1861 ई - 1965 ई। खंड 2: साम्यवादी रूस; अध्याय पांच- साम्यवादी रूस के प्रारंभिक चरण, अध्याय सात- नवीन आर्थिक नीति एवं अन्य प्रयोग। खंड 2: साम्यवादी

रूस; अध्याय नौ- औद्योगिकरण एवं कृषि 1928 - 1941, अध्याय - समूहिककरण, स्तालिनकालीन उपोत्पादक तथा चौथी पर पांचवी योजनाएं।

- Lewin, Moshe. (1985). The Making of the Soviet System: Essays in the Social History of Inter-war Russia. New York: Pantheon.
- Allen, Robert. (2003). From Farm to Factory: A Reinterpretation of the Soviet Industrial Revolution. Princeton and Oxford: Princeton University Press. Chapter 8, pp 153- 171
- Fitzpatrick, Sheila. (1999). Everyday Stalinism: Ordinary Life in Extraordinary Times: Soviet Russia in the 1930s. New York: Oxford University Press. Ch. 2, pp 40-66
- Davies, R.W., Mark Harrison and S.G. Wheatcroft (Eds.). (1994).The Economic Transformation of the Soviet Union, 1913-1945.Cambridge: Cambridge University Press. . (Whole book relevant)

Unit III: In this unit students will learn about Soviet foreign policy issues with reference to Comintern and Nazi Soviet Pact. It also examines the role of the USSR during the second World War. This unit will also teach students about the history of the Cold War, its origins, majordevelopments, and transitions.

- McDermott, Kevin and Jeremy Agnew. (1996). The Comintern: A History of International Communism from Lenin to Stalin. Basingstoke: Macmillan. Whole book
- Roberts, Geoffrey. (2006). Stalin's Wars 1939-53: From World War to Cold War. New Haven: Yale University Press.
- Suny, Ronald Grigor.(Ed.). (2006). Cambridge History of Russia. Volume 3. Cambridge: Cambridge University Press. Chapters 8 and 23, pp 217- 242 and 636- 661
- Kenez, Peter. (1999). A History of the Soviet Union from the beginning to the end. Cambridge: Cambridge University Press. Chapter 6, pp 132- 159
- करुणा कौशिक: साम्राज्यवादी एवं साम्यवादी रूस 1861 ई - 1965 ई। खंड 3: साम्यवादी रूस की विदेशनीति; अध्याय चौदह- बोल्शेविक क्रांति से लेकर हिटलर के उत्कर्ष तक, अध्याय पंद्रह- अनाक्रमण समझौता, द्वितीय विश्वयुद्ध कालीन कूटनीतिज्ञता।
- Gaddis, John Lewis. (1997), We Now Know, Oxford University Press, pp. 1- 53 and 281- 295
- McCauley, Martin, ed. (1987). Khrushchev and Khruschevism. Basingstoke and London: Palgrave pp 156- 193
- The Cambridge History of the Cold War, Volumes I and II, Reprint edition. Cambridge: Cambridge University Press. Chapters 1, 2, 4, 5, 7 and 9 from volume 1 and chapters 3, 4 and 7 from volume 2
- Zubok, Vladislav M, (2007), A Failed Empire: The Soviet Union in the Cold War from Stalin to Gorbachev, University of North Carolina Press, Chapell Hill, pp 29-162

Unit IV: This unit deals with the Khrushchev Era, history of De-Stalinisation and Khrushchev's industrial and agricultural reforms. : This unit also deals with the era of Conservatism and reform in the Soviet political system. It begins with the period of Brezhnev. goes up to Gorbachev.

- McCauley, Martin, ed. (1987). Khrushchev and Khruschevism. Basingstoke and London: Palgrave Macmillan. Pp 1- 29, 61- 70 and 95- 137
- Hanson, Philip. (2014). The Rise and Fall of the Soviet Economy: An Economic History of the USSR, 1945-1991. New York: Routledge. Pp 48- 97
- Suny, Ronald Grigor, ed. (2006). Cambridge History of Russia Volume 3. Cambridge: Cambridge University Press. Pp 268- 291
- Nove, Alec (1993), An Economic History of the USSR, Penguin, pp 331- 377
- करुणा कौशिक: साम्राज्यवादी एवं साम्यवादी रूस 1861 ई। - 1965 ई खंड 2: साम्यवादी रूस; अध्याय

- बारह- खुश्चैव का उत्कर्ष और कृषि सम्बन्धी सुधार, अध्याय तेरह - खुश्चैव की बीसवीं कांग्रेस, उद्योगीकरण,दाल संगठन व् अन्य महत्वपूर्ण सीमा चिन्ह।
- Crump, Thomas (2013). Brezhnev and the Decline of the Soviet Union, Routledge. Pp 71- 117
- Brown, Archie. (1996). The Gorbachov Factor. Oxford: Oxford University Press, Paperback. Pp 130- 211
- Suny, Ronald Grigor, ed. (2006). Cambridge History of Russia Volume 3. Cambridge: Cam- bridge University Press. Pp 292- 351
- Fainberg, Dina and Artemy M. Kalinovsky, ed, (Volume 19, Number 4, Fall 2017) Reconsidering Stagnation in the Brezhnev Era: Ideology and Exchange, Journal of Cold War Studies, The MIT Press introduction and pp 3- 20, 43- 76

Unit V: This unit deals with the history of dissolution of the Soviet Union around 1991 and the emergence of Confederation of Independent States. (Teaching time: 3 weeks Approx.)

- Kotz, David and Fred Weir. (2007). Russia's Path from Gorbachev to Putin, Routledge, chapters 4-8
- Suny, Ronald Grigor. (1993). The Revenge of the Past: Nationalism, Revolution, and the Collapse of the Soviet Union. Stanford: Stanford University Press. Pp 127- 162
- Suny, Ronald Grigor. (1997). The Soviet Experiment: Russia, the USSR and the Successor States. New York: Oxford University Press.
- Keeran, Roger and Kenny, Thomas (2010), Socialism Betrayed: Behind the Collapse of the Soviet Union, Bloomington, New York, Epilogue

Unit VI: In this unit students will learn about women and aspects of culture such as literature, arts cinema and sports during the period of the Soviet system.

- Suny, Ronald Grigor, ed. (2006). Cambridge History of Russia. Volume 3. Cambridge: Cambridge University Press. Chapter 17 and 18, pp 468- 522
- Suny, Ronald Grigor and Martin, Terry. (2001). A State of Nation: Empire and Nation Making in the Age of Lenin and Stalin, OUP, pp 67- 90
- Fitzpatrick, Sheila. (1999). Everyday Stalinism: Ordinary Life in Extraordinary Times: Soviet Russia in the 1930s. New York: Oxford University Press. Chapter 6, pp 164- 189
- Parks, Jenifer (2017), The Olympic Games, the Soviet Sports Bureaucracy and the Cold War: Red Sport, Red Tape, Lexington Books, Introduction, chapters 3- 5
- Sarantakes, Nicholas Evan (2010), Dropping the Torch: Jimmy Carter, the Olympic Boycott and the Cold War, Cambridge University Press, Introduction, chapters 2, 5, 8 13, 14 and 15

Suggested Readings:

- Carley, M.J. (1999). 1939: The Alliance that Never Was and the Coming of World War II. Chicago: Ivan R. Dee.
- Carr, E.H. (1950-1964). A History of Soviet Russia, 7 volumes. New York: Macmillan.
- Cohen, Stephen. (1973). Bukharin and the Russian Revolution: A Political Biography, 1888-
- 1938. New York: Alfred Knopf.
- Conquest, Robert (1986) Harvest of Sorrow: Soviet Collectivization and the Terror Famine,
- Oxford University Press,
- Davies, R.W. (1980-1996).The Industrialization of Soviet Russia. Vol. 1: The Socialist Offensive: The Collectivization of Soviet Agriculture, 1929-1930. Basingstoke: Macmillan,Vols. 2,3, and 5.
- Dobrenko, Evgeny and Marina Balina ed. (2011). The Cambridge Companion to Twentieth Century Literature. Cambridge: Cambridge University Press.

- Dobrenko, Evgeny. (2007). Political Economy of Socialist Realism, New Haven: Yale University Press.
- Filtzer, Donald. (1986). Soviet Workers and Stalinist Industrialization, 1928-1941. Pluto Press.
- Gatrell, Peter. (2014). Russia's First World War: a social and economic history. New York: Routledge.
- Goldman, Wendy. (2002). Women at the Gates: gender and industry in Stalin's Russia. Cambridge: Cambridge University Press.
- Gregory, Paul. (2004). The Political Economy of Stalinism: Evidence from the Soviet Secret Archives. Cambridge: Cambridge University Press.
- Kotkin, Stephen. (1995). Magnetic Mountain: Stalinism as a Civilization. Berkeley: University of California Press.
- Lieven, Dominic.(Ed.). (2006). Cambridge History of Russia, Vol. 2: Imperial Russia, 1689-1917. Cambridge: Cambridge University Press.
- Overy, Richard. (1998). Russia's War, 1941-1945. New York: Penguin.
- Viola, Lynne.(Ed.). (2002). Contending with Stalinism: Soviet Power and Popular Resistance
- in the1930s. Ithaca: Cornell University Press.
- करुणा कौशिक (1990): साम्राज्यवादी एवं साम्यवादी रूस 1861 ई - 1965 ई, हिंदी माध्यम कार्यान्वयन
- निदेशालय
- Brown, Archie. (2009). Seven Years That Changed the World: Perestroika in Perspective.
- Oxford: Oxford University Press.
- Ellman, Michael and Vladimir Kontorovich. (1998). The Destruction of the Soviet Economic System: An Insider's History. London and New York: Routledge.
- Figes, Orlando. (2014). Revolutionary Russia, 1891-1991.United Kingdom: Pelican paperback.
- Hosking, Geoffrey. (1992). History of the Soviet Union: 1917-1991. Third edition: Fontana Press.
- Brown, Archie. (2010). The Rise and Fall of Communism. London: Vintage.Leffler, Melvyn P., ed. (2010).
- Kotkin, Stephen. (2008). Armageddon Averted: The Soviet Collapse, 1970-2000. Second edition. Oxford and New York: Oxford University Press.
- Nove, Alec. (1977). The Soviet Economic System. London: Allen & Unwin. from Stalin to Khrushchev. Cambridge: Cambridge University Press.
- Service, Robert. (2015). The End of the Cold War: 1985-1991. London: Pan MacMillan

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE– 1 (DSE): Gender in Indian History upto 1500

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Gender in Indian History up to 1500	**4**	**3**	**1**	**0**	**12th Pass**	**NIL**

Learning Objectives

The course teaches how 'Gender' is not a 'value free' term denoting biological differences but indicates social and culturally constructed unequal relationships that need careful historical analysis in the context of Indian history. The focus is not merely on studying 'women's history' but to go beyond and explore aspect of masculinities as well as alternative sexualities, spanning temporal frames from earliest times to 1500 CE. There is an added emphasis on learning inter- disciplinary analytical tools and frames of analysis concerning familiar topics such as class, caste and patronage that enriches an understanding of historical processes.

Learning outcomes

On completion of this course students shall be able to

- Explain critical concepts such as gender and patriarchy and demonstrate their use as tools for historical analysis
- Examine the role and functioning of power equations within social contexts in Indian history during the ancient and medieval period, in the construction of gender identities
- Critically examine representations of gender in literature, art, focusing onideas of love, manliness and religiosity

SYLLABUS OF DSE

Unit I: Gender in Context of historical analyatis: Theories and concepts

1. Understanding Structures of Patriarchy, Patrilocality Patriliny and Matriarchy, Matrilocality and Matriliny
2. Gender: a tool of Historical Analysis

Unit II: Aspects of Gender: Socio-Economic and Political Ramifications

1. Types of households, property and patronage

2. Women and exercise of Power, with special reference to Rudrama-Deviand Razia Sultan
3. Questions of Sexualities including masculinities and alternative gender

Unit III: Gendered Representations in the World of Divinity and Art

1. Vedic-Puranic, Buddhist, Korravai-Durga, Shakta and Warkari Panths
2. Visual Representation at Mathura and Khajurao

Practical component (if any) - NIL

Essential/recommended readings

Unit -I: The unit should familiarise students with theoretical frames of patriarchy andgender and how these concepts provide tools for historical analysis. **(Teaching time: 12 hrs. approx.)**

- Geetha, V. (2002). Gender. Calcutta: Stree.
- Kent, Susan Kingley. (2012). Gender and History. New York: PalgraveMcMillan. pp. 49-75.
- Scott, J. W. (1986). "Gender a useful Category of Historical Analysis". The American Historical Review vol.91/9, pp.1056-1075.
- Rose, Sonya, (2018). What is Gender History?. Jaipur; Rawat Publication(Indian Reprint).pp1-35.
- Walby, S. (1990). Theorizing Patriarchy. Oxford: Basil Blackwell. pp.1-24, 109-127.
- Vinita, Ruth. .(2003). The self is not Gendered: Sulabha's debate with King Janaka. NWSA Journal , Summer, 2003, Vol. 15, No. 2 (Summer, 2003), pp. 76-93

Unit II: This section should equip students to locate fluctuating gender relations within households, court and also explore linkages between gender, power andpolitics. Additionally, discussion on the question of sexualities would open up vistas for a nuanced historical learning of normative and alternative sexualities as well as issues of masculinities. **(Teaching time: 18 hrs. approx.)**

- Chakravarti, U. (2006). Everyday Lives Every Day Histories: Beyond the Kings and Brahmans of 'Ancient' India. Tulika Books: New Delhi. pp.253-274.
- Gabbay, Alyssa. (2011)."In Reality a Man: Sultan Iltutmish, His Daughter, Raziya, and Gender Ambiguity in Thirteenth Century Northern India". Journal of Persianate Studies, vol. 4, 45-63.
- Jha, Pankaj. (2019). 'Political Ethics and the Art of Being a Man'. Pankaj Jha, A political History of Literature: Vidyapati and the Fifteenth Century. Delhi: Oxford University Press, pp.133-183.
- Roy, K. (2010). The Power of Gender and the Gender of Power, Explorations inEarly Indian History, New Delhi: Oxford University Press, pp.70-87 and pp.271 -289.
- Sahgal, Smita. (2017). Niyoga: Alternative Mechanism to Lineage Perpetuationin Early India; A Socio-Historical Enquiry, Delhi: ICHR and Primus Books, pp.126-175.

- Shah, Shalini.(2019).‘‘Engendering the Material Body: A Study of Sanskrit Literature’’.
- Social Scientist vol. 47,no 7-8, pp.31-52.
- Singh, Snigdha. (2022). Inscribing Identities Proclaiming Piety
- Exploring Recording Practices In Early Historic India, Delhi: Primus, pp 53- 81.
- Talbot, Cynthia. (1995). “Rudrama Devi The Female King: Gender and Political authority in medieval India”. David Shulman(Ed.), Syllables of the Sky: Studies in South Indian Civilisation. OUP: New Delhi, pp.391-428.
- Tyagi, Jaya, (2015). 'The Dynamics of Early Indian Household: Domesticity, Patronage and Propriety in Textual Traditions', in Kumkum Roy, ed. Looking Within Looking Without; Exploring Households in Subcontinent Through Time.Delhi; Primus Books pp.137-172.

Unit III: The focus is on studying gender representation in in the world of divinity andart. **(Teaching time: 15 hrs. approx.)**

- Bawa, Seema. (2021). ‘Idyllic, Intimate, Beautiful Pleasures in Visual Culture at Mathura in Locating Pleasure’, in Seema Bawa (ed.). Locating Pleasure in Indian History: Prescribed and Proscribed Desires in Visual and Literary Cultures, Bloomsbury Academic India, pp. 54-93.
- Blackstone, R. K. (1998). Women in the Footsteps of Buddha: Struggle for Liberation in the Therigathas. Britain: Curzon Press. pp. 37-58.
- Desai, Devangana. (1975). Erotic Sculpture of India: A Socio-Cultural Study. New Delhi: Tata McGraw Hill, pp. 40-70.
- Mahalaksmi, R. (2011). “Inscribing the Goddess: Female Deities in Early Medieval Inscriptions from Tamil Region”, R., Mahalakshmi. The Making of the Goddess: Korravai-Durga in Tamil Traditions. New Delhi: Penguin Books India, pp. 1-39.
- Roy, Kumkum. (2002). “Goddess in the Rgveda-An Investigation” in Nilima Chitgopekar (ed.). Invoking Goddess, Gender Politics in Indian Religion. Delhi: Shakti Books, pp.11-61.
- Saxena, Monika. (2019). Women and the Puranic tradition in India. New York: Routledge, pp.96-157.
- Zelliot, Eleanor and Mokashi Punekar, Rohini. (eds.). (2005). Untouchable Saints ..an Indian Phenomenon. Delhi: Manohar Publications.pp157-167.

Suggested Readings:

- Abbott, E. Justin.(1985). Bahina Bai A Translation of Her Autobiography and Verses.Delhi: Motilal Banarasidass.(Reprint).
- Ali, A. (2013). “Women in Delhi Sultanate”. The Oxford Encyclopaedia of Islamand Women, vol. 1. New York: Oxford University Press, pp.197-200.
- Bawa, Seema. (2013). Gods, Men and Women Gender and Sexuality in EarlyIndian Art. Delhi: D.K. Print World Ltd.
- Bhattacharya, N.N. (1999). “Proprietary Rights of Women in Ancient India”, Kumkum, Roy (ed.). Women in Early Indian Societies. Delhi: Manohar, pp.113- 122.
- Bhattacharya, S. (2014). “Issues of Power and Identity: Probing the absence of Maharani- A survey of the Vakataka inscription”. Indian Historical Reviewvol.41/1, pp. 19-34.
- ----------(2019). “Access to Political Spaces and Bhauma-Kara Queens:

Symbols of Power and Authority in Early Medieval Odisha" in Sadananda Nayak and Sankarshan Malik ed. Reconstruction of Indian History: Society and Religion. Ghaziabad: N B Publications. pp.131-144.

- Cabezon, J. I. (ed.).(1992). Buddhism, Sexuality and Gender, Albany: StateUniversity of New York Press.
- Chakravarti, Uma. (2018). Gendering Caste through Feminist Lens. New Delhi: Sage. Revised Edition.
- Dehejia, Vidya. (2009). The Body Adorned: Dissolving Boundaries Between Sacred and Profane in India's Art, New York: Columbia University Press, pp.1- 23.
- Jaiswal, Suvira. (2008). "Caste, Gender and Ideology in the making of India". Social Scientist vol. 36, no. 1-2. pp. 3-39.
- Orr, Leslie, (2000). "Women's Wealth and Worship: Female Patronage of Hinduism, Jainism and Buddhism in Medieval Tamil Nadu". Mandaktranta Bose (ed.). Faces of the Feminine in Ancient Medieval and Modern India. New Delhi: Oxford University Press, pp. 124-146.
- Rangachari, Devika. (2013). Exploring Spaces for Women in Early Medieval Kashmir, NMML Occasional Papers.
- Roy, Kumkum.(1994). Emergence of Monarchy in North India, Eighth-Fourth Centuries BC: As Reflected in the Brahmanical Tradition. Delhi: Oxford University Press.
- Sahgal, Smita. (2022). ''Locating Non-Normative Gender Constructions within Early Textual Traditions of India'', in Vasundhara Mahajan et al (ed.) Gender Equity: Challenges and Opportunities, Proceedings of 2nd International Conference of Sardar Vallabhbhai National Institute of Technology, Singapore:Springer Nature Singapore Pte Ltd. pp. 441-450
- -------- (2019). ''Goddess Worship and Mutating Gender Relations within Hindu Pantheon: From Vedic to Puranic''. Veenus Jain and Pushpraj Singh (eds.), Women: A Journey Through The Ages, New Delhi: New Delhi Publishers, pp.23-32.
- Shah, S. (2012). The Making of Womanhood; Gender Relations in the Mahabharata. Revised Edition, Delhi: Manohar. (Also available in Hindi, Granthshilpi, 2016).
- -------- (2009). Love, Eroticism and Female Sexuality in Classical Sanskrit literature 7-13 centuries. Delhi : Manohar Publishers.
- --------- (2017). "Articulation ,Dissent and Subversion: Voices of female emancipation in Sanskrit literature". Social Scientist vol. 45, no. 9 -10, pp. 79- 86.
- Singh, Snigdha. (2022). "Women in transition at Mathura Sanctuaries". VeenusJain and Pushpraj Singh (eds.), Women: A Journey Through The Ages, New Delhi: New Delhi Publishers, pp.72-96.
- Tyagi, Jaya. (2014). Contestation and Compliance :Retrieving Women Agency from Puranic traditions. Delhi: OUP.
- -------- (2008). Engendering the Early Households, Brahmanical Precepts in early Grhyasutras, middle of the First millennium BCE, Delhi: Orient Longman.
- Karve, Iravati, (1992). ''On the Road; A Maharashtrian Pilgrimage" in Zelliot, Eleanor and Berntsen, Maxine.(eds.). The Experience Of Hinduism: Essays on Religion in Maharashtra.Delhi: Shri Satguru Publications pp 142-171.
- Zwilling, L and M. Sweet. (1996). "Like a City Ablaze': The Third Sex and the Creation of Sexuality in Jain Religious Literature." Journal of History of Sexuality. vol.6/3, pp. 359- 384.

Note: Examination scheme and mode shall be as prescribed by the ExaminationBranch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE– 2 (DSE): History of Africa c. 1500 – 1960s

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
History of Africa c. 1500 – 1960s	**4**	**3**	**1**	**0**	**12th Pass**	**NIL**

Learning Objectives

This paper offers a historical overview of the African continent. It traces major long-term continuities and changes in Africa's socio-economic structures, cultural life and political formations from the 16th century to the mid-twentieth century. The paper closely examines colonial trade and rule, as well as anti-colonial resistance. It offers a critical analysis of the immediate post-independence years, and situates the specific positioning of Africa in connected histories of a globalizing world.

Learning outcomes

On completion of this course the student shall be able to

- Critique stereotypes on the African continent and outline major shifts in African history.
- Explain elements of change and continuity in the African political experience, political regimes and national formations, economy, society and cultural milieu from the 16th to 20th centuries.
- Contextualize the impact of colonialism on the African continent.
- Explain social protest and anti-colonial resistance in Africa, as well as practices of 'transculturation'.
- Discuss the dilemmas and contradictions emerging from the post-independence economic, social, political and cultural milieu.

SYLLABUS OF DSE

Unit I: Historiographies on Africa: Development of historiography on Africa and abrief survey of pre-15th century cultures and civilizations.

Unit II: Africa and World: Trade Relations from 15th century to 19th century:Economy, society and state in Africa from the end of the 15th to 19th centuries.

Unit III: Colonization of Africa: Atlantic Slave trade; Africa's contribution to the development of European capitalism.

Unit IV: Movements against Slave Trade and Slave Autobiographies: the end of the slave trade, and the shift to 'Legitimate Commerce' and 'Informal Empire'.

Unit V: Race, Imperialism and Apartheid:

1. The historical roots and meaning of Apartheid in South Africa and the struggleagainst Apartheid
2. The making of colonial economies in Sub-Saharan Africa, towards the end ofthe 19th century
3. The colonial experience of Algeria under the French, and the NationalLiberation Movement of Algeria

Unit VI: Negritude, Diaspora and Independence Movement: Various forms of protest and National Liberation Movements century to 1939; peasant and worker protests, popular culture, gender and ethnicity.

Practical component (if any) - NIL

Essential/recommended readings

Unit I: This unit deals with Development of historiography on Africa and a brief survey of pre-15thcentury cultures and civilizations in Africa. **(Teaching time: 6 hrs. approx.)**

- Manning, P., (2013). 'African and World Historiography', Journal of African History, Vol. 54, No.3, pp. 319-30. London: Cambridge University Press.
- Mazrui, A.A., (Ed.). (1993). UNESCO General History of Africa: Africa Since1935 Vol. VIII. London: Heinemann.
- Fanon, F.(1963). The Wretched of the Earth. New York: Grove Press.
- Rediker, M., (2007). The Slave Ship: A Human History. New York: Viking.
- Ischie, E., (1997). A History of African Societies upto 1870. London: Cambridge University press.

Unit-II: This unit will deal with Africa and World, trading relations from the end ofthe fifteenth to the nineteenth centuries. It would also examine the nature of economy, society and state in Africa. **(Teaching time: 9 hrs. approx.)**

- Rodney, W. (1972). How Europe Underdeveloped Africa. London: Bogle- L'Ouver- ture Publications.
- Williams, E. (1944). Capitalism and Slavery. University of North Carolina Press.
- Sparks, A. (1991). The Mind of South Africa: The Story of the Rise and Fall of Apartheid.
- New York: Ballantine Books.

Unit III: This unit examines the colonization of Africa, the history of Africa in the Atlantic world with specific reference to slaves, slave-ships, piracy and slave

rebellions. It also elaborates upon Africa's contribution to the development of European capitalism. **(Teaching time: 6 hrs. approx.)**

- Williams, E. (1944). Capitalism and Slavery. University of North Carolina Press.
- Austen, R. (1987). African Economic History. London: Heinemann.
- Reid, R. J. (2012). A History of Modern Africa: 1800 to the Present. Hoboken:Wiley Blackwell.

Unit-IV: This unit deals with the movements against slave trade leading to its endand the shift to 'Legitimate Commerce' and 'Informal Empire' from 1800 onwards. It also familiarizes students about the experience of the native Africans through the slave autobiographies. **(Teaching time: 6 hrs. approx.)**

- Williams, E. (1944). Capitalism and Slavery. University of North Carolina Press.
- Freund, B. (1988). The African Worker. Cambridge: Cambridge UniversityPress.
- Vansina, J. (1990). Paths in the Rainforests: Towards a History of PoliticalTradition in Equatorial Africa. Wisconsin: University of Wisconsin Press.
- Douglass, F., (1995). Narrative of the Life of Frederick Douglass, an AmericanSlave. Bostan: Dover Publications.

Unit V: This unit deals with the history of Imperialism and the historical roots and meaning of Apartheid in South Africa and the struggle against it. It also deals with themaking of colonial economies in Sub-Saharan Africa towards the end of the 19th century. **(Teaching time: 9 hrs. approx.)**

- Ahmida, A.A. (Ed.). (2000). Beyond Colonialism and Nationalism in theMaghrib: History, Culture, Politics. London: Palgrave.
- Vansina, J. (1990). Paths in the Rainforests: Towards a History of PoliticalTradition in Equatorial Africa. Wisconsin: University of Wisconsin Press.
- Davidson, B. (1978). Africa in Modern History: The Search for a New Society.London: Allen Lane.
- Ross, R. (1999). A Concise History of South Africa. Cambridge: CambridgeUniver- sity Press.
- Ruedy, J. Modern Algeria: The Origins and Development of a Nation. Bloomington: Indiana University Press, 2005.
- Stora, B. Algeria, 1830-2000: A Short History. (2001). Ithaca: Cornell UniversityPress, 2001.
- Thompson, L. A History of South Africa. (2000). New Haven and London: Yale University Press.

Unit-VI: This unit traces the history of various forms of protest and national liberation movements' upto 1939; peasant and worker protests, popular culture, gender and ethnicity. It also examines Worker protests, peasant rebellions and National Liberation Movements in Africa. **(Teaching time: 9 hrs. approx.)**

- Crummy, D. (Ed.). (1986). Banditry, Rebellion and Social Protest in Africa. Lon- don: Heinemann.

- Sueur, J.L. (Ed.). The Decolonization Reader. Abingdon: Psychology Press, 2003.
- Freund, B. (1988). The Making of Contemporary Africa. London: Palgrave Macmillan.

Suggested Readings:

- Jewsiewicki, B. and Newbury, D., (1985). African Historiographies: What history for Which Africa? London: Sage Publications.
- Memmi, A. (1991). The Colonizer and the Colonized. Boston: Beacon Press.
- Owen, R., and Bob Sutcliffe. (Eds.). (1972). Studies in the Theory of Imperialism. London: Longman Publishing Group, 1972.
- Robinson, D., and Douglas Smith. (Eds.). (1979). Sources of the African Past: Case Studies of Five Nineteenth-Century African Societies. London:Heinemann.
- Bennoune, M. (1988). The Making of Contemporary Algeria: Colonial Upheavals and Post-Independence Development. Cambridge: CambridgeUniversity Press.
- Callinicos, L. (1995). A People's History of South Africa: Gold and Workers 1886-1924,Volume1. Johannesburg: Ravan Press Ltd.
- Callinicos, L. (1987). A People's History of South Africa: Working Life 1886- 1940,
- Volume 2. Johannesburg: Ravan Press Ltd.
- Callinicos, L. (1993). A People's History of South Africa: A Place in the City, Vol-ume 3. Johannesburg: Ravan Press Ltd.
- Du bois, W.E.B. (1979) The World and Africa: An Inquiry into the part which Africa has played in World History. New York: International Publishers.
- Rediker, M. (2014). Outlaws of the Atlantic: Sailors, Pirates and Motley Crews in the Age of Sail. Boston: Beacon Press.
- Inikori, J.E. (2002). Africans and the Industrial Revolution in England: A Study in International Trade and Economic Development. Cambridge: CambridgeUniversity Press.
- Equiano, Olaudah., (1789). The Interesting Narrative of the Life of Olaudah Equiano, or Gustavus Vassa, the African. London : T. Wilkins, etc.
- Asanti, Molefi K., (2019). The History of Africa: The Quest for Eternal Harmony. Routledge.
- Collins, Robert O. and Iyob, R. (Eds.). (2015). The Problems in African History: The Precolonial Centuries. Markus Wiener Publishers.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category II

BA (Prog.) with History as Major

DISCIPLINE SPECIFIC CORE COURSE– 1 (DSC): History of India 1700 – 1857

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
History of India 1700 – 1857	4	3	1	0	12 th Pass	Should have studied History of India 1550 – 1700

Learning Objectives

The paper introduces the students to the key features of the 18th century, and contextualise the establishment of the early colonial state. The paper will focus on colonial policies and their impact on the socio-economic life of the people of India as well as the discontent caused by such policies. While introducing reform measures, colonial rule created a sense of self-consciousness and assertion which manifested itself in variousuprisings against the colonial rule.

Learning outcomes

On completion of this course the student shall be able to:

- Explain the process of the establishment of Company rule and the policies and practises to sustain the process of expansion and consolidation of the Company rule.
- Understand the impact of various economic policies and how they contributed to dissatisfaction with colonial rule.
- Evaluate the reform measures implemented during under the colonial rule and how they served the interests of the Empire, particularly in the context of education.

SYLLABUS OF DSC

Unit I: India in the 18th century: Background, Debate

Unit II: Expansion and consolidation of British power:

1. Bengal, Mysore, Maratha, Punjab
2. Ideologies/Strategies of Raj

Unit III: Making of a colonial Economy:

1. Land Revenue Settlements
2. Commercialisation of Agriculture
3. De-Industrialisation

Unit IV: Social and Religious Reform Movements:

1. An overview of the reformist movements of the 19th century

2. Indigenous and Modern education

Unit V: The Revolt of 1857: Causes, Nature, and Consequences

Practical component (if any) - NIL

Essential/recommended readings

Unit I. This unit situates the major historiographical debates on the transformation ofthe Indian society in the eighteenth-century. **(Teaching Time: 6 hrs. approx.)**

- Bandyopadhyay, Sekhar. (2004). From Plassey to Partition: A History ofModern India. Delhi: Orient Longman,
- Bayly, C.A. (1990). An Illustrated History of Modern India 1600-1947. London: National Portrait Gallery.
- Bose, S and Ayesha Jalal. (1998). Modern South Asia: History, Culture, Political Economy. New Delhi: OUP.
- Lakshmi Subramanian. (2010). History of India, 1707-1857. Hyderabad: Orient Blackswan. (Also in Hindi)
- Dube, Ishita Banerjee. (2015). A History of Modern India. Delhi: Cambridge University Press
- सामण्यण, लामी, (2013), भारर् का इर्हास (1700-1857), न्लली, ओररएंब्लैकतवान
- बंधोपाध्याय, शेखर. (2012). प्लासीसेंवभाि नक: आधुनकभारर्का इर्हास. Hyderabad: Orient Longman.
- शुक्ल, आर.एल. (Ed). (1987). आधुनक भार् का इर्हास, र्हंि ी माध्यम कार् ान्वनत्नशे ालर, न्लीवव्वद्यालर, न्ली

Unit II. This unit discusses the process which led to the expansion and consolidation of the British colonial power in India with the help of specific case studies. **(Teaching Time: 9 hrs. approx.)**

- Bandyopadhyay, Sekhar. (2004) From Plassey to Partition. Delhi: OrientLongman.
- Metcalf, Thomas R. (2007 reprint). Ideologies of the Raj, Cambridge: CUP
- Wagoner, Phillip B. (October 2003). "Pre- colonial Intellectuals and the Production of Colonial Knowledge". Comparative Studies in Society and History, 45 (4), pp. 783- 814
- Mann, Michael. (2015). South Asia's Modern History: Thematic Perspectives. London: Routledge.
- Chaudhary, Latika et al. (Eds.). (2016). A New Economic History of ColonialIndia. London: Routledge.
- Chandra, Bipan. (1979). Nationalism and Colonialism in Modern India.Hyderabad: Orient Longman.
- बंधोपाध्याय, शेखर. (2012). प्लासीसेंवभाि नक: आधुनकभारर्का इर्हास. Hyderabad: Orient Longman.
- ोवर, बी. एल. (1995). आधुनकभारर्का इर्हास, New Delhi: S. Chand & Co.

Unit III. This unit provides a critical perspective on the changing patterns of land relations, agricultural practices, and trade and industry in the Indian sub-continent under the British colonial rule. **(Teaching Time: 12 hrs. approx.)**

- Bandyopadhyay, Sekhar. (2004). From Plassey to Partition: A History ofModern India. Delhi: Orient Longman.
- Dutt, R.P. (1986). India Today. Calcutta: Manisha.
- Mann, Michael. (2015). South Asia's Modern History: Thematic Perspectives. London: Routledge.
- Bose, S and Ayesha Jalal. (1998). Modern South Asia: History, Culture, Political Economy. New Delhi: Oxford University Press
- Chaudhary, Latika (et. al. Eds.). (2016). A New Economic History of ColonialIndia. London: Routledge
- Sarkar, Sumit. 2014. Modern Times: India 1880s-1950s: Environment,Economy and Culture. Ranikhet: Permanent Black.
- भट्टाचार्य, सब्यसाची(2008).आधुनिकभारतकाआर्थिकइतिहास,(1850-1947) मुम्बई, राधा कमलप्रकाशन
- बंधोपाध्याय, शेखर. (2012). प्लासीसेस्वभाषिनक: आधुनिकभारतकाइतिहास. Hyderabad: Orient Longman.
- शुक्ल, आर.एल. (Ed). (1987). आधुनिक भारत का इतिहास, हिंदी माध्यम कार्यान्वयन निदेशालय, मुम्बई विश्वविद्यालय, मुम्बई

Unit IV. This unit examines social and religious reform movements, the state of education in India, and the influence of various policies designed to serve the interests of the Empire. **(Teaching Time: 12 hrs. approx.)**

- Bandyopadhyay, Sekhar. (2004). From Plassey to Partition: A History ofModern India. Delhi: Orient Longman.
- Joshi, V.C. (1975). Rammohun Roy and the process of modernization in India. Delhi: Vikas
- O'Hanlon, Rosalind. (2012). Caste, Conflict and Ideology: Mahatma JotiraoPhule and the Low Caste Protest in Nineteenth-Century Western India. Cambridge: Cambridge University Press.
- Panikkar, K.N. (1995). Culture, Ideology, Hegemony: Intellectuals and Social Consciousness in Colonial India. New Delhi: Tulika.
- Bhattacharya, Sabyasachi (ed.). (1998).The Contested Terrain: Perspectives on Education in India. New Delhi: Orient Blackswan
- बंधोपाध्याय, शेखर. (2012). प्लासीसेस्वभाषिनक: आधुनिकभारतकाइतिहास. Hyderabad: Orient Longman.
- शुक्ल, आर.एल. (Ed). (1987). आधुनिक भारत का इतिहास, हिंदी माध्यम कार्यान्वयन निदेशालय, मुम्बई विश्वविद्यालय, मुम्बई

Unit-V: This Unit shall enable students to identify and discuss the issues reflected in the major uprisings of the nineteenth century. In the context of heavy revenueassessment, changing land rights, deepening stratification within the rural society, emergence of new social forces in agrarian economy, etc., students shall discuss the discontent of the landed elite, and those of struggling peasants and tribals during theCompany Raj. **(Teaching Time: 6 hrs. approx.)**

- Stokes, Eric and C.A. Bayly. (1986). The Peasant Armed: the Indian Revolt of 1857. Clarendon Press
- Mukherjee, Rudrangshu. (1993). "The Sepoy Mutinies Revisited", in Mushirul Hasan and Narayani Gupta (Eds.), India's Colonial Encounter, New Delhi: Manohar
- Hardiman, David. (1993). Peasant Resistance in India, 1858- 1914. New Delhi: OUP.
- Desai, A.R. (ed.) (1979). Peasant Struggles in India. Bombay, OUP
- Bandyopadhyay, Sekhar (2004). From Plassey to Partition: A History ofModern India. Delhi: Orient Longman.
- Mann, Michael. (2015). South Asia's Modern History: Thematic Perspectives. London: Routledge.
- Pati, Biswamoy. (Ed.). (2007). The Great Rebellion of 1857 in India: Exploring transgressions, contests and diversities. London: Routledge.
- Bose, S and Ayesha Jalal. (1998). Modern South Asia: History, Culture, Political Economy. New Delhi: Oxford University Press.
- Taneja, Nalini. (2012). "The 1857 rebellion." in K. N. Panikkar, (Ed.).Perspectives of Modern Indian History. Mumbai: Popular Prakashan.
- Guha, Ranajit. (1983) Elementary Aspects of Peasant Insurgency in ColonialIndia. New Delhi: Oxford University Press
- Chandra, Bipan. (et.al Eds.) (1989). India's Struggle for Independence. Delhi: Penguin
- सरकार, सुमर्र् (2009). आधुर्नक भारर्, नल्ली, रार्ि कमल प्रकाशन
- बंधोपाध्यार, शेखर. (2012). प्लासी से र्वभार्ि न र्क: आधुर्नक भारर् का इर्र्हास. Hyderabad: Orient Longman.
- शुक्ल, आर॰एल. (Ed). (1987). आधुर्नक भारर् का इर्र्हास, हैंि ी माध्यमकार ा ान्वनत र्ननशे ालर, नल्ली र्वश्वर्वद्यालर, नल्ली

Suggestive readings

- Alavi, Seema ed. (2002).The Eighteenth Century in India. New Delhi: OUP.
- Bara, Joseph (2002) "Tribal Education, the Colonial State and Christian Missionaries: Chotanagpur 1839-1870." In Education and the Disprivileged: Nineteenth and Twentieth Century India, edited by Sabyasachi Bhattacharya. New Delhi: Orient Longman.
- Bayly, Susan. (1999). Caste, Society and Politics in India from the 18th Century to the Modern Age. Cambridge: Cambridge University Press.
- Bhattacharya, Sabyasachi ed. (2007).Rethinking 1857. Delhi: Orient Longman.
- Chaudhury, Sushil. (2000). The Prelude to Empire: Plassey Revolution of 1757. Delhi: Manohar.
- Constable, Philip. (2001). "The Marginalization of a Dalit Martial Race in the Late

Nineteenth and Early Twentieth Century Western India". Journal of Asian Studies, 60 (2), pp. 439- 78.

- Dirks, Nicholas B. (2001).Castes of Mind. Princeton, New Jersey: Princeton University Press.
- Guha, Ranajit. (1983) Elementary Aspects of Peasant Insurgency in Colonial India. New Delhi: Oxford University Press .
- Jones, Kenneth. (2003)Socio-Religious Reform Movements in British India. New Cambridge History of India, Vol.3.1. Cambridge: Cambridge University Press.
- Kapila, Shruti ed. (2010). An Intellectual History for India.Delhi: Cambridge University Press.
- Ludden, David ed. (2005). Agricultural Production and South Asian History. New Delhi: Oxford University Press.
- Metcalf,Thomas. (1995). Ideologies of the Raj. Cambridge: Cambridge University Press
- Mukherjee, Mithi. (2010) India in the Shadows of Empire: A Legal and Political History 1774- 1950. New Delhi: Oxford University Press.
- Mukherjee, Rudrangshu. (1984)Awadh in Revolt 1857-1858. New Delhi: Oxford University Press.
- Pollock, Sheldon ed. (2011). Forms of Knowledge in Early Modern Asia. Delhi: Manohar.
- Raj, K N. et al ed. (1985). Essays on the Commercialization of Indian Agriculture. New Delhi: Oxford University Press.
- Skuy, David. (July 1998). "Macaulay and the Indian Penal Code of 1862: The Myth of the Inherent Superiority and Modernity of the English Legal System Compared to India's Legal System in the Nineteenth Century", Modern Asian Studies, 32 (3), pp. 513-557.
- Stein, Burton (ed.) (1992).The Making of Agrarian Policy in British India, 1770- 1900. Delhi: Oxford University Press.
- Stokes, Eric. (1986).The Peasant Armed: The Indian Rebellion of 1857 In C.A. Bayly (Ed.). New Delhi: Oxford University Press.
- Rosanne Rocher, "British Orientalism in the Eighteenth century: The Dialectics of Knowledge and Government", in Peter van der Veer and Carol Breckenridge eds. Orientalism and the Postcolonial Predicament: Perspectives on SouthAsia, University of Pennsylvania Press, 1993.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE (DSC-2): History of Europe: 1789-1870

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
History of Europe: 1789-1870	**4**	**3**	**1**	**0**	**12 th Pass**	**NIL**

Learning Objectives

This paper offers a historical overview of the development stemming from the French revolution and the subsequent period of revolutionary upheavals in Europe during the first half the nineteenth century. It traces the different trajectories of industrialization in various parts of Europe, the accompanying transformations in social life and the world of work, as well as the development of new ideologies that accompanied the formation of new social classes in the industrial era. Students will also be familiarized with the factors that fuelled the emergence of nationalism and nation-states in the given period.

Learning outcomes

Upon completion of this course the student shall be able to:

- Trace the key repercussions of the French revolution and Empire-building by France.
- Distinguish the patterns of industrialization in Europe and assess the widespread impact of the industrial revolution.
- Highlight the growth of labour movements and new ideologies in the industrial era.
- Comprehend the broad varieties of nationalist aspirations that emerged in the nineteenth century, and the processes by which new nation-states were carved out in Italy and Germany.

SYLLABUS OF DSC

Unit- 1: The French revolution

1. Causes, phases, and legacy
2. Napoleonic reforms and their impacts: authoritarian state, stirrings ofnationalism in the First French Empire

Unit- 2: Restoration and revolutions, 1815-1848

1. Congress of Vienna and Concert of Europe
2. Revolutions of 1830 and 1848

Unit-3: Socio-economic transformations in the early 19th century

1. Industrialization: patterns, changing nature of work, transformations insociety, life in the industrial city
2. Social ferment: labour movements; rise of liberalism and early socialism

Unit-4: Nations and nationalism

1. Patterns of nationalism
2. Unification of Italy and Germany

Practical component (if any) - NIL

Essential/recommended readings

Unit-I: At the end of this rubric students would have developed an understanding of the conditions that paved the way for a revolution in late eighteenth century France, and the subsequent transformations in French society since 1789. They will be familiarized with the larger legacy of the French revolution, as well asthe impact of Napoleonic rule on monarchies and socio-economic structuresoutside France. **(Teaching time: 12 hrs. approx.)**

- Hunt, Jocelyn. (1998). The French Revolution. Questions and Analysis inHistory Series. London and New York: Routledge.
- Lee, Stephen J. (1982).Aspects of European History 1789–1980. London:Routledge. [Chapter 1, 2, 3 and 4]
- Rude, George. (1964). Revolutionary Europe, 1783-1815. London and Glasgow: Collins. [chapters 4 to 9; chapter 13]
- लालबहादुर वर्मा (1998) यूरोप का इतिहास: फ्रांसीसी क्रांति से प्रथम विश्व युद्ध तक। दिल्ली: ओरिएंट ब्लैकस्वान।
- पाण्डेय सरयू प्रसाद (संपादक)।Nideshalaya, यूरोप का इतिहास।Hindi Madhyam Karyanvaya DU.

Unit-II: At the end of this rubric students would have developed an understanding of the significant developments post the Congress of Vienna (1814–1815) which settled the boundaries of post- Napoleonic Europe and restored monarchs to power. Despite the conservative reaction, political revolts broke out which culminated in cycle of revolutions in 1830 and 1848**. (Teaching time: 9 hrs. approx.)**

- Craig, Gordon A. (1966). Europe since 1815. Second edition. New York, Chicago, Toronto, London: Holt, Renehart and Winston. [Chapter 1to 3; Chapter-5].
- Lee, Stephen J. Aspects of European History 1789–1980. London: Routledge. 1982 [Chapter 5 & 7].

- Seaman, L.C.B. (2003). From Vienna to Versailles. London and New York:Routledge, Taylor & Francis. [Chapter-2].
- लालबहादुर वर्मा (संपादक)। यूरोप का इतिहास: फ्रांसीसी क्रांति से नेपोलियन तक। हिंदी माध्यम कार्यान्वयन निदेशालय, दिल्ली विश्वविद्यालय, दिल्ली।

- पाठ्यसामग्री (संपादक)। Nideshalaya, यूरोप का इतिहास। Hindi Madhyam Karyanvaya DU.

Unit-III: In this Unit the student would learn about the social and economic dimensions of the Industrial revolution. The response of labour and middle-class liberals to unfolding capitalist industrialization will be examined by tracing key forms of labour protests and the development of early socialist and liberal ideologies.**(Teaching time: 15 hrs. approx.)**

- Joll, James. (1973).Europe Since 1870. An International History. New York and London: Harper and Row Publishers.[Chapters 2 and 3].
- Perry, Marvin et al (ed.).(2008). Western Civilizations: Ideas, Politics and Society. Ninth edition. Boston and New York: Houghton Mifflin Harcourt Publishing Company. [Chapter- 21; Chapter-22: pp. 534– 541].
- Stearns, Peter.(2013). Industrial Revolution in World History. Fourth edition. Philadelphia: Westview Press & Perseus Books Group. [Chapters 2 to 4].
- Lang, Sean. (1999). Parliamentary Reform, 1785–1928. London and New York: Routledge.[Chapter-3]
- लालबहादुर वर्मा (संपादक)। यूरोप का इतिहास: फ्रांसीसी क्रांति से नेपोलियन तक। हिंदी माध्यम कार्यान्वयन निदेशालय, दिल्ली विश्वविद्यालय, दिल्ली।

- पाठ्यसामग्री (संपादक)। Nideshalaya, यूरोप का इतिहास। Hindi Madhyam Karyanvaya DU.

- यूरोपियन इतिहास 1870 से अनुवादित: तनेजा महिन। Hindi Madhyam Karyanvaya Nideshalaya, DU.

Unit-IV: In this rubric the student will be expected to demonstrate an understanding of the making of modern nation-states. In this regard, the students will be exposedto a close analysis of the complex political and economic factors associated with the unification of Germany and Italy, as well as the processes by which nation-states strengthened themselves. **(Teaching time: 9 hrs.approx.)**

- Cowie, L.W. (1985). Years of Nationalism: European History, 1818-1890.Hodder & Stoughton. [Parts 3 & 4].
- Craig, Gordon. (1966). Europe since 1815. Second edition. New York, Chicago, Toronto, London: Holt, Renehart and Winston.
- Lee, Stephen J. Aspects of European History 1789–1980. London: Routledge.1982 [Chapters 9 & 10].
- Seaman, L.C.B. (2003). From Vienna to Versailles. London and New York:Routledge, Taylor & Francis. [Chapters 10 and 11].

- लालबहादुर वर्मा और कर्ण। आधुनिक यूरोप का इतिहास: फ्रांसीसी क्रांति से नेपोलियन तक
- पाठ्यसहगामी (संपादित)। आधुनिक यूरोप का इतिहास। Hindi Madhyam Karyanvaya Nideshalaya, DU.
- विश्व का इतिहास 1870 से अनुवादित: तनेहमहादिन। Hindi Madhyam Karyanvayan Nideshalaya, DU.

Suggestive readings

- Edmund Burke: reflections on the French Revolution.
- Blanning, T.C.W. (ed.). (2000). The Oxford History of Modern Europe. Oxford:OUP. [Chapters 2 and 4].
- Hobsbawm, E. J. (1996). The Age of Revolution, 1789–1848. New York: Vintage Books.
- Merriman, John. (2002). A History of Modern Europe: From Renaissance tothe Present. Vol. II. London and New York: W.W. Norton [Chapters 12 and 14].
- नवलेशवर, मीनाभारद्वाज, वीनाचौधरी (संपादित)। आधुनिक यूरोप का इतिहास
- स: आर मऔरन्शाएं।Hindi MadhyamKaryanvayaNideshalaya, DU
- तनेहमहादिन। आधुनिक यूरोप का इतिहास:1870-1914 प्रकाशन।
- ए.के. मित्तल। आधुनिक यूरोप का इतिहास: 1789 से 1945 साहित्यभवनप्रकाशन

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category III

BA (Prog.) with History as Non-Major

DISCIPLINE SPECIFIC CORE – HISTORY OF INDIA 1700-1857

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
History of India 1700 – 1857	4	3	1	0	12th Pass	Should have studied History of India 1550 – 1700

Learning Objectives

The paper introduces the students to the key features of the 18th century, and contextualise the establishment of the early colonial state. The paper will focus on colonial policies and their impact on the socio-economic life of the people of India as well as the discontent caused by such policies. While introducing reform measures, colonial rule created a sense of self-consciousness and assertion which manifested itself in variousuprisings against the colonial rule.

Learning outcomes

On completion of this course the student shall be able to:

- Explain the process of the establishment of Company rule and the policies and practises to sustain the process of expansion and consolidation of the Company rule.
- Understand the impact of various economic policies and how they contributed to dissatisfaction with colonial rule.
- Evaluate the reform measures implemented during under the colonial rule and how they served the interests of the Empire, particularly in the context of education.

SYLLABUS OF DSC-1

Unit I: India in the 18th century: Background, Debate

Unit II: Expansion and consolidation of British power:

3. Bengal, Mysore, Maratha, Punjab
4. Ideologies/Strategies of Raj

Unit III: Making of a colonial Economy:

4. Land Revenue Settlements
5. Commercialisation of Agriculture
6. De-Industrialisation

Unit IV: Social and Religious Reform Movements:

3. An overview of the reformist movements of the 19th century
4. Indigenous and Modern education

Unit V: The Revolt of 1857: Causes, Nature, and Consequences

Practical component (if any) - NIL

Essential/recommended readings

Unit I. This unit situates the major historiographical debates on the transformation ofthe Indian society in the eighteenth-century. **(Teaching time: 6 hrs. approx.)**

- Bandyopadhyay, Sekhar. (2004). From Plassey to Partition: A History ofModern India. Delhi: Orient Longman,
- Bayly, C.A. (1990). An Illustrated History of Modern India 1600-1947. London: National Portrait Gallery.
- Bose, S and Ayesha Jalal. (1998). Modern South Asia: History, Culture, Political Economy. New Delhi: OUP.
- Lakshmi Subramanian. (2010). History of India, 1707-1857. Hyderabad: Orient Blackswan. (Also in Hindi)
- Dube, Ishita Banerjee. (2015). A History of Modern India. Delhi: Cambridge University Press
- सामण्यण, लामी, (2013), भारर् का इर्हास (1700-1857), र्ल्ली, ओररएंढलैकतवान
- बंधोपाध्याय, शेखर. (2012). प्लासीसेपूवभाि र्नक: आधर्ुनकभारर्काइर्हास. Hyderabad: Orient Longman.
- शक्ल, आर.एल. (Ed). (1987). आधर्ुनक भारर् का इर्हास, र्हंि ी माध्यम कार्यान्वनत्रनथे ालय, र्ल्लीवाखवद्यालय, र्ल्ली

Unit II. This unit discusses the process which led to the expansion and consolidation of the British colonial power in India with the help of specific case studies. **(Teaching time: 9 hrs. approx.)**

- Bandyopadhyay, Sekhar. (2004) From Plassey to Partition. Delhi: Orient Longman.
- Metcalf, Thomas R. (2007 reprint). Ideologies of the Raj, Cambridge: CUP
- Wagoner, Phillip B. (October 2003). “Pre- colonial Intellectuals and the Production of Colonial Knowledge”. Comparative Studies in Society and History, 45 (4), pp. 783- 814
- Mann, Michael. (2015). South Asia’s Modern History: Thematic Perspectives. London: Routledge.
- Chaudhary, Latika et al. (Eds.). (2016). A New Economic History of Colonial India. London: Routledge.
- Chandra, Bipan. (1979). Nationalism and Colonialism in Modern India. Hyderabad: Orient Longman.
- बंधोपाध्याय, शेखर. (2012). प्लासीसेपूवभाि र्नक: आधर्ुनकभारर्काइर्हास. Hyderabad: Orient Longman.
- ोवर, बी. एल. (1995). आधर्ुनकभारर्काइर्हास, New Delhi: S. Chand & Co.

Unit III. This unit provides a critical perspective on the changing patterns of land relations, agricultural practices, and trade and industry in the Indian sub-continent under the British colonial rule. **(Teaching time: 12 hrs. approx.)**

- Bandyopadhyay, Sekhar. (2004). From Plassey to Partition: A History ofModern India. Delhi: Orient Longman.
- Dutt, R.P. (1986). India Today. Calcutta: Manisha.
- Mann, Michael. (2015). South Asia's Modern History: Thematic Perspectives. London: Routledge.
- Bose, S and Ayesha Jalal. (1998). Modern South Asia: History, Culture, Political Economy. New Delhi: Oxford University Press
- Chaudhary, Latika (et. al. Eds.). (2016). A New Economic History of ColonialIndia. London: Routledge
- Sarkar, Sumit. 2014. Modern Times: India 1880s-1950s: Environment,Economy and Culture. Ranikhet: Permanent Black.
- भट्टाचार्य, सब्यसाची(2008).आधुनिकभारत कीआर्थिकइतिहास,(1850-1947) नयी दिल्ली, राजकमलप्रकाशन
- बंद्योपाध्याय, शेखर. (2012). प्लासीसेस्वभाजिनक: आधुनिकभारतकाइतिहास. Hyderabad: Orient Longman.
- शुक्ल, आर.एल. (Ed). (1987). आधुनिक भारत का इतिहास, दिल्ली माध्यम कार्यान्वयननिदेशालय, नयीदिल्ली, दिल्लीविश्वविद्यालय, नयी

Unit IV. This unit examines social and religious reform movements, the state of education in India, and the influence of various policies designed to serve the interests of the Empire. **(Teaching time: 12 hrs. approx.)**

- Bandyopadhyay, Sekhar. (2004). From Plassey to Partition: A History of Modern India. Delhi: Orient Longman.
- Joshi, V.C. (1975). Rammohun Roy and the process of modernization in India. Delhi: Vikas
- O'Hanlon, Rosalind. (2012). Caste, Conflict and Ideology: Mahatma JotiraoPhule and the Low Caste Protest in Nineteenth-Century Western India. Cambridge: Cambridge University Press.
- Panikkar, K.N. (1995). Culture, Ideology, Hegemony: Intellectuals and Social Consciousness in Colonial India. New Delhi: Tulika.
- Bhattacharya, Sabyasachi (ed.). (1998).The Contested Terrain: Perspectives on Education in India. New Delhi: Orient Blackswan
- बंद्योपाध्याय, शेखर. (2012). प्लासीसेस्वभाजिनक: आधुनिकभारतकाइतिहास. Hyderabad: Orient Longman.
- शुक्ल, आर.एल. (Ed). (1987). आधुनिक भारत का इतिहास, दिल्ली माध्यम कार्यान्वयननिदेशालय, नयीदिल्ली, दिल्लीविश्वविद्यालय, नयी

Unit-V: This Unit shall enable students to identify and discuss the issues reflected in the major uprisings of the nineteenth century. In the context of heavy revenueassessment, changing land rights, deepening stratification within the rural society, emergence of new social forces in agrarian economy, etc., students shall discuss the discontent of the landed elite, and those

of struggling peasants and tribals during theCompany Raj. **(Teaching time: 6 hrs. approx.)**

- Stokes, Eric and C.A. Bayly. (1986). The Peasant Armed: the Indian Revolt of 1857. Clarendon Press
- Mukherjee, Rudrangshu. (1993). "The Sepoy Mutinies Revisited", in Mushirul Hasan and Narayani Gupta (Eds.), India's Colonial Encounter, New Delhi: Manohar
- Hardiman, David. (1993). Peasant Resistance in India, 1858- 1914. New Delhi: OUP.
- Desai, A.R. (ed.) (1979). Peasant Struggles in India. Bombay, OUP
- Bandyopadhyay, Sekhar (2004). From Plassey to Partition: A History ofModern India. Delhi: Orient Longman.
- Mann, Michael. (2015). South Asia's Modern History: Thematic Perspectives. London: Routledge.
- Pati, Biswamoy. (Ed.). (2007). The Great Rebellion of 1857 in India: Exploring transgressions, contests and diversities. London: Routledge.
- Bose, S and Ayesha Jalal. (1998). Modern South Asia: History, Culture, Political Economy. New Delhi: Oxford University Press.
- Taneja, Nalini. (2012). "The 1857 rebellion." in K. N. Panikkar, (Ed.).Perspectives of Modern Indian History. Mumbai: Popular Prakashan.
- Guha, Ranajit. (1983) Elementary Aspects of Peasant Insurgency in ColonialIndia. New Delhi: Oxford University Press
- Chandra, Bipan. (et.al Eds.) (1989). India's Struggle for Independence. Delhi: Penguin
- सरकार, सुमित(2009). आधुनिकभारत, नयी दिल्ली, राधा कमलप्रकाशन
- बंद्योपाध्याय, शेखर. (2012). प्लासीसेविभाजनतक: आधुनिकभारतकाइतिहास. Hyderabad: Orient Longman.
- शुक्ल, आर.एल. (Ed). (1987). आधुनिक भारत का इतिहास, हिंदी माध्यम कार्यान्वयननिदेशालय, नयी दिल्ली विश्वविद्यालय, नयी दिल्ली

Suggestive readings

- Alavi, Seema ed. (2002).The Eighteenth Century in India. New Delhi: OUP.
- Bara, Joseph (2002) "Tribal Education, the Colonial State and Christian Missionaries: Chotanagpur 1839-1870." In Education and the Disprivileged: Nineteenth and Twentieth Century India, edited by Sabyasachi Bhattacharya. New Delhi: Orient Longman.
- Bayly, Susan. (1999). Caste, Society and Politics in India from the 18th Century to the Modern Age. Cambridge: Cambridge University Press.
- Bhattacharya, Sabyasachi ed. (2007).Rethinking 1857. Delhi: Orient Longman.
- Chaudhury, Sushil. (2000). The Prelude to Empire: Plassey Revolution of 1757. Delhi: Manohar.
- Constable, Philip. (2001). "The Marginalization of a Dalit Martial Race in the Late Nineteenth and Early Twentieth Century Western India". Journal of Asian Studies, 60 (2), pp. 439- 78.
- Dirks, Nicholas B. (2001).Castes of Mind. Princeton, New Jersey: Princeton University Press.
- Guha, Ranajit. (1983) Elementary Aspects of Peasant Insurgency in Colonial India. New Delhi: Oxford University Press .

- Jones, Kenneth. (2003)Socio-Religious Reform Movements in British India. New Cambridge History of India, Vol.3.1. Cambridge: Cambridge University Press.
- Kapila, Shruti ed. (2010). An Intellectual History for India.Delhi: Cambridge University Press.
- Ludden, David ed. (2005). Agricultural Production and South Asian History. New Delhi: Oxford University Press.
- Metcalf,Thomas. (1995). Ideologies of the Raj. Cambridge: Cambridge University Press
- Mukherjee, Mithi. (2010) India in the Shadows of Empire: A Legal and Political History 1774- 1950. New Delhi: Oxford University Press.
- Mukherjee, Rudrangshu. (1984)Awadh in Revolt 1857-1858. New Delhi: Oxford University Press.
- Pollock, Sheldon ed. (2011). Forms of Knowledge in Early Modern Asia. Delhi: Manohar.
- Raj, K N. et al ed. (1985). Essays on the Commercialization of Indian Agriculture. New Delhi: Oxford University Press.
- Skuy, David. (July 1998). "Macaulay and the Indian Penal Code of 1862: The Myth of the Inherent Superiority and Modernity of the English Legal System Compared to India's Legal System in the Nineteenth Century", Modern Asian Studies, 32 (3), pp. 513-557.
- Stein, Burton (ed.) (1992).The Making of Agrarian Policy in British India, 1770- 1900. Delhi: Oxford University Press.
- Stokes, Eric. (1986).The Peasant Armed: The Indian Rebellion of 1857 In C.A. Bayly (Ed.). New Delhi: Oxford University Press.
- Rosanne Rocher, "British Orientalism in the Eighteenth century: The Dialectics of Knowledge and Government", in Peter van der Veer and Carol Breckenridge eds. Orientalism and the Postcolonial Predicament: Perspectives on SouthAsia, University of Pennsylvania Press, 1993.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Pool of DSE for BA (Prog.)

DISCIPLINE SPECIFIC ELECTIVE COURSE (DSE): Merchant and Mercantile Practices in India

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Merchant and Mercantile Practices in India	4	3	1	0	12th Pass	NIL

Learning Objectives

This course explores the ways in which merchants and mercantile practices have been approached, appropriated and understood in Indian history. The diverse narratives of a high degree of merchant mobility, institutional adaptation, and diversification into banking and manufacturing map out dimensions of variation reflected in a huge diversity of business practice and social organization. The endeavor is to familiarize students with merchant communities and practices distinguished by location, geographic scope, and type of commodities traded. Their regional distribution, internal and social organization, standards for behaviour, and resource opportunities varied accordingly and thus one could analysis historical evolution of merchants and mercantile communities of the IndianSubcontinent and their changing role. Here response and adaptation of the mercantile communities towards the changing socio-political environment too becomes vital to be explored.

Learning outcomes

Students will also learn what histories of merchants and mercantile practices can tell us about ex-change patterns across social formations. We will aim simultaneously to see merchants and mate-rial culture more generally, as playing a fundamental role inthe shaping of our past.

Theory and Practical/ Field work/Hands-on-learning:

Through the course students are expected to continuously interact with the mercantile sector through programmes built into the academic curriculum like field studies, internships, projects, audio-visual projects and its cluster initiatives.

SYLLABUS OF DSE

Unit I: Introduction: Situating merchants and mercantile practices in Indian History

1. Sources and Historiography: Inscriptions, Bahis, Khatas, Khatpatras,
2. Inception: Mechanism and means of exchange and involvement of groups(barter, coined and uncoined money)

Unit II: Origins, Identities and Organizations of Merchant Communities:

1. Crafts and commerce in early historical India: Craft Guilds and Trading Guilds (Shreni, Puga, Nigama, Sartha) the Craftsperson as a Petty Trader: Organization, rules, and regulations;
2. Occupational specialisation and spatial distribution: Nagaram,
3. Mercantile Public Identities:Chettiars, Baniyas, Jains, Marwaris, Shikarpuris, Banjaras, Bohras, Parsis

Unit III: Social Interface and world of the Merchants

1. Momentum of Markets, Urbanisation and engagement of merchants in exchange practices/development of Mercantile spaces- qasbas, bazaars, katras, melas and haats,
2. Merchants and mercantile practices in relation to the state and temple in Medieval India.

Unit IV: Changing patterns of Mercantile Communities & Practices:

1. Growth of interregional specialisation and India's interaction with Global trade.
2. Merchant families, marriage alliances, family firms, and mercantile elites,
3. Money, instruments of exchange, banking and interest,
4. European Trade, Companies and Agency houses.

Practical component (if any) - NIL

Essential/recommended readings

Unit I: This unit seeks to introduce the concept of Mercantile activities and the role of merchants through the analysis of Inscriptions, Bahis, Khatas, Khatpatras, The ideais to make student familiar with the inception of mechanism and means of exchange and involvement of groups. **(Teaching time: 9 hrs. approx.)**

- Adhya, G.L., Early Indian Economics: Studies in the Economic Life of Northern and Western India c. 200 B.c.-300 A.D; Bombay, 1966. {Chapters II ('Industry') and III ('Trade')}
- Gokhale, B G; 'The Merchant in Ancient India'; Journal of the American Oriental Society; Apr-Jun 1977; Vol. 97, no.2; pp. 125-130.
- राधाकृष्णचौधरी, प्राचीन भारत का आर्थिक इतिहास, पटनानईदिल्ली; 1979, िदल्लीपब्लिकेशन.
- {अध्याय 10 evam 12.}

- Majumdar, R.C., Corporate Life in Ancient India; (third edition), Firma K,. L. Mukhopadhyay, Calcutta, 1969, {Chapter I ('Corporate Activities in Economic Life')}

Unit II: This unit deals with origins, identities and Organizations of Merchant Communities. The unit will also trace Crafts and commerce in early historical India and look at Religious, Caste and Regional Variations in Mercantile Public Identity. **(Teaching time: 12 hrs. approx.)**

- Champakalakshmi, R., Trade, Ideology and Urbanisation: South India 300 BC toAD 1300; Oxford University Press, Delhi. 1996, {Chapter 5 ('The South Indian Guilds: Their Role in Early Medieval Trade and Urbanization')}.
- Chakravarti,Ranabir; 'Monarchs, merchants and a matha in Northern Konkan (c. 900-1053 AD)'; IESHR: 27,2, 1990.
- ———-; Trade and Traders in Early India; London, 2020.
- Das, Dipakranjan, Economic History of the Deccan: from the First to the Sixth century A.D.; Munshiram Manoharlal; Delhi; 1969. {Chapters XII ('Organisationof Industry and Trade') and XIV ('Banking and Allied Business')}
- Gopal, Lallanji, The Economic Life of Northern India, c. A.D. 700 – 1200; Motilal Banarsidass,;Varanasi;1965. {Chapter IV ('Guilds')}
- Subbarayalu, Y., 'Trade Guilds of South India up to Tenth Century'. Studies in People's History, 2(1), 2015, pp. 21–26.
- Jain.,V K; Traders and Traders in Western India 1000-1300 AD; South Asia Books; 1990.
- Jain, Shalin, "The Urban Jain Community, Commercial Mobility and Diaspora", (Chapter 4) pp. 158-205; portions dealing with social role of Jain merchants- Shantidas Jauhari and Virji Vora, pp. 255-267 in Identity, Community andState: The Jains under the Mughals, Primus Delhi, 2017
- Karashima, N., Y. Subbarayalu and P. Shanmugam, 'Nagaram during the Cola and Pandya Period: Commerce and Towns in the Tamil Country, A.D 850- 1350'. The Indian Historical Review, Volume XXXV, No I (January 2008), pp. 1- 33.
- Kosambi, D.D., 'Indian Feudal Trade Charters', Journal of Economic and Social History of the Orient, 2(3), 1959, pp. 281-293. Reprinted in B.D. Chattopadhyaya, ed., Oxford India Kosambi.
- Markovits, Claude, "The Gate of Khorrassan: the Shikarpuri network, c. 1750- 1947", The Global World of Indian Merchants, 1750-1947 Traders of Sind fromBukhara to Panama, CUP, 2000, pp. 57-109.
- Markovits, Claude (2008). Merchants, Traders, Entrepreneurs: Indian Business in the Colonial Era. Basingstoke: Palgrave Macmillan (Part III on 'Merchant Networks').
- Mehta, Makrand, Indian Merchants and Entrepreneurs in Historical Perspective, Delhi, 1991.
- Mehta, Shirin, 'The Mahajans and The Business Communities of Ahmedabad' in Dwijendra Tripathi ed., Business Communities of India, Manohar, 1984, pp. 173-184.
- Nilakanta Sastri, K.A., The Coḷas (Revised edition, 1955), {Chapter XXII ('Industry and Trade').
- Sircar, D.C., Studies in the Political and Administrative Systems in Ancient and Medieval India; Motilal Banarsidass; Delhi; 1974), {Chapter XIII ('Charter of Viṣṇuṣeṇa') and Appendix VI ('Traders' Privileges Guaranteed by Kings')}
- Ray, rajat Kanta ed, 1992, Entrepreneurship and Industry in India, 1800-1947, Delhi, OUP

Unit III: This unit will explore the growth and expansion of mercantile world of activity and its

interface with Urbanization, exchange spaces, state and temple in Medieval India. **(Teaching Time: 12 hrs. approx.)**

- The Cambridge Economic History of India 1, 1200-1750, edited by Tapan Raychaudhuri and Irfan Habib (Chapters II, III.3-4, IV, V, VII, X-XIII)
- Ardhakathanak, Translation: Mukund Lath. (ed. Translation), Half a Tale, Ardhakathanak,Jaipur, 1989
- Irfan Habib, 'Banking in Mughal India', Contributions to Indian Economic History, ed. Tapan Raychaudhuri, Calcutta, 1960, pp. 1–20.
- ———;The Currency System of the Mughal Empire', Medieval India Quarterly, Vol. iv, 1961.
- ———; 'Merchant Communities in Precolonial India', The Rise of MerchantEmpires, Long- Distance Trade in the Early Modern World 1350–1750, ed. James D. Tracy, Cambridge, 1990.
- Hall, Kenneth R., Trade and Statecraft in the Age of Cōlas; Abhinav Publications;New Delhi.;1980.
- Haider, Najaf, "The Moneychangers (Sarrafs) in Mughal India", Studies in People's History, 6, 2, 2019, pp. 146-161.
- Om Prakash; 'The Indian Maritime Merchant, 1500-1800'; Journal of the Economic and Social History of the Orient , 2004, Vol. 47, No. 3, Between the Flux and Facts of Indian History: Papers in Honor of Dirk Kolff (2004), pp. 435- 457; URL: https://www.jstor.org/stable/25165056
- Pradhan, Sulagna; 'Three Merchant of Thirteenth Century Gujarat';Proceedings of the Indian History Congress, 2017, Vol. 78 (2017), pp. 275-281; URL: https://www.jstor.org/stable/10.2307/26906095.

Unit IV: This unit will take up changing patterns of Mercantile Communities & Practices with Growth of interregional specialisation and Global prospective of trade, establishment of mercantile elite groups/families. The unit will also deal with the gradual and increasing involvement of European trading companies and emergence of agency houses. **(Teaching time: 12 hrs. approx.)**

- The Cambridge Economic History of India 2, 1757-1970, edited by Dharma Kumar and Meghnad Desai (Chapter IX, 'Money and Credit, 1858-1947', by A.G. Chandavarkar).
- Chaudhary, Sushil and Michel Morineau ed., Merchants, Companies andTrade: Europe and Asia in the Early Modern Era, CUP, 1999.
- Ray, Rajat Kanta, 'Asian Capital in the Age of European Domination: The Riseof the Bazaar, 800–1914', Modern Asian Studies, 29(3), pp. 449–554.
- Roy, Tirthankar, "States: A Political Theory of the Community", (Chapter 2), pp. 45-88; "Merchants: Guild as Corporation", (Chapter 3), pp. 89-129; "Artisans: Guilds for Training", (Chapter 4), pp. 130-152 in Tirthankar Roy, Company of Kinsmen: Enterprise and Community in South Asian History 1700- 1940, OUP, 2018.
- Rudner,David; 'Banker's Trust and the Culture of Banking among the Nattukottai Chettiars of Colonial South India'; Modern Asian Studies, 1989, Vol. 23, No. 3 (1989), pp. 417-458; URL: https://www.jstor.org/stable/312703.

Suggestive readings

- Business Practices And Monetary History, Unit 22 in Block-5 Expansion and Growth of Medieval Economy-II,

http://egyankosh.ac.in//handle/123456789/44532

- C.A. Bayly, Rulers, Townsmen and Bazaars: North Indian Society in the Age of British Expansion, 1770-1870, New Delhi: Cambridge University Press, 1988.
- Chakravarti,Ranabir; 'Nakhudas and Nauvittakas: Ship-Owning Merchants in the West Coast of India (C. AD 1000-1500)'; Journal of the Economic andSocial History of the Orient , 2000, Vol. 43, No. 1 (2000), pp. 34-64; URL: https://www.jstor.org/stable/3632772.
- Chatterjee,Kumkum; 'Collaboration and conflict: Bankers and early colonial rule in India: 1757-1813'; IESHR; 30,3, 1993'.
- Colonialism And Trade:1857-1947 Unit 27 in Block-6 Trade and Markets http://egyankosh.ac.in//handle/123456789/44534
- Goitein, S.D., 'Portrait of a Medieval India Trader: Three Letters from the CairoGeniza,
- Bulletin of the School of Oriental and African Studies 50(3), 1987, pp. 449–64.'
- Habib, Irfan, 'Usury in Medieval India', Comparative Studies in Society and History 6 (1964), pp. 393–419.
- Irfan Habib, 'The System of Bills of Exchange (Hundis) in the Mughal Empire', Proceedings of the Indian History Congress, 35 Session, Muzaffarpur, 1972,pp. 290–303.
- Mahalingham, T.V. 1940 (1975), Administration and Social life under Vijayanagar - Part II Social Life (Revised edn).
- Mehta, Makrand. (1991). "Vaishnav Banias as Merchants, Sharafs and Brokers:The 17th Century Parekhs of Surat" in Makrand Mehta ed., Indian Merchants and Entrepreneurs in Historical Perspective with Special Reference to Shroffs of Gujarat: 17th to 19th Centuries, Delhi: Academic Foundation, pp. 65- 90.
- Merchants And Markets:1757-1857 Unit 26 in Block-6 Trade and Markets http://egyankosh.ac.in//handle/123456789/44535
- Mukherjee,Rila; 'The Story of Kasimbazar: Silk merchants and Commerce in Eighteenth Century India'; Review (Fern-and Braudel Center), Fall, 1994, Vol 17, No. 4, pp 499-554; URL: https://www.jstor.org/stable/40241304
- Pushpa Prasad,'Credit and Mortgage Documents in the Lekhapaddhati', Puratattva, No. 18, 1987- 88, pp.94-95.
- Patra , Benudhar; 'Merchants,guild and trade in Ancient India: An Orissan Perspective';
- Annals of the Bhandarkar Oriental Research Institute; Vol 89, 2008; pp.133- 168.
- Steensgaard, Niels, The Asian Trade Revolution of the Seventeenth Century: The East India Companies and the Decline of the Caravan Trade. Chicago: University of Chicago Press. 1974.
- Trade, Trading Networks and Urbanisation: North India, C.AD 300 to C. AD 1300, Unit 14 in Block-3 Early Medieval Economy and Its Continuities, http://egyankosh.ac.in//handle/123456789/44516
- Tripathi, Dwijendra. (1984) (ed.), Business Communities of India: A Historical Perspective, Delhi: Manohar.
- ट्मबगा, िॅमस ए. (1978).मारवाड़ी समाि व्यवसाय मे उद्योग मेें , नईदल्ली:राधाकृष्णप्रकाशन.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE (DSE -2): Urbanisation and Urbanism in Indian

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Urbanisation and Urbanism in Indian History	**4**	**3**	**1**	**0**	**12 th Pass**	**NIL**

Learning Objectives

This course provides a comprehensive insight into the concepts of urbanisation, urbanism and urban centres in historical context. It aims to give the students an understanding of the process of urban development and decline in different historical periods and phases emphasising on the role of various factors and impetus including technology, trade, economic institutions, state-system and religious ideologies in the urbanization of prominent cities of Indian history.

Learning outcomes

On completion of this course, the students shall be able to:

- Discern the idea of urbanisation, urbanism, quintessential characteristics of an urban centre in distinct historical background and the determining factors of the emergence of urban centres in Indian history.
- Comprehend the origin and fall of early urbanism and urban centres in the light of archaeological evidence with special reference to first urbanization.
- Recognise the role of technology, economic development and state formations in the revival of urbanisation and important urban cities in ancient times.
- Identify the causes and features of urbanisation in medieval India after obtaining the knowledge of the cities in context of economic growth, political transformation and religious institutions.
- Engage with the idea of imperial ideology of the British government shaping the creation of colonial cities.
- Get acquainted with the various aspects of urbanization in the colonial period centred on trade, urban planning, transportation and polity.

SYLLABUS OF DSE-2

UNIT I: Interpreting Urbanization, Urbanism, and Urban-Rural Fringe; Survey of Sources and Historiography.

UNIT II: The First and Second Urbanization: Origin, Development, Decline and Continuity; Case studies - Harappa, Rakhigarhi, Mathura, Sopara and Kanchipuram.

UNIT III: Urban efflorescence in the medieval period: State, Trade and Religion; Case studies - Thanjavur, Hampi, Puri, Agra.

UNIT IV: Urbanization in the colonial period with special reference to trade, urban planning, transportation and polity; Case Studies - Madras, Calcutta, Bombay, New Delhi.

Practical component (if any) - NIL

Essential/recommended readings

Unit-I: This unit lays stress on the concepts of urbanisation, de-urbanisation, urbanism, and urban-rural relations in historical perspective. It further explains the subtle nuances of the various sources such as archaeological, literary and archival records while discussing the process of urbanisation, its several phases, patterns and classifications in Indian history. (Teaching Time: 6 hours approx.)

- A. K. Ramanujan, 'Towards an Anthology of City Images', in Vinay Dharwadker (ed.), The Collected Essays of A.K. Ramanujan, Oxford University Press, Delhi, 2012, pp. 52-72.
- B.D. Chattopadhyaya, Studying Early India: Archaeology, Text and Historical Issues, Permanent Black, 2003, pp. 29-38, 105-125.
- Indu Banga (ed.), The City in Indian History, Manohar, New Delhi, 1991, pp. 1-8, 69-80.
- R. Ramachandran, Urbanization and Urban System in India, Oxford University Press, Delhi, 1991.
- Shonaleeka Kaul, Imagining the Urban, Permanent Black, Delhi, 2010, (Introduction).

Unit II. This Unit shall introduce students to the evolution of urbanisation in the protohistoric period, its development and decline; the re-emergence of material culture, state-organization, belief systems and some of the important urban centres in the Indian sub-continent (Teaching Time: 12 hours approx.)

- Adhir Chakravarti, Urban Development in Ancient India, The Asiatic Society, Kolkata, 2006. (Chapter 1 & 2).
- B.D. Chattopadhyaya, Studying Early India: Archaeology, Texts and Historical Issues, Permanent Black, Delhi, 2003. pp. 105-134.
- D. K. Chakrabarti and Makkhan Lal (ed.), History of Ancient India, Vol. 3, Aryan Books International, New Delhi, 2014, pp. 435-500.
- Indu Banga (ed.), The City in Indian History, Manohar Publishers and Distributers, New Delhi, 2005, pp. 9-18.
- J.M. Kenoyer, Ancient cities of Indus valley civilization, Oxford University Press, Oxford, 1998.
- R. Champakalakshmi, Trade, Ideology and Urbanization, Oxford University Press, Delhi, 1996. (Chapter 1, 6 &7).
- Seema Bawa (ed.), Locating Pleasure in Indian History: Prescribed and Proscribed Desires in Visual and Literary Cultures, Bloomsbury, New Delhi, 2021, Chapter 2.
- Vasant Shinde, 'Peopling and Early Cultural Development in South Asia as Revealed by the First of its Kind Research Based on Archaeogenetic Analysis and Craniofacial Reconstruction of the Human Skeleton Data from Rakhigarhi', Purattatva, Vol. 50, 2020, pp. 34-53.
- Vijaya Laxmi Singh, Mathura, the Settlement and Cultural Profile of an Early Historic City, Sandeep Prakashan, Delhi, 2005, (Chapter 2 & 3).
- Vijaya Laxmi Singh, The Saga of the First Urbanism in Harappan Civilization, Sandeep Prakashan, Delhi, 2006.
- राय उदय नारायण, प्राचीन भारत में नगर तथा नगर जीवन, हिंदुस्तान एकेडेमी, इलाहाबाद, 1965.
- संजू शर्मा, ऊपरी गंगाघाटी द्वितीय नगरीकरण, लोकभारती प्रकाशन, इलाहाबाद, 2017.
- किरण कुमार थपलियाल, सिंधु सभ्यता, उत्तर प्रदेश हिंदी संस्थान, लखनऊ, 2003.

- उपिंद्र सिंह, प्राचीन एवम पूर्व मध्यकालीन भारत का इतिहास पाषाणकाल से 12वी शताब्दी तक, पियरसन, नई दिल्ली, 2016, (अध्याय 4, 6,8).

Unit III. This unit elaborates the urban development and growth of cities in medieval period with regard to the establishment of new state-polity, expansion of trade and mercantile activities as well as consolidation of religious ideologies, in which the architectural structures of the cities too hold a significant place as the manifestation of power, authority and glory. In order to describe the political, economic and cultural aspect of the medieval cities, the unit focuses on the study of Thanjavur, Hampi, Agra and Puri. (Teaching Time: 4 weeks approx.)

- Aniruddha Ray, Towns and Cities of Medieval India: A Brief Survey, Manohar, New Delhi, 2015.
- Bhairabi Prasad Sahu, 'Trade and Traders: An Exploration into Trading Communities and their Activities in Early Medieval Odisha', Studies in People's History, Vol. 6, No. 2, 2019, pp. 134–145.
- James Heitzman, 'Temple Urbanism in Medieval South India', The Journal of Asian Studies, Vol. 46, No. 4, November 1987, pp. 791-826.
- John M. Fritz and George Michell, Hampi Vijayanagar, Jaico, Mumbai, 2014.
- K. K. Trivedi, Medieval City of Agra, Primus Books, Delhi, 2017.
- R. Champakalakshmi, Trade, Ideology and Urbanization: South India 300 BC to AD 1300, Oxford University Press, Delhi, 1996.
- Stephen, S. Jeyaseela, 'Thanjavur: The Making of a Medieval Metropolis' in Yogesh Sharma and Pius Malekandathil (eds), Cities in Medieval India, Primus Books, Delhi, 2014.
- देवी दयाल माथुर, आगरा व फतेहपुर सीकरी के ऐतिहासिक भवन, सर्वोदय प्रकाशन, दिल्ली, 1954.
- वेंकट सुब्रमनियम, मुग़ल भारत में शहरीकरण, हरीशचंद्र वर्मा (संपादक), मध्यकालीन भारत, भाग द्वितीय, हिंदी माध्यम कार्यन्वय निदेशालय, दिल्ली विश्वविद्यालय, 2008 (19 वां संस्करण).

Unit IV. This unit aims to familiarise the students with the process of urbanization that was broadly influenced by the colonial policies of the British rule in India, and with the fact that urban centres were created as symbols of Imperialism. It further engages with the idea that trade and commerce, transportation, urban planning including landscapes allotted for administrative and educational purposes, as well as for cantonments, were linked to the creation of colonial cities. (Teaching Time: 4 weeks approx.)

- Amar Farooqui, 'Urban Development in a Colonial Situation: Early Nineteenth Century Bombay', Economic and Political Weekly, Vol. 31, No. 40, October 5, 1996, pp. 2746-2759.
- David A. Johnson, 'A British Empire for the Twentieth century: the Inauguration of New Delhi, 1931', Urban History, Vol. 35, No. 3, December 2008, pp. 462-484.
- Maansi Parpiani, 'Urban Planning in Bombay (1898-1928): Ambivalences, Inconsistencies and Struggles of the Colonial State', Economic and Political Weekly, Vol. 47, No. 28, July 2012, pp. 64-70.
- R. E. Frykenberg (ed.), Delhi through the Ages: Selected Essays in Urban History, Culture and Society, Oxford University Press, Delhi, 1993, pp. 223 - 286
- Narayani Gupta, Delhi between Two Empires, 1803-1931: Society, Government, and Urban Growth, Oxford University Press, Delhi, 1981, pp. 157-225.
- Partho Dutta, Planning the City: Urbanisation and Reform in Calcutta, c. 1800 – c. 1940, Tulika Books, Delhi, 2012.
- Susan M. Neild, 'Colonial Urbanism: The Development of Madras City in the Eighteenth

and Nineteenth Centuries', Modern Asian Studies, Volume 13, Issue 02, April 1979, pp. 217 – 246.
- निर्मला जैन, दिल्ली शहर दर शहर, राजकमल प्रकाशन, दिल्ली, 2009.

Suggestive readings

- Ghosh (ed.) The City in Early Historical India: An Encyclopaedia in Indian Archaeology, Vol. I, Munshiram Manoharlal, Delhi, 1973.
- P. Shah, Life in Medieval Orissa, Chaukhamba, Varanasi, 1976.
- Varghese, New Perspectives on Vijayanagara: Archaeology, Art, and Religion, Oxford University Press, New Delhi, 2000.
- Akinori Useugi, 'Perspectives on the Iron Age/ Early Historic Archaeology in South Asia', Purattava, Vol. 50, 2020, pp. 138-164.
- Alexandra Mack, 'One Landscape, Many Experiences: Differing Perspectives of the Temple Districts of Vijayanagara', Journal of Archaeological Method and Theory, Vol. 11, No. 1, 2004, pp. 59–81.
- Aloka Parashar, 'Social Structure and Economy of Settlements in the Central Deccan (200 BC- AD 200)', in Indu Banga (ed.) The City in Indian History, Manohar Publications, Delhi, 1991.
- Anil Varghese, Hampi, Oxford University Press, New Delhi, 2002.
- Attilio Petruccioli, 'The City as an Image of the King: Some Notes on the Town-Planning of Mughal Capitals in the Sixteenth and Seventeenth Centuries', in Monica Juneja (ed.) Architecture in Medieval India: Forms, Context, Histories, Permanent Black, Ranikhet, 2015.
- D. Chattopadhyaya, 'Transition to the Early Historical Phase in the Deccan: A Note', in B M Pandey and B. D. Chatyopadhyaya (eds) Archaeology and History: Vol. II (Essays in Memory of A. Ghosh), Agam Kala Prakashan, Delhi, 1987.
- K. Malik, Medieval Orissa: Literature, Society and Economy, Mayur Publications, Bhubaneswar, 1996.
- Burton Stein, 'The Economic Function of a Medieval South Indian Temple', The Journal of Asian Studies, Vol. 19, No. 2, February 1960, pp. 163-176.
- K. Chakrabarti, The Archaeology of Ancient Indian Cities, Oxford University Press, Delhi, 1995.
- Doris Meth Srinivasan, Mathura: The Cultural Heritage, South Asia book, Delhi, 1984.
- Ebba Koch, 'Mughal Agra: A Riverfront Garden', in Renata Halod, Attilio Petruccioli and Andre Raymond, (eds) The City in the Islamic World Vol. I, Leiden, Brill, 2008.
- R. Allchin, The Archaeology of Early Historic South Asia: The Emergence of Cities and States, Cambridge University Press, Cambridge, 1995.
- Howard Spodek, 'City Planning in India under British Rule', Economic and Political Weekly, Vol. 48, No. 4, January 26, 2013, pp. 53-61.
- J. Gollings, John M. Fritz and George Michell, City of Victory, Vijayanagara: The Medieval Capital of South India, Aperture, New York, 1991.
- J. M. Fritz, G. Michell and M. S. Nagaraja Rao, Where Gods and Kings Meet: The Royal Center at Vijayanagara, University of Arizona Press, Tucson, 1984.
- J. M. Kenoyer, 'The Indus Tradition: The Integration and Diversity of Indus Cities', Purattava, Vol. 50, 2020, pp. 19-34.
- James Heitzman, 'Ritual Polity and Economy: The Transactional Network of an Imperial Temple in Medieval South India', Journal of the Economic and Social History of the Orient, Vol. 34, No. 1/2, 1991, pp. 23-54.
- John M. Fritz and George Michell, (eds), New Light on Hampi, Recent Research at

Vijayanagara, Marg Publications, Mumbai, 2001.
- K.K. Trivedi, 'The Emergence of Agra As a Capital and a City: A Note on Its Spatial and Historical Background During the Sixteenth and Seventeenth Centuries', Journal of the Economic and Social History of the Orient, Vol. 37, No. 2, 1994, pp. 147-170.
- Krupali Krusche and Vinayak Bharne, Rediscovering the Hindu Temple: The Sacred Architecture and Urbanism of India, Cambridge Scholars Publishing, London, 2012.
- Meera Kosambi and John E. Brush, Three Colonial Port Cities in India, Geographical Review, Vol. 78, No. 1, January 1988, pp. 32-47.
- Narayani Gupta, 'Military Security and Urban Development: A Case Study of Delhi 1857-1912', Modern Asian Studies, Vol. 5, No. 1, 1971, pp. 61-77.
- P. K. Basant, The City and the Country in Early India: A Study of Malawa, Primus Books, Delhi, 2012.
- R. Nath, Agra and Its Monuments, The Historical Research Documentation Programme, Agra, 1997.
- R.S. Sharma, Urban Decay in India, Munshiram Manoharlal, Delhi, 1987.
- Shane Ewen, What is Urban History?, Polity Press, Cambridge, 2016.
- Sumanta Banerjee, Memoirs of Roads: Calcutta from Colonial Urbanization to Global Modernization, Oxford University Press, New Delhi, 2016.
- T. V. Mahalingam, Economic Life in the Vijayanagar Empire, Nuri Press, Madras, 1951.
- Murali Ranganathan (ed. & tr.), Govind Narayan's Mumbai: An Urban Biography from 1863, Anthem Press, London, 2008.
- कृष्णादत्त वाजपेयी, ब्रज का इतिहास, अखिल भारतीय ब्रज साहित्य मंडल, मथुरा, 1955.
- नीलकंठ शास्त्री, दक्षिण भारत का इतिहास, पटना, बिहार हिंदी ग्रंथ एकडेमी, 2006.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE– 3 (DSE): Prehistory and Protohistory of India

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Prehistory and Protohistory of India	**4**	**3**	**1**	**0**	**12 th Pass**	**NIL**

Learning Objectives

This course aims to introduce the concepts of pre and proto history through a survey of various cultures/periods of the Indian subcontinent. The course provides an understanding of the shifts and developments in the technology and subsistence practices through the hunting-gathering, food producing, urban and Iron using societies. The cultural diversity of different geographical zones of the Indian subcontinent would behighlighted through a study of settlement patterns.

Learning outcomes

At the end of the course, students would:

- Have the ability to differentiate between various pre and proto historic cultures/periods.
- Understand the changes and continuity in distribution, tool technology and subsist-ence practices during the Palaeolithic and Mesolithic periods.
- Identify the characteristic features of Neolithic cultures in the Indiansubcontinent with their regional distribution
- Recognise the various copper using cultures of India.
- Distinguish the different phases of Harappan civilization.
- Locate the development of Iron technology in different geographical zones ofIndia.

SYLLABUS OF DSE

Unit 1: Introduction Understanding the concept, scope and terminology of Pre and Proto history

1. Sources

Unit 2: Prehistoric Hunter Gatherers

1. Survey of Palaeolithic cultures: Sites, Sequence, tool typology and technology, Subsistence patterns
2. Survey of Mesolithic cultures in India: distribution, tool technology andtypology and artefacts
3. Survey of rock art in India

Unit 3: Early Farming Communities: Beginning of Food Production

1. Understanding Neolithic: Regional distribution, subsistence practices andsettlement patterns

2. Survey of Chalcolithic cultures in Indian subcontinent

Unit 4: Harappan Civilization: Extent, features of urbanisation and legacy (4 Weeks)

1. Early Harappan
2. Mature Harappan
3. Late Harappan

Unit 5: Early Iron using societies: Beginning and development of iron technology (3 Weeks)

1. Survey of PGW Cultures in Indian Subcontinent with special reference to Ahichhatra and Atranjikhera
2. Megalithic Cultures: Distribution pattern, Burial practices and types

Practical component (if any) - NIL

Essential/recommended readings

Unit 1: In this unit the students will be introduced to the major concepts and terminologies relating to the prehistoric archaeology. They will also be introduced to the other such disciplines which are utilized in the interpretation of prehistoric objects. **(Teaching Time: 6 hrs. approx.)**

- Chakrabarti, D.K. (1999). India: An Arc haeological History, Oxford University Press, pp. 1- 18.
- Jain, V. K. (2006). Pre and Protohistory of India. New Delhi: D.K. Printworld.
- Misra, V.N. (1989). "Stone Age India: an Ecological Perspective", Man and Environment, Vol. 14, pp.17–64.
- ि ैन., वी. के. (2008). भारत का प्रागैतिहास और आद्यइतिहास: एक अवलोकन. नई दिल्ली: डी के पब्लिशिंग हाउस.

Unit 2: In this unit the students will acquire comprehensive knowledge about the hunting-gathering stage of human cultural evolution in the context of Indian subcontinent. Early artistic expressions and their significance will add to theirinterpretive skills. **(Teaching Time: 9 hrs. approx.)**

- Jain, V. K. (2006). Pre and Protohistory of India. New Delhi: D.K. Printworld(Also available in Hindi).
- Misra, V.D. and J.N. Pal (eds). (2002). Mesolithic India. Allahabad: Department of Ancient History, Culture and Archaeology, University of Allahabad, pp. 13- 124.
- Mishra, S. (2008). "The Lower Palaeolithic: A Review of Recent Findings". Man and Environment, Vol. 33, pp. 14-29.
- Paddayya, K. (2008). India: Palaeolithic Cultures, in Encyclopaedia of Archaeology. Edited by D. M. Pearsall, pp. 768-791. New York: Elsevier.
- Singh, Upinder. (2009). A History of Ancient and Early Medieval India, New Delhi: Pearson, pp. 94-131.
- सिंह, उपिन्दर . (2016). प्राचीन एवम प ा मध्यकालीन भारत का इतिहास पाषाणकाल से 12वीं शताब्दी क, नई दिल्ली, पियर्सन.

Unit 3: This Unit will equip students with the appearance of a new way of life when humans

transited to plant and animal domestication and subsequently acquiring technical knowledge of copper smelting laying the foundation of agrarian societies in different parts of Indian subcontinent. **(Teaching Time: 9hrs. approx.)**

- Jain, V. K. (2006). Pre and Protohistory of India. New Delhi: D.K. Printworld. (Also available in Hindi).
- Jarrige, C., Jarrige, J.-F., Meadow, R. H. & Quivron, G. (eds). (1995). Mehrgarh Field Reports 1974–1985. From Neolithic Times to Indus Civilization (Department of Culture & Tourism, Karachi, 5-511.
- Saraswat, K.S. (2005). "Archaeological Background of the Early Farming Communities in the Middle Ganga Plain", Pragdhara, Vol. 15, pp. 145-177.
- Singh, Upinder. (2009). A History of Ancient and Early Medieval India: From the Stone Age to the 12th century. New Delhi: Pearson (Also available in Hindi).
- Tewari, R., R.K. Srivastava, K.S. Saraswat, I.B. Singh, K.K. Singh (2006). "Early Farming at Lahuradewa" in Pragdhara, Vol. 18, Lucknow, pp. 347-373.

Unit 4: In this unit students will acquire comprehensive knowledge about the evolution, expansion, flourishing and transformation of the Harappan Civilization. **(Teaching Time: 12 hrs. approx.)**

- Allchin, F.R.A. and Allchin, B. (1995). The Origins of a Civilization. Delhi: Viking, pp. 10-79.
- Chakrabarti, D.K. (1999). India An Archaeological History Palaeolithic Beginnings to Early Historical Foundations, Delhi: Oxford University Press, pp. 117-148.
- Dhavalikar, M.K. (1997). Indian Protohistory. New Delhi: Books and Books, pp.110-280. Dikshit, K.N., 2011, "The decline of Harappan civilization", Ancient India, pp. 125-178.
- Possehl, G. 1999. Indus Age: The Beginnings. Delhi: Oxford and IBH, pp. . 442- 556.
- Ratnagar, Shereen. (2001). Understanding Harappa: Civilization in the Greater Indus Valley. New Delhi: Tulika.
- Singh, Upinder. (2009). A History of Ancient and Early Medieval India, New Delhi: Pearson, pp. 94-131. (Also available in Hindi)
- िपत्लर ाल, के. के., और शुक्ल, संकटा प्रसाि). 2003). ुसमृध सभ्यर्ा (संशोधर् एवम पररवर्धर्संतकरण) उत्तर्देश: लखनऊ.

Unit 5: In this unit the focus will be given on the evolution of Iron using cultures and their significance in the history of the Indian subcontinent. **(Teaching Time: 9hrs. approx.)**

- Chakrabarti, D.K. (1992). The Early Use of Iron in India. Delhi: Oxford University Press, pp. 1-125.
- Sahu, B.P. (2006). Iron and Social Change in Early India. New Delhi: Oxford University Press, 1-140.
- Selvakumar, V. 2020, "Megalithic architecture of south India: A few observation", in SV Rajesh, Abhyayan GS, Ajit Kumar and Ehsan rahmat ilahi (eds) the Archaeology of burials: example from Indian subcontinent, Delhi: New Bhartiya Book Corporation. pp. 25-46.
- Singh, Upinder. (2009). A History of Ancient and Early Medieval India: From the Stone Age to the 12th century. New Delhi: Pearson (Also available in Hindi).
- Tripathi, Vibha. (2008). History of Iron Technology in India: From Beginning to Pre-modern Times. Rupa publication.

Suggestive readings

- Agrawal, D.P. and Chakrabarti, D.K. (1979). Essays in Indian Protohistory. NewDelhi: B.R. Publishing Corporation.
- Allchin, B., and Allchin, R., (1982). The Rise of Civilization in India and Pakistan, C.U.P. Cambridge.
- Banerjee, N. R. (1965). The Iron Age in India, Munishiram Manoharlal, New Delhi.
- Chakrabarti, D. K. (1988). A History of Indian Archaeology from the beginningto 1947. New Delhi: Munshiram Manoharlal Publishers Pvt. Ltd.
- Kumar, S. (2014). Domestication of Animals in Harappan Civilisation, Delhi: Research India Press, pp. 1-190.
- Neumayer, E. (2010). Rock Art of India, Oxford and New Delhi: OxfordUniversity Press.
- Pisipaty, S Rama Krishnan (Ed.), (2019). Early Iron Age in South Asia, LAPLambert Academic Publishing.
- Possehl, G.L. (1993). Harappan Civilization – A Recent Perspective, Oxford andIBH New Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

GENERIC ELECTIVES (GE-1): Twentieth Century World History: 1900 – 1945.

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Twentieth Century World History: 1900 – 1945.	4	3	1	0	12th Pass	NIL

Learning Objectives

This course conveys an understanding of an interconnected world history in the twentieth century. The course focuses on, why and how the world changed in the first half of the twentieth century. It also offers specific case studies to empirically underline the holistic nature of world history. One of the aims of this course is to make UGstudents aware of the contemporary world of ideas they inhabit.

Learning outcomes

This course will enable the students to:

- Define world history, and the factors, that determined it in the twentieth century.
- Understand key concepts like Imperialism, Colonialism and the world wars whichacted as catalysts of historical change throughout the world
- Comprehend the twentieth century revolutions and dictatorships in their variousforms.

SYLLABUS OF GE

Unit I: The Concept and Definition of World History: An Overview
Modernity, Imperialism, Colonialism, Interconnectedness, Economic Crisis, Revolutions, anti- colonial struggles

Unit II: First World War:

1. Consequences in Europe and the world,
2. League of Nations

Unit III: 1917 Russian Revolution:

1. Formation of the USSR;
2. Debates on socialism and the role of the Communist International (Comintern)

Unit IV: Fascism, Nazism and Militarism:

1. Italy,
2. Germany
3. Japan
4. Spain

Unit V: Second World War

1. Causes
2. Main Events
3. Consequences

Essential Readings

Unit 1: This Unit shall introduce the students to the concept and definition of world history. **(Teaching Time: 6 hrs. approx.)**

- Krippner-Martinez, J. (1995). "Teaching World History: Why We Should Start!"The History Teacher 29 (1), pp. 85-92. https://www.jstor.org/stable/494534
- Christian, David. (2003). "World History in Context." Journal of World History vol. 14 no.4, pp. 437-458. https://www.jstor.org/stable/20079239
- Mazlish, Bruce. (1998). "Comparing Global History to World History" The Journal of Interdisciplinary History vol. 28 no. 3, pp. 385-395. https://www.jstor.org/stable/205420
- Findley, Carter V. and John Rothey. (2011). Twentieth-Century World. USA: Wadsworth Publishing.
- Lowe, Norman (1997). Mastering Modern World History, Macmillan Press

Unit II: This Unit will familiarize the students with the key consequences of the First World War; including the formation of the League of Nations. **(Teaching Time:9 hrs. approx.)**

- Merriman, J. (YEAR). A History of Modern Europe: From Renaissance to the Present. Volume 1. New York, London: W.W. Norton (pp. 1011-1016; 1056- 1077; 1083-1087).
- Roberts, J.M. (1999). Twentieth-Century, the History of the World, 1901-2000.New York: Viking.
- Findley, Carter V. and John Rothey. (2011). Twentieth-Century World. USA: Wadsworth Publishing.
- Henig, R. (1995). Versailles and After 1919-1933. Lancaster Pamphlets Series. Second edition. New York, London: Routledge.

- Lee, Stephen.J.(1982) Aspects of European History (1789-1980), New York: Routledge
- Mahajan, Sneh. (2009). Issues in Twentieth Century World History. Delhi:Macmillan.
- महाजन, तनेह. (२०१६). बीसवीं शर्ाब्दी का र्वाव इर्तिहास: एकझलक(भाग-२). दिल्ली: लक्ष्मीप्रकाशन.
- दि ेशपांडे, अनुपा. (२०१४). र्वाववइर्तिहासकेप्रमखमद्दु े: बबलर्ेआयाम. दिल्ली: दिल्लीववद्यालयाकाशन.
- जैनएवंमाि(२००७) आधुनिकर्वाववइर्तिहास, जयपर: जैनप्रकाशनमंदिर
- वमाि, लाल बहादिर,(२०१६), आधुनिक र्वाव का इर्तिहास दिल्ली :हत्तनप्रिनशालय

Unit III: This Unit will provide the students a broad outline of the history of the USSR upto the 1917 Revolution and thereafter. It shall familiarize them with the functioning of the Comintern. **(Teaching Time: 9 hrs. approx.)**

- Nove, Alec. (1992). An Economic History of the USSR 1917-1991. London:Penguin.
- Hobsbawm, E.J. (1996). The Age of Extremes. 1914-1991. New York: Vintage.
- Hobsbawm, E.J. (2009). The Age Of Extremes- अर्े कोकायग (translated in Hindi by Prakash Dixit). Mumbai and Meerut: संवादिप्रकाशन
- Roberts, J.M. (1999). Twentieth-Century, the History of the World, 1901-2000.New York: Viking.
- Findley, Carter V. and John Rothey. (2011). Twentieth-Century World. USA: Wadsworth Publishing.
- Mahajan, Sneh. (2009) Issues in Twentieth Century World History. Delhi:Macmillan.
- महाजन, तनेह. (२०१६). बीसवीं शर्ाब्दी का र्वाव इर्तिहास: एकझलक(भाग-२). दिल्ली: लक्ष्मीप्रकाशन.
- दि ेशपांडे, अनुपा. (२०१४). र्वाववइर्तिहासकेप्रमखमद्दु े: बबलर्ेआयाम. दिल्ली: दिल्लीववद्यालयाकाशन.
- वमाि, लाल बहादिर,(२०१६), आधुनिक र्वाव का इर्तिहास दिल्ली :हत्तनप्रिनशालयजैनएवंमाि(२००७) आधुनिकर्वाववइर्तिहास,
- जयपर: जनप्रकाशनमंदिर

Unit IV: This unit shall introduce the students to important case studies related tothe growth of fascism post First World War. The Unit shall connect the discussion on fascism to the Second World War. **(Teaching Time: 12 hrs.approx.)**

- Hobsbawm, E.J. (1996). The Age of Extremes. 1914-1991. New York: Vintage.
- Hobsbawm, E.J. (2009). The Age Of Extremes-अर्े कोकायग(translated in Hindi by Prakash Dixit). Mumbai and Meerut: संवादिप्रकाशन.
- Lee, Stephen J. (1982). Aspects of European History 1789–1980. London, NewYork: Routledge (Ch.22, Ch.23, Ch.24 and Ch.30).
- Lee, Stephen J. (2008). European Dictatorships 1918-1945. London, New York: Routledge (Ch.5).
- Fairbank, John K., et al. (1965). East Asia: Modern Transformation. Boston: Houghton Mifflin; Highlighting edition (section on militarism in Japan).
- Duikar, William J. (2005) Twentieth-Century World History. Third edition. USA: Wadsworth Cencgage Learning.
- Henig, R. (2005). The Origins of the Second World War 1933-1941. Lancaster

Pamphlets Series. Second edition. London, New York: Routledge.
- Roberts, J.M. (1999). Twentieth-Century, the History of the World, 1901-2000.New York: Viking.
- Sarao, KTS (2017), Modern History of Japan, Surjeet Publications
- Graham, Helen (2002) The Spanish Civil War: A Very Short Introduction,Cambridge: Cambridge University Press
- Mahajan, Sneh. (2009). Issues in Twentieth Century World History. Delhi:Macmillan.
- महाजन, तनेह. (२०१६). बीसवी शर्ाब्दी का ख्वाव इर्हास: एकझलक(भाग-२). रि ल्ली: लक्ष्मीप्रकाशन.
- ि ेशपांडे, अनरुद्ध. (२०१४). ख्वाइर्हासकेप्रमखमद्दु े: बबलर्ेआयाम. रि ल्ली: रि ल्लीवव्यालयाकाशन.
- वमा ि, लाल बहा ि र,(२०१६), आधर्ुनक ख्वाव का इर्हास रि ल्ली :हत्तनभिनशालय

Unit V: The Unit shall connect the discussion on fascism to the Second World War.
(Teaching Time: 9 hrs. approx.)

- Hobsbawm, E.J. (1996). The Age of Extremes. 1914-1991. New York: Vintage.
- Hobsbawm, E.J. (2009). The Age Of Extremes-अर्े का ायग(translated in Hindi by Prakash Dixit). Mumbai and Meerut: संवा ि प्रकाशन.
- Duikar, William J. (2005) Twentieth-Century World History. Third edition. USA: Wadsworth Cengage Learning.
- Roberts, J.M. (1999). Twentieth-Century, the History of the World, 1901-2000.New York: Viking.
- Lee, Stephen J. (1982). Aspects of European History 1789–1980. London, NewYork: Routledge.
- Gluckstin, Donny (2012). A Peoples History of Second World War, Pluto Press
- Mahajan, Sneh. (2009). Issues in Twentieth Century World History. Delhi:Macmillan.
- महाजन, तनेह. (२०१६). बीसवीशर्ाब्ि ीकार्वइ लक्ष्मीप्रकाशन. र्हास: एकझलक(भाग-२). रि ल्ली :
- ि ेशपांडे, अनरुद्ध. (२०१४). र्वइर्हासके प्रमखमद्दु े: बबलर्ेआयाम. रि ल्ली: रि ल्लीर्ववद्यालयप्रकाशन.

Suggestive readings

- Atkin, N. and M. Biddis. (2009). Themes in Modern European History, 1890–1945. London, New York: Routledge (Ch.4, Ch.5, Ch.9 and Ch.10).
- Ferguson, Niall. (2006). The War of the World: Twentieth-Century Conflict andthe Descent of the West. New York: The Penguin Press.
- Martel, G. (Ed.). (2006). A Companion to Europe 1900-1945. Malden, M.A. and Oxford: Blackwell.
- Wakeman, R. (Ed). (2003). Themes in Modern European History Since 1945. London, New York: Routledge (Ch.1 and Ch.2).

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-2): Women in Indian History

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Women in Indian History	4	3	1	0	12 th Pass	NIL

Learning Objectives

The paper introduces learners to a historical analysis of the lived experiences of women at specific historical moments in the Indian subcontinent. It explores the concerned issues within an interdisciplinary framework. The students will also be familiarized with the theoretical reflections on the study of women's issues with reference to latest researchesin the field. The course seeks to make students reflect on the specificity of women's issues in different times and con-texts. At the same time, it also traces deeper continuities from a gender perspective.

Learning outcomes

After successful completion of the course, students will be able to:

- Provide an elementary outline of gender as a concept and patriarchy as ahistorically constituted system of power.
- Explore women's experiences within specific contexts at specific historicalmoments.
- To discuss the material basis of women's experiences with reference to specificissues like ownership of property.

SYLLABUS OF GE

Unit I: Exploring Aspects of History of women in India

1. Understanding Gender
2. Patriarchy, Patrilocality, Patriliny ,and Matriarchy, Matrilocality and Matriliny

Unit II: Women in Ancient India

1. Evolution of Patriarchy in Early India
2. Women and work: voices from Sangam Corpus

Unit III: Women in Medieval India

1. Politics of the Harem and Public Sphere
2. Women Queens and Bhaktas: Case Studies of Queen Kittur Chennamma and Mira Bai

Unit IV: Women in Modern India

1. Debates on Women Education: Women Participation in Indian NationalMovement

2. Partition, Refugee Women and Rehabilitation.

Practical component (if any) - NIL

Essential/recommended readings

Unit I. The unit aims to familiarize students with the theoretical framework of Gender with special focus on patriarchy and feminism and how these concepts can provide tools for historical analysis. **(Teaching Time: 6 hrs. approx.)**

- Bhasin, Kamla. (2000). Understanding Gender. New Delhi: Women Unlimited.

Unit II. The segment should apprise students of historiographical trends in ancient India pertaining to women. The idea is to explore their voices in specific spaces and during historical moments. **(Teaching Time: 15 hrs. approx.)**

- Instead put Uma Chakravarti.(2009). Of Meta Narratives and Master Paradigms: Sexuality and the Reification of Women in Early India. CWDS Occasional Paper.and State". Economic and Political Weekly. Vol. 28 no.14, pp. 579- 85.
- Ramaswamy, Vijaya. (2000). "Aspects of Women and Work in Early South India".

Unit III. The focus in this section is on studying women through fluctuating gender relations in diverse spaces and explore linkages between women, power and politics.**(Teaching Time: 12 hrs. approx.)**

- Lal, Ruby. (2005). Domesticity and Power in the Early Mughal World. New York: Cambridge Studies in Islamic Civilization. (Ch. 5 and 7), pp. 103-139 and 176-213.
- Mukta, Parita (1994). Upholding the Common Life: The Community of Mirabai. Delhi: Oxford University Press. pp. 19-45

Unit IV. The section focuses on issues pertaining to women in the colonial period as well as their participation in Indian nationalism and experiences during Partition. **(Teaching Time: 12 hrs. approx.)**

- Forbes, Geraldine. (199 6). Women in Modern India. Cambridge: Cambridge University Press, pp. 10-31, 121-156.
- Gupta, Charu. (Ed.). (2012). Gendering Colonial India: Reforms, Print, Casteand Communalism. Delhi: Orient Blackswan, [Introduction].
- Menon, Ritu and Kamla Bhasin. (1998). Borders & Boundaries. Delhi: Kalifor Women, pp. 3-29.

Suggestive readings - NIL

- Shah, Shalini. (2012). "Patriarchy and Property", in The Making of Womanhood: Gender Relations in the Mahabharata, Revised Edition. Delhi: Manohar, pp. 32-62.
- Roy Kumkum (2018). "Introduction" in Beyond the Woman Question,Reconstructing Gendered Identities in Early India. Snigdha Singh, et al. (Eds.). Delhi: Primus, pp.1-20).
- Bokhari, Afshan. (2012). "Between Patron and Piety: Jahān Ārā Begam's Sufi Affiliations and Articulations in Seventeenth-century Mughal India". in John Curry and Erik Ohlander, (eds.). Sufism and Society: Arrangements of theMystical in the Muslim World, 1200– 1800.Oxon: Routledge.

- Habib, Irfan. (2000). “Exploring Medieval Gender History”. IHC 61st Session, Symposia Paper No.23, Calicut. pp. 263-75.
- Sharma, Sunil. (2009). “From ʿĀʾesha to Nur Jahān: The Shaping of a Classical Persian Poetic Canon of Women”. Journal of Persianate Studies vol. 2, pp. 148-64.
- Basu, Aparna. (2003). Mridula Sarabhai, A Rebel with a Cause. Oxford: Oxford University Press. (Ch.8, “Recovery of Abducted Women”, pp. 133-146).
- Kumar, Radha. (1997). A History of Doing: An Illustrated Account ofMovements for Women’s Rights and Feminism in India. 1800-1990. Delhi: Zubaan (Ch.2, 4, 5) [Also available in Hindi].
- Mishra, Yuthika. (2015). “Indian Women’s Movement in the 20th Century: Resistance or Reaction”. Proceedings of Gender Issues. 5th Annual Conference, Nalanda.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE (DSE -2): Thoughts in Indian History

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Thoughts in Indian History	4	3	1	0	12th Pass	NIL

Learning Objectives

Thoughts and ideas, especially about history, across time and cultures have always been a fascination dimension of history, not long ago, even serving as entry-points for their understanding. Imageries about cosmology, human physiology, life and death, amongst several others, have helped mankind conceptualise everything around them – from real to fantacised experiences – in past. In historical times, with the accompanying complexities of human, social and institutional lives, these thoughts got more systematized and sophisticated in their articulation in historical records. Cosmological imageries underpinned astrological insights or vice-versa, soil irrigation facilitated medical models of hu-man physiology, food chain and interdependence offered insights into social ordering and so forth.

Learning outcomes

The paper 'Thought in Indian History' attempts to cull and analyse several such thoughts and ide-as that are germane to the Indian social, political and spiritual life across time in history. Notions about state, sovereignty, kingship, wellness, gender, social order, 'ahimsa', freedom and justice – as conceived and elaborated in a select set of historical works across the ancient, medieval and modern Indian history – constitute the reference coordinates to analyse and make sense of various trajectories of Indian past, including their spill-over to the contemporary times.

SYLLABUS OF GE-3

Arthashastra of Kautilya
Nitisara
Rajatarangini of Kalhana
Ziauddin Barani: Fatwa-i Jahandari
Mahatma Gandhi
B. R. Ambedkar

Practical component (if any) - NIL

Essential/recommended readings
Arthashastra
Essential Readings:

- **Arthasastra** Of Kautilya & The Chanakya Sutra With Hindi Commentary, 1984 Vachaspati Gairola (**Chaukhambha**)
- Rangarajan, L.N. (1992), Kautilya: The Arthashastra, Penguin Classics
- Thomas Trautmann (2012), Arthashastra: The Science of Wealth, Penguin.

- Olivelle, Patrick (2013) King, Governance and Law in Ancient India: Kautilya's Arthashastra, Oxford: Oxford University Press.

Suggested Readings:

- Heesterman JC (1985) The Inner Conflict of Tradition Essays in Indian Ritual, Kingship, and Society, Chapter 9 , Kautilya and the Ancient Indian State
- R.P. Kangle, The Kautiliya Arthasastra, Part I: Sanskrit Text with a Glossary; The Kautiliya Arthasastra, Part II: An English Translation
- Olivelle, Patrick (1 January 2004). "Manu and the Arthaśāstra, A Study in Śāstric Intertextuality". Journal of Indian Philosophy Journal of Indian Philosophy. 32 (2–3):281– 291.

Nitisara

Essential Readings:

- Mitra, Rajendralal (ed.), (1982) The Nitisara or the Element of Polity by
- Kamandaki, revised with English translation by Sisir Kumar Mitra, Calcutta: The Asiatic Society.
- A.N.D. Haksar, 'A Post-Kautilyan View of Diplomacy: The Nitisara of Kamandaki', in Pradeep Kumar Gautam, Saurabh Mishra and Arvind Gupta (eds), Indigenous Historical Knowledge: Kautilya and His Vocabulary, Vol. I, New Delhi: IDSA/PentagonPress, 2015
- Mukerji, K. P. "Fundamental Categories of Indian Political Theory." The Indian Journal of Political Science 11, no. 2 (1950): 1–12.

Suggested Readings:

- Gonda, J. "Ancient Indian Kingship from the Religious Point of View." Numen 3, no. 1(1956):36–71.
- Upinder Singh, 'Politics, Violence and War in Kamandaka's Nitisara', The Indian Economic and Social History Review, Vol. 47, No. 1, 2010, pp. 29–62

Ziauddin Barani: Fatwa-i Jahandari

Translation:

- Fatawa-i Jahandari, trans.by Afsar Khan in Mohammed Habib et al., The Political Theory of the Delhi Sultanate (Allahabad n.d.), Reprint, 2020. Also available in hindi ,हबीब , मोहम्म्द (2000).तिल्ली सल्तनत का राि नीततक तसद्धांत: तिर्ाउद्दीन बरनी की फतवा- ए -िहाँिारी के अनुवाि सतहत, तिल्ली , ग्रंथतशल्पी।

Essential Readings:

- Habib, Irfan. (1981).' Barani's Theory of the History of the Delhi Sultanate ', Indian Historical Review, vol.7, pp.99-115. Also avaiable in Hindi, हबीब , इरफान. (2003). 'ि े हली सल्तनत के इततहास पर बरनी का तसद्धांत ', इरफान हबीब (सं). मध्यकालीन भारत , अंक -8 , नर्ी तिल्ली , राि कमल प्रकाशन , पृ. सं. 64 -82 .
- Alam, Muzaffar. (2004). The Languages of Political Islam in India: c. 1200-1800, Delhi: Permanent Black, section on Zia Barani, pp.31-43.
- Hardy, Peter. (1978).' Unity and Variety in Indo-Islamic and Perso-Islamic Civilization: Some Ethical and Political Ideas of Diya'al-Din Barani of Delhi, of al-Ghazali and of Nasir al – Din Tusi Compared', Iran, 16, pp.127-36.
- Ray, Himanshu and Alam, Muzaffar. (2017) 'Zia Barani: Good Sultan and Ideal Polity'. In Roy, Himanshu and Singh, Mahendra Prasad, eds, Indian Political Thought: Themes and Thinker, (2nd Edition). Noida: Pearson, 2017 (Paperback).

Rajatarangini

Translation:

- Rajatarangini: The Saga of the Kings of Kashmir by Ranjit Sitaram Pandit, (English Translation) The Indian Press, Allahabad, 1935. (South Asia Books; Reprint edition, 1990) (Sahitya Academy, Government of India, New Delhi).
- Rajatarangini with Hindi Commentary by Ramtej Shastri Pandey, Chaukhamba Sanskrit Pratishthan, 2015.

Essential Readings:

- Thapar, Romila. 'Historical Ideas of Kalhan as Expressed in the Rajatarangini', in Mohibul Hasan (ed.) Historians of Medieval India, Delhi, 1968.
- Kaul, Shonaleeka, 'Seeing the Past: Text and Questions of History in Kalhana's Rajatarangini', History and Theory, Vol. 53, Issue 2, 2014, pp.194-211.
- Rangachari, Devika, 'Kalhana's Rajatarangini: A gender Perspective ' The Medieval History Journal, 5(1), 2002, pp. 37-75.
- Roy, Kumkum, 'The Making of a Mandala: Fuzzy Frontiers of Kalhana's Kashmir' in idem., ed., The Power of Gender and the Gender of Power: Explorations in Early Indian History, OUP, 2010.

Suggested Readings:

- Hardy, Peter, 'Some Studies in Pre-Mughal Muslim Historiography', in Historians of India , Pakistan and Ceylon , edited by C.H. Philips, 1962, pp.115-127.
- Zutshi, Chitralekha, ed., Kashmir's Contested Past: Narratives, Sacred Geographies and the Historical Imagination, OUP, 2014
- Bronner, Yigal, 'From Conqueror to Connoisseur: Kalhana's Account of Jayapida and the Fashioning of Kashmir as a Kingdom of Learning' , The Indian Economic and Social History Review, 2013.

Mahatma Gandhi

Translation/Primary reading:

- Anthony J. Parel, ed., Hind Swaraj and Other Writings, Cambridge University Press (second edition), 2009

Essential Readings:

- Raghavan N. Iyer, The Moral and Political Thought of Mahatma Gandhi, Oxford University Press, New York, 1973.
- Bhikhu Parekh, Colonialism, Tradition and Reform: An Analysis of Gandhi's Political Discourse, SAGE Publications Pvt. Ltd; New Delhi, 1989.

B. R. Ambedkar

Primary reading:

- B.R. Ambedkar, Who were the Shudras?, Thacker & CO. LTD, Bombay, 1946. (Also published as E -book by General Press, 9 November, 2020.)

Essential Readings:

- Valerian Rodrigues, The essential writings of B. R. Ambedkar, Oxford University Press, New Delhi, 2002.
- Dhananjay Keer, Dr. Babasaheb Ambedkar: Life & Mission, Popular Prakashan, (5th Reprint Edition), 2019.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER – VI

DEPARTMENT OF HISTORY

Category I

[UG Programme for Bachelor in History (Honours) degree in three years]

DISCIPLINE SPECIFIC CORE COURSE -1 (DSC-1) – : History of India – VII: 1600 – 1750s

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
History of India – VII: 1600 – 1750s	4	3	1	0	Class XII	Should have studies History of India I – VI

Learning Objectives

The course draws students into a discussion of the multiple historiographical narratives available for the history of India in the period between the early seventeenth and the mid-eighteenth centuries. It intends to familiarise them with challenges that the Mughal Empire faced in the process of territorial expansion and regional contestations. Students also get to explore state sponsored art and architecture as a visual expression of authority. They would also be introduced to the nature of the pre-colonial agrarian society as well as Indian participation in the international trade. In addition, the course aims to introduce students to contrasting religious ideologies of the times and their effect on the contemporary political dispensation.

Learning outcomes

On completion of this course, the students shall be able to:

- Critically evaluate the gamut of non-Persian contemporaneous literature available in the form of personal accounts and vernacular tradition.
- Describe the major social, economic, political and cultural developments of the times
- Explain the intellectual ferment of the seventeenth and eighteenth centuries and its relation to state policies.
- Discern the larger motives behind the Imperial patronage of art and architecture

- Understand the complexities of medieval Indian rural society and appreciate the resilience of the mercantile communities in furthering the maritime trade of India with long term economic implications.

SYLLABUS OF DSC-1

Unit I. Sources

1. Sanskrit Sources
2. Travelogues- Bernier and Manucci
3. Vernacular Literary Traditions- Mangal Kavya

Unit II. Political Developments and State Formation

1. Rajput State Formation and Negotiations
2. Mughal State- Changes and Crises
3. Maratha State under Shivaji and Peshwas

Unit III. Religious Ideas and Visual Culture

1. Religious ideas of Dara Shikoh; Aurangzeb's policy towards Jizya, Temples and Music
2. Articulation of Imperial Ideology: Mughals and Nayakas
3. Art- Allegory and Symbolism in the Paintings of Rajput and Mughal Paintings
4. Architecture- Shahjahanabad

Unit IV. Economy and Society

1. Rural Society- Village Community; Role of Zamindars
2. Merchant Communities
3. Pattern of India's Oceanic Trade and its impact on the Indian Economy

Practical component (if any) - NIL

Essential/recommended readings

Unit I: Introduces students to the historical source materials of the seventeenth and the eighteenth centuries other than the official chronicles. Through reading non-official, courtly and vernacular, public and personal accounts students shall be urged to think through histories, genres, and sources and rethink the above categories. The unit thus, contemplates a critical historiography. (Teaching Time: 9 hours Approx.)

- Truschke, Audrey (2016), Culture of Encounters: Sanskrit at the Mughal Court, New Delhi: Penguin Allen Lane, (Introduction, Chapters 5 and 6)
- Tambiah, S.J. (1988). "What did Bernier Actually say? Profiling the Mughal Empire",
- Contribution to Indian Sociology, vol.31 no.2, pp. 361-86.
- Ray, A. (2005). "Francoise Bernier's Idea of India" in I.Habib, (Ed.). India: Studies in the History of an Idea, New Delhi: Munshiram Manoharlal

- Subrahmanyam, Sanjay. (2008). “Further thoughts on an Enigma: The tortuous life of Niccolao Manucci 1638-c.1720” in Journal of the Economic and Social History of the Orient, Vol. 45. No. 1, pp. 35-76.
- Curley, David L. (2008), Poetry and History. Bengali Mangal-Kabya and Social Change in Pre-Colonial Bengal, New Delhi: Chronicle Books (Chaps. 1 and 5).
- Chatterjee, Kumkum (2013), “Goddess Encounters: Mughals, Monsters and the Goddess in Bengal” in Modern Asian Studies, Vol. 47, Issue-5, pp. 1435-87

Unit II: Foregrounds issues in the formation and maintenance of political power and its challenges in the Mughal, Rajput and Maratha states. It analyses events of alliances and contestations to sketch an image of state formations in pre-colonial India. (Teaching Time: 15 hours Approx.)

- Alam, Muzaffar. (2013), Crisis of the Empire in Mughal North India, Delhi: Oxford University Press. (Introduction)
- Richards, J. F. (2007). The Mughal Empire: The New Cambridge History of India, Volume 5, Cambridge: Cambridge University Press
- Richard Eaton (2019). India in the Persianate Age, 1000-1765, New Delhi, Penguin Allen Lane (Introduction, Chapters 6 and 7)
- Moin, Afzar. (2012), The Millennial Sovereign: Sacred Kingship and Sainthood in Islam, New York: Columbia University Press. (Introduction, Chapter 5)
- Lefèvre, Corinne (2007), “Recovering a Missing Voice from Mughal India: The Imperial discourse of Jahangir (1605-27) in his Memoirs”, in Journal of Economic and Social History of the Orient, Vol. 50, No. 4, pp. 452-89.
- Chandra, Satish (1993). Mughal Religious Policies, Rajputs and the Deccan, New Delhi: Oxford University Press. (Chapters 1,2 and 4)
- Bhargava, Meena (Ed.,) (2014). The decline of the Mughal Empire, Delhi: OUP (Introduction, Chapters 2 and 3)
- Sharma, G D. (1997). Rajput Polity: A Study of Politics and Administration of the State of Marwar, Delhi: Manohar
- Ziegler, Norman P. (2010). “Evolution of the Rathor State of Marwar: Horses, Structural Change and Warfare” in Meena Bhargava (ed.) Exploring Medieval India. Sixteenth to Eighteenth Century, Vol. II, Delhi: Orient Black Swan
- Ziegler, Norman. P. (1998). “Some notes on Rajput Loyalties during the Mughal Period” in J. F. Richards (Ed.) Kingship and Authority in Southeast Asia. Delhi: Oxford University Press.
- Hallissey, Robert C. (1977). The Rajput Rebellion against Aurangzeb: A Study of the Mughal Empire in Seventeenth-Century India, Columbia: University of Missouri Press.
- Sreenivasan, Ramya (2004). “Honoring the family: Narratives & Politics of Kingship in Pre-colonial Rajasthan, in Chatterjee, Indrani, ed., Unfamiliar Relations: Family and History in South Asia. New Brunswick, NJ: Rutgers University Press.
- Sreenivasan, Ramya (2014). “Rethinking Kingship and Authority in South Asia: Amber (Rajasthan), Ca. 1560-1615.” Journal of the Economic and Social History of the Orient 57, no. 4, pp 549–86

- Gordon, Stewart. (1998). The Marathas, 1600-1818, Cambridge: Cambridge University Press.
- Chandra, Satish. (1982). Medieval India: Society, the Jagirdari Crisis and the Village. Delhi: Macmillan (Chapters 8,9 and 10)
- Wink, Andre (1986), Land and Sovereignty in India: Agrarian Society and Politics under Eighteenth Century Maratha Swarajya, Cambridge: Cambridge University Press.

Unit III: Contends with state and doctrinal attitudes towards religious belief and practice and their relation to state policy. In addition, the unit also highlights nuances of the visual culture (art and architecture) as a mechanism to promote imperial ideology. (Teaching Time: 12 hours Approx.)

- Faruqui, Munis (2014). "Dara Shukoh, Vedanta and Imperial Succession", in Vasudha Dalmia and MunisFaruqui, (Eds.). "Religious Interaction in Mughal India. Delhi: Oxford University Press, pp.30-64.
- Gandhi, Supriya (2020), The Emperor Who Never Was. Dara Shukoh in Mughal India, Harvard University Press. (Introduction, Chapters 6 and 7)
- Chandra, Satish. (1993). Mughal Religious Policies, the Rajputs and the Deccan. Delhi: Vikas Publishing House. (Chapter 9 and 11)
- Husain, Azizuddin S M (2000), 'Jizya- Its Reimposition During the Reign of Aurangzeb',
- Indian Historical Review, Vol 27, Issue 2, pp 87-121
- Brown Katherine B. (2007). "Did Aurangzeb Ban Music? Questions for the Historiography of his Reign" Modern Asian Studies, Vol. 41, No. 1, pp. 77-120.
- Eaton, Richard M. (2003). Essays in Islam & Indian History 711-1750, Delhi: OUP. (Introduction and Chapter 4).
- Asher, Catherine (1995). Architecture of Mughal India, The Cambridge History of India: Vol. 1 Part 4. Cambridge: Cambridge University Press.
- Koch, Ebba. (2001). Mughal art and Imperial Ideology: Collected Essays, Delhi: Oxford University Press.
- Koch, Ebba. (2013). Mughal Architecture: An outline of its History and Development (1526- 1858). Delhi: Primus.
- Blake, Stephen. (1991). Shahjahanabad: The Sovereign City in Mughal India, 1639-1739.
- Cambridge: Cambridge University Press.
- Moin, Afzar. (2012), The Millennial Sovereign: Sacred Kingship and Sainthood in Islam, New York: Columbia University Press (Chapter 6)
- Beach, M.C. (1992), Mughal and Rajput Painting, New Cambridge History of India Vol.1. Part 3. Cambridge: Cambridge University Press.
- Desai, Vishakha N (1990), 'Painting and Politics in Seventeenth-Century North India: Mewar, Bikaner and the Mughal Court', Art Journal, Vol 49, No 4, pp 370-378

Unit IV: Acquaints students with core elements of the economy and society in pre-Modern India. Alongside dealing with the complex rural society involving peasants and

Zamindars, this unit also highlights the often ignored mercantile communities and their role in facilitating India's overseas trade during the seventeenth and eighteenth centuries. Besides it deals with the activities of the European trading companies in the Indian Ocean trade network and its impact on the Indian economy. (Teaching Time: 9 Hours Approx.)

- Kulkarni, A R, (1991), The Indian Village with special Reference to Medieval Deccan (Maratha Country), General Presidential Address, PIHC, Vol 52, pp 1-43
- Habib, Irfan (1999), The Agrarian System of Mughal India (1556-1707), OUP, New Delhi (Chapter 4)
- Habib, Irfan (1996). "Peasant Differentiation and the Structure of Village Community: 16th and 17th Century Evidence From Northern India" in V K Thakur and A Anshuman (Eds.) Peasants in Indian History, Patna
- Chandra, Satish (1982), Medieval India: Society, The Jagirdari Crisis and The Village,
- New Delhi, Macmillan India Limited. (Chapters 3,4 and 6)
- S Nurl Hasan, (2008), Religion, State and Society in Medieval India: Edited and Introduced by Satish Chandra, OUP, New Delhi (Chapters 12 and 21)
- Chaudhuri, K. N.(1982), "European Trade with India" in Tapan Raychaudhuri and Irfan Habib (eds.) The Cambridge Economic History of India, Vol. 1 (c.1200-c. 1750). Delhi: Orient Longman
- Das Gupta, Ashin and M N Pearson (eds) (1987), India and the Indian Ocean 1500-1800, Calcutta, OUP
- Pearson, Michael N (1988), 'Brokers in Western Indian Port Cities: their role in servicing Foreign Merchants', Modern Asian Studies, Vol 22, No 3, pp 455-472
- Das Gupta, Ashin (2001), The World of the Indian Ocean Merchant, 1500-1800, OUP
- Gupta, Ashin Das (1998), "Trade and Politics in 18th Century India" in Alam, Muzaffar and Subrahmanayam, Sanjay. (ed.) The Mughal State. Delhi: Oxford University Press
- Om Prakash, J. (1998). European Commercial Enterprise in Pre-colonial India. The Cambridge History of India II.5, Cambridge: Cambridge University Press
- Chaudhuri, Sushil. (2017). Trade, Politics and Society: The Indian Milieu in the Early Modern Era, London: Routledge, (Chapter 1)

Suggestive readings

- Faruqui, Munis D (2012), The Princes of the Mughal Empire, 1504-1719, New York, Cambridge University Press. (Introduction, Chapters 4,5 and 6)
- Alam, Muzaffar and S Subrahmanyam (2014). Writing the Mughal World: Studies in Political Culture, Delhi: Permanent Black
- Habib, Irfan. (1995). Essays in Indian History: Towards a Marxist Perspective, Delhi: Tulika.
- Taft Frances H. (1994). "Honour and Alliance: Reconsidering Mughal-Rajput Marriages" in Karine Schomer, Joan L. Erdman, Deryck O. Lodrick and Lloyd I. Rudolph, (Eds.). The Idea of Rajasthan, Delhi: Manohar, Vol. 1, pp. 217-41.

- Dalmia Vasudha & Faruqui, Munis, (ed.) (2014). Religious Interactions in Mughal India, Delhi: Oxford University Press, (Chap. 1-2)
- Koch, Ebba. (2001). "The Hierarchical Principles of Shah Jahani Painting" in Ebba Koch,
- Mughal Art and Imperial Ideology. Delhi: Oxford University Press.
- Richards, J. F. (1998). "Formulation of Imperial Authority under Akbar and Jahangir" in Muzaffar Alam and Sanjay Subrahmanyam ed. The Mughal State, Delhi: Oxford University Press
- Mukhia, Harbans. (2009). The Mughals of India, Delhi: Blackwell Publishing.
- Alavi, Seema. (ed.) (2002). The eighteenth century in India. Delhi: Oxford University Press
- Alam Muzaffar and Sanjay Subrahmanyam (1998). The Mughal state 1526 – 1750, Delhi: Oxford University Press
- Chenoy, ShamaMitra (1998), Shahjahanabad, Delhi: Munshiram Manoharlal
- Dutta, Rajat (2003) "Commercialization, Tribute and the transition from Late Mughal to early Colonial in India" The Medieval History Journal , Vol:6 , No 2, pp.259-91.
- Ehlers, Eckart and Krafft, Thomas (2003), Shahjahanabad / Old Delhi. Tradition and Colonial Change, Delhi: Manohar
- Jha, Mridula (2017). "Mingling of the Oceans: A Journey through the Works of Dara Shikuh", in RaziuddinAquil& David L. Curley, (Ed..) Literary and Religious Interactions in Medieval and Early Modern India, New Delhi: Routledge, pp. 62-93.
- Mukherjee, Anisha Shekhar (2003). The Red Fort of Shahjahanabad, New Delhi: Oxford University Press
- Tillotson, G.H.R (1990), Mughal India, New Delhi: Penguin Books. (Chapter on Shahjahanabad and Red Fort)
- Bahuguna, R P (2017), 'Religious Festivals as Political Rituals: Kingship and Legitimation in Late Pre-Colonial Rajasthan' in Suraj Bhan Bhardwaj, R P Bahuguna and Mayank Kumar (eds) Revisiting the History of Medieval Rajasthan. Essays for Professor Dilbagh Singh, Delhi,Primus Books
- Sreenivasan, Ramya. (2014). "Faith and Allegiance in the Mughal Era: Perspectives from Rajasthan" in Vasudha Dalmia and Munis D. Faruqui (Ed.). Religious Interactions in Mughal India, Delhi: Oxford University Press, pp. 159-191.
- Talbot, Cynthia and Asher, Catherine B. (2006). India Before Europe, Cambridge; Cambridge University Press.
- Kinra Rajeev. (2009). "Infantilizing Baba Dara: The Cultural Memory of Dara", in Journal of Persianate Studies, Vol. 2, pp. 165-93

Readings in Hindi Medium:

- Chandra, Satish (2018). *Madhyakalin Bharat (Part II), Sultanat se Mughal Ka lTak,* NewDelhi: Jawahar Publishers & Distributors
- Habib, Irfan (Ed.).(2000). *Madhyakalin Bharat*, (Vols. 1-8, relevant articles), New

Delhi:Rajkamal Prakashan

- Habib, Irfan. (2017). *Madhyakalin Bharat ka ArthikItihas: Ek Sarvekshan*, New Delhi:Rajkamal Prakashan
- Verma H C. (Ed.) (2017). *Madhyakalin Bharat (Vol. II) 1540-1761*, Hindi MadhyamKaryanvan Nideshalaya, Delhi University

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE (DSC-2): History of India – VIII: c. 1857 – 1950

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
History of India – VIII: c. 1857 – 1950	4	3	1	0	Class XII	Should have studies History of India I – VI

Learning Objectives

This paper introduces students to broad aspects of formation of identities and the manner in which these identities unfolded themselves during the course of the Indian freedom struggle. It provides an overview of socio-economic and political trends in colonial India from the latter half of the 19th century. The paper critically analyses the various trends in the national liberation movement and other aspects of politics which were foundational for the modern Indian state. The aim is to develop interdisciplinary analytical skills at the undergraduate level.

Learning outcomes

After successful completion of the course, the students will be able to:

- Identify how community, caste, and national identity developed in the late 19th, and early 20th centuries.
- Outline the social and economic facets of colonial India and their influence on the national movement.
- Explain the various trends of anti-colonial struggles in colonial India.
- Analyse the complex developments leading to partition and independence.
- Discuss the key debates on the making of the Indian Constitution, and need for socio- economic restructuring after independence

SYLLABUS OF DSC- 2

Unit 1: Colonial Economy

1. Economic critique of colonial rule with special reference to Drain of Wealth
2. Rise of modern industry and capitalist class

Unit 2: Early Nationalism

1. Emergence of Indian National Congress (INC)

2. ‘Moderates’ and ‘Extremists’ Nationalist
3. Swadeshi and early Revolutionary Movements

Unit 3: Emergence and social base of Gandhian Nationalism
1. Foundations of Gandhian Nationalism
2. Gandhi and National Movements
    a. Champaran, Kheda, Ahmedabad,
    b. Rowlatt, Khilafat and Non-Cooperation Movements
    c. Civil Disobedience Movement
    d. d) Quit India Movement

Unit 4: Alternative trends in National Movement
1. Ambedkar and the Dalit Movement, Dravidian movements
2. Hindustan Socialist Republican Association (HSRA) and Revolutionary Movements
3. Gadhar, Singh Sabha and the Akali Movement
4. Peasants, Workers and Tribal movements; Emergence of the Left
5. Subhas Chandra Bose and Indian National Army; Royal Indian Navy Mutiny

Unit 5: Towards Independence and after
1. Independence and Partition
2. The Making of the Constitution

Unit 6: Formation of Identities
1. Caste
2. Community
3. Nation

Practical component (if any) - NIL

Essential/recommended readings

Unit I: This unit studies aspects of the colonial economy and its critique particularly with reference to the phenomenon of ‘Drain of Wealth. It develops an understanding of the emergence of modern industry and capitalist class in colonial India. **(Teaching Time: 6 hours Approx.)**

- Chandra, Bipan. (1966). The Rise and Growth of Economic Nationalism in India: Economic Policies of Indian National Leadership, 1880–1905. New Delhi: People’s Publishing House (Introduction).
- Bagchi, Amiya Kumar. (2002). “The Other Side of Foreign Investment by Imperial Powers: Transfer of Surplus from Colonies”, Economic and Political Weekly, Vol. 37 (23), pp. 2229 - 2238.
- Bagchi, Amiya Kumar. (1972). Private Investment in India, 1900-1939. Cambridge: Cambridge Univer- sity Press, pp. 3-25

- Mukherjee, Aditya. (2002). Imperialism, Nationalism and the Making of the Indian Capitalist Class, 1920-1947. New Delhi: Sage (Introduction).
- Ray, Rajat Kanta. (Ed.). (1994). Entrepreneurship and Industry in India, 1800 - 1947. New Delhi: Ox- ford University Press, pp.1-69.

Unit II: After the successful completion of this unit, students will be able to understand various aspects of early nationalism and nationalist resistance. (Teaching **Time: 6 hours Approx.)**

- McLane, J.R. (1977). Indian Nationalism and the Early Congress. Princeton: Princeton University Press, pp.3-21; 89-178
- Tripathi, Amales. (1967). The Extremist Challenge. India between 1890 and 1910. Bombay,Calcutta, Madras,New Delhi: Orient Longmans, Chapters 1-5
- Chandra, Bipan, Mridula Mukherjee, Aditya Mukherjee, Sucheta Mahajan, K N Panikkar. (1989). India's Struggle for Independence. Delhi: Penguin Books, chapters 4 to 10.
- Seth, Sanjay. (2009). 'Rewriting Histories of Nationalism: The Politics of Moderate Nationalism in In- dia, 1870-1905', in Sekhar Bandyopadhyay (Ed.), Nationalist Movement in India : A Reader, New Delhi: Oxford University Press, pp.30 - 48
- Sarkar, Sumit. (1973). Swadeshi Movement in Bengal, 1903 – 08. New Delhi, People's Publishing House. (also in Hindi:र् सुमतसरकार, बंगालमÓ ंिेशीआŁ ोलन(1903-1908), Chapter 1 and 2.
- Sarkar, Sumit. (1983). Modern India: 1885—1947. Delhi: Macmillan. chapters III & IV.

Unit III: This unit deals with Gandhian mass nationalism and Gandhi's methods of mass mobilization cutting across different social groups in the national movement. **(Teaching Time: 9 hours Approx.)**

- Mohandas Karamchand Gandhi 'Hind Swaraj'
- Hardiman, David. (2005). Gandhi in his time and ours. Delhi: Orient Blackswan, pp.1-81; 109-184.
- Bandyopadhyay, Sekhar. (Ed.) (2009). Nationalist Movement in India: A Reader. New Delhi: Oxford University Press, pp. 55-155.
- Pouchepadass, Jacques. (1974). "Local leaders and the intelligentsia in the Champaran satyagraha (1917): a study in peasant mobilization", Contributions to Indian Sociology, Vol. 8 (1), Jan 1, pp. 67-87
- Kumar, Ravinder. (1971). Essays on Gandhian Politics, Rowlatt Satyagraha 1919. Oxford: Clarendon Press, pp. 1-30
- Chandra, Bipan, Mridula Mukherjee, Aditya Mukherjee, Sucheta Mahajan, K N Panikkar. (1989). India's Struggle for Independence. Delhi: Penguin Books.
- Sarkar, Sumit. (1983). Modern India: 1885—1947. Delhi: Macmillan.
- Minault, Gail. (1982). The Khilafat Movement: Religious Symbolism and Political Mobilisation in India. Delhi: Oxford University Press (Introduction, Chapters II, III, IV).

- Amin, Shahid. (1996). Event, Metaphor, Memory: Chauri Chaura, 1922 – 1992. Delhi: Penguin. Re- print, 2006, pp. 9-19, 45-56, 69-93.
- Sarkar, Sumit. (1983). Popular Movements and Middle Class Leadership in Late Colonial India. S.G. Deuskar Lectures on Indian History. Centre for Studies in Social Sciences, Calcutta.
- Pandey, Gyanendra. (1988). The Indian Nation in 1942. Calcutta: K.P. Bagchi and Company (Chapters 1,2,3, 4, 8).

Unit IV: It enables students to understand the way in which the national movement gave a new meaning to social and political movements and to diverse range of struggles**. (Teaching Time: 12 hours Approx.)**

- Zelliot, Eleanor. (1996). From Untouchable to Dalit: Essays on the Ambedkar Movement. New Delhi: Manohar Publications, pp. 53 - 177
- Grewal, J.S. (1990) The New Cambridge history. II.3. The Sikhs of the Punjab, Chapter 8, pp.157-180
- Habib, S.Irfan. (2007). To Make the Deaf Hear: Ideology and Programme of Bhagat Singh and his Com- rades, New Delhi: Three Essays Collective, pp. 29 - 141
- Bandyopadhyay, Sekhar. (2017). From Plassey to Partition and After: A History of Modern India, New Delhi: Orient Blackswan, 2nd edition (Chapter 7, "Many Voices of a Nation").
- Nagaraj, D.R. (2011). Flaming Feet, Delhi, Seagull Books. (Chapter 1).
- Sarkar, Sumit. (1983). Popular Movements and Middle Class Leadership in Late Colonial India. S.G. Deuskar Lectures on Indian History. Centre for Studies in Social Sciences, Calcutta.
- Habib, Irfan. (1998). "The Left and the National Movement", Social Scientist, Vol. 26 (5/6), May-June, pp. 3-33.
- Chandra, Bipan. (1983) The Indian Left: Critical Appraisal. New Delhi: Vikas.
- Chandra, Bipan, Mridula Mukherjee, Aditya Mukherjee, Sucheta Mahajan, K N Panikkar. (1989). India's Struggle for Independence. Delhi: Penguin Books.
- Dhanagare, D.N. (1991). in Peasant Movements India 1920-1950.
- Amin, Shahid. (1988). "Agrarian Bases of Nationalist Agitation in India: An Historiographical Survey," in D.A. Low (Ed.), The Indian National Congress: Centenary Highlights, New Delhi: OUP, pp. 54-97.
- Pandey, Gyan. (1982). 'Peasant Revolt and Indian Nationalism: The Peasant Movement in Awadh, 1919- 1922' in Ranajit Guha ed. Subaltern Studies I. Writings on South Asian History and Society. Delhi: Oxford University Press, pp. 143 – 197.
- Arnold, David. (1982). 'Rebellious Hillmen: the Gudem-Rampa Risings, 1839-1924', in Ranajit Guha (Ed.), Subaltern Studies I. Writings on South Asian History and Society. Delhi: Oxford University Press, pp. 88 – 142
- Mohapatra, Prabhu P. (2005). 'Regulated Informality: Legal Construction of Labour Relations in Colonial India, 1814-1926', in Sabyasachi Bhattacharya and Jan Lucassen (Ed.), Workers in the Informal Sector: Studies in Labour History, 1800-2000. Delhi: Macmillan India Ltd.

- Sarkar, Sumit. (1983). Modern India 1885-1947. Delhi: Macmillan, pp. 153-155, 198-203, 239-243,266-278, 339-342.

Unit V: This unit will enable students to analyse the complex developments leading to communal vio- lence, independence and partition. Students will be introduced to the key debates on the making of the constitution of India. **(Teaching Time: 6 hours Approx.)**

- Pandey, Gyanendra. (1992). The Construction of Communalism in Colonial North India. Delhi: Oxford University Press (Chapters 1, 2&7).
- Chandra, Bipan. (2008). Communalism in Modern India. New Delhi: Har-Anand Publications.
- Peter Hardy, The Muslims of British India, Cambridge University Press, Cambridge, 1972
- Jaffrelot, Christophe. (1996). The Hindu Nationalist Movement and Indian Politics: 1925 to the 1990s. London: C. Hurst & Company Publishers, pp. 1-45
- Chatterjee, Joya. (1995). Bengal Divided: Hindu Communalism and Partition 1932 - 1947.
- Cambridge, Cambridge University Press (Introduction and Chapters 3,5 & 6)
- Jalal, Ayesha. (1985). The Sole Spokesman: Jinnah, the Muslim League and the Demand for Pakistan. Cambridge, Cambridge University Press (Introduction, Chapters 1, 2& 5).
- Lelyveld, David. (2005). 'The Colonial Context of Muslim Separatism: from Sayyid Ahmad Barelvi to Sayyid Ahmad Khan,' in Mushirul Hasan and AsimRoy (Ed.). Living Together Separately: Cultural India in History and Politics. Delhi, Oxford University Press.
- Metcalf, Barbara D. (2017). 'Maulana Ahmad Madani and the Jami'at 'Ulama-i-Hind: Against Pakistan, against the Muslim League' in Qasmi, Ali Usman,(Ed.),Muslims against the Muslim League: Critiques of the Idea of Pakistan, Cambridge, Cambridge University Press, pp. 1-34 and pp. 220-254.
- Arbab, Safoora. (2017). 'Nonviolence, Pukhtunwali and Decolonization: Abdul Ghaffar Khan and the Khuda'iKhidmatgar Politics of Friendship', in Qasmi, Ali Usman. ed., Muslims against the Muslim League: Critiques of the Idea of Pakistan, Cambridge, Cambridge University Press, pp. 220-254.
- Brown, Judith. (1984). Modern India. The Origins of an Asian Democracy. Oxford: Oxford University Press, pp. 307 - 350
- Mukherjee, Rudrangshu. (2015). Nehru and Bose: Parallel Lives. Delhi, Penguin.
- Sucheta Mahajan, Independence and Partition: The Erosion of Colonial Power in India, Sage Publications, New Delhi
- Menon, V.P. (2014). Integration of the Indian States. New Delhi: Orient Blackswan. Chapter III,IV,V
- Kamtekar, Indivar. (2002). "A Different War Dance: State and Class in India 1939-1945,"
- Past & Present, Vol. 176, pp. 187-221.
- Chandra, Bipan, Mridula Mukherjee, Aditya Mukherjee. (2000). India Since Independence. New Delhi: Penguin books, chapters 3, 4 and 5

- Granville, Austin. (1966). The Indian Constitution: Cornerstone of a Nation. Oxford: Clarendon Press.
- Chaube, S.K. (2009). The Making and Working of the Indian Constitution, Delhi, National Book Trust.

Unit VI: Caste, Community and Nation: The unit seeks to identify the developments in post-1857 India in terms of the shaping of caste, religious/community and national identities in the late 19th and early 20th centuries and the role of reform and debates in this. **(Teaching Time: 6 hours Approx.)**

- Dirks, Nicholas B, (1997), "The invention of caste: civil society in colonial India" in. H L Seneviratne (Ed.), Identity, Consciousness and the Past; Forging of Caste and Community in India and Sri Lanka. Delhi: Oxford University Press.
- Sarkar, Sumit and Tanika Sarkar. (Eds.). (2013). Caste in Modern India, Vols. 1 & 2. Delhi: Permanent Black (Vol. I-Chapters 2 & 3, pp. 24-87; Vol. 2-Chapter 8, pp. 200-233).
- O'Hanlon, Rosalind. (2002). Caste, Conflict and Ideology: Mahatma Jyotirao Phule and Low Caste Protest in 19th Century Western India. Ranikhet: Permanent Black, pp. 3-11
- Bandyopadhyay, Sekhar. (1997). Caste, Protest and Identity in Colonial India: the Namasudras of Bengal, 1872-1947. London: Curzon Press.
- Jalal, Ayesha. (2000). Self and Sovereignty: Individual and Community in South Asian Islam since 1850. London: Routledge.
- Rai, Santosh Kumar. (2021). Weaving Hierarchies: Handloom Weavers in Early Twentieth Century United Provinces. Delhi: Primus Books.
- Hatcher, Brian A. (2020). Hinduism Before Reform. Massachusetts: Harvard University Press.
- Anderson, Benedict. (1994) "Imagined Communities" in J. Hutchinson and A.D. Smith (Eds.) Nationalism Oxford: Oxford University Press, pp. 225-231
- Hardgrove, Anne. (2004). Community and Public Culture: the Marwaris in Calcutta. New York: Oxford University Press, chapter 1.
- Prakash, Gyan. (2002) 'Civil society, community, and the nation in Colonial India' Etnografica, Vol. 6 (1), pp.27-40.
- Jones, Kenneth. (1994). Socio-Religious Reform Movements in British India. New Delhi: Cambridge University Press, pp.73-101.
- Oberoi, Harjot. (1994). The Construction of Religious Boundaries: Culture, Identity and Diversity, in the Sikh Tradition. Chicago: University of Chicago Press, Chapter 4,5,6
- Hardgrave, R.L. (1968). "The Breast-Cloth Controversy: Caste consciousness and Social Change in Southern Travancore", Indian Economic and Social History Review (IESHR), June 1, Vol. 5 (2), pp. 171-87.

Suggestive readings (if any)

- Bagchi, Amiya Kumar. (2002.) Capital and Labour Redefined: India and the Third World. New Delhi: Tulika.

- Bandyopadhyay, Sekhar. (2017). From Plassey to Partition and After: A History of Modern India, New Delhi: Orient Blackswan, 2nd edition
- Banerjee-Dube, I. (2015). A History of Modern India. Delhi: Cambridge University Press.
- Banerji, A.K. (1982). Aspects of Indo-British Economic Relations 1858 – 1898. Bombay: Oxford Univer- sity Press.
- Basra, Amrit Kaur. (2015). Communal Riots in the Punjab, 1923 – 28. Delhi: Shree Kala Prakashan.
- Bhargava, Rajeev (ed). (2008). Politics and Ethics of the Indian Constitution. New Delhi, Oxford Uni- versity Press.
- Brown, Judith. (1977). Gandhi and Civil Disobedience. The Mahatma in Indian Politics 1928-34. Cam- bridge: Cambridge University Press.
- Chandra, Bipan, Mridula Mukherjee, Aditya Mukherjee, Sucheta Mahajan, K N Panikkar. (1989). India's Struggle for Independence. Delhi: Penguin Books.
- Chatterjee, Partha. (1986). Nationalist Thought and the Colonial World. A Derivative Discourse?. Delhi: Oxford University Press.
- Deshpande, Anirudh. (2009). "Sailors and the Crowd: Popular Protest in Karachi, 1946", in Sekhar Bandyopadhyay, Nationalist Movement in India: A Reader. New Delhi: Oxford University Press, pp.336 -- 358.
- Dutta, Vishwa Nath. (2000). Gandhi and Bhagat Singh. New Delhi: Rupa and Company.
- Gandhi, Rajmohan. (2017). Modern South India: A History from the 17th Century to our Times, Delhi, Aleph Press
- Gilmartin, David. (1988). Empire and Islam: Punjab and the Making of Pakistan. California: University of California.
- Guha, Amalendu. (2019). Freedom Struggle & Electoral Politics in Assam From Planter Raj to Swara.
- Delhi, Tulika Books (Chapters 5 & 6).
- Guha, Ramachandra. (2018). Gandhi: The Years That Changed the World: 1914-1948. New Delhi: Pen- guin.
- Guha, Ranajit. (2000). A Subaltern Studies Reader, 1986-1995. Delhi: Oxford University.
- Gupta, Amit (1997). "Defying Death: Nationalist Revolutionism in India, 1897-1938",
- Social Scientist, Vol. 25 (9/10), pp. 3-27.
- O'Hanlon Rosalind (2017). Caste and its Histories in Colonial India: A Reappraisal,'
- Modern Asian Studies 51, 2 pp. 432–461
- Hasan, Mushirul and Asim Roy (Eds.). (2005). Living Together Separately: Cultural India in History and Politics. New Delhi: Oxford University Press.
- Hasan, Mushirul ed. (1993). India's Partition: Process, Strategy and Mobilization. (Themes in Indian History. Oxford india Readings. Delhi: Oxford University Press.

- Hasan, Mushirual, Gupta, Narayani. (1993). India's Colonial Encounter. Essays in Memory of Eric Stokes. Delhi: Manohar, pp. 183-199; 325-362.
- Kumar, Dharma. (1983) The Cambridge Economic History of India. Vol. 2: c. 1757-1970.
- Delhi: Orient Longman in association with Cambridge University Press.
- Kumar, Ravinder. (1969). 'Class, Community or Nation? Gandhi's Quest for a Popular Consensus in In- dia' Modern Asian Studies, Vol. 3, Issue. 4, pp. 357-376.
- Metcalfe, Barbara. (2014). Islamic Revival in British India: Deoband, 1860-1900. Princeton: Princeton University Press
- Mishra, Yuthika. (2004). "The Indian National Movement and Women's Issues: 1850- 1950", in The En- cyclopaedia of Women's Studies, Vol. I. Women's Movements, ed. Subhadra Channa, New Delhi: Cosmo Publications.
- Mukhopadhyay, Amitabh. (1995). Militant Nationalism in India: 1876 – 1947. Calcutta: Institute of His- torical Studies.
- Naik, J.V. (2001). "Forerunners of Dadabhai Naoroji's Drain Theory", Economic and Political Weekly,Vol. 36 (46), pp. 4428-32.
- Pandey, Gyanendra. (2001). Remembering Partition: Violence, Nationalism and History of India. Cam- bridge: Cambridge University Press
- Pandey, Gyanendra. (2002). The Ascendancy of the Congress in Uttar Pradesh 1926-34: A Study in Im- perfect Mobilization. Second edition. New Delhi: Anthem Press (Introduction and Chapter 4).
- Parekh, Bhikhu. (2001). Gandhi a Very Short Introduction. Oxford: Oxford University Press, e-book.
- Pati, Biswamoy. (Ed.). (2000). Issues in Modern Indian History: For Sumit Sarkar. Mumbai: Popular Prakshan (Chapter 8).
- Robinson, Francis. (1994). Separatism Amongst Indian Muslims: The Politics of the United Provinces' Muslims, 1860-1923. New Delhi: Oxford University Press.
- Roy, Tirthankar. (2000). The Economic History of India 1857-1947. New Delhi: Oxford University Press.
- Sarkar, Sumit. (2014). Modern Times: 1880s-1950s, Environment, Economy and Culture. Ranikhet: Per- manent Black.
- Sarkar, Sumit. (1998). Writing Social History. Delhi: Oxford University Press.
- Singh, Kumar Suresh. (2002). Birsa Munda and His Movement, 1872 – 1901: A Study of a Millenarian Movement in Chotanagpur. Chotanagpur: Seagull Books.
- Tomlinson, B.R. (1979). The Political Economy of the Raj: 1914-1947, The Economics of Decolonisa- tion in India. London: Macmillan Press.
- Panikkar, K.N. (Ed.). (1980). National and Left Movements in India. Delhi: Vikas.
- Sen, Amartya.(1981). Poverty and Famines. An Essay on Entitlement and Deprivation. Oxford: Oxford University Press, pp. 52 – 85
- Srimanjari. (1998). 'Denial, Dissent and Hunger: Wartime Bengal, 1942-44', in B. Pati ed.,
- Turbulent Times: India 1940-44. Mumbai: PPH, 1998, pp. 39-66

- Suhrud, Tridip. (2011). The Cambridge Companion to Gandhi. Cambridge: CUP, pp. 71- 92.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE (DSC-3): History of Modern Europe – II

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
History of Modern Europe – II	**4**	**3**	**1**	**0**	**Class XII**	**Should have studies History of India I – VI**

Learning Objectives

This paper offers a historical overview of the development of nationalities and nation-states in the 19th and 20th centuries. Among the various case studies discussed, the paper traces the build-up to a revolution in the disintegrating Russian empire. It also introduces students to the concept of imperialism. In this light, the paper discusses the varied historical writings on World War One and on the nature of developments during the inter-war period. It familiarises students with the intellectual and art movements that were linked to the changes in the socio-economic and political milieu of 19th and early 20th century Europe.

Learning outcomes

Upon completion of this course the student shall be able to:

- Trace varieties of nationalists and the processes by which new nation-states were carved out.
- Discuss the peculiarities of the disintegration of large empires and remaking of Europe's map.
- Deliberate on the meaning of imperialism and the manifestations of imperialist rivalry and expansion in the 19th and early 20th century.
- Analyse the conflict between radical and conservative forces, and the gradual consolidation of ultra-nationalist and authoritarian regimes in Europe.
- Contextualise major currents in the intellectual sphere and arts.

SYLLABUS OF DSC-3

Unit I: Nations and Nationalism in the nineteenth century

1. Theories of Nationalism

2. Nationalist aspirations in Germany, Italy and the Austro-Hungarian Empire / Ottoman Empire
3. State and Politics in post-unification Germany / Italy

Unit II: The First World War and Revolutions
1. Theories of Imperialism
2. Causes and Impact of the War: Historiographical debates
3. Revolutions: Russia 1905 and 1917

Unit III: Europe Between the World Wars
1. Fascism: Historiographical debates
2. Nature of the State in Fascist Italy / Nazi Germany
3. Origins of the Second World War

Unit IV: Cultural Transformation of Europe (1850-1939)
Choose any two sub themes for study (1) or (2) or (3)
- Trends in Painting, Architecture and National Art Galleries
- [Emerging Forms of Expression: Photography, Radio and Cinema
- Institutions of Knowledge: Exhibitions, Museums / Archives and History as a discipline

Practical component (if any) - NIL

Essential/recommended readings

Unit I: At the end of this rubric the student will be expected to comprehend the important theories on nationalism, which are crucial for recognising the nature of different nationalist aspirations that emerged in nineteenth century Europe. The student would also be able to demonstrate an understanding of the complex political and economic interplay associated with the unification of Germany and Italy. Students will be able to trace these complexities into the politics of state formation post unification. **(Teaching time: 12 hours Approx.)**

- Beals, Derek and Eugenio F. Biagini. (2002). The Risorgimento and the Unification of Italy. London and New York: Routledge (Chapters 5 to 9)
- Blackbourn, David. (2002). History of Germany 1780-1918: The Long Nineteenth Century. Oxford: Oxford University Press. (Chapters 5-9)
- Waller, Bruce (ed.) (1990) Themes in Modern European History 1830-90, London: Routledge. (Chapters 5 & 8)
- Eley, Geoff. (1986). From Unification to Nazism: Reinterpreting the German Past. London and New York: Routledge. (PLEASE INDICATE CHAPTERS…I DO NOT HAVE THIS BOOK)
- Hutchinson, John and Anthony Smith (eds.). (1994). Nationalism. Oxford: Oxford University Press. (Chapters 9 to 12, 14, 16, 25 & 27)
- Mazower, Mark. (2002). The Balkans: A Short History, The Modern Library: New York

- Waller, Bruce (ed.), (1990) Themes in Modern European History 1830-90, Routledge: London
- Riall, Lucy. (1994). The Italian Risorgimento: State, Society and National Unification. London and New York: Routledge. (Chapters 5 & 6)
- Sarnoff, Daniella. (2017). "Nationalism: Triumphs and Challenges in the Long Nineteenth Century and Beyond. In Revisiting Modern European History: 1789–1945, edited by Vandana Joshi. Pearson.
- लाल बहाि र वमाि। यरोपू का इर्तहास: फ्ासीसं ी क्रार्त से र्तीय वि युद्ध तक।
- पाथिसारथी गुप्ता (संपाि क)। यरू ोप का इर्तहास। Hindi Madhyam Karyanvaya Nideshalaya, DU.
- र्वेश र्वजय, मीना भारिाज, वंि ना चौधरी (संपाि क)। आधर्ु नक यरू ोप का इर्तहास: आयाम और र्शाएं। Hindi Madhyam Karyanvaya Nideshalaya, DU

Unit-II: At the end of this rubric the student will be familiar with the key theories on imperialism which are important for understanding the outbreak of the World Wars and the complex post-War scenarios. The student will also be familiarized with a range of historiographical issues reflected in historical analyses of the First World War. The student will also learn of how revolutionary possibilities emerged during the First World War. In this regard, the economic, social and political issues that led to the fall of the Tsarist regime in Russia and emergence of a socialist state by October 1917 will be explained. **(Teaching time: 12 hours Approx.)**

- Brewer, Anthony. (2001). Marxist Theories of Imperialism. A Critical Survey. London and New York: Routledge. (Chapters 4, 5, 6 & 7)
- Fitzpatrick, Sheila. (1994). The Russian Revolution. Oxford: Oxford University Press. (Chapters 1 & 2)
- Gleason, Abbot (Ed.). (2009). A Companion to Russian History. Sussex: Wily-Blackwell. (Chapters 12, 13, 14, & 16)
- Henig, Ruth. (2003). The Origins of the First World War. London and New York: Routledge.
- Jones, Heather. (2013). "Historiographical Review As The Centenary Approaches: The Regeneration Of First World War Historiography." In The Historical Journal Vol. 56 (3): 857-78.
- Kiernan, V.G. (1974). "The Marxist Theory of Imperialism and its Historical Formation." In Marxism and Imperialism. London: Edward Arnold.
- Martel, Gordon (ed). (2006). A Companion to Europe 1900-1945. (Chapter 15, 16, 17 & 18). Malden, Oxford, Victoria: Blackwell Publishing.
- Porter, A. (1994). European Imperialism 1860-1914. Hampshire: Palgrave Macmillan. (Chapters 2,4 & 5)
- Wood, Alan. (2003). The Origins of the Russian Revolution 1861-1917. London and New York: Routledge.

- लाल बहाि वमाि। यरू ोप का इर्तहास: फ्ासीसंी क्रार्तं से र्ितीय वि युद्ध तक।
- पाथिसारथी गुप्ता (संपाि)। यरू ोप का इर्तहास। Hindi Madhyam Karyanvaya Nideshalaya, DU.
- र्िवेश र्वजय, मीना भारिाज, वंिना चौधरी (संपाि)। आधर्ु नक यरू ोप का इर्तहास: आयाम और र्िशाएं। Hindi Madhyam Karyanvaya Nideshalaya, DU

Unit- III: The student will be expected to develop an understanding of European politics of the inter-war period. She/he will examine the emergence of international institutions and the impact of war on European society and economy. This would also be essential to the students' understanding of the emergence of right wing movements in Europe. The student will be expected to demonstrate a familiarity with the historiographical debates and discussion associated with the rise and development of the fascist/Nazi state in Italy and Germany, eventually leading to the outbreak of the Second World War. **(Teaching time: 12 hours Approx.)**

- Thurlow, Richard. (1999. Fascism. Cambridge: Cambridge University Press. (Chapters 1- 4)
- McDonough, Frank. (1999). Hitler and Nazi Germany. Cambridge: Cambridge University Press.
- Passamore, K. (2002). Fascism: A Very Short Introduction. Oxford: Oxford University Press. (Chapters 1 to 5; Chapters 8 to 10)
- Kershaw, Ian. (1985). The Nazi Dictatorship: Problems and perspectives of Interpretation. London: Edward Arnold. (Chapters 1 and 2)
- McDonough, Frank . (1997). The Origins of the First and the Second World War. Cambridge: Cambridge University Press. (Chapters 4, 6, 7, 11, 13, 15, 17, 24, 26 & 29)
- लाल बहाि वमाि। यरू ोप का इर्तहास: फ्ासीसंी क्रार्तं से र्ितीय वि युद्ध तक।
- पाथिसारथी गुप्ता (संपाि)। यरू ोप का इर्तहास। Hindi Madhyam Karyanvaya Nideshalaya, DU.
- र्िवेश र्वजय, मीना भारिाज, वंिना चौधरी (संपाि)। आधर्ु नक यरू ोप का इर्तहास: आयाम और र्िशाएं। Hindi Madhyam Karyanvaya Nideshalaya, DU

Unit-IV: At the end of the rubric the student will be expected to build on her/his understanding of European history to understand the cultural and intellectual transformations experienced in late nineteenth and early twentieth century Europe. The student will develop familiarity with how mass education, print culture, changes in artistic styles, emergence of photography and the academic institutionalization of disciplines shaped the modern European worldview. **(Teaching time: 9 hours Approx.)** Winders, James A. (2001). European Culture Since 1848. New York: Palgrave

- Whitehead, Christopher, (2005) The Public Art Museum in Nineteenth Century Britain: The Development of the National gallery, Routledge: London. (Chapters 1,5 and 7)
- Aronsson, Peter and Elgenius, Gabriella, (2015), National Museums and Nation Building in Europe 1750-2010: Mobilisation and legitimacy, continuity and change, Routledge: London (Chapters 1, 3, 6 and 7)
- Vincent, David. (2000).The Rise of Mass Literacy: Reading and Writing in Modern Europe. New Jersey: Wiley.
- Brettell, Richard. (1999). Modern Art, 1851-1929: Capitalism and Representation. Oxford: Oxford University Press
- Colquhoun, Alan. (2002). Modern Architecture. Oxford: Oxford University Press, pp. 13- 35 & 87-109.
- Clarke, Graham. (1997). The Photograph. Oxford University Press, Oxford, 1997 (p. 11- 54)
- Thompson, Kenneth. (1976). August Comte: the Foundation of Sociology. New Jersey: Wiley.
- Kuper, Adam. (1975). Anthropology and Anthropologists. London: Penguin Books.
- Eriksen, T.H. and F.S. Nielsen. (2013). A History of Anthropology. London: Pluto Press.

Suggested Readings:

- Bayly, C. A. (2004). The Birth of the Modern World, 1780-1914. Oxford: Blackwell Publishing, pp.199-242.
- Berger, Stefan (Ed.). (2004). A Companion to Nineteenth Century Europe 1789-1914.
- Oxford: Blackwell Publishing.
- Berger, Stefan. (Ed.). (2004) .A Companion to Nineteenth Century Europe 1789-1914.
- Oxford: Blackwell Publishing, pp. 178-192
- Gooch, John. (2001). The Unification of Italy. London: Routledge.
- Gorman, Michael. (1989). The Unification of Germany. Cambridge: Cambridge University Press (Introduction).
- Henig, Ruth. (2003). Origins of the First World War. London and New York: Routledge.
- Hobsbawm, E.J. (1990). Nations and Nationalism: Programme, Myth, Reality. Cambridge: Cambridge University Press.
- Hopkins, A.G. (2000). “Overseas Expansion, Imperialism, and Europe” in T.C.W. Blanning, (Ed.). The Nineteenth Century: Europe 1789-1914. Oxford: OUP, pp. 210-24.
- Hunt, Lynn, Tomas R. Martin, Barbara H, Rosenwein, Bonnie G. Smith. (2010). The Making of the West: Peoples and Cultures, A Concise History. Boston and New York: Bedford / St. Marti.
- Joll, James. (1999). Europe since 1870. London: Penguin Books, pp. 78-112

- Kohn, David. (1985). The Darwinian Heritage. Princeton: Princeton University Press.
- McMaster, Neil. (2001). Racism in Europe.UK: Macmillan Education.
- Merriman, John. (2002). A History of Modern Europe: From the Renaissance to the Present. London. New York: W.W. Norton.
- Merriman, John. (2002). A History of Modern Europe: From the Renaissance to the Present. London, New York: W.W. Norton. pp. 1056-1111
- Merriman, John. Open Yale Course Lectures [audio].
- Perry, Marvin and George W. Bock. (1993). An Intellectual History of Modern Europe. Princeton: Houghton Mifflin Company.
- Perry, Marvin et.al. (2008). Western Civilization: Ideas, Politics and Society, Vol.2. Boston and New York: Houghton Mifflin Harcourt Publishing Company
- Perry, Marvin et.al. (2008). Western Civilization: Ideas, Politics and Society, Vol. 2.
- Boston and New York: Houghton Mifflin Harcourt Publishing Company, pp. 708-745
- Rapport, Michael. (2005). Nineteenth Century Europe. Hampshire: Palgrave Macmillan
- Rapport, Michael. (2005). Nineteenth Century Europe. New York: Palgrave Macmillan.
- Said, Edward. (1978). Orientalism; Western Conception of the Orient. New York: Pantheon Books.
- Sheehan, James J. (2000). “Culture”, in T.C.W. Blanning)Ed.) The Nineteenth Century: Europe 1789-1914. Oxford: Oxford University Press.
- Simonton, Deborah. (1998). A History of European Women's Work: 1700 to the Present. London and New York: Routledge.
- Teich, Mikulas and Roy Porter. (Eds.). (1993).The National Question in Europe in Historical Context. Cambridge: Cambridge University Press, pp. 181 - 194
- Thompson, David. (1990). Europe Since Napoleon. London: Penguin Books.
- Todd, Allan. (2002). The European Dictatorships: Hitler, Stalin, Mussolini. Cambridge: Cambridge University Press.
- Wade, Rex A. (2000). The Russian Revolution, 1917. Cambridge: Cambridge University Press.
- Wagner, Kim A., and Roque, Ricardo, (2012) Engaging Colonial Knowledge: Reading European Archives in World History, Palgrave Macmillan: London.
- Waller, Bruce (ed.). (2002). Themes in Modern European History 1830-1890. London and N.Y.: Routledge. (Chapter: Germany: Independence and Unification with Power, pp. 99- 122.)
- स्नेह महाजन। यूरोप का इर्तहास:1870-1914 । प्रगर्त प्रकाशन ।
- ए.के. र्मिल । आधुर्नक यूरोप का इर्तहास: 1789 से 1945 तक । साहर्त्य भवन प्रकाशन
- एररक हॉब्सबॉम, साम्राज्य का युग: १८७५ - १९१४ , अनुवाि प्रकाश ि ीर्क्षत, संवाि प्रकाशन, मेरठ, २००९

- एररक हॉब्सबॉम, अर्तरेकों का युग: १९१४-१९९१ , अनुवाि प्रकाश ि ीक्षित, संवाि प्रकाशन, मेरठ, २००९
- आधर्ु नक यूरोप का इर्तहास: आयाम एवं र्िशाएं, (संपार्ित) ि ेवेश र्वजय, मीना भारिाज एवं वंिना चौधरी, हर्न्ि ी माध्यम कायाि न्वय र्निशालय, र्ि ल्ली र्विर्वधालय, 2010 ।
- यूरोप का इर्तहास, भाग 1 एवं भाग 2, प्रकाशन संस्थान, 1998।
- आधर्ु नक र्वि का इर्तहास, लाल बहाि र वमाि , हिं ी माध्यम कायाि न्वय र्निशालय र्ि ल्ली र्विर्वधालय, 2013।
- सांस्कृ र्तक इर्तहास एक तुलनात्मक सवेक्षण, ि ेवेश र्वजय, हर्न्ि ी माध्यम कायाि न्वय र्निशालय र्ि ल्ली र्विर्वधालय, 2009।
- प्रारंभिक आधर्ु नक यरू ोप में सांस्कृ र्तक पररवर्तन, संपार्ित ि ेवेश र्वजय, हर्न्ि ी माध्यम कायाि न्वय र्निशालय र्ि ल्ली र्विर्वधालय, 2006।
- यरू ोप का इर्तहास, पाथि सारर्थ गुप्ता, हर्न्ि ी माध्यम कायाि न्वय र्निशालय र्ि ल्ली र्विर्वधालय
- यरू ोप 1870 से जेम्स जॉल, स्नेह महाजन (अनुवाि क) हर्न्ि ी माध्यम कायाि न्वय र्निशालय र्ि ल्ली र्विर्वधालय
- बीसवीं शताब्ि ी का र्वि इर्तहास : एक झलक भाग 1 स्नेह महाजन हर्न्ि ी माध्यम कायाि न्वय र्निशालय र्ि ल्ली र्विर्वधालय
- र्वि इर्तहास 1500 1950 , जैन एवं माथुर, जैन प्रकाशन मंर्ि र, 2016
- मास्टररंग मॉडनि वर्ल्ड हर्स्री आधुर्नक र्वि इर्तहास नॉमिन लो, (अनुवाि क) अरुणा गुप्ता एवं हिं ु खन्ना, ि ेव पब्र्लशसि, 2020।

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE (DSE): Gender in Indian History, c.1500-1950

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Gender in Indian History, c.1500-1950	4	3	1	0	Class XII	

Learning Objectives

The module will delineate gendered constructs in Early Modern and Modern India. It contextualizes the participation and contribution of women in courtly culture and domestic spaces. While examining questions and debates on law, education, social differentiation and partition, it questions patriarchy and the nuances of historical gender dynamics. The course tries to historicize and analyse institutions of family and norms of manhood. The course also tries to give students a critical overview of the tangled paradigms that labels women as victims and agents, and objects and subjects.

Learning outcomes

Upon completion of this course the student shall be able to:

- Critically assess popularly held notions about women in Islamic empires.
- Examine critical issues of gender and power in the context of Early Modern and Modern Indian history.
- Examine the issues around the 'women's question' in the modern period of Indian history.
- Discuss issues of gender in the context of partition and the post-partition period of the construction of the independent state.

SYLLABUS OF DSE – 1

Unit I: Women in Early Modern India: 1500 to 1750's

Rethinking Courtly and Domestic Spaces: Power, Household and Family

Constructing Gender Identities: Behaviour and Practices

Unit II: Women, Colonialism and Modernity: 1750's to 1950's

The Women's Question: Social Reform, Law and Education

Women, Work and Social Differentiation

Gender and Print Culture

Unit III: Partition and Women: Family, Community and State

Practical component (if any) - NIL

Essential/recommended readings

Unit I: Women in Early Modern India: 1500 to 1750's

The learning outcome of this unit is to question gender stereotypes about women in Early Modern India. It provides for a more contextual and nuanced understanding of how historical and gendered constructions of spaces, institutions and norms helped create sensibilities in Early Modern India. (Teaching time: 18 hours)

- Joshi, Varsha, Polygamy and Purdah: Women and Society among Rajputs. Jaipur: Rawat Publications, 1995.
- Lal, Ruby, Domesticity and Power in the Early Mughal World. Cambridge: Cambridge Studies in Islamic Civilization, 2005, pp. 1-49, 212-226.
- O'Hanlon, Rosalind, "Kingdom, Household and Body: History, Gender and Imperial Service under Akbar", Modern Asian Studies, 2007, vol. 41/5, pp. 889-923.
- Peirce, Leslie, Women and Sovereignty in the Ottoman Empire. New York: Oxford University of Press, 1993. (Preface, Introduction, Chapter 1, pp vi-27 Conclusion, pp 267-285).
- Sarkar, Nilanjan, "Forbidden Privileges and History-Writing in Medieval India". The Medieval History Journal, 2013, 16 (1), pp. 21-62.
- Sreenivasan, Ramya, "Honouring the Family: Narratives and Politics of Kinship in Pre-Colonial Rajasthan" in Indrani Chatterjee, ed., Unfamiliar Relations: Family and History in South Asia. Delhi: Permanent Black, 2004, pp. 46-72.

Unit II: Women, Colonialism and Modernity: 1750's to 1950's

This segment enquires into questions of law and education in terms of the women's question. It explores the linkages of gender with various social identities. It further investigates gender histories of print and popular culture. (Teaching time: 21 hours)

- Anandi, S. "Women's Question in the Dravidian Movement c. 1925-1948", Social Scientist, 1991, vol. 19/5, pp. 24-41.
- Carroll, Lucy, "Law, Custom and Statutory Social Reform: The Widows' Remarriage Act of 1856" in Tanika Sarkar & Sumit Sarkar, ed., Women and Social Reform movement in Modern India, Ranikhet: Permanent Black, 2007, pp. 113-144.
- Forbes, Geraldine, Women in Modern India, Cambridge: Cambridge University Press, 1998, pp. 32-63.
- Gupta, Charu, "Introduction", in Gendering Colonial India, ed., Charu Gupta, New Delhi: Orient Blackswan, 2012, pp.1-36.
- Orsini, Francesca, The Hindi Public Sphere, 1920-1940, Delhi: Oxford University Press, 2002. (Chapter 4, pp.241-308).
- Warrier, Shobhana, "Women and Workplace", Shakti Kak and Biswamoy Pati, ed., Exploring Gender Equations. Colonial and Post-Colonial India. New Delhi: Nehru Memorial Museum and Library, 2005, pp. 231-265.

Unit III: Partition and Women: State, Community and Family

This section explores and reflects on the relationship between women and partition, and the role of state, community and family. (Teaching time: 9 hours)

- Butalia, Urvashi, The Other Side of Silence: Voices from the Partition of India. Delhi: Penguin, 2003. (Chapter 4, pp.109-71).
- Menon, Ritu, Borders and Boundaries: Women in India's Partition. New Brunswick:

Rutgers University Press, 1998, pp.3-29.

Suggestive readings (if any)

- Anooshahr, Ali, "The King Who Would Be Man: The Gender Roles of the Warrior King in Early Mughal History". Journal of the Royal Asiatic Society Third Series, 2008, vol. 18/3, pp. 327-340.
- Faruqui, Munis D., Princes of the Mughal Empire. New York: Cambridge University Press, 2012. (Chapter 3 – The Princely Household)
- Flavia, Agnes, Law and Gender Inequality: The Politics of Women's rights in India, New Delhi: Oxford University Press, 2001. (Chapter 4, 5 & 6, pp. 41-90).
- Gupta, Charu, Streetva se Hindutva Tak, Delhi: Rajkamal Prakashan, 2012. (Chapters 4, 7, 10 & 11).
- Gupta, Charu, ed., Gendering Colonial India: Reforms, Print, Caste and Communalism, Delhi: Orient Blackswan, 2012.
- Hambly, Gavin R.G., (ed). Women in Medieval Islamic Empires. New York: St. Martin's Press, 1998. (Introduction, Chapters 10, 16, 19, 20).
- Kumar, Radha, The History of Doing. An Illustrated Account of Movements for Women's Rights and Feminism in India 1800-1960, New Delhi: Kali for Women, 1993, pp. 7-26. (Available in Hindi)
- O'Hanlon, Rosalind, "Manliness and Imperial Service in Mughal North India", Journal of the Economic and Social History of the Orient, 1999, vol. 42/1, pp. 47-93.
- Malhotra, Anshu, "The Pativrata and Domestic Ideologies in Early Twentieth Century Punjab", Shakti Kak & Biswamoy Pati, ed., Exploring Gender Equations. Colonial and Post-Colonial India, New Delhi: Nehru Memorial Museum and Library, 2005, pp.1-27.
- Mishra, Yuthika, Hindu Woman and Legislative Reforms: A Discourse on Marriage, Delhi: Indu Prakashan, 2016.
- Mukhia, Harbans, Bhartiya Mughal, Oxford: Blackwell, 2004. (Chapter 3).
- Nair, Janaki, Women and Law in Colonial India: A Social History, New Delhi: Kali for Women, 1996. (Chapters 3 & 6).
- Petievich, Carla, "Gender Politics and the Urdu Ghazal", Indian Economic and Social History Review, 2001, vol.38, (3), pp. 223-248.
- Ruggles, D. Fairchild, (ed). Women, Patronage and Self-Representation in Islamic Societies, New York: State University of New York Press, 2000. (Introduction & Chapter 6).
- Sangari, Kumkum and Sudesh Vaid, Recasting Women: Essays in Colonial History, New Delhi: Kali for Women, 1989.
- Singh, Dilbagh. "Regulating the Domestic: Notes in the Pre-colonial States and the Family", Studies in History, 2003, vol.19/1, pp. 69-86.

Note: Examination scheme and mode shall be as prescribed by the ExaminationBranch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE : Fundamentals of Historical Methodology

NOTE: 'Fundamentals of Historical Methodology' is offered as one of the DSE courses in VI and VII Semesters. Students of the History Honors Program can opt for it either in the VI semester or VII semester.

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Fundamentals of Historical Methodology DSE – No.#	4	3	1	-	Class 12th Pass	Nil

Learning Objectives

This course aims to prepare the students with elementary techniques of conducting historical research within the larger social science framework. It does so by familiarising them with the theoretical frameworks and procedures/techniques of research that historians deploy in order to construct a meaningful narrative about the past. The course proceeds to equip students with the preliminary research steps like identifying research questions, theoretical context, survey of the literature; locating reliable sources; framing a research paper, etc.; as well acquainting them with research ethics.

Learning Outcomes

Having finished the course, the students would have learnt:

- The distinctiveness of historical research
- The issues and problems in writing history
- How to carefully choose interpretative techniques when reading sources
- How to choose a historical "field" and within that field a specific research question
- The skills and protocols related to academic writing and research in history
- The essentials of research ethics.

SYLLABUS OF DSE

Unit I: Distinctiveness of historical inquiry

1. The nature of history
2. The scope of historical research

Unit II: Issues and problems in historical research

1. Facts and inference
2. Explanation and historical research
3. Objectivity and history writing
4. History writing and relations of power

Unit III: Sources and interpretation

1. Types of historical sources: their use and limitations
2. Analytical frames in historical research
3. Varieties of approaches to sources and methods

Unit IV: Conducting historical research

1. Selecting a topic and preliminary work
2. Protocols of academic writing and avoiding plagiarism

Practical component (if any) - NIL

Essential/recommended readings:

Unit I: This introductory Unit seeks to enable students to i) distinguish the historical from the past, memory and myth; ii) comprehend the relationship of history with social science theories and concepts; iii) distinguish aspects of history (social, political, economic, religious, cultural, ecological). (Teaching Time: 9 hours)

- Hobsbawm, Eric J. (1998). On History, UK: Abacus (Ch.2, "A Sense of the Past", and Ch.3, "What Can History Tell Us About Contemporary Society").
- Bloch, Marc. (1992). The Historian's Craft, Manchester University Press. Reprint ("Introduction," pp. 1-19).
- Schlabach, Gerald. A Sense of History: Some Components http://www.geraldschlabach.net/about/relationships/benedictine/courses/handouts/sense-of-history/
- Marwick, Arthur. (1989). The Nature of History. Third edition, Hampshire and London: MacMillan (pp. 14-25 - "The Necessity of History" and "Stories and Dialogues").
- Stephens, Lester D. (1977), Probing the Past: A Guide to the Study and Teaching of History, Boston, London & Sydney: Allyn and Bacon Inc. (Ch.1, "The Nature of History," and Ch.6, "History and Related Studies").
- Sreedharan, E. (2007). A Manual of Historical Research Methodology, Trivandrum: Centre for South Indian Studies. (Ch.1: pp. 14-20).

- Tosh, J. (2002). In Pursuit of History. Revised third edition. London, N.Y., New Delhi: Longman (Ch.8, “History and Social Theory”: pp. 214-225, and Ch.3, “Mapping the Field”).

Unit-II: This unit will deal with some important issues such as identifying historical facts, context, causal explanations, generalizations, objectivity; and configurations of power and history writing. (Teaching Time: 12 hours)

- Carr, E.H. (1991). What is History. Penguin. Reprint. (Ch.1, “The Historian and His Facts”, Ch.3, “History, Science and Morality”, and Ch.4, “Causation in History”).
- Marwick, Arthur (1989). The Nature of History. Third edition, Hampshire and London: MacMillan. (Ch.6, “The Historian at Work: The Writing of History,” pp. 242-254).
- Tucker, Aviezer (ed.) (2009), A Companion to the Philosophy of History and Historiography, Chichester: Wiley Blackwell Publishing (Ch.7, “Causation in History”).
- Sreedharan, E. (2007). A Manual of Historical Research Methodology, Trivandrum: Centre for South Indian Studies. (Ch.3, “The Critical Philosophy of History-Part I” and Ch.4, “The Critical Philosophy of History-Part II”).
- Stephens, Lester D. (1977), Probing the Past: A Guide to the Study and Teaching of History, Boston, London & Sydney: Allyn and Bacon Inc. (Ch.3, “The Historian and His Work,” and Ch.4, “Explanation and History”).
- Michel-Rolph Trouillot (1995), Silencing the Past: Power and the Production of History. Boston: Beacon Press. (Ch.1, Ch.3 and Ch.5).
- Hobsbawm, Eric J. (1998). On History, UK: Abacus (Ch.10, “Partisanship”).

Unit-III: This unit looks at (i) Different sources and analytical frameworks; (ii) types of history and their connection to sources (global, national, regional, micro, oral, visual, archival, textual-official and private). (Teaching Time: 12 hours)

- Jordonova, Ludmilla. (2000). History in Practice, London/New York: Arnold and Oxford University Press Inc. (Ch.2, “Mapping the Discipline of History”, Ch.4, “The Status of Historical Knowledge”, and Ch.7, “Historians’ Skills”).
- Brundage. Anthony (2018). Going to the Sources: A Guide to Historical Research and Writing, Sixth edition, Wiley Blackwell. (Ch. 2, “The Nature and Variety of Historical Sources”, Ch.5, “Beyond Textual Sources”, and Ch.7, “Engaging with Primary Sources”).
- Tosh, J. (2002). In Pursuit of History. Revised third edition. London, N.Y., New Delhi: Longman. (Ch.4, “The Raw Materials” and Ch.5, “Using the Sources”).
- Black, J., MacRaild, D.M. (1997). Studying History. How to Study. Palgrave, London. (Ch.4, “Approaches to History: Sources, Methods and Historians”).
- Howell, Martha and Walter Prevenier (2001). From Reliable Sources: An Introduction to Historical Methods. Ithaca: Cornell University Press. (Ch.2, “Technical Analysis of Sources,” Ch.3, “Historical Interpretation: The Traditional Basics,” and Ch.4, “New Interpretative Approaches”).

Unit IV: This unit will familiarize students with i) framing a research question and building an argument, (ii) literature review and scope of research, iii) research ethics, dangers of plagiarism and styles of referencing/citation. (Teaching Time: 12 hours)

- Booth, Wayne C. and Gregory G. Colomb (Contributor), Joseph M. Williams, William C. Booth. The Craft of Research : From Planning to Reporting. University of Chicago Press.
- Brundage, Anthony (2018). Going to the Sources: A Guide to Historical Research and Writing. Sixth edition, Wiley Blackwell. (Ch.3, "Finding Your Sources", Ch.4, "Getting the Most out of History Books", Ch.6, "Exploring Changing Interpretations" and Ch.7, "Engaging with Primary Sources").
- Sorenson, Sharron (1995), How to Write a Research Paper, MacMillan
- Nayak, Dhanwanti (2011), 'Karaoked Plagiarism in the Classroom', Economic and Political Weekly, vol. 46, no. 9 (pp. 49-53).
- Katju, Manjari (2011), "Plagiarism and Social Sciences," Economic and Political Weekly, vol. 46, no. 9 (pp. 45-48).
- Chicago Manual of Style. 15th edition, Chicago: Chicago University Press, 2003.
- MLA Handbook for Writers of Research Papers 5th edition, New York: Modern Language Association of America, 1999.

Suggested Readings:

- Arnold, J.H. (2000). History: A Very Short Introduction. Oxford: Oxford University Press (Ch.3. & Ch.7).
- Black, J., MacRaild, D.M. (1997). Studying History. How to Study. Palgrave, London. (Ch.6, "Studying History").
- Elton, G.R., The Practice of History, London: Fontana Press, 1987.
- Gardiner, P. (1973). The Varieties of History: From Voltaire to Present. Second edition, Vintage Books.
- Hobsbawm, Eric J. (1998). On History. UK: Abacus.
- Jordonova, Ludmilla. (2000). History in Practice. London/New York: Arnold and Oxford University Press Inc., pp. 163-171 and 173-183 (Ch.6, "Public History").
- Munslow, Alun (2000), The Routledge Companion to Historical Studies, Second edition, London: Routledge [Relevant entries – concepts & names of historians are listed alphabetically just like a dictionary / encyclopedia].
- Munslow, Alun (2012), A History of History, London and New York: Routledge. (Ch.1, "The Emergence of Modern Historical Thinking," Ch.1, "History and/as Science," and Ch.3, "Forms of History").
- Postan, M.M. (1971). Facts and Relevance: Essays on Historical Method. Cambridge: Cambridge University Press ("Fact and Relevance, History and the Social Sciences in Historical Study").
- Sarkar, Sumit (1997), "The Many Worlds of Indian History", Writing Social History, New Delhi: OUP.

- Sreedharan, E. (2007). A Manual of Historical Research Methodology, Trivandrum: Centre for South Indian Studies. (Ch.6, “Historical Research Methodology”).
- Topolski, Jerzy. (1976). Methodology of History, translated by OlgierdWojtasiewicz, D. Reidel Publishing Company (Ch.10, “Historical Facts”, Ch.11, “The Process of History” – the section on Causality and Determinism, Ch.18, “The Authenticity of Sources and the Reliability of Informants”, Ch.19, “Methods of Establishing Historical Facts.”)
- Tosh, John. (2002). In Pursuit of History. Revised third edition. London, N.Y., New Delhi: Longman. (Ch.1, “Historical Awareness” and Ch.6, “Writing and Interpretation”).
- Tucker, Aviezer (ed.) (2009), A Companion to the Philosophy of History and Historiography, Chichester: Wiley Blackwell Publishing (Ch.6, “Historiographic Evidence and Confirmation”, Ch.10, “Explanation in Historiography” and Ch.14, “Historiographic Objectivity”).

Note: Examination scheme and mode shall be as prescribed by the ExaminationBranch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE (DSE-3) – : Select Themes in the History of Education in India

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Select Themes in the History of Education in India	**4**	**3**	**1**	**0**	**12th Pass**	**NIL**

Learning Objectives

This course will provide students with a critical understanding of different historical traditions of education in India from ancient to colonial periods and their socio-political aspects. It is a thematic course, which seeks to focus on various aspects of formal and informal systems of education in India from the earliest times to the modern period. The course takes up some aspects of the rich and varied epistemological traditions, practices and pedagogies that emerged, evolved, adopted or adapted in the Indian subcontinent.

Learning outcomes

- The course will enhance learners' comprehension of the complex historical trajectories of the expansion as well as limitations of educational opportunities in India;
- It will allow them to understand the diverse manner in which production and reproduction of knowledge took place through formal and informal socio-cultural networks.
- It will make them aware about the rich educational legacy of India and enable them to make a critical appraisal of the same.
- The course will create a greater understanding of the linkage between education and power, the role of the state, the elite and different social categories in deciding what construes as 'knowledge', its transmission, the strategies of inclusion and exclusion in knowledge dissemination in different regions and in varied chronological frameworks.
- It will provide them historical insights to engage with the issues of contemporary education.

SYLLABUS OF DSE-3

Unit 1. Knowledge Traditions, Pedagogy and Centres of Learning in Ancient India.

Unit 2. Educational Institutions and Knowledge Formation in India from 11th to 18th century.
Unit 3. History of Education during Colonial Period.
Unit 4. Educational Discourse of Freedom Struggle.

Practical component (if any) - NIL

Essential/recommended readings

Unit 1. This unit will trace the emergence of diverse knowledge traditions and the methods adopted for their transmission and dissemination. Students will be introduced to the key epistemological concepts and the philosophical traditions, and how what was construed as knowledge and education was constantly being debated, contested and modified. The unit will explore the varied pedagogic practices prevalent in ancient India - from the early Vedic śākhās to centres of learnings like Taxila and Nalanda; along with others. This unit will also familiarise the students with diverse knowledge systems from the Vedic and post-Vedic corpus, Buddhist and Jain scriptures, Carvaka and Tantric philosophy, early numerical systems, along with practices and traditions of healing, such as Ayurveda and Yoga. Knowledge traditions, concepts and educational practices will be critically interpreted in the context of their linkages with socio-political and religious structures of power and social stratifications and the question of their accessibility to caste, gender and other marginalised categories. (eleven hours)

Essential Readings:

- Divakaran, P.P. (2019), The Mathematics of India: Concepts, Methods, Connections, Springer, Singapore. Introduction. pp. 1-21.
- Lowe, Roy, Yasuhara, Yoshihito. (2016), The Origins of Higher Learning: Knowledge Networks and the Early Development of Universities, Routledge. Chapter Two 'From the Indus to the Ganges, Spread of Higher Learning in India'.
- Scharfe, Hartmut. (2002), Education in Ancient India. Brill, Lieden.
- Shrimali, Krishna Mohan. (2011), "Knowledge Transmission: Processes, Contents and Apparatus in Early India," Social Scientist, Vol. 39, No. 5/6: 3–22.
- Witzel. M. (1987), On the Localisation of Vedic Texts and Schools, India and the Ancient World: History, Trade and Culture before A.D. 650. P.H.L. Eggermont Jubilee Volume, edited by G. Pollet, Orientalia Lovaniensia Analecta 25, Leuven, pp. 173-213.

Unit 2. This unit engages with different kinds of institutional, communitarian and individual arrangements of learning and structures of patronage that existed in India from 11th to 18th century. It explores how these arrangements promoted the development of different knowledge traditions in different trans-local linguistic idioms, such as Sanskrit, Arabic and Persian alongside with a wide range of literature and genres within regional languages and translation projects in different fields like Philosophy, Philology, Aesthetics, Astrology, Law,

Mathematics, Physical Sciences, Medicine, Music, Hermeneutics, Grammar, Lexicography and Doxography. It will also deal with the questions of what were the forces of educational expansion as well as control over it, and what does this history of education tell us about social relations in the period under study. (eleven hours)

Essential Readings:

- Alam, Muzaffar. (2003), 'The Culture and Politics of Persian in Pre-colonial Hindustan,' in Sheldon Pollock (ed.), Literary Cultures in History: Reconstructions from South Asia, University of California Press, 2003, pp. 131-198.
- Ali, Daud. (2006), 'The culture of court' (Chapter 2, pp. 69-96) and 'The education of Disposition', (Chapter 5 pp. 183-201) in his Courtly Culture and Political Life in Early Medieval India. Delhi: Cambridge University Press.
- Bor, Joep. Françoise 'Nalini'delvoye, Jane Harvey and Emmie Te Nijenhuis (eds.). (2010), Hindustani Music: Thirteenth to Twentieth Centuries. New Delhi: Manohar Publishers.
- George, Gheverghese Joseph. (2009), A Passage to Infinity: Medieval Indian Mathematics from Kerala and its Impact, Delhi: SAGE Publications India Pvt Ltd, (Chapter-7, pp. 142-156 and 8, 156-178).
- Ghosh, Suresh Chandra. (2001), History of Education in Medieval India, 1192 A.D.-1757 A.D. India Originals.
- Hussain, SM Azizuddin (ed.). (2005), Madrasa Education in India: Eleventh to Twenty First Century. New Delhi: Kanishka Publishers.
- Jafri, Saiyid Zaheer Husain. (2021), 'Education and the Transmission of Knowledge in India's Medieval Past: Contents, Processes and implications' in Cristiano Casalini, Edward Choi and Ayenachew A. Woldegiyorgis (Eds.), Education beyond Europe: Models and Traditions before Modernities. Brill, pp. 129-151.
- Makdisi, Goerge. (1981), The Rise of Colleges, Institutions of Learning in Islam, Edinburg University Press, Edinburg. Chapters 1, 2, and 3.
- Nizami, K.A. (1996), 'Development of the Muslim Educational System in Medieval India', in Islamic Culture, October.
- Pollock, Sheldon (ed.). (2011), Forms of Knowledge in Early Modern Asia: Explorations in the Intellectual History of India and Tibet 1500-1800, Manohar, Delhi.
- Ray, Krishnalal. (1984), Education in Medieval India, Delhi: B.R. Publishing, (Chapter 4, pp. 34-57 and 5 pp-57-66).
- Rezavi, Syed Ali Nadeem. (2007), 'The Organization of Education in Mughal India'." Proceedings of the Indian History Congress, 68, pp. 389-97. http://www.jstor.org/stable/44147851.
- Robinson, Francis. (2001), 'Perso-Islamic Culture in India from the 17th to the Early 20th Century', pp. 9-40 (chapter 1); and 'Atamans, Safavids, Moghuls: Shared Knowledge and Connective Systems', pp. 211-251 (chapter 8), in his The

'Ulama of Farangi Mahal and Islamic Culture in South Asia. Permanent Black, Delhi.

- Venkatasubramanian, T. K. (2010, Music as History in Tamilnadu. New Delhi: Primus Books. (Chapters 4, 5 and 8, pp. 45-75 and 100-107).

Unit 3. This unit deals with the emergence of colonial education and marginalization of indigenous education from 18th century onwards. How the two systems, indigenous and the colonial, impacted each other during this period. How this transition was shaped by the interventions of the colonial state, Christian missionaries, dominant castes and classes and the social reformers?? It will engage with how the nature of education during this period was shaped by the colonial state and dominant sections of Indian society, and what were the implications of this alliance in general and particularly for marginalised sections. It will also explore how the colonial education transformed language hierarchies and knowledge traditions in India. (twelve hours)

Essential Readings:

- Acharya, Poromesh. (2000), Desaj Siksha, Aupniveshik Virasat and Jatiya Vikalp, (translated in Hindi by Anil Rajimwale), Granth Shilpi, New Delhi.
- Allender, Tim. (2016), Learning Femininity in Colonial India, 1820–1932, Manchester: Manchester University Press.
- Babu, Senthil. (2022), Mathematics and Society: Numbers and Measures in Early Modern South India. Oxford University Press.
- Bhattacharya, Sabyasachi. (ed.) (2002), Education and the Dis-privileged: Nineteenth and Twentieth Century India, Orient Longman Private Limited, New Delhi.
- Chavan, Dilip. (2013), Language politics under colonialism: Caste, class and language pedagogy in western India. Cambridge Scholars Publishing.
- Crook, Nigel (ed.). (1996), The Transmission of Knowledge in South Asia: Essays on Education, Religion, History, and Politics, Delhi, Oxford University Press.
- Dharampal (ed.), (1983) The Beautiful Tree: Indigenous Education in the Eighteenth Century, New Delhi, Biblia Impex, (Specially Introduction)
- Gupta, Vikas. Agnihotri, Rama Kant. and Panda Minati (ed.). (2021), Education and Inequality: Historical and Contemporary Trajectories, Orient Blackswan, Hyderabad.
- Kumar, Arun. (2019),'The "Untouchable School": American Missionaries, Hindu Social Reformers and the Educational Dreams of Labouring Dalits in Colonial North India', South Asia: Journal of South Asian Studies, 42(5): 823-844.
- Paik, Shailaja. (2014), Dalit Women's Education in Modern India, New York: Routledge.
- Rao, Parimala V. (2020), Beyond Macaulay: Education in India, 1780-1860, New York, Routledge.
- Sarangapani, Padma M. and Rekha Pappu. (2021), Handbook of Education Systems in South Asia, Spinger Nature, Singapore. (Volume 1).

- Tschurenev, Jana. (2019), Empire, civil society, and the beginnings of colonial education in India, Delhi: Cambridge University Press.

Unit 4. This unit explores the alternative demands that were articulated within the educational discourse of the freedom struggle. It also engages with the fate of the national education movement as may be seen in the examples of Swadeshi and Nai Talim; along with the struggle for compulsory elementary education in colonial India. (eleven hours)

Essential Readings:

- Bhattacharya, Sabyasachi (ed.). (1998), The Contested Terrain: Perspectives on Education in India, Orient Longman, New Delhi.
- Bhattacharya, Sabyasachi. Bara, Joseph. and Yagati, Chinna Rao. (eds). (2003), Educating the Nation: Documents on the Discourse of National Education in India (1880-1920), Kanishka Publishers Distributors.
- Chatterji, Basudev (ed.). (1999), 'Towards Freedom (1938 Watershed)' Oxford University Press for ICHR, (Vol. I. chapter 8).
- Rao, Parimala V. (2013), 'Compulsory Education and the Political Leadership in Colonial India, 1840-1947' in Parimala V. Rao. (ed.), New Perspectives in the History of Indian Education, Orient BlackSwan, New Delhi, pp. 151-175
- Sadgopal, Anil. (2017), 'Macaulay Banam Phule, Gandhi-Ambedkar ka Muktidai Shaikshik Vimarsh' in Hariday Kant Dewan, Rama Kant Agnihotri, Chaturvedi, Arun. Sudhir, Ved Dan. and Rajni Dwivedi (eds.), Macaulay, Elphinstone Aur Bhartiya Shiksha, Vani Prakashan, New Delhi, pp. 82-95.
- Sarkar, Sumit. (1973), Swadeshi Movement in Bengal (1903-1908), People's Publishing House, (Chapter 4, pp. 149-181).

Suggestive readings

- Acharya, Poromesh. (1997), "Educational Ideals of Tagore and Gandhi: A Comparative Study" Economic & Political Weekly, 32, pp 601-06.
- Alavi, Seema. (2007), 'Indo-Muslim Medicine: Unani in Pre-Modern India', in her Islam and Healing: Loss and Recovery of and Indo-Muslim Medical Tradition 1600-1900. New Delhi: Permanent Black, pp. 18-43.
- Altekar, A. S. (1944). Education in Ancient India. Benares: Nand Kishore & Bros.
- Bandyopadhyay, D. (2002), 'Madrasa Education and the Condition of Indian Muslims', Economic and Political Weekly, Vol. 37, No. 16, pp. 1481-1484.
- Bhattacharya, Sabyasachi (ed.), Development of Women's Education in India 1850-1920 (A collection of Documents), Kanishka Publications, New Delhi, 2001. (Introduction)
- Bronkhorst, Johannes. (2013), Buddhist Teaching in India. Boston: Wisdom Publications.
- Bryant, Edwin. (2009). The Yoga Sutras of Patanjali: A New Edition, Translation, and Commentary, North Point Press, New York.
- Charney, Michael W. (2011), 'Literary Culture on the Burma–Manipur Frontier in the Eighteenth and Nineteenth Centuries'. The Medieval History Journal, (14) 2, pp 159-181.

- Chatterji, Basudev. (ed.) (1999), “Towards Freedom (1938 Watershed)”, Oxford University Press for ICHR, (Vol. I. chapter 8.)
- Constable, Philip. (2000), “Sitting on the School Verandah: The ideology and Practice of ‘Untouchable’ Educational protest in late Nineteenth-Century Western India”, IESHR, Vol. 37, No. 4, pp. 383-422.
- Deshpande, Madhav. (2020), “Language and Testimony in Classical Indian Philosophy”, in Edward N. Zalta (ed.), The Stanford Encyclopedia of Philosophy.
- Frykenberg, R. E. (1986), ‘Modern Education in South India, 1784-1854: Its Roots and Role as a Vehicle of Integration under Company Raj’, American Historical Review, Vol. 91, No. 1, February, pp. 37-65.
- Gandhi, Mahatma. (1938), Educational Reconstruction, Hindustani Talimi Sangh, Wardha.
- George L. Hart (1975), The Poems of Ancient Tamil, Their Milieu and Their Sanskrit Counterparts, Issue 21 of Center for South and Southeast Asia Studies, UC Berkeley Publications of the Center for South and Southeast Asia studies.
- Ghosh, S. C. (2007), History of Education in India, Rawat Publications.
- Gupta, Vikas. (2017) “Macaulay se Pare”, in Hariday Kant Dewan, Rama Kant Agnihotri, Arun Chaturvedi, Ved Dan Sudhir, and Rajni Dwivedi, eds., Macaulay, Elphinstone Aur Bhartiya Shiksha, New Delhi: Vani Prakashan
- Gupta, Vikas. (2018), “Bhaurao Patil's Educational Work and Social Integration”, Inclusive, Vol. 1, Issue 12.
- Gupta, Vikas. (2022) ‘Educational Inequities in Colonial India and the Agency of Teacher: Lens of Molvi Zaka Ullah’, Social Scientist, Vol. 50, Nos. 9-10 (September-October), pp. 21-41.
- Habib, Irfan. Technology in Medieval India: C. 650-1750. India: Tulika Books, 2013.
- Habib, S Irfan and Raina Dhruv (Ed. (2007), Social History of Science in Colonial India. India: Oxford University Press.
- Hardy, Peter. (1972), Muslims of British India, Cambridge: Cambridge University Press.
- Hariday Kant Dewan, Rama Kant Agnihotri, Chaturvedi, Arun. Sudhir, Ved Dan. and Rajni Dwivedi. (eds.), Macaulay, Elphinstone Aur Bhartiya Shiksha, Vani Prakashan, New Delhi.
- Jafar, S.M. (1936), Education in Muslim India, S. Muhammad Sadiq Khan, Peshawar.
- Jafri, Saiyid Zaheer Husain. (2012). ‘Education and transmission of knowledge in medieval India’, Intellectual Discourse, 20 (1), 79-102.
- Jafri, Saiyid Zaheer Husain. (2020), ‘Making of the Indo-Islamic Intellectual Tradition in the Upper Gangetic Valley: Migrations, Settlements, Adaptations and ‘Crises’’, The Historian, Vol 18 (Summer): 16-39.
- Kamal, MM. (1998), The Epistemology of the Carvaka Philosophy, Journal of Indian and Buddhist Studies, 46(2), pp. 13–16.
- Kumar, Krishna. (2009), “Listening to Gandhi” in his What is Worth Teaching?, Orient Longman, (Third Edition), Ch. 9, pp. 111-128.

- Kumar, Krishna. (2014), Politics of Education in Colonial India, New Delhi, Routledge.
- Kumar, Krishna. and Oesterheld, Joachem. (eds.). (2007), Education and Social Change in South Asia, New Delhi, Orient Longman (Essays by Sanjay Seth, Heike Liebau, Sonia Nishat Amin, and Margret Frenz).
- Lahiri, Latika. (1986), Chinese Monks in India: Biography of Eminent Monks Who Went to the Western World in Search of the Law During the Great T'ang Dynasty. Motilal Banarsidass, Delhi.
- Mondal, Ajit and Mete, Jayanta. (2016), Right to Education in India (two volumes), Gyan Publishing House, Delhi.
- Mondal, Ajit. (2017), "Free and Compulsory Primary Education in India under the British Raj" SAGE Open, SAGE Publications.
- Naik, J.P. & Nurullah, Syed. (2004) A Students' History of Education in India, (1800-1973), Delhi, Macmillan India Ltd, First Published 1945, Sixth Revised Edition 1974, Reprinted 2004. (Also available in Hindi).
- Naik, J.P. (1941), "Compulsory Primary Education in Baroda State: Retrospect and Prospect", (First published in the Progress of Education, Poona, and thereafter published in book form).
- Nambissan, Geetha B. (1996), "Equity in Education? Schooling of Dalit Children in India" Economic & Political Weekly, Vol. 31, pp. 1011-24.
- Oesterheld, Joachim. (2009), "National Education as a Community Issue: The Muslim Response to the Wardha Scheme" in Krishna Kumar and Joachem Oesterheld (eds.), Education and Social Change in South Asia, Orient Longman, New Delhi, pp. 166-195.
- Hartung, Jan-Peter and Reifeld, Helmut (Ed.). (2006), Islamic Education, Diversity and National Identity,Sage.
- Rai, Lajpat. (1966), The Problem of National Education in India, Publications Division, New Delhi.
- Rao, Parimala V. (ed.). (2014), New Perspectives in the History of Indian Education, Orient BlackSwan, New Delhi.
- Salgado, Nirmala, S. (1996), "Ways of Knowing and Transmitting Religious Knowledge: Case Studies of Theravada Buddhist Nun", Journal of the International Association of Buddhist Studies, Volume 19, Number 1, pp. 61-80.
- Sangwan, Satpal. (1990), 'Science Education in India under Colonial Constraints, 1792-1857', Oxford Review of Education, Vol. 16, No. 1.
- Shetty, Parinita. (2008), 'Missionary pedagogy and Christianization of the heathens: The educational institutions introduced by the Basel Mission in Mangalore', Indian Economic Social History Review, Vol. 45, pp. 509-51.
- Shukla, Suresh Chandra. (1959), Elementary Education in British India during Later Nineteenth Century, New Delhi: Central institute of Education.
- Sikand, Y. (2005), Bastions of the Believers: Madrasas and Islamic Education in India. New Delhi: Penguin.
- Soni, Jayandra (2000), "Basic Jaina Epistemology", Philosophy East and West, Vol. 50, Issue 3, pp. 367–377.

- Suman, Amit K. (2020), “Colonial State and Indigenous Islamic Learning: A Case Study of Calcutta Madrasa”, Paedagogica Historica: International Journal of the History of Education, Routledge: Taylor & Francis, pp. 1-18.
- Suman, Amit K. (2014), “Indigenous Educational Institutions in Upper Gangetic Valley: Curriculum, Structure and Patronage”, Social Scientist, Vol.42, No.3-4, March-April.
- Suman, Amit K. (2018), “The Quest for Education: An Insight into the Educational Theories and Practices of the Colonial Government in Bengal Presidency”, in the Indian Historical Review, Vol. 45, Issue 2, SAGE Publications, pp. 1-16.
- Venkatanarayanan, S. (2013), “Tracing the Genealogy of Elementary Education Policy in India Till Independence”, SAGE Open, Sage Publications.
- Wujastyk, Dominik. (2003) The Roots of Ayurveda (Penguin Classics). Penguin. Introduction p.1-38.
- Zelliot, Eleanor. (2014), ‘Dalit Initiatives in Education, 1880-1992’, in Parimala V. Rao, (Ed.), New Perspectives in the History of Indian Education, New Delhi, Orient BlackSwan, pp. 45-67.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE (DSE-4): History of Latin America c. 1500 – 1960s

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
History of Latin America c. 1500 – 1960s	**4**	**3**	**1**	**0**	**12th Pass**	**NIL**

Learning Objectives

This paper offers a historical overview of Latin America. It traces major long- term continuities and changes in Latin America's socio-economic structures, cultural life and political formations from the 16th century to the mid-twentieth century. The paper closely examines colonial trade and rule, as well as anti-colonial resistance. It offers a critical analysis of the immediate years post-independence, and situates the specific positioning of Latin America in connected histories of a globalising world.

Learning outcomes

On completion of this course the student shall be able to

- Critique stereotypes on Latin America and outline major shifts in Latin American history.
- Explain elements of change and continuity in Latin American polities, economy, society and cultural milieu from the 16th to 20th centuries.
- Contextualise the impact of colonialism on Latin America.
- Explain social protest and anti-colonial resistance in Latin America, as well as practices of 'transculturation'.
- Discuss the dilemmas and contradictions emerging from the post-independence economic, social, political and cultural milieu.

SYLLABUS OF DSE-4

Unit I: Historiography

Unit II: Colonization of Central and South America by Iberian powers and Movements for In-dependence:

1. Driving forces for conquest; Impacts of colonization – key agrarian transformation; the question of labour and slavery; transatlantic commerce

and the modern world system; institutions of state; the advent of Christianity and evangelization.
2. Movements for independence in the early 19th century

Unit III: Developments in the new Latin American Nations (1830s-1930s): Case studies of Mexico, Argentina, and Brazil
1. Class and state formation, industrialization, export economies, immigration
2. Popular culture

Unit IV: Political and socio-cultural developments, 1930s to the 1960s
1. Authoritarianism, populism, revolutions
2. Politics of literature, music and sports

Practical component (if any) - NIL

Essential/recommended readings

Unit-I: This Unit provides an introduction into what constitutes as Latin America and the importance of the engaging with the modern history of the region. The Unit also familiarizes the students with the historiography of Latin America. **(Teaching time: 9 hours Approx.)**

- Bethell, L., ed. (1997). Cambridge History of Latin America: Colonial Latin America, Vol.
- II. Cambridge: Cambridge University Press.
- Bethell, L., ed. (2002). Cambridge History of Latin America: From Independence to c. 1870, Vol. III. Cambridge: Cambridge University Press.

Unit II: This Unit provides an overview of the colonization of Central and South America by Spain and Portugal from 1490s onwards. It will also examine the nature of important transformations ushered in by the colonial encounter, as well as the early independence struggles against the Spanish and Portuguese. **(Teaching time: 9 hours Approx.)**

- Chasteen, J. (2006). Born in Blood and Fire: A Concise History of Latin America. New York: W.W. Norton and Company.
- Frank, A.G. (1967). Capitalism and Underdevelopment in Latin America. New York: Monthly Review Press.
- Galeano, E. (2010). Century of the Wind: Memories of Fire, Volume III. New York: Nation Books
- Burns, E.B. (1992). Latin America Conflict and Creation: A Historical Reader. New York: Pearson.
- Skidmore, T. and Peter H. Smith. (2010). Modern Latin America. New York: Oxford University Press.
- Williamson, E. (2010). The Penguin History of Latin America. London: Penguin Books.

Unit-III: This Unit address history of class and state formation, industrialization, immigration, and popular culture from 1830s to the1930s with specific reference to case studies of Mexico, Argentina, and Brazil. **(Teaching time: 9 hours Approx.)**

- Bothell, L., ed. (1985). Mexico Since Independence. Cambridge: Cambridge University Press.
- Galeano, E. (2010). Faces and Masks: Memories of Fire, Volume II. New York: Nation Books.
- Galeano, E. (2010). Genesis: Memories of Fire Volume I. New York: Nation Books.
- Levine, R.M., and John Crocitti, (Eds.). (2002). The Brazil Reader: History, Culture, Politics. Durham: Duke University Press.
- Nouzeilles, G., and Graciela Montaldo. (Eds.). (2002). The Argentine Reader: History, Culture, Politics. Durham: Duke University Press.

Unit-IV: This Unit deals with emergence of authoritarianism, reactions against it as manifested in populism and subsequent revolutions. It will also examine the politics of literature, music and sports; 1930s to the 1960s. **(Teaching time: 9 hrs Approx.)**

- Galeano, E. (1997). Open Veins of Latin America: Five Centuries of the Pillage of a Continent. New York: Monthly Review Press.
- Gott, R. (2005). Cuba A New History. New Haven: Yale University Press.
- Wright, T. (2001). Latin America in the Era of the Cuban Revolution. Connecticut: Praeger

Suggested Readings:

- Bellos, A. Futebal. (2003). The Brazilian Way of Life. London: Bloomsbury.
- Chavez, L., 9ed). (2005). Capitalism, God and Good Cigar. Durham: Duke University Press.
- Craske, N. (1999). Women and Politics in Latin America. New Brunswick: Rutgers University Press.
- Hanke, L., and Jane M. Rausch. (Eds.). (1999). Latin American History from Independence to the Present. Princeton: Markus Wiener.
- Karush, M.B., and O. Chamosa, (Eds.). (2010). The New Cultural History of Peronism. Durham: Duke University Press.
- Levine, R.M. (1998). Father of the Poor: Vargas and His Era. Cambridge: Cambridge University Press.
- Marichal, C. etal. (2006). From Silver to Cocaine: Latin American Commodity Chains and the Building of World Economy, 1500-2000. Durham: Duke University Press.
- Marquez, G.G. (1996). Autumn of the Patriarch. London: Penguin.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category II

BA (Prog.) with History as Major

DISCIPLINE SPECIFIC CORE COURSE (DSC-1): History of India 1858 – 1947

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
History of India 1858 – 1947	**4**	**3**	**1**	**0**	**Class XII**	**Should have History of India I – VI**

Learning Objectives

The paper aims to engage students in a critical discussion of socio-economic and political trends in colonial India since the latter half of the 19th century. The paper focuses on the rise of national consciousness which manifested itself into a powerful anti-colonial nationalist movement that developed along several trajectories. It makes an attempt to critically examine various currents of the national movement which often intersected with one another each other. The paper would also look at the development of communal politics as well as Partition and Independence.

Learning outcomes

On completion of this course the student shall be able to:

- Examine various reform movements as well as issues such as gender and caste.
- Understand how the socio-political and economic experiences of the people of India under colonial rule provided a context for the emergence of a powerful anti-colonial nationalist movement in India.
- Analyse the complexities of communal politics that resulted in Partition and Independence.

SYLLABUS OF DSC-1

Unit I: Social issues and Reform Movements:

1. Revivalist / Reformist Movements of the 19th century
2. Phule, Ambedkar and the Caste question
3. Women
4. Peasants, Tribal and the Caste movements
5. Arya Samaj

Unit II: Economy under the colonial state:

1. Drain of Wealth
2. Modern Industries and Industrialization
3. Indian capitalist class

Unit III: Nationalist Politics:

1. Rise and Growth of Nationalism
2. Foundation of Indian National Congress
3. 'Moderates' and 'Extremists' Nationalists
4. Mahatma Gandhi and Mass Nationalism: Gandhian thought, techniques and movements

Unit IV: Other currents in Nationalism:

1. Hindustan Socialist Republican Association (HSRA) and Bhagat Singh
2. Subhas Chandra Bose and INA
3. Left: peasants, workers movements, Jayaprakash and Narayans socialist party
4. Nationalist politics in southern India

Unit V: Towards Freedom:

1. Overview of the growth of communal politics
2. Freedom and Partition

Practical component (if any) - NIL

Essential/recommended readings

Unit I: The unit seeks to study various reform movements as well as issues such as gender and caste. **(Teaching time: 9 hours Approx.)**

- Sarkar, Sumit and Tanika Sarkar. (Ed.). Caste in Modern India, Vol. 1&2. Delhi: Permanent Black.
- Forbes, Geraldine. (1999). Women in Modern India. The New Cambridge History of India – Volume 4. Cambridge: Cambridge University Press
- Jones, Kenneth. (1994). Socio-Religious Reform Movements in British India. New Delhi: Cambridge University Press
- O'Hanlon, Rosalind. (2002). Caste, Conflict and Ideology: Mahatma Jyotirao Phule and Low Caste Protest in 19th Century Western India. Ranikhet: Permanent Black
- O'Hanlon Rosalind (2017). Caste and its Histories in Colonial India: A Reappraisal,' Modern Asian Studies 51, 2
- Kumar, Radha. (1993). History of Doing. New Delhi: Kali for Women,
- Bandyopadhyay, Sekhar. (2004). From Plassey to Partition: A History of Modern India. Delhi: Orient Longman
- Joshi, V.C. (1975). Rammohun Roy and the process of modernization in India. Delhi: Vikas.

- Dube, Ishita Banerjee. (2015). A History of Modern India. Delhi: Cambridge University Press.
- बंधोपाध्यार्, शेखर. (2012). प्लासी से तवभाजि तक: आधुतनक भारत का इततहास. Hyderabad: Orient Longman.
- शुक्ल, आर॰एल. (Ed). (1987). आधुतनक भारत का इततहास, तहंिी माध्यम कार्ाान्वर्न तनिेशालर्, तिल्ली तवश्वतवद्यालर्, तिल्ली

Unit II: This unit examines aspects of the colonial economy and its critique, as well as the emergence of the capitalist class. **(Teaching time: 6 hours Approx.)**

- Chandra, Bipan. (1966). The Rise and Growth of Economic Nationalism in India: Economic Policies of Indian National Leadership, 1880–1905, New Delhi: People's Publishing House.
- Mukherjee, Aditya. (2002). Imperialism, Nationalism and the Making of the Indian Capitalist Class, 1920-1947. New Delhi: Sage,
- Bagchi, Amiya Kumar. (2002). 'The Other Side of Foreign Investment by Imperial Powers: Transfer of Surplus from Colonies', Economic and Political Weekly, XXXVII (23)
- Bagchi, Amiya Kumar. (1972). Private Investment in India, 1900-1939.Cambridge: Cambridge University Press
- Ray, Rajat Kanta. (Ed.). (1994). Entrepreneurship and Industry in India, 1800 - 1947. New Delhi: Oxford University Press
- Bahl, Vinay. (2009). 'Attitude of the Indian National Congress Towards the Working Class Struggle in India, 1918-1947', in Sekhar Bandyopadhyay (Ed.), Nationalist Movement in India: A Reader, New Delhi: Oxford University Press, · भट्टाचार्ा, सब्यसाची (2008).आधुतनक भारत का आतथाक इततहास,(1850-1947) तिल्ली, राजकमल प्रकाशन
- बंधोपाध्यार्, शेखर. (2012). प्लासी से तवभाजि तक: आधुतनक भारत का इततहास. Hyderabad: Orient Longman.

Unit III: After the successful completion of this unit, students will be able to grasp many facets of anti-colonial resistance and how Gandhi's politics constituted a new paradigm of rallying vastly divergent social groups in the national movement. **(Teaching time: 9 hours Approx.)**

- Sarkar, Sumit. (1983). Modern India 1885-1947. Delhi: Macmillan.
- Bandyopadhyay, Sekhar. (2004). From Plassey to Partition: A History of Modern India. Delhi: Orient Longman.
- Chandra, Bipan. (1989). India's Struggle for Independence. Delhi: Penguin, (Also in Hindi)
- Pandey, Gyanendra. (2002). The Ascendancy of the Congress in Uttar Pradesh 1926-34: A Study in Imperfect Mobilization. New Delhi: Anthem Press (Second edition).

- Bose, S and Ayesha Jalal. (1998). Modern South Asia: History, Culture, Political Economy. New Delhi: Oxford University Press.
- Dube, Ishita Banerjee. (2015). A History of Modern India. Delhi: Cambridge University Press.
- Seth, Sanjay. (2009). 'Rewriting Histories of Nationalism: The Politics of Moderate Nationalism in India, 1870-1905', in Sekhar Bandyopadhyay (Ed.), Nationalist Movement in India : A Reader, New Delhi: Oxford University Press.
- Bandyopadhyay, Sekhar. (Ed), (2009). Nationalist Movement in India: A Reader. New Delhi: Oxford University Press.
- तत्रपाठी, अमलेश. भारतीर् राि नीतत में गरमपंथ की चुनौती, नई तिल्ली, ग्रंथ तशल्पी प्रकाशन ,
- हालिार, मोतहत कु मार ,भारतीर् नविागरण और पुनरुत्थानवाि ी चेतना, नई तिल्ली, ग्रंथ तशल्पी प्रकाशन ,
- तसंह, हीरालाल , (1971). असहर्ोग आंि ोलन की झाँतकर्ाँ, तिल्ली, प्रकाशन तवभाग
- ि ेसाई, ए. आर. , (2018), भारतीर् राष्टर वाि की सामातिक पृष्ठभूतम, सेि प्रकाशन, नई तिल्ली
- तमत्तल, सतीश चंद्र, (2012), भारत का स्वाधीनता संघषा (1858-1947), नई तिल्ली, ग्राफी वर्ल्ा
- पाण्डेर्, प्रिीप कु मार (1990), गांधी का आतथाक और सामातिक तचंतन, तहंि ी माध्यम कार्ाान्वर्न तनिशालर्, तिल्ली तवश्वतवद्यालर्, तिल्ली
- गोपाल, राम, (1986), भारतीर् स्वतंत्रता संग्राम, लखनऊ, सुलभ प्रकाशन

Unit IV: This unit looks at the history of caste, class, and community mobilisation, as well as revolutionary movements and the I.N.A. **(Teaching time: 12 hours Approx.)**

- Moffat, Chris. (2019). India's Revolutionary Inheritance; Politics and the Promise of Bhagat Singh. Cambridge: Cambridge University Press, pp. 21-114.
- Habib, S. Irfan. (2007). To Make the Deaf Hear: Ideology and Programme of Bhagat Singh and his Comrades, New Delhi: Three Essays, 2007.
- Bandyopadhyay, Sekhar. (2017). From Plassey to Partition and After: A History of Modern India, New Delhi: Orient Blackswan, 2nd edition. (Also, in Hindi)
- Marston, Daniel. (2014), The Indian Army and the end of the Raj, CUP
- Stephen P Cohen. (1963). 'Subhas Chandra Bose and the Indian National Army', Pacific Affairs, 411-429,
- Sarkar, Sumit. (1983). Modern India: 1885—1947, Delhi, Macmillan. (Also in Hindi)
- Barnett, M. Ross (2015). The Politics of Cultural Nationalism in South India, Princeton University Press.

- Basu, Raj Sekhar. 'The Making of Adi-Dravid Politics in early Twentieth century Tamil Nadu', Social Scientist, Vol. 39, No.7/8, July-August2011.
- Blackburn, Stuart. (2001) Print, Folklore and Nationalism in Colonial South India. Delhi, Permanent Black.
- सरकार, सुतमत (2009). आधुतनक भारत, तिल्ली, राकिमल प्रकाशन
- बंधोपाध्यार्, शेखर. (2012). प्लासी से तवभाजिन तक: आधुतनक भारत का इततहास. Hyderabad: Orient Longman
- शुक्ल, आर॰एल. (Ed). (1987). आधुतनक भारत का इततहास, तहंिी माध्यम कार्ाान्वर्न तनिेशालर्, तिल्ली तवश्वतवद्यालर्, तिल्ली

Unit V: This unit critically contextualise the political and social conditions that led to communal mobilisation as well as its impact on the social and political fabric of the Indian subcontinent. **(Teaching time: 9 hours Approx.)**

- Sarkar, Sumit. (1983). Modern India 1885-1947, Delhi: Macmillan.
- Bandyopadhyay, Sekhar. (2004). From Plassey to Partition: A History of Modern India. Delhi: Orient Longman.
- Pandey, Gyanendra. (1990). The Construction of Communalism in Colonial North India. Delhi: Oxford University Press.
- Chandra, Bipan. (2008). Communalism in Modern India. New Delhi: Har Anand.
- Bose, S and Ayesha Jalal. (1998). Modern South Asia: History, Culture, Political Economy. New Delhi: OUP.
- Chandra, Bipan. (1979). Nationalism and Colonialism in Modern India. Hyderabad: Orient Longman.
- Misra, Salil. (2012). "Emergence of Communalism in India." in K. N. Panikkar (Ed.), Perspectives of Modern Indian History. Mumbai: Popular Prakashan.
- Jaffrelot, Christophe. (1996). The Hindu Nationalist Movement and Indian Politics: 1925 to the 1990s. London: C. Hurst & Company Publishers
- सरकार, सुतमत (2009). आधुतनक भारत, तिल्ली, राकिमल प्रकाशन
- बंधोपाध्यार्, शेखर. (2012). प्लासी से तवभाजिन तक: आधुतनक भारत का इततहास. Hyderabad: Orient Longman.

Suggestive readings

- Bandyopadhyay, Sekhar. (Ed.). (2009). National Movement in India: A Reader. New Delhi: Oxford University Press.
- Brown, Judith. (1972). Gandhi's Rise to Power, Cambridge: Cambridge University Press.
- Chandra, Bipan. (1996). Nationalism and Colonialism in Modern India, Delhi: Orient Longman.
- Chandra, Bipan. (1966, Reprint 2004). The Rise and Growth of Economic Nationalism in India. New Delhi: Anamika Publishers.

- Desai, A.R. (1981). Social Background of Indian Nationalism. Delhi: Popular Prakashan.
- Gopinath, Ravindran. (2012). "The British Imperium and the Agrarian Economy", in K. N. Panikkar, (Ed.). Perspectives of Modern Indian History, Mumbai: Popular Prakashan, pp. 62- 90.
- Habib, Irfan. (2013). Indian Economy 1757-1857, New Delhi: Tulika Books. · Habib, Irfan. (2006). Indian Economy 1858-1914, New Delhi: Tulika Books. · Hasan, Mushirul, (1993). India's Partition: Process, Strategy and Mobilisation. New Delhi: Oxford University Press.
- Kumar, K. (Ed.). (1998). Congress and Classes: Nationalism, Workers and Peasants, Delhi: Manohar.
- Metcalf, B. D. and T.R. Metcalf. (2002). A Concise History of India, Cambridge: University Press.
- Metcalf, Thomas. (2001). Ideology of the Raj, Delhi: Cambridge University Press.
- Omvedt, Gail. (1994). Dalits and Democratic Revolution, Delhi: Sage.
- Pandey, Gyanendra. (2001). Remembering Partition, Cambridge: Cambridge University Press.
- Pati, Biswamoy (Ed.). (2007). The 1857 Rebellion, Delhi: Oxford University Press.
- Roy, Tirthankar. (2000). The Economic History of India 1857-1947, New Delhi: Oxford University Press.
- Sarkar, Sumit and Tanika Sarkar (Eds.). (2014). Caste in Modern India: A Reader, Vols. I & II, Delhi: Permanent Black.
- Sarkar, Sumit. (2014). Modern Times: India 1880s-1950s: Environment, Economy and Culture. Ranikhet: Permanent Black.
- Sarkar, Sumit (1993). Popular movements and Middleclass leadership in late colonial India. Delhi: Aakar.
- Stein, Burton. (1998). A History of India. New Delhi: Oxford University Press, pp. 239- 366.
- चंद्र,तबतपन, (2009), आधुतनक भारत का इततहास, Delhi: Oriental BlackSwan.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE (DSC-2): History of Europe: 1870 – 1945

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
History of Europe: 1870 – 1945	4	3	1	0	12th Pass	NIL

Learning Objectives

This paper offers a historical overview of the consolidation of capitalist industrialization in the late nineteenth century, and its impact in terms of facilitating the age of 'new imperialism'. Among the key case studies discussed, the paper traces the build-up to a revolution in the disintegrating Russian empire. It details the formation of defensive alliances and power blocs, as well as contentious international issues that led up to First World War. The paper proceeds to discuss the crucial aspects of the post-War Peace Settlement, and the emergence of ultra-nationalist regimes prior to the Second World War. The course of the Second World War and important developments stemming from it are also highlighted in the paper.

Learning outcomes

Upon completion of this course the student shall be able to:

- Deliberate on the meaning of imperialism and the manifestations of imperialist rivalry and expansion in the 19th and early 20th century.
- Distinguish the varied impacts of the First World War as well as the outbreak of a revolution in the Russian Empire during the War.
- Analyse the conflict between radical and conservative forces, and the gradual consolidation of ultra-nationalist and authoritarian regimes in Europe between the World Wars.
- Delineate the reasons for the outbreak of the Second World War, and the course of the War.
- Analyse the key, immediate repercussions of the Second World War

SYLLABUS OF DSC-2

Unit-I: The European economy in the late 19th century

1. Second Industrial Revolution, new business practices, new consumption patterns
2. The economic down turn of 1873; growth of finance capital

Unit II: European politics, 1870-1918

1. Political developments in the Russian Empire (1905 revolution; February and October revolutions of 1917)
2. The 'Eastern question' and Balkan nationalism; scramble for African colonies; imperialist rivalries; power blocks and alliances
3. The First World War 1914-1918

Unit III: Europe between the World Wars

1. The Post-War Peace Settlement (treaties, League of Nations and International Labour Organization); Comintern on national liberation struggles and fascism; economic crisis-the Great Depression of 1929
2. Growth of Fascism (Italy) and Nazism (Germany)
3. Spanish Civil War

Unit IV: Catastrophe of WWII

1. World War II: Causes, civilian resistance to allied victory
2. Repercussions of WWII: UNO; origins of the Cold War

Practical component (if any) - NIL

Essential/recommended readings

Unit-1: In this Unit, the students will discuss the industrial, technological, and commercial innovations that characterized the latter half of the nineteenth century, and which backed the ambitions of the emerging nation-states in Europe. An overview will be provided of the growth the capitalism in its imperialist phase. **(Teaching time: 9 hours approx.)**

- Hunt, Lynn et al. The Making of the West: Peoples and Cultures: A Concise History. Vol. II. Third edition. [Chapter-18: pp.701-706]
- Joll, James. (1973). Europe Since 1870. An International History. New York and London: Harper and Row Publishers.[Chapter-4].
- Perry, Marvin et al (ed.). (2008). Western Civilizations: Ideas, Politics and Society. Ninth edition. Boston and New York: Houghton Mifflin Harcourt Publishing Company. [Chapter- 21].
- Stearns, Peter. (2013). Industrial Revolution in World History. Fourth edition. Philadelphia: Westview Press & Perseus Books Group. [Chapter-9].
- लालबहाुरवमाा।र्ूरोपकाइततहास: फ्ांसीसीक्रांततसेतितीर्तवश्वर्ुद्धतक।
- पाथासारथीगुप्ता (संपाक) ।र्ूरोप का इततहास। Hindi Madhyam Karyanvayan Nideshalaya, DU.
- तिवेशतविर्, मीनाभारिि, वंिनाचौधरी(संपाक)।आधुतनकर्ूरोपकाइततहास: आर्ामऔरतिशाएं ।Hindi Madhyam Karyanvayan Nideshalaya, DU

Unit-2: At the end of this rubric the student will be to trace the nature of imperialist rivalries and identify the intense competition that informed repeated conflagrations on certain international affairs / regions. Students will be familiarized with historical analyses of the First World War, as well asthe revolutionary possibilities which emerged in the Russian empire during the First World War. **(Teaching time: 12 hours approx.)**

- Craig, Gordon A. (1966). Europe since 1815. Second edition. New York, Chicago, Toronto, London: Holt, Renehart and Winston. [relevant chapter on the 'Eastern Question' and Balkan nationalism].
- Joll, James. (1973). Europe Since 1870. An International History. New York and London: Harper and Row Publishers.[Chapter-4].
- Lee, Stephen J. Aspects of European History 1789–1980. London: Routledge. 1982 [Chapters 13, 15 & 16, 18 & 19].
- Waller, Bruce (ed.). Themes in Modern European history 1830–90. London and NY: Routledge. 1990. [Chapters 2,3 & 4]
- Wood, Alan. (2003). The Origins of the Russian Revolution 1861–1917. Lancaster Pamphlet. Third Edition.
- लालबहाुरवमाा।र्ूरोप का इततहास: फ्ांसीसी क्रांततसे तितीर् तवश्वर्ुद्ध तक।पाथासारथीगुप्ता
- (संपाक)।र्ूरोप का इततहास। Hindi Madhyam Karyanvayan Nideshalaya, DU.
- ेम्सिोल।र्ूरोप 1870 से।अनुवाक: स्नेहमहाि। Hindi Madhyam Karyanvayan Nideshalaya, DU.

Unit-3: In this Unit, the students will examine the emergence of key international institutions within the context of the Peace Settlement and post-War order First World War. Within the backdrop of fast changing European society and economic downturn of 1929, the students will be familiarized with the emergence of ultra-nationalist movements in Europe, in particular the growth of fascism in Italy and Germany. The Unit will also proceed to provide an overview of the Spanish Civil War which represented a showdown between the fascist and the Left forces before the outbreak of the Second World War. **(Teaching time: 15 hours approx.)**

- Craig, Gordon A. (1966). Europe since 1815. Second edition. New York, Chicago, Toronto, London: Holt, Renehart and Winston.
- Lee, Stephen J. (1998, 2000). Hitler and Nazi Germany. Questions and Analysis in History. London and New York: Routledge.
- Lee, Stephen J. Aspects of European History 1789–1980. London: Routledge. 1982 [Chapters 20 to 23, 26 & 27].
- Forrest, Andrew. The Spanish Civil War. Questions and Analysis in History. London and New York: Routledge.
- Maul, David. The International Labour Organization: 100 Years of Global Policy. De Gruyter and ILO. 2019 ["Antecedents" & Chapter-1: The Washington

Conference, An International Organization in the Making, The Invention of Tripartism, Standard-setting in the 1920s]

- लालबहाुरवमाा।र्ूरोपकाइततहास: फ्ांसीसीक्रांततसेतितीर्तवश्वर्ुद्धतक।
- पाथासारथी गुप्ता(संपाक)।र्ूरोप का इततहास। Hindi Madhyam Karyanvayan Nideshalaya, DU.
- ेम्सिोल।र्ूरोप 1870 से।अनुवाक: स्नेहमहाि। Hindi Madhyam Karyanvayan Nideshalaya, DU.

Unit-4: In this Unit, the students will examine the factors that facilitated the outbreak of the Second World War. It will also explore the War's overall trajectory in terms of the role of civilian resistance to military occupation and fascism. The students will be able to delineate the important developments in terms of the formation of the United Nations and the start of the Cold War**. (Teaching time: 9 hours approx.)**

- Hunt, Lynn et al. The Making of the West: Peoples and Cultures: A Concise History. Vol. II. Third edition. [Chapter-21, Chapter-22: 870-880].
- Craig, Gordon A. (1966). Europe since 1815. Second edition. New York, Chicago, Toronto, London: Holt, Renehart and Winston.
- Henig, Ruth. Origins of the First World War. London and NY: Routledge. 2003.
- Redfern, Neil. (2017). "The Comintern and Imperialism: A Balace Sheet," Journal of Labour and Society, 20(1): 42-60
- लालबहाुरवमाा।र्ूरोपका इततहास: फ्ांसीसी क्रांतत से तितीर् तवश्वर्ुद्धतक।
- पाथासारथीगुप्ता (संपाक)।र्ूरोप का इततहास। Hindi Madhyam Karyanvayan Nideshalaya, DU.
- ेम्सिोल।र्ूरोप 1870 से।अनुवाक: स्नेहमहाि। Hindi Madhyam Karyanvayan Nideshalaya, DU.

Suggestive readings

- Hayes, Paul (ed.). Themes in Modern European History 1890–1945. London and NY: Routledge and Taylor & Francis. 1992. [Chapters 5 & 6].
- Hobsbawm, E.J. Nation and Nationalism Cambridge: CUP. 1970
- Merriman, John. History of Modern Europe. Vol. II. Third edition. New York and London:
- W.W. Norton & Company. [Chapter-19]
- Porter, Andrew. European Imperialism 1860-1914. Hampshire: Palgrave Macmillan. 1994.
- Thompson, David. (1957, 1966). Europe since Napoleon. Penguin.
- तिवेश तविर्, मीना भारिि, वंिना चौधरी (संपाक)।आधुतनक र्ूरोप का इततहास: आर्ाम और तिशाएं ।Hindi Madhyam Karyanvayan Nideshalaya, DU
- स्नेहमहाि।र्ूरोप का इततहास:1870-1914 ।प्रगततप्रकाशन।

- ए.के. तमत्तल।आधुतनक र्ूरोप का इततहास: 1789 से 1945 तक।सातहत्यभवनप्रकाशन

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category III

BA (Prog.) with History as Non-Major

Credit distribution, Eligibility and Pre-requisites of the Course

DISCIPLINE SPECIFIC CORE COURSE (DSC-1): History of India 1858 – 1947

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
History of India 1858 – 1947	**4**	**3**	**1**	**0**	**Class XII**	**History of India V**

Learning Objectives

The paper aims to engage students in a critical discussion of socio-economic and political trends in colonial India since the latter half of the 19th century. The paper focuses on the rise of national consciousness which manifested itself into a powerful anti-colonial nationalist movement that developed along several trajectories. It makes an attempt to critically examine various currents of the national movement which often intersected with one another each other. The paper would also look at the development of communal politics as well as Partition and Independence.

Learning outcomes

On completion of this course the student shall be able to:

- Examine various reform movements as well as issues such as gender and caste.
- Understand how the socio-political and economic experiences of the people of India under colonial rule provided a context for the emergence of a powerful anti-colonial nationalist movement in India.
- Analyse the complexities of communal politics that resulted in Partition and Independence.

SYLLABUS OF DSC-1

Unit I: Social issues and Reform Movements:

6. Revivalist / Reformist Movements of the 19th century
7. Phule, Ambedkar and the Caste question
8. Women
9. Peasants, Tribal and the Caste movements
10. Arya Samaj

Unit II: Economy under the colonial state:

4. Drain of Wealth
5. Modern Industries and Industrialization
6. Indian capitalist class

Unit III: Nationalist Politics:

5. Rise and Growth of Nationalism
6. Foundation of Indian National Congress
7. 'Moderates' and 'Extremists' Nationalists
8. Mahatma Gandhi and Mass Nationalism: Gandhian thought, techniques and movements

Unit IV: Other currents in Nationalism:

5. Hindustan Socialist Republican Association (HSRA) and Bhagat Singh
6. Subhas Chandra Bose and INA
7. Left: peasants, workers movements, Jayaprakash and Narayans socialist party
8. Nationalist politics in southern India

Unit V: Towards Freedom:

3. Overview of the growth of communal politics
4. Freedom and Partition

Practical component (if any) - NIL

Essential/recommended readings

Unit I: The unit seeks to study various reform movements as well as issues such as gender and caste. **(Teaching time: 9 hours Approx.)**

- Sarkar, Sumit and Tanika Sarkar. (Ed.). Caste in Modern India, Vol. 1&2. Delhi: Permanent Black.
- Forbes, Geraldine. (1999). Women in Modern India. The New Cambridge History of India – Volume 4. Cambridge: Cambridge University Press
- Jones, Kenneth. (1994). Socio-Religious Reform Movements in British India. New Delhi: Cambridge University Press
- O'Hanlon, Rosalind. (2002). Caste, Conflict and Ideology: Mahatma Jyotirao Phule and Low Caste Protest in 19th Century Western India. Ranikhet: Permanent Black
- O'Hanlon Rosalind (2017). Caste and its Histories in Colonial India: A Reappraisal,' Modern Asian Studies 51, 2
- Kumar, Radha. (1993). History of Doing. New Delhi: Kali for Women,
- Bandyopadhyay, Sekhar. (2004). From Plassey to Partition: A History of Modern India. Delhi: Orient Longman
- Joshi, V.C. (1975). Rammohun Roy and the process of modernization in India. Delhi: Vikas.
- Dube, Ishita Banerjee. (2015). A History of Modern India. Delhi: Cambridge University Press.
- बंधोपाध्यार्, शेखर. (2012). प्लासी से तवभाजन तक: आधुतनक भारत का इततहास. Hyderabad: Orient Longman.

- शुक्ल, आर॰एल. (Ed). (1987). आधुतनक भारत का इततहास, तहंिी माध्यम कार्ाान्वर्न तनिेशालर्, तिल्ली तवश्वतवद्यालर्, तिल्ली

Unit II: This unit examines aspects of the colonial economy and its critique, as well as the emergence of the capitalist class. **(Teaching time: 6 hours Approx.)**

- Chandra, Bipan. (1966). The Rise and Growth of Economic Nationalism in India: Economic Policies of Indian National Leadership, 1880–1905, New Delhi: People's Publishing House.
- Mukherjee, Aditya. (2002). Imperialism, Nationalism and the Making of the Indian Capitalist Class, 1920-1947. New Delhi: Sage,
- Bagchi, Amiya Kumar. (2002). 'The Other Side of Foreign Investment by Imperial Powers: Transfer of Surplus from Colonies', Economic and Political Weekly, XXXVII (23)
- Bagchi, Amiya Kumar. (1972). Private Investment in India, 1900-1939.Cambridge: Cambridge University Press
- Ray, Rajat Kanta. (Ed.). (1994). Entrepreneurship and Industry in India, 1800 - 1947. New Delhi: Oxford University Press
- Bahl, Vinay. (2009). 'Attitude of the Indian National Congress Towards the Working Class Struggle in India, 1918-1947', in Sekhar Bandyopadhyay (Ed.), Nationalist Movement in India: A Reader, New Delhi: Oxford University Press, · भट्टाचार्ा, सब्यसाची (2008).आधुतनक भारत का आतथाक इततहास,(1850-1947) तिल्ली, राकिमल प्रकाशन
- बंधोपाध्यार्, शेखर. (2012). प्लासी से तवभाजन तक: आधुतनक भारत का इततहास. Hyderabad: Orient Longman.

Unit III: After the successful completion of this unit, students will be able to grasp many facets of anti-colonial resistance and how Gandhi's politics constituted a new paradigm of rallying vastly divergent social groups in the national movement. **(Teaching time: 9 hours Approx.)**

- Sarkar, Sumit. (1983). Modern India 1885-1947. Delhi: Macmillan.
- Bandyopadhyay, Sekhar. (2004). From Plassey to Partition: A History of Modern India. Delhi: Orient Longman.
- Chandra, Bipan. (1989). India's Struggle for Independence. Delhi: Penguin, (Also in Hindi)
- Pandey, Gyanendra. (2002). The Ascendancy of the Congress in Uttar Pradesh 1926-34: A Study in Imperfect Mobilization. New Delhi: Anthem Press (Second edition).
- Bose, S and Ayesha Jalal. (1998). Modern South Asia: History, Culture, Political Economy. New Delhi: Oxford University Press.
- Dube, Ishita Banerjee. (2015). A History of Modern India. Delhi: Cambridge University Press.

- Seth, Sanjay. (2009). 'Rewriting Histories of Nationalism: The Politics of Moderate Nationalism in India, 1870-1905', in Sekhar Bandyopadhyay (Ed.), Nationalist Movement in India : A Reader, New Delhi: Oxford University Press.
- Bandyopadhyay, Sekhar. (Ed), (2009). Nationalist Movement in India: A Reader. New Delhi: Oxford University Press.
- तत्रपाठी, अमलेश. भारतीर् रानिीतत में गरमपंथ की चुनौती, नई तिल्ली, ग्रंथ तशल्पी प्रकाशन ,
- हालिार, मोतहत कु मार ,भारतीर् नविागरण और पुनरुत्थानवाियी चेतना, नई तिल्ली, ग्रंथ तशल्पी प्रकाशन ,
- तसंह, हीरालाल , (1971). असहर्ोग आंियोलन की झाँतकर्ाँ, तिल्ली, प्रकाशन तवभाग
- ियेसाई, ए. आर. , (2018), भारतीर् राष्टर वाि की सामातिक पृष्ठभूतम, सेि प्रकाशन, नई तिल्ली
- तमत्तल, सतीश चंद्र, (2012), भारत का स्वाधीनता संघषा (1858-1947), नई तिल्ली, ग्राफी वर्ल्ा
- पाण्डेर्, प्रिीप कु मार (1990), गांधी का आतथाक और सामातिक तचंतन, तहंियी माध्यम कार्ाान्वर्न तनिेशालर्, तिल्ली तवश्वतवद्यालर्, तिल्ली
- गोपाल, राम, (1986), भारतीर् स्वतंत्रता संग्राम, लखनऊ, सुलभ प्रकाशन

Unit IV: This unit looks at the history of caste, class, and community mobilisation, as well as revolutionary movements and the I.N.A. **(Teaching time: 12 hours Approx.)**

- Moffat, Chris. (2019). India's Revolutionary Inheritance; Politics and the Promise of Bhagat Singh. Cambridge: Cambridge University Press, pp. 21-114.
- Habib, S. Irfan. (2007). To Make the Deaf Hear: Ideology and Programme of Bhagat Singh and his Comrades, New Delhi: Three Essays, 2007.
- Bandyopadhyay, Sekhar. (2017). From Plassey to Partition and After: A History of Modern India, New Delhi: Orient Blackswan, 2nd edition. (Also, in Hindi)
- Marston, Daniel. (2014), The Indian Army and the end of the Raj, CUP
- Stephen P Cohen. (1963). 'Subhas Chandra Bose and the Indian National Army', Pacific Affairs, 411-429,
- Sarkar, Sumit. (1983). Modern India: 1885—1947, Delhi, Macmillan. (Also in Hindi)
- Barnett, M. Ross (2015). The Politics of Cultural Nationalism in South India, Princeton University Press.
- Basu, Raj Sekhar. 'The Making of Adi-Dravid Politics in early Twentieth century Tamil Nadu', Social Scientist, Vol. 39, No.7/8, July-August2011.
- Blackburn, Stuart. (2001) Print, Folklore and Nationalism in Colonial South India. Delhi, Permanent Black.
- सरकार, सुतमत (2009). आधुतनक भारत, तिल्ली, राकिमल प्रकाशन

- बंधोपाध्यार्, शेखर. (2012). प्लासी से तवभाि न तक: आधुतनक भारत का इततहास. Hyderabad: Orient Longman
- शुक्ल, आर॰एल. (Ed). (1987). आधुतनक भारत का इततहास, तहंि ी माध्यम कार्ाान्वर्न तनिेशालर्, तिल्ली तवश्वतवद्यालर्, तिल्ली

Unit V: This unit critically contextualise the political and social conditions that led to communal mobilisation as well as its impact on the social and political fabric of the Indian subcontinent. **(Teaching time: 9 hours Approx.)**

- Sarkar, Sumit. (1983). Modern India 1885-1947, Delhi: Macmillan.
- Bandyopadhyay, Sekhar. (2004). From Plassey to Partition: A History of Modern India. Delhi: Orient Longman.
- Pandey, Gyanendra. (1990). The Construction of Communalism in Colonial North India. Delhi: Oxford University Press.
- Chandra, Bipan. (2008). Communalism in Modern India. New Delhi: Har Anand.
- Bose, S and Ayesha Jalal. (1998). Modern South Asia: History, Culture, Political Economy. New Delhi: OUP.
- Chandra, Bipan. (1979). Nationalism and Colonialism in Modern India. Hyderabad: Orient Longman.
- Misra, Salil. (2012). "Emergence of Communalism in India." in K. N. Panikkar (Ed.), Perspectives of Modern Indian History. Mumbai: Popular Prakashan.
- Jaffrelot, Christophe. (1996). The Hindu Nationalist Movement and Indian Politics: 1925 to the 1990s. London: C. Hurst & Company Publishers
- सरकार, सुतमत (2009). आधुतनक भारत, तिल्ली, रा िकमल प्रकाशन
- बंधोपाध्यार्, शेखर. (2012). प्लासी से तवभाि न तक: आधुतनक भारत का इततहास. Hyderabad: Orient Longman.

Suggestive readings

- Bandyopadhyay, Sekhar. (Ed.). (2009). National Movement in India: A Reader. New Delhi: Oxford University Press.
- Brown, Judith. (1972). Gandhi's Rise to Power, Cambridge: Cambridge University Press.
- Chandra, Bipan. (1996). Nationalism and Colonialism in Modern India, Delhi: Orient Longman.
- Chandra, Bipan. (1966, Reprint 2004). The Rise and Growth of Economic Nationalism in India. New Delhi: Anamika Publishers.
- Desai, A.R. (1981). Social Background of Indian Nationalism. Delhi: Popular Prakashan.
- Gopinath, Ravindran. (2012). "The British Imperium and the Agrarian Economy", in K. N. Panikkar, (Ed.). Perspectives of Modern Indian History, Mumbai: Popular Prakashan, pp. 62- 90.
- Habib, Irfan. (2013). Indian Economy 1757-1857, New Delhi: Tulika Books. · Habib, Irfan. (2006). Indian Economy 1858-1914, New Delhi: Tulika Books. ·

Hasan, Mushirul, (1993). India's Partition: Process, Strategy and Mobilisation. New Delhi: Oxford University Press.

- Kumar, K. (Ed.). (1998). Congress and Classes: Nationalism, Workers and Peasants, Delhi: Manohar.
- Metcalf, B. D. and T.R. Metcalf. (2002). A Concise History of India, Cambridge: University Press.
- Metcalf, Thomas. (2001). Ideology of the Raj, Delhi: Cambridge University Press.
- Omvedt, Gail. (1994). Dalits and Democratic Revolution, Delhi: Sage.
- Pandey, Gyanendra. (2001). Remembering Partition, Cambridge: Cambridge University Press.
- Pati, Biswamoy (Ed.). (2007). The 1857 Rebellion, Delhi: Oxford University Press.
- Roy, Tirthankar. (2000). The Economic History of India 1857-1947, New Delhi: Oxford University Press.
- Sarkar, Sumit and Tanika Sarkar (Eds.). (2014). Caste in Modern India: A Reader, Vols. I & II, Delhi: Permanent Black.
- Sarkar, Sumit. (2014). Modern Times: India 1880s-1950s: Environment, Economy and Culture. Ranikhet: Permanent Black.
- Sarkar, Sumit (1993). Popular movements and Middleclass leadership in late colonial India. Delhi: Aakar.
- Stein, Burton. (1998). A History of India. New Delhi: Oxford University Press, pp. 239- 366.
- चंद्र,तबतपन, (2009), आधुतनक भारत का इततहास, Delhi: Oriental BlackSwan.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Pool of DSE for Multidiciplinary Studies

DISCIPLINE SPECIFIC ELECTIVE COURSE (DSE -1): Art, Society and Culture in India c. 300 BCE to 1000 CE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Art, Society and Culture in India c. 300 BCE to 1000 CE	4	3	1	0	12th Pass	NIL

Learning Objectives

This paper deals with the three most important and interconnected broad facets of history i.e art, society and culture from early historical to early medieval periods. Their trajectory of develop-ment, dynamic and ever evolving nature is highlighted clearly through this study. A regional rep-resentational approach has been adopted in order to provide a comprehensive approach to the pa-per.

Learning outcomes

At the end of the course students should be able to:

- Grasp various dimensions of visual medium of art, architecture, sculpture and paintings, as a primary source of history, which will enable them to develop a deep understanding of the theme.
- Comprehend the different perspectives that explain the emergence and crystallization of various social structures – varna, jati, untouchability and also gender relations.
- Understand that the society displayed flexibility in terms of assimilation, mobility, providing corresponding spaces to new entrants.
- Grasp the essentials of the major religious traditions of the given time period.
- Develop an understanding about the cultural florescence as reflected in rich literature produced in Sanskrit and vernacular languages.

SYLLABUS OF DSE-1

UNIT I:

1. Mauryan period: architecture, sculpture, terracotta; sources of inspiration

2. Post Mauryan period: features of Stupa architecture and relief sculptures: case study of Sanchi or Amravati – narrative art; patronage of art, terracottas; Mathura, Gandhara and Amravati schools of art
3. Rock architecture of western ghats
4. Gupta period: temples, rock cut caves and sculpture, Paintings
5. Post – Gupta period: Pratiharas, Pallava and Chalukya architecture

UNIT II:

1. Social stratification and changes within: class; varna; jati; varnasamkara, untouchability; gender relations; marriage and property relations

Unit III:

2. Religious doctrines and practices: renunciatory tradition with special reference to Buddhism, Jainism
3. Theistic trends: Puranic Hinduism – Visnuism, Sivaism and Saktism; Murugan cult of south India; the Mahayana schools; the emergence of Tantra
4. Literary and technical works in Sanskrit, Prakrit and Tamil

Practical component (if any) - NIL

Essential/recommended readings

UNIT I: This unit will introduce the students to the significant features of art in the period of their study. **(Teaching Time: 15 hours approx.)**

- Agarwal, V.S. (1965) Studies inIndian Art. Varanasi: Vishwavidyalaya Prakashan. (Chapters 4-8)
- अग्रवाल.वी. एस. (2015) भारतीर् कला: प्रारं तभकर्ुग से तीसरी शती ईस्वी तक. वाराणसी: पृतथवी प्रकाशन.(अध्यार्7-14)
- Brown, Percy. Indian Architecture. Buddhist and HinduPeriods. Bombay: D.B. Taraporevala Sons & Co. Private Ltd. (Chapters 2-16)
- Harle, J.C. (1986). The Art and Architecture of Indian Subcontinent, Penguin Books (Chapters 1-9, 20)
- Huntington, Susan. (1985) Art of Ancient India: Buddhist, Hindu, Jain, Weatherhill, New York, Tokyo. (Chapters 4-15)
- Singh, Upinder. (2008). A History of Ancient and Early Medieval India: From the Stone Age to the 12th Century. Delhi: Pearson Longman. (Chapters 7-10)
- तसंह,उतपंिर. (2016). प्राचीनएवंपूवामध्यकालीनभारतकाइततहास: पाषाणकालसे12वीशताब्दीतक. नईतिल्ली. तपर्रसन.(अध्यार्7-10)

UNIT II: This unit will provide an overview of the social structures, relations and changes taking place within them. **(Teaching Time: 15 hours approx.)**

- Chakravarti, Ranabir. (2010). Exploring Early India Up to C. AD 1300. New Delhi: MacMillan. (Chapters 4-7)

- चक्रवती. रणबीर. (2012) भारतीईततहास. आतिकाल. नईतिल्ली. ओररएं टलबब्लैकस्वेन. (अध्यार्4-7)
- Roy, Kumkum. (ed.) (2001). Women in Early Indian Societies. Delhi: Manohar. (Introduction)
- Sharma, R.S. (2007) Material Culture and Social Formations in Ancient India, Delhi: Macmillan. (Chapters 6,7)
- शमाा. आर . एस. (2008) प्राचीन भारत में भौततक संस्कृ तत एवं सामातिक संरचनाएँ .राकिमलप्रकाशन. (अध्यार्6और7)
- Singh, Upinder. (2008). A History of Ancient and Early Medieval India: From the Stone Age to the 12th Century. Delhi: Pearson Longman. (Chapters 6-10)
- तसंह,उतपंर. (2016). प्राचीनएवंपूवामध्यकालीनभारतकाइततहास: पाषाणकालसे12वीशताब्दीतक. नईतिल्ली. तपर्रसन. (अध्यार्6-10)

Unit III: This unit imparts to the student an understanding to the teachings, beliefs and practices of various ancient Indian religions as well as the rich literature produced in their period of study. **(Teaching Time: 15 hours approx.)**

- Basham, A.L. (1954). The Wonder that was India: A survey of the history and culture of the Indian subcontinent before the coming of the Muslims. Calcutta: Rupa. (Chapters 7, 9)
- बाशम. ए.एल.(2020) अि भुतभारत। तशवलाल अगरवाल एं ड कं पनी (अध्यार्7-9)
- Singh, Upinder. (2008). A History of Ancient and Early Medieval India: From the Stone Age to the 12th Century. Delhi: Pearson Longman. (Chapters 6-10)
- तसंह,उतपंर. (2016). प्राचीनएवंपूवामध्यकालीनभारतकाइततहास: पाषाणकालसे12वीशताब्दीतक. नईतिल्ली. तपर्रसन. (अध्यार्6-10)
- Zvelebil, Kamil V. (1991). Tamil Traditions on Subrahmanya-Murugan. Madras (Chennai): Institute of Asian Studies.

Suggested Readings:

- Bhattacharji, Sukumari. (1970). The Indian Theogony: A Comparative study of Indian Mythology From the Vedas to the Puranas. Cambridge University Press.
- Partha,Mitter. (2001) Oxford History of Art, Indian Art, Oxford University Press.
- Ray, Niharranjan. (1975) Maurya and Post-Maurya Art: a study in social and formal contrasts. New Delhi: ICHR, New Delhi.
- Sastri, K.A. Nilakanta. (1963). Development of Religion in South India. Bombay: Orient Longmans.
- Shrimali, K.M. (2015) Essays in Indian Art, Religion and Society. Delhi: Indian History Conference.
- श्रीमली, के.एम. (2017). प्राचीनभारतीर्धमोंका इततहास. तिल्ली: ग्रंथ तशल्पी.
- Zvelebil, Kamil V. (1973).The Smile of Murugan, Leiden.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE (DSE-2): Basics of Historical Research Methodology

NOTE: 'Fundamentals of Historical Methodology' is offered as one of the DSE courses in VI and VII Semesters. Students of the History Honors Program can opt for it either in the VI semester or VII semester.

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Fundamentals of Historical Methodology DSE – No.#	4	3	1	-	12th Pass	NIL

Learning Objectives

This course aims to prepare the students with elementary techniques of conducting historical research within the larger social science framework. It does so by familiarising them with the theoretical frameworks and procedures/techniques of research that historians deploy in order to construct a meaningful narrative about the past. The course proceeds to equip students with the preliminary research steps like identifying research questions, theoretical context, survey of the literature; locating reliable sources; framing a research paper, etc.; as well acquainting them with research ethics.

Learning Outcomes

Having finished the course, the students would have learnt:

- The distinctiveness of historical research
- The issues and problems in writing history
- How to carefully choose interpretative techniques when reading sources
- How to choose a historical "field" and within that field a specific research question
- The skills and protocols related to academic writing and research in history
- The essentials of research ethics.

SYLLABUS OF DSE

Unit I: Distinctiveness of historical inquiry

3. The nature of history

4. The scope of historical research

Unit II: Issues and problems in historical research

5. Facts and inference
6. Explanation and historical research
7. Objectivity and history writing
8. History writing and relations of power

Unit III: Sources and interpretation

4. Types of historical sources: their use and limitations
5. Analytical frames in historical research
6. Varieties of approaches to sources and methods

Unit IV: Conducting historical research

3. Selecting a topic and preliminary work
4. Protocols of academic writing and avoiding plagiarism

Practical component (if any) - NIL

Essential/recommended readings:

Unit I: This introductory Unit seeks to enable students to i) distinguish the historical from the past, memory and myth; ii) comprehend the relationship of history with social science theories and concepts; iii) distinguish aspects of history (social, political, economic, religious, cultural, ecological). (Teaching Time: 9 hours)

- Hobsbawm, Eric J. (1998). On History, UK: Abacus (Ch.2, "A Sense of the Past", and Ch.3, "What Can History Tell Us About Contemporary Society").
- Bloch, Marc. (1992). The Historian's Craft, Manchester University Press. Reprint ("Introduction," pp. 1-19).
- Schlabach, Gerald. A Sense of History: Some Components http://www.geraldschlabach.net/about/relationships/benedictine/courses/handouts/sense-of-history/
- Marwick, Arthur. (1989). The Nature of History. Third edition, Hampshire and London: MacMillan (pp. 14-25 - "The Necessity of History" and "Stories and Dialogues").
- Stephens, Lester D. (1977), Probing the Past: A Guide to the Study and Teaching of History, Boston, London & Sydney: Allyn and Bacon Inc. (Ch.1, "The Nature of History," and Ch.6, "History and Related Studies").
- Sreedharan, E. (2007). A Manual of Historical Research Methodology, Trivandrum: Centre for South Indian Studies. (Ch.1: pp. 14-20).
- Tosh, J. (2002). In Pursuit of History. Revised third edition. London, N.Y., New Delhi: Longman (Ch.8, "History and Social Theory": pp. 214-225, and Ch.3, "Mapping the Field").

Unit-II: This unit will deal with some important issues such as identifying historical facts, context, causal explanations, generalizations, objectivity; and configurations of power and history writing. (Teaching Time: 12 hours)

- Carr, E.H. (1991). What is History. Penguin. Reprint. (Ch.1, "The Historian and His Facts", Ch.3, "History, Science and Morality", and Ch.4, "Causation in History").
- Marwick, Arthur (1989). The Nature of History. Third edition, Hampshire and London: MacMillan. (Ch.6, "The Historian at Work: The Writing of History," pp. 242-254).
- Tucker, Aviezer (ed.) (2009), A Companion to the Philosophy of History and Historiography, Chichester: Wiley Blackwell Publishing (Ch.7, "Causation in History").
- Sreedharan, E. (2007). A Manual of Historical Research Methodology, Trivandrum: Centre for South Indian Studies. (Ch.3, "The Critical Philosophy of History-Part I" and Ch.4, "The Critical Philosophy of History-Part II").
- Stephens, Lester D. (1977), Probing the Past: A Guide to the Study and Teaching of History, Boston, London & Sydney: Allyn and Bacon Inc. (Ch.3, "The Historian and His Work," and Ch.4, "Explanation and History").
- Michel-Rolph Trouillot (1995), Silencing the Past: Power and the Production of History. Boston: Beacon Press. (Ch.1, Ch.3 and Ch.5).
- Hobsbawm, Eric J. (1998). On History, UK: Abacus (Ch.10, "Partisanship").

Unit-III: This unit looks at (i) Different sources and analytical frameworks; (ii) types of history and their connection to sources (global, national, regional, micro, oral, visual, archival, textual-official and private). (Teaching Time: 12 hours)

- Jordonova, Ludmilla. (2000). History in Practice, London/New York: Arnold and Oxford University Press Inc. (Ch.2, "Mapping the Discipline of History", Ch.4, "The Status of Historical Knowledge", and Ch.7, "Historians' Skills").
- Brundage. Anthony (2018). Going to the Sources: A Guide to Historical Research and Writing, Sixth edition, Wiley Blackwell. (Ch. 2, "The Nature and Variety of Historical Sources", Ch.5, "Beyond Textual Sources", and Ch.7, "Engaging with Primary Sources").
- Tosh, J. (2002). In Pursuit of History. Revised third edition. London, N.Y., New Delhi: Longman. (Ch.4, "The Raw Materials" and Ch.5, "Using the Sources").
- Black, J., MacRaild, D.M. (1997). Studying History. How to Study. Palgrave, London. (Ch.4, "Approaches to History: Sources, Methods and Historians").
- Howell, Martha and Walter Prevenier (2001). From Reliable Sources: An Introduction to Historical Methods. Ithaca: Cornell University Press. (Ch.2, "Technical Analysis of Sources," Ch.3, "Historical Interpretation: The Traditional Basics," and Ch.4, "New Interpretative Approaches").

Unit IV: This unit will familiarize students with i) framing a research question and building an argument, (ii) literature review and scope of research, iii) research ethics, dangers of plagiarism and styles of referencing/citation. (Teaching Time: 12 hours)

- Booth, Wayne C. and Gregory G. Colomb (Contributor), Joseph M. Williams, William C. Booth. The Craft of Research : From Planning to Reporting. University of Chicago Press.
- Brundage, Anthony (2018). Going to the Sources: A Guide to Historical Research and Writing. Sixth edition, Wiley Blackwell. (Ch.3, “Finding Your Sources”, Ch.4, “Getting the Most out of History Books”, Ch.6, “Exploring Changing Interpretations” and Ch.7, “Engaging with Primary Sources”).
- Sorenson, Sharron (1995), How to Write a Research Paper, MacMillan
- Nayak, Dhanwanti (2011), 'Karaoked Plagiarism in the Classroom', Economic and Political Weekly, vol. 46, no. 9 (pp. 49-53).
- Katju, Manjari (2011), “Plagiarism and Social Sciences,” Economic and Political Weekly, vol. 46, no. 9 (pp. 45-48).
- Chicago Manual of Style. 15th edition, Chicago: Chicago University Press, 2003.
- MLA Handbook for Writers of Research Papers 5th edition, New York: Modern Language Association of America, 1999.

Suggested Readings:

- Arnold, J.H. (2000). History: A Very Short Introduction. Oxford: Oxford University Press (Ch.3. & Ch.7).
- Black, J., MacRaild, D.M. (1997). Studying History. How to Study. Palgrave, London. (Ch.6, “Studying History”).
- Elton, G.R., The Practice of History, London: Fontana Press, 1987.
- Gardiner, P. (1973). The Varieties of History: From Voltaire to Present. Second edition, Vintage Books.
- Hobsbawm, Eric J. (1998). On History. UK: Abacus.
- Jordonova, Ludmilla. (2000). History in Practice. London/New York: Arnold and Oxford University Press Inc., pp. 163-171 and 173-183 (Ch.6, “Public History”).
- Munslow, Alun (2000), The Routledge Companion to Historical Studies, Second edition, London: Routledge [Relevant entries – concepts & names of historians are listed alphabetically just like a dictionary / encyclopedia].
- Munslow, Alun (2012), A History of History, London and New York: Routledge. (Ch.1, “The Emergence of Modern Historical Thinking,” Ch.1, “History and/as Science,” and Ch.3, “Forms of History”).
- Postan, M.M. (1971). Facts and Relevance: Essays on Historical Method. Cambridge: Cambridge University Press (“Fact and Relevance, History and the Social Sciences in Historical Study”).
- Sarkar, Sumit (1997), “The Many Worlds of Indian History”, Writing Social History, New Delhi: OUP.
- Sreedharan, E. (2007). A Manual of Historical Research Methodology, Trivandrum: Centre for South Indian Studies. (Ch.6, “Historical Research Methodology”).
- Topolski, Jerzy. (1976). Methodology of History, translated by OlgierdWojtasiewicz, D. Reidel Publishing Company (Ch.10, “Historical Facts”, Ch.11, “The Process of History”

– the section on Causality and Determinism, Ch.18, “The Authenticity of Sources and the Reliability of Informants”, Ch.19, “Methods of Establishing Historical Facts.”)

- Tosh, John. (2002). In Pursuit of History. Revised third edition. London, N.Y., New Delhi: Longman. (Ch.1, “Historical Awareness” and Ch.6, “Writing and Interpretation”).
- Tucker, Aviezer (ed.) (2009), A Companion to the Philosophy of History and Historiography, Chichester: Wiley Blackwell Publishing (Ch.6, “Historiographic Evidence and Confirmation”, Ch.10, “Explanation in Historiography” and Ch.14, “Historiographic Objectivity”).

Note: Examination scheme and mode shall be as prescribed by the ExaminationBranch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE (DSE-3): Travel in History: Trade, Politics and Society

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Travel in History: Trade, Politics and Society	**4**	**3**	**1**	**0**	**12th Pass**	**NIL**

Learning Objectives

This paper shall provide an overview of the history of travel. It will acquaint students with the various genres, contexts and cultural literary traditions in which these travels were undertaken and written about. The course focusses on the transformative nature of travel especially the impact of industrialisation. The course will show the student how new technologies impacted the movement of people and their ability to record their experiences. Through a critical historical and literary study of a select list of travelogues, the course would introduce the stu-dents to the varied interests of travellers and their descriptions of local societies, economic practices and socio-cultural traditions. It will engage students with a series of problematics and issues arising from writings on cross cultural engagements and social stereotyping associated with European colonialism. This course will equip stu-dents to critically read travelogues and commentaries on travels.

Learning outcomes

After completing the course students will be able to:

- Describe and historically analyse various aspects of travel experience and writing.
- Analyse the the varied and changing engagements of travellers in time.
- Develop the skills to analyse travelogues and critically evaluate cross cultural literature.
- Critically engage with the Eurocentric emphasis in travel narratives.
- Critically examine questions of colonialism, technology, race, language, gender and religion in travel narratives.

SYLLABUS OF DSE-3

Unit I: Writing Travel:

1. Writing Travel: Genre, Time and Place

2. Travel in History: Religion, Society and Economy

Unit II: Travel in the Modern Era

1. Industrialisation and a new travel culture: Railways and Photography
2. The Nineteenth and Twentieth centuries

Unit III: Travel, Texts and History (choose any 3 travellers, select at least 1 from each category)

Travel in the Pre-Modern World: [I] Huen tsang [ii] Marco Polo [iii] Christopher Colombus [iv] Varthema [v] Jan Huygen van Linschoten [vi] Guru Nanak

B. Travel in the Modern World: [I] Durgabati Das [ii] Cathanar Thomman Paremmakkal [iii] Rahul Sankrtyaya-na [iv] W. S. Caine [v] Samanth Subramanian [vi] R. L. Stevenson

Practical component (if any) - NIL

Essential/recommended readings

Unit I: This unit aims to familiarise the students with travel writing. They will read about the varied contexts in which travellers come to record their experiences. Students will be familiarised with how travelogues have been used to enabling cross cultural engagements, and in establishing certain cultural and social stereotypes. They shall learn to read travelogues as distinct texts that introduce the readers to layered visions of diverse communi-ties and practices. (**Teaching Time: 15 hours approx.)**

- Das, Nandini and Youngs, Tim (Eds.) The Cambridge History of Travel Writing, Cambridge University Press, Cambridge, 2019
- Gosch, Stephens S., and Stearns, Peter N., Premodern Travel in World History, Routledge, 2008 p.134-160
- Greenblatt, Stephen, Marvellous Possessions: The Wonder of the New World, University of Chicago Press, Chicago, 1991
- Kamps, Ivo and Singh, Jyotsna G. (eds.) Travel Knowledge: European “Discoveries” in the Early Modern Peri-od, Palgrave, New York, 2001
- Moroz, Grzegorz and Szztachelska, Jolanta (eds.) Metamorphoses of Travel Writing: Across theories, Genres, Centuries and Literary traditions, Cambridge Scholars Publishing, Newcastle, 2010
- Muzaffar Alam and Sanjay Subrahmanyam, Indo Persian Travels in the Age of Discoveries 1400-1800, Cam-bridge University Press, Cambridge, 2007
- Petting, Alasdair and Youngs, Tim (eds.) The Routledge Research Companion to Travel Writing, Routledge, London, 2020

Unit II: In this unit, students shall study about transformations in travel and travel writing. They shall read about the experience of travel through in a period shaped by Colonialism and the industrial revolution. The stu-dents will read about how the introduction of railways and new machines like the camera transformed the nature of

travel. They will engage with these transformations alongside questions of race, gender, and culture in travel narratives. They will engage with how geography, culture, language, social practices, economic activity and religion have been conceptualised by different actors. **(Teaching Time: 15 hours approx.)**

- Edwards, Justin D. And Graulund, Rune (eds.) Postcolonial Travel Writing: Critical Explorations, Palgrave Macmillan, New York, 2011
- Gharipour, Mohammad and Ozlu Nilay (eds.) The City in the Muslim World: Depictions by Western Travel Writers, Routledge, London, 2015
- Gupta, Jayati, Travel Culture. Travel Writing and Bengali Women, 1870-1940, Routledge, London, 2021
- Henes, Mary and Murray, Brian.H., Travel Writing, Visual Culture and Form 1760-1900, Palgrave Macmillan, Singapore, 2016
- Nayar, Pramod K., Indian Travel Writing in. The Age of Empire 1830-1940, Bloomsbury, Delhi, 2020
- Pratt, Mary Louise, Imperial Eyes: Travel Writing and Transculturation, Routledge, London, 1992. p. 111-200
- Schivelbusch, Wolfgang, The Railway Journey: The Industrialisation of Time and Space in the Nineteenth Cen-tury, University of California Press, Oakland, 2014. p.83-193
- Sohrabi, Naghmeh, Taken for Wonder: Nineteenth-Century Travel Accounts from Iran to Europe, Oxford Uni-versity Press, New York, 2012
- Youngs, Tim (ed.) Travel Writing in the Nineteenth Century: Filling the Blank Spaces, Anthem Press, London, 2006
- Zilcosky, John (ed), Writing Travel: The Poetics and Politics of the Modern Journey, University of Toronto Press, Toronto, 2008. P.3-56

Unit III: In this unit the student will choose travelogues as case studies. The student will select 3 travelogues from a list of 12. S/he will focus on these three and use the insights discussed in the earlier units to critically analyse these texts. The learners shall be encouraged to explore in greater detail specific themes that interest them, such as gender, religion, race, social practices, technology, architecture, ecology & nature, economic ex-changes, etc. **(Teaching Time: 15 hours approx.)**

- Travel in the Pre Modern World: [I] Huen tsang [ii] Marco Polo [iii] Christopher Colombus [iv] Varthema [v] Jan Huygen van Linschoten [vi] Guru Nanak
- Polo, Marco, Travels, (Trans.Nigel Cliff), Penguin Classics, 2019
- Si-Yu-Ki, Buddhist Records of the Western World: Translated from the Chinese of Hiren Tsiiang (AD 629) (trans. Samuel Beal), Oriental Books Reprint Corporation, Delhi,1969
- Gosch, Stephens S., and Stearns, Peter N., Premodern Travel in World History, Routledge, 2008 p.134-160
- Devahuti, D., The Unknown Hsuan Tsang, Oxford University Press, Delhi, 2006
- Columbus, Christopher, The Four Voyages of Christopher Columbus: Being his own log book, letters and dis-patches with connecting narratives, (trans. J Cohen), Oxford, Oxford University Press, 1969

- Varthema, Ludovico Di, The Itinerary of Ludovico Di Varthema of Bologna, (trans.) John Winter Jones, Asian Educational Services, New Delhi 1997
- Joan-Pau Rubies, Travel and Ethnology in the Renaissance: South India through European Eyes, 1250-1625, Cambridge University Press, 2000. p. 1-84, 164-250
- Linschoten, Jan Huygen van, The Voyage of Jan Huygen van Linschotento the East Indies: From the Old Eng-lish translation of 1598, vol I and II, Hakluyt Society, London, 1885
- Kohli, Surinder Singh, Travels of Guru Nanak, Punjab University Publication Bureau, 1978

B. Travel in the Modern World: [I] Durgabati Das [ii] Cathanar Thomman Paremmakkal [iii] Rahul Sankrtyaya-na [iv] W. S. Caine [v] Samanth Subramanian [vi] R. L. Stevenson

- Das, Durgabati, The Westward Traveller (ed & trans by Somdatta Mandal), Orient Blackswan, January 2010
- Paremmakkal, Cathanar Thomman, Varthamanappusthakam, An account of the history of the Malabar Church between the years 1773 and 1786 with special emphasis on the events connected with the journey from Malabar to Rome via Lisbon and back undertaken by Malpan Mar Joseph Cariattil and Cathanar
- Thomas Paremmakkal, (trans. Placid J. Podipara, CMI), Orientalia Christiana Analecta 190, Pont. Institutum Orientalium Studiorum, Roma, 1971
- Sankrtyayana, Rahul, Volga to Ganga: A Picture in Nineteen Stories of the Historical, Economic and Political Evolution of the Human Society from 6000 B.C. to 1922 A.D. (trans.. Victor Gordon Kiernan), Punjab Book Centre, 2015
- Irumbayam, George, Books of Yesteryears - I : 'Varthamanapusthakam' : The first ever travelogues in Indian languages, Indian Literature, July-August, 1987, Vol 30, No 4 (120) July-August 1987, pp. 81-85
- Caine, W.S., Picturesque India: A Handbook for European Travellers, George Routledge and Sons, London 1891
- Manfredi, Carla, Robert Louis Stevenson's Pacific Impressions: Photography and Travel Writing, 1888-1894, Palgrave macmillan, Switzerland, 2018.
- Stevenson, R.L. In the South Seas: The Marquesas, Paumotus and Gilbert Islands, Deadtree Publishing, Lon-don, 2013
- Subramanian, Samanth, Following Fish: Travels around the Indian Coast, Penguin, Delhi, 2010

Suggestive readings

- Banerjee, Rita, India in Early Modern English Travel Writing: Protestantism, Enlightenment, and Toleration, Brill, Leiden, 2021.
- Brock, Aske Laursen, Meersbergen, Guido Van and Smith, Edmond, Trading Companies and Travel Knowledge in the Early Modern World, Hakluyt Society Studies in history of Travel, Routledge 2022
- Clarke, Robert, The Cambridge Companion to Postcolonial Travel Writing, Cambridge University Press, Cam-bridge, 2018
- Elsner, Jas and Rubies, Joan-Pau, Voyages and Visions: Towards a Cultural History of Travel, Reaction Books, 1999.

- Grewal, Inderpal, Home and Harem: Nation, Gender, Empire and the Cultures of Travel, Duke University Press, Durham, 1996
- Mueller, Christian and Salonia, Matteo (eds.) Travel Writings on Asia: Curiosity, Identities and Knowledge Across the East, c. 1200 to the Present, Palgrave Macmillan, Singapore, 2022
- Peterson, Jennifer Lynn, Education in the School of Dreams: Travelogues and Early Nonfiction Film, Duke Uni-versity Press, Durham, 2013
- Taylor, Tom, Modern Travel in World History, London, Routledge, 2022
- Rodenas, Adriana Mendez, Transatlantic Travels in Nineteenth century Latin America: European Women Pil-grims, Bucknell University Press, Lewisburg, 2014

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

GENERIC ELECTIVES (GE-1): Media and Cinema

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Media and Cinema	**4**	**3**	**1**	**0**	**12th Pass**	**NIL**

Learning Objectives

The course will apprise the students with the elementary outlines of the history of media in India, from its beginnings to contemporary times. The different forms of media – Print, Audio-Visual and Electronic – the modes and methods will be discussed, and the potent ways in which technology and larger socio-political and economic trends intersected will be highlighted.

Learning outcomes

Upon successful completion of the course, students will be able to:

- Delineate the historical context within which the beginnings of each media platform can be understood.
- Analyze the state's attempts to control and organize media output through laws and policies.
- Explain the conjunctures of technological breakthroughs, advances and larger socio- economic and political matrices.
- Better appreciate the trends in media production, and its efforts in engaging with current ideological and socio-political issues.

SYLLABUS OF GE-1

Unit I: Forms and Contexts - **9 Hours**

1. Introduction – Types of media to be studied and their unique Indian context and adaptations

2. Significance and impact of media in history

Unit II: Press/Print media - **9 Hours**

1. Press censorship in British India; Vernacular Press Act
2. Role of the Indian press in the freedom movement; views of Leaders,
3. Press in India after independence

Unit III: Radio Transmission - **9 Hours**

1. Radio Transmission in Colonial India – Foundation, Inter-war years; AIR Programming, Expansion and broadening of listenership base
2. Establishment and Expansion of Akashvani after 1947 – The Keskar years; Classical vs. Popular; Radio Ceylon and Vividh Bharati
3. Government Policies and Bandwidth matters since the 1970s – end of License Raj; FM Radio Wave; Community Radio; Podcasts

Unit IV: The Cinematic Turn - **9 Hours**

1. Cinema during Colonial Period - Silent Era, Genres, Censorship
2. Post-Independence Cinema till 1980s- Nation Building, Mainstream Cinema and Parallel Cinema
3. Era of Liberalization, Globalization and Privatization- Changes in Production, Distribution and Exhibition, Experimental Cinema

Unit V: Studying Television and Digital Media - **9 Hours**

1. Television in India-The Doordarshan era- Entertainment, Infotainment
2. Rise of the Satellite TV – Soap Operas and 24x7 News, Changes and Effects
3. Digital Media - Effects of Digital Media - Privacy and Surveillance, Misinformation and Disinformation

Essential Readings

- Krishna Murthy, Nadig (1966): lit&& Journalism - Origin Growth and Development of Indian Journalism from Ashoka to Nehru, Prasaranga, University of Mysore.
- Devika Sethi: War over Words : Censorship in India, 1930-1960, Cambridge University Press (2019)
- AS Iyengar: Role of Press and Indian Freedom Struggle, APH Publishing Corporation (2001)
- Dismembering media diversity: A tryst with two press commissions by Vibodh Parthasarathi
  https://journals.sagepub.com/doi/abs/10.1177/0163443721994552
- भारत की समाचार पत्र क्रांर्त, रॉर्बन जेफ्ी
- Sarkar, S. 2015. Modern Times: India 1880s to 1950s: Environment, Economy, Culture.
- New Delhi: Orient Blackswan
- Khanna, A. 2019. Words. Sounds. Images: A History of Media and Entertainment in India. New Delhi: Harper Collins

- Chatterjee, K, 2020. Media and Nation Building in Twentieth-Century India: Life and Times of Ramananda Chatterjee. New Delhi: Routledge
- Malik, K.K. Mixed Signals: Radio Broadcasting Policy in India
- Bandopadhyay, P.K. 2015. The Genesis and Growth of Broadcasting in India: From Lionel Fielden to The Present Day
- Gupta, P.S. 2001. "Radio and the Raj." Power, Politics and the People: Studies in British Imperialism and Indian Nationalism. New Delhi: Permanent Black, pp 447-80.
- Lelyveld, D. 1995. "Upon the Subdominant: Administering Music on All India Radio." Social Text, Vol. 39, pp 111-27
- Pinkerton, A. 2008. "Radio and the Raj: Broadcasting in British India, 1920-1940." Journal of the Royal Asiatic Society, Vol. 18, No. 2, pp 167-91.
- Rangoonwala, Firoze, Bhartiya Chalchitra Ka Itihas, Rajpal & Sons, Delhi, 1975
- Kaul, Gautam, Cinema and the Indian Freedom Struggle, Sterling Publishers Pvt. Ltd., Delhi, 1999
- Sharma, Manoj, National Movement and Currents of Social Reform in Hindi Cinema: 1931-1947, Proceedings of Indian History Congress, Vol. 66, (2005-2006), pp.492-498, JSTOR
- Vasudev, Aruna, New Indian Cinema, Delhi, MacMillan, 1986
- Thoravel, Yves, The Cinemas of India, Macmillan, Delhi, 20
- Rini Bhattacharya Mehta & Rajeshwari V. Pandharipande ed, Bollywood and Globalisation; Indian Popular cinema: Nation and Diaspora, Anthem press, London, 2010
- Ghose, B. Doordarshan Days. Penguin/Viking, (2005)
- डॉ. परमवीर सिंह , भारतीय टेलिविज़न **का इतिहास। एडुक्रीएशन पब्लिशिंग, (२०१७)**

Suggestive readings

- Chandra, Bipin, Mridula Mukherjee, Aditya Mukherjee, K N Pannikkar, Sucheta Mahajan: India's Struggle For Independence 1857-1947 (1987), Penguin Books. Chapter 8. The Fight To Secure Press Freedom.
- बिपन चंद्र, मृ ल लिए संघषि।ा मखजी, आर्ित्य मुखजी, के एन पन्नीकर, सुचेता महाजन: भारत का स्वतंत्रता संघषि, अध्याय आठ- प्रेस की आज़ाि ी केरामशरण जोशी, मीडिया और बाजारवाि
- Kripalani, C. 2018. "All India Radio's Glory Days and Its Search for Autonomy" in Economic and Political Weekly, Vol. 53, No. 37, pp 42-50.
- Jhingan, S. 2011. "Re-embodying the Classical: The Bombay Film Song in the 1950s" in Bioscope, Vol 2, No. 2, pp 157-79
- Short, K. R. M. ed., Feature Film as History, Croom Helm Ltd., London, 1981
- Saari, Anil Hindi Cinema: An Insider's View, OUP Delhi, 2009
- Sinha, Mala and Chauhan, Vishal (2013). Deconstructing LajjA as a Marker of Indian Womanhood. Psychology and Developing Societies. 25 (1): pp.133-163. Available at: https://doi.org/10.1177/0971333613477314
- Lectures on Cinema - https://www.youtube.com/user/cecedusat

- Butler, Bred and Mirza, Karen, The Cinema of Prayoga: Indian Experimental Film and Video 1913-2006, published in 2006
- Conrad, P. (2016). Television: The medium and its manners. Routledge
- डॉ.तयाम कतयप एवं मकु े श कु मार (२००८) टेर्लवज़न की कहानी। नई र्ल्ली: राजकमल प्रकाशन

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-2): Gender in Modern World

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Gender in Modern World	4	3	1	0	12th Pass	NIL

Learning Objectives

The course seeks to introduce students to the location of gender in the historical pasts of the modern world. It focusses on different regions and locations, and analyses complexities of historical issues involving women's representation, mass movement and gendered mobilization.

Learning outcomes

After the completion of the course the students would be able to

- Understanding larger histories of patriarchy and feminism
- Analyse gender realities in international contexts
- Discuss issues of gender in world history in comparative frames
- Delineate women's movements across different regions of the world

SYLLABUS OF GE-2

Unit I: Historicizing Gender: Patriarchy, Matriarchy and Feminism
Unit II: Gender in the French Revolution: Women's participation; iconography
Unit III: Liberal Democratic Women's movements: Case Studies- Britain/ USA/South Africa
Unit IV: Women in the Socialist, Communist & Other Political Mobilization-Russian Revolution/ Chinese Revolution/ West Asia

Practical component (if any) - NIL

Essential/recommended readings

Unit I. The unit aims to make students conversant with the conceptual issues around Gender with a special focus on patriarchy and feminism. **(Teaching Time: 9 hours approx.)**

- Bock, Gisela. (1989). “Women’s History and Gender History: Aspects of an International Debate”. Gender and History, Vol. 1, no.1, pp. 7-30.
- Learner, Gerda. (1987). The Creation of Patriarchy. New York and Oxford: OUP. (Chapters 1 and 10).
- Michelet, Juliet and Ann Oakley. (Eds.). (1986). What is Feminism? London: Pantheon books. (Introduction).
- Smith, Bonnie G. (Ed.). (2008). Encyclopedia of Women in World History. New York: Oxford University Press [IV Volumes relevant sections].
- Weisner-Hanks, Merry. (2007).” World History and the History of Women, Gender, and Sexuality”. Journal of World History vol. 18 no.1, pp. 53-67.
- Millet, Kate. (2000). Sexual Politics. Urbana and Chicago: University of Illinois Press. pp. 23-58.

Unit II. The focus in the unit is on the significant role played by women in the French Revolution and how the French political paintings of the time reflected a growing image of the revolution from a gendered perspective**. (Teaching Time: 9 hours approx.)**

- Graham, Ruth. (1984). “Loaves and Liberty: Women in the French Revolution”. in
- Bridenthal Renate and Claudia Koonz (Eds.). Becoming Visible: Women in European History. New York: Monthly Review Press, pp. 236-54.
- Juneja, Monica. (1996). “Imaging the Revolution: Gender and Iconography in French Political Prints”. Studies in History vol. 12 no.1, pp. 1-65.

Unit III. The unit elucidates the trajectory of women’s movement across different countries in 19th and 20th century such as Britain/ USA/South Africa. It bears testimony to developing women’s consciousness in the realm of suffrage movement, rights, and law. **(Teaching Time: 12 hours approx.)**

- Harrison, Patricia Greenwood. (2000). Connecting Links: The British and American
- Women’s suffrage movements, 1900-1914. Westport, CT: Greenwood Press. (Introduction)
- Wingerden, Sophia A. (1999). The Women’s Suffrage Movement in Britain, 1866-1928. New York: St. Martin’s Press. Chapter 4, pp. 70-95.
- DuBois, Ellen Carol. (1999). Feminism and Suffrage: The Emergence of an Independent Women's movement in America 1848-1869. Ithaca: Cornell University Press. (Introduction)
- Lodge, Tom. (1983). Black Politics in South Africa since 1945. New York: Longman Group Limited. Chapter-6, pp. 139-152.

Unit IV. The focal point in the unit is to analyze the question of Gender in the Russian Revolution or the Chinese revolution or West Asia. Questions of women’s agency, participation and mobilization will be discussed. **(Teaching Time: 12 hours approx.)**

- Rosenthal, Bernice Glatzer. (1984). “Love on the Tractor: Women in the Russian Revolution and After”. In Bridenthal Renate and Claudia Koonz (Eds.), Becoming

Visible: Women in European History. New York: Monthly Review Press, pp. 370-399.
- Gilmartin, Christina. (1995). Engendering the Chinese Revolution: Radical Women, Communist Politics and Mass Movements in the 1920s. Berkeley: University of California Press. Chapter 3& 7, pp. 71-95 & 174-200.
- Mernissi, F. (1987). Beyond the Veil: Male-Female Dynamics in Modern Muslim Society. Bloomington: Indiana University Press. Chapter 1 &2, pp. 56-116.
- Moghadam, V. M. (2003). "Islamist Movements and Women's Responses". In Valentine Modghadam, Modernizing Women: Gender and Social Change in the Middle East. London: Lynn Rienner, pp. 151-92.

Suggestive readings -

- Bose, R.B. (1995). "Feminism, Women and the French Revolution". Historical Reflections/Reflexions Historiques. Vol. 21, No. 1. pp. 187-205. Berhghahn Books.
- Landes, Joan, B. Women and the Public Sphere in the Age of the French Revolution.
- Morgan, Sue. (2006). "Introduction: Writing Feminist History: Theoretical Debates and Critical Practices". In Sue Morgan. (eds.). The Feminist History Reader. Routledge, pp. 1- 47.
- Scott, Joan W. (1986). "Gender: A Useful Category of Historical Analysis". The American Historical Review, vol, 91. No. 5, pp. 1053-75.
- Melzer, Sara E. and Leslie W. Rabine. (1992). "Introduction". In Sara E. Melzer and Leslie
- W. Rabine. (eds.) Rebel Daughters: Women and the French Revolution. New York: Oxford University Press, pp. 3-11.
- Tilghman, Carolyn. (2011). "Staging Suffrage: Women, Politics and The Edwardian Theatre". Comparative Drama, vol. 45, no. 4, pp. 339-60.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-3): History of Textiles

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
History of Textiles	4	3	1	0	12th Pass	NIL

Learning Objectives

This course explores the ways in which textiles has been approached, appropriated and understood in Indian history and beyond. The patterns in which textiles have been situated in history, how they are made, what they are made of, where they are made, what use or function they serve, what they codify for different communities, rituals and events, their historical and economic significance, etc. will be our main focus. The multiple narratives embedded in textiles, especially the hand woven and handcrafted textiles, which go back millennia and which, through centuries, have linked India to the rest of the world will enable the students to dialogue with a great culture of textiles.

Learning outcomes

Students will also learn what textile can tell us about trade and commerce, empire, gender, sexuality, class, race, industry, revolution, nation-building, identity politics and globalization. We will aim simultaneously to see textile and material culture more generally, as playing a fundamental role in the shaping of our past.

Theory and Practical/ Field work/Hands-on-learning

Through the course students are expected to continuously interact with the textile sector through programmes built into the academic curriculum like field studies, internships, design projects, audio-visual projects and its cluster initiatives.

SYLLABUS OF GE-3

Unit 1: Textiles (Past to Present)

1. Sources and Historiography
2. Textiles in ancient India.
3. Textiles in Medieval India.
4. Textiles in Modern India.
5. Textiles in Contemporary India.

Unit 2: Theories of evolution of Textiles and Regional perspectives.

1. Local skills, Craftsmen (Case study of Weavers, Iron Smith and Carpenters) and Knowledge systems of Textiles.
2. Textiles of North, East, South, West and North-East.
3. Traditional and tribal costumes of India – North, East, South, West and North-East. d) Effect of textile culture and colours for different ceremonies and occasions.

Unit 3: Material Culture of Textiles: Study of Textile Crafts of India: with reference to history, production centers, techniques, designs, colours, products and gender (Case study of Female Weavers).

1. Woven Textiles: Benaras Brocades, Jamdanis and Baluchars of Bengal, Kani Shawls of Kashmir, Bhagalpuri Silk and Kachipuram Silk.
2. Embroidered Textiles: Kanthas of Bengal, Kasuti of Karnataka, Phulkari of Punjab, Chikankari of Uttar Pradesh, Kashida of Kashmir, Gujarat embroideries.
3. Painted and Printed textiles: Kalamkaris of Andhra Pradesh, Dabu printing of Rajasthan, Ajarakh prints of Gujarat.
4. Dyed textiles: Bandhnis of Rajasthan and Gujarat, Ikats- Patola of Gujarat, Bandhas / Sambalpuri of Orissa and Telia Rumal of Andhra Pradesh

Unit 4: Making of Modern Textiles, Responses and Resistance.

1. Introduction of Powerloom and Weavers.
2. Khadi, Gandhi and Indian Nationalism.
3. Conservation and Preservation of Textiles
4. Textiles and Globalization.

Practical component (if any) - NIL

Essential/recommended readings

Unit I: The Unit will give an overview to the paper through sources, historiography and past history and present conditions of the textile. (Teaching Time: 9 hours approx.)

- Harris J, 5000 years of Textiles, British Museum, London, 1993.
- Prasannan Parthasarathi and Giorgio Riello, eds, The Spinning World: A Global History of Cotton Textiles, 1200-1850 (Oxford, 2009).
- Ray, Tirthankar., Cloth and Commerce: Textile in Colonial India, Sage Publications, Delhi, 1996

Unit II: The Unit discusses the Local skills, Knowledge systems, Textiles and Traditional and tribal costumes of India – North, East, South, West and North-East., Effect of textile culture and colours for different ceremonies and occasions. (Teaching Time: 12 hours approx.)

- Braj Bhushan, Jamila, The Crafts of Weavers, the Costumes and Textiles of India, D.E. Tarapore
- Valla Sons and Co. Pvt. Ltd., Bombay, 1958.

- Chattopadhaya, Kamaladevi, Handicrafts of India, Wiley Eastern Limited, New Delhi, 1995. Coomarswamy, Ananda K., The Arts and Crafts of India and Ceylon, London,UK: T.N. Foulis, 1913
- Emma Tarlo, Clothing Matters: Dress and Identity in India, Chicago, University of Chicago Press, 1996.
- Rai, Santosh Kumar, "Pleasures of Fashion and sorrows of Production—the Handloom industry in united Provinces, india, 1860s–1940" in Seema Bawa, ed., Locating Pleasure in Indian History.
- Prescribed and Proscribed Desires in Visual and Literary Cultures, New Delhi: Bloomsbury, 2021, pp.243-265.

Unit III: The Unit will help students understand the study of Textile Crafts of India such as woven, embroidered, dyed textiles from various parts of India and production centers, techniques as well. The students will also become aware of the gender issues associated with the textiles. (Teaching Time: 12 hours approx.)

- Dhamija, Jasleen, The Survey of Embroidery Traditions in Textiles and Embroideries of India, Mark Publications, Bombay, 1965.
- Diana Crane, Fashion and Its Social Agendas, Chicago, University of Chicago Press, 2000.
- Chattopadhyaya, Kamaladevi, Indian Embroidery, Wiley Eastern, New Delhi, 1977. Jayakar. Pupul, Textiles and embroideries of India, Bombay, Marg Publications,1956. Maheshwari, A.K., & Sivaprakasam, P., Status of Women Weavers in Handloom Sector, 2002
- Rai, Santosh Kumar, "Weaving Hierarchies: Production Networks of the Handloom Industry in Colonial Eastern Uttar Pradesh", in Studies in History, August 2012, vol. 28, no.2, Sage Publications, Los Angeles/London, ISSN:0257-6430, eISSN:0973-080X, pp.203-230.
- Sudan, Amrik Singh., Marketing of Handloom Products in J&K, Anmol Publishing Pvt. Ltd., New Delhi, 1977.
- Verma, R., & Verma, J. (2014). Historical Transition from Cultural Entrepreneurs to Commercial Entrepreneurs: A Case Study of Handloom Weavers of North East India. Journal of Business Management and Information Systems, 1(1), 131-140. Retrieved from https://qtanalytics.in/journals/index.php/JBMIS/article/view/125.

Unit IV: This Unit emphasizes introduction of powerlooms, Gandhi's contribution, Khadi, preservation and globalizing process. (Teaching Time: 12 hours approx.)

- Hussain, Majid, N.S. Olaniya, Indian Textiles in the 20th century: Crisis in transformation, Marg
- Publications, 2000.
- Kanakalatha, M and Syamsundari, B., Traditional Industry in the New Market Economy: The Cotton Handlooms of Andhra Pradesh, Sage Publications, Delhi, 2011.
- Riello, Giorgio and Tirthankar Ray, How India Clothed the World, The World of South Asian

- Textiles 1500-1850, Brill, 2009.
- Rai, Santosh Kumar, 'Colonial Knowledge Economy: Handloom Weavers in Early Twentieth- Century United Provinces, India', International Review of Social History, Cambridge University Press, March 2022, pp.1-31.
- Verma, R., Panda, S., & Bansal, V. (2015). Dwindling Handloom, Sinking Weavers in Western
- Uttar Pradesh: A Case Study of Pilkhuwa, Amroha and Muradnagar. Journal of Business
- Management and Information Systems, 2(1), 10-20. https://doi.org/10.48001/jbmis.2015.0201002.

Suggested Reading:

- Bernard S. Cohn, 'Cloth, Clothes and Colonialism: India in the Nineteenth Century', in Cloth and Human Experience, ed. A. Weiner and J. Schneider, Washington: Smithsonian Books, 1989, pp. 106–62.
- Brouwer,Jan . (1995) The Makers of the World: Caste, Craft and Mind of South Indian Artisans.
- Delhi: OUP. h tC.A. Bayly, 'The Origins of Swadeshi (Home Industry): Cloth and Indian Society, 1700–1930', in Origin of Nationality in South Asia: Patriotism and Ethical Government in the Making of Modern India, ed. C.A. Bayly, Delhi: Oxford University Press, 1998, pp. 172–209.
- Das, Shukla, Fabric Art- Heritage of India, Abhinav Publications, New Delhi, 1992.
- Dhamija, Jasleen. (1981) 'Women and handicrafts: myth and reality', Seeds, 4:1-16.
- Dhamija, Jasleen. (Eds.), Sacred Textiles of India. Mumbai: Marg Publications,2014.
- Jayakar, Pupul and Irwin John. (1956) Textiles and Ornaments of India : A Collection of Designs, New York, UK.
- McGowan, Abigail. (2009) Crafting the Nation in Colonial India. New York, USA: Palgrave Macmillan.
- Nita Kumar, The Artisans of Banaras: Popular Culture and Identity, 1880–1986, Princeton: Princeton University Press, 1988.
- Ramaswamy, Vijaya, Textiles and Weavers in Medieval South India. Delhi, Oxford University Press, 1985.
- Varadrajan, Lotika.(1983) Traditions of Textile Printing in Kutch, Ajrakh and Related Techniques.
- Ahmedabad.India: New Order Book Company,1983.

Selected Websites and Films:

- http://www.paramparikkarigar.com/artandcraft.html
- http://www.paramparikkarigar.com/artandcraft.html
- http://collections.vam.ac.uk/item/O77243/textile-unknown/
- http://collections.vam.ac.uk/item/O68430/textile-unknown/

- http://thedreamstress.com/2014/07/brocade-and-jacquard-whats-thedifference- or-the-history-of-the-jacquard-loom-and-all-the-weaves-it-cancreate/
- Anjuman (1986), Film on Lucknow 'chikan' embroidery workers directed by Muzaffar Ali.
- The True Cost, (2015), documentary film that focuses on fast fashion, directed by Andrew Morgan.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF GEOGRAPHY

Category I

(B.A. Honours in Geography in three years)

SEMESTER-IV

DISCIPLINE SPECIFIC CORE COURSE – OCENOGRAPHY (DSC 10)

Course title & Code	Credits	Duration (Hrs per week)			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
OCEANOGRAPHY	4	3	1	0	Class 12th	NIL

Learning Objectives:

The Learning Objectives of this course are as follows:

- To enable the learner to understand the basics of oceanography.
- To enable the learner to explain the configuration of the ocean bottom
- To enable the learner to discuss ocean water and its unique ecosystem
- To equip the learner to appreciate and elaborate the problems and policies for sustainable oceans
-

Learning Outcomes:

The Learning Outcomes of this course are as follows:

- The students would be able to comprehend and establish the relationship between human action and global ocean conditions. They would be able to explain the ocean as a regulator of global climate.
- Illustrate the dynamic ocean bottom topography and appreciate the circulation of cold and warm Ocean currents.
- Discuss the salinity and temperature distribution of ocean water on a three-dimensional spatial perspective.
- Elaborate the marine ecosystems as well as explain the problems and address the policies to resolve them.

Course Outline:

UNIT 1: Introduction to Oceanography: (8 hrs)

- Significance of Oceanography, Human actions and the Oceans, Challenges to Sustainability of Marine Ecosystems, Role ofSea surface Temperature (SST) as Global Climate Regulator

UNIT 2: Geomorphological Oceanography: (8 hrs)

- Ocean Bottom Topography – Relief ofOcean Floor with Global examples

UNIT 3: Physical and Chemical Oceanography: (9 hrs)

- Properties of Ocean Water: Salinityand Temperature (Horizontal and Vertical Distribution); Oceanic currents

UNIT 4: Biological Oceanography: (10 hrs)

- Marine Ecosystems: Coral Reef, Mangrove, Openand Deep Sea

UNIT 5: Sustainability of Oceans- Problems and Policies: (10 hrs)

- Marine Challenges andManagement, Marine Policy: Integrated Coastal Zone Management (ICZM) with reference to India and SDG 14; Life Below Water

Readings

- Basu S.K. (2003). Hand Book of Oceanography. Global Vision, Delhi.
- Davis, R. J.A. (1996). Oceanography: An Introduction to the Marine Environment. Brown Co, Lowa.
- Garrison, T. (2016). Oceanography: An Invitation to Marine Science. 9th ed, Cengage Learning, Boston.
- Lal. D.S. (2003) Oceanography. Sharada Pustak Bhavan, Allahabad.
- Pinet, P.R. (2014). Invitation to Oceanography. 7th ed, Jones and Barlett Publishers, Burlington.
- Sharma, R. C. and Vatal, M. (2018) Oceanography for Geographers. Surjeet Publications, Delhi.
- Singh, S. (2015). Oceanography. Pravalika Publication, Allahabad,
- Sverdrup K. A. and Armrest, E. V. (2008). An Introduction to the World Ocean. McGraw Hill, Boston.

Readings (Hindi)

- Gautam, A. (2005) Jalwayu Evam Samudra Vigyan. Rastogi Publication, Meeruth.
- Kulshrestha, K.P. (2004). Samudra Vigyan. Kitab Ghar, Kanpur.
- Singh, S. (2015). Samudra Vigyan. Pravalika Publication, Allahabad.
- Tiwari, R. K. (2016). Bhautik Bhugol. Rajsthan Hindi Granth Academy, Jaipur.

DISCIPLINE SPECIFIC CORE COURSE – ECONOMIC GEOGRAPHY (DSC 11)

Course title & Code	Credits	Duration (Hrs per week)			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
ECONOMIC GEOGRAPHY	4	3	1	0	Class 12th	NIL

Learning Objectives:

- To evolve an understanding about the significance of space and time as attributes of human economic activities.
- To comprehend the role of geographical factors in determining the transformation of human economic activities.
- To develop an understanding of historical progression of trends and transformation of Primary, Secondary and Tertiary economic activities.

Learning Outcomes:

- To enable the learner to appreciate the role of geographical parameters in determining various economic activities and to understand the scope of economic geography, differentiating it from classification of economic activities.
- To enable the learner to assess and analyse the role of space and location in pursuit of economic activities.
- To enable the learner to develop the capability of analyzing transformation of economic activities with reference to space, time and diffusion of technology.

Course Outline

UNIT 1: Introduction: (10 hrs)

- Nature, scope and concepts and Approaches to EconomicGeography; Classification of Economic activities.

UNIT 2: Locational Factors of Economic Activities: (9 hrs)

- Factors affecting location of economic activities in agriculture industry and services; Weber's Theory of IndustrialLocation.

UNIT 3: Transitions and emerging trends in primary and secondary economic activities: (9 hrs)

- contemporary agriculture, Agro based Industry; SEZ and Technology Parks.; Pharmaceutical Industry

UNIT 4: Progressions in Tertiary Activities: **(9 hrs)**

- Case study approach to Knowledge basedindustries; IT enabled Services industry; Wellness industry

UNIT 5: Globalization of Economic activities: **(8 hrs)**

- globalization, liberalization, Ecommerce, gig economy (selected case studies)

Readings

- Alexander J. W., 1963: Economic Geography, Prentice-Hall Inc., Englewood Cliffs, New Jersey.
- Coe N. M., Kelly P. F. and Yeung H. W., 2007: Economic Geography: A Contemporary Introduction,Wiley-Blackwell.
- Roy, Prithwish, 2014, Economic Geography, New Central Book Agency.
- Combes P., Mayer T. and Thisse J. F., 2008: Economic Geography: The Integration of Regions and Nations, Princeton University Press.
- Wheeler J. O., 1998: Economic Geography, Wiley..
- Maurya, S. D., 2018, Economic Geography, Pravalika Publication, Allahabad.
- Bagchi-Sen S. and Smith H. L., 2006: Economic Geography: Past, Present and Future, Taylor and Francis.
- Singh, S. and Saroha, J., 2021, Human and Economic Geography, Pearson.
- MacKinnon, D, and Cumbers A., 2007, An Introduction to Economic Geography: Globalization, Uneven Development and Place, Harlow: Pearson Education.
- Mamoria, C. and Joshi, R., 2019, Aarthik Bhugol (Economic Geography), Sahitya Bhawan Publication, Agra. (Hindi Edition).

DISCIPLINE SPECIFIC CORE COURSE – FUNDAMENTALS OF GIS (PRACTICAL) (DSC 12)

	Credits	Duration (Hrs per week)				Prerequisite
Course title & Code		**Lecture**	**Tutorial**	**Practical/ Practice**	**Eligibility Criteria**	
FUNDAMENTALS OF GIS (PRACTICAL)	**4**	**2**	**0**	**2**	**Class 12th**	**NIL**

Learning Objectives:

The learning objectives of this course are as following:

- In this course the students will get the basic understanding of the concept of GIS, its definitions and components and its significance in geographical study.

- They will gain the working experience to handle digitally, both spatial and attribute geographical data, its collection, storage and management through GIS and the use of locational specific data in GIS using GPS.
- They learn the fundamental steps in data analysis and the GIS application to the geographical study of land uses, urban sprawl, and forests through the means of spatial mapping.

Learning Outcomes:

Through this practical, hands-on course the students will be able to know the GIS basics and when completed they would be able to:

- Develop a basic understanding of GIS skills and learn to work on a GIS Software using computer/ laptop/ and or any other digital medium.
- Understand GIS Data Structures and GIS Data Analysis for geographical enquiry.
- Learn to apply basic GIS operations/skills to analyse the spatial data for mapping, monitoring and to detect both spatial and temporal changes in land use/cover, forests, urban sprawl, and natural resources.
- Students will be aware of spatial thinking and its manifestation in resolving issues through this computer-based technology.

Course Outline

UNIT 1: Geographical Information System/Science (GIS): **(5 hrs)**

- Definition and overview,Components, Different types of GIS Software, Significance and emerging trends.

UNIT 2 : GIS Data Structures: (5 hrs)

- Types (spatial and non-spatial), Point, Line and Area;Raster and Vector Data Structure, Database Management System (DBMS).

UNIT 3: GIS Data Analysis – I: **(5 hrs)**

- Data Input; Methods, Geo-referencing, GPS for GIS Data creation, Digitization, Input of Attribute data, Data Editing; Errors in input data, BasicGeo-processing tools.

UNIT 4: GIS Data Analysis – II: (5 hrs)

- Query and Output; Conversion, Buffering, Overlays, MapLayout

UNIT 5: Application of GIS : (5 hrs)

- Land Use / Land Cover Change, Morphometric Analysis,Urban Studies

Practical Record: 60 Hrs.

- A **record file** consisting of **5 exercises** using any GIS Software.
- The exercises should focus on any one of the above-mentioned applications based on using vector / raster data layers for Query analysis /Proximities / Finding relationship / Seeing Patterns / monitoring change.

Readings:

- Bhatta, B. (2010). *Analysis of Urban Growth and Sprawl from Remote Sensing*, Berlin, Germany: Springer.
- Burrough, P.A., McDonnell, R.A. and Lloyd, D. McDonnell (2016). *Principles of Geographical Information Systems,* UK: Oxford University Press.
- DeMers M. N., 2000: *Fundamentals of Geographic Information Systems*, NJ, USA: John Wiley & Sons.
- Gomarasca, M. A. (2009). *Basics of Geomatics.* NY, USA: Springer Science.
- Heywoods, I., Cornelius, S and Carver, S. (2006). *An Introduction to Geographical*
- *Information system.* NJ, USA: Prentice Hall.
- Jones, C. B. (2014). *Geographical Information Systems and Computer Cartography*. London, UK: Taylor& Francis.
- Longley, P. A., Goodchild, M., Maguire, D. J., & Rhind, D. W. (2010). *Geographic Information Systems and Science.* NJ, USA: John Wiley & Sons.
- O'Sullivan, D., & Unwin, D. (2014). *Geographic Information Analysis*. NJ, USA: Wiley.
- Saha K and Froyen YK (2022) *Learning GIS Using Open Source Software: An Applied Guide for GeoSpatial Analysis*, Routledge
- Singh, R.B. and Murai, S. (1998). *Space Informatics for Sustainable Development*. NewDelhi, India: Oxford and IBH.

Suggestive:

- Chang K.-T., 2009: *Introduction to Geographic Information Systems,* McGraw-Hill.
- Chauniyal, D.D. (2010). *Sudur Samvedanevam Bhogolik Suchana Pranali.* Allahabad, India: Sharda Pustak Bhawan.
- Clarke K. C., 2001: *Getting Started with Geographic Information Systems*, NJ, USA: Pearson Prentice Hall.
- Elangovan.K (2020) *GIS Fundamentals, Applications, and Implementations*, New India Publishing Agency
- Kumar, Dilip, Singh, R.B. and Kaur, R. (2019). *Spatial Information Technology for*
- *Sustainable Development Goals.* New Delhi, India: Springer.
- Nag, P. (2008). *Introduction to GIS.* New Delhi, India: Concept.
- Sarkar, A. (2015) *Practical geography: A systematic approach*. New Delhi, India:Orient Black Swan Private Ltd.

DISCIPLINE SPECIFIC ELECTIVE COURSE – GEOGRAPHY OF HIMALAYAS (DSE 3)

Course title& Code	Credits	Duration (Hrs per week)			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
GEOGRAPHY OF HIMALAYAS	4	3	1	0	Class 12th	NIL

Learning Objectives:

- Understanding the importance of the Himalayan Mountains.
- Various aspects of the physical and human geography of the Himalayan mountain ranges.
- Understanding of climate change adaptation practices and initiatives by international and national agencies and communities.

Learning outcomes:

- To enable understanding of origin and, Political-Climatological-Social-Spiritual-Ecological significance of the Himalayan Mountain ranges.
- To understand the distinct physiography, climatology, hydrology, population dynamics, livelihood options, and developmental activities in the Himalayan Mountain ranges.
- To appreciate climate change and human activities-led impacts in the Himalayan region and related initiatives to cope up with these impacts.

Course Outline

Unit 1: Understanding Himalayan Mountains: **(5 hrs)**

- Origin, Climatological-Social-Spiritual-Ecological significance.

Unit 2: Geography of the Himalayas: **(11 hrs)**

- Geology and Physiography; soils andvegetation; Climates and River Systems of the Himalayas

Unit 3: Population dynamics: **(11 hrs)**

- Demographic indicators, population, livelihood optionsand, developmental activities in the Himalayan Region

Unit 4: Climate change and human-induced impacts: **(10 hrs)**

- Environmental degradation, Hydro-meteorological and geo-environmental disasters; glacial recession; Land usechange, deforestation and biodiversity loss

Unit 5: Policy Initiatives and Disaster Mitigation: (8 hrs)

- Climate Change Adaptation Practices, Disaster Risk Reduction, Role of International and National Institutions,Community-based eco-friendly practices

Readings

- Funnell, D. C., & Price, M. F. (2003). Mountain geography: a review. *The GeographicalJournal*, *169*(3), 183–190.
- Hund, A. J., & Wren, J. A. (2018). *The Himalayas: An Encyclopedia of Geography, History, and Culture*. ABC-CLIO/Greenwood Press.
- Ives, J. D. (1987). The theory of Himalayan environmental degradation: its validity and application challenged by recent research. *Mountain Research and Development*, *7*, 189.
- Ives, J., & Messerli, B. (2003). *The Himalayan Dilemma: Reconciling Development and Conservation*. The United Nations University (UNU) Routledge. https://doi.org/https://doi.org/10.4324/9780203169193
- Kohler, T., & Maselli, D. (2009). Mountains and Climate Change: From Understanding to Action. *Published by Geographica Bernensia with the Support of the Swiss Agency for Development and Cooperation (SDC), and an International Team of Contributors. Bern*.
- Pandit, M. K. (2017). *Life in the Himalaya: An Ecosystem at Risk*. Harvard University Press.
- Price, M. F., Byers, A. C., Friend, D. A., Kohler, T., & Price, L. W. (Eds.). (2013). *Mountain Geography*. University of California Press. https://doi.org/https://doi.org/10.4324/9780203169193
- Schickhoff, U., Singh, R. B., & Mal, S. (2022). *Mountain Landscapes in Transition: Effects of Land Use and Climate Change*. Springer Nature. https://doi.org/https://doi.org/10.1007/978-3-030-70238-0
- Singh, R. B., Schickhoff, U., & Mal, S. (2016). Climate change, glacier response, and vegetation dynamics in the Himalaya: Contributions toward future earth initiatives. In *Climate Change, Glacier Response, and Vegetation Dynamics in the Himalaya: Contributions Toward Future Earth Initiatives*. Springer Cham. https://doi.org/10.1007/978-3-319-28977-9
- Valdiya, K. S. (1998). Dynamic Himalaya. In *Gondwana Research* (pp. 1–178). Jawaharlal Nehru Centre for Advanced Scientific Research. https://doi.org/10.1016/s1342-937x(05)70174-x
- Valdiya, K. S. (2015). *The Making of India: Geodynamic Evolution*. Springer International Publishing.
- Wester, P., Mishra, A., Mukherji, A., & Shrestha, A. B. (2019). The Hindu Kush Himalaya Assessment. In *The Hindu Kush Himalaya Assessment*. Springer Cham. https://doi.org/10.1007/978-3-319-92288-1

DISCIPLINE SPECIFIC ELECTIVE COURSE – RURAL DEVELOPMENT (DSE 4)

Course title & Code	Credits	Duration (Hrs per week)			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
RURAL DEVELOPMENT	4	3	1	0	Class 12th	NIL

Learning Objectives:

- The course is designed to impart an integrated understanding of the crucial dimensions of rural development.
- It aims to introduce students to the need and practice of rural development projects and programmes in India.

Learning Outcomes:

At the end of the course, the students shall develop an understand of the following :

- concepts related to the need and approaches to rural development;
- Issues pertaining to rural society and economy;
- the existing rural development programs and institutions and knowledge of successful case studies from India and the sub-continent.

Course Outline

Unit 1. Understanding Rural Development: (5 hrs)

- Concept of Development; Development, Relevance and Approaches to Rural Development

Unit 2. Theories of Rural Development: (11 hrs)

- Modernization Theory; Dependency Theory;Theory of The Big Push; Leibenstein's Critical Minimum Effort theory

Unit 3. Rural Society and Economy: (11 hrs)

- Agriculture and allied activities; Seasonality and need for expanding non-farm activities; Issues of landholdings and land reforms; Concepts of social mobility and social change.

Unit 4. Rural Development Programs in India: (10 hrs)

- Poverty Alleviation Programmes;Programmes for Employment and Social Security; Other Development Programmes (PMGSY, MNREGA, PURA)

Unit 5. Rural Development Institutions and Case studies: (8 hrs)

- Panchayati Raj institutions,Cooperatives, Training & Finance Institutions, and Voluntary organisations. RuralDevelopment Experience (case study from India and the Indian sub-continent)

Readings:

- Venkata Reddy, K. Agriculture and Rural Development (Emerging Trends and Right Approach to Development), HmalayaPublshing House Pvt., Ltd., Mumbai, 2012.

- Jain L.C. 1985, Grass without roots; Rural Development under Government Auspices, Sage Publications, New Delhi.
- Seshadri, K. 1976, Political Linkages and Rural Development, National Publishing House, New Delhi.
- Maheswari S. (1985) Rural Development in India, - A Public Policy Approach, Sage Publication, New Delhi.
- Satyasundaram (1997), Rural Development, Himalaya Publishing House, New Delhi.
- Singh. Katar. 2009. Rural Development Principles, Policies ad Management. New Delhi: Sage Publications.
- Sharma S.K and S.L. Malhotra. Integrated Rural Development: Approach, Strategy and Perspectives, New Delhi: Heritage.

Online Resources:

- https://www.researchgate.net/publication/326394634_A_Handbook_of_Rural_India
- https://www.researchgate.net/publication/363239631_Rural_and_Agricultural_Development_Policy_and_Politics
- https://www.researchgate.net/publication/346462814_Democracy_Development_and_the_Countryside_Urban-Rural_Struggles_in_India
- https://www.researchgate.net/publication/363306272_The_South_Asian_Path_of_Development_A_Historical_and_Anthropological_Perspective
- https://www.researchgate.net/publication/327282616_Changing_Face_of_Rural_India
- https://www.researchgate.net/publication/368608447_Application_of_Science_Technology_for_Rural_Development
- https://www.researchgate.net/publication/229779918_Theory_in_Rural_Development_An_Introduction_and_Overview

DISCIPLINE SPECIFIC ELECTIVE COURSE – NATURAL RESOURCE MANAGEMENT (DSE 5)

Course title & Code	Credits	Duration (Hrs per week)			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
NATURAL RESOURCE MANAGEMENT	4	3	1	0	Class 12th	NIL

Learning Objectives:

The learning objectives of this course are as follows:

- To understand the basic concepts of natural resources, resource appraisal and resource management
- To explain the issues and challenges of management of different natural resources
- To discuss sustainable development of natural resources
- To analyse the resource management policies

Learning Outcomes:

The Learning Outcomes of this course are as follows:

- The students would be able to comprehend the concepts related to the field of natural resource management.
- The students would be able to assess the issues and challenges of management land, soil, water, forest and energy resources.
- The students would elaborate sustainable resource development, natural resource governance and policies.

Course Outline

Unit 1: Introduction: (9 hrs)

- Meaning and concepts of Natural Resources; Classification ofnatural resources, Approaches to Natural Resource Management, Resource Appraisal

Unit 2: Land and Soil Resources: (9 hrs)

- Utilization, Issues and challenges; Management andconservation**Unit 3: Water and Forest Resources: (9 hrs)**
- Utilization, Issues and challenges;Management and conservation

Unit 4: Energy Resources: (9 hrs)

- Growing global energy needs; Use of alternate energyresources; Management and conservation

Unit 5: Contemporary Strategies for Natural Resource Management: (9 hrs)

- SustainableResource Development; Natural Resources Governance Framework; Resource Management Policies.

Readings

- Gautam, A. (2018 Natural Resource: Exploitation, Conservation and Management, Sharda Pustak Bhawan, Allhabad.
- Potter, K. (2022) Natural Resources: Exploitation, Depletion and Conservation, Callisto Reference, New York
- Singh, J. and G. Pandey (2015) Natural Resource Management and Conservation, New Delhi: Kalyani Publishers.
- Cooper, P. (2018) Ecology and Natural Resource Management, Syrawood Publishing House, New York
- Cole, R.A. (1999) Natural Resources: Ecology, Economics and Policy, Prentice Hall College Division
- Thakur, B. (2009) Perspectives in Resource Management in Developing Countries, Vol 1: Resource Management-Theory and Practices, Concept Publishing House, NewDelhi.
- Thakur, B. (2009) Perspectives in Resource Management in Developing Countries, Vol 4: Land Appraisal and Development, Concept Publishing House, New Delhi.
- Zilberman, D., J.M. Perloff and C.S. Berck (2023) Sustainable Resource Development in the 21st Century, Natural Resource Management Policy: Vol. 57, Springer
- Pereira L.S. et al (2013) Coping With Water Scarity: Addressing the Challenges, Springer
- Misra, H. N. (2014) Managing Natural Resources: Focus on Land and Water, PHI Learning Pvt. Ltd., New Delhi.
- Pathak, P. and R.R. Srivastav (2021) Alternate Energy Resources: The way to Sustainable Modern Society, Springer.
- Grebner, D.L. et el (2021) Introduction to Forestry and natural Resources, Academic Press, U.K.
- Saxena, H. M. (2013) Economic Geography, Rawat Publication, New Delhi.

GENERAL ELECTIVE -SUSTAINABLE DEVELOPMENT: SOCIETY AND POLICY INTERFACE (GE 10)

NOTECourse title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
SUSTAINABLE DEVELOPMENT: SOCIETY AND POLICY INTERFACE	4	3	1	0	Class 12th	NIL

Learning Objectives:

- To understand emerging sustainable science disciplines and associated concepts,
- To explain principles of sustainable development, including components of sustainable development
- To discuss methods of measuring sustainable development and issues related to the same.

Learning Outcomes:

After transacting the course, students will be able to:

- Understand the basic concept of sustainable development.
- Assess sustainability and related methods to measure the same.
- To explain major issues related to sustainability including ways to achieve the same.

Course Outline

Unit 1: Sustainable Development: (7 hrs)

- Meaning and Concept of Sustainable Development, Components, Historical Background, Sustainability Sciences.

Unit 2: Sustainable Development Goals: (10 hrs)

- Illustrative SDGs**;** Goal-Based Development;Financing for Sustainable Development

Unit 3 : Sustainability Assessment and Appraisal: (10 hrs)

- Sustainability Indicators,Ecological Footprint Analysis, Sustainability Index, India SDG Index.

Unit 4: Issues in Sustainability: (10 hrs)

- Poverty and Disease, Universal Health Coverage;Policies and Global Cooperation for Climate Change, Biodiversity loss

Unit 5: Sustainable Policies and Success Stories: (8 hrs)

- Good Governance for Sustainability, Gandhian Philosophy of rural development, Sustainable Cities, Micro-level Success stories: Piplantri Village (Rajasthan) and Kundrakudi Village (Tamil Nadu)

Practical component (if any) – NIL

Readings

- Atkinson, G., Dietz, S. Neumayer, E. (2007) Handbook of Sustainable Development, Edward Elgar, Massachusetts, USA.
- Blewitt, J. (2008) *Understanding Sustainable Development*, Earthscan, London.
- Bosselmann, K. (2008) The Principle of Sustainability: Transforming Law and Governance, Ashgate, England.
- Cole, V. and Sinclair, A.J. (2002) Measuring the ecological footprint of a Himalayan tourist centre. *Mountain Research and Development*, 22(2: 132-141.
- Khuman Y.S.C., Mohapatra, S., Yadav, S.K. and Salooja, M.K. (2014) Sustainability science in India, *Current Science*, 106(1): 24-26.
- Kopnina, H. and Shoreman-Ouimet, E. (eds) Sustainability: Key Issues, London and New York: Routledge.
- Piplantri: A Rajasthan village which celebrates the birth of every girl child with 111 trees. Ministry of Women and Girl Child. Weblink: https://wcd.nic.in/sites/default/files/Piplantri.pdf
- Planning Commission (1986) Towards improved local level planning for rural development: Lessons from some Experience. Multi-Level Planning Section. Government of India, New Delhi.
- Sachs, J.D. (2015) *The Age of Sustainable Development*, Columbia University Press, New York.
- SDG India: Index & Dashboard 2020-21, Partnerships in the Decade of Action, Niti Aayog Report, Government of India, New Delhi.
- Soubbotina, T.P. (2004) Beyond Economic Growth: An Introduction to Sustainable Development, The World Bank, Washington, D.C.
- Wackernagel, M. and Rees, W. (1996) Our Ecological Footprint: Reducing Human Impact on the Earth. New Society Publishers, Philadelphia.

GENERAL ELECTIVE-GEOGRAPHY OF CONFLICT AND PEACE STUDIES (GE 11)

Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
GEOGRAPHY OF CONFLICT AND PEACE STUDIES	**4**	**3**	**1**	**0**	**Class 12th**	**NIL**

Learning Objectives:

- Develop an understanding about the Geography of Conflict and Peace Studies as an academic discipline. The course is organised around three principal themes: Introduction to Geography of Conflict and Peace Studies, Conflict Resolution, Peace building and Peace-making in spatial context.

Learning Outcome:

At the end of the course the students shall understand -

- Core Concepts of Geography of Conflict and Peace Studies
- Conflict and peace related different perspectives
- International and Intra state Conflicts with case examples
- Historical experiences of Conflict Resolution at global and regional level
- Peace making and Peace Building Process
- They will also gain knowledge to explain and analyse world politics around different geographical contexts.

Course Content:

Unit 1: Introduction: (8 hrs)

- Conflict and Peace: Definitions, Cause based classification of conflicts, Emergence of Conflicts and Peace Studies in Geography, Global Indices of Conflict and peace -Global peace Index, Global Conflict Risk Index

Unit 2: Philosophical perspectives on Conflict and peace: (10 hrs)

- Marxist, Socialist, Gandhian: key concepts, Global and Indian Experiences

Unit 3: International and Inter state Conflicts: (9 hrs)

- Conflicts in the International System: Treaty of Versailles and World War II, Intra-state river water and boundary disputes, Contemporary wars-Bio Warfare, Resource wars

Unit 4: Peace making and Peace Building: (9 hrs)

- Concept, Process, approaches; India 's Soft Power and peace-making, India's participation in UN peace keeping

Unit 5: Conflict Resolution - Global and National case studies: (9 hrs)

- Geneva Convention, Hague Conventions of 1899 and 1907, North Atlantic Treaty Organization (NATO) , Formation of League of Nations, Establishment of United Nations ; National Panchsheel Principles , Indian Peace Accords

Readings

- Audrey Kobayashi (ed), 2015, Geographies of Peace and Armed Conflict, Routledge
- Tim Marshall ,2016, Prisoners of Geography, 2016, Elliott & Thompson Limited
- Tim Marshall, 2021.THE POWER OF GEOGRAPHY: Ten Maps That Reveal the Future of Our World, Elliott & Thompson Limited
- Robert D. Kaplan ,2013, The Revenge of Geography: What the Map Tells Us About Coming Conflicts and the Battle Against Fate, RHUS; Reprint edition
- John Schwarzmantel, Hendrik Jan Kraetzschmar (ed) , 2013,Democracy and Violence: Global Debates and Local Challenges , Routledge;
- Colin Flint, 2004, The Geography of War and Peace: From Death Camps to Diplomats, OUP USA
- Björkdahl, A., Buckley-Zistel, S. (eds) Spatializing Peace and Conflict. Rethinking Peace and Conflict Studies. Palgrave Macmillan, London. https://doi.org/10.1057/9781137550484_1

- Nurit Kliot, Stanley Waterman, The Political Geography of Conflict and Peace,1999, Belhaven Press
- Galtung, John, 1996, Peace by Peaceful Means, Sage
- Nicholas John Spykman ,1944, The Geography Of The Peace, Harcourt, Brace And Company, Inc.
- Brown, Michael E, Owen R. Cote, Sean M. Lynn-Jones & Steven E. Miller, eds., 1998, Theories of War and Peace. An International Security Reader. Cambridge, MA: MIT Press
- Bercovitch, Jacob, et.al. 2009. The Sage Handbook of Conflict Resolution. New Delhi: Sage Publication.
- Azar, Edward E., 1990, The Management of Protracted Social Conflict: Theory and Cases Aldershot: Dartmouth
- Berrovitch, Jacob and Jeffery Z. Rubin, (eds), Mediation in International Relations: Multiple Approaches to Conflict Management, New York: St. Martin's Press,
- Burton, John, 1990, Conflict: Resolution and Prevention, London: Macmillan.
- Elshtain, Jean Bethke, 1995, Women and War, Chicago: University of Chicago Press.
- Kriesberg, Louis, et.al., eds., 1989, Intractable Conflicts and their Transformation, Syracuse University Press,
- Kriesberg, Louis and Thorson, Stuart J., eds., 1991, Timing and the De-escalation of International Conflicts,Syracuse: Syracuse University Press
- Lederach, John Paul, 2004, Building Peace: Sustainable Reconciliation in Divided Societies, Princeton: Princeton Uni Press,
- Miall, Hugh, Ramsbotham and Woodhouse, Tom, 1999, Contemporary Conflict Resolution: The Prevention, Management and Transformation of Conflicts, Cambridge: Polity Press.
- Michael, C.R., 1981, The Structure of International Conflict, London: Macmillan,
- Parekh, Bhikhu,1989, Gandhi's Political Philosophy: A Critical Examination, London:
- Parekh, Bhikhu, 2001, Gandhi, (London: Oxford Paperback,)
- Vayreynen, Raimo, Dieter Senghaas and Christian Schmidt (eds.), 1987, The Quest for Peace: Cultures and States, California: Beverly Hills
- Wallensteen, Peter (ed.),1998, Preventing Violent Conflicts: Past Record and Future Challenges, Uppsala University: Sweden: Department of Peace and Conflict Resolution
- Zartman, I. William and Rasmussen, J. Lewis. (eds.) 1997, Peace-making in International Conflict Methods & Techniques, Washington, DC: US Institute of Peace Press,
- Chomsky, Noam,1999, World Orders: Old & New, Oxford University Press
- Bose, Anima. 1987. Dimensions of Peace and Non-violence: The Gandhian Perspectives, Juergensmeyer, Mark. 2003. Gandhi's Way: A Handbook of Conflict Resolution. New Delhi: Oxford

GENERAL ELECTIVE-REGIONAL DEVELOPMENT (GE 12)

Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
REGIONAL DEVELOPMENT	4	3	1	0	Class 12th	NIL

Learning Objective

The Learning Objectives of this paper are as follows:

- To understand the importance of balanced regional development.
- To familiarize the students about multi-sectoral regional disparities at regional and global levels
- To introduce students to theoretical and practical aspects of regional planning and regional development.

Learning Outcome:

The Learning Outcomes of this paper are following:

- The students will understand the causes of regional disparities and significance of balanced regional development.
- The students will be able to assess the level of regional inequalities in different sectors
- of economy and in human development.
- The students will gain insights into the spatial- regional aspects of development and the importance of planned efforts to develop backward areas.

Course Outline

- **Unit 1: Introduction: (8 hrs)** Concept of Regional Development, Determinants of regional disparities and significance of balanced Regional Development.
- **Unit 2: Global Regional Disparities**: **(10 hrs)** Spatial patterns of Human Development-HDI of Developed, Developing and Least Developed Countries, Case study of Sahel and Western Europe.
- **Unit 3: Regional Disparities in India: (9 hrs)** Regional disparities in agricultural and industrial development, regional disparities in Human Development (Poverty, Education and Health).
- **Unit 4: Theories of Regional Development**: **(9 hrs)** Growth Pole and Growth Centre; Cumulative Causation and Core-periphery.
- **Unit 5: Regional Development Planning**: **(9 hrs)** Multipurpose Dam Project (Sardar Sarovar Project); Urban Planning (National Capital Region) and Target-Group Approach (Integrated Tribal Development Programme).

Readings

- Chandna, R.C. (2000) Regional Planning: A Comprehensive Text, Kalyani Publishers, New Delhi.
- Chaudhuri, J.R. (2001) An Introduction to Development and Regional Planning with special reference to India, Orient Longman, Hyderabad.
- Kuklinski, A.R. (1972) Regional Development and Planning: International Perspective, Sijthoff-Leydor.
- Mahesh Chand and V.K. Puri (1983) Regional Planning in India, Allied Publishers, New Delhi.
- Misra, R.P. (ed.) (1992) Regional Planning: Concepts, Techniques, Policies and Case Studies, 2nd Edition, Concept Publishing Company, New Delhi.
- Misra, R.P. and Natraj, V.K. (1978) Regional Planning and National Development, Vikas Publication, New Delhi.
- Patnaik, C.S. (1981) Economics of Regional Development and Planning in Third World Countries, Associate Publishing House, New Delhi.
- Saroha, J and Singh, S (2022) Geography of India (3rd Edition), Pearson India Education Services, Noida.
- Singh, S and Saroha, J (2021) Human and Economic Geography, Pearson India Education Services, Noida.
- Sundaram, K.V. (1986) Urban and Regional Planning in India, Vikas Publishing House, New Delhi.
- Eleventh Five Plan of India, Planning Commission of India, Government of India.

SEMESTER-V

Category I

(B.A. Honours in Geography in three years)

DISCIPLINE SPECIFIC CORE COURSE – ENVIRONMENT AND ECOLOGY (DSC 13)

Course title & Code	Credits	Duration (Hrs per week)			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
ENVIRONMENT AND ECOLOGY	4	3	1	0	Class 12th	NIL

Learning Objectives:

1. Various dimensions of ecology and ecosystems, their spatial distribution.
2. To learn about the global environmental challenges and management
3. To know about regional environmental challenges.
4. Understanding of environmental governance.

Learning Outcomes:

1. Detailed exposure to the concept of ecology, ecosystem, processes, theories and concepts.
2. In-depth knowledge of anthropogenic interventions and impacts, conservation strategies and planning.
3. Understanding the environmental concerns at global and regional level.
4. Evaluation and achievement of different environmental programs, policies and legislations.

Course Outline:

Unit-1 Introduction: (7 hrs)

- Concept of Environment, Ecology and Ecosystem; Types of Ecology; Concepts of Ecosystem Services; Ecological and Material Footprint; Global Planetary Boundaries.

Unit-2 Ecology and Ecosystem: (9 hrs)

- Species Interactions; Ecological Limiting Factors; Ecosystem: Structure and Functions; Human Adaptation

Unit-3 Global Environmental Challenges and Management: (11 hrs)

- Climate Change,Biodiversity loss, Land degradation and Human health issues

Unit-4 Regional Ecological Issues and Management: (11 hrs)

- Coastal and Marine Ecology: Loss of mangroves and corals, Garbage Patches; Urban Ecology: Waste disposal and Pollution

Unit-5 Programmes and Policies: (7 hrs)

- Environmental Impact Assessment; Global andNational Environment Policy of India

Readings:

- Brewster, E. N. 2010. Climate Change Adaptation: Steps for a Vulnerable Planet, New York, Nova Science.
- Cain, M.L., Bowman, W.D. and Hacker S.D. (2011). Ecology, 2nd Edition, Sinauer Associates Inc.
- Chandna R. C., 2002: *Environmental Geography*, Kalyani, Ludhiana.
- Chapman, J.L.& M.J. Reiss. (1998). Ecology: Principles and Applications. Cambridge Univ. press.
- Cunninghum W. P. and Cunninghum M. A., 2004: *Principals of Environmental Science: Inquiry and Applications*, Tata Macgraw Hill, New Delhi.
- Das, R. C., 1998. The Environmental Divide: The Dilemma of Developing Countries, A.P.H. Pub., New Delhi.
- Freedman, Bill. 1995. Environmental Ecology: The Ecological Effects of Pollution, Disturbance, and Other Stresses, Academic Press. London.
- Global Environment Monitoring UNEP, https://wesr.unep.org/article/global-environment-monitoring
- Global Environmental Outlook Reports UNEP https://www.unep.org/geo/ Intergovernmental Panel on Climate Change IPCC Reports(2021-23) https://www.ipcc.ch/report/ar6/wg2/

DISCIPLINE SPECIFIC CORE COURSE – AGRICULTURAL GEOGRAPHY ANDFOOD SECURITY (DSC 14)

Course title& Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
AGRICULTURAL GEOGRAPHY AND FOOD SECURITY	4	3	1	0	Class 12th	NIL

Learning Objectives:

- To understand the nature and scope of agricultural geography.
- To provide a detailed analysis of landuse- landcover classification by NRSA.
- To enable the learners to appreciate the geographical factors affecting agriculture
- To enable the learner to identify and understand modern agricultural practices.
- To enable the learner to identify and understand the concept and dimensions of food security.

Learning Outcomes:

- A detailed insight into the subfield of agricultural geography.
- An in-depth knowledge of geographical factors affecting agriculture.
- An understanding of models and regionalization of agriculture.
- Knowledge of concepts and dimensions of food security.
- An understanding of challenges, programme and policies related to sustainable agriculture.

Course Outline

UNIT 1: **Concept of Agricultural Geography**: **(7 hrs)**

- Nature and Scope, concept andclassification of landuse- landcover (twenty two fold NRSA).

Unit 2: Geographical Factors affecting Agriculture: (10 hrs)

- Physical, Economic, Technological,Institutional and socio-cultural.

Unit 3: Models, Theories and Regionalization: (10 hrs)

- Whittlesey's classification of Agricultural regions; Agro ecological regions of India

Unit 4: Agricultural Development: (11 hrs)

- Concept and relevance of Sustainable Agriculture, Modern Agricultural Practices (Green Revolution, Organic farming, Precision Agriculture: role of Remote Sensing and GIS modelling, role of Artificial Intelligence)

Unit 5: Food Security: (7 hrs)

- Concept and dimensions, Food security in India: Challenges, Programmes and Policy.

Readings:

- Gregor, H.P.: Geography of Agriculture. Prentice Hall, New York, 1970.
- Grigg, D. (1984): 'An Introduction to Agricultural Geography', Hutchinson Publication, London
- Hussain, M., 2000, Agricultural Geography, Rawat Publications
- Modgal, Suresh, 2017, Food Security of India, National Book Trust, 81-237-7131-2
- Ramaswamy, S. and Surulivel, L., 2017, Food Security in India, MJP Publishers, ISBN: 9788180943386, 8180943380
- Singh, J. and Dhillon, S.S. (1988), "Agricultural Geography", 2nd edition, Tata McGraw-Hill, NewDelhi
- Swaminathan, M.S., 2016, Combating Hunger and Achieving Food Security, Cambridge University Press, 9781107123113
- Symons, L. (1972): 'Agricultural Geography', Bell and Sons, London.
- Tarrant, J.R.(1974): Agricultural Geography, Problems in Modern Geography Series, John Wiley and Sons
- माजिद हुसैन, 2000, कृषि भूगोल, Rawat Publications, 9788170335658

DISCIPLINE SPECIFIC CORE COURSE – RESEARCH METHODOLOGY AND FIELDWORK (PRACTICAL) (DSC 15)

Course title & Code	Credits	Duration (Hrs per week)			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
RESEARCH METHODOLOGY AND FIELDWORK (PRACTICAL)	**4**	**2**	**0**	**2**	**Class 12th**	**NIL**

Learning Objectives:

1. To form an understanding of various dimensions of fieldwork and its role in geographical studies.
2. To understand in detail various field techniques .
3. Understanding of nuances of research instruments, field tools and report writing.

Learning Outcomes:

1. Detailed exposure of field techniques to study new geographical landscapes.
2. In-depth knowledge of different research instruments and field techniques.
3. Understanding field ethics.

Course Outline

UNIT 1: Research methodology and fieldwork: **(5 hrs)**

- concept, relevance, ethics and steps.

UNIT 2: Framing a research proposal: (5 hrs)

- identifying the research problem and study area, literature review, research questions, hypothesis, objectives, delineating the database and methods, framing the study relevance.

UNIT 3: Methods of Data collection and fieldwork: **(5 hrs)**

- Observation, Questionnaires,Interviews, Transects and Quadrants, Triangulation, pilot surveys, Recent trends

UNIT 4: Data analysis and interpretation: (5 hrs)

- Qualitative and Quantitative techniques ofanalysis; interpreting research findings

UNIT 5: Field Report: (5 hrs)

- Organisation and preparation, referencing, endnote, footnotes,supplementary materials. **Practical Record: 60 Hours**

1. Each student will prepare a report based on primary and secondary data collected during the field.
2. Handwritten (not less than 30 pages)/ typed (8000-12000 words), including preface, certificate of originality, acknowledgement, table of contents, list of figures and tables, chapters, conclusions, bibliography and appendixes.
3. One copy of the report on A 4 size paper should be submitted in soft binding.

Readings

- Creswell, J., (1994). Research Design: Qualitative and Quantitative Approaches. UK: Sage Publications.
- Dikshit, R. D. (2003). The Art and Science of Geography: Integrated Readings. New Delhi, India: Prentice-Hall of India.
- Robinson, A. (1998). Thinking Straight and Writing That Way. In Pryczak, F. and

Bruce, R. P. eds.. Writing Empirical Research Reports: A Basic Guide for Students of the Social and Behavioural Sciences. Los Angeles, USA: Routlege.

- Special Issue on “Doing Fieldwork” The Geographical Review 91:1-2 (2001)
- Evans, M. (1988). Participant Observation: The Researcher as Research Tool. In Eylesand, J and D. Smith (eds). Qualitative Methods in Human Geography. Cambridge, UK: Polity.
- Mukherjee, N. (2002). Participatory Learning and Action: with 100 Field Methods. Delhi, India: Concept Publs. Co.
- Vero, E. Sara, (2021) Fieldwork Rady: An Introductory Guide to Field Research for Agriculture, Environment and Soil Scientists, Wiley, Hoboken, USA.
- Pole, S and Hillyard, S., (2015), Doing Fieldwork. Sage Publication, LA, New Delhi.
- Wolcott, H. (1995). The Art of Fieldwork. CA, USA: Alta Mira Press.
- Krishnanad and Raman VAV., (2018) A Geographer's Guide to Field Work and Research Methodology" Book Age Publications, New Delhi.

Hindi

- Jain, BM (2015) रिसर्च मेथोडोलॉजी! Research Publications in Social Science, Delhi-Jaipur.
- Ganeshan, SN. (2009) अनुसंधान प्रविधध ससद्धान्त अौ प्रक्रिया ! Lokbharti Prakashan, Allahabad.
- Sharma, RA (2021) **शिक्षा अनुसन्धान के मूल तत्व एवं िोध प्रक्रिया**. R Lall Book Depot, Meerut.

DISCIPLINE SPECIFIC ELECTIVE COURSE - POLITICAL GEOGRAPHY (DSE 6)

Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
POLITICAL GEOGRAPHY	4	3	1	0	Class 12th	NIL

Learning Objectives

The learning objectives of the course are as follows:

- To explain the evolution of the sub field of political geography, and the contribution of its leading scholars
- To explain the key concepts and theories of the subfield of political geography
- To explain the significance of political processes and their relation to space

Learning outcomes

After completing this course, the student would be able to:

- Distinguish between Political Geography and Geopolitics and understand the importance of both
- Understand how geography affects politics and how politics affects geography
- Understand the role of geographical factors in influencing voter turnout, voting behaviour and the outcome of elections
- Understand conflicts over resources and issues related to displacement at different scales.

Course Outline

Unit 1: Introduction: (9 hrs)

- Evolution of Political Geography; Concept of State, Nation and Nation-state; Attributes of State; Frontiers and Boundaries.

Unit 2: Geopolitics: (10 hrs)

- Geopolitics: Concept; Theories of Ratzel; Geostrategic views of Mackinder and Spykman;

Unit 3: Electoral Geography: (8 hrs)

- Geographic influences on voting pattern; geography of representation and Gerrymandering.

Unit 4: Geography of Conflicts and Displacement (case studies): (9 hrs)

- Water sharingdisputes; Rights of indigenous people to forests; Boundary conflicts and forced migration; Development induced displacement

Unit 5: Contemporary Political Issues: **(9 hrs)**

- Environmental Politics; India as an emerging power (Global and Regional)

References:

Essential:

- Agnew, J. (2002*) Making Political Geography*. London,UK: Arnold
- Painter J. and Jeffrey, A. (2009) *Political Geography*. USA: Sage Publications
- Taylor, P. and Flint, C. (2000*) Political Geography*. UK: Pearson Education
- Verma, M.K. (2004*) Development, Displacement and Resettlement*. Delhi: Rawat Publications
- Adhikari,S. (2013*) Political Geography of India*. Allahabad:Sharda Pustak Bhawan
- Glassner, M. (1993) *Political Geography*. USA:Wiley
- Zamindar, V. F. (2013*) India-Pakistan Partition 1947 and forced migratio*n. Wiley Online Library https://doi.org/10.1002/9781444351071.wbeghm285
- Sibley, D. (2002*) Geographies of Exclusion.* Routledge
- DeSombre, E.R. (2020*) What is Environmental Politics?* Wiley

Suggestive:

- Cox, K. (2002) *Political Geography: Territory, State and Society*. USA: Wiley-Blackwell
- Gallaher, C. et al. (2009*) Key Concepts in Political Geography*. USA: Sage Publications
- Smith, S. (2020) Political Geography*: A Critical Introduction*. USA: Wiley-Blackwell
- Rosenbaum, W.A. (2022*) Environmental Politics and Policy 12th Edition.* CQ Press
- Dwivedi, R.L. and Misra, H.N. (2019*) Fundamentals of Political Geography*. Surjeet Publications.

DISCIPLINE SPECIFIC ELECTIVE COURSE –SOCIAL GEOGRAPHY (DSE 7)

Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
SOCIAL GEOGRAPHY	4	3	1	0	Class 12th	NIL

Learning Objectives

- To familiarise the student with the theoretical foundations of Social Geography.
- To help students appreciate how social diversity is manifested in socio-spatial patterns.
- To help student understand that social wellbeing is a spatially variable condition and appreciate its correlates.

Learning Outcomes:

On completion of the course, students will:

- understand the basic concepts of social geography, social diversity, social wellbeing and social exclusion/ inclusion.
- possess the knowledge of socio-cultural regions of India.

- understand patterns of social well-being, and welfare policies and programs in India.
- understand the relation between the process of social exclusion/inclusion and space.

Course Outline

Unit 1: Social Geography: (8 hrs)
- Origin, Nature and Scope; Concept of Social Space.

Unit 2 : Social Differences and Diversity: (10 hrs)
- Concepts; Socio- Cultural Regions, languageregions of India

Unit 3: Social Wellbeing: (9 hrs)
- Concept of Social Well Being; Needs and Wants; Componentsof Social Well Being: Healthcare, Education, Housing; Gender Equality in India.

Unit 4: Social Geographies of Exclusion and Inclusion: (9 hrs)
- Ethnicity, race, religion basedsocial and spatial exclusion, Disability and Space.

Unit 5: Social Welfare Policies and Programs: (9 hrs)
- Policies for People with Disabilities,senior citizens and Transgenders.

Readings:

- Ahmed, A., (1999): Social Geography, Rawat Publications.
- Buttimer, A., (1969): "Social Space in Interdisciplinary Perspective", Geographical Review, Vol. 59, No. 3
- Casino, V. J. D., Jr., (2009): Social Geography: A Critical Introduction, Wiley Blackwell.
- Cater, J. and Jones, T., (2000): Social Geography: An Introduction to Contemporary Issues, Hodder Arnold.
- Dutt, A.K., Thakur, B., Wadhwa, V., and Costa, F.J. (2012) Facets of Social Geography: International and Indian Perspective, Cambridge University Press India Ltd.
- Lefebvre, H., (1991): The Production of Space, Wiley-Blackwell.
- Maurya, S.D., (2022): सामाजजक भमू ोल, Sharda Pustak Bhawan
- Panday,P and Singh, (2020): सामाजजक भ ोल , SBPD Publications
- Panelli, R., (2004): Social Geographies: From Difference to Action, Sage.
- Paine, R. Burke, M., Fuller, D., Gough, J., Macfarlane, R. and Mowl, G., (2001): Introducing Social Geographies, Oxford University Press.
- Ramotra, K.C., (2008): Development Processes and the scheduled Castes, Rawat Publication.
- Slum Almanac 2015-16- A UN Habitat Report
- Smith, D. M., (1977): Human geography: A Welfare Approach, Edward Arnold, London.
- Smith, D. M., (1994): Geography and Social Justice, Blackwell, Oxford.
- Smith, S. J., Pain, R., Marston, S. A., Jones, J. P., (2009): The SAGE Handbook of Social Geographies, Sage Publications.
- Soja,E.W., (1996): *Thirdspace: Journeys to Los Angeles and Other Real-and-Imagined Places*, Wiley-Blackwell.

- Soja, E.W., (1999): Thirdspace: Expanding the Scope of the Geographical Imagination, D. Massey, J. Allen, P.Sarre, Human Geography Today, Blackwell Publishers, Cambridge, UK,
- Soldatic, K., Morgan, H. and Roulstone, A., (2019): *Disability, Spaces and Places of Policy Exclusion*, Routledge.
- Sopher, David., (1980): *An Exploration of India*, Cornell University Press, Ithasa.
- Valentine, G., (2001): *Social Geographies: Space and Society*, Prentice Hall.

GENERAL ELECTIVE- WORLD REGIONAL GEOGRAPHY (GE 13)

Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
WORLD REGIONAL GEOGRAPHY	**4**	**3**	**1**	**0**	**Class 12th**	**NIL**

Learning Objectives:

- To provide a comprehensive understanding of the world's regions
- To develop an in-depth knowledge about the different regions and their distinctive features
- To understand the interconnectedness of global issues and global regions.

Learning Outcomes:

- Detailed exposure to the concept and nature of regions in geography.
- In-depth knowledge of different regions based on multidimensional criteria.
- Understanding the interrelationship of cultural and economic factors in creating regionscapes.
- Comprehending the intricate interwoven reality of regions through the case study approach of South Asia.

Course Outline

Unit 1- Introduction: (8 hrs)

- Concept of a Region, Classification of Regions- Formal (Natural,Cultural), Functional (Economic, Administrative) and Perceptual Regions (6 Hours)

Unit 2- Natural Regions: (10 hrs)

- Equatorial, Tropical, Temperate, Taiga, Tundra regions (Location,Climate, Natural Vegetation, Human and Economic life in these regions) (12 Hours)

Unit 3- Economic Regions: (9 hrs)

- Major industrial (manufacturing) regions of Asia, North America,South America, Europe and Africa (One Case Study from each continent) (10 Hours)

Unit 4- Cultural Regions: (9 hrs)

- Major Cultural Realms/Regions of the World as given by Russelland Kniffen, 1951 and Broek and Webb, 1967. (7 Hours)

Unit 5- Systematic study of South Asia: (9 hrs)

- Natural Divisions, Economy, Demography andPopulation Dynamics (10 Hours)

Readings

- Broek, J. O. M., Webb, J. W., & Hsu, M. L. (1968). A Geography of Mankind. New York: McGraw-Hill.
- De Blij, H. J., Muller, P. O., Nijman, J., & Schouten, F. G. (2012). Geography: Realms, Regions, and Concepts. Wiley.
- Goh, C. L. (1974). Certificate Physical and Human Geography. Oxford University Press.
- Hopkins, J., & Spillman, B. (2017). The Geography of the World Economy. Routledge.
- Jordan-Bychkov, T. G., Domosh, M., & Rowntree, L. (2013). The Human Mosaic: A Thematic Introduction to Cultural Geography. W. H. Freeman.
- Knox, P. L., & Marston, S. A. (2019). Human geography: Places and regions in global context. Pearson.
- Russell, R. J., & Kniffen, F. B. (1951). Culture Worlds. New York.
- Schwartzberg, J. E. (1978): A Historical Atlas of South Asia. The University of Chicago Press, Chicago and London.
- White, G. W., Bradshaw, M. J., Dymond, J., & White, G. (2011). Essentials of World Regional Geography. New York: McGraw-Hill.

Hindi

- Gautam, Alka. (2018): Vishwa ka Pradeshik Bhugol, Sharda Pustak Bhavan, Allahabad.

GENERAL ELECTIVE- GEOGRAPHY OF TRADE AND COMMERCE (GE 14)

Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
Geography of Trade and Commerce	4	3	1	0	Class 12th	NIL

Learning Objectives:

The learning objectives for the Course are as follows:

- To develop an understanding of the concepts relating to trade and commerce.
- To introduce major theories of trade
- To learn about spatial patterns and spatiality of trade regimes
- To appreciate the trajectory of India's international trade

Learning Outcomes:

The students will learn the following:

- to appreciate factors and barriers to international trade and commerce
- Students would be able to develop an understanding of the key theories of international trade
- Students would be able to identify the institutional mechanisms governing international trade and be exposed to actual case studies
- Students would be able to analyze the patterns of International Trade with reference to India

Course Outline

Unit 1: Introduction to Trade and Commerce: (8 hrs)

- Definition and Concepts- Internationaltrade, Commerce, Export/Import and Balance of trade; Factors affecting internationaltrade; Barriers to international trade

Unit 2: Theories of Trade: (10 hrs)

- Classical Theories- David Ricardo's Comparative

Advantage, Contemporary Theories-Paul Krugman's New Trade Theory

Unit 3: Trade Blocs and Institutional Bodies: (9 hrs)

- WTO, IMF and World Bank; RegionalTrade Blocks: European Union, ASEAN, CACM, OPEC;

Unit 4: Impact of International Trade: (9 hrs)

- Case studies of Bangladesh garment industryand Brazil service trade

Unit 5: Patterns of International Trade with reference to India: (9 hrs)

- Volume of Trade ;Direction of Trade Flows ; Commodity Composition

Readings

- Batra, A. (2022). India's Trade Policy in the 21st Century. Routledge.
- Dee, M. (2015). The European Union in a multipolar world: world trade, global governance and the case of the WTO. Springer.
- Ernst, D., Ganiatsos, T., & Mytelka, L. (Eds.). (2003). Technological capabilities and export success in Asia. Routledge.
- ESCAP, U. (1995). Development of the export-oriented electronics goods sector in Asia and the Pacific.
- Gandolfo, G., & Trionfetti, F. (2014). International trade theory and policy. Berlin, Heidelberg, New York: Springer.
- Garavini, G. (2019). The rise and fall of OPEC in the twentieth century. Oxford University Press.
- Hoekman, B. M., Mattoo, A., & English, P. (Eds.). (2002). Development, trade, and the WTO: a handbook (Vol. 1). World Bank Publications.
- Kathuria, S., & Malouche, M. M. (2015). Toward New Sources of Competitiveness in Bangladesh: Key Insights of the Diagnostic Trade Integration Study. World Bank Publications.
- Kobayashi, K., Rashid, K. A., Furuichi, M., & Anderson, W. P. (Eds.). (2017). Economic integration and regional development: the ASEAN economic community. Routledge.
- Krugman, P. R. (2018). International trade: Theory and policy. Pearson.
- Leong, G.H. and Morgan, G. C. (1982) Human and Economic Geography. Oxford University Press.
- Lopez-Acevedo, G., & Robertson, R. (Eds.). (2016). Stitches to riches?: Apparel employment, trade, and economic development in South Asia. World Bank Publications.
- Michael, P. Todaro, and C. Smith Stephen (2000). Economic Development. Pearson.
- Peet, R. (2009). Unholy trinity: the IMF, World Bank and WTO. Bloomsbury Publishing.
- Pereira, L. V., Sennes, R. U., & Mulder, N. (2009). Brazil's emergence at the regional export leader in services: a case specialization in business services. ECLAC.
- Rahman, S. (2013). Broken promises of globalization: The case of the Bangladesh garment industry. Lexington Books.
- Raychauduri, A., De, P., & Gupta, S. (Eds.). (2020). World Trade and India: Multilateralism, Progress and Policy Response. Sage Publications Pvt. Limited.
- Seymour, I. (1980). OPEC: instrument of change. Springer.
- Sinha, V.C. (2015). अंतर्राष्ट्रीय व्यापार् और् षित्त. Mayur Paperbacks: Ghaziabad.
- Suranovic, S. (2010). International trade: Theory and policy.
- Thoman, R. S., & Conkling, E. C. (1967). Geography of International Trade. Prentice-Hall.
- Veeramani, C., & Nagaraj, R. (Eds.). (2018). International trade and industrial development in India: Emerging trends, patterns and issues. Orient BlackSwan.
- Yadav, P. (2021). Geographical perspectives on international trade. Springer International Publishing.

GENERAL ELECTIVE- CLIMATE CHANGE AND ADAPTATION (GE 15)

Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
CLIMATE CHANGE AND ADAPTATION	4	3	1	0	Class 12th	NIL

Learning Objectives:
The course deals with a critical global concern. The key objectives are:

- To explain various dimensions of climate change.
- To develop a detailed analysis of vulnerability and its impacts.
- To discuss the importance of mitigation and adaptation strategies.
- To evaluate the role of global initiatives and policies for climate change.

Learning Outcomes:
On transacting the course students will have an in-depth knowledge of the following:

- Anthropogenic Climate Change and related issues
- Geographic dimensions of vulnerability.
- Impact of climate change, adaptation and mitigation
- Need for effective policy making

Course Outline

Unit 1: Understanding Climate Change: **(9 hrs)**
- Natural and Anthropogenic causes andevidences

Unit 2: Climate Change and Vulnerability: (9 hrs)
- Physical, Economic and SocialVulnerability

Unit 3: Impact of Climate Change: (10 hrs)
- Ecosystem-Terrestrial and Aquatic; Agricultureand Food Security

Unit 4: Global Initiatives for Adaptation and Mitigation: (9 hrs)
- National andinternational case studies

Unit 5: Climate Change Policy: **(8 hrs)**

- Framework from Kyoto to Paris: Role of IPCC;UNFCCC and COPs

Readings

- IPCC. *Climate Change 2022: Impacts, Adaptation, and Vulnerability. SIXTH Assessment Report of the Intergovernmental Panel on Climate Change.* NY, USA:Cambridge University Press, Cambridge, United Kingdom and New York.
- Trevor. M. Letcher (edited) 2009: *Climate Change: Observed impacts on Planet Earth*
- Narain.S 2021:*Climate Change Science and Politics. Centre for Science andEnvironment*
- Sarah L. Burch and Sara E. Harris: *Understanding Climate Change: Science, Policy andPractice*
- Sen, Roy, S., and Singh, R.B., (2002). *Climate Variability, Extreme Events and Agricultural Productivity in Mountain Regions*. Delhi, India: Oxford & IBH Pub.
- Leary Neil and others, 2008: *Climate Change and Adaptation*
- OECD. (2008). *Climate Change Mitigation: What do we do?* (Organization andEconomic Co-operation and Development).
- UNEP. (2007). *Global Environment Outlook: GEO4: Environment for Development*.Nairobi, Kenya: United Nations Environment Programme.
- Reddy M.A, Vijay Lakshmi T "*Climate Change:Vulnerability and Adaptation"*

SEMESTER-VI

BA (Hons.) Geography

DISCIPLINE SPECIFIC CORE COURSE – REGIONAL GEOGRAPHY OF INDIA (DSC 16)

Course title & Code	Credits	Duration (Hrs per week)			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
REGIONAL GEOGRAPHY OF INDIA	4	3	1	0	Class 12th	NIL

Learning Objectives:

- To introduce the regional dimensions of physiography, climate, soils and vegetation of India
- To show variations in resource base and population dynamics
- To understand the regionalization of India on the basis of different geographical parameters

Learning Outcomes:

- After completing this course students will be able to understand the regional diversity of India in terms of physiography, climate, resources and demography
- Students will be able to understand the basis of regionalization of India based on physiographic, economic and socio cultural factors

Course Outline

UNIT 1: Physical Setting: (9 hrs)

- Major Physiographic Divisions, Climate, Drainage Basins(Peninsular and Extra Peninsular).

UNIT 2: Natural Resources: (9 hrs)

- Soil, Natural Vegetation, Mineral (Iron Ore), andRenewable Energy Resources.

UNIT 3: Population: (9 hrs)

- Growth, Distribution and Density, Population Composition(Sex, Age and Literacy).

UNIT 4: Economy: (9 hrs)

- Agriculture (Rice and Wheat); Industries (Automobile industry and Information Technology), Development of diversified transport network.

UNIT 5: Regionalisation of India: (9 hrs)

- Physiographic (R.L. Singh), Social-cultural (Sopher)and Economic (P.Sen Gupta)

Teaching Plan

Unit 1: 9 hours

Unit 2: 9 hours

Unit 3: 9 hours

Unit 4: 9 hours

Unit 5: 9 hours

Total : 45 hours

Essential Readings

- Singh, R.L. (ed.) (1971) India: A Regional Geography, National Geographical Society ofIndia, Varanasi.
- Sopher, David E. (1980) An Exploration of India: Geographical Perspectives on Societyand Culture, Cornell University Press, Ithaca, New York.
- Gupta, P.Sen and Galina Sdasyuk (1967) Economic Regionalisation of India: Problemsand Approaches, Census of India (1961); Monography Series – 1(8).

Suggested Readings

- Saroha, J and Singh, S. (2022) Geography of India, Pearson India Education Services,Noida.
- Sharma, T.C. (2013) Economic Geography of India, Rawat Publication, Jaipur.
- Majid, H. (2020) Geography of India, McGraw Hill Education (India) Private Ltd.
- Tiwari, R. C. (2019) Geography of India. Pravalika Publication, Allahabad.
- Khullar, D.R. (2020) India – A Comprehensive Geography, Kalyani Publishers, Ludhiana.
- Gopal Krishan (2017) The Vitality of India: A Regional Perspective, Rawat Publication,Jaipur.
- Singh, Gopal (2010) Geography of India, Atma Ram and Sons.

Hindi

- Tiwari, R. C. (2019) *Bharat ka Bhugol*, Pravalika Publication, Allahabad.
- Singh, S. and Saroha, J. (2019) *Bharat ka Bhugol*, CL Media (P) Ltd, New Delhi.
- Mamoria, C. B. and Mishra, J. P. (2021) *Bharat ka Bhugol,* Sahitya Bhawan Publication,Agra.

DISCIPLINE SPECIFIC CORE COURSE – EVOLUTION OF GEOGRAPHICAL THOUGHT (DSC 17)

Course title & Code	Credits	Duration (Hrs per week)			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
EVOLUTION OF GEOGRAPHICAL THOUGHT	4	3	1	0	Class 12th	NIL

Learning Objectives:

- The course aims to present an overview of the evolution of the discipline.
- The course will introduce students to the multi paradigmic nature of geography as adiscipline, key debates and emergence of modern geography

Learning Outcomes:

- On transacting this core course the students will be able to grasp the uniquedisciplinary focus of Geography
- Students will be able to identify the key debates that have shaped the subject
- Students will be well acquainted with the changing paradigms in Geography and theemergence of modern geography

Course Outline

Unit-1: Pre-Modern: Foundations of Geography: (9 hrs)

- Greek and Roman School, Arab School, Contributions of Chinese travellers, Age of Discovery and its Impact.

Unit 2: Paradigms in Geography: (9 hrs)

- Definition of 'Paradigm', major paradigms in geography – Determinism, Possibilism, Areal differentiation, Spatial Organization

Unit-3: Key Debates and Developments in Geography: (9 hrs)

- Geography as idiographic & Nomothetic, Systematic and Particular, General and Regional, Quantitative Revolution, Schaefer-Hartshorne Debate, impact of Darwin's theory

Unit-4: Theories and Models in Geography: **9 hrs)**

- Systems Approach and its relevance in Geography, concepts of place, space, environment, interconnection, scale

Unit -5: Emergence of Modern Geography: (9 hrs)

- Emergence of Radical, Behavioral and Feminist Geography, Evolution of Geographical Thinking and Disciplinary Trends in Germany, France and USA, India

Teaching Plan

Unit 1: 9 hours

Unit 2: 9 hours

Unit 3: 9 hours

Unit 4: 9 hours

Unit 5: 9 hours

Total: 45 hours

Essential Readings

- Holt-Jenson, A. (2011), *Geography: History and Concepts*: *A Students Guide*, Sage.
- Couper, P. (2015). *A Student's Introduction to Geographical Thought: Theories, Philosophies, Methodologies*. SAGE Publications.
- Nayak, Anoop, and Alex Jeffrey (2013). *Geographical thought: An introduction to ideas in human geography*. Routledge, 2013.

Suggested Readings

- Cresswell, Tim. (2013). *Geographic thought : a critical introduction*. Chichester, West Sussex, UK :Wiley-Blackwell
- Arentsen M.,Stam R. and Thuijis R.(2000), *Post-Modern Approaches to Space*, e-book
- Kapur, A. (2002) Indian Geography: Voice of Concern, New Delhi: Concept PublishingCompany.

- Dickinson, R.E. (1969), *The Makers of Modern Geography*, Routledge & Kegan Paul,London.
- Dikshit, R.D. (1997), *Geographical Thought: A Contextual History of Ideas*, Prentice Hallof India.
- James, P.E. & G.J. Martin (1981) *All Possible Worlds: A History of Geographical Ideas*,Third Edition, John Wiley and Sons, New York.
- Johnston, R.J. (1997, 2004), *Geography and Geographers: Anglo-American HumanGeography Since 1945*, 5th and 6th Ed., Edward Arnold, London.
- Peet, R. (1998), *Modern Geographical Thought*, Blackwell.
- Soja, E.W. (1997), Postmodern Geographies: The Reassertion of Space in Critical SocialTheory, Rawat Publishers, Jaipur and New Delhi

DISCIPLINE SPECIFIC CORE COURSE – DISASTER MANAGEMENT-BASED PROJECT REPORT (DSC 18)

Course title & Code	Credits	Duration (Hrs per week)			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
DISASTER MANAGEMENT-BASED PROJECT REPORT (PRACTICAL)	**4**	**2**	**0**	**2**	**Class 12th**	**NIL**

Learning Objectives:

- Understanding the basic concepts related to disaster management
- Detailed analysis about the different types of disasters in India
- Evaluating multiple dimensions of disaster management through field based study

Learning Outcomes:

- The course aims to provide an in depth understanding about types disastersoccurring at different scales
- It will provide thorough understanding about human responses to different kinds ofdisasters
- It will give an in-depth knowledge about tracing the

disasterscapes throughfieldwork

Course Outline

Unit 1: Introduction: **(6 hrs)**

- Concept of Hazard, Disaster, Risk, Vulnerability, Classification ofdisasters, Disaster Management Cycle, Capacity and Resilience.

Unit 2: Disasters and Institutional Framework in India: (8 hrs)

- Disaster Profiles of India (Earthquake, Flood, Drought, Cyclone, Landslide, Avalanche, Fire); Disaster Management Act; Role of Government and NGOs in Disaster Management.

Unit 3: Community-Based Disaster Management: **(8 hrs)**

- Concept and Framework; Indigenous Knowledge and Practices; Role of Civil Society.

Unit 4: Data Assessment and Analysis: (8 hrs)

- IMD and Bhuvan Portal-Demonstration; Multi- Criteria Decision Making: Concept and Method.

Unit 5: Project Report: **(60 hrs)**

Project work to be based on any one of three of the following topics of student's choice. (1) The first should be a field-based case study of any particular disasterand the (2) second should be local/college-based term paper. (3) third should be preparation of earthquake/landslide/flood/forest fire or any other hazard susceptibility map of any area

Teaching Plan

Unit 1: 6 hours

Unit 2: 8 hours

Unit 3: 8 hours

Unit 4: 8 hours

Unit 5: 60 hours

Total: 90 hours

Essential Readings

- Srivastava, P. K., Singh, S. K., Mohanty, U. C., & Murty, T. (2020). *Techniques for Disaster Risk Management and Mitigation*. *Techniques for Disaster Risk Management and Mitigation* (pp. 1–328). wiley.
- Government of India. (2011). Disaster Management in India. Delhi, India: Ministry ofHome Affairs.
- Kapur, A. (2010). Vulnerable India: A Geographical Study of Disasters. Delhi, India:Sage Publication.

Suggested Readings

- Taherdoost, H.; Madanchian, M. (2023) Multi-Criteria Decision Making (MCDM) Methods and Concepts. Encyclopedia 3,: 77–87. https://doi.org/10.3390/encyclopedia3010006
- Mishra, P.K.; Tripathi, S.; Abdelrahman, K.; Tiwari, A.; Fnais, M.S. (2023) Integrated Flood Hazard Vulnerability Modeling of Neluwa (Sri Lanka) Using Analytical HierarchyProcess and Geospatial Techniques. Water 15, 1212. https://doi.org/10.3390/w15061212
- Pathak, G. K. (2021) Apda Prabandhan (Hindi), Rajesh Publications, New Delhi.
- Pandey, R.K. (2020). Disaster Management in India. Sage Text, India
- Government of India. (2008). Vulnerability Atlas of India. New Delhi, India: BuildingMaterials & Technology Promotion Council, Ministry of Urban Development, Government of India.
- Ram kumar, M. (2009). Geological Hazards: Causes, Consequences and Methods of Containment. New Delhi, India: New India Publishing Agency.
- Singh, S. (2014) Apda Prabandhan (Hindi), Pwalika Publications, AIllahabad.
- Modh, S. (2010). Managing Natural Disaster: Hydrological, Marine and GeologicalDisasters. Delhi, India: Macmillan.
- Bhuvan Portal: Disaster Management Support Services - https://bhuvan-app1.nrsc.gov.in/bhuvandisaster/#forestfire
- IMD:https://mausam.imd.gov.in/imd_latest/contents/stationwis e-nowcast-warning.php#
- Singh, J. (2007) Disaster Management, I.K.International Publishing House, New Delhi.

DISCIPLINE SPECIFIC ELECTIVE COURSE –GEOGRAPHIES OF CRIME (DSE 8)

Course title& Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
GEOGRAPHIES OF CRIME	4	3	1	0	Class 12th	NIL

Learning Objectives:

To develop an understanding of Crime from a spatial perspective. The course is organized around three principles: The concept of crime, crime as a spatial construct; and the planning,Governance and spatial strategies to develop a safe place.

Learning Outcomes:

At the end of the course, the students shall understand-

- Definition of crime, its theories and types
- the geographic base of crime
- How differences in society construct space and impact crime;
- What role Policy, planning and Governance strategies play in preventing crime.

Course Outline

Unit 1: Introduction to crime: (9 hrs)

- Definitions; Typology of crimes: Traditional Crimes,Victimless crimes, Family-centered crimes, Environmental Crimes.

Unit 2: Geographies of crime: (9 hrs)

- Crime areas; Environmental correlates of crime; Spatial patterns of crime; Marginalisation of 'Problem Area'

Unit 3: Spatial Construct of Crime: (9 hrs)

- Class, Gender, Age, Disability, Race and Ethnicity based social differences and geographies of crime, Crime against third gender and gendered crimes

Unit 4: Urban Crime: (9 hrs)

- Governance and Policing, Urban settings and Crime Prevention,Attributes and Assessment of safe places.

Unit 5: Policy Intervention: **(9 hrs)**

- Crime Prevention: Environmental design; Local Challenges and situational crime prevention; Policies for awareness generation and deterrence.

Teaching Plan

Unit 1: 9 hours

Unit 2: 9 hours

Unit 3: 9 hours

Unit 4: 9 hours

Unit 5: 9 hours

Total: 45 hours

Essential Readings:

- Wyant, B. R. (2015). Geography and Crime. In *The Encyclopedia of Crime and Punishment* (pp. 1–5). John Wiley & Sons, Inc. https://doi.org/10.1002/9781118519639.wbecpx007
- Lersch and Hart. (2011). Space, Time and Crime 3rd Edition. Carolina Academic Press.Durham, North Carolina.
- Herbert, David. The Geography of Urban Crime. London: Longman, 1982.

Suggested Readings

- Marsh, I., Melville, G., Morgan, K., Norris, G., & Walkington, Z. (2006). *Theories of crime*. *Theories of Crime* (pp. 1–205). Routledge Taylor & Francis Group. https://doi.org/10.4324/9780203030516

- Cater, John, and Trevor Jones "Crime and Disorder." In Social Geography. Edited by J.Cater and T. Jones, 79–113. London: Edward Arnold, 1989.
- Evans, David, and David Herbert eds. The Geography of Crime. London: Routledge,1989.
- Pain, Rachel "Crime, Space and Inequality." In Introducing Social Geographies. Edited by R. Pain, M. Barke, D. Fuller, J. Gough, R. MacFarlane, and M. Graham, 231–253. London: Arnold, 2001.
- P.J., Brantingham, "Criminality of Place: Crime Generators and Crime Attractors", European Journal of Criminal Policy and Research, 3, 5-26, 1995.
- Johnston, R.J., Gregory, D., Pratt, G. and Watts, M. (2000). The Dictionary

of HumanGeography. Oxford, Blackwell Publishers Inc.
- Knox, P. (1995). Urban Social Geography. Essex, England. Logman Group Limited.

Online Resources

- https://www.unodc.org/unodc/es/urban-safety/urbansafetygovernanceapproach.html
- https://www.unodc.org/unodc/en/urban-safety/crime-prevention/unodcity/unodcity-pilots.html
- https://www.unodc.org/unodc/en/urban-safety/UNODC-toolsandresources.html
- https://www.perlego.com/book/1505927/crime-prevention-approaches-practices-and-evaluations-pdf
- https://www.unodc.org/pdf/criminal_justice/Handbook_on_Crime_Prevention_Guidelines_-_Making_them_work.pdf
- https://www.researchgate.net/publication/343721767_Crime_Geography

DISCIPLINE SPECIFIC ELECTIVE COURSE – GENDER AND DEVELOPMENT (DSE 9)

	Credits	Duration (per week)				Prerequisite
Course title & Code		Lecture	Tutorial	Practical/ Practice	Eligibility Criteria	
GENDER AND DEVELOPMENT	4	3	1	0	Class 12th	NIL

Learning Objectives

- This course aims to teach the basic idea of development through a gender lens.
- The course also aims to apply feminist approaches to understanding gender inequality
- It aims to bring awareness that development is not a linear and uniformly distributedphenomenon but has gendered patterns.
- The course also aims to demonstrate that gender-inclusive policies can bring sustainable development and social change through examples from the Global Northand Global South.

Learning Outcomes:

The course would enable the student to:

- Develop a basic understanding of the concept of gender, Gender identities, feminism,and related concepts
- Understand the spatial dimensions of development through a gender lens
- Have an idea about the Global North-Global South and Rural-Urban divide of gendereddevelopment

- To know some qualitative and quantitative methods to measure gender development

Course Outline

Unit 1: Introduction: **(9 hrs)**

- Sex and Gender, Gender Identities; Liberal Feminism, Radical Feminism, Socialist Feminism Post Colonial Feminism

Unit 2: Approaches and Measures to Study Gender and Development: (9 hrs)

- Women in Development (WID), Women and Development(WAD), Gender and Development (GAD); Mainstream Gender Equality (MGE); Gender Development Index (GDI), Gender Empowerment Measure (GEM), Gender Parity Index

Unit 3: Gendered Patterns of Well Being and Development: (9 hrs)

- Global patterns of life expectancies, maternal mortality, child-woman ratio, sex ratio, female literacy, Crime against women, electoral participation and women in Leadership Roles

Unit 4: Gendered Work and Livelihoods: (9 hrs)

- Productive paid work and reproductive work; Invisible work and double burdens, women's work participation in Global North and Global South.

Unit 5: Gender and Contemporary Global Concerns: (9 hrs)

- Gendered impacts of hazards and disasters, climate change, tourism, gendered violence and livelihood loss; Sustainable Development Goal (SDG 5); Policy framework for resilient communities.

Teaching Plan

Unit 1: 9 hours

Unit 2: 9 hours

Unit 3: 9 hours

Unit 4: 9 hours

Unit 5: 9 hours

Total : 45 hours

Essential Readings:

- Coles, Anne, Leslie Gray, and Janet Momsen, eds. ***The Routledge Handbook of Gender and Development*.** Routledge, 2015.

- Momsen, Janet. ***Gender and Development*. Routledge, 2019.**
- Mosse, Julia Cleves. *Half the world half a chance: An introduction to gender and development*. Oxfam GB, 1993.**.**

Suggested Readings

- Moser, Caroline. ***Gender planning and development: Theory, practice and training***. Routledge, 2012
- Datta, Anindita, ed. *Gender, space and agency in India: exploring regional genderscapes*. Taylor & Francis, 2020.
- Parihar, S.M. and Bannerjee, T. '***Women Empowerment Atlas of India: Science & Technology Perspective",*** SEED-DST, Government of India.,2022
- Raju, S, Peter Atkins, Naresh Kumar and Janet Townsend, *Atlas of women and men in India,* 1999
- Datta, Anindita, Peter Hopkins, Lynda Johnston, Elizabeth Olson, and Joseli Maria Silva, eds. *Routledge handbook of gender and feminist geographies*. Routledge, 2020.
- Raju, S, *Gendered Geographies: Space and Place in South Asia,* Oxford UniversityPress, 2011
- Spary Carole**, *Gender, Development, and the State in India*. Routledge**,2019
- Terry, Geraldine**. *Climate Change and gender justice*. Oxfam G.B.,** 2009.
- U.N. Women, Generation Equality Accountability Report 022 World Economic Forum, Global Gender Gap Report, 2022

GENERAL ELECTIVE- GEO HERITAGE AND GEO TOURISM (GE 16)

Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
GEO HERITAGE AND GEO TOURISM	**4**	**3**	**1**	**0**	**Class 12th**	**NIL**

Learning Objectives:

- To understand the concepts associated with geoheritage and the emergence of thesubfield of Geoheritage and Geotourism.

- To create awareness about issues related to Geodiversity, geoconservation togetherwith threats and barriers to geoconservation.
- To identify and understand selection criteria for Geoheritage sites and Geoheritageprotection laws.
- To assess the potential and role of geoheritage and geotourism for sustainabledevelopment through case studies.

Learning Outcomes:

Transacting the course will enable students to:

- Evolve a basic understanding of Geoheritage and Geotourism and appreciate theimportance of Geodiversity and Geoconservation.
- Develop a sound knowledge of the potential and role of Geoheritage in sustainabledevelopment with application of GIS
- Apply the principles of Geoconservation to analyse problems associated withunsustainable tourism activities.

Course Outline

Unit 1: Introduction to Geo heritage and Geo tourism: (9 hrs)

- Definition, Concept and evolution; Relationship between Geo heritage and Geo tourism; Significance of Geo heritage and Geo tourism.

Unit 2: Geodiversity and Geo conservation: (9 hrs)

- Geodiversity Values – Intrinsic, cultural, aesthetic, economic, functional, and scientific; Threats to Geodiversity; Geo conservation principles to protect Geo heritage.

Unit 3: Potential of Geo heritage and Geo tourism: (9 hrs)

- Case Study of Geoparks, Mountain landscape, Geothermal sites and Volcanic landscape.

Unit 4: Geoheritage, Geotourism and Sustainable Development: (9 hrs)

- Role of Geoheritage and Geotourism for sustainable social, economic and cultural development of a region.Application of GIS in Geotourism**.**

Unit 5: Inventory of World Geo heritage Sites: (9 hrs)

- Identification and selection criteria with special reference to UNESCO. Geoheritage and Protection Laws: Role of Government**.**

Teaching Plan

Unit 1: 9 hours

Unit 2: 9 hours

Unit 3: 9 hours

Unit 4: 9 hours

Unit 5: 9 hours

Total : 45 hours

Essential Readings

- Reynard, Emmanuel Jose Brilha., Geoheritage Assessment, Protection, andManagement, December 5, 2017 ISBN: 9780128095317Wolfgang Eder F, Peter T. Bobrowsky, Jesus Martinez-Frias Geoheritage. 2023. Geoparks and Geotourism Conservation and Management Series., Springer, 2023
- Brilha José Inventory and Quantitative Assessment of Geosites and Geodiversity Sites:a Review *The European Association for Conservation of the Geological Heritage 2015.*

Suggested Readings

- Wolfgang Eder F, Peter T. Bobrowsky, Jesus Martinez-Frias Geoheritage. 2023. Geoparks and Geotourism Conservation and Management Series., Springer, 2023
- Gordon, J.E. Geoconservation principles and protected area management. *InternationalJournal of Geoheritage* and *Parks.* 7 (2019) 199–210.
- Gray, M. Geodiversity, Geoheritage and Geoconservation for societies *InternationalJournal of Geoheritage and Parks.* 7 (2019) 226–237.
- Newsome, David and Dowling, Ross, 2018.. Geotourism: The tourism of geology and landscape. Goodfellow publishers, United Kingdom. ISBN:978 1-906884-09-3 DOI: 10.23912/978-1-906884-09-3-21
- Marija Belij, Snežana Đurđić, Sanja Stojković. The Evaluation of Geoheritage for Geotourism Development. 2018. doi:10.5937/zrgfub1802121B
- Newsome, David and Dowling, Ross, 2018. Geoheritage and Geotourism in *Geoheritage, Assessment, Protection, and Management* 2018, Pages 305-321

GENERAL ELECTIVE- GEOGRAPHY OF MEDIA (GE 17)

Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
GEOGRAPHY OF MEDIA	4	3	1	0	Class 12th	NIL

Learning Objectives:

- Geography of media seeks to understand how media depends on and is shaped by geographical patterns and processes.
- This course looks at the basic nature and spatial characteristics of media, its typesand processes.
- The course also deals with various roles mass media plays across geographical boundaries

Learning Outcomes:

Students would be able to:

- To develop an understanding of different forms of media, concepts and process of Media.
- To critically understand media and its functions.
- To understand historical growth, spatial pattern, development and trends ofdifferent forms of media.
- To develop insights about links between media and space and media spaces

Course Outline

Unit 1: Introduction: **(9 hrs)**

- Geography of Media, historical development and approachesto study.

Unit 2: Forms of Media: **(9 hrs)**

- Print, audio visual, digital and social media; vernacular, regional and national circulations, importance and role in geographical knowledge.

Unit 3: Functions of Media is shaping Geographical Spaces: (9 hrs)

- Surveillance, Linkage,Representation and consumption of rural and urban landscapes

Unit 4: Role of Media: (9 hrs)

- Role of media in shaping culture, politics and environmentalvalues, role in creation of global markets.

Unit 5: Media and Development: (9 hrs)

- Media as public sphere and media as public service, coverage of global issues concerning environment, disasters and conflict.

Teaching Plan

Unit 1: 9 hours

Unit 2: 9 hours

Unit 3: 9 hours

Unit 4: 9 hours

Unit 5: 9 hours

Total : 45 hours

Essential Readings

- Rajagopal, A. and Rao, A. 2016. Media and Utopia: History Imagination and Technology,Routledge: London and New York.
- Adams, P. C. 2009. Geographies of Media and Communication: A CriticalIntroduction, London: Wiley-Blackwell.
- Burgess, J. and John R. Gold, eds. 1985. Geography, the Media, and Popular Culture, New York: St. Martin's.

Suggested Readings

- Claude, G. Robin L.Benjamin L, Hugues P.2016. International agenda-setting,the mediaand geography: A multi-dimensional analysis of news flows L'Espace géographique (English Edition), Vol. 45, No. 1 (January-February-March 2016), pp. 1-18.
- Laurent,B,Claude, G, and Marta S. 2016. Geographic Spaces and Media Representations, L'Espace géographique (English Edition), Vol. 45, No. 1 (January-February-March 2016), pp. 1-4
- Travis, C. And von Lunen. A. (eds), 2016. The Digital Arts and Humanities, Neo geography, Social Media, Big Data Integrations and applications, Springer: Switzerland.
- Fuchs, C. (2014). Social media and the public sphere. TripleC: Communication,

Capitalism & Critique. Open Access Journal for a Global Sustainable Information Society, 12(1), 57-101.

- Adams, PC, Craine, J, Dittmer, J (eds) 2014. The Ashgate Research Companion toMedia Geography, Aldershot: Ashgate Press.
- Boym, S. 2002. The Future of Nostalgia, New York: Basic Books. Casey.
- Chung, W.H.K. and Keenan, T. (eds), 2006. New Media, Old Media: A History andTheory Reader, Routledge: London and New York.
- Donald F. R and Ulla G. F.2008.Trends in Media Use. The Future of Children, Vol. 18, No.1, Children and Electronic Media (Spring, 2008), pp. 11-37.
- Fuchs, C. (2014). Social media and the public sphere. TripleC: Communication, Capitalism& Critique. Open Access Journal for a Global Sustainable Information Society, 12(1), 57- 101.
- Gokulsing, K.M., and Dissanayake, W. 2009. Popular Culture in a Globalised India, Routledge:London and New York.
- Goodchild, M. (2009). NeoGeography and the nature of geographic expertise.Journal of location based services, 3(2), 82-96.
- Guillory, J. (2010). Genesis of the media concept. Critical inquiry, 36(2), 321-362.
- Harrison, S., & Dourish, P. (1996, November). Re-place-ing space: the roles of placeand space in collaborative systems. In Proceedings of the 1996 ACM conference on Computer supported cooperative work (pp. 67-76).
- Jenkins, H. 2006. Convergence Culture: Where Old and New Media Collide, NewYork: NewYork University Press.
- Aitken, Stuart C., and Leo E. Zonn. 1994. Place, Power, Situation, and Spectacle: A Geography of Film, Lanham, MD: Rowman & Littlefield.

GENERAL ELECTIVE- EDUCATION FOR SUSTAINABLE DEVELOPMENT (GE 18)

Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
EDUCATION FOR SUSTAINABLE DEVELOPMENT	**4**	**3**	**1**	**0**	**Class 12th**	**NIL**

Learning Objectives:

This paper seeks to:

- Clarify concepts of sustainability, sustainability values and principles, sustainablelifestyles and responsible consumption as well as the synergies between them.
- Deepen and expand knowledge about new paradigms of education associated witheducation for sustainability, sustainable lifestyles and transformative education.

- Strengthen the capacities and skills of the students henceforth called learners to integrate the values of sustainability in their areas of action, and promote a new awareness of our relationship with the environment and sustainable lifestyles.
- Motivate and inspire students to contribute, through their areas of action in building more coherent, harmonious, and sustainable societies.

Learning Outcomes:

Transacting the course will enable students to :

- Develop a greater understanding of Education for Sustainable Development (ESD) andits application in education including a basic understanding of Sustainable Development.
- Be familiar with new paradigms of education within the framework of Education for Sustainable Development, and related themes.
- Deepen knowledge to incorporate values-based education for sustainable development in educational programmes and processes.

Course Outline

Unit 1: Education for Sustainable Development: **(9 hrs)**

- Concept and Meaning, History,Global Perspectives

Unit 2: Education for Sustainable Development and Sustainable DevelopmentGoals: **(9 hrs)**

- Quality Education, Gender Equality, Sustainable Lifestyle

Unit 3: Transformative Learning: (9 hrs)

- Values, Ethics and Experiences, Peace Education

Unit 4: Communities and Sustainable Practices: **(9 hrs)**

- Role of Institutions, GreenTechnology and Entrepreneurship, Nature Based Solutions (NBSs)

Unit 5: Education for Sustainable Development in India: **(9 hrs)**

- Educational Policy andCurriculum, Institutes imparting ESD.

Teaching Plan

Unit 1: 9 hours

Unit 2: 9 hours

Unit 3: 9 hours

Unit 4: 9 hours

Unit 5: 9 hours

Total : 45 hours

Essential Readings

- Ossewaarde, M.J. (2018) *Introduction to Sustainable Development***,** Sage Text, India.
- Baker, S. (2015) Sustainable Development (pp. 1-449). London: Routledge. https://doi.org/10.4324/9780203121177
- Buckler, C. and Creech, H. (2014) Shaping the future, we want: UN Decade of Education for Sustainable Development (2005–2014) final report. Paris, France: UNESCO. Available at: http://unesdoc.unesco.org/images/0023/002301/230171e.pdf

Suggested Readings

- Priyadarshani, N. (2020) *Suatinable Development & Education Discovery* Publishing House Pvt Ltd, New Delhi
- Arbuthnott, K.D. (2009) Education for sustainable development beyond attitude change. *International Journal of Sustainability in Higher Education*, 10(2): 152-163. https://doi.org/10.1108/14676370910945954
- Firth, R. and Smith, M. (2017) *Education for Sustainable Development What was achieved in the DESD*? (Ed.) Routledge.
- Mohanty, A. (2018) Education for sustainable development: A conceptual model of sustainable education for India", *International Journal of Development and Sustainability*. 7(9): 2242-2255.
- Redecker C, Leis M, Leendertse M, Punie Y, Gijsbers G, Kirschner P, Stoyanov S, Hoogveld B. (2011) The Future of Learning: Preparing for Change. EUR 24960 EN. Luxembourg: Publications Office of the European Union. Available at https://op.europa.eu/en/publication-detail/-/publication/248604cb-9598-48a7-adad-8ff00e061a05/language-en
- Nevin, E (2008) 'Education and sustainable development', Policy and Practice: A Development Education Review. 6: 49-62.
- UNDESD (2005-14) Education for sustainable development toolkit. Education for Sustainable Development in Action, Learning & Training Tools. available at: https://unesdoc.unesco.org/ark:/48223/pf0000152453

Semester IV

DEPARTMENT OF SOCIOLOGY

Category I

BA (Honors) Sociology

Sociological Thinkers-1

DISCIPLINE SPECIFIC CORE (DSC) 10: Sociological Thinkers-1

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (If any)
		Lecture	Tutorial	Practical/ Practice		
DSC-10 Sociological Thinkers-I	4	3	1	0	12th Class Pass	BA (H) DSC 04: Sociological Perspectives or equivalent course

Learning Objectives:

1. The course introduces students to the theoretical contributions of Emile Durkheim, Max Weber and Talcott Parsons.
2. It provides an understanding of the conceptual foundations of the positivist, interpretive and American Structural-Functional Schools of Sociology.

Learning outcomes:

Students will be able to:

1. *Outline* the key concepts and theoretical architecture of the sociological thought of Durkheim, Weber and Parsons.
2. *Apply* the concepts and theories to conceptualize research questions to study and analyses social realities.

SYLLABUS OF DSC -10: Sociological Thinkers-I

Unit I. Emile Durkheim (18 Hours)

This unit introduces the students to Durkheim's conception of Sociology as a scientific discipline and enables them to comprehend the relationships between individual and society through the writings of Durkheim.

a. Social Fact

b. Individual and Society

Unit II. Max Weber (18 Hours)

This unit introduces the students to basic concepts of Max Weber's interpretive sociology, his methodological tools and his substantive contribution to the study of social action and the relationship between cultural ideas and social change.

a. Social Action and Ideal Types
b. Ideas and Social Change

Unit III. Talcott Parsons (9 Hours)

The unit introduces the structural-functional theory of Talcott Parsons with a focus on social action, action frame of reference and pattern variables.

a. Action Systems
b. Pattern Variables

Practical Component: NIL

Essential/Recommended Readings:

Unit I. Emile Durkheim

a. Social Fact

Jones, Robert. A. (1986). 'Studying Social Facts: The Rules of Sociological Method' in *Emile Durkheim: An Introduction to Four Major Works*. London: Sage Publications. Ch 3. Pp. 60-81.

b. Individual and Society

Durkheim, Emile. (2005). 'How to Determine Social Causes and Social Types' in *Suicide: A Study in Sociology*. London: Taylor & Francis. Introduction and Book II, Chapter 1, Pp. xxxix-li, 97-104.

Durkheim, Émile. (1984). 'Mechanical Solidarity or Solidarity by Similarities and Solidarity Arising from the Division of Labour or Organic Solidarity' in The *Division of Labour in Society*. United Kingdom: Macmillan. Book 1 -Chapters 2 & 3. Pp. 31- 64, 68-86.

Unit II. Max Weber

a. Social Action and Ideal Types

Weber, Max. (1947). *The Theory of Social and Economic Organization*. New York: The Free Press. Pp. 87-123.

b. Ideas and Social Change

Weber, Max. (2012). *Protestant Ethic and the Spirit of Capitalism.* New York: Routledge. Chapters. 1, 2, 3 & 5. Pp. 3-50, 102-125.

Unit III: Talcott Parsons

a. Action Systems
b. Pattern Variables

Parsons, Talcott. (1951). *The Social System.* London: Routledge. Ch. 1 & 2. Pp. 1-44.

Suggested Readings:

Bhambra Gurminder. and John Holmwood. (2021). *Colonialism and Modern Social Theory*. Cambridge: Polity Press.

Durkheim, E. (1982). *The Rules of Sociological Method (W.D. Halls, Trans.)*. New York London Toronto Sydney: The Free Press.

Freund, J. (1970). *The Sociology of Max Weber*. Penguin Books.

Giddens, A. (1971). *Capitalism and Modern Social Theory: An Analysis of the Writings by Marx, Weber and Durkheim*. Cambridge University Press.

Lukes, S. (1985). *Emile Durkheim: His Life and Work: A Historical and Critical Study*. Stanford University Press.

Turner, J. (1995). The Structure of Sociological Theory. Jaipur: Rawat Publications.

Black, Max ed. (1961). Parsons Sociological Theory in The Social Theories of Talcott Parsons: A Critical Examination .Englewood Cliffs, NJ. Prentice Hall. pp. 1-63.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.A. (H) Sociology
Discipline Specific Core (DSC) 11
Economic Sociology

Discipline Specific Core Course -11 (DSC-11) : Economic Sociology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (If any)
		Lecture	Tutorial	Practical/ Practice		
DSC 11 Economic Sociology	4	3	1	0	12th Class Pass	BA (H) DSC 01: Introduction to Sociology or equivalent course

Learning Objectives:

1. To familiarise students with the key concepts and theoretical perspectives in Economic Sociology.
2. To provide an understanding of the social and cultural bases of various dimensions of the economy such as production, distribution, exchange, consumption and markets.
3. To enable students to comprehend economic processes at all levels as embedded and interconnected.

Learning outcomes:

Students will be able to:

1. *Understand* the key concepts and theories of economic sociology as a specialised branch of knowledge.
2. *Identify* the diverse ways in which the economy is embedded in other aspects of society and culture.
3. *Use* sociological concepts and theories to understand and analyse the transformations of the economy and its key processes and institutions from a comparative perspective.
4. *Generate* research questions and arguments about the intersections of economy and society.

SYLLABUS OF DSC-11: Economic Sociology

Unit I: Introduction to Economic Sociology (15 hours)

This unit provides an understanding of the key concepts and theoretical perspectives of Economic Sociology as a specialised branch of knowledge.

a. What is Economic Sociology?
b. Perspectives in Economic Sociology

Unit II: Economic Action and its Locations (24 hours)

This unit provides an understanding of the various dimensions of economy such as production, distribution and consumption while highlighting their sociocultural bases.

a. Production and its Logics
b. Distribution and its Reach

Unit III: Contemporary Directions in Economic Sociology (6 hours)

This unit provides an understanding of the changing economic processes and institutions in contemporary times.

a. Informal Economy
b. Platform Society

Practical Component: NIL

Essential/Recommended Readings:

Unit I. Introduction to Economic Sociology (15 hours)

a. What is Economic Sociology

Martinelli, Alberto. 2023. 'The conception and definition of economic sociology' in *The Routledge International Handbook of Economic Sociology*. New York: Taylor & Francis, 2023. Pp. 57-74.

Portes, Alejandro. 2010. 'The Assumptions That Ground the Field' in *Economic Sociology: A Systematic Inquiry.* New Jersey: Princeton University Press. Chapter 2. Pp. 10-26.

b. Perspectives in Economic Sociology

Polanyi, Karl. 1992. 'Economy as an Instituted Process' in M. Granovetter and R. Swedberg (eds.) *The Sociology of Economic Life*. Colorado: West View Press. Pp. 27-50.

Granovetter, Mark. 1985. 'Economic Action and Social Structure: The Problem of Embeddedness'. *American Journal of Sociology*. 91(3). Pp. 481- 507.

Unit II: Economic Action and its Locations (24 hours)

a. Production and its Logics

Sahlins, Marshall. 2017. 'The Original Affluent Society' in *Stone Age Economics*. New York: Routledge. Chapter 1. Pp. 1-37.

Scott, James C. 1976. 'The Economics and Sociology of Subsistence Ethics' in *The Moral Economy of the Peasant: Rebellion and Subsistence in Southeast Asia.* Chapter 1. New Haven, Yale University press. Pp. 13-34.

Wallerstein, Immanuel. 1983. 'The Commodification of Everything: Production of Capital' in *Historical Capitalism*. London: Verso. Chapter 1. Pp. 13-46.

b. Distribution and its Reach

Mauss, Marcel. 1966. 'The Gifts and Obligation of Return Gift' and 'Distribution of the System: Generosity, Honour and Money' in *The Gift: Forms and Functions of Exchange in Archaic Societies*. (tr. Ian Cunnison). London: Cohen and West. Chapters. 1, 2. Pp. 1-46.

Patterson, Thomas C. 2005. 'Distribution and Redistribution' in James G. Carrier (ed.) *A Handbook of Economic Anthropology.* Cheltenham: Edward Elgar. Pp. 194-209.

Weiss, Brad. 1996. 'Coffee Breaks and Coffee Connections: The Lived Experience of a Commodity in Tanzanian and European Worlds' in David Howes (ed.) *Cross-Cultural Consumption: Global Market, Local Realities.* London and New York: Routledge. Pp. 93-105.

Unit III: Contemporary Directions in Economic Sociology (6 hours)

a. Informal Economy

Light, Donald W. 2004. 'From Migrant Enclaves to Mainstream: Reconceptualizing Informal Economic Behaviour' in *Theory and Society.* 33(6). Pp. 705-737.

b. Platform Society

Dijck, Jose Van. et al. 2018. 'The Platform Society as a Contested Concept' in *The Platform Society: Public Values in a Connected World.* New York: Oxford University Press. Chapter 1, Pp. 1-30.

Suggested Readings:

Appadurai, A. 1986. *The Social Life of Things: Commodities in Cultural Perspective.* Cambridge: Cambridge University Press.

Carrier, James G. 1995. *Gifts and Commodities*. London: Routledge.

DiMaggio, Paul. 2019. 'Cultural Aspects of Economic Action and Organization' in R. Friedland and A. F. Robertson (eds.) *Beyond the Market Place: Rethinking Economy and Society*. New York: Routledge. Pp. 113-136.

Graeber, David. 2001. *Toward an Anthropological Theory of Value: The False Coin of Our Own Dreams.* New York: Palgrave.

Hann, Chris and Keith Hart. 2011. *Economic Anthropology*. Cambridge: Polity Press.

Hirst, Paul and G Thompson 1999. *Globalization in Question*. 2nd Edition. Cambridge, Oxford: Polity Press.

Sahlins, Marshal. 1974. *Stone Age Economics*. London: Tavistock.

Smelser, Neil. J. and Richard Swedberg. 2005. *The Handbook of Economic Sociology.* New York: Russel Sage Foundation.

Tonkiss, Fran. 2006. *Contemporary Economic Sociology*. London: Routledge.

Verdery, Katherine. 1996. *What Was Socialism, And What Comes Next?* New Jersey: Princeton University Press.

Zelizer, Viviana A. 1989. 'The Social Meaning of Money: Special Monies'. *American Journal of Sociology*, Vol. 95 (Sept.). Pp. 342-377.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Sociology of Gender

DISCIPLINE SPECIFIC CORE COURSE -12 (DSC-12) : Sociology of Gender

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 12 Sociology of Gender	4	3	1	0	12th Class Pass	BA (H) DSC 05: Social Stratification or equivalent course

Learning Objectives:

1. To introduce the sociology of gender as a critical area of sociological inquiry.
2. To provide a sociological understanding of the categories of gender, sex and sexuality.
3. The problematise the common-sense conception of gender from a sociological perspective.

Learning outcomes:

Students will be able to:

1. *Identify* and explain key concepts in the sociology of gender.
2. *Investigate* gendered inequalities in a comparative mode across time and space.
3. *Analyse* gender in relation to other forms of social stratification and identities such as caste, class, family and work.

SYLLABUS OF DSC-12: Sociology of Gender

Unit I. Understanding Gender (9 Hours)

This unit locates the understanding of gender within the framework of sociological theories.

Unit II. Gender, Power and Resistance (9 Hours)

This unit examines the forms of resistance to gender-based power through ideological change and social movements.

a. Power and Subordination

b. Negotiations and Resistance

Unit III. Gender: Differences and Inequalities (12 Hours)

This unit examines the intersection of gender with different forms and locations of social inequality.

a. Stratification and Difference

b. Work and Houehold

Unit IV. Masculinity and Femininity (15 Hours)
This unit elucidates the varied ways in which gender is socially constructed.
a. Production of Masculinity and Femininity
b. Culture and Sexuality

Practical Component: NIL

Essential/Recommended Readings:

Unit I. Understanding Gender

Jackson, S. and S. Scott (eds.) 2002 'Introduction: The Gendering of Sociology' in S. Jackson and S. Scott *Gender: A Sociological Reader*, London: Routledge. pp 1-26.

Risman, Barbara J. 2018. 'Gender as a Social Structure' in Handbook of the Sociology of Gender. Germany, Springer International Publishing, 2018. Pp. 19-38.

Unit II. Gender, Power and Resistance

a. Power and Subordination

Susie, Tharu and Tejaswini Niranjana. 1994. 'Problems for a Contemporary theory of Gender' in *Social Scientist*, Vol.22 No. ¾ (Mar-Apr) Pp. 93-117.

Abu Lughod, Lila. 2002. 'Do Muslim Women Really Need Saving? Anthropological Reflections on Cultural Relativism and its Others.' in *American Anthropologist, Vol.* 104, No. 3. Pp.783-790.

b. Negotiations and Resistance

Kandiyoti, Deniz. 1991. 'Bargaining with Patriarchy' in Judith Lorber and Susan A. Farrell (eds.) *The Social Construction of Gender*, New Delhi: Sage Publications. Pp. 104-118.

Ahmed. S. 2017. 'Bringing Feminist Theory Home' in *Living a Feminist Life*. Durham: Duke University Press. Pp. 1-18.

Unit III. Gender: Differences and Inequalities

a. Stratification and Difference

Walby, Sylvia. 2002. 'Gender, Class and Stratification: Towards a New Approach' in S. Jackson and S. Scott (eds.) *Gender: A Sociological Reader*. London: Routledge. Pp. 93-96.

Rege, S. 1998. 'Dalit Women Talk Differently: A Critique of 'Difference' and Towards a Dalit

Feminist Standpoint Position' in *Economic and Political Weekly*, Vol. 33, No. 44, Oct.31-Nov. 6. Pp. 39-48.

b. Work and Household

Whitehead, A. 1981. 'I'm Hungry Mum: The Politics of Domestic Budgeting' in K. Young et al. (eds.) *Of Marriage and the Market: Women's Subordination Internationally and its Lessons.* London: Routledge and Kegan Paul. Pp. 93-116.

Palriwala, Rajni. 1999. 'Negotiating Patriliny: Intra-household Consumption and Authority in Rajasthan (India)', in Rajni Palriwala and Carla Risseeuw (eds.), *Shifting Circles of Support: Contextualising kinship and gender relations in South Asia and Sub-Saharan Africa.* Delhi: Sage Publications Pp. 190-220.

Unit IV. Masculinity and Femininity

a. Production of Masculinity and Femininity

Halberstam, Judith. 2012. 'An Introduction to Female Masculinity: Masculinity without Men' in *Female Masculinity*.Delhi: Zubaan . Pp. 1-29.

Cornwall, Andrea and Nancy Lindisfarne 1994 'Dislocating Masculinity: Gender, Power and Anthropology' in Cornwall and Lindisfarne (ed.). *Dislocating Masculinity: Comparative Ethnographies*. Routledge. Chapter 1, pp 11-26.

b. Culture and Sexuality

Ortner, Sherry. 1974. 'Is male to female as nature is to culture?' in M.Z. Rosaldo and L. Lamphere (eds.) *Women, Culture and Society*. Stanford: Stanford University Press. Pp. 67-87.

Dube, Leela. 2001. Anthropological Explorations in Gender: Intersecting Fields. Delhi:Sage Publications, 2001. Chapter 3. The Symbolism Of Biological Reproduction and Sexual Relations of Production. Pp. 119-151

Rubin, Gayle. 1984. 'Thinking Sex: Notes for a Radical Theory of the Politics of Sexuality' in Carole Vance, ed*., Pleasure and Anger.* London: Routledge. Pp. 143-165.

Suggested Readings:

Bhatia, R. 2022. *Gender: A Sociological Understanding*. Delhi: Pearson

Hill-Collins, Patricia. 2002. "Learning from the Outsider Within" in S. Jackson and S. Scott (eds.) *Gender: A Sociological Reader*. London: Routledge. Pp. 69-78.

Narrain, Arvind and Vinay Chandra. (eds). 2015. *Nothing to Fix: Medicalization of Sexual Orientation and Gender Identity*. New Delhi Sage Publications. Chapter 3.

Uberoi, Patricia “Feminine Identity and National Ethos in Indian Calendar Art” in *Economic and Political Weekly,* Vol. 25, No. 17 (Apr. 28, 1990)Pp. WS41-WS48.

Visvanathan, S. 1996. 'Women and Work: From Housewifization to Androgyny' in *Economic and Political Weekly*, Vol. 31 Number 45/46. Pp. 3015–17.

Menon, Nivedita .2012. *Seeing like a Feminist.* India: Penguin.

Additional Resources

Being Male, Being Koti (2010) Dir: Mahua Bandhpodhyay

Paris is Burning (1991) Dir: Jenine Livingston

Izzatnagari Ki Asabhya Betiyaan (2012) Dir: Nakul Singh Sawhney

Danish Girl (2015) Dir: Tom Hooper

Bol (2011) Dir: Shoaib Mansoor

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category II
BA (Prog.) with Sociology as Major
Discipline Specific Core (DSC) 07

Post-Classical Sociological Thinkers

DISCIPLINE SPECIFIC CORE COURSE -07 (DSC-07) : Post-Classical Sociological Thinkers

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (If any)
		Lecture	Tutorial	Practical/ Practice		
DSC 07 Post-Classical Sociological Thinkers	4	3	1	0	12th Class Pass	BA(Prog) DSC 05: Classical Sociological Thinkers or equivalent course

Learning Objectives:

1. To familiarise students with developments in sociological theory in the 20th century.
2. To introduce students to the theoretical work in the traditions of Americal Structural-functionalism, interactionism, and critical theory.
3. To draw the attention of students towards the difference between macro and micro sociologies and traditional and critical theories.

Learning outcomes:

Students will be able to:
1. *Understand* the post-classical developments in Sociological Theory.
2. *Outline* the interdisciplinary nature of sociological concepts.
3. *Apply* the theories they learned in empirical contexts and construct theoretically informed sociological research.

SYLLABUS OF DSC-07: Post-Classical Sociological Thinkers

Unit I: Talcott Parsons: Social Action (12 hours)

The unit explains the ways in which Parsons conceptualises social action as a product of social, cultural and personality systems.

Unit II: Erving Goffman : Dramaturgy (12 hours)

The unit introduces the students to Goffman's dramaturgical perspective and the application of the theory in decoding advertisements from a gendered perspective.

Unit III: Peter Berger and Thomas Luckmann : Social Construction (12 hours)

The unit deals with Berger and Luckmann's concept of reality of how it is being created and shaped by social interactions.

Unit IV: Herbert Marcuse : Critical Theory (9 hours)

The unit introduces the students to the Frankfurt School of critical theory through the original works of Herbert Marcuse.

Practical Component: NIL

Essential/Recommended Readings:

Unit I: Talcott Parsons: Social Action

Turner, J. (1987) *The Structure of Sociological Theory.* India: Rawat Publications. Pp. 57-86

Parsons, T. & Shils, E. (eds). (1951) . *Towards a General Theory of Action.* London: Routledge. Ch. 1 & 2. Pp. 1-44

Unit II: Erving Goffman: Dramaturgy

Goffman, E. (1956). *The Presentation of Self in Everyday Life*. Edinburgh: University of Edinburgh (Monograph No. 2). Pp. 1-9, 132-162.

Goffman, E. (1979). *Gender Advertisements.* New York: Harper and Row Publications. Chapter 1: Gender Display. Pp. 1-9.

Unit III: Peter Berger and Thomas Luckmann: Social Construction

Berger, P. L. & Luckmann, T. (1991). *The Social Construction of Reality*. London: Penguin Books. Pp. 31-62.

Giddens, A. & Sutton, P.W. (2022). *Sociology* (9th edition). Cambridge: Polity Press. Chapter 12: Social Interaction and Everyday Life. Pp. 958-1023.

Unit IV: Herbert Marcuse: Critical Thoery

Marcuse, H. (1964). *One Dimensional Man: Studies in the Ideology of Advanced Industrial Society*. New York: Routledge & Kegan Paul. Introduction. Pp xi- xxxviii.

Suggested Readings:

Smith G. (2015). *Goffman, E* . London & New York: Routledge.

Elliot, A. & Lemert, C. (2022) *Introduction to Contemporary Social Theory*. London & New York: Routledge.

Callincos, A. (1999). Social Theory: A Historical Introduction. United Kingdom: NYU Press.

Craib, I. (2015). Modern Social Theory. United Kingdom: Taylor & Francis.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

BA(Prog.) Sociology
Discipline Specific Core (DSC) 08
Economic Sociology

Discipline Specific Core Course -08 (DSC-08) : Economic Sociology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 08 Economic Sociology	4	3	1	0	12th Class Pass	BA (Prog) DSC 01 An Invitation Sociology or equivalent course

Learning Objectives:

4. To familiarise students with the key concepts and theoretical perspectives in Economic Sociology.
5. To provide an understanding of the social and cultural bases of various dimensions of the economy such as production, distribution, exchange, consumption and markets.
6. To enable students to comprehend economic processes at all levels as embedded and interconnected.

Learning outcomes:

Students will be able to:

5. *Understand* the key concepts and theories of economic sociology as a specialised branch of knowledge.
6. *Identify* the diverse ways in which the economy is embedded in other aspects of society and culture.
7. *Use* sociological concepts and theories to understand and analyse the transformations of the economy and its key processes and institutions from a comparative perspective.

8. *Generate* research questions and arguments about the intersections of economy and society.

SYLLABUS OF DSC-11: Economic Sociology

Unit I: Introduction to Economic Sociology (15 hours)

This unit provides an understanding of the key concepts and theoretical perspectives of Economic Sociology as a specialised branch of knowledge.

a. What is Economic Sociology?
b. Perspectives in Economic Sociology

Unit II: Economic Action and its Locations (24 hours)

This unit provides an understanding of the various dimensions of economy such as production, distribution and consumption while highlighting their sociocultural bases.

a. Production and its Logics
b. Distribution and its Reach

Unit III: Contemporary Directions in Economic Sociology (6 hours)

This unit provides an understanding of the changing economic processes and institutions in contemporary times.

a. Informal Economy
b. Platform Society

Practical Component: NIL

Essential/Recommended Readings:

Unit I. Introduction to Economic Sociology (15 hours)

a. What is Economic Sociology

Martinelli, Alberto. 2023. 'The conception and definition of economic sociology' in *The Routledge International Handbook of Economic Sociology*. New York: Taylor & Francis, 2023. Pp. 57-74.

Portes, Alejandro. 2010. 'The Assumptions That Ground the Field' in *Economic Sociology: A Systematic Inquiry.* New Jersey: Princeton University Press. Chapter 2. Pp. 10-26.

b. Perspectives in Economic Sociology

Polanyi, Karl. 1992. 'Economy as an Instituted Process' in M. Granovetter and R. Swedberg (eds.) *The Sociology of Economic Life*. Colorado: West View Press. Pp. 27-50.

Granovetter, Mark. 1985. 'Economic Action and Social Structure: The Problem of Embeddedness'. *American Journal of Sociology*. 91(3). Pp. 481- 507.

Unit II: Economic Action and its Locations (24 hours)

a. Production and its Logics

Sahlins, Marshall. 2017. 'The Original Affluent Society' in *Stone Age Economics*. New York: Routledge. Chapter 1. Pp. 1-37.

Scott, James C. 1976. 'The Economics and Sociology of Subsistence Ethics' In *The Moral Economy of the Peasant: Rebellion and Subsistence in Southeast Asia.* Chapter 1. New Haven, Yale University press. Pp. 13-34.

Wallerstein, Immanuel. 1983. 'The Commodification of Everything: Production of Capital' in *Historical Capitalism*. London: Verso. Chapter 1. Pp. 13-46.

b. Distribution and its Reach

Mauss, Marcel. 1966. 'The Gifts and Obligation of Return Gift' and 'Distribution of the System: Generosity,Honour and Money' in *The Gift: Forms and Functions of Exchange in Archaic Societies*. (tr. Ian Cunnison). London: Cohen and West. Chapters. 1, 2. Pp. 1-46.

Patterson, Thomas C. 2005. 'Distribution and Redistribution' in James G. Carrier (ed.) *A Handbook of Economic Anthropology.* Cheltenham: Edward Elgar. Pp. 194-209.

Weiss, Brad. 1996. 'Coffee Breaks and Coffee Connections: The Lived Experience of a Commodity in Tanzanian and European Worlds' in David Howes (ed.) *Cross-Cultural Consumption: Global Market, Local Realities.* London and Ne York: Routledge. Pp. 93-105.

Unit III: Contemporary Directions in Economic Sociology (6 hours)

a. Informal Economy

Light, Donald W. 2004. 'From Migrant Enclaves to Mainstream: Reconceptualizing Informal Economic Behavior' in *Theory and Society.* 33(6). Pp. 705-737.

b. Platform Society

Dijck, Jose Van. et al. 2018. 'The Platform Society as a Contested Concept' in *The Platform Society: Public Values in a Connected World.* New York: Oxford University Press. Chapter 1, Pp. 1-30.

Suggested Readings:

Appadurai, A. 1986. *The Social Life of Things: Commodities in Cultural Perspective.* Cambridge: Cambridge University Press.

Carrier, James G. 1995. *Gifts and Commodities*. London: Routledge.

DiMaggio, Paul. 2019. 'Cultural Aspects of Economic Action and Organization' in R. Friedland and A. F. Robertson (eds.) *Beyond the Market Place: Rethinking Economy and Society*. New York: Routledge. Pp. 113-136.

Graeber, David. 2001. *Toward an Anthropological Theory of Value: The False Coin of Our Own Dreams.* New York: Palgrave.

Hann, Chris and Keith Hart. 2011. *Economic Anthropology*. Cambridge: Polity Press.

Hirst, Paul and G Thompson 1999. *Globalization in Question*. 2nd Edition. Cambridge, Oxford: Polity Press.

Sahlins, Marshal. 1974. *Stone Age Economics*. London: Tavistock.

Smelser, Neil. J. and Richard Swedberg. 2005. *The Handbook of Economic Sociology.* New York: Russel Sage Foundation.

Tonkiss, Fran. 2006. *Contemporary Economic Sociology*. London: Routledge.

Verdery, Katherine. 1996. *What Was Socialism, And What Comes Next?* New Jersey: Princeton University Press.

Zelizer, Viviana A. 1989. 'The Social Meaning of Money: Special Monies'. *American Journal of Sociology*, Vol. 95 (Sept.). Pp. 342-377.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category III
BA (Prog.) with Sociology as Non-Major
Semester IV
Discipline Specific Core (DSC) 07
Post-Classical Sociological Thinkers

DISCIPLINE SPECIFIC CORE COURSE -07 (DSC-07) : Post-Classical Sociological Thinkers

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (If any)
		Lecture	Tutorial	Practical/ Practice		
DSC 07 Post-Classical Sociological Thinkers	4	3	1	0	12th Class Pass	BA(Prog) DSC 05: Classical Sociological Thinkers or equivalent course

Learning Objectives:

4. To familiarise students with developments in sociological theory in the 20th century.
5. To introduce students to the theoretical work in the traditions of Americal Structural-functionalism, interactionism, and critical theory.
6. To draw the attention of students towards the difference between macro and micro sociologies and traditional and critical theories.

Learning outcomes:

Students will be able to:

4. *Understand* the post-classical developments in Sociological Theory.
5. *Outline* the interdisciplinary nature of sociological concepts.
6. *Apply* the theories they learned in empirical contexts and construct theoretically informed sociological research.

SYLLABUS OF DSC-07: Post-Classical Sociological Thinkers

Unit I: Talcott Parsons: Social Action (12 hours)

The unit explains the ways in which Parsons conceptualises social action as a product of social, cultural and personality systems.

Unit II: Erving Goffman : Dramaturgy (12 hours)

The unit introduces the students to Goffman's dramaturgical perspective and the application of the theory in decoding advertisements from a gendered perspective.

Unit III: Peter Berger and Thomas Luckmann : Social Construction (12 hours)

The unit deals with Berger and Luckmann's concept of reality of how it is being created and shaped by social interactions.

Unit IV: Herbert Marcuse : Critical Theory (9 hours)

The unit introduces the students to the Frankfurt School of critical theory through the original works of Herbert Marcuse.

Practical Component: NIL

Essential/Recommended Readings:

Unit I: Talcott Parsons: Social Action

Turner, J. (1987) *The Structure of Sociological Theory.* India: Rawat Publications. Pp. 57-86

Parsons, T. & Shils, E. (eds). (1951) . *Towards a General Theory of Action.* London: Routledge. Ch. 1 & 2. Pp. 1-44

Unit II: Erving Goffman: Dramaturgy

Goffman, E. (1956). *The Presentation of Self in Everyday Life*. Edinburgh: University of Edinburgh (Monograph No. 2). Pp. 1-9, 132-162.

Goffman, E. (1979). *Gender Advertisements.* New York: Harper and Row Publications. Chapter 1: Gender Display. Pp. 1-9.

Unit III: Peter Berger and Thomas Luckmann: Social Construction

Berger, P. L. & Luckmann, T. (1991). *The Social Construction of Reality*. London: Penguin Books. Pp. 31-62.

Giddens, A. & Sutton, P.W. (2022). *Sociology* (9th edition). Cambridge: Polity Press. Chapter 12: Social Interaction and Everyday Life. Pp. 958-1023.

Unit IV: Herbert Marcuse: Critical Thoery

Marcuse, H. (1964). *One Dimensional Man: Studies in the Ideology of Advanced Industrial Society*. New York: Routledge & Kegan Paul. Introduction. Pp xi- xxxviii.

Suggested Readings:

Smith G. (2015). *Goffman, E* . London & New York: Routledge.

Elliot, A. & Lemert, C. (2022) *Introduction to Contemporary Social Theory*. London & New York: Routledge.

Callincos, A. (1999). Social Theory: A Historical Introduction. United Kingdom: NYU Press.

Craib, I. (2015). Modern Social Theory. United Kingdom: Taylor & Francis.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category IV
Common Pool of Discipline Specific Electives (DSE)
Discipline Specific Elective (DSE) 04

Sociology of Education

DISCIPLINE SPECIFIC ELECTIVE COURSE -04 (DSE-04) : Sociology of Education

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 04 Sociology of Education	4	3	1	0	12th Class Pass	Nil

Learning Objectives:

1. To introduce sociology of education as an area of sociological interest and investigation.
2. To constitute education as discursive practice at the confluence of various social, political, economic and cultural processes.
3. To map significant issues in the sociology of education in India.

Learning Outcomes:

Students will be able to:

1. *Develop* an understanding of the social dimensions of education.
2. *Recognise* the role of education in the production and reproduction of social structures, categories and identities.
3. *Analyse* the diversity of educational practices and cultures in a comparative context.
4. *Examine* the relationship between the political economy and educational regimes in their social context and translate this understanding into sociologically informed education practice and policy.

SYLLABUS OF DSE 04: Sociology of Education

Unit I: An Introduction to Sociology of Education (9 Hours)
This unit introduces some of the key sociological perspectives on education

Unit II: Education in the Societal Context (24 Hours)
This unit explains the interactions of education with the larger frameworks of modernization, development and inequality. It also brings out nuances of the practices of education that inform and are informed by these interactions

a. Education, Modernity and Development
b. Education, Ideology and Reproduction
c. Textbook, Curriculum and Pedagogies

Unit III: Social Character of Education in India (9 Hours)
This unit focuses on how India has evolved with its own agenda of education; Civilizational, National and constitutional aspirations, social character, diverse practice and its contradictions.

Unit IV: Globalization and Education (3 Hours)
This unit engages with the emerging questions related to the new technological advancements in contemporary times and the nature, role and contradictions of new educational socialization.

Practical Component: Nil

Course Outline and Essential/Recommended Readings:

Unit I: An Introduction to Sociology of Education

Durkheim, Emile. (1985). 'Education: Its Nature and Role;, in Suresh Chandra Shukla and Krishna Kumar (Eds.) *Sociological Perspectives on Education: A Reader*. Delhi: Chanakya Publication. Pp. 9-22.

Dewey, John. (2009). 'Education as a Social Function' in *Democracy and Education: An Introduction to the Philosophy of Education*. New Delhi: Aakar. Pp.11-25

Saha, L. (2008). 'Sociology of Education', in Thomas L. Good (ed.), *21st Century Education: A Reference Handbook,* Sage Publications Inc, California. Pp. 299-307

Unit II: Education in the Societal Context

a. Education, Modernity and Development

Weber, Max. (2014). 'The Rationalization of Education and Training'. in Richard Arum, Irenee R. Beattie and Karly Ford. (Ed.) *The Structure of Schooling: Readings in the Sociology of Education*. London: Sage Publications'. Pp. 4-6.

Chabbott, C., & Ramirez, F.O. (2000). 'Development and Education' in Hallinan, M.T. (eds) *Handbook of the Sociology of Education*. Boston: Springer. Pp.163-187

Altbach, Phillip, G. (1976). 'Higher Education and Modernization: The Indian Case', in Giri Raj Gupta (Ed). *Main Currents in Indian Sociology, Vol.1: Contemporary India.* New Delhi: Vikas Publishing House Pvt Ltd. Pp. 201-220

Jayaram, N. (2015). ;Education and Emancipation: The Saga and Ideology of Dr B.R. Ambedkar', in Singh, A.K. (Ed.). *Education and Empowerment in India*. New Delhi: Routledge India. Pp. 73-90.

(The course instructors are suggested to discuss the Education Commission Report 1964-66 in the Indian context, with reference to Education and National Development)

b. Education, Ideology and Reproduction

Bourdieu, Pierre. (1997). 'Forms of Capital' in A.H. Halsey et al (Eds.). *Education, Culture, Economy and Society*. Oxford: Oxford University Press. Pp.46-58.

Kumar, Krishna. (1987). 'Reproduction or Change: Education and Elites in India' in Ratna Ghosh and Zacharia (Ed.) *Education and Process of Change*. New Delhi: Sage. Pp.27-41

Chanana, K. (2007). 'Globalisation, Higher Education and Gender: Changing Subject Choices of Indian Women Students' in *Economic and Political Weekly*, 42(7). Pp. 590–598.

c. Textbook, Curriculum and Pedagogies

Sarup, Madan. (1982). 'The Enforcement of Discipline' in *Education State and Crisis: A Marxist Perspective*. London: Routledge. Pp.14-29

Apple, Michael W. (2004) 'Cultural Politics and the Text' in Stephen J. Ball (Ed.) *The Routledge Falmer Reader in Sociology of Education*. Routledge. Pp. 179-195.

Kumar, Krishna. (1988). 'Learning to be Backward' in *Social Character of Learning*. New Delhi: Sage. Pp. 59-77.

Unit III: Social Character of Education in India

Shukla, Sureshchandra. (1983). 'Indian Educational Thought and Experiments: A Review'. *Comparative Education,* 19(1). Pp. 59–71.

Ghosh, Suresh Chandra. (1995). 'Towards a National Policy on Education' in: *The History of Education in Modern India*. New Delhi: Orient Black Swan. Pp.177-194

Deshpande, Satish.(2012). 'Social Justice and Higher Education in India Today' in Martha Nussbaum and Zoya Hasan (eds), Equalizing Access: Affirmative Action in Higher Education in India, United States and South Africa, New Delhi: Oxford University Press.pp.212-238

Unit IV: Globalization and Education

Penprase, Bryan E. (2018). 'The Fourth Industrial Revolution and Higher Education' in *Gleason, N. W. (Ed.). Higher Education in the Era of the Fourth Industrial Revolution. Springer Nature*. Pp. 207-225

Kamat, Sangeeta G. (2011). Neoliberal Globalization and Higher Education Policy in India. In: Roger King, Simon Marginson, & Rajani Naidoo (Eds.), *Handbook on Globalization and Higher Education.* Cheltenham, UK: Edward Elgar. Pp. 273-285.

Suggested Readings:

Delanty, Gerard. (2005). The Sociology of the University and Higher Education: The Consequences of Globalization. In: Calhoun, Craig; Rojek, Chris and Turner, Bryan S (Eds.) *The SAGE Handbook of Sociology*. London: Sage Publications Ltd. Pp. 530-545.

Freire, Paulo. (2017). *Pedagogy of the Oppressed*. Penguin Classics.

Halsey, et. al. (1996). *Education, Culture and Economy*. Oxford: Oxford University Press.

Kumar, Krishna. (2005). Colonial Citizen as an Educational Ideal. In: *Political Agenda of Education*. New Delhi: Sage. Pp 27-48.

Ramachandran, V. (2018). In: *Inside Indian Schools: The Enigma of Equity and Quality*. Routledge.

Stevens, Mitchell, Eligabeth Armstrong and Richard Arum. (2008). Sieve, Incubator, Temple, Hub: Empirical and Theoretical Advances in Sociology of Higher Education, *The Annual Review of Sociology*. Pp.127-152

Thapan, Meenakshi. (1991). *Life at School: An Ethnographic Study*. New Delhi: Oxford University Press.

Vaidyantha Ayar, R.V. (2017). *History of Education Policymaking in India, 1947–2016*. New Delhi: Oxford University Press

Willis, P. (1978). *Learning to Labour: How Working-Class Kids Get Working Class Jobs*. London: Routledge.

Velaskar, Padma. (2018). The Redefinition of Equality and Excellence and Declining Goals of Democratic Egalitarianism in Higher Education. In: Varghese, N.V. & Sabharwal, Nidhi & C M, Malish. (2018). *India Higher Education Report 2016: Equity*. India: Sage Publications. Pp. 43-62

Education Policy Documents (can be used for Presentations and writing Review)

Ministry of Education, Report of the Education Commission, 1964-66. Government of India. Pp. 3-39

Ministry of Education. National Policy on Education 1968, 1986 and NPE as modified in 1992. Govt. of India.

Ministry of Human Resource Development. (2005). Report of the CABE Committee on Girls Education and Common School System. Govt. of India.

Ministry of Education, Govt. of India. (2020). Draft National Education Policy 2019 and NEP 2020.

NCERT, (2005). National Curriculum Framework (NCF, 2005). New Delhi: India

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Sociology
Discipline Specific Elective (DSE) 05
Sociology of Social Movements

DISCIPLINE SPECIFIC ELECTIVE COURSE -05 (DSE-05) : Sociology of Social Movements

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 05 Sociology of Social Movements	4	3	1	0	12th Class Pass	Nil

Learning Objectives:

1. This paper introduces students to the sociological study of social movements.
2. It aims to provide students with the major conceptual, theoretical and methodological tenets of the study of social movements.
3. The paper also demonstrates the complex relationship between social movements, culture, and the broader socio-political context, through a series of case studies.

Learning outcomes:

Students will be able to:

1. *Identify* and examine the various dimensions of the phenomenon of social movements and assess the various apporaches to its study.
2. *Describe* the various dimensions of social movements and the relationship and dynamics between them.
3. *Recognise* and *evaluate* the salience of social movements in contemporary society.

SYLLABUS OF DSE-05: Sociology of Social Movements

Unit I: Sociology and Social Movements (12 Hours)

This unit introduces students to the formative issues in the sociological study of social movements.

Unit II: Social Movements: Strategies, Opportunities, Networks, Dynamics (12 Hours)

This unit familiarises students with the relationship between the various organising principles of social movements and their dynamics.

Unit III: States, Everyday Relations and Contention (12 Hours)

This unit apprises students about the relationship between movements and other institutional political phenomena.

Unit IV: Social Movements and Culture (9 Hours)
This unit maps the issues in contemporary studies of social movements.

Practical Component: NIL

Essential/Recommended Readings:

Unit I: Sociology and Social Movements

Jasper, James M. 2007. 'Social Movements', in George Ritzer (ed). *The Blackwell Encyclopaedia of Sociology*, USA: Blackwell Publishing Ltd, p. 4451-4458.

Edelman, Marc. 2001. Social Movements: Changing Paradigms and Forms of Politics, *Annual Review of Anthropology*, Vol.30, p. 285-317.

Escobar, Arturo. 1992. Culture, Practice and Politics: Anthropology and the Study of Social Movements, *Critique of Anthropology*, Vol. 12, p. 395-424.

Unit II: Strategies, Opportunities, Networks, Dynamics

Mcadam, Doug et. al. 1996. *Comparative Perspectives on Social Movements: Political Opportunities, Mobilizing Structures and Cultural Framings*, Cambridge: Cambridge University Press, Introduction, p. 1-20.

Ray, Sthitapragyan. 2014. People and Protected Areas: Protest dynamics in a conservation project in Odisha, *Sociological Bulletin*, Vol. 63, No. 1, p. 59-76.

Kurzman, Charles. 1996. Structural Opportunity and Perceived Opportunity in Social Movement Theory: The Iranian Revolution of 1979, *American Sociological Review*, Vol. 61, No.1, p. 153-170.

Kothari, Smitu. 2002. Globalization, global alliances, and the Narmada Movement, in Sanjeev Khagram et. al. (eds.) *Restructuring World Politics: Transnational Social Movements, Networks and Norms*, Minneapolis: University of Minnesota Press, p.231-241.

Unit III: States, Everyday Relations and Contention

Auyero, Javier. 2004. When Everyday Life, Routine Politics, and Protest Meet, *Theory and Society*, Vol. 33, No. 3/ 4, p. 417-441.

Petras, James & Henry Veltmeyer. 2005. *Social Movements and State Power*; , London: Pluto Press, *Chapter 6,* p. 220-240.

Della Porta, Donatella. 2011. Communication in Movement: Social movements as agents of participatory democracy, *Information, Communication and Society*, Vol. 14, No. 6, p. 800-815.

Ray, Raka. 1998. Women's movements and political fields: A comparison of two Indian cities, *Social Problems*, Vol. 45, No.1, p. 21-36.

Unit IV: Social Movements and Culture

Melucci, Alberto. 1985. The Symbolic Challenge of Contemporary Movements, *Social Research*, Vol. 52, No. 4, p. 789-816.

Amenta, E., & Polletta, F. 2019. The Cultural Impacts of Social Movements. *Annual Review of Sociology*, 45: Pp. 11.1–11.21

Suggested Readings:

Diani, Mario & Doug Mcadam (eds.) 2003. Social Movements and Networks, Oxford: Oxford University Press.

Goodwin, Jeff & James M. Jasper. 2015. *The Social Movements Reader: Cases and Concepts*, UK: Wiley Blackwell.

Jasper, James M. 1997. *The Art of Moral Protest: Culture, Biography and Creativity in Social Movements,* Chicago: The University of Chicago Press.

Khagram, Sanjeev. 2004. *Dams and Development: Transnational Struggles for Water and Power*, Ithaca: Cornell University Press.

Klandermans, Bert & Conny Roggeband (eds.) 2007. *Handbook of Social Movements Across Disciplines*, New York: Springer.

Mcadam, Doug, Sidney Tarrow & Charles Tilly. 2004. *Dynamics of Contention*, Cambridge: Cambridge University Press.

Motta, Sara C. & Alf Gunvald Nilsen (eds.) 2011. *Social Movements in the Global South*, New York: Palgrave Macmillan.

Petras, James & Henry Veltmeyer. 2011. Social Movements in Latin America: Neoliberalism and Popular Resistance, New York: Palgrave Macmillan.

Polletta, Francesca. 2006. *It Was Like a Fever: Storytelling in Protest and Politics*, Chicago: The University of Chicago Press.

Subba, T.B. 1992. *Ethnicity, State and Development: A Case study of the Gorkhaland Movement in Darjeeling*, New Delhi: Har-Anand Publications.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Sociology
Discipline Specific Elective (DSE) 06
Sociology of Media

DISCIPLINE SPECIFIC ELECTIVE COURSE -06 (DSE-06) : Sociology of Media

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 06 Sociology of Media	4	3	1	0	12th Class Pass	Nil

Learning Objectives:

1. To introduce students to the subfield of sociology of media.
2. To equip students with key concepts and theories to grasp the contemporary media landscape from a sociological perspective.
3. To unpack the workings of media on the axis of regulation, representation and reception; and see how these enduring concerns continue to inform the workings of new media.

Learning outcomes:

Students will be able to:

1. *Examine* the nature of media and its relation with society.
2. *Describe* and *apply* the various theoretical perspectives and conceptual tools in the area of sociology of media.
3. *Evaluate* contemporary mass media related issues in terms of their constitution and consequences.

SYLLABUS OF DSE 06: Sociology of Media

Unit I Mass Society and Mass Media (9 hours)

This unit traces the contours of mass society and mass media and prevalent modes of and key motifs in sociological and anthropological investigations of media.

Unit II Sociological Theories of Media (21 hours)

This unit maps out key theoretical interventions in sociology of media in articulation with one another.

a. The Dominant Paradigm

b. Critical Media Theories

c. Semiotics, Cultural Studies, Feminism, and Post-Modernism

Unit III Media Processes (15 hours)

This unit elaborates on the media processes on the axes of regulation, representation, and reception. It concludes with a consideration of developments in new media.

a. Regulation

b. Representation

c. Reception

d. New Media

Practical Component: NIL

Essential/Recommended Readings:

Unit I. Mass Society and Mass Media: An Introduction (9 hours)

Ritzer, George. Ed 2007. *The Blackwell Encyclopedia of Sociology.*United Kingdom, Blackwell Pub., Mass Culture And Mass Society; Media; Pp. 2821-2824 & 2873-2880.

Matthews, Julian. 2020. 'The Sociology of Mass Media', in Kathleen Odell Korgen ed. *The Cambridge Handbook of Sociology: Volume I Core Areas in Sociology and the Development of the Discipline,* United Kingdom, Cambridge University Press, . Pp. 205- 211

Dickey, Sara. 2010. 'Anthropology and Its Contributions to Studies of Mass Media'. *International Social Science Journal*. 49. Pp. 413 - 425.

Unit II. Sociological Theories of Media (21 Hours)

a. The Dominant Paradigm

Gitlin, Todd. 1978. 'Media Sociology: The Dominant Paradigm.' *Theory and Society*, vol. 6, no. 2, pp. 205–224.

b. Critical Media Theories

Bennett, Tony. 2005. 'Theories of the Media, Theories of Society' in, Michael Gurevitch et al. (eds.) *Culture, Society and the Media*. United Kingdom, Taylor & Francis, Pp. 26-50

Miller, David. 2002. 'Media Power and Class Power: Overplaying Ideology', *Socialist Register* vol. 38, Pp. 245-260

c. Semiotics, Cultural Studies, Feminism, and Post-Modernism

Barthes, Roland.1977. 'The Photographic Message' in *Image, Music and Text* Ed. And Trans. Stephen Heath. New York: Hill, pp. 15-31.

Hall, Stuart. 2011. 'Encoding/Decoding,' *Critical Visions in Film Theory*. Ed. Timothy Corrigan P. White, M. Mazaj. Boston: Bedford St. Martins,pp. 77-87.

Mulvey, Laura. 1999. 'Visual Pleasure and Narrative Cinema.' Eds. Leo Braudy and Marshall

Cohen eds. *Film Theory and Criticism: Introductory Readings.* New York: Oxford UP, pp 833-44.

Baudrillard, J., & Maclean, M. 1985. 'The Masses: The Implosion of the Social in the Media'. *New Literary History*, vol. 16. no. 3, pp. 577-588

Unit III. Media Processes (15 Hours)

a. Regulation

Kaur, Raminder, and William Mazzarella. 2009. 'Between Sedition and Seduction : Thinking Censorship in South Asia' In *Censorship in South Asia: Cultural Regulation from Sedition to Seduction*. Bloomington: Indiana UP.. pp. 1-21.

b. Representation

Shohat, Ella, and Stam, Robert. 2014. 'Stereotype, Realism and the Struggle Over Representation' in *Unthinking Eurocentrism: Multiculturalism and the Media.* United Kingdom, Taylor & Francis,Chapter 5. pp. 178-215.

c. Reception

Livingstone, Sonia., 2103. 'The Changing Nature of Audiences: From the Mass Audience to the Interactive Media User' In Angharad N. Valdivia (ed) *A Companion to Media Studies*. Malden, MA: Blackwell,pp. 337-356.

d. New Media

Miller, Daniel. 2011. 'The Anthropology of Facebook: Fifteen Theses on What Facebook Might Be' in *Tales from Facebook*. United Kingdom, Wiley. Pp. 164-204.

Suggested Readings:

Bailey, Michael. *Narrating Media History*. United Kingdom, Taylor & Francis, 2012.

Berry, Jeffrey M., and Sobieraj, Sarah. *The Outrage Industry: Political Opinion Media and the New Incivility*. United Kingdom, Oxford University Press, 2014.

Bocock, Robert. And Kenneth Thompson. (Eds.) *Social and Cultural Forms of Modernity.* United Kingdom, Polity Press, 1992. Chapter 8. Popular Culture and The Mass Media. Pp. 367-401

Curran, James. *Media and Power*, London: Taylor & Francis, 2012.

Fernandes, L. (2000). Nationalizing `the global': media images, cultural politics and the middle class in India. Media, *Culture & Society*, 22(5), 611–628.

Kellner, Douglas. Media Culture: Cultural Studies, Identity and Politics Between the Modern and the Post-modern. United Kingdom, Taylor & Francis, 2003.

Kittler, Friedrich A. *Gramophone, film, typewriter*. United States, Stanford University Press, 1999.

Mankekar, Purnima. *Screening Culture, Viewing Politics: An Ethnography of Television, Womanhood, and Nation in Postcolonial India*. United Kingdom, Duke University Press, 1999.

Mutz, Diana C. In-Your-Face *Politics: The Consequences of Uncivil Media*. United Kingdom, Princeton University Press, 2016.

Postman, Neil. *Amusing Ourselves to Death: Public Discourse in the Age of Show Business.* United States, Penguin Publishing Group, 2005.

Sumiala, Johanna. *Media and Ritual: Death, Community, and Everyday Life*. United Kingdom, Routledge, 2013.

Selvaraj, Velayutham *Tamil Cinema: The Cultural Politics of India's Other Film Industry.* London: Taylor & Francis, 2008.

Vasudevan, Ravi. Aesthetics and Politics in Popular Cinema, from Vasudha Dalmia and Rashmi Sadana. Ed. *The Cambridge Companion to Modern Indian Culture*. Cambridge: Cambridge University Press, 2012. 226-46

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category V
Common List of Generic Electives (GE)
Generic Elective (GE) 10
Sociology of Public Health

GENERIC ELECTIVE COURSE 10 (GE- 10): Sociology of Public Health

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE 10 Sociology of Public Health	4	3	1	0	12th Class Pass	Nil

Learning Objectives:

1. The course introduces students to public health and its interlinkages with various social determinants.
2. It familiarises students with contemporary concerns and challenges with respect to public health in India.

Learning outcomes:

Students will be able to:

1. Examine and comprehend public health and the varied social determinants of health.
2. Develop a theoretical understanding of health in society and assess the social determinants of health.
3. Evaluate the health systems in terms of new public health initiatives and innovative technologies.

SYLLABUS OF GE 10 : Sociology of Public Health

Unit I. Introduction to Public Health (9 Hours)
This unit introduces the students to the concept of public health from a sociological perspective.

Unit II. Theoretical Approaches to Public Health (6 Hours)
This unit discusses the ways in which public health has been conceptualised.

Unit III. Social Determinants of Public Health (6 Hours)
This unit discusses how non-medical factors influence health outcomes.

Unit IV. Contemporary Issues (24 Hours)

This unit discusses the contemporary concerns and challenges to public health in India.

Practical Component: NIL

Essential/Recommended Readings:

Unit I. Understanding Public Health

Abel J, Kellehear A. (2023). Public Health Reimagined. *Lifestyle Med. e76. Pp.* 1-8.

Craig R. Janes and Kitty K. Corbett. (2009). 'Anthropology and Global Health' in *Anthropology and Global Health*. Simon Fraser University, Burnaby, British Columbia. Pp. 167-183.

Naraindas, Harish. (2020). Past and Present. *The India Forum. 30 April 2020.* Available at https://www.theindiaforum.in/amp/article/past-and-present-

Unit II. Theoretical Approaches to Public Health

Lupton, Deborah (2003). 'Medicine as Culture: Illness, Disease and the Body in Western Societies' in *Medicine as Culture: Illness, Disease and the Body in Western Societies.*New Delhi: Sage Publications.Chapter 1. Pp. 5-22.

Priya, R. (2021). 'Critical Holism As Public Health Theory: Towards A Unifying Framework For Research, Policy And Planning' in *Dialogue: Science, Scientists and Society*, 4, 1-29.

Unit III. Social Determinants of Public Health

Navarro, Vicente. (2009). Social Determinants Of Health:What We Mean By Social Determinants Of Health. *International Journal Of Health Services*. Volume 39. Number 3. Pp. 423–441.

Qadeer, I. (2021). Rebuilding India's Public Health. *Special Issue on The Deepening of Disciplinary Content: Public Health in Post-COVID India.*

Unit IV: Contemporary Issues

a. Emerging Concerns:

Chakravarty S. (2022). Anthropological Research in Public Health Emergencies in India: Current challenges and Future Opportunities. *Anthropol Open J.* 2022. 5(2). Pp 43-51.

Grover, A. and R. B. Singh. (2020). Health Policy, Programmes and Initiatives. In Grover, A. and R. B. Singh. *Urban Health and Wellbeing, Advances in Geographical and Environmental Sciences.* Pp. 251-265

World Health Organisation. 2021. *World Health Statistics. Monitoring Health for The SDGs Sustainable Development Goals. WHO*. Pp. 1-34; 58-79.

(*The concerned faculty teaching the paper may look at the latest WHO report that is available.)*

b. Public Private Partnerships

Baru, Rama V. and Madhurima Nundy. (2008). Blurring of Boundaries: Public-Private Partnerships in Health Services in India. *Economic and Political Weekly* , Vol. 43, No. 4 (Jan. 26 - Feb. 1, 2008). Pp. 62-71.

Datta, Amrita. 2009. Public Private Partnerships in India: A Case of Reform? *Economic and Political Weekly*, Vol. XLIV. No. 33. Pp. 75-78.

c. Digital Health

Tan, S., & Lim, J. (2023) 'Digital Solutions to Public Health Issues' in *Oxford Research Encyclopedia of Global Public Health*.

Dahdah, Marine Al and Rajiv K. Mishra.(2022). 'Digital Health For All: The Turn to Digitized Healthcare in India' in. *Social Science & Medicine,* Volume 319. *https://doi.org/10.1016/j.socscimed.2022.114968*.

Suggested Readings:

Turner, B. S. (1995). *Medical Power and Social Knowledge.* Sage Publications.

Freund, P. E. S., McGuire, M. B., &Podhurst, L. S. (2003). *Health Illness and the Social Body: A Critical Sociology* (4th ed.). Prentice Hall.

Deborah, L. (2013). *Digitized Health Promotion: Personal Responsibility for Health in the Web 2.0 Era* (Working Paper No. 5). Sydney Health & Society Group.

Mishra, Arima (ed.). (2010). *Health, Illness and Medicine: Ethnographic Redings.* Delhi: Orient Black Swan.

Kuhlmannhe, Ellen and E. Annadale (ed.). (2010). *Palgrave Handbook of Gender and Healthcare.* London: Palgrave Macmillan

Tripathy,G.T., Jalan A.,Shankardass M.K. (ed). (2021). Sociological Reflections on the Covid-19 Pandemic in India: Redefining the Normal. Singapore: Springer.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Sociology
Generic Elective (GE) 11
Sociology of Organisations

GENERIC ELECTIVE COURSE – 11 (GE-11): SOCIOLOGY OF ORGANISATIONS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE-11 Sociology of Organisations	4	3	1	0	12th Class Pass	Nil

Learning Objectives:

1. This course introduces organisations as an object of sociological inquiry.
2. To generate an interdisciplinary understating of organisation at the confluence of Sociology, Social Anthropology, management studies and organisational studies.
3. To embed organisations in the larger socio-historical process and study them as key sites for the reshaping of society.

Learning outcomes:

Students will be able to:

1. *Examine* organisations sociologically as comprising multiple actors, ideologies and often competing worldviews.
2. *Identify* and describe the ways in which an organisation relates to and impacts its socio-ecological environment.
3. *Outline*, observe, and examine the evolution and contemporary developments in organisational structures.

SYLLABUS OF GE-11: Sociology of Organisations

Unit I. Introducing Sociology of Organisations (10 hours)
This unit lays the ground for the sociological study of organisations through a survey of the history of this subfield followed by a study of the major theoretical approaches.
a. What is an Organisation?
b. Theoretical Approaches

Unit II. Thematic Perspectives (15 hours)
Through a combination of theoretical and ethnographic texts, this unit looks at some of the key concepts and themes animating the sociology of organisations.
a. Investigating the 'Official' and the 'Practical'
b. Organisation and its Environment
c. Organisations and the Making of the 'Selves'

Unit III: Recent Explorations: New Directions in the Study of Organisations (12 hours)
This unit aims to introduce students to more recent developments in this field with respect to contemporary workplaces.
a. Evolution of the New Workplace
b. Stretching the Limits: Criminal Organisations

Unit IV: Conducting Research in Organisations (8 hours)
This unit aims at developing a critical understanding of the methodologies used in the sociological study of organisations.

Practical Component: NIL

Essential/Recommended Readings:

Unit I. Introducing Sociology of Organisations (10 hours)

a. What is an Organisation?

Scott, W.R. and G. F. Davis. 2015. 'Organizations: Overview'. In James D Wright ed. *International Encyclopedia of the Social & Behavioral Sciences, 2nd edition (Volume 16).* Amsterdam: Elsevier. pp. 307-311.

b. Theoretical Approaches

Scott, W. R. 2004. 'Reflections on a Half-Century of Organizational Sociology.' *Annual Review of Sociology, 30,* 1–21.

Unit II. Thematic Perspectives (15 hours)

a. Investigating the 'Official' and the 'Practical'

Braverman, H. 1998. 'Scientific Management' and 'The Primary Effects of Scientific Management' in *Labor and Monopoly Capital: The Degradation of Work in the Twentieth Century*. 25th Anniversary Edition. New York: Monthly Review Press. Chapters 4 & 5. pp. 59-94.

Ong, A. 1988. 'The Production of Possession: Spirits and the Multinational Corporation in Malaysia'. *American Ethnologist*, 15(1), 28–42.

b. Organisation and its Environment

Mathur, N. 2012. 'Transparent-Making Documents and the Crisis of Implementation: A Rural Employment Law and Development Bureaucracy in India'. *POLAR: Political and Legal Anthropology Review* 35 (2), 167–85.

c. Organisations and the Making of 'Selves'

Smith, G. 2006. 'Asylums' in *Erving Goffman*. London: Routledge. Chapter 5. pp. 69-76.

Hochschild, A. 2002. 'Emotional Labour' in S. Jackson and S. Scott (eds.) *Gender: A Sociological Reader*. London: Routledge. Chapter 23. pp. 192-196.

Unit III: Recent Explorations: New Directions in the Study of Organisations (12 hours)

a. Evolution of the New Workplace

Ho, K. 2009. 'Disciplining Investment Bankers, Disciplining the Economy: Wall Street's Institutional Culture of Crisis and the Downsizing of Corporate America'. *American Anthropologist*. 111: 177-189.

Hilhorst. D. 2003. 'Making Sense of NGOs in Everyday Office Life' in *The Real World of NGOs: Discourse, Diversity and Development*. London: Zed Books. Chapter 7. pp. 146-170.

b. Stretching the Limits - Criminal Organisations

Dua, J. 2015. 'After Piracy? Mapping the Means and Ends of Maritime Predation in the Western Indian Ocean'. *Journal of Eastern African Studies,* 9(3), 505-521.

Venkatesh, S. A. 1998. 'Gender and Outlaw Capitalism: A Historical Account of the Black Sisters United Girl Gang'. *Signs,* 23(3), 683–709.

Unit IV: Conducting Research in Organisations (8 hours)

Schwartzman, H.B. 1993. 'Introduction', 'Studying Up and Studying Down' and 'Fieldwork Roles and Fieldwork Processes' in *Ethnography in Organisations*. London: Sage. Chapters 1, 4 & 5. pp. 1-4, 27-40, 47-72.

Suggested Readings:

Acker. J. 2001. "Hierarchies, Jobs, Bodies: A Theory of Gendered Organisations", In Warwick Organizational Behaviour Staff *(Ed.) Organization Studies: Critical Perspectives in Business and Management.* London: Routledge.

Biehl, J. 2005. *Vita: Life in a Zone of Social Abandonment*. Chicago: University of California Press.

Blau, P.M. and Scott, W.H. 1962. *Formal Organisations*. San Francisco: Chandler.

Blau. P.M. 1965. *The Dynamics of Bureaucracy: A Study of Interpersonal Relations in Two Government Agencies.* Chicago: University of Chicago.

Boltanski, L., & Chiapello, E. 2007. *The New Spirit of Capitalism*. London, New York: Verso. pp. 3-43.

Crozier, M. 1964. *The Bureaucratic Phenomenon.* Chicago: University of Chicago Press.

Etzioni, A. 1961. *Comparative Analysis of Complex Organisations: On Power, Involvement and their Correlates*. New York: Free Press.

Goffman, E. 1961. *Asylums.* New York: Doubleday.

Grusky, O. and Miller, G.E. 1970. *The Sociology of Organisations: Basic Studies*. Part. New York: Free Press.

Ho, K. 2009. *Liquidated: An Ethnography of Wall Street*. London: Duke University Press.

March. J.G. and Simon, H.A. 1958. *Organisations.* New York: Wiley.

Mathur, N. 2016. *Paper Tiger: Law, Bureaucracy and the Developmental State in Himalayan India*. Cambridge: Cambridge University Press.

Roethlisberger, F. and William D. 1939. *Management and the Worker*. Cambridge: Harvard University Press.

Salaman, J.G. and Thompson, K. (eds.)1973. *People and Organisations.* London: Longman.

Scott, R.W. and Davis, G.. 2007. *Organizations and Organizing*. New York: Routledge

Taylor, F.W. 1947. *Scientific Management*. New York; London: Harper.

Weber, M. 1978. *Economy and Society.* Berkeley: University of California Press.

Wright. S. (ed.) 1994. *Anthropology of Organisations*. London: Routledge.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Sociology
Generic Elective (GE) 12
Sociology of Fashion

GENERIC EILECTIVE COURSE -12 (GE-12) : Sociology of Fashion

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE 12 Sociology of Fashion	4	3	1	0	12th Class Pass	Nil

Learning Objectives:

1. This paper aims to introduce students to the sociological study of fashion and its associated domains such as dress and clothing.
2. The objective of the paper is to introduce students to a range of issues arising out of a sociological consideration of fashion: the semiosis, social forms, relationship between fashion and social locations, culture and identity, and the global fashion industries in relation to consumption and sustainability.

Learning outcomes:

Students will be able to:

1. *Acquire* a basic knowledge of the theories and substantive issues in the sociology of fashion.
2. *Identify* and assess the meanings of fashion in its various dimensions such as material culture, as identity, as an economic power, and aesthetic style.
3. *Develop* an informed approach to read fashion in order to analyse and appraise relations between the economic, symbolic and socio-political aspects of contemporary society.

SYLLABUS OF GE-12: Sociology of Fashion

Unit I: Fashion: Between History and Sociology (9 Hours)
This unit introduces students to the basic theoretical and conceptual issues in the sociological study of fashion

Unit II: Making and the Meanings of Fashion (27 Hours)
This unit maps the various dimensions of the sociological study of fashion and enables students to grasp the many meanings of fashion in relation to culture, power and economy.

a. Sociality and Material Culture
b. Commodity and Consumption

c. Identity and Change

Unit III: Fashion in a Global Society (9 Hours)
This unit familiarizes students with the sociology of fashion in the contemporary context of globalization and cultural change.

Practical Component: NIL

Essential/Recommended Readings:

Unit I: Fashion: Between History and Sociology

Wilson, Elizabeth. *Adorned in Dreams: Fashion and Modernity*, London and New York: I. B. Tauris, 2003. Introduction. Pp. 1-15.

Blumer, Herbert. Fashion: From Class Differentiation to Collective Selection. *The Sociological Quarterly*, 10(3), 1969. Pp. 275–290.

Barthes, Roland. The Language of Fashion. United Kingdom: Bloomsbury Publishing, 2013. Pp. 3-14, 85-91.

Unit II: Making and the Meanings of Fashion

a. Sociality and Material Culture

Simmel, Georg. Georg Simmel on Individuality and Social Forms. Chicago: University of Chicago Press, 2003. Chapter 19. Fashon. Pp. 294-323.

Bovone, Laura. 'Approaches to Material culture: The sociology of fashion and clothing' in *Poetics*, 34(6), 2006. Pp. 319–331.

b. Commodity and Consumption

Barnard, Malcolm. *Fashion Theory: An Introduction*. United Kingdom: Taylor & Francis, 2014. Chapter 9. Fashon, Production and Consumption. Pp. 128-144.

Veblen, Thorstein. *The Theory of the Leisure Class*, Oxford: OUP, 2007. Chapter 7. Dress as an Expression of the Pecuniary Culture Pp. 111-124.

Fletcher, Kate. *Sustainable Fashion and Textiles: Design Journeys*. London: Taylor & Francis, 2007 2nd ed. Chapter 6 Local and Light . Pp. 139-159.

c. Identity and Change

Crane, Diana. *Fashion and Its Social Agendas: Class, Gender, and Identity in Clothing*. United Kingdom: University of Chicago Press, 2012. Chapter 1. Fashon, Identity and Social Change. Pp. 1-22.

Davis, Fred. *Fashion, Culture, and Identity*. United Kingdom: University of Chicago Press, 1994. Pp. 21-29, 33-54.

Angela McRobbie (ed.) *Zoot Suits and Second-Hand Dresses*, London: Macmillan, 1989. Chapter 2. Second-Hand Dresses and the Role of the Ragmarket. Pp. 23-48.

Unit III: Fashion in a Global Society

Maynard, Margaret. *Dress and Globalization*. United Kingdom: Manchester University Press, 2004. Pp. 32-49, 69-85

Tarlo, Emma. 'Dress and the South Asian Diaspora', in Joya Chatterji and David Washbrook (ed.) *Routledge Handbook of the South Asian Diaspora*, London & New York: Routledge, 2013. Pp. 363-373.

Green, D. N., Kaiser, S. B. Fashion and Cultural Studies. United Kingdom: Bloomsbury Publishing, 2021.2e. Chapter 5. Pp. 95-116.

Suggested Readings:

Arnold, Rebecca. (2001). Fashion, desire and anxiety: image and morality in the 20th century. United Kingdom: Rutgers University Press, 2001.

Beverly Lemire & Giorgio Riello (eds.) *Dressing Global Bodies. The Political Power of Dress in World History*, London & New York: Routledge, 2019.

Edwards, Tim. Express Yourself. The Politics of Dressing Up, in Malcolm Barnard (ed.) *Fashion Theory: A Reader*, London & New York: Routledge, 2007.

Gilman, Charlotte Perkins (2002). *The Dress of Women: A Critical Introduction to the Symbolism and Sociology of Clothing*. United Kingdom: Greenwood Press, 2002.

Jacque L. Foltyn & Laura Petican (eds.) *In Fashion: Culture, Commerce, Craft and Identity*, Leiden & Boston: Brill, 2022.

M. Angela Jansen & Jennifer Craik (ed.) *Modern Fashion Traditions*, London: Bloomsbury, 2016.

M. L. Damhorst et.al. (eds.). *The Meanings of Dress,* New York: Fairchild Publications, 1999.

Ribiero, Aileen. Introduction, in Dress and Morality, London: B. T. Batsford, 1986.

Veblen, Thorstein. On Culture and Society. United Kingdom: SAGE Publications, 2003.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER-V
DEPARTMENT OF SOCIOLOGY
Category I
BA (Honors) Sociology
Semester V

Sociological Thinkers- II

DISCIPLINE SPECIFIC CORE COURSE -13 (DSC-13) : Sociological Thinkers II

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 13 Sociological Thinkers- II	4	3	1	0	12th Class Pass	BA (H) DSC 10: Sociological Thinkers I or equivalent course

Learning Objectives:

1. To introduce the contributions made by Karl Marx, Claude Levi-Strauss and Pierre Bourdieu to sociological theory.
2. To familiarise students with Marxian and Structuralist and Practice Theories.

Learning Outcomes:

Students will be able to:
1. *Understand* conflict, structural and practice-oriented perspectives in the discipline of sociology.
2. *Conceptualise* research informed by these distinctive theoretical traditions of sociology.

SYLLABUS OF DSC-13: Sociological Thinkers- II

Unit I Karl Marx (18 Hours)

This unit introduces the students to the materialist conception of history as mode of analysis. It explores the basis, processes and consequess of capitalist society through the writings of Karl Marx.

a. Dialectical and Historical Materialism
b. Capitalist Mode of Production and Alienation

Unit II Levi Strauss: Structuralism (9 Hours)
This unit introduces students to structuralism and the study of myths through the writings of Levi-Strauss.

Unit III: Pierre Bourdieu: Theory of Practice (18 Hours)

This unit explains how an individual's practices are tacit and embodied and are an outcome of the interaction between social structures and the individual.

Practical Component: NIL

Essential/Recommended Readings:

Unit I: Karl Marx

a. Dialectical and Historical Materialism:

Marx, K. and F. Engels. 1969. *Selected Works, Vol. 1.* Moscow: Progress Publishers. Pp. 19-26.

b. Capitalist Mode of Production and Alienation

Marx, K. and F. Engels. 1969. *Selected Works Vol. 1*. Moscow: Progress Publishers. Pp. 142-174.

Giddens, Anthony. 1971. *Capitalism and Modern Social Theory: An Analysis of the Writings of Marx, Weber, and Durkheim*. Cambridge: Cambridge University Press. Pp. 1-64.

Unit II: Claude Levi Strauss: Structuralism

Lévi-Strauss, C. 1981. 'Structuralism and Myth' in *The Kenyon Review, New Series*, Vol. 3, No. 2, Spring. Pp. 64-88.

Unit III: Pierre Bourdieu: Theory of Practice

Bourdieu, P. 1977. *Outline of a Theory of Practice.* Cambridge: Cambridge University Press. Chapters. 2 Pp. 72-95.

Suggested Readings:

Bhambra Gurminder. and John Holmwood. 2021. *Colonialism and Modern Social Theory*. Cambridge: Polity Press.
Bottomore, T.(ed.). 1991. *The Dictionary of Marxist Thought.* Delhi: Wiley Blackwell.
Grenfell, M. (ed.) 2012. *Pierre Bourdieu: Key Concepts*. New-Delhi: Rawat Publications.
Seidman, S. 1994. *Contested Knowledge*. Cambridge: Blackwell Publishers.
Thompson, K. & Tunstall, J. (ed.) 1977. *Sociological Perspectives. Selected Readings.* New York: Penguin Books.
Turner, J. 1995. *The Structure of Sociological Theory.* Jaipur: Rawat Publications.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

BA (H) Sociology
Discipline Specific Core (DSC) 14
Sociological Research Methods

Discipline Specific Core Course -14 (DSC-14) : Sociological Research Methods

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 14 Sociological Research Methods	4	3	0	1	12th Class Pass	BA (H) DSC 03: Introduction to Sociological Research or equivalent course

LEARNING OBJECTIVES:

1. The course will enable students to learn the philosophical and methodological underpinnings of research.
2. It introduces them to various aspects of research methodology and the use of simple statistics.

LEARNING OUTCOMES:

Students will be able to:

1. *Understand* the deeper philosophical issues that underpin research.
2. *Evaluate* the methodological validity of the claims made by theory.
3. *Assess* research works for its methodological soundness.
4. *Create* research designs for simple research projects.

SYLLABUS OF DSC 14: Sociological Research Methods

Unit 1: Ways of Looking (6 Hours)

This unit introduces students to some of the main philosophical engagements of sociological research and practice.

a. Objectivity in Sociological Research
b. Reflexivity
c. Research Ethics

Unit 2: Methodological Issues (6 Hours)

This unit focuses on some epistemological issues and research practices.

a. Comparative Method
b. Feminist Method

Unit 3: Methods of Data Collection (21 hours)

This unit engages with the building blocks of research - from sampling the population to the common methods of conducting social surveys.

a. Sampling
b. Questionnaire Construction
c. Interview
d. Documents
e. Focus Group

Unit 4: Introduction to Statistics (12 Hours)

This unit introduces the statistical and diagrammatic organization and analysis of data.

a. Graphical and Diagrammatic Presentation of Data
b. Measures of Central Tendency (Simple Arithmetic Mean, Median and Mode).
c. Measures of Dispersion (Standard Deviation, Variance and Covariance).

Practical Component: NIL

Essential/Recommended Readings:

Unit 1: Ways of Looking

a. Objectivity in Sociological Research

Gray, David J. 1968. 'Value-Free Sociology: A Doctrine of Hypocrisy and Irresponsibility' in *The Sociological Quarterly*. Vol. 9, No. 2 (Spring, 1968). Pp. 176- 185.

b. Reflexivity

Gouldner, Alvin. 1970. *The Coming Crisis of Western Sociology*. New York: Basic Books. Chapter 13. Living as a Sociologist. Pp. 481-511.

c. Research Ethics

Martin, John Levi. 2017. Thinking Through Methods: A Social Science Primer. Chicago: University of Chicago Press, Chapter 6. Ethics in Research. Pp. 142-161.

Unit 2: Methodological Issues

a. Comparative Method

Béteille A. 2002. *Sociology: Essays on Approach and Method.* New Delhi: OUP. Chapter 4. Some Observations on the Comparitive Method. Pp. 72-94.

b. Feminist Method

Hammersley, Martyn. 1992. 'On Feminist Methodology' in *Sociology*, Vol. 26, No.2 (May 1992). Pp. 187-206.

Unit 3: Methods of Data Collection

a. Sampling

Bailey, K. 1994. 'Survey Sampling*'* in *Survey Sampling in Methods of Social Research*. 4th edition. New York: Free Press. Chapter 5. Pp. 81-104.

b. Questionnaire Construction

Bailey, K. 1994. 'Questionnaire Construction' in *Questionnaire Construction in Methods of Social Research*. 4th edition. New York: Free Press. Chapter 6. Pp. 105-146.

c. Interview

Bailey, K. 1994. 'Interview Studies' in *Methods of Social Research*. 4th edition. New York: Free Press. Chapter 8, Pp.173-213.

d. Documents

Coffey, Amanda. 'Analysing Documentary Realities', in David Silverman ed. *Qualitative Research: Theory, Method and Practice*. Delhi: SAGE Publications, 2004. Pp. 56-75.

e. Focus Group

Wilkinson, Sue. 'Focus group research' in David Silverman ed. *Qualitative Research: Theory, Method and Practice*. Delhi: SAGE Publications, 2004. Pp. 177-196.

Unit 4: Introduction to Statistics
(To be taught through Practical Classes)

a. Graphical and Diagrammatic presentation of data

Gupta, S. P. 2007. 'Diagrammatic and Graphic Presentation' in *Elementary Statistical Methods*. Sultan Chand & Sons. Chapter 6, Pp.101-108, 115-118, 131-137.

b. Measures of Central Tendency

Gupta, S. P. 2007. 'Measures of Central Value' in *Elementary Statistical Methods*. Sultan Chand & Sons. Chap 7, Pp. 155-168, 173-180, 187-197.

c. Measures of Dispersion

Gupta, S. P. 2007. 'Measures of Variation' in *Elementary Statistical Methods*. Sultan Chand & Sons. Chapter 8 pp. 262-277.

SUGGESTED READINGS:

Radcliffe-Brown, A.R. 1958. *Methods in Social Anthropology*. Delhi: Asia Publishing Corporation. Chapter 5. Pp. 91-108

Durkheim, E. 1958, The Rules of Sociological Method. New York: The Free Press, Chapter 1 and 2. Pp. 1-46

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.A. (H) Sociology
Discipline Specific Core (DSC) 15
Understanding Ethnographies

Discipline Specific Core Course -15 (DSC-15) : Understanding Ethnographies

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 15 Understanding Ethnographies	4	3	1	0	12th Class Pass	BA (H) DSC 03: Introduction to Sociological Research or equivalent course

Learning Objectives:

1. To familiarise students with ethnography as a genre of writing and representing sociological research.
2. To make them aware of the various issues involved in the process of ethnographic writing through a close reading of ethnographic texts.

Learning outcomes:

Students will be able to:

1. *Inculcate* interdisciplinary thinking between sociology, philosophy and literature, through reading classic and contemporary ethnographies.
2. *Understand* the construction and representation of the ethnographic field.
3. *Critically engage* with the research and data presented in ethnographic texts.

SYLLABUS OF DSC-15:

Unit I: Ethnographic Enquiry and Representation (9 Hours)

This unit attempts to define ethnography and the construction of the research object.

a. What is Ethnography?
b. Constructing the Ethnographic Object

Unit II: Types of Ethnography (15 Hours)

This unit engages students with the many techniques involved in ethnographic research.

a. Fieldwork
b. Visual Ethnography
c. Digital Ethnography
d. Auto-ethnography

Unit III: Compulsory text for use in the syllabus (21 Hours)

This unit takes up a single ethnographic text to encourage students to build the patience to read, understand and critically analyse full-length texts that are often about another, unfamiliar culture, based on the premises outlined in the earlier sections.

Practical Component: NIL

Essential/Recommended Readings:

Unit I: Ethnographic Enquiry and Representation

a. What is Ethnography?

Clifford, James and George E. Marcus, eds. 'Introduction*'* in *Writing Culture: The Poetics and Politics of Ethnography: A School of American Research Advanced Seminar*. University of California Press, 1986. Pp. 1-19.

Nader, Laura. 'Ethnography as Theory' in *HAU: Journal of Ethnographic Theory* 1, no. 1, 2011, Pp. 211-219.

Blasco, Paloma Gay, and Huon Wardle. 'Introduction' in *How to Read Ethnography*. Routledge, 2007. Pp. 1-12.

b. Constructing the Ethnographic Object

Kumar, Nita. *Friends, Brothers, and Informants: Fieldwork Memoirs of Banaras.* Berkeley: University of California Press*,*1992. Chapter 2 and 22, Pp. 36-47 and 216-225.

Unit II: Types of Ethnography

a. Fieldwork

Srinivas, M.N. 'The Insider Versus the Outsider in the Study of Cultures.' In *Methodology and Fieldwork*. Edited by Vinay Kumar Srivastava. Oxford University Press, 2002. Pp. 413-420.

b. Visual Ethnography

Abraham, Janaki. 'Wedding Videos In North Kerala: Technologies, Rituals, And Ideas About Love And Conjugality'in *Visual Anthropology Review* 26.2 (2010), Pp. 116–127.

c. Digital Ethnography

Pink, Sarah, Heather Horst, John Postill, Larissa Hjorth, Tania Lewis, and Jo Tacchi. 'Researching Experience' in *Digital Ethnography: Principles and Practice*. Sage Publications, 2016. Chapter 2: 19-39.

d. Auto-ethnography

Narayan, Kirin. 'How Native is a 'Native' Anthropologist?.'in *American Anthropologist* 95, no. 3, 1993. Pp. 671-686.

Unit III: Compulsory text for use in the syllabus

Option 1

Mead, Margaret. *Coming of Age in Samoa: A Psychological Study of Primitive Youth for Western Civilization*. New York: Harper Collins, 1928.

Option 2

Whyte, William Foote. *Street Corner Society: The Social Structure of an Italian Slum*. University of Chicago Press, 1943.

Option 3

Taussig, Michael. *The Devil and Commodity Fetishism in South America*. Chapel Hill: University of Carolina Press, 2010 (1980).

Option 4

Gold, A. G., Gujar, B. R. (2002*). In the Time of Trees and Sorrows: Nature, Power, and Memory in Rajasthan*. United Kingdom: Duke University Press.
In the Times of Trees and Sorrows

Suggested Readings:

Srinivas, M. N. (1980). *The Remembered Village*. United Kingdom: University of California Press.

Viramma, Racine Josiane and Racine, Jean-Luc. *Viramma: Life of an Untouchable*. Translated by Will Hobson. Paris: Verso UNESCO Publishing, 1997.

Blasco, Paloma Gay, and Huon Wardle. *How to Read Ethnography*. Routledge, 2007.

Wulff, Helena. "Writing Anthropology". In *The Cambridge Encyclopedia of Anthropology*, edited by Felix Stein, 2021.

Abu-Lughod, Lila. "Can there be a Feminist Ethnography?" *Women & Performance: A Journal of Feminist Theory* 5, no. 1, 1990: 7-27.

Alsop, Christiane Kraft. "Home and Away: Self-reflexive Auto-/ethnography." In *Forum Qualitative Sozialforschung/Forum: Qualitative Social Research*, vol. 3, no. 3, 2002: 1-18.

Buber, Martin. *I and Thou*. Hesperides Press, 2008.

Mines, Diane P., and Sarah Lamb, eds. *Everyday Life in South Asia*. USA: Indiana University Press, 2010. Chapter 17 and 18: 219-249.

Sarangapani, Padma M. *Constructing School Knowledge: An Ethnography of Learning in an Indian Village*. New Delhi: Sage Publications, 2003.

Winddance Twine, France. "Visual Ethnography and Racial Theory: Family Photographs as Archives of Interracial Intimacies." *Ethnic and racial studies* 29, no. 3, 2006: 487-511.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category II
BA (Prog.) with Sociology as Major
Semester V

*

B.A. (Prog.) Sociology
Discipline Specific Core (DSC) 09
Sociological Research-I

Discipline Specific Core -9 (DSC 09): Sociological Research -I

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (If any)
		Lecture	Tutorial	Practical/ Practice		
DSC 09 Sociological Research -I	4	3	1	0	12th Class Pass	BA (Prog) DSC 01 An Invitation Sociology or equivalent course

Learning Objectives:

1. The course familiarises students with the theoretical and methodological aspects of sociological research.
2. The course introduces the basic outline of doing research and its philosophical underpinnings.

Learning outcomes:

Students will be able to:

1. *understand* the philosophical and methodological underpinning of research.
2. *develop* a practice-based understanding of the process of research.
3. *differentiate* between the quantitative, qualitative, and mixed methods of research and combine them effectively to conceptualise theoretically informed empirical research practices.

SYLLABUS OF DSC- 09: Sociological Research -I

Unit I: Doing Research (12 Hours)

This unit introduces research as a process and discusses the related issues of the logic of

research and objectivity

.

a. The Logic of doing research
b. The Process of social research
c. Objectivity in research

Unit II: Methodological Perspectives (9 Hours)

This unit delves into perspectives on how to study people.

a. Comparative Method
b. Ethnographic Method

Unit III: Modes Of Enquiry (24 Hours)

This unit looks at the interaction of theory and research and moves to methods of analysing and depicting data

.

a. Theory and Research
b. Analysing Data: Quantitative, Qualitative and Mixed Methods
c. Representing Data: Classification and Tabulation of Data and Diagrammatic and Graphic Representation of Data

Practical Component: NIL

Essential/Recommended Readings:

Unit 1: Doing Research

a. The Logic of Doing Research

Mills, C. W. (1959). 'The Promise' in *The Sociological Imagination*, London: OUP. Chapter 1, pp. 3-24.

b. The Process of Social Research

Srivastava, V.K. et al (Eds.). (2004) 'Introduction' in *Methodology and Fieldwork*, New Delhi: OUP., pp. 1-14.

c. Objectivity in Research

Gouldner, Alvin (1962) *Social Problems,* Vol. 9, No. 3 (Winter), Anti-Minotaur: The Myth of Value-Free Sociology, pp. 199-213.

Unit II: Methodological Perspectives

a. Comparative Method

Béteille, A. (2004) 'The Comparative Method and the Standpoint of the Investigator'. In Vinay

Kumar Srivastava (Ed.) *Methodology and Fieldwork*, New Delhi: OUP, pp. 112-131.

b. Ethnographic Method

Brewer, J.D. (2010). 'What is Ethnography?' in *Ethnography*, Jaipur: Rawat Publication (Indian Reprint). Chapter 1 - Pp. 10-25.

Unit III: Modes of Enquiry

a. Theory and Research

Merton, R. K. (1972). 'The Bearing of Sociological Theory on Empirical Research' and 'The bearing of Empirical Research on Sociological Theory' in *Social Theory and Social Structure*, Delhi: Arvind Publishing House. Chapter 4, 5 -, pp. 139-171.

b. Analysing Data: Quantitative, Qualitative and Mixed Methods

Creswell, J W. (2009). 'Quantitative Procedures', Qualitative Procedures and Mixed Methods Procedures in *Research Design: Qualitative, Quantitative and Mixed Methods Approaches*, 3rd edition. Sage Publications. Chapters 8, 9, 10, , pp. 145-152, 173-200, 203-220.

c.Representing Data: Classification and Tabulation of Data and Diagrammatic and Graphic Representation of Data

Gupta, S. P. (2006). 'Classification and Tabulation' and 'Diagrammatic and Graphic Presentation' in *Elementary Statistical Methods*. Sultan Chand & Sons. Chapter 5, 6, pp.65-100, 101-108, 115- 118, 131-137.

Suggested Readings:

Bailey, K. (1994). The Research Process in Methods of Social Research, 4th edition, New York: Free Press, Pp.3-19.

Béteille, A. (2002), *Sociology: Essays on Approach and Method*, New Delhi: OUP. Chapter 4, Pp. 72-94.

Bryman, Alan. (2004), *Quantity and Quality in Social Research*, New York: Routledge. Chapter 2 & 3, Pp. 11-70.

Durkheim, E. (1958). *The Rules of Sociological Method*, New York: Free Press. Chapter 1 & 2, Pp. 1-46.

Gouldner, Alvin. 1970, *The Coming Crisis of Western Sociology*, New York: Basic Books. Chapter 13, Pp. 481-511.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.A. (Prog.) Sociology
Discipline Specific Core (DSC) 10
Investigating Inequalities

DISCIPLINE SPECIFIC CORE -10 (DSC-10): Investigating Inequalities

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 10 Investigating Inequalities	4	3	1	0	12th Class Pass	BA (Prog) DSC 01 An Invitation Sociology or equivalent course

Learning Objectives:

1. To introduce the domain of social inequality as a key area of sociological inquiry.
2. To impart an understisng of social inequalities as intersenctional phinominon that impact various dimensions of social life.
3. To engage the new dimentions and changing forms of inequalities in contemporary times.

Learning outcomes:

Students will be able to:

1. *Develop* a descriptive and analytical understanding of social inequality.
2. *Identify* how social inequality operates at different socio-cultural contexts.
3. *Discuss* the key debates that animate contemporary research on inequality.

SYLLABUS OF DSC-10:

Unit I: Understanding Inequality (9 hours)

This unit introduces the concept of social inequality within the discipline of sociology. It also familiarises students to the various theoretical perspectives in the study of social inequality.

a. What is inequality?

b. Perspectives on Inequality

Unit II: Interlocking inequalities in social life (21 hours)

This unit introduces the intersectional character of social inequality and its pervasiveness in social life.

a. Gender

b. Race and Religion

c. Labour Market

d. Health

Unit III. Impact of Globalisation (15 hours)

This unit introduces the issues of exclusion and new forms of inequalities in the era of globalisation.

a. Social Exclusion

b. Technology

c. Climate Change

Practical Component: NIL

Essential/Recommended Readings:

Unit I. Understanding inequality

a. What is Social Inequality?

Beteille, A. (1969). *Social inequality*. Penguin Books.Introduction, Chapter 18. The decline of Social Inequality? Pp. 1-14, 362-380.

b. Perspectives on Inequality

Marger, M. N. (1999). *Social Inequality: Patterns and Processes*. Mountain View. Chapter 2: Theories of Class and Social Inequality. Pp. 26-53.

Walby, S., Armstrong, J., & Strid, S. (2012). Intersectionality: Multiple Inequalities in Social Theory. *Sociology*, 46(2). Pp. 224-240.

Unit II. Interlocking inequalities in Social Life

a. Gender

Dey, A., & Orton, B. (2016). Gender and Caste Intersectionality in India: An Analysis of the Nirbhaya case, 16 December 2012. In *Gender and Race Matter: Global Perspectives on Being a Woman*. Emerald Group Publishing Limited. Pp 87-105.

b. Race and Religion

Macey, M. (2010). *Ethnic, Racial and Religious Inequalities: The Perils of Subjectivity*. Springer. Chapter 2. Religion and Culture Make a Difference Pp. 27-56.

c. Labour Market

Browne, I., & Misra, J. "Labor-market inequality: intersections of gender, race, and class" in Romero, M., & Margolis, E. (Eds.). (2005). The Blackwell companion to social inequalities. John Wiley & Sons. Londres, Blackwell Publishing. Pp. 165-189.

d. Health

Abel, T. (2008). Cultural Capital and Social Inequality in Health. *Journal of Epidemiology & Community Health*, *62*(7). Pp. 1-5.

Unit III: Impact of Globalisation

a. Social Exclusion

Munck, R. (2005). Social Exclusion: New Inequality Paradigm for the Era of Globalization? In Mary Romero and Eric Margolis eds. *The Blackwell Companion to Social Inequalities*. Oxford: Blackwell, 2008. Pp. 31-49.

b. Technology

Pfohl, S. (2005). New Global Technologies of Power: Cybernetic Capitalism and Social Inequality. In Mary Romero and Eric Margolis eds. *The Blackwell Companion to Social Inequalities*. Oxford: Blackwell, 2008. Pp. 546-592.

c. Climate Change

Harlan, Sharon L. et.al. (2015). Climate Justice and Inequality, in Riley E. Dunlap (ed.), Robert J. Brulle (ed.) *Climate Change and Society: Sociological Perspectives.* United States: Oxford University Press. Pp. 127-154.

Suggested Readings:

Tilly, C. (2005). Historical Perspectives on Inequality. Mary Romero and Eric Margolis eds. *The Blackwell Companion to Social Inequalities*. Oxford: Blackwell, 2008. Pp. 15-30

Ragnedda, M. (2017). *The Third Digital Divide: A Weberian approach to Digital Inequalities*. Routledge.

Grusky, D. (2018). *The Inequality Reader: Contemporary and Foundational Readings in Race, Class, and Gender*. Routledge.

Anthony B. Atkinson. (2015) *Inequality: What Can be Done?* Cambridge: Harvard University Press. Pp. 241-308.

Menon, N. (2015). 'Is Feminism about women'? A Critical View on Intersectionality from India. *Economic and Political Weekly*, Vol. 50, No. 17 (APRIL 25, 2015), Pp. 37-44.

John, M. E. (2015). Intersectionality: Rejection or Critical Dialogue? *Economic and Political Weekly*, Vol. 50, No. 33 (AUGUST 15, 2015), Pp. 72-76.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category III
BA (Prog.) with Sociology as Non-Major
Semester V

*

B.A. (Prog.) Sociology
Discipline Specific Core (DSC) 09
Sociological Research-I

Discipline Specific Core -9 (DSC 09): Sociological Research -I

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (If any)
		Lecture	Tutorial	Practical/ Practice		
DSC 09 Sociological Research -I	4	3	1	0	12th Class Pass	BA (Prog) DSC 01 An Invitation Sociology or equivalent course

Learning Objectives:

1. The course familiarises students with the theoretical and methodological aspects of sociological research.
2. The course introduces the basic outline of doing research and its philosophical underpinnings.

Learning outcomes:

Students will be able to:

4. *understand* the philosophical and methodological underpinning of research.
5. *develop* a practice-based understanding of the process of research.
6. *differentiate* between the quantitative, qualitative, and mixed methods of research and combine them effectively to conceptualise theoretically informed empirical research practices.

SYLLABUS OF DSC- 09: Sociological Research -I

Unit I: Doing Research (12 Hours)

This unit introduces research as a process and discusses the related issues of the logic of research and objectivity

.

d. The Logic of doing research
e. The Process of social research
f. Objectivity in research

Unit II: Methodological Perspectives (9 Hours)

This unit delves into perspectives on how to study people.

c. Comparative Method
d. Ethnographic Method

Unit III: Modes Of Enquiry (24 Hours)

This unit looks at the interaction of theory and research and moves to methods of analysing and depicting data

.

a. Theory and Research
b. Analysing Data: Quantitative, Qualitative and Mixed Methods
c. Representing Data: Classification and Tabulation of Data and Diagrammatic and Graphic Representation of Data

Practical Component: NIL

Essential/Recommended Readings:

Unit 1: Doing Research

a. The Logic of Doing Research

Mills, C. W. (1959). 'The Promise' in *The Sociological Imagination*, London: OUP. Chapter 1, pp. 3-24.

b. The Process of Social Research

Srivastava, V.K. et al (Eds.). (2004) 'Introduction' in *Methodology and Fieldwork*, New Delhi: OUP., pp. 1-14.

c. Objectivity in Research

Gouldner, Alvin (1962) *Social Problems,* Vol. 9, No. 3 (Winter), Anti-Minotaur: The Myth of Value-Free Sociology, pp. 199-213.

Unit II: Methodological Perspectives

c. Comparative Method

Béteille, A. (2004) 'The Comparative Method and the Standpoint of the Investigator'. In Vinay Kumar Srivastava (Ed.) *Methodology and Fieldwork*, New Delhi: OUP, pp. 112-131.

d. Ethnographic Method

Brewer, J.D. (2010). 'What is Ethnography?' in *Ethnography*, Jaipur: Rawat Publication (Indian Reprint). Chapter 1 - Pp. 10-25.

Unit III: Modes of Enquiry

b. Theory and Research

Merton, R. K. (1972). 'The Bearing of Sociological Theory on Empirical Research' and 'The bearing of Empirical Research on Sociological Theory' in *Social Theory and Social Structure*, Delhi: Arvind Publishing House. Chapter 4, 5 -, pp. 139-171.

b. Analysing Data: Quantitative, Qualitative and Mixed Methods

Creswell, J W. (2009). 'Quantitative Procedures', Qualitative Procedures and Mixed Methods Procedures in *Research Design: Qualitative, Quantitative and Mixed Methods Approaches*, 3rd edition. Sage Publications. Chapters 8, 9, 10, , pp. 145-152, 173-200, 203-220.

c. Representing Data: Classification and Tabulation of Data and Diagrammatic and Graphic Representation of Data

Gupta, S. P. (2006). 'Classification and Tabulation' and 'Diagrammatic and Graphic Presentation' in *Elementary Statistical Methods*. Sultan Chand & Sons. Chapter 5, 6, pp.65-100, 101-108, 115- 118, 131-137.

Suggested Readings:

Bailey, K. (1994). The Research Process in Methods of Social Research, 4th edition, New York: Free Press, Pp.3-19.

Béteille, A. (2002), *Sociology: Essays on Approach and Method*, New Delhi: OUP. Chapter 4, Pp. 72-94.

Bryman, Alan. (2004), *Quantity and Quality in Social Research*, New York: Routledge. Chapter 2 & 3, Pp. 11-70.

Durkheim, E. (1958). *The Rules of Sociological Method*, New York: Free Press. Chapter 1 & 2, Pp. 1-46.

Gouldner, Alvin. 1970, *The Coming Crisis of Western Sociology*, New York: Basic Books. Chapter 13, Pp. 481-511.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category IV
Common Pool of Discipline Specific Electives (DSE)

*

Sociology
Discipline Specific Elective (DSE) 07
Visual Culture

DISCIPLINE SPECIFIC ELECTIVE COURSE -07 (DSE-07) : Visual Culture

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 07 Visual Culture	4	3	1	0	12th Class Pass	Nil

Learning Objectives:

1. To introduce students to various perspectives that enable a contextualisation of everyday visual culture within the larger debates around power, politics and identity.
2. To familiarise students to the debates from the field of Art History, Social Sciences and Visual Art Practices and enable them to understand the processes through which different visual environments can be sociologically analysed.
3. To provide students an understanding of how the very process of 'seeing' can be problematised.

Learning outcomes:

Students will be able to:

1. *Apply* sociological concepts to understand and appreciate visuals and constitute their representations as matters of academic interest.
2. *Demonstrate* 'visuality'/'visualization' as a technique of asserting power and dominance in society; simultaneously locating the subversive potential of alternative or 'counter-visualities'.
3. *Analyse* the operations of visuals in an age dominated by techniques of mass production and dissemination of images.

SYLLABUS OF DSE 07 : Visual Culture

Unit I: Introduction to Visual Culture (12 Hours)

This unit problematises the idea that 'seeing' is a natural process, and introduces students to the visual construction of the social world. It also examines the process of seeing in the context of modernity.

a. The Process of 'Seeing'
b. Modernity and Visuality

Unit II: Visual Environments and Representations (33 Hours)

This unit examines different visual environments, with illustrations to elucidate the manner in which visuals allows the constitution of the relationship between self and the everyday.

a. Power, Knowledge and Gaze of the State
b. Visual Contestations
c. Visual Practices and Identity formation
d. Visual Cultures of Everyday Life

Practical Component: NIL

Essential/Recommended Readings:

Unit I. Introduction to Visual Culture (12 Hours)

a. The Process of 'seeing'

Mitchell, W.J.T. (2002) 'Showing Seeing: A Critique of Visual Culture' In *Journal of Visual Culture,* August 2002 vol. 1 no. 2. Pp. 165-180.

Berger, John (1972) *Ways of Seeing*. London: Penguin. Pp. 7- 33.

b. Modernity and Visuality

Debord, Guy(1994). 'Separation Perfected' in *The Society of the Spectacle*, New York: Zone books. Chapter 1. Separation Perfected. Pp. 11-24.

Shohat, Ella & Robert Stam (2002) 'Narrativizing Visual Culture', In Nicholas Mirzoeff (ed) *The Visual Culture Reader*. 2nd ed. London: Routledge. Pp. 37-57.

Chatterji, Roma (2012) 'Global Events and Local Narratives: 9/11 and the Chitrakaars' In *Speaking with Pictures: Folk Art and Narrative Tradition in India*. Pp. 62-103. (20 pages of pictures)

Unit II. Visual Environments and Representations (33 Hours)
a. Power, Knowledge and Gaze of the State

Foucault, Michel (1977) 'Panopticism' In *Discipline and Punish: The Birth of the Prison*. New York: Pantheon. Race/Ethnicity: Multidisciplinary Global Contexts, Volume 2, Number 1, Autumn 2008. Pp. 1-12.

Gilbert, Emily (2010) 'Eye to Eye: Biometrics, the Observer, the Observed and the Body Politic' in Fraser MacDonald, Rachel Hughes and Klaus Dodds (Ed), *Observant States Geopolitics and Visual Culture*, London: I. B. Tauris. Pp. 225-246.

b. Visual Contestations

Morris, Pam(1994) 'Folk Humour and Carnival Laughter' in *The Bakhtin Reader*. London: Arnold. Pp. 194- 206.

Enguix, Begonya(2009) 'Identities, Sexualities and Commemorations: Pride Parades, Public Space and Sexual Dissidence' in *Anthropological Notebooks*, vol. XV: 2. Ljubljana: Slovene Anthropological Society. Pp. 15-35.

c. Visual Practices and Identity Formation

Bourdieu, P(1984) 'Introduction' in *Distinction: A Social Critique of the Judgment of Taste*. Routledge & Kegan Paul, London. Pp. 1-7.

Srivastava, Sanjay (2009) 'Urban spaces, Disney-Divinity and Moral Middle classes in Delhi' In *Economic and Political Weekly* Vol. XLIV, Nos. 26 & 27. Pp. 338-345.

MacDougall, David (1992) 'Photo Hierarchicus: Signs and Mirrors in Indian Photography' in *Visual Anthropology*, 5 (2). Pp. 3-29.

d. Visual Culture of the Everyday Life

Certeau, Michel De (1984) 'General Introduction' in *The Practice of Everyday Life*. (Trans) Steven Rendall, Berkeley: University of California. Pp. xi-xxiv.

Pinney, Christopher (2004) 'What do Pictures Want Now: Rural Consumers of Images, 1980-2000' In *Photos of the Gods: The Printed Image and Political Struggle in India*. London: Reaktion. Pp. 181-200.

Goldsmith, Steven (1983) 'The Readymades of Marcel Duchamp: The Ambiguities of An Aesthetic Revolution' in *The Journal of Aesthetics and Art Criticism*, Volume 42, Issue 2. Pp. 197–208.

Suggested Readings:

Weinbaum, Alys Eve (2008) *The Modern Girl around the World: Consumption, Modernity, and Globalization*. Durham: Duke UP.

Pinney, Christopher (1997) *Camera Indica: The Social Life of Indian Photographs.* Chicago: University of Chicago.

Babb, Lawrence A., and Susan Snow Wadley (1995) *Media and the Transformation of Religion in South Asia.* Philadelphia: University of Pennsylvania

Sciorra, Joseph (1999) 'We Go Where the Italians Live: Religious Processions as Ethnic and Territorial Markers in a Multi-ethnic Brooklyn Neighborhood' In Robert A. Orsi (ed) *Gods of the City*. Indiana University Press. Pp. 310-340

Rappoport, Erika D (1995)'A New Era of Shopping: The Promotion of Women's Pleasure', Leo Charney and Vanessa R. Schwartz (ed) *Cinema and the Invention of Modern Life*. Berkeley & Los Angeles: University of California Press.

Mazumdar, Ranjani (2007). *Bombay Cinema: An Archive of the City*. Minneapolis: University of Minnesota,

Appadurai, Arjun, and Carol A. Breckenridge (1999) 'Museums are Good to Think: Heritage on View in India.' Representing the Nation: A Reader: Histories. Heritage, and Museums. (Eds.) David Boswell and Jessica Evans .New York: Routledge.

Tavin, K. M. (2003) Wrestling with Angels, Searching for Ghosts: Toward a Critical Pedagogy of Visual Culture. *Studies in Art Education*, 44(3), Pp.197–213.

Cohn, Bernard (1983) "Representing Authority in Colonial India", in An Anthropologist Among the Historians and Other Essays, Delhi: OUP,Pp. 632-650 .

Berger, Peter, (1972), *Ways of Seeing,* (Video)
https://www.youtube.com/watch?v=0pDE4VX_9Kk

Mitchell, W.J.T., (2020), *Present Tense: An Iconology of Time - W.J.T. Mitchell* (Video) https://www.youtube.com/watch?v=z_Juh7R20eA

Cartwright, Lisa and Marita Sturken (2001) "Postmodernism: Irony, Parody, and Pastiche" in *Practices of looking*: *An Introduction to Visual Culture*, New York : OUP.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Sociology
Discipline Specific Elective 08
Sociology of the Body

DISCIPLINE SPECIFIC ELECTIVE COURSE – 08 (DSE-08) : Sociology of the Body

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 08 Sociology of the Body	4	3	1	0	12th Class Pass	Nil

Learning Objectives:

1. To de-naturalise the body and reconstitute it in sociological terms as a social phenomenon.
2. To familiarise students with various theoretical formulations and ethnographic engagements with body.
3. To outline the broad contours of discourse on the body in South Asian societies.

Learning outcomes:

Students will be able to:

1. *Identify* and explain the concepts that are integral to a sociological study of the body.
2. *Analyse* various bodily practices in their social, historical and institutional contexts.
3. *Apply* the conceptual apparatus developed by sociology to evaluate the emerging issues surrounding the body.

SYLLABUS OF DSE-08: Sociology of the Body

Unit I: Knowing the Body (12 Hours)

This unit establishes the material and social character of the body and traces the sociological tradition of thinking about body from Marcel Mauss to Mary Douglas and beyond.

Unit II: Variations on the Body (24 Hours)

This unit maps various dimensions of bodily practices and institutional practices surrounding the social body. It explores the body in its material and symbolic manifestations,

establishes its complicity in the formations of self and identity, explores its political and economic significance and delineates how it is experienced as a lived reality.

a. Body in Practice

b. Body and Identity

c. Body, Power and Commodification

d. Lived Body

Unit III: Discourse on Body in South Asia (9 Hours)

This unit configures the sociological discourse on the body in South Asia on the axes of caste, community and gender.

Practical Component: NIL

Essential/Recommended Readings:

Course Outline with Readings:

Unit I: Knowing the Body

Lock, Margaret and Judith Farquhar (Eds.) *Beyond the Body Proper: Reading the Anthropology of Material Life*. United Kingdom: Duke University Press, 2007. Introduction; On the Part Played by Labor in the Transition from Ape to Man; Techniques of the Body; Pp. 19-23, 25-29 & 49-68.

Scheper-Hughes, N., & Lock, M. M. 'The Mindful Body: A Prolegomenon to Future Work' in Medical Anthropology. *Medical Anthropology Quarterly*, 1(1), 1987, Pp. 6–31.

Unit II: Variations on the Body

a. Body in Practice

Turner, Terence S. 'The Social Skin', *HAU: Journal of Ethnographic Theory,* 2 (2): 2012. Pp. 486–503.

Bourdieu, Pierre. 'Belief and the body', in *The Logic of Practice*, Oxford: Blackwell, 1984. Chapter 4. Belief and the Body. Pp. 66-79.

b. Body and Identity

Wells, Susan. 'What Is This Body That We Read' in *Our Bodies, Ourselves and the Work of Writing.* United States: Stanford University Press. 2010, Chapter 4. Pp. 134-174.

Scott, Sue and David Morgan. 'You Too Can Have a Body Like Mine: Reflections on the Male Body and Masculinities' in *Body Matters: Essays on The Sociology of The Body*. United Kingdom: Taylor & Francis, 2004. Chapter 5. Pp. 70-88.

Fassin, Didier. 'How to Do Races with Bodies' in Frances E. Mascia-Lees ed. *A Companion to the Anthropology of the Body and Embodiment*, Cambridge: Blackwell, 2011. Pp. 419-431

c. Body, Power and Commodification

Boddy, Janice. 'Colonialism: Bodies under Colonialism', in Frances E. Mascia-Lees ed. *A Companion to the Anthropology of the Body and Embodiment*, Cambridge: Blackwell, 2011. Pp. 119-132.

Foucault, Michel. 'Body/Power' in *Power/knowledge: Selected Interviews and Other Writings*, 1972-1977. New York Knopf Doubleday Publishing Group, 1980. Chapter 3. Pp. 55-62.

Edmonds, A. 'The Poor Have the Right to be Beautiful? Cosmetic Surgery in Neoliberal Brazil'. *Journal of the Royal Anthropological Institute*, 13(2), 2007. Pp. 363–378.

d. Lived Body

Toombs, S. Key. 'The Lived Experience of Disability'. *Human Studies*, 18(1),1995. Pp. 9–22.

Morgan, David. 'The Body in Pain' in, *Real Bodies: A Sociological Introduction*. United Kingdom: Bloomsbury Publishing, 2017. Pp. 79- 94.

Unit III: Discourse on Body in Indian Context

Alter, Joseph S. 'Preface: History, Body, Culture' in *Gandhi's Body: Sex, Diet, and the Politics of Nationalism*. United States: University of Pennsylvania Press, 2011. Pp. ix-xiii

Gorringe, Hugo., & Rafanell, Irene. 'The Embodiment of Caste: Oppression, Protest and Change'. *Sociology*, 41(1), 2007. Pp. 97–112.

Mehta, Deepak. 'Circumcision, Body and Community' in Work, Ritual, Biography : A Muslim community in North India. India: Oxford University Press. 1997. Chapter 6. Pp. 178-213.

Sarah Lamb, 'The Politics of Dirt and Gender: Body Techniques in Bengali India', in *Dirt, Undress, and Difference: Critical Perspectives on the Body's Surface*. United States: Indiana University Press, 2005. Pp. 213-229.

Suggested Readings:

Alter, Joseph S. *The Wrestler's Body: Identity and Ideology in North India*. United Kingdom, University of California Press, 1992.

Arnold, David. *Colonizing the Body: State Medicine and Epidemic Disease in Nineteenth-Century India*. United Kingdom, University of California Press, 1993.

Berthelot, J. M). Sociological Discourse and the Body. *Theory, Culture & Society*, 3(3), 1986,155–161.

Bordo, Susan. *Unbearable Weight: Feminism, Western Culture, and the Body*. Berkley: University of California Press, 1993.

Davis, Lennard J. *Enforcing Normalcy: Disability, Deafness, and the Body*. United Kingdom: Verso Books, 1995.

Desjarlais, Robert R. *Body and Emotion: The Aesthetics of Illness and Healing in the Nepal Himalayas.* United States: University of Pennsylvania Press, 2011.

Dickenson, Donna. *Property in the Body: Feminist Perspectives*. Cambridge: Cambridge University Press, 2007.

Douglas, Mary. *Natural Symbols: Explorations in Cosmology*. London: Taylor & Francis, Chapter 5. Two Bodies, 2004., Pp. 72-91.

Eisenstein, Zillah R. *The Female Body and the Law*. Berkeley: University of California Press, 1988.

Falk, Pasi. *The Consuming Body*. London: Sage Publications, 1994.

Flood, Gavin D. *The Tantric Body: The Secret Tradition of Hindu Religion*. United Kingdom: Palgrave Macmillan, 2006.

Grosz, Elizabeth A. *Space, Time, and Perversion: Essays on the Politics of Bodies*. London: Routledge, 1995.

Kumar, Udaya. Self, body and inner sense: Some reflections on Sree Narayana Guru and Kumaran Asan. *Studies in History,* 1997, 13(2), 247–270.

Lupton, Deborah. *Medicine as Culture: Illness, Disease and the Body in Western Societies.* India: Sage Publications, 2003.

Scheper-Hughes, Nancy. *Commodifying Bodies*. India, London: Sage Publications, 2002.

O'Neill, John. *Five Bodies: Re-figuring Relationships*. United Kingdom: Sage Publications, 2004.

Serres, Michel. *Variations on the Body*. United States: University of Minnesota Press, 2015.

Shilling, Chris. *Re-Forming the Body: Religion, Community and Modernity*. United Kingdom: Sage Publications (CA), 1997.

Shilling, Chris. *The Body and Social Theory*. United Kingdom: Sage Publications, 2012.

Strathern, Andrew. *Body Thoughts*. United Kingdom: University of Michigan Press, 1996.

Teman, Elly. *Birthing a Mother: The Surrogate Body and the Pregnant Self*. United Kingdom: University of California Press, 2010.

Thomas J. Csordas. Embodiment as a Paradigm for Anthropology , *Ethos* , Vol. 18, No. 1,1990, Pp. 5-47

Turner, Bryan S. *The Body and Society: Explorations in Social Theory*. United Kingdom, Sage Publications, 2008.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Sociology
Discipline Specific Elective (DSE) 09
Sociology and Social Policy

DISCIPLINE SPECIFIC ELECTIVE COURSE -09(DSE-09): Sociology and Social Policy

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 09 Sociology and Social Policy	4	3	1	0	12th Class Pass	Nil

Learning Objectives:

1. To consittute social policy as an obhect of sociological investigation and recount key theories, concepts, and methods devoloped foraround it.
2. To impart the methods of analysing the formulation, adoption, implementation of social policy from a sociological vantage.
3. To appreciate social policy analysis as an interdisciplinary field of study and understand the complex dynamics of the politics of decision making.

Learning Outcomes:

Students will be able to:

1. *Develop* critical and analytical skills with respect to examining the complex dynamics involved in social policy making process.
2. *Recognise*, *evaluate* and dissect policies of social importance in the interest of people, society and environment.
3. *Exhibit* the requisite analytical skills to evaluate and improve social policy.

SYLLABUS OF DSE-09: Sociology and Social Policy

Unit I: Social Policy and Sociological Analysis (15 Hours)

This unit invites students to the world of Social Policy and familiarizes them with some of its important conceptual and theoretical frameworks, meanings, evolution and manifest practices.

a. What is Social Policy?
b. Social Policy and Sociological Perspectives

Unit II: Making Social Policy I: Institutions, Ideologies and Actors (15 Hours)

This unit engages with the context, value framework, social character and politics involved in the policy-making process.

a. Social Policy as a Worldview
b. The Character of Social Policies in India

Unit III: Making Social Policy II: Craft and Analysis (15 Hours)

This unit introduces students to the methodological issues involved in the craft of policy-making from a sociological perspective and problematizes the dominance of technocracy and reductionist public policy experts.

a. Methodological and Technical Frameworks
b. Emerging Issues and Concerns in Social Policy

Practical Component: NIL

Course Outline and Essential/Recommended Readings:

Unit I. Social Policy and Sociological Analysis

a. **What is Social Policy?**

Spicker, P. (2014). Introduction: The Nature of Social Policy. In: *Social Policy: Theory and Practice*. Great Britain: Policy Press. Pp. 1–20.

Dreze, J. (2016). Social Policy: An Introduction In: Jean Dreze (ed.) (2016). Social *Policy: Essays from Economic and Political Weekly*, New Delhi: Orient Blackswan. Pp.1-18.

b. Social Policy and Sociological Perspectives

Coffey, A. (2004). Sociological Theory and Social Policy, In: *Re-Conceptualizing Social Policy: Sociological Perspectives on Contemporary Social Policy*. England: Open University Press. Pp.1-4, 10-11, 19-22, 30-41.

Unit II: Making Social Policy I: Institutions, Ideologies and Actors

a. Social Policy Worldview: Ideology, Value Frameworks and Priorities
Spicker, P. (2014). Principles and Values. In: *Social Policy: Theory and practice*. Great Britain: Policy Press. Pp. 181–202.

Lapuente, V & Van de Walle, S. (2020).The Effects of New Public Management on the Quality of Public Services. In: *Governance: An International Journal of Policy, Administration and Institution.* Vol.33, Issue.3. Pp. 461-464.

Manuel, T. (2019). How Does One Live the Good Life?: Assessing the State of Intersectionality in Public Policy. In: O. Hankivsky, J. S. Jordan-Zachery (eds.), *The Palgrave Handbook of Intersectionality in Public Policy*. London:Palgrave. Pp-33-46

Ghosh, J. (2004). Social Policy in Indian Development. In: T. Mkandawire (eds) *Social Policy in Development Context*. London: Palgrave Macmillan. Pp. 284-307.

b. The Character of Social Policies in India

Sen, S (2022). Law and Social Policy in India. In: Davy, U., & Chen, A.H.Y. (Eds.). *Law and Social Policy in the Global South: Brazil, China, India, South Africa*. New York: Routledge. Pp-78-127

Pellissery, S. (2021). One Hundred Years of the (Stifed) Social Question, In: L. Leisering (ed.). *One Hundred Years of Social Protection, Global Dynamics of Social Policy*. Cham: Palgrave Mcmillan. Pp.121-142

Chopra, D. (2011). Policy Making in India: A Dynamic Process of Statecraft. *Pacific Affairs*, *84*(1), 89–107.

Unit III: Making Social Policy II: Craft and Analysis (15 Hours)

a. Methodological and Technical Frameworks

Fischer, Frank. (2007). Deliberative Policy Analysis as Practical Reason: Integrating Empirical and Normative Arguments, In: Frank Fischer, Gerald J. Miller, Mara S. Sidney (ed.) 2007. *Handbook of Public Policy Analysis: Theory, Politics, and Methods*. New York: CRC Press Taylor & Francis Group.pp.pp.223-236

Spicker, P. (2014). Policy in Practice. In *Social policy: Theory and practice*. Great Britain: Policy Press. Pp. 223–244, 429-431

Deshpande, S., and Y. Yadav. (2006). Redesigning Affirmative Action. *Economic and Political Weekly.* Volume 41. Pp. 2419–2424.

b. Emerging Issues and Concerns in Social Policy

Dunleavy, P. (2016). 'Big data' and Policy Learning. In: Gerry Stoker and Mark Evans (ed.). *Evidence-based Policy Making in the Social Sciences: Methods that Matter*. UK: Policy Press. Pp.145-160, 163-166.

(To make the course more empirically grounded and impactful the instructors are suggested to incorporate activities like Policy Review, Field Study, and Policy Expert Interaction)

Suggested Readings:

O'Connor, F. Mary Katherine & Netting, Ellen (Eds.). (2011). *Analyzing Social Policy Multiple Perspectives for Critically Understanding and Evaluating Policy*. New Jersy: John Wiley & Sons, Inc. Pp.1-7, 14-17

Blakemore, K and Griggs, E. (2007). Ideas and Concepts. In: *Social Policy: An Introduction.* Open University Press, England, pp. 5-10 & 15-39.

Government of India. (1946 – 1950). *Constituent Assembly Debates (Proceedings) Vol. I to XII(1946-1950)*.

Government of India. (1963). The Planning Process, Planning Commission,New Delhi, 1963

Government of India. (1985). *Challenges of Education: A Policy Perspectives*. MHRD.

Government of India. (2005).The Mahatma Gandhi National Rural Employment Guarantee Act, 2005..

Government of India. (2013). The National Food Security Act 2013.

Govt. of India, Ministery of Education. (2019,2020). Draft National Education Policy, 2019 and National Education Policy, 2020.

Government of India. (2020).The Code on Social Security, 2020, Government of India

Murali, K. (2018). Caste, Class and Capital: The Social and Political Origins of Economic Policy in India. Cambridge: Cambridge University Press.

Nussbaum, M and Sen, A. (1993). *The Quality of Life.* Oxford: Oxford University Press.

Patton, C V; Sawicki, D; Clark, Je. (2016). *Basic Methods of Policy Analysis and Planning. New York:*Rutledge.Pp. 21-33, 43-57.

Report of the Expert Group to Propose "Diversity Index" and to Work out the Modalities for Implementation. 2008. Submitted to the Ministry of Minority Affairs. Government of India

Saha, K.T. (Eds.). (1947). *National Planning Committee Series, Report of the Sub-committees (Vol.1-25)* Bombey: Vora & co. Publishers ltd.

Vaidyanatha Ayyar, R.V. (2017). *History of Education Policy Making in India: 1947 - 2016*. Delhi: Oxford University Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category VI
Common List of Generic Electives (GE)
Generic Elective (GE) 13
Understanding Development

GENERIC ELECTIVE COURSE- 13 (GE 13): Understanding Development

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE 13 Understanding Devolopment	4	3	1	0	12th Class Pass	Nil

Learning Objectives:

1. To introduce diverse processes of development from a sociological view point.
2. To familiarise students with ideas, theories, and practices of development.
3. To acquaint students with the trajectory and experiences of development in post-colonial India.

Learning outcomes:

Students will be able to:

1. *Identify* and understand different ideas of, and approaches to, development.
2. *Examine* the discourse of development as a relationship between developmental institutions, actors, policies and theories.
3. *Analyse* the key features of developmental processes in post-colonial India.
4. *Evaluate* developmental practices in different locations, moments, and contexts.

SYLLABUS OF GE 13: Understanding Devolopment

Unit I: Unpacking Development (9 Hours)
This unit examines the way development discourse is constituted analytically and historically.

Unit II: Theorizing Development (18 Hours)
This unit introduces students to various theoretical perspectives on development.

a. Modernization, Dependency and the World Systems
b. Gender, Ecology and Devolopment Theory
c. Devolopment as Freedom
d. De-essentialising Development

Unit III: Development: Histories, Practices and Alternatives (18 Hours)
This unit maps analytical and historical contours of development in South Asia and introduces issues arising out of development in practice.

a. Histories
b. Practices
c. Alternatives

Practical Component: NIL

Essential/Recommended Readings:

Unit I. Unpacking Development

Rist, Gilbert. *The History of Development: From Western Origins to Global Faith*. United Kingdom: Zed Books, 2014. Chapter 1. Definitions of Development. Pp. 1-24.

Sachs, Wolfgang (ed). *The Development Dictionary: A Guide to Knowledge as Power.* United Kingdom: Zed Books, 2010.v *Devolopment.* Pp. 1-21.

Unit II. Theorizing Development (18 Hours)

a. Modernization, Dependency and the World Systems

Bernstein, Henry. 'Modernization Theory and the Sociological Study of Development', *The Journal of Development Studies, 1971, Volume* 7, No. 2. Pp. 141-155

Roberts, J. Timmons. *The Globalization and Development Reader: Perspectives on Development and Global Change*. Germany: Wiley, 2014. Pp. 107-114, 126-144.

b. Gender, Ecology and Devolopment Theory

Pearson, Ruth 'The Rise and Rise of Gender and Development' in Kothari, Uuma K. *A Radical History of Development Studies: Individuals, Institutions and Ideologies*. United Kingdom: Zed Books, 2019. Pp. 157- 176.

Redclift, Michael 'Development and the Environment: Managing the Contradictions?' in Leslie Sklair (ed.) *Capitalism and Development*. United Kingdom: Taylor & Francis, 2002. Pp. 123-137

c. Devolopment as Freedom

Sen, Amartya. *Development as Freedom*. United Kingdom: OUP Oxford, 2001. pp. 3-11, 35-54.

d. De-essentialising Development

Sanyal, Kalyan. *Rethinking Capitalist Development: Primitive Accumulation, Governmentality and Post-Colonial Capitalism.* United Kingdom: Taylor & Francis, 2014. Pp. 168-189.

Unit III. Development: History, Practices and Alternatives (18 Hours)

a. History

Ludden, David. 'Development Regimes in South Asia: History and the Governance Conundrum' *Economic and Political Weekly*, 2000, Vol. 40, No. 37. Pp. 4042–51.

Chatterjee, Partha, 2008. 'Democracy and Economic Transformation in India,' *Economic and Political Weekly, 2008,* Vol. 48, No. 16. Pp. 53-62.

Mosse, David. Caste and Development: Contemporary Perspectives on a Structure of Discrimination and Advantage. World Development, 2018, Volume 110. Pp. 423-433.

b. Practices

Hirschman, Albert O. *Development Projects Observed.* United States: Brookings Institution Press, 2014. Pp. 1-31

De-Sardan, Jean-Pierre Oliver. *Anthropology and Development: Understanding Contemporary Social Change*. United Kingdom: Bloomsbury Publishing, 2008. Pp. 137-151.

c. Alternatives

Kothari, Ashish., Shrivastava, Aseem. *Churning the Earth: The Making of Global India.* India: Penguin, 2012. Pp. 254-292.

Suggested Readings:

Bardhan, Pranab K. *The Political Economy of Development in India*. United Kingdom: B. Blackwell, 1984.

Harrison, Elizabeth., Crewe, Emma. *Whose Development? An Ethnography of Aid*. United Kingdom: Bloomsbury Academic, 1998.

Galeano, Eduardo. *Open Veins of Latin America*. United Kingdom: Monthly Review Press, 1997.

Mies, Maria. *Patriarchy and Accumulation on a World Scale: Women in the International Division of Labour.* United Kingdom: Zed Books, 2014.

Rodney, Walter. *How Europe Underdeveloped Africa.* United Kingdom: Verso Books, 2018.

Schumacher, E. F., McKibben, Bill. *Small Is Beautiful: Economics as If People Mattered*. India: Harper Collins, 2010.

Wolf, Eric R. Europe and the People Without History. United Kingdom: University of California Press, 2010.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Sociology
Generic Elective (GE) 14
Sociology of Disability

GENERIC ELECTIVE COURSE -14 (GE-14) : Sociology of Disability

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE 14 Sociology of Disability	4	3	1	0	12th Class Pass	Nil

Learning Objectives:

1. To offer a sociological understanding of disability and outline a pluralitty of theoretical approaches towards its conceptualisation.
2. To familiarise students with critical disability theory and underline its intersections with other systems of oppression, such as caste, class, gender and sexuality.
3. To provide a sociological understanding of ableism and the processes and structures that reproduce it and introduce the disability rights movement in India and its policy interventions and advocacies.

Learning outcomes:

Students will be able to :

1. *Identify* the different sociological perspectives of disability; from social labeling theory to social constructionism and the critical disability theory.
2. *Examine* the cultural representations of disability and look at its various intersections.
3. *Develop* knowledge about disability rights, including the Disability Rights Movement and various policies on Disability.

SYLLABUS OF GE 14: Sociology of Disability

Unit I: Understanding Disability (12 hours)

This unit examines the theoretical engagement with disability, outlining the conceptualisation(s) and theoretical models to understand disability.

a. Meanings and Conceptualisation
b. Sociological Perspectives on Disability

Unit II: Disability and Vulnarability (15 hours)
This unit examines the interaction between disability and other axes of social inequality.

Unit III: Disability in Everyday Life (9 hours)
This unit approaches disability by focusing on the culture of ableism. The unit notes practices of socio-cultural reproduction of ableism and its contestation.

a. Ableism and Inaccessibility
b. Everyday Practices of Resistance

Unit IV: Paradigm Shifts and Emerging Issues (9 hours)

This unit focuses on rights assertion, interventions and emerging issues in disability studies and activism.

a Disability Rights Movements
b. Policy Interventions
c. Emerging Issues

Practical Component: NIL

Essential/Recommended Readings:

Unit I: Understanding Disability

a. Meanings and Conceptualisation

Davis, Lennard. 2017. "Introduction : Disability, Normality, and Power*"* in Lennard J. Davis (eds) *The Disability Studies Reader*. Routledge. Pp 1-16.

Shakespear, Tom. 2017. "The Social Model of Disability" in Lennard J. Davis (eds) *The Disability Studies Reader*. Routledge. Pp 195-203.

b. Sociological Perspectives on Disability

Parsons, Talcott. 1975. "The Sick Role and the Role of the Physician Reconsidered" *The Milbank Memorial Fund Quarterly. Health and Society. Vol 53, No. 3 (Summer 1975)* Pp. 257-278.

Goffman, E. 2006. 'Selections from Stigma'. In, Lennard J. Davis, *The Disability Studies Reader: Second Edition*. Pp. 131-140.

Sztobryn-Giercuszkiewicz, J., 2017. *Critical Disability Theory as a Theoretical Framework for Disability Studies*. Oblicza niepełnosprawności w praktyce i teorii,. Pp. 29-35.

Unit II: Disability and Vulnarabilities

Adlakha, Renu. 2008. "Disability, Gender and Society", *Indian Journal of Gender Studies*, 15(2). Pp. 191–207.

Chakravarti, Upali. 2008. "Burden of Caring: Families of Disabled in Urban India" In *Disability Studies in India: Global Discourses, Local Realities*, New Delhi: Routledge. Pp. 122-144

Johri, Rachana. 2019. "Disability and Mothering: Embodied Knowledge", *Peace Prints: South Asian Journal of Peacebuilding*, Vol. 5, No. 1, Special Issue: Summer 2019, pp. 2-16.

Hiranandani,Vanamala and Deepa Sonpal. 2010. 'Disability, Economic Globalization and Privatization: A Case Study of India', *Disability Studies Quarterly*, Vol 30 (3 / 4).

Unit III: Disability in Everyday Life

a. Ableism and Inaccessibility

Nario-Redmond, M. 2020. *Ableism: The Causes and Consequences of Disability Prejudice.* Wiley Blackwell. Chapter 3: Justifying Ableism: Ideologies and Language, pp. 80-109.

b. Everyday Practices of Resistance

Gold, J.R. and Margaret Gold. 2007. "Access for all: the rise of the Paralympic Games", The Journal of The Royal Society for the Promotion of Health, 127(3):133-141.

Bhowmick, Partho. 2013. "Blind with Camera: Photographs by the Visually Impaired", In Renu Addlakha (eds.) *Disability Studies in India Global Discourses, Local Realities*. Routledge. Pp. 303-330.

Unit IV: Paradigm Shifts and Emerging Issues

a. Evolution of Disability Rights

Mehrotra, Nilika. 2011. "Disability Rights Movements in India: Politics and Practice", EPW, 46, no. 6 (2011): 65–72.

b. Law and Policy Interventions

Dhanda, Amita. (2018) Disability Studies Reading of the Law for Persons with Disabilities in India" in Anita Ghai (ed.) *Disability in South Asia: Knowledge and Experience* Sage Publications . pp- 383- 400.

c. Emerging Issues

Barton, L. 2018. *Disability and Society, Emerging Issues, and Insights*. Routledge London & New York. Chapter 1 'Sociology and Disability: Some Emerging Issues. Pp. 1-15.

Suggested Readings:

Chaney, Paul. 2020. "An Institutionally Ableist State? Exploring Civil Society Perspectives on the Implementation of the Convention on the Rights of Persons with Disabilities in India", *Journal of Civil Society*, 16:4, pp. 372-392

Campbell, Fiona. 2018. "Refocusing and the Paradigm Shift: From Disability to Studies in Ableism" In, Anita Ghai (ed.) *Disability in South Asia Knowledge and Experience*. Sage Publications. Pp. 38-57

Frederick, A., & Shifrer, D. (2019). Race and Disability: From Analogy to Intersectionality, *Sociology of Race and Ethnicity*, *5*(2), 200–214.

Ghai, Anita. 2003. *(Dis)Embodied Form: Issues of Disabled Women*. New Delhi. Har-Anand Publications. Chapter 1 and 2.

Ghai, Anita. 2015. *Rethinking Disability in India*. Routledge. Chapter 2: Conversations about Disability: The Cultural Landscape.

Goodley, Dan. 2014. *Dis/Ability Studies: Theorising Disablism and Ableism*. Routledge. Chapter 3: Intersectionality, pp. 35-50.

Hans, Asha and Annie Patri. 2003. *Women, Disability, and Identity*. Sage Publications.

Mehrotra, Nilika, 2020, "Situating Disability Studies: A Prolegomenon" in Nilika Mehrotra (eds.) *Disability Studies in India : Interdisciplinary Perspectives*. Springer. Pp.1-24

Suggested E-Resources:

Policy Documents :
Ministry of Social Justice and Empowerment (Government of India). 2006. National Policy for Persons with Disabilities.
https://disabilityaffairs.gov.in/upload/uploadfiles/files/National%20Policy.pdf

Department of Personnel and Training (Government of India). (No date). Frequently Asked Questions (FAQ) on the Policy of Reservation to Persons with Disabilities.
https://dopt.gov.in/sites/default/files/FAQ_Disabilities.pdf

Unique Disability ID, Department of Empowerment of Persons with Disability, Ministry of Social Justice and Empowerment (Government of India). “Disability Schemes”. https://www.swavlambancard.gov.in/schemes/search

National Human Rights Commission. 2006. Rights of the Disabled by Anuradha Mohit, Meera Pillai and Pratiti Rungta. https://nhrc.nic.in/sites/default/files/DisabledRights_1.pdf

Ministry of Social Justice and Empowerment (Government of India). 2021. Public Notice Inviting Comments on the draft National Policy for Persons with Disabilities. https://disabilityaffairs.gov.in/upload/uploadfiles/files/Draft%20Copy%20New%20National%20Policy%20May%202022%20.pdf

World Health Organisation. “WHO Policy on Disabilities”. https://www.who.int/about/policies/disability

Films/Documentaries

- Klein, B.S. 2006. *Shameless: The Art of Disability.*
- Bhansali, Sanjay L. 2005. *Black.*
- Neudel, Eric. 2011. *Lives Worth Living.*
- Davenport, Reid. 2022. *I Didn’t See You There.*
- Lebrecht, James and Nicole Newnham. 2020. *Crip Camp: A Disability Revolution.*

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Sociology
Generic Elective (GE) 15
Key Debates in Sociology

GENERIC ELECTIVE COURSE -15 (GE-15) : Key Debates in Sociology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE 15 Key Debates in Sociology	4	3	1	0	12th Class Pass	Nil

Learning Objectives:

1. To bring the key theoretical and methodological debates of sociology alive for the students.
2. To impart an understanding of the sociological enterprise as something that is at once conceptual, methodological and substantive.
3. To help students integrate their sociological learning into a vital coherent, organic and evolving sociological vision.

Learning outcomes:

Students will be able to:

1. *Develop* knowledge of key sociological debates, their origins, configurations and interrelations.
2. *Identify* sociology as a dynamic, dialogical and open-ended discipline and ability to practice it as such.
3. *Outline*, assess and analyse the ongoing sociological debates and demonstrate an ability to create a viable sociological investigation and contextualise it in the enduring and active disciplinary legacy of debates.

SYLLABUS OF DSC-15: Key Debates in Sociology

Unit 1: Debates in Sociology: Contexts and Configurations (9 Hours)

This unit locates the sociological debates in their historical context. It also introduces students to the debate surrounding the lines that mark the separation of sociology and social anthropology.

Unit 2: Methods, Concepts and Theories (30 Hours)

This unit discusses key methodological, conceptual and theoretical debates in sociology.

a. Debating Methods

b. Conceptual Debates

i. Community and Society: Comte, Tonnies, Weber, Durkheim

ii. Status and Class: Marx, Weber

iii. Sacred, Profane and Secular: Durkheim, Weber

c. Debating Theory

Unit 3: Debating Modernity (6 Hours)

This unit maps the Sociological debate on the nature of modernity.

Practical Component: NIL

Essential/Recommended Readings:

Unit 1: Debates in Sociology: Contexts and Configurations

Nisbet, Robert. *The Sociological Tradition*. United Kingdom: Taylor & Francis, 2017. Chapter 1. The Unit-Ideas of Sociology Pp. 3-20.

Gellner, Ernest. *Cause and Meaning in the Social Sciences*. United Kingdom: Taylor & Francis, 2004. Chapter 7. Sociology and Social Anthropology. Pp. 109- 137.

Unit 2: Methods, Concepts and Theories

a. Debating Methods

Hindess, Barry. *Philosophy and Methodology in the Social Sciences*. United Kingdom: Harvester Press, 1977.Introduction, Pp. 1-22.

Stedman-Jones, Susan. Fact/Value. Chris Jenks ed. *Core Sociological Dichotomies*. United Kingdom: SAGE Publications, 1998. Pp. 49- 62.

Bourdieu, Pierre. *Sociology in Question*. United Kingdom: Sage Publications (CA), 1993. Chapters 2. A science that makes Trouble, Chapter 3. Sociologist in Question. Pp. 8-35.

b. Conceptual Debates

i. Community and Society: Comte, Tonnies, Weber, Durkheim

Nisbet, Robert. *The Sociological Tradition*. United Kingdom: Taylor & Francis, 2017. Chapter 3. Community. Pp. 47-51, 56-61, 71-97.

ii. Status and Class: Marx, Weber,

Nisbet, Robert. *The Sociological Tradition*. United Kingdom: Taylor & Francis, 2017. Chapter 5. Status. Pp. 174-182, 200-208, 212-216.

iii. Sacred, Profane and Secular: Durkheim, Weber

Nisbet, Robert. *The Sociological Tradition*. United Kingdom: Taylor & Francis, 2017. Chapter 6. The Sacred. Pp. 221-231, 243-251.

c. Debating Theory

Mills, C. Wright. *The Sociological Imagination*. United Kingdom: Oxford University Press, USA, 1999. Chapter 2. Grand Theory. Pp. 25-49.

Coleman, James S. Microfoundations and Macrosocial Behavior. In Jeffrey C. Alexander. *The Micro-macro Link*. United Kingdom: University of California Press, 1987. Pp. 153-172.

Unit 3: Debating Modernity (6 Hours)

Giddens, Anthony. *Conversations with Anthony Giddens: Making Sense of Modernity*. Germany: Polity Press, 2013. Pp. 94-117

Chatterjee, Partha. *Our Modernity*. Netherlands: SEPHIS, 1997. 3-20

Suggested Readings:

Alexander, Jeffrey C. and Steven Seidman. *The New Social Theory Reader*. United Kingdom: Taylor & Francis, 2020. Pp. 354-404.

Anderson, R. J. *Classic Disputes in Sociology*. United Kingdom: Allen & Unwin, 1987.

Bauman, Zygmunt. Is there a postmodern sociology? In Steven Seidman ed. *The Postmodern Turn: New Perspectives on Social Theory*. United Kingdom: Cambridge University Press, 1994. Pp.187-204.

Filmer, Paul. Theory/Practice. Chris Jenks ed. *Core Sociological Dichotomies*. United Kingdom: SAGE Publications, 1998.

Foss, Dennis C. *The Value Controversy in Sociology*. United Kingdom: Jossey-Bass Publishers, 1977.

Giddens, Anthony. Positivism and its Critics in Tom Bottomore ed. *A History of Sociological Analysis*. United Kingdom: Pearson Education, 1979. Pp. 237-283.

Giddens, Anthony. *The Consequences of Modernity*. United Kingdom: Stanford University Press, 1990. Pp. 1-54.

Gouldner, Alvin Ward. *For Sociology: Renewal and Critique in Sociology Today*. United Kingdom: Allen Lane, 1973.

Hawthorn, Geoffrey. *Enlightenment and Despair: A History of Social Theory*. United Kingdom: Cambridge University Press, 1987.

Holton, R. J. *The Transition from Feudalism to Capitalism*. United States: St. Martin's Press, 1985.

Jenks, Chris ed. *Core Sociological Dichotomies*. United Kingdom: SAGE Publications, 1998.

Knorr-Cetina, K. and A. V. Cicourel. *Advances in Social Theory and Methodology: Toward an Integration of Micro- and Macro-Sociologies*. United Kingdom: Taylor & Francis, 2014.

Ritzer, George. *Issues, Debates and Controversies: An Introduction to Sociology*. United States: Allyn & Bacon, Incorporated, 1972. Pp 469-500.

Tim Ingold ed. *Key Debates in Anthropology*. United Kingdom: Taylor & Francis, 2003.

Merton, R. K. (1968). Social Theory and Social Structure. India: Free Press. Chapter 2. Sociological Theories of Mddle Range. Pp. 39-72

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER-VI
DEPARTMENT OF SOCIOLOGY
Category I
BA (Honors) Sociology

B.A. (H) Sociology
Discipline Specific Core (DSC) 16
Sociological Thinkers- III

DISCIPLINE SPECIFIC CORE COURSE -16 (DSC-16) : Sociological Thinkers- III

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 16 Sociological Thinkers- III	4	3	1	0	12th Class Pass	BA (H) DSC 13 Sociological Thinkers- II Or equivalent course

Learning Objectives:

To familiarise students with the micro, interactionist, and critical thinkers in sociology.
To draw attention to the critique of modernity and its consequences forwarded by 20th century sociological thinkers.
To communicate the diversity and interdisciplinarity of sociological theory at the end of 20th centrury.

Learning outcomes:

Students will be able to:

1. *Develop* a critical perspective in the analysis of contemporary social reality.
2. *Apply* the concepts and theories necessary for sociological analysis of contemporary societies.

Syllabus Of DSC-16: Sociological Thinkers- III:

Unit I: Interactionism: G. H. Mead & Erving Goffman (18 Hours)

The unit introduces students to the symbolic interactionist approach through the works of Erving Goffman and G.H. Mead.

Unit II. Social Construction of Reality: Berger and Luckmann (9 Hours)

This unit explores how everyday reality is socially constructed.

Unit III. Critical Theory: Max Horkheimer & T.W. Adorno (12 Hours)

This unit helps the student to rethink and critique the dominant ideas, social structures and knowledge put forth by capitalism and modernity.

Unit IV : Theorizing Identity: Nancy Frazer (6 Hours)

This unit reexamines the concept of social justice from the perspective of the redistribution of resources and recognition of cultural differences.

Essential Readings

Unit I: Interactionism: G. H. Mead & Erving Goffman (18 Hours)

Mead, G.H. 1934 (1967) *Mind Self and Society*. Chicago: University of Chicago Press. Part III. Pp. 135-226.

Goffman, E. (1963) *Stigma and Social Identity*. London: Penguin Books. Ch. 1 & 4. Pp. 11-54, 150-164.

Unit II. Social Construction of Reality: Berger and Luckmann (6 Hours)

Berger, P. L. and Luckmann, T. (1991). *The Social Construction of Reality*. London: Penguin Books. Pp. 31-62.

Unit III. Critical Theory: Max Horkheimer & T.W. Adorno (12 Hours)

Horkheimer. Max and Adorno. T.W. (2002). *Dialectic of Enlightenment: Philosophical Fragments.* Stanford: Stanford University Press. Ch.1. Pp. 1-34.

Unit IV : Theorizing Identity: Nancy Frazer (6 Hours)

Fraser, Nancy. (1996) Social Justice in the Age of Identity Politics:Redistribution, Recognition, and Participation. The Tanner Lectures On Human Values. Delivered at Stanford University April 30–May 2, 1996. Pp. 1-67

Suggested Readings:

Bottomore, T. (2002). *The Frankfurt School and It's Critics.* London: Routledge.

Elliot, A. & Lemert, C. (2022). *Introduction to Contemporary Social Theory*. London: Routledge.

Goffman, E. (1994). *The Presentation of Self in Everyday Life*. London: Anchor Books. Edinburgh

Baldwin, J. D. (2002). *George Herbert Mead: A Unifying Theory for Sociology*. United States: Kendall/Hunt Publishing Company.

Schweppenhäuser, G. (2009). *Theodor W. Adorno: An Introduction*. United Kingdom: Duke University Press.

Fraser, Nancy and Axel Honneth (2003) · *Redistribution Or Recognition? A Political-Philosophical Exchange*. London:Verso Books.

Turner, Jonathan. (1995). *The Structure Of Sociological Theory*. Jaipur: Rawat Publications.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

BA (H) Sociology
Discipline Specific Core (DSC) 17
Sociology of Kinship

Discipline Specific Core Course -17 (DSC-17) : Sociology of Kinship

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC17 Sociology of Kinship	4	3	1	0	12th Class Pass	BA (H) DSC 06 Families and Intimacies Or equivalent course

Learning Objectives:

1. To introduce basic concepts in the study of kinship, marriage and family.
2. Develop an understanding of changes in kinship and marriage over time.
3. To indicate the new possibilities in the configurations of kinship made possible by the novel reproductive technologies. .

Learning outcomes:

Students will be able to:

1. *Identify* the methodological shifts in the study of kinship theories.
2. *Apply* an analytical perspective on concepts relevant for understanding kinship
3. *Understand* the coexistence of multiple perspectives in the study of family, marriage and kinship.
4. *Recognise* the significance of technology in recasting kinship.

SYLLABUS OF DSC 17: Sociology Of Kinship

Unit I: Key Terms and Classical Approaches (21 hours)

This unit introduces students to key concepts and approaches relevant for understanding kinship and family.

Unit II: Family, Household and Marriage (9 hours)

This unit acquaints students to the multiple forms of co-existence of the institutions of family and marriage.

Unit III: Re-casting Kinship (15 hours)
This unit maps out the new possibilities in the understanding of family, marriage and kinship by revisiting the concept of relatedness, gender and reproductive technologies.

a. Relatedness
b. Kinship and Gender
c. Re-imagining Families
d. New Reproductive Technologies

Practical Component: NIL

Essential/Recommended Readings:

Unit I: Key Terms and Classical Approaches

Radcliffe-Brown, A. R. and D. Forde (eds.), 1950, *African Systems of Kinship and Marriage*, London: Oxford University Press, Introduction, Pp. 1-39

Evans-Pritchard, E.E., 2004 (1940), 'The Nuer of Southern Sudan', in R. Parkin and L. Stone (eds.), *Kinship and Family: An Anthropological Reader*, U.S.A.: Blackwell, Pp. 64-78.

Leach, Edmund, 1962, 'On Certain Unconsidered Aspects of Double Descent Systems'in *Man*, Vol. 62, Pp. 130-134.

Lévi-Strauss, Claude, 1969, *The Elementary Structures of Kinship*, London: Eyre and Spottiswoode, Chapters 1 & 2, Pp. 3-25

Dumont, L., 1968, 'Marriage Alliance', in D. Shills (ed.), *International Encyclopaedia of the Social Sciences*, U.S.A.: Macmillan and Free Press, Pp. 19- 23.

Schneider, D., 2004, 'What is Kinship All About?' in R. Parkin and L. Stone (eds.) *Kinship and Family: An Anthropological Reader*, U.S.A.: Blackwell, Pp. 257-274.

Das, V., 1994, 'Masks and Faces: An Essay on Punjabi Kinship', in Patricia Uberoi (ed.), *Family, Kinship and Marriage in India*, Delhi: Oxford University Press, Pp.198-222.

Unit II- Family, Household and Marriage (9 hours)

Freeman, J. D., 1958, 'The Family Systems of the Iban of Borneo', in J. Goody (ed.), *The Developmental Cycle in Domestic Groups*, Cambridge: Cambridge University Press, Pp. 15-52.

Leach, E.R., 1961, 'Polyandry, Inheritance and the Definition of Marriage with Particular Reference to Sinhalese Customary Law', in E. R. Leach (ed.), *Rethinking Anthropology,* London: The Athlone Press, Pp. 105-113.

Shah, A. M. (1964). Basic Terms and Concepts in the Study of Family in India. *The Indian Economic & Social History Review*, *1*(3), 1–36.

Gough, Kathleen E., 1959, 'The Nayars and the Definition of Marriage', in *The Journal of the Royal Anthropological Institute of Great Britain and Ireland*, 89, Pp. 23-34

Uberoi, Patricia, 1995, 'When is a Marriage not a Marriage? Sex, Sacrament and Contract in Hindu Marriage', *Contributions to Indian Sociology,* No. 29, 1 & 2, Pp. 319-45

Unit III: Re-casting Kinship (15 hours)

a. Relatedness

Carsten, Janet, 1995, 'The Substance of Kinship and the Heat of the Hearth: Feeding, Personhood, and Relatedness among Malays in Pulau-Langkawi' *American Ethnologist*, 22 (2), Pp. 223-241.

b. Kinship and Gender

Gold, Ann Grodzins, 1994, 'Sexuality, Fertility, and Erotic Imagination in Rajasthani Women's Songs', in Gloria Goodwin Raheja and Ann Grodzins Gold (eds.), *Listen to the Heron's Words: Re-imagining Gender and Kinship in North India*, Delhi: OUP, Pp. 30-72.

c. Re-imagining Families

Weston, Kath, 1991, Families We Choose: Lesbians, Gays, Kinship, New York: Columbia University Press, Pp. 103-136.

d. New Reproductive Technologies

Kahn, Susan Martha, 2004, 'Eggs and Wombs: The Origins of Jewishness', in R. Parkin and L. Stone (eds.), *Kinship and Family: An Anthropological Reader*, U.S.A.: Blackwell, Pp. 362-77.

Suggested Readings:

Butler, J, 2022, Kinship Beyond the Bloodline, in T. Bradway and E. Freeman (eds,), Queer Kinship Race, Sex, Belonging, Form, Duke University Press

Carsten, J. (ed.), 2000, Cultures of Relatedness: New Approaches to the Study of Kinship,

Cambridge: Cambridge University Press

Fortes, M., 1970, Time and Social Structure and Other Essays, University of London: The Athlone Press, Chapter 3, Pp. 67-95

Ragone, Helena, 2004, Surrogate Motherhood and American Kinship in R. Parkin and L. Stone. L and D. E. King (ed) (2018). Kinship and Gender: An Anthropological Reader. Oxford: Blackwell Publishing Ltd, Pp. 342-361

Stone, L., & King, D. E., 2018, Kinship and Gender: An Introduction, Routledge

Vatuk Sylvia, Household Form and Formation: Variability and Social Change among South Indian Muslims in Great, John N. & David J. Mearns (1989). Society from the Inside Out: Anthropological Perspectives on the South Asian Household. New Delhi: Sage, Pp. 107- 137

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.A. (H) Sociology
Discipline Specific Core (DSC) 18
Environmental Sociology

Discipline Specific Core Course -18 (Dsc-18): Environmental Sociology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 18 Environmental Sociology	4	3	1	0	12th Class Pass	BA (H) DSC 01 Introduction to Sociology Or equivalent course

Learning Objectives:

1. The course will enable students to reflect on *environment* as an object of sociological inquiry.
2. The course will develop analytical thinking on the linkages between society and the environment from a sociological standpoint.
3. To develop an awareness of the character of causality in environmental sociology and expose students to critical debates on the role of humans in ecological crises.
4. The course will enhance the capacity to examine the social consequences and responses to ecological crises with the help of case studies.

Learning outcomes:

Students will be able to:

1. Understand the dynamic between natural and social worlds from a sociological perspective.
2. Identify and grasp the fundamental principles and core theoretical debates of the discipline.

3. Apply a sociological perspective on environment and contribute to research endeavours or public policy conversations that assess the causes, effects and possible solutions to environmental problems.
4. Examine the intertwining issues of ecology and inequity and address the questions of environmental justice and ethics.

SYLLABUS OF DSC-18: Environmental Sociology

Unit 1: Basic Concepts in Environmental Sociology (12 Hours)
This unit introduces the basic concepts and themes in environmental sociology necessary to develop a holistic perspective.

a. What is Environmental Sociology?
b. Mainstream Ideas in Environmentalism
c. Indian Environmentalism

Unit 2: Social Theory and the Environment (21 Hours)
This unit exposes students to the intersectionality of the environment with social processes and institutions.

a. Theorising the Environment
b. Intersectionality and Environment
c. Social Ecology

Unit 3: Social Responses to Environmental Disruption (12 Hours)
This unit examines the social responses to ecological crises through new issues of livelihood and experiments in sustainable living.

a. Environmental Justice
b. Alternative Engagements

Practical Component: NIL

Essential/Recommended Readings:

Unit 1: Basic Concepts in Environmental Sociology

a. What is Environmental Sociology?

Chung-En Liu, J. and Mayerfeld Bell, M. (2017). 'Environmental Sociology'. In Kathleen O. Korgen (Ed.), *The Cambridge Handbook of Sociology: Core Areas in Sociology and the Development of the Discipline*, Vol. 1. Cambridge: Cambridge University Press. Pp. 435-444.

b. Mainstream Ideas in Environmentalism

Dunlap, Riley E. (2010). 'The Maturation and Diversification of Environmental Sociology: From Constructivism and Realism to Agnosticism and Pragmatism'. In Michael R. Redclift and G. Woodgate (Eds.), *International Handbook of Environmental Sociology*, 2nd Ed. Cheltenham. UK: Edward Elgar. Pp. 15-32.

c. Indian Environmentalism

Gadgil, M and Guha, R (1995) Ideologies of Environmentalism. In Madhav Gadgil and Ramachandra Guha , Ecology and Equity: The Use and Abuse of Nature in Contemporary India. London : Routledge. Chapter 4. Pp.98-112

Chapple, Christopher K. (1998). 'Toward an Indigenous Indian Environmentalism'. In Lance E. Nelson (Ed.), *Purifying the Earthly Body of God: Religion and Ecology in Hindu India.* Albany, USA: State University of New York Press. Pp. 13-38.

Unit 2: Social Theory and the Environment

a. Theorising the Environment

Barbosa, Luiz C. (2009). 'Theories in Environmental Sociology'. In Kenneth A. Gould and Tammy L. Lewis (Ed.), *Twenty Lessons in Environmental Sociology.* New York: Oxford University Press. Pp. 25-44.

Cordner, Alissa (2021). 'Risk'. In Beth S. Caniglia, et al. (Eds.), *Handbook of Environmental Sociology.* Switzerland: Springer. Pp. 167-187.

Agarwal, Bina, (2007). 'The Gender and Environment Debate: Lessons from India'. In Mahesh Rangarajan. (Ed.), *Environmental Issues in India: A Reader*. New Delhi: Pearson, Longman. Pp. 316-324, 342-352.

b. Intersectionality and Environment

Ergas, Christina, McKinney, Laura and Bell, S. Elizabeth (2021). 'Intersectionality and the Environment'. In Beth S. Caniglia, et al. (Eds.), *Handbook of Environmental Sociology*. Switzerland: Springer. Pp. 15-30.

Sharma, Mukul (2017). 'Eco-casteism: Sulabh and the Denial of Dalit Existence'. In Mukul Sharma, *Caste and Nature: Dalits and Indian Environmental Politics*. Delhi: Oxford University Press. Pp. 1-22.

c. Social Ecology

Mukerjee, Radhakamal (1994). 'An Ecological Approach to Sociology'. In Ramchandra Guha (Ed.), *Social Ecology. Oxford in India Readings in Sociology and Social Anthropology*. Delhi: Oxford University Press. Pp. 22-26.

Unit 3: Social Responses to Environmental Disruption

a. Environmental Justice

Maung, Rebecca and Pellow, David. N. (2021). 'Environmental Justice'. In Beth S. Cagnilia, et al. (Eds.) *Handbook of Environmental Sociology*. Switzerland: Springer Pp. 35-47.

Lewis, Tammy L. (2009). 'Environmental Movements in the Global South'. In Kenneth A. Gould and Tammy L. Lewis (Ed.), *Twenty Lessons in Environmental Sociology*. New York: Oxford University Press. Pp. 244-254.

Sangvai, S. (2007). 'The Tragedy of Displacement'. In Mahesh Rangarajan (Ed.), *Environmental Issues in India: A Reader*. New Delhi: Pearson/Longman. Pp. 437-443.

b. Alternative Engagements

Leahy, Terry (2021). 'What is Permaculture? Three Perspectives' in *The Politics of Permaculture*. London: Pluto Press. Pp. 1-23.

Suggested Readings:

Guha, R and Martinez-Alier, J (2006). *Varieties of Environmentalism: Essays North and South*. London: Earthscan

Baviskar, A. (1995). *In the Belly of the River: Tribal Conflicts Over Development in the Narmada Valley.* Delhi, New York: Oxford University Press.

Bell, Michael M. (2008). *An Invitation to Environmental Sociology*. Thousand Oaks, CA: Sage.

Divan, S. and Rosencranz, A. (2022). *Environmental Law and Policy in India: Cases and Materials*. US: Oxford University Press.

Vasan, S. (2006). Living with Diversity: Forestry Institutions in the Western Himalaya. India: Indian Institute of Advanced Study.

Hannigan, J. (1995). *Environmental Sociology*. London and New York: Routledge.

Schnaiberg, A. (1980). *The Environment: From Surplus to Scarcity*. New York: Oxford University Press.

Shiva,V. (1988). Women In Nature. In *Staying Alive: Women Ecology and Development*. New Delhi: Zed Books

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category II

BA (Prog.) with Sociology as Major
Semester VI

B.A. (Prog.) Sociology
Discipline Specific Core (DSC) 11
Sociological Research-II

DISCIPLINE SPECIFIC CORE -11 (DSC 11): SOCIOLOGICAL RESEARCH -II

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (If any)
		Lecture	Tutorial	Practical/ Practice		
DSC 11: Sociological Research-II	4	3	1	0	12th Class Pass	BA (Prog.) DSC 09 Sociological Research -I or equivalent course

Learning Objectives:

1. The course aims to introduce students to the systematic methods of social research.
2. It acquaints students to ethical issues in research.

Learning outcomes:

Students will be able to:

1. *Develop* an awareness of the building blocks of research and the basic methods of data collection.
2. *Evaluate* the strengths and weaknesses of various research techniques.
3. *Apply* research methods to study diverse social processes.

SYLLABUS OF DSC: Sociological Research-II

Unit I: Basic elements of Research (9 Hours)
This unit introduces the building blocks of research concepts, hypotheses and sampling methods.

a. Concepts
b. Hypotheses
c. Sampling

Unit II: Methods of Data Collection (18 hours)
This unit describes various tools of doing social science research and how they function.

a. Observation
b. Questionnaire
c. Interview
d. Other Research Designs: Case Study, Community Study, Longitudinal Study, Cross Sectional Study, Focus Groups

Unit III: Challenges in Conducting Research (6 hours)
This unit creates awareness of the ethical dimensions of research and problems that could arise in the field.

a. Ethical Issues in Data Collection and Analysis
b. Methodological Problems in the 'field'

Unit IV: Statistical Methods (12 Hours)
This unit moves to the basic statistical concepts that are the basis of data science.

a. Measures of Central Tendency: Mean, Mode, Median
b. Measures of Dispersion: Standard Deviation

Practical Component: NIL

Essential/Recommended Readings:

Unit I: Basic elements of Research

a. Concepts

Becker, Howard S. 'Concepts' in Tricks of the Trade : How to Think about Your Research While You'Re Doing It. Chicago, Ill. :University of Chicago Press, 1998 pp. 152-198.

b. Hypotheses

Schutt, Russell K. Investigating the Social World : the Process and Practice of Research. Thousand Oaks, Calif. :Pine Forge Press, 2004.pp.123- 133.

c. Sampling

Bailey, K. (1994). *Survey Sampling in Methods of Social Research*, 4th edition. New York: Free Press. Chapter 5. Survey Sampling , Pp. 81- 98.

Unit II: Methods of Data Collection

a. Observation

Bailey, K. (1994). 'Observation'. In *Methods of Social Research*, 4th edition. New York: Free Press. Chapter 10, Pp. 241-273.

Cargan, L. (2008). 'The Classic Studies'. In *Doing Social Research*. Rawat Publications., Pp.157-174.

b. Questionnaire

c. Interview

Babbie, E. (2016). *The Practice of Social Research,* 14th Edition. Boston: Cengage Learning, Pp. 246-286.

d. Other Research Designs: Case Study, Community Study, Longitudinal Study, Cross Sectional Study, Focus Groups

Cargan, L. (2008). 'Collecting the Data: Some Special Designs' in *Doing Sociological Research*. Jaipur: Rawat Publications. Chapter 9. Survey Research , Pp. 203-227.

Liahana Gordon (2015). 'Focus Group' in *Real Research: Research Methods Sociology Students Can Use*, Sage Publications pp. 467-533.

Schutt, Russell K. *Investigating the Social World : the Process and Practice of Research*. Thousand Oaks, Calif. :Pine Forge Press, 2004.pp. 696-698.

Unit III: Challenges in Conducting Research

a. Ethical Issues in Data Collection and Analysis

Babbie, E. (2016). 'The Ethics and Politics of Social Research' in *The Practice of Social Research*, 14th edition. Boston: Cengage Learning. Chapter 3, Pp. 60-85.

b. Methodological problems in the 'field'

Srinivas, M. N. (2004). 'The Insider versus the Outsider' In, Vinay Kumar Srivastava (Ed.) *The Study of Cultures in Methodology and Fieldwork*. New Delhi: Oxford University Press, Pp. 413-420.

Unit IV: Statistical Methods:

Gupta, S. P. (2006). 'Diagrammatic and Graphic Presentation, Measures of Central Value and Measures of Variation' in *Elementary Statistical Methods*. Sultan Chand & Sons. Chapters 6, 7, 8 Pp.101-108, 115- 118, 131-137, 155-168, 173-180, 187-197, 263-277.

Suggested Readings:

Association of Social Anthropologists of the UK and Commonwealth, Ethical Guidelines for Good Research Practice

Seale, Clive (2008). *Social Research Methods: A Reader*. London: Routledge.

Denscombe, Martyn (1999). The Good Research Guide for Small Scale Social Research Projects. New Delhi: Viva Books.

Blaikie, Norman. (2000). *Designing Social Research*. Cambridge, UK: Polity.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.A. (Prog.) Sociology

Discipline Specific Core (DSC) 12
Society and Environment

DISCIPLINE SPECIFIC CORE COURSE -12 (DSC-12) : Society and Environment

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 12 Society and Environment	4	3	1	0	12th Class Pass	BA (Prog) DSC 01 An Invitation Sociology or equivalent course

Learning Objectives:

1. This course enables students to reflect on 'environment' as an object of sociological inquiry. It would orient them to the core debates in Environmental Sociology.
2. The course analyses the linkages between society and the environment from a Sociological standpoint.
3. To locate the underlines the human consequences and colletive process within the larger ecological crisis we are facing at the moment.

Learning outcomes:

Students will be able to:

1. *Develop* an understanding of the dynamic between natural and social worlds from a sociological perspective.
2. *Apply* the sociological perspective on environment to contribute to any research endeavours and public policy conversations that assess causes, effects and possible solutions of environmental issues.
3. *Examine* issues of ecology and inequity and address the questions of environmental justice and ethics.

SYLLABUS OF DSC-12: Society and Environment

Unit 1: Sociologial Engagement with the Environment (12 Hours)

This unit helps students to understand the foundational relationship between the environment and society.

a. Introduction

b. Socio-Ecological Interconnectedness

c. Realism and Constructivism

Unit 2: Theoretical Approaches in Environmental Sociology (15 Hours)

This unit examines the core debates in environmental sociology through the lens of Western and Indian environmentalism.

a. Metabolic Rift

b. Ecological Modernization

c. Ecofeminism and Feminist environmentalism

d. Social Ecology

Unit 3: Emerging Environmental Issues and Movements (18 Hours)

This unit explores specific environmental issues through sociological case studies.

a. Water

b. Land

c. Seeds and Crops

d. Climate Change

Practical Component: NIL

Essential/Recommended Readings:

Unit I Sociologial Engagement with the Environment (12 Hours)

a. Introduction

Bell, M.M. (2011). 'Environmental Problem and Society' in *An Invitation to Environmental Sociology*. 4th edition. CA: Thousand Oaks. Sage. Chapter 1. Pp. 1-6.

Hannigan, J. A. (1995). 'Environmental Sociology : Issues and Theoretical Approaches' and 'Towards an Environmental Sociology :1970 to 1995' in *Environmental Sociology.* 2nd Edition. London and New York: Routledge. Chapters 1 & 2. Pp. 10- 35.

b. Socio-Ecological Interconnectedness

Mukerjee, R. (1994) (1932). 'An Ecological Approach to Sociology' in Ramchandra Guha (ed) *Social Ecology*. Delhi: Oxford University Press. Pp. 22-26.

c. Realism and constructivism

Evanoff, Richard J. (2005). 'Reconciling Realism and Constructivism in Environmental Ethics' in *Environmental Values, 14(1).* Pp. 61–81.

Unit 2 Theoretical Premises (15 Hours)

a. Metabolic Rift

Foster, J.B. (1999). 'Marx's Theory of Metabolic Rift: Classical Foundations for Environmental Sociology' in *American Journal of Sociology*, 105(2). Pp. 366-405.

b. Ecological Modernisation

Mol, A. P. (2002). 'Ecological Modernization and the Global Economy' in *Global Environmental Politics*, *2*(2). Pp. 92-115.

c. Feminist Environmentalism

Agarwal, Bina (2007). 'The Gender and Environment Debate: Lessons from India' in MaheshRangarajan. (ed.) *Environmental Issues in India: A Reader*. New Delhi: Pearson Longman. Chapter 19. Pp. 316-324 and 342-352.

Shiva, V. (1988). 'Women in nature' in *Staying Alive: Women, Ecology and Development*. London: Zed Books. Chapter 3. Pp. 38-54.

Unit 3. Emerging environmental issues and movements (18 Hours)

Bhattacharya, S. (2019). 'Groundwater, Gurus, and Governmentality: Seva in the Neo-liberal Development Regime in India' in *Economic & Political Weekly,* (August 10) LIV(32). Pp. 51-59.

Padel, F. & Das, S. (2008). 'Orissa's Highland Clearances: The Reality Gap' in R & R. *Social Change*, 38(4). Pp. 576-608.

Scoones, I. (2008). 'Mobilizing Against GM crops in India, South Africa and Brazil' in *Journal of Agrarian Change*, 8(2-3). Pp. 315-344.

Dietz, T., R. Shwom and C. Whitley (2020). 'Climate Change and Society' in *Annual Review of Sociology*. 46. Pp. 135-158.

Suggested Reading:

Bell, M.M. (2008). *An Invitation to Environmental Sociology*, 3rd edition. CA: Thousand Oaks. Chapter 1.

Baviskar, A. (1999). *In the Belly of the River: Tribal Conflicts over Development in the Narmada Valley*. Delhi: Oxford University Press.

Egorova, Y. et al. (2015). An Analysis of the GM crop debate in India. In P. Macnaghten and S. Carro-Ripalda (eds.) *Governing Agricultural Sustainability: Global Lessons from GM crops.* New York: Routledge. Chapter 4. Pp.105-135.

Guha, R., & Alier, J. M. (1998). The Environmentalism of the Poor. In *Varieties of Environmentalism: Essays North and South.* New Delhi: Oxford University Press.

Leahy, T. (2007). Sociology and the Environment. In *Germov, John and Marilyn, Poole (Eds.) Public Sociology: An Introduction to Australian Society.* NSW: Allen & Unwin. Chapter 21. Pp. 431-442.

Sharma, M. (2017) *Caste and Nature: Dalits and Indian Environmental Politics*. New Delhi: Oxford University Press.

Tanner, R. and C. Mitchell (2002). Introduction: Religion and Environment, In R. Tanner and C. Mitchell (Eds.) *Religion and the Environment*. New York: Palgrave. Pp. 1-16.

Tvedt, T. (2021). 'Water and Climate Change' in *Water and Society: Changing Perceptions of Societal and Historical Development*. New York: Bloomsbury Publishing. Chapter 9. Pp. 177-190.

Audio Visual Material

1. "*Anthropocene- the human epoch*". (2018) https://ihavenotv.com/anthropocene-the-human-epoch.
2. "*A Dream of trees a documentary from the Nature conservation foundation*" (2020) https://www.youtube.com/watch?v=biazSyLYsEY
3. "*Ejolt, Mapping Environmental Justice*": http://www.ejolt.org/
4. "*An Inconvenient Truth*" (2006) Al Gore. 82. https://watch.plex.tv/movie/an-inconvenient-truth
5. "*On The Fence: Chipko Movement Revisited*" (2011) By Neelima and Pramod Mathur. https://www.youtube.com/watch?v=tlooQxBTrL8
6. "*Drowned out*" (2002) By Franny Armstrong. https://www.youtube.com/watch?v=ICnSsK-ZHTg
7. "*The Call of Mother Earth- A Documentary on Niyamgiri*"(2012) By Saroj Mahapatra. https://www.youtube.com/watch?v=ohDdl7kY9WE
8. "*Seed: The Untold story*" by Jon Betz and Taggart Seigel (2016) https://watch.plex.tv/movie/seed-the-untold story?autoplay=1&utm_content=62d15707fb662b3d68cababd&utm_medium=deeplink&utm_source=google-catalog

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category III

BA (Prog.) with Sociology as Non-Major
Semester VI

B.A. (Prog.) Sociology
Discipline Specific Core (DSC) 11
Sociological Research-II

DISCIPLINE SPECIFIC CORE -11 (DSC 11): SOCIOLOGICAL RESEARCH -II

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (If any)
		Lecture	Tutorial	Practical/ Practice		
DSC 11: Sociological Research-II	4	3	1	0	12th Class Pass	BA (Prog.) DSC 09 Sociological Research -I or equivalent course Nil

Learning Objectives:

3. The course aims to introduce students to the systematic methods of social research.
4. It acquaints students to ethical issues in research.

Learning outcomes:

Students will be able to:

4. *Develop* an awareness of the building blocks of research and the basic methods of data collection.
5. *Evaluate* the strengths and weaknesses of various research techniques.
6. *Apply* research methods to study diverse social processes.

SYLLABUS OF DSC: Sociological Research-II

Unit I: Basic elements of Research (9 Hours)

This unit introduces the building blocks of research concepts, hypotheses and sampling methods.

a. Concepts
b. Hypotheses
c. Sampling

Unit II: Methods of Data Collection (18 hours)
This unit describes various tools of doing social science research and how they function.

a. Observation
b. Questionnaire
c. Interview
d. Other Research Designs: Case Study, Community Study, Longitudinal Study, Cross Sectional Study, Focus Groups

Unit III: Challenges in Conducting Research (6 hours)
This unit creates awareness of the ethical dimensions of research and problems that could arise in the field.

a. Ethical Issues in Data Collection and Analysis
b. Methodological Problems in the 'field'

Unit IV: Statistical Methods (12 Hours)
This unit moves to the basic statistical concepts that are the basis of data science.

a. Measures of Central Tendency: Mean, Mode, Median
b. Measures of Dispersion: Standard Deviation

Practical Component: NIL

Essential/Recommended Readings:

Unit I: Basic elements of Research

a. Concepts

Becker, Howard S. 'Concepts' in Tricks of the Trade : How to Think about Your Research While You'Re Doing It. Chicago, Ill. :University of Chicago Press, 1998 pp. 152-198.

b. Hypotheses

Schutt, Russell K. Investigating the Social World : the Process and Practice of Research. Thousand Oaks, Calif. :Pine Forge Press, 2004.pp.123- 133.

c. Sampling

Bailey, K. (1994). *Survey Sampling in Methods of Social Research*, 4th edition. New York: Free Press. Chapter 5. Survey Sampling , Pp. 81- 98.

Unit II: Methods of Data Collection

a. Observation

Bailey, K. (1994). 'Observation'. In *Methods of Social Research*, 4th edition. New York: Free Press. Chapter 10, Pp. 241-273.

Cargan, L. (2008). 'The Classic Studies'. In *Doing Social Research*. Rawat Publications., Pp.157-174.

b. Questionnaire

c. Interview

Babbie, E. (2016). *The Practice of Social Research,* 14th Edition. Boston: Cengage Learning, Pp. 246-286.

d. Other Research Designs: Case Study, Community Study, Longitudinal Study, Cross Sectional Study, Focus Groups

Cargan, L. (2008). 'Collecting the Data: Some Special Designs' in *Doing Sociological Research*. Jaipur: Rawat Publications. Chapter 9. Survey Research , Pp. 203-227.

Liahana Gordon (2015). 'Focus Group' in *Real Research: Research Methods Sociology Students Can Use*, Sage Publications pp. 467-533.

Schutt, Russell K. *Investigating the Social World : the Process and Practice of Research*. Thousand Oaks, Calif. :Pine Forge Press, 2004.pp. 696-698.

Unit III: Challenges in Conducting Research

a. Ethical Issues in Data Collection and Analysis

Babbie, E. (2016). 'The Ethics and Politics of Social Research' in *The Practice of Social Research*, 14th edition. Boston: Cengage Learning. Chapter 3, Pp. 60-85.

b. Methodological problems in the 'field'

Srinivas, M. N. (2004). 'The Insider versus the Outsider' In, Vinay Kumar Srivastava (Ed.) *The Study of Cultures in Methodology and Fieldwork*. New Delhi: Oxford University Press, Pp. 413-420.

Unit IV: Statistical Methods:

Gupta, S. P. (2006). 'Diagrammatic and Graphic Presentation, Measures of Central Value and Measures of Variation' in *Elementary Statistical Methods*. Sultan Chand & Sons. Chapters 6, 7, 8 Pp.101-108, 115- 118, 131-137, 155-168, 173-180, 187-197, 263-277.

Suggested Readings:

Association of Social Anthropologists of the UK and Commonwealth, Ethical Guidelines for Good Research Practice

Seale, Clive (2008). *Social Research Methods: A Reader*. London: Routledge.

Denscombe, Martyn (1999). The Good Research Guide for Small Scale Social Research Projects. New Delhi: Viva Books.

Blaikie, Norman. (2000). *Designing Social Research*. Cambridge, UK: Polity.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category IV
Common Pool of Discipline Specific Electives (DSE)
BA (H) Sociology
Discipline Specific Elective (DSE) 10
Animals and Society

DISCIPLINE SPECIFIC ELECTIVE COURSE -10 (DSE - 10) : Animals and Society

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 10 Animals and Society	4	3	1	0	12th Class Pass	Nil

Learning Objectives:

1. To introduce students to the sociological/anthropological study of human-animal relationships and how it can provide a nuanced understanding of interspecies issues in contemporary society.

2. To enable students to understand a variety of contexts of human-animal encounters and study the consequent meaning constructions, interactions, and evolving human attitudes.

3. To develop a critical understanding of the changing status of animals in society by knowing different perspectives regarding the ethical treatment of animals.

Learning outcomes:

Students will be able to:

1. *Outline* the substantive issues and debates within which classic and contemporary human-animal scholarship is situated.

2. *Examine* the sociological, political, personal and legal aspects of human-animal relationships.

3. *Identify* the intersections of gender, caste, class and other identities that shape human-animal interactions.

SYLLABUS OF DSE 10:Animals and Soceity

Unit I: The Sociological Encounter with Animals (12 Hours)
This unit introduces the range and scope of sociological and anthropological scholarship on human-animal relationships.

Unit II: Animals and Culture (12 Hours)
This unit outlines the metaphorical, symbolic and material uses of animals in human societies/affairs.

Unit III: Human-Animal Relatedness (12 Hours)
This unit addresses various forms of bonds established between humans and animals, focusing on their everyday interactions.

Unite IV: Law and Ethics (9 Hours)
The final unit considers the changing nature of human-animal relationships, concerning questions of animal mis/treatment, ethics and rights.

Practical Component: NIL

Essential/Recommended Readings:

Unit I: The Sociological Encounter with Animals

Kirksey, E., & Helmreich, S. (2010). 'The Emergence of Multispecies Ethnography' in *Cultural Anthropology*, 25, Pp. 545-576.

Segata, J., & Lewgoy, B. (2016). 'Animals in Anthropology' in *VIBRANT - Vibrant Virtual Brazilian Anthropology*, 13(2), Pp. 27-37.

Peggs, K. (2012). 'Town and Country: Animals, Space and Place' in *Animals and Sociology*. (The Palgrave Macmillan Animal Ethics Series). Palgrave Macmillan. Pp. 65-99.

Unit II: Animals and Culture

Evans-Pritchard, E. E. (1953). 'The Sacrificial Role of Cattle among the Nuer in Africa' in *Journal of the International African Institute*, 23(3), Pp. 181–198.

Leach, E. (1989). 'Anthropological Aspects of Language: Animal Categories and Verbal Abuse', in *Anthrozoös*, 2:3, Pp. 151-165.

Adams, C. J. (1990). 'The Sexual Politics of Meat' in *The Sexual Politics of Meat: A Feminist-Vegetarian Critical Theory*. New York, Continuum. Pp. 35-49.

Rashkow, E. (2015). 'Resistance to Hunting in Pre-independence India: Religious Environmentalism, Ecological Nationalism or Cultural Conservation?' in *Modern Asian Studies*, 49 (2), Pp. 270–301.

Unit III: Human-Animal Relatedness

Charles, N. (2014). 'Animals Just Love You as You Are: Experiencing Kinship across the Species Barrier' in *Sociology*, 48(4), Pp. 715–730.

Porcher, Jocelyne & Schmitt, T. (2012). Dairy Cows: Workers in the Shadows?. *Society & Animals*. 20. Pp. 39-60.

Govindrajan, R. (2018). 'Outsider Monkey, Insider Monkey: On the Politics of Exclusion and Belonging' in *Animal Intimacies: Interspecies Relatedness in India's Central Himalayas*. Chicago: University of Chicago Press. Pp. 90-118.

Braverman, I. (2012). 'Naturalizing Zoo Animals' in *Zooland: The Institution of Captivity*, Redwood City: Stanford University Press, Pp. 25-50.

Unit IV: Law and Ethics

Francione, Gary L. and Anna E. Charlton. (2017). 'Animal Rights' in Linda Kalof (ed.) *The Oxford Handbook of Animal Studies*. Oxford University Press.

Kansal, Vishrut (2016) The Curious Case of *Nagaraja* in India: Are Animals Still Regarded as "Property" With No Claim Rights?, Journal of International Wildlife Law & Policy, 19:3, 256-267.

Birke, L. (2022). 'Into the Laboratory', in The Animals Reader: The Essential Classic and Contemporary Writings. Second Edition, (Eds) Linda Kalof Amy Fitzgerald. Routledge. Pp. 486-499.

Suggested Readings:

Lévi-Strauss, C. (1962). 'The Totemic Illusion' in *Totemism*. Merlin Press. London. Pp. 15-32.

Haraway, D. J. (2003). *The Companion Species Manifesto: Dogs, People, and Significant Otherness*. Chicago, Ill. : Bristol :Prickly Paradigm ; University Presses Marketing.

Geertz, C (1973). 'Notes on the Balinese Cockfight' in *The Interpretation of Cultures*, Basic Books. Pp. 412-454.

Bryant, C. D. (1979). The Zoological Connection: Animal-Related Human Behavior. *Social Forces*, 58(2), Pp. 399–421.

Wilson, M.W., Ridlon, A.D., Gaynor, K.M., Gaines, S.D., Stier, A.C. and Halpern, B.S. (2020). 'Ecological Impacts of Human-Induced Animal Behaviour Change'. *Ecol. Lett*., 23: Pp. 1522-1536.

Berger, J. (1980). Why Look at Animals? In *About Looking*. New York: Pantheon, Pp. 1-28.

Nussabaum, M. (2022). 'Frontiers of Justice: Capabilities and Animals, in *The Animals Reader: The Essential Classic and Contemporary Writings*. Second Edition, (Eds) Linda Kalof Amy Fitzgerald. Routledge. Pp. 55-62.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.A. (H) Sociology
Discipline Specific Elective (DSE) 11
Sociology of Care

DICIPLINE SPECIFIC ELECTIVE – 11 (DSE 11) : SOCIOLOGY OF CARE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 11 Sociology of Care	4	3	1	0	12th Class Pass	Nil

Learning Objectives:

1. The course introduces 'care' as a sociological concept, with its diverse themes, theoretical perspectives, key debates and empirical practices.
2. It attempts to develop a critical understanding of care as a multi-layered concept and its operationalisation in society.

Learning outcomes:

Students will be able to:

1. *Identify* and *assess*, the concept of 'care' and its intersectional nature, from a sociological lens.
2. *Evaluate* the significance of multi-layered nature of 'care' practices, further translating the conceptual and empirical knowledge in both application-based research and in academic discourses.

SYLLABUS OF DSE-11: Sociology of Care

Unit I Conceptualising 'Care' and its Multiple Dimensions (15 hrs)

This unit introduces students to the concept of care and its different dimensions.

Unit II Themes in the 'Sociology of Care' (21 hrs)

This unit maps the multiple themes in the sociology of care through analytical essays and case studies.

a. Moral and Political

b. Economy and Policy

c. Care as Social Justice

d. Global Care Complex

Unit III Care: Contexts, Practices and Current Concerns (09 hrs)

This unit explores the divergent contexts, practices, and current concerns of the sociology of care.

Practical Component: NIL

Essential/Recommended Readings:

Unit I. Conceptualising 'Care' and its Multiple Dimensions

Armenia, Amy. (2018). 'Caring as Work: Research and Theory', in Barbara J. Risman, Carissa Froyum, and William J. Scarborough, eds. *Handbook of the Sociology of Gender.* Cham: Springer International Publishing. Pp. 469-478.

Bulmer, Martin. (1993). 'The Social Basis of Community Care', in Joanna Bornat et.al. (eds.) *Community Care: A Reader*, London: Macmillan, Pp. 45-51.

Thomas, Carol. (1993). 'De-constructing concepts of care'. *Sociology* 27, no. 4. Pp. 649-669.

Unit II Themes in the 'Sociology of Care'

a. Moral and Political

Tronto, Joan C. (1993). *Moral Boundaries: A Political Argument for an Ethic of Care*, Ch.4: Care, New York & London: Routledge. Pp. 101-124.

Wuthnow, Robert. (1995). 'Reasons to Care: Multiple Voices of Modern Society' in *Learning to Care: Elementary Kindness in an Age of Indifference*, Ch.4, Oxford: Oxford University Press. Pp. 59-81.

b. Economy and Policy

Folbre, Nancy. (2006). 'Measuring Care: Gender, Empowerment, and the Care Economy.' *Journal of human development* 7, no. 2. Pp. 183-199.

Daly, Mary. (2002). 'Care as a Good for Social Policy.' *Journal of Social Policy* 31, no. 2. Pp. 251-270.

c. Care as Social Justice

Lynch, Kathleen, Manolis Kalaitzake, and Mags Crean. (2021). 'Care and Affective Relations: Social Justice and Sociology.' *The Sociological Review* 69, no. 1. Pp. 53-71.

White, Julie A. & Joan C. Tronto. (2004). 'Political Practices of Care: Needs and Rights', *Ratio Juris*, Vol.17, no.4. Pp. 425-453.

d. Global Care Complex

Yeates, Nicola. (2004). 'Global care chains.' *International Feminist Journal of Politics* 6, no. 3.Pp. 369-391.

Müller, Beatrice. (2019). 'The Careless Society—Dependency and Care Work in Capitalist Societies." Frontiers in Sociology. Pp 1-10.

Unit III: Care: Contexts, Practices and Current Concerns

Abel, Emily K**.** (2000). **'**Conclusion: The Uses of the Past' in *Hearts of Wisdom: American Women Caring for Kin, 1850-1940*, Cambridge & London: Harvard University Press. Pp. 251-275.

Ruby, Sophie, and Sylka Scholz. (2018). 'Care, Care Work and the Struggle for a Careful World from the Perspective of the Sociology of Masculinities.' *Österreichische Zeitschrift für Soziologie* 43, no. 1. Pp 73-83.

Akkan, Başak. (2020). 'An Egalitarian Politics of Care: Young Female Carers and the Intersectional Inequalities of Gender, Class and Age.' *Feminist Theory* 21. no. 1. Pp. 47-64.

Suggested Readings:

Aulenbacher, Brigitte, Helma Lutz, and Birgit Riegraf. (2018).'Introduction: Towards a global sociology of care and care work.' *Current Sociology* 66. no. 4. Pp. 495-502.

Daly, Mary, ed. (2001). *Care work: The quest for security.* Geneva. International Labour Organization.

Duffy, Mignon, Amy Armenia, and Clare L. Stacey. (2015). *Caring on the Clock: The Complexities and Contradictions of Paid Care Work*. Rutgers University Press.

England, Paula. (2005). 'Emerging theories of care work.' *Annual Review of Sociology*. 31. Pp. 381-399.

Fine, Michael. (2005). 'Individualization, risk and the body: Sociology and care.' *Journal of Sociology* 41. no. 3. Pp. 247-266.

Folbre, Nancy, and Michael Bittman, eds. (2004). *Family Time: The Social Organization of Care*. Vol. 2. Psychology Press.

Glenn, Evelyn Nakano. (2010). *Forced to Care: Coercion and Caregiving in America*. Harvard University Press.

Held, Virginia. (2006). *The Ethics of Care: Personal, Political, and Global*. Oxford University.

Ilcan, Susan. (2009).“Privatizing responsibility: Public sector reform under neoliberal government.” *Canadian Review of Sociology/Revue canadienne de sociologie* 46, no. 3. Pp. 207-234.

Isaksen, Lise, Uma Devi, and Arlie Hochschild. (2008). ‘Global Care Crisis. Mother and Child’s-eye View.” *SOCIOLOGIA, PROBLEMAS E PRÁTICAS*. no/56. Pp. 61-83.

Joanna Bornat, Julia Johnson, Charmaine Pereira, David Pilgrim and Fiona Williams (eds). (1997). *Community Care: A Reade*r. Macmillan in association with The Open University, Basingstoke.

Lam, Winnie Wing Yee, Karina Nielsen, and Ciara M. Kelly. (2023). ‘The Experience of Working Informal Carers of Older People: A Qualitative Diary Study.” *International Journal of Care and Caring*. Pp.1-16.

Luttrell, Wendy. (2020). *Children Framing Childhoods: Working-class Kids’ Visions of Care*. Policy Press.

Lynch, Kathleen. (2007). ‘Love Labour as a Distinct and Non-commodifiable form of Care Labour.’ *The Sociological Review* 55. no. 3. Pp. 550-570.

Weicht, Bernhard. (2008). “The Morality of Caring: The Discursive Construction of Informal Care.” *Enquire* 1. no. 2. Pp. 120-143.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.A. (H) Sociology

Discipline Specific Elective (DSE) 12
Research Methodology for Sociology
(As Mandated by UGCF22)
(On offer in Semesters VI & VII)

DICIPLINE SPECIFIC ELECTIVE – 12 (DSE 12) : Research Methodology for Sociology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 12 Research Methodology for Sociology	4	3	1	0	12th Class Pass	Nil

Learning Objectives:

1. This course builds on concepts and methodology of sociological research to enable students to view the whole research process from design to final report.
2. It exposes students to a wide range of research methods they could use in isolation or combination to achieve an explanation of social reality.

Learning Outcomes:

Students will be able to:

1. *Apply* each of the research methods in a practical context.
2. *Evaluate* the relative merits of each method in relation to a research problem.
3. *Comprehend* the issues around research design and its various facets.
4. *Write* a comprehensive research proposal and a research project.

SYLLABUS OF DSC 12: Research Methodology for Sociology

Unit I: Social Research (9 Hours)

This unit discusses various facets of Research Design.

a. Research Design
b. Triangulation

Unit II: Research Methods (24 hours)

This unit focuses on discussions of a wide range of research methods available to social scientists.

a. Ethnography
b. Action Research
c. Content Analysis
d. Photography and Research
e. Case study
f. Indigenous Methodologies

Unit III: Writing Research Proposal and Report (12 hours)

This unit focuses on the important part of the research process – developing an understanding of writing the research proposal and the culmination of research activity that is writing the final report.

a. Writing a Research Proposal
b. Writing a Research Report

Practical Component: NIL

Essential/Recommended Readings:

Unit I: Social Research
a. Research Design
Blaikie, Norman. (2009) 'Preparing Research Designs and Designing Social Research' in *Designing Social Research*, 2nd Edition, Polity, UK. Ch.1, 2 Pp.12-55.

b. Triangulation
Fusch, Patricia et al, (2018) 'Denzin's Paradigm Shift: Revisiting Triangulation in Qualitative Research*'* in *Social Journal*, volume 10, issue 1, Pp.19-32.

Unit II: Research Methods

a. Ethnography
Fetterman, David M., (2010). 'The First Step: An Overview' in *Ethnography Step by Step,* Sage Publications: Los Angeles. Chapter 1, Pp. 1-14.

b. Action Research
Noffke, Susan and Bridget Somekh. (2005). 'Action Research' in Bridget Somekh and Cathy Lewin (eds), *Research Methods in the Social Sciences*, Sage Publications, London, Ch. 10 Pp. 89-96**.**

c. Content Analysis
Krippendorff, Klaus. **(**2004). 'Conceptualizing Content Analysis and Conceptual Foundation ' in *Content Analysis: An Introduction to Its Methodology* Chapters 1, 2, in, Sage Publications, Thousand Oaks, pp. 3-43.

d. Photography and Research

Pinny, Christopher (2004) 'Sparks of Contingency: Photography and Anthropology in India', in VK Srivastava ed. *Methodology and Fieldwork*, Oxford University Press, pp.257-264.

e. Case Study

Stark, Sheila and Harry Torrance, (2005) 'Case Study' in Bridget Somekh and Cathy Lewin ed. *Research Methods in the Social Sciences*, Sage, London, pp. 33-39

f. Indigenous Methodologies

Denzin, Norman K. and Yvonna S.Lincoln Margaret Kovach, (2018) 'Doing Indigenous Methodologies: A Letter to a Research Class' in *The Sage Handbook of Qualitative Research* Ed. (5th Edition), Chap 9, Pp. 383-411.

Unit III: Writing Research

a. Writing a Research Proposal

Creswell, John W., (2009). 'Writing Strategies and Ethical Considerations' in *Research Design, Qualitative, Quantitative, and Mixed methods Approaches*, Sage, Los Angeles, Ch. 4, pp.73-94.

b. Writing a Research Report

Edwards, M. (2015). 'Section III- Writing Qualitative Papers & Section IV- Chapter 17- Writing a Book Review' in *Writing in Sociology*, (2nd Edition) Sage Publication: London, pp.79-118 & 135-138.

Soichru, C.O. (2023). 'Writing Strategies and Ethical Considerations' in *A Student Guide to Writing Research Reports, Papers, Theses and Dissertations.* Routledge: London. Chapter-9 Academic Writing, Pp- 197-215.

Suggested Readings:

Srivastava, V.K. et al (Ed.) (2004) Methodology and Fieldwork, New Delhi: OUP *Introduction* Pp- 1-14

Bernard, H.Russell and Clarance C. Gravlee ed. Handbook of Methods in Cultural Anthropology, Second Edition, Bowman & Littlefield, Uk, 2014, Chapter 3, *Research Design and Research Strategies* Pp- 97-129

Brewer, J.D. (2010). Ethnography, Jaipur: Rawat Publication (Indian Reprint), Chapter 1- *What is Ethnography?* Pp-10-25

Balmer, A.,& Murcott, A. (2017). *The craft of writing in sociology: Developing the argument in undergraduate essays and dissertations.* Manchester University Press. Chapter 2,3, 4 & 5 Pg 32-105

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

Common List of Generic Electives (GE)
Semester VI
Sociology
Generic Elective (GE) 16
Media, Culture and Society

GENERIC ELECTIVE COURSE-16 (GE-16) : Media, Culture and Society

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE 16 Media, Culture and Society	4	3	1	0	12th Class Pass	Nil

Learning Objectives:

1. To provide an interdisciplinary introduction to media modernity through a close examination of the relationship between culture, media and society.
2. To acquaint students with the necessary concepts and theories to grasp complex articulations of media, culture and society.
3. To familiarise students with novelty, complexity and ever-accelerating dynamics of media, culture and society in our times.

Learning outcomes:

Students will be able to:
1. *Identify*, describe and explain the key institutions and processes of mediatised cultures of our times.
2. *Apply* the learning to formulate, analyse and examine the key conundrums in the arena of media, culture and society.
3. *Evaluate* the contemporary cultural phenomenon from a conceptually informed interdisciplinary perspective.

SYLLABUS OF GE-16: Media, Culture and Society

Course Outline:
Unit I: Media and Modernity (9 Hours)

This unit traces the rise of modern media from the early modern era to our own times, paying special attention to the constitution of the Indian public sphere.

Unit II: Theories and Approaches (21 Hours)

This unit introduces students to key theoretical approaches to the study of media such as the Frankfurt school, British cultural studies, semiotics, feminism, post-colonial theory and post-modernist theory.

Unit III: Media, Culture and Society: Contemporary Configurations (15 Hours)

This unit focuses on contemporary phenomena in this arena such as televised family dramas, ubiquitous celebrity culture and selfie culture. These seemingly ordinary actions and processes are examined for their deeper cultural and social significance and embeddedness.

Practical Component: NIL

Essential/Recommended Readings:

Unit I: Media and Modernity

Thompson, John B. *The Media and Modernity: A Social Theory of the Media* Stanford, CA: Stanford UP, 1995. Chapter 2, 'The Media and the Development of Modern Societies' Pp. 52-80.

Rajagopal, Arvind. *The Indian Public Sphere: Readings in Media History*. Delhi: OUP India, 2009. Introductin: The Public Sphere in India: Structure and Transformation. Pp. 1-28.

Unit 2: Theories and Approaches

Kellner, Douglas. Frankfurt School, Media, and the Culture Industry, in *The International Encyclopedia of Media Studies: Research Methods in Media Studies*. Volume I. United Kingdom, Wiley-Blackwell, 2014.

Carey, James W. *Communication as Culture, Revised Edition: Essays on Media and Society*. Ukraine, Taylor & Francis, 2008. Chapter 2. Mass Communication and Cultural Studies. Pp. 29-52.

Danesi, Marcel. *Understanding Media Semiotics*. United Kingdom, Bloomsbury Publishing, 2018. Chapter 2. An Outline of Semiotic Theory. Pp. 28-53.

Thornham, Sue. *Women, Feminism and Media*. United Kingdom, Edinburgh University Press, 2007. Introduction: Thinking women/ media/feminism. Pp. 1- 22.

Boyd-Barrett, Oliver. *Media Imperialism: Continuity and Change*. United States, Rowman & Littlefield Publishers, 2019. Chapters. 3 & 4. Pp. 34-64.

Poster, Mark, and Aronowitz, Stanley. *Information Subject*. Netherlands, Taylor & Francis, 2013. Chapter 4. Postmodern Virtualities. Pp. 71 – 92.

Unit 3: Media, Culture and Society: Contemporary Configurations

Rudolph, Lloyd I. The Media and Cultural Politics, *Economic and Political Weekly, 1992,* Vol. 27, No. 28, pp. 1489-1495.

Muralidharan, Sukumar. Media, Modernity and Minorities: Subtleties of Exclusion in the 'Public Discourse'. *Social Scientist*,2012, Vol. 40, No. 5/6, pp. 19-52.

Mankekar, Purnima. Entangled Spaces of Modernity: The Viewing Family, the Consuming Nation, and Television in India. *Visual Anthropology Review*, 1998, Vol.14. No. 2, pp 32–45.

Shipley, Jesse Weaver. Selfie Love: Public Lives in an Era of Celebrity Pleasure, Violence, and Social Media. *American Anthropologist*, 2015, Vol. 117. No. 2, pp. 403–413.

Juris, Jefrey S. Reflections on #Occupy Everywhere: Social Media, Public Space, and Emerging Logics of Aggregation. *American Ethnologist*, 2012, Vol. 39: pp. 259-274.

Suggested Readings:

Curran, James. *Media and Democracy*. London: Taylor & Francis, 2011.

Edwards, David, and Cromwell, David. *Guardians of Power: The Myth of the Liberal Media. United Kingdom,* Pluto Press, 2006.

Enzensberger, Hans,Constituents of a Theory of the Media, *NLR I/64*, Nov/Dec 1970. Pp. 13-36.

Keane, John. *Democracy and Media Decadence*. United Kingdom, Cambridge University Press, 2013.

Kittler, Friedrich A. *Gramophone, Film, Typewriter*. United States, Stanford University Press, 1999.

Lacey, Kate. *Listening Publics: The Politics and Experience of Listening in the Media Age.* Germany, Polity Press, 2013.

Media and Cultural Studies: Keyworks. London, Wiley, 2009

Michael Gurevitch et al. (eds.) *Culture, Society and the Media*. United Kingdom, Taylor & Francis, 2005.

Miller, Daniel. *Tales from Facebook.* Cambridge*:* Polity Press, 2013. Pp. 164- 204

Postman, Neil. *Amusing Ourselves to Death: Public Discourse in the Age of Show Business.* United States, Penguin Publishing Group, 2005.

Simon, Joel. *The New Censorship: Inside the Global Battle for Media Freedom*. United States, Columbia University Press, 2014.

The Routledge Companion to Global Popular Culture. United Kingdom, Taylor & Francis, 2014.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Sociology

Generic Elective (GE) 17
Sociology of Tourism

GENERIC ELECTIVE COURSE-17 (GE-17) : Sociology of Tourism

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE 17 Sociology of Tourism	4	3	1	0	12th Class Pass	Nil

Learning Objectives:

1. This course explores the idea of travel as a social category and the various perspectives in understanding the same.
2. To examine tourism as an activity beyond leisure and contextualise it within a sociological analysis on multiple axes.
3. To understand tourism as a development issue with significant consequences for communities.

Learning outcomes:

Students will be able to:

1. *Develop* a theoretical understanding of tourism as a social category.
2. *Apply* the perspective of commodification and social change in understanding tourism as a social activity.
3. *Assess* the relationship between tourism, state, and communities in the context of globalisation.

SYLLABUS OF GE- 17: Sociology of Tourism

Unit I: Why do people Travel? Conceptualizing Travel and Tourism (15 hours)
This unit will enable students to understand tourism as a sociological and an anthropological category.

Unit II: Tourist and their Choices: Travel beyond Leisure (18 hours)

This unit will introduce tourism as a social activity that is more than a mere leisure activity. It elucidates the varieties of travel and the purposes of travel as an outcome of complex interactions between various forces.

Unit III: Political Economy of Tourism: States and Communities (12 hours)
This unit explores the new challenges in the relationship of host communities and guests and the institutions of state and tourism in a globalised world.

Practical Component: NIL

Essential/Recommended Readings:

Unit I: Why do people Travel? Conceptualizing Travel and Tourism

Greenblat, Cathay Stein and Gagon, John. H. 1983. 'Temporary Strangers: Travel and Tourism from a Sociological Perspective'. *Sociological Perspectives,* Vol. 26 No. 1. pp. 89-110

MacCannell, Dean. 1973. 'Staged Authenticity: Arrangements of Social Space in Tourist Settings'. *American Journal of Sociology*. Vol. 79. No. 3. pp. 589-603

Urry, John and Larsen, Jonas. 2011. 'Theories' in *The Tourist Gaze 3.0.* New Delhi*:* Sage. Chapter 1. pp 1-30

Unit II: Tourist and their Choices: Travel beyond Leisure

LeDuc, Mathew. 2012. 'Discourses of Heritage and Tourism at a World Heritage Site: The Case of Hampi, India' in *Practicing Anthropology Tourism: Beyond Hosts and Guests* Vol. 34, No. 3, pp. 29-33.

Sharpley, Richard and Sundaram, Priya. 2005. 'Tourism: A Sacred Journey? The Case of Ashram Tourism, India'. *International Journal of Tourism Research*. Vol 7. pp. 161–171.

Bookman, Milica Z. & Karla R. Bookman. 2007. 'Offshore Doctors: The Demand for Medical Tourism' in *Medical Tourism in Developing Countries*. New York: Palgrave Macmillan. Chapter 3. pp. 40-64.

Sengupta, Amit. 2011. 'Medical Tourism: Reverse Subsidy for the Elite'. *Signs.* Vol. 36. No. 2. pp. 312-319.

Rattan, Jasveen K., Eagles, Paul F.J and Mair, Heather L. 2011. 'Volunteer Tourism: Its Role in Creating Conservation Awareness'. *Journal of Ecotourism* Vol 11. No.1. pp. 1-15.

Amram, Azri. 2019. 'Digesting the Massacre: Food Tours in Palestinian Towns in Israel'. *Gastronomica*. Vol 19. No.4. pp. 60-73.

Iwashita, Chieko. 2002. 'Media Construction of Britain as a Destination for Japanese Tourists: Social Constructionism and Tourism'. *Tourism and Hospitality Research*. Special Issue. Vol 4. No.4. pp-331-340.

Unit III: Political Economy of Tourism: States and Communities

Gray, Matthew. 1997. 'The Political Economy of Tourism in Syria: State, Society, and Economic Liberalization'. *Arab Studies Quarterly*. Vol 19. No 2. pp 57-73.

Stronzo, Amanda. 2001. 'Anthropology of Tourism: Forging New Ground for Ecotourism and Other Alternatives'. *Annual Review of Anthropology*. Vol 30. pp 261-283.

Sherlock, Kirsty. 2001. 'Revisiting the Concept of Hosts and Guests' *Tourist Studies.* Vol 1. No.3.pp. 271–295.

Barbosa, Raoni Borges. *et. al.* 2021. 'The Effects of COVID-19 in the Tourist Society: An Anthropological Insight of the Trivialisation of Death and Life'. *International Journal Tourism Anthropology*. Vol. 8. No. 2. pp. 179-189.

Practical Component: NIL

Suggested Readings:

Cohen, Erik. 1972. Towards a Sociology of International Tourism. *Social Research.* Vol 39. No. 1. pp 164-182.

Howe, Alyssa Cymene. 2001. Queer Pilgrimage: The San Francisco Homeland and Identity Tourism. *Cultural Anthropology.* Vol. 16. No.1. pp. 35-61

Jacobs, Claude F. 2001. Folk for Whom? Tourist Guidebooks, Local Color, and the Spiritual Churches of New Orleans. *The Journal of American Folklore*. Vol 114. No. 453. pp. 309-330

MacCannell, Dean. 1999. *The Tourist. A New Theory of the Leisure Class*. Berkeley: University of California Press.

Richter, Linda K. 1989 (republished 2019). *The Politics of Tourism in Asia.* University of Hawai'i Press.

Stoddart, Mark. C.J. and Graham, Paula. 2016. Nature, History, and Culture as Tourism Attractors: The Double Translation of Insider and Outsider Media. *Nature and Culture*. Vol 11. No.1. pp. 22-43

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Sociology
Generic Elective (GE) 18
Sociology of Ageing

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE 18 Sociology of Ageing	4	3	1	0	12th Class Pass	Nil

Learning Objectives:

1. The course introduces students to the concept of ageing and outlines the relevance of its study in society through cross-cultural research.
2. The course examines ageing as a socially constructed phenomenon.
3. The course familiarises students with the social, institutional and technological support for the aged.

Learning Outcomes:

Students will be able to:

1. *Analyse* ageing as a sociocultural process and recognise different attitudes and beliefs that shape ageing and develop a more informed and nuanced perspective on the ageing process.
2. *Assess* age-based discrimination and its intersection with other dimensions of inequality.
3. *Examine* the various perspectives on the challenges of ageing and the responses through policy programs.

SYLLABUS OF GE- 18: Sociology of Ageing

Unit I: Understanding Sociology of Ageing (12 hours)
This unit provides an overview of the concept of ageing and the significance of its study.

Unit II: Ageing: Individual, Family and Society (9 hours)
This unit provides an understanding of the interplay between societal responses to ageing and the lived experiences of the individuals within the context of family.

Unit III: Ageing and Social Processes (12 hours)
This section discusses age-based discrimination and its intersection with other dimensions of inequality.

Unit IV: Ageing: Challenges and Responses (12 hours)
This section examines the challenges of ageing and the responses through policy programs.

Practical Component: NIL

Essential/Recommended Readings:

Unit I: Understanding Sociology of Ageing

S Raju. 2014. 'Studies on Ageing in India: A Review' in G.Girdhar, K.M.Satyanarayana, Sanjay Kumar, K.S.James and Moneer Alam(eds.), *Population Ageing in India.* Cambridge University Press. Chapter 7. Pp.180-224.

Achenbaum, W. Andrew. 2020. 'Past as Prologue: Toward a Global History of Ageing' in D.Dannefer and C.Philipson (eds.) *The Sage Handbook of Social Gerontology.* Sage Publications. Chapter 2. Pp. 20-32.

Woodward, Janis and Culbert, Brandan. 2019. 'AAGE and Age: A Conversation with Dr. Christine L. Fry, Founding President of AAGE' in *Anthropology and Ageing*. Vol 40, No. 2. Pp. 72-75.

Harper, Sarah. 2006. 'Understanding Age and Ageing' in *Ageing Societies: Myths, Challenges and Opportunities*. Hodder Arnold. Chapter 3. Pp. 66-92.

Unit II: Ageing: Individual, Family and Society

Gangopadhay, Jagriti. 2020. 'Examining the Lived Experiences of Ageing Among Older Adults Living Alone in India' in M.K.Shankardass (eds.) *Ageing Issues and Responses in India.* Chapter 13. Springer Publications. Pp. 207-220.

Lamb, Sarah. 2007. 'Lives Outside The Family: Gender And The Rise Of Elderly Residences In India' in *International Journal of Sociology of the Family.* Vol. 33, No. 1, Aging in Asia. Pp.43-61.

Biswas, K. Ashok., Leshabari, Kelvin. and Gebuis, P.A. Edward. 2015. ' Living with Family at Old Age' in *The International Journal of Collaborative Research on Internal Medicine and Public Health.* Vol.7, No.10. Pp. 186-195.

Unit III: Ageing and Social Processes

Gopal, Meena. 2006. 'Gender, Ageing and Social Security' in *Economic and Political Weekly*. Vol. 41, No. 42. Pp. 4477-4486.

Soletti, B. Asha. and Laavanya, P.V. 2020. 'Revered or Abused: Exploring Reasons for Abuse Within Family from the Narratives of Three Elderly Women in Chennai' in M.K.Shankardass (eds.) *Ageing Issues and Responses in India.* Springer Publications. Chapter 14. Pp. 221-234.

Previtali,Federica., Keskinen, Katri Keskinen., Niska, Miira and Nikander, Pirjo. 2022. 'Ageism in Working Life: A Scoping Review on Discursive Approaches' in *Gerontologist.* Vol 62, No. 2. Pp. 97-111.

Katz, Stephen. 2020. 'Sociocultural Perspectives on Ageing Bodies' in D.Dannefer and C.Philipson (eds.) *The Sage Handbook of Social Gerontology.* Sage Publications. Chapter 27. Pp. 357-366.

Unit IV: Ageing: Challenges and Responses

Ranjan, Alok and V R, Muraleedharan. 2020. 'Higher Disease Burden in India's Elderly' in *Economic and Political Weekly.* Vol. lV, No. 35. Pp. 13-16.

Mathur, Arvind. 2023. 'Geriatric Co-Management' in *The Journal of the Indian Academy of Geriatrics.* Vol 19. Issue 1. Pp. 1-2.

McCreadie, Claudine. 2020. 'Technology and Older People' in D.Dannefer and C.Philipson (eds.) *The Sage Handbook of Social Gerontology.* Chapter 47. Pp. 607-617.

Gupta, Sandhya. 2020. 'Institutional Care For Elderly' in M.K.Shankardass (eds.) *Ageing Issues and Responses in India.* Springer Publications. Chapter 9. Pp.143-155.

Willcox, D. Craig., Willcox, J. Bradley., Sokolovsky, Jay and Sakihara, Seizo. 2007. 'The Cultural Context of "Successful Aging" Among Older Women Weavers in a Northern Okinawan Village: The Role of Productive Activity' in *Journal of Cross-Cultural Gerontology.* Springer. Vol 22. Pp. 137-165.

Kapur, Sarita. 2020. 'Senior Citizens – Protections in Laws, an Overview' in M.K.Shankardass (eds.) *Ageing Issues and Responses in India*. Chapter 9. Springer Publications. Pp.171-184.

Suggested Readings:

Alam, Moneer and Karan, Anup. 2011. *Elderly Health in India: Dimension, Differentials and Determinants*, BKPAI Working Paper No. 3, United Nations Population Fund (UNFPA), New Delhi.

Alam, Moneer. 2006. *Ageing in India: Socio-Economic and Health Dimensions.* Academic Foundations.

Sharma, K.L. 2009. *Dimensions of Ageing: Indian Studies*. Rawat Publications.

Vatuk, S. 1990. 'To Be a Burden on Others: Dependency Anxiety Among the Elderly in India', in O.M. Lynch (eds). *Divine Passions: The Social Construction of Emotion in India.* University of California Press. Pp.64–88.

Dannefer, Dale. 2021. *Age and the Reach of Sociological Imagination Power, Ideology and the Life Course*. Routledge.

Montgomery, J. V. Rhonda. 1984. 'Teaching Social Gerontology' in *Teaching Sociology.* Vol 11, No. 4. Pp. 455-468

Dominguez, Marti and Pina, Tatiana. 2020. 'Aging through Cartoons: The Unbearable Lightness of Old People Stereotypes' in Vincent Salvador and Agnese Sampietro (eds.). *Understanding the Discourse of Aging: A Multifaceted Perspective.* Cambridge Scholars Publishing. Chapter 16. Pp. 307-324.

Amado, Abarrategui Lucía, Villas-Boas, Susana and Espinilla, Pascual Sergiin Vincent Salvador and Agnese Sampietro. 2020. 'How do Adolescents See their Grandparents and Older People? A Discursive Approach to Gender and Age Stereotypes by means of the Radio Editorial', in Vincent Salvador and Agnese Sampietro (eds.). *Understanding the Discourse of Aging: A Multifaceted Perspective.* Cambridge Scholars Publishing. Chapter 17. Pp. 325-339.

Angouri, Jo. 2012. 'The Older I Get the Less I Trust people: Constructing Age Identities in the Workplace' in *Pragmatics.* Vol. 22, No. 2. Pp. 255-277.

Gangopadhyay, Jagriti and He, Longtao. 2022. *Eldercare Issues in China and India.* Routledge.

Formosa, Marvin and Higgs, Paula. 2015. *Social Class in Later Life: Power, Identity and Lifestyle.* Policy Press.

Wanka, A. and Gallistl, V. 2018. 'Doing Age in a Digitized World—A Material Praxeology of Aging With Technology', in *Frontiers in Sociology.* Vol 3. Article 6. Pp. 1-16.

Artner, L. 2018. 'Materialities in and of Institutional Care for Elderly People', in *Frontiers in Sociology.* Vol 3. Article 30. Pp. 1-12.

WHO's work on the UN Decade of Healthy Ageing (2021-2030). https://www.who.int/initiatives/decade-of-healthy-ageing#:~:text=The%20United%20Nations%20Decade%20of,communities%20in%20which%20they%20live.

Tyagi, R. and Paltasingh T. 2015. *Caring for the Elderly: Social Gerontology in the Indian Context.* Sage Publications.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTERS–IV

DEPARTMENT OF ECONOMICS
Category-I
(B.A. Honours in Economics in three years)

STRUCTURE OF FOURTH SEMESTER

DISCIPLINE SPECIFIC CORE COURSE -10 (DSC-10): Intermediate Microeconomics II: Market, Government and Welfare

Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
Intermediate Microeconomics II: Market, Government and Welfare - ECON010	**4**	**3**	**1**	**0**	**Class 12th with Mathematics**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- This course introduces students to analysis of multi-commodity markets.
- The efficiency results, known as welfare theorems, are central to understanding of market economy.
- The course also discusses inefficiencies coming from market concentration and externalities.
- It further would discuss the role of government to deal with the inefficiencies and resultant welfare outcomes.

Learning outcomes

The Learning outcomes of this course are as follows:

- This course helps the students to understand efficiency of markets and the environment where the standard market mechanism fails to generate the desirable outcomes in simple general equilibrium settings.
- The issues of market imperfection and market failures lead students to the economics of policy design. The students will learn the efficacy of government interventions for the improved welfare.

Syllabus

UNIT I: Monopoly (9 hours)
Monopoly pricing, Inefficiency, Price discrimination, Regulation

UNIT II: General equilibrium (9 hours)
Exchange economy, Robinson Crusoe economy, Pareto optimality, Welfare theorems, Welfare and social choice

UNIT III: Models of Monopolistic Competition (9 hours)
Firms with differentiated products, mark-up, short-run and long-run equilibrium

UNIT IV: Externalities (9 hours)
Market inefficiency under externalities, Pigou tax, Coase theorem, Market creation and other solutions

UNIT V: Public Good (9 hours)
Inefficiency of market equilibrium, Optimal public good provision, Free rider problem, Lindahl taxes

Recommended readings

- Serrano, Roberto and Feldman, Alan (2012), *A short course in intermediate Microeconomics with Calculus*, Cambridge University Press
- Espinola-Arredondo, Ana and Munoz-Garaia, Felix (2020), *Intermediate Microeconomic Theory*, MITPress
- Munoz-Garaia, Felix (2017) *Practice Exercises for Advanced Microeconomic Theory*, MIT Press.
- Dunaway, Eric; Strandholm, John C., Espinola-Arredondo, Ana and Munoz-Garcia, Felix (2020) *Practice Exercises for Intermediate Microeconomic Theory*, MIT press

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE -11 (DSC-11): Intermediate Macroeconomics II: Policy Issues

Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
Intermediate Macroeconomics II: Policy Issues – ECON011	**4**	**3**	**1**	**0**	**Class 12th with Mathematics**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- This course trains the students in policy issues faced by macroeconomists in the real world.
- It discusses issues in monetary and fiscal policies as well as exchange rate dynamics.
- It also introduces the students to the financial system and dynamics of financial crises.
- The students are introduced to macroeconomic concepts in the context of open economies and the policy issues therein.

Learning outcomes

The Learning outcomes of this course are as follows:

- This course enables students to analyse the functioning of macroeconomic policies in the real world in both closed and open economies, understand the dilemmas faced by the policymakers both in the domestic economy and in the globalised world.

Syllabus

UNIT I: Fiscal and monetary policies (15 hours)
Active or passive monetary policies; time inconsistency, monetary policy objectives and targets; rules versus discretion, IS-PC-MR model, fiscal policy, the government budget constraint; government debt and Ricardian equivalence.

UNIT II: Financial markets and crisis (15 hours)
Introduction to financial markets, Financial crises and liquidity trap

UNIT III: Issues in open economy (15 hours)
Short-run open economy models; Mundell-Fleming model, Exchange rate determination; purchasing power parity, asset market approach, Dornbusch's overshooting model; monetary approach to balance of payments, International financial markets.

Recommended readings

- Blanchard,O.(2006).*Macroeconomics*,4th,6thand7thed.PearsonEducation.
- Salvatore, D. (2007), *International Economics*, Wiley.
- Dornbusch,R., Fischer,S.(1994).*Macroeconomics*,6thed.McGraw-Hill.
- Mishkin, Frederic(2012).*Macroeconomics:Policy & Practice*, Pearson.
- Jones, C. (2016). *Macroeconomics*, 4th ed. W. W.Norton.
- Carlin, Wendy and Soskice, David (2015) *Macroeconomics: Institutions, Instability and the Financial System*. Oxford University Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE -12 (DSC-12): Introductory Econometrics

Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
Introductory Econometrics – ECON012	**4**	**3**	**0**	**1**	**Class 12th with Mathematics**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- This course introduces a basic set of the econometric methods to conduct empirical analysis in economics and social sciences.
- The course is designed to provide the students with the basic quantitative techniques needed to undertake applied research projects.
- It also provides the base for more advanced optional courses in econometrics.
- The tools of econometrics will be useful to establish relationships among economic variables.
- This course will be taught as a combination of theory and practicals.

Learning outcomes

The Learning outcomes of this course are as follows:

- The students will be able to estimate linear models using the method of ordinary least squares and make inferences about population parameters.
- They will also understand the issues of estimation arising due to misspecification of models and violations of assumptions.
- Students will also gain hands-on-experience of applying the concepts learnt to a wide range of problems using econometric software.

Syllabus

UNIT I: Linear Regression Model (9 hours)
OLS method of Estimation and Properties of estimators, Measures of Fit, Testing of Hypotheses, Prediction, Introduction to econometric software and practical application using econometric software (GRETL/EViews/ R/Stata/EXCELetc.)

UNIT II: Multiple Regression Model (9 hours)
OLS method of estimation and Properties of OLS estimators, Testing of Hypotheses, Measures of fit, practical application using econometric software (GRETL/EViews/ R/Stata/EXCEL etc.)

UNIT III: Functional Forms and Qualitative independent variables (9 hours)
Nonlinear Models and Transformations of Variables, Dummy variables, practical application using econometric software (GRETL/EViews/ R/Stata/EXCEL etc.)

UNIT IV: Violations of Assumptions (9 hours)
Consequences, Detection, and Remedies: Multicollinearity, Heteroscedasticity, Serial Correlation, practical application using econometric software (GRETL/EViews/R/Stata/EXCEL etc.)

UNIT V: Specification Bias (9 hours)

Model selection criteria, types of specification errors, omitted variable bias, inclusion of irrelevant variables, incorrect functional form, errors of measurement, practical application using econometric software (GRETL/EViews/ R/Stata/EXCEL etc.)

Recommended readings

- James H. Stock and Mark W.Watson (2019) *Introduction to Econometrics*, Fourth Edition,Pearsons.
- Wooldridge, J. M. (2019). *Introductory econometrics: A modern approach*. 7th edition, C engage learning.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category II

Economics Courses for Undergraduate Programme of study with Economics as one of the Core Disciplines

(B.A. Programmes with Economics as Major discipline)

DISCIPLINE SPECIFIC CORE COURSE -7 (DSC-7):Intermediate Macroeconomics I: Foundations of Aggregate Income Determination

Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
Intermediate Macroeconomics I: Foundations of Aggregate Income Determination– ECON008	**4**	**3**	**1**	**0**	**Class 12th**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- This course builds upon the basic concepts of macroeconomics. It introduces labour markets and the aggregate supply (AS) curve.
- Aggregate Demand (AD) and Aggregate Supply (AS) are brought together to determine equilibrium prices and output examine the policy impacts.
- The course discusses Phillips curve and the alleged trade-off between inflation and unemployment. Both adaptive and rational expectations are introduced.
- A flavour of micro-foundations is introduced with respect to consumption and investment.

Learning outcomes

The Learning outcomes of this course are as follows:

- This course enables students to analyse the interaction of aggregate demand and supply and the effects of fiscal and monetary policy, trade-off between inflation and unemployment, and consumption and investment behaviour of the households.

Syllabus

UNIT I: Short-run and medium-run equilibrium (15 hours)
The labour market, Wage determination; wages, prices, and unemployment; natural rate of unemployment; from employment to output, Derivation of aggregate supply curve, Interaction of aggregate demand and supply to determine equilibrium output, price level and employment.

UNIT II: Philips Curve and Theory of Expectations (15 hours)
Inflation, unemployment and expectations, Phillips Curve; adaptive and rational expectations; policy ineffectiveness debate.

UNIT III: Microeconomic foundations of macroeconomic behaviours (15 hours)
Consumption: Keynesian consumption function; Fisher's theory of optimal intertemporal choice; life-cycle and permanent income hypotheses; other theories of consumption expenditure.

Investment: determinants of business fixed investment; residential investment and inventory investment.

Recommended readings

- Blanchard,O.(2006).*Macroeconomics*,4thed.PearsonEducation.
- C.L.F. Attfield, D.Demery and N.W. Duck (1991). *Rational Expectations in Macroeconomics: an introduction to theory and evidence*2nd Ed.
- Sheffrin, Steve(1996). *Rational Expectations*. 2nd ed., Cambridge University Press.
- Dornbusch,R., Fischer,S.(1994).*Macroeconomics*,6thed.,McGraw-Hill.
- Branson,W.(2013).*Macroeconomics:Theoryandpolicy*,3rded,EastWestPress.
- Carlin, W and D Soskice (2007), *Macroeconomics: Imperfections, Institutions and Policies*, Indian Edition,OUP.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE -8 (DSC-8): Basic Econometrics

Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
Basic Econometrics – ECON024	**4**	**3**	**1**	**0**	**Class 12th**	**Basic Statistics for Economics (ECON022)**

Learning Objectives

The Learning Objectives of this course are as follows:

- This course introduces students to the econometric methods used to conduct empirical analysis based on the basic statistics.
- It offers the basic quantitative techniques needed to undertake applied research projects to establish the relationship between variables of interests across wide variety of disciplines.

Learning outcomes

The Learning outcomes of this course are as follows:

- Students will learn to estimate simple estimation and inferences about population parameters, to formulate empirical models and analyze data.
- An expertise in econometrics increases the job prospect of the students significantly.

Syllabus

UNIT I: Regression Models (15 hours)
OLS estimators, hypothesis Testing using software and practical application; multi- ple Regression Model - estimation, Testing and practical application using software like GRETL/EViews/ R/Stata/EXCEL etc.

UNIT II: Qualitative variables and Estimation (15 hours)
Application of qualitative variables, Nonlinear Models, Applications of dummy variables

UNIT III: Issues with Classical Assumptions (15 hours)
Violation of normal distribution, Collinearity with independent variables, heteroscedasticity, autocorrelation, practical application

Recommended readings

- Christopher Dougherty, *Introduction to Econometrics*, 4th edition, OUP, Indian edition.
- Damodar Gujarati, *Econometrics by Example*, 2nd edition, Palgrave Macmillan, 2014.
- Gujarati,D.,Porter,D.(2010).*Essentials of Econometrics*,4thed.McGraw-Hill.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category III

Economics Courses for Undergraduate Programme of study with Economics as one of the Core Disciplines

(B.A. Programmes with Economics as non-Major or Minor discipline)

DISCIPLINE SPECIFIC CORE COURSE -4 (DSC-4):Intermediate Macroeconomics I: Foundations of Aggregate Income

Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
Intermediate Macroeconomics I: Foundations of Aggregate Income Determination– ECON008	**4**	**3**	**1**	**0**	**Class 12th**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- This course builds upon the basic concepts of macroeconomics. It introduces labour markets and the aggregate supply (AS) curve.
- Aggregate Demand (AD) and Aggregate Supply (AS) are brought together to determine equilibrium prices and output examine the policy impacts.
- The course discusses Phillips curve and the alleged trade-off between inflation and unemployment. Both adaptive and rational expectations are introduced.
- A flavour of micro-foundations is introduced with respect to consumption and investment.

Learning outcomes

The Learning outcomes of this course are as follows:

- This course enables students to analyse the interaction of aggregate demand and supply and the effects of fiscal and monetary policy, trade-off between inflation and unemployment, and consumption and investment behaviour of the households.

Syllabus

UNIT I: Short-run and medium-run equilibrium (15 hours)
The labour market, Wage determination; wages, prices, and unemployment; natural rate of unemployment; from employment to output, Derivation of aggregate supply curve, Interaction of aggregate demand and supply to determine equilibrium output, price level and employment.

UNIT II: Philips Curve and Theory of Expectations (15 hours)
Inflation, unemployment and expectations, Phillips Curve; adaptive and rational expectations; policy ineffectiveness debate.

UNIT III: Microeconomic foundations of macroeconomic behaviours (15 hours)
Consumption: Keynesian consumption function; Fisher's theory of optimal intertemporal choice; life-cycle and permanent income hypotheses; other theories of consumption expenditure.

Investment: determinants of business fixed investment; residential investment and inventory investment.

Recommended readings

- Blanchard,O.(2006).*Macroeconomics*,4thed.PearsonEducation.
- C.L.F. Attfield, D.Demery and N.W. Duck (1991). *Rational Expectations in Macroeconomics: an introduction to theory and evidence*2nd Ed.
- Sheffrin,Steve(1996). *Rational Expectations*. 2nd ed.,Cambridge University Press.
- Dornbusch,R.,Fischer,S.(1994).*Macroeconomics*,6thed.,McGraw-Hill.
- Branson,W.(2013).*Macroeconomics:Theoryandpolicy*,3rded,EastWestPress.
- Carlin, W and D Soskice (2007), *Macroeconomics: Imperfections, Institutions and Policies*, Indian Edition, OUP.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Semester-V

DEPARTMENT OF ECONOMICS

Category I

(B.A. Honours in Economics in three years)

DISCIPLINE SPECIFIC CORE COURSE -13 (DSC-13): Game Theory and Strategic Interactions

Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
Game Theory and Strategic Interactions – ECON013	**4**	**3**	**1**	**0**	**Class 12th with Mathematics**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- This course introduces students to formal analysis of game theory and its applications on the micro-economic issues.
- Game theory will be used to analyse market power, commitment problem, coordination problem and various modern market design tools like contract and auction.

Learning outcomes

The Learning outcomes of this course are as follows:

- This course helps the students to understand strategic interactions and importance of information in strategic situations.
- The concepts and tools developed in this course will enable the students to analyse various strategic relations seen in various disciplines, like in economics, management and other social sciences.

Syllabus

UNIT I: Complete information simultaneous move game, Dominance, Nash equilibrium, Mixed strategy Nash equilibrium (9 hours)

UNIT II: Complete information extensive form game (9 hours)
Sequential rationality and subgame perfection

UNIT III: Topics from Industrial Organization (9 hours)

UNIT IV: Incomplete information (9 hours)
Bayes Nash equilibrium, Auction, Moral Hazard, Contract

UNIT V: Communicating information (9 hours)
Perfect Bayesian equilibrium, Job market signaling and reputation

Recommended readings

- Watson, J. (2002). *Strategy: an introduction to game theory*. New York: WW Norton.
- Muñoz-Garcia,F.(2017).*Advancedmicroeconomictheory:anintuitiveapproach with Final Examinationples*. MITPress.
- Muñoz-Garcia,F.(2017).*PracticeExercisesforAdvancedMicroeconomicTheory*. MITPress.
- Dunaway, E., Strandholm, J. C., Espinola-Arredondo, A., & Munoz-Garcia, F. (2020). *Practice Exercises for Intermediate Microeconomic Theory*. MITPress.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE -14 (DSC-14):Economic Growth and Business Cycles

Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
Economic Growth and Business Cycles – ECON014	**4**	**3**	**1**	**0**	**Class 12th with Mathematics**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- This course introduces the students to the models of economic growth and business cycles.
- The literature on the differences in the growth rates across economies is discussed.
- Further, the student is exposed to the preliminaries of macroeconomic modelling through different growth models.
- It introduces business cycles through the Real Business Cycle and the New Keynesian approaches.

Learning outcomes

The Learning outcomes of this course are as follows:

- The student would understand the basic drivers of economic growth that are developed through the different approaches using exogenous, semi-endogenous and endogenous models.
- The student will be able to apprise and analyse better the business cycles and familiarise with the debates between the schools of macroeconomic thoughts like Real Business Cycles and New Keynesian Economics.

Syllabus

UNIT I: Introduction to Economic Growth (15 hours)
Introduction to economic growth, data on economic growth, stylised facts of economic growth. Economic growth and economic development, economic growth and income difference, absolute and conditional convergence.

UNIT II: Models of Economic Growth (15 hours)
Solow model and the steady state. Solow model with technology, growth accounting, Economics of ideas and innovation, Romer model, Growth through creative destruction, Growth and technology transfer, institutions, Simple endogenous growth model.

UNIT III: Business Cycles (15 hours)
Real business cycle model, productivity shocks and business cycle fluctuations, New Keynesian models, new Keynesian Short-run AS Phillips curve and dynamics IS curve. Comparison between business cycle models. Introduction to dynamic general equilibrium models.

Recommended readings

- Jones,CharlesIandVollrath,Dietrich(2013)*IntroductiontoEconomicGrowth*.
- W. W. Norton & Co.
- Aghion, Philippe and Howitt, Peter (2010) *The Economics of Growth*. Prentice Hall. Eastern EconomyEdition.
- Mishkin,FredericS(2017)*Macroeconomics:PolicyandPractice*.Pearson.
- Jones, Charles I (2018) *Macroeconomics*. W W Norton &Co.

- Sorenson,PeterBandWhitta-Jacobson,HansJorgen(2010)*IntroducingAdvanced Macroeconomics: Growth and Business Cycles*. McGraw HillEducation
- Barro, R, Chu, A and Cozzie, G (2017), *Intermediate macroeconomics*, First Edn. Cengage Learning.
- Weil,DavidN(2014)*EconomicGrowth*.Routledge.
- Gordon,RobertJ(2015)*Macroeconomics*.Pearson

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE -15 (DSC-15): Introductory Development Economics

Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
Introductory Development Economics – ECON015	**4**	**3**	**1**	**0**	**Class 12th with Mathematics**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- This course discusses the basic concept of growth and further links it up with alternative conceptions of development.
- It then proceeds to examine the aspects of poverty and inequality, not just in terms of income and wealth, but in terms of capabilities too.
- The axiomatic basis for inequality measurement is used to develop measures of inequality and poverty.
- It further explores the connections between growth and inequality.
- The course ends by linking political institutions to growth and inequality by discussing the role of the state in economic development and the informational and incentive problems that affect state governance.

Learning outcomes

The Learning outcomes of this course are as follows:

- The students would distinguish between growth and development and get an idea about the factors affecting the level of development as well as the process of economic development.
- Further, they comprehend and analyse various concepts and measures of underdevelopment including poverty and inequality.

Syllabus

UNIT I: Introducing Economic Development: Global Perspective (12 hours)
Conceptions of Economic Growth and Development; Concepts of economic growth and linking it up with alternative measures of development, including human development, documenting the international variation in these measures, comparing development trajectories across nations and within them.

UNIT II: Theories of Economic Development (12 hours)
Classic Theories of Economic Growth and Development - four approaches (linear- stages theories, structural change models, international dependence, neoclassical

UNIT III: The Strategy of Economic Development: Institutional Pathways (9 hours)
Balanced and Unbalanced growth, interlinkages, big-push and the role of markets and state, alternative institutional trajectories and their relationship with economic performance

UNIT IV: Poverty and Inequality (12 hours)
Definitions, Measures and Mechanisms, Inequality axioms and principles; a com- parison of commonly used diagrammatic and mathematical inequality measures, their deficiencies and usage; connections between

inequality and development; inequality trends at international level; conceptualisation of the poverty lines at domestic and international levels; poverty measurement; characteristics of the poor; capability approach to poverty; mechanisms that generate poverty traps and path dependence of growth processes.

Recommended readings

- Partha Dasgupa (2007), *Economics: A Very Short Introduction*, (AVSI), Oxford UniversityPress.
- Perkins, D. H., Radelet, S. C., Lindauer, D. L., & Block, S. A. (2013). *Economics of Development*. 7th Edition, New York: WW Norton &Company.
- Todaro, M. P., & Smith, S. C. (2020). *Economic Development*. PearsonUK.
- Elinor Ostrom(1990),*Governing the Commons: The Evolution of Institutions for Collective Action*, Cambridge University Press.
- Gustav Ranis et.al, Economic Growth and Human Development (2000), *World Development* Vol. 28, No. 2, Elsevier Science Ltd.
- Pranab Bardhan(2010),*AwakeningGiants,FeetofClay:AssessingtheEconomic Rise of China and India*,OUP.
- Thomas Dietz, Elinor Ostrom and Paul C. Stern, 'The Struggle to Govern the Commons',*Science*,vol.302,No.5652(Dec.12,2003),pp.1907-1912.
- Mancur Olson, Jr. (1996), 'Big Bills Left on the Sidewalk: Why Some Nations are Rich,andOthersPoor',*JournalofEconomicPerspectives*,vol.10,no.2,pp3-24.
- Albert O. Hirschman, *Rival Views of Market Society and Other Essays*, Ch. 3: 'Linkages in EconomicDevelopment'.
- Nurkse, Ragnar (1961). *Problems of Capital Formation in Underdeveloped Countries*. New York: Oxford University Press. Chapter3.
- Rodenstein Rodan, PN (1943) Problems of Industrialization of eastern and south easternEurope,*Economic Journal*,volLIII,p202-11.
- Dani Rodrik (2009), One Economics, *Many Recipies: Globalization, Institutions and Economic Growth*, Princeton UniversityPress.
- Andre Shleifer and Robert W. Vishny (1993), 'Corruption', *Quarterly Journal of Economics*, 108(3), pp599-617.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category II

Economics Courses for Undergraduate Programme of study with Economics as one of the Core Disciplines

(B.A. Programmes with Economics as Major discipline)

DISCIPLINE SPECIFIC CORE COURSE -9 (DSC-9): Intermediate Microeconomics II: Market, Government and Welfare

Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
Intermediate Microeconomics II: Market, Government and Welfare - ECON010	**4**	**3**	**1**	**0**	**Class 12th**	**Introductory/Principles of Microeconomics**

Learning Objectives

The Learning Objectives of this course are as follows:

- This course introduces students to analysis of multi-commodity markets.
- The efficiency results, known as welfare theorems, are central to understanding of market economy.
- The course also discusses inefficiencies coming from market concentration and externalities.
- It further would discuss the role of government to deal with the inefficiencies and resultant welfare outcomes.

Learning outcomes

The Learning outcomes of this course are as follows:

- This course helps the students to understand efficiency of markets and the environment where the standard market mechanism fails to generate the desirable outcomes in simple general equilibrium settings.
- The issues of market imperfection and market failures lead students to the economics of policy design. The students will learn the efficacy of government interventions for the improved welfare.

Syllabus

UNIT I: Monopoly (9 hours)
Monopoly pricing, Inefficiency, Price discrimination, Regulation

UNIT II: General equilibrium (9 hours)
Exchange economy, Robinson Crusoe economy, Pareto optimality, Welfare theorems, Welfare and social choice

UNIT III: Models of Monopolistic Competition (9 hours)
Firms with differentiated products, mark-up, short-run and long-run equilibrium

UNIT IV: Externalities (9 hours)
Market inefficiency under externalities, Pigou tax, Coase theorem, Market creation and other solutions

UNIT V: Public Good (9 hours)
Inefficiency of market equilibrium, Optimal public good provision, Free rider problem, Lindahl taxes

Recommended readings

- Serrano, Roberto and Feldman, Alan (2012), *A short course in intermediate Microeconomics with Calculus*, Cambridge UniversityPress
- Espinola-Arredondo, Ana and Munoz-Garaia, Felix (2020), *Intermediate Microeconomic Theory*,MITPress
- Munoz-Garaia, Felix (2017) *Practice Exercises for Advanced Microeconomic Theory*, MITPress.
- Dunaway, Eric; Strandholm, John C., Espinola-Arredondo, Ana and Munoz-Garcia, Felix (2020) *Practice Exercises for Intermediate Microeconomic Theory*, MIT press

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE -10 (DSC-10): Introductory Development Economics

Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
Introductory Development Economics – ECON015	**4**	**3**	**1**	**0**	**Class 12th**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- This course discusses the basic concept of growth and further links it up with alternative conceptions of development.
- It then proceeds to examine the aspects of poverty and inequality, not just in terms of income and wealth, but in terms of capabilities too.
- The axiomatic basis for inequality measurement is used to develop measures of inequality and poverty.
- It further explores the connections between growth and inequality.
- The course ends by linking political institutions to growth and inequality by discussing the role of the state in economic development and the informational and incentive problems that affect state governance.

Learning outcomes

The Learning outcomes of this course are as follows:

- The students would distinguish between growth and development and get an idea about the factors affecting the level of development as well as the process of economic development.
- Further, they comprehend and analyse various conceptsandmeasuresofunderdevelopmentincludingpovertyandinequality.

Syllabus

UNIT I: Introducing Economic Development: Global Perspective (12 hours)
Conceptions of Economic Growth and Development; Concepts of economic growth and linking it up with alternative measures of development, including human development, documenting the international variation in these measures, comparing development trajectories across nations and within them.

UNIT II: Theories of Economic Development (12 hours)
Classic Theories of Economic Growth and Development - four approaches (linear- stages theories, structural change models, international dependence, neoclassical

UNIT III: The Strategy of Economic Development: Institutional Pathways (9 hours)
Balanced and Unbalanced growth, interlinkages, big-push and the role of markets and state, alternative institutional trajectories and their relationship with economic performance

UNIT IV: Poverty and Inequality (12 hours)
Definitions, Measures and Mechanisms, Inequality axioms and principles; a com- parison of commonly used diagrammatic and mathematical inequality measures, their deficiencies and usage; connections between inequality and development; inequality trends at international level; conceptualisation of the poverty lines at

domestic and international levels; poverty measurement; characteristics of the poor; capability approach to poverty; mechanisms that generate poverty traps and path dependence of growth processes.

Recommended readings

- Partha Dasgupa (2007), *Economics: A Very Short Introduction*, (AVSI), Oxford UniversityPress.
- Perkins, D. H., Radelet, S. C., Lindauer, D. L., & Block, S. A. (2013). *Economics of Development*. 7th Edition, New York: WW Norton &Company.
- Todaro, M. P., & Smith, S. C. (2020). *Economic Development*. PearsonUK.
- Elinor Ostrom(1990), *Governing the Commons: The Evolution of Institutions for Collective Action*, Cambridge University Press.
- Gustav Ranis et.al, Economic Growth and Human Development (2000), *World Development*Vol. 28, No. 2, Elsevier Science Ltd.
- PranabBardhan(2010),*AwakeningGiants,FeetofClay:AssessingtheEconomic RiseofChinaandIndia*,OUP.
- Thomas Dietz, Elinor Ostrom and Paul C. Stern, 'The Struggle to Govern the Commons',*Science*,vol.302,No.5652(Dec.12,2003),pp.1907-1912.
- Mancur Olson, Jr. (1996), 'Big Bills Left on the Sidewalk: Why Some Nations are Rich,and Others Poor',*JournalofEconomicPerspectives*,vol.10,no.2,pp3-24.
- Albert O. Hirschman, *Rival Views of Market Society and Other Essays*, Ch. 3: 'Linkages in EconomicDevelopment'.
- Nurkse, Ragnar (1961). *Problems of Capital Formation in Underdeveloped Coun- tries*. New York: Oxford University Press. Chapter3.
- Rodenstein Rodan, PN (1943) Problems of Industrialization of eastern and south easternEurope,*EconomicJournal*,volLIII,p202-11.
- Dani Rodrik (2009), One Economics, *Many Recipies: Globalization, Institutions and Economic Growth*, Princeton UniversityPress.
- Andre Shleifer and Robert W. Vishny (1993), 'Corruption', *Quarterly Journal of Economics*, 108(3), pp599-617.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category III

Economics Courses for Undergraduate Programme of study with Economics as one of the Core Disciplines

(B.A. Programmes with Economics as non-Major or Minor discipline)

DISCIPLINE SPECIFIC CORE COURSE -5 (DSC-5): Introductory Development Economics

Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
Introductory Development Economics – ECON015	**4**	**3**	**1**	**0**	**Class 12th**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- This course discusses the basic concept of growth and further links it up with alternative conceptions of development.
- It then proceeds to examine the aspects of poverty and inequality, not just in terms of income and wealth, but in terms of capabilities too.
- The axiomatic basis for inequality measurement is used to develop measures of inequality and poverty.
- It further explores the connections between growth and inequality.
- The course ends by linking political institutions to growth and inequality by discussing the role of the state in economic development and the informational and incentive problems that affect state governance.

Learning outcomes

The Learning outcomes of this course are as follows:

- The students would distinguish between growth and development and get an idea about the factors affecting the level of development as well as the process of economic development.
- Further, they comprehend and analyse various conceptsandmeasuresofunderdevelopmentincludingpovertyandinequality.

Syllabus

UNIT I: Introducing Economic Development: Global Perspective (12 hours)
Conceptions of Economic Growth and Development; Concepts of economic growth and linking it up with alternative measures of development, including human development, documenting the international variation in these measures, comparing development trajectories across nations and within them.

UNIT II: Theories of Economic Development (12 hours)
Classic Theories of Economic Growth and Development - four approaches (linear- stages theories, structural change models, international dependence, neoclassical

UNIT III: The Strategy of Economic Development: Institutional Pathways (9 hours)

Balanced and Unbalanced growth, interlinkages, big-push and the role of markets and state, alternative institutional trajectories and their relationship with economic performance

UNIT IV: Poverty and Inequality (12 hours)
Definitions, Measures and Mechanisms, Inequality axioms and principles; a com- parison of commonly used diagrammatic and mathematical inequality measures, their deficiencies and usage; connections between inequality and development; inequality trends at international level; conceptualisation of the poverty lines at domestic and international levels; poverty measurement; characteristics of the poor; capability approach to poverty; mechanisms that generate poverty traps and path dependence of growth processes.

Recommended readings

- Partha Dasgupa (2007), *Economics: A Very Short Introduction*, (AVSI), Oxford UniversityPress.
- Perkins, D. H., Radelet, S. C., Lindauer, D. L., & Block, S. A. (2013). *Economics of Development*. 7th Edition, New York: WW Norton &Company.
- Todaro, M. P., & Smith, S. C. (2020). *Economic Development*. PearsonUK.
- ElinorOstrom(1990),*GoverningtheCommons:TheEvolutionofInstitutionsfor CollectiveAction*,CambridgeUniversityPress.
- Gustav Ranis et.al, Economic Growth and Human Development (2000), *World Development*Vol. 28, No. 2, Elsevier Science Ltd.
- PranabBardhan(2010),*AwakeningGiants,FeetofClay:AssessingtheEconomic RiseofChinaandIndia*,OUP.
- Thomas Dietz, Elinor Ostrom and Paul C. Stern, 'The Struggle to Govern the Commons',*Science*,vol.302,No.5652(Dec.12,2003),pp.1907-1912.
- Mancur Olson, Jr. (1996), 'Big Bills Left on the Sidewalk: Why Some Nations are Rich,andOthersPoor',*JournalofEconomicPerspectives*,vol.10,no.2,pp3-24.
- Albert O. Hirschman, *Rival Views of Market Society and Other Essays*, Ch. 3: 'Linkages in EconomicDevelopment'.
- Nurkse, Ragnar (1961). *Problems of Capital Formation in Underdeveloped Coun- tries*. New York: Oxford University Press. Chapter3.
- Rodenstein Rodan, PN (1943) Problems of Industrialization of eastern and south easternEurope,*EconomicJournal*,volLIII,p202-11.
- Dani Rodrik (2009), One Economics, *Many Recipies: Globalization, Institutions and Economic Growth*, Princeton UniversityPress.
- Andre Shleifer and Robert W. Vishny (1993), 'Corruption', *Quarterly Journal of Economics*, 108(3), pp599-617.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTERS–VI

DEPARTMENT OF ECONOMICS

Category I

(B.A. Honours in Economics in three years)

DISCIPLINE SPECIFIC CORE COURSE -16 (DSC-16): International Trade

Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical / Practice		
International Trade – ECON016	4	3	1	0	Class 12th with Mathematics	Introductory/Principles of Microeconomics

Learning Objectives

The Learning Objectives of this course are as follows:

- This course introduces the basics of international trade theory and examines the effects of trade policies for domestic and world welfare. It covers bother classical and new trade theories.
- This course develops a systematic exposition of models that try to explain the composition, direction, and consequences of international trade.
- Apart from the introduction to theoretical models, students will also be exposed to real-world examples and casestudies.

Learning outcomes

The Learning outcomes of this course are as follows:

- The students would be able to understand the main theoretical and empirical concepts in international trade that equip them with a thorough analytical grasp of trade theories, ranging from Ricardian comparative advantage to intra-industry trade.
- It familiarises students with the main issues in trade policy and with the basic features of theinternationaltradingregime.

Syllabus

UNIT I: Neoclassical Trade Theories (15 hours)
Ricardian trade theory of comparative advantage. Gains from trade. Comparative advantage with many goods; Specific factor model; income distribution and trade policy, international factor mobility models; Standard Trade Model, economic growth, immiserizing growth and intertemporal trade; Heckscher-Ohlin theory; factor price equalisation, Rybczynski and Stolper-Samuelson theorems, Heckscher- Ohlin-Vanek Model, Offercurve.

UNIT II: New trade theories and firms in the global economy (15 hours)
External Economies of Scale, learning curve, intra-industry trade, monopolistic competition and firm responses to trade; international Location of Production, horizontal and vertical multinationals; Gravity model, Firms in the global economy. Global value chain and offshoring of goods and services.

UNIT III: International Trade Policy Concerns (15 hours)
Instruments of trade policy, static welfare analysis of tariffs, quotas and subsidies. Equivalence of tariffs and quotas. Effective rate of protection. Export subsidies and countervailing duties; Oligopoly and International trade. Strategic tradepol-icy; International Agreements: Trade, Labour and Environment Multilateralism, WTO, RegionalTradeAgreementsandNewProtectionism

Recommended readings

- Feenstra, R., Taylor, A. (2014). *International Trade*, 3rd ed. Worth Publishers. (Abbreviation used:FT)
- Krugman, P., Obstfeld, M., Melitz, M. (2018). *International Economics - Theory and Policy*, 11th ed. Pearson Education. (Abbreviation used: KOM)
- Gandolfo, G. (2014), *International Trade Theory and Policy (with contribution fromFedericoTrionfetti*)2nded.,Springer.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE -17 (DSC-17): Development Theory and Experience

Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
Development Theory and Experience – ECON017	**4**	**3**	**1**	**0**	**Class 12th with Mathematics**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- It highlights the dynamic interconnections between the social and economic aspects of the development process.
- In particular, the course deals with the macro and micro aspects of demography, fertility choices and gender bias.
- It also discusses the process of migration through elaborate models highlighting the rural-urban sectoral interrelationships.
- It describes the peculiar characteristics of rural institutions which shape contracts across labour, land and credit markets in the rural economy.
- It discusses the efficiency of such contracts even while they deviate from the traditional competitive marketcontracts.

Learning outcomes

The Learning outcomes of this course are as follows:

- This course updates the students the unprecedented progress that has been made in many parts of the developing world—but fully confronts the enormous problems and challenges experienced during the recent decades.
- The student would understand the wide diversity of development approaches adopted across the developing world, and the differing positions in the global economy held by developing countries.
- This will help them understand better the economic development policy and programmesacrossemployedbyWorldBankandnationaleconomies.

Syllabus

UNIT I: Demography, Gender and Development (12 hours)
Demographic concepts; birth and death rates, age structure, fertility and mortality; demographic transitions during the process of development; gender bias in preferences and outcomes and evidence on unequal treatment within households; connections between income, mortality, fertility choices and the impact of intra-household gender inequality (in allocation of resources) and labour markets as genderedinstitutions.

UNIT II: Migration and Development (9 hours)
Models of migration, sectoral dynamics and the relationship between rural and urban sectors.

UNIT III: Land, Labour and Credit Markets (12 hours)
The distribution of land ownership; land reform and its effects on productivity; contractual relationships between tenants and landlords; land acquisition; nutrition and labor productivity; informational problems and credit contracts; micro-finance; inter-linkages between rural factor markets.

UNIT IV: Institutions and coordination (12 hours)
The determinants of democracy; alternative institutional trajectories and their relationship with economic performance; within-country differences in the functioning of state institutions; state ownership and regulation; government failures and corruption.

Recommended readings

- Acemoglu, D., & Robinson, J. A. (2006). *Economic origins of dictatorship and democracy*. Cambridge UniversityPress.
- Robinson, J. A., & Acemoglu, D. (2012). *Why nations fail: The origins of power, prosperity and poverty*. London:Profile.
- Perkins, D. H., Radelet, S. C., Lindauer, D. L., & Block, S. A. (2013). *Economics of Development*. 7th Edition, New York: WW Norton &Company.
- Todaro, M. P., & Smith, S. C. (2020). *Economic Development*. PearsonUK.
- Debraj Ray (2009), *Development Economics*, Oxford University P r e s s
- RobertT.Jensen(2010),*EconomicOpportunitiesandDifferencesinHumanCapital:ExperimentalEvidenceforIndia*,NBERWorkingPaperNo.16021.
- Pitt, Mark, Mark Rosenzweig and Nazmul Hassan. (1990). "Productivity, Health and Inequality in the Intrahousehold Distribution of Food in Low- income Countries."*AmericanEconomicReview*,80(5):1130-1156.
- Elson, Diane (1999) Labour markets as gendered institutions: Equality, Efficiency andEmpowermentIssues,*WorldDevelopment*,vol27(3),p611-627.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE -18 (DSC-18): Indian Growth and Development

Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
Indian Growth and Development	**4**	**3**	**1**	**0**	**Class 12th with Mathematics**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- Using appropriate analytical frameworks, this course reviews major trends in economic indicators of macro and development issues and policy debates in India in the post-Independence period, with particular emphasis on paradigm shifts and turning points.
- This course intends to give an introduction to students as to how they could explore problems related to the Indian economy by familiarizing them with the research studies on areas relating to economic development and policy in India with an emphasis on contemporary debates.

Learning outcomes

The Learning outcomes of this course are as follows:

- The students should be able to understand the development paradigm adopted in India since independence and evaluate its impact on economic as well as social indicators of progress.
- The students will acquire ability to explore current policy debates and contribute to policy making in an informed way using relevantdatabases.

Syllabus

UNIT I: Economic Growth since Independence (12 hours)
Major features of the economy at independence; growth under different policy regimes—goals, constraints, institutions and policy framework; an assessment of performance—sustainability and regional contrasts; structural change, savings and investment

UNIT II: Sectoral Performances and Concerns (12 hours)
Issuesinagriculture,industryandservices.

UNIT III: Inclusive Growth - trends and patterns, Distributional Issues and Policies Demography, Poverty and Unemployment (9 hours)

UNIT IV: Economic Policies and their Impact (12 hours)
Evolution of macroeconomic framework applied in Indian economy and its impact, fiscal policy; financial and monetary policies; trade and investment policy, five-year plans

Recommended readings

- Ahluwalia,M.S.(2019),"India'seconomicreforms:AchievementsandNextSteps", *Asian Economic Policy Review*, 14(1), 46-62.
- Bosworth, B., Collins, S. M., & Virmani, A. (2007). *Sources of growth in the Indian economy*. Working Paper no. 12901,NBER.

- Pulapre Balakrishnan, (2007), "The Recovery of India: Economic Growth in the Nehru Era", *Economic and Political Weekly*, November 10-23, 2007.
- Krishnamurty, K. (2002), Macroeconometric Models for India: Past, Present and Prospects *Economic and Political Weekly*, October 19, 2002.
- Arvind Subramanian and Josh Felman (2021) India's Stalled Rise-How the State HasStifledGrowth,*ForeignAffairs*on14.12.2021.
- Acharya, S. and Mehrotra, S. (2020), The Agricultural Market Reforms: Is there a trade-off between efficiency and equality? Working Paper Series, Institute of HumanDevelopment.
- Shah, Mihir (2007), Rural Credit in 20th Century India: Overview of History and Perspectives,*EconomicandPoliticalWeekly*,Vol.42,IssueNo.15,14April2007.
- NagarajR(2013),India'sDreamRunUnderstandingtheBoomandItsAftermath,
- *Economic and Political Weekly* Vol 48, No. 20,May 18, 2013.
- Chanda, R. (2019), India's Services Sector; trends, opportunities and challenges,in Uma Kapila(ed.), *Indian economy-2: Macroeconomic policies, Sectoral Develop- ments andPerformance*.
- Dipak Mazumdar and Sandip Sarkar (2009) "The Employment Problem in India and the Phenomenon of the 'Missing Middle' *The Indian Journal of Labour Eco- nomics*, Vol. 52, No. 1,2009
- Chakraborty, Achin, (2015), Reforming Labour Markets in States: Revisiting the FutilityThesis,*EconomicandPoliticalWeekly*,May16.
- Thomas, J. J. (2020). 'Labour Market Changes in India, 2005–18', *Economic and Political Weekly*, 55(34),57.
- James, K.S., &Srinivas Goli (2016), "Demographic Changes in India: Is the Coun- try Prepared for the Challenge?" *Brown Journal of World Affairs*, Fall/Winter 2016, Volume XXIII, IssueI.
- Desai, S. (2015), "Demographic deposit, dividend and debt", *The Indian Journal of Labour Economics*, 58, 217-232.
- Drèze,JandKhera,R.,2016,'RecentSocialSecurityInitiativesinIndia'Available athttp://dx.doi.org/10.2139/ssrn.2800699.
- Vijay Joshi, (2016), *India's Long Road: The Search for Prosperity*, Allen Lane, Gurgaon, Ch2.
- Rakesh Mohan, (2019), *Moving India to a new Growth Trajectory: Need for a ComprehensiveBigPush*,BrookingsIndia,Section1and2,9-30.
- Jagdish Bhagwati and Arvind Panagariya, (2012), *India's Tryst with Destiny*, CollinsBusiness,Noida,pp.4-5,32-38.
- PanagariyaA(2020),*IndiaUnlimited:ReclaimingtheLostGlory*,Chapter2.
- Jean Dreze and Amartya Sen, (2013), *India: An Uncertain Glory*, Allen Lane, chapters 2, 3 (pp. 72-80only).
- Kumar, R., & Patibandla, M. (2009). *Institutional dynamics and the evolution of the Indian economy*,Springer.
- McCartney,M.(2019).*TheIndianEconomy*.AgendaPublishingLimited.
- Goyal, A. (Ed.). (2019). *A Concise Handbook of the Indian Economy in the 21st Century*.OxfordUniversityPress.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF DISCIPLINE SPECIFIC ELECTIVE (DSE) COURSES
FOR semester-IV/V/VI

Discipline Specific Elective 6 (DSE-6): Advanced Econometrics

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
V/VII	Advanced Econometrics – ECON036	4	3	1	0	Class 12th with Mathematics	Basic Econometrics (ECON024)

Learning Objectives

The Learning Objectives of this course are as follows:

- A prerequisite for this course is the knowledge of concepts in the Basic Econometrics course.
- It builds on the compulsory Basic Econometrics course and teaches students a broad set of commonly used econometric methods.
- These include estimating models with limited dependent variables, the use of instrumental variables to estimate models with endogenous regressors, as also estimation methods for time series and panel data sets.

Learning outcomes

The Learning Outcomes of this course are as follows:
Students will learn the theoretical and practical basis for techniques widely used in empirical research and consider their application in a wide range of estimation problems.

Syllabus

UNIT I: Stages in empirical econometric research (3 hours)

UNIT II: The linear regression model: The matrix approach, Review of model specification, estimation and testing (6 hours)

UNIT III: Limited dependent variables: Logit and Probit models for binary responses, Tobit models for truncated data. (9 hours)

UNIT IV: Selected Topics: Instrumental variable estimation, Simultaneous equation models, Experiments and Quasi-Experiments. (9 hours)

UNIT V: Dynamic econometric models: distributed lag models, autoregressive models; Panel data models and estimation techniques (9 hours)

UNIT VI: Introduction to econometric software (R/GRETL/EViews/Stata: ANY ONE); publicly available data sets and software will be used to estimate models and apply the techniques learnt. (9 hours)

Recommended readings

- Wooldridge, J. (2014). Introduction to econometrics: A modern approach, 5th ed. Cengage Learning.
- Asteriou, D and Hall, Stephen G, Applied Econometrics, 4th Edition, 2021, Pal- grave Macmillan.
- James Stock and Mark Watson, Introduction to Econometrics, 4th Edition, 2019, Pearson.
- Gujarati, D., Porter, D. (2012). Basic econometrics, 5th ed. McGraw-Hill.
- Gujarati, D. (2014). Econometrics by Final Examinationple, 2nd ed. Palgrave Macmillan.
- G.S. Maddala and Kajal Lahiri, Introduction to Econometrics, 4th Edition, 2012, Wiley.
- Badi H. Baltagi, Econometrics, 5th Edition, 2011, Springer.
- J. Johnston and J. DiNardo (2001), Econometric Methods, Fourth Edition, Irwin Mcgraw Hill

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Discipline Specific Elective 8 (DSE-8): Economics of Health

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
V/VII	Economics of Health– ECON038	4	3	1	0	Class 12th Pass	Introductory/Principles of Microeconomics

Learning Objectives

The Learning Objectives of this course are as follows:

- Health is important not only for human well-being but also for economic growth. This course provides a framework to understand the need for the study of health economics and the relationship of health with the GDP of a nation.
- The course also looks at the determinants of health, the demand for health and the need for government intervention in provision of health care. Economic evaluation / health technology assessment is also covered in the course.

Learning outcomes

The Learning Outcomes of this course are as follows:

- The students will learn the economic dimensions of health, determinants of health and microeconomic tools for the study of health care and expenditure.
- The course will enable the students to apply the theory to understand the various policies and market mechanisms in the field of health care. They will also be equipped with the fundamental techniques of economic evaluation of health interventions.

Syllabus

UNIT I: Health Economics (12 hours)
Significance and linkages with the economy:
The need for health economics as a discipline of study, importance of health in the development of an economy and its relationship with macroeconomic performance

UNIT II: Theoretical foundations of Health Economics (12 hours)
Demand for health and health care services, determinants of health, market failure and rationale for public intervention; and health insurance

UNIT III: Economic Evaluation of Health Sector (12 hours)
Cost-effective Analysis, cost-benefit analysis, cost-utility analysis

UNIT IV: Health Systems (9 hours)
An overview of international health systems and Indian experiences, and healthcare financing

Recommended readings

- Phelps, C. E. (2017). Health economics. Routledge
- Jay Bhattacharya Timothy Hyde Peter Tu (2014), Health Economics, Palgrave Macmillan
- William, Jack. (1999) Principles of Health Economics for Developing Countries, World Bank

Institute Development Studies.
- Glied, S., & Smith, P. C. (Eds.). (2013). The Oxford Handbook of Health Eco- nomics. Oxford University Press.
- Situational Analysis: Backdrop to the National Health Policy 2017, Ministry of Health and Family Welfare, Government of India
- Mills, A., & Hsu, J. (2014), "Health services in low-and middle-income countries: financing, payment, and provision", Encyclopedia of Health Economics, pp 422- 434

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Discipline Specific Elective 9 (DSE-9): Environmental Economics

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
V/VII	Environmental Economics– ECON039	4	3	1	0	Class 12th Pass	Introductory/Principles of Microeconomics

Learning Objectives

The Learning Objectives of this course are as follows:

- This course provides basic knowledge of environmental economics, its relationship with microeconomics and welfare economics, to present and explains the significance and application in the present environmental challenges.
- It aims to describe and comprehend various environmental policies by deploying various policy instruments and to understand and measure the various market and non-market benefits of environmental policies.
- The course addresses the problems related to climate change, transboundary environmental problems, and challenges related to trade and the environment also.

Learning outcomes

The Learning Outcomes of this course are as follows:
The students will learn the trade-offs of economy and environment, and related challenges. They will comprehend the role of state and institutions to minimise the trade-offs.

Syllabus

UNIT I: Introduction to Environment Economics (9 hours)
What is environmental economics? review of microeconomics and welfare eco- nomics; Overview of environmental problems in India

UNIT II: Design and Implementation of Environmental Policy (12 hours)
Overview; Pigouvian taxes and effluent fees; tradable permits; choice between taxes and quotas under uncertainty; implementation of environmental policy.

UNIT III: Measuring the Benefits of Environmental Improvements (12 hours)
Non-market values and measurement methods; risk assessment and perception.

UNIT IV: International Environmental Problems (12 hours)
Transboundary environmental problems; economics of climate change; trade and environment.

Recommended readings

- Charles Kolstad. Intermediate Environmental Economics, Oxford University Press, 2nd edition (2012).
- Roger Perman, Yue Ma, James McGilvray and Michael Common. Natural Resource and Environmental Economics, Pearson Education/Addison Wesley, 4th edition (2011).
- Robert N. Stavins (ed.). Economics of the Environment: Selected Readings, W.W. Norton, 6th edition (2012).

- Don Fullerton and Robert Stavins (1998). "How Economists See the Environment." Nature, Vol. 395, Oct 1, 1998, pp. 433-434.
- State of Environment Report: India 2009 (Ministry of Environment and Forests, Government of India, 2009): Chapter 2 (State and Trends of the Environment): Land. Air, Water, Biodiversity (p. 9 to 71).
- Schmalensee, Richard and Robert N. Stavins (2017). "The design of environmental markets: What have we learned from experience with cap and trade?" Oxford Review of Economic Policy, Vol. 33, No. 4, pp. 572-588.
- Blackman, Allen, Li, Z., and Liu, A. A. (2018). "Efficacy of command-and-control and market-based environmental regulation in developing countries," Annual Review of Resource Economics, Vol. 10, pp. 381-404.
- Jonathan Harris and Brian Roach (2018). Environmental and Natural Resource Economics: A Contemporary Approach, Routledge.
- Nordhaus, William D. (2013). Climate Casino: Risk, Uncertainty, and Economics for a Warming World, Yale University Press.
- Richard Newell, William Pizer and Daniel Raimi (2013). "Carbon markets 15 years after Kyoto: Lessons learned, new challenges," Journal of Economic Perspectives, Vol. 27, No. 1, pp. 123-46.
- Stern,N.(2008) The economics of climate change, American Economic Review, 98(2): 1–37.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Discipline Specific Elective 10 (DSE-10): Gender and Development

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
V/VII	Gender and Development– ECON040	4	3	1	0	Class 12th Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- This course aims to deepen students' understanding on the main theoretical approaches used in gender analysis of development issues, and understanding of the differential impacts of development interventions on women and men.
- The course aims to enable students to become familiar with the gender theories, use of these theories to Final Examination in detail issues of production (formal and informal work), reproduction (health, child survival, and fertility), the family/household nexus (where production and reproduction meet), and gender biases and inequality in terms of health, education, labour and inheritance.

Learning outcomes

The Learning Outcomes of this course are as follows:
The course aims at making students to be aware about the issues and concepts of gender and development, importance of mainstreaming gender, gender and work relations and gender bias and inequality.

Syllabus

UNIT I: Conceptualising and theorizing gender and development (12 hours)
Concepts in gender and development studies: Distinction between gender and sex, patriarchy and matriarchy; women in development (WID) and women and development (WAD)

UNIT II: Mainstreaming gender (12 hours)
Institutionalization of gender in growth and development, gender and bureaucracy, intra-household bargaining, changing gender relations and gender budgeting.

UNIT III: Work and Gender Relations (Inside/Outside the House) (12 hours)
Gender dynamics within a household, bargaining models, balance of productive and reproductive roles of women, agency, inheritance, unpaid work, marriage, and bride price.

UNIT IV: Gender and Inequality (9 hours)
Gender bias and gender inequality in terms of opportunities available: health and education, occupational segregation and gender wage gap.

Recommended readings

- Anderson, S. (2007). The economics of dowry and brideprice. Journal of Economic Perspectives, 21(4), 151-174.
- Aizer, A. (2010). The gender wage gap and domestic violence. American Economic Review, 100(4), 1847-59.
- Heath, R. (2014). Women's access to labor market opportunities, control of household resources, and domestic violence: Evidence from Bangladesh. World Development, 57, 32-46.
- Goel, P. A., & Barua, R. (2021). Female education, marital assortative mating, and dowry: Theory and evidence from districts of India. Journal of Demographic Economics, 1-27.
- Rai, S. M., Brown, B. D., & Ruwanpura, K. N. (2019). SDG 8: Decent work and economic growth–A gendered analysis. World Development, 113, 368-380.
- Kantor, P. (2003). Women's empowerment through home–based work: Evidence from India. Development and Change, 34(3), 425-445
- Neetha, N. (2018). Migration, gender and care economy. Routledge India
- Boeri, N. (2018). Challenging the gendered entrepreneurial subject: Gender, development, and the informal economy in India. Gender & Society, 32(2), 157-179.
- World Bank. (2011). World development report 2012: Gender equality and development. The World Bank.
- Kabeer, N. (2003). Gender Mainstreaming in Poverty Eradication and the Millennium Development Goals: A handbook for policy-makers and other stakeholders. Commonwealth Secretariat.
- Coles, A., Gray, L., &Momsen, J. (Eds.). (2015). The Routledge handbook of gender and development. Routledge.
- Blakemore, J. E. O., Berenbaum, S. A., & Liben, L. S. (2013). Gender Development. Psychology Press.
- Momsen, Janet (2020). Gender and Development. Routledge. 3rd Edition
- Moser, C. (2012). Gender Planning and Development (pp. 63-87). Routledge.
- Andrea Cornwall et al (eds): Feminisms in Development: Contradictions, Contestations and Challenges (Zed 2007).
- Cecile Jackson & Ruth Pearson (eds.): Feminist Visions of Development: Gender Analysis and Policy (Routledge, 1998)
- Agenor, P. R., & Canuto, O. (2015). Gender equality and economic growth in Brazil: a long-run analysis. Journal of Macroeconomics, 43, 155-172.
- Nilsson, P. (2013). Gender and development: The challenge of mainstream. Consilience, (10), 125-135.
- Cornwall, A., Harrison, E., & Whitehead, A. (2007). Gender myths and feminist fables: The struggle for interpretive power in gender and development. Development and Change, 38(1), 1-20.
- Agarwal, B. (1997). "Bargaining" and gender relations: Within and beyond the household. Feminist economics, 3(1), 1-51.
- Doss, C. (2013). Intrahousehold bargaining and resource allocation in developing countries. The World Bank Research Observer, 28(1), 52-78.
- Kabeer, N. (2005). Gender equality and women's empowerment: A critical analysis of the third millennium development goal. Gender & Development, 13(1), 13-24.
- Folbre, N. (2006). Measuring care: Gender, empowerment, and the care economy. Journal of Human Development, 7(2), 183-199.
- Jayachandran, S. (2015). The roots of gender inequality in developing countries, Economics, 7(1), 63-88.
- Mitra, A., Bang, J. T., & Biswas, A. (2015). Gender equality and economic growth: Is it equality of opportunity or equality of outcomes? Feminist Economics, 21(1), 110-135.
- Dercon, S., & Singh, A. (2013). From nutrition to aspirations and self-efficacy: gender bias over time among children in four countries. World Development, 45, 31-50.
- Azam, M., & Kingdon, G. G. (2013). Are girls the fairer sex in India? Revisiting intra-household allocation of education expenditure. World Development, 42, 143- 164.
- Nguyen, C. P. (2021). Gender equality and economic complexity. Economic Systems, 45(4), 100921.
- Jayachandran, S., & Pande, R. (2017). Why are Indian children so short? The role of birth order and son preference. American Economic Review, 107(9), 2600-2629.

- Barcellos, S. H., Carvalho, L. S., & Lleras-Muney, A. (2014). Child gender and parental investments in India: Are boys and girls treated differently?. American Economic Journal: Applied Economics, 6(1), 157-89.
- Joy, L. (2000). Do colleges shortchange women? Gender differences in the transition from college to work. American Economic Review, 90(2), 471-475.
- Mbaye, L. M., & Wagner, N. (2017). Bride price and fertility decisions: Evidence from rural Senegal. The Journal of Development Studies, 53(6), 891-910.
- Babcock, L., Recalde, M. P., Vesterlund, L., & Weingart, L. (2017). Gender differences in accepting and receiving requests for tasks with low promotability. American Economic Review, 107(3), 714-47.
- Pande, R. (2015). 'I arranged my own marriage': arranged marriages and post-colonial feminism. Gender, Place & Culture, 22(2), 172-187.
- Bertrand, M., & Mullainathan, S. (2004). Are Emily and Greg more employable than Lakisha and Jamal? A field experiment on labor market discrimination. American economic review, 94(4), 991-1013.
- Duraisamy, M., & Duraisamy, P. (2016). Gender wage gap across the wage distribution in different segments of the Indian labour market, 1983–2012: exploring the glass ceiling or sticky floor phenomenon. Applied Economics, 48(43), 4098-4111.
- LEE, Jong-Wha; Wie, Dainn (2017). Wage Structure and Gender Earnings Differentials in China and India. World Development, 97, 313–329

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Discipline Specific Elective 11 (DSE-11): Law and Economics

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
V/VII	Law and Economics – ECON041	4	3	1	0	Class 12th Pass	Intermediate Microeconomics II: Market, Government and Welfare - ECON010

Learning Objectives

The Learning Objectives of this course are as follows:

- Law and Economics is an interdisciplinary course, devoted to understanding laws and legal institutions using the tools of economic theory.
- This is essentially an economic analysis of the laws.
- Topics include an introduction to legal institutions and legal analysis, application of economic concepts to the law of property, contracts, torts and criminal law and anti-trust law.

Learning outcomes

The Learning Outcomes of this course are as follows:
This course is designed to gain familiarity with basic facts and application of economic principles to analyse a wide range of legal issues, and better understanding the economic consequences of laws and regulations.

Syllabus

UNIT I: Concepts of Law and uses of foundations of Economics (6 hours)
Tools for Law and Economics: Efficiency criteria in Welfare Economics; Coase theorem; Prisoners' Dilemma

UNIT II: Economics of Tort (Accident) Law/ Liability Rules (6 hours)
Liability for accidents and harms; product liability; efficiency of liability rules; efficiency-compensation trade-off.

UNIT III: Economics of Property Law (6 hours)
Property rights and their role in resource allocation; Coase theorem; Legal remedies for breach of property rights and their economic effects, Eminent Domain (Market and non-market mechanism for land transfer)

UNIT IV: Intellectual Property Rights (IPRs) (6 hours)
Patents, Copyright and Trademarks. Cost and benefits of private IPRs; Individual rights vs common good

UNIT V: Economics of Contract Law (6 hours)
Legal contract; Role of Contracts for functioning of markets; Incomplete contracts; Efficient contracts; Damages measures and their efficiency properties.

UNIT VI: Economics of Criminal Law (6 hours)
Economics of Crime and Law Enforcement; Crime Vs Tort; Repeat Offenders; Death Penalty

UNIT VII: Anti-trust laws, Competition Policy (3 hours)

UNIT VIII: Legal Process (6 hours)
Litigation – its causes and consequences; Benefits of legal certainty

Recommended readings

- Miceli, Thomas J. , "The Economic Approach to Law" 3rd Edition Stanford University Press, 2017 (Indian edition, MPP House, 2020)
- Cooter, Robert and Thomas Ulen, Law and Economics, Sixth Edition, Addison Wesley 2013, ISBN 9780132540650. Free here Law and Economics, 6th edition (jku.at)
- Pal, Malabika, Economic Analysis of Tort Law - The Negligence Determination. Routledge, 2020.
- Bag, Sugata, Economic Analysis of Contract Law: Incomplete Contracts and Asymmetric Information. Springer/Palgrave, 2018.
- Basu, Kaushik, The Republic of Beliefs: A New Approach to Law and Economics, Princeton University Press, 2018
- Singh, Ram (2021) Land for Development: Market Versus Non-Market Mechanisms in S.Mani and C.G. Iyer (eds.) India's Economy and Society, Springer, pp.187-204.
- Bhattacharjea, Aditya. "Competition policy: India and the WTO." Economic and Political Weekly (2001): 4710-4713.
- Competition Commission of India, Competition Act of India 2002, https : //www.cci.gov.in/sites/

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Discipline Specific Elective 12 (DSE-12): Open Economy

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
V/VII	Open Economy Macroeconomics – ECON042	4	3	1	0	Class 12th Pass	Intermediate Macroeconomics II (ECON011)

Learning Objectives

The Learning Objectives of this course are as follows:

- The course is designed with the objective of introducing the students to the standard macroeconomic issues in an open economy framework using the Mundell-Fleming model and the exchange rate overshooting model.
- It further exposes them to the models of banking and currency crises which try to make sense of the risks and vulnerabilities in an interdependent economy.
- The course would give an exposure to contemporary concerns in the global economy and the challenges it poses to policy making.

Learning outcomes

The Learning Outcomes of this course are as follows:

- The student would get a good exposure towards the process of macroeconomic policy- making in an open economy and the challenges involved.
- The course would facilitate learning the art of building macro-models in an open economy context. It would also enable the student to relate it to the contemporary issues.
- The student would learn to appreciate contemporary issues by relating the real world data to the theory in this regard.

Syllabus

UNIT I: Introduction to Open Economy Macroeconomics (10 hours)
Intertemporal long run budget constraint, how much can a country borrow, external wealth, external assets and liabilities, net international investment position, financial flows and valuation effects, Feldstein Horioka Puzzle, Harberger-Laursen- Metzler effect, Foreign Exchange Market. An overview of the spot and forward markets, swaps, options and derivatives. Uncovered and Covered Interest Parity. Covered Interest Arbitrage.

UNIT II: Macro-modelling of the Open Economy (20 hours)
Mundell-Fleming model (with Flexible Prices). Dornbusch's exchange rate overshooting model with stability conditions. Monetary Approach to Balance of Payments. PPP and long run monetary approach, Balassa –Samuleson effect and non-tradables, Fisher effect. Portfolio and macroeconomic equilibrium in an open economy. 3 equation model for the open economy. Currency crises (first, second and third generation models). Optimum currency areas and monetary union.

UNIT III: International Monetary System and Policy Co-ordination (15 hours)
Classic specie price flow mechanism and the Gold Standard. Fixed exchange rate system under Bretton Woods. Triffin dilemma and the collapse of the Bretton Woods, SDRs, international consistency condition. Financial trilemma. International liquidity and demand for international reserves. Government policies to- wards capital market, exchange and capital controls. Central bank intervention, sterilization.

Prospects of Macroeconomic policy co-ordination in an open economy, Policy reaction function, Hamada diagram

Recommended readings

- Feenstra, Robert and Taylor, Alan (2020) International Macroeconomics, 3rd ed., Worth Publishers
- Feenstra, Robert and Taylor, Alan (2014) International Economics, 3rd ed., Worth Publishers
- Pugel, T International Economics, 16th ed., McGraw-Hill Education
- Gandolfo, Giancarlo (2016) International Finance and Open Economy Macroeconomics, Springer.
- Krugman, P., Obstfeld, M. and Melitz (2018) International Economics - Theory and Policy, 11th ed., Pearson Education.
- Carlin, Wendy and Soskice, David (2015) Macroeconomics: Institutions, Instability and the Financial System
- Wickens, Michael(2012) Macroeconomic Theory. Princeton University Press.
- Sorenson, Peter B and Whitta-Jacobson, Hans Jorgen(2010) Introducing Advanced Macroeconomics: Growth and Business Cycles. McGraw Hill Education

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Discipline Specific Elective 13 (DSE-13): Modern Political Economy

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
V/VII	Modern Political Economy – ECON043	4	3	1	0	Class 12th Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- This course will use the methodology and tools of economics to study the implications of various political institutions and processes that determine the quantum, scope, and nature of the state's intervention in the economy.
- Political actors are assumed to be goal-oriented and political outcomes are explained by the interaction between these actors within their institutional environment.
- This course will complement the Public Economics course as its focus will be on the positive implications of the state's interventions rather than the normative aspects.

Learning outcomes

The Learning Outcomes of this course are as follows:

- The students will learn to apply the economic paradigm to the study of political action and policy formation, and how economic and political forces may shape the incentives and constraints of policymakers and other political actors.
- They will understand the role of political institutions in shaping the actions of the state and the resulting outcomes.

Syllabus

UNIT I: Collective choice and redistribution (12 hours)
Insurance motive; public good motive; fairness motive; allocative efficiency; determination of redistribution, Majority voting and direct democracy; unanimity rule; Con- direct cycles; one dimensional median voter theorem; multidimensional issues and median voter theorem; agenda manipulation; simple variations of majority voting such as the Borda rule and approval voting

UNIT II: Representative democracy: two-party competition; and multi-party competition (12 hours)
Downsian model; deterministic voting; cycles and median voter theorems; competition in a constrained policy space; uncovered set and valence values; model with probabilistic voting model and an application to taxation, proportionality, and electoral rules; goals of multiple parties; coalition formation with one-dimensional issue space; coalition formation with multi-dimensional issue space; strategic voting.

UNIT III: Rent-seeking; Tariffs and Political economy of taxation (12 hours)
Basic model of rent-seeking and variations; rent-seeking via regulation; effects of tariffs, quotas, and voluntary export restraints; corruption, Distortions, and Diamond-Mirrlees production efficiency theorem.

UNIT IV: Dictatorship; origins and Lobbying (9 hours)
Model of public goods provisioning; Win- Trobe's model, Interest groups, lobbying, and collective action; Olsonian model of collective action; Downsian models

Recommended readings

- K. Shepsle and M. Bonchek (1997), *Analyzing Politics: Rationality, Behavior, and Institutions*, W. W. Norton
- D. Mueller (2003), *Public Choice III*, Cambridge University Press.
- K. Arrow (1963), *Social Choice and Individual Values*, Yale University Press.
- H. Demsetz (1968), Why regulate utilities? *Journal of Law and Economics* XI: 55-66.
- A. Dixit (1996), *The Making of Economic Policy*, MIT Press.
- A. Downs (1957), *An Economic Theory of Democracy*, Harper and Row.
- A. Krueger (1974), The political economy of a rent-seeking society, *American Economic Review* LXIV: 291-303.
- M. Olson (1965), *The Logic of Collective Action*, Harvard University Press.
- W. Niskanen (1995), *Bureaucracy and Public Economics*, Edward Elgar.
- D. North (1990), *Institutions, Institutional Change and Economic Performance*, Cambridge University Press.
- A. Shleifer (2005), Understanding Regulation, *European Financial Management* 11 (4); 439-451.
- A. Shleifer and R. Vishny (1993), Corruption, *Quarterly Journal of Economics* 108 (3): 599-617.
- Kiser, E., &Karceski, S. M. (2017). Political economy of taxation. *Annual review of political science*, 20, 75-92.
- Acemoglu, D., Golosov, M., &Tsyvinski, A. (2010). Dynamic Mirrlees taxation under political economy constraints. *The Review of Economic Studies*, 77(3), 841- 881.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Discipline Specific Elective 14 (DSE-14): Public Economics

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
V/VII	Public Economics – ECON045	4	3	1	0	Class 12th Pass	Intermediate Microeconomics II (ECON010)

Learning Objectives

The Learning Objectives of this course are as follows:

- Public economics is the study of government policy from the points of view of economic efficiency and equity.
- The course deals with the nature of government intervention and its implications for allocation, distribution and stabilization problems.
- Inherently, this study involves a formal analysis of government taxation and expenditures.
- The subject encompasses a host of topics including public goods, market failures and externalities.
- The course is divided into two sections, one dealing with the theory of public economics and the other with the Indian public finances.

Learning outcomes

The Learning Outcomes of this course are as follows:

- The course aims to introduce students to the main theoretical and empirical concepts in public economics, equip students with a thorough analytical grasp of implications of government intervention for allocation, distribution and stabilization, and familiarise students with the main issues in government revenues and expenditure.
- At the end, the students should be able to demonstrate their understanding of the public economics.

Syllabus

UNIT I: Public Economic Theory (30 hours)

- Role of Public Sector - Justification of the Public Sector; Public Sector Growth; Excessive Government
- Political Economy of Public Sector - Public Mechanisms for allocation; Market and Non-Market Mechanism; Theory of Rent Seeking
- Taxation - Economic Effects of Tax; Tax incidence; Dead Weight Loss and Distortion; Efficiency and Equity Considerations; Optimal taxation; Commodity tax; Ramsey rule.

UNIT II: Indian Public Finances (15 hours)

- Tax System – Indian Tax system; Structure and Reforms. Budget, Deficits and Public debt

Recommended readings

- Cullis, J., Jones, P. (1998). Public finance and public choice, 2nd ed. Oxford University Press.
- Hindriks, J., Myles, G. (2013). Intermediate public economics, 2nd ed. MIT Press.
- Stiglitz, J. E. and Rosengard J. K. (2015). Economics of the Public Sector, 4th ed., W. W. Norton.
- Rao, M. Govinda and Sudhanshu Kumar (2017). "Envisioning Tax Policy for Accelerated Development in India," Working Paper No. 190, National Institute of Public Finance and Policy (NIPFP).

- Srivastava, D K et al. (2021), Taxing Petroleum Products: Sharing Revenue Space between Centre and States, Economic and Political Weekly, Vol. 56, Issue No. 9, 27 Feb, 2021.
- Bajaj & Dutt (2020), "Financing of fiscal response to COVID-19: a pragmatic Alternative", Indian Economic Review, Vol. 55. (Suppl 1): S149 - S160, Budget at Glance 2021-22.
- Chakraborty, Lekha (2021), Union Budget 2021-22: The Macroeconomic Frame- work, Economic and Political Weekly, Vol. 56, Issue No. 9, 27 Feb, 2021.
- Latest Economic Survey and Budget Documents.
- Other recent contributions in literature.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Discipline Specific Elective 15 (DSE-15): Research Methodology for Economics

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
IV/VI	Research Methodology for Economics – ECON044	4	3	1	0	Class 12th Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- The course offers the conceptual and methodological issues in details that go into successful conduction of a scientific research.
- That includes the theoretical and methodological approaches in measurement, proposing and testing hypotheses, scientific communication and the ethical issues in the practice of science.

Learning outcomes

The Learning Outcomes of this course are as follows:

- The students will lean framing research problems, identifying gaps in literature and scientific approaches to conduct both theoretical and empirical research.
- This course will build the capacity to conduct research in the fourth year at the undergraduate level.

Syllabus

UNIT I: Starting a Research Paper (9 hours)
Forming an economic hypotheses; Components of a Research Paper

UNIT II: Sources of Data and Literature (9 hours)
Familiarizing students with a wealth of Secondary Datasets that are available;
Exposing students to the basics of compiling data from Websites; outlets and search engines to study the literature

UNIT III: Creating New Data (9 hours)
Surveys and Experiments

UNIT IV: Analyzing Data (9 hours)
Data Discovery; Causal Inference; Big Data

UNIT V: Writing a Research Paper (9 hours)
Style of writing a Research Paper and Communicating the Results

Recommended readings

- Jacobson, M., Neugeboren, R. H. (2005). Writing Economics. United States: Harvard University. (link)
- Pinker, S. (2014). The Sense of Style: The Thinking Person's Guide to Writing in the 21st Century. United Kingdom: Penguin Publishing Group.

- Greenlaw, S. A. (2005). Doing economics : a guide to understanding and carrying out economic research. Boston: Cengage Learning.
- Thomson, W. (2001). A Guide for the Young Economist. United States: MIT Press.
- Glewwe, Paul; Todd, Petra. 2022. Impact Evaluation in International Development : Theory, Methods and Practice. Washington, DC: World Bank. (link)
- John A. Rice (2007). Mathematical Statistics and Data Analysis, 3rd ed. Thomson Brooks/Cole.
- Deaton, Angus. The analysis of household surveys (reissue edition with a new preface): A microeconometric approach to development policy. World Bank Publications, 2019.
- Haaland, Ingar, Christopher Roth, and Johannes Wohlfart. "Designing information provision experiments." JEL forthcoming
- Duflo, Esther, and Abhijit Banerjee, eds. Handbook of field experiments. Volumes 1& 2. Elsevier, 2017
- List, John A."Why Economists Should Conduct Field Experiments and 14 Tips for Pulling One Off." The Journal of Economic Perspectives, vol. 25, no. 3, American Economic Association, 2011, pp. 3-15,(link).
- Huntington-Klein, N. (2021). The effect: An introduction to research design and causality. Chapman and Hall/CRC.
- John Cochrane's Writing Group Webpage (link)

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Discipline Specific Elective 16 (DSE-16): Financial Economics

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical / Practice		
IV/VI/VIII	Financial Economics – ECON046	4	3	0	1	Class XII with Mathematics	Introductory Mathematical Methods for Economics/ Basic Statistics

Learning Objectives

- To equip students with essentials tools for understanding Finance at undergraduate level.
- To enable students to use modelling techniques to solve Financial Economics concepts.
- To develop necessary skill and knowledge for financial problem solving

Learning outcomes

- After studying this course, students would be able to understand the basic concepts of finance and financial variables.
- They would develop an understanding of basics of finance including interest rates, annuity, and cash flow.
- The analytical approach adopted in this paper will strengthen and channelise their skills for more advance approaches in finance.

SYLLABUS OF DSE: FINANCIAL ECONOMICS

Unit 1. Deterministic cash-flow streams (12 Hours)
Basic theory of interest; discounting and present value; internal rate of return; evaluation criteria; fixed-income securities; bond prices and yields; interest rate sensitivity and duration; immunisation; the term structure of interest rates; yield curves; spot rates and forward rates.
Berk, DeMarzo
Chapter 4: Time Value of Money (all sections)
Chapter 6: Valuing Bonds (all sections)
Chapter 7: Investment Decision Rules (all sections)
Brealey, Richard A., Myers, Stewart, C., Allen, Franklin:
Chapter 5: Net Present Value and Other Investment Criteria (Section 5.3, pages 107-115)
Bodie, Kane, Marcus
Chapter 14: Bond Prices and Yields (Section 14.1-14.3, Pages 445-460,
Chapter 15: Term Structure of Interest Rate (Section 15.1-15.5, Pages 487-504)
Chapter 16: Managing Bond Portfolios (Section 16.1, 16.3, Pages 515 – 525, 535 – 543)

Unit 2. Single-period random cash flows (12 Hours)
Random asset returns; portfolios of assets; portfolio mean and variance; feasible combinations of mean and variance; mean – variance portfolio analysis; the Markowitz model; risk-free assets
Bodie, Kane, Marcus
Chapter 7: Optimal Risky Portfolio (Section 7.1 – 7.3, 7.4 Pages 205-218 till Example 7.3, 220 – 228)

Berk, DeMarzo
Chapter 11: Optimal Portfolio Choice and CAPM: (Sections 11.1 – 11.6, pages 351 – 378)

Unit 3. Capital Asset Pricing Model (CAPM) (12 Hours)
The capital market line; the capital asset pricing model; the beta of an asset and of a portfolio; security market line; use of the CAPM model in investment analysis and as a pricing formula. Arbitrage pricing theory(APT) and multi-factor model of risk and return.
Bodie, Kane, Marcus
Chapter 9: Capital Asset Pricing Model (Section 9.1, Pages 291-300)
Chapter 10: Arbitrage pricing theory(APT) and multi-factor model of risk and return.
Berk, DeMarzo
Chapter 11: Optimal Portfolio Choice and CAPM: (Sections 11.7 – 11.8 , pages 379 - 399)
Brealey, Richard A., Myers, Stewart, C., Allen, Franklin
Chapter 8: Portfolio Theory and the Capital Asset Pricing Model (Section 8.4, pages 199-203)
David G. Luenberger:
Chapter 7: The Capital Asset Pricing Model (Section 7.3 & 7.7, Pages 177 – 179, 187 - 190)

Unit 4. Market Efficiency & Behavioural Finance(09 Hours)
Bodie, Kane, Marcus
Chapter 11: Efficient Market Hypothesis (Sections 11.1-11.2, 11.4, Pages 349 – 357, 362-63)
Chapter 12: Behavioural Finance & Technical Analysis
Brealey, Richard A., Myers, Stewart, C., Allen, Franklin
Chapter 13: Efficient Markets &Behavioral Finance (Sections 13.2, 13.5, Pages 314 – 318, 329-333)

Practical Component (30Hours)

1. Present Value and Net Present Value
2. Internal Rate of Return and Loan Tables \
3. Multiple Internal Rates of Return
4. Future Values and Applications
5. Continuous Compounding
6. Analyzing the Cash Flows by NPV or IRR
7. Portfolio Models
8. Calculating Efficient Portfolios When There Are No Short-Sale Restrictions

Reference for Practical:
Simon Benninga, Financial Modelling, MIT Press, Third Edition, 2008:
Chapter 1: Basic Financial Calculations (Sections: 1.2, 1.3, 1.4, 1.6, 1.8)
Chapter 7: The Financial Analysis of Leveraged Leases(Sections: 7.1, 7.2, 7.3)
Chapter 8: Portfolio Models
Chapter 9: Calculating Efficient Portfolios When There Are No Short-Sale Restrictions

Essential/recommended readings
Bodie, Kane & Marcus, Investments McGraw Hill 10th Edition, 2014
Berk, DeMarzo, Corporate Finance, Pearson, 3rd Edition, 2014
Brealey, Richard A., Myers, Stewart, C., Allen, Franklin, Principles of Corporate Finance, McGraw Hill 10th Edition, 2011
David G. Luenberger, Investment Science, Oxford Press, 1998
Simon Benninga, Financial Modelling, MIT Press, Third Edition, 2008

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Discipline Specific Elective 17 (DSE-17): Money and Financial Markets

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
IV/VI/VIII	Money and Financial Markets – ECON047	4	3	1	0	Class 12th Pass	Introductory Macroeconomics

Learning Objectives

The Learning Objectives of this course are as follows:

- This course exposes the theory and functioning of the monetary and financial sectors of the economy. It highlights the organization, structure, and role of financial markets and institutions.
- It also discusses interest rates, monetary management, and instruments of monetary control.
- Financial and banking sector reforms and monetary policy with special reference to India are also covered.

Learning outcomes

The Learning Outcomes of this course are as follows:
This allows students to understand current monetary policies and financial market out- comes. It also enables them to critically evaluate policies and role of the central bank.

Syllabus

UNIT I: Money (9 hours)
Understanding concept and functions of money, Measurement of money supply, Analytics and methodology of computation of money supply, Theories of money supply determination

UNIT II: Financial markets: an Introduction (12 hours)
Role of financial markets and institutions, Money and Capital markets: Pricing and other analytical issues, Financial derivatives: Futures, Options and Swaps, Financial markets in India: Organization, Structure and Reforms in India

UNIT III: Interest Rates (12 hours)
Determination of interest rates, Sources of interest rates differentials and risk, Theories of term structure of interest rates, Interest rates in India

UNIT IV: Central Banking and Monetary policy (12 hours)
Central Bank: Functions and Balance Sheet, Monetary Policy: Targets and instruments, Monetary management in an open economy, Monetary Policy Framework in India: Evolution and current scenario, critical evaluation, Emerging issues in Monetary policy- Changing payment mechanism, Cryptocurrency and others

Recommended readings

- F J Fabozzi et al: Foundations of Financial Markets and Institutions Pearson
- F S Mishkin , S G Eakins, T Jayakumar, R K Pattnaik : Financial Markets and Institutions Pearson
- N Jadhav: Monetary Policy, Financial stability and Central Banking in IndiaMacmilla

- Report of the Working Group: Money Supply Analytics and Methodology of Compilation, 1998 Annual Report; Master Circular - Prudential Norms on Capital Adequacy - Basel I Framework - 2011; RBI Bulletin; Report of Currency and Finance (latest).
- Dua, P., "Monetary Policy Framework in India", Indian Economic Review, Vol. 55, Issue 1, June 2022
- Ghate, C., &Kletzer, K. M. (Eds.). (2016). Monetary policy in India: A modern macroeconomic perspective. Springer.
- Various publications of RBI and other agencies / institutions

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Discipline Specific Elective 19 (DSE-19): Behavioural Economics

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
VI/VIII	Behavioural Economics – ECON049	4	3	1	0	Class 12th Pass	Game Theory and Strategic Interactions (ECON013)

Learning Objectives

The Learning Objectives of this course are as follows:

- This course introduces departure in behaviour predicted by standard economic theories to provide insights into the new and evolving area of Behavioural Economics.
- First, it outlines the common ideas and theories of Behavioural Economics using the basic mathematical techniques and standard concepts of microeconomics. The empirical basis for the theories of Behavioural Economics is discussed briefly with particular emphasis on the role and nature of experiments.
- The last segment of the course discusses the policy implications of these experiments and policy lessons that have been implemented as a result of empirical support to the theories of behavioural economics.
- The course explains the origin of Behavioural Economics in terms of anomalies in be- haviour that deviate from predicted rational behaviour. It introduces the common ideas and theories of Behavioural Economics. It further familiarise the student with the different types of experiments used for empirical studies.
- The students would demonstrate the policy lessons derived from theories of Behavioural Economics.

Learning outcomes

The Learning Outcomes of this course are as follows:

- This course equips students to contrast the outcomes of standard classical microeconomic theories with real outcomes, to apply the theories that explain anomalies/deviations from rational predicted behaviour.
- It communicate the basic theories of behavioural economics cogently and critically Final Examination in the findings from experiments in terms of their applicability to public policy settings.

Syllabus

UNIT I: Biases/Anomalies and Overview (15 hours)
Some Common Anomalies from Benchmark Theories; Overview of Behavioural Economics

UNIT II: Common Ideas and Theories (15 hours)
Heuristic Thinking; Risk Preferences and Reference-Dependent Preferences; Time Preferences; Social Preferences; Probabilistic Reasoning and Beliefs; Limited Attention; Limited Rationality

UNIT III: Empirical Applications and Policy Suggestions (15 hours)

Methods: Natural experiments, Lab experiments, Field experiments, Survey; Empirical Applications and Policy Suggestions

Recommended readings

- Bernheim, B. Douglas, Stefano DellaVigna, and David Laibson. Handbook of Behavioral Economics-Foundations and Applications. Volumes 1 & 2. Elsevier, 2019.
- Dhami, Sanjit. The Foundations of Behavioral Economic Analysis. Oxford University Press, 2016.
- Angner, Erik. A Course in Behavioral Economics. Bloomsbury Publishing, 2020.
- Thaler, Richard H.. Misbehaving: The Making of Behavioral Economics. New York: WW Norton, 2015.
- Thaler, Richard H., and Cass R. Sunstein. Nudge: Improving Decisions about Health, Wealth, and Happiness. Yale University Press, 2008

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Discipline Specific Elective 20 (DSE-20): Comparative Economic Development

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
VI/VIII	Comparative Economic Development – ECON050	4	3	1	0	Class 12th Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- This course investigates selected issues in industrialization and development experiences and debates in comparative historical perspective.
- The course focuses on a set of countries (Britain, Japan and East Asian economies) which followed diverse trajectories of growth to achieve their industrial transition.
- It compares the outcomes of these diverse trajectories on sectoral change, intersectoral relations, labour processes and industrial relations.
- It also compares the role of the state in facilitating the respective trajectories.

Learning outcomes

The Learning Outcomes of this course are as follows:
The students will be able to learn critical factors affected economic development in a historical perspective and assimilate materials from diverse narratives. It will help them to think in an interdisciplinary manner.

Syllabus

UNIT I: Introduction (6 hours)
Theoretical issues and comparative historical background.

UNIT II: Agricultural transformation and its role in industrialization (6 hours)
Agrarian and land relations, production and productivity, agrarian surplus in industrial development. Case studies: Britain, Japan and East Asia.

UNIT III: The industrialization process of Britain, Japan and East Asia (6 hours)

UNIT IV: East Asian Development (9 hours)
A Theoretical Debates (Is it a miracle or not? Is it market or the state? Flying Geese Model? Can we have an "East Asian Model"? Lessons for the other countries.)

UNIT V: The factory system and making of the industrial working class. Case studies: Britain, Japan and EastAsia (6 hours)

UNIT VI: The role of the state in industrial and developmental transitions. Case studies: Britain, Japan and East Asia. (6 hours)

UNIT VII: Export Oriented Development in East Asian Countries? Trade and Industry. (Export-Oriented Industrialization (EOI) vs Import-substitution Industrialization (ISI) - International Context and Domestic Requirements. Importance of trade for underdevelopment vs development.) (6 hours)

Recommended readings

- Hughes, J., Cain, L. (1994). American Economic History, 4th ed. HarperCollins College Publishers.
- Hayami, Y. (1975). A century of agricultural growth in pre-war Japan: Its relevance to Asian development. University of Minnesota Press.
- Hobsbawm, E. (1968). Industry and empire: An economic history of Britain since 1750. Weidenfeld & Nicholson.
- Hobsbawm, E. (1984). Worlds of labour: Further studies in the history of labour. Weidenfeld & Nicolson.
- Johnson, C. (1982). MITI and the Japanese miracle: The growth of industrial policy 1925-1975. Stanford University Press.
- Macpherson, W. (1995). The economic development of Japan 1868-1941. Cam- bridge University Press.
- Norman, E. (2007). Japan's emergence as a modern state: Political and economic problems of the Meiji period. University of British Columbia Press.
- Okochi, K., Karsh, B., Levine, S. (1974). Workers and employees in Japan: The Japanese employment relations system. Princeton University Press.
- Maddison, Angus (2001). The World Economy, Vol. 1: A Millennial Perspective. OECD.
- G.M. Walton and H. Rock-off History of the American Economy, Eleventh Edition. Harcourt Brace Jovanovich.
- Sven Beckert (2015), Empire of Cotton- A Global History, Vintage.
- Michael Merrill, "Cash is Good to Eat: Self-Sufficiency and Exchange in the Rural Economy of the U.S.," Radical History Review, (Winter 1976-77), 42-71.
- Allan Kulikoff, "The Transition to Capitalism in Rural America," William and Mary Quarterly 46 (1989): 120-44.
- Paul David, "Technology, History, and Growth," in Paul David, Technical Choice, Innovation and Economic Growth (Cambridge, 1975).
- Gordon, Edwards, and Reich, Segmented Work, Divided Workers, ch. 4
- Naomi Lamoreaux, The Great Merger Movement in American Business, 1895-1904.
- Lipset, "Radicalism or Reformism: The Sources of Working-Class Politics," American Political Science Review 77:1 (Mar. 1983), 1-18.
- Sheila Collins and Gertrude Goldberg, When Government Helped: Learning from the Successes and Failures of the New Deal. Oxford, Oxford University Press: 2013.
- Morton Horwitz, The Transformation of American Law, 1870-1960 (New York, 1992).
- Edward Baptist, The Half has Never Been Told: Slavery and the Making of American Capitalism. New York, Basic Books, 2014.
- Myers, R.H., 1991. How did the modern Chinese economy develop? - a review article. The Journal of Asian Studies, 50(3), pp.604-628.
- World Bank 1993. The East Asian Miracle, New York, Oxford University Press.
- Rodrik, D, 1994, 'King Kong Meets Godzilla' in A.Fishlow et al., Miracle or Design? - Lessons from the East Asian Experience, Washington, D.C., Overseas Development Council.
- Cheng, T, Haggard, S and Kang, D, 1998, 'Institutions and Growth in Korea and Taiwan: The Bureaucracy', Journal of Development Studies, vol. 34, no. 6.
- Best, M, 1990, New Competition, Cambridge, Polity Press.
- Amsden, A, 1992. Asia's Next Giant: South Korea and Late Industrialization, OUP
- Amsden, A, 1985, 'The State and Taiwan's Economic Development' in P. Evans, D. Rueschemeyer and T. Skocpol, 1985, eds., Bringing the State Back In, Cambridge, Cambridge University Press.
- Chang, H.J., 2006. The East Asian development experience: The miracle, the crisis and the future. Zed Books.
- Morrissey, O. and Nelson, D., 1998. East Asian economic performance: miracle or just a pleasant surprise?. World Economy, 21(7), pp.855-879.
- Crafts, N., 1999. East Asian growth before and after the crisis. IMF Staff Papers, 46(2), pp.139-166.
- Waldron, S., Brown, C. and Longworth, J., 2006. State Sector Reform and Agri- culture in China. The China Quarterly, (186), p.277.
- Krugman, Paul (1994), "The Myth of Asia's Miracle," Foreign Affairs, Vol.73 Issue 6.

- Hau, Shiping (2017), "Introduction: East Asian Development Model,"
- Kuznets, Paul (1988), "An East Asian Model of Economic Development: Japan, Taiwan, and South Korea," Economic Development and Cultural Change, Vol.36 No.3.
- Cline, William (1982), "Can the East Asian Model of Development be Generalized?"
- World Development, Vol.10 Issue 2.
- Aoki, Masahiko (2013), "Historical Sources of Institutional Trajectories in Eco- nomic Development: China, Japan and Korea Compared."
- Lawrence & Weinstein (2001), "Trade and Growth: Import Led or Export Led? Evidence from Japan and Korea" in Stiglitz &Yusurf.
- Weiss, John (2005), Export and Industrial Policy: Lessons from East Asian Miracle Experience
- Dregger, Christian and Herzer, Dierk (2013), "A Further Final Examination of the Export-Led Growth Hypothesis," Empirical Economics Vol.45 Issue 1.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Discipline Specific Elective 21 (DSE-21): Corporate Finance and Governance

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
VI/VIII	Corporate Finance and Governance – ECON051	4	3	1	0	Class 12th Pass	Game Theory and Strategic Interactions (ECON013)

Learning Objectives

The Learning Objectives of this course are as follows:

- The field of corporate finance has undergone a tremendous mutation in the past three decades, specially after the global financial crisis. A substantial and important body of empirical work has provided a clearer picture of patterns of corporate financing and governance, and of their impact for firm behavior and macroeconomic activity.
- This course aims to introduce the conceptual foundation of those issues. It will introduce firm'sbehavour of finance choice in the presence of tax distortions, transaction costs, informational asymmetries etc.

Learning outcomes

The Learning outcomes of this course are as follows:

- The students will understand the variety of institutions running corporate business in present day world and will be familiar with the strategies to govern them effectively.

Syllabus

UNIT I: An economic overview of corporate institutions (9 hours)

UNIT II: Corporate Governance (9 hours)
Separation of ownership and control, managerial incentives, investor's activism, takeover, leverage buyout

UNIT III: Corporate Financing and Agency Costs Outside Financing Capacity (6 hours)

UNIT IV: Determination of borrowingcapacity (6 hours)

UNIT V: Corporate financing under asymmetric information (9 hours)

UNIT VI: Exit and voice: Passive and active monitoring (6 hours)

Recommended readings

- Tirole, J. (2010). The theory of corporate finance. Princeton universitypress.
- Vernimmen, P., Quiry, P., & Le Fur, Y. (2022). Corporate finance: theory and practice. John Wiley &Sons.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Discipline Specific Elective 22 (DSE-22): Economics of Education

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
VI/VIII	Economics of Education – ECON052	4	3	1	0	Class 12th Pass	Introductory /Principles of Microeconomics

Learning Objectives

The Learning Objectives of this course are as follows:

- This course discusses the economic aspects of current issues in education, using both economic theory and econometric tools.
- Topics include discussion of basic human capital theory, production of education, costing and finance of education, the growing impact of education on earnings and earnings inequality, the labour market for teachers, implications of the introduction of technology (computers) on education, the effectiveness of mid-career training for adult workers, the roles of school choice, and educational outcomes and inequality in demand for education and educational outcomes.

Learning outcomes

The Learning outcomes of this course are as follows:

- This course will develop skills amongst the students to conduct research and analysis in the field of economics of education.

Syllabus

UNIT I: The Role of Education in Human Development (12 hours)
Macro issues in education, human capital theory, returns to education, signalling theory, education and labour market outcomes, costs and benefits of education, education production analysis and early childhood education.

UNIT II: Analysis of School Education (12 hours)
Challenges, educational interventions and attainments, financing, accountability and standards

UNIT III: Higher Education and Training (9 hours)
Issues of higher education in India, role of internship and apprenticeship in improving labour market outcomes

UNIT IV: Education and Inequality (12 hours)
Inequality in uptake and outcomes, and the role of affirmative action.

Recommended readings

- Bradley, S., & Green, C. (Eds.). (2020). The Economics of Education: A Com- prehensiveOverview.
- Lovenheim, M., &Turner, S. E. (2017). Economics of education. Macmillan Higher Education.
- Altinok, Nadir, and Geeta Kingdon. "Newevidence on class size effects: A pupil fixed effects approach." Oxford Bulletin of Economics and Statistics 74, no. 2 (2012):203-234.

- Angrist, Joshua D., and Victor Lavy. ”UsingMaimonides’ rule to estimate the effect of class size on scholastic achievement.” The Quarterly Journal of Economics 114, no. 2 (1999):533-575
- Abhijit Banerjee, Shawn Cole, Esther Duflo, Leigh Linden. “Remedying Education: Evidence from Two Randomized Experiments in India”, QuarterlyJournalofEconomics,122,No.3,Aug2007,Pages1235–1264.
- Hanushek, Eric A. ”Assessingthe effects of school resources on student performance: An update.” Educational evaluation and policy analysis 19, no. 2 (1997a): 141-164.
- Hanushek, Eric A. ”Outcomes, incentives, and beliefs: Reflections on analysis of the economics of schools.” Educational Evaluation and Policy Analysis 19, no. 4 (1997b):301-308.
- Hattie, John. ”Theparadox of reducing class size and improving learning out-comes.”Internationaljournalofeducationalresearch43,no.6(2005):387-425.
- Hanushek, E. A., Machin, S. J., &Woessmann, L. (Eds.). (2016). Handbook of theeconomicsofeducation.Elsevier.
- Ronald G., Ehrenberg and Robert S., Smith. Modern Labor Economics: Theory and Public Policy, 11th edition, Addison Wesley
- Hanushek, Eric A., 2005, Economic Outcomes and School Quality, International AcademyofEducationandInternationalInstituteforEducationalPlanning.
- Majumdar, M. (2017). Access, success, and excess: Debating shadow education in India. In Routledge Handbook of Education in India (pp. 273-284). Routledge India.
- Blatchford, P., & Mortimore, P. (1994). The issue of class size for young children in schools: What can we learn from research?. Oxford review of education, 20(4), 411-428.
- Kingdon, G. G., &Teal, F. (2007). Does performance related pay for teachers improve student performance? Some evidence from India. Economics of Education Review, 26(4),473-486.
- Kingdon, G. G. (2020). The private schooling phenomenon in India: A review. TheJournalofDevelopmentStudies,56(10),1795-1817.
- Varughese, A. R., &Bairagya, I. (2021). Interstate variation in household spending on education in India: Does it influence educational status?. Structural Change andEconomicDynamics,59,405-415.
- Haveman, R., & Smeeding, T. (2006). The role of higher education in social mobility. The Future of children,125-150.
- Afridi, F., Barooah, B., & Somanathan, R. (2020). Designing effective transfers: Lessons from India’s school meal program. Review of Development Economics, 24(1),45-61.
- Singh, A., Park, A., &Dercon, S. (2014). School meals as a safety net: an evaluation of the midday meal scheme in India. Economic Development and Cultural Change, 62(2),275-306.
- Afridi, F., Barooah, B., & Somanathan, R. (2020). Improving learning outcomes throughinformationprovision:ExperimentalevidencefromIndianvillages.Journalof Development Economics, 146, 102276.
- Banerjee, A. V., Cole, S., Duflo, E., & Linden, L. (2007). Remedying education: Evidence from two randomized experiments in India. The Quarterly Journal of Economics, 122(3),1235-1264.
- Coate, Stephen, and Glenn C. Loury (1993) ‘Will Affirmative Action Policies EliminateNegativeStereotypes.’AmericanEconomicReview83(5),1220–1240
- Cullen, Julie Berry, Brian A Jacob, and Steven Levitt (2006) ‘The effect of school choice on participants: Evidence from randomized lotteries.’ Econometrica 74(5), 1191–1230
- Kingdon, G. G. (2007). The progress of school education in India. Oxford Review ofEconomicPolicy,23(2),168-195
- Borooah, V. K. (2012). Social identity and educational attainment: the role of caste and religion in explaining differences between children in India. Journal of Development Studies, 48(7),887-903.
- Chin, A. (2005). Can redistributing teachers across schools raise educational attainment? Evidence from Operation Blackboard in India. Journal of development Economics, 78(2),384-405.
- Ghosh, P., &Bray, M. (2018). Credentialism and demand forprivate supplementary tutoring: A comparative study of students following two Examination boards in India. International Journal of Comparative Education and Development.
- Gandhi Kingdon, G. (2002). The gender gap in educational attainment in India: Howmuchcanbeexplained?.JournalofDevelopmentStudies,39(2),25-53.
- Azam, M., & Kingdon, G. G. (2013). Are girls the fairer sex in India? Revisiting intra-household allocation of education expenditure. World Development, 42, 143- 164.

- Asadullah, M. N. (2005). The effect of class size on student achievement: Evidence from Bangladesh. Applied Economics Letters, 12(4),217-221.
- Tholen, G., Brown, P., Power, S., &Allouch, A. (2013). The role of networks and connections in educational elites' labour market entrance. Research in Social Stratification and Mobility, 34,142-154.
- Silva, P., Lopes, B., Costa, M., Melo, A. I., Dias, G. P., Brito, E., & Seabra, D. (2018). The million-dollar question: can internships boost employment?.StudiesinHigher Education, 43(1),2-21.
- Wright, E., &Mulvey, B. (2021). Internships and the graduate labour market: how upper-middle-class students 'get ahead'. British Journal of Sociology of Education, 42(3),339-356.
- Deshpande, A. (2005). Affirmative action in India and the UnitedStates.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Discipline Specific Elective 23 (DSE-23): Forecasting Methods for Economics

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
VI/VIII	Forecasting Methods for Economics – ECON053	4	3	1	0	Class 12th Pass	Basic Econometrics (ECON024)

Learning Objectives

The Learning Objectives of this course are as follows:

- This course builds on the compulsory Basic Econometrics course and teaches students a broad set of commonly used econometric methods for forecasting econometric variables.
- These include both quantitative and qualitative Forecasting Techniques including VAR, VECM, ARIMA etc.

Learning outcomes

The Learning outcomes of this course are as follows:

- Students will learn the theoretical and practical basis for forecasting techniques widely used in empirical research and consider their application in a wide range of problems.

Syllabus

UNIT I: Basics of Forecasting (6 hours)
Tools for forecasting, forecasting methods and applications, forecast horizon

UNIT II: Quantitative Forecasting Techniques (9 hours)
Definition,TimeSeries-Naïve,Average, Simple Moving Average, Weighted Moving Average, Exponential Smoothing; Fore- cast Errors Accuracy, Trend Projection, Seasonal Indexes, Holt's, winter's Model, Linear Regression. Smoothing Techniques, Exponential smoothing methods, Decomposition methods.

UNIT III: Box-Jenkins Methodology: Unit roots; Autoregressive models, moving average models, mixed autoregressive and moving average models; Identification, estimation, diagnostic checking and Forecasting (9 hours)

UNIT IV: Forecasting with Multiple Regression Models (6 hours)

UNIT V: Cointegration, Granger Causality, Error Correction (6 hours)

UNIT VI: Qualitative Forecasting Techniques (9 hours)
Definition, Delphi, Precautions in administering Delphi, Sales force composite, Consumer Panel Survey, Nominal group, and their Drawbacks.

Recommended readings

- Spyros G. Makridakis, Steven C. Wheelwright, Rob J Hyndman (2008), Forecast- ing: Methods and Applications, WileyPublications.

- Dimitrios Asteriou and Stephen G. Hall, 4th edition, Applied Econometrics, 2021, PalgraveMacmillan.
- Hyndman, R.J., & Athanasopoulos, G. (2021) Forecasting: principles and practice, 3rd edition, OTexts: Melbourne, Australia.OTexts.com/fpp3.
- Asteriou, D and Hall, Stephen G, Applied Econometrics, 4th Edition, 2021, Palgrave Macmillan.
- James Stock and Mark Watson, Introduction to Econometrics, 4th Edition, 2019, Pearson.
- Wooldridge, J. (2014). Introduction to econometrics: A modern approach, 5th ed. Cengage Learning.
- Gujarati, D., Porter, D. (2012). Basic econometrics, 5th ed.McGraw-Hill.
- Badi H. Baltagi, Econometrics, 5th Edition, 2011,Springer.
- J. Johnston and J. DiNardo (2001), Econometric Methods, Fourth Edition, Irwin McgrawHill
- G.S. Maddala and Kajal Lahiri, Introduction to Econometrics, 4th Edition, 2012, Wiley.
- Diebold, F.X. (2017), Forecasting, Department of Economics, University of Pennsylvania.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Discipline Specific Elective 24 (DSE-24): History of Economic Thought

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
VI/VIII	History of Economic Thought – ECON054	4	3	1	0	Class 12th Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- This course intends to acquaint students to an evolution of the history of economic thought from its initial thinkers to ideas of institutionalism and the reinvention of liberalism.
- The course will discuss selected authors on economic theory to understand them within the framework of intellectual debate and change.
- The idea is to expose students to the milestones in economic theory and provide a more holistic understanding of the evolution of contemporary economics.
- The course attempts to fulfil the need to integrate thehistoryofeconomicswiththeteachingoftheprinciplesofeconomics.

Learning outcomes

The Learning outcomes of this course are as follows:

- The students will develop an understanding of the historical antecedents and methodological premises of the theories in economics.
- They will also have a grounding in the set of ideas that inform academic debates and the making of policies related to the economyinthecontemporaryworld.

Syllabus

UNIT I: Introduction (9 hours)
Why study economic thought; history of economic thought or his- tories of economic thought.

UNIT II: The surplus approach and the rise of political economy (9 hours)
Value, Price, Money, Income Distribution, Macroeconomic Setting, Growth and Trade: Reading Adam Smith, David Ricardo and Karl Marx.

UNIT III: Marginalism and Keynesianism (9 hours)
Utility, technology and price : Jevons, Menger, Walras and Marshall. Keynes, Kalecki and the principle of effective demand.

UNIT IV: Institutionalism and Evolutionary Economics (9 hours)
Industrial and Pecuniary employments in Thorstein Veblen; labour as an overhead cost: competition and Knowledge – perfect, imperfect and Rivalrous; Schumpeter: creative destruction, innovation and business cycle.

UNIT V: Neoliberalism and Post-Keynesianism Theory, policy, critique and prospects. Milton Friedman (9

hours)

Recommended readings

- Munday, S. C. (1996). A Brief History of Economic Thought. In Current Developments in Economics (pp. 15-32). Palgrave,London.
- Roncaglia, Alessandro (2017). *A Brief History of Economic Thought*. Cambridge UniversityPress
- Sandelin, B., Trautwein, H. M., &Wundrak, R. (2014). A short history of economic thought.Routledge.
- Medema, S. G., & Samuels, W. J. (2013). The history of economic thought: a reader. Routledge.
- Backhouse, R.E., 1987. A history of modern economic analysis. BasilBlackwell.
- Schumpeter, Joseph A: "The Development of Economics as a Science" in Economic Doctrine and Method. New York, OUP. 1954, Chapter 1, pp 9-44
- Kaul, Nitasha: Imagining Economics Otherwise, Encounters With Identity/Difference. Firstpublishedin2008,Reprint2009.Routledge,NewDelhi,pp73-79
- Foley, D. 2009. Adam's Fallacy: A Guide to Economic Theology. Cambridge, MA andLondon,England:HarvardUniversityPress.
- Galbraith, J.K., 1987. A history of economics: The past as the present. London: H. Hamilton.
- Foley, D. 2009. Adam's Fallacy: A Guide to Economic Theology. Cambridge, MA andLondon,England:HarvardUniversityPress.
- Hunt, E.K. and Lautzenheiser, M., 2015. History of economic thought: A critical perspective. Routledge.
- Martins, N.O., 2013. The Cambridge revival of political economy. Routledge.
- Mazzucato, M., 2018. The value of everything: Making and taking in the global economy. HachetteUK.
- Medema, S.G. and Samuels, W.J., 2013. The history of economic thought: a reader. Routledge
- Screpanti, E. and Zamagni, S., 2005. An outline of the history of economic thought. OUPOxford.
- Temin, P. and Vines, D., 2014. Keynes: useful economics for the world economy. MITPress.
- Vaggi, G. and Groenewegen, P., 2016. A concise history of economic thought: Frommercantilismtomonetarism.Springer.
- Gustafsson, B., Knudsen, C. and Uskali, M. eds., 1993. Rationality, institutionsand economic methodology.Routledge.
- Veblen, T B: The Engineers and the Price System. New York, Augustus M Kelley, 1965. Pp27-51
- Commons, J R: Institutional Economics. AER, Volume 21 1931, pp648-657
- Clark, J M: Studies in the Economics of Overhead Costs. University of Chicago Press, 1923. Pp357-385
- Stigler: Perfect Competition, "Historically Contemplated", in JPE, vol. 65, Number 1, February 1957, pp 1-17
- Kirzner, I: Competition Regulation and the Market Process: An Austrian Perspective. (Link to beprovided).
- Friedman, M: " Neo Liberalism and its Prospects", from The Collected Works of MiltonFriedmanpp89-93
- Chernomas, Robert and Hudson, Ian: The Profit Doctrine. Pluto Press. Chapter Title: 'Milton Friedman: The Godfather of the Age of Instability andInequality.
- Bo Sandelin, Hans-Michael Trautwein, Richard WundrakA Short History of Eco- nomic Thought. Routledge. Third Edition.2014.
- Daron Acemoglu, Francisco A. Gallego, and James A. Robinson Institutions, Human Capital and Development. NBER Working Paper No. 19933. February2014.
- Daron Acemoglu, Simon Johnson, and James Robinson. Institutions as the Fundamental Cause of Long-Run Growth. NBER Working Paper No. 10481. May 2004
- Heilbroner,R.L.(1986).*TheWorldlyPhilosophers*.NewYork,Simon&Schuster.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Discipline Specific Elective 25 (DSE-25): Industrial Organisation

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
VI/VIII	Industrial Organisation – ECON055	4	3	1	0	Class 12th Pass	Game Theory and Strategic Interactions (ECON013)

Learning Objectives

The Learning Objectives of this course are as follows:

- The course assumes knowledge of intermediate microeconomics and game theoretical tools. The students should also be comfortable with applications of calculus.
- This course studies imperfectly competitive market and primarily focuses on firms' strategies in oligopolistic market environments.
- This is the foundation course which aims to prepare the students for further study and research.
- Along with classical models of industrial organisation, the course also covers some contemporary topics like mergers and acquisitions, patents, advertising and networks.
- The learning from this course would be useful to understand and analyse different anti-competitive practices of the firms and theneedfordesigningbettercompetitionpolicyforregulatingthemarket.

Learning outcomes

The Learning outcomes of this course are as follows:

- The students will be able to learn classical models in imperfectly competitive market, understand why regulation of firms is necessary.
- They willbeabletorelatemodernissuesofindustrialorganisation

Syllabus

UNIT I: Imperfectly Competitive Market Product Differentiation, Bertrand, Cournot, Hotelling, Salop, Monopolistic Competition (6 hours)

UNIT II: Dynamic Models of Oligopoly, Cartels, Collusion and Entry Deterrence, Anti-trust (9 hours)

UNIT III: VerticalRelationandVerticalRestraint;DoubleMarginalization,SuccessiveOligopoly, Raising Rival's Cost, Resale Price Maintenance (RPM), Exclusive Dealing (6 hours)

UNIT IV: Mergers and Acquisitions, Horizontal and Vertical Integration (6 hours)

UNIT V: Technology, Innovation, R&D; Market structure and innovation, R&D, Patents, Technology Transfer (6 hours)

UNIT VI: Networks; network Effects, Markets for a Single Network Good and Several Net- workgoods (6 hours)

UNIT VII: Advertisement; Social Costs and Benefits of Advertising, Market Structure, Advertising as Barrier to Entry, Product Differentiation and Competition (6 hours)

Recommended readings

- Cabral, L. M. B. (2017), *Introduction to Industrial Organization*. Second edition, Cambridge, Mass: MITPress.
- Church, J. R., and Roger Ware, (2000), *Industrial Organization: A Strategic Ap- proach.*Boston: Irwin McGraw Hill.
- Shy,O.,(1995),*IndustrialOrganization-TheoryandApplications*,MITPress.
- Watson, J., (2013) *Strategy: An Introduction to Game Theory*, W. W Norton &Company.
- Waldman,D.andJansenE.,(2013),*IndustrialOrganization:MarketsandStrategies* (second edition),Pearson.
- Belleflamme,P.,andPeitz,M.(2010),*Industrialorganization:marketsandstrategies*.Cambridge,UK,CambridgeUniversityPress.
- Tirole , J. (1988), *The theory of industrial organization*, Cambridge, MA: MIT Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Discipline Specific Elective 26 (DSE-26): Introduction to Causal Inference

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
VI/VIII	Introduction toCausal Inference–ECON056	4	3	2	0	Class 12th Pass	Basic Econometrics (ECON024)

Learning Objectives

The Learning Objectives of this course are as follows:

- This course intends to provide students with the essential econometric tools required for causal inference analysis.
- The course will give an overview about potential outcomes framework,datadesignandanalysis.

Learning outcomes

The Learning outcomes of this course are as follows:

- The students will be able to understand, design and implement various techniques of causal inference for data analysis as a tool for research.
- The students will be able to do anindependentresearchprojectbasedonthetechniquestheywilllearninthiscourse.

Syllabus

UNIT I: Potential Outcomes Framework (9 hours)
Causal Inference and Potential Outcomes Framework

UNIT II: Research Design (9 hours)
Observational data and experimental data; sample selection

UNIT III: Methods of Analysis (9 hours)
Overview: Ordinary Least Squares (OLS) and Limited Dependent Variables (LDV) Models, Instrumental Variables

UNIT IV: Panel Data (including Difference-in-Difference) (9 hours)
Regression Discontinuity Design (RDD); Introduction to Matching

UNIT V: Hands-on Training (9 hours)
Project work using econometric software (EViews/ R/Stata/EXCEL/SPSS/Julia)

Recommended readings

- Huntington-Klein, N. (2021). The effect: An introduction to research design and causality. Chapman andHall/CRC.
- Imbens, G. W., & Rubin, D. B. (2015). Causal inference in statistics, social, and biomedical sciences. Cambridge UniversityPress.
- Stock, J. H., &Watson, M. W. (2015). Introduction to econometrics (3rd updated edition).
- Rosenbaum, P. (2018). Observation and experiment. Harvard UniversityPress.

- Angrist, J. D., & Pischke, J. S. (2014). *Mastering metrics: The path from cause toeffect*.Princetonuniversitypress.
- Imai, K. (2018). Quantitative social science: An introduction. Princeton UniversityPress.
- Cunningham, S. (2018). Causal inference: The mixtape (V. 1.7)
- Gertler, Paul J.; Martinez, Sebastian; Premand, Patrick; Rawlings, Laura B.; Vermeersch, Christel M. J.. (2016). *Impact Evaluation in Practice, Second Edition. Washington*,DC:Inter-AmericanDevelopmentBankandWorldBank.
- White, H., Raitzer, D. A. (2017). Impact Evaluation of Development Interventions: A Practical Guide. Philippines: Asian DevelopmentBank.
- Glewwe, P., &Todd, P. (2022). Impact Evaluation in InternationalDevelopment.
- Carolina Arteaga,The effect of human capital on earnings: Evidence from a reform at Colombia's top university, Journal of Public Economics, Volume 157, 2018, 212- 225
- Bertrand, M., & Mullainathan, S. (2004). Are Emily and Greg more employable than Lakisha and Jamal? A field experiment on labor market discrimination. AmericanEconomicReview,94(4),991-1013.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Discipline Specific Elective 27 (DSE-27): Introduction to Macroeconomic Dynamics

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
VI/VIII	Introduction to Macroeconomic Dynamics – ECON057	4	3	1	0	Class 12th with Mathematics	Advanced Mathematical Methods for Economics (ECON009) And Intermediate Macroeconomics

Learning Objectives

The Learning Objectives of this course are as follows:

- This is a course which introduces the student to the basics of macroeconomic modelling through dynamic optimization.
- This includes Bellman equation, Euler's equation, Hamiltonian techniques and optimal control approaches.

Learning outcomes

The Learning outcomes of this course are as follows:

- The student gets insights about the construction of abstract macroeconomic models.
- This enables appreciation of a good body of macroeconomic literature in different spheres.
- The course would prove to particularly useful for those interested in pursuing macroeconomicsasafieldofresearchandinquiry.

Syllabus

UNIT I: Dynamic Optimization (15 hours)
Difference equations; differential equations; phase plane analysis; dynamic optimization

UNIT II: Infinite Horizon and Overlapping Generations model (15 hours)
Optimal growth, Ramsey Cass Koopmans model; overlapping generations model, Diamond Dybvig Model

UNIT III: Optimal Control Theory (15 hours)

Recommended readings

- Hoy,Livernois,McKenna,Rees,Stengos(2011),*MathematicsforEconomics*,Addison- Wesley.
- Chiang,AlphaC(1992),*ElementsofDynamicOptimization*,McGrawHill.
- Romer, David (2019) *Advanced Macroeconomics*. McGrawHillIndia.
- Barro,RobertandSalaiMartin,Xavier(2004)*EconomicGrowth*.SecondEdition
- Blanchard, Olivier and Fischer, Stanley (1996), *Lectures on Macroeconomics*, Pren- tice Hall. Eastern EconomyEdition.

- Turnovsky, Stephen(1995) *Methods of macroeconomic dynamics* Prentice Hall In- dia. Eastern EconomyEdition.
- Heijdra, Ben (2017) *Foundations of Modern Macroeconomics*. Oxford.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Discipline Specific Elective 28 (DSE-28): Labour Economics

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
VI/VIII	Labour Economics– ECON058	4	3	1	0	Class 12th Pass	Introductory /Principles of Microeconomics

Learning Objectives

The Learning Objectives of this course are as follows:

- The curriculum is an introduction to labor economics, with an emphasis on applied microeconomic theory and empirical methods critical to microeconomic analysis, as well as the link between research and public policy.
- This course particularly focuses on some of the core theories on labor economics e.g.labor supply, labor demand, role of human capital, incentives, agency, efficiency wages, wage differential and discrimination. The main objective of this course is to enlighten students with some core topics in labor economics with some of the important empirical methods.

Learning outcomes

The Learning outcomes of this course are as follows:

- The students will be able to understand basic theories of labor markets, issues of un- employment, and forms of employment.
- They will learn to critically analyse labour markets in diverse settings including in the macroeconomic context.
- This course will enable the students to evaluate the government policies on labor market critically.

Syllabus

UNIT I: Labor Supply (Static and Intertemporal) (9 hours)
Measuring the Labor Force, Basic Facts about Labor Supply, The Worker's Preferences, The Budget Constraint, The Hours of Work Decision, To Work or Not to Work? The Labor Supply Curve, Estimates of the Labor Supply Elasticity, Labor Supply of Women, Labor Supply over the Life Cycle, Policy Application: Welfare Programs and Work Incentives, Policy Application: The Earned Income Tax Credit, Policy Application: The Decline in Work Attachment among Older Workers.

UNIT II: Labor Demand (9 hours)
The Production Function, The Employment Decision in the Short Run, The Employment Decision in the Long Run, The Long-Run Demand Curve for Labor, The Elasticity of Substitution, Marshall's Rules of Derived Demand, Factor Demand with Many Inputs, Overview of Labor Market Equilibrium, Adjustment Costs and Labor Demand, Trade and Labor Demand, Policy Application: Affirmative Action and Production Costs, Policy Application: The Employment Effects of Minimum Wages Application: Rosie the Riveter as

an InstrumentalVariable

UNIT III: Human Capital (6 hours)
Education in the Labor Market: Some Stylized Facts, The Schooling Model, Education and Earnings, Estimating the Rate of Return to Schooling, Do Workers Maximize Lifetime Earnings? Schooling as a Signal, Post school Human Capital Investments, On-the-Job Training, On-the-Job Training and the Age-Earnings Profile, Policy Application: School Construction in Indonesia, Policy Application: School Quality and Earnings, Policy Application: Evaluating Government Training Programs

UNIT IV: Incentives, Agency and Efficiency Wages (6 hours)
Moral Hazard, Moral Hazard with Limited Liability, Multitasking, Career Concerns, and Applications, Efficiency Wage Models

UNIT V: Wage Differential and Wage Structure (9 hours)
The Market for Risky Jobs, The Hedonic Wage Function, Compensating Differentials and Job Amenities, The Earning Distribution, Measuring Inequality, The Wage Structure: Basic Facts, Inequality across generations. Policy Application: How much is a life worth? Policy Application: Safety and Health Regulations, Policy Application: Health Insurance and the Labor Market, Policy Application: Why did wage inequalityincrease?

UNIT VI: Discrimination (Race and Gender) (6 hours)
Race and Gender in the Labor Market, The Discrimination Coefficient, Employer Discrimination, Employee Discrimination, Customer Discrimination, Statistical Discrimination, Experimental Evidence on Discrimination, Measuring Discrimination, Discrimination against Other Groups, Policy Application: Determinants of the Black–White Wage Ratio, Policy Application: Determinants of the Fe- male–Male Wage Ratio.

Recommended readings

- GeorgeJ.Borjas,*LaborEconomics*,McGrawHill(7thEdition)
- P.Cahuch,StéphaneCarcillo,andAndréZylberberg.*LaborEconomics*,SecondEdition. MIT Press,2014
- Lectures in Labor Economics By Daron Acemoglu and DavidAutor
- Acemoglu, D., D. Autor and D. Lyle, "Women, Warand Wages: The Effect of Female Labor Supply on the Wage Structure at Mid-century," *Journal of Political Economy* (2004) 112:497-551.
- Angrist, J. D., & Pischke, J. S. (2008). *Mostly harmless econometrics*. Princeton universitypress.
- Angrist, J. D., Caldwell, S., & Hall, J. V. (2021). Uber versus taxi: A driver's eye view. *American Economic Journal: Applied Economics*, 13(3),272-308.
- Ashenfelter, O., K. Doran, and B. Schaller, "A Shred of Credible Evidence on the Long-runElasticityofLabourSupply,"*Economica*(2010),77:637
- Bertrand, M. and S. Mullainathan, "AreEmily and Greg More Employable Than Lakisha and Jamal? A Field Experiment on Labor Market Discrimination," *AmericanEconomicReview*94(2004):991-1013(PrimaryReading)
- Cappelli, Peter and Keith Chauvin (1991) "An Interplant Test of the Efficiency Wage Hypothesis." *Quarterly Journal of Economics*, 106(3), 769 – 787.
- Card, David and A. B. Krueger, "Minimum Wages and Employment: A Case Study of the Fast-Food Industry in New Jersey and Pennsylvania," *American Economic Review*(1994)84:772-793.
- Carl Shapiro and Joseph Stiglitz (1984) "Equilibrium Unemployment as Worker DisciplineDevice,"*AmericanEconomicReview*,vol.74(3),pages433-44,June.
- Cesarini,D.,Lindqvist,E.,Notowidigdo,M.J.,&Östling,R.(2017).Theeffectof wealth on individual and household labor supply: evidence from Swedish lotteries. *American Economic Review*, 107(12),3917-46.
- Charles, K.K. and J. Guryan, "Prejudice and Wages: An Empirical Assessment of Becker's The Economics of Discrimination," *Journal of Political Economy* (2008), 16(5):773-809.
- D. Acemoglu, and J-S. Pischke (1999). "Beyond Becker: Training in Imperfect LaborMarkets,"*EconomicJournal*vol109February1999,ppF112-142.
- D. Autor, (2001) "Why Do Temporary Help Firms Provide Free General Skills Training?",*QuarterlyJournalofEconomics*,Vol.116,No.3,pp.1409-1448.(M)

- D. Card, ”UsingRegional Variation to Measure the Effect of the Federal Minimum Wage,” *Industrial and Labor Relations Review*, October1992.
- D. Card, “Estimating the Return to Schooling: Progress on Some Persistent Econometric Problems.” *Econometrica*69 (September2001).
- Fehr, E. and L. Goette, ”DoWorkers Work More if Wages are High? Evidence from aRandomizedFieldExperiment,”*AmericanEconomicReview*(2007),1:298-317.
- Goldin, C., and C.Rouse, ”Orchestrating Impartiality: The Impact of ”Blind” Auditions on Female Musicians,” *American Economic Review* (2000), 90 (4):715-741.
- Imbens, D. Rubin, and B. Sacerdote, “Estimating the Effect of Unearned Income on Labor Supply: Evidence from a Survey of Lottery Players,” *American Economic Review* 91(2001).
- J. Tyler, Richard J. Murnane and John Willett, “Estimating the Labor Market SignalingvalueoftheGED,”*QuarterlyJournalofEconomics*,May2000.(M)
- J.D. Angrist and A. Krueger, ”DoesCompulsory Schooling Attendance Affect SchoolingandEarnings?”*QuarterlyJournalofEconomics*,106[4],Nov1991,979- 1014.
- Krueger, Alan B, and Lawrence H. Summers (1988) “Efficiency Wages and the Inter-IndustryWageStructure,”*Econometrica*,56(2)259-93.
- Maiti, D., & Mukherjee, A. (2013). Trade cost reduction, subcontracting and unionised wage. *Labour Economics*, 21,103-110.
- P. Martorell and D. Clark, “The SignalingValue of a High School Diploma,” *Journal ofPoliticalEconomy*,122[2],April2014.
- Saha, B., Sen, K., & Maiti, D. (2013). Trade openness, labour institutions and flexibilisation:TheoryandevidencefromIndia.*Laboureconomics*,24,180-195.
- T. MaCurdy, ”AnEmpirical Model of Labor Supply in a Life-Cycle Setting,” *Journal of Political Economy*, 89[6], December 1981, 1059-1085.
- Weber, A. and E. Del Bono “Do Wages Compensate for Anticipated Working Time Restrictions? Evidence from Seasonal Employment in Austria”, *Journal of Labor Economics*, 26(1), 181-221,2008.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Discipline Specific Elective 29 (DSE-29): Sectoral Issues in Indian Economy

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
VI/VIII	Sectoral Issue in Indian Economy – ECON059	4	3	1	0	Class 12th Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:
The course imparts in-depth knowledge on the issues relating to the agricultural and industrial economy of India, with the focus on the evolutionary path undertaken and the resultant concerns. This will cover issues of MSMEs and small farms to in form the problems industrialisation as well asincreasedproductivityofagriculture.

Learning outcomes

The Learning outcomes of this course are as follows:
This course will familiarize students with the problems, issues,currentdebates,andpolicyinterventionsforlong-termsustainability,efficiency,and resilience. The students will be able to understand, comprehend and critically analyse the issues and policies and would be able to form a well-informed and well- articulated opinionoftheirown.

Syllabus

UNIT I: Agricultural Performance since Independence: (6 hours)
Output and productivity growth Agricultural Performance since Independence in the context of land andlabour

UNIT II: The Policy Environment: Food security and nutritional concerns, MSPs, Agricultural price policy, subsidies/cash transfers, The public distribution system; Capital formation (9 hours)

UNIT III: Current Issues in Indian Agriculture (selected topics) (15 hours)
Resource Use Efficiency-Fertiliser, Water, Other inputs; Diversification for future Growth and enhanced farm income; Sustainable agricultural growth—concepts and constraints; Prospects for dryland/organic/zero budget farming; trade and competitiveness;useofnewtechnologyandartificialintelligence;Marketing/infrastructure; Crop insurance/agriculturalfinance

UNIT IV: Industry (15 hours)
Overview of the Industrial Scene in India- Trends in growth and productivity; Competitiveness and changes in Policy Regimes- domestic competitiveness and export; Issues relating to Indian Industry (selected topics); Scale and ownership, MSMEs and large industries, Public and Private Sector, Employment growth, labour and capital (domestic and foreign), formal and informal sectors, Infrastructural bottle- necks, research and development.

Recommended readings

- SukhamoyChakravarty (1984) Aspects of India's Development Strategy for 1980s? EPW vol 19 no20-21
- J. Bhagwati (1993), India in Transition: Freeing the Economy, Clarendon Oxford 1993
- K. V. Ramaswamy (2015) Labour, Employment and Economic Growth in India CambridgeUniversityPress
- Isher Judge Ahluwalia (1985) Industrial Growth in India: Stagnation Since the Mid-sixties,OxfordUniversityPress
- R. Nagaraj (2015) Can the Public Sector Revive the Economy? Review of the Evidence and a Policy Suggestion EPW vol 50 no5
- S N Rajesh Raj, Kunal Sen (2020) The 'Missing Middle' Problem in Indian Manufacturing. What Role Do Institutions Play? EPW April 18, 2020 vol 55 no16
- Indian Industrialisation, ICSSR Research and Surveys and Explorations in Eco- nomics vol.1 (2015)-C P Chandrasekhar (ed), Oxford University Press,Delhi
- Sabyasachi Mitra, Abhijit Sen Gupta, and Atul Sanganeria (2020) Drivers and Benefits of Enhancing Participation in Global Value Chains: Lessons for India, ADB South Asia Working Paper No. 79
- Raghuram Rajan (2015) Make in India, largely for India, Indian Journal of Indus- trial Relations, Vol. 50, No. 3 (January 2015), pp.361-372
- Vaidyanathan, A. (1994), "Performance of Indian Agriculture since Independence" in Kaushik Basu (ed.), Agrarian Questions Oxford UniversityPress.
- Mahendra Dev (2016) Water Management and Resilience in Agriculture vol 51, No 8 EPW Economic & Political Weekly
- Ramesh Chand (2012) Development Policies and Agricultural Markets EPW DE- CEMBER 29, 2012 vol 47 no52
- Yoginder K Alagh (2021) Globalisation and the Indian Farmer EPW vol 56 no 28
- Chatterjee, S., Kapur, D. (2017). Six puzzles in Indian agriculture. India Policy Forum 2016, Vol. 17.
- NABARD Foundation Day, Paper on enhancing Farmers' income by K J S Satyasai and Nirupam Mehrotra. 12 July 2016
- Acharya, S.S. (2007) "Agribusiness in India: Facts and Emerging Issues", AgriculturalEconomicsResearchReview,Vol. 20,ConferenceIssue,pp.409-424
- Mohan, R., (2006) Agricultural Credit in India: Status, Issues and Future Agenda, EconomicandPoliticalWeekly,March18,2006,pp1013-1021.
- Mishra S.N. and Chand, R., (1995) Public and Private Capital Formation in Indian Agriculture: Comments on Complementarily Hypothesis, Economic and Political Weekly, June 24th,1995
- GOI (2007), Report of The Working Group on Risk Management in Agriculture for the Eleventh Five Year Plan (2007-2012), GOI, NewDelhi
- Indian Agriculture Towards 2030-Pathways for Enhancing Farmers' Income, Nutritional Security and Sustainable Food and Farm Systems (2021) An open-access Springerpublication.
- Government of India (2017) "Report of the Committee on Doubling Farmers' In- come". Ministry of Agriculture and Farmers' Welfare, Government ofIndia
- PRS Legislative Research (2017), Swaminathan Report: National Commission on Farmers, at Swaminathan Report: National Commission on Farmers, PRSIndia
- Acharya SS and NL Agarwal (2016), Agricultural Marketing in India, New Delhi: CBS Publishers andDistributors
- Expert Committee Report on Marketing Infrastructure & Agricultural Marketing Reforms (2000) Government of India, Department of Agricultural & Cooperation Krishi Bhavan, NewDelhi

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Discipline Specific Elective 30 (DSE-30): Topics in Game Theory

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
VI/VIII	Topics in Game Theory – ECON060	4	3	1	0	Class 12th with Mathematics	Game Theory and Strategic Interactions (ECON013)

Learning Objectives

The Learning Objectives of this course are as follows:

- This course deals with extensive form games. Students learn the concepts of subgame- perfect equilibrium, Bayesian and Perfect Bayesian equilibrium in static and dynamic forms.

Learning outcomes

The Learning outcomes of this course are as follows:

- The students will learn how to model multi-person decision making in an interactive setting.
- They will understand how to formulate different real-life situations as games and learn to predict the optimal strategies of players and how the players can exploit strategicsituationsfortheirownbenefit.

Syllabus

UNIT I: Extensive form games with perfect information (9 hours)
Extensive games with perfect information; strategies and outcomes; Nash equilibrium; subgame perfect equilibrium; backward induction in finite games; commitment; bargaining; Stackelberg's model of duopoly; a race; other illustrations

UNIT II: Simultaneous move games (9 hours)
Entry into a monopolized industry; electoral competition with strategic voters; committee decision-making; exit from a declining industry

UNIT III: Bayesian games (9 hours)
Strategies; Bayesian Nash equilibrium; Cournot's duopoly game with imperfect information; providing a public good; auctions; juries; other applications.

UNIT IV: Extensive form games with imperfect information (9 hours)
Strategies; Nash equilibrium; beliefs and sequential equilibrium; perfect Bayesian equilibrium; signaling games; applications.

UNIT V: Repeated Games (9 hours)
Payoffs, strategies, Nash equilibrium and subgame perfect equilibrium of repeated games

Recommended readings

- Martin J. Osborne, *An Introduction to Game Theory*, Oxford University Press, New Delhi,2004.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE 31(DSE-31) : FINANCIAL DERIVATIVES

Credit distribution, Eligibility and Pre-requisites of the Course

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical / Practice		
VI/VIII	Financial Derivatives ECON077	4	3	1	0	Class XII with Mathematics	Introductory Mathematical Methods for Economics ECON002

Learning Objectives

- To equip students with essentials tools for understanding Finance at undergraduate level.
- To provide analytical knowledge to understand complex financial Derivatives.
- To provide advance skills for pricing and formulating trading strategies using Derivative products

Learning outcomes

- After studying this course, students would be able to understand the core concepts of financial derivates. The course would develop an analytical knowledge for understanding the mechanics and characteristics of derivative products such as Future, Options and SWAP agreements.
- After studying this course, students would be able to understand and formulate complex trading strategies adopted using financial derivate products.

SYLLABUS OF DSE: FINANCIAL DERIVATIVES

Unit 1: Futures Contract & SWAP (15 Hours)
Part I: Futures/Forward Contracts: Properties, Pricing and Hedging
a) Introduction to derivatives and options; forward and futures contracts; options; other derivatives
Hull Chapter - 2: Mechanics of Futures Markets (Sections 2.1 - 2.4 & 2.11)

b) Forward and future prices
Hull Chapter-5: Determination of Forward & Futures Prices (Sections 5.1 - 5.5, 5.9, 5.11 & 5.12)

c) Stock index futures & the use of futures for hedging
Hull Chapter - 3: Hedging Strategies using Futures

Part II: Interest Rate Futures
d) Interest rate futures & duration-based hedging strategies
Hull Chapter - 6: Interest rate futures (6.1 to 6.4) [exclude page-158 & 159]

Part III: SWAP & FRA
e) Forward Rate, Forward Rate Agreement and SWAP
Hull Chapter - 4: Interest rate (4.1 to 4.3, 4.6 and 4.7)
Kolb Chapter – 37: Forward Rate Agreements (Page 575- 577)
Hull Chapter - 7: Swaps (7.1 to 7.4)

Kolb Chapter – 1: Swap Contracts (Page 11-13); Chapter - 28: Pricing and Valuation of SWAP (page 407-410)

Unit 2: Options Contract (30 Hours)
Part I: Introduction and Properties of Option Contracts
f) Option markets; call and put options; factors affecting option prices; put-call parity
Hull Chapter - 10: Mechanics of options markets (10.1 to 10.7);
Hull Chapter -11: Properties of stock options (Full Chapter)

Part II: Option Strategies
g) Option trading strategies: spreads; straddles; strips and straps; strangles
Hull Chapter -12: Trading strategies involving options (Full Chapter)

Part III: Pricing of Options, BSM and Greek letters
h) The principle of arbitrage; discrete processes and the binomial tree model; risk neutral valuation, Black Scholes Merton (BSM) Model, Greek letters
Hull Chapter - 13: Binomial trees. Sections 13.1-13.4, 13.6 - 13.9 & Appendix (Derivation of BSM)
Hull Chapter - 14: Section 14.6 ITOˆ ’S Lemma
Hull Chapter - 15: The Black–Scholes–Merton Model: Sections 15.3, 15.4, 15.5, 15.6, 15.8,15.11
Hull Chapter - 19: The Greek Letters

Recommended readings

Hull, John C.,Options, Futures and Other Derivatives, Pearson Education, Inc, 9th Edition (Global Edition), 2018.

Robert W. Kolb, James A. Overdahl, Financial Derivatives: Pricing and Risk Management, John Wiley & Sons, 2010

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Discipline Specific Elective 32 (DSE-32): Political Economy and Globalisation

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
IV/VI/VIII	Political Economy and Globalisation – ECON078	4	3	1	0	Class 12th Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To explore some of the fundamental structural changes and dynamics of the advanced capitalist system since the early twentieth century to the contemporary period.
- To analyse the changes in the organization of production, labour market institutions as well as shifts in corporate, managerial, fiscal, financial and inter-firm governance structures.
- To analyse the role of state in the era of globalization. It also integrates contemporary issues of gender and environment in a political economy framework.

Learning outcomes

After completion of the course the learners will be able to:

- Do critical analysis in an integrated and broader political economy framework.
- Analyze some of the most contemporary trends and developments at the global level and evaluate them.
- Analyze the issues studied in the compulsory courses on the Indian Economy and Development Economics.

Syllabus

UNIT I: Changing Dynamics of Capitalist Production, Organisational Form and Labour Process (9 hours)
Historical Overview; changing dynamics of the organisation of production, markets and labour process; Evolution of the multinational corporations and their economic logic; changing nature of employment, job security and labour rights.

UNIT II: The State and the Economy (9 hours)
State and the economy; political economy of macroeconomic policy; state in the international political economy - globalisation and imperialism.

UNIT III: Neoclassical political economy (9 hours)
State and rent seeking; market failure; government failure and decentralized development; institutions and economic development; theory of political transitions.

UNIT IV: Political economy of fiscal consolidation and financialization (9 hours)
Principles of Political economy of Taxation; changing role of finance and the shifts in corporate governance structures: financialization – its nature and consequences.

UNIT V: Broader Perspectives (Gender and Environment) (9 hours)
Dimensions of Gender in work, accumulation and globalization; political economic issues in environment, sustainability and inequality.

Recommended readings

- Acemoglu, D and J. A. Robinson (2001). "A Theory of Political Transitions", *The AmericanEconomicReview*,Vol. 91,No. 4(September),pp. 938-963
- Acemoglu, D., & Robinson, J. A. (1999). On the political economy of institutions and development. *American Economic Review*, 91(4), 938-63.
- Acemoglu, D., Golosov, M., &Tsyvinski, A. (2007). Political economy and the structure of taxation. MIT mimeo.
- Bardhan, Pranab (1996)Decentraliseddevelopment. *Indian EconomicReview,* 1996.
- Beaud, Michel (2001). A History of Capitalism, 1500-2000, translated by Tom Dickman and Anny Lefebvre, New York: Monthly Review Press.
- Boyce, J. K. (2002). *The Political Economy of the Environment*, Edward Elgar.
- Chang, D. (2009). "Informalising Labour in Asia's Global Factory" *Journal of Contemporary Asia*, 39:2, 161-179.
- Datta-chaudhuri, Mrinal (1990) Market failure and Government Failure. *JournalofEconomicPerspectives*.Volume4,Number3—Summer1990—Pages25–39.
- Di John, J. (2006). The political economy of taxation and tax reform in developing countries (No. 2006/74). WIDER research paper.
- Dore, Ronald (2008). "Financialization of the Global Economy", *Industrial and Corporate Change*, Volume 17, Number 6, pp. 1097-1112.
- Gandini, Alessandro (2019). "Labour Process Theory and the Gig Economy",*Human Relations*, Vol. 72(6). [Particularly pages 1044-1051. The sections of"The point of production in the gig economy", "Emotional labour and gig work",and "Control"].
- Gereffi, G, J. Humphrey and T. Sturgeon (2005): "The Governance of Global Value Chains", *Review of International Political Economy*, Volume 12, pp. 78-104.
- Gottfried, Heidi (2013). *Gender, Work and Economy - Unpacking the Global Economy, Polity*. [Chapter 10 "Gender, Global Labor Markets, Commodity Chains and Mobilities"]
- Hall, P. A. and D. Soskice (2001) 'An Introduction to Varieties of Capitalism' in Hall, P. A. and D. Soskice Varieties of Capitalism: the institutional foundation of comparative advantage, Oxford University Press, pp 1-68
- Huws, Ursula (2016). "A New Paradigm for work Organisation?", *Work Organisation, Labour & Globalisation*, Vol 10 No. 1 pp 7-26, Pluto Journals.
- Hymer, Stephen (1975). "The Multinational Corporation and the Law of Un-even Development", in H. Radice (ed.) *International Firms and Modern Imperialism*, Penguin Books.
- Kim, S. Y., & Spilker, G. (2019). Global value chains and the political economy of WTO disputes. *The Review of International Organizations*, 14(2), 239-260.
- Kiser, E., &Karceski, S. M. (2017). Political economy of taxation. *Annual review of political science*, 20, 75-92.
- Sen, Amartya K. (1990): "Gender and Cooperative Conflicts" in Irene Tinker (ed.)*Persistent Inequalities - Women and World Development*, OUP.
- Srinivasan T N (1985) Neoclassical political economy, the state and economic development. *Asian Development Review* Vol. 3.1985, 2, p. 38-58

Note: Examination scheme and mode shall be as prescribed by the ExaminationBranch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

GENERIC ELECTIVES (GE-1): PRINCIPLES OF MICROECONOMICS I

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Semester	Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
			Lecture	Tutorial	Practical/ Practice		
I/III/V/VII	Principles of MicroeconomicsI ECON025	4	3	1	0	Class XII pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- This course discusses the basic principles in Microeconomics and their applications. It includes consumer's problem, demand estimation, production function, cost functions and market analysis. It illustrates how the concepts of microeconomics can be applied toanalyzereal-lifeeconomicsituations.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Thestudentslearnsomebasicprinciplesofmicroeconomicsofconsumerandproducers,andinteractions of supply and demand, characteristics of perfect competition, efficiency and welfareoutcomes.

SYLLABUS OF GE-1

UNIT – I: Introduction (12 hours)
Problem of scarcity and choice: scarcity, choice and opportunity cost; production possibility frontier; economic systems. Demand and supply: law of demand, determinants of demand, shifts of demand versus movements along a demand curve, market demand, law of supply, determinants of supply, shifts of supply versus movements along a supply curve, market supply, market equilibrium. Applications of demand and supply: price rationing, price floors, consumer sur- plus, producer surplus. Elasticity: price elasticity of demand, calculating elasticity, determinants of price elasticity, other elasticities

UNIT – II: Consumer Theory (12 hours)
Budget constraint, concept of utility, diminishing marginal utility, Diamond-water paradox, income and substitution effects; consumer choice: indifference curves, derivation of demand curve from indifference curve and budget constraint

UNIT – III: Production and Costs (12 hours)

Production: behaviour of profit maximising firms, production process, production functions, law of variable proportions, choice of technology, isoquant and isocostlines, cost minimizing equilibrium condition
Costs: costs in the short run, costs in the long run, revenue and profit maximization, minimizing losses, short run industry supply curve, economies and dis- economies of scale, long run adjustments

UNIT – IV: Perfect Competition (09 hours)

Assumptions: theory of a firm under perfect competition, demand and revenue; equilibrium of the firm in the short run and long run; Long run industry supply curve: increasing, decreasing and constant cost industries.
Welfare: allocative efficiency under perfect competition.

Practical component (if any) - NIL

Essential/recommended readings

- Mankiw,N.G.(2018).*PrinciplesofMicroeconomics*8thed.
- Frank, R. H., & Cartwright, E. (2010). *Microeconomics and behavior*. New York: McGraw-Hill.
- Bernheim,B.,Whinston,M.(2009).*Microeconomics*.TataMcGraw-Hill.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-2): BASIC DEVELOPMENT ECONOMICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Semester	Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
			Lecture	Tutorial	Practical/ Practice		
I/III/V/VII	**Basic DevelopmentEconomics ECON029**	**4**	**3**	**1**	**0**	**Class XII Pass**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- This course exposes students to some of the key ideas and concepts in the areas of economic growth, human development and globalisation building on the concept of growth and further links it up with alternative conceptions of development.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Students will develop a critical understanding of the contemporary issues in economic growth and development and their paths. Students will thus be better prepared to face the professional world and can use this knowledge base in a variety of jobs, including in the corporate, civil service and NGOsectors.

SYLLABUS OF GE-2

UNIT – I: Development and underdevelopment (12 hours)
Growth vs Development; Classic Approaches of Development; Contemporary theories of Development and Underdevelopment

UNIT – II: Development goals and indicators, measures of underdevelopment
Various concepts and measures of poverty and inequality, poverty lines using various national and international criteria. (12 hours)

UNIT – III: Capabilities, human development and sustainable development (12 hours)

UNIT – IV: Globalisation and development (9 hours)

Practical component (if any) - NIL

Essential/recommended readings

- DebrajRay,*DevelopmentEconomics*,(DE),PrincetonUniversityPress,1998.
- Robinson, J. A., & Acemoglu, D. (2012). *Why nations fail: The origins of power, prosperity and poverty* (pp. 45-47). London: Profile.
- Abhijit Banerjee, Roland Benabou and Dilip Mookerjee (eds), *UnderstandingPoverty* (UP), Oxford University Press, 2006.

- Angus Deaton, *The Great Escape: Health, Wealth and the Origins of Inequality*, PrincetonUniversityPress,2013.
- Gustav Ranis et.al, Economic Growth and Human Development, *World Development* Vol. 28, No. 2, Elsevier Science Ltd.,2000
- Amartya Sen, *Development as Freedom*, OUP,2000
- Thomas Piketty and Emmanuel Saez, 'Inequality in the Long Run', Science, 344 (838),2014
- Piketty,Thomas,2019,*CapitalandIdeology*,HarvardUniversityPress,
- SéverineDeneulinwithLilaShahani(ed.),*AnIntroductiontotheHuman DevelopmentandCapabilityApproach:FreedomandAgency*,Roultedge,2009

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-3): ESSENTIALS OF ECONOMICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Semester	Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
			Lecture	Tutorial	Practical/ Practice		
I/III/V/VII	**Essentials of Economics ECON076**	**4**	**3**	**1**	**0**	**Class XII pass**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- This course will introduce the fundamental concepts of economics, the study of how people manage resources. It contains basic principles of microeconomics (the behaviour of consumers, firms and companies), macroeconomics (national production, employment, inflation and interest rates) and international economics (balance of payment, exchange rate and trade) with graphical illustration and contemporary examples.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, the students will learn to think like an economist and understand how a modern market economy function. They will learn about the factors that determine long-run growth and short-term fluctuations and role of government and financial institutions, so they can better understand how economics applies to the everyday life.

SYLLABUS OF GE-3

UNIT – I: Microeconomic Foundations (15 hours)
Foundations of economics, how market works, firms and market structures, markets for factor of production, role of government

UNIT – II: Macroeconomic Foundations (15 hours)
GDP (measuring total production, income and economic growth), unemployment and inflation; aggregate demand and aggregate supply analysis; monetary and fiscal policies

UNIT – III: Foundation of International Economics (15 hours)
Comparative advantage and the gains from trade, macroeconomics in an open economy

Practical component (if any) - NIL

Essential/recommended readings

– Hubbard, G., Garnett, A., & Lewis, P. (2019). Essentials of economics. 5th edition, Pearson Higher Education AU.

– Sloman, J., & Garratt, D. (2016). Essentials of Economics, 7th edition, Pearson

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-4): PRINCIPLES OF MACROECONOMICS I

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Semester	Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
			Lecture	Tutorial	Practical/ Practice		
II/IV/VI/VIII	**Principles of MacroeconomicsI ECON026**	**4**	**3**	**1**	**0**	**Class XII pass**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- This course introduces the basic concepts in Macroeconomics both in closed and open economy. It deals with the behaviour and characteristics of aggregate economy.
- This course introduces the definition, measurement of the macroeconomic variables like GDP, consumption, savings, investment and balance of payments.
- The course also discusses various theories and approaches of determining GDP.

Learning outcomes

The Learning Outcomes of this course are as follows:

- The students will learn the broad understanding of macroeconomic variables and their measurement issues like GDP, inflation, money supply, interest rate and their inter- linkages.
- It will also allow them to critically evaluate various macroeconomic policies and their effects on output and interest rate in theeconomy.

SYLLABUS OF GE-4

UNIT – I: Introduction (9 hours)
What is macroeconomics? Macroeconomic issues in an economy

UNIT – II: National Income Accounting (9 hours)
Concepts of GDP and National Income; measurement of national income and re-
lated aggregates; nominal and real income; limitations of the GDP concept

UNIT – III: Determination of GDP (9 hours)
Actual and potential GDP; aggregate expenditure; consumption function; invest-
ment function; equilibrium GDP; concepts of MPS, APS, MPC, APC; autonomous expenditure; Concept of multiplier

UNIT – IV: National Income Determination in an Open Economy with Government (9 hours)
Income determination; Fiscal Policy: impact of changes in government expenditure and taxes; net exports function; net exports and equilibrium national income.

UNIT – V: Money in a Modern Economy (9 hours)

Concept of money in a modern economy; monetary aggregates; demand for money; quantity theory of money; liquidity preference and rate of interest; money supply and credit creation; monetary policy.

Practical component (if any) - NIL

Recommendedreadings

- Andrew Abel, Ben Bernanke and Dean Croushore (2011). *Macroeconomics* (7th edition). Pearson
- Richard T. Froyen(2013). *Macroeconomics: Theories and Policies* (10th ed.), Pearson.
- Blanchard,O.(2018).*Macroeconomics*(7thedition).Pearson
- Blanchard,O.(2006).*Macroeconomics*(6thedition).Pearson
- Dornbusch, R., and S. Fischer. (1994). *Macroeconomics* (6th edition). McGraw- Hill
- R. Dornbusch, S. Fischer and R. Startz. (2018). *Macroeconomics* (12th edition). McGraw-Hill

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-5): BASIC STATISTICS FOR ECONOMICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Semester	Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
			Lecture	Tutorial	Practical/ Practice		
II/IV/VI/VIII	**Basic Statistics forEconomics ECON022**	**4**	**3**	**1**	**0**	**Class XII pass**	**Knowledge of Class XII standard Mathematics**

Learning Objectives

The Learning Objectives of this course are as follows:

- The course teaches students the basics of probability theory and statistical inference based on simple technical rigor.
- It includes introductory probability theories, sample distribution and hypothesis testing that set a necessary foundation for the econometrics course taught as a General Elective.

Learning outcomes

The Learning Outcomes of this course are as follows:

- The student will be able to analyse the data using basic statistical concepts.
- They will understand sampling characteristics, estimation as well as examining the hypotheses using discrete and continuous distributions.

SYLLABUS OF GE- 5

UNIT – I: Introduction and overview (12 hours)

Populations and samples; sample statistics; Descriptive Statistics.

UNIT – II: Basic concepts of probability(12 hours)

Spaces and events; probability concepts, conditional probabilities

UNIT – III: Probability distributions and Sampling (12 hours)

Random variables – discrete and continuous, various probability distributions - functions and characteristics; Commonly used distributions - uniform, binomial, exponential, Poisson, hypergeometric and Normal random variables. Jointly distributions- conditional distributions and expectations, covariance and correlation

Unit – IV: Estimation and Hypothesis testing (9 hours)

Estimation of population parameters - methods of moments and maximum likelihood procedures; properties of estimators; confidence intervals; Defining statistical hypotheses; distributions of test statistics; testing hypotheses related to population parameters; Type I and Type II errors; power of a test

Practical component (if any) - NIL

Recommendedreadings

- Larsen, R., Marx, M. (2011). *An Introduction to Mathematical Statistics and its Applications*, PrenticeHall.
- James McClave, P. George Benson, Terry Sincich (2017), *Statistics for Business and Economics*, PearsonsPublication.
- Anderson D. R, Sweeney D.J. et. al (2019), Statistics for Business & Economics, 13th ed. CengageLearning.
- SheldonRoss(2017),IntroductoryStatistics,4thEdition,AcademicPress

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-6):INDIAN ECONOMY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Semester	Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
			Lecture	Tutorial	Practical/ Practice		
II/IV/VI/VIII	**IndianEconomy ECON030**	**4**	**3**	**1**	**0**	**Class XII pass**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- This course introduces the economic problems related to the Indian economy by familiarizing them with the research studies on areas relating to economic development and policy in India with an emphasis on contemporary debates.

Learning outcomes

The Learning Outcomes of this course are as follows:

- The students will be able to learn the development paradigm adopted in India since independenceandevaluateitsimpactoneconomicaswellassocialindicatorsofprogress.
- Students will have the ability to explore current policy debates and contribute to policy making in an informed way using relevant databases.
- They will also learn how to conductindependentresearchinthesareas

SYLLABUS OF GE-3

Unit 1 : Historical and general overview of Indian economy since Independence (9 hours)

Unit 2 : Growth and structural change (9 hours)

Unit 3 : The Indian economy in a comparative perspective (9 hours)
Unit 4 : Key issues: poverty, inequality, education, health and gender (9 hours)
Unit 5 : Agriculture, industry, services and international trade (9 hours)

Practical component (if any) - NIL

Recommendedreadings

- Kumar, Dharma (2005) ed the article on The Indian Economy 1970 to 2003 in revised version of CEHI VolII
- Balakrishnan, Pulapre(2010) *Economic Growth in India: History and Prospect*. OUP.
- Rakshit, Mihir (2011) *Macroeconomics of Post-reformIndia*. OUP
- Rakshit, Mihir (2010) *Money and Finance in the Indian Economy*.OUP
- Goyal, Ashima(ed) (2015)*A Concise handbook of Indian Economy in the 21st Century*.OUP
- Ghate,Chetan(ed)(2012)*TheOxfordHandbookofIndianEconomy*.OUP.
- Bosworth, B., Collins, S. M., & Virmani, A. (2007). *Sources of growth in the Indian economy*.
- Goyal, A. (Ed.). (2019). *A Concise Handbook of the Indian Economy in the 21st*

Century.OxfordUniversityPress.

- Pulapre Balakrishnan, 2007, "The Recovery of India: Economic Growth in the Nehru Era", *Economic and Political Weekly*, November.
- RakeshMohan,2019,*MovingIndiatoanewGrowthTrajectory:NeedforaComprehensiveBigPush*,BrookingsIndia,Section1and2,9-30.
- Ahluwalia,M.S.,2019,"India'seconomicreforms: AchievementsandNextSteps", *Asian Economic Policy Review*, 14(1), 46-62.
  James, K.S., & Srinivas Goli, 2016, "Demographic Changes in India: Is the Country Prepared for the Challenge?" *Brown Journal of World Affairs*, Fall/Winter 2016, Volume XXIII, IssueI.
  Desai, S., 2015, "Demographic deposit, dividend and debt", *The Indian Journal of Labour Economics*, 58,217-232
  Arvind Subramanian and Josh Felman (2021) India's Stalled Rise-How the State Has Stifled Growth, *Foreign Affairs*on 14.12. 2021
  Executive Summary, 2014, Report of the Expert Group to Review the Methodology for Measurement of Poverty (Rangarajan Committee report), GOI,1-5
- Thomas, J. J. (2020). 'Labour Market Changes in India, 2005–18', *Economic and Political Weekly*, 55(34),57

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Generic Elective (GE-7): Theory of Public Finance

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
III/V/VII	Theory of Public Finance – ECON061	4	3	1	0	Class 12th Pass	Introductory /Principles of Microeconomics

Learning Objectives

The Learning Objectives of this course are as follows:

- This course will look into the efficiency and equity aspect of market mechanism of allocating resources and also the design and implications of public sector policies including taxation and monetary policies.
- It will deal with efficiency, equity, public goods, externalities, taxation, subsidies, fiscal multiplier, money supply, interest rate and their interlinkages.

Learning outcomes

The Learning Outcomes of this course are as follows:

- This course aims to develop the broad conceptual frameworks which will enable students to learn economic issues efficiency, equity, public goods, externalities, taxation, subsidies, fiscal multiplier, money supply, interest rate and their interlinkages.
- It will also allow them to critically evaluate various micro and macro aspects of government policies and their effects on output, distribution, and welfare in the economy.
- The course will be useful for students aiming towards careers in the government sector, policy analysis, business and journalism.

Syllabus

UNIT I: Theories of Public Sector and Market Mechanism (12 hours)
Overview of Fiscal Functions; Tools of Normative Analysis; Pareto Efficiency; General Equilibrium Framework; Equity and the Social Welfare

UNIT II: Market Failure (12 hours)
Sources of Market failures; Public Goods; and Externalities.

UNIT III: Theories of Taxation (12 hours)
Product and Factor tax; Tax Burden; Tax Distortions; Tax Design

UNIT IV: Working of Fiscal and Monetary Policies (9 hours)
Fiscal policy; Banking system and creation of Money; Monetary Instruments and Policies; Fiscal and Monetary Management in Indian Context.

Recommended readings

- R.A. Musgrave and P.B. Musgrave ,*Public Finance in Theory and Practice*, 5th Edition.
- Rosen,H.&Gayer,T.(2014).*Publicfinance*(10thed.).NewYork:McGraw-Hill.
- Stiglitz, J E & Rosengard J K (2015), *Economics of the Public Sector*, 4th ed, W.W. Norton.

- Jonathan Gruber, (2011), Public Finance and Public Policy, 3rd edition, Worth Publishers. (MainTextbook)
- Cullis, J., Jones, P. (1998). Public finance and public choice, 2nd ed. Oxford UniversityPress.
- Hindriks,J.,Myles,G.(2013).Intermediatepubliceconomics,2nded.MITPress.
- A. Bagchi (ed.): Readings in public finance. Oxford UniversityPress.
- Stiglitz, J. (2009). Economics of the public sector, 3rd ed. W. W.Norton.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Generic Elective (GE-8): Money and Banking

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
III/V/VII	**Money and Banking – ECON062**	**4**	**3**	**1**	**0**	**Class 12th Pass**	**Introductory / Principles of Macroeconomics**

Learning Objectives

The Learning Objectives of this course are as follows:

- This course exposes students to the theory and functioning of the monetary and financial sectors of the economy.
- It highlights the organization, structure, and role of financial markets and institutions. It also discusses interest rates, monetary management, and instruments of monetary control.
- Financial and banking sector reforms and monetary policy with special reference to India are also covered.

Learning outcomes

The Learning Outcomes of this course are as follows:
This allows students to understand current monetary policies and financial market out- comes. It also enables them to critically evaluate policies.

Syllabus

UNIT I: Money (9 hours)
Understanding concept and functions of money, Measurement of money supply, Analytics and Methodology of computation of money supply, Theories of money supply determination

UNIT II: Financial markets: an Introduction (12 hours)
Role of financial markets and institutions; Problems of Asymmetric information, Financial Crises; Financial derivatives: Futures, Options and Swaps; Financial markets and Institutions in India: Organization, Structure and Reforms in India

UNIT III: Interest Rates (12 hours)
Determination of interest rates; Sources of interest rates differentials and risk; Theories of term structure of interest rates; Interest rates in India

UNIT IV: Central Banking and Monetary policy (12 hours)
Central Bank: Functions and Balance Sheet
Monetary Policy: Targets and instruments, Monetary management in an open economy
Monetary Policy Framework in India: Evolution and current scenario, critical evaluation
Digital currency: implications and emerging issues in Indian economy

Recommended readings

- F J Fabozzi et al: Foundations of Financial Markets and Institutions, Pearson
- F S Mishkin , S G Eakins, T Jayakumar, R K Pattnaik : Financial Markets and Institutions Pearson
- N Jadhav: Monetary Policy, Financial stability and Central Banking in IndiaMacmilla

- M.R. Baye and D.W. Jansen Money, Banking and Financial Markets AITBS, 1996
- Report of the Working Group: Money Supply Analytics and Methodology of Compilation, 1998 Annual Report; Master Circular - Prudential Norms on Capital Adequacy - Basel I Framework - 2011; RBI Bulletin; Report of Currency and Finance (latest).
- Dua, P., "Monetary Policy Framework in India", Indian Economic Review, Vol. 55, Issue 1, June 2020
- Ghate, C., &Kletzer, K. M. (Eds.). (2016). Monetary policy in India: A modern macroeconomic perspective. Springer.
- Various publications of RBI and other agencies / institutions

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Generic Elective (GE-9): Digitalisation and Development

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
III/V/VII	**Digitalisation and Development – ECON063**	**4**	**3**	**1**	**0**	**Class 12th Pass**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- The analysis of the impact of information and communication technologies (ICTs) on economies and societies is a growing field. Technology is an enabling factor. Technological developments become relevant to the extent that they are economically and socially meaningful.
- This course aims to offers an overview of the understanding of economics of digitalisation and its impact on the life and livelihood with an interdisciplinary approach.

Learning outcomes

The Learning Outcomes of this course are as follows:
The students would understand the functions information technology and its socio- economic impact, wellbeing and progress on the contemporary world.

Syllabus

UNIT I: Digital development - India and the World (12 hours)

UNIT II: The transformation of management practices; work and employment; social net- works, trust and social capital in the digital economy; cultural and motivational aspects (12 hours)

UNIT III: Unit ICTs, Digital Divide and the political economy of inequality (12 hours)

UNIT IV: Access to ICT and poverty and wellbeing, work-life balance (9 hours)

Recommended readings

- Goldfarb, A., Gans, J.,& Agrawal, A. (2019). The Economics of Artificial Intelligence: An Agenda. University of Chicago Press.
- Agrawal, A., Gans, J., & Goldfarb, A. (2018). Prediction machines: the simple economics of artificial intelligence. Harvard Business Press.
- Goldfarb, A., & Tucker, C. (2019). Digital economics. Journal of Economic Literature, 57(1), 3-43.
- Goldfarb, A., Greenstein, S. M., & Tucker, C. E. (Eds.). (2015). Economic analysis of the digital economy. University of Chicago Press.
- Maiti, D., & Awasthi, A. (2020). ICT exposure and the level of wellbeing and progress: A cross country analysis. Social Indicators Research, 147(1), 311-343.
- Acemoglu, D., & Restrepo, P. (2018). Artificial intelligence, automation, and work. In The economics of artificial intelligence: An agenda (pp. 197-236). University of Chicago Press.
- Acemoglu, D., & Restrepo, P. (2018). The race between man and machine: Im- plications of technology for growth, factor shares, and employment. American Economic Review, 108(6), 1488-1542.

- Varian, H. R. (2001). Economics of information technology. University of California, Berkeley.
- Maiti, D., Castellacci, F., & Melchior, A. (2020). Digitalisation and development: issues for India and beyond. In Digitalisation and Development (pp. 3-29). Springer, Singapore.
- Singh, N. (2016). Information technology and its role in India's economic development: A review. Development in India, 283-312.
- Castellacci, F., & Tveito, V. (2016). The Effects of ICTs on Well-being: A Survey and a Theoretical Framework (No. 20161004). Centre for Technology, Innovation and Culture, University of Oslo.
- Huyer, S., & Mitter, S. (2003). ICTs, globalisation and poverty reduction: Gender dimensions of the knowledge society. Kampala (Uganda): http://gab. wigsat. org/policy. htm.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Generic Elective (GE-10): Introduction to Comparative Economic Development

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
III/V/VII	**Introduction to Comparative Economic Development – ECON064**	**4**	**3**	**1**	**0**	**Class 12th Pass**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- This course investigates selected issues in industrialization and development in comparative historical perspective.
- The course focuses on a set of countries which followed diverse trajectories and patterns of growth to achieve their industrial transition and compares the outcomes of these diverse trajectories on sectoral change, intersectoral relations, labour processes and industrial relations and compares the role of the state in facilitating the respective trajectories.

Learning outcomes

The Learning Outcomes of this course are as follows:

- The students will be able to visualise economic development in a historical perspective and assimilate material from diverse narratives.
- It will help them to understand the diverse paths of economic development in the advanced economies.

Syllabus

UNIT I: Introduction (9 hours)
Theoretical issues and comparative historical background.

UNIT II: Agricultural transformation and its role in industrialization (9 hours)
Agrarian and land relations, production and productivity, agrarian surplus in industrial development. Case studies: Britain, Japan and U.S.S.R.

UNIT III: The industrialization process of Britain, Japan and U.S.S.R. (9 hours)

UNIT IV: The factory system and making of the industrial working class. Case studies: Britain and Japan (9 hours)

UNIT V: The role of the state in industrial and developmental transitions. Case studies: Britain, Japan and U.S.S.R. (9 hours)

Recommended readings

- Davies, R. (1998). Soviet economic development from Lenin to Khrushchev. Cam- bridge University Press.
- Dobb, M. (1966). Soviet economic development since 1917. Routledge.

- Hughes, J., Cain, L. (1994). American economic history, 4th ed. Harper Collins College Publishers.
- Hayami, Y. (1975). A century of agricultural growth in pre-war Japan: Its relevance to Asian development. University of Minnesota Press.
- Hobsbawm, E. (1968). Industry and empire: An economic history of Britain since 1750. Weidenfeld & Nicholson.
- Hobsbawm, E. (1984). Worlds of labour: Further studies in the history of labour. Weidenfeld & Nicolson.
- Johnson, C. (1982). MITI and the Japanese miracle: The growth of industrial policy 1925-1975. Stanford University Press.
- Macpherson, W. (1995). The economic development of Japan 1868-1941. Cam- bridge University Press.
- Norman, E. (2007). Japan's emergence as a modern state: Political and economic problems of the Meiji period. University of British Columbia Press.
- Okochi, K., Karsh, B., Levine, S. (1974). Workers and employees in Japan: The Japanese employment relations system. Princeton University Press.
- Paul, G., Robert, C. (1990). Soviet economic structure and performance, 3rd ed. Harper and Row.
- Tauger, M. (2004). Soviet peasants and collectivization 1930-39: resistance and adaptation. Journal of Peasant Studies, 31: 3-4. 427-456.
- Angus Maddison (2001). The World Economy, Vol. 1: A Millennial Perspective. OECD.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Generic Elective (GE-11): Education and Development

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
III/V/VII	**Education and Development – ECON065**	**4**	**3**	**1**	**0**	**Class 12th Pass**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:
This course discusses the role of education in development and policy analysis and formulation in the context of development; the impact of the globalisation on, and the role of international agencies in, education for development; human capital theory and human resource development; education and aid; research and consultancy strategies and ethics. he emphasis in this course is laid on understanding the theoretical aspects of education and linking it with the issues of education in a developing country like India.

Learning outcomes

The Learning Outcomes of this course are as follows:
This course will develop skills amongst the students to role of education and strategies to expand education in highly unequal societies. This will further help to conduct research and analysis the role of institutions for the outcome of education.

Syllabus

UNIT I: Introduction (9 hours)
Defining the educational problem

UNIT II: Human capital theory (6 hours)
The basic economic perspective on education

UNIT III: Early childhood education: How important? When did earnings become so dependent on education? Do our regression estimates overestimate the impact of education on earnings? The case of ability bias. (9 hours)

UNIT IV: Education as a signal of skill (9 hours)
If the return to education is real, does it reflect skills learned or is it a signal? Why has the rate of return to education increased? What skills are now rewarded in the workplace?

UNIT V: Schooling and Achievement (6 hours)
Do smaller classes raise achievement? School vouchers and parental choice; School accountability, standards and testing; Teacher quality and teacher training; Can technology complement what teachers do?

UNIT VI: Higher Education (6 hours)
Basic issues and structure; Higher education policy

Recommended readings

- Borjas, George. Labor Economics. Boston, MA: McGraw-Hill, 2005
- Lovenheim, M., & Turner, S. E. (2017). Economics of education. Macmillan Higher Education.

- Feinstein, Leon. "Inequality in the Early Cognitive Development of British Children in the 1970 Cohort." Economica 70, no. 277 (2003): 73-97.
- Duflo, Esther. "Schooling and Labor Market Consequences of School Construction in Indonesia: Evidence from an Unusual Policy Experiment." American Economic Review 91, no. 4 (2001): 795-800.
- Levy, Frank, and Richard J. Murnane. "Computers, Offshoring, and Skills." Working Paper. September 18, 2005..
- Hanushek, E. A., Machin, S. J., &Woessmann, L. (Eds.). (2016). Handbook of the economics of education. Elsevier.
- Bradley, S., & Green, C. (Eds.). (2020). The Economics of Education: A Com- prehensive Overview.
- Hanushek, Eric A., 2005, Economic Outcomes and School Quality, International Academy of Education and International Institute for Educational Planning.
- Goldin, C., & Katz, L. F. (2010). The race between education and technology. harvard university press.
- Haveman, R., & Smeeding, T. (2006). The role of higher education in social mobility. The Future of children, 125-150.
- Singh, A., Park, A., &Dercon, S. (2014). School meals as a safety net: an evaluation of the midday meal scheme in India. Economic Development and Cultural Change, 62(2), 275-306.
- Krueger, Alan B. "Experimental Estimates of Education Production Functions." Quarterly Journal of Economics 114, no. 2 (1999): 497-532.
- Loeb, Susanna, and Marianne E. Page. "Final Examinationining the Link between Teacher Wages and Student Outcomes: The Importance of Alternative Labor Market Opportunities and Non-pecuniary Variation." Review of Economics and Statis- tics 82, no. 3 (2000): 393-408.
- Winston, Gordon. "Subsidies, Hierarchy and Peers: The Awkward Economics of Higher Education." Journal of Economic Perspectives 13, no. 1 (1999): 13-36.
- Azam, M., & Kingdon, G. G. (2015). Assessing teacher quality in India. Journal of Development Economics, 117, 74-83.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Generic Elective (GE-12): Basic Resource and Energy Economics

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
III/V/VII	**Basic Resource and Energy Economics – ECON066**	**4**	**3**	**2**	**0**	**Class 12th with Mathematics**	**Introductory /Principles of Microeconomics**

Learning Objectives

The Learning Objectives of this course are as follows:
ThiscoursewillintroducethebasicsofResourceandEnergyeconomics.Theobjectiveofthis course is to provide theoretical and empirical topics on Resource economics, energy economics, energy transition, and energy security. This course introduces the conceptual and theoretical foundations of Resource Economics. In particular, the policies and potential sources are both renewable and non-renewable. The objective of thiscourseistoprovideknowledgeontheprinciplesofgoverningandmanagingnaturalresources.

Learning outcomes

The Learning outcomes of this course are as follows:
The students will learn some issues of resource economics relating to the basics of supply, demand, and prices, income elasticities, world oil markets, and depletable resources, pathways of energy transition from conventional to renewable energysources.

Syllabus

UNIT I: Resource Economics (Renewable and non-renewable sources) (15 hours)
Optimal extraction of a non-renewable resource, Optimal management of renewable resources -Fishery and Forestry, Tom Tietenberg and Lynne Lewis, Environment and Natural Resource Economics, 9th edition, Chapter 5,6,12 and13

UNIT II: Energy Economics (15 hours)
Types of energy sources, Introduction to Basics of supply, demand, and prices, energy supply and economics of depletable resources, world oil markets

UNIT III: Energy transition and energy security Pathways of energy transition from conventional to renewable energy sources, Policy instruments, Energy security, accessibility and 4 A definition, and Energy poverty (15 hours)

Recommended readings

- Tom Tietenberg and Lynne Lewis, Environment and Natural Resource Economics, 9thedition
- Review of the Basics of Supply, Demand and Price Formationin Competitive MarketsPindyckandRubinfeld.2005
- Fouquet, R. Historical energy transitions: speed, prices and system transformation. Energy Res. Soc. Sci. 22, 7–12 (2016).
- McGowan, J., and S. Conners. ”Windpower: A Turn of the Century Review.” AnnualReviewofEnergyandtheEnvironment25(2000):147-197.

- Chen, B., Xiong, R., Li, H., Sun, Q., &Yang, J. (2019). Pathways for sustainable energytransition.JournalofCleanerProduction,228,1564-1571.
- Palmer, K., and D. Bullaw. ”Cost-Effectiveness of Renewable Electricity Policies.” Energy Economics 27 (2005):873-894
- Deffeyes, K. Hubbert’s Peak: The Impending World of Oil Shortage. Princeton, NJ:PrincetonUniversityPress,2001,chapter1.ISBN:0691116253.
- Lynch M. ”ThePessimism About Petroleum Resources: Debunking the Hubbert Model (and Hubbert Modelers).” Minerals and Energy - Raw Materials Report 18, no. 1 (2003):1-18.
- Watkins, G. ”OilScarcity: What Have the Past Three Decades Revealed?” Energy Policy 34 (2006):508-514.
- Cherp, A., & Jewell, J. (2014). The concept of energy security: Beyond the four As. Energy policy, 75,415-421.
- Carley, S., &Konisky, D. M. (2020). The justice and equity implications of the cleanenergytransition.NatureEnergy,5(8),569-577.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Generic Elective (GE-13): Principles of Microeconomics II

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
III/V/VII	Principles of Microeconomics II – ECON027	4	3	1	0	Class 12th with Mathematics	Introductory Microeconomics (ECON001)/ Principles of Microeconomics I (ECON025)

Learning Objectives

The Learning Objectives of this course are as follows:

- This course covers imperfect markets and equilibrium analysis, consumer and producer theories under various markets and its failure, and international trade.

Learning outcomes

The Learning outcomes of this course are as follows:

- This course helps the students to understand different forms of market imperfections and market failures observed in real life situations.
- The students learn about the environment where the standard market mechanism fails to generate the desirable outcomes.
- They develop a sense of how the production is distributed among the different factors of production and the demand for inputs.
- Some preliminary concepts of international tradearealsocoveredinthiscourse.

Syllabus

UNIT I: Market Structures (12 hours)
Theory of a Monopoly Firm: Concept of imperfect competition; short run and long run price and output decisions of a monopoly firm; concept of a supply curve under monopoly; comparison of perfect competition and monopoly, social cost of monopoly, price discrimination; remedies for monopoly: Antitrust laws, natural monopoly
Imperfect Competition: Monopolistic competition: Assumptions, SR and LR price and output determinations under monopolistic competition, economic efficiency and resource allocation; oligopoly: assumptions, oligopoly models, game theory, contestable markets, role of government

UNIT II: Consumer and Producer Theory (12 hours)
Consumer and Producer Theory in Action: Externalities, marginal cost pricing, internalising externalities, public goods; imperfect information: adverse selection, moral hazard, social choice, government inefficiency.
Markets and Market Failure: Market adjustment to changes in demand, efficiency of perfect competition; sources of market failure: imperfect markets, public goods, externalities, imperfect information; evaluating the market mechanism.

UNIT III: Income Distribution and Factor pricing (12 hours)
Input markets: demand for inputs; labour markets, land markets, profit maximisation condition in input markets, input demand curves, distribution of Income.

UNIT IV: International Trade (9 hours)
Absolute advantage, comparative advantage, terms of trade, sources of comparative advantage, trade barriers, free trade/ protectionism.

Recommended readings

- Mankiw,N.G.(2018).*PrinciplesofMicroeconomics*8thed.
- Bernheim,B.,Whinston,M.(2009).*Microeconomics*.TataMcGraw-Hill.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Generic Elective (GE-14): Corporate Finance, Governance and Development

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
V/VII	Corporate Finance, Governance and Development – ECON067	4	3	2	0	Class 12th with Mathematics	Basic Statistics

Learning Objectives

The Learning Objectives of this course are as follows:

- This course covers the important financial decisions that face companies and corporate world in the modern economies.
- This will cover investment, financing and dividend decisions, together with the management of risk.

Learning outcomes

The Learning outcomes of this course are as follows:

- The students will be able to under the risk and decisions taken by the corporate world in the present-daysituations.
- The student will learn the practical issues of assets formation in the share and equity markets.
- They will also learn the role of institution in regulating uncertain and risky behaviours of the corporate firms.

Syllabus

UNIT I: Investment decisions (12 hours)
Traditional methods of investment appraisal, Investment–consumption decision model, The discounted cash flow approach, Net present value and internal rate of return, Project cash flows, Capitalrationing

UNIT II: Risk analysis (12 hours)
Simple risk techniques, Risk and return, Portfolio theory, The capital asset pricing model, Option valuation, Interest rate risk

UNIT III: Financing decisions (12 hours)
Financial markets, the cost of capital, Weighted average cost of capital, Capital structure in a simple world, Capital structure in a complex world, Investment and financing interactions, The dividend decision

UNIT IV: International issues (9 hours)
Foreign exchange, Foreign exchange hedging, Foreign direct investment

Recommended readings

- Quiry, P., LeFur, Y., Vernimmen, P. (2022). Corporate finance:theoryandpractice. John Wiley &Sons.
- Lumby, S., & Jones, C. (2003). Corporate finance: Theory & practice. Cengage LearningEMEA.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Generic Elective (GE-15): Principles of Macroeconomics II

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
IV/VI/VIII	Principles of Macroeconomics II – ECON028	4	3	1	0	Class 12th with Mathematics	Introductory Macroeconomics/ Principles of Macroeconomics I

Learning Objectives

The Learning Objectives of this course are as follows:

- This course introduces labour markets and derives the aggregate supply (AS) curve.
- Then, it integrates with Aggregate Demand (AD) to determine equilibrium prices and output.
- The course discusses Phillips curve and the alleged trade-off between inflation andunemployment.
- Both adaptive and rational expectations are introduced.

Learning outcomes

The Learning outcomes of this course are as follows:

- The students would learn an analytical framework to analyse the basic functioning of the aggregate macroeconomy under closed and open economy.
- It also enables them to analyse the functioning of the economies in term of the effects of fiscal and monetary policy and trade-off between inflation and unemployment.

Syllabus

UNIT I: IS-LM Analysis for income determination (12 hours)
Derivations of the IS and LM functions; IS-LM and aggregate demand; shifts in the ADcurve

UNIT II: GDP and Price Level in Short Run and Long Run (12 hours)
Aggregate demand and aggregate supply; multiplier analysis with AD curve and changes in price levels; aggregate supply in the SR and LR

UNIT III: Inflation and Unemployment (12 hours)
Concept of inflation; determinants of inflation; relationship between inflation and unemployment: Phillips Curve in short-run and long-run

UNIT IV: Balance of Payments and Exchange Rate (9 hours)
Balance of payments: current account and capital account; market for foreign exchange; determination of exchange rate

Recommended readings

- Blanchard,O.(2006).*Macroeconomics*,4thed.PearsonEducation.
- C.L.F. Attfield, D. Demery and N.W. Duck, *Rational Expectations in Macroeconomics:anintroductiontotheoryandevidence*(1991,2ndEd.).
- Sheffrin,Steve Rational Expectations. Cambridge University Press (1996, 2nd ed.).
- Dornbusch,R.,Fischer,S.(1994).*Macroeconomics*,6thed.McGraw-Hill.
- R. Dornbusch, S. Fischer and R. Startz. (2018). *Macroeconomics* (12th edition). McGraw-Hill.
- Branson,W.(2013).*Macroeconomics:Theoryandpolicy*,3rded,EastWestPress.

- Carlin, W and D Soskice (2007), *Macroeconomics: Imperfections, Institutions and Policies*, Indian Edition,OUP.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Generic Elective (GE-16): Basic Econometrics

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
IV/VI/VIII	Basic Econometrics – ECON024	4	3	2	0	Class 12th Pass	Knowledge of Class XII standard Mathematics AND Basic Statistics

Learning Objectives

The Learning Objectives of this course are as follows:

- This course introduces students to the econometric methods used to conduct empirical analysis based on the basic statistics.
- It offers the basic quantitative techniques needed to undertake applied research projects to establish the relationship between variables of interestsacrosswidevarietyofdisciplines.

Learning outcomes

The Learning outcomes of this course are as follows:

- Students will learn to estimate simple estimation and inferences about population parameters, to formulate empirical models and analyze data.
- An expertise in econometrics increases the job prospect of the students significantly.

Syllabus

UNIT I: Regression Models (15 hours)
OLS estimators, hypothesis Testing using software and practical application; multi- ple Regression Model - estimation, Testing and practical application using software like GRETL/EViews/ R/Stata/EXCEL etc.

UNIT II: Qualitative variables and Estimation (15 hours)
Application of qualitative variables, Nonlinear Models, Applications of dummy variables

UNIT III: Issues with Classical Assumptions (15 hours)
Violation of normal distribution, Collinearity with independent variables, heteroscedasticity, autocorrelation, practical application

Recommended readings

- Christopher Dougherty, *Introduction to Econometrics*, 4th edition, OUP, Indian edition.
- Damodar Gujarati, *Econometrics by Example*, 2nd edition, Palgrave Macmillan, 2014.
- Gujarati,D.,Porter,D.(2010).*EssentialsofEconometrics*,4thed.McGraw-Hill.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Generic Elective (GE-17): Sectoral Issues in Indian Economy

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
IV/VI/VIII	Sectoral Issue in Indian Economy – ECON059	4	3	1	0	Class 12th Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- The course imparts in-depth knowledge on the issues relating to the agricultural and industrial economy of India, with the focus on the evolutionary path undertaken and the resultant concerns.
- This will cover issues of MSMEs and small farms toinformtheproblemsindustrialisationaswellasincreasedproductivityofagriculture.

Learning outcomes

The Learning outcomes of this course are as follows:

- This course will familiarize students with the problems, issues,currentdebates,andpolicyinterventionsforlong-termsustainability,efficiency,and resilience.
- The students will be able to understand, comprehend and critically analyse the issues and policies and would be able to form a well-informed and well- articulated opinionoftheirown.

Syllabus

UNIT I: Agricultural Performance since Independence: (9 hours)
Output and productivity growth Agricultural Performance since Independence in the context of land andlabour

UNIT II: The Policy Environment: Food security and nutritional concerns, MSPs, Agricultural price policy, subsidies/cash transfers, The public distribution system; Capital formation (12 hours)

UNIT III: Current Issues in Indian Agriculture (selected topics) (12 hours)
Resource Use Efficiency-Fertiliser, Water, Other inputs; Diversification for future Growth and enhanced farm income; Sustainable agricultural growth—concepts and constraints; Prospects for dryland/organic/zero budget farming; trade and competitiveness;useofnewtechnologyandartificialintelligence;Marketing/infrastructure; Crop insurance/agriculturalfinance

UNIT IV: Industry (12 hours)
Overview of the Industrial Scene in India- Trends in growth and productivity; Competitiveness and changes in Policy Regimes- domestic competitiveness and export; Issues relating to Indian Industry (selected topics); Scale and ownership, MSMEs and large industries, Public and Private Sector, Employment growth, labour and capital (domestic and foreign), formal and informal sectors, Infrastructural bottle- necks, research and development.

Recommended readings

- SukhamoyChakravarty (1984) Aspects of India's Development Strategy for 1980s? EPW vol 19 no20-21

- J. Bhagwati (1993), India in Transition: Freeing the Economy, Clarendon Oxford 1993
- K. V. Ramaswamy (2015) Labour, Employment and Economic Growth in India CambridgeUniversityPress
- Isher Judge Ahluwalia (1985) Industrial Growth in India: Stagnation Since the Mid-sixties,OxfordUniversityPress
- R. Nagaraj (2015) Can the Public Sector Revive the Economy? Review of the Evidence and a Policy Suggestion EPW vol 50 no5
- S N Rajesh Raj, Kunal Sen (2020) The 'Missing Middle' Problem in Indian Manufacturing. What Role Do Institutions Play? EPW April 18, 2020 vol 55 no16
- Indian Industrialisation, ICSSR Research and Surveys and Explorations in Eco- nomics vol.1 (2015)-C P Chandrasekhar (ed), Oxford University Press,Delhi
- Sabyasachi Mitra, Abhijit Sen Gupta, and Atul Sanganeria (2020) Drivers and Benefits of Enhancing Participation in Global Value Chains: Lessons for India, ADB South Asia Working Paper No. 79
- Raghuram Rajan (2015) Make in India, largely for India, Indian Journal of Indus- trial Relations, Vol. 50, No. 3 (January 2015), pp.361-372
- Vaidyanathan, A. (1994), "Performance of Indian Agriculture since Independence" in Kaushik Basu (ed.), Agrarian Questions Oxford UniversityPress.
- Mahendra Dev (2016) Water Management and Resilience in Agriculture vol 51, No 8 EPW Economic & Political Weekly
- Ramesh Chand (2012) Development Policies and Agricultural Markets EPW DE- CEMBER 29, 2012 vol 47 no52
- Yoginder K Alagh (2021) Globalisation and the Indian Farmer EPW vol 56 no 28
- Chatterjee, S., Kapur, D. (2017). Six puzzles in Indian agriculture. India Policy Forum 2016, Vol. 17.
- NABARD Foundation Day, Paper on enhancing Farmers' income by K J S Satyasai and Nirupam Mehrotra. 12 July 2016
- Acharya, S.S. (2007) "Agribusiness in India: Facts and Emerging Issues", AgriculturalEconomicsResearchReview,Vol. 20,ConferenceIssue,pp.409-424
- Mohan, R., (2006) Agricultural Credit in India: Status, Issues and Future Agenda, EconomicandPoliticalWeekly,March18,2006,pp1013-1021.
- Mishra S.N. and Chand, R., (1995) Public and Private Capital Formation in Indian Agriculture: Comments on Complementarily Hypothesis, Economic and Political Weekly, June 24th,1995
- GOI (2007), Report of The Working Group on Risk Management in Agriculture for the Eleventh Five Year Plan (2007-2012), GOI, NewDelhi
- Indian Agriculture Towards 2030-Pathways for Enhancing Farmers' Income, Nutritional Security and Sustainable Food and Farm Systems (2021) An open-access Springerpublication.
- Government of India (2017) "Report of the Committee on Doubling Farmers' In- come". Ministry of Agriculture and Farmers' Welfare, Government ofIndia
- PRS Legislative Research (2017), Swaminathan Report: National Commission on Farmers, at Swaminathan Report: National Commission on Farmers, PRSIndia
- Acharya SS and NL Agarwal (2016), Agricultural Marketing in India, New Delhi: CBS Publishers andDistributors
- Expert Committee Report on Marketing Infrastructure & Agricultural Marketing Reforms (2000) Government of India, Department of Agricultural & Cooperation Krishi Bhavan, NewDelhi

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Generic Elective (GE-18): Game Theory and Social Sciences

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
IV/VI/VIII	**Game Theory and Social Sciences – ECON068**	**4**	**3**	**1**	**0**	**Class 12th Pass**	**Knowledge of Class XII Standard Mathematics**

Learning Objectives

The Learning Objectives of this course are as follows:

- This course will teach the basic elements of game theory with applications to political science and other social sciences.
- It will coversimultaneous games, extensive-form games, repeated games, and spatial models of elections.
- The course will also focus on using the logic of games to make inferences and arguments about political and social behavior, with readings on collective action, voting, bargaining, repeated interaction, war, and other FinalExamples.

Learning outcomes

The Learning outcomes of this course are as follows:

- The students will learn how to apply multi-person decision making in an interactive setting.
- They will understand how to formulate different real-life situations as games and learn to predict the optimal strategies of players and how the players can exploit strategic situations for their own benefit.
- They will solve basic and intermediate games, including simultaneous-move and extensive-form games, as well as basic games of asymmetric information.
- The students can create and solve an original model designed to understand a social or political problem of interest.

Syllabus

UNIT I: Rational choice; interacting decision-makers; the normal/strategic form (9 hours)

UNIT II: Dominant and dominated strategies; rationalizability; iterated elimination of dominated strategies; dominance solvability; best response functions; Nash equilibrium. (12 hours)

UNIT III: Extensive-form and simultaneous game, Strategic game and its application in social sciences, electoral competition; the war of attrition, auctions; accident law; mixed strategies; finding mixed strategy equilibria;symmetricgamesandsymmetricequilibria;illustrations:reportingacrime;expertdiagnosis (12 hours)

UNIT IV: Strictly competitive equilibrium and maximization (12 hours)

Recommended readings

- Martin J. Osborne, *An Introduction to Game Theory*, Oxford University Press, New Delhi,2004.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Generic Elective (GE-19): Economy of Colonial India

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
IV/VI/VIII	**Economy of Colonial India – ECON069**	**4**	**3**	**1**	**0**	**Class 12th Pass**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- This course Final Examples some key spheres and trends of India's economy under colonial rule and situates them in the realms of land, labour, capital and state policy as they emerged from the shadows of the Mughal decline and moved into the colonial era.
- A special focus will be given on the peasants, artisans, migrants and their changing relationships with state power.
- The course will revisit some influential debates of Indian economic history: deindustrialisation, the nature of growth under colonial conditions, forced commercialization, the modernity of its industrialisation, working classes, drain of wealth and the role of the colonialstate.

Learning outcomes

The Learning outcomes of this course are as follows:

- The students will be able to learn economic transformation from pre-colonial period to the British colonial regime that paved the way of distorted path of growth and development.
- They will understand the nature of colonial economy and how resources of colonies were exploited by the colonial power.
- They will acquire skill to critically engagewithideasofeconomicchangesinthelasttwocenturies.

Syllabus

UNIT I: Economic transformation from pre-colonial to colonial regime (12 hours)
Economic transition, Colonial exploitation and resultant tyranny affected the trend of population, national income; occupational structure, merchandise trade, emergence of state with the East India Company and nature of its rule.

UNIT II: Agrarian Transformation (12 hours)
Colonial Rule on Indian Soil affected land revenue settlements, commercialization of agriculture, changing cropping pattern, land market, rural credit and indebtedness. It further influenced agrarian relations that includes agricultural labour, regional variations, peasant commodity production and generated debates on the 'mode of production in Indian agriculture', the 'invisible' women of India's agrarian history.

UNIT III: The de-industrialisation debate (12 hours)
Role of infrastructure for merchandise trade, evolution of entrepreneurial and industrial structure; constraints on industrial growth; labourrelations; drain of wealth; international trade and Balance of Payments

UNIT IV: Evolution of State and Financial Market (9 hours)
Evolution of state and its function for social welfare and relief under famine and starvation; Public Finance, Government revenue, expenditure and investment over the years; Emergence of Modern Banking in India and its role in economy; Overall assessment of colonial economy: stagnation and decline with regional variations.

Recommended readings

- Guha, S., 1991, Mortality decline in early 20th century India, Indian Economic and Social History Review, vol. 28
- Roy,T,2011,*TheEconomicHistoryofIndia1857-1947*,3rdedn,OrientLongman, Delhi.
- Irfan Habib, 2006, Indian Economy 1858-1914, A People's History of India, vol. 28, Tulika,Delhi
- Chaudhary, L., B. Gupta, T Roy and A. V. Swami (eds.), A New Economic History of Colonial India, Routledge, London and NewYork.
- Parthasarathi, P. 2009, Historical Issues of Deindustrialization in Nineteenth Cen- tury South India, in T Roy and Giorgio Riello (eds) How India Clothed the World: The World of South Asian Textiles, 1500-1850 , Brill,Leiden
- Morris, M.D , 1965, Summary and Conclusions in Emergence of an Industrial Labour Force in India, OUP,Delhi
- Roy, T., 2018, Capital and Empire (1850-1930): Trade and Finance in A Business History of India: Enterprise and the Emergence of Capitalism from 1700, CambridgeUniversityPress,Delhi
- Chatterjee, B., 1992, Trade, Tariffs and Empire, Oxford University Press, Delhi, Epilogue.
- Washbrook, D. , 2012, The Indian Economy and the British Empire in Douglas M Peers and Nandini Gooptu (ed.) India and the British Empire, OUP, Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Generic Elective (GE-20): Basic Environmental Economics

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
IV/VI/VIII	**Basic Environmental Economics – ECON070**	**4**	**3**	**1**	**0**	**Class 12th Pass**	**Introductory /Principles of Microeconomics**

CourseObjectives:

- The objective of this course is to provide basic knowledge of environmental economics, and its relationship between microeconomics and welfare economics.
- It covers the sig- nificance and application of Environmental Economics in the present environmental challenges in India. It describes and comprehends various environmental policies by de- ployingvarious policy instruments as well as measure the various market and non-market benefits of environmental policies.
- Finally, the course addresses the transboundary en- vironmental problems, and challenges related to trade and the environment.

Course LearningOutcomes

- The students will be able to learn the basic factors influencing the environmental chal- lenges faced by the present world.
- They will comprehend the functions of state and institution in mitigating such challenges.

Content (Unit-wise):

Unit 1 : Introduction to Environment Economics (9 hours)

What is environmental economics, Overview of environmental problems in India Unit 2 :

Welfare economics and inefficiencies (9 hours)

Pareto efficiency in consumption (Edgeworth Box), Pareto efficiency in Production, Theorems of welfare economics

Unit 3 : Externalities, property rights and Environmental Policy (9 hours)

Market Failure, externalities in Production and consumption, Externalities in prop- erty rights. Types of environmental goods (use and non-use value)

Unit 4 : Bargaining Solutions and Environmental Policies (9 hours)

Coase Theorem and its implications, Overview of regulatory policies related to environment, implementation of environmental policy

Unit 5 : International Environmental Problems (9 hours)

Environment and World Trade Organization, GATT, Multilateral Environmental Agreements, Transboundary environmental problems

SuggestedReadings:

– Charles Kolstad. Intermediate Environmental Economics, Oxford University Press, 2ndedition(2012).[Indianreprintavailable.]

- Roger Perman, Yue Ma, James McGilvray and Michael Common. Natural Re- source and Environmental Economics, Pearson Education/Addison Wesley, 4th edition(2011).
- Robert N. Stavins (ed.). Economics of the Environment: Selected Readings, W.W. Norton,6thedition(2012).

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Generic Elective (GE-21): Law and Development

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
IV/VI/VIII	**Law and Development – ECON071**	**4**	**3**	**1**	**0**	**Class 12th Pass**	**Introductory /Principles of Microeconomics**

CourseObjectives:

- Law is widely thought of a prerequisite to economic development. The course focuses on how property rights play a central role in economic development and individuals investif they can reap the future benefits of their investments as well formation of assetswithcollateral.
- Thecoursedealswiththequestions,wherepropertyrightscome from, how they are made and evolve, why, by whom and in what manner attributes of property rights are grafted onto different objects, claims, or assets.
- More specifically, the course covers key areas such as property rights, business transactions, and industrial promotion,withguidanceforpro-developmentlegislationineach.

Course learning outcomes:

- The students will acquire understanding the efficacy of laws and institutions in the modern economies for property rights and debt that helped equity and transparency for economic development.
- The students will learn the facility incomparativelaw,approachestolegalinstitutionalism,andlawandpoliticaleconomy.

Content(unit-wise):

Unit 1 : Introduction (9 hours)

The Importance of Laws and institutions for EconomicDevelopment

Unit 2 : Property Rights and Economic Development (12 hours)

Property rights and their role in resource allocation (Market and non-market mechanism for land transfer); Intellectual Property Rights (IPRs) Patents, Copyright and Trademarks. Cost and benefits of private IPRs; Individual rights vs common good

Unit 3 : Legal Frameworks for Business Transactions and Economic Development (12 hours)

Economics of Contract Law Legal contract; Role of Contracts for functioning of markets; Incomplete contracts; Efficient contracts; Damages measures and theirefficiency properties.

Unit 4 : Law and Industrial Promotion as Tools for Economic Development (12 hours)

Anti-trust laws, Competition Policy; Legal Process: Litigation – its causes and consequences; Benefits of legal certainty

- SuggestedReadings:

– Lee, Yong-Shik (2017) ”GeneralTheory of Law and Development,” Cornell

Interna- tional Law Journal: Vol. 50 : No. 3 , Article 2. Available at: https://scholarship.law. cornell.edu/cilj/vol50/iss3/2

- Cooter, Robert and Thomas Ulen, Law and Economics, Sixth Edition, Addison Wesley 2013, ISBN 9780132540650. Free here Law and Economics, 6th edition (jku.at)
- Lee, Y.S., Call for a New Analytical Model for Law and Development (Septem- ber 16, 2016). Law and Development Review, Vol. 8, No. 2 (June 2015), 1-67, Available at SSRN: https://ssrn.com/abstract=2839943
- Lee, Y.S.; General Theory of Law and Development; https://ww3.lawschool.cornell.edu/research/I final.pdf
- Trubek, D. M., & Santos, A. (Eds.). (2006). The new law and economic develop- ment: a critical appraisal. Cambridge UniversityPress.
- Dam, K. W. (2007). The law-growth nexus: The rule of law and economic devel- opment.BrookingsInstitutionPress.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Generic Elective (GE-22): Public Finance inIndia

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
IV/VI/VIII	**Public Finance in India – ECON072**	**4**	**3**	**1**	**0**	**Class 12th Pass**	**NIL**

CourseObjectives:

- This course covers an overview of recent trends and issues in government finances of India.
- It will look into the recent trends in budget, deficits, reforms in taxes of the centre, states and the local governments and the issues of fiscal federalism and decentralisation in India.
- It also offers an overview of principles and finances of India's flagships welfare programs.

Course LearningOutcomes:

- The students will learn India's recent trends and issues in direct and indirect taxes, intergovernmental transfers and welfare policies.
- It will enable them to compare and contrast India's public sector performance with the conceptual standards and perfor- mances of other nations.
- It will also equip them to engage in empirical based public policy debates around taxation, fiscal federalism and welfare policies.
- The course will be useful for students aiming towards careers in the government sector, policy analysis, business andjournalism.

Content (Unit-wise):

Unit 1 : Current Issues of India's Tax system (12 hours)

Overview of India's tax system and performance; GST; Issues in Direct Taxes; other issues in indirect taxes (eg. taxes on petroleum products)

Unit 2 . Analysis of Budget and Deficits: (12 hours)

Union and State Budget analysis; Deficit and Debt Management; Unit

3 Fiscal Federalism in India (12 hours)

Theories of Fiscal Federalism; Overview of Fiscal Federalism Structure in India; Intergovernmental Transfers; Local Finances in India

Unit 4 : Development and Welfare Policies- (9 hours)

India's Flagship Programs- Public Distribution system, National Health Mission, Universal Health Insurance, Education, other Central and State sponsored schemes

SuggestedReadings:

- RelevantchaptersfromLatestFinanceCommissionReports
- Relevant chapters from the latest EconomicSurvey

- Latest BudgetDocument
- Rangarajan, Chakravarthy, and D. K. Srivastava. ”Fiscaldeficits and government debt: implications for growth and stabilisation.” Economic and Political Weekly (2005): 2919-2934
- Rao, M. Govinda. ”Centraltransfers to states in India: rewarding performance while ensuring equity.” Final report submitted to NITI Aayog(2017).
- Relevantarticlesfromreputedjournals

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Generic Elective (GE-23): Health andDevelopment

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
IV/VI/VIII	Health and Development – ECON073	4	3	1	0	Class 12th Pass	NIL

CourseObjectives:

- Thiscoursedealswiththeinterfacebetweenthehealthanddevelopment,bothmonetaryandnon-monetary terms.
- It identifies how health care markets differ from other goods and services, the unique role of health insurance for health equity.
- The course address how medical spending has evolved over time, role of state and institution for delivering health care services.
- It also covers the various strategies address by the nation and internationalorganisationsforensuringhealthcareandbetterlife.

Course LearningOutcomes:

- The students will be able to understand economic dimensions of health services, determinants of health care, role of state and institution, policies relating to health equity andstrategiestodealwithcommunicableandnon-communicablediseases

CourseOutline:

Unit 1 : Health, Wealth, and Welfare; Utility and Health; Causes and Consequences of Regional Variations in Health Care (9 hours)

Unit 2 : Health expenditure

Health Care Spending Growth; The Transformation of Medical Care to Health; TheDemandforMedicalCare;out-pocketexpenditure (9 hours)

Unit 3 : Health Insurance (9 hours)

Externalities in Health and Medical Care; The Demand for Health Insurance; Health Insurance Supply and Managed Care; Government Provision of Health Insurance; Universal Insurance Issues and International Comparisons of Health Care Systems; managing market (9 hours)

Unit 4 : Economics and mental health (9 hours)

Unit 5 : Health Systems (9 hours)

International health systems and Indian experiences, and health care financing.

Suggested Readings: Following is the suggested list of books/papers, which can be updated with more recent papers as ans when they becomeavailable.

Main Textbooks

- Deaton, A. (2007). Height, health, and development. Proceedings of the national academy of sciences, 104(33), 13232-13237.
- IMF (2004), Health and Development, https://www.imf.org/external/pubs/ft/health/eng/hdwi/h
- Satpathy SK, Bansal RD. Health economics–concepts and conceptual problems. HealthPopulPerspectIssues.1982Jan-Mar;5(1):23-33.PMID:10310083.
- Frank, R. G., & McGuire, T. G. (2000). Economics and mental health. Handbook ofhealtheconomics,1,893-954.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Generic Elective (GE-24): Global Political Economy

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
IV/VI/VIII	Global Political Economy – ECON074	4	3	1	0	Class 12th Pass	NIL

- CourseObjectives:
  - This course introduces students to the contemporary structures, trends and developments in the world economy from a political economy perspective.
  - The period covered is from the end of Second World War up to global economic crisis of 2008. Areas covered include the organization of production and corporate structure; changes in labour processes and labour regimes;
  - The financialization of the world economy; and the shift intheunderstandingofthenatureandroleofthestateunderglobalisation.
- Course LearningOutcomes:
  - This course enables students to develop a critical understanding of the contemporary global economy, changing dynamics of political economic relation and developments over the last five or six decades.

Content (Unit-wise):

Unit 1 : Introduction (6 hours)

The political economy of globalisation, a theoretical and historical overview.

Unit 2 : Changing dynamics of capitalist production. (9 hours)

Organisational forms and labour processes in the Fordist and Post-Fordist produc- tion regimes; multinational corporations – evolution, structural form and dynam- ics; global value chains and production networks; the nature of employment, job security and labour rights in a globalising world.

Unit 3 : Institutional setting of global trade. (6 hours)

Evolution of the role, structure and mechanisms of the international trade regime.

Unit 4 : The role of finance in the globalised economy. (9 hours)

Financialization– trends, instruments, features and consequences.

Unit 5 : The state in the era of globalisation: (6 hours)

Globalisation and the limits of the welfare and developmental states; the neoliberal state.

Unit 6 : Global economic instability and crisis: (9 hours)

The 2008 global economic crisis – prelude; proximate and long-term causes; and policy response.

- SuggestedReadings:

– Dore, R. (2008). Financialization of the global economy. Industrial and Corporate Change, 17,1097-1112.

– Harvey, D. (2005). A brief history of neoliberalism. Oxford UniversityPress.

- Hymer, S. (1975). The multinational corporation and the law of uneven develop- ment. In H. Radice (ed.): International firms and modern imperialism. Penguin Books.
- Nayyar, D. (2003). Globalisation and development. In H.-J. Chang (ed.): Re- thinking development economics. AnthemPress.
- Reddy, N. (2003). Economic globalisation, past and present: The challenges to labour. In K. Jomo, K.Jin (eds): Globalization and its discontents, revisited. TulikaBooks.
- Thun, E. (2011). The globalization of production. In J. Ravenhill (ed.): Global political economy. Oxford UniversityPress.
- Tonkiss, F. (2008). Contemporary economic sociology: Globalisation, production, inequality.Routledge.
- Vakulabharanam, V. (2009). The recent crisis in global capitalism: Towards a Marxianunderstanding.EconomicandPoliticalWeekly,44,144-150.
- Varoufakis, Y. (2011). The global Minotaur: America, the true origins of the financial crisis and the future of the world economy. ZedBooks.
- Winham, G. (2011). The evolution of the global trade regime. In J. Ravenhill (ed.): Global political economy. Oxford UniversityPress.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Generic Elective (GE-25): History of Indian Economic Thought

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
IV/VI/VIII	History of Indian Economic Thought – ECON075	4	3	1	0	Class 12th Pass	NIL

CourseObjectives:

- The purpose of this course is to develop understanding among the students about Indian Economic Thinking in ancient and pre-independence India.
- This course exposes students to prominent Indian economic thinkers from the ancient period till the early 20th century. The course will provide intellectual underpinning of ancient Indian economics, which will help them solve many ongoing economic problems.

Course LearningOutcomes:

- The students will be able to have idea about the ancient Indian economic system
- The course will help the students to understand the current economic system in view of the economic history of the country

- Content (Unit-wise):

Unit 1: Ancient and pre-colonial period (15 hours)

Postulates of Ancient Indian Economics; Buddhism and economics; Consumption, production, exchange and distribution in Ancient Indian Economy; Public finance and economic functions of government.

Unit 2 : Colonialism, Exploitation and Economic development (15 hours)

Classical & Neoclassical economics and Indian economic thought during colonial period; Theory of wealth drain and, famine and poverty; Industrialization, agrarian policy, infrastructure and structural changes.

Unit 3 : Economic thought: Indian Freedom Movement (15 hours)

Gandhian Economic model of swadeshi; Gokhle and Economics of Education; free trade to discriminating protection; Ranade and Economics of development; Ambedkar's thought on population, agriculture, banking and industrilisation.

- SuggestedReadings:

- Kangle, R. P. (1986). *KautiliyaArthasastra (vol. No. 1-3)* Motilal Banarsidass Publication.
- Bahadur, R. and Aiyanger, K.V.R. (1934). Aspects of Indian Economic Thought. The Madras Law Journal Press, Mylapore, Madras.
- Dasgupta, A. (1993). The history of Indian Economic Thought. Routledge, London and New York.
- Shah, K.T. (1954). Ancient Foundations of Economcis in India. Vora & Co. Publishers Ltd. Bombay.
- Mahadev Govind Ranade (2000). Indian political Economy. Indian economic association trust for research and development. Ch1.
- J. Krishnamurty (ed.; 2011). *Towards Development Economics: Indian Contribu- tions1900–1945*,OUP.
- Government of Maharashtra Education Department (1982). *On Measures for Birth Control' Dr. Babasaheb Ambedkar: Writings and Speeches, Volume.-2, Appendix-1* Government of

Maharashtra, page261.
- Waldauer, C., Zahka, W. J., & Pal, S. (1996). Kautilya's Arthashastra: A neglected precursor to classical economics. *Indian Economic Review*, 101-108.
- Tisdell, C. A. (2003). *A western perspective on Kautilya's' Arthasastra': Does it provide a basis for economic science?* (No. 1742-2016-140719, pp. 1-13).
- Adams, J. (2006). Economics, economists, and the Indian economy. *India Review*, *5*(1), 37-61.
- Skare, M. (2013). The missing link: From Kautilya's The Arthashastra to modern economics. *Journal of Philosophical Economics*, *6*(2), 2-31.
- Deodhar, S. Y. (2018). Indian antecedents to modern economic thought.
- Ambedkar, B. R. (1918). Small holdings in India and their remedies. *Journal of Indian Economic Society*, *1*, 1900-1945.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

ANNEXURE-30

Sub: Amendment to Ordinance V

[E.C Resolution No. 14-1/-(14-1-6/-) dated 09.06.2023 and 27-1-1/ dated 25.08.2023]

Following addition be made to Appendix-II-A to the Ordinance V (2-A) of the Ordinances of the University;

Add the following:

Syllabi of Semester-IV of the following programmes in respect of Department of Physics & Astrophysics under Faculty of Science based on Under Graduate Curriculum Framework -2022 implemented from the Academic Year 2022-23:

SEMESTER-IV: BSc. (H) Physics/ Pool of Discipline Specific Electives/ BSc. Physical Science with Physics as one of the Core Disciplines/ BSc. Physical Science with Physics & Electronics as one of the Core Disciplines/ Common Pool of Generic Electives (GEs) ***(As per Annexure-1)***

ANNEXURE-1

INDEX
DEPARTMENT OF PHYSICS AND ASTROPHYSICS
Semester-IV

S. No.	Contents	Page No.
1	**B. Sc. (Hons.) Physics – Discipline Specific Core (DSC)** DSC 10: Modern Physics DSC 11: Solid State Physics DSC 12: Analog Electronics	2-11
2	**B. Sc. (Hons.) Physics – Pool of Discipline Specific Electives (DSEs)** DSE 3: Advanced Mathematical Physics I DSE 4: Physics of Devices DSE 5: Physics of Earth	12-19
3	**B. Sc. Physical Science with Physics as one of the Core** **DSC** Physics DSC 4: Waves and Optics **DSEs** Physics DSE 14a: Introduction to Numerical Methods Physics DSE 14b: Analog Electronics Physics DSE 14c: Physics of Earth	20-34
4	**B. Sc. Physical Science with Physics & Electronics as one of the Core Disciplines** **DSC** Physics DSC 7: Waves and Optics Physics DSC 8: Microprocessor and Microcontroller **DSEs** Physics DSE 11: Introduction to Numerical Methods Physics DSE 12: Physics of Earth	35-49
5	**Common Pool of Generic Electives (GEs)** GE 15: Quantum Mechanics GE 16: Introduction to Embedded System Design GE 17: Nano Physics GE 18: Physics of Detectors GE 19: Nuclear and Particle Physics GE 20: Atomic and Molecular Physics	50-64

B. SC. (HONOURS) PHYSICS

DISCIPLINE SPECIFIC CORE COURSE – DSC - 10: MODERN PHYSICS

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical		
Modern Physics DSC – 10	**4**	**3**	**0**	**1**	Class XII Pass with PCM	Studied 'DSC-Light and Matter' & Mathematical Physics-I, II & III

LEARNING OBJECTIVES

This course introduces modern development in Physics. Starting from Planck's law, it develops the idea of probability interpretation and then discusses the formulation of Schrodinger equation and its applications to step potential and rectangular potential problems. This paper aims to provide knowledge about atomic physics, hydrogen atoms and X-rays. This paper covers the in-depth knowledge of lasers, its principle and working. It also introduces concepts of nuclear physics and accelerators.

LEARNING OUTCOMES

After getting exposure to this course, the following topics would be learnt.

- Main aspects of the inadequacies of classical mechanics as well as understanding of the historical development of quantum mechanics. Heisenberg's Uncertainty principle and its applications, photoelectric effect and Compton scattering.
- The Schrodinger equation in 1-dimension, wave function, probability and probability current densities, normalization, conditions for physical acceptability of wave functions, position and momentum operators and their expectation values, Commutator of position and momentum operators.
- Time independent Schrodinger equation, derivation by separation of variables, wave packets, particle in a box problem, energy levels. Reflection and transmission across a step and rectangular potential barrier.
- Modification in Bohr's quantum model: Sommerfeld theory of elliptical orbits
- Hydrogen atom energy levels and spectra emission and absorption spectra.
- X-rays: their production and spectra: continuous and characteristic X-rays, Moseley Law.
- Lasers and their working principle, spontaneous and stimulated emissions and absorption, Einstein's A and B coefficients, Metastable states, components of a laser and lasing action in He-Ne lasers and free electron laser.
- Basic properties of nuclei, nuclear binding energy, semi-empirical mass formula, nuclear force and meson theory. Radioactivity.
- Types of Accelerators, Van-de Graaff generator linear accelerator, cyclotron.

SYLLABUS OF DSC – 10

THEORY COMPONENT

Unit – I **(9 Hours)**

Origin of Quantum Theory: Black body radiation and failure of classical theory, Planck's quantum hypothesis, Planck's radiation law, quantitative treatment of photo-electric effect and Compton scattering, Heisenberg's uncertainty principle, Gamma ray microscope thought experiment, position - momentum uncertainty, consequences of uncertainty principle.

Unit – II **(9 Hours)**

The Schrodinger Equation: The Schrodinger equation in one dimension, statistical interpretation of wave function, probability and probability current densities. Normalization, conditions for physical acceptability of wave functions with examples, position and momentum operators and their expectation values. Commutator of position and momentum operators

Unit – III **(9 Hours)**

Time Independent Schrodinger Equation: Demonstration of separation of variable method for time independent Schrodinger equation: Free particle wave function, wave packets, application to energy eigen values and stationary states for particle in a box problem. Reflection and transmission across a step and rectangular potential barrier

Unit - IV **(9 Hours)**

Atomic Physics: Beyond the Bohr's Quantum Model: Sommerfeld theory of elliptical orbits; Hydrogen atom energy levels and spectra, emission and absorption spectra; Correspondence principle; X-rays: Method of production, Continuous and Characteristic X-rays, Moseley's law.

Lasers: Lifetime of excited states, natural and Doppler width of spectral lines, emission (spontaneous and stimulated) and absorption processes, Einstein's A and B coefficients, principle of detailed balancing, metastable states, components of a laser and lasing action, working principle of a 4 level laser, e.g. He-Ne lasers; qualitative idea of X-ray free electron lasers.

Unit - V **(9 Hours)**

Basic Properties of Nuclei: Introduction (notation, a basic idea about nuclear size, mass, angular momentum, spin, parity, isospin), N-Z graph, nuclear binding energy, semi-empirical mass formula, and basic idea about the nuclear force and meson theory.

Radioactivity: Law of radioactivity and secular equilibrium.

Accelerators: Accelerator facility available in India: Van-de Graaff generator (Tandem accelerator), linear accelerator, cyclotron (principle, construction, working, advantages and disadvantages), discovery of new elements of the periodic table

References:

Essential Readings:

1) Concepts of Modern Physics, A. Beiser, 2002, McGraw-Hill.
2) Modern Physics, R. A. Serway, C. J. Moses and C. A. Moyer, 2012, Thomson Brooks Cole, Cengage.
3) Schaum's Outline of Modern Physics, R. Gautreau and W. Savin, 2020, McGraw Hill LLC

4) Modern Physics for Scientists and Engineers, S. T. Thornton Rex, 4th edition, 2013, Cengage Learning.
5) Introduction to Modern Physics, F. K. Richtmyer, E. H. Kennard and J. N. Cooper, 2002, Tata McGraw Hill.
6) Physics for scientists and Engineers with Modern Physics, Jewett and Serway, 2010.
7) Learning Modern Physics, G. Kaur and G.R. Pickrell, 2014, McGraw Hill.
8) Modern Physics, R. Murugeshan, S Chand & Co. Ltd.
9) Schaum's Outline of Beginning Physics II | Waves, electromagnetism, Optics and Modern Physics, Alvin Halpern, Erich Erlbach, McGraw Hill.
10) Theory and Problems of Modern Physics, Schaum's outline, R. Gautreau and W. Savin, 2nd edition, Tata McGraw-Hill Publishing Co. Ltd.
11) Quantum Physics, Berkeley Physics, Vol.4. E. H. Wichman, 1971, Tata McGraw-Hill
12) Quantum Mechanics: Theory and Applications, A. Ghatak and S. Lokanathan, 2004, Macmillan Publishers India Limited.
13) Introduction to Quantum Mechanics, D. J. Griffith, 2005, Pearson Education.
14) Concepts of nuclear physics, B. Cohen, 2003, McGraw-Hill Education.
15) Atomic Physics, Ghoshal, 2019, S. Chand Publishing House.
16) Atomic Physics, J. B. Rajam & foreword by Louis De Broglie, 2010, (S. Chand & Co.
17) Nuclear Physics, S. N. Ghoshal, S. Chand Publishers.
18) Physics of Atoms and Molecules, B. H. Bransden and C. J. Jochain, 2nd edition, Pearson
19) Atomic and Molecular Physics, Rajkumar, RBSA Publishers.
20) Atoms, Molecules and Photons, W. Demtroder, 2nd edition, 2010, Springer.
21) Introducing Nuclear Physics, K. S. Krane, 2008, Wiley India.

Additional Readings:

1) Basic Atomic & Molecular Spectroscopy, J. M. Hollas (Royal Society of Chemistry)
2) Molecular Spectra and Molecular Structure, G. Herzberg.
3) Basic Ideas and Concepts in Nuclear Physics: An Introductory Approach (Series in Fundamental and Applied Nuclear Physics), K. Heyde (Institute of Physics Publishing Third Edition.
4) Nuclear Physics: Principles and applications, J. Lilley, 2006, Wiley.
5) Schaum's Outline of Modern Physics, 1999, McGraw-Hill Education.
6) Atomic and molecular Physics, R. Kumar, 2013, Campus Book Int.
7) The Fundamentals of Atomic and Molecular Physics (Undergraduate Lecture Notes in Physics), 2013, Springer.
8) Six Ideas that Shaped Physics: Particles Behave like Waves, T. A. Moore, 2003, McGraw Hill.
9) Thirty years that shook physics: The story of quantum theory, G. Gamow, Garden City, NY: Doubleday, 1966.

PRACTICAL COMPONENT

(15 Weeks with 2 hours of laboratory session per week)

Mandatory activity:

- Sessions on the review of experimental data analysis, sources of error and their estimation in detail, writing of scientific laboratory reports including proper reporting of errors.
- Application to the specific experiments done in the lab
- Familiarization with Schuster`s focusing; determination of angle of prism.

At least five experiments to be performed from the following list

1) Measurement of Planck's constant using black body radiation and photo-detector
2) Photo-electric effect: photo current versus intensity and wavelength of light, maximum energy of photo-electrons versus frequency of light
3) To determine the work function of material of filament of directly heated vacuum diode.
4) To determine the Planck's constant using LEDs of at least 4 different colours.
5) To determine the wavelength of the H-alpha emission line of Hydrogen atoms.
6) To determine the ionization potential of mercury.
7) To determine the value of e/m by (a) Magnetic focusing or (b) Bar magnet.
8) To show the tunneling effect in tunnel diodes using I-V characteristics.
9) One innovative experiment designed by the teacher relevant to the syllabus.

References for laboratory work:

1) Advanced Practical Physics for students, B. L. Flint and H. T. Worsnop, 1971, Asia Publishing House.
2) A Text Book of Practical Physics, I. Prakash and Ramakrishna, 11th edition, 2011, Kitab Mahal.
3) Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th edition, reprinted, 1985, Heinemann Educational Publishers.
4) A Laboratory Manual of Physics for Undergraduate Classes, D. P. Khandelwal, 1985, Vani Publisher.
5) B.Sc. Practical Physics, H. Singh, S. Chand & Co Ltd.
6) B.Sc. Practical Physics, G. Sanon, R. Chand and Co.

DISCIPLINE SPECIFIC CORE COURSE – DSC - 11: SOLID STATE PHYSICS

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical		
Solid State Physics DSC – 11	**4**	**3**	**0**	**1**	Class XII Pass with PCM	Studied 'Thermal Physics, Electricity & Magnetism' and Mathematical Physics-I,II & III

LEARNING OBJECTIVES

This course introduces the basic concepts and principles required to understand the various properties exhibited by condensed matter, especially solids. It enables the students to appreciate how the interesting and wonderful properties exhibited by matter depend upon the arrangement of its atomic and molecular constituents. The gained knowledge helps to solve problems in solid state physics using relevant mathematical tools. It also communicates the importance of solid- state physics in modern society.

LEARNING OUTCOMES

On successful completion of the module students should be able to,

- Elucidate the concept of lattice, crystals and symmetry operations
- Understand elementary lattice dynamics and its influence on the properties of materials
- Describe the origin of energy bands, and their influence on electronic behaviour
- Explain the origin of dia-, para-, and ferro-magnetic properties of solids
- Explain the origin of the dielectric properties exhibited by solids and the concept of polarizability
- Understand the basics of superconductivity
- In the laboratory students will carry out experiments based on the theory that they have learned to measure the magnetic susceptibility, dielectric constant, trace hysteresis loop. They will also employ to four probe methods to measure electrical conductivity and the hall set up to determine the hall coefficient of a semiconductor

SYLLABUS OF DSC - 11

THEORY COMPONENT

Unit – I - Crystal Structure **(10 Hours)**

Classification of solids as amorphous and crystalline materials, basic understanding of bonding in crystals, closed packed structure and packing fractions, lattice translation vectors, lattice with a basis, types of lattices, unit cell, symmetry elements, crystal planes and Miller indices, reciprocal lattice and Ewald's construction (geometrical), Brillouin Zones, Diffraction of X-rays: single crystal and powder method. Bragg's Law

Unit – II - Elementary band theory **(6 Hours)**

Brief discussion on free electron model, success and failure of free electron model, Kronig-Penney model, band gap, direct and indirect band gap, effective mass, concept of mobility, Hall effect (Semiconductor).

Unit – III - Elementary Lattice Dynamics (10 Hours)
Lattice Vibrations and Phonons: Linear monoatomic and diatomic chains, acoustic and optical phonons, Dulong and Petit's Law, Einstein and Debye theories of specific heat of solids. T^3 law

Unit – IV - Magnetic Properties of Matter (9 Hours)
Dia-, Para-, Ferri- and Ferromagnetic Materials, Classical Langevin Theory of dia– and para-magnetism, Weiss's Theory of Ferromagnetism and Ferromagnetic Domains, Curie's law, B-H Curve, hysteresis and energy loss, soft and hard material

Unit – V - Dielectric Properties of Materials (7 Hours)
Polarization, local electric field in solids, depolarization field, electric susceptibility, polarizability, Clausius Mossotti equation, classical theory of electronic polarizability, AC electronic polarizability, normal and anomalous dispersion, complex dielectric constant, basic idea of ferroelectricity and PE Hysteresis loop.

Unit – VI – Superconductivity (3 Hours)
Experimental results, critical temperature, critical magnetic field, Meissner effect, Type I and type II superconductors

References:
Essential Readings:

1) Introduction to Solid State Physics, Charles Kittel, 8th edition, 2004, Wiley India Pvt. Ltd.
2) Elements of Solid State Physics, J. P. Srivastava, 2nd edition, 2006, Prentice-Hall of India.
3) Introduction to Solids, Leonid V. Azaroff, 2004, Tata Mc-Graw Hill.
4) Solid State Physics, N. W. Ashcroft and N. D. Mermin, 1976, Cengage Learning.
5) Solid-state Physics, H. Ibach and H. Luth, 2009, Springer

Additional Readings:

1) Elementary Solid State Physics, M. Ali Omar, 2006, Pearson
2) Solid State Physics, R. John, 2014, McGraw Hill
3) Solid State Physics, M. A. Wahab, 2011, Narosa Publications

PRACTICAL COMPONENT

(15 Weeks with 2 hours of laboratory session per week)

- Sessions on the construction and use of specific measurement instruments and experimental apparatus used in the solid state physics laboratory, including necessary precautions.
- Sessions on the review of experimental data analysis, sources of error and their estimation in detail, writing of scientific laboratory reports including proper reporting of errors.
- Application to the specific experiments done in the laboratory.

At least four experiments to be performed from the following list

1) Measurement of susceptibility of paramagnetic solution (Quinck's tube method).
2) To measure the magnetic susceptibility of solids.
3) To study the dielectric constant of a material/s (solid/liquid) as a function of temperature and frequency.
4) To determine the complex dielectric constant and plasma frequency of a metal using Surface Plasmon Resonance (SPR) technique.
5) To determine the refractive index of a dielectric material using SPR technique.
6) To study the PE Hysteresis loop of a ferroelectric crystal.
7) To draw the BH curve of iron (Fe) using solenoid and determine the energy loss from hysteresis loop.
8) To measure the resistivity of a semiconductor (Ge) with temperature (up to 150^{o}C) by four-probe method and determine its band gap.
9) To determine the Hall coefficient of a semiconductor sample.
10) Analysis of X-ray diffraction data in terms of unit cell parameters and estimation of particle size.
11) To study magnetoresistance in a semiconductor with magnetic field

References for laboratory work:

1) Advanced Practical Physics for students, B. L. Flint and H. T. Worsnop, 1971, Asia Publishing House.
2) A Text Book of Practical Physics, I. Prakash and Ramakrishna, 11th edition, 2011, Kitab Mahal
3) Elements of Solid State Physics, J. P. Srivastava, 2nd edition, 2006, Prentice-Hall of India
4) Practical Physics, G. L. Squires, 4th edition, 2015, Cambridge University Press.
5) Practical Physics, C. L. Arora, 19th edition, 2015, S. Chand

DISCIPLINE SPECIFIC CORE COURSE – DSC - 12: ANALOG ELECTRONICS

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical		
Analog Electronics DSC – 12	**4**	**2**	**0**	**2**	Class XII Pass with PCM	Studied 'Electrical Circuit Analysis'

LEARNING OBJECTIVES

This course introduces the concept of semiconductor devices and their analog applications. It also emphasizes on understanding of amplifiers, oscillators, operational amplifier and their applications.

LEARNING OUTCOMES

At the end of this course, the following concepts will be learnt.

- To learn about diodes and its uses in rectification
- To gain an insight into working principle of photodiodes, solar cells, LED and zener diode as voltage regulator
- To gain an understanding of construction and working principle of bipolar junction transistors (BJTs), characteristics of different configurations, biasing and analysis of transistor amplifier
- To be able to design and understand use of different types of oscillators
- To learn the fundamentals of operation amplifiers and understand their operations to compare, add, or subtract two or more signals and to differentiate or integrate signals etc.

In the laboratory course, the students will be able to study characteristics of various diodes and BJT. They will be able to design amplifiers, and oscillators. Also different applications using Op-Amp will be designed.

SYLLABUS OF DSC - 12

THEORY COMPONENT

Unit – I - Two-terminal devices and their applications (5 Hours)

IV characteristics of a diode and its application as rectifier (half-wave and full wave rectifier), IV characteristics of a zener diode and its use as voltage regulator, principle, structure and characteristics of (1) LED, (2) Photodiode and (3) Solar Cell

Unit – II - Bipolar junction transistors (4 Hours)

n-p-n and p-n-p transistors, IV characteristics of CB and CE configurations, active, cut-off and saturation regions, current gains α and β, relations between α and β, physical mechanism of current flow

Unit – III – Amplifiers and sinusoidal oscillators (11 Hours)

Load line analysis of transistor, DC load line and Q-point, fixed bias and voltage divider bias,

transistor as 2-port network, h-parameter equivalent circuit of a transistor, analysis of a single-stage CE amplifier using hybrid model (input and output impedance, current and voltage gain)
Sinusoidal Oscillators: General idea of positive and negative feedback, Barkhausen's criterion for self-sustained oscillations, RC phase shift oscillator, determination of frequency, Hartley and Colpitts oscillators

Unit – IV - Operational Amplifiers (Black Box approach) (10 Hours)
Characteristics of an ideal and practical Op-Amp (IC 741), open-loop and closed-loop gain, frequency response, CMRR, slew rate and concept of virtual ground
Applications of Op-Amps: (1) Inverting and non-inverting amplifiers, (2) Adder, (3) Subtractor, (4) Differentiator, (5) Integrator, (6) Comparator and Zero crossing detector (7) Wein bridge oscillator

References:
Essential Readings:

1) Integrated Electronics, J. Millman and C. C. Halkias, 1991, Tata Mc-Graw Hill
2) Electronics: Fundamentals and Applications, J. D. Ryder, 2004, Prentice Hall
3) Linear Integrated Circuit, R. A. Gayakwad, 4th edition, 2000, Prentice Hall
4) Microelectronic circuits, A. S. Sedra, K. C. Smith and A. N. Chandorkar, 6th edition, 2014, Oxford University Press.
5) Semiconductor Devices: Physics and Technology, S. M. Sze, 2nd edition, 2002, Wiley India
6) Electronic Principles, A. Malvino, D. J. Bates, 7th edition, 2018, Tata Mc-Graw Hill Education.
7) Electronic Devices and circuit Theory, R. L. Boylestad and L. D. Nashelsky, 2009, Pearson

Additional Readings:

1) Learning Electronic Devices and circuits, S. Salivahanan and N. S. Kumar, 3rd edition, 2012, Tata Mc-Graw Hill
2) Microelectronic Circuits, M. H. Rashid, 2nd edition, Cengage Learning
3) Microelectronic Devices and Circuits, D. A. Bell, 5th edition, 2015, Oxford University Press
4) Basic Electronics: Principles and Applications, C. Saha, A. Halder and D. Ganguli, 1st edition, 2018, Cambridge University Press
5) Solid State Electronic Devices, B. G.Streetman and S. K. Banerjee, 6th edition, 2009, PHI

PRACTICAL COMPONENT

(15 Weeks with 4 hours of laboratory session per week)

- Session on the construction and use of specific analogue devices and experimental apparatuses used in the lab, including necessary precautions
- Sessions on the review of experimental data analysis, sources of error and their estimation in detail, writing of scientific laboratory reports including proper reporting of errors.
- Application to the specific experiments done in the lab.

At least six experiments to be performed from the following list

1) To study the V-I characteristics of a Zener diode and its use as voltage regulator.
2) Study of V-I and power curves of solar cells, and find maximum power point and efficiency.
3) To study the characteristics of a Bipolar Junction Transistor in CE configuration.
4) To design a CE transistor amplifier of a given gain (mid-gain) using voltage divider bias.
5) To design a Wien bridge oscillator for given frequency using an op-amp.
6) To design an inverting amplifier using Op-amp (741, 351) for dc voltage of given gain
7) To design inverting amplifier using Op-amp (741, 351) and study its frequency response
8) To design non-inverting amplifier using Op-amp (741, 351) and study frequency response
9) To add two dc voltages using Op-amp in inverting and non-inverting mode
10) To study the zero-crossing detector and comparator
11) To investigate the use of an op-amp as an integrator
12) To investigate the use of an op-amp as a differentiator.

References for laboratory work:

1) Basic Electronics: A text lab manual, P. B. Zbar, A. P. Malvino and M. A. Miller, 1994, Mc- Graw Hill
2) Student Manual for The Art of Electronics, T. C. Hayes and P. Horowitz

DISCIPLINE SPECIFIC ELECTIVE COURSE – DSE 3: ADVANCED MATHEMATICAL PHYSICS I

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical		
Advanced Mathematical Physics I DSE – 3	**4**	**3**	**1**	**0**	Class XII Pass with PCM	Studied DSC 'Mathematical Physics I, II & Physics III'

LEARNING OBJECTIVES

The objective of the course is to impart the concept of generalized mathematical constructs in terms of algebraic structures mainly vector spaces. Linear algebra studies linear vector spaces, linear transformations, and the matrices and is an important mathematical tool with applications in physics, engineering, machine learning, economics and even life sciences and social sciences. This course is intended to provide a solid foundation in linear algebra as used by physicists and has direct applications in classical and quantum mechanics.

LEARNING OUTCOMES

After completing this course, students will be able to,

- Understand algebraic structures in n-dimension and basic properties of the linear vector spaces.
- Understand the concept of dual spaces and inner product spaces.
- Represent linear transformations as matrices and understand basic properties of matrices.
- Determine the eigenvalues and eigenvectors of matrices and diagonalise the matrices.
- Determine orthogonal basis for a vector space using Gram-Schmidt procedure.

SYLLABUS OF DSE - 3

THEORY COMPONENT

Unit – I **(13 Hours)**

Vector Spaces as Algebraic Structures: Definition and examples of groups, rings, fields and vector spaces. Real and Complex fields, Use of ket notation $|\alpha>$ for vectors. Subspaces, Linear combination of vectors, Linear dependence and independence of vectors, span of a subset of vectors, Bases and dimension of vector space, direct sum of spaces, representation of vectors as column vectors with R^n as example.

Inner Product Spaces: Inner product of vectors ($<\alpha|\beta>$) and norm of a vector, euclidean spaces and unitary spaces. Cauchy-Schwartz inequality, concept of length and distance, metric spaces. Hilbert Space (definition only). Linear functional, dual space, dual basis ($<\alpha|$ notation); Orthogonality of vectors, orthonormal basis, Gram-Schmidt procedure to construct an orthonormal basis.

Unit – II **(8 Hours)**

Linear Transformation: Linear Mappings and Examples, Homomorphism and Isomorphism of vector space, rank and nullity of a linear mapping, Range space and Kernel (null space) of a linear mapping, non-singular transformations, Nilpotent and Idempotent Transformations.

Unit – III **(10 Hours)**

Matrices as Representations: Matrix Representation of a Linear transformations, composition of linear transformations and matrix multiplication, linear algebra. Algebra of matrices, determinant and trace of matrix and their properties. Non-singular matrices. Rank of a matrix and invertibility of matrices. Direct sum and direct product of matrices.

Change of basis transformation, similar matrices, trace and determinant as invariants of basis change. Transpose and adjoint of a linear transformation, self-adjoint operators. Symmetric and hermitian matrices. Preservation of norms by orthogonal and unitary transformations.

Unit – IV **(14 Hours)**

Eigen-values and Eigenvectors: Eigen-values and eigen vectors of a transformation and corresponding matrix representation. Cayley- Hamilton Theorem (Statement only), its applications like inverse and powers of a matrix. Eigensystems of hermitian and unitary matrices. Diagonalization of matrices. Normal matrices. Simultaneous diagonalizability of two matrices.

Use of Matrices in Solving Coupled Linear first order ordinary differential equations with constant coefficients. Minimal Polynomial, Functions of a Matrix.

References:

Essential Readings:

1) Mathematical Methods for Physicists, G. Arfken, H. Weber and F. E. Harris, 7th edition, 2012, Elsevier
2) Introduction to Matrices and Linear Transformations, D. T. Finkbeiner, 2011, Dover Publications
3) Schaum's Outline of Theory and Problems of Linear Algebra, S. Lipschutz and M. Lipson, 2017, McGraw Hill Education
4) Linear Algebra, S. H. Friedberg, A. J. Insel, and L. E. Spence, 2022, Pearson Education
5) Linear Algebra and Applications, D. C. Lay, 2002, Pearson Education India.

Additional Readings:

1) Elementary Linear Algebra with Supplemental Applications, H. Anton and C. Rorres, 2016, Wiley Student Edition
2) A Physicist's Introduction to Algebraic Structures: Vector Spaces, Groups, Topological Spaces and More, P. B. Pal, 2019, Cambridge University Press
3) Matrices and Tensors in Physics: A.W. Joshi, 2017, New Age International Pvt. Ltd.
4) An Introduction to Linear Algebra and Tensors, M. A. Akivis, V. V. Goldberg, Richard and Silverman, 2012, Dover Publications
5) Vector Spaces and Matrices in Physics, M. C. Jain, 2000, Narosa
6) Mathematical Methods for Physics and Engineering, K. F. Riley and M. P. Hobson, 2018, Cambridge University Press

DISCIPLINE SPECIFIC ELECTIVE COURSE – DSE 4: PHYSICS OF DEVICES

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical		
Physics of Devices DSE – 4	**4**	**2**	**0**	**2**	Class XII Pass with PCM	'Mathematical Physics-I', 'Mechanics' and 'Electrical Circuit Analysis'.

LEARNING OBJECTIVES

This paper is based on advanced electronics which covers the devices such as UJT, JFET, MOSFET, CMOS etc. Process of IC fabrication is discussed in detail.

LEARNING OUTCOMES

At the end of this course, students will be able to,

- Develop the basic knowledge of semiconductor device physics and electronic circuits along with the practical technological considerations and applications.
- Understand the operation of devices such as UJT, JFET, MOS, various bias circuits of MOSFET, basics of CMOS and charge coupled devices.
- Learn to analyse MOSFET circuits and develop an understanding of MOSFET I-V characteristics and the allowed frequency limits.
- Learn the IC fabrication technology involving the process of diffusion, implantation, oxidation and etching with an emphasis on photolithography and electron-lithography
- Apply concepts for the regulation of power supply by developing an understanding of various kinds of RC filters classified on the basis of allowed range of frequencies.
- Learn to use semiconductor diode as a clipper and clamper circuit

SYLLABUS OF DSE - 4

THEORY COMPONENT

Unit – I **(7 Hours)**

Semiconductors (P and N type), Energy band diagram, Barrier formation in pn junction diode, Derivation of barrier potential and barrier width, storage and depletion capacitances, current flow mechanism in forward and reverse bias junction, current components in a transistor, tunnel diode, metal-semiconductor contacts, Schottky junction and Ohmic junction

Unit – II **(6 Hours)**

Diode as clipper and clamper circuits, RC Filters: Passive-Low pass and High pass filters, Active (1st order Butterworth)-Low Pass, High Pass, Band Pass, and band reject Filters.

Unit – III **(11 Hours)**

Characteristic and small-signal equivalent circuits of UJT and JFET, introduction to metal oxide semiconductor (MOS) device/MOSFET, MOSFET - their frequency limits, enhancement and depletion mode MOSFETS, basic idea of CMOS and charge coupled devices, importance of power devices: power diode, SCR. Construction and I-V characteristics of DIAC and TRIAC.

Unit – IV **(4 Hours)**

(Basic idea) Basic process flow for IC fabrication, diffusion and implantation of dopants, passivation/oxidation technique for Si, contacts and metallization technique, basic idea of thermal evaporation and sputtering techniques, basic idea of photolithography, electron-lithography, SSI, MSI, LSI, VLSI and USI.

Unit – V **(2 Hours)**

Basic idea about sensors (gas/fire) and piezoelectric transducer

References:

Essential Readings:

1) Physics of Semiconductor Devices, S. M. Sze and K. K. Ng, 3rd edition 2008, John Wiley and Sons
2) Electronic Devices and Circuits, A. Mottershead, 1998, PHI Learning Pvt. Ltd.
3) Electronic communication systems, G. Kennedy, 1999, Tata McGraw Hill.
4) Integrated Electronics, J. Millman and C. C. Halkias, 1991, Tata Mc-Graw Hill.
5) Electronics: Fundamentals and Applications, J. D. Ryder, 2004, Prentice Hall.
6) Solid State Electronic Devices, B. G. Streetman and S. K. Banerjee, 7th edition
7) Power Electronics, M. D. Singh and K. B. Khanchandani, 2006, Tata Mc-Graw Hill

Additional Readings:

1) Op-Amps and Linear Integrated Circuits, R. A. Gayakwad, 4th edition, 2000, PHI Learning Pvt. Ltd
2) Introduction to Measurements and Instrumentation, A. K. Ghosh, 4th edition, 2017, PHI Learning
3) Semiconductor Physics and Devices, D. A. Neamen, 4th edition, 2011, Tata McGraw Hill

PRACTICAL COMPONENT

(15 Weeks with 4 hours of laboratory session per week)

At least six experiments to be performed from the following list

1) To design the active low pass and high pass filters of given specification.
2) To design the active filter (wide band pass and band reject) of given specification.
3) To study the output and transfer characteristics of a JFET.
4) To design a common source JFET amplifier and study its frequency response.
5) To study the output characteristics of a MOSFET.
6) To study the characteristics of a UJT and design a simple relaxation oscillator.
7) To study diode as clipper circuit.
8) To study diode as a clamper circuit.
9) Pattern the given structure on silicon wafer by wet chemical etching.

Suggested extra experiment:

1) Deposition of metallic thin films using thermal evaporation technique.
2) Preparation of a pn junction and study its IV characteristics.

References for laboratory work:

1) Advanced PC based instrumentation; Concepts and Practice, N. Mathivanan, 2007, Prentice-Hall of India
2) Basic Electronics: A text lab manual, P. B. Zbar, A. P. Malvino, M. A. Miller,1994, Mc-Graw Hill
3) Introduction to PSPICE using ORCAD for circuits and Electronics, M. H. Rashid, 2003, PHI Learning.

DISCIPLINE SPECIFIC ELECTIVE COURSE – DSE 5: PHYSICS OF EARTH

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical		
Physics of Earth DSE – 5	**4**	**3**	**1**	**0**	Class XII Pass with PCM	NIL

LEARNING OBJECTIVES

This course familiarizes the students with the origin of earth in the solar system and various processes occurring in atmosphere, oceans and earth's internal structure.

LEARNING OUTCOMES

At the end of this course student will be able to,

- Have an overview of structure of the earth as well as various dynamical processes occurring on it.
- Develop an understanding of evolution of the earth.
- Apply physical principles of elasticity and elastic wave propagation to understand modern global seismology as a probe of the Earth's internal structure.
- Understand the origin of magnetic field, Geodynamics of earthquakes and the description of seismic sources; a simple but fundamental theory of thermal convection.
- Explore various roles played by water cycle, carbon cycle, nitrogen cycles in maintaining steady state of earth leading to better understanding of the contemporary dilemmas (climate change, bio diversity loss, population growth, etc.) disturbing the Earth.
- Develop the problem solving skills by adding numerical and simulations to clarify the fundamental concepts.

SYLLABUS OF DSE - 5

THEORY COMPONENT

Unit – I **(10 Hours)**

The Earth and the Universe:

a) General characteristics and origin of the Universe. The Big Bang Theory. Estimation of age of the Universe and Hubble constant. Formation of Galaxies. Types of galaxies, Milky Way galaxy, Nebular hypothesis, Solar system, The Terrestrial and Jovian planets (Sizes, Acceleration due to gravity, Obliquity, Flatness, Eccentricity, Density, Temperature, Pressure, Atmosphere, Moons, Exceptions in trends). Titius-Bode law. Asteroid belt. Asteroids: origin types and examples, Meteorites.

b) Earth in the Solar system, origin, size, shape, mass, density, rotational and revolution parameters and its age. Earth's orbit and spin, the Moon's orbit and spin.

c) Energy and particle fluxes incident on the Earth.

Unit – II **(8 Hours)**

Structure of Earth:

a) Internal structure of Earth: Core, mental, magnetic field. Origin of the Magnetic field. Convection in Earth's core and production of its magnetic field. Dynamo Theory, calculation of magnetic fields, Causes of variation of Magnetic Field and Palaeomagnetism.
b) The Hydrosphere: The oceans, their extent, depth, volume, chemical composition. Ocean circulations. Oceanic current system and effect of Coriolis forces.
c) The Cryosphere: Polar caps and ice sheets. Mountain glaciers, permafrost.

Unit – III **(8 Hours)**

Dynamical Processes:

a) The Solid Earth: Concept of plate tectonics; types of plate movements, hotspots; sea-floor spreading and continental drift.
b) Earthquake and earthquake belts. Types and properties of Seismic waves, Richter scale, geophones.
c) Volcanoes: types, products and distribution.
d) Concepts of eustasy, air-sea interaction; wave erosion and beach processes. Tides. Tsunamis.

Unit – IV **(10 Hours)**

The Atmosphere

a) The Atmosphere: Features of different layers, variation of temperature with altitude; Dry, moist and environmental lapse rate, variation of density and pressure with altitude, Types of clouds and formation.
b) The Atmosphere: Atmospheric circulation. Causes of Atmospheric circulation, Formation of three cells, Easterlies and Westerlies, and ICTZ, Weather and climatic changes. Earth's heat budget. Cyclones and anti-cyclones, tropical storms, hurricanes and tornadoes.
c) Climate: Earth's temperature and greenhouse effect. Paleoclimate and recent climate changes. The Indian monsoon system.

Unit – V **(9 Hours)**

Disturbing the Earth – Contemporary dilemmas

a) Hydrosphere: Fresh water depletion.
b) Geosphere: Chemical effluents, nuclear waste.
c) Biosphere: Biodiversity loss. Deforestation. Water cycle, Carbon cycle. The role of cycles in maintaining a steady state.
d) Air Pollution: Types of air pollutants, Effects on atmosphere and living organisms. Ozone Hole.

References:

Essential Readings:

1) Planetary Surface Processes, H. J. Melosh, 2011, Cambridge University Press.
2) Holme's Principles of Physical Geology, 1992, Chapman & Hall.
3) Planet Earth, Cosmology, Geology and the Evolution of Life and Environment, C. Emiliani, 1992, Cambridge University Press.
4) Physics of the Earth, F. D. Stacey, P. M. Davis, 2008, Cambridge University Press.
5) Environmental Physics: Sustainable Energy and Climate Change, E. Boecker and R.V. Grondelle, 3rd edition, 2011, Wiley, UK
6) Atmospheric Remote Sensing (Principles and Applications, Editors – S. Tiwari and A. K.

Singh, Chapter-1 (Composition and thermal structure of the Earth's atmosphere, by S. K. Dhaka and V. Kumar), 1st edition, Elsevier

Additional Readings:

1) The Blue Planet: An Introduction to Earth System Science, B. J. Skinner, S. C. Portere, 1994, John Wiley & Sons.
2) Consider a Spherical Cow: A course in environmental problem solving, J. Harte, University Science Books.
3) Fundamentals of Geophysics, W. Lowrie, 1997, Cambridge University Press.
4) The Solid Earth: An Introduction to Global Geophysics, C. M. R. Fowler, 1990, Cambridge University Press.
5) Climate Change: A Very Short Introduction, M. Maslin, 3rd edition, 2014, Oxford University Press.
6) The Atmosphere: A Very Short Introduction, P. I. Palmer, 2017, Oxford University Press.
7) IGNOU Study material: PHE 15 Astronomy and Astrophysics Block 2

Category II

Physical Science Courses
with Physics discipline as one of the Core Disciplines

(B. Sc. Physical Science with Physics as Major discipline)

DISCIPLINE SPECIFIC CORE COURSE – PHYSICS DSC 4: WAVES AND OPTICS

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical		
Waves and Optics PHYSICS DSC – 4	**4**	**2**	**0**	**2**	Class XII Pass with Science	Studied Mathematical Physics-I, Mechanics

LEARNING OBJECTIVES

This is a core course in Physics curriculum that begins with explaining ideas of superposition of harmonic oscillations leading to physics of travelling and standing waves. The course also provides an in depth understanding of wave phenomena of light, namely, interference and diffraction with emphasis on practical applications of the same.

LEARNING OUTCOMES

On successfully completing the requirements of this course, the students will have the skill and knowledge to,

- Understand simple harmonic oscillation and superposition principle.
- Understand superposition of a range of collinear and mutually perpendicular simple harmonic motions and their applications.
- Understand concept of normal modes in stationary waves: their frequencies and configurations.
- Understand interference as superposition of waves from coherent sources derived from same parent source.
- Demonstrate understanding of interference experiments: Young's double slit, Fresnel's biprism, Llyod's mirror, Newton's rings
- Demonstrate basic concepts of diffraction: Superposition of wavelets diffracted from apertures
- Understand Fraunhoffer diffraction from apertures: single slit, double slit, grating
- Demonstrate fundamental understanding of Fresnel diffraction: Half period zones, diffraction of different apertures
- Laboratory course is designed to understand the principles of measurement and skills in experimental designs.

SYLLABUS OF PHYSICS DSC – 4

THEORY COMPONENT

Unit – I **(11 Hours)**

Superposition of collinear harmonic oscillations: Simple harmonic motion (SHM); linearity and superposition principle; superposition of two collinear oscillations having (1) equal frequencies and (2) different frequencies (beats).

Superposition of two perpendicular harmonic oscillations: Graphical and analytical methods.

Lissajous figures with equal and unequal frequencies and their uses
Superposition of two harmonic Waves: Standing (stationary) waves in a string; normal modes of stretched strings

Unit – II **(8 Hours)**

Interference: Division of amplitude and division of wavefront; Young's double slit experiment: width and shape of fringes; Fresnel's biprism; Lloyd's mirror; Phase change on reflection: Stokes' treatment; Interference in thin films: parallel and wedge-shaped films. Fringes of equal inclination (Haidinger fringes); Fringes of equal thickness (Fizeau Fringes); Newton's rings: Measurement of wavelength and refractive index

Unit – III **(11 Hours)**

Diffraction:
Fraunhofer diffraction: Single slit, double slit, diffraction grating
Fresnel diffraction: Fresnel's assumptions. Fresnel's half-period zones for plane wave. Explanation of rectilinear propagation of light; Fresnel's diffraction pattern of a straight edge, a slit and a wire using half-period zone analysis

References:

Essential Readings:

1) Vibrations and Waves, A. P. French, 1st edition, 2003, CRC press.
2) The Physics of Waves and Oscillations, N. K. Bajaj, 1998, Tata McGraw Hill.
3) Waves: Berkeley Physics Course, vol. 3, Francis Crawford, 2007, Tata McGraw-Hill.
4) Fundamental of Optics, A. Kumar, H. R. Gulati and D. R. Khanna, 2011, R. Chand Publications.
5) Optics, A. Ghatak, 6th edition, 2017, McGraw-Hill Education, New Delhi
6) The Physics of Vibrations and Waves, H. J. Pain, 2013, John Wiley and Sons.

Additional Readings:

1) Principles of Optics, M. Born and E. Wolf, 7th edition, 1999, Pergamon Press.
2) Optics, E. Hecht, 4th edition, 2014, Pearson Education.
3) Fundamentals of Optics, F. A. Jenkins and H. E. White, 1981, McGraw-Hill

PRACTICAL COMPONENT

(15 Weeks with 4 hours of laboratory session per week)

At least 7 experiments to be performed from the following list

1) To determine the frequency of an electric tuning fork by Melde's experiment and verify λ^2–T law.
2) To study Lissajous figures.
3) Familiarization with Schuster`s focusing and determination of angle of prism.
4) To determine refractive index of the material of a prism using sodium light.
5) To determine the dispersive power and Cauchy's constants of the material of a prism using mercury light.
6) To determine wavelength of sodium light using Fresnel biprism.
7) To determine wavelength of sodium light using Newton's rings.
8) To determine the thickness of a thin paper by measuring the width of the interference fringes produced by a wedge-shaped film.

9) To determine wavelength of (1) Na source and (2) spectral lines of Hg source using plane diffraction grating.
10) To determine dispersive power and resolving power of a plane diffraction grating.

References for laboratory work:

1) Advanced Practical Physics for students, B. L. Flint and H. T. Worsnop, 1971, Asia Publishing House
2) A Text Book of Practical Physics, I. Prakash and Ramakrishna, 11th edition, 2011, Kitab Mahal
3) Advanced level Physics Practicals, M. Nelson and J. M. Ogborn, 4th edition, reprinted 1985, Heinemann Educational Publishers
4) A Laboratory Manual of Physics for undergraduate classes, D. P. Khandelwal, 1985, Vani Pub.
5) B.Sc. Practical Physics, G. Sanon, 2019, R. Chand & Co

DISCIPLINE SPECIFIC ELECTIVE COURSE – PHYSICS DSE 14a: INTRODUCTION TO NUMERICAL METHODS

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical		
Introduction to Numerical Methods PHYSICS DSE 14a	**4**	**2**	**0**	**2**	Class XII Pass with Science	Elementary calculus

LEARNING OBJECTIVES

The main objective of this course is to introduce the students to the field of numerical analysis enabling them to solve a wide range of physics problems. The skills developed during the course will prepare them not only for doing fundamental and applied research but also for a wide variety of careers.

LEARNING OUTCOMES

After completing this course, student will be able to,

- Analyse a physics problem, establish the mathematical model and determine the appropriate numerical techniques to solve it.
- Derive numerical methods for various mathematical tasks such as root finding, interpolation, least squares fitting, numerical differentiation, numerical integration, and solution of initial value problems.
- Analyse and evaluate the accuracy of the numerical methods learned.

In the laboratory course, the students will learn to implement these numerical methods in Python and develop codes to solve various physics problems and interpret the results.

SYLLABUS OF PHYSICS DSE – 14a
THEORY COMPONENT

Unit – I **(7 Hours)**

Approximation and errors in computing: Introduction to numerical computation, Taylor's expansion and mean value theorem; Floating point computation, overflow and underflow; IEEE single and double precision format; Rounding and truncation error, absolute and relative error, error propagation.

Solutions of algebraic and transcendental equations: Basic idea of iteration method, Bisection method, Secant method, Newton Raphson method; comparison of order of convergence.

Unit – II **(7 hours)**

Interpolation: Interpolation and Lagrange polynomial, divided differences, Newton divided-difference form of the interpolating polynomial with equally spaced nodes. Theoretical error in interpolation.

Least Squares Approximation: Least squares linear regression, Least squares regression for exponential and power functions by taking logarithm.

Unit - III **(8 Hours)**

Numerical Differentiation: Using finite difference to approximate derivatives of first and second order using Taylor series and error in this approximation.

Numerical Integration: Newton Cotes quadrature methods; derivation of Trapezoidal and Simpson (1/3 and 3/8) rules from Lagrange interpolating polynomial; error and degree of precision of a quadrature formula; composite formulae for trapezoidal and Simpson methods; Gauss Legendre quadrature method.

Unit - IV **(8 Hours)**

Initial Value Problems: Solution of initial value problems by Euler, modified Euler and Runge Kutta (RK2, RK4) methods; local and global errors, comparison of errors in the Euler and RK methods, system of first order differential equations. Solving higher order initial value problems by converting them into a system of first order equations.

References:

Essential Readings:

1) Introduction to Numerical Analysis, S. S. Sastry, 5th edition, 2012, PHI Learning Pvt. Ltd.
2) Elementary Numerical Analysis, K. E. Atkinson, 3rd edition, 2007, Wiley India Edition.
3) Numerical methods for scientific and engineering computation, M. K. Jain, S. R. K. Iyenger and R. K. Jain, 2012, New Age Publishers
4) A Friendly Introduction to Numerical Analysis, B. Bradie, 2007, Pearson India

Additional Readings:

1) Numerical Recipes: The art of scientific computing, W. H. Press, S. A. Teukolsky and W. Vetterling, 3rd edition, 2007, Cambridge University Press
2) Numerical Methods for Scientists and Engineers, R. W. Hamming, 1987, Dover Publications
3) Applied numerical analysis, C. F. Gerald and P. O. Wheatley, 2007, Pearson Education
4) Numerical Analysis, R. L. Burden and J. D. Faires, 2011, Brooks/Cole, Cengage Learning
5) Numerical Methods, V. N. Vedamurthy and N. Ch. S.N. Iyengar, 2011, Vikas Publishing House

PRACTICAL COMPONENT

(15 Weeks with 4 hours of laboratory session per week)

The aim of this Lab is not just to teach computer programming and numerical analysis but to emphasize its role in solving problems in Physics.

- Assessment is to be done not only on the programming but also on the basis of formulating the problem.
- The list of recommended programs is suggestive only. Students should be encouraged to do more physics applications. Emphasis should be given to formulate a physics problem as mathematical one and solve by computational methods.
- The students should be encouraged to develop and present an independent project.
- **At least 12 programs must be attempted (taking two from each unit). The implementation is to be done in Python. Use of scipy inbuilt functions may be encouraged**

Unit 1

Basic Elements of Python: The Python interpreter, the print statement, comments, Python as simple calculator, objects and expressions, variables (numeric, character and sequence types) and assignments, mathematical operators. Strings, Lists, Tuples and Dictionaries, type conversions, input statement, list methods. List mutability, formatting in the print statement.

Control Structures: Conditional operations, ***if, if-else, if-elif-else, while*** and ***for*** Loops, indentation, break and continue, List comprehension. Simple programs for practice like solving quadratic equations, temperature conversion etc.

Functions: Inbuilt functions, user-defined functions, local and global variables, passing functions, modules, importing modules, math module, making new modules. Writing functions to perform simple operations like finding largest of three numbers, listing prime numbers, etc. Use of inbuilt functions to generate pseudo random numbers.

Recommended List of Programs

a) Make a function that takes a number *N* as input and returns the value of factorial of *N*. Use this function to print the number of ways a set of *m* red and *n* blue balls can be arranged.
b) Generate random numbers (integers and floats) in a given range and calculate area and volume of regular shapes with random dimensions.
c) Write functions to convert Cartesian coordinates of a given point to cylindrical and spherical polar coordinates or vice versa.
d) Solve quadratic equations for the three cases of distinct real, double real and complex conjugate roots.

Unit 2

NumPy Fundamentals: Importing *Numpy*, Difference between List and NumPy array, Adding, removing and sorting elements, creating arrays using *ones(), zeros(), random(), arange(), linspace()*. Basic array operations (*sum, max, min, mean, variance*), 2-d arrays, matrix operations, reshaping and transposing arrays, savetxt() and loadtxt().

Plotting with Matplotlib: *matplotlib.pyplot* functions, plotting of functions given in closed form as well as in the form of discrete data and making histograms

Recommended List of Programs

(a) To generate data for coordinates of a projectile and plot the trajectory. Determine the range, maximum height and time of flight for a projectile motion.
(b) To plot the displacement-time and velocity-time graph for the undamped, under damped critically damped and over damped oscillator using *matplotlib* (using given formulae).
(c) To generate array of N random numbers drawn from a given distribution (uniform, binomial, poisson and gaussian) and draw histogram using *matplotlib* for increasing N to verify the distribution.
(d) To approximate the elementary functions (e.g. $\exp(x)$, $\sin(x)$, $\cos(x)$, $\ln(1+x)$, etc.) by a finite number of terms of Taylor's series and discuss the truncation error. To plot the function as well the nth partial sum of its series for various values of *n* on the same graph and visualise the convergence of series.

Unit 3

Root Finding: Implement the algorithms for Bisection, Secant and Newton Raphson methods or their combinations to,

(a) Determine the depth up to which a spherical homogeneous object of given radius and density will sink into a fluid of given density.

(b) Solve transcendental equations like $\alpha = \tan(\alpha)$.
(c) Approximate nth root of a number up to a given number of significant digits.

Unit 4

Interpolation and Least Square Fitting:

a) Given a dataset (x, y) with equidistant x values, prepare the Newton's divided difference table. Generate a tabulated data for an elementary function, approximate it by a polynomial and compare with the true function.
b) Given a dataset (x, y) corresponding to a physics problem, use Lagrange and Newton's forms of interpolating polynomials and compare. Determine the value of y at an intermediate value of x not included in the data set. This may be done with equally spaced and non-equally spaced x-values.
c) Make Python function for least square fitting, use it for fitting given data (*x, y*) and estimate the parameters *a, b* as well as uncertainties in the parameters for the following cases :

i. Linear $(y = ax + b)$
ii. Power law $(y = ax^b)$ and
iii. Exponential $(y = ae^{bx})$

The real data taken in physics lab may be used here.

d) Compare the interpolating polynomial for a given dataset (following a known form e.g. exponential) with the approximation obtained by least square fitting.

Unit 5

Differentiation and Integration:

a) To compute the left, right and central approximations for derivative of a function given in closed form. Plot both the function and derivative on the same graph. Plot (using *matplotlib)* the error as a function of step size on a log-log graph, study the behaviour of the plot as step size decreases and hence discuss the effect of round off error.
b) Use integral definition of error function to compute and plot erf(x) in a given range. Use Trapezoidal, Simpson and Gauss Legendre methods and compare the results for small and large values of x.
c) Verify the degree of precision of each quadrature rule.
d) Approximate the value of π by evaluating the integral $\int_0^\infty \frac{1}{x^2+1} dx$ using Simpson and Gauss Legendre method. More integrals may be evaluated.

Unit 6

Initial Value Problems (IVP):

a) Compare the errors in Euler, RK2 and RK4 by solving a first order IVP with known solution. Reduce the step size to a point where the round off errors takes over.
b) Radioactive decay: With a given number of initial nuclei and decay constant plot the number of nuclei left as a function of time and determine the half life
c) Solve a system of two first order differential equations by Euler, RK2 and RK4 methods. Use it to solve an nth order IVP. Solve a damped free and forced harmonic oscillator problem using this.
d) Solve a physics problem like free fall with air drag or parachute problem using RK method.
e) Obtain the current flowing in a series LCR circuit with constant voltage for a given set of initial conditions.

References for laboratory work:

1) Documentation at the Python home page (https://docs.python.org/3/) and the tutorials there (https://docs.python.org/3/tutorial/).
2) Documentation of NumPy and Matplotlib: https://numpy.org/doc/stable/user/ and https://matplotlib.org/stable/tutorials/
3) Computational Physics, D. Walker, 1st edition, 2015, Scientific International Pvt. Ltd
4) An Introduction to Computational Physics, T. Pang, 2010, Cambridge University Press
5) Python Programming and Numerical Methods - A Guide for Engineers and Scientists, Q. Kong, T. Siauw, A. M. Bayen, 2021, Academic Press

DISCIPLINE SPECIFIC ELECTIVE COURSE – PHYSICS DSE 14b: ANALOG ELECTRONICS

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical		
Analog Electronics PHYSICS DSE – 14b	4	2	0	2	Class XII Pass with Science	NIL

LEARNING OBJECTIVES

This course introduces the concept of semiconductor devices and their analog applications. It also emphasizes on understanding of amplifiers, oscillators, operational amplifier and their applications.

LEARNING OUTCOMES

At the end of this course, the following concepts will be learnt.

- To learn about diodes and its uses in rectification
- To gain an insight into working principle of photodiodes, solar cells, LED and zener diode as voltage regulator
- To gain an understanding of construction and working principle of bipolar junction transistors (BJTs), characteristics of different configurations, biasing and analysis of transistor amplifier
- To be able to design and understand use of different types of oscillators
- To learn the fundamentals of operation amplifiers and understand their operations to compare, add, or subtract two or more signals and to differentiate or integrate signals etc.

In the laboratory course, the students will be able to study characteristics of various diodes and BJT. They will be able to design amplifiers, and oscillators. Also different applications using Op-Amp will be designed.

SYLLABUS OF Physics DSE – 14b

THEORY COMPONENT

Unit – I - Two-terminal devices and their applications (5 Hours)

IV characteristics of a diode and its application as rectifier (half-wave and full wave rectifier), IV characteristics of a zener diode and its use as voltage regulator, principle, structure and characteristics of (1) LED, (2) Photodiode and (3) Solar Cell

Unit – II - Bipolar junction transistors (4 Hours)

n-p-n and p-n-p transistors, IV characteristics of CB and CE configurations, active, cut-off and saturation regions, current gains α and β, relations between α and β, physical mechanism of current flow

Unit – III – Amplifiers and sinusoidal oscillators (11 Hours)

Load line analysis of transistor, DC load line and Q-point, fixed bias and voltage divider bias, transistor as 2-port network, h-parameter equivalent circuit of a transistor, analysis of a

single-stage CE amplifier using hybrid model (input and output impedance, current and voltage gain)
Sinusoidal Oscillators: General idea of positive and negative feedback, Barkhausen's criterion for self-sustained oscillations, RC phase shift oscillator, determination of frequency, Hartley and Colpitts oscillators

Unit – IV - Operational Amplifiers (Black Box approach) (10 Hours)
Characteristics of an ideal and practical Op-Amp (IC 741), open-loop and closed-loop gain, frequency response, CMRR, slew rate and concept of virtual ground
Applications of Op-Amps: (1) Inverting and non-inverting amplifiers, (2) Adder, (3) Subtractor, (4) Differentiator, (5) Integrator, (6) Comparator and Zero crossing detector (7) Wein bridge oscillator

References:
Essential Readings:

1) Integrated Electronics, J. Millman and C. C. Halkias, 1991, Tata Mc-Graw Hill
2) Electronics: Fundamentals and Applications, J. D. Ryder, 2004, Prentice Hall
3) Linear Integrated Circuit, R. A. Gayakwad, 4th edition, 2000, Prentice Hall
4) Microelectronic circuits, A. S. Sedra, K. C. Smith and A. N. Chandorkar, 6th edition, 2014, Oxford University Press.
5) Semiconductor Devices: Physics and Technology, S. M. Sze, 2nd edition, 2002, Wiley India
6) Electronic Principles, A. Malvino, D. J. Bates, 7th edition, 2018, Tata Mc-Graw Hill Education.
7) Electronic Devices and circuit Theory, R. L. Boylestad and L. D. Nashelsky, 2009, Pearson

Additional Readings:

1) Learning Electronic Devices and circuits, S. Salivahanan and N. S. Kumar, 3rd edition, 2012, Tata Mc-Graw Hill
2) Microelectronic Circuits, M. H. Rashid, 2nd edition, Cengage Learning
3) Microelectronic Devices and Circuits, D. A. Bell, 5th edition, 2015, Oxford University Press
4) Basic Electronics: Principles and Applications, C. Saha, A. Halder and D. Ganguli, 1st edition, 2018, Cambridge University Press
5) Solid State Electronic Devices, B. G.Streetman and S. K. Banerjee, 6th edition, 2009, PHI

PRACTICAL COMPONENT

(15 Weeks with 4 hours of laboratory session per week)

- Session on the construction and use of specific analogue devices and experimental apparatuses used in the lab, including necessary precautions
- Sessions on the review of experimental data analysis, sources of error and their estimation in detail, writing of scientific laboratory reports including proper reporting of errors.
- Application to the specific experiments done in the lab.

At least six experiments to be performed from the following list

1) To study the V-I characteristics of a Zener diode and its use as voltage regulator.

2) Study of V-I and power curves of solar cells, and find maximum power point and efficiency.
3) To study the characteristics of a Bipolar Junction Transistor in CE configuration.
4) To design a CE transistor amplifier of a given gain (mid-gain) using voltage divider bias.
5) To design a Wien bridge oscillator for given frequency using an op-amp.
6) To design an inverting amplifier using Op-amp (741, 351) for dc voltage of given gain
7) To design inverting amplifier using Op-amp (741, 351) and study its frequency response
8) To design non-inverting amplifier using Op-amp (741, 351) and study frequency response
9) To add two dc voltages using Op-amp in inverting and non-inverting mode
10) To study the zero-crossing detector and comparator
11) To investigate the use of an op-amp as an integrator
12) To investigate the use of an op-amp as a differentiator.

References for laboratory work:

1) Basic Electronics: A text lab manual, P. B. Zbar, A. P. Malvino and M. A. Miller, 1994, Mc- Graw Hill
2) Student Manual for The Art of Electronics, T. C. Hayes and P. Horowitz

DISCIPLINE SPECIFIC ELECTIVE COURSE – PHYSICS DSE 14c: PHYSICS OF EARTH

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical		
Physics of Earth PHYSICS DSE – 14c	**4**	**3**	**1**	**0**	Class XII Pass with Science	NIL

LEARNING OBJECTIVES

This course familiarizes the students with the origin of earth in the solar system and various processes occurring in atmosphere, oceans and earth's internal structure.

LEARNING OUTCOMES

At the end of this course student will be able to,

- Have an overview of structure of the earth as well as various dynamical processes occurring on it.
- Develop an understanding of evolution of the earth.
- Apply physical principles of elasticity and elastic wave propagation to understand modern global seismology as a probe of the Earth's internal structure.
- Understand the origin of magnetic field, geodynamics of earthquakes and the description of seismic sources; a simple but fundamental theory of thermal convection; the distinctive rheological behaviour of the upper mantle and its top.
- Explore various roles played by water cycle, carbon cycle, nitrogen cycles in maintaining steady state of earth leading to better understanding of the contemporary dilemmas (climate change, bio diversity loss, population growth, etc.) disturbing the Earth
- Develop the problem solving skills by adding numerical and simulations to clarify the fundamental concepts.

SYLLABUS OF DSE – 14c

THEORY COMPONENT

Unit – I **(10 Hours)**

The Earth and the Universe:

a) General characteristics and origin of the Universe. The Big Bang Theory. Estimation of age of the Universe and Hubble constant. Formation of Galaxies. Types of galaxies, Milky Way galaxy, Nebular hypothesis, Solar system, The Terrestrial and Jovian planets (Sizes, Acceleration due to gravity, Obliquity, Flatness, Eccentricity, Density, Temperature, Pressure, Atmosphere, Moons, Exceptions in trends). Titius-Bode law. Asteroid belt. Asteroids: origin types and examples, Meteorites.

b) Earth in the Solar system, origin, size, shape, mass, density, rotational and revolution parameters and its age. Earth's orbit and spin, the Moon's orbit and spin.

c) Energy and particle fluxes incident on the Earth.

Unit – II **(8 Hours)**

Structure of Earth:

a) Internal structure of Earth: Core, mental, magnetic field. Origin of the Magnetic field. Convection in Earth's core and production of its magnetic field. Dynamo Theory, calculation of magnetic fields, Causes of variation of Magnetic Field and Palaeomagnetism.
b) The Hydrosphere: The oceans, their extent, depth, volume, chemical composition. Ocean circulations. Oceanic current system and effect of Coriolis forces.
c) The Cryosphere: Polar caps and ice sheets. Mountain glaciers, permafrost.

Unit – III **(8 Hours)**

Dynamical Processes:

a) The Solid Earth: Concept of plate tectonics; types of plate movements, hotspots; sea-floor spreading and continental drift.
b) Earthquake and earthquake belts. Types and properties of Seismic waves, Richter scale, geophones.
c) Volcanoes: types, products and distribution.
d) Concepts of eustasy, air-sea interaction; wave erosion and beach processes. Tides. Tsunamis.

Unit – IV **(10 Hours)**

The Atmosphere

a) The Atmosphere: Features of different layers, variation of temperature with altitude; Dry, moist and environmental lapse rate, variation of density and pressure with altitude, Types of clouds and formation.
b) The Atmosphere: Atmospheric circulation. Causes of Atmospheric circulation, Formation of three cells, Easterlies and Westerlies, and ICTZ, Weather and climatic changes. Earth's heat budget. Cyclones and anti-cyclones, tropical storms, hurricanes and tornadoes.
c) Climate: Earth's temperature and greenhouse effect. Paleoclimate and recent climate changes. The Indian monsoon system.

Unit – V **(9 Hours)**

Disturbing the Earth – Contemporary dilemmas

a) Hydrosphere: Fresh water depletion.
b) Geosphere: Chemical effluents, nuclear waste.
c) Biosphere: Biodiversity loss. Deforestation. Water cycle, Carbon cycle. The role of cycles in maintaining a steady state.
d) Air Pollution: Types of air pollutants, Effects on atmosphere and living organisms. Ozone Hole.

References:

Essential Readings:

1) Planetary Surface Processes, H. J. Melosh, 2011, Cambridge University Press.
2) Holme's Principles of Physical Geology, 1992, Chapman & Hall.
3) Planet Earth, Cosmology, Geology and the Evolution of Life and Environment, C. Emiliani, 1992, Cambridge University Press.
4) Physics of the Earth, F. D. Stacey, P. M. Davis, 2008, Cambridge University Press.
5) Environmental Physics: Sustainable Energy and Climate Change, E. Boecker and R.V. Grondelle, 3rd edition, 2011, Wiley, UK
6) Atmospheric Remote Sensing (Principles and Applications, Editors – S. Tiwari and A. K.

Singh, Chapter-1 (Composition and thermal structure of the Earth's atmosphere, by S. K. Dhaka and V. Kumar), 1st edition, Elsevier

Additional Readings:

1) The Blue Planet: An Introduction to Earth System Science, B. J. Skinner, S. C. Portere, 1994, John Wiley & Sons.
2) Consider a Spherical Cow: A course in environmental problem solving, J. Harte, University Science Books.
3) Fundamentals of Geophysics, W. Lowrie, 1997, Cambridge University Press.
4) The Solid Earth: An Introduction to Global Geophysics, C. M. R. Fowler, 1990, Cambridge University Press.
5) Climate Change: A Very Short Introduction, M. Maslin, 3rd edition, 2014, Oxford University Press.
6) The Atmosphere: A Very Short Introduction, P. I. Palmer, 2017, Oxford University Press.
7) IGNOU Study material: PHE 15 Astronomy and Astrophysics Block

Category II

Physical Science Courses (with Electronics)
with Physics and Electronics discipline as Core Disciplines

DISCIPLINE SPECIFIC CORE COURSE – PHYSICS DSC 7: WAVES AND OPTICS

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical		
Waves and Optics PHYSICS DSC 7	**4**	**2**	**0**	**2**	Class XII Pass with Science	--

LEARNING OBJECTIVES

This is a core course in Physics curriculum that begins with explaining ideas of superposition of harmonic oscillations leading to physics of travelling and standing waves. The course also provides an in depth understanding of wave phenomena of light, namely, interference and diffraction with emphasis on practical applications of the same.

LEARNING OUTCOMES

On successfully completing the requirements of this course, the students will have the skill and knowledge to,

- Understand simple harmonic oscillation and superposition principle.
- Understand superposition of a range of collinear and mutually perpendicular simple harmonic motions and their applications.
- Understand concept of normal modes in stationary waves: their frequencies and configurations.
- Understand interference as superposition of waves from coherent sources derived from same parent source.
- Demonstrate understanding of interference experiments: Young's double slit, Fresnel's biprism, Llyod's mirror, Newton's rings
- Demonstrate basic concepts of diffraction: Superposition of wavelets diffracted from apertures
- Understand Fraunhoffer diffraction from apertures: single slit, double Slit, grating
- Demonstrate fundamental understanding of Fresnel diffraction: Half period zones, diffraction of different apertures
- Laboratory course is designed to understand the principles of measurement and skills in experimental designs.

SYLLABUS OF PHYSICS DSC – 7

THEORY COMPONENT

Unit – I **(11 Hours)**

Superposition of collinear harmonic oscillations: Simple harmonic motion (SHM); linearity and superposition principle; superposition of two collinear oscillations having (1) equal frequencies and (2) different frequencies (beats).

Superposition of two perpendicular harmonic oscillations: Graphical and analytical methods. Lissajous figures with equal and unequal frequencies and their uses

Superposition of two harmonic Waves: Standing (stationary) waves in a string; normal modes of stretched strings

Unit – II **(8 Hours)**

Interference: Division of amplitude and division of wavefront; Young's double slit experiment: width and shape of fringes; Fresnel's biprism; Lloyd's mirror; Phase change on reflection: Stokes' treatment; Interference in thin films: parallel and wedge-shaped films. Fringes of equal inclination (Haidinger fringes); Fringes of equal thickness (Fizeau Fringes); Newton's rings: Measurement of wavelength and refractive index

Unit – III **(11 Hours)**

Diffraction:

Fraunhofer diffraction: Single slit, double slit, diffraction grating

Fresnel diffraction: Fresnel's assumptions. Fresnel's half-period zones for plane wave. Explanation of rectilinear propagation of light; Fresnel's diffraction pattern of a straight edge, a slit and a wire using half-period zone analysis

References:

Essential Readings:

1) Vibrations and Waves, A. P. French, 1st edition, 2003, CRC press.
2) The Physics of Waves and Oscillations, N. K. Bajaj, 1998, Tata McGraw Hill.
3) Waves: Berkeley Physics Course, vol. 3, Francis Crawford, 2007, Tata McGraw-Hill.
4) Fundamental of Optics, A. Kumar, H. R. Gulati and D. R. Khanna, 2011, R. Chand Publications.
5) Optics, A. Ghatak, 6th edition, 2017, McGraw-Hill Education, New Delhi
6) The Physics of Vibrations and Waves, H. J. Pain, 2013, John Wiley and Sons.

Additional Readings:

1) Principles of Optics, M. Born and E. Wolf, 7th edition, 1999, Pergamon Press.
2) Optics, E. Hecht, 4th edition, 2014, Pearson Education.
3) Fundamentals of Optics, F. A. Jenkins and H. E. White, 1981, McGraw-Hill

PRACTICAL COMPONENT

(15 Weeks with 4 hours of laboratory session per week)

At least 7 experiments to be performed from the following list

1) To determine the frequency of an electric tuning fork by Melde's experiment and verify λ^2–T law.
2) To study Lissajous figures.
3) Familiarization with Schuster`s focusing and determination of angle of prism.
4) To determine refractive index of the material of a prism using sodium light.
5) To determine the dispersive power and Cauchy's constants of the material of a prism using mercury light.
6) To determine wavelength of sodium light using Fresnel biprism.
7) To determine wavelength of sodium light using Newton's rings.
8) To determine the thickness of a thin paper by measuring the width of the interference fringes produced by a wedge-shaped Film.

9) To determine wavelength of (1) Na source and (2) spectral lines of Hg source using plane diffraction grating.
10) To determine dispersive power and resolving power of a plane diffraction grating.

References for laboratory work:

1) Advanced Practical Physics for students, B. L. Flint and H. T. Worsnop, 1971, Asia Publishing House
2) A Text Book of Practical Physics, I. Prakash and Ramakrishna, 11th edition, 2011, Kitab Mahal
3) Advanced level Physics Practicals, M. Nelson and J. M. Ogborn, 4th edition, reprinted 1985, Heinemann Educational Publishers
4) A Laboratory Manual of Physics for undergraduate classes, D. P. Khandelwal, 1985, Vani Pub.
5) B.Sc. Practical Physics, G. Sanon, 2019, R. Chand & Co

DISCIPLINE SPECIFIC CORE COURSE – PHYSICS DSC 8: MICROPROCESSOR AND MICROCONTROLLER

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical		
Microprocessor and Microcontroller PHYSICS DSC – 8	**4**	**2**	**0**	**2**	Class XII Pass with Science	Basic Electronics

LEARNING OBJECTIVES

This paper introduces the basic concepts of microprocessor and microcontrollers to the undergraduate students. Basic architecture and buildings blocks of a microprocessor and microcontrollers will be discussed in detail. Pin out diagram and the assembly language programming is discussed for both of them. The course is supported by a lab where students will apply the learned concepts and write simple programs to strengthen their classroom learning.

LEARNING OUTCOMES

Upon completion of this course, students will be able to,

- Describe the basic difference between a microprocessor and microcontroller and a general computing system.
- Explain the basic architecture and pin out diagram of 8085 microprocessor and 8051 microcontroller.
- Explain the difference between machine code, mnemonics, assembly language (low level) and high level language.
- Explain the concept of memory, different types of memory available in a system. The concept of memory map and how addresses are assigned to each memory element and peripherals.
- Classify instructions 1-, 2- or 3-byte instructions and into arithmetic, logical types etc.
- Describe the different addressing modes available to perform the same task.
- Write simple programs for 8085 microprocessor and 8051 microcontroller.

SYLLABUS OF PHYSICS DSC - 8

THEORY COMPONENT

Unit – I - Microcomputer organization **(4 Hours)**

Basic organization of a microcomputer/ microprocessor based system, computer memory, memory classification (RAM and ROM), memory organization and addressing, memory interfacing, memory map

Unit – II - 8085 Microprocessor architecture **(4 Hours)**

Main features of 8085, pin-out diagram of 8085, data and address buses, registers, ALU, stack pointer, program counter

Unit – III - 8085 Programming **(7 Hours)**
Instruction classification (data transfer, arithmetic, logical, branch, and control instructions), general discussion on 1 byte, 2 bytes and 3 bytes instructions, subroutines, instruction cycle, timing diagram of MOV and MVI, hardware and software interrupts (general discussion).

Unit – IV - 8051 microcontroller **(8 Hours)**
Microcontroller vs microprocessor, block diagram of 8051 microcontroller, 8051 assembly language programming, program counter and ROM memory map, data types and directives, flag bits and program status word (PSW) register, register banks and stack, jump, loop and call instructions

Unit – V - 8051 I/O port programming **(3 Hours)**
Pin out diagram of 8051 microcontroller, introduction of I/O port and their general features, I/O port programming in 8051 (using assembly language)

Unit – VI - 8051 Programming **(4 Hours)**
8051 addressing modes and accessing memory locations using various addressing modes, arithmetic and logic instructions

References:
Essential Readings:

1) Microprocessor Architecture Programming and applications with 8085, R. S. Goankar, 2002, Prentice Hall.
2) Microprocessors and Microcontrollers, K. Kant, 2nd edition, 2016. PHI learning Pvt. Ltd.
3) The 8051 Microcontroller, Ayala, Cengage learning, 3rd edition.
4) The 8051 Microcontroller and Embedded Systems Using Assembly and C, M. A. Mazidi, J. G. Mazidi, and R. D. McKinlay, 2nd edition, 2007, Pearson Education India.
5) Microprocessor and Microcontrollers, N. Senthil Kumar, 2010, Oxford University Press.
6) 8051 Microcontroller, S. Shah, 2010, Oxford University Press.

Additional Readings:

1) Embedded Systems: Design and Applications, S. F. Barrett, 2008, Pearson Education India.
2) Introduction to embedded system, K. V. Shibu, 1st edition, 2009, McGraw Hill.
3) Embedded Microcomputer systems: Real time interfacing, J. W. Valvano, 2011, Cengage Learning.

PRACTICAL COMPONENT

(15 Weeks with 4 hours of laboratory session per week)

There are two options here:
A. Every Student must perform at least 06 experiments each from Section-A and Section-B
Or
B. Every Student must perform at least 04 experiments each from Section-A and Section-B and a suitable project based on Arduino.

Section-A: Programs using 8085 Microprocessor

1) Addition and subtraction of two 8 bits numbers using direct addressing mode

2) Addition and subtraction of two 8 bits numbers using indirect addressing mode
3) Addition and subtraction of two 16 bits numbers using direct addressing mode
4) Addition and subtraction of two 16 bits numbers using indirect addressing mode
5) Multiplication by repeated addition.
6) Division by repeated subtraction.
7) Handling of 16-bit Numbers.
8) Use of CALL and RETURN Instruction.
9) Block data handling.
10) Parity checking in an 8-bit and 16 bit number.

Section-B: Experiments using 8051 microcontroller:

1) To find that the given numbers is prime or not.
2) To find the factorial of a number.
3) Write a program to make the two numbers equal by increasing the smallest number and decreasing the largest number.
4) Use one of the four ports of 8051 for O/P interfaced to eight LED's. Simulate binary counter (8 bit) on LED's.
5) Program to glow the first four LEDs then next four using TIMER application.
6) Program to rotate the contents of the accumulator first right and then left.
7) Program to run a countdown from 9-0 in the seven segment LED display.
8) To interface seven segment LED display with 8051 microcontroller and display 'HELP' in the seven segment LED display.
9) To toggle '1234' as '1324' in the seven segments LED display.
10) Interface stepper motor with 8051 and write a program to move the motor through a given angle in clock wise or counter clockwise direction.
11) Application of embedded systems: Temperature measurement & display on LCD

References for laboratory work:

1) Microprocessor Architecture Programming and applications with 8085, R. S. Goankar, 2002, Prentice Hall.
2) Embedded Systems: Architecture, Programming and Design, R. Kamal, 2008, Tata McGraw Hill.
3) The 8051 Microcontroller and Embedded Systems Using Assembly and C, M. A. Mazidi, J. G. Mazidi, and R. D. McKinlay, 2nd edition, 2007, Pearson Education India.
4) 8051 microcontrollers, S. Shah, 2010, Oxford University Press.
5) Embedded Microcomputer systems: Real time interfacing, J. W. Valvano, 2011, Cengage Learning

DISCIPLINE SPECIFIC ELECTIVE COURSE – PHYSICS DSE 11: INTRODUCTION TO NUMERICAL METHODS

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical		
Introduction to Numerical Methods PHYSICS DSE 11	**4**	**2**	**0**	**2**	Class XII Pass with Science	Elementary calculus

LEARNING OBJECTIVES

The main objective of this course is to introduce the students to the field of numerical analysis enabling them to solve a wide range of physics problems. The skills developed during the course will prepare them not only for doing fundamental and applied research but also for a wide variety of careers.

LEARNING OUTCOMES

After completing this course, student will be able to,

- Analyse a physics problem, establish the mathematical model and determine the appropriate numerical techniques to solve it.
- Derive numerical methods for various mathematical tasks such as root finding, interpolation, least squares fitting, numerical differentiation, numerical integration, and solution of initial value problems.
- Analyse and evaluate the accuracy of the numerical methods learned.

In the laboratory course, the students will learn to implement these numerical methods in Python and develop codes to solve various physics problems and interpret the results.

SYLLABUS OF PHYSICS DSE – 11

THEORY COMPONENT

Unit – I **(7 Hours)**

Approximation and errors in computing: Introduction to numerical computation, Taylor's expansion and mean value theorem; Floating point computation, overflow and underflow; IEEE single and double precision format; Rounding and truncation error, absolute and relative error, error propagation.

Solutions of algebraic and transcendental equations: Basic idea of iteration method, Bisection method, Secant method, Newton Raphson method; comparison of order of convergence.

Unit – II **(7 hours)**

Interpolation: Interpolation and Lagrange polynomial, divided differences, Newton divided-difference form of the interpolating polynomial with equally spaced nodes. Theoretical error in interpolation.

Least Squares Approximation: Least squares linear regression, Least squares regression for

exponential and power functions by taking logarithm.

Unit - III **(8 Hours)**

Numerical Differentiation: Using finite difference to approximate derivatives of first and second order using Taylor series and error in this approximation.

Numerical Integration: Newton Cotes quadrature methods; derivation of Trapezoidal and Simpson (1/3 and 3/8) rules from Lagrange interpolating polynomial; error and degree of precision of a quadrature formula; composite formulae for trapezoidal and Simpson methods; Gauss Legendre quadrature method.

Unit - IV **(8 Hours)**

Initial Value Problems: Solution of initial value problems by Euler, modified Euler and Runge Kutta (RK2, RK4) methods; local and global errors, comparison of errors in the Euler and RK methods, system of first order differential equations. Solving higher order initial value problems by converting them into a system of first order equations.

References:

Essential Readings:

1) Introduction to Numerical Analysis, S. S. Sastry, 5th edition, 2012, PHI Learning Pvt. Ltd.
2) Elementary Numerical Analysis, K. E. Atkinson, 3rd edition, 2007, Wiley India Edition.
3) Numerical methods for scientific and engineering computation, M. K. Jain, S. R. K. Iyenger and R. K. Jain, 2012, New Age Publishers
4) A Friendly Introduction to Numerical Analysis, B. Bradie, 2007, Pearson India

Additional Readings:

1) Numerical Recipes: The art of scientific computing, W. H. Press, S. A. Teukolsky and W. Vetterling, 3rd edition, 2007, Cambridge University Press
2) Numerical Methods for Scientists and Engineers, R. W. Hamming, 1987, Dover Publications
3) Applied numerical analysis, C. F. Gerald and P. O. Wheatley, 2007, Pearson Education
4) Numerical Analysis, R. L. Burden and J. D. Faires, 2011, Brooks/Cole, Cengage Learning
5) Numerical Methods, V. N. Vedamurthy and N. Ch. S.N. Iyengar, 2011, Vikas Publishing House

PRACTICAL COMPONENT

(15 Weeks with 4 hours of laboratory session per week)

The aim of this Lab is not just to teach computer programming and numerical analysis but to emphasize its role in solving problems in Physics.

- Assessment is to be done not only on the programming but also on the basis of formulating the problem.
- The list of recommended programs is suggestive only. Students should be encouraged to do more physics applications. Emphasis should be given to formulate a physics problem as mathematical one and solve by computational methods.
- The students should be encouraged to develop and present an independent project.
- **At least 12 programs must be attempted (taking two from each unit). The implementation is to be done in Python. Use of scipy inbuilt functions may be encouraged.**

Unit 1

Basic Elements of Python: The Python interpreter, the print statement, comments, Python as simple calculator, objects and expressions, variables (numeric, character and sequence types) and assignments, mathematical operators. Strings, Lists, Tuples and Dictionaries, type conversions, input statement, list methods. List mutability, formatting in the print statement.

Control Structures: Conditional operations, ***if, if-else, if-elif-else, while*** and ***for*** Loops, indentation, break and continue, List comprehension. Simple programs for practice like solving quadratic equations, temperature conversion etc.

Functions: Inbuilt functions, user-defined functions, local and global variables, passing functions, modules, importing modules, math module, making new modules. Writing functions to perform simple operations like finding largest of three numbers, listing prime numbers, etc. Use of inbuilt functions to generate pseudo random numbers.

Recommended List of Programs

a) Make a function that takes a number *N* as input and returns the value of factorial of *N*. Use this function to print the number of ways a set of *m* red and *n* blue balls can be arranged.
b) Generate random numbers (integers and floats) in a given range and calculate area and volume of regular shapes with random dimensions.
c) Write functions to convert Cartesian coordinates of a given point to cylindrical and spherical polar coordinates or vice versa.
d) Solve quadratic equations for the three cases of distinct real, double real and complex conjugate roots.

Unit 2

NumPy Fundamentals: Importing *Numpy*, Difference between List and NumPy array, Adding, removing and sorting elements, creating arrays using *ones(), zeros(), random(), arange(), linspace()*. Basic array operations (*sum, max, min, mean, variance*), 2-d arrays, matrix operations, reshaping and transposing arrays, savetxt() and loadtxt().

Plotting with Matplotlib: *matplotlib.pyplot* functions, plotting of functions given in closed form as well as in the form of discrete data and making histograms

Recommended List of Programs

(a) To generate data for coordinates of a projectile and plot the trajectory. Determine the range, maximum height and time of flight for a projectile motion.
(b) To plot the displacement-time and velocity-time graph for the undamped, under damped critically damped and over damped oscillator using *matplotlib* (using given formulae).
(c) To generate array of N random numbers drawn from a given distribution (uniform, binomial, poisson and gaussian) and draw histogram using *matplotlib* for increasing N to verify the distribution.
(d) To approximate the elementary functions (e.g. $\exp(x)$, $\sin(x)$, $\cos(x)$, $\ln(1+x)$, etc.) by a finite number of terms of Taylor's series and discuss the truncation error. To plot the function as well the nth partial sum of its series for various values of *n* on the same graph and visualise the convergence of series.

Unit 3

Root Finding: Implement the algorithms for Bisection, Secant and Newton Raphson methods or their combinations to,

(a) Determine the depth up to which a spherical homogeneous object of given radius and density will sink into a fluid of given density.

(b) Solve transcendental equations like $\alpha = \tan(\alpha)$.
(c) Approximate nth root of a number up to a given number of significant digits.

Unit 4

Interpolation and Least Square Fitting:

a) Given a dataset (x, y) with equidistant x values, prepare the Newton's divided difference table. Generate a tabulated data for an elementary function, approximate it by a polynomial and compare with the true function.
b) Given a dataset (x, y) corresponding to a physics problem, use Lagrange and Newton's forms of interpolating polynomials and compare. Determine the value of y at an intermediate value of x not included in the data set. This may be done with equally spaced and non-equally spaced x-values.
c) Make Python function for least square fitting, use it for fitting given data (*x, y*) and estimate the parameters *a, b* as well as uncertainties in the parameters for the following cases :
   i. Linear $(y = ax + b)$
   ii. Power law $(y = ax^b)$ and
   iii. Exponential $(y = ae^{bx})$
   The real data taken in physics lab may be used here.
d) Compare the interpolating polynomial for a given dataset (following a known form e.g. exponential) with the approximation obtained by least square fitting.

Unit 5

Differentiation and Integration:

a) To compute the left, right and central approximations for derivative of a function given in closed form. Plot both the function and derivative on the same graph. Plot (using *matplotlib)* the error as a function of step size on a log-log graph, study the behaviour of the plot as step size decreases and hence discuss the effect of round off error.
b) Use integral definition of error function to compute and plot erf(x) in a given range. Use Trapezoidal, Simpson and Gauss Legendre methods and compare the results for small and large values of x.
c) Verify the degree of precision of each quadrature rule.
d) Approximate the value of π by evaluating the integral $\int_0^\infty \frac{1}{x^2+1} dx$ using Simpson and Gauss Legendre method. More integrals may be evaluated.

Unit 6

Initial Value Problems (IVP):

a) Compare the errors in Euler, RK2 and RK4 by solving a first order IVP with known solution. Reduce the step size to a point where the round off errors takes over.
b) Radioactive decay: With a given number of initial nuclei and decay constant plot the number of nuclei left as a function of time and determine the half life
c) Solve a system of two first order differential equations by Euler, RK2 and RK4 methods. Use it to solve an nth order IVP. Solve a damped free and forced harmonic oscillator problem using this.
d) Solve a physics problem like free fall with air drag or parachute problem using RK method.
e) Obtain the current flowing in a series LCR circuit with constant voltage for a given set of initial conditions.

References for laboratory work:

1) Documentation at the Python home page (https://docs.python.org/3/) and the tutorials there (https://docs.python.org/3/tutorial/).
2) Documentation of NumPy and Matplotlib: https://numpy.org/doc/stable/user/ and https://matplotlib.org/stable/tutorials/
3) Computational Physics, D. Walker, 1st edition, 2015, Scientific International Pvt. Ltd
4) An Introduction to Computational Physics, T. Pang, 2010, Cambridge University Press
5) Python Programming and Numerical Methods - A Guide for Engineers and Scientists, Q. Kong, T. Siauw, A. M. Bayen, 2021, Academic Press

DISCIPLINE SPECIFIC ELECTIVE COURSE – PHYSICS DSE 12: PHYSICS OF EARTH

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical		
Physics of Earth Physics DSE 12	**4**	**3**	**1**	**0**	Class XII Pass with Science	--

LEARNING OBJECTIVES

This course familiarizes the students with the origin of earth in the solar system and various processes occurring in atmosphere, oceans and earth's internal structure.

LEARNING OUTCOMES

At the end of this course student will be able to,

- Have an overview of structure of the earth as well as various dynamical processes occurring on it.
- Develop an understanding of evolution of the earth.
- Apply physical principles of elasticity and elastic wave propagation to understand modern global seismology as a probe of the Earth's internal structure.
- Understand the origin of magnetic field, geodynamics of earthquakes and the description of seismic sources; a simple but fundamental theory of thermal convection; the distinctive rheological behaviour of the upper mantle and its top.
- Explore various roles played by water cycle, carbon cycle, nitrogen cycles in maintaining steady state of earth leading to better understanding of the contemporary dilemmas (climate change, bio diversity loss, population growth, etc.) disturbing the Earth
- Develop the problem solving skills by adding numerical and simulations to clarify the fundamental concepts.

SYLLABUS OF DSE – 12

THEORY COMPONENT

Unit – I **(10 Hours)**

The Earth and the Universe:

a) General characteristics and origin of the Universe. The Big Bang Theory. Estimation of age of the Universe and Hubble constant. Formation of Galaxies. Types of galaxies, Milky Way galaxy, Nebular hypothesis, Solar system, The Terrestrial and Jovian planets (Sizes, Acceleration due to gravity, Obliquity, Flatness, Eccentricity, Density, Temperature, Pressure, Atmosphere, Moons, Exceptions in trends). Titius-Bode law. Asteroid belt. Asteroids: origin types and examples, Meteorites.

b) Earth in the Solar system, origin, size, shape, mass, density, rotational and revolution parameters and its age. Earth's orbit and spin, the Moon's orbit and spin.

c) Energy and particle fluxes incident on the Earth.

Unit – II **(8 Hours)**

Structure of Earth:

a) Internal structure of Earth: Core, mental, magnetic field. Origin of the Magnetic field. Convection in Earth's core and production of its magnetic field. Dynamo Theory, calculation of magnetic fields, Causes of variation of Magnetic Field and Palaeomagnetism.
b) The Hydrosphere: The oceans, their extent, depth, volume, chemical composition. Ocean circulations. Oceanic current system and effect of Coriolis forces.
c) The Cryosphere: Polar caps and ice sheets. Mountain glaciers, permafrost.

Unit – III **(8 Hours)**

Dynamical Processes:

a) The Solid Earth: Concept of plate tectonics; types of plate movements, hotspots; sea-floor spreading and continental drift.
b) Earthquake and earthquake belts. Types and properties of Seismic waves, Richter scale, geophones.
c) Volcanoes: types, products and distribution.
d) Concepts of eustasy, air-sea interaction; wave erosion and beach processes. Tides. Tsunamis.

Unit – IV **(10 Hours)**

The Atmosphere

a) The Atmosphere: Features of different layers, variation of temperature with altitude; Dry, moist and environmental lapse rate, variation of density and pressure with altitude, Types of clouds and formation.
b) The Atmosphere: Atmospheric circulation. Causes of Atmospheric circulation, Formation of three cells, Easterlies and Westerlies, and ICTZ, Weather and climatic changes. Earth's heat budget. Cyclones and anti-cyclones, tropical storms, hurricanes and tornadoes.
c) Climate: Earth's temperature and greenhouse effect. Paleoclimate and recent climate changes. The Indian monsoon system.

Unit – V **(9 Hours)**

Disturbing the Earth – Contemporary dilemmas

a) Hydrosphere: Fresh water depletion.
b) Geosphere: Chemical effluents, nuclear waste.
c) Biosphere: Biodiversity loss. Deforestation. Water cycle, Carbon cycle. The role of cycles in maintaining a steady state.
d) Air Pollution: Types of air pollutants, Effects on atmosphere and living organisms. Ozone Hole.

References:

Essential Readings:

1) Planetary Surface Processes, H. J. Melosh, 2011, Cambridge University Press.
2) Holme's Principles of Physical Geology, 1992, Chapman & Hall.
3) Planet Earth, Cosmology, Geology and the Evolution of Life and Environment, C. Emiliani, 1992, Cambridge University Press.
4) Physics of the Earth, F. D. Stacey, P. M. Davis, 2008, Cambridge University Press.
5) Environmental Physics: Sustainable Energy and Climate Change, E. Boecker and R.V. Grondelle, 3rd edition, 2011, Wiley, UK
6) Atmospheric Remote Sensing (Principles and Applications, Editors – S. Tiwari and A. K.

Singh, Chapter-1 (Composition and thermal structure of the Earth's atmosphere, by S. K. Dhaka and V. Kumar), 1st edition, Elsevier

Additional Readings:

1) The Blue Planet: An Introduction to Earth System Science, B. J. Skinner, S. C. Portere, 1994, John Wiley & Sons.
2) Consider a Spherical Cow: A course in environmental problem solving, J. Harte, University Science Books.
3) Fundamentals of Geophysics, W. Lowrie, 1997, Cambridge University Press.
4) The Solid Earth: An Introduction to Global Geophysics, C. M. R. Fowler, 1990, Cambridge University Press.
5) Climate Change: A Very Short Introduction, M. Maslin, 3rd edition, 2014, Oxford University Press.
6) The Atmosphere: A Very Short Introduction, P. I. Palmer, 2017, Oxford University Press.
7) IGNOU Study material: PHE 15 Astronomy and Astrophysics Block

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

GENERIC ELECTIVE (GE - 15): QUANTUM MECHANICS

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical		
Quantum Mechanics GE – 15	4	3	1	0	Class XII Pass with Science	GE Modern Physics of this course or its equivalent

LEARNING OBJECTIVES

The development of quantum mechanics has revolutionized the human life. In this course, the students will be exposed to the probabilistic concepts of basic non-relativistic quantum mechanics and its applications to understand the sub atomic world.

LEARNING OUTCOMES

After completing this course, the students will be able to,

- Learn the methods to solve time-dependent and time-independent Schrödinger equation.
- Characteristics of an acceptable wave function for any sub atomic particle in various potentials.
- Applications of the Schrodinger equation to different cases of potentials namely infinite and finite potential well, step potential, rectangular potential barrier, harmonic oscillator potential.
- Solve the Schrodinger equation in 3-D.
- Understand the spectrum and eigen functions for hydrogen atom

SYLLABUS OF GE - 15

THEORY COMPONENT

Unit – I **(10 Hours)**

Review of Schrodinger wave equation, applicability of operator, eigenvalues, eigenfunction, normalisation, expectation value to various kinds of potential, Superposition Principle, linearity of Schrodinger equation, General solution as a linear combination of discrete stationary states, Observables as operators, Commutator of position and momentum operators, Ehrenfest's theorem. Applicability to various kinds of wave functions

Unit – II **(15 Hours)**

General discussion of bound states in an arbitrary potential: Continuity of wave function, boundary conditions and emergence of discrete energy levels. Application to energy eigen states for a particle in a finite square potential well, reflection and transmission across step potential and rectangular potential barrier. Fourier transforms and momentum space wave function, time evolution of Gaussian wave packets, Uncertainty principle

Unit – III **(10 Hours)**

Harmonic oscillator: Energy eigen values and eigen states of a 1-D harmonic oscillator using algebraic method (ladder operators) and using Hermite polynomials. Zero point energy and uncertainty principle. Applications to various kinds of wave functions

Unit – IV **(10 Hours)**

Schrödinger Equation in three dimensions: Probability and probability densities in 3D. Schrödinger equation in spherical polar coordinates, its solution for Hydrogen atom solution using separation of angular and radial variables, Angular momentum operator, quantum numbers and spherical harmonics. Radial wave functions from Frobenius method, Orbital angular momentum quantum numbers l and ml, s, p, d shells

References:

Essential Readings:

1) Quantum Mechanics: Theory and Applications, A. Ghatak and S. Lokanathan, 6th edition, 2019, Laxmi Publications, New Delhi.
2) Introduction to Quantum Mechanics, D. J. Griffith, 2nd edition, 2005, Pearson Education.
3) A Text book of Quantum Mechanics, P. M. Mathews and K. Venkatesan, 2nd edition, 2010, McGraw Hill.
4) Quantum Mechanics, B. H. Bransden and C. J. Joachain, 2nd edition, 2000, Prentice Hall
5) Quantum Mechanics: Concepts and Applications, 2nd edition, N. Zettili, A John Wiley and Sons, Ltd., Publication
6) Atomic Physics, S. N. Ghoshal, 2010, S. Chand and Company

Additional Readings:

1) Quantum Mechanics for Scientists & Engineers, D. A. B. Miller, 2008, Cambridge University Press.
2) Introduction to Quantum Mechanics, R. H. Dicke and J. P. Wittke, 1966, Addison-Wesley Publications
3) Quantum Mechanics, L. I. Schiff, 3rd edition, 2010, Tata McGraw Hill.
4) Quantum Mechanics, R. Eisberg and R. Resnick, 2nd edition, 2002, Wiley
5) Quantum Mechanics, B. C. Reed, 2008, Jones and Bartlett Learning.
6) Quantum Mechanics, W. Greiner, 4th edition, 2001, Springer.
7) Introductory Quantum Mechanics, R. L. Liboff, 4th edition, 2003, Addison Wesley

GENERIC ELECTIVE (GE - 16) INTRODUCTION TO EMBEDDED SYSTEM DESIGN

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical		
Introduction to Embedded System Design GE – 16	4	2	0	2	Class XII Pass with Science	NIL

LEARNING OBJECTIVES

This paper aims to introduce the basic concepts or fundamentals of embedded system design to students not majoring in physics. The course covers the comprehensive introduction to embedded systems, their role and application areas in our daily life. Basic elements needed to design a typical embedded system are discussed to provide the students a broader perspective. Specific applications of embedded systems which are a part of our daily life were discussed. In the end Arduino Uno is introduced.

LEARNING OUTCOMES

Upon completion of this course, students will be able to,

- Learn about an embedded system and how it is different than a general purpose computing system like computer or laptop etc.
- The student should be able to identify various embedded systems available around us in our daily life.
- Classify embedded systems based on generation, complexity and performance, major applications areas etc.
- Explain the domains and areas of applications of embedded systems. The students should be able to get a broader perspective of different embedded systems available in industry, telecom, photography, homes, automobile, aviation and ship industry etc.
- Explain the roles and uses of various components like microcontroller, memory, sensors and actuators, interface types etc. of embedded systems.
- Know the basic characteristics and quality attributes that any typical embedded system must possess.
- This paper is designed in such a way that the students will be able to connect the textbook knowledge with basic design and working of the various embedded systems present in our daily life. By the end of this course the student will have a fairly good idea of embedded systems and the gained knowledge will be helpful in predicting the possible design and working of an unknown system. Arduino Uno is introduced so that students can learn how to use different sensors to control different processes.

SYLLABUS OF GE - 16

THEORY COMPONENT

UNIT – I - Introduction to Embedded Systems (3 Hours)
Embedded systems, historical background, difference between an embedded systems and general computing systems, classification of embedded systems based on generation, complexity and performance, major applications areas, purpose of embedded systems like in data collection/storage/representation, data communication, data/signal processing, monitoring, control, application specific user interface.

Unit – II - Elements of Embedded System (6 Hours)
Core of the embedded system: General purpose and domain specific processors like microprocessors, microcontrollers and digital signal processors, application specific integrated circuits (ASICs), programmable logic devices (PLDs), commercial off-the-shelf components (COTS), reduced instruction set computing (RISC) and complex instruction set computing (CISC), Harvard vs Von-Neumann architecture, different types of memory (RAM, ROM, Storage etc) their classification and different versions, reset circuit, oscillator unit

Unit – III - Peripheral devices, sensors and actuators (6 Hours)
General discussion on light emitting dodes (LEDs), 7-segment LED display, piezo buzzer, push button switch, keypad or keyboard (discuss design using push button switches), relay (single pole single throw), LDR, thermistor, IR sensor, ultrasonic sensor, opto-coupler, DC motors, servo motor, stepper motor (unipolar and bipolar)

Unit – IV - Communication Interface (2 Hours)
Serial and parallel interface, universal serial bus (USB), Infra-red data transfer, bluetooth (BT), Wi-Fi, general packet radio Service (GPRS), 3G, 4G, LTE

Unit – V - Characteristics and quality attributes of an embedded systems (3 Hours)
Characteristics: Application and domain specific, reactive and real time, operation under harsh environments, distributed or stand alone, size and weight, power consumption
Operational and non-operational attributes: response time, throughput, reliability, maintainability, security, safety, testability and debug-ability, evolvability, portability, cost and revenue

Unit – VI - Applications of Embedded Systems (4 Hours)
General discussion on the design and working of washing machine, refrigerator, microwave oven, automobiles, mobile phones, hearing aid device, electrocardiogram (ECG), AC or TV remote control system, smart watch, digital camera and laser printers etc.

Unit – VII - Introduction to Arduino (6 Hours)
Pin diagram and description of Arduino UNO, basic programming and applications

References:
Essential Readings:

1) Introduction to embedded system, K. V. Shibu, 1st edition, 2009, McGraw Hill
2) Embedded Systems: Architecture, Programming and Design, R. Kamal, 2008, Tata McGraw Hill
3) Embedded Systems and Robots, S. Ghoshal, 2009, Cengage Learning.
4) Embedded Microcomputer systems: Real time interfacing, J. W. Valvano, 2011, Cengage Learning
5) Embedded System, B. K. Rao, 2011, PHI Learning Pvt. Ltd.
6) Programming Arduino: Getting Started with Sketches, S. Monk, 2nd edition, McGraw Hill

7) Arduino: Getting Started With Arduino and Basic Programming with Projects by E. Leclerc

Additional Readings:

1) The 8051 Microcontroller and Embedded Systems Using Assembly and C, M. A. Mazidi, J. G. Mazidi and R. D. McKinlay, 2nd edition, 2007, Pearson Education
2) Microprocessors and Microcontrollers, K. Kant, 2nd edition, 2016, PHI learning Pvt. Ltd.
3) The 8051 Microcontroller, Ayala, 3rd edition, Cengage learning

PRACTICAL COMPONENT

(15 Weeks with 4 hours of laboratory session per week)

- Every student must perform at least six experiments from the following list
- Mandatory exercise for all students: Familiarization with power supply, function generator, CRO/DSO, multimeter, bread board etc. Measure the frequency and amplitude (pp or rms) of a given signal using CRO/DSO. (The purpose is to acquaint the students with these instruments so that they can have a basic understanding of these instruments).

ARDUINO based Experiments:

1) Flashing LEDs ON/OFF after a given delay.
2) Design a simple transmitter and receiver circuit using IR LED and a detector and use it for obstacle detection.
3) Interface a simple relay circuit to switch ON and OFF a dc motor/LED.
4) Interface DC motor to Arduin Uno and rotate it clockwise and anticlockwise.
5) Interface Servo motor to Arduin Uno and rotate it clockwise and anticlockwise for a given angle.
6) Interface an ADC and read the output of the LDR sensor. Display the value on the serial monitor.
7) To design an alarm system using an Ultrasonic sensor.
8) To design a counter/Motion sensor alarm using IR Led and Detector
9) To design a circuit to control ON/OFF of LED light using LDR.
10) To design a circuit to control ON/OFF of a process using a thermistor.
11) To design a thermistor based thermometer.
12) Control the speed of the DC motor using LDR.

References for laboratory work:

1) Arduino Programming: 3 books in 1 - The Ultimate Beginners, Intermediate and Expert Guide to Master Arduino Programming, R. Turner
2) Arduino: Getting Started With Arduino and Basic Programming with Projects, E. Leclerc
3) Basic Electronics: A text lab manual, P. B. Zbar, A. P. Malvino, M. A. Miller, 1994, McGraw Hill.
4) Electronic Devices and circuit theory, R. L. Boylestad and L. D. Nashelsky, 2009, Pearson
5) Electronics: Fundamentals and Applications, J. D. Ryder, 2004, Prentice Hall.
6) Modern Electronic Instrumentation and Measurement Tech., Helfrick and Cooper, 1990, PHI Learning.

GENERIC ELECTIVE (GE - 17) NANO PHYSICS

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical		
Nano Physics GE – 17	4	2	0	2	Class XII Pass with Science	NIL

LEARNING OBJECTIVES

The syllabus introduces the basic concepts of nanomaterials, their synthesis, properties exhibited by them and finally few applications. Various nanomaterial synthesis/growth methods and characterizations techniques are discussed to explore the field in detail. The effect of dimensional confinement of charge carries on the electrical, optical and structural properties will be discussed. Interesting experiments which shape this filed like conductance quantization in 2DEG (Integer Quantum Hall Effect) and coulomb blockade are introduced. The concept of micro- and nano-electro mechanical systems (MEMS and NEMS) and important applications areas of nanomaterials are discussed.

LEARNING OUTCOMES

On successful completion of the course students should be able to,

- Explain the difference between nanomaterials and bulk materials and their property difference.
- Explain various methods for the synthesis/growth of nanomaterials.
- Explain the role of confinement on the density of state function and so on the various properties exhibited by nanomaterials compared to bulk materials.
- Explain the concept of quasi-particles such as excitons and how they influence the optical properties.
- Explain the direct and indirect band gap semiconductors, radiative and non-radiative processes and the concept of luminescence.
- Explain the structure of 2DEG system and its importance in quantum transport experiments, like integer quantum Hall effect and conductance quantization.
- Explain the conductance quantization in 1D structure and its difference from the 2DEG system.
- Explain the necessary and sufficient conditions required to observe coulomb blockade, single electron transistor and the scope of these devices.
- Explain how MEMS and NEMS devices are produced and their applications.

SYLLABUS OF GE - 17

THEORY COMPONENT

Unit – I – Introduction **(3 Hours)**

Basic introduction to nano-science and technology - Implications on nanoscience on fields like Physics, Chemistry, Biology and Engineering, Classifications of nanostructured materials

as quantum dots (0D), nanowires (1D), Thin films (2D) and Multilayered materials or super lattices; introduction to properties like mechanical, electronic, optical, magnetic and thermal properties and how they change at nano scale dimensions to motivate students (qualitative only).

Unit – II - Nanoscale Systems (8 Hours)

Brief review of Schrodinger equation and its applications in- Infinite potential well, potential step and potential box problems, band structure and density of states of 3D and 2D systems in detail and qualitatively for 1D and 0D, confinement of charges in nanostructures their consequences on electronic and optical properties.

Unit – III - Properties of Nano Scale systems (10 Hours)

Time and length scales (diffusion, elastic and inelastic lengths etc.) of electrons in nanostructured materials, Carrier transport in nanostructures: diffusive and ballistic transport

2D naomaterials: Conductance quantization in 2DEG in GaAs and integer quantum hall effect (semi-classical treatment)

1D nanomaterials: Conductance quantization in 1D structures using split gate in 2DEG system (Qualitative)

0D nanomaterials: Charging effect, Coulomb Blockade effect, Single Electron Transfer (SET) device

Basic understanding of excitons in semiconductors and their consequence on optical properties of the material

Unit – IV - Synthesis of Nanomaterials (Qualitative) (5 Hours)

Top down and Bottom up approach, Ball milling, Spin Coating

Vacuum deposition: Physical vapor deposition (PVD): Thermal evaporation, Sputtering, Chemical vapor deposition (CVD).

Preparation of colloidal solutions of Metals, Metal Oxide nanoparticles

Unit – V - Applications (Qualitative) (4 Hours)

Micro Electromechanical Systems (MEMS), Nano-electromechanical Systems (NEMS), Applications of nanomaterials as probes in medical diagnostics and targeted drug delivery, sunscreen, lotions, and paints and other examples to give broader perspective of applications of nanomaterials

References:

Essential Readings:

1) Introduction to Nanotechnology, C. P. Poole and Jr. Frank J. Owens, 1st edition, 2003, Wiley India Pvt. Ltd.
2) Nanotechnology: Principles and Practices, S. K. Kulkarni, 2nd edition, 2011, Capital Publishing Company
3) Introduction to Nanoscience and Technology, K. K. Chattopadhyay and A. N. Banerjee, 2009, PHI Learning Private Limited
4) Introduction to Nanoelectronics, V. V. Mitin, V. A. Kochelap and M. A. Stroscio, 2011, Cambridge University Press
5) Nanotechnology for Dummies, R. Booker and E. Boysen, 2005, Wiley Publishing Inc.
6) Introductory Nanoscience, M. Kuno, 2012, Garland science Taylor and Francis Group
7) Electronic transport in mesoscopic systems, S. Datta, 1997, Cambridge University Press.
8) Fundamentals of molecular spectroscopy, C. N. Banwell and E. M. McCash, 4th edition, McGrawHill

Additional Readings:

1) Quantum Transport in semiconductor nanostructures, C. Beenakker and H. Van Houten, 1991, available at arXiv: cond-mat/0412664) Open Source
2) Ph.D. thesis, S. Cronewett, 2001, Available as Arxiv
3) Solid State Physics, J. R. Hall and H. E. Hall, 2nd edition, 2014, Wiley

PRACTICAL COMPONENT

(15 Weeks with 4 hours of laboratory session per week)

At least six experiments to be performed from the following list

1) Synthesis of metal (e.g. Au/Ag) nanoparticles by chemical route and study its optical absorption properties.
2) Synthesis of semiconductor (CdS/ZnO/TiO_2/Fe_2O_3 etc) nanoparticles and study its XRD and optical absorption properties as a function of ageing time.
3) Surface Plasmon study of metal nanoparticles as a function of size by UV-Visible spectrophotometer.
4) Analysis of XRD pattern of given nanomaterial and estimate lattice parameters and particle size.
5) To study the effect of the size nanoparticles on its color.
6) To prepare composite of CNTs with other materials and study their optical absorption/Transmission properties.
7) Growth of metallic thin films using thermal evaporation technique.
8) Prepare a ceramic disc of a given compound and study its XRD/I-V characteristics/ measure its dielectric constant or any other property.
9) Fabricate a thin film of nanoparticles by spin coating (or chemical route) and study its XRD and transmittance spectra in UV-Visible region.
10) Prepare thin film capacitor and measure capacitance as a function of temperature or frequency.
11) Fabricate a pn junction diode by diffusing Al over the surface of N-type Si/Ge and study its V-I characteristic.
12) Fabricate thin films (polymer, metal oxide) using electro-deposition
13) To study variation of resistivity or sheet resistance with temperature of the fabricated thin films using four probe method.

References for laboratory work:

1) Introduction to Nanotechnology, C. P. Poole and Jr. Frank J. Owens, 1st edition, 2003, Wiley India Pvt. Ltd.
2) Nanotechnology: Principles and Practices, S. K. Kulkarni, 2nd edition, 2011, Capital Publishing Company
3) Introduction to Nanoscience and Technology, K. K. Chattopadhyay and A. N. Banerjee, 2009, PHI Learning Private Limited
4) Nanotechnology for Dummies, R. Booker and E. Boysen, 2005, Wiley Publishing Inc.

GENERIC ELECTIVE (GE - 18): PHYSICS OF DETECTORS

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical		
Physics of Detectors GE – 18	4	3	1	0	Class XII Pass with Science	GE Modern Physics of this course or its equivalent

LEARNING OBJECTIVES

A detector is necessary for every physical measurement, and experimental physicists must be proficient in detector physics. The course will provide an overview of radiation and particle detectors, as well as how to use them in various experimental physics settings and application fields. The course covers the theory of detectors, their design and operation including electronic readout systems and signal processing. The fundamental physics processes for detecting radiation and particles are covered in the course, which include the photoelectric effect, Compton scattering, pair creation, excitation, ionization, bremsstrahlung, Cherenkov radiation, nuclear reactions, and secondary emissions.

LEARNING OUTCOMES

After completion of this course, students are expected to be able to,

- Understand the different types underlying fundamental physical processes for the detection of radiation and particles
- Acquire knowledge of design principles and characteristics of different types of detector
- Acquire knowledge of electronic readout systems and signal processing
- Assess the applicability of different types of detectors and detector systems in various fields of physics and applied sciences.

SYLLABUS OF GE - 18

THEORY COMPONENT

Unit – I **(12 Hours)**

Interaction of Radiation with matter: Interaction of radiation with matter (e.m. charged particles); detection of charged particles in magnetic field and measurement of charge to mass ratio; energy loss due to ionization (Bethe-Block formula), energy loss of electrons, Cerenkov radiation; gamma ray interaction through matter (photoelectric effect, Compton scattering, pair production); Dependence of electron and photon energy spectrum on materials (increasing Z); neutron interaction with matter

Unit – II **(8 Hours)**

Introduction to detectors: Basic principle of detector operation and its modes of operation, pulse height spectra, various detector performance parameters: response time, energy resolution, fano factor, efficiency: intrinsic and extrinsic, dead time.

Unit – III **(16 Hours)**

Detectors:

Gas detectors: Detector gases, gas detector characteristics, different types of detectors: gas filled ionization detectors (ionization chamber), bubble and cloud chambers, proportional counters, multi wire proportional counters (MWPC), Geiger Mueller (GM) counters and avalanche counters, gaseous multiplication detector.

Scintillation detectors: General characteristics, organic scintillators (anthracene and plastic), inorganic crystals (NaI(Tl), CsI(Tl)), Charge Coupled Devices (CCD)

Photomultipliers: Basic construction and operation, time response and resolution, noise, gain stability; scintillation counter operation

Semiconductor detectors: Doped semiconductors, np semiconductor junction, depletion depth, detector characteristics of semiconductors. silicon and germanium detectors

Neutron detectors (gas-filled, scintillation, and semiconducting): slow and fast neutron detectors

Bolometric detectors: Working principle, characteristics and use of infrared detectors

Unit - IV **(5 Hours)**

Electronics, signal processing and techniques for data acquisition and analysis: Basic idea of analog and digital signal processing, noise and its types; instrumentation standards for nuclear instruments: NIM, ECL; TTL standards

Data acquisition system: VME and Digital pulse processing system.

Unit - V **(4 Hours)**

Application of detectors: for particle physics experiments, for nuclear physics, for astrophysics and cosmology, medical physics and imaging, by giving two examples each.

References:

Essential Readings:

1) Radiation detection and measurement, G. F. Knoll, 2010, John Wiley and Sons
2) Principles of radiation interaction in matter and detection, C. Leroy and P. G. Rancoita, 3rd edition, 2011, World Scientific
3) Techniques for Nuclear and Particle Physics experiments, W. R. Leo, 1994, Springer
4) Nuclear Radiation Detectors, S. S. Kapoor and V. S. Ramamurthy, 1st edition, John Wiley and Sons.
5) Physics and Engineering of Radiation Detection, S. N. Ahmed, 2007, Academic Press Elsevier
6) Semiconductor detectors: New developments, E. Gatti and P. Rehak, 2002, Springer

Additional Readings:

1) Radiation Detection for Nuclear Physics Methods and industrial applications, D. Jenkins
2) Advanced Nuclear Radiation Detectors Materials, processing, properties and applications, A. K. Batra, IOP Publishing
3) Measurement and Detection of Radiation, N. Tsoulfanidis et al., 4th edition, T and F CRC
4) Principles of nuclear radiation detection, G. G. Eichholz and J. W. Poston, CRC
5) Introduction to Nuclear Radiation Detectors: 2, Laboratory Instrumentation and Techniques, P. Ouseph, Springer
6) Detectors for Particle Radiation, K. Kleinknecht, Cambridge
7) Particle Detectors, C. Grupen, Cambridge
8) Handbook of Particle Detection and Imaging, C. Grupen and I. Buvat

GENERIC ELECTIVE (GE - 19): NUCLEAR AND PARTICLE PHYSICS

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical			
Nuclear and Particle Physics GE – 19	4	3	1	0	Class XII Pass with Science	NIL	Physics and Astrophysics

LEARNING OBJECTIVES

This course imparts the understanding of the sub atomic particles and their properties; introduces various nuclear phenomena and their applications, interactions of basic building blocks of matter through fundamental forces, the inherent discrete symmetries of particles and complements each and every topic with applications and problems.

LEARNING OUTCOMES

After completion of this course, students are expected to have an understanding of,

- Nuclear charge and mass density, size, magnetic and electric moments
- Theoretical principles and experimental evidences towards modelling the nucleus
- Kinematics of nuclear reactions and decays
- Energy loss of radiation during propagation in medium
- Principles of nuclear detection technique
- Classification of fundamental forces based on their range, time-scale and mediator mass.
- Scattering cross-sections of 2 to 2 processes and their inherent symmetries.
- Angular and energy distributions for three body decay process.
- Discrete symmetries of nature and associated conservation laws
- Colour triplet quarks and anti-quarks as constituents of observed colour singlet baryons and mesons.

SYLLABUS OF GE 19

THEORY COMPONENT

Unit – I **(5 Hours)**

General properties of nuclei: Constituents of nucleus and their Intrinsic properties: quantitative facts about mass, radii, charge density, matter density, binding energy, N/Z plot, angular momentum, parity, magnetic moment, electric moments.

Unit – II **(5 Hours)**

Nuclear models: Liquid drop model approach, semi empirical mass formula and significance of its various terms, condition of nuclear stability, evidence for nuclear shell structure and the basic assumptions of shell model, magic numbers.

Unit – III **(7 Hours)**

Radioactivity decay: Decay rate and equilibrium (secular and transient)
(a) Alpha decay: basics of α-decay processes, Gamow factor, Geiger Nuttall law, α-decay spectroscopy, decay Chains.
(b) β-decay: energy kinematics for β-decay, β-spectrum, positron emission, electron capture, neutrino hypothesis.
(c) Gamma decay: Gamma ray emission from the excited state of the nucleus and kinematics, internal conversion.

Unit – IV **(5 Hours)**

Nuclear reactions: Kinematics of reactions, Q-value, reaction rate, reaction cross section, Concept of compound and direct reaction, Coulomb scattering (Rutherford scattering).

Unit – V **(8 Hours)**

Interaction of nuclear radiation with matter: Energy loss due to ionization (Bethe-Block formula), energy loss of electrons, Cerenkov radiation; Gamma ray interaction through matter
Detector for nuclear radiations: Basics of types of detectors: gas detectors, scintillation detector, semiconductor detector (principle, schematics of construction and working)

Unit – VI **(15 Hours)**

Particle Physics: Overview of particle spectrum and their interactions in the Standard Model; range, time-scale and relative strength of interactions; interactions at a distance mediated by virtual particles (Exchange Force)
Kinematics for 2 -> 2 scattering processes and crossing symmetries of scattering amplitudes; angular and energy distributions of decaying particles in 1 -> 3 decay processes (muon decay/beta decay); identification of invisibles (neutrinos) from energy and transverse momentum distributions
Lepton and Baryon quantum numbers; isospin, strangeness and hypercharge; Gell-Mann-Nishijima formula; parity and charge conjugation of a particle state; time reversal and general CPT theorem
Valence quark model of Murray Gell-Mann and Yuval Ne'eman, current and constituent masses of quarks, flavor symmetry isospin triplets, baryon octet, decuplet and meson octet; existence of Δ^{++} baryon as a clue for necessity of colour quantum number; evidence for colour triplet quarks from e^+e^- annihilation experiment; confinement of quarks, antiquarks and gluons in hadrons
High energy scattering experiments at linear and circular colliders, inelastic collisions at hadron colliders; elastic and inelastic neutrino-nucleus scattering experiments

References:

Essential Readings:

(A) For Nuclear Physics

1) Basic ideas and concepts in nuclear physics: An introductory approach, K. Heyde, 3rd edition, 1999, IOP Publication
2) Introductory Nuclear Physics, K. S. Krane, 2008, Wiley-India Publication
3) Nuclear Physics, S. N. Ghoshal, 1st edition, 2010, S. Chand Publication
4) Nuclear Physics: Principles and applications, J. Lilley, 2006, Wiley Publication
5) Concepts of Nuclear Physics, B. L. Cohen, 1974, Tata McGraw Hill Publication
6) Radiation detection and measurement, G. F. Knoll, 2010, John Wiley and Sons

(B) For Particle Physics

1) Modern Particle Physics, M. Thompson, 2013, Cambridge University Press

2) Particles and Nuclei: An Introduction to the Physical Concepts, B. Povh, K. Rith, C. Scholz, F. Zetsche and W. Rodejohann, 2015, Springer-Verlag
3) An Introductory Course of Particle Physics, P. B. Pal, 2015, CRC Press
4) Introduction to High Energy Physics, D. H. Perkins, 4th edition, 2000, Cambridge University Press
5) Introduction to elementary particles, D. J. Griffiths, 2008, Wiley
6) Quarks and Leptons, F. Halzen and A. D. Martin, 1984, John Wiley

Additional Readings:

References for Tutorial

1) Problems and Solutions in Nuclear and Particle Physics, S. Petreta, 2019, Springer
2) Schaum's Outline of Modern Physics, 1999, McGraw-Hill
3) Schaum's Outline of College Physics, E. Hecht, 11th edition, 2009, McGraw Hill
4) Problems and Solutions on Atomic, Nuclear and Particle Physics, Yung-Kuo Lim, 2000, World Scientific
5) Nuclear Physics "Problem-based Approach" including MATLAB, H. M. Aggarwal, 2016, PHI Learning Pvt. Ltd

GENERIC ELECTIVE (GE - 20): ATOMIC AND MOLECULAR PHYSICS

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical		
Atomic and Molecular Physics GE – 20	4	3	1	0	Class XII Pass with Science	GE Modern Physics and GE Quantum Mechanics of this course or their equivalent

LEARNING OBJECTIVES

This course introduces the basic concepts of atomic, molecular and nuclear physics to an undergraduate student. Advanced mathematics is avoided and the results of quantum mechanics are attempts to explain, or even to predict, the experimental observations of spectroscopy. The student will be able to visualize an atom or molecule as a physical entity rather than a series of mathematical equations.

LEARNING OUTCOMES

On successful completion of the module students should be able to elucidate the following main features.

- Stern-Gerlach experiment, electron spin, spin magnetic moments
- Space quantization and Zeeman effect
- Spectral notations for atomic and molecular states and corresponding term symbols
- Understanding of atomic spectra and molecular spectra
- Basic principle of Raman spectroscopy and Franck Condon principle
- To complete scientific potential lies on the way we are able to interpret the fundamental astrophysical and nuclear data. This acquired knowledge will be a common base for the areas of astrophysics, nuclear, medical, geology and other inter-disciplinary fields of Physics, Chemistry and Biology. Special skills required for the different fields will be enhanced.

SYLLABUS OF GE 20

THEORY COMPONENT

Unit – I – Atomic Physics **(23 Hours)**

One-electron atoms: Degeneracy of energy levels and selection rules, modes of relaxation of an excited atomic state, line intensities and the lifetimes of excited states, line shapes and widths

Fine structure of hydrogenic atoms: Shifting of energy levels, splitting of spectral lines, relativistic correction to kinetic energy, spin-orbit term, Darwin term, fine structure spectral lines, Lamb shift (qualitative idea)

Atoms in external magnetic fields: Larmor's theorem, Stern-Gerlach experiment, normal Zeeman effect, Paschen Back effect, and anomalous Zeeman effect, g-factors

Two and multi-electron systems: Spin multiplicity, singlet and triplet states and selection rules in helium atom, central field approximation, Aufbau and Pauli exclusion principle,

Slater determinant, LS and JJ coupling scheme (equivalent and non-equivalent electrons), term symbols and Hund's rule, Lande' interval rule
Qualitative Discussion of: Lamb shift and Auger effect.

Unit – II - Molecular Physics (22 Hours)

Electronic states of diatomic molecules: Linear combination of atomic orbitals (LCAO), bonding and antibonding orbitals; 'gerade', 'ungerade', molecular orbitals and the ground state electronic configurations for homo and hetero-nuclear diatomic molecules, classification of molecular excited states of diatomic molecule, Vector representation of Orbital and electron spin angular momenta in a diatomic molecule, The Born-Oppenheimer approximation, Concept of Potential energy curve for a diatomic molecule, Morse potential. The Franck-Condon principle

Molecular Spectra of diatomic molecule: Rotational Spectra (rigid and non-rigid rotor), Vibrational Spectra (harmonic and anharmonic), Vibration-Rotation Spectrum of a diatomic molecule, Isotope effect, Intensity of spectral lines

Raman Effect: Classical Theory (with derivation) of Raman effect, pure rotational Raman Lines, Stoke's and Anti-Stoke's Lines, comparison with Rayleigh scattering

Idea of spin resonance spectroscopy (Nuclear Magnetic Resonance, Electron Spin Resonance) with few examples, estimation of magnetic field of the Sun.

References:

Essential Readings:

1) Physics of Atoms and Molecules, B. H. Bransden and C. J. Jochain, 2nd edition, Pearson
2) Fundamentals of Molecular Spectroscopy, C. N. Banwell and E. M. McCash, 1994, Tata McGraw – Hill
3) Atomic physics, J. B. Rajam and foreword by Louis De Broglie, 2010, S. Chand and Co.
4) Atoms, Molecules and Photons, W. Demtroder, 2nd edition, 2010, Springer
5) Atomic, Nuclear and. Particle Physics. Compiled by. The Physics Coaching Class. University of science and Technology of China, edited By Yung-Kuo Lim. World scientific.
6) Atomic Physics, S. N. Ghoshal, 2019, S. Chand Publication
7) Introduction to Spectroscopy, D. L. Pavia, G. M. Lampman, G. A. Kriz and J. R. Vyvyan, 5th edition, 2014, Brookes/Cole

Additional Readings:

1) Basic Atomic and Molecular Spectroscopy, J. M. Hollas, Royal Society of Chemistry
2) Molecular Spectra and Molecular Structure, G. Herzberg
3) Introduction to elementary particles, D. J Griffiths, 2008, Wiley
4) Atomic and molecular Physics, R. Kumar, 2013, Campus Book Int.
5) The Fundamentals of Atomic and Molecular Physics, Undergraduate Lecture Notes in Physics, 2013, Springer

ANNEXURE-31

Sub: Amendment to Ordinance V

[E.C Resolution No. 14-1-6/-(6) dated 09.06.2023 and 27-1-1/-(7) dated 25.08.2023]

Following addition be made to Appendix-II-A to the Ordinance V (2-A) of the Ordinances of the University;

Add the following:

Syllabi of Semester-IV, V and VI of the following Programmes of Department of Chemistry under Faculty of Science based on Under Graduate Curriculum Framework -2022 implemented from the Academic Year 2022-23 :

(i) BSc. (Hons.) Chemistry

(ii) BSc. (Physical Science) with Chemistry as one of Core Discipline

(iii) BSc. (Life Science) with Chemistry as one of the Core Discipline

(iv) BSc. (Industrial Chemistry) – Chemistry Component

(v) BSc (Hons.) Applied Life Sciences with Agrochemicals and Pest Management.

DEPARTMENT OF CHEMISTRY

SEMESTER IV

B Sc. (Hons) Chemistry

DISCIPLINE SPECIFIC CORE COURSE - 10(DSC-10): Coordination Chemistry and Reaction Mechanism

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Coordination Chemistry and Reaction Mechanism (DSC-10: Inorganic Chemistry - IV)	04	03	--	01	Class 12th with Physics, Chemistry, Mathematics	--

Learning Objectives

The Objectives of this course are as follows:

- To familiarize the students with coordination compounds which find manifold applications in diverse areas.
- To acquaint the student with the concept of Inorganic reaction mechanism.

Learning Outcomes

By studying this course, the students will be able to:

- Explain the terms- ligand, denticity of ligands, chelate, coordination number and use standard rules to name coordination compounds.
- Discuss the various types of isomerism possible in such compounds.
- Use Valence Bond Theory to predict the structure and magnetic behaviour of metal complexes and understand the terms inner and outer orbital complexes.

- Explain the meaning of the terms Δ_o, Δ_t, pairing energy, CFSE, high spin and low spin complexes and how CFSE affects thermodynamic properties like lattice enthalpy and hydration enthalpy.
- Explain magnetic properties and colour of complexes on the basis of Crystal Field Theory.
- Explain the reaction mechanism of coordination compounds and differentiate between kinetic and thermodynamic stability.

SYLLABUS OF DSC-10

Unit-1: Coordination Chemistry **(Hours: 28)**

Werner's Coordination theory, simple problems based on this theory

IUPAC nomenclature of coordination compounds, isomerism in coordination compounds (coordination numbers 4 and 6). Valence bond theory and its application to complexes of coordination numbers 4 and 6.

Crystal field theory, measurement of Δ_o. Calculation of CFSE in weak and strong fields, concept of pairing energies, factors affecting the magnitude of Δ_o. Octahedral vs. tetrahedral coordination, tetragonal distortions from octahedral geometry: Jahn-Teller theorem, square planar geometry. Qualitative aspect of Ligand field and MO Theory (for octahedral σ-donor, π- acceptor and π- donor complexes).

Unit-2: Stability of complexes and Inorganic Reaction Mechanism: **(Hours: 17)**

Brief discussion of thermodynamic and kinetic stability, Factors affecting stability of complexes, such as chelate effect, macrocyclic effect, resonance effect etc., trends in step wise formation constant, interpretation of lability and inertness based on VBT and CFT.

Introduction to inorganic reaction mechanisms, concept of reaction pathways, transition state, intermediate and activated complex. Substitution reactions in square planar complexes, factors affecting the rate of Substitution reactions in square planar complexes- such as charge effect, solvent effect and Trans- effect (Theories of trans-effect).

Practical component
Practical: **Credits: 01**
(Laboratory periods: 15 classes of 2 hours each)

(A) Argentometry

Estimation of Cl^-

(i) By Mohr's method

(ii) By Vohlard's method and

(iii) By Fajan's method

(B) Complexometric Titrations:

(i) Complexometric estimation of Mg^{2+}/ Zn^{2+} using EDTA

(ii) Estimation of total hardness of water samples

(iii) Estimation of Ca^{2+} in solution by substitution method

(iv) Estimation of Ca/Mg in drugs or biological samples**.**

(C) Properties of Complexes

Synthesis of ammine complexes of Ni(II) and its ligand exchange reactions (e.g. bidentate ligands like acetylacetone, dimethyl glyoxime, glycine) by substitution method.

Essential/recommended readings

Theory:

1. Atkins, P.W.; Overton, T.L.; Rourke, J.P.; Weller, M.T.; Armstrong, F.A. (2010), **Shriver and Atkins Inorganic Chemistry**, 5th Edition, Oxford University Press.
2. Miessler, G.L.; Fischer P.J.; Tarr, D. A. (2014), **Inorganic Chemistry**, Fifth Edition, Pearson.
3. Huheey, J.E.; Keiter, E.A.; Keiter; R. L.; Medhi, O.K. (2009), **Inorganic Chemistry-Principles of Structure and Reactivity**, Pearson Education.
4. Pfennig, B. W. (2015), **Principles of Inorganic Chemistry,** John Wiley & Sons.
5. Cotton, F.A.; Wilkinson, G.(1999), **Advanced Inorganic Chemistry,** Wiley-VCH.
6. Sodhi G.S. (2018), **Principles of Inorganic Chemistry,** Viva Books India.

Practicals:

1. Jeffery, G.H.; Bassett, J.; Mendham, J.; Denney, R.C. (1989), **Vogel's Textbook of Quantitative Chemical Analysis,** John Wiley and Sons,
2. Harris, D. C.; Lucy, C. A. (2016), **Quantitative Chemical Analysis,** 9th Edition, Freeman and Company.
3. Day, R. A.; Underwood, A. L. (2012), **Quantitative Analysis**, Sixth Edition, PHI Learning Private Limited.
4. Marr, G.; Rockett, B.W. (1972), **Practical Inorganic Chemistry**, Van Nostrand Reinhold.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE -11 (DSC-11): Carbohydrates, Lipids and Heterocyclic Compounds

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Carbohydrates, Lipids and Heterocyclic Compounds (DSC-11, Organic Chemistry IV)	04	03	--	01	Class 12th with Physics, Chemistry	--

Learning Objectives

The Objectives of this course are as follows:

- To familiarize students with the chemistry of carbohydrates, lipids, and heterocyclic compounds
- To enable students to develop novel, efficient, convenient, selective and environmentally benign synthetic methods for synthesis of heterocyclic compounds.

Learning outcomes

By studying this course, the students will be able to:

- Describe uses and applications carbohydrates, lipids and heterocycles
- Use the knowledge gained from study of carbohydrates, lipids and heterocycles to propose greener and better synthetic routes.
- Use the chemistry and biology of carbohydrates, lipids and heterocycles to better serve the mankind.

SYLLABUS OF DSC-11

Unit-1: Carbohydrates & Lipids (Hours: 24)

Monosaccharides: Constitution and absolute configuration of glucose and fructose, epimers and anomers, mutarotation, determination of ring size of glucose and fructose, Haworth projection and conformational structures; Interconversion of aldoses and ketoses; Killiani-Fischer synthesis and Ruff degradation; Linkage between monosaccharides: Comparative study of the structure of disaccharides (sucrose, maltose, lactose) and polysaccharides (starch, cellulose and glycogen) excluding their structure elucidation. Reactions of disaccharides-reducing property, hydrolysis, methylation and acetylation.
Lipids: Introduction to lipids, classification. Oils and fats: Common fatty acids present in oils and fats, Omega-3&6 fatty acids, trans fats, hydrogenation, hydrolysis, acid value, saponification value, iodine number. Biological importance of triglycerides, phospholipids, glycolipids, and steroids (cholesterol).

Unit-2: Heterocyclic Compounds (Hours:21)

Classification and nomenclature of heterocyclic compounds (containing only one hetero atom). Structure, aromaticity in 5-membered and 6-membered rings containing one heteroatom; Basicity and relative reactivity towards electrophilic substitution reactions (amongst five membered and six membered rings.

General methods of synthesis for: furan, thiophene, pyrrole (Paal-Knorr synthesis, Hantzsch synthesis), pyridine (Hantzsch synthesis), indole (Fischer Indole synthesis), quinoline (Skraup synthesis, Friedlander's synthesis, Knorr quinoline synthesis, Doebner-Miller synthesis)

Properties: Physical properties, discussion on the following reaction (with mechanism) for furan, pyrrole, thiophene, pyridine, indole and quinoline: Electrophilic substitution- nitration, sulphonation, halogenation, formylation, acylation, mercuration and carboxylation. Oxidation, reduction, addition, reactions showing acidic /basic character, reaction with diazonium salts, ring opening, ring expansion and nucleophilic substitution reaction wherever applicable should be discussed.

Practical: Credits: 01
(Laboratory periods: 15 classes of 2 hours each)

1. Estimation of sugars by using Fehling solution.
2. Functional group tests for amine, nitro and amides.
3. Determination of saponification value of the given oil.
4. Determination of iodine number of the given oil.
5. Systematic qualitative analysis of the given organic compounds containing monofunctional groups (carboxylic acids, carbonyl compounds, carbohydrates and esters) and preparation of one suitable derivative.

Essential/recommended readings

Theory:

1. Berg, J.M., Tymoczko, J.L., Stryer, L. (2019), **Biochemistry**, 9th Edition W.H. Freeman and Co.
2. Nelson, D.L., Cox, M.M., Lehninger, A.L. (2017), **Principles of Biochemistry**. W.H. Freeman and Co., International Edition.
3. Morrison, R. N., Boyd, R. N., Bhattacharjee, S.K. (2010), **Organic Chemistry**, 7th Edition, Dorling Kindersley (India) Pvt. Ltd., Pearson Education.
4. Parashar, R.K., Negi, B. (2016) **Chemistry of Heterocyclic Compounds**, Ane Books Pvt Ltd.
5. Kuashik, S., Singh, A. (2023), **Biomolecules: From Genes to Proteins**, Ist Edition, Berlin, Boston: De Gruyter.
6. Finar, I.L., (2012), **Organic Chemistry** Volume 1, 6th Edition, Pearson Education.
7. Singh J, Awasthi S K, Singh J, **Fundamentals of Organic Chemistry**, Pragati Prakashan Meerut.

Practical:

1. Vogel, A.I. (2012), **Quantitative Organic Analysis**, Part 3, Pearson Education.
2. Mann, F.G., Saunders, B.C. (2009), **Practical Organic Chemistry**, Pearson Education.
3. Ahluwalia, V.K., Dhingra, S. (2004), **Comprehensive Practical Organic Chemistry: Qualitative Analysis**, University Press.
4. Ahluwalia, V.K., Aggarwal, R. (2004), **Comprehensive Practical Organic Chemistry: Preparation and Quantitative Analysis**, University Press
5. Pasricha, S., Chaudhary, A. (2021), **Practical Organic Chemistry: Volume–I**, I K International Publishing house Pvt. Ltd, New Delhi
6. Pasricha, S., Chaudhary, A. (2021), **Practical Organic Chemistry: Volume–II**, I K International Publishing house Pvt. Ltd, New Delhi

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE-12 (DSC-12): Electrochemical Cells, Chemical Kinetics and Catalysis

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Electrochemical Cells, Chemical Kinetics and Catalysis (DSC-12, Physical Chemistry IV)	**04**	**03**	**--**	**01**	**Class 12th with Physics, Chemistry, Mathematics**	**--**

Learning Objectives

The Objectives of this course are as follows:

- To provide a detailed understanding about galvanic cells and their types
- To explain the applications of galvanic cells and EMF measurements.
- To get an understanding of the kinetics of simple and complex chemical reactions
- To give basic concept about catalysts and enzymes.
- To teach the working of potentiometer and different electrodes for performing potentiometric titrations
- To explain the experimental study of kinetics of simple reactions

Learning outcomes

By studying this course, the students will be able to:

- Explain the working of electrochemical cells and different types of galvanic cell.
- Devise a spontaneous galvanic cell using various combinations of half-cells.
- Understand the concept of concentration cell
- Use the appropriate galvanic cell to measure pH, calculate thermodynamic parameters and perform potentiometric titrations.
- Write rate law and derive rate equations for simple and complex reactions and understanding of theories of reaction rates.
- Understand different types of catalysts and mechanism of enzyme catalysis.
- Perform potentiometric titrations using appropriate electrodes for quantitative analysis.
- Set up experiments to study the kinetics of simple reactions.

SYLLABUS OF DSC-12

Unit-1: Electrochemical Cells **(Hours: 21)**

Rules of oxidation/reduction of ions based on half-cell potentials, Chemical cells, reversible and irreversible cells with examples. Electromotive force of a cell and its measurement, Nernst equation; Standard electrode (reduction) potential and its application to different kinds of half-cells. Application of EMF measurements in determining (i) free energy, enthalpy and entropy of a cell reaction, (ii) equilibrium constants, and (iii) pH values, using hydrogen, quinone-hydroquinone, glass and SbO/Sb_2O_3 electrodes. Concentration cells with and without transference, liquid junction potential; determination of activity coefficients and transference numbers. Qualitative discussion of potentiometric titrations (acid-base, redox, precipitation). Structure of electric double layer (qualitative aspects only).

Unit-2: Chemical Kinetics **(Hours: 18)**

Order and molecularity of a reaction, rate laws in terms of the advancement of a reaction, differential and integrated form of rate expressions up to second order reactions, experimental methods for determination of rate laws, kinetics of complex reactions (integrated rate expressions up to first order only): (i) Opposing reactions (ii) parallel reactions and (iii) consecutive reactions and their differential rate equations (steady-state approximation in reaction mechanisms) (iv) chain reactions.

Temperature dependence of reaction rates; Arrhenius equation; activation energy. Collision theory of reaction rates, Lindemann mechanism, qualitative treatment of the theory of absolute reaction rates, introduction to electrode kinetics (qualitative aspects only).

Unit-3: Catalysis: **(Hours: 6)**

Types of catalyst, specificity and selectivity, mechanisms of catalyzed reactions at solid surfaces. Enzyme catalysis, Michaelis-Menten mechanism, acid-base catalysis.

Practical: **Credits: 01**

(Laboratory periods: 15 classes of 2 hours each)

(A) Potentiometry:

Perform the following potentiometric titrations:

1. Strong acid vs. strong base
2. Weak acid vs. strong base
3. Dibasic acid vs. strong base
4. Mixture of strong and weak acid vs strong base
5. Potassium dichromate vs. Mohr's salt

(B) Chemical Kinetics:

Study the kinetics of the following reactions

1. Iodide-persulphate reaction by Initial rate method
2. Acid hydrolysis of methyl acetate with hydrochloric acid.
3. Saponification of ethyl acetate by conductometric measurements.

Suggested experiments

1. To study the kinetics of Iodide-persulphate reaction using integrated rate method.
2. Comparison of the strengths of HCl and H_2SO_4 by studying kinetics of hydrolysis of methyl acetate.

Essential/recommended readings
Theory:

1. Atkins, P.W.; Paula, J.de. (2014), **Atkin's Physical Chemistry Ed**., 10th Edition, Oxford University Press.
2. Ball, D. W. (2017), **Physical Chemistry,** 2nd Edition, Cengage Learning, India.
3. Castellan, G. W. (2004), **Physical Chemistry**, 4th Edition, Narosa.
4. Kapoor, K.L. (2015), **A Textbook of Physical Chemistry**, Vol 3, 6th Edition, McGraw Hill Education.
5. Kapoor, K.L. (2015), **A Textbook of Physical Chemistry**, Vol 5, 3rd Edition, McGraw Hill Education.
6. Laidler K.J. (2003), **Chemical Kinetics**, 3rd Edition, Pearson Education India.

Practical:

1. Khosla, B.D.; Garg, V.C.; Gulati, A. (2015), **Senior Practical Physical Chemistry**, R. Chand & Co, New Delhi.
2. Kapoor, K.L. (2019), **A Textbook of Physical Chemistry**, Vol.7, 1st Edition, McGraw Hill Education.
3. Garland, C. W.; Nibler, J. W.; Shoemaker, D. P. (2003), **Experiments in Physical Chemistry**, 8th Edition, McGraw-Hill, New York

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER-V

BSC. (HONS.) CHEMISTRY

DISCIPLINE SPECIFIC CORE COURSE -13 (DSC-13): Basics of Organometallic Chemistry

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Basics of Organometallic Chemistry (DSC-13)-Inorganic Chemistry-V	04	03	--	01	Class 12th with Physics, Chemistry, Mathematics	-

Learning Objectives

The Objectives of this course are as follows:

- To familiarize the students with the interactions of metal atom with organic molecules (or not so typical organic molecule), which is in an entirely different fashion as compared to coordination compounds.
- To familiarize the students with the structure and bonding in organometallic compounds
- To familiarize the student with how organometallic compounds can act as good catalysts for organic transformations and hencehave industrial importance associated with medicines, bioorganic synthesis, and energy production.

Learning Outcomes

By studying this course, the students will be able to:

- Identify and classify organometallic compounds of different types.
- Explain the stability of organometallic compounds and hence the requirement of special experimental conditions for their synthesis.
- Explain the bonding modes through VBT and MOT in these compounds.
- Explain the chemical nature of these compounds through various reactions thus acquiring skills to understand their applications.
- Explain the mechanism of catalysis by these compounds. This may prepare the student to predict the catalytic pathways for new reactions

SYLLABUS OF DSC-13

Unit-1: Introduction to Organometallic Chemistry (Hours: 6)

Definition**,** brief history, classification of organometallic compounds on the basis of bond type. Common notation used in organometallic chemistry, concept of hapticity of organic ligands, importance of organometallic chemistry, organometallic compounds as reagents, additives, and catalysts. Introduction to the 18-electron rule or effective atomic number rule, electron count of mononuclear, polynuclear and substituted metal carbonyls of 3d series and finding metal-metal bonds.

Unit-2: Structure and Bonding in Organometallic Compounds (Hours : 12)

Structures of mononuclear and binuclear carbonyls of Cr, Mn, Fe, Co and Ni using VBT. Molecular orbital theory applied to organometallic compounds, description of bonding of two electron ligands to transition metals. π-acceptor behavior of CO (MO diagram of CO to be discussed), π-bonding of CO with metal (synergic effect) and use of IR data to explain extent of back bonding, bonding modes of CO, symmetry of metal carbonyls.

Bonding between metal atoms and organic π- systems: linear (ethylene, allyl, butadiene) and cyclic (cyclopentadiene, benzene), Zeise's salt and comparison of synergic effect with that in carbonyls.

Metal alkyls and Metal-carbene complexes

Unit-3: Synthesis, Reactions and Applications of Organometallic Compounds (Hours: 16)

General methods of synthesis of metal carbonyls: direct carbonylation, reductive carbonylation, thermal and photochemical decomposition, of mono and binuclear carbonyls of 3d series.

Reaction of metal carbonyls: reduction, oxidation, photochemical substitution, migratory insertion of carbonyls, and nucleophilic addition of CO.

Synthesis of metal-alkene complexes through ligand addition, reduction and substitution and reaction of metal bound alkenes, Zeise's salt

Metal–sandwich compounds**:** Ferrocene: synthesis, physical properties and reactions: acylation, sulfonation, alkylation metallation, acetylation, chloromercuration, Mannich reaction, comparison of aromaticity and reactivity of ferrocene with that of benzene.

Synthesis and reactions of Metal alkyls and Metal-carbenes

Unit-4: Catalysis by Organometallic Compounds (Hours: 11)

General principles of catalysis, properties of catalysts, homogeneous and heterogeneous catalysis. (Catalytic steps, examples and industrial applications), deactivation and regeneration of catalysts, (catalytic poisons and promoter).

Organometallic catalysis of the following reactions of commercial importance and their mechanism:

1. Alkene hydrogenation (using Wilkinson's Catalyst)
2. Synthetic gasoline preparation (Fischer Tropsch reaction)
3. Polymerisation of ethene using Ziegler-Natta catalyst
4. Wacker oxidation process (Smidth process)
5. Hydroformylation reaction (Oxo-process)
6. Monsanto Acetic Acid process

Theoretical aspects of enlisted practicals are also to be included in the theory paper.

Practical component

Practical: Credits: 01

(Laboratory periods: 15 classes of 2 hours each)

1. To study and compare the UV-Vis spectrum of ferrocene (in methanol or acetonitrile) and potassium ferrocyanide (in water).
2. To study the cyclic voltammogram of ferrocene.
3. Preparation of Bis(acetylacetonato)copper(II) complex and characterisation through UV-Visible spectrum of its aqueous solution..
4. Preparation of tris(acetylacetonato)manganese(III) complex.
5. Preparation of Potassium tris(oxalato)ferrate(III) complex.
6. Preparation of Tetraamminecopper(II) sulphate monohydrate complex.
7. Preparation of Pentaamminechloridocobalt(III) chloride.
8. Preparation of Hexaamminecobalt(III) chloride
9. Determination of number of chloride ions in ionisation sphere to confirm the formula of complexes prepared in (6) and (7) through potentiometric titration or conductance measurements. (See reference 5 & 6 of Practicals)
10. Compare and interpret the visible spectrum of complexes prepared in (6) and (7) for shifts in wavelength maxima.

Any other organometallic compounds synthesised from time to time may also be included.

Essential/recommended readings

Theory:

1. Gary L Miesler, Paul J Ficsher, and Donald A Tarr, **Inorganic Chemistry** 5th Edition , Pearson.
2. Shriver & Atkins **Inorganic Chemistry,** Edn V, W.H. Freeman and Company.
3. F.A. Cotton & G. Wilkinson, Advanced Inorganic Chemistry, 5th Edition.
4. William W. Porterfield, Inorganic Chemistry, Ist Edition.
5. Huheey, J.E.; Keiter, E.A., Keiter; R. L.; Medhi, O.K. (2009), **Inorganic Chemistry-Principles of Structure and Reactivity**, Pearson Education.
6. Principles of Organometallic Chemistry by M.L.H Green, Coward, G.E Coates and K.Wade 3rd Edition.
7. Cotton, F.A.; Wilkinson, G.; Gaus, P.L. **Basic Inorganic Chemistry**, 3rd Edition, Wiley India.
8. Greenwood, N.N.; Earnshaw, A. (1997), **Chemistry of the Elements**, 2nd Edition, Elsevier.
9. Gupta, B. D., Elias, A. J., (2013) **Basic Organometallic Chemistry: Concepts, Syntheses and Applications,** 2nd Edition, Universities Press.

Practicals:

1. ChemTexts (2020) 6:22, https://doi.org/10.1007/s40828-020-00119-6
2. J. Chem Education: 1971, Volume 48(2), 133
3. Front. Chem. Sci. Eng. 2013, 7(3): 329–337, DOI 10.1007/s11705-013-1339-0
4. Orbital: Electron. J. Chem. 2019, 11 (6): 348-354

6. Vogel's text book of quantitative chemical analysis. Edn V

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE - 14 (DSC-14): Nucleic Acids, Amino Acids, Proteins and Enzymes

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Nucleic Acids, Amino Acids, Proteins and Enzymes (DSC-14, Organic Chemistry- V)	**04**	**02**	**--**	**02**	Class 12th with Physics, Chemistry	**--**

Learning Objectives

The objectives of this course are as follows:

- To familiarize students with the fascinating chemistry and biology of biomolecules, *i.e.*, nucleic acids and proteins etc..
- To develop the interest of students in the basic concepts of heredity, which are imparted through replication, transcription, and translation processes.
- To discuss basic fundamentals of enzyme action and inhibition, which forms the basis of drug action.

Learning outcomes

By studying this course, the students will be able to:

- Demonstrate how structure of biomolecules determines their reactivity and biological role.
- Gain insight into concepts of heredity through the study of genetic code, replication, transcription, and translation
- Demonstrate basic understanding of enzyme action and role of inhibitors
- Use knowledge gained to solve real world problems.

SYLLABUS OF DSC-14

Unit-1: Nucleic Acids **(Hours: 8)**

Structure of components of nucleic acids: Bases, Sugars, Nucleosides and Nucleotides. Nomenclature of nucleosides and nucleotides, structure of polynucleotides (DNA and RNA) and factors stabilizing them, biological roles of DNA and RNA; Concept of heredity: Genetic Code, Replication, Transcription and Translation.

Unit-2: Amino Acids, Peptides and Proteins **(Hours: 14)**

Amino acids and their classification; α-amino acids - Synthesis, ionic properties, and reactions. zwitterions, pKa values, isoelectric point, and electrophoresis; Study of peptides: determination of their primary structure-end group analysis; Synthesis of peptides using N-protecting, C-protecting and C-activating groups, Solid-phase synthesis; Overview of primary, secondary and tertiary structures of proteins, protein denaturation.

Unit-3: Enzymes **(Hours: 8)**

Introduction, classification, and characteristics of enzymes. Salient features of active site of enzymes. Mechanism of enzyme action (taking trypsin as an example), factors affecting enzyme action, coenzymes, and cofactors (including ATP, NAD, FAD), specificity of enzyme action (including stereospecificity). Enzyme inhibitors and their importance, phenomenon of inhibition (competitive, uncompetitive, and non-competitive inhibition including allosteric inhibition).

Practical component
Practical: **Credits: 02**
(Laboratory periods: 15 classes of 4 hours each)

1. Study of the titration curve of glycine.
2. Estimation of glycine by Sorenson Formol Titration
3. Qualitative analysis of proteins- Ninhydrin test, Biuret test, Millon's reagent test, Xanthoproteic test.
4. Estimation of proteins by Lowry's method.
5. Study of the action of salivary amylase on starch at room temperature.
6. Effect of temperature on the action of salivary amylase.
7. Effect of pH on the action of salivary amylase
8. Study the inhibition of α-Amylase by copper sulphate
9. Isolation and estimation of DNA using cauliflower/onion.

Essential/recommended readings

Theory:

1. Berg, J.M., Tymoczko, J.L., Stryer, L. (2019), **Biochemistry**, Nineth Edition W.H. Freeman and Co.
2. Nelson, D.L., Cox, M.M., Lehninger, A.L. (2017), **Principles of Biochemistry**. W.H. Freeman and Co., International Edition.
3. Murray, R.K., Granner, D.K., Mayes, P.A., Rodwell, V.W. (2009), **Harper's Illustrated Biochemistry**. Lange Medical Books/McGraw-Hill.
4. Brown, T.A. (2018), **Biochemistry**, (First Indian Edition) Viva Books.
5. Kuashik, S., Singh, A. (2023), **Biomolecules: From Genes to Proteins**, First Edition, Berlin, Boston: De Gruyter.
6. Voet, D., Voet, J.G. (2010), **Biochemistry**, Fourth Edition, Wiley.

7. Singh J, Awasthi S K, Singh J, **Fundamentals of Organic Chemistry**, Pragati Prakashan Meerut.

Additional Resources:

1. Finar, I.L. (2008), **Organic Chemistry**, Volume 2, Fifth Edition, Pearson Education.
2. Bruice, P.Y. (2020), **Organic Chemistry,** Egighth Edition, Pearson Education.

Practicals:

1. **Manual of Biochemistry Workshop** (2012), Department of Chemistry, University of Delhi.
2. Kumar, A., Garg, S., Garg, N. (2015), **Biochemical Tests: Principles and Protocols**. Viva Books.
3. Pasricha, S., Chaudhary, A. (2021), **Practical Organic Chemistry: Volume–II**, I K International Publishing house Pvt. Ltd, New Delhi

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE-15 (DSC-15): Quantum Chemistry and Organic Chemistry IV Covalent bonding

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Quantum Chemistry and Covalent bonding (DSC-15, Physical Chemistry V)	**04**	**03**	**--**	**01**	**Class 12th with Physics, Chemistry, Mathematics**	

Learning objectives

The objectives of this course are as follows:

- To make students understand the limitations of classical mechanics and the need of quantum chemistry
- To familiarize the students with the postulates of quantum chemistry
- To explain how to apply the postulates to derive equations for various models and extend to hydrogen atom and hydrogen like atoms.
- To explain the valence bond and molecular orbital theories and their applications to simple molecules
- To explain the use of some computational software

Learning outcomes

By studying this course, students will be able to:

- Explain the limitations of classical mechanics and solution in terms of quantum mechanics for atomic/molecular systems.
- Develop an understanding of quantum mechanical operators, quantization, probability distribution, uncertainty principle
- Set up Schrodinger equations for different types of systems
- Explain the concept of covalent bonding based on valence bond theory and molecular orbital theory.
- Perform calculations using different software and plot different wavefunctions and probability distribution curves.
- Perform simple calculations using appropriate quantum mechanical methods in different computational software

SYLLABUS OF DSC-15

Unit-1: Quantum Chemistry **(Hours: 22)**

Postulates of quantum mechanics, quantum mechanical operators and commutation rules, Schrödinger equation and its application to free particle and particle in a box rigorous treatment), quantization of energy levels, zero-point energy and Heisenberg Uncertainty principle; wave functions, probability distribution functions, nodal properties, Extension to two and three- dimensional boxes, separation of variables, degeneracy.

Qualitative treatment of simple harmonic oscillator model of vibrational motion: Setting up of Schrödinger equation and discussion of solution and wave functions. Vibrational energy of diatomic molecules and zero-point energy.

Angular momentum. Rigid rotator model of rotation of diatomic molecule. Schrödinger equation in Cartesian and spherical polar coordinates (derivation not required). Separation of variables. Spherical harmonics. Discussion of solution (Qualitative).

Unit-2: Hydrogen atom (Hours: 08)

Qualitative treatment of hydrogen atom and hydrogen-like ions: setting up of Schrödinger equation in spherical polar coordinates, radial part and quantization of energy (only final energy expression). Average and most probable distances of electron from nucleus. Zeeman effect, Introduction of spin quantum number and magnetic spin quantum number Setting up of Schrödinger equation for many electron atoms (He, Li), Indistinguishability of electrons and Pauli exclusion principle, Need for approximation methods. Statement of variation theorem and application to simple systems (particle-in-a-box, harmonic oscillator, hydrogen atom).

Unit-3: Covalent bonding (Hours: 15)

Setting up of Schrödinger equation, Born-Openheimer approximation, LCAO-MO treatment of H_2^+ and its qualitative extension to H_2, Valence bond (VB) treatment of H_2, Comparison of LCAO-MO and VB wave functions of H_2 and their refinements, Qualitative description of LCAO-MO of homonuclear and heteronuclear diatomic molecules-HF and LiH.

Practical component

Practical: Credits: 01

(Laboratory periods: 15 classes of 2 hours each)

1. Plot the radial wavefunctions and probability distribution for H atom's 1s, 2s, 2p orbital using software like EXCEL.
2. Using a software such as ArgusLab, plot HOMO, LUMO and ESP maps of various molecules.
3. Draw probability plots for a particle in a 1-dimensional box for different values of quantum number n - commenting on the number of points of zero probability and then correlate them with the correspondence principle.
4. Plot the electron density contour maps of sigma molecular orbitals for diatomic homonuclear molecules.
5. Plotting of the wave function and probability curve for simple harmonic motion and interpret the results for first two levels.

6. Plotting energy as a function of distance for simple harmonic motion - parabolic curve.
7. Using software such as ArgusLab calculate properties such as dipole moment and Mulliken charges using quantum mechanical methods.

Note: Any other suitable software may also be used .

Essential/recommended readings

Theory:

1. Kapoor, K.L. (2015), **A Textbook of Physical Chemistry**, McGraw Hill Education, Vol 4, 5th Edition, McGraw Hill Education.
2. House, J.E. (2004), **Fundamentals of Quantum Chemistry**, 2nd Edition, Elsevier.
3. McQuarrie, D.A. (2016), **Quantum Chemistry**, Viva Books.
4. Chandra, A. K. (2001), **Introductory Quantum Chemistry**, Tata McGraw-Hill.
5. House, J.E. (2004), **Fundamentals of Quantum Chemistry**, 2nd Edition, Elsevier

Suggested Readings

1. Atkins, P.W.; Friedman, R. (2010), **Molecular Quantum Mechanics**, 5th Edition, Oxford University Press.

Practical:

1. McQuarrie, D. A. **Mathematics for Physical Chemistry** University Science Books (2008).
2. Mortimer, R. **Mathematics for Physical Chemistry**. 3rd Ed. Elsevier (2005).
3. Steiner, E**. The Chemical Maths Book** Oxford University Press (1996).
4. Yates, P. **Chemical Calculations**. 2nd Ed. CRC Press (2007).
5. Levie, R. de, **How to use Excel in analytical chemistry and in general scientific data analysis**, Cambridge Univ. Press (2001) 487 pages.
6. Noggle, J. H. **Physical Chemistry on a Microcomputer**. Little Brown & Co. (1985).

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER-VI

BSC. (HONS.) CHEMISTRY

DISCIPLINE SPECIFIC CORE COURSE -16 (DSC-16): Principles in Qualitative Analysis and Bioinorganic Chemistry

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Principles in Qualitative Analysis and Bioinorganic Chemistry (DSC-16: Inorganic Chemistry -VI)	**04**	**02**	**--**	**02**	Class 12th with Physics, Chemistry, Mathematics	**--**

Learning Objectives

The Objectives of this course are as follows:

- To discuss the principles of qualitative analysis
- To understand the concept of solubility products and the common ion effect on the separation of cations.
- To discuss the importance of metal ions in biological systems.
- To discuss the applications of iron in physiology, including iron transport and storage.

Learning Outcomes:

By the end of the course, the students will be able to:

- Explain the basic principles of qualitative inorganic analysis.
- Discuss the influence of solubility products and the common ion effect on the separation of cations.
- Discuss the identification of interfering anions and their removal.
- Explain and discuss the importance of metal ions in biological systems, through discussions on
  metal-containing enzymes, the sodium-potassium pump.
- Discuss the applications of iron in physiology, including iron transport and storage system.

Unit-1: Theoretical Principles in Qualitative Analysis (Hours: 12)

Basic principles involved in analysis of cations and anions. Solubility product, common-ion effect. Principles involved in separation of cations into groups and choice of group reagents. Interfering anions (fluoride, borate, oxalate and phosphate), need to remove them after Group II and methods of removal. Analysis of insoluble substances.

Unit-2: Bioinorganic Chemistry (Hours: 18)

Metal ions present in biological systems, classification of elements according to their action in biological system. Geochemical effect on the distribution of metals. Sodium / potassium pump, conduction of nerve impulses, Ca-pump, carbonic anhydrase and carboxypeptidase. Excess and deficiency of some trace metals. Toxicity of metal ions (Hg, Pb, Cd and As), reasons for toxicity, Use of chelating agents in medicine, Cisplatin as an anti-cancer drug.

Iron and its application in bio-systems, Haemoglobin, Myoglobin, cytochrome-C-oxidase ; Storage and transfer of iron.

Practical: Credits: 02

(Laboratory periods: 15 classes of 4 hours each)

(A) Qualitative semi-micro analysis of mixtures containing 3 anions and 3 cations. Emphasis should be given to the understanding of the chemistry of different reactions. The following radicals are suggested:
CO_3^{2-}, NO_2^-, S^{2-}, SO_3^{2-}, SO_4^{2-}, $S_2O_3^{2-}$, CH_3COO^-, F^-, Cl^-, Br^-, I^-, NO_3^-, BO_3^{3-}, $C_2O_4^{2-}$, PO_4^{3-}, NH_4^+, K^+, Pb^{2+}, Cu^{2+}, Cd^{2+}, Bi^{3+}, Sn^{2+}, Sb^{3+}, Fe^{3+}, Al^{3+}, Cr^{3+}, Zn^{2+}, Mn^{2+}, Co^{2+}, Ni^{2+}, Ba^{2+}, Sr^{2+}, Ca^{2+}, Mg^{2+}

(B) Mixtures should preferably contain one interfering anion, or insoluble component ($BaSO_4$, $SrSO_4$, $PbSO_4$, CaF_2 or Al_2O_3) or combination of anions e.g. CO_3^{2-} and SO_3^{2-}, NO_2^- and NO_3^-, $Cl^-$and Br^-, Cl^- and I^-, Br^- and I^-, NO_3^- and Br^-, NO_3^- and I^-. Spot tests should be done whenever possible.

Essential/recommended readings

1. Svehla, G. (1996), **Vogel's Qualitative Inorganic Analysis**,7th Edition, Prentice Hall.
2. Huheey, J.E.; Keiter, E.A., Keiter; R. L.; Medhi, O. K. (2009), **Inorganic Chemistry Principles of Structure and Reactivity**, Pearson Education.
3. Lippard, S.J.; Berg, J.M. (1994), **Principles of Bioinorganic Chemistry**, Panima Publishing Company.
4. *Biological Inorganic Chemistry* by **RR Crichton** in additional books
5. *Bioinorganic Chemistry- Inorganic Elements in the Chemistry of Life: An Introduction and Guide*, 2nd Edition by **Wolfgang Kaim, Brigitte Schwederski, Alex Klein**
6. Atkins, P.W.; Overton, T.L.; Rourke, J.P.; Weller, M.T.; Armstrong, F.A. (2010), 5th Edition, Oxford University Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 17 (DSC-17): Polynuclear Hydrocarbons, Photochemistry, Pericyclic Reactions, and Spectroscopy of Organic Compounds

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Polynuclear Hydrocarbons, Photochemistry, Pericyclic Reactions, and Spectroscopy of Organic Compounds (DSC-17, Organic Chemistry-VI)	04	03	--	01	Class 12th with Physics, Chemistry	-

Learning objectives

The objectives of this course are as follows:

- To provide thorough knowledge of the chemistry of polynuclear hydrocarbons .
- To detail the basic principles and applications of pericyclic reactions and photochemistry
- To familiarize students with the various tools and techniques for identifying and characterizing the organic compounds through their interactions with electromagnetic radiations *viz.* UV-Visible, IR and NMR spectroscopy.

Learning outcomes

By studying this course, students will be able to:

- Discuss and use the chemistry of polynuclear hydrocarbons for application in real world problems.
- Discuss and use the pericyclic reactions and photochemistry for research and other applications.
- Use spectroscopic techniques to determine structure and stereochemistry of known and unknown compounds.

SYLLABUS OF DSC-17

Unit-1: Polynuclear Hydrocarbons (Hours: 6)

Introduction, classification, structure, nomenclature and uses. Aromaticity of polynuclear hydrocarbons, structure elucidation of Naphthalene and general methods of preparation of naphthalene and anthracene (including Haworth method, Friedel Craft acylation, Diels Alder reaction, Elbs reaction). Relative reactivity of naphthalene and anthracene in comparison to benzene.

Discussion on the following reactions (with mechanism) for Naphthalene and Anthracene: Addition reactions, Oxidation, Electrophilic substitution- Friedel Craft reaction, Chloromethylation, Halogenation, Formylation, Nitration and sulphonation. Reduction reaction and Diels Alder reaction.

Unit-2: **Photochemistry and Pericyclic reactions (Hours: 12)**

Photochemistry

Introduction and basic principles of photochemistry, photochemical energy, photolytic cleavage, photochemistry of carbonyl compounds (Norrish type 1, Norrish type 2 and Peterno Buchi reactions)

Pericyclic Reactions

Introduction: Types of pericyclic reactions (Electrocyclic, Cycloaddition and Sigmatropic Rearrangements), Symmetry in σ and π molecular orbitals, Frontier Molecular Orbitals.

Electrocyclic Reactions: Conrotatory and Disrotatory motion in ring opening and ring closing reactions in (4n) and (4n+2) π electron systems, FMO method, Woodward Hoffmann rule.

Cycloaddition Reactions: [2+2] and [4+2] π cycloaddition reactions, Diels Alder reaction (electron rich and electron poor dienes and dienophiles, Stereochemistry, Alder rule of endo addition).

Sigmatropic Reactions: [1,3], [1,5] and [3,3] sigmatropic rearrangements, Cope rearrangement, Claisen Rearrangements.

Unit-3: **Spectroscopy of Organic Compounds** **(Hours: 27)**

UV-Visible Spectroscopy: Types of electronic transitions, λ_{max}, chromophores and Auxochromes, bathochromic and hypsochromic shifts, intensity of absorption, factors affecting λ_{max} values, application of Woodward Rules for calculation of λ_{max} for the following systems: α, β-unsaturated aldehydes, ketones, carboxylic acids and esters; conjugated dienes: alicyclic, homoannular and heteroannular; Extended conjugated systems (aldehydes, ketones and dienes); distinction between *cis* and *trans* isomers by UV; Colour concept, Theory of colour and constitution-Witt's theory, valence bond and molecular orbital theory.

IR Spectroscopy: Fundamental and non-fundamental molecular vibrations; IR absorption positions of O and N containing functional groups; effect of H-bonding, conjugation, resonance and ring size on IR absorptions; fingerprint region and its significance, application of IR in functional group analysis.

^{1}H-NMR Spectroscopy: Basic principles of proton magnetic resonance, chemical shift and factors, influencing it; equivalent and non-equivalent protons (chemical and magnetic equivalence), Spin–Spin coupling and coupling constant; Anisotropic effects in alkene, alkyne, aldehydes and aromatics. Interpretation of NMR spectra of simple compounds containing AX, AX_2, AX_3, A_2X_3 spin systems, special case of 1-nitropropane.

Applications of IR, UV and ^{1}H-NMR Spectroscopy for identification of simple organic compounds (spectra to be provided for some representative compounds).

Practical component

Practical: **Credits: 01**

(Laboratory periods: 15 classes of 2 hours each)

1. Systematic qualitative analysis of the given organic compounds containing monofunctional groups (Aryl halides, nitro compounds, amines and amides) and simple

bifunctional compounds like salicylic acid, cinnamic acid, *p*-nitro phenol etc. and preparation of one suitable crystalline derivative.

2. Differentiation between of *o*-/*p*-hydroxybenzaldehyde by IR spectroscopy (Spectra to be provided).
3. Differentiation between of benzoic acid and cinnamic acid by UV spectroscopy (Spectra to be provided).

Essential/recommended readings

Theory:

1. Morrison, R. N., Boyd, R. N., Bhattacharjee, S.K. (2010), **Organic Chemistry**, 7th Edition, Dorling Kindersley (India) Pvt. Ltd., Pearson Education.
2. Finar, I.L. **Organic Chemistry** Volume 1, Dorling Kindersley (India) Pvt. Ltd., Pearson Education.
3. Finar, I.L. **Organic Chemistry** Volume 2, Dorling Kindersley (India) Pvt. Ltd., Pearson Education.
4. Solomons, T.W.G., Fryhle, C.B.; Snyder, S.A. (2017), **Organic Chemistry**, 12th Edition, Wiley.
5. Silverstein R.M. (2005), **Spectrometric Identification of organic compounds**, 7th edition, John Wiley and Sons,
6. Kemp W. (2019), **Organic Spectroscopy**, Third Edition, MacMillan.
7. Pavia, D. (2015), **Introduction to Spectroscopy**, Fifth Edition, Cengage Learning India Pvt. Learning.
8. Scheinmann, F., **Introduction to spectroscopic methods for identification of organic compounds**, Volume 2, Pergamon Press.
9. Ahluwalia, V.K., Parashar, R.K. (2011), **Organic Reaction Mechanisms**, 4th Edition, Narosa Publishing House.
10. Horspool, W.M. (1976) **Aspects of Organic Photochemistry**, Academic Press.
11. Singh J, Awasthi S K, Singh J, **Fundamentals of Organic Chemistry**, Pragati Prakashan Meerut.

Practical:

1. Vogel, A.I. (2012), **Quantitative Organic Analysis**, Part 3, Pearson Education.
2. Mann, F.G., Saunders, B.C. (2009), **Practical Organic Chemistry**, Pearson Education.
3. Furniss, B.S., Hannaford, A.J., Smith, P.W.G., Tatchell, A.R. (2012), **Vogel's Textbook of Practical Organic Chemistry**, Fifth Edition, Pearson.
4. Ahluwalia, V.K., Dhingra, S. (2004), **Comprehensive Practical Organic Chemistry: Qualitative Analysis**, University Press.
5. Ahluwalia, V.K., Aggarwal, R. (2004), **Comprehensive Practical Organic Chemistry: Preparation and Quantitative Analysis**, University Press
6. Pasricha, S., Chaudhary, A. (2021), **Practical Organic Chemistry: Volume–I**, I K International Publishing house Pvt. Ltd, New Delhi
7. Pasricha, S., Chaudhary, A. (2021), **Practical Organic Chemistry: Volume–II**, I K International Publishing house Pvt. Ltd, New Delhi

DISCIPLINE SPECIFIC CORE COURSE-18 (DSC-18): Photochemistry and Spectroscopy

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Photochemistry and Spectroscopy (DSC-18, Physical Chemistry VI)	**04**	**02**	**-**	**02**	**Class XII with Physics, Chemistry and Mathematics**	

Learning Objectives:

The Learning Objectives of this course are as follows:

- To make students understand the laws of photochemistry and their applications
- To understand the basis of molecular spectroscopy
- To study different types of spectroscopic techniques and their applications

Learning Outcomes:

By studying this course, students will be able to:

- Explain low and high quantum yield
- Explain photosensitized reactions
- Apply the concept of quantization to spectroscopy.
- Interpret various types of spectra and know about their application in structure elucidation

SYLLABUS OF DSC-18

Unit-1: Introduction to Molecular Spectroscopy and Photochemistry (Hours: 6)

Interaction of electromagnetic radiation with molecules and various types of spectra; Born Oppenheimer approximation.

Characteristics of electromagnetic radiation. Lambert-Beer's law and its limitations, physical significance of absorption coefficients. Laws of photochemistry, quantum yield, actinometry, examples of low and high quantum yields, photochemical equilibrium and the differential rate of photochemical reactions, photosensitized reactions, quenching. Role of photochemical reactions in biochemical processes, photostationary states, chemiluminescence.

Unit-2: Rotational, Vibrational , Raman and Electronic Spectroscopy (Hours: 14)

Rotational spectroscopy: Selection rules, intensities of spectral lines, determination of bond lengths of diatomic molecules, isotopic substitution, classification of molecules based on moment of inertia, applications of rotation spectroscopy (e.g. microwave appliances)

Vibrational spectroscopy: Classical equation of vibration, computation of force constant, amplitude of diatomic molecular vibrations, anharmonicity, Morse potential, dissociation energies, fundamental frequencies, overtones, hot bands, degrees of freedom for polyatomic molecules, modes of vibration, concept of group frequencies.

Vibration-rotation spectroscopy: diatomic vibrating rotator, P, Q, R branches.

Raman spectroscopy: Qualitative treatment of Rotational Raman effect; effect of nuclear spin, Vibrational Raman spectra, Stokes and anti-Stokes lines; their intensity difference, rule of mutual exclusion.

Electronic spectroscopy

Franck-Condon principle, electronic transitions, singlet and triplet states, Jablonski diagrams, fluorescence and phosphorescence, dissociation and predissociation, calculation of electronic transitions of polyenes using free electron model.

Unit-3: NMR and ESR (Hours: 10)

Nuclear Magnetic Resonance (NMR) spectroscopy: Principles of NMR spectroscopy, Larmor precession, chemical shift and low-resolution spectra, different scales (δ and T), spin-spin coupling and high resolution spectra, interpretation of PMR spectra of simple organic molecules like methanol, ethanol and acetaldehyde.

Principles of ESR spectroscopy, hyperfine structures, ESR of simple radicals

Practical component

Practical: Credits: 02

(Laboratory periods: 15 classes of 4 hours each)

(A) Colorimetry :

1. Verify Lambert-Beer's law and determine the concentration of (i) $CuSO_4$ (ii) $KMnO_4$ (iii) $K_2Cr_2O_7$ in a solution of unknown concentration

2. Determine the concentrations of $KMnO_4$ and $K_2Cr_2O_7$in a mixture.
3. Study the kinetics of iodination of propanone in acidic medium.
4. Determine the amount of iron present in a sample using 1,10-phenathroline.
5. Determine the dissociation constant of an indicator (phenolphthalein).
6. Study the kinetics of interaction of crystal violet/ phenolphthalein with sodium hydroxide

(B) UV/Visible spectroscopy:

1. Study the 200-500 nm absorbance spectra of $KMnO_4$ and $K_2Cr_2O_7$ (in 0.1 M H_2SO_4) and determine the λ_{max} values. Calculate the energies of the two transitions in different units (J molecule^{-1}, kJ mol^{-1}, cm^{-1}, eV).
2. Study the pH-dependence of the UV-Vis spectrum (200-500 nm) of $K_2Cr_2O_7$.
3. Record the 200-350 nm UV spectra of the given compounds (acetone, acetaldehyde, 2- propanol, acetic acid) in water. Comment on the effect of structure on the UV spectra of organic compounds.

(C) Analysis of the given vibration-rotation spectrum of HCl(g)

Essential/recommended readings

Theory:

1. Banwell, C.N.; McCash, E.M. (2006), **Fundamentals of Molecular Spectroscopy**, Tata McGraw- Hill.
2. Kapoor, K.L. (2015), **A Textbook of Physical Chemistry**, McGraw Hill Education, Vol 4, 5th Edition, McGraw Hill Education.
3. Kakkar, R. (2015), **Atomic & Molecular Spectroscopy**, Cambridge University Press.

Suggested Readings:

1. Engel, T.; Reid, P. (2013), **Quantum Chemistry and Spectroscopy**, Pearson

Practical:

1. Khosla, B.D.; Garg, V.C.; Gulati, A. (2015), **Senior Practical Physical Chemistry**, R. Chand & Co, New Delhi.
2. Garland, C. W.; Nibler, J. W.; Shoemaker, D. P. (2003), **Experiments in Physical Chemistry**, 8th Edition, McGraw-Hill, New York
3. Kapoor, K.L. (2019), **A Textbook of Physical Chemistry**, Vol.7, 1st Edition, McGraw Hill Education.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

POOL OF DSE FOR III/IV/V/VI SEMESTER

DISCIPLINE SPECIFIC ELECTIVE COURSE - 1 (DSE-1): Inorganic Materials of Industrial Importance

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Inorganic Materials of Industrial Importance (DSE-1)	**04**	**03**	**--**	**01**	Class 12th with Physics, Chemistry	--

Learning Objectives

The objectives of this course are as follows:

- To make students understand the diverse roles of inorganic materials in the industry and to give an insight into how these raw materials are converted into products used in day-to-day life.
- To make students learn about silicates, fertilizers, surface coatings, batteries, engineering materials for mechanical construction.
- To develop the interest of students in the frontier areas of inorganic and material chemistry.

Learning outcomes

By studying this course, the students will be able to:

- State the composition and applications of the different kinds of glass.
- State the composition of cement and discuss the mechanism of setting of cement.
- Defend the suitability of fertilizers for different kinds of crops and soil.
- Explain the process of formulation of paints and the basic principle behind the protection offered by the surface coatings.
- Describe the principle, working and applications of different batteries.
- Evaluate the synthesis and properties of nano-dimensional materials, various semiconductor and superconductor oxides.

SYLLABUS OF DSE-1

Unit 1: Silicate Industries **(6 Hours**

Glass: Glassy state and its properties, classification (silicate and non-silicate glasses). Manufacture and processing of glass. Composition and properties of the following types of glasses: Soda lime glass, lead glass, armoured glass, different types of safety glass, borosilicate glass, fluorosilicate glass, coloured glass, photosensitive glass, photochromic glass, glass wool and optical fibre.

Cement: Manufacture of Portland cement and the setting process, Different types of cements: quick setting cements, eco-friendly cement (slag cement), pozzolana cement.

Unit 2: Fertilizers (6 Hours)

Different types of fertilizers (N, P and K). Importance of fertilizers, chemistry involved in the manufacture of the following fertilizers: urea, calcium ammonium nitrate, ammonium phosphates, superphosphate of lime and potassium nitrate.

Unit 3: Surface Coatings (18 Hours

Brief introduction to and classification of surface coatings, paints and pigments: formulation, composition and related properties, pigment volume concentration (PVC)and critical pigment volume concentration (CPVC), fillers, thinners, enamels and emulsifying agents. Special paints: heat retardant, fire retardant, eco-friendly paints, plastic paints, water and oil paints. Preliminary methods for surface preparation, metallic coatings (electrolytic and electroless with reference to chrome plating and nickel plating), metal spraying and anodizing.

Contemporary surface coating methods like physical vapor deposition, chemical vapor deposition, galvanising, carburizing, sherardising, boriding, nitriding and cementation.

Unit 4: Batteries (9 Hours)

Primary and secondary batteries, characteristics of an Ideal Battery, principle, working, applications and comparison of the following batteries: Pb- acid battery, Li-metal batteries, Li-ion batteries, Li-polymer batteries, solid state electrolyte batteries, fuel cells, solar cells and polymer cells.

Unit 5: Nano dimensional materials (6 Hours)

Introduction to zero, one and two-dimensional nanomaterial: Synthesis, properties and applications of fullerenes, carbon nanotubes, carbon fibres, semiconducting and superconducting oxides.

Practical component

Practicals: Credits:

01 (Laboratory periods:15 classes of 2 hours each)

(At least four experiments to be performed)

1. Detection of constituents of Ammonium Sulphate fertilizer (Ammonium and Sulphate ions) by qualitative analysis and determine its free acidity.

2. Detection of constituents of CAN fertilizer (Calcium, Ammonium and Nitrate ions) fertilizer and estimation of Calcium content.

3. Detection of constituents of Superphosphate fertilizer (Calcium and Phosphate ions) and estimation of phosphoric acid content.

4. Analysis of (Cu, Ni) in alloy or synthetic samples (methods involving Gravimetry and Spectrophotometry).

5. Analysis of (Cu, Zn) in alloy or synthetic samples (Multiple methods involving Iodometry, and Potentiometry).

6. Synthesis of pure ZnO and Cu doped ZnO nanoparticles.

7. Synthesis of silver nanoparticles by green and chemical approach methods and its characterization using UV-visible spectrophotometer

Essential/recommended readings

Theory:

1. West, A. R. (2014),**Solid State Chemistry and Its Application**, Wiley
2. Smart, L. E.; Moore, E. A. (2012),**Solid State Chemistry An Introduction**, CRC Press Taylor & Francis.
3. Atkins, P.W.; Overton, T.L.; Rourke, J.P.; Weller, M.T.; Armstrong, F.A.(2010),**Shriver and Atkins Inorganic Chemistry**, W. H. Freeman and Company.
4. Kent, J. A. (ed**)** (1997), **Riegel's Handbook of Industrial Chemistry**, CBS Publishers, New Delhi.
5. Poole Jr.; Charles P.; Owens, Frank J.(2003), **Introduction to Nanotechnology**, John Wiley and Sons.

Practical:

1. Svehla, G.(1996),**Vogel's Qualitative Inorganic Analysis**, Prentice Hall.
2. Banewicz, J. J.; Kenner, C.T. **Determination of Calcium and Magnesium in Limestones and Dolomites**, Anal. Chem., 1952, 24 (7), 1186–1187.
3. Ghorbani, H. R.; Mehr, F.P.; Pazoki, H.; Rahmani B. M. **Synthesis of ZnO Nanoparticles by Precipitation Method.** Orient J Chem 2015;31(2).
4. Orbaek, W.; McHale, M.M.; Barron, A.R. **Synthesis and characterization of silver nanoparticles for an undergraduate laboratory**, J. Chem. Educ. 2015, 92, 339−344.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 2 (DSE-2): Green Chemistry in Organic Synthesis

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Green Chemistry in Organic Synthesis (DSE-2)	04	03	--	01	Class 12th with Physics, Chemistry	Basic knowledge of organic reactions

Learning objectives

The objectives of this course are as follows:

- To create awareness about the chemistry that is not harmful for human health and the environment.
- To provide thorough knowledge of the green chemistry principles that can be used to develop chemistry in greener way.
- To familiarize students with new remediation technologies for the cleaning up of hazardous substances.
- To use green chemistry for boosting profits, increase productivity and ensure sustainability with absolute zero waste.
- To learn about innovations and applications of green chemistry in education that helps companies to gain environmental benefits as well as to achieve economic and societal goals also
- The objective of the practical component is to develop basic skills to be able to design, develop and run chemical processes in a sustainable way.

Learning outcomes

By studying this course, students will be able to:

- List the twelve principles of green chemistry and build the basic understanding of toxicity, hazard and risk related to chemical substances.
- Calculate atom economy, E-factor and relate them in all organic synthesis
- State the uses of catalyst over stoichiometric reagents
- Debate and use green solvents, renewable feedstock, and renewable energy sources for carrying out safer chemistry
- Use green chemistry for problem solving, innovation and finding solutions to environmental problems.

- Design safer processes, chemicals, and products through understanding of inherently safer design (ISD)
- Discuss the success stories and use real-world cases to practice green chemistry

SYLLABUS OF DSE-2

UNIT – 1: Introduction (3 Hours

Introduction to Green Chemistry, some important environmental laws, pollution prevention Act of 1990, emergence of green chemistry, need for Green Chemistry. Goals of Green Chemistry. Limitations/ Obstacles in the pursuit of the goals of Green Chemistry. Green chemistry in sustainable development.

UNIT – 2: **Application of Green Chemistry Principles (36 Hours**

Principles of Green Chemistry and designing a chemical synthesis
Concept familiarization and application of green chemistry principles using specific examples

1. Prevention of waste/ by products; waste or pollution prevention hierarchy
2. Green metrics to assess greenness of a reaction: Calculation of atom economy of the rearrangement, addition, substitution, and elimination reactions; calculation of E-factor for industrial processes
3. Prevention/ minimization of hazardous/ toxic products
4. Safer Solvent and Auxiliaries: Problems associated with conventional reaction media Some Common Green solvents: Introduction, application, advantages, and disadvantages of green solvents in organic synthesis (taking suitable examples). Special emphasis on the following:
   i. Super Critical Fluids (with special reference to carbon dioxide)
   ii. Water: Concept of In-water, and on-water reactions (with special reference to synthesis of terpinol and linalool in water, Benzoin condensation, Heck reaction)
   iii. Ionic Liquids: Physical properties and classification of Ionic Liquids (with special reference to Diels Alder reaction and Coumarin synthesis in ionic liquids)
   iv. Biomass derived Solvents: Physicochemical properties, Use of glycerol and its derivatives (Mizoroki–Heck reaction) and 2-methyltetrahydrofuran (Suzuki–Miyaura reaction).
5. Design for energy efficiency: Phenomenon of accelerating organic reactions by using the following Green Chemistry tools (taking suitable examples) and its advantages:
   i. Mechanochemistry
   ii. Ultrasound assisted reactions: Taking examples like Simmons Smith reaction, Diels–Alder reaction,
   iii. Microwave assisted reactions: Special emphasis on solvent-free synthesis- copper phthalocyanine and aspirin, In-water reactions-Hofmann Elimination, methyl benzoate to benzoic acid and Decarboxylation reaction;
   iv. Electrocatalysis: Taking examples like adiponitrile synthesis, synthesis of 3-bromothiophene.
   v. Visible light induced Reactions: with examples such as, syntheses of caprolactam and vitamin D_3, cis-trans isomerization of alkenes
6. Use of renewable starting materials: Illustrate with few examples such as biodiesel, bioethanol, polymers from renewable resources (PLA from corn), Synthesis and

properties of 2-Methyltetrahydrofuran, furfural and 5-Aminolevulinic acid (DALA) from levulinic acid

7. Avoidance of unnecessary derivatization – careful use of blocking/protecting groups (taking specific examples like selective oxidation of aldehydic group and synthesis of 6-Aminopenicillanic Acid (6-APA) from penicillin G
8. Catalysis and green chemistry
   Introduction to Catalysis (including concept of selectivity, turnover frequency and turnover number), Types of Catalysts: Heterogeneous catalysis and homogeneous catalysis (H-beta and zeolites in organic synthesis), General catalytic cycle for heterogeneous catalysis; Asymmetric catalysis (Monsanto route to L-dopa via asymmetric hydrogenation, synthesis of carbapenhem via Asymmetric reduction); Photocatalysis (with special reference to TiO2); Biocatalysis (Synthesis of adipic acid/catechol using biocatalyst) and Nanocatalysis (oxazole synthesis using nanocatalyst)
9. Design for degradation: (Illustrate with the help of examples: soaps and detergents, pesticides, polymers)
10. Real Time monitoring of chemical processes using inline, offline, and online techniques
11. Inherently safer design/chemistry:
    Principle and subdivision of ISD, Bhopal Gas Tragedy (safer route to carbaryl) and Flixiborough accident (safer route to cyclohexanol, Asahi Process)

UNIT – 3: Industrial Applications and Success Stories (6 Hours)

- Vitamin C Synthesis using enzymes (Hoffman La Roche)
- Zoloft -Presidential Chemistry Award Winning Innovation (Pfizer)
- Methyl Methacrylate syngas process (Eastman Chemicals)
- Synthesis of herbicide disodium iminodiacetate
- Rightfit pigments azo dyes synthesis and their applications
- Healthier Fats and oils by Green Chemistry: Enzymatic Interesterification for production of No Trans-Fats and Oils.
- Synthesis of anti-tuberculosis drug Paramycin from waste water stream

Practical component Credits:

01 (Laboratory periods:15 classes of 2 hours each)

Note: Characterization by melting point, UV-Visible spectroscopy, IR spectroscopy and any other specific method should be done (wherever applicable).

1. Preparation and characterization of nanoparticles of gold using tea leaves/silver nanoparticles using plant extracts.
2. Preparation of biodiesel from waste cooking oil and characterization (TLC, pH, solubility, combustion test, density, viscosity, gel formation at low temperature and IR can be provided).
3. Benzoin condensation using thiamine hydrochloride as a catalyst instead of cyanide.
4. Extraction of D-limonene from orange peel using liquid CO2 prepared from dry ice.
5. Mechanochemical solvent free, solid-solid synthesis of azomethine using p-toluidine and o-vanillin/p-vanillin.
6. Microwave-assisted Knoevenagel reaction using anisaldehyde, ethylcyanoacetate and ammonium formate.

7. Photoreduction of benzophenone to benzopinacol in the presence of sunlight.
8. Photochemical conversion of dimethyl maleate to dimethyl fumarate (cis-trans isomerisation)
9. Benzil- Benzilic acid rearrangement: Preparation of benzilic acid in solid state under solvent-free condition.
10. Preparation of dibenzalacetone by cross aldol condensation reaction using base catalysed green method.

Essential/recommended readings

Theory:

1. Anastas, P.T., Warner, J.C. (2014), **Green Chemistry, Theory and Practice**, Oxford University Press.
2. Lancaster, M. (2016), **Green Chemistry: An Introductory Text**, 3rd Edition, RSC Publishing.
3. Cann, M. C., Connely, M.E. (2000), **Real-World cases in Green Chemistry, American Chemical Society**, Washington.
4. Matlack, A.S. (2010), **Introduction to Green Chemistry**, 2nd Edition, Boca Raton: CRC Press/Taylor & Francis Group publisher.
5. Alhuwalia,V.K., Kidwai, M.R. (2005), **New Trends in Green chemistry**, Anamalaya Publishers.
6. Sidhwani, I.T, Sharma, R.K. (2020), **An Introductory Text on Green Chemistry**, Wiley India Pvt Ltd.

Practicals:

1. Kirchoff, M.; Ryan, M.A. (2002), **Greener approaches to undergraduate chemistry experiment**, American Chemical Society, Washington DC.
2. Sharma, R.K.; Sidhwani, I.T.; Chaudhari, M.K. (2013), **Green Chemistry Experiments: A monograph**, I.K. International Publishing House Pvt Ltd. New Delhi.
3. Pavia, D.L.; Lamponam, G.H.; Kriz, G.S.W. B. (2012), **Introduction to organic Laboratory Technique- A Microscale approach**, 4th Edition, Brooks-Cole Laboratory Series for Organic chemistry.
4. Sidhwani I.T. (2015), Wealth from Waste: A green method to produce biodiesel from waste cooking oil and generation of useful products from waste further generated. **DU Journal of Undergraduate Research and Innovation**, 1(1),131-151. ISSN: 2395-2334.
5. Sidhwani, I.T; Sharma, R.K. (2020), **An Introductory Text on Green Chemistry**, Wiley India Pvt Ltd.
6. **Monograph on Green Chemistry Laboratory Experiments**, Green Chemistry Task Force Committee, Department of Science and Technology, Government of India.
7. Pasricha, S., Chaudhary, A. (2021), **Practical Organic Chemistry: Volume–I**, I K International Publishing house Pvt. Ltd, New Delhi
8. Pasricha, S., Chaudhary, A. (2021), **Practical Organic Chemistry: Volume–II**, I K International Publishing house Pvt. Ltd, New Delhi

DISCIPLINE SPECIFIC ELECTIVE COURSE -3(DSE-3): Solutions, Colligative properties, Phase Equilibria and adsorption

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Solutions, Colligative properties, Phase Equilibria and adsorption (DSE-3)	**04**	**03**	**-**	**01**	Class 12th with Physics, Chemistry	

Learning Objectives

The Learning Objectives of this course are as follows:

- To make the students understand the various properties of dilute solutions.
- To make the students understand the thermodynamic basis of colligative properties.
- To explain the concept of phase, co-existence of phases, phase diagram for various types of system, CST and distribution law.
- To introduce the concept of adsorption, its dependence on various conditions and applications

Learning outcomes

By studying this course, students will be able to:

- Explain different types of phase equilibrium, draw a well labelled phase diagram.
- Predict the existence of a substance in a given phase under different conditions of temperature and pressure
- Apply the concepts of phase, solutions and distribution law while studying other chemistry courses and every-day life processes.
- Explain the type of adsorption that can take place in different systems and predict the conditions to get maximum adsorption.

SYLLABUS OF DSE-3

UNIT-1: Solutions and Colligative Properties **(12 Hours**

Dilute solutions; lowering of vapour pressure, Raoult's law, Henry's law. Thermodynamic basis of the colligative properties - lowering of vapour pressure, elevation of Boiling Point, Depression of Freezing point and Osmotic pressure and derivation of expressions for these using chemical potential. Application of colligative properties in calculating molar masses of normal, dissociated and associated solutes in solutions, van't Hoff factor and its applications. Concept of activity and activity coefficients.

UNIT-2: Phase Equilibria (24 Hours)

Concept of phases, components and degrees of freedom, derivation of Gibbs Phase Rule for nonreactive and reactive systems; Clausius-Clapeyron equation and its applications to solid-liquid, liquid-vapour and solid-vapour equilibria, phase diagram for one component systems (H_2O and S), with applications. A comparison between the phase diagram of CO_2 and H_2O. Phase diagrams for systems of solid-liquid equilibria involving eutectic, congruent and incongruent melting points, solid solutions (excluding partial miscibility). Binary solutions: Gibbs-Duhem-Margules equation, its derivation and applications to fractional distillation of binary miscible liquids (ideal and non-ideal), Konovalov's laws, azeotropes, lever rule, partial miscibility of liquids, CST, miscible pairs, steam distillation. Nernst distribution law: its derivation and applications.
Three component systems, water-chloroform-acetic acid system, triangular plots.

UNIT-3: Surface chemistry (9 Hours

Physical adsorption, chemisorption, adsorption isotherms (Langmuir and Freundlich). Nature of adsorbed state. Multilayer adsorption, BET equation derivation, thermodynamic treatment of adsorption-Gibbs equation.

Practical component Credit: 01

(Laboratory periods: 15 classes of 2 hours each)

Practical

Phase Equilibrium

1. Determination of critical solution temperature and composition at CST of the phenol water system
2. To study the effect of impurities of sodium chloride and succinic acid on the CST of phenol-water system.
3. To study the cooling curves for the following systems:
   (i) simple eutectic
   (ii) congruently melting systems.

Adsorption

Verify the Freundlich and Langmuir isotherms for adsorption of acetic acid on activated charcoal.

Essential/recommended readings

Theory:

1. Peter, A.; Paula, J. de. (2011), **Physical Chemistry**, 9th Edition, Oxford University Press.
2. Castellan, G. W. (2004), **Physical Chemistry**, 4th Edition, Narosa.
3. Kapoor, K.L. (2015), **A Textbook of Physical Chemistry**, Vol 3, 6th Edition, McGraw Hill Education.
4. Kapoor, K.L. (2015),**A Textbook of Physical Chemistry**, Vol 5, 6th Edition, McGraw Hill Education.
5. Ball, D. W. (2017), **Physical Chemistry,** 2nd Edition, Cengage Learning, India.

Practical:

1. Khosla, B.D.; Garg, V.C.; Gulati, A. (2015), **Senior Practical Physical Chemistry**, R. Chand & Co, New Delhi.
2. Garland, C. W.; Nibler, J. W.; Shoemaker, D. P. (2003), **Experiments in Physical Chemistry**, 8th Edition, McGraw-Hill, New York.

Suggestive readings

1. Levine, I.N. (2010), **Physical Chemistry**, Tata Mc Graw Hill.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE -4 (DSE-4): Nuclear and Environmental Chemistry

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Nuclear and Environmental Chemistry (DSE-4)	**04**	**03**	**--**	**01**	Class 12th with Physics, Chemistry	**--**

Learning Objectives

The Objectives of this course are as follows:

- To make students know more about nuclear chemistry
- To familiarise the students about environmental chemistry, especially with respect to air and water

Learning outcomes

By studying this course, the students will be able to:

- Gain knowledge about Nuclear chemistry, radioactive decay, nuclear disasters, and nuclear waste and their disposal.
- Describe the composition of air, various air pollutants, effects and control measures of air pollutants.
- List different sources of water, water quality parameters, impacts of water pollution, water treatment.
- Identify different industrial effluents and their treatment methods.

SYLLABUS OF DSE-4

Unit-1 : Nuclear Chemistry **(21 Hours**

The nucleus: subatomic particles, e liquid drop model; forces in nucleus-mesons; stability of nucleus-n/p ratio, binding energy; radioactive elements.
Radioactive decay- α-decay, β-decay, γ-decay; neutron emission, positron emission; unit of radioactivity (curie); half life period; radioactive displacement law, radioactive series.
Measurement of radioactivity: ionization chamber, Geiger Counters, Scintillation counters.
Nuclear reactions: Nuclear fission-theory of nuclear fission; chain reaction; nuclear fusion; nuclear reactors-fast breeder reactors, fuels used in nuclear reactors, separation of isotopes, moderators, coolants; nuclear reactors in India.
Applications: Dating of rocks and minerals, carbon dating, neutron activation analysis, isotopic labeling studies, nuclear medicine- ^{99m}Tc radio pharmaceuticals.
Nuclear disasters – Chernobyl disaster, Three Mile Island Disaster, Disposal of nuclear waste and its management.

UNIT – 2: Air Pollution **(**12 Hours

Major regions of atmosphere, chemical and photochemical reactions in atmosphere. Air pollutants: types, sources, particle size and chemical nature, Major sources of air pollution, Pollution by SO_2, CO_2, CO, NO_x, H_2S and other foul-smelling gases, methods of estimation of CO, NO_x, SO_x and control procedures.

Chemistry and environment impact of the following: Photochemical smog, Greenhouse effect, Ozone depletion

Air pollution control, Settling Chambers, Venturi Scrubbers, Electrostatic Precipitators (ESPs).

UNIT – 3 : Water Pollution: (12 Hours)

Hydrological cycle, water resources, aquatic ecosystems, Sources and nature of water pollutants, Techniques for measuring water pollution, Impacts of water pollution on hydrological cycle and ecosystems. Water purification methods. Effluent treatment plants (primary, secondary and tertiary treatment).

Sludge disposal. Industrial waste management, incineration of waste. Water treatment and purification (reverse osmosis, electro dialysis, ion-exchange). Water quality parameters for wastewater, industrial water and domestic water.

Practical component
Practical: Credits: 01
(Laboratory periods:15 classes of 2 hours each)
(At least four experiments to be performed)

1. Determination of dissolved oxygen in a given sample of water.
2. Determination of Chemical Oxygen Demand (COD) in a given sample of water.
3. Determination of Biological Oxygen Demand (BOD) in a given sample of water.

4. Measurement of chloride, sulphate and salinity of water samples by simple titration method ($AgNO_3$ and potassium chromate).
5. Estimation of total alkalinity of water samples (CO_3^{2-}, HCO_3^-) using double titration method.
6. Measurement of dissolved CO_2 in a given sample of water.
7. Determination of hexavalent Chromium Cr(VI) concentration in tannery wastes/ waste water sample using UV-Vis spectrophotometry technique.

Essential/recommended readings

Theory:

1. Stanley E. Manahan, 10th edition, **Environmental chemistry,** CRC Press, Taylor and Francis Group, US, 2017
2. Baird, C. and Cann, M., **Environmental Chemistry,**(2012), Fifth Edition, W. H. Freemann & Company, New York, US.
3. VanLoon, G.W. and Duffy, J.S.(2018) **Environmental Chemistry - A global perspective**, Fourth Edition, Oxford University Press
4. Brusseau, M.L.; Pepper,I.L. and Gerba, C., (2019) **Environmental and Pollution Science**, Third Edition, Academic Press.
5. Masters, G.M., (1974) **Introduction to Environmental Science and Technology**, John Wiley & Sons.
6. Masters, G.M., (2015) **Introduction to Environmental Engineering and Science.** JPrentice Hall India Learning Private Limited.
1. 7.Arnikar, H.J., (1987), Second Edition, **Essentials of Nuclear Chemistry,** Wiley Blackwell Publishers
7. Arnikar, H.J.; Rajurkar, N. S.,(2016) **Nuclear Chemistry through Problems,** New Age International Pvt. Ltd.
8. De, A.K.(2012), **Environmental Chemistry,** New Age International Pvt., Ltd.
9. Khopkar, S.M.(2010), **Environmental Pollution Analysis**, New Age International Publisher.
10. Das, A. K. (2010), ***Fundamentals of Inorganic Chemistry***, Volume 1, Second Edition, CBS Publishers & Distributors Pvt Ltd.
11. Das, A. K. (2012), ***Environment Chemistry with Green chemistry***, Books and Allied (P) Ltd.

Practical:

1. Vowles, P.D.; Connell, D.W. (1980), **Experiments in Environmental Chemistry: A Laboratory Manual**, Vol.4, Pergamon Series in Environmental Science.
2. Gopalan, R.; Anand, A.; Sugumar R.W. (2008), **A Laboratory Manual for Environmental Chemistry**, I. K. International.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 5 (DSE-5): Reactions, Reagents and Chemical Process

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Reactions, Reagents and Chemical Process (DSE-5)	04	03	--	01	Class 12^{th} with Physics, Chemistry	Basic knowledge of organic reactions

Learning objectives

The objectives of this course are as follows:

- To study the important organic name and rearrangement reactions that are crucial for the synthesis of valuable organic compounds.
- To give the knowledge belonging to the role of reagents in organic reactions for the synthesis of chemo-, diastereo- and enantio-selective products.
- To impart the knowledge of process chemistry that is a key part of the large-scale synthesis of chemical products essential for day-to-day life

Learning outcomes

By studying this course, students will be able to:

- Explain the reaction mechanism of various name and rearrangement reactions
- Discuss the role of the reagents in organic synthesis and apply these reagents for the bulk chemical synthesis
- Debate and use oxidizing and reducing reagents for selective synthesis organic products
- Apply the learnt techniques to chemical processes
- Acquire skills for human resource building especially in the chemical industry.

SYLLABUS OF DSE-5

UNIT – 1: Name Reactions **(15 Hours)**

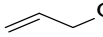
Application, scope and mechanism of following reactions: Prevost Reaction, Chugaev Reaction, Maukaiyama Aldol Reaction, Mozingo Reaction, Ramberg Backlund Reaction, Shapiro Reaction, Barbier Reaction, Clark- Eschweiler Reaction, Darzen's Reaction, Julia-Olifination Reaction, Tiffeneaus Damjanov Reaction, Darkin West Reaction, Bischler-Napieralaski Reaction, Birch reduction of aromatic compounds, Appel Reaction, Mitsunobu

Reaction, Corey Kim Oxidation, Azide-alkyne 1,3-dipolar cycloaddition reaction, Olefin metathesis: Grubbs reaction, Heck Reaction, Suzuki coupling and Wittig reaction.

UNIT – 2: **Reducing Reagents** **(9 Hours)**

Reactions, mechanism and applications of following reducing agents: Sodium borohydride, Lithium aluminium hydride, $NaBH_3CN$, DIBALH, lithium-tri-*tert*-butoxyaluminum hydride, Red-Al $Na[AlH_2(OCH_2OCH_2OCH_3)_2]$, Zinc borohydride, L and K selectrides, $LiBHEt_3$ and $KBHEt_3$, Luche Reagent $NaBH_4$-$CeCl_3$, $K[BH(OAc)_3]$, *bis*-Boric Acid (BBA), Catecholborane, DEMS (Diethoxymethylsilane), 3-Mercapto propionic acid, Polymethylhydrosiloxane (PMHS), Schwartz's Reagent (Zirconocene chloride hydride).

UNIT – 3: Oxidizing Reagents **(9 Hours**

Reactions, mechanism and applications of following oxidizing agents: Jones Reagent (CrO_3, H_2SO_4, H_2O), Swern Reagent (DMSO, oxalyl chloride), Dess Martin, TEMPO, TPAP (Tetrapropyl ammonium perruthenate), Fetizon's Reagent, Fenton's Reagent [H_2O_2 + Fe(II) ion], Sodium perborate NaH_2BO_4, Sodium Bismuthate $NaBiO_3$, ABNO (9-Azabicyclo[3.3.1]nonane N-oxyl), DEAP (Diethyl allyl phosphate, 

), AZADO (2-Azaadamantane N-oxyl], Wacker oxidation.

UNIT – 4: Process Chemistry **(12 Hours)**

1. Process chemistry a) Introduction, stages of scale up process: Bench, pilot, and large-scale process with at least two examples of scale up process of API. b) In-process control and validation of large-scale process.
2. Unit Processes: The following unit processes should be studied with mechanism and one example of each process Nitration: Nitrating agents, process equipment for technical nitration. Halogenation: Types of halogenations, catalytic halogenations. Reduction: Catalytic hydrogenation, hydrogen transfer reactions, metal hydrides. Oxidation: Types of oxidative reactions, and non-metallic oxidizing agents such as H, sodium hypochlorite, oxygen gas, ozonolysis.

Practical component **Credits:**

01 (Laboratory periods:15 classes of 2 hours each)

1. Oxidation of alcohols to acid using Jones reagent.
2. Reduction of acetophenone and its derivatives to 1-phenyl ethanol derivatives by $NaBH_4$.
3. Reduction of 4-tert-butyl-cyclohexanone to cis and trans 4-tert-butyl-cyclohexanol.
4. Synthesis of 2,5-dimethyl-2,5-hexanediol from tert-butanol using Fenton's reagents.
5. Wittig reaction of benzyltriphenylphosphonium chloride and 4-bromobenzaldehyde using potassium phosphate (tribasic).
6. Substitution (S_N2) reaction of 1-iodobutane and 2-naphthol.
7. Aldol condensation reaction: solventless synthesis of chalcones.
8. Borohydride reduction of a ketone: hydrobenzoin from benzil.
9. Visit to chemical industry of the demonstration of pilot scale.

Essential/recommended readings

Theory:

2. Clayden, J. Greeves, N., Warren, S. **Organic Chemistry**, South Asian Edition, Oxford University Press, USA
3. Gadamasetti K., **Process Chemistry in the Pharmaceutical Industry: Challenges in an Ever- Changing Climate-An Overview**, Vol-2, CRC Press, London.
4. Murphy R.M., **Introduction to Chemical Processes: Principles, Analysis, Synthesis**, McGraw-Hill Education, New York.
5. Harrington P. J., **Pharmaceutical Process Chemistry for Synthesis: Rethinking the Routes to Scale up**, John Wiley and Sons, Inc, New Jersey.
6. Parashar, R.K.; Ahluwalia, V.K. (2018), **Organic Reaction Mechanism,** 4th Edition, Narosa Publishing House.

Practical:

1. Mann F.G, Saunders, B.C., **Practical Organic Chemistry**, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education Ltd.), Singapore.
2. Vogel A.I., **Elementary Practical Organic Chemistry**, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education Ltd.), Singapore.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE - 6 (DSE- 6): Polymers, Colloids, Surfaces and Interfaces

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Polymers, Colloids, Surfaces and Interfaces (DSE- 6)	**04**	**03**	**--**	**01**	Class 12th with Physics, Chemistry	**--**

Learning Objectives

The objectives of this course are as follows:

- To give students a comprehensive coverage of important physical aspects of polymers chemistry, colloids, emulsions, surfaces and interfaces.
- to study the applications of these aspects.

Learning outcomes

By studying this course, the students will be able to:

- Explain the types of polymers, kinetics of polymerization and polymer properties.
- Understand and apply the concepts of properties of polymer solutions and their thermodynamics.
- Comprehend the basic concepts of surface chemistry specifically in relation to colloids.
- Have a thorough understanding of applications of colloids in various areas.

SYLLABUS OF DSE-6

UNIT 1: Introduction to polymers **(Hours: 6)**

Recapitulation of basic concepts of polymers. Types of polymerizations and their mechanism and kinetics: Free radical, ionic, step-growth, coordination, copolymerization. Polymerization techniques: Bulk, solution, suspension, and emulsion.

UNIT 2: Polymer solution **(Hours: 9)**

Polymer solution – solubility parameter, properties of dilute solutions and their criteria, Thermodynamics of polymer solutions, entropy, enthalpy, and free energy change. Flory Huggins theory.

UNIT 3: Introduction to Colloid Chemistry (Hours: 9)

Recapitulation of basic concepts of Adsorption, Distinction among true solutions, colloids and suspensions, Components of Colloids, classification of colloids - lyophilic, lyophobic; Preparation methods and properties of lyophobic solutions, Hydrophile-lyophile balance (HLB), multi molecular, macromolecular and associated colloids (micelles formation), preparation and properties of colloids - Tyndall effect, Brownian movement, electrophoresis, dialysis, coagulation and flocculation; Charge on Colloidal particles and Electrical double layer concept, Suspensions and their characteristics, Emulsions and their characteristics.

UNIT 4: Surface chemistry in relation to colloids (Hours: 12)

Surface film on liquid surface, surface potential, monomolecular films, Langmuir Blodgett layers. Emulsions, foams and aerosols; electrical aspects of surface chemistry; Surface of solids, solid-liquid interface, stability of dispersions, stabilization of suspensions

UNIT 5: Application of colloids (Hours: 9)

Characterization of colloidal particles, Role of colloid chemistry in Nanotechnology (wet colloid chemical approach, “bottom up” fabrication of nanoparticles and nanostructured materials), applications of colloid chemistry in petroleum recovery, coating and painting, food, pharmaceuticals and cosmetic industry, medicinal chemistry (use in drug formulations), Sewage disposal, Purification of water, cleansing action of soap, Formation of Delta, Smoke precipitation, Photography, Artificial rain

Practical component

Practicals: Credits: 01

(Laboratory periods:15 classes of 2 hours each)

1. Free radical solution polymerization of styrene (St) / Methyl Methacrylate (MMA)/MethylAcrylate (MA).
2. Preparation of nylon 6,6
3. Determination of molecular weight of polyvinyl propylidene in water by viscometry.
4. Determination of the viscosity-average molecular weight of poly(vinyl alcohol) (PVOH) and the fraction of head-to-head monomer linkages in the polymer.
5. Determination of molecular weight by end group analysis of polymethacrylic acid.
6. Estimation of the amount of HCHO in the given solution by sodium sulphite method.
7. Preparation of Colloidal Sols of following
    A. Arsenic sulphide,

B. Antimony sulphide

C. Ferric chloride

D. Aluminium hydroxide

8. To find out the precipitation values of arsenious sulphide sol by using monovalent, bivalent and trivalent cations.
9. To determine the nature of charge on particle in given colloidal solution and their electrophoretic velocity and zeta potential.
10. To prepare lyophilic sol of starch.

Essential/recommended readings

Theory:

1. Carraher,C. E. Jr. (2013), **Seymour's Polymer Chemistry**, Marcel Dekker, Inc.
2. Odian, G. (2004), **Principles of Polymerization**, John Wiley.
3. Billmeyer, F.W. (1984), **Text Book of Polymer Science**, John Wiley
4. Myers D.,Surface, interfaces and colloids Principles and Applications, 2nd Edition, Wiley-VCH
5. V.R. Gowarikar (2010), **Polymer Science**, New Age International Publishers Ltd.

Practical:

1. Sperling, L.H. (2005), **Introduction to Physical Polymer Science**, John Wiley & Sons

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE -7 (DSE-7): Novel Inorganic Solids

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Novel Inorganic Solids (DSE-7)	**04**	**03**	**--**	**01**	**Class 12th with Physics, Chemistry**	**--**

Learning Objectives

The Objectives of this course are as follows:

- To familiarize the students with the characterization techniques of inorganic solids
- To familiarize the students with use and manifold applications of composites, carbon or high-tech ceramics

Learning Outcomes:

By studying this course, the students will be able to:

- Explain the mechanism of solid-state synthesis.
- Explain about the different characterization techniques and their principle.
- Explain the importance of composites and their applications.
- Discuss and explain the usage of solid materials in various instruments, batteries, etc. which would help them to appreciate the real-life importance of these materials

SYLLABUS OF DSE- 7

Unit 1: Synthesis of inorganic solids **(Hours: 5)**

Conventional heat and beat method, Co-precipitation method, Sol-gel method, Hydrothermal method, Chemical vapor deposition (CVD), Ion-exchange and Intercalation method.

Unit 2: Characterization techniques of inorganic solids **(Hours: 10)**

Powder X-ray Diffraction, UV-visible spectroscopy, Scanning Electron Microscopy (SEM), Transmission Electron Microscopy (TEM), Fourier-Transform Infrared (FTIR) spectroscopy, Brunauer–Emmett–Teller (BET) surface area analyser, Dynamic Light Scattering (DLS)

Unit 3: Pigments **(Hours: 10)**

Cationic, anionic and mixed solid electrolytes and their applications. Inorganic pigments – coloured, white and black pigments.

One-dimensional metals, molecular magnets, inorganic liquid crystals.

Unit 4: Composite materials **(Hours: 10)**

Introduction, limitations of conventional engineering materials, role of matrix in composites, classification, matrix materials, reinforcements, metal-matrix composites, polymer-matrix composites, fibre-reinforced composites, bio-nanocomposites, environmental effects on composites, applications of composites.

Unit 5: Speciality polymers **(Hours: 10)**

Speciality polymers: Conducting polymers - Introduction, conduction mechanism, polyacetylene, polyparaphenylene, polyaniline. and polypyrrole, applications of conducting polymers, ion-exchange resins and their applications.

Ceramic & Refractory: Introduction, classification, properties, manufacturing and applications of ceramics, refractory and superalloys as examples.

Practicals **Credits: 01**

(Laboratory periods: 15 classes of 2 hours each)

1. Preparation of polyaniline and its characterization using UV-visible spectrophotometer.
2. Intercalation of hydrogen in tungsten trioxide and its conductivity measurement using conductometer.
3. Synthesis of the following inorganic pigments:

   (i) $PbCrO_4$ / chrome yellow

   (ii) Barium white

   (iii) Prussian Blue

   (iv) Malachite

. 4. Preparation of zeolite A and removal of Mg and Ca ions from water samples quantitatively using zeolite.

5. Determination of exchange capacity of cation exchange resins and anion exchange resins.

6. Determination of a mixture of cobalt and nickel (UV-visible spectroscopy).
7. Preparation of a disc of a ceramic compound using ball milling, pressing and sintering, and study its XRD.

Essential/recommended readings

Theory:

1. West, A. R. (2014), **Solid State Chemistry and Its Application**, Wiley.
2. Smart, L. E.; Moore, E. A., (2012),**Solid State Chemistry: An Introduction** CRC Press Taylor & Francis.
3. Rao, C. N. R.; Gopalakrishnan, J. (1997),**New Direction in Solid State Chemistry**, Cambridge University Press.
4. Poole Jr.; Charles P.; Owens, Frank J. (2003), **Introduction to Nanotechnology**, John Wiley and Sons.

Practicals:

1. Orbaek, W.; McHale, M.M.; Barron, A. R.; **Synthesis and Characterization of Silver Nanoparticles for An Undergraduate Laboratory**,J. Chem. Educ. 2015, 92, 339−344.
2. MacDiarmid, G.; Chiang, J.C.; Richter, A.F.; Somasiri, N.L.D.(1987), **Polyaniline: Synthesis and Characterization of the Emeraldine Oxidation State by Elemental Analysis**, L. Alcaeer (ed.), Conducting Polymers, 105-120, D. Reidel Publishing.
3. Cheng, K.H.; Jacobson, A.J.; Whittingham, M.S. (1981),**Hexagonal Tungsten Trioxide and Its Intercalation Chemistry**, Solid State Ionics, 5, 1981, 355-358.
4. Ghorbani H.R.; Mehr, F.P; Pazoki, H; Rahmani, B.M.; **Synthesis of ZnO Nanoparticles by Precipitation Method**, Orient J Chem 2015, 31(2).

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 8 (DSE-8): Applied Organic Chemistry

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Applied Organic Chemistry (DSE-8)	04	03	--	01	Class 12th with Physics, Chemistry	--

Learning Objectives

The objectives of this course are as follows:

- To make students aware of the importance of organic compounds in daily life.
- To familiarize students with the chemistry and uses of dyes, polymers, terpenoids, alkaloids, steroids and pharmaceutical compounds and their direct or indirect effect on human life and health

Learning outcomes

By the end of this course the students will be able to:

- Discuss and demonstrate the chemistry and uses of commercially important and naturally occurring compounds like dyes, polymers, terpenoids, alkaloids, steroids and pharmaceuticals.
- Appreciate the chemistry of biodegradable and conducting polymers and their importance to human life and society.
- Comprehend the chemistry of dyeing and dyes. Explain why some dyes are better than others. Describe the applications of various types of dyes including those in foods and textiles.
- Comprehend the synthetic routes and mode of action of some selected pharmaceutical compounds
- Use the knowledge gained to solve real world problems

SYLLABUS OF DSE-8

Unit 1: Dyes **(Hours: 7)**

Nomenclature of commercial dyes with at least one example. Suffixes - G, O, R, B, 6B, L, S; colour index and colour index number. Classification of dyes based on structure and application; Chemistry of dyeing.

Synthesis and applications of the following types of dyes: Azo dyes - Methyl orange, Congo red; Triphenyl methane dyes-Malachite green, Rosaniline and Crystal violet; Phthalein Dyes - Phenolphthalein; Natural dyes - Structure elucidation and synthesis of Alizarin and Indigotin; Edible Dyes (natural and synthetic) with examples and effect of synthetic food colours on health.

Unit 2: Polymers **(Hours:12)**

Introduction and classification based on origin, monomer units, thermal response, mode of formation, structure, application and tacticity; di-block, tri-block and amphiphilic polymers; Weight average molecular weight, number average molecular weight, glass transition temperature (Tg) of polymers; Polymerisation Reactions-Addition and condensation. Mechanism of cationic, anionic and free radical addition polymerization; Ziegler-Natta polymerisation of alkenes.

Preparation and applications of: Plastics -thermosetting (phenol-formaldehyde, Polyurethanes) and thermosoftening (PVC, polythene); Fabrics -natural (cellulose and synthetic derivatives of cellulose like rayon and viscose); synthetic (acrylic, polyamide, polyester); Rubbers-natural and synthetic: Buna-N, Buna-S, Neoprene, silicon rubber; Vulcanization; Polymer additives; Introduction to Specialty Polymers: electroluminescent (Organic light emitting diodes), Conducting, biodegradable polymers and liquid crystals.

Unit 3: Natural Product Chemistry- An Introduction to Terpenoids, Alkaloids and Steroids (Hours: 12)

Terpenes: Introduction, occurrence, classification, uses, isoprene and special isoprene rule; structure elucidation, synthesis and industrial application of citral.

Alkaloids: Introduction, occurrence, classification, uses, general structural features, general methods for structure elucidation including Hoffmann's exhaustive methylation and Emde's method. Structure elucidation, synthesis and physiological action of Nicotine.

Steroids: Introduction, occurrence, structure, Diel's hydrocarbon, nomenclature of steroid hydrocarbons, structure and biological functions of the following steroids- Cholesterol, Sex Hormones (Estrogen, androgen and progesterone), Adrenocortical hormones (Cortisone and cortisol) and Ergosterol (antirachitic effect).

Unit 4: Pharmaceutical Compounds **(Hours:14)**

Introduction, classification; Synthesis, uses, mode of action and side effects of the following drugs:

Antipyretics -Paracetamol; Analgesics- Ibuprofen; Antimalarials - Chloroquine; Antitubercular drugs - Isoniazid.

An elementary treatment of Antibiotics and detailed study of chloramphenicol including mode of action. Structure and medicinal uses of curcumin (haldi), azadirachtin (neem), vitamin C and antacid (ranitidine)**.**

Practical component

Practical: **Credits: 01**

(Laboratory periods:15 classes of 2 hours each)

(At least five experiments to be performed)

1. Synthesis of urea formaldehyde resin and test the solubility.
2. Preparation of Starch-PVA Film.
3. Preparation of Methyl orange.
4. Separation of a mixture of dyes by Thin Layer Chromatography (TLC).
5. Isolation and estimation of the content of aspirin in a commercial tablet.
6. Synthesis of 4-methyl-7-hydroxycoumarin by condensation of resorcinol with ethyl acetoacetate.
7. Synthesis of 3,5-dimethyl pyrazole by condensation of acetylacetone and hydrazine.
8. Synthesis of benzimidazole.
9. Synthesis of 2,3-diphenylquinoxaline.
10. Synthesis of paracetamol

Essential/recommended readings

Theory:

1. Finar, I.L. Fifth Edition **Organic Chemistry**, Volume 2, Pearson Education, 2008.
2. Saunders, K. J., (1988), **Organic Polymer Chemistry,** Second Edition Chapman & Hall, London.
3. Campbell, Ian M., (2000), **Introduction to Synthetic Polymers**, Second Edition, Oxford University Press, USA.
4. Bahadur, P. and Sastry, N.V. (2002) **Principles of Polymer Science** Narosa, New Delhi
5. Patrick, G. **An Introduction to Medicinal Chemistry** (2013), Fourth Edition, Oxford University Press.
6. Beale J.M. Block J., (2010) **Wilson and Gisvold's Textbook of Organic Medicinal and Pharmaceutical Chemistry,** Twelfth Edition, Lippincott Williams and Wilkins.
7. Alagarsamy, V. (2010), **Textbook of Medicinal Chemistry**, Volume II, Second Edition, Reed Elsevier India Private Limited.

Practical:

1. Sciam, A.J. **TLC of mixture of dyes**; *J. Chem. Educ*., **1985**, 62(4), 361. https://pubs.acs.org/doi/10.1021/ed062p361.
2. McKone, H.T.; Nelson, G.J**. Separation, and identification of some FD &C dyes by TLC. An undergraduate laboratory experiment**, *J. Chem. Educ*., **1976**, *53*(11), 722. DOI: 10.1021/ed053p722.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE- 9 (DSE-9): Applications of Computers in Chemistry

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Applications of Computers in Chemistry (DSE 9)	**04**	**03**	**-**	**01**	Class 12th with Physics, Chemistry	

Learning Objectives

The Objectives of this course are as follows:

- To familiarize the students with the fundamental building blocks and syntax of coding in Python with
- To apply python programming to solve simple Chemistry problems by thinking algorithmically and coding structurally

Learning outcomes

By studying this course, the students will be able to:

- Understand the importance of python programming in chemistry and its applications in the field of AI and ML
- Perform simple computations in python after learning the basic syntax, loop structure, string data manipulation etc.
- Solve chemistry problems such as finding pKa of a weak acid, solving Schrodinger's equation etc.
- Plot experimental data and perform regression analysis

SYLLABUS OF DSE-9

UNIT–1: Basic Computer system **(Hours: 3)**

Hardware and Software; Input devices, Storage devices, Output devices, Central Processing Unit (Control Unit and Arithmetic Logic Unit); Number system (Binary, Octal and

Hexadecimal Operating System); Computer Codes (BCD and ASCII); Numeric/String constants and variables. Operating Systems (DOS, WINDOWS, and Linux); Software languages: Low level and High-Level languages (Machine language, Assembly language; QBASIC, C, C++, FORTRAN 90&95); Compiled versus interpreted languages. Debugging Software Products (Office, chemsketch, scilab, matlab, and hyperchem), internet application

UNIT-2: Introduction to Python (Hours: 3)

Why Python? Python coding environment setup, Python as an interpreted language, Brief history of Python, Uses of Python (including artificial intelligence and machine learning), Applications of Python in Chemistry

UNIT-3: Coding in Python (Hours: 18)

(i) Basic syntax including constants and variables, Operators, Data Types, Declaring and using Numeric data types: int, float, string etc. (ii) Program Flow Control Conditional blocks: if, else and else if, simple FOR loops, FOR loop using ranges, string, list and dictionaries. Use of while loops, Loop manipulation using pass, continue, break and else. (iii) Complex data types: String, List, Arrays, Tuples and Dictionary, String operations and manipulation methods, List operations including slicing, in-built Python Functions. (iv) Python packages - usage of numpy and scipy for mathematical computations.

UNIT-4: Plotting graphs (Hours: 9)

Matplotlib for Plotting - Simple plots, formatting of plots, multiple plots, histograms, bar graphs, distributions, curve fitting – linear regression.

UNIT-5: Numerical Methods in Chemistry (Hours: 12)

Solution of quadratic equation, polynomial equations (formula, iteration, Newton – Raphson methods and binary bisection) with examples of polynomial equations used in chemistry; Numerical differentiation – finite difference method (backward, central and forward), Numerical integration - Trapezoidal and Simpson's rule to calculate area under the curves for chemistry problems, e.g., entropy calculations, Simultaneous equations, Statistical analysis-mean, variance, standard deviation, error, Curve fitting – linear regression, Solving Schrödinger's equation using Python packages.

Practical component

Practicals: Python Programming for Chemists Credits: 01

4. **Writing simple programs using scipy and numpy**
    a. syntax, data types
    b. loop structure, conditional loops

c. To learn string data manipulation
d. Array and lists
e. Sorting, matrix manipulations

5. **Plotting graphs using matplotlib**
   a. Planck's distribution law
   b. Maxwell-Boltzmann distribution curves as a function of temperature and mass
   c. Radial distribution curves for hydrogenic orbitals
   d. Gas law Isotherms – Ideal and Real
   e. Data from phase equilibria studies
   f. Wavefunctions and Probabilities as multiplots
   g. Kinetics data with linear fitting

6. **Numerical Methods in Chemistry**
   a. Solving equations involved in chemical equilibria such as pH of a weak acid at a given concentration, cubic equation obtained from solving van der Waals equation of real gases using Iteration, Newton-Raphson, and Binary Bisection Method
   b. Numerical Differentiation – finding equivalence point given pH metric and potentiometric titrations data by finding the first and the second derivative using the finite difference method
   c. Numerical Integration – Trapezoidal and Simpson's 1/3 rule to calculate enthalpy and entropy of an ideal gas
   d. Statistical Analysis – Calculating Mean, Variance, Standard Deviation
   e. Solving Schrodinger's Equation

Essential/recommended readings

Theory:

7. Dr. M. Kanagasabapathy(2023), **Python for Chemistry: An introduction to Python algorithms, Simulations, and Programing for Chemistry** (English Edition), BPB Publications
8. Robert Johansson (2021), **Numerical Python: Scientific Computing and Data Science Applications with Numpy, SciPy and Matplotlib**, 2nd Edition, Apress

Practical

1. Urban M., Murach J., **Murach's Python programming,** 2nd Indian reprint 2018, Shroff publishers and distributors
2. Gaddis T., **Starting out with python plus My programming Lab** with Pearson e-text-Access card package, 3rd ed.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE - 10(DSE-10): Analytical Methods in Chemistry

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Analytical Methods in Chemistry (DSE-10)	**04**	**03**	**--**	**01**	**Class 12th with Physics, Chemistry**	**-**

Learning Objectives

The Objectives of this course are as follows:

- To familiarize the students with concept of sampling, Accuracy, Precision, Statistical test data-F, Q and t test.
- To familiarize the students with the laws of spectroscopy and selection rules governing the possible transitions in the different regions of the electromagnetic spectra.
- To familiarize the students with important separation methods like solvent extraction and chromatography

Learning Outcomes:

By studying this course, the students will be able to:

- Perform experiment with accuracy and precision.
- Develop methods of analysis for different samples independently.
- Test contaminated water samples.
- Use basic principle of instrument like Flame Photometer, UV-Visible spectrophotometer learnt for practical applications.
- Apply knowledge of geometrical isomers and keto-enol tautomers to analysis.
- Determine composition of soil.
- Estimate macronutrients using Flame photometry.

SYLLABUS OF DSE-10

Unit 1: Qualitative and Quantitative Aspects of Analysis: (Hours: 5)

Sampling, evaluation of analytical data, errors, accuracy and precision, methods of their expression.

Normal law of distribution of indeterminate errors, statistical test of data; F, Q and t test, rejection of data, and confidence intervals.

Unit 2: Optical Methods of Analysis (Hours: 25)

Origin of spectra, interaction of radiation with matter, fundamental laws of spectroscopy and selection rules

UV-Visible Spectrometry: Basic principles of instrumentation (choice of source, monochromator and detector) for single and double beam instrument; Transmittance. Absorbance and Beer-Lambert law

Basic principles of quantitative analysis: estimation of metal ions from aqueous solution, geometrical isomers, keto-enol tautomers.

Flame Atomic Absorption and Emission Spectrometry: Basic principles of instrumentation (choice of source, monochromator, detector, choice of flame and Burner designs). Techniques of atomization and sample introduction; Method of background correction, sources of chemical interferences and their method of removal, Techniques for the quantitative estimation of trace level of metal ions from water samples.

Unit 3: Thermal methods of analysis (Hours: 5)

Theory of thermogravimetry (TG) and basic principle of instrumentation of thermal analyser. Techniques for quantitative estimation of Ca and Mg from their mixture.

Unit 4: Separation techniques (Hours:10)

Solvent extraction: Classification, principle and efficiency of the technique.

Mechanism of extraction: extraction by solvation and chelation, Technique of extraction: batch, continuous and counter current extractions, Qualitative and quantitative aspects of solvent extraction: extraction of metal ions from aqueous solution, extraction of organic species from the aqueous and non-aqueous media.

Chromatography: Classification, principle and efficiency of the technique, Mechanism of separation: adsorption, partition & ion-exchange

Practicals Credits 01

(Laboratory periods: 15 classes of 2 hours each)

1. Separation of constituents of leaf pigments by Thin Layer Chromatography

2. Solvent Extractions

   (i) To separate a mixture of Ni^{2+} & Fe^{2+} by complexation with DMG and extracting the Ni^{2+} DMG complex in chloroform, and determine its concentration by spectrophotometry.

3. Analysis of soil:

   (i) Total soluble salt
   (ii) Estimation of exchangeable calcium and magnesium
   (iii) Estimation of carbonate and bicarbonate
   (iv) Qualitative detection of nitrate and phosphate

4. Separation of amino acids from organic acids by ion exchange chromatography.
5. Spectrophotometry

   (i) Verification of Lambert-Beer's law and determination of concentration of a coloured species ($CuSO_4$ / $KMnO_4$ /$CoCl_2$ / $CoSO_4$)
   (ii) Spectrophotometric analysis of caffeine and benzoic acid in a soft drink
   (iii) Determination of concentration of coloured species via following methods;
   (a) Graphical method, (b) Epsilon method, (c) Ratio method, (iv) Standard addition method

6. Flamephotomerty
   (i) Estimation of potassium, calcium and magnesium using flame photometry

Essential/recommended readings

Theory:

1. Willard, H.H.(1988),**Instrumental Methods of Analysis**, 7th Edition, Wardsworth Publishing Company.
2. Christian, G.D.(2004),**Analytical Chemistry**, 6th Edition, John Wiley & Sons, New York.
3. Harris, D. C.(2007),**Quantitative Chemical Analysis**,6th Edition, Freeman.
4. Khopkar, S.M. (2008), **Basic Concepts of Analytical Chemistry,** New Age International Publisher.
5. Skoog, D.A.; Holler F.J.; Nieman, T.A. (2005), **Principles of Instrumental Analysis,** Thomson Asia Pvt. Ltd.

Practicals:

1. Jeffery, G.H.; Bassett, J.; Mendham, J.; Denney, R.C.(1989),**Vogel's Textbook of Quantitative Chemical Analysis**,John Wiley and Sons.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE - 11 (DSE-11): Basic Principles of Food Chemistry

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Basic Principles of Food Chemistry (DSE-11)	04	03	--	01	Class 12th with Physics, Chemistry	--

Learning Objectives

The objectives of this course are as follows:

- To make students understand the sources, importance, stability and transformations of food components during handling and processing.
- To make students aware about nature and importance of additives in food chemistry.

Learning outcomes

By studying this course, the students will be able to:

- Develop a strong understanding of basic fundamentals of food chemistry
- Discuss and demonstrate how alterations /transformations during processing and handling affect the quality and stability of food
- Develop an elementary idea on the nature and importance of additives in food chemistry.
- Apply the knowledge gained to real world problems

SYLLABUS OF DSE-11

Unit 1: Introduction **(Hours:3)**

What is food chemistry; An overview of the following: alterations during handling or processing (texture, flavour, colour), chemical and biochemical reactions leading to alteration in food quality (browning, oxidation, hydrolysis, protein denaturation), cause and effect relationship pertaining to food handling; factors governing stability of food (chemical and environmental factors) and role of food chemists.

Unit 2: Water **(Hours:3)**

Definition of water in food, structure of water and ice, types of water, sorption phenomenon, water activity and packaging, water activity and shelf-life.

Unit 3: Carbohydrates (Hours:6)

Introduction, sources, functions, deficiencies, structure and importance of polysaccharides in food chemistry (Agar and Agarose, Pectin, Hemicellulose, Cyclodextrins, Gums, Alginate, Starches, modified starches), Non-enzymatic browning and its prevention, caramelisation, formation of acrylamide in food, role of carbohydrates as sweeteners and comparison with artificial sweeteners.

Unit 4: Proteins (Hours:6)

Introduction, sources, classification, functions, deficiencies, physico-chemical & functional properties of proteins, nature of food proteins (plant and animal proteins).

Unit 5: Lipids (Hours:6)

Introduction, sources, classification and physical properties, functions, deficiencies, effect of frying on fat, reaction of lipids: hydrogenation, interesterification, hydrolysis, auto-oxidation and its prevention; flavour reversion, fat replacers: fat mimetics and fat substitutes.

Unit 6: Vitamins and Minerals (Hours:6)

Vitamins: Introduction, sources, classification: water soluble and water insoluble vitamins, essential vitamins, physiological function, deficiencies, causes of variation and loss in foods, vitamin like compounds, effect of food processing.

Minerals: Introduction, sources, classification: major minerals and trace elements, physiological function, deficiencies, factors affecting mineral content of food, fortification and enrichment of foods with minerals, effect of food processing.

Unit 7: Food Additives (Hours:15)

Additives: Introduction, importance, classification, antioxidants, emulsifiers, stabilizers, gelling agents, gums, thickeners, sweeteners, acidulants, preservatives, humectants, food toxins

Colouring Agents and Pigments: Introduction, natural food colourants: anthocyanins, carotenoids, chlorophyll, caramel, betalains; examples of pigments in common food; Nature-identical colourants: β-Carotene, canthaxanthin and riboflavin; artificial colouring agents; artificial/synthetic colourants: Azo dyes (e.g. amaranth dye, tatrazine, citrous red, Allura red); quinoline (e.g. quinoline yellow); phthalein (e.g. erythrosine); triarylmethanes and indigoid (e.g. indigo carmine), FD&C Dyes and lakes; properties of certified dyes, colours exempt from certification.

Food Flavor: Sensation of taste and odour, chemical dimension of basic types of taste (Salty, Sweet, Bitter, Sour, Umami taste), other sensations like astringency, coolness, pungency/pungency); non-nutritive sweeteners (aspartame, saccharin, sucralose, cyclamate) and nutritive sweeteners, molecular mechanism of flavour perception, biogenesis of fruits and vegetable flavors, taste inhibition, modification and enhancement, common vegetable and spice flavors.

Practical component

Practical: **Credits: 01**

(Laboratory periods:15 classes of 2 hours each)

(At least four experiments to be performed)

1. Determination of moisture in food products by hot air oven-drying method.
2. Paper chromatography of synthetic food dyes.
3. Quantitative determination of food dyes in powdered drink mixes by spectrophotometric method.
4. Colorimetric determination of Iron in vitamin / dietary tablets.
5. Determination of rancidity of edible oils by Kriess Test.
6. Estimation of Vitamin C in a given solution/ lemon Juice/chillies by 2, 6-dichlorophenol by Indophenol Method.
7. Isolation of casein from milk.
8. Qualitative estimation of cholesterol by Liebermann-Burchard method.
9. Detecting the presence of Vanaspati and rancidity in the given Ghee sample through qualitative tests.

Essential/recommended readings

Theory:

1. DeMan, J.M., Finley, J.W., Hurst, W.J., Lee, C.Y. (2018), **Principles of Food Chemistry**, Fourth Edition, Springer.
2. Msagati, T.A.M. (2013), **Chemistry of Food Additives and Preservatives**, Wiley-Blackwell.
3. Fennema, O.R. (2017), **Food Chemistry**, Fifth Edition, CRC Press.
4. Attokaran, M. (2017), **Natural Food Flavors and Colorants**, Second Edition, Wiley-Blackwell.
5. Potter, N.N., Hotchkiss, J.H, (1995) **Food Science,** Fifth Edition, Chapman & Hall.
6. Brannen, D., Davidsin, P.M., Salminen, T. Thorngate III, J.H. (2002), **Food Additives**, Second Edition, CRC Press.
7. Coultate, T. (2016), **Food: The Chemistry of its Components**, Sixth Edition, Royal Society of Chemistry.
8. Belitz, H. D.; Grosch, W. (2009), **Food Chemistry**, Springer.
9. Course: Food Chemistry (iasri.res.in)

Practical:

1. Ranganna, S. (2017). **Handbook of analysis and quality control for fruits and vegetable products**, Second Edition, McGraw Hill Education
2. Sawhney, S.K., Singh, R. (2001), **Introductory Practical Biochemistry**, Narosa Publishing House

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE -12 (DSE-12): Computational Methods & Molecular Modelling

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Computational Methods & Molecular Modelling (DSE-12)	**04**	**03**	**--**	**01**	Class 12th with Physics, Chemistry and Mathematics	**--**

Learning Objectives

The Objectives of this course are as follows:

- To make students learn the theoretical background of computational techniques in molecular modelling.
- To give the different flavours of computational chemistry by the end of this course.
- To provide hands-on experience in molecular modelling on various software

Learning outcomes

By studying this course, the students will be able to:

- Explain the theoretical background of computational techniques and selective application to various molecular systems.
- Compare computational and experimental results and explain deviations.
- Perform Optimization of geometry parameters of a molecule (such as shape, bond length and bond angle) through the use of software like Chem Sketch and Argus Lab in interesting hands-on exercises.
- Perform analysis of molecular properties using various software.

SYLLABUS OF DSE-12

UNIT-1 : Introduction **(Hours: 6)**

Introduction to computational chemistry: Overview of Classical and Quantum Mechanical Methods (Ab initio, DFT, Semi-empirical, Molecular Mechanics, Molecular Dynamics, and Monte Carlo)

UNIT – 2: Potential Energy Surfaces **(Hours: 6)**

Intrinsic Reaction Coordinates, Stationary points, Equilibrium points – Local and Global minima, Geometry optimization and energy minimization, the concept of transition state with examples, Hessian matrix

UNIT – 3 : Molecular Mechanics & Molecular Dynamics **(Hours: 9)**

Molecular Mechanics

Force Fields (A brief explanation of all the terms of a basic force field), the basic idea of MM1, MM2, MM3, MM4, MM+, AMBER, BIO+, OPLS.

Molecular Dynamics

The concept of the periodic box, ensembles (microcanonical, canonical, isothermal – isobaric), steps in a typical MD simulation.

UNIT-4: Huckel Molecular Orbital Theory **(Hours: 6)**

Huckel MO with examples: ethene and propenyl systems, Properties calculated – energy, charges, bond order, electronic energies, resonance energies.

UNIT- 5: Computational Methods **(Hours: 18)**

Ab-initio methods

Antisymmetry principle, Slater determinants, SCF method, Hartree-Fock method.
Basis sets, Basis functions, STOs and GTOs, diffuse and polarization functions. Minimal basis sets, Basis set superposition error (BSSE) - Effective core potentials (ECP)
Advantages of ab initio calculations.

Density Functional Theory

A brief description of Density Functional Theory (DFT). Calculation of Electronic Properties in ground and Excited states

Semi-empirical methods

Basic idea about Zero differential overlap (ZDO) approximation

Some important concepts

Concepts of atomic charges, electrostatic potential maps, computation of thermodynamic properties and spectroscopic observables

Practical component

Practical: Credits: 01

(Laboratory periods:15 classes of 2 hours each)

1) Write the Z-Matrix of a given set of molecules.

2) Carry out geometry optimisation on H_2O, H_2S, H_2Se molecules compare the optimized bond angles and dipole moments from the results obtained. Obtain the ESP-mapped density surfaces and interpret the results obtained with reference to bonding in these molecules.

   Suggestive: A comparative analysis of results of the above exercise may be carried out using different quantum mechanical methods.

3) Calculate the energy of the following chemical species and arrange them in order of increasing stability.

   1-hexene, 2-methyl-2-pentene, (E)-3-methyl-2-pentene, (Z)-3-methyl-2-pentene, and 2,3- dimethyl-2-butene in order of increasing stability.

4) Carry out geometry optimisation on the following chemical species and compare the shapes and dipole moments of the molecules.

   1-pentanol, 2-pentanol, 3-pentanol, 2-methylbutan-1-ol, 3-methylbutan-1-ol, 2-methylbutan-2-ol, 2-methylbutan-3-ol and 2,2-dimethylpropanol.

   Correlate the computationally obtained values of the dipole moments with the experimental values of the boiling points: (118 ºC, 100 ºC, 108 ºC, 82 ºC, of 1-butanol, 2-butanol, 2-methyl-1-propanol, and 2-methyl-2- propanol respectively).

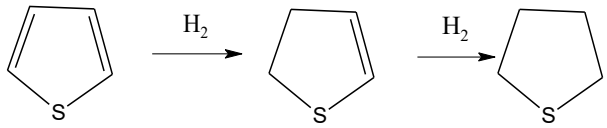
5) Based on the implicit electronic structure calculations, determine the heat of hydrogenation of Propylene.

6) Based on the calculations of enthanlies of the participating chemical species on optimized geometry of the molecules, calculate the reaction enthalpy at 298 K for the following, industrially important reactions:

   $$CH_4 + H_2O \rightarrow CO + 3H_2$$ (steam reforming of methane)

   ≡≡ (Haber-Bosch process)

7) Carry out geometry optimisation and determine the energy of the participating chemical species in the following reactions Using these results calculate the resonance energy of thiophene.



8) Carry out geometry optimisation & Energy calculations on the following species and obtain Frontier Molecular Orbitals. Visualize the Molecular Orbitals of these species and interpret the results for bonding in these molecules.
Benzene, Naphthalene, and Anthracene.

9) Compare the gas phase basicities of the methylamines by comparing the enthalpies of the following reactions:

$$BH^+ + NH_3 \rightarrow B + NH_4^+$$

Where B = CH_3NH_2, $(CH_3)_2NH$, $(CH_3)_3N$

10) On the basis of results of geometry optimization and energy calculations, determine the enthalpy of isomerization of cis and trans 2-butene.

11) Perform a conformational analysis of butane. Plot the graph between the angle of rotation and the energy of the conformers using spreadsheet software.

12) Compute the resonance energy of benzene by comparison of its enthalpy of hydrogenation with that of cyclohexene.

13) Calculate the electronic UV/Visible absorption spectrum of Benzene.

14) Calculate the electronic absorption spectra of formaldehyde.

15) Plot the electrostatic potential mapped on electron density for benzene and use it to predict the type of stacking in the crystal structure of benzene dimer.

16) On a given set of molecules methylamine (CH_3NH_2) carry out geometry optimization, single point energy and NBO calculations and interpret the output results treated at the ab initio RHF/3-21G level.

17) Study the mechanism of SN_2 reaction between Cl^- and CH_3Br involving a Walden inversion computationally.

18) Perform a geometry optimization followed by a frequency assessment (opt+freq keyword) using the B3LYP method and 6-31-G(d) basis set on a given set of small molecules i.e. BH_3, CH_4.
Suggestive: A greater number of molecules may be studied as per instructions received from the concerned teacher.

19) Based on the fundamentals of conceptual DFT calculate the ionization potential (IP), electron affinity (EA), electronegativity and electron chemical potential of a given set of molecules.

20) Perform molecular docking of Sulfonamide-type D-Glucose inhibitor into MurrD active site using Argus Lab.

21) Perform molecular dynamics (MD) simulation of a given alkali metal ion in aqueous function (RDF)

Essential/recommended readings

Theory:

1. Lewars, E. (2003), **Computational Chemistry**, Kluwer academic Publisher.
2. Cramer, C.J. (2004), **Essentials of Computational Chemistry**, John Wiley & Sons.
3. Hinchcliffe, A. (1996), **Modelling Molecular Structures**, John Wiley & Sons.
4. Leach, A.R. (2001), **Molecular Modelling**, Prentice-Hall.
5. House, J.E. (2004), **Fundamentals of Quantum Chemistry**, 2nd Edition, Elsevier.
6. McQuarrie, D.A. (2016), **Quantum Chemistry**, Viva Books.
7. Levine, I. N.; **Physical Chemistry**, 5th Edition, McGraw –Hill.

Practical:

1. https://www.afs.enea.it/software/orca/orca_manual_4_2_1.pdf
2. https://dasher.wustl.edu/chem430/software/avogadro/learning-avogadro.pdf
3. http://www.arguslab.com/arguslab.com/ArgusLab.html
4. https://barrett-group.mcgill.ca/tutorials/Gaussian%20tutorial.pdf
5. https://gaussian.com/techsupport/
6. https://gaussian.com/man/
7. https://gaussian.com/wp-content/uploads/dl/gv6.pdf
8. https://dasher.wustl.edu/chem478/software/spartan-manual.pdf
9. http://www.mdtutorials.com/gmx/
10. https://vina.scripps.edu/manual/

Important Instruction Note on working approach:

- A student is required to perform/investigate a minimum of 10 exercises from the given set of exercises.
- The students may use open source softwares; ArgusLab, Avogadro and ORCA. In case a licenced version softwares is available, if procured by the college, other licenced softwares may also be used.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 13 (DSE-13): Research Methodology for Chemists

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Research Methodology for Chemists (DSE-13)	04	03	--	01	Class 12th with Physics, Chemistry	

Learning objectives

The objectives of this course are as follows:

- To make the students aware of fundamental but mandatory ethical practices in chemistry.
- To introduce the concept of data analysis.
- To learn to perform literature survey in different modes.
- To make the students aware of safety handling and safe storage of chemicals.
- To make students aware about plagiarism and how to avoid it.
- To teach the use of different e-resources.

Learning outcomes

By studying this course, students will be able to:

- Follow ethical practices in chemistry
- Do Data analysis
- Literature survey in different modes
- Use e-resources.
- Avoid plagiarism, understand the consequences and how to avoid

SYLLABUS OF DSE-13

UNIT – 1: Scope of Research **(Hours: 3)**

Introduction, overview of research process: define research problem, review literature, formulate hypothesis, design research/experiment, collect and analyse data, interpret and report, scope and importance.

UNIT – 2: **Literature Survey, Databases and Research metrics** **(Hours: 15)**

Print: Sources of information: Primary, secondary, tertiary sources; Journals: Journal abbreviations, Digital: Databases and their responsible use: Google Scholar, Web of science, Scopus, UGC INFONET, SciFinder, PubMed, ResearchGate, E-consortium, e-books; Search techniques: Phrase, Field, Boolean, Proximity, Concept, Limiting/Refining Search Results.
Research metrics: Impact factor of Journal, h-index, i10 index, Altmetrics, Citation index.
Author identifiers/or profiles: ORCID, Publons, Google Scholar, ResearchGate, VIDWAN

UNIT – 3: Communication in Science **(Hours: 12)**

Types of technical documents: Full length research paper, book chapters, reviews, short communication, project proposal, Letters to editor, and thesis.
Thesis writing – different steps and software tools (Word processing, LaTeX, Chemdraw, Chemsketch etc) in the design and preparation of thesis, layout, structure (chapter plan) and language of typical reports, Illustrations and tables, bibliography, referencing: Styles (APA, Oxford etc), annotated bibliography, Citation management tools: Mendeley, Zotero and Endnote; footnotes. Oral presentation/posters – planning, software tools, creating and making effective presentation, use of visual aids, importance of effective communication, electronic manuscript submission, effective oral scientific communication and presentation skills.

UNIT – 4: Research and Publication ethics **(Hours: 9)**

Scientific Conduct: Ethics with respect to science and research, Scientific Misconducts: falsification, fabrication and plagiarism, similarity index, software tools for finding plagiarism (Turnitin, Urkund etc), redundant dublications

Publication Ethics: Introduction, COPE (Committee on Publication Ethics) guidelines; conflicts of interest, publication misconduct: problems that lead to unethical behaviour and vice versa, types, violation of publication ethics, authorship and contributorship, predatory publishers and journals

IPR - Intellectual property rights and patent law, commercialization, copy right, royalty, trade related aspects of intellectual property rights (TRIPS)

UNIT – 5: Statistical analysis for chemists **(Hours: 6)**

Types of data, data collection-Methods and tools, data processing, hypothesis testing, Normal and Binomial distribution, tests of significance: t-test, F-test, chi- square test, ANOVA, multiple range test, regression and correlation.

Features of data analysis with computers and softwares -Microsoft Excel, Origin, SPSS

Practical component **Credits: 01**

(Laboratory periods:15 classes of 2 hours each)

1. Collection of journal articles on a particular topic using Google Scholar and creating a database.
2. Collection of journal articles on a particular topic using Science Direct and creating a database.
3. Collection of journal articles on a particular topic using Scopus and creating a database.
4. Drawing chemical structure, reactions and mechanisms using Chemsketch or ISIS draw or any other software.
5. Collection of chemical structure using ChemSpider and creating a database.
6. Curve fitting using freely available softwares/apps (any one)
7. Making of power point presentation
8. Experimental learning of safe storage hazardous chemicals
9. Experimental learning of handling of hazardous chemicals
10. Technical writing on topics assigned.
11. Demonstration for checking of plagiarism using recommended software

Essential/recommended readings:

1. Dean, J. R., Jones, A. M., Holmes, D., Reed, R., Weyers, J. & Jones, A. (2011) Practical skills in chemistry. 2nd Ed. Prentice-Hall, Harlow.
2. Hibbert, D. B. & Gooding, J. J. (2006) Data analysis for chemistry. Oxford University Press.
3. Topping, J. (1984) Errors of observation and their treatment. Fourth Ed., Chapman Hall, London.
4. Harris, D. C. Quantitative chemical analysis. 6th Ed., Freeman (2007) Chapters 3-5.
5. Levie, R. de, how to use Excel in analytical chemistry and in general scientific data analysis. Cambridge Univ. Press (2001) 487 pages.
6. Chemical safety matters – IUPAC – IPCS, Cambridge University Press, 1992.
   OSU safety manual 1.01

Note:

- **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

- **The students are required to opt one paper each from DSEs 1-3 in Semester 3, DSEs 4-6 in Semester 4, DSEs 7-9 in Semester 5 and DSEs 10-13 in Semester 6.**

- **Research Methodology (DSE 13) shall be offered as one of the DSE courses in semester VI or VII. If a student wishes to pursue four years Honours Degree with Research, he/she shall compulsorily opt for a Research Methodology course in either Semester VI or VII.**

BSC. (PHYSICAL SCIENCES)- CHEMISTRY COMPONENT
SEMESTER - IV

DISCIPLINE SPECIFIC CORE COURSE CHEM-DSC -10: Chemistry- IV: Chemistry of Carboxylic Acids & their Derivatives, Amines and Heterocycles

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Chemistry of Carboxylic Acids & their Derivatives, Amines and Heterocycles DSC-10: Chemistry-IV	**04**	**02**	**-**	**02**	**Class 12th with Physics, Chemistry, Mathematics**	

Learning Objectives

The Learning Objectives of this course are as follows:

- To make students learn about the chemistry of carboxylic acids and their derivatives (aliphatic and aromatic)
- To give basic understanding of amines (aliphatic & aromatic), diazonium salts
- To provide basic understanding of heterocyclic systems.

Learning outcomes

By studying this course, students will be able to:

- Understand reactions of carboxylic acids, esters, amides, amines and diazonium salts
- Understand the concept of protection and deprotection.
- Use the synthetic chemistry learnt in this course to do functional group transformations.
- Gain theoretical understanding of chemistry of heterocyclic compounds.

Syllabus

Unit 1: Carboxylic Acids and their Derivatives (aliphatic and aromatic) (1 3 Lectures)

Preparation: Oxidation reactions of alcohols, aldehydes and ketones, Acidic and alkaline

hydrolysis of esters; Reactions: Hell-Volhard Zelinsky reaction,

Carboxylic acid derivatives (aliphatic): Preparation: Acid chlorides, anhydrides, esters and amides from acids and their interconversion, Claisen condensation. Reactions: Relative reactivities of acid derivatives towards nucleophiles, Reformatsky reaction, Perkin condensation.

Active methylene compounds: Keto-enol tautomerism. Preparation and synthetic applications of ethyl acetoacetate

Unit 2: Amines (aliphatic & aromatic) and Diazonium Salts (Hours:10)

Amines

Preparation: from alkyl halides, Gabriel's Phthalimide synthesis, Hoffmann bromamide reaction. Reactions: Hoffmann *vs* Saytzeff elimination, carbylamine test, Hinsberg test, reaction with HNO_2, Schotten-Baumann reaction. Electrophilic substitution (case aniline): nitration, bromination, sulphonation; basicity of amines.

Diazonium salt

Preparation: from aromatic amines; Reactions: conversion to benzene, phenol and dyes.

Unit 3: Heterocyclic Compounds (Hours: 7)

Introduction, classification, structure, nomenclature and uses. Preparation and properties of the following heterocyclic compounds with reference to electrophilic and nucleophilic substitution: furan, pyrrole, thiophene, and pyridine.

Practical Component: Credits: 02

(Laboratory periods: 60)

1. Systematic qualitative analysis and preparation of suitable crystalline derivative (carboxylic acids, carbonyl, alcohols, phenols, amines (1°, 2°, 3°) and amides).
2. Preparation:
   a. Acetylation of Aniline and Phenols.
   b. Benzoylation of Aniline and phenols

The above derivatives should be prepared using 0.5-1g of the organic compound. The solid samples must be collected and may be used for recrystallization and melting point.

References:

Theory:

1. Morrison, R. N.; Boyd, R. N. **Organic Chemistry**, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
2. Finar, I. L. **Organic Chemistry** (Volume 1), Dorling Kindersley (India) Pvt. Ltd. (Pearson

Education).

3. Ahluwalia, V.K.; Bhagat, P.; Aggarwal, R.; Chandra, R. (2005), **Intermediate for Organic Synthesis**, I.K. International.
4. Solomons, T. W. G.; Fryhle, C. B. ; Snyder, S. A. (2016), **Organic Chemistry**, 12th Ed., Wiley.

Practical:

1. Ahluwalia, V.K.; Dhingra, S.; Gulati, A. (2005), **College Practical Chemistry**, University Press (India) Ltd.
2. Ahluwalia, V.K.; Dhingra, S. (2004), **Comprehensive Practical Organic Chemistry: Qualitative Analysis**, University Press.
3. Pasricha, S., Chaudhary, A. (2021), **Practical Organic Chemistry: Volume I**, I K International Publishing House Pvt. Ltd., New Delhi.
4. Pasricha, S., Chaudhary, A. (2021), **Practical Organic Chemistry: Volume II**, I K International Publishing House Pvt. Ltd., New Delhi.
5. Vogel, A.I. (1972), **Textbook of Practical Organic Chemistry**, Prentice-Hall.
6. Jeffery, G.H.; Bassett, J.; Mendham, J.; Denney, R.C. (1989), **Vogel's Textbook of Quantitative Chemical Analysis**, John Wiley and Sons.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

BSC. (PHYSICAL SCIENCES)- CHEMISTRY COMPONENT
SEMESTER - V

DISCIPLINE SPECIFIC CORE COURSE CHEM-DSC -13: Chemistry- V: Coordination Chemistry and Organometallics

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Coordination Chemistry and Organometallics DSC-13: Chemistry- V	**04**	**02**	**-**	**02**	**Class 12th with Physics, Chemistry, Mathematics**	

Learning Objectives

The Learning Objectives of this course are as follows:

- To develop basic understanding of coordination chemistry and organometallics which are of immense importance to biological systems, qualitative quantitative analysis, catalysis, medicines, paints and pigments etc.
- The students learn nomenclature, isomerism and bonding in coordination compounds with special emphasis on important coordination compounds in the biological system.
- To understand classification of organometallic compounds, the concept of hapticity and the 18-electron rule governing the stability of a wide variety of organometallic species with special emphasis on metal carbonyls.

Learning outcomes

By studying this course, students will be able to:

- Understand terms: ligand, denticity of ligands, chelate, coordination number.
- Systematically name coordination compounds.
- Discuss the various types of isomerism possible in Octahedral and Tetrahedral coordination compounds.
- Use Valence Bond Theory to predict the structure and magnetic behaviour of metal complexes and understand the terms inner and outer orbital complexes.
- Explain the meaning of the terms $\Delta o.$, Δt, pairing energy, CFSE, high spin and low spin and how CFSE affects thermodynamic properties like lattice enthalpy and hydration enthalpy.

- Explain magnetic properties and colour of complexes on basis of Crystal Field Theory
- Apply 18-electron rule to rationalize the stability of metal carbonyls and related species.
- Learn how IR data can be used to understand extent of back bonding in metal carbonyls.

Syllabus

Unit 1: Introduction to Coordination compounds **(Hours: 6)**

Brief discussion with examples of types of ligands, denticity and concept of chelate. IUPAC system of nomenclature of coordination compounds (mononuclear and binuclear) involving simple monodentate and bidentate ligands. Structural and stereoisomerism in complexes with coordination numbers 4 and 6.

Unit 2: Bonding in Coordination Compounds **(Hours: 14)**

Valence Bond Theory (VBT): Salient features of theory, concept of inner and outer orbital complexes, Drawbacks of VBT.

Crystal Field Theory: Splitting of d orbitals in octahedral symmetry. Crystal field effects for weak and strong fields, Crystal field stabilization energy (CFSE), concept of pairing energy, Factors affecting the magnitude of Δ, Spectrochemical series, Splitting of d orbitals in tetrahedral symmetry, Comparison of CFSE for octahedral and tetrahedral fields, tetragonal distortion of octahedral geometry, Jahn-Teller distortion

Unit 3: Organometallic Chemistry **(Hours: 10)**

Definition and classification with appropriate examples based on nature of metal-carbon bond (ionic, sigma, pi and multicentre bonds), Structure and bonding of methyl lithium and Zeise's salt, Structure and bonding of ferrocene, mononuclear and polynuclear carbonyls of 3d metals, 18-electron rule as applied to carbonyls, π-acceptor behaviour of carbon monoxide (MO diagram of CO to be discussed), synergic effect and use of IR data to explain extent of back bonding.

Practical Component **Credits:02**

(Laboratory periods:60)

1. Estimation of Mg^{2+} by direct complexometric titrations using EDTA.
2. Estimation of Zn^{2+} by direct complexometric titrations using EDTA.
3. Estimation of Ca^{2+} by direct complexometric titrations using EDTA.
4. Estimation of total hardness of a given sample of water by complexometric titration.
5. Determination of the composition of the Fe^{3+} - salicylic acid complex / Fe^{2+}-1, 10-phenanthroline complex in solution by Job's method.

6. Determination of the composition of the Fe^{3+} - salicylic acid complex / Fe^{2+}-1,10-phenanthroline complex in solution by mole ratio method
7. Preparation of the following inorganic compounds:
   a). Tetraamminecopper(II) sulphate
   b). Potassium trioxalatoferrate(III) trihydrate
   c). Chrome alum
   d). *Cis*- and *trans*-Potassium diaquadioxalatochromate(III)
8. Any suitable experiment (other than the listed ones) based upon complexation reactions.

References:

Theory:

1. Huheey, J.E.; Keiter, E.A., Keiter; R. L.; Medhi, O.K. (2009), **Inorganic Chemistry- Principles of Structure and Reactivity**, Pearson Education.
2. Shriver, D.D.; Atkins, P.; Langford, C.H. (1994), **Inorganic Chemistry** 2nd Ed., Oxford University Press.
3. Atkins, P.W.; Overton, T.L.; Rourke, J.P.; Weller, M.T.; Armstrong, F.A. (2010), **Inorganic *Chemistry***, 5th Edition, W. H. Freeman and Company.
4. Cotton, F.A.; Wilkinson, G.; Gaus, P.L. **Basic Inorganic Chemistry**, 3rd Edition, Wiley India.
5. Douglas, B.E.; McDaniel, D.H.; Alexander, J.J. (1994), **Concepts and Models of Inorganic Chemistry**, John Wiley & Sons.
6. Greenwood, N.N.; Earnshaw, A. (1997), **Chemistry of the Elements**, 2nd Edition, Elsevier.
7. Lee, J.D.; (2010), **Concise Inorganic Chemistry**, Wiley India.
8. Sodhi G.S., **Principles of Inorganic Chemistry**, 3rd Edition, Viva Books India.

Practicals:

1. Jeffery, G.H.; Bassett, J.; Mendham, J.; Denney, R.C. (1989), **Vogel's Textbook of Quantitative Chemical Analysis**, John Wiley and Sons.
2. Marr, G.; Rockett, B.W. (1972), **Practical Inorganic Chemistry**, Van Nostrand Reinhold.
3. Dua A, Manav N, **Practical Inorganic Chemistry,** (2017), Manakin Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

BSC. (PHYSICAL SCIENCES)- CHEMISTRY COMPONENT
SEMESTER -VI

DISCIPLINE SPECIFIC CORE COURSE -16: Chemistry -VI Quantum Chemistry and Spectroscopy

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Quantum Chemistry and Spectroscopy DSC-16: Chemistry-VI	**04**	**02**	**--**	**02**	**Class 12th with Physics, Chemistry, Mathematics**	**NA**

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce the concepts and methodology of quantum mechanics
- Application of Quantum chemistry to spectroscopy
- To establish the relation between structure determination and spectra.

Learning outcomes

By studying this course, students will be able to:

- Understand basic principles of quantum mechanics: operators, eigen values, averages, probability distributions.
- Understand and use basic concepts of microwave, IR and UV-VIS spectroscopy for interpretation of spectra.

Syllabus

Unit 1: Quantum Chemistry **(Hours: 16)**

Postulates of quantum mechanics, quantum mechanical operators.

Schrodinger equation and its application to free particle and particle in a 1-D box (complete solution), quantization, normalization of wave functions, concept of zero-point energy.

Qualitative treatment of H and H like atoms. Setting up of Schrodinger equation for many electron atoms.

Rotational Motion: Schrödinger equation of a rigid rotator and brief discussion of its results (solution not required). Quantization of rotational energy levels.

Vibrational Motion: Schrödinger equation of a linear harmonic oscillator and brief discussion of its results (solution not required). Quantization of vibrational energy levels.

Unit 2: Spectroscopy (Hours: 14)

Electromagnetic radiation and its interaction with matter. Lambert-Beer's law, Jablonski's diagram. Florescence and Phosphorescence.
Difference between atomic and molecular spectra. Born- Oppenheimer approximation: Separation of molecular energies into translational, rotational, vibrational and electronic components.

Microwave Spectroscopy: Microwave (pure rotational) spectra of diatomic molecules. Selection rules.
Structural information derived from rotational spectroscopy.

IR Spectroscopy: Selection rules, IR spectra of diatomic molecules. Structural information derived fromvibrational spectra. Effect of hydrogen bonding (inter- and intramolecular) and substitution on vibrational frequencies.

Electronic Spectroscopy: Electronic excited states. Free electron model and its application to electronicspectra of polyenes. chromophores, auxochromes, bathochromic and hypsochromic shifts.

Practical component Credits:02

(Laboratory periods: 60)

UV/Visible spectroscopy

1. Study the 200-500 nm absorbance spectra of $KMnO_4$ and $K_2Cr_2O_7$ (in 0.1 M H_2SO_4) and determine the λ_{max} values. Calculate the energies of the two transitions in different units (J molecule^{-1}, kJ mol^{-1}, cm^{-1}, eV).
2. Study the pH-dependence of the UV-Vis spectrum (200-500 nm) of $K_2Cr_2O_7$
3. Record the 200-350 nm UV spectra of the given compounds (acetone, acetaldehyde, 2-propanol, acetic acid) in water. Comment on the effect of structure on the UV spectra of

organic compounds.

Colorimetry

4. Verify Lambert-Beer's law and determine the concentration of $CuSO_4$/ $KMnO_4$/ $K_2Cr_2O_7$/ $CoCl_2$ in a solution of unknown concentration
5. Determine the concentrations of KMnO4 and $K_2Cr_2O_7$ in a mixture.
6. Study the kinetics of iodination of propanone in acidic medium.
7. Determine the amount of iron present in a sample using 1, 10-phenanthroline.
8. Determine the dissociation constant of an indicator (phenolphthalein).
9. Study the kinetics of interaction of crystal violet/ phenolphthalein with sodium hydroxide.

References:

Theory:

1. Banwell, C.N.; McCash, E.M.(2006), **Fundamentals of Molecular Spectroscopy**, Tata McGraw- Hill.
2. Kapoor, K.L.(2015),**A Textbook of Physical Chemistry**, McGraw Hill Education, ,Vol 4, 5th Edition, McGraw Hill Education.
3. McQuarrie, D.A.(2016),**Quantum Chemistry**, Viva Books.
4. Chandra, A. K.(2001),**Introductory Quantum Chemistry**, Tata McGraw-Hill.
5. Dua A and Tyagi P, **Molecular Spectroscopy: Quantum to Spectrum**, (2022) Atlantic Publishers & Distributors Pvt Ltd.
6. Dua A, Singh C, **Quantum Chemistry: Classical to Computational** (2015) ManakinPress.

Practical:

1. Khosla, B.D.; Garg, V.C.; Gulati, A. (2015),**Senior Practical Physical Chemistry**, R. Chand & Co, New Delhi.
2. Kapoor, K.L. (2019),**A Textbook of Physical Chemistry**, Vol.7, 1st Edition, McGraw Hill Education.
3. Garland, C. W.; Nibler, J. W.; Shoemaker, D. P.(2003),**Experiments in Physical Chemistry**, 8th Edition, McGraw-Hill, New York.

Additional Resources:

1. Castellan, G. W .(2004),**Physical Chemistry**, Narosa.
2. Petrucci, R. H.(1989),**General Chemistry: Principles and Applications**, Macmillan Publishing

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

POOL OF DISCIPLINE SPECIFIC ELECTIVES FOR SEMESTER -III/IV/V/VI

SEMESTER III

DISCIPLINE SPECIFIC ELECTIVE COURSE CHEM-DSE -1: Main Group Chemistry

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Chem-DSE 1: Main Group Chemistry	**04**	**02**	**-**	**02**	**Class XII with Science**	

Learning Objectives

The Learning Objectives of this course are as follows:

- To provide basic understanding of the fundamental principles of metallurgy through study of the different methods of extraction and refining of metals.
- To illustrate the diversity and fascinating aspects of inorganic chemistry through the study of structure, properties and utilities of s- and p-block elements and their compounds.

Learning outcomes

By studying this course, students will be able to:

- Understand the basis of occurrence of metals in nature and the methods that can be applied on minerals to extract the metals from them.
- Explain the importance of free energy of formation of oxides with the choice of reducing agents for extracting the metals.
- Understand and explain the importance of refining of metals and the choice of a refining procedure.
- Explain the group trends observed for different properties of s and p block elements.
- Explain the structures and the bonding of compounds of s- and p- block elements
- Explain the unique properties of alkali metals and some other main group elements
- Understand and explain the polymerization mechanism of inorganic ions to generate inorganic polymers and the difference between organic and inorganic polymers.

Syllabus

Unit 1: General Principles of Metallurgy (Hours: 6)

Chief modes of occurrence of metals based on standard electrode potentials. Ellingham diagrams for reduction of metal oxides using carbon and carbon monoxide as reducing agent. Electrolytic Reduction, Hydrometallurgy with reference to cyanide process for silver and gold. Methods of purification of metals: Electrolytic process, Van Arkel-De Boer process, Zone refining.

Unit 2: General Properties (4 Hours)

General group trends of s- and p-block elements with special reference to melting and boiling points, flame colour, metallic character and complex formation tendency, diagonal relationship and anomalous behaviour of first member of each group, Alkali metal solutions in liquid ammonia

Unit 3: Structure, Bonding, Properties and Applications (Hours: 16)

Structure, bonding, properties (Acidic/Basic nature, stability, ionic/covalent nature, oxidation/reduction, hydrolysis, thermal stability) and applications of the following:

Crown Ethers and cryptates of Alkali metals
Hydrides: hydrides of Group 13 (only diborane), Group 14, Group 15 (EH_3 where E = N, P, As, Sb, Bi), Group 16 and Group 17.
Oxides: Oxides of nitrogen, phosphorus and sulphur.
Oxoacids: oxoacids of phosphorus, sulphur and chlorine
Halides of phosphorus

Unit 4: Inorganic Polymers (4 Hours)

Preparation, properties, structure and uses of the following:
Borazine, Silicates and Silicones.

Practicals Credits:02

(Laboratory periods:60)

Qualitative semi-micro analysis of mixtures containing 2 anions and 2 cations (preferably 7-8 mixtures). Emphasis should be given to the understanding of the chemistry of different reactions. The following radicals are suggested:

CO_3^{2-}, NO_2^-, S^{2-}, SO_3^{2-}, SO_4^{2-}, $S_2O_3^{2-}$, CH_3COO^-, F^-, Cl^-, Br^-, I^-, NO_3^-, BO_3^{3-}, $C_2O_4^{2-}$, PO_4^{3-}, NH_4^+, K^+, Pb^{2+}, Cu^{2+}, Cd^{2+}, Bi^{3+}, Sn^{2+}, Sb^{3+}, Fe^{3+}, Al^{3+}, Cr^{3+}, Zn^{2+}, Mn^{2+}, Co^{2+}, Ni^{2+}, Ba^{2+}, Sr^{2+}, Ca^{2+}, Mg^{2+}.
The mixtures may contain combination of anions/one interfering anion.
Spot tests should be preferred wherever applicable.

References:

Theory:

1. Lee, J.D.; (2010), **Concise Inorganic Chemistry**, Wiley India.
2. Huheey, J.E.; Keiter, E.A.; Keiter; R. L.; Medhi, O.K. (2009), **Inorganic Chemistry- Principles of Structure and Reactivity**, Pearson Education.
3. Douglas, B.E.; McDaniel, D.H.; Alexander, J.J. (1994), **Concepts and Models of Inorganic Chemistry**, John Wiley & Sons.
4. Atkins, P.W.; Overton, T.L.; Rourke, J.P.; Weller, M.T.; Armstrong, F.A. (2010), Shriver and **Atkins Inorganic Chemistry**, 5th Edition, Oxford University Press.
5. Housecraft, E. H.; Sharpe, A.G. (2018), **Inorganic Chemistry**, 5th Edition, Pearson.
6. F.A. Cotton & G. Wilkinson (1999), **Advanced Inorganic Chemistry**, 6th Edition, John Wiley & Sons.

Practicals:

1. Vogel, A.I. (1972), **Qualitative Inorganic Analysis**, Longman.
2. Svehla, G. (1996), **Vogel's Qualitative Inorganic Analysis**, Prentice Hall.
3. Dua A, Manav N, **Practical Inorganic Chemistry,** (2017), Manakin Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE CHEM-DSE -2: Green Chemistry

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Chem-DSE-2: Green Chemistry	**04**	**02**	**-**	**02**	**Class XII with Science**	

Learning Objectives

The Learning Objectives of this course are as follows:

- To learn about the environmental status, public awareness in evolution, principles involved in green chemistry, bio-catalytic reactions, global warming and its control measures, availability of green analytical methods.
- To practice chemistry in the safest way possible
- To imbibe safeworking conditions in the laboratories as well as the chemical industry extending to society in a sustainable future for the planet.

Learning outcomes

By studying this course, students will be able to:

- Understand the twelve principles of green chemistry and also build the basic understanding of toxicity, hazard and risk related to chemical substances.
- Calculate atom economy, E-factor and relate them in all organic synthesis
- Appreciate the use of catalyst over stoichiometric reagents
- Learn to use green solvents, renewable feedstock and renewable energy sources for carrying out safer chemistry
- Appreciate the use of green chemistry in problem solving skills and critical thinking to innovate and find solutions to environmental problems.
- Learn to design safer processes, chemicals and products through understanding of inherently safer design (ISD)
- Appreciate the success stories and real-world cases as motivation for them topractice green chemistry

Syllabus

Unit 1: Introduction **(Hours: 8)**

Definition of green chemistry and how it is different from conventional chemistry and environmental chemistry.

Need of green chemistry.

Importance of green chemistry in- daily life, Industries and solving human health problems (four examples each).

A brief study of Green Chemistry Challenge Awards (Introduction, award categories and study about five last recent awards).

.

Unit 2: Twelve Principles of Green Chemistry **(Hours: 12)**

The twelve principles of the Green Chemistry with their explanations Special emphasis on the following:

- Prevention of waste / by products, pollution prevention hierarchy.
- Green metrics to assess greenness of a reaction: environmental impact factor, atom economy and calculation of atom economy.
- Green solvents-supercritical fluids, water as a solvent for organic reactions, ionic liquids, solvent less reactions, solvents obtained from renewable sources.
- Catalysis and green chemistry- comparison of heterogeneous and homogeneous catalysis, biocatalysis, asymmetric catalysis and photocatalysis.
- Green energy and sustainability.
- Real-time analysis for pollution prevention.

Prevention of chemical accidents, designing greener processes, principles of inherent safer design (ISD). Bhopal Gas Tragedy (safer route to carbaryl) and Flixborough accident (safer route to cyclohexanol), subdivision of ISD, minimization, simplification, substitution, moderation and limitation.

Unit 3: Real-world Cases in Green Chemistry **(Hours: 10)**

Discussion of the following Real-world Cases in green chemistry: Surfactants for carbon dioxide – replacing smog producing and ozone depleting solvents with CO_2 for precision cleaning and dry cleaning of garments. Designing of environmentally safe marine antifoulant. Right fit pigment: Synthetic azo pigments to replace toxic organic and inorganic pigments. An efficient, green synthesis of a compostable and widely applicable plastic (polylactic acid) made from corn.

Practical Component **Credits:02**

(Laboratory periods:60)

Characterization by melting point, UV-Visible spectroscopy, IR spectroscopy and any other specific method should be done (wherever applicable).

1. Preparation and characterization of nanoparticles of gold using tea leaves/silver nanoparticles using plant extracts.

2. Preparation of biodiesel from waste cooking oil and characterization (TLC, pH, solubility, combustion test, density, viscosity, gel formation at low temperature and IR can be provided).

3. Benzoin condensation using thiamine hydrochloride as a catalyst instead of cyanide.

4. Extraction of D-limonene from orange peel using liquid CO_2 prepared from dry ice.

5. Mechanochemical solvent free, solid-solid synthesis of azomethine using p-toluidine and o-vanillin/p-vanillin.

6 Microwave-assisted Knoevenagel reaction using anisaldehyde, ethyl cyanoacetate and ammonium formate.

7. Photoreduction of benzophenone to benzopinacol in the presence of sunlight.

8. Photochemical conversion of dimethyl maleate to dimethyl fumarate (cis-trans isomerisation)

9. Benzil- Benzilic acid rearrangement: Preparation of benzilic acid in solid state under solvent-free condition.

References:

Theory:

1. Anastas, P.T., Warner, J.C. (2014), **Green Chemistry**, **Theory and Practice**, Oxford University Press.
2. Lancaster, M. (2016), **Green Chemistry: An Introductory Text**, 3rd Edition, RSC Publishing.
3. Cann, M. C., Connely, M.E. (2000), **Real-World cases in Green Chemistry**, American Chemical Society, Washington.
4. Matlack, A.S. (2010), **Introduction to Green Chemistry**, 2nd Edition, Boca Raton: CRC Press/Taylor & Francis Group publisher.
5. Alhuwalia, V.K., Kidwai, M.R. (2005), **New Trends in Green chemistry**, Anamalaya Publishers.
6. Sidhwani, I.T, Sharma, R.K. (2020), **An Introductory Text on Green Chemistry**, Wiley India Pvt Ltd.

Practicals:

7. Kirchoff, M.; Ryan, M.A. (2002), **Greener approaches to undergraduate chemistry experiment**, American Chemical Society, Washington DC.

8. Sharma, R.K.; Sidhwani, I.T.; Chaudhari, M.K. (2013), **Green Chemistry Experiments: A monograph**, I.K. International Publishing House Pvt Ltd. New Delhi.
9. Pavia, D.L.; Lamponam, G.H.; Kriz, G.S.W. B. (2012), **Introduction to organic Laboratory Technique- A Microscale approach**, 4th Edition, Brooks-Cole Laboratory Series -for Organic chemistry.
10. Sindhwani I.T. (2015), **Wealth from Waste: A green method to produce biodiesel from waste cooking oil and generation of useful products from waste further generated**. DU Journal of Undergraduate Research and Innovation, 1(1),131-151. ISSN: 2395- 2334.
11. Sidhwani, I.T; Sharma, R.K. (2020), **An Introductory Text on Green Chemistry**, Wiley India Pvt Ltd.
12. **Monograph on Green Chemistry Laboratory Experiments**, Green Chemistry Task Force Committee, Department of Science and Technology, Government of India.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE CHEM-DSE 3: Chemistry of Colloids and Adsorption

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Chem-DSE 3: Chemistry of Colloids and Adsorption	**04**	**02**	**-**	**02**	**Class XII with Science**	

Learning Objectives

The Learning Objectives of this course are as follows:

- To develop basic concepts of colloids and colloidal phenomenon.
- Preparation and characterization of sols, understanding about applications of colloid in food, petroleum and cosmetic industry.
- Basic understanding of adsorption, types of adsorption, chemistry of adsorption and its applications.

Learning outcomes

By studying this course, students will be able to:

- Understand colloid solutions, preparation of sols.
- Understand the concept of Electrical double layer, charge on colloidal particles.
- Characterize the colloids sols, learn colloid phenomenon like Tyndall effect, Brownian movement, electrophoresis, dialysis, coagulation and flocculation.
- Understand adsorption, types of adsorption. Characteristics, factors affecting adsorption and its applications

Syllabus

Unit 1: Colloidal State **(Hours: 8)**

Distinction among true solutions, colloids and suspensions, components of Colloids, classification of colloids - lyophilic, lyophobic; Preparation methods and properties of lyophobic solutions, Hydrophile-lyophile balance (HLB), multi molecular, macromolecular and associated colloids (micelles formation), Schulze -Hardy law.

Unit 2: Preparation and Properties of Colloids **(Hours: 14)**

Methods of preparation of colloids, Tyndall effect, Brownian movement, coagulation and flocculation; electrophoresis, dialysis.

Emulsification by surfactants, selection of surfactants as emulsifying agent, colloidal phenomenonin food chemistry, Protein based functional colloids.

Unit 3: Surface Chemistry **(Hours: 8)**

Adsorption, Distinction between adsorption and absorption, Types of Adsorption, Physisorption and chemisorption and their characteristics, factors affecting adsorption of gases on solids - Freundlich and Langmuir adsorption isotherms, Adsorption from solutions. Applications of Adsorption phenomenon in living systems.

Practical component **Credits: 02**

(Laboratory periods: 60)

1. Preparation of Colloidal Sols of following
   a. Egg Albumin
   b. Starch /Gum
   c. Ferric chloride
   d. Aluminum hydroxide
   e. Antimony Sulphide

2. To find out the precipitation values of Antimony Sulphide sol by using monovalent, bivalentand trivalent cations.
3. To verify the Schulze -Hardy law.
4. To verify the Freundlich's Adsorption isotherms.
5. Study of adsorption of HAc on charcoal and prove the validity of Langmuir's adsorption isotherms
6. Study of adsorption of Oxalic acid on charcoal and prove the validity of Langmuir's adsorption isotherms.

References:

Theory:

1. Puri B. R., Sharma L. R. and Pathania M.S., (2020) Principles of Physical Chemistry, Vishal Publishing Co.Jalandhar, Punjab, India.
2. Kapoor K L, **Text Book of Physical Chemistry, Vol. 4,** McGraw Hill Education (India) Private Limited, Chennai, India.
3. Evans D F and Wennerström's, **The Colloidal Domain**, Second Edition, John Wiley & Sons Inc.
4. Adamson A. W. and Gast A., **Physical Chemistry of Surfaces** (Main text) Sixth Edition, John Wiley & Sons Inc.
5. Berg J. C., **An Introduction to Interfaces and Colloids,** World Scientific Publishing Co., Inc. New Jersey.
6. Israelachvili J. N., **Intermolecular and Surface Forces,** Elsevier Inc.

Practical:

1. Giri, S; Bajpai, D.N.; Pandey, O.P. **Practical Chemistry**, S. Chand Limited.
2. Khosla, B.D.; Garg, V.C.; Gulati, A.(2015), **Senior Practical Physical Chemistry**, R. Chand & Co.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER IV

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

DISCIPLINE SPECIFIC ELECTIVE COURSE CHEM-DSE -4: Nanoscale Materials and their Applications

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Chem-DSE-4: Nanoscale Materials and their Applications	**04**	**02**	**-**	**02**	**Class XII with Science**	

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce nanoscale materials and their applications.
- To provide an insight into bottom-up and top-down-approach, the methods of synthesis of nanoparticles, simple characterization techniques and applications of nanomaterials.

Learning outcomes

By studying this course, students will be able to:

- Understand the concept of nano dimensions.
- Know the various methods of preparation of nanomaterials.
- Understand the principles of optical and electron microscopy techniques of characterizing nanomaterials.
- Understand and appreciate the real life applications of nanomaterials.

Syllabus

Unit 1: Introduction to Nanodimensions **(Hours: 12)**

0D, 1D, 2D nanomaterials, Quantum Dots, Nanoparticles, Nanostructures (nanowires, thin films, nanorods), carbon nanostructures (carbon nanotubes, carbon nanofibers, fullerenes), Size Effects in nano systems, Quantum confinement and its consequences, Semiconductors. Band structure and band gap. Optical Properties Surface plasmon resonance

.

Unit 2: Preparation of Nanomaterials **(Hours: 10)**

Top down and Bottom up approach, Photolithography. Ball milling. Vacuum deposition. Physical vapor deposition (PVD), Chemical vapor deposition (CVD), Thermal decomposition, Chemical reduction, Sol-Gel synthesis, Hydrothermal synthesis, Spray pyrolysis, Electrochemical deposition, Pulsed Laser deposition. Characterization of nanomaterials: Basic principle of optical methods and electron microscopy.

Unit 3: Applications of Nanomaterials (Hours: 8)

Nanomaterials as Catalysts, semiconductor nanomaterials as photocatalysts, Nanocomposites as catalysts. Carbon nanostructures as catalytic nanoreactors, metal and metal oxides confined inside carbon nanostructures, Nanowires and thin films for photonic devices (LEDs, solar cells, transistors).

Practical Component Credits:02

(Laboratory periods:60)

1. Synthesis of silver nanoparticles by chemical methods and characterization using UV-visible spectrophotometer.
   a. Turkevich Method
   b. Burst Method
2. Synthesis of silver nanoparticles by green approach methods (using soluble starch, glucose or cinnamon bark) and characterization using UV-visible spectrophotometer.
3. Synthesis of metal sulphide nanoparticles and characterization using UV-visible spectrophotometer.
   a. MnS
   b. ZnS
   c. CuS
4. Intercalation of hydrogen in tungsten trioxide and its conductivity measurement using conductometer.
5. Synthesis of pure ZnO and Cu doped ZnO nanoparticles.
6. Phytochemicals mediated synthesis of gold nanoparticles (AuNPs) using tea leaves and to study the effect of size on color of gold/silver nanoparticles.
7. Preparation of magnetic nanoparticles (MNPs) of Fe_3O_4 using green tea leaf extract.
8. Any suitable experiment (other than the listed ones) based upon complexation reactions.

References:

Theory:

1. West, A. R. (2014), **Solid State Chemistry and Its Application**, John Wiley and Sons Inc.
2. Smart, L. E.; Moore, E. A., (2012), **Solid State Chemistry: An Introduction**, CRC Press Taylor & Francis.
3. Rao, C. N. R.; Gopalakrishnan, J. (1997), **New Direction in Solid State Chemistry**, Cambridge University Press.

4. Poole Jr.; Charles P.; Owens, Frank J. (2003), **Introduction to Nanotechnology**, John Wiley and Sons. Inc. Harris, D. C. (2007), **Quantitative Chemical Analysis**, 6th Edition, Freeman.
5. Chattopadhyay, K.K.; Banerjee, A. N. (2009), **Introduction to Nanoscience and Technology**, Prentice Hall India.

Practicals:

1. Orbaek, W.; McHale, M.M.; Barron, A. R.; **Synthesis and Characterization of Silver Nanoparticles for An Undergraduate Laboratory**, J. Chem. Educ. 2015, 92, 339−344.
2. MacDiarmid, G.; Chiang, J.C.; Richter, A.F.; Somasiri, N.L.D.(1987), **Polyaniline: Synthesis and Characterization of the Emeraldine Oxidation State by Elemental Analysis**, L. Alcaeer (ed.), Conducting Polymers, 105-120, D. Reidel Publishing.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE CHEM-DSE -5: Molecules of Life

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Chem-DSE-5: Molecules of Life	**04**	**02**	**-**	**02**	**Class XII with Science**	

Learning Objectives

The Learning Objectives of this course are as follows:

- To deliver information about the chemistry of carbohydrates, proteins & enzymes and its relevance in the biological system using suitable examples.
- To provide an insight into the structural principles that govern reactivity/physical /biological properties of biomolecules as opposed to learning structural details.

Learning outcomes

By studying this course, students will be able to:

- Learn and demonstrate how the structure of biomolecules determines their chemical properties, reactivity and biological uses.
- Gain an insight into the mechanism of enzyme action and inhibition.
- Understand the basic principles of drug-receptor interaction and SAR.

Syllabus

Unit 1: Carbohydrates **(Hours: 12)**

Classification of carbohydrates, reducing and non-reducing sugars, biological functions, general properties and reactions of glucose and fructose, their open chain structure, epimers, mutarotation and anomers, reactions of monosaccharides, determination of configuration of glucose (Fischer proof), cyclic structure of glucose. Haworth projections. Cyclic structure of fructose. Linkage between monosaccharides: structure of disaccharides (sucrose, maltose, lactose) and polysaccharides (starch and cellulose) excluding their structure elucidation.

.

Unit 2: Amino acids, Peptides and Proteins **(Hours: 10)**

Classification of amino acids and biological uses of amino Acids, peptides and proteins. Zwitterion structure, isoelectric point and correlation to acidity and basicity of amino acids. Determination of primary structure of peptides, determination of N-terminal amino acid (by Edman method) and C–

terminal amino acid (with carboxypeptidase enzyme). Synthesis of simple peptides (up to dipeptides) by N-protection (t-butyloxycarbonyl) & C-activating groups (only DCC) and Merrifield solid phase synthesis, Overview of primary, secondary, tertiary and quaternary structure of proteins, denaturation of proteins.

Unit 3: Enzymes (Hours: 4)

Classification of enzymes and their uses (mention Ribozymes). Mechanism of enzyme action, factors affecting enzyme action, Coenzymes and cofactors and their role in enzyme action, specificity of enzyme action (including stereospecificity).

-

Unit 4: Nucleosides, Nucleotides and Nucleic Acids (Hours: 4)

Components of Nucleic acids: Adenine, guanine, thymine, cytosine and uracil (structure only), other components of nucleic acids, nucleosides and nucleotides (nomenclature), structure of polynucleotides; structure of DNA (Watson-Crick model) and RNA (types of RNA), difference between DNA and RNA.

Practical Component Credits:02

(Laboratory periods:60)

1. Estimation of glucose by Fehling's solution.
2. Determination of total sugar content by ferricyanide method (volumetric/colorimetric method).
3. Study of the titration curve of glycine and determine the isoelectic point of glycine.
4. Estimation of proteins by Lowry's method.
5. Qualitative tests for amino acids, proteins and carbohydrates.
6. Separation and identification of mixture of sugars by paper chromatography.
7. Separation and identification of mixture of Amino acids by paper chromatography.
8. Study of the action of salivary amylase on starch under optimum conditions and find the enzyme activity.
9. Study the effect of temperature on activity of salivary amylase.
10. Extraction of DNA from onion/cauliflower.

References:

Theory:

1. Finar, I. L. **Organic Chemistry (Volume 1 & 2)**, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
2. Morrison, R. N.; Boyd, R. N., Bhattacharjee, S.K. (2010), **Organic Chemistry, 7th Edition**, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education India).
3. Berg, J. M.; Tymoczko, J. L.; Stryer, L. (2019), **Biochemistry, 9th Ed**., W. H. Freeman Co Ltd.

Practicals:

1. Furniss, B.S.; Hannaford, A.J.; Smith, P.W.G.; Tatchell, A.R. (2012), Vogel's **Textbook of Practical Organic Chemistry**, Pearson Education India.
2. **Manual of Biochemistry Workshop, 2012**, Department of Chemistry, University of Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE CHEM-DSE -6: Conductance, Electrochemistry and Chemical Kinetics

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Chem-DSE 6: Conductance, Electrochemistry and Chemical Kinetics	**04**	**02**	**-**	**02**	**Class XII with Science**	

Learning Objectives

The Learning Objectives of this course are as follows:

- To develop basic understanding of electrolytic and galvanic cells.
- Measurementof conductance and its applications, measurement of emf and its applications.
- To understand reaction rate, order, activation energy and theories of reaction rates.

Learning outcomes

By studying this course, students will be able to:

- Explain the factors that affect conductance, migration of ions and application of conductance measurement.
- Understand the importance of Nernst equation, measurement of emf, calculations of thermodynamic properties and other parameters from the emf measurements.
- Understand rate law and rate of reaction, theories of reaction rates and catalysts; both chemical and enzymatic.

Syllabus

Unit 1: Conductance **(Hours: 8)**

Conductivity, equivalent and molar conductivity and their variation with dilution for weak and strong electrolytes, Kohlrausch Law of independent migration of ions, Ionic velocity, mobility and their determination, transference number and its relation to ionic mobility, Conductometric titrations (only acid-base).

Unit 2: Electrochemistry **(Hours: 12)**

Concept of reversible and irreversible electrochemical cells, Standard hydrogen electrode, standard electrode potential, concept of EMF of a cell, measurement of EMF of a cell, Nernst equation and its importance, types of electrodes (Reference and inert electrodes), electrochemical series.

Thermodynamics of a reversible cell, calculation of thermodynamic properties: G, H and S from EMF data. Calculation of equilibrium constant from EMF data. pH determination using glass electrode, Potentiometric titrations-qualitative treatment (acid-base and oxidation-reduction only).

Unit 3: Chemical Kinetics and Catalysis **(Hours: 10)**

The concept of reaction rates, effect of temperature, pressure, catalyst and other factors on reaction rates. Order and molecularity of a reaction, integrated rate equations for zero, first and second order reactions (derivation not required), half–life of a reaction, Concept of activation energy and its calculation from Arrhenius equation.

Catalysis: Types of catalyst, specificity and selectivity, generalized treatment of catalyzed reactions at solid surfaces. Enzyme catalysis, Michaelis-Menten mechanism, acid-base catalysis.

Practical component **Credits:02**

Laboratory periods: 60

1. Determination of molar conductance, degree of dissociation and dissociation constant of aweak acid.
2. Perform the following conductometric titrations: Strong acid vs strong base.
3. Perform the following conductometric titrations: Weak acid vs strong base.
4. Determination of TDS of water from different sources.
5. Determination of Soil pH of soil collected from various locations.
6. Perform the potentiometric titrations of strong acid vs strong base
7. Perform the potentiometric titrations of Weak acid vs strong base.
8. Perform the potentiometric titrations of Potassium dichromate vs. Mohr's salt.
9. Perform the potentiometric titrations of $KMnO_4$ vs. Mohr's salt.
10. Study the kinetics of acid hydrolysis of methyl acetate with hydrochloric acid.

References:

Theory:

1. Castellan, G. W .(2004), **Physical Chemistry**, Narosa Publications.
2. Kapoor, K.L. (2015),**A Textbook of Physical Chemistry**, Vol.1, 6th Edition, McGraw Hill Education.
3. Kapoor, K.L. (2015),**A Textbook of Physical Chemistry**, Vol.5, 3rd Edition, McGraw Hill Education.
4. Puri, B.R., Sharma, L.R. and Pathania M.S. (2020),**Principles of Physical Chemistry,** Vishal Publishing Co.

*

Practicals:

1. Khosla, B.D.; Garg, V.C.; Gulati, A.(2015), **Senior Practical Physical Chemistry**, R. Chand & Co.Kapoor, K.L. (2019), **A Textbook of Physical Chemistry**, Vol 7, 1st Edition, McGrawHill Education.
2. Batra, S.K., Kapoor, V and Gulati, S. (2017) 1st Edition, **Experiments in Physical Chemistry,** Book Age series.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER V

DISCIPLINE SPECIFIC ELECTIVE COURSE CHEM-DSE -7: Inorganic Materials of Industrial Importance

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Chem-DSE-7: Inorganic Materials of Industrial Importance	**04**	**02**	**-**	**02**	**Class XII with Science**	

Learning Objectives

The Learning Objectives of this course are as follows:

- The course introduces learners to the importance of Inorganic compounds in Industries.
- To provide an insight into how the inorganic materials form a basis of the products used in day-to-day life like silicates, fertilizers, surface coatings.

Learning outcomes

By studying this course, students will be able to:

- Learn the composition and applications of the different kinds of glass.
- Understand glazing of ceramics and the factors affecting their porosity.
- Give the composition of cement and discuss the mechanism of setting of cement.
- Explain the suitability of fertilizers for different kinds of crops and soil.
- Understand and explain the polymerization of inorganic ions to generate inorganic polymers and the difference between organic and inorganic polymers.

Syllabus

Unit 1: Silicate Industries **(Hours: 10)**

Glass: Glassy state and its properties, classification (silicate and non-silicate glasses). Manufacture and processing of glass. Composition and properties of the following types of glasses: Soda lime

glass, lead glass, armoured glass, different types of safety glass, borosilicate glass, fluorosilicate glass, coloured glass, photosensitive glass, photochromic glass, glass wool and optical fibre.

Ceramics: Brief introduction to types of ceramics. glazing of ceramics.

Cement: Manufacture of Portland cement and the setting process, Different types of cements: quick setting cements, eco-friendly cement (slag cement), pozzolana cement.

Unit 2: Fertilizers **(Hours: 8)**

Different types of fertilizers (N, P and K). Importance of fertilizers, chemistry involved in the manufacture of the following fertilizers: urea, ammonium nitrate, calcium ammonium nitrate, ammonium phosphates, superphosphate of lime, potassium chloride and potassium nitrate. Environmental impact of fertilizers.

Unit 3: Surface Coatings **(Hours: 12)**

Brief introduction to and classification of surface coatings, paints and pigments: formulation, composition and related properties, pigment volume concentration (PVC) and critical pigment volume concentration (CPVC), fillers, thinners, enamels and emulsifying agents. Special paints: heat retardant, fire retardant, eco-friendly paints, plastic paints, water and oil paints. Preliminary methods for surface preparation, metallic coatings (electrolytic and electroless with reference to chrome plating and nickel plating), metal spraying and anodizing. Contemporary surface coating methods like physical vapor deposition, chemical vapor deposition, galvanising, carburizing, sherardising, boriding, nitriding and cementation.

Practical Component
Credits:02

(Laboratory periods:60)

1. Detection of constituents of CAN fertilizer (Calcium, Ammonium and Nitrate ions) fertilizer and estimation of Calcium content.
2. Detection of constituents of Superphosphate fertilizer (Calcium and Phosphate ions) and estimation of phosphoric acid content.
3. Detection of constituents of Dolomite (Calcium, Magnesium and carbonate ions) and determination of composition of Dolomite (Complexometric titration).
4. Analysis of (Cu, Ni) in alloy or synthetic samples (Multiple methods involving Complexometry, Gravimetry and Spectrophotometry).
5. Analysis of (Cu, Zn) in alloy or synthetic samples (Multiple methods involving Iodometry, Complexometry and Potentiometry).
6. Preparation of following Inorganic Pigments:

a). Barium white
b). Chrome Yellow

c). Malachite
d).Chromium oxide
e). Prussian Blue

7. Any suitable experiment other than the listed ones.

References:

Theory:

1. West, A. R. (2014*),* **Solid State Chemistry and Its Application**, Wiley & sons.
2. Smart, L. E.; Moore, E. A. (2012), **Solid State Chemistry An Introduction**, CRC Press Taylor & Francis.
3. Atkins, P.W.; Overton, T.L.; Rourke, J.P.; Weller, M.T.; Armstrong, F.A.(2010), **Inorganic Chemistry**, W. H. Freeman and Company.
4. Kent, J. A. (ed**)** (1997), **Riegel's Handbook of Industrial Chemistry**, CBS Publishers, New Delhi.
5. Jain P.C., Jain M., **Engineering Chemistry**, Dhanpat Rai & Sons, Delhi.
6. Gopalan R., Venkappaya D.,Nagarajan S., **Engineering Chemistry***,* Vikas Publications, New Delhi.
7. Sharma, B.K., **Engineering Chemistry***,* Goel Publishing House, Meerut.
8. Kingery W.D., Bowen H. K., Uhlmann, D.R., (1976), **Introduction to Ceramics***,* Wiley & sons, Delhi.

Practicals:

1. Vogel A. I., Vogel's **Quantitative Inorganic Analysis**, Pearson Education.
2. Banewicz, J. J.; Kenner, C.T. **Determination of Calcium and Magnesium in Limestones and Dolomites**, Anal. Chem., 1952, 24 (7), 1186–1187.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE CHEM-DSE 8: Polynuclear Hydrocarbons, Pharmaceutical Compounds, UV- Visible & IR Spectroscopy

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Chem-DSE 8: Polynuclear Hydrocarbons, Pharmaceutical Compounds, UV-Visible & IR Spectroscopy	**04**	**02**	**-**	**02**	**Class XII with Science**	

Learning Objectives

The Learning Objectives of this course are as follows:

- To provide an insight to the fundamentals of polynuclear hydrocarbons and heterocyclic compounds
- The course introduces learners to IR and UV-Vis spectroscopic techniques and their importance in functional group identification.

Learning outcomes

By studying this course, students will be able to:

- Understand the fundamentals of polynuclear hydrocarbons and heterocyclic compounds through the study of methods of preparation, properties and chemical reactions with underlying mechanism.
- Gain insight into the basic fundamental principles of IR and UV-Vis spectroscopic techniques.
- Use basic theoretical principles underlying UV-visible and IR spectroscopy as a tool for functional group identification in organic molecules.

Syllabus

UNIT-1: Polynuclear Hydrocarbons **(Hours: 6)**

Introduction, classification, uses, aromaticity of polynuclear compounds, Structure elucidation of naphthalene, preparation and properties of naphthalene and anthracene.

UNIT-2: Pharmaceutical Compounds (Hours: 12)

Introduction, classification, general mode of action of antipyretics and analgesics, aspirin; Synthesis, uses and side effects of the following drugs:

Antipyretics - Paracetamol (with synthesis and mode of action); Analgesics- Ibuprofen (with synthesis and overview of the mode of action); Antimalarials - Chloroquine (synthesis and mode of action).

An elementary treatment of Antibiotics and detailed study of chloramphenicol including mode of action. Medicinal values of curcumin (haldi), azadirachtin (neem), vitamin C and antacid (ranitidine)**.**

UNIT-3: UV-Vis and IR Spectroscopy (Hours: 12)

UV-Vis and IR Spectroscopy and their application to simple organic molecules. Electromagnetic radiations and their properties; double bond equivalence and hydrogen deficiency. UV-Vis spectroscopy (electronic spectroscopy): General electronic transitions, λ_{max} & ε_{max}, chromophores & auxochromes, bathochromic & hypsochromic shifts. Application of Woodward rules for the calculation of λ_{max} for the following systems: conjugated dienes - alicyclic, homoannular and heteroannular; α, β-unsaturated aldehydes and ketones, charge transfer complex.

Infrared (IR) Spectroscopy: Infrared radiation and types of molecular vibrations, the significance of functional group & fingerprint region. IR spectra of alkanes, alkenes, aromatic hydrocarbons (effect of conjugation and resonance on IR absorptions), simple alcohols (inter and intramolecular hydrogen bonding and IR absorptions), phenol, carbonyl compounds, carboxylic acids and their derivatives (effect of substitution on >C=O stretching absorptions).

Practical component Credit:02

(Laboratory periods: 15 classes of 4 hours each)

1. Isolation and estimation of the amount of aspirin in a commercial tablet.
2. Synthesis of ibuprofen.
3. Systematic qualitative identification and derivative preparation of organic compounds (Aromatic hydrocarbons, Aryl halides)
4. Detection of simple functional groups through examination of IR spectra (spectra to be provided). IR spectra of simple compounds like phenols, aldehydes, ketones, carboxylic acids may be given.
5. Differentiation between of o-/p-hydroxybenzaldehyde by IR spectroscopy (Spectra to be provided).
6. Differentiation between benzoic acid and cinnamic acid by UV spectroscopy.
7. Laboratory preparation of paracetamol.
8. Diel's Alder reaction using Anthracene and Maleic anhydride.

References:

Theory:

1. Finar, I. L. **Organic Chemistry** (Volume 1 & 2), Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
2. Morrison, R. N.; Boyd, R. N. **Organic Chemistry**, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
3. Bahl, A; Bahl, B. S. (2012), **Advanced Organic Chemistry**, S. Chand.
4. Pavia, D.L. **Introduction to Spectroscopy**, Cengage learning (India) Pvt. Ltd.
5. Kemp, W. (1991), **Organic Spectroscopy**, Palgrave Macmillan.

Practicals

1. Ahluwalia, V.K.; Dhingra, S.; Gulati, A. (2005), **College Practical Chemistry**, University Press (India) Ltd.
2. Ahluwalia, V.K.; Dhingra, S. (2004), **Comprehensive Practical Organic Chemistry**: Qualitative Analysis, University Press.
3. Vogel, A.I. (1972), **Textbook of Practical Organic Chemistry**, Prentice-Hall.
4. Pasricha, S., Chaudhary, A. (2021), **Practical Organic Chemistry**: Volume I, I K International Publishing House Pvt. Ltd., New Delhi.
5. Pasricha, S., Chaudhary, A. (2021), **Practical Organic Chemistry**: Volume I, I K International Publishing House Pvt. Ltd., New Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE CHEM-DSE 9: Computer Applications in Chemistry

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Chem-DSE 9: Computer Applications in Chemistry	**04**	**02**	**-**	**02**	**Class XII with Science**	

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce the students to basic computer skills that will help them in solving chemistry problems using spreadsheets and BASIC language.
- To acquaint the students with different software for data tabulation, calculation, graph plotting, data analysis and document preparation.
- To expose the students to the concept of molecular modelling, its applications to various molecular systems, energy minimization techniques, analysis of Mulliken Charge and ESP Plots.

Learning outcomes

By studying this course, students will be able to:

- Have knowledge of most commonly used commands and library functions used in programming in BASIC language.
- Develop algorithm to solve problems and write corresponding programs in BASIC language for performing calculations involved in laboratory experiments.
- Use various spreadsheet software to perform theoretical calculations and plot graphs

Syllabus

Unit 1: Programming using BASIC **(Hours: 20)**

Programming Language – Elements of BASIC language, Numeric and string Constants and Variables, arithmetic expressions, hierarchy of operations, inbuilt functions. Syntax and use of the various QBASIC commands: REM, CLS, INPUT, PRINT, GOTO, IF, IF…THEN, IF...THEN..ELSE, IF and END IF, FOR

and NEXT etc., DIM, READ, DATA, GOSUB, RETURN, RESTORE, DEF FNR and Library Functions, Simple programs based on usage of the commands mentioned above.

Statistical analysis using BASIC: Mean, Least square fit - Linear regression, variance, standard deviation.

Unit 2 : Handling of Numerical Data (Hours: 4)

Spreadsheet software: MS Excel. Creating a spreadsheet, entering and formatting information, applying basic functions and formulae to the data, drawing charts, tables and graphs, displaying the equation of graph along with the R^2 value, incorporating tables and graphs in Word files, graphical solution of equations, plotting pressure-volume curves of van der Waals gases, Maxwell-Boltzmann distribution, concentration versus time graphs, spectral data, titration curves, etc.

Unit 3: Molecular Modelling (Hours: 6)

Introduction to molecular modelling, overview of classical and quantum mechanical methods (molecular mechanics, semi empirical, ab initio and DFT), general considerations and comparison of these methods.

Practical component Credit:02

(Laboratory periods: 15 classes of 4 hours each)

Exercises of Programing

1. Calculate pressure of a real gas using Van der Waal's Equation.
2. Calculate the most probable speed, average speed and root men square velocity of an ideal gas.
3. Roots of quadratic equations
4. Binomial coefficient using GOSUB statement.
5. Mean, standard deviation
6. Least square curve fitting method for linear equation.

Plotting graphs using a spreadsheet

1. Van der Waals isotherms
2. Maxwell-Boltzmann distribution curves as function of temperature and molecular weight
3. Plot the conductometric titration curve for

   a) strong acid vs strong base and b) weak acid vs strong base
4. Plot the pH metric titration curve for

   a) strong acid vs strong base and b) weak acid vs strong base and determine the pK_a of the weak acid
5. Plot the graphs for the kinetics of first order reaction and determine the rate constant
6. Plot the UV-vis absorbance spectra and determine the molar absorption coefficient.

Molecular Modelling

1. Optimize and compare the geometry parameters of H_2O and H_2S using ArgusLab.
2. Compare the basicities of N atom in ammonia, methylamine, dimethylamine and trimethylamine using ArgusLab by comparing Mulliken charges and ESP map in ArgusLab.

3. Compare C-C bond lengths and bond order in ethane, ethene and ethyne using ArgusLab.
4. Determine enthalpy of isomerization of cis and trans-2-butene using ArgusLab.
5. Compare the HAH bond angles for the second row hydrides (BeH_2, CH_4, NH_3, H_2O) and compare with the results from qualitative MO theory.

References:

Theory:

1. Levie, R. de. (2001), **How to use Excel in analytical chemistry and in general scientific data analysis**, Cambridge Univ. Press.
2. Venit, S.M. (1996), **Programming in BASIC: Problem solving with structure and style**. Jaico Publishing House.
3. Lewars, E. (2003), **Computational Chemistry,** Kluwer academic Publisher.
4. Cramer, C.J.(2004), **Essentials of Computational Chemistry,** John Wiley & Sons.
5. Hinchcliffe, A. (1996), **Modelling Molecular Structures,** John Wiley & Sons.
6. Leach, A.R.(2001), **Molecular Modelling,** Prentice-Hall.

Practicals

1. Lewars, E. **(2003), Computational Chemistry,** Kluwer academic Publisher.
2. Cramer, C.J. **(2004), Essentials of Computational Chemistry,** John Wiley & Sons.
3. Hinchcliffe, A. **(1996), Modelling Molecular Structures,** John Wiley & Sons.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER VI

DISCIPLINE SPECIFIC ELECTIVE COURSE CHEM-DSE -10: Analytical Methods in Chemistry

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Chem-DSE-10: Analytical Methods in Chemistry	**04**	**02**	**-**	**02**	**Class XII with Science**	

Learning Objectives

The Learning Objectives of this course are as follows:

- To familiarize students with the concepts of sampling, errors in analysis, accuracy, precision and introduce basics of statistical analysis.
- To introduces students to important instrumentation and separation techniques routinely used in the laboratory analysis of samples. The experiments expose students to instrumentation and they learn to detect and separate analytes in a mixture.

Learning outcomes

By studying this course, students will be able to:

- Understand various sources of errors in chemical analysis.
- Learn about methods to minimize error.
- Understand basic principle of instrumentation (Flame Photometer, UV-vis spectrophotometer, Atomic Absorption spectrophotometer).
- Apply the principles of analysis and instrumentation to analyse soil samples, soft drinks and synthetic mixtures provided in the laboratory.
- Learn basic principles of separation techniques (chromatography and solvent extraction) and apply them to separate mixtures.
- Understand principles of Gravimetric analysis and apply them in determination of Ni^{2+} and Al^{3+}
- Analyse samples independently in the laboratory.

Syllabus

Unit 1: Errors in Chemical Analysis **(Hours: 8)**

Types of errors, Accuracy and Precision, Absolute and relative uncertainty, propagation of uncertainty. The Gaussian distribution, mean and standard deviation, confidence intervals.

Unit 2: Optical Methods of Analysis (Hours: 10)

Origin of spectra, interaction of radiation with matter, fundamental laws of spectroscopy and selection rules, Beer's-Lambert Law.

UV-Vis Spectrophotometry

Basic principles of instrumentation for single and double beam instruments. Determination of concentration of unknown compounds, composition of metal complexes using Job's method of continuous variation and mole ratio method.

Flame Atomic Absorption and Emission Spectroscopy

Basic principles of instrumentation. Techniques of atomization and sample introduction; Method of background correction, sources of chemical interferences and their method of removal.

Application of these techniques in analysis of samples.

Unit 3: Separation Techniques (Hours: 12)

Solvent extraction

Classification, principle and efficiency of the technique. Mechanism of extraction: extraction by solvation and chelation. Technique of extraction: batch, continuous and counter current extractions.

Chromatography

Principles of Chromatographic separations, Classification of Chromatographic techniques, Thin Layer Chromatography, Column Chromatography, efficiency of separation (Resolution, Efficiency of Resolution, Plate Height) Application of these techniques in analysis of samples.

Practical Component Credits:02

(Laboratory periods:60)

1. Analysis of soil**.**
   a. Determination of pH of soil, Total soluble salts, carbonate and bicarbonate, calcium and magnesium by titration.
   b. Estimation of Potassium, calcium and magnesium by flame photometry.
2. Separation of constituents of leaf pigments by thin layer chromatography.
3. Determination of the ion exchange capacity of an anion exchange resin.
4. Determination of the ion exchange capacity of a cation exchange resin.
5. Separation of amino acids by ion exchange chromatography.

6. Spectrophotometric analysis of Co^{2+} and Ni^{2+} ions in a mixture.
7. Spectrophotometric analysis of Caffeine and Benzoic acid in a soft drink.
8. Gravimetric estimation of Ni^{2+} using Dimethylglyoxime or Al^{3+} using oxine.

References:

Theory:

1. Willard, H.H. (1988), **Instrumental Methods of Analysis**, 7th Edition, Wardsworth Publishing Company.
2. Christian, G.D. (2004), **Analytical Chemistry**, 6th Edition, John Wiley & Sons, New York.
3. Harris, D. C. (2007), **Quantitative Chemical Analysis**,6th Edition, Freeman.
4. Skoog, D.A.; Holler F.J.; Nieman, T.A. (2005), **Principles of Instrumental Analysis**, Thomson Asia Pvt. Ltd.
5. Jeffery, G.H.; Bassett, J.; Mendham, J.; Denney, R.C. (1989), **Vogel's Textbook of Quantitative Chemical Analysis**, John Wiley and Sons.

Practicals:

1. Jeffery, G.H.; Bassett, J.; Mendham, J.; Denney, R.C. (1989), V**ogel's Textbook of Quantitative Chemical Analysis**, John Wiley and Sons.
2. Christian, G.D. (2004), **Analytical Chemistry**, 6th Edition, John Wiley & Sons, New York.
3. Harris, D. C. (2007), **Quantitative Chemical Analysis**, 6th Edition, Freeman.
4. Skoog, D.A.; Holler F.J.; Nieman, T.A. (2005), **Principles of Instrumental Analysis**, Thomson Asia Pvt. Ltd.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE CHEM-DSE 11: Chemistry of Polymers, Dyes and Natural Products

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Chem-DSE 11: Chemistry of Polymers, Dyes and Natural Products	**04**	**02**	**-**	**02**	**Class XII with Science**	

Learning Objectives

The Learning Objectives of this course are as follows:

- To understand the process of converting knowledge of chemistry into marketable products for commercial gain.
- To familiarize the basic nomenclature of polymers, dyes and natural products, classification and important terms.

Learning outcomes

By studying this course, students will be able to:

- Learn about the chemistry of natural and synthetic polymers including fabrics and rubbers.
- Understand the chemistry of biodegradable and conducting polymers and appreciate the need of biodegradable polymers with emphasis on basic principles.
- Comprehend the theory of colour and constitution as well as the chemistry of dyeing.
- Know applications of various types of dyes including those in foods and textiles.
- Understand the chemistry and applications of natural products like terpenoids and alkaloids.

Syllabus

Unit 1: Polymers **(Hours: 12)**

Introduction and classification based on origin, monomer units, thermal response, mode of formation, structure, application and tacticity; di-block, tri-block and amphiphilic polymers;

Weight average molecular weight, number average molecular weight, glass transition temperature (T_g) of polymers; Polymerisation Reactions-Addition and condensation. Mechanism of cationic, anionic and free radical addition polymerization; Ziegler-Natta polymerisation of alkenes.
Preparation and applications of: Plastics -thermosetting (phenol-formaldehyde, polyurethanes) and thermosoftening(PVC, polythene); Fabrics -natural (cellulose and synthetic derivatives of cellulose like rayon and viscose); synthetic (acrylic, polyamide, polyester); Rubbers-natural
and synthetic: Buna-N, Buna-S, Neoprene, silicon rubber; Vulcanization; Polymer additives; Introduction to Specialty Polymers: electroluminescent (Organic light emitting diodes), conducting, biodegradable polymers and liquid crystals.

Unit 2: Dyes (Hours: 8)

Classification, Colour and constitution; Mordant and Vat Dyes; Chemistry of dyeing. Synthesis and applications of Azo dyes – Methyl orange, Congo red; Triphenyl methane dyes- Crystal violet; Phthalein Dyes – Phenolphthalein; Natural dyes –Structure elucidation and synthesis of Alizarin and Indigotin; Edible Dyes with examples.

Unit 3: Natural Product Chemistry- An Introduction to Terpenoids and Alkaloids (Hours: 10)

Terpenes: Introduction, occurrence, classification, uses, isoprene and special isoprene rule; structure elucidation, synthesis and industrial application of citral.

Alkaloids: Introduction, occurrence, classification, uses, general structural features, general methods for structure elucidation including Hoffmann's exhaustive methylation and Emde's method. Structure elucidation, synthesis and physiological action of Nicotine.

Practical component Credits: 02

(Laboratory periods: 60)

1. Preparation of Methyl Orange.
2. Preparation of Malachite Green.
3. Recycling of Plastic: Moulding of plastic or Cracking of plastic.
4. Preparation of Urea-formaldehyde resin.
5. Preparation of Methyl Orange.
6. (a) Dyeing of different fabrics (cotton, wool, silk) using Alizarin or any other dye.
7. (b) Preparation of azo dye on the surface of the fabric.
8. Qualitative test for identification of alkaloids (Dragendorff's reagent and Mayer's reagent test) and terpenoids (Salkowski test).
9. Preparation of perichromic dye using p-amino phenol and p-nitro benzaldehyde.

References:

Theory:

1. Finar, I.L. (2008), **Organic Chemistry**, Vol 2, 5th Edition, Pearson Education

2. Saunders, K. J. (1988), **Organic Polymer Chemistry**, 2nd Edition Chapman & Hall, London

3. Campbell, Ian M., (2000), **Introduction to Synthetic Polymers**, 2nd Edition Oxford University Press, USA.

4. Bahadur, P. and Sastry, N.V. (2002) **Principles of Polymer Science**, Narosa, New Delhi

5. Patrick, G. **An Introduction to Medicinal Chemistry** (2013), 4th Edition, Oxford University Press.

6. Priscilla Abarca, Patricia Silva, Iriux Almodovar and Marcos Caroli ezende*Quim. Nova, Vol. 37, No. 4, 745-747, 2014. http://dx.doi.org/10.5935/0100- 4042.20140120

Practical:

1. Furniss B S., Hannaford A. J., Smith Peter W. G. & Tatchell Austin R., **Vogel's Textbook of Practical Organic Chemistry** Fifth Edition, Longman Scientific & Technical.

2. Pasricha, S., Chaudhary, A. (2021), **Practical Organic Chemistry**: Volume I, I K International Publishing House Pvt. Ltd., New Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE CHEM-DSE -12: Phase Equilibria and Photochemistry

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Chem-DSE 12: Phase Equilibria and Photochemistry	**04**	**02**	**-**	**02**	**Class XII with Science**	

Learning Objectives

The Learning Objectives of this course are as follows:

- To develop basic understanding of Phase, Component, Degree of freedom, basic principles of phase equilibria,
- To understand phase diagram of one and two component systems.
- The students will also gain an understanding of Binary solution, distillation of binary solution, CST and distribution law & its applications.

Learning outcomes

By studying this course, students will be able to:

- Understand phase equilibrium, criteria, CST, Gibbs-Duhem-Margules equation.
- Apply the concepts of phase, conductance and distribution law while studying otherchemistry courses and every-day life.
- Explain low and high quantum yield, photosensitized reactions

Syllabus

Unit 1: Phase Equilibria **(Hours: 22)**

Concept of phases, components and degrees of freedom, derivation of Gibbs Phase Rule for nonreactive and reactive systems; Clausius-Clapeyron equation and its applications to solid-liquid, liquid-vapour and solid-vapour equilibria, Phase diagram for one component systems (H_2O and S). Phase diagrams for systemsof solid-liquid equilibria involving eutectic, congruent and incongruent melting points.

Binary solutions: Gibbs-Duhem-Margules equation, its derivation and applications to fractional distillation of binary miscible liquids (ideal and non-ideal), azeotropes, lever rule, partial miscibility of liquids, CST, miscible pairs, steam distillation. Nernstdistribution law: its derivation and applications.

Unit 2: Photochemistry **(Hours: 8)**

Characteristics of electromagnetic radiation. Lambert-Beer's law and its limitations, physical significance of absorption coefficients. Laws of photochemistry, quantum yield, examples of low and high quantum yields

Photosensitized reactions, Jablonski's diagram. Role of photochemical reactions in biochemical processes, chemiluminescence.

Practical component **Credits: 02**

(Laboratory periods: 60)

Phase Equilibrium

1. Determination of critical solution temperature and composition at CST of the phenol water system.
2. Effect of impurity on CST of phenol-water system (NaCl and succinic acid).
3. Construction of the phase diagram using cooling curves :
   a. Simple eutectic.
   b. Congruent melting system(s).
4. Distribution of acetic/ benzoic acid between water and chloroform or cyclohexane.
5. Study of equilibrium of any one of the following reactions by distribution method:

   (i) I_2 (aq) + I^- (aq) ⇌ I_3^-(aq)
   (ii) Cu^{2+} (aq) + nNH_3⇌ $[Cu(NH_3)n]^{2+}$

References:

Theory:

1. Atkins, P.W.; Paula, J.de. (2014), **Atkin's Physical Chemistry Ed**., 10th Edition, OxfordUniversity Press.
2. Ball, D. W. (2017), **Physical Chemistry**, 2nd Edition, Cengage Learning, India.
3. Castellan, G. W. (2004), **Physical Chemistry**, 4th Edition, Narosa.
4. Kapoor, K.L. (2015), **A Textbook of Physical Chemistry**, Vol 1, 6th Edition, McGrawHill Education.
5. Kapoor, K.L., **A Textbook of Physical Chemistry**, Vol 3, 5th Edition, McGraw HillEducation.

Practical:

1. Khosla, B.D.; Garg, V.C.; Gulati, A. (2015), **Senior Practical Physical Chemistry**, R.Chand & Co, New Delhi.
2. Kapoor, K.L. (2019), **A Textbook of Physical Chemistry**, Vol.7, 1st Edition, McGrawHill Education.
3. Garland, C. W.; Nibler, J. W.; Shoemaker, D. P. (2003), **Experiments in PhysicalChemistry**, 8th Edition, McGraw-Hill, New York

Additional Resources:

1. Moore, W.J. (1972), **Physical Chemistry**, 5th Edition, Longmans Green & Co. Ltd.
2. Glasstone, S. (1948), **Textbook of Physical Chemistry**, D. Van Nostrand company, NewYork.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 13 (DSE-13): Research Methodology for Chemists

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Research Methodology for Chemists (DSE-13)	04	03	--	01	Class 12th with Physics, Chemistry	

Learning objectives

The objectives of this course are as follows:

- To make the students aware of fundamental but mandatory ethical practices in chemistry.
- To introduce the concept of data analysis.
- To learn to perform literature survey in different modes.
- To make the students aware of safety handling and safe storage of chemicals.
- To make students aware about plagiarism and how to avoid it.
- To teach the use of different e-resources.

Learning outcomes

By studying this course, students will be able to:

- Follow ethical practices in chemistry
- Do Data analysis
- Literature survey in different modes
- Use e-resources.
- Avoid plagiarism, understand the consequences and how to avoid

SYLLABUS OF DSE-13

UNIT – 1: Scope of Research **(Hours: 3)**

Introduction, overview of research process: define research problem, review literature, formulate hypothesis, design research/experiment, collect and analyse data, interpret and report, scope and importance.

UNIT – 2: Literature Survey, Databases and Research metrics **(Hours: 15)**

Print: Sources of information: Primary, secondary, tertiary sources; Journals: Journal abbreviations, Digital: Databases and their responsible use: Google Scholar, Web of science, Scopus, UGC INFONET, SciFinder, PubMed, ResearchGate, E-consortium, e-books; Search techniques: Phrase, Field, Boolean, Proximity, Concept, Limiting/Refining Search Results.
Research metrics: Impact factor of Journal, h-index, i10 index, Altmetrics, Citation index.
Author identifiers/or profiles: ORCID, Publons, Google Scholar, ResearchGate, VIDWAN

UNIT – 3: Communication in Science (Hours: 12)

Types of technical documents: Full length research paper, book chapters, reviews, short communication, project proposal, Letters to editor, and thesis.
Thesis writing – different steps and software tools (Word processing, LaTeX, Chemdraw, Chemsketch etc) in the design and preparation of thesis, layout, structure (chapter plan) and language of typical reports, Illustrations and tables, bibliography, referencing: Styles (APA, Oxford etc), annotated bibliography, Citation management tools: Mendeley, Zotero and Endnote; footnotes. Oral presentation/posters – planning, software tools, creating and making effective presentation, use of visual aids, importance of effective communication, electronic manuscript submission, effective oral scientific communication and presentation skills.

UNIT – 4: Research and Publication ethics (Hours: 9)

Scientific Conduct: Ethics with respect to science and research, Scientific Misconducts: falsification, fabrication and plagiarism, similarity index, software tools for finding plagiarism (Turnitin, Urkund etc), redundant dublications

Publication Ethics: Introduction, COPE (Committee on Publication Ethics) guidelines; conflicts of interest, publication misconduct: problems that lead to unethical behaviour and vice versa, types, violation of publication ethics, authorship and contributorship, predatory publishers and journals

IPR - Intellectual property rights and patent law, commercialization, copy right, royalty, trade related aspects of intellectual property rights (TRIPS)

UNIT – 5: Statistical analysis for chemists (Hours: 6)

Types of data, data collection-Methods and tools, data processing, hypothesis testing, Normal and Binomial distribution, tests of significance: t-test, F-test, chi- square test, ANOVA, multiple range test, regression and correlation.

Features of data analysis with computers and softwares -Microsoft Excel, Origin, SPSS

Practical component Credits: 01

(Laboratory periods:15 classes of 2 hours each)

1. Collection of journal articles on a particular topic using Google Scholar and creating a database.
2. Collection of journal articles on a particular topic using Science Direct and creating a database.
3. Collection of journal articles on a particular topic using Scopus and creating a database.
4. Drawing chemical structure, reactions and mechanisms using Chemsketch or ISIS draw or any other software.

5. Collection of chemical structure using ChemSpider and creating a database.
6. Curve fitting using freely available softwares/apps (any one)
7. Making of power point presentation
8. Experimental learning of safe storage hazardous chemicals
9. Experimental learning of handling of hazardous chemicals
10. Technical writing on topics assigned.
11. Demonstration for checking of plagiarism using recommended software

Essential/recommended readings:

1. Dean, J. R., Jones, A. M., Holmes, D., Reed, R., Weyers, J. & Jones, A. (2011) Practical skills in chemistry. 2nd Ed. Prentice-Hall, Harlow.
2. Hibbert, D. B. & Gooding, J. J. (2006) Data analysis for chemistry. Oxford University Press.
3. Topping, J. (1984) Errors of observation and their treatment. Fourth Ed., Chapman Hall, London.
4. Harris, D. C. Quantitative chemical analysis. 6th Ed., Freeman (2007) Chapters 3-5.
5. Levie, R. de, how to use Excel in analytical chemistry and in general scientific data analysis. Cambridge Univ. Press (2001) 487 pages.
6. Chemical safety matters – IUPAC – IPCS, Cambridge University Press, 1992.
   OSU safety manual 1.01

BSC. (LIFE SCIENCE)- CHEMISTRY COMPONENT

SEMESTER-IV

DISCIPLINE SPECIFIC CORE COURSE CHEM-DSC -10: Chemistry- IV: Chemistry of Carboxylic Acids & their Derivatives, Amines and Heterocycles

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Chemistry of Carboxylic Acids & their Derivatives, Amines and Heterocycles DSC-10: Chemistry- 04	**04**	**02**	**-**	**02**	**Class 12th with Physics, Chemistry, Mathematics**	

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce the basics of coordination chemistry and which are of immense importance to biological systems, qualitative and quantitative analysis, catalysis, medicines, paints and pigments etc.
- Nomenclature, isomerism, bonding in coordination compounds has been dealt with in sufficient detail along with special emphasis on important coordination compounds in the biological system.

Learning outcomes

By studying this course, students will be able to:

- Understand terms: ligand, denticity of ligands, chelate, coordination number.
- Systematically name coordination compounds.
- Discuss the various types of isomerism possible in Octahedral and Tetrahedral coordination compounds.
- Use Valence Bond Theory to predict the structure and magnetic behaviour of metal complexes and understand the terms inner and outer orbital complexes.
- Explain the meaning of the terms Δo., Δt, pairing energy, CFSE, high spin and low spin and how CFSE affects thermodynamic properties like lattice enthalpy and hydration enthalpy.
- Explain magnetic properties and colour of complexes on basis of Crystal Field Theory
- Understand reaction mechanisms of coordination compounds and differentiate between kinetic and thermodynamic stability.
- Discuss the application of coordination compounds in the biological systems such as Heamoglobin, myoglobin and some enzymes

Syllabus

Unit 1: Carboxylic acids and their Derivatives (aliphatic and aromatic) (Hours:13)

Preparation: Oxidation reactions of alcohols, aldehydes and ketones, Acidic and alkaline hydrolysis of esters; Reactions: Hell-Volhard Zelinsky reaction,

Carboxylic acid derivatives (aliphatic): Preparation: Acid chlorides, anhydrides, esters and amides from acids and their interconversion, Claisen condensation. Reactions: Relative reactivities of acid derivatives towards nucleophiles, Reformatsky reaction, Perkin condensation.

Active methylene compounds: Keto-enol tautomerism. Preparation and synthetic applications of ethyl acetoacetate

Unit 2: Amines (aliphatic & aromatic) and Diazonium Salts (Hours:10)

Amines

Preparation: from alkyl halides, Gabriel's Phthalimide synthesis, Hofmann Bromamide reaction. Reactions: Hofmann *vs* Saytzeff elimination, carbylamine test, Hinsberg test, reaction with HNO_2, Schotten-Baumann reaction. Electrophilic substitution (case aniline): nitration, bromination, sulphonation; basicity of amines.

Diazonium salt

Preparation: from aromatic amines; Reactions: conversion to benzene, phenol and dyes.

Unit 3: Heterocyclic Compounds (Hours:07)

Introduction, classification, structure, nomenclature and uses. Preparation and properties of the following heterocyclic compounds with reference to electrophilic and nucleophilic substitution: furan, pyrrole, thiophene, and pyridine.

PRACTICALS: Credits: 02

(Laboratory periods: 60)

1. Systematic qualitative analysis and preparation of suitable crystalline derivative (carboxylic acids, carbonyl, alcohols, phenols, amines (1°, 2°,3°) and amides).
2. Preparation:

    a. Acetylation of Aniline and Phenols.
    b. Benzoylation of Aniline and phenols.

The above derivatives should be prepared using 0.5-1g of the organic compound. The solid samples must be collected and may be used for recrystallization and melting point.

References:

Theory:

1. Morrison, R. N.; Boyd, R. N. **Organic Chemistry**, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).

2. Finar, I. L. **Organic Chemistry** (Volume 1), Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).

3. Ahluwalia, V.K.; Bhagat, P.; Aggarwal, R.; Chandra, R. (2005), **Intermediate for Organic Synthesis**, I.K. International.

4. Solomons, T. W. G.; Fryhle, C. B.; Snyder, S. A. (2016), **Organic Chemistry**, 12th Ed., Wiley.

5. Parashar, R.K., Negi, B. (2016) **Chemistry of Heterocyclic Compounds**, Ane Books Pvt Ltd.

Practical:

1. Ahluwalia, V.K.; Dhingra, S.; Gulati, A. (2005), **College Practical Chemistry**, University Press (India) Ltd.

2. Ahluwalia, V.K.; Dhingra, S. (2004), **Comprehensive Practical Organic Chemistry: Qualitative Analysis**, University Press.

3. Pasricha, S., Chaudhary, A. (2021), **Practical Organic Chemistry: Volume I**, I K International Publishing House Pvt. Ltd., New Delhi.

4. Pasricha, S., Chaudhary, A. (2021), **Practical Organic Chemistry: Volume II**, I K International Publishing House Pvt. Ltd., New Delhi.

5. Vogel, A.I. (1972), **Textbook of Practical Organic Chemistry**, Prentice-Hall.

6. Jeffery, G.H.; Bassett, J.; Mendham, J.; Denney, R.C. (1989), **Vogel's Textbook of Quantitative Chemical Analysis**, John Wiley and Sons.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

BSC. (LIFE SCIENCE)- CHEMISTRY COMPONENT

SEMESTER-V

DISCIPLINE SPECIFIC CORE COURSE CHEM-DSC -13: Chemistry- V: Coordination Chemistry and its Application in Biological Systems

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Coordination Chemistry and its Application in Biological Systems DSC-13 Chemistry- 5	**04**	**02**	**-**	**02**	**Class 12th with Physics, Chemistry, Mathematics**	

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce the basics of coordination chemistry and which are of immense importance to biological systems, qualitative and quantitative analysis, catalysis, medicines, paints and pigments etc.
- Nomenclature, isomerism, bonding in coordination compounds has been dealt with in sufficient detail along with special emphasis on important coordination compounds in the biological system.

Learning outcomes

By studying this course, students will be able to:

- Understand terms: ligand, denticity of ligands, chelate, coordination number.
- Systematically name coordination compounds.
- Discuss the various types of isomerism possible in Octahedral and Tetrahedral coordination compounds.
- Use Valence Bond Theory to predict the structure and magnetic behaviour of metal complexes and understand the terms inner and outer orbital complexes.
- Explain the meaning of the terms $\Delta o.$, Δt, pairing energy, CFSE, high spin and low spin and how CFSE affects thermodynamic properties like lattice enthalpy and hydration enthalpy.
- Explain magnetic properties and colour of complexes on basis of Crystal Field Theory

- Understand reaction mechanisms of coordination compounds and differentiate between kinetic and thermodynamic stability.
- Discuss the application of coordination compounds in the biological systems such as Heamoglobin, myoglobin and some enzymes

Syllabus

Unit 1: Introduction to Coordination Compounds (Hours: 6)

Brief discussion with examples of types of ligands, denticity and concept of chelate. IUPAC system of nomenclature of coordination compounds (mononuclear and binuclear) involving simple monodentate and bidentate ligands. Structural and stereoisomerism in complexes with coordination numbers 4 and 6.

Unit 2: Bonding in Coordination Compounds (Hours: 14)

Valence Bond Theory (VBT): Salient features of theory, concept of inner and outer orbital complexes, Drawbacks of VBT.

Crystal Field Theory: Splitting of d orbitals in octahedral symmetry. Crystal field effects for weak and strong fields, Crystal field stabilization energy (CFSE), concept of pairing energy, Factors affecting the magnitude of Δ, Spectrochemical series, Splitting of d orbitals in tetrahedral symmetry, Comparison of CFSE for octahedral and tetrahedral fields, tetragonal distortion of octahedral geometry, Jahn-Teller distortion.

Unit 3: Thermodynamic and Kinetic aspects of Metal Complexes (Hours: 6)

A brief outline of thermodynamic and kinetic stabilities of metal complexes and factors affecting the stability. Substitution reactions of square-planar complexes – Trans effect: cisplatin and transplatin.

Unit 4: Application of coordination compounds in biological systems (Hours: 4)

Haemoglobin, Myoglobin, carboxypeptidase, carbonic anhydrase

Practicals Component **Credits: 02**
(Laboratory periods: 60)

1. Estimation of Mg^{2+} by direct complexometric titrations using EDTA.
2. Estimation of Zn^{2+} by direct complexometric titrations using EDTA.
3. Estimation of Ca^{2+} by direct complexometric titrations using EDTA.
4. Estimation of Zn^{2+} in zinc tablet.
5. Estimation of Ca^{2+} in milk sample.
6. Estimation of total hardness of a given sample of water by complexometric titration.
7. Determination of the composition of the Fe^{3+} - salicylic acid complex / Fe^{2+} -1,10-phenanthroline complex in solution by Job's method
8. Determination of the composition of the Fe^{3+} - salicylic acid complex / Fe^{2+}-1,10-phenanthroline complex in solution by mole ratio method

9. Preparation of the following inorganic compounds:
   a). Tetraamminecopper(II) sulphate
   b). Potassium trioxalatoferrate(III) trihydrate
   c). Chrome alum
10. Any suitable experiment (other than the listed ones) based upon complexation reactions.

References:

Theory:

9. Huheey, J.E.; Keiter, E.A., Keiter; R. L.; Medhi, O.K. (2009), **Inorganic Chemistry- Principles of Structure and Reactivity**, Pearson Education.
10. Shriver, D.D.; Atkins, P.; Langford, C.H. (1994), **Inorganic Chemistry** 2nd Ed., Oxford University Press.
11. Atkins, P.W.; Overton, T.L.; Rourke, J.P.; Weller, M.T.; Armstrong, F.A. (2010), ***Inorganic Chemistry***, 5th Edition, W. H. Freeman and Company.
12. Cotton, F.A.; Wilkinson, G.; Gaus, P.L. **Basic Inorganic Chemistry**, 3rd Edition, Wiley India.
13. Douglas, B.E.; McDaniel, D.H.; Alexander, J.J. (1994), **Concepts and Models of Inorganic Chemistry**, John Wiley & Sons.
14. Greenwood, N.N.; Earnshaw, A. (1997), **Chemistry of the Elements**, 2nd Edition, Elsevier.
15. Lee, J.D.; (2010), **Concise Inorganic Chemistry**, Wiley India.
16. Sodhi G.S., Principles of Inorganic Chemistry, Third Edition, Viva Books, India.

Practicals:

1. Jeffery, G.H.; Bassett, J.; Mendham, J.; Denney, R.C. (1989), **Vogel's Textbook of Quantitative Chemical Analysis**, John Wiley and Sons.
2. Marr, G.; Rockett, B.W. (1972), **Practical Inorganic Chemistry**, Van Nostrand Reinhold.
3. Dua A, Manav N, **Practical Inorganic Chemistry,** (2017), Manakin Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

BSC. (LIFE SCIENCE)- CHEMISTRY COMPONENT

SEMESTER-VI

DISCIPLINE SPECIFIC ELECTIVE COURSE CHEM-DSC 16: Chemistry- VI: Conductance, Electrochemistry and Chemical Kinetics

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Conductance, Electrochemistry and Chemical Kinetics DSC-16: Chemistry- 6	**04**	**02**	**-**	**02**	**Class XII with Science**	

Learning Objectives

The Learning Objectives of this course are as follows:

- To develop basic understanding of electrolytic and galvanic cells.
- Measurementof conductance and its applications, measurement of emf and its applications.
- To understand reaction rate, order, activation energy and theories of reaction rates.

Learning outcomes

By studying this course, students will be able to:

- Explain the factors that affect conductance, migration of ions and application of conductance measurement.
- Understand the importance of Nernst equation, measurement of emf, calculations of thermodynamic properties and other parameters from the emf measurements.
- Understand rate law and rate of reaction, theories of reaction rates and catalysts; both chemical and enzymatic.

Syllabus

Unit 1: Conductance **(Hours: 8)**

Conductivity, equivalent and molar conductivity and their variation with dilution for weak and

strong electrolytes, Kohlrausch Law of independent migration of ions, Ionic velocity, mobility and their determination, transference number and its relation to ionic mobility, Conductometric titrations (only acid-base).

Unit 2: Electrochemistry **(Hours: 12)**

Concept of reversible and irreversible electrochemical cells, Standard hydrogen electrode, standard electrode potential, concept of EMF of a cell, measurement of EMF of a cell, Nernst equation and its importance, types of electrodes (Reference and inert electrodes), electrochemical series.

Thermodynamics of a reversible cell, calculation of thermodynamic properties: G, H and S from EMF data. Calculation of equilibrium constant from EMF data. pH determination using glass electrode, Potentiometric titrations-qualitative treatment (acid-base and oxidation-reduction only).

Unit 3: Chemical Kinetics and Catalysis **(Hours: 10)**

The concept of reaction rates, effect of temperature, pressure, catalyst and other factors on reaction rates. Order and molecularity of a reaction, integrated rate equations for zero, first and second order reactions (derivation not required), half–life of a reaction, Concept of activation energy and its calculation from Arrhenius equation.

Catalysis: Types of catalyst, specificity and selectivity, generalized treatment of catalyzed reactions at solid surfaces. Enzyme catalysis, Michaelis-Menten mechanism, acid-base catalysis.

Practical Component: **Credits:02**

Laboratory periods: 60

1. Determination of molar conductance, degree of dissociation and dissociation constant of a weak acid.
2. Perform the following conductometric titrations: Strong acid vs strong base.
3. Perform the following conductometric titrations: Weak acid vs strong base.
4. Determination of TDS of water from different sources.
5. Determination of Soil pH of soil collected from various locations.
6. Perform the potentiometric titrations of strong acid vs strong base
7. Perform the potentiometric titrations of Weak acid vs strong base.
8. Perform the potentiometric titrations of Potassium dichromate vs. Mohr's salt.
9. Perform the potentiometric titrations of $KMnO_4$ vs. Mohr's salt.
10. Study the kinetics of acid hydrolysis of methyl acetate with hydrochloric acid.

References:

Theory:

1. Castellan, G. W .(2004), **Physical Chemistry**, Narosa Publications.
2. Kapoor, K.L. (2015),**A Textbook of Physical Chemistry**, Vol.1, 6th Edition, McGraw Hill Education.
3. Kapoor, K.L. (2015),**A Textbook of Physical Chemistry**, Vol.5, 3rd Edition, McGraw Hill Education.
4. Puri, B.R., Sharma, L.R. and Pathania M.S. (2020), **Principles of Physical Chemistry,** Vishal Publishing Co.

Practical:

1. Khosla, B.D.; Garg, V.C.; Gulati, A.(2015), **Senior Practical Physical Chemistry**, R. Chand & Co.
2. Kapoor, K.L. (2019), **A Textbook of Physical Chemistry**, Vol 7, 1st Edition, McGraw Hill Education.
3. Batra, S.K., Kapoor, V and Gulati, S. (2017) 1st Edition, **Experiments in Physical Chemistry,** Book Age series.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

POOL OF DISCIPLINE SPECIFIC ELECTIVES (DSEs)

SEMESTER III

DISCIPLINE SPECIFIC ELECTIVE COURSE CHEM-DSE -1: Chemistry of Major and Minor Biogenic Elements

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Chem-DSE-1: Chemistry of Major and Minor Biogenic Elements	**04**	**02**	**-**	**02**	**Class XII with Science**	

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce learners to review periodic properties of main group elements and their role in the biological systems. It further discusses the patterns and trends exhibited by main group elements and their compounds with emphasis on synthesis, structure, bonding and their diverse applications in the environment, industry and in the biological system.
- To develop the interest of students in the frontier areas of inorganic and material chemistry, it gives an insight into how these compounds such as oxides of N and S affect our day-to-day life. Students learn about inorganic polymeric compounds borazine, silicates, silicones, phosphonitrilic compounds and their applications.

Learning outcomes

By studying this course, students will be able to:

- Understand the periodicity in atomic and ionic radii, electronegativity, ionization enthalpy, electron gain enthalpy of elements of the periodic table.
- Understand oxidation states with reference to the existence of elements in unusual and rare oxidation states in alkalides, carbides and nitrides.

- Understand vital role of sodium, potassium, calcium and magnesium ions etc. in biological systems and the role of oxides of N and S in our environment.
- Distribution of major and minor biogenic elements in human beings

Syllabus

Unit 1: Periodic Properties **(Hours: 6)**

Electronic configurations of the atoms. Stability of half-filled and completely filled orbitals, the concept of exchange energy, inert pair effect.
General group trends of main group elements with special reference to size (atomic and ionic), Ionization Enthalpy, Electron Gain Enthalpy, Electronegativity, oxidation states (including rare oxidation states of alkali metals, carbides and nitrides), melting and boiling points, flame colour, metallic character and complex formation tendency (crown ethers and cryptates), Alkali metal solutions in liquid ammonia
Distribution of major and minor biogenic elements in human beings

Unit 2: Structure, Bonding and Properties **(Hours: 16)**

Structure, bonding and properties: Acidic/Basic nature, stability, ionic/covalent nature, oxidation/reduction, hydrolysis, thermal stability of the following:
Hydrides: hydrides of Group 13 (only diborane), Group 14, Group 15 (EH_3 where E = N, P, As, Sb, Bi), Group 16 and Group 17.
Oxides: Oxides of nitrogen, phosphorus and sulphur
Oxoacids: oxoacids of phosphorus, sulphur and chlorine
Halides of phosphorus
Relevance of above compounds in industrial/environmental/biological systems wherever applicable

Unit 3: Preparation, Properties, Structure and Uses **(Hours: 8)**

Preparation, properties, structure and uses of the following compounds: Borazine, Silicates, silicones, Phosphonitrilic halides $\{(PNCl_2)_n$ where n = 3 and 4$\}$

Practicals **Credits:02**
(Laboratory periods: 60)

Qualitative semi-micro analysis of mixtures containing 2 anions and 2 cations (preferably 7-8 mixtures). Emphasis should be given to the understanding of the chemistry of different reactions. The following radicals are suggested:
CO_3^{2-}, NO_2^-, S^{2-}, SO_3^{2-}, SO_4^{2-}, $S_2O_3^{2-}$, CH_3COO^-, F^-, Cl^-, Br^-, I^-, NO_3^-, BO_3^{3-}, $C_2O_4^{2-}$, PO_4^{3-},
NH_4^+, K^+, Pb^{2+}, Cu^{2+}, Cd^{2+}, Bi^{3+}, Sn^{2+}, Sb^{3+}, Fe^{3+}, Al^{3+}, Cr^{3+}, Zn^{2+}, Mn^{2+}, Co^{2+}, Ni^{2+}, Ba^{2+}, Sr^{2+}, Ca^{2+}, Mg^{2+}
The mixtures may contain combination of anions/one interfering anion.
Spot tests should be preferred wherever applicable.

References:

Theory:

1. Lee, J.D.; (2010), **Concise Inorganic Chemistry**, Wiley India.
2. Huheey, J.E.; Keiter, E.A.; Keiter; R. L.; Medhi, O.K. (2009), **Inorganic Chemistry- Principles of Structure and Reactivity**, Pearson Education.
3. Douglas, B.E.; McDaniel, D.H.; Alexander, J.J. (1994), **Concepts and Models of Inorganic Chemistry**, John Wiley & Sons.
4. Atkins, P.W.; Overton, T.L.; Rourke, J.P.; Weller, M.T.; Armstrong, F.A. (2010), Shriver and Atkins **Inorganic Chemistry**, 5th Edition, Oxford University Press.
5. Housecraft, E. H.; Sharpe, A.G. (2018), **Inorganic Chemistry**, 5th Edition, Pearson.

Practicals:

4. Vogel, A.I. (1972), **Qualitative Inorganic Analysis**, Longman.
5. Svehla, G. (1996), **Vogel's Qualitative Inorganic Analysis**, Prentice Hall.
6. Dua A, Manav N, **Practical Inorganic Chemistry,** (2017), Manakin Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE CHEM-DSE -2: Polynuclear Hydrocarbons, Pharmaceutical Compounds,

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Chem-DSE-2: Polynuclear Hydrocarbons, Pharmaceutical Compounds, UV- Visible & IR Spectroscopy	**04**	**02**	**-**	**02**	**Class XII with Science**	

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce the chemistry and applications of polynuclear hydrocarbons and heterocyclic compounds.
- Introduction to spectroscopy, an important analytical tool which allows identification of organic compounds by correlating their spectra to structure.

Learning outcomes

By studying this course, students will be able to:

- Understand the fundamentals of polynuclear hydrocarbons and heterocyclic compounds through the study of methods of preparation, properties and chemical reactions with underlying mechanism.
- Gain insight into the basic fundamental principles of IR and UV-Vis spectroscopic techniques.
- Use basic theoretical principles underlying UV-visible and IR spectroscopy as a tool for functional group identification in organic molecules.

Syllabus

UNIT-1: Polynuclear Hydrocarbons **(Hours: 6)**

Introduction, classification, uses, aromaticity of polynuclear compounds, Structure elucidation of naphthalene, preparation and properties of naphthalene and anthracene.

UNIT-2: Pharmaceutical Compounds (Hours: 12)

Introduction, classification, general mode of action of antipyretics and analgesics, aspirin; Synthesis, uses and side effects of the following drugs:
Antipyretics - Paracetamol (with synthesis and mode of action); Analgesics- Ibuprofen (with synthesis and overview of the mode of action); Antimalarials - Chloroquine (synthesis and mode of action).
An elementary treatment of Antibiotics and detailed study of chloramphenicol including mode of action. Medicinal values of curcumin (haldi), azadirachtin (neem), vitamin C and antacid (ranitidine)**.**

UNIT-3: UV-Vis and IR Spectroscopy (Hours: 12)

UV-Vis and IR Spectroscopy and their application to simple organic molecules. Electromagnetic radiations and their properties; double bond equivalence and hydrogen deficiency. UV-Vis spectroscopy (electronic spectroscopy): General electronic transitions, λ_{max} & ε_{max}, chromophores &auxochromes, bathochromic & hypsochromic shifts. Application of Woodward rules for the calculation of λ_{max} for the following systems: conjugated dienes - alicyclic, homoannular and heteroannular; α, β-unsaturated aldehydes and ketones, charge transfer complex.

Infrared (IR) Spectroscopy: Infrared radiation and types of molecular vibrations, the significance of functional group & fingerprint region. IR spectra of alkanes, alkenes, aromatic hydrocarbons (effect of conjugation and resonance on IR absorptions), simple alcohols (inter and intramolecular hydrogen bonding and IR absorptions), phenol, carbonyl compounds, carboxylic acids and their derivatives (effect of substitution on >C=O stretching absorptions).

Practical component Credit:02

(Laboratory periods: 15 classes of 4 hours each)

1. Isolation and estimation of the amount of aspirin in a commercial tablet.
2. Preparation of Aspirin.
3. Synthesis of ibuprofen.
4. Systematic qualitative identification and derivative preparation of organic compounds (Aromatic hydrocarbons, Aryl halides)
5. Detection of simple functional groups through examination of IR spectra (spectra to be provided). IR spectra of simple compounds like phenols, aldehydes, ketones, carboxylic acids may be given.
6. Differentiation between of o-/p-hydroxybenzaldehyde by IR spectroscopy (Spectra to be provided).
7. Differentiation between benzoic acid and cinnamic acid by UV spectroscopy.
8. Diel's Alder reaction using Anthracene and Maleic anhydride.
9. Partial Reduction of m-dinitrobenzene to m-nitroaniline and then analysing the IR spectra of reactant and Product.
10. Laboratory preparation of Paraacetamol.

References:

Theory:

1. Finar, I. L. **Organic Chemistry** (Volume 1 & 2), Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
2. Morrison, R. N.; Boyd, R. N. **Organic Chemistry,** Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
3. Bahl, A; Bahl, B. S. (2012), **Advanced Organic Chemistry**, S. Chand.

4. Pavia, D.L. **Introduction to Spectroscopy**, Cengage learning (India) Pvt. Ltd.
2. Kemp, W. (1991), **Organic Spectroscopy**, Palgrave Macmillan.

Practicals:

1. Ahluwalia, V.K.; Dhingra, S.; Gulati, A. (2005), **College Practical Chemistry,** University Press (India) Ltd.
2. Ahluwalia, V.K.; Dhingra, S. (2004), **Comprehensive Practical Organic Chemistry: Qualitative Analysis**, University Press.
3. Vogel, A.I. (1972), **Textbook of Practical Organic Chemistry**, Prentice-Hall.
4. Pasricha, S., Chaudhary, A. (2021), **Practical Organic Chemistry: Volume I**, I K International Publishing House Pvt. Ltd., New Delhi.
5. Pasricha, S., Chaudhary, A. (2021), **Practical Organic Chemistry: Volume I**, I K International Publishing House Pvt. Ltd., New Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE CHEM-DSE 3: Chemistry of Colloids and Adsorption

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Chem-DSE 3: Chemistry of Colloids and Adsorption	**04**	**02**	**-**	**02**	**Class XII with Science**	

Learning Objectives

The Learning Objectives of this course are as follows:

- To develop basic concepts of colloids and colloidal phenomenon.
- Preparation and characterization of sols, understanding about applications of colloid in food, petroleum and cosmetic industry.
- Basic understanding of adsorption, types of adsorption, chemistry of adsorption and its applications.

Learning outcomes

By studying this course, students will be able to:

- Understand colloid solutions, preparation of sols.
- Understand the concept of Electrical double layer, charge on colloidal particles.
- Characterize the colloids sols, learn colloid phenomenon like Tyndall effect, Brownian movement, electrophoresis, dialysis, coagulation and flocculation.
- Understand adsorption, types of adsorption. Characteristics, factors affecting adsorption and its applications

Syllabus

Unit 1: Colloidal State **(Hours: 8)**

Distinction among true solutions, colloids and suspensions, components of Colloids, classificationof colloids - lyophilic, lyophobic; Preparation methods and properties of lyophobic solutions, Hydrophile-lyophile balance (HLB), multi molecular, macromolecular and associated colloids (micelles formation), Schulze -Hardy law.

Unit 2: Preparation and properties of colloids **(Hours: 14)** Methods of preparation of colloids, Tyndall effect, Brownian movement, coagulation and flocculation; electrophoresis, dialysis.

Emulsification by surfactants, selection of surfactants as emulsifying agent, colloidal phenomenonin food chemistry, Protein based functional colloids.

UNIT 3: Surface Chemistry **(Hours: 8)**

Adsorption, Distinction between adsorption and absorption, Types of Adsorption, Physisorption and chemisorption and their characteristics, factors affecting adsorption of gases on solids - Freundlich and Langmuir adsorption isotherms, Adsorption from solutions. Applications of Adsorption phenomenon in living systems.

Practical component **Credits: 02**

(Laboratory periods: 60)

7. Preparation of Colloidal Sols of following
   a. Egg Albumin
   b. Starch /Gum
   c. Ferric chloride
   d. Aluminum hydroxide
   e. Antimony Sulphide
8. To find out the precipitation values of Antomony Sulphide sol by using monovalent, bivalent and trivalent cations.
9. To verify the Schulze -Hardy law.
10. To verify the Freundlich's Adsorption isotherms.
11. Study of adsorption of HAc on charcoal and prove the validity of Langmuir's adsorption isotherms
12. Study of adsorption of Oxalic acid on charcoal and prove the validity of Langmuir's adsorption isotherms.

References:

Theory:

7. Puri B. R., Sharma L. R. and Pathania M.S., (2020) Principles of Physical Chemistry, Vishal Publishing Co.Jalandhar, Punjab, India.
8. Kapoor K L, **Text Book of Physical Chemistry, Vol. 4,** McGraw Hill Education (India) Private Limited, Chennai, India.
9. Evans D F and Wennerström's, **The Colloidal Domain**, Second Edition, John Wiley & Sons Inc.
10. Adamson A. W. and Gast A., **Physical Chemistry of Surfaces** (Main text) Sixth Edition, John Wiley & Sons Inc.
11. Berg J. C., **An Introduction to Interfaces and Colloids,** World Scientific Publishing Co., Inc.
    New Jersey.
12. Israelachvili J. N., **Intermolecular and Surface Forces,** Elsevier Inc.

Practical:

3. Giri, S; Bajpai, D.N.; Pandey, O.P. **Practical Chemistry**, S. Chand Limited.
4. Khosla, B.D.; Garg, V.C.; Gulati, A.(2015), **Senior Practical Physical Chemistry**, R. Chand & Co.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE CHEM-DSE -4: Acids & Bases and Aqueous Chemistry of Metal Ions

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Chem-DSE-4: Acids & Bases and Aqueous Chemistry of Metal Ions	**04**	**02**	**-**	**02**	**Class XII with Science**	

Learning Objectives

The Learning Objectives of this course are as follows:

- To provide basic understanding of the various concepts of acids and bases and Buffers to students and the factors responsible for variable acid and bases strength. This will help the learner to understand the importance of pH maintenance for a large number of biological processes especially enzyme systems.
- The unit of Aqueous Chemistry of metal ions provides an insight into the types of reactions a metal ion undergoes in aqueous medium- hydration, hydrolysis, redox, complexation, precipitation. The knowledge of these let a learner ascertain the feasibility of a proposed reaction and also to predict the possible outcomes of a new reaction. This additionally equips a biology student to understand different biological processes involving metal ions in a better way.

Learning outcomes

By studying this course, students will be able to:

- Define the Arrhenius, Bronsted Lowry, Lewis and Hard & soft acids and bases.
- Distinguish one class of acids and bases from the other and will be able to classify different types of available acids (synthetic and natural) under these classes.
- Understand the parameters affecting the relative strength of acids and bases and the effect of solvent on them.
- Explain the effect of mixing a strong/weak acid with a weak/strong base and will be able to calculate the pH of buffers.
- Correlate the concepts of acids and bases to the biological processes, the importance of pH and the buffers in sustaining specific metabolic activities.
- Explain the behavior of metal ions in aqueous solutions in presence of other reagents

- Differentiate between solvation and solvolysis and explain the formation of oxo ions as a result of hydrolysis.
- Write the redox reactions involving metal ions, use the Nernst equation to calculate redox potentials and correlate them with the relative oxidizing/reducing strength of metal ions
- Explain the successive reduction or oxidation of a metal ion capable of displaying more than two oxidation states and hence predict the spontaneity of a redox reaction
- Explain the disproportionation of an oxidation state and the stability of an oxidation state in aqueous medium by comparing the redox potentials with that of water at different pH.
- Explain the chemistry involved in the quantitative chemical analysis involving redox
- reactions like redox titrations.
- Explain the formation of metal complexes based on two different modes of ligand metal interaction.
- Understand the importance of complexation process in stabilizing some oxidation states more than the other.
- Write the reactions involving the precipitation of metal ions, and predict the relative precipitations based on solubility products.
- Explain the identification and separation of metal ions in a mixture based on difference in precipitation behavior of metal ions.
- Correlate the redox, complexation and precipitation behavior of metal ions in aqueous medium to the role of metal ions and metalloproteins in biological systems.

Syllabus

Unit 1: Acids & Bases **(Hours: 10)**

Concepts: Arhenius, Bronsted-Lowry (aqua, hydroxo, oxo), Lewis acids and bases, Hard and Soft acids and bases.
Strength of Acids and Bases: factors affecting relative strength of acids and bases, solvent levelling, superacids and superbases.
Buffers (NH_4OH/NH_4Cl, NaOAc/HOAc, boric acid and borate, Phosphate buffers, Universal Buffer), buffer capacity, calculation of pH of buffer solutions, pH calculation using Handerson-Hasselbalch equation, Applications of Acids & Bases and buffers in biological processes

Unit 2: Aqueous Chemistry of Metal ions **(Hours: 20)**

Solvation effects on metal ions, oxocations and oxoanions
Redox reactions: Half reactions, balancing of redox reactions, Nernst equation, standard potentials and spontaneity, trends in standard potentials, electrochemical series
Redox stability of species in aqueous solutions (influence of pH, effect of solvation, redox reaction with water, disproportionation)
Diagrammatic presentation of potential data: Latimer diagrams, Frost diagrams and Pourbaix diagrams their significance
Applications of redox reactions in quantitative analysis: permanganate, dichromate & iodine titrations
Examples of Redox reactions in biological processes
Complexation behaviour of metal ions: Lewis acid – base type (d block), electrostatic interactions based (s block elements with crown ethers and cryptates), stabilisation of oxidation states by complexation (Cu(I), Mn(III)),
Applications of complexes in biological systems with special mention of metalloenzymes.

Precipitation: Insoluble salts with anions like S^{2-}, SO_4^{2-}, PO_4^{3-}, halides, OH^-, $C_2O_4^{2-}$, CO_3^{2-} and their application in metal ions analysis.

Practical Component: **Credits:02**

(Laboratory periods: 60)

1. Preparation of Potassium trioxalatochromate(III).
2. Preparation of Potassium trisoxalatomanganate(III).
3. Preparation of acetylacetonato complexes of
   a). Cu(II)
   b). Fe(III)
4. Determination of strength of oxalate ions and oxalic acid in a mixture titrimetrically.
5. Determination of available chlorine in bleaching powder iodometrically.
6. Preparation of a phosphate buffer solution and measurement of its pH using pHmeter.
7. Determination of buffer capacity of phosphate buffer.
8. Determination of strength of chloride ions argentometrically
   a). Volhard's Method
   b). Fajan's Method
   c). Mohr's Method
9. pHmetric titration of a strong acid with a strong base.
10. Any suitable experiment other than the listed ones.

References:

Theory:

1. Shriver, D.D.; Atkins, P.; Langford, C.H. (1994), **Inorganic Chemistry** 2nd Ed., Oxford University Press.
2. Atkins, P.W.; Overton, T.L.; Rourke, J.P.; Weller, M.T.; Armstrong, F.A. (2010), **Inorganic Chemistry**, 5th Edition, W. H. Freeman and Company.
3. Lee, J.D.; (2010), **Concise Inorganic Chemistry**, Wiley India.
4. Miessler, G. L. (2008*).* **Inorganic chemistry**. Pearson Education India.
5. Sharpe, A. G. (1992). **Inorganic chemistry**. Longman Publishing Group.
6. Lehninger, A. L., Nelson, D. L., Cox, M. M., & Cox, M. M. (2005). **Lehninger principles of biochemistry**. Macmillan India.
7. Svehla, G. (2008). **Vogel's qualitative inorganic analysis***, 7/e*. Pearson Education India.

Practicals:

1. Jeffery, G.H.; Bassett, J.; Mendham, J.; Denney, R.C. (1989), Vogel's **Textbook of Quantitative Chemical Analysis**, John Wiley and Sons.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE CHEM-DSE 5 Biomolecule-I

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Chem-DSE 5: Biomolecules-I	**04**	**02**	**-**	**02**	**Class XII with Science**	

Learning Objectives

The Learning Objectives of this course are as follows:

- To understand the process of converting knowledge of chemistry into marketable products for commercial gain.
- To teach students about important biomolecules essential to life processes.
- 2. To discuss aspects of the principles of organic chemistry in the structure and function of important biomolecules.

Learning outcomes

By studying this course, students will be able to:

- Learn about the chemistry of natural and synthetic polymers including fabrics and rubbers.
- Understand the chemistry of biodegradable and conducting polymers and appreciate the need of biodegradable polymers with emphasis on basic principles.
- Comprehend the theory of colour and constitution as well as the chemistry of dyeing.
- Know applications of various types of dyes including those in foods and textiles.
- Understand the chemistry and applications of natural products like terpenoids and alkaloids.

Syllabus

Unit 1: Chemistry of Carbohydrates **(Hours:10)**

Classification of carbohydrates, reducing and non-reducing sugars, biological functions, general properties

and reactions of glucose and fructose, their open chain structure, epimers, mutarotation and anomers, reactions of monosaccharides, determination of the configuration of glucose (Fischer proof), the cyclic structure of glucose. Haworth projections. The cyclic structure of fructose. The linkage between monosaccharides: structure of disaccharides (sucrose, maltose, lactose) and polysaccharides (starch and cellulose) excluding their structure elucidation**.**

Unit 2: Nucleosides, Nucleotides and Nucleic Acids (Hours:10)

Components of Nucleic acids: Adenine, guanine, thymine, cytosine and uracil (structure only), other components of nucleic acids, nucleosides and nucleotides (nomenclature), structure of polynucleotides; structure of DNA (Watson-Crick model) and RNA (types of RNA), difference between DNA and RNA, genetic code, biological roles of DNA and RNA: replication, transcription and translation.

Unit-3: Lipids (Hours:10)

Introduction to oils and fats; common fatty acids present in oils and fats, Hydrogenation of fats and oils, Saponification value, acid value, iodine number. Reversion and rancidity.

Lipids: Classification. Biological importance of triglycerides and phosphoglycerides and cholesterol; Lipid membrane, Liposomes and their biological functions and underlying applications. Lipoproteins.

Properties, functions and biochemical functions of steroid hormones.

PRACTICALS: Credits: 02
(Laboratory periods: 60)

1. Preparation of osazone of glucose, fructose and Maltose (Comparing the time of formation of the two and the shape of crystals using microscope).
2. Identification of given carbohydrates as
    a. Reducing and Non-reducing
    b. Monosaccharide and Disaccharide
    c. Aldose and Ketose
3. Estimation of glucose by Fehling's solution.
4. Determination of the iodine number of oil.
5. Determination of the saponification number of oil.
6. Identification and separation of mixture of sugars by paper chromatography.
7. Isolation of DNA from cauliflower/ onion.
8. Determination of total sugar content by ferricyanide method (volumetric/colorimetric method).

References:

Theory

1. Finar, I. L. **Organic Chemistry** (Volume 1 & 2), Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).

2. Morrison, R. N.; Boyd, R. N. **Organic Chemistry**, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).

3. Berg, J. M.; Tymoczko, J. L.; Stryer, L. (2002), **Biochemistry**, W. H. Freeman.

4.Devlin, T.M. (2010), **Textbook of Biochemistry with Clinical Correlation**, Wiley.

5. Satyanarayana, U.; Chakrapani, U. (2017), **Fundamentals of Biochemistry**, Books and Allied (P) Ltd.

6. Lehninger, A.L; Nelson, D.L; Cox, M.M. (2009), Principles of Biochemistry, W. H. Freeman.

Practical:

1. Dean, J.R.; Jones, A.M.; Holmes, D;, Reed, R.; Jones, A.Weyers, J. (2011), **Practical skills in chemistry**, Prentice-Hall.

2. Wilson, K.; Walker, J. (2000), **Principles and techniques of practical biochemistry**, Cambridge University Press.

3. Gowenlock. A.H. (1988), **Varley's Practical Clinical Biochemistry**, CRC Press.

4. Pasricha, S., Chaudhary, A. (2021), **Practical Organic Chemistry**: Volume II, I K International Publishing House Pvt. Ltd., New Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE CHEM-DSE -6 Quantum Chemistry and Spectroscopy

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Chem-DSE 6: Quantum Chemistry and Spectroscopy	**04**	**02**	**--**	**02**	**Class 12th with Physics, Chemistry, Mathematics**	**NA**

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce the concepts and methodology of quantum mechanics
- Application of Quantum chemistry to spectroscopy
- To establish the relation between structure determination and spectra.

Learning outcomes

By studying this course, students will be able to:

- Understand basic principles of quantum mechanics: operators, eigen values, averages, probability distributions.
- Understand and use basic concepts of microwave, IR and UV-VIS spectroscopy for interpretation of spectra.

Syllabus

Unit 1: Quantum Chemistry **(Hours: 16)**

Postulates of quantum mechanics, quantum mechanical operators.

Schrodinger equation and its application to free particle and particle in a 1-D box (complete solution),quantization, normalization of wave functions, concept of zero-point energy.

Qualitative treatment of H and H like atoms. Setting up of Schrodinger equation for many electron atoms.

Rotational Motion: Schrödinger equation of a rigid rotator and brief discussion of its results (solution not required). Quantization of rotational energy levels.

Vibrational Motion: Schrödinger equation of a linear harmonic oscillator and brief discussion of its results (solution not required). Quantization of vibrational energy levels.

Unit 2: Spectroscopy (Hours: 14)

Electromagnetic radiation and its interaction with matter. Lambert-Beer's law, Jablonski's diagram. Florescence and Phosphorescence.
Difference between atomic and molecular spectra. Born- Oppenheimer approximation: Separation of molecular energies into translational, rotational, vibrational and electronic components.

Microwave Spectroscopy: Microwave (pure rotational) spectra of diatomic molecules. Selection rules.
Structural information derived from rotational spectroscopy.

IR Spectroscopy: Selection rules, IR spectra of diatomic molecules. Structural information derived fromvibrational spectra. Effect of hydrogen bonding (inter- and intramolecular) and substitution on vibrational frequencies.

Electronic Spectroscopy: Electronic excited states. Free electron model and its application to electronicspectra of polyenes. chromophores, auxochromes, bathochromic and hypsochromic shifts.

Practical component Credits:02

(Laboratory periods: 60)

UV/Visible spectroscopy

10. Study the 200-500 nm absorbance spectra of $KMnO_4$ and $K_2Cr_2O_7$ (in 0.1 M H_2SO_4) and determine the λ_{max} values. Calculate the energies of the two transitions in different units (J molecule^{-1}, kJ mol^{-1}, cm^{-1}, eV).
11. Study the pH-dependence of the UV-Vis spectrum (200-500 nm) of $K_2Cr_2O_7$
12. Record the 200-350 nm UV spectra of the given compounds (acetone, acetaldehyde, 2-propanol, acetic acid) in water. Comment on the effect of structure on the UV spectra of organic compounds.

Colorimetry

13. Verify Lambert-Beer's law and determine the concentration of $CuSO_4$/ $KMnO_4$/ $K_2Cr_2O_7$/ $CoCl_2$ in a solution of unknown concentration
14. Determine the concentrations of $KMnO_4$ and $K_2Cr_2O_7$ in a mixture.
15. Study the kinetics of iodination of propanone in acidic medium.
16. Determine the amount of iron present in a sample using 1, 10-phenanthroline.
17. Determine the dissociation constant of an indicator (phenolphthalein).
18. Study the kinetics of interaction of crystal violet/ phenolphthalein with sodium hydroxide.

References:

Theory:

1. Banwell, C.N.; McCash, E.M.(2006), **Fundamentals of Molecular Spectroscopy**, Tata McGraw- Hill.
2. Kapoor, K.L.(2015),**A Textbook of Physical Chemistry**, McGraw Hill Education, ,Vol 4, 5th Edition, McGraw Hill Education.
3. McQuarrie, D.A.(2016),**Quantum Chemistry**, Viva Books.
4. Chandra, A. K.(2001),**Introductory Quantum Chemistry**, Tata McGraw-Hill.
5. Dua A and Tyagi P, **Molecular Spectroscopy: Quantum to Spectrum**, (2022) Atlantic Publishers & Distributors Pvt Ltd.
6. Dua A, Singh C, **Quantum Chemistry: Classical to Computational** (2015) ManakinPress.

Practical:

4. Khosla, B.D.; Garg, V.C.; Gulati, A. (2015),**Senior Practical Physical Chemistry**, R. Chand & Co, New Delhi.
5. Kapoor, K.L. (2019),**A Textbook of Physical Chemistry**, Vol.7, 1st Edition, McGraw Hill Education.
6. Garland, C. W.; Nibler, J. W.; Shoemaker, D. P.(2003),**Experiments in Physical Chemistry**, 8th Edition, McGraw-Hill, New York.

Additional Resources:

3. Castellan, G. W .(2004),**Physical Chemistry**, Narosa.
4. Petrucci, R. H.(1989),**General Chemistry: Principles and Applications**, Macmillan Publishing

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE CHEM-DSE -7: Analytical Methods in Chemistry

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Chem-DSE-7: Analytical Methods in Chemistry	**04**	**02**	**-**	**02**	**Class XII with Science**	

Learning Objectives

The Learning Objectives of this course are as follows:

- To familiarize students with the concepts of sampling, errors in analysis, accuracy, precision and introduce basics of statistical analysis. The course introduces students to important instrumentation and separation techniques routinely used in the laboratory analysis of biological samples.
- To expose students to instrumentation in the practical and they learn to detect and separate analytes in a mixture.

Learning outcomes

By studying this course, students will be able to:

- Understand various sources of errors in chemical analysis.
- Learn about methods to minimize error.
- Understand basic principle of instrumentation (Flame Photometer, UV-vis spectrophotometer, Atomic Absorption spectrophotometer).
- Apply the principles of analysis and instrumentation to analyse soil samples, soft drinks and synthetic mixtures provided in the laboratory.
- Learn basic principles of separation techniques (chromatography and solvent extraction) and apply them to separate mixtures.
- Understand principles of Gravimetric analysis and apply them in determination of Ni^{2+} and Al^{3+}
- Analyse samples independently in the laboratory.

Syllabus

Unit I: Errors in Chemical Analysis **(Hours: 8)**

Types of errors, Accuracy and Precision, Absolute and relative uncertainty, propagation of uncertainty. The Gaussian distribution, mean and standard deviation, confidence intervals.

Unit 2: Optical Methods of Analysis (Hours: 10)

Origin of spectra, interaction of radiation with matter, fundamental laws of spectroscopy and selection rules, Beer's-Lambert Law.

UV-Visible Spectrophotometry: Basic principles of instrumentation for single and double beam instruments. Determination of concentration of unknown compounds, composition of metal complexes using Job's method of continuous variation and mole ratio method.

Flame Atomic Absorption and Emission Spectroscopy: Basic principles of instrumentation. Techniques of atomization and sample introduction; Method of background correction, sources of chemical interferences and their method of removal.

Application of these techniques in analysis of biological samples.

Unit 3: Separation Techniques (12 Hours)

Solvent extraction: Classification, principle and efficiency of the technique. Mechanism of extraction: extraction by solvation and chelation. Technique of extraction: batch, continuous and counter current extractions.

Chromatography: Principles of Chromatographic separations, Classification of Chromatographic techniques, Thin Layer Chromatography, Column Chromatography, efficiency of separation (Resolution, Efficiency of Resolution, Plate Height)

Application of these techniques in analysis of biological samples.

Practical Component Credits: 02

(Laboratory periods: 60)

1. Analysis of soil**.**
   (a) Determination of pH of soil, Total soluble salts, carbonate and bicarbonate, calcium and magnesium by titration.
   (b) Estimation of Potassium, calcium and magnesium by flame photometry.
2. Separation of constituents of leaf pigments by thin layer chromatography.
3. Determination of the ion exchange capacity of an anion exchange resin.
4. Determination of the ion exchange capacity of a cation exchange resin.
5. Separation of amino acids by ion exchange chromatography.
6. Spectrophotometric analysis of Co^{2+} and Ni^{2+} ions in a mixture.
7. Spectrophotometric analysis of Caffeine and Benzoic acid in a soft drink
8. Gravimetric estimation of Ni^{2+} using Dimethylglyoxime.
9. Gravimetric estimation of Al^{3+} using oxine.
10. Any suitable experiment (other than the listed ones) based upon analytical techniques discussed in theory section.

References:

Theory:

1. Willard, H.H. (1988), **Instrumental Methods of Analysis**, 7th Edition, Wardsworth Publishing Company.
2. Christian, G.D. (2004), **Analytical Chemistry**, 6th Edition, John Wiley & Sons, New York.
3. Harris, D. C. (2007), **Quantitative Chemical Analysis**, 6th Edition, Freeman.
4. Skoog, D.A.; Holler F.J.; Nieman, T.A. (2005), **Principles of Instrumental Analysis**, Thomson Asia Pvt. Ltd.
5. Jeffery, G.H.; Bassett, J.; Mendham, J.; Denney, R.C. (1989), **Vogel's Textbook of Quantitative Chemical Analysis**, John Wiley and Sons.

Practical:

1. Jeffery, G.H.; Bassett, J.; Mendham, J.; Denney, R.C. (1989), Vogel's **Textbook of Quantitative Chemical Analysis**, John Wiley and Sons.
2. Marr, G.; Rockett, B. W. (1972), **Practical Inorganic Chemistry**, Van Nostrand Reinhold.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE CHEM-DSE 8: Biomolecule-II

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Chem-DSE 8: Biomolecules-II	**04**	**02**	**-**	**02**	**Class XII with Science**	

Learning Objectives

The Learning Objectives of this course are as follows:

- To understand the process of converting knowledge of chemistry into marketable products for commercial gain.
- To teach students about important biomolecules essential to life processes.
- 2. To discuss aspects of the principles of organic chemistry in the structure and function of important biomolecules.

Learning outcomes

By studying this course, students will be able to:

- Learn about the chemistry of natural and synthetic polymers including fabrics and rubbers.
- Understand the chemistry of biodegradable and conducting polymers and appreciate the need of biodegradable polymers with emphasis on basic principles.
- Comprehend the theory of colour and constitution as well as the chemistry of dyeing.
- Know applications of various types of dyes including those in foods and textiles.
- Understand the chemistry and applications of natural products like terpenoids and alkaloids.

Syllabus

Unit 1: Amino acids, Peptides & Proteins **(Lecture : 12)**

Amino Acids and Peptides -Zwitterion, isoelectric point and electrophoresis. Preparation of amino acids: Strecker synthesis and using Gabriel's phthalimide synthesis. Reactions of amino acids: ester of –COOH group, acetylation of $–NH_2$ group, complexation with Cu^{2+} ions, ninhydrin test.

Determination of the primary structure of peptides by degradation Edman degradation (N-terminal) and C– terminal (thiohydantoin and with carboxypeptidase enzyme).

Synthesis of simple peptides (up to dipeptides) by N-protection (*t*-butyloxycarbonyl and phthaloyl) & C-activating groups and Merrifield solid-phase synthesis. An Overview of primary, secondary, tertiary and quaternary structure of proteins.

UNIT 2 : Enzymes (Hours: 08)

Classification of enzymes and their uses (mention ribozymes). Mechanism of enzyme action, factors affecting enzyme action, coenzymes and cofactors and their role in biological reactions, specificity of enzyme action (including stereo-specificity), enzyme inhibitors and their importance, and the phenomenon of inhibition (competitive and non-competitive inhibition including allosteric inhibition). Drug action-receptor theory. Structure – activity relationships of drug molecules, binding role of –OH group, -NH_2 group, double bond and aromatic ring.

Unit 3: Concept of Energy in Biosystems (Hours: 10)

Cells obtain energy by the oxidation of foodstuff (organic molecules). Introduction to metabolism (catabolism, anabolism). ATP: The universal currency of cellular energy, ATP hydrolysis and free energy change. Agents for transfer of electrons in biological redox systems: NAD+, FAD. Conversion of food to energy: Outline of catabolic pathways of carbohydrate-glycolysis, fermentation, Krebs cycle. The caloric value of food, the standard caloric content of food types.

PRACTICALS:
Credits: 02

(Laboratory periods: 60)

1. Qualitative tests for amino acids and proteins.
2. Separation and identification of mixture of amino acids by paper chromatography.
3. Study of the action of salivary amylase on starch under optimum conditions and determine the enzyme activity.
4. Study the effect of temperature on activity of salivary amylase.
5. Isolation of casein from milk.
6. Estimation of proteins by Lowry's method.
7. Estimation of glucose by Fehling's solution.
8. Determination of total sugar content by ferricyanide method (volumetric/colorimetric method).
9. Study of the titration curve of glycine and determine the isoelectric point of glycine.
10. Estimation of proteins by Lowry's method.
11. Estimation of Glycine by Sorensen's method.

References:

Theory:

1. Devlin, T.M. (2010), **Textbook of Biochemistry with Clinical Correlation**, Wiley.

2. Berg, J. M.; Tymoczko, J. L.; Stryer, L. (2019), **Biochemistry**, 9th Ed., W. H. Freeman Co Ltd.

3. Lehninger, A.L; Nelson, D.L; Cox, M.M. (2009), **Principles of Biochemistry**, W. H. Freeman.

5. Finar, I.L. **Organic Chemistry** (Volume 1 & 2), Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).

Practical:

1. Dean, J.R.; Jones, A.M.; Holmes, D., Reed, R.; Jones, A. Weyers, J. (2011), **Practical skills in chemistry**, Prentice-Hall.
2. Wilson, K.; Walker, J. (2000), **Principles and techniques of practical biochemistry**, Cambridge University Press.
3. Gowenlock. A.H. (1988), **Varley's Practical Clinical Biochemistry**, CRC Press.
4. Pasricha, S., Chaudhary, A. (2021), **Practical Organic Chemistry**: Volume II, I K International Publishing House Pvt. Ltd., New Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE CHEM-DSE 9: Computer Applications in Chemistry

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Chem-DSE 9: Computer Applications in Chemistry	**04**	**02**	**-**	**02**	**Class XII with Science**	

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce the students to basic computer skills that will help them in solving chemistry problems using spreadsheets and BASIC language.
- To acquaint the students with different software for data tabulation, calculation, graph plotting, data analysis and document preparation.
- To expose the students to the concept of molecular modelling, its applications to various molecular systems, energy minimization techniques, analysis of Mulliken Charge and ESP Plots.

Learning outcomes

By studying this course, students will be able to:

- Become familiar with the simple use of BASIC Language.
- Use software for tabulating data, plotting graphs and charts, carry out statistical analysis of the data.
- Solve chemistry problems and simulate graphs.
- Prepare documents that will incorporate chemical structure, chemical equations, mathematical expressions from chemistry.
- Understand theoretical background of computational techniques and selective application to various molecular systems.
- Learn Energy minimization methods through use of different force fields.
- Learn ESP Plots by suitable soft wares, electron rich and electron deficient sites.
- Compare computational and experimental results and explain deviations.
- Perform Optimization of geometry parameters of a molecule (such as shape, bond length and bond angle) through use of software like Chem Sketch and Argus Lab in interesting hands-on exercises.

Syllabus

Unit 1: Programming using BASIC **(Hours: 20)**

Programming Language – Elements of BASIC language, Numeric and string Constants and Variables, arithmetic expressions, hierarchy of operations, inbuilt functions. Syntax and use of the various QBASIC commands: REM, CLS, INPUT, PRINT, GOTO, IF, IF…THEN, IF...THEN..ELSE, IF and END IF, FOR and NEXT etc., DIM, READ, DATA, GOSUB, RETURN, RESTORE, DEF FNR and Library Functions, Simple programs based on usage of the commands mentioned above.

Statistical analysis using BASIC: Mean, Least square fit - Linear regression, variance, standard deviation.

Unit 2 : Handling of Numerical Data **(Hours: 4)**

Spreadsheet software: MS Excel. Creating a spreadsheet, entering and formatting information, applying basic functions and formulae to the data, drawing charts, tables and graphs, displaying the equation of graph along with the R^2 value, incorporating tables and graphs in Word files, graphical solution of equations, plotting pressure-volume curves of van der Waals gases, Maxwell-Boltzmann distribution, concentration versus time graphs, spectral data, titration curves, etc.

Unit 3: Molecular Modelling **(Hours: 6)**

Introduction to molecular modelling, overview of classical and quantum mechanical methods (molecular mechanics, semi empirical, ab initio and DFT), general considerations and comparison of these methods.

Practical component **Credit:02**
(Laboratory periods: 15 classes of 4 hours each)

Exercises of Programing

7. Calculate pressure of a real gas using Van der Waal's Equation.
8. Calculate the most probable speed, average speed and root men square velocity of an ideal gas.
9. Roots of quadratic equations
10. Binomial coefficient using GOSUB statement.
11. Mean, standard deviation
12. Least square curve fitting method for linear equation.

Plotting graphs using a spreadsheet

4. Van der Waals isotherms
5. Maxwell-Boltzmann distribution curves as function of temperature and molecular weight

6. Plot the conductometric titration curve for

   a) strong acid vs strong base and b) weak acid vs strong base

5. Plot the pH metric titration curve for

   a) strong acid vs strong base and b) weak acid vs strong base and determine the pK_a of the weak acid

7. Plot the graphs for the kinetics of first order reaction and determine the rate constant
8. Plot the UV-vis absorbance spectra and determine the molar absorption coefficient.

Molecular Modelling

6. Optimize and compare the geometry parameters of H_2O and H_2S using ArgusLab.
7. Compare the basicities of N atom in ammonia, methylamine, dimethylamine and trimethylamine using ArgusLab by comparing Mulliken charges and ESP map in ArgusLab.
8. Compare C-C bond lengths and bond order in ethane, ethene and ethyne using ArgusLab.
9. Determine enthalpy of isomerization of cis and trans-2-butene using ArgusLab.
10. Compare the HAH bond angles for the second row hydrides (BeH_2, CH_4, NH_3, H_2O) and compare with the results from qualitative MO theory.

References:

Theory:

7. Levie, R. de. (2001), **How to use Excel in analytical chemistry and in general scientific data analysis**, Cambridge Univ. Press.
8. Venit, S.M. (1996), **Programming in BASIC: Problem solving with structure and style**. Jaico Publishing House.
9. Lewars, E. (2003), **Computational Chemistry,** Kluwer academic Publisher.
10. Cramer, C.J.(2004), **Essentials of Computational Chemistry,** John Wiley & Sons.
11. Hinchcliffe, A. (1996), **Modelling Molecular Structures,** John Wiley & Sons.
12. Leach, A.R.(2001), **Molecular Modelling,** Prentice-Hall.

Practicals

4. Lewars, E. **(2003), Computational Chemistry,** Kluwer academic Publisher.
5. Cramer, C.J. **(2004), Essentials of Computational Chemistry,** John Wiley & Sons.
6. Hinchcliffe, A. **(1996), Modelling Molecular Structures,** John Wiley & Sons.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE CHEM-DSE -10: Applied Inorganic Chemistry

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Chem-DSE 10: Applied Inorganic Chemistry	**04**	**02**	**-**	**02**	**Class XII with Science**	

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce the principles of catalysis. It further discusses the types of catalysts and their industrial applications. It gives an insight into different types of fertilizers and chemistry involved in their manufacturing.
- To learn about applications of metals and inorganic compounds as diagnostic agents and medicines. The course helps develop the interest of students in the frontier areas of applied inorganic and medicinal chemistry.

Learning outcomes

By studying this course, students will be able to:

- Get a general idea of catalysis and describe in detail the mechanism of Wilkinson's catalyst, Zeigler- Natta catalyst and synthetic gasoline manufacture by Fischer-Tropsch process and applications of zeolites and biocatalysis.
- Explain the suitability of fertilizers for different kinds of crops and soil.
- Explain the inorganic compounds and metals in medicine and, specifically, the role of cisplatin in cancer therapy

Syllabus

Unit 1: Catalysis **(Hours: 10)**

General principles of catalysis, properties of catalysts, homogeneous and heterogeneous catalysis (catalytic steps, examples) and their industrial applications, deactivation and regeneration of catalysts, catalytic poison, promoter. Study of the following processes and their mechanism:

1. Alkene hydrogenation (Wilkinson's Catalyst)
2. Synthetic gasoline (Fischer-Tropsch reaction)

3. Polymerisation of ethene and propene using Ziegler-Natta catalyst
4. Application of zeolites as catalysts.
Introduction and importance of biocatalysis

Unit 2: Fertilizers (Hours: 8)

Different types of fertilizers (N, P and K). Importance of fertilizers, chemistry involved in the manufacture of the following fertilizers: Urea, ammonium nitrate, calcium ammonium nitrate, ammonium phosphates, superphosphate of lime and potassium chloride, Environmental aspects of fertilizers.

Unit 3: Medical Applications of Inorganic Compounds (Hours: 12)

Introduction, Use of Chelating agents, metal complexes as diagnostic agents, Lithium in mental health, Gold containing drugs, role of metals in Neurodegenerative Diseases, Inorganic compounds in Chemotherapy: Cisplatin; mode of action, basic idea of second and third generation drugs.

Practical Component Credits:02
(Laboratory Periods: 60)

1.Preparation of magnesium pyrosilicate (Antacid).
2.Determination of ascorbic acid in vitamin C tablets by iodometric titrations.
3. Preparation of borax.
4. Preparation of boric acid.
5. Catalytic oxidation of potassium sodium tartrate by cobalt(II) chloride.
6. Estimation of boric acid and borax in a mixture by titrimetric analysis
7. Detection of constituents of CAN fertilizer (Calcium, Ammonium and Nitrate ions) fertilizer and estimation of Calcium content.
8. Detection of constituents of Superphosphate fertilizer (Calcium and Phosphate ions) and estimation of phosphoric acid content.
9. Detection of constituents of Dolomite (Calcium, Magnesium and carbonate ions) and determination of composition of Dolomite (Complexometric titration)

References:

Theory:

1. Huheey, J.E.; Keiter, E.A.; Keiter; R. L.; Medhi, O.K. (2009), **Inorganic Chemistry-Principles of Structure and Reactivity**, Pearson Education.
2. Atkins, P.W.; Overton, T.L.; Rourke, J.P.; Weller, M.T.; Armstrong, F.A. (2010), Shriver and Atkins **Inorganic Chemistry**, 5th Edition, Oxford University Press.
3. Housecraft, E. H.; Sharpe, A.G. (2018), **Inorganic Chemistry**, 5th Edition, Pearson.
4. Greenwood, N.N.; Earnshaw, A. (1997), **Chemistry of the Elements**, 2nd Edition, Elsevier (Ziegler Natta Catalyst and Equilibria in Grignard Solution).
5. Lippard, S.J.; Berg, J.M. (1994), **Principles of Bioinorganic Chemistry**, Panima Publishing Company.
6. Spessard, Gary O.; Miessler, Gary L. (1996), **Organometallic Chemistry**, Prentice-Hall.

7. Fertilizers and Their Composition, Characteristics, Quality, Transformations and Applications, Tandon, H.L.S., 2008., **Riegel's Handbook of Industrial Chemistry**, CBS Publishers, New Delhi.
8. Patrick, G. (2017), **Introduction to Medicinal Chemistry**, Oxford University Press.
9. Wolfgang Kaim, Brigite Schwederski, Axel Klein, **Bioinorganic chemistry: Inorganic elements in the chemistry of life,** Jojn Wiley & Sons Inc.

Practicals:

1. Vogel, A.I. (1972), **Qualitative Inorganic Analysis**, Longman.
2. Svehla, G. (1996), **Vogel's Qualitative Inorganic Analysis**, Prentice Hall.
3. Marsh, D.G.; Jacobs, D.L.; Veening, H., J. Chem. Educ., Analysis of commercial vitamin C tablets by iodometric and coulometric titrimetry. 1973, 50 (9), p 626. DOI: 10.1021/ed050p626
4. https://edu.rsc.org/experiments/catalytic-oxidation-of-potassium-sodiumtartrate/1736.article

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE CHEM-DSE 11: Chemistry of Polymers, Dyes and Natural Products

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Chem-DSE 11: Chemistry of Polymers, Dyes and Natural Products	**04**	**02**	**-**	**02**	**Class XII with Science**	

Learning Objectives

The Learning Objectives of this course are as follows:

- To understand the process of converting knowledge of chemistry into marketable products for commercial gain.
- To familiarize the basic nomenclature of polymers, dyes and natural products, classification and important terms.

Learning outcomes

By studying this course, students will be able to:

- Learn about the chemistry of natural and synthetic polymers including fabrics and rubbers.
- Understand the chemistry of biodegradable and conducting polymers and appreciate the need of biodegradable polymers with emphasis on basic principles.
- Comprehend the theory of colour and constitution as well as the chemistry of dyeing.
- Know applications of various types of dyes including those in foods and textiles.
- Understand the chemistry and applications of natural products like terpenoids and alkaloids.

Syllabus

UNIT-1: Polymers **(Hours: 12)**

Introduction and classification based on origin, monomer units, thermal response, mode of formation, structure, application and tacticity; di-block, tri-block and amphiphilic polymers; Weight average molecular weight, number average molecular weight, glass transition

temperature (Tg) of polymers; Polymerisation Reactions-Addition and condensation. Mechanism of cationic, anionic and free radical addition polymerization; Ziegler-Natta polymerisation of alkenes.
Preparation and applications of: Plastics -thermosetting (phenol-formaldehyde, polyurethanes) and thermosoftening(PVC, polythene); Fabrics -natural (cellulose and synthetic derivatives of cellulose like rayon and viscose); synthetic (acrylic, polyamide, polyester); Rubbers-natural and synthetic: Buna-N, Buna-S, Neoprene, silicon rubber; Vulcanization; Polymer additives; Introduction to Specialty Polymers: electroluminescent (Organic light emitting diodes), conducting, biodegradable polymers and liquid crystals.

UNIT 2: Dyes (Hours: 08)

Classification, Colour and constitution; Mordant and Vat Dyes; Chemistry of dyeing. Synthesis and applications of Azo dyes – Methyl orange, Congo red; Triphenyl methane dyes- Crystal violet; Phthalein Dyes – Phenolphthalein; Natural dyes –Structure elucidation and synthesis of Alizarin and Indigotin; Edible Dyes with examples.

Unit 3: Natural Product Chemistry- An Introduction to Terpenoids and Alkaloids (Hours: 10)

Terpenes: Introduction, occurrence, classification, uses, isoprene and special isoprene rule; structure elucidation, synthesis and industrial application of citral.
Alkaloids: Introduction, occurrence, classification, uses, general structural features, general methods for structure elucidation including Hoffmann's exhaustive methylation and Emde's method. Structure elucidation, synthesis and physiological action of Nicotine.

Practicals: - Credits: 02
(Laboratory periods: 60)

1. Preparation of Starch-PVA Film.
2. Recycling of Plastic: Moulding of plastic or Cracking of plastic.
3. Preparation of Urea-formaldehyde resin.
4. Preparation of Methyl Orange.
   (a) Dyeing of different fabrics (cotton, wool, silk) using Alizarin or any other dye.
   (b) Preparation of azo dye on the surface of the fabric.
5. Qualitative test for identification of alkaloids (Dragendorff Reagent and Mayer's reagent test) and terpenoids (Salkowski test).
6. Preparation of Malachite Green.
7. Preparation of perichromic dye using p-amino Phenol and p-nitro benzaldehyde.

References:

Theory

1. Finar, I.L. (2008), **Organic Chemistry**, Volume 2, 5th Edition, Pearson Education
2. Saunders, K. J. (1988), **Organic Polymer Chemistry**,2nd Edition Chapman & Hall, London
3. Campbell, Ian M., (2000), **Introduction to Synthetic Polymers**, 2nd Edition Oxford University Press, USA.
4. Bahadur, P. and Sastry, N.V. (2002) **Principles of Polymer Science** Narosa Publications, New Delhi
5. Patrick, G. **An Introduction to Medicinal Chemistry** (2013), 4th Edition, Oxford University Press.

6. Priscilla Abarca, Patricia Silva, Iriux Almodovar and Marcos Caroli Rezende* Quim. Nova, Vol. 37, No. 4, 745-747, 2014. http://dx.doi.org/10.5935/0100-4042.20140120

Practical:

1. Ashraf S.M., Ahmad S., Riaz U., **A Laboratory Manual of Polymers**, I. K. International Publishing House Pvt. Ltd., New Delh.
2. Hannaford FA J., Smith P. W. G. & Tatchell A. R.; **Vogel's Textbook of Practical Organic Chemistry** Fifth Edition, Longman Scientific and Technical.
3. Pasricha, S., Chaudhary, A. (2021), **Practical Organic Chemistry**: Volume I, I K International Publishing House Pvt. Ltd., New Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE CHEM-DSE 12: Biophysical Chemistry

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Chem-DSE 12: Biophysical Chemistry	**04**	**02**	**-**	**02**	**Class XII with Science**	

Learning Objectives

The Learning Objectives of this course are as follows:

- To provide students with a sound background of latest techniques used in biophysical research
- To provide them with an understanding of the principles underlying these techniques.

Learning outcomes

By studying this course, students will be able to:

- The students will acquire knowledge of structure and biological functions of proteins and enzyme.
- Students will acquire knowledge about the principles and applications of latest methods used to analyse amino acid and proteins.
- The course will also provide students an opportunity for hands-on-experience to develop their laboratory skills expected for working in a biophysical research lab.

Syllabus

Unit I: Fundamentals of Biological Macromolecules (Hours: 10)

Structure and physical properties of amino acids, structure, function, and folding of proteins, internal rotational angle, conformations of proteins (Ramachandran plot, secondary, tertiary and quaternary structure). Structures of nucleic acids, Properties of nucleosides and nucleotides;composition of nucleic acids, Stabilizing interactions in biomolecules.

Unit II: Biophysical techniques for the Structural and Conformational Analysis (Hours: 20)

Overview : General principle and qualitative treatment of the techniques to understand the structure and characteristics of enzymes, protein and nucleic acid: X-ray crystallography – protein crystals, myoglobin, nitrogenase, pepsinogen; NMR spectroscopy-NMR spectra of

amino acids, UV-vis absorption spectroscopy, Fluorescence spectroscopy and Vibrational spectroscopy. Determination of protein structures by spectroscopic methods (FTIR, NMR), thermodynamics of protein folding by spectroscopic methods, protein conformational study by NMR and fluorescence spectroscopy. Methods for the separation of biomolecules: General principles, including Chromatography; Sedimentation, Moving Boundary Sedimentation, Electrophoresis, Isoelectric focusing.

Practical Component **Credits: 02**

(Laboratory periods: 60)

1. Separate and identify amino acids by paper chromatography.
2. Determine the isoelectric point of the given proteins.
3. Estimation of Proteins by Biuret, Lowry and Bradford.
4. Estimation of Urea.
5. Separation and identification of Sugars/lipids by TLC.
6. To check the purity of the proteins by calculating A260/ A280 ratio spectrophotometrically.
7. Agarose gel electrophoresis to check the size of DNA (For example- Calf ThymusDNA).
8. Characterization of the DNA (genomic/ designed oligonucleotide) as a function of pH, salt-concentration spectrophotometrically.
9. Determination of the isobestic point by titrating DNA sample with any ligand using UV- Visiblespectrophotometer.
10. SDS-PAGE analysis of proteins.

References:

Theory:

1. Lesk, A.M., **Introduction to Protein Science: Architecture, Function, and Genomics**, 2nd edition, 2010, Oxford University Press.
2. Cantor, C.R. and Schimmel, P.R., **Biophysical Chemistry**, 1980, Freeman.
3. Van Holde, K.E., Johnson, W.C. and Ho, P.S., **Principles of Physical Biochemistry**, 2nded,2006, Pearson Education.
4. Harding, S.E. and Chowdhry, B. Z. **Protein-Ligand Interactions**, Oxford UniversityPress.

Practical:

1. Hofmann, A ., Clokie,S., Wilson and Walker's Principles & Techniques of Practical Biochemistry, 2018, Cambridge University Press.

2. Friefelder D. Physical Biochemistry- Application to Biochemistry and Molecular Biology, 1983, WH Freeman and Company.

3. R. N. Roy, Viva and Practical Physiology, Biochemistry and Biophysics, 1998, Books and allied Pvt. Ltd.

4. Sawhney, S.K. and Singh , R.,Introductory Practical Biochemistry , 2nd Edition, 2005, Alpha Science International.

5. Keith Wilson , John Walker, John M. Walker Principles and Techniques of Practical Biochemistry, 5th Edition, 2000, Cambridge University Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Research Methodology for Chemists (DSE-13)	04	03	--	01	Class 12th with Physics, Chemistry	

Learning objectives

The objectives of this course are as follows:

- To make the students aware of fundamental but mandatory ethical practices in chemistry.
- To introduce the concept of data analysis.
- To learn to perform literature survey in different modes.
- To make the students aware of safety handling and safe storage of chemicals.
- To make students aware about plagiarism and how to avoid it.
- To teach the use of different e-resources.

Learning outcomes

By studying this course, students will be able to:

- Follow ethical practices in chemistry
- Do Data analysis
- Literature survey in different modes
- Use e-resources.
- Avoid plagiarism, understand the consequences and how to avoid

SYLLABUS OF DSE-13

UNIT – 1: Scope of Research **(Hours: 3)**

Introduction, overview of research process: define research problem, review literature, formulate hypothesis, design research/experiment, collect and analyse data, interpret and report, scope and importance.

UNIT – 2: Literature Survey, Databases and Research metrics **(Hours: 15)**

Print: Sources of information: Primary, secondary, tertiary sources; Journals: Journal abbreviations, Digital: Databases and their responsible use: Google Scholar, Web of science,

Scopus, UGC INFONET, SciFinder, PubMed, ResearchGate, E-consortium, e-books; Search techniques: Phrase, Field, Boolean, Proximity, Concept, Limiting/Refining Search Results. Research metrics: Impact factor of Journal, h-index, i10 index, Altmetrics, Citation index. Author identifiers/or profiles: ORCID, Publons, Google Scholar, ResearchGate, VIDWAN

UNIT – 3: Communication in Science (Hours: 12)

Types of technical documents: Full length research paper, book chapters, reviews, short communication, project proposal, Letters to editor, and thesis.
Thesis writing – different steps and software tools (Word processing, LaTeX, Chemdraw, Chemsketch etc) in the design and preparation of thesis, layout, structure (chapter plan) and language of typical reports, Illustrations and tables, bibliography, referencing: Styles (APA, Oxford etc), annotated bibliography, Citation management tools: Mendeley, Zotero and Endnote; footnotes. Oral presentation/posters – planning, software tools, creating and making effective presentation, use of visual aids, importance of effective communication, electronic manuscript submission, effective oral scientific communication and presentation skills.

UNIT – 4: Research and Publication ethics (Hours: 9)

Scientific Conduct: Ethics with respect to science and research, Scientific Misconducts: falsification, fabrication and plagiarism, similarity index, software tools for finding plagiarism (Turnitin, Urkund etc), redundant dublications

Publication Ethics: Introduction, COPE (Committee on Publication Ethics) guidelines; conflicts of interest, publication misconduct: problems that lead to unethical behaviour and vice versa, types, violation of publication ethics, authorship and contributorship, predatory publishers and journals

IPR - Intellectual property rights and patent law, commercialization, copy right, royalty, trade related aspects of intellectual property rights (TRIPS)

UNIT – 5: Statistical analysis for chemists (Hours: 6)

Types of data, data collection-Methods and tools, data processing, hypothesis testing, Normal and Binomial distribution, tests of significance: t-test, F-test, chi- square test, ANOVA, multiple range test, regression and correlation.

Features of data analysis with computers and softwares -Microsoft Excel, Origin, SPSS

Practical component Credits: 01

(Laboratory periods:15 classes of 2 hours each)

12. Collection of journal articles on a particular topic using Google Scholar and creating a database.
13. Collection of journal articles on a particular topic using Science Direct and creating a database.
14. Collection of journal articles on a particular topic using Scopus and creating a database.
15. Drawing chemical structure, reactions and mechanisms using Chemsketch or ISIS draw or any other software.
16. Collection of chemical structure using ChemSpider and creating a database.
17. Curve fitting using freely available softwares/apps (any one)

18. Making of power point presentation
19. Experimental learning of safe storage hazardous chemicals
20. Experimental learning of handling of hazardous chemicals
21. Technical writing on topics assigned.
22. Demonstration for checking of plagiarism using recommended software

Essential/recommended readings:

7. Dean, J. R., Jones, A. M., Holmes, D., Reed, R., Weyers, J. & Jones, A. (2011) Practical skills in chemistry. 2nd Ed. Prentice-Hall, Harlow.
8. Hibbert, D. B. & Gooding, J. J. (2006) Data analysis for chemistry. Oxford University Press.
9. Topping, J. (1984) Errors of observation and their treatment. Fourth Ed., Chapman Hall, London.
10. Harris, D. C. Quantitative chemical analysis. 6th Ed., Freeman (2007) Chapters 3-5.
11. Levie, R. de, how to use Excel in analytical chemistry and in general scientific data analysis. Cambridge Univ. Press (2001) 487 pages.
12. Chemical safety matters – IUPAC – IPCS, Cambridge University Press, 1992.
    OSU safety manual 1.01

Bachelor of Sciences in Industrial Chemistry

Category II

Industrial Chemistry Course for Undergraduate Programme of study with Industrial Chemistry as one of the Core Disciplines

SEMESTER IV

DISCIPLINE SPECIFIC CORE COURSE – 10: (DSC-10) PHARMACEUTICALS, COSMETICS AND PESTICIDES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Pharmaceuticals, Cosmetics and Pesticides (DSC-10: Industrial Chemistry -IV)	04	02	--	02	Physics, Chemistry, Mathematics, in Class XII	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To imparts basic knowledge of chemistry of inorganic materials such as silicates, non-silicates, ceramics, and cement.
- To enrich students with the knowledge of various types of batteries like Pb acid Battery, Li-ion Battery, Fuel Cells, Solar cell and Polymer cell.
- To impart the theoretical and practical knowledge of estimation and determination of various industrially important chemicals.

Learning outcomes

By the end of this course, students will be able to:

- Establish an appreciation of the role of inorganic chemistry in the chemical sciences.
- Analyse inorganic materials like silicates, ceramics and cement.

- Familiarized with scientific method of planning, developing, conducting, reviewing and reporting experiments.
- Draw various concepts of industrial metallurgy which will help them to explore new innovative areas of research.
- Explain scientific methods employed in inorganic chemistry.

SYLLABUS OF DSC-10

Unit 1: Drugs and Pharmaceuticals Hours: 12

Drug discovery, design and development. Synthesis of the representative drugs of the following classes: analgesics, antipyretics, antiinflammatory agents (Aspirin, Paracetamol.), antibiotics (Penicillin, Cephalosporin, Chloromycetin, Streptomycin and Chloramphenicol), antibacterial and antifungal agents (Sulphonamides, Sulfamethoxazole), antiviral agents (Acyclovir), Central Nervous System agents (Phenobarbital, Diazepam), Cardiovascular drugs (Glyceryl trinitrate), antileprosy drug (Dapsone).

Unit 2: Cosmetics Hours: 08

Introduction to cosmetics and perfumes, preparation and uses of the following: Hair dye, hair spray. Shampoo. Sun-tan lotions, face powder, lipsticks. talcum powder, nail enamel, creams (cold, vanishing and shaving creams), antiperspirants.

Unit 3: Pesticides Hours: 10

Introduction to pesticides (natural and synthetic), benefits and adverse effects, changing concepts of pesticides. Synthesis and technical manufacture, uses of representative pesticides in the following classes: Organochlorines (DDT, Gammaxene), Organophosphates (Malathion, Parathion), Carbamates (Carbofuran and carbaryl), Quinones (Chloranil), Anilides (Alachlor and Butachlor).

Practical

(Credits: 2, Laboratory periods: 60)

1. Preparation of talcum powder.
2. Preparation of shampoo.
3. Preparation of nail enamel
4. Preparation of hair remover.
5. Preparation of face cream.
6. Preparation of Aspirin and its analysis.
7. Preparation of nail polish and nail polish remover.
8. To calculate acidity in a given sample of pesticide formulations as per BIS specifications.
9. To calculate alkalinity in a given sample of pesticide formulations as per BIS specifications.
10. Preparation of Antacid.
11. Preparation of paracetamol.

References (Theory and practical):

1. Vermani, O. P.; Narula, A. K. (2004), **Industrial Chemistry**, Galgotia Publications Pvt. Ltd., New Delhi.
2. Bhatia, S. C. (2004), **Chemical Process Industries,** Vol. I & II, CBS Publishers, New Delhi.
3. Barel, A.O.; Paye, M.; Maibach, H.I.(2014), **Handbook of Cosmetic Science and Technology**, CRC Press.
4. Gupta, P.K.; Gupta, S.K.(2011),**Pharmaceutics and Cosmetics**, Pragati Prakashan
5. Butler, H. (2000),**Poucher's Perfumes, Cosmetic and Soap**, Springer.
6. Kumari,R.(2018),**Chemistry of Cosmetics**,Prestige Publisher.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE –DSC 11: Chemistry of Carboxylic acids & derivatives, Amines and Heterocycles

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Chemistry of Carboxylic Acids & their Derivatives, Amines and Heterocycles DSC-10: Chemistry-IV	**04**	**02**	**-**	**02**	**Class 12th with Physics, Chemistry, Mathematics**	

Learning Objectives

The Learning Objectives of this course are as follows:

- To make students learn about the chemistry of carboxylic acids and their derivatives (aliphatic and aromatic)
- To give basic understanding of amines (aliphatic & aromatic), diazonium salts
- To provide basic understanding of heterocyclic systems.

Learning outcomes

By studying this course, students will be able to:

- Understand reactions of carboxylic acids, esters, amides, amines and diazonium salts
- Understand the concept of protection and deprotection.
- Use the synthetic chemistry learnt in this course to do functional group transformations.
- Gain theoretical understanding of chemistry of heterocyclic compounds.

Syllabus

Unit 1: Carboxylic Acids and their Derivatives (aliphatic and aromatic)

(Hours: 13)

Preparation: Oxidation reactions of alcohols, aldehydes and ketones, Acidic and alkaline hydrolysis of esters; Reactions: Hell-Volhard Zelinsky reaction,

Carboxylic acid derivatives (aliphatic): Preparation: Acid chlorides, anhydrides, esters and amides from acids and their interconversion, Claisen condensation. Reactions: Relative reactivities of acid derivatives towards nucleophiles, Reformatsky reaction, Perkin condensation.

Active methylene compounds: Keto-enol tautomerism. Preparation and synthetic applicationsof ethyl acetoacetate

Unit 2: Amines (aliphatic & aromatic) and Diazonium Salts (Hours:10)

Amines

Preparation: from alkyl halides, Gabriel's Phthalimide synthesis, Hoffmann bromamide reaction. Reactions: Hoffmann *vs* Saytzeff elimination, carbylamine test, Hinsberg test, reaction with HNO_2, Schotten-Baumann reaction. Electrophilic substitution (case aniline): nitration, bromination, sulphonation; basicity of amines.

Diazonium salt

Preparation: from aromatic amines; Reactions: conversion to benzene, phenol and dyes.

Unit 3: Heterocyclic Compounds (Hours: 7)

Introduction, classification, structure, nomenclature and uses. Preparation and properties of the following heterocyclic compounds with reference to electrophilic and nucleophilic substitution: furan, pyrrole, thiophene, and pyridine.

Practical Component: **Credits: 02**

(Laboratory periods: 60)

3. Systematic qualitative analysis and preparation of suitable crystalline derivative (carboxylic acids, carbonyl, alcohols, phenols, amines (1°, 2°, 3°) and amides).
4. Preparation:
   a. Acetylation of Aniline and Phenols.
   b. Benzoylation of Aniline and phenols

The above derivatives should be prepared using 0.5-1g of the organic compound. The solidsamples must be collected and may be used for recrystallization and melting point.

References:

Theory:

5. Morrison, R. N.; Boyd, R. N. **Organic Chemistry**, Dorling Kindersley (India) Pvt. Ltd.(Pearson Education).
6. Finar, I. L. **Organic Chemistry** (Volume 1), Dorling Kindersley (India) Pvt. Ltd. (PearsonEducation).
7. Ahluwalia, V.K.; Bhagat, P.; Aggarwal, R.; Chandra, R. (2005), **Intermediate for OrganicSynthesis**, I.K. International.
8. Solomons, T. W. G.; Fryhle, C. B. ; Snyder, S. A. (2016), **Organic Chemistry**, 12th Ed.,Wiley.

Practical:

7. Ahluwalia, V.K.; Dhingra, S.; Gulati, A. (2005), **College Practical Chemistry**, UniversityPress (India) Ltd.
8. Ahluwalia, V.K.; Dhingra, S. (2004), **Comprehensive Practical Organic Chemistry:Qualitative Analysis**, University Press.
9. Pasricha, S., Chaudhary, A. (2021), **Practical Organic Chemistry: Volume I**, I KInternational Publishing House Pvt. Ltd., New Delhi.
10. Pasricha, S., Chaudhary, A. (2021), **Practical Organic Chemistry: Volume II**, I KInternational Publishing House Pvt. Ltd., New Delhi.
11. Vogel, A.I. (1972), **Textbook of Practical Organic Chemistry**, Prentice-Hall.
12. Jeffery, G.H.; Bassett, J.; Mendham, J.; Denney, R.C. (1989), **Vogel's Textbook ofQuantitative Chemical Analysis**, John Wiley and Sons.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Bachelor of Sciences in Industrial Chemistry
SEMESTER V

DISCIPLINE SPECIFIC CORE COURSE – 13: (DSC-13) INDUSTRIAL CATALYSTS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Industrial Catalysts (DSC-13: Industrial Chemistry -V)	04	02	--	02	Physics, Chemistry, Mathematics, in Class XII	NIL

Learning Objectives:
The Learning Objectives of this course are as follows:

- To imparts basic knowledge of catalysis, properties of catalysts and mode of action of catalyst.
- To enrich students with the knowledge of various types of catalysts such as organometallic catalyst, biocatalyst, shape selective catalyst and photocatalysts.
- To impart the theoretical and practical knowledge of catalysts with the view of their industrial applications.

Learning Outcomes:

By the end of this course, students will be able to:

- Establish an appreciation of the role of catalyst in industrial applications.
- Gain sound knowledge of various types of catalyst.
- Get skilled in the scientific method of planning, developing, conducting, reviewing and reporting experiments.
- Get skilled concepts of industrial catalysis which will help them to explore new innovative areas of research.

Unit 1: Introduction of Catalyst Hours: 8

General principles of catalysis, properties of catalysts, Mode of action of catalyst, Types of catalyst (homogeneous and heterogeneous catalysis), Deactivation and regeneration of catalysts, catalytic poison, Promoter, Turnover frequency, Turnover number, Specificity and selectivity

Unit 2: Catalysis by Organometallic Compounds Hours: 6

Study of the following industrial processes, catalytic cycle and their mechanism:
Alkene hydrogenation (Wilkinson's Catalyst), Synthetic gasoline (Fischer Tropsch reaction), Polymerisation of ethene using Ziegler-Natta catalyst

Unit 3: Biocatalysis Hours: 5

Introduction, Kinetics of enzyme–catalysed reactions, Industrial process with biocatalyst, Aspartame through enzymatic peptide synthesis, 4-Hydroxyphenoxypropionic acid as herbicide intermediate

Unit 4: Shape selective catalysis: Zeolites Hours: 6

Composition and structure of Zeolites, Catalytic properties of Zeolites, Shape selectivity, Isomorphic substitution of Zeolites, Metal doped Zeolites, Applications of Zeolites

Unit 5: Photocatalysis Hours: 5

Basic principle, Photoreduction and oxidation of water, Water reduction, Water oxidation, Photocleavage of water

Practical

(Credits: 2, Laboratory periods: 60)

1. Catalytic bromination of benzene. Catalyst: $FeCl_3/AlCl_3$
2. Catalytic chlorination of benzene. Catalyst: $FeCl_3/AlCl_3$
3. Catalytic Removal of Bromates from polluted Water: Synthesis of catalyst one lab, Removal of Bromates one lab.
4. Phase-Transfer Catalytic Reactions
5. Catalytic oxidation of ammonia using chromium(III) oxide as a catalyst. Catalytic Friedal-craft reaction using $AlCl_3$ and Lewis acid catalyst. Synthesis of toluene.
6. Synthesis of "Zeolite A" catalyst.
7. Zeolite Hydrogen-Y or dil.HCl/dil.H_2SO_4 as a Catalyst for the Preparation of an Ester.
8. Synthesis of biaryl using palladium catalyst.
9. Catalytic Transfer Hydrogenation of Castor Oil
10. Reduction of Nitrobenzene

References (Theory):

1. Huheey, J. E.; Keiter, E.A.; Keiter; R. L.; Medhi, O.K. (2009), **Inorganic Chemistry-Principles of Structure and Reactivity**, Pearson Education.
2. Cotton, F.A.; Wilkinson, G. (1999), **Advanced Inorganic Chemistry,** Wiley-VCH.
3. Jens Hagen (2015) **Industrial Catalysis: A Practical Approach** Wiley-VCH Verlag GmbH & Co

References (Practical):

1. Cerrillo, J. L.; López-Hernández, I.; Palomares, A. E. **Catalytic Removal of Bromates from Water: A Hands-On Laboratory Experiment to Solve a Water Pollution Problem through Catalysis** J. Chem. Educ. 2021, 98, 1726−1731.
2. Shabestary, N.; Khazaeli, S.; Hickman, R.; **Phase-Transfer Catalytic Reactions Journal of Chemical Education**, 1998, 75, 1470-1472.
3. Volkovich, V. A.; Griffiths, T. R.; **Catalytic Oxidation of Ammonia: A Sparkling Experiment** J. Chem. Educ. 2000, 77, 2, 177.

4. Williams, D. J.; Huck, B. E.; Wilkinson, A. P. **First-Year Undergraduate Laboratory Experiments with Zeolites Chem. Educator** 2002, 7, 33–36.
5. Coker, E. N.; Davis, P. J.; **Experiments with Zeolites at the Secondary-School Level: Experience from The Netherlands** Journal of Chemical Education 1999, 76, 10, 1417.
6. Hanson RW. **Catalytic transfer hydogenation reactions for undergraduate practical programs.** J Chem Educ. 2009, 74, 430.
7. Alwaseem H, Donahue CJ, Marincean S. **Catalytic transfer hydrogenation of castor oil.** J Chem Educ. 2014; 91, 575–8.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE –DSC 14: COORDINATION CHEMISTRY AND ORGANOMETALLICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Coordination Chemistry and Organometallics DSC-13: Chemistry- V	**04**	**02**	**-**	**02**	**Class 12th with Physics, Chemistry, Mathematics**	

Learning Objectives

The Learning Objectives of this course are as follows:

- To develop basic understanding of coordination chemistry and organometallics which are of immense importance to biological systems, qualitative quantitative analysis, catalysis, medicines, paints and pigments etc.
- The students learn nomenclature, isomerism and bonding in coordination compounds with special emphasis on important coordination compounds in the biological system.
- To understand classification of organometallic compounds, the concept of hapticity and the 18-electron rule governing the stability of a wide variety of organometallic species with special emphasis on metal carbonyls.

Learning outcomes

By studying this course, students will be able to:

- Understand terms: ligand, denticity of ligands, chelate, coordination number.
- Systematically name coordination compounds.

- Discuss the various types of isomerism possible in Octahedral and Tetrahedral coordination compounds.
- Use Valence Bond Theory to predict the structure and magnetic behaviour of metal complexes and understand the terms inner and outer orbital complexes.
- Explain the meaning of the terms Δo., Δt, pairing energy, CFSE, high spin and low spin and how CFSE affects thermodynamic properties like lattice enthalpy and hydration enthalpy.
- Explain magnetic properties and colour of complexes on basis of Crystal Field Theory
- Apply 18-electron rule to rationalize the stability of metal carbonyls and related species.
- Learn how IR data can be used to understand extent of back bonding in metal carbonyls.

Syllabus

Unit 1: Introduction to Coordination compounds (Hours: 6)

Brief discussion with examples of types of ligands, denticity and concept of chelate. IUPAC system of nomenclature of coordination compounds (mononuclear and binuclear) involving simple monodentate and bidentate ligands. Structural and stereoisomerism in complexes with coordination numbers 4 and 6.

Unit 2: Bonding in Coordination Compounds (Hours: 14)

Valence Bond Theory (VBT): Salient features of theory, concept of inner and outer orbital complexes, Drawbacks of VBT.

Crystal Field Theory: Splitting of d orbitals in octahedral symmetry. Crystal field effects for weak and strong fields, Crystal field stabilization energy (CFSE), concept of pairing energy, Factors affecting the magnitude of Δ, Spectrochemical series, Splitting of d orbitals in tetrahedral symmetry, Comparison of CFSE for octahedral and tetrahedral fields, tetragonal distortion of octahedral geometry, Jahn-Teller distortion

Unit 3: Organometallic Chemistry (Hours: 10)

Definition and classification with appropriate examples based on nature of metal-carbon bond (ionic, sigma, pi and multicentre bonds), Structure and bonding of methyl lithium and Zeise's salt, Structure and bonding of ferrocene, mononuclear and polynuclear carbonyls of 3d metals, 18-electron rule as applied to carbonyls, π-acceptor behaviour of carbon monoxide (MO diagram of CO to be discussed), synergic effect and use of IR data to explain extent of back bonding.

Practical Component **Credits:02**

(Laboratory periods:60)

8. Estimation of Mg^{2+} by direct complexometric titrations using EDTA.
9. Estimation of Zn^{2+} by direct complexometric titrations using EDTA.
10. Estimation of Ca^{2+} by direct complexometric titrations using EDTA.
11. Estimation of total hardness of a given sample of water by complexometric titration.
12. Determination of the composition of the Fe^{3+} - salicylic acid complex / Fe^{2+}-1, 10- phenanthroline complex in solution by Job's method.
13. Determination of the composition of the Fe^{3+} - salicylic acid complex / Fe^{2+}-1,10-phenanthroline complex in solution by mole ratio method
14. Preparation of the following inorganic compounds:
    a). Tetraamminecopper(II) sulphate
    b). Potassium trioxalatoferrate(III) trihydrate
    c). Chrome alum
    d). *Cis*- and *trans*-Potassium diaquadioxalatochromate(III)

8. Any suitable experiment (other than the listed ones) based upon complexation reactions.

References:

Theory:

17. Huheey, J.E.; Keiter, E.A., Keiter; R. L.; Medhi, O.K. (2009), **Inorganic Chemistry- Principles of Structure and Reactivity**, Pearson Education.
18. Shriver, D.D.; Atkins, P.; Langford, C.H. (1994), **Inorganic Chemistry** 2nd Ed., Oxford University Press.
19. Atkins, P.W.; Overton, T.L.; Rourke, J.P.; Weller, M.T.; Armstrong, F.A. (2010), **Inorganic *Chemistry***, 5th Edition, W. H. Freeman and Company.
20. Cotton, F.A.; Wilkinson, G.; Gaus, P.L. **Basic Inorganic Chemistry**, 3rd Edition, Wiley India.
21. Douglas, B.E.; McDaniel, D.H.; Alexander, J.J. (1994), **Concepts and Models of Inorganic Chemistry**, John Wiley & Sons.
22. Greenwood, N.N.; Earnshaw, A. (1997), **Chemistry of the Elements**, 2nd Edition, Elsevier.
23. Lee, J.D.; (2010), **Concise Inorganic Chemistry**, Wiley India.

Practicals:

4. Jeffery, G.H.; Bassett, J.; Mendham, J.; Denney, R.C. (1989),Vogel's Textbook of Quantitative Chemical Analysis, John Wiley and Sons.
5. Marr, G.; Rockett, B.W. (1972), Practical Inorganic Chemistry, Van Nostrand Reinhold.
6. Dua A, Manav N, **Practical Inorganic Chemistry,** (2017), Manakin Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Bachelor of Sciences in Industrial Chemistry
SEMESTER VI

DISCIPLINE SPECIFIC CORE COURSE – 16: (DSC-16) FOOD ADDITIVES, CONTAMINATION AND SAFETY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Food Additives, Contamination and Safety (DSC-16: Industrial Chemistry - VI)	04	02	--	02	Physics, Chemistry, Mathematics, in Class XII	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To understand the chemistry of food additives and their applications.
- To impart theoretical and practical knowledge on common food additives, contaminants and adulterants.
- To enhance the understanding of safety measures of food and evaluation techniques to determine toxicity of additives.
- To enhance knowledge about regulations and monitoring agencies of food.

Learning Outcomes:

By the end of this course, students will be able to:

- Understand and describe applications of various food additives in food processing and preservation.
- Know the merits and demerits of synthetic and natural colouring, flavouring and sweetening agents as food additives.
- Identify and prevent potential sources of food contamination
- Know Safety measures of food additives, regulations and monitoring agencies and toxicological evaluation of additives.

Unit 1: Food Additives Hours: 12

Introduction, need of food additives in food processing and preservation. Characteristics and classification of food additives.
Antimicrobial agents. -Nitrites, sulphides, sulphur dioxide, sodium chloride, hydrogen peroxide.

Antioxidants - Introduction, mechanism of action, natural and synthetic antioxidants, technological aspect of antioxidants.
Sweeteners- Introduction, importance, classification- natural and artificial, chemistry, technology and toxicology, consideration for choosing sweetening agents.
Colors- Introduction, importance, classification- natural, artificial, and natural identical, FD&C Dyes and Lakes. polymeric colors.

Unit 2: Food Contamination & adulterants Hours: 12

Contamination in Food: Physical, chemical contaminants- heavy metals, pesticide residues, agrochemicals, Antibiotics and Veterinary Drug residues, environmental pollutants, radionuclides, solvent residues, NOTS (Naturally Occurring Toxic Substances)
Contaminants formed during processing & packaging – nitrosamines, acrylamide, alloys, benzene, dioxins, furans, persistent organic pollutants, polymers, PAH (Polycyclic Aromatic Hydrocarbons) in smoked foods, food. fumigants, autoxidation products.
Food adulteration - Common adulterants in foods and tests to detect common adulterants.

Unit 3: Food Safety, Risks and hazards Hours: 6

Food related hazards, regulations and monitoring agencies, interaction of additives with food ingredients and their toxicological aspects, quality evaluation of additives and contaminants, Acute and chronic studies, NOEL, ADI, LD50

Practical

Credits: 02, Laboratory periods: 60)

1. Determination of moisture content of foods by oven drying.
2. Determination of reducing and total sugar content in foods.
3. Chromatographic Separation and identification of sugars and amino acids.
4. Testing of turmeric powder, milk and mustard oil for adulterants.
5. Extraction of natural coloring and flavoring agent from flowers and fruits
6. Inspection of various food grains- cereals and coarse cereals
7. Determination of quality standards and inspection of spices and condiments.
8. Qualitative tests for hydrogenated fats, butter, and ghee.
9. Estimation of sulphur dioxide in beverages.
10. Qualitative estimation of benzoic acid in ketchup and sauces.
11. Chromatographic estimation of colour.
12. Study the effect of aerial oxidation of food.

References (Theory):

1. DeMan. (2007). **Principles of Food Chemistry**. Springer, 3rdedition
2. Emerton, V, (2008). **Food Colours**. Blackwell Publishing.
3. Wilson, R. (2007).**Sweeteners**. Blackwell Publishing.
4. Fennema OR.(1996). **Food Chemistry**. Marcel Dekker.
5. Pieternel A, Luning. & Willem, J. Marcelis. (2009). **Food Quality Management Technological and Managerial principles and practices**. Wageningen.

References (Practical):

1. Ranganna, S., & Ranganna, S. (2003). **Handbook of analysis and quality control for fruit and vegetable products**. New Delhi: Tata McGraw-Hill
2. Nielsen, S. S. (2017). **Food analysis**.
3. Vogel, Arthur I. (Arthur Israel). (1989). **Vogel's textbook of quantitative chemical analysis**. Harlow, Essex, England : New York :Longman Scientific & Technical ; Wiley,

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Quantum Chemistry and Spectroscopy DSC-16: Chemistry- VI	**04**	**02**	**--**	**02**	**Class 12th with Physics, Chemistry, Mathematics**	**NA**

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce the concepts and methodology of quantum mechanics
- Application of Quantum chemistry to spectroscopy
- To establish the relation between structure determination and spectra.

Learning outcomes

By studying this course, students will be able to:

- Understand basic principles of quantum mechanics: operators, eigen values, averages, probability distributions.
- Understand and use basic concepts of microwave, IR and UV-VIS spectroscopy for interpretation of spectra.

Syllabus

Unit 1: Quantum Chemistry **(Hours: 16)**

Postulates of quantum mechanics, quantum mechanical operators.

Schrodinger equation and its application to free particle and particle in a 1-D box (complete solution), quantization, normalization of wave functions, concept of zero-point energy.

Qualitative treatment of H and H like atoms. Setting up of Schrodinger equation for many electron atoms.

Rotational Motion: Schrödinger equation of a rigid rotator and brief discussion of its results (solution not required). Quantization of rotational energy levels.

Vibrational Motion: Schrödinger equation of a linear harmonic oscillator and brief discussion of its results (solution not required). Quantization of vibrational energy levels.

Unit 2: Spectroscopy (Hours: 14)

Electromagnetic radiation and its interaction with matter. Lambert-Beer's law, Jablonski's diagram. Florescence and Phosphorescence.
Difference between atomic and molecular spectra. Born- Oppenheimer approximation: Separation of molecular energies into translational, rotational, vibrational and electronic components.

Microwave Spectroscopy: Microwave (pure rotational) spectra of diatomic molecules. Selection rules.
Structural information derived from rotational spectroscopy.

IR Spectroscopy: Selection rules, IR spectra of diatomic molecules. Structural information derived fromvibrational spectra. Effect of hydrogen bonding (inter- and intramolecular) and substitution on vibrational frequencies.

Electronic Spectroscopy: Electronic excited states. Free electron model and its application to electronic spectra of polyenes. chromophores, auxochromes, bathochromic and hypsochromic shifts.

Practical component Credits:02

(Laboratory Periods: 60)UV/Visible spectroscopy

19. Study the 200-500 nm absorbance spectra of $KMnO_4$ and $K_2Cr_2O_7$ (in 0.1 M H_2SO_4) and
    determine the λ_{max} values. Calculate the energies of the two transitions in different units (J molecule^{-1}, kJ mol^{-1}, cm^{-1}, eV).
20. Study the pH-dependence of the UV-Vis spectrum (200-500 nm) of $K_2Cr_2O_7$
21. Record the 200-350 nm UV spectra of the given compounds (acetone, acetaldehyde, 2- propanol, acetic acid) in water. Comment on the effect of structure on the UV spectra of organic compounds.

Colorimetry

22. Verify Lambert-Beer's law and determine the concentration of $CuSO_4$/ $KMnO_4$/ $K_2Cr_2O_7$/$CoCl_2$ in a solution of unknown concentration
23. Determine the concentrations of KMnO4 and $K_2Cr_2O_7$ in a mixture.
24. Study the kinetics of iodination of propanone in acidic medium.
25. Determine the amount of iron present in a sample using 1, 10-phenanthroline.
26. Determine the dissociation constant of an indicator (phenolphthalein).

27. Study the kinetics of interaction of crystal violet/ phenolphthalein with sodium hydroxide.

References:

Theory:

1. Banwell, C.N.; McCash, E.M.(2006), **Fundamentals of Molecular Spectroscopy**,Tata McGraw- Hill.
2. Kapoor, K.L.(2015),**A Textbook of Physical Chemistry**, McGraw Hill Education,
   ,Vol 4, 5th Edition, McGraw Hill Education.
3. McQuarrie, D.A.(2016),**Quantum Chemistry**, Viva Books.
4. Chandra, A. K.(2001),**Introductory Quantum Chemistry**, Tata McGraw-Hill.
5. Dua A and Tyagi P, **Molecular Spectroscopy: Quantum to Spectrum**, (2022)Atlantic Publishers & Distributors Pvt Ltd.
6. Dua A, Singh C, **Quantum Chemistry: Classical to Computational** (2015) ManakinPress.

Practical:

7. Khosla, B.D.; Garg, V.C.; Gulati, A. (2015),**Senior Practical Physical Chemistry**,
   R. Chand & Co, New Delhi.
8. Kapoor, K.L. (2019),**A Textbook of Physical Chemistry**,
   Vol.7, 1st Edition,McGraw Hill Education.
9. Garland, C. W.; Nibler, J. W.; Shoemaker, D. P.(
   2003),**Experiments in PhysicalChemistry**, 8th Edition, McGraw-Hill, New York.

Additional Resources:

5. Castellan, G. W .(2004),**Physical Chemistry**, Narosa.
6. Petrucci, R. H.(1989),**General Chemistry: Principles and Applications**, MacmillanPublishing

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Pool of Discipline Specific Elective Courses (DSE)

Credit Distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Green Chemistry	04	02	--	02	Class 12th with Physics, Chemistry, Mathematics	NA

Learning Objectives

The Learning Objectives of this course are as follows:

- To make the society to become more and more environmentally conscious by knowing huge rise in environmental pollution, depleting resources, climate change, ozone depletion, heaps and heaps of landfills piling up has forced.
- To improve the creative and innovative thinking in undergraduate students towards sustainable practices of Green Chemistry. has arisen from these concerns.
- To know the Green chemistry in a way to boost profits, increase productivity and ensure sustainability with absolute zero waste. To trained them to practice chemistry in the safest way in the laboratories as well as the chemical industry and extends to society in a sustainable future for the planet.

Learning Outcomes:

By the end of this course, students will be able to:

- Understand the twelve principles of green chemistry and also build the basic understanding of toxicity, hazard and risk related to chemical substances.
- Calculate atom economy, E-factor and relate them in all organic synthesis
- Appreciate the use of catalyst over stoichiometric reagents
- Learn to use green solvents, renewable feedstock and renewable energy sources for carrying out safer chemistry
- Appreciate the use of green chemistry in problem solving skills and critical thinking to innovate and find solutions to environmental problems.
- Learn to design safer processes, chemicals and products through understanding of inherently safer design (ISD)
- Appreciate the success stories and real-world cases as motivation for them to practice green chemistry

Unit 1: Introduction Hours :08

Definition of green chemistry and how it is different from conventional chemistry and environmental chemistry.

• Need of green chemistry

• Importance of green chemistry in- daily life, Industries and solving human health problems (four examples each).

• A brief study of Green Chemistry Challenge Awards (Introduction, award categories and study about five last recent awards).

Unit 2: Twelve Principles of Green Chemistry Hours : 12

The twelve principles of the Green Chemistry with their explanations, Special emphasis on the following:

• Prevention of waste / byproducts, pollution prevention hierarchy.

• Green metrics to assess greenness of a reaction: environmental impact factor, atom economy and calculation of atom economy.

• Green solvents-supercritical fluids, water as a solvent for organic reactions, ionic liquids, solvent less reactions, solvents obtained from renewable sources.

• Catalysis and green chemistry- comparison of heterogeneous and homogeneous catalysis, biocatalysis, asymmetric catalysis and photocatalysis.

• Green energy and sustainability.

• Real-time analysis for pollution prevention.

• Prevention of chemical accidents, designing greener processes, inherent safer design, principle of ISD “What you don’t have cannot harm you”, greener alternative to Bhopal Gas Tragedy (safer route to carcarbaryl) and Flixiborough accident (safer route to cyclohexanol) subdivision of ISD, minimization, simplification, substitution, moderation and limitation

Unit 3: Hours : 10

The following Real-world Cases in green chemistry should be discussed: Surfactants for carbon dioxide – replacing smog producing and ozone depleting solvents with CO_2 for precision cleaning and dry cleaning of garments. Designing of environmentally safe marine antifoulant. Rightfit pigment: Synthetic azo pigments to replace toxic organic and inorganic pigments. An efficient, green synthesis of a compostable and widely applicable plastic (polylactic acid) made from corn.

Practical
(Credits: 02, Laboratory periods: 60)

Characterization by melting point, UV-Visible spectroscopy, IR spectroscopy and any other specific method should be done (wherever applicable).

1. Preparation and characterization of nanoparticles of gold using tea leaves/silver nanoparticles using plant extracts.
2. Preparation of biodiesel from waste cooking oil and characterization (TLC, pH, solubility, combustion test, density, viscosity, gel formation at low temperature and IR can be provided).
4. Benzoin condensation using thiamine hydrochloride as a catalyst instead of cyanide.
5. Extraction of D-limonene from orange peel using liquid CO_2 prepared from dry ice.
6. Mechanochemical solvent free, solid-solid synthesis of azomethine using *p*-toluidine and *o*-vanillin/*p*-vanillin.
8. 6 Microwave-assisted Knoevenagel reaction using anisaldehyde, ethylcyanoacetate and ammonium formate.
7. Photoreduction of benzophenone to benzopinacol in the presence of sunlight.
8. Photochemical conversion of dimethyl maleate to dimethyl fumarate (*cis-trans* isomerisation)
9. Benzil- Benzilic acid rearrangement: Preparation of benzilic acid in solid state under solvent-free condition.

References (Theory):

1. Anastas, P.T., Warner, J.C. (2014), **Green Chemistry, Theory and Practice**, Oxford University Press.
2. Lancaster, M. (2016), **Green Chemistry: An Introductory Text**, 3rd Edition, RSC Publishing.
3. Cann, M. C., Connely, M.E. (2000), **Real-World cases in Green Chemistry, American Chemical Society**, Washington.
4. Matlack, A.S. (2010), **Introduction to Green Chemistry**, 2nd Edition, Boca Raton: CRC Press/Taylor & Francis Group publisher.
5. Alhuwalia, V.K., Kidwai, M.R. (2005), **New Trends in Green chemistry**, Anamalaya Publishers.
6. Sidhwani, I.T, Sharma, R.K. (2020), **An Introductory Text on Green Chemistry**, Wiley India Pvt Ltd.

References (Practical):

1. Kirchoff, M.; Ryan, M.A. (2002), **Greener approaches to undergraduate chemistry experiment**, American Chemical Society, Washington DC.
2. Sharma, R.K.; Sidhwani, I.T.; Chaudhari, M.K. (2013), **Green Chemistry Experiments: A monograph**, I.K. International Publishing House Pvt Ltd. New Delhi.
3. Pavia, D.L.; Lamponam, G.H.; Kriz, G.S.W. B. (2012), **Introduction to organic Laboratory Technique- A Microscale approach**, 4th Edition, Brooks-Cole Laboratory Series for Organic chemistry.
4. Sidhwani I.T. (2015), Wealth from Waste: A green method to produce biodiesel from waste cooking oil and generation of useful products from waste further generated. **DU Journal of Undergraduate Research and Innovation**, 1(1),131-151. ISSN: 2395-2334.
5. Sidhwani, I.T; Sharma, R.K. (2020), **An Introductory Text on Green Chemistry**, Wiley India Pvt Ltd.
6. **Monograph on Green Chemistry Laboratory Experiments**, Green Chemistry Task Force Committee, Department of Science and Technology, Government of India.

Credit Distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Analytical Methods in Chemistry	04	02	--	02	Class 12th with Physics, Chemistry, Mathematics	NA

Learning Objectives

The Learning Objectives of this course are as follows:

- To make the students aware of the concept of sampling, accuracy, precision, statistical test data-F, Q and t test.
- To learn the laws of spectroscopy and selection rules governing the possible transitions in the different regions of the electromagnetic spectrum, Thermal and electroanalytical methods of analysis.
- To learn important separation methods like solvent extraction and chromatography. The practical exposure to the latest instrumentation and to detect analytes in a mixture.

Learning Outcomes:

By the end of this course, students will be able to:

- Perform experiments with accuracy and precision.
- Develop methods of analysis for different samples independently.
- Test contaminated water samples.
- Understand basic principles of instruments like Flame Photometer, UV-vis spectrophotometer.
- Learn separation of analytes by chromatography.
- Apply knowledge of geometrical isomers and keto-enol tautomers to analysis.
- Determine composition of soil.
- Estimate macronutrients using Flame photometry.

Unit 1: Qualitative and quantitative aspects of analysis Hours : 04

Sampling, evaluation of analytical data, errors, accuracy and precision, methods of their expression. Normal law of distribution of indeterminate errors, statistical test of data; F, Q and t test, rejection of data, and confidence intervals.

Unit 2: Optical methods of analysis Hours :10

Origin of spectra, interaction of radiation with matter, fundamental laws of spectroscopy and selection rules. UV-Visible Spectrometry: Basic principles of instrumentation (choice of source, monochromator and detector) for single and double beam instrument; Transmittance. Absorbance and Beer-Lambert law. Absorption and Emission Spectrometry: Basic principles of instrumentation (choice of source, monochromator, detector, choice of flame and Burner designs).

Unit 3: Thermal methods of analysis Hours :04

Theory of thermogravimetry (TG) and basic principle of instrumentation of thermal analyser. Techniques for quantitative estimation of Ca and Mg from their mixture.

Unit 4: Electroanalytical methods Hours :04

Classification of electroanalytical methods, basic principle of pH metric, potentiometric and conductometric titrations. Techniques used for the determination of equivalence points. Techniques used for the determination of pKa values.

Unit 5: Separation techniques Hours :08

Solvent extraction: Classification, principle and efficiency of the technique. Qualitative and quantitative aspects of solvent extraction: extraction of metal ions from aqueous solution, extraction of organic species from the aqueous and nonaqueous media. Chromatography: Classification, principle and efficiency of the technique, Mechanism of separation: adsorption, partition &ion-exchange, Development of chromatograms: frontal, elution and displacement methods.

Practical
(Credits: 02, Laboratory periods: 60)

1. Separation of mixtures by paper chromatography and reporting the Rf values:
   (i) Co^{2+} and Ni^{2+}.
   (ii) Amino acids present in the given mixture.
2. Solvent Extractions

To separate a mixture of Ni^{2+} & Fe^{2+} by complexation with DMG and extracting the Ni^{2+} DMG complex in chloroform, and determine its concentration by spectrophotometry.

3. Analysis of soil:
   (i) Determination of pH of soil.
   (ii) Total soluble salt
   (iii) Estimation of calcium and magnesium
   (iv) Qualitative detection of nitrate and phosphate
4. Ion exchange:
   (i) Determination of exchange capacity of cation exchange resins and anion exchange resins.
   (ii) Separation of amino acids from organic acids by ion exchange chromatography.

5. Spectrophotometry

   (i) Verification of Lambert-Beer's law and determination of concentration of a coloured species ($CuSO_4$, $KMnO_4$, $CoCl_2$, $CoSO_4$)

   (ii) Determination of concentration of coloured species via following methods;

   (a) Graphical method
   (b) Epsilon method
   (c) Ratio method
   (d) Standard addition method

References (Theory):

1. Willard, H.H.(1988),**Instrumental Methods of Analysis**, 7th Edition, Wardsworth Publishing Company.
2. Christian, G.D.(2004),**Analytical Chemistry**, 7th Edition, John Wiley & Sons, New York.
3. Harris, D. C.(2007),**Quantitative Chemical Analysis**,7th Edition, Freeman.
4. Khopkar, S.M. (2008), **Basic Concepts of Analytical Chemistry**, New Age International Publisher.
5. Skoog, D.A.; Holler F.J.; Nieman, T.A. (2017), **Principles of Instrumental Analysis,** Thomson Asia Pvt. Ltd.

References (Practical):

1. Jeffery, G.H.; Bassett, J.; Mendham, J.; Denney, R.C.(1989),**Vogel's Textbook of Quantitative Chemical Analysis**, John Wiley and Sons.

Credit Distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Basics of Polymer Chemistry	**04**	**02**	**--**	**02**	**Class 12th with Physics, Chemistry, Mathematics**	**NA**

Learning Objectives

The Learning Objectives of this course are as follows:

- To help the student to know about the synthesis, properties and applications of polymers.
- To give glimpse of polymer industry to the student and help them to choose their career in the field of polymer chemistry.

Learning Outcomes:

By the end of this course, students will be able to:

- Know about history of polymeric materials and their classification
- Learn about different mechanisms of polymerization and polymerization techniques
- Learn about different methods of finding out average molecular weight of polymers
- Differentiate between glass transition temperature (Tg) and crystalline melting point (Tm)
- Determine Tg and Tm
- Learn properties and applications of various useful polymers in our daily life.

Unit 1: Introduction to Polymeric Materials Hours:10

History of polymeric materials, Different schemes of classification of polymers, Polymer nomenclature
Molecular forces and chemical bonding in polymers, Physical and chemical properties of polymers
Solubility and Criteria for polymer solubility, Texture of Polymers, modification of polymers, Structure and property relationships, Introduction to conducting and biodegradable polymers.

Unit 2: Characterization of Polymers: Hours:10

Thermal characterisation of polymer: Glass transition temperature (Tg), thermal stability and decomposition of polymers, Molecular weight of polymers (Mn, Mw, etc.) by end group analysis, viscometry, light scattering technique and osmotic pressure methods.
Structural characterisation of polymers by IR and NMR spectroscopy.

Unit 3: Preparation, Properties and Uses of Polymers: Hours:10

Brief introduction to polymerisation, mechanism, properties and application of the following polymers: polyolefins, polystyrene, poly(vinyl chloride), poly(vinyl acetate), polyurethanes, acrylic polymers and polyamides. Phenol formaldehyde and urea formaldehyde, Silicone polymers, Conducting Polymers: polyacetylene, polyaniline, polypyrrole, polythiophene., Biopolymer: Cellulose and Chitosan.

Practical:
(Credits: 2, Laboratory periods: 60)

1. Preparation of nylon 6,6.
2. Redox polymerization of acrylamide.
3. polymerization of acrylonitrile.
4. Preparation of urea-formaldehyde resin.
5. Preparations of phenol-formaldehyde resin.

6. Determination of molecular weight of different polymers in water by viscometry.
7. Estimation of the amount of HCHO in the given solution by sodium sulphite method.
8. Demonstration for chemical structure and functional group in polymers using IR spectroscopy.
9. Purification of monomer and polymerisation of Styrene and Polymethylmethacrylate using BPO (Benzoyl Peroxide).
10. Polymerization of aniline and pyrrole by chemical polymerisation method.
11. Preparation of poly methylacrylate by emulsion and bulk polymerisation and compare the results.
12. Characterisation of polymers by IR spectroscopy.

References (Theory):

1. Ahluwalia V.K. & Mishra A**. Polymer Science :A Textbook**(2009) Anne Books.
2. Odian, G. (2004), **Principles of Polymerization**, John Wiley.
3. Billmeyer, F.W. (1984),**Text Book of Polymer Science**,3rd Ed., John Wiley.
4. Ghosh, P. (2001),**Polymer Science & Technology**, Tata Mcgraw-Hill.
5. Lenz, R.W. (1967),**Organic Chemistry of Synthetic High Polymers**, Interscience (Wiley).

References (Practical):

1. Hundiwale ,D.G.,Athawale V.D ,Kapadi, U.R.& Gite V.V, **Experiments in Polymer Science ,**New Age International Publishers .
2. Allcock, H.R.; Lampe, F. W.; Mark, J. E. (2003), **Contemporary Polymer Chemistry**, Prentice-Hall.
3. Fried, J.R. (2003), **Polymer Science and Technology**, 2nd Ed, Prentice-Hall.
4. Munk, P.; Aminabhavi , T. M. (2002), **Introduction to Macromolecular Science,** John Wiley & Sons.
6. Sperling, L.H. (2005), **Introduction to Physical Polymer Science**, John Wiley & Sons.

Credit Distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Molecules of Life	04	02	--	02	Class 12th with Physics, Chemistry, Mathematics	NA

Learning Objectives

The Learning Objectives of this course are as follows:

- To deliver information about the chemistry of carbohydrates, proteins & enzymes and its relevance in the biological system using suitable examples.
- To understand the structural principles that govern reactivity/physical /biological properties of biomolecules as opposed to learning structural details.

Learning Outcomes:

By the end of the course, the students will be able to:

- Learn and demonstrate how the structure of biomolecules determines their chemical properties, reactivity and biological uses.
- Gain an insight into the mechanism of enzyme action and inhibition.
- Understand the basic principles of drug-receptor interaction and SAR.

Unit 1: Carbohydrates Hours: 12

Classification of carbohydrates, reducing and non-reducing sugars, biological functions, general properties and reactions of glucose and fructose, their open chain structure, epimers, mutarotation and anomers, reactions of monosaccharides, determination of configuration of glucose (Fischer proof), cyclic structure of glucose. Haworth projections. Cyclic structure of fructose. Linkage between monosaccharides: structure of disaccharides (sucrose, maltose, lactose) and polysaccharides (starch and cellulose) excluding their structure elucidation.

Unit 2: Amino Acids, Peptides and Proteins Hours: 10

Classification of amino acids and biological uses of amino Acids, peptides and proteins. Zwitterion structure, isoelectric point and correlation to acidity and basicity of amino acids. Determination of primary structure of peptides, determination of N-terminal amino acid (by Edman method) and C– terminal amino acid (with carboxypeptidase enzyme). Synthesis of simple peptides (up to dipeptides) by N-protection (t-butyloxycarbonyl) & C-activating groups (only DCC) and Merrifield solid phase synthesis, Overview of primary, secondary, tertiary and quaternary structure of proteins, denaturation of proteins.

Unit 3: Enzymes Hours: 04

Classification of enzymes and their uses (mention Ribozymes). Mechanism of enzyme action, factors affecting enzyme action, Coenzymes and cofactors and their role in enzyme action, specificity of enzyme action (including stereospecificity).

Unit 4: Nucleosides, Nucleotides and Nucleic acids Hours: 04

Components of Nucleic acids: Adenine, guanine, thymine, cytosine and uracil (structure only), other components of nucleic acids, nucleosides and nucleotides (nomenclature), structure of polynucleotides; structure of DNA (Watson-Crick model) and RNA (types of RNA), difference between DNA and RNA

Practical
(Credits: 02, Laboratory periods: 60)

1. Estimation of glucose by Fehling's solution.
2. Determination of total sugar content by ferricyanide method (volumetric/colorimetric method).
3. Study of the titration curve of glycine and determine the isoelectic point of glycine.
4. Estimation of proteins by Lowry's method.
5. Qualitative tests for amino acids, proteins and carbohydrates.
6. Separation and identification of mixture of sugars by paper chromatography.
7. Separation and identification of mixture of Amino acids by paper chromatography.
8. Study of the action of salivary amylase on starch under optimum conditions and find the enzyme activity.
9. Study the effect of temperature on activity of salivary amylase.
10. Extraction of DNA from onion/cauliflower.

References (Theory):

1. Finar, I. L. **Organic Chemistry** (Volume 1 & 2), Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
2. Morrison, R. N.; Boyd, R. N., Bhattacharjee, S.K. (2010), **Organic Chemistry**, 7th Edition, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
3. Berg, J. M.; Tymoczko, J. L.; Stryer, L. (2019), **Biochemistry**, 9th Ed., W. H. Freeman Co Ltd.

References (Practical):

1. Furniss, B.S.; Hannaford, A.J.; Smith, P.W.G.; Tatchell, A.R. (2012), **Vogel's Textbook of Practical Organic Chemistry**, Pearson.
2. **Manual of Biochemistry Workshop**, 2012, Department of Chemistry, University of Delhi.

Credit Distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Main Group Chemistry	04	02	--	02	Class 12th with Physics, Chemistry, Mathematics	NA

Learning Objectives

The Learning Objectives of this course are as follows:

- To provide basic understanding of the fundamental principles of metallurgy through study of the different methods of extraction and refining of metals.
- To illustrate the diversity and fascination of inorganic chemistry through the study of structure, properties and utilities of s- and p-block elements and their compounds

Learning Outcomes:

By the end of the course, the students will be able to:

- Understand the basis of occurrence of metals in nature and the methods that can be applied on minerals to extract the metals from them.
- Explain the importance of free energy of formation of oxides with the choice of reducing agent for extracting the metals.
- Understand and explain the importance of refining of metals and the choice of a refining procedure
- Explain the group trends observed for different properties of s and p block elements
- Explain the structures and the bonding basis of compounds of s- and p- block elements
- Explain the uniqueness observed in alkali metals and some other main group elements
- Understand and explain the polymerization of inorganic ions to generate inorganic polymers and the difference between organic and inorganic polymers.

Unit 1: General Principles of Metallurgy Hours: 06

Chief modes of occurrence of metals based on standard electrode potentials. Ellingham diagrams for reduction of metal oxides using carbon and carbon monoxide as reducing agent. Electrolytic Reduction, Hydrometallurgy with reference to cyanide process for silver and gold. Methods of purification of metals: Electrolytic process, Van Arkel-De Boer process, Zone refining.

Unit 2: General Properties Hours: 05

General group trends of s- and p-block elements with special reference to melting and boiling points, flame colour, metallic character and complex formation tendency, diagonal relationship and anomalous behaviour of first member of each group, Alkali metal solutions in liquid ammonia

Unit 3: Structure, Bonding, Properties and Applications Hours: 15

Structure, bonding, properties (Acidic/Basic nature, stability, ionic/covalent nature, oxidation/reduction, hydrolysis, thermal stability) and applications of the following:
Crown Ethers and cryptates of Alkali metals
Hydrides: hydrides of Group 13 (only diborane), Group 14, Group 15 (EH_3 where E = N, P, As, Sb, Bi), Group 16 and Group 17.
Oxides: Oxides of nitrogen, phosphorus and sulphur.
Oxoacids: oxoacids of phosphorus, sulphur and chlorine
Halides of phosphorus

Unit 4: Inorganic Polymers Hours:04

Preparation, properties, structure and uses of the following:

Borazine, Silicates and Silicones

Practical
(Credits: 02, Laboratory periods: 60)

Qualitative semi-micro analysis of mixtures containing 2 anions and 2 cations (preferably 7-8 mixtures). Emphasis should be given to the understanding of the chemistry of different reactions. The following radicals are suggested:

CO_3^{2-}, NO_2^- , S^{2-}, SO_3^{2-}, SO_4^{2-} , $S_2O_3^{2-}$, CH_3COO^-, F^-, Cl^-, Br^-, I^-, NO_3^- , BO_3^{3-}, $C_2O_4^{2-}$, PO_4^{3-}, NH_4^+, K^+, Pb^{2+}, Cu^{2+}, Cd^{2+}, Bi^{3+}, Sn^{2+}, Sb^{3+}, Fe^{3+}, Al^{3+}, Cr^{3+}, Zn^{2+}, Mn^{2+}, Co^{2+}, Ni^{2+}, Ba^{2+}, Sr^{2+}, Ca^{2+}, Mg^{2+}

The mixtures may contain combination of anions/one interfering anion.

Spot tests should be preferred wherever applicable.

References (Theory):

1. Lee, J.D.; (2010), **Concise Inorganic Chemistry**, Wiley India.
2. Huheey, J.E.; Keiter, E.A.; Keiter; R. L.; Medhi, O.K. (2009), **Inorganic Chemistry-Principles of Structure and Reactivity**, Pearson Education.

3. Douglas, B.E.; McDaniel, D.H.; Alexander, J.J. (1994), **Concepts and Models of Inorganic Chemistry**, John Wiley & Sons.
4. Atkins, P.W.; Overton, T.L.; Rourke, J.P.; Weller, M.T.; Armstrong, F.A. (2010), **Shriver and Atkins Inorganic Chemistry**, 5th Edition, Oxford University Press.
5. Housecraft, E. H.; Sharpe, A.G. (2018), **Inorganic Chemistry**, 5th Edition, Pearson.
6. F.A. Cotton & G. Wilkinson (1999), **Advanced Inorganic Chemistry**, 6th Edition, John Wiley & Sons.

References (Practical):

1. Vogel, A.I. (1972), **Qualitative Inorganic Analysis**, Longman.

2. Svehla, G. (1996), **Vogel's Qualitative Inorganic Analysis**, Prentice Hall.

Credit Distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Nanoscale Materials and their applications	04	02	--	02	Class 12th with Physics, Chemistry, Mathematics	NA

Learning Objectives

The Learning Objectives of this course are as follows:

- To provide an introduction to nanoscale materials and their applications.
- To provides an insight into bottom-up and top-down-approach, the methods of synthesis of nanoparticles, simple characterization techniques and applications of nanomaterials.

Learning Outcomes:

By the end of the course, the students will be able to:

- Understand the concept of nano dimensions.
- Know the various methods of preparation of nanomaterials.
- Understand the principles of optical and electron microscopy techniques of characterizing nanomaterials.
- Understand the Appreciate the real life applications of nanomaterials.

Unit 1: Introduction to Nanodimensions Hours: 12

0D, 1D, 2D nanomaterials, Quantum Dots, Nanoparticles, Nanostructures (nanowires, thin films, nanorods), carbon nanostructures (carbon nanotubes, carbon nanofibers, fullerenes), Size Effects in nano systems, Quantum confinement and its consequences, Semiconductors. Band structure and band gap. Optical Properties Surface plasmon resonance

Unit 2: Preparation of Nanomaterials Hours: 10

Top down and Bottom up approach, Photolithography. Ball milling. Vacuum deposition. Physical vapor deposition (PVD), Chemical vapor deposition (CVD), Thermal decomposition, Chemical reduction, Sol-Gel synthesis, Hydrothermal synthesis, Spray pyrolysis, Electrochemical deposition, Pulsed Laser deposition. Characterization of nanomaterials: Basic principle of optical methods and electron microscopy.

Unit 3: Applications of Nanomaterials Hours: 8

Nanomaterials as Catalysts, semiconductor nanomaterials as photocatalysts, Nanocomposites as catalysts. Carbon nanostructures as catalytic nanoreactors, metal and metal oxides confined inside carbon nanostructures, Nanowires and thin films for photonic devices (LEDs, solar cells, transistors).

Practical
(Credits: 02, Laboratory periods: 60)

1. Synthesis of silver nanoparticles by chemical methods and characterization using UV-visible spectrophotometer.
   a. Turkevich Method
   b. Burst Method
2. Synthesis of silver nanoparticles by green approach methods (using soluble starch, glucose or cinnamon bark) and characterization using UV-visible spectrophotometer.
3. Synthesis of metal sulphide nanoparticles and characterization using UV-visible spectrophotometer and determination of Band gap.
   a. MnS
   b. ZnS
   c. CuS
4. Intercalation of hydrogen in tungsten trioxide and its conductivity measurement using conductometer.
5. Synthesis of pure ZnO and Cu doped ZnO nanoparticles.
6. Phytochemicals mediated synthesis of gold nanoparticles (AuNPs) using tea leaves and to study the effect of size on color of gold/silver nanoparticles.
7. Preparation of magnetic nanoparticles (MNPs) of Fe_3O_4 using green tea leaf extract.

8. Any suitable experiment (other than the listed ones) based upon complexation reactions.

References (Theory):

1. West, A. R. (2014), **Solid State Chemistry and Its Application**, Wiley.
2. Smart, L. E.; Moore, E. A., (2012), **Solid State Chemistry: An Introduction**, CRC Press Taylor & Francis.
3. Rao, C. N. R.; Gopalakrishnan, J. (1997), **New Direction in Solid State Chemistry**, Cambridge University Press.
4. Poole Jr.; Charles P.; Owens, Frank J. (2003), **Introduction to Nanotechnology**, John Wiley and Sons. Harris, D. C. (2007), **Quantitative Chemical Analysis**,6th Edition, Freeman.
5. Chattopadhyay, K.K.; Banerjee, A. N. (2009), **Introduction to Nanoscience and Technology**, PHI.

References (Practicals):

1. Orbaek, W.; McHale, M.M.; Barron, A. R.; **Synthesis and Characterization of Silver Nanoparticles for An Undergraduate Laboratory**,J. Chem. Educ. 2015, 92, 339−344.
2. MacDiarmid, G.; Chiang, J.C.; Richter, A.F.; Somasiri, N.L.D.(1987), **Polyaniline: Synthesis and Characterization of the Emeraldine Oxidation State by Elemental Analysis**, L. Alcaeer (ed.), Conducting Polymers, 105-120, D. Reidel Publishing.
3. Cheng, K.H.; Jacobson, A.J.; Whittingham, M.S. (1981),**Hexagonal Tungsten Trioxide and Its Intercalation Chemistry, Solid State Ionics**, 5, 1981, 355-358.
4. Ghorbani H.R.; Mehr, F.P; Pazoki, H; Rahmani, B.M.; **Synthesis of ZnO Nanoparticles by Precipitation Method**, Orient J Chem 2015, 31(2).

Credit Distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Chemistry of Polymers, Dyes and Natural Products	04	02	--	02	Class 12th with Physics, Chemistry, Mathematics	NA

Learning Objectives

The Learning Objectives of this course are as follows:

- Introducing the students to the process of converting knowledge of chemistry into marketable products for commercial gain**.**
- To learn the applications of chemistry in small industries.
- To give knowledge for business opportunities for small and medium enterprises through chemistry.

Learning Outcomes:

By the end of this course the students will be able to:

- Learn about the chemistry of natural and synthetic polymers including fabrics and rubbers.
- Understand the chemistry of biodegradable and conducting polymers and appreciate the need of biodegradable polymers with emphasis on basic principles.
- Comprehend the theory of colour and constitution as well as the chemistry of dyeing.
- Know applications of various types of dyes including those in foods and textiles.
- Understand the chemistry and applications of natural products like terpenoids and alkaloids.

Unit-1: Polymers Hours:12

Introduction and classification based on origin, monomer units, thermal response, mode of formation, structure, application and tacticity; di-block, tri-block and amphiphilic polymers; Weight average molecular weight, number average molecular weight, glass transition temperature (Tg) of polymers; Polymerisation Reactions-Addition and condensation. Mechanism of cationic, anionic and free radical addition polymerization; Ziegler-Natta polymerisation of alkenes.

Preparation and applications of: Plastics -thermosetting (phenol-formaldehyde, polyurethanes) and thermosoftening (PVC, polythene); Fabrics -natural (cellulose and synthetic derivatives of

cellulose like rayon and viscose); synthetic (acrylic, polyamide, polyester); Rubbers-natural and synthetic: Buna-N, Buna-S, Neoprene, silicon rubber; Vulcanization; Polymer additives; Introduction to Specialty Polymers: electroluminescent (Organic light emitting diodes), conducting, biodegradable polymers and liquid crystals.

Unit-2: Dyes Hours: 08

Classification, Colour and constitution; Mordant and Vat Dyes; Chemistry of dyeing. Synthesis and applications of Azo dyes – Methyl orange, Congo red; Triphenyl methane dyes- Crystal violet; Phthalein Dyes – Phenolphthalein; Natural dyes –Structure elucidation and synthesis of Alizarin and Indigotin; Edible Dyes with examples.

Unit 3: Natural Product Chemistry- An Introduction to Terpenoids and Alkaloids Hours: 10

Terpenes: Introduction, occurrence, classification, uses, isoprene and special isoprene rule; structure elucidation, synthesis and industrial application of citral.

Alkaloids: Introduction, occurrence, classification, uses, general structural features, general methods for structure elucidation including Hoffmann's exhaustive methylation and Emde's method. Structure elucidation, synthesis and physiological action of Nicotine.

Practical
(Credits: 02, Laboratory periods: 60)

1. Preparation of Methyl Orange.
2. Preparation of Malachite Green.
3. Recycling of Plastic: Moulding of plastic or Cracking of plastic.
4. Preparation of Urea-formaldehyde resin.
5. (a) Dyeing of different fabrics (cotton, wool, silk) using Alizarin or any other dye.
   (b) Preparation of azo dye on the surface of the fabric.
6. Qualitative test for identification of alkaloids (Dragendorff Reagent and Mayer's reagent test) and terpenoids (Salkowski test).
7. Preparation of perichromic dye using p-amino Phenol and p-nitro benzaldehyde.

References (Theory):

1. Finar, I.L. (2008), **Organic Chemistry**, Volume 2, 5th Edition, Pearson Education
2. Saunders, K. J. (1988), **Organic Polymer Chemistry**,2nd Edition Chapman & Hall, London
3. Campbell, Ian M., (2000), **Introduction to Synthetic Polymers**, 2nd Edition Oxford University Press, USA.
4. Bahadur, P. and Sastry, N.V. (2002) **Principles of Polymer Science** Narosa, New Delhi
5. Patrick, G. **An Introduction to Medicinal Chemistry** (2013), 4th Edition, Oxford University Press.
6. Priscilla Abarca, Patricia Silva, Iriux Almodovar and Marcos Caroli ezende*Quim. Nova, Vol. 37, No. 4, 745-747, 2014. http://dx.doi.org/10.5935/0100-4042.20140120

Credit Distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Chemistry : IT Skills and Molecular Modelling	**04**	**02**	**--**	**02**	**Class 12th with Physics, Chemistry, Mathematics**	**NA**

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce the students to basic computer skills that are a must for a new age chemist.
- To acquaints the students with data tabulation, calculation, graph plotting, data analysis and document. Preparation using various software (preferably open-source).
- To learn about molecular modelling, its applications to various molecular systems, energy minimization techniques, analysis of Mulliken Charge and ESP Plots.

Learning Outcomes:

By the end of the course, the students will be able to:

- Become familiar with the use of computers
- Use software for tabulating data, plotting graphs and charts, carry out statistical analysis of the data.
- Solve chemistry problems and simulate graphs.
- Prepare documents that will incorporate chemical structure, chemical equations, mathematical expressions from chemistry.
- Understand theoretical background of computational techniques and selective application to various molecular systems.
- Learn ESP Plots by suitable software, electron rich and electron deficient sites.
- Compare computational and experimental results and explain deviations.
- Perform Optimization of geometry parameters of a molecule (such as shape, bond length and bond angle) through use of software like Chem Sketch and Argus Lab in interesting hands-on exercises.

Unit 1: Introduction to important software in chemistry Hours:10

Introduction to different software available for drawing chemical structures (Proprietary and Open-source) like ACD Chemsketch and 3-D viewer, ChemDraw.
Carrying out simple calculations on anyone of the following software: ArgusLab, Pymol, Avogadro, Molview, MarvinSketch.
Draw structures of various compounds (aliphatic, aromatic, heterocyclic with different functional groups) using software. Save the structures in various file formats. Incorporate the structures in word document and powerpoint presentation. SMILES notation for the chemical structures. PDB Files.

Unit 2: Handling of Numerical Data Hours:10

Using a spreadsheet software: applying basic functions and formulae to the data, drawing charts, tables and graphs, displaying the equation of graph along with the R^2 value, incorporating tables and graphs in Word files, graphical solution of equations, plotting pressure-volume curves of van der Waals gases, Maxwell-Boltzmann distribution, concentration versus time graphs, spectral data, titration curves, etc.

Unit 3: Molecular Modelling Hours: 10

Introduction to molecular modelling, overview of classical and quantum mechanical methods (semi empirical, ab initio and DFT) and molecular mechanics method

Intrinsic Reaction Coordinates, Stationary points, Equilibrium points – Local and Global minima, concept of transition state with examples.

Practical
(Credits: 02, Laboratory periods: 60)

Plotting graphs using a spreadsheet

1. van der Waals isotherms
2. Maxwell-Boltzmann distribution curves as function of temperature and molecular weight
3. Plot the conductometric titration curve for

   a) strong acid vs strong base and b) weak acid vs strong base

4. Plot the pH metric titration curve for

   a) strong acid vs strong base and b) weak acid vs strong base

5. Plot the graphs for the kinetics of first order reaction.

Molecular Modelling

6. Optimise and compare the geometry parameters of H_2O and H_2S using Argus Lab.

7. Compare the basicities of ammonia, methylamine, dimethylamine and trimethylamine using Argus Lab by comparing Mulliken charges and ESP maps.
8. Compare C-C bond lengths and bond order in ethane, ethene and ethyne using Argus Lab.
9. Determine enthalpy of isomerization of cis and trans-2-butene in Argus Lab.
10. Compare the HAH bond angles for the second row hydrides (BeH_2, CH_4, NH_3, H_2O) and compare with the results from qualitative MO theory.

References (Theory):

1. Levie, R. de. (2001), **How to use Excel in analytical chemistry and in general scientific data analysis**, Cambridge Univ. Press.
2. Lewars, E. (2003), **Computational Chemistry,** Kluwer academic Publisher.
3. Cramer, C.J.(2004), **Essentials of Computational Chemistry,** John Wiley & Sons.
4. Hinchcliffe, A. (1996), **Modelling Molecular Structures,** John Wiley & Sons.
5. Leach, A.R.(2001), **Molecular Modelling,** Prentice-Hall.

References (Practical):

1. Lewars, E. **(2003), Computational Chemistry,** Kluwer academic Publisher.
2. Cramer, C.J. **(2004), Essentials of Computational Chemistry,** John Wiley & Sons.
3. Hinchcliffe, A. **(1996), Modelling Molecular Structures,** John Wiley & Sons.

Note: Some of the papers are same as in B Sc (H) Chemistry and B Sc Physical Sciences.

Bachelor of Science (Hons.) in Applied Life Sciences with Agrochemicals and Pest Management

SEMESTER-IV

BOTANY COMPONENT - DSC

DISCIPLINE SPECIFIC CORE COURSE (DSC 04)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the core course			Eligibility criteria	Pre-requisite of the course (If any)
		Lecture	Tutorial	Practical/ Practice		
Phytopathology ALS BOT DSC 04	4	2	0	2	Class 12th Pass with Science	NIL

Learning Objectives:

The learning objectives of this course are as follows:

- to introduce students with various fungi, fungus like organisms, bacteria and viruses.
- to give an understanding of their characteristics, reproduction and ecology.
- to introduce students with the principles and concepts of plant pathology.
- to acquaint with various plant diseases, symptomatology, causal organisms and their control measures.

Learning Outcomes:

By studying this course, students will be able to:

- understand the world of different types of pathogens of plants.
- identify the characteristic symptoms of different groups of plant pathogens in the fields.

- understand the ecological and economical impact of plant diseases.
- identify common plant diseases and their control measures.
- understand the application and significance of integrated disease management.
- explicate the economic and pathological importance of fungi, bacteria and viruses.

Unit 1: Introduction **(3 Hours)**

Definition, Concepts and Terminology; General symptoms; Classification of diseases.

Unit 2: **Key events of Disease development** **(6 Hours)**

Disease cycle; Host pathogen relationships; Plant defence mechanism (Structural and biochemical); Epidemiology and Disease forecasting.

Unit 3: Fungal Diseases **(5 Hours)**

General symptoms; Disease cycle and Control measures - Powdery mildew of Pea.

Black stem Rust of Wheat; Smut of Barley (Loose and Covered smut).

Unit 4: Diseases caused by Oomycota **(3 Hours)**

General symptoms; Disease cycle and Control measures – White rust of Crucifers; Late blight of Potato.

Unit 5: Bacterial Diseases **(3 Hours)**

General symptoms; Disease cycle and Control measures - Citrus canker; Angular leaf spot of Cotton.

Unit 6: Viral Diseases **(3 Hours)**

General symptoms; Mode of transmission and Control measures-- Tobacco mosaic disease; Vein clearing of Bhindi.

Unit 7: Plant Disease Control **(7 Hours)**

Quarantine, Cultural practices, Physical methods, Chemical methods, Biological control (Antibiosis, Hyper-parasitism, Predation, Induced Systemic Resistance).

PRACTICAL **(60 Hours)**

1. Study of White rust of crucifers, Symptoms on leaves and hypertrophy with the help of live or preserved specimens. Study of causal organism (*Albugo candida*) with the help of temporary tease/section mount. Permanent section mount of somatic and reproductive phases.
2. Study of Late blight of Potato through specimens, temporary mounts (V.S. of leaf showing infection) and permanent slides.
3. Study of Powdery mildew of Pea, Symptoms on leaves and stem of Pea with the help of live or preserved specimens. Study of *Erysiphe* asexual stage with the help of temporary tease/ section mount and sexual stage through permanent slides.
4. Study of Black stem Rust of Wheat, Symptoms on both Wheat and Barberry with the help of live or preserved specimens/photographs. Study of *Puccinia graminis tritici* with the help of temporary tease/section mount of Wheat . Permanent slides of somatic and reproductive phases on both the hosts.
5. Study of Smut of Barley, Symptoms of Loose and Covered smut through live or preserved specimens. Study of teliospores through temporary mount.
6. Study of Bacterial Diseases through the specimens - Citrus canker; Angular leaf spot of Cotton.
7. Study of Viral Diseases through specimens - Tobacco mosaic Disease; Vein clearing of Bhindi.
8. Study of Phylloplane Mycoflora through cellotape method.

9. Study through digital images / photographs – Chlorosis, Tuber rot, Apple scab, Mycoparasite, Predaceous fungi.

Essential/ Recommended readings:

1. Oliver, R. (2023) *Agrios' Plant Pathology* 6th edition, Academic Press.
2. Agrios, G.N. (2005) *Plant Pathology* 5th edition, Elsevier Academic Press, Amsterdam.
3. Sharma, P.D. (2014) *Plant Pathology* Rastogi Publications, Meerut, U.P.
4. Singh, R.S. (2021) *Plant Diseases* 10th revised edition, Medtech, New Delhi.
5. Schumann, G.L. and D'Arcy C.J. (2009) *Essential Plant Pathology* 2nd edition, American Phytopathological Society, U.S.A.

Suggestive readings:

1. Singh, R.S. (2017) *Introduction to Principles of Plant Pathology, 5*th edition, Medtech, New Delhi.
2. Gupta, R. and Chugh, G. (2022) *Plant, Microbes and Diseases*. I.K. International Pvt. Ltd., Delhi.
3. Tronsmo A.M., Munk L., Anika D., Tronsmo A., Yuen J and Collinge D.B. (2020) *Plant Pathology and Plant Diseases*. CABI Publishing, U.S.A.
4. Ownley B.H. and Trigiano R.N. (2016) *Plant Pathology Concepts and Laboratory Exercises* 3rd edition, CRC Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

BOTANY COMPONENT - DSE

DISCIPLINE SPECIFIC ELECTIVE COURSE (DSE 02)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Crop Genetics and Plant Breeding ALS BOT DSE 02	4	2	0	2	Class 12th Pass with Science	NIL

Learning Objectives:

The Learning Objectives of this course are as follows:

- to develop an understanding of the concepts of plant breeding and its applications.
- to provide adequate knowledge on the natural breeding systems of different agriculturally important plant and strategies employed for crop improvement.
- to impart skills on plant genome analysis and gene mapping using DNA markers and their use in increasing efficiency of plant breeding.
- to understand the genetic basis of hybrid vigour and development of hybrid varieties.
- to make students familiar with the concept of varietal release and rights of a farmer and plant breeder.

Learning Outcome:

By studying this course, the students will be able to:

- gain knowledge on the importance of plant breeding for developing new cultivars and use of breeding strategies for improvement of crop plants.

- understand the concept of gene pool and germplasm resources that are fundamental to crop improvement.
- explicate the breeding methods for commercially important crop plants.

Unit 1: Introduction (2 Hours)

Importance of plant breeding and its history; Breeding systems in crop plants; Self-incompatibility, male sterility and apomixis, Important achievements in plant breeding.

Unit 2: Sources of Variation (4 Hours)

Plant genetic resources- their management and conservation, utilization of gene pools in breeding programs. Chromosome manipulation- induced mutations, haploidy, polyploidy, somatic hybridization, somaclonal variation.

Unit 3: Conventional Breeding Methods (8 Hours)

Selection methods for self-pollinated, cross-pollinated and vegetatively propagated crop plants; Hybridization for self-pollinated, cross-pollinated and vegetatively propagated crop plants-procedure, advantage and limitations.

Unit 4: Heterosis Breeding (3 Hours)

Genetic and molecular basis of heterosis (hybrid vigour); Development of hybrid varieties through exploitation of hybrid vigour. Inbreeding depression.

Unit 5: Molecular Genetics and Plant Breeding (10 Hours)

Molecular markers as tools in plant breeding; Principle of genetic linkage; Concept of genetic distance; Development and choice of mapping populations (F_2, NILs, RILs, BC etc); Linkage map construction; Quantitative traits - Principles and methods of QTL mapping, QTL Introgression; Marker-assisted breeding- Gene tagging; Marker-aided selection (foreground and background

selection); Elimination of linkage drags; Marker assisted recurrent selection (MARS). Novel Plant Breeding Tools (TALEN's, CRISPR-Cas9, Base editing).

Unit 6: Intellectual Property Rights and Varietal Release (3 Hours)

IPR, Patenting; Breeder's Right; Release of New Varities-Trials & their evaluation, Prerelease, Notification and its Release; Plant variety protection; Farmer's Right.

PRACTICAL (60 Hours)

1. Introduction to open/controlled pollinations in field and laboratory (Breeders kit; temporal details of anthesis, anther dehiscence, CMS, stigma receptivity, emasculation, bagging).
2. Analysis of the breeding system of chosen crop species by calculating pollen:ovule ratio.
3. Calculation of Index of self-incompatibility (ISI).
4. Study of dominant/ codominant nature of different molecular markers.
5. Assessment of phenotypic diversity in different accessions of given plant material using morphological markers.
6. Assessment of genetic diversity and construction of dendrogram using molecular markers.
7. Phenotypic screening of a mapping population/ land races for biotic stress resistance and calculating the log of percentage severity and symptom score.
8. Study of floral biology, emasculation and hybridization techniques in self-pollinated and cross-pollinated crops.
9. Estimation of heterosis, inbreeding depression and heritability.
10. Project: Case study based on gene mapping.
11. Field trip to plant breeding station.

Essential/recommended readings

1. Acquaah, G. (2012). *Principles of Plant Genetics & Breeding*. 2nd edition. Hoboken, NJ, Wiley.

2. Allard, R.W. (1999). *Principles of Plant Breeding*. John Wiley, New York.
3. Singh, B.D. (2022). *Plant Breeding: Principles and Methods*, 12th edition. New Delhi, Delhi: Kalyani Publishers.
4. Frey, K. J. (1982). *Plant Breeding II.* Kalyani Publishers, New Delhi.

Suggestive readings:

1. Welsh, J. R. (1981). *Fundamentals of Plant Genetics and Breeding*. John Wiley and Sons, New York.
2. Poehlman J. M. and Sleper D. A. (1995). *Breeding Field Crops,* 4th Ed. Panima Publishing Corporation, New Delhi.
3. Chopra, V.L. (2023). *Plant Breeding: Theory and Practice* 2nd Restructured Edition, New India Publishing Agency, New Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Bachelor of Science (Hons.) in Applied Life Sciences with Agrochemicals and Pest Management

SEMESTER-IV

Chemistry Component - DSC

DISCIPLINE SPECIFIC CORE COURSE (DSC 04)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Fundamentals of Agrochemistry ALS CHEM DSC 04	**4**	**2**	**0**	**2**	**Class 12th Pass with Science**	**NIL**

Learning Objectives:

The Learning objectives of this course are as follows:

- to develop a scientific understanding of the diverse approaches to classify the agrochemicals.
- to make them familiar of chemical structure, mode of action and uses of pesticides.
- to impart the knowledge of pesticide formulation, their types, advantages and disadvantages.
- to make them aware of the hazards of agrochemicals and their impact on human health.

Learning Outcomes:

By studying this course, students will be able to:

- learn classification of pesticides.
- analyze the impact of stereochemical aspects on pesticidal activity.

- carry out preparation of formulations and analysis.
- handle pesticides safely in view of human health and environment.

Unit 1: Pesticides (5 Hours)

Different classes of pesticides based on use or target pests (Only definitions and examples- no structural requirement): Herbicides, Fungicides, Insecticides, Rodenticides, Acaricides, Bactericides**,** Chemosterillant, Molluscicide, Nematicides, Plant growth regulators, Repellents, Antifeedants, Sex attractants, Classification of pesticides based on chemical nature, mode of entry, mode of action and toxicity.

Unit 2: Herbicides (6 Hours)

Structure, uptake, mode of action and uses along with key points on human toxicity, with special reference to the individual compounds mentioned (synthesis excluded):

a) Aryl alkanoic acids: 2, 4 D, 2,4DB, MCPA and other acid derivatives: dicamba, dichlorobenil, dalapon {along with structure-activity relationship (SAR)}
b) Aromatic carbamates: Barban and asulam.
c) Triazines: Simazine, Atrazine
d) Bipyridinium: Paraquat
e) Organophosphorous: Glyphosate
f) Sulfonylurea: Chlorosulfuron
g) Uracils: Bromacil
h) Ureas: Monuron and Isoproturon

Unit 3: Fungicides (6 Hours)

Structure, mode of action and uses along with key points on human toxicity, with special reference to the individual compounds mentioned (synthesis excluded):

a) Copper and mercury derivatives
b) Dithiocarbamates: Thiram, Ziram, Nabam
c) Dinitro phenols: 2, 4-Dinitro o-Cresol (DNOC)

d) Quinines: Dichlone
e) Benzimidazoles: Benomyl
f) Organophosphorus fungicides: Kitazine
g) Phenyl amides: Metalaxyl
h) Triazoles: Propiconazole
i) Thiophanates: Thiophanates

Unit 4: Conventional Pesticides (4 Hours)

With special reference to the individual compounds mentioned (*synthesis excluded*): Structure, pesticidal properties and stereochemical aspects (*if any*), mode of action, uses and comments on human toxicity

a) Carbamate insecticides: Carbaryl, Methomyl
b) Organophosphorus insecticides: Malathion, Parathion
c) Organochlorine Insecticides: Chlordane, Heptachlor, DDT

Unit 5: Introduction to other Pesticides (4 Hours)

Structure, stereochemical aspects (if any), use and toxicity of the following (*synthesis excluded*):

a) Alkaloid family: Nicotine
b) Pyrethrins: Pyrethrin-I and II
c) Fumigants: Example of Halogenated Hydrocarbons
d) Rodenticides: Inorganic and organic (Two examples each)
e) Repellents: DEET, Diethylphthalate

Unit 6: Pesticide Formulations (5 Hours)

1. Definition and purpose of formulations.
2. Brief discussion on the following type of formulations:
    a) Solid formulations: dusts (D), granules (G), pellets (P), wettable powders (WP or W), dry flowable (DF), soluble powders (SP); poison baits (B)

b) Liquid formulations: emulsified concentrates (EC or E), solutions, flowing suspensions (F or L), Suspension Concentrate (SC), aerosols (A)

c) Other type of formulations: fumigants (F); microencapsulated product (M) for controlled-release.

PRACTICAL **(60 Hours)**

1. Preparation of Bordeaux mixture and Bordeaux paste.

2. Preparation of Dithiocarbamate fungicide analogous from aromatic/aliphatic amine and separated as sodium /zinc/ manganese salt.

3. Preparation of homemade rodent bait.

4. Preparation of Emulsifiable concentrate (EC) formulation of given organic compound as oil in water emulsion(O/W).

5. Preparation of EC formulation: Emulsifiable concentrate of neem oil.

6. Preparation of standard hard water.

7. To determine the emulsion stability of given EC formulation.

8. Determination of bulk density of WP formulation.

9. **Project Writing**: For project work pesticides to be selected from the theory portion

(a) Use of Globally Harmonized System (GHS) of classification and labelling of chemicals
(b) The impact of pesticides on the environment.
(c) Pesticide exposure and its impact on human health.

Essential /Recommended readings:

1. Buchel, K. H**.,** (1983) *Chemistry of Pesticides*, John Wiley & Sons Inc ISBN 13 978-0471056829
2. Melnikov,N.N. (1971) *Chemistry of Pesticides,* Edited By: Frances A. Gunther, Jane Davies Gunther, Springer, ISBN: 978-1-4684-6253-1
3. Cremlyn, R. (1978) *Pesticides: Preparation and mode of action*, 1st edition (October 19, 1978) John Wiley & Sons., 0471996319

4. Kenneth, A., Hessall (2013) *The chemistry of Pesticides, their Metabolism, Mode action and uses in crop*, Bio-Green Books, ISBN13: 978-9386237118
5. Sree Ramulu, U. S. (1979) *Chemistry of insecticides and fungicides,* 3rd Edition, Scientific Publishers; Edition: 2020, ISBN: 9789389832020
6. Roberts, T.R., Hutson, D.H., Jewess P.J., (1998) *Metabolic pathways of agrochemicals: insecticides and fungicides.* Royal Society of Chemistry
7. Handa, S.K., (2008) *Principles of Pesticide Chemistry*, Ed. By Agrobios (India) ISBN-13: 9788177542165
8. Singh Anupama et. al (2022) *Basics of Agrochemical Formulations*, Brillion Publishing ; ISBN: 9789392725128
9. Parmar, B.S., Tomar, S.S., (2010) *Pesticide formulation-Theory and practice* , CBS Publisher; ISBN 13: 9788123911243

Suggestive readings

1. Matolcsy,G., Nádasy,M., Andriska,V.,(1989) *Pesticide Chemistry,* 1st Edition - January 1, 1989; eBook ISBN: 9780080874913
2. Vyas, S. C. (1993) *Handbook of Systemic Fungicides: Compounds*. Tata McGraw-Hill.
3. Ashworth, R. D. B., (1970) *Analysis of technical and formulated pesticides,* Volume 1 ,*CIPAC handbook.*
4. Jim A. Turner, (2018*) The Pesticide Manual: A World Compendium*, British Crop Production Council.
5. World Health Organization. (2011). *International code of conduct on the distribution and use of pesticides: guidelines for quality control of pesticides* (No. WHO/HTM/NTD/WHOPES/2011.4). World Health Organization.
6. Zweig, G. (Ed.). (2013). *Principles, Methods, and General Applications: Analytical Methods for Pesticides, Plant Growth Regulators, and Food Additives, Vol. 1* (Vol. 1). Elsevier.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

CHEMISTRY COMPONENT - DSE

DISCIPLINE SPECIFIC ELECTIVE COURSE (DSE 02)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Organic Chemistry in Pesticide Synthesis ALS CHEM DSE 02	**4**	**2**	**0**	**2**	**Class 12th Pass with Science**	**NIL**

Learning Objectives:

The Learning objectives of this course are as follows:

- to familiarize students to different types of classification of pesticides.
- to familiarize with factors that make the organic compound to be considered as pesticide.
- to understand the correlation of stereochemistry of pesticide and pesticidal activity.
- to inculcate the awareness about the hazards of pesticides.

Learning Outcomes:

By studying this course, students will be able to:

- analyze important aspects attributing pesticidal activity to organic molecules.
- explain the strategies involved in synthesis of different pesticides.

- illustrate the impact of stereochemical aspects on pesticidal activity.
- handle pesticides safely in view of human health and environment.

Unit 1: Key Consideration for Pesticidal Activity of Organic Compounds (3 Hours)

a) Chemical structure (key functional groups in pesticides)

b) Mode of action to the selected target

c) Metabolism and metabolites

d) Toxicity concerns mainly human toxicity and ecotoxicity

Unit 2: Insecticides (5 Hours)

Structure, stereochemical aspects and toxicity of the following (synthesis excluded):

a) Alkaloid family: Nicotine

b) Nicotine analogous: Imidacloprid

c) Pyrethrins: Pyrethrin-I and II

d) Pyrethroids: Cypermethrin

Unit 3: Organic Halogenated Compounds as Pesticides (9 Hours)

a) Synthesis of Halogenated Hydrocarbons as Fumigants
   I. Methyl bromide (Bromomethane)
   II. 1,2-Dibromoethane
   III. 1,2-Dichloroethane
   IV. Carbon tetrachloride
b) Synthesis of DDT and Methoxychlor.
c) Synthesis of Hexachlorocyclohexane (BHC) and discussion of its stereoisomers.
d) Synthesis of Chlordane and Heptachlor from Hexachlorocyclopentadiene (HCCP) by Diels Alder reaction and discussion of their stereoisomers.

Ecological problems due to Organic Halogenated Compounds as Pesticides, their toxicity and effect on Human Health

Unit 4: Organophosphorus Insecticides: (6 Hours)

General chemistry of phosphate esters (Esters of Phosphoric and Phosphorothioic acids)

Synthesis of:

- **a)** Vinyl organophosphates: Dichlorvos, Mevinphos (Phosdrin)
- **b)** Phosphorothioates: Parathion, Methyl-parathion
- **c)** Phosphorodithioate: Malathion
- **d)** Heterocyclic phosphorodithioate: Phosmet

Unit 5: Carbamates (4 Hours)

General chemistry of carbamates: N-methyl carbamates and N, N-dimethyl (alkyl) carbamates

Synthesis of Carbaryl, Bendiocarb, MTMC, and Methomyl

Unit 6: Other Agrochemicals (3 Hours)

Synthesis of DNOC, Captan, 2,4-D, Ziram, Zineb, DEET and their uses.

PRACTICAL (60 Hours)

The following synthesis should be carried out starting from 0.5-1.0 g of the organic compound. The product to be recrystallized and melting point to be determined.

(*Experiments 1 to 6 are synthetic analogues of selected chemical class of pesticides*)

1. Synthesis of aryloxy acetic acid class of herbicide (any one of the following)
    a) 4-chlorophenoxy acetic acid
    b) 4-methylphenoxy acetic acid
    c) 2-methylphenoxy acetic acid

2. Preparation of Dithiocarbamate fungicide analogous from aromatic/aliphatic amine and separated as sodium /zinc/ manganese salt.
3. Preparation of urea derivative from phenylisocynate and aniline.
4. Preparation of carbamate derivative from phenylisocynate and alcohol/phenol.
5. Preparation of benzimidazole/2-benzylimidazole /2-Methylbenzimidazole.
6. Synthesis of 3,5-dimethylpyrazole.
7. Preparation of mosquito repellent Diethyl phthalate in two steps:

   Step-1: Preparation of phthalic anhydride

   Step-2 : Preparation of Diethyl phthalate
8. To prepare Neem extract from neem leaves and/or seeds.
9. **Project Writing**: Insecticidal properties of Neem extract and its uses.

Essential /Recommended readings:

1. Buchel, K. H**.** (1983) *Chemistry of Pesticides* **,** John Wiley & Sons, ISBN 13 978-0471056829
2. Melnikov, N.N. (1971) *Chemistry of Pesticides***,** Edited By: Frances A. Gunther, Jane Davies Gunther, Springer, ISBN: 978-1-4684-6253-1
3. Cremlyn, R. (1978) *Pesticides. Preparation and mode of action*, 1st edition John Wiley & Sons, 0471996319
4. Kenneth A, Hessall (2013), *The chemistry of Pesticides, their Metabolism, Mode action and uses in crop,* Bio-Green Books, ISBN13: 978-9386237118
5. Sree Ramulu, U. S. (1979) *Chemistry of insecticides and fungicides*, 3rd Scientific Publishers; Edition: 2020, ISBN: 9789389832020
6. Roberts, T.R., Hutson, D.H., Jewess, P.J. (1998) *Metabolic pathways of agrochemicals: insecticides and fungicides*, Royal Society of Chemistry
7. Matolcsy, G., Nádasy,M., Andriska,V. (1989) *Pesticide Chemistry* 1st Edition, eBook ISBN: 9780080874913

Suggestive readings

1. Handa, S.K. (2008) *Principles of Pesticide Chemistry*, Ed. By Agrobios (India) ISBN-13: 9788177542165
2. Vyas, S. C. (1993*) Handbook of Systemic Fungicide Compounds*. Tata McGraw-Hill.
3. Jim A. Turner (2018) *The Pesticide Manual: A World Compendium*, British Crop Production Council.
4. World Health Organization (2011) *International code of conduct on the distribution and use of pesticides: guidelines for quality control of pesticides* (No. WHO/HTM/NTD/WHOPES/2011.4). World Health Organization.
5. Zweig, G. (Ed.), (2013) *Principles, Methods, and General Applications: Analytical Methods for Pesticides, Plant Growth Regulators, and Food Additives, Vol. 1* (Vol. 1). Elsevier.
6. "IARC Monograph on Evaluation of Carcinogenic Risk of Chemicals to Humans", Supplement 7, International Agency for Research on Cancer, Lyon, 1987.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Bachelor of Science (Hons.) in Applied Life Sciences with Agrochemicals and Pest Management

SEMESTER-IV

ZOOLOGY COMPONENT – DSC

DISCIPLINE SPECIFIC CORE COURSE (DSC 04)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Agricultural Pests ALS ZOO DSC 04	4	2	0	2	Class 12th Pass with Science	NIL

Learning Objectives:

The learning objectives of this course are as follows:

- to impart knowledge about the various agricultural pests and the nature of damage caused by them.
- to apprise the students of the lifecycle of the pest and the specific stage at which it is destructive to the host.
- to acquaint them of the different control measures applied for the management of pests.

Learning Outcomes:

By studying this course, students will be able to:

- identify and differentiate among various types of pests.
- acquire knowledge of the damage caused by agricultural pests.
- better understand the methods of control for the management of the pests.

Unit 1: Introduction **(3 Hours)**

Classification, identification, distribution and host-range of agricultural pests; Overview of: bionomics, nature and extent of damage, seasonal abundance and management of insect pests.

Unit 2: Pests of Cereals **(2 Hours)**

Biology, nature, extent of damage and control: *Chilozonellus*, *Sesamia inferens*

Unit 3: Pests of Oilseeds **(4 Hours)**

Bionomics, lifecycle and management: *Lipaphis erysimi*, *Athalialugen sproxima*, *Achaea janata*, *Euproctis lunata.*

Unit 4: Pests of Fibre Crops **(5 Hours)**

Bionomics, life cycle and management*: Helicoverpa armigera, Earias vitella*, *Pectinophora gossypiella*, *Oxycarenus laetus*, *Dysdercus koenigii.*

Unit 5: Pests of Paddy and Sugarcane **(5 Hours)**

Biology, nature of damage and control: *Leptocorisa varicornis*, *Hispa (Dicladispa) armigera*, *Spodoptera exempta, Scirpophaga nivella*, *Pyrilla perpusilla*, *Emmalocera depressella, Aleurolobus barodensis.*

Unit 6: Stored Grain Pests **(6 Hours)**

Life cycle, nature of damage and control: *Sitophilus oryzae*, *Rhyzopertha dominica*, *Trogoderma granarium, Sitotroga cerealella*, *Callosobruchus chinensis, Atherigona varia*, *Calocorisan gustatus, Mythimna separate*, *Macrosiphum miscanthi /Sitobion avenae*.

Unit 7: **Polyphagus Pests** **(5 Hours)**

Lifecycle and control: grasshopper, locust, termite, white grub, hairy caterpillar, and non-insect pests (mites, birds, rodents, snails, slugs).

PRACTICAL **(60 Hours)**

1. Identification, life cycle and damage caused by following pests:

Chilozonellus, Sesamia inferens, Lipaphis erysimi, Helicoverpa armigera, Earias vitella, *Pectinophora gossypiella*, *Oxycarenus laetus*, *Dysdercus koenigii. Athalialugen sproxima, Achaea janata, Euproctis lunata, Hispa(Dicladispa) armigera, Spodoptera exempta, Pyrilla perpusilla*, *Emmalocera depresse, Sitophilus oryzae*, *Rhyzopertha dominica*, *Trogoderma granarium, Sitotroga cerealella*, *Callosobruchus chinensis, Atherigona varia*, *Calocorisan gustatus, Mythimna separate*, *Macrosiphum miscanthi /Sitobion avenae*.

2. Identification and life cycle of grasshoppers and locusts.
3. Study of life cycle and management of non-insect pests through specimens/photographs.
4. Collection and identification of stored grains pests and nature of damage caused by them.
5. Field visits to Central warehouse/FCI godowns/ CFTRI, IGSMRI.

Essential/recommended readings

1. Dhaliwal G.S. and Singh R. (2004) *Host Plant Resistance to Insects - Concepts and Applications*. Panima Publications., New Delhi.
2. Evans J.W. (2005). *Insect Pests and their Control.* Asiatic Publications., New Delhi.
3. Atwal A.S. and Dhaliwal G.S. (2018) *Agricultural Pests of South Asia and their Management,* 7th Edition Kalyani Publ., New Delhi.

Suggestive readings

1. Maxwell F.G. and Jennings P.R. (Eds). (1980) *Breeding Plants Resistant to Insects.* John Wiley and Sons, New York.
2. Sharma V. (2015) *Agricultural Pest Management*, Rajat Publications.

3. Awasthi V. B. (2017) Agricultural Insect Pest and their Control, 2nd edition, Scientific Publisher India.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

ZOOLOGY COMPONENT – DSE

DISCIPLINE SPECIFIC ELECTIVE COURSE (DSE 02)

Credits distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Developmental Biology of Animals ALS ZOO DSE 02	**4**	**2**	**0**	**2**	**Class 12th Pass with Science**	NIL

Learning Objectives:

The learning objectives of this course are as follows:

- to acquaint students of different phases of development and changes from embryonic to post-embryonic stage.
- to comprehend the basic principles and concepts underlying developmental processes at the cellular and molecular level.
- to learn about gametogenesis, cleavage patterns, morphogenetic movements and the importance of extraembryonic membranes.

- to apprise the students of the applications of this course in addressing the problems of developmental abnormalities and infertility in human.

Learning Outcomes:

By studying this course, students will be able to:

- understand the events that lead to the formation of a multicellular organism from a single cell.
- learn the general patterns and sequential developmental stages during embryogenesis.
- acquire better knowledge of the mechanisms involved in morphogenesis and interactions of cells during gastrulation, placentation, regeneration and metamorphosis.
- appreciate the importance of IVF and amniocentesis for tackling infertility and developmental abnormalities.

Unit 1: Introduction (2 Hours)

Historical background, phases of development, growth and differentiation, cytoplasmic determinants, teratogens.

Unit 2: Early Embryonic Development (15 Hours)

Gametogenesis: spermatogenesis, oogenesis; types of eggs, egg membranes; fertilization (External and Internal), blocks to polyspermy, planes and patterns of cleavage, types of blastula, fate maps, morphogenetic movements, gastrulation in frog and chick.

Unit 4: Late Embryonic Development (5 Hours)

Fate of germ layers, extraembryonic membranes in birds, placenta (structure, types and functions).

Unit 5: Post-embryonic Development (5 Hours)

Metamorphic changes in amphibians and insects; regeneration: modes of regeneration, epimorphosis, morphallaxis and compensatory regeneration, limb regeneration in tailed amphibia.

Unit 6: Applications of Developmental Biology (3 Hours)

Embryonic stem cell; *in vitro* fertilization, amniocentesis.

PRACTICAL (60 Hours)

1. Study of whole mounts and sections of developmental stages of frog through permanent slides: Egg, cleavage stages, blastula, gastrula, neurula (neural plate, neural fold and neural tube stages), tailbud stage, tadpole (external and internal gill stages)
2. Study of whole mounts of developmental stages of chick through permanent slides (Hamburger and Hamilton stages): Stage 3 (Intermediate Streak)-13 hours, stage 4 (Definitive streak)-18 hours, stage 5 (Head process)-21 hours, Stage 7- 24 hours, stage 8-28 hours, stage10-33 hours, stage 11- 40 hours, stage 13- 48 hours, stage 19- 72 hours and stage 24- 96 hours of incubation.
3. *In vivo* study of chick embryo development by windowing and candling methods. (Demonstration only).
4. Study of different stages of development of *Drosophila*.
5. Study of different types of placenta (photomicrographs/ slides).
6. Project report on *Drosophila* development/Visit to poultry farm/IVF Centre.

Essential/recommended readings:

1. Gilbert, S.F. (2016) *Developmental Biology*, Sinauer Associates, Inc. Publishers, Sunderland, Massachusetts, USA.
2. Balinsky B. I. and Fabian B. C. (2006) *An Introduction to Embryology*. 8th Edition, International Thompson Computer Press.
3. Kalthoff, K. (2001) *Analysis of Biological Development*. 2nd Edition, McGraw Hill Publishers.

Suggestive readings:

1. Arora, R. and Grover, A. (2018) *Developmental Biology: Principles and Concepts*. 1st Edition, R. Chand & Company.
2. Baweja, V. and Misra, M. (2021) *E-book on Practical Manual of Developmental Biology*.
3. Carlson, B.M. (2007) *Foundations of Embryology*. 6th Edition, Tata McGraw-Hill Publishers.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Bachelor of Science (Hons.) in Applied Life Sciences with Agrochemicals and Pest Management

SEMESTER-V

BOTANY COMPONENT - DSC

DISCIPLINE SPECIFIC CORE COURSE (DSC 05)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the core course			Eligibility criteria	Pre-requisite of the course (If any)
		Lecture	Tutorial	Practical/ Practice		
Physiology and Biochemistry in Plant Development ALS BOT DSC 05	**4**	**2**	**0**	**2**	**Class 12th Pass with Science**	**NIL**

Learning Objectives:

The learning objectives of this course are as follows:

- to understand the fundamental concepts of plant physiology and metabolism.
- to identify the role of water, minerals, hormones, and light in plant growth and development.
- to understand the basic biochemical mechanisms and mineral nutrition of plants.
- to identify the criteria for the essentiality of elements.
- to understand the role of hormones in plant growth and development.
- to examine the commercial applications of growth regulators.
- to understand the physiology of flowering and senescence.
- to understand the mechanisms of photosynthesis and respiration.
- to examine the biological nitrogen fixation in plants.

Learning Outcomes:

By studying this course, students will be able to:

- comprehend the physiological processes that occur in plants, including the role of water, minerals, hormones, and light in plant growth and development.
- acquaint the basic biochemical mechanisms of plants, including photosynthesis, respiration, nitrogen metabolism, and chemical regulation of growth and development.
- comprehend the process of biological nitrogen fixation, reproductive physiology and senescence of plants.
- develop practical skills in plant physiology and metabolism.

Unit 1: Plant-water relations (3 Hours)

Water potential and its components, pathway of water movement, ascent of sap, transpiration and its significance, factors affecting transpiration, root pressure and guttation.

Unit 2: Mineral Nutrition (3 Hours)

Essential elements, Macro- and micronutrients, Criteria for essentiality of elements, Methods of studying mineral requirement (Hydroponics, Aeroponics)

Unit 3: Translocation in Phloem (3 Hours)

Composition of phloem sap, girdling experiments, Pressure Flow Model, phloem loading and unloading.

Unit 3: Chemical Regulation of Growth and Development (3 Hours)

Role of hormones in plant growth and development, Commercial applications of growth regulators, Growth retardant and its usefulness

Unit 4: Reproductive Physiology and Senescence (3 Hours)

Photo-periodism and flowering response, Photo-perception and critical photoperiod, Phyto-chrome and its role in flowering, Vernalization and senescence.

Unit 5: Photosynthesis (7 Hours)

Historical contributions of Blackman, Emerson, and Hill, Photosynthetic pigments (chlorophyll-a and b, xanthophyll, carotene), Photosystem I and II, reaction center, antenna molecules, Electron transport and mechanism of ATP synthesis, C3 pathway, C4 and CAM plants (in brief, no pathways), Photorespiration.

Unit 6: Respiration (5 Hours)

Glycolysis, Anaerobic respiration, TCA cycle, Oxidative phosphorylation, Glyoxylate cycle, RQ

Unit 7: Nitrogen Metabolism (3 Hours)

Biological nitrogen fixation - nodulation in detail, Nitrate and ammonia assimilation.

PRACTICAL (60 Hours)

1. To determine the osmotic potential of plant cell sap by plasmolytic method.
2. Calculate stomatal index and stomatal frequency of a mesophyte and a xerophyte.
3. Study Hill's reaction.
4. To study the effect of the environmental factor light on transpiration by excised twig.
5. Study the effect of light intensity on O_2 evolution in photosynthesis.
6. Compare the rate of respiration in any two parts of a plant.
7. To study the activity of catalase and the effect of pH and heavy metals.
8. Demonstrate the effect of auxin on rooting.
9. Demonstration of Bolting.
10. Demonstration of root respiration.

11. Demonstration of suction due to transpiration
12. A field visit to Hydroponics and Aeroponics facilities.

Essential/ Recommended readings:

1. Hopkins, W. G., Huner, N. P. A. (2009) *Introduction to Plant Physiology*, 4th edition. New Delhi, Delhi: Wiley India Pvt. Ltd
2. Taiz, L., Zeiger, E., Moller, I. M., Murphy, A. (2018) *Plant Physiology and Development* International 6th edition. New York, NY: Oxford University Press, Sinauer Associates.
3. Kochhar, S.L., Kaur, S. and Gujral, S.K. (2020) *Plant Physiology: Theory and Applications*. New Delhi, Delhi: Foundation Books, imprint of Cambridge University Press India Pvt, Ltd.

Suggestive readings:

1. Bajracharya, D. (1999) *Experiments in Plant Physiology: A Laboratory Manual.* New Delhi, Delhi: Narosa Publishing House.
2. Bhatla S.C. and Lal, M.A. (2018) *Plant Physiology, Development and Metabolism*, Springer.
3. Salisbury F.B. and Ross C.W. (1992) Plant Physiology, 4th edition, Wadsworth Publishing Company, California.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

BOTANY COMPONENT - DSE

DISCIPLINE SPECIFIC ELECTIVE COURSE (DSE 03)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the core course			Eligibility criteria	Pre-requisite of the course (If any)
		Lecture	Tutorial	Practical/ Practice		
Developmental Biology of Plants ALS BOT DSE 03	**4**	**2**	**0**	**2**	**Class 12th Pass with Science**	**NIL**

Learning Objectives:

The learning objectives of this course are follows:

- to acquaint the students with internal basic structure and cellular composition of the plant body.
- to correlate structure with important functions of different plant parts.
- to study of various tissue systems and their development and functions in plants
- to have knowledge of the flowering and fruiting, reproduction process, role of pollinators, ovule and seed development.

Learning Outcomes:

By studying this course, students will be able to:

- gain knowledge of various cells and tissues, meristem, epidermal and vascular tissue system in plants.

- get an insight of various aspects of growth, development of the tissues and differentiation of various plant organs.
- gain the knowledge of basic structure and organization of plant parts in angiosperms and its correlation with morphology and functions.
- get acquainted with pollen development and pollination, ovule development and fertilization, endosperm development and its importance.

Unit 1: Meristematic and permanent tissue: (4 Hours)

Meristems and derivatives- structural organization of shoot and root apices; permanent tissue: simple and complex tissues.

Unit 2: Dermal System (2 Hours)

Epidermis, stomata, trichomes and glands

Unit 3: Organs (4 Hours)

Structure of dicot and monocot root, stem and leaf

Unit 4: Secondary Growth (4 Hours)

Vascular cambium – structure and function, Secondary growth in root and stem, periderm.

Unit 5: Anther (4 Hours)

Structure and development, microsporogenesis, Pollen Development, structure of pollen and pollen wall (Basic Concepts).

Unit 6: Ovules (4 Hours)

Structure and types, megasporogenesis and mega gametogenesis, mature embryo sac.

Unit 7: Pollination and Fertilization (4 Hours)

Pollination mechanisms and adaptations; double fertilization; sexual incompatibility- basic concepts

Unit 8: Endosperm and Embryo (3 Hours)

Types and function of endosperm, embryogenesis, dicot and monocot embryo

Unit 9: Seed development (1 Hours)

Basic concepts of seed development

PRACTICAL (60 Hours)

1. Study of root and shoot apex through permanent slides and photographs.
2. Tissues (parenchyma, collenchyma, sclerenchyma and their types); Macerated xylary elements, Phloem (Permanent slides/ Photographs/ Digital resources)
3. To cut transverse section of stem: Monocot: *Zea mays*; Dicot: *Helianthus*; Study of secondary growth in *Helianthus* stem.
4. To cut transverse section of root: Monocot: *Zea mays*; Dicot: *Cicer*; Study of secondary growth in *Helianthus* .
5. Study of structure of Dicot and Monocot leaf.
6. Study of anther structure (young and mature).
7. Calculation of percentage of germinated pollen in a given medium through hanging

drop/sitting drop method.

8. Types of ovules: anatropous, orthotropous, circinotropous, amphitropous/ campylotropous.
9. Female gametophyte: Mature embryo sac (photographs). Ultrastructure of mature egg apparatus cells through electron micrographs.
10. Dissection of embryo and endosperm from developing seeds.

Essential/ Recommended readings:

1. Bhojwani, S.S., Bhatnagar, S.P. (2011). *Embryology of Angiosperms*, 5th edition. New Delhi, Delhi: Vikas Publication House Pvt. Ltd.
2. Mauseth, J.D. (1988). *Plant Anatomy*. San Francisco, California: The Benjamin/Cummings Publisher.
3. Franklin, E. R. (2006). *Esau's Plant Anatomy: Meristems, Cells, And Tissues of the Plant Body: Their Structure, Function, and Development.* New Jersey, U.S.: John Wiley & Sons, Inc., Hoboken.
4. Shivanna, K.R. (2003). *Pollen Biology and Biotechnology.* Delhi, Delhi: Oxford and IBH Publishing Co. Pvt. Ltd.

Suggestive readings:

1. Raghavan, V. (2000). *Developmental Biology of Flowering plants*. Netherlands, Europe: Springer.

2. Johri, B.M. (1984). *Embryology of Angiosperms.* Netherlands, Europe: Springer-Verlag.

3. Bhojwani S.S., Dantu P.K. and Bhatnagar, S.P. (2015) The Embryology of Angiosperms, 6th edition. Vikas Publication House Pvt. Ltd. New Delhi.

4. Tayal, M.S. (2021). Plant Anatomy, 4th Edition. Meerut, U.P.: Rastogi publications.

5. Crang, R., Lyons-Sobaski, S., and Wise, R., (2018) Plant Anatomy: A Concept-Based Approach to the Structure of Seed Plants, 1st Edition, Springer Nature Switzerland AG.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

CHEMISTRY COMPONENT - DSC

DISCIPLINE SPECIFIC CORE COURSE (DSC 05)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Physical Chemistry; ALS CHEM DSC 05	4	2	0	2	Class 12th Pass with Science	NIL

Learning Objectives:

The Learning Objectives of this course are as follows:

- to make students able to understand thermodynamic concepts, properties of thermodynamic systems, laws of thermodynamics and thermochemistry.
- to introduce the basic concept of chemical equilibrium, ionic equilibria and conductance and their correlation among themselves and with other branches of chemistry.
- to provide basic understanding of the behavior of electrolytes and their solution.

Learning Outcomes:

By studying this course, students will be able to:

- understand the laws of thermodynamics, thermochemistry and equilibria.
- explain the concept of pH and its effect on various physical and chemical properties of the compounds.
- use the concepts learnt to predict feasibility of chemical reactions and to analyse the behaviour of reactions in equilibrium.
- apply classroom knowledge to local environmental phenomena and interpret them in relation to the chemistry involved in both conceptual and experimental aspects.

Unit 1: Chemical Energetics (8 Hours)

Review of thermodynamics and the laws of thermodynamics

Thermochemistry: Important principles and definition of thermochemistry, *Conventions* about the *thermochemical equation,* Enthalpy of reactions: standard states; enthalpy of neutralization, enthalpy of ionization, enthalpy of hydration, enthalpy of formation, *enthalpy of solution: integral and differential enthalpies of solution and dilution, calculation of bond energy, bond dissociation energy and resonance energy from thermochemical data,* the effect of temperature (Kirchhoff's equations) on the enthalpy of reactions.

Statement of Third Law of thermodynamics and calculation of absolute entropies of substances.

Unit 2: Chemical Equilibrium (6 Hours)

Free energy change in a chemical reaction. Thermodynamic derivation of the law of chemical equilibrium. Distinction between ΔG and $\Delta G^{\ominus}$, Le Chatelier's principle, relationship between Kp, Kc and Kx for reactions involving ideal gases.

Unit 3: Ionic Equilibria (10 Hours)

Strong, moderate, and weak electrolytes, degree of ionization, factors affecting the degree of ionization, Ostwald's dilution law, ionization constant, and ionic product of water. Ionization of weak acids and bases, pH scale, common ion effect, Buffer solutions, Henderson- Hasselbach equation, salt hydrolysis- calculation of hydrolysis constant, degree of hydrolysis and pH of different salts, solubility and solubility product of sparingly soluble salts-applications of solubility product principle. Qualitative treatment of acid-base titration curves (calculation of pH at various stages).

Unit 4: Conductance (6 Hours)

Conductivity, equivalent and molar conductivity and their variation with dilution for weak and strong electrolytes. Kohlrausch's law of independent migration of ions. Ionic mobility. Applications of conductance measurements: determination of degree of ionization of weak electrolytes, solubility and solubility products of sparingly soluble salts, ionic product of water,

hydrolysis constant of a salt. Conductometric titrations (only acid-base).

PRACTICAL **(60 Hours)**

Thermochemistry

1. Determination of heat capacity of calorimeter for different volumes.
2. Determination of enthalpy of neutralization of hydrochloric acid with sodium hydroxide.
3. Determination of the enthalpy of ionization of ethanoic acid.
4. Determination of integral enthalpy (endothermic and exothermic) solution of salts.
5. Determination of enthalpy of hydration of copper sulphate.

Ionic equilibria:

6. Preparation of buffer solutions:

   (i) Sodium acetate-acetic acid

   (ii) Ammonium chloride- ammonium hydroxide.

Measurement of the pH of buffer solutions and comparison of the values with theoretical values.

7. pH metric titration:

   (i) Strong acid vs strong base

   (ii) Weak acid vs strong base

Determination of dissociation constant of a weak acid.

Conductance

8. (i) Determination of cell constant

(ii) Determination of equivalent conductance, degree of dissociation and dissociation constant of a weak acid.

9. Conductometric titration:

   (i) Strong acid vs strong base

   (ii) Weak acid vs strong base

   (iii) Mixture of strong and weak acid vs strong base

Essential/Recommended readings:

1. Peter, A., Paula, J. de. (2011), "*Physical Chemistry*", Fifth Ed., Oxford University Press.
2. Castellan, G. W. (2004), "*Physical Chemistry*", Fourth Ed., Narosa.
3. Kapoor, K. L. (2015), "*A Textbook of Physical Chemistry*", Vol 1, 6th Edition, McGraw Hill Education.
4. Kapoor, K. L. (2015), "*A Textbook of Physical Chemistry*", Vol 2, 6th Edition, McGraw Hill Education.
5. Puri, B.R; Sharma, L.R; Pathania, M.S. (2017), "*Principles of Physical Chemistry*", Vishal Publishing Co.

Suggestive readings:

1. Khosla, B. D., Garg, V. C., Gulati, A. (2011), "*Senior Practical Physical Chemistry* ", R. Chand & Co., New Delhi.
2. Athawale, V. D., Mathur, P. (2001), "*Experimental Physical Chemistry*", New Age International: New Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

CHEMISTRY COMPONENT - DSE

DISCIPLINE SPECIFIC ELECTIVE COURSE (DSE 03)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Nanotechnology in Agriculture; ALS CHEM DSE 03	4	2	0	2	Class 12th Pass with Science	NIL

Learning Objectives:

The Learning objectives of this course are as follows:

- to create foundational knowledge of Nanotechnology.
- to educate students about the current green and sustainable methods of preparation of nanomaterials.
- to teach difference between conventional and modern agriculture.
- to give idea about the importance of nanomaterials in agriculture.
- to impart knowledge on toxicity of nanomaterials.

Learning Outcomes:

By studying this course, students will be able to:

- identify the different types of nanomaterials and their properties.
- understand the role of nano- agrochemicals in enhancing crop productivity.
- articulate the study of nanomaterials in the treatment of soil.
- summarize the toxicity risks of nanomaterials on soil and environment.

Unit 1: Introduction (6 Hours)

Basics of nanoscience and technology: Definition, Classification of nanoparticles based on dimension and origin, Quantum confinement, properties of nanoparticles (optical only).

Synthesis of nanoparticles: Overview of physical and chemical routes, green methods of nanoparticles synthesis.

Introduction to agriculture: Limitations of conventional farming, role of nano- agrochemicals in modern agriculture. Benefits of nanomaterials in agriculture (plant growth, crop protection, crop nutrients, etc.).

Unit 2: Application of Nanomaterials in Agriculture (14 Hours)

Nano fertilizers: Types and synthesis: Nitrogen-based, Phosphate based and Iron based. Role towards enhancement of crop productivity. Molecular mechanism of nano- fertilizer for plant growth and mechanism.

Advantages over conventional fertilizers, limitations, optimization of nutrient use efficiency (NUE) and environment sustainability.

Nano pesticides: Brief discussion about nano- insecticides, nano- herbicides and nano-fungicides, role in agriculture. Advantages over conventional pesticides and limitations.

Unit 3: Treatment of Soil using Nanomaterials (6 Hours)

Treatment of polluted soil by nanoremediation. Utilization of nanoparticles like nanoclay and zeolites in soil boosting. Smart pest control.

Unit 4: Nanotoxicity in Agriculture (4 Hours)

Toxicity of nanoparticles. Toxic effects of metal nanoparticles on soil ecosystem. Toxicity of nanoparticles to crop production. Health and environmental concerns related to nanomaterials.

PRACTICAL (60 Hours)

1. Basic introduction to the characterization of nanoparticles employing the following techniques (Data and/or images for few reference compounds will be provided for analysis):
    i. UV-Visible spectroscopy

ii. Fourier transform infrared spectroscopy (FT-IR)

iii. Powder X-ray diffraction (PXRD)

iv. Scanning electron microscopy (SEM)

v. Transmission electron microscopy (TEM)

2. Sol-gel synthesis of nanoparticles.
3. Synthesis of metal and metal oxide nanoparticles by green methods:
   i. Silver nanoparticles and their characterization using UV-visible spectrophotometer.
   ii. Zinc oxide nanoparticles.
   iii. Iron oxide nanoparticles using potato extract.
4. Synthesis of Nano urea.
5. Analysis of soil:
   i. Comparative study of pH of untreated and nano fertilizer treated soil
   ii. Estimation of composition of zinc in nano fertilizer treated soil using complexometry.

Essential/Recommended readings:

1. Varghese, T., Balakrishna, K.M., (2020) *Nanotechnology- An Introduction to synthesis, properties and applications of nanomaterials.* Atlantic Publishers & Distributors (P) Ltd; ISBN: 9788126916375.

2. Shah, M.A.; Shah, K.A., (2019) *Nanotechnology-The Science of Small*. Wiley; ISBN: 9788126579976.

3. Swayam (MHRD) Portal online: Nanotechnology in Agriculture (https://nptel.ac.in/course/102104069); Book download link: 102104069.pdf - Google Drive .

4. Axelos, M. A., & Van de Voorde, M. (Eds.). (2017). *Nanotechnology in agriculture and food science*. John Wiley & Sons, ISBN: 3527339892.

5. Chattopadhyay K.K., Banerjee A.N., (2009) *Introduction to Nanoscience and* Technology; PHI Learning Pvt. Ltd. ISBN: 9788120336087.

6. Jogaiah, S., Singh, H. B., Fraceto, L. F., & De Lima, R. (Eds.). (2020). *Advances in Nano-Fertilizers and Nano-Pesticides in Agriculture: A Smart Delivery System for Crop Improvement*. Woodhead Publishing; ISBN: 978-012-820092.

7. Singh, H. B., Mishra, S., Fraceto, L. F., & De Lima, R. (Eds.). (2018). Emerging trends in agri-nanotechnology: fundamental and applied aspects; CABI Publishing, ISBN: 9781786391445.

8. Mallick, M. A., Solanki, M. K., Kumari, B., & Verma, S. K. (Eds.). (2021). *Nanotechnology in Sustainable Agriculture*. CRC Press; ISBN: 9780367369408.

9. Subramanian, K. S., Gunasekaran, K., Natarajan, N., Chinnamuthu, C. R., Lakshmanan, A., & Rajkishore, S. K. (2015). *Nanotechnology in Agriculture*. New India Publishing Agency; ISBN: 9789383305209

10. Tarafdar, J. C. (2021). Nanofertilizers: challenges and prospects.; Scientific Publishers (India); ISBN: 978938889696931.

11. Fraceto, L. F., De Castro, V. L. S., Grillo, R., Ávila, D., Oliveira, H. C., & Lima, R. (2020). *Nanopesticides*. Springer International Publishing. ISBN: 978-3-030-44873-8.

Suggestive readings:

1. Craig, E. (2019) Nanomaterials: An Introduction to Properties, Synthesis and Applications. Larsen and Keller Education (New York). ISBN: 1641721065.
2. Fraceto, L. F. (2022). *Inorganic Nanopesticides and Nanofertilizers: A View from the Mechanisms of Action to Field Applications*. Springer Nature; ISBN: 9783030941543.
3. Prasad, R., Kumar, M., & Kumar, V. (Eds.). (2017). *Nanotechnology: an agricultural paradigm*. Springer.ISBN:9789811045721.
4. Kumar, V., Guleria, P., Ranjan, S., Dasgupta, N., & Lichtfouse, E. (Eds.). (2021). *Nanotoxicology and Nanoecotoxicology Vol. 1* (Vol. 59). Springer International Publishing; ISBN: 978-3-030-63241-0.

E-contents:

1. E-content on e-PG Pathshala portal of Government of India: (**P08**) Nanoscience and Nanotechnology (**33**) (https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=5VgWkgm+I3FGq9cGlsbNmQ==).
2. Swayam (MHRD) Portal online: Nanotechnology in Agriculture

   (https://nptel.ac.in/course/ 102104069); study material, videos and other material link for course (NPTEL).

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE (DSC 05)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Animal Physiology and Metabolism ALS ZOO DSC 05	4	2	0	2	Class 12th Pass with Science	NIL

Learning Objectives:

The learning objectives of this course are as follows:

- to impart knowledge about the functions of organs and organ systems of the body.
- to distinguish between normal and diseased states of the body functions.
- to apprise the students about correlation of the structure of organs with their functions.
- to enable the students to learn the working of different metabolic pathways of the body.

Learning Outcomes:

By studying this course, students will be able to:

- understand the physiology of different systems of the human body.
- comprehend and analyse problem-based questions on physiological aspects.
- recognize and explain the working of physiological systems in unison to maintain homeostasis in the body.

Unit 1: Nerve and Muscle **(5 Hours)**

Types of muscles, ultrastructure of muscle, characteristics of muscle twitch. Structure of neuron, action potential, propagation of nerve impulse (myelinated and non-myelinated nerve fibre).

Unit 2: Digestion **(5 Hours)**

Digestion and absorption of carbohydrates, fats and proteins.

Unit 3: Respiration **(4 Hours)**

Ventilation, external and internal respiration, transport of oxygen and carbon dioxide in blood.

Unit 4: Heart **(4 Hours)**

Structure of heart, origin and conduction of heart beat, cardiac cycle.

Unit 5: Excretion **(3 Hours)**

Structure of nephron, mechanism and regulation of urine formation.

Unit 6: Endocrine Glands **(2 Hours)**

Structure and function of endocrine glands.

Unit 7: Metabolism of Carbohydrates, Proteins and Lipids **(7 Hours)**

Glycolysis, TCA cycle, electron transport chain (respiratory chain), Urea cycle, β-oxidation of fatty acids.

PRACTICAL **(60 Hours)**

1. Preparation of temporary mount of neuron and striated muscle.
2. Estimation of haemoglobin using Sahli's Haemoglobinometer.
3. Preparation of haemin crystals.
4. Study of oesophagus, stomach, duodenum, ileum, liver, pancreas, trachea, lung,

kidney (of mammals) through permanent slides.

5. Study of endocrine glands of mammal using permanent slides: pituitary, thyroid parathyroid, pancreas, adrenal, ovary and testis.
6. Study of the activity of salivary amylase under optimal conditions.
7. Interpret the recording of frog's heartbeat (*in situ)* under normal conditions.
8. Study of muscle twitch through videos/photographs and interpret the recording of muscle twitch.

Essential/recommended readings:

1. Tortora, G.J. and Derrickson, B. H. (2017) *Principles of Anatomy and Physiology*. 15th Edition, Wiley Publishers.
2. Campbell and Reece (2020). *Biology.* Pearson Education, (Singapore) Pvt. Ltd.

Suggestive readings:

1. Vander A., Sherman J. and Luciano D. (2017) *Vander's Human Physiology: The Mechanism of Body Function*. 7th Edition, McGraw Hills.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE (DSE 03)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Integrated Pest Management ALS ZOO DSE 03	4	2	0	2	Class 12th Pass with Science	NIL

Learning Objectives:

The learning objectives of this course are as follows:

- to familiarize the students with the ecology of pests and the damage caused by them.
- to acquaint the students of the concept of Integrated Pest Management (IPM) using different models.
- to apprise the students of various components of IPM *viz*. chemical, biological and genetic control.
- to impart knowledge about the various pest surveillance techniques and forecasting of pest outbreaks.

Learning Outcomes:

By studying this course, students will be able to:

- better understand the effects of insecticides on the environment and need for ecofriendly approach for management of insect pests.
- learn the management of agricultural ecosystem using effective pest control strategies and techniques.
- appreciate the role of IPM in sustainable agriculture.

Unit 1: Concept of Pest and its Ecology (5 Hours)

Pest population dynamics, Economic Injury Level (EIL), Economic Threshold Level (ETL), carrying capacity, secondary pest outbreak.

Unit 2: Overview of Integrated Pest Management (4 Hours)

Concept of IPM and its components, major IPM strategies.

Unit 3: Insect Pest Management (6 Hours)

Types of pest management: cultural, physical and mechanical; pest survey (types) and surveillance: factors affecting surveys; forecasting; pest and pesticide risk analysis; political, social and legal implications of IPM; case studies of successful IPM programmes.

Unit 4: Chemical Control (5 Hours)

Classification of insecticides, insecticide adjuvants and formulations, mechanism of insecticide action with reference to chlorinated hydrocarbons, organophosphates, carbamates, plant products, synthetic pyrethroids, fumigants, IGR compounds and pheromones.

Unit 5: Biological Control (6 Hours)

Principle; biocontrol agents: parasitoids, predators and pathogens (NPV, bacteria, fungi and nematodes).

Unit 6: Genetic Control and Legislation (4 Hours)

Sterile Insect Release Method (SIRM): radio and chemo sterilization, hybrid sterility; other strategies of genetic control; quarantine laws.

PRACTICAL (60 Hours)

1. Study of damage caused by the common insect pests of stored grains and crops (any 6).
2. Study of life history of important insect pests and non-insect pests.
3. Study of common natural enemies of crop pests (parasitoids, predators, microbes).

4. Study of IPM model for control of *Leptocorisa acuta* and *Scirpophaga nivella.*
5. Learn algorithm (flow chart) of IPM strategies for the sustainable agriculture.
6. Study of tools and techniques of IPM: mechanical, physical, cultural control.
7. Study of the equipments used for spraying and dusting of insecticides.
8. Determination of LD50/LC50 of insecticides based on assessment of SIT efficacy through data.
9. Submission of project report on visit to IARI, IPFT, Hindustan Insecticides Ltd., FCI complex.

Essential/recommended readings:

1. Atwal A.S. and Dhaliwal G.S. (2018) *Agricultural Pests of South Asia and their Management,* 7th Edition Kalyani Publ., New Delhi.
2. Dhaliwal G.S. and Singh R. (2004) *Host Plant Resistance to Insects – Concepts and Applications.* Panima Publ., New Delhi.
3. Hill, Dennis S (2012) *Agricultural insect pests of the tropics and their control*, 2nd Edition; Permission of Cambridge University, printed at Shree Maitrey Printech Pvt.
4. Horowitz, A. Rami and Ishaaya, Isaac. (2009) *Insect Pest Management - Field and Protected Crops* by Mary Lou Flint and Robert van den Bosch**,** (1981).
5. Flint MC & Bosch RV. (2012). *Introduction to Integrated Pest Management.* Springer, New York.

Suggestive readings:

1. Pedigo, L.P. (1996) *Entomology and pest management*, prentice hall, New Delhi
2. Raymond A. Cloyd, Philip L. Nixon and Nancy R. Pataky. 2004. *IPM for Gardeners: A Guide to Integrated Pest Management*, Timber Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Bachelor of Science (Hons.) in Applied Life Sciences with Agrochemicals and Pest Management

SEMESTER-VI

BOTANY COMPONENT - DSC

DISCIPLINE SPECIFIC CORE COURSE (DSC 06)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Plant Biotechnology: Concepts and Applications ALS BOT DSC 06	**4**	**2**	**0**	**2**	**Class 12th Pass with Science**	NIL

Learning Objectives:

The learning objectives of this course are as follows:

- to give students knowledge of techniques used in plant biotechnology and its applications.
- to explore the use of biotechnology to generate genetic variation in plants and to understand how factors at the cellular level contribute to the expression of genotypes and hence to phenotypic variation.
- to understand the biotechnological processes such as recombinant DNA technology and its applicative value in pharmaceuticals, food industry, agriculture, horticultural and ecology. This knowledge is central to our ability to modify plant responses and properties for global food security and commercial gains in biotechnology and agriculture.
- to perform the techniques currently used to generate information and detect genetic variation.

Learning Outcomes:

By studying this course, students will be able to:

- comprehend the basic concepts, principles and processes of plant biotechnology.
- apply the acquired knowledge in biotechnological, pharmaceutical, medical, ecological and agricultural fields.
- use the basic biotechnological techniques to explore molecular biology of plants.
- explain the use of biotechnological techniques for plant improvement and biosafety concerns.

Unit 1: Introduction to Biotechnology (2 Hours)

Historical timeline; Brief overview of techniques and methods in Biotechnology, sectors of Biotechnology.

Unit 2: Plant Tissue Culture (8 Hours)

Historical perspective (Haberlandt, Laibach, White, Reinert and Steward, Murashige, Cocking, Guha and Maheshwari, Bhojwani, Morel and Martin); Composition of media; Nutrients (major and minor), vitamins and hormones; Plasticity and Totipotency; Regeneration: Organogenesis (Direct and Indirect) and Embryogenesis (somatic and zygotic); Protoplast isolation, culture and fusion; Tissue culture applications (micropropagation, androgenesis, haploids, triploids, cybrids, production of virus-free plants).

Unit 3: Recombinant DNA Technology and Genetic Transformation (12 Hours)

Restriction Endonucleases (History, Types I - IV, biological role and applications); Modifying enzymes and their applications (nucleases, ligases, alkaline phosphatase, polynucleotide kinase) Introduction to prokaryotic and eukaryotic cloning vectors: pBR322, pUC 18, pUC19, BACs, Lambda phage, YACs. Gene Cloning: Restriction digestion of DNA, ligation, bacterial transformation and selection of recombinant clones; Methods of gene transfer to plants: *Agrobacterium*-mediated transformation (Ti plasmids), Direct gene transfer by Electroporation, Microinjection, Microprojectile bombardment; Selection of transgenic plants: selectable marker

genes (Positive selection markers – antibiotic- and herbicide-resistance conferring genes) and reporter genes (Luciferase, GUS, GFP).

Unit 3: Applications of Transgenic Technology (8 Hours)

Pest resistant (Bt-cotton) and herbicide resistant plants (RoundUp Ready soybean); Transgenic crops with improved quality traits (Flavr Savr tomato. Golden rice); Improved horticultural varieties (Moondust carnations); Role of transgenics in bioremediation (Superbug); Edible vaccines; Introduction to genome editing; Biosafety of transgenic plants.

PRACTICALS 60 hours

1. Preparation of nutrient media for plant cell cultures- Murashige & Skoog's (MS) medium and B5 medium.
2. Initiation of axenic cultures (seed sterilisation and inoculation)
3. Micropropagation (shoot induction) using leaf and/or nodal explants of tobacco/*Datura*/ *Brassica* etc.
4. Study of anther culture, embryo and endosperm culture, somatic embryogenesis using digital resources/ photographs.
5. Preparation of artificial seeds.
6. Isolation of plasmid DNA.
7. Induction of callus and analysis of effects of growth regulators on *in vitro* regeneration using tobacco as a model plant
8. Preparation of competent cells and transformation of *E. coli* by heat shock method.
9. Restriction digestion and gel electrophoresis of plasmid DNA.
10. Construction of restriction map of circular and linear DNA from the data provided.
11. Visit to a Research laboratory.

Essential/recommended readings:

1. Bhojwani, S.S., Bhatnagar, S.P. (2011). The Embryology of Angiosperms, 5th edition. New Delhi, Delhi: Vikas Publication House Pvt. Ltd.
2. Bhojwani, S.S., Razdan, M.K., (1996). Plant Tissue Culture: Theory and Practice. Amsterdam, Netherlands: Elsevier Science.
3. Glick, B.R., & Patten C. (2022). Molecular Biotechnology: Principles and Applications. 6th edn. Washington, U.S.: ASM Press.
4. Brown, T. A. 2020. Gene Cloning & DNA Analysis: An Introduction. 8th edn. UK: Wiley Blackwell.
5. Slater, A., Scott, N. W. & Fowler, M. R. (2010) Plant Biotechnology: The Genetic Manipulation of Plants. 2nd edn. New York, USA: Oxford University Press Inc.
6. Primrose, S. B. and Twyman, R.M. (2013) Principles of Gene Manipulation and Genomics. 7th edn. Wiley-Blackwell Publishing.

Suggested Readings :

1. Stewart, C.N. Jr. (2008). Plant Biotechnology and Genetics: Principles, Techniques and Applications. New Jersey, U.S.: John Wiley & Sons Inc.
2. Snustad, D.P., Simmons, M.J. (2010). Principles of Genetics, 5th edition. Chichester, England: John Wiley and Sons.
3. Bhojwani, S.S. and Dantu, P.K. (2013). Plant Tissue Culture: An Introductory Text. Springer New Delhi Heidelberg New York Dordrecht London

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE (DSE 04)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Plant Systematics **ALS BOT DSE 04**	**4**	**2**	**0**	**2**	**Class 12th Pass with Science**	**NIL**

Learning Objectives:

The learning objectives of this course are as follows:

- to gain knowledge about the basics of plant systematics.
- to get an insight into the interrelationships of plant systematics and allied subjects.

Learning Outcomes:

By studying this course, students will be able to:

- understand technical terminology used in plant taxonomy.
- apply the terminologies to describe, identify and classify the flowering plants.
- search and analyze taxonomic information from internet-based scientific databases and other resources.
- comprehend and compare various systems of classification.
- recognize diversity in local/regional flora.

Unit 1: Introduction **(1 Hour)**

Plant identification, Classification, Nomenclature, Biosystematics.

Unit 2: Identification (4 Hours)

Field inventory, Herbarium Techniques, Functions of Herbarium, Important herbaria and botanical gardens of the world and India, Virtual Herbarium, E-flora: Flora, Monographs, Journals.

Unit 3: Systematics-An Interdisciplinary Science (5 Hours)

Evidence from cytology, phytochemistry [Alkaloids, Phenolics, Glycosides, (in brief)] and molecular data (cp.DNA, mt-DNA, nuclear DNA, PCR amplification, sequence data analysis)

Unit 4: Taxonomic Hierarchy (2 Hours)

Concept of taxa (family, genus, species); Categories and taxonomic hierarchy; Species concept (taxonomic, biological & evolutionary)

Unit 5: Botanical Nomenclature (7 Hours)

Principles and rules (ICN); Ranks and names; Typification, Author citation, Valid publication, Rejection of names, Principle of priority and its limitations; Names of hybrids and cultivated plants.

Unit 6: Basic Terms and Concepts of Phylogeny (4 Hours)

Cladistics: Terms and concepts (primitive and advanced, homology and analogy, parallelism and convergence, monophyly, Paraphyly, polyphyly, clades and grades). Methodology of Cladistics, Methods of illustrating evolutionary relationships (phylogenetic tree, cladogram).

Unit 7: Systems of Classification (7 Hours)

Major contributions of Parasara, Charaka, Theophrastus, Bauhin, Tournefort, Linnaeus, Adanson, de Candolle, Bessey, Hutchinson, Takhtajan, Cronquist, Bremer and MW Chase; Classifica

tion systems of Benthan and Hooker (up to series) and Engler and Prantl (up to series); Angiosperm Phylogeny Group (APG IV) Classification (major clades).

PRACTICAL (60 Hours)

1. To prepare at least 2 herbarium specimens and identify them using available resources (Literature, herbaria, e-resources, taxonomic keys) and classify up to family level (according to Bentham and Hooker's classification).
2. Description of taxa using semi-technical terms and identification of the families according to Bentham and Hooker's classification.

Note: Any twelve families from the following list to be studied with at least two specimens (or one where limitations exist).

List of Suggested Families (*mandatory)

Acanthaceae, Rubiaceae, *Apiaceae, Apocynaceae, *Asteraceae, *Brassicaceae, *Euphorbiaceae, *Fabaceae, *Lamiaceae, Liliaceae, *Malvaceae, Moraceae, *Poaceae, *Ranunculaceae, *Solanaceae.

Essential/recommended readings:

1. Simpson, M. G. (2019). *Plant systematics*. 3rd Edition, Academic press.
2. Singh, G. (2019). *Plant Systematics- An Integrated Approach.* 4th edition. CRC Press, Taylor and Francis Group.
3. Pandey, A. K., Kasana, S. (2021). *Plant Systematics*. 2nd Edition. CRC Press Taylor and Francis Group
4. *http://www.mobot.org/MOBOT/research/APweb/*
5. Maheshwari, J. K. (1963). *The flora of Delhi.* Council of Scientific & Industrial Research.
6. Maheshwari, J. K. (1966). *Illustrations to the Flora of Delhi.* Council of Scientific & Industrial Research.
7. Harris, J. G., Harris, M. W. (2001). *Plant Identification Terminology: An Illustrated Glossary*. Spring Lake, Utah: Spring Lake Pub. Spring Lake, Utah.

Suggestive Readings:

1. The Angiosperm Phylogeny Group, Chase, M.W., Christenhusz, M.J.M, Fay M.F., Byng, J.W., Judd, W.S., Soltis, D.E., Mabberley, D.J., Sennikov, A.N., Soltis, P.S., Stevens, P.F. (2016). *An update of the Angiosperm Phylogeny Group classification for the orders and families of flowering plants: APG IV.* Botanical journal of the Linnean Society 181 (1): 1-20.
2. https://www.mobot.org/MOBOT/research/APweb/treeapweb2s.gif
3. https://www.digitalatlasofancientlife.org
4. http://apps.kew.org/herbcat/navigator.do
5. https://efloraofindia.com/
6. https://powo.science.kew.org/
7. Page, R.D.M., Holmes, E.C. (1998). *Molecular Evolution: A Phylogenetic Approach*. Blackwell Publishing Ltd.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE (DSC 06)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the core course			Eligibility criteria	Pre-requisite of the course (If any)
		Lecture	Tutorial	Practical/ Practice		
Analytical Techniques in Chemistry ALS CHEM DSC 06	4	2	0	2	Class 12th Pass with Science	NIL

Learning Objectives:

The learning objectives of this course are as follows:

- to make students aware of the concept of accuracy, precision, Statistical test data-F, Q and t test.
- to expose students to the laws of spectroscopy and selection rules governing the possible transitions in the different regions of the electromagnetic spectra.
- to familiarize students to different electroanalytical methods of analysis.
- to make students familiar to important separation methods like solvent extraction and chromatography.

Learning Outcomes:

By studying this course, students will be able to:

- analyse various sources of errors in chemical analysis.
- apply methods to minimize error.

- understand basic principle of instrumentation (UV-VIS spectrophotometer, Infrared spectrometer, Mass spectrometer, NMR Spectrometer).
- apply basic principles of separation techniques (chromatography and solvent extraction) and apply them to separate mixtures.
- analyse samples independently in the laboratory.

Unit 1: Qualitative and Quantitative Aspects of Analysis (4 Hours)

Errors, Accuracy and Precision. The Gaussian distribution, mean and standard deviation, confidence intervals. Normal law of distribution of indeterminate errors, statistical test of data; F, Q and t test.

Unit 2: Optical Techniques of Analysis (8 Hours)

Origin of spectra, interaction of radiation with matter, fundamental laws of spectroscopy and selection rules, Verification of Beer's-Lambert Law by using colorimeter for different solutions and its limitations. UV-Visible Spectrometry: Basic principles of instrumentation for single and double beam instruments. Determination of concentration of unknown compounds, composition of metal complexes using Job's method of continuous variation and mole ratio method.

Unit 3: Electroanalytical Techniques (6 Hours)

Classification of electroanalytical methods, basic principle of pH metric, potentiometric and conductometric titrations. Techniques used for the determination of equivalence points. Techniques used for the determination of pKa values. Application of conductance measurement: i) Ionic product of water ii) Solubility and solubility product of sparingly soluble salts.

Unit 4: Separation Techniques (6 Hours)

Solvent extraction: Classification, principle and efficiency of the technique. Chromatography: Principles of Chromatographic separations, Classification of Chromatographic techniques, Paper

Chromatography, Thin Layer Chromatography, Column Chromatography, efficiency of separation (Resolution, Efficiency of Resolution, Plate Height) Application of these techniques in analysis of biological samples.

Unit 5: Spectroscopy (6 Hours)

Basic principle of IR and NMR spectroscopy, interpretation of IR spectra of simple organic molecules with functional groups amine, amide, carbonyl, hydroxy. Chemical shift and low-resolution spectra, factors affecting chemical shift, interpretation of ^{1}H-NMR spectra of simple organic molecules like methanol, ethanol, acetaldehyde, acetone, acetic acid, aromatic protons and pesticide. Elementary discussion on Mass Spectrometry.

PRACTICAL (60 Hours)

1. Verification of Lambert-Beer's law and determination of concentration of a coloured species ($KMnO_4$, $K_2Cr_2O_7$).
2. Determine the concentration of $KMnO_4$ and $K_2Cr_2O_7$ in a mixture by using colorimeter.
3. Spectrophotometric analysis of Co^{2+} and Ni^{2+} ions in a mixture.
4. Perform the following conductometric titration

   i) Strong acid vs strong base

   ii) Weak acid vs strong base

5. Perform the following potentiometric titration

   i) Strong acid vs strong base
   ii) Weak acid vs strong base

6. Determination of isoelectric point of amino acids.

7. Separation of Co^{2+} and Ni^{2+} mixture by paper chromatography and to determine their R_f values.

8. Separation of amino acids present in the given mixture by paper chromatography and to determine their R_f values.

9. Interpretation of simple organic compounds by IR spectra. (Spectra to be provided).

10. Study and interpretation of ^{1}H-NMR spectra of simple organic compounds (Spectra to be provided).

11. Interpretation of the structure of simple pesticide molecule (two examples) from the given IR and NMR data/spectra

Essential/ Recommended readings:

1. Willard, H.H. (1988), *Instrumental Methods of Analysis*, 7th Edition, Wardsworth Publishing Company.
2. Christian, G.D. (2004), *Analytical Chemistry, 6th Edition*, John Wiley & Sons, New York.
3. Jeffery, G.H.; Bassett, J.; Mendham, J.; Denney, R.C. (1989), *Vogel's Textbook of Quantitative Chemical Analysis*, John Wiley and Sons.
4. Skoog, D.A.; Holler F.J.; Nieman, T.A. (2005), *Principles of Instrumental Analysis*, Thomson Asia Pvt. Ltd.
5. Donald L. Pavia, Gary M. Lampman, George S. kriz (2014), *Introduction to Spectroscopy***,** Thomas Press Ltd.
6. Singh, Pradeep Pratap; Ambika (2018), *Organic Spectroscopy,* Viva Books

Suggestive readings:

1. Harris, D. C. (2007), *Quantitative Chemical Analysis,6th Edition*, Freeman.
2. Khopkar, S.M. (2008), *Basic Concepts of Analytical Chemistry***,** New Age International Publisher.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE (DSE 04)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Medicinal Chemistry; ALS CHEM DSE 04	4	2	0	2	Class 12th Pass with Science	NIL

Learning Objectives:

The learning objectives of this course are as follows:

- to impart fundamental knowledge on the structure, chemistry, and therapeutic value of drugs.
- to familiarize the structure activity relationships (SAR) of drugs.
- to understand the importance of physicochemical properties and metabolism of drugs.
- to study chemical synthesis of important drugs under each class.

Learning Outcomes:

By studying this course, students will be able to:

- understand the chemistry of drugs with respect to their pharmacological activity.
- explain the drug metabolic pathways, adverse effect and therapeutic value of drugs.
- analyze the Structural Activity Relationship (SAR) of different class of drugs.
- write the chemical synthesis of some drugs.

Unit 1: Basic Principles of Medicinal Chemistry (10 Hours)

History and development of medicinal Chemistry. Stereochemical aspects: optical, geometrical, conformational, Isosterism. Physiochemical properties: solubility, acid-base, chemical bond,

partition coefficient. Drug receptor interaction and International Nonproprietary Names (INNs) of drugs.

Unit 2: Pharmacokinetics (4 Hours)

ADME: Drug absorption, drug distribution, drug metabolism - Phase 1, Phase 2 metabolism, drug excretion, Drug Half Life.

Unit 3: Medicinally Important Classes of Compounds (10 Hours)

Introduction, Structure, Synthesis, Therapeutic value and elementary SAR of representative drugs of the following classes:

- Analgesics agent: Ibuprofen
- Antipyretic agent: Paracetamol
- Anti-inflammatory agent: Aspirin
- Antibacterial and antifungal agents: Sulphonamides; Sulphanethoxazol, Sulphacetamide
- Antiviral agent: Acyclovir
- Antibiotics agents: Penicillin, Cephalosporin, Chloromycetin and Streptomycin
- Antileprosy agent: Dapsone

Unit 4: Drugs Acting on Central Nervous System (6 Hours)

Introduction, structure, therapeutic value and elementary SAR of representative drugs of the following classes:

- Central Nervous System agents: Phenobarbital, Diazepam
- Morphine and related drugs
- Narcotic antagonists: Nalorphine hydrochloride
- Miscellaneous: Cardiovascular (Glyceryl trinitrate), HIV-AIDS related drugs (AZT-Zidovudine)

PRACTICAL (60 Hours)

1. Preparation of aspirin and its analysis.

2. Preparation of paracetamol and its analysis.

3. Preparation of sulphacetamide of sulphonamide and its analysis.

4. Determination of alcohol contents in liquid drugs/galenical.

5. Determination of ascorbic acid in vitamin C tablets by iodometric or coulometric titrations.

6. Assay of drugs (any two)

1. Chlorpromazine
2. Phenobarbitone
3. Atropine
4. Ibuprofen
5. Aspirin

Essential/ Recommended Readings:

1. Patrick, G. (2017), *Introduction to Medicinal Chemistry*, Oxford University Press.
2. Lemke, T. L.; William, D.A.; Roche, V. F.; Zito, S. W. (2012), *Principles of Medicinal Chemistry*, 7th Edition, Wolter Kluwer I Lippincott Williams and Wilkins.
3. Burger, (2021) *Medicinal Chemistry, Drug Discovery and Development*, Vol I to VIII, 8th Edition, Wiley.

Suggestive Reading:

1. Beale, J. M.; Block, J. H. (2010), *Organic Medicinal and Pharmaceutical Chemistry*, 12th Edition, Wolters Kluwer India Pvt. Ltd.
2. Singh H.; Kapoor V.K. (1996), *Medicinal and Pharmaceutical Chemistry*, Vallabh Prakashan.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

ZOOLOGY COMPONENT - DSC

DISCIPLINE SPECIFIC CORE COURSE (DSC-06)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Immunology and Immunotechnology ALS ZOO DSC 06	4	2	0	2	Class 12th Pass with Science	NIL

Learning Objectives:

The learning objectives of this course are as follows:

- to acquaint the students about cells of innate and acquired immune system and their interactions.
- to learn the structure of antibody, different isotypes and their biological functions.
- to acquire knowledge of different types of vaccines.
- to apprise the students of the mechanisms of antigen processing and presentation.
- to train the students in various immunotechniques applied in diagnostics and therapeutics.

Learning Outcomes:

By studying this course, students will be able to:

- have better understanding of the concepts of innate and acquired immunity.
- acquire knowledge of antigenicity and immunogenicity of biomolecules.
- comprehend and analyse different cellular and humoral components of the immune system.

- appreciate the applications of immunotechniques used in diagnostics and therapeutics.

Unit 1: Overview of Immune System (3 Hours)

Historical perspectives of immunology, clonal selection theory, brief outline of immune dysfunctions (hypersentivity, autoimmunity and immunodeficiency).

Unit 2: Innate and Adaptive Immunity (7 Hours)

Anatomical barriers, inflammation, cells of immune system; adaptive immunity: cell-mediated and humoral, active and passive, natural and artificial.

Unit 3: Antigens (4 Hours)

Antigenicity and immunogenicity; Immunogens:factors influencing immunogenicity; adjuvants and haptens; properties of B and T-cell epitopes.

Unit 4: Immunoglobulins and Vaccines (7 Hours)

Structure and functions of different classes of immunoglobulins, different types of vaccines.

Unit 5: Major Histocompatibility Complex (4 Hours)

Structure and functions of MHC molecules (MHC I and II), endogenous and exogenous pathways of antigen processing and presentation.

Unit 6: **Immunotechniques (5 Hours)**

Double immunodiffusion assay, haemagglutination assay (ABO typing), immunoeletrophoresis, immunofluorescence, ELISA, hybridoma technology: monoclonal antibodies in therapeutics and diagnosis.

PRACTICAL (60 Hours)

1. Demonstration of lymphoid organs of rat/mouse. (Subject to UGC guidelines).
2. Study of primary and secondary lymphoid organs through slides/photographs/videos.
3. Preparation of stained blood film to study various types of cells.
4. Preparation of serum using rat /mouse (Subject to UGC guidelines).
5. Perform Ouchterlony's double immunodiffusion (DID) to study immunoprecipitation and interpretation of patterns of identity, non-identity and partial identity.
6. Identification of ABO blood group by heamagglutination using antisera.

7. Cell counting and viability test of splenocytes from farm bred animals/cell lines.
8. Demonstration of ELISA and Immunoelectrophoresis.
9. Project on any topic related to theory.

Essential/ Recommended Readings:

1. Kindt, T. J., Goldsby, R.A., Osborne, B. A. and Kuby, J. (2006*). Immunology,* VI Edition, W.H. Freeman and Company.
2. David, M., Jonathan, B., David, R. B. and Ivan, R. (2006). *Immunology*, VII Edition, Mosby, Elsevier Publication.
3. Punt, J., Stranford, S., Jones, P., Owen J., A. (2018) Kuby Immunology, W H Freeman Publications.

Suggestive readings:

1 Abbas, K. Abul and Lechtman H. Andrew (2017) *Cellular and Molecular Immunology*. IX Edition, Saunders Publication.

2 Kaur, H., Toteja, R., and Makhija, S. (2021). *Textbook of Immunology*. IK International Publishing House and Wiley India Ltd.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE (DSE 04)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Social and Beneficial Insects ALS ZOO DSE 04	4	2	0	2	Class 12th Pass with Science	NIL

Learning Objectives:

The learning objectives of this course are as follows:

- to acquaint students of the social organization found in insects.
- to apprise them of beneficial aspects of insects.
- to impart knowledge about the techniques involved in culturing and rearing of bees, silkworms and lac insect.

Learning Outcomes:

By studying this course, students will be able to:

- identify different types of social and beneficial insects.
- differentiate the various castes and their role in the social life of insects.
- acquire skill for mass rearing of beneficial insects and their products.

Unit 1: Social Insects **(7 Hours)**

Characteristics and systematic position. Social organization: caste determination, communication, social parasitism and symbioses, social insect pathogens. Life cycle, social organisation and types of ants, bees, wasps and termites.

Unit 2: Apiculture **(7 Hours)**

Habit and habitat of honey bee (*Apis),* bee keeping techniques, bee pasturage, artificial bee hives. Economic importance of bee. Bee enemies, bee diseases and their control.

Unit 3: Sericulture **(6 Hours)**

Life cycle of silkworm *Bombyx mori.* Types of silkworm species and their salient features. Rearing techniques of mulberry, muga, eri and tassar silkworms. Enemies and diseases of silkworms and their management.

Unit 4: Lac Culture **(5 Hours)**

Habit, habitat and biology of *Laccifera lacca.* Host trees of lac insect*,* pruning, inoculation and lac harvesting. Enemies of lac insect and their control.

Unit 5: Ecological aspects of beneficial insects **(5 Hours)**

Ecological role of insects: pollination, weed control, improving soil fertility and as scavengers. Medicinal use of insects and insect products. Entomophagy.

PRACTICAL **(60 Hours)**

1. Study of life cycle of ants, bees, termites, silk worm and lac insect through museum specimens/photographs.
2. Study of different nests build by ants, bees and termites.
3. Construction and maintenance of artificial bee hives and study of equipments related to apiculture.
4. Rearing techniques of mulberry, muga, eri and tassar silkworms.
5. Study of different types of enemies and diseases of silkworms.
6. Study of lac culture technique: pruning, inoculation, cropping and harvesting.
7. Study of economically important insect products.

Essential/Recommended readings:

1. Watson, J. A. L., Okot-Kother, B. M. and Noiroh C. (1985) *Caste differentiation in social insects.* Pergamon Press.
2. Dunston AP. (2007) *The Insects: Beneficial and Harmful Aspects*.Kalyani Publishers., New Delhi.
3. Brian, M. V. (1983) *Social insects: ecology and behavioural biology*. Chapman and Hall, London, New York.
4. D. B. Tembhare (2017) *Modern Entomology.* Himalaya Publishing House.
5. Dokuhon, Z.S. (1998) *Illustrated Textbook on Sericulture.* Oxford & IBH publishing Co., Pvt. Ltd. Calcutta.
6. Shukla, G.S. and Upadhyay, V.B. (2014) *Applied and Economic Zoology*, Rastogi Publications.

Suggestive readings:

1. Maxwell F.G. and Jennings P.R. (Eds). (1980) *Breeding Plants Resistant to Insects*. John Wiley & Sons, New York.
2. *Encyclopedia of Social Insects* (2021) Springer International Publishing.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

ANNEXURE-32

Sub: Amendment to Ordinance V

[E.C Resolution No. 14-1/-(14-1-6/-) dated 09.06.2023 and 27-1-1/ dated 25.08.2023]

Following addition be made to Appendix-II-A to the Ordinance V (2-A) of the Ordinances of the University;

Add the following:

Syllabi of Semester-IV, V and VI of the following departments under Faculty of Science based on Under Graduate Curriculum Framework -2022 implemented from the Academic Year 2022-23 :

(i) Botany

(ii) Geology

(iii) Zoology

(iv) Zoology Component for BSc. Life Science

DEPARTMENT OF BOTANY
SEMESTER - IV
Category-I
BSC (Hons.) BOTANY

DISCIPLINE SPECIFIC CORE COURSE - 10: Mycology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
MYCOLOGY **DSC-10**	4	**2**	**0**	**2**	Class XII pass with Biology/ Biotechnology	Nil

Learning Objectives:

- To introduce students with various fungal groups and lichens, their ecology, classification, characteristics, reproduction and economic Importance
- To introduce students to the role of fungi in biotechnology, food industry, agriculture, human health and diseases etc.

Learning Outcomes: Upon completion of this course, the students will be able to:

- understand the world of fungi, lichens and pathogens of plants
- understand characteristics the ecological and economic significance of the fungi and lichens
- understand the application of mycology in various fields of economic and ecological significance

Unit 1: Introduction **04 hours**

General characteristics; Thallus organization; Cell wall composition; Nutrition; Heterokaryosis and Parasexuality; Classification - Webster and Weber (2007) and Introduction to Phylogenetic system of classification.

Unit 2: Chytridiomycota **01 hour**

General characteristics; Life cycle of *Synchytrium*, *Allomyces*

Unit 3: Zygomycota **02 hours**

General characteristics; Distribution; Thallus organization; Classification; Life cycle of *Rhizopus* &*Mucor*.

Unit 4: Ascomycota **05 hours**

General characteristics; Distribution; Classification, Life cycles of *Saccharomyces, Penicillium, Alternaria, Neurospora* and *Peziza.*

Unit 5: Basidiomycota **05 hours**

General characteristics; Distribution; Classification, Life cycle of *Puccinia graministritici*, *Agaricus*; Bioluminescence, Fairy Rings, Mushroom cultivation.

Unit 6: Oomycota **02 hours**

General characteristic (with emphasis on difference with fungi); Distribution; Classification, Life cycle of *Albugo*.

Unit 7: Myxomycota **02 hours**

General characterises (with emphasis on difference with fungi); Distribution; Types of plasmodia; Types of fruiting bodies; Life cycle of *Stemonitis*.

Unit 8: Symbiotic associations **04 hours**

Lichen - Distribution; General characteristics; Growth forms and range of thalli; Economic importance of lichens. Mycorrhiza - Ectomycorrhiza, Endomycorrhiza and their significance.

Unit 9: Applied Mycology **05 hours**

Application of fungi in Food Industry- Fermentation, Organic acids, Enzymes, Mycoproteins; Introduction to Plant Pathology**,** Nematophagous fungi, Entomogenousfungi , Mycoparasites, Mycoremediation, Medical mycology and Mycotoxins.

Practicals **60 hours**

1. *Rhizopus* & *Mucor*: Study of asexual stage from temporary mounts and sexual stage through permanent slides.
2. *Saccharomyces:* Study of vegetative cell and buddingfrom temporary mounts.
3. *Penicillium*: Study of asexual stage from temporary mounts and sexual stage from permanent slides.
4. *Peziza*: Study of sexual stage from temporary preparation of V.S of ascocarp.
5. *Alternaria solani*: Study of symptoms of early blight of Potato. Study of asexual stages through temporary mounts.
6. *Puccinia graminitritici*: Herbarium specimens of Black stem rust of wheat and barberry leaves; sections / mounts of spores (Uredospores and Teleutospores) on wheat. Permanent slides showing spore stages on both the hosts.
7. *Agaricus:* Specimens of button stage and mature basidiocarp; V.S of gills of *Agaricus*.
8. Study of Phaneroplasmodium of *Physarum* and sporangia of *Stemonitis.*
9. *Albugo candida*: Study of symptoms of white rust on *Brassica* sp.; Asexual stage study through section / temporary mounts. Sexual structures through temporary mounts / permanent slides.
10. Lichens: Study of different types of lichens - Crustose, Foliose and Fruticose. Study of Internal structure of thallus; Apothecium through permanent slides.

Suggested Readings:

1. Agrios, George N. (2005). Plant Pathology, 5th Edition, Academic Press / Elsevier.
2. Alexopoulos, C.J., Mims, C.W., Blackwell, M. (1996). Introductory Mycology, 4th edition, John Wiley & Sons, Singapore.
3. Moore, David et. al. (2020). 21st Century Guidebook to Fungi, 2nd Edition, Cambridge University Press.
4. Sethi, I.K. and Walia, S.K. (2018). Text book of Fungi and Their Allies, Medtech Publishers.
5. Webster, J., Weber, R. (2007). Introduction to Fungi, 3rd edition. Cambridge, U.K.: Cambridge University Press, UK.

Additional Resources:

1. Kavanagh, Kevin (2017). Fungi: Biology and Applications, 3rd Edition, Wiley-Blackwell.
2. Maheshwari, Ramesh (2012). Fungi: Experimental Methods in Biology, 2nd Edition, CRC Press.
3. Ownley, Bonnie and Trigiano, Robert N. (2017). Plant Pathology: Concepts and Laboratory Exercises, 3rd Edition, CRC Press.
4. Watkinson, Sarah et. al. (2015). The Fungi, 3rd Edition, Academic Press / Elsevier.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 11: Ecology and Conservation

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Ecology and Conservation **DSC – 11**	**4**	**2**	**0**	**2**	Class XII pass with Biology/ Biotechnology	**Nil**

Learning Objectives:

- To introduce the students with environmental factors affecting the plants, the basic principles of ecology and phytogeography.
- To make them understand community patterns and processes, and ecosystem functioning.

Learning Outcomes:

At the end of this course, students will be able to understand:

- the interrelationship between organisms and environment.
- methods to study vegetation, community patterns and processes, ecosystem functions, and principles of phytogeography.
- evolving strategies for sustainable natural resource management and biodiversity conservation.

Unit 1: Introduction **01 hour**

Basic concepts, Interrelationships between the living world and the environment

Unit 2: Soil **05 hours**

Origin & Formation; physical, chemical and organic components; soil profile; forms of water in soil

Unit 3: Water **02 hours**

Importance; States of water in the environment; Atmospheric moisture; Water table

Unit 4: Abiotic interactions **03 hours**

Abiotic factors and plant adaptations, variations in light, temperature & wind conditions.

Unit 5: Biotic interactions **02 hours**

Definition; types of positive and negative biotic interactions

Unit 6: Population ecology **02 hours**

Characteristics of populations; population growth models and introduction to population regulation (density-dependent and independent); ecotypes; metapopulation (history, concept and applications to conservation)

Unit 7: Plant Communities **04 hours**

Community characters (General account of analytical and synthetic characters); Ecotone; Succession: processes, types (Lithosere, Hydrosere, Xerosere, Psammosere)

Unit 8: Ecosystems **04 hours**

Types, components, trophic organisation; food chain & food webs, ecological pyramids. models of energy flow; production and productivity; a brief outline of biogeochemical cycles (Carbon and Nitrogen)

Unit 9: Phytogeography **04 hours**

Principles; Continental drift; Theory of tolerance; Endemism; Phytogeographical division of India

Unit 10: Conservation **03 hours**

In-situ, ex-situ; gene banks, institutions - National & International; sacred groves, on-farm conservation.

Practicals **60 hours**

1. Principle and operation of instruments used to measure microclimatic variables: Soil thermometer, maximum and minimum thermometer, anemometer, psychrometer/hygrometer, rain gauge and lux meter.
2. Determination of pH and detection of carbonates, chlorides, nitrates, sulphates, organic matter and base deficiency from atleast two soil samples by rapid field tests.
3. Determination of pH & dissolved oxygen from polluted and unpolluted water samples.
4. Determination of soil organic carbon and organic matter of different soil samples by Walkley & Black rapid titration method.
5. Study of ecological adaptations of hydrophytes and xerophytes (four each).
6. Study of biotic interactions of the following: Stem parasite (*Cuscuta*), Root parasite (*Orobanche*), Epiphytes, Predation (Insectivorous plants).
7. Determination of minimal quadrat size and number for the study of herbaceous vegetation in the college campus, by species area curve method (species to be listed).
8. Quantitative analysis of herbaceous vegetation in the college campus for frequency and comparison with Raunkiaer's frequency distribution law.

9. Quantitative analysis of herbaceous vegetation for density and abundance in the college campus.
10. Species distribution pattern based on A/F ratio (regular, random, clumped).
11. Field visit to familiarize students with ecology/conservation of different sites.

Suggested Readings:

1. Daubenmire, R.F. (1975). Plant and Environment.London: J. Wiley and Sons Inc.
2. Kormondy, E.J. (1996). Concepts of Ecology. New Delhi, India: PHI Learning Pvt. Ltd. 4th edition.
3. Odum, E.P. (2005). Fundamentals of Ecology. New Delhi, India: Cengage Learning India Pvt. Ltd., 5th edition.
4. Sharma, P.D. (2010). Ecology and Environment. Meerut, India: Rastogi Publications. 8th edition.
5. Singh, J.S., Singh, S.P., Gupta, S.R. (2014). Ecology, Environmental Science and Conservation. New Delhi, India: S. Chand.

Additional Resources:

1. Ambasht, R.S. and Ambasht, N.K. (2008). A text book of Plant Ecology, CBS Publishers & Distributors PVT. LTD.
2. Majumdar, R and Kashyap, R (2019). Practical Manual of Ecology and Environmental Science, New Delhi, India: Prestige Publishers
3. Singh, J.S., Singh, S.P., Gupta, S. R. (2006). Ecology, Environment and Resource Conservation. New Delhi, India: Anamaya Publications.
4. Wilkinson, D.M. (2007). Fundamental Processes in Ecology. USA: An Earth Systems Approach. Oxford University Press.
5. Hanski, I.A., & Gilpin, M.E. (1997). Metapopulation biology: Ecology, genetics, and evolution. Academic Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 12: Developmental Biology of Angiosperms: Form, Anatomy & Function

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Developmental Biology of Angiosperms: Form, Anatomy & Function DSC-12	**4**	**2**	**0**	**2**	Class XII pass with Biology/ Biotechnology	**Nil**

Learning Objectives:

- To understand the basics of plant cell structure, and development, growth and organisation of the plant body.

Learning Outcomes:

Upon completion of the course, the students will

- become familiar with the structure and functions of various components of plant cell
- understand the process of cell growth and its regulation
- comprehend the structure and functions of tissues organising the various plant organs
- get acquainted with the reproductive processes involved in the life cycle of angiosperms
- be able to appreciate the interactions between the developmental pathways resulting in the differentiation of plant body
- recognise the importance of plant developmental biology in the improvement and conservation of plants.

Unit 1: Introduction to diversity of plant forms **05 Hours**

Historical perspective, methods/tools and techniques (fixation, sectioning, macerations); terms for describing plant cells; basic plant growth-meristems and cell differentiation; Primary and Secondary plant body (introduce terms);Classification of tissues; Simple and complex tissues, Vascular system.

Unit 2: Tissue organisation in stem **05 Hours**

Organization of shoot apex -Apical cell theory, Histogen theory, Tunica Corpus theory, Neuman's Theory of Continuing Meristematic Residue, Cyto-Histological Zonation Theory; Types of vascular bundles; Structure of dicot and monocot stem; Shoot Chimeras

Unit 3: Tissue organisation in leaf **03 Hours**

Initiation and development of leaf; leaf lamina, venation and vascular differentiation in leaf; dermal tissue system, cuticles and special epidermal cells - cuticle; epicuticular waxes; trichomes (uni-and multicellular, glandular and non-glandular, two examples of each); stomata (classification); structure of dicot and monocot leaf, Kranz anatomy

Unit 4: Tissue organisation in root **04 Hours**

Organisation of root apex -Apical cell theory, Histogen theory, Korper - Kappe theory; structure and function of root apex- quiescent centre; root cap; Structure of dicot and monocot root; Endodermis, exodermis and origin of lateral root.

Unit 5: Vascular Cambium **03 Hours**

Structure (Axially and radially oriented elements); function and seasonal activity of cambium; Secondary growth in root and stem, Cambial variants in secondary growth in stem: Included phloem and Phloem wedges.

Unit 6: Wood and Periderm **04 Hours**

Types of rays and axial parenchyma; Cyclic aspects and reaction wood; Sapwood and heartwood; Ring and diffuse porous wood; Early and late wood, tyloses; Pits and plasmodesmata; Wall ingrowths and transfer cells; Ergastic substances; Development and composition of periderm; rhytidome and lenticels.

Unit 7: Adaptive and Defensive Systems **03 Hours**

Anatomical adaptations of xerophytes and hydrophytes.; Adcrustation and incrustation;

Unit 8: Secretory System **02 Hours**

Hydathodes, cavities, lithocysts and laticifers.

Unit 9: Application of Plant Anatomy **01 hour**

Applications in systematics, plant development, physiology, forensics and pharmacognosy. Dendrochronology and dendroclimatology.

Practicals **60 Hours**

1. Prepare temporary whole mounts/ sections to study organisation of apical meristem of root, shoot and vascular cambium.
2. Distribution and types of parenchyma, collenchyma and sclerenchyma through temporary preparations / digital resources/ permanent slides.
3. Prepare temporary stained mounts (maceration, sections) to observe xylem: tracheary elements-tracheids, vessel elements; thickenings; perforation plates; xylem fibres.
4. Study the types and features of wood: ring porous; diffuse porous; tyloses; heartwood and sapwood through specimens, permanent slides and digital resources.

5. Prepare temporary whole mounts/ sections to observe phloem: sieve tubes-sieve plates; companion cells; phloem fibres.
6. Study epidermal system: cell types, stomata types; trichomes: non-glandular and glandular through temporary whole mounts/peels/using enamel.
7. Prepare temporary whole mounts/ sections to study organisation of root: monocot, dicot, secondary growth in roots.
8. Prepare temporary whole mounts/ sections to study organisation of monocot, dicot - primary and secondary growth; phloem wedges in *Bignonia*, included phloem in *Leptadenia/Salvadora*; periderm; lenticels.
9. Prepare temporary whole mounts/ sections to study organisation of leaf: isobilateral, dorsiventral, Kranz anatomy.
10. Study the adaptive anatomy in xerophytes and hydrophytes (two each) through temporary preparations / digital resources/ permanent slides.
11. Study secretory tissues: cavities, lithocysts and laticifers through permanent slides / digital resources.
12. Project: submission of permanent slides

Suggested Reading:

1. Beck, C.B. (2010). Plant Structure and Development. Second edition. Cambridge University Press, Cambridge, UK, New York, USA.
2. Dickison, W.C. (2000). Integrative Plant Anatomy. Harcourt Academic Press, USA.
3. Esau, K. (1977). Anatomy of Seed Plants. John Wiley & Sons, Inc., Delhi.
4. Fahn, A. (1974). Plant Anatomy. Pergmon Press, USA.
5. Mauseth, J.D. (1988). Plant Anatomy. The Benjammin/Cummings Publisher, USA.

Additional Resources:

1. Bahadur, B. Rajam, M.V., Sahijram, L., Krishnamurthy, K.V. (2015). Plant Biology and Biotechnology. Volume 1: Plant Diversity, Organization, Function and Improvement.
2. Crang, R., Lyons-Sobaski, S., Wise, R. (2018) Plant Anatomy: A Concept-Based Approach to the Structure of Seed Plants 1st ed. Springer
3. Cutler, D.F., Botha, T., Stevenson, D.W. (2007). Plant Anatomy - An Applied Aspect. Blackwell Publishing, USA
4. Evert, R.F. (2017) Esau's Plant Anatomy; Meristems, Cells and Tissues Of The Plant Body- Their Structure, Function And Development. 3rd Edn Wiley India.
5. Moza M. K., Bhatnagar A.K. (2007). Plant reproductive biology studies crucial for conservation. Current Science 92:1907.
6. Shivanna, K.R., Tandon, R. (2014). Reproductive Ecology of Flowering Plants: A Manual. Springer (India) Pvt. Ltd. New Delhi, Heidelberg, New York, Dordrecht, London

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

POOL OF DISCIPLINE SPECIFIC ELECTIVES

DISCIPLINE SPECIFIC ELECTIVE COURSE – 03 Applied Phycology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Applied Phycology BOT-DSE-03	**4**	**2**	**0**	**2**	Class XII pass with Biology/ Biotechnology	**Nil**

Learning Objective:

- To gain knowledge about diversity, life forms, life cycles, morphology and economic importance of algae.

Learning Outcomes:
On completion of the course the students will be able to understand:

- use of algae for environment, human welfare and industries.
- algal culture techniques and their commercial production

Unit 1: Scope of phycology **01 hour**
In emerging research areas, environment and industries.

Unit 2: Algae as food, feed and fodder **03 hours**
Nutritional value of algae; Common edible algae; Algae as food, feed and fodder with suitable examples.

Unit 3: Algae in industry **06 hours**
Phycocolloids (Agar-agar, Alginic acid and Carrageenan) and secondary metabolites: Sources and Applications; Pharmaceutical and Nutraceutical uses of algae; Algae in cosmetics; Diatomaceous Earth.

Unit 4: Algae in agriculture **03 hours**
Algae as soil conditioners and biofertilizers; Seaweed liquid extract; Seaweed powder; Algal biorefinery residues.

Unit 5:Role ofAlgae in environment **06 hours**
Algae as pollution indicators; wasteland reclamation; Role of algae in wastewater treatment; Ecological importance of Symbiotic associations of algae; Harmful algal blooms; Red tides; Algal toxins.

Unit 6: Algae in biotechnology and research **05 hours**

Gene sequencing and algal systematics; Algae as a model organism (*Chlamydomonas*, *Chlorella*, *Acetabularia*, *Ectocarpus*, *Porphyra*); Bioluminescent forms; Algae in nanotechnology.

Unit 7: Algae as emerging source of bioenergy **02 hours**

Biofuels (Bioethanol, Biodiesel, Biohydrogen); Algal Biorefinery.

Unit 8: Algal culture techniques and commercial production **04 hours**

Isolation, purification and sterilisation of algae; Freshwater and marine culture media (BG-11 and Provasoli ES medium); Photobioreactors and large-scale production of microalgae; Seaweed farming.

Practicals **60 hours**

1. Isolation and identification of algal species (any three) in water samples from polluted and non-polluted sources through temporary mounts.
2. Nutritional analysis (protein and carbohydrates) of *Spirulina/ Chlorella/* anyother available edible algae.
3. Study of algal symbiosis (*Azolla* fronds) through sectioning or tease mount.
4. Phycocolloid (Agar-agar/ Alginates/ Carrageenan) extraction (demonstration/ digital resources).
5. Microalgal culture - maintain cultures of species isolated in Experiment 1(any three).
6. Commercial applications of algae through photographs/products (edible, cosmetics, biofuels, pharmaceutical, nutraceutical, phyco-remediation).
7. Study of algae as a model organism (any 2) through digital resources.
8. Project work on any applied aspect of algae/ Visit to any Institute or Industry (Report to be submitted).

Suggested Readings:

1. Bold, H.C. and Wynne, M.J. (1985) Introduction to the Algae: Structure and Reproduction, 2nd edition. Prentice-Hall International INC.
2. Chapman, D.J. and Chapman, V.J. (1980) Seaweeds and their uses. 3rdedn. British Library.
3. Kumar, H.D. (1999) Introductory Phycology, 2nd edition. Affiliated East-West Press, New Delhi.
4. Lee, R.E. (2008) Phycology, 4th edition: Cambridge University Press, Cambridge.
5. Sahoo, D. (2000) Farming the Ocean*:* Seaweed Cultivation and Utilization. Aravali Book International, New Delhi.

Additional Resources:

1. Andersen, R.A. (2005) Algal Culturing Techniques. Elsevier Academic Press.
2. Chapman, D.J. and Chapman, V.J. (1973) The Algae. 2nd edn. Macmillan, London.
3. Fleurence, J. and Levine, I. (2016) Seaweed in Health and Disease Prevention. Academic Press publications.
4. Sahoo, D (2010). Common seaweeds of India. IK International Pvt Ltd.
5. Sahoo, D. and Seckbach, J. (2015) The Algae World. Vol 26 Cellular Origin, Life in Extreme Habitats and Astrobiology. Springer, Dordrecht.
6. Van den Hoek, C. Mann, D.G. and Jahans H.M. (1995) Algae: An Introduction to Phycology. Cambridge University Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFICELECTIVE COURSE – 04 Industrial and Environmental Microbiology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Industrial and Environmental Microbiology **BOT-DSE-04**	**4**	**2**	**0**	**2**	Class XII pass with Biology/ Biotechnology	**Nil**

Learning Objectives:

- To introduce students to the concepts, principles, scope and applications of industrial and environmental microbiology.

Learning Outcomes:

Upon successful completion of the course, students will be able to:

- understand how microbiology is applied in manufacturing of industrial products
- know about design of bioreactors
- understand the rationale in medium formulation, design for microbial fermentation, sterilization of medium and air
- comprehend the techniques and the underlying principles in upstream and down-stream processing
- learn the occurrence, abundance and distribution of microorganism in the environment and their role in the environment and also learn different methods for their detection
- understand the basic principles of environment microbiology and application of the same in solving environmental problems - waste water treatment and bioremediation
- comprehend the various methods to determine the quality of water

Unit 1: Microbes and quality of environment **04 hours**

Introduction and scope of microbes in industry and environment; Distribution and isolation of microorganisms from soil, air and water.

Unit 2: Bioreactors/Fermenters and fermentation processes **08 hours**

Solid-state and liquid-state (stationary and submerged) fermentations; Batch and continuous Fermentations; Components of a typical bioreactor, Types of bioreactors: laboratory, pilot

scale and production fermenters; Constantly stirred tank fermenter, tower fermenter, fixed bed and fluidized bed bioreactors and air-lift fermenter.

Unit 3: Microbial production of industrial products 10 hours

Microorganisms generally regarded as safe (GRAS); Downstream processing and uses; Filtration, centrifugation, cell disruption, solvent extraction, precipitation and ultrafiltration, lyophilization; Production of industrially important products: enzyme (amylase); organic acid (citric acid); alcohol (ethanol); antibiotic (penicillin)

Unit 4: Microbial enzymes of industrial importance 03 hours

Applications of industrially important enzymes (protease, lipase, and penicillin acylase); Methods of immobilisation and its advantages.

Unit 5: Microbial flora of water 05 hours

Water pollution: various sources and control measures; Role of microbes in sewage and domestic wastewater treatment systems. Microorganisms as indicators of water quality: coliforms and faecal coliforms.

Practicals 60 hours

1. Principles and functioning of instruments: autoclave, laminar air flow, incubators, types of fermenters.
2. Preparation of different culture media (Nutrient medium/ Luria Bertani medium/Potato dextrose medium/Czapek Dox medium).
3. Hydrolysis of casein andstarch by microorganisms.
4. Alcohol production by yeast using sugar/ jaggery.
5. Serial dilution method for isolation of microorganisms from water and soil and study of aero-microflora.
6. To determine the BOD of sewage water.
7. To qualitatively check the enzyme activity (phosphatase/amylase/cellulase) in soil samples.
8. To determine the microbial activity in soil by Triphenyltetrazolium chloride (TTC) assay or by measuring the CO_2 evolution.
9. Determination of coliforms in water samples using eosin methylene blue (EMB) medium.
10. Visit to any educational institute/ industry and a report to be submitted

Suggested Readings:

1. Bertrand, Jean-Claude, Caumette, P., Lebaron, P, Matheron, R., Normand, P., Sime• Ngando, T. (2015). Environmental Microbiology: Fundamentals and Applications. Amesterdam, Netherlands, Springer.
2. Joe, S., Sukesh (2010). Industrial Microbiology. S.Chand& Company Pvt. Ltd. New Delhi, Delhi.

3. Mohapatra. P.K. (2008). Textbook of Environmental Microbiology. I.K. International Publishing House Pvt.Ltd. New Delhi, Delhi.
4. Okafer, Nduka (2007). Modern Industrial Microbiology & Biotechnology. Science Pubishers, Enfield, NH, USA.
5. Pelzar, M.J. Jr., Chan E.C. S., Krieg, N.R. (2010). Microbiology: An application based approach. New Delhi, Delhi: McGraw Hill Education Pvt. Ltd., Delhi.

Additional Resources:

1. Alef K, and Nannipieri P (1995). Methods in Applied Soil Microbiology and Biochemistry, First Edition Academic Press, USA.
2. Atlas, Bartha. (1997). Microbial Ecology: Fundamentals and Applications. San Fransisco, SF. Pearson.
3. Casida, J.R. (2016). Industrial Microbiology. New Delhi, Delhi, New Age International Publishers.
4. Hurst C.J., Crowford R.L., Garland J.L. and Lipson D.A. (2007). Manual of Environmental Microbiology, American Society of Microbiology, USA.
5. Patel, A.H. (2008). Industrial Microbiology, Bangalore, India: McMillan India Limited.
6. Sharma, P.D. (2005). Environmental Microbiology. Meerut, UP: Alpha Science International, Ltd.
7. Stanbury, P.F., Whitaker, A., Hall, S.J. (2016). Principles of Fermentation Technology. Amesterdam, NDL:Elsevier Publication.
8. Tortora, G.J., Funke, B.R., Case. C.L. (2007). Microbiology (9th edition). San Francisco, SF: Pearson Benjamin Cummings.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category II

Botany Courses for Undergraduate Programme of study with Botany as one of the Core Disciplines
BSc Life Sciences – Botany Component

DISCIPLINE SPECIFIC CORE COURSE – 4: Ecology and Evolution

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Ecology and Evolution LS-BOT-DSC-04	**4**	**2**	**0**	**2**	Class XII pass with Biology/ Biotechnology	**Nil**

Learning objectives:

- To understand basic ecological concepts, processes, inter-relation between the living world and abiotic environment.
- To make students understand the basic concept of evolution and natural selection.

Learning outcomes:

- After successful completion of the course the student shall have adequate knowledge about the basic principles of ecology and evolution.

Unit 1:Introduction to fundamental concepts in Ecology 02 hours

Inter-relation between the living world and abiotic environment. Fundamental concepts: Abiotic and biotic components; Levels of ecological organization: species, population, community, ecosystems, biomes.

Unit 2: Ecological factors 04 hours

Soil: Origin, formation, composition, soil profile. Water: States of water in the environment, precipitation types; Light, Temperature (Thermal stratification in water bodies and atmosphere) and Wind; Ecological amplitude; Leibig's law of minimum; Shelford law of tolerance.

Unit 3: Population Ecology 04 hours

Population Characteristics (dispersion, natality, mortality, survivorship curve, age pyramids); growth rates (density-dependent/independent); Interactions: mutualism, symbiosis, commensalism, competition, parasitism, predation, ammensalism, antibiosis.

Unit 4: Plant communities **05 hours**

Characters; Ecotone and edge effect; Succession; Processes and types (autogenic, allogenic, autotrophic, heterotrophic, primary and secondary)

Unit 5: Ecosystem **05 hours**

Structure; niche and habitats; Food chains and food webs, Ecological pyramids production and productivity; energy flow (single channel and Y-shaped); trophic organisation; Biogeochemical cycling; Cycling of nitrogen and Phosphorous

Unit 6: Introduction to Evolution **03 hours**

Origin and history of life; Macro and microevolution; Phylogeny and the tree of life.

Unit 7: Evolution of Species **04 hours**

Lamarckism and Neo-Lamarckism; Darwinism – selection (natural and artificial), Neo-Darwinism; Species concept and modes of speciation.

Unit 8: Phytogeography **03 hours**

Phytogeographical regions of India; Endemism (definition, factors and types).

Practicals **60 hours**

1. Principle and operation of instruments used to measure microclimatic variables: Soil thermometer, maximum and minimum thermometer, anemometer, psychrometer/hygrometer, rain gauge and lux meter.
2. Determination of pH and detection of carbonates, chlorides, nitrates, sulphates, organic matter and base deficiency from atleast two soil samples by rapid field tests.
3. Study of ecological adaptations of hydrophytes and xerophytes (four each).
4. Study of biotic interactions of the following: Stem parasite (*Cuscuta*), Root parasite (*Orobanche*), Epiphytes (Orchids), Predation (Insectivorous plants).
5. Determination of minimal quadrat size and number for the study of herbaceous vegetation in the college campus, by species area curve method (species to be listed).
6. Quantitative analysis of herbaceous vegetation in the college campus for frequency and comparison with Raunkiaer's frequency distribution law.
7. Study of ecological speciation (allopatric and sympatric) with the help of examples.
8. Study phylogenetic relationships among taxa with the help of exercises.

9. Construct phylogenetic tree using MEGA and interpret evolutionary relationships.

Suggested Readings:

1. Douglas J. Futuyma (1998). Evolutionary Biology (3rd Edition), Sinauer Associates.
2. Kormondy, E.J. (1996). Concepts of Ecology. Prentice Hall, U.S.A. 4th edition.
3. Mark Ridley (2003) Evolution (3rd edition), Blackwell.
4. Odum, E.P. (2005). Fundamentals of Ecology. New Delhi, India: Cengage Leaming India Pvt. Ltd., 5th edition.
5. Reece, J. B., Urry, L. A., Cain, M. L., Wasserman, S. A., Minorsky, P. V., Jackson, R. B. (2014). Campbell biology (Vol. 9). Boston: Pearson.

Additional Resources:

1. Rosenbaum, P.E. (2010). Volpe's Understanding Evolution. McGraw-Hill, New York.
2. Schulze, E. D., Beck, E., Müller-Hohenstein, K. (2005). Plant Ecology. Springer Science & Business Media.
3. Singh, J.S., Singh, S.P., Gupta, S.R. (2014). Ecology, Environmental Science and Conservation. New Delhi, India: S. Chand.
4. Smith, R. L., Smith, T. M., Hickman, G. C., Hickman, S. M. (1998). Elements of ecology.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COURSES OFFERED BY DEPARTMENT OF BOTANY
Category III:

B.Sc. programme in Applied Life Sciences with Agrochemicals and Pest Management

DISCIPLINE SPECIFIC CORE COURSE (DSC 04)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the core course			Eligibility criteria	Pre-requisite of the course (If any)
		Lecture	Tutorial	Practical/ Practice		
Plant Pathology ALS BOT DSC 04	**4**	**2**	**0**	**2**	Class XII pass with Biology/ Biotechnology	**NIL**

Learning Objectives:
The learning objectives of this course are as follows:

- to introduce students with various fungi, fungus like organisms, bacteria and viruses.
- to give an understanding of their characteristics, reproduction and ecology.
- to introduce students with the principles and concepts of plant pathology.
- to acquaint with various plant diseases, symptomatology, causal organisms and their control measures.

Learning Outcomes:

By studying this course, students will be able to:

- understand the world of different types of pathogens of plants.
- identify the characteristic symptoms of different groups of plant pathogens in the fields.
- understand the ecological and economical impact of plant diseases.
- identify common plant diseases and their control measures.
- understand the application and significance of integrated disease management.
- explicate the economic and pathological importance of fungi, bacteria and viruses.

Unit 1: Introduction **3 Hours**
Definition, Concepts and Terminology; General symptoms; Classification of diseases.

Unit 2: **Key events of Disease development** **6 Hours**

Disease cycle; Host pathogen relationships; Plant defence mechanism (Structural and biochemical); Epidemiology and Disease forecasting.

Unit 3: Fungal Diseases **5 Hours**

General symptoms; Disease cycle and Control measures - Powdery mildew of Pea. Black stem Rust of Wheat; Smut of Barley (Loose and Covered smut).

Unit 4: Diseases caused by Oomycota **3 Hours**

General symptoms; Disease cycle and Control measures – White rust of Crucifers; Late blight of Potato.

Unit 5: Bacterial Diseases **3 Hours**

General symptoms; Disease cycle and Control measures - Citrus canker; Angular leaf spot of Cotton.

Unit 6: Viral Diseases **3 Hours**

General symptoms; Mode of transmission and Control measures-- Tobacco mosaic disease; Vein clearing of Bhindi.

Unit 7: Plant Disease Control **7 Hours**

Quarantine, Cultural practices, Physical methods, Chemical methods, Biological control (Antibiosis, Hyper-parasitism, Predation, Induced Systemic Resistance).

Practicals **60 Hours**

1. Study of White rust of crucifers, Symptoms on leaves and hypertrophy with the help of live or preserved specimens. Study of causal organism (*Albugocandida*) with the help of temporary tease/section mount. Permanent section mount of somatic and reproductive phases.
2. Study of Late blight of Potato through specimens, temporary mounts (V.S. of leaf showing infection) and permanent slides.
3. Study of Powdery mildew of Pea, Symptoms on leaves and stem of Pea with the help of live or preserved specimens. Study of *Erysiphe* asexual stage with the help of temporary tease/ section mount and sexual stage through permanent slides.
4. Study of Black stem Rust of Wheat, Symptoms on both Wheat and Barberry with the help of live or preserved specimens/photographs. Study of *Puccinia graministritici* with the help of temporary tease/section mount of Wheat . Permanent slides of somatic and reproductive phases on both the hosts.
5. Study of Smut of Barley, Symptoms of Loose and Covered smut through live or preserved specimens. Study of teliospores through temporary mount.
6. Study of Bacterial Diseases through the specimens - Citrus canker; Angular leaf spot of Cotton.

7. Study of Viral Diseases through specimens - Tobacco mosaic Disease; Vein clearing of Bhindi.
8. Study of Phylloplane Mycoflora through cellotape method.
9. Study through digital images / photographs – Chlorosis, Tuber rot, Apple scab, Mycoparasite, Predaceous fungi.

Essential/ Recommended readings:

1. Singh, R.S. (2021). Plant Diseases 10th revised edition, Medtech, New Delhi.
2. Schumann, G.L. and D'Arcy C.J. (2009). Essential Plant Pathology 2nd edition, AmericanPhytopathological Society, U.S.A.
3. Agrios, G.N. (2005). Plant Pathology 5th edition, Elsevier Academic Press, Amsterdam.
4. Oliver, R. (2023). Agrios' Plant Pathology 6th edition, Academic Press.
5. Sharma, P.D. (2014). Plant Pathology Rastogi Publications, Meerut, U.P.

Suggestive readings:

1. Gupta, R. and Chugh, G. (2022). *Plant, Microbes and Diseases*. I.K. International Pvt. Ltd., Delhi.
2. Ownley B.H. and Trigiano R.N. (2016. *Plant Pathology Concepts and Laboratory Exercises* 3rd edition, CRC Press.
3. Singh, R.S. (2017). Introduction to Principles of Plant Pathology, 5th edition, Medtech, New Delhi.
4. Tronsmo A.M., Munk L., Anika D., Tronsmo A., Yuen J and Collinge D.B. (2020). Plant Pathology and Plant Diseases. CABI Publishing, U.S.A.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

POOL OF DISCIPLINE SPECIFIC CORE
FOR B.SC. PROGRAMME IN APPLIED LIFE SCIENCES WITH AGROCHEMICALS AND PEST MANAGEMENT

DISCIPLINE SPECIFIC ELECTIVE COURSE (DSE 02)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Crop Genetics and Plant Breeding ALS BOT DSE 02	**4**	**2**	**0**	**2**	Class XII pass with Biology/ Biotechnology	**NIL**

Learning Objectives:

The Learning Objectives of this course are as follows:

- to develop an understanding of the concepts of plant breeding and its applications.
- to provide adequate knowledge on the natural breeding systems of different agriculturally important plant and strategies employed for crop improvement.
- to impart skills on plant genome analysis and gene mapping using DNA markers and their use in increasing efficiency of plant breeding.
- to understand the genetic basis of hybrid vigour and development of hybrid varieties.
- to make students familiar with the concept of varietal release and rights of a farmer and plant breeder.

Learning Outcome:

By studying this course, the students will be able to:

- gain knowledge on the importance of plant breeding for developing new cultivars and use of breeding strategies for improvement of crop plants.
- understand the concept of gene pool and germplasm resources that are fundamental to crop improvement.

- explicate the breeding methods for commercially important crop plants.

Unit 1: Introduction (2 Hours)

Importance of plant breeding and its history; Breeding systems in crop plants; Self-incompatibility, male sterility and apomixis, Important achievements in plant breeding.

Unit 2: Sources of Variation (4 Hours)

Plant genetic resources- their management and conservation, utilization of gene pools in breeding programs. Chromosome manipulation- induced mutations, haploidy, polyploidy, somatic hybridization, somaclonal variation.

Unit 3: Conventional Breeding Methods (8 Hours)

Selection methods for self-pollinated, cross-pollinated and vegetatively propagated crop plants; Hybridization for self-pollinated, cross-pollinated and vegetatively propagated crop plants-procedure, advantage and limitations.

Unit 4: Heterosis Breeding (3 Hours)

Genetic and molecular basis of heterosis (hybrid vigour); Development of hybrid varieties through exploitation of hybrid vigour. Inbreeding depression.

Unit 5: Molecular Genetics and Plant Breeding (10 Hours)

Molecular markers as tools in plant breeding; Principle of genetic linkage; Concept of genetic distance; Development and choice of mapping populations (F_2, NILs, RILs, BC etc); Linkage map construction; Quantitative traits - Principles and methods of QTL mapping, QTL Introgression; Marker-assisted breeding- Gene tagging; Marker-aided selection (foreground and background selection); Elimination of linkage drags; Marker assisted recurrent selection (MARS). Novel Plant Breeding Tools (TALEN's, CRISPR-Cas9, Base editing).

Unit 6: Intellectual Property Rights and Varietal Release

(3 Hours)

IPR, Patenting; Breeder's Right; Release of New Varities-Trials & their evaluation, Prerelease, Notification and its Release; Plant variety protection; Farmer's Right.

PRACTICAL (60 Hours)

1. Introduction to open/controlled pollinations in field and laboratory (Breeders kit; temporal details of anthesis, anther dehiscence, CMS, stigma receptivity, emasculation, bagging).

2. Analysis of the breeding system of chosen crop species by calculating pollen:ovule ratio.
3. Calculation of Index of self-incompatibility (ISI).
4. Study of dominant/ codominant nature of different molecular markers.
5. Assessment of phenotypic diversity in different accessions of given plant material using morphological markers.
6. Assessment of genetic diversity and construction of dendrogram using molecular markers.
7. Phenotypic screening of a mapping population/ land races for biotic stress resistance and calculating the log of percentage severity and symptom score.
8. Study of floral biology, emasculation and hybridization techniques in self-pollinated and cross-pollinated crops.
9. Estimation of heterosis, inbreeding depression and heritability.
10. Project: Case study based on gene mapping.
11. Field trip to plant breeding station.

Essential/recommended readings

1. Acquaah, G. (2012). *Principles of Plant Genetics & Breeding*. 2nd edition. Hoboken, NJ, Wiley.
2. Allard, R.W. (1999). *Principles of Plant Breeding*. John Wiley, New York.
3. Singh, B.D. (2022). *Plant Breeding: Principles and Methods*, 12th edition. New Delhi, Delhi: Kalyani Publishers.
4. Frey, K. J. (1982). *Plant Breeding II.* Kalyani Publishers, New Delhi.

Suggestive readings:

1. Chopra, V.L. (2023). *Plant Breeding: Theory and Practice* 2nd Restructured Edition, New India Publishing Agency, New Delhi.
2. Poehlman J. M. and Sleper D. A. (1995). *Breeding Field Crops,* 4th Ed. Panima Publishing Corporation, New Delhi.
3. Welsh, J. R. (1981). *Fundamentals of Plant Genetics and Breeding*. John Wiley and Sons, New York.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES

GENERIC ELECTIVE (BOT-GE-16)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Plant Health & Disease Diagnostics BOT-GE-16	4	2	0	2	Class XII pass with Biology/ Biotechnology	**Nil**

Learning Objectives:

- understand the challenges and importance of plant pathogen diagnosis
- understand methods for reducing/minimizing risk of the spread of pathogens and pests.
- understand principles and tools for early warning systems to protect plant health.

Learning Outcomes:

At the end of this course, students will be able to:

- diagnose the cause of a plant disease and identify the causal agent
- select appropriate methods and strategy for control and mitigate spread.

Unit 1: Introduction to Plant Diseases **04 Hours**

Definition; History of Plant Pathology, Concept and basic components of disease; Causes and classification of diseases; Disease cycle; Significance of plant diseases.

Unit 2: Plant Disease Diagnosis **06 Hours**

Koch's Postulates; Plant disease symptoms and types (Necrosis, Hypertrophy and Hyperplasia, Hypoplasia); General symptoms of viral, bacterial and fungal plant diseases; Methods of plant disease diagnosis- Histochemical, Serological and PCR techniques.

Unit 3: Plant Disease Epidemiology **05 Hours**

Epidemics and factors affecting the development of epidemics; Epidemic assessment and Disease forecasting; Tools of epidemiology geographic information system (GIS), Global Positioning System (GPS), Geostatistics, Remote sensing.

Unit 4: Plant Diseases **11 hours**

Causal organism, symptoms, disease cycle and management of the plant disease caused by bacteria, virus and fungi: Tobacco Mosaic, Yellow Vein mosaic of Bhendi, Citrus Canker, Angular leaf spot of Cotton, White rust of crucifers, Late & early blight of potato, Rust of wheat, Smut of Cereals.

Unit 5: Management of Plant Diseases **04 Hours**

Concept of integrated disease management (IDM); strategies for IDM- regulatory, cultural, physical, chemical and biological.

Practicals **60 hours**

1. Preparation of Fungal Medium (Potato Dextrose Agar | Czapek Dox), Study of Instruments (Laminar Air flow, Autoclave, Incubator) & sterilization techniques.
2. Isolation pathogen from an infected plant sample.
3. Symptoms of Citrus canker and Angular leaf spot of Cotton through specimens / photograph.
4. Powdery mildew of pea: Symptoms and study of asexual and sexual stage of causal organism (*Erysiphe polygoni*) with the help of temporary tease /section/permanent slides.
5. Symptoms of Tobacco Mosaic Virus and Yellow Vein Mosaic of Bhinde through specimens / photographs.
6. White Rust of Crucifers - Symptoms and study of asexual and sexual stages of *Albugo candida* from tease /section/permanent slides.
7. Late blight of potato. Symptoms
8. Early blight of potato - Symptoms and study of asexual stage of *Alternaria solani* through temporary tease mounts
9. Black stem rust of wheat: Symptoms on both wheat and barberry. Types of spores of *Puccinia gormenistritici* wheat and barberry by temporary tease/section mount /permanent slides.
10. Symptoms of Loose and covered smuts of barley.

Suggested Readings:

1. Cooke, B.M., Jones, D.G., Kaye, B. (2007) The Epidemiology of Plant Diseases, 2nd ed. Springer.
2. Madden, L.V., Hughes, G. and Bosch, F van den (2017). The Study of Plant Disease Epidemics, APS Publications.
3. Sethi, I.K. and Walia, S.K. (2018). Text book of Fungi and their Allies. (2nd Edition), Medtech Publishers, Delhi.
4. Sharma, P.D. (2014*).* Plant Pathology. Rastogi Publications, Meerut.
5. Singh R.S. (2018*).* Plant Diseases. 10th Edition Medtech, New De

Additional Resources:

1. Agrios G.N. (2005*).* Plant Pathology. 5th Edition, Elsevier.
2. Gupta, V.K. and Sharma, R.C. (2020) Integrated Disease Management and Plant Health, Scientific Publishers, India
3. Kapoor, A.S. and Banyal, D.K. (2012). Plant Disease Epidemiology and Management, AbeBooks.

GENERIC ELECTIVE (BOT-GE-17)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Environmental Monitoring and Ecosystem Restoration BOT-GE-17	4	2	0	2	Class XII pass with science	**Nil**

Learning Objectives:

- The course will train students on methods for conducting environmental monitoring protocols.
- It will provide experiential learning in conducting quality check experiments on soil, water and air.
- The course will develop understanding on different aspects of ecosystem restoration and processes through monitoring system.

Learning Outcomes:

At the end of this course, students will be able to**:**

- understand the problem of environmental degradation
- assessment of quantitative and qualitative parameters used in environmental monitoring of air, soil and water.
- understand the strategies and methods for ecosystem restoration, including physico-chemical and biological indicators.
- understand degraded and restored sites through field visits.

Unit 1: Introduction **03 Hours**

Ecosystem degradation, Magnitude/ Scale of degradation (National and Global Scenario); influence of climate change in Ecosystem degradation (extreme and erratic natural events)

Unit 2: Factors of environmental degradation **03 Hours**

Factors responsible for degradation of soil, water, air and loss of biodiversity; natural and anthropogenic-forest fires, landslides, floods, deforestation, overgrazing, soil erosion, mining, landfills, etc.

Unit 3: Ecosystem Restoration **06 Hours**

Definition; UN decade on Ecosystem Restoration; Bradshaw's Concept: Restoration, Rehabilitation and Reclamation (replacement); Role of Sustainable Development Goals (SDGs)., REDD+, Joint Forest Management; Relevance for people, nature and climate.

Unit 4: Environment Monitoring **09 Hours**

Indicators of land degradation: Soil- alkalinity, salinity, organic carbon and soil health; Water- pH, Hardness, BOD, COD and Heavy metals content; Air- PM 10 , PM 2.5 , SO_2 , NOx, ozone), Air Quality Index (AQI); Bioindicators/ Biomonitors (plants, animals and microbes).

Unit 5: Role of Plants and Microbes in Ecosystem Restoration **09 Hours**

Brief account of remediation technologies: bioremediation, phytoremediation (phytoextraction, rhizofiltration, phytovolatilization, phytostabilization etc); Role of associations of Grasses-AMF, Legumes-Rhizobium in restoring degraded land/ mined out areas; Role of macrophytes in wetland restoration; Role of green spaces including parklands and avenue plantations in amelioration of air quality.

Practicals **60 hours**

1. Field visit to degraded ecosystem/ natural ecosystem/restored ecosystem.
2. Analyze the soil and water samples from polluted and unpolluted sites for their pH
3. Analyze carbonates, chlorides, nitrates, sulphates, organic matter and base deficiency by rapid field tests in soil samples from degraded and healthy sites.
4. Determine the organic matter in soil samples by Walkley and Black's rapid titration method.
5. Determine the dissolved oxygen of water samples of polluted and nonpolluted sites by Winkler's method.
6. Determine the BOD and COD content of water samples of polluted and nonpolluted sites.
7. To collect, collate and analyze Air Quality Index (AQI) data, Water Quality data of various locations from DPCC/CPCB website collected from real-time monitoring stations.
8. Study of bioindicators (plant, animal and microbes).

Suggested Readings:

1. Bagyaraj, D.J. and Jamaluddin (2016) Microbes for Restoration of Degraded Ecosystems, New India Publishing Agency
2. Majumdar R., Kashyap R (2020). Practical Manual of Ecology and Environmental Science, Prestige
3. Ricklefs, R. E., Miller, G. L., (2000). Ecology, 4th edition W.H. Freeman.
4. Sharma, P. D. (2017). Ecology and Environment, 13th Edition. Meerut: Rastogi Publications.
5. Smith, T. M., Smith, R. L. (2012). Elements of Ecology 8th Edition. Pearson.

Additional Resources:

1. Central Pollution Control Board (CPCB) Air and Water: https://cpcb.nic.in/real-time-data/
2. Managing Ecosystems in The Context of Climate Change Mitigation: A review of current knowledge and recommendations to support ecosystem-based mitigation actions that look beyond terrestrial forests https://www.cbd.int/doc/publications/cbd-ts-86-en.pdf
3. National Clean Air Programme (NCAP) 2018. https://moef.gov.in/wp-content/uploads/2019/05/NCAP_Report.pdf
4. Real Time Ambient Air Quality Data (DPCC). https://www.dpccairdata.com/dpccairdata/display/index.php
5. Restoration for People, Nature and Climate, https://wedocs.unep.org/bitstream/handle/20.500.11822/36251/ERPNC.pdf
6. Champion, H. G., and S. K. Seth. A revised classification of forest types of India. Manager Publication, Government of India, Delhi (1968).

Note:Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER-V

BSC. (HONS.) BOTANY

DISCIPLINE SPECIFIC CORE COURSE – 13: Molecular Biology of the Cell

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Molecular Biology of the Cell – DSC 13	**4**	**2**	0	**2**	Class XII pass with Biology/ Biotechnology	**Nil**

Learning Objective:

- To gain comprehensive knowledge about of genetic material, central dogma, genetic code, DNA replication, transcription, modification of transcript, translation and regulation of gene expression.

Learning Outcomes: At the end of this course the student will understand:

1. structure and function of nucleic acids at molecular level.
2. the concept of central dogma and genetic code.
3. molecular details of DNA replication and its types.
4. cellular processes of transcription and translation including modification of transcripts and polypeptides/proteins
5. mechanisms regulating gene expression.

Unit 1: Nucleic acids as carriers of genetic information **02 Hours**

Discovery of nucleic acids, Experiments that established nucleic acids (DNA & RNA) as the carrier of genetic information: Griffith's, Hershey & Chase, Avery, McLeod & McCarty, and Fraenkel-Conrat's experiment.

Unit 2: Structure and organisation of the genetic material **03 Hours**

DNA double helix structure (Chargaff's rule; Watson and Crick model); salient features of DNA double helix. Types of DNA: A, B & Z conformations, denaturation and renaturation (only melting profile- Tm), types of RNA (mRNA, rRNA, tRNA, small RNAs). split genes (Phillip Sharp)

Unit 3: Central Dogma and Genetic Code **04 Hours**

Beadle and Tatum's one gene one enzyme hypothesis; The Central Dogma, Genetic code and its salient features, Experiments for deciphering Genetic code (Experiments by Nirenberg &Matthaei, and Har Gobind Khorana). Adaptor hypothesis by Crick; Baltimore and Temin's discovery of reverse transcription

Unit 4: Replication of DNA **06 Hours**

Delbruck's Dispersive mechanism model; Bloch and Butler's conservative replication model; Messelson and Stahl's semi-conservative replication model; Mechanism - initiation, elongation and termination; Enzymes and other proteins involved in DNA replication; General principles – bidirectional, semiconservative and semi-discontinuous replication (Replisome), RNA priming (Primase &Primosome); Various modes of DNA replication, including rolling circle, θ (theta) mode of replication, replication of linear dsDNA. Replication of the 5'end of linear chromosome (end-replication problem & Telomerase).

Unit 5: Mechanism of Transcription **05 Hours**

Transcription process in prokaryotes (Initiation, Elongation and Termination); structure and function of RNA polymerase enzyme; concept of promoters and transcription factors; comparison between prokaryotic and eukaryotic transcription; concept of post-transcriptional modifications (introduction to eukaryotic mRNA processing: 5' capping; Splicing and alternative splicing; 3' poly A tailing).

Unit 6: Mechanism of Translation **05 Hours**

Translation in prokaryotes: Initiation, Elongation and Termination; concept of charging of tRNA and role of aminoacyl synthetases; ribosome structure and assembly (prokaryotes and eukaryotes); comparison between prokaryotic and eukaryotic translation; post-translational modifications (phosphorylation, glycosylation).

Unit 7: Gene Regulation **05 Hours**

Gene regulation in prokaryotes: Operon concept; inducible & repressible systems; regulation of lactose metabolism in *E. coli* (inducible system, positive & negative control); regulation of tryptophan synthesis (Repression-De-repression and concept of Attenuation) in *E. coli.* Gene regulation in eukaryotes: concept of gene silencing by DNA methylation and RNA interference.

Practicals **60 hours**

1. Isolation of plasmid and genomic DNA from *E. coli* and quantification using agarose gel electrophoresis
2. Isolation of genomic DNA from plant samples (atleast two different genera / species) using CTAB method and quantification using agarose gel electrophoresis
3. Quantification of unknown DNA by diphenylamine reagent (colorimetry).

4. To estimate the generation time of *Escherichia coli* (prokaryote) and budding yeast (eukaryote) by spectrophotometric measurement and plotting growth curve as an indirect method to study DNA replication
5. To study control of replication in budding yeast with the help of specific inhibitors (beta-lactams:-Clavulanic acid, Ceftazidime, Piperacillin, Ceftriaxone etc) and studying budding frequency.
6. To study control of transcription in *Escherichia coli* with the help of prokaryotic (Rifampicin) and eukaryotic (Actinomycin-D) transcription inhibitors and plotting growth curve
7. To study control of translation in *Escherichia coli* with the help of prokaryotic (Kanamycin / Streptomycin) inhibitors using an IPTG-inducible system.
8. To understand the regulation of lactose (*lac*) operon (positive & negative regulation) and tryptophan (*trp*) operon (Repression and De-repression & Attenuation) through digital resources/data sets.

Suggestive readings:

1. William S. Klug, Michael R. Cummings, Charlotte A. Spencer, Michael A. Palladino, & Darrell Killian (2019). Concepts of Genetics. Pearson; 12th edition.
2. Watson J.D., Baker, T.A., Bell, S.P., Gann, A., Levine, M., Losick, R. (2007). Molecular Biology of the Gene, Pearson Benjamin Cummings, CSHL Press, New York, U.S.A. 6th edition.
3. Snustad, D.P. and Simmons, M.J. (2019). Principles of Genetics. John Wiley, 7th edition.
4. Russell, P. J. (2010). iGenetics- A Molecular Approach. Benjamin Cummings, U.S.A. 3rd edition.

Additional Resources:

1. Griffiths, A.J.F., John Doebley J., Peichel, C., Wassarman D.A. (2020). Introduction to Genetic Analysis. W H Freeman & Co; 12th edition
2. Micklos D A., Freyer G.A. (2003) DNA Science: A First Course (2nd Edition), Cold Spring Harbor Laboratory; Greg A., CSHL Press, USA

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 14: Reproductive Biology of Angiosperms

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Reproductive Biology of Angiosperms – DSC 14	4	**2**	0	**2**	Class XII pass with Biology/ Biotechnology	**Nil**

Learning Objectives:

- To understand the scope of reproductive biology, development and structure of male and female reproductive units of the flower, organization of male and female gametophytes, pre-fertilization, fertilization and post-fertilization events.
- To understand the processes and significance of pollen--pistil interactions, apomixis and polyembryony.
- Significance of seed as a diaspore.

Learning Outcomes:

Upon completion of the course, the students will become familiar with:

- The significance and scope of reproductive biological studies in crop production and conservation. Structure and function of anther and ovule, male and female gametophyte.
- The significance of associations of MGU, FGU and double fertilization; embryo and endosperm development, genomic imprinting.
- Pollination and seed dispersal mechanisms, apomixis and polyembryony as alternate pathways of angiosperm reproduction.
- Experiential learning through field trips, scientific photography, videography and documentary preparation. The students will also learn to write scientific reports and present scientific data.

Unit 1: Introduction **01 Hour**

Introduction about Reproductive biology and its scope; significant contributors to the field; structure of flower.

Unit 2: Anther and Pollen **05 Hours**

Anther wall: Structure and functions, microsporogenesis, microgametogenesis; Pollen wall: Structure and functions, Number Position Character (NPC), pollen viability and storage, Male Germ Unit (MGU) – structure and significance.

Unit 3: Pistil **04 Hours**

General structure and types of pistil and ovules; megasporogenesis (monosporic, bisporic and tetrasporic) and megagametogenesis (details of *Polygonum* type); Organization and ultrastructure of mature embryo sac; cell specification; Female Germ Unit – structure and significance.

Unit 4: Pollination **04 Hours**

Types (Self, cross, geitonogamy, xenogamy), significance; Structure of the stigma and style; Pollen-pistil interactions- capture, adhesion, hydration, pollen tube penetration; Path of pollen tube in the pistil; Role of synergids in pollen tube attraction; Double fertilization; Polytubey block

Unit 5: Self-Incompatibility **04 Hours**

Basic concepts (interspecific, intraspecific, homomorphic, heteromorphic, GSI and SSI); Methods to overcome self-incompatibility (in brief): mixed-pollination, intraovarian and in vitro pollination and fertilization, modification of stigma surface, parasexual hybridization.

Unit 6: Endosperm **02 Hours**

Types (2 examples each), development, structure and functions; Genomic imprinting

Unit 7: Embryo **04 Hours**

General pattern and comparison of development of dicot and monocot embryo (initial apical cell and basal cell polarity, globular embryo with radial polarity, mature embryo); Suspensor: structure and functions; Embryo-endosperm relationship; Nutrition of embryo, haustorial systems: Embryo patterning.

Unit 8: Seed **02 Hours**

Structure and importance of seed as diaspore, as storage organ; germination and seedling formation.

Units 9: Polyembryony and apomixis **02 Hours**

Introduction, types, causes and applications.

Unit 10. Applications of Reproductive biology **02 Hours**

Haploid embryos - concept and significance; crop productivity, conservation

Practicals **60 hours**

- Anther: Wall and its ontogeny, tapetum (amoeboid and glandular), Microspore mother cell, spore tetrads, uninucleate, bicelled and dehisced anther; Temporary stained mounts of T.S. anther to study the organization.

- Pollen: General morphology, psuedomonads, polyads, pollinia (slides/digital resources, fresh material); Ultrastructure of pollen wall (micrograph); Pollen viability: tetrazolium test/FDA; Germination: calculation of percentage germination in different media using hanging drop/sitting method.

- Temporary mounts of pollen grains cleared with 1N HCl/KOH to study germ pores; Ultrastructure of male germ unit (MGU) through micrographs.

- Ovule: Types-anatropous, orthotropous, amphitropous/campylotropous, circinotropous, unitegmic, bitegmic; tenuinucellate and crassinucellate; Special structures: endothelium, obturator, hypostase, caruncle and aril (permanent slides/specimens/digital resources).
  Female gametophyte: developmental sequence of monosporic embryo sac only; Ultrastructure of Female Germ Unit.

- Pollination: Adaptations; bagging experiment; **project on pollination.

- Intra-ovarian pollination; Test tube pollination (through digital resources).

- Endosperm: Dissections of developing seeds for endosperm with free-nuclear haustoria.
- Embryogenesis: Study of development of dicot embryo through permanent slides; dissection of developing seeds for embryos at various developmental stages; Study of suspensor through electron micrographs.

- Seed dispersal mechanisms (adaptations through live specimens), **project on seed dispersal

** The projects can be on pollination/ seed dispersal or on any other topic based on the syllabus. It can be a write-up with visuals. The students can also make a digital project submission in the form of a documentary of 5-10 min.

Suggested Readings:

- Bhojwani S.S., Bhatnagar S.P. & Dantu P.K. (2015). The Embryology of Angiosperms, 6th Edition. By VIKAS PUBLISHING HOUSE. ISBN: 978-93259-8129-4.
- P. Maheshwari, (2004). An introduction to the embryology of Angiosperms. Tata McGraw-Hill Edition, ISBN: 0-07-099434-X.
- Johri, B.M. (1984). Embryology of Angiosperms. Netherlands: Springer-Verlag. ISBN: 13:978-3-642-69304-5
- Raghavan, V. (2000). Developmental Biology of Flowering plants. Netherlands: Springer. ISBN: 978-1-4612-7054-6.
- Shivanna, K.R. (2003). Pollen Biology and Biotechnology. New Delhi, Delhi: Oxford and IBH Publishing Co. Pvt. Ltd.
- Mangla,Y., Khanduri, P., Gupta, C.K. 2022. Reproductive Biology of Angiosperms: Concepts and Methods.Cambridge University Press ISBN 978-1-009-16040-7.
- Tandon R, Shivanna KR, Koul M Reproductive Ecology of Flowering Plants: Patterns and Processes 1st ed. 2020 Edition ISBN 978-9811542091.Springer Verlag
- Kapoor, R., Kaur, I. Koul M.2016. Plant Reproductive Biology and Conservation IK International Publishing House Ltd. India ISBN: 9789382332909

Additional Resources:

- Shivanna, K.R., Tandon, R. (2020). Reproductive Ecology of Flowering Plants: A Manual. Springer (India) Pvt. Ltd. New Delhi, Heidelberg, New York, Dordrecht, London
- Shivanna, K. R., & Rangaswamy, N. S. (2012). *Pollen biology: a laboratory manual*. Springer Science & Business Media.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 15: Plant Physiology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Plant Physiology – DSC 15	**4**	**2**	**0**	**2**	Class XII pass with Biology/ Biotechnology	**Nil**

Learning objective:

7. To introduce the basic principles of plant structure and function and its application in related fields.

Learning outcomes: On completion of the course the students will be able to:

8. understand the structure and function of plants
9. comprehend and compare various tissue systems in plants and their role
10. realise the importance of water, soil and atmosphere in the life of organisms
11. appreciate the ability of plants to sense the environment and adapt
12. interpret and evaluate the significance of regulator molecules in controlling life forms
13. apply the principles of plant physiology to solve problems in related fields

Unit 1: Plant-water relations **04 Hours**

Water potential and its components, water absorption by roots, water movement via symplast, apoplast and aquaporins, root pressure, guttation, ascent of sap, cohesion-tension theory, transpiration, factors affecting transpiration, anti-transpirants

Unit 2: Mineral nutrition **04 Hours**

Essential and beneficial elements, macro- and micro-elements, criteria for essentiality, roles of essential elements, chelating agents, phytosiderophores, mineral nutrition in hydroponics and aeroponics.

Unit 3: Nutrient uptake **05 Hours**

Transport of ions across cell membrane, passive absorption, simple and facilitated diffusion (carrier and channel proteins), Fick's law, active absorption, proton ATPase pump, electrochemical gradient, ion flux, uniport, co-transport (symport, antiport)

Unit 4: Translocation in the phloem **03 Hours**

Composition of phloem sap, phloem loading and unloading, Pressure-Flow Model, source-sink relationship

Unit 5: Plant growth regulators **08 Hours**

Chemical nature (basic structure, precursor), physiological roles, bioassays and applications of Auxins, Gibberellins, Cytokinins, Abscisic Acid, Ethylene; Other growth regulators - Jasmonic Acid, Brassinosteroids, Nitric Oxide. Mechanism of action of Auxin. Introduction to interactions among plant growth regulators.

Unit 6: Physiology of photo-sensory molecules **03 Hours**

Discovery, chemical nature, mode of action and role of phytochrome, cryptochrome and phototropin in photomorphogenesis

Unit 7: Physiology of flowering **02 Hours**

Concept of florigen, photoperiodism, CO-FT Model of flowering, vernalization.

Unit 8: Seed dormancy **01 hour**

Seed dormancy -causes and methods to induce and/or overcome dormancy

Practicals **60 Hours**

9. Determination of osmotic potential of plant cell sap by plasmolytic method.
10. Determination of water potential of potato tuber cells by weight method.
11. Determination of water potential of potato tuber cells by falling drop method.
12. Study of effect of light on the rate of transpiration in excised leafy twig.
13. Calculation of stomatal index and stomatal frequency from the lower surface of leaves of a mesophyte and a xerophyte.
14. To calculate the area of an open stoma and percentage of leaf area open through stomata in a mesophyte and a xerophyte (lower surface).
15. To study the effect of different concentrations of ABA on stomatal closure.
16. To study the effect of light and dark on seed germination.
17. To study induction of amylase activity in germinating barley grains.
18. To study the effect of ethylene on fruit ripening.
19. To study the effect of auxin on rooting.

Suggested Readings:

6. Hopkins, W. G., Huner, N. P. A. (2009). Introduction to Plant Physiology, 4th edition. New Delhi, Delhi: Wiley India Pvt. Ltd.
7. Taiz, L., Zeiger, E., Moller, I. M., Murphy, A. (2018). Plant Physiology and Development, 6th edition. New York, NY: Oxford University Press, Sinauer Associates.
8. Kochhar, S.L., Gujral, S.K. (2020). Plant Physiology: Theory and Applications. New Delhi, Delhi: Foundation Books, 2nd Edn. Cambridge University Press India Pvt, Ltd.

Additional Resources:

- Bajracharya, D. (1999). Experiments in Plant Physiology: A Laboratory Manual. New Delhi, Delhi: Narosa Publishing House.
- Bhatla, S.C., Lal, M.A. (2018). Plant Physiology, Development and Metabolism. Singapore: Springer Nature, Singapore Pvt. Ltd.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF DISCIPLINE SPECIFIC ELECTIVES

DISCIPLINE SPECIFIC ELECTIVES (BOT-DSE-05)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Plant Pathology **BOT-DSE-05**	4	2	0	2	Class XII pass with Biology/ Biotechnology	

Learning Objectives:

- To introduce students with the phytopathology, its concepts and principles\
- To acquaint with various plant diseases, causal organisms and their control

Learning Outcomes: Upon completion of this course, the students will be able to:

- Understand the economic and pathological importance of fungi, bacteria and viruses
- Identify common plant diseases and their control measures

Unit 1: Introduction **03 Hours**

Definition of disease and its components (disease pyramid); Classification of diseases (on the basis of pathogens; geographical distribution; extent of occurrence); History and significance of Phytopathology (with special reference to India); Eminent plant pathologists and their contributions (Anton de Bary; E.J. Butler; Louis Pasteur; PMA Millardet; E.F. Smith; Adolf Mayer; K.C. Mehta, J.F. Dastur ; B.B. Mundkur; R.N. Tandon).

Unit 2: Basic concepts of Plant Pathology **04 Hours**

Definitions (Pathogenesis; Pathogen; symptoms; etiology); Types of pathogens and their Symptoms (Fungus, Oomycetes, Bacteria, Virus, Nematode, Phytoplasma); Koch's Postulates; Disease cycle (Components) - Epidemiology and forecasting of Plant diseases.

Unit 3: Host- -Pathogen relationship **04 Hours**

How pathogens attack plants (brief concept on mode of penetration; post-penetration and colonization). Plant defence mechanisms (Constitutive and induced, structural and biochemical).

Unit 4: Fungal diseases **05 Hours**

Causal Organism, Symptoms, Disease Cycle and control: Powdery mildew of Pea; Ergot of Rye; Apple scab, Early blight of potato, red rot of sugarcane, Black, Yellow and Brown rust of Wheat; Smut of Barley (Loose and Covered Smut).

Unit 5: Oomycete Diseases **02 Hours**

Causal organism, symptoms, disease cycle and control: Late Blight of Potato; White Rust of Crucifers; Downy mildew of Grapes.

Unit 6: Bacterial Diseases **01 Hours**

General symptoms; Disease cycle and Control measures - Citrus canker; Angular leaf spot of Cotton.

Unit 7: Viral Diseases **01 Hours**

General symptoms; Mode of transmission and Control measures-Tobacco mosaic disease; Vein Clearing of Bhindi

Unit 8: Nematode Diseases **01 Hours**

General symptoms, Disease cycle and Control measures-Root knot disease of Brinjal.

Unit 9: Plant Disease Control **07 Hours**

Plant quarantine and its significance; Methods of disease control: Physical (Heat treatment, drying, radiation and regeneration); Chemical methods (foliar spray; dust, seed treatment; soil treatment; treatment of wounds). Types of fungicides - Inorganic (Bordeaux mixture, Fixed copper; Sulphur, Lime Sulphur); Organic (Dithiocarbamates, quinones); Systemic fungicides and their mode of action (Oxanthin, Strobilurins, Benzimidazole, Pyrimidine). Cultural practices (Host eradication, sanitation, crop rotation, Polythene traps, Mulches) Biological Control (Antibiosis, hyper - parasitism, Hypovirulence, Predation, Induced systemic Resistance).

Unit 8: Plant Disease Control **02 Hours**

Quarantine, Cultural practices, Physical methods, Chemical methods, Biological control (Antibiosis, Hyper-parasitism, Hypovirulence, Predation, Induced Systemic Resistance).

Practicals **60 hours**

4. Study of Late blight of Potato through specimens, temporary mounts (V.S. of leaf showing infection) and permanent slides.
5. Study of Black stem Rust of Wheat: Symptoms on wheat and barberry. Observe uredospores and teleutospores on V.S. wheat leaf/ to study stem spore stages of *Puccinia graministritici* with the help of temporary tease/section mount of wheat. Permanent slides of somatic and reproductive phases on both the hosts.
6. Study of smut of barley, symptoms of loose and covered smut and temporary spore mount.
7. Study of Powdery mildew of pea, Symptoms with the help of live or preserved specimens. Study of *Erysiphe* asexual and sexual stages with the help of temporary tease/section mount/ permanent slides.
8. Study of symptoms of Red rot of sugarcane, W.M. of conidia through temporary tease mount.

9. Study symptoms of bacterial diseases: Citrus canker, Angular leaf spot of Cotton.
10. Study symptoms of viral diseases: Tobacco mosaic Disease, Vein clearing of *Abelmoschus esculentus*/*Ageratum* sp.
11. Study of nematode diseases: Root knot disease of Brinjal.
12. Isolation of seed borne mycoflora by moist chamber method technique.
13. Study of biocontrol agents: Nematophagous fungi; *Trichoderma* sp.
14. The students should submit specimens of any two plant diseases studied by them.

Suggested Readings:

7. Agrios, G.N. (2005) *Plant Pathology* 5 th edition: Elsevier Academic Press, Amesterdam.
8. Sharma, P.D. (2014) *Plant Pathology* Rastogi Publications, Meerut, U.P.
9. Singh, R.S. (2018) *Plant Diseases*. 10th Edition Medtech, New Delhi.

Additional Readings:

- Ownley, Bonnie and Trigiano, Robert N. (2017). Plant Pathology: Concepts and Laboratory Exercises, 3rd Edition, CRC Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVES (BOT-DSE-06)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Natural Resource Management **BOT-DSE-06**	4	2	0	2	Class XII pass with Biology/ Biotechnology	**Nil**

Learning Objectives:

- Natural Resources are materials from earth which support life and significantly meet the needs of people. The paper aims to describe the different types of natural resources and their management. Students will study about the importance of each natural resource and how and why they are threatened in current times. They will also be taught about sustainably using our resources

Learning outcomes: At the end of this course, students will be able to:

13. understand the different resources available in nature
14. learn the importance of each resource along with the threats to these resources
15. gain an in-depth understanding of management of these resources and also restoration of natural ecosystems
16. study the importance of sustainable practices
17. gain an insight into various initiatives taken the world over to save our natural resources.
18. understand the concept of clean energy and management of waste

Unit 1: Natural Resources **01 Hours**
Definition, fundamental concepts and types

Unit 2: Sustainable Utilization **04 Hours**
Concept, goals, approaches (economic, ecological, socio-cultural)

Unit 3: Land Resources **06 Hours**
Forests (definition, threats, management); Agricultural practices and their impact; Soil degradation (causes, management and remediation/restoration strategies)

Unit 4: Water Resources **04 Hours**

Freshwater, Marine, Estuarine, Wetlands – Threats and Management

Unit 5: Biological Resources **03 Hours**
Biodiversity – Levels, Significance, Threats, Management

Unit 6: Energy **02 Hours**
Clean energy strategies – Solar, Wind, Hydro, Tidal, Geo-thermal, Bio-energy

Unit 7: Climate Change **04 Hours**
Impact, adaptation and mitigation (Land, Soil, Water, Biodiversity, Air)

Unit 8: Contemporary practices **04 Hours**
EIA, GIS, Energy Audits, Waste Management, Ecosystem Restoration, Carbon footprint

Unit 9: National and International Initiatives **02 Hours**
International Solar Alliance; Ramsar Convention; Basel Convention; Carbon Neutral Goals; Net-zero Coalition; Clean Development Mechanism; CAMPA (Compensatory Afforestation Fund Management and Planning Authority); Carbon Credits; REDD+ project, Renewable Energy Certificates

Practicals **60 hours**

5. Comparison of pH (pH meter) and salinity (Electrical Conductivity) of various soil samples.
6. Comparison of field capacity of various soil samples.
7. Comparison of pH (pH meter) and TDS (TDS meter) of various water samples.
8. Comparison of salinity (titrimetric method) of various water samples.
9. Calculation and comparison of BOD and COD of various water samples from given data.
10. Comparison of species diversity in various communities by Shannon-Wiener Index.
11. Measurement of dominance of woody species by DBH method in the college campus.
12. Project (any one of the following):
    6. Rainwater harvesting (site visit)
    7. Ecological restoration (site visit)
    8. Energy audit
    9. Seed germination and seedling growth in garden and contaminated soils
    10. Composting
    11. Any other
13. Field visit/s to any degraded ecosystem (landfill, polluted water body, invaded forest) or any ongoing restoration project site.

Suggestive readings:

- Vasudevan, N. (2006). Essentials of Environmental Science. New Delhi, India: Narosa Publishing House.
- Singh, J. S., Singh, S.P. and Gupta, S.R. (2006). Ecology, Environment and Resource

Conservation. New Delhi, India: Anamaya Publications.
- Rogers, P.P., Jalal, K.F. and Boyd, J.A. (2008). An Introduction to Sustainable Development. New Delhi, India: Prentice Hall of India Private Limited.

Additional resource:

10. https://moef.gov.in/en/division/forest-divisions-2/campa/compensatory-afforestation-fund-management-and-planning-authority-campa/
11. https://www.un.org/en/climatechange/net-zero-coalition
12. https://www.recregistryindia.nic.in/
13. https://static.investindia.gov.in/National%20Policy%20on%20Biofuels.pdf
14. https://cri.nccf.in/
15. https://www.investindia.gov.in/team-india-blogs/carbon-financing-india
16. https://www.un-redd.org/
17. Ecosystem Restoration for People, Nature and Climate https://wedocs.unep.org/bitstream/handle/20.500.11822/36251/ERPNC.pdf
18. Managing Ecosystems In The Context Of Climate Change Mitigation: A review of current knowledge and recommendations to support ecosystem-based mitigation actions that look beyond terrestrial forests https://www.cbd.int/doc/publications/cbd-ts-86-en.pdf
19. Jordan III, W. R., Gilpin, M. E., Aber, J. D. (1987). Restoration Ecology: a synthetic approach to ecological research. Cambridge, Great Britain: Cambridge University Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COURSES OFFERED BY DEPARTMENT OF BOTANY

Category II

Botany Courses for Undergraduate Programme of study with Botany as one of the Core Disciplines

(B.Sc. Life Sciences with Botany as one of the Core discipline)

DISCIPLINE SPECIFIC CORE (LS-BOT-DSC-05)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Plant Physiology and Metabolism **LS-BOT-DSC-05**	4	2	0	2	Class XII pass with Biology/ Biotechnology	Nil

Learning Objectives:

4. To make students realize how plants function, the importance of water, minerals, phytohormones, and role of light in plant growth and development;
5. To understand mechanisms of carbon assimilation, nitrogen metabolism, phloem transport and translocation.

Learning Outcomes: At the end of this course, students will be able to:

- correlate physiological and metabolic processes with functioning of the plants.
- establish the link between theoretical principles and experimental evidence.

Unit 1: Plant-water relations **03 hours**

Water potential and its components, pathway of water movement, ascent of sap (include root pressure and guttation), transpiration and its significance, stomatal movements – only ion theory.

Unit 2: Mineral nutrition **03 hours**

Classification of mineral elements: Essential elements (macro- and micronutrients) and beneficial elements, General role of essential elements, transport of ions across membrane, active and passive transport (brief account of carriers, channels and pumps).

Unit 3: Translocation in phloem **02 hours**

Composition of phloem sap, girdling experiments, Pressure Flow Model, phloem loading and unloading.

Unit 4: Plant growth regulators **04 hours**

Physiological roles and bioassays of auxins, gibberellins, cytokinins, ethylene and ABA.

Unit 5: Plant response to light and temperature **02 hours**

Photoperiodism - discovery (SDP, LDP, day neutral plants), concept of florigen; phytochrome (discovery and physiological role), vernalization.

Unit 6: Enzymes **02 hours**

Classification, Structure and properties, mechanism of enzyme catalysis and enzyme inhibition.

Unit 7: Carbon metabolism **06 hours**

Photosynthetic pigments (chlorophyll *a* and chlorophyll *b*, xanthophyll, carotene); photosystem I and II, Light reactions (electron transport and photophosphorylation), Dark reactions: C3 pathway; C4 and CAM pathways (no chemical structures); photorespiration. Metabolite pool and exchange of metabolites, synthesis and degradation of sucrose and starch.

Unit 8: Respiration **02 hours**

Basic differences in animal and plant respiration, Cyanide resistant respiration.

Unit 9: Nitrogen metabolism **04 hours**

Nitrate assimilation (NR and NiR), biological nitrogen fixation in legumes (nodulation and role of dinitrogenase) Ammonia assimilation: GS-GOGAT, reductive amination and transamination.

Unit 10: Stress physiology in plants **02 hours**

ROS, RNS and anti-oxidative defence strategies.

Practicals **60 hours**

- Determination of osmotic potential of plant cell sap by plasmolytic method.
- To study the effect of the environmental factor light on transpiration by excised twig.
- Calculation of stomatal index and stomatal frequency of a mesophyte and a xerophyte.
- To study the activity of catalase and study the effect of pH on the activity of enzyme.
- To Study Hill's reaction.
- To study the effect of light intensity on O_2 evolution in photosynthesis.
- Comparison of the rate of respiration in any two parts of a plant.
- To separate photosynthetic pigments by paper chromatography.
- Bolting / Effect of auxins on rooting.
- To demonstrate the delay of senescence by cytokinins/ effect of ethylene on fruit ripening

20. To study the phenomenon of seed germination (effect of light and darkness).
21. To demonstrate Respiratory Quotient (RQ)

Suggested Readings:

- Taiz, L., Zeiger, E., Moller, I. M., Murphy, A. (2018). Plant Physiology and Development, International 6th edition, Oxford University Press, Sinauer Associates, New York, USA.
- Bajracharya, D. (1999). Experiments in Plant Physiology: A Laboratory Manual, Narosa Publishing House, New Delhi.
- Hopkins, W. G., Huner, N. P. A. (2009). Introduction to Plant Physiology, 4th edition, Wiley India Pvt. Ltd, New Delhi.

Additional Resources:

- Jones, R.,Ougham, H., Thomas,H.,Waaland, S. (2013). *The molecular life of plants.* Chichester, England: Wiley-Blackwell.
- Kochhar, S.L. & Gujral, S.K. 2020. Plant Physiology: Theory and Applications, 2nd Edition. Cambridge University Press, UK.
- Bhatla, S.C., Lal, M.A. (2018). *Plant Physiology, Development and Metabolism.* Singapore: Springer.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COURSES OFFERED BY DEPARTMENT OF BOTANY

Category III:

B.Sc. programme in Applied Life Sciences with Agrochemicals and Pest Management

DISCIPLINE SPECIFIC CORE COURSE (DSC 05)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the core course			Eligibility criteria	Pre-requisite of the course (If any)
		Lecture	Tutorial	Practical/ Practice		
Plant Physiology and Metabolism ALS BOT DSC 05	**4**	**2**	**0**	**2**	Class XII pass with Biology/ Biotechnology	**NIL**

Learning Objectives:

The learning objectives of this course are as follows:

- to understand the fundamental concepts of plant physiology and metabolism.
- to identify the role of water, minerals, hormones, and light in plant growth and development.
- to understand the basic biochemical mechanisms and mineral nutrition of plants.
- to identify the criteria for the essentiality of elements.
- to understand the role of hormones in plant growth and development.
- to examine the commercial applications of growth regulators.
- to understand the physiology of flowering and senescence.
- to understand the mechanisms of photosynthesis and respiration.
- to examine the biological nitrogen fixation in plants.

Learning Outcomes:

By studying this course, students will be able to:

6. comprehend the physiological processes that occur in plants, including the role of water, minerals, hormones, and light in plant growth and development.
7. acquaint the basic biochemical mechanisms of plants, including photosynthesis, respiration, nitrogen metabolism, and chemical regulation of growth and development.
8. comprehend the process of biological nitrogen fixation, reproductive physiology and senescence of plants.
9. develop practical skills in plant physiology and metabolism.

Unit 1: Plant-water relations **(3 Hours)**

Water potential and its components, pathway of water movement, ascent of sap, transpiration and its significance, factors affecting transpiration, root pressure and guttation.

Unit 2: Mineral Nutrition (3 Hours)

Essential elements, Macro- and micronutrients, Criteria for essentiality of elements, Methods of studying mineral requirement (Hydroponics, Aeroponics)

Unit 3: Translocation in Phloem (3 Hours)

Composition of phloem sap, girdling experiments, Pressure Flow Model, phloem loading and unloading.

Unit 3: Chemical Regulation of Growth and Development (3 Hours)

Role of hormones in plant growth and development, Commercial applications of growth regulators, Growth retardant and its usefulness

Unit 4: Reproductive Physiology and Senescence (3 Hours)

Photo-periodism and flowering response, Photo-perception and critical photoperiod, Phyto-chrome and its role in flowering, Vernalization and senescence.

Unit 5: Photosynthesis (7 Hours)

Historical contributions of Blackman, Emerson, and Hill, Photosynthetic pigments (chlorophyll-a and b, xanthophyll, carotene), Photosystem I and II, reaction center, antenna molecules, Electron transport and mechanism of ATP synthesis, C3 pathway, C4 and CAM plants (in brief, no pathways), Photorespiration.

Unit 6: Respiration (5 Hours)

Glycolysis, Anaerobic respiration, TCA cycle, Oxidative phosphorylation, Glyoxylate cycle, RQ

Unit 7: Nitrogen Metabolism (3 Hours)

Biological nitrogen fixation - nodulation in detail, Nitrate and ammonia assimilation.

PRACTICAL (60 Hours)

2. To determine the osmotic potential of plant cell sap by plasmolytic method.
3. Calculate stomatal index and stomatal frequency of a mesophyte and a xerophyte.
4. Study Hill's reaction.
5. To study the effect of the environmental factor light on transpiration by excised twig.
6. Study the effect of light intensity on O_2 evolution in photosynthesis.
7. Compare the rate of respiration in any two parts of a plant.

8. To study the activity of catalase and the effect of pH and heavy metals.
9. Demonstrate the effect of auxin on rooting.
10. Demonstration of Bolting.
11. Demonstration of root respiration.
12. Demonstration of suction due to transpiration
13. A field visit to Hydroponics and Aeroponics facilities.

Essential/ Recommended readings:

6. Hopkins, W. G., Huner, N. P. A. (2009) *Introduction to Plant Physiology*, 4th edition. New Delhi, Delhi: Wiley India Pvt. Ltd
7. Taiz, L., Zeiger, E., Moller, I. M., Murphy, A. (2018) *Plant Physiology and Development* International 6th edition. New York, NY: Oxford University Press, Sinauer Associates.
8. Kochhar, S.L., Kaur, S. and Gujral, S.K. (2020) *Plant Physiology: Theory and Applications*. New Delhi, Delhi: Foundation Books, imprint of Cambridge University Press India Pvt, Ltd.

Suggestive readings:

6. Bajracharya, D. (1999) *Experiments in Plant Physiology: A Laboratory Manual.* New Delhi, Delhi: Narosa Publishing House.
7. Bhatla S.C. and Lal, M.A. (2018) *Plant Physiology, Development and Metabolism*, Springer.
8. Salisbury F.B. and Ross C.W. (1992) Plant Physiology, 4th edition, Wadsworth Publishing Company, California.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DSE for

B.Sc. programme in Applied Life Sciences with Agrochemicals and Pest Management

DISCIPLINE SPECIFIC ELECTIVE COURSE (DSC 05)

Creditdistribution,EligibilityandPre-requisitesoftheCourse

Coursetitle&Code	Credits	Creditdistributionofthecore Course			Eligibilitycriteria	Pre-requisiteofthecourse (Ifany)
		Lecture	Tutorial	Practical/ Practice		
Developmental Biology of Plants ALS BOT DSE03	**4**	**2**	**0**	**2**	Class XII pass with Biology/ Biotechnology	**NIL**

LearningObjectives:

Thelearningobjectivesofthiscoursearefollows:

12. to acquaint the students with internal basic structure and cellular composition of the plant body.
13. to correlate structure with important functions of different plant parts.
14. to study of various tissue systems and their development and functions in plants
15. to have knowledge of the flowering and fruiting, reproduction process, role of pollinators, ovule and seed development.

LearningOutcomes:

By studying this course, students will be able to:

11. gain knowledge of various cells and tissues, meristem, epidermal and vascular tissue system in plants.
12. get an insight of various aspects of growth, development of the tissues and differentiation of various plant organs.
13. gain the knowledge of basic structure and organization of plant parts in angiosperms and its correlation with morphology and functions.
14. get acquainted with pollen development and pollination, ovule development and fertilization, endosperm development and its importance.

Unit1: Meristematic and permanent tissue: (4 Hours)

Meristems and derivatives- structural organization of shoot and root apices; permanent tissue: simple and complex tissues.

Unit 2: Dermal System (2 Hours)

Epidermis, stomata, trichomes and glands

Unit3: Organs (4 Hours)

Structure of dicot and monocot root, stem and leaf

Unit 4: Secondary Growth (4 Hours)

Vascular cambium – structure and function, Secondary growth in root and stem, periderm.

Unit 5: Anther (4 Hours)

Structure and development, microsporogenesis, Pollen Development, structure of pollen and pollen wall (Basic Concepts).

Unit 6: Ovules (4 Hours)

Structure and types, megasporogenesis and mega gametogenesis, mature embryo sac.

Unit 7: Pollination and Fertilization (4 Hours)

Pollination mechanisms and adaptations; double fertilization; sexual incompatibility- basic concepts

Unit 8: Endosperm and Embryo (3 Hours)

Types and function of endosperm, embryogenesis, dicot and monocot embryo

Unit 9: Seed development (1 Hours)

Basic concepts of seed development

PRACTICAL (60 Hours)

1. Study of root and shoot apex through permanent slides and photographs.
2. Tissues (parenchyma, collenchyma, sclerenchyma and their types); Macerated xylary elements, Phloem (Permanent slides/ Photographs/ Digital resources)
3. To cut transverse section of stem: Monocot: *Zea mays*; Dicot: *Helianthus*; Study of secondary growth in *Helianthus* stem.
4. To cut transverse section of root: Monocot: *Zea mays*; Dicot: *Cicer*; Study of secondary growth in *Helianthus* .
5. Study of the structure of Dicot and Monocot leaf.
6. Study of anther structure (young and mature).
7. Calculation of percentage of germinated pollen in a given medium through hanging drop/sitting drop method.
8. Types of ovules: anatropous, orthotropous, circinotropous, amphitropous/ campylotropous.

9. Female gametophyte: Mature embryo sac (photographs). Ultrastructure of mature egg apparatus cells through electron micrographs.
10. Dissection of embryo and endosperm from developing seeds.

Essential/ Recommended readings:

1. Bhojwani, S.S., Bhatnagar, S.P. (2011). *Embryology of Angiosperms*, 5th edition. New Delhi, Delhi: Vikas Publication House Pvt. Ltd.
2. Mauseth, J.D. (1988). *Plant Anatomy*. San Francisco, California: The Benjamin/Cummings Publisher.
3. Franklin, E. R. (2006). *Esau's Plant Anatomy: Meristems, Cells, And Tissues of the Plant Body: Their Structure, Function, and Development.* New Jersey, U.S.: John Wiley & Sons, Inc., Hoboken.
4. Shivanna, K.R. (2003). *Pollen Biology and Biotechnology.* Delhi, Delhi: Oxford and IBH Publishing Co. Pvt. Ltd.

Suggestive readings:

1. Raghavan, V. (2000). *Developmental Biology of Flowering plants*. Netherlands, Europe: Springer.
2. Johri, B.M. (1984). *Embryology of Angiosperms.* Netherlands, Europe: Springer-Verlag.
3. Bhojwani S.S., Dantu P.K. and Bhatnagar, S.P. (2015) The Embryology of Angiosperms, 6th edition. Vikas Publication House Pvt. Ltd. New Delhi.
4. Tayal, M.S. (2021). Plant Anatomy, 4th Edition. Meerut, U.P.: Rastogi publications.
5. Crang, R., Lyons-Sobaski, S., and Wise, R., (2018) Plant Anatomy: A Concept-Based Approach to the Structure of Seed Plants, 1st Edition, Springer Nature Switzerland AG.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

POOL OF GENERIC ELECTIVES

GENERIC ELECTIVE (BOT-GE-18)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Genetic Engineering Technologies & Applications BOT-GE-18	4	2	0	2	Class XII pass with Science	**Nil**

Learning Objectives:

- To illustrate the use of modern techniques for the manipulation and analysis of DNA sequences
9. To understand the applications of recombinant DNA technology for the generation of commercial biotechnological products of diverse usage.
10. To gain knowledge about biosafety and ethical concerns associated with recombinant DNA technology.
11. To train students in strategizing research topics employing genetic engineering techniques.

Learning Outcomes: At the end of this course students would be able to:

- understand methods and techniques involved in manipulation and analysis of nucleic acids, gene cloning and creation of genetically modified organisms (GMOs).
- understand the commercial application of rDNA technology in research, agriculture and human health
- comprehend biosafety and ethical issues associated with rDNA technology

Unit 1: Introduction **01 Hours**

Introduction to rDNA technology and gene cloning.

Unit 2: Enzymes and Vectors in genetic engineering **07 Hours**

Restriction endonucleases, exonucleases, polymerases, RNAses, kinases, ligases; Plasmids (pBR322, pUC18, pUC19); Lambda based vectors and derivatives (Insertion vectors, replacement vectors, cosmids, phagemids); Artificial Chromosomes (YACs, BACs); Bacterial transformation, strategies for selection and screening (α complementation, antibiotic resistance); Plant Transformation vectors (Ti plasmid), Protein Expression Vectors for use in *E. coli*; introduction to marker and reporter genes (GUS, GFP).

Unit 2: Gene transfer methods **04 Hours**

Agrobacterium mediated transformation, Electroporation, Microinjection, Particle Bombardment, PEG mediated

Unit 3: DNA libraries construction and screening **04 Hours**

Procedures for construction of genomic and cDNA libraries, screening methods for locating the desired gene (Replica plating, Complementation screening, heterologous gene probe-based hybridizations)

Unit 4: PCR, nucleic acid hybridization and DNA sequencing **08 Hours**

PCR technique and its applications, RT-PCR, qPCR, Hybridization based assays (Southern and Northern blotting), Sanger's di-deoxy chain termination method of sequencing – gel-based electrophoresis (semi-automated) and capillary-based gel electrophoresis (automated sequencing).

Unit 5: Applications of rDNA technology **06 Hours**

Applications in basic research (identify, map, clone, and sequence genes and to determine their functions); applications in agriculture (biotic and abiotic stress tolerant transgenic plants, improved Nitrogen fixation, and plant growth); applications in human health (Disease diagnosis (heritable diseases and acquired infectious diseases) and therapeutics (production of recombinant vaccines, protein therapies: production of Insulin, Interferons, and human growth hormone). Human genome project and sequencing of plant genomes by taking *Arabidopsis* genome as an example. Safety and Ethical Issues related to rDNA research.

Practicals **60 hours**

- Isolation of genomic/plasmid DNA from bacteria.
- Quantification of extracted DNA by DPA (Diphenylamine) method.
- Restriction digestion and AGE (Agarose gel electrophoresis) of DNA.
- Restricting Mapping of linear and circular DNA.
- Study of direct and indirect gene transfer methods by photographs: Electroporation, Microinjection and Particle Bombardment, Ti-plasmid mediated gene transfer.
- Demonstration of techniques by photographs: PCR, RT-PCR, qPCR, Southern and Northern blotting and hybridization.
- Study of applications of rDNA technology by photographs: recombinant insulin, interferon and human growth hormone, Bt Cotton, Golden rice, and Flavr Savr tomato.
- Demonstration of working of equipments used in rDNA technology: Thermocycler, Laminar air flow cabinet, Autoclave, Incubator shaker, Refrigerated centrifuge.

Suggested Readings:

11. M. R. Green, J. Sambrook. Molecular Cloning: A Laboratory Manual (Cold Spring Harbor, ed. 4, 2012).

12. M. Wink. An Introduction to Molecular Biotechnology: Molecular Fundamentals, Methods and Applications in Modern Biotechnology (Wiley, ed. 2, 2011).
13. Glick, B.R., & Patten C. (2022). Molecular Biotechnology: Principles and Applications. 6thedn. Washington, U.S.: ASM Press.
14. Snustad, D.P.,Simmons, M.J. (2019). Principles of Genetics, 7th edition. Chichester, England: John Wiley and Sons.
15. Brown, T. A. 2020. Gene Cloning & DNA Analysis: An Introduction. 8thedn. UK: Wiley Blackwell.
16. Primrose, S. B., Twyman, R. (2009). Principles of gene manipulation and genomics. Wiley. com.
17. Howe, C. J. (2007). Gene cloning and manipulation. Cambridge University Press.

Additional Resources:

1. M. M. Burell. (1993) Enzymes of Molecular Biology, Humana Press.
2. H.M. Eun. (1996) Enzymology: Primer for Recombinant DNA Technology, Academic Press.
3. S. B. Primrose, R. Twyman. (2006) Principles of Gene Manipulation and Genomics (Wiley-Blackwell, ed. 7).

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVE (BOT-GE-19)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Fundamentals of Molecular Biology **BOT-GE-19**	4	2	0	2	Class XII pass with Science	**Nil**

Learning Objectives:

5. To gain the knowledge of structure and functions of DNA and RNA

Learning Outcomes:

Students would have understanding of

9. understanding of nucleic acid, organization of DNA in prokaryotes and Eukaryotes, DNA replication mechanism, genetic code and transcription process.
10. Processing and modification of RNA and translation process, function and regulation of expression.

Unit 1: Nucleic Acids as genetic material **02 Hours**

Discovery of Nuclein by Fredrich Miescher; Experiments by Griffith, Hershey and Chase, Avery, McLeod and McCarty and Fraenkel Conrat.

Unit 2: Structure of Nucleic acids- the blueprint of Life **04 Hours**

Building blocks of nucleic acid: Ribose sugar, Purine, Pyrimidine, phosphate; Watson and Crick's model of DNA, DNA types (A,B,Z type), Comparison of RNA structure and types (tRNA, mRNA and rRNA); nucleosome- chromatin structure; Euchromatin and heterochromatin.

Unit 4: Central Dogma of Life **04 Hours**

Concept of Central dogma; Salient features of genetic code, deciphering the genetic code (Contribution of Nirenberg, Matthei and Ochoa, H.G. Khorana).

Unit 3: Replication **05 Hours**

Semi-conservative mode of DNA replication; replication of linear and circular DNA (Theta and Rolling circle model); mechanism and role of key enzymes in replication; role of telomerase enzyme in eukaryotic DNA replication; reverse transcription.

Unit 5: Transcription **05 Hours**

Comparative account of transcription in Prokaryotes and eukaryotes; post-transcriptional processing of pre-mRNA in eukaryotes (3', 5' end modifications and general mechanism of splicing involving spliceosomes).

Unit 6: Translation **05 Hours**

Comparative account of prokaryotic and eukaryotic ribosome structure and translation; inhibitors of protein synthesis (antibiotics).

Unit 7: Gene regulation **05 Hours**

Gene regulation in Prokaryotes- Operon concept: inducible and repressible operon; regulation of lactose (lac) and tryptophan (trp) in *Escherichia coli*; attenuation regulation.

Practicals **60 hours**

6. DNA isolation from cauliflower head by spooling method.
7. Study experiments establishing nucleic acid as genetic material: Griffith's, Avery et al, Hershey & Chase's and Fraenkel Conrat's experiments (through photographs)
8. Study DNA packaging (photographs/paper models).
9. Study modes of DNA replication: Meselson and Stahl's experiment, Rolling circle and Theta model of replication and semi-discontinuous, semi conservative replication (photographs).
10. Study structure of tRNA, prokaryotic RNA polymerase and eukaryotic RNA polymerase II (photographs/paper models).
11. Study RNA modification: Assembly of Spliceosome machinery, Splicing mechanism in group I & group II introns (photographs/paper models).
12. Study gene regulation mechanism in prokaryotes: lactose (lac) operon and tryptophan (trp) operon (photographs).
13. Finding the Tm of different DNA samples from the photographs of DNA melting profile provided. Problem solving for calculating the GC content.

Suggested Readings:

- Cooper, G.M., Hausman, R.E. (2009). The Cell: A Molecular Approach, 5th edition. Washington, D.C.: ASM Press & Sunderland, Sinauer Associates, MA.
- Karp, G. (2010). Cell Biology, 6th edition. New Jersey, U.S.A.: John Wiley & Sons
- Snustad, D.P., Simmons, M.J. (2012). Principles of Genetics, 6th Edition. New Delhi, Delhi: John Wiley & Sons
- Klug, W.S., Cummings, M.R., Spencer, C.A. (2012). Concepts of Genetics, 10th edition. San Francisco, California: Benjamin Cummings

Additional Resources:

6. Hardin, J. and Lodolce, J.P. (2021). Becker's World of the cell, 10th edition, Pearson

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

BSC. (HONS.) BOTANY
SEMESTER - VI
Category-I
Botany (H) Courses for Undergraduate Programme of study with Botany as a Single Core Discipline

DISCIPLINE SPECIFIC CORE COURSE - 16: Plant Biotechnology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Plant Biotechnology **DSC-16**	4	**2**	**0**	**2**	Class XII pass with Biology/ Biotechnology	Nil

Learning objective:

- to provide knowledge of techniques used in plant biotechnology and their application.

Learning outcomes: At the end of the course the students will be able to:

14. understand basic concepts, principles and methods in plant biotechnology.
15. explain the use of acquired knowledge in biotechnological, pharmaceutical, medical, ecological and agricultural applications.

Unit 1: Introduction to Biotechnology **02 Hours**

Historical timeline; sectors of Biotechnology, brief overview of techniques and methods in Biotechnology.

Unit 2: Plant Tissue Culture **08 Hours**

Historical perspective (Major contributions of Haberlandt, Laibach, White, Reinert and Steward, Murashige and Skoog, Cocking, Guha and Maheshwari, Bhojwani, Morel and Martin); types and composition of media: roles of nutrients (major and minor), vitamins, hormones and others (coconut water, activated charcoal); plasticity and totipotency; regeneration: organogenesis (direct and indirect) and embryogenesis (somatic and zygotic); protoplast isolation, culture and fusion; tissue culture applications (micropropagation, androgenesis, haploids, triploids, cybrids, production of virus-free plants).

Unit 3: Recombinant DNA technology **07 Hours**

Restriction Endonucleases (History, Types I - IV, biological roles and applications); modifying enzymes and their applications (nucleases, ligases, alkaline phosphatase, polynucleotide kinase), introduction to prokaryotic and eukaryotic cloning vectors: pBR322, pUC18, pUC19, BACs, Lambda phage, YACs. Gene Cloning: Restriction digestion of DNA, elution of DNA from agarose gels, ligation, bacterial transformation and selection of

recombinant clones (alpha complementation, antibiotic selection, restriction enzyme based selection)

Unit 4: Genetic transformation of Plants **05 Hours**

Methods of gene transfer to plants: *Agrobacterium*-mediated transformation (Ti plasmids, development of binary vectors), Direct gene transfer by Electroporation, Microinjection, Microprojectile bombardment; selection of transgenic plants: selectable marker genes (Positive selection markers – antibiotic- and herbicide-resistance conferring genes) and reporter genes (Luciferase, GUS, GFP); Introduction to genome editing.

Unit 5: Applications **08 Hours**

Pest resistant (Bt-cotton) and herbicide resistant plants (RoundUp Ready™ soybean); Transgenic crops with improved quality traits (Flavr Savr™ tomato. Golden™ rice); Improved horticultural varieties (Moondust carnations); Bioremediation (Superbug); Edible vaccines; Biosafety of transgenic plants.

Practicals **60 hours**

4. Preparation of Murashige & Skoog's (MS) medium.
5. Initiation of axenic cultures- seed sterilisation and inoculation
6. Micropropagation (shoot induction) using leaf and/or nodal explants of tobacco/*Datura*/ *Brassica* etc.
7. Study of anther culture, embryo and endosperm culture, somatic embryogenesis usingdigital resources.
8. Preparation of artificial seeds.
9. Induction of callus and analysis of effects of growth regulators (Auxin and Cytokinin) on *in vitro* regeneration using tobacco leaf explant.
10. Preparation of chemically competent cells of *E. coli*.
11. Transformation of *E. coli* with plasmid DNA by heat shock method.
12. Restriction digestion and gel electrophoresis of plasmid DNA.
13. Construction of restriction map of circular and linear DNA from the data provided.
14. Visit to a research laboratory.

Suggested Readings:

5. Slater, A., Scott, N. W. & Fowler, M. R. (2010) Plant Biotechnology: The Genetic Manipulation of Plants. 2nd edn. New York, USA: Oxford University Press Inc.
6. Snustad, D.P., Simmons, M.J. (2010) Principles of Genetics, 5th edition. Chichester, England: John Wiley and Sons.
7. Brown, T. A. (2020) Gene Cloning & DNA Analysis: An Introduction. 8th edn. UK: Wiley Blackwell.
8. Primrose, S. B. & Twyman, R.M. (2006). Principles of Gene Manipulation and Genomics. 7th edn. Victoria, Australia: Blackwell Publishing.
9. Bhojwani, S.S., Razdan, M.K., (1996). Plant Tissue Culture: Theory and Practice. Amsterdam, Netherlands: Elsevier Science.

Additional Resources:

9. Bhojwani, S.S. and Dantu, P.K. (2013). Plant Tissue Culture: An Introductory Text. Springer New Delhi Heidelberg New York Dordrecht London

10. Glick, B.R., & Patten C. (2022). Molecular Biotechnology: Principles and Applications. 6thedn. Washington, U.S.: ASM Press.
11. Bhojwani, S.S., Bhatnagar, S.P. (2011). The Embryology of Angiosperms, 5th edition. New Delhi, Delhi: Vikas Publication House Pvt. Ltd.
12. Stewart, C.N. Jr. (2008). Plant Biotechnology and Genetics: Principles, Techniques and Applications. New Jersey, U.S.: John Wiley & Sons Inc.
13. Glick, B.R., Pasternak, J. J. & Patten C. (2010). Molecular Biotechnology: Principles and Applications. 4thedn. Washington, U.S.: ASM Press.
14. Glick, B.R., & Patten C. (2017). Molecular Biotechnology: Principles and Applications. 5thedn. Washington, U.S.: ASM Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 17: Plant Biochemistry and Metabolism

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Plant Biochemistry and Metabolism **DSC - 17**	**4**	**2**	**0**	**2**	Class XII pass with Biology/ Biotechnology	**Nil**

Learning Objectives:

- To understand different pathways of metabolism in plant cells.
- To understand how various metabolic pathways work in a synchronized manner.

Learning Outcomes: At the end of the course the student will:

6. know the details of carbon assimilation, oxidation, synthesis of ATP- the energy currency of the cell, nitrogen fixation and lipid metabolism.
7. understand the role of enzymes in regulating metabolic pathways for molecules like carbohydrates, lipids and proteins.
8. understand the coordination of various biochemical reactions with reference to cell requirement and its economy.

Unit 1:Concepts in Metabolism **01 Hour**

Introduction, anabolic and catabolic pathways, coupled reactions

Unit 2: **Enzymes** **04 Hours**

Structure, classification and mechanism of action, Michaelis-Menten equation (no derivation), enzyme inhibition (competitive, non-competitive and uncompetitive), allosteric regulation and covalent modulation, factors affecting enzyme activity.

Unit 3:Carbon Assimilation **07 Hours**

Concept of light, absorption and action spectra, photosynthetic pigments (no structural details), PSI, PSII antenna molecules and reaction centres, LHC, photochemical reaction, photosynthetic electron transport, photophosphorylation (cyclic and non-cyclic)

Dark reactions: CO_2 reduction in C3, C4 pathways and CAM, photorespiration

Unit 4: Carbohydrate Metabolism **02 Hours**

Metabolite pool and exchange of metabolites, synthesis and degradation of sucrose and starch (no structural details)

Unit 5:Carbon Oxidation **06 Hours**

Glycolysis, fate of pyruvate- aerobic, anaerobic respiration and fermentation, regulation of glycolysis, oxidative pentose phosphate pathway, oxidative decarboxylation of pyruvate, Krebs cycle and its regulation, amphibolic role of Krebs cycle, mitochondrial electron transport, oxidative phosphorylation, cyanide-resistant respiration

Unit 6: ATP Synthesis **02 Hours**

Mechanism of ATP synthesis-substrate level phosphorylation, oxidative and photophosphorylation, chemiosmosis, ATP synthase

Unit 7: Lipid Metabolism **04 Hours**

Triglycerides: synthesis, degradation through alpha and beta -oxidation, glyoxylate cycle

Unit 8: **Nitrogen Metabolism** **04 Hours**

Nitrate assimilation (NR and NiR), biological nitrogen fixation in legumes (nodulation and role of dinitrogenase) Ammonia assimilation: GS-GOGAT, reductive amination and transamination.

Practicals **60 Hours**

1. Study the activity of urease and the effect of substrate concentration on its activity.
2. Study the effect of pH on the activity of catalase enzyme.
3. Chemical separation of photosynthetic pigments (liquid-liquid partitioning).
15. Study Hill reaction by dye reduction method.
16. Study the law of limiting factors.
17. Compare the rate of respiration in three different parts of a plant.
18. Study the activity of Nitrate reductase in leaves of two different plants.
19. To study the activity of lipases in germinating oil seeds and explain mobilization of lipids during germination.
20. To study the fluorescence in isolated chlorophyll pigments.
21. To study the absorption spectrum of photosynthetic pigments.
22. To study respiratory quotient (RQ).

Suggested Readings:

14. Nelson, D.L., Cox, M.M. (2017). Lehninger Principle of Biochemistry, 7th edition. NewYork, NY: W.H. Freeman, Macmillan learning.
15. Taiz, L., Zeiger, E., Moller, I. M. & Murphy, A. 2018. Plant Physiology and Development, International 6thedn, Oxford University Press, Sinauer Associates, New York, USA.

16. Hopkins, W.G., Huner, N. (2008). Introduction of Plant Physiology, 4th edition. New Jearsey, U.S.: John Wiley and sons.
17. Jones, R., Ougham, H., Thomas, H., Waaland, S. (2013). The molecular life of plants. Chichester, England: Wiley-Blackwell.

Additional Resources:

19. Buchanan, B.B., Gruissem, W. and Jones, R.L. (2015). Biochemistry and Molecular Biology of Plants, 2nd edition. New Jearsey, U.S.: Wiley Blackwell.
20. Kochhar, S.L. & Gujral, S.K. 2020. Plant Physiology: Theory and Applications, 2nd Edition. Cambridge University Press, UK.
21. Bhatla, S.C., Lal, M.A. (2018). Plant Physiology, Development and Metabolism. Singapore: Springer.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 18: Advanced tools & Analytical Techniques in Plant Biology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Advanced tools & Analytical Techniques in Plant Biology **DSC- 18**	**4**	**2**	**0**	**2**	Class XII pass with Biology/ Biotechnology	**Nil**

Learning Objectives:

- To gain the knowledge on various techniques and instruments used for the study of plant biology

Learning Outcomes: At the end of this course, students will be:

- competent in the basic principles of major techniques used in study of plants
- understand principles and uses of light, confocal, transmission and electron microscopy, centrifugation, spectrophotometry, chromatography, x-ray diffraction technique and chromatography techniques

Unit 1: Imaging and related techniques **06 Hours**

Electron microscopy: Transmission and Scanning electron microscopy, cryofixation, negative staining, shadow casting, freeze-fracture, freeze-etching; Chromosome banding, FISH, GISH, chromosome painting.

Unit 2: Fractionation methods **04 Hours**

Centrifugation: types of rotors, differential and density gradient centrifugation, sucrose density gradient, ultracentrifugation, caesium chloride gradient; marker enzymes for analysis of cellular fractions.

Unit 3: Radioisotopes **04 Hours**

Types of radioisotopes; types of emissions (alpha, beta, gamma radiations); half-life; use of radioisotopes in biological research; auto-radiography; pulse-chase experiment; Biosafety measures and disposal of radioactive material

Unit 4: Spectrophotometry **02 Hours**

Principles and applications of UV, Visible and IR spectrophotometry

Unit 5: Chromatography **05 Hours**

Principles and applications of Paper chromatography, Column chromatography, TLC, GLC,

HPLC, Ion-exchange chromatography, Molecular sieve chromatography, Affinity chromatography.

Unit 6: Techniques for detection and analysis of nucleic acids and proteins 09 Hours

PCR – design of PCR primers, enzymes used for PCR, cloning of PCR products; DNA polymorphism and its applications (RFLP, AFLP, SSR, SNPs); RNA isolation and analysis, cDNA synthesis and qRT-PCR; Extraction of proteins, PAGE (Native and denaturing); Blotting and hybridization techniques: Southern (Radioactive and Non-radioactive), Northern and Western; DNA sequencing – Sanger's dideoxy sequencing; ELISA.

Practicals 60 hours

1. Study of microscopic techniques using digital resources (freeze-fracture, freeze-etching, negative staining, FISH, chromosome banding).
2. Isolation of chloroplasts by differential centrifugation.
3. Separation of nitrogenous bases by paper chromatography.
4. Separation of sugars by thin layer chromatography
5. Separation of chloroplast pigments by column chromatography (demonstration)
6. Amplification of DNA by PCR and visualization of PCR products.
7. Detection of DNA polymorphism (SSR based DNA fingerprinting).
8. Gel based and capillary based DNA sequence data analysis.
9. Estimation of protein concentration by Bradford method.
10. PAGE to study overexpression of proteins/ Separation of proteins by PAGE.
11. Blotting techniques: Southern, Northern and Western using digital resources.

Suggested Reading:

18. Hofmann, A., &Clokie, S. (2018) Wilson and Walker's Principles and Techniques of Biochemistry and Molecular Biology (8th ed.). Cambridge University Press.
19. Gerald Karp, Janet Iwasa, Wallace Marshall (2019).Karp's Cell and Molecular Biology, 9th Edition: Wiley
20. O' Brien, T.P. and Cully M.E (1981). The Study of Plant Structure. Principles and selected Methods, Termarcarphi Pty. Ltd., Melbourne.

Additional Resources:

1. Cooper, G.M., Hausman, R .E. (2009). The Cell: A Molecular Approach, 5th edition. Washington, D.C.: ASM Press & Sunderland, Sinauer Associates, MA.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

POOL OF DISCIPLINE SPECIFIC ELECTIVES

DISCIPLINE SPECIFIC ELECTIVE COURSE (DSE -07): Recombinant DNA Technology and Proteomics

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Recombinant DNA Technology and Proteomics BOT-DSE-07	**4**	**2**	**0**	**2**	Class XII pass with Biology/ Biotechnology	**Nil**

Learning Objectives: This course structure is designed to:

- familiarize the students with the essential knowledge and technical skills/ methodology involved in creating recombinant DNA molecules.
- provide knowledge on generating modified organisms, synthesize a product or modify a biological process by tailoring and/or incorporating DNA from one organism into another.

Learning outcomes:

After completion of the course students will:

7. be able to identify, locate, isolate and functionally characterize DNA sequences/genes.
8. Get familiarized with technologies used to create recombinant DNA.
9. be able to design strategies adopted to generate genetically modified organisms for various applications.
10. be aware of the application of recombinant DNA in pharmaceuticals, agriculture, environment management, etc.

Unit 1: **Enzymes inrecombinant DNA technology** **04 hours**

Nucleases: DNAses, RNAses, Restriction endonucleases (discovery, classification, isoschizomers and cleavage action), exonucleases, polymerases (DNA, RNA, Reverse transcriptase, *Taq* polymerase), ligases, kinases, alkaline phosphatase.

Unit 2: Cloning vectors **04 hours**

Plasmids (basic features and types - pBR322, pUC18, pUC19, TA vectors), lambda vectors (insertion and replacement vectors), M13, cosmids and phagemids, pBluescript II; Artificial chromosomes as vectors (BACs, YACs). Expression vectors and shuttle vectors, YeP; strategies for over-expression of proteins

Unit 3: Isolation and cloning of target DNA **03 hours**

PCR, Strategies: isolation/generation of target sequence (restriction-based and PCR-based), generation of compatible cohesive ends, linkers and adaptors.

Unit 4: **Creating and screening DNA libraries** **03 hours**

Construction of genomic and cDNA libraries, screening and identification of target sequence by DNA hybridization and immunological methods.

Unit 5: **Introduction of DNA into host cell** **06 hours**

Preparation and transformation of competent bacterial cells (heat shock and electroporation). DNA delivery into plant cells and protoplasts: *Agrobacterium* mediated (disarmed Ti plasmid), electroporation, microinjection, liposomes and biolistic methods). Selection and identification of transformants (alpha-complementation, antibiotic resistance and reporter genes (GUS and GFP).

Unit 6: Protein purification and Identification **03 hours**

Chromatography-based methods (ion exchange chromatography and affinity chromatography), antibody-based methods (ELISA and Western blotting).

Unit 7: **Proteomics** **04 hours**

Introduction to proteomics: gel-based methods (Native and SDS PAGE, 2D gel electrophoresis, differential gel electrophoresis), mass spectrometry.

Unit 8: Applications **03 hours**

Application of recombinant DNA technology and Proteomics in medicines (insulin, vaccines), agriculture (insecticide delta endotoxin, golden rice, antisense strategy in tomatoes).

Practicals **60 hours**

15. Plasmid DNA isolation using Bacterial cultures.
16. Agarose Gel electrophoresis of plasmid DNA
17. Quantification of DNA by spectrophotometry
18. Extraction of protein and its Quantification by Lowry’s method

19. Constructing Restriction map of linear and circular DNA using the data provided
20. Study of recombinant DNA techniques through photographs (Biolistic technique, electroporation, microinjection, PCR, western blotting, artificial chromosomes YAC, BAC, Cosmid, Phagemid, Ti plasmid)
21. Demonstration of SDS-PAGE and affinity Chromatography

Suggested reading:

- Brown, T. A. (2016) Gene Cloning an Introduction: Chapman & Hall.
- Zlatanova, J. and Van Holde, K.E. (2016) Molecular Biology Structure and Dynamics of Genomes and Proteomes: Taylor and Francis; .
- Glick, Bernard R, Jack J. Pasternak, Patten Cheryl L. 2018. Molecular Biotechnology; principles and applications of recombinant DNA, ASM Press, Washington.
- Lovric, J., 2011. Introducing Proteomics. Wiley-Blackwell
- S.B. Primrose, R. M. Twyman, R.W.Old. 2001. Principles of Gene manipulation: Blackwell Science; 2001

Additional reading:

- Banks, K (2022) Introduction to Proteomics. Larsen & Keller Education
- Kreuzer, H. Massey, A (1996) Recombinant DNA and Biotechnology; A guide for teachers; ASM Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category II

Botany Courses for Undergraduate Programme of study with Botany as one of the Core Disciplines

DISCIPLINE SPECIFIC CORE COURSE (DSC-6.): Economic Botany and Biotechnology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Economic Botany and Biotechnology LS-DSC-BOT - 6	**4**	**2**	**0**	**2**	Class XII pass with Biology/ Biotechnology	**Nil**

Learning Objectives:

- To understand the economic importance of plants as cash crops - cereals, legumes, spices, non-alcoholic beverages, oils and fibres.
- To understand the concepts and applications of the techniques of Plant Tissue Culture and Recombinant DNA Technology in enhancing economic value of plants

Learning Outcomes: At the end of the course the students will have:

- knowledge of the nutritive and commercial / medicinal value of various plants and plant parts used as sources of carbohydrates, proteins, spices, oil and beverages.
- practice the methods / techniques of Plant Tissue Culture and apply tools of Biotechnology in improvement of crops for economic potential.

Unit 1: Origin of Cultivated Plants **02 hours**

Concept of centres of origin, their importance with reference to Vavilov's work.

Unit 2: Cereals and millets **04 hours**

Wheat, Rice and Maize: Origin, description of the part used, economic importance. Major and minor millets (Pearl millet, Sorghum, Kodo millet and Finger millet).

Unit 3: Pulse crops **02 Hours**

General account and economic importance with special reference to chickpea and pigeon pea.

Unit 4: Spices **03 Hours**

General account, part used and economic importance with special reference to cardamom, clove and black pepper.

Unit 5: Beverage **02 Hours**

Tea; morphology, types, processing, uses.

Unit 6: Oils and Fats **02 Hours**

General account; Classification, Difference between essential oils and fatty oils, uses (Sunflower, Soybean, Mint)

Unit 7: Fibre Yielding Plants **02 Hours**

Classification of fibres. Cotton and Jute, description of part used and uses.

Unit 8: Plant Tissue Culture Technology **05 Hours**

Introduction; nutrient media; aseptic and culture conditions, organogenesis (direct and indirect) and somatic embryogenesis; androgenesis, embryo culture, endosperm culture, protoplast culture Applications: micropropagation, generation of somaclonal variants, synthetic seeds and germplasm conservation.

Unit 9: DNA Recombinant Technology **08 Hours**

Introduction, Blotting techniques (Southern and Northern); PCR; Molecular DNA markers (RAPD, RFLP) and DNA fingerprinting in plants. Genetic Engineering Techniques: Gene cloning vectors (pUC18, Ti plasmid); enzymes (nuclease, polymerase, kinase, ligase); screening for gene of interest by DNA probe hybridisation, Insertion of genes into plant (*Agrobacterium* mediated, biolistics); selection of recombinants by selectable marker and reporter genes (GUS). Applications: Bt cotton, Golden rice, Flavr-Savr tomato, Edible vaccines.

Practicals: **60 Hours**

- Study of economically important plants through: specimens (Millets, Pigeon pea, Chickpea, Tea, and Cotton), Sections (Wheat, Maize, Black pepper, Clove), Micro-chemical Tests (Wheat, Soybean, Groundnut and Cotton).
- Principle and working of equipment used in Tissue culture: Laminar air flow cabinet, Autoclave.
- Preparation of culture medium (MS medium), sterilisation and inoculation of explants (Demonstration)
- Study of Micropropagation, Anther culture, Somatic embryogenesis, Endosperm and Embryo culture
- Study of Molecular techniques: PCR, Blotting techniques

22. Extraction and separation of DNA.
23. Visit to any tissue culture/biotechnology laboratory

Suggested reading:

14. Bhojwani, S.S., Razdan, M.K. (1996). Plant Tissue Culture: Theory and Practice. Amsterdam, Netherlands: Elsevier Science.
15. Bhojwani, S. S. and Dantu, P. K. (2013). Plant Tissue Culture: An Introductory Text. Springer

16. Glick, B.R., Pasternak, J.J. (2003). Molecular Biotechnology- Principles and Applications. Washington, U.S.: ASM Press.
17. Kochhar, S.L. (2011). Economic Botany in the Tropics, 4th edition. New Delhi, Delhi: MacMillan Publishers India Ltd.
18. Newmann, Karl-Hermann (2020). Plant Cell and Tissue Culture: A Tool in Biotechnology, Springer
19. Wickens,G.E. (2012) Economic Botany: Principles and Practices. Springer

Additional Resources:

11. Park, S. (2021). Plant Tissue Culture: Techniques and Experiments, 4th Edition. Elsevier
12. Ranabhatt, H. and Kapor, R. (2018). Plant Biotechnology {Woodhead Publishing}
13. Razdan, M. K. (2019). Introduction to Plant Tissue Culture, 3rd Edition {CBS / Oxford & IBH}
14. Smith, R. H. (2013). Plant Tissue Culture: Techniques and Experiments, 3rd Edition {Elsevier}.
15. Stewart, C. Neal (2016). Plant Biotechnology and Genetics, 3rd Edition {Wiley-Blackwell}
16. Trigiano, R. N., Dannis, J. Gray (2019). Plant Tissue Culture, Development, and Biotechnology {CRC Press}

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category - III

B.Sc. programme in Applied Life Sciences with Agrochemicals and Pest Management

DISCIPLINE SPECIFIC CORE COURSE (DSC 06)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Plant Biotechnology: Concepts and Applications ALS BOT DSC 06	**4**	**2**	**0**	**2**	Class XII pass with Biology/ Biotechnology	NIL

Learning Objectives:

The learning objectives of this course are as follows:

- to give students knowledge of techniques used in plant biotechnology and its applications.
- to explore the use of biotechnology to generate genetic variation in plants and to understand how factors at the cellular level contribute to the expression of genotypes and hence to phenotypic variation.
- to understand the biotechnological processes such as recombinant DNA technology and its applicative value in pharmaceuticals, food industry, agriculture, horticultural and ecology. This knowledge is central to our ability to modify plant responses and properties for global food security and commercial gains in biotechnology and agriculture.
- to perform the techniques currently used to generate information and detect genetic variation.

Learning Outcomes:

By studying this course, students will be able to:

- comprehend the basic concepts, principles and processes of plant biotechnology.
- apply the acquired knowledge in biotechnological, pharmaceutical, medical, ecological and agricultural fields.
- use the basic biotechnological techniques to explore molecular biology of plants.
- explain the use of biotechnological techniques for plant improvement and biosafety concerns.

Unit 1: Introduction to Biotechnology (2 Hours)

Historical timeline; Brief overview of techniques and methods in Biotechnology, sectors of Biotechnology.

Unit 2: Plant Tissue Culture (8 Hours)

Historical perspective (Haberlandt, Laibach, White, Reinert and Steward, Murashige, Cocking, Guha and Maheshwari, Bhojwani, Morel and Martin); Composition of media; Nutrients (major and minor), vitamins and hormones; Plasticity and Totipotency; Regeneration: Organogenesis (Direct and Indirect) and Embryogenesis (somatic and zygotic); Protoplast isolation, culture and fusion; Tissue culture applications (micropropagation, androgenesis, haploids, triploids, cybrids, production of virus-free plants).

Unit 3: Recombinant DNA Technology and Genetic Transformation (12 Hours)

Restriction Endonucleases (History, Types I - IV, biological role and applications); Modifying enzymes and their applications (nucleases, ligases, alkaline phosphatase, polynucleotide kinase) Introduction to prokaryotic and eukaryotic cloning vectors: pBR322, pUC 18, pUC19, BACs, Lambda phage, YACs. Gene Cloning: Restriction digestion of DNA, ligation, bacterial transformation and selection of recombinant clones; Methods of gene transfer to plants: *Agrobacterium*-mediated transformation (Ti plasmids), Direct gene transfer by Electroporation, Microinjection, Microprojectile

bombardment; Selection of transgenic plants: selectable marker genes (Positive selection markers – antibiotic- and herbicide-resistance conferring genes) and reporter genes (Luciferase, GUS, GFP).

Unit 3: Applications of Transgenic Technology (8 Hours)

Pest resistant (Bt-cotton) and herbicide resistant plants (RoundUp Ready soybean); Transgenic crops with improved quality traits (Flavr Savr tomato. Golden rice); Improved horticultural varieties (Moondust carnations); Role of transgenics in bioremediation (Superbug); Edible vaccines; Introduction to genome editing; Biosafety of transgenic plants.

PRACTICALS 60 hours

1. Preparation of nutrient media for plant cell cultures- Murashige & Skoog's (MS) medium
and B5 medium.
2. Initiation of axenic cultures (seed sterilisation and inoculation)
3. Micropropagation (shoot induction) using leaf and/or nodal explants of tobacco/*Datura*/ *Brassica* etc.
4. Study of anther culture, embryo and endosperm culture, somatic embryogenesis using digital resources/ photographs.
5. Preparation of artificial seeds.
6. Isolation of plasmid DNA.
7. Induction of callus and analysis of effects of growth regulators on *in vitro* regeneration using
tobacco as a model plant
8. Preparation of competent cells and transformation of *E. coli* by heat shock method.
9. Restriction digestion and gel electrophoresis of plasmid DNA.
10. Construction of restriction map of circular and linear DNA from the data provided.
11. Visit to a Research laboratory.

Essential/recommended readings:

1. Bhojwani, S.S., Bhatnagar, S.P. (2011). The Embryology of Angiosperms, 5th edition. New Delhi, Delhi: Vikas Publication House Pvt. Ltd.
2. Bhojwani, S.S., Razdan, M.K., (1996). Plant Tissue Culture: Theory and Practice. Amsterdam, Netherlands: Elsevier Science.

3. Glick, B.R., & Patten C. (2022). Molecular Biotechnology: Principles and Applications. 6thedn. Washington, U.S.: ASM Press.
4. Brown, T. A. 2020. Gene Cloning & DNA Analysis: An Introduction. 8thedn. UK: Wiley Blackwell.
5. Slater, A., Scott, N. W. & Fowler, M. R.(2010) Plant Biotechnology: The Genetic Manipulation of Plants. 2ndedn. New York, USA: Oxford University Press Inc.
6. Primrose, S. B. and Twyman, R.M. (2013) Principles of Gene Manipulation and Genomics. 7thedn. Wiley-Blackwell Publishing.

SuggestedReadings :

1. Stewart, C.N. Jr. (2008). Plant Biotechnology and Genetics: Principles, Techniques and Applications. New Jersey, U.S.: John Wiley & Sons Inc.
2. Snustad, D.P., Simmons, M.J. (2010). Principles of Genetics, 5th edition. Chichester, England: John Wiley and Sons.
3. Bhojwani, S.S. and Dantu, P.K. (2013). Plant Tissue Culture: An Introductory Text. Springer New Delhi Heidelberg New York Dordrecht London

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

POOL OF DISCIPLINE SPECIFIC CORE
FOR B.SC. PROGRAMME IN APPLIED LIFE SCIENCES WITH AGROCHEMICALS AND PEST MANAGEMENT

DISCIPLINE SPECIFIC ELECTIVE COURSE (DSE 04)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Plant Systematics ALS BOT DSE 04	**4**	**2**	**0**	**2**	Class XII pass with Biology/ Biotechnology	**NIL**

Learning Objectives:

The learning objectives of this course are as follows:

- to gain knowledge about the basics of plant systematics.
- to get an insight into the interrelationships of plant systematics and allied subjects.

Learning Outcomes:

By studying this course, students will be able to:

- understand technical terminology used in plant taxonomy.
- apply the terminologies to describe, identify and classify the flowering plants.
- search and analyze taxonomic information from internet-based scientific databases and other resources.
- comprehend and compare various systems of classification.
- recognize diversity in local/regional flora.

Unit 1: Introduction **(1 Hour)**

Plant identification, Classification, Nomenclature, Biosystematics.

Unit 2: Identification **(4 Hours)**

Field inventory, Herbarium Techniques, Functions of Herbarium, Important herbaria and botanical gardens of the world and India, Virtual Herbarium, E-flora: Flora, Monographs, Journals.

Unit 3: Systematics-An Interdisciplinary Science **(5 Hours)**

Evidence from cytology, phytochemistry [Alkaloids, Phenolics, Glycosides, (in brief)] and molecular data (cp.DNA, mt-DNA, nuclear DNA, PCR amplification, sequence data analysis)

Unit 4: Taxonomic Hierarchy **(2 Hours)**

Concept of taxa (family, genus, species); Categories and taxonomic hierarchy; Species concept (taxonomic, biological & evolutionary)

Unit 5: Botanical Nomenclature **(7 Hours)**

Principles and rules (ICN); Ranks and names; Typification, Author citation, Valid publication, Rejection of names, Principle of priority and its limitations; Names of hybrids and cultivated plants.

Unit 6: Basic Terms and Concepts of Phylogeny **(4 Hours)**

Cladistics: Terms and concepts (primitive and advanced, homology and analogy, parallelism and convergence, monophyly, Paraphyly, polyphyly, clades and grades). Methodology of Cladistics, Methods of illustrating evolutionary relationships (phylogenetic tree, cladogram).

Unit 7: Systems of Classification **(7 Hours)**

Major contributions of Parasara, Charaka, Theophrastus, Bauhin, Tournefort, Linnaeus, Adanson, de Candolle, Bessey, Hutchinson, Takhtajan, Cronquist, Bremer and MW Chase; Classification systems of Benthan and Hooker (up to series) and Engler and Prantl (up to series); Angiosperm Phylogeny Group (APG IV) Classification (major clades).

PRACTICAL (60 Hours)

1. To prepare at least 2 herbarium specimens and identify them using available resources (Literature, herbaria, e-resources, taxonomic keys) and classify up to family level (according to Bentham and Hooker's classification).

2. Description of taxa using semi-technical terms and identification of the families according to Bentham and Hooker's classification.

Note: Any twelve families from the following list to be studied with at least two specimens (or one where limitations exist).

List of Suggested Families (*mandatory)

Acanthaceae, Rubiaceae, *Apiaceae, Apocynaceae, *Asteraceae, *Brassicaceae, *Euphorbiaceae, *Fabaceae, *Lamiaceae, Liliaceae, *Malvaceae, Moraceae, *Poaceae, *Ranunculaceae, *Solanaceae.

Essential/recommended readings:

1. Simpson, M. G. (2019). *Plant systematics*. 3rd Edition, Academic press.
2. Singh, G. (2019). *Plant Systematics- An Integrated Approach.* 4th edition. CRC Press, Taylor and Francis Group.
3. Pandey, A. K., Kasana, S. (2021). *Plant Systematics*. 2nd Edition. CRC Press Taylor and Francis Group
4. *http://www.mobot.org/MOBOT/research/APweb/*
5. Maheshwari, J. K. (1963). *The flora of Delhi.* Council of Scientific & Industrial Research.
6. Maheshwari, J. K. (1966). *Illustrations to the Flora of Delhi.* Council of Scientific & Industrial Research.
7. Harris, J. G., Harris, M. W. (2001). *Plant Identification Terminology: An Illustrated Glossary.* Spring Lake, Utah: Spring Lake Pub. Spring Lake, Utah.

Suggestive Readings:

1. The Angiosperm Phylogeny Group, Chase, M.W., Christenhusz, M.J.M, Fay M.F., Byng, J.W., Judd, W.S., Soltis, D.E., Mabberley, D.J., Sennikov, A.N., Soltis, P.S., Stevens, P.F. (2016). *An update of the Angiosperm Phylogeny Group classification for the orders and families of flowering plants: APG IV.* Botanical journal of the Linnean Society 181 (1): 1-20.
2. https://www.mobot.org/MOBOT/research/APweb/treeapweb2s.gif
3. https://www.digitalatlasofancientlife.org
4. http://apps.kew.org/herbcat/navigator.do
5. https://efloraofindia.com/
6. https://powo.science.kew.org/
7. Page, R.D.M., Holmes, E.C. (1998). *Molecular Evolution: A Phylogenetic Approach*. Blackwell Publishing Ltd.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES

GENERIC ELECTIVE (BOT-GE-20)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Genomics, Proteomics and Metabolomics **BOT-GE-20**	4	2	0	2	Class XII Pass with Science	**Nil**

Learning Objectives:

22. Build the concepts of genomics, proteomics and metabolomics.
23. Understand the role of model organisms in genomics studies
24. Familiarization of tools used in genomics and proteomics.

Learning Outcomes: At the end of this course, students will be able to:

7. understand the implications of genomic, transcriptomic, proteomic and metabolomic studies in an organism.
8. assimilate logic and reasoning behind choice of model organisms for genomics study.

Unit 1: Introduction to genomics **02 Hours**

Recapitulating basics of prokaryotic and eukaryotic genomes; basic concept of structural and functional genomics.

Unit 2: Model organisms in genomics **02 Hours**

Features of important model organisms used in genomics study (*Escherichia coli*, *Saccharomyces cerevisiae*, *Caenorhabditis elegans*, *Arabidopsis thaliana*)

Unit 3: Sequencing strategies **04 Hours**

Sequencing: basic principle-Sanger's method; classical approaches for sequencing large genomes (whole genome shot gun method viz. WGS, clone by clone sequencing); Next generation sequencing (NGS) ; Concept of third generation sequencing

Unit 4: Genome sequencing Projects **04 Hours**

Human genome project (brief history and significance); *Arabidopsis* genome project; rice genome project; applications of genomics in agriculture and human health

Unit 5: Transcriptomics **03 Hours**

Concept: EST sequencing; Gene expression studies by Microarrays and RNAseq.

Unit 6: Introduction to proteins and proteomics **06 Hours**

Proteins as structural and functional unit of life; basics concept of protein structure (primary, secondary, tertiary, and quaternary), peptide bonds; brief introduction of major post-translational modifications (phosphorylation, glycosylation); introduction to enzymes; introduction to proteomics and its applications.

Unit 7: Tools for proteome analysis **05 Hours**

Separation and isolation of proteins from plant tissue; purification of proteins by chromatographic techniques (column chromatography, ion exchange and affinity chromatography); separation of total cellular proteins by electrophoresis: SDS-PAGE, western blotting and ELISA.

Unit 8: Metabolomics **04 Hours**

Concept of metabolomics; classes of metabolites (primary and secondary metabolites in plants); Experimental methods and instruments used in metabolomics- HPLC, GC; applications of metabolomics.

Practicals **60 hours**

- Genomic DNA extraction from cauliflower heads
- Select 10 different organisms (5 prokaryotic and 5 eukaryotic) whose genomes have been completely sequenced and categorize them based on taxonomy, find their genome size and locate the database where their genome sequence is hosted.
- Demonstration of gene expression studies through photographs: microarrays and RNA seq.
- Demonstration of Sanger's DNA sequencing principle.
- Interpretation and reading of DNA sequence chromatograms.
- Experiment to demonstrate activity of Amylase.
- Estimation of protein concentration through Lowry's methods/Bradford assay.
- Demonstration of separation of proteins using SDS-PAGE (demonstration).
- Study of proteins by Western blotting technique (digital resources/demonstration).
- Demonstration of ELISA through kit.

Suggested readings:

15. Brown, T. A. (2020). Gene Cloning & DNA Analysis: An Introduction. 8thedn. UK: Wiley Blackwell.
16. Glick, B.R., Patten C. (2022). Molecular Biotechnology: Principles and Applications. 6thedn. Washington, U.S.: ASM Press.
17. Griffiths, A.J.F., Doebley, J., Peichel, C, Wassarman D. (2020). Introduction to Genetic Analysis, 12th edition. New York, NY: W.H. Freeman and Co.
18. Liebler, D.C. (2002). Introduction to Proteomics: Tools for New Biology, Humana Press.
19. Primrose, S. B. Twyman, R.M. (2006). Principles of Gene Manipulation and Genomics. 7thedn. Victoria, Australia: Blackwell Publishing.
20. Twyman R. (2013) Principles of Proteomics, Taylor & Francis Books.
21. Watson J.D. (2017) Molecular Biology of the Gene. Pearson publishers.

22. Westermeier, R., Naven, T., Hopker, H.R. (2008). Proteomics in Practice: A guide to successful experimental design, 2nd edition, Wiley Blackwell.
23. Wood, P.L., (2021) Metabolomics. Springer Protocols.

Additional resources:

- Banks, K (2022) Introduction to Proteomics. Larsen & Keller Education
- Campbell, A.M. and Heyer, L.J (2006). Discovering Genomics, Proteomics and Bioinformatics, Pearson publishers.
- Bhattacharya, S.K. (2019) Metabolomics: Methods & Protocols. Springer Protocols/Humana Press

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF GEOLOGY
SEMESTER – IV
BSC (H) Geology
Category - I

DISCIPLINE SPECIFIC CORE COURSE -10 (DSC-10) – : Geomorphology (L3, P1)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
(DSC-10) **Geomorphology (L3, P1)**	**4**	**3**	**0**	**1**	**12th pass with science**	**Studied Earth System Science and Equivalent**

Learning Objectives

The course on geomorphology is intended to provide students basic scientific knowledge Earth surface process and evolution of the landforms. Students will be aught about the basic and fundamentals of geomorphology to comprehend the process and evolution of landscapes through time.

Learning outcomes

After going through this course, students will develop basic skills and understanding about the key concepts of geomorphology, i.e., systems (morphological, cascading, process-response), threshold, magnitude and frequency, unifying concepts such as conservation of mass and energy in geomorphic systems, sediment routing, equilibrium and steady state. They will be able to use the knowledge to identify various landforms and processes in different environments i.e., glacial, fluvial, aeolian, coastal regions. They will also be able to examine the landforms at primary scale. They will be able to analyse the morphometric parameters of a basin. They will develop skills to prepare a geomorphic map using topographic sheets and Google Earth images.

SYLLABUS OF DSC-10 (Credits: 4)
Theory: 45 hours, Practical: 30 hours

UNIT – I (9 hours)

Detailed content

Introduction to Geomorphology: Concepts in geomorphology, Geosphere-Hydrosphere-Biosphere; Unifying concepts

UNIT – II (9 hours)

Detailed contents

Morphological features of Earth: Geoid, Topography, Hypsometry, Global Hypsometry, Major Morphological features. Large Scale Topography - Ocean basins, Plate tectonics overview, Large scale mountain ranges (with emphasis on Himalaya)

UNIT – III (9 hours)

Detailed contents

Earth Surface Processes: Surficial processes and geomorphology; Weathering and associated landforms, Hill slopes Glacial, Periglacial processes and landforms, Fluvial processes and landforms, Aeolian Processes and landforms, Coastal Processes and landforms, Landforms associated with igneous activities.

UNIT – IV (9 hours))

Detailed contents

Methods and techniques: Dating Methods, measuring rates; Rates of uplift and denudation, Tectonics and drainage development, Sea-level change, Long-term landscape development.

UNIT – V (9 hours)

Detailed contents

Overview of Indian Geomorphology. Introduction to Extra-terrestrial landforms

Practical Component- (30 Hours)

Reading topographic maps, Concept of scale, Preparation of a topographic profile, Preparation of longitudinal profile of a river, Preparing Hack Profile and Calculating Stream length gradient index, Morphometry of a drainage basin - Calculating different morphometric parameters, Preparation of geomorphic maps.

Essential/recommended readings

M.A. Summerfield (1991) Global Geomorphology. Wiley & Sons.

Robert S. Anderson and Suzzane P. Anderson (2010): Geomorphology - The Mechanics and Chemistry of Landscapes. Cambridge University Press.

Suggestive readings

Robert S. Anderson and Suzzane P. Anderson (2010): Geomorphology - The Mechanics and Chemistry of Landscapes. Cambridge University Press.

Paul R. Bierman and D.R. Montgomery (2014): Key Concepts in Geomorphology. W.H. Freeman and Company Publishers.

M.A. Summerfield (1991) Global Geomorphology. Wiley & Sons.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE : DSC-11- Hydrogeology (L3, P1)

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
(DSC-11) Hydrogeology (L3, P1)	4	3	0	1	12th Pass with Science	Studied Stratigraphy, Earth System Science or Equivalent

Learning Objectives
Main objective of the course is to make students comprehend about the nature, occurrence and movement of groundwater in geological context. To develop basic understanding about ground water exploration and management.

Learning Outcomes:
After completing the course, the students will get a basic understanding of aquifers and groundwater systems. The students will be able to comprehend the groundwater flow dynamics and well hydraulics, enhancing their numerical skills for development of groundwater resources. Learners will gain expertise in fundamentals of groundwater exploration helping them to identify groundwater sources in field. The students will be able to analyse and compare the groundwater quality. This would help them to categorise the use of groundwater for various purposes. Learners will be skilled with fundamentals of water balance, groundwater resource estimation and groundwater resource management practices.

SYLLABUS OF DSC- 11
Theory (45 Hours)

UNIT – I (9 hours)
Detailed contents
Introduction and basic concepts: Scope of hydrogeology and its societal relevance. Hydrologic cycle: precipitation, run-off, infiltration and subsurface movement of water. Hydrogeological formations: Aquifer; Aquitard; Aquiclude; Aquifuge. Vertical distribution of subsurface water. Types of aquifers, aquifer properties, anisotropy and heterogeneity of aquifers. Introduction to geologic formation as aquifers.

UNIT – II (9 hours)
Detailed contents
Groundwater flow: Darcy's law and its validity (discussions on laminar and turbulent groundwater flow), intrinsic permeability and hydraulic conductivity, Groundwater flow rates and flow direction.

UNIT – III (9 hours)
Detailed contents
Well hydraulics and Groundwater exploration: Basic Concepts of well hydraulics (drawdown; specific capacity etc). Elementary concepts related to: equilibrium conditions for water flow to a well in confined and unconfined aquifers, estimation of permeability in field and laboratory. Introduction to non-equilibrium groundwater flow condition. Surface-based groundwater exploration methods.

UNIT – IV (9 hours)
Detailed contents
Groundwater chemistry: Physical and chemical properties of water and water quality. Introduction to methods of interpreting groundwater quality data using standard graphical plots. Sea water intrusion in coastal aquifers.

UNIT – V (9 hours)
Detailed contents
Groundwater management: Basic concepts of water balance studies, issues related to groundwater resources development and management. Groundwater level fluctuations. Rainwater harvesting and artificial recharge to groundwater.

Practical Component- (30 Hours)
Preparation and interpretation of water level contour maps and depth to water level maps. Preparation and analysis of hydrographs for differing groundwater conditions. Graphical representation of chemical quality data and water classification (C-S and Trilinear diagrams). Simple numerical problems related to: estimation of permeability in field and laboratory, Groundwater flow, Well hydraulics etc.

Essential/recommended readings
Todd, D. K. 2006. Groundwater hydrology, 2nd Ed., John Wiley & Sons, N.Y.
Karanth K.R., 1987, Groundwater: Assessment, Development and management, Tata McGraw- Hill Pub. Co. Ltd.

Suggested readings
Davis, S. N. and De Weist, R.J.M. 1966. Hydrogeology, John Wiley & Sons Inc., N.Y.
Raghunath, H.M. 2007. Groundwater, Third Edition, New Age International Publishers.
Shekhar Shashank . 2017a. Aquifer Properties. E-PG Pathshala, UGC, MHRD, Govt. of India. Available on: https://epgp.inflibnet.ac.in/ahl.php?csrno=448
Shekhar Shashank. 2017b. Darcy's law. E-PG Pathshala, UGC, MHRD, Govt. of India. Available on: https://epgp.inflibnet.ac.in/ahl.php?csrno=448
Shekhar Shashank. 2017c. Assessment of groundwater quality. E-PG Pathshala, UGC, MHRD, Govt. of India. Available on: https://epgp.inflibnet.ac.in/ahl.php?csrno=448
Syed Tajdarul Hassan. 2017a. Introduction to Hydrology. E-PG Pathshala, UGC, MHRD, Govt. of India. Available on: https://epgp.inflibnet.ac.in/ahl.php?csrno=448
Syed Tajdarul Hassan. 2017b. Hydraulic Head, Fluid Potential, Reynolds number and Pumping Tests-I. E-PG Pathshala, UGC, MHRD, Govt. of India. Available on: https://epgp.inflibnet.ac.in/ahl.php?csrno=448
Syed Tajdarul Hassan. 2017c. Hydraulic Head, Fluid Potential, Reynolds number and Pumping Tests-II. E-PG Pathshala, UGC, MHRD, Govt. of India. Available on: https://epgp.inflibnet.ac.in/ahl.php?csrno=448

DISCIPLINE SPECIFIC CORE COURSE– 12 (DSC-12): Geology of India (L3, P1)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-12 Geology of India (L3, P1)	4	3	0	1	12th Pass with Science	Studied Earth System Science, Concepts of Stratigraphy, Structural Geology, and Mineralogy or Equivalent

Learning Objectives

The course on Geology of India is to provide students a comprehensive understanding about the overall geology of the Indian subcontinent through stratigraphic approach. Students will be taught about the geological history of the Indian subcontinent spanning from Archean to Quaternary times. They will be motivated to learn the role of tectonics, climate and sea level in framing the geological history of India through time.

Learning Outcomes:

After completion of the course, students will have understanding of stratigraphic sub-divisions of India from Archaean to Cenozoic times. They will acquaint with depositional environments, paleogeographic setting and tectonic evolution of various Indian sedimentary basins and their fossils and mineral assets. They will understand the major mass extinction events, its effect on various faunas and their recovery after mass extinction.

SYLLABUS OF DSC-12

Theory (45 Hours)

UNIT – I (9 hours)

Detailed contents

Introduction to geology of India: Physical and tectonic subdivisions of Indian subcontinent

UNIT – II (9 hours)

Detailed contents

Major sub-divisions Indian Geology: Distribution of stratigraphic units in the Peninsula and in the Himalayas. Stratigraphy, geographic distribution, lithological characteristics, fossil contents and economic importance.

UNIT – III (9 hours)

Detailed contents

Precambrian and Phanerozoic successions of India: Precambrian basement rocks of Dharwar, Aravalli-Bundelkhand, Bastar, Singhbhum, central provinces of northeastern India; Proterozoic mobile belts in northwestern, central, eastern and southern Indian peninsular regions and in the extra-peninsula; Proterozoic basins including: Vindhyan, Cuddapah, Kurnool, Bhima, and Kaladgi. Marine Paleozoic formations of India: Tethyan regions, Lesser Himalayan region. Marine Mesozoic formations of India: Himalayan and Peninsular region.

Gondwana sequences of India. Cenozoic formations in western, eastern, southern and Himalayan regions. Deccan Traps, Rajmahal Traps.

.

UNIT – IV (9 hours)

Detailed contents

Stratigraphic boundary problems: Precambrian-Cambrian boundary; Permian-Triassic boundary; Cretaceous-Tertiary boundary

UNIT – V (9 hours)

Glacial Events: Major glacial events in the Earth's history, stratigraphic implication of the sea-level changes in the Quaternary period and their significance in Indian subcontinent.

Practical Component- (30 Hours)

Study of rocks in hand specimens from the known stratigraphic horizons, Drawing various paleogeographic maps and tectonic maps of sedimentary basins. Study of different Proterozoic supercontinent reconstructions, Interpretation of various stratigraphic logs and their correlation.

Essential/recommended readings

Wadia,D.N. 1957. Geology of India, 3rd Ed., McMillan, London.
Ravindra Kumar, 1985. Fundamentals of historical geology and stratigraphy of India. Wiley Eastern Ltd., Delhi.
Ramakrishnan, M. & Vaidyanathan, R. (2008) Geology of India. Volume 1 & 2, Geological Society of India, Bangalore.

Suggestive readings

Wadia,D.N. 1957. Geology of India, 3rd Ed., McMillan, London.
Naqvi, S.M. and Rogers, J.J. 1986. Precambrian Geology of India. Clarendon Press.
Ravindra Kumar, 1985. Fundamentals of historical geology and stratigraphy of India. Wiley Eastern Ltd., Delhi.

Common Pool of Discipline Specific Electives

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE-2 **Introduction to Field Geology (L2, P2)**	**4**	**2**	**0**	**2**	**12th pass with science**	**Studied Earth System Science and Structural Geology or Equivalent**

Learning Objectives

This course on Introduction to Field Geology is intended to provide students of geology about the basic techniques of observation and description of various primary and secondary rock structures and landforms during geological fieldwork. They will learn and develop skills to extract information about an area through the investigation of topographic maps and techniques of field geology.

Learning outcomes

After completion of this course, students will develop the technique of carrying out the field work in different geological terrains. Specifically, they will be able to locate themselves in field Identify sedimentary structures in field, measure grain size in the field, prepare lithologs, identify structures in the field, and prepare and interpret profiles from the topographic maps and how to prepare a field report.

SYLLABUS OF DSE-2

Theory (30 hours)

UNIT – I (6 Hours)

Detailed Content

Rock Particles and Fragments: characters of larger rock fragments, pebbles etc.; Shape and surface markings; Dimensions of Particles and fragments; composition; shape; angular particles; subangular particles; rounded particles;

UNIT – II (6 Hours)

Detailed Content

Sedimentary Structures: process of formation and their interpretation; laminae, bed, ripple marks, wave marks, rill marks, mud cracks, slump marks, cross-stratifications etc. Importance of litholog (theory)

UNIT – III (6 Hours)

Detailed Content

Deformed rocks: Tilted and folded strata; Principal kinds of folds or flexures; Types of folds; Strike, dip, plunge and pitch; Classification of faults; kinds of displacement; principal evidences of faulting; relation of folds and faults; Topographic expression of folds and faults.

UNIT – IV (6 Hours)

Detailed Content

Landforms in various environment: Fluvial landforms, coastal landforms, aeolian landforms, and glacial landforms.

UNIT – V (6 Hours)

Detailed Content

Topographic maps and profile sections: Contours; spacing of contours; scale; direction; requisite data on a completed contour map. Techniques used in examination of outcrops.

Practical Component- (60 Hours)

In the practical class, all components of the field geology and measurement techniques will be demonstrated and practised in the field. The practical classes of this course will be conducted at a go through field visit (10 days) in a suitable geological terrain in India. This will cover- Measuring large grain sizes in the field (Grid method), Identification of sedimentary structures, Preparation of litholog, Identification of landforms (glacial/fluvial/coastal/aeolian), Identification of folds and faults; evidences of faulting, Construction of a profile section; Enlargement of profile section, Measurement of slope from the topographic map, Location in the toposheet thorough GPS/bearing, Measurement of dip, strike, trend, plunge, pitch, Identification of bedding, flow banding, metamorphic foliation.

Essential

Field Geology by F.H. Lahee, CBS Publishers
Basic geological mapping, R. Lisle, Wiley-Blackwell, 2014

Recommended readings

Sedimentary Rocks in the field, M. Tucker, Wiley-Blackwell, 2011

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE-3 **Paleoseismology** (L3, P1)	**4**	**3**		**1**	**12th pass with science**	**Studied Earth System Science and Structural Geology or Equivalent**

DSE-3:
Paleoseismology (L3, P1)
Credit: 4
Theory (45 hours), Practical (30 hours)

Learning Objectives

The goal of this course is to provide students an understanding about: Geological techniques to study the pre-instrumental earthquakes and its application to Seismic Hazard Assessment. What do past earthquakes look like in the geologic record in different environments? To estimate the magnitude of past and future earthquakes using trench logs and geochronology as a case study from different seismically active regions of the world, e.g., Himalaya, Japan, New Zealand, etc. Learn the deformation on short- and long-term time scales.

Learning outcomes

After going through this course, students will understand how the Earth deforms from individual earthquakes to systems of faults to the construction of mountain ranges. They can able to map the active faults and their recurrence time of earthquake and seismic hazard in a seismically active area.

SYLLABUS OF DSE-3
Theory (45 hours)

Unit-1 (9 hours)
Detailed Content
Landscape Response to Tectonics: Introduction to Seismicity, its causes and nucleation, Introduction to geodesy and short-term deformation. Earthquakes in the Indian Subcontinent. Tectonic landforms. Climate-Tectonic interaction in landscape evolution. Erosion and uplift in orogenic settings. Active tectonics and rivers.

Unit-2 (9 hours)
Detailed Content
Introduction to Paleoseismology: The Scope of Paleoseismology, Evidences to identify past earthquakes- Primary and Secondary evidences, On-fault and Off-fault structures, Recurrence time of earthquake, Slip-rate Determination and Magnitude Estimation, Development of Paleoseismology. Distinguishing Paleoseismic Features from Non-Seismic or Non-Tectonic Features.

Unit-3 (9 hours)
Detailed Content
Paleoseismic Investigation Techniques: Geomorphic expressions of fault, Surveying and Mapping Paleoseismic Landforms. Trenching, logging and sampling the fault scarps. Stratigraphic and Structural evidences of Paleoearthquakes. Quaternary Dating techniques- ^{14}C, OSL, surface exposures dating.

Unit-4 (9 hours)
Detailed Content
Paleoseismology of different Tectonic Environments: Introduction to paleoseismic investigations in Contractional, Extensional, and Strike-Slip Tectonic Settings. Surface Rupture studies in Himalaya. Interpreting the Paleoseismic History by Retro-deformation. Introduction to Long term deformation study, Quaternary and Neogene Geomorphic Responses to Tectonics- the Himalayan case.

Unit-5 (9 hours)
Detailed Content
Applications on different time scale: Seismic Hazard Assessment, Estimating Paleo-earthquake Magnitude and Recurrence Cycle, Fault Segmentation.

Practical Component- (30 Hours)
Exercises covering various practical based problems on paleoseismology and tectonic events, past earthquakes, and to assess magnitude and recurrence of the seismic events and futures perspectives.

Essential/Recommended readings
James P. McCalpin (editor), 2009, Paleoseismology (2nd edition), Elsevier/Academic Press: Burlington, MA, 629 pp.
Robert S. Yeats, Kerry E. Sieh, and Clarence R. Allen, 1997, Geology of Earthquakes, Seismological Research Letters 68(5).

Recommended readings
Jayangondaperumal, R., Thakur, V. C., Joevivek, V., Rao, P. S., & Gupta, A. K. (2018), Active Tectonics of Kumaun and Garhwal Himalaya. Singapore: Springer.
Douglas W. Burbank and Robert S. Anderson, 2012, Tectonic Geomorphology (2nd edition), Wiley-Blackwell: UK, 454 pp.
William B. Bull, 2008, Tectonic Geomorphology of Mountains: A New Approach to Paleoseismology, Wiley-Blackwell: Malden, MA, 328 pp.
William B. Bull, 2009, Tectonically Active Landscapes, Wiley-Blackwell: Malden, MA, 320 pp.
Edward A. Keller and Nicholas Pinter, 2002, Active Tectonics: Earthquakes, Uplift, and Landscape (2nd edition), Prentice Hall: Upper Saddle River, NJ, 362 pp.

COMMON POOL OF GENERIC ELECTIVES

Credit distribution, Eligibility and Pre-requisites of the Course GE-4

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE-4 Natural Hazards and Mitigation (L3, T1)	**4**	**3**	**1**	**0**	**12th Pass**	**Nil**

Learning Objectives

The main objective of this course is to teach students how to evaluate risks and implement mitigation strategies. This course introduces students to the concept of disaster risk reduction and gives a foundational understanding of natural hazards around the world with a focus on India. This course also lays the foundation for advanced study in climate change impacts, environment science, sustainability, and disaster management.

Learning outcomes

After going through this course, student will know the genesis of major natural hazards of the world, the impact of climate change and understand the disaster management system of India. The students will be able to assess the risk of natural hazards to a specific place and suggest the basic disaster risk reduction measures and emergency plan.

SYLLABUS OF GE-4
Theory (45 hours)

UNIT – I (9 Hours)
Detailed contents
Introduction to natural hazards: Concept of hazards, vulnerability, exposure, risk and disaster. Major natural and manmade hazards and their impact.

UNIT – II (9 hours)
Detailed contents
Hydrometeorological hazards: Floods, storms/cyclone, cloudburst, heat and cold waves, genesis of hydrometeorological hazards, extreme events.

UNIT – III (9 Hours)
Detailed contents
Geological hazards: Geological processes and hazards. Different forms of mass movement: landslide, subsidence, debris flow; Volcanic hazards: major volcanic eruption; Earthquake and secondary hazard: Tsunami, snow avalanche.

UNIT – IV (9 Hours)
Detailed contents
Climate change and pandemic: Climate change, global warming, sea-level rise, impact of climate change on natural resources; Global climate agreements. Pandemics; other natural hazards.

UNIT – V (9 Hours)
Detailed contents
Hazard mitigation: Hazard zonation; Early warning system; Engineering measures. Hazard/disaster profile of India. Disaster management cycle; Different stakeholder in disaster management; Disaster mitigation structure in India; Emergency plan.

Tutorial (30 hours)
Students in small batches or groups will be assigned different exercises about the natural hazards and resolve the key issues to handle and mitigate.

Essential/recommended readings
Edward Bryant (2005). Natural Hazards. Cambridge University Press
Smith, Keith, (2013). Environmental hazards: assessing risk and reducing disaster: Routledge Taylor & Francis Group. London.

Suggestive readings
Edward Bryant (2005). Natural Hazards. Cambridge University Press
Smith, Keith, (2013). Environmental hazards: assessing risk and reducing disaster: Routledge Taylor & Francis Group. London.
Stephen Marshak, (2013). Essential of Geology, W W Norton & Co Inc, New York
Edward A. Keller; Duane E. DeVecchio (2014). Natural Hazards: Earth's Processes as Hazards, Disasters, and Catastrophes. Routledge.
Bell, F.G., 1999. Geological Hazards, Routledge, London.
David C. Alexander (1993). Natural Disasters. CRC Press

DEPARTMENT OF GEOLOGY
SEMESTER – V
BSC (H) Geology
Category - I

DISCIPLINE SPECIFIC CORE COURSE - DSC – 13: Economic Geology (L3, P1)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC – 13: Economic Geology (L3, P1)	**4**	**3**	**0**	**1**	**12th pass with science**	**Studied Earth System Science and Equivalent**

Learning Objectives
This course on economic geology is provide basic knowledge and leaning to students to about morphology, structure, mineralogy, petrology and geochemistry of various ore deposits, and to help them to develop a basic idea and comprehension of different ore forming processes.

Learning outcomes
After going through this course students will develop basic understanding and skill about the characteristics and distribution of mineral resources and the knowledge on different ore-bearing geological systems. They will learn about the different processes that are responsible for producing different types of ores corresponding to different tectonic settings. They will learn about the different major ore bodies that have been identified in different parts of the India.

SYLLABUS OF DSC-7
Theory (45 hours)

UNIT – I (9 hours)
Detailed content
Introduction to ore geology: Economic and academic definitions/terminologies of ore geological components. Ore minerals and their uses. Morphology and style of ore mineralization. General textures and structures

UNIT – II (9 hours)
Detailed contents
Basic principles of an ore deposit formation: Geochemical behaviour of elements in ore geological systems. Concept of source-transporting agent-driving mechanism-trap

UNIT – III (9 hours)
Detailed contents
Ore forming processes: Magmatic ore forming processes. Hydrothermal ore forming processes. Sedimentary ore forming processes. Surficial and supergene ore forming processes

UNIT – IV (9 hours))
Detailed contents
Basic mineral economics and policies: Introduction to mineral economics related to metal an non-metallic commodities. Application of mineral economics to understand mineral commodity markets. An assessment of the mineral economics for the public and corporate policies.

UNIT – V (9 hours)
Detailed contents
Distribution of major metallic and non-metallic ore deposits in India

Practical Component- (30 Hours)
Identification of common ore minerals by physical and optical properties

Essential/recommended readings
Robb, L., 2020. Introduction to ore-forming processes. John Wiley & Sons.
Evans, A.M., 2009. Ore geology and industrial minerals: an introduction. John Wiley & Sons

Suggestive readings
Robb, L., 2020. Introduction to ore-forming processes. John Wiley & Sons.
Evans, A.M., 2009. Ore geology and industrial minerals: an introduction. John Wiley & Sons.
Bateman, A.M. and Jensen, M.L. 1990. Economic Mineral Deposits. John Wiley & Sons.
Misra, K., 2012. Understanding mineral deposits. Springer Science & Business Media.
Ramdohr, P., 2013. The ore minerals and their intergrowths. Elsevier.
Sarkar, S.C. and Gupta, A., 2012. Crustal evolution and metallogeny in India. Cambridge University Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – DSC – 14: Engineering Geology ((L3, P1)

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC – 14: Engineering Geology (L3, P1)	**4**	**3**	**0**	**1**	**12th pass with science**	**Studied Stratigraphy, Earth System Science or Equivalent**

Learning Objectives

The main objective of this course is to provide a basic introduction on the role of geology in slope stability and civil engineering projects. It is aimed to provide various insights of topography, lithology and geological structures to ensure the stability and economy of engineering projects.

Learning outcomes

After going through this course, students will know the basic geological and geotechnical requirements for the site selection of engineering projects. They will be able to characterize the rock-mass strength of the site for various engineering projects and suggest the necessary support system. They will be able to identify the primary causative factors of the slope failure and suggest the preliminary mitigation measures. They will be able to investigate the various geological factors to assess environmental impacts of any engineering project.

SYLLABUS OF DSC- 14
Theory (45 Hours)

UNIT – I (9 hours)
Detailed contents
Introduction to engineering geology: Principles and scope of engineering geology: material, material fabrics and environmental factors. Geological and geotechnical investigations.

UNIT – II (9 hours)
Detailed contents
Engineering properties of geological material: Rock strength; Rock aggregates; Significance of rock as construction material; Rock mass: discontinuities, Rock mass classification; Soil: strength, standard penetration test and engineering bedrock.

UNIT – III (9 hours)
Detailed contents
Engineering structures: dams, tunnels and roads: Engineering structures: Dams, tunnels, road, their types, acting forces, ground conditions; tunnelling methods; geological considerations for site selection.

UNIT – IV (9 hours)
Detailed contents
Slope failure and mitigation measures: Concept of slope failure mechanism; Landslide types and causes, landslide mapping; Engineering treatment of slope and foundations: grouting, retaining walls, rock bolting and other support mechanisms.

UNIT – V (9 hours)
Detailed contents
Site investigation and assessment for engineering structures: Site investigation and characterization; Reconnaissance survey; Environment impact assessment (EIA); Detailed project report (DPR)

Practical Component- (30 Hours)
Merits, demerits & remedial measures based upon geological cross sections of project sites. Computation of Index properties of rocks and soil. Concept, significance and computation of Rock Mass Classification schemes like Rock Structure Rating (RSR), Rock Mass Rating (RMR)/ Tunnelling Quality Index (Q)/Rock Quality Designation (RQD).

Essential/recommended readings
Krynin, D.P. and Judd, W.R. (1957). Principles of Engineering Geology and Geotechnique, McGraw Hill (CBS Publ).
Gangopadhyay, S. (2013). Engineering geology. Oxford University Press.

Suggestive readings (if any)
Krynin, D.P. and Judd, W.R. (1957). Principles of Engineering Geology and Geotechnique, McGraw Hill (CBS Publ).
Gangopadhyay, S. (2013). Engineering geology. Oxford University Press.
Goodman, R.E. (1993). Engineering Geology: Rock in engineering constructions. Wiley& Sons, N.Y.
Waltham, T. (2009). Foundations of Engineering Geology (3rd Edn.) Taylor & Francis.
Bell, F.G. (2007). Engineering Geology, Butterworth-Heinema.
Anbalagan, R. Singh, B, Chakraborthy, D. and Kohli, A. (2007) "A filed Manual for Landslide investigations". DST, Government of India, New Delhi.
Duncan C. Wyllie and Christopher W. Mah. (2004). Rock Slope Engineering. CRC Press. London.
David George Price (2009). Engineering Geology: Principles and Practice. Springer-Verlag Berlin Heidelberg

DISCIPLINE SPECIFIC CORE COURSE– DSC – 15: Geological Mapping (L2, P2)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC – 15: Geological Mapping (L2, P2)	**4**	**2**	**0**	**2**	**12th Pass with science**	**Studied Earth System Science, Structural Geology, and Mineralogy or Equivalent**

Learning Objectives
This course on geological mapping to provide basic skills to carry out geological fieldwork in different terrains and prepare a geological map with all aspects related to lithology, structures, deformation patterns. Which is essential for basic understanding of geoscience and any detailed exploration activity.

Learning Outcomes
After going through this course, students will develop the following skills and knowledge about: How to identify a rock and broadly define its composition? How to identify and measure lithological and/or structural details of rocks at the outcrop/hand-specimen scale? How to plot the data on a base map/toposheet to create a lithological and/or structural map of the terrain? How to appreciate the possible origin of the rock and their genetic process. How to reconstruct the geological history of the terrain?

SYLLABUS OF DSC-15
Theory (30 hours)

UNIT – I (6 hours)
Introduction to toposheets and maps: Concepts of scale, contour density, numbering system. Global Positioning Systems, their types and uses. Choosing a suitable geological traverse.

UNIT – II (6 hours)
Outcrop geology: Pattern of beds in a undulating topography – rule of V. Identification of rock types, and their classification based on field criteria. Textural features of different rocks through field study and microscopy. Preparation of lithologs.

UNIT – III (6 hours)
Basic concept of structural measurements: Measurement of Strike, dip, trend, plunge, pitch etc. at the outcrop in the field. Distinguishing characters of planar and linear structures in the outcrop scale. Overprinting nature of folds/ metamorphic foliations etc.

UNIT – IV (6 hours)
Folds: Identification and structural measurement of a fold in the field. Geometric classification of a fold based on field data. Understanding the outcrop pattern of a fold in non-ideal sections

UNIT – V (6 Hours)
Faults: Distinguishing criteria of a fault in the field. Understanding the slip pattern of faults in an outcrop. Measuring the orientation of different planar and linear structures associated with a fault.

Practical Component- (60 Hours)

In the practical class, all the aforesaid techniques of measurement and identification will be demonstrated and practised in the field. The practical classes of this course will be conducted at a go through field visit (10 days) in a suitable geological terrain

Essential/recommended readings

Lahee F. H. (1962): Field Geology. McGraw Hill
Billings, M. P. (1987). Structural Geology, 4th edition, Prentice-Hall.
Lisle, R.J., Brabham, P., Branes, J. 2011. Basic Geological mapping, Wiley

Suggestive readings

Davis, G. R. (1984) Structural Geology of Rocks and Region. John Wiley
Park, R. G. (2004) Foundations of Structural Geology. Chapman & Hall.

Common Pool of Discipline Specific Electives

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE-3 **River Science (L3, P1)**	**4**	**3**	**0**	**1**	**12th pass with science**	**Studied Earth System Science and Structural Geology or Equivalent**

Learning Objectives

This course on river science is intended to provide student with basic science and understanding of the life cycle of a river especially in relation to societal development. It is to provide them knowledge and comprehension about the processes of erosion and transportation of sediments and its connection with the landforms.

Learning outcomes

After going through this course, students will be able to gain a thorough understanding of the evolution of a river. They will develop an understanding of stream hydrology concepts such as river hydrographs, river discharge, and flood frequency. Students will be able to comprehend the movement of sediments from source to sink. Students will develop the basic skills to identify different types of drainage networks and the impact of catchment morphometry and shape on the hydrological parameters of the river. Students will be able to analyze river profiles and explain their anomalies. They will be able to calculate the stream power and perform flood frequency analysis.

SYLLABUS OF DSE-3
Theory (45 hours)

UNIT – I (9 Hours)
Detailed Content
Stream hydrology: Basic stream hydrology. Physical properties of water, sediment and channel flow. River discharge, River hydrographs (UH, IUH, SUH, GIUH) and its application in hydrological analysis; Flood frequency analysis

UNIT – II (9 Hours)
Detailed Content
River basin: Sediment source and catchment erosion processes; Sediment load and sediment Yield; Sediment transport processes in rivers; Erosion and sedimentation processes in channel.

UNIT – III (9 Hours)
Detailed Content
Drainage: Drainage network; Quantitative analysis of network organization – morphometry Role of drainage network in flux transfer. Evolution of drainage network in geological time scale.

UNIT – IV (9 Hours)
Detailed Content
Rivers in time and space: River diversity in space, Patterns of alluvial rivers - braided, meandering and anabranching channels, Dynamics of alluvial rivers; Channel patterns in stratigraphic sequences. Different classification approaches in fluvial geomorphology and its applications.

UNIT – V (9 Hours)
Detailed Content

Channels and Landscapes: Bedrock channels, Bedrock incision process; River response to climate, tectonics and human disturbance; Bedrock channel processes and evolution of fluvial landscapes. Fluvial hazards: Integrated approach to stream management. Introduction to river ecology.

Practical Component- (30 Hours)
Exercises based on River visit during weekend, Stream power calculation, Longitudinal profile analysis, Hydrograph analysis, and Flood Analysis

Essential/Recmmended readings
Fryirs and Brierly (2013) Geomorphology and river management. Wiley-Blackwell Pub.
Julien, P.Y. (2002) River Mechanics. Cambridge University Press.

Recommended readings
Bridge, J.S., (2003) Rivers and Floodplain: Forms, Processes and Sedimentary Record. Blackwell Science.
Gibling, M.R., (2021) River Planet. Dunedin Press.
Wohl, E., (2010) Mountain Rivers Revisited. American Geophysical Union.

OR

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE-3 **Introduction to Geophysics** (L3, T1)	**4**	**3**	**1**	**0**	**12th pass with science**	**Studied Earth System Science and Structural Geology or Equivalent**

DSE-3:
Introduction to Geophysics (L3, T1)
Credit: 4
Theory (45 hours), Tutorial (30 hours)

Learning Objectives
This course on introduction to geophysics is intended to provide basic scientific knowledge to students to understand the interrelationship of geology and geophysics, which is essential to know the geodynamic behavior of the Earth and its interior. Students will be taught about the basic concepts in geophysics, different types of geophysical exploration methods, and geophysical anomalies to appreciate the geodynamics of the Earth and its resources.

Learning outcomes
After going through this course, students will be able to have an elementary knowledge and comprehension about the geophysical methods and their application to understand and explore Earth and its interior. They will also develop basic skills about the geophysical anomalies and their relation to geological process that are essential for any detailed exploration activity.

Theory (45 hours),

UNIT – I (9 Hours)
Detailed content
Basic concepts of geophysics: Interrelationship between geology and geophysics, Role of geology and geophysics in explaining geodynamical features of the earth.

UNIT – II (9 Hours)
Detailed content
Exploration geophysics: General and Exploration geophysics: Different types of geophysical methods - gravity, magnetic, electrical and seismic; their principles and applications; Concepts and Usage of corrections in geophysical data

UNIT – III (9 Hours)
Detailed content
Geophysical surveys: Geophysical field operations: Different types of surveys, grid and route surveys, profiling and sounding techniques; Scales of survey,

UNIT – IV (9 Hours)
Detailed content
Geophysical Methods: Application of Geophysical methods. Regional geophysics, oil and gas geophysics, ore geophysics, groundwater geophysics, engineering geophysics, internal structure of the Earth based on major discontinuities in seismic velocities.

UNIT – V (9 Hours)
Detailed content
Geophysical anomalies: Correction to measured quantities, regional and residual (local) anomalies, factors controlling anomaly, and depth of exploration. Integrated geophysical methods: Ambiguities in geophysical interpretation, planning and execution of geophysical surveys

Tutorials (30 Hours)
Students in small batches or groups will be assigned to resolve different types geophysical problems concerning calculating the free air and Bouguer anomalies, determining the gravity anomaly arising due to density contrast in the subsurface, calculating paleolatitude and paleopole, numerical problems on resistivity survey, Problems on seismic survey.

Essential/Recommended readings
Kearey, P., Brooks, M. and Hill, I., 2002. *An Introduction to Geophysical Exploration* . Third Edition. Blackwell Publishing.
Lowrie, W. (2007). Fundamentals of geophysics. Cambridge University Press.
Mussett, A.E. and Khan, M.A., 2000. *Looking into the Earth: An Introduction to Geological Geophysics*. Cambridge University Press.
Bhimasankaram, V.L.S. (1990). Exploration Geophysics - An Outline by, Association of Exploration Geophysicists, Osmania University, Hyderabad.
Dobrin, M.B. (1984) An introduction to Geophysical Prospecting, McGraw-Hill, New Delhi.

Recommended readings
Bhimasankaram, V.L.S. (1990). Exploration Geophysics - An Outline by, Association of Exploration Geophysicists, Osmania University, Hyderabad.
Dobrin, M.B. (1984) An introduction to Geophysical Prospecting, McGraw-Hill, New Delhi.
Telford, W. M., Geldart, L. P., & Sheriff, R. E. (1990). Applied geophysics (Vol. 1), Cambridge University press.

OR

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE-2 **Application of thermodynamics in petrology (L3, P1)**	**4**	**3**	**0**	**1**	**12th pass with science**	**Studied Earth System Science and Structural Geology or Equivalent**

Learning Objectives

The course intends to provide the concept of various thermodynamic parameters and application of the laws thermodynamics in different petrological systems. It attempts to demonstrate the effect of pressure temperature and chemical compositions in controlling stability of different mineral associations in open and closed systems. The course intends to demonstrate the application of thermobarometers in natural systems.

Learning Outcome

After completing the course, students will learn to calculate the free energy of the system. Students will learn to construct the stability fields of different mineral associations through Gibb's free energy minimization. Student will be able to apply the thermobarometers and will be able to calculate the pressure temperature conditions of stability of different magmatic, metamorphic and economically valuable mineral associations.

Theory (45 hours)

UNIT 1 (9 hours)

Introduction to thermodynamics, Irreversible and Reversible Processes, Thermodynamic Systems and variables, Energy in the form of heat and work, First law of thermodynamics, enthalpy, entropy, second and third law of thermodynamics, concept of free energy, Gibbs equation: thermodynamic potentials, free energy of formation at any temperature and pressure, equilibrium condition in closed system.

UNIT 2 (9 hours)

Free energy surface in G–T–P space, Clausius–Clapeyron equation, Schreinemakers rules, petrogenetic grid, Concept of stability (phase) diagrams, Phase rule, Free energy of solutions, ideal and non-ideal solutions, fugacity and activity, equilibrium constant,

UNIT3 (9 hours)

Temperature and pressure dependence of equilibrium constant, Geothermometry, geobarometry, mineral reactions among solid solutions, computer-generated phase relations, Introduction to pseudosections.

UNIT 4 (9 hours)

Partial melting and fractional crystallisation in magmatic systems along different geothermal gradients, modelling the role of magmatic processes in controlling the major, trace and REE budget in the crust, modelling the effect of composition on phase stability.

UNIT 5 (9 hours)
Thermodynamics of open system, Mass and heat transfer, effect of fluid ingress and composition of fluid in controlling the stability of different phases.

Practical (30 hours)
Calculation of free energy of formation at any temperature and pressure, Plotting univariant lines in P–T diagrams, Geothermo-barometric calculation, construction of pseudosections, use of mass balancing techniques on natural rocks

Essential/Recommended readings
Philpotts, A.R. and Ague, J.J., 2022. *Principles of igneous and metamorphic petrology*. Cambridge University Press.

Spear, F.S., 1993. Metamorphic phase equilibria and pressure-temperature-time paths. *Mineralogical Society of America Monograph*, *799*.

Ganguly, J., 2008. *Thermodynamics in earth and planetary sciences* (p. 501). Berlin: Springer.

COMMON POOL OF GENERIC ELECTIVES

Credit distribution, Eligibility and Pre-requisites of the Course GE-5

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE-5 Concepts of Sustainability (L3, T1)	**4**	**3**	**1**	**0**	**12th Pass**	**Nil**

Learning Objectives

The course on concepts of sustainability is aimed at providing students with knowledge-based concepts to understand the challenges of global sustainability and motivate them to think about solutions to these challenges. This course is also intended to encourage students to discuss and propagate issues of sustainability with others and create awareness.

Learning outcomes

After completing this course, students should be able to understand the major challenges and opportunities in the area of global sustainability. Develop an understanding of the system concept and the interconnectivity of humans and nature. They will be able to communicate issues related to sustainability. Critically analyze problems and solutions related to global sustainability.

SYLLABUS OF GE-5

Credits 4
Theory (45 hours)

UNIT – I (12 Hours)
Detailed contents
Basic concept of sustainability: Introduction to Sustainability; basic concepts Human Population – Past and Future trends

UNIT – II (12 hours)
Detailed contents
Ecosystems: Extinctions and Tragedy of Commons; Climate and Energy; Water Resources and Agriculture

UNIT – III (9 Hours)

Detailed contents
National and international issues about sustainability: National Resources Accounting, Environmental Economics and Policy, Measuring Sustainability

UNIT – IV (12 Hours)
Detailed contents
Major challenges about sustainability: Systems interconnectivity among Primary Sustainability challenges Sustainability Solutions: Some examples

Tutorials (30 Hours)
Students leaning the concepts of sustainability will be divided in small batches or groups and assigned critical exercises and problems to resolve major issues of sustainability of national and international importance.

Essential/recommended readings
Rogers, P.P., K. F. Jalal, and J.A. Boyd. 2007. An Introduction to Sustainable Development. Earthscan Publishers, 416 pp.

Suggestive readings
Rogers, P.P., K. F. Jalal, and J.A. Boyd. 2007. An Introduction to Sustainable Development. Earthscan Publishers, 416 pp.
Brown, L. 2009. Plan B 4.0. Norton Publishers, New York. (The entire book is available in pdf format: http://www.earthpolicy.org/images/uploads/book_files/pb4book.pdf)

DEPARTMENT OF GEOLOGY
SEMESTER – VI
BSC (H) Geology
Category - I

DISCIPLINE SPECIFIC CORE COURSE - DSC – 16: Remote Sensing and GIS (L3, P1)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC – 16: Remote Sensing and GIS (L3, P1)	**4**	**3**	**0**	**1**	**12th pass with science**	**Studied Earth System Science and Equivalent**

Learning Objectives

This course is intended to provide basic understanding of remote sensing, geographic information system and photogrammetry. The course also aims to familiarize the students with utilization of geo-processing tools in the field of geosciences.

Learning outcomes

After completing this course, the students will understand the basics of remote sensing and GIS techniques and their applications in various fields of the Earth Sciences. They will be able to utilize open source image processing and GIS software to make basic image correction and thematic maps. They will be able to integrate the GNSS and field-based data with the GIS to create maps for further analysis.

SYLLABUS OF DSC-16
Theory (45 hours)

UNIT – I (12 hours)

Detailed content

Fundamentals of remote sensing: Concept of remote sensing, electromagnetic spectrum, atmospheric windows, remote sensing system, sensors and scanners, remote sensing platforms, image resolution, data procurement, data formats- raster and vector, digital image processing.

UNIT – II (12 hours)

Detailed contents

Photogeology: Types and acquisition of aerial photographs, concept of scale and resolution; Principles of stereoscopy, relief displacement, vertical exaggeration and distortion. Elements of air photo interpretation, identification of the primary and secondary structures of rocks, lithology, landforms and surface processes.

UNIT – III (11 hours)

Detailed contents

Geographic Information System (GIS): Introduction to GIS, datum, coordinate systems and projection systems, spatial data models and data editing. Introduction to digital elevation model (DEM) analysis. Spatial and Temporal interpolation of datasets.

UNIT – IV (10 hours))
Detailed contents
Global navigation satellite systems (GNSS): Introduction to GNSS, GPS, GPS signals. Integrating GNSS data with GIS; GNSS applications in earth system sciences and disaster studies.

Practical Component- (30 Hours)
Introduction to QGIS software, plugins in QGIS, data procurement, creating FCC from raw data, Registration of satellite images, Image enhancement, Classification of images (Visual interpretation), Classification of images (Supervised and Unsupervised), Identification of geological structures, landforms and surface processes. Stereo viewing of images. Vector data editing, Generating slope map, aspect map and drainage network map, Spatial interpolation of datasets, Introduction to GPS.

Essential/recommended readings
Gupta, R.P. Remote Sensing Geology, Springer
Bhatta, B., Remote Sensing and GIS, 2nd Edition, Oxford.
Joseph, G., and Jeganathan, C., Fundamental of Remote Sensing, University Press, Hyderabad.

Suggestive readings
Gupta, R.P. Remote Sensing Geology, Springer
Joseph, G., and Jeganathan, C., Fundamental of Remote Sensing, University Press, Hyderabad.
Demers, M.N., 1997. Fundamentals of Geographic Information System, John Wiley & sons. Inc.
Hoffmann-Wellenhof, B., Lichtenegger, H. and Collins, J., 2001. GPS: Theory & Practice, Springer Wien New York.
Jensen, J.R., 1996. Introductory Digital Image Processing: A Remote Sensing Perspective, Springer-Verlag.
Lillesand, T. M. & Kiefer, R.W., 2007. Remote Sensing and Image Interpretation, Wiley.
Richards, J.A. and Jia, X., 1999. Remote Sensing Digital Image Analysis, Springer-Verlag.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – DSC – 17: Fuel Geology ((L3, P1)

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC – 17: Fuel Geology (L3, P1)	4	3	0	1	12th pass with science	Studied Stratigraphy, Earth System Science, Structural Geology or Equivalent

Learning Objectives

The course on fuel geology is intended to provide basic scientific knowledge and understanding about the natural fossil fuels i.e., petroleum and coal to students of geology. Because use of petroleum resources and its exploration is the most powerful driving forces shaping our modern world.

Learning outcomes

After completion of this course students will be able to understand and comprehend the processes involved in generation of hydrocarbons and the formation of coal and the exploration methods. Students will also have a comprehension about the conventional and non-conventional fuels and their demand through time.

SYLLABUS OF DSC- 17

Theory (45 hours)

UNIT – I (9 hours)

Detailed contents

Coal: Definition and origin of Coal; Classification of coal; Fundamentals of Coal Petrology - Introduction to lithotypes, microlithotypes and macerals in coal, Proximate and Ultimate analysis.

.

UNIT – II (9 hours)

Detailed contents

Coal as a fuel: Coal Bed Methane (CBM): global and Indian scenario**;** Underground coal Gasification**;** Coal liquefaction

UNIT – III (9 hours)

Detailed contents

Petroleum: Chemical composition and physical properties of crudes in nature; Origin of petroleum; Maturation of kerogen; Biogenic and Thermal effect. Van Krevelen diagram

UNIT – IV (9 hours)

Detailed contents

Oil migration: Primary and secondary. Role of capillary pressure and Buoyancy. Petroleum Reservoirs and Traps: Reservoir rocks: general attributes and petrophysical properties.

UNIT – V (9 hours)

Detailed contents

Classification of reservoir rocks - clastic and chemical. Hydrocarbon traps: definition, Structural, Stratigraphic and Mixed. Time of trap formation and time of Hydrocarbon accumulation. Cap rocks - definition and general properties. Plate tectonics and global distribution of hydrocarbon reservoir.

Practical Component- (30 Hours)

Study of hand specimens of coal. Reserve estimation of coal. Section correlation and identification of hydrocarbon prospect. Panel and Fence diagrams

Essential/recommended readings

Shelly R. C. (2014). Elements of Petroleum geology: Third Edition, Academic Press.
Bjorlykke, K. (1989). Sedimentology and petroleum geology. Springer-Verlag.

Suggestive readings (if any)

Shelly R. C. (2014). Elements of Petroleum geology: Third Edition, Academic Press.
Bjorlykke, K. (1989). Sedimentology and petroleum geology. Springer-Verlag.
Chandra D. (2007). Chandra's Textbook on applied coal petrology. Jinasa Publishing House
North, F.K., 1985 Petroleum Geology
Bastia, R., & Radhakrishna, M. (2012). Basin evolution and petroleum prospectivity of the continental margins of India (Vol. 59). Newnes.

DISCIPLINE SPECIFIC CORE COURSE– DSC – 18: Paleoceanography and Paleoclimate (L3, P1)

Credit Distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC – 18: Paleoceanography and Paleoclimate (L3, P1)	**4**	**3**	**0**	**1**	**12th pass with science**	**Studied Earth System Science, Structural Geology, and Mineralogy or Equivalent**

Learning Objectives
The course is intended to make students aware about the climate changes through geological time periods, the chaotic nature of the Climate System, its behaviour at various time scales, and its influence on biotic system. Students will also be introduced to futuristic approaches and projections of the Inter-Governmental Panel of Climate Change, and scientific issues related to climate change. As the Oceans cover 70 percent of the Earth's surface understanding the evolution of oceans through time is essential to understand their role in controlling the earth's climate at various time scales.

Learning Outcomes:
After completing the course, the student will be able to comprehend the role of Oceans in controlling the Earth's climate at various time scales. The students will be able to independently interpret the proxy record generated from various paleoclimate archives. Archives. The student will develop an overall understanding of the Ocean-Climate linkages, Tectonics -climate linkages and modern climate change.

SYLLABUS OF DSC-18
Theory (45 hours)

UNIT – I (9 hours)
Detailed contents
Weather, Climate, Components of climate, Climate classification. Insolation, short and long-term changes in Insolation.

UNIT – II (9 hours)
Detailed contents
Aerosols: Definition, origin, role in climate change. Greenhouse gases: Introduction, causes of changing concentration, role in climate change.

UNIT – III (9 hours)
Detailed contents
Origin and evolution of Oceans. Closing and opening of Ocean Gateways and the resultant effect on climate. Climate of the Arctic and Antarctica through the ages. Bipolar See Saw, Polar Amplifications. Ice core studies and climate change. Oceanic sediments, Terrigenous, biogenic sediments, and their distribution.

UNIT – IV (9 hours)
Detailed contents
Sea-level: factors affecting sea-level changes, Short and long-term sea-level variability, evidence of sea-level change from marine sediments. Ocean-climate linkage. Effect of topography/tectonics on climate. Natural variability in climate. Human influence on climate change.

UNIT – V (9 hours)
Detailed contents
Historical evidence of climate change. Effects of climate change on mankind. Sampling methods for retrieving archives of climate/oceanographic change. Various dating methods of the marine cores., merits and demerits of various dating methods Paleoclimatic/paleoceanographic reconstruction from archives. Elemental and isotopic analysis for paleoclimatic/paleoceanographic reconstruction, Instruments used for paleoclimatic/paleoceanographic studies. Modeling climate change, IPCC climate change projections.

Practical Component- (30 Hours)
Processing of marine core samples for paleoclimatic/ paleoceanographic studies. Exercises in oceanography. Interpretation of various types of paleoceanographic and paleoclimatic data.

Essential/recommended readings
Bradley, R.S., Paleoclimatology: Reconstructing Climates of the Quaternary, Academic. Press.
Brasier, M.D. 1980 Microfossils, George Allen and Unwin.

Suggestive readings
Frank J Millero, Chemical Oceanography, CRC Press, Taylor and Francis Group, 2013
Alan Trujillo (Author), Harold Thurman (Author), Essentials of Oceanography 13th Edition, 2023, Pearson Education.
Bradley, R.S., Paleoclimatology: Reconstructing Climates of the Quaternary, Academic. Press.
Brasier, M.D. 1980 Microfossils, George Allen and Unwin.
Cronin, T.M., 1999. Principles of Paleoclimatology, Columbia University Press.
Fischer, G. and Wefer, G 1999 Use of Proxies in Paleoceanography: Examples from the South Atlantic, Springer.
Haq and Boersma, 1978. Introduction to Marine Micropaleontology, Elsevier.
Kennett, J.P.1982 Marine Geology, Prentice-Hall Inc.
North, G.R. and Crowley, T.J., 1995. Palaeoclimatology, Oxford University Press
Schopf, TJ.M., 1980. Paleoceanography, Harvard University Press.
Tolmazin, D., 1985. Elements of Dynamic Oceanography, Allen and Unwin.

COMMON POOL OF DISCIPLINE SPECIFIC ELECTIVES

Discipline Specific Elective (DSE-4): Exploration Geology or Geophysics or Application of Hydrogeology in Industries and Mining
(L3, P1)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE-4 **Exploration Geology (L3, P1)** or **Research Methods in Geoscience (L3, P1)** or **Application of Hydrogeology in Industries and Mining (L3, P1)**	**4**	**3**	**0**	**1**	**12th pass with science**	**Studied Earth System Science and Structural Geology, Hydrogeology or Equivalent**

DSE-4: Exploration Geology (4 credits)
Theory (45 hours)
Practical (30 hours)

Learning Objectives

The course on exploration geology is intended to provide introductory knowledge of mineral exploration at different stages though geological, geochemical, geophysical, and remote sensing methods. Students will also be provided basic understanding about the estimation of reserves.

Learning outcomes

After going through this course, students will have a clear idea and knowledge about the exploration methods and tools, and their application in mineral resource exploration and exploitation.

SYLLABUS OF DSE-4 (Exploration Geology)
Theory (45 Hours)

UNIT – I (9 Hours)
Detailed content
Introduction to exploration geology: Definitions and different terminologies of exploration components. Basic exploration and exploitation steps or stages. Classification of mineral deposits with respect to exploration strategies. Mineral resources and their uses

UNIT – II (9Hours)

Principles of mineral exploration: Importance of mineralogy, grain size-shape and texture in exploration. Mineral identification and analytical techniques. Sampling techniques, drilling and logging. Estimation of grade in samples.

UNIT – III (9 Hours)
Detailed content
Prospecting and exploration: Surficial survey methods and applications. Geochemical survey methods and applications. Geophysical survey methods and applications. Remote sensing methods and applications

Unit – IV (9 Hours)
Detailed content
Importance of drilling and logging in exploration: Core and non-core drilling. Basic parts of drilling machine. Types of drilling techniques. Planning and location of bore holes on ground.

Unit – V (9 Hours)
Detailed content
Principles of reserve estimation: Reserves estimation methods and models. Critical geological data to be considered. Factors affecting reliability of reserve estimation and types of errors. Evaluation of sampling data: mean, median, mode, standard deviation and variance.

Practical Component- (30 Hours)
Exercises based on Evaluation of data Average grade and reserve estimation techniques. Geological cross-section and borehole problems.

Essential/Recmmended readings
Moon, C.J., Whateley, M.K.G. & Evans, A.M. 2006. Introduction to Mineral Exploration, Blackwell Publishing.
Haldar, S.K., 2013. Mineral Exploration – Principles and Applications. Elsevier Publication.

Recommended readings
Moon, C.J., Whateley, M.K.G. & Evans, A.M. 2006. Introduction to Mineral Exploration, Blackwell Publishing.
Haldar, S.K., 2013. Mineral Exploration – Principles and Applications. Elsevier Publication.
Arogyaswami, R.P.N.(1996. Courses in Mining Geology. 4th Ed. Oxford-IBH.
Clark, G.B. 1967. Elements of Mining. 3rd Ed. John Wiley & Sons.

or

DSE-4: Research Methods in Geoscience (L3, P1)
Credits: 4
Theory: 45 hours
Practical: 30 hours

Learning Objectives
Main objective of this course to provide an introduction to research methods relevant to geoscience through lectures and practical training about literature review, proper referencing and citation, professional ethics, geoscience hypotheses, analytical techniques, data analysis, preparation of scientific reports and proposals.

Learning outcomes
After successful completion of this course, students will have a basic understanding and skill to develop a research plan related to critical issues in geoscience. The students will also be able to develop skills to synthesise scientific ideas and appreciate the scope of research work in geoscience.

SYLLABUS OF DSE-4

Research Methods in Geoscience (4 credits)

Theory (45 hours)

UNIT – I (9 Hours)

Detailed Content

Fundamentals of research in geoscience: Concept and definitions of research issues in geoscience, types of research in geosciences, testing of hypothesis in geosciences, literature survey of scientific articles relevant to geoscience, critical gaps and key questions to resolve through scientific research in geoscience.

UNIT –II (9 Hours)

Detailed Content

Planning and development of research work: Defining major objective and sub-objectives of geological research in a particular field. Assessment of required methodologies and experimental setups. Types of field and laboratory data, time period and key millstones of the progress, synthesis of acquired data and writing of thesis.

UNIT –III (9 Hours)

Detailed Content

Analytical techniques: Geological fieldwork and collections of representative samples, sample preparation, petrographic techniques, mineralogical and geochemical analytical techniques.

UNIT –IV (9 Hours)

Detailed Content

Data handling and statistical treatments: Basic statistical methods, correlation and regression, principal component analysis, factor analysis, cluster analysis, making of different geological maps and figures using software's.

UNIT –V (9 Hours)

Detailed Content

Writing of thesis and scientific reports: Review of concerned geoscience research articles. Introduction, significance and utility of the concerned geoscience research. Easy to follow stepwise chapters on different aspects of the research work. Synthesis and interpretations, conclusions, referencing, bibliographies, ethics and plagiarism.

Practical: 30 hours

Students will be exposed to basic instrumentation facilities and their working, such as thin section preparation, petrographic analysis, mineralogical and geochemical analytical techniques and writing of project reports.

Essential readings

Lisle, R.J., Brabham, P., Branes, J. 2011. Basic Geological mapping, Wiley

Wilson M. J. 1987. A handbook of determinative methods in clay mineralogy. Blackie

Recommended readings

Lindholm, R.C. 1963. A practical approach to Sedimentology, Allen & Unwin
Faure, G. and Mensing, T.M.2009. Isotopes principles and Applications. Willey.

Jackson M. (1975) Soil Chemical Analysis–Advanced Course: 10th printing, published by author, Dept. Soil Science, University of Wisconsin, Madison, Wisconsin.

Or

Application of Hydrogeology in Industries and Mining (L3, P1)
Credits: 4
Theory: 45 hours
Practical: 30 hours

Learning Objectives
The course introduces the students to the legal and constitutional framework of ground water governance in India. It aims to provide knowledge about the scientific processes and protocols involved in impact assessment and comprehensive hydrogeological studies for developmental projects involving groundwater extraction.

Learning outcomes
After completing the course, students will become familiar with the salient aspects of India's ground water governance framework. They will develop an understanding of the groundwater resources estimation methods, and acquire basic skill to undertake impact assessment, comprehensive hydrogeological and water audit studies for developmental projects involving groundwater extraction. Learners will be trained to write professional grade Impact Assessment Report, Comprehensive Hydrogeological Report and Water Audit Report. They will be skilled with capability of formulating and processing No Objection Certificate (NOC) application for ground water extraction.

SYLLABUS OF DSE-4
Application of Hydrogeology in Industries and Mining (4 credits)

Theory (45 hours)

Unit 1: (9 hours)
Detailed content
Ground water governance: Ground water ownership: The Indian Easement Act 1882. Constitutional provisions regarding ground water. National Water Policy. Environment Protection Act 1986 – Central Ground Water Authority (CGWA) and State Ground Water Regulatory Bodies. National Green Tribunal.

Unit 2: (9 hours)
Detailed content
Guidelines to regulate and control ground water extraction in India: Preamble and background: exemptions from seeking No Objection Certificate, Drinking & Domestic use for Residential apartments/ Group Housing Societies/ Government water supply agencies in urban areas, Agriculture Sector, Commercial Use, Industrial Use, Mining Projects, Infrastructure projects, Ground water abstraction/ restoration charges, Bulk Water Supply, Abstraction of Saline ground water, Protection of Wetland Areas, General compliance conditions in No Objection Certificate, Monitoring of compliance of No Objection Certificate Conditions, Renewal and extension of No Objection Certificate, Delegation of powers against illegal ground water withdrawal, Ground Water Level Monitoring, Environmental Compensation, Provision of penalty and other important conditions. No Objection Certificate Application Portal (NOCAP). Water Audit Report. Accreditation of Ground Water Professional.

Unit 3: (9 hours)
Detailed content
Ground Water Resources Estimation: Dynamic ground water resources of unconfined aquifers for command and non-command areas: assessment unit, estimation of monsoon and non-monsoon recharge from all sources and provision for natural discharges, estimation of monsoon and non-monsoon extraction by different sectors, categorization of assessment blocks and validation. Poor ground water quality area. Waterlogged and shallow water table areas. In-storage ground water resources of unconfined aquifer. INGRES portal.

Unit 4: (9 hours)
Detailed content
Impact Assessment Report (IAR): Buffer zone demarcation, Land Use Land Classification (LULC), Digital Elevation Model (DEM), geomorphology, details of water bodies, geological set up. Hydrogeological set up: aquifer characteristics, depth to water level, water table contours and ground water flow, surface ground water interaction, hydrogeological map, seasonal and long-term water level fluctuation, ground water quality, water quality of nearby water bodies. Assessment of impact of proposed ground water extraction using analytical modelling/numerical solutions, etc. Socio-economic analysis and mitigation measures. Case studies.

Unit 5:
Detailed content
Comprehensive Hydrogeological Report (CHR): Buffer zone demarcation, Land Use Land Classification (LULC), Digital Elevation Model (DEM), geomorphology, details of water bodies, geological set up. Hydrogeological set up: geophysical studies and aquifer characteristics, depth to water level, water table contours and ground water flow, surface - ground water interaction, hydrogeological map, seasonal and long-term water level fluctuation, ground water quality, water quality of nearby water bodies. Mine plan and seepage estimation. Assessment of impact of proposed ground water extraction using analytical modelling/numerical solutions, etc. Socio-economic analysis and mitigation measures. Case studies.

Practicals (30 hours)

Students will be trained to carry out Ground Water Resource estimation, hands on exercises on IAR and CHR, hands on exercises on Water Audit, and exercises based on analytical modelling/numerical solutions for impact assessment, mine seepage estimation analysis.

Essential readings
Todd, D.K., 2004. Ground Water Hydrology, John Wiley & Sons, New York.
Fetter, C.W., 1984. Applied Hydrogeology, McGraw-Hill Book Co., New York
Ministry of Jal Shakti (Department of Water Resources, River Development and Ganga Rejuvenation) (Central Ground Water Authority). Guidelines to regulate and control ground water extraction in India. Notification No. 2941. The Gazette of India: Extraordinary [Part II—Sec. 3(ii)]. 24th September, 2020. Weblink: https://cgwb.gov.in/CGWA/CGWA%20New%20Guidelines%202020.pdf

Recommended Readings
Raghunath, H.M., 1987. Ground Water, Wiley Eastern Ltd., Calcutta.
Ministry of Water Resources, River Development & Ganga Rejuvenation Government of India. 2017. Report of The Ground Water Resource Estimation Committee (GEC-2015) Methodology. Weblink: http://cgwb.gov.in/Documents/GEC2015_Report_Final%2030.10.2017.pdf
Central Ground Water Authority, Ministry of Jal Shakti. 2022. Standard Operating Procedures: Impact Assessment Report and Comprehensive Hydrogeological Report. Weblink: https://cgwa-noc.gov.in/landingpage/UserAssistance/ImpactAssessmentRepMin3.pdf
Central Ground Water Authority, Ministry of Jal Shakti. 2023. Notification of Guidelines dated 24th September 2020 & Amendments dated 29th March 2023: Standard Operating Procedure for Implementation of Guidelines. Weblink: https://cgwa-noc.gov.in/LandingPage/UserAssistance/STANDARDOPERATINGPROCEDUREV-9.1.pdf (SOPs are updated at regular intervals and the updated SOP from CGWA site will be additional reference material)

COMMON POOL OF GENERIC ELECTIVES

One GE from GE pool (GE-6): Evolution of life trough time (L3, T1)

Credit distribution, Eligibility and Pre-requisites of the Course GE-5

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE-6 Evolution of life through time (L3, T1)	**4**	**3**	**1**	**0**	**12th Pass**	**Nil**

Learning Objectives

The main objective of the course is to make the student aware about the evolution of life through geological time from simple prokaryotic to complex multicellular life forms, and the role of geological processes and climatic events in shaping the evolution of life on the Earth.

Learning outcomes

On completion of the course, the student will be able to learn how fossilization processes operate in nature and what early planetary conditions led to the origin and evolution of early life. The student will also be able to understand mass extinction events in the Phanerozoic Era and their causes, and how various geological and climatic events influenced the evolution of life and how life itself has influenced the geological processes.

SYLLABUS OF GE-6

Theory (45 hours)

UNIT – I (9 Hours)

Detailed contents

Life through ages: Fossilization processes and modes of fossil preservation, exceptional preservation; Geological Time Scale with emphasis on major bio-events.

UNIT – II (9 hours)

Detailed contents

Geobiology: Biosphere as a system, processes and products; Biogeochemical cycles; Abundance and diversity of microbes, extremophiles; Microbes-mineral interactions, microbial mats.

Origin of life; possible life sustaining sites in the solar system.

UNIT – III (9 Hours)

Detailed contents

Archean life: Earth's oldest life, the oxygen revolution and radiation of life.

Proterozoic life: The Garden of Ediacara and the evolution of metazoan life.

UNIT – IV (9 Hours)

Detailed contents

Palaeozoic Life: The Cambrian Explosion of Life; Biomineralisation and the fossil record. Palaeozoic Marine Life; Origin and progression of vertebrates; Early adaptations of plants to terrestrial life.

Mesozoic Life: Life after the largest (P/T) mass extinction, life in the Jurassic seas; Origin of mammals; Rise and fall of dinosaurs; Origin of birds; and spread of flowering plants.

UNIT – V (9 Hours)
Detailed contents
Cenozoic Life: Radiation of placental mammals following K/Pg mass extinction; Evolution of modern grasslands and co-evolution of hoofed grazers; Palaeocene-Eocene Thermal Maximum (PETM) deep time analogue for modern greenhouse state; Back to water – Evolution of Whales; The age of humans; Hominid dispersals and climate setting

Tutorial (30 hours)
Students in different batches or groups will be given exercises to prepare shorts reports about the life evolution and extinction through different geological times on Earth.

Essential/recommended readings

Stanley, S.M. & Luczaj, J.A. (2014). Earth System History (4th Edition), W.H.Freeman (Macmillan)
Cowen, R. (2000). History of Life. Wiley-Blackwell.
Benton, M.J. & Harper, D.A.T. (2016). Introduction to Paleobiology and the fossil record. Wiley

Suggestive readings

Stanley, S.M. & Luczaj, J.A. (2014). Earth System History (4th Edition), W.H.Freeman (Macmillan)
Cowen, R. (2000). History of Life. Wiley-Blackwell.
Benton, M.J. & Harper, D.A.T. (2016). Introduction to Paleobiology and the fossil record. Wiley
Canfield, D.E. & Konhauser, K.O. (2012). Fundamentals of Geobiology, Blackwell.
Suggested Reading:
Cowen, R. (2000). History of Life. Wiley-Blackwell.
Lumine, J.I. (1999). Earth-Evolution of a Habitable World, Cambridge University Press.
Lieberman, B.S. & Kaesler, R. (2010). Prehitoric Life-Evolution and the Fossil Record, Wiley-Blackwell.
Lieberman, B.S. & Kaesler, R. (2010). Prehitoric Life-Evolution and the Fossil Record. Wiley-Blackwell.
Cockell, C., Corfield, R., Edwards, N. & Harris, N. (2007). An Introduction to the Earth-Life System Cambridge University Press.

Department of Zoology

SEMESTER-IV
BSc (Hons.) Zoology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

DISCIPLINE SPECIFIC CORE COURSE -10 – :
Comparative Anatomy of Vertebrates
Zoo-DSC-10

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Comparative Anatomy of Vertebrates Zoo-DSC-10	04	02	Nil	02	Passed Class XII with Biology/ Biotechnology	Basic knowledge of Vertebrates

Learning Objectives

The learning objectives of this course are as follows:

- to impart in-depth knowledge about the structural patterns and a comparative account of the different organ systems of vertebrates.
- to understand the account of the functional and comparative morphology provides a deepunderstanding of animal diversity and the adaptive changes the vertebrates have gone throughduring evolution from common ancestors
- to help students identify the body plan types of complex chordates and their systematic organization based on evolutionary relationships, structural and functional affinities.
- to apprise the students about the correlation of comparative development to evolutionary biology and phylogeny, and how it helps in classifying animals.
- to enable students to establish the evolutionary links based on fossil records.

Learning Outcomes

By studying this course, students will be able to

- have a better understanding of the evolutionary significance of comparative anatomy.
- understand the importance of morphology and anatomy of organisms in relation to evolution.
- appreciate the comparative anatomy among vertebrates that provides evolutionary evidences.
- enhance collaborative learning and communication skills through practical sessions, teamwork, group discussions, assignments, and projects.

SYLLABUS OF DSC-10

UNIT 1: Integumentary System **4 hrs**

Structure and derivatives of integument.

UNIT 2: Digestive System **4 hrs**

Alimentary canal and associated glands; Dentition.

UNIT 3: Circulatory System **4 hrs**

General plan of circulation; Evolution of heart and aortic arches.

UNIT 4: Respiratory System **4 hrs**

Skin, gills, lungs, accessory respiratory organs in fishes, air sacs.

UNIT 5: Skeletal System **5 hrs**

Outline of axial and appendicular skeleton; Concept of neurocranium, dermatocranium and splanchnocranium; Structure of a typical vertebra and its classification based on centrum; Jaw suspensorium; General plan of girdles and limbs.

UNIT 6: Nervous System **3 hrs**

Comparative account of brain; Cranial nerves in mammals.

UNIT 7: Sense Organs **3 hrs**

Classification of receptors; Structure and function of mammalian eye and ear.

UNIT 8: Urinogenital System **3 hrs**

Succession of kidney; Evolution of urinogenital ducts; Types of uteri in mammals.

Practical **(60 hrs)**

(Laboratory periods: 15 classes of 4 hours each)

1. Study of different types of feathers of birds.
2. Study of the disarticulated skeleton of Frog, Varanus, Fowl, Rabbit (Vertebral Column, Sternum,Girdles, Ribs, Limb bones).
3. Study of the vertebrate Skull (i) one herbivorous and one carnivorous animal skull; (ii) one monocondylic and one dicondylic skull.
4. Study of carapace and plastron of turtle/tortoise.
5. Study of the digestive, circulatory and urinogenital system of frog/rat through videos ondissection or through virtual dissections.
6. Project related to topics covered in theory.
7. Field trips/Documentary film show on vertebrates/Visit to Zoological Park, Biodiversity Park or Sanctuary.

8. Student Presentation: Power point presentation on any two animals from two different classes.

Essential/recommended readings

1. Kardong, K.V. (2005) Vertebrate's Comparative Anatomy, Function and Evolution. IV Edition. McGraw-Hill Higher Education.

2. Kent, G.C. and Carr R.K. (2000). Comparative Anatomy of the Vertebrates. IX Edition. The McGraw-Hill Companies.

Suggestive readings

1. Leiem C.F., Bermis W.E, Walker, W.F, Grande, L. (2001) Functional anatomy of the vertebrates, An evolutionary perspective. III Edition, Brookes/Cole, Cengage Learning.

NOTE: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE -11 – : Developmental Biology Zoo-DSC-11

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical		
Developmental Biology Zoo-DSC-11	04	02	Nil	02	Passed Class XII with Biology/ Biotechnology	Basic knowledge of Chordates

Learning Objectives

The learning objectives of this course are as follows:

- to provide an in-depth knowledge on the embryonic and post embryonic developmental processes.
- to apprise the students of the fascinating aspect of the development of a single fertilized egg to mature into a fully developed complex organism.
- to explain the basic principles and concepts the developmental processes from a single cell system to a multi-cellular system.
- to understand morphogenesis in Sea urchin, Drosophila, Frog and Chick.
- to provide the undergraduate students an in-depth knowledge on the embryonic

and post embryonic developmental processes.

- by understanding the developmental processes, the students can relate to errors occurring during development leading to congenital disorders and human diseases.
- to familiarize the students with the technique of IVF and pre-diagnostic methods to identify any abnormality arising during development.
- To make the students aware of the areas of great interest including stem cell therapy, tissue engineering and regenerative medicine.

Learning Outcomes

By studying this course, students will be able to

- appreciate the events that lead to the formation of a multicellular organism from a single fertilized egg.
- better understand the general patterns and sequential developmental stages during embryogenesis.
- gain knowledge of the general mechanisms involved in morphogenesis.
- comprehend the processes of ageing to improve the overall health and quality of life in aged people.
- acquire basic knowledge and importance of latest techniques like stem cell therapy, *in vitro* fertilization and amniocentesis etc.
- develop the skill to raise and maintain culture of model system- *Drosophila* in the laboratory.

Syllabus of DSC-11

UNIT- 1: Introduction **2 hrs**

Historical perspectives and basic concepts: Phases of development, Pattern formation, Differentiation and growth, Cytoplasmic determinants.

UNIT- 2: Early Embryonic Development **12 hrs**

Gametogenesis: oogenesis, spermatogenesis; Types of eggs, Egg membranes; Fertilization (External and Internal), Blocks to polyspermy; Planes and patterns of cleavage; Types of Blastula; Fate maps; Gastrulation in frog and chick, Embryonic induction and organizers.

UNIT- 3: Late Embryonic Development **6 hrs**

Fate of Germ Layers; Extra-embryonic membranes in birds; Implantation of embryo in humans, structure, types, and functions of placenta.

UNIT- 4: Post Embryonic Development **6 hrs**

Metamorphosis and its hormonal regulation in amphibians and insects;Regeneration: Modes of regeneration, epimorphosis, morphallaxis and compensatory regeneration (with one example each); Ageing: concepts and theories.

UNIT- 5: Implications of Developmental Biology **4 hrs**

Teratogenesis: Teratogenic agents and their effects on embryonic development; *in-vitro* fertilization, Embryonic stem cell (ESC), Amniocentesis.

Practical **(60 hrs)**

(Laboratory periods: 15 classes of 4 hours each)

1. Study of whole mounts and sections of developmental stages of frog through permanent slides: Cleavage stages, blastula, gastrula, neurula (Neural plate, Neural fold and Neural tube stages), tail-bud stage, tadpole (external and internal gill stages)
2. Study of whole mounts of developmental stages of chick through permanent slides (Hamburger and Hamilton Stages): Stage 3 (Intermediate Streak)-13 hours, Stage 4 (Definitive Streak)-18 hours, Stage 5 (Head Process)-21 hours, Stage 7- 24 hours, Stage 8-28 hours, Stage10-33 hours, Stage 11-40 hours, Stage 13-48 hours, Stage 19- 72 hours and Stage 24-96 hours of incubation
3. *in vivo* study of chick embryo development by windowing and candling methods. (Demonstration only)
4. Study of indirect development and metamorphosis by rearing any one insect.
5. Study of different sections of placenta (photomicrographs/ slides).
6. Project report on *Drosophila* or any insect culture/Visit to Poultry Farm/IVF Centre
7. Student Presentation: Power point presentation on any topic related to developmental biology.

Essential/recommended readings

1. Slack, J.M.W. (2013) Essential Developmental Biology. III Edition, Wiley- Blackwell.
2. Gilbert, S. F. (2010) Developmental Biology. IX Edition, Sinauer Associates, Inc. Publishers, Sunderland, Massachusetts, USA
3. Carlson, B.M. (2007) Foundations of Embryology. VI Edition, Tata McGraw-Hill Publishers.
4. Balinsky B. I. and Fabian B. C. (2006). An Introduction to Embryology. VIII Edition, International Thompson Computer Press.

Suggestive readings

1. Baweja, V. and Misra, M. (2021) E-book on Practical Manual of developmental Biology.
2. Arora, R. and Grover, A. (2018) Developmental Biology: Principles and Concepts. I Edition, R. Chand & Company.
3. Wolpert, L. (2002) Principles of Development. II Edition, Oxford University Press.
4. Kalthoff, K. (2001) Analysis of Biological Development. II Edition, McGraw Hill Publishers.

NOTE: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE– 12:
Animal Behaviour Zoo-DSC-12

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical		
Animal Behaviour Zoo-DSC- 12	**04**	**02**	**Nil**	**02**	**Passed Class XII with Biology/ Biotechnology**	**NIL**

Learning Objectives

The learning objectives of this course are as follows:

- To provide an overview of animal behaviour in a scientific study of the wild and the wonderful ways in which animals interact with each other, with other living beings, and with the environment.
- to understand and appreciate different types of animal behaviour, their adaptive and evolutionary significance.
- to equip the students with an ability to pursue career in behavioural ecology other related areas.
- to apprise the students of the versatility of Animal behaviour and its crosstalk among conservation biology, molecular biology, behavioural ecology and integrated pest management.

Learning Outcomes

By studying this course, students will be able to:

- comprehend various types of animal behaviour and their importance.
- observe, analyse, interpret and document the different types of behaviour.
- enhance their skills by taking short projects pertaining to Animal behaviour.
- appreciate and develop passion to biodiversity; and respect the nature and environment.
- better understand and relate the fundamentals and advanced concepts so as to develop a strong foundation that will enable them to acquire skills and knowledge.

SYLLABUS OF DSC-12

UNIT- I Introduction to Animal Behaviour **4 hrs**

Origin and history of ethology; Pioneers of modern ethology: Karl *von* Frisch, Ivan Pavlov, Konrad Lorenz, Niko Tinbergen; Proximate and ultimate causes of behavior.

UNIT- 2 Mechanisms of Behaviour **5 hrs**

Innate behaviour, Instinct, Stimulus filtering, Sign stimuli, Code breakers.

UNIT- 3: Patterns of Behaviour **5 hrs**

Orientation: Primary and secondary orientation; Kinesis - orthokinesis, klinokinesis; **Taxis**: tropotaxis and klinotaxis, menotaxis (light compass orientation).

Learning: Associative learning, Classical and operant conditioning, Habituation, Imprinting;

Reasoning: Intelligence and artificial intelligence.

UNIT- 4: Communication **3 hrs**

Importance of communication; Role of Tactile, Chemical, Auditory, Visual stimuli in communication.

UNIT- 5: Social Behaviour **4 hrs**

Concept of Society; Insects' society; Honey bee: Society organization, polyphenism and polyethism; Foraging in honey bee, round dance, waggle dance; Experiments to prove distance and direction component of dance; Formation of new hive/queen.

UNIT- 6: Altruism **3 hrs**

Altruism, Inclusive fitness, Hamilton's rule

UNIT 7: Sexual Behaviour **6 hrs**

Asymmetry of sex; Sexual dimorphism, mate choice; Intra-sexual selection (male rivalry); Inter- sexual selection (female choice); Courtship behaviour, Courtship behavior in 3-spine stickleback; Infanticide; Parental care, sexual conflict in parental care.

Practical **(60 hrs)**

(Laboratory periods: 15 classes of 4 hours each)

1. Tools, techniques and methods used in studying animal behavior.
2. To study nests and nesting behaviour of the birds and social insects.
3. To study the behavioural responses of wood lice to dry and humid conditions.
4. To study geotaxis behaviour in earthworm.
5. To study the phototaxis behaviour in insect larvae.
6. To study different types of animal behaviour such as habituation, social life, courtship behaviour in insects and birds, and parental care from short videos/movies. At least two videos for each behaviour.
7. Construction of ethogram using suitable data to study animal behaviour.
8. Visit to Forest/Wild life Sanctuary/Biodiversity Park/Zoological Park to study and record the behavioural activities of animals and prepare a short report.

Essential/recommended readings

1. John Alcock, (2013) Animal Behaviour, Xth Edition, Sinauer Associates Inc., USA.
2. Manning, A. and Dawkins, M. S, (2012) An Introduction to Animal Behaviour, VI th Edition, Cambridge University Press, UK.
3. McFarland, D. (1985) Animal Behaviour, Pitman Publishing Limited, London, UK.

Suggestive readings

1. Rubenstein, D. (2022) Animal Behavior, XIIth Edition, Sinauer Associates, Oxford University Press, UK.
2. Gadagkar, R. (2021) Experiments in Animal Behaviour: Cutting-Edge Research at Trifling Cost, Indian Academy of Sciences. David McFarland, Animal Behaviour, Pitman Publishing Limited, London, UK.

NOTE: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

POOL OF DISCIPLINE SPECIFIC ELECTIVES (DSE) COURSES

SEM IV

DISCIPLINE SPECIFIC ELECTIVES (DSE-5): Bioenergetics and Enzymology
Zoo-DSE-5

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical			
Bioenergetics and Enzymology Zoo-DSE-5	04	03	Nil	01	Passed Class XII with Biology/ Biotechnology	Basic knowledge of Biochemistry	Zoology

Learning Objectives

The learning objectives of this course are as follows:

- to develop a holistic understanding of the complex enzymatic reactions occurring within body through lectures, practical and laboratory exercises, assignments, seminars and visit to research Institutes.
- to appreciate the basic laws of thermodynamics; free energy, and equilibrium to acquire the knowledge to introspect and understand the core concepts of biochemistry
- to build upon undergraduate-level knowledge of biochemical principles with specific emphasis on concepts of transfer of energy in different metabolic pathways.
- to learn about the basic tools used over and over in biological reactions.

Learning Outcomes

By studying this course, students will be able to

- differentiate between the "high energy" biomolecules with respect to their hydrolysis and group transfers.
- appreciate the energy stored in reduced organic compounds that can be used to reduce cofactors such as NAD^+ and FAD, which serve as universal electron carriers.
- Increase the understanding of the function of electron-transport chain in mitochondria and the chemi-osmotic theory involved in ATP synthesis.
- explain the thermodynamic basic principles for energy transformation in biological membranes.

- use spectroscopic and other physical analytical methods to use membrane proteins and biological redox processes.

SYLLABUS OF DSE-5

UNIT- 1: Principles of Biophysical Chemistry **5 hrs**

Concept of pH, buffers, Principles of thermodynamics: free-energy, entropy, enthalpy, chemical bonds and stabilizing interactions: van der Waals, electrostatic, hydrogen bonding and hydrophobic interactions.

UNIT- 2: Bioenergetics: **9 hrs**

Concept of free energy, standard free energy, determination of ΔG for a reaction. Relationship between equilibrium constant and standard free energy change, biological standard state & standard free energy change in coupled reactions. Biological oxidation-reduction reactions, redox potentials, relation between standard reduction potentials and free energy change.

High energy phosphate compounds- introduction, phosphate group transfer, free energy of hydrolysis of ATP and sugar phosphates along with reasons for high ΔG.

Transfer of energy: Electron Transport Chain, Bioenergetics of the liver.

UNIT- 3: Kinetics of enzyme action **10 hrs**

Concept of ES complex, Derivation of Michaelis-Menten equation for uni-substrate reactions. Different plots for the determination of Km and V_{max} and their physiological significances. Importance of K_{cat}/K_m. Kinetics of zero and first order reactions.

Classification of multi substrate reactions with example of each class. Ping Pong random and ordered BiBi mechanisms. Use of initial velocity, inhibition and exchange studies to differentiate between multi substrate reaction mechanisms.

Reversible (glutamine synthase and phosphorylase) and irreversible (proteases) inhibition. Competitive, non-competitive, uncompetitive, linear-mixed type inhibitions and their kinetics, Suicide inhibitor.

UNIT- 4: Mechanism of Enzyme Action **8 hrs**

Cofactor dependency, pH, temperature and ionic strength dependency; Acid-base catalysis, covalent catalysis, proximity, orientation effect. Strain and distortion theory. Chemical modification of active site groups. Mechanism of action of chymotrypsin.

UNIT V: Enzyme Regulation **7 hrs**

Feedback inhibition and feed forward stimulation; Allosteric enzymes: qualitative description of "concerted" & "sequential" models for allosteric enzymes;
Half site reactivity, Flip-flop mechanism, positive and negative co-operativity.

UNIT VI: Multi-enzyme system: **6 hrs**

Occurrence, isolation and their properties: Mechanism of action and regulation of pyruvate dehydrogenase & fatty acid synthase complexes. Enzyme-enzyme interaction, multiple forms of enzymes with special reference to lactate dehydrogenase.

Practical **(30 hrs)**

(Laboratory periods: 15 classes of 2 hours each)

1. Titration of a weak acid using a pH meter, preparation of buffers
2. Verification of Beer-Lambert's law and determination of absorption coefficients.
3. Preparation of cytochrome C from goat/chicken heart and distinguish between different cytochromes in ETC using absorbance spectra.
4. Isolation of NAD from brewer's yeast. Calculate Gibbs' Free Energy for electron flowfrom reduced NADH to Oxygen.
5. Assay of enzyme activity and specific activity, e.g. acid phosphatase, alkaline phosphates, SGOT, SGPT.
6. Determination of K_m and V_{max} using Lineweaver-Burk graph. (Dry experiment).
7. Enzyme inhibition - calculation of Ki for competitive inhibition. (Dry experiment)
8. Perform complex energy calculations that can be applied to biological systems. (Dryexperiment)

Essential/recommended readings

1. Lehninger by D. Nelson, and M. Cox, (2017) "The principles of Biochemistry", 7 th edition, M.W.H. Freeman and Company, New York.
2. D. M. Greenberg, (2014) "Metabolic Pathways", 3rd edition, Academic Press, Elsevier Science & Technology Books,
3. David G. Nicholls and Stuart J. Ferguson (2013) "Bioenergetics 4", Academic Press.
4. L. Stryer, (2012) "Biochemistry", 7 th edition, W.H. Freeman and Company, New York.

Suggestive readings

1 J. M. Berg, J. L. Tymoczko, L. Stryer (2007) "Biochemistry", 6th edition, W. H. Freeman andCompany, New York, NY, 2007.

2 D.J. Voet, J.G. Voet, C.W. Pratt, (2008) "Principles of Biochemistry" 3rd edition, John Wiley & Sons, Inc.

NOTE: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVES (DSE-6): Cell Growth and Regulation
Zoo-DSE-6

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Cell Growth and Regulation Zoo-DSE- 6	04	03	Nil	01	Passed Class XII with Biology/ Biotechnology	Basic knowledge of Cell Biology	Zoology

Learning Objectives

The learning objectives of this course are as follows:

- to enable students to learn biological phenomenon at cellular level
- to develop an understanding of cell function and its regulatory mechanisms.
- to understand cell division, cell cycle and its regulation, growth factors, survival factors; cell cycle control systems and checkpoints.
- to provide in-depth knowledge on various experimental skills and histo-pathological studies used in clinical and research laboratories
- to acquire knowledge in the areas of cellular malfunctioning causing serious health conditions such as autoimmune disorders, cancers etc.

Learning Outcomes

By studying this course, students will be able to:

- appreciate the diverse cellular processes, cell signaling, and cellular interactions.
- Know more about the defects in cellular functioning and molecular mechanisms that can lead to diseases and disturb the homeostasis of the body.
- to elucidate the roles of cell signalling in gene regulation
- appreciate differences in normal and cancer cell, apoptosis vs. necrosis; cell death and cell renewal
- observe stem cells and their applications in therapeutic cloning and regenerative medicine.
- Know the fundamentals of targeted cancer therapies and molecular approaches to cancer treatment.

SYLLABUS OF DSE- 2

UNIT 1: Cell division, Cell Cycle, and its Regulation **10 hrs**

A brief study of stages and events during mitosis and meiosis; overview of cell cycle; mitogens, growth factors, and survival factors; cell cycle control system: components and mechanisms; cell cycle checkpoints.

UNIT- 2: Cell Signalling **7 hrs**

Types of cell-cell signalling, signalling molecules, and cell receptors; components of a generalized signalling pathway; examples of two pathways: GPCR/ cAMP/ PKA/ CREB/ target gene and a nuclear receptor pathway (to elucidate roles in gene regulation).

UNIT 3: Gene Regulation **9 hrs**

Concepts of positive and negative gene regulation; principles of eukaryotic transcriptional regulation of genes; concepts of activators, repressors, silencers, and enhancers.

UNIT- 4: Cell Death and Cell Renewal **9 hrs**

Apoptosis *vs*. necrosis; intrinsic and extrinsic pathways of programmed cell death; stem cells and maintenance of adult tissues; cells in culture and cell lines; embryonic and induced pluripotent stem cells and their applications in therapeutic cloning and regenerative medicine.

UNIT 5: Cancer Biology **10 hrs**

Hallmarks of a cancer cell; types and causes of cancer; oncogenes and tumour suppressor genes; tumour viruses; correlation of cell signaling, gene regulation, cell cycle control, and cell death in cancer development (any one example); targeted cancer therapies/molecular approaches to cancer treatment.

Practical **(30 hrs)**

(Laboratory periods: 15 classes of 2 hours each)

1. Principles of Microscopy.
2. Preparation of a temporary slide of onion root tip to study various stages of mitosis.
3. Study of various stages of meiosis through permanent slides.
4. Cell culture techniques: preparation of media, seeding, thawing and maintenance of cell culture, trypsinization and cryopreservation
5. Measurement of cell growth: Direct count by Trypan blue and Indirect count by Spectrophotometer.
6. Calculation of Doubling Time based on given data.
7. Assessment of metabolic activity by MTT.
8. Study of monolayer (in Roux Bottle, Roller bottle, Plastic film, Optical culture system, Bread Bed reactors, Heterogenous reactors). Suspensions (stirred bioreactors, continuous flow cultures, air lift fermenter) and immobilized cultures.

9. Project related to topics covered in theory/ project report based on visit to labs/institutions/industry etc.

Essential/recommended readings

1. Karp, G. (2010) Cell and Molecular Biology: Concepts and Experiments. 6th edition. John Wiley & Sons. Inc.
2. Cooper, G.M. and Hausman, R.E. (2009) The Cell: A Molecular Approach. 5th edition. ASM Press & Sunderland, Washington, D.C.; Sinauer Associates, MA.

Suggested readings

1. Alberts et. al., (2008) Molecular Biology of the Cell, Garland Science, Taylor & Francis Group, New York, USA.

2. Lodish et. al., (2007) Molecular Cell Biology, W.H. Freeman and Company, New York, USA

NOTE: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVES (DSE-7):
Fish and Fisheries Zoo-DSE-7

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical			
Fish and Fisheries Zoo-DSE- 7	04	03	Nil	01	Passed Class XII with Biology/ Biotechnology	Nil	Zoology

Learning Objectives

The learning objectives of this course are as follows:

- To offer an insight about the climatic conditions that favours fish growth and reproduction.
- to understand the importance of fish as a rich source of animal protein.
- To learn the basic concepts and knowledge of fish biology and its applications.
- to equip the student with a balanced and complete scientific understanding of fisheries.
- to enable students to learn more technical skills to generate entrepreneurial skills and suitable employment opportunities.
- to acquire knowledge of the pathogenic and pathological basis of fish diseases including infectious diseases caused by viruses, prokaryotes, protozoans, helminthes, vector borne and zoonotic diseases.
- To learn about nutritional deficiencies and lifestyle diseases, endocrine diseases and cancer.

Learning Outcomes

By studying this course, students will be able to:

- acquire basic knowledge of physiology and reproduction in fishes.
- analyse different kinds of water and identify/differentiate among various kinds of fishes.
- equip the students with the knowledge on the procedures for artificial and induced breeding which can be learnt by visiting any fish farm or demonstrated in research labs in college/Departments.
- have more knowledge of the in-land and marine Fisheries in India and to explore ways in which it can contribute to the Indian economy.
- know more about the different methods of fishing and fish preservation

which can be employed for export and storage of commercial fishes.

- develop skills for entrepreneurship or self-employment in fisheries-related business.

SYLLABUS OF DSE- 7

UNIT– 1 Introduction and Classification **6 hrs**

General description of fish; Account of systematic classification of fishes (upto classes); Classification based on feeding habit, habitat and manner of reproduction. Brief introduction to transgenic fishes.

UNIT– 2 Morphology, Physiology and Behavior **14 hrs**

Types of fins and their modifications; Locomotion in fishes; Hydrodynamics; Types of Scales,Gills and gas exchange; Swim Bladder: Types and role in Respiration, buoyancy;Osmoregulation in Elasmobranchs, Schooling; Parental care; Migration.

UNIT– 3 Fisheries **8 hrs**

Inland Fisheries; Estuarine Fisheries, Marine Fisheries; Fishing crafts and Gears; Depletion of fisheries resources; Application of remote sensing and GIS in fisheries; Fisheries law and regulations.

UNIT – 4 Aquaculture **17 hrs**

Sustainable Aquaculture; Extensive, semi-intensive and intensive culture of fish; Pen and cage culture; Polyculture; Composite fish culture; Brood stock management; Induced breeding of fish;Management of finfish hatcheries; Preparation of compound diets for fish; Role of water quality in aquaculture; Post harvest handling techniques and Fishery by-products.

Practical **(30 hrs)**

(Laboratory periods: 15 classes of 2 hours each)

1. Study of specimens- *Petromyzon*, *Myxine*, *Pristis*, *Chimaera, Exocoetus*, *Hippocampus*, *Gambusia, Labeo, Heteropneustes, Anabas* (at least one fish from each class).
2. Study of different types of scales by preparing a temporary/permanent mount.
3. Study of air breathing organs in *Channa, Heteropneustes, Anabas* and *Clarias.*
4. Demonstration of induced breeding in Fishes and hatchery management (video/visit tofisheries institute/fish farm).

Demonstration of the setting up of a fish aquarium, and its management/maintenance.

5. Study of parental care in fishes through visual media and resources.
6. Study of different methods of fish tagging.
7. Determination of fish density in a pond by Peterson's mark recapture method.
8. Project Report on a visit to any fish farm/pisciculture unit.

Essential/recommended readings

1. Pandey, K. and Shukla, J.P. (2013) Fish and Fisheries. Rastogi publication,India
2. Chakrabarti, R. and Sharma, J. G. (2008). Aquahouse: New Dimension of Sustainable Aquaculture. DIPAS, Indian Council of Agricultural Research, New Delhi, India.
3. Norman, J.R. A History of Fishes. Hill and Wang Publishers. Khanna, S.S.and Singh, H.R. (2014) A text book of Fish Biology and Fisheries. Narendra, Publishing House.
4. Bone, Q. and Moore, R. (2008) Biology of Fishes. Talyor and Francis Group, CRC Press, U.K.

Essential/recommended readings

1. Srivastava, C.B.L. (2008) Fish Biology. Narendra Publishing House.
2. Jhingran, V.G. (1982) Fish and Fisheries in India. Hindustan Publication Cooperation. India.

NOTE: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVES (DSE-8):
Parasitology Zoo-DSE-8

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Parasitology Zoo-DSE- 8	**04**	**03**	**Nil**	**01**	**Passed Class XII with Biology/ Biotechnology**	**Basic under-standing of parasitic animals**	**Zoology**

Learning Objectives

The learning objectives of this course are as follows:

- To enable the students to see, appreciate and understand the diversity of parasites
- to learn about Parasitology that will enable students to diagnose parasites correctly, understand their life cycle and control them effectively and use some of them as bio control agents
- to acquire understanding of study of life cycles of parasites, that can help in defying the stigmas and religious taboos for many societies making free many of the people from superstition and ill health.
- to make the students aware about the possible scope of the subject which includes research and applied aspects including entrepreneurial skill

Learning Outcomes

By studying this course, students will be able to:

- better understand the variation amongst parasites, parasitic invasion in animals; applicable to medical and agriculture aspects
- Identify the stages of the life cycles of parasites and their respective infective stages. develop ecological model, on the base knowledge of population dynamics of parasites.
- comprehend the different methods adopted by parasites to combat with the host immune system.
- develop skills and realize significance of diagnosis of parasitic attack and treatment of patient or host.

- analyse and interpret the case studies to highlight innovative researches, serendipities towards the advancement and enrichment of knowledge in the field of Parasitology.

SYLLABUS OF DSE- 8

UNIT- 1: Introduction to Parasitology **3 hrs**

Brief introduction of Parasitism, Parasite, Parasitoid and Vectors; Host parasite relationship

UNIT- 2: Parasitic Protists **10 hrs**

Study of Morphology, Life Cycle, Epidemiology, Pathogenicity, Diagnosis, Prophylaxis and Treatment of *Entamoeba histolytica, Trypanosoma gambiense and Plasmodium vivax.*

UNIT- 3: Parasitic Platyhelminthes **10 hrs**

Study of Morphology, Life Cycle, Epidemiology, Pathogenicity, Diagnosis, Prophylaxis and Treatment of *Fasciolopsis buski, Schistosoma haematobium* and *Taenia solium*

UNIT- 4: Parasitic Nematodes **10 hrs**

Study of Morphology, Life Cycle, Epidemiology, Pathogenicity, Diagnosis, Prophylaxis and Treatment of *Ascaris lumbricoides*, *Ancylostoma duodenale*, *Wuchereria bancrofti* and *Trichinella spiralis*.

UNIT- 5: Parasitic Arthropoda **8 hrs**

Biology, importance and control of ticks, mites, *Pediculus humanus* (Head and Body louse), *Xenopsylla cheopis* and *Cimex lectularius*

UNIT- 6: Parasitic Vertebrates **4 hrs**

A brief account of parasitic vertebrates; Cookicutter Shark, Hood Mockingbird and Vampire bat.

Practical **(30 hrs)**

(Laboratory periods: 15 classes of 2 hours each)

1. Study of life stages of *Entamoeba histolytica, Trypanosoma gambiense*, and *Plasmodium vivax* through permanent slides/micro photographs.
2. Study of adult and life stages of *Fasciolopsis buski, Schistosoma haematobium* and *Taenia solium* through permanent slides/microphotographs.
3. Study of adult and life stages of *Ascaris lumbricoides, Ancylostoma duodenale* and *Wuchereria bancrofti* through permanent slides/microphotographs.
4. Study of *Pediculus humanus* and *Xenopsylla cheopis* and *Cimex lectularius* through permanent slides/ photographs.

5. Study of monogenea from the gills of fresh/marine fish [Gills can be procured from fish market as by-product of the industry]
6. Submission of a brief report on parasites (anyone phylum).
7. Visit to rural area/hospital near rural area/NCDC/NIMR/NICD to study the natural history and diagnostics of parasites.

Essential/recommended readings:

1. Parija, S. C. (2013) Textbook of Medical Parasitology, Protozoology & Helminthology (Text and colour Atlas), IV Edition, All India Publishers & Distributers, New Delhi.
2. Ichhpujani, R.L. and Bhatia, R. (2009) Medical Parasitology. III Edition, Jaypee BrothersMedical Publishers (P) Ltd., New Delhi
3. Ahmed, N., Dawson, M., Smith, C. and Wood, Ed. (2007) Biology of Disease. Taylor andFrancis Group.

Suggested readings:

1. Chatterjee, K. D. (2009). Parasitology: Protozoology and Helminthology. XIII Edition, CBSPublishers & Distributors (P) Ltd.
2. Arora, D. R and Arora, B. (2001) Medical Parasitology. II Edition. CBS Publications andDistributors
3. Noble, E.R. and Noble, G.A. (1989) Parasitology: The Biology of Animal Parasites. VIEdition, Lea and Febiger

NOTE: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

GENERIC ELECTIVES (GE-8): Exploring Animal World
Zoo-GE-8

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Exploring the Animal world Zoo-GE-8	04	02	Nil	02	Passed Class XII with Biology/ Biotechnology	NIL	Zoology

Learning Objectives

The learning objectives of this course are as follows:

- to overview the concepts of invertebrate and vertebrate animals, including sponges, cnidarians, comb jellies, flatworms, nematodes, annelids, molluscs, arthropods, echinoderms, invertebrate chordates, fishes, amphibians, reptiles, birds, and mammals.
- to enable students to understand the diversity within different groups, and interrelationship among different species and genera within each group of animals.
- to learn the hierarchy, body plan and their role in ecological development of animals.

Learning Outcomes

By studying this course, students will be able to

- Learn about the importance of systematics, taxonomy, and structural organization of non-chordates and chordata.
- Appreciate the diversity of animals living in varied habits and habitats.
- Understand evolutionary history and relationships of different animals through functional and structural affinities.
- better understand coelom formation, different levels of organization, role of macronutrients and micronutrients, their nutritional requirements for different age groups during various health conditions.

SYLLABUS OF GE-8

UNIT- 1: An Introduction to the Animal Kingdom **2 hrs**

Non-chordates *vs.* Chordates; Outline of Coelom, Body symmetry, Levels of organization

UNIT-2: Kingdom Protista **2 hrs**

General characters of Protozoa; Locomotory organelles

UNIT- 3: Porifera **2 hrs**

General characters of Phylum Porifera, Canal system in Porifera

UNIT- 4: Radiata **2 hrs**

General characters of Phylum Cnidaria & Ctenophora; Polymorphism

UNIT- 5: Helminthes **3 hrs**

General characters of helminths (Platyhelminthes and Nemathelminths); Parasitic Adaptations

UNIT- 6: Coelomates (Non-chordates) **6 hrs**

General characters of Phylum Annelida; Metamerism
General characters of Phylum Arthropoda; Vision in insects
General characters of Phylum Mollusca; Pearl Formation
General characters of Phylum Echinodermata, water vascular system in starfish

UNIT- 7: Lower chordates (Protochordata) **1 hr**

Salient features of Protochordates (Hemichordates, Urochordates and Cephalochordates)

Unit 8: Higher chordates **12 hr**

General characters of Vertebrates:

- Cyclostomes; Cartilaginous and Bony fishes; Catadromous and Anadromous migration.
- Amphibians; Adaptations for Terrestrial Life
- Reptiles; Poisonous and Non-poisonous Snakes
- Aves; Flight Adaptations in birds
- Mammals - Prototheria, Metatheria and Eutheria.

Practical **(60 hrs)**

(Laboratory periods: 15 classes of 4 hours each)

1. Study of specimens- Non-chordates:

Euglena, Noctiluca, Paramecium; Sycon; Physalia, Tubipora, Meandrina; Taenia, Ascaris; Nereis, Heteronereis, Aphrodite, Hirudinaria, Peripatus; Limulus, Cancer, Daphnia, Julus, Scolopendra, Apis, Termite; Chiton, Dentalium, Octopus; Asterias and *Antedon*

2. Study of specimens- Chordates:
Balanoglossus, Herdmania, Amphioxus; Petromyzon; Sphyrna, *Pristis, Hippocampus, Exocoetus, Diodon/ Tetradon; Icthyophis/ Uraeotyphlus, Bufo, Hyla, Salamandra; Rhacophorus, Draco, Uromastix, Naja, Viper*;
Any three common birds (Crow, duck, Owl); Funambulus, Loris and Bat

3. Study through Permanent Slides:
i) Cross Section of *Sycon*, and *Ascaris* (male and female).
ii) T. S. of Earthworm passing through Pharynx, Gizzard, and Typhlosole region of intestine.
iii) Septal and Pharyngeal Nephridia of Earthworm.
iv) Placoid and Cycloid Scales in Fishes.

4. Study of Organ Systems (through videos/animations/photographs/dissections*:
i) Digestive System of Cockroach;
ii) Urinogenital System of Rat
* subject to UGC guidelines

Essential/recommended readings

1. Young, J.Z. (2004) The Life of Vertebrates. III Edition, Oxford University Press.
2. Ruppert, Fox and Barnes (2003) Invertebrate Zoology. A Functional Evolutionary Approach, VII Edition, Thomson Books/Cole.
3. Parker T.J. and Haswell W.A. (1972). Textbook of Zoology Vertebrates. VII Edition, Volume II. Blackwell, Hoboken

**Note: Refer Ruppert, Fox and Barnes (VII Ed.) for the classification of invertebrates;*

Suggestive reading

1. Saha, G.K. and Mazumdar, S. (2017). Wildlife Biology: An Indian Perspective. PHI learning Pvt. Ltd.
2. Campbell and Reece (2005). Biology, Pearson Education, (Singapore) Pvt. Ltd.
3. Mann Raven, P.H. and Johnson, G.B. (2004). Biology, VI Edition, Tata McGraw Hill Publications. New Delhi.

NOTE: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-9): Microbiota: Importance in Health and Disease Zoo-GE-9

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical			
Microbiota: Importance in Health and Disease Zoo-GE-9	04	02	Nil	02	Passed Class XII with Biology/ Biotechnology	NIL	Zoology

Learning Objectives

The learning objectives of this course are as follows:

- to acquaint students with the basic concepts of microbiota that coexist with the human being both in health and in different pathologies.
- To enable students to understand how microbiota undergoes changes as a consequence of the influence of multiple factors, diet, lifestyle, pharmacological treatments generating alterations in this bacterial ecosystem.
- To compare the role of our microbiota in behavior, mood, and development.
- to make the students aware of the microbial communities that reside within or upon us, and how they impact our health.
- To acquire knowledge about the interactions between the different types of microbiota and their host in different pathophysiological situations.

Learning Outcomes

By studying this course, students will be able to

- Identify the components of the human microbiota and their major characteristics.
- Learn the key approaches and techniques used to identify and quantify the bacterial, fungal, archaeal, protozoan, and viral components of the microbiota.
- Identify the common members of the microbiota and their influence on various body systems including the skin, upper and lower respiratory system, oral and the lower digestive system, urinary and reproductive systems, the immune system, and the nervous system in healthy and diseased states.
- Compare the role of our microbiota in behavior, mood, and development.
- Appreciate the emerging treatment approaches for microbiota-associated illnesses.

SYLLABUS OF GE-9

UNIT- 1: Microbes **4 hrs**

Introduction to microbes, general approaches and techniques used for studying microbiota, the nature of microbiological problems, Prokaryotic and eukaryotic organisms.

UNIT- 2: Introduction to the Human Microbiome **16 hrs**

Importance of human body environment for growth of a variety of microorganisms, concept of contamination, infection and disease, septicaemia, Acute and subacute bacterial endocarditis.

a) Microbial Diseases of the Respiratory System: Tuberculosis; Common cold,

b) Microbial Diseases of the Eyes: Conjunctivitis, Trachoma; Viral Diseases of the Eye.

c) Microbial Diseases of skin: Bacterial diseases of the skin: Acne, folliculitis, boils, cellulitis, Infections of burns and surgical wounds, gangrene, Leprosy. Viral Diseases of the Skin: Chicken pox;

Fungal Diseases of the Skin: Candidiasis.

d) Microbial Diseases of the Nervous System: Bacterial diseases: Tetanus, Viral diseases: Polio/Rabies; Protozoan diseases: Trypanasomiasis

e) Microbial Diseases of the Oral Cavity and Digestive System: Bacterial diseases: Dental caries; Cholera, Gastroenteritis; Fungal diseases: Aflatoxin poisoning, Ergot poisoning; Viral diseases: Mumps; Protozoan diseases: Amoebic dysentery, Giardiasis

f) Microbial Diseases of the Urinary/Reproductive Systems: Bacterial diseases: Syphilis; Viral diseases: genital warts; Protozoan diseases: Trichomoniasis; Fungal diseases: Vaginitis

UNIT- 3: Microbiota and the Immune System Development **5 hrs**

Normal flora, transient flora opportunistic microbes, Pathogenicity, virulence, and factors that increase virulence (enzymes, toxins), Factors that affect the spread of disease, Nonspecific immune responses, Specific immune responses: humoral and cell mediated immunity

UNIT- 4: Human Microbiota in Health and Disease **5 hrs**

Basic concept of Gut microbiota in the mother-child environment, Gut microbiota and cancer; Microbiota and viral diseases- An opportunity for COVID-19. Relationship between diet and the intestinal microbiota, Probiotics, prebiotics and other "biotics".

Practical **(60 hrs)**

(Laboratory periods: 15 classes of 4 hours each)

1. Bacterial shapes and arrangements Cell wall, Cell membrane, Glycocalyx, Endospores, Flagella, Cytoplasmic inclusions, Cytoplasmic structures/organelles, Bacterial growth curve, Physical factors affecting microbial growth.
2. To understand Good Lab practise: The effectiveness of hand washing and sterilization.
3. To understand microbial morphology by Gram Staining.
4. To appreciate bacterial anatomy by Acid-fast Staining.
5. Environmental Factors affecting growth of microorganisms: Temperature, pH and Osmotic Pressure.
6. Bacterial growth curve and evaluation of factors affecting microbial growth.
7. Isolation of normal microbiota from the human Body (Nose, Throat, or Skin).
8. Effects of chemical agents on bacteria growth (Kirby-Bauer method).

Essential/recommended readings

1. Leboffe, M. J and Pierce; B. E. (2014) A Photographic Atlas for the Microbiology Laboratory, 5th Edition, Morton Publishing Company.
2. Michael Wilson (2005) "Microbial Inhabitants of Humans-Their Ecology and Role in Health and Disease"; Oxford University Press, UK.

Suggestive readings

1. Nina Parker, Mark Schneegurt, Anh-Hue-Thi Tu and Brian M. Forster; (2016) "Microbiology"; 1st Edition, OpenStax Resource.

NOTE: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-10): Insect Vector and Disease
Zoo-GE-10

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Insect Vector and Disease Zoo-GE-10	**04**	**02**	**Nil**	**02**	**Passed Class XII with Biology/ Biotechnology**	**NIL**	**Zoology**

Learning Objectives

The learning objectives of this course are as follows:

- to familiarize the students with a variety of diseases caused by insects.
- to learn the complex interactions between the transmission by Insect-borne pathogens affecting human health.
- to acquire knowledge of how the insects can only be controlled and prevented by studying their biology, modalities of pathogen transmission
- to enable students to evaluate the associated risk factors and devising new efficient techniques to control these insects.
- to help understand the environmental pressures caused by stagnant water.
- to motivate students to pursue a career in Health Management.

Learning Outcomes

By studying this course, students will be able to

- identify different insects and classify them based on their morphology and behaviour.
- describe the host-pathogen relationships and the role of the host reservoir on transmission of parasite.
- explain various modes of transmission of parasite by insect vectors.
- recognize various possible modern tools and methodologies for laboratory diagnosis, surveillance and treatment of diseases.
- develop a critical understanding of insect transmitted diseases such as Zoonotic, Vertical and Horizontal transmission, host specificity etc.
- spread awareness on public health programs about insect borne diseases and their control.

- To use advanced management strategies in disease control with respect to parasite evolution

SYLLABUS OF GE-10

UNIT- 1: Introduction to Insects **8 hrs**

General Features of Insects, Classification of insects up to Orders- General features of orders, Morphological features: Head, legs and types of antennae. Types of Insects mouth parts w.r.t. feeding habits: siphoning type (butterfly), sponging type (housefly), biting and chewing type (cockroach), piercing and sucking type (mosquito), chewing and lapping type (honey bee).

UNIT- 2: Concept of Vectors **5 hrs**

Brief introduction to carriers and vectors (mechanical and biological vector); Insect reservoirs; Host-vector relationship; Vectorial capacity; Host Specificity; Modes of disease transmission - vertical and horizontal transmission. Insects as vectors: General adaptations in insects to act as vectors.

UNIT- 3: Dipterans as disease Vectors-I **7 hrs**

Dipterans as important insect vectors–Mosquitoes. Study of mosquito borne diseases– Malaria, Dengue, Chikungunya, Filariasis, Viral encephalitis. Control and prevention/cure of diseases caused by mosquitoes. Study of sand fly-borne diseases- Visceral Leishmaniasis, Cutaneous Leishmaniasis; Control of Sand fly; Study of house fly as important mechanical vector, Control of house fly.

UNIT- 4: Siphonapterans as disease vectors **5 hrs**

Fleas as insect vectors; Study of flea borne diseases – Plague, typhus fever; Control and prevention/cure of diseases caused by fleas.

UNIT- 5: Siphunculata as disease vectors **5 hrs**

Human louse (head, body and pubic louse) as disease vectors; study of louse borne diseases – Typhus fever, relapsing fever, vagabond's disease, phthiriasis; Control of human louse and prevention/cure of diseases caused by them.

Practical **(60 hrs)**

(Laboratory periods: 15 classes of 4 hours each)

1. Study of different kinds of mouth parts and legs of insects through slides/specimens
2. Study of insect vectors through permanent slides or photographs: Mosquitoes (*Aedes, Culex, Anopheles*), lice [head, body (*Pediculus*), pubic (*Pthirus*)], Flea (*Xenopsylla cheopis*), sand fly (*Phlebotomus*), house fly (*Musca domestica*)

3. Study of different diseases transmitted by above insect vectors using photographs.
4. Project report on any one disease transmitted by insect vector.
5. Optional field trip/Lab. visit to institutes such as NIMR, NCDC.

Essential/recommended readings

1. Mullen and Darden (2009) Medical and Veterinary Entomology, 3rd Edition, Academic Press.
2. Service, M.W. (1980) A Guide to Medical Entomology, Macmillan Press.

Suggestive readings

1. Burgess, N.R.H and Cowan, G.O. (1993) A colour atlas of medical entomology. Springer Science and Business Media, B. V. House.

NOTE: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF ZOOLOGY
SEMESTER - V
Category I

(B.Sc. Honours in Zoology in three years)

DISCIPLINE SPECIFIC CORE COURSE -13 –:
Principles of Immunology
Zoo-DSC-13

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Principles of Immunology Zoo-DSC-13	**04**	**02**	**Nil**	**02**	**Passed Class XII with Biology/ Biotechnology**	**NIL**

Learning Objectives

The learning objectives of this course are as follows:

- to impart an in-depth knowledge on how our immune system fights with infection and foreign substances that can harm our body
- to understand and design new therapeutics against a wide range of diseases and infections.
- to assist in comprehending the quick response to pandemics in the form of vaccines
- to apprise the students on the development of therapies targeting different components of the immune system that can alter the progression of human inflammatory diseases and cancers.

Learning Outcomes

By studying this course, students will be able to

- have a better understanding of the concepts of innate and acquired immunity.
- acquire knowledge of the immunogenicity of biomolecules
- comprehend and analyze the different cellular and humoral components of the immune system
- appreciate the contribution of various components of immune system in health and disease including basis of vaccination, autoimmunity, immunodeficiency and hypersensitivity

SYLLABUS OF DSC-13

UNIT 1: Overview of the Immune System **6 hrs**

Early theories (Selective and Instructional) and Clonal Selection theory; Innate immunity: components and defensive barriers of innate immunity. Adaptive immune system: Components and attributes of acquired immunity, humoral and cell mediated immunity, active and passive immunity, primary and secondary immune response,

UNIT 2: Antigens and Immunoglobulins **10 hrs**

Antigens and immunogens; antigenicity and immunogenicity; factors affecting immunogenicity; antigenic determinants and its properties (B- and T-cell epitopes); Haptens and Adjuvants.

Structure and functions of different classes of antibodies; antigenic determinants on immunoglobulin; Production and applications of monoclonal antibodies.

UNIT 3: MHC and Antigen Presentation **4 hrs**

Structure and functions of MHC (MHC-I & MHC-II); endogenous and exogenous pathways of antigen processing and presentation.

UNIT 4: Complement System and Cytokines **3 hrs**

Pathways of complement activation and biological consequences of complement activation; properties and functions of cytokines

UNIT 5: Immune System in Health and Diseases **7 hrs**

Vaccines and their types; Gell and Coombs classification of hypersensitivity; autoimmunity and immunodeficiency with suitable examples.

Practical **(60 hrs)**

(Laboratory periods: 15 classes of 4 hours each)

1. Study of lymphoid cells and organs in rat/mouse*.
2. Histological study of spleen, thymus and lymph nodes through slides/photomicrographs.
3. To study various types of white blood cells using Leishman's/Giemsa/Crystal violet stained blood smear.
4. To understand the antigen and antibody interactions by

i) Ouchterlony's double immunodiffusion method.

ii) ABO Blood group antigen determination by heamagglutination test.

iii) Demonstration of ELISA.

iv) Demonstration of Immunoelectrophoresis.

v) FACS

vi) RIA

vii) Elispot

5. Cell counting and viability test (trypan blue dye exclusion test) from splenocytes* from rat/mouse/any other species.
6. Project on any topic/ Project report on visit to any research institute/laboratory to study the immunological techniques.

*depending on availability of animals or sample.

Essential/recommended readings

Punt, J., Stranford, S., Jones, P., Owen, J.A. (2018) Kuby Immunology, VIII Edition, WH Freeman and Company
Abul Abbas, Andrew Lichtman, Shiv Pillai (2017) Cellular and Molecular Immunology; Elsevier
Kindt, T. J., Goldsby, R.A., Osborne, B. A. and Kuby, J. (2006) Immunology, VI; Edition, W.H. Freeman and Company
David, M., Jonathan, B., David, R. B. and Ivan, R. (2006) Immunology, VII Edition, Mosby, Elsevier Publication.

Suggestive readings

1. Singh, I. K. and Sharma, P. [Eds.] (2022) An Interplay of Cellular and Molecular Components of Immunology. Taylor & Francis group, CRC Press.
2. Kaur, H., Toteja, R., and Makhija, S. (2021) Textbook of Immunology, I.K International Publishing House and Wiley India Ltd
3. Singh, I. K. and Sharma, P. [Eds.] (2022) Essentials of Immunology, Laboratory Manual; Prestige Publishers.
4. Kenneth Murphy, Casey Weaver (2016) Janeway's Immunobiology; 9th Edition, Garland Science

NOTE: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE -14 –:
Cell and Molecular Biology
Zoo-DSC-14

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical		
Cell and Molecular Biology Zoo-DSC-14	04	02	Nil	02	Passed Class XII with Biology/ Biotechnology	Basic knowledge of cell biology

Learning Objectives

The learning objectives of this course are as follows:

- to provide an understanding of structure-function relationships of nucleic acids and protein and the regulatory processes.
- to demonstrate practical knowledge of raising, handling, maintenance and special features such as antibiotic resistance of a simple prokaryotic model organism, *Escherichia coli*.
- to empower the students with a broad range of research and development related to cell signalling, cell culture and cell lines.
- to elucidate the molecular machinery and mechanism of information transfer processes- transcription and translation-in prokaryotes and eukaryotes;

Learning Outcomes

By studying this course, students will be able to

- have a better understanding of the diverse cellular processes and cellular interactions.
- have an in-depth knowledge of the defects in cellular functioning and the molecular mechanisms that can lead to various diseases.
- appreciate the importance of homeostasis of the body and the adversities of disturbing it.
- acquire the basic information of cell signalling pathways and to elucidate its roles in gene expression and its regulation in eukaryotes.
- interpret the differences between cellular deaths; stem cells and their applications in therapeutic cloning and regenerative medicine.
- explain post-transcriptional modification mechanisms for the processing of eukaryotic mRNA.
- impart experimental skills used in clinical and research laboratories giving the students an extra edge for taking up higher studies.

Syllabus of DSC-14

UNIT- 1: Cell Signalling **3 hrs**

Introduction to cell signalling pathways GPCR, cAMP, PKA, CREB, target gene and a nuclear receptor pathway.

UNIT-2: Cell Death and Cell Renewal **4 hrs**

Apoptosis vs. necrosis; intrinsic and extrinsic pathways of programmed cell death; stem cells and maintenance of adult tissues; embryonic and induced pluripotent stem cells.

UNIT-3: DNA and its Replication **7 hrs**

DNA replication in prokaryotes and eukaryotes-replication machinery and mechanisms, semi-conservative, bidirectional and semi-discontinuous replication, Replication of circular and linear double stranded DNA, Replication of telomeres.

UNIT 4: Transcription **5 hrs**

Machinery and mechanism of transcription in prokaryotes and eukaryotes-RNA polymerases, Transcription unit, Transcription factors, Synthesis of rRNA.

UNIT 5: Translation **5 hrs**

Genetic code, Process of protein synthesis in prokaryotes: fidelity of protein synthesis, aminoacyl-tRNA synthetases and charging of tRNA; Proteins involved in initiation, elongation and termination of polypeptide chain; Difference between prokaryotic and eukaryotic translation.

UNIT 6: Post Transcriptional Modifications **2 hrs**

Split genes: concept of introns and exons, splicing mechanism, alternative splicing, and RNA editing.

UNIT 7: Gene Regulation **4 hrs**

Transcription regulation in prokaryotes: Lac operon; Overview of transcription regulation in eukaryotes: Activators, repressors, enhancers, silencer elements.

Practical **(60 hrs)**

(Laboratory periods: 15 classes of 4 hours each)

1. Requirement of a Tissue culture laboratory, its equipment and its layout. Concept of cell culture and cell lines; Media preparation for mammalian tissue culture.
2. Preparation of permanent slides of mitosis/meiosis*.
3. Study of Polytene chromosomes from *Chironomous*/*Drosophila* larva.
4. Inoculation and culture of *E. coli* in liquid culture medium (LB).
5. Preparation of solid culture medium (LB) and growth of *E. coli* by spreading and streaking.
6. Estimation of the growth kinetics of *E. coli* from the data provided.
7. Quantitative estimation of salmon sperm/calf thymus DNA using colorimeter.

(Diphenylamine reagent) or spectrophotometer (A_{260} measurement).

8. Study and interpretation of electron micrographs/photographs showing: DNA replication, Transcription, and Split genes.
9. Project related to topics covered in theory/ project report based on visit to labs/institutions/industry etc.

*Subject to UGC guidelines

Essential/recommended readings

1. Karp, G. (2010) Cell and Molecular Biology: Concepts and Experiments. VI Edition. John Wiley and Sons. Inc.
2. R. Ian Freshney (2021) Freshney's Culture of Animal Cells: A Manual of Basic Technique and Specialized Applications; Wiley-Blackwell.
3. Lodish et. al., (2007), Molecular Cell Biology, W.H. Freeman and Company, New York, USA
4. Alberts et. al., (2008), Molecular Biology of the Cell Garland Science, Taylor & Francis Group, New York, USA.
5. Cooper G. M. and Robert E. Hausman R. E. The Cell: A Molecular Approach, V Edition, ASM Press and Sinauer Associates.
6. Becker, W.M., Kleinsmith, L.J., Hardin. J. and Bertoni, G. P. (2009). The World of the Cell. VII Edition. Pearson Benjamin Cummings Publishing, San Francisco.

Suggestive readings

1. Watson, J. D. Baker T.A. Bell, S. P. Gann, A. Levine, M. and Losick, R. (2008) Molecular Biology of the Gene.VI edition. Cold Spring Harbour Lab. Press, Pearson Pub.
2. Lewin B. (2008). Gene XI. Jones and Bartlett.
3. Gupta, R., Makhija, S. and Toteja, R. (2018). Cell Biology Practical Manual, Prestige Publishers, New Delhi-110003.
4. Sharma, V. K. (1991). Techniques in Microscopy and Cell Biology, Tata McGraw Hill Publishing Company Limited, New Delhi.

NOTE: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE 15–:
Fundamentals of Genetics
Zoo-DSC-15

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical		
Fundamentals of Genetics Zoo-DSC-15	04	02	Nil	02	Passed Class XII with Biology/ Biotechnology	NIL

Learning Objectives

The learning objectives of this course are as follows:

- to be able to list some of the distinguishing features of prokaryotes versus eukaryotes.
- to provide an understanding of the basic patterns of inheritance.
- to explain how genotype is related to phenotype?
- to describe how a mutation can change the phenotype.

Learning Outcomes

By studying this course, students will be able to

- Enhance knowledge of the basic principles of inheritance.
- Develop analytical skills and critical thinking through pedigree analysis.
- Understand the mechanism of gene transfer and mapping in both prokaryotes and eukaryotes.
- Learn the mechanisms of mutations and harmful and beneficial effects of mutagens, which help evolve new species over time.
- Be able to grasp basic concepts of human chromosomal disorders.

SYLLABUS OF DSC-15

UNIT- 1: Mendelian Genetics and its Extensions **7 hrs**

Principles of inheritance, Incomplete dominance and co-dominance, Multiple alleles, Lethal alleles, penetrance and expressivity, Epistasis, Phenocopy, Pleiotropy, Polygenic Inheritance, Sex-linked, Sex-influenced, and Sex-limited characters inheritance.

UNIT- 2: Linkage, Crossing Over and Chromosome Mapping **6 hrs**

Linkage and crossing over, Cytological basis of crossing over, Recombination frequency

as ameasure of linkage intensity, two-factor and three-factor crosses, Linkage map, Coefficient of Coincidence and Interference, Gene mapping by Somatic cell hybridization.

UNIT- 3: Mutations **8 hrs**

Types of gene mutations, Detection of mutations in *Drosophila*: CLB method, Mutagens: Physical and chemical, molecular basis of spontaneous and induced mutations, Chromosomal aberrations: Structural Variations in chromosomes, Aneuploidy & Polyploidy.

UNIT- 4: sex Determination **3 hrs**

Basis of sex determination: Genetic and environmental; Sex determination in *Drosophila* and human; Mechanism of dosage compensation.

UNIT- 5: Extra-chromosomal Inheritance **3 hrs**

Comparison of nuclear and extranuclear inheritance; Organelle inheritance: Antibiotic resistance in *Chlamydomonas*, Infective heredity in *Paramecium*. Maternal effects: Shell coiling in *Limnaea*, pigmentations in *Ephestia.*

UNIT- 6: Transposable Genetic Elements **3 hrs**

Transposons in bacteria, Ty elements in yeast, Ac-Ds elements in maize, P elements in *Drosophila*, Transposons in humans, Significance of Transposons.

Practical **(60 hrs)**

(Laboratory periods: 15 classes of 4 hours each)

1. Simulation exercises using beads or seeds to study the gene interactions: 9:3:4; 12:3:1; 9:7; 9:3:3:1 (comb shapes in roosters) and verification of ratios by usingChi-square analysis.
2. Pedigree analysis of Autosomal Dominant trait, Autosomal recessive trait, X-linked Dominant traits, X-linked recessive traits, Y-linked traits and mitochondrial traits.
3. Use of probability in solving problems of genetics (Sum rule, Multiplication rule & Binomial expansion).
4. Gene mapping (order and distance) using data from interrupted mating experiments in bacteria.
5. Linkage maps based on data (two - point and three - point crossing over) from *Drosophila*.
6. Human Karyotypes, Human chromosomal disorders & single gene disorders.
7. Project on Epigenetic, Eugenics, Euthenics and Euphenics.

*Subject to UGC guidelines

Essential/recommended readings

1. Snustad, D.P., Simmons, M.J. (2009). Principles of Genetics. V Edition. John Wiley and Sons In.

2. Klug, W.S., Cummings, M.R., Spencer, C.A. (2012). Concepts of Genetics. X Edition. Benjamin Cumming

3. Pierce, B. A. (2012). Genetics-A Conceptual Approach. IV Edition. W. H. Freeman and Company

Suggestive readings

1. Peter, J. Russell. (2009), iGenetics: A molecular approach. 3rd Edition. Benjamin Cumming

2. Anthony J.F. Griffiths, Susan R. Wessler, Richard C. Lewontin, Sean B. Carroll (2007). Introduction to Genetic Analysis. 9th Edition. W H Freeman.

NOTE: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER-V

POOL OF DISCIPLINE SPECIFIC ELECTIVES (DSE) COURSES

DISCIPLINE SPECIFIC ELECTIVES (DSE-9): Chronobiology
Zoo-DSE-9

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical			
Chronobiology Zoo-DSE-9	**04**	**03**	**Nil**	**01**	**Passed Class XII with Biology/ Biotechnology**	**Basic knowledge of animal behavior**	**Zoology**

Learning Objectives

The learning objectives of this course are as follows:

- to understand and appreciate the cyclic physiological phenomena.
- to acquaint the students to the concept of generation of internal time.
- to learn about the fascinating phenomena of seasonal migration and hibernation.
- to expose the students to clock dysfunctions
- to make the students aware of the various aspects of chronobiology and how it can be applied to therapeutics and medicine?
- to facilitate the students to learn about their very own rhythms of sleep and body temperature
- to familiarize the students to actograms and their interpretation and analysis.

Learning Outcomes

By studying this course, students will be able to

- better understand the concept and biological significance chronobiology.
- acquire knowledge about the various types of biological rhythms and their adaptive role.
- appreciate the importance of circadian rhythms in human mental and physical health.
- better understand physiological and molecular mechanisms controlling circadian rhythms.
- know the genetic components comprising the biological clocks.
- gain knowledge about the importance of photoperiodism and its association with circannual rhythms.
- learn about the applications of chronobiology in medicine, pharmacology and

therapeutics.

SYLLABUS OF DSE-9

UNIT- 1: Introduction to Chronobiology **8 hrs**

Historical developments in chronobiology; Biological oscillation: the concept of average, amplitude, phase and period; Types of Rhythms – Ultradian rhythms, Circadian rhythms, Infradian rhythms; Lunar rhythm; Circannual rhythm; Adaptive significance of biological rhythms.

UNIT- 2: Circadian rhythms **8 hrs**

Characteristics of circadian rhythms, Free-running rhythm; Temperature compensation; Masking and synchronization; Zeitgebers- Photic and non-photic Zeitgebers; Effect of light, Intensity- Aschoff's rule.

UNIT- 3: Biological clock system **9 hrs**

Input, time generation and output components; Central and peripheral clocks; Suprachiasmatic nucleus; Molecular mechanisms underlying the generation of circadian time in Drosophila and Mammals.

UNIT- 4: Circannual rhythm and Photoperiodism **9 hrs**

Circannual rhythms; Photoperiodism and regulation of seasonal reproduction in vertebrates; Migration in birds; Hibernation in mammals.

UNIT- 5: Circadian clock, diseases and therapeutics **11 hrs**

Circadian clock and sleep-wake cycle; Jet Lag, Shift work ; Sleep and Chronotypes; Consequence of clock dysfunction- Sleep Disorders, Depression, Anxiety, Stress, Cancer; Obesity, Immune Disorders; Chronopharmacology, Chronomedicine and Chronotherapy.

Practical **(30 hrs)**

(Laboratory periods: 15 classes of 2 hours each)

1. Study of basic characteristics of biological rhythms from a given dataset.
2. Study and actogram construction of locomotor activity of suitable animal models.
3. Study of body temperature rhythm using periodically assembled data.
4. Study of the alertness rhythm using periodically assembled data.
5. Study of phase shift in circadian rhythm using given data.
6. Research plan presentation/ project on circadian (daily) rhythm functions, like eating, sleep or body temperature.
7. Project related to topics covered in theory/ project report based on visit to labs/institutions/industry etc.

Essential/recommended readings

1. Binkley, S. (2020). Biological clocks: Your owner's manual. CRC Press.
2. Vinod Kumar (2017): Biological Timekeeping: Clocks, Rhythms and Behaviour.
3. Wirz-Justice, A., Benedetti, F., & Terman, M. (2013). Chronotherapeutics for Affective Disorders: A Clinician's Manual for Light and Wake Therapy. Karger Medical andScientific Publishers

4. Koukkari, W. L., & Sothern, R. B. (2007). Introducing biological rhythms: A primer on the temporal organization of life, with implications for health, society, reproduction, and the natural environment. Springer Science & Business Media.

Suggestive readings

1. Dunlap J. C, Loros J. J, DeCoursey P. J. (2004) Chronobiology Biological Timekeeping.Sinauer Associates, Inc. Publishers, Sunderland, MA, USA.
2. Palmer, J. D. (2002). The living clock: The orchestrator of biological rhythms. OxfordUniversity Press.
3. Vinod Kumar (2002) Biological Rhythms. Narosa Publishing House, Delhi/ Springer-Verlag, Germany.
4. Saunders D. S. (2002). Insect Clocks. III Edition, Barens and Noble Inc. New York, USA
5. Weiner, J. (2000). Time, love, memory: a great biologist and his quest for the origins ofbehavior. Vintage.

NOTE: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVES (DSE-10):
Integrative Systems Biology and Bioinformatics

Credit distribution, Eligibility and Pre-requisites of the Course

Course Title & Code	Credits	Credit distribution of the Course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical			
Integrative Systems Biology and Bioinformatics Zoo-DSE- 10	**04**	**03**	**Nil**	**01**	**Passed Class XII with Biology/ Biotechnology**	**Basic knowledge of computer and biology**	**Zoology**

Learning Objectives

The learning objectives of this course are as follows:

- to give an overview of the key principles of Systems Biology and Bioinformatics.
- to introduce students to a variety of *in silico* solution for biological problems and systems data by analysing biological databases, gene sequence alignments, gene annotation, structure predictions, and drug development, among other areas.
- to encourage undergraduate students to pursue higher education in this field as Bioinformatics has been identified as a critical area of study and development

Learning Outcomes

By studying this course, students will be able to:

- know more about the basic of systems biology and bioinformatics
- better understand about the availability of experimental data through biological databases, usage of small molecules, nucleic acids, protein sequences, in a variety of biological sciences domains
- gain more knowledge about the gene sequence annotation, protein structure prediction and gene enrichment prediction
- acquire skills to perform and understand pair-wise and multiple sequence alignment
- better understand a variety of computational tools and approaches, as well as their use in *in silico* drug discovery, structural bioinformatics, and functional genomics etc.

SYLLABUS OF DSE- 10

UNIT- 1: Introduction to Systems Biology and Bioinformatics **5 hrs**

Introduction to Systems Biology, Bioinformatics, Genomics, Proteomics, Transcriptomics, Metabolomics, Scope and their applications.

UNIT- 2: Systems Biology **10 hrs**

Computational models, modelling and their basic notions, networks (feed forwardgene circuit,transcription regulatory networks and protein-protein interaction networks)

UNIT- 3: Biological Databases **8 hrs**

Introduction to biological databases; Primary, Secondary and Composite databases; Nucleic acid databases (GenBank, DDBJ, EMBL and NDB); Protein databases (PIR, SWISS-PROT, TrEMBL, PDB); Metabolic pathway database (KEGG, Reactome, EcoCyc, and MetaCyc); Small molecule databases (PubChem, Drug Bank, ZINC, CSD)

UNIT- 4: Sequence Alignment and Phylogeny **10 hrs**

Scoring Matrices (PAM, BLOSUM), Methods of Alignment (Dot matrix, Dynamic Programming, BLAST and FASTA); HMM model, Local and global alignment, pair wise and multiple sequence alignments, Molecular Phylogeny.

UNIT- 5: Structural Biology and Drug Discovery **12 hrs**

Protein secondary structure prediction (Chou-Fasman & GOR methods), Protein tertiary structure prediction and its validation (Homology modelling, Threading and *Ab-initio* methods); Lipinski rule, Molecular docking (rigid and flexible docking), ADMET properties, Molecular Dynamics, Drug-DNA interactions.

Practical **(30 hrs)**

(Laboratory periods: 15 classes of 2 hours each)

1. Retrieval of DNA, RNA, protein sequences and structures from the biological databases and to create various datasets.
2. Perform pairwise and multiple sequence alignments from the generated datasets in Experiment 1, using online/offline tool.
3. Retrieval and analysis of any one disease network from KEGG pathway database.
4. Gene functional enrichment analysis using DAVID tool.
5. Protein structure prediction through homology modelling using Swiss Modeller.
6. Molecular docking (Protein-ligand) using AutodockVina/ SwissDock/ PatchDock/ZDock (anyone).
7. Project related to topics covered in theory/ project report based on visit to labs/institutions/industry etc.

Essential/recommended readings

1. Pevsner, J. (2015) Bioinformatics and Functional Genomics, 3rd edition, Wiley and Blackwell.
2. Xiong, J. (2012) Essential Bioinformatics, Cambridge University Press.
3. Claverie, JM and Notredame, C. (2006) Bioinformatics for Dummies 2nd edition, Wiley Publishing Inc.
4. Klipp, E., Liebermeister, W., Wierling, C. and Kowald, (2016) A. System Biology 2nd edition, Wiley-VCH.

Suggestive readings

1. Alon, U. (2019) An Introduction to Systems Biology 2nd edition, CRC, Taylor & Francis.
2. Jenny Gu, J. and Bourne, P.E.(2011) Structural Bioinformatics 2nd edition, Wiley Blackwell.
3. Harren Jhoti, H. & Leach, A. (2007) Structure-based Drug Discovery, Springer.
4. Kitano, H. (2001) Foundations of Systems Biology, MIT press Cambridge.

NOTE: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVES (DSE-11): Basics of Neuroscience

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Dept offering the course
		Lecture	Tutorial	Practical			
Basics of Neuroscience Zoo-DSE- 11	**04**	**03**	**Nil**	**01**	**Passed Class XII with Biology/ Biotechnology**	**Concept of functioning of nervous system**	**Zoology**

Learning Objectives

The learning objectives of this course are as follows:

- to understand the structure and function of the nervous system at the molecular, cellular, and systems levels.
- to provide an in-depth understanding of neuronal excitability, signal generation and propagation, synaptic transmission, post-synaptic mechanisms of signal integration, and neural plasticity.
- to gain an insight into how membrane excitability elicits functional effects in individual neurons and neuronal networks and how different parts of the brain control various behavioural patterns by releasing neurohormones/neuropeptides.
- to have a thorough knowledge of neuroimaging techniques and a comprehensive understanding of the kinds of information each technique provides about the brain.
- to gain knowledge about the neural mechanism and pathogenesis of common neurodegenerative disorders such as Alzheimer's, Parkinson's disease etc.

Learning Outcomes

By studying this course, students will be able to:

- understand the fundamentals of neuroscience, key concepts, and the relationship between the nervous system and behaviour/cognition.
- comprehend the neural basis of sleep, emotions, learning and memory and related aspects of cognition.
- have a detailed understanding of how different neuroimaging techniques are used to assess brain function and explore questions in clinical and behavioural neuroscience.
- explore potential developments to current research, design, execute and communicate a substantive research project in the field of neuroscience or its application.

SYLLABUS OF DSE- 11

UNIT- 1 Introduction to Nervous System **6 hrs**

Origins of Neuroscience; Neuron doctrine; Classification of the nervous system.

UNIT- 2 Structure of the Brain **5 hrs**

Gross anatomy of the human brain, Meninges, ventricular System, Blood-brain Barrier, Cranial nerves.

UNIT-3 Cellular and Molecular Neurobiology **10 hrs**

Classification of neurons; Structure of prototypical neuron; Electrophysiology of membrane potentials-resting and action potentials, generation, and propagation; Ion Channels and Membrane Ion Currents; Types of Synapses, synaptic transmission and integration; Post synaptic potentials - EPSPs and IPSPs; tripartite synapse.

UNIT- 4 Neurotransmitters **4 hrs**

Types of neurotransmitters; transmitter-gated channels; neurotransmitter receptors Ionotropic and metabotropic receptors; G-protein coupled receptors and effectors.

UNIT- 5 Cognitive and Behavioural Neuroscience **10 hrs**

Neurobiology of visual perception; Molecular basis of learning and memory: Classification ofmemory, amnesia, case of H.M. (Henry Malaison); Synaptic plasticity, Long-term potentiation (LTP), Long-term depression (LTD); Memory consolidation.

UNIT-6 Neurophysiology of Sleep **4 hrs**

Neurophysiology of sleep and wakefulness, electroencephalogram rhythms (EEG).

UNIT- 7 Neuroimaging and Neuropathology **6 hrs**

Computed Tomography Scan (CT), Magnetic Resonance Imaging (MRI), functional Magnetic Resonance Imaging (fMRI), Positron Emission Tomography (PET); Neurological disorders (in brief)- Epilepsy, Schizophrenia; Aetiology and Molecular pathogenesis - Parkinson's, Alzheimer's.

Practical **(30 hrs)**
(Laboratory periods: 15 classes of 2 hours each)

1. Study of brain coordinates using stereotaxis instrument (video demonstration).
2. Study of *Drosophila* nervous system using GFP reporter system.
3. Study of anatomy of mammalian brain (from slaughter house or) using brain models (Medical anatomical teaching models, graphics, videos etc., can be used).
4. Histological study of neurons and myelin sheath (Nissl and Luxol Fast Blue staining).
5. Study of novelty, anxiety, and spatial learning in mice.
6. Histological study of the cerebellum and spinal cord by H&E stain and cerebral cortex by Nissl stain.

7. Study of neurodegenerative diseases (Parkinson's and Alzheimer's) with the help of brainscan images or brain tissue images.

Essential/recommended readings

1. Purves, D. et al., (2017) Neuroscience, VI Edition. Oxford University Press.
2. Bear, M. F., Connors, B. W. and Paradiso, M. A. (2016). Neuroscience: Exploring the Brain. IV Edition. Philadelphia: Wolters Kluwer.
3. Squire, L., Berg, D., Bloom, F. E., du-Lac, S., Ghosh, A., Spitzer, N. C. (2012) Fundamental Neuroscience, IV Edition, Academic Press Publications.
4. Kandel, E.R., Schwartz, J.H. and Jessell, T.M. (2000) Principles of Neural Science. IVEdition, McGraw-Hill Companies.

Suggestive readings

1. Carter, R. (2014). The Human Brain Book. D. K. Publishers.
2. Stephan M. Stahl (2000) Essential Psychopharmacology- Neuroscientific Basis and Practical Applications. II Edition. Cambridge University Press.
3. Ramachandran, V. S. and Blakeslee, S. (1998). Phantoms in the Brain: Probing the Mysteries of the Human Mind. William Morrow, New York.

NOTE: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVES (DSE-12): Biology of Insecta
Zoo-DSE-12

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical			
Biology of Insecta Zoo-DSE-12	**04**	**03**	**Nil**	**01**	**Passed Class XII with Biology/ Biotechnology**	**NIL**	**Zoology**

Learning Objectives

The learning objectives of this course are as follows:

- to acquaint the students about biology of class Insecta.
- to acquire knowledge of the morphology and physiology of Insects.
- to enable the students to see, appreciate and understand the diversity of insects.

Learning Outcomes

By studying this course, students will be able to:

- better appreciate the diversity of insects.
- better understand the physiology of Insects which has made them the most successful animalsin terms of numbers and variety of species.
- get acquainted with the highly organized social life of insects.
- to make the students aware about the possible scope of the subject which includes research and applied aspects including entrepreneurial skill.

SYLLABUS OF DSE- 12

UNIT-1 Introduction **4 hrs**

General features of Insects and their diversity; Classification of insects up to orders.

UNIT- 2: General Morphology of Insects **12 hrs**

Head: Eyes, Types of antennae, Mouth parts w.r.t. feeding habits; Thorax: wings- Typical structure of insect wing and its modifications, Types of Legs; Abdomen: Typical structure.

UNIT- 3: Physiology of Insects **18 hrs**

General aspects of the Integumentary (structure of integument and process of moulting), digestive, excretory, circulatory, respiratory, reproductive, and nervous system (using cockroach as the type representative); Metamorphosis: Types & hormonal control.

UNIT- 4: Insect behaviour **6 hrs**

Insect-Plant Interactions: Host-plant selection by phytophagous insects.

UNIT- 5: Insects as plant pests **5 hrs**

Bionomics and control of any two phytophagous insect pests of fruits, vegetables, cash crops and stored grains.

Practical **(30 hrs)**

(Laboratory periods: 15 classes of 2 hours each)

1. Methodology of collection, preservation and taxonomic identification of insects (classification up to order with the help of taxonomic keys).
2. Study of different kinds of antennae, legs and mouth parts of insects with the help of slides/specimens/ photographs
3. Study of morphological features of insects using pictures/slides/museum specimen (cockroach): head, sclerites, antennae, mouthparts, wing venation, and legs.
4. Preparation of temporary/permanent mount of any stored grain pest and its life stages.
5. Study of biology of any insect pest of agricultural crops (Fruit/vegetable).
6. Field study of insects and submission of a project report showcasing insect diversity.

Essential/recommended readings

1. Chapman, R. F. (1998) The Insects: Structure and Function. Cambridge University Press, UK.
2. Richards, O. W., Davies, R. G. (1977) Imms' General Text Book of Entomology. Vol I & Vol II; Chapman & Hall, UK.

Suggestive readings

1. Snodgrass, R. E. Principles of Insect Morphology. Cornell Univ. Press, USA.
2. Borror, D. J., Triplehorn, C. A., and Johnson, N. F. Introduction to the Study of Insects. M Saunders College Publication, USA.

NOTE: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVES (DSE-13):
Reproductive Biology and Assisted Reproductive Technologies (ART)
Zoo-DSE-13

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical			
Reproductive Biology and Assisted Reproductive Technology (ART) Zoo-DSE-13	**04**	**03**	**Nil**	**01**	**Passed Class XII with Biology/ Biotechnology**	**NIL**	**Zoology**

Learning Objectives

The learning objectives of this course are as follows:

- to acquaint the students about the various aspects of reproduction in humans.
- to acquire in-depth knowledge of male and female reproductive systems as well as factors that are important in maintaining reproductive health.
- to enable the students to see, appreciate and understand the new technologies in assisted reproduction as well as contraceptive methods.
- to familiarize the students about the social and public health issues related to family planning.
- to make the students aware of the possible scope of the subject which includes research and applied aspects including entrepreneurial skills.

Learning Outcomes

By studying this course, students will be able to:

- get an in-depth understanding of morphology, anatomy, and histology of male and female reproductive organs.
- know different processes in reproduction starting from germ cell formation to fertilization and consequent pregnancy, parturition, and lactation.
- compare estrous and menstrual cycles and their hormonal regulation.
- comprehend the interplay of various hormones in the functioning and regulation of the male and female reproductive systems.
- know about the diagnosis and management of infertility, including the latest methods, technologies, and infrastructure in assisted reproduction.
- better understand the modern methods of contraception and their use in family planning strategies.
- translate their understanding into the development of products like non-hormonal contraceptives; contribute to drug discovery programs as well as neonatal and

maternal health programmes and work with family planning teams to understand the needs and preferences of individuals belonging to lower socioeconomic groups.

SYLLABUS OF DSE-13

UNIT-1: Reproductive Endocrinology **8 hrs**

Hypothalamo–hypophyseal–gonadal axis; Regulation of gonadotropins and gonadal steroids secretion in male and female; Steroidogenesis; Mechanism of action of hormones related to reproduction.

UNIT- 2: Male Reproductive System **9 hrs**

Anatomy of the male reproductive system: Testis, epididymis, vas deferens, prostate gland, seminal vesicle; Spermatogenesis and its regulation; Sperm transport and maturation in the male genital tract.

UNIT- 3: Female Reproductive System **12 hrs**

Anatomy of the female reproductive system: Ovary, fallopian tubes/oviducts, uterus, cervix, and vagina; Folliculogenesis; Oocyte maturation and ovulation; Menstrual cycle and its hormonal regulation. Lactation and its regulation.

UNIT- 4: Fertilization **8 hrs**

Fertilization; Implantation; Feto-placental unit; Hormonal regulation of gestation; Parturition and its hormonal regulation;

UNIT- 5 Reproduction **8 hrs**

Modern contraceptive methods; Infertility in males and females- causes and diagnosis
Assisted Reproductive Technologies (ART): sperm banks, IVF, frozen embryos, ET, EFT, IUT, ZIFT, GIFT, ICSI, PROST. Ethical issues in ART.

Practical **(30 hrs)**

(Laboratory periods: 15 classes of 2 hours each)

1. Examination of histological sections from photomicrographs/permanent slides of rat/human: testis, epididymis, and accessory glands of male reproductive systems.
2. Sections of the ovary, fallopian tube, uterus (proliferative and secretory stages), cervix, and vagina.
3. Study the estrous cycle by examination of the vaginal smear of rats (from live animals)
4. Study of ovariectomy and castration.
5. Study of sperm count and sperm motility in rats.
6. Study of modern contraceptive devices.
7. Submission of project report on the reproductive health of a small human community involving survey, data collection, statistical analysis

OR

Report on the visit to animal culture facility including details about setting up and maintenance of the animal house, breeding techniques, care of normal and experimental animals.

*All exercises requiring live animals should be performed with the help of photomicrographs/pictures/videos.

Essential/recommended readings

1. Johnson, M.H. and Everitt, B.J. (2018) Essential reproduction. IV Edition, London, Blackwell Science.
2. Jones, R.E. and Lopez, K.H. (2014) Human Reproductive Biology. IV Edition, Elsevier.
3. Franklyn F. Bolander (2012) Molecular Endocrinology. III Edition, USA, Academic Press.
4. De-Groot, L.J. and Jameson, J.L. (eds) (2001) Endocrinology. W.B. Saunders and Company.

Suggestive readings

1. Knobil, E. and Neil, JD (eds) (2014) The Physiology of Reproduction. IV Edition, Elsevier.
2. Robert Martin (2013) How We Do It: The Evolution and Future of Human Reproduction. Basic Books.
3. Austin, C.R. and Short R.V. (Eds) (2012) Reproduction in Mammals. Cambridge University Press.

NOTE: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

GENERIC ELECTIVES (GE-11): Animal Cell Biotechnology
Zoo-GE-11

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical			
Animal Cell Biotechnology Zoo-GE-11	**04**	**02**	**Nil**	**02**	**Passed Class XII with Biology/ Biotechnology**	**NIL**	**Zoology**

Learning Objectives

The learning objectives of this course are as follows:

- to give the students a fundamental understanding of the field of biotechnology.
- to provide a tool kit in the form of a number of techniques and processes developed over time to solve problems involving primarily human welfare with focus on health and medicine.
- to make the students aware of the scope of biotechnology which encompasses almost every field of science like engineering, research, commercialization and academics.
- to empower the students to face research and industrial outlets by nurturing independent thinking, initiating scientific enquiry and developing their entrepreneurship skills.
- to equip the students with basic understanding of the tools and techniques of biotechnology which are a must for anyone interested in pursuing a career in biotechnology.

Learning Outcomes

By studying this course, students will be able to

- have a better understanding of the basic principles and applications of biotechnology.
- appreciate the basic techniques used in genetic manipulation helping them continue with higher studies in this field.
- acquire knowledge of the basic principles, preparations and handling required for animal cell culture.
- have an in-depth understanding of the principles underlying the design of fermenter and fermentation process and its immense use in the industry.

- enable students to design small experiments for successful implementation of the ideas and develop solutions to solve problems related to biotechnology keeping in mind safety factor for environment and society.
- apply knowledge and skills gained in the course to develop new diagnostic kits and to innovate new technologies further in their career.
- enhance their understanding of the various aspects and applications of biotechnology as well as the importance of bio-safety and ethical issues related to it.

SYLLABUS OF GE-11

UNIT- 1: Introduction **2 hrs**

Concept and Scope of Biotechnology.

UNIT- 2: **Techniques in Gene Manipulation** **9 hrs**

Outline process of genetic engineering and recombinant DNA technology, Restriction endonucleases, DNA modifying enzymes, Cloning Vectors: Plasmids, Phage vectors, Cosmids, Phagemids (lambda & M13). Shuttle and Expression Vectors. Genomic and cDNA libraries. Transformation techniques: Electroporation and Calcium Chloride method.

UNIT- 3: Fermentation **9 hrs**

Different types of Fermentation: Submerged & Solid state; batch, Fed batch and Continuous; Stirred tank, Air Lift, Downstream Processing: Filtration, centrifugation, extraction, chromatography (Only Principles: Adsorption, Ion exchange, gel filtration, hydrophobic, affinity and size exclusion and lyophilization.

UNIT- 4: Transgenic Animal Technology **5 hrs**

Production of transgenic animals: Retroviral method, DNA microinjection method, Nuclear Transplantation: Dolly and Polly.

UNIT- 5: rDNA Application in Health **5 hrs**

Recombinant vaccines, gene therapy (*in-vivo and ex-vivo*). Production of recombinant Proteins: Monoclonal Antibodies, Insulin and growth hormones, Bio safety: Physical and Biological containment.

Practical **(60 hrs)**

(Laboratory periods: 15 classes of 4 hours each)

1. Packing and sterilization of glass and plastic wares for microbial culture.
2. Preparation and sterilization of culture media.
3. Preparation of genomic DNA from *E. coli*.
4. Calculation of transformation efficiency from the data provided.
5. Restriction digestion of lambda (λ) DNA using EcoR1 and Hind III.

6. Techniques:
   a. Western Blot
   b. Southern Hybridization
   c. DNA Finger printing
   d. Polymerase chain reaction,
   e. DNA Microarrays
   f. Polyacrylamide gel Electrophoresis
   g. DNA sequencing: Sanger method

Essential/recommended readings

1. Glick, B.R. and Pasternak, J.J. (2009). Molecular Biotechnology- Principles and Applications of Recombinant DNA. IV Edition, ASM press, Washington, USA.
2. Brown, T.A. (1998). Gene Cloning and DNA Analysis: An Introduction. II Edition, Academic Press, California, USA.
3. R. Ian Freshney (2021) Freshney's Culture of Animal Cells: A Manual of Basic Technique and Specialized Applications; Wiley-Blackwell.

Suggestive readings

1. Griffiths, A.J.F., J.H. Miller, Suzuki, D.T., Lewontin, R.C. and Gelbart, W.M. (2009). An Introduction to Genetic Analysis. IX Edition. Freeman and Co., N.Y., USA.
2. Watson, J.D., Myers, R.M., Caudy, A. and Witkowski, J.K. (2007). Recombinant DNA-Genes and Genomes-A Short Course. III Edition, Freeman and Co., N.Y., USA.
3. Mathur, J.P. and Barnes, D. (1998) Methods in Cell Biology: Animal Cell Culture Methods. Academic Press.

NOTE: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-12): Introduction to Public Health and Epidemiology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical			
Introduction to Public Health and Epidemiology Zoo-GE-12	**04**	**02**	**Nil**	**02**	**Passed Class XII with Biology/ Biotechnology**	**NIL**	**Zoology**

Learning Objectives

The learning objectives of this course are as follows:

- to acquaint students with the basic concepts and importance of epidemiology and its contribution in the public health research.
- to acquire knowledge about the descriptive, analytic, and experimental aspects that can be applied for assessing the epidemiological studies of health status in the Indian population-based registers.
- to understand the relevance of statistics for the analysis of health-related data and its implications in the health sector
- To enable students to interpret results of data analysis for public health research, policy or practice.

Learning Outcomes

By studying this course, students will be able to

- better understand the fundamental components of epidemiology and data analysis.
- gain an understanding of the unique resources that Indian health registers represent for epidemiological research.
- comprehend various types of epidemiological studies, and understand their 'hierarchy' with respect to research.
- evaluate and interpret basic measures of occurrence and association and interpret the results
- appreciate and analytically assess the collection, analysis of data, and evaluate the relevant hypotheses.
- evaluate the strengths and limitations of epidemiologic reports
- apply epidemiological thinking to critically read and appraise articles in medical literature.

SYLLABUS OF GE-12

UNIT- 1: Epidemiology of Infectious Diseases **12 hrs**

Modes of infections with suitable examples. Overview of cause, extent, prevention, treatment and control of the diseases: Respiratory infections, Intestinal infections, Arthropod-borne infections, Zoonosis and Surface infections.

UNIT- 2: Understanding Epidemiological Data **8 hrs**

Understanding incidence, mortality (rates, ratios and proportions); Components of epidemiology: disease frequency, distribution and determinants of diseases. Epidemiological approach and measurements- vital statistics, health indicator parameters (morbidity, mortality and fertility rates); Analysis of data from National Cancer Registry Program (NCRP) and Covid-19 data.

UNIT- 3: Epidemiologic Methods and Survey **6 hrs**

Outlining the parameters for ethical issues in a study. Determining the target and control populations; Designing of questionnaires; Data collection: Strength of observation (descriptive and analytical) and experimental studies. Epidemiology study designs- case control and cohort studies (prospective and retrospective), procedures of sampling and matching, sources of bias.

UNIT- 4: Collection, Tabulation and Representation of Data **4 hrs**

Analysis of data from NCRP data and survey conducted by the students. Basic principles of "R" software for tabulation and graphical representations (bar diagrams, histograms, pie charts, box plot, etc.), measures of central tendency (mean, mode, median and partition values), dispersion (range, standard deviation, coefficient of variance and covariance) and skewness.

Practical **60 hrs**

(Laboratory periods: 15 classes of 4 hours each)

1. Designing a questionnaire for survey of prevalence diabetes/ hypertension/ allergy/ respiratory disorders/covid 19.
2. To conduct a population survey for the year for the any one of the disease- diabetes/ hypertension/ allergy/ respiratory disorders/covid 19.
3. Design an epidemiology study: case control and cohort study (prospective and retrospective), including techniques of sampling and matching, sources of bias.
4. Perform correlation and regression studies on the data collected.
5. Analyze the probabilistic distribution studies.
6. Comparison of groups and ascertaining statistical significance of differences.
8. Research and presentation on current trends in infectious diseases.

Essential/recommended readings

1. Glantz, S. (2011) Primer of Biostatistics, 7th edition, McGraw-Hill Medical. ISBN-13: 978-0071781503.
2. Park, K.(2011) Park's Textbook of Preventive and Social Medicine, 21st edition, M/s Banarsi Das Bhanot Publishers.
3. Bonita, R., Beaglehole, R., TordKjellstrèom, (2006) Basic epidemiology, 2nd edition (2006), Contributor; World Health Organization, illustrated, Publisher: World Health Organization.
4. Pagano, M. and Gauvrean, K. (2000) Principles of Biostatistics, 2nd edition, Thompson learning.

Suggestive readings

1. Wayne W Daniel and Chad L. Cross (2013), Biostatistics: A Foundation for Analysis in the Health Sciences, 10th edition, Wiley. ISBN-13: 978-1118302798.
2. Jerrold H. Zar (2009) Biostatistical Analysis, 5th edition, Pearson. ISBN-13: 978-0131008465.

NOTE: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-13): Concept of Animal Behaviour
Zoo-GE-13

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical			
Concept of Animal Behaviour Zoo-GE-13	**04**	**02**	**Nil**	**02**	**Passed Class XII with Biology/ Biotechnology**	**NIL**	**Zoology**

Learning Objectives

The learning objectives of this course are as follows:

- to familiarize the students with the scientific study of the behaviour of animals.
- to enable students to link behaviour patterns to the brain, genes, and hormones, as well as to the surrounding ecological and social environments.
- to acquire knowledge of aggression, the chase of the hunter and the flight of the hunted, the spinning of webs, the digging of burrows, and the building of nests or remaining motionless and concealed.
- to provide a good understanding of various concepts in animal behaviour.
- to motivate students to pursue a career in animal behaviour.

Learning Outcomes

By studying this course, students will be able to

- better understand the various types of animal behaviour and their importance.
- enhance their observation skills, analytical skills, scientific interpretation and documentation skills.
- enable students to evaluate the characteristic features of animal life including static postures, active movements, noises, smells, changes in colour and shape.
- realise, appreciate and develop passion to biodiversity and respect the nature and its surroundings.

SYLLABUS OF GE-13

UNIT- 1: Introduction to Animal Behaviour **4 hrs**

Origin and history of ethology, Pioneers of modern ethology: Karl von Frisch, Ivan Pavlov, Konrad Lorenz, Niko Tinbergen, Four Questions for Ethology.

UNIT- 2: Patterns of Behaviour **7 hrs**

Innate behaviour, Instinct, Sign stimuli, Code breakers, Learning: associative learning and non-associative learning, Classical and operant conditioning, Habituation, Imprinting.

UNIT- 3: Communication **3 hrs**

Importance of communication; Role of Chemical, Tactile, Auditory, Visual stimuli in communication.

UNIT- 4: Social Behaviour **7 hrs**

Concept of Society, Social insects (Honeybee as example), Bee communication, Altruism & Reciprocal altruism, Inclusive fitness, Hamilton's rule.

UNIT- 5: Sexual Behaviour **9 hrs**

Sexual dimorphism, mate choice; Intra-sexual selection (male rivalry); Inter-sexual selection (female choice); Courtship behaviour, Parental care, sexual conflict in parental care, Infanticide.

Practical **(60 hrs)**

(Laboratory periods: 15 classes of 4 hours each)

1. To study nests and nesting behaviour of the birds and social insects.
2. To study the behavioural responses of wood lice to dry and humid conditions.
3. To study geotaxis behaviour in earthworm.
4. To study the phototaxis behaviour in insect larvae.
5. Study of different tools, techniques and methods used in preparing ethogram.
6. To study courtship behaviour in insects and birds from short videos/movies.

Essential/recommended readings

1. Alcock, J. (2013) Animal Behaviour, Xth Edition, Sinauer Associates Inc., USA.
2. Manning, A. and Dawkins, M. S, (2012) An Introduction to Animal Behaviour, VIth Edition, Cambridge University Press, UK
3. McFarland, D. (1985) Animal Behaviour, Pitman Publishing Limited, London, UK

Suggestive readings

1. Rubenstein, D. (2022) Animal Behavior, XIIth Edition, Sinauer Associates, Oxford University Press, UK.
2. Gadagkar, R. (2021) Experiments in Animal Behaviour: Cutting-Edge Research at Trifling Cost, Indian Academy of Sciences.

NOTE: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

BSc. (H) Zoology
DSC-Animal Biotechnology
Zoo-DSC-16

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of thecourse			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Animal Biotechnology Zoo-DSC-16	04	02	Nil	02	Passed Class XII with Biology/ Biotechnology	NIL

Learning Objectives

The learning objectives of this course are as follows:

- to introduce students to the principle, practices and application of biotechnology.
- to familiarize the students with the basic concept of genetic engineering.
- to enable students to solve problems focusing on health, medicine, agriculture and environment etc.
- to learn scientific and engineering principles related to the processing/production of the recombinant proteins.
- to equip the students with the skills advanced tools and techniques used in biotechnology to acquire skills to pursue a career in biotechnology.
- to make the students aware of the scope of biotechnology which encompasses almost every field of science like engineering, research, commercialization and academics.

Learning Outcomes

By studying this course, students will be able to:

- Enable students to make a strategy to manipulate genetic structure of an organism for improvement of any trait.
- Comprehend the ethical and social issues regarding GMOs.
- Gain knowledge of DNA isolation, Agarose gel electrophoresis, PCR, transformation etc.
- Execute the application of recombinant DNA technology in designing research project.
- Acquire technical skills required for joining research labs/industry/institute/pharmaceutical etc. including entrepreneurship.

SYLLABUS OF DSC-16

UNIT- 1: Overview of Biotechnology **1 hr**

Aim and scope; applications in biotechnology.

UNIT- 2: Basic Tools for Gene Manipulation **10 hrs**

Cloning vectors: Plasmids, Cosmids, Phagemids, Lambda Bacteriophage, M13, BAC, YAC, MAC and Expression vectors (characteristics); Restriction enzymes; DNA modifying enzymes; Transformation techniques: Calcium chloride method, electroporation and biolistic methods, construction of genomic and cDNA libraries and screening by colony and plaque hybridization.

UNIT- 3: Advance Tools and Techniques **3 hrs**

Gene Editing Tool: Zinc Finger, TALEN, Clustered regularly interspaced short palindromic repeats (CRISPR/Cas9) system.

UNIT- 4: Genetically Modified Animals **8 hrs**

Production of cloned and transgenic animals: Nuclear Transplantation, Retroviral Method, DNA microinjection; Applications of transgenic animals; Production of pharmaceuticals, production of donor organs, knock-out mice.

UNIT- 5: Applications of Genetic Engineering **8 hrs**

Molecular diagnosis of genetic diseases (Cystic fibrosis, Sickle cell anemia): RFLP based, Allele specific oligonucleotide dot blot method, PCR- Oligonucleotide ligation assay; Recombinant DNA in medicines: recombinant insulin and human growth hormone, Gene therapy.

Practical **(60 hrs)**

(Laboratory periods: 15 classes of 4 hours each)

1. Isolation of genomic DNA from *E. coli.*
2. Isolation of plasmid (pUC 18/19) from *E. coli.*
3. Detection/ Visualization of DNA using Agarose gel electrophoresis.
4. Construction of circular and linear restriction map from the data provided.
5. Calculation of transformation efficiency from calcium chloride method.
6. Study of different blotting techniques: Southern, Northern and Western.
7. DNA sequencing: Sanger method, Next generation sequencing (Illumina).
8. Study of Polymerase Chain Reaction (PCR) and DNA microarrays.
9. Study and interpretation of DNA fingerprinting.
10. Submission of Project report based on any of the topics above (theory/practical)

Essential/recommended readings

1. Brown, T.A. (2010) Gene Cloning and DNA Analysis. VI Edition, Wiley-Blackwell publishing (Oxford, UK), ISBN: 978-1-4051-8173-0.
2. Glick, B.R., Pasternak, J.J. and Patten, C.L. (2010). Molecular Biotechnology-Principles and Applications of Recombinant DNA. IV Edition, ASM press, Washington, USA.
3. Primrose, S.B., and Twyman, R. M. (2006). Principles of Gene Manipulation and Genomics. VII Edition, Blackwell publishing (Oxford, UK)

Suggestive readings

1. Clark, D. P. and Pazdernik, N.J. (2012) Biotechnology, Academic Press.
2. Watson, J.D., Myers, R.M., Caudy, A. and Witkowski, J.K. (2007) Recombinant DNA Genes and Genomes- A Short Course. III Edition, Freeman and Co., N.Y., USA.

NOTE: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE -17 – :
Methods in Biostatistics
Zoo-DSC-17

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite ofthe course (if any)
		Lecture	Tutorial	Practical/ Practice		
Methods in Biostatistics Zoo-DSC-17	**04**	**02**	**Nil**	**02**	**Passed Class XII with Biology/ Biotechnology**	**NIL**

Learning Objectives

The learning objectives of this course are as follows:

- to provide an overview of the fundamental concepts of biostatistics.
- to apprise students to the various statistical methods and software tools for understanding data analysis in biological sciences.
- to familiarize students with basic training and develop skills required for analysis of experimental data in biological sciences.
- to encourage students to pursue higher studies or career in biostatistics as Data Analyst, Data Scientist, Software Developer, Machine Learning Analyst, Research Scientist, Academicians, etc.

Learning Outcomes

By studying this course, students will be able to

- better understand the basic concepts of Biostatistics and its various applications in different fields of biological sciences.
- acquire basic skills to set up hypothesis and design research studies.
- enable students to differentiate among various experimental designs and apply appropriate statistical tests.
- develop the skills to collect and represent data in tabular and graphical forms.
- analyze data and interpret experimental results using calculator, spread sheets software and online/offline software tools.

Syllabus of DSC-17

UNIT- 1: Introduction to Biostatistics **1 hr**

Aim and scope; applications in biological sciences.

UNIT- 2: Statistical Data **4 hrs**

Sampling methods; Primary and secondary data; Qualitative and quantitative data; Discrete and continuous data; Presentation of data- graphical representation of data.

UNIT- 3: Descriptive Statistics **9 hrs**

Concepts of statistical population and samples, parameter and statistics; Measures of Central tendency and Dispersion - Mean, Median and Mode (grouped and ungrouped data); Variance, Standard Deviation and Standard Error; Coefficient of Variance.

UNIT- 4: Probability and Distributions **2 hrs**

Normal, Binomial and Poisson; Skewness and Kurtosis.

UNIT- 5: Testing of Hypothesis **4 hrs**

Null and Alternative hypotheses; Concepts of statistical errors - Type I and Type II errors; Confidence Intervals and Confidence levels.

UNIT- 6: Statistical tests **6 hrs**

Chi Square tests; Z test, t Tests - paired and unpaired; F test (one way ANOVA).

UNIT- 7: Correlation and Regression **4 hrs**

Correlation Coefficient; Linear regression analysis.

Practical **(60 hrs)**

(Laboratory periods: 15 classes of 4 hours each)

1. To learn calculation and graphical representation of data with computers (e.g. MS Excel/SPSS/SigmaStat/Prism).
2. To compute Coefficient of Variance from data collected and measure variability.
3. To collect data on different parameters (e.g. height/weight) of animal/plant samples and test for significance, difference between mean, mode and median.
4. To compute 'test of independence' and 'goodness of fit' with samples/data provided using Chi square test.
5. To perform Z test/ F test (ANOVA) for given samples/data provided.
6. Submission of Project report based on field studies (sample collection, data analysis and interpretation using above statistical tests).

Essential/recommended readings

1. Daniel, W.W. and Cross, C.L. (2018) Biostatistics: Basic Concepts and Methodology for the Health Sciences 11th Edition, John Wiley & Sons, Inc.
2. Motulsky, H. (2016) Essential Biostatistics: A Non-mathematical Approach Oxford University Press

Suggestive readings

1. Zar, Jerrold H. (1999). Biostatistical Analysis, IV Edition, Pearson EducationInc and Dorling Kindersley Publishing Inc. USA

NOTE: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE– 18:

Evolutionary Biology
Zoo-DSC-18

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Evolutionary Biology Zoo-DSC- 18	**04**	**02**	**Nil**	**02**	**Passed Class XII with Biology/ Biotechnology**	**NIL**

Learning Objectives

The learning objectives of this course are as follows:

- to understand evolutionary forces leading to the variations and diversification of species.
- to learn about deciphering evidences ranging from fossil records to molecular data and to establish phylogenetic relationships of species.
- to gain knowledge of the processes and patterns of biological evolution.
- to get acquainted with origin and evolution of man.
- to acquire problem solving and high order analytical skills by attempting numerical problems as well as performing simulation studies of various evolutionary forces in action.

Learning Outcomes

By studying this course, students will be able to:

- gain knowledge about the relationship of the evolution of various species and the environment they live in.
- apply knowledge gained, on populations in real time, while studying speciation, behaviour and susceptibility to diseases.
- better understand the study of variations, genetic drift to ensure that conservation efforts for small threatened populations are focused in right direction.
- predict the practical implication of various evolutionary forces acting on the human population in the field of human health, agriculture and wildlife conservation.
- use various software to generate interest towards the field of bioinformatics and coding used in programming language.

SYLLABUS OF DSC-18

UNIT- 1 Historical Review of Evolutionary Concepts **2 hrs**

Lamarckism, Darwinism, Neo-Darwinism

UNIT- 2: Beginning of Life **3 hrs**

Chemogeny, RNA world, biogeny, origin of photosynthesis, endo-symbiotic theory

UNIT- 3: Evidences of Evolution **5 hrs**

Palaeontological: geological time scale; phylogeny of horse;
Molecular: neutral theory of evolution, molecular clock, example of globin gene family, rRNA/Cyt c.

UNIT- 4: Raw Material for Evolution **3 hrs**

Variations: Heritable variations and their role in evolution

Unit 5: Process of Evolution **6 hrs**

Qualitative studies: Natural selection, types of natural selection, artificial selection, kin selection, adaptive resemblances, sexual selection, frequency dependent selection.
Quantitative studies: Natural selection (concept of fitness, selection coefficient), genetic drift (founder's effect, bottleneck phenomenon), migration and mutation (genetic load).

UNIT- 6: Product of Evolution **4 hrs**

Speciation: micro-evolutionary changes (inter-population variations, clines, Ring species, races), species concept, isolating mechanisms.

UNIT- 7: Extinction **3 hrs**

Mass extinctions (events, causes and effects), Detailed explanation of K-T extinction

UNIT- 8: Origin and Evolution of Man **4 hrs**

Unique hominin characteristics contrasted with primate characteristics, primate phylogeny from *Dryopithecus* leading to *Homo sapiens*, molecular evidences in evolution of modern human.

Practical **(60 hrs)**

(Laboratory periods: 15 classes of 4 hours each)

1. Study of fossils (types, forms and dating) from models/pictures.
2. Study of homology, analogy and homoplasy from suitable specimens.
3. Study different modes of speciation and Adaptive radiation/macroevolution by suitable examples.

4. Study of variations in a sample human population: (a) Continuous variation: Height/Weight in relation to age and sex (b) Discontinuous variation: Ability/Inability to taste Phenylthiocarbamide (PTC).
5. Study of Hardy-Weinberg Equilibrium: statement, assumptions, derivation of the equation and its verification by chi square analysis.
6. Demonstration of role of natural selection and genetic drift in changing allelic frequencies using simulation studies.
7. Construction of cladograms based on morphological characters.
8. Introduction and construction of Phylogenetic trees with the help of bioinformatics tools (Clustal X/W, Phylip, MLK/MP/NJ) and its interpretation.

Essential/recommended readings

1. Roberts, A. (2018) Evolution: the human story, Dorling, Kindersley Ltd.
2. Hall, B.K. and Hallgrimson, B. (2013). Evolution. V Edition, Jones and Barlett Publishers.
3. Campbell, N.A. and Reece J.B. (2011). Biology. IX Edition. Pearson, Benjamin, Cummings.
4. Barton N.H., Briggs D.E.G., Eisen J.A., Goldstein D.B. and Patel N.H., (2007) 1st Ed. Evolution, Cold Spring Harbor Laboratory Press.

Suggestive readings

1. Futuyma, Douglas and Mark, Kirkpatrick (2017) 3rd Ed. Evolutionary Biology, Oxford University Press.
2. Zimmer C. and Emlen D. J., (2013) 1stEd. Evolution: Making Sense of Life, Roberts & Co.
3. Pevsner, J. (2009). Bioinformatics and Functional Genomics. II Edition, Wiley Blackwell.
4. Ridley, M. (2004). Evolution. III Edition, Blackwell publishing.

NOTE: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

POOL OF DISCIPLINE SPECIFIC ELECTIVES (DSE) COURSES

SEM VI

ZOOLOGY- DSE-14: Nanobiotechnology
ZOOLOGY- DSE-15: Human Endocrinology
ZOOLOGY- DSE-16: Toxicology
ZOOLOGY- DSE-17: Research Methodology

DISCIPLINE SPECIFIC ELECTIVES (DSE-14): Nanobiotechnology
Zoo-DSE-14

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Nano-biotechnology Zoo-DSE-14	**04**	**03**	**Nil**	**01**	**Passed Class XII with Biology/ Biotechnology**	**NIL**

Learning Objectives

The learning objectives of this course are as follows:

- to make the students aware of concept of Nanobiotechnology.
- to acquire the knowledge to introspect and understand the core concepts of nanotechnology.
- to equip the students with the concepts of biotechnology required for understanding the behaviour of nano-biomaterials.
- to develop a holistic understanding of the complex cellular processes occurring after treatment with nanoparticles.
- to provide in-depth knowledge of the body's response to nanotherapeutics.
- to appreciate the potential benefits and challenges of nanomedicine.

Learning Outcomes

By studying this course, students will be able to

- better understand the basics of nanobiotechnology and the nanoscale paradigm in terms of properties at the nanoscale dimension.
- acquire skills to optimize the synthesis of nanoparticles.
- appreciate the interaction between biomolecules and nanoparticle surfaces and theirapplications.
- analyze the process of nanoparticle internalization inside the cell and to evaluate

the process and interactions of nanoparticles within the cells.

- better understand the practical, real world biosensing technologies such as enzyme-based biosensors.
- ability to understand the ethical, societal responsibilities and identify the risk assessments involved in using bio-nanobiomaterials.
- to provide a critical and systematic understanding of cutting-edge technology at the forefront.

SYLLABUS OF DSE-14

UNIT- 1: Introduction to Nanobiotechnology, **2 hrs**

Overview of nanobiotechnology - timelines and progress.

UNIT- 2: Fundamentals of Nanobiomaterials **12 hrs**

Properties of Materials: Bulk materials *vs* nanomaterials, Biomaterials and synthetic materials; Types of nanocarriers/nanoparticles: Metals, Lipids, Polymeric nanoparticles (Liposomes, polymeric micelles, quantum dots, iron nanoparticles, carbon nanotubes), nanoscale assembly of microorganisms (virus, diatoms, bacteria); Nanofabrication: Top-down- Ball Milling; Bottom- up approaches-synthesis of metal oxides by green synthesis and chemical synthesis; nano-herbal formulations.

UNIT -3: Nanocarriers for Drug Delivery **10 hrs**

Drug Delivery Systems (DDS): Oral delivery, Systemic delivery, Controlled drug release; Transdermal drug delivery (Examples: Intranasal Drug Delivery and Ocular Drug Delivery); Active and passive nanocarriers- Concept of targeting, Multifunctional Nanoparticles: Inorganic and organic nanoparticles and their biomedical applications; Improvements in pharmacokinetics, bioavailability, biodistribution.

UNIT- 4: Applications of Nanobiotechnology **14 hrs**

Health and Diseases - Infectious and chronic diseases; Vaccines - Lipid nanoparticles, Viral nanoparticles

Diagnostics: Enzyme Biosensors and Diagnostics, DNA-Based Biosensors and Diagnostics, nano-immunosensors. Improved diagnosis by *in vivo* imaging- detection of tumours and genetic defects.

Environmental Pollution: Environmental Nanoremediation Technology- Thermal, Physico-Chemical and Biological Methods, nanofiltration for treatment of waste removal of organics, inorganics and pathogens.

UNIT- 5 Nanotoxicity: **7 hrs**

Basics of cellular toxicity: Effect of size, shape, surface properties and composition on the toxicity of nanoparticles; genotoxicity and carcinogenicity – Mechanisms and

Tests. Risk assessment of Nanoparticle exposure, Prevention and control of nanoparticles exposure.

Practical **(30 hrs)**

(Laboratory periods: 15 classes of 2 hours each)

1. Biosynthesis of nanoparticles: plants/microbial and its follow up with visible spectroscopy.
2. Synthesis of Iron oxide nanoparticles by using chemical methods.
3. Characterization of nanoparticles: Electron microscopy (scanning and transmission), atomic force microscopy; nanoparticle analyzer, zeta potential measurement, spectroscopic techniques including spectrophotometer.
4. Cell counting and cell viability study of a non-adherent cell (Hepatocyte) culture.
5. Antibacterial studies of nanoparticles by minimum inhibitory concentration (MIC) method.
6. Isolation of DNA and demonstration of apoptosis by DNA fragmentation.
7. Study of cell and nanoparticle interaction (Video demonstration).
8. Enzyme-based biosensors, e.g., the blood glucose sensor (Video demonstration).
9. Array-based DNA "biochip" sensors with fluorescence detection (video demonstration).

Essential/recommended readings

1. Niaounakis, M. (2015) "Biopolymers: Applications and Trends", 1st Edition, Elsevier.
2. Guterres, N., Silvia S., Alves, O. L. (Eds.) (2014) Nanotoxicology: Materials, Methodologies, and Assessments, Springer New York, USA.
3. Hillery, A. M.et al. (2010) "Drug Delivery and Targeting", CRC Press.
4. Torchillin, V. (2006) Nanoparticulates as Drug Carriers, Imperial College Press,

Suggestive readings

1. Kesharwani, P., Singh, K. K. (Eds) (2021) Nanoparticle Therapeutics: Production Technologies, Types of Nanoparticles, and Regulatory Aspects; Academic Press Inc.

2. Pieter Stroeve and Morteza Mahmoudi (2018) Drug Delivery Systems, World Scientific Series: From Biomaterials towards Medical Devices, Vol I.

3. Mao Hong Fan, Chin-Pao Huang, Alan E Bland, Z Honglin Wang, Rachid Sliman, Ian Wright. (2010) Environanotechnology; Elsevier.

4. N. Yao and Z. L. Wang, Handbook of Microscopy for Nanotechnology, Springer New York, NY (2005).

NOTE: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVES (DSE-15): Human Endocrinology Zoo-DSE-15

Credit distribution, Eligibility and Pre-requisites of the Course

Course title &Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Human Endocrinology Zoo-DSE- 15	04	03	Nil	01	Passed Class XII with Biology/ Biotechnology	NIL

Learning Objectives

The learning objectives of this course are as follows:

- to enable students to learn endocrinology with special emphasis on the human endocrine system covering the anatomy, physiology and biochemistry of the system, biological phenomenon at cellular level
- to provide detailed information on the release, effect and functioning of hormones.
- to acquire knowledge about the role of hormones as therapeutic agents.
- to acquaint students with experimental skills used in clinical and research laboratories

Learning Outcomes

By studying this course, students will be able to:

- comprehend the endocrine system and properties of hormones.
- understand the importance of endocrine system and its role in maintenance of homeostasis.
- gain in-depth knowledge of the molecular mechanism of hormone action and its regulation.
- better appreciate the regulation of physiological process and its implication in diseases.
- acquire information about human endocrine disorders.

SYLLABUS OF DSE- 15

UNIT- 1: Introduction to Endocrine Physiology **8 hrs**

Introduction to the endocrine system and major glands (pituitary, pineal, adrenal, thyroid, parathyroid, testis, pancreas, ovaries, and GI tract), Classes of hormones, Modes of hormone secretion.

UNIT- 2: Neuroendocrinology **12 hrs**

General organization of nervous system and neuroendocrine organs; Neurons: Structure, types, distribution and characteristics; Introduction to Neuropeptides, Neurosteroids and neurohormones.

The hypothalamo-hypophyseal axis; Hypothalamo-vascular system; hypothalamic hormones: chemistry, physiology and its regulation. Hypothalamo-hypophyseal interactions with the gonads, adrenal and other endocrine glands.

Neuroendocrine regulation of immune system; Stress hormones and immune response. Neuroendocrine disorders: genetic *versus* environmental causes (sleep apnea, precocious puberty).

UNIT- 3: Molecular Endocrinology **10 hrs**

Hormones as chemical messengers for control and regulation of physiological processes. Structure and biosynthesis of peptide, protein and steroid hormones; Storage, secretion and regulation of hormones; Mechanisms of hormone action: Receptor and non-receptor mediated signalling; Feedback mechanisms in signalling pathways.

UNIT- 4: Hormones as Therapeutic Agents **15 hrs**

Therapeutic use of hormones in health and disease (cancer, biological clock regulation, metabolic dysfunction, stress management, growth hormone disorders).

Current developments in design and production of hormonal contraceptives.

Recombinant protein hormones: production and application in regulation of fertility (Hormone replacement therapy, hypogonadism, PCOS/PCOD, xeno-estrogens and its effects on male fertility).

Practical **(30 hrs)**

(Laboratory periods: 15 classes of 2 hours each)

1. Simulation of dissection and virtual display of endocrine glands in rat model.
2. Study of the permanent slides of the major (pituitary, pineal, adrenal, thyroid, parathyroid, testis, pancreas, ovaries, and GI tract) endocrine glands.
3. Estimation of plasma level of any hormone using Immunoblot/ELISA.
4. Chromatographic separation of steroid hormones using paper chromatography.
5. Visit to endocrine laboratory/hospitals/clinics.
6. Project work/survey-based project on any endocrine disorder.

Essential/recommended readings

1. David O. Norris, James Carr (2021) Vertebrate Endocrinology, V Edition, Elsevier.
2. J. Larry Jameson, Leslie De Groot (2010). Endocrinology, VI Edition, Elsevier.
3. Hadley, M.E. and Levine J.E. (2009). Endocrinology. VI Edition. Pearson Prentice Hall, Pearson Education Inc., New Jersey.
4. Franklin F. Bolander (2004) Molecular Endocrinology. III Edition, Academic Press, USA.

Suggestive readings

1. Handbook of Physiology published by American Physiological Society by Oxford University Press, Section 7: Multiple volumes set, 1998.

2. Endocrinology: An Integrated Approach. BIOS Scientific Publishers (https://www.ncbi.nlm.nih.gov/books/NBK22/).

3. Turner, D. (1977) General Endocrinology. VI Edition, Saunders.

NOTE: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVES (DSE-16): Toxicology
Zoo-DSE-16

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title& Code	Credits	Credit distribution of the course			Eligibilitycriteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Toxicology Zoo-DSE- 16	**04**	**03**	**Nil**	**01**	**Passed Class XII with Biology/ Biotechnology**	**NIL**

Learning Objectives

The learning objectives of this course are as follows:

- to gain insight about basic toxicology, nature and classification of toxins and its mechanism.
- to learn about daily exposure types, dose response curve and toxicity episodes of toxic substances.
- to understand the chemistry, kinetics, metabolism and excretion of toxins.
- to enable the students to understand the aspects of environmental, medical and forensic toxicology.
- to elucidate the role of instruments and techniques in studying toxicology.

Learning Outcomes

By studying this course, students will be able to:

- acquire in-depth knowledge of the principles of toxicology, exposure and dose-response assessment.
- use technical and analytical skills to quantify the level and effect of xenobiotics on environment.
- better understand the mechanism of action and effects of toxic chemicals at multiple levels of biological organization.
- identify relationship between chemical exposure and its effect on physiological system.
- perform, analyse and interpret technical aspects and experimental approaches for toxicological research testing and risk assessment.

SYLLABUS OF DSE- 16

UNIT- 1: Principles of Toxicology **8 hrs**

History and scope of toxicology, nature and classification of toxins, mechanism of toxicity, risk assessment-animal bioassays, dose-response assessment.

UNIT- 2: Toxicokinetics: 10 hrs

Transportation, absorption, distribution, metabolism and excretion of toxins, enzyme mediated biotransformation (hydrolysis, reduction, oxidation, conjugation), and toxicokinetics (one-and two-compartment, elimination, clearance, saturation).

UNIT-3: Applied Toxicology 20 hrs

Environmental Toxicology: Ecotoxicology, Food, Agrochemical and Industrial Toxicology- Fertilizers and pesticide toxicology, Heavy metal toxicity, solvent & vapors toxicity, radiation/ radioactive toxicity.

Medical, and Forensic Toxicology: Organ's responses to toxins (pulmonary, hepatic, renal, cerebral, cardiac-blood vascular, nervous system, organs of immune system, ocular, dermal, reproductive and endocrine systems) toxicity, Poisons: definition, classification of poisons, types of poisoning, mode of action, antidotes & factors modifying the action of poisons, Nanotoxicology, Carcinogens, Immunotoxicity (immune modulation, xenobiotic-inducedhypersensitivity & autoimmunity).

Developmental and Occupational Toxicity: Dosemetrics, Dysmorphogenesis, maternal & environmental effects on fetus, workplaces, associated agents, routes and span of exposures and standards, dose determination, diseases/ ailments, risk evaluation.

UNIT- 4: Tools and Techniques in Toxicology: 4 hrs

Instruments (Chromatography- TLC, GLC, HPLC), Soxhlet apparatus, flash evaporator, Lyophilization

UNIT- 5: Regulatory Units 3 hrs

Role of institutes *viz.* EPA (Environmental Protection Agency), TERI, CSE (Center for science and environment) and CPCB, FAO, European union norms etc.

Practical (30 hrs)

(Laboratory periods: 15 classes of 2 hours each)

1. Determination of the LD_{50} /LC_{50} with the help of data.
2. Minimum inhibitory concentration of a toxin/ pesticide/ heavy metal/ tobacco.
3. Effect of a toxin/ pesticide/ heavy metal on any live organism (microbes/ animal/ plants).
4. Comparative study of normal and intoxicated sections of organs with the help of permanent slides/ pictorial representation (pulmonary, hepatic, renal, cerebral, cardiac-blood vascular, nervous system, organs of immune system, ocular, dermal, reproductive and endocrine systems - any three organs).
5. Separating techniques for toxin/s- Chromatography: Paper/ Thin Layer/ Column.
6. Techniques of HPLC, GLC (Dry Lab).
7. Routes of administration of drugs for the treatment regimens (Dry Lab).

8. Project work based on visit to institute of toxicology/ forensic science/ public health/ laboratory /hospital.

Essential/recommended readings

1. Woolley, D. and Woolley, A. (2017). Practical Toxicology- Evaluation, Prediction and Risk, Third edition, CRC press, Taylor and Francis Group/
2. Stine, K. E. and Brown, T. M. (2015). Principles of Toxicology, Third edition, CRC press, Taylor and Francis Group
3. Hayes, W. and Kruger, C. L. (2014). Hayes' Principles and Methods of Toxicology, VI edition, CRC press, Taylor and Francis Group.
4. Eroschenko, V. P. (2008), De Fiore's Atlas of Human Histology with functional correlations, Eleventh edition, Wolter Kluwer, Lippincott William and Wilkins.
5. Tortora, G.J. & Grabowski, S (2006) Principles of Anatomy & Physiology, XI edition. John Wiley & Sons.

Suggestive readings

1. Pani, B (2019). Textbook of Toxicology, Dreamtech press.
2. Gad, S. C. (2018). Regulatory Toxicology, III edition, CRC press, Taylor and Francis Group.
3. Casarett & Doull's Essentials of Toxicology (2015), III Edition, A & L Lange Series.
5. Pandey, G. and Sahni, Y. (2013) Toxicology Laboratory manual. International E-Publication.
6. Freifelder, D. (1999). Physical Biochemistry: Applications to Biochemistry and Molecular Biology, Second Edition, W. H. Freeman and Company.

NOTE: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

GENERIC ELECTIVES (GE-14): Model Organisms in Research
Zoo-GE-14

Course title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Model Organisms in Research Zoo-GE-14	04	02	Nil	02	Passed Class XII with Biology/ Biotechnology	NIL

Learning Objectives

The learning objectives of this course are as follows:

- to make the students aware about the requirement of model organisms in biological research.
- to understand the simulation of human traits in model organisms.
- to familiarize the students about the suitability and availability of different model organisms.
- to aware students about the ethical issues involved in using animals for research in laboratories.
- to give insight about the database systems available of different model organism.

Learning Outcomes

By studying this course, students will be able to

- better understand the concept of model organisms and their advantages.
- appreciate various types of model organisms used in biological research.
- gain better knowledge of how the model organisms can be used for modelling of human diseases.
- have an insight on the ethical issues related to handling and maintaining laboratory animals and plants.
- design simple experiments with model organism.
- determine the type of model organisms that are suitable to answer the specific research questions.

SYLLABUS OF GE-14

UNIT- 1: Introduction **2 hrs**

Model organisms: Definition, requirement, characteristics and selection.

UNIT- 2: Commonly used Model Organisms **20 hrs**

Characteristics, establishment and maintenance, specific application of following model organisms in research:

Viruses (Bacteriophage λ-phage, T4); Bacteria (*Escherichia coli*); Fungi (*Saccharomyces cerevisiae*); Ciliates (*Tetrahymena*); Annelids (*Caenorhabditis elegans, Lumricusterrestris*); Arthropods (*Drosophila melanogaster*); Pisces (*Danio rerio*); Amphibians (*Xenopus laevis*); Mammals [Rodents (*Mus musculus*), *Rattus rattus* (Rat) and Primates]; Plants (*Arabidopsis thaliana*).

UNIT- 3: Model organism specific databases **6 hrs**

Saccharamyces genome Database, EcoCyc, Flybase, Xenbase, Wormbase, Zfin, Mouse genome informatics, Tetrahymena genome Database, The Arabidopsis Information Resource etc.

UNIT- 4: Ethical consideration **2 hrs**

Brief introduction about CPCSEA, IAEC and related regulatory bodies.

Practical **(60 hrs)**

(Laboratory periods: 15 classes of 4 hours each)

1. Preparation of culture medium for *E. coli* and study the growth kinetics of *E. coli*.
2. Preparation of culture medium for *Drosophila* and study different stages of life cycle of *Drosophila*.
3. Preparation of culture medium for ciliates and their growth kinetics.
4. Study different phases of cell cycle in ciliates.
5. Culturing of *C. elegans*/ earthworm and Zebra fish and perform eco-toxicological studies.
6. Demonstration of culturing of mammalian cell lines/ visit to eukaryotic cell culture facility.
7. Visit to animal house and/ or plant culture facility and prepare the report on maintenance of laboratories animal/plant.

Essential/recommended readings

1. Jarret, R. L. and McCluskey, K. (2021) The Biological Resources of Model Organisms, 1st Ed, CRC Press.

2. Ankeny, R. A. and Leonelli, S. (2020) Concept of Model Organisms; Cambridge University Press.
3. Emerging model organisms: A laboratory manual, Volume 2, lab manual edition (2010), New York, USA: Cold Spring Harbor Laboratory Press.

Suggestive readings

1. Wang, W., Rohner, N., Wang, Y. (2023) Emerging Model Organisms; SpringerLink.
2. Jarret, R. L. and McCluskey, K. (2021) The Biological Resources of Model organisms, Taylor and Francis group.
3. Carroll, P. M. and Fitzgerad, K. (2003) Model Organisms in Drug Discovery, Wiley.

NOTE: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-15): Nanobiology
Zoo-GE-15

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title& Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Nanobiology Zoo-GE-15	04	02	Nil	02	Passed Class XII with Biology/ Biotechnology	NIL

Learning Objectives

The learning objectives of this course are as follows:

- to acquaint students with the basic concepts of Nanobiology.
- to equip the students with the concepts, properties and behaviour of nano-biomaterials.
- to provide a critical and systematic understanding of cutting-edge technology.
- to give an overall concept regarding the prominence of nanomaterials and their classification, synthesis process

Learning Outcomes

By studying this course, students will be able to

- better understand the interaction of biomolecules with surfaces of different chemical and physical species.
- appreciate the different applications of various types of nanostructured materials.
- gain knowledge of the types of nanoparticles based on size, shape, surface properties and composition.
- interpret/ analyse and get insight into the applications in the field of medicine.
- use basic principles of microfluidics to solve biotechnical and bioanalytical problems.
- appreciate the multidisciplinary nature of Nanobiology.
- develop skills in high-tech instrumental techniques suited for characterization of the micro/nano- structural properties.

SYLLABUS OF GE-15

UNIT- 1: Nanobiology **2 hrs**

Definition and concepts, Development of nanobiotechnology/nanobiology, timelines and progress.

UNIT- 2: Biomaterials **8 hrs**

Bulk materials *vs* nanomaterials. Different types of materials used to synthesize nanoparticles, Top-down approach, and bottom-up approach. Classification of

nanoparticles based on size, shape, surface properties and composition; bio-inspired nanomaterials. Nanoscale assembly of cellular components (cell membrane and liposomes). Nanoscale assembly of microorganisms (virus, diatoms, bacteria).

UNIT- 3: **Nanomedicine** **10 hrs**

Drug encapsulation, drug delivery and gene delivery, Active and passive targeting by ligands and receptor-mediated delivery, Interactions of nanoparticles with biological membranes and ion channels. Applications of nanomedicines in diagnostics: biosensor-based techniques like optical, colorimetric, and electrochemical, point-of-care diagnostics tools like lab-on-chip device, lateral flow immunoassay.

UNIT- 4: Environmental applications **6 hrs**

Nanoadsorbents, release of nutrients and pesticides, Nanoremediation, Nanopollution: air - water - soil contaminants, Treatment of industrial wastewaters using nanoparticles.

UNIT- 5: Nanotoxicity **4 hrs**

Effect of nanomaterials on human health, nanomaterial-cell interaction, Concept of cytotoxicity and genotoxicity, Future perspectives of Nanobiology.

Practical **(60 hrs)**

(Laboratory periods: 15 classes of 4 hours each)

1. Synthesis of silver/gold nanoparticles from plants extracts and follow up with visible spectroscopy.
2. Synthesis of Iron oxide nanoparticles by using chemical methods (Tyndall effect).
3. Characterization of nanoparticles: Electron microscopy (scanning and transmission), atomic force microscopy; nanoparticle analyzer, zeta potential measurement, electrochemical analyzer, flow cytometry, spectroscopic techniques including spectrophotometer, spectro-fluorimeter.
4. Cell counting and cell viability study of a non-adherent cell (Hepatocyte) culture.
5. Study of cell and nanoparticle interaction (video demonstration).
6. Antibacterial studies of nanoparticles by MIC method.
7. Assessing cytotoxicity of nanoparticles by MTT.
8. Isolation of DNA and demonstration of apoptosis by DNA fragmentation.
9. Nano microbial degradation of various xenobiotics (e.g. pesticides, organochlorines, pyrethroids, PAH).

Essential/recommended readings

1. Kesharwani, P., Singh, K. K. (Eds) (2021) Nanoparticle Therapeutics: Production Technologies, Types of Nanoparticles, and Regulatory Aspects; Academic Press Inc.
2. Kenneth E. Gonsalves, Craig R. Halberstadt, Cato T. Laurencin, Lakshmi S. Nair, (Eds) (2008) “Biomedical Nanostructures” Wiley-Interscience, John Wiley & Sons, Inc.
3. Niemeyer, C.M. (2006) Nanobiotechnology: Concepts, Applications and

Perspectives; Wiley VCH.
4. Ralph S. Greco, Fritz B. Prinz, R. Lane Smith Eds. (2005) Nanoscale Technology in Biological Systems, CRC PRESS, Taylor & Francis.

Suggestive readings

1. Stroeve, P and Mahmoudi (2018) Drug Delivery Systems, World Scientific Series: From Biomaterials towards Medical Devices, Vol I.
2. Hillery, and Anya M et al. (2010 "Drug Delivery and Targeting", CRC Press.
3. Hong-fan, M, Huang, C.P., Bland, A. E., Honglin, W. Z., Sliman,R., Wright, I (2010) Enviro-nanotechnology; Elsevier.

NOTE: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-16): Forensic Biology
Zoo-GE-15

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title& Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Forensic Biology Zoo-GE-16	04	02	Nil	02	Passed Class XII with Biology/ Biotechnology	NIL

Learning Objectives

The learning objectives of this course are as follows:

- to introduce the concept of forensic biology and DNA analysis.
- to identify and analyse the crime scene for biological evidence.
- to familiarize the students about the scientific methods in forensic biology.
- to emphasis on the practical techniques of biological principles that includessample recovery, sample handling, different analytical techniques and DNA profile comparison.
- to highlight the importance and application of forensic science.

Learning Outcomes

By studying this course, students will be able to

- Comprehend the fundamentals of forensic biology and DNA analysis.
- better understand the concepts of proper collection and preservation of biological.
- exhibits and crime scene investigation of biological evidence.
- rationalize the significance of criminal profiling.
- Develop skills based on the practical techniques of biological principles that includes sample recovery, sample handling, different analytical techniques and DNA profile comparison.

SYLLABUS OF GE-16

UNIT- 1: Principles of DNA Forensics and DNA Typing **8 hrs**

Definition and fundamental concepts of forensic biology, DNA as biological blueprint of life, Structure of DNA, collection of DNA sample, extraction, profiling, restriction fragment length polymorphism (RFLP), polymerase chain reaction (PCR), short tandem repeat markers, single nucleotide polymorphism markers (SNP), determination of ethnicity, determination of physical appearance, determination of personality traits, mitochondrial DNA, RNA and DNA database. Result interpretation.

UNIT- 2: Parentage Testing **4 hrs**

Principles of heredity, genetics of paternity, DNA testing in disputed paternity, Mendelian laws of parentage testing.

UNIT- 3: Biological Evidence **12 hrs**

Nature and importance of study of biological evidences in crime cases:

a) Forensic examination of hair: Transfer, persistence and recovery of hair evidence, Structure of human hair, Comparison of hair samples, Morphology and biochemistry of human hair.

b) Comparison of human and animal hair.

c) Identification of wild life materials such as skin, fur, bones, nails, horn, teeth, plants, plant parts and products by conventional and modern methods, Identification of Pug marks of various animals

d) Types and identification of microbial organisms of forensic significance

e) Forensic odontology: structural variation in teeth (human and non-human), types of teeth and their functions, determination of age from teeth: eruption sequence, Gustafson's method, dental anomalies, their significance in personal identification. **Bites marks:** Forensic significance, collection and preservation of bite marks, photography and evaluation of bite marks, Lip prints in forensic investigations.

UNIT- 4: Forensic Importance of Body fluids **6 hrs**

Blood: Composition and functions, Collection and preservation of blood evidence, Distinction between human and non-human blood, Determination of blood groups; Forensic characterization of bloodstains, typing of dried stains;

Semen: Forensic significance of semen, Composition, functions and morphology of spermatozoa, Collection, evaluation and tests for identification of semen, Individualization on the basis of semen examination.

Other Fluids: Composition, functions, identification tests and forensic significance of saliva, sweat, milk and urine.

Practical **(60 hrs)**

(Laboratory periods: 15 classes of 4 hours each)

1. Prepare slides of scale pattern of human hair and examine morphology of hair to determine the species to which the hair belongs.
2. Chemical identification of human blood.
3. Determination of blood group from fresh and dried blood samples.
4. Crime scene Blood Stain Pattern Analysis, using photographs and videos.
5. Identification of saliva and urine.
6. Separation of amino acids by thin layer chromatography (TLC).
7. Case study of evidences based on: DNA finger printing (disputed paternity)/ Bite marks/ Hair.
8. Visit to any Forensic Lab/Institute.

Essential/recommended readings

1. Tilstone, W.J., Hastrup, M.L. and Hald, C. (2013) Fisher's Techniques of Crime Scene Investigation, CRC Press, Boca Raton.
2. Saferstein, R. (2010) Criminalistics: An Introduction to Forensic Science (10th Edition), Pearson.
3. Butler, J.M. (2005) Forensic DNA Typing, Elsevier.
4. L. Stryer, (1988) Biochemistry, 3rd Edition, W.H. Freeman and Company, New York.
5. Chowdhuri, S. (1971) Forensic Biology, BPRD, New Delhi.

Suggestive readings

1. Duncan, G.T. and Tracey, M.I. (1997) Introduction to Forensic Sciences, 2nd Edition, W.G. Eckert (Ed.), CRC Press, Boca Raton.
2. Inman K. and Rudin, N. (1997) An Introduction to Forensic DNA Analysis, CRC Press, Boca Raton.

NOTE: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

BSc. (Life Science) -
Zoology Component (Semester - IV)

DISCIPLINE SPECIFIC CORE COURSE-12 (Zoo-LS-DSC-12):– Fundamentals of Human Physiology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical		
Fundamentals of Human Physiology Zoo-LS-DSC-12	04	02	Nil	02	Passed Class XII with Chemistry/ Biology/ Biotechnology	NIL

Learning Objectives

The learning objectives of this course are as follows:

- to learn the fundamentals that underpins the health and well-being of living organisms.
- to study the internal working of organs and organ systems.
- to expand their knowledge with respect to functioning of various organ systems such as muscular, nervous, digestive, circulatory, respiratory, excretory, reproductive and endocrine in humans.

Learning Outcomes

By studying this course, students will be able to

- Have an enhanced knowledge and appreciation of human physiology
- Recognize and identify principal tissue structures and functions
- Better understand the functions of important physiological systems including the nervous system, muscular system, endocrine and reproductive system
- Learn an integrative approach to understand how these separate systems interact to yield integrated physiological responses to maintain homeostasis in the body along with feedback mechanism.

SYLLABUS OF DSC- 12

UNIT- 1: Nerve and Muscle **7 hrs**

Structure of a neuron, Resting membrane potential, Graded potential, Origin of action potential and its propagation in myelinated and non-myelinated nerve fibres, Ultrastructure of skeletal muscle, Molecular and chemical basis of muscle contraction.

UNIT- 2: Digestion **4 hrs**

Physiology of digestion in the alimentary canal; Absorption of carbohydrates, proteins, lipids.

UNIT- 3: Respiration **4 hrs**

Pulmonary ventilation, Respiratory volumes and capacities, Transport of Oxygen and carbon dioxide in blood.

UNIT- 4: Excretion **4 hrs**

Structure of nephron, Mechanism of urine formation, Counter-current Mechanism.

UNIT- 5: Cardiovascular system **5 hrs**

Structure of Heart, Origin and conduction of the cardiac impulse, Cardiac cycle.

UNIT- 6: Reproduction and Endocrine Glands **6 hrs**

Physiology of male reproduction: hormonal control of spermatogenesis; Physiology of female reproduction: hormonal control of menstrual cycle. Structure and function of pituitary, thyroid, Parathyroid, pancreas and adrenal gland.

Practical: **60 hrs**

(Laboratory periods: 15 classes of 4 hours each)

1. Preparation of haemin and haemochromogen crystals.
2. Estimation of WBC and RBC count of blood.
3. Estimation of haemoglobin using Sahli's haemoglobinometer.
4. Determination of Blood Pressure by Auscultatory method.
5. Lung function tests using Spirometry (Determination of Vital Capacity, Peak Expiratory Flow Rate. Lung Volumes and Capacities).
6. Measurement of oxygen saturation by pulse oximetry before and after exercise.
7. Experiments on superficial (plantar) and deep (knee jerk) reflex.
8. Study of permanent histological sections of mammalian pituitary, thyroid, pancreas, adrenal gland, duodenum, liver, lung, kidney, bone, cartilage.
9. Project on Family planning devices.

Essential/recommended readings

1. Tortora, G.J. and Derrickson, B.H. (2009) Principles of Anatomy and Physiology, XIVth Edition, John Wiley & Sons, Inc.
2. Widmaier, E.P., Raff, H. and Strang, K.T. (2008) Vander's Human Physiology, XI Edition., McGraw Hill.
3. Guyton, A.C. and Hall, J.E. (2011) Textbook of Medical Physiology. XII Edition, Harcourt Asia Pvt. Ltd/ W.B. Saunders Company.
4. Victor P. Eroschenko. (2008). Di Fiore's Atlas of Histology with Functional correlations. XII Edition.

Suggestive readings

1. Kesar, S. and Vashisht, N. (2007) Experimental Physiology. Heritage Publishers.
2. Prakash, G. (2012) Lab Manual on Blood Analysis and Medical Diagnostics. S. Chand and Company Ltd.

BSc. (Life Science) -
Zoology Component (Semester - V)

DISCIPLINE SPECIFIC CORE COURSE-15 (Zoo-LS-DSC-15):– Evolutionary Ecology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical		
Evolutionary Ecology Zoo-LS-DSC-15	04	02	Nil	02	Passed Class XII with Chemistry/ Biology/ Biotechnology	Basic concept of Ecology

Learning Objectives

The learning objectives of this course are as follows:

- to explore the interface of ecological and evolutionary forces that leads to the diversity of the form.
- to understand the function, and behaviour among animals.
- to impart an understanding of the evolutionary origin and drivers of biological variation and diversity, including the significance of genetic variation, natural selection, and genetic drift.
- to unravel the evolution of animals, sexual selection, the evolution of mating systems, animal interactions, reaction norms and plasticity.
- to learn about co-evolution between species and ecology from a phylogenetic perspective and compares evolutionary processes behind reproductive and ecological adaptations.
- to understand how communities and species interact with their environment at large spatial and temporal scales.

Learning Outcomes

By studying this course, students will be able to

- better understand the diverse relationships that the organisms have in the environment.
- analyze the patterns of distribution of animals in different regions and ecosystems.
- gain insight to the major events in history of life and major theories of evolution.
- know the fundamental concepts of natural selection, speciation, mass extinction and macro-evolution.
- explain the characteristics, dynamics, and growth of populations.
- appreciate the characteristics of the community, ecosystem development and climax theories.
- gain knowledge about the relationship of the evolution of various species and the environment they live in.

SYLLABUS OF DSC- 15

UNIT- 1: Introduction to Evolutionary Ecology **3 hrs**

Introduction to the concepts of evolution and ecology and the relationship, evolutionary theories and origin of life, Levels of ecological hierarchy, heritability, natural selection, fitness and adaptation; Types of selection, Ecological adaptations of animals to their environment.

UNIT- 2: **Population Ecology** **7 hrs**

Group attributes- Density, natality, mortality, dispersal and dispersion, life tables, fecundity tables, survivorship curves, age ratio, sex ratio, dispersal and dispersion. Population growth- Exponential and logistic growth, Life history traits - r and K selection. Population regulation - Density dependent and independent. Population interactions: Positive and negative interactions.

UNIT- 3: Community Interactions **6 hrs**

Characteristics of community- species richness, dominance, diversity and abundance. Community organisation – habitat, niche, guilds, and dominant species. Interspecific interactions with examples. Species diversity indices. Types of ecological succession. Characteristics of climax community, Concept of keystone, flagship, umbrella species with examples.

UNIT- 4: Processes of Evolutionary Change and Species Concept **7 hrs**

Natural selection and its types, Genetic drift, Artificial selection. Species concept, Isolating mechanisms, Modes of speciation (Allopatric, Sympatric, Parapatric and Peripatric), Adaptive radiation/macroevolution (Darwin finches).

UNIT- 5: Coevolution **4 hrs**

Introduction to coevolution; types of coevolution (pairwise coevolution, diffuse coevolution, and gene-for-gene coevolution); Co-evolutionary interactions (Coevolution of competitors, Predator-prey coevolution, Host-parasite coevolution, Coevolution of mutualists); Evolutionary equilibria. Approaches to examine coevolution; Co-speciation and diversification.

UNIT- 6: Macroecology **3 hrs**

Introduction to macroecology: patterns and constraints; macroecological datasets; statistical patterns of abundance, distribution and diversity; Allometry: metabolism, body size and temperature; Macroecology of humans; Conservation macroecology: assessing, prioritizing, and quantifying biodiversity at large scales; Extinction dynamics.

Practical: **60 hrs**

(Laboratory periods: 15 classes of 4 hours each)

1. Study of the phytoplankton and zooplankton: Collection of specimens from an ecosystem (pond/river/lake/forest/garden) to study its biotic and abiotic components.
2. Measurement of temperature, turbidity/penetration of light, determination of pH, Dissolved Oxygen content (Winkler's method), chlorides, hardness, Chemical Oxygen Demand, free CO_2.
3. Gause's Principle with laboratory and field examples, Lotka-Volterra equation-significance in competition; Lotka-Volterra equation, functional and numerical responses in Predation.
4. Determination of population density in a natural/hypothetical community by quadrate method and calculation of Shannon-Weiner diversity index for the same community.
5. Study of life tables and plotting of survivorship curves of different types from the hypothetical/real data provided.
6. Catch, mark and recapture technique for finding the population size.
7. Study of homology, analogy and homoplasy from suitable specimens.
8. Construction of cladograms based on morphological characters.
9. Study and verification of Hardy-Weinberg Law by Chi-square analysis
10. Project report based on the visit to natural history museum/National Park/Biodiversity Park/Wildlife Sanctuary.

Essential/recommended readings

1. Futuyma, Douglas and Mark, Kirkpatrick (2017) 3rd Ed. Evolutionary Biology, Oxford University Press
2. Zimmer C. and Emlen D. J., (2013) 1st Ed. Evolution: Making Sense of Life, Roberts & Co.
3. Hall, B.K. and Hallgrimson, B. (2013) Evolution; 5th Edition, Jones and Barlett Publishers.
4. Chapman, J., and Reiss, M. (2012). Ecology Principles and Applications; Cambridge University Press.
5. Miller, T., and Spoolman, S. (2008) 12th Edition Environmental Science- Problems, Concepts and Solutions; Thomson Brooks/Cole.
6. Odum, E. P. and Barrette, G. W. (2008) Fundamentals of Ecology; 5th Indian edition; Brooks/Cole

Suggestive readings

1. Smith T. M. and Smith R. L. (2015). Elements of Ecology. 9th International Edition. Publisher: Benjamin Cummings.
2. Ridley, M. (2004). Evolution. III Edition, Blackwell publishing.
3. Southwood, T. R. E., & Henderson, P. a. (2000). Ecological Methods, 3rd Edition; Blackwell Science Ltd. (Vol. 278, Issue 5705).

BSc. (Life Science) -
Zoology Component (Semester - VI)

DISCIPLINE SPECIFIC CORE COURSE-18 (Zoo-LS-DSC-18):– Basics of Immunology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical		
Basics of Immunology Zoo-LS-DSC-18	04	02	Nil	02	Passed Class XII with Chemistry/ Biology/ Biotechnology	NIL

Learning Objectives

The learning objectives of this course are as follows:

- to understand the components and functions of immune system of the body.
- to learn how the immune system responds to various infections and foreign substances that adversely affect our body.
- to help comprehend the concept of hypersensitivity and vaccines.
- to acquaint the students on the role of immune system in prevention and altered response to diseases.

Learning Outcomes

By studying this course, students will be able to

- acquire knowledge of immunogenicity and antigenicity.
- better understand innate and acquired immunity.
- appreciate and analyze the various humoral and cellular components of the immune system.
- comprehend the role of immune system in health and disease.
- gain knowledge of autoimmunity, immunodeficiency and hypersensitivity.
- have an enhanced understanding of vaccine and vaccination.

SYLLABUS OF DSC- 18

UNIT-1: Immune System and its components **6 hrs**

Instructional and clonal selection theory; Innate immunity: components and defensive barriers of innate immunity. Adaptive immune system: Components and attributes of acquired immunity, humoral and cell mediated immunity, active and passive immunity, primary and secondary immune response.

UNIT- 2: Antigens, Immunogens and Antibodies **8 hrs**

Antigens and immunogens; antigenicity and immunogenicity; factors affecting immunogenicity; antigenic determinants (B- and T-cell epitopes); concepts of

antigen recognition by B- and T-cells. Structure and function of different classes of antibodies.

UNIT- 3: Antigen Processing and Presentation 4 hrs

Structure and functions of MHC (MHC I & MHC II); endogenous and exogenous pathways of antigen processing and presentation.

UNIT- 4: Cytokines & Complement System 4 hrs

Properties and functions of cytokines; Pathways of complement activation and its biological consequences.

UNIT- 5: Role of immune system in Prevention of Diseases 8 hrs

Gell and Coomb's classification of hypersensitivity; autoimmunity; immune dysfunctions and immunodeficiency with suitable examples. Vaccines and their types.

Practical: 60 hrs

(Laboratory periods: 15 classes of 4 hours each)

1. To study the structure and function of lymphoid organs of the immune system.
2. Histological study of spleen, thymus and lymph nodes through slides/ photomicrographs.
3. To study haematopoiesis and role of cells in immune response through flowchart.
4. To study various types of blood cells using Leishman's/Giemsa/Crystal violet stained blood smear.
5. Cell counting and viability test (trypan blue dye exclusion test) from splenocytes* from rat/mouse/any other species.
6. To understand the antigen and antibody interactions by
   i) ABO Blood group antigen determination by heamagglutination test.
   ii) Ouchterlony's double immunodiffusion method.
   iii) Production of monoclonal antibodies by HAT selection.
   iv) Demonstration of ELISA.
   v) Demonstration of Immunoelectrophoresis.
   vi) FACS
   vii) RIA
7. Project on any topic/ Project report on visit to any research institute/laboratory to study the immunological techniques

Essential/recommended readings

1. Kindt, T. J., Goldsby, R.A., Osborne, B. A. and Kuby, J. (2006) Immunology, VI Edition, W.H. Freeman and Company
2. David, M., Jonathan, B., David, R. B. and Ivan, R. (2006) Immunology, VII Edition, Mosby, Elsevier Publication.

3. Janeway's Immunobiology 9th Edition, by Kenneth Murphy, Casey Weaver, Garland Science
4. Kenneth Murphy, Casey Weaver (2016) Janeway's Immunobiology; 9th Edition, Garland Science
5. Abbas, K. Abul and Lechtman H. Andrew (2003) Cellular and Molecular Immunology, V Edition, Saunders Publication.

Suggestive readings

1. Punt, J., Stranford, S., Jones, P., Owen, J.A. (2018) Kuby Immunology, VIII Edition, WH Freeman and Company
2. 1. Singh, I. K. and Sharma, P. [Eds.] (2022) An Interplay of Cellular and Molecular Components of Immunology. Taylor & Francis group, CRC Press.
3. Kaur, H., Toteja, R., and Makhija, S. (2021) Textbook of Immunology, I.K International Publishing House and Wiley India Ltd
4. Singh, I. K. and Sharma, P. [Eds.] (2022) Essentials of Immunology, Laboratory Manual; Prestige Publishers.
5. Hay, F.C., Westwood, O.M.R (2005) Practical Immunology– Fifth Edition. John Wiley and Sons Ltd.

ANNEXURE-33

Sub: Amendment to Ordinance V

[E.C Resolution No. 14-1/-(14-1-6/-) dated 09.06.2023 and 27-1-1/ dated 25.08.2023]

Following addition be made to Appendix-II-A to the Ordinance V (2-A) of the Ordinances of the University;

Add the following:

Syllabi of Semester-IV, V and VI of the following courses of Department of Home Science under the Faculty of Science based on Under Graduate Curriculum Framework -2022 implemented from the Academic Year 2022-23 :

(i) BSc. (Hons.) Home Science

(ii) BSc. (Hons.) Food Technology

(iii) BSc. (Prog.) Home Science

(iv) BA (Prog.) Food Technology

(v) BA (Prog.) Nutrition & Health Education (NHE)

(vi) BA (Prog.) Human Development & Family Empowerment (HDFE)

(vii) BA (Prog.) Apparel Design & Construction (ADC)

DEPARTMENT OF HOME SCIENCE

SEMESTER 4

B.Sc. Hons (Food Technology)

DISCIPLINE SPECIFIC CORE COURSE

DSC FT10: Food Quality Management

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITE OF THE COURSE

Course title & code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Theory	Tutorial	Practical/Practice		
FOOD QUALITY MANAGEMENT	4	3	0	1	XII Pass with PCM/PCB	NIL

Learning Objectives

- To appreciate the significance of food quality assurance in food processing.
- To comprehend approaches to Food Quality Management.
- To understand Food Quality Management during food production.

Learning Outcomes

After completing this course, students will be able to:

- Apply knowledge of food quality management in food value chain.
- Understand the dynamics and Techno- managerial approaches in the agri- food chain.
- Apply food recall and traceability protocols to assure food quality.
- Identify different contaminants formed during food production.

SYLLABUS OF DSC FT10

THEORY
Credits: 3; Hours: 45

UNIT I: Introduction to Food Quality **15 Hours**

Unit Description: This unit will provide concept of food quality management and assurance in the agri- food chain.

Subtopics:

- Definition of food quality: concepts, perception, attributes.
- Quality control and quality assurance.
- Food quality management functions.
- Food quality relationship and its management in the agri- food production chain.

UNIT II: Approaches to Food Quality Management. **15 Hours**

Unit Description: This unit will provide insights on different approaches of quality management, food recall and traceability in the agri -food production chain.

Subtopics:

- Dynamics in the agri- food chain.
- Techno- managerial approach in Food Quality Management.
- Core developments in food quality management
- Food Recall
- Food Traceability

UNIT III: Food Quality Management during food production. **(15 Hours.)**

Unit Description: This unit will provide information on contaminants formed during processing and packaging of foods. Major focus will be on emerging concerns with food contaminants.

Subtopics:

- Contaminants formed during processing & packaging – nitrosamines, acrylamide, alloys, benzene, dioxins, 3- mono chloro 1,2-propanediol (3-MCPD), furans, and methyl furans, VOCs.
- Persistent organic pollutants, PAH (Polycyclic Aromatic Hydrocarbons), Heterocyclic amines (HCAs), fumigants, autoxidation products.
- Emerging concerns in food- Microplastics, Bisphenol A, Endocrine Disruptors, hypersensitivities from food additives.

PRACTICAL
Credit : 1, Hours: 30

1. Determination of quality standards and inspection of various food grains- cereals and -nutri - cereals/millets.
2. Determination of quality standards and inspection of pulses.
3. Determination of quality standards and inspection of spices and condiments.
4. Perform qualitative tests for fats and oils.
5. Determination of non-permitted colours in fruits and vegetables.
6. Estimation of ammonia nitrogen in water.
7. Prepare an effective HACCP plan for any food commodity or process in the food chain.

Essential Readings

- Pieternel A, Luning. &Willem, J. Marcelis. (2009). *Food Quality Management Technological and Managerial principles and practices*. Wageningen.
- Lawley, R., Curtis, L., & Davis, J. (2012). *The food safety hazard guidebook*. Royal Society of Chemistry.
- DeMan. (2007). *Principles of Food Chemistry*. Springer, 3rd edition.

Suggested Readings

- Carol, E., Steinhart, M. and Ellin, D. (1995). *Food Safety*, Food Research Institute. New York: Marcel Dekker, Inc
- Shapton, D.A. and Shapton, N.F. (1998). *Principles and Practices for the safe processing of Foods*. CRC Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE

DSC FT11: Poultry & Egg Processing Technology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITE OF THE COURSE

Course title & code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Theory	Tutorial	Practical/Practice		
Poultry & Egg Processing Technology	4	3	0	1	XII Pass with PCM/PCB	NIL

Learning Objectives

- To understand primary processing of poultry, chicken quality and by-product utilization.
- To understand HACCP models for poultry processing.
- To understand egg production practices, and egg preservation methods.
- To understand egg quality and development of value-added products.

Learning Outcomes

After completing this course, students will be able to:

- Understand the need and importance of egg and poultry industry.
- Comprehend egg production and poultry product processing.
- Acquire knowledge about application of HACCP model for poultry processing.
- Understand value-addition and by-product utilization

SYLLABUS OF DSC FT011

THEORY
Credits: 3; Hours: 45

Unit 1 Introduction **5 Hours**

Unit Description: The unit will provide an understanding of the status and development of the Poultry industry, chicken quality, and processing of poultry and by-products.

Subtopics:

- Development of Poultry industry in India and its need in nation's economy,
- Chicken Quality - Color, Flavor, Texture, Water-Holding Capacity (WHC), Emulsification capacity.

Poultry products processing **15 Hours**

- Primary processing of poultry,
- Inspection, Grading, Cut Up and Composition, ante-mortem and post-mortem inspection of poultry,
- A Generic HACCP model for poultry slaughter.
- Processing of enrobed poultry products, HACCP for a Cooked Product Model.
- Poultry by-products.

UNIT II: Egg Industry and Egg Production Practices **12 Hours**

Unit Description: The unit will provide knowledge on the status and development of the Egg industry, and management of poultry farms.

Subtopics:

- The egg industry , Production of shell eggs
- Laying stock, Brooding period
- General management of Poultry farm.

UNIT III: Quality identification of shell eggs **5 Hours**

Unit Description: The unit will provide an understanding of the factors that affect egg quality. Measures of egg quality will also be covered.

Subtopics:

- Grading of shell eggs
- Factors affecting egg quality
- Measures of Albumen and Yolk quality

UNIT IV: Preservation of eggs **8 Hours**

Unit Description: The unit will provide information on the functional properties of eggs and different egg product processing and preservation techniques.

Subtopics:

- Refrigeration and freezing, egg powder manufacture, egg coatings.
- Functional properties of eggs and development of value-added products

PRACTICAL
Credit : 1, Hours: 30

1. To study the shelf-life of eggs by different methods of preservation
2. Evaluation of eggs for quality parameters (market eggs, branded eggs)
3. To perform freezing of yolk/albumen
4. Egg product formulation.
5. Cut out analysis of canned chicken/retort pouches (external parameters).
6. Cut out analysis of canned chicken/retort pouches (internal parameters).
7. Planning generic HACCP model for poultry.
8. To prepare flow chart of enrobed chicken products/evaluate the quality of enrobed chicken products (chicken nuggets).

Essential Readings

- Shai, Barbut. (2016). Poultry Products Processing. An Industry Guide. CRC Press.
- Stadelman, W. J., Newkirk, D., & Newby, L. (2002). *Egg science and technology*. 4th ed. New Delhi: CBS Publication.
- Isabel Guerrero-Legarreta, Hui,Y.H .et.al.(2010)Handbook of Poultry Science and Technology, Volume 2:Secondary Processing. Wiley Publication

Suggested Readings

- Owens, C. M. (2010). *Poultry meat processing*. CRC Press.
- Richardson, R.I.,Mead,G.C(2005)Poultry meat Science New Delhi:CABI Publishing
- Parkhurst, C., &Mountney, G. J. (1997). *Poultry meat and egg production*. New Delhi: CBS Publishers

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE

DSC FT12: Food Engineering- I

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITE OF THE COURSE

Course title & code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Theory	Tutorial	Practical/Practice		
Food Engineering- I	4	3	0	1	XII Pass with PCM/PCB	Nil

Learning Objectives

- To understand the concept of unit operation, units and dimensions.
- To comprehend the different Heat and mass transfer, refrigeration and Freezing operations.
- To understand the fundamentals of food engineering systems and its process.

Learning Outcomes

After completing this course, students will be able to:

- Understand the principle of unit operation.
- Apprehend the different methods of separation in the food industry.
- Acquire the basic knowledge of thermal properties, methods of heat transfer and mass transfer, principles of refrigeration and freezing.
- Apply these principles for solving numerical problems.

SYLLABUS OF DSC FT12

THEORY
Credits: 3; Hours: 45

UNIT I: Introduction **6 Hours**

Unit Description: The unit will provide information on the concept of unit operation, mass balance and energy balance system.

Subtopics:

- Concept of Unit operation
- Units and dimensions, Unit conversions, dimensional analysis
- Mass and Energy Balance

UNIT II: Separation Processes 12 Hours

Unit Description: The unit will provide an insight into the principle and equipment design of various separation processes like distillation, extraction, centrifugation, filtration and sedimentation.

Subtopics:

- Distillation principles and methods: steam, batch, continuous distillation with rectification and stripping.
- Extraction : Hildebrandt, Bollman, SCF extraction
- Filtration : Plate and frame, pressure leaf, continuous rotary vacuum, batch and continuous filtration
- Centrifugation: Tubular, disc bowl and basket centrifuge
- Sedimentation : continuous thickener

UNIT III: Heat and Mass Transfer 15 Hours

Unit Description: The unit will provide knowledge of thermal properties of food, design and derivation of heat and mass transfer systems and applications.

Subtopics:

- Systems for heating and cooling food products
- Thermal Properties of Food
- Modes of heat transfer- Conduction, Convection and Radiation
- Applications of steady state heat transfer, estimation of conductive heat transfer coefficient, convective heat transfer coefficient, overall heat transfer coefficient and design of tubular heat exchanger
- Fick's Law of Diffusion
- Related basic numerical
- Membrane separation systems-Electrodialysis system , Reverse Osmosis, Ultra filtration, Microfiltration
- Membrane devices used for RO and UF: Plate and Frame, Tubular, Spiral wound and hollow fiber devices

UNIT IV: Refrigeration and Freezing 12 Hours

Unit Description: The unit will provide concept of refrigerants, VCR cycle, components of Refrigeration system and freezing time calculations

Subtopics:

- Concept, properties and selection of refrigerants
- Description of Vapor compression refrigeration (VCR) cycle
- Pressure Enthalpy charts and Tables
- Mathematical expressions useful in analysis of VCR cycle
- Numerical on VCR system using R -134a, R-717, R-12; Saturated cycle and deviations from the standard
- Freezing time calculation using Plank equation
- Frozen food storage

PRACTICAL
Credit : 1, Hours: 30

1. Mass and Energy Balance Calculations
2. Determination of alcohol insoluble solids using extraction process
3. Determination of the osmotic pressure of the given sample
4. Estimation of sedimentation rate
5. Determination of thermal properties of the given samples
6. Mathematical Design of Heat exchanger
7. Cooling refrigeration load calculations.
8. Determination of Convective heat transfer coefficient and freezing time
9. Determination of freezing point depression in given solution

Essential Readings

- Rao, D.G. (2010). *Fundamentals of food engineering*. PHI learning private ltd.
- Singh, R.P. and Heldman, D.R. (2009) *Introduction to food engineering*2nd edition. 4th edition Academic press.
- Singh, R.P. and Heldman, D.R. (2014) Introduction to food engineering 5th edition. Academic press

Suggested Readings

- Earle, R.L. (1983).*Unit Operations in Food Processing,* 2nd edition. Pergamon press.
- Fellows, P. (2009).*Food processing technology*. Woodhead publication, 3rd edition
- Garg, M., Chaturvedi, S., Sadhu, S.D. and Barwa, M. and Pani. B ., (2020) Practical Handbook of Food Engineering Aryush Education, ISBN NO. 978-81-930437-5-2

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE

DSE FT02 A: Bakery Technology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITE OF THE COURSE

Course title & code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Theory	Tutorial	Practical/Practice		
Bakery Technology	**4**	**2**	0	**2**	**XII Pass with PCM/PCB**	**Nil**

Learning Objectives

- To understand the fundamentals of baking and technology of various bakery products.
- To understand basic knowledge, importance, quality and safety concerns in bakery industry.
- To understand technology used in modified bakery products for different health conditions.

Learning Outcomes

After completing this course, students will be able to:

- Understand the fundamentals of baking.
- Acquire the knowledge of technologies of bakery products.
- Understand trends in bakery industry.
- Get an overview of modified bakery products for different health conditions

SYLLABUS OF DSE FT03

THEORY
Credits: 2; Hours: 30

UNIT I: Introduction **5 Hours**

- Bakery industry, current status and economic importance of bakery Industry in India.

- Nutritional quality and safety, pertinent standards & regulations, safety concerns

UNIT II: Bakery products **18 Hours**

- Bread, Buns and Pizza base: Ingredients & processes for breads, buns, pizza base, changes taking place during baking, product quality characteristics, faults and corrective measures
- Cakes: Ingredients & processes for cakes, product quality characteristics, faults and corrective measures. Different types of icings.
- Pastry: Ingredients & processes for pastry, product quality characteristics, faults and corrective measures.
- Biscuits and Cookies: Ingredients & processes, product quality characteristics, faults and corrective measures.

UNIT III: Modified bakery products **7 Hours**

- Modification of bakery products for people with special nutritional requirements e.g. high fibre, sugar free, low sugar, low fat, gluten free bakery products, use of fat and sugar replacers, enzymes, egg replacers and natural preservatives in bakery products.

PRACTICAL
Credit: 2, Hours: 60

1. Introduction of tools and equipment used in preparation of bakery products.
2. Quality assessment of wheat flour used in the preparation of baked products.
3. Preparation and acceptability of yeast leavened baked products (bread/ bun/ pizza base).
4. Preparation and acceptability of biscuits.
5. Preparation and acceptability of cookies.
6. Preparation of different types of cakes and their acceptability.
7. Preparation of different types of icings.
8. Development of any bakery product with special nutritional requirement.

Essential readings:

- Zhou, W., Hui, Y. H., Leyn, I. De., Pagani, M. A. , Rosell, C. M. , Selman, J. D., & Therdthai, N. . (2014). *Bakery Products Science and Technology* (Second ed.): John Wiley & Sons, Ltd.
- Dubey, S.C. (2007). Basic Baking 5th Ed. Chanakya Mudrak Pvt. Ltd.

Suggested readings:

- Khetarpaul, N. (2005). Bakery Science and Cereal Technology. India: Daya Publishing House.
- Edwards, W. P. (2015). The Science of Bakery Products. United Kingdom: Royal Society of Chemistry.
- Samuel, A. Matz (1999). Bakery Technology and Engineering. PAN-TECH International Incorporated
- Barndt, R. L. (1993). Fat & Calorie – Modified Bakery Products.US: Springer

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE

DSE FT 02 B: Agribusiness Management

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITE OF THE COURSE

Course title & code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Theory	Tutorial	Practical/Practice		
Agribusiness Management	4	2	0	2	XII Pass with PCM/PCB	NIL

Learning Objectives

- To develop an insight of agribusiness management
- To develop an insight for different types of marketing management
- To gain knowledge and acquired skills for setting up an agribusiness and its management.

Learning Outcomes

After completing this course, students will be able to:

- Understand the basic knowledge of Agri-business management
- Develop insight for Agricultural Supply Chain Management
- Examine the role of various type of marketing management in agri-business
- Understand the different support system for agri-business
- Skill Development- After studying this paper, students will be able to identify entrepreneurial potential in agribusiness and explore the scope of sustainable agricultural produce, marketing and supply chain management. This paper would also improve the skill set of the students, enhance their agribusiness managerial skills and leadership quality which will entitle them to work in industries.

SYLLABUS OF DSE FT05

THEORY
Credits 2 (30 Hours)

Unit 1 Concepts and application of agribusiness **15 Hours**

Unit Description: The unit will provide an understanding of the Concepts and application of agribusiness.

Subtopics:

- Nature and Characteristics of Agribusiness

- Agro-based Industries in India
- Agricultural Supply Chain Management
- Strategic Management in Agribusiness
- Contract Farming
- ICT In Agribusiness

UNIT II: Marketing Management **15 Hours**

Unit Description: The unit will provide knowledge on the concept of marketing management

Subtopics:

- Concepts of Marketing
- Marketing management: role of management in agri-business, attributes and responsibility of manager
- New product development and Product life cycle
- Product-mix, 4Ps of marketing

Practical
Credit : 2, Hours: 60

1. Study of various business models in agri-business
2. Case study of Agri business and its aspects
3. Study of farm records & inventory
4. Study of system of book keeping & accountancy
5. Study of farm planning techniques & situations
6. Study of farm budgeting techniques & types
7. Study of balance sheet financial ratio analysis
8. Study of preparation of cash flow plan
9. Visit of Agri business enterprise

Essential Readings:

- Baker, G.A., Grunewald, O. Gorman, W.D. (2002) Introduction to food and agribusiness management: Prentice Hall of India, New Delhi.
- Kottler (1994). Marketing Management: Prentice Hall of India, New Delhi.
- S.S.Johl, T.R.Kapoor (2017) Fundamentals of farm business management: Kalyani Publishers, Ludhiana
- David, D. & Erickson, S. (1987) Principles of Agri Business Management. New Delhi: Mc Graw Hill Book Co.

Suggested Readings:

- Jakobsen, G. & Torp, J.E. (2001). Understanding Business systems in developing countries.
- Ahmad, S.M. (2000). Management Info Guide.
- Prasanna, C. (1996). Projects, Planning, Analysis, Selection, Implementation and Review. New Delhi:Tata McGraw-Hill Publishing Company Limited.
- K. Loknandhan, K. Mani, K. Mahendran (2015). Innovations in Agribusiness Management
- Tripathi (2012). Principles of Management: Tata McGraw-Hill Education

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF HOME SCIENCE

SEMESTER 5

B.Sc. Hons (Food Technology)

DISCIPLINE SPECIFIC CORE COURSE

DSC FT13: Food Microbiology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITE OF THE COURSE

Course title & code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Theory	Tutorial	Practical/Practice		
Food Microbiology	4	3	0	1	XII Pass with PCM/PCB	Nil

Learning Objectives

- To know the important genera of microorganisms associated with food and their characteristics.
- To understand the role of microbes in fermentation, spoilage and food borne diseases.

Learning Outcomes

Upon completion of this course, students are expected to:

- Recognize and describe the characteristics of important pathogens and spoilage microorganisms in foods.
- Understand the role and significance of intrinsic and extrinsic factors on growth and response of microorganisms in foods.
- Identify ways to control microorganisms in foods.
- Identify the conditions under which the important pathogens and spoilage microorganisms are commonly inactivated, killed or made harmless in foods.
- Describe the beneficial role of microorganisms in fermented foods and in food processing.
  6. Utilize laboratory techniques to detect, quantify, and identify microorganisms in foods.

- Acquire, discover, and apply the theories and principles of food microbiology in practical, real-world situations and problems.
- Develop success skills in communication, critical thinking, interaction, information acquisition and interpretation and life-long-learning.

SYLLABUS OF DSC FT13

THEORY
Credits: 3; Hours: 45

UNIT I: Microorganisms in food **15 Hours**

Unit Description: The unit shall introduce students to the world of food microbiology. The structure and growth of bacteria, yeast, mold and virus in food as well as how the intrinsic and extrinsic factors affect the growth of microorganisms shall be taken up. The growth curve of bacteria will be covered to understand various phases of growth.

Subtopics:

- Introduction, history and scope of food microbiology.
- Morphological and physiological features of bacteria, yeast, mold. Introduction to bacterial endospores and capsules. Food borne viruses and their reproduction.
- Growth curve of bacteria.
- Factors affecting growth of microbes in foods.
- Role of microorganism in fermentation, spoilage and food borne diseases.

UNIT II: Cultivation of microorganism **10 Hours**

Unit Description: Isolation and cultivation is the heart of microbiology. Therefore, the various techniques related to their cultivation and enumeration shall be taught. Although some are already taken in practicals but not all of them. A theoretical insight is needed.

Subtopics:

- Principles of cultivation of microorganism (purity, activity etc.).
- Pure culture technique.
- Methods of isolation and enumeration (including latest ones).
- Rapid methods of bacteria detection.

UNIT III: Microbial food spoilage **10 Hours**

Unit Description: Food is the best substrate for the microorganism to grow, multiply and cause undesirable changes. The spoilage of raw as well as processed foods is very common. Therefore, as a food processor the understanding of food spoilage is very important for the students, in order to preserve the food.

Subtopics:

- Sources of microorganism in foods.
- Spoilage in milk, meat, cereals, fruits and vegetables (and few associated products).
- Spoilage in canned foods.

UNIT IV: Food preservation by novel technologies **10 Hours**

Unit Description: There are many convention and new methods of food preservation. The novel methods cause minimum changes in sensory and nutritive properties of food. It is imperative to teach such methods and their application in food preservation.

Subtopics:

- Conventional methods of food preservation- an overview.
- Non-thermal methods such as pulse electric field preservation, high hydrostatic pressure, ohmic heating, irradiation, biopreservation etc. to be familiarized.
- Hurdle concept and minimal processing.

PRACTICAL
Credit: 1; Hours: 30

1. Introduction to the Basic Microbiology Laboratory Practices and Equipment's
2. Functioning and use of compound microscope
3. Cleaning and sterilization of glassware
4. Preparation and sterilization of nutrient broth
5. Preparation of slant, stab and plates using nutrient agar
6. Cultivation and sub-culturing of microbes
7. Morphological study of bacteria and fungi using permanent slides
8. Simple staining
9. Gram's staining
10. Standard Plate Count Method

Essential Readings

- Frazier William C and Westhoff, Dennis C. Food Microbiology, TMH, New Delhi, 2004
- Jay, James M. Modern Food Microbiology, CBS Publication, New Delhi, 2000
- Garbutt, John. Essentials of Food Microbiology, Arnold, London, 1997
- Pelczar MJ, Chan E.C.S and Krieg, Noel R. Microbiology, 5th Ed., TMH, New Delhi, 1993
- W. M. Foster (2020) Food Microbiology. CBS Publishers & Distributors Pvt Ltd.

Suggested Readings

- Bibek Ray and Arun Bhunia. Fundamentals food microbiology, 5th Ed, CRC Press, 2014.
- K.R. Aneja. Experiments in microbiology, plant pathology, tissue culture and microbial biotechnology, New age international publishers, 2018.
- Roger Y. Stanier. General Microbiology, Macmillan,1987.
- K.R. Aneja. Modern Food Microbiology, Medtech, 2018

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE

DSC FT14: Food Engineering II

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITE OF THE COURSE

Course title & code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Theory	Tutorial	Practical/Practice		
Food Engineering II	4	3	0	1	XII Pass with PCM/PCB	Appeared in Food Engineering- I

Learning Objectives

- To understand the principle of size reduction and mixing unit operations
- To acquaint with fundamentals of fluid flow process and psychrometrics
- To understand the basics of designing of evaporator and dehydrator

Learning Outcomes

After completing this course, students will be able to:

- Apprehend the principles of size reduction and mixing unit operations.
- Comprehend the applications of fluid flow, steam and psychrometrics
- Understand basic design of evaporator and dehydrator used in food processing
- Apply these principles for solving numerical problems

SYLLABUS OF DSC FT14

THEORY
Credits: 3; Hours: 45

UNIT I: Introduction to Size Reduction and Mixing Operations 10 hours

Unit Description: The unit will provide information on the application of size reduction and mixing unit operations in food processing industry.

Subtopics:

- Introduction of size reduction and mixing operation
- Types of size reduction
- Size reduction equipment (crusher, grinding mill, pulveriser, roller mill, knife cutter)
- Application of size reduction

- Size separation, screening, screening equipment and applications
- Mixing equipment for solids and pastes (Planetary mixer, Kneader, Ribbon mixer, Double cone mixer)
- Applications of mixing in solids and fluids

UNIT II: Fluid Flow in food Processing 11 hours

Unit Description: The unit will provide knowledge of fluid characteristics, viscometers and pressure measuring devices

Subtopics:

- Liquid Transport systems
- Newton's Law of Viscosity
- Principle and operation of Capillary tube and rotational viscometer
- Properties of Non-Newtonian fluids
- Flow characteristics, Reynolds Number, Bernoulli's Equation
- Concept of Flow Measurement devices

UNIT III: Steam and Evaporation 12 hours

Unit Description: The unit will provide an understanding of generation of steam process, functioning and designing of evaporators

Subtopics:

- Generation of steam
- Construction and functions of fire tube and water tube boilers
- Thermodynamics of Phase change
- Steam tables
- Boiling point elevation
- Types of evaporators
- Design of single effect evaporators

UNIT IV: Psychrometrics and Dehydration 12 hours

Unit Description: The unit will provide knowledge of the psychrometrics, dehydration process and designing of dehydrator

Subtopics:

- Properties of dry air, water vapour, air vapour mixture
- Psychrometric Chart and its application
- Basic Drying Process
- Moisture content on wet basis and dry basis
- Dehydration systems
- Dehydration system Design

PRACTICAL
Credit: 1; Hours: 30

1. Screen analysis of food sample
2. Study the effect of temperature on viscosity of Newtonian / non-Newtonian fluids
3. Operation of pressure measuring instrument
4. Study properties of moist air using Psychrometer and psychrometric chart
5. Determination of evaporation rate of given food sample
6. Determine elevation in boiling point of given solution
7. Study steam table and its application

8. Operation of tray dryer and drying process calculations
9. Determination of drying characteristics of given food sample

Essential Readings

- Fellows, P. (2009). *Food processing technology*. Woodhead publication, 3rd edition
- Rao, D.G. (2010). *Fundamentals of food engineering*. PHI learning private ltd.
- Singh, R.P. and Heldman, D.R. (1993) *Introduction to food engineering* 2nd edition. Academic press
- Singh, R.P. and Heldman, D.R. (2014) *Introduction to food engineering* 5th edition. Academic press

Suggested Readings

- Earle, R.L. (1983). *Unit Operations in Food Processing,* 2nd edition. Pergamon press.
- Garg, M.**,** Chaturvedi, S., Sadhu, S.D. and Barwa, M. and Pani. B ., (2020) *Practical Handbook of Food Engineering* Aryush Education, ISBN NO. 978-81-930437-5-2
- Jafari, Seid Mahdi, ed. (2021) Engineering Principles of Unit Operations in Food Processing: Unit Operations and Processing Equipment in the Food Industry. Woodhead Publishing.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE

DSC FT 15: Food Chemistry I

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITE OF THE COURSE

Course title & code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Theory	Tutorial	Practical/Practice		
Food Chemistry I	4	3	0	1	XII Pass with PCM/PCB	Nil

Learning Objectives

- To understand the composition of food.
- To learn the structure, interaction, importance & stability of macro & micro components.
- To understand the functional aspects of food components and to study their role in food processing.

Learning Outcomes

After completing this course, students will be able to:

- Understand and describe the general chemical structures of the major & minor components of foods.
- Give a molecular rationalization for the observed physical properties and reactivity of the food components.
- Provide a theoretical explanation for observed extent and rates of reactions that are common to foods
- Predict how processing conditions are likely to change the reactivity of food components

THEORY

Credits: 3; Hours: 45

Unit I: Introduction to Food Chemistry **2 Hours**

Unit II: Water **8 Hours**

- Definition of water in food
- Structure of water and ice
- Types of water

- Sorption phenomenon
- Water activity and packaging
- Water activity and shelf-life

Unit III: Macronutrients **26 Hours**

Lipids

- Classification of lipids
- Physical properties-melting point, softening point, specific gravity, refractive index, smoke, flash and fire point, turbidity point.
- Chemical properties-reichert meissl value, polenske value, iodine value, peroxide value, saponification value.
- Effect of frying on fats
- Changes in fats and oils- rancidity, lipolysis, flavor reversion
- Auto-oxidation and its prevention
- Technology of edible fats and oils- Refining, Hydrogenation and Interesterification, Fat Mimetics

Proteins

- Protein classification and structure
- Properties of proteins (electrophoresis, sedimentation, amphoterism and denaturation,)
- Functional properties of proteins eg. organoleptic, solubility, viscosity , binding gelation / texturization , emulsification , foaming.

Carbohydrates

- Classification (mono, oligo and poly saccharides)
- Structure of important polysaccharides (starch, glycogen, cellulose, pectin, hemicellulose, gums)
- Chemical reactions of carbohydrates –oxidation, reduction , with acid & alkali
- Modified celluloses and starches

Unit IV : Micronutrients **11 Hours**

Vitamins

- Structure ,Importance and Stability
- Water soluble vitamins
- Fat soluble vitamins

Minerals

- Major and minor minerals
- Metal uptake in canned foods
- Toxic metals

PRACTICALS

Credit: 1; Hours: 30

1. Preparation of primary and secondary standard Solutions.
2. Estimation of moisture content.
3. Determination of gelatinization temperature range (GTR) of different starches and effect of additives on GTR.
4. Determination of refractive index and specific gravity of fats and oils.
5. Determination of smoke point and percent fat absorption for different fat and oils.
6. Determination of percent free fatty acids.
7. Estimation of saponification value.
8. Estimation of total ash content.

Essential Readings

- DeMan, J.M.(2018).Principles of Food Chemistry.NewYork: AVI.
- Fennema, Owen R. (2017).Food Chemistry. 3rd Ed..NewYork: Marcell Dekker
- Whitehurst and Law.(2002).Enzymes in Food Technology. Canada: CRC Press.

Suggested Readings

- Potter, N.N. and Hotchkiss, J.H. (1999). Food Science, 5th Ed., Chapman & Hall.
- Wong, Dominic WS. (2018). Food Enzymes. New York: Chapman and Hall.
- Meyer, L.H. (2004). Food Chemistry. CBS Publishers & Distributors Pvt Ltd, India.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE

DSE FT03 A: Food Fermentation Technology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITE OF THE COURSE

Course title & code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Theory	Tutorial	Practical/ Practice		
Food Fermentation Technology	4	2	0	2	XII Pass with PCM/PCB	Nil

Learning Objectives

- To understand the concept and significance of fermentation
- To understand the principles of food fermentation technology
- To study the types of starters used in the food industry
- To study the production of various fermented foods

Learning Outcomes

- An understanding of the basic components of Food Fermentation Technology and their principles.
- An understanding of the concept of the different fermentation processes.
- Develop insight into common types of starters used in the Food Industry.
- Apply acquired skills in the production of various fermented foods.

SYLLABUS OF DSE FT 03

THEORY
Credits: 2; Hours: 30

UNIT I: Introduction to fermentation **10 Hours**

Unit description: This unit introduces the concept of fermentation as a process ,its basic requirements and types . It also covers the types of microbes required in the process resulting

in the formation of different products along with the emphasis on the significance of fermentation

Subtopics:

- Definition of Fermentation
- Types of fermentation process: submerged/solid state, Batch/continuous fermentation
- Requirements for the fermentation process
- Role of Starter cultures and their types commonly used in fermentation
- Importance of Fermentation

UNIT II: Fermentation Technology **10 Hours**

Unit description: This unit covers Food Fermentation Technology with a focus on fermenters and their operations. Both the concept of upstream and downstream processing will be taught along with coproduct recovery

Subtopics:

- Fermenter: design and its operation
- Measurement and control of fermentation
- Upstream processing- screening and identification of microorganisms, media preparation, multiplication of microbes
- Downstream processing -Recovery of fermentation products and conversion into commercially viable products, Co-product recovery, and valorization

UNIT III: Fermented Products **10** Hours

Unit description: This unit describes the fermentation process of various products and their classification with an emphasis on the Indian traditional fermented products.

Subtopics:

- Types of fermented products and their classification
- Fermentation of milk, vegetables, cereals
- Industrial Production of selected products -Baker's yeast, Cider, Vinegar, and Cheese
- Traditional Indian Fermented products

PRACTICAL
Credit: 2, Hours: 60

1. To study the design and operation of a lab scale fermenter
2. To study the sugar utilization patterns by microorganisms
3. To determine β-galactosidase activity of microorganisms
4. To perform Solid State Fermentation using byproducts as a substrate at lab scale.
5. To produce Baker's Yeast
6. To prepare Sauerkraut
7. To prepare Curd /Yogurt
8. To develop a fermented food/drink utilizing plant products or their by- products
9. To develop a fermented food/drink utilizing animal products or their by-products

Essential Readings

- Brian, J. Wood. (1997).*Microbiology of Fermented Foods*. Volume II and I. Elsevier Applied Science Publication.

- Joshi, V.K. & Pandey. A. (2009). *Biotechnology: Food Fermentation Microbiology, Biochemistry and Technology*. Volume I and II. Asiatech Publishers Inc.
- Stanbury, P.F., Whitekar A. and Hall (2013). *Principles of Fermentation Technology*. Reed Elsevier India Pvt.Ltd.

Suggested Readings

- Adams, M. & Moss, M. (2008). Food Microbiology. 2nd Edition. RSC Publishing.
- John, Garbutt. (1997).Essentials of Food Microbiology. Arnold International Students Edition.
- Arnold L. Demain & Julian E. Davis. Industrial Microbiology & Biotechnology, ASM Press. (2004).

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE

DSE FT 03 B: Traditional Indian Foods

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITE OF THE COURSE

Course title & code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Theory	Tutorial	Practical/Practice		
TRADITIONAL INDIAN FOODS	4	2	0	2	XII Pass with PCM/PCB	NIL

Learning Objectives

- To understand the evolution, cultural, regional diversity and health benefits of traditional Indian foods.
- To understand the processing and preservation methods used for traditional Indian foods.

Learning Outcomes

After completing this course, students will be able to:

- Upon successful completion of this course students will gain knowledge of the diverse traditional Indian foods from the vedic times, states, regions, cultures and religion.
- The course aims to provide hands-on training to students in processing of different traditional Indian foods for setting enterprise, promotion of healthy forgotten traditional foods for research and development.

SYLLABUS OF DSE FT 06

THEORY
Credits 2 (30 Hours)

Unit 1 Introduction to Traditional Indian foods **15 Hours**

Unit Description: This unit will be covering the history and tradition of Indian foods from various cultures, regions and religions.

Subtopics:

- History of Indian Food Culture and Traditional Foods
- The journey of food from various Indian civilizations to Vedic period and modern era
- Categories of traditional foods of India: Traditional foods from different regions/states and different cultures and weaning foods in Indian tradition

- Concepts of Ayurvedic foods, classification of food based on Ayurveda: Grain based, fruits and vegetable based, milk-based traditional foods in Ayurvedic system.

UNIT II: Processing and preservation of traditional Indian foods 15 Hours

Unit Description: The unit will provide knowledge on the processing and preservation of traditional Indian foods

Subtopics:

- Ancient practices of food preservation: Dehydration, osmotic drying techniques
- Other Processing techniques used in preparation of traditional Indian foods

Practical
Credit : 2, Hours: 60

Unit I: Practicals based on literature survey of the traditional Indian foods including the ingredients used, processing and health benefits.

1. Students will make presentations on vedic foods of India
2. Presentation on regional/state wise traditional Indian foods

Unit II: Practicals based on processing and preservation techniques used in Traditional Indian foods

1. Preparation of regional traditional foods: Regional cuisine preparation
2. Functional traditional foods: Fermented foods (grain based/drinks), adjuncts (papad/chutney/pickle).
3. Ayurvedic food preparations: Fruits and vegetable based/milk and milk product-based (ghee/buttermilk) processing of traditional foods
4. Processing of a traditional Indian foods by osmotic dehydration/drying

Essential Readings

- Achaya, K.T. (1994). Indian Food: A Historical Companion. Oxford University Press.
- Sarkar, P., Dh, L. K., Dhumal, C., Panigrahi, S. S., & Choudhary, R. (2015). Traditional and ayurvedic foods of Indian origin. Journal of Ethnic Foods, 2(3), 97-109.
- Raghunathsuri. (2012). Bhojanakutuhalam (Translated from original by Scholar of I-AIM, Institute of Ayurveda and Integrative Medicine, Bangalore).
- Suri, R. Balakrishna, A. (2013). Bhojanakutuhalam, first ed. Divya Prakashan, Haridwar, pp.1-373.

Suggested Readings

- Singh, A., & Singh, R. K. (2007). Cultural significance and diversities of ethnic foods of Northeast India.
- Subbulakshmi, G and Subhadra, M. (2020). Nutrition in Traditional Therapeutic Nutrition. Daya Publishing House Vol. 1 and 2

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF HOME SCIENCE

SEMESTER 6

B.Sc. Hons (Food Technology)

DISCIPLINE SPECIFIC CORE COURSE

DSC FT16: Food Packaging

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITE OF THE COURSE

Course title & code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Theory	Tutorial	Practical/Practice		
Food Packaging	4	3	0	1	XII Pass with PCM/PCB	Nil

Learning Objectives

- To impart comprehensive overview of the scientific and technical aspects of food
- packaging.
- To instil knowledge on packaging machinery, systems, testing and regulations of food packaging
- To acquire knowledge of package designing for different food groups

Learning Outcomes

After completing this course, students will be able to:

- Comprehend the overview of scientific and technical aspects of food packaging
- Understand packaging machinery, systems and testing of material and package
- Acquire an insight into food packaging laws and regulations
- Apprehend the requirement of packaging material and package designing of food.

SYLLABUS OF DSC FT16

THEORY
Credits: 3; Hours:45

UNIT I: Introduction to Food Packaging 15 Hours

Unit Description: The unit will provide information on the status and concept of packaging, different packaging materials, their manufacturing process and applications
Subtopics:

- Status of Packaging industry, concept of food packaging
- Flexible packaging material (paper, plastic films, laminate and Aluminum foil)-manufacturing process and applications
- Semi rigid packaging material (paper board, corrugated board and composite carton)-manufacturing process and applications
- Rigid packaging material (metal, glass and plastic containers)-manufacturing process and applications
- Aseptic, active and intelligent packaging systems
  .

UNIT II: Package Designing for Foods **15 Hours**
Unit Description: The unit will provide knowledge of factors affecting shelf life of food, packaging system requirement and package designing
Subtopics:

- Fresh horticultural produce
- Animal foods
- Dry and moisture sensitive foods
- Frozen foods
- Fats and oils
- Thermally processed food

UNIT III: Testing of Food Packaging Material and Package **8 Hours**
Unit Description: The unit will provide an understanding of the testing and quality evaluation of packaging material and package.
Subtopics:

- Testing procedures for packaging materials- thickness, tensile properties, puncture resistance, bursting strength, seal strength, water vapor permeability, gas transmission rate (CO_2 and O_2 permeability), grease resistance
- Compatibility and shelf-life studies
- Evaluation of transport worthiness of filled packages

UNIT IV: Regulatory Aspects of Food Packaging 7 Hours
Unit Description: The unit will provide knowledge of the food packaging and labelling regulations, environment issues and life cycle analysis (LCA)
Subtopics:

- Food Packaging and Labelling regulations (FSSAI)
- Sustainable and green packaging-environment issues
- LCA definition and methodology, carbon foot print and its significance in packaging material

PRACTICAL
Credit: 1, Hours: 30

1. Identification of plastic using floatation method.

2. Demonstration of the operation of Shrink wrapping/Vacuum packaging/Form Fill and Seal packaging machinery
3. Testing of packaging material and package: COBB / tensile strength /bursting strength / tear resistance/ drop/ leakage
4. Testing of thermal shock resistance of glass.
5. Study of water vapor transmission rate of packaging material.
6. Development of biodegradable film.
7. Design a package label
8. Study porosity of tinplate.
9. Examination of can double seam

Essential Readings

- Saha, N. C. (2022). *Food Packaging: Materials, Techniques and Environmental Issues*. Springer Nature.
- Robertson, G.L. (2012) *Food Packaging – Principles and Practice*. CRC Press Taylor and Francis Group
- Coles, R., McDowell, D.& Kirwan, MJ. (2003). *Food Packaging Technology*. Blackwell publication
- Paine, F.A. and Paine, H.Y. (1992). *A Handbook of Food Packaging*. Blackie Academic and Professional.

.

Suggested Readings

- Daniel, Lu. and Wong, D. (Eds). (2017). *Materials for Advanced Packaging. S*pringer
- Garg, M., Meena, P.L., Sadhu, S.D. and Alam, T. (2020) *Food Packaging: A Practical Guide,* The Computype Media (Publishing Division), ISBN No.614027934-9

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE

DSC FT 17: Food Chemistry II

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITE OF THE COURSE

Course title & code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Theory	Tutorial	Practical/Practice		
Food Chemistry II	4	3	0	1	XII Pass with PCM/PCB	Nil

Learning Objectives

- To understand the chemistry of food components and their interactions.
- To know about the role of enzymes and its application in food industry.
- To co-relate the quality changes during different processing methods of food.
- To understand the concept of new food product development.

Learning Outcomes

After completing this course, students will be able to:

- Determine approaches that may be used to control the reactivity of those food components that are likely to impact the overall quality of finished products.
- Interpret the reasoning of changes occurring in food during different processing treatments.
- Learn basic methods of food product development.

THEORY
Credits: 3; Hours:45

Unit I: **Sensory Aspects (Colour & Flavour)**

Natural Food Pigments **6 Hours**

- Introduction and classification
- Food pigments (Sources, Structure, Stability and Interactions)

- Chlorophyll
- Carotenoids
- Anthocyanins and flavonoids
- Beet pigments
- Myoglobin

Flavour **5 Hours**

- Definition and basic tastes
- Chemical structure and taste
- Description of food flavours , Flavour enhancers

Unit II : Enzymes

- Introduction, classification **10 Hours**
- General characteristics
- Enzymes in food processing
- Industrial Uses of Enzymes
- Immobilized enzymes

Unit III: **Changes occurring during food processing treatments.**

Physico-chemical and nutritional changes occurring during food processing treatments **9 Hours**

- Drying and dehydration
- Irradiation
- Freezing
- Canning

Browning Reactions In Food **7 Hours**

- Enzymatic browning
- Non – Enzymatic browning:
- Maillard reaction
- Caramelization
- Ascorbic acid oxidation

Unit IV: **New Food product development** **8 Hours**

- Definition
- Importance
- Need of product development
- Stages of product development
- Product development tools
- Reasons for failure
- Product Life Cycle

PRACTICAL

Credit: 1; Hours: 30

1. Determination of thermal inactivation time of spoilage enzymes (Blanching time) in fruits and vegetables.
2. Estimation of minerals -demo
3. Estimation of iodine value
4. Estimation of peroxide value
5. Estimation of reducing and non-reducing sugars using potassium ferricyanide method.

6. Determination of carotenoids w.r.t flour pigments.
7. Extend of non-enzymatic browning by extraction methods.
8. Introduction of the concept of new product

Essential Readings

- DeMan, J.M.(2018).Principles of Food Chemistry.NewYork: AVI.
- Fellows, P. J. (2009). *Food processing technology: principles and practice*. Elsevier.
- Rahman, M. S. (2020). Handbook of Food Preservation. 3rd Edition. India: CRC Press.
- Fennema, Owen. R. (2017). Food Chemistry, 3rd Ed., New York: Marcell Dekker.
- Whitehurst and Law (2002).Enzymes in Food Technology. Canada: CRC Press.
- Graf, E & Saguy,I.S (2011). Food Product Development. Newyork, AVI pub.Co.

Suggested Readings

- Wong, Dominic W.S. (1996). Food Enzymes. New York: Chapman and Hall.
- Desrosier, Norman W. and Desrosier, James.N. (2018). The technology of food preservation, 4th Ed.Westport, Conn.: AVI Pub. Co.
- Hui, Y. H., & Evranuz, E. Ö. (Eds.). (2015). Handbook of vegetable preservation and processing. CRC press.
- Eskin, N. M., & Shahidi, F. (2012). Biochemistry of foods.
- Simpson, B. K., Nollet, L. M., Toldrá, F., Benjakul, S., Paliyath, G., & Hui, Y. H. (Eds.). (2012). Food biochemistry and food processing. John Wiley & Sons.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE

DSC FT18: Food Safety

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITE OF THE COURSE

Course title & code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Theory	Tutorial	Practical/ Practice		
FOOD SAFETY	4	3	0	1	XII Pass with PCM/PCB	Nil

Learning Objectives

- To understand the concept of safe food and types of hazards associated with food.
- To control the potential threats to the safety of food.
- To familiarize with Good Hygienic Practices, Food Safety Management Systems and the Indian regulatory regime

Learning Outcomes

After completing this course, students will be able to:

- Understand the concept of food safety, types of hazards, and their control measures
- Identify and prevent potential sources of food contamination
- Comprehend the need for hygiene and sanitation for ensuring food safety
- Knowledge of Food Safety Management tools and introduction to the Indian regulatory regime
- Practical knowledge to detect and quantify microorganisms from various routes of contamination of food

SYLLABUS OF DSC FT18

THEORY
Credit: 3; Hours: 45

UNIT I Introduction to Food Safety 6 Hours

Unit Description: This unit introduces the concept of safe food. It focuses on the significance of food safety, common types of hazards associated with food, and factors that affect the safety of food, especially in a developing country like India.

Subtopics:

- Definition of safe food
- Types of hazards
- Factors affecting Food Safety
- Importance of Safe Foods

UNIT II Hazards associated with food 14 Hours

Unit Description: This unit begins with how various hazards gain entry into the food chain, then gradually delves into each hazard type, its example, and its impact. The unit also covers the chemical and biological hazards in depth keeping in view their public health significance. Topics like mycotoxins, indicator organisms, and allergens are also included for a better understanding of their relationship to food safety.

Subtopics:

- Mode of entry of hazards into food
- Physical hazards –common examples and control measures
- Chemical hazards (naturally occurring, environmental including radioactive components and intentionally added), packaging material as a threat
- Biological hazards (Foodborne pathogens: bacteria, viruses, and eukaryotes) , Seafood and Shellfish poisoning, Mycotoxins, Indicator Organisms
- Food Allergens

UNIT III Management of Hazards 16 Hours

Unit Description: This unit covers all the key factors which influence food safety in depth and provides hands-on information on managing hazards in the food industry. This unit helps the students not only to understand the significance of hygiene and sanitation but also the critical role of water and food handlers in maintaining food safety. The recent food safety management tools have also been included to emphasize the applied aspects of food safety.

Subtopics:

- Factors influencing food safety -Design of food plant, Temperature Danger Zone and Storage of Food, Food handler and personal hygiene, Quality of Water

- General Principles of Hygiene, Sanitation and methods of control using physical and

chemical agents, Waste Disposal, Pest and Rodent Control

- Food Safety Management Tools -Basic Concept, HACCP, ISO series, TQM - components of TQM, Risk Analysis

UNIT IV Trends in Food Safety **9 Hours**

Unit Description: Food safety is a dynamic area of food science where new challenges recurrently appear and finding solutions to them is the key to safe food. This unit covers the current status of Food Safety Regulations in the country and all the emerging hazards in food. The new advances in food safety pertaining to the detection of hazards, food-borne pathogens, and preservation methods are also discussed.

Subtopics:

- Food Safety Regulations and their current status in India
- New and emerging pathogens and chemical hazards
- Genetically Modified Foods \ Transgenics, Organic foods
- Newer approaches to hazard and pathogen detection
- Recent technologies in food preservation and pathogen detection

PRACTICAL
Credit: 1, Hours: 30

1. Preparation of different types of media (complex, differential and selective)
2. Enumeration of aerial microflora using PDA
3. Identification of Molds by lactophenol blue staining
4. Bacteriological Analysis of Water by MPN method
5. Assessment of surface sanitation by swab / rinse method
6. Assessment of Personal Hygiene
7. Preparation of a HACCP plan
8. Testing of foods for microbiological hazards

Essential Readings

- Forsythe,S.J. (2020).The Microbiology of Safe Food , 3rd edition. UK: Willey.
- Lawley, R., Curtis L. and Davis,J.(2015) The Food Safety Hazard Guidebook. London: RSC.
- Marriott, N G. and Gravani RB (2006).Principles of Food Sanitation. 5th edition New York: AVI
- Mathur, P. (2018). Food Safety and Quality Control. Hyderabad: Orient BlackSwan Pvt. Ltd.

Suggested Readings

- de Blackburn, C and Mc Clure P.(2009).Food borne pathogens. Hazards,risk analysis & control. 2nd edition. Washington,US: CRC Press.
- De Vries. (2014). Food Safety and Toxicity.New York: CRC.
- Mortimore S.and Wallace C. (2013).HACCP-A Practical Approach 3rd edition. London: Springer.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE
DSE HS 6-1: Research Methods in Home Science

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
Research Methods in Home Science	4	3	0	1	NIL	NIL

Learning Objectives

- To provide students understandings about the basic concepts, approaches and methods in conducting Home Science research.
- To enable learners to appreciate and critique the nuances of designing a research study well.
- To sensitize students towards ethical concerns while conducting Home Science research.

Learning Outcomes

- Demonstrate knowledge of the scientific method, purpose and approaches to research in Home Science
- Compare and contrast quantitative and qualitative research approaches
- Explain different types of research design and their applicability in Home Science research
- Understand the key elements of a research process
- Explain ethical principles, issues and procedures

SYLLABUS DSE HS 6-1

THEORY
Credits: 3; Hours: 45

UNIT I: Research Purpose and Design **10 Hours**

This unit will deal with meaning and importance of research in various areas of Home Science. Exposure to different types of research designs and measurement in Home Science research would also be given.

- Meaning, purpose and significance of research
- Research as a scientific method
- Types of research
- Quantitative, Qualitative and mixed method approaches

- Research Designs –Experimental and Non-Experimental; Descriptive and Observational; Participatory research
- Internal and external validity of research design
- Variables, concepts and measurement in research
- Levels of measurement
- Units of analysis

UNIT II: Sampling and Research tools & techniques 15 Hours

This unit will introduce the student to the concept of sampling and methods used to draw sample from population using examples from Home Science discipline. Students would also learn about types of data, its collection and reliability and validity concerns.

- Role of sampling in research
- Sampling techniques and their applicability, Sample size and sampling error
- Types of data: Primary and Secondary
- Tools of data collection; types, construction and administration- Interview, Questionnaire, Observation, Focus group discussion and other methods
- Validity and reliability of data collection tools

UNIT III: The Research Process 15 Hours

This unit will elaborate upon the various steps involved in conducting and reporting researches in Home Science.

- Defining the problem, research questions, objectives, hypotheses
- Review of related literature and originality in writing
- Systematic research: concept and methodology
- Planning the research
- Identifying variables and constructing hypothesis
- Selecting appropriate research methodology and tools
- Data analysis: coding and tabulation
- Writing a research report: styles and formats
- Citation formats: in medical sciences, social sciences

UNIT IV: Values, Social Responsibility and Ethics in Research 5 Hours

This unit will apprise the students about ethical concerns while conducting and reporting research.

- Ethical principles guiding research: from inception to completion and publication of research
- Plagiarism and Academic integrity in research: plagiarism tools and software
- Ethical issues relating to research participants and the researcher
    - Rights, dignity, privacy and safety of participants
    - Informed consent, confidentiality, anonymity of respondents, voluntary participation, harm avoidance

PRACTICAL

(Credits 1; 30 Hours)

1. Data visualization
2. Levels of Measurement

3. Types of research designs
    a. Experimental and non-experimental; Descriptive and observational
    b. Qualitative, Quantitative and mixed method
4. Sampling techniques and sample size calculation
    a. Probability sampling method
    b. Non-Probability sampling methods
5. Tools of data collection- Interview schedule, questionnaire and FGD
    - Designing/ Construction
    - Preparation of tools for ethical review
    - Pilot testing/ validity and reliability of the tool\
6. Data collection and analysis process: conducting interviews, administering questionnaire
7. Coding and tabulation of data for analysis
8. Citation formats and Plagiarism
9. Reviewing a research paper from a specific area of specialization in Home Science

Essential Readings:

- Kerlinger F. N. and Lee, H.B. (2017). *Foundations of Behavioral Research* 4th Ed. Harcourt College Publishers.
- Kothari, C. R. (2019). *Research Methodology: Methods and Techniques*. New Age International Pvt Ltd, New Delhi.
- Kothari, C. R. (2022). *Shodh Padhati* 1st Ed. New Age International Pvt Ltd, New Delhi.
- Kumar, R. (2019) Research Methodology: A Step-by-Step Guide for Beginners. 5th Ed. Sage Publications, New Delhi.

Suggested Readings:

- Bernard, H. R. (2000). *Social research methods: Qualitative and quantitative approaches.* Thousand Oaks, CA.: Sage.
- Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches.* Thousand Oaks, CA: Sage Publications.
- Davis, A. M., Treadwell, D. (2019). Introducing Communication Research: Paths of Inquiry. United Kingdom: SAGE Publications.
- Flynn, J.Z., Foster, I.M. (2009). *Research Methods for the Fashion industry.* Fairchild books, Bloomsbury publishing.
- Indian National Science Academy (INSA) (2019). *Ethics in Science Education, Research and Governance*. ISBN:978-81-939482-1-7. http://www.insaindia.res.in/pdf/EthicsBook.pdf
- Jacobsen, K. H. (2020). *Introduction to health research methods: A practical guide*. Jones & Bartlett Publishers.
- UGC (2021) *Academic Integrity and Research Quality*. New Delhi: UGC, Retrieved from https://www.ugc.ac.in/e-book/Academic%20and%20Research%20Book_WEB.pdf

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF HOME SCIENCE

SEMESTER-IV

UG Programme for Bachelor in B.Sc. Home Science (Hons.) degree in three years

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE

DSC HH 410 : Textile Science

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisiteof the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Textile Science	4	3	0	1	XII Pass	Appeared in Fashion Studies

Learning Objectives

- To impart knowledge regarding production, properties and usage of textile fibres and yarns
- To create awareness regarding various techniques of fabric production and their properties
- To give an overview of dyeing, printing and finishing of textiles

Learning Outcomes

- Describe textile fibres in terms of their production and properties
- Understand production techniques and properties of yarns
- Explain various methods of fabric construction and relate them to specific uses keeping in mind fabric properties
- Recall various dyeing, printing and finishing techniques

SYLLABUS OF DSC HH 410

THEORY

(Credits 3; Hours 45)

UNIT I: Fundamentals of Textile Fibres 6 Hours

Unit Description: This unit will deal with the key concepts of textile polymers, morphology of textile fibers, primary, secondary properties and classification of textile fibers.

- Morphology of textile fibers: Monomer, Polymer, Degree of Polymerisation, Crystalline and Amorphous Regions, Orientation
- Primary and secondary properties
- Fiber classification

UNIT II: Production and Properties of Fibers 12 Hours

Unit Description: This unit will introduce the student to selected commercially significant cellulosic, protein and man-made fibers, their production, chemistry, properties and usage.

UNIT III: Production and Properties of Yarns 8 Hours

Unit Description: This unit will discuss the techniques of yarn production, types of yarns and their properties.

- Yarn construction:
  - Mechanical spinning (Cotton system, Wool system, Worsted system)
  - Chemical spinning (Wet, Dry, Melt)
- Types of yarns: Staple and Filament yarns, Simple and Complex yarns, Textured Yarns
- Yarn Properties: Yarn Twist and Balance, Yarn Count

UNIT IV: Fabric Construction 11 Hours

Unit Description: This unit will apprise the students about different fabric construction techniques. Students will learn basic principles of weaving, knitting and non-woven fabrics.

- **Weaving**
  - Parts of a loom
  - Operations and motions of the loom
  - Classification of weaves- construction, characteristics, usage
- **Knitting**
  - Classification of knits
  - Construction and properties of warp and weft knits
- **Non-wovens**
  - Types
  - Construction
  - Properties and usage

UNIT V: Basics of Textile Processing 8 Hours

Unit Description: This unit help students gain insight to the fundamentals of textile processing, viz. dyeing, printing and finishing.

- **Dyeing**
  - Fundamentals of dyeing- Dyes and Pigments
  - Stages of dyeing- Advantages and Disadvantages
- **Printing**
  - Fundamentals of printing
  - Difference between dyeing and printing,

- Methods of printing: Block, Screen
- Styles of printing: Direct, Resist, Discharge

- **Finishes**
  - Classification of finishes
  - Routine finishes

PRACTICAL
(Credits 1; Hours 30)

1.	Fibre Identification tests –Visual, burning, microscopic and chemical	8
2.	Yarn Identification – Single, ply, cord, textured, elastic, monofilament, multifilament and spun yarn	4
3.	Thread count and balance	6
4.	Fabric identification (woven, knitted, non-woven)	2
5.	Identification of basic weaves	4
6.	Tie-Dye	6

Essential Readings:

- Rastogi, D. & Chopra, S. (Eds.) (2017). *Textile Science*. New Delhi, India: Orient Black Swan Publishing Limited.
- Rastogi, D, Chopra, S., Arora, C. & Chanchal (Eds.). (2016). *Textile Science-A Practical Manual*. New Delhi, India: Elite Publishing House Private Limited.
- Sekhri S. (2022). *Textbook of Fabric Science: Fundamentals to Finishing*. Delhi, India: PHI Learning Pvt Ltd.
- Joseph, M. L. (1988). *Essentials of Textiles.* (6th Edition). Florida: Holt, Rinehart and Winston Inc.
- Corbman, P.B. (1983). *Textiles- Fiber to Fabric.* (6th Edition). USA: McGraw Hill.

Suggested Readings:

- Collier B. & Tortora G. Phyllis. (1997). *Understanding Textiles*. USA: Merrill.
- Hollen, N. and Saddler, J. (1979). *Textile*. New York: Mcmillan.
- Sekhri S. (2023) , वस्त्र विज्ञान (Vastra Vigyaan). Delhi: PHI Learning Private Ltd.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE
DSC HH 411 : Personal Finance and Consumer Studies

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title& Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Personal Finance and Consumer Studies	4	3	0	1	XII Pass	Appeared in Fundamentals of Resource Management

Learning Objectives

- To provide students an understanding of income, saving and investment management in the changing socio-economic environment
- To acquaint students with the concept of consumers' role in an economy, consumer problems, education, consumer aids and empowerment
- To comprehend issues related to consumer protection, legislative measures and redressal mechanisms

Learning Outcomes

After completing the course, students will be able to:

- Acquire knowledge of income, saving and investment management in the changing socio-economic environment.
- Develop an understanding about the issues related to consumer protection, legislative measures and redressal mechanisms.
- Gain conceptual knowledge of critically evaluating and designing various consumer aids and about consumer education and protection.
- Learn to undertake food adulteration tests through lab analysis.
- Understand the schemes and services offered by banks and post offices.

SYLLABUS OF DSC HH 411

THEORY
(Credits 3; Hours 45)

UNIT I: Income and Expenditure **14 Hours**

The unit focuses on developing the fundamental concepts of income, savings and investment management and its applicability in changing socio-economic environment.

- Household Income – Types, Sources, Supplementation of family income

- Income management – significance of budgeting, steps of making a budget, household accounts
- Factors influencing expenditure pattern
- Family savings and investments- need, principles, channels of investment, tax implications
- Consumer credit

UNIT II: Consumer in India: Consumer problems and education 12 Hours

This unit attempts to acquaint the students with an understanding of the consumer problems, role of consumer education and empowerment in today's context.

- Definition of a consumer
- Role of consumers in the economy
- Types of consumer problems – products and service related, causes and remedies
- Guidelines for wise buying practices
- Consumer education and empowerment, sustainable consumption
- Changing nature of the business world –e-commerce, e-business

UNIT III: Consumer Protection 10 Hours

This unit will orient the students to the need for consumer protection, and rights and responsibilities available for safeguarding consumers' interest.

- Consumer protection
- Consumer rights and responsibilities
- Consumer organizations and their role in consumer protection

UNIT IV: Legislative framework for consumers protection

This unit focuses on the legislative framework, acts and redressal mechanisms available for consumer protection.

- Basic legislative framework for consumer protection in India
- Consumer Protection Act (COPRA) and its amendment
- Alternative redressal mechanisms
- Standardization and quality control measures

PRACTICAL
(Credits 1; Hours 30)

1. Understanding and designing standardization marks.
2. Evaluation and designing of informative and attractive labels for different types of products.
3. Evaluation and designing of advertisements for print/digital media including products, services and social ads.
4. Case study of banks and post offices to understand their services and products.
5. Learning to fill different bank forms.
6. Analysis of consumer redressal through case study approach.
7. Food adulteration tests.

Essential readings

- Kotler, P.T., Armstrong, G., Agnihotri, P. (2018). *Principles of Marketing: Basic concepts of marketing*. Pearson Education. ISBN 13: 978-9352865611.

- Maheswaran, D. (2019). *Understanding Indian Consumers*. 1st Edition. Oxford University Press. ISBN 13: 978-0199479627.
- Mital M., Jain, S., & Mehta, C. (2015). *Family finance and Consumer Studies: A Practical Manual, Second Edition.* New Delhi: Elite Publishing House Pvt. Ltd.
- Mital, M., Sawhney, H. K. (2015). *Family Finance and Consumer Studies*. New Delhi: Elite Publishing House Pvt. Ltd.
- Rajni. (2020). *Personal Finance and Planning*. JSR Publishing House LLP.
- Seetharaman, P. and Sethi, M. (2001). *Consumerism: Strength and Tactics*. New Delhi: CBS Publishers.

Suggested readings

- Arora, R. (2005). *Consumer Grievances Redressal*. New Delhi: Manak Publications.
- Khanna, S. R., Hanspal S., Kapoor S. & Awasthi H.K. (2007). *Consumer Affairs*. Universities Press India Pvt. Ltd.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE
DSC HH 412: Physical Science for Home Science

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Physical Science for Home Science	4	2	0	2	XII Pass	Appeared in Communication Concepts and Theories

Learning Objectives

- To acquire knowledge of different compounds/substances and their importance
- To impart knowledge about various alternate energy sources
- To enhance their skills in handling different equipment

Learning Outcomes

After completing the course, students would be able to:

- Acquire the ability to correlate structures of different compounds/substances like biomolecules, polymers, surfactants and metals with their properties and functions
- Understand the basic principles of different analytical techniques and the equipment used
- Develop understanding of the basics of different physical phenomenon and their applications in day-to-day life
- Understand the basic concept of nanotechnology and green chemistry
- Understand the various renewable energies and need of energy conversion

SYLLABUS OF DSC HH 412

THEORY
(Credits 2; Hours 30)

Section A-Chemistry

UNIT I: Macromolecules, Dyes, surfactants and metals **12 Hours**

This unit highlights biomolecules, synthetic polymers, dyes, cleaning agents and metals

- Carbohydrates - Classification, structures and properties.
- Proteins – Amino acids (structures, classification and properties), and basic concepts of proteins structure
- Lipids – Classification, structures and properties of fatty acids, triacylglycerol and structural lipids
- Synthetic polymers – Classification, polymerisation, polymer morphology, general properties of polymers, (Examples - PE, PP, PVC, PET, PS, PTFE, Nylons), biodegradable polymers, compounding, recyclable plastics (Impact on environment and human health)

- Dyes – Classification of dyes, chemistry of dyeing, food colours, natural dyes
- Surfactants – Soaps and synthetic detergents (structure, cleansing action and their applications)
- Metals- Characteristics of metals and their alloys (iron, aluminium, copper, silver, steel), types of corrosion, tarnishing, prevention of corrosion

UNIT II: Introduction to Green chemistry 3 Hours

This unit highlights the importance of Green chemistry

- Definition of green chemistry
- Need of green chemistry (Indiscriminate use of chemicals, fertilizers and pesticides)
- 12 principles of green Chemistry
- Important examples of green chemistry

Section B-Physics

UNIT III: Renewable Energy and Electronics 9 Hours

This unit highlights the importance of Renewable energy and basics of electronics

- Basics of Semi-Conductors and their applications in simple electronic devices.
- Light sources-Incandescent lamp, fluorescent tube, CFL, LED
- Renewable sources of energy: Wind energy, ocean energy, hydro energy, geothermal energy
- Solar Energy- Importance, photoelectric effect, storage, solar cooker, solar green houses, solar desalination, solar cell, need and characteristics of photo-voltaic (PV) systems

UNIT IV: Sound, Optics and Nanotechnology 6 Hours

This unit highlights the introduction of nanotechnology, colour measurement, optics, sound and radio communication

- Spectrum of light, chromaticity and CIE chromaticity diagram, basics of spectrometry
- Basics of LASER and optical fibres
- Lenses-types of lenses, power measurement, defects and their remedies, applications in various instruments, photographic camera
- Introduction to nanotechnology, nano materials, properties and applications in different fields
- Basic knowledge of sound, echo, reverberations, acoustics of buildings
- Geostationary satellites, elementary knowledge of radio communication: AM and FM

PRACTICAL

(Credits 2; Hours 60)

1. **Section A- Chemistry**
   - Safe handling and disposal of chemicals generally used in chemical laboratories
   - Experiments using Analytical techniques:
     - Separation of mixture of amino acids using paper chromatography and determination of R_f values
     - Estimation of proteins by Lowry's/ Biuret method
     - Determination of hardness of water by using complexometric titration
   - Qualitative tests for carbohydrates
     - Monosaccharides
     - Disaccharides and polysaccharides
   - Preparation of Osazones of monosaccharides and disaccharides
   - Saponification of the given oil
   - Preparation of biodiesel from vegetable oil preferably waste cooking oil.

- Preparation of nanoparticles of gold using tea leaves / silver nanoparticles using plant extracts

2. Section B- Physics

- Study of different types of experimental errors, their reporting and graphing techniques
- Determination of inner diameter, outer diameter and depth of beaker using Vernier Calliper
- Determination of area of cross section of glass rod and wire using Screw Gauge
- The use of Multimeter for measuring (a) Resistances, (b) AC and DC Voltages, (c) DC Current, and (d) checking electrical fuses
- Study of the voltage and current of the solar cells in series and parallel combinations.
- Study of V-I & power curves of solar cells, and find maximum power point & efficiency of solar cell.
- Study of the application of solar cells to provide electrical energy to domestic appliances such as lamp, fan and radio.
- Electroplating of the given metal article with a superior metal and to determine the E.C.E.
- Determination of λ_{max} using colorimeter.
- Verification of Beer- Lambert law.
- To study/observe the effect of size on colour of nanomaterials.
- Study of different types of lenses and determination of power of a convex lens.

Essential Readings

- Ahluwalia, V. K., Dhingra, S. and Gulati, A., 2005, College Practical Chemistry, University Press (India) Pvt. Ltd, India.
- Anastas, P.T. and Warner, J.C., 1998, Green Chemistry: Theory and Practice, Oxford University Press, U.S.A.
- Bahl, A. and Bahl, B.S., 2022, Advanced Organic Chemistry, (6th ed.), S. Chand and Sons, New Delhi.
- Beiser, A., Mahajan, S. and Choudhary, S.R., 2017, Concepts of Modern Physics, McGraw-Hill, India.
- Boyle, G., 2012, Renewable Energy, Power for a sustainable future (3rd ed.), Oxford University Press, U.S.A.
- Dua, A. and Manav, N., 2017, Practical Organic Chemistry, Manakin Press, New Delhi.
- Freedman, R.A., Young, H.D. and Ford, A.L., 2021, University Physics with modern physics (15th ed.), Pearson Education, India.
- Kulkarni, S. K., 2014, Nanotechnology: Principles & Practices (3rd ed.), Capital Publishing Company, New Delhi.
- Lancaster, M., 2016, Green Chemistry: An Introductory Text (2nd ed.), RSC Publishing, U.K.
- Poole, C.P., Frank, Jr. and Owens, J., 2003, Introduction to Nanotechnology (1st ed.), Wiley India Pvt. Ltd, India.
- Sharma, R.K., Sidhwani, I.T. and Chaudhari, M.K., 2013, Green Chemistry Experiments: A monograph, I.K. International Publishing House Pvt Ltd, New Delhi.
- Sukhatame, S.P. and Nayak, J. K., 2017, Solar energy, Tata McGraw - Hill Publishing Company Ltd., India.

Suggested Readings:

- Chattopadhyay, K.K. and Banerjee, A. N., 2009, Introduction to Nanoscience and Technology, PHI Learning Private Limited, New Delhi.
- Flint, B.L. and Worsnop, H.T., 1971, Advanced Practical Physics for students, Asia Publishing House, India.
- Jacob, T., 1979, Textbook of Applied Chemistry, McMillan India Ltd., Noida.

- Khandelwal, D. P., 1985, A Laboratory Manual of Physics for Undergraduate Classes, Vani Publication, New Delhi.
- Morrison, R.T., Boyd, R. N. and Bhattacharjee, S.K., 2021, Organic Chemistry (7th ed.), Pearson Education, New Delhi.
- Sharma, S.P., 2003, Basic Radio and Television (2nd ed.), Tata McGraw Hill, India.
- Singh, H., 2001, B.Sc. Practical Physics, S. Chand and Co., New Delhi.
- Solomon, T.W., 2017, Organic Chemistry (12th ed.), John Wiley & Sons, U.S.A.
- Vogel, 2009, Quantitative Chemical analysis, Pearson Education, New Delhi.
- Walker, J., Resnick, R., and Halliday, D., 2013, Fundamentals of Physics, Wiley, U.S.A.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE
DSE HH 4A1 : Laws and Policies for Women and Children in India

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Laws and Policies for Women and Children in India	4	2	0	2	XII Pass	Appeared in Human development II: Middle Childhood and Adolescence

Learning Objectives

- To understand the constitutional provisions for women and children in India
- To study the programmes and policies for women and children in India
- To appreciate the challenges in implementation of laws and policies

Learning Outcomes

The students will:

- Comprehend the existing constitutional provisions for women and children in India
- Obtain knowledge of policies and programmes as they relate to lives of children and women
- Be able to engage with the linkages between laws and policy implementation

SYLLABUS OF HH 4A1

THEORY
(Credits 2; Hours 30)

UNIT I: Overview of provisions **10 Hours**

- Social and constitutional status of women and children
- Overview of laws and policies for women and children
- Rights based approaches to laws and policies
- Challenges in implementation of laws and policies

UNIT II: Constitutional provisions, laws and conventions for women **10 Hours**

- Legislation for women (laws to protect reproductive rights and laws against violence and discrimination)
- Policies and programmes for women (empowerment, health and protection)
- Conventions for women (CEDAW)
- Specific challenges in implementation

UNIT III: Constitutional provisions, laws and conventions for children **10 Hours**

- Legislation for children (PC-PNDT Act; JJ Act; POSCO Act; PwD Act and others)
- Policies and programmes for children (National Policy for Children; ICDS)
- United Nations Convention on the Rights of the Child (UNCRC)
- Specific challenges in implementation

PRACTICAL
(Credits 2; Hours 60)

1. Essential readings Collect various newspaper articles on relevant topics and make a E-journal/ E- scrapbook.
2. Construct a questionnaire and conduct a survey to explore awareness of laws and policies for women and children
3. Conduct interviews to explore existing conditions, challenges and situations in different communities.
4. Field visits/field placement to relevant government (CWC's, Observation homes) and non-government organizations
5. Audio-visual resources, films and documentaries to understand the need for laws and policies for women and children
6. Workshops/lectures by resource persons from the field of law, programme implementation, field level workers and critical analysis of laws related to children and women
7. Poster/pamphlet preparation for creating awareness on policies and programmes

Suggested Readings:

- A Comprehensive Guide to Women's Legal Rights For Indian Institute of Technology, KanpurLegalTrainingWorkshop.(2018). https://www.iitk.ac.in/wc/data/Majlis_Legal-rights-of-women.pdf
- Bhargava, V. (2005). Adoption in India: Policies and Experiences. New Delhi: Sage Publications.
- Begum, S. M. (Ed.). (2000). Human Rights in India: issues and perspectives. APH Publishing.
- Chopra, G. (2016). Child rights in India: challenges and social action. S.l.: Springer, India, private.

Essential Readings:

- Bajpai, A (2003). Child Rights in India: Law, Policy and Practice. New Delhi:
- Bhakhry, S. (2006). Children in India and their Rights. New Delhi: National Human Rights Commission.
- Contemporary publications and documents of the Government of India, UN bodies, established International and National Organisations.
- HumanDevelopmentReport2021-22 https://hdr.undp.org/content/human-development-report-2021-22
- Gangoli, G. (2016). Indian feminisms: Law, patriarchies and violence in India. Routledge.
- Halder, D. (2018). Child sexual abuse and protection laws in India. SAGE Publishing India.
- Kumari, V. (2004). Creative Child Advocacy: Global Perspectives. New Delhi: Sage.
- Selected Legislations for Children and Women. Ministry of Women and Child Development GOI website www.wcd.nic.in/
- Rights to the youngest: Towards a legal framework for early childhood development *(2016)*. Books for Change: Bangalore. ISBN – 978-81-926907-2-8
- Saikia, N. (2008). Indian Women: A Sociolegal Perspective. New Delhi

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC ELECTIVE
DSE HH 4B1 : Food Science and Processing

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
Food Science and Processing	4	2	0	2	XII Pass	Appeared in Food Science and Nutrition

Learning Objectives

- To enable students to understand the basic chemistry, science of food and techniques involved in food processing.
- To impart knowledge of sensory evaluation of food.
- To understand the role of microorganisms in food processing, preservation and spoilage.

Learning Outcomes

- Food science and its interplay in processing of food.
- Understanding of role of microorganisms in preservation and spoilage of food.
- Application of technology in food processing.
- Basics concepts of sensory evaluation in foods and its applications in different food metrices.

SYLLABUS OF HH 4B1

THEORY
(Credits 2; Hours 30)

UNIT I: Understanding to Food Science and Food Chemistry 12 Hours

The unit will provide an understanding of the basic terms used in food science, its interdisciplinary approach and applications. It will also provide knowledge about food sources, chemistry and functional properties of important components of the food. Concept of how colloidal systems are formed and their applications in the food industry will also be discussed.

- **Food Science:** Definition, importance and scope of food science.
- **Food Chemistry-** Sources, chemistry and functional properties of Carbohydrates, Lipids and Proteins.
- **Colloidal Chemistry-**Definition, classification, properties and applications of sols, gels, foams and emulsions.

UNIT II: Food microbiology 6 Hours

The unit will introduce microorganisms involved in food spoilage and preservation.

- **Introduction to microorganisms in food** - Characteristics of predominant micro-organisms in food (yeast, mold and bacteria), bacterial growth curve, intrinsic and extrinsic factors for growth of microorganisms.

- **Role of microorganisms in spoilage and preservation of food**- Important food spoilage micro-organisms (psychotrophic, thermophilic, osmophilic microbes), spoilage in specific food groups (raw meat, fruits & vegetables, milk and milk products), role of microorganisms in food fermentation.

UNIT III: Food processing Techniques 8 Hours

The unit provides an understanding of different food processing techniques, and their applications in food preservation.

- **Food processing techniques**-Non-thermal techniques - refrigeration, freezing, additives, filtration, osmosis, irradiation.
  Thermal processing techniques – Blanching, dehydration, canning, pasteurization, concentration.

UNIT IV: Sensory Science 4 Hours

The unit will help in understanding of the physiological basis of the sensory evaluation of food and subjective and objective methods of sensory evaluation.

- Physiological basis of sensory evaluation
- Subjective and objective methods of sensory evaluation

PRACTICAL
(Credits 2; Hours 60)

1. Food analysis: Moisture, pH and acidity using standard methods. Total soluble solids (by refractometer).
2. Analysis of hygiene of college canteen and understanding the applications of GHP, HACCP, ISO 22000.
3. Identification of bacteria, yeast and mold from prepared slides.
4. Preparation of foam, gel and emulsion to understand their properties.
5. Preservation of food using non-thermal techniques (Freezing, use of additives).
6. Preservation of food using thermal techniques (Dehydration/Drying/Concentration).
7. Sensory evaluation of given food samples using different sensory evaluation methods.

Essential Readings:

- Frazier WC and Westhoff DC (2014). Food Microbiology, Fifth Edition. TMH Publication, New Delhi.
- Manay NS and Shadaksharaswamy M (2008). Food-Facts and Principles, Third Edition.New Age International (P) Ltd. Publishers, New Delhi.
- Mathur P. (2018). Food Safety and Quality Control. Orient BlackSwan Pvt. Ltd., Hyderabad.
- Suri S and Malhotra A (2014). Food Science, Nutrition and Safety. Delhi: Pearson India Ltd., New Delhi.
- Potter NN and Hotchkiss H J (1996). Food Science, Fifth Edition.CBS Publication, New Delhi.
- Srilakshmi B (2014). Food Science, 6th Edition. New Age International Ltd., Delhi.

Suggested Readings:

- Mohini Sethi, Eram Rao (2011). Food science- Experiments and applications, Second Edition. CBS publishers & Distributors Pvt Ltd., New Delhi
- Raina U, Kashyap S, Narula V, Thomas S, Suvira, Vir S, Chopra S (2010). Basic Food Preparation: A Complete Manual, Fourth Edition. Orient Black Swan Ltd., New Delhi.
- Sivashankar. B (2002). Food Processing and Preservation. PHI learning Pvt. Ltd., New Delhi

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE
DSE HH 4C1: Communication for Development

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Communication for Development	4	2	0	2	XII Pass	Appeared in Communication Concepts and Theories

Learning Objectives

- To understand the concept of development and development indicators.
- To gain insights into the concept of Development Communication, philosophy, theories
- and approaches.
- To inculcate the knowledge of development communication and relations with media and society.
- To comprehend about problems and issues of the development.
- To examine the role of various media in development communication.

Learning Outcomes

- Be conversant with the dimensions of development and the development frameworks.
- Comprehend the key concerns of development and the role of communication.
- Understand issues in development as a basis for effective development communication.
- Comprehend the role of information, communication and media in the field of development and social change.

SYLLABUS OF HH 4C1

THEORY
(Credits 2; Hours 30)

UNIT I: Development and Development Indicators **8 Hours**

The unit elucidates on the concept of development and its various dimensions. It provides an overview of development goals and highlights the level of development across countries.

- Concept of development
- Growth vs development
- Development goals
- Classification of countries based on development indices
- Indices as a measure of human development (HDI, GDI, GII, GGI & MPI)
- Characteristics of developing countries

UNIT II: Development Communication (DC) 11 Hours

This unit focuses on how communication is used to promote development. It highlights different perspectives and approaches of Dev. Comm. It explores how communication strategies are formulated for development and how communication contributes to inclusive growth.

- Development Communication (DC) - concept, genesis, characteristics, and philosophy
- Approaches to DC
- Models of DC - Dominant Paradigm, Dependency Model, Basic Needs Model, New Paradigm of development, Participatory Framework, Right based approach
- Success stories and Innovations in DC
- Growth and transitions in the field of DC -Development Support communication; IEC, BCC, SBCC to SBC; Socio ecological model

UNIT III: Media and Development Communication 11 Hours

The Unit focuses on the role of communication systems in development communication. It explores the role of government and other agencies in the field of development communication. The unit highlights the role of different types of media in the arena of development communication.

- DC strategies and communication systems dialogue; scope for participation, engagement and feedback
- Role of Traditional Media in DC
- Development Reporting in India: Print, Electronics and New media
- Role of mass media in DC
- Theories of Press
- Community Media: Types, Role in DC
- Mainstream Media and Digital Media in DC
- Scope of ICTs
- Convergence and partnerships for DC
- Role of Government and other agencies in DC

PRACTICAL
(Credits 2; Hours 60)

1. Analysis of development indicators (HDI, GDI, GII, GGI, MPI)
2. Critical analysis of selected development communication initiatives
3. Analyzing and designing print and other media for Development Communication
4. Development Reporting in media across different sectors (Health, Environment etc)
5. Content analysis of mainstream and alternative media

Essential Readings:

- Kumar, K. J. (2000). *Mass communication in India.* New Delhi: Jaico Publishing House, India. ISBN 8172243731.
- McQuail, D. (2010). *Mass Communication Theory*. London: Sage Publications. ISBN 978-1-84920-291-6.
- Melkote, S. & Steeves, L. (2013). *Communication for Development in the Third World.* New Delhi: Sage Publications.
- Narula, Uma. (1994). *Development Communication: Theory and practice*. New Delhi: Har Anand Publications. ISBN 10: 8124101647.
- Pannu, P. & Azaad, Y. T. (2012). *Communication Technology for Development*. International Publishing House Pvt. Ltd, India. ISBN 938057890.
- Servaes, Jan (2008*). Communication for Development and Social Change.* New Delhi,: Sage Publication. DOI: 10.1177/097317411000500110.

- Servaes. J. (2020). *Handbook of Communication for Development and Social Change. Springer*. https://doi.org/10.1007/978-981-10-7035-8 2020.
- Waisbord, S. (2003). *Family Tree of Theories, Methodologies and Strategies in Development Communication: Convergences and Differences*. DOI:10.1007/978-981-10-7035-8_56-1.
- Wilkins, G.K., Tufte, T., & Obregon, R. (2014). T*he Handbook of Development Communication and Social Change*. Wiley-Blackwel, ISBN: 978-1-118-50531-1.

Suggested Readings:

- Ashford, J. B., LeCroy, C. W., & Lortie, K.L. (2010). *Human Behavior in the Social Environment: A Multidimensional Perspective* (4th ed.). Belmont CA: Wadsworth/Thomson Learning.
- Mefalopulos, Paulo. (2008). *Development Communication Sourcebook- Broadening the Boundaries of Communication*, The World Bank.
- Melkote, R.S., Singhal, A., Shirley, S., & Edna Holt Marston, H. E. (2021). *Handbook of Communication and Development.* Edward Elgar Publishing. ISBN: 978 1 78990 634 9.
- Murthy, D V R. (2006). *Development Journalism, What Next*? New Delhi : Kanishka Publications. ISBN 8173918457.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC ELECTIVE
DSE HH 4D1: Pattern Making and Construction

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
Pattern Making and Construction	4	2	0	2	XII Pass	Appeared in Fashion Studies

Learning Objectives

- To learn the techniques of pattern making and to judiciously decide the technique required for various designs
- To be able to develop pattern making skills for various garment components
- To be proficient in making patterns in a variety of styles for women's garments

Learning Outcomes

- To understand the use and apply the knowledge of tools and terminology used in pattern making the various pattern making tools and its terminology.
- Apply the principles of pattern making for basic upper and lower slopers, sleeves, collars and dresses
- Manipulate the basic slopers to create design variations
- Assemble and complete a dress with all its components
- To develop a keen eye for assessing fit in clothes

SYLLABUS OF HH 4D1

THEORY
(Credits 2; Hours 30)

UNIT I: Pattern Making: Tools and Methods **6 Hours**

- This unit enables the students to understand use and apply the knowledge of tools and terminology used in pattern making the various pattern making tools and their terminology also include the various principle and rules of pattern making.
    - Terms and tools for pattern making
    - Various software for pattern making
    - Drafting
    - Flat pattern making
    - Dart manipulation
    - Added fullness

- Contouring
- Rules of pattern making

UNIT II: Pattern making for women's wear 18 Hours

This unit helps the students to apply the principles of pattern making for basic upper and lower slopers, sleeves, collars and dresses.

- Development of Basic bodice block, Sleeve block and Skirt block
- Bodice variations: Double darts & multiple darts, Dart cluster, Princess line, Empire line-incorporating appropriate Placket and Pocket
- Sleeve variations: Leg-o-mutton, Petal, Bell, Circular, Shirtmaker
- Collar variations: Peter pan on altered neckline, Partial peter pan, Mandarin, Stand and fall-One piece and Two pieces
- Skirt and waistband variations: A-line, Flared, Gathered, Pleated
- Developing the Torso block: Boxy, Fitted and Semi-fitted

UNIT III: Design and Fit 6 Hours

Unit Description: This unit helps to recognize the concept of fit and acquire designing skills for the different figure.

- Body shapes
- Designing for different figure types
- Fit: Fitting area, fitting guidelines, fitting procedure, fitting problem and remedies
- Factors affecting fit, line, ease, grain, set and balance

PRACTICAL
(Credits 2; Hours 60)

UNIT I: Flat Pattern making:

In this unit, students will learn the development of basic bodice, sleeve, and skirt slopers along with their variations for women's wear

- Developing basic bodice, sleeve, and skirt slopers
- Developing variations in bodices: Double darts & multiple darts, Dart cluster, Princess line, Empire line
- Yoke variations: basic front & back yoke, back yoke inverted box pleat, added fullness/gathers
- Sleeve variations: Leg-o-mutton, Petal, Bell, Circular, Shirtmaker
- Collar variations: Peter pan on altered neckline, Partial peter pan, Mandarin, Stand and fall (One piece and Two pieces)
- Skirt variations: A-line, Flared, Gathered, Pleated and Waistbands and waist facing
- Pockets and Plackets
    - Pocket: Applied, Inseam and slash
    - Plackets: shirt plackets, continuous wrap, wrap and projection and zipper attachments

UNIT II: Construction: Women's wear garment and its components

This unit equips the students to independently lay patterns, cut fabric and sew a garment

- Construction of a Tunic incorporating appropriate collar, sleeve, placket and pocket using the patterns developed in unit 1
- Construction of a Skirt with an appropriate waistband, zipper attachment using the patterns developed in unit 1

Essential Readings:

- Armstrong, H.J. (2009), *Pattern Making for Fashion Design*, Harper Collins Publishers, INC, New York. Chapter 1 pg. 1-22; Chapter 4, 5, 6, 7, 8 & 9
- MacDonald, Nora M. (2010), *Principles of Flat-Pattern Design*, Fairchild Books, New York. Chapter 5 & 6 pg. 117-182; Chapter 9 & 10 pg. 229-282
- Brown, P. and Rice, J. (2014) Ready to Wear Apparel Analysis, Fourth Edition. Pearson Education, India
- Mansfield, E. A. & Lucas, E. L., 1953, Clothing Construction, Chapter 3, pg 40-58
- Liechty, E.G., Potterberg, D.N., Rasband, J.A., 2010, *Fitting and Pattern Alteration: A Multimethod Approach*, Fairchild Publications, New York. Chapter 1 & 2 pg. 2-62; Chapter 4 pg 64-98
- Aldrich, W. (2008) Metric Pattern Cutting for Women's Wear, ISBN 10: 1405175672 / ISBN 13: 9781405175678, Wiley Blackwell Publication.

Suggested Readings:

- Dunham, G. R., (2021) The Fitting Book: Make Sewing Pattern Alterations and Achieve the Perfect Fit You Desire,ISBN: 9783033083745, Gina Renee Designs Publication, India
- Pepin, H., 1947,*Modern Pattern Design,* Funk and Wagnalls, USA
- Reader's Digest (Eds.). 2002, New Complete Guide to Sewing, Reader's Digest Association (Canada) Ltd. Montreal.
- Azad, N., (2019), Sewing Technology, Neelkanth Publishers Pvt. Ltd. India.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE
DSE HH 4E1: Interior Design

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Interior Design	4	2	0	2	XII Pass	Appeared in Fundamentals of Resource Management

Learning Objectives

- To comprehend the concept of design as applicable to interior spaces.
- To develop proficiency in making working and presentation drawings to be used by interior space design professional.
- To understand the application of materials and finishes for creating aesthetic and sustainable interiors.

Learning Outcomes

After completing this course, students will be able to:

- Understand the components of interior design and its application.
- Prepare working and presentation drawings for interiors.
- Critically evaluate different types of materials and finishes for designing interior spaces.

SYLLABUS OF HH 4E1

THEORY
(Credits 2; Hours 30)

UNIT I: Design Fundamental **6 Hours**

This unit attempts to introduce the students to the concept of design, elements and principles.

- Design
  - Definition
  - Concept
  - Scope (Inclusive Design, Designing for circular future, Innovative Designs)
- Importance and requirement of good design
- Concept and scope of Interior Design
- Role of an Interior Designer
- Classification of Design: Structural & Decorative

UNIT II: Advanced Concepts in Interior Design **15 Hours**

The unit attempts to give advanced understanding of the concepts of interior design to the

students.

- Application of Elements and Principles to Interior Spaces.
- Theme based Interior designing concepts
- Interior Construction
  - Paneling and Partitions,
  - False ceiling,
  - Electrical systems,
  - Plumbing systems.

UNIT III: Historical and Contemporary Trends in Interior Design 9 Hours

The unit introduces the students to historical and contemporary trends in Interior design.

- History of Architectural Design
- Historical and Contemporary Design Styles
- Vernacular Architecture
- Recent trends in design: Bio-Mimicry, Bio-philic

PRACTICAL
(Credits 2; Hours 60)

1. Basic drawing techniques
2. Concept of Scale
3. Lettering
4. Concept Sheets and Mood Boards
5. Introduction to Computer Aided Drawings
6. Drawing and identification of common symbols
7. Drawing 1 BHK, floor plans and elevations
8. Rendering Techniques
9. Application of rendering in plans
10. Project / Portfolio (Innovative designs, materials and technologies for Interiors)

Essential Readings:

- Faulkner, S. & Faulkner, R. (1954). *Inside Today's Home,* Rinehart Publishing Company.
- Goldstein, H. and Goldstein, V. (1988). *Art in Everyday Life* (4th. ed), Oxford: IBH Publishing Co.
- Grimley, C. and Love, M. (2018). *The Interior Design Reference & Specification Book*, Rockport Publishers.
- Mitton, M. and Nystuen, C. (2021). *Residential Interior Design: A Guide to Planning Spaces* (4th. ed), Wiley
- Rao, M.P. (2020). *Interior Design Principles and Practices,* Standard Publishers Distribution.

Suggested Readings:

- Lawrence M. (1987). *Interior Decoration*, Chartwell Books.
- Mogg, C. C. (1995). *The Complete Home Decorator*, Portland House.
- Riley & Bayen. (2003). *The Elements of Design*, Free Press.
- Seetharaman P. and Pannu, P. (2001). *Interior Design & Decoration*, CBS publishers.
- Thompson, J. A. A. and Blossom, N. (Ed). (2015), *The Handbook of Interior Design*, Wiley.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DEPARTMENT OF HOME SCIENCE
Semester – V

B.Sc. (Honours) Home Science

DISCIPLINE SPECIFIC CORE COURSE

DSC HH 513: Human Development III: The Adulthood Years

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Human Development III: The Adulthood Years	4	3	0	1	XII Pass	Appeared in Human development II: Middle Childhood and Adolescence

Learning Objectives

- To develop an understanding of different domains of development in adulthood
- To gain an understanding of how socio-cultural contexts shape development during adulthood
- To utilize a range of techniques to study different domains of development in adulthood

Learning Outcomes

Students will be able to:

- To describe different domains of development in adulthood : physical, cognitive, language and socio-emotional
- To understand development in adulthood in varied contexts and cultures
- To develop competency in the use of different techniques for studying various domains of development in adulthood

SYLLABUS OF DSC HH 513

THEORY
(Credits 3; Hours 45)

UNIT I: Understanding Young Adulthood **15 Hours**

- Physical and physiological changes
- Cognitive development
- Socio-emotional development- relationships and marriage

- Careers, work and leisure
- Gender and sexuality in Indian context

UNIT II: Development during Middle Adulthood **15 Hours**

- Definition, developmental tasks of middle adulthood
- Physical changes, health and well-being
- Cognitive development and changes
- Social and emotional development-relationships and family dynamics, marital satisfaction and parenting

UNIT III: Aging in Late Adulthood **15 Hours**

- Developmental tasks of late adulthood
- Physical and physiological changes associated with aging and health concerns
- Cognitive development: changes in cognitive abilities
- Socio-emotional development-grand parenting, social support networks, work and retirement, leisure and overall well-being
- Culture, religion and spirituality
- Death and grief

PRACTICAL

(Credits 1; Hours 30)

1. To study development during adulthood using multimedia resources.
2. Case profile of an individual in middle/late adulthood
3. Use of interview/questionnaire method to study adult roles (at least one male and one female)
   - Father/ Husband
   - Homemaker
   - Employed woman
   - Single parent
   -Grandfather/ grandmother
   -Retired person
4. Journaling in young adulthood
5. Visit to an old age home
6. Study psychological tests of intelligence and personality- any three

Essential Readings:

- Berk, L.E. (2007). Development through the lifespan. Delhi: Pearson Education.
- Papalia, D.E. and Martorell, G. (2015). Experience Human Development. McGraw Hill Education.
- Ranganathan, N.(Ed.).2020. Understanding Childhood and Adolescence. New Delhi: Sage
- Santrock, J.W. (2007). A Topical Approach to Lifespan Development. New Delhi: Tata McGraw-Hill.
- Singh, A. (Ed). 2015. Foundations of Human Development: A Lifespan approach. New Delhi: Orient Black Swan.

Suggested Readings:

- Sharma, N. (1999). Understanding Adolescence. National Book Trust.

- Rice. F. P. (1998). Human Development: A lifespan approach. New Jersey: Prentice Hall.
- Rutter, M. and Rutter, M. (1992). Developing Minds: Challenge and continuity across the lifespan. London: Penguin.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch,
University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE
DSC HH 514: Dietetics and Public Health Nutrition I

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Dietetics and Public Health Nutrition I	4	3	0	1	XII Pass	Appeared in Nutrition: A Life Cycle Approach

Learning Objectives

- To explain the importance and scope of public health nutrition and its role in the health care system.
- To develop skills for using various methods and techniques for assessing nutritional status.
- To familiarize with the National public health nutrition concerns
- To develop an understanding about the principles of dietetics and nutrition care.
- To apprise the various aspects related to management of some common disorders / diseases.
- To inculcate the skill of dietary intervention according to patients' nutritional assessment and diagnosis.

Learning Outcomes

- Understand the concept of public health nutrition and its role in the health care system.
- Comprehend and use various methods and techniques for assessment of nutritional status assessment at individual and community level.
- Gain knowledge of the current National nutritional concerns.
- Understand the principles of the nutrition care process in hospital settings in the management of diseased person.
- Ability to modify normal diets as per the therapeutic condition.

SYLLABUS OF DSC HH 514

THEORY
(Credits 3; Hours 45)

UNIT I:Public Health Nutrition and Health Care Systems **8 Hours**

- Definition and multidisciplinary nature of public health nutrition
- Concept, scope and current concerns in public health nutrition
- Health – Concept, definition, dimensions, determinants and indicators
- Health care systems:

- Levels of Health Care
    - Health Care System, Health care delivery system in India
    - Role of Public Health sector and other sectors and agencies
    - Primary Health care in India
    - Role of important schemes and institutions
- Role of public health nutritionist in health nutrition

UNIT II: Assessment of Nutritional Status 8 Hours

- Objectives and importance of assessment of nutritional status of individual and population groups
- Methods of Assessment of Nutritional status of Individual and Population groups
    - Anthropometry and related measures
    - Biochemical Assessment
    - Clinical Examination
    - Dietary Assessment
    - Vital Statistics, Ecological factors and Qualitative Assessment Methods- An overview

UNIT III: National Public Health Nutrition Concerns 8 Hours

- Prevalence, etiology, clinical features, prevention and management at community level of the following:
    - Protein Energy Malnutrition, Moderate Acute Malnutrition , Severe Acute Malnutrition
    - Micronutrient deficiencies such as Vitamin A deficiency, Nutritional anemia, Iodine deficiency disorders, Vitamin D deficiency and Zinc deficiency
    - Fluorosis
    - Obesity, Metabolic Syndrome and Non communicable disease- An overview

UNIT IV: Principles of Nutrition Care 4 Hours

- Nutrition Care Process
- Therapeutic adaptations of a Normal Diet, Progressive diets

UNIT V: Etiology, patho-physiology, metabolic changes, clinical features and nutritional management of 17 hours

- Infection and Fevers- Typhoid, Tuberculosis, HIV-AIDS, Malaria/Dengue/Chikungunia
- G I Tract disorders- Diarrhea, Constipation, Lactose Intolerance, Celiac disease\
- Weight management- Underweight, overweight and obesity
- Eating Disorders

PRACTICAL
(Credits 1; Hours 30)

1. Assessment of nutritional status:

- Anthropometry (height, weight , Middle upper arm circumference , Waist circumference)
- Dietary Assessment - Food frequency questionnaire ,24 hour dietary recall
- Review of nutritional status of population from National /Regional/ Nutrition Surveys (NFHS, CNNS, etc)

2. Planning and preparation of low cost nutritious diet/ recipes for population groups vulnerable to nutritional deficiency diseases (PEM, Nutritional Anemia, Vitamin A deficiency)
3. Therapeutic modifications of diets:
    - Normal, soft, clear- and full- fluid
4. Planning and preparation of diets/dishes for individuals suffering from:
    - Febrile disorders- Typhoid, Tuberculosis
    - GI Tract disorders- Diarrhoea and Constipation
    - Weight management- Underweight, overweight/ obesity

Essential Readings:

- Siddhu A, Bhatia N, Singh K, Gupta S (2017). Compilation of food exchange list, Technical Series 6, Lady Irwin College, University of Delhi. Publ. Global Books Organisation, Delhi
- Vir, S. (2023). Child, adolescent and women nutrition in India: Public Policies, programme and progress. KW Publishers, Daryaganj,New Delhi, India.
- Seth V, Singh K and Mathur P (2018). Diet Planning through the Life Cycle: Part 1 Normal Nutrition. A Practical Manual. 6 th Edn. Elite Publishing House Pvt. Ltd. New Delhi.
- Seth, V. and Singh K. (eds.) (2021) Principles of Medical Nutrition Therapy for Positive Clinical Outcomes, 1st Edition. Elite Publishing House Pvt. Ltd.
- Bamji MS, Krishnaswamy K and Brahmam GNV (Eds) (2016). Textbook of Human Nutrition, 4th edition. Oxford and IBH Publishing Co. Pvt. Ltd. New Delhi
- Indian Dietetics Association, (2018) Clinical Dietetics Manual, 2nd Edition. Elite Publishing House Pvt. Ltd.
- Gibney, M. J., Margetts, B. M., Kearney, J. M. & Arab, L. (Eds.). (2005). Public Health Nutrition. Oxford, UK: Blackwell Science.
- Longvah T, Ananthan R, Bhaskarachary K and Venkaiah K (2017). Indian Food Composition Tables. National Institute of Nutrition, ICMR, Hyderabad.
- ICMR (2020) Estimated Average Requirements and Recommended Dietary Allowances for Indians .Published by National Institute of Nutrition, Hyderabad.

Suggested Readings:

- Chadha R and Mathur P eds.(2015) Nutrition : A Lifecycle Approach. Orient Blackswan, New Delhi.
- Wadhwa A. and Sharma S (2003). Nutrition in the Community-A Textbook. Elite Publishing House Pvt. Ltd. New Delhi
- ICMR (2011) Dietary Guidelines for Indians. Published by National Institute of Nutrition, Hyderabad.

- Khanna K, Gupta S, Seth R, Passi SJ, Seth R, Mahna R, Puri S (2013). Textbook of Nutrition and Dietetics.2nd Edn. Phoenix Publishing House Pvt. Ltd.
- Mahan, L.K. & Escott Stump, S. (2020). Krause's Food & Nutrition Therapy, 15th ed. Saunders Elsevier
- Jelliffe DB & Jelliffe E F P (1989). Community nutritional assessment with special reference to less technically developed countries. Oxford Medical Publications. Oxford University Press, Oxford, UK.
- Joshi, S.A. (2015). Nutrition and Dietetics, 4th ed. Mc Graw Hill education.
- WHO information on Dengue/ Chikungunia/ Malaria
  Dengue- https://www.who.int/news-room/fact-sheets/detail/dengue-and-severe-dengue. Assessed on March 2023
  Chikungunia-https://www.who.int/news-room/fact-sheets/detail/chikungunya .Assessed on March 2023
  Malaria- https://www.who.int/news-room/fact-sheets/detail/malaria .Assessed on March 2023
- WHO https://www.who.int/tools/child-growth-standards/standards Assessed on March 2023
- WHO (2009) https://www.who.int/publications/i/item/9789241547635. Assessed on March 2023
- http://www.ilsi-india.org/Workshop_National_Food_Consumption_Anthropometry_Physical_Activity_Survey/Methodology.pdf. Assessed on March 2023
- https://nhm.gov.in/images/pdf/programmes/wifs/operational-framework-wifs/operational_framework_wifs.pdf. Assessed on March 2023
- WHO https://www.who.int/tools/child-growth-standards/standards. Assessed on March 2023
- WHO (2009) https://www.who.int/publications/i/item/9789241547635. Assessed on March 2023
- https://www.nin.res.in/tenders/DABS/2.Anthro_BP_Dec_1_2022.pdf.Assessed on March 2023
- https://nhm.gov.in/images/pdf/programmes/wifs/operational-framework-wifs/operational_framework_wifs.pdf. Assessed on March 2023
- National Nutrition Monitoring Bureau (India) | GHDx (healthdata.org).Assessed on March 2023
- NFHS Project | International Institute for Population Sciences (IIPS) (iipsindia.ac.in).Assessed on March 2023

Note: Examination scheme and mode shall be as prescribed by the Examination Branch,
University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE

DSC HH 515: Psycho-Social Dimensions of Family and Community

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Psycho-Social Dimensions of Family and Community	4	2	0	2	XII Pass	NIL

Learning Objectives

- To develop a fundamental understanding of the dynamics of the family systems.
- To understand the various community systems and their functioning.
- To comprehend various psychosocial influences on families and communities.

Learning Outcomes

- Students will be able to:
- Understand the multifaceted nature of families and communities.
- Gain awareness of the changing structure, roles and expectations of families and communities in the present times.
- Gain in-depth knowledge of coping strategies and support mechanisms to empower families and communities.

SYLLABUS OF DSC HH 515

THEORY
(Credits 2; Hours 30)

UNIT I: Understanding Family Systems **10 Hours**

- Dynamics of family structure and function
- Demographic and cultural variations
- Continuities and change in contemporary families: changing roles, expectations and identities; single parent/divorce/co-parenting; dealing with the loss of a family member or chronic illness.

UNIT II: Understanding Community Systems **10 Hours**

- The concept of communities, evolution and types: Rural, urban, tribal, small town; meaning, characteristic features and growth in the communities.
- Community and social relationships: Everyday lives, conflict and crises, transitions
- Continuities and change in community systems.

UNIT III: Psychosocial Dimensions **10 Hours**

- Local and global influences on families and communities
- Stressors and coping mechanisms, risk and protective factors
- Care and support mechanisms in family and community setting: childcare support, youth support groups, elderly care
- Families and communities as ecologies of resilience: negotiating migration, conflict/war zones, displaced or stateless situations, and natural disasters.

PRACTICAL
(Credits 2; Hours 60)

1. Interviews and focus group discussions to study the changing structure, roles, and expectations of the family: relationships with parents, grandparents, and siblings.
2. Understanding changing family and community dynamics through Movies/Documentaries
3. Understanding stressors and coping strategies among individuals through interview technique.
4. Understanding local/global influences and coping mechanisms in a traditional community (artisans/potters/folk musicians) using interviews and observations.
5. Using audio-visual materials to understand how human behaviour influences our self, psyche, and group relationships.
6. Workshop/lecture on building resilience and coping mechanisms.

Essential Readings:

- Abraham, F. (2006). *Contemporary Sociology: An Introduction to concepts and Theories.* Oxford University Press.
- Anand, V., Balakrishnan, G., & George, P. (2018). *Community practices in India: Lessons from the grassroots*. Cambridge Scholars Publishing.
- Maguire, K. (2012). *Stress and coping in Families*. Wiley.
- Sachdeva, P., & Florence. D. (2020). *Basic Sociology*. Elite Publishing House.
- Shah, M. A. (2014). *The Writings of A. M. Shah: The Household and Family in India.* Orient Blackswan.
- Thibaut, J. W., & Kelley, H. H. (2017). *The social psychology of groups.* Routledge.
- Ungar, M. (2021). *Multisystemic resilience: Adaptation and transformation in contexts of change*. Oxford University Press.

Suggested Readings:

- Compas, B. E., Murphy, L. K., Yarboi, J., Gruhn, M. A., & Watson, K. H. (2019). Stress and coping in families. In B. H. Fiese, M. Celano, K. Deater-Deckard, E. N. Jouriles, & M. A. Whisman (Eds.), *APA handbook of contemporary family psychology: Foundations, methods, and contemporary issues across the lifespan* (pp. 37–55). American Psychological Association. https://doi.org/10.1037/0000099-003.
- Hochschild, A. (2013). *So how's the Family? And other Essays*. University of California Press.
- Madan, T. N. & Das, Veena. (2003). *The Oxford India companion to sociology and social anthropology.* Oxford University Press
- Passer, M.W. & Smith, R.E. (2010). *Psychology: The science of mind and behaviour*. Tata McGraw-Hill.

- Stockholm Resilience Centre. (2015). Applying resilience thinking: Seven principles for building resilience in social-ecological systems. http://stockholmresilience.org/download/18.10119fc11455d3c557d6928/1459560241272/SRC+Applying+Resilience+final.pdf
- Trawick, M. (1996). *Notes on Love in a Tamil family*. Oxford University Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE
DSE HH 5A1: Children with Disabilities

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Children with Disabilities	4	2	0	2	XII Pass	Appeared in Human development II: Middle Childhood and Adolescence

Learning Objectives

- To understand the varied perspectives on disability.
- To know major types of disabilities, the causes, prevention, characteristics of the disabilities and barriers which persons with disability face.
- To understand importance of early identification and early intervention, and inclusion.

Learning Outcomes

- Students will be able to understand various perspectives on disability and ways of preventing disability.
- Students will acquire skills in Early identification of childhood disability and etiology of a wide range of disabilities.
- Student will understand inclusive practices for including children with disability in classrooms.

SYLLABUS OF HH 5A1

THEORY
(Credits 2; Hours 30)

UNIT I: Understanding Disability\ 6 Hours

- Definition and concept of disability
- Perspectives and models of Disability
- Linking disability to milestones
- Prevention of Disability

UNIT II: Types of Disability **14 Hours**

Etiology and types and early identification of following disabilities

- Locomotor Disabilities
- Intellectual Disability
- Sensory disability-Visual and auditory

- Learning Disability
- Autism Spectrum Disorder

UNIT III: Disability and Society **10 Hours**

- Understanding inclusive practices
- Significance of early intervention
- Role of families of children with disability
- Legal provisions

PRACTICAL
(Credits 2; Hours 60)

1. Focus Group discussion on the listing of disabilities and innovations for PwD in community and school teaching
2. Visit to organizations working with and for children with disabilities (CGC, Inclusive Schools, Resource Rooms, NGOs, Hospitals)
3. Observation of children with disability in classrooms
4. Exploring audio visual resources with reference to children with disability and their families
5. Survey of public space to gauge accessibility for PwD
6. Preparing pamphlets/posters to create awareness about rights of PwD
7. Preparing developmental checklists for assessing developmental delays
8. Case profile of a child with disability/of an organization working with children with disability
9. Planning developmentally appropriate material for children with disabilities.
10. Select psychometric tests- Disability screening schedule, Portage guide for early intervention, Tests for Learning Disability

Essential Readings:

- Chopra, G. (2015). Child rights in India: Challenges and social action. New Delhi: Springer (India) Pvt. Ltd.
- Chopra, G. (2012). *Early Detection of Disabilities and persons with disabilities in the community.* New Delhi: Engage publications
- Chopra, G. (2012). *Stimulating Development of Young Children with Disabilities at Anganwadi and at Home: A Practical Guide.* New Delhi: Engage publications.
- Chopra, G. (2011). *Mother and child care: Promoting health, preventing disabilities.* New Delhi: Engage publications
- Heward, W.L., (Ed) (2000). Exceptional children: An introduction to special education. New Jersey: Prentice-Hall Inc.
- Mangal, S. K. (2007). *Exceptional children: An introduction to special education*. New Delhi: Prentice Hall of India
- Sharma, N. (Ed) (2010). *The Social Ecology of Disability-Technical Series - 3,* Lady Irwin College. Delhi: Academic Excellence
- The Rights of Persons with Disabilities Act, 2016. http://scpdodisha.nic.in/sites/default/files/Gazette%20Notification%20%20of%20PwD%2 0Act%202016.pdf

Suggested Readings:

- Draft National policy for Persons with Disability (2022) https://disabilityaffairs.gov.in/upload/uploadfiles/files/Draft%20Copy%20New%20National%20Policy%20May%202022%20.pdf. Accessed in March 2023.

- Jangira, N.K. (1997) “Special Educational Needs of Children and Young Adults: An Unfinished Agenda,” Education and Children with Special Needs: From Segregation to Inclusion,Ed. Seamus Hegarty, MithuAlur, Thousand Oaks: Sage Publications Inc.
- Karna, G. N. (1999). *United Nations and rights of disabled persons: A study in Indian perspective*. New Delhi: A.P.H. Publishing Corporation.
- Mani, R. (1988). *Physically handicapped in India*. Delhi: Ashish Publishing House.
- Mastropieri, M. A., & Scruggs, T. E. (2004). *The inclusive classroom: Strategies for effective instruction*. NY: Pearson.
- Werner, D. (Ed) (2018). Disabled village children: A guide for community health workers, rehabilitation workers, and families. United States of America: Hesperian Health Guides

Note: Examination scheme and mode shall be as prescribed by the Examination Branch,
University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE
DSE HH 5A2: Childhood in India

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Childhood in India	4	2	0	2	XII Pass	Appeared in Human development II: Middle Childhood and Adolescence

Learning Objectives

- To study the concept of multiple childhoods in India
- To understand the social and cultural dimensions of childhood in India
- To know/ appreciate the diverse contexts of childhood

Learning Outcomes

The students will:

- Understand the meaning of multiple childhoods and various views about it
- Appreciate children's experiences of ethnicity, class, caste, religion, and gender
- Learn about multiple contexts of development for children and diverse childhood experiences

SYLLABUS OF HH 5A2

THEORY
(Credits 2; Hours 30)

UNIT 1 Conceptualizing Childhood in India **10 Hours**

- Construction of childhoods in India: Social and cultural dimensions; historical and political influences
- Folk theories of childhood
- portrayal in mythology, stories and films

UNIT 2 Understanding Multiple Childhoods: Growing up in Diverse Social Contexts **10 hours**

- Growing up in familial and extra-familial settings
- Childhood in families
- Childhood in schools
- Childhood in rural and tribal communities

UNIT 3 Contemporary Issues of Childhood in India **10 Hours**

- Childhood through the lens of social class, caste, gender, and religion
- Demographic profile in relation to diversity and childhoods
- Poverty and disadvantage, children in street situations
- Gendered childhoods/ transgender childhood

PRACTICAL
(Credits 2; Hours 60)

1. Using the model of developmental niche, prepare an autobiographical narrative of childhood, elaborating on the impact of the different settings on your experience as a child.
2. Observation and documentation of children in different socio-cultural settings
3. Construct and conduct an Interview schedule (Structured/ Semi structured) to understand beliefs of children, folk lore, folk song, toys and games for diverse ethnic groups.
4. Exploring diverse Indian childhood context
   - Audio-Visual aids: Movies and documentaries
   - Documentation: Images, visual and print sources
5. Workshops/ lecture/ seminar to understand the diverse contexts of growing up in India.
6. Case profile of children with disability/working children/ children in street situations
7. Develop a conceptual map/audit trail to depict the childhoods in India using secondary sources
8. Visit to Museum at the Department of Anthropology/Craft Museum/National Museum: for documenting artifacts/ play material/clothes/ any tangible material on display used by or for children

Essential Readings:

- Behera, D. K. (Ed.). (2007). *Childhoods in South Asia*. Pearson Education India.
- Jenks, C. (2020). *Childhood*. Routledge.
- Joshi, P., & Shukla, S. (2019). *Child development and education in the twenty-first century.* Springer. https://doi.org/10.1007/978-981-13-9258-0
- Kaur, R. (2022). *Constructions of Childhood in India: Exploring the Personal and Sociocultural Contours.* Routledge.
- Saraswathi, T. S., Menon, S., & Madan, A. (Eds.). (2017). *Childhoods in India: Traditions, trends and transformations*. Taylor & Francis.
- Sharma, D. (2003). *Infancy and childhood India*. In D. Sharma (Ed.), *Childhood, family and socio-cultural changes in India*. Oxford.
- Thapan, M. (Ed.). (2014). *Ethnographies of schooling in contemporary India*. SAGE Publications India.

Suggested Readings:

- Balagopalan, S. (2019). Afterschool and during vacations: On labor and schooling in the postcolony. *Children's Geographies*, *17*(2), 231-245. https://doi.org/10.1080/14733285.2018.1490008
- Balagopalan, S. Introduction: Children's lives and the Indian context. *Childhood*, *18(3)*, 291–297. doi:10.1177/0907568211413369
- Sharma, D. (2000). Infancy and childhood in India: A critical review.

International Journal of Group Tensions, *29*, 219–251. https://doi.org/10.1023/A:1026521211796

- Thapan, M. (2022). Dalit Autobiographies as Counter Publics: An Exploratory Essay. *South Asia Multidisciplinary Academic Journal*, *28*. https://doi.org/10.4000/samaj.7910
- Sarangapani, P. (2003). Childhood and Schooling in an Indian Village. *Childhood*, *10(4),* 403–418. doi:10.1177/0907568203104002.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch,
University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE
DSE HH 5B1: Nutritional Biochemistry I

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Nutritional Biochemistry I	4	2	0	2	XII Pass	Appeared in Physical Science for Home Science

Learning Objectives

- To provide basic concepts of biomolecules, the basic building blocks vital for various life forms
- To focus on key structures, properties and biological functions of biomolecules

Learning Outcomes

- Gain knowledge on structure-function relationship of biomolecules
- Developing an insight into biochemical role and significance of carbohydrates, proteins,
  lipids, nucleic acids, vitamins and minerals

SYLLABUS OF HH 5B1

THEORY
(Credits 2; Hours 30)

UNIT I: Carbohydrates **6 Hours**

This unit lays emphasis on classification, structures and properties of carbohydrates.

- Introduction, definition and classification

- Structures of monosaccharides (glucose, fructose, galactose, ribose) and disaccharides (maltose, lactose, sucrose)
- Homopolysaccharides-structures and functions (dextrin, starch, glycogen)
- Stereoisomerism of monosaccharides (Keto-aldo, D- and L-isomerism, optical isomerism, epimerism, anomerism), mutarotation

UNIT II: Lipids **6 Hours**

This unit highlights on classification, structures and biochemical functions of fatty acids and lipids.

- Introduction and structure of fatty acids (saturated and unsaturated)
- Essential and non-essential fatty acids
- Definition, classification and function of lipids (storage lipids-triacylglycerols; Membrane lipids-phospholipids and sphingolipids)

UNIT III: Amino acids and Proteins **5 Hours**

This unit covers structures and classification of amino acids. The unit also discusses basic concepts of structural organization in proteins.

- Introduction, definition, classification and structure of standard amino acids
- Essential and non-essential amino acids
- Peptide bond-nature, conformation and dihedral angles psi and phi
- Structure of proteins-primary, secondary (alpha-helix, beta-sheets and beta-turns), tertiary and quaternary

UNIT IV: Nucleic Acids **6 Hours**

The unit focuses on structures, biological functions and significance of nucleic acids.

- Introduction and structure of nucleosides and nucleotides
- DNA structure (B-form) and functions
- RNA structure and functions (mRNA, tRNA and rRNA)

UNIT V: Vitamins and Minerals **7 Hours**

This unit covers structures and biochemical functions of vitamins along with biological role and significance of minerals.

- Definition and classification of vitamins
- Structure and biochemical role of fat soluble vitamins-A and D
- Structure and biochemical role of water soluble vitamins- Thiamine, Riboflavin, Niacin, Pyridoxine and Ascorbic acid.
- Biological role and occurrence of inorganic elements – iron, calcium, phosphorous, iodine, selenium and zinc.

PRACTICAL
(Credits 2; Hours 60)

1. Qualitative tests for monosaccharides, disaccharides and polysaccharides.
2. Identification of monosaccharides, disaccharides and polysaccharides in unknown mixtures.
3. Quantitative estimation of glucose, sucrose and lactose by titrimetric method.
4. Qualitative tests for amino acids.
5. Qualitative analysis of DNA by diphenyl amine reagent.
6. Qualitative analysis of RNA by orcinol reagent.

7. Estimation of ascorbic acid using 2,6 dichlorophenol indophenol method in the given solution.
8. Estimation of calcium using EDTA by titration.

Essential Readings:

- Kennelly, P. J., Botham, K. M., McGuinness, O., Rodwell, V. W., Weil, P.A., 2022, *Harper's Illustrated biochemistry* (32nd ed.). McGraw-Hill Education.
- Nelson, D. L., Cox, M. M., 2017, *Lehninger Principles of Biochemistry* (7th ed.). W H Freeman & Co.
- Satyanarayana, U., Chakrapani U., 2021, *Biochemistry* (6th ed.). Elsevier.
- Sundararaj, P., Siddhu, A., 2002, *Qualitative tests and Quantitative Procedures in Biochemistry* (2nd ed.). New Delhi: A. H. Wheeler and Co Ltd.

Suggested Readings:

- Voet, D., Voet, J.G., 2012, *Principles of Biochemistry* (4th ed.). Wiley.
- Devlin, T.M. 2010, *Textbook of Biochemistry with Clinical Correlations* (7th ed.). New York, John Wiley-Liss.
- West, E.S., Todd, W.R., Mason, H.S., Bruggen J.T.V., 2017, Textbook of Biochemistry (4th ed.). Oxford & IBH.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE
DSE HH 5B2: Social and Cultural Aspects of Nutrition

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Social and Cultural Aspects of Nutrition	4	2	0	2	XII Pass	Appeared in Food Science and Nutrition

Learning Objectives

- To understand the relationship between socio-cultural aspects of food and nutrition in the historical and current context.
- To gain an insight of the social and cultural influences on food choices and diet-related behaviour.
- To recognize and appreciate the importance of cultural knowledge in nutrition.

Learning Outcomes

- Understand the social and cultural significance of food and its integration with the biological aspects.
- Comprehend the historical perspective and current dietary practices and food consumption patterns across cultures.
- Appreciate the social and cultural influences on food choices and diet-related behaviour.
- Recognize the importance of culture-sensitive dietary advice and guidance.

SYLLABUS OF HH 5B2

THEORY
(Credits 2; Hours 30)

UNIT I: Food, Nutrition and Culture **12 Hours**

This unit deals with social and cultural significance of food and its integration with biological aspects of food and nutrition, and the historical perspective and current dietary practices, concerns and food consumption patterns. It also includes the cross-cultural differences and acculturation in food behaviour.

- Ethnological Perspectives on Role of Food - Social and cultural significance of food
- Integrating Biological and Socio-Cultural Aspects of Food and Nutrition
- Indian Perspective on Anthropology of Food: An Overview
- Dietary Practices and Food Consumption Pattern

    - Historical perspective
    - Current dietary practices, concerns and health-related issues
  - Cross-cultural differences and eating behaviour
  - Cultural Integrity and Acculturation in relation to Food Choices

UNIT II: Social and Cultural Influences on Food Choices and Diet-Related Behaviour

12 Hours

This unit deals with the role of food environment, especially socio-cultural practices, as well as demographic and other factors in determining food behaviour. It also includes culture-specific food taboos for vulnerable groups and socio-cultural influences on sustainable healthy diets.

- Relation of Food Environment with Food Choices and Dietary Practices
- Significance of Social Structures, Socio-demographic factors, Cultural practices, Religious structures and Policy
- Culture-specific foods and taboos for feeding children, adolescents, pregnant and nursing mothers
- Socio-cultural influences on sustainable healthy diets

UNIT III: Importance of Cultural Knowledge in Nutrition **6 Hours**

This unit deals with the importance of cultural knowledge in influencing food behaviour and culture-specific dietary advice.

- Influencing change in Food Choices and Dietary Patterns
- Cultural Interpretation of Malnutrition
- Culture-sensitive dietary advice and guidance

PRACTICAL
(Credits 2; Hours 60)

Activities/Project on:

- Staple foods/ethnic cuisines in different regions of India/across the Globe
- Traditional foods for special occasions in different cultures
- Food habits and dietary patterns of individuals following different religions
- Food habits and dietary patterns of migrants in comparison with their traditional eating behaviour
- Food waste behaviour in different cultures
- Infant and young child feeding and nutrition - Regional diets during pregnancy and variations in feeding during infancy and childhood
- Globalization and its effect on food environment and dietary practices

Essential Readings:

- Dufour, D.L., Goodman, A.H. and Pelto, Gretel H. (2012). Nutritional Anthropology: Biocultural Perspectives on Food and Nutrition. 2nd Edition. Oxford University Press.
- Gibney, M.J., Margetts, B.M., Kearney, J.K., & Arab, L. (Eds.) (2004). Public Health Nutrition. Wiley-Blackwell.
- Nambiar, V. (2021). Indian Food Anthropology and the Eat Right Movement. Volume I & II. Selective & Scientific Books, New Delhi.

Suggested Readings:

- Achaya, K.T. (1998). Indian Food. Oxford.
- Antani, V., Mahapatra, S. (2022). Evolution of Indian cuisine: a socio-historical review. *J. Ethn. Food,* 9, 15. https://doi.org/10.1186/s42779-022-00129-4
- Farb, P. and G. Armelagos. (1980). Consuming Passions: The Anthropology of Eating. Houghton Mifflin Harcourt.
- Germov, J. & Williams, L. (Eds.). (2009). A Sociology of Food and Nutrition: The Social Appetite. 3rd Edition. Oxford University Press.
- Harris, M. (1987). Foodways: historical overview and theoretical prolegomenon. In: Harris, M. and E. B. Ross (eds.) Food and Evolution: Toward a Theory of Human Food Habits. Philadelphia: Temple University Press.
- Higman, B.W. (2011). How Food Made History. 1st Edition. Wiley-Blackwell.
- Le, S. (2018). 100 Million Years of Food: What Our Ancestors Ate and Why It Matters Today. Reprint Edition. Picador.
- McIntosh, Wm. A. (1996). Sociologies of Food and Nutrition. Springer New York.
- McWilliams, M. (2010). Food Around the World: A Cultural Perspective. Second Edition. Pearson Education.
- Seal, PP. (2023). Food Anthropology in India. Routledge India.
- Sidney, C.H.C. & Tan, C. (2007). Food and Foodways in Asia: Resource, Tradition and Cooking. 1st Edition. Routledge.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE
DSE HH 5C1: Gender, Media and Society

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Gender, Media and Society	4	2	0	2	XII Pass	Appeared in Communication Concepts and Theories

Learning Objectives

- To sensitize students to the gender dynamics operating in societies and their impact on overall development at regional and national level.
- To understand the gender-based differentials in terms of socio-cultural constraints, deprivations and violence faced by men and women during their life cycle and the legal redressal available.
- To make students appreciate the inter-linkages between gender, media and society and how media can play an important role in in promoting Gender equity.

Learning Outcomes

- The students will understand and internalize the concepts of sex and gender and how various socio-economic-cultural-political practices impact the construction of gender.
- The students will develop appreciation of inter-relationships between gender equality/equity on one hand and gender and development based indicators on the other.
- The students will be able to appreciate the dimensions, theories and approaches of women empowerment.
- The students will be enabled to critique the role of media in promoting gender equality and equity.

SYLLABUS OF HH 5C1

THEORY
(Credits 2; Hours 30)

UNIT I: Understanding Gender and Perspectives on Women's Status
8 Hours

This unit elucidates upon the concept of gender, sex and LGBTQA+ identities. It elaborates on the status of women across ages and the shifts across various social orders.

- Concept of gender, differences between sex and gender

- LGBTQA + Binary and Non Binary identities: Concept, intersection with other gender identities, challenges, activist trends, initiatives by the Government
- Status of women- definition, quantification; shifts in status of women – historical and contemporary perspectives
- Patriarchal and matriarchal social order and impact on women's status

UNIT II: Gender and Development **14 Hours**

This unit elaborates on the inter-relationships between Gender and Development as well as gender-based differentials in various sectors and their measurement. It also elaborates on the violence faced by women across various life cycle and the various legal provisions available for the same.

- Inter-relationships of Gender and Development; Gender differentials in health/nutrition, education, economic and political participation
- Indices of Human and Gender development with special reference to India's position
- Life Cycle Approach to gender studies; violence faced by women at different life stages (Domestic violence, Sex selection practices, Sexual Harassment at work place);
- Legal provisions available for dealing with such violence
- Empowerment of vulnerable groups including women- Economic, social and political dimensions of empowerment.

UNIT III: Gender, Media and Impact on Society
8 Hours

This unit elaborates on media's role in construction of gender, representation of women in media and gender stereotypes. It also focuses on framework for gender responsive media and gender mainstreaming.

- Social construction of gender reality by contemporary media
- Media and perpetuation of gender stereotypes
- Representation of women in media in political, cultural and social landscape
- Gender and media ethics
- Framework for gender responsive media and gender mainstreaming, ICTs and Gender

PRACTICAL
(Credits 2; Hours 60)

1. Understanding the concept of sex and Gender
   - Quiz/games on sex and gender
2. Gender based Indices
   - Studies of gender-based indices with reference to Indian context
   - Research studies on issues linked to Gender
3. Portrayal of gender in Media
   - Analysis of portrayal of gender in media – Advertisements, radio, cinema
4. Programs and campaigns on gender equity
   - Case studies for national and state level programmes and campaign for gender equity
5. Media production on gender based issues
   - Developing Digital stories/ Power point presentations/ Radio Programs/Audio jingles on gender-based Issues

Essential Readings:

- Azad R., (2014). Gender discrimination-An Indian perspective, Atlantic Publishers and Distributors.
- Bhasin, Kamla (2000). *Understanding Gender.* New Delhi. Kaali for Women.
- Beauvoir, S. (2015). *The Second Sex*. London: Vintage Books.
- Chattopadhyay, S (2018). *Gender Socialization and the Making of Gender in the Indian Context.* New Delhi: Sage Publications.
- Ghadially, R. (2007).*Urban Women in Contemporary India. .* New Delhi: sage Publications.
- Saikia, J.P., (2017). Gender Themes and Issues, Concept Publishing Company.
- Sohoni, K Neeraja, (1994), *Status of Girls in Development Strategies,* New Delhi, Har-Anand Publications.

Suggested Readings:

- Dube, L. (2001) *Anthropological Explorations in Gender-Intersecting Fields.* New Delhi: Sage Publications.
- Goel, A, Kaur, A and Sultana, A (2006). *Violence against women: Issues and Perspectives*. New Delhi, Deep& Deep Publishers.
- Goel, A. (2004) *Education & Socio-Economic Perspectives of Women Development and Empowerment.* New Delhi: Deep & Deep.
- Goel, A. (2004) *Organisation & Structure of Women Development and Empowerment*. New Delhi: Deep & Deep.
- Kishwar, M. (1994) *Off the Beaten Track – Rethinking Gender Justice for Indian Women*. Mumbai: Oxford University Press.
- Krishna, S. (Ed) (2003) *Livelihood and Gender Equality in Community Resource Management*. New Delhi: Sage Publications
- UNDP, Human Development Reports (Latest publication).

Note: Examination scheme and mode shall be as prescribed by the Examination Branch,
University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE
DSE HH 5C2: New Media for Change

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
New Media for Change	4	2	0	2	XII Pass	Appeared in Communication Concepts and Theories

Learning Objectives

- To synthesize a comprehensive view of key concepts and theories involved in new media.
- To appreciate and express the cultural significance of new media.
- To explore the myriad ways that people and organizations use new media as tools for civic engagement, activism, and political participation.
- To explore how technological changes effect social institutions and society.

Learning Outcomes

- Acquire knowledge of new media tools.
- Learn the concept and importance of the digital culture.
- Understand the potential and limitations of new media.
- Evaluate the role and uses of new media technology across cultures.

SYLLABUS OF HH 5C2

THEORY
(Credits 2; Hours 30)

UNIT 1: Understanding New Media: Formats concepts and Theories 10 Hours

The Unit will give in-depth understanding of concepts and theories of new media in context of contemporary culture.

- Understanding new media; trans-media/multimedia storytelling
- Computer/mobile-mediated communication and the notion of digital
- History of New Media
- New media concepts and theories; Networked society
- Convergence culture
- Mediatization theory
- Actor-network theory

UNIT II: Application in New Media 10 Hours

The unit will describe the application of new media for social upliftment specifically in field of education and governance.

- Proliferation of networks

- Educational uses of new media
- Use of new media in governance
- Civic, Community, and Public Engagement
- Critique of new media as a tool of surveillance and oppression
- Social media as a liberating force
- Digital democracy and participation

UNIT III: New Media Laws and Ethics **10 Hours**

This unit will give understanding of laws pertaining to new media and analytical knowledge into related ethical issues.

- Need for Laws and Ethics in New Media
- New Media Laws and Acts
- Social Media Freedom of Expression
- Intellectual Property Rights
- Privacy, Data and International Law
- Hate Speech
- Pornography and Obscenity
- Defamation
- Government Censorship
- New Media and Democracy
- New Media and Activism

PRACTICAL
(Credits 2; Hours 60)

1. Case studies pertaining to ethical issues in the use of new media.
2. Evaluation of New Media campaigns.
3. Development and Designing of New Media Campaigns
4. Content Development for various new media tools.

Essential Readings:

- Jenkins, Henry. (2006). Convergence Culture: Where Old and New Media Collide. New York, NY: NYU Press.
- Computer-Mediated Communication: A Theoretical and Practical Introduction to Online Human Communication, Rowman & Littlefield, April 2021.
- John C. Sherblom Computer-Mediated Communication: Approaches and Perspectives, 6 March 2019
- Aaron Langille and Victoria Kannen Virtual Identities and Digital Culture Taylor & Francis Ltd, 2021.
- Jeremy Harris Lipschultz, Social Media Law and Ethics, Routledge, 2021.

Suggested Readings:

- Mike Z Yao, Rich Ling, "What Is Computer-Mediated Communication?"—An Introduction to the Special Issue, Journal of Computer-Mediated Communication, Volume 25, Issue 1, January 2020, Pages 4–8, https://doi.org/10.1093/jcmc/zmz027**.**
- Pannu Parveen, Tomar A Yuki, Communication Technology for Development, IK International publication, 2012.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch,
University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE
DSE HH 5D1: Fabric Production

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Fabric Production	4	2	0	2	XII Pass	Appeared in Textile Science

Learning Objectives

- To provide students with knowledge of various production techniques.
- To learn about the various standard test methods required for the evaluation of various types of fabrics

Learning Outcomes

- Demonstrate an understanding of various types of fabric forming methods.
- Familiarize students with the types and scope of technical textiles.
- Acquire skills to inspect, manage and control quality in the textile industry.

SYLLABUS OF DSE HH 5D1

THEORY
(Credits 2; Hours 30)

UNIT I: Weaving **10 Hours**

- Structure and components of woven fabric: warp, weft, selvedge, grain
- Yarn preparation for weaving
- Weaving operations
- Types of Loom: shuttle and shuttleless looms
- Types of weaves: Basic and Decorative
- Blended Fabrics

UNIT II: Knitting **8 Hours**

- Structure and components of knitted fabric: courses, wales
- Yarn preparation for knitting
- Knitting needles
- Knitting process and machines
- Knit fabric stitches
- Knitted fabric classification: Warp and Weft knits
- Techniques for knitwear production- fully-cut, fully-fashioned and integral

UNIT III: Non-Wovens **6 Hours**

- Production of non-woven
- Types of non-woven fabrics and their properties
- Application in various sectors- apparel and industrial

UNIT IV: Other methods of fabric construction **4 Hours**

- Nets
- Laces
- Braiding
- Knotting

UNIT V: Technical Textiles **2 Hours**

PRACTICAL
(Credits 2; Hours 60)

1.	Yarn Count : Direct and Indirect	**6**
2.	Dimensional Stability of cotton and wool and knitted fabric	**8**
3.	Identification of weaves, point paper diagrams	**12**
4.	GSM	**4**
5.	Drape	**6**
6.	Crease recovery	**6**
7.	Bending length	**6**
8.	Tear strength	**6**
9.	Fabric analysis	**6**

Essential Readings:

- Joseph, M.L., (1988) Essentials of Textiles (6th Edition), Holt, Rinehart and Winston Inc., Florida.
- Rastogi, D. (Ed.) and Chopra, S. (Ed.), (2017), Textile Science, Orient Black Swan.
- Sekhri S., (2011) Textbook of Fabric Science: Fundamentals to Finishing, PHI Learning, Delhi.
- Chattopadhyay, K.D., 1995, Handicrafts of India, Wiley Eastern Limited, N Delhi.
- Corbman P. B., (1989), Textiles- Fibre to Fabric, 6th edition, Mc Graw Hill, New York.
- Pizzuto's J.J. "Fabric Science", Fairchild Publication, New York.
- Hollen N., Saddler J., Langford A.L., Kadolph S.J., (1988), Textiles, 6th Edition, Macmillan Publishing Company New York, USA
- Das, Shukla, 1992, Fabric Art- Heritage of India, Abhinav Publications, N Delhi.
- Chelna Desai, 1988, Ikats Textiles of India, Chronicle Books, India

Suggested Readings:

- Brackenbury, T. (2005). *Knitting Clothing Technology*, Blackwell Science Publishers
- Horrock A.R. and Anand, S.C. (2000). *Handbook of Technical Textiles*, Cambridge: Woodhead Publishing.
- Spencer, D.J. (2005) *Knitting Technology: A Comprehensive Handbook and Practical Guide*, 4th ed. Cambridge: Woodhead Publishing.
- Booth, J. E. (1964) Principle of textile testing an introduction to physical methods of testing textile fibers, yarns, and fabrics. 2nd Edition. London: Meanness Butterwroths.
- Saville, P. B. (1999) Physical testing of textiles. Cambridg: Woodhead Publishing Limited.
- Skinkle, J.H. (1940) Textile Testing. New York: Chemical Publishing Co. Inc. Brooklyn.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch,

University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE
DSE HH 5D2: Understanding Fabrics

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Understanding Fabrics	4	2	0	2	XII Pass	Appeared in Textile Science

Learning Objectives

- To briefly study the fabric components.
- To enhance awareness of various commercially available fabrics.
- To understand the properties and end uses of the various types of fabrics.

Learning Outcomes

The students would be able to:

- Understand the components of a textile fabric.
- Identify the various commercially available fabrics.
- Appropriately select fabrics based on their properties, cost and recommended end use.

SYLLABUS OF HH 5D2

THEORY
(Credits 2; Hours 30)

UNIT I: Fabric components **7 Hours**

In this unit, students will be able to understand the basics of fibres, yarns and fabric.

- Fibres and yarns
- Methods of fabric construction
- Fabric finishing- dyeing, printing, aesthetic and functional finishes

UNIT II: Commercially important woven fabrics: Identification, properties and end use 14 Hours

In this unit, students will gain an understanding of various types of woven fabrics

- **Cotton and other Cellulosic Fabrics**

- Light weight fabrics- Mulmul, Voile, Organdy, etc.
- Medium weight fabrics- Cambric, Poplin, Cotton Rubia, Denim, Chambray, Seer-sucker, Eyelash dobby, Schiffli, Jute, Linen, etc.
- Heavy weight fabrics- Canvas, Casement, Gabardine, Damask, Corduroy, Velvet, Terry, etc.

- **Silk and Wool fabrics**
  - Lightweight fabrics- Silk Crepe, De'chine, Georgette, Chiffon, Organza, etc.
  - Medium/Heavy weight fabrics- Flat silk, Satin, Taffeta, Dupion, Shantung, Raw silk, Tussar silk, Habutai silk, Tweed, Wool twill
- **Man-made fibre and blended fabrics**
  - Art silk, Lizzy-Bizzy, Terryvoile, Semi-crepe, Moss crepe, Artificial chiffon, Artificial

UNIT III: Commercially Important Knitted and Non-woven fabrics: Identification, properties and end use

4 Hours

In this unit, students will learn about various types of knitted and non-woven and other types of fabrics

- Knitted Fabrics- Knitted Terry, Jersey, Rib Knit, Interlock knit, Pique, Velour, Scuba, Fleece, etc.
- Non-wovens- Different types and weights
- Others- Leatherette, Suede, Nets and Laces

UNIT IV: Traditional Indian Fabrics: Identification, properties and end use **5 Hours**

In this unit, students will be learn to identify various types of traditional Indian fabrics

- Selected woven, embroidered, painted, printed and dyed traditional Indian textiles.

PRACTICAL
(Credit 2; Periods: 60)

7. Identification of various types of fibres, yarns, fabric types (woven, knitted, non-wovens and others), weaves, thread count and fabric weight
8. Collection of swatches for portfolio preparation of woven, knitted, non-woven and traditional Indian fabrics

Essential Readings

- Corbman P. B., (1989), Textiles- Fibre to Fabric, 6th edition, Mc Graw Hill, New York.
- Hollen N., Saddler J., Langford A.L., Kadolph S.J., (1988), Textiles, 6th Edition, Macmillan Publishing Company New York, USA
- Joseph, M.L., (1988) Essentials of Textiles (6th Edition), Holt, Rinehart and Winston Inc., Florida.
- Rastogi, D. (Ed.) and Chopra, S. (Ed.), (2017), Textile Science, Orient Black Swan.
- Sekhri S., (2011) Textbook of Fabric Science: Fundamentals to Finishing, PHI Learning, Delhi.

Suggested Readings

- Pizzuto's J.J. "Fabric Science", Fairchild Publication, New York.
- Tholia A., (2013) Understanding Fabrics- A practical Approach, 2nd edition, Sarv International.
- Das, Shukla, 1992, Fabric Art- Heritage of India, Abhinav Publications, N

Delhi.
- Chelna Desai, 1988, Ikats Textiles of India, Chronicle Books, India.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch,
University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE
DSE HH 5E1: Entrepreneurship Development and Enterprise Management

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Entrepreneurship Development and Enterprise Management	4	2	0	2	XII Pass	Appeared in Fundamentals of Resource Management

Learning Objectives

- To familiarize the students with meaning and concept of entrepreneurship and its ecosystem
- To sensitize and orient students towards identifying entrepreneurial opportunities and market potential
- To impart knowledge for setting up an enterprise and its management

Learning Outcomes

The students would be able to:

- Understand the concepts of an entrepreneur, entrepreneurship and entrepreneurial ecosystem in context of India.
- Appreciate the role of entrepreneurial motivation and creativity in innovation.
- Develop skills in project identification, formulation and appraisal.
- Gain insight into setting up of an enterprise and its management.

SYLLABUS OF HH 5E1

THEORY
(Credits 2; Hours 30)

UNIT I: Entrepreneurship Development **10 Hours**

Fundamental concepts of entrepreneurship development and entrepreneurial ecosystem**.**

- Entrepreneurship- concept, significance, stages, growth process, entrepreneurship development in India, entrepreneurship education model, drivers & barriers
- Entrepreneur- characteristics, competencies, types, style & motivation
- Women Entrepreneurship in India- characteristics, competencies, significance, status, factors promoting , challenges faced, strategies for women entrepreneurship development- income generation , self-help groups, micro enterprises and self- employment, skill development and technology transfer

- Entrepreneurial Ecosystem: Domains (accessible markets, availability of finance, conducive culture, human capital, progressive policy framework, and a range of institutional support)
- Creativity: Concept, significance & process
- Innovation: Concept, types, process, sustaining growth- disruptive innovation.

UNIT II: Enterprise Planning and Launching 10 Hours

Project identification, project formulation, project appraisal

- Types of enterprises: classification based on sector, capital, gender, place, product, ownership pattern, platform & process
- Project Identification: sensing business opportunities, feasibility study
- Project Formulation: Project report & its components, writing a business proposal
- Project Appraisal: Technical, marketing, financial, legal and environmental

UNIT III: Enterprise Management & Sustenance (with reference to start ups and micro enterprises) 10 Hours

- Production Management - Organizing production; input-output cycle - ensuring quality
- Marketing Management- Understanding markets and marketing: types, functions & marketing mix
- Financial Management - Concept, types and sources of finance, financial ratios & projections
- Human resource management – Concept, significance, practices, challenges
- Total Quality Management
- Business ethics

PRACTICAL
(Credits 2; Hours 60)

1. Micro Lab
2. SWOC analysis of successful entrepreneurs and enterprises through case profiling.
3. Entrepreneurial Competencies & Motivation - Simulations & experiential learning.
4. Institutions facilitating entrepreneurship development in India.
5. Preparation and appraisal of a business plan.
6. Calculations of financial Indices.
7. Design and development of marketing mix for a startup.
8. Designing of sales campaign for digital marketing

Essential Readings:

- Barringer R. B. (2020). *Entrepreneurship: Successfully Launching New Ventures* (6e ed.). Pearson Education.
- Chabbra T. N. (2015). Entrepreneurship Development. New Delhi: Sun India.
- Charantimath, P. M. (2018). Entrepreneurship Development and Small Business Enterprises. Pearson Publications.
- Desai V. (2011). The Dynamics of Entrepreneurial Development and Management. Himalaya Publishing House.

Suggested Readings:

- Gundry L, K. & Kickul J. R. (2007). Entrepreneurship Strategy: Changing Patterns in New Venture Creation, Growth, and Reinvention. SAGE Publications, Inc.
- Taneja & Gupta. (2001). Entrepreneur Development- New Venture Creation. New Delhi: Galgotia Publishing Company.

- Zaware, N. (2019). Entrepreneurship Development and Startups Managemen. Educreation Publishing.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE
DSE HH 5E2: Design Thinking and Innovation

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Design Thinking and Innovation	4	2	0	2	XII Pass	Appeared in Fundamentals of Resource Management

Learning Objectives

- To comprehend the Design Thinking concept for fostering innovation
- To understand concept and role of innovation in present day context
- To apply design thinking solutions individually and in team for maximizing business growth
- To instill a culture of design thinking to enhance innovation within an organization

Learning Outcomes

The students would be able to:

- Overcome cognitive fixedness and develop new mindset that integrates design thinking for innovation.
- Empathize and apply human centered design for seeking innovative solutions.
- Create the optimal environment and team dynamics to steer innovation and collaboration.
- Develop the capacity to design and test cutting-edge for customer-focused prototypes

SYLLABUS OF HH 5E1

THEORY
(Credits 2; Hours 30)

UNIT I: Innovation **10 Hours**

This unit will help students to understand the concept of innovation and types and its dimensions

- Innovation: Concept, significance, types and process
- Innovation diffusion theory
- Innovation in organizations: Drivers and barriers, bottom up and top down approach, horizontal versus vertical approach
- Dimensions of innovation: Innovation eco-system in India, social Innovation, grassroots innovation, frugal innovation and global Innovation-global innovation index framework (GII)

UNIT II: Design thinking approaches and processes **12 Hours**

The focus of this unit would be on developing the basic concepts of design thinking, business use of design thinking, mindset, approaches and processes.

- Design thinking : Concept, discipline, role and mindset
- Design Thinking Approaches: Empathy, Ethnography, Divergent thinking, convergent thinking, Visual thinking, Assumption testing, Prototyping and Time for learning and validation
- Design thinking resources: people, place, materials and organizational fit
- Design thinking processes: Double diamond process, Stanford d. school 5 stage process

UNIT III: Design thinking in practice **8 Hours**

This unit will help students to gain insights about design thinking tools, methods and its application.

- Stages of designing for growth
- Design thinking tools and methods: visualization, journey mapping, value chain analysis, mind mapping, brain storming, concept development, assumption testing, customer co creation, rapid prototyping, launching
- Design thinking applications in organizations

PRACTICAL
(Credits 2; Hours 60)

1. The foundation for innovation: Define users' needs and problems, identify and reframe the most game changing part of the problem and analyze the contextual environment for viable solution.
2. Ideate: Develop user focus ideas to identify new problems, and apply tools for innovative solutions, ideation through design thinking approaches and refine innovative ideas.
3. Develop an experimentation mindset: Combine ideas into complex innovation concepts, critique and strengthen concepts, guide prototyping by creating critical questions related to concept's desirability, feasibility and viability.
4. Implement: Assess developer and user perspectives for bias that may affect implementation, apply framework to strengthen communications about an innovation`s value and reflect on management skills for sustaining a culture of innovation

Essential Readings:

- Soni, Pwan. (2020). Design your thinking: The Mindsets, toolsets and skillsets for creative problem solving
- Kahneman, Daniel. (2011). Thinking fast and slow
- Drucker, P. F. (2006). Innovation and entrepreneurship: Practice and principles. USA: Elsevier.70
- Roy, R. (2008) Entrepreneurship. New Delhi: Oxford University Press

Suggested Readings:

- Chesbrough, H. (2006). Open business model: How to thrive in the new innovation landscape. Harvard Business School Press.
- CS Prasad (2012), Small and Medium Enterprises in Global Perspective, New Century Publications, New Delhi

- Fagerberg, J., Mowery, D. C., & Nelson, R. R. (Ed.). (2006). The Oxford Handbook of Innovation. New Delhi: Oxford University Press.
- Kaplan, J. M. (.2006). Patterns of entrepreneurship. John Wiley & Son.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF HOME SCIENCE
SEMESTER – VI

B.Sc. (Honours) Home Science

DISCIPLINE SPECIFIC CORE COURSE

DSC HH 616: Traditional Indian Textiles

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Traditional Indian Textiles	4	3	0	1	XII Pass	Appeared in Textile Science

Learning Objectives

- To create awareness and foster appreciation of the country's rich textile heritage
- To impart knowledge of fundamentals of textile conservation and storage
- To acquaint students about the khadi, handloom and handicrafts sectors and measures taken by various organisations for their sustenance

Learning Outcomes

- Recognise and identify embroidered fabrics of different states in terms of stitches and designs
- Explain material and design of selected traditional woven fabrics.
- Describe our heritage of varied dyed, painted and printed fabrics.
- Classify conservation techniques and recognise signs of deterioration of textiles.
- Carry out care and conservation of traditional textiles.
- Provide an insight into the evolution and socio-economic significance of *khadi,* handloom and handicraft sectors.
- Discuss sustenance of traditional textile crafts and interventions by organisations.
- Analyse the textile arts in their historical perspective, the impact of modernisation and their contemporary status.

SYLLABUS OF DSC HH 616

THEORY
(Credits 3; Hours 45)

UNIT I: Study of Textile Crafts of India: with reference to history, production centers, designs, materials, colours and products. 30 Hours

- Woven Textiles - Banaras Brocades, Jamdanis and Baluchars of Bengal, Kani Shawls of Kashmir, Kanjivarams of Tamil Nadu
- Embroidered Textiles-Kanthas of Bengal, Kasuti of Karnataka, Phulkari of Punjab, Chikankari of Uttar Pradesh, Kashida of Kashmir, Gujarat embroideries
- Painted and Printed textiles –Kalamkaris of Andhra Pradesh, Dabu printing of Rajasthan, Ajrakh printing of Gujarat
- Dyed textiles –Bandhnis of Rajasthan and Gujarat, Ikats- Patola of Gujarat, Bandhas of Orissa, Telia Rumal of Andhra Pradesh

UNIT II: Status of Traditional Textiles in Modern India 7 Hours

- Evolution and socio-economic significance of Khadi, Handloom and Handicraft sector
- Sustenance of traditional textile crafts
- Interventions by organizations

UNIT III: Conservation of Traditional Textiles 8 Hours

- Types of Conservation – Preventive and Curative
- Factors influencing degradation of textiles
- Care and storage techniques

PRACTICAL
(Credits 1; Hours 30)

1. Resist Dyeing Techniques **10**
   - Tie & dye using various techniques on cellulosic and protein fibers
   - Batik on cotton
2. Printing **4**
   - Block printing: pigment
   - Screen printing: pigment
3. Embroidery stitches of traditional embroideries **6**
4. Portfolio development-Traditional textile crafts **4**
5. Product development **4**
6. Visit to craft centers/museums: Craft documentation report on any one craft **2**

Essential Readings:

- Agarwal, O.P., 1977, *Care and Presentation of Museum projects* – II, NRL
- Barnard, N., Gillow, J., 1993, Indian Textiles, Thames and Hudson, USA
- Chattopadhaya, K.D., 1995, *Handicrafts of India*, Wiley Eastern Limited, N Delhi
- Crill, R., 2015, The Fabric of India, Victorial and Albert Museum, UK
- Das, Shukla, 1992, *Fabric Art- Heritage of India,* Abhinav Publications, N Delhi.
- Grundy & Northedge, (1998) *Standards in the Museum Care of Costume and Textile*

Collections, Museums & Galleries Collection, Spin Offset Limited, Chapter 7-14, pg 35-54

- Mausumi Kar, (2015), The Indian Textile and Clothing Industry An Economic Analysis, Springer New Delhi Heidelberg New York Dordrecht London, Chapter 1& 2, pg 12-33.
- Pandit Savitri, 1951, Indian Embroidery- Its Variegated Charm, Pandit Publisher, Baroda Embroidery tutorials, video links of woven textiles and slide share

Suggested Readings:

- Annual Report, (2002-2003), Handloom Industry, Ministry of textiles, Chapter 5, pg 1-20
- Chelna Desai, 1988, *Ikats Textiles of india*, Chronicle Books, India
- Craft Documentaries on Youtube
- Evaluation study on khadi and village industries programme, (2001) Programme evaluation organization planning commission government of India, New Delhi. Chapter 1 & 2, pg 1-9
- Karolia, Anjali, 2019, Traditional Indian Handcrafted Textiles, Niyogi Publishers

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE
DSC HH 617: Space Design and Sustainability

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Space Design and Sustainability	4	3	0	1	XII Pass	Appeared in Personal Finance and Consumer Studies

Learning Objectives

- To understand the fundamentals of space planning.
- To acquire knowledge regarding materials, building construction techniques and technologies.
- To comprehend sustainable parameters in space design.

Learning Outcomes

- Comprehend the concept of design applicable to interior spaces.
- Understand the application of materials and finishes to create aesthetic and sustainable interiors.
- Comprehend the concept of sustainability and green rating systems.

SYLLABUS OF DSC HH 617

THEORY
(Credits 3; Hours 45)

UNIT I: Basic Concepts in Space Planning **10 Hours**

This unit will develop understanding regarding the concept of space planning and designing.

- Concept of space as a resource, characteristics of space
- Principles of planning spaces
- Zoning
- Types of houses: Independent houses and Apartments.
- Contemporary Housing - Service Apartments, Senior living.
- Building bye-laws – NBC and MPD

UNIT II: Construction Features in Building Design **15 Hours**

This unit will acquaint students with various elements of building construction important for developing a strong structure.

- Site selection
- Conventional and Non-conventional building materials, sustainable building materials
- Structural components of a building (Material and Types) – Foundation, Walls, Flooring, Roofs, Doors and Windows, Staircase.
- Basic building services
- Landscaping
- Earthquake resistant structures
- Home Automation

UNIT III - Concept of Space Design **15 Hours**

This unit will introduce students to the area of space design such as elements and principles of design, furniture and furnishings and wall treatment.

- Introduction to Elements and Principles of design
- Concept of Colour in Interior Design - Colour Theories, Colour Psychology, Colour Schemes, Colour Forecasting
- Energy Efficient Lighting Systems
- Furniture - Types, Selection criteria, Arrangement
- Furnishings - Home Furnishing, Window treatment, Floor Coverings
- Wall treatment
- Use of sustainable material in space design

UNIT IV: Sustainable built environment **5 Hours**

This unit will introduce students to the concept and application of sustainability in built environment.

- Introduction to sustainable built environment
- Green building rating guidelines in India – GRIHA and LEED
- Concept of Smart Cities

PRACTICAL

(Credits 1; Hours 30)

1. Introduction to building terminologies, Concept of Scale, building constructions symbols
2. Evaluation of floor plans on the basis of principles of space planning
3. Preparation of floor plans
   - Multipurpose rooms/ studio apartment (Computer aided / manual)
4. Identification and characteristics of different building materials
5. Case study of a Green Building
6. Project on Landscaping / Home Automation

Essential Readings:

- Goel S., Seetharaman P. Kakkar, A. (2015). *Manual on Interior space designing*, Elite publishers.
- Goldstein, H. & Goldstein, V. (1988). *Art in Everyday Life (4th ed.),* Oxford & IBH Publishing Co.
- Indian Green Building Council. (2022). *Introduction to Green Buildings and Built Environment*, BSP Books.
- Kumar, S. (2008). *Building Construction*, Standard Publisher.
- Rao, M.P. (2020). *Interior Design Principles and Practices*, Standard Publishers Distribution.

Suggested Readings:

- Duggal S.K. (2017). *Building Materials*. CRC Press.
- Green Rating for Integrated Habitat Assessment (GRIHA). (2021). *GRIHA Manuals*, GRIHA Council.
- Grimley, C. and Love, M. (2018). *The Interior Design Reference & Specification Book*, Rockport Publishers.
- Indian Green Building Council. (2021). *IGBC Manuals*, IGBC.
- Iyer, G. H. (2022). *Green Building Fundamentals*, Notion Press.
- Mitton, M. and Nystuen, C. (2021*). Residential Interior Design: A Guide to Planning Spaces (4th ed.),* Wiley.
- Singh, G. (2019). *Building Construction and Materials*, Standard Publishers.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE
DSC HH 618: Extension for Development

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Extension for Development	4	3	0	1	XII Pass	Appeared in Communication Systems and Social Change

Learning Objectives

- To enable the students to grasp the concept of extension and its role in development.
- To gain knowledge and application of principles and processes involved in Extension Programme Planning and Management including community mobilization and stakeholder participation.
- To understand the principles and process of Extension Programme Design and Management.
- To develop understanding and skills in planning participatory approaches in Extension Programme Management.
- To inculcate a thorough understanding of the dynamic nature of extension programmes based on the changing needs of society as well as critical appraisal of the presently operating extension programs in the country.

Learning Outcomes

- Learn about the concept and scope of extension in national development.
- Develop an understanding of the principles and process involved in programme design and management.
- Develop skills for using participatory approaches in programme management.
- Gain knowledge for various development schemes and programmes operating at the national level.

SYLLABUS OF DSC HH 618

THEORY
(Credits 3; Hours 45)

UNIT I: Extension: Concept and Principles **9 Hours**

This unit explains the concept of extension and lays thrust on the fundamental concepts of extension applied in national development.

- Extension: concept, goals, philosophy, history and scope
- Types of extension and approaches to Extension
- Principles of Andragogy; Andragogy vs. Pedagogy
- Principles of extension
- Relationship between communication and extension - role of extension in development
- Methods of community contact in Extension

UNIT II: Participation & Leadership for Community Development **12 Hours**

This unit highlights the concept of participation required as a prerequisite in any extension programme and develop skill sin the same.

- Stakeholders in Extension programs
- People's participation and social mobilization in development, levels of participation
- Participatory Learning and Action – concept, principles, classification of tools and techniques
- Leaders in extension – functions, types and leadership styles and theories
- Diffusion of innovation and adoption – concept, theory and application

UNIT III: Programme Management **12 Hours**

This unit emphasizes on the principles and process involved in designing a programme and its management. The unit also strives to give conceptual clarity on project cycle and the different models of extension programme management.

- Project cycle- goals, objectives, indicators, outputs and outcomes
- Concept and Principles of extension program management
- Models of extension programme management - overview of models, Sandhu's model, Logic model
- Monitoring and evaluation

UNIT IV: Development Programmes **12 Hours**

This unit elucidates on the in-depth understanding of the various Extension schemes and programmes initiated by the Government.

- Development issues and goals- national and international perspectives, Sustainable Development Goals
- Contemporary National Development Programmes (related to education, employment, income, health and nutrition, digitalization and women) – objectives, target groups, salient features, monitoring and evaluation, outcomes, stakeholders, partnership and funding

PRACTICAL
(Credits 1; Hours 30)

1. Approaches to Adult Education
2. Develop skills in planning and using individual and small group methods in extension
3. Understanding the use of PLA as need assessment tools
4. Assessing the leadership skills in a case-study format

Essential Readings:

- Beck, S., 2020, Communication in the 2020s. Routledge.
- Kumar, S., 2002, Methods for community participation: a complete guide for practitioners. Vistaar Publications, New Delhi.
- Ray G.L., 2015, Extension, Communication and Management, Kalyani Publications, New Delhi.
- Sandhu, A S., 2018, Extension Programme Planning. Oxford and IBH Publishers, New Delhi.
- Singh, S., 2022, A Brief Book on Extension Education. New Vishal Publications, New Delhi.
- Singh, A K., 2020, Frontline Extension in India Innovations and Reforms. Biotech Publisher, New Delhi.
- Supe, S V., 2019, An Introduction to Extension Education. Oxford & Ibh Publishing Co. Pvt Ltd, New Delhi.

Suggested Readings:

- Bhatnagar. O.P & Dahama, O.P., 2009, Education and Communication for Development 2ed. Oxford & IBH Publishing Co. Pvt Ltd, New Delhi.
- Dale R., 2004, Evaluating Development Programmes and Projects. Sage Publications, New Delhi.
- Kumar & Hansra, 2000, Extension Education for Human Resource Development. Concept Publishing Company, New Delhi.
- Mikkelsen, B., 2002, Methods for Development Work and Research. Sage Publications, New Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE
DSE HS 6-1: Research Methods in Home Science

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
Research Methods in Home Science	4	3	0	1	XII Pass	NIL

Learning Objectives

- To provide students understandings about the basic concepts, approaches and methods in conducting Home Science research.
- To enable learners to appreciate and critique the nuances of designing a research study well.
- To sensitize students towards ethical concerns while conducting Home Science research.

Learning Outcomes

- Demonstrate knowledge of the scientific method, purpose and approaches to research in Home Science
- Compare and contrast quantitative and qualitative research approaches
- Explain different types of research design and their applicability in Home Science research
- Understand the key elements of a research process
- Explain ethical principles, issues and procedures

SYLLABUS DSE HS 6-1

THEORY
(Credits 3; Hours 45)

UNIT I: Research Purpose and Design **10 Hours**

This unit will deal with meaning and importance of research in various areas of Home Science. Exposure to different types of research designs and measurement in Home Science research would also be given.

- Meaning, purpose and significance of research
- Research as a scientific method
- Types of research
- Quantitative, Qualitative and mixed method approaches
- Research Designs –Experimental and Non-Experimental; Descriptive and Observational; Participatory research

- Internal and external validity of research design
- Variables, concepts and measurement in research
- Levels of measurement
- Units of analysis

UNIT II: Sampling and Research tools & techniques 15 Hours

This unit will introduce the student to the concept of sampling and methods used to draw sample from population using examples from Home Science discipline. Students would also learn about types of data, its collection and reliability and validity concerns.

- Role of sampling in research
- Sampling techniques and their applicability, Sample size and sampling error
- Types of data: Primary and Secondary
- Tools of data collection; types, construction and administration- Interview, Questionnaire, Observation, Focus group discussion and other methods
- Validity and reliability of data collection tools

UNIT III: The Research Process 15 Hours

This unit will elaborate upon the various steps involved in conducting and reporting researches in Home Science.

- Defining the problem, research questions, objectives, hypotheses
- Review of related literature and originality in writing
- Systematic research: concept and methodology
- Planning the research
- Identifying variables and constructing hypothesis
- Selecting appropriate research methodology and tools
- Data analysis: coding and tabulation
- Writing a research report: styles and formats
- Citation formats: in medical sciences, social sciences

UNIT IV: Values, Social Responsibility and Ethics in Research 5 Hours

This unit will apprise the students about ethical concerns while conducting and reporting research.

- Ethical principles guiding research: from inception to completion and publication of research
- Plagiarism and Academic integrity in research: plagiarism tools and software
- Ethical issues relating to research participants and the researcher
    - Rights, dignity, privacy and safety of participants
    - Informed consent, confidentiality, anonymity of respondents, voluntary participation, harm avoidance

PRACTICAL
(Credits 1; 30 Hours)

1. Data visualization
2. Levels of Measurement
3. Types of research designs
    a. Experimental and non-experimental; Descriptive and observational

   b. Qualitative, Quantitative and mixed method
4. Sampling techniques and sample size calculation
   a. Probability sampling method
   b. Non-Probability sampling methods
5. Tools of data collection- Interview schedule, questionnaire and FGD
   - Designing/ Construction
   - Preparation of tools for ethical review
   - Pilot testing/ validity and reliability of the tool\
6. Data collection and analysis process: conducting interviews, administering questionnaire
7. Coding and tabulation of data for analysis
8. Citation formats and Plagiarism
9. Reviewing a research paper from a specific area of specialization in Home Science

Essential Readings:

- Kerlinger F. N. and Lee, H.B. (2017). *Foundations of Behavioral Research* 4th Ed. Harcourt College Publishers.
- Kothari, C. R. (2019). *Research Methodology: Methods and Techniques*. New Age International Pvt Ltd, New Delhi.
- Kothari, C. R. (2022). *Shodh Padhati* 1st Ed. New Age International Pvt Ltd, New Delhi.
- Kumar, R. (2019) Research Methodology: A Step-by-Step Guide for Beginners. 5th Ed. Sage Publications, New Delhi.

Suggested Readings:

- Bernard, H. R. (2000). *Social research methods: Qualitative and quantitative approaches.* Thousand Oaks, CA.: Sage.
- Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches.* Thousand Oaks, CA: Sage Publications.
- Davis, A. M., Treadwell, D. (2019). Introducing Communication Research: Paths of Inquiry. United Kingdom: SAGE Publications.
- Flynn, J.Z., Foster, I.M. (2009). *Research Methods for the Fashion industry.* Fairchild books, Bloomsbury publishing.
- Indian National Science Academy (INSA) (2019). *Ethics in Science Education, Research and Governance*. ISBN:978-81-939482-1-7. http://www.insaindia.res.in/pdf/EthicsBook.pdf
- Jacobsen, K. H. (2020). *Introduction to health research methods: A practical guide*. Jones & Bartlett Publishers.
- UGC (2021) *Academic Integrity and Research Quality*. New Delhi: UGC, Retrieved from https://www.ugc.ac.in/e-book/Academic%20and%20Research%20Book_WEB.pdf

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE
DSE HS 6-2: Innovation and Entrepreneurship

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
Innovation and Entrepreneurship	4	1	0	3	XII Pass	NIL

Learning Objectives

- To motivate students to opt for innovation and entrepreneurship as a career option.
- To foster entrepreneurial traits and competencies
- To make students understand the critical role of creativity, design thinking and innovation in entrepreneurship development
- To prepare students to plan, launch and manage start-ups/enterprise
- To establish an ecosystem for students that is conducive to networking and incubating

Learning outcomes

After completing the course, students will be able to:

- Consider opting innovation and entrepreneurship as a career.
- Develop entrepreneurial traits and competencies.
- Ideate a viable business proposition.
- Network for venturing and innovating.
- Pitch a business proposal.

SYLLABUS OF DSE 6-2

THEORY
(Credit 1: Hours: 15)

UNIT I: Innovation **5 Hours**

- This unit focuses on developing the fundamental concept of innovation and its dimensions.
- Innovation: Concept, significance, types and process
- Innovation diffusion theory

- Innovation in organizations: Drivers and barriers, bottom-up and top-down approach, horizontal versus vertical approach
- Dimensions of innovation: Innovation eco-system in India, social Innovation, grassroots innovation, frugal innovation, and global Innovation-global innovation index framework (GII)

UNIT II: Creativity & Design thinking 4 Hours

- The focus of this unit will be on developing the basic concepts and role of creativity & design thinking in innovation.
- Creativity- Concept, significance, role, processes and fostering creativity for innovation
- Design thinking: Concept, discipline, role, mindset**,** resources, and processes
- Design Thinking Approaches: Empathy, Ethnography, Divergent thinking, convergent thinking, Visual thinking, Assumption testing, Prototyping and Time for learning and validation

UNIT III: **Entrepreneurship and Enterprise Management 6 hours**

This unit will orient the students to the concept of entrepreneurship and enterprise management.

- Entrepreneurship - Concept, stages, growth process, and entrepreneurship development in India, Government policies and schemes
- Entrepreneur- characteristics, competencies, types, styles, and motivation
- Enterprise & its management- types and strategies for Start-up launching, management and sustenance
- Exit strategies for a new startup- trends in India
- Networking & business ethics

PRACTICAL
(Credit 3: Hours: 90)

1. Entrepreneurial Motivation: Developing an appreciation for entrepreneurial traits and entrepreneurship as a career through 14 Hours

- Entrepreneurial motivation orientation – Sector-specific case studies of successful entrepreneurs and profiling of required traits for innovation
- Understanding self as a prospective entrepreneur - Who am I?, Locus of control, Competency Profiling, SWOC analysis, Mapping entrepreneurial styles

2. Understanding and appreciating Innovations and design thinking: 20 Hours

- Identification of innovations in day-to-day life
- Critical evaluation of innovations and design-driven solutions – case studies
- Environment scanning for business opportunities
- User's empathy mapping – understanding user's pain, pain creators and relievers
- Redesign activities for possible solutions - products and services
- Industry-integrated learning – live projects

3. Market research & mapping start-up station: 12 Hours

- Environment scanning for business opportunities

- Ideation: Generation, articulation, testing and incubating
- Develop a feasibility report

4. Business plan and appraisal: 10 Hours

- Business preparation
- Appraisal of business plan
- Risk auditing and mitigation

5. Operations and Marketing management: 12 Hours

- Develop operational management sheet and applications for registrations and licenses
- Familiarizing with the relevant documents, including the inventory and stock registers.
- Customer segmentation and profiling
- Prepare the 4Ps of the marketing mix, including digital marketing tools
- Prepare an elevator pitch

6. Financial management: 12 Hours

- Analysis of financial requirements and available capital
- Sources of finance - bootstrapping, crowdfunding, angel investing venture capital
- Financial statements, cash flow management, applicable interest rates of different types of loans
- Calculation of financial ratios, break-even analysis and applicable taxes
- Designing funding strategy and start-up valuation

7. Human resource management and legal framework: 10 Hours

- Functional requirements and cost implications
- Team formation
- Ensuring health and safety at the workplace
- Business communication
- Enterprise registration- Legal compliances, paperwork and cost
- Intellectual property rights

Essential Readings:

- Bhatt Arvind Kumar (2022). Innovation and Entrepreneurship. Atlantic publisher
- Chabbra T. N. (2019). Entrepreneurship Development. New Delhi: Sun India.
- Charantimath, P. M. (2018). Entrepreneurship Development and Small Business Enterprises. Pearson Publications.
- Carayanis Elias G, Samara Elpida T & Bakouros Yannis L.(2015). Innovation and Entrepreneurship. Springer.
- Drucker. Peter F. (2006), Innovation and Entrepreneurship. Harper Business
- Gundry L, K. & Kickul J. R. (2007). Entrepreneurship Strategy: Changing Patterns in New Venture Creation, Growth, and Reinvention. SAGE Publications, Inc.
- Santiago, Sam (2011), The official book of Innovation. Rising above LLC publisher
- Soni, Pwan.(2020). Design your thinking: The Mindsets, toolsets and skillsets for creative problem solving

Suggested Readings:

- Christensen M Clayton (2013). The innovator's dilemma. Harvard Business Review Press.
- Daum Callie (2020). Business strategy: essentials you always want. Vibrant publishers

- Goyal P. (2017). Before you start up: How to prepare to make your start-up a dream reality. Fingerprint publishing.
- HBR's 10 Must Reads on Startups and Entrepreneurship (2018). Featuring Bonus Article "Why the Lean Startup Changes Everything" by Steve Blank
- Nath,D. Mitra, S. (2020) Funding your startup and other nightmare. Penguin portfolio.
- Taneja & Gupta. (2001). Entrepreneur Development- New Venture Creation. New Delhi: Galgotia Publishing Company.

Web references:

- https://web.iima.ac.in/assets/upload/mdp/480284395YEP%20Brochure.pdf
- https://www.iimb.ac.in/entrepreneurship
- https://www.mepsc.in/skill-based-programs/
- https://ediindia.ac.in/pgdm-innovation-entrepreneurship-venture-development/

Training material:

- EMT kit developed by NIESBUD, New Delhi and EDII Ahmedabad

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Department of Home Science
Semester – IV

B.Sc. (Prog.) Home Science

DISCIPLINE SPECIFIC CORE COURSE

DSC HP 410: Lifespan Development II: Middle Childhood and Adolescence

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutoria	Practical/ Practice		
Lifespan Development II: Middle Childhood and Adolescence	4	3	0	1	XII Pass	Appeared in Lifespan Development I: Prenatal and Early Years

Learning Objectives

- To acquire a detailed understanding of development in middle childhood and adolescence.
- To gain insights into context specific cultural practices of development in children and adolescents.
- To develop understanding of the various roles and relationships during middle childhood and adolescence.

Learning Outcomes

Students will be able to:

- To develop an understanding of developmental milestones and domains from middle childhood to adolescence.
- To gain insights into the cultural aspects of development.
- To understand how relationships evolve and are maintained during middle childhood and adolescence.

SYLLABUS OF DSC HP 410

THEORY
(Credits 3; Hours 45)

UNIT I: Introduction to Middle Childhood Years **11 Hours**

This unit will explain the stage of middle childhood and the various changes in physical-motor, cognitive and language domains.

- Physical-motor Development
- Cognitive Development
- Language Development

UNIT II: Development in Middle Childhood Years **11 Hours**

This unit will explain the stage of middle adulthood and focus on the social emotional changes specific to this stage.

- Social- Role of Peers, School and Family
- Emotional Development
- Moral Development

UNIT III: Introduction to Adolescence **11 Hours**

This unit will focus on adolescence in India and focus on selected domains of development.

- Adolescence in the cultural context
- Physical and physiological changes during adolescence
- Cognition and Language Development

UNIT IV: Development in Adolescence **12 Hours**

This unit will explain the stage of adolescence and focus on the socio-emotional changes specific to this stage.

- Formation of Identity during Adolescence
- Social and Emotional Development
- Moral Development

PRACTICAL
(Credit 1; Hours 30)

1. Methods of studying Children and Adolescents
    - Questionnaire
    - Sociometry
    - Case study
2. To write a narrative account on adolescent years to understand the development of self.
3. To develop activities to facilitate cognition and creativity in adolescents.
4. Use of secondary sources to understand the depiction of children and adolescents in media
5. Psychometric tests for children and adolescents.

Essential Readings:

- Berk, L. E. (2007). Development through the lifespan. Delhi: Pearson Education. McGraw-Hill.
- Papalia, D.E. and Martorell, G. (2015). Experience Human Development, McGraw-Hill Education.
- Rice. F. P. (1998). Human Development: A lifespan approach. New Jersey: Prentice Hall.
- Santrock, J. W. (2007). A topical approach to life-span development. New Delhi: Tata
- Singh, A. (Ed). 2015. Foundations of Human Development: A life span approach. New Delhi: Orient Black Swan.
- Sharma, N. (1999). Understanding Adolescence. National Book Trust.
- Ranganathan, N. (Ed.). 2020. Understanding Childhood and Adolescence. New Delhi: Sage.

Suggested Readings

- Journal of Developmental Psychology
- Rutter, M. and Rutter, M. (1992). Developing Minds. Challenge and continuity across the lifespan. London: Penguin.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC CORE COURSE
DSC HP 411: Lifespan Approach to Nutrition

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title &Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Lifespan Approach to Nutrition	4	3	0	1	XII Pass	Appeared in Foundation of Food Science and Nutrition

Learning Objectives

- To acquire knowledge about the nutritional needs and concerns of an individual throughout the life cycle.
- To enable students in understanding the principles of planning nutritionally adequate diets.
- To make them exercise food choices consonant with good health based on sound knowledge of principles of nutrition.

Learning Outcomes

- Acquire knowledge about the nutritional needs and concerns of an individual throughout the life cycle.
- Comprehend the principles of planning nutritionally adequate diets.
- Exercise food choices consonant with good health based on sound knowledge of principles of nutrition.

SYLLABUS OF DSC HP 411

THEORY
(Credits 3; Hours 45)

UNIT I: Basics of Nutrient Requirements and Meal Planning 12 Hours

In this unit concepts of food groups and food exchange lists for meal planning, factors affecting meal planning will be dealt with. Students will also be introduced to dietary guidelines for Indians.

The concept of estimated average requirements, recommended allowances and methods of assessing nutrient requirements in general for Indians will be explained.

- Food groups
- Food exchange list
- Factors affecting meal planning and food related behaviour, diet diversity
- Dietary guidelines for Indians
- Concept of EAR, RDA and TUL
- Basic concepts of assessment of nutrient requirements

UNIT II: Nutrition during Adulthood and Old Age 12 Hours

Physiological influence on nutrient requirements during adulthood and old age (EAR/RDA), energy balance, nutritional concerns and changes in requirements during adulthood and old age, concept of healthy food choices, processed and ultra-processed food consumption and factors contributing to longevity will be dealt with.

- Adult men and women
- Elderly

UNIT III: Nutrition during Pregnancy and Lactation 9 Hours

Physiological changes in pregnancy and lactation, EAR/RDA during pregnancy and lactation, nutritional guidelines, effect of nutritional status on pregnancy outcome, optimal weight gain and its components during pregnancy, nutrition related problems in pregnancy, importance of nutrition for successful lactation will be dealt with.

- Pregnant women
- Lactating mothers

UNIT IV: Nutrition during Childhood 12Hours

Physiological changes during infancy, childhood and adolescence – growth and development; nutrient requirements (EAR/RDA) during these age groups, and nutrition concerns keeping in mind the changing food habits and importance of physical activity will be dealt with.

- Infant
- Preschool children
- Schoolage children
- Adolescents

PRACTICAL
(Credits 1; Hours 30)

1. Introduction to meal planning:
    - Rich sources of nutrients
    - Use of food exchange lists
2. Planning nutritious diets for:
    - Adult (Male and Female)
    - Pregnant and Lactating woman
    - Pre-schooler
    - Adolescent girl

- Elderly

3. Planning and cooking of nutrient rich snacks/dishes for:
    - Infants (Freshly prepared complementary foods)
    - Packed tiffin
    - Pregnancy/Lactation

Essential Readings:

- Chadha R and Mathur P eds. (2015). Nutrition: A Lifecycle Approach. Orient Blackswan, New Delhi
- ICMR-NIN Expert Group on Nutrient Requirements for Indians, Recommended Dietary Allowances (RDA) and Estimated Average Requirements (EAR)-2020 and subsequent revision
- Khanna K, Gupta S, Seth R, Passi SJ, Mahna R, Puri S (2013). Textbook of Nutrition and Dietetics. Delhi: Elite Publishing House Pvt. Ltd.
- NIN (2011). Dietary Guidelines for Indians-A manual. Second Edition. National Institute of Nutrition, Indian Council of Medical Research, Hyderabad. and subsequent revision

Suggested Readings:

- Byrd-Bredbenner C, Moe G, Beshgetoor D, Berning J (2013). Wardlaw‟s Perspectives in Nutrition, McGraw- Hill International Edition, 9th edition
- B Srilakshmi Eighth Edition (2019). Nutrition Science. New Age International Publishers.
- Longvah T, Ananthan R, Bhaskarachary K and Venkaiah K (2017). Indian Food Composition Tables. National Institute of Nutrition, Indian Council of Medical Research, Department of Health Research, Ministry of Health and Family Welfare, Government of India, Hyderabad.
- Punita Sethi, Poonam Lakra (2015). Aahar Vigyan Suraksha evam Poshan.Delhi: Elite Publishing House Pvt.Ltd
- Puri S, Bhagat A, Aeri, BT, Sharma A (2019). Food Exchange List: A Tool for meal Planning. Elite Publishing House. New Delhi.
- Siddhu, A, Bhatia, N, Singh, K, Gupta, S (2017). Compilation of Food Exchange List, Technical Series 6, Lady Irwin College, University of Delhi Publ. Global Books Organisation, Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC CORE COURSE
DSC HP 412: Communication Systems

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title& Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical / Practice		
Communication Systems	4	3	0	1	XII Pass	Appeared in Fundamentals of Communication

Learning Objectives

- To gain an in-depth understanding of various communication systems and their applications in personal and professional life.
- To acquire knowledge about the applications of communication transactions in the field of Development Communication.
- To appreciate and recognize the importance of understanding self through concepts of self-concept, self-esteem and self-disclosure.
- To understand the nuances of different levels of communication ranging from intra personal communication to organizational as well as intercultural communication.
- To throw light on the role of communication transactions in persuasion and influencing desired changes in individuals and groups.

Learning Outcomes

- Develop an understanding of various communication systems and their relevance.
- Comprehend the various levels of communication transactions and their applications in Development Communication approaches.
- Gain understanding of self through self-concept, self-awareness and self-esteem.
- Recognize and appreciate various communication networks in personal and professional spheres.
- Understand how mass communication and media impact society through mass communication theories and models and their significance.

SYLLABUS OF DSC-412

THEORY
(Credits 3; Hours 45)

UNIT I: Intrapersonal and Interpersonal Communication 9 Hours

The Unit I elucidate upon the various levels of communication transactions. This Unit in particular lays thrust on the Intrapersonal and Interpersonal Communication Systems and processes.

- Overview of communication transactions
- Intrapersonal Communication - Self Development, Looking Glass Self Theory, Self-concept and self-esteem, Awareness of Self & Johari's Window, Self-Disclosure
- Interpersonal Communication - Functions, Types of relationships- friendship, families, other relationships, Stages of relationship development, Interpersonal Competence
- Theories of Relationship Development - Social Exchange Theory, Uncertainty Reductions Theory, Interpersonal Relationship Model

UNIT II: Small Group and Organizational Communication 12 Hours

Unit II highlights the small group communication characteristics, functions and power of group conformity. It emphasizes on the organizational communication with focus on culture and leadership.

- Small group communication: Characteristics, Functions & Types
- Small Groups & Social Influence, Power in small group Conformity, Group Think, Polarization, Social Loafing
- Theories of group formation - Functional Theory, Structuration Theory, Symbolic Convergence Theory, Participatory theory
- Small Group Processes: Culture, Structure, Roles & Leadership
- Organization - concept, types and relationship in organization
- Organizational communication: Types: Formal Informal, Internal External, Direction & Networks, Functions, Tools used by organizations, challenges
- Organizational Culture and Leadership

UNIT III: Public, Intercultural and Mass Communication 12 Hours

Unit III highlights the Communication networks in professional and public spaces. It provides insight into the dynamics of intercultural communication. It also highlights the various theories and models of mass communication and emphasizes the significance and characteristics of various mass media.

- Public communication - Concept, types, techniques and skills in public speaking, qualities of an effective public speaker, overcoming speaker apprehension
- Intercultural communication-concept, importance and relevance, stages and barriers
- Mass Communication - concept, significance, functions and elements
- Models and theories of mass communication

- Mass Media - Characteristics, classification, Evolution, significance of print, electronic and web-based media in contemporary society

UNIT IV: Scope of Levels of Transactions in Communication 12 Hours

Unit IV emphasizes how communication transactions help in persuading, influencing and bringing out desired changes in individuals and groups. It strives to give conceptual clarity about use of communication in addressing conflict and strengthening personal and professional relationships.

- Application of levels of communication transactions for Influencing ideas attitudes and beliefs of individuals and groups
- Communications and building Self-Confidence, Self-development identity and personal branding
- Communication in conflict management, relationship development and repair
- Business communication and strengthening organizational processes and efficacy
- Communication approaches for Behaviour Change

PRACTICAL
(Credit 1; Periods 30)

1. Self-Awareness & Analysis of Communication with self
2. Media design and production for group and mass communication
3. Evaluating & Designing communications for changing attitudes
4. Evaluation of various communication strategies for social change

Essential Readings:

- Anand, S. & Kumar, A., 2016, Dynamics of Human Communication. Orient Black Swan, New Delhi.
- Foss, K. A., Oetzel J. G., 2021, Theories of Human Communication. Waveland Press
- Kumar, K. J., 2020, Mass Communication in India. Jaico Publishing House, Mumbai.
- McQuail, D., 2000, Mass Communication Theories. Sage Publications, London
- Patri, V. R. and Patri, N., 2002, Essentials of Communication. Greenspan Publications

Suggested Readings:

- Baran, S., 2014, Mass Communication Theory. Wadsworth Publishing
- Devito, J., 2012, Human Communication. Harper & Row, New York
- Greene, J.O., 2021, Essentials of Communication Skills and Skill Enhancement. Taylor & Francis
- Stevenson, D., 2002, Understanding Media Studies: Social Theory and Mass Communication, Sage Publications
- Zeuschner, R., 1997, Communicating Today. California State University, USA

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC ELECTIVE
DSE HP 4A1 : Adolescent Relationships and Wellbeing

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
Adolescent Relationships and Wellbeing	4	2	0	2	XII Pass	Pass in Lifespan Development II: Middle Childhood and Adolescence

Learning Objectives

- To study adolescent relationships across cultural contexts
- To understand adolescent relationships in relation to society, family and peers
- To understand well-being of adolescents and factors affecting wellbeing.

Learning outcomes

- The student will acquire knowledge about intra-personal and inter-personal adolescent relationships
- The student will develop an understanding of the concept and dimensions of wellbeing of adolescents in the contemporary social world.
- The student will engage in the use of various methods and tools to understand self and adolescence in diverse contexts

SYLLABUS OF DSE HP 4A1

THEORY
(Credits 2; Hours 30)

UNIT I Adolescence in diverse contexts **9 Hours**

- Definitions, social construction of adolescence
- Adolescence across different ecological settings
- Cultural and social influences on adolescence

UNIT II Understanding adolescent relationships **9 Hours**

- Family relationships: changing dynamics
- Peer relationships and friendships: self and identity; group dynamics
- Relationship with society and community
- Relationship beyond the family and peers: building intimate relationship

UNIT III Adolescent well- being **9 Hours**

- Challenges of adolescence: Self, identity and well-being
- Indicators of well-being - physical/health, mental/cognitive, social– emotional, spiritual and moral
- Factors and experiences that influence well-being
- Promoting life skills and well-being: counselling, yoga, meditation, mindfulness

PRACTICAL
(Credits 2; Hours 60)

1. Understanding self
   -SWOT analysis
   -Narratives/ autobiography/ diagrammatic representation of self
2. Understanding adolescence
   - Pilot research on understanding adolescence: well-being/ identity/body image
     - Interviews
     - Observations
     - Checklist
   - Movies/ documentaries/ videos
   - Book review
3. Promoting life skills and wellbeing: workshops/ lectures/ seminar
   - Socio-emotional well-being
   - Counseling/Yoga/Meditation
   - Life skills
   - Mindfulness

Essential Readings:

- Erikson, E.H. (1968). *Identity, youth and crisis.* New York: Norton.
- Manthei, R. (1997). *Counselling: The skills of finding solutions to problems*. London: Routledge.
- Rice, F. P. (2007). *Adolescent: Development, Relationships and Culture*. inc: US, Allyn & Bacon.
- Santrock, J. W. (2010). *Life Span Development: A Topical Approach*, New Delhi: Tata McGraw Hill.
- Sharma, N. (2009). *Understanding Adolescence*, New Delhi: National Book Trust.

Suggested Readings:

- Damour, L. (2017). *Untangled*. Atlantic Books.
- Deb, S., Bhadra, S., Sunny, A. M., & Sahay, S. (2019). *Childhood to Adolescence: Issues and Concerns*. Pearson Education.
- http://archive.unu.edu/unupress/sample-chapters/1130-UnderstandingHumanWell-Being.pdf , understanding human well-being, chapter 1, pp 3-15.
- IGNOU. Introduction to counseling (Block 1) https://egyankosh.ac.in/handle/123456789/23640
- Jha, M. (Ed.) (2021). *Being an Indian Teenager.* Literaturelight Publishing.
- Morgan, N. (2018). *Positively Teenage*. Hachette Children's Group.
- Nair, M. K. C. (2010). *Adolescent Counselling*. Jaypee Brothers Medical Publishers.
- Notion Press (2022, December 14). *The Great Indian Teen Fiction Collective*.
- Ranganathan, N. & Wadhwa, T. (2017). *Guidance and Counselling for Children and Adolescents in Schools (India).* SAGE Publications India Pvt Ltd.
- Saraswathi, T.S. (2003*). Cross-Cultural Perspectives in Human Development: Theory, Research and Applications*. SAGE Publications Pvt. Ltd
- Saraswathi, T.S. (2003). *The World's Youth: Adolescence in Eight Regions of the Globe*. Cambridge University Press
- Shah, G. J. & Thomas, S. (2021). *Adolescence in India*. Routledge India
- Smith, J. (2022). *Why Has Nobody Told Me This Before?* Harper One.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC ELECTIVE
DSE HP 4B1 : Physiology and Promotive Health

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
Physiology and Promotive Health	4	2	0	2	XII Pass	NIL

Learning Objectives

- To learn about the structural organization of the human body.
- To understand the normal functioning of the organ systems and their interactions.
- To learn about modes of transmission of common communicable diseases and their prevention.
- To learn web of causation of Non communicable diseases and lifestyle disorders

Learning Outcomes

- Understand the knowledge about the structural organization of the human body.
- Develop insight of normal functioning of all the organ systems of the body and their interactions.
- Understanding modes of transmission of common communicable diseases and their prevention.
- Understanding causes of Non communicable diseases and lifestyle disorders.

SYLLABUS OF DSE HP 4B1

THEORY
(Credits 2; Hours 30)

UNIT I: Cardio-Respiratory and Gastric Physiology. 8 Hours

The unit presents the student with an understanding the structure and functioning of the Cardio-respiratory system and Gastro-Intestinal system.

Cardio-respiratory Physiology **3 Hours**

- Blood -Composition and function
- Blood circulations (systemic, pulmonary, coronary, and portal)
- Cardiac cycle, Heart Sounds &ECG
- Structure of lungs and its function

Gastro-intestinal Physiology **5 Hours**

- Structure of stomach, liver, gallbladder, pancreas, and their functions
- Composition, function and regulation of GI secretions

UNIT II Neuroendocrine, Renal & Reproductive Physiology **10 Hours**

The unit presents the student with the understanding of the structure and functions of the Neuroendocrine, Renal and reproductive system of the body.

Neuro-Endocrine Physiology **4 Hours**

- Organization of nervous system.
- Actions & disorders of Pituitary, Thyroid, Adrenal & Pancreatic hormones

Renal and reproductive Physiology **6 Hours**

- Structure of kidney and its function.
- Physiology of Menstruation, pregnancy, lactation, and Menopause

UNIT III Promotive Health and Community Health **12 Hours**

The unit presents the student with the understanding of the concept of health, disease and its prevention. This unit will also focus on communicable diseases, non-communicable diseases and community health.

Concept of Health, Disease, and its prevention **3 Hours**

- WHO definition of Health
- Epidemiological triad.
- Concept of Immunization, Immunization Schedule. Immunization during various stages of lifecycle of humans.
- Recent/Newer Vaccines
- Anticancer vaccines

Epidemiology of communicable diseases **4 Hours**

- Air borne infections: Tuberculosis, COVID
- Faeco-oral infections: Hepatitis, Enteric Fever

- Zoonotic diseases: Rabies
- Vector Borne diseases: Malaria & Dengue
- Sexually transmitted diseases: A.I.D.S

Epidemiology of Non-communicable diseases **2 Hours**

- Hypertension
- Diabetes, PCOD
- Cancer

Community Health **3 Hours**

- Maternal Health care: · Antenatal Care, Family Planning, and Contraception
- Occupational health.

PRACTICAL
(Credits 2; Hours 60)

1. Case study of Iron deficiency Anemia, investigations and diagnosis.
2. Case Study of Enteric Fever
3. Case Study of Dengue
4. Case Study of HIV/AIDs
5. Measurement of Oxygen saturation by pulse oximeter and its relevance
6. Measurement of Blood pressure by using sphygmomanometer and its relevance
7. Clinical significance of variations in blood glucose and Diabetes mellitus. Use of Glucometer
8. Demonstration of clinical examination to see for pallor, cyanosis, jaundice, oedema and dehydration and their importance.
9. Basic First aid procedures and CPR
10. Preparation of a project on various contraceptive devices
11. Understanding Oncogenesis: Risk factors, danger signal & vaccines.

Essential Readings:

- Ganong WF (2019). Review of Medical Physiology, 26th ed. McGraw Hill.
- Guyton, AC.and Hall, JE (2011) Textbook of Medical Physiology, XII Edition, Harcourt Asia Pvt. Ltd/ W.B. Saunders Company. Longman Group Ltd.
- Marieb, E (2014). Human Anatomy and Physiology, 10th Edition, Addison-Wesley.
- Park JE and Park K (2021). Park's Textbook of Preventive and Social Medicine, 26th ed
- Bedi YP (2018), 17th Edition Handbook of Preventive and Social Medicine: Community Health/Community Medicine
- Practical Workbook of Human Physiology, K Sri Nageswari and Rajeev Sharma, 2nd Edition 2018
- Textbook of Practical Physiology, G K Pal and Pravati Pal 5th Edition (2020)
- A Textbook of Practical Physiology, CL Ghai, 8th Edition, (2013)

Suggested Readings:

- Ross and Wilson (2018). Foundation of Anatomy and Physiology, Medical Division 12th Edition

- Singh HD (2010). Handbook of Basic human physiology for paramedical students.
- https://www.who.int/news-room/fact-sheets/detail/cancer (Accessed March 19th 2023)
- https://www.who.int/news-room/fact-sheets/detail/hiv-aids (Accessed March 19th 2023)
- https://www.who.int/news-room/fact-sheets/detail/dengue-and-severe-dengue (Accessed March 19th 2023)
- https://www.who.int/health-topics/anaemia#tab=tab_1 (Accessed March 19th 2023)
- https://www.who.int/health-topics/contraception#tab=tab_1 (Accessed March 19th 2023)
- https://nhm.gov.in/images/pdf/guidelines/nrhm-guidelines/stg/Hypertension_full.pdf (Accessed March 19th 2023)
- https://nvbdcp.gov.in/Doc/National%20Guideline%20for%20Dengue%20case%20management%20during%20COVID-19%20pandemic.pdf (Accessed March 19th 2023)
- https://www.nhm.gov.in/images/pdf/guidelines/nrhm-guidelines/stg/stg-tb.pdf (Accessed March 19th 2023)
- https://www.nhm.gov.in/images/pdf/guidelines/nrhm-guidelines/stg/dengue.pdf (Accessed March 19th 2023)

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC ELECTIVE
DSE HP 4C1 : NGO Management and Advocacy

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
NGO Management and Advocacy	4	2	0	2	XII Pass	NIL

Learning Objectives

- To develop key management competencies and analytical in the management of NGOs.
- To develop understanding about the legal framework of NGOs and various issues/risk associated with NGOs.
- To develop basic understanding regarding the structure and functioning of NGOs with effective strategies for networking and fundraising
- To inculcate understanding of communication campaigning and advocacy with the importance of effective campaigning in achieving objectives and changing public policy through mediums like media, legislation, marketing, and advertising.

Learning Outcomes

The students would be able to:

- Gain an understanding of the unique nature of the non-government sector and distinguish it from the government (public) and business (for-profit) sectors.
- Explore the historical, theoretical, and legal perspectives on non-government organizations, as well as current trends and issues of consequence to non-government organizations.
- Develop an understanding of management techniques and leadership skills for enhancing the effectiveness of non-government organizations.
- Be able to design and assess the effectiveness of governance models, volunteer programs, organizational capacity, and inter-organizational relationships.

- Develop understanding of advocacy skills and knowledge and also key stages involved in developing an advocacy strategy.

SYLLABUS OF DSE HP 4C1

THEORY
(Credits 2; Hours 30)

UNIT I: Introduction to Non-governmental Organizations 10 Hours

This unit introduces the concept and idea of non-governmental organizations, its relevance, and characteristics. It also provides an overview of the evolution NGOs, historical development of voluntary action with respect to the roles played by them within changing development frameworks.

- Meaning of NGO and GO and private sector
- Difference between Government Organizations and NGO
- Relationship between NGO, GO and private sector
- Characteristics of good NGO
- Structure of NGO
- Functions of NGO
- Classification of NGOs
- Historical evolution of NGOs
- Growth and status of NGOs in India
- Contribution and Role of NGOs in Development
- Mapping Voluntarism in the Third sector
- Challenges faced by NGOs.

UNIT II: Management of Non-governmental Organizations 12 Hours

This unit elaborates on the organizational structure and the various aspects of establishing and running an NGO. It focuses on the numerous challenges, problems and issues associated with NGOs. It elucidates about the different managerial strategies of NGOs, through planning, implementing, and monitoring activities strategically.

- Organizational types and structures
- Registration of NGO
- Legal Procedures for Establishment of NGOs
- Overview of Societies Registrations Act, India's Companies Act, Charitable Endowment Act and FCRA, Memorandum of Association and Bye Laws
- Tax Relief Under Section 80G
- Management of NGOs

- NGO management competencies
- Human Resource Management- Human Resource Policy, Staffing and Salaries
- Selection and training of Personnel
- Managing people and teams in NGOs
- Communication and Networking in NGOs
- Planning, Implementation and Evaluation strategy under NGO
- Fundraising
- Resource mobilization

UNIT III- Introduction to Advocacy **8 Hours**

This unit describes the concept of advocacy and campaigning highlighting its relevance, in the contemporary times. It focuses on the process of advocacy and planning an advocacy campaign. It explores the relationship between advocacy, programme communication and social mobilization through diverse platforms

- Concept and relevance of Advocacy
- Types or approaches of Advocacy
- Steps in planning an Advocacy Campaigns
- Tools and Techniques of Advocacy
- Elements of an advocacy strategy
- Advocacy Planning Cycle - planning advocacy campaigns for different stakeholders
- Case studies of advocacy campaigns
- Community Advocacy
- Media Advocacy
- Relationship between advocacy, programme communication and social mobilization

PRACTICAL
(Credits 2; Hours 60)

1. Visit to Non-government organizations
2. Profiling of NGOs
3. Evaluation of promotional/IEC materials developed by NGOs
4. Case studies and Evaluation of Advocacy Initiatives/ Campaigns
5. Planning an advocacy campaign

Essential Readings:

- R. Kumar, S. L. Goel. (2005). Administration and Management of NGOs: Text and Case Studies Paperback. Deep & Deep Publications, India. ISBN 8176296015.
- S. Chandra (2003). Guidelines for NGO Management in India. Kanishka Distributors, New Delhi. ISBN 978-8173916038.

- D. Lewis (2001). Management of Non-Governmental Development Organization. Second Edition, Routledge, New York. ISBN 9780203002162.
- Subedi, N R, (2008). Advocacy Strategies and Approaches: A Training of Trainers Manual. International Centre for Integrated Mountain Development (ICIMOD). ISBN : 9291150830
- Abraham, A. (2003). Formation and Management of NGOs. Third Edition, Universal Law Publishing Co. Pvt Ltd., New Delhi. ISBN 9350350122.

Suggested Readings:

- Sundar, P. (2013). Business and Community: The Story of Corporate Social Responsibility in India. New Delhi, Sage Publication. ISBN 978-81-321-0955-6.
- Agarwal, S.K. (2008). Corporate Social Responsibility in India, Sage publication Pvt. Ltd. https://doi.org/10.4135/9788132100027.
- Lewis. D. (2014). Non-governmental Organizations: Management and Development. 3rd Edition. Routledge. ISBN 9781138294097.
- Til, J.V. (1988). Mapping the Third Sector: Voluntarism in a Changing Social Economy. Foundation Centre, New York. ISBN 0879542403.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC ELECTIVE
DSE HP 4D1 : Fabric Construction

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
Fabric Construction	4	2	0	2	XII Pass	NIL

Learning Objectives

- To provide students with knowledge of various production techniques.
- To learn about the various standard test methods required for the evaluation of various types of fabrics

Learning Outcomes

- Demonstrate an understanding of various types of fabric forming methods.
- Familiarise students with the types and scope of technical textiles.
- Acquire skills to inspect, manage and control quality in the textile industry.

SYLLABUS OF DSE HP 4D1

THEORY
(Credits 2; Hours 30)

UNIT I: Weaving **10 Hours**

- Structure and components of woven fabric: warp, weft, selvedge, grain
- Yarn preparation for weaving
- Weaving operations
- Types of Loom: shuttle and shuttleless looms
- Types of weaves: Basic and Decorative
- Blended Fabrics

UNIT II: Knitting **8 Hours**

- Structure and components of knitted fabric: courses, wales
- Yarn preparation for knitting
- Knitting needles
- Knitting process and machines
- Knit fabric stitches
- Knitted fabric classification: Warp and Weft knits
- Techniques for knitwear production- fully-cut, fully-fashioned and integral.

UNIT III: Non-wovens **6 Hours**

- Production of non-woven
- Types of non-woven fabrics and their properties
- Application in various sectors- apparel and industrial

UNIT IV: Other methods of fabric construction **4 Hours**

- Nets
- Laces
- Braiding
- Knotting

UNIT V: **Technical Textiles** **2 Hours**

Definition and Examples

PRACTICAL
(Credits 2; Hours 30)

1. Yarn Count : Direct and Indirect
2. Dimensional Stability of cotton and wool and knitted fabric
3. Identification of weaves, point paper diagrams
4. GSM
5. Drape
6. Crease recovery
7. Bending length
8. Tear strength
9. Fabric analysis

Essential Readings:

- Brackenbury, T. (2005). *Knitting Clothing Technology*, Blackwell Science Publishers
- Corbman P. B., (1989), Textiles- Fibre to Fabric, 6th edition, Mc Graw Hill, New York.
- Horrock A.R. and Anand, S.C. (2000). *Handbook of Technical Textiles*, Cambridge: Woodhead Publishing.
- Joseph, M.L., (1988) Essentials of Textiles (6th Edition), Holt, Rinehart and Winston Inc.,

Florida.
- Rastogi, D. and Chopra, S. (Ed) (2017) *Textile science*, India: Orient Black Swan Publishing Limited.
- Sekhri S. (2022) *Textbook of Fabric Science: Fundamentals to Finishing*, 4E, Delhi: PHI Learning Private Ltd.
- Sekhri S. (2023) , वस्त्र विज्ञान (Vastra Vigyaan). Delhi: PHI Learning Private Ltd.
- Spencer, D.J. (2005) *Knitting Technology: A Comprehensive Handbook and Practical Guide*, 4th ed. Cambridge: Woodhead Publishing.

Suggested Readings:

- Booth, J. E. (1964) Principle of textile testing an introduction to physical methods of testing textile fibers, yarns, and fabrics. 2nd Edition. London: Meanness Butterwroths.
- Saville, P. B. (1999) Physical testing of textiles. Cambridg: Woodhead Publishing Limited.
- Skinkle, J.H. (1940) Textile Testing. New York: Chemical Publishing Co. Inc. Brooklyn

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC ELECTIVE
DSE HP 4E1 : Human Capital Management

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
Human Capital Management	4	2	0	2	XII Pass	Appeared in Introduction to Resource Management

Learning Objectives

- To understand the importance of human capital and their effective management in an organisation.
- To comprehend functions of human capital management.
- To sensitize towards the emerging trends and applications of human capital management.

Learning outcomes

After completing the course, students will be able to :

- Develop an understanding about the discipline of human capital management.
- Aquire knowledge about the functions and key areas of human capital management as a people's dimension.
- Gain insight into emerging trends and modern practices in the field of human capital management for growth and optimizing performance.

SYLLABUS OF DSE HP 4E1

THEORY
(Credits 2; Hours 30)

UNIT I: Human Resource Management **4 Hours**

The focus of this unit would be on developing the fundamental concepts of human resource management and its applicability in changing business environment.

- Concept, functions, roles, skills and competencies
- Changing environment of HRM- Globalization, corporate downsizing, cultural
- environment, work force diversity, changing skill requirement, technological changes.
- HRM support for improvement programs -re engineering processes, contingent workforce,
- decentralized work sites.

UNIT II: Human capital: concept and data 10 Hours

This unit attempts to acquaint the students in understanding the functions of human capital management.

- Human capital concept, HRM vs HCM
- Human resource & capital management Concept, functions, roles, competencies
- Process of HCM, HCM drivers, Human capital measurement journey, measuring HR.
- Human capital data, types of data, a guide to data management.
- Measuring human capital, classification of measures.
- Approaches to measurement

UNIT III: Human Capital Management 10 Hours

This unit will help students to gain insights about the components of HR system used in an organization for auditing purposes to check its effectiveness.

- Measuring human capital, measurement issues, classification of measures, developing measures- measurement models (human resource accounting, balance scorecard, HR scorecard, workforce scorecard
- Human capital monitor
- Organizational performance model
- Human capital index
- Engagement model
- People and performance model

UNIT IV: Applications of HCM 6 Hours

This unit will help students to understand the applications of HCM

- Human capital value
- HCM and strategic HRM
- HCM and talent management
- Performance and reward management

PRACTICAL
(Credits 2; Hours 60)

1. Human Capital Management
   - Analysis of human capital management environment and HR audit in an organization through case-studies.
   - Understanding human capital management practices
2. Human Capital Management: Functions and Key Areas
   - Human capital metrics viz-a-viz key performance indicators
   - Performance appraisal and management (methods)
   - Simulation on human capital data management and talent management.
3. Applications of HCM
   - Introduction to HCM tools and HCMS application
   - Preparation of HCM tool as per modern workforce trends for optimizing productivity.

Essential Readings:

- Aswathappa K. (2021). *Human Resource Management Text and Cases* (9th Ed.) McGraw Hill Education India.
- Decenzo, D. A., & Robbins, S. P. (2011). *Fundamentals of Human Resource Management.* Wiley.
- Dessler G. (2020). *Human Resource Management*. Prentice Hall of India Pvt. Ltd.
- Mark Salsbury (2021) *Human Capital Management:* Leveraging Your Workforce for a Competitive Advantage.
- Rao, V.S.P. (2010). *Human Resource Management*.(3rd ed.) Excel Books.
- Wilson Wong, Valerie Anderson, Heather Bond. (2019) *Human Capital Management Standards, A Complete Guide*. Kogan publisher.

Suggested Readings:

- Ivanecevich, J.M.(2010). *Human Resource Management*. (10th ed.). Tata McGraw Hill Education Pvt. Ltd.
- Noe, R.A., Hollenbeck, Gerhart and Wright (2012*). Fundamentals of Human Resource Management* .(3rd ed.), McGrawHill Education Ltd.
- Subbaroo, R. (2007). *Personnel and HRM – Text and Cases*. Himalaya Publishing House.
- Vance, C.M. and Paik, Y. (2009). *Managing a Global Workforce: Challenges and Opportunities in International Human Resource Management.* PHI Learning.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

Department of Home Science
Semester – V

B.Sc. (Prog.) Home Science

DISCIPLINE SPECIFIC CORE COURSE

DSC HP 513: Space Planning and Sustainability

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title& Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Space Planning and Sustainability	4	3	0	1	XII Pass	Appeared in Personal Finance and Consumer Education

Learning Objectives

- To understand the fundamentals of space planning.
- To acquire knowledge regarding materials, building construction techniques and technologies.
- To comprehend sustainable parameters in space design.

Learning Outcomes

- Comprehend the concept of design applicable to interior spaces.
- Understand the application of materials and finishes to create aesthetic and sustainable interiors.
- Comprehend the concept of sustainability and green rating systems.

SYLLABUS OF DSC HP 513

UNIT I: Basic Concepts in Space Planning **10 Hours**

This unit will develop understanding regarding the concept of space planning and designing.

- Concept of space as a resource, characteristics of space
- Principles of planning spaces
- Zoning
- Types of houses: Independent houses and Apartments.
- Contemporary Housing - Service Apartments, Senior living.
- Building bye-laws – NBC and MPD

UNIT II: Construction Features in Building Design **15 Hours**

This unit will acquaint students with various elements of building construction important for developing a strong structure.

- Site selection
- Conventional and Non-conventional building materials, sustainable building materials
- Structural components of a building (Material and Types) – Foundation, Walls, Flooring, Roofs, Doors and Windows, Staircase.
- Basic building services
- Landscaping
- Earthquake resistant structures
- Home Automation

UNIT III - Concept of Space Design **15 Hours**

This unit will introduce students to the area of space design such as elements and principles of design, furniture and furnishings and wall treatment.

- Introduction to Elements and Principles of design
- Concept of Colour in Interior Design - Colour Theories, Colour Psychology, Colour Schemes, Colour Forecasting
- Energy Efficient Lighting Systems.
- Furniture - Types, Selection criteria, Arrangement
- Furnishings - Home Furnishing, Window treatment, Floor Coverings
- Wall treatment
- Use of sustainable material in space design

UNIT IV: Sustainable built environment **5 Hours**

This unit will introduce students to the concept and application of sustainability in built environment.

- Introduction to sustainable built environment
- Green building rating guidelines in India – GRIHA and LEED
- Concept of Smart Cities

PRACTICAL
(Credits 1; Hours 30)

1. Introduction to building terminologies, Concept of Scale, building constructions symbols
2. Evaluation of floor plans on the basis of principles of space planning
3. Preparation of floor plans
   - Multipurpose rooms/ studio apartment (Computer aided / manual)
4. Identification and characteristics of different building materials
5. Case study of a Green Building
6. Project on Landscaping / Home Automation

Essential Readings:

- Goel S., Seetharaman P. Kakkar, A. (2015). *Manual on Interior space designing*, Elite publishers.
- Goldstein, H. & Goldstein, V. (1988). *Art in Everyday Life (4th ed.),* Oxford & IBH Publishing Co.
- Indian Green Building Council. (2022). *Introduction to Green Buildings and Built Environment*, BSP Books.
- Kumar, S. (2008). *Building Construction*, Standard Publisher.
- Rao, M.P. (2020). *Interior Design Principles and Practices*, Standard Publishers Distribution.

Suggested Readings:

- Duggal S.K. (2017). *Building Materials*. CRC Press.
- Green Rating for Integrated Habitat Assessment (GRIHA). (2021). *GRIHA Manuals*, GRIHA Council.
- Grimley, C. and Love, M. (2018). *The Interior Design Reference & Specification Book*, Rockport Publishers.
- Indian Green Building Council. (2021). *IGBC Manuals*, IGBC.
- Iyer, G. H. (2022). *Green Building Fundamentals*, Notion Press.
- Mitton, M. and Nystuen, C. (2021*). Residential Interior Design: A Guide to Planning Spaces (4th ed.),* Wiley.
- Singh, G. (2019). *Building Construction and Materials*, Standard Publishers.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC CORE COURSE
DSC HP 514: INDIAN TEXTILE HERITAGE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Indian Textile Heritage	4	3	0	1	XII Pass	Appeared in Fundamentals of Textiles

Learning Objectives

- To study the traditional textile arts in their historical perspective, the impact of modernization and their contemporary status.
- To create awareness about the khadi, handloom and handicraft sectors and measures undertaken by organisations for their sustenance.
- To impart knowledge of fundamentals of textile storage and conservation

Learning Outcomes

- Explain history, construction and design of selected traditional woven fabrics.
- Recognize and identify embroidered fabrics of different states in terms of stitches and designs.
- Describe our heritage of varied dyed, painted and printed fabrics.
- Provide an insight into the evolution and socio-economic significance of khadi, handloom and handicraft sectors.
- Discuss sustenance of traditional textile crafts and interventions by organisations.
- Analyse the textile arts in their historical perspective, the impact of modernisation and their contemporary status.
- Classify conservation techniques and recognize signs of deterioration of textiles.
- Carry out care and conservation of traditional textiles

SYLLABUS OF DSC HP 514

THEORY

(Credits 3; Hours 45)

UNIT I: Study of Textile Crafts of India: with reference to history, production centers, techniques, designs, colours and products.

This unit lays thrust on history, making and design details of various textile crafts of India

- Classification of Traditional Indian Textiles, craft centres. **6 Hours**
- Woven Textiles-Banaras Brocades , Jamdanis and Baluchars of Bengal, Kani Shawls of Kashmir, Kanjivaram sarees of Tamil Nadu **6 Hours**
- Embroidered Textiles-Kanthas of Bengal, Kasuti of Karnataka,Phulkari of Punjab, Chikankari of Uttar Pradesh, Kashida of Kashmir, Gujarat embroideries **8 Hours**
- Painted and Printed textiles –Kalamkaris of Andhra Pradesh, Dabu printingof Rajasthan, Ajrakh printings of Gujarat **6 Hours**
- Dyed textiles –Bandhnis of Rajasthan and Gujarat, Ikats- Patola of Gujarat **4 Hours**

UNIT II: Status of Traditional Textiles in Modern India 7 Hours

This unit highlights on the socio economic importance of the traditional textile industries. It also emphasizes on the role of organizations in sustenance of textile crafts

- Evolution and socio-economic significance of Khadi, Handloom and Handicraft sector
- Sustenance of traditional textile crafts
- Interventions by organizations

UNIT III: Conservation of Textiles 8 Hours

This Unit highlights on very important area - Conservation of textiles. It provides insight into the types of conservation along with degradation factors that affect textiles. It also highlights the care and storage methods that can be used to prolong the life of textiles

- Types of Conservation- Preventive and Curative
- Factors affecting deterioration of textiles
- Care and storage of textiles

PRACTICAL
(Credit 1; Hours 30)

1. Resist Dyeing Techniques
   - Tie & dye using various techniques on natural fabrics
   - Batik on cotton
2. Printing
   - Block printing: pigment
   - Screen printing: pigment
3. Embroidery stitches of traditional embroideries
4. Portfolio development-Traditional textile crafts
5. Product development
6. Visit to craft centers/museums: Craft documentation report on any one craft

Essential Readings:

- Agarwal, O.P., 1977, Care and Presentation of Museum projects – II, NRL
- Barnard, N., Gillow, J., 1993, Indian Textiles, Thames and Hudson, USA
- Chattopadhaya, K.D., 1995, Handicrafts of India, Wiley Eastern Limited, N Delhi
- Crill, R., 2015, The Fabric of India, Victorial and Albert Museum, UK

- Das, Shukla, 1992, Fabric Art- Heritage of India, Abhinav Publications, N Delhi.
- Evaluation study on khadi and village industries programme, (2001) Programme evaluation organization planning commission government of India, New Delhi. Chapter 1 & 2, pg 1-9
- Grundy & Northedge, (1998) Standards in the Museum Care of Costume and Textile Collections, Museums & Galleries Collection, Spin Offset Limited, Chapter 7-14, pg 35-54
- Mausumi Kar, (2015), The Indian Textile and Clothing Industry An Economic Analysis, Springer New Delhi Heidelberg New York Dordrecht London, Chapter 1& 2, pg 12-33.
- Pandit Savitri, 1951, Indian Embroidery- Its Variegated Charm, Pandit Publisher, Baroda Embroidery tutorials, video links of woven textiles and slide share

Suggested Readings:

- Annual Report, (2002-2003), Handloom Industry, Ministry of textiles, Chapter 5, pg 1-20
- Chelna Desai, 1988, Ikats Textiles of india, Chronicle Books, India
- Craft Documentaries on Youtube; As accessed on Mar. 2023
- Pandit Savitri, 1951, Indian Embroidery- Its variegated charm, Pandit Publisher, Baroda
- Karolia, Anjali, 2019, Traditional Indian Handcrafted Textiles, Niyogi Publishers

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC CORE COURSE -15
DSC HP 515: Extension Management

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title& Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Extension Management	4	3	0	1	XII Pass	Appeared in Communication Systems

Learning Objectives

- To orient the students to the concept and scope of extension in development.
- To understand the principles and process of Extension Programme Design and Management.
- To develop skills for using participatory approaches in Extension Programme Management.
- To provide knowledge about various development schemes and programmes in India.

Learning Outcomes

The students would be able to:

- Learn the concept of extension in a holistic manner with respect to national development.
- Get insights on the principles and process of Extension Programme Design and Management.
- Develop skills for using various participatory approaches in a programme management.
- Gain knowledge of various development schemes and programmes in India.

SYLLABUS OF DSC HP 515

THEORY
(Credits 3; Hours 45)

UNIT I: Extension: concept and principles **9 Hours**

This unit provides deeper understanding on the fundamental concepts of Extension and its application to national development.

- Extension: history, concept, goals, philosophy and scope
- Typology of extension and approaches to Extension
- Concept of Andragogy, Andragogy vs. Pedagogy

- Principles of Extension
- Relationship between Communication and Extension - role of Extension in development
- Methods of community contact in Extension

UNIT II: Stakeholder, Participation and Leadership 12 Hours

This Unit highlights the significance of people's participation as a pre-requisite in any extension programme and develop skills in the same.

- Stakeholders in development
- People's participation and social mobilization in development, typology of participation
- Participatory Learning and Action – concept, principles, classification of tools and techniques
- Leaders in extension – functions, types and leadership styles and theories
- Diffusion of innovation and adoption – concept, theory and application

UNIT III: Programme Management 12 Hours

This unit emphasizes on the principles and process involved in designing a programme and its management. The unit also gives conceptual clarity on project cycle and the different models of extension programme management.

- Project cycle- goals, objectives, indicators, outputs and outcomes
- Conceptual framework and Principles of extension program management
- Models of extension programme management - overview of models, Sandhu's model, Logic model
- Monitoring and Evaluation

UNIT IV: Development Programmes 12 Hours

This unit provides an in-depth understanding of the various development schemes and programmes initiated as part of extension.

- Development issues and goals- national and international perspectives, Sustainable Development Goals
- Contemporary National Development Programmes (related to education, employment, income, health and nutrition, digitalization and women) – objectives, target groups, salient features, monitoring and evaluation, partnership and funding, outcomes and communication support

PRACTICAL

(Credit 1; Hours 30)

1. Assessing the leadership skills in a case-study format
2. PLA as needs assessment tools
3. Approaches to the Adult Education
4. Developing skills in planning and using individual and small group methods in extension

Essential Readings:

- Beck, S., 2022, Communication in the 2020s. Routledge, New York
- Kumar, S., 2002, Methods for community participation: a complete guide for practitioners. Vistaar Publications, New Delhi
- Ray G.L., 2015, Extension, Communication and Management, Kalyani Publications, New Delhi
- Sandhu, A S., 2018, Extension Programme Planning. Oxford and IBH Publishers, New Delhi
- Singh, S., 2022, A Brief Book on Extension Education. New Vishal Publications, New Delhi
- Singh, A K., 2020, Frontline Extension in India Innovations and Reforms. Biotech Publisher, New Delhi
- Supe, S V., 2019, An Introduction to Extension Education. Oxford & Ibh Publishing Co. Pvt Ltd, New Delhi

Suggested Readings:

- Bhatnagar. O.P & Dahama, O.P., 2009, Education and Communication for Development 2ed. Oxford & IBH Publishing Co. Pvt Ltd, New Delhi
- Dale R., 2004, Evaluating Development Programmes and Projects. Sage Publications, New Delhi
- Kumar & Hansra, 2000, Extension Education for Human Resource Development. Concept Publishing Company, New Delhi
- Mikkelsen, B., 2002, Methods for Development Work and Research. Sage Publications, New Delhi

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC ELECTIVE
DSE HP 5A1 : Developmental Delay and Disability in Childhood

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
Developmental Delay and Disability in Childhood	4	2	0	2	XII Pass	Appeared in Lifespan Development II: Middle Childhood and Adolescence

Learning Objectives

- To understand the perspectives and models of disability.
- To know major types of disabilities, the causes, prevention, characteristics of the disabilities and barriers which persons with disability face.
- To understand importance of early identification and early intervention, and inclusion.

Learning outcomes

- Students will understand concept of disability.
- Students will be able to demonstrate understanding and knowledge of the etiology of a wide range of disabilities.
- Students will understand and demonstrate knowledge of the characteristics of children with different disabilities.
- Student will learn simple skills for planning classroom activities for children with disabilities.

SYLLABUS OF DSE HP 5A1

THEORY
(Credits 2; Hours 30)

UNIT I - Introduction to Disability **6 Hours**

Unit Description: The unit will provide an understanding of the meaning of disability and developmental delays and help understand how disability is defined through various models,

Subtopics:

- Definition of disability
- Models of disability
- Social construction of disability
- Linking disability to delay in development

UNIT II- Types of Disabilities: causes and symptoms 14 Hours

Unit Description: The unit will focus on major disabilities, their causes, signs and symptoms.
Subtopics:
Causes, Signs and Symptoms of the following disabilities

- Physical disabilities
- Intellectual disability
- Sensory disabilities
- Visual and auditory
- Learning disability
- Autism

UNIT III- Strategies for rehabilitation 10 Hours

Unit description: This unit will help students develop an understanding of the role of family, legal system and best practices in rehabilitation of children with disabilities
Subtopics:

- Role of family
- Legal provisions
- Early identification and early intervention
- Inclusion

PRACTICAL
(Credits 2; Hours 60)

UNIT I 30 Hours

- Exploring audio-visual sources with reference to children with disabilities and their families.
- Understanding barriers to disability using interviews, questionnaires, surveys.
- Visits to organizations working with children with disabilities.
- Observations of children with disabilities.
  Case profile of a child with disability / an organisation working with disability.

UNIT II 30 Hours

- Preparing developmental checklists for assessment of developmental delays.
- Planning developmentally appropriate material for children with disabilities
- Preparing IEC material for generating awareness in community about disabilities.
- Selected psychometric tests (Raven Progressive Matrices, Portage, Tests for detecting Learning Disabilities, Disability Screening Schedule)

Essential Readings:

- Chopra,G., (2012). Early Detection of Disabilities and persons with disabilities in the

community. New Delhi: Engage publications.
- Chopra, G., (2012). Stimulating Development of Young Children with Disabilities at Anganwadi and at Home: A Practical Guide. New Delhi: Engage publications.
- Heward, W.L., (Ed) (2000). Exceptional children: An introduction to special education. New Jersey: Prentice-Hall Inc.,
- Hardman, M.L., Drew ,C.J., Egan, M.W. (2014) Human exceptionality: School, Community and Family. Wadsworth Cengage Learning
- Mangal, S. K. (2007). Exceptional children: An introduction to special education. New Jersey: Prentice-Hall Inc.,
- Premananda M., Sriniwas R., K. Sridevi, (2019) Introduction to Disabilities. 1st edition Neelkamal Publications

Suggested Readings:

- Chopra, G. (2015). Child rights in India: Challenges and social action. New Delhi: Springer (India) Pvt. Ltd., Chapter 9, pg 205-233
- Mastropieri, M. A., & Scruggs, T. E. (2004). The inclusive classroom: Strategies for effective instruction. NY: Pearson.
- Werner, D. (Ed) (2018). Disabled village children: A guide for community health workers, rehabilitation workers, and families. United States of America: Hesperian Health Guides.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC ELECTIVE
DSE HP 5A2 : Laws, Policies and Programmes for Children, Women and Families

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Laws, Policies and Programmes for Children, Women and Families	4	2	0	2	XII Pass	Appeared in Lifespan Development II: Middle Childhood and Adolescence

Learning Objectives

- To orient students to the concept of child rights
- To familiarize them with the existing laws, policies and programmes for children, women and families
- To gain an understanding of the implementation process of policies and programmes for children, women and families and the role of various stakeholders.

Learning Outcomes

- The students will understand why child rights are important
- The students will demonstrate an understanding of current social policies for children and women in India
- The students will develop understand the policies and programmes for children, women and families

SYLLABUS OF 5A2

THEORY
(Credits 2; Hours 30)

UNIT I: Introduction to the Rights based Approach **8 Hours**

The focus of this unit would be on developing an understanding of the concept of rights, international conventions and constitutional provisions.

Subtopics:

- Concept of Child Rights and why they are important
- Situational analysis of children in India
- Children in difficult circumstances

- Factors of exclusion- socio-economic, gender, geo-political
- International Conventions on the rights of children, women, and families

UNIT II: Legislations for Children, Women and Families 14 Hours

This unit will help students to gain insight into the laws concerning children, women and families

Subtopics:

- Laws for children: Juvenile Justice Act, Protection of Children from Sexual Offences Act, Child Labour Prohibition & Regulation Act, Prohibition of Child Marriage Act
- Laws for Women: Prenatal Diagnostics Techniques Act, Dowry Prohibition Act, Protection of Women from Domestic Violence Act, Sexual Harassment of Women at Workplace
- Family Laws: Guardians and Wards Act, Hindu Adoption and Maintenance Act, Special Marriage act, Maintenance and Welfare of Parents and Senior Citizens Act

UNIT III: Policies, Programmes and the Implementation process 8 Hours

This unit attempts to acquaint the students with the various facets of the policies and programmes for children, women and families and the role of the various stakeholders in the implementation process

Subtopics:

- Constitutional Provisions for children and women
- Policies for children, women, and families
- Major Programmes for children, women, and families
- Role of Government, Public-private partnership, NGOs and CSR in the implementation of programmes

PRACTICAL
(Credits 2; Hours 60)

1. Interview of children in difficult circumstances exploring their lives
2. Survey to explore awareness of child rights and laws for women and children
3. Preparing PPTs and making presentations on vulnerable groups of children
4. Focus group discussion to understand gender realities in different social groups
5. Understanding the concept of rights through audio/visual aids (Movies/Documentaries)
6. Visit government (CWCs, Observation Homes) and non-government institutes/centres working for specially disadvantaged groups of children
7. Review of research papers on the issues of rights of children of specially disadvantaged groups and women rights
8. Preparing posters/flipbooks/social media content for advocacy of laws
9. Workshops/Lectures to understand the various aspects of the implementation of laws and policies
10. Program planning of a workshop for creating awareness of policies and programmes

Essential Readings:

- Bhargava, V. (2005). *Adoption in India: Policies and Experiences*. Sage Publications.
- Chopra, G. (2015). *Child rights in India: Challenges and social action*. Springer
- Chopra, G. 2021). Child protection in India: From silos to systems. In S. Puri (Ed.),

Children
India: Opportunities and Challenges (25-42), Nova Science Publishers.
https://pesquisa.bvsalud.org/global-literature-on-novel-coronavirus-2019-ncov/resource/pt/covidwho-1801302
- Gangoli, G. (2016). *Indian feminisms: Law, patriarchies and violence in India.* Routledge.
- Halder, D. (2018). *Child sexual abuse and protection laws in India*. SAGE
- Jancic, C. O. (2016). (Ed.). *The Rights of the Child in a Changing World 25 Years after the UN Convention on the Rights of the Child*. Springer.
- Rathore, V. (2019). *An insight into Indian Juvenile Justice System.* Notionpress.
- Selected Legislations for Children and Women. Ministry of Women and Child Development GOI website www.wcd.nic.in/
- United Nations Development Programme. (2022). *Human Development Report 2021-22.* https://hdr.undp.org/content/human-development-report-2021-22

Suggested Readings:

- Agnes, F. (1999). Law and Gender Inequality: The Policies of Women's Rights in India. Oxford University Press.
- Bajpai, A. (2017). A child's right to a family: Deinstitutionalization—In the best interest of the child. *Journal of National Human Rights Commission, 16,* 199–216. http://nhrc.nic.in/sites/default/files/nhrc_journal_2017.pdf
- Biswas, T. (2008). Human Rights, Gender and Environment. In N. Pradhan (Ed*.), Laws, Institutions and Rights in India*. Viva Books.
- Begum, S. M. (Ed.). (2000). Human Rights in India: issues and perspectives. APH Publishing.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC ELECTIVE
DSE HP 5B1: Nutritional Biochemistry

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Nutritional Biochemistry	4	2	0	2	XII Pass	Appeared in Foundation of Food Science and Nutrition

Learning Objectives

- To provide basic concepts of biomolecules, the basic building blocks vital for various life forms
- To focus on key structures, properties and biological functions of biomolecules

Learning Outcomes

- Understanding of the biochemical basis of macro- and micro- nutrients
- Developing an insight into structures, functions and biochemical role of carbohydrates, proteins, lipids, vitamins and minerals.

SYLLABUS OF DSE HP 5B1

THEORY
(Credits 2; Hours 30)

UNIT I: Unit I: Carbohydrates **8 Hours**

This unit lays emphasis on structures, properties and significance of carbohydrates.

- Introduction, definition and classification
- Structures of monosaccharides- glucose, fructose, mannose and galactose
- Structures of disaccharides – maltose, lactose and sucrose
- Structures and biological role polysaccharides– dextrin, starch and glycogen
- Stereoisomerism of monosaccharides (Keto-aldo, D- and L-isomerism, optical isomerism, epimerism and anomerism)
- General chemical properties of monosaccharides (oxidation, reduction, osazone

formation, action of alkali and glycoside bond formation)

UNIT II: Lipids **6 Hours**

This unit highlights on definition, classification and biological role of fatty acids and lipids.

- Introduction and structures of fatty acids (saturated and unsaturated)
- Essential and non-essential fatty acids
- Acid value, iodine value, saponification value and hydrogenation
- Definition, classification and functions of lipids
  (storage lipids-triacylglycerols; Membrane lipids-phospholipids and sphingolipids)

UNIT III: Amino acids and Proteins **10 Hours**

This unit gives an overview of amino acids and their role as building blocks of proteins. The students would acquire knowledge on structure of proteins. The unit would also cover basic concepts of enzymes and their catalytic action.

- Introduction, classification and structures of standard amino acids
- Essential and non-essential amino acids
- Elementary knowledge of structure of proteins
- Introduction to enzymes, active site, co-enzymes, prosthetic groups,
- apoenzyme and holoenzyme
- Factors affecting enzyme activity: pH, temperature and substrate concentration (Km and Vmax)

UNIT IV: Vitamins and Minerals **6 Hours**

This unit covers structures and biochemical functions of vitamins along with biological role and significance of minerals.

- Definition and classification of vitamins
- Structure and biochemical role of fat soluble vitamins-A and D
- Structure and biochemical role of water soluble vitamins- Thiamine, Riboflavin, Niacin, Pyridoxine and Ascorbic acid.
- Biochemical role of inorganic elements – iron, calcium, phosphorous, iodine, selenium and zinc.

PRACTICAL
(Credits 2; Hours 60)

1. Qualitative tests for monosaccharides, disaccharides and polysaccharides.
2. Identification of monosaccharides, disaccharides and polysaccharides in unknown mixtures.
3. Quantitative estimation of glucose, sucrose and lactose by titrimetric method.
4. Qualitative tests for amino acids.
5. Estimation of calcium using EDTA by titration.
6. Estimation of ascorbic acid using 2,6 dichlorophenol indophenol method in the given solution.

Essential Readings:

- Kennelly, P. J., Botham, K. M., McGuinness, O., Rodwell, V. W., Weil, P.A., 2022, *Harper's Illustrated biochemistry* (32nd ed.). McGraw-Hill Education.

- Nelson, D. L., Cox, M. M., 2017, *Lehninger Principles of Biochemistry* (7th ed.). W H Freeman & Co.
- Satyanarayana, U., Chakrapani U., 2021. *Biochemistry* (6th ed.). Elsevier.
- West, E.S., Todd, W.R., Mason, H.S., Bruggen J.T.V., 2017, Textbook of Biochemistry (4th ed.). Oxford & IBH.
- Sundararaj, P., Siddhu, A., 2002, *Qualitative tests and Quantitative Procedures in*
- *Biochemistry* (2nd ed.). New Delhi: A. H. Wheeler and Co Ltd.

Suggested Readings:

- Voet, D., Voet, J.G., 2012, *Principles of Biochemistry* (4th ed.). Wiley.
- Devlin, T.M. 2010, *Textbook of Biochemistry with Clinical Correlations* (7th ed.). New York, John Wiley-Liss.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC ELECTIVE
DSE HP 5B2: Advanced Human Nutrition

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Advanced Human Nutrition	**4**	**2**	**0**	**2**	**XII Pass**	**Pass in Foundation of Food Science and Nutrition**

Learning Objectives

- To understand the role of various nutrients, their requirements under normal and in special conditions with special reference to bioavailability.

Learning Outcomes

After completing this course, a student will be able to:

- Understand the importance of macro and micro-nutrients in a human body.
- Understand methods used for assessing nutrient requirements.
- Comprehend why and how the requirements change under special conditions.

SYLLABUS OF DSE HP 5B2

THEORY
(Credits 2; Hours 30)

UNIT I: Human Nutritional Requirements **20 Hours**

- Historical perspective of nutrient requirements, terms used - EAR, RDA, AI, TUL
- Methods of assessment of nutrient needs – a critical review
- Biological role, sensitive methods of assessment, bioavailability, and other factors affecting requirements of nutrients
    - Energy
    - Carbohydrates and dietary fibre
    - Proteins and amino acids
    - Lipids and fatty acids
    - Water

- Fat soluble and water soluble vitamins
- Minerals

UNIT II: Nutrition under special conditions **10 Hours**

- Extreme temperatures - Hot and cold
- High altitude
- Space nutrition
- Nutrition in emergencies

PRACTICAL
(Credits 2; Hours 60)

1. Methods of assessment of protein quality - Chemical score, NDpCal%
2. Measuring energy expenditure - Minute to minute activity record, GPAQ
3. Understanding fatty acid profile of commonly eaten foods
4. Understanding the dietary fibre (soluble and insoluble) profile of commonly eaten foods
5. Assessment of molar ratios of iron and vitamin C in given diets
6. Estimation of iodine content of salt
7. Estimation of carotenoid content of fruits/vegetables
8. Estimation of antinutritional factors affecting bioavailability -phytic acid / oxalates / tannins
9. Understanding the clinical signs of nutrient deficiency and excess

Essential Readings:

- Chadha R., Mathur P. Eds. (2015) Nutrition: A Lifecycle Approach. New Delhi: Orient Blackswan.
- NIN-ICMR. (2020) Nutrient Requirements -Estimated Average Requirements and Recommended Dietary Allowances.
- WHO/UNHCR/UNICEF/WFP. (2004). Food and Nutrition Needs in Emergency.

Suggested Readings:

- FAO/WHO. (2004) Vitamin and Mineral Requirements in Human Nutrition. Report of a Joint Expert Consultation.
- FAO/WHO/UNU (2004) Human Energy Requirements. Report of a Joint Expert Consultation. Rome.
- FAO/WHO/UNU (2007) Protein and Amino acid Requirements in Human Nutrition. Report of a joint WHO/FAO/UNU expert consultation WHO Technical Report Series 935. Geneva: WHO.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC ELECTIVE
DSE HP 5C1: Information and Communication Technologies for Change

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Information and Communication Technologies for Change	4	2	0	2	XII Pass	Appeared in Fundamentals of Communication

Learning Objectives

- To appraise the importance of ICTs and their incorporation in the development sector.
- To explain the integration of ICTs in the Development Communication.
- To provide skills for discerning and producing information using ICTs.
- To familiarize learners with the strategies for creating effective ICT materials and assess their impact.
- To enhance awareness about development initiatives at global level and address them using ICTs.

Learning Outcomes

- Assess relationship between ICT and Development.
- Gain knowledge about the effective use of ICTs in Development sector.
- Develop skills to conceptualize and create ICT tools for higher user engagement.
- Critique the role of ICTs for social change and maximize their reach and impact.
- Address the global development concerns by using ICTs effectively.

SYLLABUS OF DSE HP 5C1

THEORY
(Credits 2; Hours 30)

UNIT I: Introduction to ICTs **10 Hours**

This unit elucidates upon the concept of ICTs and their growth. It covers Digital Literacy and allied terms. It also delves upon learning theories and their implications for using ICTs

- Understanding ICTs- Definition, concept, meaning
- Evolution and Growth of ICTs-global and local level
- Classification of ICTs- Traditional and modern ICTs, their relevance to development

- Digital Literacy- meaning concept and changing notion
- Introduction to Digital Capital, Digital Divide, Digital Gender Divide
- Learning theories: behaviorism, cognitivism, constructivism, and connectivism and their implications for using ICT
- Limitations and challenges of ICTs
- ICT related development Indices

UNIT II: Types of ICT in Development 8 Hours

This unit focuses on various media such as radio, television, mobile applications and new media as an ICT tool for development. It also includes economic management for ICT projects

- ICT mediated learning: engagement and correlation
- Radio as a tool for ICT
- Television as a tool for ICT
- Mobile as a tool for ICT
- New Media as tools for ICT
- Stakeholders in ICT projects, funding patterns and management

UNIT III: Application of ICTs in addressing Global Development Concerns 12 Hours

This unit provides the students an in-depth view of various initiatives at national and international level, to address the global development challenges and the strategies to combat them

- Role of ICTs in Livelihood development and Poverty Reduction, Governance, Sustainable Education, sustainable agriculture; Environment protection & Climate change, Disaster Risk reduction
- Usage of ICTs in Gender equality and Empowerment, addressing health challenges through E-Health & M-Health initiatives
- Importance of Cyber Security- Scenario of Cyber Crime in India, Types of Cyber Crimes - Identity Theft, Psychological Tricks, Social Media Frauds, Mobile Application Frauds, Online Banking Frauds, Virus Attack on Personal Computers, etc.,
- Cyber Hygiene for Cyber Space & General Tips to keep you safe, National Cyber Crime Reporting Portal and Incident Reporting

PRACTICAL
(Credits 2; Hours 60)

1. Conducting a survey on ICTs and social media usage pattern
2. Review of Mobile Apps on Development Issues
3. Analyzing and reviewing various internet-based platforms for social change such as blogging, YouTube etc.
4. Review of websites for e-initiatives of Govt. of India
5. Research and development of a report/presentation related to Cyber security and Hygiene
6. Conceptualization, ideation and creation of ICT materials for a social media campaign

Essential Readings:

- Heeks, R. (2018). *Information and Communication Technology for Development (ICT4D).* Routledge Publications.

- Kiwelekar, A.W. (2021). *Information Communication Technologies for Sustainable Development: A Concise Textbook for ICT4SD*. Notion Press, Mangaon-Raigad 402104 India.
- Makol, R. & Makol. L. (2021). *Critical Understanding of ICT*. Kala Mandir, New Delhi.
- Mishra, RC. (2010). *Cyber Crime Impact in the New Millenium*, Auther Press.
- Unwin, P. T. H., & Unwin, T. (2017). *Reclaiming information and communication technologies for development*. Oxford University Press.

Suggested Readings:

- GoM. (2020). *Cyber Security Awareness Booklet for Citizens. Volume 1*. Office of Special Inspector General of Police Maharashtra Cyber, Home Department. Government of Maharashtra. Last Accessed Date 20 March 2023. https://cybercrime.gov.in/pdf/Cyber%20Security%20Awareness%20Booklet%20for%20Citizens.pdf
- MoHA. (2021). *Cyber Hygiene for Cyber Space - Dos and Don'ts Basics.* Ministry of Home Affairs. Last Accessed Date 20 March 2023 https://cybercrime.gov.in/pdf/Final_English_Manual_Basic.pdf
- Kihrwadkar A, Pushpanadan, (2006), *Information and Communication Technology in Education*, Sarup and Sons, Delhi. Chapter- 1,2,3
- Reddi, U. R. V. *Primer 1: An Introduction to ICT for Development.* UNAPCICT. Last Accessed Date 20 March 2023 https://www.unapcict.org/sites/default/files/inline-files/Primer%201_An%20Introduction%20to%20ICTD.pdf
- Tongia, R., Subrahmanian, E. & Arunachalam, V. (2005). *Information and Communications Technology for Sustainable Development*. Bangalore: Allied Publishers
- Unwin, T. (Ed.) (2009). *ICT4D: Information and Communication Technology for Development*. Cambridge: Cambridge University Press.
- Weigel, G. & Waldburger, D. (Eds.) (2004). *ICT4D – Connecting People For A Better World. Lessons, Innovations and Perspectives of Information and Communication Technologies in Development*. Berne: Swiss Agency for Development and Cooperation (SDC) and the Global Knowledge Partnership (GKP).

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC ELECTIVE
DSE HP 5C2: Digital Marketing and Advertising

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Digital Marketing and Advertising	4	2	0	2	XII Pass	Appeared in Fundamentals of Communication

Learning Objectives

- To introduce the concept of marketing and digital marketing.
- To develop an understanding of the core elements of Digital Marketing.
- To introduce current practices and tools of Digital Marketing.
- To provide comprehensive understanding of the use of digital media, social media, and mobile applications for marketing applications.
- To familiarize students with the concepts and techniques of advertising.

Learning Outcomes

- Build basic Concepts of Digital marketing and the road map for successful Digital marketing strategies.
- Understand the fundamentals and best practices-audience engagement, content curation, campaign planning and execution, tools and resources, and measuring results for using social media for marketing on current, new and emerging platforms.
- Understand the concepts and skills required for advertising and the importance of effective brand positioning using integrated marketing communications.
- Learn to critically evaluate advertisements and understand the importance of ethical practices in advertising.
- Examine the scope for making advertising and digital marketing a future career

SYLLABUS OF DSE HP 5C2

THEORY
(Credits 2; Hours 30)

UNIT I: Introduction to Digital Marketing **8 Hours**

This unit elucidates upon the concept of marketing and digital marketing. It will enable the learners to understand the core elements of Digital and critically appraise the integration of digital marketing into broader design and development strategies.

- Understanding concept of Marketing Process
- Understanding Concept of Digital Marketing Process
- Digital Marketing VS traditional marketing
- Benefits of Digital Marketing and various Digital Platforms
- Digital Marketing Landscape
- Understanding Digital Business Models
- Digital Marketing Strategy Concept of visibility, its type and visitors' engagement
- Introduction to Search Engines for Marketing Applications

UNIT II: Introduction to Advertising **12 Hours**

The idea of the unit to explore the concept of advertising world to the students. Beside introducing the concept, the unit will further elaborate the models of advertising along with the classification of the same. The ethics regulating the field of advertising will also be covered.

- Understanding concept, importance and functions of Advertising
- Advertising Theories and Models-AIDA model, DAGMAR Model, Maslow's Hierarchy Model, communication theories applied to advertising
- Types of advertising and new trends
- Economic, cultural, psychological and social aspects of advertising
- Ethical & regulatory aspects of Advertising-Apex Bodies in Advertising-AAAI, ASCI and their codes
- Types of Media for advertising and their characteristics
- Marketing mix, role of advertising in the marketing mix
- Media selection, Planning, Scheduling for effective advertising

UNIT III: Digital Marketing VS Advertising: Tools and Techniques **10 Hours**

This unit describes the tools and techniques used in digital marketing and advertising. Concepts of Search Engine Optimization, Search Engine Marketing and Search Media Marketing will be thought. The unit also will bring clarity upon Integrated Marketing Communication and executing Digital Strategy and Digital Marketing Analytics.

- Digital marketing: tools and techniques
- Advertising: tools and techniques
- Performance of Digital Advertising:- Process & players, Display Advertising Media, Digital metrics
- Understanding website planning process
- Search Engine Optimization and Search Engine Marketing
- Social Media marketing, Email marketing, Content marketing, Affiliate marketing
- Elements of Branding and Integrated Marketing Communication
- Crafting and Executing Digital Strategy and Digital marketing analytics

PRACTICAL
(Credits 2; Hours 60)

1. Design an ad copy for a product
2. Developing advertisements for media
3. Planning & Designing advertising campaigns
4. Critical evaluation of Digital Media Marketing campaigns
5. Designing and implementation of Digital Media Campaigns
6. Analysis of websites and development of web pages, blogs and vlogs
7. Creating effective Ad Words campaign & Advertising Positioning with respect to the Digital marketing

Essential Readings:

- Broom, G.M. (2012). *Cutlip and Center's Effective Public Relations.* Pearson Prentice Hall.
- Chunawalla S.A. (2018). *Advertising Theory and Practice*. Himalaya Publishing House.
- Deiss, R., Henneberry, R. (2017). *Digital Marketing for Dummies.* For Dummies.
- Jethwaney, J., Jain, S. (2012). *Advertising Management*. Oxford University Press India.
- Jefkins, F. (1994). *Public Relation Techniques*. A Butterworth-Heinemann Title.
- Kingsnorth, S. (2019). *Digital Marketing Strategy: An Integrated Approach to Online Marketing,* Kogan Page.
- Rowles, D. (2014). *Digital Branding: A complete step-by-step guide to strategy, tactics and measurement.* Kogan Page.

Suggested Readings:

- George, B.E., Michael, B.A., Keyoor, P. (2007) *Advertising & Promotion, an Integrated Marketing Communications Perspective*. McGraw Hill.
- Heath R.L. (2010). *The Sage Handbook of Public Relations*. SAGE Publications, Inc.
- Hinton, S and Larissa, H. (2013). *Understanding Social Media*. Sage Publications India.
- Jefkins, F. (1985). *Advertising Made Simple.* Made Simple.
- Kaul J.M. (1982). *Public Relation in India*. Noya Prakash.
- Lister, M, Dovey, J. (2003). *New Media: A Critical Introduction.* Routledge.
- Ogilvy, D. (1995) *Ogilvy on Advertising.* Prion Books.
- Wilcox D.L., Glen T, Reber, B. (2014). Public Relations: Strategies and Tactics. Pearson

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC ELECTIVE
DSE HP 5D1: Pattern Making and Construction for Women's Wear

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Pattern Making and Construction for Women's Wear	4	2	0	2	XII Pass	Appeared in Fashion Concepts

Learning Objectives

- To trace the development of fashion industry.
- To gain an understanding and knowledge of the market involved in women's wear.
- To develop skills in designing, pattern making and construction of advanced styles in garment making techniques for women's wear.

Learning Outcomes

- Comprehend the evolution of fashion industry.
- Describe the design development process involved in women's wear fashion.
- Understand the market involved in women's wear
- Judicious application of knowledge with respect to selection of fashion fabrics, support materials and trims
- Develop popular garment styles for upper and lower garments for women

SYLLABUS OF DSE HP 5D1

THEORY
(Credits 2; Hours 30)

UNIT I: Women's Wear Fashion **6 Hours**

This unit enables the students to understand the growth and development of fashion industry with respect to Haute couture and ready to wear apparel for women.

- Development of fashion industry at international level- growth of the Haute Couture, effects of Industrial Revolution, mass production of clothing, women in work force leading to new fashion trends

- International fashion centres
- Designing for women's wear- Fashion seasons, line planning, sources of fashion inspiration, concept board, fabric and colour story, design sketches

UNIT II: Women's Wear Market 6 Hours

This unit provides an insight into the women's wear market with respect to various brands, market categories, sizes, styles and silhouettes. It further imparts knowledge on selection and sourcing of raw materials for women's wear.

- National and International brands for Women Wear
- Women's wear: categories, sizes, styles and silhouettes
- Selection and sourcing of fashion fabrics, support materials and trims

UNIT III: Drafting and Pattern Making 18 Hours

This unit imparts skills in designing and pattern making of various styles in women's wear including upper and lower Indian and western garments and dresses without waistline seams.

- Design variation in bodice through dart manipulation and added fullness
- Design variation in skirts by adding pleats, flares, yokes, panels, circularity
- Drafting of Indian upper and lower garments: Straight & A-line kurta, Salwar/Churidar/Palazzos
- Torso foundation: Boxy, Semi-fitted and Fitted
- Styles of dresses without waistline: Princess-line, Panel dress, Empire-line and Tent silhouette
- Stylizing various components of a garment- sleeves, collars, plackets, pockets, vents & slits, peplum, godets

PRACTICAL
(Credits 2; Hours 60)

UNIT I: Designing and Pattern making for Women's Wear 32 Hours

This unit provides hands-on skill to the students for adapting the basic slopers to create style variations in women's wear.

- Designing five women's tops/blouses using the principles of dart manipulation and added fullness and developing patterns for any two selected designs.
- Designing five women's skirts by adding pleats, flares, yokes, panels, circularity and developing patterns for any two selected designs.
- Designing one Kurta and one dress without waistline seam and developing the pattern for the same

UNIT II: Construction of women's garments 28 Hours

This unit equips the student to select appropriate fabric, plan a layout of pattern pieces, cut the fabric and assemble the cut pieces using basic seams and processes to create a finished garment.

- Construction of either a top / blouse or a skirt using the patterns developed in unit 1
- Construction of a Kurta / dress without waistline seam using the pattern developed in unit 1

Essential Readings:

- Brown, P. and Rice, J. (2014) Ready to Wear Apparel Analysis, Fourth Edition. Pearson Education, India
- Armstrong, H.J., 2009, *Pattern Making for Fashion Design*, Harper Collins Publishers Inc.,
- New York.
- Aldrich, W. (2008) Metric Pattern Cutting for Women's Wear, ISBN 10: 1405175672 / ISBN 13: 9781405175678, Wiley Blackwell Publication.
- Frings, G.S. (2007) FASHION From concept to consumer 9th ed., ISBN—10:0131590332/ ISBN-13: 978-0131590335, Pearson education Inc.
- Shoben, M.M., Ward, J.P. (2000) Pattern Cutting and Making Up Volume 2, Revised Edition, LCFS Fashion Media

Suggestive Readings:

- Dunham, G. R., (2021) The Fitting Book: Make Sewing Pattern Alterations and Achieve the Perfect Fit You Desire, Gina Renee Designs, India
- Jennifer Lynne & Matthews-Fairbanks, 2018, *Pattern Design: Fundamentals*, Fairbanks Publishing LLC.
- Reader's Digest (Eds.). 2002, New Complete Guide to Sewing, Reader's Digest Association (Canada) Ltd. Montreal.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC ELECTIVE
DSE HP 5D2: Designing for Children's Wear

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
Designing for Children's Wear	4	2	0	2	XII Pass	Appeared in Fashion Concepts

Learning Objectives

- To gain an understanding and knowledge of the market involved in children's wear.
- To develop proficiency in design conceptualization of clothes for children.
- To develop skills in designing, pattern making and construction of styles in garment making techniques for children's wear.

Learning Outcomes

- Describe the design development process involved in children's wear fashion.
- Understand the market involved in children's wear.
- Judicious application of knowledge with respect to selection of fashion fabrics, support materials and trims
- Develop popular garment styles of garments for children.

SYLLABUS OF DSE HP 5D2

THEORY
(Credits 2; Hours 30)

UNIT I: Children's Wear Market **6 Hours**

This unit enables the students to gain an insight into the children's wear market with respect to market categories, sizes, various brands, fashion seasons and sources of design inspiration.

- Categories of children's wear
- Sizes in children's wear
- National and international brands
- Fashion seasons
- Design inspiration

UNIT II: Design Conceptualization **6 Hours**

This unit imparts knowledge on planning a line for children's wear, selection and sourcing of raw materials and designing appropriate clothing for different children age groups.

- Planning a line- concept board, design sketches, colour and fabric story
- Selection and sourcing of suitable fabrics, support materials and trims
- Designing for different age groups (Infants, toddlers, pre-schooler, elementary school going, pre-teens and teens): Boys and girls
- Structural and applied design in children's wear

UNIT III: Pattern development for children's wear **18 Hours**

This unit imparts skills in designing and pattern making of various styles in children's wear including upper and lower garments for boys and girls.

- Child's bodice sloper, sleeve sloper, shorts sloper
- Fullness – Addition and disposal of fullness: dart, gathers, pleats and flares
- Adaptation of child's bodice to the following:
  - Skirt top
  - Skirts (Flared, gathered, A-line, pleated)
  - Frocks (A-line, yoked, short bodice, elongated bodice with gathers, pleats and flare)
  - Bushirt
  - Romper/ Pedal Pusher/ Jumpsuit
- Adaptation of child's sleeve:
  - Flared sleeve
  - Cap sleeve
  - Petal sleeve
  - Puffed sleeve and its variations
- Drafting collars:
  - Mandarin Collar
  - One piece stand and fall collar
  - Peter pan collar (flat and raised) and its variations (sailor's, cape, bertha)
- Other garment components- pockets, plackets and fasteners

PRACTICAL
(Credits 2; Hours 60)

Learning Objective

It will develop a keen eye for design and development of patterns for styles in children's fashion wear.

Learning Outcomes

- Able to develop basic slopers and adapt these to various design drafts
- Construct any one selected garment
- Design a line for children's wear
- Show case their work as a class/ team effort

UNIT I: Designing and pattern making for children's wear **32 Hours**

This unit provides hands-on skill to the students for adapting the basic slopers to create style variations in children's wear.

- Developing child's slopers- bodice, sleeve and shorts
- Adaptation of bodice block to shirt/bushirt, A-line frock, short bodice, elongated bodice regular bodice, yoke with flare, pleated and gathered frock
- Sleeve adaptations
- Collar drafts

UNIT II: Construction of children's garment and designing a line **28 Hours**

This unit equips the student to select appropriate fabric, plan a layout of pattern pieces, cut the fabric and assemble the cut pieces using basic seams and processes to create a finished garment.

- Construction of a garment from the adaptations above
- Designing a line for children's wear by adding design interest to the above patterns and developing patterns for the same (boys and girls)

Essential Readings:

- Donnanno A., 2018, Fashion Patternmaking Techniques for Children's Clothing, Promopress
- Brown, P. and Rice, J., 2014, Ready to Wear Apparel Analysis, Fourth Edition. Pearson Education, India
- Marshall S G, Jackson H O, Stanley MS, Kefgen M & Specht T, 2011, Individuality in Clothing Selection and Personal Appearance, 7th edition, Pearson Education, USA
- Armstrong, H.J., 2009, *Pattern Making for Fashion Design*, 5th ed., Harper Collins Publishers Inc., New York
- Frings, G.S., 2007, FASHION From concept to consumer, 9th ed., ISBN—10:0131590332/ ISBN-13: 978-0131590335, Pearson education Inc.

Suggestive Readings:

- Jennifer Lynne & Matthews-Fairbanks, 2018, *Pattern Design: Fundamentals*, Fairbanks Publishing LLC
- Reader's Digest (Eds.). 2002, New Complete Guide to Sewing, Reader's Digest Association (Canada) Ltd. Montreal

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC ELECTIVE
DSE HP 5E1: Entrepreneurship and Enterprise Management

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
Entrepreneurship and Enterprise Management	4	2	0	2	XII Pass	Appeared in Introduction to Resource Management

Learning Objectives

- To familiarize the students with meaning and concept of entrepreneurship and its ecosystem.
- To sensitize and orient students towards identifying entrepreneurial opportunities and market potential.
- To impart knowledge for setting up an enterprise and its management

Learning Outcomes

Students will be able to :

- Understand the concepts of an entrepreneur, entrepreneurship and entrepreneurial ecosystem in context of India.
- Appreciate the role of entrepreneurial motivation and creativity in innovation.
- Develop skills in project identification, formulation and appraisal.
- Gain insight into setting up of an enterprise and its management.

SYLLABUS OF DSE HP 5E1

THEORY
(Credits 2; Hours 30)

UNIT I: Entrepreneurship Development: Fundamental concepts of entrepreneurship development and entrepreneurial ecosystem**.** **10 Hours**

- Entrepreneurship- concept, significance, stages, growth process, entrepreneurship development in India, entrepreneurship education model, drivers & barriers
- Entrepreneur- characteristics, competencies, types, style & motivation

- Women Entrepreneurship in India- characteristics, competencies, significance, status, factors promoting , challenges faced, strategies for women entrepreneurship development- income generation , self-help groups, micro enterprises and self- employment, skill development and technology transfer
- Entrepreneurial Ecosystem: Domains (accessible markets, availability of finance, conducive culture, human capital, progressive policy framework, and a range of institutional support)
- Creativity: Concept, significance & process
- Innovation: Concept, types, process, sustaining growth- disruptive innovation.

UNIT II: Enterprise Planning and Launching: Project identification, project formulation, project appraisal **10 Hours**

- Types of enterprises: classification based on sector, capital, gender, place, product, ownership pattern, platform & process
- Project Identification: sensing business opportunities, feasibility study
- Project Formulation: Project report & its components, writing a business proposal
- Project Appraisal: Technical, marketing, financial, legal and environmental

UNIT III: Enterprise Management & **Sustenance** (with reference to start ups and micro enterprises) **10 Hours**

- Production Management - Organizing production; input-output cycle - ensuring quality
- Marketing Management- Un derstanding markets and marketing: types, functions & marketing mix
- Financial Management - Concept, types and sources of finance, financial ratios & projections
- Human resource management – Concept, significance, practices, challenges
- Total Quality Management
- Business ethics

PRACTICAL
(Credits 2; Hours 60)

1. Micro Lab
2. SWOC analysis of successful entrepreneurs and enterprises through case profiling.
3. Entrepreneurial Competencies & Motivation - Simulations & experiential learning. Institutions facilitating entrepreneurship development in India.
4. Preparation and appraisal of a business plan.
5. Calculations of financial Indices.
6. Design and development of marketing mix for a startup.
7. Designing of sales campaign for digital marketing

Essential Readings:

- Barringer R. B. (2020*). Entrepreneurship: Successfully Launching New Ventures*. Pearson Education.
- Chabbra T. N. (2015). *Entrepreneurship Development*. Sun India.

- Charantimath, P. M. (2018*). Entrepreneurship Development and Small Business Enterprise*s. Pearson Publications.
- Desai V. (2011). *The Dynamics of Entrepreneurial Development and Management.* Himalaya Publishing House.

Suggested Readings:

- Gundry L, K. & Kickul J. R. (2007*). Entrepreneurship Strategy: Changing Patterns in New Venture Creation, Growth, and Reinvention*. SAGE Publications, Inc.
- Taneja & Gupta. (2001). *Entrepreneur Development- New Venture Creation.* Galgotia Publishing Company.
- Zaware, N. (2019). *Entrepreneurship Development and Startups Management.* Educreation Publishing.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC ELECTIVE
DSE HP 5E2: Innovation and Design Thinking

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
Innovation and Design Thinking	4	2	0	2	XII Pass	Appeared in Introduction to Resource Management

Learning Objectives

- To comprehend the Design Thinking concept for fostering innovation
- To understand concept and role of innovation in present day context
- To apply design thinking solutions individually and in team for maximizing business growth
- To instill a culture of design thinking to enhance innovation within an organization

Learning Outcomes

- Students will be able to :
- Overcome cognitive fixedness and develop new mindset that integrates design thinking for innovation.
- Empathize and apply human centred design for seeking innovative solutions.
- Create the optimal environment and team dynamics to steer innovation and collaboration.
- Develop the capacity to design and test cutting-edge for customer-focused prototypes

SYLLABUS OF DSE HP 5E1

THEORY
(Credits 2; Hours 30)

UNIT I: Innovation **10 Hours**

This unit will help students to understand the concept of innovation and types and its dimensions

- Innovation: Concept, significance, types and process
- Innovation diffusion theory
- Innovation in organizations : Drivers and barriers, bottom up and top down approach, horizontal versus vertical approach

- Dimensions of innovation: Innovation eco-system in India, social Innovation, grassroots innovation, frugal innovation and global Innovation-global innovation index framework (GII)

UNIT II: Design thinking approaches and processes 12 Hours

The focus of this unit would be on developing the basic concepts of design thinking, business use of design thinking, mindset, approaches and processes.

- Design thinking : Concept, discipline, role and mindset
- Design Thinking Approaches: Empathy, Ethnography, Divergent thinking, convergent thinking, Visual thinking, Assumption testing, Prototyping and Time for learning and validation
- Design thinking resources: people, place, materials and organizational fit
- Design thinking processes: Double diamond process, Stanford d. school 5 stage process

UNIT III: Design thinking in practice 8 Hours

This unit will help students to gain insights about design thinking tools, methods and its application.

- Stages of designing for growth
- Design thinking tools and methods: visualization, journey mapping, value chain analysis, mind mapping, brain storming, concept development, assumption testing, customer co creation, rapid prototyping, launching
- Design thinking applications in organizations

PRACTICAL
(Credits 2; Hours 60)

1. The foundation for innovation: Define users' needs and problems, identify and reframe the most game changing part of the problem and analyze the contextual environment for viable solution.
2. Ideate: Develop user focus ideas to identify new problems, and apply tools for innovative solutions, ideation through design thinking approaches and refine innovative ideas.
3. Develop an experimentation mindset: Combine ideas into complex innovation concepts, critique and strengthen concepts, guide prototyping by creating critical questions related to concept's desirability, feasibility and viability.
4. Implement : Assess developer and user perspectives for bias that may affect implementation, apply framework to strengthen communications about an innovation`s value and reflect on management skills for sustaining a culture of innovation

Essential Readings:

- Brown, T. (2009). *Change by design*. Harper Business.
- Drucker, P. F. (2006). *Innovation and entrepreneurship: Practice and principles*. USA: Elsevier.70
- Kahneman, D. (2011). *Thinking fast and slow*.Farrar, Straus and Giroux.
- Roy, R. (2008).*Entrepreneurship*. Oxford University Press.
- Soni, P. (2020*). Design your thinking: The Mindsets, toolsets and skillsets for creative*

problem solving. Penguin Random House India Private Limited.

Suggested Readings:

- Chesbrough, H. (2006). *Open business model: How to thrive in the new innovation landscape.* Harvard Business School Press.
- CN Prasad,(2004) *Small and Medium Enterprises in Global Perspective*. New century Publications.
- Fagerberg, J., Mowery, D. C., & Nelson, R. R. (Ed.). (2006). *The Oxford Handbook of innovation*. Oxford University Press.
- Kaplan, J. M. (.2006). *Patterns of entrepreneurship.* John Wiley & Sons.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DEPARTMENT OF HOME SCIENCE
SEMESTER – VI

B.Sc. (Prog.) Home Science

DISCIPLINE SPECIFIC CORE COURSE

DSC HP 616: Lifespan Development III: Development in Adulthood

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title& Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Lifespan Development III: Development in Adulthood	4	3	0	1	XII Pass	Appeared in Lifespan Development II: Middle Childhood and Adolescence

Course description:

Life span development, will equip aspiring students with theoretical perspectives and the, principles of development as well as the challenges during different stages of adulthood.

Learning Objectives

- To learn about the various changes that take place in the different domains of development during early, middle and late adulthood.
- To understand the theoretical perspectives on early, middle and late adulthood.
- To understand the influence of cultural contexts on development during adulthood.
- To learn about different techniques, tools of data collection and psychometric measurement.

Learning Outcomes

The students would be able to:

- The students will develop an understanding of the diverse changes that are experienced in different developmental domains during adulthood.
- Students will be able to apply theoretical perspectives in understanding adulthood.
- Students will be able to apply their understanding of development during adulthood to everyday life experiences.

- To understand how relationships evolve and are maintained through the lifespan.

SYLLABUS OF DSC HP 616

THEORY
(Credits 3; Hours 45)

UNIT I: Early Adulthood **20 Hours**

Unit description: This unit will explain the stage of early adulthood and the various changes across different domains of development.

Subtopics:

- Transition from adolescence to adulthood; Developmental tasks of adulthood
- Theoretical Perspectives of early adulthood- Life cycle approach, Erikson, Sternberg and others.
- Physical and physiological changes
- Socio-emotional development: Relationships, Marriage, co-habitation and Parenting
- Cognition and creativity: Work, Vocation and leisure

UNIT II: Middle Adulthood **10 Hours**

Unit description: This unit will explain the stage of middle adulthood and focus on the physical, physiological and socio-emotional changes specific to this stage

Subtopics:

- Developmental tasks of middle adulthood
- Physical and physiological changes
- Socio-emotional development
- Diversity in roles and relationships
- Parenting in the current context

UNIT III: Late Adulthood **15 hours**

Unit description: This unit will explain the stage of late adulthood and the challenges across the different domains of development**.**

Subtopics:

- Developmental tasks of late adulthood
- Physical and physiological changes and aging
- Socio-emotional development: Parenting and Grandparenting; Coping with the challenges of aging
- Work and Retirement
- Cultural Perspectives on aging, death and grief
- Meditation, spirituality and stress management

PRACTICAL
(Credit 1; Hours 30)

UNIT 1 **15 Hours**

- Reviewing methods of data collection: Interview, Observation, Questionnaire, Case study
- To study physical and sexual changes in adulthood
- To study cognitive development and creativity during adulthood
- Case profile of an adult- including study of self, family relationships and peer relationships, challenges.
- Use of interview/questionnaire method to study adult roles (at least one male and

female)
- Father/husband
- Home maker
- Employed woman
- Grandfather/Grandmother
- Single parent
- College-going young adults

UNIT 2 **15 Hours**

- Depictions of adolescence and adulthood stages in media: Audio-visual, Print and Theatre
- Familiarity with Psychological Tests of Intelligence and Personality- any three (WAIS-R, Ravens, TAT)
- Analysis of care-based apps for elderly

Essential Readings:

- Berk, L. E. (2007). Development through the Lifespan. Delhi, Pearson Education
- Papalia, D.E. and Martorell, G. (2015). Experience Human Development, McGraw-Hill Education
- Rice. F. P. (1998). Human Development: A lifespan approach. New Jersey: Prentice Hall.
- Santrock, J. W. (2007). A topical approach to life-span development. New Delhi: Tata McGraw- Hill.
- Santrock,J.W (2021). Life Span Development:Eighteenth edition. MC.Graw-Hill:New York.
- Singh, A. (Ed). (2015). Foundations of Human Development: A Life Span Approach. New Delhi: Orient Black Swan

Suggested Readings:

- Harris, M. and Butterworth, G. (2002). Developmental Psychology: A Student's Handbook. Psychology Press.
- Hurlock, E. B. (1973). Adolescent Development. Mc Graw -Hill Education.
- Journal of Developmental Psychology
- Lefrancois, G.R. (1996). The Lifespan. Wadsworth Publishing Company.
- Rutter, M. and Rutter, M. (1992). Developing Minds. Challenge and continuity across the
  Life span. London: Penguin.
- Tennant, M. and Pogson, P. (1995) Learning and Change in the Adult Year, San Francisco: Jossey-Bass

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC CORE COURSE
DSC HP 617: Public Nutrition and Dietetics

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title& Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Public Nutrition and Dietetics	4	3	0	1	XII Pass	Appeared in Lifespan Approach to Nutrition

Learning Objectives

- To elucidate the concept and scope of public nutrition.
- To apprise the relevance of assessing nutritional status and the various techniques for assessment of nutritional status.
- To familiarize with the common nutritional deficiencies of public health significance and their management and prevention.
- To understand the nutrition care process in disease management of a patient.
- To develop the skill of modifying normal diets into therapeutic diets for managing some diseases/ disorders.
- To understand the etiology, patho-physiology, metabolic changes, clinical symptoms and management of some common disorders / diseases.

Learning Outcomes

- Understand the concept of public nutrition and the multifaceted nature of nutritional problems.
- Comprehend the relevance of assessing nutritional status and various techniques for assessment of nutritional status.
- Knowledge of common nutritional deficiencies, their management , prevention and relevant national nutrition programmes.
- Understand the principle of diet therapy and the nutrition care process.
- Develop an ability to modify a normal diet for therapeutic purposes.
- An understanding of the etiology, patho-physiology, metabolic changes, clinical symptoms and management of some common disorders / diseases.

SYLLABUS OF DSC HP 617

THEORY
(Credits 3; Hours 45)

UNIT I: Concept and scope of public nutrition **3 Hours**

- Health –Concept, definition, dimensions, determinants and indicators
- Definition and multidisciplinary nature of public nutrition
- Concept, scope and current concerns in public nutrition
- Role of public health nutritionist

UNIT II: Assessment of nutritional status of individual and community 8 Hours

- Objectives and importance of assessment of nutritional status of individual and population groups
- Methods of Assessment of Nutritional status of Individual and Population groups
  - Anthropometry and related measures
  - Biochemical Assessment
  - Clinical Examination
  - Dietary Assessment
  - Vital Statistics , Ecological factors

UNIT III: Prevalence, etiology, clinical features, prevention and management at community level of the following. 10 Hours

- Protein Energy Malnutrition, Moderate Acute Malnutrition, Severe Acute Malnutrition
- Micronutrient deficiencies such as Vitamin A deficiency, Nutritional anemia, Iodine deficiency disorders, Vitamin D deficiency and Zinc deficiency
- Fluorosis
- Obesity, Metabolic Syndrome and Non communicable disease- An overview

UNIT IV: Introduction to Nutrition Care and Diet Therapy 4 Hours

- Principles and basic concepts of diet therapy
- Nutrition Care Process (NCP)
- Therapeutic modifications of the normal diet

UNIT V: Etiology, patho-physiology, metabolic changes, clinical symptoms and management of some common disorders / diseases 20 Hours

- Febrile disorders- Typhoid, Tuberculosis, HIV-AIDS
- GI Tract disorders- Diarrhoea, Constipation, Lactose Intolerance, Celiac Disease
- Weight management- Underweight, Overweight and Obesity

PRACTICAL
(Credit 1; Hours 30)

I Assessment of nutritional status:

- Anthropometry (height, weight , Middle upper arm circumference, Waist circumference)
- Dietary Assessment - Food frequency questionnaire ,24 hour dietary recall
- Review of nutritional status of population from National /Regional/ Nutrition Surveys (NFHS, CNNS, etc)

II Planning and preparation of low cost nutritious diet/recipes for:

- Population groups vulnerable to nutritional deficiency diseases (Protein Energy Malnutrition,, Nutritional Anemia, Vitamin A deficiency)

III Planning and preparation of diets/dishes and snacks for:

- Individuals suffering from febrile disorders- Typhoid, Tuberculosis; GI Tract disorders- Diarrhea and Constipation; Weight management- Underweight, Overweight/ obesity

Essential Readings:

- Vir, S. (2023). Child, adolescent and women nutrition in India: Public Policies, programme and progress. KW Publishers, Daryaganj,New Delhi, India.

- Park, K. (2021). Park‟s Textbook of Preventive and Social Medicine (26th ed.).Jabalpur, India: Banarasidas Bhanot Publishers.
- Seth, V. and Singh K. (eds.) (2021) Principles of Medical Nutrition Therapy for Positive Clinical Outcomes, 1st Edition. Elite Publishing House Pvt. Ltd.
- ICMR (2020) Estimated Average Requirements and Recommended Dietary Allowances for Indians .Published by National Institute of Nutrition, Hyderabad.
- Seth V, Singh K and Mathur P (2018). Diet Planning through the Life Cycle: Part 1 Normal Nutrition. A Practical Manual. 6 th Edn. Elite Publishing House Pvt. Ltd. New Delhi.
- Siddhu A, Bhatia N, Singh K, Gupta S (2017). Compilation of food exchange list, technical series 6, Lady Irwin College, University of Delhi. Publ. Global Books Organisation, Delhi
- Longvah T, Ananthan R, Bhaskarachary K and Venkaiah K (2017). Indian Food Composition Tables. National Institute of Nutrition, ICMR, Hyderabad.
- Kishore, J. (2016). National Health Programs of India (12th ed.). New Delhi, India:Century Publications.
- Wadhwa A and Sharma S (2003). Nutrition in the Community- A Textbook. Elite Publishing Pvt Ltd, New Delhi.
- Jelliffe DB & Jelliffe E F P (1989). Community nutritional assessment with special reference to less technically developed countries. Oxford Medical Publications. Oxford University Press, Oxford, UK.
- Policy on Control of Nutritional Anemia (1991). Ministry of family and health welfare. Government of India.

Suggested Readings:

- Chadha R and Mathur P eds.(2015) Nutrition : A Lifecycle Approach. Orient Blackswan, New Delhi.
- Indian Dietetics Association, (2018) Clinical Dietetics Manual, 2nd Edition. Elite Publishing House Pvt. Ltd.
- Bamji, M. S., Krishnaswamy, K. & Brahmam, G. N. V. (Eds.). (2017). Textbook of Human Nutrition (4th ed.). New Delhi, India: Oxford and IBH Publishing Co. Pvt. Ltd.
- Gibney, M. J., Margetts, B. M., Kearney, J. M. & Arab, L. (Eds.). (2005). Public Health Nutrition. Oxford, UK: Blackwell Science.
- ICMR (2011) Dietary Guidelines for Indians. Published by National Institute of Nutrition, Hyderabad.
- Khanna K, Gupta S, Seth R, Passi SJ, Seth R, Mahna R, Puri S (2013). Textbook of Nutrition and Dietetics.2nd Edn. Phoenix Publishing House Pvt. Ltd.
- https://www.who.int/tools/child-growth-standards/standards. Assessed on March 2023
- National Nutrition Monitoring Bureau (India) | GHDx (healthdata.org)Assessed on March 2023
- WHO. Xerophthalmia and night blindness for the assessment of clinical vitamin A deficiency in individuals and populations. WHO/NMH/NHD/EPG/14.4. Geneva: World Health Organization; 2014 (http://apps.who.int/iris/bitstream/10665/133705/1/WHO_NMH_NHD_EPG_14.4_eng.pdf).Assessed on March 2023
- https://www.who.int/data/nutrition/nlis/info/vitamin-a-deficiency Assessed on March 2023
- https://www.nhm.gov.in/images/pdf/programmes/child-health/IEC-materials/PARTICIPANT-MANUAL_FBCSA-Malnutrition.pdf Assessed on March 2023
- Comprehensive National Nutrition Survey(2016-18) reports https://www.unicef.org/india/media/2646/file/CNNS-report.pdf Assessed on March 2023

- WHO https://www.who.int/tools/child-growth-standards/standards. Assessed on March 2023
- WHO (2009) https://www.who.int/publications/i/item/9789241547635. Assessed on March 2023
- NRHM. Facility based care of SAM (2013) https://www.nhm.gov.in/images/pdf/programmes/child-health/IEC-materials/PARTICIPANT-MANUAL_FBCSA-Malnutrition.pdf .Assessed on March 2023
- NFHS Project | International Institute for Population Sciences (IIPS) (iipsindia.ac.in)Assessed on March 2023

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC CORE COURSE

DSC HP 618: Sociology and Psychology for Home Science

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title& Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Sociology and Psychology for Home Science	4	2	0	2	XII Pass	NIL

Learning Objectives

- To develop an understanding of the contributions of Sociology and Psychology to Home Science.
- To gain knowledge about various dimensions of social change, society and culture.
- To develop an understanding of the nature and foundations of Psychology.
- To appreciate the relevance of the Sociology and Psychology in everyday life.

Learning Outcomes

Students will be able to:

- Understand the nature of self, family, community and society.
- Gain awareness of the variations in family and social systems.
- Develop an understanding of Psychology and its basic concepts.
- Apply concepts of Sociology and Psychology in everyday life.

SYLLABUS OF DSC HP 618

THEORY
(Credits 2; Hours 30)

PART A – Sociology (15 Hours)

UNIT I: Introduction to Sociology **7 Hours**

This unit will introduce the students to basic concepts of social systems.

- Definitions and theoretical approaches in Sociology
- Social systems: Family, Community and Society
- Family in India: Structures, functions, variations and transition

UNIT II: Communities and Social Groups **8 Hours**

This unit introduces the students to the concepts of communities, social groups and social inclusion and exclusion.

- Types of communities: rural, urban, tribal, and other variations

- Organization and role of social groups in communities and society
- Social Inclusion and Exclusion

PART B – Psychology (15 Hours)

UNIT III: Introduction to Psychology **8 Hours**

This unit will help students to gain an insight into the basic concepts of Psychology.

- Key terms, definitions and concepts in Psychology
- Schools of thought in Psychology
- Theories of learning and perception

UNIT IV: Psychology in everyday life **7 Hours**

This unit will help students to appreciate the application of Psychology in everyday life.

- Self, emotions, perception and behaviour
- Group dynamics
- Media and Psychology

PRACTICAL
(Credit 2; Hours 60)

PART A – Sociology **30 Hours**

1. To study the structures and roles of families in diverse settings (social, cultural, economic and geographical variations)
2. To study local communities to understand social systems and dynamics (residential, slum, street, migrant).
3. Documenting everyday rituals, cultural practices and events: traditional art and craft, folk songs, attire, food
4. Audio visual resources to study changing social systems

PART B – Psychology **30 Hours**

1. To prepare a scrapbook on relevant contemporary topics and issues in Psychology
2. Audio visual material to understand how human behaviour influences group dynamics and relationships
3. Survey on use and impact of popular social media
4. Workshops on any relevant theme: self, emotional regulation, mindfulness, counselling.

Essential Readings:

- Abraham, F. (2006). *Contemporary Sociology: An Introduction to concepts and Theories.* Oxford University Press.
- Anand, V., Balakrishnan, G., & George, P. (2018). *Community practices in India: Lessons from the grassroots*. Cambridge Scholars Publishing.
- Baron, R. A., Byrne, D., & Branscombe, N. R. (2006). *Social psychology* (11th ed.). Pearson Education.
- Beteille, Andre. (2009). Sociology: Essays in Approach and Method. Delhi: Oxford University Press.
- Ciccarelli, Saundra K., White, J. Noland & Misra, Girishwar. (2022). *Psychology* (6th ed.). Pearson India.
- Maguire, K. (2012). *Stress and coping in Families*. Wiley.
- Sachdeva, P., & Florence. D. (2020). *Basic Sociology*. Elite Publishing House.
- Shah, M. A. (2014). *The Writings of A. M. Shah: The Household and Family in India.*

Orient Blackswan.

Suggested Readings:

- Compas, B. E., Murphy, L. K., Yarboi, J., Gruhn, M. A., & Watson, K. H. (2019). Stress and coping in families. In B. H. Fiese, M. Celano, K. Deater-Deckard, E. N. Jouriles, & M. A. Whisman (Eds.), *APA handbook of contemporary family psychology: Foundations, methods, and contemporary issues across the lifespan* (pp. 37–55). American Psychological Association. https://doi.org/10.1037/0000099-003.
- Hochschild, A. (2013). *So how's the Family? And other Essays*. University of California Press.
- Madan, T. N. & Das, Veena. (2003). *The Oxford India companion to sociology and social anthropology.* Oxford University Press
- Passer, M.W. & Smith, R.E. (2010). *Psychology: The science of mind and behaviour*. Tata McGraw-Hill.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC ELECTIVE
DSE HS 6-1: Research Methods in Home Science

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
Research Methods in Home Science	4	3	0	1	XII Pass	NIL

Learning Objectives

- To provide students understandings about the basic concepts, approaches and methods in conducting Home Science research.
- To enable learners to appreciate and critique the nuances of designing a research study well.
- To sensitize students towards ethical concerns while conducting Home Science research.

Learning Outcomes

- Demonstrate knowledge of the scientific method, purpose and approaches to research in Home Science
- Compare and contrast quantitative and qualitative research approaches
- Explain different types of research design and their applicability in Home Science research
- Understand the key elements of a research process
- Explain ethical principles, issues and procedures

SYLLABUS DSE HS 6-1

THEORY
(Credits 3; Hours 45)

UNIT I: Research Purpose and Design **10 Hours**

This unit will deal with meaning and importance of research in various areas of Home Science. Exposure to different types of research designs and measurement in Home Science research would also be given.

- Meaning, purpose and significance of research
- Research as a scientific method

- Types of research
- Quantitative, Qualitative and mixed method approaches
- Research Designs –Experimental and Non-Experimental; Descriptive and Observational; Participatory research
- Internal and external validity of research design
- Variables, concepts and measurement in research
- Levels of measurement
- Units of analysis

UNIT II: Sampling and Research tools & techniques 15 Hours

This unit will introduce the student to the concept of sampling and methods used to draw sample from population using examples from Home Science discipline. Students would also learn about types of data, its collection and reliability and validity concerns.

- Role of sampling in research
- Sampling techniques and their applicability, Sample size and sampling error
- Types of data: Primary and Secondary
- Tools of data collection; types, construction and administration- Interview, Questionnaire, Observation, Focus group discussion and other methods
- Validity and reliability of data collection tools

UNIT III: The Research Process 15 Hours

This unit will elaborate upon the various steps involved in conducting and reporting researches in Home Science.

- Defining the problem, research questions, objectives, hypotheses
- Review of related literature and originality in writing
- Systematic research: concept and methodology
- Planning the research
- Identifying variables and constructing hypothesis
- Selecting appropriate research methodology and tools
- Data analysis: coding and tabulation
- Writing a research report: styles and formats
- Citation formats: in medical sciences, social sciences

UNIT IV: Values, Social Responsibility and Ethics in Research 5 Hours

This unit will apprise the students about ethical concerns while conducting and reporting research.

- Ethical principles guiding research: from inception to completion and publication of research
- Plagiarism and Academic integrity in research: plagiarism tools and software
- Ethical issues relating to research participants and the researcher
    - Rights, dignity, privacy and safety of participants
    - Informed consent, confidentiality, anonymity of respondents, voluntary participation, harm avoidance

PRACTICAL
(Credits 1; 30 Hours)

1. Data visualization
2. Levels of Measurement
3. Types of research designs
    a. Experimental and non-experimental; Descriptive and observational
    b. Qualitative, Quantitative and mixed method
4. Sampling techniques and sample size calculation
    a. Probability sampling method
    b. Non-Probability sampling methods
5. Tools of data collection- Interview schedule, questionnaire and FGD
    - Designing/ Construction
    - Preparation of tools for ethical review
    - Pilot testing/ validity and reliability of the tool\
6. Data collection and analysis process: conducting interviews, administering questionnaire
7. Coding and tabulation of data for analysis
8. Citation formats and Plagiarism
9. Reviewing a research paper from a specific area of specialization in Home Science

Essential Readings:

- Kerlinger F. N. and Lee, H.B. (2017). *Foundations of Behavioral Research* 4th Ed. Harcourt College Publishers.
- Kothari, C. R. (2019). *Research Methodology: Methods and Techniques*. New Age International Pvt Ltd, New Delhi.
- Kothari, C. R. (2022). *Shodh Padhati* 1st Ed. New Age International Pvt Ltd, New Delhi.
- Kumar, R. (2019) Research Methodology: A Step-by-Step Guide for Beginners. 5th Ed. Sage Publications, New Delhi.

Suggested Readings:

- Bernard, H. R. (2000). *Social research methods: Qualitative and quantitative approaches.* Thousand Oaks, CA.: Sage.
- Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches.* Thousand Oaks, CA: Sage Publications.
- Davis, A. M., Treadwell, D. (2019). Introducing Communication Research: Paths of Inquiry. United Kingdom: SAGE Publications.
- Flynn, J.Z., Foster, I.M. (2009). *Research Methods for the Fashion industry.* Fairchild books, Bloomsbury publishing.
- Indian National Science Academy (INSA) (2019). *Ethics in Science Education, Research and Governance*. ISBN:978-81-939482-1-7. http://www.insaindia.res.in/pdf/EthicsBook.pdf
- Jacobsen, K. H. (2020). *Introduction to health research methods: A practical guide*. Jones & Bartlett Publishers.
- UGC (2021) *Academic Integrity and Research Quality*. New Delhi: UGC, Retrieved from https://www.ugc.ac.in/e-book/Academic%20and%20Research%20Book_WEB.pdf

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC ELECTIVE
DSE HS 6-2: Innovation and Entrepreneurship

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
Innovation and Entrepreneurship	4	1	0	3	XII Pass	NIL

Learning Objectives

- To motivate students to opt for innovation and entrepreneurship as a career option.
- To foster entrepreneurial traits and competencies
- To make students understand the critical role of creativity, design thinking and innovation in entrepreneurship development
- To prepare students to plan, launch and manage start-ups/enterprise
- To establish an ecosystem for students that is conducive to networking and incubating

Learning outcomes

After completing the course, students will be able to:

- Consider opting innovation and entrepreneurship as a career.
- Develop entrepreneurial traits and competencies.
- Ideate a viable business proposition.
- Network for venturing and innovating.
- Pitch a business proposal.

SYLLABUS OF DSE 6-2

THEORY
(Credit 1: Hours: 15)

UNIT I: Innovation **5 Hours**

- This unit focuses on developing the fundamental concept of innovation and its dimensions.
- Innovation: Concept, significance, types and process
- Innovation diffusion theory
- Innovation in organizations: Drivers and barriers, bottom-up and top-down approach, horizontal versus vertical approach
- Dimensions of innovation: Innovation eco-system in India, social Innovation, grassroots innovation, frugal innovation, and global Innovation-global innovation index framework (GII)

UNIT II: Creativity & Design thinking 4 Hours

- The focus of this unit will be on developing the basic concepts and role of creativity & design thinking in innovation.
- Creativity- Concept, significance, role, processes and fostering creativity for innovation
- Design thinking: Concept, discipline, role, mindset**,** resources, and processes
- Design Thinking Approaches: Empathy, Ethnography, Divergent thinking, convergent thinking, Visual thinking, Assumption testing, Prototyping and Time for learning and validation

UNIT III: **Entrepreneurship and Enterprise Management 6 hours**

This unit will orient the students to the concept of entrepreneurship and enterprise management.

- Entrepreneurship - Concept, stages, growth process, and entrepreneurship development in India, Government policies and schemes
- Entrepreneur- characteristics, competencies, types, styles, and motivation
- Enterprise & its management- types and strategies for Start-up launching, management and sustenance
- Exit strategies for a new startup- trends in India
- Networking & business ethics

PRACTICAL
(Credit 3: Hours: 90)

1. Entrepreneurial Motivation: Developing an appreciation for entrepreneurial traits and entrepreneurship as a career through 14 Hours

- Entrepreneurial motivation orientation – Sector-specific case studies of successful entrepreneurs and profiling of required traits for innovation
- Understanding self as a prospective entrepreneur - Who am I?, Locus of control, Competency Profiling, SWOC analysis, Mapping entrepreneurial styles

2. Understanding and appreciating Innovations and design thinking: 20 Hours

- Identification of innovations in day-to-day life
- Critical evaluation of innovations and design-driven solutions – case studies
- Environment scanning for business opportunities
- User's empathy mapping – understanding user's pain, pain creators and relievers

- Redesign activities for possible solutions - products and services
- Industry-integrated learning – live projects

3. Market research & mapping start-up station: 12 Hours

- Environment scanning for business opportunities
- Ideation: Generation, articulation, testing and incubating
- Develop a feasibility report

4. Business plan and appraisal: 10 Hours

- Business preparation
- Appraisal of business plan
- Risk auditing and mitigation

5. Operations and Marketing management: 12 Hours

- Develop operational management sheet and applications for registrations and licenses
- Familiarizing with the relevant documents, including the inventory and stock registers.
- Customer segmentation and profiling
- Prepare the 4Ps of the marketing mix, including digital marketing tools
- Prepare an elevator pitch

6. Financial management: 12 Hours

- Analysis of financial requirements and available capital
- Sources of finance - bootstrapping, crowdfunding, angel investing venture capital
- Financial statements, cash flow management, applicable interest rates of different types of loans
- Calculation of financial ratios, break-even analysis and applicable taxes
- Designing funding strategy and start-up valuation

7. Human resource management and legal framework: 10 Hours

- Functional requirements and cost implications
- Team formation
- Ensuring health and safety at the workplace
- Business communication
- Enterprise registration- Legal compliances, paperwork and cost
- Intellectual property rights

Essential Readings:

- Bhatt Arvind Kumar (2022). Innovation and Entrepreneurship. Atlantic publisher
- Chabbra T. N. (2019). Entrepreneurship Development. New Delhi: Sun India.
- Charantimath, P. M. (2018). Entrepreneurship Development and Small Business Enterprises. Pearson Publications.
- Carayanis Elias G, Samara Elpida T & Bakouros Yannis L.(2015). Innovation and Entrepreneurship. Springer.
- Drucker. Peter F. (2006), Innovation and Entrepreneurship. Harper Business

- Gundry L, K. & Kickul J. R. (2007). Entrepreneurship Strategy: Changing Patterns in New Venture Creation, Growth, and Reinvention. SAGE Publications, Inc.
- Santiago, Sam (2011), The official book of Innovation. Rising above LLC publisher
- Soni, Pwan.(2020). Design your thinking: The Mindsets, toolsets and skillsets for creative problem solving

Suggested Readings:

- Christensen M Clayton (2013). The innovator's dilemma. Harvard Business Review Press.
- Daum Callie (2020). Business strategy: essentials you always want. Vibrant publishers
- Goyal P. (2017). Before you start up: How to prepare to make your start-up a dream reality. Fingerprint publishing.
- HBR's 10 Must Reads on Startups and Entrepreneurship (2018). Featuring Bonus Article "Why the Lean Startup Changes Everything" by Steve Blank
- Nath,D. Mitra, S. (2020) Funding your startup and other nightmare. Penguin portfolio.
- Taneja & Gupta. (2001). Entrepreneur Development- New Venture Creation. New Delhi: Galgotia Publishing Company.

Web references:

- https://web.iima.ac.in/assets/upload/mdp/480284395YEP%20Brochure.pdf
- https://www.iimb.ac.in/entrepreneurship
- https://www.mepsc.in/skill-based-programs/
- https://ediindia.ac.in/pgdm-innovation-entrepreneurship-venture-development/

Training material:

- EMT kit developed by NIESBUD, New Delhi and EDII Ahmedabad

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DEPARTMENT OF HOME SCIENCE
SEMESTER – IV

B.A (Prog) with Nutrition and Health Education (NHE)
B.A (Prog.) with Nutrition and Health Education (NHE) as Major

Category-II

DISCIPLINE SPECIFIC CORE COURSE

DSC- 7-NHE: Food Hygiene Sanitation and Quality Control

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title and Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Food Hygiene Sanitation and Quality Control	4	3	1	0	XII Pass	NIL

Learning Objectives

- To introduce students to the basic concepts of food hygiene, quality control, WASH and Swachh Bharat Abhiyan
- To equip them with the knowledge of basic principles of hygienic storage and preservation of food, microbiological safety at various food operations
- To enable students to understand the concept of quality control and sanitation standards/regulations

Learning Outcomes

After completion of the course students will be able to:

- Explain the concept of hygiene and sanitation at different levels of food handling
- Understand the microorganisms involved in food spoilage, food infection and intoxication, mode of transmission of microorganisms, methods of food preservation
- Understand the concept of total quality management, WHO five keys to safer food, sanitation standards and regulations

SYLLABUS OF DSC-7

THEORY

(Credits 3; Hours 45)

UNIT I: Concept of Hygiene and Sanitation **8 Hours**

This unit will introduce the concept of WASH, various adverse health effects related to sanitation and hygiene; Swachh Bharat Abhiyan.

- Water, Sanitation and Hygiene (WASH)
- Sanitation and hygiene health effects
- Swachh Bharat Abhiyan

UNIT II: Food Hygiene and Sanitation **15 Hours**

This unit will acquaint the students with the concept of food hygiene and sanitation at different levels of food handling.

- Personal hygiene
- Environmental hygiene
- Sanitation and hygiene during food handling practices (preparing, cooking and holding food)
- Food hygiene at food service institutions
- Food waste management

UNIT III: Food Borne Microbial Diseases **10 Hours**

This unit will introduce the concept of public health hazard, mode of transmission of microorganisms, principles of food preservation, food storage.

- Public health hazards
- Food infection, intoxication and poisoning – symptoms, mode of transmission, and prevention
- Food storage (selection, purchase and storage of perishable, semi-perishable and non-perishable foods)
- Principles and methods of food preservation

UNIT IV: Quality Management **12 Hours**

This unit will introduce the concept of total quality management, WHO five keys to safer food, hygiene and sanitation regulations/standards.

- Characteristics of quality
- Quality control, quality assurance
- Total Quality Management (TQM)
- Risk analysis
- HACCP, GMP, GHP
- WHO five keys to safer food
- Hygiene and sanitation regulations/standards

TUTORIALS
(Credits 1; Hours 15)

Tutorial classes will involve:

1. Q&A sessions/ Group Discussions/ Problem Solving exercises with the Students
2. Presentation of project/ research activity by students
3. Any other scholastic work related to application of conceptual understanding of the

subject

4. Evaluation and feedback by the teacher

ESSENTIAL/RECOMMENDED READINGS

- Roday, S. (2011). *Food hygiene and sanitation* (2nd ed.). Tata Mc Graw Hill.
- Mathur, P. (2018). *Food safety and quality control*. Orient Black Swan Pvt. Ltd.
- Marriott, N. G., Schilling, M. W., & Gravani, R. B. (2018). *Principles of food sanitation*. (6th ed.). Springer International Publishing.
- Sethi, P., & Lakra, P. (2015). *Aahaar vigyaan, poshan evam suruksha*, Elite Publishing House.
- Suri, S. & Malhotra A. (2014). *Food science, nutrition and safety*. Pearson.
- Frazier, W. C., Westhoff, D. C. (2017). *Food microbiology*. (5th edn.). McGraw Hill Education.
- Swachh Bharat Mission-Grameen, Department of Drinking Water and Sanitation, Ministry of Jal Shakti, Government of India. https://swachhbharatmission.gov.in (Accessed on 10 March 2023).
- UNICEF. *Water, Sanitation and Hygiene (WASH).* https://www.unicef.org/wash. (Accessed on 10 March 2023).

SUGGESTED READINGS

- Lawley, R., Curtis L. & Davis, J. (2012). *The food safety hazard guidebook.* RSC Publishing.
- Forsythe, S.J. (2010). *The microbiology of safe food.* (2nd ed.). Wiley-Blackwell.
- Blackburn, C. D.W. & Mc Clure, P.J. (2005). *Food borne pathogens. Hazards, risk analysis & control*. CRC Press.
- Mortimore, S., & Wallace, C. (1995). *HACCP – A practical approach*. Chapman
- Jay, J. M. (2012). *Modern food microbiology*. (4th edn.). Springer.
- WHO. *Water Sanitation and Health.* https://www.who.int/health-topics/water-sanitation-and-hygiene-wash. (Accessed on 10 March 2023).

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE

DSC-NHE-8: Nutrition Entrepreneurship

CREDIT DISTRIBUTION, ELIGIBILTY AND PREREQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Nutrition Entrepreneurship	4	3	0	1	XII Pass	NIL

Learning Objectives

- To introduce the concept and explain the opportunities in the field of nutrition entrepreneurship
- To equip the students with the necessary knowledge and skills to develop a nutritious product and set up an entrepreneurial venture for the same
- To provide information regarding Government of India's initiatives to encourage entrepreneurship and other mandatory requirements in order to facilitate start-up ventures by the students

Learning Outcomes

After completing this course, the learner will able to:

- Understand the significance of nutrition entrepreneurship in today's times
- Identify nutritious products for different target consumers and draw up a business plan for the production of the same
- Know the funding agencies/ institutions which can be approached for getting assistance in an entrepreneurial venture

SYLLABUS OF DSC-NHE-8

THEORY
(Credits 3; Hours 45)

UNIT I: Introduction to Nutrition Entrepreneurship **9 Hours**

This unit will introduce the concept of nutrition entrepreneurship and apprise the students of the opportunities in the field

- Meaning, concept and scope of nutrition-entrepreneurship
- Food and nutrition start-up: trends, opportunities and challenges
- Start-up life cycle

UNIT II: Nutrition Based Enterprise **18 Hours**

This unit will impart knowledge regarding steps to be undertaken for setting up a nutrition based

food business.

- Qualities/ traits of an entrepreneur
- Development of innovative nutritious products
- Computation of nutritive value of the product
- Development of business plan for a nutritious food
- Resource management

UNIT III: Guidelines for an Entrepreneurial Venture **18 Hours**

This unit will familiarize the students with Government of India's initiatives to promote entrepreneurship and necessary requirements to become nutrition-entrepreneur.

- Intellectual property rights
- Government schemes/ initiatives to support start-ups and promote entrepreneurship
- Food Safety Compliance System (FoSCoS) by FSSAI
- FSSAI guidelines for a food start-up

PRACTICAL
(Credit 1; Hours 30)

1. Planning of innovative nutrient rich products
2. Computation of nutritive value of the products and justifying their nutritional superiority in comparison to existing products
3. Formulation of a hypothetical business proposal for a funding agency
4. Advertising for the products planned
5. Preparation of food product acceptance checklist

ESSENTIAL/ RECOMMENDED READINGS

- Taneja, S. (2014). *Entrepreneur development*. Delhi: Himalaya Publishing House.
- FSSAI. *Food Safety Compliance System (FoSCoS).* https://foscos.fssai.gov.in. (Accessed on 10 March 2023).
- Start-up India. (2022). *Schemes.* Department for Promotion of Industry and Internal Trade, Ministry of Commerce and Industry, Government of India. https://www.startupindia.gov.in/content/sih/en/government-schemes.html (Accessed on 10 March 2023).
- FSSAI. *Guide for food start-ups.* https://fostac.fssai.gov.in/assets/docs/guide-for-food-startup.pdf (Accessed on 10 March 2023).
- FSSAI. *Food start-up in India – opportunities and challenges* https://www.fssai.gov.in/upload/media/FSSAI_News_Startup_FNB_26_02_2019.pdf. (Accessed on 10 March 2023).
- Sudheer, K. P., & Indira, V. (Eds.) (2022). *Entrepreneurship development in food processing.* New India Publishing Agency.

SUGGESTED READINGS

- Narayan, J., & Bala, P. (2016). *Start up your own restaurant.* Harper Collins.
- Green, K. (2017). *Recipe for success – the ingredients of a profitable food business*.

Troubador Publishing Limited.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.A (Prog.) with Nutrition and Health Education (NHE) as Non-Major

Category-III

DISCIPLINE SPECIFIC CORE COURSE
DSC-8-NHE: Nutrition Entrepreneurship

CREDIT DISTRIBUTION, ELIGIBILTY AND PREREQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Nutrition Entrepreneurship	4	3	0	1	XII Pass	NIL

Learning Objectives

- To introduce the concept and explain the opportunities in the field of nutrition entrepreneurship
- To equip the students with the necessary knowledge and skills to develop a nutritious product and set up an entrepreneurial venture for the same
- To provide information regarding Government of India's initiatives to encourage entrepreneurship and other mandatory requirements in order to facilitate start-up ventures by the students

Learning Outcomes

After completing this course, the learner will able to:

- Understand the significance of nutrition-entrepreneurship in today's times
- Identify nutritious products for different target consumers and draw up a business plan for the production of the same
- Know the funding agencies/ institutions which can be approached for getting assistance in an entrepreneurial venture

SYLLABUS OF DSC-NHE-8

THEORY
(Credits 3; Hours 45)

UNIT I: Introduction to Nutrition-Entrepreneurship **9 Hours**

This unit will introduce the concept of nutrition entrepreneurship and apprise the students of the opportunities in the field

- Meaning, concept and scope of nutrition-entrepreneurship
- Food and nutrition start-up: trends, opportunities and challenges
- Start-up life cycle

UNIT II: Nutrition Based Enterprise **18 Hours**

This unit will impart knowledge regarding steps to be undertaken for setting up a nutrition based food business.

- Qualities/ traits of an entrepreneur
- Development of innovative nutritious products
- Computation of nutritive value of the product
- Development of business plan for a nutritious food
- Resource management

UNIT III: Guidelines for an Entrepreneurial Venture **18 Hours**

This unit will familiarize the students with Government of India's initiatives to promote entrepreneurship and necessary requirements to become nutrition-entrepreneur.

- Intellectual property rights
- Government schemes/ initiatives to support start-ups and promote entrepreneurship
- Food Safety Compliance System (FoSCoS) by FSSAI
- FSSAI guidelines for a food start-up

PRACTICAL
(Credit 1; Hours 30)

6. Planning of innovative nutrient rich products
7. Computation of nutritive value of the products and justifying their nutritional superiority in comparison to existing products
8. Formulation of a hypothetical business proposal for a funding agency
9. Advertising for the products planned
10. Preparation of food product acceptance checklist

ESSENTIAL/ RECOMMENDED READINGS

- Taneja, S. (2014). *Entrepreneur development*. Delhi: Himalaya Publishing House.
- FSSAI. *Food Safety Compliance System (FoSCoS).* https://foscos.fssai.gov.in. (Accessed on 10 March 2023).
- Start-up India. (2022). *Schemes.* Department for Promotion of Industry and Internal Trade, Ministry of Commerce and Industry, Government of India. https://www.startupindia.gov.in/content/sih/en/government-schemes.html (Accessed on 10 March 2023).
- FSSAI. *Guide for food start-ups.* https://fostac.fssai.gov.in/assets/docs/guide-for-food-startup.pdf (Accessed on 10 March 2023).
- FSSAI. *Food start-up in India – opportunities and challenges* https://www.fssai.gov.in/upload/media/FSSAI_News_Startup_FNB_26_02_2019.pdf. (Accessed on 10 March 2023).
- Sudheer, K. P., & Indira, V. (Eds.) (2022). *Entrepreneurship development in food processing.* New India Publishing Agency.

SUGGESTED READINGS

- Narayan, J., & Bala, P. (2016). *Start up your own restaurant.* Harper Collins.
- Green, K. (2017). *Recipe for success – the ingredients of a profitable food business*. Troubador Publishing Limited.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF HOME SCIENCE
SEMESTER – V

B.A (Prog) with Nutrition and Health Education (NHE)
B.A (Prog) with Nutrition and Health Education (NHE) as Major

Category-II

DISCIPLINE SPECIFIC CORE COURSE
DSC-9-NHE: Sports Nutrition

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title and Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical / Practice		
Sports Nutrition	4	3	0	1	XII Pass	NIL

Learning Objectives

- To impart knowledge and skills to students about Sports Nutrition
- To familiarise students with concepts of components of fitness and skills required for assessment and improvement of physical fitness
- To equip students with the concept and application skills with respect to nutrition for high performance sports through the life cycle and diet of sports persons

Learning Outcomes

After completion of the course students will be able to:

- Exhibit knowledge of the components of fitness and its assessment
- Successfully plan sport-specific diets
- Function effectively as a sports nutrition counsellor with knowledge and skills to support recreational and competitive sports.

SYLLABUS OF DSC-NHE-9

THEORY
(Credits 3; Hours 45)

UNIT I: Physical Fitness and Sports Nutrition **7 Hours**

This unit will introduce the student to physical fitness and sports nutrition.

- Definition and components of physical fitness
- Methods of assessing physical fitness
- Introduction to sports nutrition (Definition, importance, types of sports and introduction to terms like endurance, strength and power sports)
- Role of major nutrients in sports

UNIT II: Energy Systems and Fuel for Exercise and Sports 14 Hours

This unit will introduce the students with the energy systems, temperature regulation and fluid balance, symptoms and implications of dehydration in sports.

- Energy systems for physical activity and sports
- Fuel utilization for different sports
- Temperature regulation, fluid balance, fluid requirements of athletes and rehydration strategies for athletes

UNIT III: Nutritional Recommendations and Guidelines for Different Sports 14 Hours

This unit will introduce the students with Nutritional recommendations for athletes and sports.

- Nutritional recommendations and guidelines for different sports
- Nutrition for pre-competition, competition and post competition phase
- Supplements in sports-performance enhancing substances, drugs, ergogenic aids and herbs in sports
- Ethics and regulatory standards (doping and FSSAI regulation)

UNIT IV: Management of Nutrition Related Disorders in Sports 10 Hours

This unit will deal with weight management and eating disorders in sports.

- Approaches to weight management and body composition in sports
- Sports anaemia
- Management of eating disorders in sports persons
- Relative Energy Deficiency in sports (RED-S)

PRACTICAL
(Credit 1; Hours 30)

1. Planning a day's diet for an individual high-performance athlete (any one sport).
2. Planning a pre and post competition meal for endurance, ultra endurance, strength events, team events and sports drinks during and after an event.
3. Meal planning for Strength/Power sports activities.
4. Meal planning for Endurance sports activities.
5. Survey of sports nutritional supplements and study their labels (whey protein isolates).

ESSENTIAL/RECOMMENDED READINGS

- International Life Sciences Institute-India, National Institute of Nutrition, & Sports Authority of India. (2007). *Nutrition and hydration guidelines for excellence in sports performance.* http://ilsi-india.org/PDF/Nutrition_&_Hyd_Guidelines_for_Athletes_Final_report.pdf
- Wasuja, M. (2017). *Health education and sports nutrition.* Friend's Publication.
- Burke, L. M. & Deakin, V. (2002). *Clinical sports nutrition.* (2nd edn.). McGraw Hill Education.
- Chadha, R., & Mathur, P. (2015). *Nutrition: A lifecycle approach.* Elite Publishing House Pvt Ltd.
- Fink, H.H., Mikesky, A. E. & Burgoon, L.A. (2012). *Practical applications in sports Nutrition.* (3rd ed.). Jones and Bartlett Learning.

- Food Safety and Standards Authority of India (FSSAI), Government of India. http://www.fssai.gov.in/home/fss-legislation/food-safety-and-standards-act.html. (Accessed on 10 March 2023).
- National Anti-Doping Agency, Ministry of Youth Affairs and Sports, Government of India. https://www.nadaindia.org/. (Accessed on 10 March 2023).

SUGGESTED READINGS

- Mahan, L.K., & Escott-Stump, S. (2016). *Krause's food and nutrition therapy.* (14th edn.). Saunders-Elsevier.
- Agarwal. A., & Udipi, S. A. (2014). *Text book of human nutrition*. Jaypee Brothers Medical Publisher Ltd.
- Hickson, J. F., & Wolinksky, I. (1997*). Nutrition for exercise and sport.* (2nd edn.). CRC Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE
DSC-NHE-10: Nutritional Approaches to Wellness and Longevity

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title and Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Nutritional Approaches to Wellness and Longevity	4	3	1	0	XII Pass	NIL

Learning Objectives

- To familiarize students with the concept of wellness and various diet related approaches for longevity
- To explain the significance of approaches other than diet for wellness and longevity
- To make students aware about various addictions and their relation to longevity

Learning Outcomes

After completion of the course, the students will be able to:

- Understand the several elements of health and wellness
- Describe approaches other than diet for wellness and longevity
- Gain knowledge about the linkage of longevity and wellness with different addictions

SYLLABUS OF DSC-NHE-10

THEORY
(Credits 3; Hours 45)

UNIT I: Relation between Disease, Health and Wellness 15 Hours

This unit will familiarize the students with the concept of wellness, health, their determinants and interaction.

- Definitions – longevity, wellness / wellbeing, standard of living, level of living, quality of life, physical quality of life index (PQLI), Human Development Index, Happiness Index
- Dimensions of wellness and health
- Determinants of health
- Epidemiologic concept of interactions of agent, host and environment
- Concept of prevention of illness
- Modes of intervention for combating illness

UNIT II: Diet Related Approaches for Longevity and Wellness 15 Hours

This unit will introduce the concept of various approaches related to diet for longevity and wellness in life.

- Nutritional screening
- Probiotics
- Prebiotics
- Antioxidants
- Immuno-nutrition
- Calorie restricted diets
- Chrono –nutrition
- Nutrigenomics
- Nutrigenetics

UNIT III: Adjuncts to Diet Therapy 8 Hours

This unit will introduce the approaches other than diet for wellness and longevity.

- Physical activity – types, benefits, tracking devices
- Yoga – benefits
- Circadian rhythm
- Psycho-social and mental health
- Stress management – meditation, pranayama, mind training

UNIT IV: Addictions and Longevity 7 Hours

This unit will acquaint the students with relation of addictions and longevity.

- Substance addiction
    - Smoking /Tobacco
    - Alcoholism
    - Drug abuse
- Non substance addiction
    - Overeating
    - Screen

TUTORIALS
(Credits 1; Hours 15)

Tutorial classes will involve:

1. Q&A sessions/ Group Discussions/ Problem Solving exercises with the Students
2. Presentation of project/ research activity by students
3. Any other scholastic work related to application of conceptual understanding of the subject
4. Evaluation and feedback by the teacher

ESSENTIAL/RECOMMENDED READINGS

- Park, K. (2021). *Park's textbook of preventive and social medicine* (26th ed.). Banarsidas Bhanot Publishers.
- Uppal, A.K., & Ranganathan, P.P. (2020). *Fitness, wellness and nutrition* (1st ed.). Friends Publication.
- Caterina, R.D., Martinez, J.A., & Kohlmeier, M. (Eds.). (2020). *Principles of nutrigenetics and nutrigenomics – fundamentals for individualized nutrition*. Academic Press.
- Zou, Z., Wang, H., Uquillas, F., Wang, X., Ding, J., & Chen H. (2017). Definition of substance and non-substance addiction. *Experimental Medicine and Biology*. 1010, DOI 10.1007/978-981-10-5562-1_2
- Chadha, R., & Mathur, P. (Eds). (2015). *Nutrition: A life cycle approach*. Orient Blackswan Private Limited.
- Swarbrick, P., & Yudof, J. (2015). *Wellness in eight dimensions.* Collaborative support programs of NJ.
- Joshi, Y.K. (Ed.). (2009). *Basics of Clinical Nutrition*. (2nd ed.). Jaypee Brothers Medical Publishers (P) Ltd.
- Harvard T.H. Chan School of Public Health. *The nutrition resource: healthy living guide 2022/2023.* https://www.hsph.harvard.edu/nutritionsource/2023/01/04/healthy-living-guide-2022-2023/ (Accessed on 10 March 2023).
- Harvard T.H. Chan School of Public Health. *The nutrition resource – stress and health.* https://www.hsph.harvard.edu/nutritionsource/stress-and-health/ (Accessed on 10 March 2023).

SUGGESTED READINGS

- Meiliana, A. & Wijaya, A. (2020). Nutrigenetics, nutrigenomics and precise nutrition. *Indonesian Biomedical Journal, 12*(3), 189–200.
- Savini, I., Gasperi, V., & Catani, V.M. (2016). *Nutrigenetics.* John Wiley & Sons Ltd. 10.1002/9780470015902.a0021028.
- Reen, J.K., Yadav, A.K., & Singh, J. (2015). Nutrigenomics: concepts, advances and applications. *Asian Journal of Dairy & Food Research*, *34*(3), 205–212.
- Harvard T.H. Chan School of Public Health. The nutrition resource: nutrition and immunity. https://www.hsph.harvard.edu/nutritionsource/nutrition-and-immunity/ (Accessed on 10 March 2023).
- Harvard T.H. Chan School of Public Health. *The nutrition resource – sleep*.

https://www.hsph.harvard.edu/nutritionsource/sleep/ (Accessed on 10 March 2023).

- Harvard T.H. Chan School of Public Health. *The nutrition resource – staying active.* https://www.hsph.harvard.edu/nutritionsource/staying-active/ (Accessed on 10 March 2023).
- Harvard T.H. Chan School of Public Health. (2011). *The nutrition resource – happiness and health.* https://www.hsph.harvard.edu/news/magazine/happiness-stress-heart-disease/ (Accessed on 10 March 2023).
- Harvard T.H. Chan School of Public Health. *The nutrition resource – healthy longevity.* https://www.hsph.harvard.edu/nutritionsource/healthy-longevity/(Accessed on 10 March 2023).

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.A (Prog.) with Nutrition and Health Education (NHE) as Non-Major

Category-III

DISCIPLINE SPECIFIC CORE COURSE
DSC-NHE-10: Nutritional Approaches to Wellness and Longevity

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title and Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Nutritional Approaches to Wellness and Longevity	4	3	1	0	XII Pass	NIL

Learning Objectives

- To familiarize students with the concept of wellness and various diet related approaches for longevity
- To explain the significance of approaches other than diet for wellness and longevity
- To make students aware about various addictions and their relation to longevity

Learning Outcomes

After completion of the course, the students will be able to:

- Understand the several elements of health and wellness
- Describe approaches other than diet for wellness and longevity
- Gain knowledge about the linkage of longevity and wellness with different addictions

SYLLABUS OF DSC-NHE-10

THEORY
(Credits 3; Hours 45)

UNIT I: Relation between Disease, Health and Wellness **15 Hours**

This unit will familiarize the students with the concept of wellness, health, their determinants and interaction.

- Definitions – longevity, wellness / wellbeing, standard of living, level of living, quality of life, physical quality of life index (PQLI), Human Development Index, Happiness Index
- Dimensions of wellness and health
- Determinants of health
- Epidemiologic concept of interactions of agent, host and environment
- Concept of prevention of illness
- Modes of intervention for combating illness

UNIT II: Diet Related Approaches for Longevity and Wellness 15 Hours

This unit will introduce the concept of various approaches related to diet for longevity and wellness in life.

- Nutritional screening
- Probiotics
- Prebiotics
- Antioxidants
- Immuno-nutrition
- Calorie restricted diets
- Chrono –nutrition
- Nutrigenomics
- Nutrigenetics

UNIT III: Adjuncts to Diet Therapy 8 Hours

This unit will introduce the approaches other than diet for wellness and longevity.

- Physical activity – types, benefits, tracking devices
- Yoga – benefits
- Circadian rhythm
- Psycho-social and mental health
- Stress management – meditation, pranayama, mind training

UNIT IV: Addictions and Longevity 7 Hours

This unit will acquaint the students with relation of addictions and longevity.

- Substance addiction
    - Smoking /Tobacco
    - Alcoholism
    - Drug abuse
- Non substance addiction
    - Overeating
    - Screen

TUTORIALS
(Credits 1; Hours 15)

Tutorial classes will involve:

1. Q&A sessions/ Group Discussions/ Problem Solving exercises with the Students
2. Presentation of project/ research activity by students
3. Any other scholastic work related to application of conceptual understanding of the subject
4. Evaluation and feedback by the teacher

ESSENTIAL/RECOMMENDED READINGS

- Park, K. (2021). *Park's textbook of preventive and social medicine* (26th ed.). Banarsidas Bhanot Publishers.
- Uppal, A.K., & Ranganathan, P.P. (2020). *Fitness, wellness and nutrition* (1st ed.).

Friends Publication.
- Caterina, R.D., Martinez, J.A., & Kohlmeier, M. (Eds.). (2020). *Principles of nutrigenetics and nutrigenomics – fundamentals for individualized nutrition*. Academic Press.
- Zou, Z., Wang, H., Uquillas, F., Wang, X., Ding, J., & Chen H. (2017). Definition of substance and non-substance addiction. *Experimental Medicine and Biology*. 1010, DOI 10.1007/978-981-10-5562-1_2
- Chadha, R., & Mathur, P. (Eds). (2015). *Nutrition: A life cycle approach*. Orient Blackswan Private Limited.
- Swarbrick, P., & Yudof, J. (2015). *Wellness in eight dimensions.* Collaborative support programs of NJ.
- Joshi, Y.K. (Ed.). (2009). *Basics of Clinical Nutrition*. (2nd ed.). Jaypee Brothers Medical Publishers (P) Ltd.
- Harvard T.H. Chan School of Public Health. *The nutrition resource: healthy living guide 2022/2023.* https://www.hsph.harvard.edu/nutritionsource/2023/01/04/healthy-living-guide-2022-2023/ (Accessed on 10 March 2023).
- Harvard T.H. Chan School of Public Health. *The nutrition resource – stress and health.* https://www.hsph.harvard.edu/nutritionsource/stress-and-health/ (Accessed on 10 March 2023).

SUGGESTED READINGS

- Meiliana, A. & Wijaya, A. (2020). Nutrigenetics, nutrigenomics and precise nutrition. *Indonesian Biomedical Journal, 12*(3), 189–200.
- Savini, I., Gasperi, V., & Catani, V.M. (2016). *Nutrigenetics.* John Wiley & Sons Ltd. 10.1002/9780470015902.a0021028.
- Reen, J.K., Yadav, A.K., & Singh, J. (2015). Nutrigenomics: concepts, advances and applications. *Asian Journal of Dairy & Food Research*, *34*(3), 205–212.
- Harvard T.H. Chan School of Public Health. The nutrition resource: nutrition and immunity. https://www.hsph.harvard.edu/nutritionsource/nutrition-and-immunity/ (Accessed on 10 March 2023).
- Harvard T.H. Chan School of Public Health. *The nutrition resource – sleep*. https://www.hsph.harvard.edu/nutritionsource/sleep/ (Accessed on 10 March 2023).
- Harvard T.H. Chan School of Public Health. *The nutrition resource – staying active.* https://www.hsph.harvard.edu/nutritionsource/staying-active/ (Accessed on 10 March 2023).
- Harvard T.H. Chan School of Public Health. (2011). *The nutrition resource – happiness and health.* https://www.hsph.harvard.edu/news/magazine/happiness-stress-heart-disease/ (Accessed on 10 March 2023).
- Harvard T.H. Chan School of Public Health. *The nutrition resource – healthy longevity.* https://www.hsph.harvard.edu/nutritionsource/healthy-longevity/(Accessed on 10 March 2023).

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF HOME SCIENCE
SEMESTER – VI

B.A (Prog) with Nutrition and Health Education (NHE)
B.A (Prog.) with Nutrition and Health Education (NHE) as Major

Category-II

DISCIPLINE SPECIFIC CORE COURSE
DSC-NHE 11: Nutrition During Emergencies and Disaster Management

CREDIT DISTRIBUTION, ELIGIBILITY AND PREREQUISITES OF THE COURSE

Course Title and Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Nutrition during Emergencies and Disaster Management	4	3	1	0	XII Pass	NIL

Learning Objectives

- To acquaint the students about disasters resulting in emergency situations and associated nutritional concerns
- To familiarize the students with the knowledge of assessment and surveillance of nutritional status in emergency and disasters
- To equip the students with an understanding of the strategies for nutritional rehabilitation, relief and mitigation of emergency affected populations
- To impart knowledge regarding nutrition interventions and role of National/International agencies to tackle emergency situations

Learning Outcomes

After completion of the course, the students will be able to:

- Familiarize with different types of disasters and understand the nutritional concerns in emergency situations
- Assess various methods of nutritional status of the emergency affected populations
- Differentiate between general feeding programme and selective feeding programme
- Recognize the role of government, non-government bodies and international organisations in the management of nutrition in emergencies.
- Analyze and understand strategies for prevention and mitigation for the emergency affected populations

SYLLABUS OF DSC-11

THEORY
(Credits 3; Hours 45)

UNIT I: Disasters, Emergencies and Associated Nutritional Concerns 8 Hours

This unit will introduce different types of disasters, factors effecting management of disasters and emergencies; nutritional concerns among vulnerable groups.

- Concept and types of disasters (natural/manmade)
- Factors to be considered for management of disasters and emergencies
- Nutritional concerns during disaster and emergencies among vulnerable populations – causes of malnutrition, macro/micro nutrient deficiencies

UNIT II: Assessment and Surveillance of Nutritional Status in Emergency Affected Population 12 Hours

This unit will lay emphasis on assessment of nutritional status and food needs, food distribution strategies, nutrition monitoring and surveillance of emergency affected populations.

- Screening and assessment of nutritional status in emergency affected populations
- Assessment of food needs in emergency situations, identifying and reaching the vulnerable groups, food distribution strategies
- Nutrition monitoring and surveillance

UNIT III: Nutrition Relief, Rehabilitation and Mitigation Strategies 15 Hours

This unit will acquaint the students with various aspects of nutritional relief, nutritional rehabilitation and mitigation strategies.

- Targeting food aid – food rations for nutritional relief and rehabilitation (special/fortified foods, local foods in rehabilitation, packed food)
- Transportation of food during emergencies, food storage and preventing food spoilage
- Household food and nutrition security – post emergency
- Importance of nutrition in post-emergency situations
- Disaster prevention and mitigation strategies, warning systems
- Role of government and non-government organisations, nutritionists in relief, rehabilitation and mitigation

UNIT IV: Nutrition Interventions and Role of National/International Agencies to tackle Emergency Situations 10 Hours

This unit will acquaint the students about different feeding programmes as nutrition interventions and role of various authorities in managing nutrition in emergencies.

- General Feeding Programme
- Selective Feeding Programme
    - Supplementary feeding programme (blanket SFP: micronutrient interventions; and target SFP: Infant and Young Child Feeding – breastfeeding, age appropriate and safe complimentary feeding, interventions to treat undernutrition, MAM, SAM)

    - Therapeutic Feeding Programme
- Disaster Management Act 2005
- Disaster Management cell, the State Disaster Management Authority (SDMA) and the National Disaster Management Authority (NDMA) – structure and functions
- Role of FAO, WHO and UNICEF in the management of nutrition in major emergencies

TUTORIALS
(Credits 1; Hours 15)

Tutorial classes will involve:

1. Q&A sessions/ Group Discussions/ Problem Solving exercises with the Students
2. Presentation of project/ research activity by students
3. Any other scholastic work related to application of conceptual understanding of the subject
4. Evaluation and feedback by the teacher

ESSENTIAL/RECOMMENDED READINGS:

- Vir, S. C. (2011). *Public health nutrition in developing countries – volume II*. Woodhead Publishing.
- Woodruff, B. A., & Duffield, A. (2000). *Adolescents: Assessment of Nutritional Status in Emergency affected populations.* Special supplement UN ACC/SCN sub-committee on nutrition.
- WHO. (2000). *The management of nutrition in major emergencies.* https://www.who.int/publications/i/item/9241545208 (Accessed on 10 March 2023).
- UNICEF (2018). *Nutrition in emergencies. Saving lives today, strengthening systems for tomorrow.* https://www.unicef.org/media/97011/file/Nutrition-in-emergencies-Saving-Lives-Today-Strengthening-Systems-for-Tomorrow.pdf (Accessed on 10 March 2023).
- National Disaster Management Authority, Government of India. https://ndma.gov.in/
- WHO. *Nutrition in Emergencies. Planning, preparedness and management for development out of disaster.* https://apps.who.int/disasters/repo/13849_files/i/nutrition_in_emergencies_ppt.pdf (Accessed on 10 March 2023).
- FAO. *Nutrition in Post-Emergency and Rehabilitation Interventions*. https://www.fao.org/3/v5611e/V5611E03.htm (Accessed on 10 March 2023).

SUGGESTED READINGS:

- Singh, S. N. (2010). Nutrition in emergencies: Issues involved in ensuring proper nutrition in post-chemical, biological, radiological, and nuclear disaster. *Journal of Pharmacy and Bioallied Sciences, 2*(3), 248–52.
- Gupta, H. K. (2003). *Disaster Management.* Indian National Science Academy. Orient Blackswan.
- United Nations World Food Programme (WFP). (2005). *Emergency Food Security Assessment Handbook.* (1st edn.).

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE
DSC-NHE-12: Preventive and Promotive Nutrition

CREDIT DISTRIBUTION, ELIGIBILTY AND PREREQUISITES OF THE COURSE

Course Title and Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Preventive and Promotive Nutrition	4	3	0	1	XII Pass	NIL

Learning Objectives

- To make students aware about the prevalence of chronic diseases and correlate it with food consumption pattern
- To explain the role of nutraceuticals and functional foods in prevention of chronic diseases and promotion of good health
- To familiarize with types of dietary supplements and their health benefits

Learning Outcomes

After completion of the course, the students will be able to:

- Understand the relation between food consumption pattern and prevalence of chronic disease
- Describe the types and health benefits of nutraceuticals and functional foods
- Gain knowledge about the types, health benefits and adverse effects of dietary supplements

SYLLABUS OF DSC-NHE-12

THEORY
(Credits 3; Hours 45)

UNIT I: Relation between Diet, Nutrition and Prevalence of Disease **7 Hours**

This unit will familiarize the students with the correlation of chronic diseases and food consumption pattern.

- Global burden of chronic diseases
- Food consumption patterns and trends
- Oxidative stress and free radicals-Basic concept, mechanism of free radical formation, biological effects of free radicals

UNIT II: Nutraceuticals and their Role in Prevention of Diseases and Promotion of Health **15 Hours**

This unit will introduce definition, classification and health benefits of nutraceuticals.

- Definition of nutraceuticals
- Classification of nutraceuticals on the basis of chemical structure and their health benefits

    - Phytochemicals- isoprenoids, polyphenolics, phytosterols
    - Carbohydrates and their derivatives
    - Lipids- conjugated linoleic acid, omega-3 fatty acids
    - Proteins and peptides
    - Vitamins
    - Minerals
    - Microbial
- FSSAI regulations of nutraceuticals

UNIT III: Functional Foods and their Role in Prevention of Diseases and Promotion of Health

15 Hours

This unit will introduce definition, types and health benefits of various functional foods.

- Definition of functional foods
- Types of functional foods and their health benefits
    - Cereal and cereal products
    - Milk and milk products
    - Egg
    - Oils
    - Meat and meat products
    - Herbs and spices
    - Fruits and vegetables
    - Beverages (tea, wine)
    - Fermented foods

UNIT IV: Dietary Supplements **8 Hours**

This unit will introduce definition, types, benefits and safety issues of dietary supplements.

- Definition of dietary supplements
- Types of dietary supplements- vitamins, minerals, protein and amino acids, essential fatty acids, natural products
- Benefits and safety issues

PRACTICAL
(Credit 1; 30 Hours)

1. Survey of available nutraceuticals/dietary supplement in the market.
2. Survey regarding the awareness of availability and health benefits of dietary supplements among college going students and high fat, salt or sugar foods (HFSS).
3. Design a label for nutraceutical food/dietary supplement
4. Development of teaching aids for creating awareness of preventive and promotive nutrition

ESSENTIAL/RECOMMENDED READINGS

- Bagchi, D., Preuss, H. G., & Swaroop, A. (Eds.). (2015). *Nutraceuticals and functional foods in human health and disease prevention*. CRC Press.

- Wildman, R. E. and Bruno, R.S. (2021). *Handbook of nutraceuticals and functional foods*. (3rd edn.). CRC press.
- Food safety and Standards Authority of India, Government of India https://www.fssai.gov.in/upload/uploadfiles/files/Compendium_Nutra_29_09_2021.pdf (Accessed on 10 March 2023).
- World Health Organization. (2003). *Diet, nutrition, and the prevention of chronic diseases: report of a joint WHO/FAO expert consultation* (Vol. 916).

SUGGESTED READINGS

- Egbuna, C., & Dable-Tupas, G. (2020). Functional foods and nutraceuticals. *Springer Nature*, *1*, 1-632.
- Mahan, L. K., & Raymond, J. L. (2016). *Krause's Food & the nutrition care process, Iranian Edition E-Book*. Elsevier Health Sciences.
- Rani, V., & Yadav, U. C. (Eds.). (2018). *Functional food and human health*. Springer.
- Noomhorm, A., Ahmad, I., & Anal, A. K. (Eds.). (2014). *Functional foods and dietary supplements: processing effects and health benefits*. John Wiley & Sons.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.A (Prog.) with Nutrition and Health Education (NHE) as Non-Major
Category-III

DISCIPLINE SPECIFIC CORE COURSE
DSC-12-NHE: Preventive and Promotive Nutrition

Course Title and Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Preventive and Promotive Nutrition	4	3	0	1	XII Pass	NIL

Learning Objectives

- To make students aware about the prevalence of chronic diseases and correlate it with food consumption pattern
- To explain the role of nutraceuticals and functional foods in prevention of chronic diseases and promotion of good health
- To familiarize with types of dietary supplements and their health benefits

Learning Outcomes

After completion of the course, the students will be able to:

- Understand the relation between food consumption pattern and prevalence of chronic disease
- Describe the types and health benefits of nutraceuticals and functional foods
- Gain knowledge about the types, health benefits and adverse effects of dietary supplements

SYLLABUS OF DSC-NHE-12

THEORY
(Credits 3; Hours 45)

UNIT I: Relation between Diet, Nutrition and Prevalence of Disease **7 Hours**

This unit will familiarize the students with the correlation of chronic diseases and food consumption pattern.

- Global burden of chronic diseases
- Food consumption patterns and trends
- Oxidative stress and free radicals-Basic concept, mechanism of free radical formation, biological effects of free radicals

UNIT II: Nutraceuticals and their Role in Prevention of Diseases and Promotion of Health **15 Hours**

This unit will introduce definition, classification and health benefits of nutraceuticals.

- Definition of nutraceuticals

- Classification of nutraceuticals on the basis of chemical structure and their health benefits
  - Phytochemicals- isoprenoids, polyphenolics, phytosterols
  - Carbohydrates and their derivatives
  - Lipids- conjugated linoleic acid, omega-3 fatty acids
  - Proteins and peptides
  - Vitamins
  - Minerals
  - Microbial
- FSSAI regulations of nutraceuticals

UNIT III: Functional Foods and their Role in Prevention of Diseases and Promotion of Health **15 Hours**

This unit will introduce definition, types and health benefits of various functional foods.

- Definition of functional foods
- Types of functional foods and their health benefits
  - Cereal and cereal products
  - Milk and milk products
  - Egg
  - Oils
  - Meat and meat products
  - Herbs and spices
  - Fruits and vegetables
  - Beverages (tea, wine)
  - Fermented foods

UNIT IV: Dietary Supplements **8 Hours**

This unit will introduce definition, types, benefits and safety issues of dietary supplements.

- Definition of dietary supplements
- Types of dietary supplements- vitamins, minerals, protein and amino acids, essential fatty acids, natural products
- Benefits and safety issues

PRACTICAL
(Credit 1; 30 Hours)

5. Survey of available nutraceuticals/dietary supplement in the market.
6. Survey regarding the awareness of availability and health benefits of dietary supplements among college going students and high fat, salt or sugar foods (HFSS).
7. Design a label for nutraceutical food/dietary supplement
8. Development of teaching aids for creating awareness of preventive and promotive nutrition

ESSENTIAL/RECOMMENDED READINGS

- Bagchi, D., Preuss, H. G., & Swaroop, A. (Eds.). (2015). *Nutraceuticals and functional foods in human health and disease prevention*. CRC Press.
- Wildman, R. E. and Bruno, R.S. (2021). *Handbook of nutraceuticals and functional foods*. (3rd edn.). CRC press.
- Food safety and Standards Authority of India, Government of India https://www.fssai.gov.in/upload/uploadfiles/files/Compendium_Nutra_29_09_2021.pdf (Accessed on 10 March 2023).
- World Health Organization. (2003). *Diet, nutrition, and the prevention of chronic diseases: report of a joint WHO/FAO expert consultation* (Vol. 916).

SUGGESTED READINGS

- Egbuna, C., & Dable-Tupas, G. (2020). Functional foods and nutraceuticals. *Springer Nature*, *1*, 1-632.
- Mahan, L. K., & Raymond, J. L. (2016). *Krause's Food & the nutrition care process, Iranian Edition E-Book*. Elsevier Health Sciences.
- Rani, V., & Yadav, U. C. (Eds.). (2018). *Functional food and human health*. Springer.
- Noomhorm, A., Ahmad, I., & Anal, A. K. (Eds.). (2014). *Functional foods and dietary supplements: processing effects and health benefits*. John Wiley & Sons.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF HOME SCIENCE

B.A (Prog) with Nutrition and Health Education (NHE)

Pool of Discipline Specific Elective Course (DSE) for Odd Semester

Category-V

DISCIPLINE SPECIFIC ELECTIVE COURSE
DSE-NHE 1: Basic Physiology of Digestive System

CREDIT DISTRIBUTION, ELIGIBILITY AND PREREQUISITES OF THE COURSE

Course Title and Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Basic Physiology of Digestive System	4	3	1	0	XII Pass	NIL

Learning Objectives

- To impart knowledge about the basic structure of human digestive system.
- To explain the functioning of the human digestive system.
- To provide overview of the various disorders in relation with human digestive system.

Learning Outcomes

After completion of the course, the students will be able to:

- Understand the fundamentals of the human digestive system.
- Develop insight of functioning of the digestive system in the human body.
- Understand overview of the various diseases of human digestive system.

SYLLABUS OF DSE-NHE-1

THEORY
(Credits 3; Hours 45)

UNIT I: Fundamentals of Human Digestive System **10 Hours**

The unit explains the concept of the gross positioning and basic functioning of digestive system. It also imparts understanding about the contribution of different organ systems in relation to the digestive system.

- Overview of the gross structural positioning of digestive system in human body
- Contributions of different systems of human body in relation to the digestive system
- Functions of digestive system: ingestion, propulsion, digestion, absorption, and elimination
- Digestion and absorption of carbohydrates, fats, and proteins

UNIT II: Physiology of Gastrointestinal Tract (GIT) of Human Digestive System 18 Hours

This unit presents an understanding of the gross structure and functions of alimentary canal of digestive system and their correlation with specific disease conditions.

- Gross structure and functions of Gastro Intestinal Tract (GIT): mouth, pharynx, oesophagus, stomach, small intestine, large intestine, rectum and anal canal
- An overview of the diseases in correlation with alimentary canal/GIT: gastro oesophageal reflux disease (GERD), peptic ulcers, diarrhoea, constipation, irritable bowel syndrome etc.

UNIT III: Physiology of Accessory Organs of Human Digestive System 17 Hours

The unit presents an understanding of structure and functions of accessory organs of the digestive system and their correlation with specific disease conditions.

- Gross structure and functions of accessory organs of digestive system: teeth, tongue, salivary glands, liver, gallbladder, pancreas
- An overview of the diseases in correlation with accessory organs of digestive system: hepatitis, Non-alcoholic Fatty Liver Disease (NAFLD), liver cirrhosis, cholelithiasis, pancreatitis, diabetes etc.

TUTORIALS
(Credits 1; Hours 15)

Tutorial classes will involve:

1. Q&A sessions/ Group Discussions/ Problem Solving exercises with the Students
2. Presentation of project/ research activity by students
3. Any other scholastic work related to application of conceptual understanding of the subject
4. Evaluation and feedback by the teacher

ESSENTIAL/ RECOMMENDED READINGS

- Jain, A. K. (2019). *Human Physiology for BDS.* (6th edn.). Avichal Publishing Company.
- Singh, H. D. (2010). *Handbook of basic human physiology for paramedical students*. S. Chand Publishing.
- *Manav evan igyan evum yog*, M.Y-104. Uttrakhand Mukt Vishwa Vidyalaya https://uou.ac.in/sites/default/files/slm/MY-104.pdf (Accessed on 10 March 2023).

SUGGESTED READINGS

- Ross., & Wilson. (2018). *Anatomy and Physiology in Health and Illness* (13th edn.). Elsevier.
- Chaudhari, S. K. (2016). *Concise Medical Physiology* (7th edn.). New Central Book Agency (P) Ltd.
- *Manav sharir -rachna aur kriya- vigyan*, paper- 4 of PGDIPP, SIGFA Solutions http://assets.vmou.ac.in/PGDIPP04.pdf (Accessed on 10 March 2023).

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.A (Prog.) with Nutrition and Health Education (NHE)

Category-V

DISCIPLINE SPECIFIC ELECTIVE COURSE
DSE-NHE-3: Recent Advances in Food and Nutrition

CREDIT DISTRIBUTION, ELIGIBILTY AND PREREQUISITES OF THE COURSE

Course Title and Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Recent advances in food and nutrition	4	3	1	0	XII Pass	Nil

Learning Objectives

- To introduce students with the advances in food trends to fulfill developing health requirements.
- To equip them with knowledge of various recent advances in technologies in nutrition and food science.

Learning Outcomes

After completion of the course, the students will be able to:

- Develop understanding of modern approach to types of diet, and advancement in high altitude and space foods.
- Understand the multidisciplinary approaches in enrichment of nutrition.
- Understand and explore technologies involved in preparation and preservation of processed and convenience foods.
- Understand and explore different advanced methods of processing, preservation and packaging materials.

SYLLABUS OF DSE-NHE-3

THEORY
(Credits 3; Hours 45)

UNIT I: Recent Advances in Food for Health **12 Hours**

This unit will introduce diets and specified foods in order to attain desired health status by individuals

- Dietary approaches: Intermittent fasting, veganism, mediterranean diet, detox diet, gluten free diet, paleo diet, ketogenic diet, atkins diet, circadian rhythms diet.
- Recent advances with respect to functional foods, organic foods, nutraceuticals, dietary supplements, nutrigenomics, nutrigenetics, prebiotics, probiotics, synbiotics, postbiotics, high altitude and space foods.

UNIT II: Advanced Technologies to Enrich Nutrition **10 Hours**

This unit will explain the multidisciplinary approach in enrichment of nutrition.

- Food fortification
- Food biotechnology: role, application and concerns for the following:
  - Genetically modified foods
  - Biofortification
- WHO guidelines for fortified foods
- FSSAI regulations/standards for fortified foods

UNIT III: Technological Advancement in Food Processing **15 Hours**

This unit will introduce different technologies involved in preparation and preservation of processed and convenience foods.

- Concept, application, advantages and disadvantages of the following techniques /technologies:
  - Extrusion technology
  - Microencapsulation
  - Nanotechnology
  - Ohmic heating
  - High-power ultrasound (HPU)
  - Electrohydrodynamic drying
  - Pulsed electric field (PEF)
  - Manothermosonication
  - High-pressure processing (HPP)
  - Food printing

UNIT IV: Advances in Food Packaging **8 Hours**

This unit will introduce the advancement in different methods of food packaging.

- Sustainable food packaging: edible packaging, bioplastics
- Controlled atmosphere packaging (CAP) and Modified atmosphere packaging (MAP)
- Active, smart and intelligent packaging

TUTORIALS
(Credits 1; Hours 15)

Tutorial classes will involve:

1. Q&A sessions/ Group Discussions/ Problem Solving exercises with the Students
2. Presentation of project/ research activity by students
3. Any other scholastic work related to application of conceptual understanding of the subject
4. Evaluation and feedback by the teacher

ESSENTIAL/ RECOMMENDED READINGS

- Srilakshmi, B. (2022). *Food Science* (7th edition). New Age International (P) Ltd.
- Fellows, P. J. (2022). *Food processing technology: Principles and Practice* (5th edn.). Woodhead publishing.
- Anjana, A., & Shobha, A. U. (2021). *Textbook of human nutrition* (3rd edn.). Jaypee Brothers medical publishers.
- Rahman, M. S. (Ed.). (2007). *Handbook of Food Preservation*. (2nd edn.). CRC press.

SUGGESTED READINGS

- Suvendu, B. (Ed.). (2015). *Conventional and advanced food processing technologies.* Wiley Publishing.
- Bhesh, B., Fernanda, C. G., Min, Z., Sangeeta, P. (Eds.). (2019). *Fundamentals of 3D food printing and applications.* Academic press.
- Kit L.Y., & Dong S.L. (2012). *Emerging food packaging technologies: Principles and practice.* Woodhead publishing ltd.
- Sharvari, R., Sudiksha, H., Salil, M. & Ramesh, B. (2021). *Advancements in space food processing technologies. International Journal of Recent Scientific Research, 12*(06): 42033–42037.
- Food Safety and Standards Authority of India. (2018). *Food Safety and Standards (Fortification of Foods) Regulations.* https://www.fssai.gov.in/upload/uploadfiles/files/Compendium_Food_Fortification_Regulations_30_09_2021.pdf (Accessed on 10 March 2023).
- World Health Organization. (2006). *Guidelines on food fortification with micronutrients.* https://www.who.int/publications/i/item/9241594012 (Accessed on 10 March 2023).

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.A (Prog.) with Nutrition and Health Education (NHE)
Category-V

DISCIPLINE SPECIFIC ELECTIVE COURSE
DSE-NHE-5: Health and Nutrition for Women and Children

CREDIT DISTRIBUTION, ELIGIBILTY AND PREREQUISITES OF THE COURSE

Course Title and Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Health and Nutrition for Women and Children	4	3	0	1	XII Pass	NIL

Learning Objectives

- To sensitize students towards the current scenario with respect to health and nutrition indicators for women and children
- To impart holistic knowledge about health and nutrition issues concerning women
- To educate students about various aspects of child health and nutrition including IYCF, immunization as well as problems of malnutrition
- To create awareness regarding Government of India's ongoing programmes for nutrition and health of women and children

Learning Outcomes

After completion of the course, the students will be able to:

- Understand the various dimensions of women's health and nutrition
- Explain every aspect of children's health and nutrition including breast feeding, complementary feeding, immunization and nutrition related problems
- Gain sufficient knowledge to be able to contribute to the efforts made by the government towards promoting health and nutrition of women and children

SYLLABUS OF DSE-NHE-5

THEORY
(Credits 3; Hours 45)

UNIT I: Health and Nutrition for Non-pregnant, Non-lactating Women 12 Hours

This unit will familiarize the student with the current scenario and knowledge regarding nutrition and care for non-pregnant, non-lactating women.

- Nutrition situation of women in India
- Vital statistics related to health
- Importance of optimal nutrition for healthy life
- Nutritional concerns

UNIT II: Pregnancy and Lactation 12 Hours

This unit will address issues related to various aspects of health and nutrition of pregnant and lactating mothers.

- Health and nutritional considerations
- Factors affecting pregnancy outcomes and lactation performance
- Immunization/ vaccination during pregnancy
- Nutritional problems and their management

UNIT III: Infancy and Childhood 12 Hours

This unit will introduce all aspects of nutrition as well as other dimensions of child health.

- IYCF guidelines, first 1000 days
- Importance of appropriate nutrition during childhood
- Immunization: Universal Immunization programme, Intensified Mission Indradhanush 4.0
- Growth monitoring
- Malnutrition – Wasting, stunting and micronutrient deficiencies among children
  – Childhood obesity
- Diarrhoea

UNIT IV: Women and Child Nutrition Programmes: 9 Hours

This unit will give a complete overview of the government's flagship programme 'Poshan Abhiyan' and other programmes to improve nutritional outcomes for women and children

- Poshan Abhiyan
- Aanganwadi services
- Pradhanmantri Surakshit Matritva Abhiyan
- Anemia mukt bharat
- Janani-Shishu Suraksha Karyakram
- Rashtriya Bal Swasthya Karyakram

PRACTICAL
(Credit 1; 30 Hours)

1. Development of questionnaire/ presentation on health and nutritional problems in NPNL women

2. Planning and preparing an educational aid on the following suggested topics:
    - adequate care and nutrition during pregnancy/ lactation
    - dietary management of anemia during pregnancy
    - breastfeeding
    - complementary feeding
    - importance and schedule of immunization
3. Plotting and interpreting growth charts
4. Demonstrate age-specific complimentary food preparation
5. Preparation of information card about Poshan Abhiyan activities

ESSENTIAL/ RECOMMENDED READINGS

- Bamji, M. S., Rao, N. P., Reddy, V. (2017). *Textbook of Human Nutrition.* (4th edn.). Oxford and IBH Publishing Co. Pvt Ltd.
- Ministry of health and family welfare, Government of India. (2018). *Journey of the first 1000 days.* https://nhm.gov.in/images/pdf/programmes/RBSK/Resource_Documents/Journey_of_The_First_1000_Days.pdf (Accessed on 10 March 2023).
- Ministry of health and family welfare, Government of India. *Infant and Young Child Feeding* (2016) https://www.nhm.gov.in/MAA/One_Day_Sensitization_Module/One_Day_Sensitization_Module_English_lowres.pdf (Accessed on 10 March 2023).
- Ministry of health and family welfare, Government of India. *National Family Health Survey 5 (NFHS-5)* (2021) https://main.mohfw.gov.in/sites/default/files/NFHS-5_Phase-II_0.pdf (Accessed 10 March 2023).
- Ministry of health and family welfare, Government of India. *Intensified Mission Indradhanush* (2018) https://nhm.gov.in/New_Updates_2018/NHM_Components/Immunization/Guildelines_for_immunization/Mission_Indradhanush_Guidelines.pdf (Accessed 10 March 2023).
- *Poshan Abhiyan: Prime Minister's Over-reaching Scheme for Holistic Nourishment* https://www.india.gov.in/spotlight/poshan-abhiyaan-pms-overarching-scheme-holistic-nourishment. 22 October 2018 (Accessed on 10 March 2023).

SUGGESTED READINGS

- Chadha, R., Mathur, P. (2015). *Nutrition: A life cycle approach*. Orient Blackswan.
- Agarwal, A., & Udipi, S. A. (2022). *Textbook of Human Nutrition* (2nd edn.). Jaypee Brothers (P) Ltd.
- *Poshan Abhiyan: Prime Minister's Over-reaching Scheme for Holistic Nourishment. PIB* press release doc202112111.pdf (pib.gov.in) (Accessed on 10 March 2023).

- UNICEF. *Women's Nutrition*. https://www.unicef.org/india/what-we-do/womens-nutrition (Accessed on 10 March 2023).

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF HOME SCIENCE

B.A (Prog) with Nutrition and Health Education (NHE)

Pool of Discipline Specific Elective Course (DSE) for Even Semester
Category-V

DISCIPLINE SPECIFIC ELECTIVE COURSE

DSE-NHE 2: Nutritional and Lifestyle Counselling

CREDIT DISTRIBUTION, ELIGIBILITY AND PREREQUISITES OF THE COURSE

Course Title and Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Nutritional and lifestyle counselling	4	3	0	1	XII Pass	NIL

Learning Objectives

- To introduce students to the concept of nutrition counselling, nutrition care process and responsibilities of a nutrition counsellor
- To acquaint the students with the WHO's 5A brief interventions for behaviour change counselling
- To familiarize the students with nutrition and lifestyle counselling for prevention and management of lifestyle related disorders/diseases

Learning Outcomes

After completion of the course, the students will be able to:

- Prepare and maintain a nutrition and lifestyle counselling case record
- Incorporate the WHO's 5A brief interventions for behaviour change counselling
- Gain knowledge for becoming an effective counsellor to lead a healthy lifestyle
-

SYLLABUS OF DSE-NHE-2

THEORY

(Credits 3; Hours 45)

UNIT I: Introduction to Counselling **8 Hours**

This unit will introduce the concept of counselling, it's stages and will acquaint the students to prepare a counselling case record.

- Basics of counselling; difference between education and counselling

- Counselling skills
- Stages of counselling
- Counsellors' role at different levels
- Counselling case record

UNIT II: Nutrition Counselling **17 Hours**

This unit will help the students to understand the concept of nutrition counselling and it's importance in nutrition care process, responsibilities of a nutrition counsellor and theories that influence them.

- Concept and objectives
- Nutrition care process
- Importance of nutrition counselling in the nutrition care process
- Responsibilities and role of nutrition counsellor
- Theories influencing nutrition counsellor

UNIT III: Nutrition and Lifestyle Counselling **20 Hours**

This unit will familiarize the students to the concept of lifestyle counselling, it's significance; WHO's 5As brief interventions for behaviour change counselling; nutrition and lifestyle counselling for lifestyle related disorders diseases

- Lifestyle counselling – concept and significance
- Understanding behaviour change
- Counselling for behaviour change through WHO's 5As (Ask, Advise, Assess, Assist, Arrange) brief interventions – healthy diet, increase in physical activity, quit tobacco and harmful use of alcohol
- Nutrition and lifestyle counselling for lifestyle related disorders/diseases
    - Types; risk factors (modifiable and non-modifiable risk factors)
    - Signs and symptoms of lifestyle diseases/disorders
    - Prevention and management of lifestyle diseases/disorders
        - Healthy and unhealthy diet
        - Diet and linkage with other risk factors
        - Diet and lifestyle diseases/disorders
        - Role of counsellor to promote healthy dietary practices, physical activity, reduce risk from indoor air pollution, in helping individuals experiencing stress and related disorders

PRACTICAL
(Credit 1; Hours 30)

1. Prepare a counselling case record for a healthy lifestyle and for any lifestyle related disease/disorder
2. Design information flyer/leaflet for risk factors of lifestyle related diseases/disorders OR do's and don'ts to maintain a healthy lifestyle

3. Create a power-point presentation showcasing signs/symptoms, prevention and management of lifestyle related diseases/disorders
4. Conduct 24-hour dietary recall for college going student of one working day, one non-working day and counsel accordingly for leading a healthy lifestyle
5. Conduct a case study using WHO's 5As (Ask, Advise, Assess, Assist, Arrange) brief interventions on any two – healthy diet, increase in physical activity, quit tobacco and harmful use of alcohol

ESSENTIAL/ RECOMMENDED READINGS

- Snetselaar, L. (2009). *Nutrition Counseling Skills for the Nutrition Care Process* (4th edn.). Jones and Bartlett Publishers.
- National programme for prevention and control of cancer, diabetes, cardiovascular diseases and stroke (NPCDCS) handbook for counsellors - Reducing risk factors for noncommunicable diseases. Directorate General of Health Services Ministry of Health and Family Welfare, Government of India. Developed by National Institute of Mental Health and Neuro Sciences (NIMHANS) in collaboration with World Health Organization India (2017) https://main.mohfw.gov.in/sites/default/files/Handbook%20for%20Counsellors%20-%20Reducing%20Risk%20Factors%20for%20NCDs_1.pdf (Accessed on 10 March 2023).
- *Counselling and educating the patient*. https://gyansanchay.csjmu.ac.in/wp-content/uploads/2022/08/COUNSELLING-AND-EDUCATING-THE-PATIENT.pdf
  WHO (2018). *HEARTS Technical package for cardiovascular disease management in primary health care - Healthy-lifestyle counselling* https://apps.who.int/iris/bitstream/handle/10665/260422/WHO-NMH-NVI-18.1-eng.pdf (Accessed on 10 March 2023).
  https://samples.jblearning.com/0763729604/snetselaar_4e_ch1.pdf
- Raymond, J.L, Morrow, K. (2020). *Krause and Mahan's Food and the Nutrition Care Process.* (15th edn.). Elsevier Publications.

SUGGESTED READINGS:

- Mudambi, S.R., Rajagopal, M.V. (2007). *Fundamentals of Foods, Nutrition and Diet Therapy.* New Age International Publishers, Delhi.
- Oikarinen, A., Engblom, J., Paukkonen, L., Kääriäinen, M., Kaakinen, P., & Kähkönen, O. (2023). Effects of a lifestyle counselling intervention on adherence to lifestyle changes 7 years after stroke - A quasi-experimental study. Scandinavian Journal of Caring Sciences, 37(1), 163–172.
- Lonnberg, L. (2022). Digital Comprehensive Summaries of Uppsala Dissertations from the Faculty of Medicine 1849. Acta Universitatis Upsaliensis Uppsala. https://uu.diva-portal.org/smash/get/diva2:1657438/FULLTEXT01.pdf.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.A (Prog.) with Nutrition and Health Education (NHE)

Category-V

DISCIPLINE SPECIFIC ELECTIVE COURSE

DSE-NHE 4: Indigenous Indian Foods

CREDIT DISTRIBUTION, ELIGIBILITY AND PREREQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Indigenous Indian Foods	4	3	1	0	XII Pass	NIL

Learning Objectives

- To impart knowledge about history of indigenous Indian foods
- To provide overview of the traditional foods evolved from indigenous foods
- To equip students with knowledge of traditional Indian functional foods
- To familiarize students with utilization of indigenous and traditional food as medicines

Learning Outcomes

After completion of the course, the students will be able to:

- Understand the history of indigenous Indian foods.
- Explain concept of traditional food evolving from indigenous foods.
- Learn about the health benefits of traditional foods as functional food.
- Understand the concept of utilization of indigenous and traditional food as medicines.

SYLLABUS FOR DSE-NHE-4

THEORY
(Credits 3; Hours 45)

UNIT I: Indian Food Culture, Indigenous Foods and Traditional Foods 8 Hours

The unit presents students with an introduction about Indian cookery, indigenous Indian foods, traditional Indian foods and history of evolution of food culture in India.

- History of Indian cookery.
- Overview of evolution of Indian food culture from ancient era to present time.
- Introduction to concept of indigenous Indian foods and traditional Indian foods.

UNIT II Indigenous foods of India **7 Hours**

The unit will focus on different indigenous foods of indigenous Indian communities and also help the students to learn through case studies of select indigenous communities.

- Ancestral legacies (pre-ancient history, Indus valley and Harrapan spreads)
- Indigenous foods of indigenous communities
- Case study of select indigenous communities

UNIT III Traditional Functional Foods of India **15 Hours**

The unit acquaints the students with an understanding about traditional Indian functional foods.

- Evolution of traditional functional foods
- Traditional Indian functional foods based on:
    - Whole grains
    - Legumes and legume adjuncts (*wadi, papad* etc.)
    - Milk and its products (*dahi, ghee* etc.)
    - Spices, salt, and condiments
    - Oils and oilseeds
    - Fruits and vegetables
    - Betel leaf
    - Herbs
    - Traditional Indian food as provider of abundant fibre
    - Traditional Indian food as provider of abundant polyphenols

UNIT IV Traditional Food as Medicine **15 Hours**

The unit will focus on various aspects of ayurveda and traditional foods which can be utilized as medicine.

- Introduction to vedic nutrition (ayurvedic nutrition) concept incorporating indigenous and traditional foods as medicine**.**
- Ayurvedic triad (*sushruta, charaka, aryabhatta*)
- Tridosha (*vata, pitta, kapha*)
- Rasas (sweet, salty, sour, bitter, pungent, astringent)
- Hot and cold foods
- Kacha and pucca food
- Gunas of food (*rajsik, tamsik, satvik*)
- Incompatible foods (*virudh ahaar*): *pathya, apathya, viprit*
- Ayurvedic rules of food consumption

TUTORIALS
(Credits 1; Hours 15)

Tutorial classes will involve:

1. Q&A sessions/ Group Discussions/ Problem Solving exercises with the Students
2. Presentation of project/ research activity by students
3. Any other scholastic work related to application of conceptual understanding of the subject
4. Evaluation and feedback by the teacher

ESSENTIAL/ RECOMMENDED READINGS

- Achaya, K. T. (1994). *Indian Food: A Historical Companion.* Oxford University Press
- Srinivasan, K. (2010). Traditional Indian functional foods. In *Functional foods of the east* (pp. 51–84). https://doi.org/10.1201/b10264-4.
- Wickramasinghe, P. (2007). *The Food of India*. Om Books Service.
- Rastogi, S. (Ed.). (2014). *Ayurvedic science of Food and Nutrition*. Springer Nature.
- Sen, C. T. (2016). *Feast and Fasts: A History of Food in India*. Reaktion Books Ltd.
- FAO and Alliance of Bioversity International and CIAT. (2021). *Indigenous Peoples' food systems: Insights on sustainability and resilience in the front line of climate change.* https://www.fao.org/3/cb5131en/cb5131en.pdf
- Ghosh-Jerath, S., Kapoor, R., Barman, S., Singh, G., Singh, A., Downs, S., & Fanzo. J. (2021). Traditional Food Environment and Factors Affecting Indigenous Food Consumption in Munda Tribal Community of Jharkhand, India. *Frontiers in nutrition, 7,* Article 600470. https://doi.org/10.3389/fnut.2020.600470

SUGGESTED READINGS

- Gosh-Jerath, S., Kapoor, R., & Sabharwal, M. (2022). Indigenous Foods of India: A Comprehensive Narrative Review of Nutritive Values, Antinutrient Content and Mineral Bioavailability of Traditional Foods Consumed by Indigenous Communities of India. Frontiers in sustainable food systems, 6, https://www.frontiersin.org/articles/10.3389/fsufs.2022.696228/full
- BHM 401T, *Introduction to Indian Cooking*, Uttrakhand Open University India (2005). https://www.uou.ac.in/sites/default/files/slm/BHM-401T.pdf
- Rai, R., & Nath, V. (2003). *The role of ethnic and indigenous people of india and their culture in the conservation of biodiversity.* ICFRE India. https://www.fao.org/3/xii/0186-a1.htm
- Negi, V. S., Pathak, R., Thakur, S., Joshi, R. K., Bhatt, I. D., & Rawal, R. S. (2021*).* Scoping the Need of Mainstreaming Indigenous Knowledge for Sustainable Use of Bioresources in the Indian Himalayan Region. *Environmental Management.* https://doi.org/10.1007/s00267-021-01510-w
- FAO. The role of ethnic and indigenous people of India and their culture in the conservation of biodiversity. https://www.fao.org/3/xii/0186-a1.htm.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.A (Prog.) with Nutrition and Health Education (NHE)

Category-V

DISCIPLINE SPECIFIC ELECTIVE COURSE

DSE-NHE 6: Research Methods in Home Science

CREDIT DISTRIBUTION, ELIGIBILITY AND PREREQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Research Methods in Home Science	4	3	0	1	XII Pass	NIL

Learning Objectives

- To provide students understandings about the basic concepts, approaches and methods in conducting Home Science research.
- To enable learners to appreciate and critique the nuances of designing a research study well.
- To sensitize students towards ethical concerns while conducting Home Science research.

Learning Outcomes

- Demonstrate knowledge of the scientific method, purpose and approaches to research in Home Science
- Compare and contrast quantitative and qualitative research approaches
- Explain different types of research design and their applicability in Home Science research
- Understand the key elements of a research process
- Explain ethical principles, issues and procedures

SYLLABUS OF DSE-NHE-6

THEORY

(Credits 3; Hours 45)

UNIT I: Research Purpose and Design **10 Hours**

This unit will deal with meaning and importance of research in various areas of Home Science. Exposure to different types of research designs and measurement in Home Science research would also be given.

- Meaning, purpose and significance of research
- Research as a scientific method

- Types of research
- Quantitative, Qualitative and mixed method approaches
- Research Designs –Experimental and Non-Experimental; Descriptive and Observational; Participatory research
- Internal and external validity of research design
- Variables, concepts and measurement in research
- Levels of measurement
- Units of analysis

UNIT II: Sampling and Research Tools and Techniques 15 Hours

This unit will introduce the student to the concept of sampling and methods used to draw sample from population using examples from Home Science discipline. Students would also learn about types of data, its collection and reliability and validity concerns.

- Role of sampling in research
- Sampling techniques and their applicability, Sample size and sampling error
- Types of data: Primary and Secondary
- Tools of data collection; types, construction and administration- Interview, Questionnaire, Observation, Focus group discussion and other methods
- Validity and reliability of data collection tools

UNIT III: The Research Process 15 Hours

This unit will elaborate upon the various steps involved in conducting and reporting researches in Home Science.

- Defining the problem, research questions, objectives, hypotheses
- Review of related literature and originality in writing
- Systematic research: concept and methodology
- Planning the research
- Identifying variables and constructing hypothesis
- Selecting appropriate research methodology and tools
- Data analysis: coding and tabulation
- Writing a research report: styles and formats
- Citation formats: in medical sciences, social sciences

UNIT IV: Values, Social Responsibility and Ethics in Research 5 Hours

This unit will apprise the students about ethical concerns while conducting and reporting research.

- Ethical principles guiding research: from inception to completion and publication of

research

- Plagiarism and Academic integrity in research: plagiarism tools and software
- Ethical issues relating to research participants and the researcher
    - Rights, dignity, privacy and safety of participants
    - Informed consent, confidentiality, anonymity of respondents, voluntary participation, harm avoidance

PRACTICAL

(Credits 1; Hours 30)

1. Data visualization
2. Levels of Measurement
3. Types of research designs
    a. Experimental and non-experimental; Descriptive and observational
    b. Qualitative, Quantitative and mixed method
4. Sampling techniques and sample size calculation
    a. Probability sampling method
    b. Non-Probability sampling methods
5. Tools of data collection- Interview schedule, questionnaire and FGD
    - Designing/ Construction
    - Preparation of tools for ethical review
    - Pilot testing/validity and reliability of the tool
6. Data collection and analysis process: conducting interviews, administering questionnaire
7. Coding and tabulation of data for analysis
8. Citation formats and Plagiarism
9. Reviewing a research paper from a specific area of specialization in Home Science

ESSENTIAL READINGS

- Kerlinger F. N. and Lee, H.B. (2017). *Foundations of Behavioral Research* 4th Ed. Harcourt College Publishers.
- Kothari, C. R. (2019). *Research Methodology: Methods and Techniques*. New Age International Pvt Ltd, New Delhi.
- Kothari, C. R. (2022). *Shodh Padhati* 1st Ed. New Age International Pvt Ltd, New Delhi.
- Kumar, R. (2019) Research Methodology: A Step-by-Step Guide for Beginners. 5th Ed. Sage Publications, New Delhi.

SUGGESTED READINGS

- Bernard, H. R. (2000). *Social research methods: Qualitative and quantitative*

approaches. Thousand Oaks, CA.: Sage.

- Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches.* Thousand Oaks, CA: Sage Publications.
- Davis, A. M., Treadwell, D. (2019). Introducing Communication Research: Paths of Inquiry. United Kingdom: SAGE Publications.
- Flynn, J.Z., Foster, I.M. (2009). *Research Methods for the Fashion industry.* Fairchild books, Bloomsbury publishing.
- Indian National Science Academy (INSA) (2019). *Ethics in Science Education, Research and Governance*. ISBN:978-81-939482-1-7. http://www.insaindia.res.in/pdf/EthicsBook.pdf
- Jacobsen, K. H. (2020). *Introduction to health research methods: A practical guide*. Jones & Bartlett Publishers.
- UGC (2021) *Academic Integrity and Research Quality*. New Delhi: UGC, Retrieved from https://www.ugc.ac.in/e-book/Academic%20and%20Research%20Book_WEB.pdf (Accessed on 10 March 2023).

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF HOME SCIENCE
Semester – IV

B.A (Prog.) with Human Development and Family Empowerment (HDFE)
B.A (Prog.) with Human Development and Family Empowerment (HDFE) as Major

Category-II

DISCIPLINE SPECIFIC CORE COURSE – DSC-7-HDFE: ECCE- PROGRAM PLANNING AND PRACTICES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITE OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
ECCE- Program Planning and Practices	4	2	-	2	Class XII	NIL

Learning Objectives:

1. To understand various aspects of planning and evaluation of ECCE centers.
2. To understand views of various philosophers in the area of ECCE
3. To develop skills and methods required for planning.

Learning Outcomes:

After completion of the course, the students will be able to:

1. Develop skills and methods required for planning.
2. Understand the importance of planning in an ECCE program
3. Develop an effective curriculum based on the principles of program planning

THEORY
(Credits 2, Hours 30)

UNIT I: Understanding the need and importance of program planning **(12 hours)**

Unit Description:
This unit provides a basic understanding about the aspects of planning in ECCE.

Subtopics:

- Program planning in ECCE: Definition and Principles
- Important considerations while planning programs for preschoolers (long term and short term goals)

UNIT II: Contribution of Indian and Western Philosophers in the field of ECCE **(8 hours)**
Unit Description:
This units focuses on the contribution by various philosophers in the field of Early childhood Care and Education

Subtopics:

- Indian Philosophers: Gijubhai Badheka, Tarabai Modak, Rabindranath Tagore, Mahatma Gandhi (Any two)
- Western Philosophers: F. Froebel, M. Montessori

UNIT III: Components of a successful ECCE program. (**10 hours)**
Unit Description:
This unit focuses on various important components of ECCE program.

Subtopics:

- Planning space and equipment in an ECCE centre
- Roles and qualities of an ECCE worker
- Importance of community involvement.

PRACTICAL
(Credits 2; Hours 60)

1. Visit to an ECCE program/centre
2. Interview with an ECCE worker
3. Designing one-week Teaching Plan for an ECCE centre.

ESSENTIAL READINGS:

- Aggarwal, J.C. and Gupta, S. (2007). *Early childhood care and education (First Ed.)*. New Delhi: Shipra Publications.
- Gupta, M. S. (2009). *Early childhood care and education*. PHI Learning Pvt. Ltd.
- IGNOU. Organizing Child Care Services: DECE-1. New Delhi: IGNOU
- Mohanty, J., &Mohanty, B. (1994). *Early Childhood Care and Education (ECCE)*. New Delhi: Deep & Deep Publications.
- Swaminathan, M. and Daniel, P. (2000). *Activity-based developmentally appropriate curriculum for young children*. Chennai: Indian Association for Pre-school Education.

SUGGESTED READINGS:

- Kaul, V. and Bhatnagar, R. (2009). *Early childhood education: A trainers' handbook*. New Delhi: NCERT.
- Kulshreshtha, A. (2017). *Early Childhood Care and Education*. Kanishka Publisher, distributors.
- Roopnarine, J. L., & Johnson, J. E. (2012). *Approaches to Early Childhood Education* (5th ed.). Pearson.
- Swaminathan, M. (1998). *The first five years: A critical perspective on early childhood care and education in India*. New Delhi: Sage

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – DSC-8-HDFE PRINCIPLES AND PERSPECTIVES ON ECCE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITE OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Principles & Perspectives on ECCE	4	2	-	2	Class XII	NIL

Learning Objectives:

- To understand the need and significance of early childhood care and education.
- To understand the policy perspectives on ECCE in India and world.
- To develop skills to make low-cost Teaching-Learning Material (TLM).

Learning Outcomes:

After completion of the course, the students will be able to:

- Become sensitized on the significance of focusing on early years.
- Understand the policy perspectives of ECCE in India.
- Develop skills to make low-cost Teaching-Learning Material (TLM) and apply the principles of ECCE in a child care setting.

THEORY
(Credits 2; Hours 30)

UNIT 1: Introduction to Early Childhood Care and Education (ECCE) **(10 Hours)**

- Unit Description:

This unit gives an overview of ECCE while focusing on the importance of early years.

Subtopics:

- Definition and Objectives of ECCE
- Significance of investing in early childhood
- National ECCE Policy 2013

UNIT 2: Developmental needs in Preschool years **(10 Hours)**

- Unit Description:

This unit focuses on the developmental needs of preschoolers and making of the activities related to the different domains of development using play material

Subtopics:

- Physical-motor, cognitive, language and socio-emotional development in Preschool years
- Preparation and use of learning and play material – Principles & characteristics

UNIT 3: Policy Perspectives in ECCE **(10 Hours)**

- Unit Description:

This unit focuses on creating awareness among students about the policies, legislations & programs related to ECCE in Indian context.

Subtopics:

- National Curriculum Framework 2005 and ECCE
- Role of Right to Education Act 2009 in promotion of ECCE
- Position of ECCE in New National Education Policy, 2020

PRACTICAL
(Credits 2; Hours 60)

1. Designing low cost/environment friendly teaching-learning materials (TLM) and activities for all domains of development
2. Using prepared TLMs to gain hands on experience- One-week internship in nursery/pre/play school.

ESSENTIAL READINGS:

- Day, M., Kaul, V., & Sawhney, S. (2022). *Early childhood education for marginalized children in India: Deconstructing quality*. Sage Publications
- Bhattacharjea, S, Kaul, V. (2019). Early childhood education and school readiness in India: Quality and diversity. Springer Singapore
- NAEYC (National Association for the Education of Young Children). 2022. *Developmentally Appropriate Practice in Early Childhood Programs Serving Children from Birth Through Age 8*. 4th ed. Washington, DC: NAEYC
- National Education Policy (2020). Ministry of Human Resource Development. GOI. https://www.education.gov.in/sites/upload_files/mhrd/files/NEP_Final_English_0.pdf.

SUGGESTED READINGS:

- Swaminathan, M. and Daniel, P. (2000). *Activity-based developmentally appropriate curriculum for young children*. Chennai: Indian Association for Pre-school Education.
- Aggarwal, J.C. and Gupta, S. (2007). *Early childhood care and education (First Ed.)*. New Delhi: Shipra Publications.
- Swaminathan, M. (1998). *The first five years: A critical perspective on early childhood care and education in India*. New Delhi: Sage.
- World Bank (2004). *Reaching out to the child: An integrated approach to child development*. New Delhi: Oxford University Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.A (Prog.) with Human Development and Family Empowerment (HDFE) as Non-Major

Category-III

DISCIPLINE SPECIFIC CORE COURSE – DSC-8-HDFE: PRINCIPLES AND PERSPECTIVES ON ECCE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITE OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Principles & Perspectives on ECCE	4	2	-	2	Class XII	NIL

Learning Objectives:

1. To understand the need and significance of early childhood care and education.
2. To understand the policy perspectives on ECCE in India and world.
3. To develop skills to make low-cost Teaching-Learning Material (TLM).

Learning Outcomes:

After completion of the course, the students will be able to:

1. Become sensitized on the significance of focusing on early years.
2. Understand the policy perspectives of ECCE in India.
3. Develop skills to make low-cost Teaching-Learning Material (TLM) and apply the principles of ECCE in a child care setting.

THEORY
(Credits 2; Hours 30)

UNIT 1: Introduction to Early Childhood Care and Education (ECCE) **(10 Hours)**

- Unit Description:

This unit gives an overview of ECCE while focusing on the importance of early years.

Subtopics:

- Definition and Objectives of ECCE
- Significance of investing in early childhood
- National ECCE Policy 2013

UNIT 2: Developmental needs in Preschool years **(10 Hours)**

- Unit Description:

This unit focuses on the developmental needs of preschoolers and making of the activities

related to the different domains of development using play material

Subtopics:

- Physical-motor, cognitive, language and socio-emotional development in Preschool years
- Preparation and use of learning and play material – Principles & characteristics

UNIT 3: Policy Perspectives in ECCE **(10 Hours)**

- Unit Description:

This unit focuses on creating awareness among students about the policies, legislations & programs related to ECCE in Indian context.

Subtopics:

- National Curriculum Framework 2005 and ECCE
- Role of Right to Education Act 2009 in promotion of ECCE
- Position of ECCE in New National Education Policy, 2020

PRACTICAL
(Credits 2; Hours 60)

1. Designing low cost/environment friendly teaching-learning materials (TLM) and activities for all domains of development
2. Using prepared TLMs to gain hands on experience- One-week internship in nursery/pre/play school.

ESSENTIAL READINGS:

- Day, M., Kaul, V., & Sawhney, S. (2022). *Early childhood education for marginalized children in India: Deconstructing quality*. Sage Publications
- Bhattacharjea, S, Kaul, V. (2019). Early childhood education and school readiness in India: Quality and diversity. Springer Singapore
- NAEYC (National Association for the Education of Young Children). 2022. *Developmentally Appropriate Practice in Early Childhood Programs Serving Children from Birth Through Age 8*. 4th ed. Washington, DC: NAEYC
- National Education Policy (2020). Ministry of Human Resource Development. GOI. https://www.education.gov.in/sites/upload_files/mhrd/files/NEP_Final_English_0.pdf.

SUGGESTED READINGS:

- Swaminathan, M. and Daniel, P. (2000). *Activity-based developmentally appropriate curriculum for young children*. Chennai: Indian Association for Pre-school Education.
- Aggarwal, J.C. and Gupta, S. (2007). *Early childhood care and education (First Ed.)*. New Delhi: Shipra Publications.
- Swaminathan, M. (1998). *The first five years: A critical perspective on early childhood care and education in India*. New Delhi: Sage.
- World Bank (2004). *Reaching out to the child: An integrated approach to child development*. New Delhi: Oxford University Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF HOME SCIENCE
SEMESTER V

B.A (Prog.) with Human Development and Family Empowerment (HDFE)
B.A (Prog.) with Human Development and Family Empowerment (HDFE) as Major

Category-II

DISCIPLINE SPECIFIC CORE COURSE – DSC-9-HDFE: WOMEN RIGHTS AND GENDER JUSTICE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITE OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Women Rights and Gender Justice	4	2	-	2	Class XII	NIL

LEARNING OBJECTIVES:

- To understand women's rights and movements in India.
- To recognize gender issues prevailing in Indian society.
- To understand the legal frameworks for women in India.

LEARNING OUTCOMES:

After completion of the course, the students will be able to:

- Identify gender issues existing in Indian society.
- Understand women laws, acts and movements in India.
- Comprehend the women's rights of India.

THEORY
(Credits 2; Hours 30)

UNIT I: Women Rights as Human Rights **(12 hours)**

Unit Description:

This unit provides awareness regarding women rights and movements in India.

Subtopics:

- Concept of women rights: Reproductive rights, Health education right, Employment and Legal rights.
- Women's movement in India: Chipko movement, Narmada Bachao Andolan, SEWA, SHGs etc.

UNIT II: Perspectives on Women Rights **(8 hours)**

Unit Description:

This unit focuses on the concept of Feminism and the role of UN agencies in promoting Gender Justice.

Subtopics:

- Feminism – 3 waves of Feminism
- Role of UN in promoting Gender Justice

UNIT III: Laws for Women in India: Path to Gender Justice (**10 hours)**

Unit Description:

This unit focuses on generating awareness regarding laws for women in India.

Subtopics:

- Protection of Women from Domestic Violence Act 2005
- Sexual Harassment of Women at workplace Act 2013
- The Maternity Benefit Act 1961

PRACTICAL
(Credits 2; Hours 60)

4. Case study of any one law/movement related to Women's Right
5. Review of one documentary/book/video based on gender justice
6. Workshop/ talk/webinar on the topic of Gender sensitization

ESSENTIAL READINGS:

- Chawla, M. (2013). Gender Justice: Women and Law in India, New Delhi
- Bhasin, K. (2000). Understanding Gender. New Delhi. Kaali for Women.
- Bhasin, K. (1986). Some questions on feminism. Jagori
- Chopra, G. (2015). Child Rights in India. Springer
- Vij, M. et.al (2014). Women's Studies in India, A journey of 25 years, Rawat Publication

SUGGESTED READINGS:

- Brizendine, L. (2008). The Female Brain. Bantam books.
- Lips, Hilary M., (2015), Gender the basics, Routledge, London
- Rege, Sharmila. (2003). Sociology of Gender, New Delhi: Sage.
- Oberoi, P. (2006), Freedom and Destiny: Gender, Family and Popular Culture in India, Oxford University Press

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – DSC-10-HDFE: CHILD RIGHTS AND GENDER EQUITY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITE OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Child Rights and Gender Equity	4	2	-	2	Class XII	NIL

LEARNING OBJECTIVES:

- To understand the various definitions of child and child rights
- To learn about various dimensions of vulnerability with regard to children
- To understand contemporary gender issues

LEARNING OUTCOMES:

After completion of the course, the students will be able to:

- Acquire knowledge about child rights in India.
- Be sensitized to various dimensions of challenges faced by children.
- Develop insight on contemporary gender issues.

THEORY
(Credits 2; Hours 30)

UNIT I: Vulnerable Children- Need for Child Rights **(12 hours)**

Unit Description:

This unit focuses and gives students awareness about various groups of disadvantaged children.

Subtopics:

- Understanding Exclusion and Vulnerability in Childhood
- Vulnerable Children-Magnitude and Classification

UNIT II: Concept of Child Rights **(8 hours)**

Unit Description:

This unit focuses on providing basic knowledge about rights for children in India and the role played by important stakeholders in protecting these rights.

Subtopics:

- Definition of Child and Child Rights

- Protecting Child Rights-Laws and Policies for Children in India

UNIT III: Gender Equity- The way Ahead **(10 hours)**

Unit Description:

This unit focuses on the difference between equality and equity and process of socialization involved in constructing these perspectives.

Subtopics:

- Gender Equity v/s Gender Equality-Concept and Scope
- Socialization for Gender Equity

PRACTICAL
(Credits 2; Hours 60)

1. Case Profile of a child in difficult circumstances
2. Poster making on Gender related issues
3. Portrayal of Gender (males and females) in school books/text-books/story books and magazines to identify the scope of gender equity.

ESSENTIAL READINGS:

- Bhasin, Kamla (2000). Understanding Gender. New Delhi. Kaali for Women.
- Goel, A, Kaur, A and Sultana, A (2006). Violence against women: Issues and Perspectives. New Delhi, Deep & Deep Publishers.
- Kataria, K. and Parihar, M. (2017) Women Empowerment Gender Equality and Social Justice. Books Treasure.
- Monica, C. (2022). Gender Justice: Women and Law in India. Deep & Deep Publications.

SUGGESTED READINGS:

- Seidman, Steven (1996), (ed), 'Queer Theory/Sociology', Blackwell ϖ V. Geetha, 2007, Patriarchy, Stree Publications, Calcutta
- Lips, Hilary M., (2015), Gender the basics, Routledge, London
- Pernau, Margrit, Imtiaz Ahmad and Helmut Reifeld, (2003), Family and Gender, Sage, New Delhi
- Oberoi, Patricia, (2006), Freedom and Destiny: Gender, Family and Popular Culture in India, Oxford University Press
- Rege, Sharmila. (2003). Sociology of Gender, New Delhi: Sage.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.A (Prog.) with Human Development and Family Empowerment (HDFE) as

Non-Major

Category-III

DISCIPLINE SPECIFIC CORE COURSE – DSC-10-HDFE: CHILD RIGHTS AND GENDER EQUITY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITE OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Child Rights and Gender Equity	4	2	-	2	Class XII	NIL

LEARNING OBJECTIVES:

- To understand the various definitions of child and child rights
- To learn about various dimensions of vulnerability with regard to children
- To understand contemporary gender issues

LEARNING OUTCOMES:

After completion of the course, the students will be able to:

- Acquire knowledge about child rights in India.
- Be sensitized to various dimensions of challenges faced by children.
- Develop insight on contemporary gender issues.

THEORY

(Credits 2; Hours 30)

UNIT I: Vulnerable Children- Need for Child Rights **(12 hours)**

Unit Description:

This unit focuses and gives students awareness about various groups of disadvantaged children.

Subtopics:

- Understanding Exclusion and Vulnerability in Childhood
- Vulnerable Children-Magnitude and Classification

UNIT II: Concept of Child Rights **(8 hours)**

Unit Description:

This unit focuses on providing basic knowledge about rights for children in India and the role played by important stakeholders in protecting these rights.

Subtopics:

- Definition of Child and Child Rights
- Protecting Child Rights-Laws and Policies for Children in India

UNIT III: Gender Equity- The way Ahead **(10 hours)**

Unit Description:

This unit focuses on the difference between equality and equity and process of socialization involved in constructing these perspectives.

Subtopics:

- Gender Equity v/s Gender Equality-Concept and Scope
- Socialization for Gender Equity

PRACTICAL
(Credits 2; Hours 60)

1. Case Profile of a child in difficult circumstances
2. Poster making on Gender related issues
3. Portrayal of Gender (males and females) in school books/text-books/story books and magazines to identify the scope of gender equity.

ESSENTIAL READINGS:

- Bhasin, Kamla (2000). Understanding Gender. New Delhi. Kaali for Women.
- Goel, A, Kaur, A and Sultana, A (2006). Violence against women: Issues and Perspectives. New Delhi, Deep & Deep Publishers.
- Kataria, K. and Parihar, M. (2017) Women Empowerment Gender Equality and Social Justice. Books Treasure.
- Monica, C. (2022). Gender Justice: Women and Law in India. Deep & Deep Publications.

SUGGESTED READINGS:

- Seidman, Steven (1996), (ed), 'Queer Theory/Sociology', Blackwell ϖ V. Geetha, 2007, Patriarchy, Stree Publications, Calcutta
- Lips, Hilary M., (2015), Gender the basics, Routledge, London
- Pernau, Margrit, Imtiaz Ahmad and Helmut Reifeld, (2003), Family and Gender, Sage, New Delhi
- Oberoi, Patricia, (2006), Freedom and Destiny: Gender, Family and Popular Culture in India, Oxford University Press
- Rege, Sharmila. (2003). Sociology of Gender, New Delhi: Sage.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF HOME SCIENCE
SEMESTER – VI

B.A (Prog.) with Human Development and Family Empowerment (HDFE)

B.A (Prog.) with Human Development and Family Empowerment (HDFE) as Major

Category-II

DISCIPLINE SPECIFIC CORE COURSE – DSC-HDFE-11: EARLY INTERVENTION AND SERVICES FOR CHILDREN WITH DISABILITY

CREDIT DISTRIBUTION, ELIGIBILITY AND PREREQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Early Intervention and Services for Children with Disability	4	2	0	2	Class XII	NIL

LEARNING OBJECTIVES:

- To introduce students regarding the concept and significance of Early Intervention.
- To make students aware regarding the issues and challenges in Early Intervention
- To equip students regarding the services for Children with Disability

LEARNING OUTCOMES:

After completion of the course:

- Students will gain an insight regarding the concept and significance of Early Intervention.
- Students will develop an understanding regarding the issues and challenges in Early Intervention
- Students will become aware regarding the services for Children with Disability

THEORY

(Credits 2; Hours 30)

UNIT 1: Understanding Early Intervention (10 Hours)

Unit Description: This unit will introduce the students regarding the concept and significance of Early Intervention.

Subtopics

- Meaning, Significance and Need of Early Intervention
- Principles, Screening and Assessment Tools in Early Intervention

UNIT 2: Early Intervention in practice – Opportunities and Challenges (10 Hours)

Unit Description: This unit will introduce the students with issues and challenges in Early Intervention.

Subtopics*:*

- Issues and challenges in Early Intervention
- Working with families: Role of parents

UNIT 3: Services for Children with Disability (10 Hours)

Unit Description: This unit will introduce students regarding the services for Children with Disability

Subtopics:

- Educational Approaches for Children with Disability (Inclusive, Integrated, Segregated, and Home based education)
- Need and importance of Individualized Education Plans (IEPs) in education of children with disability

PRACTICAL
(Credits 2; Hours 60)

1. Interview of a caregiver providing services to a child/person with disability
2. Identification of any one Standardized Assessment Tool for children with disability and preparation of a checklist for early detection of disability.
3. Documentation of any two IEPs for children with disability

ESSENTIAL READINGS:

- Mangal, S.K. (2007). *Educating exceptional children*. New Delhi: PHI Learning
- National Human Rights Commission (2005). *Disability manual*. New Delhi: NHRC
- NCERT (2014). *Including children with special needs*. New Delhi: NCERT
- Ramesh, R (2011). *Disability Towards Inclusive India*. Pentagon Press
- Pal, C. and Viswakarma, V (2011). *Vishesh shiksya - shikshan*. New Delhi: Kanishka Publishers, Distributors
- Nair, R. (2013). Development and Validation of Trivandrum Development Screening Chart for children aged 0-6 years, The Indian Journal of Pediatrics. DOI:10.1007/s12098-013-1144-2

SUGGESTED READINGS:

- NCERT (2006). *Education of children with special needs*. New Delhi: NCERT
- NCERT (2010). *Towards inclusive education*. New Delhi: NCERT
- Sharma, Y.K. (2009). Sharireki roop se viklagng balak. New Delhi: Kanishka Publishers, Distributors.
- Werner, D. (1994). *Disabled Village Children (2022 Edition*). Voluntary Health Association of India

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – DSC-HDFE-12: CHILDREN WITH DISABILITY IN INDIA

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Children with Disability in India	4	2	0	2	Class XII	NIL

LEARNING OBJECTIVES:

- To introduce students regarding etymology of disability.
- To make students aware regarding the categorization of children with disability.
- To equip students with the knowledge of policies, provisions and organizations for children with disability.

LEARNING OUTCOMES:

After completion of the course:

- Students will gain an insight regarding terms concerning disability.
- Students will develop an understanding regarding the categorization of children with disability.
- Students will become aware regarding the policies, provisions and organizations for children with disability.

THEORY

(Credits 2; Hours 30)

UNIT 1: Understanding Disability (10 Hours)

Unit Description: This unit will introduce the Historical Perspective of Disability along with the attitude of society towards disability.

Subtopics

- Etymology of Disability-Understanding ICIDH by WHO
- Models of Disability (Charity, Medical, Social and Right based model)

UNIT 2: Categorization of Children with Disability (10 Hours)

Unit Description: This unit will introduce the students with Categorization of Children with Disability along with its causes and prevention.

Subtopics:

- Categorization of Children with Disability
- Causes and Prevention of Disabilities in Children

UNIT 3: Children with Disability in India- Magnitude and Provisions (10 Hours)

Unit Description: This unit will introduce the Policies, Provisions and Organizations for Children with Disability.

Subtopics:

- Demographic profile of Children with Disability in India
- Enlist the policies, provisions and laws with respect to Disability- Eg: Rehabilitation Council of India Act (1992), National Trust for Welfare of Persons with Autism, cerebral Palsy, Mental retardation & Multiple Disability Act (1999), National Policy for Persons with Disabilities (2006)
- Rights of Persons with Disability (RPWD) Act, 2016

PRACTICAL
(Credits 2; Hours 60)

1. Case study of any one organization such as RCI, NAB etc working for Children with Disability.
2. Poster/pamphlet on causes and prevention of disabilities in children.
3. Using your observations and personal experiences enlist how your institution is accessible for People with Disability.

ESSENTIAL READINGS:

- Mangal, S.K. (2007). *Educating exceptional children*. New Delhi: PHI Learning
- National Human Rights Commission (2005). *Disability manual*. New Delhi: NHRC
- NCERT (2014). *Including children with special needs*. New Delhi: NCERT
- Ramesh, R (2011). *Disability Towards Inclusive India.* Pentagon Press
- NCERT (2010). *Towards inclusive education*. New Delhi: NCERT

SUGGESTED READINGS:

- NCERT (2006). *Education of children with special needs*. New Delhi: NCERT
- Pal, C. and Viswakarma, V (2011). V*ishesh shiksya - shikshan.* New Delhi: Kanishka Publishers, Distributors.
- Sharma, Y.K. (2009). *Sharariki roop se viklagng balak*. New Delhi: Kanishka Publishers, Distributors.
- Werner, D. (1994). *Disabled Village Children (2022 Edition).* Voluntary Health Association of India

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.A (Prog.) with Human Development and Family Empowerment (HDFE) as Non-Major

Category-III

DISCIPLINE SPECIFIC CORE COURSE – DSC-HDFE-12: CHILDREN WITH DISABILITY IN INDIA

CREDIT DISTRIBUTION, ELIGIBILITY AND PREREQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Children with Disability in India	4	2	0	2	Class XII	NIL

LEARNING OBJECTIVES:

- To introduce students regarding etymology of disability.
- To make students aware regarding the categorization of children with disability.
- To equip students with the knowledge of policies, provisions and organizations for children with disability.

LEARNING OUTCOMES:

After completion of the course:

- Students will gain an insight regarding terms concerning disability.
- Students will develop an understanding regarding the categorization of children with disability.
- Students will become aware regarding the policies, provisions and organizations for children with disability.

THEORY

(Credits 2; Hours 30)

UNIT 1: Understanding Disability **(10 Hours)**

Unit Description: This unit will introduce the Historical Perspective of Disability along with the attitude of society towards disability.

Subtopics

- Etymology of Disability-Understanding ICIDH by WHO
- Models of Disability (Charity, Medical, Social and Right based model)

UNIT 2: Categorization of Children with Disability **(10 Hours)**

Unit Description: This unit will introduce the students with Categorization of Children with Disability along with its causes and prevention.

Subtopics:

- Categorization of Children with Disability
- Causes and Prevention of Disabilities in Children

UNIT 3: Children with Disability in India- Magnitude and Provisions (10 Hours)

Unit Description: This unit will introduce the Policies, Provisions and Organization's for Children with Disability.

Subtopics:

- Demographic profile of Children with Disability in India
- Enlist the policies, provisions and laws with respect to Disability- Eg: Rehabilitation Council of India Act (1992), National Trust for Welfare of Persons with Autism, cerebral Palsy, Mental retardation & Multiple Disability Act (1999), National Policy for Persons with Disabilities (2006)
- Rights of Persons with Disability (RPWD) Act, 2016

PRACTICAL:
(Credits 2; Hours 60)

1. Case study of any one organization such as RCI, NAB etc working for Children with Disability.
2. Poster/pamphlet on causes and prevention of disabilities in children.
3. Using your observations and personal experiences enlist how your institution is accessible for People with Disability.

ESSENTIAL READINGS:

- Mangal, S.K. (2007). *Educating exceptional children*. New Delhi: PHI Learning
- National Human Rights Commission (2005). *Disability manual*. New Delhi: NHRC
- NCERT (2014). *Including children with special needs*. New Delhi: NCERT
- Ramesh, R (2011). *Disability Towards Inclusive India.* Pentagon Press
- NCERT (2010). *Towards inclusive education*. New Delhi: NCERT

SUGGESTED READINGS:

- NCERT (2006). *Education of children with special needs*. New Delhi: NCERT
- Pal, C. and Viswakarma, V (2011). V*ishesh shiksya - shikshan.* New Delhi: Kanishka Publishers, Distributors.
- Sharma, Y.K. (2009). *Shaririki roop se viklagng balak*. New Delhi: Kanishka Publishers, Distributors.
- Werner, D. (1994). *Disabled Village Children (2022 Edition).* Voluntary Health Association of India

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Department of Home Science

B.A (Prog.) with Human Development and Family Empowerment (HDFE)

Pool of Discipline Specific Electives (DSEs)

S. No.	Content	Page No.
	Odd Semester	
1.	Children in Especially Difficult Circumstances	1-3
2.	Language Development and Early Literacy	4-5
3.	Developing Early Childhood Curriculum	6-7
	Even Semester	
1.	Education and Rehabilitation approaches for Person with Disabilities	8-9
2.	Socio-Emotional Development: A lifespan perspective	10-11
3.	Research Methods in Home Science	12-14

ODD SEMESTER

DISCIPLINE SPECIFIC ELECTIVE – DSE-HDFE –CHILDREN IN ESPECIALLY DIFFICULT CIRCUMSTANCES

CREDIT DISTRIBUTION, ELIGIBILITY AND PREREQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Children in Especially Difficult Circumstances	4	2	0	2	Class XII	NIL

LEARNING OBJECTIVES:

1. To learn about various dimensions of vulnerability with regard to children
2. To create awareness about various groups of disadvantaged children
3. To create understanding about the organizations and services available for disadvantaged children

LEARNING OUTCOMES:

After completion of the course, students will be able to:

1. Become aware and acquire knowledge about child rights in India.
2. Be sensitized to the various dimensions of challenges faced by children.
3. Become aware about the organizations, institutions and services for disadvantaged children.

THEORY **(30 Hours)**

UNIT 1: Overview of Children in Especially Difficult Circumstances (CEDC) **(6 Hours)**

Unit Description:

This unit provides a basic understanding about all the aspects of CEDC.

Subtopics:

- Definition of CEDC
- Classification of CEDC
- Magnitude and Causes

UNIT 2: Categories of CEDC: Issues and Challenges **(12 Hours)**

Unit Description:

This unit focuses on various categories of disadvantaged children and challenges faced by them.

Subtopics:

- Children in conflict with law
- Street children
- Child labour
- Child trafficking

Unit 3: Provisions for child protection in India (12 Hours)
Unit Description:
This unit focuses on providing information about the various organizations, laws and programs available in India for children in especially difficult circumstances

Subtopics:

- Concept of child protection: NCPCR, Childline
- Protection of Children from Sexual Offences Act (POCSO, 2012)
- Child Labour (Prohibition and Regulation) Amendment Act, 2016
- Juvenile Justice (Care and Protection of Children) Act, 2015
- Organizations working for Child protection: Prayas, Butterflies, Bachpan Bachao Andolan

PRACTICAL
(Credits 2; 60 Hours)

- Poster making/ News articles collection on the issue of child abuse
- Film review/Visit to an organization working for child protection
- Case profile of a working child/ Street child

ESSENTIAL READINGS:

- Bajpai, A. (2006). *Child rights in India: law, policy and practice*. New Delhi: Oxford University Press.
- Chopra, G. (2015). *Child rights in India: Challenges and social action*. New Delhi: Springer.
- सेतिया. ए. (2012). बच्चों के कानूनी हक। उत्तराखंड: राज्य बाल अधिकार संरक्षण आयोग E-book retrieved from http://wecd.uk.gov.in/files/book.pdf

SUGGESTED READINGS:

- Children in Difficult Circumstances. Retrieved from https://www.planindia.org/wp-content/uploads/2019/09/CIDC-Report-compressed.pdf
- NIPCCD (2002). Children in difficult circumstances: Summaries of research. New Delhi: Resource Centre on Children.
- Sathpathy, C. (2013). Child welfare policies and programme in India. Insights of India, Issues concerning children. https://www.insightsonindia.com/wp-content/uploads/2013/09/child-welfare-policies-and-programmes-in-india.pdf
- भारत में बाल संरक्षण कानूनों का सारांश. SATYARTHI: Kailash Satyarthi Children's Foundation Retrieved from https://satyarthi.org.in/wp-content/uploads/BondedLabor/Hindi/Summary%20of%20Child%20Protection%20Laws_Hindi.pdf

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE – DSE-HDFE -LANGUAGE DEVELOPMENT AND EARLY LITERACY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITE OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Language Development and Early Literacy	4	2	0	2	Class XII	NIL

LEARNING OBJECTIVES:

1. To understand how language development takes place.
2. To understand the role of early stimulation in language development.
3. To understand the role of the family and school in language development of children.

LEARNING OUTCOMES:

After completion of the course, the students will be able to:

1. Understand the process of language development
2. Get awareness regarding the importance of early stimulation
3. Understand the role of family and school in language development

THEORY
(Credits 2; 30 hours)

Unit I: Language and Communication **(11 hours)**

Unit Description:

This unit focuses on providing basic knowledge about language and its importance.

Subtopics:

- Language and its importance
- Language Acquisition
- Grammar, Phonetics, Semantics

Unit II: Stages of Language Development **(11 hours)**

Unit Description:

This unit focuses on various factors and problems related to language development during different life stages

Subtopics:

- Language Development through Infancy, Childhood and Adolescence
- Factors affecting language development
- Early Identification of problems related to language development

Unit III: Role of Family and School **(08 hours)**

Unit Description:

This unit focuses on the importance of stimulation in language development

Subtopics:

- Home Stimulation
- Role of Caregiver in language development
- School Enrichment Programme
- Role of a Teacher

PRACTICAL

(Credits 2; Hours 60)

- Identification and documentation of early literacy programs in the country (Any two)
- Preparation of booklets for reading readiness
- Organizing Workshop /webinar/ interactive session on communication skills of children and report writing.

ESSENTIAL READINGS:

- Hetherington E.M. and Parke R.D. Gauvin M. Locke V.O. (2006). *Child Psychology -A Contemporary view point.* Mc Graw- Hill Education
- Verma, P., Srivastava, D. N. and Singh, A. (2020). *Bal manovigyan and bal vikas*. (and all further editions) Agra: Agrawal Publication.
- Singh, V. (2007). *Bal vikas avam bal manovigyan*. Jaipur: Panchsheel Prakashan.
- Mangal S.K. (2007). *Educating Exceptional Children.* New Delhi: PHI Learning

SUGGESTED READINGS:

- Papilla D.E., Olds S.W. and Feldman R.D. (2004). *Human Development*. New York: Mc Graw-Hill
- Woolfolk A., Mishra G. Jha, A.K. (2012). *Educational Psychology.* Pearson Education, Inc.
- Santrock J.W. (2013). *Life Span Approach.* Mc Graw-Hill Education. India
- IGNOU- BES-*008 Language and Early Literacy Block* -3, Language Acquisition and Language Learning: Preschool and Early Years Unit 6, Classroom Language and Literacy-Hindi/English

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE – DSE-HDFE-DEVELOPING EARLY CHILDHOOD CURRICULUM

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITE OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Developing Early Childhood Curriculum	4	2	0	2	Class XII	NIL

LEARNING OBJECTIVES:

1. To understand need and significance of early childhood period.
2. To understand meaning, scope and significance of curriculum development in ECCE.
3. To develop skills to holistically develop and evaluate the curriculum.

LEARNING OUTCOMES:

After completion of the course, the students will be able to:

1. Get awareness and acquire knowledge about early childhood.
2. Understand curriculum designing and evaluation for early childhood years.
3. Understand pedagogical approaches in early childhood curriculum.

THEORY **(30 hours)**

Unit I: Development during early years and importance of curriculum development **(12 hours)**

Unit Description:

This unit provides a basic understanding about Early Childhood Curriculum.

Subtopics:

- Developmental Milestones (birth -8years)
- Meaning and significance of Curriculum Development
- Qualities of a good curriculum for providing Early Childhood Education (ECE)

Unit II: Content and Pedagogy in Early Childhood Curriculum **(8 hours)**

Unit Description:

This unit focuses on providing basic knowledge about Pedagogy in Early Childhood Curriculum.

Subtopics:

- Understanding different pedagogical approaches (Activity/theme based, play-way, child centered)
- Selection of activities and learning aids for different age-groups (Infancy, Pre-school and Early School stages)

Unit III: Curriculum Assessment **(10 hours)**

Unit Description:

This unit focuses on the holistic evaluation and curriculum assessment

Subtopics:

- Assessment and evaluation: Need and tools
- Holistic evaluation of the curriculum: Child, Staff, Center, Learning activities

PRACTICAL **(60 hours)**

- Develop One Week Schedule (Curriculum) for 3-6 and 6-8 years old
- Prepare a checklist for evaluating an ECE Curriculum
- Make assessment of a child (3-6 years) using the 'Child Assessment Card' issued by Ministry of Women & Child Development, GOI.

ESSENTIAL READINGS:

- Aggarwal, J.C. and Gupta, S. (2007). *Early childhood care and education (First Ed.)*. New Delhi: Shipra Publications.
- Gupta, M. S. (2009). *Early childhood care and education*. PHI Learning Pvt. Ltd.
- Mohanty, J., &Mohanty, B. (1994). *Early Childhood Care and Education (ECCE)*. New Delhi: Deep & Deep Publications.
- Swaminathan, M. and Daniel, P. (2000). *Activity-based developmentally appropriate curriculum for young children*. Chennai: Indian Association for Pre-school Education.
- Romila Soni, R. (2015). Theme Based Early Childhood Care and Education Programme: A Resource Book. National Council of Educational Research and Training.
- Theory and Practice in Early Childhood Care and Education. Managing Children's Programmes: Some Perspectives. Indira Gandhi National Open University DECE Study Material

SUGGESTED READINGS:

- Kaul, V. and Bhatnagar, R. *Early childhood education: A trainers' handbook*. New Delhi: NCERT.
- Kulshreshtha, A. (2017). *Early Childhood Care and Education*. Kanishka Publisher, distributors.
- Swaminathan, M. (1998). *The first five years: A critical perspective on early childhood care and education in India*. New Delhi: Sage.
- Morrison, G. S. (2003). Fundamentals of early childhood education. Merrill/Prentice Hall: Virginia
- Singh, A. (1995). Playing to Learn: A training manual for Early Childhood Education. M. S. Swaminathan Research Foundation.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

EVEN SEMESTER

DISCIPLINE SPECIFIC ELECTIVE – DSE-HDFE-EDUCATION AND REHABILITATION APPROACHES FOR PERSONS WITH DISABILITIES

CREDIT DISTRIBUTION, ELIGIBILITY AND PREREQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Education and Rehabilitation Approaches for Persons with Disabilities	4	2	0	2	Class XII	NIL

LEARNING OBJECTIVES:

1. To introduce students to educational approaches for Persons with Disabilities
2. To help students gain an understanding of Assistive Technology and ICT for Persons with Disabilities.
3. To make the students understand about Rehabilitation Approaches for Persons with Disabilities

LEARNING OUTCOMES:

After completion of the course, students will be able to:

1. Develop an understanding regarding educational approaches for persons with disabilities.
2. Gain an insight regarding assistive technology and ICT for persons with disabilities.
3. Get awareness about the rehabilitation approaches for persons with disabilities.

THEORY:
(Credits 2; Hours 30)

UNIT 1: Introduction to educational approaches for Persons with Disabilities (10 Hours)

Unit Description:

This unit will introduce the educational approaches for Persons with Disabilities.

Subtopics:

- Paradigm shift in educational approach from Segregation to Inclusion
- Role of significant others in developing self-image and self-esteem of Persons with Disabilities.
- Deno-cascade model of service delivery.

Unit 2: Assistive Technology and ICT for Persons with Disabilities (10 Hours)

Unit Description:

This unit will introduce students to different Assistive Technology and its uses for persons with disabilities.

Subtopics:

- Understanding ICT and its role in Classroom learning
- Assistive devices and their importance for Persons with Disabilities (Braille-books, Hearing Aids, Walking Canes etc.)

UNIT 3: Rehabilitation Approaches for Persons with Disabilities (10 Hours)

Unit Description:

This unit will lay emphasis on understanding the concept of Rehabilitation Approaches for Persons with Disabilities.

Subtopics:

- Therapeutic Intervention – Occupational therapy (OT), Physio-Therapy (PT) and Speech Therapy (ST)
- Community Based Rehabilitation (CBR)
- Institution Based Rehabilitation (IBR)

PRACTICAL

(Credits 2; Hours 60)

1. Interview a person with disability to understand role of significant others in their life.
2. Identify various ICT tools and how they facilitate learning of persons with disabilities
3. Prepare a list of assistive devices for persons with disabilities and their use.

ESSENTIAL READINGS:

- Kozma, R.B. (2003). Technology, Innovation, and Educational Change: A Global Perspective: A Report of the Second Information Technology in Education Study, Module 2. International Society for Technology in Education
- Abbot, C. (2001). ICT: Changing Education. Routledge Falmer.
- Florian, L., & Hegarty J. (2004). ICT and Special Educational Needs: A Tool for Inclusion. Open University Press, Maidenhead.
- Scheme of Assistance to Disabled for Purposes of Fitting of Aids/Appliances (2014). Ministry of Social Welfare, Govt. of India, New Delhi.
- Ladau E. (2021). Demystifying Disability: What to Know, What to Say, and How to Be an Ally, Ten Speed Press Publisher
- Nair, R. (2013). Development and Validation of Trivandrum Development Screening Chart for children aged 0-6 years, The Indian Journal of Pediatrics. DOI:10.1007/s12098-013-1144-2

SUGGESTED READINGS:

- Scheme of Assistance to Organizations for Disabled Persons, Ministry of Social Welfare, Govt. of India, New Delhi.
- WHO. (1982). Community Based Rehabilitation — Report of a WHO International Consultation, Colombo, Sri Lanka, 28 June- 3 July. WHO (RHB/IR/82.1)
- WHO. (1984). "Rehabilitation For AIl" in World Health Magazine, WHO, Geneva
- Loveday, M. (2006). The HELP Guide for Community Based Rehabilitation Workers: A Training Manual. Global-HELP Publications, California.
- McConkey, R. and O' Tool, B (Eds). Innovations in Developing Countries for People with Disabilities, P.H. Brookes, Baltimore.
- Sarva Siksha Abhiyan. Module on Multiple Disabilities. http://ssa.nic.in/inclusive-education/training-module-for-resource-teachers-for-disable-

children/Module%203%20Multiple%20Disability.pdf/at_download/

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE – DSE- HDFE-: SOCIO-EMOTIONAL DEVELOPMENT: A LIFESPAN PERSPECTIVE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITE OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Socio-Emotional Development: A Lifespan Perspective	4	2	0	2	Class XII	NIL

LEARNING OBJECTIVES:

- To enable students to understand the concept and relevance of social and emotional skills.
- To provide a lifespan perspective of socio-emotional skills to the students.
- To enable students in understanding various factors promoting socio-emotional skills in humans.

LEARNING OUTCOMES:

After completion of the course, the students will be able to:

- Understand the concept and relevance of social and emotional skills.
- Get a lifespan perspective of socio-emotional skills.
- Understand various factors promoting socio-emotional skills in humans.

THEORY
(Credits 2; Hours 30)

UNIT I: Introduction to Socio-Emotional Development (8 hours)

Unit Description:

This unit focuses on making students understand the concept and importance of socio-emotional development in human beings.

Subtopics:

- Socio-Emotional Development: Concept and importance
- Critical Socio-Emotional Skills: Empathy, Managing Self and Social Relationships, Critical thinking, Conflict Resolution
- Social and Emotional Intelligence: Meaning and relevance

UNIT II: Importance of Socio-Emotional Development in Human Lifespan (12 hours)

Unit Description:

This unit focuses on providing a life-span perspective in understanding the importance of socio-emotional skills

Subtopics:

- Socio-Emotional Development and Psycho-Social theory of Development:

- Childhood years
- Adolescence
- Adulthood

UNIT III: Factors affecting Socio-Emotional Development (10 hours)
Unit Description:
This unit focusses on important factors like family, school etc. that play an important role in developing socio-emotional skills in humans

Subtopics:

- Role of Family/ Parenting Strategies
- Role of School, Teachers and Peers

PRACTICAL
(Credits 2; Hours 60)

1. Plan and document any two activities to improve socio-emotional skills in children.
2. Discuss and analyze any one standardized program for promoting Socio-Emotional Learning. Eg: Collaborative for Academic, Social and Emotional Learning (CASEL), Promoting Alternative Thinking Strategies (PATHS) etc.
3. Review a movie/documentary/video about emotional problems faced by children in school (Eg. bullying, peer pressure) and write learnings from it

ESSENTIAL READINGS:

- Goleman, D. (2005). *Emotional intelligence: Why it can matter more than IQ.* Bantam Publications
- Sapra, R. (2020). Resilience as a Significant Factor in Child and Adolescent Health Pp 179-198. In *Handbook on Child and Adolescent Behavior and Health*. Ed Antonio Araujo Goncales, Nova Science Publishers, New York
- Berk, L. E. (2017). *Development through the lifespan* (7rd edition). US: Pearson Education.
- Singh, A. (2015). *Foundation of Human development: A lifespan approach*. London: Orient Longman.

SUGGESTED READINGS:

- Burk, D.I (1996) Understanding Friendship and Social Interaction. *Childhood Education*, 282-85
- Advancing Social and Emotional Learning. CASEL.org. Retrieved from https://casel.org/
- Sapra, R. (2020). Parenting Children for Emotion Regulation and Resilience: A Review. *International Journal of Science and Research*. Volume9 Issue 5.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DSE HS 6-1: RESEARCH METHODS IN HOME SCIENCE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical		
Research Methods in Home Science	**4**	**3**	**0**	**1**	XII Pass	NIL

Learning Objectives

1. To provide students understandings about the basic concepts, approaches and methods in conducting Home Science research.
2. To enable learners to appreciate and critique the nuances of designing a research study well.
3. To sensitize students towards ethical concerns while conducting Home Science research.

Learning Outcomes

1. Demonstrate knowledge of the scientific method, purpose and approaches to research in Home Science
2. Compare and contrast quantitative and qualitative research approaches
3. Explain different types of research design and their applicability in Home Science research
4. Understand the key elements of a research process
5. Explain ethical principles, issues and procedures

THEORY
(Credits 3; Hours 45)

UNIT I: Research Purpose and Design **(10 Hours)**

This unit will deal with meaning and importance of research in various areas of Home Science. Exposure to different types of research designs and measurement in Home Science research would also be given.

- Meaning, purpose and significance of research
- Research as a scientific method
- Types of research
- Quantitative, Qualitative and mixed method approaches

- Research Designs –Experimental and Non-Experimental; Descriptive and Observational; Participatory research
- Internal and external validity of research design
- Variables, concepts and measurement in research
- Levels of measurement
- Units of analysis

UNIT II: Sampling and Research tools & techniques (15 Hours)

This unit will introduce the student to the concept of sampling and methods used to draw sample from population using examples from Home Science discipline. Students would also learn about types of data, its collection and reliability and validity concerns.

- Role of sampling in research
- Sampling techniques and their applicability, Sample size and sampling error
- Types of data: Primary and Secondary
- Tools of data collection; types, construction and administration- Interview, Questionnaire, Observation, Focus group discussion and other methods
- Validity and reliability of data collection tools

UNIT III: The Research Process (15 Hours)

This unit will elaborate upon the various steps involved in conducting and reporting researches in Home Science.

- Defining the problem, research questions, objectives, hypotheses
- Review of related literature and originality in writing
- Systematic research: concept and methodology
- Planning the research
- Identifying variables and constructing hypothesis
- Selecting appropriate research methodology and tools
- Data analysis: coding and tabulation
- Writing a research report: styles and formats
- Citation formats: in medical sciences, social sciences

UNIT IV: Values, Social Responsibility and Ethics in Research (5 Hours)

This unit will apprise the students about ethical concerns while conducting and reporting research.

- Ethical principles guiding research: from inception to completion and publication of research
- Plagiarism and Academic integrity in research: plagiarism tools and software
- Ethical issues relating to research participants and the researcher
    - Rights, dignity, privacy and safety of participants
    - Informed consent, confidentiality, anonymity of respondents, voluntary participation, harm avoidance

PRACTICAL
(Credits 1; 30 Hours)

1. Data visualization
2. Levels of Measurement

3. Types of research designs
   a. Experimental and non-experimental; Descriptive and observational
   b. Qualitative, Quantitative and mixed method
4. Sampling techniques and sample size calculation
   a. Probability sampling method
   b. Non-Probability sampling methods
5. Tools of data collection- Interview schedule, questionnaire and FGD
   - Designing/ Construction
   - Preparation of tools for ethical review
   - Pilot testing/ validity and reliability of the tool\
6. Data collection and analysis process: conducting interviews, administering questionnaire
7. Coding and tabulation of data for analysis
8. Citation formats and Plagiarism
9. Reviewing a research paper from a specific area of specialization in Home Science

ESSENTIAL READINGS

- Kerlinger F. N. and Lee, H.B. (2017). *Foundations of Behavioral Research* 4th Ed. Harcourt College Publishers.
- Kothari, C. R. (2019). *Research Methodology: Methods and Techniques*. New Age International Pvt Ltd, New Delhi.
- Kothari, C. R. (2022). *Shodh Padhati* 1st Ed. New Age International Pvt Ltd, New Delhi.
- Kumar, R. (2019) Research Methodology: A Step-by-Step Guide for Beginners. 5th Ed. Sage Publications, New Delhi.

SUGGESTED READINGS

- Bernard, H. R. (2000). *Social research methods: Qualitative and quantitative approaches.* Thousand Oaks, CA.: Sage.
- Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches.* Thousand Oaks, CA: Sage Publications.
- Davis, A. M., Treadwell, D. (2019). Introducing Communication Research: Paths of Inquiry. United Kingdom: SAGE Publications.
- Flynn, J.Z., Foster, I.M. (2009). *Research Methods for the Fashion industry.* Fairchild books, Bloomsbury publishing.
- Indian National Science Academy (INSA) (2019). *Ethics in Science Education, Research and Governance*. ISBN:978-81-939482-1-7. http://www.insaindia.res.in/pdf/EthicsBook.pdf
- Jacobsen, K. H. (2020). *Introduction to health research methods: A practical guide*. Jones & Bartlett Publishers.
- UGC (2021) *Academic Integrity and Research Quality*. New Delhi: UGC, Retrieved from https://www.ugc.ac.in/e-book/Academic%20and%20Research%20Book_WEB.pdf

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF HOME SCIENCE
Semester – IV

B.A (Prog.) with Apparel Design and Construction (ADC) as Major

Category-II

DISCIPLINE SPECIFIC CORE COURSE – DSC-7-ADC:
FASHION: DESIGN AND DEVELOPMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Fashion: Design & Development	4	2	0	2	Class XII	NIL

Learning Objectives:

- To give the learners an overview of the garment design and development process.
- To provide an understanding of the industrial practice of techpack preparation and sample development and testing.

Learning Outcomes:

After completing this course, the learner will be able to:

- Develop a garment collection using the steps of design and development process.
- Develop techpack for garment designs.
- Estimate the material requirement and prepare a cost sheet for a garment design.
- Describe the role of various types of samples used in garment manufacturing.
- Enumerate the steps in the development of proto and fit samples
- Evaluate proto samples based on various criteria
- Conduct fitting sessions for sample evaluation.

SYLLABUS OF DSC-7

THEORY
(Credits 2; Hours 30)

UNIT I: Design and Development process **5 Hours**

This unit provides an overview of design and development process in the preparation of a garment collection.

- Basic Steps in the Design process: Ideation and inspiration research, Mood board/theme board development, Design Development, Flat and technical drawings, Use of CAD software for design development, Design finalization based on feedback and improvement.

- Basic steps in the Development process: Techpack development, Sourcing, Sampling, Fit review, Design approval, Production

Unit II: Techpack Development and Cost sheet **15 Hours**

This unit apprises the learners of the Industry practice of using Techpack and cost sheet in garment making.

- Tech pack and its importance, Components of Tech pack
- Tech pack terminology
- Steps in the development of tech packs
- Estimation of fabrics, materials, supplies and production processes
- Development of Cost Sheet

Unit III: Sample Development and testing **10 Hours**

This unit imparts knowledge about the concept of sample development and testing

- Importance of sample making - Types and roles of sample
- Steps in development of prototype and fit samples, Evaluation criteria for prototype samples
- Fit - Factors influencing fit, Conducting fit sessions, Preparations for fitting, sample evaluation

PRACTICAL
(Credits 2; 60 Hours)

1. Development of design collection of four garments for selected season.
2. Development of mock tech-pack of any one design
3. Preparation of cost sheet
4. Preparation of prototype sample of any one garment.

ESSENTIAL READINGS:

- Aspelund K., (2010), *Design Process*, Fairchild Publication. USA.
- Bryant Michele W., DeMers Diane (2005), *The Spec Manual* 2nd Edition, Fairchild Books.
- Jaeil Lee, Camille Steen, (2019), *Technical Sourcebook For Apparel Designers*, Bloomsbury
- Sarkar Prasanta, (2015), *Garment Manufacturing: Processes, Practices and Technology, Online Clothing Study*
- *Tech Pack Book For Fashion: Clothing design sketchbook Journal for fashion designers* (2021), Independently published

SUGGESTED READINGS:

- Frings G., (2007), *Fashion: From Concept to Consumer* (9th Edition). Prentice Hall. USA.
- Grace Kunz, Ruth Glock, (2004), *Apparel Manufacturing: Sewn Product Analysis* (4th Edition), Pearson
- Janace E. Bubonia, (2017), *Apparel Production Terms and Processes*, Fairchild Books; 2nd edition
- Seivewright S., Sorger R, (2016), *Research and Design for Fashion*, New York: Fairchild Books
- Tain L. (2018), *Portfolio Presentation for Fashion Designers*, New York: Fairchild Books

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.A (Prog.) with Apparel Design and Construction (ADC) as Major

Category-II

DISCIPLINE SPECIFIC CORE COURSE – DSC-8-ADC: INTRODUCTION TO FASHION AND GARMENT INDUSTRY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Introduction to Fashion and Garment industry	4	3	0	1	Class XII	NIL

Learning Objectives:

- To provide an understanding of the concepts related to Fashion and Garment Industry.
- To introduce garment design concepts and their application
- To apprise the learners of the social aspects of clothing
- To provide an overview of the structure of Indian garment industry and to create an awareness of the various fashion centres of the world and their leading designers and brands.

Learning Outcomes:

After completion of the course, the students will be able to:

- Define and describe fashion related basic terms and concepts.
- Illustrate and explain the stages of a fashion cycle curve.
- Identify fashion consumers belonging to different phases of the fashion cycle.
- Describe the theories of fashion adoption.
- Explain the various sources of fashion and design inspirations.
- Explain the elements and principles of design with examples drawn from garment design.
- Explain the various theories of origin and functions of clothing.
- List the major fashion centres of the world and their leading designers and brands.
- Describe the various factors influencing the spread of fashion
- Explain the role and responsibilities of a fashion designer
- Illustrate garments or components such as necklines, sleeves, tops and collars, skirts, trousers, etc.
- Illustrate select garments on a fashion croqui using basic rendering techniques.

SYLLABUS OF DSC-8

THEORY
(Credits 3; Hours 45)

UNIT – 1: Terms and concepts related to Fashion **15 Hours**

This unit introduces the learners to the various terms and concepts related to Fashion

- Fashion terms: Fashion, Fad, Classic, Style, Haute-couture, Mass fashion, Fashion Label, Prêt-a-porter, Knockoff, Accessory, Atelier, Boutique, Avant Garde, Empire line, Season, Slow and Fast Fashion, Fashion Forecasting

- Fashion Concepts:
  - Fashion cycle
  - Consumer identification with fashion life cycle – fashion leaders, fashion followers, fashion victims, fashion laggards
  - Theories of Fashion adoption – trickle down, trickle up, trickle across
  - Factors favouring and retarding the spread of fashion
  - Sources of fashion research - printed and electronic media, web resources, historic/traditional costumes, travel, fabrics, nature, street, architecture, awareness

UNIT – 2: Design Concepts and Clothing **15 Hours**

This unit provides an understanding of the use of various elements and principles of design in garment designing. It also provides an understanding of the various functions of clothing and theories about its origin.

- Elements and principles of design and their use in creating well designed garments.
- Body Shapes and their design requirements
- Theories of origin of clothing, Functions of clothing
- Clothing Terminology

Unit - 3: Fashion and Garment Industry **15 Hours**

This unit provides an overview of the structure of Indian garment industry. It also aims to apprise the learners to the various fashion centres of the world and their leading designers and brands.

- Structure and status of the Indian Readymade Garment Industry
- Overview of the different departments of Garment Industry and their respective functions
- Role and responsibilities of a Fashion Designer
- Major fashion centers of the world and their leading designers and fashion labels/brands - Paris, Milan, Tokyo, New York, London, India

PRACTICAL
(Credits 1; Hours 30)

1. Development of flat sketches and technical drawings of various garment components, and their style variations– Necklines, Collars, Sleeves, Skirts, Pants, Dresses
2. Illustration of select garments on Fashion Croqui. Basic fabric rendering techniques.
3. Collection of garment images and Style Reading to describe various garments and their parts
4. Analysis of the use of elements and principles of design in garment design.

ESSENTIAL READINGS:

- Frings G. (2013). *Fashion-From Concept to Consumer* (9th Edition). USA: Prentice Hall Publications.
- N. Gokarneshan, (2019), *Garment Manufacturing Technology*, Abhishek Publications
- Stone E., Farnan, Sheryl A. (2023). *The Dynamics of Fashion*. New York: Fairchild Publication.
- Tate Sharon, (2006), *Inside Fashion Design*, Pearson Education India

SUGGESTED READINGS:

- Abling Bina, (2019), *Fashion Sketch Book* (7th edition), Fairchild Books
- Irina V Ivanova, (2016), *How to Draw Fashion Flats: A practical guide to fashion technical drawing (pencil and marker techniques) (Fashion Croquis)* (Volume 2) Art Design Project
- Marshall S G, et al. (2009). *Individuality in Clothing & Personal Appearance* (6th Edition). USA: Pearson Education
- Ilaria Caielli, (2022), *Beyond Fashion: Inside the Fashion Business*, Hoaki

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.A (Prog.) with Apparel Design and Construction (ADC) as Non-Major

Category-III

DISCIPLINE SPECIFIC CORE COURSE – DSC-8-ADC: INTRODUCTION TO FASHION AND GARMENT INDUSTRY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Introduction to Fashion and Garment industry	4	3	0	1	Class XII	NIL

Learning Objectives:

- To provide an understanding of the concepts related to Fashion and Garment Industry.
- To introduce garment design concepts and their application
- To apprise the learners of the social aspects of clothing
- To provide an overview of the structure of Indian garment industry and to create an awareness of the various fashion centres of the world and their leading designers and brands.

Learning Outcomes:

After completion of the course, the students will be able to:

- Define and describe fashion related basic terms and concepts.
- Illustrate and explain the stages of a fashion cycle curve.
- Identify fashion consumers belonging to different phases of the fashion cycle.
- Describe the theories of fashion adoption.
- Explain the various sources of fashion and design inspirations.
- Explain the elements and principles of design with examples drawn from garment design.
- Explain the various theories of origin and functions of clothing.
- List the major fashion centres of the world and their leading designers and brands.
- Describe the various factors influencing the spread of fashion
- Explain the role and responsibilities of a fashion designer
- Illustrate garments or components such as necklines, sleeves, tops and collars, skirts, trousers, etc.
- Illustrate select garments on a fashion croqui using basic rendering techniques.

SYLLABUS OF DSC-8

THEORY
(Credits 3; Hours 45)

UNIT – 1: Terms and concepts related to Fashion **15 Hours**

This unit introduces the learners to the various terms and concepts related to Fashion

- Fashion terms: Fashion, Fad, Classic, Style, Haute-couture, Mass fashion, Fashion Label, Prêt-a-porter, Knockoff, Accessory, Atelier, Boutique, Avant Garde, Empire line, Season, Slow and Fast Fashion, Fashion Forecasting

- Fashion Concepts:
  - Fashion cycle
  - Consumer identification with fashion life cycle – fashion leaders, fashion followers, fashion victims, fashion laggards
  - Theories of Fashion adoption – trickle down, trickle up, trickle across
  - Factors favouring and retarding the spread of fashion
  - Sources of fashion research - printed and electronic media, web resources, historic/traditional costumes, travel, fabrics, nature, street, architecture, awareness

UNIT – 2: Design Concepts and Clothing **15 Hours**

This unit provides an understanding of the use of various elements and principles of design in garment designing. It also provides an understanding of the various functions of clothing and theories about its origin.

- Elements and principles of design and their use in creating well designed garments.
- Body Shapes and their design requirements
- Theories of origin of clothing, Functions of clothing
- Clothing Terminology

UNIT - 3: Fashion and Garment Industry **15 Hours**

This unit provides an overview of the structure of Indian garment industry. It also aims to apprise the learners to the various fashion centres of the world and their leading designers and brands.

- Structure and status of the Indian Readymade Garment Industry
- Overview of the different departments of Garment Industry and their respective functions
- Role and responsibilities of a Fashion Designer
- Major fashion centers of the world and their leading designers and fashion labels/brands - Paris, Milan, Tokyo, New York, London, India

PRACTICAL
(Credits 1; Hours 30)

1. Development of flat sketches and technical drawings of various garment components, and their style variations– Necklines, Collars, Sleeves, Skirts, Pants, Dresses
2. Illustration of select garments on Fashion Croqui. Basic fabric rendering techniques.
3. Collection of garment images and Style Reading to describe various garments and their parts
4. Analysis of the use of elements and principles of design in garment design.

ESSENTIAL READINGS:

- Frings G. (2013). *Fashion-From Concept to Consumer* (9th Edition). USA: Prentice Hall Publications.
- N. Gokarneshan, (2019), *Garment Manufacturing Technology*, Abhishek Publications
- Stone E., Farnan, Sheryl A. (2023). *The Dynamics of Fashion*. New York: Fairchild Publication.
- Tate Sharon, (2006), *Inside Fashion Design*, Pearson Education India

SUGGESTED READINGS:

- Abling Bina, (2019), *Fashion Sketch Book* (7th edition), Fairchild Books
- Irina V Ivanova, (2016), *How to Draw Fashion Flats: A practical guide to fashion technical drawing (pencil and marker techniques) (Fashion Croquis)* (Volume 2) Art Design Project
- Marshall S G, et al. (2009). *Individuality in Clothing & Personal Appearance* (6th Edition). USA: Pearson Education
- Ilaria Caielli, (2022), *Beyond Fashion: Inside the Fashion Business*, Hoaki

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF HOME SCIENCE
SEMESTER – V

B.A (Prog.) with Apparel Design and Construction (ADC) as Major

Category-II

DISCIPLINE SPECIFIC CORE COURSE – DSC-9-ADC:
APPAREL QUALITY MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Apparel Quality Management	4	3	1	0	Class XII	NIL

Learning Objectives:

- To introduce the learners to the concept of Quality and Quality management in the apparel industry.
- To provide an understanding of quality control practices in apparel manufacturing in the pre-production, production and post – production stages.

Learning Outcomes:

After completing this course, the learner will be able to:

- Describe the dimensions of quality and components of quality management.
- Identify and differentiate the various quality standards applicable to the apparel industry.
- Describe the process of inspection and testing of the raw material at the pre-production stage of apparel manufacturing.
- Identify and explain the various pattern and marker defects, spreading defects, cutting defects, sewing and seam defects, pressing and finishing defects
- Correctly measure ready garments such as shirt, trousers, t-shirt, skirt
- Describe the common garment tests for checking its functionality and durability
- Evaluate the ready garment for it overall appearance, workmanship and against the specific requirements of the buyer/ client

SYLLABUS OF DSC-9

THEORY
(Credits 3; Hours 45)

UNIT I: Introduction to Quality and Quality Management **5 Hours**

This unit provides an understanding of the concepts relating to quality and quality management in the apparel industry. It also aims to apprise the learners of the various quality standards and specifications applicable to the garment industry.

- Quality and Quality Management – Definition and importance, Dimensions of Quality, Components of Quality management – Quality Planning, Quality Assurance, Quality Control
- Quality Standards and Specifications – Importance and types, National and International Standards

UNIT II: Quality Control in Apparel Manufacturing: Pre-production Stage 10 Hours

This unit provides basic understanding of the quality control practices in apparel manufacturing in the pre-production stages.

- Fabric Inspection and Testing – Inspection machines/Equipment, Grading of fabric - 4 point and 10 point system, Fabric Testing – Need and Importance, Physical Tests, Color fastness tests
- Accessories Inspection – Interlining, Sewing thread, Zipper, Buttons

UNIT III: Quality Control in Apparel Manufacturing: Production Stage 15 Hours

This unit provides basic understanding of the quality control practices in apparel manufacturing in the production stages.

- Pattern and marker defects, Spreading defects, Cutting defects, sewing and seam defects, Pressing and finishing defects
- Key Inline checkpoints for standard Garment Types

UNIT IV: Quality Control in Apparel Manufacturing: Post-production Stage 15 Hours

This unit provides basic understanding of the quality control practices in apparel manufacturing in the post-production stages.

- Garment Measuring - Shirt, Trouser, T-Shirt, and Skirt
- Garment Testing for functionality, durability, safety
- Evaluation on the basis of overall appearance, workmanship, specific requirements of the buyer/ client
- Sampling Plans, AQL

TUTORIALS
(Credits 1; Hours 15)

Tutorial classes will involve:

1. Q&A sessions/ Group discussions/ Problem Solving exercises with the Students
2. Presentation of project/ research activity by students
3. Any other scholastic work related to application of conceptual understanding of the subject.
4. Evaluation and feedback by the teacher

ESSENTIAL READINGS:

- B. Purushothama, (2021), *Handbook of Managing Apparel Production and Quality*, Woodhead Publishing India Pvt Ltd
- Pradip V. Mehta, (2012), *Quality Management Handbook For The Apparel Industry*, New Age International Private Limited
- Sara J. Kadolph, (2007), *Quality Assurance for Textiles and Apparel*, Fairchild Books

SUGGESTED READINGS:

- Janace E. Bubonia, (2014), Apparel Quality: A Guide to Evaluating Sewn Products, Fairchild Books
- Mehta & Bharadwaj, (1998), *Managing Quality in Apparel Industry*, New Age Publisher, Delhi
- J.E. Booth, (1996), *Principles of Textile Testing*, CBS Publishers & Distributors Pvt. Ltd.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – DSC-10-ADC: GARMENT PRODUCTION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Garment Production	4	3	1	0	Class XII	NIL

Learning Objectives:

- To provide an overview of the functions and processes of various departments of a Garment production unit.
- To create an understanding of the garment production systems and the role of time and motion studies in productivity.

Learning Outcomes:

After completion of the course, the students will be able to:

- Describe the Steps and strategies involved in the sourcing of fabrics and trims for garment production.
- Explain the role of Marker making, Marker Modes, Marker efficiency in garment production.
- Explain the processes involved in spreading, layout and cutting
- Identify and describe the function of general and specialised sewing machines, types of machine beds and related seams and stitches
- Explain the processes used in finishing and packing department.

- Compare and evaluate the alternative systems of production.
- Explain the importance of time and motion studies to improve productivity in garment production.

SYLLABUS OF DSC-10

THEORY
(Credits 3; Hours 45)

UNIT – 1: Sourcing of fabrics and trims **10 Hours**

This unit aims at providing a basic understanding of the steps involved in sourcing of raw materials required for garment production.

- Role and Functions of sourcing department
- Steps and strategies of sourcing – Commercial and technical specification of the required fabrics and trims, types of sources, finalisation of vendors and order placement

UNIT 2: Spreading, Marker making and Cutting **10 Hours**

This unit provides an understanding of the various equipment and processes used in marker making, spreading, layout and cutting room.

- Marker Making – Marker making and fabric consumption, Marker Modes, Marker efficiency
- Spreading and Layout – Spreading methods, Spreading Machines, Splicing, Fabric (Symmetrical and asymmetrical), Types of Lay
- Cutting Room – Cutting room workflow, Cut order planning, Cutting equipment, Fabric Reconciliation

UNIT – 3: Sewing, Finishing and Packing department **15 Hours**

This unit provides an understanding of the various equipment and processes used in sewing, finishing and packing department.

- Sewing Room – Functions of sewing department, General and specialised sewing machines, Seams and stitches
- Finishing Department - Functions of finishing department, finishing equipment, types of pressing, washing and dry cleaning, Stain and dry removal, Types of folds, Folding equipment and accessories
- Packing department – Packing and packing material, types of packing, packing list

UNIT 4 – Production Systems and Productivity **10 Hours**

This unit introduces the concept of Production systems and time and motion studies in garment production.

- Production systems: Make through system, Section or process system, Whole Garment Production System, Assembly Line System, Bundle system and PBS, Straight line or synchro, Unit production system, Modular Production System
- Role of time and motion study in the productivity of garment production.

TUTORIALS
(Credits 1; Hours 15)

Tutorial classes will involve:

1. Q&A sessions/ Group discussions/ Problem Solving exercises with the Students
2. Presentation of project/ research activity by students
3. Any other scholastic work related to application of conceptual understanding of the subject.
4. Evaluation and feedback by the teacher

ESSENTIAL READINGS:

- N. Gokarneshan, (2019), *Garment Manufacturing Technology*, Abhishek Publications
- Gerry Cooklin, Steven George Hayes, John McLoughlin, (2006), *Introduction to Clothing Manufacture*, Wiley-Blackwell
- Shukla Atul, Tyagi Dharmendra, (2023), *Productivity Improvement in Garment Manufacturing Process*, LAP Lambert Academic Publishing
- T Karthik, (2016), *Apparel Manufacturing Technology*, Taylor and Francis

SUGGESTED READINGS:

- Eiri Staff, (2007), *Hand Book of Garments Manufacturing Technology*, Educa Books
- Jaeil Lee, Camille Steen, (2019), *Technical Sourcebook For Apparel Designers*, Bloomsbury
- Jung Ha-Brookshire, (2017), *Global Sourcing in the Textile and Apparel Industry*, Bloomsbury Publishing Plc
- Sarkar Prasanta, (2015), *Garment Manufacturing: Processes, Practices and Technology*, Online Clothing Study

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.A (Prog.) with Apparel Design and Construction (ADC) as Non-Major

Category-III

DISCIPLINE SPECIFIC CORE COURSE – DSC-10-ADC: GARMENT PRODUCTION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Garment Production	4	3	1	0	Class XII	NIL

Learning Objectives:

- To provide an overview of the functions and processes of various departments of a Garment production unit.
- To create an understanding of the garment production systems and the role of time and motion studies in productivity.

Learning Outcomes:

After completion of the course, the students will be able to:

- Describe the Steps and strategies involved in the sourcing of fabrics and trims for garment production.
- Explain the role of Marker making, Marker Modes, Marker efficiency in garment production.
- Explain the processes involved in spreading, layout and cutting
- Identify and describe the function of general and specialised sewing machines, types of machine beds and related seams and stitches
- Explain the processes used in finishing and packing department.
- Compare and evaluate the alternative systems of production.
- Explain the importance of time and motion studies to improve productivity in garment production.

SYLLABUS OF DSC-10

THEORY
(Credits 3; Hours 45)

UNIT – 1: Sourcing of fabrics and trims **10 Hours**

This unit aims at providing a basic understanding of the steps involved in sourcing of raw materials required for garment production.

- Role and Functions of sourcing department
- Steps and strategies of sourcing – Commercial and technical specification of the required fabrics and trims, types of sources, finalisation of vendors and order placement

UNIT 2: Spreading, Marker making and Cutting **10 Hours**

This unit provides an understanding of the various equipment and processes used in marker making, spreading, layout and cutting room.

- Marker Making – Marker making and fabric consumption, Marker Modes, Marker efficiency
- Spreading and Layout – Spreading methods, Spreading Machines, Splicing, Fabric (Symmetrical and asymmetrical), Types of Lay
- Cutting Room – Cutting room workflow, Cut order planning, Cutting equipment, Fabric Reconciliation

UNIT – 3: Sewing, Finishing and Packing department **15 Hours**

This unit provides an understanding of the various equipment and processes used in sewing, finishing and packing department.

- Sewing Room – Functions of sewing department, General and specialised sewing machines, Seams and stitches
- Finishing Department - Functions of finishing department, finishing equipment, types of pressing, washing and dry cleaning, Stain and dry removal, Types of folds, Folding equipment and accessories
- Packing department – Packing and packing material, types of packing, packing list

UNIT 4 – Production Systems and Productivity **10 Hours**

This unit introduces the concept of Production systems and time and motion studies in garment production.

- Production systems: Make through system, Section or process system, Whole Garment Production System, Assembly Line System, Bundle system and PBS, Straight line or synchro, Unit production system, Modular Production System
- Role of time and motion study in the productivity of garment production.

TUTORIALS
(Credits 1; Hours 15)

Tutorial classes will involve:

1. Q&A sessions/ Group discussions/ Problem Solving exercises with the Students
2. Presentation of project/ research activity by students
3. Any other scholastic work related to application of conceptual understanding of the subject.
4. Evaluation and feedback by the teacher

ESSENTIAL READINGS:

- N. Gokarneshan, (2019), *Garment Manufacturing Technology*, Abhishek Publications
- Gerry Cooklin, Steven George Hayes, John McLoughlin, (2006), *Introduction to Clothing Manufacture*, Wiley-Blackwell
- Shukla Atul, Tyagi Dharmendra, (2023), *Productivity Improvement in Garment Manufacturing Process*, LAP Lambert Academic Publishing
- T Karthik, (2016), *Apparel Manufacturing Technology*, Taylor and Francis

SUGGESTED READINGS:

- Eiri Staff, (2007), *Hand Book of Garments Manufacturing Technology*, Educa Books
- Jaeil Lee, Camille Steen, (2019), *Technical Sourcebook For Apparel Designers*, Bloomsbury
- Jung Ha-Brookshire, (2017), *Global Sourcing in the Textile and Apparel Industry*, Bloomsbury Publishing Plc
- Sarkar Prasanta, (2015), *Garment Manufacturing: Processes, Practices and Technology*, Online Clothing Study

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF HOME SCIENCE
Semester – VI

BA (Prog.) with Apparel Design and Construction (ADC) as Major

Category-II

DISCIPLINE SPECIFIC CORE COURSE – DSC-11-ADC:
ADVANCED PATTERN MAKING AND CLOTHING CONSTRUCTION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Advanced Pattern Making and Clothing Construction	4	2	0	2	Class XII	Pass in DSC-4-ADC Basic Pattern Making and Clothing Construction

Learning Objectives:

- To enhance the knowledge and skills of learners in advanced concepts related to Pattern Making and Clothing Construction
- To familiarise the students about the concepts related to the handling of extra special fabrics
- To develop pattern making and construction skills for various advanced garments and their components
- To impart skills for developing design and size variations through draping and Grading

Learning Outcomes:

After completing this course, the learner will be able to:

- Apply draping principles to develop patterns
- Use grading techniques to develop different pattern sizes.
- Develop paper patterns for men and women.
- Describe the 2D and 3D applications of CAD software in Garment designing and pattern development
- List the sequence of the Garment Assembly process
- Evaluate the fit of garment and its components and carry out pattern alteration as required.

SYLLABUS OF DSC-11

THEORY
(Credits 2; Hours 30)

UNIT I: Garment Fit and Role of CAD in Designing and Pattern development 10 Hours

This unit provides an understanding of the advanced techniques of pattern making. It also introduces the learners to the use of CAD in pattern development.

- Garment fit: Evaluating fit of garment and its components, standards and methods of pattern alteration, pattern alterations for fitting problems
- Introduction to the role of Computer Aided Designing (CAD): 2D and 3D applications of CAD software in Garment designing and pattern development

UNIT II: Introduction to Draping and Pattern Grading 10 Hours

This unit introduces the learners to the concepts of draping and pattern grading.

- Draping: Draping Technique, Principles of Draping, Tools and dress forms used for Draping, Fabric preparation, Demonstration of draping technique, Converting draped patterns to commercial patterns on paper
- Pattern Grading: Definition, features, terminology, Principles and methods, Demonstration of Grading

UNIT III: Handling of special fabrics and Garment Assembly 10 Hours

This unit provides an understanding of handling advanced special fabrics. It also helps to understand the sequence of garment assembly.

- Handling of fabrics with reference to designing, layout, marking, cutting, stitching, needle sizes, stitch sizes, threads used, seams and other special considerations – Brocade, Corduroy, Denim, Embroidered fabric, Net and tulle, Delicate fabrics, Stretch fabric, Terry cloth, Fleece.
- Garment Assembly: Steps in assembling Shirt, Skirt

PRACTICAL
(Credits 2; Hours 60)

1. Pattern Making:
    - Dart manipulation for contouring
    - Advanced design variations of garment components

2. Garment Construction:
    - Reversible Garment
    - Evening/ Formal Wear

ESSENTIAL READINGS:

- Abling Bina, Maggio Kathleen, (2019), *Integrating Draping, Drafting and Drawing*, Fairchild Books
- Armstrong, H.J., (2009), *Pattern Making for Fashion Design*, Harper Collins Publishers Inc., New York.
- Kim Injoo, Myoung Ok Kim, Zachary Hoh, (2022), *Apparel Design through Patternmaking*, Fairchild Books

- Liechty Elizabeth, Rasband Judith, Pottberg-Steineckert Della, (2016), *Fitting and Pattern Alteration: A Multi-Method Approach to the Art of Style Selection, Fitting, and Alteration*, Fairchild Books
- Shaeffer Claire, (2003), *Sew any Fabric*, Krause Publications
- Theresa Parker, (2012), *Draping for Fashion Design*, The Crowood Press Ltd

SUGGESTED READINGS:

- Gerry Cooklin, (2008), *Pattern Grading for Women's Clothes*, OM Books
- Jennifer Lynne Matthews-Fairbanks, Dawn Marie Forsyth, (2018), *Pattern Design: Fundamentals: Construction and Pattern Making for Fashion Design*, Create Space Independent Publishing Platform
- Kathy K. Mullet, (2015), *Concepts of Pattern Grading: Techniques for Manual and Computer Grading*, Fairchild
- Macdonald Nora M., (2009), *Principles of Flat-Pattern Design*, Fairchild Books, New York.
- Sarah Veblen, (2012), *The Complete Photo Guide to Perfect Fitting*, Quarry Books
- Mahon Joi, (2022), *Ultimate Illustrated Guide to Sewing Clothes: A Complete Course on Making Clothing for Fit and Fashion*, Landauer Publishing

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – DSC-12-ADC: APPAREL MARKETING AND MERCHANDISING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Apparel Marketing & Merchandising	4	3	0	1	Class XII	NIL

Learning Objectives:

- To introduce the learners to the principles of apparel marketing.
- To create an understanding of the fashion trend forecasting process.
- To impart basic knowledge relating to apparel merchandising in garment industry and retail.

Learning Outcomes:

After completion of the course, the students will be able to:

- Explain the role and application of the 4 Ps in apparel marketing
- List and explain the importance and methods of market segmentation, targeting and positioning
- Explain the process of fashion forecasting and compare qualitative and quantitative methods of forecasting.
- Describe the role and functions of a merchandiser in garment industry and retail.

SYLLABUS OF DSC-12

THEORY
(Credits 3; Hours 45)

UNIT – 1: Fundamentals of Apparel Marketing — 20 Hours

This unit introduces the students to the concepts of marketing as applied to apparels

- Marketing Concept, Marketing Mix - 4Ps of Marketing
- Product - Product classification, Product mix, product life cycle and marketing strategies; Branding and brand attributes
- Price - Factors affecting price, Methods of price fixation
- Place - Channels of distribution, Factors affecting Channels of distribution
- Promotion – Advertising, Publicity, Personal selling, Sales promotion
- Market: Segmentation, Targeting & Positioning, Advantages and types of market segmentation

UNIT 2: Fashion Trend Forecasting — 10 Hours

This unit imparts basic knowledge of fashion trend forecasting.

- Function and process of Forecasting
- Long term and short term forecasting
- Qualitative and Quantitative forecasting
- Sources of Fashion Forecasting Information

UNIT – 3: Basics of Apparel Merchandising — 15 Hours

This unit provides an understanding of the role and functions of a merchandiser in garment industry and retail

- Concept of merchandising
- Merchandising Process
- Apparel retail – Meaning, retail formats
- Role of a merchandiser in garment Industry
- Role of a merchandiser in apparel retail
- Merchandise Category-Staple, Fashion & Seasonal; Assortment Planning

PRACTICAL
(Credits 1; Hours 30)

1. Study of Fashion forecast: Development of mood boards & theme boards depicting colour, silhouettes & detailing, material & textures, print & graphics, accessories
2. Case study of an apparel brand- signage, logo, tagline, positioning, target market, product mix
3. Comparative survey of Apparel Retail stores
4. Development of Promotional material – Brand, Logo, Visiting card, Print advertisement, Shopping bag

ESSENTIAL READINGS:

- Kotler P and Armstrong G. (2017). *Principles of Marketing* (17th Edition). New Delhi: Prentice Hall of India
- Krishnakumar, M., (2010), *Apparel Merchandising, An integrated Approach*, Abishek Publications
- Mary G. Wolfe, (2017), *Fashion Marketing & Merchandising*, Goodheart-Willcox Pub
- Stone Elaine, Farnan Sheryl A., (2023), *The Dynamics of Fashion*, Fairchild Books
- V. Ramesh Babu (Author), A. Arunraj, (2019), *Fashion Marketing Management*, Woodhead Publishing India Pvt Ltd

SUGGESTED READINGS:

- Harriet Posner, (2015), *Marketing Fashion*, Laurence King Publishing
- Olga Mitterfellner, (2019), *Fashion Marketing and Communication: Theory and Practice Across the Fashion Industry*, Routledge
- Wendy K. Bendoni, (2017), *Social Media for Fashion Marketing: Storytelling in a Digital World*, Fairchild Books

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.A (Prog.) with Apparel Design and Construction (ADC) as Non-Major

Category-III

DISCIPLINE SPECIFIC CORE COURSE – DSC-12-ADC: APPAREL MARKETING AND MERCHANDISING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Apparel Marketing & Merchandising	4	3	0	1	Class XII	NIL

Learning Objectives:

- To introduce the learners to the principles of apparel marketing.
- To create an understanding of the fashion trend forecasting process.
- To impart basic knowledge relating to apparel merchandising in garment industry and retail.

Learning Outcomes:

After completion of the course, the students will be able to:

- Explain the role and application of the 4 Ps in apparel marketing
- List and explain the importance and methods of market segmentation, targeting and positioning
- Explain the process of fashion forecasting and compare qualitative and quantitative methods of forecasting.

- Describe the role and functions of a merchandiser in garment industry and retail.

SYLLABUS OF DSC-12

THEORY
(Credits 3; Hours 45)

UNIT – 1: Fundamentals of Apparel Marketing 20 Hours

This unit introduces the students to the concepts of marketing as applied to apparels

- Marketing Concept, Marketing Mix - 4Ps of Marketing
- Product - Product classification, Product mix, product life cycle and marketing strategies; Branding and brand attributes
- Price - Factors affecting price, Methods of price fixation
- Place - Channels of distribution, Factors affecting Channels of distribution
- Promotion – Advertising, Publicity, Personal selling, Sales promotion
- Market: Segmentation, Targeting & Positioning, Advantages and types of market segmentation

UNIT 2: Fashion Trend Forecasting 10 Hours

This unit imparts basic knowledge of fashion trend forecasting.

- Function and process of Forecasting
- Long term and short term forecasting
- Qualitative and Quantitative forecasting
- Sources of Fashion Forecasting Information

UNIT – 3: Basics of Apparel Merchandising 15 Hours

This unit provides an understanding of the role and functions of a merchandiser in garment industry and retail

- Concept of merchandising
- Merchandising Process
- Apparel retail – Meaning, retail formats
- Role of a merchandiser in garment Industry
- Role of a merchandiser in apparel retail
- Merchandise Category-Staple, Fashion & Seasonal; Assortment Planning

PRACTICAL
(Credits 1; Hours 30)

1. Study of Fashion forecast: Development of mood boards & theme boards depicting colour, silhouettes & detailing, material & textures, print & graphics, accessories
2. Case study of an apparel brand- signage, logo, tagline, positioning, target market, product mix
3. Comparative survey of Apparel Retail stores
4. Development of Promotional material – Brand, Logo, Visiting card, Print advertisement, Shopping bag

ESSENTIAL READINGS:

- Kotler P and Armstrong G. (2017). *Principles of Marketing* (17th Edition). New Delhi: Prentice Hall of India
- Krishnakumar, M., (2010), *Apparel Merchandising, An integrated Approach*, Abishek Publications
- Mary G. Wolfe, (2017), *Fashion Marketing & Merchandising*, Goodheart-Willcox Pub
- Stone Elaine, Farnan Sheryl A., (2023), *The Dynamics of Fashion*, Fairchild Books
- V. Ramesh Babu (Author), A. Arunraj, (2019), *Fashion Marketing Management*, Woodhead Publishing India Pvt Ltd

SUGGESTED READINGS:

- Harriet Posner, (2015), *Marketing Fashion*, Laurence King Publishing
- Olga Mitterfellner, (2019), *Fashion Marketing and Communication: Theory and Practice Across the Fashion Industry*, Routledge
- Wendy K. Bendoni, (2017), *Social Media for Fashion Marketing: Storytelling in a Digital World*, Fairchild Books

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF HOME SCIENCE

B.A (Prog.) with Apparel Design & Construction (ADC)

Pool of Discipline Specific Elective Courses (DSE) for Odd Semester

B.A (Prog.) with Apparel Design and Construction (ADC)

Category-V

DISCIPLINE SPECIFIC ELECTIVE COURSE
DSE-1-ADC: INDIAN TEXTILES CRAFTS

Credit Distribution, Eligibility and Pre-requisites of the Course

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Indian Textile Crafts	4	3	1	0	Class XII Pass	NIL

Learning Objectives:

To create an understanding and appreciation of the various traditional Indian textile crafts such as needle crafts, dyeing and printing techniques, and weaving of sarees and shawls.

Learning Outcomes:

After completing this course, the learner will be able to:

- Explain briefly the origin, history, speciality and popularity of the needle crafts of India such as Toda, Chamba Rumal, Lambada, Sindhi, Suf embroidery of Kutchh
- Explain briefly the origin, history, speciality and popularity of the dyed, painted and printed textiles of India such as Kalamkari, Thangka, Pichhwai, Ajrakh, Dabu
- Explain briefly the origin, history, speciality and popularity of the woven saris and shawls of India such as Brocades, Chanderi and Maheshwari, Kota, Paithani, Kanjeevarams, Kasavu, Kashmir Shawl, Kullu Shawl, Wraps of North-east
- List the specific regions of the country having a concentration of artisans practising different types of traditional textile crafts.
- Identify the various types of traditional needle craft, traditional dyeing, painting and printing techniques and traditional woven saris and shawls of India.

SYLLABUS OF DSE-1-ADC

THEORY
(Credits 3; Hours 45)

Unit I: Traditional Needle-Craft Techniques **10 Hours**

This unit provides an understanding of the origin of technique and design with reference to colours, stitches and motifs of different embroidered textiles.

- Study of traditional Indian needle craft techniques with reference to History, production centres, techniques, design, Motifs, Color combination, Type of thread used, Stitches: Toda, Chamba Rumal, Lambada, Sindhi, Suf embroidery of Kutchh

Unit II: Dyed, Painted and Printed Textiles **15 Hours**

This unit provides basic knowledge of resist dyeing textile techniques of India in terms of process, production centres, colours, patterns and layout

- Study of Indian Dyed, painted and printed textiles with reference to History, production centres, techniques, designs and colours: Kalamkari, Thangka, Pichhwai, Ajrakh, Dabu

Unit III: Woven Saris and Shawls of India **20 Hours**

This unit provides basic knowledge of the origin of technique and design with reference to colours, motifs, layouts of different hand-woven saris of India

- Study of woven saris and shawls of India with reference to History, production centres, techniques, motifs, designs and colours: Brocades, Chanderi and Maheshwari, Kota, Paithani, Kanjeevarams, Kasavu, Kashmir Shawl, Kullu Shawl, Wraps of North-east

TUTORIALS
(Credits 1; Hours 15)

Tutorial classes will involve:

1. Q&A sessions/ Group discussions/ Problem Solving exercises with the Students
2. Presentation of project/ research activity by students
3. Any other scholastic work related to application of conceptual understanding of the subject.
4. Evaluation and feedback by the teacher

ESSENTIAL READINGS

- Dhamija J., (1989), *Hand-woven fabrics of India,* Ahmedabad: Mapin Publishing Pvt ltd
- John Gillow, Nicholas Barnard, (2014), *Indian Textiles*, Om books International, New Delhi.
- Naik S, (1996), *Fabric Art- Heritage of India,* Abhinav Publications
- Shailaja D. Naik, (1996), *Traditional Embroideries of India*, A.P.H. Publishing Corporation, New Delhi

SUGGESTED READINGS

- Chattopadhaya, K.D. (1995), *Handicrafts of India,* New Delhi: Wiley Eastern Limited Das
- Neumann Helmut, Neumann Heidi, Crill Rosemary, (2020), *Textiles of India*, Prestel
- Sheila Paine, (1990), *Embroidered Textiles*, Thames and Hudson Ltd.
- Shah Archana, (2021), *Crafting a Future: Stories of Indian Textiles and Sustainable Practices*, Niyogi Books

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.A (Prog.) with Apparel Design and Construction (ADC)

Category-V

DISCIPLINE SPECIFIC ELECTIVE COURSE
DSE-3-ADC: APPAREL RETAIL AND E-TAIL

Credit Distribution, Eligibility and Pre-requisites of the Course

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Apparel Retail and E-tail	4	3	1	0	Class XII Pass	NIL

Learning Objectives:

- To provide an overview of Indian apparel retail and e-tail scenario.
- To create an understanding of basic marketing and operations of apparel retail and e-tail stores.

Learning Outcomes:

After completing this course, the learner will be able to:

- List the important structural changes and emerging trends in the Indian apparel retail sector.
- Describe the unique aspects of apparel retail and e-tail
- Classify the different types of retail outlets.
- Compare the 4 Ps and 4Cs of retail and e-tail marketing mix
- Describe the main operational processes of retail and e-tail stores
- Compare the strengths & weaknesses of apparel retail &e-tail from the vendor and consumer points of view
- Identify the different types of e-tailing business models

SYLLABUS OF DSE-3-ADC

THEORY
(Credits 3; Hours 45)

UNIT I: Overview of Apparel Retailing **5 Hours**

This unit provides an overview of the Indian apparel retail scenario. It also provides classification of retail formats and stores.

- Overview of Indian apparel retail – Definition of Retail & Retailer, Special features of apparel retailing, Organised and unorganized retailing, Retail evolution in India: structural changes and emerging trends
- Strengths & weaknesses of apparel retail from vendor and customer points of view

- Classification of Retail Formats/ Stores – Types of Formats (in-store and non-store), Type of Stores (ownership and merchandise based)

UNIT II: Retail Marketing and Operations 10 Hours

This unit provides basic understanding of the concepts related to marketing and operation of retail stores.

- 4Ps of marketing - Product – merchandise assortment and inventory management; Place – Store Management, store location, Floor layout; Promotion – in-store and off-store promotion and advertising; Pricing strategy
- Retail Store Operations - Store Management (Store procedures, premises maintenance, Legal compliance); Customer management (Approaching and assisting the customer, Transaction flow system, Handling returns and exchanges, Following up on sales, Dealing with customers' grievances)

UNIT III: Overview of Apparel E-tailing 15 Hours

This unit provides an overview of the Indian apparel e-tail scenario. It also introduces the learners to categories of e-business models.

- Overview of Indian apparel e-tail - Indian apparel e-tail scenario, Uniqueness of apparel in e-tail, Steps involved in e-tailing, Types of fashion e-tail outlets
- Strengths & weaknesses of apparel e-tail from vendor and customer points of view
- Types of e-business: B2B, B2C, C2C, C2B, B2G, G2B, G2C
- Broad categories of e-commerce implementation strategies - Retail Model, Brokerage Model, Mall Model, Drop Shipping Model, Warehousing and Whole selling Model, Private Labelling, and White Labelling Models
- E-commerce revenue models: advertising, affiliate, Transaction Fee Revenue, sales revenue

UNIT IV: E-tail Marketing and Operations 15 Hours

This unit provides basic understanding of the concepts related to marketing and operation of e-tail stores.

- 4Ps Vs 4Cs of e-tail marketing mix
- E-commerce store-fronts
- Essentials of e-tail operations - Customer acquisition, supply-chain and delivery, Pricing strategy, customer service, returns and refunds, financial transaction, legal compliance, data privacy and security

TUTORIALS
(Credits 1; Hours 15)

Tutorial classes will involve:

1. Q&A sessions/ Group discussions/ Problem Solving exercises with the Students
2. Presentation of project/ research activity by students
3. Any other scholastic work related to application of conceptual understanding of the subject.
4. Evaluation and feedback by the teacher

ESSENTIAL READINGS:

- Joseph P. T., (2019), *E-Commerce: An Indian Perspective*, New Delhi: PHI Learning
- Levy Michael, Weitz Barton A., Grewal Dhruv, (2021), *Retailing Management.* US: Irwin Publishers
- McMahon John, (2017), *E-commerce A Beginners Guide to e-commerce*, Createspace Independent Publishing Platform
- Whiteley D. (2017). *E-Commerce: Strategy, Technologies and Applications*. New York: McGraw Hill Education

SUGGESTED READINGS:

- Dunn Patrick, Lusch Robert, Griffith David A., (2002), *Retailing,* USA: Harcourt College Publishers
- Chaffey D. (2013). *E-Business and E-Commerce Management: Strategy, Implementation and Practice* (5th edition). New Delhi: Pearson Education India
- Laudon C., Traver C. (2018). *E-Commerce 13th Edition.* Pearson

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.A (Prog.) with Apparel Design and Construction (ADC)

Category-V

DISCIPLINE SPECIFIC ELECTIVE COURSE
DSE-5-ADC: FASHION COMMUNICATION AND MEDIA

Credit Distribution, Eligibility and Pre-requisites of the Course

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Fashion Communication and Media	4	2	0	2	Class XII Pass	NIL

Learning Objectives:

To provide an understanding of the different types of media used in Fashion communication

Learning Outcomes:

After completing this course, the learner will be able to:

- Describe the social aspect of clothing
- List and explain the 7Cs of communication
- Compare the characteristics of different types of media
- Describe the nature and application of carious elements of fashion communication

SYLLABUS OF DSE-5-ADC

THEORY
(Credits 2; Hours 30)

UNIT I: Concepts of Fashion and Communication **5 Hours**

This unit provides an overview of the fashion concept relevant to media communication.

- Social aspects of Fashion and clothing – Communication through clothing
- Communication – Function and types of communication
- 7Cs of Communication

UNIT II: Concepts related to Media **5 Hours**

This unit provides understanding of the importance and types of communication and media

- Characteristics, significance and types of print, electronic and web based media
- Importance of media in fashion industry

UNIT III: Elements of Fashion Communication **20 Hours**

This unit provides an understanding of the elements of fashion communication and related aspects.

- Importance, impact, types, methods and tools, and related professions:
    - Fashion Journalism
    - Fashion Photography
    - Fashion Broadcasting and Fashion Films
    - Fashion Visual Merchandising
    - Fashion Styling
    - Fashion Advertising
    - Fashion Events
    - Fashion Blogging and Vlogging
    - Graphic Design for Fashion

PRACTICAL
(Credits 2; 60 Hours)

1. Preparation of an article/Blog for publication in print media/ web media
2. Creation of a Video Blog of a fashion event/ news
3. Study of editorial photography of a fashion magazine
4. Development of print and web advertisement layout for selected fashion brand.
5. Comparative survey of window displays of fashion stores
6. Preparation of a press release for a fashion event
7. Content creation for Social Media

ESSENTIAL READINGS:

- Guntasha K. Tulsi, Nidhi Madan, (2022), *Media and Communication: A Handbook of Students*, Worldview Publications
- Jay, Phyllida (2015) *Fashion India*, Thames and Hudson, London.
- Lascity Myles Ethan, (2021), *Communicating Fashion: Clothing, Culture, and Media*, Bloomsbury Visual Arts

SUGGESTED READING:

- Anand, S. & Kumar, A. (2016). *Dynamics of Human Communication*. New Delhi: Orient Black Swan. ISBN: 9788125063254
- Greenwood, G. L. (2012) *Fashion Marketing Communications,* John Wiley and Sons
- Jade, L. (2012) *Fashion Photography 101, A Complete Course for the New Fashion Photographers,* Hachette UK

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF HOME SCIENCE

B.A (Prog.) with Apparel Design & Construction (ADC)
Pool of Discipline Specific Elective Courses (DSE) for Even Semester
Category-V

DISCIPLINE SPECIFIC ELECTIVE COURSE
DSE-2-ADC: FASHION EVENT MANAGEMENT

Credit Distribution, Eligibility and Pre-requisites of the Course

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Fashion Event Management	4	3	1	0	Class XII Pass	NIL

Learning Objectives:

- To create an understanding of the different types of fashion events and the planning required for their successful organisation.
- To familiarise the students with the various practical steps involved in the organisation of fashion events and their proper coordination
- To develop practical knowledge of the administrative, designing, planning, marketing, operational and risk management aspects of fashion events through project work.

Learning Outcomes:

After completing this course, the learner will be able to:

- List the types and components of fashion events
- Create an initial event plan covering theme, duration, target audience and budget
- Prepare a checklist for venue related activities and their management
- Describe the steps required for successfully staging the fashion event
- Explain the process of marketing the event and mobilising sponsorships
- State the legal compliance and safety requirements
- Describe the role of themes, target audience and media communication in successful fashion shows
- List the logistics arrangements and personnel requirements of a fashion show
- Prepare a checklist of the organisational requirements of a fashion show

SYLLABUS OF DSE-2-ADC

THEORY
(Credits 3; Hours 45)

UNIT I: Understanding and Planning Fashion Events **10 Hours**

This unit introduces the students to the types of fashion events and their planning requirements.

- Types, categories and Principles of Event Management

- Types of fashion events – fashion show, fairs & trade show,product launch
- Role of an event coordinator - Administration, Design, Marketing, Operations, Risk
- Creating an event plan
- Initial Planning Requirements: Creating themes, targeting the audience /vendors, Timing the event, Finding a venue, Guest lists and Invitations, Team organisation, preparing duty charts, Budget estimation, seeking sponsorships

UNIT II: Designing & Executing Fashion Show 20 Hours

This unit creates an understanding of the various steps in the organisation of fashion shows.

- Venue requirements: Stage design, Seating plan, Lighting and allied audio-visual effects, Programme Booklet, Catering arrangements, Progressmonitoring through checklists
- Catwalk Presentation Requirements: Merchandise selection, Models selection, Music andchoreography, Final show sequence and rehearsals, Fitting sessions, Dressing area arrangements, Commentary requirements, Closing and striking the show

UNIT III: Marketing & Managing Fashion events 15 Hours

This unit helps in understanding the various aspects related to promoting, managing and analysing fashion events

- Creating a pre and post-event promotion plan; preparing press release and media kit
- Post Show Evaluation
- Ensuring Legal Compliance, Safety & Security: Licenses and permissions to be obtained, Risk Management for prevention of hazards, Security for people and merchandise

TUTORIALS
(Credits 1; Hours 15)

Tutorial classes will involve:

1. Q&A sessions/ Group discussions/ Problem Solving exercises with the Students
2. Presentation of project/ research activity by students
3. Any other scholastic work related to application of conceptual understanding of the subject.
4. Evaluation and feedback by the teacher

ESSENTIAL READINGS:

- Everett C., Swanson K. (2018). *Guide to Producing a Fashion Show* (3rd Edition). NewYork: Bloomsbury Publications.
- Silvers J. (2012). *Professional Event Coordination* (2nd Edition). New Jersey: Wiley.
- Ukaegbu Raymond, (2023), *Essentials of Fashion Show Production*, Goloko Diaries

SUGGESTED READINGS:

- Berners P. (2017). *The Practical Guide to Organizing Events*. UK: Taylor & FrancisPublisher.
- Robinson P., Dikson G., Wale D. (2010). *Event Management: An Introduction*. CABIPublication.
- Taylor P. (2012). *How to Produce a Fashion Show from A to Z*. New Jersey: Pearson Prentice Hall.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.A (Prog.) with Apparel Design and Construction (ADC)

Category-V

DISCIPLINE SPECIFIC ELECTIVE COURSE
DSE-4-ADC: ENTREPRENEURSHIP IN FASHION

Credit Distribution, Eligibility and Pre-requisites of the Course

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Entrepreneurship in Fashion	4	3	1	0	Class XII Pass	NIL

Learning Objectives:

To provide an understanding of entrepreneurship and setting up a fashion business

Learning Outcomes:

After completing this course, the learner will be able to:

- Describe the essential Qualities of an Entrepreneur
- Follow the steps required for setting up a business
- Identify the sources of funding
- List the Entrepreneurship promotion schemes and institutional support
- Identify business opportunities in the fashion sector.
- Describe the challenges specific to the clothing businesses.

SYLLABUS OF DSE-4-ADC

THEORY
(Credits 3; Hours 45)

UNIT I: Introduction to Entrepreneurship **10 Hours**

This unit provides an overview of the concept of entrepreneurship.

- Entrepreneurship: Concept, Functions and Importance
- Essential Qualities of an Entrepreneur; Types of Entrepreneur
- Types of entrepreneurship
- Role of creative and innovative problem-solving in entrepreneurship

UNIT II: Setting up a new Enterprise **20 Hours**

This unit provides basic understanding of the steps to be followed in the setting up a business.

- Idea Generation: Tools and techniques for idea generation
- Setting up an enterprise: Basic steps, Feasibility study, Components and Preparation of business plan
- Resource Requirements: Financial, Human, Technical, Marketing, Legal and other Resources

- Funding sources – Traditional and modern
- Marketing Channels

UNIT III: Promotional Schemes and Resources 15 Hours

This unit provides an overview of the Entrepreneurship promotion schemes and resources. It also provides an understanding of the opportunities and challenges of fashion businesses.

- Entrepreneurship promotion schemes and resources of Government and Financial Institutions
- Role of incubation centres in enterprise creation and development
- Important terms and concepts: Intellectual Property (IP) rights, Trademark, Copyright, Patent, Design, Trade secret, Investment, Turnover
- Business opportunities in the Fashion sector – Boutique Owner, Apparel store, Fashion label, Contract Manufacturer, Fashion event management, Garment exporter, Online retail
- Challenges in Clothing business – High inventory holding and costs, Heavy rate of returns, Fast fashion, Sustainability issues, High customer acquisition cost, varied customer segments

TUTORIALS
(Credits 1; Hours 15)

Tutorial classes will involve:

1. Q&A sessions/ Group discussions/ Problem Solving exercises with the Students
2. Presentation of project/ research activity by students
3. Any other scholastic work related to application of conceptual understanding of the subject.
4. Evaluation and feedback by the teacher

ESSENTIAL READINGS:

- Aarthi Gunnupuri, (2016), *Start Up Your Fashion Label*, Collins
- Charantimath Poornima M., (2018), *Entrepreneurship Development and Small Business Enterprises*. Pearson Education India
- Gupta O. P., Gupta Vijay, Gupta Santosh, (2021), *Fundamentals Of Entrepreneurship*, SBPD Publishing House
- Sharma Sangeeta, (2017), *Entrepreneurship Development* New Delhi: PHI Learning Private Limited
- Harvard Business Review, (2018), *Harvard Business Review Entrepreneur's Handbook*, Harvard Business Review Press

SUGGESTED READING:

- Andrea Siracuse, (2020), *Voguepreneurs: Women Entrepreneurs Who Have Built Million Dollar Brands Through Digital Platforms*, New Degree Press
- Nath Dhruv, Mitra Sushanto, (2020*), Funding Your Startup and Other Nightmare*, Penguin Portfolio
- Cameron Brewer, (2021), *How to Start a Clothing Company - Deluxe Edition Learn Branding, Business, Outsourcing, Graphic Design, Fabric, Fashion Line Apparel, Shopify, Fashion, Social Media, and Instagram*, Ramtander Ltd

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.A (Prog.) with Apparel Design and Construction (ADC)

Category-V

DISCIPLINE SPECIFIC ELECTIVE COURSE
DSE-6-ADC: RESEARCH METHODS IN HOME SCIENCE

Credit Distribution, Eligibility and Pre-requisites of the Course

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Research Methods in Home Science	4	3	0	1	XII Pass	NIL

Learning Objectives:

- To provide students understandings about the basic concepts, approaches and methods in conducting Home Science research.
- To enable learners to appreciate and critique the nuances of designing a research study well.
- To sensitize students towards ethical concerns while conducting Home Science research.

Learning Outcomes:

- Demonstrate knowledge of the scientific method, purpose and approaches to research in Home Science
- Compare and contrast quantitative and qualitative research approaches
- Explain different types of research design and their applicability in Home Science research
- Understand the key elements of a research process
- Explain ethical principles, issues and procedures

SYLLABUS OF DSE- 6- ADC

THEORY
(Credits 3; Hours 45)

UNIT I: Research Purpose and Design **10 Hours**

This unit will deal with meaning and importance of research in various areas of Home Science. Exposure to different types of research designs and measurement in Home Science research would also be given.

- Meaning, purpose and significance of research
- Research as a scientific method
- Types of research
- Quantitative, Qualitative and mixed method approaches
- Research Designs –Experimental and Non-Experimental; Descriptive and Observational; Participatory research
- Internal and external validity of research design
- Variables, concepts and measurement in research

- Levels of measurement
- Units of analysis

UNIT II: Sampling and Research tools & techniques 15 Hours

This unit will introduce the student to the concept of sampling and methods used to draw sample from population using examples from Home Science discipline. Students would also learn about types of data, its collection and reliability and validity concerns.

- Role of sampling in research
- Sampling techniques and their applicability, Sample size and sampling error
- Types of data: Primary and Secondary
- Tools of data collection; types, construction and administration- Interview, Questionnaire, Observation, Focus group discussion and other methods
- Validity and reliability of data collection tools

UNIT III: The Research Process 15 Hours

This unit will elaborate upon the various steps involved in conducting and reporting researches in Home Science.

- Defining the problem, research questions, objectives, hypotheses
- Review of related literature and originality in writing
- Systematic research: concept and methodology
- Planning the research
- Identifying variables and constructing hypothesis
- Selecting appropriate research methodology and tools
- Data analysis: coding and tabulation
- Writing a research report: styles and formats
- Citation formats: in medical sciences, social sciences

UNIT IV: Values, Social Responsibility and Ethics in Research 5 Hours

This unit will apprise the students about ethical concerns while conducting and reporting research.

- Ethical principles guiding research: from inception to completion and publication of research
- Plagiarism and Academic integrity in research: plagiarism tools and software
- Ethical issues relating to research participants and the researcher
    - Rights, dignity, privacy and safety of participants
    - Informed consent, confidentiality, anonymity of respondents, voluntary participation, harm avoidance

PRACTICAL
(Credits 1; Hours 30)

1. Data visualization
2. Levels of Measurement
3. Types of research designs
    a. Experimental and non-experimental; Descriptive and observational
    b. Qualitative, Quantitative and mixed method
4. Sampling techniques and sample size calculation
    a. Probability sampling method
    b. Non-Probability sampling methods

5. Tools of data collection- Interview schedule, questionnaire and FGD
   - Designing/ Construction
   - Preparation of tools for ethical review
   - Pilot testing/ validity and reliability of the tool\
6. Data collection and analysis process: conducting interviews, administering questionnaire
7. Coding and tabulation of data for analysis
8. Citation formats and Plagiarism
9. Reviewing a research paper from a specific area of specialization in Home Science

ESSENTIAL READINGS

- Kerlinger F. N. and Lee, H.B. (2017). *Foundations of Behavioral Research* 4th Ed. Harcourt College Publishers.
- Kothari, C. R. (2019). *Research Methodology: Methods and Techniques*. New Age International Pvt Ltd, New Delhi.
- Kothari, C. R. (2022). *Shodh Padhati* 1st Ed. New Age International Pvt Ltd, New Delhi.
- Kumar, R. (2019) Research Methodology: A Step-by-Step Guide for Beginners. 5th Ed. Sage Publications, New Delhi.

SUGGESTED READINGS

- Bernard, H. R. (2000). *Social research methods: Qualitative and quantitative approaches.* Thousand Oaks, CA.: Sage.
- Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches.* Thousand Oaks, CA: Sage Publications.
- Davis, A. M., Treadwell, D. (2019). Introducing Communication Research: Paths of Inquiry. United Kingdom: SAGE Publications.
- Flynn, J.Z., Foster, I.M. (2009). *Research Methods for the Fashion industry.* Fairchild books, Bloomsbury publishing.
- Indian National Science Academy (INSA) (2019). *Ethics in Science Education, Research and Governance*. ISBN:978-81-939482-1-7. http://www.insaindia.res.in/pdf/EthicsBook.pdf
- Jacobsen, K. H. (2020). *Introduction to health research methods: A practical guide*. Jones & Bartlett Publishers.
- UGC (2021) *Academic Integrity and Research Quality*. New Delhi: UGC, Retrieved from https://www.ugc.ac.in/e-book/Academic%20and%20Research%20Book_WEB.pdf

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Department of Home Science

Pool of Generic Elective Courses (GE)

B.A (Prog.) with Apparel Design and Construction (ADC)

GENERIC ELECTIVE COURSE – GE-1-ADC:
APPAREL DESIGN AND CONSTRUCTION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Apparel Design & Construction	4	2	0	2	Class XII Pass	NIL

Learning Objectives:

To familiarise the students with the terminologies and concepts related to apparel design and its construction

Learning Outcomes:

- After completing this course, the learner will be able to:
- Define the basic sewing and pattern making terminologies
- Describe and use the tools used for measuring, drafting, pinning, marking and cutting, sewing and pressing.
- Explain the steps and processes used in Clothing construction
- List the different parts of a sewing machine and their functions
- Identify the causes of working defects of sewing machines and suggest their remedies
- State the apparel categories
- Take body measurements correctly
- List and describe the factors influencing designing garments for different seasons, age groups, occasions & profession
- Classify fibre types and list examples
- Describe the basic processes of dyeing and printing fabrics.
- Do basic hand stitches such as basting, hemming, back stitch and running
- Make use of basic seams for constructing garments
- Construct a few women's garment using the direct method of cutting fabrics and sewing.
- Use tie and dye technique to design an article.

SYLLABUS OF GE-1-ADC

THEORY
(Credits 2; Hours 30)

UNIT I: Apparel Design and Pattern Development 10 Hours

This unit introduces the students to classification of apparels and concepts related to design and development of garment patterns.

- Apparel Classification
- Body measurements – Correct procedure of taking body measurements.
- Methods of pattern development: Drafting, Flat pattern making, Draping
- Garment designing according to age, climate, occasion, occupation

UNIT II: Introduction to Textiles 8 Hours

This unit provides basic understanding of textile fibres and fabrics.

- Common Fibre types – natural and man-made
- Introduction to methods of fabric construction – woven, knitted, non-woven
- Fabric Glossary of commonly available fabrics
- Common methods of dyeing and printing – tie & Dye, Block Printing

UNIT III: Introduction to Apparel Construction 12 Hours

This unit imparts knowledge regarding terms, equipment and processes connected with apparel construction.

- Common terms: Apparel, basting, seam finishing, Dart, Gathers, Seam allowance,Pattern, Grading, Notch, Stay stitching, Yoke, Gusset, Basic blocks
- Fabric grain- types, identification and importance in apparel construction
- Tools and equipment required for measuring, drafting, pinning, marking and cutting, sewing, pressing
- Steps in clothing construction- pre-shrinking, grain straightening, layout, pinning, marking, cutting, sewing, pressing
- Main parts of a sewing machine and their functions, Common sewing problems &remedies, care of machine, safety measures to be taken while sewing

PRACTICAL
(Credits 2; Hours 60)

1. Basic hand stitches – basting, hemming, back stitch, running
2. Seams – plain seam, French seam, Top-stitching
3. Preparation of body measurement chart for self.
4. Construction by direct method: (any one in each category)
    - Women's upper garment – Kameez/ kurti/ Blouse
    - Lower garment – Palazzo/ Petticoat/ skirt
5. Tie and Dye samples – Stripes, Tritik, folds, knots
6. Preparation of an article by tie and dye

ESSENTIAL READING:

- Armstrong H. (2009). *Pattern Making for Fashion Design*. New York: Collins Publishers.
- Colton V. (1995). *Reader's Digest- Complete Guide to Sewing*. New York: The Reader's Digest Association, Inc.
- Joseph M.L. (1988). *Essentials of Textiles* (5th Edition). Florida: Rinehart and Winston Inc.
- Marshall S G, et al. (2009). *Individuality in Clothing & Personal Appearance* (6th Edition). USA: Pearson Education

SUGGESTED READING:

- Amita, A. Stamper A., et al. (2005). *Evaluating Apparel Quality*. New York: Fairchild publications
- Kindersley D. (1992). *The Complete Book of Sewing*. London: Dorling KindersleyLimited.
- Sinclair R. (2015). *Textiles and Fashion: Materials, Design and Technology*. New York: Woodhead Publishing Limited.
- Verma, P. (2003). *Vastra Vigyan Evam Paridhan*. Bhopal: Hindi Granth Academy
- Zarapkar K. R. (2017). *System of Cutting*. New Delhi: Navneet Education (India)Limited.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.A (Prog.) with Apparel Design and Construction (ADC)

GENERIC ELECTIVE COURSE – GE-2-ADC: APPRECIATION OF INDIAN TEXTILE CRAFTS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Appreciation of Indian Textile Crafts	4	3	1	0	Class XII Pass	NIL

Learning Objectives:

To create an understanding and appreciation of the various traditional Indian textile crafts such as needle crafts, dyeing and printing techniques, and weaving of sarees and shawls.

Learning Outcomes:

After completing this course, the learner will be able to:

- Explain briefly the origin, history, speciality and popularity of the needle crafts of India such as Kashida, Kasuti, Kantha, Chikankari, Kutch work and Phulkari
- Explain briefly the origin, history, speciality and popularity of the dyed, painted and printed textiles of India such as Kalamkari, Bandhani, Ikats, Pichwais, Ajrakh and Bagru.
- Explain briefly the origin, history, speciality and popularity of the woven saris and shawls of India such as Brocades, Jamdani, Baluchar, Paithani, Chanderi and Kanjeevarams.
- List the specific regions of the country having a concentration of artisans practising different types of traditional textile crafts.
- Identify the various types of traditional needle craft, traditional dyeing, painting and printing techniques and traditional woven saris and shawls of India.

SYLLABUS OF GE-2-ADC

THEORY
(Credits 3; Hours 45)

UNIT I: Traditional Needle-Craft Techniques **10 Hours**

This unit provides an understanding of the origin of technique and design with reference to colours, stitches and motifs of different embroidered textiles.

- Study of traditional Indian needle craft techniques with reference to History, production centres, techniques, design, Motifs, Color combination, Type of thread used, Stitches: Kashida, Kasuti, Kantha, Chikankari, Phulkari and Bagh

UNIT II: Dyed, Painted and Printed Textiles **15 Hours**

This unit provides basic knowledge of resist dyeing textile techniques of India in terms of process, production centres, colours, patterns and layout

- Study of Indian Dyed, painted and printed textiles with reference to History, production centres, techniques, designs and colours: Kalamkari, Bandhani, Ikat and Patola, Ajrakh

UNIT III: Woven Saris and Shawls of India **20 Hours**

This unit provides basic knowledge of the origin of technique and design with reference to colours, motifs, layouts of different hand-woven saris of India

- Study of woven saris and shawls of India with reference to History, production centres, techniques, motifs, designs and colours: Brocades, Jamdani, Baluchar, Chanderi, Kanjeevarams, Kashmir Shawl, Kullu Shawl, Wraps of North-east

TUTORIALS
(Credits 1; Hours 15)

Tutorial classes will involve:

5. Q&A sessions/ Group discussions/ Problem Solving exercises with the Students
6. Presentation of project/ research activity by students
7. Any other scholastic work related to application of conceptual understanding of the subject.
8. Evaluation and feedback by the teacher

ESSENTIAL READINGS

- Naik S, (1996), *Fabric Art- Heritage of India,* Abhinav Publications
- Shailaja D. Naik, (1996), Traditional Embroideries of India, A.P.H. Publishing Corporation, New Delhi
- John Gillow, Nicholas Barnard, (2014), *Indian Textiles*, Om books International, New Delhi.
- Dhamija J., (1989), *Hand-woven fabrics of India,* Ahmedabad: Mapin Publishing pvt ltd

SUGGESTED READINGS

- Crill R., Murphy M. (1991). Tie-dyed Textiles of India. London: Victoria and Albert museum.
- Desai C. (1988). Ikat textiles of India. San Francisco: Chronical Books
- Sheila Paine, "Embroidered Textiles", Thames and Hudson Ltd., 1990.
- Chattopadhaya, K.D. (1995). Handicrafts of India. New Delhi: Wiley Eastern Limited Das S.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.A (Prog.) with Apparel Design and Construction (ADC)

GENERIC ELECTIVE COURSE – GE-3-ADC: UNDERSTANDING FASHION DESIGN

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Understanding Fashion Design	4	2	0	2	Class XII Pass	NIL

Learning Objectives:

To provide an understanding of the concepts related to Fashion and Garment Design and Development.

Learning Outcomes:

After completing this course, the learner will be able to:

- Define and describe fashion related basic terms and concepts.
- Illustrate and explain the stages of a fashion cycle curve.
- Identify fashion consumers belonging to different phases of the fashion cycle.
- Describe the theories of fashion adoption.
- Explain the elements and principles of design with examples drawn from garment design.
- List the major fashion centres of the world and their leading designers
- Describe the basic steps of design and development process
- Explain the role and responsibilities of a fashion designer
- Illustrate garments or components such as necklines, sleeves, tops and collars, skirts, trousers, etc.
- Illustrate select garments on a fashion croqui using basic rendering techniques.

SYLLABUS OF GE-3-ADC

THEORY
(Credits 2; Hours 30)

UNIT – 1: Terms and concepts related to Fashion 10 Hours

This unit introduces the learners to the various terms and concepts related to Fashion

- Fashion terms: Fashion, Fad, Classic, Style, Haute-couture, Mass fashion, Fashion Label, Prêt-a-porter, Knockoff, Accessory, Atelier, Boutique, Avant Garde, Empire line, Season, Slow and Fast Fashion, Fashion Forecasting

- Fashion Concepts:
  - Fashion cycle
  - Fashion leaders, fashion followers, fashion victims, fashion laggards
  - Theories of Fashion adoption – trickle down, trickle up, trickle across

UNIT – 2: Application of Design Concepts in Clothing 10 Hours

This unit provides an understanding of the use of various elements and principles of design in garment designing. It also provides an understanding of the various functions of clothing and theories about its origin.

- Elements and principles of design and their use in creating well designed garments.
- Body Shapes and their design requirements
- Clothing Terminology

UNIT - 3: Design and Development Process 10 Hours

This unit provides an overview of the steps in the Design and Development process. It also aims to apprise the learners to the various fashion centres of the world and their leading designers.

- Basic Steps in the Design and Development process: Ideation and inspiration research, Mood board/theme board development, Design Development, Flat and technical drawings, Design finalization based on feedback and improvement, Specification sheet, Fabric Sourcing, Sample development, Design approval, Production
- Role and responsibilities of a Fashion Designer
- Major fashion centers of the world and their leading designers - Paris, Milan, Tokyo, New York, London, India

PRACTICAL
(Credits 2; 60 Hours)

1. Development of flat sketches of various garment components, and their style variations – Necklines, Collars, Sleeves, Skirts, Pants, Dresses
2. Illustration of select garments on Fashion Croqui.
3. Collection of garment images and their Style Reading
4. Analysis of the use of elements and principles of design in garment design.

ESSENTIAL READINGS:

- Frings G. (2013). *Fashion-From Concept to Consumer* (9th Edition). USA: Prentice Hall Publications.
- Stone E., Farnan, Sheryl A. (2023). *The Dynamics of Fashion*. New York: Fairchild Publication.
- Tate Sharon, (2006), *Inside Fashion Design*, Pearson Education India

SUGGESTED READINGS:

- Abling Bina, (2019), *Fashion Sketch Book* (7th edition), Fairchild Books
- Irina V Ivanova, (2016), *How to Draw Fashion Flats: A practical guide to fashion technical drawing (pencil and marker techniques) (Fashion Croquis)* (Volume 2) Art Design Project
- Marshall S G, et al. (2009). *Individuality in Clothing & Personal Appearance* (6th Edition). USA: Pearson Education

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.A (Prog.) with Apparel Design and Construction (ADC)

GENERIC ELECTIVE COURSE - GE-4-ADC: FASHION ACCESSORIES DESIGN

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Fashion Accessories Design	4	2	0	2	Class XII Pass	NIL

Learning Objectives:

- To give the learners an overview of the accessory design and development process
- To develop the skills required for creating and restyling fashion accessories.
- To impart the basic knowledge about styles and production techniques of select fashion accessories.

Learning Outcomes:

After completing this course, the learner will be able to:

- State the importance of fashion accessories.
- Describe the role of an accessory designer
- Describe the Common styles, materials used and production of handbags, footwear, Jewellery, Belts, Hats
- Provide a brief description of the sources of design inspiration and research.
- Describe the various steps in the accessory design development process.
- Explain how to design development is used for creating an accessory range.
- Use illustration and rendering techniques for designing fashion accessories.
- Adopt restyling techniques creatively for making accessories through recycling
- Create a theme/inspiration based accessory collection.

SYLLABUS OF GE-4-ADC

THEORY
(Credits 2; Hours 30)

UNIT I: Importance of Fashion Accessories **8 Hours**

This unit introduces the students to role and importance of accessories and accessory designer.

- Importance of accessories in fashion industry
- Role of an accessory designer
- Leading contemporary accessory designers and brands

UNIT II: Understanding Fashion Accessories 12 Hours

This unit creates an understanding of the common styles, production methods of common fashion accessories.

- Common style, materials used and the production methods of common accessories: Handbags, Footwear, Jewellery, Belt, Hats

UNIT III: From Concept to Creation: Key Steps in Accessories Design 10 Hours

This unit provides an overview of steps in the designing of an accessories collection/ range.

- Inspiration and Research
- Trend forecasting of fashion accessories
- Design development
- Developing a theme-based range
- Presentation techniques

PRACTICAL
(Credits 2; 60 Hours)

1. Illustrating fashion accessories - Handbag, Footwear, Jewellery
2. Designing and construction of any one fashion accessory
3. Restyling project- Restyling of plain accessories using creative techniques
4. Final Project- Based on an inspiration, designing a collection of accessories on paper.

ESSENTIAL READING:

- Darla-Jane Gilroy, (2023), *Fashion Bags and Accessories: Creative Design and Production,* Laurence King Publishing
- Diamond E. (2007). *Fashion Apparel, Accessories, and Home Furnishings.* New Jersey: Pearson.
- Fringes S. (2007). *Fashion: From Concept to Consumer* (9th Edition). New Jersey: Prentice Hall
- Jarnow J. (1987). *Inside the Fashion Business.* New Jersey: Pearson.
- Lau J. (2012). *Basics Fashion Design 09: Designing Accessories: Exploring the design and construction of bags, shoes, hats and jewellery*. New York: A Publishing

SUGGESTED READING:

- Gerval O. (2010), Fashion Accessories. USA: Firefly Books publisher
- Peacock J. (2000). Fashion Accessories: The Complete 20th Century Sourcebook., London: Thames & Hudson Publisher
- Marshall S., Jackson H., Stanley S. (2011). Individuality in Clothing Selection and Personal Appearance (7th Edition). New Jersey: Pearson.
- Vilaseca E. (2008). Essential Fashion Illustration: Color and Medium. USA: Rockport Publishers

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.A (Prog.) with Apparel Design and Construction (ADC)

GENERIC ELECTIVE COURSE - GE-5-ADC: FASHION AND MEDIA

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Fashion and Media	4	2	0	2	Class XII Pass	NIL

Learning Objectives:

To provide an understanding of the different types of media used in Fashion communication

Learning Outcomes:

After completing this course, the learner will be able to:

- Describe the common fashion related concepts.
- List and explain the 7Cs of communication
- Compare the characteristics of different types of media
- Describe the nature and application of carious elements of fashion communication

SYLLABUS OF GE-5-ADC

THEORY
(Credits 2; 30 Hours)

UNIT I: Fashion Concepts **7 Hours**

This unit provides an overview of the fashion concept relevant to media and communication.

- Social aspects of Fashion and clothing – Communication through clothing
- Terms and concepts related to fashion – Fashion, Style, Fashion Cycle, Fashion adoption, Fashion movement, Fashion brands and designers

UNIT II: Communication and Media **5 Hours**

This unit provides understanding of the importance and types of communication and media

- Communication – Function and types of communication, 7Cs of Communication
- Characteristics, significance and types of print, electronic and web based media

- Importance of media in fashion industry

UNIT III: Elements of Fashion Communication 18 Hours

This unit provides an understanding of the elements of fashion communication and related aspects.

- Importance, impact, types, methods and tools, and related professions:
    - Fashion Journalism
    - Fashion Photography
    - Fashion Broadcasting and Fashion Films
    - Fashion Visual Merchandising
    - Fashion Styling
    - Fashion Advertising
    - Fashion Events
    - Fashion Blogging and Vlogging
    - Graphic Design for Fashion

PRACTICAL
(Credits 2; 60 Hours)

8. Preparation of an article/Blog for publication in print media/ web media
9. Creation of a Video Blog of a fashion event/ news
10. Study of editorial photography of a fashion magazine
11. Development of print and web advertisement layout for selected fashion brand.
12. Comparative survey of window displays of fashion stores
13. Preparation of a press release for a fashion event
14. Content creation for Social Media

ESSENTIAL READINGS:

- Guntasha K. Tulsi, Nidhi Madan, (2022), *Media and Communication: A Handbook of Students*, Worldview Publications
- Jay, Phyllida (2015) *Fashion India*, Thames and Hudson, London.
- Lascity Myles Ethan, (2021), *Communicating Fashion: Clothing, Culture, and Media*, Bloomsbury Visual Arts

SUGGESTED READING:

- Anand, S. & Kumar, A. (2016). *Dynamics of Human Communication*. New Delhi: Orient Black Swan. ISBN: 9788125063254
- Greenwood, G. L. (2012) *Fashion Marketing Communications,* John Wiley and Sons
- Jade, L. (2012) *Fashion Photography 101, A Complete Course for the New Fashion Photographers,* Hachette UK

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.A (Prog.) with Apparel Design and Construction (ADC)

GENERIC ELECTIVE COURSE - GE-6-ADC: FASHION STYLING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Fashion Styling	4	2	0	2	Class XII Pass	NIL

LEARNING OBJECTIVES:

- To provide an understanding of the different aspects of fashion styling that suitdifferent occasions
- To create an awareness of the body types and the art of selecting styles that improve the overall visual appeal.

LEARNING OUTCOMES:

After completing this course, the learner will be able to:

- Explain the psychological and sociological influences of clothing.
- Assess the personality and personal style preferences
- Select suitable clothing based on season, body types, occasions
- Use elements and principles of design effectively in garment designing and illusiondressing.
- Prepare wardrobe plans
- Coordinate clothing with accessories

SYLLABUS OF GE-6-ADC

THEORY
(Credits 2; 30 Hours)

UNIT I: Basics of Fashion and Styling **8 Hours**

This unit introduces the students to role and importance of accessories and accessory designer.

- Effect of clothing on Self-Concept & Image and social response
- Introduction to fashion - Types of fashion (Haute couture, Ready-to-wear fashion, Mass market, Custom-tailored), Classics, Fads, Fashion cycles, Fashion trends
- Fashion styles: Casual/ street wear, Business casual, Office formal, Chic, Bohemian, Ethnic/traditional, Vintage, Artsy, Gothic, Professional, Sporty, Classic, Feminine, Modest and Minimalist.

UNIT II: Concepts of Garment Design and Accessories **14 Hours**

This unit introduces the learner to various styles of garments and accessories and familiarises them with the application of elements and principles of design for dressing up an individual.

- Garment style terminology - women's and men's wear.
- Elements and Principles of Design and their application in garment designing.
- Dressing up according to season and occasion
- Characteristic features and design requirements of various body types.
- Accessory styles – Handbags, Footwear, Scarves; Accessory coordination with clothing

UNIT III: Wardrobe Planning **8 Hours**

This unit helps in understanding the various aspects of wardrobe planning and execution

- Factors influencing wardrobe planning
- Wardrobe evaluation, organization and categorization
- Capsule wardrobe – Importance, types and planning for self

PRACTICAL
(Credits 2; 60 Hours)

1. Analysis of self-image, personality and fashion style for self
2. Development of a Fashion and accessory style board for an individual, for different occasions based on body types
3. Presentation of a wardrobe plan for self/ an individual
4. Analysis of the use of elements and principles of design in any garment

ESSENTIAL READINGS:

- Stone, E., (2023), *The Dynamics of Fashion*, Fairchild Books
- Brown, P., & Janett, R. (1998), *Ready to Wear Apparel Analysis*. Prentice Hall, New Jersey.
- Frings, Stephens, G., 2007, *Fashion: From Concept to Consumer*, 9th edition, Pearson Education, India.
- Stall-meadows, C. (2003), *Know your Fashion Accessories*, Bloomsbury Publishing.
- Rasband, J. (2001), *Wardrobe Strategies for Women*, Fairchild Books, Bloomsbury Publishing.
- Romano, C. (2002), *Plan your Wardrobe*, New Holland Publishers.

SUGGESTED READINGS:

- Baumgartner, J. (2012), *You are What You Wear*, Da Capo Press.
- Constantine, S. & Woodall, T. (2007), *The Body Shape Bible: Forget Your Size Discover Your Shape Transform Yourself*, Weidenfeld & Nicolson
- Lewis S.D. etal. (1956), *Clothing Construction & Wardrobe Planning*, Macmillan Co. New York.
- Sumathi, G. J., (2002), *Elements of Fashion and Apparel Design*, New Age International Publishers, New Delhi.
- Aneta G. (2011), *Accessory Design*, Fairchild Publications, 1st edition
- Jane S., & Sue S. (2012), *Fashion Design Course: Accessories: Design Practice and Processes for Creating Hats, Bags, Shoes, and More*, Barron's Educational Series

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Department of Home Science
Semester -IV
B.A. (Prog) with Food Technology (FT) as Major
Category-II

DISCIPLINE SPECIFIC CORE COURSE – DSC-7-FT:
INTRODUCTION TO FOOD SAFETY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Introduction to Food Safety	4	3	0	1	Class XII	NIL

LEARNING OBJECTIVES:

1. To impart knowledge on basic concepts of food safety.
2. To familiarize the students about common physical, chemical and biological contamination of food.
3. To help students understand the basics of surveillance and sustainability in food processing.

LEARNING OUTCOMES:

After completion of the course, the students will be able to:
1. Explain food safety, principles of hygiene and factors which compromise food safety
2. Appreciate the role of surveillance and sustainability while ensuring food safety
3. Handle food with responsibility
4. Facilitate safe food handling by fellow colleagues in food processing unit

SYLLABUS OF DSC-7-FT

THEORY
(Credits 3: 45 Hours)

UNIT I: Unit I: Introduction to Food Safety (15 Hours)

- *Unit Description:* This unit will introduce the students to the concept of food safety and hygiene as well as safety related challenges faced while ensuring processing and handling of food.
- *Subtopics:*
  - Importance of food safety and key terms
  - Factors affecting food safety
  - Emerging concerns of food safety
  - General principles of food hygiene

UNIT III: Biological Hazards in Foods: Microorganisms, Spoilage and its Prevention (14 Hours)

- *Unit Description:* This unit will help students learn and understand how different types of micro organisms can cause food spoilage which can lead to food poisoning and intoxication to the consumer.
- *Subtopics:*
    - Food hazards of biological origin- bacteria, mold, yeast, viruses and parasites
    - Factors affecting microbial growth in foods.
    - Types of food spoilage, causes and prevention (canned food, milk, water, nuts)
    - Food borne diseases- food infections and food intoxications.
    - Mycotoxins and other toxins produced in foods.

UNIT II: Physical and Chemical Contaminants in Foods (8 Hours)

- *Unit Description:* Contamination is an important cause of unsafe food. In this unit salient physical and chemical contaminants shall be discussed in detail. Secondary contamination shall also be dealt briefly.
- *Subtopics:*
    - Following contaminants and hazards in food and water:
        - Physical Hazards
        - Heavy Metals
        - Pesticide Residues
        - Veterinary Drug Residues
        - Packaging Residues
    - Secondary contamination

Unit IV: National Food Laws and Sustainability (8 Hours)

- *Unit Description:* Governance at national level for ensuring food safety from farm to the consumer's plate will be discussed in this unit. It will also introduce the concept that ensuring food safety is a responsibility which should not compromise the environment.
- *Subtopics:*
    - FSS Act and Regulations (1, 4, 5,7, 13)
    - Consumer Protection Act, 1986
    - Sustainable Hygiene Practices
    - Green Food Processing

PRACTICAL
(Credits 1: 30 Hours)

No. of Students per Practical Class Group: 10-15

1. Develop a checklist on food hygiene practices.
2. Conduct a survey to study the food hygiene practices in a food processing unit.
3. Develop educational aid on general principles of hygiene as recommended by WHO.
4. College Project by a group of students to maintain good hygiene in college canteen
   OR
   Conduct a food laboratory waste segregation activity by students and demonstration of food waste compost making unit.
5. Identification and removal of physical hazards rice grains, tea leaves, whole wheat flour and pulses.

6. Assessing the pH, TDS and hardness of potable water.
7. Checking the spoilage in milk by making use of MBRT method.
8. Assessing the microbial count by swab method for the workers and cooking surface areas of college canteen.
9. Identification of microbes/parasites by use of prepared slides and specimens.

ESSENTIAL READINGS (Theory and Practical):

- Suri, S and Malhotra, A. (2014). *Food Science, Nutrition and Safety*. Dorling Kindersley Pvt. Ltd. (Pearson) India.
- Mathur, P. (2018). *Food Safety and Quality Control*. Orient Blackswan Private Limited.
- *The Food Safety and Standards Act along with Rules and Regulations*. (2011) Delhi: Commercial Law Publishers (India) Pvt. Ltd.
- Frazier, W.C. and Westhoff, D.C. (2014). *Food Microbiology*. Chennai: Tata McGrawHill Publishing Company Limited.
- Srivastava, S.S. (2006). *Phal Parirakshan*. Lucknow: Kitab Mahal.

SUGGESTED READINGS:

- Boye, J.I. and Arcand, Y. (2012). *Green Technologies in Production and Processing*. First Edition. Springer Nature (USA).
- Kapoor, B., Singh, R., Kapoor, D. and Gautam, V. (2022). *Environmental Sustainability in Food Industry: A Green Perspective*. First Edition. CRC Press (USA).
- Knechtges, L.I. (2012). *Food Safety-Theory and Practice*, USA: Jones and Barlette Learning.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – DSC-8-FT: BASIC PRESERVATION TECHNOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Basic Preservation Technology	4	3	0	1	Class XII	Nil

LEARNING OBJECTIVES:

1. To familiarize the students with food spoilage and their causes.
2. To impart basic knowledge related to principles of food preservation.

3. To introduce the students about applications of food preservation.
4. To develop the skills of processing of chutney, sauces, fruit beverages and pickles.

LEARNING OUTCOMES:

After completion of the course, the students will be able to:

1. Describe the purpose and scope of food preservation in Indian economy
2. Explain the different objectives, principles and methods of food preservation
3. Develop safe and hygienic fruits and vegetable-based products like chutneys, sauces, beverages and pickles

SYLLABUS OF DSC-8-FT

THEORY
(Credits 3: 45 Hours)

UNIT I: Scope of Food Preservation (6 Hours)

- *Unit Description:* This introductory unit focuses on the scope of food preservation and the objectives of food preservation and processing.
- *Subtopics:*
    - Scope of preservation industry in India
    - Objectives of preservation and processing

UNIT II: Spoilage in Preserved Products (9 Hours)

- *Unit Description:* This unit will lay emphasis on types of food spoilage in different food products as well as factors affecting food spoilage. This unit will also describe various contaminants that can result in food contamination.
- *Subtopics:*
    - Food spoilage and types
    - Causes of spoilage
    - Spoilage in different food products
    - Food contamination

UNIT III: Principles and Methods of Preservation (15 Hours)

- *Unit Description:* This unit will comprise of basic principles and various popular food preservation methods based on these principles.
- *Subtopics:*
    - Basic principles of food preservation
    - Basic Methods of preservation
        - Asepsis
        - Use of low temperature
        - Use of high temperature
        - Removal of moisture
        - Removal of air
        - Use of preservatives
        - Fermentation (Modification of pH)

- Irradiation
- Gas preservation
- Combination of Methods – Hurdle Technology
- Novel Preservation Techniques (HPP, PEF, Ohmic Heating, Irradiation - nomenclature only)

UNIT IV: Basic Fruit and Vegetable Preserved Products (15 Hours)

- *Unit Description:*This unit will describe the preservation methods of different fruits and vegetables based processed products.
- *Subtopics:*
  - Definition, classification, preparation steps and method of preservation of following:
  - Chutneys
  - Sauces
  - Fruit beverages (with special emphasis on pasteurization, use of chemical preservatives, sugar)
  - Pickles

PRACTICAL
(Credits 1: 30 Hours)

No. of Students per Practical Class Group: 10-15

1. Sterilization of bottles.
2. Market survey of preserved fruit and vegetable products
3. Development of an educational aid on food labelling
4. Preparation, bottling, sensory/objective (TSS, pH) evaluation and costing & Labelling of:
   - Sauces (chilli sauce and tomato sauce)
   - Ketchup (tomato)
   - Chutney (tomato chutney and *imli* chutney)
   - Squash (lemon squash/ orange squash, pineapple squash)
   - Syrup (rose syrup and almond syrup)
   - Fermented beverage (*Kanji*)/ value added beverages
   - Pickles (Lime, Mix Vegetable, Chilli)

ESSENTIAL READINGS (Theory and Practical):

- Rao, E.S., Garg, M. and Barwa, M.S.(2023). *Handbook on Processing and Preservation of Fruits and Vegetables.* 2nd edn. Variety Books Publisher's Distributors, New Delhi
- Frazier, W.C. and Westhoff, D.C. (2014). *Food Microbiology*. Chennai: Tata McGraw Hill Publishing Company Limited.
- Fellows, P.J. (2022). *Food Processing Technology Principles and Practice* (5th ed.). Woodhead Publishing Series in Food Science, Technology and Nutrition. https://doi.org/10.1016/C2019-0-04416-0.
- Rahman, M.S. (Ed.). (2020). *Handbook of Food Preservation* (3rd ed.). CRC Press. https://doi.org/10.1201/9780429091483
- Suri, S. & Malhotra, A. (2014). *Food Science Nutrition and Safety*. Delhi: Pearson India Ltd.
- Sivasankar, B. (2002). *Food Quality, in Food Processing and Preservation*. Prentice-Hall of India Private Limited, New Delhi.
- Srivastava, S.S. (2006). *Phal Parirakshan*. Lucknow: Kitab Mahal.

SUGGESTED READINGS:

- Potter, N.N., and Hotchkiss, J.H. (2012). Food Science (5th ed.). Springer New York, NY. XV, 608. https://doi.org/10.1007/978-1-4615-4985-7.
- Lal, G., Siddhapa, G.S. and Tandon, G.L. (2009). *Preservation of Fruits and Vegetables*. New Delhi: Indian Council of Agriculture Research.
- Subbalakshmi, G., and Udipi, S.A. (2007). *Food Processing and Preservation*. Delhi: New Age International Publishers.
- Khurdia, D.S. (1995). *Preservation of fruits and vegetables*. New Delhi: Indian Council of Agriculture Research.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.A. (Prog.) with Food Technology (FT) as Non-Major
Category-III

DISCIPLINE SPECIFIC CORE COURSE – DSC-6-FT:
BASIC PRESERVATION TECHNOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Basic Preservation Technology	4	3	0	1	Class XII	Nil

-

LEARNING OBJECTIVES:

1. To familiarize the students with food spoilage and their causes.
2. To impart basic knowledge related to principles of food preservation.
3. To introduce the students about applications of food preservation.
4. To develop the skills of processing of chutney, sauces, fruit beverages and pickles.

LEARNING OUTCOMES:

After completion of the course, the students will be able to:

1. Describe the purpose and scope of food preservation in Indian economy
2. Explain the different objectives, principles and methods of food preservation
3. Develop safe and hygienic fruits and vegetable-based products like chutneys, sauces, beverages and pickles

SYLLABUS OF DSC-8-FT

THEORY
(Credits 3: 45 Hours)

UNIT I: Scope of Food Preservation (6 Hours)

- *Unit Description:*This introductory unit focuses on the scope of food preservation and the objectives of food preservation and processing.
- *Subtopics:*
  - Scope of preservation industry in India
  - Objectives of preservation and processing

UNIT II: Spoilage in Preserved Products (9 Hours)

- *Unit Description:*This unit will lay emphasis on types of food spoilage in different food products as well as factors affecting food spoilage. This unit will also describe various contaminants that can result in food contamination.

- *Subtopics:*
    - Food spoilage and types
    - Causes of spoilage
    - Spoilage in different food products
    - Food contamination

UNIT III: Principles and Methods of Preservation (15 Hours)

- *Unit Description:*This unit will comprise of basic principles and various popular food preservation methods based on these principles.
- *Subtopics:*
    - Basic principles of food preservation
    - Basic Methods of preservation
        - Asepsis
        - Use of low temperature
        - Use of high temperature
        - Removal of moisture
        - Removal of air
        - Use of preservatives
        - Fermentation (Modification of pH)
        - Irradiation
        - Gas preservation
        - Combination of Methods – Hurdle Technology
        - Novel Preservation Techniques (HPP, PEF, Ohmic Heating, Irradiation - nomenclature only)

UNIT IV: Basic Fruit and Vegetable Preserved Products (15 Hours)

- *Unit Description:* This unit will describe the preservation methods of different fruits and vegetables based processed products.
- *Subtopics:*
    - Definition, classification, preparation steps and method of preservation of following:
    - Chutneys
    - Sauces
    - Fruit beverages (with special emphasis on pasteurization, use of chemical preservatives, sugar)
    - Pickles

PRACTICAL
(Credits 1: 30 Hours)

No. of Students per Practical Class Group: 10-15

1. Sterilization of bottles.
2. Market survey of preserved fruit and vegetable products
3. Development of an educational aid on food labelling
4. Preparation, bottling, sensory/objective (TSS, pH) evaluation and costing & Labelling of:
    - Sauces (chilli sauce and tomato sauce)

- Ketchup (tomato)
- Chutney (tomato chutney and *imli* chutney)
- Squash (lemon squash/ orange squash, pineapple squash)
- Syrup (rose syrup and almond syrup)
- Fermented beverage (*Kanji*)/ value added beverages
- Pickles (Lime, Mix Vegetable, Chilli)

ESSENTIAL READINGS (Theory and Practical):

- Rao, E.S., Garg, M. and Barwa, M.S.(2023). *Handbook on Processing and Preservation of Fruits and Vegetables.* 2nd edn. Variety Books Publisher's Distributors, New Delhi
- Frazier, W.C. and Westhoff, D.C. (2014). *Food Microbiology*. Chennai: Tata McGraw Hill Publishing Company Limited.
- Fellows, P.J. (2022). *Food Processing Technology Principles and Practice* (5th ed.). Woodhead Publishing Series in Food Science, Technology and Nutrition. https://doi.org/10.1016/C2019-0-04416-0.
- Rahman, M.S. (Ed.). (2020). *Handbook of Food Preservation* (3rd ed.). CRC Press. https://doi.org/10.1201/9780429091483
- Suri, S. & Malhotra, A. (2014). *Food Science Nutrition and Safety*. Delhi: Pearson India Ltd.
- Sivasankar, B. (2002). *Food Quality, in Food Processing and Preservation*. Prentice-Hall of India Private Limited, New Delhi.
- Srivastava, S.S. (2006). *Phal Parirakshan*. Lucknow: Kitab Mahal.

SUGGESTED READINGS:

- Potter, N.N., and Hotchkiss, J.H. (2012). *Food Science* (5th ed.). Springer New York, NY. XV, 608. https://doi.org/10.1007/978-1-4615-4985-7.
- Lal, G., Siddhapa, G.S. and Tandon, G.L. (2009). *Preservation of Fruits and Vegetables*. New Delhi: Indian Council of Agriculture Research.
- Subbalakshmi, G., and Udipi, S.A. (2007). *Food Processing and Preservation*. Delhi: New Age International Publishers.
- Khurdia, D.S. (1995). *Preservation of fruits and vegetables*. New Delhi: Indian Council of Agriculture Research.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF HOME SCIENCE
Semester -V

B.A (PROG) WITH FOOD TECHNOLOGY (FT)

B.A. (Prog) with Food Technology (FT) as Major
Category-II

DISCIPLINE SPECIFIC CORE – DSC-9-FT:

FOOD PROCESSING: TECHNIQUES AND TECHNOLOGIES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Food Processing: Techniques and Technologies	4	2	0	2	Class XII	NIL

LEARNING OBJECTIVES:

4. To impart theoretical and practical knowledge on basic concepts of salient techniques and technologies used in the food processing industry.
5. To familiarize the students regarding the importance of process control for ensuring efficient application of various techniques/technologies.

LEARNING OUTCOMES:

After completion of the course, the students will be able to:

5. Appreciate the significance of using most appropriate pre-preparation and preparation techniques/technologies for processing a food product
6. Develop analytical skills pertaining to application of food processing techniques and technologies in the industry
7. Train staff associated with food handling at various levels
8. Work in food sector such as food manufacturing, packaging, sale and distribution units at mid-level positions

SYLLABUS OF DSC-9-FT

THEORY
(Credits 2: 30 Hours)

UNIT I: Introduction to material handling and pre-preparation techniques (7 Hours)

- *Unit Description:* This unit will briefly discuss several pre-preparation techniques used in the food

industry.

- *Subtopics:*
  - Material handling during receiving and storage.
  - Cleaning of food and equipment's (dry, wet, others)
  - Separating, grading, sorting
  - Mixing, blending, binding, beating, whipping, folding, mashing, stuffing.
  - Disintegrating and grinding
  - Bleeding, singeing, flaying, trussing, de-scaling, skinning, ageing, curing, filleting.
  - Pumping, filtration, centrifugation
  - Other pre-preparation techniques: cutting, grating, peeling, stringing, soaking,

UNIT II: Food Processing Techniques and Technology (16 Hours)

- *Unit Description:* High temperature is popularly used while processing a variety of foods. This unit will discuss the principle, advantages, disadvantages and salient techniques, machinery required for processing food using high/low temperature, fermentation and irradiation.

- *Subtopics:*
  - High Temperature: principle (TDT, cold point), advantages, disadvantages, salient heat treatments employed in processing food (<100C, ~100C, >100C), process and heating systems – use of heat before and after packaging, ultra high-pressure systems (autoclaves, steamers and heat exchangers), canning
    - Dehydration: principle (heat mass transfer, a_w, drying curve), advantages, disadvantages, treatment of foods before and after drying, techniques (heated air/heated surface dehydrators), methods of dehydration
    - Concentration: principle, advantages, disadvantages, methods (any five)
    - Extrusion: principle, advantages, disadvantages, methods (hot paste, cold paste), extruders.
  - Low temperature: principle, advantages, disadvantages, process – treatment of foods before, during and after refrigeration/freezing, types (common or cellar storage, chilling or cold storage), types of freezing (direct and indirect contact)
  - Fermentation: principle, advantages, disadvantages, production of culture, maintaining activity of cultures, products obtained from fermentation (food products, nutrients, enzymes)
  - Irradiation: principle, advantages, disadvantages, general process

Unit III: Process Control and Post processing Techniques /Technologies (7 Hours)

- *Unit Description:* Process control is being recognized as an important component for enhancing efficiency and quality in food processing. This unit will discuss the significance and scope of process control as well as about packaging, storing, distribution. It will also help students learn about recent advancements in the field of food processing and packaging.
- *Subtopics:*
  - Process control – role of automation
  - Packaging techniques and technologies: passive, active, intelligent, general packaging process (assembly line)
  - Storing, distribution

- Recent advancements in food processing and packaging

PRACTICAL
(Credits 2: 60 Hours)

No. of Students per Practical Class Group: 10-15

10. Learn skill (hands on experience) on various pre-preparation techniques.
11. Study/ compare quality characteristics of foods processed by using high temperature, low temperature, fermentation, irradiation or combination methods.
12. Cut-out analysis of canned food(s)
13. Survey on convenience foods available in nearby local market and identification of processing techniques used in manufacturing them.
14. Learn skill of developing food product(s) using low temperature and/or fermentation as principal method of processing and their packaging.
15. Learn skill of developing food product(s) using low temperature and/or fermentation as principal method of processing and their packaging.
16. Presentation on case study of any one processing technique or technology used traditionally in any food sector or any food industry.
17. Presentation/demonstration on innovative food processing technique or technology of a food ingredient (eg; peeling/extrusion equipment, novel technologies).
    OR
    Prepare an educational audio-visual aid on recent trends in food processing industry.
18. Industry visit(s)
    OR
    Train a group of women/students/canteen workers about any one food processing technique through demonstration of any food product that can be followed at home-based level.

ESSENTIAL READINGS (Theory and Practical):

- Fellows, P.J. (2022). *Food Processing Technology Principles and Pra*ctice (5th ed.). Woodhead Publishing Series in Food Science, Technology and Nutrition. ISBN: 9780323857376. https://doi.org/10.1016/C2019-0-04416-0.
- Rahman, M.S. (Ed.). (2020). *Handbook of Food Preservation* (3rd ed.). CRC Press. https://doi.org/10.1201/9780429091483
- Sharif, Z., Mustapha, F., Jai, J., Mohd Yusof, N., and Zaki, N. (2017). Review on methods for preservation and natural preservatives for extending the food longevity. *Chemical Engineering Research Bulletin*, 19, 145–153. https://doi.org/10.3329/cerb.v19i0.33809
- Suri, S.,and Malhotra, A. (2014). *Food Science Nutrition and Safety*. Delhi: Pearson India Ltd.
- Potter, N.N., and Hotchkiss, J.H. (2012). *Food Science* (5th ed.). Springer New York, NY.XV, 608.https://doi.org/10.1007/978-1-4615-4985-7.
- Srivastava, S.S. (2006). *Phal Parirakshan*. Lucknow: Kitab Mahal.
- Sivasankar, B. (2002) *Food Quality, in Food Processing and Preservation*. Prentice-Hall of India Private Limited, New Delhi.

SUGGESTED READINGS:

- Alyward, F.E. (1999). *Food Technology Processing and Laboratory Control*. Allied Scientific Publishers.
- Bali, P.S. (2009). *Food: Production Operations*. First Edition. Oxford University Press.
- Clark, S., Jung, S. & Buddhi. (2022). *Food Processing: Principles and Applications*. First Edition. John Wiley and Sons Inc.
- Geoffrey, C.P. (2009). *Food Science and Technology*. First Edition. Willey-Blackwell.
- Green, J.H. (2009). *Food Processing Industries*. AVI Press.
- Kumar, A. (2019). Food Preservation: Traditional and Modern Techniques. *Acta Scientific Nutritional Health* 3(12) : 45-49
- Murano, P.S. (2003). *Understanding Food Science and Technology*. First Edition. Thomsons Pvt. Ltd.
- Prasad, J. (2022). खाद्य प्रसंस्करण और सुरक्षा विषय. First Edition. Kalyani Publishers.
- Singh, M.K. (2007). *Food Processing*. First Edition. Discovery Publishing House.
- Singh, N. & Singh, I.S. (2018). *Food Science and Technology*. First Edition. Woodhead Publishing House.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE – DSC-10-FT: ADVANCED BAKING TECHNOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Advanced Baking Technology	4	2	0	2	Class XII	Basic Baking Technology

LEARNING OBJECTIVES:

1. To impart students with knowledge related to processing of breads and Cookies.
2. To familiarize them with basics of food packaging, marketing, and cost control.

LEARNING OUTCOMES:

After completion of the course, the students will be able to develop:

1. Skill to prepare various kinds of breads and cookies
2. Illustrate various methods of marketing
3. Compare food packaging materials and their characteristics

4. Prepare food labels and conduct sensory evaluation of prepared baked products
5. Entrepreneurial skill related to bakery products

SYLLABUS OF DSE-10-FT

THEORY
(Credits 2: 30 Hours)

UNIT I: Bread Processing (13 Hours)

- *Unit Description:* This unit describes bread processing and various spoilage occurring in bread and different bread products.
- *Subtopics:*
    - Preparation of bread - Ingredients, methods of bread dough preparation (straight, sponge, salt delayed, sour dough) steps in bread processing, evaluation of the baked bread.
    - Staling of bread, spoilage in bread and control measures.
    - Types of breads (variety of breads, pizza base, buns, dinner rolls, sourdough products).

UNIT II: Cookies, Biscuits and Crackers Processing (05 Hours)

- *Unit Description*: The unit will focus on processing and evaluation of cookies and crackers. It also describes the packaging, storage& labelling of the processed products.
- *Subtopics:*
  Ingredients, types, processing, storage and evaluation.
    - Cookies (Sheet, molded and dropped).
    - Biscuits
    - Crackers.

UNIT III: Food Packaging, Marketing and Cost Control (12 Hours)

- *Unit Description*: This unit describes the FSSAI regulations for food packaging, various food packaging materials, food marketing and cost calculation for processed baked food products.
- *Subtopics:*
    - Packaging – its importance, essential features of an ideal package, food packaging materials for baked products.
    - Food Safety and Standard (Packaging) Regulation, 2018, Food Safety and Standard (Labelling and Display) Regulation, 2020.
    - Marketing - definition and importance, marketing strategies (wholesale, retail, digital, swot and market mix) understanding the difference between marketing and sales, 4Ps of marketing (Product, Price, Place, Promotion) and distribution.
    - Cost control – cost components (material cost, labour cost and miscellaneous costs).

PRACTICAL
(Credits 2: 60 Hours)

No. of Students per Practical Class Group: 10-15

1. Determination of gluten content in refined wheat flour.

2. Determination of dough raising capacity (DRC) of yeast and factors affecting the yeast activity.
3. Designing labels for baked products.
4. Preparation and sensory evaluation, packaging and costing of breads:
    - White and brown bread
    - Buns
    - Dinner rolls
    - Pizza base
5. Preparation and sensory evaluation, packaging and costing of cookies:
    - Dropped cookies
    - Rolled cookies
    - Molded cookies
6. Preparing any of the baked products in bulk and organizing an exhibition-cum sale.

ESSENTIAL READINGS (Theory and Practical):

- Dubey S. C. (2016). *Basic Baking: Science and Craft*. Delhi: The Society of Indian Bakers.
- Dubey S. C. (2009). *Bakery Vigyan*. Delhi: The Society of Indian Bakers.
- Matz A. (2008). *Bakery Technology and Engineering*. 10th Edition. Delhi: CBS Publishers.
- Kirar, I. (2021). *Textbook of Culinary and Bakery World*, I K International Publishing House Pvt Ltd.
- *Food Safety and Standards Authority of India*: http://www.fssai.gov.in(accessed on 17.3.2023)
- Sethi, M. (2005). *Institutional Food Management*. Delhi: New Age International Publishers.
- Food Safety and Standard (Labeling and Display) Regulation, 2020 https://www.fssai.gov.in/upload/notifications/2020/12/5fd87c6a0f6adGazette_Notification_Labelling_Display_14_12_2020.pdf (accessed on 17.3.2023)
- Food Safety and Standard (Packaging) Regulation, 2018 https://www.fssai.gov.in/upload/uploadfiles/files/Gazette_Notification_Packaging_03_01_2019.pdf (accessed on 17.3.2023)

SUGGESTED READINGS:

- Faridi, H. (2004). *The Science of Cookie and Crackers Production*. Delhi: CBS Publishers.
- Griffin, S. (1997). *Principles of Food Packaging*. Connecticut: The AVI Publishing Company.
- Khetrapal, N., Grewal, R.B., and Jood, S. (2005). Bakery Science and Cereal Technology. Delhi: Daya Publishing House.
- Khanna, K., Gupta, S., Seth, R., Mahana, R., and Rekhi, T. (2004). *The Art and Science of Cooking*. Delhi: Phoenix Publishing House Private Limited.
- Potter, N., and Hotchkiss, J.H. (2006). *Food Science*. Delhi: CBS Publishers.
- Raina, U., Kashyap, S., Narula, V., Thomas, S., Suvira, Vir, S., and Chopra, S. (2005). *Basic Food Preparation – A Complete Manual*. Delhi: Orient Longman.
- Sharma, S., Aggarwal, M. & Sharma, S. (2018). *Food Frontiers*. Delhi: New Delhi Publishers.
- Radhakrishnan, S. (2016). *A Guide To Baking Process:* Write And Print Publications.
- Cauvain, S.P. (2003). *Bread Making Improving Quality*: Elsevier.
- Baking courses: https://www.udemy.com/topic/baking/.(accessed on 17.3.2023)
- Baking guide: http://www.reviewlab.com/baking-guide/.(accessed on 17.3.2023)

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.A. (Prog.) with Food Technology (FT) as Non-Major
Category-III

DISCIPLINE SPECIFIC CORE – DSC-10-FT:
ADVANCED BAKING TECHNOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Advanced Baking Technology	4	2	0	2	Class XII	Basic Baking Technology

LEARNING OBJECTIVES:

3. To impart students with knowledge related to processing of breads and Cookies.
4. To familiarize them with basics of food packaging, marketing, and cost control.

LEARNING OUTCOMES:

After completion of the course, the students will be able to develop:

6. Skill to prepare various kinds of breads and cookies
7. Illustrate various methods of marketing
8. Compare food packaging materials and their characteristics
9. Prepare food labels and conduct sensory evaluation of prepared baked products
10. Entrepreneurial skill related to bakery products

SYLLABUS OF DSE-10-FT

THEORY
(Credits 2: 30 Hours)

UNIT I: Bread Processing **(13 Hours)**

- *Unit Description:* This unit describes bread processing and various spoilage occurring in bread and different bread products.
- *Subtopics:*
  - Preparation of bread - Ingredients, methods of bread dough preparation (straight, sponge, salt delayed, sour dough) steps in bread processing, evaluation of the baked bread.
  - Staling of bread, spoilage in bread and control measures.
  - Types of breads (variety of breads, pizza base, buns, dinner rolls, sourdough products).

UNIT II: Cookies, Biscuits and Crackers Processing **(05 Hours)**

- *Unit Description*: The unit will focus on processing and evaluation of cookies and crackers. It also describes the packaging, storage& labelling of the processed products.
- *Subtopics:*
  Ingredients, types, processing, storage and evaluation.
  - Cookies (Sheet, molded and dropped).
  - Biscuits
  - Crackers.

UNIT III: Food Packaging, Marketing and Cost Control (12 Hours)

- *Unit Description*: This unit describes the FSSAI regulations for food packaging, various food packaging materials, food marketing and cost calculation for processed baked food products.
- *Subtopics:*
  - Packaging – its importance, essential features of an ideal package, food packaging materials for baked products.
  - Food Safety and Standard (Packaging) Regulation, 2018, Food Safety and Standard (Labelling and Display) Regulation, 2020.
  - Marketing - definition and importance, marketing strategies (wholesale, retail, digital, swot and market mix) understanding the difference between marketing and sales, 4Ps of marketing (Product, Price, Place, Promotion) and distribution.
  - Cost control – cost components (material cost, labour cost and miscellaneous costs).

PRACTICAL
(Credits 2: 60 Hours)

No. of Students per Practical Class Group: 10-15

7. Determination of gluten content in refined wheat flour.
8. Determination of dough raising capacity (DRC) of yeast and factors affecting the yeast activity.
9. Designing labels for baked products.
10. Preparation and sensory evaluation, packaging and costing of breads:
    - White and brown bread
    - Buns
    - Dinner rolls
    - Pizza base
11. Preparation and sensory evaluation, packaging and costing of cookies:
    - Dropped cookies
    - Rolled cookies
    - Molded cookies
12. Preparing any of the baked products in bulk and organizing an exhibition-cum sale.

ESSENTIAL READINGS (Theory and Practical):

- Dubey S. C. (2016). *Basic Baking: Science and Craft*. Delhi: The Society of Indian Bakers.
- Dubey S. C. (2009). *Bakery Vigyan*. Delhi: The Society of Indian Bakers.
- Matz A. (2008). *Bakery Technology and Engineering*. 10th Edition. Delhi: CBS Publishers.
- Kirar, I. (2021). *Textbook of Culinary and Bakery World*, I K International Publishing House Pvt Ltd.

- *Food Safety and Standards Authority of India*: http://www.fssai.gov.in(accessed on 17.3.2023)
- Sethi, M. (2005). *Institutional Food Management*. Delhi: New Age International Publishers.
- Food Safety and Standard (Labeling and Display) Regulation, 2020 https://www.fssai.gov.in/upload/notifications/2020/12/5fd87c6a0f6adGazette_Notification_Labelling_Display_14_12_2020.pdf (accessed on 17.3.2023)
- Food Safety and Standard (Packaging) Regulation, 2018 https://www.fssai.gov.in/upload/uploadfiles/files/Gazette_Notification_Packaging_03_01_2019.pdf (accessed on 17.3.2023)

SUGGESTED READINGS:

- Faridi, H. (2004). *The Science of Cookie and Crackers Production*. Delhi: CBS Publishers.
- Griffin, S. (1997). *Principles of Food Packaging*. Connecticut: The AVI Publishing Company.
- Khetrapal, N., Grewal, R.B., and Jood, S. (2005). Bakery Science and Cereal Technology. Delhi: Daya Publishing House.
- Khanna, K., Gupta, S., Seth, R., Mahana, R., and Rekhi, T. (2004). *The Art and Science of Cooking*. Delhi: Phoenix Publishing House Private Limited.
- Potter, N., and Hotchkiss, J.H. (2006). *Food Science*. Delhi: CBS Publishers.
- Raina, U., Kashyap, S., Narula, V., Thomas, S., Suvira, Vir, S., and Chopra, S. (2005). *Basic Food Preparation – A Complete Manual*. Delhi: Orient Longman.
- Sharma, S., Aggarwal, M. & Sharma, S. (2018). *Food Frontiers*. Delhi: New Delhi Publishers.
- Radhakrishnan, S. (2016). *A Guide To Baking Process:* Write And Print Publications.
- Cauvain, S.P. (2003). *Bread Making Improving Quality*: Elsevier.
- Baking courses: https://www.udemy.com/topic/baking/.(accessed on 17.3.2023)
- Baking guide: http://www.reviewlab.com/baking-guide/.(accessed on 17.3.2023)

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF HOME SCIENCE

Semester -VI

B.A. (Prog) with Food Technology (FT) as Major

Category-II

DISCIPLINE SPECIFIC CORE – DSC- 11-FT:
FOOD JOURNALISM

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Food Journalism	4	3	0	1	Class XII	NIL

LEARNING OBJECTIVES:

1. To make students understand the concept food writing and types and role of food media and culture.
2. To familiarize students with the characteristics of a food writer and develop the content writing style.
3. To develop in students the skills required to be a food critic and reviewer.

LEARNING OUTCOMES:

After completion of the course, the students will be able to:

1. Write articles for newspaper, magazine, commercial co-operations and social media
2. Develop the skill of being a food critic and reviewer
3. Enhance ability related to food photography and investigative food journalism
4. Communicate about food effectively through writing and multimedia storytelling

SYLLABUS OF DSC-11-FT

THEORY
(Credits 3: 45 Hours)

UNIT I: Introduction to Food Journalism **(12 Hours)**

- *Unit Description:* This unit is an introduction to food journalism, its characteristics and discusses about all kinds of food writing, from memoir to blogging to cookbooks.
- *Subtopics:*
  - Food Writing: What is food journalism, types of food writing.
  - Characteristics of a food writer
  - Content writing style
  - Storytelling and creating your own voices.

UNIT II: Reviews and Food Critics **(12 Hours)**

- *Unit Description:* This unit is about food critics, skills required to be a food critic and reviewer. The unit also has focus on investigative food journalism.
- *Subtopics:*
    - Food critic: Who is a food critic do, types of food critic, skill required for food critic, benefits of being a food critic.
    - Restaurant critics and reviewer
    - Investigative food journalism: food industrialism, Scams and scandals, controversial health studies

UNIT III: Food Media and Culture (12 Hours)

- *Unit Description:* This unit will focus on basic concepts of food writing and photography for various print, social and broadcast media.
- *Subtopics:*
    - Recipe writing (newspaper, magazine, commercial co-operations)
    - Food photography (pixel, camera handling)
    - Technical and Cultural role of social media (Writing on Food Systems and Future, Food in relation with diet and health)
    - Food advertisement, marketing and messaging, business email writing
    - Food TV shows
    - Food trends (Food and Instagram, Blogging and Vlogging)

Unit IV: Media Law and Ethics (9 Hours)

- *Unit Description:* This unit will focus on media pillars, *fssai* food advertisement related regulations and CPA 2019 Act. The unit also discusses media ethics and major acts in media.
- *Subtopics:*
    - Media as 4 pillars and 4 estates
    - Food Advertising Regulation and Consumer Protection in India 2019
    - Food Safety and Standards (Advertising and Claims) Regulations 2018
    - 5 ethics of Journalism (Association of Food Journalists' Code of Ethics)
    - Major Acts in Media

PRACTICAL
(Credits 1: 30 Hours)

No. of Students per Practical Class Group: 10-15

1. Write a long paragraph about eating a favorite piece of fruit/ passion about food, using all the senses
2. Write a paragraph about food utility objects (e.g. coffee mug: why do you love it, its specialty etc.)
3. Write a recipe for your favorite sandwich/ dish or write a 250-word review of the best restaurant meal you have eaten recently
4. Conduct a survey of a home scale level food business and report writing of the same.
5. Write an article on food fashion/ trends/ food fusion/ we are what we eat/ good eating practices.
6. Food photography (State food/ International and National foods)
7. Conduct an interview of a food blogger/ chef/ restaurant manager/ canteen vendor/ food entrepreneur.

ESSENTIAL READINGS (Theory and Practical):

- Siniauer, P. (2016). *Writing About Food- A Guide to Good Food Journalism. European* Journalism–*Fellowships*. 2014 – 2015, Freie Universität Berlin. https://www.hssaatio.fi/wp-content/uploads/2015/07/Siniauer_WRITE-ABOUT-FOOD-a-guide-to-good-food-journalism.pdf (accessed on 17.3.2023)
- Jacob, D. (2021). *Will Write for Food: The Complete Guide to Writing Cookbooks, Blogs, Reviews Memoir And More*. 4th edition, Da Capo Lifelong Books
- https://www.livelaw.in/columns/food-safety-and-standards-authority-fssai-food-advertising-consumer-protection-act-212421(accessed on 17.3.2023)
- https://www.poynter.org/ethics-trust/2021/association-of-food-journalists-code-of-ethics/(accessed on 17.3.2023)

SUGGESTED READINGS:

- Gabrielle, H. Killingsworth, S. (2021). *The Best American Food Writing*.HarperCollins Publishers LLC. Boston, New York.
- Sanghvi Vir. (2019). *The Indian Pantry: The Very Best of Rude*. Penguin publisher, India https://www.amazon.in/s/ref=dp_byline_sr_book_1?ie=UTF8&field-author=Sanghvi+Vir&search-alias=stripbooks
- Neelamalar, M. (2010). *Media Law and Ethics*. PHI Learning Pvt Ltd, New Delhi. (ISBN 9788120339743)

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE – DSC-12-FT: ADVANCED PRESERVATION TECHNOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Advanced Preservation Technology	4	3	0	1	Class XII Pass	Basic Preservation Technology

LEARNING OBJECTIVES:

1. To impart knowledge about advanced preservation techniques such as dehydration, canning and freezing.
2. To equip the students with knowledge and skills for preparing, packaging, evaluating and marketing of preserved pectin products and preserves.

COURSE OUTCOMES:

After completion of the course, the students will be able to-

1. Describe the different principles and methods of fruit and vegetable preservation and processing

2. Compare different advanced preservation techniques such as dehydration, concentration, refrigeration and freezing
3. Describe the various steps in dehydration, freezing, canning, pectin products and preserves
4. Prepare, evaluate, package and market jams, jelly, marmalade, and preserves professionally

SYLLABUS OF DSC-12-FT

THEORY
(Credits 3: 45 Hours)

UNIT I: Canning/ Hermetic Preservation (10 Hours)

- *Unit Description:* This unit will focus on the purpose of preservation via canning/hermetic sealing and packaging which is termed as the father of preservation.
- *Subtopics:*
  - Definition and objectives of canning
  - Principle of Preservation, steps of canning of fruits and vegetables (with special emphasis on blanching, exhausting and heat processing)
  - Spoilage of canned foods
  - Packaging

UNIT II: Refrigeration and Freezing (9 Hours)

- *Unit Description*: This unit will focus on the technique of Freezing and Refrigeration as a means of Preservation.
- *Subtopics*:
  - Definition and objectives of Refrigeration and Freezing
  - Principles of Refrigeration and Freezing
  - Methodology of Refrigeration and Freezing of fruits and vegetables
  - Cryogenic Freezing
  - Evaluation of Refrigerated and Frozen foods
  - Cold Storage and Cellars

UNIT III: Dehydration (8 Hours)

- *Unit Description*: This unit will focus on the technique of dehydration and concentration as a means of preservation.
- *Subtopics:*
  - Dehydration- definition and objectives
  - Method of preservation, normal drying curve, water activity, factors affecting rate of drying,
  - Sun drying,
  - Types of dehydration techniques and steps involved.
  - Concentration- definition and objectives, techniques
  - Rehydration

UNIT IV: Fruit and Vegetable Processing –Pectin Products, and Preserves (18 Hours)

- *Unit Description:* This unit will focus on the processing of jam, jelly, marmalades, preserves and pickles.
- *Subtopics:*

- Jam, Jelly and Marmalade- definition, role of pectin and theory of gel formation
- Method of preservation, steps of preparation and evaluation of jam, jelly and marmalade
- Preserves- definition of candied, crystallized and glazed fruits.
- Principle of preservation, steps of preparation and evaluation of candied, crystallized and glazed fruits

PRACTICAL
(Credits 1: 30 Hours)

No. of Students per Practical Class Group: 10-15

Preparation, packaging, labelling, sensory/objective (TSS, pH and headspace) evaluation and costing of:

1. Jam (apple jam and mixed fruit jam)
2. Jelly (guava jelly)
3. Marmalade (orange marmalade)
4. Preserve (carrot)
5. Dehydration of vegetables (green leafy vegetables, other vegetables and tubers)
6. Rehydration of dehydrated vegetables
7. Freezing of vegetables
8. Preparing any of the preserved product/new product in bulk and organizing an exhibition-cum-sale.

ESSENTIAL READINGS (Theory and Practical):

- Rao, E.S., Garg, M. and Barwa, M.S.(2023). *Handbook on Processing and Preservation of Fruits and Vegetables.* 2nd edn. Variety Books Publisher's Distributors, New Delhi
- Potter, N., and Hotchkiss, J.H. (2006). *Food Science*. Delhi: CBS Publishers.
- Lal, G., Siddhapa, G.S., andTandon, G.L. (2009). *Preservation of Fruits and Vegetables*. New Delhi: Indian Council of Agriculture Research.
- Srivastava, S.S. (2006). *PhalParirakshan*. Lucknow: Kitab Mahal.
- Barba, F. J., Ahrné, L., Xanthakis, E., Landerslev, M. G., andOrlien, V. (2018). Innovative technologies for food preservation. In: *Innovative Technologies for Food Preservation* (pp. 25-51). Academic Press.
- Board, N. P. C. S. (2012). *Modern Technology on Food Preservation*. Asia Pacific Business Press Inc.
- Goyal, MR., Mishra, S.K., and Birwal, P. (2022). *Food Processing and Preservation Technologies – advances, methods and applications*. New York: Apple Academic Press.

SUGGESTED READINGS:

- Khurdia, D.S. (1995). *Preservation of Fruits and Vegetables*. New Delhi: Indian Council of Agriculture Research.
- Hui, Y.H., and Evaranuz, E.O. (2015). *Handbook of Vegetable Processing and Preservation*. 2nd Edition. USA: CRC Press.
- Sharma, S. (2010). *Postharvest Management and Processing of Fruits and Vegetables*: Instant Notes. New India Publishing Agency.
- Ramaswamy, H. and Marcotte, M. (2009). *Food Processing–Principles and Applications*. Boca Raton: Taylor and Francis.
- Srilakshmi, B. (2018). *Food Science*. Seventh Edition. Delhi: New Age Publications.
- Subbalakshmi, G. andUdipi, S.A. (2007). Food Processing and Preservation. Delhi: New Age International Publishers.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.A. (Prog.) with Food Technology (FT) as Non-Major
Category-III

DISCIPLINE SPECIFIC CORE – DSC-12-FT:
ADVANCED PRESERVATION TECHNOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Advanced Preservation Technology	4	3	0	1	Class XII Pass	Basic Preservation Technology

LEARNING OBJECTIVES:

1. To impart knowledge about advanced preservation techniques such as dehydration, canning and freezing.
2. To equip the students with knowledge and skills for preparing, packaging, evaluating and marketing of preserved pectin products and preserves.

COURSE OUTCOMES:

After completion of the course, the students will be able to-

1. Describe the different principles and methods of fruit and vegetable preservation and processing.
2. Compare different advanced preservation techniques such as dehydration, concentration, refrigeration and freezing.
3. Describe the various steps in dehydration, freezing, canning, pectin products and preserves.
4. Prepare, evaluate, package and market jams, jelly, marmalade, and preserves professionally.

SYLLABUS OF DSC-12-FT

THEORY
(Credits 3: 45 Hours)

UNIT I: Canning/ Hermetic Preservation **(10 Hours)**

- *Unit Description:* This unit will focus on the purpose of preservation via canning/hermetic sealing and packaging which is termed as the father of preservation.
- *Subtopics:*
  - Definition and objectives of canning
  - Principle of Preservation, steps of canning of fruits and vegetables (with special emphasis on blanching, exhausting and heat processing)
  - Spoilage of canned foods
  - Packaging

UNIT II: Refrigeration and Freezing **(9 Hours)**

- *Unit Description*: This unit will focus on the technique of Freezing and Refrigeration as a means of Preservation.

- *Subtopics*:
    - Definition and objectives of Refrigeration and Freezing
    - Principles of Refrigeration and Freezing
    - Methodology of Refrigeration and Freezing of fruits and vegetables
    - Cryogenic Freezing
    - Evaluation of Refrigerated and Frozen foods
    - Cold Storage and Cellars

UNIT III: Dehydration (8 Hours)

- *Unit Description*: This unit will focus on the technique of dehydration and concentration as a means of preservation.
- *Subtopics:*
    - Dehydration- definition and objectives
    - Method of preservation, normal drying curve, water activity, factors affecting rate of drying,
    - Sun drying,
    - Types of dehydration techniques and steps involved.
    - Concentration- definition and objectives, techniques
    - Rehydration

UNIT IV: Fruit and Vegetable Processing –Pectin Products, and Preserves (18 Hours)

- *Unit Description:* This unit will focus on the processing of jam, jelly, marmalades, preserves and pickles.
- *Subtopics:*
    - Jam, Jelly and Marmalade- definition, role of pectin and theory of gel formation
    - Method of preservation, steps of preparation and evaluation of jam, jelly and marmalade
    - Preserves- definition of candied, crystallized and glazed fruits.
    - Principle of preservation, steps of preparation and evaluation of candied, crystallized and glazed fruits.

PRACTICAL
(Credits 1: 30 Hours)

No. of Students per Practical Class Group: 10-15

Preparation, packaging, labelling, sensory/objective (TSS, pH and headspace) evaluation and costing of:

1. Jam (apple jam and mixed fruit jam)
2. Jelly (guava jelly)
3. Marmalade (orange marmalade)
4. Preserve (carrot)
5. Dehydration of vegetables (green leafy vegetables, other vegetables and tubers)
6. Rehydration of dehydrated vegetables
7. Freezing of vegetables
8. Preparing any of the preserved product/new product in bulk and organizing an exhibition-cum-sale.

ESSENTIAL READINGS (Theory and Practical):

- Rao, E.S., Garg, M. and Barwa, M.S.(2023). *Handbook on Processing and Preservation of Fruits and Vegetables.* 2nd edn. Variety Books Publisher's Distributors, New Delhi
- Potter, N., and Hotchkiss, J.H. (2006). *Food Science*. Delhi: CBS Publishers.
- Lal, G., Siddhapa, G.S., and Tandon, G.L. (2009). *Preservation of Fruits and Vegetables*. New Delhi: Indian Council of Agriculture Research.
- Srivastava, S.S. (2006). *Phal Parirakshan*. Lucknow: Kitab Mahal.
- Barba, F. J., Ahrné, L., Xanthakis, E., Landerslev, M. G., and Orlien, V. (2018). Innovative technologies for food preservation. In: *Innovative Technologies for Food Preservation* (pp. 25-51). Academic Press.
- Board, N. P. C. S. (2012). *Modern Technology on Food Preservation*. Asia Pacific Business Press Inc.
- Goyal, MR., Mishra, S.K., and Birwal, P. (2022). *Food Processing and Preservation Technologies – advances, methods and applications*. New York: Apple Academic Press.

SUGGESTED READINGS:

- Khurdia, D.S. (1995). *Preservation of Fruits and Vegetables*. New Delhi: Indian Council of Agriculture Research.
- Hui, Y.H., and Evaranuz, E.O. (2015). *Handbook of Vegetable Processing and Preservation*. 2nd Edition. USA: CRC Press.
- Sharma, S. (2010). *Postharvest Management and Processing of Fruits and Vegetables: Instant Notes*. New India Publishing Agency.
- Ramaswamy, H. and Marcotte, M. (2009). *Food Processing–Principles and Applications*. Boca Raton: Taylor and Francis.
- Srilakshmi, B. (2018). *Food Science*. Seventh Edition. Delhi: New Age Publications.
- Subbalakshmi, G. and Udipi, S.A. (2007). *Food Processing and Preservation*. Delhi: New Age International Publishers.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF HOME SCIENCE

B.A (PROG) WITH FOOD TECHNOLOGY (FT)

B.A. (Prog) with Food Technology (FT) as Major & Non-Major
Pool DSE: Odd Semester

DISCIPLINE SPECIFIC ELECTIVE COURSE – DSE-1-FT:
CEREAL AND PULSE TECHNOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Cereal and Pulse Technology	4	3	0	1	Class XII Pass	NIL

LEARNING OBJECTIVES:

1. To acquaint students with various types of indigenous grains available.
2. To impart knowledge regarding post-harvest technology of various cereals, millets and pulses.
3. To acquaint students with processing of cereals, millets and pulses with principles, mechanism and machinery involved.

COURSE OUTCOMES:

After completion of the course the students will be able to -
1. Understand basic composition and structure of food grains.
2. Understand the basics of milling operations and storage of grains.
3. Learn processing of food grains into value added products.
4. Access the physical and cooking properties of cereals, millets and pulses**.**

SYLLABUS OF DSE-1-FT

THEORY
(Credits 3: 45 Hours)

UNIT I: Introduction to Cereals, Millets and Pulses (7 Hours)

- *Unit Description:* This unit will introduce the students to various grains in Indian context with its production, utilization, availability and grading standards.
- *Subtopics:*

- General introduction
- Production and utilization trends
- Grain classification
    - Classification of cereals, pulses and millets
    - Market varieties of various grains available in India
    - Grading standards of various grains

UNIT II: Staple Grain Processing (18 Hours)

- *Unit Description:* This unit will focus on various aspects pertaining to the composition and processing of staple cereals with the related processed products.
- *Subtopics:*
    - Structure, physico-chemical properties of staple grains (wheat, rice, corn)
    - Wheat processing
        - Cleaning, tempering, conditioning and milling of wheat
        - Flour treatments (bleaching, maturing) and grading
        - Wheat products (Wheat flour, semolina, dahlia)
    - Rice processing
        - Milling and parboiling of paddy
        - Curing and ageing of paddy and rice; cooking and storage qualities of raw and parboiled rice
        - Rice products (Polished rice, Brown rice, popped, puffs, rice rawa, rice flour)
    - Corn processing
        - Dry and wet milling
        - Starch and its conversion products and processed corn products (popped corn, corn flakes etc.)

UNIT III: Coarse grain and Millet Processing (10 Hours)

- *Unit Description:* This unit describes the composition and processing of coarse grains and millets with their respective products.
- *Subtopics:*
    - Oats Processing
    - Physico-chemical properties and composition of millets
    - Primary processing operations of millets
    - Coarse grain and millet processed products.

UNIT IV: Pulse Processing (10 Hours)

- *Unit Description:* This unit will focus on composition and processing of pulses with its respective products.
- *Subtopics:*
    - Structure, physico-chemical properties and composition of pulses and legumes
    - Traditional and modern milling methods
    - Soybean Processing
    - Products and by-products of pulse milling

PRACTICAL
(Credits 1: 30 Hours)

No. of Students per Practical Class Group: 10-15

1. Physical properties of staple grains (seed weight, seed volume, seed density and hydration capacity)
2. Physical properties of millets (seed weight, seed volume, seed density and hydration capacity)
3. Cooking parameters of rice (water uptake ratio, gelatinization temperature)
4. Popping of grains (wheat/rice/corn/millets)
5. Product preparation from pulses (cleaning, soaking, drying, de-husking, product preparation)
6. Preparation of amylase rich/malt flour from grains
7. Visit to a cereal/pulse processing plant.

ESSENTIAL READINGS (Theory and Practical):

- Rosentrater, K. A., and Evers, A. D. (2017). *Kent's Technology of Cereals: An Introduction for Students of Food Science and Agriculture*. Woodhead Publishing.
- Rice Milling Manual by IRRI. http://www.knowledgebank.irri.org/ericeproduction/PDF_&_Docs/Teaching_Manual_Rice_Milling.pdf(accessed on 17.3.2023)
- Kate, A. and Singh, A. (2021). Processing Technology for Value Addition in Millets. In: Kumar, A., Tripathi, M.K., Joshi, D., Kumar, V. (eds) *Millets and Millet Technology*. Springer, Singapore. https://doi.org/10.1007/978-981-16-0676-2_11(accessed on 17.3.2023)
- Chapke et al. 2020. Latest millet production and processing technologies. Indian Institute of Millet Research. https://www.millets.res.in/farmer/Latest_Millet_English_Full_Book_2020.pdf
- Potter, N. N., and Hotchkiss, J. H. 2012. *Food Science*. Springer Science and Business Media.
- Williams, P.C.; Nakoul, H. and Singh, K.B. (1983). Relationship between cooking time and some physical characteristics in chickpea (Cicer arietinum L.). *J. Fd. Sci. Agric*. 34: 492-495.
- Oko, A.O., Ubi, B.E., Efisue, A.A. and Dambaba, N. (2012). Comparative analysis of the chemical nutrient composition of selected local and newly introduced rice varieties grown in Ebonyi state of Nigeria. *International Journal of Agriculture and Forestry*. 2(2): 16-23.
- Chandra, S. and Samsher, L. (2013). Assessment of Functional Properties of Different Flours. *African Journal of Agricultural Research*, 8, 4849-4852.
- https://egyankosh.ac.in/bitstream/123456789/45848/1/Experiment-12.pdf(accessed on 17.3.2023)
- http://ecoursesonline.iasri.res.in/mod/resource/view.php?id=5933(accessed on 17.3.2023)
- Nwosu, J.N.; Owuamanam, C.I., Omeire, G.C. and Eke, C.C. (2014). Quality parameters of bread produced from substitution of wheat flour with cassava flour using soybean as an improver. *American J. Res. Commu*., 2 (3): 99-118.

SUGGESTED READINGS:

- Davis, J. G. (1982). *Food Science and Technology*: By Magnus Pyke, revised and enlarged by LelioParducci. John Murray, London, 304 pp
- Chakraverty, A., Raghavan, G. S. V., & Ramaswamy, H. S. (2003). *Handbook of post-harvest technology*. Marcel Dekker, Inc
- Hoseney, R. C. and Delcour J. A. (2010). *Principles of Cereal Science and Technology* (No. Ed. 3). American Association of Cereal Chemists (AACC).
- Dendy DAV and Dobraszczyk BJ. (2001). *Cereal and Cereal Products*. Aspen
- Karl, K. (2000). *Handbook of Cereal Science and Technology*. 2nd Rev. Edition. CRC Press
- Matthews, R. H. (1989). *Legumes: Chemistry, Technology, and Human Nutrition*. American Association of Cereal Chemists (AACC).
- Sethi, P. and Lakra, P. (2015). *Aahar Vigyan, Poshan Evam Suraksha*. Delhi: Elite Publishing

House Pvt. Ltd.
- Sahay, K.M. and K.K. Singh. (1994). *Unit Operations in Agricultural Processing*, Vikas Publishing House Pvt. Ltd., New Delhi, p.340.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE – DSE-3-FT: FOOD CULTURAL PERSPECTIVES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Food Cultural Perspectives	4	3	0	1	Class XII Pass	NIL

LEARNING OBJECTIVES:

1. To make students aware of the rich cultural food heritage of India.
2. To make students understand the importance of food in social events and the intercultural communications.

LEARNING OUTCOMES:

After completion of the course, the students will be able to:
1. Understand the factors influencing the diversity in diets of India
2. Comprehend the Indian rich cultural parameters related to food during various community and family social occasions and events
3. Have knowledge regarding variation in Indian food as per the religion
4. Get acquainted with the various myths, beliefs and intercultural communications related to diverse Indian food culture

SYLLABUS OF DSE-3-FT

THEORY
(Credits 3: 45 Hours)

UNIT I: Introduction: Influences on Food and Food Habits (10 Hours)

- *Unit Description:* This unit is about food culture around the world and the varied factors influencing the Indian food cultural practices.

- *Subtopics:*
  - Introduction, Early food habits, Food around the world – current scenario
  - Agricultural developments over the years

- Factors influencing diets- geography, environmental factors (water, climate, soil, weather, natural calamities), trade, war and peace.

UNIT II: Cultural Parameters (10 Hours)

- *Unit Description:* This unit is about the importance and type of food offered on various special occasions and events in Indian society.

- *Subtopics:*
  - Birth and Death
  - Architecture/Housing
  - Language
  - Lifestyle
  - Art and literature
  - Immigration/travel
  - Festivals, special occasions and events

UNIT III: Identity of Food - Religion, beliefs, myths (15 Hours)

- *Unit Description:* The unit describes the Indian food cultural diversity according to the varied religions of India and the common food myths and beliefs.

- *Subtopics:*
  - Food habits and practices – Hinduism, Jainism, Buddhism, Muslim, Christianity
  - Common food myths and beliefs

Unit IV: Food - Intercultural Communications (10 Hours)

- *Unit Description:* This unit will discuss the effect of customs, traditions, culture on the way food is cooked, served, consumed and associated with.

- *Subtopics:*
  - Language (mother tongue)
  - Body language and Customs
  - Food attitude and traditions
  - Cultural differences – food-based practices.
  - Food – a mode of communicating at international level/other social functions of food

PRACTICAL
(Credits 1: 30 Hours)

No. of Students per Practical Class Group: 10-15

1. Preparation of types of questionnaires for interview/ survey.
2. Exploring the menu of various cultural food outlets around your locality.
3. Identify and compare the two diverse Indian regional meals/ cuisines.

4. Identify and present the *PRASADAM* and its cultural importance at various Indian religious places.

   OR

   Prepare a brief report/ Power Point Presentation (PPT) on FSSAI initiative BHOG (Blissful Hygienic Offering to God).
5. Explore and present Food as Medicine in Indian literature.
6. Organize Indian regional cuisine Exhibition/ competition/ Quiz in your institution.
7. Critically evaluate any Indian folk tale/song w.r.t food cultural behaviour.

   OR

   Write a critique on magazine and newspaper articles pertaining to Indian cultural food habits and patterns.
8. Visit to food fair.

ESSENTIAL READINGS (Theory and Practical):

- McWilliams, M. (2015). *Food Around the World: A Cultural Perspective*. Fourth Edition. Pearson Education Inc.
- Srinivas, T. (2011). *Exploring Indian Culture through Food. Food, Culture and Asia*; 16(3): 38-41.
- Sen, C.T. (2004). *Food Culture in India*. Greenwood Press.
- Nandrajog, H. andSuri, S. (2021). *The Saga of Food: Reflections on Technology and Culture*. International Book House.

SUGGESTED READINGS:

- Szanto, D., Battista, A.D. and Knezevic, I. (2022). *Food Studies: Matter, Meaning and Movement*. Food Studies Press.
- Kittler, P.G. andSucher, K.P. (2008). *Food and Culture*. Fifth Edition. Thomson Wadsworth Publishing.
- Albala, K. (2013). *Food: A Cultural Culinary History*. The Great Courses.
- Acharya, K.T. (2000). *Indian Food: A Historical Comparison*. Oxford Press.
- Bhushi, K. (2018). *Farm to Fingers: The Culture and Politics of Food in Contemporary India*. First Edition. Cambridge University Press.
- Lonely, P. (2001). *World Food: India.* Lonely Planet Oakland.
- Ali, E., Naquiah, N. andNizar, A. (2018). *Preparation and Processing of Cultural Food*. First edition. Woodhead Publishing House (Elsevier).

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE – DSE-5-FT: OPERATIONAL LEADERSHIP AND MANAGEMENT: FOOD INDUSTRY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Operational Leadership and Management	4	3	0	1	Class XII Pass	NIL

LEARNING OBJECTIVES:

1. To understand the basic concepts related to operational leadership and management.
2. To know the characteristics of a good leader and effective leadership in variable situations.
3. To be able to conceptualize the role and responsibilities of a manager in various unit operations in food industry.

LEARNING OUTCOMES:

After completion of the course, the students will be able to:

1. Gain the skills of operational leadership and management in food handling and processing
2. Develop strategic plan of action which can support principles and framework of operational management
3. Work in a lead role for managing unit operations/assembly lines in food processing units and various food businesses.

SYLLABUS OF DSE-5-FT

THEORY
(Credits 3: 45 Hours)

UNIT I: Introduction **(8 Hours)**

- *Unit Description:* This chapter will introduce to the students to the concept of operational leadership and management, the historical background, importance and challenges in the field especially with relevance to the food industry.
- *Subtopics:*
    - Introduction to basic concepts: unit operations, management, leadership, operational leadership, operational management, operational thinking.
    - Operational leadership and operational management: evolution, scope, emerging concerns.
    - Approaches to management of food manufacturing and food service unit.

UNIT II: Operational leadership (12 Hours)

- *Unit Description:* This unit will help students know about the basics of leadership, leadership styles, characteristics and responsibilities of an effective leader viz-a-viz operational leader.
- *Subtopics:*
    - Leadership – concept, qualities of an effective leader
    - Leadership styles, difference between strategic and operational leadership
    - Characteristics or role of operational leaders
    - Communications for effective operational leadership

UNIT III: Basics of Management (10 Hours)

- *Unit Description:* The unit will help student understand the importance, principles and functions of management. It will also help them to understand the work responsibilities of a manger with regards to judicious management of human resources for efficient productivity.

- *Subtopics:*
    - Introduction, significance and scope of management
    - Principles of management
    - Functions of management
    - Role of manager/supervisor in work productivity (vertical/horizontal division of labour, departmentalization, organization chart) with relevance to food industry.
    - Decision making – steps and barriers; importance of decision making in operations management.

Unit IV: Operational Management in food industry (15 Hours)

- *Unit Description:* Through this unit the student will learn about efficient administration of business practices which is the primary responsibility of an operational manager. The chapter will discuss about the various aspects of operational management which can lead to enhanced quality and productivity in an efficient manner.
- *Subtopics:*
    - Importance of operations manager and operational management in food industry (models/process)
    - Job Analysis and description (ergonomics, role of duty rosters and SOP), work design and work measurement
    - Material Management (purchase, store, inventory, standardization)
    - Improving productivity (forecasting, scheduling and controlling production activities) System design and capacity planning
    - Food Safety Management System
    - Role of automation and Artificial Intelligence in operational management

PRACTICAL
(Credits 1: 30 Hours)

No. of Students per Practical Class Group: 10-15

1. Prepare a summary report on a short film/documentary on manufacturing a food product to study management of assembly lines or during various stages of production.

or

Critically review approaches of management in a food enterprise unit through a short film/documentary.

2. Prepare a presentation on the leadership styles and stages of operational management through a short film/documentary on the success story of food enterprise led by a woman leader.
3. Visit a nearby small-scale food production unit such as college canteen and understand the applications of "forecasting" for any 2 food products.
4. As an operation manager, prepare an organizational chart, duty roster and job description for a bakery/food preservation unit.
5. Develop an operational leader assessment worksheet in a food production or food processing unit.
   https://clgm.net/files/pdf/OPERATIONAL%20LGL%20Profile%20November%202014.pdf
6. Prepare a presentation on role of computers, artificial intelligence and CAD currently being used in the food processing industry.
7. Prepare a work flowchart for a food processing unit for material handling.
8. Conduct SWOT analysis in a given case study regarding operational management of a process in a food processing unit.

ESSENTIAL READINGS (Theory and Practical):

- Gupta, S. and Starr, M. (2014). *Production and Operation Management System*. London: CRC press Taylor & Francis Group.
- Kumar, A.S. and Suresh, N. (2008). *Production and Operations Management* (skill Development, Caselets and Cases). Banglore: New Age International (P) Limited Publisher.
- Render, B. (2012). *The Encyclopedia of Operations Management. A field Manual and Glossary of Operations Management Terms and Concepts*. Pearson.
- Stevenson, W.J. (2018). *Operations Management*. (13th edn.). McGraw-Hill Education, New York
- Greasley, A. (2013). *Operations management*. (3rd edn.). John Wiley & Sons, Limited.
- Young, S.T. (2010). *Essentials of Operations Management*. Sage Publications, United State of America.
- Reid, R., and Sanders, N.R. (2010). Chapter 1. Introduction to Operations Management. In: *Operations Management*. (4th edn.). John Wiley & Sons, Inc.
  a. https://catalogimages.wiley. com/images/db/pdf/9781119497332.excerpt.pdf
- Morill, R.L. (2010). *Strategic Leadership*. United Kingdom: Rowman & Little field Publishers.
- Merel, S. (2017). *Leadership Styles in the Context of the Food Processing Industries*. Wageningen Research. https://livrepository.liverpool.ac.uk/3090163/

SUGGESTED READINGS:

- Certified Local Government Manager (CLGM), Society of Local Government Managers of Alberta (SLGM) (2014). Operational local government leader profilehttps://clgm.net/files/pdf/OPERATIONAL%20LGL%20Profile%20November%202014.pdf
- Dittmer, P.R, and Keefe, J.D. (2009). *Principles of Food, Beverage and Labour Cost Controls* (9th edn.). John Wiley & Sons, United State of America.
- Kumar, S.A, Suresh, N. (2009). *Operations Management*. New Age International Publishers. Delhi.
- Palacio, J. and Theis, M. (2009). *Food Service Management: Principles and Practices*. New Jersey: Pearson.
- Russell,R.S., Taylor,B.W (2011). *Operations Management – Creating Value Along the Supply Chain* (7thedn.). John Wiley and Sons, Inc. United States of America.

- Seuring, Stefan, Sarkis, Joseph and Klassesn, Robert 2014. Sustainable operations management: recent trends and future directions [Editorial]. *International Journal of Operations and Production Management* 34 (5) 10.1108/IJOPM-12-2013-0557
- Smith, R.A. and Siquaw, J. (2010). *Strategic Hospitality Leadership*. John Willey & Sons Pte. Ltd.
- Stevenson, W.J. (2018). *Operations Management*. (13th edn.). McGraw-Hill Education, New York.
- Wallis, J. (2016). Operational Leadership. In: Farazmand, A. (eds) *Global Encyclopedia of Public Administration, Public Policy, and Governance*. Springer, Cham. https://doi.org/10.1007/978-3-319-31816-5_1921-1

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.A. (Prog) with Food Technology (FT) as Major & Non-Major
Pool DSE: Even Semester

DISCIPLINE SPECIFIC ELECTIVE – DSE-2-FT:
POST HARVEST TECHNOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Post Harvest Technology	4	3	0	1	Class XII Pass	NIL

LEARNING OBJECTIVES:

4. To familiarize students with role of post-harvest technology.
5. To impart knowledge regarding the developmental dynamics of agricultural produce.
6. To acquaint students with technological approaches involved in reduction of post-harvest losses.

COURSE OUTCOMES:

Upon successful completion of this course, students will be able to:
1. Explain the principles of post-harvest technology
2. Illustrate the physiological and biochemical changes that occur during various stages of fruits and vegetables development and production
3. Understand the causes of post-harvest losses, and remedial methods to reduce them
4. Indicate the importance and the significance of proper post-harvest handling to maintain the quality of agricultural produce

SYLLABUS OF DSE-2-FT

THEORY
(Credits 3: 45 Hours)

UNIT I: Introduction to Post-Harvest Technology (9 Hours)

- *Unit Description:* This unit will introduce the students to the relevance and current status of post-harvest technology in global scenario.
- *Subtopics:*
    - Introduction to Post-harvest technology
    - Importance and need.
    - Status of post-harvest: Global scenario
    - Factors affecting quality of horticultural produce.
        - Pre-harvest (customization of produce by moulding method)
        - Harvest

- Post-Harvest

UNIT II: Physiology and Biochemistry of Horticultural Produce (10 Hours)

- *Unit Description:* This unit will focus on various physiological and biochemical changes in horticultural produce after harvest.
- *Subtopics:*
  - Physiology of horticultural produce
  - Respiration rate and associated factors
  - Biochemical and physiological changes during ripening and ethylene biosynthesis
  - Maturity indices in horticultural produce
  - Disorders in horticultural produce

UNIT III: Post-harvest Losses and Treatments for Prevention (17 Hours)

- *Unit Description:* This unit describes the post-harvest losses, associated factors and the treatments involved in reduction of such losses
- *Subtopics:*
  - Introduction and types of post-harvest losses
  - Factors responsible
    - Biological
    - Environmental
  - Post-harvest treatments
    - Pre-cooling
    - Cleaning, washing, dry-cleaning and dressing.
    - Curing, drying, vapor heat treatment and degreening
    - Dys-infection and sprout suppression
    - Wax-coating, astringency reduction and irradiation
    - Regulation of ripening

UNIT IV: Storage and Packaging (9 Hours)

- *Unit Description:* This unit will focus on storage and packaging techniques of horticultural produce.
- *Subtopics:*
  - Principles of storage.
  - Traditional (in situ, sand, coir, pits, clamps, windbreaks, cellars, barns, evaporative cooling, ZECC) and advanced storage methods (Controlled atmosphere Storage, Modified Atmospheric Storage, Cold storage).
  - Packaging of horticultural produce- material, techniques-basic and advanced.

PRACTICAL
(Credits 1: 30 Hours)

No. of Students per Practical Class Group: 10-15

8. Classify any fruit(ex.-banana) based on physical maturity indices
9. Determination of firmness in fruits by penetrometer
10. Determination of the juice content in different maturity stages of fruit
11. Determination of fruit acids by titration and calculation of the sugar/acid ratio

12. Determination of the starch content of apples/pears using an iodine solution
13. Determination of pesticide residue in fresh farm produce by using chlorine test strips
14. Presentation on post-harvest management of any fruit/vegetable by application of low cost and modern techniques

OR

Visit to a nearby farm.

ESSENTIAL READINGS (Theory and Practical):

- Yahia, E. M., and Carrillo-Lopez, A. (Eds.). (2018). *Postharvest Physiology and Biochemistry of Fruits and Vegetables*. Woodhead Publishing.
- Wills, R., and Golding, J. (2016). *Postharvest: An Introduction to The Physiology and Handling Of Fruit And Vegetables*. UNSW press.
- Siddiq, M., Ahmed, J., Lobo, M. G., and Ozadali, F. (Eds.). (2012). *Tropical and Subtropical Fruits: Postharvest Physiology, Processing and Packaging*. John Wiley & Sons.
- Singh, I.S. (2009). *Post-Harvest Handling and Processing of Fruits and Vegetables*, West vill Publishing House.
- Chakraverty, A., Mujumdar, A. S., and Ramaswamy, H. S. (Eds.). (2003). *Handbook Of Postharvest Technology: Cereals, Fruits, Vegetables, Tea, And Spices* (Vol. 93). CRC press. http://ecoursesonline.iasri.res.in/course/view.php?id=164(accessed on 17.3.2023)
- FAO. Post-harvest system and food losses. https://www.fao.org/3/ac301e/AC301e03.html(accessed on 17.3.2023)
- FAO. Prevention of post-harvest food losses fruits, vegetables and root crops a training manual. https://www.fao.org/3/t0073e/t0073e00.html(accessed on 17.3.2023)

SUGGESTED READINGS:

- Wills, R. B., and Golding, J. (Eds.). (2016). *Advances in Postharvest Fruit and Vegetable Technology*. CRC press.
- Kitinoja, L., and Gorny, J. R. (1999). Postharvest technology for small-scale produce marketers: economic opportunities, quality and food safety. *Postharvest technology for small-scale produce marketers: economic opportunities, quality and food safety*.
- Kadar, A.A. (2002). *Post Harvest Technology of Horticultural Crops,* 2nd Edition, University of California.
- http://postharvest.org/PEF_Training_of_Postharvest_Trainers_Manual_2019_2Ed.pdf
- https://agmarknet.gov.in/Others/CPBANANA.pdf(accessed on 17.3.2023)
- https://www.oecd.org/agriculture/fruit-vegetables/publications/guidelines-on-objective-tests.pdf(accessed on 17.3.2023)

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE – DSE-4-FT: FOOD VALUE CHAIN MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Food Value Chain Management	4	3	0	1	Class XII Pass	NIL

LEARNING OBJECTIVES:

6. To understand the basic concepts related to food value chain management.
7. To know the principles, process and components of value chain management with special reference to the food industry.
8. To learn the scope and challenges associated with sustainable food value chain management.

LEARNING OUTCOMES:

After completion of the course, the students will be able to:

9. Appreciate the significance of managing food value chains
10. Develop strategic plan of action which can support the concept of sustainability in food value-addition
11. Manage unit operations/assembly lines in food processing units

SYLLABUS OF DSE-4-FT

THEORY
(Credits 3: 45 Hours)

UNIT I: Introduction: Concept and Framework (8 Hours)

- *Unit Description:*This unit will discuss about the concept of food value chain and the basic framework necessary for its application. It will help students understand the difference and association of value chain vis-à-vis food value chain.

- *Subtopics:*
  - Basic Concepts: value chain, food value chain, sustainable food value chain, supply food chain management, sustainable food value chain development.
  - Concept of "value added" in food chains.
  - Sustainable food value chain framework.

UNIT II: Principles and Components of Sustainable Food Value Chain Development (12 Hours)

- *Unit Description:* This unit will discuss about the basic principles and components which help in the planning and implementation of food value chain.

- *Subtopics:*
    - Principles of sustainable food value chain development: measuring, understanding and improving
    - Components of sustainable food value chain development

UNIT III: Food Supply Chain Management (15 Hours)

- *Unit Description:* Food supply chain is an important for successful food value chain management. This unit will discuss the basic aspects of supply chain management.

- *Subtopics:*
    - Types of food supply chains
    - Management of operations: manufacturing and processing of food
        - Operational Challenges: food logistics in procurement, distribution, transportation and retailing (case study)

Unit IV: Challenges and Potential in Food Value Chain Management (10 Hours)

- *Unit Description:* This chapter will discuss the future challenges and potential or scope of successful and sustainable food value chain management.

- *Subtopics:*
    - Social and economic aspects
    - Food insecurity (Conserving and enhancing nutrients: food fortification)
    - Carbon footprint, water footprint, toxicity and waste, soil health
    - Food losses and food waste
    - Food innovation
    - Green Technological Approaches in food industry
    - Catering sector as a sustainable value chain (case study)

PRACTICAL
(Credits 1: 30 Hours)

No. of Students per Practical Class Group: 10-15

19. Critical evaluation on the following case studies:
    - Potato value chain management (Link: https://www.fao.org/3/i3953e/i3953e.pdf, Pg. 28 of Neven (2014)
    - Dairy value chain management (Link: https://averdishome.files.wordpress.com/2017/01/sustainable-value-chains-for-sustainable-food-systems.pdf, Pg. 25 of Maybeck and Redfern (2016).
    - Coffee value chain management (Link: https://www.fao.org/3/i3953e/i3953e.pdf, Pg. 49 of Neven (2014))
    - Pineapple value chain management (Link: http://sfacindia.com/PDFs/SFAC_Value-Chain-Analysis.pdf)

20. Develop a food value chain flow chart or framework for any farm to plate product such as wheat to bread or tomato to tomato puree.
21. Develop a business proposal for supply chain management of milk or any perishable food.
22. SWOT Analysis of a given food value chain management through a case study (Link: https://averdishome.files.wordpress.com/2017/01/sustainable-value-chains-for-sustainable-food-systems.pdf, Pg. 263 of Maybeck and Redfern (2016)).
23. Methodology for determining food waste in college or school canteen.

ESSENTIAL READINGS (Theory and Practical):

- Neven, D. (2014). *Developing Sustainable Food Value Chains: Guiding Principles. Food and Agricultural Organization (FAO)*. Link: https://www.fao.org/3/i3953e/i3953e.pdf
- Dani, S. (2021). *Food Supply Chain Management and Logistics*. Second Edition. Kogan Page.
- Meybeck, A. and Redfern, S. (2016). *Sustainable value chains for sustainable food systems. Food and Agricultural Organization* (FAO).Link: https://averdishome.files.wordpress.com/2017/01/sustainable-value-chains-for-sustainable-food-systems.pdf
- Stead, V. and Hinkson, M. (2022). *Beyond Global Food Supply Chains: Crisis, Disruption and Regeneration*. First Edition. Palgrave Macmillan Press.
- Pullman, M. and Wu, Z. (2021). *Food Supply Chain Management: Building a Sustainable Future*. Second Edition. Routledge Press.
- Ikavou, E., Bochtis, D., Vlachos, D. and Aidonis, D. (2016). *Supply Chain Management: For Sustainable Food Networks*. First Edition. Wiley Publishers.
- Mena, C. and Stevens, G. (2010). *Delivering Performance in Food Supply Chains*. First Edition. CRC Press.
- Small Farmers Agrobusiness Consortium (SFAC). (2022). *Value Chain Analysis of Select Crops in Northeastern States*. SFAC. Link: http://sfacindia.com/PDFs/SFAC_Value-Chain-Analysis.pdf

SUGGESTED READINGS:

- Mor, R.S., Kamble, S.S. andSangwan, K.S. (2022). *Operations and Supply Chain Management in Food Industry: Farm to Fork*. Springer.
- Lianos, I., Ivanov, A. and Davis, D. (2022). *Global Food Value Chains and Competitive Laws*. First Edition. Cambridge University Press.
- Bourlakis, M.A. and Weightman, P.W.H. (2003). *Food Supply Chain Management*. First Edition. Blackwell Publishing.
- Mukherjee, A., Goyal, T.M., Pal, P. and Deb, S. (2014). *Food Supply Chain in India: Analysing the Situation for International Business*. Academic Foundation.
- Hill, V. (2016). *A Kaizen Approach to Food Safety: Quality Management in the Value Chain from Wheat to Bread*. Springer.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE – DSE-6-FT: RESEARCH METHODS IN HOME SCIENCE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Research Methods in Home Science	4	3	0	1	XII	NIL

LEARNING OBJECTIVES:

1. To provide students understandings about the basic concepts, approaches and methods in conducting Home Science research.
2. To enable learners to appreciate and critique the nuances of designing a research study well. To sensitize students towards ethical concerns while conducting Home Science research.

COURSE OUTCOMES:

Upon successful completion of this course, students will be able to:

1. Demonstrate knowledge of the scientific method, purpose and approaches to research in Home Science
2. Compare and contrast quantitative and qualitative research approaches
3. Explain different types of research design and their applicability in Home Science research
4. Understand the key elements of a research process
5. Explain ethical principles, issues and procedures

SYLLABUS OF DSE-6-FT

THEORY
(Credits 3; Hours 45)

UNIT I: Research Purpose and Design **(10 Hours)**

This unit will deal with meaning and importance of research in various areas of Home Science. Exposure to different types of research designs and measurement in Home Science research would also be given.

- Meaning, purpose and significance of research
- Research as a scientific method
- Types of research
- Quantitative, Qualitative and mixed method approaches

- Research Designs –Experimental and Non-Experimental; Descriptive and Observational; Participatory research
- Internal and external validity of research design
- Variables, concepts and measurement in research
- Levels of measurement
- Units of analysis

UNIT II: Sampling and Research tools & techniques (15 Hours)

This unit will introduce the student to the concept of sampling and methods used to draw sample from population using examples from Home Science discipline. Students would also learn about types of data, its collection and reliability and validity concerns.

- Role of sampling in research
- Sampling techniques and their applicability, Sample size and sampling error
- Types of data: Primary and Secondary
- Tools of data collection; types, construction and administration- Interview, Questionnaire, Observation, Focus group discussion and other methods
- Validity and reliability of data collection tools

UNIT III: The Research Process (15 Hours)

This unit will elaborate upon the various steps involved in conducting and reporting researches in Home Science.

- Defining the problem, research questions, objectives, hypotheses
- Review of related literature and originality in writing
- Systematic research: concept and methodology
- Planning the research
- Identifying variables and constructing hypothesis
- Selecting appropriate research methodology and tools
- Data analysis: coding and tabulation
- Writing a research report: styles and formats
- Citation formats: in medical sciences, social sciences

UNIT IV: Values, Social Responsibility and Ethics in Research (5 Hours)

This unit will apprise the students about ethical concerns while conducting and reporting research.

- Ethical principles guiding research: from inception to completion and publication of research
- Plagiarism and Academic integrity in research: plagiarism tools and software
- Ethical issues relating to research participants and the researcher
    - Rights, dignity, privacy and safety of participants
    - Informed consent, confidentiality, anonymity of respondents, voluntary participation, harm avoidance

PRACTICAL
(Credits 1; Hours 30)

1. Data visualization
2. Levels of Measurement

3. Types of research designs
   a. Experimental and non-experimental; Descriptive and observational
   b. Qualitative, Quantitative and mixed method
4. Sampling techniques and sample size calculation
   a. Probability sampling method
   b. Non-Probability sampling methods
5. Tools of data collection- Interview schedule, questionnaire and FGD
   - Designing/ Construction
   - Preparation of tools for ethical review
   - Pilot testing/ validity and reliability of the tool\
6. Data collection and analysis process: conducting interviews, administering questionnaire
7. Coding and tabulation of data for analysis
8. Citation formats and Plagiarism
9. Reviewing a research paper from a specific area of specialization in Home Science

ESSENTIAL READINGS (Theory and Practical):

- Kerlinger F. N. and Lee, H.B. (2017). *Foundations of Behavioral Research* 4th Ed. Harcourt College Publishers.
- Kothari, C. R. (2019). *Research Methodology: Methods and Techniques*. New Age International Pvt Ltd, New Delhi.
- Kothari, C. R. (2022). *ShodhPadhati* 1st Ed. New Age International Pvt Ltd, New Delhi.
- Kumar, R. (2019) Research Methodology: A Step-by-Step Guide for Beginners. 5th Ed. Sage Publications, New Delhi.

SUGGESTED READINGS:

- Bernard, H. R. (2000). *Social research methods: Qualitative and quantitative approaches.* Thousand Oaks, CA.: Sage.
- Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches.* Thousand Oaks, CA: Sage Publications.
- Davis, A. M., Treadwell, D. (2019). Introducing Communication Research: Paths of Inquiry. United Kingdom: SAGE Publications.
- Flynn, J.Z., Foster, I.M. (2009). *Research Methods for the Fashion **industry.*** **Fairchild** books, Bloomsbury publishing.
- Indian National Science Academy (INSA) (2019). *Ethics in Science Education, Research and Governance*. ISBN:978-81-939482-1-7. http://www.insaindia.res.in/pdf/EthicsBook.pdf
- Jacobsen, K. H. (2020). *Introduction to health research methods: A practical guide*. Jones & Bartlett Publishers.
- UGC (2021) *Academic Integrity and Research Quality*. New Delhi: UGC, Retrieved from https://www.ugc.ac.in/e-book/Academic%20and%20Research%20Book_WEB.pdf

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF HOME SCIENCE

B.A (Prog) Food Technology

GENERIC ELECTIVE COURSES (GE)

GENERIC ELECTIVE – GE-1-FT:
BASIC BAKING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Basic Baking	4	3	0	1	Class XII	NIL

LEARNING OBJECTIVES:

1. To impart students with knowledge related to baking technology.
2. To introduce and equip students to the techniques and skills of cakes, biscuits and pastry making.

COURSE OUTCOMES:

Upon successful completion of this course, students will be able to:

1. Familiarize themselves with present and future trends of baking industry.
2. Describe the role of ingredients in bakery industry.
3. Demonstrate the skills in preparing cakes, pastries and biscuit, cost control and marketing.
4. Recognize the significance of factors which influence safety of food. Conduct sensory evaluation of bakery products.

SYLLABUS OF GE-1-FT

THEORY
(Credits 3: 45 Hours)

UNIT I: Baking Industry **(10 Hours)**

- *Unit Description:* This unit will introduce the students to the field of Food Bakery Science. It will also give information on nutrition facts of Bakery products.
- *Subtopics:*
    - History of bakery - present trends and prospects

- Nutrition facts about bakery products
- Food safety aspects of baked products

UNIT II: Cake Processing (14 Hours)

- *Unit Description:* The unit is about processing of various types of cakes, their labelling, packaging and evaluation.
- *Subtopics:*
  - Preparation of cakes – Ingredients, types of cakes, methods of batter preparation, steps in cake making, balancing of cake formula, evaluation of the baked cake, operational faults in cake processing and the remedial measures.
  - Packaging, labelling, and costing

UNIT III: Pastry Processing (6 Hours)

- *Unit Description:* The unit is about processing of various types of pastries, and their evaluation.
- *Subtopics:*
  - Preparation of pastry – Ingredients, types of pastries (short crust, puff/flaky and choux pastry), processing and evaluation, faults and remedies.

UNIT IV: Biscuit and Cookies Processing (15 Hours)

- *Unit Description:* The unit is about processing of various types of biscuits, cookies and their evaluation.
- *Subtopics:*
  - Preparation of biscuits and cookies – types, ingredients, processing and evaluation.

PRACTICAL
(Credits 1: 30 Hours)

No. of Students per Practical Class Group: 10-15

1. Weights and measures, selection of raw material.
2. Preparation, sensory evaluation and packaging of cakes.
   - Fatless sponge cakes
   - Shortened cakes
   - Eggless cakes
   - Muffins and brownies
3. Preparation, sensory evaluation and packaging of pastries-
   - Short crust
   - Puff/flaky
   - Choux pastry
4. Preparation, sensory evaluation and packaging of biscuits.

ESSENTIAL READINGS (Theory and Practical):

- Dubey, S. C. (2016). *Basic Baking: Science and Craft*. Delhi: The Society of Indian Bakers.
- Edward, W. P. (2007). *The Science of Bakery Products*. Cambridge: RSC Publishing.
- Faridi, H. (2004). The Science of Cookie and Crackers Production. Delhi: CBS
- Publishers.
- Ketrapaul, N., Grewal, R.B., Jood, S. (2005). Bakery Science and Cereal Technology.
- Delhi: Daya Publishing House.
- Matz, A. (2008). *Bakery Technology and Engineering*, 10th Edition. Delhi: CBS Publishers.
- Suri, S. & Malhotra, A. (2014). *Food Science, Nutrition and Safety.* Delhi: Pearson India Ltd.

SUGGESTED READINGS:

- Cornell, Hugh, J. & Hoveling, Alber. W. (1998). Wheat Chemistry and Utilization,
- Delhi: CRC Press.
- Edward, W. P. (2007). The Science of Bakery Products. Cambridge: RSC Publishing.
- Kent, N.L. (2004). Technology of Cereals. London: Pergamon Press.
- Khanna, K., Gupta, S., Seth, R., Mahana, R., & Rekhi, T. (2004). The Art and Science
- of Cooking. Delhi: Phoenix Publishing House Private Limited.
- Matz A. (2004). The Chemistry and Technology of Cereals as Food and Feed. Delhi:
- CBS Publishers.
- Matz, A. (1998). Bakery Technology and Engineering. Delhi: CBS Publishers.
- Raina, U., Kashyap, S., Narula,V., Thomas, S., Suvira, Vir, S., & Chopra, S. (2005).
- Basic Food Preparation – A Complete Manual. Delhi: Orient Longman.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – GE-2-FT: FRUIT AND VEGETABLE PRESERVATION TECHNOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Fruit and Vegetable Preservation Technology	4	3	0	1	Class XII	NIL

LEARNING OBJECTIVES:

9. To introduce students to the myriad field of preservation
10. To help students understand the basic principles of fruit and vegetable preservation
11. To help students learn methods and gain skills required for preserving fruits and vegetables
12. To know the regulatory and safety aspects associated with processing preserved products

LEARNING OUTCOMES:

After completion of the course, the students will be able to:

12. Explain the principles and methods of preserving fruits and vegetables
13. Appreciate the role of food safety regulations in preservation industry
14. Prepare different types of preserved products from fruits and vegetables

SYLLABUS OF GE-2-FT

THEORY
(Credits 3: 45 Hours)

UNIT I: Unit I: Fruit and Vegetable Preservation – an overview (10 Hours)

- *Unit Description:* This unit will introduce the students to the vast field of food preservation and the salient changes which occur post harvest in fruits and vegetables.

- *Subtopics:*
  - Objectives of preservation and processing
  - Scope of preservation industry in India
  - Physical, chemical and microbiological changes in fruits and vegetables
  - Factors affecting growth of microorganisms and the control measures

UNIT II: Principles and methods of preservation (12 Hours)

- *Unit Description:* This unit will explain to the students the principle, advantages and disadvantages of various methods of preservation.

- *Subtopics:*
  - Asepsis
  - Low temperature
  - High temperature
  - Removal of moisture
  - Removal of air
  - Use of chemical preservatives
  - Fermentation
  - Irradiation
  - Newer methods

UNIT III: Fruit and vegetable processing (15 Hours)

- *Unit Description:* This unit will help students learn in detail the methods of preparing safe and good quality preserved products.

- *Subtopics:*
  - Chutney and sauces- Definition, method of preservation, steps in preparation of chutney and sauces.
  - Fruits beverages- Definition and classification, method of preservation (with special emphasis on pasteurization, use of chemical preservatives, sugar), role of various ingredients.
  - Jam, Jelly and Marmalade-definition, role of pectin and theory of gel formation, method of preservation, steps of preparation, evaluation.
  - Preserves- definition, method of preservation, steps of preservation, evaluation, candied, crystallized and glazed fruits
  - Pickles- definition, classification method of preservation steps of preparation of vinegar pickles, evaluation.

Unit IV: Food Safety Regulations and procedures (8 Hours)

- *Unit Description:* This unit will help students learn about the regulatory aspects of preserved food products. The unit will also briefly discuss the practices and programmes which can be adopted to enhance quality of preserved products.

- *Subtopics:*
  - Key terms, factors affecting food safety, recent concerns
  - National food law (FSSA), standards and regulations
  - Food additives and contaminants
  - Good Hygiene Practices
  - HACCP

PRACTICAL
(Credits 1: 30 Hours)

Preparation, packaging, labeling, sensory and objective (TSS, p^H) evaluation of :

1. Sauces and chutnies
2. Ketchup (tomato)
3. Squashes (lemon squash, orange squash, pineapple squash)
4. Syrups (rose syrup and almond syrup)
5. Jams (apple jam and mixed fruits jam)
6. Pickles (green chilli, lemon, mixed vegetable)
7. Preserve (carrot)

ESSENTIAL READINGS (Theory and Practical):

- Rao, E.S., Garg, M. and Barwa, M.S. (2023). *Handbook on Processing and Preservation of Fruits and Vegetables.* 2nd edn. Variety Books Publisher's Distributors, New Delhi
- Frazier, W.C. and Westhoff, D.C. (2014). *Food Microbiology.* Chennai: Tata McGraw Hill Publishing Company Limited.
- Fellows, P.J. (2022). *Food Processing Technology Principles and Practice*. 5th edn. Woodhead Publishing Series in Food Science, Technology and Nutrition. https://doi.org/10.1016/C2019-0-04416-0.
- Rahman, M.S. (Ed.). (2020). *Handbook of Food Preservation.* 3rd edn. CRC Press. https://doi.org/10.1201/9780429091483
- Suri, S. & Malhotra, A. (2014). Food Science Nutrition and Safety. Delhi: Pearson India Ltd.
- Sivasankar, B. (2002). *Food Quality, in Food Processing and Preservation.* Prentice-Hall of India Private Limited, New Delhi.
- Srivastava, S.S. (2006). *Phal Parirakshan.* Lucknow: Kitab Mahal.

SUGGESTED READINGS:

- Potter, N.N., and Hotchkiss, J.H. (2012). *Food Science.* 5th edn. Springer New York, NY. XV, 608. https://doi.org/10.1007/978-1-4615-4985-7.
- Lal, G., Siddhapa, G.S. and Tandon, G.L. (2009). *Preservation of Fruits and Vegetables.* New Delhi: Indian Council of Agriculture Research.
- Subbalakshmi, G., and Udipi, S.A. (2007). *Food Processing and Preservation.* Delhi: New Age International Publishers.
- Khurdia, D.S. (1995). *Preservation of fruits and vegetables.* New Delhi: Indian Council of Agriculture Research.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVE – GE-3-FT:
ENTREPRENEURSHIP FOR SMALL SCALE CATERING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical /Practice		
Entrepreneurship for Small Scale Catering	4	3	0	1	Class XII	NIL

LEARNING OBJECTIVES:

1. To introduce the students to the field of food business and cafeteria management
2. To impart knowledge about different types of food business, types of cafeteria and their management
3. To impart practical skills in preparation of project report for business plans, planning and organization of different cafeterias and quantity food production

LEARNING OUTCOMES:

After successfully completing the course, the students will be able to:

1. Describe various types of food businesses and develop food business plans.
2. Know the government regulations for food business and concept of quality management.
3. Plan and execute menus for different types of cafeterias.
4. Develop business plan to set up a successful small scale food business/cafeteria.

SYLLABUS OF GE-3-FT

THEORY
(Credits 3: 45 Hours)

UNIT I: Food Business Management (15 Hours)

- *Unit Description:* This unit will introduce students to the concept of different types of food business, business plans, business ethics and food regulations
- *Subtopics:*
  - Case studies of food businesses and its aspects, Types of Food Businesses
  - Market assessment techniques and preparation of a food business plan.
  - FSSAI regulations for Food Businesses
  - Business ethics and Quality Management.

UNIT II: Cafeteria Management (15 Hours)

- *Unit Description:* This unit will introduce students to the concept of different types of cafeterias and their management.
- *Subtopics:*
    - Types of Cafeterias and Type of Services
    - Resources- Finance, Human Resource, Equipment, Infrastructure and facilities
    - Organizational goals, structure and salient responsibilities of staff and management
    - Menu Planning- types of menus, factors affecting menu planning.
    - Food Purchase and Storage
    - Quantity Food production

Unit III: Operational Management in food industry (15 Hours)

- *Unit Description:* Through this unit the student will learn about efficient administration of business practices which is the primary responsibility of an operational manager. The chapter will discuss about the various aspects of operational management which can lead to enhanced quality and productivity in an efficient manner.
- *Subtopics:*
    - Importance of operations manager and operational management in food industry (models/process)
    - Job Analysis and description (ergonomics, role of duty rosters and SOP), work design and work measurement
    - Material Management (purchase, store, inventory, standardization)
    - Improving productivity (forecasting, scheduling and controlling production activities) System design and capacity planning
    - Food Safety Management System
    - Role of automation and Artificial Intelligence in operational management

PRACTICAL
(Credits 1: 30 Hours)

No. of Students per Practical Class Group: 10-15

1. Market Survey for identification of food business opportunities
2. Preparation of a food Business plan
3. Planning and organization for industrial cafeteria
4. Planning and organization for hospital cafeteria
5. Planning and organization for cafeteria in a mall/market
6. Planning and organization for cafeteria in a corporate office/ Airport
7. Setup and display of daily menus
8. Quantity Food Production

9. Management of a Cafeteria

ESSENTIAL READINGS (Theory and Practical):

1. Sethi,M. (2016). *Institutional Food Management*. Delhi, New Age International Publishers, India
2. Taneja,S. & Gupta,S.L. (2017). *Entrepreneur Development.* Galgotia Publishing Company, Delhi, India.
3. Bali, P.S. (2011). *Quantity Food Production Operations and Indian Cuisine.* Oxford University Press, India.
4. Warner, M. (2016). *Industrial Food Service and Cafeteria Management.* Cahners Books, Boston.

SUGGESTED READINGS:

1. Andrews, S. (2008). *Food and Beverage Management*. Tata McGraw-Hill Publishing Company Limited, New Delhi, India.
2. PaynePalacio, J. & Theis, M. (2015). *Food Service Management: Principles and Practices* (13th edition). Pearson.
3. Dessler, G. (2007). *Human Resource Management* (11th edition). Prentice Hall, New Jersey.
4. Luthans, F. (2004). *Organisational Behaviour* (10th edition). McGraw Hill International.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVE – GE-4-FT:

FOOD QUALITY MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Food Quality Management	4	3	0	1	Class XII	NIL

LEARNING OBJECTIVES:

1. To introduce students to the field of food quality management
2. To impart knowledge on basic concepts of quality and safety in the food sector
3. To familiarize the students with the approaches, principles and programs which facilitate food quality management.
4. To help students understand the basics of preparing, evaluating and implementing a food quality policy on an on-going basis.

LEARNING OUTCOMES:

After completion of the course, the students will be able to:

1. Explain the association of food quality with food safety.
2. Appreciate the need for having a quality policy and work-specific standard operating guidelines in food-based organizations.
3. Contribute enthusiastically to the food quality management system.
4. Facilitate the development, implementation and evaluation of quality policy.

SYLLABUS OF GE-4-FT

THEORY
(Credits 3: 45 Hours)

UNIT I: Food Quality and Food Safety – an overview (18 Hours)

- *Unit Description:* This unit will introduce the students to the vast and emerging field of food quality, managing quality during food handling and its association with food safety.

- *Subtopics:*
  - Introduction to basic terms (quality, food quality, quality control, quality assurance, quality improvement, quality planning, quality assessment, quality management)
  - Characteristics of quality
  - Food quality attributes – Intrinsic and Extrinsic
  - Food quality management – scope (consumer and business perspectives)

- Role of food safety in food quality
- Food safety hazards and the role of FSSAI

UNIT III: Approaches to management of food quality (17 Hours)

- *Unit Description:* This unit will explain to the students how a combination of approaches in different situations can help in managing resources and processes to result in achieving, maintaining, enhancing quality of food.

- *Subtopics:*
  - Quality control
  - Quality assurance
  - Total quality management
  - Quality management system

UNIT III: Quality management programs and standards for food industry (10 Hours)

- *Unit Description:* This unit will discuss the principles, procedures which can be followed in principle to maintain and achieve higher standards by the food industry.

- *Subtopics:*
  - HACCP (origin, key terms, principles, development and implementation and maintenance)
  - Codex Alimentarius 12 steps for application of HACCP
  - Quality management standards (ISO quality system standards eg; 9000:2000, 9001:2000, 9004:2000)
  - Procedures for auditing and certifications

Unit IV: Food quality policy and strategy (10 Hours)

- *Unit Description:* Every food handling/processing unit must have a quality policy on the basis of which strategic plan of action can be made and implemented. This unit will help students understand how to prepare, evaluate and implement a quality policy.

- *Subtopics:*
  - Quality policy and strategy process (activities and decisions)
  - Quality policy and technological conditions
  - Tools and methods for quality strategy and policy
  - Organizational structure and procedures (crosby's maturity grid, collaboration in food chain)
  - Quality cost analysis
  - Quality policy evaluation
  - Challenges in executing sustainable FQM

PRACTICAL
(Credits 1: 30 Hours)

No. of Students per Practical Class Group: 10-15

24. Identification and removal of physical hazards rice grains, tea leaves, whole wheat flour and pulses.
25. Identification of microbes/parasites by use of prepared slides and specimens.
26. Develop educational aid on general principles of GMP.
27. Develop HACCP program for college canteen.
28. Project on developing a food quality management system for a bakery or milk/vegetable booth/canteen/food kiosk
29. Case study on quality policy of a multi-national food processing company

ESSENTIAL READINGS (Theory and Practical):

- Alli. I. (2003). Food Quality Assurance – Principles and Practices, CRC Press.
- Suri, S and Malhotra, A. (2014). Food Science, Nutrition and Safety. Dorling Kindersley Pvt. Ltd. (Pearson) India.
- Mathur, P. (2018). Food Safety and Quality Control. Orient Blackswan Private Limited.
- Pieternel A.L and Willem JM. (2020). Food Quality Management – Technological and Managerial Principles and Practices

SUGGESTED READINGS:

- Ronald F. Cichy,and Jae Min Cha. (2009). Food Safety and Quality Management, American Hotel and Lodging Educational Institute.
- Knechtges, L.I. (2012). Food Safety-Theory and Practice, USA: Jones and Barlette Learning.
- Kalia, M. (2010). *Food quality management*. Agrotech Pub. Academy.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

ENERIC ELECTIVE – GE-5-FT: TRADITIONAL INDIAN FOODS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Traditional Indian Foods	4	3	0	1	Class XII	NIL

LEARNING OBJECTIVES:

1. Impart knowledge about the background and benefits of traditional foods of India.
2. Prepare traditional regional Indian dishes using basic principles of cooking.

COURSE OUTCOMES:

After successful completion of the course, the students will:

1. Get appraised to the basic concepts of indigenous Indian foods by ancestors.
2. Have theoretical and practical knowledge about the rich food heritage of India.
3. Based on available resources judiciously adopt cooking healthier traditional foods of India.
4. Be able to work/contribute/ promote the food industry catering to traditional Indian foods.

SYLLABUS OF GE-5-FT

THEORY
(Credits 3: 45 Hours)

UNIT I: Traditional foods of India – An Introduction (5 Hours)

- *Unit Description:* This unit would help students learn about the rich food culture/ background of traditional foods, the concepts of common food beliefs and the journey of traditional foods over the years.
- *Subtopics:*
  - Ancestral food legacy
  - Historical Background (Aryans, Vedic and Harappans)
  - Common food beliefs
  - Roots to routes – future prospects

UNIT II: Traditional Cooking Methods and Equipment (10 Hours)

- *Unit Description:* This unit will help students understand the traditional Indian equipments and methods used to cook food; their advantages and disadvantages.
- *Subtopics:*
    - Common traditional equipments and utensils
    - Common traditional cooking methods

UNIT III: Traditional Regional Cuisines (20 Hours)

- *Unit Description:* The unit is based on the diverse traditional regional cuisines/ foods. It will help student understand that the traditional food as available today has evolved over the year as a result of various socio-demographic, political and other factors.
- *Subtopics:*

  Traditional menus, meals, snacks and desserts of following:
    - Northern India
    - Southern India
    - Central India
    - Eastern India
    - Western India

UNIT IV: Traditional Foods – Health and Disease (10 Hours)

- *Unit Description:* The unit will discuss about the health-promotive properties of salient indigenous foods of India as well as the concepts of traditional dietary regimes.
- *Subtopics:*
    - Spices, herbs and condiments
    - Hot and cold foods
    - Satvik, Rajsik,Tamsik
    - Fasting and feasting.

PRACTICAL
(Credits 1: 30 Hours)

No. of Students per Practical Class Group: 10-15

5. Weights, measures and common food hygiene practices.
6. Basic cooking terminologies and market order preparation.
7. Visit to state houses/bhawans/dilli haat
8. Northern Region:
    - 2 snacks: kathi kebab/galouti kebab/moong daal kachori/samosa/palak pakoras
    - 1 main dish: sarso ka saag, makka ki roti/ bajre ki khichdi singhri ki sabzi/Jammu rajma/bedmi poori
    - 1 dessert: kheer/laddoo/pinni/phirni/ halwa

9. Eastern region:
    - 2 snacks: bhujia/puchka/pitthas/dhuska
    - 1 main dish: littichokha/macher jhol/luchi/potala rasa/
    - 1 dessert: rajbhog/thekua/sandesh/khaja/pitha/kakara.
10. North-Eastern region:
    - 2 snacks: pitha/sanpiau/momos/zan/sha phaley/koatpitha
    - 1 main dish: steamed fish/gyathuk/chamthong/panchphoran tarkari
    - 1 dessert: pukhlein/kabok/guroorpayash/xutulipitha/sel roti
11. Central region:
    - 2 snacks: bafauri/faraa/moong-bara/muthia/indori poha
    - 1 main dish: dubki-kadhi/suran/dal-bafla
    - 1 dessert: tilgur/indori jalebi/khurma/pooran-poli
12. Western region:
    - 2 snacks: fafda/batata vada/vada pav/mirchivada/bonda
    - 1 main dish: Gujrati kadhi/khaman with curry/dal bati
    - 1 dessert: basundi/shrikhand/kulkul/choorma laddoo
13. Southern region:
    - 2 snacks: murukku/idli/elaada/ribbon sev
    - 1 main dish: idiyappam/dosa/avial/rasam/uttapam/ Hyderabadi biryani/bisibele bath
    - 1 dessert: moong dal payasam/sweet pongal/boorelu/ khubani- ka-meetha

ESSENTIAL READINGS (Theory and Practical):

- Acharya, K.T. (2000). Indian Food: A Historical Comparison. Oxford Press.
- Nandrajog, H. & Suri, S. (2021). The Saga of Food: Reflections on Technology and Culture. International Book House.
- Khanna K, Gupta S, Seth R, Mahna R, Rekhi T. (2004). *The Art and Science of Cooking: A Practical Manual,* Revised Edition. New Delhi: Elite Publishing House Pvt Ltd.
- Raina, U., Kashyap, S., Narula,V., Thomas, S., Suvira, Vir, S., & Chopra, S. (2005). Basic Food Preparation – A Complete Manual. Delhi: OrientLongman.

SUGGESTED READINGS:

- Sen, C.T. (2005). Food Culture in India. Greenwood Press.
- Davidar, R.N. (2001). Indian Food Science: A Health and Nutrition Guide to Traditional Recipes. East West Books.
- Sanghvi, V. (2019). The Indian Pantry: The Very Best of Rude Food. Penguin Publishers.
- Ayushman Systems of Medicine. Traditional Food Recipes. Ayushman Bharat. Ministry of Ayush. Government of India.
  Website: https://ayushportal.nic.in/pdf/Food_Recipes_From_AYUSH.pdf.
- Garg, A.K., Chouhan, P. & Adlakha, M.K. (2018). Traditional Dietary Pattern of Indian Food & it's Scientific Basis: Diversity in Indian Cuisine and its Health Benefits. LAP Lambert Academic Publishing.
- Food Safety and Standards Authority of India (FSSAI). (2020). The Eat Right India Handbook. First Edition.

Website: http://www.indiaenvironmentportal.org.in/files/file/The-Eat-Right-India-Handbook.pdf.

- Spencer, S. (2018). Totally Indian: Quick and Easy Traditional Indian Food Recipes (Flavors of the World). The Cookbook Publisher.
- Sen, CT. (2016). Feast and Fasts: A History of Food in India. Speaking Tiger.
- Basic Food Preparation – A Complete Manual. Delhi: Orient Longman.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

UNIVERSITY OF DELHI

CNC-II/093/1(28)/2023-24/262

Dated: 26.10.2023

N O T I F I C A T I O N

Sub: Amendment to Ordinance V

[E.C Resolution No. 14-1/-(14-1-6/-) dated 09.06.2023 and 27-1-1/ dated 25.08.2023]

Following addition be made to Appendix-II-A to the Ordinance V (2-A) of the Ordinances of the University;

Add the following:

Syllabi of Semester-IV, V and VI of the following departments under Faculty of Science based on Under Graduate Curriculum Framework -2022 implemented from the Academic Year 2022-23 :

(i) Anthropology

(ii) Biological Science (Sri Venkateswara College)

(iii) Biomedical Science (ACBR)

(iv) Environmental Studies

(v) Polymer Science

DEPARTMENT OF ANTHROPOLOGY
BSc. (Hons.) Anthropology
Semester-4

DISCIPLINE SPECIFIC CORE COURSE -10 (DSC-10)
Human Genetics

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Human Genetics	04	03	Nil	01	Class XII pass	NIL

(Teaching hours required: Theory, 45 hours; Practical, 30 hours)

Course Objectives

1. To introduce the students the basic principles of human genetics.
2. To familiarize the students with the methods/technologies used in genetic research.
3. Aims to provide knowledge about the pattern of inheritance of genetic disorders, genetic abnormalities and the importance of genetic testing and counseling.

Learning Outcomes
Student will be able to:
1. describe the structure and function of DNA; concept of gene, transcription and translation.
2. grasps the inheritance pattern of human traits/diseases and types of chromosomal abnormalities and their implications.
3. handle the methods and techniques used in human genetics.
4. comprehend the importance of genetic counselling.

Unit 1: Human Genome, Chromosomes and Abnormalities (09 Hours)
History of Human genetics; Concept of gene; Chromosomal structure and abnormalities, Cytogenetics, and Human Genome Project

Unit 2: DNA Structure and Function (09 Hours)
DNA Structure and Function, DNA Replication, repair and recombination, gene expression, coding and non-coding regions. Expression of genetic information: from Transcription to Translation - the relationship between genes and protein.

Unit 3: Patterns of Inheritance (09 Hours)

Mendelian inheritance (Autosomal and X linked); Co-dominance; Sex-linked inheritance; Multiple allelism; Dosage compensation, Single factor and multifactorial inheritance and Non-Mendelian inheritance

Unit 4: Methods in Human Genetics (09 Hours)
Pedigree analysis, methods of assessing chromosomal abnormalities (Banding techniques; Karyotyping; FISH); Sib-pair and Twin studies; Genotyping and Sequencing methods

Unit 5: Genetic Diagnosis and Counselling (09 Hours)
Prenatal diagnosis; Newborn screening; Genetic counseling

Practical (30 hours)
Project report based on data collection related to one mendelian disorder on the basis of brief field visits, in nearby areas.

References

1. Brown TA. (2007). *Genomes*. Garland Science.
2. Cummings MR (2011). *Human Heredity: Principles and Issues*. Brooks/Cole, Cengage Learning
3. Klug WS (2012). *Concepts of Genetics*. Pearson.
4. Lewis R. (2009). *Human Genetics: Concepts and Application*. The McGraw−Hill Companies, Inc.
5. Vogel F. and Motulsky A.G. (1996). *Human Genetics: Problems and Approaches*. Springer, 3rd revised edition.

Teaching Learning Process
The process of learning will involve acquisition of domain knowledge and understanding of skills required for conducting human genetic research. Process will involve lectures and presentations and report submission.

Assessment Methods
Examination schemes and mode shall be as prescribed by the Examination Branch, University of Delhi from time to time.

Keywords
Human genetics, DNA, chromosomal abnormalities, anthropology, sequencing

DISCIPLINE SPECIFIC CORE COURSE -11 (DSC-11)
Kinship and Polity

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Kinship and Polity	**04**	**03**	**Nil**	**01**	**Class XII pass**	**NIL**

(Teaching hours required: Theory, 45 hours; Practical, 30 hours)

Course objective

This course seeks to impart basic anthropological knowledge on themes in the studies of kinship, Family and Marriage, and various political systems.

Learning Outcomes

The students will be able to:

- demonstrate understanding of key anthropological debates and approaches to kinship studies.
- differentiate between different kinds of marriage rules and family types.
- elucidate analysis of power in different forms of political systems.

Syllabus:

Unit 1 (10 Hours)

Approaches to the study of Kinship; Descent, Alliance and cultural Theories; Kinship Usages, Terminologies; Redefining Kinship

Unit 2 (11 Hours)

Marriage and Family : Problems of definition; Approaches to the study of Family; Domestic Group and Household

Unit 3 (12 Hours)

Descent and Political Systems; Approaches to the study of Political Anthropology; Power, Authority and Legitimacy; State and stateless societies

Unit 4 (12 Hours)

Nation, Nation State and Citizenship; Customary Laws; Social Movements

Practical (30 hours)

1. Collect and analyse genealogies of a person and find out the inter-generational changes in terms of age at marriage, education qualification, household, occupation and migration pattern.

2. Conduct an in-depth interview to find out the changing marriage practices and family types.

3. Case study of any current political instance/event in social media to understand how people imagine the state, and are involved in power relations

References

1. Fortes, Meyer, and Evans-Pritchard. (1950) (4th edition). *African Political Systems*. London: Oxford University Press
2. Harris, C. C. (1990). *Kinship. Concepts in social thought*. Minneapolis: University of Minnesota Press.
3. Karve, Irawati. (1968). *Kinship organization in India*. London: Asia Publ. House.
4. Lévi-Strauss, Claude. (1969). *The elementary structures of kinship*. Boston: Beacon Press
5. Shah, A.M (1998). *The Family in India: Critical Essays*. New Delhi : Orient Longman
6. Spencer, Jonathan (2007). *Anthropology, Politics, and the State: Democracy and Violence in South Asia.* University of Edinburgh: Cambridge University Press.
7. Stone, Linda and Diane E King. (2019). *Kinship and Gender: An Introduction* (6th edition). New York: Routledge.
8. Uberoi, Patricia (1994) *Family, Kinship and Marriage in India.* New Delhi: Oxford University Press.
9. Vincent, Joan (ed.) (2002). *The anthropology of Politics: A reader in ethnography, theory and critique*. Blackwell publisher

Teaching Learning Process

Lectures and Discussions, Seminars and Presentations, Practical Classes

Assessment Methods

Examination schemes and mode shall be as prescribed by the Examination Branch, University of Delhi from time to time.

Keywords:

Kinship, Marriage, Family, Politics, Customary Law

DISCIPLINE SPECIFIC CORE COURSE -12 (DSC-12)
Archaeological Fieldwork (4-7 days)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Archaeological Fieldwork	**04**	**02**	**Nil**	**02**	**Class XII pass**	**NIL**

(Teaching hours required: Theory, 45 hours; Practical, 30 hours)

Course objectives:
To expose students to different prehistoric sites of India.

Learning Outcomes: The students will be able to:

1. demonstrate the understanding of the lithic industry.
2. identify prehistoric tools in situ.
3. describe the stratigraphic context of the tools.

Syllabus:

Unit 1 Methods in Archaeological Anthropology: (07 Hours)
Distinction between exploration, expedition, field Survey and ethnoarchaeology

Unit 2: Geological Background of the Region (07 Hours)
Geomorphology, Geochronology, Topography, Flora and Fauna, Sedimentology

Unit 3: Understanding Culture (08 Hours)
Artifacts and tools, Tool Types, and technology of different cultural periods of prehistoric times

Unit 4: Interpretation of Culture (08 Hours)
Analysis of material, Drawing, Dating of artifacts and logic of inference

Practical (60 Hours)

1. Analysis of Prehistoric Tools: Identification, Interpretation and Drawings of the tool types with special reference to the technology and chronology:
Core Tool Types
Flake Tool Types
Blade Tool Types

2. The students are required to conduct an archaeological fieldwork in a selected region of India for a period nearly 7 days and submit a field report.

References

1. Bhattacharya, D.K (2006). *An outline of Indian Prehistory*. Palaka Prakashan Delhi.

2. Bhattacharya, D.K. (1979). *Old Stone Age Tools: A Manual of Laboratory Techniques of Analysis.* Calcutta: K. P. Bagchi and Company

3. Inizan, M.L.; M. R. Ballinger; H. Roche and J. Tixier. (1999). *Technology and terminology of Knapped Stone.* Nanterre: CREP.

4. Oakley, K.P. (1972). *Man the Tool Maker*. London. Trustees of the British Museum of Natural History.

5. Renfrew Colin and Bahn Paul. (2012). *Archaeology: Theories, Methods and Practice*. New York: Thames & Hudson, 6th Edition.

6. Sankalia, H.D. (1982). *Stone Age Tools: Their Techniques, Names and Probable Functions*. Poona: Deccan College.

7. Whittaker, J.C. (2009). *Flintknapping: Making and Understanding Stone Tools.* Austin: University of Texas Press.

Teaching Learning Process

Classroom Presentations using digital methods
Practical classes
Seminars and presentations by students
Field visit to an archaeologically important site

Assessment Methods

Examination schemes and mode shall be as prescribed by the Examination Branch, University of Delhi from time to time.

Keywords

Prehistoric, Archaeological, stone tools, material culture and evolution

POOL OF DISCIPLINE SPECIFIC ELECTIVES

DISCIPLINE SPECIFIC ELECTIVE COURSE -5 (DSE-5)
Physiological Anthropology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Physiological Anthropology	**04**	**03**	**Nil**	**01**	**Class XII pass**	**NIL**

(Teaching hours required: Theory, 45 hours; Practical, 30 hours)

Course Objectives

1. To familiarise the student with the idea of homeostasis, physical performance, physiological adaptation and factors influencing adaptation.

2. To make them understand the relationship between physique and human body composition

Learning Outcomes

The students will be able to:

1. demonstrate understanding of the fundamentals of physiological anthropology.
2. to identify the physiological changes during performance and factors influencing adaptation with respect to environmental adaptation.
3. relate physique and human body composition on one hand and the importance of nutrition on the other.

Unit 1 (10 Hours)

Fundamentals of work physiology- homeostasis; metabolism and energy and systems; exercise, respiratory system and haemodynamics (blood pressure, pulse, rate, heart rate, and heamatocrit).

Unit 2 (11 Hours)

Acute physiological adjustments during transition from resting homeostasis to sub-maximal and maximal exercise and physiological adaptations

Unit 3 (12 Hours)

Cardio-vascular and respiratory endurance, physical working capacity and physical fitness; Reproductive health, regulation of metabolism, growth and energy balance

Unit 4 (12 Hours)

Physical performance and environmental stress; inter-relationship between physique, body composition and nutrition

Practical (30 Hours)

1. Measure the cardiovascular functions -
Blood pressure
Heart rate
Pulse rate

2. Measure the Respiratory functions (Static and Dynamic lung functions)

3. Physical activity assessment

References

1. C. Bouchard, S.N Blair,W.L Haskell (Editors) (2014). *Physical Activity and Health*. 2nd Edition. Human Kinetics.

2. William D. McArdle, Frank I. Katch, Victor L. Katch (2014). *Exercise Physiology Energy, Nutrition and Human Performance.* Lippincott Williams & Wilkins.

Teaching Learning Process
Classroom teachings
Seminars and presentations
Practical classes

Assessment Methods
Examination schemes and mode shall be as prescribed by the Examination Branch, University of Delhi from time to time.

Keywords:
Exercise physiology, cardio-respiratory endurance, physical working capacity, fitness, environmental stress

DISCIPLINE SPECIFIC ELECTIVE COURSE -6 (DSE-6)
Gender and Society

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Gender and Society	04	03	Nil	01	Class XII pass	NIL

(Teaching hours required: Theory, 45 hours; Practical, 30 hours)

Course Objectives

This course will expose the students to a fundamental understanding of gender and the related phenomena in historical and contemporary context. Using anthropological lens, the students will explore, interpret, analyse and deal with gender concerns in everyday life.

Learning Outcomes

At the end of the course, the students will be able to:

1. elucidate the theories on the social construction of gender categories.
2. comprehend gender rights, gender justice, particularly in Indian context.
3. describe the contemporary gender issues in its various manifestations in India.

Unit 1 Anthropology of Gender (10 Hours)

Basic concepts, definitions, and terminologies. History and theoretical developments, approaches and orientations.

Unit 2. Gender, Sex and Sexualities (11 Hours)

Sex/Gender and sexuality. Gender identity and expressions, Embodiment and Bio-politics, Queer Anthropology

Unit 3. Gender in South Asia (12 Hours)

Gender narratives and performances, gender and development, Gender rights and gender justice, politics and activism, CEDAW

Unit 4. Intersectional Framework (12 Hours)

Gender, ethnicity, caste, disability and others

Practical (30 Hours)

The students shall prepare comprehensive project based on short fieldwork or from secondary sources on different dimensions of gender issues.

References

1. Aneja, Anu (2019) *Women's and Gender Studies in India: Crossings*. Routledge

2. Channa, Subhadra Mitra. (2013). *Gender in South Asia: Social Imagination and Constructed Realities*. Cambridge University Press.

3. de Beauvoir, Simone (2015). *The Second Sex*. Vintage Classics. Chicago.

4. Dube, Leela (Ed.), (2001). *Anthropological explorations in gender: Intersecting Fields*. New Delhi: Sage Publications.

5. Mascia-Lees E. Ffrances, Nancy Johnson Black (2017) *Gender and the Body*. Illinois. Waveland press.

6. Mehrotra, Nilika (2013). *Disability, Gender and State Policy: Exploring Margins*. Jaipur: Rawat Publications.

7. Ortner, Sherry B. (1996). *Making Gender: The Politics and Erotics of Culture*. Boston: Beacon

Teaching learning process

Lectures, Active participation of students in class debates and discussions, sharing of experiences and dialogues. Innovative fieldwork exercises and workshops, short documentaries on gender issues.

Assessment Methods

Examination schemes and mode shall be as prescribed by the Examination Branch, University of Delhi from time to time.

Keywords:

Gender and Sexuality, Feminism, Gender Identity, Gender Narratives, Gender Performances, Gender Rights and Gender Justice**.**

DISCIPLINE SPECIFIC ELECTIVE COURSE -7 (DSE-7)
Material Culture and Museology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Material Culture and Museology	04	03	Nil	01	Class XII pass	NIL

(Teaching hours required: Theory, 45 hours; Practical, 30 hours)

Course objective

1. To expose the students the community relationship to their surrounding through study of material culture.
2. To make them aware of the role of museums in heritage cultural preservation

Learning Outcomes

The students will be able to :

1. demonstrate the understanding of the social history of the community through the study of museum objects.
2. to deconstruct the biases in the writings of colonial accounts through the study of material culture.

Syllabus:

UNIT 1: Material Culture and Consumption (10 Hours)
Bodily adornment and social/symbolic categories; Material culture and social life of things

UNIT 2: Museums and Museology (12 Hours)
The Origins of the Museum; Architecture and the 'Museum Effect'; The Curator and the Exhibition: Assimilating and exoticizing; Interpreting Museum Texts

UNIT 3: Museums and Colonialism (11 Hours)
Exhibiting Sacred Art; Museums and Gender; Digital Museums, Digital Museology; Decolonising the Museum

UNIT 4: Museology and Conservation (12 Hours)
Techniques of conservation, Community Museums.

Practical (30 Hours)

1. The students are required to understand the structure and function of material culture pertaining to different social institutions and activities through specific drawing and their analyses.
2. Use of technology (such as audio-visual and digital) to enrich the museum experiences.
3. Undertake visit to different types of museums and prepare a brief report.

References

1. Appadurai, Arjun. (1986). *The Social life of things*. New York: Cambridge University Press
2. Gell, Alfred. (1998). *Art and Agency: An anthropology theory*. Clarendon Press
3. Ingold, Tim. (2002). *Companion Encyclopedia of Anthropology*. London: Routledge
4. Miller, Daniel. (1997). *Material Cultures: Why some things matter*? London: Routledge.
5. Marwah, I.S. and V.K. Srivastava. (1987). Khel gate and social structure: a study of their relationship and a note on the place of material culture in anthropology. *Indian Anthropologist*, 17 (2): 63-99

Teaching Learning Process

The students will be encouraged to review relevant literature to understand museum artefacts. Museum visits will be organized and the systemic review of material objects will be carried out.

Assessment Methods
Examination schemes and mode shall be as prescribed by the Examination Branch, University of Delhi from time to time.

Keywords:
Museum, Museology, Tribal arts, Artefacts

DISCIPLINE SPECIFIC ELECTIVE COURSE -8 (DSE-8)
Nutritional Anthropology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Nutritional Anthropology	04	03	Nil	01	Class XII pass	NIL

(Teaching hours required: Theory, 45 hours; Practical, 30 hours)

Course Objectives

To understand human diet and nutrition from an explicitly anthropological perspective; augment the basic knowledge of nutrition with special reference to its evolutionary perspective by developing deeper insights of biocultural perspective in the contemporary food habits and dietary practices.

Learning Outcomes

The students will be able to:

1. demonstrate understanding of the importance of nutrition in lifestyle diseases,
2. identify nutritional transition, and eco-cultural zones
3. describe the emerging trends in lifestyle diseases due to nutritional abnormalities.

Syllabus:

UNIT1 Introduction to Nutritional Anthropology (12 Hours)
Basic principles, aim and objectives of nutritional anthropology, Macro- and micro-nutrients and their importance in health, Trace elements and their importance in human nutrition.

UNIT 2 The Evolutionary Background (12 Hours)
Palaeolithic diet, Evolution of diet.

UNIT 3 Biocultural diversity of food and nutrition (12 Hours)
Eco-cultural zones, diet and nutrition, culture and Food Diversity, dietary and nutritional transition and lifestyle, Undernutrition and malnutrition and Nutritional disorders.

UNIT 4 Nutritional Requirements (09 Hours)
Recommended dietary

PRACTICALS (30 Hours)

1. Anthropometric assessment of nutritional status: Somatometery (Height, weight, BMI, Body fat percentage, Circumferences)
2. Development of Food Frequency Questionnaire (FFQ)
3. Haemoglobin and glucose estimation
4. Qualitative and quantitative methods of nutritional assessment

Suggested Readings

1. Eaton, S. B., & Konner, M. (1985). Paleolithic nutrition: a consideration of its nature and current implications. *The New England Journal of Medicine*, 312(5):283-289.
2. Farb, P. & Armelagos, G. (1980). *Consuming Passions: The Anthropology of Eating*. Boston: Houghton Mifflin Co. Pp. 3-14.
3. Hunter, J. M. (1973). *Geophagy in Africa and in the United States: A Culture-Nutrition Hypothesis*. Geographical Review, 63:170-195.
4. Jenkins, M. (2002). *Burgerstein's Handbook of Nutrition: Micronutrients in the Prevention and Therapy of Disease*.
5. Leonard, W. R. (2002). Food for thought: dietary change was a driving force in human evolution. *Scientific American*, 287:106-112.
6. Pelto, G. H., Goodman, A. H., & Dufour, D. L. (2000). The biocultural perspective in nutritional anthropology. In: Goodman AH, Dufour DL, Pelto GH. (eds.) *Nutritional Anthropology: biocultural Perspectives on Food and Nutrition. Mountain View*, CA: Mayfield Publishing Co. Pp. 1-9.
7. Teaford, M. F., & Ungar, P. S. (2000). Diet and the evolution of the earliest human ancestors. *Proceedings of the National Academy of Sciences*, 97:13506–13511.

Teaching Learning Process

The students will be encouraged to prepare FFQs through questionnaires. Somatometric techniques will be used to assess the nutritional status.

Assessment Methods

Examination schemes and mode shall be as prescribed by the Examination Branch, University of Delhi from time to time.

Keywords

Nutritional Assessment, Micro and Macro-nutrients, Malnutrition, Lifestyle Diseases

SEMESTER-5

BSc. (Hons.) Anthropology

DISCIPLINE SPECIFIC CORE COURSE -13 (DSC-13)
Anthropology of Health and Wellbeing

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Anthropology of Health and Wellbeing	04	03	Nil	01	Class XII pass	NIL

(Teaching hours required: Theory, 45 hours; Practical, 30 hours)

Course Objectives

1. To explore various dimensions of health and issues related to illness and disease.
2. To familiarize the students with various demographic measuring methods and their applications.
3. Aims to provide knowledge about the cultural dimensions of illness, disease, and health in Indian context.

Learning Outcomes

Students will be able to:

1. comprehend the application of the concept of health, illness, and disease.
2. handle basic demographic and medical anthropological methods to evaluate demographic and health assessment.
3. grasp, analyse and interpret health, illness, disease related issues and develop critical understanding.

Syllabus:

Unit-1: Introduction (10 Hours)

Anthropology and health; Medical Anthropology and its subfields; Approaches, health and its determinants, dimensions and indicators

Unit-2: Disease, Illness and Healing (11 Hours)

Concept of Disease and Illness; Experiential Health – Indian perspective: placebo, faith healing; Measuring Health: Morbidity and Mortality: Healing and Healers in Cross-Cultural Perspectives, Ethno-medicine

Unit-3: Mental Health and Wellbeing (12 Hours)

Culture and Mental Health, Ethno-psychiatry, Concept of wellbeing and quality of life; Happiness Life Index

Unit-4: Public Health and Anthropology (12 Hours)
National Health Policy, Health Care Programmes in India; Mother and Child Health: Women's Health, New-born's health, Family Planning; Endemics, Epidemics, and Outbreaks; Pandemics and Communicable diseases; Health and Environment

Practical (30 Hours)
Project on Health-related issues based on primary/secondary data collection through fieldwork/review of literature.

References

1. Farmer, Paul, Jim Yong Kim, Arthur Kleinman and Matthew Basilico (2013) *Reimagining Global Health*, University of California Press

2. Gaur, Mokshika and Soumendra. Patnaik (2011). Who is healthy among the Korwa?" Liminality in the experiential health of the displaced Korwa of Central India, *Medical Anthropology Quaterly*, Mar;25(1):85-102.

3. Hahn, Robert A. 1999. *Anthropology in Public Health. Bridging Differences in Culture and Society.* New York: Oxford University Press.

4. Helman, Cecil G. 1994. *Culture, Health, and Illness*. 3rd ed. Oxford.

5. Inhorn, Marcia C; Wentzell, Emily A (2012). *Medical Anthropology at the Intersections: Histories, Activisms and Futures*. Duke University Press Books

6. Mehrotra, Nilika & Mahima Nayar (2015). *Isliye dard hota hai*: Women's Mental Health Issues in Poor Households of India, *Psychology and Developing Societies*, vol. 27 no. 1 104-124.

7. Tsui, Amy O., Judith N. Wasserheit, and John G. Haaga (eds.) (1997). *Reproductive Health in Developing Countries*. Washington, D.C.: National Academy Press.

8. Winkelman M (2008). *Culture and Health: Applying Medical Anthropology*. Jossey-Bass

Teaching Learning Process
The process of learning will involve acquisition of disciplinary knowledge and understanding of skills required for a researcher exploring health, illness, and disease. The process will involve lecture, class-room exercises, project-based learning, data collection and analysis, fieldwork and report preparation and presentation.

Assessment Methods
Examination schemes and mode shall be as prescribed by the Examination Branch, University of Delhi from time to time.

Keywords
Health, Illness, Disease, Health Policy, Health Dimensions

DISCIPLINE SPECIFIC CORE COURSE -14 (DSC-14)
Religion and Economy

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Religion and Economy	04	03	Nil	01	Class XII pass	NIL

(Teaching hours required: Theory, 45 hours; Practical, 30 hours)

Course Objective

The objective of the paper is to understand about various religious life and the economic life in diverse society using a comparative framework.

Learning Outcomes

By studying the paper, the students will be able to:

1. demonstrate understanding of various dimensions of religion, the rituals activities, etc.
2. identify the economic activities among traditional societies.
3. analyze the factors of changes regarding religious and economic life spheres.

Syllabus:

Unit 1: (10 Hours)

Concept and Meaning of Religion, Systems of Faith; distinction between Dharma and religion; Religious Symbols; Approaches to study religion: Types and forms of religious life.

Unit 2: (11 Hours)

Magic, religion and science; revivalism and conversions, religious pluralism and social harmony.

Unit 3: (12 Hours)

Concepts and Approaches; Reciprocity, Redistribution and Market: Ceremonial exchange, Gifts; Barter, Trade, Weekly Market, Money, Mela and Festivals.

Unit 4: (12 Hours)

Changes in Economic Patterns: Technology, Innovation, Trade; Traditional entrepreneurship/ Household and Cottage Industries; Temple economy and other institutions.

Practical (30 Hours)

1. Prepare a project on any social institutions (religion or economy) considering the socio-cultural aspects in our society.

2. Identify and review an ethnography/monograph revealing significant socio-cultural and economic imperative in the community.

References

1. Bielo, James. S. (2015). *Anthropology of Religion: The Basics*. Routledge Publishing.
2. Gottlieb, R. (2004). *This sacred earth: religion, nature, environment*. Routledge
3. Hann, Chris & Keith Hart. (2011). *Economic Anthropology: History, Ethnography, Critique*. Polity Press.
4. King, E. Francis. (2009). *Material Religion and Popular Culture.* Routledge
5. Lambek, Michel. (2008). *A reader in Anthropology of Religion*. Wiley Blackwell, UK
6. Madan, T.N. (2011). *India's Religions: Perspectives from Sociology and History*. Oxford University Press.
7. Malinowski, B.(1967) *Argonauts of the Western Pacific*. London: Routledge and Kegan Paul

Teaching Learning Process

Classroom teachings
Seminars, presentations and group discussion Practical classes

Assessment Methods:
Examination schemes and mode shall be as prescribed by the Examination Branch, University of Delhi from time to time.

Keywords:

Religion, Symbols, Totemism, Exchange, Barter

DISCIPLINE SPECIFIC CORE COURSE -15 (DSC-15)
Village and City in India

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Caste, Village and Cities in India	04	03	Nil	01	Class XII pass	NIL

(Teaching hours required: Theory, 45 hours; Practical, 30 hours)

Course Objectives

The students will be introduced to the problems associated with concept of peasant in India. The focus will be on the contemporary issues and challenges that confront the rural communities in India.

Learning Outcomes

The students will be able to:

1. demonstrate understanding of the problems and challenges relating to agrarian societies both in historical and contemporary perspectives.
2. describe the changing patterns of village life.
3. evaluate policy pertaining to agrarian reforms and migration.
4. identify remedial measures for city environmental problems.

Unit 1: (10 Hours)

Varna and *Jati*, Indological and empirical approaches, book-view and field-view, caste mobility, contemporary debates

Unit 2: (11 Hours)

Social Organization of an Indian village: Village studies in Anthropology. Institutions, economy and changes; Globalisation and the Indian village

Unit 3: (12 Hours)

Peasantry: Concept and approaches to the study of peasants. State Policy and Agrarian Reform, agrarian transformation, rural–urban migration

Unit 4: (12 Hours)

Emergence of city, study *in* and study *of* city, Folk-urban continuum, approaches and methodologies in urban anthropology; Urban Social Structure: problems and challenges

Practical (3 0 Hours)

1. Identification of a problem related to rural communities and peasant societies of Indian Villages. Preparation of a research design for a detailed study.
2. Field visits in different parts of the city to understand various facets of community life, with special reference to changing caste dynamics.
3. Visit a residential colony and study their urban neighbourhood relationship.

Suggested Readings

1. Dube S.C. (1955). *Indian Village*. London*:* Routledge and Kegan Paul Ltd

2. Fox. R. G. (1977). *Urban Anthropology: cities and their cultural Setting*. University of Michigan: Prentice Hall

3. Hannerz U. (1983). *Exploring the city inquires towards an urban anthropology*. New York: Columbia University Press.

4. Jodhka, Surinder S (ed.); Simpson, Edward (ed.). (2019). *India's villages in 21st century*. New Delhi: Oxford University Press.

5. Low, Setha. (2005). *Theorizing the City: The New Urban Anthropology Reader*. New Jersey: Rutgers University Press.

6. Shanin T. (1987). *Peasants and Peasantry*. New York: Blackwell.

7. Srinivas, M. N. (2000). *Caste: Its twentieth Century Avatar*. New Delhi: Penguin.

Teaching Learning Process
Lectures and Discussions
Seminars and Presentations

Assessment Methods:
Examination schemes and mode shall be as prescribed by the Examination Branch, University of Delhi from time to time.

Keywords:
Caste, Village, Rural, Urban, City, Slum, Agrarian, Folk-urban

POOL OF DISCIPLINE SPECIFIC ELECTIVES

DISCIPLINE SPECIFIC ELECTIVE COURSE -9 (DSE-9)
Primate Biology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Primate Biology	**04**	**03**	**Nil**	**01**	**Class XII pass**	**NIL**

(Teaching hours required: Theory, 45 hours; Practical, 30 hours)

Course Objectives

The objective of this paper is to enable the students to understand the evolutionary biology of various non-human primates. Their physical and anatomical metamorphosis will help the students to understand primate evolution too.

Course Learning Outcome:

The students will be able to:

1. demonstrate understanding of human evolution and origin.
2. comprehend the physical aspects that can be used for better understanding of early human migration.

Syllabus:

Unit 1(10 Hours)

History, aim and scope of Primate Biology and its importance in anthropology

Unit 2 (11 Hours)

Definition of primates, characteristic features, classification, primate radiation and primate locomotion

Unit3 (12 Hours)

Anatomical differences between Prosimians and Anthropoids, Old and New World monkeys, Great and Lesser apes and Humans

Unit 4 (12 Hours)

Human Evolution: Dryopithecus, Ramapithecus, Australopithecus, Homo habilis, Homo erectus, Homo sapiens, Neandertalensis, Homo sapiens sapiens

Practical (30 Hours)

Identify and draw the skull/crania of: Prosimians, Anthropoids, Old and New World monkeys, Lesser and greater apes and humans for comparisons with anatomical features.

References:

1. D. Swindler (2004). *Introduction to the primates*. Indian Overseas Press.
2. John Buettner-Janusch (1966). *Origins of Man: Physical Anthropology*. Willey Eastern Publication Ltd.
3. Pia Nystrom and Pamela Ashmore (2011). *The Life of Primates*. Prentice Hall India Learning Private Limited.
4. Russell, Tuttle. (2007). *The functional and Evolutionary Biology of Primates*. Aldine Transaction.
5. Winfried Henke and Ian Tattersall (2015). *Handbook of Palaeoanthropology*. Springer Berlin, Heidelberg.

Teaching Learning Process

Classroom teachings, Seminars, presentations and group discussion, Practical classes

Assessment Methods:
Examination schemes and mode shall be as prescribed by the Examination Branch, University of Delhi from time to time.

Keywords: Non-human primates, primate radiation, primate locomotion

DISCIPLINE SPECIFIC ELECTIVE COURSE -10 (DSE-10)
Visual Anthropology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Visual Anthropology	04	03	Nil	01	Class XII pass	NIL

(Teaching hours required: Theory, 45 hours; Practical, 30 hours)

Course Objectives

This course is designed to help students understand how anthropologists have used visual methods to produce anthropological knowledge; it will also help students learn to critically analyse visual media and produce visual images and films that are anthropologically informed.

Learning Outcomes

On completion, students will be able to:

1. demonstrate understanding of the inter-disciplinary nature of studying visuals in anthropology.
2. analyze visual and textual ethnographic representation in different theoretical traditions.
3. make anthropologically informed documentary films.

Syllabus:

Unit 1 Situating Visual Anthropology (10 Hours)

Historical and Contemporary Trajectories; Interdisciplinarity; Visual Anthropology and the Senses

Unit 2 Theory and Representation (11 Hours)

Social Theory of Communication and Ethnographic Semiotic; Theories of Representation; Politics and Poetics of Representation; Indigenous Filmmaking and Self Expression

Unit 3 Ethnographic Photography and Pictorial Media (12 Hours)

Photographic analyses; Images as writing; Found Images; Photography as tool of ethnographic observation; Indigenous Media

Unit 4 Ethnographic Films: Techniques and Ethics (12 Hours)

Ethnographic film as sensory experience; techniques of Ethnographic Film making; Ethical Issues

PRACTICAL(30 Hours)

1. Photo analysis: Analyze visual data from classical and contemporary ethnographies signifying how 'otherness' is constituted in different theoretical traditions.
2. Photo-elicitation and Ethno-photo essay
3. Auto-Ethnographic Digital Storytelling
4. Short ethnographic/documentary filmmaking and their anthropological evaluation.

REFERENCES

1. Banks, M and J. Ruby. (eds). (2011). *Made To Be Seen: Perspectives on the History of visual anthropology.* Chicago: University of Chicago Press.
2. Banks, M. (2001). *Visual Methods in Social Research*. London: Sage Press
3. El Guindi, Fadwa. (2015). 'Visual Anthropology: Essential Method and Theory'. In H.Russell Bernard and Clarence C. Gravlee (eds) *Handbooks of Methods in Cultural Anthropology*. Lanham: Rowman and Littlefield.
4. Hockings, Paul. (2003). *Principles of Visual Anthropology*. Berlin: Mouton de Gruyter.
5. Lawrence, Andy. (2020). *Filmmaking for fieldwork: A practical handbook*. Manchester University Press
6. Pink, Sarah. (2010). *Doing Sensory Ethnography*. Sage Publications.
7. Worth, Sol and Larry P Gross. (1981). *Studying Visual Communication*. Philadelphia: University of Pennsylvania Press.

Teaching Learning Process

Lectures and Discussions

Fieldwork for filmmaking

Hands-on practice in the Visual Anthropology Lab

Seminars and Presentations

Assessment Methods:

Examination schemes and mode shall be as prescribed by the Examination Branch, University of Delhi from time to time.

Keywords: Representation, Ethnographic Film, Visual, Communication, Sensory

DISCIPLINE SPECIFIC ELECTIVE COURSE -11 (DSE-11)
European Prehistory

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
European Prehistory	04	03	Nil	01	Class XII pass	NIL

(Teaching hours required: Theory, 45 hours; Practical, 30 hours)

Course Objectives

1. To introduce to students the evolutionary perspective of human prehistoric society in Europe with the help of archaeological cultural remains.
2. To familarise the students with tool typology and its classification for the reconstruction of prehistoric societies.

Learning Outcomes

By studying this course, students will be able to:

1. describe the landscape of European archaeological sites and their relevance in studying prehistoric societies.
2. identify the tools, appreciate the tool typology, and classify it appropriately.

Syllabus:

Unit I (10 Hours)
Introduction to European Prehistory: Chronology and Terminology.

Unit II (11 Hours)
Lower Palaeolithic Culture of Europe: Somme Valley, Terra Amata, Le Vallonet, Monte Poggiollo, Atapuerca, Torallba -Ambrona

Unit III (12 Hours)
Middle Palaeolithic Culture of Europe: Le Moustier, Gorham Cave, Asprochaliko and Kiik Koba, Tata, La Micoque

Unit IV (12 Hours)
Upper Palaeolithic Culture of Europe: Different types of traditions. Cave Art

References:

1. Bhattacharya, D.K. (1977). *Palaeolithic Europe*. Netherland: Humanities press.

2. Champion Timothy, Clive Gamble, Stephen Shenan & Alasdair Whittle (2009) *Prehistoric Europe*, London: Routledge

3. Debenath, A., & Dibble, H. (1994). *Handbook of Paleolithic Typology. Volume one: Lower and Middle Paleolithic of Europe.* Philadelphia: University of Pennsylvania.

4. Fagan B. M. (2004). *People of the Earth: An Introduction to World Prehistory*. New Jersey: Pearson Education.

5. Gamble Clive. (1999). *The Paleolithic Societies of Europe*. Cambridge-. Cambridge University Press.

6. Hole, F., & Heizer, R. F. (1969). *An Introduction to Prehistoric Archaeology*. New York: Holt, Rinehart and Winston

Practical/Project work/Assignment (30 Hours)

- Identification of tools:
  Chopper/chopping tools
  Varieties of handaxes
  Cleavers and its types
  Side scrapers
  End scrapers
  Knives
  Burins
  Borers
  Microliths
  Bone tools

- Identification of various lithic technologies

Teaching Learning Process
The process of learning will involve acquisition of domain knowledge and understanding of skills required for conducting research in European archaeology. Process will involve lectures, assignments, class-room discussions, practical and appropriate inference of results and practical file preparation.

Assessment Methods
Examination schemes and mode shall be as prescribed by the Examination Branch, University of Delhi from time to time.

Keywords
Geochronology, European archaeology, tool culture in Europe

SEMESTER-VI
Bachelor of Science (Hons) Anthropology

DISCIPLINE SPECIFIC CORE COURSE -16 (DSC-16)
Human Population Genetics

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Human Population Genetics	04	03	Nil	01	Class XII pass	NIL

(Teaching hours required: Theory, 45 hours; Practical, 30 hours)

Course Objectives

1. To understand the basic tenets of human population genetics
2. To learn the concepts of evolutionary forces and their applications
3. To understand the role of human genetic variation in shaping current population structure

Learning Outcomes

The students will be able to:

- develop basic understanding of genetic principles of human populations
- understand the concept of polymorphisms and its applications in understanding genetic structure of human populations
- develop an idea of different types of evolutionary forces
- understand the role of genetic variations in studying human populations

Syllabus:

Unit-1 (10 Hours)

Landmarks in the history of population genetics, Concept of genetic polymorphism; haplotypes and haplogroups; transient, balanced polymorphisms; single locus versus multi-locus inheritance and population structure

Unit-2 (11 Hours)

Genotypic and allelic frequencies, assumptions of Hardy-Weinberg equilibrium, and its applications

Unit-3 (12 Hours)

Concept of Mutation, Natural Selection, Genetic drift, Gene flow, admixture and inbreeding

Unit-4(12 Hours)

Models explaining the maintenance of genetic polymorphism (Relationship between sickle cell and malaria, X-linked polymorphism and selection relaxation hypothesis)

Practical (30 Hours)

1. Blood group typing-ABO; MN and Rh (D) blood groups
2. Color Blindness
3. Blood Collection, sample transportation
4. Plasma and RBC separation and storage in field

References

1. Vogel F. and Motulsky A.G. (1996). Human Genetics: Problems and Approaches. Springer, 3rd revised edition.
2. Cooper DN and Kehrer-Sawatzki H. (2008). Handbook of Human Molecular Evolution. John Wiley & Sons, volume-2.
3. Lewis R. (2009). Human Genetics: Concepts and Applications 9th Edition. The McGraw−Hill Companies, Inc.
4. Patch C. (2005). Applied Genetics in Healthcare. Taylor & Francis Group
5. Templeton A. R. (2018). Human Population Genetics and Genomics. Academic Press.

Teaching Learning Process

The process of learning will involve acquisition of domain knowledge and understanding of skills required for conducting research in human population genetics. Process will involve lectures, assignments, class-room discussions, laboratory experiments and appropriate inference of results and practical file preparation.

Assessment Methods

Theoretical understanding of the student will be assessed using time-constrained examination. The assessment of the practical will be based on the conducting the laboratory-based experiments, inference of results and practical file preparation.

Keywords

human genetics, DNA, genetic structure, human evolution, natural selection, genetic drift

DISCIPLINE SPECIFIC CORE COURSE -17 (DSC-17)
Tribes of India

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Tribes of India	**04**	**03**	**Nil**	**01**	**Class XII pass**	**NIL**

(Teaching hours required: Theory, 45 hours; Practical, 30 hours)

Course Objectives

The course is designed to help students understand the contested and problematic nature of the term 'tribe' and its definitional attributes. It also seeks to elucidate pressing issues faced by the tribes in India by focus on the contemporary issues, challenges and crisis that confront the rural and tribal communities in India.

Learning Outcomes

At the end of the course, the student will be able to **:**

- comprehend the nature and concepts of tribe and indigenous communities in comparison to caste societies.
- understand critical issues, problems and challenges related to tribal societies both in historical and contemporary perspectives.
- understand the challenges of tribal development and associated solutions.

Syllabus:

Unit 1: On the concept of tribe (10 Hours)

Concept and approaches to the study of tribes; classification, distribution and cosmogeny of tribes in India; Scheduled Tribes, *Adivasi* and Indigenous people; Particularly Vulnerable Tribal Groups , De notified communities

Unit 2: Tribes and institutions (11 Hours)

Kinship system, types of family, rules of marriage, tribal polity and governance, subsistence economy and tribal market, tribal religion: nature-man-spirit complex, Gender and Tribe

Unit 3: Issues in Tribal Development (12 Hours)

Problems of tribal communities in different parts of India; Displacement and Rehabilitation. Protest movements; Modernization, Globalization and Tribal Transformation

Unit 4: Tribes and Policy (12 Hours)

National Tribal Policy; Forest Rights, Food security, land acquisition, mining, tribal migrants

Practical (30 Hours)
The students shall prepare comprehensive project based on short fieldwork or from secondary sources on different dimensions of tribal life.

References:

1. Bailey, F.G. (1960). *Tribes, Caste and Nations*. Manchester University Press
2. Bhandari, J. S., and Subhadra Channa. (1997). *Tribes and government policies*. New Delhi: Cosmo Publications.
3. Channa, Subhadra Mitra. (2020). *Anthropological Perspectives on Indian Tribes*. New Delhi: Orient Blackswan Private Limited.
4. Chaudhury, Sukant K., and Patnaik, Soumendra Mohan. (2008.) *Indian Tribes and the Mainstream*. New Delhi. Rawat Publications.
5. Fürer-Haimendorf, Christoph von. (1985). *Tribal populations and cultures of the Indian subcontinent*. Handbook of Studies Oriental Leiden: E.J. Brill.
6. Miri, Mrinal. (2003). *Identity and the moral life*. New Delhi: Oxford University Press.
7. Vidyarthi, L.P.(2011 online). *The Maler : A study in Nature-Man -Spirit Complex of a Hill Tribe* (Bookland : Calcutta 1963) Cambridge University Press (Online)
8. Xa-xa, Virginius. (2008). *State, Society, And Tribes: Issues In Post-Colonial India*. New Delhi: Dorling Kindersley (India)

Teaching Learning Process
Lectures and Discussions
Seminars and Presentations

Assessment Methods:
Practical assignments/ project reports; theory, and practical examination at the end of term.

Keywords:
Scheduled Tribe, Caste, Tribal Development, Tribal Policy, Indigenous People

DISCIPLINE SPECIFIC CORE COURSE -18 (DSC-18)
Anthropological Fieldwork

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Anthropological Fieldwork	**04**	**02**	**Nil**	**02**	**Class XII pass**	**NIL**

(Teaching hours required: Theory, 45 hours; Practical, 30 hours)

Course objective

To train students to apply the methods and techniques of fieldwork in actual field situation to understand social problem and lived realities in a tribal or a rural community.

Learning Outcomes

The students will be able to:

- apply the theoretical perspectives in actual field situation and systematically undertake a study on an anthropological problem.
- write a report based on the field data using qualitative and quantitative methods.

Syllabus:

UNIT 1. Identification of a community for fieldwork, collection of secondary information and preparation of field statements, designing the field study, identification and formulation of research tools, pre-testing and standardization of research tools. **(07 Hours)**

UNIT 2. Survey methods: formation and administration of household census to collect data on socio-economic and biological variables. **(07 Hours)**

UNIT 3. Ethnographic methods: Team Ethnography, rapport establishment, categories of respondents, sources of data, maintaining field diaries and field notes, ethical considerations **(08 Hours)**

UNIT 4. Collection of data on biological variables and their analyses. **(08 Hours)**

Practical (60 Hours)

Students are required to apply these techniques and methods in real social context to have variable experience and make sense of how to use them in research context.

Students will undertake fieldwork of 10-12 days to any rural or tribal area and explore significant dimensions of the community life involving anthropological techniques.

Students are required to submit a dissertation based on the fieldwork taking into account cultural and biological variables.

References:

1. Brewer, John David. 2000. *Ethnography: Understanding Social Research*. Open University Press.
2. O'Reilly, Karen. 2012. *Ethnographic Methods*. Routledge.
3. Patnaik, Soumendra M. *Doing Team Ethnography. 2006 The Eastern Anthropologist* 59 (3-4): 295-319.
4. Srivastava, Vinay Kumar. 2004. *Fieldwork and Methodology*. Oxford University Press. New Delhi
5. Madan, T. N., Beteille, André. 1975. Encounter and Experience - Personal Accounts of Fieldwork. Vikas Publishing House.

Teaching and Learning process:

Lectures and Discussions, Field visits, Presentations

Assessment methods: Viva voce examination based on submitted dissertation.

Keywords: Ethnography, Field study design, field research tools, report writing

POOL OF DISCIPLINE SPECIFIC ELECTIVES

DISCIPLINE SPECIFIC ELECTIVE COURSE -12 (DSE-12)
Research Methods in Anthropology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Research Methods in Anthropology	04	03	Nil	01	Class XII pass	NIL

(Teaching hours required: Theory, 45 hours; Practical, 30 hours)

Course Objectives

1. To understand the process of designing an effective research study in anthropology
2. To learn the qualitative and quantitative methods used in anthropological research
3. To learn the appropriate ways of scientific writing

Learning Outcomes

The students will be able to:

- understand how to formulate research problem and able to frame it for the purpose of research
- use qualitative and quantitative methods used in anthropological research
- know the ways of scientific writing and sensitive to ethical issues such as intellectual honesty and plagiarism.

Syllabus:

Unit-1: Research Designs (09 Hours)

Types of Research Design- Exploratory, Description and Experimental, Formulation of research problem, hypothesis, review of literature and conceptual framework

Unit-2: Ethnographic research (09 Hours)

Ethnographic and survey research distinguished, etic and emic perspectives, comparative and historical methods, techniques of rapport establishment, identification of representative categories of informants, maintenance of field diary and logbook

Unit-3: Tools and techniques of data collection (09 Hours)

Formulation of questionnaire, interview schedule and interview guide, types of Interview - structured, unstructured and semi-structured, observation and its types, participant observation, Focused Group Discussion, key informant interview; Case Study, life history and genealogy.

Unit-4: Ethics and Human Research (09 Hours)

Ethical issues in social science and human subject research.
Concepts, guidelines and practice

Issues of Plagiarism, conflicts of interest and publication ethics

Unit-5: Bio-Statistics and its Applications (09 Hours)
Types of variables, Measurers of Central Tendency, Measures of Dispersion, Skewness and Kurtosis and Normal distribution; Concept of metanalysis.
Geospatial mapping and use of satellite data in anthropological research

Practical (30 Hours)
Project report based on data collection related to anthropological topic.

References

1. Madrigal L. 2010. Statistics for Anthropology. Cambridge: Cambridge University Press. 2012. Zar JH. Biostatistical Analysis. Prentice Hall.
2. Bernard H.R. 2006 Research Methods in Anthropology, Qualitative and Quantitative Approaches. Jaipur: Rawat Publications.
3. Emerson RM, Fretz RI and Shaw L. 1995. Writing Ethnographic Fieldnotes. Chicago, University of Chicago Press.
4. Garrard E and Dawson A. What is the role of the research ethics committee? Paternalism, inducements, and harm in research ethics. Journal of Medical Ethics 2005; 31: 419-23.
5. Patnaik , Soumendra Mohan 2013 . Ethical Debate in Development Discourse in India : Towards Formulation of Universal Ethical Guidelines . Developmental Anthropology ; *Entwicklungsethnologie* Vol 21 no 1&2 Hamburg /Germany

Teaching Learning Process
The process of learning will involve acquisition of disciplinary knowledge and understanding of skills required for anthropological research. Process will involve lectures, project based learning, designing a research study, data collection with the help of fieldwork and report submission.

Assessment Methods
Theoretical understanding of the student will be assessed using time-constrained examination. The assessment of the practical will be based on the quality of the project report submitted by the student (i.e., involvement of the student in every aspect of the report preparation for example, development of tools for data collection, fieldwork, data entry, analyses and writing).

Keywords
Research, anthropology, ethnography, biostatistics, ethics

DISCIPLINE SPECIFIC ELECTIVE COURSE -13 (DSE-13)
Kinanthropology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Kinanthropology	**04**	**03**	**Nil**	**01**	**Class XII pass**	**NIL**

(Teaching hours required: Theory, 45 hours; Practical, 30 hours)

Course Objectives

1. To provide the applied knowledge of biological anthropology in an inter-disciplinary framework with respect to performance, exercise and nutrition.
2. The course equips theoretical & applied aspects of kinanthropology.

Learning Outcomes

The students will be able to:

- Learn the tools and techniques of kinanthropology that can help understanding growth, exercise, performance and nutrition.
- understand an integrated approach for use in the field of Physical Education, sport, recreation, rehabilitation and physiotherapy.

Unit I: History, Concept and Scope(10 Hours)
History and development of Kinanthropology. Basic concept and techniques. Scope and relevance

Unit II: Kinanthropology and other disciplines(11 Hours)

Relevance of kinanthropology in Physical education, sports, public health

Unit III: Tools & techniques in Kinanthropology (12 Hours)

Traditional & modern methods in Kinanthropology

Unit IV: Application of Kinanthropology (12 Hours)
Kinanthropometry, Growth, Exercise, Performance, Nutrition

Practical (30 Hours)

1. **Somatometric measurements:** Stature, Sitting Height, Body weight, Head length, Head Breadth, Head Circumference, Nasal height, Nasal breadth, Total Upper Extremity Length Size, Total Lower Extremity Length, Hand Grip Strength, Skinfold at Triceps, Skinfold at Biceps

2. **Indices:** Body mass index, Relative sitting height, Relative upper extremity length, Relative total lower extremity length, Nasal index, Cephalic index

3. Projects on topics related to kinanthropology. on current issues around innovative ideas.

References

1. Singh, S.P., & Mehta, P. (2009). Human Body Measurements: concepts and application. PHI Learning Pvt. Ltd.
2. Physical activity and Growth by RJ Shephard, 1982 (Mosby).
3. Singh I.P., & Bhasin, M. K. (Digital version 2008). Anthropometry. Kamla-Raj Enterprises.
4. Renson,R. (1989). From Physical Education to Kinanthropology: A Quest for Academic and Professional Identity. QUEST (41) 235-256.
5. Human Body Composition by Heymsfield, Lohman, Wang and Going. 1996 (Human Kinetics).
6. Human Body Composition by Heymsfield, Lohman, Wang and Going. 1996 (Human Kinetics).

Teaching Learning Process

Classroom teachings, Seminars and presentations, Practical classes, Workshop

Assessment Methods

Theory and practical examinations (including practical records)

Keywords: Kinanthropometry, physical fitness, sports, human growth, exercise

DISCIPLINE SPECIFIC ELECTIVE COURSE -14 (DSE-14)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Psychological Anthropology	**04**	**03**	**Nil**	**01**	**Class XII pass**	**NIL**

(Teaching hours required: Theory, 45 hours; Practical, 30 hours)

Course Objective

The course examines the cultural, evolutionary and psychological basis of human behaviour. It attempts to bring in the cultural basis of some of key psychological concepts like self, identity, emotion, and others that influences human cognition and behaviour and the psychological basis of cultural behaviour, it also looks at cultural aspects of Mental disorders.

Learning Outcomes

The course would enable the students to:

- understand the cultural, evolutionary and the psychological basis of the key concepts of mind, body and culture.
- comprehend the universals in human behaviour and how these universals are influenced by the culture and other factors.

Unit1. Concepts of Human Nature, Body, Brain, Mind and Culture. **(10 Hours)**

Foundations of human behaviour: cultural, evolutionary and psychological dimensions.

Unit 2: Culture and Personality Studies; Basic personality, Modal personality, National Character studies **(11 Hours)**

Unit 3: Concepts of Self, Identity, Emotions **(12 Hours)**

Unit 4: Psychiatric anthropology and mental wellbeing; Altered states of consciousness: spirit possession, shamanism and faith healing **(12 Hours)**

Practical (30 Hours)

1. Students are required to conduct interviews and assess the psychological profile of the respondents in given cultural context.

2. Exploration of issues pertaining to the idea of personhood, interpersonal relationship and cultural orientations in the life of the respondents.
3. A brief report is to be prepared on any specific topic having relevance to psychological anthropology.

Suggested Readings:

1. Imgham, J. M. (1996). *Psychological Anthropology Reconsidered*. Cambridge: Cambridge University Press.
2. Eller, J.D. (2019). *Psychological Anthropology for the 21st Century*. NY and London: Routledge
3. Shweder, Richard A. and Robert A. LeVine, eds. (1984). *Culture Theory: Essays on Mind, Self and Emotion*. Cambridge: Cambridge University.
4. Spiro, Melford E. (1987). *Culture and Human Nature: Theoretical Papers of Melford E. Spiro.* Benjamin Kilborne and L.L. Langness, eds. Chicago: University of Chicago Press.
5. Strauss, Claudia and Naomi Quinn 1(997). *A Cognitive Theory of Cultural Meaning*. Cambridge: Cambridge University Press.
6. Nayar, Mahima. (2018). *Against all odds: Psychosocial distress and healing among women.* New Delhi: Sage Publications

7. Mathur, Nita. (2002). *Cultural rhythms in emotions, narratives and dance*. New Delhi: Munshiram Manoharlal

Teaching Learning Process

Lectures and Discussions, Seminars and Presentations

Assessment Methods:

As per University Rules

Keywords:

Emotions, Identity, Altered states of consciousness, personality, shaminism

DISCIPLINE SPECIFIC ELECTIVE COURSE -15 (DSE-15)
Post Holocene Cultural Adaptations of India and Europe

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Post Holocene Cultural Adaptations of India and Europe	04	03	Nil	01	Class XII pass	NIL

(Teaching hours required: Theory, 45 hours; Practical, 30 hours)

Course Objectives

- The course aims to understand the cultural adaptations of societies in India and Europe with the help of archaeological and cultural remains.

Learning Outcomes

- By studying this course, students will be able to understand the landscape of archaeological sites and their relevance in studying cultural adaptations in prehistoric societies in Europe and India.

Syllabus

Unit I (10 Hours)

Introduction to Holocene Epoch: Geo-chronology, climate change, fauna and flora

Unit II (11 Hours)

Mesolithic Culture of India at Bhimbhetka, Adamgarh, Bagor, Langhnaj and Sarai Nahar Rai.

Rock Art of India

Unit III (12 Hours)

Neolithic Culture of India at Burzahom

Evidences from Ganga Valley and Eastern India, Deccan Neolithic

Unit IV (12 Hours)

Mesolithic Culture of Europe: Different Traditions: Azilian, Maglamosean, Tardenosean

References:

1. Bhattacharya, D.K. (1977). Palaeolithic Europe. Netherland: Humanities Press.

2. Hole, F., & Heizer, R. F. (1969). An Introduction to Prehistoric Archaeology. New York: Holt, Rinehart and Winston
3. Bailey, G. and P. Spikins (eds.). (2008). Mesolithic Europe. Cambridge-. Cambridge University Press.
4. Fagan B. M. (2004). People of the Earth: An Introduction to World Prehistory. New Jersey: Pearson Education.
5. Debenath, A., & Dibble, H. (1994). Handbook of Paleolithic Typology. Volume one: Lower and Middle Paleolithic of Europe. Philadelphia: University of Pennsylvania.
6. Champion Timothy, Clive Gamble, Stephen Shenan & Alasdair Whittle (2009) Prehistoric Europe, London: Routledge
7. Bhattacharya, D.K. (2006).An Outline of Indian Prehistory. Delhi: Palaka Prakashan.
8. Sankalia, H. D. (1977). Prehistory of India. Delhi: Munshiram Manoharlal.

Practical/ Assignment/Project Work (30 Hours)

The students are required to submit a comprehensive project report based on the state of art review of secondary literature on significant dimensions of post-holocene cultural adaptations in India and Europe.

Teaching Learning Process

Lectures and Discussions, Seminars and Presentations

Assessment Methods:

As per University Rules

Keywords: Prehistoric archaeology, palaeolithic culture, mesolithic culture

SEMESTER-IV

Category I

(SRI VENKATESWARA COLLEGE)

(BSc Honors in Biological Science in three years)

DISCIPLINE SPECIFIC CORE COURSE – 10:

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Metabolism and Integration (BS-DSC-401)	4	2		2	Class XII Pass with Biology and chemistry	Should have a background in chemistry of biomolecules and enzymes

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce the students to the basic concepts of metabolism occurring within a living organism.
- to provide the students an understanding of the major metabolic pathway and their regulation.
- To provide knowledge about the possible integration between various metabolic pathways.
- To enable them to corelate adaptations in metabolic pathways and physiological as well as pathophysiological states.

Learning outcomes

On successful completion of the course, students will be able to:

- Outline the pathways involved in catabolism and biosynthesis of glucose.
- Understand the biosynthesis and degradation of glycogen
- Comprehend the catabolism and biosynthesis of fatty acids
- Understand the biosynthesis and degradation of amino acids and nucleotides
- Understand the integration of metabolism

SYLLABUS FOR DSC-10

CREDITS:2 **TOTAL HOURS: 30 hrs**

UNIT I: Carbohydrate metabolism **No. of hours: 14**

Principles of metabolism, anabolism, catabolism, standard free energy change, metabolic roles of ATP, phosphoryl group transfer, nucleotidyl group transfer. Glycolysis as a universal pathway, anaerobic glycolysis, fermentation, gluconeogenesis, reciprocal regulation of glycolysis and gluconeogenesis, Glycogenesis and glycogenolysis and overview of regulation, Pentose phosphate pathway, Pyruvate dehydrogenase complex, oxidation of acetyl CoA. TCA cycle, amphibolic role, ATP calculation, Glycerol-3-phosphate and malate-aspartate shuttle.

UNIT II: Lipid metabolism **No. of hours: 8**

Lipid metabolism - Mobilization of triglycerides, metabolism of glycerol, β-oxidation of saturated, monounsaturated and poly-unsaturated fatty acids, even and odd chain fatty acids. Ketogenesis and significance, Biosynthesis of C-16 palmitic acid, brief overview of cholesterol metabolism and lipoprotein cycle.

UNIT III: Amino acid and nucleotide metabolism **No. of hours: 5**

Transamination and deamination, Urea cycle, glucogenic and ketogenic amino acids, secondary metabolites from amino acids. Nucleotide Metabolism- De novo and Salvage pathways and degradation. Inborn errors of metabolism - Phenylketonuria, Alkaptonuria, Maple syrup, Lesch Nyhan syndrome.

UNIT IV: Integration of metabolism **No. of hours: 3**

Starve feed cycle: Metabolic shifts in absorptive, post absorptive, fasting and starvation states

PRACTICALS

CREDITS: 2 **TOTAL HOURS: 60**

1. Estimation of Random Blood Glucose – Glucose Oxidase- Peroxidase method
2. Estimation of Oral Glucose tolerance test (O-GTT).
3. Determination of Lipid Profile: Total Cholesterol (TC), High Density Lipoproteins (HDL) and Triglycerides (TAG).
4. Estimation of SGPT and SGOT in serum/plasma sample.
5. Estimation of creatinine in serum/plasma sample.
6. Estimation of Blood Urea.
7. Estimation of serum uric acid

Essential Readings

1. Nelson, D.L. and Cox, M.M. (2017). Lehninger: Principles of Biochemistry (7th ed.). W.H. Freeman & Company (New York), ISBN:13: 9781464126116 / ISBN:10-1464126119.
2. Berg, J.M., Tymoczko, J.L., Stryer L., (2012) Biochemistry 7th ed., W.H. Freeman and Company (New York); ISBN:10:1-4292-2936-5, ISBN:13:978-1-4292-2936-4.
3. Campbell, M.K., Farrel, S.O. (2012) Biochemistry7th ed, S.O. Brooks/Cole, Cengage Learning (Boston); ISBN: 13:978-1-111-42564-7 ISBN:10:1-4292-2936-5.
4. An Introduction to Practical Biochemistry (1998) 3rd ed., Plummer D. T., Tata McGraw Hill Education Pvt. Ltd. (New Delhi), ISBN:13: 978-0-07-099487-4 / ISBN:10:0-07-099487-0

Suggested Readings

1. Principles of Biochemistry (2013) 4th ed., Voet, Donald,Voet, Judith &Pratt, charlotte. Wiley & Sons, Inc. (New Jersey), ISBN:978-1-11809244-6.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, Universityof Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 11

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Animal Physiology (BS-DSC-402)	**4**	**2**		**2**	Class XII pass with Biology and chemistry	**None**

Learning Objectives

The Learning Objectives of this course are as follows:

- Seeks to understand what the physiological adaptations are that enable animalsto thrive across virtually any environment on earth, and
- How some of these adaptations can reveal the general principles that govern life functions
- Provides an understanding of fundamental principles of animal physiology and how these principles are incorporated into adaptations of different animal groups.
- Emphasizes on integrating the knowledge of how systemswithin diverse organisms' function and respond to changes in their environment
- Serves as a comprehensive guide to understand the complexity of an organ system and to cover the comparative aspects of system in different animal groups.
- The course is based on the "Krogh's principle", which proposes the use of specific organisms convenient to study specific questions and to address the central concept based on evolutionary adaptations.

Learning outcomes

Upon completion of the course, the students will be able to:

- Students will know how animals obtain energy from their environment.
- Students will understand the unique role of various organs and organ systems inperforming various vital functions.
- Students will understand the role of physiology in adapting to various environments.
- Students will appreciate the importance of homeostasis in different animals.
- Students will learn to apply critical thinking and integrate scientific knowledge to understand the basic physiological principles which led to diverse evolutionary adaptations.

SYLLABUS OF DSC- 11

Theory

TOTAL HOURS: 30 **CREDITS: 2**

Unit 1: Production of Energy **No. of hours: 4**

Feeding patterns found in different animals; Intracellular and extracellular digestion, cellulose digestion in animals: invertebrates, ruminants, non-ruminants and coprophagy.

Unit 2: Gas Exchange in Organisms **No. of hours: 5**

Physiology of aquatic and terrestrial breathing; Respiratory organs in aquatic and terrestrial organisms: respiration in insects: terrestrial, aquatic and cyclic respiration, respiration in fishes: ventilation, water pumping and counter current flow, respiration in birds: air sacs, lung function and crosscurrent flow

Unit 3: Bulk Transport **No. of hours: 6**

General plan of circulatory system in invertebrates and vertebrates: closed and open system of circulation, single circulation and double circulation: circulation patterns of cockroach, bony fishes and amphibians. Physiology of vertebrate heart: cardiac output, regulation of heartbeat- Starling' s law of the heart.

Unit 4: Regulatory Physiology **No. of hours: 10**

Homeostasis in animals: regulation of water and solutes in aquatic and terrestrial animals; osmoconformers and osmoregulators; physiology of osmoregulation in marine invertebrates, elasmobranchs and bony fishes (freshwater and marine); water balance in terrestrial animals: kangaroo rat.

Patterns of thermoregulation: heat exchange with the environment. Ectotherms: tolerance to high temperature (lethal temperature), tolerance to cold and freezing temperature (freeze tolerant and intolerant animals). Endotherms: thermogenesis and regulation of body temperature. Structural and functional adaptations to temperature stress (taking examples of arctic fox, penguins, and camels)

Unit 5: Integrative Physiology **No. of hours: 5**

An overview of neuronal structure and function; general principles of sensory physiology- chemoreceptors (gustatory and olfactory); mechanoreceptors (statocyst in invertebrates and lateral line system of fishes); sonar system in bats; electroreceptors (electric organs in fishes); thermoreceptors.

PRACTICALS

TOTAL HOURS: 60 **CREDITS: 2**

1. Effect of isotonic, hypotonic and hypertonic saline solutions on erythrocytes
2. Study of mouth parts and digestive system of *Periplaneta**
3. Preparation of temporary mounts: nerve cells and blood smear
4. Enumeration of Differential Leucocyte Count (D.L.C)
5. Effect of temperature on action of salivary amylase.

6. Study of permanent slides of nephridia of earthworm and mammalian oesophagus, stomach, ileum, rectum, liver, trachea, lung, kidney, spinal cord
(*Subject to UGC guidelines)

Essential Readings

1. Moyes, C. D., & Schulte, P. M. (2008). Principles of Animal Physiology. San Francisco, CA: Pearson/Benjamin Cummings.
2. Randall, D. C., Burggren, W. W., & French, K. (2002). Eckert Animal Physiology. New York: W. H. Freeman.
3. Schmidt-Nielsen, K. (2010). Animal Physiology: Adaptation and Environment. Cambridge: Cambridge University Press.

Suggested readings.

2. Prakash, G. (2012). Lab Manual on Blood Analysis and Medical Diagnostics. S. Chand andCo. Ltd.
3. Reece, J. B., & Campbell, N. A. (2011). Campbell Biology. Boston: Benjamin Cummings /Pearson.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE –12 :

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Plant Physiology (BS-DSC-403)	**4**	**2**		**2**	Class XII pass with Biology and chemistry,	**None**

Learning Objectives

The Learning Objectives of this course are as follows:

- Gives the students an insight into the structure-function integration in plants.
- To appreciate the complex interactions of the plant with the environmental and edaphic factors that forms a major portion of plant physiology
- To provide students with comprehensive exposure to the subject of plant physiology.
- Aims to familiarize the students with the role of various functional processes of plants in their growth and development;
- To understand transport mechanisms and translocation in the phloem,
- Appreciate the commercial applications of plant physiology.

Learning outcomes

By the end of the course, the student will be able to:

- Comprehend the fundamental concepts of plant physiology
- Understand the physiological mechanisms of plant growth, function, and development.
- Understand the integration of soil, atmosphere, and plant in carrying outthe life processes by plants.
- Understand the complex regulation of phenomena of growth and flowering.
- Be able to use the knowledge gained to help crop growers, fruit farmers,floriculturists and others in the related area.

SYLLABUS OF DSC-12

Theory

Credits: 2 **Total Hours: 30**

Unit 1: Water relations **No. of hours: 9**

Water potential and its components (solute potential, pressure potential, gravimetric potentialand matric potential); inter cellular water transport (diffusion, mass flow and osmosis), short- distance transport (water absorption by roots), aquaporins, pathway of water movement (apoplastand symplast), water and ion uptake from soil into roots, root pressure, guttation, ascent of sap, cohesion-tension theory; Transpiration and its significance, factors affecting transpiration, anti- transpirants; Mechanism of stomatal movement (starch-sugar hypothesis, proton transport theory).

Unit 2: Plant Nutrition: uptake and distribution **No. of hours: 10**

Essential elements (macronutrients and micronutrients, criteria of essentiality, roles and deficiency symptoms), methods of study and use of nutrient solutions (ash analysis, hydroponics and aeroponics), Soil cation exchange capacity, transport of ions across cell membrane-passive transport and active transport, experimental evidence in support of phloem as the site of sugar translocation, Source-sink relationship, pressure flow model, phloem loading and unloading.

Unit 3: Regulation of plant growth **No. of hours: 5**

Discovery, basic structure, bioassays, physiological roles and commercial applications of auxins, gibberellins, cytokinins, abscisic acid and ethylene, general mechanism of mode of action of hormones. Brassinosteroids and Jasmonic acid (brief)

Unit 4. Physiology of Flowering **No. of hours: 6**

Photoperiodism: SDPs, LDPs, DNPs, photoinductive cycle(perception of photoperiodic signal), physiology of flowering (florigen concept), phytochrome (discovery, structure and responses on photomorphogenesis) vernalization, seed dormancy and germination (causes and methods to overcome dormancy).

2.1 Practical

Credit:2 **Total Hours: 60**

1. To determine the osmotic potential of plant cell sap by incipient plasmolytic method.
2. To determine the water potential by weight method.
3. To study the effect of two environmental factors on transpiration of an excised twig.
4. To calculate stomatal index and stomatal frequency of two surfaces of leaves of a mesophyte and a xerophyte.
5. To calculate the area of an open stoma and percentage of leaf area open through stomata in a mesophyte and a xerophyte (any one surface)
6. To demonstrate suction due to transpiration
7. To demonstrate the role of auxins in rooting of the cuttings
8. To study the phenomenon of Bolting
9. To study the role of Ethylene in fruit ripening
10. To study the effect of pH on anthocyanin pigments

Essential readings:

1. Hopkins, W.G. and Huner, A. (2008). Introduction to Plant Physiology. John Wiley and Sons.U.S.A. 4th edition.
2. Kochhar, S.L. and Gujral, S.K. (2011). Comprehensive Practical Plant Physiology, Macmillan India Ltd, New Delhi.
3. Noggle, G.R. and Fritz,G.J. (1986).Introduction to Plant Physiology, 2nd Ed. PrenticeHall of India Ltd., New Delhi.
4. Salisbury, F.B. and Ross, C.W. (2005). Plant Physiology, Thomson Wadsworth, 4th edition.
5. Taiz, L., Zeiger, E. Moller, I.M. and Murphy, A. (2015). Plant Physiology and Development, Sinauer Associates Inc. U.S.A 6th edition.

Suggested readings:

1. Bhatla, S.C. and Lal M.A. (2018). Plant Physiology, Development and Metabolism, Springer Nature, 1st edition.
2. Nobel, P.S. (2009). Physicochemical and Environmental Plant Physiology, Academic Press, 4th edition.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Pool of DSE

DISCIPLINE SPECIFIC ELECTIVE COURSE –DSE-4 :

Course title& Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Natural resources and their Sustainable Utilization(BS-DSE-4)	**4**	**2**		**2**	Class XII pass with Biology and chemistry	**NA**

Learning Objectives:

Natural Resource Management (NRM) is an integrated and multidisciplinary approach combining Earth- Science, Life-Science, Environmental Science and Social Science to manage and restore natural resources andecosystems. This paper takes an objective view of the nature of Earth's resources, how and where they are generated, how they are extracted and used, and how these activities impact Earth's environment. It also addresses sustainability by looking into different ways of conservation of the natural resources and their management. Natural Resource Management helps to balance the needs of people and the economy with protecting the ability of ecosystems to support soil, water, forests, biodiversity, recreation and other resources

Learning Outcomes:

On successful completion of the course, a student will:

- Define and differentiate between biological and physical natural resources
- Appreciate the role of natural resources in ecological, economic and socio-cultural activities
- Understand the effect of anthropogenic interference on natural resources
- Understand the laws and policies associated with resource management and conservation

SYLLABUS for DSE-4

Course Contents – Theory

Unit 1: Natural Resources and Sustainable Utilization **No. of hours: 3**

Definition and types of Natural resources. Concept of sustainable utilization and approaches
(economic,ecological and socio-cultural), ecotourism

Unit 2: Land and Water **No. of hours: 6**

Land resources and land use patterns and changes: Land as a resource, land degradation, landslides (natural &man-induced), soil types of India, soil erosion and desertification.
Water resources (Fresh water (rivers, freshwater lakes, salt lakes, groundwater, aquifers, watershed); Marine; Estuarine), Use and over-exploitation of surface and ground water, floods, drought. Effects of climate change on water and land.

Unit 3: Biological Resources **No. of hours: 5**

Importance of Biological Resources in Human welfare. Threats; Management strategies; Bioprospecting;
IPR(Intellectual Property Rights); CBD (Convention on Biological Diversity); National Biodiversity
Action Plan,National Green Tribunal (NGT) and its role.

Unit 4: Forests and Energy **No. of hours: 8**

Forests & forest resources of India: Use and over-exploitation, Major and minor Forest products.
Energy resources: Renewable and non-renewable energy sources, use of alternate energy sources, impact ofgrowing energy needs and energy crisis- remedial measures.

Unit 5: Contemporary practices in Resource Management **No. of hours: 8**

Environment Impact Assessment (EIA), Geographical Information System (GIS), Participatory Resource Appraisal, Ecological Footprint with emphasis on carbon footprint, Resource Accounting; Types of waste andtheir management. National and international efforts in resource management and conservation

PRACTICALS

CREDITS: 2 **TOTAL HOURS: 60**

1. Estimation of solid waste generated by a domestic system (biodegradable and non-biodegradable) andits impact on land degradation.
2. Collection of data on vegetation/ forest cover of specific city/state (any two) and correlate withconservation and socio economic practices.
3. Measurement of dominance of woody species by DBH (diameter at breast height) method.
4. Calculation and analysis of ecological footprint.
5. Estimation of soil organic carbon by Walkley and Black's method.
6. Ecological modeling.
7. Estimation of dissolved carbon-dioxide in different water samples.
8. Soil Analysis for water holding capacity, pore-space, cation-exchange capacity
9. Visit to landfill sites/ mining area/sewage treatment plant.

Essential Readings:

1. Craig, J.R., Vaughan, D.J. Skinner, B.J. (1996). Resources of the Earth: Origin, Use, and EnvironmentalImpact (2nd ed). Prentice Hall, New Jersey.
2. Klee, G.A. (1991). Conservation of Natural Resources. Prentice Hall Publ. Co., New Jersey
3. Owen, O.S, Chiras, D.D. and Reganold, J.P. (1998). Natural Resource Conservation – Management forSustainable future, (7thEdn.), Prentice Hall.
4. N. Vasudevan, Essentials of Environmental Science, Narosa Publishing House, (New Delhi), 2006
5. Vasudevan, N. (2006). Essentials of Environmental Science. New Delhi: Narosa Publishing House.
6. Sharma, P. D. (2017). Ecology and Environment. Meerut: Rastogi Publications

Additional Resources

1. J. S. Singh, S.P Singh and S. Gupta, Ecology, Environment and Resource Conservation, AnamayaPublications, (New Delhi), 2006
2. An P.P Rogers, K.F Jalal and J.A Boyd, Introduction to Sustainable Development, Prentice Hall of IndiaPrivate Limited (New Delhi), 2008

DISCIPLINE SPECIFIC ELECTIVE COURSE –DSE-5 :

Course title& Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Human Nutrition and Biochemistry (BS-DSE-5)	**4**	**2**		**2**	Class XII pass with Biology and chemistry	**NA**

Learning Objectives:

This course provides students with knowledge and understanding of the characteristics, function, metabolism and deficiency of macro and micronutrients in the human body. It involves integrated learning between the areas of Biochemistry and Nutrition.

Learning Outcomes:

On successful completion of the course, a student will:

- Critically analyze and evaluate concepts in nutritional biochemistry that are important for an understanding of human nutrition.
- Appreciate the biochemical underpinning of human nutrition in maintaining health.
- Demonstrate understanding of the biochemical basis of essentiality of macro and micronutrients and their nutritional deficiencies.
- Be aware of techniques used in the assessment of nutritional status and nutritional disorders.

Understand drug nutrient interactions

SYLLABUS FOR DSE-5

Course Contents -Theory

UNIT 1: Introduction to Nutrition and Energy Metabolism **No. of hours: 4**

Defining nutrition, role of nutrients. Unit of energy, Food energy, Specific Dynamic Action. Energy expenditure and its components, Energy Balance, Recommended Nutrient Intakes (RNI) and Daily Recommended Intakes for different age groups.

UNIT 2: Macronutrients **No. of hours: 10**

Food sources of carbohydrates, functions of carbohydrates, RDA, Factors affecting bioavailability, Glycemic index and glycemic load. Dietary fiber and the role of fiber in health. Role of Gut microbiome in maintaining health. Role of prebiotics and probiotics in nutritive health.
Essential Fatty Acids; Functions of EFA, AI, excess and deficiency of EFA, factors affecting bioavailability. Dietary implications of ratios of n6 and n3, MUFA, PUFA, SFA and Cholesterol in the body.
Functions of proteins in the body. RDA for different age groups. Essential and Nonessential amino acids. Complete and incomplete protein, Amino Acid Interactions: Antagonism, Toxicity, Imbalance, Amino acid complementation and Supplementation in foods. Protein quality determinants: Net protein utilization (NPU), Biological Value, Protein digestibility-corrected amino acid score (PDCAAS), Nitrogen balance. PEM: Marasmus and Kwashiorkor.

UNIT 3: Fat- and water-soluble Vitamins **No. of hours: 9**

Vitamin A, D, E, K and their dietary sources, RDA, Role of Vitamin A in Visual cycle and overview of other functions. Role of Vitamin K in Gamma carboxylation (blood clotting). Role of Vitamin E as an antioxidant. Role of Vitamin D in maintenance of bone physiology and overview of other functions. Vitamin C- Dietary sources, RDA, role in collagen synthesis. The B Complex vitamins- Dietary sources, RDA.Functions and role in metabolism, Role of Vitamin B12 and Folate in Hematopoiesis and Neurology Biochemical basis for deficiency symptoms, Hypervitaminosis.

UNIT 3: Minerals **No. of hours: 7**

Minerals: Dietary Sources, RDA. Sodium, Potassium, Calcium, Iron, Chloride, Copper and Phosphorus-Function, metabolism, Excretion, Deficiency and Toxicity.
Function, Metabolism, deficiency, Toxicity and Sources of Trace Elements: Iodine, Fluoride, Mg, Zn, Se,Chromium, Molybdenum.

PRACTICAL

CREDITS: 2 **TOTAL HOURS: 60**

1. Anthropometric identifications for nutrition related diseases –Body mass index (BMI), percentage body fat
2. Calculation of Basal Metabolic Rate (BMR) and Total daily Energy Expenditure (TDEE)
3. Determination of oxidative stress: Thiobarbaturic acid reactive substances (TBARS) in serum.
4. Assay of antioxidant enzymes in hemolysate/plant sources.
5. Estimation of vitamin A/E in serum.
6. Estimation of minerals in drugs/food/serum.
7. Determination of nutritive value of foods through Kjeldal's method, Soxhlet method
8. Understanding fortification and supplementation
9. Presentation and discussion on Food as medicine.
10. Group discussion on Nutrient-nutrient and drug-nutrient interactions
11. Case studies on nutritional disorders.

Essential Readings

1. Coombs Jr. G. F., (2008). *The vitamins, Fundamental aspects in Nutrition and Health.* Elsevier's Publications. ISBN-13- 978-0-12- 183493-7.
2. Mahan, L.K., Strings, S. E., Raymond, J. (2012) *Krause's Food and Nutrition Care process.* Elsevier's Publications. ISBN: 978-1-4377-2233-8.
3. Rosalind Gibson (2005). *Principles of Nutritional Assessment.* Oxford University Press. ISBN: 9780195171693
4. Tom Brody (1999). *Nutritional Biochemistry* (2nd Ed). Harcourt Braces. ISBN:9814033251, 978981403325
5. Malik, D., Narayanasamy, N., Vavilala, P., Takur, J., Sinha, N., (2022). Textbook of Nutritional Biochemistry. Springer Singapore, ISBN978-981-19-4149-8.

Suggested Reading

1. Devlin, T. M., (2011). *Textbook of Biochemistry with Clinical Correlations.* John Wiley & Sons, Inc. (New York), ISBN: 978-0-4710-28173-4.

DISCIPLINE SPECIFIC ELECTIVE COURSE –DSE-6 :

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Conservation and Management of Wildlife (BS-DSE- 6)	**4**	**2**		**2**	Class XII pass with Biology and chemistry,	**NA**

Learning Objectives:

The Discipline Specific Paper on Wildlife Conservation and Management is designed to acquaint students with varied aspects of wildlife conservation, including its importance, major threats, management of their habitats and populations. The emphasis will be on developing interest and invoking a sense of responsibility among students towards wildlife conservation. The course also explores different techniques, perspectives, and approaches to both identify and achieve wildlife management goals. This course will motivate students to pursue career in the field of wildlife conservation and management.

Learning Outcomes:

Upon completion of the course, students will be able to:

- Understand the importance of wildlife in general, and its conservation and management in particular.
- Comprehend the application of the principles of ecology and animal behaviour to formulate strategiesfor the management of wildlife populations and their habitats.
- Understand the management practices required to achieve a healthy ecosystem for wildlife populationalong with emphasis on conservation and restoration.
- Know the key factors for loss of wildlife and important strategies for their in situ and ex situconservation.
- Recognize the techniques for estimation, remote sensing and Global Position Tracking for wildlife.
- Gain knowledge about the wildlife diseases and the quarantine policies.
- Know about the Protected Area Networks in India, Ecotourism, Ecology of perturbation and Climaxpersistence.
- Perform critical thinking, literature review; scientific writing as well as presentations; and participationin citizen science initiatives with reference to wildlife.

SYLLABUS for DSE-6
Course Contents- Theory

Unit 1: Introduction to Wildlife **No. of hours: 6**

Values of wildlife - positive and negative; Conservation ethics; Importance of conservation; Causes of depletion

Unit 2: Management of Habitats **No. of hours:4**

Setting back succession: Grazing logging; Mechanical treatment; Advancing the successional process:
Cover Construction

Unit 3: Wildlife identification and estimation **No. of hours: 8**

Fecal analysis of ungulates and carnivores: Faecal samples, slide preparation, and Hair
identification; Pugmarks and Census methods

Unit 4: Wildlife Health Management **No. of hours: 6**

Common diseases of wild animals: Zoonosis (Ebola and Salmonellosis), Rabies, Foot and Mouth
Disease,Mycobacterium TB, Bovine and Avian Flu

Unit 5: Protected Areas and Management **No. of hours: 6**

National parks and sanctuaries; Biosphere reserves; Conservation and Community reserve; Important
features of protected areas in India; Tiger conservation - Tiger reserves in India and management
challenges in Tiger reserves. Human-wildlife conflict; Ecotourism / wild life tourism in forests

PRACTICAL

Credits: 2 **Total Hours: 60**

1. Identification of mammalian fauna, avian fauna, herpeto-fauna through direct and indirect evidencesseen on a field trip to a wildlife conservation site.
2. Demonstration of basic equipment needed in wildlife studies use, care and maintenance (Compass,Binoculars, Spotting scope, Range Finders, Various types of Cameras and lenses).
3. Familiarization and study of animal evidences in the field: Identification of animals through Pug marks,Scats & Nests.
4. Identification of big cats: Lion, Tiger, Cheetah, Leopard and Jaguar.
5. To Study the various Animal tracking systems: VHF, UHF, GPS and GIS
6. Trail / transect monitoring for abundance and diversity estimation of wildlife (direct and indirectwildlife evidences).

7. A report based on a visit to National Park/Wildlife Sanctuary or any other wildlife conservation site.

Essential Readings

1. Saha, G.K. and Mazumdar, S. (2017) Wildlife Biology: An Indian Perspective. PHI learning Pvt. Ltd.ISBN: 8120353137, 978-812035313
2. Sinclair, A.R.E., Fryxell, J.M. and Caughley, G. (2006) Wildlife Ecology, Conservation andManagement. Wiley-Blackwell, Oxford, UK.
3. Singh, S.K. (2005) Text Book of Wildlife Management. IBDC, Lucknow.
4. Hossetti, B. B. (1997). Concepts in Wildlife Management. Daya Publishing House, Delhi.

Suggested Readings:

1. Hudson, P.J., Rizzoli, A., Grenfell, B.T. Heestrbeek, H. and Dobson, A.P. (2002) The Ecology of Wildlife Diseases. Oxford University Press, Oxford.
2. Banerjee, K. (2002) Biodiversity Conservation in Managed and Protected Areas. Agrobios, India. • Sharma, B.D. (1999) Indian Wildlife Resources Ecology and Development. Daya Publishing House, Delhi.
3. Primack, R.B. (1998). Essentials of Conservation Biology. Sinauer Associates, Inc. Sunderland, MA.

Online Tools and Web Resources:

- https://swayam.gov.in/courses/4687-july-2018-wildlife-conservation
- https://swayam.gov.in/courses/5364-jan-2019-wild-life-ecology
- https://papaco.org/mooc-on-species-conservation/
- https://www.iucn.org/theme/protected-areas/our-work/capacity-development/moocs
- https://www.zsl.org/united-for-wildlife-free-conservation-courses
- https://wildlife.org/next-generation/career-development/online-courses/
- https://www.openlearning.com/umtmooc/courses/wildlife-management

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES OFFERED BY THE DEPARTMENTS

GRNERIC ELECTIVE COURSE –GE-1 :

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Light and Life (BS-GE- 1)	**4**	**2**		**2**	Class XII pass with Biology and chemistry,	**NA**

Course Objective:

The course explores the physical properties of light and its interplay with living organisms. Light as a source of energy and information has shaped life on earth over the last 3.6 billion years. We see the world around us because the light reflected to the retina is processed to our brain (Photoreception), we breathe in oxygen because it has been evolved by the plants around us due to the light dependent Photosynthesis. Where there is no natural light organisms produce their own (Bioluminescence). Maintaining coordination with the surrounding light regime is fundamentally important to the inherent biological clock in organisms which needs re-calibration almost every 24 hours (Circadian Rhythms); whereas a disruption may lead to adverse effects. Every part of the spectrum is used in one way or the other by different life forms. In this paper students will be able to appreciate the delicate processes of life that are dependent on light.

Course Learning Outcomes:

- Students will understand and appreciate the dual nature of light.
- Students will comprehend the impact of light on biodiversity from pole to pole.
- Students will gain knowledge about the various photoreceptors in plants and animals and will appreciate and understand the mechanism of photosynthesis.
- Students will understand bioluminescence, photoperiodism and biological rhythms.
- Students will gain knowledge about the ecological and physiological responses to light.

Syllabus for GE-1

THEORY
TOTAL HOURS: 30 CREDITS: 2

Unit I: Introduction to Light and Life **No. of Hours: 4**

Nature of light (Wave and Particle), spectrum of light. Measurement of light (Lux, Candela, Foot Candle). Polarized light, light attenuation in water. Light as an ecological factor affecting distribution of plants and animals (Phyto and Zoo geography), in terrestrial and aquatic ecosystems. Latitudinal Diversity gradient.

Unit II: Photoreception **No. of Hours: 4**

Comparative account of chemistry and functional roles of pigments associated with harvesting light energy: photoreceptors in plants: chlorophylls, carotenoids, phycobilinoproteins, bacteriochlorophylls etc. Photoreception in animals, color vision and visual processing in human eye.

Unit III: Photosynthesis **No. of Hours:6**

History, Structure of chloroplast, Photosynthetic equation, Photosynthetic electron transport (cyclic and non-cyclic), photolysis of water, , concept of Reaction centers, , Dark Reactions in Photosynthesis, C3, C4, CAM cycle, Regulation of PCR cycle, photorespiration (C2 cycle), photoautotroph vs. photoheterotrophs; Photoautotroph vs. chemoautotroph, Anoxygenic and oxygenic photosynthesis.

Unit IV: Bioluminescence **No. of Hours: 6**

Definition, discovery, diversity of organisms, Functions and mechanism of Bioluminescence (*Photinus pyralis, Aequorea victoria*).

Unit V: Photoperiodism **No. of Hours: 10**

Photoperiodism: phytochromes, LDP, SDP, DNP plants, vernalization, vernalin, etiolation and de-etiolation. Animal responses to changing photoperiodism. Physiological and Behavioural adaptations to extreme light conditions in plants and animals. Three rhythm domains, Biological clock and Circadian rhythms. Sleep disorders, Shift work disorder, Jetlag.

Unit VI: Ecological and physiological responses to Light **No. of Hours: 6**

Color in animals: chromatophores and colour changes in animals, morphological and physiological colour change. Role of Light as an inducer for biosynthesis of Vitamin D and Melatonin along with significance .Thymine dimer formation, skin cancer and cataract in response to UV exposure. Light pollution and its impacts on environment, ecosystems and wildlife.

PRACTICALS

TOTAL HOURS: 60 CREDITS: 2

1. To study light penetration in water using Secchi disc.
2. To demonstrate the effect of light on soil fauna using Berlese funnel setup.
3. To study the effect of light and darkness on the chromatophores of fish.
4. To test / survey for color blindness using Ishihara charts.
5. To study oxygen liberation during photosynthesis using Hydrilla. Measurement of light using Luxmeter.
6. Separation of Chloroplast pigments by Paper Chromatography.
7. Demonstration of Hills Reaction and study the effect of Light intensity (any 2 light conditions).
8. To study the effect of Light intensity and CO2 concentration on the rate of photosynthesis

Essential Readings:

1. Björn, L. O. (2015) 3rd Ed. *Photobiology: Science of Light and Life*, L.O. Bjorn.,Springer
2. Buchanan, B. B., Gruissem, W., and Jones, R. L. (2000). *Biochemistry and molecularbiology of plants.* Rockville, Md.: American Society of Plant Physiologists.
3. Huner, N. and Hopkins, W. (2013). *Introduction to Plant Physiology.* In: 4th ed. JohnWiley & Sons, Inc.
4. Kohen E., Santus R., Hirschberg J.G. (1995) 1st Ed., *Photobiology* Academic Press
5. Randall D., Burggren W., & French k. (2001) 5th Ed. *Eckert, Animal PhysiologyMechanisms*
6. *and Adaptations.* W.H. Freeman and Co.

Suggested Readings:

1. Gross M. (2003). *Light and Life*. Oxford University Press
2. Shimomura O., (2012) *Bioluminescence: Chemical Principles and Methods*, World Scientific,
3. Taiz, L., &Zeiger, E. (1991).*Plant physiology*. Redwood City, Calif:Benjamin/Cummings Pub. Co.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GRNERIC ELECTIVE COURSE –GE-2 :

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Wellness and health (BS-GE- 2)	**4**	**2**		**2**	Class XII pass	**NA**

Learning Objectives

This course aims at creating consciousness among the students towards health, fitness and wellness and in developing and maintaining a healthy life style. The course provides an introduction to basic personal health issues and concerns in today's society. The course will lay emphasis on current health issues such as malnutrition, mental health, sleep hygiene, substance abuse and stress. Upon completion, students should be able to demonstrate an understanding of the factors necessary to lead

a stress free and healthy life.

Learning Outcome

Upon successful completion of this course, the student will be able to:

1. Define Health and Wellness and understand the importance of a healthy lifestyle
2. Be familiar with factors contributing to physiological and mental health
3. Discuss misconceptions about nutrition and weight management; appreciate factors that contribute to malnutrition.
4. To create awareness of various life style related diseases and maintain a reasonable and cardiac-respiratory fitness and health.
5. Understand factors that contribute to stress, identify stressors commonly reported by different groups and appreciate ways to manage stress.
6. Identify the characteristics of emotionally and mentally healthy individuals
7. Identify the characteristics and risk factors of sexually transmitted infections and disease

GE-2 Syllabus

THEORY
Credits:2 **Total hours: 30**

UNIT I: Understanding Wellness and Health **2 hrs.**

Defining health, Factors that contribute to health and wellness: Genetic, Physiological, Physical, Psychological, Social and Geopolitical.

UNIT II: Nutrition and Health **6 hrs.**

Definition of Nutrition, Understanding different body types in relation to appropriate diet, Concept of Balanced Diet, Diet Plans: Keto diet, Intermittent fasting, Paleo diet, Atkins diet; Malnutrition and its contribution to ill health. Current concerns in India regarding Nutrition and Health.

UNIT III: Sleep, Mental Health and Stress **6 hrs**

Defining sleep, Sleep Physiology and sleep wake cycle, Stages of sleep, Sleep hygiene and its contribution to health, Basic physiology of stress and mental health, Psychosomatic illness, PTSD, Depression and Anxiety; Social, Psychological, Physiological and Environmental factors contributing to stress and its mental health

UNIT IV: Lifestyle Management and Fitness 6 **hrs**

Understanding Non-Communicable diseases (NCD), Cardiovascular and pulmonary health and disease, Diabetes Mellitus and Obesity. Management of Life Style disease: Diet, sleep, exercise and stress management. Cardiopulmonary fitness, Maintenance of Healthy lifestyle, Exercise: types, benefits; Yoga and Pranayama.

UNIT V: Addiction and Health Concerns **5 hrs**

Definition of Addiction, Physiology and psychology of addictive behaviour, Addiction of alcohol,

drugs, nicotine and electronic devices and their effect on health, Deaddiction, Counselling and Rehabilitation

UNIT VI: Sexual Health and Disease **5 hrs**

Overview of reproductive physiology, Contraception, sexually transmitted disease (HIV, Herpes, Cervical cancer), PCOS, Infertility and health

PRACTICALS

Credits: 2 **Total hours: 60**

1. Calculating BMI, BMR and Total daily energy expenditure
2. Calculating Nutrient Intake and Total Daily Energy Intake
3. Calculating Energy balance and obesity indices like percent body fat, Body Conicity Index and Body Adiposity Index, Waist to Hip ratio
4. Measuring Blood Pressure and Pulmonary function tests.
5. Determining Mental Health through established questionnaire.
6. Maintaining record and calculating sleep hours.
7. Case Studies: Life Style Disorders, Sexually Transmitted Diseases

ESSENTIAL READINGS:

1. Physical Activity and Health by Claude Bouchard, Steven N. Blair, William L. Haskell. ISBN-13: 978-0736095419

2. Mental Health Workbook by Emily Attached & Marzia Fernandez, 2021. ISBN-13:979-8640649550
3. Lifestyle Diseases: Lifestyle Disease Management, by C. Nyambichu & Jeff Lumiri, 2018.
4. An Invitation to Health 18th ed., by Dianne Hales ISBN: 1337392898
5. The Psychology of Addiction by Jenny Svanberg, 2018 ISBN-13: 978-1133104544
6. Introduction to Human Physiology by Lauralee Sherwood, ISBN-13:978-1133104544

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER-V

Category I

(BSc Honors in Biological Science in three years)

DISCIPLINE SPECIFIC CORE COURSE – 13:

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Molecular Biology I(BS-501)	**4**	**2**		**2**	Class-XII pass with Biology & Chemistry	Should have a background in chemistry of biomolecules and enzymes

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce to the students, the basic concepts of genome, DNA structure, genes, chromatin and chromosomes.
- Provide an understanding of mechanism of DNA replication, recombination, mutations and repair.
- Teo enable students to apply this knowledge in understanding the life processes and develop an interest to pursue high quality research.

Learning outcomes

On successful completion of the course, students will be able to:

- Explain the basic information about the structure of DNA and various forms of DNA, about organization of genome in various life forms, supercoiling of DNA and its significance
- Outline and elaborate the molecular basis of processes like DNA replication, recombination and transposition and explain the significance of these processes
- Discuss about the various ways in which the DNA can be damaged leading to mutations and lesions and the different ways that DNA damage can be repaired.

SYLLABUS FOR DSC-13

Credits: 2 **Total hours: 30**

UNIT 1: Structure of DNA and genomic organization **No. of hours: 8**

Watson and Crick model of DNA, various forms of DNA, Supercoiling of DNA, linking number, Topoisomerases, Topoisomerase inhibitors and their clinical

importance, Definition of a gene, organization of genes in viruses, bacteria and eukaryotes, concept of split genes, introns, exons, satellite DNA, highly repetitive DNA.

UNIT 2: Replication of DNA **No. of hours: 10**

The chemistry of DNA synthesis, DNA polymerase, the replication fork, enzymes and proteins in DNA replication, *E coli* DNA polymerases, stages of replication: initiation, elongation, origin of replication, relationship between replication and cell division, replication in eukaryotes, end replication problem, telomerases. Comparison of replication in prokaryotes and eukaryotes.Inhibitors of DNA replication and applications in medicine.

UNIT 3: Recombination and transposition of DNA **No. of hours: 6**

Homologous recombination, enzymes in homologous recombination, site-specificrecombination, recombinases. Transposition, DNA transposition by cut and paste and replicativemechanism.

UNIT 4: Mutations and DNA Repair **No. of hours: 6**

Types of mutations, DNA damage by hydrolysis, alkylation, oxidation and radiation. Mutations caused by base analogs and intercalating agents. Ames test. Replication errors and their repair, mismatch repair system, repair of DNA damage-direct reversal of DNA damage, base excision repair, nucleotide excision repair, translesion DNA synthesis. DNA repair diseases.

PRACTICALS
CREDITS: 2 **TOTAL HOURS : 60**

1. DNA estimation by DPA
2. Separation of nitrogenous bases by paper chromatography
3. To plot the ultraviolet absorption spectrum of DNA
4. Isolation of chromosomal DNA from *E coli* cells
5. Determination of DNA concentration and purity by UV absorption.
6. Determination of the melting temperature of DNA
7. Demonstration of the mechanism of Transposition and Recombination (Dry Lab)

ESSENTIAL READINGS

1. Lehninger: Principles of Biochemistry (7th ed.) (2017) Nelson, D.L. and Cox, M.M W.H.Freeman & Company (New York), ISBN:13: 9781464126116 / ISBN:10-1464126119.
2. Molecular biology of the gene: (7th ed), (2014) Watson, J. D., Baker, T. A., Bell, S. P.,Gann, A., Levine, M., & Losick, R. International). Pearson.

SUGGESTED READINGS

1. Genetics - A Conceptual Approach,) (6th ed). (2012), Pierce, B.A. W.H. Freeman & Co.(New York), ISBN:13:978-1-4292-7606-1 / ISBN:10:1-4292-7606-
2. Lewin's Gene X (10th edition) (2018). Lewin, B., Krebs, J.E., Kilpatrick, S.T., Goldstein,E.S., Bartlett Learning publishers, LLC, ISBN: 978-0-7637-6632-0.
3. The Cell: A Molecular Approach (7th ed.) (2009). Cooper, G.M. and Hausman, R.E. ASMPress & Sunderland (Washington DC), Sinauer Associates, MA. ISBN:978-0- 87893-3030.
4. *Biochemistry* (6th ed.) (2016). Garrett, R. H., & Grisham, C. M. Brooks Cole. ISBN:9781305882409

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, Universityof Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 14

Credit distribution, Eligibility and Pre-requisites of the Course

Course title& Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Transmission and Molecular Genetics (BS-DSC-502)	**4**	**2**		**2**	Class XII pass with Biology and chemistry.	

Learning Objectives

The Learning Objectives of this course are as follows:

- To provide the students with an understanding of both classical and modern

concepts in genetics.

- To familiarize them with the principles and mechanisms of the inheritance of traits and genes, various modes of inheritanceof traits/ phenotypes and Phenotype-genotype correlation.
- To understand the areas of transmission genetics, different mapping techniques, chromosomal aberrations andmolecular and developmental genetics.
- To corelate practical exercises with the theory and facilitate skill-oriented learning outcomes

Learning outcomes

Upon completion of the course, the students will be able to:

- Understand the concept of genotype and phenotype, describe the basic principles of Mendelian genetics and appreciate the various factors that confer genotypic and phenotypicvariability.
- Understand the inter relationship between environment (Nurture) versus inheritance(Nature) in determining the conversion of genotype to phenotype.
- Be able to use the concepts of bacterial and viral genetics to understand resistance patternsand to create linkage and genetic maps
- Be able to apply the principles of transmission and inheritance in real life situations.

SYLLABUS OF DSC- 14

Theory

TOTAL HOURS: 30 **CREDITS: 2**

Unit 1: Transmission Genetics **No. of hours: 8**

Introduction to the basic principles of heredity. Mendelian Genetics and Extensions: Mendel'swork on transmission of traits, genetic variation, molecular basis of Genetic Information.

Principles of Inheritance, Chromosome theory of inheritance, Laws of probability, Incompletedominance and codominance, Multiple alleles, Lethal alleles, Epistasis, Pleiotropy Penetranceand expressivity, norm of reaction and phenocopy. Polygenic inheritance; continuous and discontinuous variation.

Unit 2: Organelle heredity and Chromosomal variations **No. of hours: 6**

Chloroplast mutation/variegation in four'o'clock plant, mitochondrial mutations in Neurospora, maternal effects, infective heredity- Kappa particles in Paramecium. Chromosomal aberrations: Variations in chromosome number and structure.

Unit 3: Linkage, crossing over and mapping techniques **No. of hours: 4**

Linkage and Crossing over, cytological basis of crossing over, Molecular mechanism of crossingover. Recombination frequency as a measure of linkage intensity, two factor and three factor crosses, Interference and Coincidence

Unit 4: Molecular genetics **No. of hours: 6**

Sex determination: Genetic basis of sex determination in Humans, *Drosophila melanogaster,* sexlinked, sex influenced and sex limited traits. Mechanism of dosage compensation- X chromosome inactivation.Epigenetic mechanisms of transcriptional regulation, Genomic imprinting. Eukaryotictransposable elements- Ac-Ds system in maize and P-elements in drosophila.

Unit 5: Genetics of bacteria and virus **No. of hours: 6**

Complementation test, limitations of cis-trans test, intragenic complementation, rII locus of phage T4 and concept of cistron. Mechanism of genetic exchange - conjugation, transformation and transduction. Prokaryotic transposable elements- IS elements, Composite transposons, Tn-3 elements.

Practical

Credits: 2 **Total Hours: 60**

1. To understand the genetic interaction involved using the seed mixture given (all six ratios)
2. Study of Linkage, recombination, gene mapping using marker-based data from Drosophila.
3. Preparation of karyotype and idiogram from the metaphasic plate of *Phlox/Allium sp*
4. Effect of colchicine and demonstration of polyploidy in *Allium sp.*
5. PTC testing in a population and calculation of allele and genotype frequencies.
6. Study of abnormal human karyotype.
7. Study of pedigree conventions and pedigree analysis
8. Squash preparation of salivary glands of Dipteran larva to observe polytene chromosomes.
9. Smear technique to demonstrate sex chromatin in buccal epithelial cells.

Essential readings:

1. Griffiths, A. J. F., Wessler, S. R, Carroll, S. B., Doebley, J. (2010). An Introduction to Genetic Analysis (10thed.). W.H. Freeman & Company (New York). ISBN:10: 1- 4292-2943-8
2. Pierce, B.A. (2012). Genetics - A Conceptual Approach (4thed.). W.H. Freeman & Co. (New York). ISBN:13: 978-1-4292-7606-1 / ISBN: 10:1-4292-7606-1
3. Snustad, D. P., Simmons, M. J. (2015). Principles of Genetics (7th ed.). ISBN: 978-1-119-14228-7.
4. Gardner, E.J., Simmons, M.J., Snustad, D.P. (1991). Principles of Genetics, 8th edition. New Delhi, Delhi: John Wiley & sons.
5. Klug, W.S., Cummings, M.R., Spencer, C.A. (2012). Concepts of Genetics, 10th edition. San Francisco, California: Benjamin Cummings.

Additional Readings:

a. Raven, F.H., Evert, R. F., Eichhorn, S.E. (1992). Biology of Plants. New York, NY: W.H. Freeman and Co. Additional Resources
b. Hartl, D.L., Ruvolo, M. (2012). Genetics: Analysis of Genes and Genomes, 8th edition.New Delhi, Delhi: Jones and Bartlett Learning.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch,University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE –15 :

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Growth and Reproduction (BS-DSC-503)	**4**	**2**		**2**	Class XII pass with Biology and chemistry	**Understanding of animal and plant physiology**

Learning Objectives

The Learning Objectives of this course are as follows:

- To allow students to explore the development of plants and animals from juvenile to mature phase.
- To enthuse students to explore the myriad ways in which plants produce fruits and seeds, and encourage them to pursue further studies in plant reproductive biology and its genetic regulation.
- To explore the fundamentals of reproduction anddevelopment in animals particularly vertebrates, from fertilization to organogenesis, primarily for understanding of tissue differentiation and molecular mechanisms fundamental to developmentof animals.

Learning outcomes

By the end of the course, the student will be able to:

- Students will understand the development of plants from juvenile to senescent stage with the associated genetic, cellular, anatomical and morphological changes.
- Students will appreciate the role of pollinators and get hands-on experience of observing patterns on pollen grains, pollen germination, embryo and endosperm dissection, and collecting seeds with different dispersal mechanisms.
- Students will understand the reproductive system in animals and human beings so as to relate with the control of population and environmental threats in the current scenario.
- Students will be able to explain how errors in development can lead to congenital defects.
- Students will visualize and appreciate concepts learnt in theory and apply experimental approaches to understand these developmental events in the laboratory

SYLLABUS OF DSC-15

Theory

Credits: 2 **Total Hours: 30**

Unit 1: Introduction to Growth and Reproduction **No. of hours: 5**

Vegetative and Reproductive phases of growth in plants, senescence and abscission. Functional anatomy of male and female reproductive systems in humans.

Unit 2: Fertilization **No. of hours: 10**

Sexual reproduction in angiosperms: Structure and organisation of flower, organization of typical tetrasporangiate anther and eight nucleate embryo sac (Polygonum type), pre-fertilization events in plants, microgametogenesis and megagametogenesis, anther dehiscence, pollination, pollen- pistil interaction, pollen germination, double fertilization.

Gametogenesis- Spermatogenesis and Oogenesis with reference to human, Estrus and menstrual cycle, Types of eggs in animals, capacitation, fertilization and development of an embryo from zygote, Causes of Infertility.

Unit 3: Embryogenesis in Plants and Animals **No. of hours: 10**

Post fertilization events in plants: Types of embryogenesis (with special emphasis on dicot embryogenesis), endosperm development, types of endosperm, seed formation, seed dispersal: mechanisms and agents. Embryogenesis; Types of cleavages, Morphogenetic movements, Gastrulation in humans; Extra Embryonic membranes, Mechanism of Implantation, Placentation: Endocrine functions and types based on chorionic villi distribution and histology. feto-placental unit

Unit 4: Differentiation **No. of hours: 5**

Post-embryonic meristem in plants with special reference to *Arabidopsis* embryogenesis. Role ofmeristem in differentiation, shoot and root apical meristems, lateral meristem (vascular and cork cambium), floral meristem, ABC model of flowering. senescence and abscission

Formation of organs Organogenisis during development, critical windows of development in humans during pregnancy. Teratogens and Ageing.

PRACTICALS

CREDITS: 2 **TOTAL HOURS: 60**

1. Luteinizing Hormone (LH) Levels and HCG based test.
2. Vaginal smear preparation to examine estrous cycle.
3. Preparation and histological study of mammalian testis and ovary or Examination of histological sections from photomicrographs/ permanent slides of rat/human: testis, epididymis and accessory glands of male reproductive systems; Sectionsof ovary, fallopian tube, uterus (proliferative and secretory stages), cervix and vagina; Study different types of mammalian placenta on the basis of histology andmorphology.

4. Case studies on teratogens.
5. Study different stages of micro and mega-gametogenesis in angiosperms-throughpermanent slides.
6. To study percent pollen germination using different media.
7. To study embryo development in flowering plant /slides.
8. To dissect out endosperm and embryo from angiosperm seeds.
9. Study of apical and lateral meristem by permanent slides.
10. Survey of dispersal mechanisms of seeds/ pollination agents
11. To study Polyembryony/ Types of Embyo sacs through permanent slides/ photographs/temporary prepartions/chart
12. Project report on visit to animal house facility/ IVF lab.

Essential Readings:

1. Bhatnagar, S. P., Dantu, P. K., & Bhojwani, S. S. (2018). The Embryology of Angiosperms, 6th Edition.Vikas
2. Raghavan, V. (2000).Developmental Biology of Flowering Plants.New York: Springer.
3. Tortora, G. J., & Derrickson, B. (2017). *Principles of anatomy & physiology.* Fifteenth edition; Wiley Loose-Leaf Print Companion. Hoboken, New Jersey: John Wiley & Sons, Inc.
4. Regulation of Implantation and Establishment of Pregnancy in Mammals, Editors: Rodney D Geisert, Fuller W. Bazer, ISBN 978-3-319-15856-3, Springer International Publishing, 2015.
5. Gilbert, S. F., & Barresi, M. J. F. (2016).

Developmental biology.

Additional readings:

1. Kalthoff, K. O. (2000). Analysis of Biological Development (2 edition). Boston: McGraw-Hill Science/Engineering/Math.
2. William. J. Larsen.(2001). Human Embryology (3 edition). New York: Churchill Livingstone.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch,University of Delhi, from time to time.

Pool of DSE

DISCIPLINE SPECIFIC ELECTIVE COURSE –DSE-7 :

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Plant resource Utilization (DSE-7)	**4**	**2**		**2**	Class XII pass with Biology and chemistry, as one of the papers in Class XII	**NA**

Learning Objectives:

- To make the students familiar with the economic importance of diverse plants that offer resources to human life.
- It emphasizes the plants used as- food for man, fodder for cattle, feed for poultry, plants having medicinalvalue and also plant source of huge economic value etc.
- After studying Economic Botany, students would havefirst-hand information of plants used as food and the various kinds of nutrients available in the plants. The dietary requirements of proteins, fats, amino-acids, vitamins etc that can be met by plants.
- They will also learn about the use of fibre plants, beverages, oil yielding and medicinal plants that are integral to day to day life .

Learning Outcomes:

On successful completion of the course, a student will:

- Know about the concept of origin of cultivated plants
- Gain an understanding of morphology, processing and economic value of plant sources of cereals,legumes, spices, oil, beverages, medicines etc.
- Gain an insight into the importance of medicinal plants and their therapeutic properties
- Understand the extraction of essential oils and their commercial applications.
- Learn to perform the micro-chemical tests to demonstrate various components present ineconomically important plants.

SYLLABUS FOR DSE-7

Course Contents - Theory

UNIT 1: Origin of Cultivated Plants **No. of hours: 3**

Cultivated Plants: origin and importance with particular reference to the works of A. de Candolle and Vavilov(especially centers of diversity, primary and secondary centers). Major plant introductions.

UNIT 2: Cereals and Legumes **No. of hours: 6**

Cereals- General account and Importance of cereals with special reference to Wheat (origin, evolution, morphology & uses); Legumes- General account, Importance of legumes to man and ecosystem with specialreference to Gram and Soybean (origin, morphology & uses).

UNIT 3: Spices and Beverages **No. of hours: 8**

Spices: General account with special reference to clove, turmeric and black pepper (Botanical name, family,part used, morphology and uses)
Beverages: General account with special reference to non-alcoholic beverages. Tea (morphology, processing,uses)

UNIT 4: Oils and Fats (Edible,Non-edible and Essential) **No. of hours: 6**

General description and classification;extraction of Edible and essential oils; uses and health implications; Groundnut, Mustard (Botanical name, family, morphology of the part used & uses). Adulteration of edible oils.Dropsy disease.

UNIT 5: Drug Yielding Plants **No. of hours: 4**

Therapeutic and habit-forming drugs with special reference to *Cinchona, Digitalis, Papaver* and *Cannabis*.

UNIT 6: Fibres **No. of hours: 3**

Classification based on the origin of fibres; Cotton (origin of tetraploid cotton, morphology, processing anduses).

PRACTICAL

Credits: 2 **Total Hours: 60**

1. Cereals: Wheat (habit sketch, L.S/T.S. grain, micro-chemical tests)
2. Legumes: Soybean, Groundnut (habit sketch, fruit, seed structure, micro-chemical tests).
3. Spices: Black pepper, Fennel and Clove (habit sketch and sections L.S./T.S.).

4. Beverages: Tea (plant specimen, sectioning of tea leaves) Coffee(Plant specimen and fruits)
5. Oils and fats: Groundnut- plant specimen, habit sketch, micro-chemical tests
6. Drug-yielding plants: Specimens of *Cinchona, Digitalis, Papaver* and *Cannabis*.
7. Fiber-yielding plants: Cotton (specimen, whole mount of fiber and micro-chemical test),jute (specimen, whole mount of fibre and micro-chemical test)
8. Essential oil-yielding plants: Habit sketch of *Rosa, Vetiveria, Santalum* and *Eucalyptus* (specimens/photographs).
9. Dye yielding plants: Any two (*Indigofera*/*Henna*/*Bixa/Butea*)
10. Report on study of Industrially important plants (specimens/products)- morphology, botany and uses.

3.1 Essential readings:

1. Kochhar, S.L. (2012). *Economic Botany in Tropics*. New Delhi, India: MacMillan & Co.
2. Wickens, G.E. (2001). *Economic Botany: Principles & Practices*.The Netherlands: Kluwer AcademicPublishers.

DISCIPLINE SPECIFIC ELECTIVE COURSE –DSE-8

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Membrane Biology (BS-DSE-8)	**4**	**2**		**2**	Class XII pass with Biology and chemistry	**Basic cell biology**

Learning Objectives:

The objective of the course is to provide students with

- The basic understanding of membrane composition, structure-function relationship, and properties of membranes.
- To provide an understanding of the various types of membrane transporters and their molecular mechanisms.
- Provides an understanding of molecular mechanisms involved in vesicular transport processes and membrane fusion.

Learning Outcomes:

On successful completion of the course, a student will:

- Understand the general composition and structure of biomembranes.
- Gain knowledge of the basic properties of membranes such as membrane fluidity.
- Have knowledge about the various types of membrane transport mechanisms.
- Have knowledge about the molecular mechanism of vesicular transport and membrane fusion.

SYLLABUS FOR DSE-8

Course Contents -Theory

UNIT 1: Membrane composition and structure **No. of hours: 8**

Composition of membranes: Lipids (Phospholipids, Glycolipids, sterols), Proteins (Peripheral Proteins, Integral Membrane Proteins and Lipid-Anchored proteins) and carbohydrates. Historical background and various membrane models. Comparison of various cellular and subcellular membranes. Lateral and transverse asymmetry in membranes. Role of Flippase, Floppase and Scramblase. Model systems to study membranes- Lipid monolayers, Planar bilayer, Liposome and their applications. Polymorphic Lipid-Water Systems. Determinants of polymorphic phases: Critical Micellar Concentration (CMC), lipid shape, critical packing parameter.

UNIT 2: Membrane dynamics **No. of hours: 6**

Membrane fluidity: lateral, transverse and rotational motion of lipids and proteins. Factors affecting membranefluidity- composition, barriers (tight junctions), cytoskeleton interactions,
Microdomains- rafts, caveolae. Study of RBC membrane architecture. Homeoviscous adaptation. Techniquesto study membrane dynamics: FRAP, TNBS, SPT.

UNIT 3: Membrane transport **No. of hours: 10**

Thermodynamics of transport. Simple diffusion and facilitated diffusion. Passive transport glucose transporterand anion transporter. Primary active transporters- P-type ATPases, V-type ATPases, F-type ATPases. Secondary active transporters- Lactose permease, Na^+-glucose symporter. ABC family of transporters- MDR and CFTR. Group translocation (PEP-PTS) and bacteriorhodopsin. Ion channels: voltage-gated ion channels (Na^+ and K^+ channel) and ligand-gated ion channels (Acetylcholine receptor) and aquaporins. Ionophores: valinomycin, gramicidin. Relationship between membrane transport and diseases.

UNIT 4: Vesicular transport and membrane fusion **No. of hours: 6**

Vesicular transport. Vesicles, Clathrin-coated Vesicles and COP-Coated Vesicles (COPI and COPII).

Molecular mechanism of vesicular transport. Membrane fusion (dynamin protein, Rab proteins, NSF/ SNAP

complex, SNARE proteins). Receptor Mediated Endocytosis: LDL and Transferrin.

PRACTICALS

CREDIT: 2 **TOTAL HOURS: 60**

1. Effect of lipid composition on the permeability of a lipid monolayer.
2. Isolation of membrane phospholipids and separation by TLC.
3. Effect of temperature, pH, detergents and ionic strength on Tonoplast membrane of beetroot.
4. Determination of CMC of Neutral and Ionic detergents.

5. Preparation of RBC ghost cell.
6. Separation of RBC membrane proteins by SDS-PAGE.
7. Demonstration of Histidine uptake from the intestinal membrane.

Essential readings:

1. Garret, R.H., Grisham, C.M. (2016). Biochemistry (6th ed.). Boston, Cengage Learning. ISBN-10: 1305577205, ISBN-13: 978-1305577205
2. Lodish, H., Berk, A., Kaiser, C.A., Krieger, M., Bretscher, A., Ploegh, H., Martin, K.C., Yaffe, M., Amon, A. (2021). Molecular Cell Biology (9th ed.). New York, WH: Freeman & Company. ISBN-13:978-1319208523, ISBN-10:1319208525.
3. Nelson, D.L., Cox, M.M. (2021). Lehninger: Principles of Biochemistry (8th ed.). New York, WH: Freeman and Company. ISBN: 13: 978-1319381493 / ISBN-10:1319381499.
4. Voet, D., Voet. J. G. (2013). Biochemistry (4th ed.). New Jersey, John Wiley & Sons Asia Pvt. Ltd. ISBN: 978-1-11809244-6.
5. Wardhan, R., Mudgal, P. (2017). Textbook on Membrane Biology (1st ed.). Singapore, Springer. ISBN-10: 9811071004, ISBN-13: 978-9811071003

DISCIPLINE SPECIFIC ELECTIVE COURSE –DSE-9 :

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Ethology (BS-DSE-9)	**4**	**2**		**2**	Class XII pass with Biology and chemistry,	**NA**

Learning Objectives:

Ethology or Animal Behavior is the scientific study of the wild and wonderful ways in which animals interact with each other, with other living beings, and with the environment in which they live in. One important aspect pertaining to the studies on Animal Behavior is that it can be conducted anywhere and at any time, depending on the interest of the researcher. Moreover, it is not confined to the four walls of the classroom or the laboratory. Thebehavioral biology has high applied value and currently linked to conservation biology, molecular biology, behavioral ecology and integrated pest management. This course will help the learners to understand and appreciate different types of animal behaviors, their adaptive, evolutionary and practical significance.

Learning Outcomes:

Upon completion of the course, students will be able to:

- Understand types of animal behaviour and their importance to the organisms.
- enhance their observation, analysis, interpretation and documentation skills by taking short projectspertaining to Animal behaviour and emotions.
- Relate animal behaviour with other subjects such as Animal biodiversity, Evolutionary biology, Ecology,Conservation biology and Genetic basis of the behaviour.
- Realize, appreciate and develop passion to biodiversity; and will respect the nature
- Learn to evaluate and analyse human behaviour and emotions, and develop intuitive skills and empathyfor better leadership qualities

SYLLABUS FOR DSE -9

Course Contents- Theory

Unit 1: Mechanisms of Behaviour **No. of hours: 6**

Definition of Proximate and Ultimate causes of behaviour; Innate behaviour: Instinct, Fixed Action Pattern (FAP); Learning: Associative learning: Classical and Operant conditioning; Non-associative learning: Habituation, Imprinting; Code breakers.

Unit 2: Patterns of Behaviour **No. of hours: 7**

Reflexes: Types of reflexes, reflex path, characteristics of reflexes (latency, after discharge, summation, fatigue,inhibition) and its comparison with complex behaviour. Orientation: Primary and Secondary orientation; Kinesis-orthokinesis, klinokinesis; Taxis-tropotaxis and klinotaxis; menotaxis (light compass orientation).

Unit 3: Social Behaviour and Sociobiology **No. of hours: 8**

Concept of Society; Degree of sociality; Insect society-Honey bee as example; Society organization and caste system, Polyethism vs Polymorphism; Dance as means of communication; Altruism and Reciprocal altruism; Hamilton‟s rule and inclusive fitness with suitable examples.

Unit 4: Sexual Behaviour **No. of hours: 6**

Asymmetry of sex, Sexual dimorphism mate choice, Intra-sexual selection (male rivalry: competition, territoriality, infanticide), Inter-sexual selection (female choice), Consequences of mate choice for female fitness, Courtship Behaviour in stickleback fish.

Unit 5: Emotions **No. of hours: 3**

Concept of emotions, Emotional intelligence, Emotional Quotient (EQ) vs Intelligence Quotient (IQ); Components and theories of emotions

Practical

Credits: 2 **Total Hours: 60**

1. To study the nests and nesting behavior of any 5 birds.
2. To study the nests and nesting behavior of social insects (Wasps, Honeybees, Termites and Ants).
3. To study the behavioral responses of wood lice to dry and humid conditions.
4. To study Geotaxis behavior in earthworm/ Phototaxis behavior in insect larvae.
5. Study of various behavioral concepts (courtship, nesting, infanticide, territoriality) through shortvideos/films.
6. Study and actogram construction of locomotor activity of suitable animal models.
7. Construct an ethogram using suitable data to study animal behavior
8. Prepare a project report on the survey based on questions to study Emotional Quotient (EQ)
9. Visit to a Zoological Park to study and record the behavioral activities of animalsand prepare a short report.

Essential readings:

1. Alcock J. Animal Behaviour. Sinauer Associate Inc., USA.
2. McFarland D. Animal Behaviour. Pitman Publishing Limited, London, UK.
3. Vinod Kumar (2002) Biological Rhythms. Narosa Publishing House, Delhi/ Springer-Verlag, Germany
4. Manning, A., & Dawkins, M. S. (2012). An Introduction to Animal Behaviour. Cambridge: CambridgeUniversity Press.
5. Goodenough, J., McGuire, B., and Jakob, E. 2010. Perspectives on Animal Behavior. 3rd Edition. JohnWiley and Sons.
6. Passer, M.W. & Smith, R.E. (2010). Psychology: The science of mind and behaviour. New Delhi: TataMcGraw-Hill.

Suggested readings:

1. Mandal, F.B. (2015).Textbook of Animal Behaviour. Delhi: PHI Pvt. Ltd.
2. Sherman, P. W., & Alcock, J. (2013). Exploring Animal Behavior, Sinauer Associate Inc., Massachusetts.
3. Martin, P. and Bateson, P. 1986. Measuring Behaviour: An Introductory Guide. Cambridge University Press.
4. Dugatkin, L.A. 2013. Principles of Animal Behavior. 3rd Edition.WW Norton and Co

SEMESTER-V

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES OFFERED BY THE DEPARTMENTS

GENERAL ELECTIVE COURSE –GE-3:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Bioremediation and sustainability (BS-GE- 3)	**4**	**2**		**2**	Class XII pass	**NA**

Learning Objectives

This course will provide understanding of environment around and which pollutants are of concern to us . It will provide knowledge of sustainability and methods which can help to improve the sustainability. It will also make students understand how toxicity can be monitored in our body and how our body copes to detoxify its internal system. It will also introduce methods which can be used to monitor the pollutants in various samples.

Learning Outcomes:

Students will:

- Understand the various components of the environment.
- Understand and evaluate the local and global scale of environmental problem.
- Gain knowledge and skills necessary to understand multifaceted nature of environmental studies.
- Get informed perspective of biological, chemical and physical processes relevant to environmental problems.
- Get hands on experience of some quantitative and qualitative research tools to assess and analyse the environmental problems

Syllabus for GE-3

Theory

Credits: 2 **Total Hours: 30**

Unit 1: Introduction to Environment and the Pollutants **No. of hours: 8**

Normal Chemistry of - Air, Water, Soil. Environmental Toxins-Physical Pollutants- Noise, Light and

Radiation and Air Pollutants- Carbon Monoxide, Lead, Nitrogen Oxides, Ozone, Particulate Matter, Sulphur Dioxide, Methane Volatile Organic Chemicals (VOC); Water Pollutants - Volatile Organic Chemicals (VOC), Heavy Metals, Insecticides, Herbicides/ Endocrine Disruptors; Soil Pollutants- Heavy metals, Herbicides/pesticides, Polyaromatic Carbon (PAH), Microplastics; Source, Effect and Impact on Flora, Fauna including Human Beings. Definition of Terminologies: Air Quality Index (AQI) Suspended Particulate matter (SPM), Water Quality Index (WQI), Air Pollution Tolerance Index (APTI), Anticipated Performance Index (API).

Unit 2: Environment and Xenobiotics **No. of Hours: 8**

Understanding the principle of Toxicity. Concept of Dose and Response (LD50). Process of Bioaccumulation, Bioaugmentation and Biotransformation. Impact of pollutants on human health Mammalian Detoxification by Liver to Organic Chemicals (Heavy Metals, Endocrine Disruptors, Microplastics).

Unit 3: Sustainability and its Enhancement **No. of Hours: 8**

Concept of Sustainability and Enhancement of Sustainability, Waste Management (Refuse, Reduce, Reuse and Recycle), Bioremediation- Introduction and Types of Bioremediations- Phytoremediation, Microbial Bioremediation, In-situ Remediation, Ex-situ Remediation.

Unit 4: Techniques to Analyse Pollutants **No. of Hours: 6**

Determination of pollutants in soil, water, air, blood by following Analytical Techniques: Flame Photometer; Atomic Absorption Spectroscopy (AAS); Inductive Coupled Plasma (ICP) & Mass spectroscopy MS; Gas Liquid Chromatography (GC-MS); Ion Chromatography; High Performance Liquid Chromatography (HPLC); UV spectrophotometer; Biosensors and its application in pollution detection;

Practical:

Credits: 2 **Total Hours: 60**

1. Evaluating APTI and API of Herbs/Shrubs/Trees
2. Evaluating seasonal variations of AQI and SPM
3. Evaluating C/N/P/K content of soil by Spectrophotometry/Titrimetric method
4. Detecting Microbial Contamination of water
5. Composting of waste (Leaf/Kitchen Waste/Cow dung) and Detecting Maturity by pH and Electric conductivity (EC) content changes
6. Studying Enzymatic Activity (amylase/urease) in the soil sample due to microbial activity
7. Student Environment Projects.

Essential readings:

- Basic Concepts on Environmental Chemistry by Des. W. Conwell (2005) 2nd edition, CRC press, ISBN 9781498770484
- Environmental Chemistry by Stanley E Manahan, 11th Edition, Taylor and Francis,2022, ISBN 9780367560546
- Biodegradation and Bioremediation by Alexander Martin, 2nd Edition, Academic Press, ISBN 978-0-12-049861-8
- Fundamentals of Ecology author Eugene Odum, Cary W. Barrett, ,5th edition Cengage learning India. ISBN 9788131500200

- Environment and Ecology author P.D. Sharma, 12th Edition, Rastogi Publication. ISBN 978-93-5078-068-8

Note: Examination scheme and mode shall be as prescribed by the ExaminationBranch, University of Delhi, from time to time.

GENERAL ELECTIVE COURSE –GE-4:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Epidemiology and Biostatistics (BS-GE- 4)	**4**	**2**		**2**	Class XII pass with Biology	**NA**

Learning Objectives

Throughout the course, students will explore different units of study, including Introduction to Epidemiology, Infectious Disease Epidemiology, Chronic Disease Epidemiology, Screening and Diagnostic Tests, Data Collection and Management, and Public Health and Epidemiology. They will learn about key concepts, study designs, disease surveillance, global health initiatives, and statistical analysis techniques relevant to each unit.
Practical exercises will further enhance students' skills and understanding. They will engage in case-control studies, outbreak investigations, estimation of sensitivity and specificity, analysis of vaccination coverage rates, hypothesis testing, and field visits to healthcare centers to gather data on disease rates. These practical experiences will provide hands-on application of epidemiological methods, fostering critical thinking and problem-solving abilities.

Learning Outcomes

Upon completion of this course, students will achieve the following learning outcomes:

1. Understand the principles of disease causation, with an emphasis on modifiable environmental factors. Students will be able to explain how various factors contribute to the development and spread of diseases, particularly focusing on the influence of the environment.
2. Apply epidemiology to disease prevention and health promotion, including environmental and occupational health. Students will recognize the importance of epidemiological approaches in identifying risk factors, implementing preventive measures, and promoting health in various settings.
3. Optimize the use of healthcare resources. Students will develop the skills to ensure that healthcare resources are effectively utilized by applying epidemiological knowledge to guide resource allocation, decision-making, and public health interventions.

Syllabus for GE-4

Theory
Credits 2 Total hours:30

Unit 1: Introduction to Epidemiology **3 hrs**

Definition and scope of epidemiology, Basic concepts and principles of epidemiology, Measures of disease frequency and association, Study designs in epidemiology

Unit 2: Infectious Disease Epidemiology **6 hrs**

Principles of infectious disease transmission, Outbreak investigation and response, Surveillance of infectious diseases, Vaccines and vaccine-preventable diseases, Emerging and re-emerging infectious diseases

Unit 3: Chronic Disease Epidemiology **8 hrs**

Epidemiology of non-communicable diseases: Risk factors and determinants of chronic diseases, Cardiovascular diseases, Cancer epidemiology, Diabetes epidemiology, Mental health epidemiology, Environmental and Occupational Epidemiology

Unit 4: Screening and diagnostic tests **3 hrs**

Screening test and diagnostic test, Sensitivity, specificity, Positive predictive value, Negative predictive value

Unit 5: Data collection and analysis **7 hrs**

Introduction to biostatistics and its applications in epidemiology, Sources of epidemiological data, Measures of Variability, calculation of standard deviation, standard error and Co-efficient of Variance, Statistical errors, Chi-square test, Z test, t-Test

Unit 6: Public Health and Epidemiology **3 hrs**

Introduction to public health, Role of epidemiology in public health practice, Disease prevention and control strategies, Epidemiological aspects of diseases of national importance ,Global burden of disease, Global health initiatives and organizations

Practical:

Credits: 2 Total hours: 60

1. Case-control study on a chronic disease: Design and conduct a case-control study to investigate the risk factors associated with a specific chronic disease (with given data)
2. Outbreak investigation simulation : Analyze a given simulated outbreak data, identify the source of infection, and propose control measures.
3. Sensitivity and specificity estimation: Analyze data from a diagnostic test evaluation study to estimate sensitivity, specificity, positive predictive value, and negative predictive value.
4. Collect data on vaccine coverage rates (public domain) in a population and analyze the results to assess the effectiveness of vaccination programs.

5. Hypothesis testing: Perform hypothesis tests (e.g., chi-square test, t-test) on provided datasets to analyze associations or differences between groups.
6. Field visits to nearby health care centres to understand health check-ups and collect some data on the rate of a particular disease over the past few months or years.

Essential reading

1. Aschengrau A, Seage G.R., (2013) Essentials of Epidemiology In Public Health, Jones and Bartlett Publishers, Inc; (3rd ed.) ISBN-10: 1284028911; ISBN-13:978-1284028911.

2. Sullivan. L.M. (2017) Essentials of Biostatistics in Public Health. Jones and Bartlett Publishers, Inc; (3rd ed.) ISBN-10: 1284108198; ISBN-13: 978-1284108194.

Note: Examination scheme and mode shall be as prescribed by the ExaminationBranch, University of Delhi, from time to time.

SEMESTER -VI

Category I

Biological Science Courses for Undergraduate Programme of study with BiologicalScience as a Single Core Discipline

(BSc Honors in Biological Science in three years)

DISCIPLINE SPECIFIC CORE COURSE – 16:

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Molecular Biology II (601)	**4**	**2**		**2**	Class XII Pass with Biology & Chemistry	**Should have done Molecular biology I**

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce the students to the students the basic knowledge about how genes are transcribed and how translation takes place in prokaryotes and eukaryotes.
- To understand how these processes are regulated.
- To enable them to apply this knowledge in enhancing their analytical and problem- solving skills.

Learn **CREDITS:2 TOTAL HOURS: 15 weeks** ing outcomes

On successful completion of the course, students will be able to:

1. Acquire basic knowledge about the processes of transcription and translation in prokaryotes and eukaryotes
2. Learn about the features of the genetic code and various experimental approachesused to crack the code
3. Develop understanding of the molecular basis of RNA processing and RNA splicing
4. Learn about the various ways in which these biological processes are regulated and the significance of regulation in maintaining life forms

SYLLABUS

FOR DSC-16

UNIT I: Transcription in Prokaryotes and Eukaryotes **No. of hours :10**

Transcription cycle in bacteria, Sigma factor, bacterial promoters and RNA Polymerases, various stages of RNA synthesis- initiation, elongation and termination, rho-dependent and rho-independent termination. Introduction of basal eukaryotic transcription machinery: threeclasses of eukaryotic RNA polymerases – I, II and III, and their respective promoters. Details of transcription by RNA polymerase II, features of RNA polymerase II core promoters. Inhibitors of eukaryotic and prokaryotic transcription and their applications.

UNIT II: RNA Processing **No. of hours : 4**

Various types of mRNA processing- polyadenylation and capping, brief overview of rRNA andtRNA processing. Chemistry of RNA splicing, the spliceosome machinery, group I and group IIintrons, alternative splicing.

UNIT III: Translation **No. of hours: 7**

Salient features of the genetic code, triplet nature, degenerate, wobble hypothesis, codon usage bias. Experimental approaches used to decipher the genetic code. Messenger RNA, transfer RNA, charging of tRNA. Structure of the ribosome. Three stages of translation- initiation, elongation and termination in prokaryotes and eukaryotes, charging of tRNA and aminoacyl tRNA synthetases.

UNIT IV: Regulation of gene expression **No. of hours: 9**

Concept of operons, regulatory proteins, activators, repressors, DNA binding domains,regulation of *lac* and *trp* operon, riboswitches, induction of SOS response. Eukaryotic gene regulation by chromatin remodeling, heterochromatin and euchromatin, regulation of galactose metabolism genes in yeast, action of enhancers and insulators, working of activatorsand repressors, synthesis and mechanism of action - siRNA and miRNA.

PRACTICAL:

Credit: 2 **Total Hours: 60**

1. Quantitative estimation of RNA by Orcinol Method
2. Extraction of total RNA from bacteria /yeast
3. To study growth curve and diauxic growth curve in *E. coli*
4. To study the effect of inhibitors on protein synthesis

5. DNA Footprinting (Dry Lab)

Essential readings:

1. Nelson, D.L. and Cox, M.M (2017) *Lehninger: Principles of Biochemistry* (7th ed.) W.H. Freeman & Company (New York), ISBN:13: 9781464126116 / ISBN:10-1464126119.
2. Watson, J.D., Baker, T.A., Bell, S.P., Gann, A., Levine, M. and Losick, R. (2008) *Watson: Molecular Biology of the Gene* (7th ed.), Cold Spring Harbor Laboratory Press, Cold spring Harbor (New York), ISBN:0-321-50781 / ISBN-13: 9780321762436

Suggested readings:

Lewin, B., Krebs, J.E., Kilpatrick, S.T., Goldstein, E.S., (2018) *Lewin's Gene X* (10th edition).Bartlett Learning publishers, LLC, ISBN: 978-0-7637-6632-0.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, Universityof Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 17

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Defense mechanisms in living organisms (BS-DSC-602)	4	2		2		SEM V

Learning Objectives

The Learning Objectives of this course are as follows:

- to focus on the integrative working and regulation of both the innate and induced/adaptive defense mechanism that operate in the vertebrate system as well as in the plant kingdom.
- to differentiate between innate and induced/adaptive immune mechanisms and their importance in maintaining a healthy system in both the animal and plan tkingdoms.

Learning outcomes

Upon completion of the course, the students will be able to:

- Get an overview of the immune system and learn about the various cells, organs and tissues of the immune system.
- to describe the basic mechanisms, differencesand functional interplay of innate and adaptive immunity.
- Students will be able to define the pathways of humoral and cell-mediated immune responses.
- Students will learn about the various preexisting structural and induced defenses in plants, the genetic basis of plant- pathogen interaction and how pathogens can cause disease in plants.

SYLLABUS OF DSC- 17

Theory

TOTAL HOURS: 30 **CREDITS: 2**

Unit I: Introduction to Defense Mechanisms **No. of weeks: 1**

Overview of immunity. Source of infection and spread of infection in plants and animals.

Unit II: Innate Defense mechanisms in plant **No. of weeks: 2.5**

Pre-existing structural defenses -waxy coat, cuticle, epidermal layer, hydathodes, thorns, sclereids,mineral crystals (idioblasts,) and cell wall. Biochemical defenses- secondary metabolites (terpenoids, glycosides, phenolics and alkaloids) Innate Immunity in Plants- Pattern triggered immunity (PTI)

Unit III: Adaptive Defense mechanisms in plant **No. of weeks: 4**

Factors causing plant stress: biotic stress. Classification of biotic stresses, major pests and diseasesof economically important crops, interaction in host-pathogen systems, Flor's gene for gene concept, R gene mediated resistance, effector triggered immunity (ETI), receptor-elicitor model, Cytological protection and induced resistance. Concept of signal transduction and other host- defense mechanisms. Heat shock proteins, Basic ROS cycle and adaptation during stress, SystemicAcquired Resistance (SAR), Phytoalexins Jasmonic acid, MAPKS,SROS,HPL, systemins , mechanism of production and scavenging of NO.

Unit IV: Innate Defence mechanisms in animals **No. of weeks: 3**

Anatomical barriers, soluble molecules and membrane associated receptors (PRR). Complement system - biological consequences and regulation of the pathway. Haematopoiesis, cells of the innate immune system, primary lymphoid organs. inflammatory response; connections between innate and adaptive immunity.

Unit V: Adaptive Defence mechanisms in animals **No. of weeks: 4.5**

Antigens and haptens, Factors that dictate immunogenicity, B and T cell epitopes. Structure and distribution of classes of immunoglobulins (Ig). Secondary lymphoid organs and tissues B cell maturation and generation of antibody diversity. Generation of humoral immune response. Histocompatibility antigens – structure and function, T cell maturation – Positive and Negative selection of thymocytes, Antigen Presentation by the exogenous and endogenous pathways, cell mediated immunity, role of NK cells and Antibody dependent cellular cytotoxicity.

PRACTICALS

TOTAL HOURS: 60 **CREDIT: 2**

1. Characterization of diseases symptoms and identification of pathogenic organisms (bacterial- Xanthomonas campestris; viral- TMV; fungal- Puccinia, graminis tritici, pest and nematodes- Meloidogyne spp.).
2. Survey of structural plants defences: viz. cuticle, wax, lignin, bark, thorns, prickles, trichomes, armour in different plants species including thigmonasty, camouflage, mimicry.

3. Precipitation reactions – DID and SRID.

4. Immunoelectrophoresis (IEP), Counter current IEP, Rocket IEP

5. Agglutination reaction.

6. Cell isolation and viable Counting- Spleen/PBMC

7. Survey report on infections in plants and animals

REFERENCES

1. B.B.Buchanan, W. Gruissem & R.L.Jones. (2015). Biochemistry and MolecularBiology of Plants. Oxford: Wiley Blackwell.
2. Coico, R & Sunshine, G., John (2009). Immunology: A Short Course. New Jersey:Wiley& sons.
3. Kindt, T.J., Goldsby, R.A. & Osborne, B.A.(2007) . Kuby Immunology. New York: W.H Freeman.
4. Leslie Hudson & Frank C. Hay (1980). Practical Immunology. Oxford: Blackwell Scientific 5. Lincoln Taiz & Eduardo Zeiger.(2010). Plant Physiology. Sunderland,Mssachusetts: Sinauer associates Inc.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch,University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE –18 :

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibilitycriteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Evolutionary Biology(BS-DSC-603)	4	2		2	Class XII pass with Biologyand chemistry, as one of the papers in Class XII	NA

Learning Objectives

The Learning Objectives of this course are as follows:

- To stress the importance of evolution in biology and introduce students to all aspects of evolutionary biology.
- to make the students familiar with basic history of evolutionary concept, its criticism and its development as a science.
- They will learn about history of life through fossils and other evidences helping them analyze the evolutionary relationships between species.
- They will develop a deep understanding of the mechanisms that fuel the evolution of biological systems and will have an insight into the origin and evolution of species.

Learning outcomes

By the end of the course, the student will be able to:

- Students will learn about the origins and development of evolutionary thought.
- Students will learn about the compelling evidence in favor of evolution likefossils, comparative anatomy and molecular homologies.
- Students will learn about the origin and history of life through fossil records.
- Students will understand how biodiversity is generated by repeated speciation andlost over time due to mass extinctions.
- Students will understand how the forces of evolution like variations, naturalselection, genetic drift and migration shape populations.
- Students will learn how novelty in organisms arises, how organisms adapt to theirenvironment and about our origins from our primate ancestors.

SYLLABUS OF DSC-18

Theory

Credits: 2 Total weeks: 15

Unit I: Historical Review of Evolutionary Concept No. of hours: 3

Pre-Darwinian ideas: List of contributors influencing Darwin indicated as a *timeline.*
Lamarckism: Darwinism: Post-Darwinian era: Modern synthetic theory; Neo-Darwinism.

Unit II: History of Life **No. of hours: 7**

Chemogeny: An overview of prebiotic conditions and events; experimental proofs to abiotic origin of micro- and macro-molecules. Current concept of chemogeny: RNA firsthypothesis. Biogeny: Cellular evolution based on proto-cell models (coacervates and proteinoid microspheres). Origin of photosynthesis, Evolution of oxygen and ozone buildup and significance. Evolution of Eukaryotes from Prokaryotes (endosymbiotic theory), multicellularity. Cambrian explosion and timeline of plant and animal evolution in the Phanerozoic eon. Mass-scale extinctions: causes, significance and events. Cretaceous-Tertiary Mass Extinction in detail.

Unit III: Evidences of Evolution **No. of hours: 5**

General evidences, Fossils, Concept of Stratigraphy and geological timescale, Dating methods (K-Argon and Radiocarbon dating); Convergent and Divergent Evolution, Adaptiveradiation, Phylogeny of horse as a model. Molecular clock, Neutral theory of evolution and;Basics of molecular phylogenetics.

Unit IV: Forces of Evolution **No. of hours: 6**

Concept of micro- and macro-evolution (Role of gene regulation in macroevolution usingexample of beak development in Darwin's finches): A brief comparison Natural selection asa guiding force: Its attributes and action, basic characteristics of natural selection. Co-adaptation and co-evolution, Industrial melanism; antibiotic resistance. Modes of selection(Stabilizing, directional, disruptive), sexual selection, kin selection, artificial selection, Polymorphism and Balanced lethal systems.

Hardy Weinberg equilibrium,Genetic Drift (Sewall Wright effect) as a stochastic/randomforce: Basic characteristics of drift; selection vs. drift, Bottleneck effect, Founder principle.

Unit V: Product of Evolution: Speciation **No. of hours: 5**

Concept of species as a real entity- Morphological and Biological species concept, Micro- evolutionary changes (inter-population variations, clines, Ring species, Races, polymorphism)Mechanisms of speciation, Allopatric, Peripatric, Parapatric and sympatric; Patterns of speciation. Anagenesis and Cladogenesis; Phyletic Gradualism and Punctuated Equilibrium (Quantum Evolution), Basis of speciation: Isolating mechanisms

Unit VI: Human Ancestry and Phylogeny **No. of weeks: 4**

Primate characteristics and unique Hominin characteristics. Advantages and adaptations of bipedalism. General characteristics , distribution of Australopithecines, Homo habilis, Homoergaster, Homo erectus (Java Man , Peking man), Neanderthal man and Homo sapiens. Briefoverview of

Multiregional and Out of Africa hypothesis for origin and migration of Modern humans.

PRACTICALS

TOTAL HOURS: 60 **CREDITS: 2**

1. Study of types of fossils (e.g. Body fossils, trails, casts, molds and others) and Index fossils of Palaeozoic era
2. Connecting links/transitional forms - *Eg. Euglena, Neopilina, Balanoglossus, Chimaera, Tiktaalik, Archaeopteryx and* Living fossils - Eg. *Limulus, Peripatus*, *Latimeria, Sphaenodon*
3. Vestigial, Analogous and Homologous organs using photographs, models orspecimen
4. Problems based on Hardy Weinberg equilibrium
5. Simulation experiments using colored beads to understand the effects of Naturalselection on allele frequencies
6. Simulation experiments using colored beads to understand the role of Bottleneckeffect/Founder effect on allele frequencies
7. Darwin's finches with diagrams/ cutouts of beaks of different species.
8. Digit reduction and teeth modification in horse phylogeny (study from chart),
9. Study of monkey and human skull - A comparison to illustrate common primate andunique Hominin features
10. Construction of Phylogenetic tree using morphological characters
11. Educational visit to Geology/ Anthropology museums, Delhi University

Essential readings:

1. Barton N.H., Briggs D.E.G., Eisen J.A., Goldstein D.B. and Patel N.H.,(2007)1st Ed. *Evolution*, Cold Spring Harbor Laboratory Press.
2. Futuyma Douglas and Mark Kirkpatrick (2017) 3rd Ed.*Evolutionary Biology*,Oxford University Press
3. Hall B. K. and Hallgrimson B., (2014) 5th Ed.*Strickberger's Evolution.* Jones and Bartlett
4. Ridley M., (2003) 3rd Ed.*Evolution* Wiley-Blackwell
5. Zimmer C. and Emlen D. J., (2013) 1st Ed. *Evolution: Making Sense ofLife*, Roberts & Co.

Additional resources

1. Darwin C., (2003)*The Origin of Species: 150th Anniversary Edition* , PenguinUSA
2. https://evolution.berkeley.edu/evolibrary/home.php
3. Kolbert E., (2015)*The Sixth Extinction: An Unnatural History,* Bloomsbury
4. Weiner J. (1995),*The Beak of the Finch: A Story of Evolution in Our Time*, Vintage

Note: Examination scheme and mode shall be as prescribed by the Examination Branch,University of Delhi, from time to time.

POOL OF DSE

DISCIPLINE SPECIFIC ELECTIVE COURSE –DSE-10

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Plant development and anatomy (BS-DSE-10)	**4**	**2**		**2**	Class XII pass with Biology and chemistry, as one of the papers in Class XII	**NA**

Learning Objectives:

The objective of this paper is to provide the students with internal basic structure and cellular composition ofthe plant body. This will help them to understand how different plant tissue structures evolve and modify theirfunctions with respect to the environment. To acquaint the students with the study of various plant tissue systems and their development and functions in plants.

Learning Outcomes:

On successful completion of the course, a student will:

- Have knowledge about the various cells and tissues, meristems, epidermal and vascular tissue systemsin plants.
- Understand various aspects of growth, development of the tissues and differentiation of various plantorgans.
- Have knowledge of basic structure and organization of plant parts in angiosperms.
- Correlate the structure with morphology and functions.

SYLLABUS FOR DSE-10

Course Contents - Theory

Unit 1: Meristematic and Permanent Tissues **No. of hours: 10**

Classification of Tissues, Simple and complex tissues (no phylogeny), Types of meristems: Root and Shoot Apical Meristems (describe theories in brief with special reference to Tunica Corpus andKorper-Kappe Theory), Pits and plasmodesmata, wall ingrowths and transfer cells, Ergastic substances

Unit 2: Secondary growth **No. of hours: 10**

Vascular Cambium: Structure and function, seasonal activity; Structure of monocot and dicot stem, root and leaf; Secondary growth in root and stem; wood (Heartwood and Sapwood; Tension wood; Ring and Diffuse porous wood; early and late wood); Tyloses Cork Cambium and its derivatives and function: Rhytidome

Unit 3: Adaptive and Protective Systems **No. of hours 10**

Epidermal tissue system; Cuticle; Epicuticular waxes; Trichomes (Uni and multicellular, glandular and non- glandular, two examples of each); secretory tissues (hydathodes, mucilage ducts, resin ducts, oil glands, laticifers, lysigenous and schizogenous cavities); Stomata (Classification); Adcrustation and Incrustation; Anatomical adaptation of xerophytes and hydrophytes.

PRACTICALS

CREDITS: 2 **TOTAL HOURS: 60**

1. Study of root and shoot apical meristem through permanent slides. Study of distribution and types ofParenchyma, Collenchyma and Sclerenchyma through permanent slides.
2. Study of xylem and phloem elements through maceration.
3. Study of primary growth in Monocot and Dicot stem through temporary mounts
4. Study of secondary growth in Dicot stem through temporary mounts
5. Study of Monocot and Dicot root through temporary mounts – Primary growth
6. Study of secondary growth in Dicot root through temporary mounts
7. Study of isobilateral and dorsiventral leaf through temporary mounts/permanent slides
8. Study of different types of wood (ring porous; diffuse porous; tyloses; heartwood and sapwood)through permanent slides/museum specimens.
9. Study of stomata types through epidermal peel mount.
10. Study of trichomes (glandular and non-glandular), cystoliths, druses, raphides, starch grains, sclereidsand stone cells through permanent slides
11. Study of anatomical adaptations in Hydrophytes (*Nymphaea* or *Hydrilla*) and Xerophytes (*Nerium*leaf).

Essential Readings

i. Dickinson, W.C. (2000). *Integrative Plant Anatomy.* Cambridge, U.K. : Harcourt Academic Press.
ii. Esau K. (1977). *Anatomy of Seed Plants.* New Delhi, Delhi: John Wiley & Sons, Inc.
iii. Evert, R.F., Eichhorn, S.E. (2006). *Esau's Plant Anatomy: Meristems, Cells, and tissues of the plantbody: their structure, function and development.* New Jersey, U.S.: Wiley-Liss.
iv. Fahn, A. (1974). *Plant Anatomy.* Pergmon Press, USA and U.K.

Suggested Readings

1. Mauseth, J.D. (1988). *Plant Anatomy.* San Francisco, California: The Benjammin CummingsPublisher.
2. Raven, F.H., Evert, R.F., Eichhorn, S.E. (1992). *Biology of Plants.* New York, NY: W.H. Freemanand Company.

DISCIPLINE SPECIFIC ELECTIVE COURSE –DSE-11

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Pharmacology and Toxicology (BS-DSE-11)	**4**	**2**		**2**	Class XII pass with Biology and chemistry, as one of the papers in Class XII	**NA**

Learning Objectives:

This is an introductory course to lay the foundation for understanding basic concepts in Pharmacology and thepharmacological basis of therapeutics. The objective of the course is to introduce students to the core principles of drug action in terms of bioavailability, pharmacokinetics, pharmacodynamics, and mechanism of action of drugs in the treatment of diseases. The course will also provide basic principles of toxicology, toxic substancesand their effects on body systems.

Learning Outcomes:

On successful completion of the course, a student will:

- Understand the basic scientific concepts and principles that serve as the foundational underpinnings of the pharmacological sciences including pharmacokinetics; pharmacodynamics; drug metabolism; and drug-drug interactions.
- Learn an introduction to the processes by which new drugs are discovered.
- Understand the specific pharmacology of the major drugs and drug classes currently used in medical practice including their indications, clinical use and mechanisms of action,
- Discuss the basic principles of toxicology; the mechanisms by which excess exposure to certain drugs,toxins, chemicals, heavy metals and poisons can lead to adverse toxicological effects

SYLLABUS FOR DSE-11
Course Contents -Theory

Unit 1: Introduction to Pharmacology **No. of hours: 5**

History and Scope of Pharmacology, Nature and source of drugs, Routes of drug administration, Drugreceptors and receptor subtypes, Drug Discovery and Development, Computer Aided Drug Design

Unit 2: Pharmacokinetics and Pharmacodynamics **No. of hours 8**

Absorption, Distribution, Metabolism, and Excretion (ADME) of drugs. Bioavailability, First Passmetabolism, Biological half-life of drug and its significance, Drug-drug interactions.

Unit 3: Drug Classification and their mechanism of action **No. of hours: 10**

Drugs of Inflammation: Analgesics and Anti-inflammatory Drugs, NSAIDs; Drugs of autonomic and central nervous system -Adrenergics: Isoprenaline, Propranolol; Dopaminergics, Dopamine, Syndopa; General Anesthetics: Halothane; Sedatives and Hypnotics: Diazepam; Cholinergics: Bethanechol, Rivastigmine; Anticonvulsant, Drugs of Cardiovascular system*:* Anticoagulant (Heparin, Warfarin) Blood Pressure LoweringDrugs (Diuretics, Reserpine), Lipid Lowering Drugs (Statin); Drugs of Gastro-Intestinal tract*:* Antacid(Cimetidine), Acid Blocker and Laxative ;Drugs of Renal functions: Diuretics; and Anticancer Drugs (Cistatin,Methotrexate, 5-fluorouracil).

Unit 4: Toxicology **No. of hours:7**

Classification of toxic substances, Drugs, Toxins and Heavy metal poisoning, Xenobiotics, Mechanism of toxicity, Tolerance to toxicants, Dose-response relationship, Therapeutic Index, Bioaccumulation and Antidotes.

3.1 PRACTICALS

CREDITS: 2 **TOTAL HOURS: 60**

1. To study the presence of paracetamol (acetaminophen) in given sample by spectroscopic method
2. Determination of LD50/LC50 of antibiotic/drug
3. Model Systems to study Dose-Response
4. Drug Binding assay to Albumin by Spectroscopic Analysis
5. Effect of heavy metal/toxin on enzyme activity
6. Colchicin effect on cell division.
7. Case Studies in Toxicology
8. Small Molecule Databases mining and Protein-ligand Docking
9. Visit to Pharmaceutical or Toxicology laboratory

3.2 Essential Readings

1. Tripathi, K.D. (2010). 7th Edition. Essentials of medical pharmacology. Delhi, India: Jaypee Brothers.ISBN-13:9788184480856.
2. Katzung, Bertram G. , Basic &Clinical Pharmacology, 14th Edition, McGraw Hill Education, 2017
3. Klaassen, C. D. and Watkins J. B. (2021), 4th Edition, Casarett & Doull's Essentials of Toxicology NewYork, USA: McGraw Hill.ISBN: 978-1-26-045229-7.

4 Kulkarni, S.K. (2012). 4th Edition. Handbook of experimental pharmacology. Delhi, India: VallabhPrakashan, ISBN-13: 97881857311.

DISCIPLINE SPECIFIC ELECTIVE COURSE –DSE-12

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Developmental Biology (BS-DSE-12)	**4**	**2**		**2**	Class XII pass with Biology and chemistry, as one of the papers in Class XII	**NA**

Learning Objectives:

The main objective of Developmental Biology course is to provide four-dimensional thinking of students to truly understand the patterns and process of embryonic development, body plan, fate map, induction, competence, regulative and mosaic development, molecular and genetic approach for the study of developing embryo which is not necessarily shared with any other disciplines in the biological sciences. The relevance of Developmental Biology to the study of human disease will be exemplified throughout using different model organisms.

Learning Outcomes:

Upon completion of the course, students will be able to:

- Understand the fundamental processes that underpin the fertilization of an egg cell and its step-by-step transformation into the fascinating complexity of a whole organism.
- Learn how a cell behaves in response to an autonomous determinant or an external signal depends on the combination of transcriptional and posttranscriptional regulators, signaling pathway components, cytoskeletal elements, and other proteins and RNAs that it has synthesized earlier: i.e., on its developmental history. Students learn best by doing and by having the opportunity to put what they havelearned into practice. Therefore, various model organism will be used as a learning tool.
- Understand that cells only express a proportion of their genome, and that differential gene expression underlies cell differentiation and any alteration in the entire process of development leads to devastating diseases.

SYLLABUS FOR DSE-12
Course Contents- Theory

Unit 1: Introduction **No. of hours: 5**

Historical perspective and basic concepts of developmental biology: cell division, cell differentiation, morphogen and morphogenetic gradient, patterning; EVO-DEVO concept. Model organisms

Unit 2: Early Embryonic Development **No. of hours: 10**

Post fertilization events: Planes and patterns of cleavage; Types of Blastula; Fate maps (including Techniques); Early development of frog and chick up to gastrulation; Embryonic induction and organizers

Unit 3: Late and post Embryonic Development **No. of hours: 10**

Fate of Germ Layers; Formation of neural tube and neural tube defects , Formation of Extra-embryonic membranes in birds; Placenta (Structure, types and functions of placenta) Modes of regeneration-epimorphosis,morphallaxis and compensatory regeneration (with one example each). Aging- genes involved in alteration in timing of senescence

Unit 4: Gene regulation in development No. of hours: 5 Axis specification in Drosophila: role of maternal genes, patterning of early embryo by zygotic genes: gapgenes, pair-rule genes, segment polarity genes, homeotic selector genes- bithorax and antennapedia complex.

3.1 PRACTICAL

Credit: 2 **Total Hours: 60**

1. Study of whole mounts and sections of developmental stages of frog through permanent slides: Cleavage stages, blastula, gastrula, neurula, tail-bud stage, tadpole (external and internal gill stages)
2. Study of whole mounts of developmental stages of chick through permanent slides (Hamburger and Hamilton Stages): Stage 3 (Intermediate Streak)-13 hours, Stage 4 (Definitive Streak)-18 hours, Stage 5 (Head Process)-21 hours, Stage 7-24 hours, Stage 8-28 hours, Stage10-33 hours, Stage 11-40 hours, Stage 13-48 hours, Stage 19- 72 hours and Stage 24-96 hours of incubation
3. Demonstration of culture of chick embryo from fertilized eggs to study various developmental stages.
4. Study of the developmental stages and life cycle of Drosophila from stock culture.
5. Study of different sections of placenta (photomicrographs/ slides).
6. Project report on Drosophila culture/chick embryo /Zebra fish development.
7. A visit to Poultry Farm/IVF Centre/Zebra fish lab

3.2 Essential readings:

1. Gilbert, S. F. (2010). Developmental Biology. IX Edition, Sinauer Associates, Inc. Publishers,Sunderland, Massachusetts, USA
2. Balinsky B. I. and Fabian B. C. (2006). An Introduction to Embryology. VIII Edition, InternationalThompson Computer Press.
3. Slack, J.M.W. (2013) Essential Developmental Biology. III Edition, Wiley- Blackwell.

Suggested Readings:

1. Wolpert, L. (2002). Principles of Development. II Edition, Oxford University Press.
2. Kalthoff, K. (2001). Analysis of Biological Development. II Edition, McGraw Hill Publishers.
3. Carlson, B.M. (2007) Foundations of Embryology. VI Edition, Tata McGraw-Hill Publishers.
4. Arora, R. and Grover, A. (2018) Developmental Biology: Principles and Concepts. I Edition, R. Chand& Comp

DISCIPLINE SPECIFIC ELECTIVE COURSE –DSE-19

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Research Methodology (BS-DSE-12)	**4**	**2**		**2**	Class XII pass with Biology and chemistry, as one of the papers in Class XII	**NA**

Learning Objectives:

The main objective of this paper is to provide students with a general introduction to the methodological foundations and tools used in research for an understanding of the ways to identify problems, develop hypotheses and research questions and design research projects. The course will expose students to the range of designs used in research in laboratory, field experiments, surveys and content analysis. It will also provide an introduction to the concept of controls, statistical tools and computer applications used in research. In addition, the course will impart knowledge of scientific writing, oral presentation and the various associated ethical issues.

Learning Outcomes:

Upon completion of the course, students will be able to:

- Define research, learn the importance of research and its link with theoretical knowledge
- Describe the research process and the principle activities, skills and ethics associated with the researchprocess
- Describe and compare the major quantitative and qualitative research methods
- Construct an effective research proposal
- Understand the importance of research ethics use the computer software for organization and analysisof data.
- Develop skills in the art of scientific writing and oral presentation

SYLLABUS FOR DSE-19

Course Contents- Theory

Unit 1: Introduction to Research **No. of hours: 4**

Objectives and characteristics of research; significance of research, types of research methods-qualitative andquantitative; basic and applied; descriptive and analytical; various phases of research-problem identification, generation of hypothesis, experimental design, results and discussion. Writing a research proposal-schematic presentation.

Unit 2: Basic principles of research design **No. of hours: 8**

Review of literature using appropriate sources – reviews, patents, research papers, books and e-

resources; Significance of controls in research, Types of research designs – exploratory, descriptive, experimental, surveyand case study.

Unit 3: Statistical tools and Report writing **No. of hours: 12**

Data collection, analysis and graphical presentation; Sample – types and characteristics; Basic Statistical Tools
- Measures of central tendency, Arithmetic mean, Median, Mode, Standard deviation, Co-efficient of variation (Discrete serious and continuous serious), Correlation, Regression, Multiple Regression, hypothesis testing, P-value, data analysis and interpretation; Report writing, format of publications and presentations-oral and poster.

Unit 4: Scientific conduct and ethics in Research **No. of hours: 6**

Biosafety and Ethics - compliance and concerns; Plagiarism-Software tools and Creative Commons; Introduction to Intellectual Property Rights; Citation and acknowledgement, Impact factor, h-index, Indianand international funding agencies.

3.1 PRACTICALS

CREDITS: 2 **TOTAL HOURS: 60**

1. Use of search engine tools for retrieving research papers
2. Preparation of bibliography in different formats
3. Use of Plagiarism tools
4. Design of a research survey on a specific problem
5. Writing a concept note / research proposal
6. Writing of a mini-review paper
7. Systematic review, meta data analysis and presentation
8. Poster/oral presentations

3.2 Essential readings

1. Cresswell, J. (2009) *Research Design : Qualitative and quantitative Approaches* Thousand Oaks CA,(3rd ed.), Sage Publications
2. Kothari, C.R. (2004) *Research Methodology: Methods and Techniques* (2nd ed.), New AgeInternational Publishers.
3. Kumar, R. (2011) *Research Methodology: A Step-by-Step Guide for Beginners* (5th ed.), SAGEpublisher
4. Walliman, N. (2017*) Research Methods: The Basics,* **(**2nd ed.), London ; New York : Routledge

5. *WHO (2001) Health Research Methodology – A Guide for Training in Research Methods.*

B.Sc (Hons.) Biomedical Science
Discipline Specific Core (BIOMED-DSCs)
(ACBR)
SEMESTER- IV

DISCIPLINE SPECIFIC CORE COURSE -10 (BIOMED-DSC-10) IMMUNOBIOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Immunobiology **BIOMED-DSC-10**	**4**	**3**	**-**	**1**	**XII Pass with Physics, Chemistry & Biology**	**Basic knowledge of biology**

Learning objectives

The students will learn

- The organization and functioning of the immune system and its branches- Innate and Humoral, its complex network of cells, molecules, tissues and organs
- Various Immunological techniques and their applications
- Various types of vaccine based immunotherapies

Learning outcomes

Having successfully completed this course, students shall be able to learn

- The human immune system and its components and how the immune system responds to 'non-self' entities.
- The principle, methodology and applications of various laboratory techniques involving antigen-antibody reaction.
- Various types of vaccine based immunotherapies will help them to think about new approaches for combating pathogens.

SYLLABUS OF BIOMED-DSC-10:

Unit I: Overview of Immune System **(05 hrs)**

Historical background, general concepts of the immune system, innate and adaptive immunity, primary and secondary immune response, active and passive immunity. Haematopoiesis

Lymphoid Organs: Thymus, Bone marrow, Lymph nodes, Spleen, MALT, GALT and SALT.

Unit II: Innate Immune response (10 hrs)

Physical and Chemical barriers.

Cells of the innate immune system: NK cells, Monocytes and Macrophages; Neutrophils, Eosinophils, Basophils, Mast cells and Dendritic cells.

Complement system: Components of the complement activation-classical, alternative and lectin pathways; biological consequence of complement activation.

Introduction to Pathogen Associated Molecular Pattern and Pattern Recognition Receptors Mechanisms of pathogen killing by macrophages and neutrophils.

Concept of inflammation.

Unit-III Antigens and their presentation in immune responses: (06 hrs)

Antigenicity and immunogenicity, haptens. Properties (foreignness, molecular size, heterogeneity, route and dose of administration, solubility and degradability); Types of antigens.

Major Histocompatibility Complex: Genome Organization of MHC and inheritance in humans; concepts of polygeny and polymorphism with respect to MHC and its contribution in survival of host population.

Antigen presenting cells, antigen processing, loading (Bimolecular complex formation) and presentation pathways (cytosolic and endocytic).

Unit IV: Adaptive Immune Response (10 hrs)

Cells of the adaptive immune system: T and B lymphocytes, Characteristics of adaptive immune responses.

Humoral immune response: Stages of B cell development in bone marrow, stages of B cell activation in the secondary lymphoid organs. Antibodies: structure, function and properties of the antibodies; different classes (isotypes) and subclasses. Biological activities of antibodies, concepts of antibody diversity, monoclonal and polyclonal antibodies, Hybridoma technology.

Cell mediated immune response: Major steps in T cell differentiation in thymus- thymic selection, self MHC restriction, T cell receptor complex. Phenotypic characteristics of naïve T-cells ($CD4^+$ and $CD8^+$ T-cells). Stages of activation of naïve T-cells in secondary lymphoid organs and effector functions of $CD4^+$ and $CD8^+$ T lymphocytes.

Basic introduction and properties of cytokines: IL-2, IL-4 and IFN-γ.

Concept of hypersensitivity.

Unit V: Principles of Antigen- Antibody Interactions and Techniques (09 hrs)

Basic concepts of antigen-antibody interactions (epitope-paratope), Affinity and avidity, cross reactivity, precipitation, agglutination, immunodiffusion, ELISA, ELISPOT, western blotting.

Unit VI: Vaccines (05 hrs)

Contribution of Sir Edward Jenner and Louis Pasteur in vaccine development. Major types of vaccine and their characteristics, adjuvants. National Immunization programme.

Practical (30 hrs)

(Wherever wet lab experiments are not possible, the principles and concepts can be demonstrated through any other material or medium including videos/virtual labs etc.)

1. Virtual demonstration of lymphoid organs and phagocytosis.
2. To perform immuno-diffusion by Ouchterlony method.
3. To perform Immuno-diffusion by Mancini method.
4. To perform Lateral Flow assay/ Immunochromatography.
5. To perform Complement fixation assay.
6. To perform direct (blood group) agglutination assay.
7. To perform indirect (Widal test) agglutination assay.
8. To perform sandwich dot ELISA

Essential readings:

- Delves, P.J. Martin, S.J. Burton, D.R. and Roitt, I. M. (2017). 13th Edition. *Roitt's Essential Immunology*. New Jersey, USA: Wiley-Blackwell Science. ISBN: 13: 978- 1118415771.
- Punt, J. Stranford, S. Jones, P. and Owen, J. (2019). 8th Edition. *Kuby Immunology*. New York, USA: W.H. Freeman and Company. ISBN- 13: 978-1464189784.

Suggestive readings:

- Kindt T. J., Osborne B. A. , Goldsby R. A. (2007). 6th Edition *Kuby Immunology*. New York, USA: W.H. Freeman and Company. ISBN-13: 978-1429202114 ISBN-10: 1429202114.

- Willey, J. Sherwood, L and Woolverton, C.J. (2016). 10th Edition. *Prescott's Microbiology*. New York, USA: McGraw-Hill Education. ISBN-13: 978-1259281594.
- Hay, F.C. and Westwood, O.M.R. (2002). 4th Edition. *Practical Immunology*. New Jersey, USA: Blackwell Science. ISBN: 9780865429611.

DISCIPLINE SPECIFIC CORE COURSE –11 (BIOMED-DSC-11) MOLECULAR BIOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/Practice		
Molecular Biology **BIOMED-DSC-11**	**4**	**3**	**-**	**1**	**XIIth Pass with Physics, Chemistry & Biology**	**Basic knowledge of biology**

Learning objectives

- The objective of the course is to offer detailed and comprehensive knowledge about the mechanisms of DNA replication, repair, transcription and translation in prokaryotes and eukaryotes so that students can apply this knowledge in enhancing their analytical and research problem solving skills.
- As the course progresses, students would comprehend the basic mechanism of DNA replication in prokaryotes and eukaryotes along with associated discerning features.
- Students would also understand the mechanism of introduction of mutations and how these are repaired inside the cell.
- Students would be able to understand that, molecular biology as a field started with an in-depth research and studies on prokaryotes and only recently our understanding of life processes in eukaryotes have increased considerable.

Learning outcomes

- This course focuses on the molecular processes involving biomolecules and provides students with a range of theoretical knowledge and associated practical skills.

- Students would comprehend biological processes such as Replication, Transcription and Translation. While studying the unit on Replication, students would also appreciate how various kinds of errors can be introduced and if not removed may manifest themselves as mutations.
- The course would help them understand established repair mechanisms to take care of these mutations. Hand-in-hand and related practical knowledge would help students build their foundation for future courses like Medical Biotechnology and Genome Organization and Function.
- Students would appreciate the recent advances in molecular biology that have led to the completion of genomic projects that are changing the face of modern biology, especially in areas of medicine, agriculture and biotechnology. Research in this field has also helped in understanding the molecular basis of illnesses and use of genetic manipulation in biotechnology to make valuable products including blood clotting factors, insulin and vaccines.

SYLLABUS OF BIOMED-DSC-11

Unit-I: The Replication of DNA in Prokaryotes and Eukaryotes (14 hrs)

An introduction to chemistry of DNA synthesis. Enzyme and proteins involved in DNA replication– helicase, topoisomerases, DNA polymerases, DNA ligase, primase, RNaseH, telomerase, sliding clamp, sliding clamp loader and SSBs. Mechanism of action of DNA polymerase, DNA transactions during replication-bidirectional replication, semi-conservative, discontinuous. Mechanics at the DNA replication fork: RNA priming, initiation and termination of DNA replication (comparing prokaryotes with eukaryotes), regulation of bacterial DNA replication, replicating the 5' end of linear chromosome, replication coupled to chromatin synthesis in eukaryotes. Various models of DNA replication including Trombone model, D-loop (mitochondrial), Theta mode of replication, Rolling circle model, replication of linear ds-DNA.

Unit-II: The Mutability and Repair of DNA (6 hrs)

Replication Errors (transitions, transversion and thymine dimer), DNA Damage (deamination, depurination and dimerization). DNA repair: Direct repair, Mismatch repair, Excision Repair, Photo reactivation, Recombination Repair, SOS response.

Unit-III: Information Transfer–I: Mechanism of Transcription. (8 hrs)

Basic transcription apparatus. Transcription in Prokaryotes: Initiation, elongation and termination of transcription, Promoter sequences and concept of abortive initiation. Transcription in Eukaryotes: Types of RNA polymerases, RNA polymerase II, Promoters, TBP and other transcription factors. Transcription by RNA polymerase I and III. Inhibitors of transcription- rifampicin and- amanitin.

Unit-IV: Post-Transcriptional Modifications (8 hrs)

Split Genes, Concept of introns and exons, RNA splicing pathways: Spliceosomes and Self splicing introns (Group I and Group II introns), Ribozymes, Variants of splicing: alternative splicing, exon shuffling and RNA editing, Mutually exclusive splicing (example Drosophila Dscam gene), Mechanism determining the sex of Drosophila.

Unit-V: Information Transfer-II: Mechanism of Translation (9 hrs)

Features of genetic code and exceptions in some systems. Types of RNA: Messenger RNA, Ribosomal RNA and Transfer RNA, Ribosomal structure, Charging of tRNA, Amino-acyl tRNA synthetases, Proteins and factors involved in translation. Process of translation: Initiation, elongation and termination (Prokaryotes and Eukaryotes), Fidelity of translation, Translation-Coupled removal of defective mRNA. Inhibitors of protein synthesis–tetracyclins, aminoglycosides, chloramphenicol and aminoglycosides.

Practical (30 hrs)

(Wherever wet lab experiments are not possible, the principles and concepts can be demonstrated through any other material or medium including videos/virtual labs etc.)

1. Calculations and preparation of various stock and working solutions of Molecular Biology experiments (Number 2 to 9).
2. Isolation of genomic DNA from bacterial cells.
3. Isolation of genomic DNA from blood/tissue.
4. Fractionation of DNA by agarose gel electrophoresis.
5. To determine the lambda max for DNA and protein.
6. Quantify and analyze the purity of DNA using spectrophotometer (estimating at 260 nm, 280 nm and 320 nm).
7. Quantitative estimation of salmon sperm/calf thymus DNA using colorimetric assay using Diphenylamine reagent.
8. In vitro gene amplification method of Polymerase Chain Reaction (PCR): Primer designing and setting up of the reaction.

9. Analysis of the PCR products.

Essential readings:

- Karp, G. (2020). 9th Edition. *Cell and molecular biology: Concepts and experiments.* NewJersey, USA: Wiley Publishers, ISBN-13: 978-1119598244
- Cox, M. M. Doudna J. A. and Donnell, M. O. (2015). 2nd Edition. *Molecular biology: Principles and practice.* London, UK: W H Freeman & Co Publishers, ISBN-13: 978-1464126147
- Watson, J. D. Baker T. A. Bell, S. P. Gann, A. Levine, M. and Losick, R. (2013). 7thEdition. *Molecular Biology of the Gene.* New York, USA: Cold Spring Harbor Laboratory Press, ISBN-13: 978-0-321-76243-6.
- Green, M.R. and Sambrook, J. (2012). 4th Edition. *Molecular cloning: A laboratory manual,* New York, USA: Cold Spring Harbor Laboratory Press, ISBN-13:978-1936113422.
- Hardin, J. Bertoni, G.P. Kleinsmith, L.J. and Becker, W.M. (2008). 7thEdition. *The world of the cell.* San Francisco, USA: Benjamin Cummings Publishers, ISBN-13:978-0805393934.

Suggestive Readings

- Kornberg, A. (2005). 2nd Edition. *DNA replication.* California, USA: University Science Books, ISBN-13: 978-1891389443.

DISCIPLINE SPECIFIC CORE COURSE -12 (BIOMED-DSC-12) PHARMACOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Pharmacology **BIOMED-DSC-12**	**4**	**3**	**-**	**1**	**XII Pass with Physics, Chem & Biology**	**Basic knowledge in Functioning of human body.**

Learning objective

- This course is concerned with the study of drugs and how they can be used in the treatment of various diseases.
- The students will be able to learn about various formulations and administration of drugs in the body. The course provides basic mechanisms by which various drugs modify/affect physiology of the body leading to the treatment of various diseases.
- Students will also get an insight into making choice and functioning of drugs given to treat microbial infections, and various diseases due to imbalance of hormones in the body.

Learning outcomes

- Students will be familiarized with the naming and formulation of drugs; routes of drug administration and conditions under which one route is preferred over another in patients; various macromolecular targets (receptors, enzymes, etc.) of drugs in the body.
- They will also learn basic mechanisms of absorption, transport, excretion of drugs and effects of metabolism on drug action; basics of quantification of half-life, bio-availability and elimination of drugs in the body and factors affecting them; an insight into measurement of response, efficacy and potency of drug, and factors affecting action of the drugs.
- Students will also be imparted knowledge of the classification, mechanism of action, uses and contraindication of various classes of drugs. Assessment of the choice of antimicrobial drugs; problems arising from indiscriminate/inadequate use of antimicrobial drugs. Use of hormones and

hormone antagonists as drugs in endocrine system related disorders; hormone replacement therapy and its application.

SYLLABUS OF BIOMED-DSC-12

Unit-I: Introduction to pharmacology (07 hrs)

Nomenclature of drugs, various dosage forms of drugs (solid, liquid, semi-solid and inhalation forms) routes of drug administration, their advantages and disadvantages, various macromolecular targets of drugs (membrane receptor, transporters, enzymes, channels etc.).

Unit-II: Pharmacokinetics and pharmacodynamics (09 hrs)

Drug absorption, distribution, metabolism, and excretion, bio-availability, excretion and kinetics of elimination, biological half-life of drug and its significance, drug-drug interactions.

Unit-III: Mechanism of action of different classes of drugs (18 hrs)

General aspects; classification and mechanism of action of following classes of drugs along with side effects and contraindication of the drugs mentioned against each class should also be covered.

(a) General Anesthetics:	Halothane
(b) Sedatives and Hypnotics:	Diazepam
(c) Cholinergics:	Bethanechol, Rivastigmine
(d) Skeletal Muscle Relaxants:	Succinylcholine
(e) Adrenergics:	Isoprenaline, Propranolol
(f) Dopaminergics:	L-Dopa, Carbidopa
(g) Diuretics:	Furosemide
(h) Analgesics and Antipyretics:	Aspirin, Celecoxib

Unit-IV: Chemotherapy of microbial disease (05 hrs)

General aspects of anti-microbial therapy, Antibacterial (Quinolones: Ciprofloxacin).

Unit-V: Hormones and hormone antagonists (06 hrs)

Brief introduction to hormones; insulin and oral hypoglycemic agent (tolbutamide, metformin), HRT, estrogen and progestins (progesterone, hydroxylprogesterone caproate).

Practical (30 hrs)

(Wherever wet lab experiments are not possible the principles and concepts can be demonstrated through any other material or medium including videos/virtual labs etc.)

1. Handling of laboratory animals.
2. Routes of drug administration (Oral, I.M.)
3. To study the presence of acetaminophen in given sample.
4. To study the stages of general anesthesia.
5. To determine partition coefficient of general anesthetics.
6. Effect of analgesic (Tail-flick test).
7. Anti-anxiety effect of Valium (Plus maze test).
8. Fixing of organ bath and kymograph.
9. To record CRC of acetylcholine using guinea pig ileum/ rat intestine.
10. Determination of dose ratio.
11. Study of competitive antagonism using acetylcholine and atropine.

Essential reading

- Kulkarni, S.K. (2014). 4th Edition, Reprint. *Handbook of Experimental Pharmacology*, Vallabh Prakashan, India, ISBN-13: 978-8185731766.
- Tripathi, K.D. (2018). 8th Edition. *Essentials of Medical Pharmacology*. Jaypee Brothers, India, ISBN-13: **.9352704996-978**

Suggestive readings

- Ritter, J.M., Flower, R., Henderson, G., *et al*. (2019). 9th Edition (International). *Rang and Dale's Pharmacology.* Relx India Pvt. Ltd, ISBN-13: 978-0702074479.
- **Katzung, B. G.**, (2021) Basic and Clinical Pharmacology, 15th Edition, McGraw-Hill Education, ISBN: 978-1260452310

Pool of DSEs

DISCIPLINE SPECIFIC ELECTIVE COURSE– 04 (BIOMED-DSE-04) MEDICAL BIOCHEMISTRY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the Course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Medical Biochemistry BIOMED-DSE-04	4	3	-	1	XII Pass with Physics, Chemistry & biology	Basic knowledge of biology	Biomedical Science

Learning objectives

The Learning objectives of this course are as follows:

- The objective of this course is to educate students on the clinical significance of Biochemistry. Students would learn the principle and applications of the diagnostic enzymology, interplay of hormones in the metabolism and details of various biomolecules of diagnostic significance.
- These topics are incorporated in the course to impart relevant information on clinical biochemistry. This course will also focus on the contemporary methods and practical approaches that are used in the clinical laboratories for the investigation of the parameters to ascertain normal and diseased state.

Learning outcomes

The Learning outcomes of this course are as follows:

- Having successfully completed this course, students shall be able to learn and appreciate:
- To integrate the biochemical pathways of different biomolecules; the point of divergence and convergence and will have a comprehensive overview of the metabolic and hormonal regulation of pathways and cycles.
- Students will understand how disruptions in intermediary metabolism can lead to manifestations of diseases. Additionally, hormonal actions in maintaining body mass shall be understood and factors leading to disorders such as obesity and diabetes will also be learnt.

- The diagnostic significance of enzymes and isoenzymes as diagnostic markers in clinical tests. They will learn to assess how biochemical tools accomplish diagnostic and therapeutic interventions on metabolic and genetic disorders. They will also learn to correlate the tissue/organ-specific metabolic indicators with the physiological and clinical state of a patient.
- Students would be able to gain knowledge about several bimolecular conjugates, their structural complexities, physiological significance and clinical correlations, especially the disorders related to lipid metabolism.
- Students will learn about recommended daily allowance for vitamins, their role as dietary precursors and clinical significance of deficiency diseases.
- With the help of diagnostic kits that are used in clinical laboratories students will learn to perform qualitative and quantitative analyses of samples. Through the presentations made on the known case studies, students will learn how to apply the gained knowledge in diagnosis and prognosis of a disease and know the relevance of preventive measures taken in healthcare. Also, they will be introduced to quantitative analysis of biomolecules in clinical biochemistry and evaluation of relevant data.

SYLLABUS OF BIOMED-DSE-04

Unit I: Introduction to Medical Biochemistry with an Overview of Integrative Metabolism (12 hrs)

Basic Concepts and Scope of Medical Biochemistry.

Local and global regulation in tissue specific metabolism. Interplay of insulin and glucagon hormones. Integration of various metabolic pathways of proteins, lipids and carbohydrates. Obesity, role of leptin, ghrelin and adiponectin in regulation of body mass, hunger and satiety.

Unit II: Enzymes - Distribution and Diagnostic Significance (12 hrs)

Properties of enzymes used in diagnosis. Factors affecting levels of diagnostic enzymes in blood and the selection of a test. Clinical significance of diagnostically important enzymes: Creatine kinase, Lactate dehydrogenase, alanine- and aspartate aminotransferases, with a detailed account of the biochemical reactions catalyzed by these enzymes and of their clinical assays. Kinetic assay and end point assay for the enzymes. Isoenzymes: types of isoenzymes, allozymes, hybrid isoenzymes, isoforms,their tissue distribution, clinical and diagnostic significance.

Unit III: Structural Complexities and Diseases Associated with Carbohydrates and Lipids (14 hrs)

Carbohydrates: Sugars as information molecules. Detailed account on Lectins: their role in physiological functions and their potential as drug targets in various infectious diseases. Dietary fibres

Lipids: Types of Lipoproteins (chylomicrons, VLDL, LDL, HDL). Disorders associated with lipid metabolism (hyperlipidemia). Prostaglandins: classification, biosynthesis, role of COX-1, COX-2, NSAIDS in synthesis, functions.

Steroids: Cholesterol- biosynthesis and regulation, inhibitors of cholesterol biosynthesis (Statins - structure and biochemical basis).

Unit IV: Vitamins (7 hrs)

Definition, classification, functions, recommended dietary allowances, and dietary precursors. Diseases (1 each, due to deficiency of water-soluble and fat-soluble vitamins): symptoms and clinical significance

Practical (30 Hrs)

(Wherever wet-lab experiments are not possible, the principles and concepts can be demonstrated through any other material or medium including videos/virtual labs, etc.)

1. Virtual demonstration of preparation of serum or plasma from whole blood.
2. Quantitative determination of the following (any 4):
    i) SGPT/SGOT
    ii) Albumin/Total protein and A:G ratio
    iii) Urea
    iv) Uric acid
    v) Total Cholesterol, HDL, LDL
    vi) Triglycerides
3. Interpretation of case studies (any 3)
4. Analysis of a given Diagnostic Test Report for KFT/LFT/Myocardial Infarction.
5. Profiling of Iron and Vitamin D/B12 deficiency in Indian Population, using recent published data.

Essential Reading:

- Nelson, D.L. and Cox, M.M. (2021). *Lehninger: Principles of Biochemistry* (8th ed.). Macmillan. ISBN: 9781319322328

- Burtis, C.A., Bruns, D.E.,Sawyer, B.G, Tietz,NW (2015). *Tietz Fundamentals of Clinical Chemistry and Molecular Diagnostics*. United States Of America:WB Saunders Company, ISBN: 9781455741656
- Chatterjee & Shinde (2012). *Textbook of Medical Biochemistry* (8th ed). New Delhi, India: Jaypee Publications ISBN: 978-93-5025-484-4
- Literature provided by Diagnostic Kit's manufacturer.

Suggestive reading

- Murray, R. Bender, D.Botham, M.K.Kennelly, P.J.Rodwell, V.Weil, P.A. (2018). *Harpers Illustrated Biochemistry*; New Delhi, India: McGraw-Hill Medical.
- Devlin, T.M. (2011). *Textbook of Biochemistry with Clinical Correlations*. New Jersey, United States of America: John Wiley & Sons, Inc.

DISCIPLINE SPECIFIC ELECTIVE COURSE –5 (BIOMED-DSE-05) INDUSTRIAL MICROBIOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/Practice		
Industrial Microbiology **BIOMED-DSE-05**	**4**	**3**	**-**	**1**	**XII Pass with Physics, Chemistry & biology**	**Basic knowledge of biology**

Learning objectives

- The Industrial Microbiology course has been formulated to train students on how microbiological techniques are carried out in industrial practices.
- Students will be able to learn usage of microorganism for industrial applications.
- This course will concentrate on experimental practice and their theoretical aspects. Study of this course will develop trained manpower ready for industry and bridge the huge gap that exists between knowledge based conventional education and market demands.
- This would further help inculcate sense of job responsibilities, while maintaining social and environment awareness.

- Students would eventually build-up a progressive and successful career in industries with a biotechnological perspective.

Learning outcomes

- The course on Industrial Microbiology starts with the fundamental basics and scope of industrial microbiology. Students would learn the requirements for setting up an Industrial Microbiological unit along with the kind of microbial products that can be made available.
- The course would help the students to explore the benefits of microbial kingdom.
- Students would also understand the process of selection of potent strains suitable for industrial application and use of mutants/genetically modified organism for this purpose. Methods associated with usage and selection of appropriate fermentation process will enhance the learning of students enable them to think in new horizons.
- Selection of appropriate nutrient for the multiplication of microorganism plays a significant role at industrial level. Through understanding of the current scenario might help them setting their own ventures.
- Students would be given a glimpse of extraction of fermentation products and maintenance of sterility in fermenters. Different types of nutritive products/beverages such as beers, wines, spirits, bread, single cell proteins can be obtained using fermenters.
- At the end of syllabus students would learn the process of waste water treatment by municipal corporations.

SYLLABUS OF BIOMED-DSE-05

Unit I: Scope of Industrial Microbiology (6 hrs)

Scope of Industrial Microbiology; Industrial microbiology in comparison to Chemical/any other industry; emphasis on functioning of fermentation industry; examples of products and microbes; Industrial Microbiology and Biotechnology; History (An Art from the Past, a Skill for the Future); Obsolescence in Industrial Microbiology.

Organizational set-up in an industrial microbiology establishment: Upstream processing (USP) and downstream processing (DSP); unit downstream processing. Bioprocess: introduction, advantages and limitations. Industrial fermentation products and their producer microorganisms.

Unit II: Industrial Microorganisms (8 hrs)

Taxonomic diversity of industrially useful bacteria and Fungi: Brief Discussion, general feature and taxonomic position; Bacterial genomes and genomics of bacterial plasmids; Useful Characteristics in microbes used in Industrial Microbiology and Biotechnology; Isolation of suitable producer microorganisms from environment.

Concept of Microorganisms classified as Generally Regarded As Safe (GRAS); Culture Collections of industrial microorganisms; Industrial producer strains and strain improvement: Outline and importance of the process; Use of mutants / Genetically Modified Microorganisms (GMM) as against Wild type isolates for production; ethical issues related to release of GMM in the environment. Aseptic and non-aseptic fermentations; Fermentation types according to organization of biological system: Suspended and support culture; Screening for productive strains. Good manufacturing processes.

Unit III: Industrial Media and the Nutrition of Industrial Organisms (6 hrs)

Basic Nutrient Requirements of Industrial Media; Criteria for the Choice of Raw Materials Used in Industrial Media; Raw Materials Used in Compounding Industrial Media; Potential Sources of Components of Industrial Media; Use of Plant Waste Materials in Industrial Microbiology: Saccharification of Polysaccharides, Standard microbes used in Industry, like useful *E.coli* and *Pichia.*

Unit IV: Fermenters and its Operation (7 hrs)

Definition of a Fermenter; Aerated Stirred Tank Batch Fermenter; Temperature control in a fermenter; Foam production and control; Process control in a fermenter; Anaerobic Batch Fermenters; *Continuous fermentations;* Design of New Fermenters on the Basis of Physiology of the Organisms; Place of the Pilot Plant; Inoculum Preparation; Surface or Solid State Fermenters; Extraction of Fermentation Products; Maintenance of sterility in Fermenters

Unit V: Production of fermented foods and Metabolites (13 hrs)

Single Cell Proteins and its nutrition value; Yeast Production; Other fermented foods – from bread, corn etc; Production of Beers: Barley and Sorghum Beers; Production of wines and spirits: Grape wines; Palm wines and Distilled Alcoholic (or Spirit) Beverages; Production and processing of vinegar. Production of

Organic Acids and Industrial Alcohols; Amino Acids; Biocatalysts; Microbial Fertilizers; Microbial Insecticides; Antibiotics and Anti-Tumor Agents; Ergot Alkaloids; Microbial Transformation and Steroids and Sterols; Vaccines; Microbial Products with Bioactive properties.

Unit VI: Treatment of wastes in industries (5 hrs)

Methods for determination of organic matter content in Waste Waters – Dissolved oxygen, Biological oxygen demand, Permanganate value (PV) test, Chemical oxygen demand, Total organic carbon, Total suspended solids, Volatile suspended solids; Wastes from Major Industries; Systems for the Treatment of Wastes; Treatment of the Sludge; Waste Water Disposal in the Pharmaceutical Industry. Municipal waste water treatment plant, Microbial degradation of pollutants (Bioremediation), Recovery of resources from waste using microbes (biomining/metal recovery).

Practical (30 hrs)

(Wherever wet lab experiments are not possible the principles and concepts can be demonstrated through any other material or medium including videos/virtual labs etc.)

1. Field trip to any industrial setup / research organization for demonstration of fermenters.
2. Antibiotic/anticancer drugs production using Streptomyces species.
3. Replicate the classic experiment of Sir Alexander Fleming experiment for the production of penicillin.
4. Fermentation of sugarcane syrup using yeast and detection of alcohol percentage.
5. Microbial biomass production: manufacturing of baker's yeast.
6. Mushroom cultivation strategies.
7. Maintenance of starter culture for probiotics.
8. Demonstration of production/extraction of microbial production.
9. Commercial microbial production.

Essential Readings

- Willey, J., Sherwood, L., and Woolverton, C.J. (2019). 11th Edition. Prescott's microbiology. New York, USA: McGraw-Hill Education. ISBN-13: 1260211887-978 .
- Tortora, G.J., Funke, B.R., Case C.L. Weber, D. and Bair, W. (2018). 13th Edition. Microbiology: An introduction. Addison-Wesley, ISBN-13 : 978-0134605180.

- Cappuccino, J.G. and Welsh, C. T. (2017). 11th Edition. Microbiology: A laboratory manual. Pearson Publishers. ISBN-13: 1292175782-978.

Suggestive Readings

- Tille, P. (2013). 13th Edition. Bailey & Scott's diagnostic microbiology. Elsevier's Publishers. ISBN-13 : 978-0323681056
- Pelczar, M.J (2001). 5th Edition. Microbiology. New York, USA: McGraw Hill International. ISBN-13: 9780074623206.

DISCIPLINE SPECIFIC ELECTIVE -6 (BIOMED-DSE-06) ENVIRONMENT SUSTAINABILITY AND BIOMEDICAL WASTE MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Environment Sustainability And Biomedical Waste Management **BIOMED-DSE-06**	**4**	**3**	**-**	**1**	**XII Passed**	**Basic knowledge of biology**

Learning objectives

The Learning objectives of this course are as follows:

- To promote awareness among students about the importance of environment and its sustainable usage and development
- To highlight the components affecting environment and factors responsible for deterioration of environment
- To familiarize with the techniques available for waste management, use of refuse/ reduce/re-use/ recover/re-cycle of substances toxic for environment

Learning outcomes

Having successfully completed this course, students shall be able to learn and appreciate:

- Surroundings and environment, renewable/non-renewable natural resources and their exploitation. Sensitizing about environmental crisis can promote them to for search alternatives to reduce our dependence of non-renewable natural resources and their usage.
- Studies on pollution and deforestation will help them to understand their impact on environment and human health. Conservation of forests and recycling policies will promote social awareness about sustainable development.
- Learning about various methods of sustainable development is an important for skill development in students so that they can design better strategies to protect our environment.
- Generation of biomedical waste is alarmingly increasing but the awareness of appropriate waste disposal methods is completely lacking. Development of new methods for waste management and strategies in this area will help them to reduce and segregate waste at point source.
- At the end of this course, students will be able to understand the severity of the problem and influence of biohazards on human health

SYLLABUS OF BIOMED-DSE-06

Unit I: Environment and Environmental Crisis (08 hrs)

Function of environment, resources (biotic and abiotic), renewable resources (air, water, land) and non-renewable resources (fossil fuels), worldwide Environmental Crisis: Global Warming, Ozone Layer Depletion, Measures to protect environment: environmental pollution and its control measures, air pollution in metropolitan cities of India, Deforestation and conservation, steps for social awareness, Reduce, Reuse and Recycle policy for waste management, water conservation, implementation of policies and programmes for environment sensitization, Environmental tribulations in India: Environmental degradation, Indian government proposals and plans to protect environmental degradation

Unit II: Role of green technologies in Sustainable development (14 hrs)

- Definition and aspects, requirements, strategies and way for sustainable development , Role of education for sustainable development (ESD); Management of resources for human consumption and its impacts assessment, Influence of biodiversity on ecosystem services, Land use changes for agriculture and food, Indian government initiatives to implement sustainable development, Challenges to acquire SDGs.

- Surfacing green technologies and sustainable growth, Different aspects of sustainable development: bioprospect of plant essential oils for medicinal uses-revival of Indian ancient practice; Nanotechnology: potential for environmental sustainability, Role of photo-catalyst in environmental remediation, Applications and future prospective of biopolymers in industries; Green and self-sustainable buildings: Opportunities and challenges

Unit III: Measures for Sustainable development (09 hrs)

Phytoremediation of chemopollutants, bioconversion of industrial wastes into value-added polyhydroxyalkanoate (eg sugar and oils), Role of fungal and bacterial resources in heavy metal/radioactive waste material contaminated soil remediation and ecological restoration, xenobiotics bioremediation using fungi, Impact of pesticides usage in agricultural practices on microbial communities and soil bioprocesses: a biochemical, physiological, and molecular perception; Possibilities of biofuel production from microalgae as renewable energy source for environmental sustainability, integrated algal industrial waste treatment and bioenergy generation

Unit IV: Biomedical waste management (07 hrs)

Definition and classification of biomedical waste, Infectious, non-infectious and chemical waste;
Waste management: designation of waste, segregation, packaging and transportation.
Treatment: steam sterilization, chemical disinfection, incineration, emerging treatment technologies, treated waste disposal, regulatory and advisory considerations, Training of supportive staff

Unit V: Health and safety of workers in hazardous environment (07 hrs)

Exposure of workers at hazardous waste sites: chemical exposure, explosion and fire, ionizing radiation, biologic hazards, oxygen deficiency, heat stress, blood borne pathogens, safety hazards, electrical hazards, noise hazards, cold exposure, other physical hazards, hazardous waste operations and emergency response

Practical (30 hrs)

(Wherever wet lab experiments are not possible, the principles and concepts can be demonstrated through any other material or medium including videos/virtual labs etc.)

1. Document the Biological Wealth (flora and fauna) of your campus.
2. Calculate the water footprint of your organization.
3. Examine the current status of organization for waste management. Develop guidelines to reduce waste by improved methods of handling and disposing of wastes.
4. Plan guidelines for the safety of workers working at hazardous waste sites.
5. A case study on "Make sustainability more than just the right thing to Do"
6. A case study on handling and disposal of wastes.
7. Develop green design of organization to maintain and enrich the biological wealth.
8. Understandings of energy missions and follow up for classroom energy audit.
9. Prepare a questionnaire to asses knowledge, attitude and practices among students about Sustainable Development
10. Prepare a poster on Bio-augmentation and Bio-stimulation**.**
11. Make a poster on success stories of environment polices and movements that have reduced pollution or reversed diminishing populations of unique species.
12. Determine your carbon foot printing.

Essential readings

- Sangeetha, J; Thangadurai, D; David, M and Abdullah, M.A. (2021) 1st Edition. Environmental Biotechnology: Biodegradation, Bioremediation, and Bioconversion of Xenobiotics for Sustainable Development. Edited by. Apple Academic Press Inc, 9 Spinnaker Way, Waretown, NJ 08758, USA. International Standard Book Number-13: 978-1771883627.
- Fulekar, M.H.; Pathak, B; Kale, R.K. (2014) Edition 2014th Environment and Sustainable Development. Publisher-Springer Nature ISBN: 978-8132211655
- William C. Blackman, Jr (2001) Basic hazardous waste management.. Third Edition, Lewis Publishers, Boca Raton London New York Washington, D.C. ISBN 1-56670-533-9 (alk. paper)

Suggestive readings:

- Tweedy, James T., Healthcare hazard control and safety management-CRC Press_Taylor and Francis (2014).

SEMESTER-V
BIOMEDICAL SCIENCE

DISCIPLINE SPECIFIC CORE COURSE –13 (BIOMED-DSC-13) GENOME ORGANIZATION AND FUNCTION (GOF)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical /Practice		
Genome Organization and Function **BIOMED-DSC-13**	**4**	**3**	**-**	**1**	**XII Pass with Physics, Chemistry & biology**	**Basic knowledge of biology**

Learning objectives

- The course on Genome Organization and Function (GOF) will review the basic concepts of organization and architecture of human genome.
- This course would equip the students with intriguing concepts of genome packing within the nucleus, the regulatory strategies either at transcriptional or translational level, gene silencing, RNAi and mechanisms of regulatory effects of non-coding RNA.
- The objective is to remain competitive and relevant in international sense by offering high quality academic programs and research activities.

Learning outcomes

- Students will acquire basic concepts of genome, its organization and maintenance, packaging of DNA into chromosome structure, changes in histone and chromosome remodeling proteins.
- Students will learn the concept of regulatory mechanisms governing over-expression and under-expression of genes. They will understand transcriptional and translational control in prokaryotes and in eukaryotes.
- Students will also learn about post-translational control-mRNA decay and Proteolysis. Students will understand regulatory RNA in prokaryotes and in eukaryotes (sRNA, riboswitches,

CRISPER- Cas system, RNA interference, miRNA and siRNA, Piwi interacting RNA) and Regulatory RNA in X-inactivation.

SYLLABUS OF BIOMED-DSC- 13

Unit-I: Organization of Human Genome (7 hrs)

General features: Genome size, gene density and diversity. Types of repetitive DNA. Nucleosomes: Basic unit of DNA condensation, packaging of DNA in to chromosome structure, nucleosome assembly. Protein and RNA encoding genes. Gene-families and super families. Processed and non-processed Pseudogenes.

Unit II: Gene Regulation at DNA level (6 hrs)

Prokaryotic gene regulation- Histone like proteins, overlapping genes.

Eukaryotic gene regulation: Genomic control – gene amplification and deletions, DNA rearrangements, chromosome puffs, DNA methylation, CpG islands. Changes in histone and chromosome remodeling proteins-HAT and HDAC, Chromodomain and Bromodomain proteins, nucleosome modifications and nucleosomes positioning.

Unit-III: Transcriptional Regulation in Prokaryotes (6 hrs)

Principles of transcriptional regulation. Activators and Repressors and their mechanism of working. Bacterial gene regulation with reference to Operons- Lactose, Tryptophan and Arabinose operon. Combinatorial control. Role of sigma factors in gene expression.

Unit-IV: Transcriptional Regulation in Eukaryotes (10 hrs)

Difference between gene regulation in Prokaryotes and Eukaryotes. Cis-acting regulatory sequences- Promoters, Enhancers, Insulators, Boundary elements. Regulatory proteins-Activators, Repressors and Co-activators, their structure and mechanism of working, Structural difference among the different DNA binding domains, Regulation of LCR, Signal integration and Combinatorial control, Signal transduction pathways- MAP kinase and STAT pathways. Techniques for studying DNA-Protein interaction: EMSA, DNA foot printing, ChIP assay.

Unit-V: Regulatory RNAs (6 hrs)

Regulation by RNAs in Prokaryotes: sRNA (6S RNA, RybB, DsrA, RprA, OxyS), Riboswitches, Attenuation in trp operon. Structure, Origin and Functioning of CRISPR-Cas system. Regulation by RNAs in Eukaryotes: RNA interference-need and mechanism. Therapeutic uses of RNAi. RNA Induced silencing complex (RISC) and Argonaute (AGO). miRNA- structure, origin and working. siRNA- structure, origin and working. Piwi-interacting RNA- structure, origin and working. Regulatory RNA and X-inactivation: long non-coding RNA. Mechanism of X-inactivation.

Unit-VI: Translational and Post-Translational Regulation (10 hrs)

Rationale of gene regulation at translation level. Regulation of Prokaryotic translation-protein and RNA bonding to RBS, Ribosomal proteins as translational repressor, Tm RNA. Regulation of Eukaryotic translation- Global regulation and Gene specific regulation. Regulation of Oscar protein by Cup protein in Drosophila, Regulation of Ferritin in Humans, Regulation of Gcn4 in yeast, Eukaryotic mRNA structure and stability. mRNA decay pathway in Eukaryotic cells: De-adenylation dependent pathway and De-adenylation independent pathways- Endoribonucleolytic decay, Nonsense and Nonstop mediated decay, No-Go decay and RNAi dependent pathway of mRNA decay. Proteolysis in Prokaryotes and Eukaryotes, Lysosome and Proteasome mediated protein decay, Ubiquitin-Proteasome pathway.

Practical (30 hrs)

(Wherever wet lab experiments are not possible the principles and concepts can be demonstrated through any other material or medium including videos/virtual labs etc.)

1. Preparation of various stock solutions for mentioned experiments.
2. Isolate plasmid/ genomic DNA of the sample provided.
3. Comparative analysis of genomic DNA and plasmid DNA by restriction enzyme digestion and estimation of size of a DNA fragment after electrophoresis using DNA markers.
4. Quantification of unknown DNA using Lambda-Hind III marker.
5. Study transfer of DNA through Southern Blotting.
6. Perform hybridization of DNA using Southern Blot.
8. Separation of proteins using SDS PAGE.
9. Perform Western hybridization.
7. Bioinformatic analysis of Prokaryotic gene.
8. Bioinformatic analysis of Eukaryotic gene.

Essential Readings

- Klug, W. S. Cummings, M. R. Spencer, C. A. and Palladino, M. A. Killian, D. (2019*).* 12th Edition*. Concepts of genetics.* San Francisco, USA: Benjamin Cummings Publishers. ISBN-13:978-0134604718
- Strachan, T. and Read, A. (2018). 5th Edition. *Human molecular genetics*. Florida, USA: CRC Press, Garland Science. ISBN: 978-0815345893.
- Cox, M. M. Doudna J. A. and Donnell, M. O. (2015). 2nd Edition. *Molecular biology: Principles and practice.* London, UK: W H Freeman & Co Publishers, ISBN-13: 978-1464126147
- Watson, J.D. Baker T.A. Bell, S.P. Gann, A. Levine, M. and Losick, R. (2013). 7th Edition. *Molecular biology of the gene.* New York, USA: Cold Spring Harbor Laboratory Press.ISBN-13:9780321762436.
- Snustad, D. P. and Simmons, M. J. (2011). 6th Edition*. Principles of genetics.* New York, USA: John Wiley and Sons.ISBN-13: 978-0470903599

Suggestive Readings

- Karp, G. (2020). 9th Edition. *Cell and molecular biology: Concepts and experiments.* NewJersey, USA: Wiley Publishers, ISBN-13: 978-1119598244
- Cooper, G.M. and Hausman, R.E.(2013). 6th Edition. *The cell: A molecular approach.* Massachusetts, USA: Sinauer Associates. ISBN-13:978-1605351551.
- Green M.R. and Sambrook J. (2012). 4thEdition, (three-volume set). *Molecular cloning: A laboratory manual.* Cold Spring Harbor Laboratory Press. ISBN-13: 978-1936113422.
- Snustad, D. P. and Simmons, M. J. (2011). 6th Edition*. Principles of genetics.* New York, USA: John Wiley and Sons. ISBN-13: 978-0470903599.
- Hardin ,J. Bertoni, G. P. Kleinsmith, L.J. and Becker, W.M.(2008).7thEdition. *The world of the cell.* San Francisco, USA: Benjamin Cummings Publishers. ISBN-13:978-0805393934.
- Kornberg, A. (2005). 2nd Edition. *DNA replication.* California, USA: University Science Books. ISBN-13: 9781891389443.
- Cantor, C. R. and Smith, C. L. (1999). 1st Edition. *Genomics: The Science and technology behind the human genome project.* NewYork, USA: JohnWiley and Sons. ISBN-13:978-0471599081.

DISCIPLINE SPECIFIC CORE COURSE –14 (BIOMED-DSC-14) MEDICAL BIOTECHNOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical / Practice		
Medical Biotechnology **BIOMED-DSC-14**	**4**	**3**	**-**	**1**	**XII Pass with Physics, Chemistry & biology**	**Basic knowledge of biology**

Learning objectives

- The objective of this course is to enable the students to comprehend the concepts of recombinant DNA technology and apply the gained knowledge towards cloning and expression of genes and purification of the recombinant proteins.
- In the process, students would get a grasp on the cutting-edge technologies used in the analysis of nucleic acids and expressed proteins. The course aims to give students training in modern molecular techniques and help them make a connection between biological concepts and the technologies developed for various applications in biotechnology.
- The course finally aims to augment students' understanding of the role biotechnology plays/can play in various aspects of human medicine and provide them the platform to appreciate the drivers of emerging innovations in medical biotechnology along with biosafety and ethical concerns.

Learning outcomes

- Students will learn the contemporary techniques being applied in the field of medical biotechnology which include PCR, Gene Cloning, Gel electrophoresis etc.
- Students will gain a comprehensive understanding of DNA manipulation techniques and how to create recombinant DNA molecules by making a suitable choice of vectors and expression hosts.
- An in-depth understanding of gene cloning, expression in prokaryotic and eukaryotic systems and on the production of recombinant proteins shall prepare students to apply the gained knowledge on different organisms.

- Having grasped the fundamentals of recombinant DNA technology, its robust potential and the limitations & challenges, students shall discern the applications of biotechnology in human medicine. Their gained knowledge shall be imbued with a deeper understanding of the safety and limitations of molecular tools used in the diagnostics of infectious diseases, production of biopharmaceuticals and gene therapy.

SYLLABUS OF BIOMED-DSC-14

Unit I: Introduction to Recombinant DNA Technology and its applications in Medical Biotechnology

(13 hrs)

Brief history and scope of molecular biotechnology, concept of manipulation of DNA, cloning vectors and gene cloning. Restriction and modification system: Type I-IV restriction endonucleases, nomenclature and sequence recognition, isochizomers, blunt end and sticky ends, restriction mapping. Joining of DNA molecules: role of DNA ligase enzymes, adaptors, linkers, homopolymer tailing.
Cloning vectors: bacterial plasmids (T-vector, pUC vector), Lambda phage-derived vectors (replacement and insertion vectors), Cosmids, *in vitro* packaging. Gene cloning: Blunt end and directional.

Unit II: Expression of cloned genes in prokaryotes (13hrs)

Prokaryotic expression vector (pET vector). Bacterial transformation (*E.coli*): Preparation of competent cells ($CaCl_2$ method), selection of the transformants (antibiotic-resistance) and screening (blue/white & by colony PCR). Challenges in the expression of foreign proteins in a heterologous host, Factors affecting the expression: Promoters, Codon usage, Plasmid copy number. Fusion proteins and tagged protein cleavage system. Gene Probe preparation, Use of enzymatic and chemiluminescent methods for the detection of proteins.

Unit III: Cloning and expression in a eukaryotic system (09hrs)

Concept of auxotrophic mutants of yeast (eg. *Saccharomyces cerevisiae*) as cloning host. Cloning vectors (yeast Integrative (yIP), Replicative (yRP) and Episomal (yEP) plasmid, YAC), Shuttle vectors. Expression in eukaryotic cells, screening and selection of recombinants. cDNA cloning.

Unit IV: Applications of Medical Biotechnology (10hrs)

(a) Production of recombinant biopharmaceuticals: Insulin and Factor VIII.

(b) Gene Therapy: Strategies and limitations, Somatic and germline gene therapy, Vectors used in gene therapy (viral and non-viral) and their comparison.

(c) Polymerase chain reaction (PCR): Principle and applications. Importance of RT PCR in diagnosis of infectious diseases.

(d) Biosafety and ethical concerns in medical biotechnology.

Practical **(30 hrs)**

The below listed practicals are based on a guided project: 'PCR-based gene cloning' where students need to work in a group (4-6 students) to perform *in vivo* gene cloning. For this, any prokaryotic gene of interest may be chosen.

1. Plasmid DNA isolation
2. Designing of gene-specific primers
3. PCR amplification of the desired gene
4. Agarose gel analysis of plasmid DNA and PCR product(s).
5. Restriction digestion of plasmid DNA (vector) and PCR product (insert)
6. Ligation of the insert and vector using T4 DNA ligase
7. Preparation of competent cells (*E.coli*) using the calcium chloride method
8. Transformation of competent bacterial cells with ligation mixture along with suitable controls.
9. Screening of transformants by blue/white selection OR by colony PCR.

Essential Readings

- Bernard, R. G. Jack, J. P. and Cheryl, I. P. (2022). 6th Edition. *Molecular biotechnology: Principles and applications of recombinant DNA.*USA: ASM press, ISBN-978-1-683-6736-8
- Brown, T. A. (2016). 7th Edition. *Gene cloning and DNA analysis: An introduction.* NewYork, USA: John Wiley and Sons, ISBN-978-1-119-07256-0.
- Primrose, S. B. and Twyman, R. B. (2006). 7th Edition. *Principles of gene manipulation and genomics.* Oxford, UK: Blackwell Scientific Publishers. ISBN:978-1405135443.

Suggestive Readings

- Karp, G. (2020). 9th Edition. *Cell and molecular biology: Concepts and experiments.* NewJersey, USA: Wiley Publishers, ISBN-13: 978-1119598244
- Green, M.R. and Sambrook, J.(2012). 4th Edition, (three-volume set). Molecular cloning: A laboratory manual. New York, USA: Cold Spring Harbor Laboratory Press ISBN-13:978-1936113422.

DISCIPLINE SPECIFIC CORE COURSE –15 (BIOMED-DSC-15) HUMAN PATHOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical		
Human Pathology **BIOMED-DSC-15**	**4**	**3**	**-**	**1**	**XII Pass with Physics, Chemistry & biology**	**Basic knowledge of biology**

Learning objectives

The Learning objectives of this course are as follows:

- The course of Human Pathology will build upon the existing knowledge that the students have gained in physiology, cell biology, immunology to help them understand how alteration of normal state takes place and diseases develop. The curriculum is a systematic presentation of the various internal and external stimuli that initiate pathogenesis of diseases.
- Topics like cellular adaptations, inflammation, repair and hemodynamic disorders would assist students for better understanding of the subject.
- Study of neoplasia and a few infectious and non-infectious diseases would help in understanding and integration of all concepts.

Learning outcomes

Having successfully completed this course, students shall be able to learn and appreciate:

- Basics of disease in human body
- Adaptation of the human body under stress and injury
- Repair and healing of wounds
- Importance of early detection, diagnosis and treatment in any disease
- Prevention is better than cure and one needs to follow the discipline and healthy lifestyle

SYLLABUS OF BIOMED-DSC-15

Unit-I: Introduction, Cellular Adaptations, Cell Injury and Cell responses (7 hrs)

History of pathology with respect to medical science, basic definitions and familiarization with the common terms used in pathology, Causes and mechanisms of cell injury: reversible and irreversible injury, Overview of pathogenesis (salient steps) and Cellular responses: (subcellular, intracellular and intercellular response, Hyperplasia, Metaplasia, Hypertrophy, Atrophy, dysplasia, Necrosis, Apoptosis) with one example each.

Unit-II: Inflammation and its significance in Diseases (7 hrs)

Hallmarks of Inflammation and why inflammation ensues with suitable examples. General features of acute and chronic inflammation: Vascular changes, cellular events, termination of acute inflammatory response, Molecular mediators of inflammation, morphological effects and outcome of acute inflammation. Systemic effects of inflammation

Unit-III: Hemodynamic Pathology (7 hrs)

Edema, hyperaemia, congestion, hemorrhage, haemostasis and thrombosis, Embolism, Infarction, shock and hypertension.

Unit-IV: Tissue Repair and Remodeling (8 hrs)

Control of cell proliferation, maintenance of cellularity and differentiation, mechanism of tissue and organ regeneration. Wound healing by repair (first and second intention), scar formation and fibrosis, role of extracellular matrix. Angiogenesis and pathological aspects of remodeling (eg Atherosclerosis).

Unit-V: Tumor Pathology and Pathogenesis (8 hrs)

Definitions, nomenclature, characteristics of benign and malignant neoplasms, biology of tumor growth, mechanism of tumor invasion, metastasis cancer progression. Overview of genetic changes in transformed cells and cancer stem cells.

Unit-VI: Pathophysiology of Diseases (8 hrs)

Etiopathogenesis of following diseases: Communicable (Tuberculosis), Non-communicable (CAD, Myocardial Infarction and Asthma, Diabetes).

Practical **(30 hrs)**

(Wherever wet lab experiments are not possible the principles and concepts can be demonstrated through any other material or medium including videos/virtual labs etc.- minimum 8 practicals)

1. Urine Analysis: Gross examination of urine for colour, odor etc. Abnormal constituents like protein, ketone bodies, glucose, blood, urea (any three)
2. Histopathology Tissue Processing, embedding, sectioning. Staining and preparation of permanent histological slides.
3. Study of four distinct stages of alcoholic liver disease through permanent slide.
4. Study of histological slides showing hypertrophy, hyperplasia, dysplasia, leukemia, cirrhosis
5. Hematological assessment: Study and analysis of a blood report: CBC, KFT, LFT, lipid profile, thyroid profile.
6. Measurement of Erythrocyte Sedimentation Rate.
7. To perform Platelet count and its pathological significance
8. To perform reticulocyte count its pathological significance
9. Study of fractures
10. Diagnostic tests: Detection of various Diseases – Montoux test, CRP, VDRL, RA, Pregnancy (any two)

Essential Readings

- Kumar, V., Abbas, A.K., Aster, J.C. and Fausto, N. (2020). 10th Edition. Robbins and Cotran Pathologic basis of disease. Philadelphia, USA: Saunders Publishers. ISBN 13: 9780323531139.
- Cross, S.S. (2019). 7th Edition. Underwood's Pathology: a Clinical Approach: with STUDENT CONSULT Access ISBN-13: 978-0702072123.
- Sood, R. (2009). 6th Edition Volume 1 and 2. Medical laboratory technology methods and interpretations. India: Jaypee Brothers Medical Publishers. ISBN-13:978-8184484496. There is no recent edition but another book which i have not seen

Suggestive Readings

- Goswami, P; Kalla, A.R; Khatri, K. Dubey, A and Goswami, K. (2022) 1st Edition, Comprehensive Pathology Practical and Technical book , Scientific Publishers. ISBN: 9789392590313

  Copstead-Kirkhorn, L. C. (2021). 7th Edition. Pathophysiology. Philadelphia, USA: Saunders. ISBN: 9780323761550

Pool of DSEs

DISCIPLINE SPECIFIC ELECTIVE COURSE –(BIOMED-DSE-07) MEDICAL LABORATORY TECHNOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical /Practice		
Medical Lab Technology BIOMED-DSE-07	4	3	-	1	XII Pass with Physics, Chemistry & biology	Basic knowledge of biology

Learning objective

- The course on Medical Lab Technology would enable students to have an in-depth understanding of key concepts required in Clinical Laboratory set-ups.
- Students would be precisely trained to assist Physicians, in Laboratory set-ups and Hospitals, in handling samples, centrifuging, making slides, using specified stains etc, under proper guidance.
- After completion of the course, students would have an opportunity to work as research fellows in molecular diagnostics, molecular biotechnology companies and in research labs.

Learning outcomes

At the end of the course student would be able to:

- Develop specific laboratory skills, such as accurate pipetting, mixing, filtration, dispensing etc. using multi-step methods.
- Learn about ethics of working in biomedical labs and concerns about the medico legal aspects in Medical Laboratory Science.

- Comply with laboratory safety regulations and standards. Analyze and appreciate the quantum of biomedical waste that is generated and managed in various Labs.
- Exhibit skills essential to identify and determine blood group incompatibility. These skills would help them to analyze any mismatch during the blood transfusion reactions.

SYLLABUS FOR BIOMED-DSE-07

Unit 1: Clinical laboratory- Basic Principal and Procedure (06 hrs

Standardized clinical lab setup, Lab safety and First-aid measures, Laboratory Calculations. Definition of Biomedical Waste: Types of waste generated from Health Care Facility, Segregation, Collection, Transportation, Treatment, and Disposal (including color coding) of biomedical waste. Medical Ethics - Definition - Goal - Scope, Autonomy and informed consent - Right of patients, Obtaining an informed consent, Ethics in the profession of Medical Laboratory Science.

Unit II: Classical Instruments and Automation used in Medical Laboratory (09 hrs)

Working Principle of: Distillation setup, RO system, Weighing balance, Centrifuge, Bio safety cabinet, Spectrophotometer – Visible and UV-Visible, Water bath, Incubators, Hot Air Oven, Vortex mixer, Magnetic stirrer, Autoclave, Automation in clinical labs.

Unit-III: Clinical Biochemistry (10 hrs)

Organ Function Tests: Liver Function Tests, Renal Function Tests, Thyroid function tests and Pancreatic Function tests, Cardiac Profile, Diabetic Profile: Regulation of Blood Glucose, FBS, PP, Glucose tolerance test (GTT), Glycosylated Hemoglobin (HbA1C), Microalbuminuria etc. Gonadal Hormonal Profile: FSH, LH, Testosterone, Estradiol.

Unit-IV: Clinical Hematology (8 hrs)

Anticoagulants: Mechanism of action and Selection of anticoagulant- Wintrobe's mixture, EDTA, Heparin, Citrate, ACD. Erythropoiesis and Thrombopoiesis. Synthesis of hemoglobin and iron metabolism. Anemia: Definition, Causes, Classification & lab findings of Iron Deficiency Anemia,

Megaloblastic Anemia, Hemolytic Anemia. Hemoglobinopathies: Hemophilia, Thalassemia, Sickle cell anemia. Leukemia: Classification, Blood Picture, Differentiation of Blast Cells. Hematological tests- CBC, Fetal hemoglobin test, Osmotic fragility test, Serum iron, TIBC. Blood groups-RH and ABO system. Blood transfusion: Prerequisites of transfusion.

Unit-V: Body Fluid Examination (04 hrs)

Urine examination: Physical, Chemical, Microscopic and Culture. Routine examination of faeces. Examination of body fluids, Cell counts, Semen analysis, CSF (Cerebrospinal Fluid), Chemical Tests of Gastric Content, Collection and Transportation of specimens: General Principles, Containers, Rejection, Samples- Urine, Faeces, Sputum, Pus, Body fluids, Swab, Blood.

Unit-VI: Diagnostic Cytology and Molecular Biology (08 hrs)

Normal chromosomal structure, Pre and Post-natal Cytogenetics, Cancer and Tumor markers-FISH. Aspiration Cytology: Principles, Indications, Fine Needle Aspiration Cytology (FNAC) and Fluid cytology. Exfoliative cytology: Introduction, Preparation of vaginal & cervical smears, Papanicolaou technique for the staining of cervical smears (PAP smear). Histopathology: HE staining and IHC. Role of molecular biology in diagnostics, Common techniques used in molecular biology for the detection of infectious and non-infectious disease-PCR and its variants.Stem cell banking: Applications, Procedure & Requirements of cord blood cells.

Practical:

(Wherever wet lab experiments are not possible the principles and concepts can be demonstrated through any other material or medium including videos/virtual labs etc.)

1. Preparation of reagents routinely used in Medical Laboratories.
2. Standardization of 1.0 ml of volumetric pipette.
3. Working of various instruments used in Medical laboratory: Water baths, Incubators & Hot Air Oven, Centrifuges, Balances, Autoclave, pH Meter, Vortex mixer and magnetic stirrer. Maintenance of working manuals provided with the Instruments, formulating SOPs and LOG Books for each of the Instruments.
4. Calibration and standardization of spectrophotometer and other Instruments.

5. Selection of a filter for determining the intensity of a coloured solution.
6. Determination of an unknown concentration of a coloured solution by photometric method.
7. Organize a poster making competition for standard biomedical waste disposal procedure.
8. Medico legal experts maybe invited to deliver lecture on specific topics and share their experiences.
9. Visit to hospital for demonstration of Biomedical Waste Management.
10. Visit to hospital for demonstration of advanced instrumentation and auto-analyzers.

Essential Reading:

- Sood Ramnik. (2006). Textbook of Medical Laboratory Technology.*1st edition.*Jaypee Brothers Medical Publishers. ISBN: 978-8180615917.
- Dacie and Lewis. (2017).Practical Hematology. *12th edition.* Elsevier IE. ISBN: 978-0702069307.

Suggested Reading:

- Devlin, T.M. (2011).Textbook of Biochemistry with Clinical Correlations. *7th edition*. John Wiley & Sons, Inc. (New York). ISBN: 978-0-470-28173-4.
- R. S Khandpur. (2014).Handbook of Biomedical Instrumentation. *3rd edition.* McGraw-Hill Education ISBN 978-9339205430.
- Mary C. Haven, Gregory A. Tetrault, Jerald R. Schenke. (2010).Laboratory Instrumentation. *4th edition.*Wiley India Pvt Ltd. ISBN 978-8126528578.

DISCIPLINE SPECIFIC ELECTIVE COURSE –(BIOMED-DSE-08) INTELLECTUAL PROPERTY RIGHTS FOR BIOLOGISTS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical / Practice		
Intellectual Property Rights for Biologists **BIOMED-DSE-08**	**4**	**3**	**-**	**1**	**XII Pass with Physics, Chemistry & biology**	**Basic knowledge of biology**

Learning objectives:

Upon successful completion, the certificate level course on Intellectual Property Rights (IPR) aims to achieve the following objectives:

- Familiarize students with national and international IP protection systems.
- Provide a foundation for further career development and specialization in the field of Intellectual Property Rights.
- Enhance students' understanding of Intellectual Property Rights and their significance in various fields.
- Prepare students for future career opportunities in diverse fields such as patent office/law firm clerks, patent agents, trademark agents, patent attorneys, business strategists, enforcement officers, and banks.

Learning outcomes:

The syllabus on Intellectual Property Rights (IPR) for biologists aims to equip students with a comprehensive understanding of the subject. The course outcomes include:

- Knowledge of various forms of Intellectual Property Rights, including patents, copyrights, trademarks, and trade secrets, legal frameworks and regulations governing these rights.
- Understanding of Biological Innovations and how Intellectual Property Rights apply specifically to biological innovations, such as genetically modified organisms, biotechnological inventions, pharmaceuticals, and plant varieties.
- Importance of IPR in Biotechnology and Biomedical Research.innovation, safeguards investments, and promotes the commercialization of research outcomes.
- Understanding of IP Protection Strategies in the field of biology, drafting patent applications, conducting patent searches, and navigating the patent filing process, would learn alternative forms of protection such as copyrights and trademarks, applicable to biological inventions.
- Patents of Trade mark, copyright & Design: The students will understand the legal issues related to the trade marks, logo design and the works related to arts.
- Ethical and Legal Considerations: Students will develop an understanding of the ethical and legal implications associated with Intellectual Property Rights in biology and explore issues of patent infringement, licensing, technology transfer, and access to genetic resources.

SYLLABUS FOR BIOMED-DSE-08

Unit 1: Indian Patent Act and National Policy (12 hrs)

- Understanding Intellectual Property Rights: Introduction to Intellectual Property Rights. Significance of IP and its Role in society and business, Indian Patent Act and International treaties on IP Rights (Birds eye view)

- Patent Laws and Policies : History of Patent Protection & Rational, Introduction to Indian Patent Act and its sections, National IPR Policy

Unit II: Patent Protection Procedure (10 hrs)

Function of a patent and Patentability criteria, Elements of a Patent and Application forms (Form 1 and Form 2). Types of Patent Applications. Signification of Provisional patent Filing. PCT system, IP infringement and IP enforcement. Plant variety protection and farmers rights Acts and authority in India

Unit III: Patent Prosecution and IP issues in the current scenario (10 hrs)

First Examination Report (FER) and Responding to FER and hearing notice. Exercises and Ecommerce. Interaction Between IP Law and Competition Law regulating anti-competitive conduct of companies. IP Rights in digital environment and open source & open Access, Plagiarism. Importance of IP policy for an organization

Unit IV: Geographical indications & Trademarks (08 hrs)

Brief introduction to Legal framework for GIs in India and Impact of GI registration in India. Importance of Trademarks , Salient features of Trademark law of India and Trademark filing and prosecution in India. Madrid System

Unit V: Registration of Copyright, Designs and Lay out of Integrated circuits (05hrs)

Salient elements of Indian Copyright Act, Law relating to Layout designs of Integrated Circuits and Design Act. Registration of Copyrights, Designs, The Industrial Property System

Practical (30 hrs)

1. Drafting of specifications, claims and Patent Filing:

a) Drafting a patent specification
b) Claims Drafting
c) Patent filing – examples (05)
d) Exercises (05)

2. Industrial Designs and Layout design of Integrated circuits in India.
3. **Case studies** : (a) Patents as assets; (b) Drug pricing as a result of patent filing. (c) Recent cases related to the provisions of Section 3(d) of The Patents Act (Novartis vs Generic Manufacturers, Roche vs Cipla, Astra Zeneca Vs Natco Pharma). (d) Traditional knowledge and IP system;

   (e) Patenting of genetically-engineered micro-organism (Diamond Vs Chakravarthy); (f) Infringement cases; (g) Biopiracy cases *(Hoodia case, the Quinoa case, the Enola bean case, The neem patents);* (h) Trade secrets;

Essential Reading

- Intellectual property: A power tool for Economic Growth: Kamal Idris, Published by World Intellectual Property Organization, 2003. ISBN: 9280511149, 9789280511147
- Intellectual property and Human Development : Current trends and future Scenarios: T. Wong and G. Dutfield, Publisher Cambridge University Press, 2010. ISBN-13 : 978-0521190930
- Intellectual Property laws, Publisher: Universal Law Pub Co. P. Ltd., Delhi, 2015. ISBN-13 : 978-9350355855
- Intellectual property Law in India, Third Edition. Tamali Sen Gupta, Dhruv Shekhar, Publisher: Kluwer Law International, 2022. ISBN-13 : 9789403548111
- IIMA Business and Intellectual Property: Protect Your Ideas: Anurag K. Agarwal, Random House Publishers India Pvt. Limited, 2016. ISBN-13, 978-8184001402
- Technology Licensing and Development Agreements By Cynthia Cannady, Oxford University Press, 2013. ISBN-13: 978-0195385137
- Deborah Bouchoux : The Law of Trademarks, Copyright, Patents and Design, 2012. ISBN-13 , 978-1111648572.

Suggested Reading

- Office of the Controller General of Patents, Designs & Trade (CGPDTM): Manual of Geographical Indications Practice and Procedure; Manual of Patent Office Practice and Procedure; Manual of Designs Practice and Procedure; Revised Draft Manual of Trademarks Practice and Procedure.
- WIPO: WIPO Guide To Using Patent Information; WIPO Intellectual Property (IP) Audit, : WIPO Patent Drafting Manual, WIPO: The Value of Intellectual Property, Intangible Assets and Goodwill.
- Journal of Intellectual Property Rights 2007 and 2009.
- OECD Report on Patents and Economic Performance, IP guidelines from Patent office.
- Patentability of Software in India - (Lex Orbis).
- Acts : Indian Patent Act (amended), Indian Trademark Act (amended), Indian Copyright Act (amended), Indian Design Act (amended), Indian Plant variety and Farmers Right Act (Amended), Indian Biodiversity Act ,Indian GI Act

DISCIPLINE SPECIFIC ELECTIVE COURSE (BIOMED-DSE-09) DRUG DESIGN AND DISCOVERY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Drug Design and Discovery **BIOMED-DSE-09**	**4**	**3**	**-**	**1**	**XII Pass with Physics, Chemistry & biology**	**Basic Knowledge of Medicinal Chemistry**

Learning objectives

The Learning Objectives of this course are as follows:

1. The students will learn the fundamental computational techniques used in drug design and discovery that can be applied to study problems in biology.
2. The students will develop scientific and hands-on practical skills and abilities to plan and carry out drug design projects to design a druggable ligand using computer-aided drug design tools.
3. The students will develop skills that will be useful for higher studies in biomedical research.

Learning outcomes

Having successfully completed this course, students shall be able:

1. To use structural databases and computer programs to visualize three-dimensional structures of the proteins and to analyse the relationship between structure and function.
2. To describe molecular mechanics force fields, parameterization, and their limitations and procedure for energy minimization of simple systems.
3. To understand the principle and carry out basic steps involved in molecular dynamics simulations.
4. To interpret molecular dynamics results vis-a-vis their biological significance and limitations.
5. To understand the drug discovery process from molecules to new medicines, challenges encountered in the development, manufacturing, and regulatory approval.

SYLLABUS OF BIOMED -DSE- 9:

Unit I: Structure of Proteins (08 hrs)

Basics of biomolecular structure- primary, secondary tertiary and quaternary protein structures, Ramachandran plot, various parameters of protein secondary structure, introduction to peptide planarity, chirality, side-chain packing.

Molecular structure databases and visualization, The PDB and mmCIF formats, structure classification databases (SCOP and CATH), structure comparison and alignment, structure and functional assignment; secondary structure assignment, identifying structural domains in proteins.

Unit II: Proteins as Drug Targets (08 hrs)

Chemical attributes of drug targets, candidate gene prioritization, experimental validation, practical aspects and case studies, structural bioinformatics in drug discovery, protein structure prediction (homology modelling, fold recognition and, *ab initio* methods).

Unit III: Ligand and Pharmacophore-based screening methods for Lead Discovery (07 hrs)

Traditional and rational drug discovery methods, SAR, drug discovery pipeline, , hit and lead discovery, chemical databases and 2D substructure searching, , molecular descriptors and fingerprints, molecular similarity (or diversity) and similarity searching, selecting 'diverse sets of compounds', ligands and targets, chemical libraries, Lipinski's rule of five, QSAR, deriving and using 3D pharmacophores, 3D database searching, strengths and limitations of pharmacophore-based virtual screening

Unit IV: Structure based drug design methods (07 hrs)

Introduction to structure-based drug design methods, , , library design, binding site prediction, virtual screening, , docking and scoring methods, rigid and flexible docking, induced fit methods, *de novo* drug design, calculation of binding free energies molecular affinities and assemblies, design against protein-protein interactions.

Unit V: Introduction to Molecular Mechanics (08 hrs)

Scope of computational chemistry, Potential energy surfaces and optimization methods, , Introduction of *ab initio* methods. Electrostatics for force fields, basics of molecular dynamics simulation, introduction to Monte Carlo methods, electrostatics and solvation in biomolecules; calculation of free energy, Poisson-Boltzmann surface area.

Unit VI: Overview of the Clinical Evaluation and Development Process (07 hrs)

Introduction to drug development pathway: how to go from molecule to medicine, pharmacological and toxicological evaluation (prediction as well as *in vitro/ in vivo* methods), preclinical evaluation methods, an overview of the clinical process, clinical safety and pharmacovigilance.

Practical (30 hrs)

1. To predict secondary e.g PSIPred, and tertiary structures of proteins e.g. Swiss Model.
2. To calculate the total energy of a biomolecule e.g Charmm-GUI, AMBER, Chimera.
3. To build a ligand- *ab initio* from similar ligands with and without a known macromolecular target. SWISS-DOCK
4. To perform virtual screening and molecular docking using Autodock, Chimera.
5. To calculate energy minimization (EM) through different EM methods. Charmm-GUI, Chimera
6. To calculate binding free energy/MMPBSA through tools/ servers. AMBER
7. To perform MD simulations e.g. Charmm GUI, NAMD

8. To design a druggable ligand using computer-aided drug design tools.

Essential readings:

- Stromgaard, K., Krogsgaard-Larsen, P., & Madsen, U. (Eds.). (2016). Textbook of drug design and discovery, Fifth Edition. United States: Taylor & Francis. ISBN: 9781315354545.
- Gu, J., & Bourne, P. E. (Eds.). (2011). Structural bioinformatics, Second Edition. John Wiley & Sons. ISBN: 9781118210567.

Suggested readings:

- Rostron, C. (2020). Drug Design and Development. United Kingdom: Oxford University Press. ISBN: 9780198749318.
- Jhoti, H., & Leach, A. R. (Eds.). (2007). Structure-based drug discovery. Springer Netherlands. ISBN: 9781402044076.
- Gasteiger, J., & Engel, T. (Eds.). (2006). Chemoinformatics: a textbook. John Wiley & Sons. ISBN: 9783527306817.
- Bajorath, J., (2013) Chemoinformatics for Drug Discovery, John Wiley & Sons, ISBN: 978-1-118-13910-3.
- Leach, A. R. (2001). Molecular modelling: principles and applications. Pearson Education. ISBN: 9780582382107.

Pool of Generic Electives (Semester III Onwards)

GENERIC ELECTIVES (BIOMED-GE-04): PANDEMIC: CHALLENGES AND PREPAREDNESS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Pandemic: Challenges and Preparedness **BIOMED-GE-04**	**4**	**3**	**-**	**1**	**XII Passed**	**Basic knowledge of Biology-**

Learning Objectives

The Learning Objectives of this course are as follows:

- Current scenario of covid outbreak all over the world made everyone curious about pandemic, its challenges and how to prepare for dealing with it.
- In this context we designed this paper to make students aware about pandemics caused by various pathogens.
- Course describes different pandemic outbreaks and strategies adapted to combat the transmission of pathogen and their neutralization.
- The course also explains the different therapeutic approaches for the elimination and cure of patients suffering from pandemic infections.

Learning outcomes

The Learning Outcomes of this course are as follows:

- This unit helps students to understand the difference between endemic, epidemic and pandemic.
- It makes students familiar with various pandemics that have spread in last century and are caused by different types of pathogens such as virus, bacteria and fungi.
- Students will learn extent of spread of pandemic worldwide, its timeline, death rate and other statistical data.
- This unit will explain about the infectious diseases and process of invasion by microbes.

- It will also helpful to understand preventive measures of infection transmission and about mutant strains which are associated with recurrent outbreaks.
- Students will learn about different treatment strategies for the patients suffering from any infection, along with specific precautions for handling patients with co-morbidities/ elderly persons. The content of this unit will be helpful to explain about plasma therapy and booster doses. Some basic concept of psychological counselling will help to reduce the depression and anxiety faced by individuals during pandemic outbreak.
- This unit describes different methods and equipments used during an out breaks to minimize the contamination and cross transmission of infection and its spread.
- This will help students to learn the usage of PPE kits, mask, sanitization, quarantine and significance of social distancing.
- Current unit, emphasizes about the history of vaccine, process of active and passive immunization, different types of vaccines and their effectiveness to control any pandemic, vaccines developed in India against covid-19.
- Students will learn hands-on training for important techniques used in the detection and diagnosis of various types of pathogens and associated protocols.
- Last unit of the course will focus on awareness and sensitization programs (eg. SOPs), health and hygiene and many issues related to public health. Also possible global approach to strengthening the health infrastructure and disease surveillance shall be elaborated.

SYLLABUS OF BIOMED-GE-04

Unit I: Introduction to Pandemics: (07 Hrs)

General concepts of endemic, epidemic and pandemic; Historical background of pandemics: Rabies, plague, small pox, cholera, Spanish Influenza, AIDS, Avian bird flu, Swine flu, MERS, SARS and covid-19 pandemic. Timeline of Covid- 19. Extent of spread, worldwide statistics and death rate. Statistics of affected nations worldwide and in India; symptoms, extent of spread and containment

Unit II: Infectious Disease: (05 Hrs)

Structure of causative agent, invasion into human body, etiology and strategies currently used to block infection process, common mutant strains responsible further outbreaks of the pandemics

Unit III: Emerging Therapies, Natural Protection and strengthening immune system: (06 Hrs)

Drugs used to cure Avian bird flu, Swine flu and covid-19. First line of treatment at home additional care of person with co-morbidities / elderly person. Convalescent plasma therapy, Placebo effect, alternative therapies and immunity boosters used during pandemic and psychological counseling and countering depression.

Unit IV: Precautions and Prevention: (06 Hrs)

Quarantine protocol at home, for frequent fliers, hospital exposure, and workplace exposure. Precautionary measures such as PPE clothing, gloves, masks, social distancing, frequent washing of hands with soap, use of sanitizers, disinfection strategies.

Unit V: Vaccines: An effective tool for prevention of pandemics: (09 Hrs)

Historical perspective of vaccination, active and passive immunization; Vaccination drive, types of vaccines: Live attenuated vaccines, inactivated vaccines, subunit vaccines, multivalent vaccine, recombinant vector vaccines and DNA vaccines. Types of vaccines developed against Covid-19 worldwide, Their effectiveness and side effects. Vaccines developed in India for adults (Covaxin and Covishield) and vaccines for children. Limitations in effective development of covid-19 vaccine.

Unit VI: Techniques for diagnosis and detection of disease: (06 Hrs)

Antigen-antibody based detection techniques: Lateral flow technique, RAPID and RT-PCR test with complete protocol. Probes for virus detection.

Unit VII: Challenges and Preparedness: **(06 Hrs)**

Awareness and sensitization programs (SOPs) about general health and hygiene. Funding in research on issues related to public health and protection of environment. Global health approach with multidisciplinary collaborations. Pandemic preparedness and disease surveillance with strong health infrastructure.

Practical component (30 Hrs)

(Wherever wet lab experiments are not possible, the principles and concepts can be demonstrated through any other material or medium including videos/virtual labs etc.)

1. A case study of any one pandemic of past.
2. A case study of any one emerging pandemic.

3. Detection and diagnosis using antigen and antibody in the sample.
4. Demonstration of the PCR machine
5. Video demonstration of Covid-19 lateral flow technique
6. Demographic analysis of extent of spread both national and international.
7. Project work

Essential readings:

- Park, K. (2021), 26th Edition, *Park's Textbook of Preventive and Social Medicine*, Banarsidas Bhanot Publisher, ISBN-13 : . 978-9382219163
- Madigan M. T, Bender K.S, Buckley D.H, Sattley W.M, Stahl D.A (2021) 16th edition, Brock Biology of Microorganisms, Pearson Publisher, ISBN-139780135861717.
- Punt, J. Stranford, S. Jones, P. and Owen, J. (2019). 8 th Edition. Kuby Immunology. New York, USA: W.H. Freeman and Company. ISBN- 13: 978-1464189784.
- Willey, J., Sherwood, L., and Woolverton, C.J. (2016). 10th Edition. Prescott's microbiology. New York, USA: McGraw-Hill Education. ISBN-13: 978-1259281594.

Suggestive readings:

- Bonita, Ruth, Beaglehole, Robert, Kjellström, Tord & World Health Organization. (2 (2006nd edition. *Basic Epidemiology*, World Health Organization, ISBN 978 92 4 154707 9.

GENERIC ELECTIVE-05 (BIOMED-GE-05) UNDERSTANDING GENETIC BASIS OF DISEASES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Understanding Genetic Basis of Diseases **BIOMED-GE-05**	**4**	**3**	**-**	**1**	**XII Passed**	**Basic knowledge of Biology**

Learning Objectives

- The course is designed to provide insight about the importance of our genetic material.
- Students will be taught different types of changes that can take place in our genetic material and their repercussions.
- Students will be briefed as to how even minor changes in such a complex genetic system can lead to serious defects and disorders.

Learning outcomes

Having successfully completed this course, students will understand:

- The basic structural arrangement of our genetic material, its location within the cells and how it contributes to the unique features of each individual organism.
- Possible changes that can occur in the chromosomes at the macro level and what serious consequences this might have to the bearing individuals will be taught to the students.
- Not only the structural features but also the correct dose of the chromosomes present in our cells plays an important role in regulating normal body functioning. The same will be taught by citing examples of disorders associated with both extra as well as deficient chromosome numbers.
- The basic Mendelian pattern of inheritance. Students will also learn about different changes that can occur within a single gene, the diseases associated with them and how these changes can be inherited from one generation to the next.

SYLLABUS OF BIOMED-GE-05:

Unit I: Organization of human genome (09 Hrs)

Basic structure of DNA and chromosomes, euchromatin, heterochromatin. A brief overview of the human nuclear and mitochondrial genome, Concept of allele, haploid and diploid. Genetic Variations-Polymorphism vs mutations. Types of mutations: Somatic vs germline.

Unit II: Structural chromosomal abnormalities (06 Hrs)

Different types of structural chromosomal abnormalities (deletions, duplications, inversions and translocations) and their associated disorders (Cri-du-chat, Wolf-Hirschhorn, Charcot-Marie-Tooth disease Type 1, Pallister Killian, Hunter syndrome, Walker-Warburg, CML).

Unit III: Numerical Chromosomal abnormalities (06 Hrs)

Concept of non-disjunction anaphase lagging, genomic imprinting, uniparental disomy, euploidy, aneuploidy and associated disorders (Down Syndrome, Edward Syndrome, Patau Syndrome, Turner Syndrome, Klinefelter Syndrome, Prader-Willi Syndrome, Angelman Syndrome).

Unit IV: Monogenic Disorders (12 Hrs)

Mendelian inheritance (autosomal and sex-linked). Types of gene mutations (substitution, indels, dynamic) and associated disorders: (Achondroplasia, Huntington's disease, sickle cell anaemia, cystic fibrosis, thalassemia, Rett Syndrome, haemophilia, colour blindness, phenylketonuria, albinism, maple syrup urine disease, alkaptonuria).

Unit V: Other genetic disorders (07 Hrs)

Multifactorial disorders like Cancer, Alzheimer's disease, Arthritis, Diabetes

Unit VI: Genetic counselling (05 Hours)

Invasive and non-invasive methods of prenatal diagnosis and screening (Down syndrome, Thalassemia). Genetic counselling for risk assessment and possible treatment and management strategies.

Practical component (30 hrs)

(Wherever wet lab experiments are not possible, the principles and concepts can be demonstrated through any other material or medium including videos/virtual labs etc.)

1. PCR for polymorphism detection
2. Study of chromosomal abnormalities through karyotypes
3. Pedigree charts for disorders likeHuntington's disease, colour blindness, sickle cell anaemia
4. Pedigree analysis for determining inheritance and risk assessment
5. Case studies for disorders like cancer, diabetes
6. Case studies for genetic counselling
7. Determination of linkage and cross-over analysis (through two point test cross and three point test cross data).
8. Analysis of Tetrads from *Saccharomyces cerevisiae.*

Essential readings:

- Klug, W. S., Cummings, M., Spencer, C. A., Palladino, M. A., Darrell K. (2019). 12th Edition. Concepts of genetics. San Francisco, NY:Pearson ISBN-13: 9780134604718.
- Snustad, D.P. and Simmons, M.J. (2019). 7th Asia Edition. Principles of genetics. New York, USA: John Wiley and Sons. ISBN-13: 9781119657552.
- Strachan, T. and Read, A. (2018). 5th Edition. *Human molecular genetics*. Florida, USA: CRC Press, Garland Science. ISBN: 978-0815345893.
- Gardner E. J., Simmons M. J. and Snustad D. P. (2006). 8th edition Principles of genetics. USA. Wiley. ISBN-13: 978-8126510436.

Suggestive readings:

- Speicher, M.R., Antonarakis, S.E. and Motulsky, A.G. (2010). 4th Edition. *Vogel and Motulsky's Human genetics: Problems and approaches*. Berlin, Germany: Springer Verlag. ISBN: 978-3540376538.
- Wilson, G.N. (2000). 1st Edition. *Clinical genetics: A short course*. New York, USA: Wiley-Liss, ISBN: 978-0471298069.

GENERAL ELECTIVE -06 (BIOMED-GE -06): STATISTICAL CONCEPTS IN BIOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Statistical Concepts in Biology **BIOMED-GE-06**	**4**	**3**	**-**	**1**	**XII Passed**	**Basic knowledge of Biology**

Learning Objectives

- The purpose of the course is to teach fundamental concepts and techniques of descriptive and inferential statistics with applications in health care, medicine, public health, and epidemiology.
- The course will prepare students to collect, analyze and interpret biological data sets and provide quantitative evidence to support scientific conclusions

Learning outcomes

Having successfully completed this course, students shall be able to:

- Recognise the importance of statistics in biological sciences, understand the different types of data and difference between population and sample.
- Learn how to group data into tabular form and present it in various graphical forms.
- Learn the calculation and application of measures of central tendency and measures of dispersion in data representation.
- Understand concepts of discrete and conditional probability and apply these concepts to biological applications.
- Understand the significance and basic concepts of correlation and simple linear regression analysis.
- The student will be able to learn the process of hypothesis formulation, and utilization of appropriate test of significance for biological data analysis.

SYLLABUS OF BIOMED-GE-06

Unit I: Types of Statistical Data and Measurement (06 Hrs)

Importance of Statistical Studies in Biology. Types of Data in Biology: Qualitative, Quantitative and Random (Discrete and Continuous) Variables. Scales of Measurement: Nominal, Ordinal, Interval and Ratio scale. Sample and Population.

Unit II: Data Organization and Graphical Representation (06 Hrs)

Ordered array, Grouped Frequency Distribution Table. Charts and Diagrams: Bar diagram, Pie chart, Histogram, Frequency Polygon, Line chart, Cumulative Frequency Curve and Scatter diagram.

Unit III: Descriptive Statistics (10 Hrs)

Measures of Central Tendency: Mean, Mode, Median, Partition Values. Measures of Dispersion: Range, Standard Deviation, Coefficient of Variance, Covariance. Concept and Importance of Skewness and Kurtosis.

Unit IV: Probability (07 Hrs)

Concepts of Probability, Addition and Multiplication Rules and Conditional Probability. Use of Probability in Assessing Validity (Sensitivity/Specificity) of a Diagnostic Test.

Unit V: Correlation and Linear Regression Analysis (07 Hrs)

Correlation Analysis: Scatter diagram, Pearson's and Spearman's Coefficients of Correlation, Coefficient of Determination. Regression Analysis: Concept of Line of Best Fit, Equations of Lines of Regression and their Applications in Biostatistics.

Unit V: Inferential Statistics (09 Hours)

Sampling Distribution and Standard Error. Concept of Null and Alternate Hypothesis. Biological Data Analysis using Z-Test (Single Mean and Difference of Means), Student's T-Test (Single Mean, Difference of Means and Paired T-Test) and F-Test.

Practical (30 hrs)

The experiments are designed for students to learn the usage of statistical methods for biological data analysis using spreadsheets.

1. Hands-on training of Microsoft excel software to perform basic operations, commands and functions.
2. Organize the given data set and make frequency distribution table.
3. Present data in various charts or diagrams (bar diagrams, histograms, pie charts, Line graph and scatter diagrams).
4. Computing measures of central tendency and dispersion using biological data.
5. Correlation analysis to determine the strength of relationship between a set of dependent and independent variable.
6. Compute regression equations to predict the value of dependent variable.
7. Perform Z-test (Single Mean and Difference of Means).
8. Perform student's t-test (Single Mean, Difference of Means and Paired T-Test)

Essential readings:

- Daniel, W.W. and Cross, C.L. (2019). 11th Edition. Biostatistics: A foundation for analysis in the health sciences. New York, USA: John Wiley & Sons. ISBN-13: 9781119588825.
- Triola M.M., Triola M.F., Roy J. (2019). 2nd Edition. Biostatistics for Biological and Health Sciences. Harlow, UK: Pearson Education Ltd. ISBN-13: 9789353436537.
- Pagano, M. and Gauvrean, K. (2018). 2nd Edition. Principles of Biostatistics. California, USA: Duxbury Press. ISBN-13: 9781138593145.
- Schmuller, J. (2016). 5th Edition. Statistical Analysis with Excel for Dummies. New York, USA: John Wiley & Sons. ISBN-13: 9781119844549.

Suggestive readings:

- Zar, J.H. (2014). 5th Edition. Biostatistical analysis. USA: Pearson. ISBN-13: 9789332536678.
- Glantz, S. (2012). 7th Edition. Primer of biostatistics. New York, USA: McGraw-Hill Medical. ISBN-13: 9780071781503

GENERIC ELECTIVE COURSE -07 (BIOMED-GE-07): BIOCHEMICAL BASIS OF LIFE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Biochemical Basis of Life **BIOMED-GE-07**	**4**	**3**	**-**	**1**	**XII Passed**	**Basic knowledge of Biology**

Learning Objectives

The Learning Objectives of this course are as follows:

- The objective of this course is to address how the wonderful and remarkable properties of living organisms arise from the various biomolecules, the building blocks.
- The course focuses on the chemical complexity and organization of molecules in a living cell, extraction and transformation of energy
- It gives insights into the changes that occurred during the gradual evolution of life.

Learning outcomes

The Learning Outcomes of this course are as follows:

- The fundamental Chemistry of Life: Students will gain an understanding of the elements found in living systems and appreciate the importance of water as the solvent for living systems. It is important to learn about the units used for expressing the biochemical basis of a living system. Students will learn the unit system for the molecular mass of biomolecules, units used for the concentration of solutions, and units for expressing the distances, etc.
- Cellular foundations of life**:** A stepwise organization of a living system, starting from the smallest unit to an entire living organism would be the focal point in this unit.
- Molecular basis of life**:** Students will understand the monomeric forms of different types of biomolecules. In addition, the relationship between the structure and function of biomolecules would also be learnt.

- Physical foundation of life: Students would learn the concept of enthalpy, entropy and free energy in a living system and understand the importance of the energy currency and the significance of coupled biochemical reactions.
- Biochemical events in the origin of life: Students would learn the origin of life and the nature of transformative changes that occurred for life to evolve from the pre-biotic world to the modern times.

SYLLABUS OF BIOMED-GE-07

Unit I: The fundamentals of chemistry of life (06 Hrs)

Carbon chemistry of life, structure and importance of water, diverse inorganic ions, major elements (C, H, O, N, S), trace elements. Units used in biochemistry such as those expressed for the atomic mass unit (Daltons), concentration (moles/litre) and distance (in nanometer-scale).

Unit II: Cellular foundations of life (06 Hrs)

Levels of organization in a living system. The important features of living cells, subcellular organelles in Eukaryotic cells and subcellular organization in Prokaryotic cells. Brief description on Phototrophs, Chemotrophs, Autotrophs and Heterotrophs.

Unit III: Molecular basis of life (12 Hrs)

Common functional groups and linkages in biomolecules.

Macromolecules: classification, building blocks, structural and functional diversity.

Structural and functional forms of macromolecules: Proteins (collagen, albumin, hormones (insulin), enzyme (proteases, nucleases, amylases and lipases); Polysaccharides (starch, glycogen, cellulose), Nucleic acids, Lipids (cholesterol and triglycerides).

Unit IV: Physical foundation of life (11 Hrs)

Enthalpy, Entropy, Free Energy, Standard Free Energy, Equilibrium constant, Open and Closed systems, Endergonic and Exergonic reactions, the energy currency in a biological system (ATP), Energy coupling reactions.

Unit V: Biochemical events in the origin of life (10 Hrs)

Landmark events in the evolution of life. Biochemical basis of the origin of aerobic and anaerobic world. Evolution of biological monomers and polymers from pre-biotic compounds. Properties of DNA as

genetic material. Structural and functional analysis of eukaryotes and prokaryotes, with suitable examples.

Practical components **(30 Hours)**

(Wherever wet lab experiments are not possible, the principles and concepts can be demonstrated through any other material or medium including videos/virtual labs etc.)

1. Preparation of buffer at a specific molarity and pH.
2. Numerical problems based on Enthalpy, Free Energy and Entropy.
3. Comparative analysis of protein content in egg white and egg yolk, using Biuret's method.
4. Detection of a glucose polymer (starch) in rice/potato/corn, using iodine test.
5. To assess the differential solubility of lipids in aqueous and organic solvents.
6. Extraction of DNA from plant/microbial cells by the spooling method.
7. Demonstration of agarose gel electrophoresis for analyzing the isolated DNA.
8. To compare the structural features of a prokaryotic and eukaryotic cell by studying their electron micrographs.

Essential readings

- Nelson, D.L. and Cox, M.M. (2021). *Lehninger: Principles of Biochemistry* (7th ed.). W.H. Freeman & Company (New York), ISBN:13:9781319322328
- Pratt, C.W. and Cornely, K.(2017). *Essential Biochemistry* (4th ed.) John Wiley& Sons, Inc.ISBN:9781119012375
- Plummer, D.T. (2012). *An Introduction to Practical Biochemistry*. New Delhi, India: McGraw-Hill College.

Suggestive readings

- Berg, J., Gatto, G., Stryer, L. and Tymoczko, J. L. (2019). *Biochemistry*. New York, USA: W. H. Freeman and Company.
- Campbell, M. K. and Farrell, S. O. (2017) 9th Edition. *Biochemistry*. Boston, USA: Brooks/Cole Cengage Learning. ISBN-13: 978-1305961135

GENERAL ELECTIVE -08 (BIOMED-GE-08): DISEASES IN EVERYDAY LIFE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Diseases in Everyday Life **BIOMED-GE-08**	**4**	**3**	**-**	**1**	**XII Passed**	**Basic knowledge of Biology**

Learning Objectives

The Learning Objectives of this course are as follows:

- Diseases are not new to human beings but if we are familiar with them, it is easy to manage.
- The course has been designed to familiarize students with most common diseases in everyday life. Students will be able to differentiate between infectious and non-infectious diseases.
- Students will learn about the causative organism of these diseases and their symptoms. A brief description related to treatment and management methods will also be included in the syllabus.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Initially students will understand about diseases and various approaches to classify different types of diseases.
- A detailed description of various diseases caused by infectious agents has been included in the syllabus. As all the diseases are not infectious, students will learn differentiate between communicable and non-communicable diseases with examples of most common disorders.
- A brief overview about degenerative disorders such as Parkinson's, Alzheimer's, Osteoarthritis, Osteoporosis have also been included in the syllabus to enrich the learning of students.
- Majority of human population is malnourished and suffer from many deficiency disorders, thus students are familiarized with common deficiency diseases such as Anaemia, Goitre, Kwashiorkor, Beri-Beri, Scurvy and Rickets have also been included.

- Many cell types in blood and immune components sometime leads to anomalies which may be associated with any disorder. Keeping this in mind, some common immune disorders are briefly added to the syllabus.

SYLLABUS OF BIOMED-GE-08

Unit I: Introduction: (12 Hrs)

Disease classification: Overview of disease condition related to human body: Communicable and non-communicable diseases. Five "F' of communicable diseases [Food (contaminated), Fingers (unclean), Faeces, Fomites, and Flies] Genetic Diseases, Toxic effect of drugs and Chemicals (toxic gases and radiation),Auto immune disorders, nutritional deficiency (Effect of nutrition) (deficiency of Vitamin B12, Vitamin C), Route of transmission, Infectious dose, Communication by vector, Allergic diseases

Unit II: Communicable (Infectious) diseases: (09 Hrs)

a. Diseases transmitted directly: air borne (Mycobacterium) and water borne (Cholera) food borne (typhoid).Epidemiology, cause, clinical feature and prevention. STDs (with examples).Diseases caused by Virus, bacteria, fungus and protozoa/ helminths.
b. Vector borne diseases: mosquito, (Malaria, dengue and Chikungunya), cockroaches and flies, how they spread diseases and methods of prevention, diagnosis (basic).

Unit III: Non-communicable diseases: (06 Hrs)

a. Diabetes, hypertension and cancer (Brief discussion and special emphasis on prevention).
b. Down syndrome and colour blindness.

Unit IV: Degenerative Diseases: (07 Hrs)

Parkinson's/Alzheimer's, Osteoarthritis, Osteoporosis.(Special focuses on factors related to Lifestyle).

Unit V: Deficiency Diseases: (05 Hrs)

Anaemia, Goitre, Kwashiorkor, Beri- Beri, Scurvy and Rickets (Main emphasis on nutritional factors)

Unit VI: Blood disorders and Autoimmune Disease: (06 Hrs)

a. Sickle cell anaemia,haemophilia, thalassemia, blood incompatibility disorder, Rh factor.
b. Graves' disease, Rheumatoid Arthritis and Psoriasis.

Practical component **(30 Hrs)**

(Wherever wet lab experiments are not possible, the principles and concepts can be demonstrated through any other material or medium including videos/virtual labs etc.)

1. A case study of any communicable disease outbreak.
2. A case study on the prevalence of degenerative diseases (Parkinson's diseases/ Alzheimer's) in our country
3. Study different parameters responsible for malnutrition in human population and appropriate management strategies
4. Brief case study non communicable disease associated with lifestyle (hypertension and colourblindness)
5. How much we are aware about immune disorders? Give a small intra college survey to support the statement.
6. Preparation of a brief flow chart depicting classification of diseases.
7. Case study about minamata disease / Hiroshima and Nagasaki / Bhopal gas tragedy.
8. Effect of pesticides on human beings (taking example of anyone state in India).
9. Identification of common diseases caused by vectors.

Essential readings:

- Park, K. (2021), 26th Edition, *Park's Textbook of Preventive and Social Medicine*, Banarsidas Bhanot Publisher, ISBN-13 : . 978-9382219163
- Punt, J. Stranford, S. Jones, P. and Owen, J. (2019). 8 th Edition. Kuby Immunology. New York, USA: W.H. Freeman and Company. ISBN- 13: 978-1464189784.
- Cappuccino, J.G. and Sherman, N. (2013). 10th Edition. Microbiology: A laboratory manual. California, USA: Benjamin Cumming. ISBN-13: 978-0321840226.
- Willey, J., Sherwood, L., and Woolverton, C.J. (2016). 10th Edition. Prescott's microbiology. New York, USA: McGraw-Hill Education. ISBN-13: 978-1259281594

Suggestive readings:

- Tille, P. (2013). 13th Edition. Bailey & Scott's diagnostic microbiology. Missouri, USA: Mosby Publishers. ISBN-13: 978-0323083300.

- Madigan, M.T., Martinko, J.M., Stahl, D.A. and Clark, D.P. (2010). 13th Edition. Brock biology of microorganisms. California, USA: Benjamin Cumming. ISBN-13: 978- 0321649638.

- Tortora, G.J., Funke, B.R. and Case C.L. (2006). 9th Edition. Microbiology: An introduction. California, USA: Benjamin Cummings. ISBN-13: 978-0536292117.
- Bonita, Ruth, Beaglehole, Robert, Kjellström, Tord & World Health Organization. (2 (2006nd edition. *Basic Epidemiology*, World Health Organization, ISBN 978 92 4 154707 9.
- Pelczar, M.J (2001). 5th Edition. Microbiology. New York, USA: McGraw Hill International. ISBN-13: 9780074623206.

GENERAL ELECTIVE -09 (BIOMED-GE-09): HEALTH AND BODY DEFENSE SYSTEM

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Health and Body Defense System **BIOMED-GE-09**	**4**	**3**	**-**	**1**	**XII Passed**	**Basic knowledge of Biology**

Learning Objectives

The Learning Objectives of this course are as follows:

- Characteristics of a healthy body and ways to improve one's health and well-being.
- Body defense system is a comprehensive study of the organization and functioning of the immune system with its network of cells and molecules. Understanding the biology of the immune system is key to developing strategies towards prevention and cure to a number of disorders and diseases that result due to malfunctioning and dysregulation of the immune system.
- This paper covers the organization and functioning of the various branches of immune system, namely, Innate and adaptive Immunity to combat different pathogens. Various Immunological techniques will also be taught to the students.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Students learn various aspects of health and immune system in normal and infectious stage which equips students to design better strategies for combating the immunological disorders. Students will be given an overview to various pathogens and immune system in Invertebrates and Vertebrates.
- Students learn historical perspective of the extensive field of Immunology. They are introduced to the important concepts of Immunology.

- Students will be familiarized with origin and maturation of all blood cell types in bone marrow and thymus. They will understand the process of haematopoiesis, functions of various types of cells and roles played by them in generating immune responses against pathogens.
- The unit entails different barriers of Innate Immunity, Cells, Complement system, Patterns on the pathogens recognized by receptors of Innate Immune system, pathogen killing by the immune cells and concept & the importance of the Inflammation in an Immune response.
- Students will learn about the cells of adaptive immune system, the concept of antigen, antibody molecules and role of major histocompatibility complex & associated cells in the processing and presentation of antigen. The students will explore the branches of adaptive immunity - the humoral and cell mediated, their components and interplay of these components in combating the infection. The students will also be able to understand the significance of various kinds of growth factors and cytokines in the activations of various lymphocytes
- The students will be given knowledge about the principle, methodology and applications of various laboratory techniques involving antigen-antibody reaction.
- Vaccine based immunotherapies and their designing will assist them to think about new path for combating with pathogens and working mechanisms of immune system.
- The students will be made aware about the importance of diet and lifestyle in promoting Immunity and health.

SYLLABUS OF BIOMED-GE-09

Unit I: Hallmarks of Health (03 Hrs)

Basic aspects of healthy body: Cells, Tissue and Organ system, difference between prokaryotes and eukaryotes. Key differences between bacteria, fungi, protozoans and viruses.

Requirements for ahealthy body according to age and gender. Survival strategies of host against the invading pathogens: bacterial defense against bacteriophage, immune system of Plants, invertebrates (Mollusca) and vertebrates

Unit II: Introduction to Immune system: (03 Hrs)

Historical background, general concepts of the immune system, innate and adaptive immunity; active and passive immunity.

Unit III: Organization of Immune System: (03 Hrs)

Lymphoid Organs: thymus, bone marrow and haematopoiesis, lymph nodes, spleen.

Unit IV: Innate Immune response (08 Hrs)

- Physical and Chemical barriers
- Cells of the innate immune system: Natural Killer cells, monocytes and macrophages; neutrophils, eosinophils, basophils, mast cells and dendritic cells: Structure, Phenotypic and functional aspects.
- Complement system: Components of the complement activation classical, alternative and lectin pathways; biological consequence of complement activation.
- Mechanisms of pathogen killing by macrophages and neutrophils: Receptor/non receptor mediated endocytosis, phagosome formation, phagolysosome formation, respiratory burst phenomenon, basic pathways of oxygen dependent and oxygen independent killing mechanism.
- Inflammation: concept, hall marks of inflammation.

Unit V: Adaptive Immune Response (10 Hrs)

- Cells of the adaptive immune system: T and B lymphocytes
- Characteristics of adaptive immune response: self and non-self recognition, specificity, diversity and memory, primary and secondary immune response, allergen/ allergy.
- Antigens: antigenicity and immunogenicity, haptens. Properties (foreignness, molecular size, heterogeneity, route and dose of administration, solubility and degradability); host factors (genotypes, gender, nutrition) Blood group antigens and transfusion reactions.
- Basic function of Major Histocompatibility Complex
- Importance of Antigen presentation
- Types of antibodies and their function,
- Cell mediated immune response: Major steps in T cell differentiation in thymus: thymic selection, self MHC restriction, T cell receptor assembly. Phenotypic characteristics of naïve T-cells ($CD4^+$ and $CD8^+$ T-cells). Migration of naïve T-cells from thymus to secondary lymphoid organs. Activation of T-cells, proliferation of clonally selected T cells and their effector functions, concepts of T-helper 1 (TH_1) and T-helper 2 (TH_2) cells. Basic introduction to cytokines: IL-2, IL-4 and IFN-γ

- Contribution of MHC, B-cell receptor (BCR) and T-cell receptor (TCR) to diversity in adaptive immune response

Unit VI: Immunological Principles of Various Reactions and Techniques (05 Hrs)

Basic concepts of antigen-antibody interactions (epitope-paratope), Affinity and avidity, cross reactivity, precipitation, agglutination, immunodiffusion, immune-electrophoresis, ELISA (indirect, sandwich, competitive, chemiluminescence, and ELISPOT assay), western blotting, immunofluorescence microscopy, immunohistochemistry and lateral flow assay.

Unit VII: Vaccines and Immunotherapeutics (04 Hrs)

Contributions of Sir Edward Jenner and Louis Pasteur in vaccine development; Major types of vaccine and their characteristics, importance of adjuvants in the development of artificial and active immunity. The concept of passive immunity and immunotherapeutics (Plasma therapy in COVID-19, anti-rabies therapy, anti-toxin therapy), National immunization programme

Unit VIII: Diet, Nutrition and Life style in promoting health and Immunity (09 Hrs)

Importance of a well- balanced nutrition, the role of Immunity boosters and immunomodulators from kitchen shelf (curcumin , ginseng, lycopene &Giloy), vitamins (Vitamin A, B, C, D and Vitamin B12) and minerals (Zn) in improving health and defense.Role of probiotics, gut microbiota andprebioticsin regulating health and immunity. Role of physical activity and emotional & Mental state in regulation of Immunity status, holistic health and happiness. A primer on our traditional practices, yogic lifestyle and meditation in creating homeostasis in the body (balancing Vatta, Pitta and Kapha) will also be given.

Practical component (30 Hours)

(Wherever wet lab experiments are not possible, the principles and concepts can be demonstrated through any other material or medium including videos/virtual labs etc.)

1. Visualization of antigen-antibody interaction or To perform Immuno-diffusion by Ouchterlony method
2. To perform Immuno-diffusion by Mancini Method
3. To perform Complement fixation assay
4. To perform sandwich dot ELISA
5. To perform Widal test (Indirect/passive agglutination) for the detection of typhoid antigen and blood group determination (direct agglutination)

6. To perform SARS-CoV-2 Rapid Antigen Test(Lateral flow Assay)
7. Project work based on historical research work in the area of immunology.
8. Case studies on hypersensitivity reactions(seafood hypersensitivity, Erythroblastosis Fetalis)

Essential readings:

- Punt, J. Stranford, S. Jones, P. and Owen, J. (2019). 8th Edition. *Kuby Immunology*. New York, USA: W.H. Freeman and Company. ISBN- 13: 978-1464189784.
- Delves, P.J. Martin, S.J. Burton, D.R. and Roitt, I. M. (2017). 13th Edition. *Roitt's Essential Immunology*. New Jersey, USA: Wiley-Blackwell Science. ISBN: 13: 978- 1118415771.

Suggestive readings:

- Ananthanarayan R and Jayaram Paniker CK (Author), Reba Kanungo (Editor) (2020) Ananthanarayan and Paniker's Textbook of Microbiology, Eleventh Edition. Universities Press (India) Pvt. ISBN **9389211433**
- Practical Ayurveda: Find Out Who You Are and What You Need to Bring Balance to Your Life Paperback – 5 June 2018 by Sivananda Yoga Vedanta Centre. Publisher : DK; Illustrated : edition (5 June 2018) ISBN-10 : ISBN-13 ,1465468498 978-1465468499.
- Willey, J. Sherwood, L and Woolverton, C.J. (2016). 10th Edition. *Prescott's Microbiology*. New York, USA: McGraw-Hill Education. ISBN-13:978-1259281594.
- Satomi Oshima; Zhen-Bo Cao; Koichiro Oka (2015) 'Physical Activity, Exercise, Sedentary, Behavior and Health' Springer Tokyo Heidelberg New York Dordrecht London ISBN 978-4-431-55333-5 (eBook)
- Guglielmo M Trovato (2012) Behavior, nutrition and lifestyle in a comprehensive health and disease paradigm: skills and knowledge for a predictive, preventive and personalized medicine. Trovato EPMA Journal 2012, 3:8 (Review Article)
- Kindt T. J., Osborne B. A. , Goldsby R. A. (2007). 6th Edition *Kuby Immunology*. New York, USA: W.H. Freeman and Company. ISBN-13: 978-1429202114 ISBN-10: 1429202114.
- Hay, F.C. and Westwood, O.M.R. (2002). 4th Edition. *Practical Immunology*. New Jersey, USA: Blackwell Science. ISBN:9780865429611
- BYG-002 Yoga and Health, Block 4 Yogic Lifestyle, School of Health Science, Indira Gandhi National Open University (https://drive.google.com/file/d/10j00rWXLsCEV5cTbzK-hM43ezlNvn0hl/view)

GENERAL ELECTIVE -10 (BIOMED-GE -10): UNDERSTANDING THE HUMAN BODY SYSTEMS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Understanding The Human Body System BIOMED-GE-10	4	3	-	1	XII Passed	Basic knowledge of Biology

Learning Objectives

The Learning Objectives of this course are as follows:

- This is an introductory course dealing with the structure and function of the human organism and the issues facing the human in today's world.
- It is intended for students with limited science background. It would make them familiar with basic physiological concepts.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Students will have an increased understanding and appreciation for the workings of the human body. They will be familiar with the terminology and physiology of the major organ systems
- They will be able to explain the relation between form and function in biology, as expressed in molecular, cellular, and whole-organism physiology.
- Students will be able to recognize the anatomical structures and explain the physiological functions of the body systems.
- Recognize the anatomical structures and explain the physiological functions of the body systems. Develop scientific terminology to describe the parts and processes of the human body.

SYLLABUS OF BIOMED-GE-10:

Unit I: Body organization and Integumentary system (05 Hrs)

General Anatomy of the body, Introduction to various kinds of body planes, cavities and their membranes, Tissues level of organization and classification (Types, origin, function & repair). Structure and functions of human skin. Blood as connective tissue

Unit II: Nervous System (06 Hrs)

Organization of the Central and Peripheral nervous system. Motor and sensory physiology. Nerve Physiology and Sensory Physiology (Special Senses)

Unit III: Muscular and Skeletal System (04 Hrs)

Functional anatomy of muscular system, types of muscles, neuromuscular junction structure property and transmission, General characteristics of muscle contraction using skeletal muscle as example.

Unit IV: Cardiovascular and Respiratory System (06 Hrs)

Functional Anatomy of heart, The Cardiac Cycle, Electrocardiogram.

Circulatory system: Blood vessels, hemodynamics and regulatory mechanisms.

Lymphatic circulation - hemodynamics and regulation, micro-circulation

Functional Anatomy of the respiratory system. Mechanisms of pulmonary and alveolar, gaseous exchange, transport of gases, respiratory and nervous control and regulation of respiration.

Unit V: Endocrine System (06 Hrs)

General mechanism of hormone action, Structure, function and regulation of the major gland of the body: Pituitary, Hypothalamus, Thyroid, Pancreas and Adrenals. Basic concepts about hypo and hyper secretion of hormones.

Unit VI: Gastrointestinal system (06 Hrs)

Anatomy and histology of the digestive tract. General principles of gut motility secretion, digestion, absorption and assimilation.

Unit VII: Renal Physiology (06 Hrs)

Functional anatomy of kidney, histology of nephron and its physiology, process of urine formation. Urinary bladder: structure, micturition and its regulation

Unit VII: Reproductive System (06 Hrs)

Structure and function of male and female reproductive organs. Basic concepts of gametogenesis (oogenesis and spermatogenesis), fertilization, implantation, menopause and contraception.

Practical component **(30 Hrs)**

(Wherever wet lab experiments are not possible, the principles and concepts can be demonstrated through any other material or medium including videos/virtual labs etc.)

1. To prepare a blood smear and identify different types of white blood cells.
2. Estimation of hemoglobin (Sahli's method)
3. Physiological data acquisition based experiments (ECG/PFT/EMG).
4. Blood Pressure recordings in humans.
5. To study a simple reflex arc
6. To study the sensation of taste, touch and smell.
7. To study various types of contraceptives (condoms, IUD‟s, oral and injectable contraceptives)
8. To study different human organs and their sections through permanent histological slides T.S. of brain, spinal cord, skeletal fibers, cardiac muscles, skeletal muscles, T. S. of thyroid, liver, thymus, spleen, ovary, artery, vein, capillaries, testis, pancreas, esophagus, adrenal, kidney (cortex and medulla), urinary bladder, fallopian tubes, epididymis, lungs, trachea, heart.(Minimum 8 slides covering the systems mentioned in theory.)

Essential readings:

- Guyton and Hall Textbook of Medical Physiology, 14th edition (2020), J. E. Hall; W B Saunders and Company, ebook ISBN: 978-0-3236-4003-9; Hardcover ISBN: 978-0-3235-9712-8
- Principles of Anatomy and Physiology, 16th edition (2020), Gerard J. Tortora and Bryan H. Derrickson; Wiley and Sons, ISBN: 978-1-119-66268-6. (e book), ISBN: 978-1-119-70438-6 (for print book).
- Textbook of Practical Physiology, 9th edition (2019), CL Ghai; Jaypee Publication, ISBN-9789352705320.
- Human Physiology, 16th edition (2011), Stuart I. Fox; Tata McGraw Hill, ISBN10: 1260720462; ISBN13: 978-1-26-072046-4.

Suggestive readings:

- Ganong's Review of Medical physiology, 26th edition (2019), K. E. Barett, S. M. Barman, S. Boitano and H. Brooks; Tata McGraw Hill, ISBN 978-1-26-012240-4 (for ebook) ISBN:978-1-26-012241-1 (for print Book)

GENERAL ELECTIVE -11 (BIOMED-GE -11): DRUGS AND VACCINES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Drugs and Vaccines **BIOMED-GE-11**	**4**	**3**	**-**	**1**	**XII Passed**	**Basic knowledge of Biology**

Learning Objectives

The Learning Objectives of this course are as follows:

- This course integrates the concept of chemistry, biochemistry, pharmacology and immunology for understanding the process of drug action in the body.
- The focus is on various targets present in body that can be useful in rational drug design.
- The course entails different approaches to drug discovery and design, sources of drugs and measurement of drug target interaction.
- It also aims to understand the human immune system and the immunotherapies used to combat disease.

Learning outcomes

The Learning Outcomes of this course are as follows: Having successfully completed this course, students shall be able to learn and appreciate:

- The student will understand the concept of drugs and vaccines, their effect on body and different routes used to administer them in body.
- They will be able to identify the various drug targets in the body
- Students will learn to identify various parameters for comparison of different drugs with ways to analyse how safe a drug is for use. Also, they will understand the overall process of drug design, various approaches used in drug discovery and the concept of rational drug design. They will also learn about mode of action of different types of Drugs
- Students will also learn about the Organization, Properties and Functioning of the Immune System. Innate and adaptive immune responses. Antigen-antibody interactions.

- Students will familiarize themselves with the need for vaccines, concepts and principles of vaccines, types of vaccines and available vaccines: BCG, DPT, HBV, HPV, Polio, Covid-19. Finally, the student will be able to grasp the use of immuno-therapeutics in dealing with certain infections rabies vaccine, plasma therapy) and the concept of using antibodies as drug carriers.

SYLLABUS OF BIOMED-GE- 11

Unit-I: Introduction of Drugs (06 Hrs)

Definition and scope of Drugs, source of drugs, routes of drug administration and their advantages anddisadvantages (with emphasis on oral and I.V), Bioavailability and first pass metabolism, drug formulations and delivery agents. Introduction to pharmacodynamics and pharmacokinetics (brief introduction on ADME)

Unit-II: Drug Target Classification and Measurement of Drug Receptor Interactions (10 Hrs)

Classification of Drug targets: Proteins, Nucleic acid, lipids and carbohydrates

Proteins as drug targets: Receptors: Receptor role, Ion channels, membrane bound enzyme activation, concept of Agonist, antagonists, partial agonist (Cholinergic agonist and antagonist, Dopaminergic agonist and antagonist)

Enzymes: Enzyme inhibitors (competitive, non- competitive (ethylene glycol for antifreeze poisoning, ACE inhibitor, Aspirin, 6-mercapto purine)

Analysis of ligand receptor interaction, relationship between dose and effect (graded and quantal response). Affinity, Efficacy and potency, therapeutic index.

Unit-III: Drug Design and Mechanism of Action of Drugs (07 Hours)

Introduction to Drug design, Analogue synthesis versus rational drug design, Strategies in the search for new lead compounds (random and non-random screening), SAR, Concept of prodrugs (to tackle toxicity and membrane permeability)

Mode of action of following class of drugs: Antipyretics (Paracetamol), Anti-inflammatory drugs (Ibuprofen), Anticancer drugs (cisplatin), Antibiotics and Antibacterial drugs (sulphonamides, Penicillin), Antifungal drugs (Amphotericin B).

Unit-IV: Introduction to the Immune System (12 Hours)

Historical background, organization of the immune system, lymphoid organs: Bone marrow, thymus, lymph nodes and spleen.

Innate Immune System: Physical and chemical barriers, brief overview of the cells of the innate immune system: Natural Killer cells, monocytes and macrophages; neutrophils, eosinophils, basophils, mast cells and dendritic cells, Mechanisms of pathogen killing by phagocytes: macrophages and neutrophils, Inflammation: brief overview

Adaptive Immune System: Cells of the adaptive immune system: B and T lymphocytes: characteristics viz; Specificity, diversity, immunologic memory, self and nonself recognition. B cell and T cell development, Antigens: Properties: foreignness, molecular size, route and dose of administration, Antibodies: Structure, classes and distribution, B cell and T cell epitopes, MHC molecules: structure and functions, Antigen processing and presentation on MHC molecules

Unit V: Vaccines and Immuno-therapeutics (10 Hours)

Principles and concepts of vaccines: History of vaccines- Contribution of Sir Edward Jenner and Louis Pasteur I n vaccine development. Major types of vaccines and their characteristics: while cell based vaccines, subunit based vaccines, vectored vaccines, nucleic acid based vaccines. Importance of adjuvants in development of artificial and active immunity.

Common vaccines: BCG, DPT, HBV, HPV, Polio, Covid-19. Immuno-therapeutics: Rabies Vaccine and Plasma therapy. Antibody and receptors as drug carriers and targets. National immunization program.

Practical component (30 Hours)

(Wherever wet lab experiments are not possible, the principles and concepts can be demonstrated through any other material or medium including videos/virtual labs etc.)

1. To study different routes of administration of drugs.
2. To study the presence of acetaminophen in a given sample.
3. Quantitative estimation of acetaminophen in a given sample using spectrophotometer.
4. Extraction of caffeine from tea leaves.
5. Study the absorption properties of caffeine using spectrophotometer

6. Phytochemical screening and qualitative chemical examination of various plant constituents by solvent extraction. (Detection of alkaloids, carbohydrates, glycosides, phytosterols, oils and fats, tannins, proteins, gums).
7. To record CRC of acetylcholine using guinea pig ileum/ rat intestine (virtually)
8. Study of competitive antagonism using acetylcholine and atropine.
9. Determination of dose ratio.
10. To perform blood grouping (direct agglutination)
11. To perform Widal test (indirect agglutination).

Essential readings:

- Punt, J. Stranford, S. Jones, P. and Owen, J. (2019). 8th Edition. Kuby Immunology. New York, USA: W.H. Freeman and Company. ISBN- 13: 978-1464189784.
- Patrick G.I. (2017). 6 th Edition. Introduction to medicinal chemistry. Oxford, UK: Oxford University Press. ISBN-13: 978-0198749691.
- Silverman, R.B. and Holladay, M.W. (2014). 3 rd Edition. The organic chemistry of drug design and drug action. San Diego, USA: Elsevier, Academic Press. ISBN-13: 9780123820303.

Suggestive readings:

- Wermuth, C.G., Aldous, D., Raboisson, P. and Rognan, D. (2015). 4 th Edition. The practice of medicinal chemistry. San Diego, USA: Elsevier, Academic Press. ISBN-13: 978-0124172050.
- Nogrady, T. and Weaver, D.F. (2005). 3rd Edition. Medicinal chemistry: A molecular and biochemical approach. New York, USA: Oxford University Press. ISBN-13: 978-0195104561.
- King F.D. (2003). 2 nd Edition. Principles and practice of medicinal chemistry. London, UK: The Royal Society of Chemistry. ISBN-13: 978-0854046317.
- Hay, F.C. and Westwood, O.M.R. (2002). 4th Edition. Practical Immunology. New Jersey, USA: Blackwell Science. ISBN: 9780865429611.
- Gringauz, A. (1996). 1 st Edition. Introduction to medicinal chemistry: How drugs act and why. Brooklyn, New York, USA: Wiley VCH. ISBN-13: 978-0471185451.

SEMESTER- VI
B.Sc (Hons.) Biomedical Science

Discipline Specific Core Course (BIOMED-DSCs)

DISCIPLINE SPECIFIC CORE COURSE -16 (BIOMED-DSC-16) BIOPHYSICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Biophysics **BIOMED-DSC-16**	4	3	-	1	**XII Pass with Physics, Chemistry & biology**	**Basic knowledge of Bio- physical Techniques**

Learning objectives

The Learning objectives of this course are as follows:

- The course will demonstrate the role of fundamentals of chemistry and physics in understanding the biological processes including the methods to study the structure and functions of macro molecules and the chemical reactions occurring in living cells.
- The students will be able to learn theoretical basis of various analytical and biomedical techniques including various spectroscopic techniques, hydrodynamic methods, molecular biophysics.
- The students will be introduced to various physical principles responsible for maintaining the basic cellular function and integrity of biological membranes including transport across them.

Learning outcomes

Having successfully completed this course, students shall be able to learn and appreciate:

- The interdisciplinary frontier of science in which the principles and techniques of physics are applied to understand biological problems at every level, from atoms and molecules to cells, organisms and environment and analyze the data generated through spectroscopic techniques such as UV-Visible, Infrared, Mass spectroscopy, NMR, etc.
- Understand the concepts of viscosity and sedimentation methods and their biological applications.
- Comprehend the thermodynamics of the structure of biomolecules and consequences of their structural instability and apply their biophysics knowledge to analyze the known experiments and to develop newer experimental methods for new biophysical applications.

- Understand the physical basis of transport across biological membranes. Additionally, they will be able to perform the experiments and demonstrate the interpretation of the data and further be able to deliver scientific conclusions. Further, they can apply their biophysics knowledge to analyze the known experiments and to develop newer experimental methods for new biophysical applications.

SYLLABUS OF BIOMED-DSC-16

Unit-I: Basic Spectroscopic Techniques (10 hrs)

Basic principles of electromagnetic radiation: Energy, wavelength, wave numbers and frequency, Review of electronic structure of molecules.

UV-visible spectrophotometry: Beer Lambert law, Light absorption and its transmittance, Factors affecting absorption properties of achromophore, Structural analyses of DNA/protein using absorption of UV light.

Fluorescence spectroscopy: Theory of fluorescence, Static and dynamic quenching, Resonance energy transfer, Fluorescent probes in the study of protein and nucleic acids.

Infra-red spectroscopy: Theory of IR, Identification of exchangeable hydrogen, Number of hydrogen bonds, Tautomeric forms, Biological significance of IR.

Unit II: Advanced Biophysical Techniques (10 hrs)

Optical rotatory dispersion and Circular dichroism: Principle of ORD and CD, Analysis of secondary structure of proteins (denatured and native form) and nucleic acids using CD.

Magnetic resonance spectroscopy: Basic theory of NMR, Chemical shift, Medical applications of NMR.

Mass Spectrometry (MALDI-TOF): Physical basis and uses of MS in the analysis of proteins/nucleic acids.

X-ray crystallography: Diffraction, Bragg's law and electron density maps (concept of R-factor and B-factor), Growing of crystals (Hanging drop method), Biological applications of X-ray crystallography.

Unit-III: Hydrodynamic Methods (10 hrs)

Viscosity: Methods of measurement of viscosity, Specific and intrinsic viscosity, Relationship between viscosity and molecular weight, Measurement of viscoelasticity of DNA.

Sedimentation: Physical basis of centrifugation, Svedberg equation, Differential and density gradient centrifugation, Preparative and analytical ultracentrifugation techniques, Fractionation of cellular components using centrifugation with examples.

Flow Cytometry: Basic principle of flow cytometry and cell sorting, Detection strategies in flow cytometry.

Unit-IV: Molecular Biophysics (7 hrs)

Basic thermodynamics: Concept of entropy, enthalpy, free energy change, heat capacity. Forces involved in biomolecular interactions with examples: Configuration versus conformation, Vander Waals interactions,

Electrostatic interactions, Stacking interactions, Hydrogen bond and hydrophobic effect, Ramachandran plot.

Supercoiling of DNA: Linking number, twist and writhe.

Protein folding: Marginal stability of proteins, Thermodynamic and kinetic basis of protein folding.

Unit-V: Biological Membranes (8 hrs)

Biophysical basis of transport of solutes and ions, Fick's laws of diffusion, Transport equation, Membrane potential, an introduction to ionophores.

Practical (30 hrs)

(Wherever wet lab experiments are not possible the principles and concepts can be demonstrated through any other material or medium including videos/virtual labs etc.)

1. Effect of different solvents on UV absorption spectra of proteins.
2. Study of structural changes of proteins at different pH using UV spectrophotometry.
3. Study of structural changes of proteins at different temperature using UV-spectrophotometry.
4. Determination of melting temperature of DNA.
5. Study the effect of temperature on the viscosity of a macromolecule (Protein/DNA).
6. Use of viscometer in the study of ligand binding to DNA/protein.
7. Crystallization of enzyme lysozyme using hanging drop method.
8. Analysis, identification and comparison of various spectra (UV, NMR, MS, IR) of simple organic compounds.

Essential readings

- Skoog D.A., Holler, F.J. and Crouch, S.R. (2017). 7thEdition. Principles of Instrumental Analysis. Boston, USA: Cengage Learning. ISBN-13:978-1305577213.
- Sheehan, D. (2009). 2nd Edition. Physical biochemistry: Principles and applications. Oxford, UK: JohnWiley.ISBN-13:978-0470856031.
- Freifelder, 1983). 2nd Edition. Physical biochemistry: Applications to biochemistry and molecular biology. NewYork, USA: W.H. Freeman and Company. ISBN-13:978-0716714446.

Suggestive readings

- Hofmann, A. and Clokie, S. (2018). 8th Edition. Wilson and Walker's principles and techniques of biochemistry and molecular biology. Cambridge, UK: Cambridge University Press. ISBN: 978-1108716987.

- Watson, J.D., Baker T.A., Bell, S.P., Gann, A., Levine, M., Losick, R.(2013).7th Edition. Molecular Biology of the Gene. New York, USA: Cold Spring Harbor Laboratory Press, ISBN-13:978-0321762436.
- Tinoco I., Sauer, K. Wang, J.C., Puglisi, J.D., Harbison, G. and Rovnyak, D. (2013). 5thEdition. Physical chemistry: Principles and applications in biological sciences Pearson, Prentice Hall. ISBN-13:978-0136056065.
- Kuriyan, J., Konforti, B. and Wemmer, D. (2012). 1st Edition. The molecules of life: Physical and chemical principles. New York, USA: Garland Science. ISBN-13: 978-0815341888.
- Frauen felder, H., Chan, S.S. and Chan, W.S. (2010). 1stEdition. The physics of proteins: An introduction to biological physics and molecular biophysics. NewYork, USA:Springer, ISBN-13: 978-1441910431.
- Rhodes, G. (2006). 3rd Edition. Crystallography made crystal clear: Guide for users of macro molecular models. Massachusetts, USA: Academic Press. ISBN-13:978-0125870733.
- Van Holde, K.E., Jhonson, W.C. and Shing Ho, P. (2005). 2nd Edition. Principles of physical biochemistry. NewJersey, USA: Prentice Hall Inc.ISBN-13:978-0130464279
- Branden, C. and Tooze, J. (1999). 2nd Edition. Introduction to protein structure. New York, USA: Garland Science, ISBN-13: 978-0815323051.
- Hoppe, W., Lohmann, W., Markl, H. and Ziegler, H.(1983). 1st Edition. Biophysics. Berlin, Germany: Springer-Verlag and Heidelberg GmbH & Co., ISBN-13:978-3540120834.
- Cantor, C.R. Schimmel, P.R. (1980). 1st Edition. Biophysical Chemistry. New York, USA: W.H. Freeman and Company. ISBN-13:9780716711889.

DISCIPLINE SPECIFIC CORE COURSE- 17 (BIOMED-DSC-17) HUMAN GENETICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Human Genetics **BIOMED-DSC-17**	**4**	**3**	**-**	**1**	**XII Pass with Physics, Chem & biology**	**Basic Knowledge of Genetics**

Learning objectives

The Learning objectives of this course are as follows:

- This course is designed to develop an appreciation for the groundwork carried out so far in areas that contributed to our understanding of human genetics and diseases, relates to how it has been built on the numerous genetic studies carried out over decades to contribute to the understanding of the relationship between genotype and phenotype.
- The course will also introduce the sequencing of the Human Genome and new methods of investigating biological function, research into the genetic and molecular basis of human disease.

Learning outcomes

Having successfully completed this course, students shall be able to:

- Students will understand the patterns of inheritance of monogenic traits from pedigree data for both Mendelian and non-Mendelian traits.
- They will comprehend the techniques and advances in the analysis of DNA, identification of genes involved in diseases, and gene/sequence mapping strategies.
- Students will be able to describe objectives, tools, approaches and outcomes of the Human Genome Project (HGP). They will be aware of the ethical and societal issues raised by the new knowledge derived by using new technologies.
- Students will be able to apply principles of genetics at population level.
- They will understand the genetic basis of common diseases and methods of prenatal diagnosis.
- Students will be able to proficiently explore relevant literature, web sites and databases for research into human genetics.

SYLLABUS OF BIOMED-DSC-17:

Unit- I: Inheritance for Monogenic Traits (08 hrs)

History of Human Genetics: Early Greek concepts about inheritance, Cytogenetics history (the works of Winiwater, Painter and Tjio and Levan), Landmark achievements of Galton, Garrod etc. Patterns of Inheritance: Recapitulation of principles of human inheritance pattern through pedigree analysis: Autosomal inheritance- dominant, recessive, sex-linked inheritance, sex- limited and sex- influenced traits and mitochondrial inheritance. Deviations from the basic pedigree patterns- non-penetrance, variable expressivity, pleiotropy, late onset, anticipation, consanguinity and its effects, mosaicism and chimerism, genetic heterogeneity, uniparental disomy, and genomic imprinting.

Unit- II: Genetic and Physical Maps (06 hrs)

Genetic markers and their applications. Overview of genetic maps. Physical maps (different types- restriction, cytogenetic maps, use of FISH in physical mapping, radiation hybrids and clone libraries in STS mapping)

Unit- III: Identification of Human Disease Genes (08 hrs)

Principles and strategies, positional and candidate gene approaches, (examples- HD, CFTR), concept of twin and adoption studies.DNA sequencing (Principles of Maxam-Gilbert and Sanger Method, introduction to NGS with an example of illumina based sequencing), DNA fingerprinting, polymorphism screening (genotyping of SNPs and microsatellite markers)

Unit- IV: Human Genome Project (04 hrs)

History, organization and goals of human genome project, Tools (Vectors- BAC, PAC, YAC)) and approaches (Hierarchical and whole genome shotgun sequencing), outcomes ethical issues and applications in human diseases

Unit- V: Population Genetics (05 hrs)

Genotypic and allelic frequencies, Hardy-Weinberg Equilibrium, linkage disequilibrium, haplotype construction (two loci using SNPs and/or microsatellites).

Unit- VI: Clinical Genetics (08 hrs)

Inborn errors of metabolism and their genetic basis (example- phenylketonuria), genetic disorders of hematopoietic systems (examples- sickle cell anemia and thalassemia), genetic basis of color blindness, familial cancers (example- retinoblastoma) and mental retardation.

Prenatal Diagnosis: Brief introduction, methods of prenatal diagnosis (invasive and non-invasive such as Amniocentesis, Chorionic villus sampling, Ultrasonography, Fetoscopy, Maternal serum screening, Fetal cells in maternal blood) and its application with examples of Aneuploidy and Thalassemia.

Pharmacogenetics and Pharmacogenomics(genetic polymorphism in drug metabolism genes e.g. cytP450 and GST and their effect on drug metabolism and drug response), genetic counseling.

Unit- VII: Guided short project (06 hrs)

Short project involving, data analysis/*in silico* analysis of genomes/ literature-based project; guiding the students through identification of the project, discussions on approach and methodology, and strategies for data analysis.

Practical (30 hrs)

(Wherever wet lab experiments are not possible the principles and concepts can be demonstrated through any other material or medium including videos/virtual labs etc.)

1. Pedigree construction of some common phenotypic characteristics of humans.
2. Pedigree analysis and risk assessment.
3. Restriction mapping/ STS mapping from the given data.
4. Demonstration of DNA fingerprinting.
5. Polymorphism analysis using PCR.
6. Analysis of the given DNA sequencing data based on Maxam-Gilbert and Sanger sequencing methods.
7. Study of Hardy-Weinberg equilibrium by PTC tasting and ABO blood grouping.
8. Video based demonstration of tools for prenatal diagnosis.
9. Exploring DNA, RNA, and Protein Sequence Databases for retrieval of a desired human sequence and sequence alignment using BLAST.
10. Preparation of human metaphase chromosomes and Giemsa staining.

Essential readings:

- Strachan, T. and Read, A. (2018). 5th Edition. *Human molecular genetics*. Florida, USA: CRC Press, Garland Science. ISBN: 978-0815345893.
- Pasternak, J.N. (2005). 2nd Edition. *An introduction to human molecular genetics*. New York, USA: Wiley-Liss. ISBN: 978-0-471-47426-5.

- Cantor, C.R. and Smith, C.L. (1999). 1st Edition. *Genomics: The science and technology behind the human genome project*. New York, USA: Wiley-Interscience. ISBN: 9780471599081.

Suggestive readings:

- Brown, T.A. (2023). 5th Edition. *Genomes 4*. New York, USA: Garland Science. ISBN-13: 978-0815345084.
- Speicher, M.R., Antonarakis, S.E. and Motulsky, A.G. (2010). 4th Edition. *Vogel and Motulsky's Human genetics: Problems and approaches*. Berlin, Germany: Springer Verlag. ISBN: 978-3540376538.
- Wilson, G.N. (2000). 1st Edition. *Clinical genetics: A short course*. New York, USA: Wiley-Liss, ISBN: 978-047129806.

DISCIPLINE SPECIFIC CORE COURSE- 18 (BIOMED-DSC-18) TOXICOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Toxicology **BIOMED-DSC-18**	**4**	**3**	**-**	**1**	**XII Pass with Physics, Chemistry & biology**	**Basic Knowledge of Pharmacology**

Learning objective

- The present course content is designed to provide the basics of toxicology. The course would help to understand the influence of toxic substances on various body organs. It provides insight into measurement of toxicity, principles of exposure, molecular mechanism of toxicity and toxicants that harm our environment.
- Relevant importance has been given to those topics which can build a strong foundation in the subject, based on which, facts can be assimilated during subsequent higher studies.

Learning outcomes

- Familiarity with the form of toxicology practiced during antiquities across the world; and how the modern form of toxicology emerged. Nature of toxic substances and how humans are exposed to them. Spectrum of toxic responses. Types of toxicity and factors affecting the toxicity by a chemical.

- Basics methods and biological parameters used to measure toxicity of a chemical. General mechanisms whereby toxicants cause toxicity; interaction of toxicants with target bio-molecules in the body and resultant toxicity. Basics of safety evaluation of toxicants.
- Mechanisms/processes involved in absorption, transport, chemical modification and excretion of toxicants from the body.
- Through examples of few common classes of toxicants such as pesticides and metals, students are able to learn; how humans are exposed to them, their mechanism of action and symptoms of toxicity.
- The process by which certain anthropogenic chemicals cause harm to wildlife/ ecosystem.
- Basics of management, clinical evaluation of toxic patients, methods used to prevent further toxicity, and use of antidotes.

SYLLABUS OF BIOMED-DSC-18

Unit-I: Introduction (07hrs)

Brief history, Different areas of modern toxicology, Classification of toxic substances, various definitions of toxicological significance, characteristic and types of toxic responses and tolerance to toxicants.

Unit-II: Toxic exposure, response, evaluation of toxicity and mechanism of toxicity (14hrs)

Effect of duration, frequency, route and site of exposure of xenobiotics on its toxicity, various types of dose response relationships, assumptions in deriving dose response, LD50, LC50, TD50, NOAEL, ADI, MOE and therapeutic index. Concept of ultimate toxicant, general mechanisms by which various toxicants cause toxicity (up to molecular and cellular level).

Unit-III: Fate of xenobiotics in human body (12 hrs)

Absorption, distribution, excretion and metabolism of xenobiotics (biotransformation, Phase-I reactions including oxidations, hydrolysis, reductions and phase II conjugation reactions). Toxic insult to liver, its susceptibility to toxicants with reference to any two hepatotoxicants.

Unit-IV: Toxic agents (06hrs)

Human exposure, mechanism of action and resultant toxicities of the following xenobiotics: Metals: lead, arsenic; Pesticides: organophosphates, bipyridyl compounds and anticoagulant pesticides.

Unit-V: Eco-toxicology (02hrs)

Brief introduction to avian and aquatic toxicology, movement and effect of toxic compounds in food chain (DDT, mercury), concept of bio-accumulation, bio-magnification.

Unit-VI: Clinical toxicology (04hrs)

Management of poisoned patients, clinical methods to decrease absorption and enhance excretion of toxicants from the body, use of antidotes.

Practical (30 hrs)

(Wherever wet lab experiments are not possible, the principles and concepts can be demonstrated through any other material or medium including videos/virtual labs etc.)

1. Separation of a mixture of benzoic acid, beta- naphthol and naphthalene by solvent extraction and
2. Identification of their functional Groups.
3. Determination of Dissolved oxygen (DO) using Winkler method.
4. Determination of Biological oxygen demand (BOD) of water.
5. To perform quantitative estimation of residual chlorine in water samples.
6. To determine the total hardness of water by complexo-metric method using EDTA.
7. To determine acid value of the given oil sample.
8. To estimate formaldehyde content of given sample.
9. Calculation of LD50 value of an insecticide from the data provided.
10. Determination of COD (chemical oxygen demand) of the given water sample.

Essential reading

- Klaassen, C.D and Watkins, J.B. (2021). 4th Edition. *Casarett and Doull's Essentials of Toxicology.* McGraw Hill, ISBN-13: .1260452297-978
- Klaassen, C.D. (2018). 9th Edition. *Casarett and Doull's Toxicology, The Basic Science of the Poisons.* McGraw Hill. ISBN-13: 978-1259863745.

Suggestive readings

- Stine, K.E. and Brown T.M (2015). 3rd Edition. *Principles of Toxicology.* Florida, USA: CRC Press. ISBN-13: 9781466503434.
- Timbrell. J. (2001). 3rd Edition. *Introduction to Toxicology.* CRC Press. ISBN-13: 978-0415247634.

Pool of DSEs

DISCIPLINE SPECIFIC ELECTIVE COURSE– 10 (BIOMED-DSE-10)
FUNDAMENTALS OF NEUROSCIENCE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the Course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Fundamentals of Neuroscience BIOMED-DSE-10	4	3	-	1	XII Pass with Physics, Chemistry & biology	Basic knowledge of Physiology, biochemistry and Cell biology	Biomedical Science

Learning Objectives

The Learning Objectives of this course are as follows:

- To provide a comprehensive overview of the basic principles and concepts in neuroscience, including the structure and function of the nervous system, neural communication, and basic neuroanatomy.
- The paper aims to investigate the neural mechanisms underlying a particular phenomenon, such as perception, memory, learning, decision-making, or emotion.
- To prepare students to undertake further research in the area of neuroscience.

Learning outcomes

Having successfully completed this course, students shall be able:

- To understand the fundamental organization, function and development of the nervous system.
- To conceptualize and compare the role of different neurotransmitters.
- To understand the mechanisms of different disorders associated with the nervous system.
- To appreciate the principles and applications of different tools and techniques used in neuroscience.
- To proficiently explore relevant websites and databases related to latest initiatives in the field of neuroscience.

SYLLABUS OF BIOMED-DSE-10

Unit I: Introduction to Neuroscience (10hrs)

Brief overview of Neuroanatomy: Timeline of the nervous system development, Organization of Central Nervous System (CNS), Peripheral Nervous System (PNS), Autonomic Nervous System (ANS). Meninges and Cerebrospinal Fluid (CSF), Vascular Supply of the Brain: blood brain barrier and blood CSF barrier.

Unit II: Neurochemistry and Neurophysiology (10hrs)

Introduction to Neurochemistry, overview of synaptic transmission and cellular signaling. Neurotransmitters and their receptors: Acetylcholine, Glutamate, GABA, Dopamine, Serotonin and Epinephrine. Neuropeptides, Gut-Brain axis. Membrane potentials, Post synaptic potential and synaptic integration, Neuromuscular junctions.

Unit III: Brain and Behavior (06 hrs)

Neuroplasticity, learning and memory, cognition, sleep, circadian rhythm, Affective immunology: emotions and Immunity

Unit IV: Diseases of the nervous system (10hrs)

Overview of neuroinflammation, Neurochemical and molecular mechanisms of different neurological conditions: Autism, Attention Deficit Hyperactivity Disorder (ADHD), Epilepsy, Anxiety and depression, Alzheimer Disease, Parkinson Disease/ Schizophrenia, and Amyotrophic Lateral Sclerosis (ALS)

Unit V: Tools and Techniques in Neuroscience / Kaleidoscopic Dimensions of Neuroscience(09hrs)

Methods and tools to study brain and behavior: neuroimaging techniques (MRI, PET), electrophysiological studies (EEG). *In vitro* models of neurosciences including cell culture, tissue culture and animal models. Introduction to Neuroinformatics.

Practical (30 hrs)

(Wherever wet lab experiments are not possible the principles and concepts can be demonstrated through any other material or medium including videos/virtual labs etc.)

1. Gross examination of the brain and its different parts (human and animal) through videos.
2. Histology of different brain sections through permanent slides.
3. Microanatomy of neurons using virtual labs.
4. Electrophysiological studies using physiological data acquisition systems (teaching modules)

5. Exploration and extraction of information about the brain from NCBI, NIF, Allen Brain Atlas, the virtual brain, Human Connectome Project, etc.
6. Behavioral studies using virtual lab- Motor functions tests (Rotarod Test, Grip Strength Test), Cognitive Functions tests – Learning and memory related test (Water Maze, open field test, etc.)

Essential readings:

- Kandel, E. R., Koester, J. D., Mack, S.H., et al. (2021). 6th Edition. Principles of Neural Science. McGraw Hill, ISBN: 978-1259642234
- Sontheimer, H. (2021). 2nd Edition. Diseases of the Nervous System. Elsevier, ISBN: 978-0128212288
- Squire, L., Spitzer, N. C., Berg, D., et al. (2012). 4th Edition. Fundamental Neuroscience, Academic Press, ISBN: 978-0123858702
- Brady, S. T., Siegel, G. J., Albers, R. W., et al. (2011). 8th Edition. Basic Neurochemistry. Academic Press, ISBN: 0125468075
- Zigmond, M. J., Bloom, F. E., Roberts, J. L., et al. (2008). 3rd Edition. Fundamental Neuroscience. Academic Press, ISBN: 978-0123740199

Suggested readings:

- Sanes, D. H., Reh, T. A., Harris, W. A., et al. (2019). 4th Edition. Development of the Nervous system. Academic Press, ISBN: 978-0128039960
- Gilbert, S. F., & Barresi, M. J. F. (2016). 11th Edition. Developmental Biology. Sinauer Associates Inc, ISBN: 978-1605354705
- Hall, J.E. (2015). 13th Edition. Guyton and Hall textbook of Medical Physiology. Philadelphia, USA: W B Saunders and Company. ISBN-13: 978-1455770052
- Aminoff, M., Greenberg, D., Simon, R. P. (2015). 9th Edition. Clinical Neurology. McGraw Hill Education, ISBN: 978-0071841429

DISCIPLINE SPECIFIC ELECTIVE COURSE –11 (BIOMED-DSE-11) GREEN CHEMISTRY METHODS IN PHARMACEUTICAL AND INDUSTRIAL APPLICATIONS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical /Practice			
Green Chemistry Methods in Pharmaceutical and Industrial Applications **BIOMED-DSE-11**	**4**	**3**	**-**	**1**	**XII Pass with Physics, Chemistry & biology**	**Basic knowledge of organic reactions**	**Biomedical Science**

Learning objectives

The objective of this course is to make students aware of

- The toxicity, hazard and risk of chemical substances as well as to be aware of the importance of green chemistry in today's world.
- To familiarize students with environment-friendly alternatives for the synthesis of various chemicals.
- ·Course will help to understand the usage of various green approaches in synthetic chemistry and their applications for sustainable development.

Learning outcomes

After studying this course students should be able to:

- Understand the twelve principles of green chemistry and gain an in-depth understanding of chemical toxicity, hazard, and associated risk.
- Learn to create non-toxic chemicals, products, and processes than current alternatives.
- Comprehend the importance of inherently safer design for accident prevention
- ·Understand the advantages of using catalysts and biocatalysts, use of renewable feedstocks and green solvents for environmental protection.
- Appreciate the role of green chemistry in innovatively solving environmental issues.
- Green chemistry is a mean to maximize revenues, productivity, and sustainability while producing zero waste. They are also motivated to practice green chemistry by success stories and real-life examples.

SYLLABUS OF BIOMED-DSE-11

Unit I: Introduction to Green Chemistry (10 hrs)

Importance of Green Chemistry: Green Chemistry in nature (for example nitrogen fixation, photosynthesis, glucogenesis/ glycolysis), Twelve principles of green Chemistry:Prevention of waste, Atom economy, Designing less hazardous chemical synthesis, Designing safer products, Safer solvents and auxiliaries, Design for energy efficiency, Renewable resources, Reduce derivative, Use of selective catalyst, Design for degradation, You cannot control what you cannot measure, Inherently safer chemistry for accident prevention, Important environmental laws, the Pollution Prevention Act of 1990, Limitations and Obstacles in the Pursuit of the Goals of Green Chemistry.

Unit II: Conventional Chemistry vs Green Chemistry (10 hrs)

General concept of mixing of orbitals (Hybridization), Role of various electronic effects in the modulation of reactions; Homolytic and Heterolytic cleavage. Substitution reactions (hydrolysis of alkyl halides and Hydrolysis of esters), Addition reactions (Hydrogenation of alkenes), Elimination reactions (Hoffman elimination, Decarboxylation), Rearrangement (Diels-Alder reactions), Cis-trans isomerisation of alkenes, Condensation reactions: Aldol (replacement of ethanol with solvent free reaction) and Benzoin (replacement of KCN, TPP, Thiamine HCl). Prevention of waste/by-product pollution, calculation of atom economy with reference to above reactions.

Unit III: Green Solvents (10 hrs)

- Conventional solvents (Ethanol, Acetone, chloroform, DCM) and Green Solvents (water/buffer, supercritical fluids, ethyl lactate, Ionic liquids). Buffers (Phosphate, Acetate) and buffer action (concept of pKa), Relative acids/basic strength of organic acids and bases (aliphatic and aromatic).
- Advantages of green solvents in chemical synthesis: Supercritical CO_2 in the separation of coffee from coffee beans and perfume industry, water as a green solvent in reactions (Benzoin condensation, Hofmann Elimination, methyl benzoate to benzoic acid and Decarboxylation reaction).
- Ionic liquids: physicochemical properties, Advantages and Disadvantages (purification of complex mixtures and cost), Reactions of Ionic liquids: Imidazolium based ionic liquid for the synthesis of antiviral drug trifluridine, hydrogenation of alkenes, Diels-Alder reaction with copper (II) bisoxazolium complex having imidazolium tag.

Unit IV: Various Approaches to Green reaction synthesis (10 hrs)

- Enzyme-based reactions: Biocatalyst (concept of stereoselectivity and stereospecificity, and turnover number), Biocatalyst mediated synthesis of Sitagliptin drug and ethanol; Nanocatalysis (oxazole synthesis using nanocatalyst). Photocatalysis: Visible light induced Reactions (syntheses of vitamin D3, cis-trans isomerization of alkenes, waste water treatment with TiO2).
- Microwave-assisted green approach: Principle, merits, demerits and effect of solvent; Microwave-assisted reactions: solvent-free synthesis of aspirin, Renewable starting materials: Synthesis and properties of 5-Aminolevulinic acid (DALA) from levulinic acid. Design of degradable reactions (pesticides), Inherently Safer design in chemical synthesis: Principle and Subdivision eg. Bhopal Gas Tragedy.

Unit V: Pharmaceutical and Industrial Applications for revenue, productivity and sustainability (5 hrs)

Vitamin C used in cosmetics/neutraceuticals industry: Synthesis using enzymes, commercial production of drugs/pharmaceutical product: anti-depressant drug sertraline, Removal of Drug from Waste water: Levofloxacin, an anti-bacterial drug with ZnO nanoparticles, Enzymatic synthesis of Zero Trans-Fats and Oils,

Practical: (30 hrs)

(Wherever wet lab experiments are not possible, the principles and concepts can be demonstrated through any other material or medium including videos/virtual labs etc.) (Any seven)

1. Preparation and characterization of biodiesel from vegetable oil preferably waste cooking oil.
2. Benzoin condensation using thiamine hydrochloride as a catalyst instead of cyanide
3. Mechanochemical solvent-free synthesis of succinic anhydride/phthalic anhydride
4. Hydrolysis of esters/ esterification using green methods.
5. Solvent-free, microwave-assisted one-pot synthesis of phthalocyanine complex of copper (II).
6. Cross aldol condensation reaction using base catalyzed green method.
7. Microwave-assisted synthesis of drug/ drug intermediates (Knoevenagel reaction, Aspirin)
8. Photoreduction of benzophenone to benzopinacol in the presence of sunlight.
9. Acetylation of primary aromatic amine using the green method.
10. Synthesis of nanoparticles using green approach.

Essential Reading:

- Matlack, A.S., Andraos. J, (2022); Introduction to Green Chemistry, 3rd Edition, CRC press (ISBN: 978-1032199429).

- Sharma, R.K.; Bandichhor, R. (2018), Hazardous Reagent Substitution, Royal Society of Chemistry. (ISBN: 978-1-78262-050-1)
- Lancaster, M. (2016), Green Chemistry: An Introductory Text, 3rd Edition, RSC Publishing. (ISBN: 978-1-78262-294-9)
- Wei Zhang, Berkeley W. Cue Jr (2012) "Green Techniques for Organic Synthesis and Medicinal Chemistry" John Wiley & Sons, Ltd (ISBN:9780470711828)
- Sharma, R.K.; Sidhwani, I.T.; Chaudhari, M.K. (2012), Green Chemistry Experiments: A monograph**,** I.K.International Publishing House Pvt Ltd. (ISBN: 978-9381141557)
- Kirchhoff, M.; Ryan, M.A. (2002), Greener approaches to undergraduate chemistry experiment**.** American Chemical Society, Washington DC. (ISBN: 8412-3866-9)
- Anastas, P.T.; Warner, J.C. (2000), Green Chemistry: Theory and Practice, Oxford University Press. (ISBN: 9780-198506980).
- El-Maraghy, C. M., El-Borady, O. M., & El-Naem, O. A. (2020). Effective Removal of Levofloxacin from Pharmaceutical Wastewater Using Synthesized Zinc Oxid, Graphen Oxid Nanoparticles Compared with their Combination. *Scientific Reports*, *10*(1), Article 1. https://doi.org/10.1038/s41598-020-61742-4

Suggestive readings

- Batra. S.K; Gulati, S; Shukla, S, (2020); Practical Green Chemistry: Strategies, Tools & Experiments, Shri Kala Prakashan (ISBN: 978-9385329456)
- Sidhwani, Tucker I; Sharma, R.K, (2020); An Introductory Text on Green Chemistry: For Undergraduate Students, Wiley (ISBN: 978-8126554072)
- Benyus, J.M. (2002); Biomimicry:Innovations Inspired by nature, HarperCollins. (ISBN: 9780060533229)
- Garay,A. L; Pichon, A.; James,S.L. "Solvent-free synthesis of metal complexes" Chem Soc Rev, 2007, 36,846-855.
- James H. Clark, Duncan Macquarrie (2002); Handbook of Green Chemistry and Technology, Wiley (ISBN: 9780632057153)

DISCIPLINE SPECIFIC ELECTIVE -12 (BIOMED-DSE-12) RESEARCH METHODOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Research Methodology **BIOMED-DSE-12**	**4**	**3**	**-**	**1**	**XII Pass with Physics, Chemistry & biology**	**Basic knowledge of biology, mathematics and computers**	**Biomedical Science**

Learning objectives

The Learning objectives of this course are as follows:

- The syllabus aims to educate students on the fundamentals of research methodology and familiarize them with the different search engines used in literature surveys.
- It will guide them in identifying research problems and developing research strategies to address them.
- The course will cover different approaches used in research, along with ethical considerations related to clinical research.
- In addition, students will learn about scientific writing and presentation skills.

Learning outcomes

Upon completion of this course, students will achieve the following learning outcomes:

- Develop the ability to identify a research problem, design and execute experiments, and analyze the resulting data.
- Comprehend and follow ethical guidelines for conducting research and accurately document research activities.
- Utilize various tools to write research papers and review articles effectively.
- Demonstrate effective presentation skills to communicate scientific work.

SYLLABUS OF BIOMED-DSE-12

Unit I: Introduction (6 hrs)

Basics of research methodology: Background of research area and generation of hypothesis, Types of Research: Experimental vs Theoretical; Descriptive vs Analytical; Fundamental vs Applied; Quantitative vs Qualitative.

Unit II: Literature Review (08 hrs)

Importance of literature review, common search engines such as NCBI, Google Scholar etc. used for literature surveys. Exploring various types of academic journals and publications fundamental to research: journals and e-books. Introduction to reference and citation management tools like Mendeley, Zotero and EndNote.

Unit III: Identifying a Research Problem and Designing of Experiment: (10 hrs)

Identification of a research problem (any one disease of national importance: tuberculosis/leprosy/diabetes/cardiovascular disease/neurodegenerative disorders), its national and international status. Experimental strategies: number and types of replicates and control, Statistical analysis of data using MS Excel/ R-Statistical tools.

Unit IV: Methods in Biomedical Research (08hrs)

Clinical Research and associated methodology, Epidemiology: Concepts and methods in the context of illustrative projects. Classical examples of epidemiological studies such as TB and leprosy, its challenges and limitations.

Unit V: Research Ethics and Intellectual Property (07hrs)

Understanding research ethics and its significance in scientific writing, Plagiarism, peer-review, conflict of interest, and research misconduct. Introduction to Intellectual Property Rights (IPR) such as Patent, Trademarks, Copyright, and Trade Secrets. Importance of IPR in research and innovation.

Unit VI: Research Presentation (06 hrs)

To write a research paper and review article. To prepare an oral and poster presentation of a research paper.Steps in writing a research grant proposal

Practical **(30 hrs)**

1. Literature survey on any one disease of national importance: tuberculosis/leprosy/diabetes/cardiovascular disease/neurodegenerative disorders
2. Creating bibliography in different formats using any available tools like Mendeley/ Zotero/ EndNote, etc.
3. Group exercise by students
    1. Writing a review article
    2. Writing a research report
    3. Powerpoint presentation
    4. Poster presentation

Essential Readings

- Walliman, N. (2017) Research Methods: The Basics, **(**2nd ed.), London; New York: Routledge; ISBN-10:1138693995
- Kumar, R. (2014) Research Methodology: A Step-by-Step Guide for Beginners (4th ed.), SAGE publisher; ISBN-10: 9789351501336
- The Craft of Research (Guides to writing, editing and publishing) (2008), Booth, W.C., Colomb, G.G., Williams, J.M., University of Chicago Press, 2008. (ISBN-13: 978-0226065663)

Suggestive Readings

- Research Methodology: A Step-by-Step Guide for Beginners (2010) 3rd ed., Kumar R., Pearson Education. (ISBN-13: 978-1849203012)
- Cresswell, J. (2009) Research Design: Qualitative and quantitative Approaches Thousand Oaks CA, (3rd ed.), Sage Publications
- Research in Education (2005) 10th ed., Best, J.W. and Kahn, J.V., Prentice Hall of India Pvt. Ltd. (ISBN-13: 978-0205458400)
- At the Bench: A Laboratory Navigator (2005) Barker, K., Cold Spring Harbor Laboratory Press (New York). ISBN: 978-087969708-2.
- Research Methodology - Methods and Techniques (2004) 2nd ed., Kothari C.R., New Age International Publishers. (ISBN-13 / EAN: 9788122415223)

DEPARTMENT OF ENVIRONMENTAL STUDIES

Category-I

SEMESTER - IV

BSC (H) ENVIRONMENTAL SCIENCE

DISCIPLINE SPECIFIC CORE COURSE – 10 (DSC-EVS-10): SYSTEMATICS AND BIOGEOGRAPHY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-EVS-10: SYSTEMATICS AND BIOGEOGRAPHY	4	2	0	2	Class XII pass	NA

Learning objectives

The Learning Objectives of this course are as follows:

- Gain insights into the principles and methods of systematic biology for determining evolutionary relationships among organisms
- Describe major biogeographic regions of the world and identify underlying factors responsible for their formation and evolution
- Familiarize with the different types of molecular and morphological characters used in systematic analysis
- Interpret phylogenetic trees constructed using molecular and morphological data in an evolutionary context
- Evaluate literature in systematics and biogeography and critically assess research questions and methods

Learning outcomes

After this course, students will be able to:

- Identify and classify different taxa using morphological and molecular characters
- Construct and interpret phylogenetic trees based on molecular and morphological data
- Analyze biogeographic patterns and use them to make inferences about evolutionary history

- Apply the principles and methods of systematics and biogeography to practical problems in conservation biology, ecology, and biotechnology
- Communicate effectively about the principles and methods of systematics and biogeography, and their applications to various areas of research and practice

SYLLABUS OF DSC-EVS-10

Theory (02 Credits: 30 lectures)

UNIT – I Concept, systematics approaches and taxonomic hierarchy (3 Week) (6 lectures)
Definition of systematics; taxonomic identification; keys; field inventory; herbarium; museum; botanical gardens; taxonomic literature; nomenclature; evidence from anatomy, palynology, ultrastructure, cytology, phyto-chemistry, numerical and molecular methods; taxonomy databases.

Concept of taxa (species, genus, family, order, class, phylum, kingdom); concept of species (taxonomic, typological, biological, evolutionary, phylogenetic); categories and taxonomic hierarchy

UNIT – II Nomenclature and systems of classification (2½ Week) (5 lectures)
Principles and rules (International Code of Botanical and Zoological Nomenclature); ranks and names; types and typification; author citation; valid publication; rejection of names; principle of priority and its limitations; names of hybrids; classification systems of Bentham and Hooker; Angiosperm Phylogeny Group (APG III) classification.

UNIT – III Numerical and molecular systematics (1½ Week) (3 lectures)
Characters; variations; Operational Taxonomic Units; character weighting and coding; phenograms; cladograms; DNA barcoding; phylogenetic tree (rooted, unrooted, ultrametric trees); clades: monophyly, paraphyly, polyphyly; homology and analogy; parallelism and convergence.

UNIT – IV Biogeography, Speciation and extinction (3½ Week) (7 lectures)
Genes as unit of evolutionary change; mutation; genetic drift; gene flow; natural selection; geographic and ecological variation; biogeographical rules – Gloger's rule, Bergmann's rule, Allen's rule, Geist rule; biogeographical realms and their fauna; endemic, rare, exotic, and cosmopolitan species.

Types and processes of speciation – allopatric, parapatric, sympatric; ecological diversification; adaptive radiation, convergent and parallel evolution; dispersal and immigration; means of dispersal and barriers to dispersal; extinction.

UNIT – V Historical and ecological Biogeography (3½ Week) (7 lectures)
Earth's history; paleo-records of diversity and diversification; continental drift and plate tectonics and their role in biogeographic patterns – past and present; biogeographical dynamics of climate change and Ice Age.

Species' habitats; environment and niche concepts; biotic and abiotic determinants of communities; species-area relationships; concept of rarity and commonness; Island Biogeography theory; Equilibrium Theory of Insular Biogeography; geography of

diversification and invasion; phylogeography.

UNIT – VI Conservation Biogeography (1 Week) (2 lectures)
Application of biogeographical rules in design of protected area and biosphere reserves; use of remote sensing in conservational planning.

Practicals/Hands-on Exercises – based on theory (02 Credits: 60 hours)

1. Construct and compare phylogenetic trees based on morphological and molecular data
2. Extract and quantify DNA from various organisms
3. Conduct PCR and amplify a specific gene using a target primer
4. Identify different taxa using morphological and molecular characters
5. Construct, analyze and infer phylogenetic trees based on molecular data by using software like PAUP*, RAxML, and MrBayes
6. Use and construct a phylogenetic tree based on morphological characters
7. Molecular Characters: Students should learn how to use molecular characters to construct a phylogenetic tree
8. Compare and contrast the anatomy of different organisms to understand their evolutionary relationships
9. Map and identify the distribution of organisms across the world and the factors that influence their distribution
10. Analyze the factors explaining biogeographic patterns of distribution of a target species using hypothesis of vicariance and dispersal
11. Estimate the timing of evolutionary events based on molecular clocks
12. Identify and analyze different biogeographic regions of the world and the unique flora and fauna found in each
13. Estimate divergence times between different lineages using molecular data

Teaching and learning interface for theoretical concepts

To achieve the course objectives and match with the contents, a wide range of teaching and learning tools will be employed, including (a) Formal lectures; (b) Interactive sessions using visual aid; (c) Case study analyses; (d) Hypothetical scenario building; (e) Group discussion on key topics; and (f) documentary screening and critical analyses.

Essential/recommended readings

- Baum, D. A., & Smith, S. C. (2013). Systematic Biology. John Wiley & Sons.
- Briggs, C. J. (2016). Biogeography: An ecological and evolutionary approach. Wiley-Blackwell.
- Cox, L. R., & Moore, P. D. (2010). Biogeography: An introduction to the study of plants and animals in time and space. Wiley-Blackwell.
- Heads, M. (2019). Biogeography and evolution. New Zealand. CRC Press.
- Lieberman, B. S., & Garland, R. L. (2020). Phylogenetic trees made easy: A how-to manual. Sinauer Associates.
- Lomolino, I., Riddle, B. R., & Whittaker, R. J. (2016). Biogeography: Principles and Practice. Sinauer Associates.

- Pressey, R. L., Anderson, M. B., & Groves, R. G. (2019). Systematic conservation planning. Oxford University Press.
- Wiley, E. H., & Lieberman, B. S. (2011). Systematics and evolution: Theory and practice. Wiley-Blackwell.

Suggestive readings

- Antonelli, A. (2019). Historical biogeography: An introduction. Princeton University Press.
- Dayrat, B. H. E. W. (2005). Phylogenetic systematics. University of Kansas Press.
- Guglielmino, A. G., & Barbujani, A. V. (2017). Biogeography: A natural science of human diversity. Cambridge University Press.
- Hennig, P. (1966). Systematics: A course of lectures. Columbia University Press.
- Nei, M., & Kumar, S. (2020). Molecular evolution and phylogenetics. Oxford University Press.
- Revell, L. V. (2020). Phylogenetic comparative methods: A guide for ecologists. Princeton University Press.
- Wiley, E. O. (2020). Phylogenetics: Theory and practice of phylogenetic systematics. John Wiley & Sons.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 11 (DSC-EVS-11): ENVIRONMENTAL TOXICOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-EVS-11: ENVIRONMENTAL TOXICOLOGY	4	2	0	2	Class XII pass	NA

Learning objectives

The Learning Objectives of this course are as follows:

- Analyze sources, fate, and effects of toxic substances in the environment
- Train in methods relevant to assess and manage environmental risks associated with toxic substances
- Investigate the impact of environmental toxicants on wildlife and ecosystems, including the effects on reproductive success and population dynamics.
- Examine management practices related to the use, disposal, and treatment of hazardous substances and wastes.
- Compare scientific methods and techniques to measure and monitor environmental toxicants in different environmental media.
- Familiarize with emerging issues and technologies in environmental toxicology
- Promote critical thinking and problem-solving skills through case studies and hands-on activities related to environmental toxicology.

Learning outcomes

After this course, students will be able to

- Define and describe the scope and historical background of environmental toxicology.
- Identify, classify, and predict fate and transport of different types of toxic substances in the environment
- Evaluate the risks associated with toxic substances and apply risk assessment and management strategies
- Analyze the effects of toxic substances on wildlife and ecosystems, and propose solutions to mitigate their impacts.
- Compare and contrast the toxicity of different pollutants and their possible mechanisms of action.
- Apply their knowledge of environmental toxicology to current environmental issues and develop potential solutions.

SYLLABUS OF DSC-EVS-11

Theory (02 Credits: 30 lectures)

UNIT – I Introduction to Environmental Toxicology (1 Week) (2 lectures)
Definition, Historical perspective, Types of Toxic substances: types, properties, sources, and fate and transport, biomagnification and bioaccumulation.

UNIT –II Toxicology of Air and Water (2 Weeks) (4 lectures)
Toxic air contaminants, Health effects of air pollution, Acid rain and its impacts, Ozone depletion and its impacts, Water pollution and its sources, Health effects of water pollution, Eutrophication and hypoxia in aquatic ecosystems, Marine pollution and its impacts, Emerging issues in air and water toxicology

UNIT –III Toxicology of Soil and Hazardous Waste (3½ Weeks) (7 lectures)
Sources and types of hazardous waste, Health effects of soil contamination: from heavy metals, metalloids, and organic contaminants; Brownfields and urban redevelopment, Superfund sites and environmental justice, Pesticide and Pharmaceuticals: classification, history of use, distribution in environment, fate and transport, health effects, and ecotoxicology; Emerging issues in environmental toxicology by hazardous waste, pesticides and pharmaceuticals

UNIT –IV Toxicology of Radiation and Nanoparticles (3 Weeks) (6 lectures)
Ionizing and non-ionizing radiation, Health effects of radiation, Radioactive waste and nuclear accidents, Nanoparticles: properties, behavior in the environment, fate and transport, health effects, and ecotoxicology; Emerging issues in radiation and nanoparticle toxicology, Risk assessment and risk management of radiation and nanoparticles

UNIT –V Emerging Issues in Environmental Toxicology (2½ Weeks) (5 lectures)
Endocrine disruption and its impacts, Climate change and toxicology, Emerging contaminants (e.g., microplastics, PFAS), Global perspectives, Ethics in environmental toxicology, Careers in environmental toxicology, Future directions in environmental toxicology research

UNIT –VI Management and regulation of environmental toxicants (1½ Weeks) (3 lectures)
Environmental regulations and policy, Hazardous waste regulations and management, Pesticide and pharmaceutical use and regulation, Ecotoxicology and wildlife toxicology, Risk assessment and risk management, Remediation and restoration of contaminated sites

UNIT –VII Environmental forensics (1½ Weeks) (3 lectures)
Definition, Applications in environmental toxicology, Common techniques (e.g., isotope analysis, DNA fingerprinting), Case studies in identifying sources of contamination, Future developments and potential applications in environmental sustainability.

Teaching and learning interface for theoretical concepts

To achieve the course objectives and match with the contents, a wide range of teaching and learning tools will be employed, including (a) Formal lectures; (b) Interactive sessions using visual aid; (c) Case study analyses; (d) Hypothetical scenario building; (e) Group discussion on key topics; and (f) documentary screening and critical analyses.

Practicals/Hands-on Exercises – based on theory (02 Credits: 60 hours)

1. Analyze effects of pH on the toxicity of heavy metals on model organism, such as Daphnia
2-3. Determine toxicity of varying concentration of industrial effluent on common alga and measure its growth and survival rates
4-5. Effects of heavy metal toxicity on plant growth, focussing on different plant parts and physiological characteristics
6. Analyze effects of climate change on the abundance and diversity of pollinators under different climatic conditions
7. Analyze the abundance and diversity of nematodes (e.g., Caenorhabditis elegans) in the background of use of environmental chemicals
8. Effects of herbicides on the abundance and diversity of weed populations in response to the use of different herbicides
9. Test the effects of a target organic contaminant on behaviour and mortality of earthworm
10-11. Measure developmental abnormalities in zebrafish embryos due to toxicity of target environmental chemicals
12-13. Prepare and characterize nanoparticles of selected heavy metal and assess effect of nanoparticles on plant growth
14. Effects of various concentrations of road salt on freshwater organisms (e.g., zooplankton) and measure changes in their behavior and survival

Teaching and learning interface for practical skills

To impart training on technical and analytical skills related to the course objectives, a wide range of learning methods will be used, including (a) laboratory practicals; (b) field-work exercises; (c) customized exercises based on available data; (d) survey analyses; and (e) developing case studies; (f) demonstration and critical analyses; and (h) experiential learning individually and collectively.

Essential/recommended readings

- Crosby, D. G. (2019). Environmental toxicology and chemistry (3rd ed.). CRC Press.
- Landis, W. G., Sofield, R. M., & Yu, M.-H. (2019). Introduction to environmental toxicology (4th ed.). CRC Press.
- Lehrer, I., & Poole, J. B. (2019). Principles of environmental toxicology (4th ed.). CRC Press.
- Newman, M. C., Roberts, M. H., Hale, R. C., & Robinson, E. M. (Eds.). (2020).

Environmental Toxicology: Biological and Health Effects of Pollutants (4th ed.). CRC Press.
- Yu, M.-H., & Yan, G. W. S. (2020). Environmental toxicology: Biological and health effects of pollutants (3rd ed.). CRC Press.

Suggestive readings

- Ballantyne, B., Marrs, T. C., & Syversen, T. (2020). Toxicology: The basic science of poisons (4th ed.). CRC Press.
- Kamrin, M. A. (2020). Introduction to Environmental Toxicology: Molecular Substructures to Ecological Landscapes (5th ed.). CRC Press.
- Meyers, R. A. (Ed.). (2018). Environmental toxicology: Selected entries from the Encyclopedia of Sustainability Science and Technology. Springer
- Smart, R. C., & Hodgson, E. (2018). Molecular and biochemical toxicology (5th ed.). John Wiley & Sons.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 12 (DSC-EVS-12): RESTORATION ECOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-EVS-12: RESTORATION ECOLOGY	4	2	0	2	Class XII pass	NA

Learning objectives

The Learning Objectives of this course are as follows:

- Gain insights into principles and concepts of restoration ecology to understand various approaches and techniques used in ecological restoration
- Provide hands-on experience with ecological restoration techniques and field methods
- Promote critical thinking and problem-solving skills in the context of ecological restoration for innovation related methods
- Investigate the interdisciplinary issues and practices linked with ecological restoration

Learning outcomes

After this course, students will be able to

- Describe the ecological, economic and social factors that lead to ecosystem degradation
- Evaluate and select appropriate ecological restoration techniques for different types of ecosystems
- Design ecological restoration projects and identify appropriate methods to monitor and evaluate the restoration practices
- Undertake collaborative programmes to understand and solve ecological restoration problems
- Critically evaluate the scientific and technical aspects of ecological restoration research and practice.

SYLLABUS OF DSC-EVS-12

Theory (02 Credits: 30 lectures)

UNIT – I Fundamentals of Restoration Ecology (3½ Weeks) (7 lectures)

Definition and history of restoration ecology, Principles of restoration ecology, Restoration process: planning, implementation, and monitoring; Ecosystem services and the importance of restoration ecology; Challenges and limitations of restoration ecology; Case studies in restoration ecology; Ethics and values in restoration ecology; Restoration ecology and environmental policy

UNIT – II Ecological Foundations for Restoration Ecology: (3 Weeks) (6 lectures)

Role of ecological concepts in restoration ecology: ecological succession. Biodiversity, ecological interactions, and habitat fragmentation and ecosystems; Climate change and its impact on restoration ecology, Invasive species and their role in ecosystem degradation and restoration, Ecological thresholds, and their relevance to restoration ecology

UNIT – III Techniques and Tools for Restoration Ecology (3 Weeks) (6 lectures)

Ecological site assessment and inventory, Restoration planning and design, Techniques for soil and water conservation in restoration ecology, Seed collection, propagation, and planting techniques for restoration, Wildlife management in restoration ecology, Restoring aquatic ecosystems: techniques and challenges, Biomimicry and ecological engineering in restoration ecology. Evaluating and monitoring restoration outcomes

UNIT – IV Ecosystem Restoration (2 Weeks) (4 lectures)

Restoration of: grasslands, forests, wetlands, agricultural and urban landscapes, mining and industrial sites; Restoration of ecosystem services in aquatic ecosystems

UNIT – V Synthesis and Applications of Restoration Ecology (3½ Weeks) (7 lectures)

Integrating restoration ecology with conservation biology, Adaptive management in restoration ecology, Restoring ecosystem services and human well-being, Restoring cultural and spiritual values in ecosystems, Restoring resilience and resistance in ecosystems, Restoring ecosystem connectivity and migration corridors, Restoring biodiversity in the face of global change, and The future of restoration ecology and its role in sustainability

Teaching and learning interface for theoretical concepts

To achieve the course objectives and match with the contents, a wide range of teaching and learning tools will be employed, including (a) Formal lectures; (b) Interactive sessions using visual aid; (c) Case study analyses; (d) Hypothetical scenario building; (e) Group discussion on key topics; and (f) documentary screening and critical analyses.

Practicals/Hands-on Exercises – based on theory (02 Credits: 60 hours)

1. Field visits to assess the magnitude of degradation in selected ecosystems
2. Analyse the success of ecosystem restoration case studies in Delhi and identify the underlying principles
3. Assess the current status of a degraded ecosystem and identify potential areas for restoration
4. Learn techniques for collecting and propagating native plant species for use in restoration projects

5-6. Design methods for reducing erosion and managing nutrient runoff in restored ecosystems
7-8. Examine techniques for planting and establishing native plant species in a restored ecosystem
9-10. Evaluate methods for assessing and managing wildlife habitat in a restored ecosystem
10-11. Assess efficacy of different methods for monitoring and evaluating restoration outcomes in a restored ecosystem
12. Learn techniques for managing invasive species in a restored ecosystem
13-14. Design and implement a restoration plan for selected degraded ecosystems (terrestrial and aquatic) to improve the quality of habitat

Teaching and learning interface for practical skills

To impart training on technical and analytical skills related to the course objectives, a wide range of learning methods will be used, including (a) laboratory practicals; (b) field-work exercises; (c) customized exercises based on available data; (d) survey analyses; and (e) developing case studies; (f) demonstration and critical analyses; and (h) experiential learning individually and collectively.

Essential/recommended readings

- Clewell, A. F., & Aronson, J. (Eds.). (2013). Ecological restoration: Principles, values, and structure of an emerging profession (2nd ed.). Island Press.
- Erickson, A. L., Ryan, C. M., & Jones, T. A. (Eds.). (2021). The science of ecological restoration: Creating resilience in a changing world. Island Press.
- Hobbs, R. J., & Suding, K. N. (2018). New models for ecosystem dynamics and restoration. CRC Press.
- Palmer, M. A. (2016). Restoration: The science of restoring ecosystems and the human spirit. Island Press.
- Temperton, V. M., Hobbs, R. J., Nuttle, T., Halle, S., & Tonev, C. (Eds.). (2020). Novel ecosystems: Intervening in the new ecological world order. John Wiley & Sons.
- Yaffee, S. L., & Wondolleck, J. M. (2019). Ecosystem management in the United States: An assessment of current experience. Routledge.

Suggestive readings

- Allison, S. D., & Murphy, S. D. (Eds.). (2019). Ecosystem collapse and restoration. Oxford University Press.
- Benedetti-Cecchi, L. (2021). Marine restoration ecology. Oxford University Press.
- Benson, M. H., & Phillips, A. (Eds.). (2016). Ecosystem services and conservation in urbanizing Asia. Springer.
- Higgs, E. S., Falk, D. A., Guerrini, A., Hall, M. P., & Harris, J. G. (Eds.). (2021). The Routledge handbook of ecological and environmental restoration. Routledge.
- Moreno-Mateos, D., & Perring, M. P. (Eds.). (2019). Ecological restoration and environmental change: Renewing damaged ecosystems in a changing world. Routledge.
- Palmer, M. A., Zedler, J. B., & Falk, D. A. (Eds.). (2021). Foundations of restoration ecology (2nd ed.). Island Press.

- Suding, K. N., & Hobbs, R. J. (Eds.). (2019). Handbook of restoration ecology (2nd ed.). Oxford University Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE (DSE-EVS-10): ECOSYSTEM MONITORING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSE-EVS-10: ECOSYSTEM MONITORING	4	2	0	2	Class XII pass	NA

Learning objectives

The Learning Objectives of this course are as follows:

- Introduce principles and practices of monitoring ecological systems for designing and implement monitoring programmes
- Provide knowledge of the importance of monitoring for conservation and management of natural resources.
- Impart skills in data analysis and interpretation and provide with hands-on experience in monitoring programmes
- Encourage to communicate the results of monitoring programs effectively and promote ethical principles in monitoring

Learning outcomes

After the course, the students will be able to

- Explain the principles of ecosystem monitoring and design and implement monitoring programmes
- Analyze and interpret data from monitoring programmes and identify specific monitoring methods for conservation and management of natural resources
- Conduct monitoring programmes and communicate the results effectively
- Apply ethical and scientific principles in monitoring programmes

SYLLABUS OF DSE-EVS-10

Theory (02 Credits: 30 lectures)

UNIT – I Introduction to Ecosystem Monitoring (2½ Weeks) (05 lectures)

Introduction to ecosystem monitoring, Principles of ecosystem monitoring, Importance of monitoring for conservation and management, Types of monitoring programmes, Steps in designing a monitoring programme, Sampling methods, Data analysis and interpretation, Communication of monitoring results, Ethics in monitoring, Case studies in ecosystem monitoring

UNIT – II Ecological Indicators (3 Weeks) (06 lectures)

Definition and types of ecological indicators, Commonly used ecological indicators in different ecosystems (e.g., terrestrial, aquatic, marine), Measurement techniques for ecological indicators (e.g., field sampling, remote sensing, citizen science), Interpretation of ecological indicators and their relationship to ecosystem health and function, Applications of ecological indicators in environmental management and policy

UNIT – III Sampling Techniques (4 Weeks) (08 lectures)

Different types of sampling techniques and their advantages and limitations, Sampling design and planning for ecosystem monitoring (e.g., sample size, spatial and temporal scales), Sampling protocols and techniques for climate and different types of ecosystem components, (e.g., soil, water, air, biota), Quality assurance and quality control in ecosystem monitoring sampling, Data management and analysis considerations for sampling data

UNIT – IV Data Analysis and Visualization (3½ Weeks) (07 lectures)

Types of data collected in ecosystem monitoring (e.g., continuous, discrete, categorical), Statistical techniques and software for analyzing ecosystem monitoring data (e.g., regression analysis, multivariate analysis, machine learning), Data visualization techniques for ecosystem monitoring data (e.g., charts, graphs, maps), Communicating monitoring results to stakeholders (e.g., reports, presentations, online platforms), Ethical considerations in the analysis and visualization of ecosystem monitoring data

UNIT – V Ecosystem Monitoring in Practice (2 Weeks) (04 lectures)

Overview of a specific ecosystem monitoring program (e.g., the National Ecological Observatory Network, Long-Term Ecological Research sites), Planning and design of an ecosystem monitoring project, Analysis of a case study of ecosystem monitoring with respect to different practices mentioned in other units, Reflection on the challenges and opportunities of implementing ecosystem monitoring programs in practice.

Teaching and learning interface for theoretical concepts

To achieve the course objectives and match with the contents, a wide range of teaching and learning tools will be employed, including (a) Formal lectures; (b) Interactive sessions using visual aid; (c) Case study analyses; (d) Hypothetical

scenario building; (e) Group discussion on key topics; and (f) documentary screening and critical analyses.

Practicals/Hands-on Exercises – based on theory (02 Credits: 60 hours)

1. Measure plant diversity using different methods to assess species richness, diversity indices, and community structure
2. Survey nearby ecosystem to identify and monitor invasive species and its possible impact
3. Analyze remote sensing data for ecosystem monitoring, including satellite imagery and aerial photographs
4. Learn different soil sampling methods and monitor soil properties
5. Measure potential carbon sequestration by trees of a nearby area
6. Analyze climate data, including temperature, precipitation, and atmospheric carbon dioxide concentrations
7. Hands-on experience in testing water quality parameters such as pH, dissolved oxygen, and nutrients using rapid methods
8. Conduct bird surveys and identify common bird species of nearby ecosystem
9. Hands-on experience in setting up and monitoring wildlife camera traps, and identifying common wildlife species
10. Design and conduct social surveys to understand public perceptions, attitudes, and behaviors related to ecosystem (wetland, etc.) monitoring
11. Record and monitor leaf-out, flowering, and fruiting of selected species of nearby ecosystem
12. Survey amphibians in ecosystems by method of your choice including visual surveys or call surveys or capture-mark-recapture
13. Sample and identify insects in a nearby area, including sweep netting or pitfall traps or light traps
14. Engage citizen scientists in ecosystem monitoring programme, including data collection, quality assurance, and community engagement

Teaching and learning interface for practical skills

To impart training on technical and analytical skills related to the course objectives, a wide range of learning methods will be used, including (a) laboratory practicals; (b) field-work exercises; (c) customized exercises based on available data; (d) survey analyses; and (e) developing case studies; (f) demonstration and critical analyses; and (h) experiential learning individually and collectively.

Essential/recommended readings

- Bartram, J., & Ballance, R. (2017). Water Quality Monitoring: A Practical Guide to the Design and Implementation of Freshwater Quality Studies and Monitoring Programs. CRC Press.
- Becker, C. G., Bastos, R. P., & Silvano, D. L. (2021). Measuring and Monitoring Biological Diversity: Standard Methods for Amphibians. Smithsonian Institution Press
- Burden, F. R., & Pitt, R. F. (2013). Environmental Monitoring Handbook. McGraw Hill.
- Lindenmayer, D., Gibbons, P., & Bennett, A. (2019). Monitoring ecosystems: Interdisciplinary approaches for evaluating ecoregional initiatives. CSIRO Publishing
- Stenseth, N. C., & Furevik, T. (2016). Principles and Methods of Ecosystem-based Management. CRC Press.

Suggestive readings

- Aronson, J. (2017). The Practice of Ecosystem Services Evaluation: An Introduction. Springer.
- Ferretti, M., & Fischer, R. (2013). Forest Monitoring: Methods for Terrestrial Investigations in Europe with an Overview of North America and Asia. Elsevier.
- Kobayashi, T., Yang, W., & Qi, Y. (2020). Remote sensing of ecosystem health with prism and modis data. CRC Press.
- Krkosek, M., & Bateman, A. (2019). Wildlife Population Monitoring: Some Practical Considerations. Oxford University Press.
- Rees, Y., Brazeau, M., & Santos, L. F. (2021). Environmental monitoring using UAVs. Springer.
- Schulin, R., & Kutílek, M. (2017). Soil Monitoring: Early Detection and Surveying of Soil Contamination and Degradation. Springer.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVES (DSE-EVS-11): ENVIRONMENTAL INDICATORS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSE-EVS-11: ENVIRONMENTAL INDICATORS	4	2	0	2	Class XII pass	NA

Learning objectives

The Learning Objectives of this course are as follows:

- Understand the concept of environmental indicators and their role in measuring and assessing environmental quality
- Learn how to select, analyze, and interpret various types of environmental indicators to evaluate the condition of natural resources and ecosystems
- Develop an understanding of select and use environmental indicators in environmental policy and decision-making
- Learn about the practical applications of environmental indicators in different sectors such as government, business, and non-governmental organizations.
- Gain an appreciation of the interdisciplinary nature of environmental indicators, and the importance of collaboration among different disciplines to address environmental issues

Learning outcomes

After successful completion of this course, students will be able to:

- Define, describe and identify environmental indicators to measure and assess environmental quality
- Select appropriate environmental indicators based on specific environmental issues, and apply appropriate methods for data collection and analysis
- Evaluate the effectiveness of different environmental indicators and their relevance to environmental policy and decision-making.
- Communicate environmental indicator data effectively to different audiences using appropriate formats and techniques.
- Apply knowledge and skills in business, society, policy formulation and implementation, to address environmental issues

SYLLABUS OF DSE-EVS-11

Theory (02 Credits: 30 lectures)

UNIT – I Introduction to Environmental Indicators (2 Weeks) (4 lectures)
Environmental Indicators: overview, types, relevance in environmental sustainability, environmental health and social justice, Principles of Environmental Indicator Selection, Environmental Monitoring and Data Collection. Environmental Indicator Reporting and Communication

UNIT – II Air Quality Indicators (2 Weeks) (4 lectures)
Air Pollution Sources and Emissions, Criteria Air Pollutants and their Health Effects, Ozone Depletion and Stratospheric Ozone Protection, Indoor Air Quality and Health; Air Quality: standards, guidelines, monitoring, sampling, management strategies, policies, trends and projections, Quality parameters: particulate matter, ozone, nitrogen oxides, sulfur dioxide, carbon monoxide, volatile organic compounds, lead, radon, and carbon dioxide
.

UNIT – III Water Quality Indicators (2½ Weeks) (5 lectures)
Water Pollution Sources and Pathways, Surface Water and Groundwater Quality Indicators, Drinking Water Quality and Treatment, Water Pollution Control Strategies and Policies, Non-Point Source Pollution and Best Management Practices, Water Quality: standards, guidelines, monitoring, sampling, trends and projections; Quality parameters: dissolved oxygen, pH, temperature, turbidity, nutrient concentrations, chlorophyll-a, biological oxygen demand, fecal coliform bacteria, total dissolved solids, and toxic substances

UNIT – IV Biodiversity Indicators (2½ Weeks) (5 lectures)
Biodiversity: concepts, definitions, components, levels, measurement, assessment, threats, conservation strategies and policies, trends and projections; Ecosystem Services and Biodiversity, Biodiversity and Climate Change, Parameters: species richness and diversity, genetic diversity, endemic species, threatened species, habitat extent, fragmentation and quality, ecosystem services

UNIT – V Land Use and Soil Indicators (3½ Weeks) (7 lectures)
Land Use and Land Cover Change, Urbanization and Suburbanization Trends, Productivity of Agricultural and Forests, Wilderness Management, Mining and Mineral Extraction Impacts, Land Use and Ecosystem Services, Land Use Planning and Policy, Land Use Change and Climate Change; Soil health: soil organic matter, texture, pH, nutrients, biodiversity and microbial activity, respiration aggregate stability, compaction, and water holding capacity

UNIT – VI Climate Change Indicators (2½ Weeks) (5 lectures)
Greenhouse Gas Emissions and Sinks, Climate Change: science, impacts mitigation strategies and policies, adaptation strategies and policies, vulnerability and risk assessment; Climate Change Indicators: for terrestrial and aquatic ecosystems, for human health and societal well-being (average global temperature, sea-level rise, ocean acidification, carbon dioxide concentrations, extreme weather events, arctic sea ice and glaciers and ice sheets,

ecosystem productivity and species phenology, heat-related and mediated illnesses, total energy consumption); and Climate Change and Global Environmental Governance

Teaching and learning interface for theoretical concepts

To achieve the course objectives and match with the contents, a wide range of teaching and learning tools will be employed, including (a) Formal lectures; (b) Interactive sessions using visual aid; (c) Case study analyses; (d) Hypothetical scenario building; (e) Group discussion on key topics; and (f) documentary screening and critical analyses.

Practicals/Hands-on Exercises – based on theory (02 Credits: 60 hours)

1. Investigate variations in different surfaces to absorb and reflect heat
2. Determine pattern of sea-level rise at selected coastal location over time and propose its causes and potential impacts
3. Investigate the sources and concentrations of carbon dioxide in different indoor and outdoor environments and explore ways to reduce carbon dioxide emissions
4. Collect and analyze data on weather patterns and events over time and investigate the impacts of extreme weather events on human communities and ecosystems
5. Monitor changes in Arctic sea ice extent and thickness over time and investigate the impacts of sea ice loss on Arctic ecosystems and global climate
6. Conduct field surveys to measure plant and animal diversity and abundance in different habitats and investigate the impacts of habitat loss and fragmentation on biodiversity
7. Analyze air and water quality data in different urban and rural environments and investigate the links between environmental pollution and human health outcomes
8. Monitor energy consumption and greenhouse gas emissions in different households, buildings, and industries and investigate strategies for reducing energy use and transitioning to renewable energy sources
9. Compare different land use change for variations in soil health and fertility
10. Analyze the impact of land use on health of selected water bodies
11. Conduct surveys to identify the links between environmental exposure of noise or air pollution and onset of stress and anxiety in humans
12. Monitor glacier and thickness of ice sheet using GIS and identify the changes in glacier and water resources and rise in sea level
13. Analyze the relationship between economic growth and environmental impacts using temporal data from economics and environment and suggest ways to promote sustainable development
14. Use the case study method to analyze companies having prioritized environmental and social concerns in their business practices and their impacts on society, environment, and economy

Teaching and learning interface for practical skills

To impart training on technical and analytical skills related to the course objectives, a wide range of learning methods will be used, including (a) laboratory practicals; (b) field-work exercises; (c) customized exercises based on available

data; (d) survey analyses; and (e) developing case studies; (f) demonstration and critical analyses; and (h) experiential learning individually and collectively.

Essential/recommended readings

- Hák, T., Moldan, B., & Dahl, A. L. (2020). Sustainability indicators: A scientific assessment. Springer.
- Mulder, K. F. (2018). Environmental sustainability indicators: An introduction. Routledge.
- Murgante, B., Misra, S., Carullo, A., & Torre, C. M. (Eds.). (2019). Environmental sustainability indicators for industry: Methods and tools. Springer.
- Saad-Sulonen, J., & Horelli, L. (2020). Urban environmental indicators: Tools for liveability and sustainability. Routledge.
- Sala, S., & Farioli, F. (2020). Environmental Indicators: Tools for Evaluation and Decision Making in Resource Management. Springer.

Suggestive readings

- Brouwer, R., & van Ek, R. (Eds.). (2021). Environmental and Resource Valuation with Revealed Preferences: Approaches and Methods. Routledge.
- Campbell, L. M., Gray, N. J., & Fairbanks, L. W. (Eds.). (2021). The Routledge Handbook of Environmental Governance and Sustainability. Routledge.
- Farinha-Marques, P., & Pina, A. (2019). Green supply chain management: Environmental sustainability indicators. Springer.
- Singh, R. B., & Mallick, J. (2019). Eco-friendly and sustainable agriculture: Environmental sustainability indicators. Springer.
- Tukker, A., & Dietz, F. (Eds.). (2020). Environmental Indicator Frameworks for Policy: A Comparative Analysis of Approaches in Europe. Routledge.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE (DSE-EVS-12): ECOSYSTEM STEWARDSHIP

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSE-EVS-12: ECOSYSTEM STEWARDSHIP	4	2	0	2	Class XII pass	NA

Learning objectives

The Learning Objectives of this course are as follows:

- Introduce the principles and practices of ecosystem stewardship for valuing ecosystems from the perspective of ecology, society, and economy
- Explore the challenges and opportunities of managing ecosystems in a changing world.
- Provide hands-on experience in ecosystem management through practical exercises and case studies
- Foster communication and collaboration skills for engaging with stakeholders in ecosystem stewardship

Learning outcomes

After the course, students will be able to:

- Demonstrate an understanding of the key principles and practices of Ecosystem Stewardship
- Identify and describe the ecological, social, and economic values of ecosystems
- Apply practical tools and techniques for ecosystem management, including stakeholder engagement, biodiversity assessment, and habitat restoration
- Analyze and interpret data on ecosystem health and identify strategies for ecosystem restoration and conservation
- Develop effective communication and collaboration skills for engaging with stakeholders in ecosystem stewardship

SYLLABUS OF DSE-EVS-12

Theory (02 Credits: 30 lectures)

UNIT – I Introduction to Ecosystem Stewardship (2½ Weeks) (5 lectures)
Concept of Ecosystem Stewardship, Ecological Principles of Ecosystem Stewardship, Historical and Contemporary Perspectives, Role of stewardship in conservation, Ethics and Values in Ecosystem Stewardship, Importance of Ecosystem Services, Ecosystem Resilience and Sustainability, Ecosystem Restoration and Rehabilitation

UNIT – I Ecosystem Management (2 Weeks) (4 lectures)
Principles of Ecosystem Management, Ecosystem Management Planning and Implementation, Multiple Use Management, Ecosystem-Based Management, Adaptive Management, Stakeholder Engagement and Collaboration, Legal and Institutional Frameworks for Ecosystem Management, Economic Valuation of Ecosystem Services

UNIT – I Ecosystem Restoration (2 Weeks) (4 lectures)
Principles of Ecosystem Restoration, Restoration Planning and Implementation, Ecological Succession and Restoration, Restoration Techniques and Strategies, Restoration of Degraded Landscapes, Restoring Biodiversity and Ecosystem Functioning, Community-Based Restoration, Monitoring and Evaluation of Ecosystem Restoration

UNIT – IV Biodiversity Conservation and Ecosystem Services (3 Weeks) (6 lectures)
Biodiversity: importance of conservation, threats, link with ecosystem services; Conservation Planning and Implementation, Protected Areas and their Management, Habitat Restoration and Management, Wildlife Conservation, Invasive Species Management, Community-Based Conservation, Ecosystem Services: types, economic valuation, ecological and social drivers; Trade-offs and Synergies in Ecosystem Services, Payments for Ecosystem Services, Green Infrastructure and Ecosystem Services, Case studies of Ecosystem Services

UNIT – V Human Dimensions of Ecosystem Stewardship (2½ Weeks) (5 lectures)
Human-nature relationship and its impact on Ecosystems, Social-Ecological Systems and their Resilience, Indigenous and Local Knowledge Systems, Community-Based Management and Decision Making, Conflict Management and Resolution, Environmental Justice, Public Participation and Environmental Governance, Cultural Diversity and Ecosystem Stewardship

UNIT – VI Emerging Issues in Ecosystem Stewardship (3 Weeks) (6 lectures)
Influence of Climate Change on: natural ecosystems, agriculture, and urban ecosystems; Integrated watershed management, energy and natural resources, Linking technology with ecosystem stewardship, Ecosystem-based disaster risk reduction, Policy and legal frameworks, Stakeholder participation, Decentralized governance and community-based management, Future directions in ecosystem stewardship.

Teaching and learning interface for theoretical concepts

To achieve the course objectives and match with the contents, a wide range of teaching and learning tools will be employed, including (a) Formal lectures; (b) Interactive sessions using visual aid; (c) Case study analyses; (d) Hypothetical scenario building; (e) Group discussion on key topics; and (f) documentary screening and critical analyses.

Practicals/Hands-on Exercises – based on theory (02 Credits: 60 hours)

1. Conduct a baseline assessment of a local ecosystem, including identifying key ecological features, ecosystem services, and human impacts
2. Develop a management plan for a local ecosystem, including setting objectives, identifying management actions, and monitoring progress
3. Conduct a stakeholder analysis for an ecosystem management project, including identifying stakeholders, assessing their interests and needs, and developing strategies for engagement
4. Identify and map habitats in a local ecosystem, including key species and their ecological roles
5. Develop a restoration plan for a degraded ecosystem, including identifying restoration objectives, selecting appropriate restoration techniques, and monitoring progress
6. Assess the economic value of ecosystem services in a local ecosystem, including identifying beneficiaries, estimating the economic value of services, and developing strategies for payment
7. Carry out a social impact assessment of an ecosystem management project, including identifying and assessing potential social impacts, and developing strategies for mitigating negative impacts and enhancing positive impacts
8. Develop a community-based ecosystem management project, including identifying and engaging stakeholders, developing a collaborative management plan, and evaluating project outcomes
9. Develop a climate adaptation plan for a local ecosystem, including identifying vulnerable species and ecosystems, developing adaptation strategies, and monitoring progress
10. Evolve a payment for ecosystem services (PES) project for a local ecosystem, including identifying beneficiaries, estimating the economic value of services, and developing a PES scheme
11. Conduct an ecosystem-based disaster risk reduction project, including identifying vulnerable ecosystems, developing strategies for risk reduction, and monitoring progress
12. Develop a water resources management project within your institute or residential area, including identifying and addressing water scarcity, improving water quality, and developing water governance mechanisms
13. Plan an urban ecosystem management project, including identifying green infrastructure, improving air quality, and enhancing biodiversity in urban areas

Teaching and learning interface for practical skills

To impart training on technical and analytical skills related to the course objectives, a wide range of learning methods will be used, including (a) laboratory practicals; (b) field-work exercises; (c) customized exercises based on available data; (d) survey analyses; and (e) developing case studies; (f) demonstration and critical analyses; and (h) experiential learning individually and collectively.

Essential/recommended readings

- Baggio, J. A., Barnett, A. J., Perez-Ibarra, I., & Rubiños, C. (Eds.). (2021). Governance for ecosystem stewardship: An institutional perspective. Routledge.
- Chapin III, F. S., Carpenter, S. R., Kofinas, G. P., Folke, C., Abel, N., & Clark, W. C. (2010). Ecosystem stewardship: sustainability strategies for a rapidly changing planet. Springer.
- Hobbs, R. J., Higgs, E. S., & Hall, C. M. (Eds.). (2019). Ecosystem stewardship: Principles and practices for sustainability and resilience. CRC Press.
- Kareiva, P., & Marvier, M. (2012). Conservation science: Balancing the needs of people and nature. Roberts & Company.
- Peterson, G. D., & Cumming, G. S. (2013). Scenario planning: a tool for conservation in an uncertain world. The University of Chicago Press.

Suggestive readings

- Berkes, F. (2017). Sacred ecology. Routledge.
- Brown, K., & Westaway, E. (2011). Agency, capacity, and resilience to environmental change: Lessons from human development, well-being, and disasters. Routledge.
- Côté, I. M., & Darling, E. S. (2021). Conservation in the Anthropocene ocean. Oxford University Press.
- Kareiva, P., & Marvier, M. (2020). Conservation science: Balancing the needs of people and nature. Roberts & Company.
- Peterson, G. D., Cumming, G. S., & Carpenter, S. R. (Eds.). (2021). Scenario planning for conservation and management. Springer.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE (DSE-EVS-13): GREEN URBANIZATION

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSE-EVS-13: GREEN URBANIZATION	4	2	0	2	Class XII pass	NA

Learning objectives

The Learning Objectives of this course are as follows:

- Develop an understanding of the principles, concepts, challenges and opportunities of green urbanization and sustainable urban development
- Impart skills in designing sustainable urban development strategies that promote environmental, social, and economic sustainability
- Empower with evaluating the effectiveness of sustainable urban development strategies.
- Provide insights into the role of urban planning and policy in promoting green urbanization and sustainable urban development
- Gain importance of social equity and community engagement in green urbanization and sustainable urban development

Learning outcomes:

After the course, students will be able to

- Describe the principles and concepts of green urbanization and its linkages with sustainable development
- Design sustainable urban development strategies that promote environmental, social, and economic sustainability
- Evaluate and explain the effectiveness of sustainable urban development strategies and the role of urban planning and policy in promoting green urbanization
- Explain the importance of interdisciplinary and collaborative approaches to green urbanization and sustainable urban development
- Communicate and collaborate effectively with stakeholders in green urbanization and sustainable urban development projects

SYLLABUS OF DSE-EVS-13

Theory (02 Credits: 30 lectures)

UNIT – I Introduction to Green Urbanization and Sustainable Urban Design (3½ Weeks) (7 lectures)

What is Green Urbanization?, Concept of sustainability in urbanization, Historical context and evolution of urbanization, Challenges and opportunities of Green Urbanization, Role of urban planning in promoting Green Urbanization

Principles of sustainable urban design, Importance of green spaces in urban areas, Role of urban design in promoting sustainable transportation, Importance of green infrastructure in urban areas, Urban heat island mitigation strategies

UNIT – II Sustainable Transportation (2 Weeks) (4 lectures)

Sustainable transportation planning and policy, Public transportation systems and infrastructure, Active transportation options and infrastructure (walking, biking), Electric vehicles and charging infrastructure, Transit-oriented development (TOD) and its benefits

UNIT – III Green Buildings and Energy Efficiency (2 Weeks) (4 lectures)

Principles of green building design, Energy-efficient building design and technologies, Role of building codes and standards in promoting green building, Renewable energy systems for urban areas, Green building certification programs and their benefits

UNIT – IV Sustainable Water Management (2 Weeks) (4 lectures)

Importance of sustainable water management in urban areas, Water conservation and efficiency strategies, Sustainable stormwater management, Water reuse and recycling strategies, Green infrastructure for stormwater management

UNIT –V Sustainable Waste Management (2 Weeks) (4 lectures)

Importance of sustainable waste management in urban areas, Strategies for reducing waste and increasing recycling, Composting and organic waste management, Waste-to-energy technologies and their benefits, Extended Producer Responsibility (EPR) and its role in sustainable waste management

UNIT –VI Social Equity and Financing Green Urbanization (3½ Weeks) (7 lectures)

Social equity-environmental justice-green urbanization, Community for sustainable urban planning, Strategies for affordable housing and sustainable development, Green spaces for all

Public-private partnerships for sustainable urban development, Green bonds and sustainable urban projects, Tax incentives for green urbanization, Green banks and financing for urban sustainability, Crowdfunding and for financing urban sustainability

Teaching and learning interface for theoretical concepts

To achieve the course objectives and match with the contents, a wide range of teaching and learning tools will be employed, including (a) Formal lectures; (b) Interactive sessions using visual aid; (c) Case study analyses; (d) Hypothetical scenario building; (e) Group discussion on key topics; and (f) documentary screening and critical analyses.

Practicals/Hands-on Exercises – based on theory (02 Credits: 60 hours)

1. Conduct a case study on a green urban development project and evaluate its effectiveness in promoting sustainability
2. Design a green infrastructure plan for a specific urban area, considering factors such as land use, vegetation, and water management
3. Develop a sustainable transportation plan for an urban area, incorporating options such as public transit, cycling, and walking
4. Conduct a building energy audit and recommend strategies for reducing energy consumption and increasing efficiency
5. Develop a green building certification programme and evaluate its potential benefits for promoting sustainable urban development.
6. Design a stormwater management plan for an urban area, incorporating green infrastructure and water reuse strategies
7. Conduct a waste audit and recommend strategies for reducing waste and increasing recycling in an urban area
8. Develop a green space plan for an urban area, considering factors such as biodiversity, recreation, and community engagement
9. Design a sustainable urban food system plan, considering factors such as local food production, distribution, and waste reduction
10. Conduct a social equity assessment of a green urban development project and recommend strategies for promoting equitable outcomes
11. Survey of public perceptions of green urbanization and evaluate the potential for public support
12. Develop a public outreach campaign to promote green urbanization and sustainability
13. Analyze the potential for green jobs and economic development in the green urbanization sector

Teaching and learning interface for practical skills

To impart training on technical and analytical skills related to the course objectives, a wide range of learning methods will be used, including (a) laboratory practicals; (b) field-work exercises; (c) customized exercises based on available data; (d) survey analyses; and (e) developing case studies; (f) demonstration and critical analyses; and (h) experiential learning individually and collectively.

Essential/recommended readings

- Abbott, C. (2021). Greening cities in Asia: Governance, institutions and urban development. Edward Elgar Publishing.
- Beatley, T. (2018). Biophilic cities: Integrating nature into urban design and planning. Island Press.
- González, J. A. (2020). Green infrastructure in urban planning: A guide for practitioners. Routledge
- Mahmood, A. (2020). Green urbanism: Formulating a sustainable urban future. Routledge.
- Roberts, P., & Sykes, O. (2018). Urban green spaces: A complete guide to parks, gardens, and other outdoor spaces in towns and cities. Routledge.

- Zhang, Y., & Lu, Y. (2021). Smart and green urban development: New concepts and strategies for sustainable mobility. Routledge.

Suggested readings

- Beatley, T. (2021). Green urbanism down under: Learning from sustainable communities in Australia. Island Press.
- Christensen, P., & Nilsson, K. (2020). Sustainable urban development: A smart and green approach to city regeneration. Palgrave Macmillan.
- Kabisch, N., Korn, H., Stadler, J., & Bonn, A. (2017). Nature-based solutions to climate change adaptation in urban areas: Linkages between science, policy and practice. Springer.
- Puppim de Oliveira, J. A. (2019). Urban sustainability in the context of climate change: Adaptation, resilience, and opportunities in cities. Springer.
- Zhang, Y. (2019). Urban regeneration and sustainability: Best practices from European cities. Routledge.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE (DSE-EVS-14): ENERGY AND ENVIRONMENT

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSE-EVS-14: ENERGY AND ENVIRONMENT	4	2	0	2	Class XII pass	NA

Learning objectives

The Learning Objectives of this course are as follows:

- Introduce fundamental concepts and principles related to the energy and environment
- Gain knowledge of the sources of energy and the impacts of its production and consumption
- Identify the technological, economic, and social perspective of energy
- Analyze the environmental and social implications of energy sources and evaluate policies related to energy for sustainable environmental practices
- Foster awareness of the interconnectedness of global energy and environmental issues

Learning outcomes:

After the course, students will be able to

- Explain the principles and concepts of energy and its impacts on environment
- Evaluate the merit and demerits of different energy sources and associated technologies
- Analyze the environmental and social implications of energy production and consumption
- Evaluate the effectiveness of policies and strategies for promoting sustainable energy and environmental practices.
- Advocate for sustainable energy and environmental practices as informed and active citizens

SYLLABUS OF DSE-EVS-14

Theory (02 Credits: 30 lectures)

UNIT – I Concepts of Energy and Environment (1 Weeks) (2 lectures)

Definition and scope of energy and environment, Types of energy and their environmental impacts, Energy production and consumption trends, Global warming and climate change, Ecological footprint, Energy and environmental policies, Environmental impact assessment, Sustainable development

UNIT – I Fossil Fuels and their Environmental Impact (1 Weeks) (2 lectures)

Coal, oil, and gas extraction and processing, Greenhouse gas emissions and climate change, Air pollution from fossil fuels, Water pollution from fossil fuels, Environmental impacts of oil spills, Acid rain, Land degradation from mining, Fossil fuel dependence and energy security

UNIT – II Renewable Energy Sources (1 Weeks) (2 lectures)

Solar energy, Wind energy, Geothermal energy, Hydroelectric power, Ocean energy, Bioenergy, Biomass and biofuels, Renewable energy technologies and their environmental impact

UNIT – III Energy Efficiency and Conservation (2 Weeks) (4 lectures)

Energy efficiency in buildings, Energy-efficient appliances and electronics, Transportation efficiency and fuel economy, Energy conservation behaviours, Energy audits and retrofits, Green building design and construction, Smart grids and energy storage, Energy-efficient lighting

UNIT – IV Energy and the Environment in Developing Countries (3½ Weeks) (7 lectures)

Energy access and poverty alleviation, Energy consumption patterns in developing countries, Clean energy technologies for developing countries, Environmental impacts of energy in developing countries, Energy and sustainable development, Energy financing and investment in developing countries, Capacity building and technology transfer, International cooperation on energy and the environment, India's efforts for a sustainable sources of energy and self-reliance

UNIT – V Environmental Impacts of Nuclear Energy (2½ Weeks) (5 lectures)

Nuclear power generation and its environmental impact, Nuclear accidents and their environmental impact, Nuclear waste management and disposal, Nuclear proliferation and security risks, Alternatives to nuclear energy, Public perception of nuclear energy, Nuclear energy and climate change, Nuclear energy policies and regulations

UNIT –VI Energy Policy and Regulation (2½ Weeks) (5 lectures)

International energy policies and agreements, National energy policies and goals, Renewable energy incentives and subsidies, Fossil fuel subsidies and taxation, Energy market regulation, Energy efficiency standards and labelling, Carbon pricing and emissions trading, Energy security and geopolitical considerations

UNIT – VII Emerging Energy Technologies and Future Prospects (1½ Weeks) (3 lectures)
Energy storage technologies, Carbon capture and storage, Artificial photosynthesis, Fusion energy, Energy from waste, Smart cities and energy systems, Future energy scenarios and modelling, Technological innovation and energy transitions

Teaching and learning interface for theoretical concepts

To achieve the course objectives and match with the contents, a wide range of teaching and learning tools will be employed, including (a) Formal lectures; (b) Interactive sessions using visual aid; (c) Case study analyses; (d) Hypothetical scenario building; (e) Group discussion on key topics; and (f) documentary screening and critical analyses.

Practicals/Hands-on Exercises – based on theory (02 Credits: 60 hours)

1. Measure energy consumption of household appliances and calculate the energy savings from switching to energy-efficient appliances and recommend the most efficient options
2. Conduct an energy audit of a building to identify areas of energy waste in a building and recommend energy-saving measures
3. Analyze the carbon footprint of a household or business and recommend ways to reduce it
4. Evaluate the environmental impact of different waste disposal methods in your city and recommend the most sustainable options
5. Investigate the impact of water usage on the environment and energy sector and recommend ways to conserve water sustainably
6. Analyze the impact of energy policy on the environment and recommend more sustainable policies.
7. Investigate the impact of transportation choices on energy and the environment and develop a sustainable plan for the city
8. Measure the efficiency of solar panels under different light intensities and angles of incidence
9. Assess the environmental impacts of a product or process throughout its entire life cycle, from raw materials extraction to disposal.
10. Measure the concentration of different greenhouse gases in the atmosphere and track their trends over time
11. Set up to convert waste materials into energy using selected biological method(s)
12. Analyze using of electric vehicles or public transportation in your city as sustainable transportation options and evaluate their environmental impacts

Teaching and learning interface for practical skills

To impart training on technical and analytical skills related to the course objectives, a wide range of learning methods will be used, including (a) laboratory practicals; (b) field-work exercises; (c) customized exercises based on available data; (d) survey analyses; and (e) developing case studies; (f) demonstration and critical analyses; and (h) experiential learning individually and collectively.

Essential/recommended readings

- Hoffert, M. I. (2021). Energy and climate change: How to achieve a successful energy transition. Cham, Switzerland: Springer.
- Mebratu, D. (2021). Energy, environment, and sustainable development: A socio-economic approach. Abingdon, UK: Routledge.
- Smil, V. (2020). Growth: From microorganisms to megacities. Cambridge, MA: MIT Press.
- Sovacool, B. K., Heffron, R. J., & McCauley, D. (Eds.). (2020). Energy democracy: Goals and policies. Cham, Switzerland: Palgrave Macmillan.
- Westra, L., & Carbonnier, G. (2021). Energy transition, capitalism and the environment: Problems and solutions. Abingdon, UK: Routledge.

Suggested readings

- Burchell, K., & Rettie, R. (2021). Energy ethics: Conceptualizing a moral compass for energy transitions. London, UK: Palgrave Pivot.
- Levi, M. A. (2021). The power surge: Energy, opportunity, and the battle for America's future. New York, NY: Oxford University Press.
- Monbiot, G. (2021). Heat: How to stop the planet burning. London, UK: Penguin.
- Nye, D. E. (2021). Powering the new civilization: Energy, civilization, and the demands of the future. New York, NY: HarperCollins.
- Raza, S. A. (2021). The political ecology of energy transitions: A political economy approach. Abingdon, UK: Routledge.
- Rifkin, J. (2020). The Green New Deal: Why the fossil fuel civilization will collapse by 2028, and the bold economic plan to save life on Earth. New York, NY: St. Martin's Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE (DSE-EVS-15): BIOINFORMATICS & ENVIRONMENT

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSE-EVS-15: BIOINFORMATICS & ENVIRONMENT	4	2	0	2	Class XII pass	NA

Learning objectives

The Learning Objectives of this course are as follows:

- Introduce the principles of bioinformatics for environmental research
- Provide with hands-on experience of bioinformatics to analyze biological data for environmental research
- Enable to address the challenges and opportunities of using bioinformatics in environmental science
- Enable students to communicate effectively and professionally about bioinformatics research and its implications for environmental science.

Learning outcomes:

After the course, students will be able to

- Use bioinformatics to analyze biological data for environmental research
- Evaluate the quality of bioinformatics data and use it for environmental science
- Communicate effectively the use of bioinformatics for environmental protection
- Apply problem-solving skills to real-world bioinformatics and environmental research challenges
- Use environmental challenges as novel opportunities by applying bioinformatics for developing sustainable approaches for environmental protection

SYLLABUS OF DSE-EVS-15

Theory (02 Credits: 30 lectures)

UNIT – I Bioinformatics Basics (2 Weeks) (4 lectures)

Definition and Scope of Bioinformatics, Biological Data Types and Sources, Introduction to Computer Science and Mathematics for Bioinformatics, Overview of Bioinformatics Tools and Databases, Sequence Alignment and Assembly Algorithms, Phylogenetic Analysis and Molecular Evolution

UNIT – II Genomics and Transcriptomics (2½ Weeks) (5 lectures)
DNA Sequencing Technologies and Platforms, Genome Sequencing, Assembly, Annotation and Visualization, Comparative Genomics, Gene Expression Transcriptomics Analysis and Interpretation, and Epigenetics Analysis

UNIT – III Proteomics and Metabolomics (3 Weeks) (6 lectures)
Proteomics Technologies and Platforms, Protein Separation and Identification, Mass Spectrometry and Peptide Mapping, Protein-Protein Interactions and Complex Analysis, Metabolomics and Metabolic Pathway Analysis, Metabolite Profiling and Identification, Biomarker Discovery and Validation, Integration of Omics Data and Network Analysis

UNIT – IV Computational Biology and Biostatistics (1½ Weeks) (3 lectures)
Biostatistical Methods and Techniques, Hypothesis Testing and Model Selection, Regression Analysis and Linear Models, Machine Learning and Data Mining, Statistical Analysis of Biological Data

UNIT – V Systems Biology and Network Analysis (2 Weeks) (4 lectures)
Systems Biology Concepts and Approaches, Regulatory Networks and Pathways, Signaling Networks and Cell Communication, Metabolic Networks and Flux Balance Analysis, Network Visualization and Analysis

UNIT – VI Environmental Genomics and Metagenomics (4 Weeks) (8 lectures)
Environmental DNA: sampling, sequencing, and analysis; Metagenomics for: biodiversity assessment, community analysis, understand biogeochemistry, determine ecosystem functioning; and ascertain functional diversity

Bioinformatics Applications in: developing stress-tolerant crops, genomics for animal breeding, improving livestock health, management of aquaculture and fisheries, environmental monitoring, bioremediation, bioprospecting and conservation

Teaching and learning interface for theoretical concepts

To achieve the course objectives and match with the contents, a wide range of teaching and learning tools will be employed, including (a) Formal lectures; (b) Interactive sessions using visual aid; (c) Case study analyses; (d) Hypothetical scenario building; (e) Group discussion on key topics; and (f) documentary screening and critical analyses.

Practicals/Hands-on Exercises – based on theory (02 Credits: 60 hours)

1-4. Familiarize with commonly used bioinformatics tools and databases, such as BLAST, ClustalW, NCBI, and UniProt
5-6. Sequence analysis and alignment of nucleotide and protein sequences and analyze their properties
1. Familarize with basics of genome annotation and comparative genomics using different software and tools
8-9. Analyze metagenomic data, identify and classify microbial communities, and explore their functional properties

10-11. Know dealing with RNA sequencing data for transcriptome analysis and explore gene expression patterns
12-13. Explore protein structure and function using different software and tools or learn basics of identification and quantification of metabolites, and exploration of metabolic pathways
14-15. Learn basic statistical techniques and perform data analysis on biological datasets, such as hypothesis testing and regression analysis,

Teaching and learning interface for practical skills

To impart training on technical and analytical skills related to the course objectives, a wide range of learning methods will be used, including (a) laboratory practicals; (b) field-work exercises; (c) customized exercises based on available data; (d) survey analyses; and (e) developing case studies; (f) demonstration and critical analyses; and (h) experiential learning individually and collectively.

Essential/recommended readings

- Bell, T., & Lilley, A. (2019). Environmental Proteomics: Methods and Protocols. Springer.
- Carvalho, R. (2019). Bioinformatics for Biologists. Wiley.
- Li, R. W. (2018). Environmental Metagenomics: Methods, Protocols, and Applications. Humana Press.
- Xia, X. (2019). Ecological Bioinformatics: The Role of Bioinformatics in Studying Ecology. Academic Press.
- Zhu, D. (2021). Environmental Bioinformatics. CRC Press.

Suggested readings

- Hirsch, A. (Ed.). (2020). Environmental DNA: A Practical Guide to Methods, Applications, and Data Analysis. Wiley.
- Liu, Z. (2020). Bioinformatics in Aquaculture: Principles and Methods. Academic Press.
- Karlovsky, P. (Ed.). (2019). Environmental Metabolomics: Methods and Protocols. Humana Press.
- Huang, X., & Madan, A. (2019). Environmental Bioinformatics. Springer.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE (DSE-EVS-16): DATA ANALYTICS FOR ENVIRONMENTAL SUSTAINABILITY

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSE-EVS-16: DATA ANALYTICS FOR ENVIRONMENTAL SUSTAINABILITY	4	2	0	2	Class XII pass	NA

Learning objectives

The Learning Objectives of this course are as follows:

- Introduce the concepts and principles of data analytics in the context of environmental sustainability
- Enable to collect, process, analyze, and visualize environmental data using appropriate software tools and techniques
- Equip to apply statistical and machine learning techniques to environmental data analysis and interpretation
- Provide practical experience in using data analytics for environmental impact assessment, carbon accounting, and waste management
- Enhance understanding of the role of data analytics in promoting sustainable development and environmental stewardship

Learning outcomes:

After the course, students will be able to

- Describe the principles and importance of data analytics for environmental sustainability
- Collect and process environmental data using appropriate software tools
- Analyze environmental data using statistical and machine learning techniques.
- Visualize environmental data using appropriate software tools and techniques
- Apply data analytics to environmental impact assessment, carbon accounting, and waste management
- Demonstrate critical thinking, problem-solving, and decision-making skills related to environmental sustainability

SYLLABUS OF DSE-EVS-16

Theory (02 Credits: 30 lectures)

UNIT – I Introduction to Environmental Sustainability and Data Analytics
(2 Weeks) (4 lectures)

Introduction to environmental sustainability, Overview of data analytics, Importance of data analytics in environmental sustainability, Data types and sources for environmental sustainability, Techniques for data analysis and interpretation, Environmental data

visualization, Case studies in data analytics for environmental sustainability, Ethics of data collection and analysis in environmental sustainability

UNIT – II Environmental Data Collection and Processing (2 Weeks) (4 lectures)
Overview of environmental data collection methods, Techniques for cleaning and preprocessing environmental data, Quality assurance and quality control for environmental data, Big data and cloud computing for environmental data processing, Data warehousing and data management in environmental sustainability, Geographic information systems (GIS) for environmental data, Data integration and data fusion for environmental sustainability, Challenges and limitations of environmental data collection and processing

UNIT – III Data Analytics Techniques for Environmental Sustainability
(2 Weeks) (4 lectures)
Introduction to statistical analysis for environmental data, Regression analysis for environmental data, Time series analysis for environmental data, Spatial analysis for environmental data, Machine learning techniques for environmental data analysis, Data clustering and classification for environmental sustainability, Network analysis for environmental sustainability, Visualization techniques for environmental sustainability data

UNIT – IV Modeling and Simulation for Environmental Sustainability
(2 Weeks) (4 lectures)
Introduction to modeling and simulation in environmental sustainability, Modeling techniques for environmental sustainability, Environmental systems dynamics modelling, Agent-based modeling for environmental sustainability, System dynamics modeling for environmental sustainability, Optimization modeling for environmental sustainability, Monte Carlo simulation for environmental sustainability, Case studies in modeling and simulation for environmental sustainability

UNIT – V Environmental management and conservation using data analytics
(2 Weeks) (4 lectures)
Data analytics for: environmental impact and risk assessment, environmental regulations compliance, conservation monitoring; Case studies of using data analytics in: biodiversity conservation, and water and waste management

Teaching and learning interface for theoretical concepts

To achieve the course objectives and match with the contents, a wide range of teaching and learning tools will be employed, including (a) Formal lectures; (b) Interactive sessions using visual aid; (c) Case study analyses; (d) Hypothetical scenario building; (e) Group discussion on key topics; and (f) documentary screening and critical analyses.

Practicals/Hands-on Exercises – based on theory (02 Credits: 60 hours)

1. Introduction to R programming for environmental data analysis
2. Cleaning and preprocessing environmental data using Excel
3. Visualization of environmental data using Tableau
4. Regression analysis for environmental data using R
5. Time series analysis for environmental data using Python

6. Spatial analysis for environmental data using ArcGIS
7. Data clustering and classification for environmental sustainability using R
8. Monte Carlo simulation for environmental sustainability using Excel
9. Environmental impact assessment using data analytics
10. Carbon accounting and management using Excel
11. Analysis of weather and climate data using Python
12. Social media analysis for environmental sustainability using Netlytic

Teaching and learning interface for practical skills

To impart training on technical and analytical skills related to the course objectives, a wide range of learning methods will be used, including (a) laboratory practicals; (b) field-work exercises; (c) customized exercises based on available data; (d) survey analyses; and (e) developing case studies; (f) demonstration and critical analyses; and (h) experiential learning individually and collectively.

Essential/recommended readings

- Cooper, J. (2016). Environmental impact assessment: A practical guide (2nd ed.). Wiley-Blackwell.
- Grolemund, G., & Wickham, H. (2018). R for data science: Import, tidy, transform, visualize, and model data. O'Reilly Media.
- James, G., Witten, D., Hastie, T., & Tibshirani, R. (2013). An Introduction to Statistical Learning: With Applications in R. Springer.
- Lawhead, J. (2018). Learning ArcGIS Pro. Packt Publishing.
- Matthews, H. D. (2020). Climate data analytics: An introductory guide. Cambridge University Press.
- Wall, D. H., & Evans, D. A. D. (2018). Environmental analytics: Methods and applications for the chemical and environmental sciences. Wiley.
- Zhang, Y., Lu, Y., & Guo, M. (2020). Big data analytics for environmental sustainability: Challenges, opportunities and practices. Springer.

Suggested readings

- Alexander, M. J., & Walkenbach, J. (2019). Excel 2019 Bible. Wiley.
- Kaufman, L., & Rousseeuw, P. J. (2009). Finding groups in data: An introduction to cluster analysis (2nd ed.). Wiley.
- Murray, S. (2020). Tableau your data!: Fast and easy visual analysis with Tableau Software. Wiley.
- Petts, J. (2018). Handbook of environmental impact assessment (2nd ed.). Wiley.
- Sleeter, B. M., & Davis, K. F. (2019). Mapping with ArcGIS Pro: Design accurate and user-friendly maps to share the story of your data. Packt Publishing.
- VanderPlas, J. (2016). Python data science handbook: Essential tools for working with data. O'Reilly Media.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE (DSE-EVS-17): ENVIRONMENTAL SUSTAINABILITY AND DATA VISUALIZATION

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSE-EVS-17: ENVIRONMENTAL SUSTAINABILITY AND DATA VISUALIZATION	4	2	0	2	Class XII pass	NA

Learning objectives

The Learning Objectives of this course are as follows:

- Develop skills in data collection, cleaning, and preparation for visualization
- Learn various data visualization techniques for environmental data analysis and communication
- Apply data analysis and visualization skills to real-world environmental sustainability problems
- Develop critical thinking skills in environmental sustainability and data visualization

Learning outcomes:

After the course, students will be able to

- Collect, clean, and prepare environmental data for analysis and visualization
- Use various data visualization techniques such as line charts, heat maps, and tree maps for environmental data analysis and communication
- Apply data analysis and visualization skills to real-world environmental sustainability problems and create compelling data visualization presentations
- Develop critical thinking skills in environmental sustainability and data visualization and evaluate the effectiveness of different visualization techniques for different audiences

SYLLABUS OF DSE-EVS-17

Theory (02 Credits: 30 lectures)

UNIT – I Introduction to Environmental Sustainability and Data Visualization (2 Weeks) (4 lectures)

Introduction to environmental sustainability, Introduction to data visualization, Overview of environmental data sources, Role of data visualization in environmental sustainability, Basic statistical concepts, Introduction to data analysis software (e.g. Excel, R, Python), Introduction to data visualization software (e.g. Tableau, Power BI), Case studies in environmental sustainability and data visualization

UNIT – II Climate Change and Data Visualization (2 Weeks) (4 lectures)
Overview of climate change and its causes, Analysis of climate change data (e.g. temperature, carbon emissions), Visualization of climate change data (e.g. line charts, heat maps), Communicating climate change data to various audiences, Case studies in climate change data visualization

UNIT – III Resource Depletion and Data Visualization (2 Weeks) (4 lectures)
Overview of resource depletion (e.g. water, oil, minerals), Analysis of resource depletion data, Visualization of resource depletion data (e.g. bar charts, scatter plots), Communicating resource depletion data to various audiences, Case studies in resource depletion data visualization

UNIT – IV Pollution and Data Visualization (2 Weeks) (4 lectures)
Overview of pollution (e.g. air, water, soil), Analysis of pollution data, Visualization of pollution data (e.g. maps, histograms), Communicating pollution data to various audiences, Case studies in pollution data visualization

UNIT – V Biodiversity Loss and Data Visualization (2 Weeks) (4 lectures)
Overview of biodiversity loss, Analysis of biodiversity data, Visualization of biodiversity data (e.g. network graphs, tree maps), Communicating biodiversity data to various audiences, Case studies in biodiversity data visualization

UNIT – VI Sustainability in Industry and Data Visualization (2½ Weeks) (5 lectures)
Overview of sustainability in various industries (e.g. agriculture, energy, transportation), Analysis of sustainability data in industry, Visualization of sustainability data in industry (e.g. bubble charts, stacked bars), Communicating sustainability data in industry to various audiences, Case studies in sustainability data visualization in industry

UNIT – VII Communicating Environmental Data (2½ Weeks) (5 lectures)
Overview of communication strategies for environmental data, Choosing appropriate visualization types for different audiences, Design principles for effective data visualizations, Best practices for communicating environmental data, Case studies in effective communication of environmental data

Teaching and learning interface for theoretical concepts

To achieve the course objectives and match with the contents, a wide range of teaching and learning tools will be employed, including (a) Formal lectures; (b) Interactive sessions using visual aid; (c) Case study analyses; (d) Hypothetical scenario building; (e) Group discussion on key topics; and (f) documentary screening and critical analyses.

Practicals/Hands-on Exercises – based on theory (02 Credits: 60 hours)

1. Understand the basics of data visualization and different types of charts/graphs
2. Analyze climate change data and create visualizations using line charts and heat maps
3. Examine data on resource depletion and generate visual representations using bar graphs and scatter plots.
4. Create visual representations of pollution data by using maps and histograms after examining the dataset.

5. Analyze biodiversity data and create visualizations using network graphs and tree maps.
6. Assess sustainability data across different industries and produce visualizations using stacked bars and bubble charts.
7. Design effective visualizations and communicate environmental data to various audiences.
8. Use GIS software to analyze and visualize environmental data
9. Collect environmental data from online sources using web scraping techniques.
10. Use NLP techniques to analyze environmental data from textual sources.
11. Create visualizations that support decision-making processes related to environmental sustainability.
12. Use data storytelling techniques to communicate environmental sustainability issues and solutions

Teaching and learning interface for practical skills

To impart training on technical and analytical skills related to the course objectives, a wide range of learning methods will be used, including (a) laboratory practicals; (b) field-work exercises; (c) customized exercises based on available data; (d) survey analyses; and (e) developing case studies; (f) demonstration and critical analyses; and (h) experiential learning individually and collectively.

Essential/recommended readings

- Berg, L. R., & Hassenzahl, D. M. (2016). Visualizing Environmental Science. John Wiley & Sons.
- Cairo, A. (2019). How Charts Lie: Getting Smarter about Visual Information. W. W. Norton & Company.
- Healy, K. (2018). Data Visualization: A Practical Introduction. Princeton University Press.
- Theus, M. (2019). Interactive Data Visualization: Foundations, Techniques, and Applications. Chapman and Hall/CRC.
- Tufte, E. R. (2017). The Visual Display of Quantitative Information. Graphics Press.

Suggested readings

- Baumer, B., Kaplan, D. T., & Horton, N. J. (2020). Modern Data Science with R. CRC Press.
- Handbook: Berg, L. R., & Hassenzahl, D. M. (2016). Visualizing Environmental Science. John Wiley & Sons.
- Kellner, K., & Niederer, C. (Eds.). (2019). Data Visualization in Society. Amsterdam University Press.
- Mann, D. J. (2018). Data Visualization for Social Science: A Practical Introduction with R and ggplot2. Routledge.
- Theus, M. (2019). Interactive Data Visualization: Foundations, Techniques, and Applications. Chapman and Hall/CRC.
- Wickham, H., & Grolemund, G. (2017). R for Data Science: Import, Tidy, Transform, Visualize, and Model Data. O'Reilly Media.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE (DSE-EVS-18): INTRODUCTION TO OCEANOGRAPHY

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSE-EVS-18: INTRODUCTION TO OCEANOGRAPHY	4	2	0	2	Class XII pass	NA

Learning objectives

The Learning Objectives of this course are as follows:

- Familiarize with physico-chemical, and geological characteristics of the ocean
- Gain insights into the interactions among the ocean-atmosphere-land in the background of human activities
- Emphasize the importance of the ocean for human well-being and sustainability

Learning outcomes:

After the course, students will be able to

- Assess the critical linkages among physico-chemical and geological processes occurring in the oceans
- Decipher the interactions between the ocean and Earth's components
- Analyze oceanographic data analysis and interpret it to relate it with human activities and global environmental policies
- Develop an appreciation of the relevance of oceans in society and determining global challenges

SYLLABUS OF DSE-EVS-18

Theory (02 Credits: 30 lectures)

UNIT – I Oceanography basics (2½ Weeks) (5 lectures)

Definition of oceanography, History of oceanography, Importance of oceanography, Scientific methods in oceanography, Oceanographic tools and equipment, Ocean basins and features, Ocean circulation, Oceanography career opportunities

UNIT – II Physical and chemical oceanography (3 Weeks) (6 lectures)

Properties of seawater, Ocean currents, Waves, Tides, Ocean circulation, Heat budget, Water masses, Coastal oceanography

Properties of seawater, Major ions in seawater, Nutrients, Dissolved gases, pH and ocean acidification, Biogeochemical cycles, Marine pollution, Harmful algal blooms

UNIT – III Geological and biological oceanography (3 Weeks) (6 lectures)
Plate tectonics, Seafloor, Marine sediments, Paleooceanography, Mineral resources, Coastal processes, Sea level rise due to climate change, Oceanographic data and its analysis

Marine life and ecosystems: phytoplankton, zooplankton, mammals, and fisheries; Climate change and marine ecosystems

UNIT –IV Marine ecology (2 Weeks) (4 lectures)
Marine food webs and ecosystem dynamics, Mangroves and coral reefs, seagrass beds, Deep-sea ecosystems, Marine conservation and protected areas

UNIT –V Oceanography and climate (2½ Weeks) (5 lectures)
Ocean-atmosphere interactions, Oscillations: El Niño-Southern, North-Atlantic; Monsoons and climate modelling, Hurricanes and typhoons, Climate change policy and oceanography

UNIT –VI Oceanography and human interaction (2 Weeks) (4 lectures)
Maritime history and culture, Oceanographic related: law, policy, economics, technology, education, tourism, and recreation

Teaching and learning interface for theoretical concepts

To achieve the course objectives and match with the contents, a wide range of teaching and learning tools will be employed, including (a) Formal lectures; (b) Interactive sessions using visual aid; (c) Case study analyses; (d) Hypothetical scenario building; (e) Group discussion on key topics; and (f) documentary screening and critical analyses.

Practicals/Hands-on Exercises – based on theory (02 Credits: 60 hours)

1. Familiarize with common oceanographic equipment such as CTD, Niskin bottles, and plankton nets
2. Measure seawater temperature, salinity, and density using a CTD
3. Analyse satellite imagery for oceanographic data such as sea surface temperature and chlorophyll concentration
4. Calculate oceanographic parameters using remote sensing data
5. Measure seawater pH and carbonate chemistry using a spectrophotometer
6. Calculate pH and pCO2 values from carbonate chemistry data
7. Interpret oceanographic data and preparation of graphical presentations
8. Analyse marine resources such as fisheries and aquaculture using data from government agencies and scientific literature
9. Analysis of marine spatial planning data such as marine protected areas and shipping lanes
10. Calculate spatial distribution of marine resources and assessment of the impact of human activities on marine ecosystems
11. Analyse marine policy and law at national and international levels
12. Calculate the impact of marine policy and law on marine ecosystems and human societies

Teaching and learning interface for practical skills

To impart training on technical and analytical skills related to the course objectives, a wide range of learning methods will be used, including (a) laboratory practicals; (b) field-work exercises; (c) customized exercises based on available data; (d) survey analyses; and (e) developing case studies; (f) demonstration and critical analyses; and (h) experiential learning individually and collectively.

Essential/recommended readings

- Knauss, J. A. (2016). Introduction to Physical Oceanography (2nd ed.). Waveland Press.
- Sverdrup, K. A., Armbrust, E. V., & Armstrong, R. A. (2019). Introduction to the World's Oceans (11th ed.). McGraw-Hill.
- Talley, L. D., Pickard, G. L., Emery, W. J., & Swift, J. H. (2019). Descriptive Physical Oceanography: An Introduction (6th ed.). Academic Press.
- Thurman, H. V. (2017). Introductory Oceanography (11th ed.). Prentice Hall.
- Trujillo, A. P., & Thurman, H. V. (2021). Essentials of Oceanography (13th ed.). Pearson.

Suggested readings

- Garrison, T. (2020). Oceanography: An Invitation to Marine Science (10th ed.). Cengage Learning.
- Martin, J. H., & McCorkle, D. C. (2016). An Introduction to Oceanography (2nd ed.). Jones & Bartlett Learning.
- Pinet, P. R. (2018). Invitation to Oceanography (7th ed.). Jones & Bartlett Learning.
- Segar, D. A. (2019). Introduction to Oceanography: A Life-Earth Science Approach. Springer.
- Stewart, R. H., & Church, T. M. (2019). Oceanography and Marine Biology: An Introduction to Marine Science. Garland Science.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF ENVIRONMENTAL SCIENCE

Category-I

SEMESTER - V

BSC (H) ENVIRONMENTAL SCIENCE

DISCIPLINE SPECIFIC CORE COURSE – 13 (DSC-EVS-13): BIODIVERSITY AND CONSERVATION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-EVS-13: BIODIVERSITY AND CONSERVATION	4	2	0	2	Class XII pass	NA

Learning objectives

The Learning Objectives of this course are as follows:

- Provide fundamental principles of origin and distribution of biodiversity and its conservation
- Examine major threats to biodiversity and their impacts on ecosystems and human well-being
- Investigate the methods and strategies for conserving biodiversity, including protected areas, and sustainable management practices.
- Develop critical thinking skills and to apply scientific principles to the analysis of biodiversity and conservation issues
- Appreciate the paradigm “think globally, act locally” for a sustainable common future of humankind

Learning outcomes

After this course, students will be able to:

- Assess biodiversity and determine its significance for ecological processes
- Explain the underlying factors of generating biodiversity on Earth
- Analyze major threats to biodiversity and its links with human well-being.
- Apply scientific principles to the analysis of biodiversity and conservation issues and evaluate the methods and strategies for conserving biodiversity

- Communicate effectively about biodiversity and conservation issues to both scientific and non-scientific audiences.

SYLLABUS OF DSC-EVS-13

Theory (02 Credits: 30 lectures)

UNIT – I Levels of biological organization and biodiversity patterns (2½ Week) (5 lectures)
From genes to ecosystems; tree of life; history of character transformation; organic evolution through geographic time scale; species concept – what's in a name?; how many species are there on earth?; concept and types of speciation.

Spatial patterns: latitudinal and elevational trends in biodiversity; temporal patterns: seasonal fluctuations in biodiversity patterns; importance of biodiversity patterns in conservation.

UNIT – II Biodiversity estimation (2½ Week) (5 lectures)
Sampling strategies and surveys: floristic, faunal, and aquatic; qualitative and quantitative methods: scoring, habitat assessment, richness, density, frequency, abundance, evenness, diversity, biomass estimation; community diversity estimation: alpha, beta and gamma diversity; molecular techniques: RAPD, RFLP, AFLP; NCBI database, BLAST analyses.

UNIT – III Importance of biodiversity (2 Week) (4 lectures)
Economic values – medicinal plants, drugs, fisheries and livelihoods; ecological services – primary productivity, role in hydrological cycle, biogeochemical cycling; ecosystem services – purification of water and air, nutrient cycling, climate control, pest control, pollination, and formation and protection of soil; social, aesthetic, consumptive, and ethical values of biodiversity.

UNIT – IV Threats to biodiversity (2½ Week) (5 lectures)
Natural and anthropogenic disturbances; habitat loss, habitat degradation, and habitat fragmentation; climate change; pollution; hunting; over-exploitation; deforestation; hydropower development; invasive species; land use changes; overgrazing; man wildlife conflicts; consequences of biodiversity loss; Intermediate Disturbance Hypothesis.

UNIT – V Conservation of Biodiversity (3½ Week) (6 lectures)
In-situ conservation (Biosphere Reserves, National Parks, Wildlife Sanctuaries); Ex-situ conservation (botanical gardens, zoological gardens, gene banks, seed and seedling banks, pollen culture, tissue culture and DNA banks), role of local communities and traditional knowledge in conservation; biodiversity hotspots; IUCN Red List categorization – guidelines, practice and application; Red Data book; ecological restoration; afforestation; social forestry; agro forestry; joint forest management; role of remote sensing in management of natural resources; Conservation planning.

UNIT – VI Biodiversity in India (2½Week) (5 lectures)
India as a mega diversity nation; phytogeographic and zoogeographic zones of the country; forest types and forest cover in India; fish and fisheries of India; impact of hydropower development on biological diversity; status of protected areas and biosphere reserves in the country; National Biodiversity Action Plan.

Practicals/Hands-on Exercises – based on theory (02 Credits: 60 hours)

1. Practice and learn different field survey methods to assess and monitor biodiversity
2. Field trip to a local conservation area to assess the plant and animal diversity
3. Identify threatened and endangered species in a given
4. Assess variations in biodiversity with different types of ecosystems around
5. Estimate biodiversity indices and comparison of biodiversity levels in different locations
6. Determine magnitude of infestation of invasive species and their possible impacts on native species in a given ecosystem
7. Identify and investigate pollinators of selected plant species in a given ecosystem
8. Study the effects of habitat fragmentation or degradation on population of selected species
9. Analyze the conservation strategies and their effectiveness in protecting biodiversity in given natural and restored ecosystems
10. Identify and document economically important species in a given ecosystem
11. Undertake field trip to a local garden/ecosystem to observe different plant species and their adaptations to their environment
12. Analyse the effects of land use change on biodiversity of a given area
13. Investigate the coexistence or competition among species in a given area and based on literature suggest the possible underlying biotic interactions
14. Develop conservation planning for target species and make informed decisions for biodiversity conservation.

Teaching and learning interface for theoretical concepts

To achieve the course objectives and match with the contents, a wide range of teaching and learning tools will be employed, including (a) Formal lectures; (b) Interactive sessions using visual aid; (c) Case study analyses; (d) Hypothetical scenario building; (e) Group discussion on key topics; and (f) documentary screening and critical analyses.

Essential/recommended readings

- Primack, R.B. (2017). Essentials of Conservation Biology (Sixth Edition). Sinauer Associates.
- Gaston, K.J. (2016). Biodiversity: An Introduction (Third Edition). Wiley-Blackwell.
- Wilson, E.O. (2016). Half-Earth: Our Planet's Fight for Life. Liveright Publishing Corporation.
- Kareiva, P., & Marvier, M. (2017). Conservation Science: Balancing the Needs of People and Nature (Second Edition). Roberts and Company Publishers.
- Koh, L.P., & Wilcove, D.S. (2016). Conservation for a New Era: Integrated Conservation Science for the 21st Century. Oxford University Press.

Suggestive readings

- Lovejoy, T.E. (2019). Biodiversity and Climate Change: Transforming the Biosphere. Yale University Press.
- Pimm, S.L. (2018). The Value of Everything: How to Save the World by Making it

Wealthier. PublicAffairs.
- Simberloff, D. (2013). The Ecology of Invasions by Animals and Plants. University of Chicago Press.
- Tallis, H. (2018). The Nature of Conservation: A Race Against Time. Island Press.
- Wilson, E.O. (2016). Half-Earth: Our Planet's Fight for Life. Liveright Publishing Corporation.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 14 (DSC-EVS-14): ORGANISMAL & EVOLUTIONARY BIOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-EVS-14: ORGANISMAL & EVOLUTIONARY BIOLOGY	4	2	0	2	Class XII pass	NA

Learning objectives

The Learning Objectives of this course are as follows:

- Gain insights into principles of evolution and its significance in shaping biological diversity on Earth
- Familiar with classification of organisms from different domains of life and their unique structure and function
- Equip with scientific methods to investigate and understand nuances of organismal and evolutionary biology
- Appreciate the linkages among ecology, conservation biology, and evolutionary biology

Learning outcomes

After this course, students will be able to

- Explain the ecological and molecular processes contributing to evolution, including natural selection, genetic drift, gene flow, and mutation
- Identify and characterize organisms belonging to different domains of life based on their major characteristics and functions
- Design and conduct experiments for better understanding on organismal and evolutionary biology
- Evolve better strategies for biodiversity conservation and improving ecosystem health while taking into account their evolutionary biology

SYLLABUS OF DSC-EVS-14

Theory (02 Credits: 30 lectures)

UNIT – I History of life on Earth and theory of evolution (3½ Week) (7 lectures)

Paleontology and evolutionary History; evolutionary time scale; eras, periods and epoch; major events in the evolutionary time scale; origins of unicellular and multi cellular organisms; major groups of plants and animals; stages in primate evolution

including Homo.

Lamarck's concept of evolution; Darwin's Evolutionary Theory: variation, adaptation, struggle, fitness, and natural selection; Mendelism; spontaneity of mutations; The Evolutionary Synthesis.

UNIT – II Evolution of unicellular life (2½ Week) (5 lectures)
Origin of cells and unicellular evolution and basic biological molecules; abiotic synthesis of organic monomers and polymers; Oparin-Haldane hypothesis; study of Miller; the first cell; evolution of prokaryotes; origin of eukaryotic cells; evolution of unicellular eukaryotes; anaerobic metabolism, photosynthesis and aerobic metabolism.

UNIT – III Evolution of multicellular organisms (2½ Week) (5 lectures)
Origin of multicellularity, Cellular differentiation and specialization, Developmental biology and body plans, Evolution of cell-to-cell communication, Emergence of tissues and organs, Evolution of organ systems, Evolution of life cycles and reproductive strategies, Evolution of multicellular organisms (protists, plants and animals) and their ecological interactions

UNIT – IV Geography of evolution (1½ Week) (3 lectures)
Biogeographic evidence of evolution; patterns of distribution; historical factors affecting geographic distribution; evolution of geographic patterns of diversity.

UNIT – V Molecular evolution (2 Week) (4 lectures)
Neutral evolution; molecular divergence and molecular clocks; molecular tools in phylogeny, classification and identification; protein and nucleotide sequence analysis; origin of new genes and proteins; gene duplication and divergence.

UNIT – VI Fundamentals of population genetics (3 Week) (6 lectures)
Concepts of populations, gene pool, gene frequency; concepts and rate of change in gene frequency through natural selection, migration and genetic drift; adaptive radiation; isolating mechanisms; speciation (allopatric, sympatric, peripatric and parapatric); convergent evolution; sexual selection; co- evolution; Hardy-Weinberg Law.

Teaching and learning interface for theoretical concepts

To achieve the course objectives and match with the contents, a wide range of teaching and learning tools will be employed, including (a) Formal lectures; (b) Interactive sessions using visual aid; (c) Case study analyses; (d) Hypothetical scenario building; (e) Group discussion on key topics; and (f) documentary screening and critical analyses.

Practicals/Hands-on Exercises – based on theory (02 Credits: 60 hours)

1. Analyze effects of pH on the toxicity of heavy metals on model organism, such as Daphnia

2-3. Determine toxicity of varying concentration of industrial effluent on common

alga and measure its growth and survival rates

4-5. Effects of heavy metal toxicity on plant growth, focussing on different plant parts and physiological characteristics

6. Analyze effects of climate change on diversity of pollinators
7. Determine the impacts of environmental chemicals on the abundance and diversity of nematodes (e.g., *Caenorhabditis elegans*)
8. Ascertain the possible impacts of herbicides on weed populations
9. Test the effects of a target organic contaminant on behaviour and mortality of earthworm

10-11. Measure developmental abnormalities in zebrafish embryos due to toxicity of target environmental chemicals

12-13. Prepare and characterize nanoparticles of selected heavy metal and assess effect of nanoparticles on plant growth

15. Effects of various concentrations of road salt on freshwater organisms (e.g., zooplankton) and measure changes in their behavior and survival

Teaching and learning interface for practical skills

To impart training on technical and analytical skills related to the course objectives, a wide range of learning methods will be used, including (a) laboratory practicals; (b) field-work exercises; (c) customized exercises based on available data; (d) survey analyses; and (e) developing case studies; (f) demonstration and critical analyses; and (h) experiential learning individually and collectively.

Essential/recommended readings

- Futuyma, D. J., & Kirkpatrick, M. (2017). Evolution (4th ed.). Sunderland, MA: Sinauer Associates.
- Madigan, M. T., Bender, K. S., Buckley, D. H., Sattley, W. M., & Stahl, D. A. (2018). Brock Biology of Microorganisms (15th ed.). London, UK: Pearson.
- Primack, R. B., & Rodricks, R. V. (2021). Essentials of Conservation Biology (7th ed.). Sunderland, MA: Sinauer Associates.
- Raven, P. H., Evert, R. F., & Eichhorn, S. E. (2022). Biology of Plants (9th ed.). New York, NY: W. H. Freeman.
- Sodhi, N. S., Gibson, L., & Raven, P. H. (2021). Conservation Biology for All. Oxford, UK: Oxford University Press.
- Stearns, S. C., & Hoekstra, R. F. (2021). Evolution: An Introduction (3rd ed.). Oxford, UK: Oxford University Press.
- Zimmer, C., & Emlen, D. J. (2021). Evolution: Making Sense of Life. New York, NY: Macmillan Learning.

Suggestive readings

- Deacon, J. (2019). Fungal Biology (5th ed.). Hoboken, NJ: John Wiley & Sons.
- Haviland, W. A., Prins, H. E. L., Walrath, D., & McBride, B. (2021). Evolution and Prehistory: The Human Challenge (11th ed.). Boston, MA: Cengage Learning.
- Herron, J. C., & Freeman, S. (2020). Evolutionary Analysis (6th ed.). Hoboken, NJ: Pearson.

- Pough, F. H., Janis, C. M., & Heiser, J. B. (2018). Vertebrate Life (10th ed.). London, UK: Pearson.
- Raven, P. H., Johnson, G. B., Mason, K. A., Losos, J. B., & Singer, S. R. (2021). Biology (12th ed.). New York, NY: McGraw-Hill Education.
- Ruppert, E. E., Fox, R. S., & Barnes, R. D. (2021). Invertebrate Zoology: A Functional Evolutionary Approach. Boston, MA: Cengage Learning.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 15 (DSC-EVS-15): NATURAL RESOURCES MANAGEMENT & SUSTAINABILITY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-EVS-15: NATURAL RESOURCES MANAGEMENT & SUSTAINABILITY	4	2	0	2	Class XII pass	NA

Learning objectives

The Learning Objectives of this course are as follows:

- Gain insights into the principles and practices of natural resources management and sustainability
- Understand critical linkages among social, economic, and environmental issues related to natural resources management and sustainability
- Impart analytical and critical thinking skills related to natural resources management and sustainability
- Equip students with the knowledge and skills necessary to develop and implement sustainable solutions to natural resource management challenges
- Prepare students for careers in natural resource management, environmental policy, sustainability, and related fields

Learning outcomes

After this course, students will be able to

- Analyze the socio-economic, and environmental issues related to natural resource management
- Explain the key principles and practices of natural resource management and sustainability.
- Evaluate the effectiveness of natural resource management and sustainability policies and practices and develop sustainable solutions
- Communicate effectively about natural resource management and sustainability issues to a variety of audiences.
- Assess the environmental impacts of natural resource management and sustainability practices and apply ecological, economic an ethical principle to natural resource management and sustainability issues

- Pursue careers in natural resource management, environmental policy, sustainability, and related fields.

SYLLABUS OF DSC-EVS-15

Theory (02 Credits: 30 lectures)

UNIT – I Natural resources and reserves and their management (3½ Weeks) (7 lectures)

Classification of natural resources, Renewable and non-renewable resources, Land resources; Soil resources, Forest resources, food resources, Water resources; Fisheries and other marine resources; energy resources; mineral resources; resource availability and factors influencing its availability; human impact on natural resources; Resource degradation; Resource conservation; Concept of natural resource management, Relationship between natural resource management and sustainability, Stakeholders and natural resource management, Social and economic dimension of resource management, Role of science and technology in natural resource management, Sustainable Development Goals (SDGs) and natural resources.

UNIT –II Land Use and Management (2 Weeks) (4 lectures)

Land use and land cover change, Land use planning and management, Land degradation and desertification, Soil conservation and management, Agroforestry and sustainable agriculture, Urbanization and land use, Land tights, Land use conflict and resolution

UNIT – III Mineral resources (3 Weeks) (6 lectures)

Mineral resources: definition, types, rock cycle, significance in society and importance economic development, Mineral extraction and processing: types of mining, techniques, methods, waste management, and social and environmental impacts, Global consumption patterns of mineral resources, techniques to increase mineral resource supplies; ocean mining for mineral resources, Mineral markets and economics, Mineral governance and policy, Sustainable mineral resource management, Future of mineral resources

UNIT – IV Non-renewable and renewable energy resources (3½ Weeks) (7 lectures)

Oil, coal natural gas liquified natural gas: formation, reserve, exploration, extraction and processing, and consumption; Environmental and economic impacts of non-renewable energy consumption;

Solar energy, hydropower, geothermal energy, tidal energy, wave energy, ocean thermal energy, nuclear power, biomass and biofuel: technology, potential, operational costs, advantages, challenges, innovation and future; Radioactive contamination; Application of green technology; India's efforts and its global impacts on solar mission, Indian renewable energy programme, Future energy options and challenges.

UNIT – V Resource management for sustainability (3 Weeks) (6 lectures)

Approaches in Resource Management: ecological, economic, and ethnological, Implications of integrated resource management; Climate Change and Energy Management: energy sources, efficiency and conservation, carbon capture and storage;

Urban Ecosystems: energy efficiency, transportation, industry, and reduction in greenhouse gas emissions; Energy policy and governance.

Teaching and learning interface for theoretical concepts

To achieve the course objectives and match with the contents, a wide range of teaching and learning tools will be employed, including (a) Formal lectures; (b) Interactive sessions using visual aid; (c) Case study analyses; (d) Hypothetical scenario building; (e) Group discussion on key topics; and (f) documentary screening and critical analyses.

Practicals/Hands-on Exercises – based on theory (02 Credits: 60 hours)

1. Identify, classify and assess the status of different tree species in a given ecosystems and recommend appropriate management strategies
2. Investigate the effects of different land management practices on soil erosion to understand how to prevent soil degradation and protect natural resources
3. Test the water quality of given water samples collected from two water bodies and suggest appropriate management practices
4. Survey and document the socio-economic and ecological importance of plant species sampled from a local ecosystem
5. Assess the current status of plant species prioritized in practical 4 and recommend the appropriate conservation and management practices
6. Calculate and interpret the ecological footprint of a community or organization using the Ecological Footprint Standards.
7. Conduct energy audits of buildings or facilities using standard methods such as the ASHRAE Level I, II, or III Energy Audits.
8. Analyze stakeholders to identify and engage with key stakeholders in natural resources management and sustainability.
9. Conduct life cycle assessment of products or processes using standard methods such as the ISO 14040/14044 standards
10. Document agricultural research priorities of India and comment on its importance as sustainable agricultural practices for natural resource management and food security
11. Develop and implement a sustainable plan for water resource management of your institute
12. Assess the environmental impacts of mining activities in India during past 10 years and identify the shift in trend, if any
13. Analyze mineral/energy resource policies in a national or global context to understand the importance of sustainable mineral resource management.
14. Extract bioenergy from organic waste or crops to understand the importance of renewable energy sources and their management.

Teaching and learning interface for practical skills

To impart training on technical and analytical skills related to the course objectives, a wide range of learning methods will be used, including (a) laboratory practicals; (b) field-work exercises; (c) customized exercises based on available data; (d) survey analyses; and (e) developing case studies; (f) demonstration and critical analyses; and (h) experiential learning individually and collectively.

Essential/recommended readings

- Cleveland, C. J. (2018). Biophysical economics: From physiocracy to ecological economics and industrial ecology. Routledge.
- Folke, C., Österblom, H., Jouffray, J. B., Lambin, E. F., & Adger, W. N. (Eds.). (2020). For ocean sustainability: Challenges, opportunities, and the role of science-policy interaction. Cambridge University Press.
- Mitchell, B. (2019). Resource efficiency and sustainable production: A handbook for achieving sustainability in manufacturing. Springer.
- Reed, M. G. (2021). Environmental and natural resource economics: A contemporary approach. Routledge.
- Varghese, J. (2019). Resource management for sustainable development. Springer.

Suggestive readings

- Agyeman, J. (Ed.). (2020). Sustainability: A handbook for management and leadership. Routledge.
- Daly, H. E. (Ed.). (2017). Valuing the Earth: Economics, ecology, ethics. MIT Press.
- Norton, B. G. (2018). Sustainability: A philosophy of adaptive ecosystem management. University of Chicago Press.
- Westman, W. E. (Ed.). (2018). How much is enough? Shaping the defense program, 1961-1969. Routledge.
- Wright, T. (2020). Sustainable communities and urban housing: A comparative analysis of self-help housing practices in the United States and Mexico. Routledge.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE (DSE-EVS-05): WATERSHED MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSE-EVS-05: WATERSHED MANAGEMENT	4	2	0	2	Class XII pass	NA

Learning objectives

The Learning Objectives of this course are as follows:

- Familiarize with the concepts of watershed management and its relevance in ecological balance
- Gain insights into various physico-chemical, and biological processes related to watersheds and its impact on water quality and quantity
- Empower with tools and methods widely used in watershed management, such as remote sensing and GIS
- Understand the legal and regulatory frameworks governing watershed management at different levels (local, state, and national)

Learning outcomes

After the course, the students will be able to

- Explain the concept of a watershed and its importance in maintaining ecological balance
- Describe the various physical, chemical, and biological processes occurring in watersheds and their impact on water quality and quantity
- Use remote sensing, GIS, and modeling tools to analyze and manage watersheds.
- Identify and explain the legal and regulatory frameworks governing watershed management at the local, state, and national levels
- Evaluate the effectiveness of a watershed management plan through critical analysis of case studies and practical exercises
- Critically evaluate case studies in watershed management to understand challenges and opportunities in the field

SYLLABUS OF DSE-EVS-05

Theory (02 Credits: 30 lectures)

UNIT – I Watershed Management Basics (2½ Weeks) (05 lectures)
Watershed: definition, and characteristics: Watershed Management: approaches, principles, planning, importance, institutional and legal framework, role in sustainable development, and challenges and opportunities

UNIT – II Watershed Hydrology (2 Weeks) (04 lectures)
Precipitation and its measurement, Evaporation and transpiration, Infiltration and percolation, Runoff generation and calculation, Streamflow and stream gauging, Watershed models and simulations, Hydrologic design of watershed management practices, Impacts of climate change on watershed hydrology

UNIT – III Water Quality in Watershed (1½ Weeks) (03 lectures)
Water quality parameters and standards, Sources of water pollution, Point and non-point source pollution, Water quality monitoring and sampling, Water quality modeling

Eutrophication and harmful algal blooms, Water quality management practices, Watershed management for drinking water supply

UNIT – IV Land Use in Watersheds (2½ Weeks) (05 lectures)
land use and land cover change, Land use planning and zoning, Soil erosion and sedimentation, Agricultural management practices for soil and water conservation, Forest management for watershed protection, Urbanization and watershed management, Wetland conservation and management, Mining and watershed management

UNIT – V Management Practices for Sustainable Watershed Management (2 Weeks) (04 lectures)
Best management practices (BMPs), Conservation tillage and crop rotation, Agroforestry and silvopasture, Riparian buffer management, Grassland management, Land treatment and land application, Green infrastructure and low-impact development (lid), Restoration of degraded watersheds

UNIT – VI Watershed Economics (2½ Weeks) (05 lectures)
Economic valuation of watershed services, Benefit-cost analysis of watershed management projects, Water pricing and market-based mechanisms for watershed management, Environmental economics and watershed management, Cost-effective watershed management, Watershed financing and investment, Economic instruments for watershed conservation, Watershed management and rural livelihoods

UNIT –VII Stakeholder Participation and Governance in Watershed Management

(2 Weeks) (04 lectures)
Community-based watershed management, Public participation and stakeholder engagement, Social equity and environmental justice, Governance structures and watershed management, Water user associations (WUAs), Secentralization and devolution of watershed management, Indigenous knowledge and watershed management, Gender and watershed management

UNIT – VIII Case Studies in Watershed Management (1½ Weeks) (03 lectures)
Case studies on: success and failures of watershed management, from developing countries, influence by and adaptation to climate change conflicts and resolution, and ecological restoration; Watershed management and sustainable development goals

Teaching and learning interface for theoretical concepts

To achieve the course objectives and match with the contents, a wide range of teaching and learning tools will be employed, including (a) Formal lectures; (b) Interactive sessions using visual aid; (c) Case study analyses; (d) Hypothetical scenario building; (e) Group discussion on key topics; and (f) documentary screening and critical analyses.

Practicals/Hands-on Exercises – based on theory (02 Credits: 60 hours)

1. Delineate and categorize watershed boundary using digital elevation data and GIS software
2. Calibrate and validate the model by collecting data on climate, land use, soil properties, and topography of the watershed
3. Set up the model in the chosen software by defining the watershed boundary, hydrological processes, and inputs and outputs of the model
4. Conduct a sensitivity analysis to identify the most important model parameters that affect the model's output
5. Document prevalence of invasive species in two most significant watershed regions of India
6. Design and suggest best management practices (BMPs) of world's most notable watershed region and compare it with any watershed region of India
7. Analyze different types of satellite imagery and their use in watershed management
8. Determine the impact of changes in land use and land cover on water quality and watershed management
9. Create a hydrological model of a watershed using remote sensing and GIS, simulating runoff, soil erosion, and other hydrological processes
10. Map wetlands in a watershed using remote sensing and GIS and analyze their functions, such as water storage, nutrient cycling, and biodiversity conservation
11. Determine soil erosion rates in a watershed using remote sensing and GIS and analyze their impact on water quality, sedimentation, and flooding

Teaching and learning interface for practical skills

To impart training on technical and analytical skills related to the course objectives, a wide range of learning methods will be used, including (a) laboratory practicals; (b) field-work exercises; (c) customized exercises based on available

data; (d) survey analyses; and (e) developing case studies; (f) demonstration and critical analyses; and (h) experiential learning individually and collectively.

Essential/recommended readings

- Anderson, C. W., & Miller, W. W. (2021). Watershed management: Planning for the 21st century. John Wiley & Sons.
- Bruijnzeel, L.A., Hamilton, L.S., and Asdak, C. (2011). Rainforest Hydrology, Ecology and Management. Springer.
- Dupigny-Giroux, L. A., McCabe, G. J., & Hirsch, R. M. (2017). State of the art in watershed modeling. John Wiley & Sons.
- King, K.W., Balogh, J.C., and Harmel, R.D. (2010). Watershed Management for Potable Water Supply: Assessing the New York City Strategy. American Society of Agricultural and Biological Engineers.
- National Research Council. (2008). Urban Stormwater Management in the United States. National Academies Press.
- Tindall, J.A., Keren, R.A., and Stone, J.J. (2016). Watershed Management: Planning for the 21st Century. American Society of Civil Engineers.

Suggestive readings

- Ma, J., Su, C., and Liu, W. (Eds.). (2018). River basin management in the twenty-first century: Understanding people and place. CRC Press.
- Miao, S. L., Zhang, C., Cai, Y., & Zhou, J. (Eds.). (2022). Sustainable watershed management in China. Springer.
- Water Environment Federation. (2012). Urban Watersheds: Geology, Contamination, and Sustainable Development. Wiley.
- Wilcock, R.J., and Iverson, R.M. (2013). Surface Water-Quality Modeling. Waveland Press.
- Yang, H. (2010). Integrated Watershed Management in the Global Ecosystem. Nova Science Publishers.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVES (DSE-EVS-6): WETLAND CONSTRUCTION AND MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSE-EVS-6: WETLAND CONSTRUCTION AND MANAGEMENT	4	2	0	2	Class XII pass	NA

Learning objectives

The Learning Objectives of this course are as follows:

- Understand physical and chemical processes for classifying, segregating, and managing solid wastes
- Characterize the different solid waste types and apply interdisciplinary knowledge for effective solid waste collection and processing of solid waste
- Compare methods of collection, transfer, storage, treatment, disposal, and use of solid waste in developed and developing nations
- Management, construction, and operations of landfill and other solid waste management facilities

Learning outcomes

After successful completion of this course, students will be able to:

- Conduct the life cycle assessment of solid waste and its impact on the urban metabolisms
- Identify and select landfill sites using GIS and other analytical techniques
- Examine and apply technical and legal solutions for sustainable management of solid waste
- Plan and design waste recycling programmes, compost and incineration facilities, and landfills
- Mine and analyze the relevant data and apply multiple criteria decision-making systems for a sustainable integrated solid waste management plan

SYLLABUS OF DSE-EVS-06

Theory (02 Credits: 30 lectures)

UNIT – I Wetlands Basics (1½ Weeks) (3 lectures)
Wetlands: definition, classification, functions and values, ecology and hydrology, ecosystem services; Importance in global environment, Wetland plant and animal communities, Wetland biogeochemistry, Threats to wetlands and wetland conservation

UNIT – II Design and Construction of Wetlands (2 Weeks) (4 lectures)
Design and planning principles, Construction techniques and materials, Wetland hydrology and water management, Vegetation selection and planting methods, Soil preparation and amendment, Erosion and sediment control, Monitoring and maintenance of constructed wetlands, Case studies in wetland design and construction

UNIT – III Restoration, Creation, and Wetland Management in Practice (3 Weeks) (6 lectures)
Restoration and creation goals and objectives, Site assessment and planning, Hydrological restoration techniques, Vegetation establishment and management, Wildlife habitat restoration and management, Monitoring and adaptive management of wetland restoration projects, Wetland restoration and creation in urban areas, Case studies in wetland restoration and creation,

Wetland management for: biodiversity conservation, water quality improvement, climate change adaptation and mitigation, and flood control and stormwater management; Challenges and opportunities for wetland management and restoration

UNIT – IV Monitoring and Assessment of Wetlands (2½ Weeks) (5 lectures)
Monitoring and assessment goals and objectives, Indicators of wetland health and function, Methods for measuring wetland hydrology, Vegetation sampling and analysis, Wildlife monitoring and assessment, Water quality monitoring, Data management and analysis, Case studies in wetland monitoring and assessment

UNIT – V Socio-Economic Benefits of and Emerging Issues in Wetland Management (3½ Weeks) (7 lectures)
Economic valuation of wetland services, Wetland-based: livelihoods, tourism, recreation and sustainable development, Wetlands and cultural heritage, Stakeholder engagement in wetland management, Social equity considerations in wetland management

Climate change impacts on wetlands, Innovative wetland management and restoration techniques, Role of wetlands in green infrastructure, and social justice, Wetland management and restoration in the developing world andthe Anthropocene, and Policy and research needs for wetland management and restoration

UNIT – VI Wetland Regulations and Policy (2½ Weeks) (5 lectures)
Wetland regulatory frameworks in India and other developed countries, Wetlands (Conservation and Management Rules) 2017, Wetland impact assessment, Ramsar Convention and international wetland protection, Wetland mitigation banking, Adaptive management for wetland restoration, Legal and ethical considerations in wetland management

Teaching and learning interface for theoretical concepts

To achieve the course objectives and match with the contents, a wide range of teaching and learning tools will be employed, including (a) Formal lectures; (b) Interactive sessions using visual aid; (c) Case study analyses; (d) Hypothetical scenario building; (e) Group discussion on key topics; and (f) documentary screening and critical analyses.

Practicals/Hands-on Exercises – based on theory (02 Credits: 60 hours)

1. Conduct a wetland site assessment and identify wetland vegetation, soils, and hydrological features
2. Analyze a wetland construction project and learn about the methods and materials used in wetland construction
3. Monitor wetland using specific indicators including vegetation characteristics and water quality
4. Identify a suitable site and develop a wetland restoration project based on theoretical concepts
5. Analyze wetland conservation policy and its relations with other environmental and biodiversity conservation policies and regulations
6. Develop and implement a wetland education and outreach program for a local community
7. Calculate water budget of a selected wetland in your area or from any other parts of the country
8. Survey a local wetland and identify characteristics plants using field guides and manuals
9. Document wetland specific wildlife, including birds, amphibians, and reptiles,
10. Analyze wetland soil samples for key soil physico-chemical properties
11. Map wetlands in your city using GIS mapping and assess the ecosystem diversity
12. Conduct a wetland education program and evaluate its effectiveness in promoting importance of wetlands

Teaching and learning interface for practical skills

To impart training on technical and analytical skills related to the course objectives, a wide range of learning methods will be used, including (a) laboratory practicals; (b) field-work exercises; (c) customized exercises based on available data; (d) survey analyses; and (e) developing case studies; (f) demonstration and critical analyses; and (h) experiential learning individually and collectively.

Essential/recommended readings

- Brinson, M. M., & Rheinhardt, R. D. (2017). The practice of wetland restoration. American Society of Civil Engineers.
- Craft, C. B., Seneca, E. D., & Broome, S. W. (2018). Methods in biogeochemistry of wetlands. Soil Science Society of America.
- Lewis, J. (Ed.). (2018). Wetlands law and policy: understanding regulatory and environmental challenges. American Bar Association.
- Richardson, C. J. (Ed.). (2019). The wetland book: I: structure and function, management and methods (2nd ed.). Springer.
- Vymazal, J. (2018). Constructed wetlands for wastewater treatment: municipal, industrial and agricultural. Elsevier.

Suggestive readings

- Middleton, B. A. (2018). Wetland restoration: flood pulsing and disturbance dynamics (2nd ed.). Island Press.
- Millennium Ecosystem Assessment. (2005). Ecosystems and human well-being: wetlands and water synthesis. World Resources Institute.
- Mitsch, W. J., & Gosselink, J. G. (2015). Wetlands (5th ed.). John Wiley & Sons.
- Richardson, C. J., & King, R. S. (2019). Understanding and managing freshwater wetlands (2nd ed.). CRC Press.
- Zedler, J. B., & Kercher, S. (Eds.). (2015). Wetland restoration and construction: a technical guide (2nd ed.). CRC Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE (DSE-EVS-7): WATER TREATMENT TECHNOLOGIES

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSE-EVS-7: WATER TREATMENT TECHNOLOGIES	4	2	0	2	Class XII pass	NA

Learning objectives

The Learning Objectives of this course are as follows:

- Gain insights into physico-chemical, and biological processes involved in water treatment
- Familiarize with different types of water treatment technologies and their applications
- Understand the importance of water quality standards and learn criteria to evaluate the effectiveness of water treatment processes
- Identify and appreciate the critical linkages among environmental, socio-economic impacts of water treatment and importance regulations

Learning outcomes

After the course, students will be able to:

- Explain the performance of water treatment plant based on the physico-chemical, and biological processes
- Apply theoretical concepts for operation, management, and improvement of water treatment systems
- Evaluate the effectiveness of water treatment plants and its link with socio-economic and environmental impacts
- Collaborate for learning the structure and function of local water treatment plants to solve related problems

SYLLABUS OF DSE-EVS-7

Theory (02 Credits: 30 lectures)

UNIT – I Fundamentals of Water Treatment Technologies (1½ Weeks) (3 lectures)
Water sources: types, quality parameters, different uses; Water treatment processes: overview, types, importance in public health; Water treatment plants: design, operations, maintenance, future trends; Regulations and standards

UNIT – II Pre-Treatment and primary treatment processes (3½ Weeks) (7 lectures)
Screening and sedimentation, Adsorption and absorption, Coagulation and flocculation, Chemical dosing, pH control methods, Aeration and degasification, Membrane filtration and reverse osmosis

Sedimentation and clarification, Dissolved air flotation and gravity separation, Hydrocyclone and centrifugation methods, Physical and chemical disinfection, UV irradiation and ozonation, Chlorination and chloramination, Taste and odor control methods, Color removal and demineralization techniques

UNIT – III Secondary Treatment Processes (2½ Weeks) (5 lectures)
Biological treatment methods, Activated sludge: aerobic and anaerobic digestion; Bioreactors, Nutrient: removal, denitrification, and recovery techniques; Sludge dewatering and drying methods, Biofilm and trickling filters, Constructed wetlands and bioswales

UNIT – IV Tertiary Treatment Processes (2½ Weeks) (5 lectures)
Advanced oxidation processes, Granular activated carbon and adsorption beds, Ion exchange and membrane technologies, Electrocoagulation and electrochemical treatment, Chemical precipitation and coagulation-flocculation, Disinfection byproduct removal and control, Emerging contaminants and micropollutants, Industrial wastewater treatment methods

UNIT – V Water Distribution Systems (2½ Weeks) (5 lectures)
Water distribution systems: overview, and components; Pipeline materials and design considerations, Pumping stations and pressure regulation, Storage tanks and reservoirs, Water quality monitoring and testing, Water loss and leak detection, Cross-connection control and backflow prevention

UNIT – VI Water Treatment Plant Management (2½ Weeks) (5 lectures)
Water treatment plant performance metrics, Safety and emergency response planning, Human resources and staffing, Asset management and maintenance, Energy management and optimization, Capital and budgeting planning, Public outreach and Regulatory compliance

Teaching and learning interface for theoretical concepts

To achieve the course objectives and match with the contents, a wide range of teaching and learning tools will be employed, including (a) Formal lectures; (b) Interactive sessions using visual aid; (c) Case study analyses; (d) Hypothetical scenario building; (e) Group discussion on key topics; and (f) documentary screening and critical analyses.

Practicals/Hands-on Exercises – based on theory (02 Credits: 60 hours)

1. Visit local water treatment plant and understand its structure and function and link it with the efficacy of water treatment
2. Analyze the water samples collected from local water treatment plant at different stages of treatment and analyze the role of ongoing physico-chemical and biological processes
3. Based on analyses of practicals 1 and 2, prepare a plan for improvement of water treatment plant with appropriate justification
4. Assess efficacy of filtration by different media, including sand, activated carbon, and gravel in removing contaminants from water
5. Prepare and test the potential of biofilters to remove nutrients and organic matter from water.
6. Ascertain the requirement and assess the effectiveness of chlorination for disinfection of microbial contaminated water samples
7. Test the effectiveness of coagulation-flocculation in removing suspended particles from water and determine effectiveness of different coagulants and flocculants
8. Determine the sedimentation rate of suspended particles in water using graduated cylinders packed with different soil particle size fractions
9. Determine effectiveness of UV radiation and ozone treatment in reducing the microbial load in water samples.
10. Assess the effectiveness of reverse osmosis in treating the water loaded with salts and other contaminants and improving the water quality
11. Determine the effectiveness of activated carbon and other self-prepared biological sorbent in reducing the chemical oxygen demand (COD)

Teaching and learning interface for practical skills

To impart training on technical and analytical skills related to the course objectives, a wide range of learning methods will be used, including (a) laboratory practicals; (b) field-work exercises; (c) customized exercises based on available data; (d) survey analyses; and (e) developing case studies; (f) demonstration and critical analyses; and (h) experiential learning individually and collectively.

Essential/recommended readings

- Crittenden, J. C., Trussell, R. R., Hand, D. W., Howe, K. J., & Tchobanoglous, G. (2012). MWH's Water Treatment: Principles and Design (3rd ed.). John Wiley & Sons.
- Farooq, R., & Fan, J. (2020). Water Treatment Technologies for the Removal of High-Toxicity Pollutants. Elsevier. https://doi.org/10.1016/C2019-0-03681-3
- Johnson, L. (2021). Emerging Water Treatment Technologies. Boca Raton, FL: CRC Press.

- Kim, S. (2021). Sustainable Water Treatment Technologies. Amsterdam, Netherlands: Elsevier.
- Zhang, Q. (2020). Innovative Water Treatment Technologies. Singapore: Springer.

Suggestive readings

- Brown, R. (2020). Membrane-Based Water Treatment Technologies. Hoboken, NJ: Wiley.
- Chen, X., Li, Y., & Li, P. (2021). Environmental Water Treatment Technologies: Advanced Treatment Processes, Modeling and Optimization. Elsevier. https://doi.org/10.1016/C2021-0-03457-3
- Chen, W. (2019). Advanced Oxidation Technologies for Water and Wastewater Treatment. Springer.
- Davis, M. L., & Masten, S. J. (2018). Principles of Environmental Engineering and Science (3rd ed.). McGraw-Hill Education.
- Smith, J. (2022). Advanced Water Treatment Technologies. New York, NY: Springer.
- Tchobanoglous, G., Burton, F. L., & Stensel, H. D. (2013). Wastewater Engineering: Treatment and Resource Recovery (5th ed.). McGraw-Hill Education.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE (DSE-EVS-8): ENVIRONMENTAL ENGINEERING

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSE-EVS-8: ENVIRONMENTAL ENGINEERING	4	2	0	2	Class XII pass	NA

Learning objectives

The Learning Objectives of this course are as follows:

- Gain insights into the principles and practices of environmental engineering and develop skills in the environmental systems and technologies
- Cultivate skills for effective awareness for the environmental impacts of human activities and foster critical thinking in the context of sustainable development
- Evaluate tools and techniques, such as mathematical-, experimental-, and computer-based, used in environmental engineering
- Equip with laboratory techniques for estimating quality of water, air and waste

Learning outcomes:

After the course, students will be able to

- Apply principles of environmental engineering into environmental systems and technologies
- Analyze and design environmental systems for treating water, controlling air pollution and manage waste
- Evaluate the environmental impacts of human activities, and appreciate ethical and professional responsibilities of environmental engineers for sustainability
- Demonstrate proficiency in the use of environmental engineering tools and technologies for sustainable development

SYLLABUS OF DSE-EVS-8

Theory (02 Credits: 30 lectures)

UNIT – I Basics of Environmental Engineering (2 Weeks) (4 lectures)

Environmental Engineering: concept, history and evolution, potential in sustainable development; Green chemistry and life cycle assessment, Ethics and environmental policies and regulations, Chemistry of water, air and soil, Redox reactions and chemical equilibrium,

Biological processes and environmental functioning (photosynthesis, respiration, decomposition, nutrient cycling)

UNIT – II Water and Wastewater Treatment (2½ Weeks) (5 lectures)
Water and wastewater treatment methods: physical, chemical, biological, integrated and advanced methods; Water quality: parameters, standards, and related regulations; Sludge: treatment, use, and disposal; Water reuse and recycling

UNIT – III Air Pollution Control (2½ Weeks) (5 lectures)
Air quality: parameters, standards, and regulations; Air Pollutants: types, sources, dispersion, and their control; Indoor air quality, Emerging air pollutants

UNIT – IV Solid Waste Management (2½ Weeks) (5 lectures)
Solid waste: types, characteristics, collection, transportation, storage, processing, treatment, and disposal or resource recovery and recycling; Integrated solid waste management; Hazardous waste management

UNIT – V Microbial and plant biology and ecology (2½ Weeks) (5 lectures)
Microbial and plant physio-ecological processes and waste treatment, Ecophysiology of microbes and plants, Growth of microbes and plants during waste management, Pathogen control in soil, water, and air by biological methods

UNIT – VI Environmental Impact Assessment (EIA) (1½ Weeks) (3 lectures)
EIA: Process, Statement, and case studies; Social and Economic Impact Assessment, Environmental Management Plan

UNIT – VII Sustainable Energy and Climate Change (1½ Weeks) (3 lectures)
Sustainable Energy and Climate Change: renewable energy sources, energy efficiency, climate change science, case studies, Climate change: mitigation and adaptation strategies, Carbon footprinting

Teaching and learning interface for theoretical concepts

To achieve the course objectives and match with the contents, a wide range of teaching and learning tools will be employed, including (a) Formal lectures; (b) Interactive sessions using visual aid; (c) Case study analyses; (d) Hypothetical scenario building; (e) Group discussion on key topics; and (f) documentary screening and critical analyses.

Practicals/Hands-on Exercises – based on theory (02 Credits: 60 hours)

1-3. Conduct physico-chemical characterization of given water samples (pH, temperature, dissolved oxygen, turbidity, total suspended solids, and NO3-N or PO4-P)
4. Characterize the given wastewater sampled from an industry and agricultural field
5. Measure the concentration of particulate matter, NO2, SO2, CO, using different methods
6. Characterize solid waste and determine its moisture content, density, and calorific value

7. Visit a landfill site and draw its design and explain the underlying geotechnical principles
8. Based on practical 5, improve and propose a design and justify the improvement in the design
9. Test the ability of given bacteria to tolerate different levels of the selected pollutants
10. Select and evaluate a proposed project or activity using life cycle assessment
11. Perform a life cycle assessment of a selected product or process and determine its possible environmental impacts from cradle to grave
12. Using principles of green chemistry, perform the selected experiment using environmentally friendly methods and reagents

Teaching and learning interface for practical skills

To impart training on technical and analytical skills related to the course objectives, a wide range of learning methods will be used, including (a) laboratory practicals; (b) field-work exercises; (c) customized exercises based on available data; (d) survey analyses; and (e) developing case studies; (f) demonstration and critical analyses; and (h) experiential learning individually and collectively.

Essential/recommended readings

- Chiang, C. Y., & Lin, Y. P. (2021). Sustainable Environmental Engineering: Trends and Innovations. Elsevier.
- Gribb, M., & Banerjee, S. (2021). Environmental Engineering: Principles and Practice. Cambridge University Press.
- Kharaghani, A., & Fazeli, A. (2021). Environmental Engineering and Management: Sustainable Development and Hazard Mitigation. CRC Press.
- Vesilind, P. A., & Morgan, S. M. (2020). Introduction to Environmental Engineering. Cengage Learning.
- Wang, Y. (2020). Environmental Engineering: An Introduction to the Fundamentals. Wiley.

Suggested readings

- Falletti, L., & Paolini, R. (2019). Environmental Remediation Technologies for Metal-Contaminated Soils. Springer.
- Lichtfouse, E. (2020). Environmental Chemistry for a Sustainable World. Springer.
- Shuyler, H. (2021). Sustainability and Engineering: Concepts, Metrics, and Opportunities. Springer.
- Tchobanoglous, G., & Burton, F. L. (2019). Wastewater Engineering: Treatment and Resource Recovery. McGraw-Hill Education.
- Wang, L. K., Hung, Y. T., & Shammas, N. K. (2016). Advanced Treatment Technologies for Urban Wastewater Reuse. Springer.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVES (DSE-EVS-9): NATURAL HAZARDS & DISASTER MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSE-EVS-9: NATURAL HAZARDS & DISASTER MANAGEMENT	4	2	0	2	Class XII pass	NA

Learning objectives

The Learning Objectives of this course are as follows:

- Gain insights into the types and causes of natural hazards and their potential impacts on individuals and communities.
- Examine the socio-economic, and environmental factors contributing to disaster risk and vulnerability
- Identify principles of disaster risk reduction and management, including mitigation, preparedness, response, and recovery.
- Understand different perspectives of disaster management, including ethical social and cultural
- Analyze the critical linkages between climate change and natural hazards and prepare plans for disaster preparedness, emergency response and recovery

Learning outcomes

After successful completion of this course, students will be able to:

- Identify a specific risk of natural hazards to the given locality or community conduct a hazard assessment and identify potential weaknesses in disaster preparedness of a local community or infrastructure
- Develop an emergency preparedness plan for their residential colony highlighting evacuation routes, emergency contacts, and supplies
- Design a communication plan for disaster response and recovery operation and develop a disaster risk reduction plan for mitigation, preparedness, response, and recovery
- Evaluate the relevance of GIS mapping, remote sensing, and social media in disaster response and recovery plans and examine the associated issues, such as equity, justice, and human rights

SYLLABUS OF DSE-EVS-09

Theory (02 Credits: 30 lectures)

UNIT – I Natural Hazards and Disasters Basics (2½ Weeks) (5 lectures)
Natural hazards and disasters: definition, classification (geological, meteorological, hydrological, biological), causes (plate tectonics, climate change, etc.), social and economic effects; Historical and recent natural disasters and their impacts, Disaster risk reduction and management frameworks, International disaster response mechanisms, Disaster preparedness and mitigation strategies

UNIT – II Geological Hazards (2 Weeks) (4 lectures)
Earthquakes: causes, prediction and warning systems, Seismic hazards and risk assessment, Tsunamis: causes and early warning systems; Volcanic hazards and eruptions: risk assessment and mitigation strategies; Landslides: causes and impacts

UNIT – III Meteorological Hazards (2 Weeks) (4 lectures)
Causes and impacts of: hurricanes, typhoons, cyclones, tornadoes, thunderstorms and lightning, floods and flash floods, drought, heat waves, wildfires; Climate change and its impact on meteorological hazards

UNIT – IV Hydrological Hazards (2 Weeks) (4 lectures)
Causes and impacts of: river flooding, coastal flooding and storm surges, dam and levee failures, urban flooding, groundwater depletion and contamination; Water scarcity and its effects on society, Water management and conservation strategies, Climate change and hydrological hazards

UNIT – V Biological Hazards (2 Weeks) (4 lectures)
Pandemics and epidemics, Zoonotic diseases and their transmission, Vector-borne diseases and their prevention, Foodborne diseases and their causes, Bioterrorism and its impacts, Environmental health and its relationship to natural hazards, Health systems and emergency response to biological hazards, One Health approach to disaster management

UNIT – VI Technological Hazards (2 Weeks) (4 lectures)
Causes and consequences of hazards, such as: industrial accidents, nuclear accidents, chemical spills, transportation accidents, and cybersecurity threats; Communication technologies and their role in disaster response, Technological risk assessment and mitigation strategies, Relationship between technological hazards and natural hazards

UNIT – VII Disaster Response and Recovery: Policy and ethics (2½ Weeks) (5 lectures)
Emergency response, Disaster recovery and reconstruction, Psychological impacts of disasters, Gender and disaster response, Social vulnerability and disaster risk reduction, Community resilience and disaster preparedness, Role of government and international community

Disaster risk reduction policies and frameworks, Environmental ethics and human rights in disaster response and recovery, and disaster management, Stakeholder engagement public-private partnerships, Legal frameworks and liability, Innovation and technology in future

Teaching and learning interface for theoretical concepts

To achieve the course objectives and match with the contents, a wide range of teaching and learning tools will be employed, including (a) Formal lectures; (b) Interactive sessions using visual aid; (c) Case study analyses; (d) Hypothetical scenario building; (e) Group discussion on key topics; and (f) documentary screening and critical analyses.

Practicals/Hands-on Exercises – based on theory (02 Credits: 60 hours)

1. Conduct a hazard assessment of your college or a given locality or local community to identify the vulnerability to most likely natural hazards and its potential impacts
2. Develop an emergency preparedness plan for the area investigated in practical 1, highlighting evacuation routes, emergency contacts, and supplies
3. Conduct a disaster simulation exercise in the area selected in practicals 1 and 2 to practice emergency response skills
4. Analyze disaster preparedness plan of a local community or infrastructure, assess vulnerability, and identify potential weaknesses for improvement
5. Analyze a recent case study of natural disaster from India or the country of your choice and critically evaluate its socio-economic impacts, including effects on housing, healthcare, and employment
6. Design a communication plan for an effective disaster response and recovery operation,
7. Develop a plan to reduce the risk of disasters for a community giving details of mitigation, preparedness, response, and recovery
8. Analyze the risk of a critical infrastructure system of your city including transportation network or power grid and identify vulnerabilities and potential consequences of failure
9. Examine the climate change scenarios and assess the potential for increased frequency and intensity of natural hazards in a given area
10. Analyze a recent case study on natural disaster and evaluate the emerging importance of technology use in disaster response and recovery, including GIS mapping, remote sensing, and social media
11. Identify the populations vulnerable to possible natural disasters in an area and develop a specific plan for the preparedness of low-income communities, elderly populations, and people with disabilities
12. Analyze different components of Community Emergency Response Team (CERT) training or community-based disaster preparedness programme

Teaching and learning interface for practical skills

To impart training on technical and analytical skills related to the course objectives, a wide range of learning methods will be used, including (a) laboratory practicals; (b) field-work exercises; (c) customized exercises based on available

data; (d) survey analyses; and (e) developing case studies; (f) demonstration and critical analyses; and (h) experiential learning individually and collectively.

Essential/recommended readings

- Birkmann, J., Cardona, O. D., & Carreño, M. L. (2018). Risk Analysis of Natural Hazards: Interdisciplinary Challenges and Integrated Solutions. Springer.
- Cutter, S. L. (2019). Hazards, Vulnerability and Environmental Justice. Routledge.
- Dash, N. (2018). Climate Change and Disaster Risk Management. CRC Press.
- Keller, E., DeVecchio, D., & Galloway, D. (2021). Natural Hazards: Earth's Processes as Hazards, Disasters, and Catastrophes. Pearson.
- Musaazi, M., Cunha, R., & Kibreab, M. (2019). Disaster Risk Reduction and Management Approaches. Springer.
- Smith, K. (2019). Environmental Hazards: Assessing Risk and Reducing Disaster. Routledge.

Suggestive readings

- Berke, P. R., & Beatley, T. (2017). Planning for Resilience: Handbook for Practitioners. Island Press.
- Comfort, L. K. (2019). Crisis Management and Emergency Planning: Preparing for Today's Challenges. Routledge.
- Li, J., & Chen, Y. (2021). Risk Management of Natural Disasters: A Comparative Study of the Role of Governments. Springer.
- Okuyama, S., & Chang, R. (2018). Managing Natural Disasters through Public-Private Partnerships. Springer.
- Wisner, B., Gaillard, J. C., & Kelman, I. (2019). The Routledge Handbook of Disaster Risk Reduction Including Climate Change Adaptation. Routledge.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF ENVIRONMENTAL SCIENCE

Category-I

SEMESTER - VI

BSC (H) ENVIRONMENTAL SCIENCE

DISCIPLINE SPECIFIC CORE COURSE – 16 (DSC-EVS-16): ENVIRONMENTAL POLLUTION AND HUMAN HEALTH

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-EVS-16: ENVIRONMENTAL POLLUTION AND HUMAN HEALTH	4	2	0	2	Class XII pass	NA

Learning objectives

The Learning Objectives of this course are as follows:

- Provide in-depth knowledge about pollution sources, and its effects on human health
- Equip with skills to assess and manage pollution related health risks
- Enable to analyze the roles government agencies, industry, and the public, in protecting environment and human health
- Familiarize with the advancements in research and technology to control environmental pollution and protect human health
- Encourage to apply skills and knowledge to real-world problems of environmental pollution and human health

Learning outcomes

After this course, students will be able to:

- Identify different types and sources of environmental pollutants and associated impacts on human health
- Use analytical techniques to monitor environmental pollutants in air, water, and soil
- Assess the health risks associated with exposure to different pollutants and recommend appropriate strategies to manage associated risks
- Recommend appropriate scientific analysis related to environmental health, risks and solutions to decision-makers

SYLLABUS OF DSC-EVS-16

Theory (02 Credits: 30 lectures)

UNIT – I Introduction **(1 Week)** (2 lectures)

Environmental pollutants and their classification, Link between pollution and human health, Ecological principles and pollution, Environmental health risk assessment, Global perspectives on pollution and health, Ethics and social responsibility in pollution management

UNIT – II Air pollution **(2½ Week)** (5 lectures)

Ambient air quality: monitoring and standards (National Ambient Air Quality Standards of India); air quality index; sources and types of pollutants (primary and secondary); smog (case study); effects of different pollutants on human health (NOx, SOx, PM, CO, CO2, hydrocarbons and VOCs) and control measures; indoor air pollution: sources and effects on human health.

UNIT – III Water pollution **(3 Week)** (6 lectures)

Sources of surface and ground water pollution; water quality parameters and standards; organic waste and water pollution; eutrophication; COD, BOD, DO; effect of water contaminants on human health (nitrate, fluoride, arsenic, chlorine, cadmium, mercury, pesticides); water borne diseases; concept and working of effluent treatment plants (ETPs).

Marine resources and their importance; sources of marine pollution; oil spill and its effects; coral reefs and their demise; coastal area management; existing challenges and management techniques (planning, construction, environmental monitoring of coastal zones).

UNIT – IV Soil pollution **(1 Week)** (2 lectures)

Causes of soil pollution and degradation; effect of soil pollution on environment, vegetation and other life forms; control strategies.

UNIT – V Noise, radioactive and thermal pollution **(2½ Week)** (5 lectures)

Noise pollution – sources; frequency, intensity and permissible ambient noise levels; effect on communication, impacts on life forms and humans - working efficiency, physical and mental health; control measures.

Radioactive material and sources of radioactive pollution; effect of radiation on human health (somatic and genetic effects); thermal pollution and its effects.

UNIT – VI Chemistry of environmental pollutants **(2½Week)** (5 lectures)

Solubility of pollutants (hydrophilic and lipophilic pollutants), transfer of pollutants within different mediums, role of chelating agents in transferring pollutants, concept of biotransformation and bioaccumulation, concept of radioactivity, radioactive decay and half-life of pollutants, organometallic compounds, acid mine drainage.

UNIT – VII Pollution control **(2½Week)** (5 lectures)

Activated Sludge Process (ASP) – Trickling Filters – oxidation ponds, fluidized bed reactors,

membrane bioreactor neutralization, ETP sludge management; digesters, up flow anaerobic sludge blanket reactor, fixed film reactors, sequencing batch reactors, hybrid reactors, bioscrubbers, biotrickling filters; regulatory framework for pollution monitoring and control; case study: Ganga Action Plan; Yamuna Action Plan; implementation of CNG in NCT of Delhi.

Practicals/Hands-on Exercises – based on theory (02 Credits: 60 hours)

1-3. Determine the levels of selected gaseous pollutants (oxides of nitrogen and sulfur, carbon monoxide) and particulate matter
4. Analyze National Ambient Air Quality Standards (NAAQS) of your City and compare it with any other city of similar size and demography from the country or other parts of the world
5-7. Analyze quality of water sampled from different sources based on pH, dissolved oxygen, turbidity, and nutrient contents
8. Analyze the most probable soil pollutants of area near your college and predict its impact on human health
9. Identify health hazard by any target air/water pollutant of your city and develop the possible exposure pathway and predict the associated environmental health risk
10. Assess potential of water pollution control techniques like coagulation-flocculation, sedimentation, filtration, and disinfection
11. Measure the noise levels in different environments using sound level meters and analyze the impacts of noise pollution on human health
12. Determine the probable indoor air pollutants in the buildings of your college and identify their sources
13. Analyze the cases of waterborne Disease during past 30-years in any country of your choice and determine the pattern, if any
14. Practice different communication strategies for educating the pollution-related health hazards and assess their impacts

Teaching and learning interface for theoretical concepts

To achieve the course objectives and match with the contents, a wide range of teaching and learning tools will be employed, including (a) Formal lectures; (b) Interactive sessions using visual aid; (c) Case study analyses; (d) Hypothetical scenario building; (e) Group discussion on key topics; and (f) documentary screening and critical analyses.

Essential/recommended readings

- Brauer, M., & Brook, J. (Eds.). (2019). Air pollution and health (2nd ed.). Academic Press.
- Gee, D. (2019). Toxic legacy: Synthetic toxins in the food, water and air of American cities. MIT Press.
- Gee, D. (2019). Toxic legacy: Synthetic toxins in the food, water and air of American cities. MIT Press.
- Harrison, R. M. (2019). Pollution: Causes, effects and control (5th ed.). Royal Society of Chemistry.
- Lippmann, M. (2019). Environmental toxicants: Human exposures and their health

effects (4th ed.). John Wiley & Sons.
- Merchant, R. M. (2019). An introduction to environmental epidemiology. CRC Press.
- World Health Organization. (2019). Chemicals of public health concern: Fact sheets. World Health Organization.
- Yang, Y., & Khudyakov, J. I. (Eds.). (2020). Environmental surveillance and population monitoring for chemical, biological, and radiological agents. Academic Press.

Suggestive readings

- Clements, A. L. (2019). Green building: Guidebook for sustainable architecture. Routledge.
- Cohen, A. J. (2017). The human cost of air pollution: Health implications for billions of people. The MIT Press.
- Guha, M., & Sircar, N. (Eds.). (2019). Environmental hazards in South Asia: Domestic and transboundary perspectives. Routledge.
- Peterson, R. E. (2019). The fundamentals of environmental chemistry. CRC Press.
- Ritz, B. (2019). Critical windows of exposure to environmental pollutants. Springer.
- White, L. W., & Gibson, J. E. (2019). Principles of toxicology: Environmental and industrial applications (3rd ed.). John Wiley & Sons.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 17 (DSC-EVS-17): ENVIRONMENTAL LEGISLATION & POLICY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-EVS-17: ENVIRONMENTAL LEGISLATION & POLICY	4	2	0	2	Class XII pass	NA

Learning objectives

The Learning Objectives of this course are as follows:

- Provide an overview of the key environmental laws, regulations, and policies of India and world
- Examine the role of government agencies, stakeholders, and the public in the environmental policy-making process.
- Explore the historical development and contemporary challenges of environmental policy and its implementation.
- Analyze the impact of environmental policies on environmental quality, public health, and social justice.

Learning outcomes

After this course, students will be able to

- Describe the key environmental laws, regulations, and policies of India and world, including their history and objectives
- Analyze the roles of government agencies, stakeholders, and the public in the environmental policy-making process, and understand the challenges and opportunities in policy implementation
- Evaluate the effectiveness of environmental policies in achieving their intended outcomes, including their impacts on environmental quality, public health, and social justice
- Communicate their understanding of environmental policy issues and solutions to a variety of audiences, including policymakers, stakeholders, and the public.

SYLLABUS OF DSC-EVS-17

Theory (02 Credits: 30 lectures)

UNIT – I Introduction (3½ Week) (7 lectures)

Constitution of India; fundamental rights; fundamental duties; Union of India; union list, state list, concurrent list; legislature; state assemblies; judiciary; panchayats and

municipal bodies; National Green Tribunal.

UNIT – II History of environmental legislation and policy (2½ Week) (5 lectures)
Ancient period: worship of water, air, trees; Mauryan period: Kautilya's Arthashastra, Yajnavalkyasmriti and Charaksamhita; Medieval period: forests as woodland and hunting resourcesduring Mughal reign; British India: Indian Penal Code 1860, Forest Act 1865, Fisheries Act 1897; Independent India: Van Mahotsava 1950, National Forest Policy 1952, Orissa River pollution and prevention Act 1953.

UNIT – III Environmental legislation (2½ Week) (5 lectures)
Legal definitions (environmental pollution, natural resource, biodiversity, forest, sustainable development); Article 48A (The protection and improvement of environment and safeguarding of forests and wildlife); Article 51 A (Fundamental duties).

UNIT – IV Legislative Instruments (1½ Week) (3 lectures)
The Indian Forest Act 1927; The Wildlife (Protection) Act 1972; The Water (Prevention and Control of Pollution) Act 1974; The Forests (Conservation) Act 1980; The Air (Prevention and Control of Pollution) Act 1981; The Environment (Protection) Act 1986; Motor Vehicle Act 1988; The Public Liability Insurance Act 1991; Noise Pollution (Regulation and Control) Rules 2000; The Biological Diversity Act 2002; The Schedule Tribes and other Traditional Dwellers (Recognition of Forests Rights) Act 2006; The National Green Tribunal Act 2010; Scheme and labeling of environment friendly products, Ecomarks.

UNIT – V India's recent efforts (1½ Week) (3 lectures)
Namami Gange Programme 2014, National Mission on Sustainable Agriculture 2014, Smart Cities Mission 2015, Plastic Waste Management Rules of 2016, National Policy on Marine Fisheries of 2017, National Clean Air Programme 2019, Jal Shakti Abhiyan 2019, Swachh Bharat Abhiyan 2.0, EIA Notification 2020, National Biodiversity Act of 2022.

UNIT – VI Government institutions and case studies (2 Week) (4 lectures)
Role of Ministry of Environment, Forests & Climate Change in environmental law and policy making; role of central and state pollution control boards in environmental law and policy making.

National Green Tribunal: Aditya N Prasad vs. Union of India & Others; Ganga Tanneries Case: M.C. Mehta vs. Union of India 1988; Environmental education case: M.C. Mehta vs. Union of India, WP 860/1991.

UNIT – VII International laws and policy (3 Week) (6 lectures)
Stockholm Conference 1972; Ramsar Convention, Montreal Protocol 1987; United Nations Conference on Environment and Development 1992; Rio de Janeiro (Rio Declaration, Agenda 21); Kyoto Protocol 1997; Copenhagen and Paris Summits; The Sustainable Development Goals 2015, and The Basel Convention Plastic Waste Amendments 2019,

Teaching and learning interface for theoretical concepts

To achieve the course objectives and match with the contents, a wide range of teaching and learning tools will be employed, including (a) Formal lectures; (b) Interactive sessions using visual aid; (c) Case study analyses; (d) Hypothetical scenario building; (e) Group discussion on key topics; and (f) documentary screening and critical analyses.

Practicals/Hands-on Exercises – based on theory (02 Credits: 60 hours)

1. Conduct a stakeholder analysis of an environmental policy issue in your community to understand the range of interests and perspectives of stakeholders in environmental policy-making
2. Analyze a recent environmental impact statement (EIS) for a proposed development project
3. Develop a compliance checklist for a specific environmental regulation to understand the key requirements of an environmental regulation and ensure compliance
4. Conduct a cost-benefit analysis of a proposed environmental policy
5. Develop a communications plan for an environmental advocacy campaign
6. Analyze a landmark environmental court case and its implications for policy-making
7. Develop a policy brief on an emerging environmental issue. Aim to effectively communicate the key facts and policy options related to an emerging environmental issue
8. Analyze the policy-making process for a recent environmental regulation to understand the key stages and actors involved in environmental policy-making
9. Conduct a comparative analysis of environmental policies in two different countries
10. Analyze the role of civil society in environmental policy-making, especially of non-governmental organizations, and other stakeholders
11. Conduct a stakeholder analysis of issues of climate change or biodiversity loss, or marine conservation

Teaching and learning interface for practical skills

To impart training on technical and analytical skills related to the course objectives, a wide range of learning methods will be used, including (a) laboratory practicals; (b) field-work exercises; (c) customized exercises based on available data; (d) survey analyses; and (e) developing case studies; (f) demonstration and critical analyses; and (h) experiential learning individually and collectively.

Essential/recommended readings

- Alexander, L. (2018). Environmental law: Cases and materials. West Academic

Publishing.
- Christoff, P. (2018). Fourteen environmental reformers: Speaking up for nature. Routledge.
- Donnelly, K. (2019). Environmental law, policy, and economics: Reclaiming the environmental agenda. Routledge.
- Fisher, E. (2019). Environmental law: A very short introduction. Oxford University Press.
- Hird, J. A. (2019). Pollution, politics, and international law: Tankers at sea. Routledge.
- Lavanya, R. (2021). Environmental law in India: An introduction to legal principles, policy and practice. Bloomsbury Publishing.
- Menon, M. K. (2020). Environmental law and policy in India. Springer.

Suggestive readings

- Bhaskar, V. (2019). Environmental law and policy in India: Trends, issues and challenges. Springer.
- Fisher, E. (2018). Regulating chemicals: Law, science, and the unbearable burdens of regulation. Routledge.
- Gunningham, N. (2015). Smart regulation: Designing environmental policy. Oxford University Press.
- Kramer, R., & Leape, J. (Eds.). (2018). Legal and policy tools for the transition to sustainable societies: Regional pathways to green economy. Routledge.
- Sutherland, E. H. (Ed.). (2020). Handbook of international environmental law (2nd ed.). Edward Elgar Publishing.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 18 (DSC-EVS-18) URBAN ECOSYSTEMS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-EVS-18: URBAN ECOSYSTEMS	4	2	0	2	Class XII pass	NA

Learning objectives

The Learning Objectives of this course are as follows:

- Gain insights into the concepts and principles of sustainability of urban ecosystems and development
- In-depth understanding of the interactions in socio-ecological systems in urban settings
- Equip with skills to analyze urban environmental problems and provide effective solutions
- Encourage to critically evaluate policies and practices related to urban ecosystems and suggest ecologically sound alternative strategies
- Foster appreciation for urban biodiversity and ecosystems and its linkages with human well-being and social equity

Learning outcomes

After this course, students will be able to

- Explain key concepts of urban ecosystems and its linkages with sustainable urban development.
- Analyze interactions between socio-ecological systems in urban settings and its impacts on ecosystem services
- Apply socio-ecological methods to assess urban environmental problems, including pollution, water scarcity and habitat fragmentation
- Recommend green urban development strategies, such as green infrastructure, and ecosystem-based adaptation
- Communicate the relevance of urban biodiversity with reference to human well-being and social equity

SYLLABUS OF DSC-EVS-18

Theory (02 Credits: 30 lectures)

UNIT – I Introduction to Urban Ecosystems **(3½ Weeks)** (7 lectures)
Definition and scope of urban ecosystems, Historical and cultural contexts of urbanization, Ecological approach to urban systems, Urbanization process and its impacts on ecosystems, Concept of sustainability and its application to urban ecosystems, Urban environmental issues and challenges, Methods and tools for studying urban ecosystems, Urban ecosystem services and benefits

UNIT – II Urban Ecology and Biodiversity **(3½ Weeks)** (7 lectures)
Principles of urban ecology, Biodiversity in urban ecosystems, Urban habitats and their characteristics, Ecological interactions in urban ecosystems, Species adaptation and evolution in urban environments, Urban wildlife and conservation, Urban agriculture and gardening, Urban forestry and green infrastructure

UNIT – III Urban Hydrology and Water Management **(3½ Weeks) (7 lectures)**
Urban water cycle, Water demand and supply in urban areas, Stormwater management and green infrastructure, Water quality and pollution control, Groundwater management in urban areas, Urban wetlands and their functions, Water conservation and efficiency in urban areas, Water governance and policy in urban areas

UNIT – IV Urban Air Quality and Pollution **(3½ Weeks) (7 lectures)**
Sources and types of urban air pollution, Health effects of urban air pollution, Atmospheric chemistry and pollution transport, Air quality monitoring and modelling, Urban heat island effects and mitigation, Energy and transportation systems and air pollution, Indoor air quality in urban areas, Policy and regulation for air quality in urban areas

UNIT – V Urban Waste Management and Recycling **(3½ Weeks) (7 lectures)**
Urban waste generation and composition, Waste reduction and recycling strategies, Municipal solid waste management and disposal, Hazardous waste management in urban areas, Electronic waste and recycling, Construction and demolition waste management, Composting and organic waste management, Waste-to-energy and alternative waste management technologies

UNIT – VI Urban Land Use and Planning **(3½ Weeks) (7 lectures)**
Urban land use patterns and dynamics, Urban sprawl and its impacts, Smart growth and compact cities, Sustainable urban development and planning, Land use regulations and zoning, Brownfields and urban redevelopment, Transit-oriented development and walkability, Public participation and community-based planning

UNIT – VII Urban Social and Economic Systems (3½ Weeks) (7 lectures)

Urbanization and Urban Demography linked with: social diversity, homelessness, inequality and poverty, education and workforce, health, entrepreneurship, innovation and well-being

Teaching and learning interface for theoretical concepts

To achieve the course objectives and match with the contents, a wide range of teaching and learning tools will be employed, including (a) Formal lectures; (b) Interactive sessions using visual aid; (c) Case study analyses; (d) Hypothetical scenario building; (e) Group discussion on key topics; and (f) documentary screening and critical analyses.

Practicals/Hands-on Exercises – based on theory (02 Credits: 60 hours)

1. Assess magnitude of urban heat island effects and the role of urban forests in mitigating them
2. Quantify the ecological and economic benefits of urban trees and understand the importance of urban forestry
3. Assess the impact of urbanization on soil quality and understand the principles of soil health in urban landscapes
4. Analyze the impact of urbanization on water quality and understand the principles of stream health in urban environments
5. Determine the effects of urbanization on bird populations and understand the importance of bird conservation in urban areas
6. Identify opportunities for green infrastructure improvements in a neighborhood and understand the principles of green infrastructure planning and implementation
7. Quantify the economic benefits of urban agriculture and understand the principles of sustainable food systems.
8. Determine the effects of air pollution on plant health and understand the impact of air pollution on urban ecosystems
9. Examine the impact of urbanization on insect populations and understand the importance of insect biodiversity in urban areas
10. Analyze the impact of urbanization on carbon cycling and understand the role of urban ecosystems in climate change mitigation.
11. Assess the impact of urbanization on amphibian populations and understand the importance of amphibian conservation in urban environments
12. Determine the effects of urbanization on soil microbial communities and understand the role of soil microbiota in urban ecosystems
13. Design and implement a green infrastructure project for a specific urban site or neighborhood and understand the principles of green infrastructure planning and implementation.

Teaching and learning interface for practical skills

To impart training on technical and analytical skills related to the course objectives, a wide range of learning methods will be used, including (a) laboratory practicals; (b) field-work exercises; (c) customized exercises based on available data; (d) survey analyses; and (e) developing case studies; (f) demonstration and critical analyses; and (h) experiential learning individually and collectively.

Essential/recommended readings

- Colding, J. (2018). Ecological Landscapes in the Anthropocene. Cambridge University Press.
- Colding, J., & Barthel, S. (2021). Urban Greening for Health and Well-Being. Cambridge University Press.
- McDonnell, M. J., & Hahs, A. K. (2020). Ecology of Cities and Towns: A Comparative Approach. Cambridge University Press.
- Miller, J. R. (2019). The Nature of Cities: The Ecological Imperative in Urban Design and Planning. Routledge.
- Wu, J., & Zhang, Y. (2020). Urban Ecology: An Introduction. Springer.
- Zhang, Y. (2019). Urban Ecosystems: Ecological Principles for the Built Environment. Routledge.

Suggestive readings

- Andersson, E., Barthel, S., & Borgström, S. (Eds.). (2020). Urban Ecosystems: Ecological Principles for the Built Environment. Cambridge University Press.
- Escobedo, F. J., Clerici, N., & Staudhammer, C. L. (Eds.). (2019). The Urban Forest: Cultivating Green Infrastructure for People and the Environment. Springer.
- Heynen, N. (2019). The Political Ecology of Green Spaces. Routledge.
- Kowarik, I., & Körner, S. (Eds.). (2019). Wild Urban Woodlands: New Perspectives for Urban Forestry. Springer.
- Li, Y. (2018). Sustainable Cities and Communities Design Handbook: Green Engineering, Architecture, and Technology. Butterworth-Heinemann.
- Schellnhuber, H. J., & Grimm, N. B. (Eds.). (2018). Urban Planet: Knowledge Towards Sustainable Cities. Cambridge University Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER –IV

BSc. (Polymer Science)

Bhaskaracharya College of Applied Science

DISCIPLINE SPECIFIC CORE COURSE – 10

CREDIT DISTRIBUTION, ELIGIBILITY, AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
POLYMER TESTING AND SPECIFICATIONS (PTS)	4	2	0	2	Class 12th with Physics, Chemistry, Mathematics	NIL

Learning objectives

The Learning Objectives of this course are as follows:

- To learn about the fundamentals of polymer testing
- To understand testing standards of polymeric materials on various testing instruments

Learning outcomes

The Learning Outcomes of this course are as follows:

After completing the course, the students

- Perform tests of polymeric materials on testing instruments
- Establish the structure property correlation (mechanical, thermal, optical, electrical) of polymers
- Elucidate stability of various polymers and their properties on the basis of their thermo mechanical transitions.

SYLLABUS OF DSC- 10

THEORY COMPONENT-

UNIT 1: (12 Hours)

TESTING STANDARDS AND MECHANICAL ANALYSIS OF POLYMERS

Principles of standardization, preparation of sample, different standards: BIS and ASTM standards (thermal and mechanical analysis), testing methods, evaluation of errors in polymer testing, correction of errors

a. Short term strengths: tensile, flexural, hardness, impact strength, tear resistance, abrasion, etc.

b. Long term strengths: Creep and fatigue properties, isochronous stress strain curve compression set.

UNIT 2: **(4 Hours)**

ELECTRICAL AND OPTICAL PROPERTIES

Dielectric strength, surface and volume resistivity, electro active properties, Refractive index, Haze and gloss, yellowness index.

UNIT 3: **(6 Hours)**

GAS BARRIER AND ENVIRONMENTAL ASSESSMENT

Permeability to gases and moisture: Standard methods of measuring the permeability of gases, Environment resistance: Cause of deterioration of polymer by aging & weathering, assessment of deterioration, natural and artificial weathering, chemical resistance.

UNIT 4: **(8 Hours)**

THERMAL AND FIRE RESISTANT PROPERTIES

Thermo-mechanical Properties, Melt flow index, thermal conductivity, thermal diffusivity, specific heat capacity, linear thermal expansion, brittleness temperature etc. Burning behaviour, flammability tests (UL-94, limiting oxygen index, critical temperature index, smoke density).

PRACTICAL COMPONENT **(60 Hours)**

- To determine the melt flow index of LLDPE, PP etc.
- To evaluate limiting oxygen index (LOI)/ UL-94 of plastic samples: PVC, PE, PP etc.
- To determine the heat distortion temperature (HDT) & vicat softening point (VSP) of polymers.
- To measure the abrasion resistance of polymer sheets.
- To measure the dielectric strength of polymer films/sheets.
- To determine the coefficient of friction of polymeric samples.
- To determine the Izod impact strength of polymeric samples.

- To determine the environment stress cracking resistance of PE/PP.
- To calculate weight percentage of inorganic and organic ingredients in polymeric compounds.
- Measure the Thermo-mechanical transition.
- Determine the water vapor transition rate for polymeric film.
- Determine the thermal conductivity of a polymer sheet.

ESSENTIAL/RECOMMENDED READINGS

- Shah V., (2007) Handbook of Plastic Testing & Technology, Wiley-Inter science.
- Hylton D., (2004) Understanding Plastic Testing, Hanser publication
- Grellmann W., Seidler S., (2013) Polymer Testing, Hanser publication.
- Willard H.H., Merrit L.L., Dean J.A. (1988) Instrumental method of analysis, Wads worth Publishing Company.
- Seidel, A. (Ed.). (2008). Characterization analysis of polymers. Wiley-Interscience.
- Pethrick, R. A., & Viney, C. (2003). Techniques for polymer organization and morphology characterisation. Wiley.
- Frick. A., Stern. C. , Muralidharan V. (2019) Practical Testing And Evaluation Of Plastics, Wiley,

SUGGESTIVE READINGS

- Berins M. L., (1991) SPI Plastic Engineering Hand book, Springer.
- Ward I.M., Sweeney J., (2004) An Introduction to the Mechanical Properties of Solid Polymers, Wiley.
- Tanaka T., (1999) Experimental Methods in Polymer Sciences, Academic Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 11

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
POLYMER PROCESSING TECHNOLOGY	**4**	**2**	**0**	**2**	**Class 12th with Physics, Chemistry, Mathematics**	**---**

Learning objectives

- To learn about the various processing techniques and their components
- To learn the fundamentals of extrusion and different extrusion processes of thermoplastics.

Learning outcomes

After studying this paper, students will be able to

- Explain the significance of the single screw and multiple screw extruder systems
- Apply the fundamentals of injection and compression molding process and interpret processing variables for upgradation of quality of products

SYLLABUS OF DSC- 11

THEORY COMPONENT-

UNIT 1: **(6 Hours)**

EXTRUSION

Extrusion process, the extrusion die, classification of extrusion dies: film and sheet extrusion, multi-layer extrusion, Spider die, Pipe and Tube die, offset die, etc. Die swell and die defects

UNIT 2: **(10 Hours)**

INJECTION & BLOW MOLDING

Principles, material used, injection molding cycle, injection molding machine, some aspects of product quality, reaction injection molding (RIM), blow molding, extrusion blow molding,

injection blow molding, stretch blow molding, blow moulding of PET, trouble shooting operations.

UNIT 3: **(4 Hours)**

THERMOFORMING

Thermoforming process: Principles, materials used, types and applications

UNIT 4: **(4 Hours)**

COMPRESSION & TRANSFER MOLDING

Compression moulding process, transfer moulding process: introduction, material used, types and applications

UNIT 5: **(6 Hours)**

MISCELLANEOUS PROCESSING METHODS

Casting and rotational moulding processes: principles, material used, types and applications
Casting, rotational moulding, machining and joining processes: principles, material used, types and applications

PRACTICAL COMPONENT **(60 Hours)**

- To prepare a polymeric sheet/ specimen by compression molding.
- To prepare polymeric specimens by transfer molding.
- Preparation of polymeric specimens/product by injection molding.
- To process a polymer using extruder and to determine the production rate & residence time
- To prepare polymer film/ membrane by solution casting method.
- To prepare thermo formed polymeric products.
- To cast various products using polyester resin/epoxy resin/latex.
- Industrial/lab visit.

ESSENTIAL/RECOMMENDED READINGS

- Strong A.B., (2005) Plastics: Materials & Processing, Prentice Hall.
- Rosato D.V., Rosato D.V., (2000) Injection Moulding Handbook, CBS Publisher.
- Morton-Jones D.H., (2007) Polymer Processing, Chapman & Hall.
- Griff A. L., (2021) Plastics Extrusion Technology, Creative Media Partners, LLC

- Gogos, C. G., & Tadmor, Z. (2013). Principles of polymer processing. John Wiley & Sons.
- Berins, M. (Ed.). (1991). Plastics engineering handbook of the society of the plastics industry. Springer Science & Business Media.

SUGGESTIVE READINGS

- Chan I. Chung, Hanser Verlag (2000) Extrusion of Polymers: Theory and Practice,
- R. J. Crawford, Rotational Molding of Plastics ABS, Research Studies Press Ltd.
- Crawford R.J., (1998) Plastic Engg, Butterworth-Heinemann.
- J.L. Throne (1987) Thermoforming Hanser Publishers.
- Rosato (1987) Blow Molding Handbook, Hanser Publishers.
- Harper, C. A., & Petrie, E. M. Plastic materials and processes: a concise encyclopedia. 2003.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 12

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
RECYCLING AND WASTE MANAGEMENT	**4**	**2**	**0**	**2**	**Class 12th with Physics, Chemistry, Mathematics**	**NIL**

Learning objectives

- To introduce the concept of life cycle analysis
- To learn about the solid waste management policies
- To learn about various sources of polymer waste generation and their management
- To understand various waste disposal and treatment methods

Learning outcomes

After studying this paper, students will be able to

- Explain the policies and legislations related to polymeric waste management and their impact on environment
- Apply the 4 R's approach (reduce, reuse, recycle, recover) for solid waste management

SYLLABUS OF DSC-12

THEORY COMPONENT-

UNIT 1: (10 Hours)

INTRODUCTION TO WASTE MANAGEMENT

Introduction to the concept of life cycle analysis, four pillars of LCA, plastic wastes and litter, social and environmental challenges of plastic waste recycling in India, Main features of Plastic waste management regulations in India, sorting techniques and classification (density - float sink and froth floatation methods, selective dissolution, optical, spectroscopic, sorting by melting temperature, triboelectric separator etc.).

UNIT 2: (6 Hours)

CLASSIFICATION OF WASTE MANAGEMENT

Thermoplastic waste management: 4 R's approach (reduce, reuse, recycle, recover), recycling classification - primary, secondary, tertiary, quaternary recycling with examples (mechanical, chemical and thermal processes)

UNIT 3: (4 Hours)

DISPOSAL AND WASTE TREATMENT TECHNIQUES

Controlled tipping, pulverization, composting, incinerators, pyrolysis, gasification, on-site disposal methods, compacting and baling

UNIT 4: (5 Hours)

THERMOPLASTIC RECYCLING

Recycling of polyolefins, PVC, PET, polystyrene, polyamides (nylon-6 and nylon-6, 6) etc.

UNIT 5: (5 Hours)

WASTE MANAGEMENT OF THERMOSET

Recycling of thermosets, reclaiming of rubber, tire retreading, uses of recycled rubber

PRACTICAL COMPONENT (60 Hours)

- Primary recycling of various waste collected from the environment.
- Secondary recycling of MSW by incorporating and blending the recyclable waste with virgin polymers.
- To study composting of natural/biopolymers.
- Separation of polymer mixture by sink flotation technique.
- Separation of polymer mixture by selective dissolution technique.
- To recover BHET from PET by chemical recycling process
- To recover adipic acid from nylon 66 by chemical recycling technique
- To study the effect of vulcanized rubber at varying ratio (in powder form) on mechanical properties of rubber vulcanizate
- To study the effect of vulcanized rubber at varying ratio (in powder form) on thermal properties of rubber vulcanizate
- To study the effect of vulcanized rubber at varying ratio (in powder form) on physical properties of vulcanized rubber

ESSENTIAL/RECOMMENDED READINGS

- Hawkins W. L., (1984) Polymer Degradation and Stabilization, SpringerLink.
- Reich L., Stivala S. S., (1971) Elements of Polymer Degradation, McGraw-Hill.
- Niti Aayog (2021), Undp Handbook on Sustainable Urban Plastic Waste Management
- Saha N. C., Garg M., Sadhu S. D., Ghosh A. K., (2022) Food Packaging-Materials, Techniques and Environmental Issues, Springer.
- Chandra R., Adab A., (2004) Rubber and Plastic Waste: Recycling, Reuse and Future Demand, CBS Publisher.
- NIIR Board of Consultant and Engineers, (2007) Medical, Municipal and Plastic Waste Management Handbook, National Institute of Industrial Research.
- Goodship V., (2007) Introduction to plastics recycling, Rapra.

SUGGESTIVE READINGS

- Maharana, T., Negi, Y. S., & Mohanty, B. (2007). Recycling of polystyrene. Polymer-Plastics Technology and Engineering, 46(7), 729-736.
- Caillol, S. (2014). Lifecycle assessment and green chemistry: a look at innovative tools for sustainable development. Environmental Impact of Polymers, 65-89.

- Klöpffer, W. (Ed.). (2014). Background and future prospects in life cycle assessment. Springer Science & Business Media.
- Dimitris, S., & Achilias, L. (2014). Recent advances in the chemical recycling of polymers (PP, PS, LDPE, HDPE, PVC, PC, Nylon, PMMA). Mater. Recycl. Trends Perspect, 3, 64.
- La Mantia, F. (2002). Handbook of plastics recycling. iSmithers Rapra Publishing.
- Braun, D. (2002). Recycling of PVC. Progress in polymer science, 27(10), 2171-2195.
- Scheirs J., (1998) Polymer Recycling, John Wiley & Sons.
- Blow S., (2000) Handbook of Rubber Technology, Hanser Gardner.
- Bandrup J.E., (1996) Recycling and Recovery of Plastics, Hanser Gardner.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER-V

BSc. (Hons.) Polymer Science

DISCIPLINE SPECIFIC CORE COURSE – 13

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
FIBRE SCIENCE	**4**	**2**	**0**	**2**	**Class 12th with Physics, Chemistry, Mathematics**	**-**

Learning objectives

- To study the basic concepts of natural and synthetic fibres
- To learn about the basic concepts of spinning including melt and solution spinning.
- To understand various parameters affecting spinning, drawing and heat setting of fibre structure and properties

Learning outcomes

After studying this paper, students will be able to

- Explain classification, structure and properties of natural and synthetic fibres
- Manufacture fibre with desired properties.
- Explain the various spinning variables

SYLLABUS OF DSC-13

UNIT 1: (4 Hours)

INTRODUCTION TO FIBRES

Introduction, classification, structural requirements of fibre forming polymers, general properties of fibres such as moisture absorption, fineness (tex, denier), tensile properties (elongation at break, elastic recovery, tenacity etc.)

UNIT 2: **(5 Hours)**

NATURAL FIBRES

Brief introduction to structure, properties and application of naturally occurring fibres: vegetable fibres, animal fibres and mineral fibres

UNIT 2: **(10 Hours)**

FIBER SPINNING PROCESSES

Melt spinning process: Spinning line, spinning manifold, spinning pack and manifold, cooling system, spinning variables, Force balance and heat balance in melt spinning; fibre structure development:

Solution spinning process: dry spinning (dope, spinning process, fibre cross section formation) wet spinning (solution preparation, coagulation, effect of process parameters on coagulation and structure of dry and wet spun fibres)

UNIT 3: **(12 Hours)**

SYNTHETIC FIBRES

Structure, properties and applications of synthetic fibres: viscose rayon, cellulose acetate, nylon 6, nylon – 66, polyester, acrylic, carbon fibre and aramid fibres

PRACTICAL COMPONENT **(60 Hours)**

(Students are required to minimum 6 experiments)

- To determine fineness (denier, tex and count) of given fibre, filaments and yarns.
- To study the cross-sectional view of natural and synthetic fibres and to identify them.
- To study the longitudinal view of natural and synthetic fibres and to identify them.
- To investigate moisture regain of fibres by absorption and desorption method.
- To identify fibres through elemental analysis.
- To identify the fibre through solubility tests.
- To analyze the reaction fibres to heat & flame.
- Analysis of chemical structure of fibres by FTIR and UV spectroscopy.
- To study thermal degradation of fibers through Thermo Gravimetric Analysis TGA method.
- To determine composition of fibres in blends.
- To measure electrical resistance of fibres.
- To measure static electricity a static charge in fibres

- To analyze microscopic properties of fibre.
- Quantitative analysis of cellulose/polyester blends.
- R & D Lab visit

ESSENTIAL/RECOMMENDED READINGS

- Cook J.G., (2009), Hand Book of Textile Fibres, Woodhead Publishing.
- Mishra S. P., (2000), A Text Book of Fibre Science and Technology, New Age International Publisher.
- Sperling L. H., (2013), Introduction to Physical Polymer Science, Wiley, 4th Edition
- Gupta V.B., Kothari V.K., (1997) Manufactured Fibre Technology, 1st Ed Chapman and Hall.
- Vaidya A.A., (1988) Production of Synthetic Fibres, First Edition, Prentice Hall of India.

SUGGESTIVE READINGS

- Morton W.E., Hearle J.W.S., (2008) Physical Properties of Fibres, Woodhead Publishing.
- David S. R., (2000) Structure Formation in Polymeric Fibres, First edition, Hanser Publishers.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 14

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
POLYMER CHARACTERIZATION	**4**	**2**	**0**	**2**	**Class 12th with Physics, Chemistry, Mathematics**	**-**

Learning objectives

- To acquaint the students with the instrumental techniques and their applications in characterization of polymers and polymeric materials
- To determine a chemical property and identify a chemical structure of a polymer.

Learning outcomes

After studying this paper, students will be able to

- Explain the basic principle and application of characterisation techniques.
- Interpret NMR, Raman, Mass and IR–Spectra for characterization of molecular structure of polymeric materials
- Elucidate stability of various polymers and their characterization on the basis of their thermal stability and glass transition temperature

SYLLABUS OF DSC-14

THEORY COMPONENT

UNIT 1: (4 Hours)

INTRODUCTION

Basic principle of spectroscopy, molecular, atomic and electronic spectra, Lambert-Beer's law, Frank-condon principle, electromagnetic radiation and it's properties, interaction of radiation with matter, statistical method of analysis.

UNIT 2: (5 Hours)

SPECTROSCOPIC TECHNIQUES

Principles and applications in structural determination of polymers (functional group, tacticity, molecular structure, purity, unsaturation etc.) by Infra-red spectroscopy, UV-Vis spectroscopy, electron spin resonance (ESR), raman spectroscopy, nuclear magnetic resonance spectrometer (^{1}HNMR).

UNIT 3: **(5 Hours)**

CHROMATOGRAPHY TECHNIQUES IN POLYMER

Paper chromatography, thin layer chromatography, high performance liquid chromatography, gel permeation chromatography (GPC), gas chromatography and size exclusion chromatography.

UNIT 4: **(6 Hours)**

MICROSCOPIC AND X-RAY TECHNIQUES

Optical microscopy, electron microscopy (SEM, TEM, AFM) and XRD: basics principle and applications in polymers characterization, Contact angle and measurement.

UNIT 5: **(6 Hours)**

THERMO-MECHANICAL CHARACTERIZATION

Principle and applications of Thermal gravimetric analysis (TGA), Differential thermal analysis (DTA). Differential scanning calorimeter (DSC), Dynamic mechanical analyser (DMA) and thermal mechanical analyser (TMA) in polymer analysis.

UNIT 6: **(4 Hours)**

MOLECULAR MASS AND MASS SPECTROSCOPY

Mass spectroscopy, Gas chromatography-mass spectrometer (GC-MS): principle and application for determination of molecular mass and chemical structure of polymers.

PRACTICAL COMPONENT **(60 Hours)**

- To verify Lambert-Beer's law by UV-Vis. spectrophotometer.
- Calculate weight percentage of inorganic and organic ingredient in polymeric compound.
- Analyze thermal behaviour of polymers by TGA.
- Quantitative determine of chemical impurities in polymer sample by UV-Vis. spectrophotometer.
- Contact angle and measurement of polymer

- Identification of additives present in a processed polymer by Paper and thin layer chromatography.
- Separation, characterization, and purity determination of polymers by TLC and Paper chromatography.
- Determination of size and particle distribution of additive in polymer sample by optical microscope.
- Determine the size and prepare size distribution curve by microscopy
- Visit of analytical laboratory.

ESSENTIAL/RECOMMENDED READINGS

- Willard H.H., Merrit L.L., Dean J.A. (1988) Instrumental method of analysis, Wads worth Publishing Company.
- Kaushik N.K., Shukla S. K., (2023) Thermal Analysis Techniques and Applications, IK International Pvt. Ltd.
- Skoog D.A, (1997) Principle of Instrumental Analysis, Harcourt College Pub.
- Shah V., (2007) Handbook of Plastic Testing, Technology, Wiley-Inter science.
- Banwell C.N., McCash E.M., (2008) Fundamentals of Molecular Spectroscopy, Fourth Edition, Tata McGraw-Hill.
- Muhammad Malik, Jimmy Mays, Muhammad Raza Shah, (2021) Molecular Characterization of Polymers: A Fundamental Guide, Elsevier.

SUGGESTIVE READINGS

- Tanaka T., (1999) Experimental Methods in Polymer Sciences, Academic Press.
- Silverstein R.M., (1991) Spectrometric identification of organic compounds, John Wiley.
- Macomber R.S., (2008) A complete introduction to NMR spectroscopy, Wiley-inter science.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 15

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
POLYMERS IN PACKAGING	**4**	**2**	**0**	**2**	**Class 12th with Physics, Chemistry, Mathematics**	**-**

Learning objectives

- To learn about the Packaging systems and role of Polymer in packaging
- To acquire knowledge of various types of polymers as packaging materials

Learning outcomes

After studying this paper, students will be able to

- Apprehend the basic concept of packaging and its utilization for desired applications
- Assess the quality of packaging material and packaged product
- Select the packaging material and can design a packaged product

SYLLABUS OF DSC-15

THEORY COMPONENT-

UNIT-1: (10 Hours)

PACKAGING SYSTEMS

Types of packaging systems: box, bottle, tetrapack, pouch, shrink, vacuum packaging, controlled atmospheric packaging (CAP), modified atmospheric packaging (MAP), aseptic packaging.

UNIT 2: (10 Hours)

POLYMERS IN PACKAGING

Importance of polymers in packaging. Property requirements of Polymers for packaging applications: Structure and process requirements for the required Properties and applications. Properties and applications: PE (LLDPE, LDPE, HDPE, HMHDPE), PP, BOPP PVC, nylons, polyester, polycarbonate, PS, EPS, PVA, Ionomers & Fluoro polymers.

UNIT 3: **(10 Hours)**

TESTING OF POLYMER PACKAGING MATERIAL

Bursting strength, tensile strength, tear strength, puncture test, impact test (drop, falling dart), barrier properties test (water vapour, oxygen), sealing strength., migration & compatibility.

PRACTICAL COMPONENT **(60 Hours)**

- Preparation of packaging films (PP/ HDPE/ LDPE/ LLDPE/PVA)
- To prepare polyester film and find its WVTR.
- Identification of packaging materials with the help of FT-IR, DSC, TGA etc.
- Preparation of laminate films by various methods (heat, solvent, adhesives)
- Determination of physico-mechanical properties (density, bursting strength, tensile strength, tear strength, puncture strength, impact strength etc) of packaging materials.
- Determination of water vapor transmission rate of packaging material.
- To determine the seal strength of packaging materials.
- To determine compatibility of packaging film with the packaged material.
- Industrial visit of packaging industry/plant

ESSENTIAL/RECOMMENDED READINGS

- Robertson G.L., (2012) Food Packaging – Principles and Practice, CRC Press Taylor and Francis Group.
- Paine F.A., Paine H.Y., (1992) A Handbook of Food Packaging, Blackie Academic and Professional
- Sharma S., Aggarwal M., Sharma D., (2019), Food Frontiers, New Delhi Publisher
- N. C. Saha, M. Garg, S. Dey Sadhu, A. K. Ghosh(2022) Food Packaging-Materials, Techniques and Environmental Issues" by published by Springer.
- Garg, M., Meena, P.L., Sadhu, S.D., Alam, T. (2019). Food Packaging: A Practical Guide : Viba Press Pvt. Ltd.

SUGGESTIVE READINGS

- Coles R., McDowell D., Kirwan M.J., (2003) Food Packaging Technology, Blackwell.
- Sukhareva L.A., Yakolev V.S., Legonkova O.A., (2008) Polymers for packaging and containers in the food industry, VSP.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER –VI

POLYMER SCIENCE

Category I

(B.Sc. Honours in Polymer Science in four years)

DISCIPLINE SPECIFIC CORE COURSE – 16

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
POLYMER BLENDS AND COMPOSITES	**4**	**2**	**0**	**2**	**Class 12th with Physics, Chemistry, Mathematics**	**-**

Learning objectives

- To gain knowledge of polymer composites and its basic construction
- To learn about preparation, properties and characterization of polymer blends.

Learning outcomes

After studying this paper, students will be able to

- Understand various techniques for preparation of polymer blends
- Understand the types and forms of reinforcement materials used in composites
- Apply different production techniques for fabrication of polymer composites

SYLLABUS OF DSC-16

THEORY COMPONENT-

UNIT 1: **(6 Lectures)**

BASIC CONCEPT OF BLENDS

Definition of blends, types of blends (plastic-plastic, rubber-rubber and plastic-rubber blends), differences between: copolymer and IPNs, blends, alloys and composites; concept of miscibility, concept of free energy of mixing, phase equilibria, Flory-Huggins theory, spinodal, binodal and critical phase, Gibb's phase rule

UNIT 2: **(6 Lectures)**

PREPARATION AND PROPERTIES OF BLENDS

Methods of blending, compatibilizers, methods of compatibilization, factors affecting miscibility of polymer blends, effect of composition on properties (rheology, morphology, mechanical and thermal)

UNIT 3: **(6 Lectures)**

CHARACTERIZATION TECHNIQUES OF BLENDS

Applications of the following techniques: IR, microscopy (TEM, SEM and optical), TGA, DSC, DMA, viscosity, refractive index

UNIT 4: **(6 Lectures)**

POLYMER COMPOSITES

Definition; classification of composites; dispersed phase: (reinforcing fillers, non-reinforcing fillers), and (particulate matter, fibrous structure and platelet structures), continuous phase: thermoset matrix, thermoplastic matrix and high-performance resins, mechanism of reinforcement, various factors affecting reinforcements

UNIT 5: **(6 Lectures)**

DESIGN AND FABRICATION OF COMPOSITES

Fabrication techniques: Prepreg technology, injection and compression molding, vacuum bag molding, hand-lay-up process, spray-up technique, filament winding process, fibre placement process, Pultrusion, reaction transfer molding, laminating techniques, expansion processes, fabrication processes: adhesion, cohesion and mechanical processes & FRPs.

Design of a few polymer composite: basic design practice – material considerations, product considerations and design considerations, rule of mixture

PRACTICAL COMPONENT (60 Lectures)

- To prepare polymer blends by melt, solution and latex blending.
- To check the compatibility of blends by using microscope/DSC
- Determination of Lower and Upper Critical Solution Temperature of a polymer.
- To study the miscibility of the polymer blend using ultrasonic method.
- To study the miscibility of the polymer blend using viscosity method.
- To study the miscibility of the polymer blend using refractive index method.
- Determination of miscibility of polymer blends by density measurement method.
- Preparation of FRP laminates by hand lay-up technique.
- Evaluate the effect of filler loading on mechanical properties of a composite.
- Fabrication of composites by various techniques.
- Characterization (thermal and mechanical) of blends and composites.
- Determine the refractive indices of polymer blends by using abbe's refractometer.

ESSENTIAL/RECOMMENDED READINGS

- Paul D.R., Bucknall C.B., (2000) Polymer Blends Vol. 1 & Vol. 2, Wiley-Interscience.
- Robeson L.M., (2007) Polymer Blends, Hanser Gardner.
- Singh R.P., Das C.K., Mustafi S.K., (2002) Polymer Blends and Alloys, Asian Books Private Limited.

SUGGESTIVE READINGS

- Utracki L.A., (2003) Polymer Blends Handbook Vol. 1 & Vol. 2, Kluwer Academic Pub.
- Bhowmick A.K., De S.K., (1990) Thermoplastic Elastomers from Rubber-Plastic Blends, Ellis Horwood Publishers Ltd.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 17

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
POLYMERIC NANOMATERIALS AND NANOCOMPOSITES	**4**	**3**	**0**	**1**	**Class 12th with Physics, Chemistry, Mathematics**	**-**

Learning objectives

- To make students understand the basic concepts of nanomaterials and polymer nanocomposites.
- To learn the effect of shape, size, dispersion and percolation of nanomaterials on polymer nanocomposites
- To understand modification techniques of nanomaterials

Learning outcomes

After studying this paper, students will be able to

- Synthesize polymeric nanomaterials
- Demonstrate the knowledge of properties and structural aspects of polymeric nanomaterials
- Explore various areas of polymeric nanomaterial applications

SYLLABUS OF DSC-17

THEORY COMPONENT-

UNIT 1: (9 Lectures)

NANO-REINFORCING AGENTS

Preparation, structure and properties of nano-reinforcing agents: 1 D, 2 D and 3 D nanomaterials eg. nanoparticles, nanotubes, nano-clays, POSS, carbon nanostructures (CNTS, graphene)

UNIT 2: (21 Lectures)

PROPERTIES AND CHARACTERIZATION OF NANOMATERIALS

Morphology analysis of crystallites in nanocomposites: X-ray scattering & diffraction technique, Analysis of Nanostructure developed in semi-crystalline polymers during deformation, Nanostructure of two component amorphous block copolymers, effect of chain architecture. Factors governing properties of nanocomposites such as loading, dispersion and percolation, influence of size, shape and diameter of nanoparticles nanotubes, functionalization of nanomaterials

UNIT 3: (15 Lectures)

POLYMER NANOCOMPOSITES Basic concepts, preparation, characterization and applications of polymer nanocomposites, technical challenges and understanding of interfacial dynamics using LJ potential and many body problems approach

PRACTICAL COMPONENT (30 Lectures)

- To analyze particle size of nanomaterials (nanoparticles).
- To prepare polymer nanocomposites by solution casting
- To prepare polymer nanocomposite by melt compounding.
- To determine the polymer nanocomposite by in-situ polymerization
- Determination of mechanical properties of nanocomposites.
- To prepare graphene oxide and its nanocomposite.
- Chemical modification of nanoclay and its characterization.
- Characterization (morphology and thermal) of nanocomposites by optical microscope, SEM, TEM, DSC, DMA, TG-DTA etc.
- Determination of electrical properties of nanocomposites.
- To prepare nano metal oxides and nano silica by chemical modification.

ESSENTIAL/RECOMMENDED READINGS

- Koo J.H., (2010) Polymer Nanocomposites, Tata McGraw-Hill.
- Bhattacharya S.N., (2008) Polymeric Nanocomposites-Theory and Practice, Hanser Gardner.
- Michler G.H., Balta F.J., (2005) Mechanical Properties of Polymer based on Nanostructure and Morphology, CRC Press.

SUGGESTIVE READINGS

- Tjong S.C., (2006) Nanocrystalline Materials, Elsevier Science.
- Owens F.J., Papoose C., (2003) Introduction to Nanotechnology, John-Wiley & Sons.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 18

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
RUBBER TECHNOLOY	**4**	**2**	**0**	**2**	**Class 12th with Physics, Chemistry, Mathematics**	**-**

Learning objectives

- To learn about the concept of vulcanization and properties of rubbers

Learning outcomes

After studying this paper, students will be able to

- Apply the knowledge of preparation of rubbers and fibres
- Learn the knowledge of different types curing techniques

SYLLABUS OF DSC-18

THEORY COMPONENT-

UNIT 1: (4 Lectures)

RUBBERS: INTRODUCTION

Properties of rubber: Structure, glass transition temperature, mechanical properties (tensile, % elongation, compression set, fatigue resistance, resilience, hysteresis, hardness etc.)

UNIT 2: (10 Lectures)

PREPARATION, PROPERTIES AND APPLICATIONS

Natural rubber and synthetic rubbers (styrene-butadiene rubber, polybutadiene rubber, ethylene propylene diene rubber, butyl rubber, nitrile rubber, neoprene, silicone rubber, fluorocarbon rubber

Thermoplastic elastomers: Structure, properties, preparation, types and applications

UNIT 3: (6 Lectures)

MIXING OF RUBBERS

Need for compounding - Rubber mixing mechanism -mixing machinery- two roll mill-internal mixer–machine design -mixing in internal mixers &two roll mill, continuous mixers - mixing cycles and procedures, operating variables and mix quality

UNIT 4: (6 Lectures)

VULCANIZATION OF RUBBER

Theory and mechanism of sulphur and non-sulphur vulcanization (with and without accelerators), rheocurve of compounded rubber, pre and post vulcanization processes, properties of vulcanized rubber

UNIT 5: (4 Lectures)

VULCANISATION TECHNIQUES

Importance of vulcanization - vulcanization processes - batch processes - Continuous vulcanization – machinery & process - Reaction injection moulding of PU; silicone injection moulding.

PRACTICAL COMPONENT (60 Lectures)

- To determine tensile strength, modulus, elongation at break of Rubber sheet.
- To determine tear strength, abrasion resistance, heat build-up, resilience, hardness, flex resistance for rubber compounds.
- To determine curing time and physical properties of rubber compounds.

- To determine mooney viscosity of rubber using Mooney viscometer.

ESSENTIAL/RECOMMENDED READINGS

- Martin J.M., Smith W.K., (2007) Handbook of Rubber Technology, CBS Publisher.
- Mark J. E., Erman B., Eirich F.R., (2005) The Science and Technology of Rubber, Elsevier Academic Press.
- Blow S., (2000), HandBook of Rubber Technology, Hanser Gardner.

SUGGESTIVE READINGS

- Morton W.E., Hearle J.W.S., (2008) Physical Properties of Fibres, Woodhead Publishing.
- Blow.C.M. andHepburn.C. Rubber Technology and manufacture, Butterworths, 1982.
- Evans.C.W., Practical Rubber Compounding and processing, Applied Science Publishers, London, 1981.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF DISCIPLINE SPECIFIC ELECTIVE COURSES (DSE)
COURSES OFFERED IN ODD SEMESTERS BY THE DEPARTMENTS

*{**Note1**: DSE Paper 1 to DSE: Paper 7 will be offered in odd semesters & DSE: Paper 8 to DSE: Paper 14 will be offered in even semesters.*

***Note 2**: Paper 15 is compulsory for all the students who want to pursue VII and VIII semesters. It will be offered in both VI and VII semesters.}*

DISCIPLINE SPECIFIC ELECTIVE COURSES (DSE-1)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
ADVANCED ANALYTICAL TECHNIQUES FOR POLYMERS	**4**	**2**	**0**	**2**	**Class 12th with Physics, Chemistry**	**---**

Learning objectives

The Learning Objectives of this course are as follows:

- To acquaint the students with the advancements in different characterisation techniques (spectroscopy, microscopy and separation), their principle, instrumentation, and applications in characterization of polymeric materials.
- Students will be able to determine a chemical structure, purity, property and functionality in polymer samples.

Learning outcomes

After studying this paper, students will be able to

- Interpret NMR, raman, mass and IR–spectra for characterization of molecular structure of polymeric materials
- Elucidate the morphology, size, homogeneity and distribution of various polymers and polymeric samples

- Acquire the knowledge about separation process of components from polymer mixture and samples.

SYLLABUS OF DSE-1

THEORY COMPONENT-

UNIT 1 (14 Hours)

SPECTROSCOPIC TECHNIQUES

Principles, instrumentation, and applications for structural determination of polymers (functional group, tacticity, molecular structure, purity, unsaturation etc.) using FT-IR, electron spin resonance, Raman, nuclear magnetic resonance (^{13}C NMR).

Mass Spectroscopy: Introduction, basic principles, instrumentation, fragmentation patterns, and interpretation of mass spectra and applications. Basis and application of MALDI-TOF, and ESI-MS in characterisation of different polymers including biopolymer for determination of molecular mass and structures (branching, and chain length).

UNIT 2 (8 Hours)

CHROMATOGRAPHY TECHNIQUES

Introduction to chromatographic methods: thin layer chromatography, column and gas chromatography. Principles, instrumentation and application of Gas liquid Chromatography, High performance liquid chromatography and gel permeation chromatography (GPC) including brief about column, detectors and stationary phases and their significance.

UNIT 3 (8 Hours)

MICROSCOPIC AND MISCELLANEOUS TECHNIQUES

Optical microscopy, electron microscopy (SEM, TEM, AFM) and XPS, XRD: principle, instrumentation and applications (Particle size by Scherrer formula, d-Spacing, Crystal parameter, morphology etc.) for polymers characterization. Different methods used for determination of molecular mass, Particle size analyser, and measurement and importance of zeta potential.

PRACTICAL COMPONENT (60 Hours)

- To identify the functional groups and components in various polymers (homo and co polymers) using FTIR.
- To determination of Reactivity ratio by FTIR.
- To determination of purity of monomers by spectrophotometer
- To determine the cross linking density of a polymer samples by FTIR.
- To analyse the Raman spectra of given polymers(demonstrative).
- Evaluate percentage crystallinity and size of polymeric samples by XRD curve.
- To separate and identify additives in a given polymeric sample by thin layer chromatography.
- To separate and identify the polymeric samples and mixture by TLC.
- To analyze film morphology (homogeneity, distribution and size) by optical microscope.
- To determine the size of polymer/additives particles by particle size analyzer.
- Visit to an analytical laboratory and submit a report.

ESSENTIAL/RECOMMENDED READINGS

- Willard H.H., Merritt L.L., Dean J.A. (1988) Instrumental method of analysis, Wads worth Publishing Company.
- Skoog D.A, (1997) Principle of Instrumental Analysis, Harcourt College Pub.
- Shah V., (2007) Handbook of Plastic Testing, Technology, Wiley-Inter science.
- Banwell C.N., McCash E.M., (2008) Fundamentals of Molecular Spectroscopy, Fourth Edition, Tata McGraw-Hill.
- Maus, A. (2008). Characterization and Analysis of Polymers, Wiley and Sons.
- Malik, A. Mays, J. Shah, M. R. (2021) Molecular Characterization of Polymers: A Fundamental Guide, Elsevier.

SUGGESTIVE READINGS

- Tanaka T., (1999) Experimental Methods in Polymer Sciences, Academic Press.
- Silverstein R.M., (1991) Spectrometric identification of organic compounds, John Wiley.
- Macomber R.S., (2008) A complete introduction to NMR spectroscopy, Wiley-inter science.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSES (DSE-2)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical / Practice		
FIBRE MANUFACTURING TECHNOLOGY	**4**	**2**	**0**	**2**	**Class 12th with Physics, Chemistry**	**---**

Learning objectives

The Learning Objectives of this course are as follows:

- To learn about the basic concepts of spinning including melt and solution spinning.
- To understand various parameters affecting spinning, drawing and heat setting of fibre structure and properties

Learning outcomes

After studying this paper, students will be able to:

- Manufacture fibre with desired properties.
- Demonstrate the various spinning variables.

SYLLABUS OF DSE-2

THEORY COMPONENT-

UNIT 1 (6 Hours)

INTRODUCTION TO FIBRES

Manmade fibres: definition of man-made fibres, brief history of manmade fibres, relative merits and demerits of manmade and natural fibres

UNIT 2: (12 Hours)

MELT SPUN FIBRES

Melt spinning of PP, polyester and nylon-6 and nylon -66, Effect of parameters on structure development in nylon 6, PET, PP, post spinning operations (drawing, necking and heat setting), bulking/texturing

UNIT 3 (12 Hours)

SOLUTION SPUN FIBRES

Cellulose diacetate and triacetate fibres: Unit operations, dope preparation, dry-jet-wet-spinning

Acrylic fibres: Acrylonitrile polymerization (solution, emulsion and aqueous dispersion polymerization), Fibre manufacturing; polymer solubility and dope preparation, wet spinning (fibre extrusion and coagulation, structure of coagulated fibre, tow processing), dry-jet-wet-spinning

Rayon fibres: Viscose rayon process (chemistry and spinning), overview of alternatives to viscose process

Gel spinning of PE, PAN and PVA

PRACTICAL COMPONENT (60 Hours)

- To prepare polypropylene fibre by melt spinning.
- Study of preparation, melt spinning and properties of any one specialized melt spun fibre.
- Melt spinning and cold drawing of nylon 6 using laboratory spinning and drawing machines
- To prepare polyester fibre by melt spinning.
- Solution spinning of acrylic fibre.
- Dry-jet-wet spinning of PAN fibre.
- To characterize a woven fabric with respect to its dimensional properties: thread density, yarn number, yarn crimp, weave, cover factor, areal density, skewness, thickness
- To determine the crease recovery of fabric and observe the effect of loading time and recovery time on crease recovery.
- Drawing and heat setting of fibres.
- Chemical modification of fibres.
- Visit of Industry/R&D organization

ESSENTIAL/RECOMMENDED READINGS

- Gupta V.B., Kothari V.K., (1997) Manufactured Fibre Technology, 1st Ed Chapman and Hall.
- NPTEL course material on Manufactured fibre Technology.
- Macintyre J.E., (2005) Synthetic Fibres: Nylon, Polyester, Acrylic, Polyolefin, Elsevier Science.
- Vaidya A.A., (1988) Production of Synthetic Fibres, First Edition, Prentice Hall of India.

SUGGESTIVE READINGS

- Vaidya A.A., (1988) Production of Synthetic Fibres, First Edition, Prentice Hall of India.
- Kothari V.K., (2000), Textile Fibres: Developments and Innovations, IAFL Publications.
- Nakajima T., (2000) Advanced Fiber Spinning Technology, First Edition, Woodhead Publisher.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSES (DSE-3)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
TYRE TECHNOLOGY	4	2	0	2	Class 12th with Physics, Chemistry	---

Learning objectives

The Learning Objectives of this course are as follows:

- Familiarizing various types of tyres and their components.
- Developing the knowledge of manufacturing techniques of various tyres.

Learning outcomes

The Learning Outcomes of this course are as follows:

After studying this paper, students will be able to

- Apply the knowledge of basic concept of manufacturing technology of tyre
- Demonstrate the designing and compounding of various tyre components.
- Evaluate performance and quality assessment of tyre.

SYLLABUS OF DSE-3

THEORY COMPONENT-

UNIT 1 (8 Hours)

INTRODUCTION AND TYRE MANUFACTURING

Classification: based on construction (pneumatic, radial, bias, cross ply, tube, tubeless, solid), Types of tyre on their uses: Cycle tyre, Car tyre, Light truck tyre, truck tyre, aeroplane tyre, earthmoving machinery tyre, Animal drone vehicles tyre etc. Tyre Components: Tread, sidewall, Bede, Apex, Solder, Inner Liner etc. Mixing (Mixing instruments: two roll mill, kneader, internal mixers), processing (extrusion, calendaring, bead winding), building drum, curing (molding machines etc.)

UNIT 2 (12 Hours)

TYRE DESIGN

Compound design (selection of chemical ingredients); process design (process parameters correlating with properties); product design (constructions), latest advances in materials and technologies

UNIT 3 (10 Hours)

TYRE TESTING

Endurance, groove crack test, plunger test, traction: dry, wet and snow, air permeation, noise test, rolling resistance, drivability, road test, wet braking test, fuel economy test, tread to ply pull out, bead seating test

PRACTICAL COMPONENT (60 Hours)

- To identify the type of rubber by reverse engineering.
- To prepare fabric- rubber coated ply.

- To test mechanical and physical properties of vulcanized rubber.
- To perform air aging properties of rubber and rubber to fabric ply.
- To determine bonding strength of rubber to fabric.
- To calculate abrasion losses of tyre tread.
- To calculate rebound resilience of a rubber.
- Tyre indexing and cut section analysis.
- To evaluate the compression set of a rubber.
- To determine rolling resistance test.
- Industrial Visit of Tyre Industry/ R&D

ESSENTIAL/RECOMMENDED READINGS

- Koutny F., Zling, (2007) Geometry and Mechanics of Pneumatic TIRE, CZE.
- French T., (1989) Tyre Technology, Adam Hilger, New York.
- Mark J.E., Erman B., Eirich F.R., (2005) The Science and Technology of Rubber, Elsevier.

SUGGESTIVE READINGS

- Ford T.L., Charles F.S., (1988) Heavy Duty Truck TIRE Engineering SAE's 34th L. Ray Buckingdale Lecture, SP729.
- Clark S.K., (1971) Mechanics of Pneumatic Tires, National Bureau of Standards, Monograph, US Govt. printing office.
- Gent A.N., Walter J.D., (2006) The Pneumatic TIRE, U.S. Department of Transportation, National Highway Traffic Safety Administration.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSES (DSE-4)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
POLYMER PRODUCT DESIGN	**4**	**2**	**0**	**2**	**Class 12th with Physics, Chemistry**	**---**

Learning objectives

The Learning Objectives of this course are as follows:

- To understand physical properties of polymers required for product design
- To learn about plastic parts such as static and dynamic loaded parts for electrical, optical and mechanical applications (gears, bearings, pipes, seals, couplings and vibration dampers)

Learning outcomes

After studying this paper, students will be able to

- Explain the terminology involved in product design
- Distinguish the moulded hole, insert and undercut
- Describe the processing limitation of product design and stress analysis for product
- Demonstrate the plastic products for load bearing applications
- To do cost estimation of a polymeric product

SYLLABUS OF DSE-4

THEORY COMPONENT-

UNIT-1 (7 Hours)

INTRODUCTION TO PRODUCT DEVELOPMENT

Introduction, challenges in development process, distinguishing features in polymer products, polymer product classification, Selection of the right product, Generic development process, Criteria for a successful product process flow chart, identifying customer need and its analysis, Material data bank, comparative analysis, Criterion for material selection, types of polymers and their characteristics

UNIT 2 (7 Hours)

STRUCTURAL DESIGN AND DYNAMIC LOADING ON PLASTIC PARTS

Structure and physical properties of polymers, Dynamic load response of polymers, effects of cyclic loading, other forms of stress applied to polymer parts, design for stiffness, stress analysis of polymers, structural design

UNIT 3 (10 Hours)

DESIGN PROCEDURE FOR PLASTIC PARTS

Design procedure for plastic parts- Tolerance-Moulded holes-threads-radius- moulded hinges, integral hinge-snap fits Design of plastic structural parts for static loads, design of dynamically loaded plastic parts, design of plastic parts for electrical applications, design of plastic parts for optical applications.

UNIT 4 (6 Hours)

ESTIMATING, COSTING AND ELEMENTS OF COST

Cost estimation, importance of estimation, Costing, importance of costing, Difference between costing and estimation, Importance of realistic estimates, Estimation procedure, Elements of cost, Material Cost, Determination of Material cost, Labour cost, Determination of Labour Cost, Expenses , Cost of Product (Ladder of cost) , Illustrative examples.

PRACTICAL COMPONENT (60 Hours)

- Design requirement of Gear: materials, Bearings: Self lubricated plastic materials rubber bearing,
- Design of PVC piping: Raw materials, pipe design, specification and test procedure, manufacturing process
- Product, material, and Process requirement of Car bumper
- Application of reverse engineering in Rubber product design
- To prepare open and closed cell foam.
- To prepare rubber - metal composite products
- To determine mechanical properties of designed products

ESSENTIAL/RECOMMENDED READINGS

- Ulrich, T. K. T. and Eppinger, D.S. (2004), Product design and development, Tata McGraw-Hill, 3rd edition.
- Mahajan, M. (2008) Industrial Engineering and Production Management, Dhanpat Rai Publication.
- Mollay, A.R. (1994) Plastic Part Design for Injection Moulding, Hanser Publishers, Munich Vienna, New York.

SUGGESTIVE READINGS

- Hollins, B. Pugh, S. (1990) Successful product design, Butterworth & Co.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSES (DSE-5)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
POLYMERS IN BIOMEDICAL APPLICATIONS	4	2	0	2	Class 12th with Physics, Chemistry	---

Learning objectives

The Learning Objectives of this course are as follows:

- To acquire knowledge of biocompatibility and biodegradation
- To learn about applications and testing of bio-compatible polymer in tissue engineering

Learning outcomes

After studying this paper, students will be able to

- Explain the basic concepts and requirement of biomedical applications and biocompatibility
- Apply the knowledge of various polymers in biomedical application

SYLLABUS OF DSE-5

THEORY COMPONENT-

UNIT 1 (8 Hours)

BASICS OF BIOMATERIALS

Important features for Biomedical Application: responsiveness, estimations of biodegradation and biocompatibility.

Types of Polymers in Biomedical applications and their Importance, hydrogel, fibres, bio-ceramics, bio-elastomers and membrane

UNIT 2 (10 Hours)

POLYMERS IN BIOMEDICAL APPLICATION

Permanent implants for function-orthopaedics (Internal and External artificial organ), cardio vascular, respiratory patches and tubes, digestive system, genitourinary system, nervous system, orbital (corneal and lens prosthesis)–permanent implant for cosmoses, other applications of engineered material in clinical practices, silicone implants. polymer membranes, polymer skin, polymeric blood

UNIT 3 (12 Hours)

MISCELLANEOUS APPLICATIONS (DENTAL, LENSES, DRUG DELIVERY AND TISSUE ENGINEERING)

Contact Lenses, Hard Lenses, Gas Permeable Lenses, Flexible Lenses, Soft Lenses, Hydrogels, Equilibrium Swelling, Absorption And Desorption, Oxygen Permeability, Types of Soft Lenses, Manufacture, Cleaning And Disinfection.

Dental applications, denture bases, crown and bridge resins, plastic teeth, mouth protectors, maxillofacial prosthetic materials, restorative material, polyelectrolyte based restoratives, sealants, adhesives, dental impression and duplicating materials, agar, algmater elastomers.

Introduction to drug delivery, polymers in controlled drug delivery, dressing strips, polymer drug vessels, core shell and nanogels, tissue engineering, uses of cellulose, chitosan and alginate

PRACTICAL COMPONENT (60 Hours)

- Evaluate the biocompatibility of polymeric samples.
- Determination of the degradation behavior of polymers such as thermal, hydrolytic etc.
- Preparation of membranes and measurement of their absorption behavior.
- Preparation and characterization of dental cement.
- Prepare a hydrogel and characterization.

- Prepare jaw by powdered silicone rubber
- To find out biocompatibility of polymer products by enigmatic test
- Determination of mechanical strength of polymers.
- To find out hydro degradation of artificial bone.
- To prepare porous membranes.

ESSENTIAL/RECOMMENDED READINGS

- Park, J. B. (2003) Bio-materials, An Introduction, CRC Press.
- Tiwari A., Tiwari A., (2013) Nanomaterials in drug delivery, Imaging and Tissue Engineering, Wiley.
- Pilla S., (2011) Handbook of Bioplastics and Biocomposites Engineering Applications, Wiley.

SUGGESTIVE READINGS

- Ratner B.D., Hoffman A.S., (1996) An Introduction to Materials in Medicine, Academic Press.
- Saltzman W.M., (2001) Drug delivery: Engineering principles for drug therapy, Oxford University Press.
- Kalia S., Averous L., (2011) Biopolymers: Biomedical and Environmental Applications, John Wiley & Sons.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSES (DSE-6)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
CONDUCTING POLYMERS	4	2	0	2	Class 12th with Physics, Chemistry	---

Learning objectives

The Learning Objectives of this course are as follows:

- To impart knowledge of structure and electrical properties of conducting polymers.
- To learn about applications of conducting polymers.

Learning outcomes

The Learning Outcomes of this course are as follows:

After studying this paper, students will be able to

- Perform the synthesis and doping in conducting polymers.
- Analyze and demonstrate the properties of conducting polymers

SYLLABUS OF DSE-6

THEORY COMPONENT-

UNIT 1 (8 Hours)

BASIC ASPECTS OF CONDUCTING POLYMERS

Historical background, band structure, band alignment, conduction mechanism, theory of electrical conduction in conducting polymers

UNIT 2 (10 Hours)

SYNTHESIS OF CONDUCTING POLYMERS

Chemical, electrochemical and mechanical synthesis of polyaniline, polypyrrole, polythiophene. Doping and its effects on properties of conducting polymers

UNIT 3 (12 Hours)

PROPERTIES & APPLICATIONS OF CONDUCTING POLYMERS

Electrical properties, resistance, impedance, capacitance, magnetic properties and optical properties of different conducting polymers. Applications of conducting polymers in electronic devices, sensors, rechargeable batteries, solar cells, light emitting devices, biomedical devices, organ transplant, artificial mussels and EMI shielding etc.

PRACTICAL COMPONENT (60 Hours)

- Synthesis of polyaniline, polypyrrole and polythiophene by chemical polymerizations.
- Synthesis of conducting polymers by electro chemical polymerizations.
- To improve electrical conductivity of PANI by chemical doping.
- Evaluation of mechanical properties of conducting polymer films/sheets.
- Determination of the thermal properties of conducting polymers.
- To prepare a molded sheet of conducting polymers.
- To manufacture molded conducting device
- To study the effect of doping of Polypyrrole
- To measure the electrical conductivity and resistivity of conducting polymer films/sheets.
- To design and demonstrate the conducting polymer based devices i.e light emitting devices, chemical sensor and solar cell.

ESSENTIAL/RECOMMENDED READINGS

- Chandrasekhar P., (1999) Conducting Polymers, fundamentals and applications: A practical approach, Springer.
- Nalwa H.S., (1997) Handbook of Organic Conductive Molecules and Polymers: Conductive polymers: synthesis and electrical properties, Vol. 2, Wiley.
- Skotheim T.A., Elsenbaumer R.L., Reynolds J.R., (2007) Handbook of Conducting Polymers, CRC Press.
- Batrinescu, G., Constantin, L. A., Cuciureanu, A., & Constantin, M. A. (2016). Conductive polymer-based membranes. Conducting Polymers.
- Fernandez O.T., (2015) Conducting Polymers, Royal Society of Chemistry.

- Almeida L.C., (2013) Conducting Polymers: Synthesis, Properties & Applications, Nova Publishers.
- Gupta, R. K. (Ed.). (2022). Conducting Polymers: Chemistries, Properties and Biomedical Applications. CRC Press.

SUGGESTIVE READINGS

- Dyson, R. W., (1982) Speciality polymers Chapman and Hall publications.
- Brydson J.A., (2016) Plastics Materials, Butterworth Heinemann, 8th Edition.
- Sołoducho, J., & Cabaj, J. (2016). Conducting polymers in sensor design. Conducting Polymers. Rijeka: Intech, 27-48.
- Otero, T. F. (2016). Conducting Polymers: Bioinspired Intelligent Materials and Devices. Royal Society of Chemistry.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSES (DSE-7)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical / Practice		
BIO-BASED AND BIODEGRADABLE POLYMERS	**4**	**2**	**0**	**2**	**Class 12th with Physics, Chemistry**	**---**

Learning objectives

The Learning Objectives of this course are as follows:

- To gain knowledge of biopolymers and their isolations
- To acquire knowledge on structure and properties of biopolymers
- To understand the basic applications of various biopolymers

Learning outcomes

After studying this paper, students will be able to:

- Explain the applications of bio-based and biodegradable polymers
- Distinguish and analyse biopolymers
- Evaluate the strength and properties of polymers

SYLLABUS OF DSE-7

THEORY COMPONENT-

UNIT 1 (12 Hours)

BASICS TO BIOPOLYMERS & NATURAL MACROMOLECULES

Introduction to the concept of Bio Based Polymers and Biodegradable Polymer. Significance, classifications, properties and applications of biopolymers and natural polymers such as Starch, cellulose, chitosan, gelatine, protein, fatty acids, lipids, aliphatic polyesters (PLA, PHB), cellulose

UNIT 2 (8 Hours)

PROCESSING

Isolation, processing of biopolymers: composite formation, blending and solvent casting

UNIT 3 (10 Hours)

APPLICATIONS

Applications of biopolymers in packaging, biomedical testing and devices, agriculture: soil conditioning and micro-nutrient delivery

PRACTICAL COMPONENT (60 Hours)

- To determine the molecular weight of biopolymers.
- Isolation of starch from wheat/rice/potato
- Isolation of gelatin from natural resources.
- To prepare Poly(lactic acid).
- To prepare a chitosan based composite for biomedical applications.
- To prepare blends of natural polymers and find out miscibility
- Develop a biodegradable film by solution casting of biopolymers.
- Estimate the biodegradability by soil burial test.
- Evaluate swelling index, porosity, hardness of a film.
- Estimate the water vapor transmission rate of a biopolymeric film.

ESSENTIAL/RECOMMENDED READINGS

- Byrom D., (1991) Biomaterials: Novel Materials from Biological Sources, First Edition, Macmillan Publishers Ltd.
- Bastioli C., (1987) HandBook of Biodegradable polymers, Rapra Technology.
- Niaounakis M., (2015) Biopolymers: Processing and Products, First Edition, Elsevier Inc.

SUGGESTIVE READINGS

- Johnson R.M., Mwaikambo L.Y., Tucker N., (2003) Biopolymers, Rapra Technology.
- Pilla S., (2011) Hand Book of Bioplastics & Biocomposites for Engineering Applications, Wiley.
- Alexander S., (2003) Biopolymers, Vol. 1, Wiley.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSES (DSE-8)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
ENGINEERING DRAWING & MOLD DESIGN	4	3	0	1	Class 12th with Physics, Chemistry	---

Learning objectives

- To understand the various planes of work pieces
- To learn about the various mold and their components
- To acquaint with the concepts of mold & die design and their key features

Learning outcomes

The Learning Objectives of this course are as follows:

After studying this paper, students will be able to

- Explain about the graphics design
- Apply design features in structure of injection molds
- Apply design features in structure of extrusion dies

SYLLABUS OF DSE-8

THEORY COMPONENT-

UNIT 1 (18 Hours)

INTRODUCTION & PROJECTIONS OF PLANES, POLYHEDRA SOLIDS AND SOLIDS OF REVOLUTION

Introduction of Drawing instruments, sheet layouts lines, lettering and Dimensioning scales, various types of projections, First and Third angle systems of orthographic projections. Projection of Points in different quadrants: parallel to one reference plane, inclined to one plane but perpendicular to the other, inclined to both reference planes. Projections of Polyhedra Solids and Solids of Revolution – in simple positions with axis perpendicular to a plane, with

axis parallel to both planes, with axis parallel to one plane and inclined to the other, Projections of sections of Prisms, Pyramids, Cylinders and Cones.

UNIT 2: (12 Hours)

MOLD DESIGNING AND MAKING

Materials selection for mold and die, mold making processes: casting, electro deposition, cold hobbing, pressure casting, spark machining. Tool room machines and their application: CNC machines-CNC EDM-CNC, Milling- CNC. Basis structure and feed system of mould: core, cavity, runner, gates, bolster, and cooling unit.

UNIT 3: (15 Hours)

EJECTION SYSTEM & UNDER CUTS

Ejector grid, ejector plate assembly, ejection techniques, ejection from fixed half and sprue pullers, Form pin, split cores, side cores, stripping internal undercuts, molds for threaded components. Daylight molds–general, undercut, formin, double & triple daylight mold

PRACTICAL COMPONENT (30 Hours)

- Lines, lettering & Dimension (Sketch Book): Scale-representative Fraction, Plan scale, Diagonal Scale, Vernier scales (In sheet), comparative Scale, & scale of chords (Sketch Book)
- Geometric conception, caners used in drawing practice. Conic Section: Construction of Ellipse, Parabola & Hyperbola by different methods (In sheet)
- Construction of cycloid, Epicycloids, Hypocycloid and Involutes (In sheet) Archimedean and Logarithmic spiral, (Sketch book)
- Type Projection, Orthographic Projection: First Angle and third Angle Projection (Sketch Book)
- Projection of Straight lines, different position of straight lines, methods for determining True length, true inclinations and Traces of straight lines (Four problems in sheet and three problems in Sketch Book)
- Projection of Planes: Different positions of Plane lamina like.: - Regular polygon, circle three of planes (Four problems in Drawing sheet and three problems in Sketch Book).
- Demonstration software used in mold and die design (Auto CAD, solid works, etc.)

- To design and validate well labelled mold from clay/POP/resin and prepare plastic products.
- Demonstration of Lathe, milling, CNC and wire cutting machine
- Tool room/industrial visit

ESSENTIAL/RECOMMENDED READINGS

- Engineering Drawing, Basant Agarwal & CM Agrawal, Tata McGraw Hill.
- Engineering Drawing Geometrical Drawing, P.S. Gill, S.K. Katara & Sons.
- Engineering Drawing, Dhanarajay A Jolhe, Tata McGraw Hill.
- Pye R.G.W., (2000) Injection mould design, Affiliated East West Press Pvt. Ltd.
- Strong A.B., (2005) Plastics: Materials & Processing, Prentice Hall.
- Rosato D.V., Rosato D.V., (2000) Injection Moulding Handbook, CBS Publisher.

SUGGESTIVE READINGS

- Engineering Drawing, N.D. Bhatt, Charotar Publishing House Pvt. Ltd.
- Morton-Jones D.H., (2007) Polymer Processing, Chapman & Hall.
- Crawford R.J., (1998) Plastic Engg, Butterworth-Heinemann.
- Rees H., (1995) Mould Engineering, Hanser Publisher.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSES (DSE-9)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
POLYMER PHYSICS	**4**	**2**	**0**	**2**	**Class 12th with Physics, Chemistry**	**---**

Learning objectives

- To learn about the conformations of polymer chains.
- To understand the morphology of crystalline and amorphous polymers.

Learning outcomes

After studying this paper, students will be able to

- Apply concepts of polymer physics.
- Classify polymers on the basis of physical properties.
- Determine crystal structure of polymers.

SYLLABUS OF DSE-9

THEORY COMPONENT-

UNIT 1 (12 Hours)

FUNDAMENTALS OF POLYMER PHYSICS

Potential energy and conformational energy of molecules, conformations and configurations, tacticity, isomeric states and isomerism in polymers, stereoisomerism, geometric isomerism, Random coils and average end to end distance, more realistic chains, excluded-volume effect, chain flexibility and the persistence length.

UNIT 2 (10 Hours)

REGULAR CHAINS AND CRYSTALLINITY

Regular and irregular chains, Polymers with 'automatic' regularity, Polydienes, Helical molecules, Determination of crystal structures by X-ray diffraction, Crystal structures of some common polymers (PE, PP, PET, Nylons, PVC)

UNIT 3 (8 Hours)

MORPHOLOGY AND MOTION

Introduction, degree of crystallinity, Experimental determination of crystallinity. Crystallites: fringed-micelle model, Chain-folded crystallites, Extended-chain crystallites, Non-crystalline regions and polymer macro-conformations:, Lamellar stacks, Spherulites and other polycrystalline structures, Concept of chain orientation, orientation in amorphous and crystalline polymers, Uniaxial and biaxial orientation practical significance, Optical microscopy of spherulites, Light scattering by spherulites.

PRACTICAL COMPONENT (60 Hours)

- To determine density of fibres by Density Gradient Column.
- To develop and study the growth of PP spherulites in different crystallization conditions.
- To study the morphology of the given fibre sample by Infrared spectroscopy.
- Interpretation crystallization and isothermal crystallization of polymers by DSC thermogram
- To determine crystallinity and orientation in polymers by XRD
- To determine the d-spacing in a given polymer sample by XRD.
- Morphological study of polymers by optical microscopy and interpretation of optical micrograph.
- Interpretation of molecular weight distribution curve/chromatogram
- To study Tyndall effect in polymer solution.
- To study the effect of crystallinity on mechanical properties of fibres.
- R&D Lab Visits

ESSENTIAL/RECOMMENDED READINGS

- Sperling L.H., (1993) Introduction to Physical Polymer Sciences, J. Wiley N.Y.
- Crompton R.T., (1989) Molecular Motions in High Polymers, Pergamon Press N.Y.
- Hiemenz, P. C., & Lodge, T. P. (2007). Polymer chemistry. CRC press.

SUGGESTIVE READINGS

- Crompton T.R., (1989) Analysis of Polymers, Pergamon Press N.Y.
- Ward I.M., (1979)Mechanical Properties Of High Polymers, John Wiley.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC ELECTIVE COURSES (DSE-10)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
MATERIAL SCIENCE	4	3	0	1	Class 12th with Physics, Chemistry	---

Learning objectives

- To introduce the fundamentals of material science especially dielectric materials, semiconducting materials and nanomaterials
- To impart knowledge of different types of materials, their properties and applications

Learning outcomes

After studying this paper, students will be able to

- Explain the structure, function, properties of various materials
- Apply the knowledge of smart materials for desired applications

SYLLABUS OF DSE-10

THEORY COMPONENT-

UNIT 1: (15 Hours)

BASICS OF MATERIALS STRUCTURE

Amorphous and crystalline structure, unit cells and space lattices, X-ray diffraction of crystal structures, miller indices of planes and directions, packing geometry in metallic, covalent and ionic solids, single and polycrystalline materials, imperfections in crystalline solids magnetism, intrinsic and extrinsic semiconductors, dielectric properties, absorption and transmission of electromagnetic radiation.

UNIT 2: (15 Hours)

ADVANCED MATERIALS

Ferroelectric, piezoelectric, optoelectronic, semiconducting behaviour, lasers and optical fibres, photoconductivity and superconductivity, nanomaterials (synthesis, properties and applications), biomaterials, shape memory alloys, Ceramics: structure, properties, processing and applications of traditional and advanced ceramics.

UNIT 3: (15 Hours)

METALS AND ALLOYS

Solid solutions, solubility limit, intermediate phases, intermetallic compounds, iron-iron carbide phase diagram, heat treatment of steels, cold, hot working of metals, recovery, recrystallization and grain growth. Microstructure, properties and applications of ferrous, non-ferrous alloys and polymer alloy

PRACTICAL COMPONENT (30 Hours)

- To check the hardness of composite materials by rockwell hardness tester.
- To determine % composition of metals, fillers etc.
- Thermogravimetric analysis of different Polymers (Using TGA)
- Determination of degradation profile and filler content of a polymer (using TGA).
- Study of mechanical stress v/s strain behavior of a polymer (tensile and flexural)
- Determination of impact strength of a polymer by izod method.
- Determination of impact strength of a polymer by charpy method.
- To determine magnetic properties of materials.
- To determine mechanical properties (strength, modulus) of materials.
- Preparation of advanced polymer composite material for different applications (packaging and biomedical).
- To prepare safety glass and evaluate its properties.

ESSENTIAL/RECOMMENDED READINGS

- Shackelford J.F., (2010) Materials Science And Engineering Handbook, Third Edition CRC Press.
- Mittemeijer E.J., (2011) Fundamentals of Materials Science: The Microstructure–Property Relationship Using Metals as Model Systems, Springer.
- Sedha R.S., Khurmi R.S., (2004) Materials Science, S. Chand.

SUGGESTIVE READINGS

- Kakani S.L., Kakani A., (2006) Material Science, New Age International.
- Yao J., Zhou Z., Zhou H., (2019) Highway Engineering Composite Material and its Application, Springer.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSES (DSE-11)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
SMART MATERIALS	4	3	0	1	Class 12th with Physics, Chemistry	---

Learning objectives

- Overview of smart materials, Piezoelectric Ceramics, Piezo-polymers, Magnetostrictive Materials, Electroactive Polymers, Shape Memory polymers.
- To learn the fundamentals of electro and magneto rheological fluids, thermally responsive polymers, modelling of smart materials, introduction to composite smart materials and smart hydrogels.

Learning outcomes

After studying this paper, students will be able to

- Explain polymer based smart materials
- Demonstrate applications of smart materials.

SYLLABUS OF DSE-11

THEORY COMPONENT-

UNIT 1: (15 Hours)

INTRODUCTION

Smart materials and structures: components and classification of smart structures, single crystals vs polycrystalline systems, common smart materials and associated stimulus-response, application areas of smart systems, piezoelectric materials- piezoelectric effect, parameter definitions, piezoceramics, piezopolymers, piezoelectric materials as sensors, actuators and bimorphs.

UNIT 2: (15 Hours)

SMART POLYMERS

Thermally responsive polymers, electroactive polymers microgels (synthesis, properties and applications), protein-based smart polymers, ph-responsive and photo-responsive polymers, self-assembly, molecular imprinting using smart polymers, approaches to molecular imprinting, drug delivery using smart polymers

UNIT 3: (15 Hours)

SMART HYDROGELS

Synthesis, fast responsive hydrogels, molecular recognition, smart hydrogels as actuators, controlled drug release, artificial muscles, hydrogels in microfluidics. smart systems for space applications: elastic memory composites, smart corrosion protection coatings, self-healing materials, sensors, actuators, transducers, deployment devices, molecular machines.

PRACTICAL COMPONENT (30 Hours)

- To determine the elastic properties of polymers.
- To determine % swelling of a hydrogel.
- To determine the sensing power of a sensor.
- To prepare corrosion resistance coatings.
- To test the corrosion inhibition of materials.
- To prepare electroactive microgel.
- To prepare polymer for artificial muscles and study its behaviour with pH change.
- To determine the flexural strength of epoxy/ polyester composite.
- To synthesise and test water absorption behaviour of hydrogel.
- To prepare a polymer based photo sensor.

ESSENTIAL/RECOMMENDED READINGS

- Leo D.J., (2007) Engineering Analysis of Smart Material Systems, Wiley.
- Addington M., Schodek D.L., (2005) Smart Materials and New Technologies in Architecture, Elsevier.
- Otsuka K., Wayman (Eds.) C.M., (1998) Shape Memory Materials, Cambridge University Press.
- Gandhi, M.V., Thompson B. S., (1992) Smart Materials and Structures, Chapman & Hall.
- Schwartz, M., (2006) New Materials, Processes, and Methods Technology, CRC Press.

SUGGESTIVE READINGS

- Ball, P., (1997) Made to Measure: Materials for the 21st Century, Princeton University Press.
- Galaev, I., Mattiasson, B., (Eds.), (2008) Smart Polymers: Applications in Biotechnology and Biomedicine, 2nd ed, CRC Press.
- Yui, N., Mrsny, R. J., Park, hK., (Eds.), (2004) Reflexive Polymers and Hydrogels: Understanding and Designing Fast Responsive Polymeric Systems, CRC Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSES (DSE-12)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
AUTOMOBILE APPLICATIONS OF POLYMERS	**4**	**3**	**0**	**1**	**Class 12th with Physics, Chemistry**	**---**

Learning objectives

- To know various sources of materials used in automobiles.

- To learn about polymeric materials significance in automobiles structural and mechanical components.
- To study about rubber components used in automobiles.

Learning outcomes

After completing this course, the students

- Explain the knowledge about requirements of automobile industry.
- Apply the polymeric (plastic) components in automobile interior and exterior parts.
- Determine the rubber components used in automobile parts.

SYLLABUS OF DSE-12

THEORY COMPONENT-

UNIT 1: (8 Hours)

INTRODUCTION TO AUTOMOTIVE COMPONENTS AND MATERIALS

History of automobile industry, need for polymers, advantages and limitations of polymers, competition between plastics, composites and other materials, processing, designing with plastics, selection criteria of material.

.

UNIT 2: (10 Hours)

POLYMERS IN THE INTERIOR OF THE VEHICLE

Interiors, dominance of polymeric components, Fashion and function, Plastics surfaces (Texture and fogging), Plastic structure and panel application (Sandwich concept, Instrumental panel, other sensitive panels), Structural and mechanical components (Seating, Door and window furniture, steering wheel, airbags, seat belts, pedals, instrumental and others).

UNIT 3: (10 Hours)

POLYMERS IN THE EXTERIOR OF THE VEHICLE

Exteriors: Body panels and structure – Painting problems – Bumpers – Other exteriors: Grills, Spoilers, Mirrors, Door handles, Wheel trim, Road wheels, Sun roof components, Windscreen wiper assemblies.

UNIT 4: (10 Hours)

ENGINE, POWERTRAIN AND CHASSIS

The engine compartment, cooling system, under bonnet structure, transmission, engine hang on parts, engine interior, composite engine, suspension, steering, brakes, fuel tanks, electrics: battery boxes, circuitry, lighting and instrumentation, electronics.

UNIT 5: (7 Hours)

RUBBER PRODUCTS

Rubber mounts, spring, seals, O-ring, rubber to metal bonding components, coupling hoses, brake lining, disc brakes.

PRACTICAL COMPONENT (30 Hours)

- To prepare EPDM profile for windshield and door seal.
- To prepare bumper material and test its impact strength.
- To prepare O'Rings/gaskets material for sealing applications
- To manufacture automobile carpet/leather and test its mechanical and physical properties.
- To prepare laminated material for radiator pipe
- To manufacture carbon fibre-epoxy composite for high strength applications
- To prepare plastic joint and test its strength.
- To find out scratch resistance of a coated automobile part.
- To prepare composite for railway breaker
- To analyze flexural strength of jumping rod.
- Industrial Visit

ESSENTIAL/RECOMMENDED READINGS

- Maxwell, J,. (1994) “Plastics in the Automotive Industry”, SAE internationals, Woodhead Publication, England.
- Mann, D., (1999) “Automotive Plastics and Composites Worldwide Markets and Trends” to 2007, 2nd Edition , Elsevier advanced technology.
- Ashby, M. F., Shercliff, H., Cubon, D., (2007) “Materials Engineering Science, Processing and Design”, Butterworth Publications.
- Brian, C., Patrick, G., and Colin J., (2007) Automotive Engineering: Light Weight, Functional and Novel Materials, Taylor & Francis.

- Groover, M. P., (2005) Fundamentals of Modern Manufacturing: Materials, Processes, and Systems, 2nd edition, John Wiley & Sons.
- Stauber, R., Vollrath, L. (2007) Plastics in Automotive Engineering: Exterior Applications, Hanser publications.
- Marur, S., (2011) Plastics Application Technology for Safe and Lightweight Automobiles.

SUGGESTIVE READINGS

- Callister, W. D., (2005) Materials Science and Engineering an Introduction, 6th edition, John Wiley & Sons.
- Yamagata, H., (2005) The Science and Technology of Materials in Automotive Engines, Yamaha Motor Co. Ltd., Japan Woodhead Publishing Limited.
- Davies, G., (2003) Materials for Automobile Bodies, Butterworth-Heinemann Publications.
- Koronis, G. Silva, A., (2018) Green Composites for Automotive Applications, Woodhead Publishing Series in Composites Science and Engineering.
- Sehanobish, K., (2009)"Engineering Plastics and Plastic composites in Automotive Applications", SAE internationals, Warrendale.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSES (DSE-13)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
POLYMERS IN ENERGY APPLICATION	4	2	0	2	Class 12th with Physics, Chemistry	---

Learning objectives

The Learning Objectives of this course are to:

- Make students familiar with use of advanced polymers for energy applications
- Learn about the manufacturing of fuel cells

- Understand polymer properties related to energy components

Learning outcomes

After studying this paper, students will be able to

- Select the polymers for energy applications
- Explain working process of lithium ion batteries and fuel cell

SYLLABUS OF DSE-13

THEORY COMPONENT-

UNIT 1: (6 Hours)

INTRODUCTION

Importance and need of energy storage, modes of energy transmission, batteries, thermal, mechanical storage, hydrogen, pumped hydropower, flywheels, role of polymer in energy storage applications. environmental and sustainability issues.

UNIT 2: (8 Hours)

ENERGY STORAGE DEVICES BASED ON POLYMERS

Introduction, principal, methodology & working: photovoltaics, supercapacitors, lithium-ion batteries: PVAc based polymer blend electrolytes for lithium batteries, preparation of solid polymer electrolytes based batteries, perovskite-type composite polymer electrolytes, PPO-type composite polymer electrolytes, sulfide-type polymer electrolytes, solid polymer electrolytes with ionic liquid, solid polymer electrolytes with cellulose.

UNIT 3: (8 Hours)

FUEL CELLS

Hydrogen generation & storage, fuel cells, principles and nanomaterials design for; proton exchange membrane fuel cells (PEMFC), sulfonated poly (ether-ether ketone)s, sulfonated poly(aryl ether) for PEMFC and direct methanol fuel cell (DMFCs). Polymer composite membrane role (cation/anion/proton-exchange membranes) in bio-electrochemical systems – construction and performance of MFCs.

UNIT 3: (8 Hours)

POLYMER NANOCOMPOSITES FOR RENEWABLE ENERGY STORAGE SYSTEMS

Solar cells: Types, functioning, mechanism, materials for solar cell and structure design, Concept of solar cells with organic quantum dots, Quantum dots (polymer multiple & molecular multiple quantum dots), polymer-inorganic hybrid solar cells, hybrid conjugated polymer-inorganic semiconductor composites, semiconducting polymer-based bulk heterojunction solar cells, current trends and future status.

PRACTICAL COMPONENT (60 Hours)

- To prepare methanol fuel cell.
- To design low, medium and high-temperature fuel cell.
- Preparation of proton exchange by membrane fuel cell.
- Preparation of hydrogen fuel cell.
- To prepare quantum dots grown by molecular layer deposition for photovoltaics.
- Synthesis of polymer multiple quantum dots.
- To test the efficiency of solar cell.
- Demonstrate the working principle of solar cell.
- To prepare PVAc based polymer blend electrolytes.
- To test the energy storage of Lithium batteries.

ESSENTIAL/RECOMMENDED READINGS

- Deborah, D.L., Chung, (2002) “Composite Materials”, Springer.
- Sun, S. S., Sariciftci, N. S., (2005) “Organic Photovoltaics”, CRC press-Taylor & Francis.
- Mohammad, F., (2007) “Specialty Polymers: Materials and Applications”, I. K. International Pvt Ltd.
- Chanda, M. Roy, S. K., (2008) “Industrial Polymers, Specialty Polymers“, and Their Applications, CRC Press.
- Ram K. Gupta, R. K., (2022) “Conducting Polymers for Advanced Energy Applications”, CRC Press.
- Thangadurai, T. D., Nandhakumar, M., Thomas, S., Nzihou, A., (2022) “Polymer Nanocomposites for Energy Applications”, Wiley.

SUGGESTIVE READINGS

- Malaika, S. Al, Wilkie, C. A., Golovoy, A., (2001) “Specialty Polymer Additives”, Wiley.
- Dyson, R. W., (1982) “Speciality polymers”, Chapman and Hall publications.

- Ise, N., Tabushi, I., (1983) "An Introduction to Speciality Polymers", CUP Archive.
- Inamuddin, Ahamed M. I., Boddula, R., Altalhi, T., (2022) "Polymers in Energy Conversion and Storage".
- Kroschwitz, J. I. (2003) "Encyclopedia of polymer science and technology", John Wiley.
- Mark, H. F. (2013). "Encyclopedia of polymer science and technology", John Wiley & Sons.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSES (DSE-14)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
3D PRINTING OF POLYMERS	4	3	0	1	Class 12th with Physics, Chemistry	---

Learning objectives

- Impart students to the fundamentals of various 3D Printing techniques for application to various industrial needs.
- Students will be able to convert part files into STL format and will understand the method of manufacturing of liquid based, powder based and solid based techniques.

Learning outcomes

The Learning Objectives of this course are as follows:

After studying this paper, students will be able to

- Use software tools for 3D printing
- Prepare 3D printed modules
- Construct products using LOM and FDM technologies

SYLLABUS OF DSE-14

THEORY COMPONENT-

UNIT 1: (15 Hours)

BASICS OF 3D PRINTING TECHNOLOGIES

Introduction to 3D printing, advantages. commonly used terms, process chain, 3D modeling, classification of 3D printing process (comparing different 3D printing technologies, including FDM, SLA, SLS, and MJ.), applications to various fields.

UNIT 2: (15 Hours)

MATERIALS FOR 3D PRINTING

Comparing the different material types available for 3D Printing product, including PLA, ABS, PETG, TPE, nylon, PC, as well as 8 exotic filaments that are not focussed on physical properties.

UNIT 3: (15 Hours)

3D PRINTING TECHNOLOGY

Laminated object manufacturing (LOM): Models and specifications, process, working principle, applications, advantages and disadvantages, case studies.

Fused deposition modelling (FDM): Models and specifications, process, working principle, applications, advantages and disadvantages, case studies, practical demonstration

PRACTICAL COMPONENT (30 Hours)

- Manufacturing of additives by selective laser Sintering (SLS)
- To prepare fibre by FDM
- Manufacturing of Polyamide products by powder bed fusion
- Product manufacturing by extrusion 3D printing process (fusion, deposition, modelling)
- Direct ink writing of 3D functional materials
- To manufacture polymer products by Multi jet fusion
- To prepare photoreactive polymeric materials by material jetting.
- To prepare the shoe sole by 3D printing.
- To prepare filament by FFF (fused filament fabrication)
- Preparation the elastomeric thread by 3 D printing technology

ESSENTIAL/RECOMMENDED READINGS

- Chua C.K., Leong K.F. and LIM C.S, (2010) Rapid prototyping: Principles and Applications, World Scientific publications, 3rd Ed.

- Pham, D.T. and Dimov, S.S. , (2001) Rapid Manufacturing, Springer.
- Wohlers, T., (2000) Wohlers Report 2000, Wohlers Associates, 2000

.

SUGGESTIVE READINGS

- Jacobs, P. F., (1996) " Rapid Prototyping and Manufacturing"–, ASME Press.
- Gibson, I., Rosen D., Stucker B., 2014) Additive Manufacturing Technologies, Springer, 2nd Ed.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSES (DSE-15)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
RESEARCH METHODOLOGY IN POLYMER SCIENCE	4	3	0	1	Class 12th with Physics, Chemistry	---

Learning objectives

- To understand some basic concepts of research and its methodologies
- To learn research problem and parameters
- To learn about preparation a project proposal
- To study components of research paper, report and thesis

Learning outcomes

After studying this paper, students will be able to

- Select a particular research method.
- Apply research skills in qualitative and quantitative data analysis and presentation.
- Write the research paper, project and thesis with advanced critical thinking skills.

SYLLABUS OF DSE-15

THEORY COMPONENT

UNIT 1: (10 Hours)

RESEARCH METHODS

Identification and selection of the research problem, Literature survey for required information, Search engines (Scopus, Science direct, Web of science, Google scholar) for scientific information, Encyclopaedia, Reference books, abstraction of a research paper – drawing inferences from data, - qualitative and quantitative analysis, Reference, Management Software like Zotero/Mendeley, Software for paper writing and formatting like chem draw, origin,

LaTeX and MS Office. Developing a research plan, Format of research proposal: individual research proposal and institutional proposal.

UNIT 2: (10 Hours)

Research TOOLS, Paper and report writing

Correct usage of technical language and scientific peer network, ethics with respect to science and research, intellectual honesty and research integrity, scientific misconduct: falsification, fabrication and plagiarism (FFP), redundant publications: duplicate and overlapping publication, salami slicing, selective reporting and misrepresentation of data. Thesis and Paper writing, General format, page and chapter formation. Analysis and presentation of data, Statistical test: choosing and using suitable statistical tests. The use of quotation - footnotes - tables and figures - referencing - appendices - revising the paper or thesis - editing and evaluating and the final product - proof reading - the final types copy.

Thesis and Paper writing: Format of thesis- title, abstract, introduction, objectives, methods, results, tables, figures, graphs, discussion, summary, acknowledgement, in-text citations, reference list, and appendix. Presentation skill, them of conferences and workshops - Oral presentation skills – Post presentation of research outcome, Abstracts, Proceedings of technical deliberation - Publication in journals, conference proceedings and in book or as book chapters.

Research article & Research Proposals

Components of research article - Title, abstract, key words, introduction, citations, introduction, objectives, methods, results, tables figures, graphs, discussion summary, and references. Instruction to authors by journal for writing a research paper. Components of proposal document- Title, aim, research background, project outline, research methodology & budgeting, time schedule, deliverables and references.

UNIT 3: (15 Hours)

PUBLICATION ETHICS

Publication ethics: definition, introduction and importance, Best practices / standard setting initiatives and guidelines COPE (Committee on publication ethics), conflicts of interest, publication misconduct: definition, concept, problems that lead to unethical, behaviour and vice-versa, types, violation of publication ethics, authorship and contributor ship, identification of publication misconduct, complaints and appeals, predatory publishers and journals. Software for detection of Plagiarism determining the mode of action, literature survey, mode of approach of actual investigation.

PRACTICAL COMPONENT (30 Hours)

- Literature survey (scopus, sciencedirect, elsevier, scifinder etc.)
- Report writing
- Reference writing using softwares like Endnote, Mendley etc.
- Drawing of chemical structures using software like chem draw etc.
- Poster making
- Paper writing
- Graphical representation using excel, origin etc.

ESSENTIAL/RECOMMENDED READINGS

- Kothari, C. K. Garg, G.(2018) Research Methodology: Methods and Techniques, New Age International, 4th Edition,
- Rajaraman V., (2008) Computer Oriented Numerical Methods, Prentice Hall of India.
- Jain M. K., Iyengar S. R. K. and Jain R.K., (2007) Numerical Methods for Scientific and Engineering Computation, New Age International.

SUGGESTIVE READINGS

- Bhattacharya D. K., (2009) Research Methodology, Excel Books India.
- Garg, B.L., Karadia, R., Agarwal, F. and Agarwal, U.K., (2002) An introduction to Research Methodology, RBSA Publishers.
- Kothari, C.R., (1990) Research Methodology: Methods and Techniques. New Age International. 418p.
- Sinha, S.C. and Dhiman, A.K., (2002). Research Methodology, Ess Ess Publications. 2 volumes.
- Trochim, W.M.K., (2005). Research Methods: the concise knowledge base, Atomic Dog Publishing. 270p.
- Wadehra, B.L., (2000). Law relating to patents, trade marks, copyright designs and geographical indications. Universal Law Publishing.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES OFFERED BY THE DEPARTMENTS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
BASICS OF POLYMER SCIENCE	**4**	**2**	**0**	**2**	**Class 12th with Physics, Chemistry**	**---**

Learning objectives

The Learning Objectives of this course are as follows:

- To familiarize with the structure of polymers will be introduced to students.
- To acquaint students with knowledge of molecular weight determination and polymer solubility

Learning outcomes

After studying this paper, students will be able to

- Distinguish crystalline and amorphous states of polymers
- Correlate polymer flexibility with the glass transition temperature
- Illustrate structure-property relationship of polymers
- Apply mathematical formulae to depict polymer solution properties

SYLLABUS OF GE-1

THEORY COMPONENT-

UNIT – I (10 Hours)

Introduction and classification of polymers, configuration and conformation of polymers, nature of molecular interaction in polymers, entanglement, various structures of copolymers such as linear branched and cross-linked copolymers, Polymer solutions, solubility parameter, solution viscosity, polymer solubility, thermodynamics of polymer solutions

UNIT – 2 **(10 Hours)**

Physical properties, stress–strain behaviour, mechanical properties (tensile, flexural, impact, fatigue, hardness, creep, abrasion), introduction to flow & glass transition temperature (T_g) and its measurement of T_g, factors affecting the glass transition temperature

UNIT – 3 **(10 Hours)**

Nature and structure of polymers – structure-property relationships, Molecular weight of polymers (*M*n, *M*w etc.), polydispersity, molecular weight distribution and determination of molecular weight by viscosity, end group analysis, cryoscopy, ebulliometry, light scattering & ultracentrifugation methods

PRACTICAL COMPONENT **(60 Hours)**

- Chemical identification of polymers: Functional groups (associated with polymers).
- Determination of molecular weight by solution viscosity/end group analysis.
- To check the solubility of the given polymeric sample in different solvents.
- To determine the melting point of crystalline polymers.
- Determination of heat deflection temperature & vicat softening point of polymers.
- Determination of Acid value of acrylic acid
- Estimation of hydroxyl value by PVA and Cyclohexanol
- Determination of epoxy equivalent weight of the epoxy resin.
- Determination of saponification value of oil.
- Study of three component systems.

ESSENTIAL/RECOMMENDED READINGS

- Brydson J.A., (2016) Plastics Materials, Butterworth Heinemann, 8th Edition.
- Ghosh P., (2010) Polymer Science and Technology: Plastics, Rubbers, Blends and Composites Tata McGraw-Hill.
- Gowarikar V.R., (2019) Polymer Science, New Age International Publishers Ltd, 3rd Edition
- Billmeyer F.W., (2007) Textbook of Polymer Science, Wiley, India.
- Shah V., (1998) Handbook of Plastics Testing Technology, Wiley interscience publications.

SUGGESTIVE READINGS

- Schultz J.M., (2001) Polymer Crystallization, American Chemical Society.
- Seymour R.B., Carraher C.E., (2000) Polymer Chemistry, Marcel Dekker.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-2)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
ADVANCED ANALYTICAL TECHNIQUES	4	2	0	2	Class 12th with Physics, Chemistry	---

Learning objectives

The Learning Objectives of this course are as follows:

- To acquaint the students with the advanced instrumental techniques and their applications in characterization of polymeric materials.

Learning outcomes

After studying this paper, students will be able to

- Elucidate surface morphology of polymeric materials
- Determine crystallinity of various polymers and their characterization on the basis of their thermal stability and glass transition temperature

SYLLABUS OF GE-2

THEORY COMPONENT-

UNIT – I **(8 Hours)**

Basic principle of spectroscopy, molecular and atomic spectra, Lambert-Beer's law, Frank-condon principle, electromagnetic radiation and it's properties, interaction of radiation with matter, statistical method of analysis

UNIT – 2 **(8 Hours)**

Principles and applications in structural determination of polymers (functional group, tacticity, molecular structure, purity, unsaturation etc.): Infra-red spectroscopy, UV-Vis spectroscopy, electron spin resonance, raman, nuclear magnetic resonance spectrometer

UNIT – 3 **(8 Hours)**

Thin layer chromatography, high performance liquid chromatography, gel permeation chromatography (GPC), gas chromatography.

UNIT – 4 **(6 Hours)**

Optical microscopy, electron microscopy (SEM, TEM, AFM) and XRD: basics and applications (size, morphology, crystallinity etc.) in polymers characterization

PRACTICAL COMPONENT **(60 Hours)**

- Study of UV stabilization of polymer samples by UV-visible spectrophotometer.
- Calculate weight percentage of inorganic and organic ingredients in polymeric compounds.
- Determination of K-value of PVC.
- Quantitative determination of impurities by UV-Vis. spectrophotometer.
- Characterization of Filler Content /Ash Content of common polymers by Thermogravimetric Analysis, (TGA).
- Identification of additives in a processed polymer by chromatography.
- Interpretation of FTIR, NMR and Raman spectra of polymers.

ESSENTIAL/RECOMMENDED READINGS

- Willard H.H., Merritt L.L., Dean J.A. (1988) Instrumental method of analysis, Wads worth Publishing Company.
- Skoog D.A, (1997) Principle of Instrumental Analysis, Harcourt College Pub.
- Shah V., (2007) Handbook of Plastic Testing, Technology, Wiley-Inter science.

- Banwell C.N., McCash E.M., (2008) Fundamentals of Molecular Spectroscopy, Fourth Edition, Tata McGraw-Hill.

SUGGESTIVE READINGS

- Tanaka T., (1999) Experimental Methods in Polymer Sciences, Academic Press.
- Silverstein R.M., (1991) Spectrometric identification of organic compounds, John Wiley.
- Macomber R.S., (2008) A complete introduction to NMR spectroscopy, Wiley-inter science.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-3)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
POLYMER AND ENVIRONMET	**4**	**2**	**0**	**2**	**Class 12th with Physics, Chemistry**	**----**

Learning objectives

The Learning Objectives of this course are as follows:

- To give understanding of basics of care to be taken while handling polymer products.
- To know the Safety and hazardous of their manufacturing processes.
- To impart Knowledge of the subject will help students to see the environmental impact of plastic and resin.
- To understand the current benefits and concerns surrounding the use of plastics and look to future priorities, challenges and opportunities.

Learning outcomes

After studying this paper, students will be able to

- Explain the basics of environmental and safety issues in the chemical industry.
- Apply the safety in handling monomer and resins

- Demonstrate the final product of polymer in environment after use and its waste management

SYLLABUS OF GE-3

THEORY COMPONENT-

UNIT – 1 **(10 Hours)**

Health and safety, Plastics in the society, Plastics in the environment, Plastic waste management, Plastic waste in the marine and terrestrial environment, Plastic material degradation, regulations for hazardous chemicals in articles/plastic products, coated articles. Separation techniques of plastic wastes (density, float sink and froth floatation methods, optical, spectroscopic, sorting by melting temperature etc.).

UNIT – 2 **(10 Hours)**

Thermoplastic waste management: 4 R's approach (reduce, reuse, recycle (mechanical and chemical), recover), recycling classification- - primary - secondary - tertiary - quaternary recycling with examples.

UNIT – 3 **(10 Hours)**

Disposal processes and Various waste treatment methods – controlled tipping, pulverization, compositing, Energy from waste – (incinerators- pyrolysis, factors affecting incineration), new developments in thermal disposal of refuse, on-site disposal methods, compacting and baling. Recycling of Polyolefins, PVC, PET, Polystyrene, Polyamides (Nylon-6 and Nylon-6,6). Recycling of Thermosets –reclaiming of rubber –pyrolysis, depolymerization of scrap rubber, tyre retreading, uses of recycled rubber.

PRACTICAL COMPONENT (60 Hours)

- Primary recycling of plastic waste collected from the environment.
- Secondary recycling of MSW by incorporating and blending the recyclable waste with virgin polymers.
- To study composting of natural/biopolymers.
- Separation of polymer mixture by sink flotation technique.
- Separation of polymer mixture by selective dissolution technique.

- Recovery of BHET from PET by chemical recycling process
- Recovery of Adipic Acid from Nylon 66 by chemical recycling technique
- To study the effect of vulcanized rubber at varying ratio (in powder form) on mechanical properties of rubber vulcanizate
- Preparation of plasticizer from polyester waste.
- Preparation of reclaim from tyre waste.

ESSENTIAL/RECOMMENDED READINGS

- Chandra, R., & Adab, A. (1994). Rubber & Plastic Waste: Recycling, Reuse and Future Demand. CBD Publishers.
- Scheirs, J., & Long, T. E. (Eds.). (2005). Modern polyesters: chemistry and technology of polyesters and copolyesters. John Wiley & Sons.

SUGGESTIVE READINGS

- Blow, S. (1998). Handbook of Rubber Technology.
- Brandrup, J., Bittner, M., Michaeli, W., & Menges, G. (1996). Recycling and Recovery of Plastics, Hanser. Gardner, München.
- Goodship, V. (2007). Introduction to plastics recycling. iSmithers Rapra Publishing.
- Brydson J.A., (2016) Plastics Materials, Butterworth Heinemann, 8th Edition.
- Ehrenstein G.W., Riedel G., Trawiel P., (2004) Thermal analysis of plastics, Hanser.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-4)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
BIOMEDICAL APPLICATIONS OF POLYMERS	**4**	**2**	**0**	**2**	**Class 12th with Physics, Chemistry**	**----**

Learning objectives

- To acquire knowledge of biopolymer and biodegradation
- To gain knowledge of applications and testing of biopolymers

Learning outcomes

After studying this paper, students will be able to

- Explain basic concepts and requirement of biomaterials and biocompatibility
- Apply the knowledge of various biomaterials for a desired bio-application

SYLLABUS OF GE-2

THEORY COMPONENT-

UNIT – 1 (6 Hours)

BASICS OF BIOMATERIALS

Concept of biocompatibility and biodegradability, responsiveness, estimations of degradation and biocompatibility, Important biomaterials: hydrogel, fibres, bio-ceramics, bio-elastomers and membranes

UNIT – 2 (8 Hours)

POLYMERS AS BIOMATERIALS

Polyester and polysaccharides, natural gums, biodegradable polymers, polymers and hydrogels

UNIT – 3 (8 Hours)

BIOMATERIALS FOR ORGAN TRANSPLANTS AND TISSUE ENGINEERING

Properties and applications of polymers for organ transplant e.g. dental cement, orthopaedic, skin, artificial kidney etc., basic concepts of tissue engineering, important polymers for tissue engineering: cellulose, chitosan and alginates

UNIT – 4 (8 Hours)

DRUG DELIVERY AND WOUND CARE

Introduction to drug delivery, polymers in controlled drug delivery, dressing strips, polymer drug vessels, core shell and nanogels, polymers for antimicrobial activity, bio-conjugates

PRACTICAL COMPONENT (60 Hours)

- Evaluate the biocompatibility of polymeric samples.
- Determination of the degradation behavior of polymers such as thermal, hydrolytic degradation etc.
- Preparation of membranes and measurement of absorption behavior.
- Preparation and characterization of dental cement.
- Preparation of a hydrogel and its characterization.
- Determination of tensile strength of biopolymers.
- Determine the swelling rate of biopolymers
- Preparation of nanogel and find its water absorption
- preparation and characterization of membrane for skin transplant

ESSENTIAL/RECOMMENDED READINGS

- Tiwari A., Tiwari A., (2013) Nanomaterials in drug delivery, Imaging and Tissue Engineering, Wiley.
- Pilla S., (2011) Handbook of Bioplastics and Biocomposites Engineering Applications, Wiley.
- Ratner, Buddy D., Allan S. Hoffman, Frederick J. Schoen, and Jack E. Lemons. "Biomaterials science: an introduction to materials in medicine." San Diego, California (2004): 162-4.
- Park, J. B., & Bronzino, J. D. (2002). Biomaterials: principles and applications. crc press.

SUGGESTIVE READINGS

- Ratner D., Hoffman A.S., (1996) An Introduction to Materials in Medicine, Academic Press.
- Saltzman W.M., (2001) Drug delivery–Engineering principles for drug therapy, Oxford University Press.
- Kalia S., Averous L., (2011) Biopolymers: Biomedical and Environmental Applications, John Wiley & Sons.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-5)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
POLYMERS FOR PACKAGING	4	2	0	2	Class 12th with Physics, Chemistry	----

Learning objectives

- To learn about the basic necessities and importance of packaging
- To acquire knowledge of various types of packaging materials

Learning outcomes

After studying this paper, students will be able to

- Apply the basic concepts of packaging and its utilization for desired applications
- Evaluate the quality of packaging material and packaged product

SYLLABUS OF GE-5

THEORY COMPONENT-

UNIT – 1 **(6 Hours)**

PACKAGING SYSTEMS

Types of packaging systems: box, bottle, tetra, pouch, shrink, vacuum, gas, controlled atmosphere packaging (CAP), modified atmosphere packaging (MAP), and aseptic packaging

UNIT – 2 **(8 Hours)**

POLYMERS IN PACKAGING

Properties and applications: LLDPE, LDPE, HDPE, HMHDPE, PP, PVC, nylons, polyester, polycarbonate, PS, EPS, PLA, PVA and Starch

UNIT – 3 **(8 Hours)**

PACKAGING PROCESS TECHNIQUES

Preparation of packaging materials by thermoforming, co-extrusion, extrusion-stretch blow molding, injection molding, BOPP films

UNIT – 4 **(8 Hours)**

TESTING OF POLYMER PACKAGING MATERIAL

Bursting strength, tensile strength, tear strength, puncture test, impact test (Drop, falling dart), permeability test (water vapour, oxygen), biodegradability, sealing strength

PRACTICAL COMPONENT **(60 Hours)**

- To identify packaging materials with the help of FT-IR, DSC, TGA etc.
- Determination of physico-mechanical properties (density, burst strength, tensile strength, tear strength, puncture test strength, impact strength etc).
- Determination of water vapor transmission rate of packaging material.
- To test sealing strength integrity of packaging materials.
- To check biodegradability of packaging material.
- Preparation biodegradable packaging film
- Determination of water vapor transmission rate of packaging material.
- To test seal strength integrity of packaging materials.
- To check biodegradability of packaging material.
- To determine compatibility of film.

ESSENTIAL/RECOMMENDED READINGS

- Robertson G.L., (2005) Food Packaging Principles and Practice, CRC press.
- Paine F.A. and Paine H.Y., (1992) A Handbook of Food Packaging, Blackie Academic and Professional.
- Sharma S., Aggarwal M., Sharma D., (2019), Food Frontiers, New Delhi Publisher
- N. C. Saha, M. Garg, S. Dey Sadhu, A. K. Ghosh(2022) Food Packaging-Materials, Techniques and Environmental Issues" by published by Springer.
- Garg, M., Meena, P.L., Sadhu, S.D., Alam, T. (2019). Food Packaging: A Practical Guide : Viba Press Pvt. Ltd.

SUGGESTIVE READINGS

- Robertson G.L., (2012) Food Packaging–Principles and Practice, CRC Press.

- Coles R, McDowell D., Kirwan M.J., (2003) Food Packaging Technology, Blackwell.
- Sukhareva L.A., Yakolev V.S., Legonkova O.A., (2008) Polymers for packaging materials for preservation of foodstuffs, VSP.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-6)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
POLYMERS FOR ELECTRICAL AND ELECTRONIC APPLICATIONS	**4**	**2**	**0**	**2**	**Class 12th with Physics, Chemistry**	**----**

Learning objectives

- To learn about basic concepts of polymer electrical and electronic properties
- To gain knowledge of electrical and electronics applications of polymers

Learning outcomes

After studying this paper, students will be able to

- Synthesize a conducting polymer for a specific application
- Apply the knowledge of properties of polymers required for electrical and electronics applications

SYLLABUS OF GE-6

THEORY COMPONENT-

UNIT – 1 (6 Hours)

INTRODUCTION TO POLYMERS

Petro polymers, conducting polymers, biopolymers, composites, Band diagram, processing of polymers, doping (chemical and ion), advantages and disadvantages of conducting polymers, limitations

UNIT – 2 **(8 Hours)**

PREPARATION OF CONDUCTING POLYMERS

Synthetic methods: chemical, electrochemical, photochemical etc. (polyaniline, polypyrrole, polythiophene, polyacetylene, etc.), methods to enhance the processability of conducting polymers

UNIT – 3 **(8 Hours)**

PROPERTIES

Dielectric strength, dielectric loss, charge storage capacity, electrical conductivity, heat capacity, magnetism, hysteresis loop, shape memory, mechanical properties, EMI shielding

UNIT – 4 **(8 Hours)**

ELECTRONIC APPLICATIONS

Semiconducting organic materials, polymer based electronic devices, organic field effect transistor, organic transistors, plastic solar cell, light emitting diode, supercapacitor, sensors etc.

PRACTICAL COMPONENT **(60 Hours)**

- Preparation of conducting polyaniline and measurement of their conductivity.
- Preparation of polypyrrole and measurement of their conductivity.
- Preparation of polythiophene and measurement of their surface resistivity.
- Preparation and testing of conducting polymers for sensor applications.
- Measurement of multilayer insulation of a thin film.
- Measurement of dielectric strength of a polymer film.
- Measurement of mechanical properties of insulating cable
- Preparation polymer sample and analyzed its dielectric strength
- Preparation of a conducting polymer nanocomposites.
- Preparation polymeric semiconductor

ESSENTIAL/RECOMMENDED READINGS

- Skotheim T.A., Elsenbaumer R.L., Reynolds J.R., (1998) Handbook of conducting polymers, Vol. 1 and Vol. 2, Marcel Dekker.
- Nalwa H.S., (1977) Organic Conductive Molecules and Polymers, John Wiley & Sons.
- Bredas J.L., Silbey R., (1991) Conjugated Polymers: The Novel Science and Technology of Highly Conducting and Nonlinear Optically Active Materials, Kluwer Academic Publishers.
- Bikales M., Menges O.B., (1986) Encyclopedia of Polymer science and Engineering, Second Edition, Vol.5, John Wiley & Sons.

SUGGESTIVE READINGS

- Lyons M.E.O., (1994) Electroactive polymers, Plenum Press.
- Margolis J., (1993) Conducting Polymers and Plastics, Chapman & Hall.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Sd/-

REGISTRAR

ANNEXURE - 35

Sub: Amendment to Ordinance V

[E.C Resolution No. 14-1-2/- and 27-1-7/- dated 09.06.2023 and 25.08.2023 respectively]

Following addition be made to Appendix-II-A to the Ordinance V (2-A) of the Ordinances of the University;

Add the following:

Syllabi of Semester-IV, V and VI of the following programmes in the Department of Commerce under Faculty of Commerce & Business based on Under Graduate Curriculum Framework -2022 implemented from the Academic Year 2022-23 :

1. B.Com (Hons.)
2. B. Com (Prog.)
3. BA Commerce Based Papers

SEMESTER-IV
B.Com (Hons.)

Discipline Specific Core Course- 4.1(DSC-4.1): Business Statistics

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre- requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC -4.1: Business Statistics	4	3	0	1	Pass in Class XII with Mathematics/Accountancy	NIL

Learning Objectives

The course aims to develop amongst the learners the ability to summarise, analyse and interpret quantitative information for business decision making.

Learning outcomes

After completion of the course, learners will be able to:

1. Examine and understand the various descriptive properties of statistical data.
2. Evaluate probability rules and concepts relating to discrete and continuous random variables to answer questions within a business context.
3. Analyse the underlying relationships between the variables to use simple regression models.
4. Analyse the trends and tendencies over a period of time through time series analysis.
5. Examine and apply index numbers to real life situations.

SYLLABUS OF DSC-4.1

Unit 1: **Descriptive Statistics (9 hours)**

Measures of Central Tendency: Concept and properties of averages including Arithmetic mean, Median and Mode.

Measures of Dispersion: An overview of Range, Quartile Deviation and Mean Deviation;

Standard deviation; Variance and Coefficient of variation.

Moments: Computation and significance; Skewness; Kurtosis.

Unit 2:Probability and Probability Distributions (14 hours)

Theory and approaches to probability; Probability Theorems: Addition and Multiplication;

Conditional probability and Bayes' Theorem.

Expectation and variance of a random variable.

Discrete Probability distributions: Binomial and Poisson (Properties and Applications).

Normal distribution: Properties of Normal curve; Computation of Probabilities and Applications.

Unit 3: Simple Correlation and Regression Analysis (11 hours)

Correlation Analysis: Meaning and types of Correlation; Correlation Vs Causation; Pearson's coefficient of correlation (computation and properties); Probable and standard errors; Rank correlation.

Regression Analysis: Principle of least squares and regression lines; Regression equations and estimation; Properties of regression coefficients; Relationship between Correlation and Regression coefficients; Standard Error of Estimate.

Unit 4: Time Series Analysis (7 hours)

Time Series Data; Components of time series; Additive and Multiplicative models.

Trend analysis; Fitting of trend using principle of least squares – linear and second-degree parabola.

Shifting of Origin and Conversion of annual linear trend equation to quarterly/monthly basis and vice-versa.

Unit 5: Index Numbers (4 hours)

Meaning and uses of index numbers.

Construction of Index numbers: Methods of Laspeyres, Paasche and Fisher's Ideal index.

Construction and Utility of Consumer Price Indices; BSE SENSEX, and NSE NIFTY.

Practical Exercises:

The learners are required to:

1. Observe and apply the concepts learned in real life situations.
2. Practice basic calculations in statistics using spreadsheets/ statistical packages/ open source ware such as R/ Python and try to use it for solving subject related assignments.
3. Do small primary research/survey in groups and analyse the data using statistical tools discussed in the class (Examples: Buying Behaviour, Motivation, Stress, Brand aspects, Sales Projections, Impact of advertisements etc).
4. Plan a Project work

5. Studying stock market movements

Suggested Readings:

- Anderson, D. R. (2019). *Statistics for learners of Economics and Business*. Boston, United States: Cengage Learning.
- Douglas A. Lind, Robert D. Mason, William G. Marchal. (2022). *Basic Statistics for Business and Economics*. New York, United States: Mc-Graw-Hill International editions.
- Gupta, S. C., & Gupta, I. (2018). *Business Statistics*. Mumbai, India: Himalaya Publishing House.
- Gupta, S. P., & Gupta, A. (2018). *Business Statistics: Statistical Methods*. Delhi, India: S. Chand Publishing.
- Hazarika, P. A. (2012). *Textbook of Business Statistics*. Delhi, India: S. Chand Publishing.
- Levine, D. M., Krehbiel, C., & Berenson, L. (2009). *Viswanathan. Business Statistics – A First Course*. India: Pearson Education.
- Levin, R., Rubin, D. S., Rastogi S., & Siddqui, M. H. (2017). *Statistics for Management*. London, United Kingdon: Pearson Education.
- Berenson, M., Baruch, B.M., Levine, D., Szabat, K., & Stephen, D. (2020). *Basic Business Statistics*. Australia: Pearson.
- Murray, R.S., Stephens, L.J. (2017). *Statistics*. Uttar Pradesh, India:Tata McGraw Hill edition.
- Siegel, O. F. (2016). *Practical Business Statistics*. Cambridge, United States: Academic Press.
- Thukral, J. K. (2021). *Business Statistics*. Delhi, India: Taxman Publication.
- Tulsian, P.C., & Jhunjhunwala, B. (2020). *Business statistics*. Mumbai, India: S. Chand publishing.
- Vohra, N. D. (2017). *Business Statistics*. Delhi, India: McGraw-Hill Education India.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

Discipline Specific Core Course- 4.2 (DSC-4.2): Cost Accounting

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-4.2: Cost Accounting	4	3	1	0	Pass in Class XII with Mathematics/ Accountancy	NIL

Learning Objectives:

The course aims to develop understanding among learners about contemporary cost concepts and rational approach towards cost systems and cost ascertainment. The course also aims to provide knowledge about various methods of cost determination under specific situations and to acquire the ability to use information determined through cost accounting for decision making purposes.

Learning Outcomes:

After completion of the course, learners will be able to:

1. Understand and analyse the different cost concepts.
2. Analyse various components of cost of production.
3. Compute unit cost and total cost by preparing a cost statement.
4. Compute employee cost, employee productivity and employee turnover.
5. Determine cost for different industries using job costing, process costing, contract costing and service costing.

SYLLABUS OF DSC-4.2

Unit 1: Introduction (11 hours)

Meaning, scope, objectives and advantages of cost accounting; Difference between financial and cost accounting. Cost concepts and classifications, Overview of elements of cost and preparation of Cost Sheet for manufacturing sector. Role of a cost accountant in an organisation. Cost Accounting Standards (CAS – 4 on Cost of Production / Acquisition / Supply of Goods / Provision of Services) and (CAS – 22 on Manufacturing Cost) as amended from time to time.

Unit 2: Elements of Cost: Material and Employee Cost (9 hours)

(a) Materials: Accounting and control of purchases, storage and issue of materials. Techniques of inventory control, Periodic and perpetual systems of maintaining inventory records, an overview of methods of pricing of materials issues — FIFO, LIFO and Weighted Average price method, Valuation of materials as per CAS – 6 on Material Cost, Accounting treatment of losses— Wastage, scrap, spoilage and defectives

(b) Employee (Labour) Cost: Accounting and Control of employee cost. Time-keeping and time-booking. Employee turnover: meaning, methods of measurement and accounting treatment. Concept and treatment of idle time and overtime. Methods of wage payment and Incentive schemes- Halsey, Rowan, Taylor's differential piece wage.

Unit 3: Elements of Cost: Overheads (9 hours)

Classification, allocation, apportionment and absorption of overheads, Under and over-absorption of overheads; Capacity Levels and Costs; Treatments of certain items in costing like interest and financing charges, packing expenses, bad debts, research and development costs.

Unit 4: Methods of Costing (9 hours)

Job costing, Contract costing, Process costing (including process losses, valuation of work-in-progress). Service costing (only transport)

Unit 5: Cost Accounting Book-Keeping Systems (7 hours)

An overview of integral and non-integral systems; Reconciliation of cost accounting profit with financial profits.

Notes :

1. Treatment of various items of cost should be as per the relevant cost Accounting Standards (CAS) issued by Institute of Cost Accountant of India.
2. Use of spreadsheet software should be encouraged for the basic calculation.

Exercises:

The learners are required to:

1. Prepare a cost statement for manufacturing and/ or service organisation.
2. Identify the items to be included and excluded in the material and labour costs.
3. Visit a factory and analyse different elements of overhead costs.
4. Visit industries to understand process costing and prepare a cost statement for any Process industry.
5. Suggest a suitable cost system for different types of services organisation.

Suggested Readings:

- Arora, M.N. (2021). *Cost Accounting-principles and practice*.Delhi, India: Vikas Publishing House.
- Goel, R. K., & Goel, I. (2019). *Concept Building Approach to Cost Accounting for B.Com (Hons.)/B.Com.*. Delhi, India: Cengage Publications.
- Gupta, S., Reeta, & Prabhakar, R. R. (2021).*Cost Accounting for B.Com*. Delhi, India: Sultan Chand.
- Maheshwari, S. N., & Mittal, S. N. (2020). *Cost Accounting. Theory and Problems*. Delhi, India: Shri Mahaveer Book Depot.
- Maheshwari, S. N., Mittal S. K. & Mittal, S.N. (2021). *Cost Accounting: Principles & Practice*, Delhi, India: Shree Mahaveer Book.
- Mitra, J. K. (2021). *Cost and Management Accounting*. Delhi, India: Oxford University Press.
- Nigam, B. M. L. & Jain, I. C. (2023). *Cost Accounting: Principles and Practice*. Delhi, India: PHI Learning.
- Singh, S. (2019). *Fundamentals of Cost Accounting*. Allahabad, India: Kitab Mahal.
- Tulsian, P.C. (2020). *Cost Accounting*. Delhi, India: S.Chand.

Additional Resources:

- Drury, C. (2018). *Management and Cost Accounting*. China: Cengage.
- Horngren, C. T., Foster, G. & Dattar, S. M. (2017).*Cost Accounting: A Managerial Emphasis*. Delhi, India: Prentice Hall of India Ltd.
- Jain, S.P. & Narang, K.L. (2021). *Cost Accounting: Principles and Methods*. Jalandhar, India: Kalyani Publishers.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

Discipline Specific Core Course- 4.3 (DSC-4.3): International Business

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 4.3 – International Business	4	3	1	0	Pass in Class XII with Mathematics/ Accountancy	NIL

Learning Objectives:

The course aims to impart the core body of knowledge in international business to the students. The course would introduce students to the international trading and investment environment and also create awareness about emerging issues such as outsourcing and sustainable development in the context of international business.

Learning Outcomes:

After completion of the course, learners will be able to:

1. Analyse the process of globalization and its impact on the growth of the international business.
2. Evaluate the changing dynamics of the diverse international business environment.
3. Analyse the theoretical dimensions of international trade as well as intervention measures adopted.
4. Analyse the significance of different forms of regional economic integration and the role played by various international economic organisations.
5. Evaluate the forms of foreign direct investment and analyse the benefits and costs of FDI.

Unit 1: **Introduction to International Business (7 hours)**

Globalization - concept, significance and impact on international business; international business contrasted with domestic business; complexities of international business; internationalization stages and orientations; modes of entry into international businesses.

Unit 2: International Business Environment (11 hours)

Role of political and legal systems in international business; cultural environment of international business (including Hofstede's dimensions of culture);implications of economic environment for international business.

Unit 3: International Trade and BOP (9 hours)
Theories of international trade – Theory of Absolute Advantage theory, Theory of Comparative Advantage, Factory Proportions theory and Leontief paradox, Product Life Cycle theory, Theory of National Competitive Advantage; Instruments of trade control.
Balance of payments (BOP) statement and its components

Unit 4: Regional Economic Integration and International Economic Organisations (9 hours)
Forms of regional economic integration; Integration efforts amongst countries in Europe, North America and Asia: EU, USMCA, SAARC and ASEAN; Cost and benefits of regional economic integration.
International Economic Organisations: WTO- functions, structure and scope; World Bank and IMF.

Unit 5: International finance and contemporary issues in IB (9 hours)
Types of FDI - Greenfield investment, Mergers & Acquisition, strategic alliances; benefits and drawbacks of FDI.
Overview of exchange rate systems.
Contemporary issues in international business: Outsourcing and its potential for India; international business and sustainable development.

Exercises:
The learners are required to:

1. Demonstrate through case studies the suitability of each mode of entry in international business.
2. Conduct a comparative analysis of countries which are different in terms of political/legal/economic/cultural environment to understand the impact of these dimensions on international business.
3. Analyse data on trade of select countries to examine if trade patterns conform to different trade theories.
4. Conduct an in-depth study of a regional economic arrangement and evaluate its costs and benefits by applying the theoretical knowledge gained during the course
5. Make presentations on developments in contemporary issues affecting international business such as sustainable development.

Suggested Readings:

- Bennett, R. (2006). *International Business*. Delhi: Pearson.
- Cavusgil, S. T., Knight, G. & Riesenberger, J. (2006). *International Business: Strategy, Management and the New Realities*. Pearson India.
- Chaturvedi, D.D. & Jindal, D., & Kaur, R. (2022). *International Business*. Delhi: Scholar Tech Press.
- Hill, C.W.L., & Jain, A. K. (2011). *International Business*. New Delhi: Tata McGraw Hill.
- Daniels, J. D., Radenbaugh, L. H., & Sullivan, D. P. (2016). *International Business*. Uttar Pradesh, India: Pearson Education.

- Griffin, R. W., & Pustay, M. W. (2014). *International Business - A Managerial Perspective*. New Jersey, United States: Prentice Hall.
- Joshi, R.M. (2009). *International Business*. Delhi, India: Oxford University Press.
- Menipaz, E., Menipaz A., & Tripathi, S.S. (2017). *International Business: Theory and Practice*. Delhi, India: Sage Publications India Pvt. Ltd.

Additional Resources

- Economic Survey, various issues.
- RBI Report on Currency & Finance, various issues.
- World Investment Reports, UNCTAD
- Websites: RBI, IMF, World Bank, WTO.
- WTO Annual Reports

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

Discipline Specific Elective Course- 4.1 (DSE-4.1): Human Resource Development

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE-4.1: Human Resource Development	4	3	1	0	Pass in Class XII	NIL

Learning Objectives

The course aims to make students understand the various aspects of human resource development and its contribution in the organisation.

Learning outcomes

After completion of the course, learners will be able to:

1. Examine the evolution of HRD.
2. Analyse the role of HRD strategies in organisations.
3. Apply and evaluate a learning process starting with training needs, analysis, assessment and evaluation process.
4. Explore the role of training needs of employees.
5. Evaluate the training methods used in industry.

SYLLABUS OF DSE-4.1

Unit 1: Introduction (7 hours)

Human Resource Development (HRD)- concept, components, evolution, need and significance, difference between human resource management and human resource development, Role of HR manager, HRD culture and climate, contemporary issues in HRD.

Unit 2: Strategic Perspectives in HRD (11 hours)

Concept of Strategic HRD, HRD Interventions-Performance Appraisal, Potential Appraisal, Performance Coaching and Feedback, Career Planning, Training, Systems Development,

Rewards, Employee Welfare and Work Life balance, Roles of HR Developer, Physical and Financial Resources for HRD, HR Accounting, HRD Audit.

Unit 3: Learning Technology for HRD (9 hours)

Learning and HRD, Models and Curriculum, Principles of Learning, Individual and Group

Learning, Assessment Centre, Transactional Analysis, Behaviour Modeling and Self Directed Learning, Evaluating the HRD.

Unit 4: Human Resource Training and Development (T&D) (9 hours)

Concept and Importance, Assessing Training Needs, Designing and Evaluating Training & Development Programmes, Role, Responsibilities and challenges to Training Managers.

Unit 5: Training Methods (9 hours)

Training within Industry: On the Job & Off the Job Training, Management Development: Lecture Method, Role Play, In-basket Exercise, Simulation, Vestibule Training, Management Games, Case Study, Programmed Instruction, Sensitivity Training, Strategies of Training Program, Review on T&D Programmes in India.

Exercises:

The learners are required to:

1. Engage themselves in trainer competencies through developing and implementing experiential sessions
2. List the various rewards and employee welfare schemes
3. Assess the ways of self-directed learning
4. Design and evaluate training and development programs.
5. Analyse the case studies to understand various training methods.

Suggested Readings:

- Chabbra, T.N .(2016). *Human Resource Management: Concepts and Issues*. Delhi, India: DhanpatRai and Co. Publications.
- Durai, P. (2016). *Human Resource Management*. Delhi, India: Pearson Education.
- Graig, R. L. & Bittel, L. R. (2012). *Training and Development Hand Book*, Delhi, India: McGraw-Hill .
- ILO. (1975). *Teaching and Training Methods for Management Development Hand Book*. New York, United States: McGraw-Hill.
- Kapur, S. (2009). *Human Resource Development and Training in Practice*. Delhi, India: Beacon Books.
- Mondy, R.W., & Martocchio, J. J. (2016). *Human Resource Management* (14th ed.). London, United Kingdom: Pearson Education Publications.
- Nadler, L. (1980). *Corporate Human Resource Development*. New York, United States: Van Nostrand Reinhold, ASTD.
- Routry, P., & Kalyani, M. (2009). *Human Resource Development and Organisational Effectiveness*. Delhi, India: Excel Books.

- Rao, T.V. (2010). *Human Resource Development*. Delhi, India: Sage Publications.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

Discipline Specific Elective Course- 4.2 (DSE-4.2): Investment Management

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE-4.2: Investment Management	4	3	1	0	Pass in Class XII with Mathematics/Accountancy	Studied Financial Markets and Institutions (DSE 3.2)

Learning Objectives

The course aims to familiarize learners with different aspects of investment management and risks, introduce them to the framework of securities analysis and valuation and highlight the process of portfolio management

Learning outcomes

After completion of the course, learners will be able to:

1. Analyze the environment of investment and risk return framework.
2. Describe bonds in terms of valuation, yields, and risks.
3. Analyse equity shares using different approaches and models.
4. Construct, analyse, select and evaluate portfolios along with a deep understanding of capital market theory and associated models.
5. Comprehend and analyse futures and options and to be able to devise own investment strategies using various options trading strategies in the derivative market.

SYLLABUS OF DSE-4.2

Unit 1: Introduction to Investment (9 hours)

Concept of Investment, Investment Decision Process; Avenues for investment- features and classes; Difference between investment, speculation, and gambling; Primary market- IPO, Secondary Markets- Trading of securities; Security market indices; Return and risk: concept, calculation, trade-off between risk and return; Impact of taxes and inflation on investments.

Unit 2: Bond Analysis and Valuation (9 hours)

Bond Fundamentals; Estimating bond yields; Bond Valuation and Malkiel Theorems; Bond risks and credit rating; Present Scenario of Indian Debt Market.

Unit 3: Equity Analysis and Valuation (9 hours)

Fundamental Analysis; Technical Analysis and Efficient Market Hypothesis; Valuation of Equity Shares using Dividend Discount Model and P/E Ratio model.

Unit 4:Portfolio Management (9 hours)

Portfolio Management- Concept and need, Measurement of Portfolio Return and risk; Diversification- Markowitz Theory; Capital Asset Pricing Model.

Unit 5: Mutual Fund and Derivatives (9 hours)

Mutual Fund -concept and types; Performance Evaluation; Overview of Financial Derivatives- Forwards, Futures and Options.

Exercises:

The learners are required to:

1. Extract historical data on daily/monthly/annual prices for stocks in an index from a financial database. Evaluate them in terms of risk and return using appropriate software.
2. Estimate the Yield-to-Maturity of a corporate bond using relevant software.
3. Carry out moving average analysis on a stock of a real company to decide whether to buy, sell or hold the stock for one month using spreadsheets. Further, learners are also required to assess their decision after one month of decision making.
4. Select any 5 companies of your choice. Using appropriate models, forecast their future cash flows, growth rate and cost of capital. Estimate the intrinsic value of stocks of these companies using relevant software.
5. Select any 5 stocks of your choice. Extract past data on their prices and volumes from a financial database. Make investment decisions using appropriate technical analysis tools and techniques. Use any technical analysis software for this purpose.
6. Construct portfolios based on any firm attribute using past data on NSE 500 stocks. Assess the profitability of this investment strategy. Evaluate if the returns on this strategy are explained by standard risk models such as CAPM. Use relevant software for your estimations.
7. Build and analyse option strategies for Index and Stock options using any option building analytical tool.

Suggested Readings:

- Alexander G. J., Sharpe W.F., & Bailey J.V. (2009). *Fundamentals of Investments*. Delhi, India: PHI Learning
- Bodie, Z., Kane, A., Marcus A.J. ,& Mohanty, P.(2020).*Investments*. New York, United States: McGraw Hill.
- Chandra, P.(2021).*Investment Analysis & Portfolio Management.* Delhi, India: Tata McGraw Hill Education
- Jones, C.P. (2019). *Investment Analysis and Management*. New Jersey, United States:Wiley.
- Kevin, S.(2015).*Security Analysis and Portfolio Management*. Delhi, India: PHI Learning
- Mayo. (2016). *An Introduction to Investment*. Boston, United States: Cengage Learning.
- Pandian, P.(2012).*Security Analysis and Portfolio Management*. Delhi, India: Vikas Publishing House.
- Ranganatham, M., & Madhumati, R. (2011). *Security Analysis and Portfolio Management*. Delhi, India: Pearson (India) Education.
- Rustagi, R.P.(2023). *Investment Management*. Delhi, India: Sultan Chand.
- Sharma S.K., & Kaur G. (2019). *Fundamentals of Investment*. Mumbai, India:Sultan Chand Publishers
- Singh,Y.P. (2000). *Fundamentals of Investment Management*. Delhi, India: Galgotia Publications
- Tripathi,V. (2019). *Fundamentals of Investment*. Delhi, India: Taxmann Publications.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

Discipline Specific Elective Course- 4.3 (DSE-4.3): Sustainability Marketing

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 4.3-Sustainability Marketing	4	3	1	0	Pass in Class XII	NIL

Learning Objectives

This course aims to familiarize the students with the concept and process of sustainable marketing.

Learning outcomes

After completion of the course, learners will be able to:

1. Describe the need of sustainable marketing in view of environmental, legal and ethical aspects.
2. Explore the opportunities for sustainable marketing strategies.
3. Identify the consumer behaviour for sustainable marketing.
4. Demonstrate how sustainable marketing can be applied in marketing mix strategies.
5. Discover the case studies of legal framework for sustainable marketing.

SYLLABUS OF DSE-4.3

Unit 1: Introduction (9 hours)

Sustainability- Concept, Issues, SDG Goals. Sustainability Marketing- Concept, Rationale, Evolution, Pillars of Sustainability Marketing, Linkage with SDGs.

Sustainability and Ethical Decision Making. Challenges of Practising SM- Sustainability and Profitability. Triple Bottom Line- An Overview.

Unit 2: Sustainability Marketing Opportunities (9 hours)

Sustainability Opportunities- Marketing Environment; Segmentation, Targeting and Positioning; Creating Value through Sustainability- Designing the Marketing Mix, Holistic Approach to Sustainability.

Unit 3: Consumer Behaviour and Sustainability Marketing (9 hours)

Unsustainable Lifestyles, Dimensions of Sustainable Consumer Behaviour. Motives of adapting Sustainable Consumer Behaviour, Attitude-Behaviour Inconsistency in Sustainable Buying Decisions, Environmental Consciousness; Sustainable Consumption- Beliefs, Social Norms, Values, Cases of Mindful Consumption and Responsible Consumption.

Unit 4: Sustainability and Marketing Mix Decisions (9 hours)

Developing and Reinforcing Behaviour through 3 R's- Recycle, Reuse and Reduce.

Sustainable Products, Sustainable Branding and Packaging. Sustainable Pricing Decisions, Sustainable Marketing Communication, Sustainability and Promotion Mix Decision, Marketing Channels and Sustainable Supply Chain.

Unit 5: Sustainability Legal Framework and its Implementation in India (9 hours)

An Overview of Legal Framework- Leading Cases and Developments. Role of Sustainable Marketing in Global Network.

Exercises:

The learners are required to:

1. Perform a role play (as a marketer and as consumers)
2. Make presentations of companies' case examples where marketers have adapted sustainable marketing mix strategies and how it impacted their business.
3. Represent their own Behaviour for mindful and responsible Behaviour.
4. Demonstrate how marketers can develop and reinforce consumer Behaviour through 3 R's.
5. Find out the leading case studies where sustainable marketing has emerged as an important issue.

Suggested Readings:

- Kotler, P.. (2012). *Rethinking Marketing: Sustainable Marketing Enterprise in Asia, Second Edition*. Delhi, India: Pearson.
- Belz, F.M., & Ken, P. (2012). *Sustainability Marketing: A Global Perspective*. Delhi, India: Willey publication
- Richardson, N. (2020). *Sustainable Marketing Planning*. Delhi, India: Routledge, Taylor and Francis Group.
- Peterson, M. (2021). *Sustainable Marketing: A holistic Approach*. Delhi, India: Sage Publication Ltd.
- Carvill,M., Butler, G., & Evans, G. (2021). *Sustainable Marketing: How to Drive Profits with Purpose*. United Kingdom: Bloomsbury Business.
- Fuller, D.A. (1999). *Sustainable Marketing: Managerial-Ecological Issues. Markets and Market Development*. United Kingdom: Sage Publications Inc.

Additional Resources:

- https://moef.gov.in/wp-content/uploads/wssd/doc2/ch2.html
- https://www.oecd.org/env/outreach/37838061.pdf
- http://www.sacep.org/pdf/Reports-Technical/2002-UNEP-SACEP-Law-Handbook-India.pdf
- https://open.umn.edu/opentextbooks/textbooks?term=sustainable+development&commit=Go

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

Discipline Specific Elective Course- 4.4 (DSE-4.4): Analysis of Financial Statements

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 4.4- Analysis of Financial Statements	4	3	1	0	Pass in Class XII with Mathematics/Accountancy	Studied Financial Reporting Analysis & Valuation (DSE3.4)

Learning Objectives

The course aims to help the learners to analyse accounting and other information incorporated in the corporate annual reports, and to analyse the operating, financial, and structural performance of business firms with the help of appropriate analytical tools.

Learning outcomes

After completion of the course, learners will be able to:

1. Analyse and interpret the quantitative information provided in the Financial Statements of a company.
2. Examine various techniques for financial statement analysis.
3. Analyze financial statements and make inter-firm comparisons using Accounting ratios.
4. Prepare a cash flow statement and perform cash flow analysis.
5. Analyse intra-firm and inter-firm comparisons using case study technique.

SYLLABUS OF DSE-4.4

Unit 1: Introduction (4 hours)

Introduction to Corporate Financial Statements, Financial/Accounting information contained in the Financial Statements; Meaning, objectives, and limitations of Financial Statement Analysis; Considerations for the economic and financial analysis.

Unit 2: Techniques of Financial Statement Analysis - I (7 hours)

Techniques of financial statement analysis – Comparative Financial Statements, Common-size Financial Statement, and Trend Analysis.

Unit 3: Techniques of Financial Statement Analysis - II (11 hours)

Meaning, objectives, and classification of Accounting Ratios and Ratio Analysis; Computation and application of accounting ratios for evaluation of performance (Activity and Profitability Analysis), evaluation of financial health (Liquidity, Solvency, and Structural Analysis); and market ratios. EVA analysis. Intra-firm and inter-firm comparison using ratio analysis. DuPont analysis.

Unit 4: Cash Flow Analysis (9 hours)

Meaning of Cash Flow; Objectives and Importance of Statement of Cash Flows; Preparation of Statement of Cash Flows as per AS 3 and Ind AS 7.

Unit 5:Analysis of Financial Statements- Case Study (14 hours)

A Case Study Intra-firm and inter-firm comparison of any three listed companies from any sector/industry for a period of five years using the spreadsheet, Industry Averages, Growth rates, CAGR, Z-score etc. using the techniques of financial statement analysis.

Exercises:

Learners are required to:

1. Extract historical annual reports of any reputed company.
2. Analyse the information contained in the financial statements using common size analysis and trend analysis.
3. From the financial statements, compute the accounting ratios to examine the operating efficiency, profitability, liquidity, and solvency of the company.
4. Prepare Cash flow statements from the information available in the financial statements.
5. Conduct a comparative analysis of any two listed companies using excel.

Suggested Readings:

- Ahuja, N. L., &Dawar, V. (2015). *Financial Accounting and Analysis*. Delhi, India: Taxmann Publications.
- Bhattacharyya, A.K. (2016). *Financial Accounting for Business Managers*. Delhi, India: Prentice Hall of India.
- Friedson, M. S., & Alvarez, F. (2022). *Financial Statement Analysis: A practioners' Guide*. New Jersey, United States: Wiley.
- Foster, G. (1986). *Financial Statement Analysis*. London, United Kingdom: Pearson Education.
- Gopalkrishnan, A. A. (2001). *Understanding Financial Statements - Interpretation and Analysis*. Delhi, India: Label Book Publisher.
- Goyal, B.K. (2022). *Corporate Accounting*. Delhi, India: Taxmann Publications.

- Gupta, A. (2018). *Financial Accounting for Managers: An Analytical Perspective*. Delhi, India: Pearson Education.
- Gupta, M., Kaur, H., & Gupta, R. (2020). *Financial Reporting and Analysis*. Delhi, India: JSR Publishing House LLP.
- Helfert, E. A. (1996). *Techniques of Financial Analysis: A Practical Guide to Measuring Business Performance*. New York, United States: McGraw Hill Education.
- Lal, J. & Sucheta, G. (2018). *Financial Reporting and Analysis*. Mumbai, India: Himalaya Publishing House.
- Narasimhan, M. S. (2016). *Financial Statement and Analysis*. Uttar Pradesh, India: Cengage Learning India.
- Sah, R. K. (2019). *Concept Building Approach to Corporate Accounting*. Uttar Pradesh, India: Cengage Learning India.
- Soffer, L. C., & Soffer, R. J. (2002). *Financial Statement Analysis: A Valuation Approach*. London, United Kingdom: Pearson Education.
- Myer, J. N. (1969). *Financial Statement Analysis*. Prentice-Hall.
- Tulsian, P. C., & Tulsian, B.(2016). *Corporate Accounting*. Delhi, India: S. Chand Publishing.
- Tulsian, P. C., & Tulsian, B.(2017). *Financial Management*. Delhi, India: S. Chand Publishing.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

Discipline Specific Elective Course- 4.5 (DSE-4.5): Decision Science

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 4.5 – Decision Science	**4**	**3**	**1**	**0**	**Pass in Class XII with Mathematics/Accountancy**	**NIL**

Learning Objectives

The course aims to familiarise the learners with basic mathematical tools, emphasising applications to business and economic situations.

Learning outcomes

After completion of the course, learners will be able to:

1. Analyse quantitative techniques that play an important role in managerial decision-making.
2. Compare programming for business problems involving constrained optimization.
3. Examine, schedule, and coordinate the activities of a large-scale project using PERT and CPM.
4. Describe programming to assign sources and jobs to destinations and machines.
5. Examine how competitive choices in a business are made and how the business strategies are developed to reduce the customers' wait time.

SYLLABUS OF DSE – 4.5

Unit 1: Linear Programming (9 hours)

Formulation of Linear programming problems (LPPs) with more than two variables. Solution of LPPs by simplex method - maximization and minimization cases. The dual problem: Formulation, the relationship between Primal and Dual LPP, Primal and Dual solutions (excluding mixed constraints LPPs). The economic interpretation of the dual.

Unit 2: Assignment and Transportation (9 hours)

Assignment Problem, Hungarian Method of Assignment, Unbalanced Assignment Problems, Transportation Problem, Method to find the initial solution: North-west corner method, Least cost Method, Vogel's approximation method, Finding optimal solution: Stepping-stone method and Modified Distribution Method.

Unit 3: Sequencing and Game Theory (9 hours)

Introduction of sequencing, Notations, Terminology, and Assumptions, Processing n jobs through two and three machines, Introduction of Game Theory, Two-Person Zero-Sum Game, Pure Strategies (Minimax and Maximin Principles): Game with a saddle point. Mixed Strategies, Rule of Dominance.

Unit 4: Queuing Model and Replacement Theory (9 hours)

Introduction of Queuing Model, Structure of a Queuing System, Performance Measure of a Queuing System, Model I: {(M/M/1): (Infinite/FCFS)}, Introduction of Replacement, Replacement of items whose efficiency deteriorates with time.

Unit 5: Project Management: PERT and CPM (9 hours)

Introduction, Basic Difference PERT and CPM, Phases of Project Management, PERT/CPM Network Components and Precedence Relationships, Critical Path Analysis, Critical Path, Project Scheduling with uncertain activity times, Estimation of project completion time.

Exercises:

The learners are required to:

1. Identify the decision-making variables and assess their functional relationship with other variables affecting the decision in a business situation.

2. Establish the production sequence of a hypothetical manufacturing company.
3. Solve business problems as an application of linear programming/assignment/ transportation.
4. Estimate the time when an asset of a company should be replaced.
5. Use a hypothetical case of a project and plan, schedule, and coordinate the activities.

Note: Learners may use software packages.

Suggested Readings:

- Anthony, M., & Biggs, N. (1996). *Mathematics for Economics and Finance*. Cambridge, United Kingdom: Cambridge University Press.
- Budnick, P. (1986). *Applied Mathematics for Business, Economics, & Social Sciences*. New York, United States: McGraw Hill Publishing.
- Dowling, E. (2011). *Introduction to Mathematical Economics*. New York, United States: McGraw Hill Publishing.
- Hamdy, A. T. (2017). *Operational Research*. Pearson.
- Kapoor, V.K. (2013). *Operations Research: Quantitative Techniques for Management*. Delhi, India: Sultan Chand and Sons.
- Levin R. I., Rubin D.S., Stinson J.P., & Gardner E.S. Jr. (1986). *Quantitative Approaches to Management*. New York, United States: McGraw Hill International Editions.
- Vohra, N.D. & Arora, H. (2010). *Quantitative Techniques in Management*. Delhi, India: McGraw Hill.
- Tulsian, P.C. & Pandey, V. (2002). *Quantitative Techniques: Theory and Problems*. India: Pearson Education.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

POOL OF GENERIC ELECTIVE

General Elective Course- 4.1 (GE-4.1): Basics of Organisation Behaviour

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE-4.1 – Basics of Organisation Behaviour	4	3	1	0	Pass in Class XII	NIL

Learning Objectives

The course aims to enhance the understanding of the basic concept of Organisational Behaviour (OB) and the working of modern organisations. It focuses on the study of human behaviour at three levels: Individual, Interpersonal and Group.

Learning outcomes

After completion of the course, learners will be able to:

1. Analyse the working of organisations and human Behaviour.
2. Apply the concepts of OB in managing people at the workplace.
3. Critically evaluate the role of motivation theories in guiding human behaviour.
4. Recognise diverse leadership styles and strategies.
5. Summarise the ways to build supportive organisational culture.

SYLLABUS OF GE-4.1

Unit 1: Introduction (7 hours)

Introduction to organisational studies, importance of organisations, relationship between management and organizing function, emergence and development of Organisation Behaviour, Organisational Behaviour in changing times.

Unit 2: Individual Behaviour (9 hours)

Individual characteristics - Inherited characteristics vs. learned characteristics; Personality-concept and types; Components of Attitude, organisational commitmentand job satisfaction as work attitude; Sources and types of values; role of values and beliefs in the making of an individual.

Unit 3: Communication and Motivation (11 hours)

Communication - concept, process and types, essentials of effective communication; Johari Window.

Why people work - Maslow's Need Hierarchy theory, intrinsic and extrinsic rewards, monetary and non-monetary incentives, contemporary motivation practices.

Unit 4: Group Behaviour and Leadership (11 hours)

Importance of groups, groups vs. teams;

Leadership - trait theory, nature vs. nurture leadership; difference between a leader and a manager; Leadership styles (Likert) - exploitative, benevolent, consultative, and participative; making of great leaders, contemporary leadership practices.

Unit 5: Organisational Dynamics (7 hours)

Organisation as a system; organisational structure, relationship between organisation structure, system, and strategy; Managing conflict - reasons, types and resolutions; Managing stress.

Exercises:
The learners are required to:

1. Undertake a group activity to identify personality type.
2. Role play on Johari window
3. Conduct a primary survey to study the dynamics of group behaviour.
4. Apply and test various stress management techniques like deep breathing, Exercise, and mindfulness.
5. Identify the innovative ways of motivation practiced by contemporary organisations.

Suggested Readings:

- Greenberg, J. (2015). *Behaviour in organisations* (10th Ed.). India: Pearson Education.
- Hersey, P. K., Blanchard, D., & Johnson, D. (2013). *Management of organisational Behaviour*. London, United Kingdom: Pearson.
- Luthans, F. (2017). *Organisational Behaviour-An evidence based approach* (12th ed.). NewYork, United States: McGraw-Hill Education.
- Pareek, U. (2014). *Understanding Organisational Behaviour*. United Kingdom: Oxford University Press.
- Robbins, S. T. & Judge, T. A. (2019). *Essentials of organisational Behaviour*. London, United Kingdom: Pearson.
- Singh, A. K., & Singh, B. P. (2012). *Organisational Behaviour*. Delhi, India: Excel Books Pvt. Ltd.

- Singh, K. (2015). *Organisational Behaviour: Texts & Cases* (3rd ed.). India: Pearson. Additional Resources.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

General Elective Course- 4.2 (GE-4.2): Personal Financial Planning

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE 4.2- Personal Financial Planning	4	3	1	0	Pass in Class XII	NIL

Learning Objectives

The course aims to familiarize learners with different aspects of personal financial planning like savings, investment, taxation, insurance, and retirement planning and to develop the necessary knowledge and skills for effective financial planning.

Learning outcomes

After completion of the course, learners will be able to:

1. Analyse the meaning and appreciate the relevance of financial planning.
2. Appraise the concept of investment planning and its methods.
3. Examine the scope and ways of personal tax planning.
4. Analyse insurance planning and its relevance.
5. Identify the need for retirement planning and its relevance.

SYLLABUS OF GE-4.2

Unit 1: Introduction to Financial Planning (9 hours)

Financial goals, steps in financial planning, budgeting incomes and payments, time value of money. Introduction to savings, benefits of savings, management of spending & financial discipline, Setting alerts and maintaining sufficient funds for fixed commitments.

Unit 2: Investment Planning (9 hours)

Process and objectives of investment, concept and measurement of return & risk for various asset classes, measurement of portfolio risk and return, diversification & portfolio formation. Gold bond; Real estate; Investment in greenfield and brownfield Projects; Investment in fixed income instruments, financial derivatives & commodity market in India. Mutual fund schemes; International investment avenues. Currency derivatives and digital currency.

Unit 3: Personal Tax Planning (9 hours)

Tax structure in India for personal taxation, Scope of personal tax planning, exemptions and deductions available to individuals under different heads of income and gross total income. Comparison of benefits - Special provision u/s 115 BAC vis-à-vis General provisions of the Income-tax Act, 1961, tax avoidance versus tax evasion.

Unit 4: Insurance Planning (9 hours)

Need for insurance. Life insurance, health insurance, property insurance, credit life insurance and professional liability insurance.

.

Unit 5: Retirement Benefits Planning (9 hours)

Retirement plans goals, process of retirement planning, Pension plans available in India, Reverse mortgage, Estate planning.

Exercises:

The learners are required to:

1. Perform electronic fund transfers through net banking and UPI.
2. Identify certain recent Ponzi schemes in the market.
3. Prepare tax planning for a hypothetical individual.
4. List a few health insurance plans of different insurance companies for individuals.
5. Discuss the new pension schemes available for employees.

Suggested Readings:

- Halan, M.(2018). *Let's Talk Money: You've Worked Hard for It, Now Make It Work for You*. New York, United States: HarperCollins Publishers.
- Madura, J. (2016). *Personal Finance*. Delhi, India: Pearson.

- Indian Institute of Banking & Finance. (2017). *Introduction to Financial Planning*. Delhi, India: Taxmann Publication.
- Keown A.J. (2018). *Personal Finance*. New York, United States: Pearson.
- Pandit, A. (2014). *The Only Financial Planning Book that You Will Ever Need*. Mumbai, India: Network 18 Publications Ltd.,
- Sinha, M. (2017). *Financial Planning: A Ready Reckoner*. Delhi, India: McGraw Hill Education.
- Tripathi, V. (2019). *Fundamentals of Investment*. Delhi, India: Taxmann Publication.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

General Elective Course- 4.3 (GE-4.3): Brand Management

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE 4.3- Brand Management	4	3	1	0	Pass in Class XII	Studied Basics of Advertising (GE- 3.2)

Learning Objectives

The course aims to make students aware of brands, their evolution, extensions, simple brand management strategies and its practical implications for business. The course shall focus on developing skills to devise success actions for brand positioning and equity in the market.

Learning outcomes

After completion of the course, learners will be able to:

1. Comprehend the conceptual framework of brands.
2. Analyse various success actions of popular brands.
3. Describe the brand extensions.
4. Explore the life stages of a brand.
5. Apply brand management success actions to real life products.

.

SYLLABUS OF GE 4.3

Unit I : Introduction (9 hours)

Introduction to Brands and Brand Management, Concept of a Brand, Evolution of a Brand, Challenges and Opportunities, Brand Identity, Brands and Consumers, IMC: Evolution and Growth.

Unit II: Brand Positioning (9 hours)

Brand Building, Identifying and Establishing Brand Positioning and Values, Brand Repositioning, Life Stages of a Brand, Brand Personality, Brand Image.

Unit III: Designing Marketing Program (11 hours)

Brand Management Process, Designing And Implementing Brand Actions, Brand Extensions, Brand Reinforcement Strategies,

Unit IV: Brand Equity & Performance (11 hours)

Customer-based Brand Equity, Understanding Brand Performance: Brand Equity Management System, New Media Environment, Growing and Sustaining Brand Equity.

Unit V: Recent Issues in Branding (5 hours)

Managing Strong Brands, Managing Brands in the Digital Era. Contemporary Scene: storytelling, Internet and Social Media, Brands amplifiers, Legal and Ethical aspects in Brand Management.

Note: Real-life examples may be discussed in every unit, where ever possible to supplement the subject matter.

Exercises:

The learners are required to:

1. Choose popular brands and analyse the life-cycle of select brands.
2. Discuss suggestive strategies for brand positioning.
3. Use appeals for advertising and branding of products.
4. Understand the rationale behind a brand story.
5. Develop a brand story for a unique product idea.

Suggested Readings:

- Aaker, D. (2009). *Brand Leadership*. (UK Ed), United Kingdom: Simon & Schuster.
- Beverland, M. (2018). *Brand Management: Co-creating Meaningful Brands*. United Kingdom: SAGE Publications.
- Chernev, A. (2015). S*trategic Brand Management*. Illinois, United States: Cerebellum Press.
- Cowley, D. (1991). *Understanding Brands.* India: Kogan Page Ltd.
- John, D. R. (2017). *Strategic Brand Management: Lessons for Winning Brands in Globalized Markets*. Delhi, India: Oxford University Press.

- Keller, K. L., Swaminathan V., Parameswaran, A. M. G., & Jacob, I. C. (2019). *Strategic Brand Management: Building, Measuring and Managing Brand Equity*. India: Pearson Education.
- Miller, D. (2017). *Building a Story Brand: Clarify Your Message So Customers Will Listen*. India: HarperCollins Publishers.
- Temporal, P. (2011). *Advanced Brand Management*. Singapore: John Wiley and Sons.
- Parameshwaran, M.G. (2006). *Building Brand Value*. India: McGraw Hill Education.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

General Elective Course- 4.4 (GE-4.4): Accounting for Managerial Decision Making

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE 4.4 – Accounting for Managerial Decision Making	4	3	1	0	Pass in Class XII with Mathematics/ Accountancy	Studied Financial Statements Analysis (GE- 3.4)

Learning Objectives

The course aims to enable students to acquire knowledge of concepts, methods and various techniques of accounting for the purpose of managerial planning, control and decision making.

Learning outcomes

After completion of the course, learners will be able to:

1. Examine the fundamentals of accounting and its branches.
2. Apply financial statements and analyse their use in managerial decision making.
3. Evaluate the budgetary control system as a tool of managerial planning and control.
4. Analyse the concept of cost-volume-profit analysis for use in short-term decision making.
5. Determine the relevant cost and make decisions related to different business situations using

marginal costing and differential costing techniques.

SYLLABUS OF GE-4.4

Unit 1: Fundamentals of Accounting (9 hours)
An Overview of Accounting: meaning, scope, objectives, accounting as part of information system, branches of accounting. Financial accounting process, accounting concepts, accounting standards. Basic cost concepts, cost classification, cost sheet, an overview of various types of costing methods.

Unit 2: Financial Statements and their Analysis (9 hours)
Understanding of financial statements. Interpretation of financial statements with the help of ratio analysis (liquidity ratios, profitability ratios, turnover ratios and solvency ratios) and cash flow analysis.

Unit 3: Budgetary Control System (9 hours)
Concept of budget, budgeting and budgetary control; objectives, merits and limitations; Functional Budgets; Fixed and Flexible budgeting.

Unit 4: Cost Volume Profit Analysis (9 hours)
Concept of marginal cost and marginal costing, marginal costing equation and contribution margin, Cost-volume-profit analysis; Break-even Analysis, Profit-volume ratio, break-even point, angle of incidence, margin of safety, key factor.

Unit 5: Decision Making under Specific Situations (9 hours)
Steps in decision making process. Concept of relevant costs. Solving various short -term decision making problems using marginal costing and differential costing techniques – Profitable product mix, Acceptance or rejection of special/ export offers, Make or buy, Addition or elimination of a product line, and pricing decisions.

Note: Use of Spreadsheet should be encouraged for doing basic calculations for various topics in the course and giving students subject related assignments for their internal assessment purposes.

Exercises:

The learners are required to:
1. Analyse the scope of accounting in different enterprises.
2. Evaluate the role of financial statements in managerial decision making.
3. Prepare and evaluate a budgetary control system for a hypothetical business.
4. Prepare a business plan and apply concepts of cost, volume, profit analysis on the same.
5. Analyse case studies on various decision-making situations.

Suggested Readings:

- Arora, M.N. (2020). *Management Accounting*. Delhi, India: Himalaya Publishing House.
- Bhattacharyya, A. K. (2021). *Essentials of Financial Accounting*. Delhi, India: PHI Learning.
- Goel, R. K. & Goel, I. (2019).*Concept Building Approach to Management Accounting for*

B.Com. Delhi, India: Cengage.

- Goel, R. K. & Goel, I. (2019). *Concept Building Approach to Cost Accounting for B.Com (Hons)/B.Com.* Delhi, India: Cengage.
- Goyal, B.K &Tiwari, H. N. (2022). *Financial Accounting*. Delhi, India: Taxmann.
- Kishore, R. M. (2020).*Financial Management*. Delhi, India: Taxmann.
- Monga, G.R. & Bahadur, R. (2021). *Basic Financial Accounting*. Delhi, India: Scholar Tech Press.

- Narayanaswamy. (2021). *Financial Accounting: A Managerial Perspective*. Delhi, India: PHI Learning.
- Sah, R. K. (2019). *Concept Building Approach to Financial Accounting.* Delhi, India: Cengage Learning India Pvt. Ltd.
- Singh, S. (2021).*Management Accounting*. Delhi, India: PHI Learning Pvt. Limited.
- Singh, S. (2019).*Elements of Cost Accounting*. Delhi, India: Kitab Mahal.
- Singh, S.K.& Gupta, L. (2021). *Basic Management Accounting: Theory and Practice*. Delhi, India: A.K. Publications.
- Tulsian, P.C. &Tulsian, B. (2019). *Advanced Management Accounting*. Delhi, India: S.Chand.
- Tulsian, P.C. (2019). *Cost Accounting*. Delhi, India: S.Chand.

Additional Readings:

- Myer, J. N. (2017).*Financial Statement Analysis*. London, United Kingdom: Prentice-Hall.
- Drury,C. (2007).*Management and Cost Accounting*. London, United Kingdom: Thomson Learning.
- Gibson, C. H. (2014). *Analysis of Financial Statement.* Delhi, India: Cengage Learning
- Horngren, C. T., Foster, G. & Dattar, S. M. (2017). *Cost Accounting: A Managerial Emphasis*. Delhi, India: Prentice Hall of India Ltd.
- Usry, M. E. & Hammer, L. H. (2002). *Cost Accounting: Planning and Control*. United States: South Western Publishing Co.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

General Elective Course- 4.5 (GE-4.5): Fundamentals of International Business

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE 4.5 – Fundamentals of International Business	4	3	1	0	Pass in Class XII	NIL

Learning Objectives

The course aims to impart the core body of knowledge in international business to the students. The course would introduce students to the international trading and investment environment and also create awareness about emerging issues such as outsourcing and sustainable development in the context of international business.

Learning Outcomes: After completion of the course, learners will be able to:

1. Analyse the process of globalization and its impact on growth of international business.
2. Evaluate the changing dynamics of the diverse international business environment.
3. Analyse the theoretical dimensions of international trade as well as intervention measures adopted.
4. Analyse the significance of different forms of regional economic integration and the role played by various international economic organisations.
5. Evaluate the forms of foreign direct investment and analyse benefits and costs of fdi.

Syllabus of GE-4.5

Unit 1: **Introduction to International Business (7 hours)**
Globalization - concept, significance and impact on international business; international business contrasted with domestic business; complexities of international business; internationalization stages and orientations; modes of entry into international businesses.

Unit 2: International Business Environment (11 hours)
Role of political and legal systems in international business; cultural environment of international business; implications of economic environment for international business.

Unit 3: International Trade (9 hours)
Theories of international trade – Theory of Absolute Advantage theory, Theory of Comparative Advantage, Factory Proportions theory and Leontief paradox, Product Life Cycle theory, Theory of National Competitive Advantage; Instruments of trade control.

Unit 4: Regional Economic Integration and International Economic Organisations (9 hours)
Forms of regional economic integration; Integration efforts amongst countries in Europe, North America and Asia: EU, USMCA, and SAARC; Cost and benefits of regional economic integration. International Economic Organisations: WTO- functions, structure and scope; World Bank and IMF.

Unit 5: International finance and contemporary issues in IB (9 hours)
Types of FDI - Greenfield investment, Mergers & Acquisition, strategic alliances; benefits and drawbacks of FDI.
Overview of Exchange Rate systems.

Contemporary issues in international business: Outsourcing and its potential for India; international business and sustainable development.

Exercises:
The learners are required to:

1. Demonstrate through case studies the suitability of each mode of entry in international business.
2. Conduct a comparative analysis of countries which are different in terms of political/legal/economic/cultural environment to understand the impact of these dimensions on international business.
3. Analyse data on trade of select countries to examine if trade patterns conform to different trade theories.
4. Conduct an in-depth study of a regional economic arrangement and evaluate its costs and benefits by applying the theoretical knowledge gained during the course
5. Make presentations on developments in contemporary issues affecting international business such as sustainable development.

Suggested Readings:

- Bennett, R. (2006). *International Business.* Delhi, India: Pearson.
- Cavusgil, S. T., Knight, G. & Riesenberger, J. (2007). *International Business: Strategy, Management and the New Realities*. India: Pearson India.
- Hill, C.W.L., & Jain, A. K. (2011). *International Business.* Delhi, India: Tata McGraw Hill.
- Chaturvedi, D.D., Jindal, D., & Kaur, R. (2022). *International Business*. Delhi, India: Scholar Tech Press.
- Daniels, J. D., Radenbaugh, L. H., & Sullivan, D. P. (2016).*International Business*. Harlow, United Kingdom: Pearson Education.
- Griffin, R. W., & Pustay, M. W. (2014). *International Business - A Managerial Perspective*. United Kingdom: Pearson.
- Joshi, R.M.(2009). *International Business*. Delhi, India: Oxford University Press.
- Menipaz, E., Menipaz A.,& Tripathi, S.S. (2017). *International Business: Theory and Practice*. Delhi, India: Sage Publications India Pvt. Ltd.

Additional Resources

- Economic Survey, various issues.
- RBI Report on Currency & Finance, various issues.
- World Investment Reports, UNCTAD
- Websites: RBI, IMF, WORLD BANK, WTO.
- WTO Annual reports

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

SEMESTSER-V
B.Com (Hons.)

Discipline Specific Core Course- 5.1(DSC-5.1): Income Tax Law and Practice

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC -5.1: Income Tax Law and Practice	4	3	0	1	Pass in Class XII with Mathematics/Accountancy	NIL

Learning Objectives

The course aims to impart knowledge of law pertaining to levy of income tax in India.

Learning outcomes

After completion of the course, learners will be able to:

1. Analyse the basic concepts of income tax and determine the residential status of different persons.
2. Compute income under the heads 'salaries' and 'income from house property'.
3. Compute income under the heads 'profits and gains of business or profession' and 'capital gains'.
4. Compute income under the head 'income from other sources' and understand the provisions relating to clubbing of income and set-off losses.
5. Analyse various deductions and computation of total income and tax liability of individuals.

SYLLABUS OF DSC-5.1

Unit 1: Introduction (9 hours)

Basic concepts: Income; Agricultural income, Person, Assessee, Assessment year, Previous year, Gross Total Income, Total income, Maximum marginal rate of tax and Permanent

Account Number (PAN); Residential status: Scope of total income on the basis of residential status; Exempted incomes under section 10; Learning lessons from Kautilya's Taxation Policy.

Unit 2: Computation of Income from Salaries and House Property (11 hours)

Income from Salaries; Income from House Property.

Unit 3: Computation of Income from Business or Profession and Capital Gains (11 hours)

Profits and gains of business or profession; Capital gains.

Unit 4: Income from Other Sources, Clubbing of Income and Set-off (7 hours)

Income from other sources; Income of other persons included in assessee's total income; Aggregation of income and set-off and carry forward of losses.

Unit 5: Deductions and Computation of Total Income and Tax Liability (7 hours)

Deductions from gross total income; Rebates and reliefs; Computation of total income and tax liability of individuals (On-line filing of Returns of Income & TDS).

Practical Exercises:

The learners are required to:

1. Prepare a case study for a person resident but not ordinarily resident in India having income under the head other sources of income.

2. Prepare a presentation indicating the impact of alternative tax regime structure on the tax liability of an assessee.

3. Present a hypothetical case wherein the impact of change in the capital gains taxes are reflected as per the relevant Financial Act.

4. Learn about various tax services available on the official website of Government of India.

5. Prepare a list of tax deductions available in case of a senior citizen.

6. Explore and attempt on-line filing of Returns of Income & TDS on Income tax e-filing website under ITR-1 and ITR-2.

Suggested Readings:

- Ahuja, G., & Gupta, R. (2022). *Simplified Approach to Income Tax.* Delhi, India: Flair Publications Pvt. Ltd.
- Bandypoadhyay, S. B., & Das, C. (2019). *TAXATION II* (1st ed., Vol. II). Delhi, India: Oxford University Press.
- Mittal, N. (2019). *Concept Building Approach to Income Tax Law and Practice* (1st ed.,

Vol. 1). Delhi, India: Cengage Learning India Pvt.

- Singhania, V. K., & Singhania, M. (2021). *Students' Guide to Income Tax | University Edition.* Delhi, India: Taxmann Publications Private Limited.

Additional Readings:

- Current Tax Reporter. Jodhpur, India: Current Tax Reporter.
- Income Tax Reports. Chennai, India: Company Law Institute of India Pvt. Ltd.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

Discipline Specific Core Course- 5.2 (DSC-5.2): Business Economics

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-5.2: Business Economics	4	3	1	0	Pass in Class XII with Mathematics/Accountancy	NIL

Learning Objectives

The course aims to acquaint the learners with Micro economics and its applications.

Learning outcomes

After the completion of the course, the learners will be able to:
1. Examine the nature and scope of business economics.
2. Analyse how consumers try to maximize their satisfaction by spending on different goods.
3. Evaluate the relationship between inputs used in production and the resulting outputs and costs.
4. Analyse and interpret various facets of and pricing under different market situations.
5. Discuss the contemporary issues and applications in micro economics.

SYLLABUS OF DSC-5.2

Unit 1: Introduction to Business Economics (5 hours)

Nature and scope of Business Economics, Demand and Supply: Meaning, law, Individual Vs Market, Movement Vs Shift, Market equilibrium. Elasticity of Demand: Price, income and cross elasticity. Measurement of elasticity of demand: outlay and percentage method. Elasticity of supply: concept and measurement (Percentage method).

Unit 2: **Consumer Behaviour (11 hours)**
Cardinal Vs Ordinal Utility, Indifference curves: features, budget line, consumers equilibrium, ICC and Engels curve, PCC and derivation of demand curve, Income and substitution effects of price change (normal, inferior and giffen goods), Applications: effect of interest rates on household savings, lump sum subsidy Vs excise subsidy.

Unit 3: Production and Cost (11 hours)

Production function: TP, AP and MP, Law of Variable proportions. Isoquants: properties, optimal combination of resources, expansion path and returns to scale.

Cost: Different cost concepts, Derivation of short run and long run cost curves (LAC and LMC), Economies and Diseconomies of scale.

Unit 4: Market Structures (11 hours)

Perfect competition: features, equilibrium under short run and long run, derivation of supply curve under short run and long run.

Monopoly: features, equilibrium under short run and long run, absence of supply curve, Price discrimination: degrees, conditions and dumping.
Monopolistic competition: features, product differentiation and excess capacity and equilibrium.
Oligopoly: Collusive and non- collusive: Cournot's model, Kinked demand curve, Cartels (OPEC and CIPEC)

Unit 5: **Contemporary Issues and applications (7 hours)**

Rent control, Minimum wages, Individual supply curve of labour, Peak load Pricing, Prisoners' dilemma and Game Theory.

Exercises:
The learners are required to:
1. Apply the concept of elasticity of demand and supply in real life.
2. Analyse the impact of changing prices on consumption of necessities by a household.
3. Visit any manufacturing unit and study its production process and costing.
4. Analyse the OPEC as a case of a successful cartel.
5. Comment on the contemporary issues and applications in micro economics.

Suggested Readings:

- Baye, M., & Prince, J.(2021). *Managerial Economics and Business Strategy* (3rd ed.). New York, United States: McGraw Hill.
- Case, K. E., & Fair, R. C. (2017). *Principles of Economics* (12th ed.). London, United Kingdom: Pearson Education.
- Chaturvedi, D. D., & Chaturvedi, S. (2022). *Business Economics.* Delhi, India: Kitab Mahal.
- Deepashree (2021). *Business Economics.* Delhi, India: MKM Publisher.
- Gillespie, A. (2013). *Business Economics* (2nd ed.). Oxford, United Kingdom: Oxford University Press.
- Gupta, G. S. (2011). *Managerial Economics* (2nd ed.). Delhi, India: McGraw Hill.
- Maddala, G. S., & Miller, E. (2017). *Microeconomics Theory and Applications.* Delhi, India: Tata McGraw Hill.
- Mankiw, N. G., Aswin A., & Taylor, M. P. (2019). *Business Economics.* United Kingdom: Cengage Learning.
- Miller, R. L. (1982). *Intermediate Microeconomics: Theory, Issues, Applications* (2nd ed.). New York, United States: McGraw-Hill.
- Pindyck, R., & Rubinfeld, D. (2017). *Microeconomics* (8th ed.). London, United Kingdom: Pearson Education.
- Salvator, D., & Rastogi S. K. (2016). *Managerial Economics: Principles and Worldwide Applications* (8th Ed.). Delhi, India: Oxford University Press.
- Samuelson, P. A., Nordhaus, W. D., Chaudhari S., & Sen, A. (2019). *Economics (SIE)* (20th ed.). New York, United States: McGraw-Hill.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

Discipline Specific Core Course- 5.3 (DSC-5.3): Management Accounting

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 5.3 – Management Accounting	4	3	0	1	Pass in Class XII with Mathematics/ Accountancy	Studied Cost Accounting (DSC- 4.2)

Learning Objective: The course aims to enable students to acquire knowledge of concepts, methods and techniques of management accounting for the purpose of managerial planning, control and decision making.

Learning Outcomes:

After completion of the course, learners will be able to:

1. Examine the conceptual framework of Management Accounting and identify the differences between various forms of accounting.
2. Analyse budgetary control system as a tool of managerial planning and control
3. Evaluate the standard costing system as a tool of managerial control.
4. Recognise the concept of marginal costing and cost-volume-profit analysis.
5. Analyse techniques of decision making.
6. Discuss the concept of responsibility accounting and performance measurement.

Syllabus of DSC-5.3

Unit 1: Introduction to Management Accounting (4 hours)
Meaning, objectives, nature and scope of management accounting, Difference between different forms of accounting- Cost, Financial and Management accounting, Cost control and Cost reduction.

Unit 2: Budgetary Control and Standard Costing Systems (18 hours)

(a) Budgeting and Budgetary Control: Concept of budget, budgeting and budgetary control; objectives, merits and limitations; Functional Budgets; Fixed and Flexible budgeting; An overview of different approaches to budgeting (Zero base budgeting, Performance budgeting and Programme budgeting)

(b) Standard Costing and Variance Analysis: Meaning of standard cost and standard costing; advantages, limitations and applications; Variance Analysis – material, labour, overheads and sales variances. Control ratios.

Unit 3: Marginal Costing (9 hours)
Concept of marginal cost and marginal costing; Absorption versus Variable Costing: Distinctive features and income determination; Cost-volume-profit analysis; Break-even Analysis-Statements, mathematical and graphical approaches; Profit-volume ratio, angle of incidence, margin of safety, key factor, determination of cost indifference point.

Unit 4: Decision Making (9 hours)
Steps in Decision making process. Concept of relevant costs. solving various short -term decision making problems using marginal costing and differential costing techniques – Profitable product mix, Acceptance or rejection of special/ export offers, Make or buy, Addition or elimination of a product line, sell or process further, operate or shut down and Pricing decisions

Unit 5: Performance Measurement (5 hours)
Responsibility Accounting: Concept, Significance, Different Responsibility Centres; Divisional Performance Measurement: Financial and Non-Financial measures;

Note: Spreadsheet may be used for doing basic calculations in Management Accounting and giving students subject related assignments for their internal assessment purposes.

Practical Exercises:
The learners are required to:

1. Discuss differences between various forms of accounting.
2. Prepare different types of budgets.
3. Apply the concept of zero base budgeting on a select firm by collecting relevant data.
4. Visit any manufacturing unit and study the relevance of marginal costing.
5. Compute variances and perform analysis.
6. Perform cost-volume-profit analysis.
7. Compute the foreign export sales price for a domestic firm engaged in manufacturing goods/services.
8. Evaluate various decision making techniques using case studies.
9. Identify the responsibility centres of a pharmaceutical industry.
10. Discuss case studies on divisional performance measurement.

Suggested Readings:

- Arora, M. N. (2019). *Management Accounting.* Delhi, India: Himalaya Publishing House.
- Goel, R. K., & Goel, I. (2019). *Concept Building Approach to Management Accounting for B.Com(Hons.),* Delhi, India: Cengage.
- Maheshwari, S. N., & Mittal, S. N. (2019). *Management Accounting.* Delhi, India: Shri Mahaveer Book Depot.
- Maheshwari, S. N., Maheshwari, S. K., & Maheshwari, S. K. (2021). *Principles of Management Accounting.* Delhi, India: Sultan Chand & Sons.
- Maheshwari, S. N. (2015). *Management Accounting and Financial Control.* Delhi, India: Sultan Chand & Sons.
- Shah, P. (2015). *Management Accounting.* Delhi, India: Oxford University Press.
- Singh, S. (2023). *Management Accounting.* Delhi, India: PHI Learning Pvt. Limited.
- Singh, S. K., & Gupta, L. (2021). *Management Accounting: Theory and Practice.* Delhi, India: A. K. Publications.
- Tulsian, P. C., & Tulsian, B. (2023). *Advanced Management Accounting.* Delhi, India: S. Chand.

Additional Readings:

- Drury, C. (2020). *Management and Cost Accounting.* China: Cengage.
- Horngren, C. T., Foster, G., & Dattar, S. M. (2002). *Cost Accounting: A Managerial Emphasis.* Delhi, India: Prentice Hall of India Ltd.
- Khan, M. Y., & Jain, P. K. (2021). *Management Accounting.* Delhi, India: Tata McGraw Hill Publishing Co.
- Usry, M. E., & Lawrence, H. H. (2010). *Cost Accounting: Planning and Control.* Nashville, United States: South Western Publishing Co.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

Discipline Specific Elective Course- 5.1 (DSE-5.1): Organisational Democracy and Industrial Relations

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE-5.1: Organisational Democracy and Industrial Relations	4	3	1	0	Pass in Class XII	NIL

Learning Objectives

The course enables the learners to understand and apply the important concepts of Organisational democracy and industrial relations including trade unions, workers participation in management, collective bargaining, industrial disputes, grievance handling and various labour enactments through the pedagogy of case discussions and the practices of Indian Organisations in this context.

Learning outcomes

After completion of the course, learners will be able to:

1. Recognise organisational democracy and industrial relations in a changing environment.
2. Evaluate the effectiveness of trade unions and to analyse the legal framework of trade unions.
3. Identify the role of workers' participation in management and collective bargaining.
4. Analyse industrial disputes and implementation of its legal provisions and to evaluate the effectiveness of grievance redressal mechanism;
5. Discuss various legal enactments related to Industrial relations.

SYLLABUS OF DSE-5.1

Unit 1: Organisational Democracy and Industrial Relations: Introduction (9 hours)

Organisational Democracy: Concept, definition, nature of organisational democracy. elements, significance of organisational democracy. Industrial Relations: Concept, Nature, Objectives, Importance, Factors influencing Industrial Relations in changing Environment, Approaches to Industrial Relations.

Unit 2: Trade Union: Theoretical and Legal Framework (7 hours)

Theories of Trade Union Movement, Definition, Objectives, Registration of trade unions and Recognitions, Rights, Duties and Liabilities of registered trade union, problems of trade unions, dissolution of trade union, Factors influencing the growth of trade unions.

Unit 3: Workers' Participation and Collective Bargaining (9 hours)

Worker's participation: concept, principles, levels, objectives and importance; Strategies to make participative management more successful; Collective Bargaining: concepts, nature, Negotiations Techniques and Skills.

Unit 4: Industrial Disputes and Grievance Redressal (9 hours)

Industrial Disputes: concept, essentials of industrial dispute, classification, impact and causes. Grievance Handlings in industries: concept, meaning and nature of employees' grievance, Grievance redressal machinery in India- Preventive Machinery, Settlement Machinery: conciliation, arbitration and adjudication.

Unit 5: Other Labour Enactments (11 hours)

The Industrial Disputes Act, 1947: Important Definitions; various Authorities, Procedure, Powers and Duties of Authorities; The Factories Act, 1948: Provisions relating to Health, Safety, Welfare facilities, working hours, Employment of young persons, The Code on Wages, 2019, Minimum Wages Act 1948, Payment of Wages Act 1948 (Cover salient features only).

Note: Case studies are compulsory to develop the concept and evaluation of the students.

Exercises:

The learners are required to:

1. Discuss case studies on organisational democracy and industrial relations.
2. Evaluate the legal framework of trade unions in India.
3. Perform role play on collective bargaining situations.
4. Assess and prepare a report on the grievance redressal mechanism in India.
5. Analyse provisions under various labour enactments.

Suggested Readings:

- Sahoo, D. P. (2019). *Employee Relations Management - Texts and Cases.* Delhi, India: SAGE Publishing India.

- Mamoria, C. B., Mamoria, S., & Gankar. (2010). *Dynamics of Industrial Relations.* Delhi, India: Himalaya Publishing House.
- Monappa, A. (2012). *Industrial Relations and Labor laws.* Delhi, India: Tata McGraw Hill Edition.
- Monappa, A., Nambudiri, R., & Selvaraj P. (2012). *Industrial Relations and Labour Laws.* Delhi, India: Tata McGraw Hill Education.
- Padhi, P. K. (2019). *Industrial Relations and Labour Law.* Delhi, India: PHI Learning.
- Sharma, J. P. (2018). *Simplified Approach to Labour Laws.* Delhi, India: Bharat Law House.
- Sinha, P. R. N., Sinha, I. B., & Shekhar, S. P. (2017). I*ndustrial Relations, Trade Unions and Labour Legislation.* Delhi, India: Pearson Education.
- Srivastava, S. C. (2009). *Industrial Relations and Labour Laws.* Delhi, India: Vikas Publishing House.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

Discipline Specific Elective Course- 5.2 (DSE-5.2): International Finance

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE-5.2: International Finance	4	3	1	0	Pass in Class XII with Mathematics/Accountancy	Studied Investment Management (DSE-4.2)

Learning Objectives

The course aims to familiarize the students with the principles and practice of international finance.

Learning outcomes

After completion of the course, learners will be able to:

1. Describe the International Monetary System and the nature and scope of international finance.
2. Discuss various aspects of Foreign Exchange Markets.

3. Analyse the factors affecting the exchange rates.
4. Describe International Financial Markets and Instruments.
5. Evaluate various kinds of risks due to fluctuation in the exchange rate and management of these risks.

SYLLABUS OF DSE-5.2

Unit 1: International Financial Environment (9 hours)
Evolution of the International Monetary System, Bimetallism, Gold Standard, Bretton Woods System, Flexible Exchange Rate Regime and Current Exchange Rate Arrangements. Globalization and Multinational Enterprise. Issues in international finance.

Unit 2: Foreign Exchange Markets (9 hours)
Spot Markets, Spot Rate Quotations, Trading in Spot Markets, Cross Exchange Rates. Forward Markets: Concept of Forward Rates, Long and Short Forward Positions, Forward Premium and Discounts. Arbitrage, Hedging and Speculation.

Unit 3: Exchange Rate Determination (9 hours)
Factors affecting Exchange Rate, Relative Inflation Rate, Relative Interest Rate, Relative Income Levels, Government Controls, expectations, etc. Theories of Exchange Rate (Purchasing Power Parity, Interest Rate Parity and Fisher's Effect).

Unit 4: International Financial Markets and Foreign Exchange Risk Management (9 hours)
Foreign Portfolio Investment, International Bond & Equity market, GDR, ADR. International Financial Instruments, Foreign Bonds, Eurobonds and Global Bonds. Floating rate Notes, Zero-coupon Bonds. Types of risk exposure - Transaction exposure, Economic exposure and Translation exposure, Measurement of risk exposure. Management of currency risk using currency forwards and futures, currency options and currency swaps. Interest Rate Risk and its management.

Unit 5: International Capital Budgeting (9 hours)
Cross border investment decision: Types and issues, Greenfield investment vs. cross border M&As. Estimation of cash flows from cross border investment projects. Risks in cross border investment decision-currency risk, political risk, country risk, inflation risk etc. Valuation techniques by incorporating risk and other factors.

Exercises:
The learners are required to:
1. Study RBI and other websites to evaluate the impact of change in exchange rates.
2. Use various software to assess the impact of different factors on exchange rates,
3. Calculate cross exchange rate to find arbitrage opportunities.
4. Select the appropriate international financial instruments as per investment needs.
5. Select the appropriate instrument for managing the risk.

6. Study cross- border mergers and acquisitions.
7. Evaluate cross-border investment opportunities.

Suggested Readings:

- Apte, P. G. (2017). *Multinational Financial Management.* Delhi, India: Tata McGraw-Hill.
- Eun, C. S., & Resnick, B. G. (2017). *International Financial Management.* Delhi, India: Tata McGraw-Hill.
- Madura, J. (2021). *International Financial Management.* Boston, United States: Cengage Learning.
- Levi, M. D. (2009). *International Finance.* New York, United States: Taylor and Francis Ltd.
- Shapiro, A. C. (2019). *Multinational Financial Management.* West Sussex, United Kingdom: John Wiley.
- Sharan, V. (2012). *International Financial Management* (6th ed.). Delhi, India: PHI Learning.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

Discipline Specific Elective Course- 5.3 (DSE-5.3): Consumer Affairs and Sovereignty

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 5.3- Consumer Affairs and Sovereignty	4	3	1	0	Pass in Class XII	NIL

Learning Objectives

This course seeks to familiarize the learners with their rights and responsibilities of a consumer and the procedure to redress their complaints. The learner should be able to comprehend the business firms' interface with consumers and the related regulatory and business environment.

Learning outcomes

After completion of the course, learners will be able to:

1. Describe the concept of consumer and post-purchase voicing of consumer grievances.

2. Demonstrate how to exercise the consumer rights provided under Consumer Protection Act, 2019.

3. Discuss the filing, hearings, and appeal provisions.

4. Identify the role of industry regulators in consumer protection.

5. Discuss the recent developments in consumer protection in India.

SYLLABUS OF DSE-5.3

Unit 1: Introduction (9 hours)

Concept of Consumer, Consumer Buying Process, Post-Purchase Behaviour, Factors affecting voicing of consumer grievances, Alternatives available to dissatisfied consumers: Private Action and Public Action. Complaint handling process : ISO 10000 suite

Nature of markets: Liberalization and Globalisation of the Indian Consumer Market, Socio Economic Classification of Indian Consumers, online and offline markets; Organized and unorganized market, Grey market Concept of price in retail and wholesale, MRP, Fair price, labelling and packaging: legal aspects.

Unit 2: The Consumer Protection Act, 2019 (11 hours)

Genesis of the Consumer Protection law in India; Basic concepts: Consumer, goods, service, defect in goods, deficiency in service, spurious goods, unfair trade practice, restrictive trade practice, unfair contract, product liability, consumer rights.

Organisational Set up under the CPA, 2019: Advisory bodies: Consumer Protection Councils at the Central, State, and District level: Composition and role. Central Consumer Protection Authority: Composition and Powers; Adjudicatory bodies: District Commission, State Commission, and National Commission: Composition and Jurisdiction (Territorial and Pecuniary). Role of Supreme Court under the CPA with relevant case laws. Consumer Mediation Cell.

Unit 3: Grievance Redress Mechanism under the CPA, 2019 (9 hours)

Who can file a Complaint? Grounds of Filing a Complaint, Limitation Period, and Procedure for Filing and Hearing of Complaint, Reliefs provided Appeal, Enforcement of Order, Offences and Penalties.

Leading cases decided by the National Commission/Supreme Court under the CPA in: Medical service, Banking, Insurance, Housing Construction, Education, defective product, Unfair Trade Practices.

Unit 4: Role of Industry Regulators in Consumer Protection (9 hours)

Banking: Banking Ombudsman Scheme, Insurance: Insurance Ombudsman, Food Products: FSSAI, Advertising: ASCI, Housing Construction: RERA , Telelcom : Role of TRAI, Role of. Central Consumers Protection Authority (CCPA) : under CPA, 2019

Unit 5: Developments in Consumer Protection in India (7 hours)

Consumer Movement in India; Voluntary Consumer Organisations (VCOs); National Consumer Helpline, GAMA, CONFONET, E-daakhil, Quality and Standardisation: AGMARK, ISI mark, Hallmarking, Consumer Grievance Redressal under the BIS Act, 2016. Role Of Energy Rating and Energy standards, Role of ISO and international Standards.

Exercises:

The learners are required to:

1. Talk to people in their community and find out what they do when they are dissatisfied with a product or service.

2. Share personal experiences with respect to unfair trade practices and infringement of any of the consumer rights.

3. Visit the www.ncdrc.nic.in and pick any two case judgments on deficiency in services. Examine who was the complainant, ground of complaint, appeal filed, and where filed and final order passed by the concerned Consumer Commission.

4. Observe the advertisements given by builders and verify whether they are registered under the RERA.

5. Visit the website of ASCI and find out the nature of complaints received and what action was taken by ASCI.

6. Identify products which are using ISI mark. Check whether it is genuine or fake

7. Identify the product categories for which standards are mandatory under the BIS.

8. Discuss case studies on recent developments in consumer protection in India.

Suggested Readings:

- Aggarwal, V. K. (2021). *Law of Consumer Protection,* (4th ed.). Delhi, India: Bharat Law House.
- Khanna, S. R., & Hanspal, S. (2020). *Consumer Affairs & Customer Care* (1st ed.). Delhi, India: Prowess Publishing.
- Kapoor, S. (2021). *Consumer Affairs and Customer Care,* (1st ed.). Delhi, India: Scholar Tech Press.
- Rao, R. (2022). *Consumer is King.* Delhi, India: Universal Law Publishing Company.
- Patil, A. R. (2022). *Landmark Judgments on Consumer Protection and Law: 2008-2020.* Delhi, India: Ministry of Consumer Affairs, Food & Public Distribution, Government of India. E-book: www.consumeraffairs.nic.in.
- The Bureau of Indian Standards, 2016
- The Consumer Protection Act, 2019
- Real Estate (Regulation and Development) Act, 2016

Additional Resources:

- www.consumeraffairs.nic.in
- www.bis.org
- https://fssai.gov.in
- https://irdai.gov.in
- https://rbi.org.in/Scripts/Complaints.aspx
- www.confonet.nic.in
- www.ncdrc.nic.in
- https://ascionline.in

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

Discipline Specific Elective Course- 5.4 (DSE-5.4): Accounting for Mergers & Acquisitions and Valuation

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 5.4- Accounting for Mergers & Acquisitions and Valuation	4	3	1	0	Pass in Class XII with Mathematics/Accountancy	Studied Analysis of Financial Statements (DSE 4.4)

Learning Objectives

The course aims to help learners to conceptualise the knowledge of value creation through Mergers and Acquisitions and acquire skills for accounting for Mergers and Acquisitions both from the perspective of India and Internationally.

Learning outcomes

After completion of the course, learners will be able to understand:

1. Analyse value creation through Mergers and Acquisitions.
2. Describe valuation tools used during Mergers and Acquisitions.
3. Demonstrate accounting for Mergers and Acquisitions from Indian Perspective.
4. Demonstrate the accounting for Mergers and Acquisitions from International Perspective.
5. Analyse the different types of Synergic effects and the concept of Demerger along with Reverse Merger.

SYLLABUS OF DSE-5.4

Unit 1: Introduction to Mergers and Acquisitions (9 hours)

Introduction to mergers and acquisitions (M&A), Types of Mergers, Participants in Merger and Acquisition, Understanding financial statements and key valuation concepts, Leveraging M&A for value creation, M&A- Cure for Corporate Turbulence, Fast Track Mergers, Significance of Intellectual Property Rights in M&A, Cross Border Mergers.

Unit 2: Modelling and Valuation (9 hours)
Income Approach (Capitalization Method and Discounted Cash Flow Method); Market Approach (Comparable Company Method); Assets Approach (Book Value Method and Liquidation Method); Modelling for Internal Rate of Return calculations; Discounted cash flow valuation; Due Diligence in M&A, Negotiation; Synergistic benefits and distribution of Synergy gains.

Unit 3: Accounting for Mergers and Acquisitions (Indian Perspective) (9 hours)
Looking at the dynamics of an actual transaction, Examining the effects of the transaction, Accounting for Amalgamation in the nature of Purchase, Accounting for Amalgamation in the nature of Merger, Treatment of Reserve on Amalgamation, Amalgamation after balance sheet date, Acquisition under Business Transfer Agreement (BTA), Accounting for Business Combination as per Ind AS 103, Identifying a business combination, Acquisition Method, Acquisition Date, Applications of Acquisition methods, Common Control Accounting as per Ind AS 103, Accounting for Acquisition-related Transaction Costs, Acquisition of control through the acquisition of Equity Shares, Acquisition of Group of Assets.

Unit 4: Accounting for Mergers and Acquisitions (International Perspective) (9 hours)
Identification of the Acquirer, Determining the Acquisition Date, Recognising and Measuring Identifiable Assets Acquired & Liabilities, Conditions for Recognition (IFRS 3 Paras 10-14), Measurement Principle- Fair Values (IFRS 3 Para 18) subject to Exceptions (IFRS 3 Paras 22-31A), Recognising and Measuring any Non-Controlling Interest (NCI), Identifying and Measuring Consideration (IFRS 3 Para 37), Recognising and Measuring Goodwill or Gain from a Bargain Purchase transaction, Controversies and Dilemma in Accounting for M&A, Accounting for M&A, Features of Pooling Accounting, Criteria for Pooling of Interests, Incentives to choose Pooling Over Purchase, Accounting for Valuation of Goodwill, IFRS-3 on International Accounting Standards for M&A, Comparison between Indian GAAP and IFRS-3.

Unit 5: Laws and Regulations affecting M&A, Demerger and Reverse Merger (9 hours)
Tax Laws, The Companies Act, 2013, The Competition Act, 2002, SEBI Regulations and any other laws and regulations affecting M&A, Substantial Acquisitions and Buyouts in listed and unlisted space, Ethical Considerations in M&A; Conceptualization of Demerger; Tax Laws, The Companies Act, 2013, SEBI Regulations and any other laws and regulations affecting Demerger; Accounting Aspects of Demerger, Demerger vs. Reconstruction; Reverse Merger.

Exercises:
The learners are required to:
1. Collect information from business newspapers, periodicals, print and digital media for analysing reasons for mergers, acquisitions and demergers.
2. Analyse the annual reports of companies before and after the merger to evaluate the tools applied for valuation.
3. Discuss and analyse the case study on domestic mergers.
4. Discuss and evaluate the impact of cross border mergers.

5. Analyse the impact of laws and regulation and its results on the merger and acquisition, demerger and reverse merger.

Suggested Readings:

- DePamphillis, D. M. (2021). *Mergers, Acquisitions, and Other Restructuring Activities: An Integrated Approach to Process, Tools, Cases and Solutions.* United States: Elsevier.
- Koller, T., Goedhart, M., & Wessels, D. (2020). *Valuation: Measuring and Managing the Value of Companies.* New Jersey, United States: Mckinsey & Company.
- Pettit, B. S., & Ferris, K. R. (2013). *Valuation for Mergers & Acquisitions.* London, United Kingdom: FT Press.
- Reed, S. F., Lajoux, A., & Nesvold, H. P. (2019). *The Art of M&A: A Merger Acquisition Buyout Guide.* London, United Kingdom: Tata Mcgraw Hill.
- Sherman, A. J. (1998). *Mergers & Acquisitions from A to Z: Strategic and Practical Guidance for Buyers and Sellers.* United States: Goodreads.
- Sudarsanam, S. (2003). *Creating Value from Mergers and Acquisitions: The Challenges.* Delhi, India: Prentice-Hall.
- Zadeh, A. A., & Meeks, G. (2021). *Accounting for M&A: Uses and Abuses of Accounting in Monitoring and Promoting Merger.* New York, United States: Routledge.

Additional Resources:

- AS – 14 issued by the Institute of Chartered Accountants of India.
- Educational Material on Indian Accounting Standard (Ind AS) Business Combinations issued by The Institute of Chartered Accountants of India.
- IFRS–3 issued by the International Accounting Standard Board.
- Ind AS 103 issued by the Ministry of Corporate Affairs, India.
- Study Material of the Institute of Cost Accountants of India for the "Strategic Performance Management and Business Valuation".
- Study Material of the Institute of Company Secretary of India for the Professional Programme Course on "Valuation and Business Modelling".

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

Discipline Specific Elective Course- 5.5 (DSE-5.5): Auditing

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 5.5 – Auditing	4	3	1	0	Pass in Class XII with Mathematics / Accountancy	Studied Analysis of Financial Statements (DSE 4.4)

Learning Objectives

The course aims to provide knowledge of auditing concepts, principles, procedures, and techniques in accordance with current legal requirements.

Learning outcomes

After completion of the course, learners will be able to:

1. Discuss basic concepts of auditing and acquaint with latest developments in the area of auditing.
2. Describe the need of auditing and the role of auditors.
3. Demonstrate the principles, procedures and techniques of auditing.
4. Interpret the contents of audit reports.
5. Analyse the provisions of companies act, 2013 relating to auditor and auditing.

SYLLABUS OF DSE – 5.5

Unit 1: Introduction (7 hours)
Meaning and objectives of auditing; nature and scope of auditing; basic principles and techniques of auditing; Classification of audit; Audit in computerised environment.

Unit 2: Internal Control and Audit Procedures (9 hours)
Audit planning and documentation; audit evidence; audit sampling, internal check, internal control, and internal audit.

Unit 3: Vouching and Verification (11 hours)
Vouching – Meaning and objectives; Procedure of Vouching; Vouching of Cash and Bank, Purchase and Sales; Verification of Assets and Liabilities; Inventory Valuation.

Unit 4: Company Auditors (11 hours)
Qualifications and disqualifications; appointment and rotation, removal, remuneration, rights, duties and liabilities of Auditors.

Unit 5: Audit Report and Special Audit (7 hours)
Contents and types of audit report, Qualified and Unqualified report; National Financial Reporting Authority. Special Audit: Banking and Insurance company; Forensic Audit.

Exercises:
The learners are required to:

1. Critically analyse auditing-based case studies with the help of focussed group discussions.
2. Examine the audit reports published by Indian companies.
3. Identify and verify any five-documentary evidence in connection with sales, purchases of goods/machineries, payment of expenses and liabilities.
4. Prepare internal control questionnaire and internal control checklist for audit of an organisation/business firm.
5. Examine the p & l account and balance sheet of listed companies and identify gaps for forensic audit.

Suggested Readings:

- Ainapure, V., & Ainapure, M. (2019). *Auditing & Assurance.* Delhi, India: PHI Learning.
- Garg, P. (2022). *Auditing & Assurance.* Delhi, India: Taxmann Publication.
- Kumar, R. & Sharma, V. (2019). *Auditing Principles and Practice.* Delhi, India: PHI Learning.
- Roy (2019). *Auditing & Assurance.* Delhi, India: Oxford University Press.
- Singh A. K., & Gupta, L. (2021). *Auditing Theory and Practice.* Noida, India: Galgotia Publishing.

Additional Readings:

- Kamal, G. (2008). *Contemporary Auditing.* Delhi, India: Tata Mcgraw Hill Publishing Company.
- Tandon, B. N., Sudharsnam, S., & Sundharabahu, S. A. (2015). *Hand book on Practical Auditing.* Delhi, India: S. Chand Publishing.

Note:
(i) Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.
(ii) Standard on Auditing and Statements on Auditing Practice issued by the ICAI shall be referred wherever necessary.

Discipline Specific Elective Course- 5.6 (DSE-5.6): Export Import Management

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE -5.6 – Export- Import Management	4	3	1	0	Pass in Class XII	NIL

Learning Objectives

The course aims to develop an understanding and build knowledge on the key aspects of export-import management in India and enable students to become export professionals and entrepreneurs in the fast-changing global environment.

Learning outcomes

After completion of the course, learners will be able to:

1. Analyse the basics of export-import management in India.
2. Recognise the export-import procedure.
3. Evaluate various export incentives and schemes designed for business firms and exporters.
4. Discuss the legal framework of custom law.
5. Discuss Government schemes to promote export competitiveness.

SYLLABUS OF DSE-5.6

Unit 1: **Basics of Export-Import Management (11 hours)**
An overview of Foreign Trade Policy; An overview of export-import management system in India; Deemed exports; Importance of exports to economic growth; Understanding Export--Import Operations; Steps of export shipment from India; Processing of an Export Order; Legal Formalities for Getting Started in Foreign Trade; International Commercial (INCO) Terms 2020; Rules of Origin & Certificates of Origin;

Unit 2: **Export-Import Procedure and Documentation (9 hours)**
EXIM procedure; Export Documents related to goods, shipment and payment; Import documents used in import transaction; Export and Import through Post & Courier. Export finance: pre-shipment and post-shipment;

Unit 3: **An Overview of Export Promotion Schemes and Organisational Support (9 hours)**
NiryatBandhu Scheme, MEIS, SEIS, Information on Registered Exporter (REX) System, SCOMET guidelines; Export Incentives: Scheme For Remission of Duties or Taxes on Export Products (RoDTEP), Scheme For Rebate of State and Central Taxes and Levies (RoSCTL); Export Promotion Capital Goods (EPCG); Organisational support: government regulatory agencies involved in export and import i.e. Department of Commerce and Industry, Directorate General of Foreign Trade (DGFT), Directorate General of Trade Remedies (DGTR), Export Promotion Councils, Commodity Boards and Export Inspection Council (EIC).

Unit 4: **Legal framework of Custom Law (9 hours)**
Indian Customs Electronic Gateway (ICEGATE); Indian Customs EDI System (ICES); Procedure for clearance of imported and export goods.

Unit 5: **Make in India and Export Competitiveness (7 hours)**
NITI's Aayog Export Preparedness Index, 2020 – Policy, Business Ecosystem, Export Ecosystem, Export Performance, Learning and strategies; Emerging export entrepreneurs in India; Micro Exporters Policy (MEP).

Exercises:
The learners are required to:

1. Prepare flow-chart of export-import management system in India by accessing the steps prescribed by DGFT.
2. Access the DGFT website and if possible, interact with officials of DGFT for an in-depth and practical understanding of export import management and export finance.
3. Make field visits to various Export Promotion Councils (EPC) for goods and services established by the Department of Commerce and Industry, GOI.
4. Analyse various export promotion schemes in India.
5. Access the ICEGATE and ICES portal on FAQ to understand the legal framework of custom law.
6. Prepare case studies on emerging exporters in India and discuss the contribution of the Make in India initiative in export promotion through survey reports and government decisions.

Suggested Readings:

- Custom Manual (2018). *Central Board of Indirect Taxes & Customs.* India.
- Gupta, P. (2020). *Export-Import Management.* Delhi, India: Tata McGraw Hill.
- Joshi, R. M. (2018). *International Marketing.* OXFORD University Press.
- Lall, M., & Ahmed, S. (2021). *Export-Import Procedure and Documentation.* Delhi, India: Sultan Chand & Sons.
- NITI Aayog, (2020). *Export Preparedness Index.*
- Paul, J., & Aserkar, R. (2008). *Export-Import Management.* (1st ed.). Delhi, India: OXFORD University Press.
- Rai, U. K. (2010). *Export-Import and Logistics Management.* (2nd ed.). Delhi, India: PHI Learning.

- Singh, R. (2020). *Export and Import Management: Text and Cases*. Delhi, India: SAGE Publishing.

Additional Resources:

- https://www.dgft.gov.in/CP/?opt=export-management-system
- https://www.dgft.gov.in/CP/?opt=import-management-system
- https://www.icegate.gov.in/about_icegate.html
- https://cip.icegate.gov.in/CIP/#/import_and_export_through_post
- https://cip.icegate.gov.in/CIP/#/import_and_export_through_courier
- https://www.youtube.com/watch?v=3lxRK76JwH4
- https://www.youtube.com/watch?v=eq2WRACDMfw
- https://www.youtube.com/watch?v=dUpVkNGA_q0

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

Discipline Specific Elective Course- 5.7 (DSE-5.7): Public Administration and Business

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE -5.7 – Public Administration and Business	4	3	1	0	Pass in Class XII	NIL

Learning Objectives

The course aims to impart basic knowledge about the structure and working of the public administration system in India.

Learning outcomes

After completion of this course, learners will be able to:

1. Discuss the basic concept of public administration and its relevance for business.
2. Recognise the difference between public administration and business administration.

3. Analyse the concept of good society and its impact on business.
4. Analyse the impact of the political system on the business environment in India.
5. Evaluate the impact of the judicial system on the business environment in India.
6. Assess the impact of governance and public policies on business.

SYLLABUS OF DSE-5.7

Unit 1: Introduction (9 hours)

Public Administration- meaning, nature and scope and limitations; Concept and functions of a welfare state; Emergence of civil society; Factors leading to emergence of civil society; Concept of liberty, Theories of liberty; Concept of equality, Dimensions of equality; Concept of justice, dimensions of justice. Similarity and Dissimilarity between Public Administration and Business Administration.

Unit 2: Idea of a Good Society (9 hours)

Good society: Need and Importance, Moral Reasoning, Theories of Moral Reasoning; Diversity, Equity and Equality; Leadership; Responsibility, Accountability; Globalization and society; Cross cultural issues; Ethical Conduct of National and Multinational Corporations.

Unit 3: Political System and Business (9 hours)

Constitution of India- Preamble, Fundamental rights, Directive Principles of state policies; India's federal system, NITI AYOG-role and functions; Impact of political system on business environment- policies, programmes and procedure; Ease of doing business; Startup India, Stand Up India, Make in India, Recent trends in taxation policies-impact on investment and business.

Unit 4: Judicial System and Business (9 hours)

Judicial System- features and structure; Jurisdiction, Powers and Functions, Judicial Review, Judicial Activism and business, Human Rights and business- challenges and opportunities, Social Justice. Public Interest Litigation and writs- challenges and opportunities for business.

Unit 5: Governance and Public Policy (9 hours)

Governance- Concept and Nature; Public accountability; Redressal of public grievances with special reference to RTI, Lokpal, and Lokayukta, Election Commission, Association for Democratic Reforms (ADR), Bringing people closer to Administration: E-governance; Political Representation, Decentralization of Governance- Panchayati Raj System, Urban Local Bodies.

Exercises:

The learners are required to:

1. Analyse cases from real life regarding fundamental rights, freedom of expression, and civil society
2. Discuss case studies from real life regarding equity and equality in the context of organisations.
3. Evaluate the ease of doing business parameters in the context of a specific sector.
4. Practice session as Mock Parliament.
5. Practice session as Moot Court related to business cases.

6. Discuss case study on decentralization of governance and present key learnings.

Suggested Readings:

- Basu, D. D. (2015). *Introduction to the Constitution of India.* New York, United States: LexisNexis.
- Fadia, B. L., & Fadia, K. (2017). *Indian Government and Politics.* Uttar Pradesh, India: Sahitya Bhawan.
- Granville, A. (1999). *The Indian Constitution: Cornerstone of a Nation.* Oxford, United Kingdom: Oxford University Press.
- Granville, A. (2003). *Working a Democratic Constitution: A History of the Indian Experience.* Oxford, United Kingdom: Oxford University Press.
- Kashyap, S. C. (2011). *Our Constitution.* Delhi, India: National Book Trust.
- Sapru, R. K. (2012). *Public Policy: Formation, Implementation and Evaluation.* New York, United States: Sterling Publishers.
- Sarkar, S. (2018). *Public Administration in India.* (2nd ed.). Delhi, India: PHI Learning
- Singh, M. P., & Saxena, R. (2008). *Indian Politics: Contemporary Issues and Concerns.* Delhi, India: PHI Learning.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

Discipline Specific Elective Course- 5.8 (DSE-5.8): Business Tax Procedures and Management

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE -5.8 – Business Tax Procedures and Management	4	3	1	0	Pass in Class XII with Mathematic/ Accountancy	NIL

Learning Objectives

The course aims to provide knowledge of provisions pertaining to income tax procedures with a view to equip students with effective tax management skills.

Learning outcomes

After completion of the course, learners will be able to:

1. Analyse the provisions of payment of tax in advance, deduction of tax at source and computation of tax, interest and fee payable to / by government.
2. Recognise various Income Tax authorities and return of income.
3. Describe the assessment procedures and filing of appeals.
4. Discuss the provisions dealing with penalties and prosecutions, and search, seizure and survey.
5. Evaluate the concept of GAAR and conditions for levy of Securities Transaction Tax.

SYLLABUS OF DSE-5.8

Unit 1: Advance Payment of Tax and Collection and Recovery of Tax (18 hours)

Advance payment of Tax; Tax deduction/ collection at source: Provisions, documentation, returns and Certificates; Interest payable by assessee/ Government; Collection and recovery of Tax.

Unit 2: Administration and Return of Income (5 hours)

Income Tax authorities; Return of income.

Unit 3: Assessment and Appeals (9 hours)

Assessment, re-assessment and rectification of mistakes; Appeals and revisions; Preparation and filing of appeals with appellate authorities.

Unit 4: Penalties and Prosecutions (9 hours)

Penalties and Prosecutions; Provisions relating to undisclosed income/ investment; Search, seizure and survey.

Unit 5: GAAR, Securities Transaction Tax, TAN and TIN (4 hours)

Transactions with persons located in notified jurisdictional area; General anti-avoidance rule (GAAR); Tax clearance certificate; Securities transaction tax; TAN (Tax Deduction and Collection Account Number); TIN (Tax Information Network).

Exercises:

The learners are required to:

1. Illustrate the concepts and features of assessment of profits and gains of proprietorship, Doctor, Advocate and Chartered Accountant as individual assessee.
2. Prepare a presentation explaining the return of Income.
3. Illustrate the filing of appeals with appellate authorities.
4. Discuss case studies on Penalties and prosecutions related to Business Tax Procedures and Management.
5. Prepare case studies related to general anti-avoidance rules.
6. Check United States of Americage and importance of GAAR, TAN and TIN.

Suggested Readings:

- Ahuja, G., & Gupta, R. (2022). *Corporate Tax Planning.* Delhi, India: Commercial Law House.
- Ahuja, G., & Gupta, R. (2012). *Systematic Approach to Income Tax.* Delhi, India: Bharat Law House.
- Bajpai. O. S. (2023). *Search, Seizure and Survey.* Delhi, India: Taxmann Publications Pvt. Ltd.
- Singhania, V. K., & Singhania, M. (2022). *Corporate Tax planning & Business Tax Procedures.* Delhi, India: Taxmann Publications Pvt. Ltd.

Additional Sources

- Current Tax Reporter. Jodhpur, India.
- Income Tax Reports. Company Law Institute of India Pvt. Ltd., Chennai, India.
- Corporate Professionals Today. Taxman. Delhi, India.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

POOL OF GENERIC ELECTIVES

General Elective Course- 5.1 (GE-5.1): Fundamentals of Human Resource Management

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE-5.1 Fundamentals of Human Resource Management	4	3	1	0	Pass in Class XII	NIL

Learning Objective: The course aims to introduce learners to the field of human resource management by exposing them to the key concepts.

Learning Outcomes: After completion of the course, learners will be able to:

1. Examine the organisational human resource processes.
2. Compare job analysis, job description, and job design.
3. Evaluate the relevance and methods of training and development.
4. Recognise the requisite skills in performance appraisal and compensation of employees.
5. Analyse the need of Employee Maintenance in the organization and study the Emerging issues in HRM

SYLLABUS of GE-5.1:

Unit 1: Introduction to HRM (9 hours)

Concept, functions and significance of HRM. Challenges of human resource management. Workplace diversity, employee empowerment, maintaining work life balance, and stress management.

Unit 2: Human Resource Planning and Procurement (9 hours)

Quantitative and qualitative dimensions of human resource planning; job analysis, job description and job specification. Recruitment: concept, sources and techniques. Selection: concept and process.

Unit 3: Employee Training and Development (9 hours)

Training: concept and methods; Apprenticeship, understudy, job rotation, vestibule training. case study, role playing, and sensitivity training. Development: In-basket, management games, conferences and seminars, coaching and mentoring, management development programs; Training process outsourcing.

Unit 4: Performance Appraisal and Employee Compensation (9 hours)

Performance appraisal: nature, objectives and process; Performance management; Methods of performance appraisal; Potential appraisal; Employee counselling; Job transfer and promotion. Compensation - Concept and policies, Base and supplementary compensation; Individual, group and organisation incentive plans; Fringe benefits; Performance linked compensation; Employee stock option; Pay band compensation system; Job evaluation.

Unit 5: Employee Maintenance and Emerging issues in HRM (9 hours)

Employee health, welfare and safety; Social security; Employer-employee relations; Grievance handling and redressal; Industrial disputes: Causes and settlement machinery; Contemporary issues in HRM: Human Resource Information System (HRIS); HR Audit, emerging job opportunities, e-HRM, work life balance and work from home.

Exercises:

The learners are required to:

1. Design a human resource plan.
2. Conduct orientation cum induction programme.
3. Hold mock counselling sessions.
4. Create team building activities.
5. Devise incentive plans for a diverse workforce.

Suggested Readings:

- Aswathappa, K., & Dash, S. (2021). *Human Resource Management-Text and cases.* (9th ed.). Delhi, India: Tata McGraw-Hill.
- Chhabra, T. N., & Chhabra, M. (2020). *Human Resource Management.* Delhi, India: Sun India Publications.
- Decenzo, D. A., & Robbins, S. P. (2009). *Fundamental of Human Resource Management.* New Jersey, United States of America; Wiley.
- Dessler, G., & Varrkey, B. (2020). *Human Resource Management.* Sixteenth Edition. Delhi, India: Pearson Paperback.
- French, W. L. (2006). *Human Resource Management.* Boston, United States: Houghton Mifflin.
- Gupta, C. B. (2018). *Human Resource Management.* Delhi, India: Sultan Chand & Sons.
- Pattanayak, B. *Human Resource Management.* (6th ed.). Delhi, India: PHI learning

- Prasad, L. M. (2018). *Human Resource Management.* Delhi, India: Sultan Chand & Sons
- Rao, V. S. P. (2020). *Human Resource Management.* (2nd ed.). Delhi, India: Taxmann.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

General Elective Course- 5.2 (GE-5.2): Project Management

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE-5.2 Project Management	4	3	1	0	Pass in Class XII with Mathematics/Accountancy	NIL

Learning Objective: The course aims to enable the learners to evolve a suitable framework for the preparation, appraisal, monitoring, and control of projects undertaken in an organisation.

Learning Outcomes: After completion of the course, learners will be able to:

1. Discuss the concept and attributes of projects, project management system, process and its principles.

2. Assess technical feasibility, marketing feasibility and commercial viability; using NPV, and further to understand tax and legal aspects of a project;

3. Develop schedule for a specific project and its appraisal using various techniques;

4. Calculate project duration and assess project cost;

5. Evaluate project management in terms of risk and performance.

SYLLABUS of GE-5.2

Unit 1: Introduction (5 hours)

Concept and attributes of Project, Project Management Information System, Project Management Process and Principles, Role of Project Manager, Relationship between Project Manager and Line Manager, Project Stakeholder Analysis, Identification of Investment opportunities, Project life cycle, Project Planning, Monitoring and Control of Investment Projects, Pre-Feasibility study, Identify common sources of conflict within a project environment.

Unit 2: Project Preparation and Budgeting (11 hours)

Technical Feasibility, Marketing Feasibility, Financial Planning: Estimation of Costs and Funds (including sources of funds), Loan Syndication for the Projects, Demand Analysis and Commercial Viability (brief introduction to NPV), Project budget, Collaboration Arrangements, Tax considerations and legal aspects.

Unit 3: Project Scheduling and Appraisal (9 hours)

Decomposition of work into activities, determining activity-time duration. Business Criterion of Growth, Liquidity and Profitability, Social Cost Benefit Analysis in Public and Private Sector, Investment Criterion and Choice of techniques, Estimation of Shadow prices and Social discount rate.

Unit 4: Project Planning Techniques (11 hours)

Determine project duration through critical path analysis using PERT & CPM techniques. Resource allocations to activities. Cost and Time Management issues in Project Planning and Management.

Unit 5: Project Risk and Performance Assessment (9 hours)

Project Risk Management- Identification, Analysis and Reduction, Project quality management, Project Performance Measurement and Evaluation, Project Report, Project Closure and Audit.

Exercises:

The learners are required to:

1. Examine the project running in the local area and list the activities required for project completion.

2. Develop time estimates for various activities.

3. Evaluate the critical activities of the project using CPM technique.

4. Find out the delays in the activities, if any, and their impact on cost and project completion.

5. Discuss PERT and CPM techniques with help of any corporate example.

Suggested Readings:

- Chandra, P. (2019). *Projects: Planning, Analysis, Selection, Financing, Implementation and Review.* Delhi, India: Tata McGraw Hill.
- Gido, J., & Clements, J. P. (2015). *Project Management.* Delhi, India: Cengage Learning Pvt. Ltd.
- Gray, C. F., Larson, E. W., & Desai, G. V. (2014). *Project Management: The Managerial Process.* Delhi, India: Tata McGraw Hill.

- Kanda, A. (2010). *Project Management: A Life Cycle Approach.* Delhi, India: Prentice Hall India Learning Private Limited.
- Khatua, S. (2011). *Project Management and Appraisal.* Oxford, United Kingdom: Oxford Press University.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

General Elective Course- 5.3 (GE-5.3): Digital Marketing

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE-5.3 Digital Marketing	4	3	1	0	Pass in Class XII	Studied Brand Management (GE-4.3)

Learning Objective: The course aims to provide knowledge regarding the concepts, tools, techniques and relevance of digital marketing in the current scenario. It also enables the learners to learn the practical application of the Digital Marketing tools and the ethical and legal issues involved therein.

Learning Outcomes: After completion of course, learners will be able to:

1. Identify and assess the impact of digital technology in transforming the business environment and also the customer journey.
2. Describe the functioning of the digital marketers and how it is different than the traditional marketing practices
3. Discuss the significance of digital marketing tools, such as, SEO, Social media platforms, Online advertising, Blogging etc.
4. Analyse ethical considerations and the regulatory framework of digital marketing in India.
5. Describe the various ethical and legal issues in digital marketing.

SYLLABUS OF GE-5.3

Unit 1: Introduction (9 hours)

Concept, Scope and Importance of Digital Marketing, Traditional Marketing vs Digital Marketing, Challenges and opportunities for Digital Marketers, Digital Marketing landscape: an overview of Indian Markets.

Unit 2: Digital Marketing Management (9 hours)

Digital marketing-mix, Segmentation, Targeting, Differentiation and Positioning: Concept, Levels, and strategies in digital environment, Digital Technology and Customer Relationship Management, Digital Consumers and their Buying Decision process.

Unit 3: Digital Marketing Presence (9 hours)

Concept and role of Internet in Marketing, Online marketing Domains, The P.O.E.S.M. Framework, Website design and domain name branding, Search Engine Optimization stages, Types of traffic, Online Advertising: Types, formats, requisites of a good online advertisement, Email marketing: types and strategies.

Unit 4: Interactive Marketing (9 hours)

Interactive Marketing: Concept and options, Social media marketing: concept and tools, Online Communities and Social networks, Blogging: types and role, Video marketing: tools and techniques, Mobile marketing tools, PPC marketing, Payment options and Gateways.

Unit 5: Ethical and Legal Issues (9 hours)

Ethical Issues and Legal Challenges in digital marketing, Regulatory framework for digital marketing in India.

Exercises:

The learners are required to:

1. Discuss marketing strategies of Companies who have succeeded in marketing their products through online platforms.

2. Create a hypothetical online venture and discuss its marketing and advertising strategies.

3. Design an advertising campaign and run it on various social media handles: Facebook, Instagram, Twitter, LinkedIn, Snap Chat etc.

4. Implement various tools with the help of free softwares available online, such as Google Adword, Google Analytics etc.

5. Analyze the ethical considerations and the regulatory framework of digital marketing from the official website of Government of India.

6. Discuss various ethical and legal issues in digital marketing with the help of case study.

Suggested Readings:

- Ahuja, V. (2015). *Digital Marketing.* Delhi, India: Oxford University Press.
- Chaffey, D., Chadwick, F. E., Johnson, K., & Mayer, R. (2008). *Internet Marketing: Strategy, Implementation and Practice.* New Jersey, United States: Pearson Hall.
- Charlesworth, A. (2018). *Digital Marketing: A Practical Approach.* Abingdon, United Kingdom: Routledge.
- Frost, R. D., Fox, A., & Strauss, J. (2018). *E-Marketing.* Abingdon, United Kingdom: Routledge.
- Gay, R., Charlesworth, A., & Esen, R. (2007). *Online Marketing: A Customer Led Approach.* Oxford, United Kingdom: Oxford University Press.
- Gupta, S. (2018). *Digital Marketing.* Delhi, India: Tata McGraw Hill Education.
- Kapoor, N. (2021). *Concept Building Approach to Digital Marketing.* Delhi, India: Cengage Learning India Pvt. Ltd.
- Kotler, P., Kartajaya, H., & Setiawan, I. (2017). *Digital Marketing: 4.0 Moving from Traditional to Digital.* New Jersey, United States: John Wiley & Sons.
- Maity, M. (2022). *Digital Marketing.* Delhi, India: Oxford University Press.
- Mathur, V., & Arora, S. (2020). *Digital Marketing.* Delhi, India: PHI Learning Pvt. Ltd.
- Ryan, D., & Calvin, J. (2016). *Understanding Digital Marketing: Marketing Strategies for Engaging the Digital Generation.* London, United Kingdom: Kogan Page Publishers.
- Tasner, M. (2015). *Marketing in the Moment: The Digital Marketing Guide to Generating More Sales and Reaching Your Customers First.* London, United Kingdom: Pearson Education.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

General Elective Course- 5.4 (GE-5.4): Ethics and Governance

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE-5.4 Ethics and Governance	4	3	1	0	Pass in Class XII	NIL

Learning Objective: This course is designed keeping in view the dominant role that modern corporations play in creating desirable economic, social and environmental outcomes for the society. As corporate governance is intertwined with social responsibility, it requires a multi-disciplinary approach to understand the associated issues and challenges. Therefore, the course outlines the key theoretical and practical issues underpinning the study of both corporate governance (CG) and corporate social responsibility (CSR) in an integrated fashion.

Learning Outcomes:

After completion of the course, learners will be able to:

1. Evaluate and analyse the concepts, tools and theories of ethics and the issues in ethics.
2. Recognize the essence of ethics in business.
3. Develop decision-making skills with regard to ethical governance.
4. Recognise major aspects of corporate governance principles and various theories and systems of corporate governance.
5. Recognise opportunities for reflection on the roles and responsibilities of directors towards the shareholders and other stakeholders covering both theory and relevant practices.
6. Discuss emerging issues and challenges in corporate governance.

SYLLABUS OF GE-5.4

Unit 1: Introduction to Ethics (9 hours)
Concept of moral reasoning and ethics; Contributions of moral thinkers and philosophers to the concepts of morality; Approaches to Moral reasoning; Essence of Ethics, Dimensions of Ethics; Human Values; Ethical concerns and dilemmas

Unit 2: Business Ethics (9 hours)
Concept; Principles; Theories of Business Ethics; Ethical Organisations, Code of Ethics; Ethical issues in business

Unit 3: Governance of Business Entities (9 hours)
The philosophical basis of governance; Corporate Governance- Meaning and significance; Conceptual framework; Corporate governance systems across the world; Corporate governance in India.

Unit 4: Corporate Frauds (9 hours)
Cases of corporate frauds and scams- Enron, Lehman Brothers; Satyam Computer Services; PNB Heist; IL&FS Fraud, ABG Shipyards, Yes Bank; Governance issues and challenges

Unit 5: Recent Issues and Challenges of Governance (9 hours)
Insider Trading; Whistle Blowing; Shareholders Activism; Class Action suits; Gender Diversity in Boards; Governance of Family entities; Governance of multi-national corporations.

Exercises:
The learners are required to:

1. Narrate the cases on ethics and values.
2. Perform simulation exercises to present ethics and ethical dilemmas.
3. Discuss corporate governance concerns highlighted in print and virtual media.
4. Organise brainstorming and discussion sessions on corporate frauds.
5. Project on critical analysis of recent cases on whistleblowing/insider trading/class action suits.
6. Interpret the various emerging issues and challenges in corporate governance with the help of case study.

Suggested Readings:

- Crane, A., Matten, D., Glozer, S., & Spence, L. J. (2019). *Business ethics: Managing corporate citizenship and sustainability in the age of globalization.* Oxford, United Kingdom: Oxford University Press.
- Monks, R. A. G., & Minow, N. (2011). *Corporate governance*. Hoboken, NJ, United States: John Wiley & Sons.
- Reddy, N. K., & Ajmera, S. (2015). *Ethics integrity and aptitude: For Civil Services Main Examination.* Delhi, India: McGraw Hill Education (India) Private Limited.
- Sharma, J. P. (2013). *Corporate Governance, Business Ethics and CSR:(with Case Studies and Major Corporate Scandals).* Delhi, India: Ane Books Pvt.
- Tricker, B., & Tricker, R. I. (2015). *Corporate governance: Principles, policies, and practices.* New York, United States: Oxford University Press.

- Weiss, J. W. (2022). *Business ethics: A stakeholder and issues management approach.* Oakland, CA, United States: Berrett-Koehler.

Additional Readings:

- Mallin, C. A. (2019). *Corporate governance.* Oxford, United Kingdom: Oxford University Press.

- Rani, D. G., & Mishra, R. K. (2017). *Corporate governance: Theory and practice.* Delhi, India: Excel Books India.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

SEMESTER-VI
B.Com (Hons.)

DSC- 6.1 : BUSINESS ANALYTICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC -6.1: Business Analytics	4	2	0	2	Pass in Class XII with Mathematics/Accountancy	Studied Business Statistics (DSC-4.1)

Learning Objectives

This course aims to introduce the learners to business intelligence and analytics which includes describing business data, analysing the data using various statistical tools for creating predictive models and making inferences for solving business problems and for providing assistance in business decision making.

Learning outcomes

After completion of the course, the learners will be able to:

1. Describe skills for computation and aggregation of data using spreadsheets.
2. Analyse data with the help of pivot tables and pivot charts.
3. Analyse data using R packages and interpret the results.
4. Compare linear regression models using spreadsheet & r and interpret the results.
5. Examine textual data analysis using R

SYLLABUS OF DSC-6.1

Unit 1: Introduction (3 hours)

Data and Data Science; Data analytics and data analysis, Classification of Analytics, Application of analytics in business, Types of data: nominal, ordinal, scale; Big Data and its characteristics, Applications of Big data. Challenges in data analytics.

Unit 2: Data Preparation, Summarisation and Visualisation Using spreadsheet (6 hours)

Data Preparation and Cleaning, Sort and filter, Conditional formatting, Text to Column, Removing Duplicates, Data Validation, identifying outliers in the data, covariance and correlation matrix, Moving Averages, Finding the missing value from data; Summarisation; Visualisation: scatter plots, line charts, histogram, etc., Pivot Tables, pivot charts and interactive dashboards.

Unit 3: Getting started with R (6 hours)
Introduction to R, Advantages of R, Installation of R Packages, Importing data from spreadsheet files, Commands and Syntax, Packages and Libraries, Data Structures in R - Vectors, Matrices, Arrays, Lists, Factors, Data Frames, Conditionals and Control Flows, Loops, Functions, and Apply family.

Unit 4:Descriptive Statistics Using R (6 hours)
Importing Data file; Data visualisation using charts: histograms, bar charts, box plots, line graphs, scatter plots. etc; Data description: Measure of Central Tendency, Measure of Dispersion, Relationship between variables: Covariance, Correlation and coefficient of determination.

Unit 5: Predictive and Textual Analytics (9 hours)
Simple Linear Regression models; Confidence & Prediction intervals; Multiple Linear Regression; Interpretation of Regression Coefficients; heteroscedasticity; multi-collinearity.
Basics of textual data analysis, significance, application, and challenges. Introduction to Textual Analysis using R. Methods and Techniques of textual analysis: Text Mining, Categorization and Sentiment Analysis.

Note:

The General-Purpose Software referred in this course will be notified by the University Departments every three years. If the specific features, referred to in the detailed course above, are not available in that software, to that extent it will be deemed to have been modified.

Practical Exercises (60 hours):
The learners are required to:

1. Showcase their understanding of the basics of Spreadsheet: Organizing data with Spreadsheet – Performing simple computations and aggregations using Spreadsheet - Working with Summing and other Reporting functions in Spreadsheet - Working with pivot tables and charts -using Spreadsheet for Data Analytics: Power Query - Power Pivot - Power view - Power Map - Building tips – Display tips - Keyboard shortcuts – Mouse shortcuts - Standardized layouts - Understanding table-based and spreadsheet-based layouts.

2. Showcase their understanding of data cleansing techniques using External Data – Searching and Combining Data with Power Query: Getting started with Power Query - Know the Environment tabs and toolbars - Access new or existing reports - Importing and combining data from databases, web, files - Splitting and aggregating data - Discovering and Analyzing Data with Power Pivot: Database concepts - Loading Data into Power Pivot - using Power Query and Power map add-ins - Designing Pivot Table reports - Filtering data – Creating Custom functions and formulas - Formatting Pivot Tables - Managing Power Pivot Data - Setting Connection properties - Managing Data sources - Configuring Pivot Table Options, Preparation of Histograms - Pareto charts – Boxplots - Treemap and Sunburst charts.

3. Create Linear Regression Models using Spreadsheet; Interpretation of results. Applying tests for heteroscedasticity and multicollinearity.

4. Read datasets into R - Export data from R - Manipulate and Process Data in R -use functions and packages in R - Demonstrate with a Case Study to perform basic analytics using R.

5. Use R for analysing textual data; Data loading into Python; Pre-processing and Text Clean up; Generating a TF-IDF (Term Frequency Inverse Document Frequency) Matrix; Data Clustering; visualisation & Reporting.

Suggested Readings:

- Alexander, M., Decker, J., & Wehbe, B. (2014). *Microsoft business intelligence tools for spreadsheet analysis.* New Jersey, United States: Wiley.
- Giri, A., & Paul, P. (2021). *Applied marketing analytics: using spss (modeler, statistics and amos graphics).* Delhi, India: PHI Learning Pvt. Ltd.
- Kumar, D. U. (2017). *Business analytics: the science of data driven decision making.* New Jersey, United States: Wiley.
- McKee, A. (2003). *Textual analysis: a beginner's guide.*(1st ed.). London, United Kingdom: Sage Publication.
- Motwani, B. (2019). *Data analytics with r.* New Jersey, United States: Wiley.
- North, M. (2012). *Data mining for the masses.* Athens, Georgia: Global Text Project.
- Ohri, A (2012). *R for business analytics.* Springer.
- Paul, T. (2011). *R cookbook.* New York, United States: O Reilly Media.
- Provost, F., & Fawcett, T. (2013). *Data science for business.* New York, United States: O'Reilly Media.
- Rao, P. H. (2013). *Business analytics—an application focus.* Delhi, India: PHI Learning Private Limited.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

Discipline Specific Core Course- 6.2 (DSC-6.2): Corporate Governance

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-6.2: Corporate Governance	4	3	1	0	Pass in Class XII with Mathematics/ Accountancy	NIL

Learning Objectives

The course aims to develop critical thinking ability and provide knowledge of corporate governance, its procedures, techniques in accordance with current legal requirements and professional standards.

Learning outcomes

After completion of the course, learners will be able to:

1. Describe the concept and significance of corporate governance in a business setup.
2. Analyse the role of the board of directors.
3. Discuss important dimensions in corporate governance.
4. Analyse global corporate failures; understand international codes and its implications.
5. Discuss corporate governance regulatory framework in India.
6. Assess and analyse the problems of corporate governance in Indian Inc.

SYLLABUS OF DSC-6.2

Unit 1: Conceptual Framework of Corporate Governance (9 hours)

Corporate Governance: Meaning, significance and principles; Management and corporate governance; Theories of Corporate Governance: Agency Theory, Stewardship theory, Stakeholder Theory, Resource Dependency Theory, Managerial Hegemony Theory; Models of Corporate Governance; Art of Governance as per Kautilya's Arthashastra.

Unit 2: Recent Issues and Challenges of Corporate Governance (9 hours)

Board structure and Directors; Role of Board; Board Committees and their functions; Insider Trading; Whistle Blowing; Shareholders Activism; Role of institutional investors; Class Action suits. CSR and Corporate Governance. Concept of Gandhian Trusteeship.

Unit 3: Global Corporate Failures and International Codes (9 hours)

BCCI (United Kingdom), Maxwell (United Kingdom), Enron (USA), World.Com (USA), Vivendi (France), Lehman Brothers; Sir Adrian Cadbury Committee 1992, SOX 2002, OECD Principles of Corporate Governance.

Unit 4: Corporate Governance Regulatory Framework in India (9 hours)

Regulatory framework in India: Kumar Mangalam Birla (1999), NR Narayana Murthy Committee (2005), Relevant provisions of Companies Act, 2013, SEBI: Listing Obligations and Disclosure Requirements Regulations (LODR), 2015 and Uday Kotak Committee (2017).

Unit 5: Corporate Failures and Scams in India (9 hours)

Satyam Computer Services Ltd, Kingfisher Airlines, PNB Heist, IL&FS Group Crisis; ICICI Bank, Yes Bank; Common Governance Problems in various corporate failures in India and abroad.

Exercises:
The learners are required to:

1. Identify and analyse corporate governance models followed by companies incorporated in India and abroad.
2. Analyse Board composition and Board committees of different companies; Analyse cases on the topic of Whistle blowing/ Shareholder activism/ Insider trading.
3. Critically analyse global corporate governance failure and identify corporate governance issues therein.
4. Identify corporate governance issues and concerns raised in context of Indian companies and their implications (from published sources newspapers or websites).
5. Comment on the latest corporate governance regulatory framework in India.
6. Critically analyse major corporate governance failure to suggest common governance problems in Indian context.

Suggested Readings:

- *A handbook of corporate governance*. (2022). (3rd ed.). Institute of Directors. Delhi, India: IOD Publishing.
- Das, S. C. (2021). *Corporate governance in India: An evaluation. (4th ed.).* Delhi, India: PHI Learning Pvt. Ltd..
- Goel, S. (2019). *Corporate governance: principles and practices* (1st ed., Vol. 1). Noida, India: McGraw-Hill.
- Sharma, J. P. (2018). *Corporate governance, business ethics and csr: with case studies and major corporate scandals.* Delhi, India: Ane Books.
- Soloman, J. (2021). *Corporate governance and accountability*. (5th ed.). United States: Wiley
- Tricker, B., & Tricker, R. I. (2015). *Corporate governance: principles, policies, and practices.* United States: Oxford University Press.
- Tricker, B. (2020). *Elements in corporate governance*. United Kingdom: Cambridge University Press.

Additional Resources

- Mallin, C. A. (2019). *Corporate governance.* Oxford, United Kingdom: Oxford University Press.
- Rani, D. G., & Mishra, R. K. (2017). *Corporate governance: theory and practice.* India: Excel Books.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

Latest amendments to the regulations shall be referred.

Discipline Specific Core Course- 6.3 (DSC-6.3): Goods and Services Tax (GST) and Customs Law

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 6.3 – Goods & Services Tax (GST) and Customs Law	4	3	1	0	Pass in Class XII with Mathematics/Accountancy	Nil

Objective:

The course aims to impart knowledge of principles and provisions of GST and Customs Law, the important legislation dealing with the indirect tax system in India; and to enable the students to apply the same practically.

Learning Outcomes:

After completion of the course, learners will be able to:

1. Analyse the rationale of Goods and Services Tax (GST), constitutional amendment carried out to install GST in India and comprehend the composition and working of GST council
2. Interpret the meaning of supply under GST law, differentiate between intra-state and inter-state supply, provisions related to place of supply, time of supply and compute the value of supply.
3. Evaluate the utilization of input tax credit and the provisions of reverse charge mechanism.
4. Analyse various returns under GST and payment of taxes.
5. Evaluate the concepts of Customs Act, various custom duties and computation of the

assessable value for charging customs duty.

SYLLABUS OF DSC-6.3

Unit 1: Structure, Registration and Exemptions (9 hours)
Constitutional framework of indirect taxes before GST; Rationale for GST; Structure of GST (SGST, CGST, UTGST & IGST); GST Council; GST Network; State compensation mechanism.
Registration; Exemptions from GST.

Unit 2: Levy and Collection of GST (16 hours)
Scope of 'Supply'; Nature of supply: Inter-State, Intra-State; Classification of goods and services.
Composite and Mixed supplies; Composition levy scheme; Place of supply; Time of supply; Value of supply.

Unit 3: Input Tax Credit and Reverse Charge Mechanism (9 hours)
Eligible and ineligible input tax credit; Apportionments of credit and blocked credits; Tax credit in respect of capital goods; Availability of tax credit in special circumstances; Reverse Charge Mechanism.

Unit 4: Tax Invoice, Returns and Payment of Tax (7 hours)
Tax Invoice, Credit and debit notes, and e-Way bills; Returns; Payment of taxes; Taxability of e-Commerce.

Unit 5: Customs Law (4 hours)
Basic concepts, Territorial waters and High seas; Types of custom duties; Valuation.

Note: In case of any subsequent notifications/amendments regarding GST or customs law by the government, the syllabus would be updated accordingly.

Exercises:
The learners are required to:

1. Discuss relevant provisions of the CGST Act, IGST Act, GST (Compensation to States) Act and Constitution (One Hundred and First Amendment) Act from the official website of Government of India.
2. Refer relevant notifications and circulars from the official website of Government of India to differentiate between intra-state and inter-state supply and provisions related to place of supply.
3. Illustrate the utilization of input tax credit and the provisions of reverse charge mechanism.
4. Identify the eligible and ineligible tax credit under various circumstances.
5. Study cases related to utilization of input tax credit.
6. Enlist the process of returns under GST and payment of taxes.
7. Illustrate computation of the assessable value for charging customs duty with hands-on exercise.
8. Gather information available under the heading 'Popular help topics' on the official website of the Government of India.

Suggested Readings:

- Ahuja, G., & Gupta, R. (2023). *GST & customs law*. Delhi, India: Flair Publications Pvt. Ltd.
- Babbar, S., Kaur, R., & Khurana, K. (2020). *Goods and services tax (GST) and customs law.* (5th ed.). Delhi, India: Scholar Tech Press.
- Balachandran, V. (2023). *Indirect taxation. Goods and service tax and customs law.* (19th ed.). Delhi, India: Sultan Chand & Sons.
- Balachandran, V. (2023). *Textbook of GST & customs law.* (2nd ed.). Delhi, India: Sultan Chand & Sons.
- Bansal, K. M. (2023). *GST & customs law.* Delhi, India: Taxmann Publication.
- Gupta, S.S. (2020). *GST- how to meet your obligations.* Delhi, India: Taxmann Publications.
- Mittal, N. (2022). *Goods & services tax and customs law.* Delhi, India: Cengage Learning India Pvt. Ltd.
- Sahi, S. (2019). *Concept building approach to goods and services tax (gst), & customs law.* Delhi, India: Cengage Learning India Pvt. Ltd.
- Singhania, V. K., & Singhania, M. (2021). *Students' guide to income tax. (university ed.).* Delhi, India: Taxmann Publications Pvt. Ltd.

Additional Readings:

- Gupta, S. S. (2017). *GST how to meet your obligations.* (13th ed., Vol. 3). Delhi, India: Taxmann Publication.
- Bansal, K. M. (2023). *GST & customs law.* Delhi, India: Taxmann Publication.
- Sisodia, P. (2018). *Bharat's handbook on goods & services tax (gst).* Delhi, India: Bharat Law House.
- *The Constitution (One hundred and First Amendment) Act, 2016.*
- *The Central Goods and Services Tax Act, 2017.*
- *The Integrated Goods and Services Tax Act, 2017.*
- *The Union Territory Goods and Services Tax Act, 2017.*
- *The Goods and Services Tax (Compensation to States) Act, 2017.*
- *Vastu and Sevakar Vidhan, by Government of India.*

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

Discipline Specific Elective Course- 6.1 (DSE-6.1): Learning and Development in Organisations

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE-6.1: Learning and Development in Organisations	4	3	1	0	Pass in Class XII	NIL

Learning Objectives

The course aims at equipping the learners with the concept and practice of Learning and Development in the modern organisational setting through the pedagogy of case study, counselling, discussions and recent experiences.

Learning Outcomes:

After completion of the course, learners will be able to:

1. Analyse the various learning strategies used in real situations.
2. Compare individual development in terms of intelligence, creativity and personality.
3. Develop the learning needs to create a learning environment.
4. Demonstrate various techniques for enhancing decision–making and interpersonal skills.
5. Examine the need and importance of guidance & counselling.

SYLLABUS OF DSE-6.1

Unit 1: Introduction (7 hours)

Learning- concept, characteristics, principles, types, learning theories; Classical conditioning, operant conditioning, cognitive, observational and social learning; Learning strategies and constructivist approach to learning, learning in a digital world.

Unit 2: Individual Learning and Development (11 hours)

Individual development: Meaning and stages**;** Role of creativity in learning; process and measures of creativity; Personality- concept and determinants, approaches of development of personality; Intelligence – concept, measurement of intelligence; emotional intelligence and its relevance in learning and development of an individual.

Unit 3: Developing Learning Environment (11 hours)

Overview of learning methodologies- logic and process of learning; Principles of learning, Learning process, learning curve, learning management system; Criteria for method selection; skills of an effective trainer; Computer aided instructions- distance learning, e-learning; technologies convergence and multimedia environment.

Unit 4: Development Methodologies (11 hours)

Development techniques for enhancing decision–making and interpersonal skills, case-study, in-basket exercise, special projects, action learning, syndicate work, games, action maze, role play, experience learning, discovery learning, brainstorming, position rotation, team building, and sensitivity training.

Unit 5: Guidance and Counselling (5 hours)

Guidance: meaning, needs, principles, types, importance; counselling; meaning, nature objectives and importance, techniques of counselling; directive, nondirective, eclectic, ethics in counselling, effect of guidance and counselling on individual learning and development.

Exercises:
The learners are required to:

1. Analyse and interpret case study of any Indian organisations learning strategies.
2. Participate in simulation exercises in the classroom to conduct a learning assessment of oneself thereby preparing a questionnaire on learning and development of an individual.
3. Develop a learning and development module on the basis of selected strategies in the previoUnited States exercise.
4. To compare different learning requirements of individuals in the organisations as per their individual learning abilities.
5. To restructure the strategies after assessing the learning and development report.

Suggested Readings:

- Beevers, K., Rea, A., Hayden, D. (2019). Learning and Development Practice in the Workplace. United Kingdom: Kogan Page.
- Bernard, H. W., & Fullner, D. W. (1987). *Principles of guidance, a basic test (indian education).* Delhi, India: Allied publishers Pvt.Ltd.
- Carson, B. (2021). *L&D's playbook for the digital age.* United States: American Society for Training & Development.
- Clifford, J., & Thorpe, S. (2007). *Workplace learning and development: delivering competitive advantage for your organisation.* United Kingdom: Kogan Page.
- Dam, N. V. (2018). Elevating Learning & Development (paperback). United States: McKinsey.
- Fee, K. (2011). *101 Learning and development tools: essential techniques for creating, delivering and managing effective training.* United Kingdom: Kogan Page.

- Hilgard, E. & Bower, G. H. (1966). *Theories of learning.* United States: Englewood Cliffs: Prentice Hill.
- Mishra , R. C. (2005). *Guidance & counselling.* (2 vols). Delhi, India: APH, Publishing Cooperation.
- Page-Tickell, R. (2018). *Learning and development: a practical introduction.* (Vol. 15). India: Kogan Page.
- Parry-Slater, M. (2021). *The learning and development handbook: a learning practitioner's toolkit.* India: Kogan Page.
- Rao, A. K. N. (2002). *Guidance and counselling.* Delhi, India: APH Publishing Corporation.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

Discipline Specific Elective Course- 6.2 (DSE-6.2): Investment Banking and Financial Services

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE-6.2: Investment Banking and Financial Services	4	3	1	0	Pass in Class XII with Mathematics/Accountancy	Studied Financial Markets and Institutions (DSE-3.2)

Learning Objectives

The course aims to provide students with necessary theoretical and conceptual understanding of investment banking and financial services.

Learning Outcomes

After completion of the course, students will be able to:

1. Evaluate investment banking evolution, various activities and structure.

2. Analyse the process of issue management.
3. Examine role and functions of Mutual funds, Pension fund, Insurance and Leasing.
4. Examine role and functions of NBFC, Credit rating, Financial counselling, Portfolio management service, securitization, factoring and forfeiting.
5. Analyse process of Mergers and Acquisitions, its valuation techniques and methods of corporate restructuring.

SYLLABUS OF DSE-6.2

Unit 1 Investment Banking (9 hours)

Investment Banking: Introduction: Concept, Importance; Commercial Banks vs. Investment banks; Functions of Investment Banks; Types of Investment banking operations; Investment Banking in India – Evolution, characteristics; Recent Developments and the way ahead; Structure of Investment Banks; SEBI guidelines for Merchant Bankers, Pre-issue and Post-issue regulatory framework.

Unit 2 Issue Management (9 hours)

Issue Management**:** Emergence and role of Capital markets, Types of Issue: Public Issue, Book building, Green Shoe option, Private placements, Preferential allotment, Rights Issue, Bonus Issue, Depository Receipts; Process of Issue Management; Lead Managers – Duties and responsibilities of Lead Managers; Underwriting- concept and types; Issue management intermediaries; De-mat account – Concept and importance; Depository System – NSDL, CDSL.

Unit 3 Financial Services -I (9 hours)

Financial Services -I: Leasing – Concept and types of leasing; Venture Capital – various steps in venture financing; Start-ups – Concept and financing; Mutual Funds - Role, Types of Mutual Funds; Pension Funds; Insurance- Classification, Principles of insurance; An Overview of Regulatory Framework – RBI, SEBI, IRDA, PFRDA.

Unit 4 Financial Services -II (9 hours)

Financial Services -II: Banking products and services – Recent trends; Innovations in banking sector; NBFCs - Concept, Commercial Banks vs. NBFCs, Services provided by NBFCs; Housing Finance- Concept and Types, Housing Finance institutions; Credit Rating- Concept and significance, Credit Rating Agencies; Factoring and Forfaiting; Securitisation – concept, securitisation as a funding mechanism; Financial Counselling; Portfolio management services.

Unit 5 Mergers and Acquisitions (9 hours)

Mergers and Acquisitions: Process of M&A, Role of Investment Bankers in M&A; Rationale and considerations of M&A; Financial Evaluation of M&A; Valuation techniques – Comparable companies analysis, Precedent Transaction analysis, Discounted Cash Flow Analysis, Leveraged Buyouts; Takeover defenses; Corporate Restructuring – Methods of corporate restructuring; Challenges: Legal, ethical and governance issues in Investment Banking.

Exercises:

The learners are required to:

1. Compile various forms and documents required to be registered as a Merchant Banker.
2. Compile various forms and documents required for pre-issue and post-issue management of Equity shares.
3. Make a comparison of 1-year and 3-year holding period return offered by two mutual funds belonging to the same risk class
4. Compare credit rating of all the debt securities issued by any two companies. Analyse its effect on the credit worthiness of the company in terms of coupon rate and yield.
5. Compile various incidents where different companies have successfully defended a hostile takeover bid.

Suggested Readings:

- Frederic, S. M., & Stanley, G. E. (2021). *Financial markets and institutions.* Delhi, India: Pearson Education.
- Gordon, E., & Natarajan, K. (2023). *Financial markets and services.* Mumbai, India: Himalaya Publishing House.
- Khan, M. Y. (2019). *Financial services.* Delhi, India: Tata McGraw Hill..
- Khan, M. Y. (2019). *Indian financial system.* Delhi, India: Tata McGraw Hill.
- Pathak, B. V. (2018). *Indian financial system: markets, institutions and services.* Delhi, India: Pearson Education.
- Pratap, G. S. (2021). *Investment banking.* (4th ed.). *India:*McGraw Hill.
- Saunders, A., Cornett, M. M. & Erhemjamts, O. (2022). *Financial markets and institutions.* (8th ed.). Tata McGraw Hill.
- Shanmugham, R. (2017). *Financial services.* Wiley.

Additional Resources:

- www.sebi.gov.in
- https://www.rbi.org.in/
- http://www.tin-nsdl.com
- http://www.cdslindia.com
- www.financialservices.gov.in
- http://www.irdai.gov.in
- http://www.pfrda.org.in/pfrda.org.in

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

Discipline Specific Elective Course- 6.3 (DSE-6.3): Advertising

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 6.3-Advertising	4	3	1	0	Pass in Class XII	NIL

Learning Objectives

The objective of this paper is to familiarise the students with concepts and techniques of advertising used in marketing.

Learning Outcomes

After completion of the course, learners will be able to:

1. Discuss communication objectives behind advertising of various products and services.
2. Describe advertising appeals, elements of print and broadcast advertisement.
3. Elucidate various advertising and media elements in the advertising decisions.
4. Discuss advertising effectiveness.
5. Explain various organizational arrangements and examine the ethical and legal issues of advertising.

SYLLABUS OF DSE-6.3

Unit 1: Introduction to Advertising (9 hours)

Communication Process-basic and elements; Communication Response Hierarchy Models: AIDA Model, Hierarchy of Effects Model, Advertising: significance, types and objectives; DAGMAR Approach; Target audience selection – approaches and basis; Setting of advertising budget: determinants and major methods. Integrated marketing communication- meaning and process.

Unit 2: Advertising Message (9 hours)

Advertising appeals – types; Advertising Copy - Elements of print and broadcast advertisements

Unit 3: Advertising Media Decisions (9 hours)

Major media types: merits and demerits; Factors influencing media choice; Media scheduling-types.

Unit 4: Advertising: Effectiveness (9 hours)

Rationale of Measuring Advertising Effectiveness: Evaluating Communication and Sales effects; Pre and Post-testing techniques

Unit 5: Organisational Arrangements (9 hours)

Advertising Agency: Role, types and selection; Agency remuneration - methods

Social, ethical and legal aspects of advertising in India; Role of Advertising Standards Council of India (ASCI), Recent developments and issues in Advertising

Exercises:

The learners are required to:

1. Discuss communication objectives behind advertising of any product or service.
2. Identify advertising appeals used in any advertisement.
3. Identify various media elements in advertising decisions.
4. Discuss a case study on advertising effectiveness.
5. Present a report on the role of ASCI.
6. Comment on various ethical and legal issues in advertising.
7. Perform a content analysis of various advertising campaigns to:
    a. Identify the objective of an advertisement forming part of an advertising campaign.
    b. Find out the target audience of a campaign.
    c. Prepare a report on various media options used in a campaign.
    d. Prepare a report on message strategy and copy elements used in the campaign.
8. Develop an advertising campaign for any product or service.

Suggested Readings:

- Belch, G. E., Belch, M. A., & Purani, K. (2009). *Advertising and promotion: an integrated marketing communications perspective.* New York, United States: McGraw Hill Education.
- Gupta, R. (2017). *Advertising.* Delhi, India: Scholar Tech Press.
- Kapoor, N. (2022). *Fundamentals of advertising.* (2nd ed.). Delhi, India: Cengage Learning India Pvt. Ltd.
- Shah, K., & D'Souza, A. (2008). *Advertising and promotions: An IMC Perspective.* Delhi, India: Tata McGraw Hill Publishing Company Limited.
- Sharma, K. (2018). *Advertising: planning and decision making.* Delhi, India: Taxmann.
- Sharma, S., & Singh, R. (2006). *Advertising: planning and implementation.* (3rd ed.). India: PHI Learning Pvt. Ltd.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

Discipline Specific Elective Course- 6.4 (DSE-6.4): Industrial Relations and Labour Laws

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 6.4- Industrial Relations and Labour Laws	4	3	1	0	Pass in Class XII	NIL

Learning Objectives

The course aims to enable the students to learn the concepts of industrial relations including trade unions, discipline, grievance redressal and various labour laws/ code.

Learning outcomes

After completion of the course, learners will be able to:

1. Analyse the evolution of ind ustrial relations and its significance in the managerial world.
2. Evaluate the significance of international dimensions of ind ustrial relations in a globalized world.
3. Imbibe how to interact, negotiate and transact with trade unions.
4. Design and understand the discipline measures and grievance mechanisms.
5. Analyse the legal structure provided for handling the industrial disputes.

SYLLABUS OF DSE-6.4

Unit 1: Industrial Relations (IR) (11 hours)

Concept of Industrial Relations; Nature of Industrial Relations; Objectives of IR; Factors affecting IR in changing Environment, Evolution of IR in India; Role of State; Trade Union; Employers' Organisation; Human Resource Management and IR; Concept of GIG Economy and ramifications for industrial relations.

Unit 2: International Dimensions of Ind ustrial Relations (6 hours)
Role of ILO in Ind ustrial Relations: Adoption of conventions and recommendations, Influence on Indian labour legislation, Impact of globalization on IR.

Unit 3: Trade Union (11 hours)
Origin and growth, Unions in the era of liberalisation; Factors Affecting Growth of Trade Unions in India, Multiplicity & Recognition of Trade Unions; Major Provisions of Trade Union Law.

Unit 4: Discipline and Grievance Redressal (6 hours)
Discipline: Causes of indiscipline, Maintenance of discipline, Misconduct, Highlights of domestic enquiries; Labour turnover; Absenteeism; Grievance: Meaning and Grievance redressal machinery in India; Salient features of Industrial Employment Standing orders.

Unit 5: Industrial Disputes (11 hours)
Definitions of Industry, and Industrial Dispute; Procedure, Powers and Duties of Authorities for resolution of disputes; Strikes and Lockouts; Provisions relating to Layoff, Retrenchment, and Closure.

Exercises:
The learners are required to:

1. Examine various factors having bearing on industrial relations.
2. Analyse the ratification of ILO conventions by different countries.
3. Enlist the process of registering a trade union.
4. Study the Grievance redressal mechanism of any business unit.
5. Identify the recently reported industrial dispute in India in large corporate or MNC's having factories in India, and analyse latest case laws related to industrial disputes.

Suggested Readings:

- Katz, H. C., Kochan, T. A., & Colvin, A. J. S. (2007). *An introduction to collective bargaining and industrial relations.* (4th ed.). *McGraw-Hill Higher Education*.
- Padhi, P. K. (2019). *Industrial relations.* (4th ed.). Prentice Hall India.
- Ratnam, C. S. V. (2006). *Industrial relations: text and cases.* Delhi, India: Oxford University Press.
- Sharma, J. P. (2018). *Simplified approach to labour laws.* (5th ed.). Bharat Law House Pvt. Ltd.
- Sinha, P.R.N., Sinha, I. & Priyadarshini, S. (2019). *Industrial relations, trade unions and labour legislations* (3rd ed.). Pearson Education.

Additional Resources:

- Farnham, D., & Pimlott, J. (1990). *Understanding industrial relations.* (4th ed.). London, United Kingdom: Cassell Educational Ltd.
- Salamon, M. (2001). *Industrial relations: theory & practice.* (4th ed.). Pearson Higher Education.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

From the date of implementation of labour codes, this syllabus shall be disseminated as per Industrial Relations code wherever applicable

Discipline Specific Elective Course- 6.5 (DSE-6.5): International Monetary and Financial Environment

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 6.5 – International Monetary and Financial Environment	4	3	1	0	Pass in Class XII with Mathematics/Accountancy	NIL

Learning Objectives

The course aims to introduce learners to the international monetary and financial environment. Learners are also expected to understand the basic features of the international monetary system, foreign exchange market and exchange rate risk. In addition, the course creates awareness about international financial markets and instruments.

Learning outcomes

After completion of the course, learners will be able to:

1. Demonstrate an understanding of the international monetary system and balance of payments
2. Infer the importance of international finance in global context.
3. Analyse the factors affecting exchange rates and the inter linkages among them.
4. Summarize the evolution and spread of international financial markets and the implications of globalized finance.
5. Demonstrate how the international financial market operates and the inherent foreign exchange risk involved in it.
6. Evaluate and compare different types of international financial instruments.

SYLLABUS OF DSE – 6.5

Unit 1:International Monetary System (9 hours)
Overview of International Monetary System: evolution, Gold Standard, Bretton Woods system, the floating exchange rate regime; types of exchange rate systems; international agencies regulating and facilitating international financial flows: IMF, World Bank Group and its institutions, Bank for International Settlements,
Balance of Payments (BOP): concept, components of BOP, factors affecting BOP, BOP-equilibrium and disequilibrium.

Unit 2:Foreign Exchange Markets and Exchange Rate Determination (9 hours)
Foreign exchange markets: characteristics, functions, structure and participants; factors affecting exchange rate: relative inflation rates, relative interest rates, relative income levels, government controls, current account deficit, currency speculation and expectations, public debt, political stability and economic performance. Government intervention and influence on exchange rates.
Theories of exchange rate determination: Purchasing Power Parity; Interest Rate Parity, International Fisher effect

Unit 3:Foreign Exchange Derivatives (9 hours)
Spot market, spot rate quotations, bid-ask spreads, trading in spot markets, cross exchange rates; trading in forward markets, long and short forward positions, forwards premium and discount; arbitrage, hedging and speculation.

Unit 4:Foreign Exchange Risk Management (9 hours)
Types of foreign exchange risk: transaction exposure, translation exposure, economic exposure; hedging against foreign exchange exposure; Forwards market, Futures market and Options market; country risk analysis.

Unit 5:International Financial Markets and Instruments (9 hours)
Foreign Portfolio Investment: International bond and equity market, GDRs, ADRs, cross-listing of shares; global registered shares; international financial instruments: Foreign bonds, Eurobonds, Global Bonds, Floating rate bonds, Zero coupon Bonds; International Money Markets.

Exercises:
The learners are required to:

1. Illustrate and explain the direction of India's foreign trade and investment flows through an analysis of Balance of payments over a period of last five years.
2. Do practical questions on working of foreign exchange quotations
3. Conduct an inter-country comparison to understand the factors affecting exchange rates under different exchange rate systems
4. Explain through examples how companies use currency derivatives to minimise the risk.
5. Examine the market conditions under which companies use foreign currency instruments to raise funds

Suggested Readings:

- Cavusgil, S. T., Knight, G., & Riesenberger, J. (2007). *International business: strategy, management and the new realities.* Pearson India.
- Daniels, J. D., Radenbaugh, L. H., Sullivan, D. P., & Salwan, P. (2016). I*nternational business.* (1st ed.)*.* London, United Kingdom: Pearson Education
- Eiteman, D. K., Stonehill, A. I., & Moffett, M. H. (2021). *Multinational business finance.* (15th ed.). Pearson.
- Krugman, P., Obestfeld, M., & Melitz, M. J. (2020). *International finance theory and policy.* (11th ed.). Pearson.
- Levi, M. D. (2009). *International finance.* (5th ed.). Taylor and Francis Ltd.
- Madura, J. (2020). *International financial management.* (14th ed.). Cengage Learning.
- Vij, M. (2010). *International financial management.* (3rd ed.). Excel Books.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

Discipline Specific Elective Course- 6.6 (DSE-6.6): Business Research Methodology

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE -6.6 – Business Research Methodology	4	3	0	1	Pass in Class XII with Mathematics/Accountancy	NIL

Learning Objectives

The course aims to inculcate research aptitude among the learners and equip them with knowledge and skills required to successfully undertake various steps in the research process.

Learning outcomes

After completion of the course the learners will be able to:

1. Analyse research concepts, its types and steps in the research process.
2. Formulate research problems and assimilate various types of research design.
3. Create scales, sampling techniques and design data collection tools.
4. Recognise various techniques of data analysis and interpretation.
5. Prepare a complete research report in appropriate format.

SYLLABUS OF DSE-6.6

Unit 1: Introduction (9 hours)

Meaning and Scope of Research; Application of research in Business; Types of Research- qualitative, quantitative, longitudinal, cross-sectional, fundamental, applied, conceptual and empirical; Characteristics of Good Research; Steps in Research Process; Terminologies of research- Concept, Construct, Variables, Proposition and Hypothesis. Theory and Model; Literature Review and Formulation of Research Question; Philosophies of Research; Induction and Deduction Approach.

Unit 2: Research Design (9 hours)

Research Design- Meaning and Characteristics; Types of Research Design- Exploratory, Descriptive and Experimental. Meaning, Examples and Characteristics of Exploratory Research Design. Methods of Exploratory Research Design. Steps in Exploratory Research. Meaning,

Characteristics and Methods of Descriptive Research Design with examples. Meaning and Types of Experimental Research Design.

Unit 3: Data Collection (9 hours)
Measurement and Scaling; Primary scales of Measurement (Nominal, Ordinal, Interval and Ratio). Scales for Measurements of Constructs- Likert, Semantic Differential Scale and Staple; Reliability and Validity; Meaning and Sources of Primary and Secondary Data; Questionnaire Design (also using online tools); Census and Survey Method; Probability and Non-Probability Sampling Techniques; Sample Size Determination.

Unit 4: Data Analysis Using Spreadsheet (9 hours)
Data Preparation and Cleaning; Graphical Presentation of Data; Frequency Distribution, Descriptive Statistics; Steps in Hypothesis Testing; Hypothesis Testing- parametric (z test and t test) and non-parametric (chi- square test).

Unit 5: Report Writing and Ethics (9 hours)

Types of Reports; Steps in Report Writing; Format and Presentation of Report, Referencing (APA, Chicago manual etc.), Ethics in Business Research.

Practical Exercises (30 hours):

The learners are required to:

1. Prepare literature review from a topic of your choice involving business and economics. Also, comment on the following case 1:
   Case 1: A product manager wants to know the viability of a new innovative product being launched by his company. What are the steps that need to be followed in his research?
2. Identify the type of a research design that will be most appropriate in a given scenario as per Case 1.
3. Apply online tools and platforms, design a questionnaire using various kinds of questions including Likert scale statements to address a particular business problem.
4. Use spreadsheet to practice t- test, z-test and Chi- square test on the secondary data from a given sample set of data.
5. Prepare a brief report following proper format in Word processing software.

Suggested Readings:

- Bryman, A. (2020). *Business research methods.* Oxford University Press.
- Bryman, A., & Bell, E. (2011). *Business research methods.* (3rd ed.). Cambridge; New York, United States: Oxford University Press.
- Bryman, A., Bell, E., & Harley, B. (2022). *Business research methods.* Oxford University Press.

- Chawla D., & Sondhi N.(2023). *Research Methodology: Concepts and Cases.* (2nd ed.). Delhi, India: Vikas Publishing.
- Cooper, D. R., & Schindler, P. S. (2014). *Business research methods.* (12th ed.). New York, United States: McGraw Hill International Edition.
- Creswell, J. D., & Creswell, J. W. (2017). *Research design: qualitative, quantitative, and mixed methods approaches.* United States: SAGE Publications.
- Dangi, H., & Dewan, S. (2016). *Business research methods*. *India:* Cengage Learning India Pvt. Ltd.
- Field, A.(2013). *Discovering statistics using ibm spss statistics*. Sage.
- Hair, J. F., Page, M., & Brunsveld, N. (2019). *Essentials of business research methods.* (4th ed.). Routledge. https://doi.org/10.4324/9780429203374
- Ken, B. (2019). *Business statistics: for contemporary decision making*. United States: John Wiley & Sons.
- Kothari, B. L. (2011). *Research methodology: tools and techniques.* Jaipur, India: ABD Publishers.
- Mishra (2014). *Business research methods.* Oxford University Press.
- Newman, W. L. (2021). *Social research methods: qualitative and quantitative approaches.* (8th ed.). India: Pearson.
- Saunders, M. (2010). *Research methods for business.* Pearson Education.
- Schindler, P. S. (2021), *Business research methods*. (13th ed.). India: Mc Graw Hill Education.
- Sekran, U., & Bougie, R. (2015). *Research methods for business: a skill building approach.* (6th ed.). United States: John Wiley & Sons.
- Zikmund, W. G., Babin, B. J., Carr, J. C., & Griffin, M. (2013). *Business research methods.* (9th ed.). South Western: Cengage Learning.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

Discipline Specific Elective Course- 6.7 (DSE-6.7): Social Accounting

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Social Accounting DSE-6.7	4	3	1	0	Pass in Class XII with Mathematics/Accountancy	NIL

Learning Objectives

The course aims to help learners to know issues in Social Accounting and Reporting and how these issues can be reported more transparently and responsibly.

Learning Outcomes

After completion of the course, learners will be able to:

1. Compare Conventional Accounting System with Social Accounting.
2. Describe and measure various Social Costs and Social Benefits
3. Analyse Corporate Social Accounting.
4. Evaluate the framework and standards of Corporate social reporting.
5. Evaluate the impact of corporate activities at the National and Global Levels.

SYLLABUS OF DSE-6.7

Unit 1: Conventional Accounting and Shift in Paradigm (6 hours)
Traditional Framework of Accounting, Limitations with traditional framework of Accounting, Shift in Paradigm. Historical Development & Evolution of Social Accounting. Rationale for Social Accounting.

Unit 2: Social Benefits and Costs (9 hours)
Social Benefits and Costs. Measurement of Costs and Benefits. Social Impact Assessment of Business Activities. Seidler's Model for Social Income Statement, Abt's Model, Ralph's Comprehensive Social Benefit Cost Model.

Unit 3: Corporate Social Accounting (9 hours)
Definitions of Social Accounting, Responsibility Accounting, Objectives & Scope of Social Accounting. Role & Importance. Social Accounting in India. Approaches, Challenges in Social Accounting. Theories of Social Accounting (Stakeholder, Legitimacy, Institutional).

Unit 4: Corporate Responsibility Approach for Reporting (11 hours)

Social Performance Indicators. Corporate Social Responsibility, CSR Reporting Framework in Companies Act 2013. Sustainability Reporting. Triple Bottom Line. SEBI Guidelines on Business Responsibility & Sustainability Reporting. Stakeholder Engagement and Reporting. Need for Corporate Social Reporting.

Unit 5: National and Global Social Accounting (10 hours)
International accounting standards, frameworks, and guidance – SASB, GRI, SDG. National Income and Social Accounting, Social Accounting Matrix. Social Audit and Assurance. Socially Responsible Investment.

Exercises:

The learners are required to:

1. Prepare a small report on conventional accounting and shift in a paradigm based on the research papers.
2. Identify the different types of social costs based on the financial statements of selected companies.
3. Give a presentation on corporate social accounting by collecting information from the annual reports of select companies.
4. Evaluate the impact of the Corporate Responsibility Approach for Reporting on the financial performance of the select national companies based on their financial statements.
5. Prepare a project on analysing unique aspects of social accounting in the nonprofit sector and reporting on social outcomes and impact for nonprofits.
6. Do a comprehensive analysis of National and Global Social Accounting standards and procedures.

Suggested Readings:

- Bhanumurthy, K. V. (2011). *Business ethics and corporate responsibility - about social responsibility standards.* In R. Mishra, & J. Kiranmai, Corporate Governance in Asia. (pp. 236-247). Delhi, India: Allied Publishers Pvt. Ltd.
- Bhanumurthy, K. V., Bhandari, V., & Pandey, V. (2014). *Does Indian stock market encourage socially responsible companies?* Manthan Journal of Commerce and Management, 1(1), 1-34.
- Ramanathan, K. V. (1976). Toward a theory of corporate social accounting. *The accounting review*, *51*(3), 516-528.
- Gray, R., Collison, D., & Bebbington, J. (1998). Environmental and social accounting and reporting. *Financial reporting today*, 179-214.
- Retolaza, J. L., & San-Jose, L. (2021). Understanding Social Accounting Based on Evidence. *SAGE Open*, 11(2). https://doi.org/10.1177/21582440211003865
- Owen, T. S. D. (2001). Introduction social accounting, reporting and auditing: beyond the rhetoric?.
- Shaikh, J. M., & Jakpar, S. (2007). Dispelling and construction of social accounting in view of social audit. *Information Systems Control Journal*, *2*(6).
- Gray, R. (2013). Back to basics: What do we mean by environmental (and social) accounting and what is it for?—A reaction to Thornton. *Critical perspectives on Accounting*, *24*(6), 459-468.
- Robbins, P., Hintz, J., & Moore, S. A. (2022). *Environment and society: a critical introduction.* United States: John Wiley & Sons.
- Trivedi, V., & Shrivastava, V. K. (2011). *Environment and social concerns.* Delhi, India: Concept Publishing Co.

- Verma, M. K. (2018). *Globalisation, environment and social justice: perspectives, issues and concerns.* Delhi, India: Routledge.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

Discipline Specific Elective Course- 6.8 (DSE-6.8): Environmental Accounting

Course title & Code	Credits	Credit distribution of the Course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Environmental Accounting DSE-6.8	4	3	1	0	Pass in Class XII with Mathematics/Accountancy	NIL

Learning Objectives

The course aims to help learners to know issues in Environmental Accounting and how these issues can be reported more transparently and responsibly.

Learning Outcomes

After completion of the course, learners will be able to:

1. Compare the Conventional Accounting System with Environmental Accounting.
2. Describe the Environmental costs and benefits.
3. Analyse Corporate Environmental Accounting.
4. Analyse the rationale of the New Accounting Framework and the Corporate Responsibility Approach.
5. Evaluate the impact of corporate activities at the National and Global Levels.

SYLLABUS OF DSE-6.8

Unit 1: Conventional Accounting and Shift in Paradigm (6 hours)
Traditional Framework of Accounting, Limitations with traditional framework of Accounting, Shift in Paradigm,

Increasing awareness of Environmental Issues. Rationale for Environmental Accounting. Importance of environmental accounting in sustainable development.

Unit 2: Environmental Costs (9 hours)
Different Levels of Environmental Costs, Components of Environmental Costs, Externalities, Costs of Externalities, True Cost and Hidden Cost and Life Cycle Assessment, Role of Environmental Costing, Environmental cost-benefit analysis, Energy and Environmentally Differentiated Accounting

Unit 3: Corporate Environmental Accounting (9 hours)
Corporate Environmental Accounting, Environmental Accounting Methods, Environmental Management Accounting and Environmental Audit. Carbon Accounting, Carbon footprint calculation and reduction strategies. Environmental Performance Indicators

Unit 4: Corporate Reporting on Environmental Impact (9 hours)
Triple Bottom Line Reporting, CSR Reporting and Green Accounting, SEBI Guidelines on Business Responsibility & Sustainability Reporting. Need & Significance of Environmental Reporting Standards, GRI, SASB, BR&SR. Green Energy Stocks & ESG Index

Unit 5: National and Global Environmental Accounting (12 hours)
National Environmental Accounting, System of Integrated Environmental and Economic Accounts (SEEA), Economy-wide material flow accounts, Environmental protection expenditure accounts, Assessment of Environment Cost and Benefits, Green Accounts and Green GDP, Greenhouse Gas Emissions; Global Environmental Accounting, Sustainable Economic Development and Environmental Kuznets Curve.

Exercises:
The learners are required to:

1. Prepare a small report on conventional accounting and shift in a paradigm based on the research papers.
2. Identify the different types of environmental costs based on the financial statements of selected companies.
3. Give a presentation on corporate environmental accounting by collecting information from the annual reports of select companies.
4. Evaluate the impact of the Corporate Responsibility Approach for Reporting on the financial performance of the select national companies based on their financial statements.
5. Make a comparative analysis of National and Global Environmental Accounting based on the policies adopted by selected national and global companies.

Suggested Readings:

- Bhanumurthy, K. V. (2011). *Business ethics and corporate responsibility - about social responsibility standards.* In R. Mishra, & J. Kiranmai, Corporate Governance in Asia. (pp. 236-247). Delhi, India: Allied Publishers Pvt. Ltd.
- Bhanumurthy, K. V., Bhandari, V., & Pandey, V. (2014). *Does Indian stock market encourage socially responsible companies?* Manthan Journal of Commerce and Management, 1(1), 1-34.
- Callan, S. J., & Thomas, J. M. (2013). *Environmental economics and management: theory, policy, and applications*. Dryden Press.
- Jha, R., & Bhanumurthy, K. V. (2009). *Environmental sustainability – consumption approach.* London, United Kingdom: Routledge.
- Naik, I. C. (2016). *Environmental movements, state and civil society.* Jaipur, India: Rawat Publications.
- Odum, H T. (1995). *Environmental accounting: energy and environmental decision making.* United States: Wiley.

- Porchelvi, A. (2020). *Environmental reporting and company characteristics: a study of indian companies.* International Journal of Research and Analytical Reviews, 7(1), 429-440.
- Porchelvi, A. (2019). *Environmental reporting practices: an analysis of indian companies.* EPRA International Journal of Economic and Business Review, 7(10), 83-93.
- Robbins, P., Hintz, J., & Moore, S. A. (2022). *Environment and society: a critical introduction.* United States: John Wiley & Sons.
- Trivedi, V., & Shrivastava, V. K. (2011). *Environment and social concerns.* Delhi, India: Concept Publishing Co.
- Verma, M. K. (2018). *Globalisation, environment and social justice: perspectives, issues and concerns.* Delhi, India: Routledge.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

General Elective Course- 6.1 (GE-6.1): Leadership Development

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE -6.1– Leadership Development	4	3	1	0	Pass in Class XII	NIL

Learning Objectives

The course aims to create an understanding of the various leadership theories amongst the upcoming leaders in order to decide as to which style of leadership they should follow in numerous situations that they might encounter in their careers or personal lives.

Learning outcomes

After completion of the course, learners will be able to:

1. Describe the meaning of the term leadership and various theories of leadership.
2. Interpret the various situations and decide the style of leadership based on the situation.
3. Discuss the theories of culture and its impact on leadership.
4. Recognise the concept of E Leadership in pandemic.
5. Analyse styles of several leaders and demonstrate qualities of a good leader.

SYLLABUS OF GE-6.1

Unit 1: Introduction (9 hours)

Meaning of Leadership, definitions of leadership, significance of leadership, qualities of a leader, difference between leadership and management, basic styles of leadership – autocratic, democratic, laissez faire (their meaning, features, advantages, disadvantages and suitability), Rensis Likert styles of management, Tanenbaum and Schmidt Model.

Unit 2: Theories of Leadership (14 hours)

Traditional Theories-Great Man Theory, Trait Theory, **Behavioural Theories**- Ohio Studies, Michigan Studies, Managerial Grid, **Contingency theories-** Fiedler's Theory, Hersey and

Blanchard Situational Model, Path Goal Theory, Transformational Leadership, Transactional Leadership, Charismatic Leadership, Servant Leadership, Ethical Leadership.

Unit 3: Culture and Leadership (7 hours)

Trompenaars Cultural Dimensions, Hofstede's study on culture, Hall's Cultural Theory, GLOBE Model: Global Leadership and organisational Behaviour Effectiveness, organisation Culture and Leadership, OCTAPACE profile by Uday Parekh - Openness, Collaboration, Trust, Autonomy, Proactive, Authenticity, Confrontation, Experimentation.

Unit 4: E Leadership (7 hours)

Meaning, definition, need and significance especially pre covid, during covid and post covid, social media and leadership, Use of social media and video conferencing tools for electronically connecting the team and the leaders, e-leadership and collaborative tools. Use of technology in providing e-leadership.

Unit 5: Contemporary Leaders (8 hours)

Cases on contemporary leaders like Narendra Modi, Indra Nooyi, Ratan Tata, Narayan Murthy.

Exercises:
The learners are required to:

1. Identify a Leader of your choice, prepare and present a report highlighting the important traits that have contributed to the effectiveness of that Leader. (Should be done in a team)
2. Watch movie screening of movies like Mission Mangal, Lagan, Chak De, Rock On, Lakshay, Super 30 etc, open house for discussing the movie and a report/ presentation on lessons learnt from the movie.
3. Administer Fidler's Least Preferred Coworker scale in the class on all the students to make sure that they understand the theory well.
4. Administer Managerial Grid questionnaire in order to help students assess their style of leadership.
5. Present how E leadership has changed from pre corona period to during corona period to post corona period
6. Practice using collaborative tools online like google docs, mind meister etc.
7. Demonstrate the qualities of good leadership with the help of example.

Suggested Readings:

- A Handbook of Leadership Styles. (2020). United Kingdom: Cambridge Scholars Publishing.
- Chhabra, T. N. (2022). *Business organisation and management.* (2nd revised ed.). Delhi, India: Sun India Publications.
- Day, D. V. (2014). *The oxford handbook of leadership and organisations.* (1st ed.). Oxford, New York, United States: Oxford University Press.
- Griffin, R. W., Phillips, J. M., & Gully, S. M. (2017). *Organisational Behavior: Managing People and Organisations*. Cengage Learning.
- Gupta, C. B. (2022). *Business organisation & management.* Delhi, India: Sun India Publication.

- Hughes, R. L., Ginnett, R., & Gordon, C. (2019). *Leadership: enhancing the lessons of experience.* (9th ed.). Mcgraw Hill Education.
- Hersey, P. K., Blanchard, D., & Johnson, D. (2013). *Management of Organisational Behavior: Leading Human Resources.* Pearson Education.
- Koontz, H., & Weihrich, H. (2012). *Essentials of management: an international and leadership perspective.* (9th ed.). McGraw Hill Education.
- Mittal, R. (2015). *Leadership: personal effectiveness and team building.* (2nd ed.). Uttar Pradesh, India: Vikas Publishing House Pvt. Ltd.
- Nooyi, I. K. (2021). *My life in full: work, family, and our future.* Penguin.
- Northouse, P. (2018). *Leadership: theory and practice.* (8th ed.). California, United States: SAGE Publications Inc.
- Robbins, S. P., Judge, T. A., & Vohra, N. (2018). *Organisational behaviour.* (18th ed.). Pearson.
- Wang, X., Wei, X., Van Wart, M., McCarthy, A., Liu, C., Kim, S., & Ready, D. H. (2023). *The role of E-leadership in ICT utilization: A project management perspective*. Information Technology and Management, 24(2), 99-113.
- Willink, J. (2020). *Leadership strategy and tactics: field manual.* New York, United States: Macmillan Publishers.

Additional Resources:

- https://repository.iimb.ac.in/bitstream/2074/11692/1/Reddy_VKPA_2011_Vol.36_Iss.3.pdf
- https://icmrindia.org/casestudies/Case_Studies.asp?cat=Leadership%20and%20Entrepreneurship
- https://hbr.org/2010/03/leadership-lessons-from-india
- https://hbr.org/2018/04/how-humble-leadership-really-works

NOTE: The students are advised to read the articles regularly from HBR and other news items related to Leadership for class discussions and in order to be up to date with the contemporary industry practices.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

General Elective Course- 6.2 (GE-6.2): Data Visualisation

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE 6.2- Data Visualisation	4	2	0	2	Pass in Class XII	Nil

Learning Objectives

The course helps students learn the technique to visualise data and to gain hands-on experience with creating visualisations of financial data.

Learning outcomes

After the completion of the course, the learners will be able to:

1. Recognise the concept of data visualization.
2. Develop data visualization using spreadsheets.
3. Explain effective visualisations and dashboard using spreadsheet.
4. Analyse financial data.
5. Use Tableau public.

SYLLABUS OF GE-6.2

Unit 1: Introduction (3 hours)

Concept of Data Visualisation, Significance and role, Functions of data analyst, Types of charts, Choose an appropriate visualisation based on your data

Unit 2: Data Visualisation using Spreadsheet (4 hours)

Data Visualizations using Conditional Formatting, Sparklines and Number Formats, Charts - line charts, pie charts, scatter charts, area charts, column and bar charts, histogram, Specialized Charts: hierarchical charts, waterfall, funnel, stock charts and combo charts.

Unit 3: Creating Visualisation and Dashboard using Spreadsheet (7 hours)

Working with pivot tables and charts, Slicer, Timeline, Power Query, Power Pivot, Power View, Power Map.

Unit 4: Financial Data Analysis Using Power BI (8 hours)

Introduction to Power BI, Possible Data Sources, Cleansing, Transforming and Loading Data, Add Columns, Remove Columns, Split and Rename column and Change data types, Merge data, Append data, Create report and Power BI Dashboard using visualisation controls, Publish report and export it to PDF.

Unit 5: Working with Tableau Public (8 hours)
Introduction, Loading the Data and Preparing the Sheets, Bar and Line Combination Chart, Horizontal Bars Chart, Candlesticks and stock markets, Creating the Tableau Dashboard, and Adding a Brand Filter and Interpretation

Practical Exercises (60 hours):
The learners are required to:

1. Discuss the significance of data visualisation.
2. Use spreadsheets to create data visualisation.
3. Create dashboards for MIS.
4. Export and share dashboards and visualisations with the help of example
5. Perform financial data analysis using power BI.
6. Practice quantitative analysis through the help of Spreadsheets, Power BI, and Tableau.
7. Prepare a project on how to create the Tableau Dashboard.

Suggested Readings:

- Ferrari, A., & Russo, M. (2017). *Analyzing data with microsoft power bi and power pivot for excel.* PHI.
- Powell, B. (2017). *Microsoft power bi cookbook.* Packt Publishing Limited.
- Brown, L. (2020). *Tableau desktop cookbook.* O'Reilly Media.
- Sleeper, R. (2018). *Practical tableau.* O'Reilly Media.

Note:
The General Purpose Software referred in this course will be notified by the University Department every three years. If the specific features, referred to in the detailed course above, are not available in that software, to that extent it will be deemed to have been modified.
Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

General Elective Course- 6.3 (GE-6.3): Logistics Management

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE-6.3 Logistics Management	4	3	1	0	Pass in Class XII	NIL

Learning Objectives:

The course aims to acquaint the student with the concept, tools and importance of Distribution logistics in Marketing.

Learning Outcomes: After completion of the course, learners will be able to :

1. Describe the basics of logistics management.
2. Discuss the distribution channels and their importance.
3. Evaluate the various modes of transportation for distribution.
4. Demonstrate the basic knowledge about the various tools for operational efficiency.
5. Analyse how the advanced technology used in distribution logistics.

SYLLABUS OF GE-6.3

Unit 1 Introduction to Logistics (5 hours)

Introduction to Logistics: Concept, Evolution, Components and Process. Dimensions of Logistics – Micro and Macro; inbound, outbound, Value-Added Role of Logistics.

Unit 2: Distribution Strategy (11 hours)

Distribution Strategy – Meaning, Marketing channels: nature and importance, conventional and emerging channels, role of online sales and supply chain; Designing strategic distribution network; Factors influencing distribution network.

Unit 3: Transportation and Warehousing Decision (9 hours)

Transportation and Warehousing Decision - Role and importance. Factors influencing transportation and warehousing decisions. Importance of Multimodal Transport and containerization. Cost effectiveness of various modes of transport and types of warehouses.

Unit 4: Operational Efficiency and its tools (11 hours)

Operational Efficiency and its tools: Inventory Management: introduction, objectives, types and importance, EOQ and JIT approach. Third and fourth-party logistic outsourcing– challenges and future directions.

Unit 5: Technology in Logistics (9 hours)

Overview of AI in Logistics, Robotics, Block Chain, Reverse Logistics, Re-engineering the supply chain, RFID, EDI, Bar coding.

Exercises:
The learners are required to:

1. Discuss case studies of firms for logistics management.
2. Analyse the impact of transportation modes.
3. Critically examine the role of transportation modes for distribution.
4. Comment on functional applications – HR, marketing, operations, finance, IT.
5. Explain the role of artificial intelligence in distribution logistics.

Suggested Readings:

- Bloomberg, D. J., & Lemay, S. (2015). *Logistics.* (8th ed.). India: Pearson Education India.
- Bozarth, C. C., & Handfield, R. B. (2015). *Introduction to operations and supply chain management.* (5th ed.). Pearson Education.
- Chopra, S., & Meindl, P. (2007). *Supply chain management: strategy, planning and operation.* (6th ed). India: Pearson Education.
- Hult, M. G., Closs, D., & Frayer, D. (2014). *Global supply chain management: leveraging processes, measurements, and tools for strategic corporate advantage.* United States: McGraw Hill Ltd.
- Shapiro, J. F. (2007). *Modelling the supply chain.* (2nd ed.). India: Cengage India Pvt. Ltd.
- Simchi-Levi, D., Kaminsky, P., Simchi-Levi, E., & Shankar, R. (2008). *Designing and managing the supply chain.* (3rd ed.). India: Tata McGraw-Hill Education.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

General Elective Course- 6.4 (GE-6.4): E-Filing of Returns

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE 6.4 – E-Filing of Returns	4	2	0	2	Pass in Class XII	Nil

Learning Objectives

The course aims to equip students with the practical skills required for filing of returns under Income Tax Laws.

Learning Outcomes: After completing of the course, learners will be able to:

1. Examine the basic concepts of income tax applicable to an individual assessee.
2. Analyse the provisions when business or professional income is computed on an estimated basis.
3. Demonstrate e filing of return.
4. Analyse the provisions of TDS.
5. Demonstrate e filing of TDS returns.

SYLLABUS OF GE-6.4

Unit 1: Income tax: An overview (5 hours)

Incomes taxable under different heads, deductions available from gross total income, computation of total income and tax liability of individuals, PAN and due date of filing of income tax return; Provisions related to advance payment of tax; New tax regime for individuals; Reliefs for an individual.

Unit 2: Maintenance of accounts, audit, and taxation on presumptive basis (7 hours)

Provisions of maintenance of accounts by certain persons carrying on profession or business [Sec.44AA]; Provisions of audit of accounts of certain persons carrying on business or profession [Sec.44AB]; Special provision for computing profits and gains of business on presumptive basis [Sec.44AD]; Special provision for computing profits and gains of profession on presumptive basis [Sec.44ADA]; Special provision for computing profits and gains of business of plying, hiring or leasing goods carriages [Sec. 44AE].

Unit 3: e-Filing: Conceptual framework and filing of Income Tax Returns (9 hours)

Meaning and merits of e-Filing; Filing of income tax returns in ITR-1, ITR-2, ITR-3, ITR-4, ITR-5 and ITR-U.

Unit 4: Tax Deducted at Source (4 hours)

Provisions relating to TDS; Schedule for deposit of TDS; Schedule for submission of TDS returns; Exemption from TDS: Form 13, 15G, 15H; Form 16, AIS.

Unit 5: e-Filing of TDS returns (5 hours)

Prescribed forms for filing of TDS returns; Practical workshop on e-filing of TDS returns [Form 24 Q and Form 26 Q].

Practical Exercises (60 hours):

The learners are required to:

1. Discuss basic concepts of Income taxable under Income-tax Act, 1961 from the official website of Government of India.
    a. Explain relevant provisions to understand basic concepts of income tax applicable to an individual assessee.
    b. Give hands-on simulating exercise relating to due dates and advance payment of income tax.
2. Refer to the Finance Act to know about the amendments done in various provisions of the Income-tax Act, 1961.
3. Explain the process of e-filing by showing the video e-filing 2.0 guided tour on the official website of Income Tax department, Government of India.
4. Do hands-on training to furnish Income Tax Return (ITR) on the official e-filing website of the Government of India i.e., www.incometax.gov.in.
5. Do hands-on training to furnish TDS returns at https://www.incometax.gov.in/iec/foportal/
6. Demonstrate e filing of TDS returns.

Suggested Readings:

- Ahuja, G., & Gupta, R. (2021). *Systematic approach to income tax.* Delhi, India: Flair Publications Pvt.Ltd.

- Das, A. N,. & Agnihotri, M. (2022). *Computerised Accounting and E-Filing of Tax Returns.* Kolkata, India: Tee Dee Publications.
- Lodha, R. (2022). *Computerised Accounting and E-Filing of Tax Returns.* Kolkata, India: Lawpoint Publications.
- Mittal, N. (2022). *Concept building approach to income tax law & practice.* (1st ed.). Delhi, India: Cengage Learning India Pvt. Ltd.
- Panwar, V. & Mahajan, J. (2023). *Introduction to E-Filing of Returns (with practical workshops using Java and Excel utilities)*. Delhi, India: Scholar Tech Publication.
- Singhania, V. K., & Singhania, M. (2021). *Students' guide to income tax | University Edition.* (65th ed.). Delhi, India: Taxmann Publications Private Limited.

Additional Resources:

- Income-tax Act, 1961
- www.incometaxindia.gov.in

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

SEMESTER-IV
B.Com

Discipline Specific Core Course- 4.1(DSC-4.1): Entrepreneurship & New Venture Planning

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Entrepreneurship & New Venture Planning DSC- 4.1	**4**	**3**	**1**	**0**	**Pass in Class XII**	**NIL**

Learning Objective:

This course aims at instituting entrepreneurial skills in the students by giving an overview of entrepreneurship and the competencies that are needed to become an entrepreneur. To enable students to explore and launch entrepreneurial ventures in their own areas of interest.

Learning Outcomes:

After completion of the course, learners will be able to:

1. Describe distinct entrepreneurial traits.
2. Recognise the process and nature of entrepreneurship.
3. Identify the different ways in which entrepreneurs manifest in start-ups.
4. Comprehend the entrepreneurial process for initiating new venture creation.
5. Design strategies for the successful implementation of innovative ideas of new ventures.

SYLLABUS OF DSC-4.1

Unit 1: Introduction (9 hours)

Concept and Definitions Entrepreneurship, Entrepreneurial Mind-set, Traits/Qualities of Entrepreneurs, Entrepreneurship process; Theories of entrepreneurship; Factors affecting the emergence of entrepreneurship; Role of an entrepreneur in economic growth as an innovator; Generation of employment opportunities; complementing and supplementing economic growth; Bringing about social stability and balanced regional development of industries.

Unit 2: Types of Entrepreneurs (9 hours)

Classification and Types of Entrepreneurs; Women Entrepreneurs; Social Entrepreneurship; Corporate Entrepreneurs, Family Business: Concept, structure, and kinds of family firms; Culture and evolution of family firm; Managing Business.

Unit 3: Business plan (9 hours)

Creating Entrepreneurial Venture: Generating Business ideas, Team building, Sources of Innovation, Creativity, and Entrepreneurship; Challenges in managing innovation; Entrepreneurial strategy and Scaling up, Business planning process; Drawing business plans; Failure of the business plan.

Unit 4: Mobilizing Resources (9 hours)

Resource Mobilization for entrepreneurship: Resources mobilization, types of resources, Process of resource mobilization, Arrangement of funds; writing a Funding Proposal, Traditional sources of financing, Venture capital, Angel investors, Business Incubators.

Unit 5: Managerial Aspects of Business and Government Initiatives (9 hours)

Managing finance; Understanding capital structure; organisation structure and management of human resources of a new enterprise; Marketing-mix; Management of cash; Relationship management; Cost management, Government initiatives for promoting entrepreneurship.

Exercises:
The learners are required to:

1. Discuss various cases of entrepreneurship and distinguish between different entrepreneurial traits.
2. Prepare a business plan for a start-up venture in a rural setting after analyzing the various facets of the rural economy.
3. Analyse and present the key initiatives of the government of india for promoting entrepreneurship in the country in a business area.
4. Analyse and interpret case study on business philosophy at Tata Group, Aditya Birla Group, Reliance Industries Limited, and similar organisations.
5. Participate in business plan competition-designing a business plan proposal and identifying alternative sources of raising finance for the start-ups.

Suggested Readings:

- Barringer, B.R., & Ireland, R.D. (2015). *Entrepreneurship*. Pearson.
- Gersick, K. E., Davis, J. A., Hampton, M. M., & Lansberg, I. (1997). *Generation to generation: Life cycles of the family business*. Boston, United States: Harvard Business School Press.
- Hisrich, R.D., Manimala, M.J., Peters, M.P., & Shepherd, D.A. (2013). *Entrepreneurship*. Delhi, India: Tata McGraw Hill.
- Kuratko, D.F., & Rao, T. V. (2012). *Entrepreneurship: A South-Asian Perspective* .Cengage.
- Shukla, M.B. (2007). *Entrepreneurship and Small Business Management.* Allahabad, India: Kitab Mahal Publishers.
- Nicholls, A. (Ed.). (2006). *Social entrepreneurship new models of sustainable social change*. London: United Kingdom: Oxford University Press.

- Hishrich, R.D., & Peters, M.P.(2017), *Entrepreneurship*. Delhi, India: Tata McGraw Hill.
- Scarborough, N. M., Cornwall, J. R., & Zimmerer, T. (2016). *Essentials of entrepreneurship and small business management*. Boston, United States: Pearson.
- Shankar, R. (2012). *Entrepreneurship Theory and Practice.* Delhi, India: Tata McGraw Hill.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

Discipline Specific Core Course- 4.2(DSC-4.2): Cost Accounting

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Cost Accounting **DSC- 4.2**	**4**	**3**	**1**	**0**	**Pass in Class XII**	**NIL**

Learning Objective: The course aims to develop understanding among learners about contemporary cost concepts and rational approach towards cost systems and cost ascertainment. The course also aims to provide knowledge about various methods of cost determination under specific situations and to acquire the ability to use information determined through cost accounting for decision making purposes.

Learning Outcomes:

After completion of the course, learners will be able to:

1. Discuss and analyze the different cost concepts.
2. Determine various components of cost of production.
3. Compute unit cost and total cost by preparing a cost statement.
4. Compute employee cost, employee productivity and employee turnover.
5. Determine cost for different industries using job costing, process costing, contract costing and service costing.

SYLLABUS OF DSC-4.2

Unit 1: Introduction (11 hours)

Meaning, scope, objectives and advantages of cost accounting; Difference between financial and cost accounting. Cost concepts and classifications, Overview of elements of cost and preparation of Cost Sheet for manufacturing sector. Role of a cost accountant in an organisation. Cost Accounting Standards (CAS – 4 on Cost of Production / Acquisition / Supply of Goods / Provision of Services) and (CAS – 22 on Manufacturing Cost) as amended from time to time.

Unit 2: Elements of Cost : Material and Employee Cost (9 hours)

(a) Materials: Accounting and control of purchases, storage and issue of materials. Techniques of inventory control, Periodic and perpetual systems of maintaining inventory records, an overview of methods of pricing of materials issues — FIFO, LIFO and Weighted Average price method, Valuation of materials as per CAS – 6 on Material Cost, Accounting treatment of losses— Wastage, scrap, spoilage and defectives

(b) Employee (Labour) Cost: Accounting and Control of employee cost. Time-keeping and time-booking. Employee turnover: meaning, methods of measurement and accounting treatment. Concept and treatment of idle time and overtime. Methods of wage payment and Incentive schemes- Halsey, Rowan, Taylor's differential piece wage.

Unit 3: Elements of Cost: Overheads (9 hours)

Classification, allocation, apportionment and absorption of overheads, Under and over- absorption of overheads; Capacity Levels and Costs; Treatments of certain items in costing like interest and financing charges, packing expenses, bad debts, research and development costs.

Unit 4: Methods of Costing (9 hours)

Job costing, Contract costing, Process costing (including process losses, valuation of work-in-progress). Service costing (only transport)

Unit 5: Cost Accounting Book-Keeping Systems (7 hours)

An overview of integral and non-integral systems; Reconciliation of cost accounting profit with financial profits.

Notes :

1. Treatment of various items of cost should be as per the relevant cost Accounting Standards (CAS) issued by Institute of Cost Accountant of India.
2. Use of spreadsheet software should be encouraged for the basic calculation.

Exercises:

The learners are required to:

1. Prepare a cost statement for manufacturing and/ or service organisation.
2. Identify the items to be included and excluded in the material and labour costs.
3. Visit a factory and analyse different elements of overhead costs.
4. Visit industries to understand process costing and prepare a cost statement for any
5. Process industry.
6. Suggest a suitable cost system for different types of services organisation.

Suggested Readings:

- Arora, M.N. (2021). *Cost Accounting-principles and practice*. Delhi, India: Vikas Publishing House.
- Goel, R. K., & Goel, I. (2019). *Concept Building Approach to Cost Accounting for B.Com (Hons.)/B.Com.* Delhi, India: Cengage Publications.
- Gupta, S., R., & Prabhakar, R. R. (2021).*Cost Accounting for B.Com*. Delhi, India: Sultan Chand.
- Maheshwari, S. N., & Mittal, S. N. (2020). *Cost Accounting. Theory and Problems.* Delhi, India:

Shri Mahaveer Book Depot.
- Maheshwari, S. N., Mittal S. K., & Mittal, S.N. (2021). *Cost Accounting: Principles & Practice*. Delhi, India: Shree Mahaveer Book.
- Mitra, J. K. (2021). *Cost and Management Accounting*. Delhi, India: Oxford University Press.
- Nigam, B. M. L., & Jain, I. C. (2023). *Cost Accounting: Principles and Practice*. Delhi, India: PHI Learning.
- Singh, S. (2019). *Fundamentals of Cost Accounting*. Allahabad, India: Kitab Mahal.
- Tulsian, P.C. (2020). *Cost Accounting*. Delhi, India: S.Chand.

Additional Resources:

- Drury, C. (2018). *Management and Cost Accounting*. China: Cengage.
- Horngren, C. T., Foster, G., & Dattar, S. M. (2017).*Cost Accounting: A Managerial Emphasis*. Delhi, India: Prentice Hall of India Ltd.
- Jain, S.P., & Narang, K.L. (2021). *Cost Accounting: Principles and Methods*. Jalandhar, India: Kalyani Publishers.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

Discipline Specific Core Course- 4.3 (DSC-4.3): International Business

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
International Business **DSC- 4.3**	**4**	**3**	**1**	**0**	**Pass in Class XII**	**NIL**

Learning Objectives:

The course aims to impart the core body of knowledge in international business to the students. The course would introduce students to the international trading and investment environment and also create awareness about emerging issues such as outsourcing and sustainable development in the context of international business.

Learning Outcomes:

After completion of the course, learners will be able to:

1. Analyse the process of globalization and its impact on growth of international business.
2. Evaluate the changing dynamics of the diverse international business environment.
3. Analyse the theoretical dimensions of international trade as well as intervention measures adopted.
4. Analyse the significance of different forms of regional economic integration and the role played by various international economic organisations.
5. Evaluate the forms of foreign direct investment and analyse benefits and costs of FDI.

SYLLABUS OF DSC-4.3

Unit 1: **Introduction to International Business (7 hours)**
Globalization - concept, significance and impact on international business; international business contrasted with domestic business; complexities of international business; internationalization stages and orientations; modes of entry into international businesses.

Unit 2: International Business Environment (11 hours)
Role of political and legal systems in international business; cultural environment of international business; implications of economic environment for international business.

Unit 3: International Trade (9 hours)
Theories of international trade – Theory of Absolute Advantage theory, Theory of Comparative Advantage, Factory Proportions theory and Leontief paradox, Product Life Cycle theory, Theory of National Competitive Advantage; Instruments of trade control.

Unit 4: Regional Economic Integration and International Economic Organisations (9 hours)
Forms of regional economic integration; Integration efforts amongst countries in Europe, North America and Asia: EU, USMCA, and SAARC; Cost and benefits of regional economic integration.
International Economic Organisations: WTO- functions, structure and scope; World Bank and IMF

Unit 5: International finance and contemporary issues in IB (9 hours)
Types of FDI - Greenfield investment, Mergers & Acquisition, strategic alliances; benefits and drawbacks of FDI
Overview of Exchange Rate systems
Contemporary issues in international business: Outsourcing and its potential for India; international business and sustainable development.

Exercises:
The learners are required to:

1. Demonstrate through case studies the suitability of each mode of entry in international business.
2. Conduct a comparative analysis of countries which are different in terms of political/legal/economic/cultural environment to understand the impact of these dimensions on international business.
3. Analyse data on trade of select countries to examine if trade patterns conform to different trade theories.
4. Conduct an in-depth study of a regional economic arrangement and evaluate its costs and benefits by applying the theoretical knowledge gained during the course
5. Make presentations on developments in contemporary issues affecting international business such as sustainable development.

Suggested Readings:

- Bennett, R. (2006). *International Business*. Delhi, India: Pearson.
- Cavusgil, S. T., Knight, G., & Riesenberger, J. (2006). *International Business: Strategy, Management and the New Realities*. India: Pearson India.
- Hill, C.W.L., & Jain, A. K. (2011). *International Business*. Delhi, India: Tata McGraw Hill.
- Chaturvedi, D.D., Jindal, D., & Kaur, R. (2022). *International Business*. Delhi, India: Scholar Tech Press.
- Daniels, J. D., Radenbaugh, L. H., & Sullivan, D. P. (2016). *International Business*. Pearson Education.
- Griffin, R. W., & Pustay, M. W. (2014). *International Business - A Managerial Perspective*. New Jersey, United States: Prentice Hall.
- Joshi, R.M. (2009). *International Business*. Delhi, India: Oxford University Press.
- Menipaz, E., Menipaz A., & Tripathi S.S. (2017). *International Business: Theory and Practice.* Delhi, India: Sage Publications India Pvt. Ltd.

Additional Resources

- *Economic Survey, various issues.*
- *RBI Report on Currency & Finance, various issues.*
- *World Investment Reports, UNCTAD*
- *Websites: RBI, IMF, WORLD BANK, WTO.*
- *WTO Annual reports*

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

SEMESTER-V
B.Com

Discipline Specific Core Course- 5.1(DSC-5.1): Income Tax Law and Practice

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Income Tax Law and Practice DSC- 5.1	4	3	0	1	Pass in Class XII	NIL

Learning Objectives

The course aims to impart knowledge of law pertaining to levy of income tax in India.

Learning Outcomes:

After completion of the course, learners will be able to:

1. Describe the basic concepts of income tax and determine the residential status of different persons.
2. Compute income under the heads 'salaries' and 'income from house property'.
3. Compute income under the heads 'profits and gains of business or profession' and 'capital gains'.
4. Compute income under the head 'income from other sources' and recognise the provisions relating to income of other persons included in assessee's total income
5. Discuss the various deductions and computation of total income and tax liability of individuals.

SYLLABUS OF DSC-5.1

Unit 1: Introduction (9 hours)

Basic concepts: Income; Agricultural income, Person, Assessee, Assessment year, Previous year, Gross Total Income, Total income, Maximum marginal rate of tax and Permanent Account Number (PAN); Residential status: Scope of total income on the basis of residential

Unit 2: Computation of Income from Salaries and House Property (11 hours)

Income from Salaries; Income from House Property.

Unit 3: Computation of Income from Business or Profession and Capital Gains (11 hours)

Profits and gains of business or profession; Capital gains.

Unit 4: Income from Other Sources, Clubbing of Income and Set-off (7 hours)

Income from other sources; Income of other persons included in assesses total income; Aggregation of income and set-off and carry forward of losses.

Unit 5: Deductions and Computation of Total Income and Tax Liability (7 hours)

Deductions from gross total income; Rebates and reliefs; Computation of total income and tax liability of individuals (On-line filing of Returns of Income & TDS).

Practical Exercises:

The learners are required to:

1. Prepare a case study for a person resident but not ordinarily resident in India having income under the head other sources of income.
2. Prepare a presentation indicating the impact of alternative tax regime structure on the tax liability of an assessee.
3. Present a hypothetical case wherein the impact of change in the capital gains taxes are reflected as per the relevant Financial Act.
4. Learn about various tax services available on the official website of Government of India.
5. Prepare a list of tax deductions available in case of a senior citizen.
6. Explore and attempt on-line filing of Returns of Income & TDS on Income tax e-filing website under ITR-1 and ITR-2.

Suggested Readings:

- Ahuja, G., & Gupta, R. (2022). *Simplified Approach to Income Tax.* Delhi, India: Flair Publications Pvt. Ltd.
- Bandopadhayaya, S. B. (2019). *Taxation I, II.* Delhi, India: Oxford University Press.
- Mittal, N. (2019). *Concept Building Approach to Income Tax Law & Practice.* Delhi, India: Cengage Learning India Pvt. Ltd.

● Singhania, V. K., & Singhania, M. (2021). *Students' Guide to Income Tax, University Edition.* Delhi, India: Taxmann Publications Pvt. Ltd.

Additional Resources

- Current Tax Reporter. Jodhpur, India: Current Tax Reporter.
- Income Tax Reports. Chennai, India: Company Law Institute of India Pvt. Ltd.
- Corporate Professionals Today. Delhi, India: Taxmann.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

Discipline Specific Core Course- 5.2(DSC-5.2): Business Economics

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Business Economics **DSC- 5.2**	**4**	**3**	**1**	**0**	**Pass in Class XII**	**NIL**

Learning Objectives

The course aims to acquaint the learners with Microeconomics and its applications.

Learning Outcomes:

After the completion of the course, the learners will be able to:

1. Examine the nature and scope of business economics.
2. Analyse how consumers try to maximize their satisfaction by spending on different goods.
3. Evaluate the relationship between inputs used in production and the resulting outputs and costs.
4. Analyse and interpret various facets of and pricing under different market situations.
5. Discuss the contemporary issues and applications in micro economics.

SYLLABUS OF DSC-5.2

Unit 1: Introduction to Business Economics (5 hours)

Nature and scope of Business Economics, Demand and Supply: Meaning, law, Individual Vs Market, Movement Vs Shift, Market equilibrium. Elasticity of Demand: Price, income and cross elasticity. Measurement of elasticity of demand: outlay and percentage method. Elasticity of supply: concept and measurement (Percentage method).

Unit 2: **Consumer Behaviour (11 hours)**

Cardinal Vs Ordinal Utility, Indifference curves: features, budget line, consumers equilibrium, ICC and Engels curve, PCC and derivation of demand curve, Income and substitution effects of price change (normal, inferior and giffen goods), Applications: effect of interest rates on household savings, lumpsum subsidy Vs excise subsidy.

Unit 3: Production and Cost (11 hours)

Production function: TP, AP and MP, Law of Variable proportions. Isoquants: properties, optimal combination of resources, expansion path and returns to scale.

Cost: Different cost concepts, Derivation of short run and long run cost curves (LAC and LMC), Economies and Diseconomies of scale.

Unit 4: Market Structures (11 hours)

Perfect competition: features, equilibrium under short run and long run, derivation of supply curve under short run and long run.
Monopoly: features, equilibrium under short run and long run, absence of supply curve, Price discrimination: degrees, conditions and dumping.
Monopolistic competition: features, product differentiation and excess capacity and equilibrium.
Oligopoly: Collusive and non- collusive: Cournot's model, Kinked demand curve, Cartels (OPEC and CIPEC)

Unit 5: **Contemporary Issues and applications (7 hours)**

Rent control, Minimum wages, Individual supply curve of labour, Peak load Pricing, Prisoners' dilemma and Game Theory.

Exercises:
The learners are required to:

1. Apply the concept of elasticity of demand and supply in real life.
2. Analyse the impact of changing prices on consumption of necessities by a household.
3. Visit any manufacturing unit and study its production process and costing.
4. Analysis of OPEL as a case of a successful cartel.

5. Comment on contemporary issues and applications of income tax law

Suggested Readings:

- Baye, M., & Prince J. (2021). *Managerial Economics and Business Strategy.* (3rd ed.). New York, United States: McGraw Hill.
- Case, K. E., & Fair, R. C. (2017). *Principles of Economics.* (12th ed.). London, United Kingdom: Pearson Education.
- Deepashree (2021). *Business Economics.* Delhi, India: MKM Publisher.
- Gillespie, A., (2013). *Business Economics.* Oxford, United Kingdom: Oxford University Press. (2nd ed.)
- Gupta, G. S. (2011). *Managerial Economics.* Delhi, India: McGraw Hill (2nd ed.)
- Maddala, G. S., & Ellen, M. (2017). *Microeconomics Theory and Applications.* Delhi, India: Tata McGraw Hill.
- Mankiw, N. G., Ashwin A., & Taylor, M. P. (2019). *Business Economics.* United Kingdom: Cengage Learning.
- Miller, R. L. (1982). *Intermediate microeconomics: theory, issues, applications.* New York, United States: McGraw-Hill Companies.
- Pindyck, R., & Rubinfeld, D. (2017). *Microeconomics.* (8th ed.). London, United Kingdom: Pearson education.
- Salvator, D., & Rastogi S. K. (2016). *Managerial Economics: Principles and Worldwide Applications.*(8th ed.). Delhi, India: Oxford University Press.
- Samuelson, P. A., Nordhaus, W. D., Chaudhari, S., & Sen, A. (2019). *Economics (SIE).* (20th ed.). New York, United States: McGraw-Hill.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

Discipline Specific Core Course- 5.3(DSC-5.3): Management Accounting

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Management Accounting DSC- 5.3	4	3	0	1	Pass in Class XII	Studied DSC-4.2 (Cost Accounting)

Learning Objectives

The course aims to enable students to acquire knowledge of concepts, methods and techniques of management accounting for the purpose of managerial planning, control and decision making.

Learning Outcomes:

After completion of the course, learners will be able to:

1. Examine the conceptual framework of Management Accounting and identify the differences between various forms of accounting.
2. Analyse budgetary control system as a tool of managerial planning and control
3. Evaluate the standard costing system as a tool of managerial control.
4. Recognise the concept of marginal costing and cost-volume-profit analysis.
5. Analyse techniques of decision making.
6. Discuss the concept of responsibility accounting and performance measurement.

SYLLABUS OF DSC-5.3

Unit 1: Introduction to Management Accounting

Meaning, objectives, nature and scope of management accounting, Difference between different forms of accounting- Cost, Financial and Management accounting, Cost control and Cost reduction.

Unit 2: Budgetary Control and Standard Costing Systems

(a) Budgeting and Budgetary Control: Concept of budget, budgeting and budgetary control; objectives, merits and limitations; Functional Budgets; Fixed and Flexible budgeting; An overview of different approaches to budgeting (Zero base budgeting, Performance budgeting and Programme budgeting)

(b) Standard Costing and Variance Analysis: Meaning of standard cost and standard costing; advantages, limitations and applications; Variance Analysis – material, labour, overheads and sales variances. Control ratios.

Unit 3: Marginal Costing

Concept of marginal cost and marginal costing; Absorption versus Variable Costing: Distinctive features and income determination; Cost-volume-profit analysis; Break-even

Analysis-Statements, mathematical and graphical approaches; Profit-volume ratio, angle of incidence, margin of safety, key factor, determination of cost indifference point.

Unit 4: Decision Making

Steps in Decision making process. Concept of relevant costs. solving various short -term decision making problems using marginal costing and differential costing techniques – Profitable product mix, Acceptance or rejection of special/ export offers, Make or buy, Addition or elimination of a product line, sell or process further, operate or shut down and Pricing decisions

Unit 5: Performance Measurement

Responsibility Accounting: Concept, Significance, Different Responsibility Centres; Divisional Performance Measurement: Financial and Non-Financial measures;

Note: Spreadsheet may be used for doing basic calculations in Management Accounting and giving students subject related assignments for their internal assessment purposes.

Practical Exercises:

The learners are required to:

The learners are required to:

1. Discuss differences between various forms of accounting.
2. Prepare different types of budgets.
3. Apply the concept of zero base budgeting on a select firm by collecting relevant data.
4. Visit any manufacturing unit and study the relevance of marginal costing.
5. Compute variances and perform analysis.
6. Perform cost-volume-profit analysis.
7. Compute the foreign export sales price for a domestic firm engaged in manufacturing goods/services.
8. Evaluate various decision making techniques using case studies.
9. Identify the responsibility centres of a pharmaceutical industry.
10. Discuss case studies on divisional performance measurement.

Suggested Readings:

- Arora, M. N. (2019). *Management Accounting.* Delhi, India: Himalaya Publishing House.
- Goel, R. K. & Goel, I. (2019). *Concept Building Approach to Management Accounting for B.Com(Hons.).* Delhi, India: Cengage.
- Maheshwari, S. N. & Mittal, S. N. (2019). *Management Accounting.* Delhi, India: Shri Mahaveer Book Depot.
- Maheshwari, S. N., Maheshwari, S. K. & Maheshwari, S. K. (2021). *Principles of Management Accounting.* Delhi, India: Sultan Chand & Sons.
- Maheshwari, S. N. (2015). *Management Accounting and Financial Control.* Delhi, India: Sultan Chand & Sons.
- Shah, P. (2015). *Management Accounting.* Delhi, India: Oxford University Press.

- Singh, S. (2023). *Management Accounting.* Delhi, India: PHI Learning Pvt. Limited.
- Singh, S. K., & Gupta, L. (2021). *Management Accounting: Theory and Practice.* Delhi, India: A. K. Publications.
- Tulsian, P. C., & Tulsian, B. (2023). *Advanced Management Accounting.* Delhi, India: S. Chand.

Additional Readings:

- Drury, C. (2020). *Management and Cost Accounting.* China: Cengage.
- Horngren, C. T., Foster, G., & Dattar, S. M. (2002). *Cost Accounting: A Managerial Emphasis.* Delhi, India: Prentice Hall of India Ltd.
- Khan, M. Y., & Jain, P. K. (2021). *Management Accounting.* Delhi, India: Tata McGraw Hill Publishing Co.
- Usry, M. E., & Lawrence, H. H. (2010). *Cost Accounting: Planning and Control.* Nashville, United States: South Western Publishing Co.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

Discipline Specific Elective Course- 5.1(DSE-5.1): Organisational Behaviour

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Organization Behaviour DSE- 5.1	4	3	1	0	Pass in Class XII	NIL

Learning Objectives

The course aims to develop a basic understanding of the concept of organisational behaviour and its relevance in modern organisations. It will enable students to gain theoretical and practical knowledge along with desirable skills to become successful managers and effective employees in organisation.

Learning Outcomes:

After completion of the course, learners will be able to:

1. Demonstrate understanding of the basic concepts of organisational behaviour and their applicability in contemporary organisations.
2. Analyse the various means of managing people at the workplace.
3. Interpret the complex nature of human behaviour and group dynamics.
4. Critically evaluate leadership styles and strategies.
5. Discuss the ways to build supportive organisational culture

SYLLABUS OF DSE-5.1

Unit 1: Introduction (7 hours)

Organisational Behaviour: Concepts and Determinants; Emergence of organizational behaviour; Contributing disciplines of OB; OB models.

Unit 2: Individual Behavior (9 hours)

Foundations of Individual Behaviour; Personality- Type A and B, Big five personality types; Attitude - components, job related attitudes; Learning- concept, theories and reinforcement; Perception - concept, perceptual process, factors influencing perception; Values - concept and types: terminal values and instrumental values.

Unit 3: Communication and Motivation (11 hours)

Communication – Understanding Communication; Communication styles; Transactional Analysis (TA), Johari Window.

Motivation – Early Theories of motivation (Need Hierarchy, Theory X and Theory Y, Two Factors Theory); Contemporary Theories of motivation (Self-Determination Theory, Goal-setting Theory, Reinforcement Theory, Self-efficacy Theory).

Unit 4: Group Behaviour and Leadership (11 hours)

Group Behaviour - concept, types- group norms, group roles, and group cohesiveness;

Leadership - Concept and theories; Styles of leadership; Leadership continuum; Trait, Behavioural and Situational approach; Contemporary leadership issues.

Unit 5: Dynamics of Organisational Behavior (7 hours)

Organisational culture- concept and determinants; Organisational change- types of change, resistance to change, managing change; Stress- source, prevention and management of stress.

Exercises:

The learners are required to:

1. Evaluate personality type as a group activity.
2. Play a role on TA and JOHRI Window
3. Identify the innovative ways to manage counter-productive behavior
4. Study the various leadership styles opted in MNCs
5. Practice stress management techniques.

Suggested Readings:

- Luthans, F. (2017). *Organisational Behavior-An evidence based approach.* (12th ed.). McGraw-Hill Education.
- Pareek, U. (2014). *Understanding Organisational Behavior.* Delhi, India: Oxford University Press.
- Robbins, S. T., & Judge, T. A. (2019). *Essentials of Organizational Behaviour.* (14th ed.). London, United Kingdom: Pearson.
- Singh, A. K., & Singh, B. P. (2007). *Organisational Behavior.* Delhi, India: Excel Books Pvt. Ltd.
- Singh, K. (2015). *Organisational Behavior: Texts & Cases.* (3rd ed.). India: Pearson.

Additional Resources:

- Greenberg, J. (2015). *Behavior in Organizations.* (10th ed.). Delhi, India: Pearson Education India.
- Hersey, P. K., Blanchard, D., & Johnson, D. (2013). *Management of Organizational Behavior.* Pearson.

Note: The course combines learning through analysis and discussion of case studies and active participation in experiential exercises and simulations.

Discipline Specific Elective Course- 5.2 (DSE-5.2): Financial Markets and Institutions

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Financial Markets and Institutions DSE- 5.2	4	3	1	0	Pass in Class XII	NIL

Learning Objective: The course aims to provide students an overview of financial markets and financial institutions.

Learning Outcomes:

After completion of the course, learners will be able to:

1. Describe the components and functions of a financial system.
2. Analyse integration and linkages between different financial systems and describe how they operate.
3. Analyse the functioning and working of money and capital markets.
4. Evaluate the role of commercial banks.
5. Analyse role of insurance, mutual funds and NBFCs.

SYLLABUS OF DSE-5.2

Unit-I Introduction (9 hours)

An introduction to financial system– concept, functions, structure and components, inter-linkages between financial system and economic development; evolution of Indian financial system since 1951; recent reforms and developments in Indian financial system; financial stability; financial crisis – causes and policy response.

Unit-II: Financial Markets I: Money Markets (9 hours)

Money markets – functions, organisations and participants; money market instruments; role of central bank in money market; role of Reserve Bank of India in Indian money market.

Unit III: Financial Markets II: Capital Markets (9 hours)

Capital Markets - introduction, components, role and functions; equity market-methods of issue; debt market-concept, significance and classification; capital market instruments; primary and secondary markets- concept, similarities, differences; stock exchanges in India - NSE, BSE; Stock Indices: concept and major stock indices in India (NIFTY and BSE-SENSEX); SEBI and investor protection.

Unit-IV: Financial Institutions I: Commercial Banking (9 hours)

Commercial banking – introduction, classification and role in economy; asset liability management; non-performing assets; financial inclusion; recent developments including digital banking, universal banking.

Unit-V: Financial Institutions II: Insurance, Mutual Funds and NBFCs (9 hours)

Insurance - life and non-life insurance companies in India: public and private; Mutual Funds - introduction and their role in capital market development, types of mutual fund schemes (open ended vs close ended, equity, debt, hybrid schemes and ETFs; Non-banking Financial Companies (NBFCs)-role and types.

Exercises:

The learners are required to:

1. Identify one Indian and one global financial conglomerate and examine their genesis and evolution.
2. Compare the yield curve of India, another developing country and a developed country. Analyze the reasons for similarities and differences.
3. Pick two leading stock market indices in India, analyse their method of computation, reasons behind the differences and their implications.
4. Pick financial statements of any two Public Sector banks and compare their NPA
5. Pick any three mutual funds and make a comparison on the basis of its risk parameters, Portfolio holdings and historical return.

Suggested Readings:

- Balachandran, V. (2023). Securities Market & Regulations. Delhi, India: Sultan Chand & Sons.
- Bhole, L.M., & Mahakud, J. (2017). *Financial Institutions and Markets: Structure, Growth and Innovations.* Delhi, India: McGraw Hill Education.
- Bhole, L.M. (2009). *Financial Markets and Institutions.* Delhi, India: Tata McGraw Hill Publishing Company.
- Frederic S. M., & Stanley G. E. (2011). *Financial Markets and Institutions.* Prentice Hall.
- Goel, S. (2018). *Financial Markets, Institutions and Services.* Delhi, India: PHI learning
- Khan, M. Y. (2017). *Indian Financial System –Theory and Practice.* Delhi, India: Vikas Publishing House.
- Kohn (2013). *Financial Institutions and Markets.* Oxford, United Kingdom: Oxford University Press.
- Madura, J. (2018). *Financial Markets and Institutions.* Boston, United States: Cengage
- Pathak, B. V. (2018). *Indian Financial System: Markets, Institutions and Services.* Delhi, India: Pearson education.
- Saunders, A., & Cornett, M. M. (2007). *Financial Markets and Institutions.* Delhi, India: Tata McGraw Hill.

Additional References

- Annual Reports of Major Financial Institutions in India.
- BSE website www.bseindia.com
- National Stock Exchange website www.nseindia.com.
- NIFM, Department of Economic Affairs
- SEBI website www.sebi.gov.in
- Reserve Bank of India website www. rbi.org.in
- Economic Survey, www.indiabudget.gov.in
- Reports on Trends and Progress of Banking in India, RBI
- Reports on Currency and Finance, RBI

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

Discipline Specific Elective Course- 5.3 (DSE-5.3): Sustainability Marketing

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Sustainability Marketing DSE- 5.3	4	3	1	0	Pass in Class XII	NIL

Learning Objectives

This course aims to familiarize the students with the concept and process of sustainable marketing.

Learning Outcomes:

After completion of the course, learners will be able to:

1. Describe the need of sustainable marketing in view of environmental, legal and ethical aspects.
2. Recognise the opportunities for sustainable marketing strategies.
3. Identify the consumer behaviour for sustainable marketing
4. Demonstrate how sustainable marketing can be applied in marketing mix strategies.
5. Discover the case studies of legal framework for sustainable marketing.

SYLLABUS OF DSE-5.3

UNIT 1: Introduction (9 hours)

Sustainability- Concept, Issues, SDG Goals. Sustainability Marketing- Concept, Rationale, Evolution, Pillars of Sustainability Marketing, Linkage with SDGs.

Sustainability and Ethical Decision Making. Challenges of Practising SM- Sustainability and Profitability. Triple Bottom Line- An Overview.

Unit 2: Sustainability Marketing Opportunities (9 hours)

Sustainability Opportunities- Marketing Environment; Segmentation, Targeting and Positioning; Creating Value through Sustainability- Designing the Marketing Mix, Holistic Approach to Sustainability.

UNIT 3: Consumer Behaviour and Sustainability Marketing (9 hours)

Unsustainable Lifestyles, Dimensions of Sustainable Consumer Behaviour. Motives of adapting Sustainable Consumer Behaviour, Attitude-Behaviour Inconsistency in Sustainable Buying Decisions, Environmental Consciousness; Sustainable Consumption- Beliefs, Social Norms, Values, Cases of Mindful Consumption and Responsible Consumption.

Unit 4: Sustainability and Marketing Mix Decisions (9 hours)

Developing and Reinforcing Behaviour through 3 R's- Recycle, Reuse and Reduce.

Sustainable Products, Sustainable Branding and Packaging. Sustainable Pricing Decisions, Sustainable Marketing Communication, Sustainability and Promotion Mix Decision, Marketing Channels and Sustainable Supply Chain.

UNIT 5: Sustainability Legal Framework and its Implementation in India (9 hours)

An Overview of Legal Framework- Leading Cases and Developments. Role of Sustainable Marketing in Global Network.

Exercises:

The learners are required to:

1. Perform a role play (as a marketer and as consumers)
2. Make presentations of companies' case examples where marketers have adapted sustainable marketing mix strategies and how it impacted their business.
3. Represent their own behaviour for mindful and responsible behaviour.
4. Demonstrate how marketers can develop and reinforce consumer behaviour through 3 R's.
5. Find out the leading case studies where sustainable marketing has emerged as an important issue.

Suggested Readings

- Kotler, P. (2012). *Rethinking Marketing: Sustainable Marketing Enterprise in Asia.* (2nd ed.). Delhi, India: Pearson.
- Ross, G., Magnusson, M., & Merenda, M. (2012). *The Sustainable Business Case Book*. Washington DC, United States: FlatWorld.
- Frank-Martin, B., & Ken, P. (2012). *Sustainability Marketing: A Global Perspective.* (2nd ed.). Delhi, India: Willey publication.
- Richardson, N. (2020). *Sustainable Marketing Planning.* Delhi, India: Routledge, Taylor and Francis Group.
- Peterson, M. (2021). Sustainable Marketing: A holistic Approach. Delhi, India: Sage Publication Ltd.
- Carvill, M., Butler, G., & Evans, G. (2021). *Sustainable Marketing: How to Drive Profits with Purpose.* London, United Kingdom: Bloomsbury Business.
- Fuller, D. A. (1999). *Sustainable Marketing: Managerial-Ecological Issues.* London, United Kingdom: Sage Publications Inc.

Useful links:

1. https://open.umn.edu/opentextbooks/textbooks?term=sustainable+development&commit=Go
2. http://www.sacep.org/pdf/Reports-Technical/2002-UNEP-SACEP-Law-Handbook-India.pdf
3. https://moef.gov.in/wp-content/uploads/wssd/doc2/ch2.html
4. https://www.oecd.org/env/outreach/37838061.pdf

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

Discipline Specific Elective Course- 5.4 (DSE-5.4): Business Mathematics

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Business Mathematics DSE-5.4	4	3	0	1	Pass in Class XII	NIL

Learning Objectives

The course aims to familiarize students with the applications of Mathematics and Statistical techniques in business decision making.

Learning Outcomes

After completion of the course, learners will be able to:

1. Identify proficiency in using different mathematical tools in solving real life business and economic problems.
2. Analyse how matrices are used as mathematical tool in representing a system of equations.
3. Apply differential calculus to solve simple business problems.
4. Discuss mathematical formulation and solution of problems related to finance including different methods of interest calculation, future and present value of money.
5. Identify business problems involving linear relationships between decision variables and their determining factors.

SYLLABUS OF DSE-5.4

Unit 1: Matrices (9 hours)

Definition and types; Algebra of matrices; Applications of matrix operations to simple business and economic problems; Calculation of values of determinants up to third order; Finding the solution of system of linear equations up to three variables by Matrix Inversion and Cramer's Rule.

Unit 2: Differentiation (9 hours)

Concept and rules of differentiation; applications of differentiation - elasticity of demand and supply, Cost, Revenue, Profit and Break Even Point, Maxima and Minima of functions relating to cost, revenue and profit.

Unit 3: Integration (9 hours)

Standard forms of Integration Definite integration. Application of Integration to marginal analysis; Marginal Cost to Cost function, Marginal Revenue to Revenue function, Elasticity of Demand to Demand function.

Unit 4: Basic Mathematics of Finance (9 hours)

Simple and Compound interest (including continuous compounding); Rates of interest - nominal and effective and their inter-relationships; Compounding of a sum using different types of rates.

Unit 5: Linear Programming (9 hours)

Formulation of Linear programming problems (LPPs), Graphical solutions of LPPs. Cases of unique solutions, multiple optional solutions, unbounded solutions, infeasibility, and redundant constraints.

Practical Exercises:

The learners are required to:

1. Identify the decision-making variables and assess their functional relationship with other variables affecting the decision in a hypothetical business situation.
2. Take the business case and assess how the use of matrices helps in deciding about competing alternatives
3. Identify and formulate business problems as an application of calculus
4. Identify and solve business problems of any company of your choice as an application of linear programming
5. Gather information about various deposit and loan schemes of banks to find out interest rate differential, and compounded value.

Note: Use of a simple calculator is allowed. Proofs of theorems/ formulae are not required.

Suggested Readings:

- Aggarwal, B. M. (2018). *Business Mathematics.* Delhi, India: Kitab Mahal.
- Anthony, M., & Biggs, N. (1996). *Mathematics for Economics and Finance.* Cambridge, United Kingdom: Cambridge University Press.
- Ayres, F. J. (1963). *Theory and Problems of Mathematics of Finance.* New York,

United States: McGraw Hill Publishing.

- Budnick, P. (1986). *Applied Mathematics for Business, Economics, & Social Sciences.* New York, United States of America : McGraw Hill Publishing.
- Dowling, E. (2011). *Introduction to Mathematical Economics.* New York, United States: McGraw Hill Publishing Kapoor.
- Ghosh, S., & Sinha, S. (2018). *Business Mathematics and Statistics.* Delhi, India: Oxford University Press.
- Sharma, S. K., & Kaur, G. (2019). *Business Mathematics.* Delhi, India: Sultan Chand & Sons (P) Ltd.
- Thukral, J. K. (2020). *Mathematics for Business Studies.* Delhi, India: Mayur Paperbacks.
- Singh, J. K. (2017). *Business Mathematics.* Delhi, India: Himalaya Publishing House.
- V. K., & Sancheti, D. C. (2014). B*usiness Mathematics, Theory & Applications.* Delhi, India: S. Chand Publishing.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

Discipline Specific Elective Course- 5.5 (DSE-5.5): Accounting for Mergers & Acquisitions and Valuation

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Accounting for Mergers & Acquisitions and Valuation DSE-5.5	4	3	1	0	Pass in Class XII	NIL

Learning Objectives: The course aims to help learners to conceptualise the knowledge of value creation through Mergers and Acquisitions and acquire skills for accounting for Mergers and Acquisitions both from the perspective of India and Internationally.

Learning Outcomes: After completion of the course, learners will be able to understand:

1. Define value creation through Mergers and Acquisitions.
2. Describe valuation tools used during Mergers and Acquisitions.
3. Demonstrate accounting for Mergers and Acquisitions from Indian Perspective.
4. Demonstrate the accounting for Mergers and Acquisitions from International Perspective.

5. Analyse the different types of Synergic effects and the concept of Demerger along with Reverse Merger.

SYLLABUS OF DSE-5.5

Unit 1: Introduction to Mergers and Acquisitions (9 hours)
Introduction to mergers and acquisitions (M&A), Types of Mergers, Participants in Merger and Acquisition, Understanding financial statements and key valuation concepts, Leveraging M&A for value creation, M&A- Cure for Corporate Turbulence, Fast Track Mergers, Significance of Intellectual Property Rights in M&A, Cross Border Mergers.

Unit 2: Modelling and Valuation (9 hours)
Income Approach (Capitalization Method and Discounted Cash Flow Method); Market Approach (Comparable Company Method); Assets Approach (Book Value Method and Liquidation Method); Modelling for Internal Rate of Return calculations; Discounted cash flow valuation; Due Diligence in M&A, Negotiation; Synergistic benefits and distribution of Synergy gains.

Unit 3: Accounting for Mergers and Acquisitions (Indian Perspective) (9 hours)
Looking at the dynamics of an actual transaction, Examining the effects of the transaction, Accounting for Amalgamation in the nature of Purchase, Accounting for Amalgamation in the nature of Merger, Treatment of Reserve on Amalgamation, Amalgamation after balance sheet date, Acquisition under Business Transfer Agreement (BTA), Accounting for Business Combination as per Ind AS 103, Identifying a business combination, Acquisition Method, Acquisition Date, Applications of Acquisition methods, Common Control Accounting as per Ind AS 103, Accounting for Acquisition-related Transaction Costs, Acquisition of control through the acquisition of Equity Shares, Acquisition of Group of Assets.

Unit 4: Accounting for Mergers and Acquisitions (International Perspective) (9 hours)
Identification of the Acquirer, Determining the Acquisition Date, Recognising and Measuring Identifiable Assets Acquired & Liabilities, Conditions for Recognition (IFRS 3 Paras 10-14), Measurement Principle- Fair Values (IFRS 3 Para 18) subject to Exceptions (IFRS 3 Paras 22-31A), Recognising and Measuring any Non-Controlling Interest (NCI), Identifying and Measuring Consideration (IFRS 3 Para 37), Recognising and Measuring Goodwill or Gain from a Bargain Purchase transaction, Controversies and Dilemma in Accounting for M&A, Accounting for M&A, Features of Pooling Accounting, Criteria for Pooling of Interests, Incentives to choose Pooling Over Purchase, Accounting for Valuation of Goodwill, IFRS-3 on International Accounting Standards for M&A, Comparison between Indian GAAP and IFRS-3.

Unit 5: Laws and Regulations affecting M&A, Demerger and Reverse Merger (9 hours)
Tax Laws, The Companies Act, 2013, The Competition Act, 2002, SEBI Regulations and any other laws and regulations affecting M&A, Substantial Acquisitions and Buyouts in listed and unlisted space, Ethical Considerations in M&A; Conceptualization of Demerger; Tax Laws, The Companies Act, 2013, SEBI Regulations and any other laws and regulations affecting Demerger; Accounting Aspects of Demerger, Demerger *vs.* Reconstruction; Reverse Merger.

Exercises:

The learners are required to:

1. Collect information from business newspapers, periodicals, print and digital media for analysing reasons for mergers, acquisitions and demergers.
2. Analyse the annual reports of companies before and after the merger to evaluate the tools applied for valuation.
3. Discuss and analyse the case study on domestic mergers.
4. Discuss and evaluate the impact of cross border mergers.
5. Analyse the impact of laws and regulation and its results on the merger and acquisition, demerger and reverse merger.

Suggested Readings:

- DePamphillis, D. M. (2021). *Mergers, Acquisitions, and Other Restructuring Activities: An Integrated Approach to Process, Tools, Cases and Solutions.* United States: Elsevier.
- Koller, T., Goedhart, M., & Wessels, D. (2020). *Valuation: Measuring and Managing the Value of Companies.* New Jersey, United States: Mckinsey & Company.
- Pettit, B. S., & Ferris, K. R. (2013). *Valuation for Mergers & Acquisitions.* London, United Kingdom: FT Press.
- Reed, S. F., Lajoux, A., & Nesvold, H. P. (2019). *The Art of M&A: A Merger Acquisition Buyout Guide.* London, United Kingdom: McGraw Hill.
- Sherman, A. J. (1998). *Mergers & Acquisitions from A to Z: Strategic and Practical Guidance for Buyers and Sellers.* United States: Goodreads.
- Sudarsanam, S. (2003). *Creating Value from Mergers and Acquisitions: The Challenges.* Delhi, India: Prentice-Hall.
- Zadeh, A. A., & Meeks, G. (2021). *Accounting for M&A: Uses and Abuses of Accounting in Monitoring and Promoting Merger.* New York, United States: Routledge.

Additional Resources:

- AS – 14 issued by the Institute of Chartered Accountants of India.
- Educational Material on Indian Accounting Standard (Ind AS) Business Combinations issued by The Institute of Chartered Accountants of India.
- IFRS–3 issued by the International Accounting Standard Board.
- Ind AS 103 issued by the Ministry of Corporate Affairs, India.
- Study Material of the Institute of Cost Accountants of India for the "Strategic Performance Management and Business Valuation".
- Study Material of the Institute of Company Secretary of India for the Professional Programme Course on "Valuation and Business Modelling".

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

Discipline Specific Elective Course- 5.6 (DSE-5.6): Auditing

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Auditing DSE-5.6	4	3	1	0	Pass in Class XII	NIL

Learning Objective: The course aims to provide knowledge of auditing concepts, principles, procedures, and techniques in accordance with current legal requirements.

Learning Outcomes: After completion of the course, learners will be able to:

1. Recognise the basic concepts of auditing and acquaint with latest developments in the area of auditing;
2. Describe the need of auditing and role of auditors;
3. Demonstrate the principles, procedures and techniques of auditing;
4. Interpret the contents of audit reports;
5. Analyse the provisions of Companies Act, 2013 relating to auditor and auditing.

SYLLABUS OF DSE-5.6

Unit 1: Introduction (7 hours)
Meaning and objectives of auditing; nature and scope of auditing; basic principles and techniques of auditing; Classification of audit; Audit in a computerized environment.

Unit 2: Internal Control and Audit Procedures (9 hours)
Audit planning and documentation; audit evidence; audit sampling, internal check, internal control, and internal audit.

Unit 3: Vouching and Verification (11 hours)
Vouching – Meaning and objectives; Procedure of Vouching; Vouching of Cash and Bank, Purchase and Sales; Verification of Assets and Liabilities; Inventory Valuation.

Unit 4: Company Auditors (11 hours)
Qualifications and disqualifications; appointment and rotation, removal, remuneration, rights, duties and liabilities of Auditors.

Unit 5: Audit Report and Special Audit (7 hours)
Contents and types of audit report, Qualified and Unqualified report; National Financial Reporting Authority. Special Audit: Banking and Insurance company; Forensic Audit.

Exercises:
The learners are required to:

1. Critically analyse auditing-based case studies with the help of focussed group discussions.
2. Examine the audit reports published by Indian companies.
3. Identify and verify any five-documentary evidence in connection with sales, purchases of goods/machineries, payment of expenses and liabilities.
4. Prepare internal control questionnaire and internal control checklist for audit of an organisation/business firm.
5. Examine the P & L Account and Balance Sheet of Listed Companies and identify gaps for forensic audit.

Suggested Readings:

- Ainapure, V., & Ainapure, M. (2009). *Auditing & Assurance*. Delhi, India: PHI Learning.
- Garg, P. (2022). *Auditing & Assurance*. Delhi, India: Taxmann Publication.
- Kamal, G. (1980). *Contemporary Auditing*. Delhi, India: Tata Mcgraw Hill Publishing Company.
- Kumar, R., & Sharma, V. (2015). *Auditing Principles and Practice*. Delhi, India: PHI Learning.
- Roy, P.K. (2019). *Auditing & Assurance.* (1st ed.). Delhi, India: Oxford University Press.
- Singh A. K., & Gupta, L. (2011). *Auditing Theory and Practice*. Noida, India: Galgotia Publishing.
- Tandon, B. N., Sudharsnam, S., & Sundharabahu, S. (2007). *A Hand book on Practical Auditing*. Delhi, India: S. Chand Publishing.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

Standard on Auditing and Statements on Auditing Practice issued by the ICAI shall be referred wherever necessary.

Discipline Specific Elective Course- 5.7 (DSE-5.7): Business Tax Procedures and Management

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Business Tax Procedures and Management DSE-5.7	4	3	1	0	Pass in Class XII	NIL

Learning Objectives

The course aims to provide knowledge of provisions pertaining to income tax procedures with a view to equip students with effective tax management skills.

Learning Outcomes

After completion of the course, learners will be able to:

1. Discuss the provisions of payment of tax in advance, deduction of tax at source and computation of tax, interest and fee payable to / by government;
2. Describe about various Income Tax authorities and return of income;
3. Recognise the assessment procedures and filing of appeals;
4. Interpret and learn the provisions dealing with penalties and prosecutions, and search, seizure and survey; and
5. Evaluate the concept of GAAR and conditions for levy of Securities Transaction Tax.

SYLLABUS OF DSE-5.7

Unit 1: Advance Payment of Tax and Collection and Recovery of Tax (18 hours)
Advance payment of Tax; Tax deduction/ collection at source: Provisions, documentation, returns and Certificates; Interest payable by assessee/ Government; Collection and recovery of Tax.

Unit 2: Administration and Return of Income (4 hours)
Income Tax authorities; Return of income.

Unit 3: Assessment and Appeals (9 hours)
Assessment, re-assessment and rectification of mistakes; Appeals and revisions; Preparation and filing of appeals with appellate authorities.

Unit 4: Penalties and Prosecutions (9 hours)

Penalties and Prosecutions; Provisions relating to undisclosed income/ investment; Search, seizure and survey.

Unit 5: GAAR, Securities Transaction Tax, TAN and TIN (5 hours)
Transactions with persons located in notified jurisdictional area; General anti-avoidance rule (GAAR); Tax clearance certificate; Securities transaction tax; TAN (Tax Deduction and Collection Account Number); TIN (Tax Information Network).

Exercises:
The learners are required to:

1. Illustrate the concepts and features of assessment of profits and gains of proprietorship, Doctor, Advocate and Chartered Accountant as individual assessee.
2. Prepare a presentation explaining the return of Income.
3. Illustrate the filing of appeals with appellate authorities.
4. Discuss case studies on Penalties and prosecutions related to Business Tax Procedures and Management.
5. Prepare case studies related to general anti-avoidance rules.
6. Check United States of Americage and importance of GAAR, TAN and TIN.

Suggested Readings:

- Ahuja, G. & Gupta, R. (2022). *Corporate Tax Planning.* Delhi, India: Commercial Law House.
- Singhania, V. K., & Singhania, M. (2022). *Corporate Tax planning & Business Tax Procedures.* Delhi, India: Taxmann Publications Pvt. Ltd.
- Ahuja, G., & Gupta, R. (2012). *Systematic Approach to Income Tax.* Delhi, India: Bharat Law House.
- Bajpai, O. S. (2023). *Search. Seizure and Survey.* Delhi, India: Taxmann Publications Pvt. Ltd.

Additional Sources

- Current Tax Reporter. Jodhpur, India.
- Income Tax Reports. Chennai, India: Company Law Institute of India Pvt. Ltd.
- Corporate Professionals Today. Delhi, India: Taxman.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

Discipline Specific Elective Course- 5.8 (DSE-5.8): International Monetary and Financial Environment

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
International Monetary and Financial Environment DSE- 5.8	4	3	1	0	Pass in Class XII	NIL

Learning Objectives

The course aims to introduce learners to the international monetary and financial environment. Learners are also expected to understand the basic features of the international monetary system, foreign exchange market and exchange rate risk. In addition, the course creates awareness about international financial markets and instruments

Learning Outcomes

After completion of the course, learners will be able to:

1. Demonstrate an understanding of the international monetary system and balance of payments
2. Discuss the importance of international finance in a global context.
3. Analyse the factors affecting exchange rates and the inter linkages among them.
4. Summarize the evolution and spread of international financial markets and the implications of globalized finance.
5. Demonstrate how the international financial market operates and the inherent foreign exchange risk involved in it.
6. Evaluate and compare different types of international financial instruments.

SYLLABUS OF DSE-5.8

Unit 1:International Monetary System (9 hours)

Overview of International Monetary System: evolution, Gold Standard, Bretton Woods system, the floating exchange rate regime; types of exchange rate systems; international agencies regulating and facilitating international financial flows: IMF, World Bank Group and its

institutions, Bank for International Settlements, Balance of Payments (BOP): concept, components of BOP, factors affecting BOP, BOP- equilibrium and disequilibrium.

Unit 2:Foreign Exchange Markets and Exchange Rate Determination (9 hours)
Foreign exchange markets: characteristics, functions, structure and participants; factors affecting exchange rate: relative inflation rates, relative interest rates, relative income levels, government controls, current account deficit, currency speculation and expectations, public debt, political stability and economic performance. Government intervention and influence on exchange rates.
Theories of exchange rate determination: Purchasing Power Parity; Interest Rate Parity, International Fisher effect

Unit 3:Foreign Exchange Derivatives (11 hours)
Spot market, spot rate quotations, bid-ask spreads, trading in spot markets, cross exchange rates; trading in forward markets, long and short forward positions, forwards premium and discount; arbitrage, hedging and speculation.

Unit 4:Foreign Exchange Risk Management (7 hours)
Types of foreign exchange risk: transaction exposure, translation exposure, economic exposure; hedging against foreign exchange exposure; Forwards market, Futures market and Options market; country risk analysis.

Unit 5:International Financial Markets and Instruments (9 hours)
Foreign Portfolio Investment: International bond and equity market, GDRs, ADRs, cross-listing of shares; global registered shares; international financial instruments: Foreign bonds, Eurobonds, Global Bonds, Floating rate bonds, Zero coupon Bonds; International Money Markets.

Exercises:
The learners are required to:

1. Illustrate and explain the direction of India's foreign trade and investment flows through an analysis of Balance of payments over a period of last five years.
2. Do practical questions on working of foreign exchange quotations
3. Conduct an inter-country comparison to understand the factors affecting exchange rates under different exchange rate systems
4. Explain through examples how companies use currency derivatives to minimise the risk.
5. Examine the market conditions under which companies use foreign currency instruments to raise funds
6. Compare and list out the different types of international financial instruments of top five companies in the service industry.

Suggested Readings:

- Cavusgil, S. T., Knight, G., & Riesenberger, J. (2007). *International Business: Strategy, Management and the New Realities.* Delhi, India: Pearson India.
- Daniels, J. D., Radenbaugh, L. H., Sullivan, D. P., & Salwan, P. (2016). *International Business.* London, United Kingdom: Pearson Education.

- Eiteman, D. K., Stonehill, A. I., & Moffett, M. H. (2018). *Multinational Business Finance.* Essex, England: Pearson.
- Krugman, P., Obestfeld, M., & Melitz, M. J. (2017). *International Finance Theory and Policy.* (10th ed.) Essex, England: Pearson.
- Levi, M. D. (2009). *International Finance.* New York, United States: Taylor and Francis Ltd.
- Madura, J. (2013). *International Financial Management.* Boston, United States: Cengage Learning.
- Vij, M. (2010). *International Financial Management.* Delhi, India: Excel Books.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

General Elective Course- 5.1 (GE-5.1): General Management

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
General Management GE-5.1	4	3	1	0	Pass in Class XII	NIL

Learning Objectives:

The course aims to equip learners with essential management related knowledge and skills and their applicability in the real world.

Learning Outcomes:

After completion of the course, learners will be able to:

1. Discuss the evolution of management and its significance
2. Analyse applicability of managerial functions
3. Recognise the role of decision-making in business
4. Analyse the role of directing in management
5. Discuss the function of controlling and contemporary issues in management

SYLLABUS OF G.E-5.1

Unit 1: Introduction to Management (9 hours)

Principles of management - concept, nature and significance; Evolution of Management thought: Classical (Fayol's principles of management; Taylor's scientific management), Neo-classical (Hawthorne Experiments), Modern approach (Systems Approach; Contingency Approach).

Unit 2: Functions of Management (7 hours)

Management functions and their relationship- planning, organizing, staffing, directing and controlling; Functional areas of management – an overview; Coordination - concept, characteristics and importance.

Unit 3: Planning and Organizing (11 hours)

Planning- meaning, strategic and operations planning; Decision-making- concept, importance

and bounded rationality; Organizing- division of labour & specialization; Organisational structures; Factors affecting organisational design.

Unit 4: Directing and Staffing (9 hours)

Directing- concept and importance; Concept and theories of Motivation- Maslow's need hierarchy, Herzber's two-factor theory, Theory X&Y; Leadership-meaning and importance; Communication- meaning and importance; Staffing- concept, importance and process.

Unit 5: Controlling and Contemporary Issues in Management (9 hours)

Principles of Controlling, performing controlling function; Management challenges of the 21st Century; Factors reshaping and redesigning management purpose, performance and reward perceptions- internationalization; Digitalization; Entrepreneurship & innovation; Workplace Diversity

Exercises:

The learners are required to:

1. Assess the applicability of managerial theories in today's corporate world.
2. Discuss the interrelationship between various managerial functions
3. Present a role play on bounded rationality or on any other aspect of decision-making
4. Identify various motivation techniques used by organizations.
5. Discuss the impact of emerging issues in management.

Suggested Readings:

- Drucker, P. F. (1954). *The Practice of Management.* New York, United States: Harper & Row.
- Drucker, P. F. (1999). *Management Challenges for the 21st Century.* United States: HarperCollins Publishers Inc.
- Griffin. (2013). *Management Principles and Application.* Boston, United States: Cengage.
- Gupta C. B., & Mathur, S. (2021). *Management Principles and Applications.* Delhi, India: Scholar Tech Press.
- Koontz, H., & Weihrich, H. (2012). *Essentials of Management: An International and Leadership Perspective.* New York, United States: McGraw Hill Publications.
- Kumar, P. (2020). *Management: Principles and Applications.* Delhi, India: JSR Publication House LP.
- Mahajan, J. P., & Mahajan A. (2016). *Management Principles and Applications.* Delhi, India: Vikas Publications.
- Rao, V. S. P. (2022). *Management Principles and Applications.* Delhi, India: Taxmann Publications.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

General Elective Course- 5.2 (GE-5.2): Communication in Management

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Communication in Management GE- 5.2	4	3	1	0	Pass in Class XII	NIL

Learning Objectives

The course aims to train students to enhance written as well as oral communication in management. This course will help students in understanding the principles and techniques of communication. Also, to understand the use of electronic media for communication.

Learning Outcomes

After completion of the course, learners will be able to:

1. Analyse basics of communication in management.
2. Interpret need for effective listening.
3. Discuss basics of written and spoken communication.
4. Demonstrate the role of group discussion and interviews.
5. Prepare business reports and proposals.

SYLLABUS OF GE-5.2

Unit 1: Introduction to Communications (9 hours)

Meaning and Objectives of Communication. Process of Communication. Forms of communication: formal and informal; upward, downward, diagonal and lateral. Role of a Manager. Barriers to effective Communication and Overcoming them. Effectiveness in Managerial Communication. Make use of grapevine. Role of verbal and non-verbal communication; interpreting non-verbal communication.

Unit 2: Listening (9 hours)

Meaning and objectives of Listening. Features of a good listener. Analysing poor listening. Effective listening skills and barriers to effective listening.

Unit 3: Spoken communication (9 hours)

Oral Presentation: Planning, structuring and delivering presentation. Handling queries. Challenges and etiquettes associated with Telephonic, web-conferencing and Teleconferencing communication.

Written communication: Principles and steps of effective writing. Seven Cs of Letter writing. Business Letters: inquiries, placing orders, sales letters. Job applications and resumes. Memos.

Unit 4: Group Discussion (9 hours)

Nature, forms and classification of Groups. Role of managers in Group Discussions. Effective Group Decision Making. Group Conflict.

Interviews: Interviewing, Nature and types of Interviewing Questions. Verbal and Non-Verbal aspects of interviewing. Types of Interviews: structured and unstructured; group and depth.

Unit 5: Meetings (9 hours)

Planning and conducting meetings. Meeting Process. Ways to Effectively lead a meeting. Evaluating meetings and drafting minutes of a meeting.

E-mail, Business Reports and Proposals: E-mail Etiquettes, smartness and presentation. Business Reports and proposals: Writing and purpose.

Exercises:
The learners are required to:

1. Learn how to summarise annual reports of companies.
2. Write business proposals.
3. Participate in group discussions and mock interviews
4. Smartly draft business emails.
5. Draft a business letter

Suggested Readings:

- Bell, R. L., & Martin, J. S. (2014). *Managerial Communication.* New York, United States: Business Expert Press.
- Lesikar, R. V., & Flatley, M. E. (2001). *Basic Business Communication Skills for Empowering the Internet Generation.* Delhi, India: Tata McGraw Hill Publishing Company Ltd.
- Meyer, C., & Dev, N. B. (2021). *Communicating for Results.* (4th ed.) Delhi, India: Oxford University Press.
- Hargie, O. D. W., Dickson, D., Tourish, D. (1999). *Communication in Management.* United Kingdom: Gower Publishing Ltd.
- Ludlow, R., & Panton, F. (1992). *The Essence of Effective Communications.* Delhi, India: Prentice Hall of India Pvt. Ltd.
- Raman, M., & Singh, P. (2012). *Business Communication.* Delhi, India: Oxford University Press.
- Bhatia, R. C. (2008). *Business Communication.* Delhi, India: Ane Books Pvt Ltd.
- Scot, O. (1998). *Contemporary Business Communication.* Delhi, India: Biztantra.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

General Elective Course- 5.3 (GE-5.3): Accounting for Everyone

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Accounting for Everyone GE- 5.3	4	3	0	1	Pass in Class XII	NIL

Learning Objectives

The course aims to help learners coming from non-commerce backgrounds acquire basic knowledge of financial accounting and to impart preliminary skills for recording various kinds of financial transactions and prepare financial statements.

Learning Outcomes:

After completion of the course, learners will be able to:

1. Analyse various terms used in accounting;
2. Identify and record business transactions.
3. Prepare accounts and calculate depreciation.
4. Prepare profit and loss account and balance sheet for a sole proprietor;
5. Estimate profit and loss from incomplete records.

SYLLABUS OF GE-5.3

Unit 1: Introduction to Accounting and Accounting Principles (7 hours)

Accounting - Meaning, Importance, Need,objectives, advantages and limitations. Accounting as an information system, user of accounting information, sources of accounting information. Some Basic Accounting Terms –Transactions, Accounts, Assets, Liabilities, Capital, Drawings, Expenditure and Expense, Income, Revenue, Gain, Profit, Surplus, Loss, Deficit. Accounting Principles Basis of Accounting – Cash, Accrual and Hybrid.Difference between Double Entry system and Single entry system (accounting for incomplete records).

Unit 2: Recording of transactions (9 hours)

Identification of transactions and events for recording, Classifications of accounts (Traditional) : Personal Account, Real Account and Nominal Account, Classifications of accounts (Modern) : Assets, Liabilities, Capital , Income and expenses. Accounting Equation, Rules of debit and credit. Basis of recording – vouchers., Journalising the transactions.

Unit 3: Preparation of Accounts and Depreciation Accounting (11 hours)

Preparation of Ledger, Cash Book including bank transactions and depreciation accounting: concept, features, causes, methods (SLM and WDV), charging to assets account.

Unit 4: Preparation of Financial Statement (11 hours)
Trial Balance; Concept of Revenue and Capital expenditure; Preparation of Trading and Profit & Loss Account and Balance Sheet for a sole proprietor with basic adjustments.
Unit 5: Accounts from Incomplete Records (7 hours)
Meaning, features, reasons and limitations of accounting from incomplete records.Determining profit and loss using the Statement of affairs method.
Practical Exercises:
The learners are required to:

1. Analyse the basic accounting principles.
2. Prepare a small business basic accounting transactions.
3. Compute depreciation of select companies registered in NSE stock exchange.
4. Evaluate financial position on the basis of financial statements of select health insurance companies.
5. Determine the complete accounting records of a single entry firm.

Suggested Readings:

- Bhupinder, Lt. (2020). *Principles of Financial Accounting.* Delhi, India: Cengage.
- Goyal, B. K., & Tiwari, H. N. (2022). *Financial Accounting.* Delhi, India: Taxmann Publication.
- Gupta, R. L., & Radhaswamy, M. (2020). *Financial Accounting.* Delhi, India: S. Chand Publishing.
- Hatfield, L. (2022). *Accounting Basics.* Delhi, India: Amazon Digital Services LLC.
- Horngren, C. T., Sundem, G. L., Elliott, J. A., & Philbrick, D. (2017). *Introduction to Financial Accounting.* London, United Kingdom: Pearson Education.
- Jain, S. P., & Narang, K. L. (2020). *Financial Accounting.* Delhi, India: Kalyani Publishers.
- Kumar, A. (2019). *Financial Accounting.* Delhi, India: Singhal Publication.
- Lal, J., & Srivastava, S. (2019). *Financial Accounting Text & Problems.* Mumbai, India: Himalaya Publishing House.
- Maheshwari, S. N., Maheshwari, S. K., & Maheshwari, S. K. (2019). *Financial Accounting.* Delhi, India: Vikas Publishing House Pvt. Ltd.
- Maheshwari, S. N., Maheshwari, S. K., & Maheshwari, S. K. (2020). *The Introduction of Accountancy.* Delhi, India: Vikas Publishing House Pvt. Ltd.
- Monga, J. R. (2021). *Financial Accounting: Concepts and Applications.* Delhi, India: Mayur Paperback.
- Mukharji, A., & Hanif, M. (2020). *Financial Accounting.* Delhi, India: Tata McGraw Hill Publishing Co. Ltd.
- Mukherjee, S., & Mukherjee, A. K. (2019). *Financial Accounting.* United States: Oxford University Press.
- Sah, R. K. (2019). *Concept building approach to financial accounting.* Delhi, India: Cengage.
- Sehgal, D. (2020). *Financial Accounting.* Delhi, India: Vikas Publishing House Pvt. Ltd.
- Siddiqui, S. A. (2019). *Book Keeping & Accountancy.* Delhi, India: Laxmi Publications Pvt. Ltd.
- Tulsian, P. C. (2019). *Financial Accounting.* Delhi, India: Tata McGraw Hill Publishing Co. Ltd.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

General Elective Course- 5.4 (GE-5.4): Finance for Everyone

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Finance for Everyone GE-5.4	4	3	0	1	Pass in Class XII	NIL

Learning Objectives

The course aims to offer an integrated approach to the understanding of concepts and applications of financial planning.

Learning Outcomes

After completion of the course, learners will be able to:

1. Analyze the importance of financial literacy and the role of institutions in providing financial services.
2. Prepare financial plans, budgets and manage personal finances.
3. Compare, analyze and examine various services offered by banks.
4. Compare, analyze and examine various services offered by post offices.
5. Compare, analyze and examine various life insurance policies.
6. Evaluate and examine various financial securities for investment in the stock market.

SYLLABUS OF GE-5.4

Unit 1: Introduction, Financial Planning and Budgeting (9 hours)

Meaning, importance and scope of financial literacy; Prerequisites of financial literacy – level of education, numerical and communication ability; Various financial institutions – banks, insurance companies, post offices, mobile app-based services. Need of availing of financial services from banks, insurance companies and postal services. Concept of economic wants and means for satisfying these needs; Balancing between economic wants and resources; Meaning, importance and need for financial planning; Personal budget, family budget, business budget and national budget; Procedure for financial planning and preparing a budget; Budget surplus and budget deficit, Avenues for savings from surplus, Sources for meeting the deficit.

Unit 2: Banking Services (9 hours)

Types of banks; Banking products and services – Various services offered by banks; Types of bank deposit accounts – savings bank account, term deposit, current account, recurring deposit; pan card, address proof, KYC norm; Various types of loans – education loan, consumer durable loan, vehicle loan, housing loan, short term, medium term, long term, microfinance, bank overdraft, cash credit, mortgage, reverse mortgage, hypothecation, pledge, Agricultural and related interest rates offered by various nationalized banks; Cashless banking, e-banking, check counterfeit currency; CIBIL, ATM, net banking, RTGS, NEFT, IMPS, electronic clearance services (ECS), debit and credit card, app based payment system, bank draft and pay order; banking complaints and ombudsman.

Unit 3: Financial Services from India Post Office (9 hours)

Post office savings schemes: savings bank, recurring deposit, term deposit, monthly income scheme, kisan vikaspatra, NSC, PPF, senior citizen savings scheme, Sukanya samriddhiyojana ;india post payments bank. money transfer: money order, e-money order. instant money order, collaboration with the western union financial services; movidesh, international money transfer service, money gram international money transfer, indian postal order.

Unit 4: Insurance Services (9 hours)

Life insurance policies: life insurance, term life insurance, endowment policies, pension policies, ULIP, health insurance plans, comparison of policies offered by various life insurance companies, comparison of policies offered by various health insurance companies. Property insurance policies. Post office life insurance schemes: postal life insurance and rural postal life insurance.

Unit 5: Stock Markets – Some Basic Concepts (9 hours)

Terms used in stock markets: SENSEX, NIFTY, primary markets, secondary markets, initial public offering(IPO), follow-on public offering (FPO), offer for sale (OFS), block deal, equity shares, preference shares, debentures, bonus shares, stock split, dividend, buyback, DEMAT account, trading account, delivery instruction slip (DISlips),blue chips, defensive stocks, face value, market value, market capitalisation, pre-opening session, trading session, opening price, closing price, business days, bull, bear, bull market, bear market, risk, stop loss, derivatives, call option, put option, hedge, holding period; Tax on short term capital gains and long-term capital gains, Mutual Fund and its various schemes.

Practical Exercises:

The learners are required to:

1. Prepare a financial budget for any two individuals belonging to different age groups and draw a comparative analysis.
2. Visit banks, post offices, and insurance companies to collect information and documents related to the services offered by these institutions.
3. Pick any two schemes offered by the post office and draw a comparative analysis.
4. Pick any two life insurance policies of different insurance companies and draw a comparative analysis.
5. Construct a portfolio for any number of securities and analyze their returns over a period of time.

6. Compare and list out at least twenty various financial securities for investment in the stock market.

Suggested Readings:

- Avadhani, V. A. (2022). *Investment Management.* Mumbai, India: Himalaya Publishing House Pvt. Ltd.
- Bhattacharya, S. (2018). *Indian Financial System.* Delhi, India: Oxford University Press.
- Chandra, P. (2013). *Investment Game: How to Win.* Delhi, India: Tata McGraw Hill Education.
- Kothari, R. (2010). *Financial Services in India-Concept and Application.* Delhi, India: Sage Publications India Pvt. Ltd.
- Milling, B. E. (2003). *The Basics of Finance: Financial Tools for Non-Financial Managers.* Indiana, United States: Universe Company.
- Mittra, S., Rai, S. K., Sahu, A. P., & Starn, H. J. (2015). *Financial Planning.* Delhi, India: Sage Publications India Pvt. Ltd.
- Zokaityte, A. (2017). *Financial Literacy Education.* London, United Kingdom: Palgrave Macmillan.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

General Elective Course- 5.5 (GE-5.5): Marketing for Beginners

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Marketing for Beginners GE- 5.5	4	3	1	0	Pass in Class XII	NIL

Learning Objectives

The structure of this course is to provide basic understanding of concepts, principles, tools and techniques of marketing and to provide knowledge about various developments in the marketing scenario in India.

Learning Outcomes

After completion of the course, learners will be able to:

1. Recognise the basic concepts and philosophies of marketing.
2. Demonstrate the dynamics of consumer behaviour and the basic product decisions.
3. Analyse the process of value creation through marketing decisions involving product, pricing and its distribution.
4. Discuss marketing decisions involving product promotion
5. Discuss various developments in the marketing area.

SYLLABUS OF GE-5.5

Unit 1 (9 hours)

Introduction to Marketing: Concept, Scope and Importance; Marketing Philosophies; Marketing Mix for goods and services.

Marketing Environment: Need for studying marketing environment; Micro environment- company, suppliers, marketing intermediaries, customers, competitors, publics; Macro environment- demographic, economic, natural technological, politico-legal and socio-cultural factors.

Unit 2 (9 hours)

Consumer Behaviour: Need for studying consumer behavior; Stages in consumer buying decision process, Factors influencing consumer's buying decisions.

Market Selection: Market segmentation-concept and bases of segmenting consumer markets; Market Targeting; Product Positioning- concept and bases.

Unit 3 (9 hours)

Product Decisions: Concept and classification; Product mix; Branding; Packaging; Labeling; Product support services; Product life cycle-concept and marketing strategies.

Unit 4 (9 hours)

Pricing Decisions: Objectives; Factors affecting price of a product; Pricing strategies for new products- penetration pricing and skimming pricing.

Distribution Decisions: Channels of Distribution**:** types and functions; Wholesaling and retailing; factors affecting the channels of distribution; Distribution Logistics Decisions.

Unit 5 (9 hours)

Promotion Decisions: Communication process; Importance of promotion; Promotion tools: advertising, personal selling, sales promotion, public relations, publicity and direct marketing.

Developments in Marketing: Sustainable Marketing, Rural marketing, Social marketing, Digital marketing – an overview.

Exercises:

The learners are required to:

1. Scan the marketing environment of any product/ service on the basis of its demographic and socio-cultural environment affecting it. Make a presentation on the basis of the report.
2. Study the impact of the factors affecting consumer behaviour of a company marketing health products in the Indian market.
3. Suggest the suitable bases for segmentation of a product, service, event, organization of your choice.
4. Identify 20 brand names of real-life products of your choice and justify as to why they are good brand names.
5. Identify 5 real-life products each that have been using penetration pricing and market-skimming pricing.
6. Analyse the rural marketing strategies of a business organization.

Suggested Readings:

- Baines, P., Whitehouse, S., Rosengren, S., & Antonetti, P. (2021). *Fundamentals of Marketing.* United States: Oxford University Press.
- Etzel, M. J., Walker, B. J., Stanton, W. J., & Pandit, A. (2010). *Marketing.* Delhi, India: McGraw Hill.
- Kotler, P., Armstrong, G., & Agnihotri, P. (2018). *Principles of Marketing.* (Indian edition). Delhi, India: Pearson Education.
- Kotler, P., Chernev, A., & Keller, K. L. (2022). *Marketing Management.* United Kingdom: Pearson Education.
- Levy, M., & Grewal, D. (2022). *Marketing.* New York, United States: McGraw-Hill Education.
- Sharma, K., & Aggarwal S. (2021). *Principles of Marketing.* Delhi, India: Taxmann Publications.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

General Elective Course- 5.6 (GE-5.6): Ethics and Governance

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Ethics and Governance GE-5.6	4	3	1	0	Pass in Class XII	NIL

Learning Objectives

This course is designed keeping in view the dominant role that modern corporations play in creating desirable economic, social and environmental outcomes for the society. As corporate governance is intertwined with social responsibility, it requires a multi-disciplinary approach to understand the associated issues and challenges. Therefore, the course outlines the key theoretical and practical issues underpinning the study of both corporate governance (CG) and corporate social responsibility (CSR) in an integrated fashion.

Learning Outcomes

After completion of the course, learners will be able to:

1. Discuss the concepts, tools and theories of ethics and the issues in ethics.
2. Recognize the essence of ethics in business.
3. Analyse the concept of ethical governance.
4. Discuss major aspects of corporate governance principles and various theories and systems of corporate governance.
5. Describe the recent issues and challenges of governance.

SYLLABUS OF GE-5.6

Unit 1: Introduction to Ethics (9 hours)
Concept of moral reasoning and ethics; Contributions of moral thinkers and philosophers to the concepts of morality; Approaches to Moral reasoning; Essence of Ethics, Dimensions of Ethics; Human Values; Ethical concerns and dilemmas

Unit 2:Business Ethics (9 hours)
Concept; Principles; Theories of Business Ethics; Ethical Organisations, Code of Ethics; Ethical issues in business

Unit 3:Governance of Business Entities (9 hours)
The philosophical basis of governance; Corporate Governance- Meaning and significance; Conceptual framework; Corporate governance systems across the world; Corporate governance in India.

Unit 4:Corporate Frauds (9 hours)
Cases of corporate frauds and scams- Enron, Lehman Brothers; Satyam Computer Services; PNB Heist; IL&FS Fraud, ABG Shipyards, Yes Bank; Governance issues and challenges

Unit 5: Recent Issues and Challenges of Governance (9 hours)
Insider Trading; Whistle Blowing; Shareholders Activism; Class Action suits; Gender Diversity in Boards; Governance of Family entities; Governance of multinational corporations.

Exercises:
The learners are required to:

1. Narrate the cases on ethics and values.
2. Perform simulation exercises to present ethics and ethical dilemmas.

3. Discuss corporate governance concerns highlighted in print and virtual media.
4. Organise brainstorming and discussion sessions on corporate frauds.
5. Prepare a project on critical analysis of recent cases on whistle blowing/insider trading/class action suits.

Suggested Readings:

- Crane, A., Matten, D., Glozer, S., & Spence, L. J. (2019). *Business ethics: Managing corporate citizenship and sustainability in the age of globalization*. Oxford, United Kingdom: Oxford University Press.

- Monks, R. A. G., & Minow, N. (2011). *Corporate governance*. Hoboken, NJ, United States: John Wiley & Sons.

- Reddy, N. K., & Ajmera, S. (2015). *Ethics integrity and aptitude: For Civil Services Main Examination*. Delhi, India: McGraw Hill Education (India) Private Limited.

- Sharma, J. P. (2013). *Corporate Governance, Business Ethics and CSR:(with Case Studies and Major Corporate Scandals)*. Delhi, India: Ane Books Pvt.
- Tricker, B., & Tricker, R. I. (2015). *Corporate governance: Principles, policies, and practices*. New York, United States: Oxford University Press.
- Weiss, J. W. (2022). *Business ethics: A stakeholder and issues management approach*. Oakland, CA, United States: Berrett-Koehler.

Additional Readings:

- Mallin, C. A. (2019). *Corporate governance*. Oxford, United Kingdom: Oxford University Press.

- Rani, D. G., & Mishra, R. K. (2017). *Corporate governance: Theory and practice*. Delhi, India: Excel Books India.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

General Elective Course- 5.7 (GE-5.7): Fundamentals of International Business

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Fundamentals of International Business	4	3	1	0	Pass in Class XII	NIL

Learning Objectives

The course aims to impart the core body of knowledge in international business to the students. The course would introduce students to the international trading and investment environment and also create awareness about emerging issues such as outsourcing and sustainable development in the context of international business.

Learning Outcomes

After completion of the course, learners will be able to:

1. Analyse the process of globalization and its impact on growth of international business.
2. Evaluate the changing dynamics of the diverse international business environment.
3. Analyse the theoretical dimensions of international trade as well as intervention measures adopted.
4. Analyse the significance of different forms of regional economic integration and the role played by various international economic organisations.
5. Evaluate the forms of foreign direct investment and analyse benefits and costs of FDI.
6. Discuss emerging issues in international business such as outsourcing and sustainable development.

SYLLABUS OF GE-5.7

Unit 1: **Introduction to International Business (7 hours)**
Globalization - concept, significance and impact on international business; international business contrasted with domestic business; complexities of international business; internationalization stages and orientations; modes of entry into international businesses.

Unit 2: International Business Environment (11 hours)
Role of political and legal systems in international business; cultural environment of international business;implications of economic environment for international business.

Unit 3: International Trade (9 hours)
Theories of international trade – Theory of Absolute Advantage theory, Theory of Comparative Advantage, Factory Proportions theory and Leontief paradox, Product Life Cycle theory, Theory of National Competitive Advantage; Instruments of trade control.

Unit 4: Regional Economic Integration and International Economic Organisations (9 hours)
Forms of regional economic integration; Integration efforts amongst countries in Europe, North America and Asia: EU, USMCA, and SAARC; Cost and benefits of regional economic integration.
International Economic Organisations: WTO- functions, structure and scope; World Bank and IMF

Unit 5: International finance and contemporary issues in IB (9 hours)
Types of FDI - Greenfield investment, Mergers & Acquisition, strategic alliances; benefits and drawbacks of FDI
Overview of Exchange Rate systems

Contemporary issues in international business: Outsourcing and its potential for India; international business and sustainable development.

Exercises:
The learners are required to:

1. Demonstrate through case studies the suitability of each mode of entry in international business.
2. Conduct a comparative analysis of countries which are different in terms of political/legal/economic/cultural environment to understand the impact of these dimensions on international business.
3. Analyse data on trade of select countries to examine if trade patterns conform to different trade theories.
4. Conduct an in-depth study of a regional economic arrangement and evaluate its costs and benefits by applying the theoretical knowledge gained during the course
5. Make presentations on developments in contemporary issues affecting international business such as sustainable development.
6. Comment on various emerging issues in international business such as outsourcing and sustainable development

Suggested Readings:

- Bennett, R. (2006). *International Business.* Delhi, India: Pearson.
- Cavusgil, S. T., Knight, G., & Riesenberger, J. (2007). *International Business: Strategy, Management and the New Realities.* Delhi, India: Pearson India.
- Chaturvedi, D. D., Jindal, D., & Kaur, R. (2022). *International Business.* Delhi, India: Scholar Tech Press.
- Daniels, J. D., Radenbaugh, L. H., & Sullivan, D. P. (2016). *International Business.* Pearson Education.
- Griffin, R. W., & Pustay, M. W. (2014). *International Business - A Managerial Perspective.* Pearson.
- Hill, C. W. L., & Jain, A. K. (2011). *International Business.* Delhi, India: Tata McGraw Hill.
- Joshi, R. M. (2009). *International Business.* Oxford University Press.
- Menipaz, E., Menipaz A., & Tripathi S. S. (2017). *International Business: Theory and*

Practice. Delhi, India: Sage Publications India Pvt. Ltd.

Additional Resources

- Economic Survey, various issues.
- RBI Report on Currency & Finance, various issues.
- World Investment Reports, UNCTAD
- Websites: RBI, IMF, WORLD BANK, WTO.
- WTO Annual reports

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

General Elective Course- 5.8 (GE-5.8): Project Management

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Project Management GE- 5.8	4	3	1	0	Pass in Class XII	NIL

Learning Objectives

The course aims to enable the learners to evolve a suitable framework for the preparation, appraisal, monitoring, and control of projects undertaken in an organisation.

Learning Outcomes

After completion of the course, learners will be able to:

1. Discuss the concept and attributes of projects, project management system, process and its principles.
2. Analyse technical feasibility, marketing feasibility and commercial viability of a project.
3. Demonstrate project scheduling and appraisal using various techniques.
4. Describe and calculate project duration and assess the project cost.
5. Evaluate project management in terms of risk and performance.

SYLLABUS OF GE-5.8

Unit 1: Introduction (5 hours)

Concept and attributes of Project, Project Management Information System, Project Management Process and Principles, Role of Project Manager, Relationship between Project Manager and Line Manager, Project Stakeholder Analysis, Identification of Investment opportunities, Project life cycle, Project Planning, Monitoring and Control of Investment Projects, Pre-Feasibility study, Identify common sources of conflict within a project environment.

Unit 2: Project Preparation and Budgeting (11 hours)

Technical Feasibility, Marketing Feasibility, Financial Planning: Estimation of Costs and Funds (including sources of funds), Loan Syndication for the Projects, Demand Analysis and Commercial Viability (brief introduction to NPV), Project budget, Collaboration Arrangements, Tax considerations and legal aspects.

Unit 3: Project Scheduling and Appraisal (9 hours)

Decomposition of work into activities, determining activity-time duration. Business Criterion of Growth, Liquidity and Profitability, Social Cost Benefit Analysis in Public and Private Sector, Investment Criterion and Choice of techniques, Estimation of Shadow prices and Social discount rate.

Unit 4: Project Planning Techniques (11 hours)
Determine project duration through critical path analysis using PERT & CPM techniques. Resource allocations to activities. Cost and Time Management issues in Project Planning and Management.

Unit 5: Project Risk and Performance Assessment (9 hours)
Project Risk Management- Identification, Analysis and Reduction, Project quality management, Project Performance Measurement and Evaluation, Project Report, Project Closure and Audit.

Exercises:
The learners are required to:

1. Discuss project management systems of various organisations through case studies.
2. Analyse technical feasibility, marketing feasibility and commercial viability of a hypothetical project.
3. Discuss case studies on Social Cost Benefit Analysis in the Public and Private sector.
4. Evaluate PERT and CPM techniques using case studies.
5. Analyse case studies on project risk management.

Suggested Readings

- Chandra, P. (2019). *Projects: Planning, Analysis, Selection, Financing, Implementation and Review.* Delhi, India: Tata McGraw Hill.
- Gido, J., & Clements, J. P. (2015). *Project Management.* Delhi, India: Cengage Learning Pvt. Ltd.
- Gray, C. F., Larson, E. W., & Desai, G. V. (2014). *Project Management: The Managerial Process.* Delhi, India: Tata McGraw Hill.
- Khatua, S. (2011). *Project Management and Appraisal.* Oxford, United Kingdom: Oxford Press University.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

General Elective Course- 5.9 (GE-5.9): Computer Applications in Business

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Computer Applications in Business GE- 5.9	4	1	0	3	Pass in Class XII	NIL

Learning Objectives

This paper aims to impart computer knowledge that will enable them with the ability to handle and analyse data for decision making and presenting it to the person concerned in the form of presentations and/or reports in the fast-moving business world.

Learning Outcomes

After completion of the course, learners will be able to:

1. Describe the various concepts and terminologies used in computing, computer networks and the internet.
2. Examine document creation for report making and communication.
3. Create innovative and creative presentations.
4. Analyse various computations using various functions in the area of accounting and finance and represent the business data using suitable charts. S/he should also be able to manipulate and analyse the business data for better understanding of the business environment and decision making.
5. Examine the spreadsheet knowledge acquired through this paper in solving real life problems that help in decision making.

SYLLABUS OF GE-5.9

Unit1: Introduction (4 hours)

Computing: Concept of computing, Data and information; Computing Interfaces Graphical User Interface (GUI), Command Line Interface (CLI), Touch Interface, Natural Language Interface(NLI); data processing; applications of computers in business.

Computer Networks: Meaning of computer network; objectives/ needs for networking; Applications of networking; Basic Network Terminology; Types of Networks; Network

Topologies; Distributed Computing: Client Server Computing, Peer- to- peer Computing; Wireless Networking; Securing Networks: firewall.

Basic Internet Terminology: I.P. Address, Modem, Bandwidth, Routers, Gateways, Internet Service Provider (ISP), World Wide Web (www), Browsers, Search Engines, Proxy Server, Intranet and Extranet; Basic Internet Services; Internet Protocols: TCP/IP, FTP, HTTP(s), Uses of Internet to Society; Cyber Security: Cryptography, digital signature.

Unit 2: Word Processing (3 hours)

Introduction to word Processing, Word processing concepts, Use of Templates and styles, Working with word document: Editing text, Find and replace text, Formatting, spell check, Autocorrect, Auto-text; Bullets and numbering, Tabs, Paragraph Formatting, Indent, Page Formatting, Header and footer, page break, table of contents, Tables:Inserting, filling and formatting a table; Inserting Pictures and Video; Mail Merge (including linking with spreadsheet files as data source); Printing documents; Citations, references and Footnotes.

Unit 3: Preparing Presentations (2 hours)

Basics of presentations: Slides, Fonts, Drawing, Editing; Inserting: Tables, Images, texts, Symbols, hyperlinking, Media; Design; Transition; Animation; and Slideshow, exporting presentations as pdf handouts and videos.

Unit 4: Spreadsheet basics (3 hours)

Spreadsheet concepts, Managing worksheets; Formatting, conditional formatting, Entering data, Editing, and Printing and Protecting worksheets; Handling operators in formula, Project involving multiple spreadsheets, Organizing Charts and graphs; Flash-fill; Working with Multiple worksheets; controlling worksheet views, naming cells and cell ranges.

Spreadsheet functions: Mathematical, Statistical, Financial, Logical, Date and Time, Lookup and reference, Text functions and Error functions

Working with Data: Sort and filter; Consolidate; Tables; Pivot tables; What–if-analysis: Goal seek, Data tables and Scenario manager.

Unit 5: Spreadsheet projects (3 hours)

Creating business spreadsheet: Loan repayment scheduling; forecasting: stock prices, costs & revenues; Payroll statements; handling annuities and unequal cash flows; Frequency distribution and its statistical parameters and break-even analysis.

Note:The General Purpose Software referred in this course will be notified by the University Departments every three years. If the specific features, referred in the detailed course above, is not available in that software, to that extent it will be deemed to have been modified.

Practical Exercises:
The learners are required to:

1. Analyze and compare the different mobile payment apps (at least 5) on the basis of their pros and cons and prepare a report on the same in word document using table of contents, bullets, numbering, citations, etc. Also prepare a presentation for the same.

2. Using mail merge utility of word processing for either sending letters or for creating any other document like salary slip/ utility bills to be delivered to multiple recipients using data from a business organization or of the peer students.

3. Identify a topic related to any business operation and prepare a PowerPoint Presentation with all the above functions therein.

4. Prepare a Spreadsheet document with any hypothesized data and perform all the above functions therein.

5. Take secondary data from a company's income statement and balance sheet for five to ten years. All learners are required to conduct the Ratio Analysis and forecast values for different items of these statements for the next five to ten years.

6. Use logical, mathematical and statistical functions of spreadsheets. The learners should be able to analyse the results of the class test using hypothesized data to determine the students who passed or failed, assigning them ranks like first, second, third, etc., finding out number of absentees, counting no. of students scoring marks with distinction, etc.

7. Prepare repayment schedule of the loans that they borrow, prepare a payroll statement using spreadsheet functions listed above and analyse different investment opportunities using financial functions.

8. Take live data from the website of the Government of India, use Spreadsheet for preparing frequency distribution, graphs, and calculate statistical measures like mean, median, mode, standard deviation, Correlation etc.

Suggestive Readings

- Jain, H. C., & Tiwari, H. N. (2021). *Computer Applications in Business.* Delhi, India: Taxmann.
- Joseph, P. T., S. J. (2019). *E-Commerce: An Indian Perspective.* (6th ed.). Delhi, India: PHI Learning
- Madan, S. (2020). *Computer Applications in Business.* Delhi, India: Scholar Tech Press.
- Mathur, S., & Jain, P. (2016). *Computer Applications in Business.* Noida, India: Galgotia Publishing Company.
- Sharma, S. K., & Bansal, M. (2017). *Computer Applications in Business.* Delhi, India: Taxmann.
- Thareja, R. (2019). *Fundamentals of Computers.* Delhi, India: Oxford University Press.
- Thareja, R. (2018). *IT & Its Business Application.* Delhi, India: Oxford University Press
- Walkenbach, J. (2016). *MS Excel 2016, Bible.* United States: John Wiley & Sons.
- Winston, W. L. (2013). *MS Excel 2013, Data Analysis & Business Modeling.* Redmond, United States: Microsoft Press.

Additional Readings

- Benninga, S. (2022). Financial Modelling. Massachusetts, United States: The MIT Press.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

Semester-VI
(B.Com)

Discipline Specific Core Course- 6.1 (DSC-6.1): Business Analytics

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Business Analytics DSC- 6.1	4	2	0	2	Pass in Class XII	Studied Business Statistics (DSC-3.1)

Learning Objectives

This course aims to introduce the learners to business intelligence and analytics which includes describing business data, analysing the data using various statistical tools for creating predictive models and making inferences for solving business problems and for providing assistance in business decision making.

Learning Outcomes:

After completion of the course, the learners will be able to:

1. Describe skills for computation and aggregation of data using spreadsheets.
2. Analyse data with the help of pivot tables and pivot charts.
3. Analyse data using R packages and interpret the results.
4. Identify linear regression models using spreadsheet & R and interpret the results.
5. Examine textual data analysis using R.

SYLLABUS OF DSC-6.1

Unit 1: Introduction (3 hours)

Data and Data Science; Data analytics and data analysis, Classification of Analytics, Application of analytics in business, Types of data: nominal, ordinal, scale; Big Data and its characteristics, Applications of Big data. Challenges in data analytics.

Unit 2: Data Preparation, Summarisation and Visualisation Using spreadsheet (6 hours)

Data Preparation and Cleaning, Sort and filter, Conditional formatting, Text to Column, Removing Duplicates, Data Validation, identifying outliers in the data, covariance and correlation matrix, Moving Averages, Finding the missing value from data; Summarisation; Visualisation: scatter plots, line charts, histogram, etc., Pivot Tables, pivot charts and interactive dashboards.

Unit 3: Getting started with R (6 hours)

Introduction to R, Advantages of R, Installation of R Packages, Importing data from spreadsheet files,

Commands and Syntax, Packages and Libraries, Data Structures in R - Vectors, Matrices, Arrays, Lists, Factors, Data Frames, Conditionals and Control Flows, Loops, Functions, and Apply family.

Unit 4: Descriptive Statistics Using R (6 hours)
Importing Data file; Data visualisation using charts: histograms, bar charts, box plots, line graphs, scatter plots. etc; Data description: Measure of Central Tendency, Measure of Dispersion, Relationship between variables: Covariance, Correlation and coefficient of determination.

Unit 5: Predictive and Textual Analytics (9 hours)
Simple Linear Regression models; Confidence & Prediction intervals; Multiple Linear Regression; Interpretation of Regression Coefficients; heteroscedasticity; multi-collinearity.
Basics of textual data analysis, significance, application, and challenges. Introduction to Textual Analysis using R. Methods and Techniques of textual analysis: Text Mining, Categorization and Sentiment Analysis.

Note:
The General Purpose Software referred in this course will be notified by the University Departments every three years. If the specific features, referred to in the detailed course above, are not available in that software, to that extent it will be deemed to have been modified.

Practical Exercises (60 hours):

The learners are required to

1. Showcase their understanding of the basics of Spreadsheet: Organizing data with Spreadsheet – Performing simple computations and aggregations using Spreadsheet - Working with Summing and other Reporting functions in Spreadsheet - Working with pivot tables and charts - Using Spreadsheet for Data Analytics: Power Query - Power Pivot - Power view - Power Map - Building tips – Display tips - Keyboard shortcuts – Mouse shortcuts - Standardized layouts - Understanding table-based and spreadsheet-based layouts.

2. Showcase their understanding of data cleansing techniques using External Data – Searching and Combining Data with Power Query: Getting started with Power Query - Know the Environment tabs and toolbars - Access new or existing reports - Importing and combining data from databases, web, files - Splitting and aggregating data - Discovering and Analyzing Data with Power Pivot: Database concepts - Loading Data into Power Pivot - Using Power Query and Power map add-ins - Designing Pivot Table reports - Filtering data – Creating Custom functions and formulas - Formatting Pivot Tables - Managing Power Pivot Data - Setting Connection properties - Managing Data sources - Configuring Pivot Table Options, Preparation of Histograms - Pareto charts – Boxplots - Treemap and Sunburst charts.

3. Create Linear Regression Models using Spreadsheet; Interpretation of results. Applying tests for heteroscedasticity and multi-collinearity.

4. Read datasets into R - Export data from R - Manipulate and Process Data in R - Use functions and packages in R - Demonstrate with a Case Study to perform basic analytics using R.

5. Use R for analysing textual data; Data loading into Python; Pre-processing and Text Clean up; Generating a TF-IDF (Term Frequency Inverse Document Frequency) Matrix; Data Clustering; Visualization & Reporting.

Suggested Readings:

- Alexander, M., Decker, J., & Wehbe, B. (2014). *Microsoft business intelligence tools for spreadsheet analysis.* New Jersey, United States: Wiley.
- Giri, A., & Paul, P. (2021). *Applied marketing analytics: using spss (modeler, statistics and amos graphics).* Delhi, India: PHI Learning Pvt. Ltd.
- Kumar, D. U. (2017). *Business analytics: the science of data driven decision making.* New Jersey, United States: Wiley.
- McKee, A. (2003). *Textual analysis: a beginner's guide.* London, United Kingdom: Sage Publication.
- Motwani, B. (2019). *Data analytics with r.* New Jersey, United States: Wiley.
- North, M. (2012). *Data mining for the masses.* Athens, Greece: Global Text Project.
- Ohri, A (2012). *R for business analytics.* Springer.
- Paul, T. (2011). *R cookbook.* New York, United States: O Reilly Media.
- Provost, F., & Fawcett, T. (2013). *Data science for business.* New York, United States: O'Reilly Media.
- Rao, P. H. (2013). *Business analytics—an application focus.* Delhi, India: PHI Learning Private Limited.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

Discipline Specific Core Course- 6.2 (DSC-6.2): Corporate Governance

Course title & Code	Credits	Credit distribution of the Course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Corporate Governance DSC- 6.2	4	3	1	0	Pass in Class XII	NIL

Learning Objectives

The course aims to develop critical thinking ability and provide knowledge of corporate governance, its procedures, techniques in accordance with current legal requirements and professional standards.

Learning Outcomes

After completion of the course, learners will be able to:

1. Describe the concept and significance of corporate governance in a business setup
2. Analyse the role of the board of directors.
3. Discuss important dimensions in corporate governance.
4. Analyse global corporate failures; understand International Codes and its implications.
5. Evaluate corporate governance regulatory framework in India.
6. Assess and analyse the problems of corporate governance in Indian Inc.

SYLLABUS OF DSC-6.2

Unit 1: Conceptual Framework of Corporate Governance (9 hours)

Corporate Governance: Meaning, significance and principles; Management and corporate governance; Theories of Corporate Governance: Agency Theory, Stewardship theory, Stakeholder Theory, Resource Dependency Theory, Managerial Hegemony Theory; Models of Corporate Governance; Art of Governance as per Kautilya's Arthashastra.

Unit 2: Recent Issues and Challenges of Corporate Governance (9 hours)

Board structure and Directors; Role of Board; Board Committees and their functions; Insider Trading; Whistle Blowing; Shareholders Activism; Role of institutional investors; Class Action suits. CSR and Corporate Governance, Concept of Gandhian Trusteeship.

Unit 3: Global Corporate Failures and International Codes (9 hours)
BCCI (UK), Maxwell (UK), Enron (USA), World.Com (USA), Vivendi (France), Lehman Brothers; Sir Adrian Cadbury Committee 1992, SOX 2002, OECD Principles of Corporate Governance.

Unit 4: Corporate Governance Regulatory Framework in India (9 hours)
Regulatory framework in India: Kumar Mangalam Birla (1999), NR Narayana Murthy Committee (2005), Relevant provisions of Companies Act, 2013, SEBI: Listing Obligations and Disclosure Requirements Regulations (LODR), 2015 and Uday Kotak Committee (2017).

Unit 5: Corporate Failures and Scams in India (9 hours)
Satyam Computer Services Ltd, Kingfisher Airlines, PNB Heist, IL&FS Group Crisis; ICICI Bank, Yes Bank; Common Governance Problems in various corporate failures in India and abroad.

Exercises:
The learners are required to:
1. Identify and analyse corporate governance models followed by companies incorporated in India and abroad.
2. Analyse Board composition and Board committees of different companies; Analyse cases on the topic of Whistle blowing/ Shareholder activism/ Insider trading.
3. Critically analyse global corporate governance failure and identify corporate governance issues therein.
4. Identify corporate governance issues and concerns raised in context of Indian companies and their implications (from published sources newspapers or websites).
5. Comment on the latest corporate governance regulatory framework in India.
6. Critically analyse major corporate governance failure to suggest common governance problems in Indian context.

Suggested Readings:

- *A handbook of corporate governance*. (2022). (3rd ed.). Institute of Directors. Delhi, India: IOD Publishing.
- Das, S. C. (2018). *Corporate governance in India: an evaluation.* Delhi, India: PHI Learning Private Limited.
- Goel, S. (2019). *Corporate governance: principles and practices.* (1st ed.). Delhi, India: McGraw Hill Education (India) Private Limited.
- Sharma, J. P. (2018). *Corporate governance, business ethics and csr: (with case studies and major corporate scandals).* Delhi, India: Ane Books Pvt. Ltd.
- Tricker, B., & Tricker, R. I. (2015). *Corporate governance: principles, policies, and practices.* United States: Oxford University Press.
- Tricker, B. (2020). *Elements in corporate governance*. United Kingdom: Cambridge University Press.

Additional Resources:

- Mallin, C. A. (2019). *Corporate governance.* (6th ed.). Oxford, United Kingdom: Oxford University Press.
- Rani, D. G., & Mishra, R. K. (2017). *Corporate governance: theory and practice.* Delhi, India: Excel Books.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

Latest amendments to the regulations shall be referred.

Discipline Specific Core Course- 6.3(DSC-6.3): Goods & Services Tax (GST) and Customs Law

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Goods & Services Tax (GST) and Customs Law DSC- 6.3	4	3	1	0	Pass in Class XII	NIL

Learning Objectives

The course aims to impart knowledge of principles and provisions of GST and Customs Law, the important legislation dealing with the indirect tax system in India; and to enable the students to apply the same practically.

Learning Outcomes:

After completion of the course, learners will be able to:

1. Describe the rationale of Goods and Services Tax (GST), constitutional amendment carried out to install GST in India and comprehend the composition and working of the GST council.
2. Interpret the meaning of supply under GST law, differentiate between intra-state and inter-state supply, provisions related to place of supply, time of supply and compute the value of supply.
3. Explain the utilization of input tax credit and the provisions of reverse charge mechanism.
4. Define various returns under GST and payment of taxes.

5. Evaluate the concepts of Customs Act, various custom duties and computation of the assessable value for charging customs duty.

SYLLABUS OF DSC-6.3

Unit 1: Structure, Registration and Exemptions (9 hours)

Constitutional framework of indirect taxes before GST; Rationale for GST; Structure of GST (SGST, CGST, UTGST & IGST); GST Council; GST Network; State compensation mechanism; Registration; Exemptions from GST.

Unit 2: Levy and Collection of GST (15 hours)

Scope of 'Supply'; Nature of supply: Inter-State, Intra-State; Classification of goods and services; Composite and Mixed supplies; Composition levy scheme; Place of supply; Time of supply; Value of supply.

Unit 3: Input Tax Credit and Reverse Charge Mechanism (9 hours)

Eligible and ineligible input tax credit; Apportionments of credit and blocked credits; Tax credit in respect of capital goods; Availability of tax credit in special circumstances; Reverse Charge Mechanism.

Unit 4: Tax invoice, Returns and Payment of Tax (7 hours)

Tax Invoice, Credit and debit notes, and e-Way bills; Returns; Payment of taxes; Taxability of e-Commerce.

Unit 5: Customs Law (5 hours)

Basic concepts, Territorial waters and High seas; Types of custom duties; Valuation.

Note:*In case of any subsequent notifications/amendments regarding GST or customs law by the government, the syllabus would be updated accordingly.*

Exercises:
The learners are required to:

1. Discuss relevant provisions of the CGST Act, IGST Act, GST (Compensation to States) Act and Constitution (One Hundred and First Amendment) Act from the official website of Government of India.
2. Refer relevant notifications and circulars from the official website of Government of India to differentiate between intra-state and inter-state supply and provisions related to place of supply.
3. Illustrate the utilization of input tax credit and the provisions of reverse charge mechanism.
4. Identify the eligible and ineligible tax credit under various circumstances.
5. Study cases related to utilization of input tax credit.

6. Enlist the process of returns under GST and payment of taxes.
7. Illustrate computation of the assessable value for charging customs duty with hands-on exercise.
8. Gather information available under the heading 'Popular help topics' on the official website of the Government of India.

Suggested Readings:

- Ahuja, G., & Gupta, R. (2023). *GST & customs law.* Delhi, India: Flair Publications Pvt. Ltd.
- Babbar, S., Kaur, R., & Khurana, K. (2018). *Goods and service tax (gst) and customs law.* Delhi, India: Scholar Tech Press.
- Balachandran, V. (2023). *Indirect taxation. Goods and service tax and customs law.* (19th ed.). Delhi, India: Sultan Chand & Sons.
- Balachandran, V. (2023). *Textbook of GST & customs law.* (2nd ed.). Delhi, India: Sultan Chand & Sons.
- Bansal, K. M. (2023). *GST & customs law.* Delhi, India: Taxmann Publication.
- Gupta, S.S. (2020). *GST- how to meet your obligations.* Delhi, India: Taxmann Publications.
- Mittal, N. (2022). *Goods & services tax and customs law.* Delhi, India: Cengage Learning India Pvt. Ltd.
- Sahi, S. (2019). *Concept building approach to goods & service tax, & customs laws.* Delhi, India: Cengage India Private Limited.
- Singhania, V. K. (2022). *Taxmann's students' guide to gst & customs law – the bridge between theory & application.* (1st ed.). Delhi, India: Taxmann Publications Private Limited.

Additional Resources:

- Gupta, S. S. (2017). *GST how to meet your obligations.* (13th ed., Vol. 3). Delhi, India: Taxmann Publication.

- Bansal, K. M. (2023). *GST & customs law. (9th ed.)* Delhi, India: Taxmann Publications Private Limited.
- Sisodia, P. (2018). *Bharat's handbook on goods & services tax (gst)*. Delhi, India: Bharat Law House.
- *The Constitution (One hundred and First Amendment) Act, 2016.*
- *The Central Goods and Services Tax Act, 2017.*
- *The Integrated Goods and Services Tax Act, 2017.*
- *The Union Territory Goods and Services Tax Act, 2017.*
- *The Goods and Services Tax (Compensation to States) Act, 2017.*
- *Vastu and Sevakar Vidhan, by Government of India.*

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

Discipline Specific Elective Course- 6.1 (DSC-6.1): Human Resource Development

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Human Resource Development DSE-6.1	4	3	1	0	Pass in Class XII	NIL

Learning Objectives

The course aims to make students understand the various aspects of human resource development and its contribution in the organization.

Learning Outcomes

After completion of the course, learners will be able to:

1. Define the concept of human resource management and the role of HR manager.
2. Analyse the role of HRD strategies in organisations
3. Apply and evaluate a learning process starting with training needs, analysis, assessment and evaluation process
4. Explore the role of training needs of employees
5. Evaluate the training methods used in industry

SYLLABUS OF DSE-6.1

Unit 1: Introduction (7 hours)

Human Resource Development (HRD)- concept, components, evolution, need and significance, difference between human resource management and human resource development, Role of HR manager, Contemporary issues in HRD.

Unit 2: Strategic Perspectives in HRD (11 hours)

Concept of Strategic HRD, HRD Interventions-Performance Appraisal, Potential Appraisal, Performance Coaching and Feedback, Career Planning, Training, Systems Development, Rewards, Employee Welfare and Work-Life Balance.

Unit 3: Instructional Technology for HRD (9 hours)
Learning and HRD, Models and Curriculum, Principles of Learning, Individual and Group Learning, Assessment Centre, Transactional Analysis, Behaviour Modeling and Self- Directed Learning, Evaluating the HRD.

Unit 4: Human Resource Training and Development (T&D) (9 hours)
Concept and Importance, Assessing Training Needs, Designing and Evaluating Training & Development Programmes, Role, Responsibilities and Challenges to Training Managers.

Unit 5: Training Methods (9 hours)
Training within Industry: On the Job & Off the Job Training, Management Development: Lecture Method, Role Play, In-basket Exercise, Simulation, Vestibule Training, Management Games, Case Study, Programmed Instruction, Sensitivity Training.

Exercises:

The learners are required to:

1. Engage themselves in manager competencies through developing and implementing experiential sessions
2. List the various rewards and employee welfare schemes
3. Assess the ways of self-directed learning
4. Design and evaluate training and development programs.
5. Analyse the case studies to understand various training methods.

Suggested Readings:

- Sadler-Smith, E. (2022). *Human resource development: from theory into practice.*(1st ed.). United Kingdom: SAGE Publications Limited.
- Mehta, M. C., & Kar. D. (2020). *Human resource development.* (1st ed.). India: Bharti Publications.
- Bhattacharya, D. K. (2016). *Human resource management.* (1st ed.). India: Himalaya Publishing House.
- Durai, P. (2016). *Human resource management.* (2nd ed.). Delhi, India: Pearson Education.
- Mondy, R. W., & Martocchio, J. J. (2016). *Human resource management.* (14th ed.). United Kingdom: Pearson Education Publications.
- Chalofsky, N. F. (2014). *Handbook of human resource development.* Philippines: Wiley.
- Werner, J. M., & DeSimone, R. L. (2011). *Human resource development.* United States: Cengage Learning.
- Kapur, S. (1999). *Human resource development & training: in practice.* India: Infinity Books.
- Rao, T. V. (1987). *planning for human resources development.* Vikalpa, 12(3), 45-51.
- Taylor B., & Lippitt, G. L. (1974). *Management development and training handbook.* London, United kingdom: Mcgraw-Hill.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

Discipline Specific Elective Course- 6.2 (DSE-6.2): Fundamentals of Investment

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Fundamentals of Investment DSE-6.2	4	3	1	0	Pass in Class XII	NIL

Learning Objectives

The course aims to familiarize learners with different aspects of investment management and risks, introduce them to the framework of securities analysis and valuation and highlight the process of portfolio management.

Learning Outcomes: After completion of the course, learners will be able to:

1. Analyze the environment of investment and risk return framework.
2. Explain bonds in terms of valuation, yields, and risks.
3. Analyze equity shares using different approaches and models.
4. Construct, analyse, select and evaluate portfolios along with a deep understanding of capital market theory and associated models.
5. Comprehend and analyse futures and options and to be able to devise own investment strategies using various options trading strategies in the derivative market.

SYLLABUS OF DSE-6.2

Unit1: Introduction to Investment (9 hours)

Concept of Investment; Investment Decision Process; Avenues for investment- features and classes; Difference between investment, speculation, and gambling; Primary market and Secondary Markets- Trading of securities; Security market indices; Return and risk: concept, calculation; trade-off between risk and return; Impact of taxes and inflation on investments.

Unit 2: Bond Analysis and Valuation (9 hours)

Bond Fundamentals, Estimating bond yields; Bond Valuation; Relationship between bonds prices, interest rates and term to maturity; bond risks and credit rating.

Unit3: Equity Analysis and Valuation (9 hours)

Fundamental Analysis, Technical Analysis and Efficient Market Hypothesis; Valuation of Equity Shares using Dividend Discount Model and P/E Ratio model.

Unit4: Portfolio Management (9 hours)

Portfolio Management- Concept and need; Measurement of Portfolio Return and risk; Diversification-Markowitz Theory; Capital Asset Pricing Model.

Unit5: Mutual Fund and Derivatives (9 hours)

Mutual Fund-concept and types; Overview of Financial Derivatives-Forwards; Futures and Options.

Exercises:
The learners are required to:

1. Extract historical data on daily/monthly/annual prices for stocks in an index from a financial database. Evaluate them in terms of risk and return using appropriate software.
2. Participate in a group discussion on 'Verifying the existence of Bond price – yield relationship in today's times with real life examples'.
3. Estimate the Yield-to-Maturity of a corporate bond using relevant software.
4. Carry out moving average analysis on a stock of a real company to decide whether to buy, sell or hold the stock for one month using spreadsheets. Further, learners are also required to assess their decision after one month of decision making.
5. a) Draft a case study to devise an investment strategy for yourself in the short term based on your risk aversion.
   b. Prepare a presentation to demonstrate real-life examples of stock market anomalies.
6. Select any 5 companies of your choice. Using appropriate models, forecast their future cash flows, growth rate and cost of capital. Estimate the intrinsic value of stocks of these companies using relevant software.
7. Select any 5 stocks of your choice. Extract past data on their prices and volumes from a financial database. Make investment decisions using appropriate technical analysis tools and techniques. Use any technical analysis software for this purpose.
8. Construct portfolios based on any firm attribute using past data on NSE 500 stocks. Assess the profitability of this investment strategy. Evaluate if the returns on this strategy are explained by standard risk models such as CAPM. Use relevant software for your estimations.
9. Build and analyse option strategies for Index and Stock options using any option building analytical tool.

Suggested Readings:

- Alexander, G. J., Sharpe, W. F., & Bailey, J. V. (2009). *Fundamentals of investments.* PHI Learning.
- Bodie, Z., Kane, A., Marcus, A. J., & Mohanty, P. (2019). *Investments.* McGraw Hill.
- Chandra, P. (2021). *Investment analysis & portfolio management.* Delhi, India: Tata McGraw Hill Education.
- Jones, C. P. (2019). *Investment analysis and management.* United States: Wiley.

- Kevin, S. (2022). *Security analysis and portfolio management.* Delhi, India: PHI Learning.
- Mayo, H. (2020). *An introduction to investment.* Cengage Learning.
- Pandian, P. (2012). *Security analysis and portfolio management.* Delhi, India: Vikas Publishing House.
- Ranganatham, M., & Madhumati, R. (2015). *Security analysis and portfolio management.* (2nd ed.). India: Pearson (India) Education.
- Rustagi, R. P. (2022). *Investment management.* Delhi, India: Sultan Chand.
- Sharma, S. K., & Kaur, G. (2019). *Fundamentals of investment.* Delhi, India: Sultan Chand.
- Tripathi, V. (2020). *Fundamentals of investment.* Delhi, India: Taxmann Publications.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

Discipline Specific Elective Course- 6.3(DSE-6.3): Advertising

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Advertising DSE-6.3	4	3	1	0	Pass in Class XII	NIL

Learning Objectives

The objective of this paper is to familiarise the students with concepts and techniques of advertising used in marketing.

Learning Outcomes

After completion of the course, learners will be able to:

1. Discuss communication objectives behind advertising of various products and services.
2. Describe advertising appeals, elements of print and broadcast advertisement.
3. Elucidate various advertising and media elements in the advertising decisions.
4. Discuss advertising effectiveness.
5. Explain various organizational arrangements and examine the ethical and legal issues of advertising.

SYLLABUS OF DSE-6.3

Unit 1: Introduction to Advertising (9 hours)

Communication Process-basic and elements; Communication Response Hierarchy Models: AIDA Model, Hierarchy of Effects Model, Advertising: significance, types and objectives; DAGMAR Approach; Target audience selection – approaches and basis; Setting of advertising budget: determinants and major methods. Integrated marketing communication- meaning and process.

Unit 2: Advertising Message (9 hours)

Advertising appeals – types; Advertising Copy - Elements of print and broadcast advertisements

Unit 3: Advertising Media Decisions (9 hours)

Major media types: merits and demerits; Factors influencing media choice; Media scheduling-types.

Unit 4: Advertising: Effectiveness (9 hours)

Rationale of Measuring Advertising Effectiveness: Evaluating Communication and Sales effects; Pre and Post-testing techniques

Unit 5: Organisational Arrangements (9 hours)

Advertising Agency: Role, types and selection; Agency remuneration - methods
Social, ethical and legal aspects of advertising in India; Role of Advertising Standards Council of India (ASCI), Recent developments and issues in Advertising

Exercises:

The learners are required to:

1. Discuss communication objectives behind advertising of any product or service.
2. Identify advertising appeals used in any advertisement.
3. Identify various media elements in advertising decisions.
4. Discuss a case study on advertising effectiveness.
5. Present a report on the role of ASCI.
6. Comment on various ethical and legal issues in advertising.
7. Perform a content analysis of various advertising campaigns to:
    a. Identify the objective of an advertisement forming part of an advertising campaign.
    b. Find out the target audience of a campaign.
    c. Prepare a report on various media options used in a campaign.
    d. Prepare a report on message strategy and copy elements used in the campaign.
8. Develop an advertising campaign for any product or service.

Suggested Readings:

- Belch, G. E., Belch, M. A., & Purani, K. (2009). *Advertising and promotion: an integrated marketing communications perspective.* New York, United States: McGraw Hill Education.
- Gupta, R. (2017). *Advertising.* Delhi, India: Scholar Tech Press.
- Kapoor, N. (2022). *Fundamentals of advertising.* (2nd ed.). Delhi, India: Cengage Learning India Pvt. Ltd.
- Shah, K., & D'Souza, A. (2008). A*dvertising and promotions: an imc perspective.* Delhi, India: Tata McGraw Hill Publishing Company Limited.
- Sharma, K. (2018). *Advertising: planning and decision making.* Delhi, India: Taxmann Publication.
- Sharma, S., & Singh, R. (2006). *Advertising: planning and implementation*. (3rd ed.). India: PHI Learning Pvt. Ltd.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

Discipline Specific Elective Course- 6.4 (DSE-6.4): Business Research Methodology

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Business Research Methodology DSE-6.4	4	3	0	1	Pass in Class XII	NIL

Learning Objectives

The course aims to inculcate research aptitude among the learners and equip them with knowledge and skills required to successfully undertake various steps in the research process.

Learning Outcomes

After completion of the course the learners will be able to:

1. Define various research concepts, its types and steps in the research process.
2. Analyse and formulate research problems and assimilate various types of research design.
3. Discuss different scales, sampling techniques and design data collection tools.
4. Interpret and get acquainted with various techniques of data analysis and interpretation.
5. Analyse and prepare a complete research report in appropriate format.

SYLLABUS OF DSE-6.4

Unit 1: Introduction (9 hours)

Meaning and Scope of Research; Application of research in Business; Types of Research- qualitative, quantitative, longitudinal, cross-sectional, fundamental, applied, conceptual and empirical; Characteristics of Good Research; Steps in Research Process; Terminologies of research- Concept, Construct, Variables, Proposition and Hypothesis. Theory and Model; Literature Review and Formulation of Research Question; Philosophies of Research; Induction and Deduction Approach.

Unit 2: Research Design (9 hours)

Research Design- Meaning and Characteristics; Types of Research Design- Exploratory, Descriptive and Experimental. Meaning, Examples and Characteristics of Exploratory Research Design. Methods of Exploratory Research Design. Steps in Exploratory Research. Meaning, Characteristics and Methods of Descriptive Research Design with examples. Meaning and Types of Experimental Research Design.

Unit 3: Data Collection (9 hours)

Measurement and Scaling; Primary scales of Measurement (Nominal, Ordinal, Interval and Ratio). Scales for Measurements of Constructs- Likert, Semantic Differential Scale and Staple; Reliability and Validity; Meaning and Sources of Primary and Secondary Data; Questionnaire Design (also using online tools); Census and Survey Method; Probability and Non-Probability Sampling Techniques; Sample Size Determination.

Unit 4: Data Analysis Using Spreadsheet (9 hours)

Data Preparation and Cleaning; Graphical Presentation of Data; Frequency Distribution, Descriptive Statistics; Steps in Hypothesis Testing; Hypothesis Testing- parametric (z test and t test) and non-parametric (chi- square test).

Unit 5: Report Writing and Ethics (9 hours)

Types of Reports; Steps in Report Writing; Format and Presentation of Report, Referencing (APA, Chicago manual etc.), Ethics in Business Research.

Practical Exercises (30 hours):

The learners are required to:

1. Prepare literature review from a topic of your choice involving business and economics. Also, comment on the following case 1:

Case 1: A product manager wants to know the viability of a new innovative product being launched by his company. What are the steps that need to be followed in his research?

2. Identify the type of a research design that will be most appropriate in a given scenario as per Case 1..
3. Apply online tools and platforms, design a questionnaire using various kinds of questions including Likert scale statements to address a particular business problem.
4. Use spreadsheet to practice t- test, z-test and Chi- square test on the secondary data from a given sample set of data.
5. Prepare a brief report following proper format in Word processing software.

Suggested Readings:

- Bryman, A. (2020). *Business research methods.* Oxford University Press.
- Bryman, A., Bell, E., & Harley, B. (2019). *Business research methods.* Oxford, United Kingdom: University Press.
- Bryman, A., & Bell, E. (2011). *Business research methods.* (3rd ed.). Cambridge, United States: Oxford University Press.
- Chawla D., & Sondhi N.(2023). *Research Methodology: Concepts and Cases.* (2nd ed.). Delhi, India: Vikas Publishing.
- Cooper, D. R., & Schindler, P. S. (2014). *Business research methods.* (12th ed.). New York, United States: McGraw Hill International Edition.

- Creswell, J. D., & Creswell, J. W. (2017). *Research design: qualitative, quantitative, and mixed methods approaches.* United States: SAGE Publications.
- Dangi, H., & Dewan, S. (2016). *Business research methods.* India: Cengage Learning India Pvt. Ltd.
- Field, A. (2013). *Discovering statistics using IBM SPSS statistics.* Sage.
- Hair, J. F., Page, M., & Brunsveld, N. (2019). *Essentials of business research methods* (4th ed.). Routledge. https://doi.org/10.4324/9780429203374
- Ken, B. (2019). *Business statistics: for contemporary decision making.* United States: John Wiley & Sons.
- Kothari, B. L. (2007). *Research methodology: tools and techniques.* Jaipur, India: ABD Publishers.
- Mishra, P. (2014). *Business research methods.* Oxford University Press.
- Newman, W. L. (2021). *Social research methods: qualitative and quantitative approaches.* (8th ed.). Pearson.
- Saunders, M. (2010). *Research methods for business.* Pearson Education
- Schindler, P. S. (2021), *Business research methods*. (13th ed.). India: Mc Graw Hill Education
- Sekran, U., & Bougie, R. (2015). *Research methods for business: a skill building approach.* (6th ed.). United States: Wiley.
- Zikmund, W. G., Babin, B. J., Carr, J. C., & Griffin, M. (2013). *Business research methods.* (9th ed.). United States: South Western Cengage Learning.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

Discipline Specific Elective Course- 6.5 (DSE-6.5): Social Accounting

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Social Accounting DSE-6.5	4	3	1	0	Pass in Class XII	NIL

Learning Objectives

The course aims to help learners to know issues in Social Accounting and Reporting and how these issues can be reported more transparently and responsibly.

Learning Outcomes

After completion of the course, learners will be able to:

1. Compare Conventional Accounting System with Social Accounting.
2. Describe and measure various Social Costs and Social Benefits
3. Analyse Corporate Social Accounting.
4. Evaluate the framework and standards of Corporate social reporting.
5. Evaluate the impact of corporate activities at the National and Global Levels.

SYLLABUS OF DSE-6.5

Unit 1: Conventional Accounting and Shift in Paradigm (6 hours)
Traditional Framework of Accounting, Limitations with traditional framework of Accounting, Shift in Paradigm. Historical Development & Evolution of Social Accounting. Rationale for Social Accounting.

Unit 2: Social Benefits and Costs (9 hours)
Social Benefits and Costs. Measurement of Costs and Benefits. Social Impact Assessment of Business Activities. Seidler's Model for Social Income Statement, Abt's Model, Ralph's Comprehensive Social Benefit Cost Model.

Unit 3: Corporate Social Accounting (9 hours)
Definitions of Social Accounting, Responsibility Accounting, Objectives & Scope of Social Accounting. Role & Importance. Social Accounting in India. Approaches, Challenges in Social Accounting. Theories of Social Accounting (Stakeholder, Legitimacy, Institutional).

Unit 4: Corporate Responsibility Approach for Reporting (11 hours)
Social Performance Indicators. Corporate Social Responsibility, CSR Reporting Framework in Companies Act 2013. Sustainability Reporting. Triple Bottom Line. SEBI Guidelines on Business Responsibility & Sustainability Reporting. Stakeholder Engagement and Reporting. Need for Corporate Social Reporting.

Unit 5: National and Global Social Accounting (10 hours)
International accounting standards, frameworks, and guidance – SASB, GRI, SDG. National Income and Social Accounting, Social Accounting Matrix. Social Audit and Assurance. Socially Responsible Investment.

Exercises:

The learners are required to:

1. Prepare a small report on conventional accounting and shift in a paradigm based on the research papers.
2. Identify the different types of social costs based on the financial statements of selected companies.
3. Give a presentation on corporate social accounting by collecting information from the annual reports of select companies.
4. Evaluate the impact of the Corporate Responsibility Approach for Reporting on the financial performance of the select national companies based on their financial statements.
5. Prepare a project on analysing unique aspects of social accounting in the nonprofit sector and reporting on social outcomes and impact for nonprofits.
6. Do a comprehensive analysis of National and Global Social Accounting standards and procedures.

Suggested Readings:

- Bhanumurthy, K. V. (2011). *Business ethics and corporate responsibility - about social responsibility standards.* In R. Mishra, & J. Kiranmai, Corporate Governance in Asia. (pp. 236-247). Delhi, India: Allied Publishers Pvt. Ltd.
- Bhanumurthy, K. V., Bhandari, V., & Pandey, V. (2014). *Does Indian stock market encourage socially responsible companies?* Manthan Journal of Commerce and Management, 1(1), 1-34.
- Ramanathan, K. V. (1976). Toward a theory of corporate social accounting. *The accounting review*, *51*(3), 516-528.
- Gray, R., Collison, D., & Bebbington, J. (1998). Environmental and social accounting and reporting. *Financial reporting today*, 179-214.
- Retolaza, J. L., & San-Jose, L. (2021). Understanding Social Accounting Based on Evidence. *SAGE Open*, 11(2). https://doi.org/10.1177/21582440211003865
- Owen, T. S. D. (2001). Introduction social accounting, reporting and auditing: beyond the rhetoric?.
- Shaikh, J. M., & Jakpar, S. (2007). Dispelling and construction of social accounting in view of social audit. *Information Systems Control Journal*, *2*(6).
- Gray, R. (2013). Back to basics: What do we mean by environmental (and social) accounting and what is it for?—A reaction to Thornton. *Critical perspectives on Accounting*, *24*(6), 459-468.
- Robbins, P., Hintz, J., & Moore, S. A. (2022). *Environment and society: a critical introduction.* United States: John Wiley & Sons.
- Trivedi, V., & Shrivastava, V. K. (2011). *Environment and social concerns.* Delhi, India: Concept Publishing Co.
- Verma, M. K. (2018). *Globalisation, environment and social justice: perspectives, issues and concerns.* Delhi, India: Routledge.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

Discipline Specific Elective Course- 6.6 (DSE-6.6): Environmental Accounting

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Environmental Accounting DSE-6.6	4	3	1	0	Pass in Class XII	NIL

Learning Objectives

The course aims to help learners to know issues in Environmental Accounting and how these issues can be reported more transparently and responsibly.

Learning Outcomes

After completion of the course, learners will be able to:

1. Compare the Conventional Accounting System with Environmental Accounting.
2. Describe the Environmental costs and benefits.
3. Analyse Corporate Environmental Accounting.
4. Analyse the rationale of the New Accounting Framework and the Corporate Responsibility Approach.
5. Evaluate the impact of corporate activities at the National and Global Levels.

SYLLABUS OF DSE-6.6

Unit 1: Conventional Accounting and Shift in Paradigm (6 hours)

Traditional Framework of Accounting, Limitations with traditional framework of Accounting, Shift in Paradigm, Increasing awareness of Environmental Issues. Rationale for Environmental Accounting. Importance of environmental accounting in sustainable development.

Unit 2: Environmental Costs (9 hours)

Different Levels of Environmental Costs, Components of Environmental Costs, Externalities, Costs of Externalities, True Cost and Hidden Cost and Life Cycle Assessment, Role of Environmental Costing, Environmental cost-benefit analysis, Energy and Environmentally Differentiated Accounting

Unit 3: Corporate Environmental Accounting (9 hours)

Corporate Environmental Accounting, Environmental Accounting Methods, Environmental Management Accounting and Environmental Audit. Carbon Accounting, Carbon footprint calculation and reduction strategies. Environmental Performance Indicators

Unit 4: Corporate Reporting on Environmental Impact (9 hours)

Triple Bottom Line Reporting, CSR Reporting and Green Accounting, SEBI Guidelines on Business Responsibility & Sustainability Reporting. Need & Significance of Environmental Reporting Standards, GRI, SASB, BR&SR. Green Energy Stocks & ESG Index

Unit 5: National and Global Environmental Accounting (12 hours)
National Environmental Accounting, System of Integrated Environmental and Economic Accounts (SEEA), Economy-wide material flow accounts, Environmental protection expenditure accounts, Assessment of Environment Cost and Benefits, Green Accounts and Green GDP, Greenhouse Gas Emissions; Global Environmental Accounting, Sustainable Economic Development and Environmental Kuznets Curve.

Exercises:
The learners are required to:

1. Prepare a small report on conventional accounting and shift in a paradigm based on the research papers.
2. Identify the different types of environmental costs based on the financial statements of selected companies.
3. Give a presentation on corporate environmental accounting by collecting information from the annual reports of select companies.
4. Evaluate the impact of the Corporate Responsibility Approach for Reporting on the financial performance of the select national companies based on their financial statements.
5. Make a comparative analysis of National and Global Environmental Accounting based on the policies adopted by selected national and global companies.

Suggested Readings:

- Bhanumurthy, K. V. (2011). *Business ethics and corporate responsibility - about social responsibility standards.* In R. Mishra, & J. Kiranmai, Corporate Governance in Asia. (pp. 236-247). Delhi, India: Allied Publishers Pvt. Ltd.
- Bhanumurthy, K. V., Bhandari, V., & Pandey, V. (2014). *Does Indian stock market encourage socially responsible companies?* Manthan Journal of Commerce and Management, 1(1), 1-34.
- Callan, S. J., & Thomas, J. M. (2013). *Environmental economics and management: theory, policy, and applications*. Dryden Press.
- Jha, R., & Bhanumurthy, K. V. (2009). *Environmental sustainability – consumption approach.* London, United Kingdom: Routledge.
- Naik, I. C. (2016). *Environmental movements, state and civil society.* Jaipur, India: Rawat Publications.
- Odum, H T. (1995). *Environmental accounting: energy and environmental decision making.* United States: Wiley.
- Porchelvi, A. (2020). *Environmental reporting and company characteristics: a study of indian companies.* International Journal of Research and Analytical Reviews, 7(1), 429-440.
- Porchelvi, A. (2019). *Environmental reporting practices: an analysis of indian companies.* EPRA International Journal of Economic and Business Review, 7(10), 83-93.
- Robbins, P., Hintz, J., & Moore, S. A. (2022). *Environment and society: a critical introduction.* United States: John Wiley & Sons.
- Trivedi, V., & Shrivastava, V. K. (2011). *Environment and social concerns.* Delhi, India: Concept Publishing Co.
- Verma, M. K. (2018). *Globalisation, environment and social justice: perspectives, issues and concerns.* Delhi, India: Routledge.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

Discipline Specific Elective Course- 6.7 (DSE-6.7): Industrial Laws

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Industrial Laws DSE-6.7	4	3	1	0	Pass in Class XII	NIL

Learning Objectives

The course aims to familiarize the students with the understanding and provisions of industry related laws. Case studies and issues involved in industrial laws are required to be discussed.

Learning Outcomes

After completion of the course, learners will be able to:

1. Acquaint themselves with the basic framework of payment of wages.
2. Analyse the calculation of bonus and eligibility to receive bonus as per legislation.
3. Examine the schemes for labour and their benefits enacted under the Indian legislation.
4. Create channels to extend the benefits of different schemes of insurance available for a defined set of employees.
5. Interpret the legal structure provided for social security.

SYLLABUS OF DSE-6.7

Unit 1: Payment of Wages (7 hours)

Definitions under Payment of Wages legislation[#]; Fixation of Wage Period; Time of Payment of Wages; Mode of Payment; Deductions from Wages and Fines.

Unit 2: Payment of Bonus (11 hours)

Definitions under the Payment of Bonus legislation[#]; allocable surplus, available surplus; determination of bonus; calculation of bonus; eligibility for bonus; disqualifications for bonus; payment of minimum and maximum bonus; set on and set off of allocable surplus; deductions of certain amounts from bonus payable; time limit for payment of bonus.

Unit 3: Employees Provident Fund (9 hours)

Definitions under the legislation[#]; EPF Schemes– Employees' Provident Fund Scheme; Employees' Pension Scheme; Employees' Deposit linked Insurance Scheme.

Unit 4: Employees State Insurance (9 hours)

Definitions under the legislation[#]; Partial and Permanent Disablement; ESI Corporation; Contributions; Benefits available under Employees' State Insurance**.**

Unit 5: Payment of Gratuity (9 hours)

Definitions under the legislation[#]; continuous service; payment of gratuity; forfeiture of gratuity; determination of amount of gratuity.

Exercises:

The learners are required to:

1. Enlist authorized deductions from wages. Identify unauthorized deductions faced by workers/ employees in your local area.
2. Identify practices of dissemination of bonuses paid by business units.
3. Discuss various schemes within the ambit of employees' provident fund.
4. Visit nearby ESI hospital or dispensary and enlist the services available for employees covered under the legislation.
5. Identify scenarios wherein employees' gratuity can be forfeited.

Suggested Readings:

- Maheshwari, S. N., Maheshwari, S. K. (2018) *Industrial laws*. Delhi, India: Himalaya Publishing House Pvt. Ltd.
- Malik, K. L.(2021) *Industrial laws and labour laws*. Lucknow, India: Eastern Book Company,.
- Sharma, J. P. (2018) *Simplified approach to labour laws*.(5th ed.). Delhi, India: Bharat Law House Pvt. Ltd.
- Singh, A. (2021) *Introduction to labour and industrial laws.* Nagpur, India: Wadhwa and Company.
- New Industrial and Labour Laws (2023). Delhi, India: Taxmann Publication.

Additional Resources

- Arora, S., & Arora, R. (2018). *Industrial laws*. Delhi, India: Taxmann Pvt Ltd.
- Institute of Company Secretaries of India. *Executive programme-module II, Paper 5 economic and labour laws*. Delhi, India.
- Srivastava, S. C. (2022). *Industrial relations & labour laws*. Uttar Pradesh, India: Vikas Publishing House (P) Ltd.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

#***From the date of implementation of labour codes, this syllabus shall be disseminated as per new labour codes (Code on Wages and Code on Social Security)***

Discipline Specific Elective Course- 6.8 (DSE-6.8): Export-Import Management

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Export-Import Management DSE-6.8	4	3	1	0	Pass in Class XII	NIL

Learning Objectives

The course aims to develop an understanding and build knowledge on the key aspects of export-import management in India and enable students to become export professionals and entrepreneurs in the fast-changing global environment.

Learning Outcomes

After completion of the course, learners will be able to:

1. Analyse the basics of export-import management in India.
2. Evaluate various export incentives and schemes designed for business firms and exporters.
3. Organise and plan the documents required for export and import transactions and export finance.
4. Analyse the different operations involved in executing export orders.
5. Summarize the procedure and documentation formalities, practices and regulations governing export trade.
6. Create awareness about India's policy reforms to promote export competitiveness.

SYLLABUS OF DSE-6.8

Unit 1: **Basics of Export-Import Management (11 hours)**
An overview of Foreign Trade Policy; An overview of export-import management system in India; Deemed exports; Importance of exports to economic growth; Understanding Export--Import Operations; Steps of export shipment from India; Processing of an Export Order; Legal Formalities for Getting Started in Foreign Trade; International Commercial (INCO) Terms 2020; Rules of Origin & Certificates of Origin;

Unit 2: **Export-Import Procedure and Documentation (9 hours)**
EXIM procedure; Export Documents related to goods, shipment and payment; Import documents used in import transaction; Export and Import through Post & Courier. Export finance: pre-shipment and post-shipment;

Unit 3: **An Overview of Export Promotion Schemes and Organisational Support (9 hours)**
NiryatBandhu Scheme, MEIS, SEIS, Information on Registered Exporter (REX) System, SCOMET guidelines; Export Incentives: Scheme For Remission of Duties or Taxes on Export Products (RoDTEP), Scheme For Rebate of State and Central Taxes and Levies (RoSCTL); Export Promotion Capital Goods (EPCG); Organisational support: government regulatory agencies involved in export and import i.e. Department of Commerce and Industry, Directorate General of Foreign Trade (DGFT), Directorate General of Trade Remedies (DGTR), Export Promotion Councils, Commodity Boards and Export Inspection Council (EIC).
Unit 4: **Legal framework of Custom Law (9 hours)**
Indian Customs Electronic Gateway (ICEGATE); Indian Customs EDI System (ICES); Procedure for clearance of imported and export goods.

Unit 5: **Make in India and Export Competitiveness (7 hours)**
NITI's Aayog Export Preparedness Index, 2020 – Policy, Business Ecosystem, Export Ecosystem, Export Performance, Learning and strategies; Emerging export entrepreneurs in India; Micro Exporters Policy (MEP).

Exercises:
The learners are required to:

1. Prepare flow-chart of export-import management system in India by accessing the steps prescribed by DGFT.
2. Access the DGFT website and if possible, interact with officials of DGFT for an in-depth and practical understanding of export import management and export finance.
3. Make field visits to various Export Promotion Councils (EPC) for goods and services established by the Department of Commerce and Industry, GOI.
4. Access the ICEGATE and ICES portal on FAQ to understand the legal framework of custom law.
5. Prepare case studies on emerging exporters in India and learn the contribution of the Make in India initiative in export promotion through survey reports and government decisions.
6. Prepare a campaign to create awareness about India's policy reforms to promote export competitiveness

Suggested Readings:

- Custom Manual (2018). *Central board of indirect taxes & customs, India.*
- Gupta, P. (2020). *Export-import management.* Tata McGraw Hill.
- Joshi, R. M. (2018). *International marketing.* OXFORD University Press.
- Lall, M., & Ahmed, S. (2021). *Export-import procedure and documentation.* Delhi, India: Sultan Chand & Sons.
- NITI Aayog (2020). *Export preparedness index.*
- Paul, J., & Aserkar, R. (2008). *Export-import management.* OXFORD University Press.

- Singh, R. (2020). *Export and import management: text and cases.* SAGE Publishing.
- Rai, U. K. (2010). *Export-import and logistics management.* (2nd ed.). PHI Learning.

Important Weblinks

- https://www.dgft.gov.in/CP/?opt=export-management-system
- https://www.dgft.gov.in/CP/?opt=import-management-system
- https://www.icegate.gov.in/about_icegate.html
- https://cip.icegate.gov.in/CIP/#/import_and_export_through_post
- https://cip.icegate.gov.in/CIP/#/import_and_export_through_courier
- https://www.youtube.com/watch?v=3lxRK76JwH4
- https://www.youtube.com/watch?v=eq2WRACDMfw
- https://www.youtube.com/watch?v=dUpVkNGA_q0

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

Discipline Specific Elective Course- 6.9 (DSE-6.9): Business Incubation

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Business Incubation DSE- 6.9	4	3	0	1	Pass in Class XII	NIL

Learning Objectives

The course aims to familiarize the learners with development of business incubators and its management.

Learning Outcomes

After completing the course, the learners will be able to:

1. Explain the incubation as a concept, types of business incubators and the role played by business incubators in supporting entrepreneurial efforts;
2. Describe the process of business incubation, incubator structure, and value propositions leading to start-up development;
3. Explain about various funding opportunities available to business incubators and understand the funding needs of the incubator;
4. Explain about various aspects of development of a business incubator, such as preparation of feasibility study, team building, and preparation of business plan;
5. Carry management of business incubators involving formulation of policy for entry and exit, employee management, identification of key performance indicators and mentoring process.

SYLLABUS OF DSE-6.9

Unit 1: Introduction (5 hours)
Business Incubation- Concept and Principles; Incubator and Incubation; Pre-requisites of incubator; Development of an incubator; Types of incubators; Corporate and educational incubators. Incubation and Entrepreneurship. Business incubation models and success factors. Virtual business incubation. Agribusiness incubation. Government Policies and Programmes, Role of business incubation in the economy.

Unit 2: Incubation Process (7 hours)
Process of business incubation and business incubator; Pre-incubation and post-incubation; Idea lab; Business plan structure; Value proposition. Role of business incubation in start-up development.

Unit 3: Incubator Business Environment (7 hours)
Managing business incubator; Financing business incubator; Owners and Fund providers; Seed funding/venture capital; Angel Financiers: types, nature, and procedures; Services of incubators.

Unit 4: Planning an Incubator (13 hours)
Feasibility study; Team formation and team building; Examining sample business idea and writing business plans; Developing business plan; Business incubation marketing and stakeholder management; Understanding investor/lender's perspective and presenting business plan; Valuation of business plan and elevator pitch.

Unit 5: Managing Business Incubator (13 hours)
Policy formulation for entry and exit; Incubation structures; Roles and responsibilities of key players; Managing incubator employees; Performance indicators of business incubator. Mentoring process; Legal issues and other formalities.

Practical Exercises (30 hours):
The learners are required to:

1. Develop a comparative study of various business incubators in the context of real- life cases.

2. Analyse the case of a start- up and elaborate upon the business incubation process and business plan structure.
3. Identify funding sources for various business incubators on the basis of real-life examples.
4. Develop a business incubator plan and prepare its management plan.
5. Discuss various legal issues and other formalities for business incubator with help of case study

Suggested Readings:

- Adkins, D. (2002). *A brief history of business incubation in the United States*. Athens, Greece: National Business Incubation Association.
- Anand, P., Prasad, S., Mukherjee, S., Shukla, A. (2021). *The sustainability and challenges for entrepreneurship, business incubation and technology start-ups in India*. Eureka Publications.
- Blokdyk, G. (2021). *Business incubator A complete guide*. Brendale, Australia: 5starCooks.
- Gerl, E. (2000). *Brick and mortar, renovating or building a business incubation facility*. Athens, Greece: National Business Incubation Association
- Leonard, J. (2014). *Startup incubators and business accelerators*: *The Easy Way*. United States: CreateSpace Independent Publishing Platform.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

Note: Students in the team shall visit various centres of Incubation such as Incubation Centre at NSIC, NISBURD, MSME, etc., and other colleges' and Management Institutes' incubation centres. After the visit, the students have to present their learning experiences in the form of a formal report and the same will form a part of joint evaluation by internal and external examiners after taking formal viva-voce of the students. The evaluation of the submitted project report shall be completed after the classes are disbursed but before the commencement of theory examinations.

General Elective Course- 6.1 (GE-6.1): Business Organisation

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Business Organisation GE- 6.1	4	3	1	0	Pass in Class XII	NIL

Learning Objectives

The course aims to familiarize the students with the forms of business organisation and contemporary issues.

Learning Outcomes

After completion of the course, learners will be able to:

1. Analyse the dynamics of business organisations
2. Describe the various forms of business organisations
3. Examine varied perspectives related to business environment and entrepreneurship.
4. Appreciate the change in working pattern of modern organisations.
5. To enable them to analyze and understand the emerging issues and challenges of the organization.

SYLLABUS OF GE-6.1

Unit 1: Introduction (7 hours)

Business – Concept, nature and scope, business as a system, business objectives, business and environment interface, distinction between business, commerce and trade, Business ethics, social responsibilities of Business

Unit 2: Business Enterprises (11 hours)

Forms of Business Organisation: Sole Proprietorship, Partnership firm, Joint Stock Company, One Person Company, Cooperative society; Limited Liability Partnership; Multinational Corporations; Choice of Form of Organisation; Business Combination: Need and Objectives, Forms: Mergers, Takeovers and Acquisitions

Unit 3: Business Environment (9 hours)

Meaning and significance of Business environment, Internal and external environment, Dimensions of Business Environment; Uncertainty and business; Environmental Analysis and Diagnosis, Environment scanning techniques: SWOT and ETOP

Unit 4: Entrepreneurship: Founding the Business (11 hours)

Entrepreneur-Entrepreneurship-Entreprise; entrepreneurial ideas and opportunities in contemporary business environment; Process of entrepreneurship; Forms of entrepreneurship; Skill India, Start Up India, Make in India, Globalisation

UNIT 5: Contemporary Issues of Business Organisations (7 hours)

Emerging Issues and Challenges; Innovation in Organisational Design; Learning Organisations, Workforce Diversity, Franchising, Outsourcing, and E-commerce; Government and business interface; Sustainability; Digitalisation and Technological innovations

Exercises:

The learners are required to:

1. Complete the exercise wherein they are given different situations and scenarios to start their own business (in terms of capital, liability, scale of operations, etc.) and are asked to select the most suitable form of business and justify the same highlighting the advantages and disadvantages of their choice.
2. Visit different enterprises and present a report on business models followed by them through a comparative analysis.
3. Identify various elements affecting the business environment and conduct SWOT analysis for the company identified.
4. Record and report their observations regarding the emerging issues and challenges of Business Organisations
5. Identify changes in the working pattern of modern organisations.

Suggested Readings:

- Basu, C. (2017). *Business organisation and management.* McGraw Hill Education.
- Drucker, P. F. (1954). *The practice of management.* New York, United States: Harper & Row.
- Chhabra, T. N. (2021). *Business organisation and management.* Delhi, India: Sun India Publications.
- Kaul, V. K. (2012). *Business organisation management.* Pearson Education.
- Koontz, H., & Weihrich, H. (2012). *Essentials of management: an international and leadership perspective.* McGraw Hill Education.
- Singh, B. P., & Singh, A. K. (2002). *Essentials of management*. Delhi, India: Excel Books Pvt. Ltd.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

General Elective Course- 6.2 (GE-6.2): Financial Management for Beginners

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Financial Management for Beginners GE-6.2	4	3	1	0	Pass in Class XII	NIL

Learning Objectives

The course aims to familiarize the students with the basic concepts of financial management.

Learning Outcomes

After completion of the course, learners will be able to:

1. Analyse the concept of the time value of money and risk & return.
2. Interpret financial analysis with the aid of various financial statements & analyse the capital budgeting process and techniques.
3. Analyse the cost of capital, capital structure and leverage.
4. Examine dividend & working capital dividend decisions.
5. Perform valuation of securities.

SYLLABUS OF GE-6.2

Unit 1: Introduction (9 hours)

Meaning and importance of finance. Time value of money (Compounding & Discounting), Risk & Return. Alternative investment options, Sources of long-term financing and short term financing.

Unit 2: Financial Analysis & Capital Budgeting (12 hours)

Financial statements- income statement, balance sheet, Ratio analysis: meaning, significance and limitations. Current ratio, quick ratio, absolute liquidity ratio, debt-equity ratio, interest coverage ratio, inventory turnover ratio, debtors turnover ratio, average collection period,

creditors turnover ratio, average payment period, return on capital employed, return on equity, earnings per share, dividend per share, price-earning ratio.

Capital budgeting process, Capital budgeting techniques (Payback period, Discounted payback period, NPV, IRR).

Unit 3: Cost of Capital & Capital Structure (7 hours)
Concept of cost of capital and capital structure: Cost of debt capital, Cost of preference share capital, Cost of equity share capital, Weighted average cost of capital (WACC). Meaning of leverage. Operating leverage, Financial leverage, Combined leverage.

Unit 4: Dividend Decisions & Working Capital (8 hours)
Types of dividends, Dividend policies and factors affecting dividend policies.Stock-split and bonus Shares. Concept of working capital, its components and factors affecting working capital requirements.

Unit 5: Valuation of Securities (9 hours)
Types of risks and returns. Concept of valuation, Equity valuation & analysis, Bond valuation & analysis.

Exercises:
The learners are required to:

1. Explain the importance of time value of money and how it is related to investment.
2. Analyse and interpret case studies on capital budgeting, financial structure and working capital of a company based on annual reports and other information.
3. Determine the capital structure of various companies from their annual reports.
4. Define the concept of working capital dividend decisions with the help of suitable examples.
5. Use sample excel data for valuation of securities.

Suggested Readings:

- Chandra, P. (2016). *Finance sense: finance for non finance executives.* Tata McGraw Hill.
- Hawawini, G., & Viallet, C. (2022). *Finance for non finance managers.* India: Cengage Delmar Learning India Pvt Ltd.
- Siciliano, G. (2014). *Finance for nonfinancial managers (briefcase books series).* Tata McGraw Hill.
- Maheshwari, S. N. (2019). *Elements of financial management.* Delhi, India: Sultan Chand & Sons.
- Maheshwari, S. N. (2019). *Financial management – principles & practice.* Delhi, India: Sultan Chand & Sons.
- Tripathi, V. (2019). *Basic financial management.* Delhi, India: Taxmann Publication.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

General Elective Course- 6.3 (GE-6.3): Basics of Advertising

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Basics of Advertising GE-6.3	4	3	1	0	Pass in Class XII	NIL

Learning Objectives

The objective of this paper is to familiarise the students with concepts and techniques of advertising used in marketing.

Learning Outcomes

After completion of the course, learners will be able to:

1. Explain various introductory concepts of advertising.
2. Discuss advertising copy decisions.
3. Evaluate the use of different types of advertising media.
4. Discuss different types of advertising agencies.
5. Explain advertising effectiveness.

SYLLABUS OF GE-6.3

Unit 1: Basic Concepts (9 hours)
Communication: Meaning and process. Advertising: Meaning, Significance, and Types. Difference between advertising and publicity, advertising and personal selling. Sales and communication objectives for advertising. Advertising budget: Methods. Target audience: Meaning and basis of selection.

Unit 2: Advertising Copy Decisions (9 hours)
Message Appeals Rational and Emotional; Advertising Copy: Elements of Print Advertising Copy

Unit 3: Advertising Media Types (9 hours)
Types of Media: Merits and Demerits; Advertising through internet and interactive media - issues and considerations

Unit 4: Advertising Agency (9 hours)
Types and Selection of advertising agency

Unit 5: Evaluating Advertising Effectiveness (9 hours)
Evaluating Communication and Sales Effect -relevance and techniques.

Exercises:
The learners are required to:
1. Discuss case studies on different methods of setting advertising budget.
2. Analyse various advertising copy decisions of different firms.
3. Discuss the role of different advertising media types in the present times.
4. Present case studies on selection of advertising agencies.
5. Assess the effectiveness of any advertisement.

Suggested Readings:

- Belch, G. E., Belch, M. A., & Purani, K. (2009). *Advertising and promotion: an integrated marketing communications perspective*. New York, United States: McGraw Hill Education.
- Gupta, R. (2017). *Advertising.* Delhi, India: Scholar Tech Press.
- Kapoor, N. (2022). *Fundamentals of advertising*. (2nd ed.). Delhi, India: Cengage Learning India Pvt. Ltd.
- Shah, K., & D'Souza, A. (2008). *Advertising and promotions: an imc perspective.* Delhi, India: Tata McGraw Hill Publishing Company Limited.
- Sharma, K. (2018). *Advertising: planning and decision making*. Delhi, India: Taxmann Publication.
- Sharma, S., & Singh, R. (2006). *Advertising: planning and implementation.* (3rd ed.). India: PHI Learning Pvt. Ltd.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

General Elective Course- 6.4 (GE-6.4): Computerized Accounting System

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Computerized Accounting System GE-6.4	4	2	0	2	Pass in Class XII	Studied Accounting for Everyone (GE-5.3)

Learning Objectives

This course aims to impart the skills needed for recording business transactions and producing final accounts by a non-commerce student using computerised accounting software.

Learning Outcomes

After completion of the course, learners will be able to:

1. Develop manual and computerised accounting system environments.
2. Create structure of a computerised accounting system for a business firm.
3. Record day to day business transactions in computerised accounting system
4. Describe and make necessary adjustments for goods and service tax (GST) while recording business transactions
5. Demonstrate and generate various accounting reports for analysis and decision making

SYLLABUS OF GE-6.4

Unit-1: Introduction to Accounting (3 hours)

Accounting – meaning, importance and need, its objectives and relevance to business establishments and other organisations, and individuals. accounting information: meaning, users and utilities, sources of accounting information. some basic terms –transaction, account, asset, liability, capital, expenditure & expense, income, revenue, gain, profit, surplus, loss, deficit. debit, credit, accounting year, financial year, financial accounting principles.

Unit-2: Recording of business transactions and preparation of financial statements (7 hours)

Features of recordable transactions and events; types of accounts: personal account, real account and nominal account; rules for debit and credit; double entry bookkeeping system, journalizing transactions; preparation of ledgers; fundamental accounting equation; preparation of Trial Balance; concept of revenue and capital; preparation of Trading and Profit & Loss Account and Balance Sheet manually.

Unit-3: Computerised Accounting System (3 hours)

Computerised Accounting Systems: Basics of computerised accounting systems; difference between manual and computerized accounting system; overview of available software packages for computerized accounting; factors affecting selection of suitable Computerised accounting software; procurement and installation of computerised accounting software.

Using any popular accounting software: create, select, shut, and delete a Company; setting security features of company; date and period features; configure and features settings; backup and restore data of a company.

Unit-4: Creating Masters and voucher entry (12 hours)

Creating Accounting Ledgers and Groups: Single create vs. multiple create, creating ledger under a group and entering opening balances

Creating Stock Items and Groups: Creating unit of measurement, creating stock groups using single or multiple create feature under an existing group, creating Stock items using single or multiple feature under an existing group,

Voucher Entry: Types of vouchers, selection of voucher type for transactions, vouchers entry, voucher number and date settings, voucher entry with more than one debit or credit accounts, editing and deleting a voucher and printing of voucher.

Unit-5: Taxation and Generating Reports: **(5 hours)**

Taxation: Accounting for Goods and Service Tax

Generating Reports: Cash Book, ledger accounts, Trial Balance, Profit and Loss Account, Balance Sheet, Ratio analysis and Cash Flow Statement; exporting reports in pdf and excel formats.

Note: The General Purpose Software referred in this course will be notified by the University Departments every three years. If the specific features, referred to in the detailed course above, is not available in that software, to that extent it will be deemed to have been modified.

Practical Exercises (60 hours):

The learners are required to:

1. Discuss relevant provisions of the computerised accounting system environment.
2. Analyse the basic business transactions of select firms and create structure of computerised accounting systems .
3. Apply a computerised accounting system on manually prepared accounts of a firm.
4. Determine the tax amount with the help of computerised accounting entries.
5. Prepare the accounting reports of any three companies of your interest and comment how these accounting reports helpful in decision making

Suggested Readings:

- Charles, T. N., Gary, L. S., John, A. E., & Donna, R. P. (2017). *Introduction to financial accounting.* United States: Pearson.
- Goyal, B. K., & Tiwari, H. N. (2022). *Financial accounting.* Delhi, India: Taxmann.
- Kumar, A. (2018). *Financial accounting.* Delhi, India: Singhal Publication.
- Lal, J., Srivastava, S., & Abrol, S. (2017). *Financial accounting text and problems.* Delhi, India: Himalaya Publishing House.
- Leonardo, A. R., Qanis, J. R., & Alderman, C. W. (1990). *Accounting information systems: a cycle approach.* United States: Publisher Wiley.
- Lt. Bhupinder. (2020). *Financial accounting – concepts and applications.* Delhi, India: Cengage.
- Monga, J. R., & Bahadur, R. (2023). *Financial accounting: concept and applications.* Delhi, India: Scholar Tech Press.
- Hurt, R. L. (2015). *Accounting information systems: basic concepts and current issues.* United States: McGraw Hill.
- Sah, R. K. (2020). *Concept building approach to financial accounting.* Delhi, India: Cengage Learning India Pvt. Ltd.
- Sehgal, A., & Sehgal, D. (2019). *Fundamentals of financial accounting.* Delhi, India: Taxmann.
- Tulsian, P. C. (2023). *Financial accounting.* Delhi, India: S. Chand.

Additional Resources:

- Tally ERP 9 Training Guide – 4th Edition. Ashok K Nadhani. Publisher: BPB Publications
- Tally ERP 9 book advanced user. Publisher: Swayam Publication (www.tallyerp9book.com)
- **Web resource:** http://tallyerp9book.com/TallyERP9-Book-Content.html

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

General Elective Course- 6.5 (GE-6.5): E-Filling of Returns

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
E-Filing of Returns GE-6.5	**4**	**2**	**0**	**2**	**Pass in Class XII**	NIL

Learning Objectives

The course aims to equip students with the practical skills required for filing of returns under Income Tax Laws.

Learning Outcomes

After completing of the course, learners will be able to:

1. Examine the basic concepts of income tax applicable to an individual assessee.
2. Explain the provisions when business or professional income is computed on estimated basis.
3. Demonstrate e filing of return.
4. Analyse the provisions of TDS.
5. Demonstrate e filing of TDS returns.

SYLLABUS OF GE-6.5

Unit 1: Income tax: An overview (5 hours)

Incomes taxable under different heads, deductions available from gross total income, computation of total income and tax liability of individuals, PAN and due date of filing of income tax return; Provisions related to advance payment of tax; New tax regime for individuals; Reliefs for an individual.

Unit 2: Maintenance of accounts, audit, and taxation on presumptive basis (7 hours)

Provisions of maintenance of accounts by certain persons carrying on profession or business [Sec.44AA]; Provisions of audit of accounts of certain persons carrying on business or profession [Sec.44AB]; Special provision for computing profits and gains of business on presumptive basis [Sec.44AD]; Special provision for computing profits and gains of profession on presumptive basis [Sec.44ADA]; Special provision for computing profits and gains of business of plying, hiring or leasing goods carriages [Sec. 44AE].

Unit 3: e-Filing: Conceptual framework and filing of Income Tax Returns (9 hours)

Meaning and merits of e-Filing; Filing of income tax returns in ITR-1, ITR-2, ITR-3, ITR-4, ITR-5 and ITR-U.

Unit 4: Tax Deducted at Source (4 hours)

Provisions relating to TDS; Schedule for deposit of TDS; Schedule for submission of TDS returns; Exemption from TDS: Form 13, 15G and 15H; Form 16, AIS.

Unit 5: e-Filing of TDS returns (5 hours)

Prescribed forms for filing of TDS returns; Practical workshop on e-filing of TDS returns [Form24Q and Form 26Q].

Practical Exercises (60 hours):

The learners are required to:

1. Discuss basic concepts of Income taxable under Income-tax Act, 1961 from the official website of Government of India.
    a. Explain relevant provisions to understand basic concepts of income tax applicable to an individual assessee.
    b. Give hands-on simulating exercise relating to due dates and advance payment of income tax.
2. Refer to the Finance Act to know about the amendments done in various provisions of the Income-tax Act, 1961.
3. Explain the process of e-filing by showing the video e-filing 2.0 guided tour on the official website of Income Tax department, Government of India.
4. Do hands-on training to furnish Income Tax Return (ITR) on the official e-filing website of the Government of India i.e., www.incometax.gov.in.
5. Do hands-on training to furnish TDS returns at https://www.incometax.gov.in/iec/foportal/
6. Demonstrate e filing of TDS returns.

Suggested Readings:

- Ahuja, G., & Gupta, R. (2021). *Systematic approach to income tax.* Delhi, India: Flair Publications Pvt.Ltd.
- Das, A. N,. & Agnihotri, M. (2022). *Computerised Accounting and E-Filing of Tax Returns.* Kolkata, India: Tee Dee Publications.

- Lodha, R. (2022). *Computerised Accounting and E-Filing of Tax Returns.* Kolkata, India: Lawpoint Publications.
- Mittal, N. (2022). *Concept building approach to income tax law & practice.* Delhi, India: Cengage Learning India Pvt. Ltd.
- Panwar, V. & Mahajan, J. (2023). *Introduction to E-Filing of Returns (with practical workshops using Java and Excel utilities)*. Delhi, India: Scholar Tech Publication.
- Singhania, V. K., & Singhania, M. (2021). *Students' guide to income tax.* University ed.. Delhi, India: Taxmann Publications Private Limited.

Additional Resources:

- Income-tax Act, 1961
- www.incometaxindia.gov.in

Note: Suggested readings will be updated by the Department of Commerce and uploaded on the Department's website.

(BA Commerce based papers are approved for the students admitted during academic session 2022-23 and 2023-24)

SEMESTER- IV

BA COMMERCE BASED PAPERS

B.A. Programmes with Commerce (Entrepreneurship and Small Business)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
BAC: Discipline (ESB) - A4: Launching a New Venture (Non-Major/Minor)	4	3	1	0	Pass; in Class XII	Studied Contemporary Policy & Institutional Framework (BAC: Discipline (ESB) – A3)
BAC: DSC-4 Principles of Management (Major)	4	3	1	0	Pass in Class XII	NIL

BAC: Discipline (ESB) - A4: Launching a New Venture (Non-major/Minor)

Learning Objectives

The purpose of this paper is to acquaint students with various opportunities to establish and launch a new venture with identifying the entrepreneurial opportunity.

Learning Outcomes

After completion of the course, learners will be able to:

1. Demonstrate entrepreneurial opportunities and create business ideas.
2. Analyse and conduct feasibility study of business proposals.
3. Describe the formation of new ventures and recognise its legal aspects.
4. Recognise the significance of human resource and strategic planning.
5. Discuss various stages of financing for a business venture.

SYLLABUS OF BAC: Discipline (ESB) - A4

UNIT 1 Entrepreneurial Opportunities and Business ideas (9 hours)

- Innovation and Creativity: Meaning and types of Innovations; Meaning and role of creative thinking in generating Innovative ideas.
- Entrepreneurial Opportunities and Business Ideas: Meaning, nature and Identification of Entrepreneurial Opportunities; Meaning, nature and Techniques of generating Business Ideas; Difference between Entrepreneurial Opportunities and Business Ideas

UNIT 2 Feasibility Study (9 hours)

- Market Feasibility: Customer Analysis; Pricing Decision; Sales Forecast and Sales

Distribution; Competition Analysis

- Financial Feasibility: Concepts of startup (project) costs, operating costs; introduction to sources of finance; introduction of various financial statements
- Technological Feasibility: Product/Service Feasibility

UNIT 3 Business Formation (9 hours)

- Meaning and process of formation of Sole Proprietorship, Partnership, Limited Liability Partnership, Company (including Section 8 company and One Person Company) and Non-Governmental Organizations (NGO)
- Legal Aspects-Intellectual Property Protection: Patents, Copyrights, Trademarks

UNIT 4 Human Resource and Strategic Planning (9 hours)

- Team building and Networking
- Management Strategies- Competitive Strategy, Corporate Strategy; Business Strategy, Functional Strategy and Operating Strategy
- Business Plan

UNIT 5 Business Scalability and Growth (9 hours)

- Financing through Pitching
- Financing Stages: Self-funding, Seed capital, Business Incubators and Facilitators, Angel Investors, Banks, Venture Capitalists, Initial Public Offering (IPO)
- Strategies for Growth-Acquisition, Mergers, Franchisee, Diversification, Market Segmentation, Market Penetration, Market Development, Product Development, Internationalization

Suggested Case Studies

- Swiggy- Foodtech Startup
- Flipkart- E-Commerce Startup
- ByJu's – Education tech Startup
- PayTm- Fintech Startup
- Dream 11- Gaming Startup
- Ola- Mobility Startup
- OYO- Hospitality Startup
- Meesho- e-commerce Startup
- Nykaa- e-commerce Startup

Exercises

The learners are required to:

1. Create a plan to start their own business. The plan should highlight the capital requirements, scale of operations, etc. Discuss the most suitable form of business applicable in this case and justify the same highlighting the advantages and disadvantages of their choice.
2. For the plan created in the above exercise, conduct a feasibility study.
3. Identify the legal aspects that would be relevant for the devised plan.
4. Identify the human resources needed for the above plan. Also, elaborate on various aspects of strategic planning.
5. Discuss various stages of financing for certain popular business ventures.

Suggested Readings

- Holt, D. H. (1992). *Entrepreneurship: New venture creation*. Uttar Pradesh, India: Pearson Education India.

- Allen, K. R. (2015). *Launching new ventures: An entrepreneurial approach*. United States: Southwestern College Publishing.
- Bansal, S. (2020). *New Venture Planning*. New Delhi, India: JSR Publishing House.
- Timmons, J. A. (1990). *Planning and financing the new venture*. Baltimore, United States: Brickhouse Publishing Company.
- Kaplan, J. M., & Warren, A. C. (2009). *Patterns of entrepreneurship management*. New Jersey, United States: John Wiley & Sons.
- Zimmerer, T. W., & Scarborough, N. M. (2005). *Essentials of Entrepreneurship and Small Business Management*. United States: Pearson.

https://www.projectmanager.com/training/how-to-conduct-a-feasibility-study

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

BAC: DSC-4: Principles of Management (Major)

Learning Objectives

The course aims to equip learners with essential management related knowledge and skills and their applicability in the real world.

Learning Outcomes

After completion of the course, learners will be able to:

1. Discuss evolution of management and its significance.
2. Analyse applicability of managerial functions.
3. Assess the significance of planning and organising in business.
4. Interpret the role of directing in business.
5. Analyse the importance of controlling function and discuss contemporary issues in management.

SYLLABUS OF BAC: DSC-4

Unit 1: Introduction to Management (9 hours)

Principles of management - concept, nature and significance; Evolution of Management thought: Classical (Fayol's principles of management; Taylor's scientific management), Neoclassical (Hawthorne Experiments), Modern approach (Systems Approach; Contingency Approach).

Unit 2: Functions of Management (7 hours)

Management functions and their relationship- planning, organizing, staffing, directing and controlling; Coordination - concept, characteristics and importance; Functional areas of management – an overview.

Unit 3: Planning and Organizing (11 hours)

Planning- meaning, strategic and operations planning; Decision-making- concept, importance and bounded rationality; Organizing- division of labor & specialization; Organisational structures- traditional and modern; Factors affecting organisational design.

Unit 4: Directing (11 hours)

Concept and theories of Motivation- Maslow's need hierarchy, Herzber's two-factor theory, Theory X&Y; Leadership-meaning and importance, leadership styles, Transactional and transformational leadership; Communication- meaning and importance.

Unit 5: Controlling and Contemporary Issues in Management (7 hours)
Principles of Controlling, performing controlling function; Management challenges of the 21st Century; Century; Factors reshaping and redesigning management purpose, performance and reward perceptions- Internationalization; Digitalization; Entrepreneurship & innovation; Workplace Diversity

Exercises:
The learners are required to:

1. Assess the applicability of managerial theories in today's corporate world.
2. Demonstrate the use of managerial functions in organizing an event.
3. Prepare a comparative analysis of organization structures of various companies.
4. Demonstrate various types of leadership styles in form of role play and identify the motivation techniques used by leaders.
5. Discuss the impact of emerging issues in management.

Suggested Readings:

- Drucker, P. F. (1954). *The Practice of management*. New York, United States: Harper & Row.
- Drucker, P. F. (1999). *Management challenges for the 21st Century*. New York, United States: HarperCollins Publishers Inc.
- Griffin, R.W. (2011). *Management principles and application*. Massachusetts, Unites States: Cengage.
- Koontz, H., & Weihrich, H. (2012). *Essentials of management: An international and leadership perspective*. New York, United States: McGraw Hill Publications.
- Kumar, P. (2019). *Management: principles and applications*. Delhi: JSR Publication House LLP.
- Laasch, O. (2022). *Principles of management*. California, United States: Sage Textbook.
- Mahajan, J.P., Mahajan, A., & Dewan, D. (2017). *Management principles and applications*. Uttar Pradesh, India: Vikas Publications.
- Rao, V.S.P. (2017). *Management Principles and Applications*. Delhi, India: Taxmann Publications.
- Vasishth, N., & Rajput, N. (2016). *Principles of management*. Delhi: Kitab Mahal.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
BAC: Discipline (A&F) – A4: Corporate Accounting (Non-Major/Minor)	4	3	1	0	Pass in Class XII	NIL
BAC: DSC-4 Principles of Management (Major)	4	3	1	0	Pass in Class XII	NIL

BAC: Discipline (A&F) – A4: Corporate Accounting (Non-Major/Minor)

Learning Objectives

The course aims to help learners to acquire conceptual knowledge of corporate accounting systems and to learn the techniques of preparing the financial statements of companies.

Learning Outcomes

After completion of the course, learners will be able to :

1. Explain the accounting for Share Capital, Debentures, Bonus Shares, Redemption of Preference Shares and Debentures of a company.
2. Prepare Financial Statements of Companies manually as well as using online software.
3. Estimate the value of Intangible Assets and Shares
4. Explain the Accounting for Amalgamation and Internal Reconstruction of Companies.
5. Interpret and prepare Annual Reports of companies.

SYLLABUS OF BAC: Discipline (A&F) – A4

Unit 1: Accounting for Share Capital and Debentures (7 hours)
Types of shares; Accounting for Share Capital, Issue of Rights and Bonus Shares; ESOPs and Buy-Back of shares; Issue and Redemption of preference Shares and Debentures. Underwriting of Shares and Debentures. In reference to Relevant Accounting Standards (AS and Ind AS) and Guidance Notes as applicable.

Unit 2: Financial Statements of Companies including one Person Company (11 hours)
Preparation of financial statements of corporate entities including one Person Company (excluding calculation of managerial remuneration) as per Division I and II of Schedule III of the Companies Act 2013; Related Parties, Preparation of Statement of Profit and Loss, Balance Sheet, Statement of Equity and Cashflow Statement manually and using appropriate software. Interpreting the ratios calculated as per Schedule III of the Companies Act 2013 [with reference to Relevant Accounting Standards (AS and Ind AS) and the relevant provisions of The Companies Act,2013, as applicable.]. Calculation of EPS as per AS 20.

Unit 3: Valuation of Intangible Assets and Shares (9 hours)
Valuation of Intangible Assets and Shares. Value Added Statement, Economic Value Added, Market Value Added, Shareholder Value Added.

Unit 4: Amalgamation of Companies and Internal Reconstruction (9 hours)
- Accounting for Amalgamation of Companies (excluding inter-company holdings) applying AS 14/Ind AS 103.
- Accounting for Different forms of Internal Reconstruction (excluding drafting of Internal Reconstruction Scheme).

Unit 5: Corporate Financial Reporting (9 hours)
Meaning, need and objectives; Constituents of Annual Report and how it is different from financial statements; Contents of the Report of the Board of Directors; XBRL Reporting. Drafting of Notes to Accounts. Segment Reporting, Sustainability Reporting, Triple Bottom Line Reporting, CSR Reporting.

Notes:
- The relevant Accounting Standards (both AS & Ind AS) for all of the above topics should be covered.
- Any revision of the relevant Indian Accounting Standards/Accounting Standards would become applicable.
- The relevant provisions of The Companies Act,2013, as applicable for all of the above topics should be covered.

Exercises
The learners are required to:
1. Collect prospectus issued by reputed companies, and examine the matters related to issues of shares.
2. Examine the annual reports of business Organisations to find out whether applicable accounting standards (AS and Ind AS) are complied with or not.
3. Estimate the value of Intangible Assets and Shares of any company.
4. Collect information from business newspapers, periodicals, print and digital media on the amalgamation of companies and prepare a report.
5. Download company annual reports of reputed companies from the websites and analyze the voluntary and mandatory information contained in these statements.

6. Read and Collect Notes on Accounts from the annual reports of reputed companies from the websites.

Suggested Readings

- Bergeron, B. (2003). *Essentials of XBRL: Financial reporting in the 21st Century*. New Jersey, United States: John Wiley & Sons.
- Dam, B. B., & Gautam, H. C. (2020). *Corporate accounting*. Guwahati, India: Gayatri Publications.
- Goyal, B. K. (2022). *Corporate accounting*. Delhi, India: Taxmann Publication.
- Goyal, V. K., & Goyal, R. (2021). *Corporate accounting.* Delhi, India: PHI Learning.
- Jain, S. P., & Narang, K. L. (2017). *Corporate accounting*. Delhi, India: Kalyani Publishers.
- Kumar, A. (2020). *Corporate accounting*. Delhi, India: Singhal Publications.
- Maheshwari, S. N., Maheshwari, S. K., & Maheshwari, S. K. (2019). *Corporate Accounting*, Uttar Pradesh, India: Vikas Publishing House.
- Monga, J. R., & Bahadur, R. (2023). *Fundamentals of corporate accounting*. Delhi, India: Scholar Tech Press.
- Mukherjee, A., & Hanif, M. (2017). *Corporate accounting*. Delhi, India: Tata McGraw Hill Education.
- Sah, R. K. (2019). *Concept building approach to corporate accounting*. Delhi, India: Cengage.
- Sehgal, A. (2019). *Fundamentals of corporate accounting*. Delhi, India: Taxmann Publication.
- Shukla, M. C., Grewal, T. S., & Gupta, S. C. (2017). *Advanced accounts*. Delhi, India: S. Chand Publishing.
- Tulsian, P. C., & Tulsian, B. (2019). *Corporate accounting*. Delhi, India: S. Chand Publishing.

Additional Resources

- Accounting Standards at the Website of the Institute of Chartered Accountants of India
- Indian Accounting Standards at the Website of the Ministry of Corporate Affairs.
- The Companies Act, 2013 as amended from time to time.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

B.A. Programmes with Commerce (BANKING AND INSURANCE)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
BAC: Discipline (B&I) – A4: Banking Laws and Practice (Non-major/Minor)	4	3	1	0	Pass in Class XII	NIL
BAC: DSC-4 Principles of Management (Major)	4	3	1	0	Pass in Class XII	NIL

BAC: Discipline (B&I) – A4: Banking Laws and Practice (Non-Major/Minor)

Learning Objectives

The course aims to acquaint the students about the banking legislations practiced in India

Learning Outcomes

After completion of the course, learners will be able to:

1. Describe the banking system in India.
2. Discuss the Negotiable Instrument Act, 1881.
3. Evaluate the operational system of a bank and relationship with customers.
4. Recognise good and bad lending practices and discuss the role of RBI in supervising banks.
5. Identify International banking supervision norms and assess the role of various international institutions.

SYLLABUS OF BAC: Discipline (B&I) - A4

Unit-1: Overview of Banking System and Regulatory Framework (9 hours)

History and evolution of banking in India, structure of banking sector in India, Role of banking sector in economic development. Provisions of RBI Act 1935, Banking Regulation Act 1949 and Deposit Insurance Corporation Act 1961, Payment and Settlement Systems Act, 2007.

Unit-2: Negotiable Instrument Act, 1881(9 hours)

Meaning and kinds of Negotiable Instruments, transfer and negotiation, holder and holder in due course, presentation and payment, liabilities of parties, material alteration, noting and

protest, paying banker and collecting banker, Penal provisions under Negotiable Instrument Act, Bankers Book Evidence Act.

Unit-3: Banker and Customer Relationship (9 hours)

Legal character, relationship between a bank and customers, Banker's Lien. Customers: nature and types, Special customers: lunatic, minor, partnership, corporation, etc., Rights and duties of banker and customer, Know your customer (KYC), Customer protection including protection against cyber crime, Ombudsman, Anti Money Laundering.

Unit-4: Lending by Banks and Supervision (11 hours)

Good lending practices, Securities for advances: kinds and their merits, Repayment of loans: rate of interest and protection against discriminating lending practices, Default and recovery, Concept and assessment of Non-Performing Assets.

RBI supervision: banks management, accounts and audit, lending, credit policy, reconstruction and reorganization.

Unit -5: International Banking (7 hours)

International Banking Supervision: BASEL Framework. Role of Institutions: Bank for International Settlements (BIS), International Monetary Fund (IMF), Nes Development Bank (NDB) for BRICS, Asian Development Bank (ADB), World Bank.

Exercises

The learners are required to:

1. Present a case study on the banking system in India and its regulatory aspects.
2. Discuss major provisions of the Negotiable Instrument Act, 1881.
3. Examine the KYC process and the steps taken by a bank to protect its customers.
4. Present case studies on anti-money laundering, or consumer protection against cybercrime by considering different banks.
5. Analyse good and bad lending practices by different banks.
6. Identify non-performing assets of private / public sector banks.
7. Discuss the BASEL framework.

Suggested Readings

- Tannan, M.L. (2020). *Banking law and practice in India*. New York, United States: Lexis Nexis.
- Suneja, H.R. (2019). *Practical and law of banking*. Delhi, India: Himalaya Publishing House.
- Kumar, S. (2018). *Essentials of banking laws and practice*. Delhi, India: JSR Publishers.
- Goyal, L.C. (2017). *The law of banking and bankers*. Delhi, India: Eastern Law House.
- Sundharam, K.P.M., & Varshney, P.N. (2016). *Banking theory, law and practice.* Delhi, India: Sultan Chand and Sons.

Additional Resources

- Kumar, V. P. (2017). *Banking and negotiable instruments- Law and practice.* Delhi, India: Eastern Book Company.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

B.A. Programmes with Commerce (ADVERTISING, SALES PROMOTION AND SALES MANAGEMENT)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
BAC: Discipline (ASPSM) – A4: Personal Selling & Salesmanship (Non-Major/Minor)	4	3	1	0	Pass in Class XII	NIL
BAC: DSC-4 Principles of Management (Major)	4	3	1	0	Pass in Class XII	NIL

BAC: Discipline (ASPSM) – A4: Personal Selling & Salesmanship (Non-Major/Minor)

Learning Objectives

The course aims to familiarize the students with the concept and process of personal selling and salesmanship.

Learning Outcomes

After completion of the course, learners will be able to:

1. Recognise the concepts of personal selling, roles and opportunities for salespersons.
2. Discuss the theories, models and approaches of selling.
3. Recognise different buying motives.
4. Describe the process of personal selling.
5. Analyse sales reports and recognise the importance of ethical issues in selling.

SYLLABUS OF BAC: Discipline (ASPSM) – A4

Unit 1: Introduction to Personal Selling and Salesmanship (11 hours)

Concept of Personal Selling and Salesmanship; Differences among Personal Selling, Salesmanship and Sales Force Management; Qualities of a good salesperson; Types of salespersons; Role of Personal Selling in CRM.

Unit 2: Theories of Selling (11 hours)
AIDAS Model of Selling; Problem Solving Approach; Right Set of Circumstances Theory and Modern Sales Approaches.

Unit 3: Buying Motives (11 hours)
Concept of Motivation; Maslow's Theory of Need Hierarchy; Buying Motives and their uses in Personal Selling.

Unit 4: Personal Selling Process (7 hours)
Prospecting; Pre-Approach; Approach; Presentation and Demonstration; Handling of Objections; Closing the Sale; Follow-Up.

Unit 5: Sales Planning and Control (5 hours)
Sales Reports and Documents; Various Ethical Issues in Selling.

Exercises:
The learners are required to:

1. Perform a role play depicting different roles and opportunities for salespersons.
2. Evaluate various approaches of selling.
3. Conduct a primary survey to understand the buying motives of consumers of FMCG products.
4. Discuss case studies on the process of personal selling.
5. Prepare sales report for a hypothetical firm.
6. Discuss case studies on ethical issues in selling.

Suggested Readings

- Russell, F.A., Beach, F.H., Buskirk, R.H., & Buskirk, B.D. (1988). *Selling: Principles and practices*. Delhi, India: McGraw-Hill Education.
- Futrell, C. (2013). *Fundamentals of selling*. Delhi, India: McGraw Hill Education.
- Kapoor, N. (2008). *Advertising and personal selling*. Delhi, India: Pinnacle.

Additional Resources

- Belch, G. E., Belch, M.A., & Purani, K. (2009). *Advertising and promotion: An integrated marketing communications perspective*. Delhi, India: McGraw Hill Education.
- Castleberry, S.B., & Tanner, J. F. (2013). *Selling: Building relationships*. Delhi, India: McGraw Hill Education.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

B.A. Programmes with Commerce (HUMAN RESOURCE MANAGEMENT)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
BAC: Discipline (HRM) – A4: Performance Management (Non-major/Minor)	4	3	1	0	Pass in Class XII	Studied Human Resource Development (BAC: Discipline (HRM) – A3)
BAC: DSC-4 Principles of Management (Major)	4	3	1	0	Pass in Class XII	NIL

BAC: Discipline (HRM) – A4: Performance Management (Non-Major/Minor)

Learning Objectives

The course aims to create fundamental knowledge of performance management, related aspects like talent management, compensation management, contemporary issues etc. in the organization through the pedagogy of case discussions and the practices of Indian Organisations in this context.

Learning Outcomes

After completion of the course, learners will be able to:

1. Identify the process of performance management and performance appraisal.
2. Evaluate different methods of performance management and performance appraisal.
3. Recognise the concept of learning organisation and assess different aspects of performance-based compensation.
4. Analyse issues in implementation of performance management.
5. Discuss contemporary issues in performance management.

SYLLABUS OF BAC: Discipline (HRM) - A4

Unit 1: Introduction to Performance Management (7 hours)
Meaning, Principles, Objectives, Purpose of Performance Management, Performance Management vs Performance Appraisal, Performance Management as a Process

Unit 2: Performance Planning and Managing Performance (11 hours)
Developing Performance Planning: Agreement and Action Planning, Methods of managing performance of all the levels of Management (including labor), Graphics rating scale, Ranking Methods, Paired Comparison Methods, Forced Distribution Method, Critical Incident Method, Behaviour ally Anchored Rating Scales, Management By Objective, 360-Degree Performance Appraisal, Performance Feedback & Counselling.

Unit 3: Learning Organisation and Performance Based Compensation (9 hours)
Concept-Peter Senge Model, Need, Types, Factors and Obstacles in Learning Organisation, Performance Management and Compensation: Concept of Performance Related Pay, Criteria for Performance Related Pay, Installing and Monitoring PRP.

Unit 4: Implementation of Performance Management (9 hours)
Performance Management and Career Planning: Advantages and Significance, Coaching and Mentoring in Performance Management: Concept, Roles, Advantage and Disadvantage of Coaching and Mentoring, Performance Management and Talent Management: Concepts, Features and Strategies to retain employees.

Unit 5: Contemporary Issues in Performance Management (9 hours)
Competency Mapping, Competency Mapping & its Linkage with Career Development and Succession Planning, Online Appraisal: Advantage & Disadvantage, Performance Management Audit, Ethical and Legal issues in Performance Management.

Exercises

The learners are required to:

1. Identify the process of performance management and performance appraisal of any organisation.
2. Analyse different methods of performance management and performance appraisal employed by any organisation.
3. Devise a performance management system for a hypothetical organisation, with the help of performance planning.
4. Discuss case studies on the success story of various learning organisations.
5. Relate the elements of performance appraisal and potential appraisal and device a system of performance-based compensation system.
6. Discuss a case study of any organisation in the context of talent management and coaching and mentoring.
7. Present case studies on contemporary issues in performance management.

Suggested Readings

- Armstrong, M., & Baron, A. (2005). *Performance management and development.* Mumbai, India: Jaico Publishing House.
- Bhattacharyya, D. K. (2011). *Performance management systems and strategies*. Uttar Pradesh, India: Pearson Education.
- Chadha, P. (2003). *Performance management: It's about performing not just appraising*. Uttar Pradesh, India: McMillan India Ltd.

- Rao, T.V. (2004). *Performance management and appraisal systems: HR tools for global competitiveness*. SAGE Response.
- Kandula, S.R. (2010). *Performance management: Strategies, intervention & drivers*. Delhi, India: Prentice-Hall of India Pvt.Ltd
- Bagchi, S.N. (2013). *Performance management*. Uttar Pradesh, India: Cengage Learning India Pvt. Ltd.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

B.A. Programmes with Commerce (COMMERCIAL LAWS AND CORPORATE GOVERNANCE)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
BAC: Discipline (CLCG) – A4: Sale of Goods Act: Cases and Application (Non-Major/Minor)	4	3	1	0	Pass in Class XII	Studied Intellectual Property Rights (IPR Laws)-I (BAC: Discipline (CLCG) – A3)
BAC: DSC-4 Principles of Management (Major)	4	3	1	0	Pass in Class XII	NIL

BAC: Discipline (CLCG) – A4: Sale of Goods Act: Cases and Application (Non-Major/Minor)

Learning Objectives

The course aims to familiarize the students with the provisions of Sale of Goods Act, an important constituent of business laws. Case laws relevant for the inception and conduct of general and business activities are required to be discussed.

Learning Outcomes

After completion of the course, learners will be able to:

1. Analyse basic aspects of contract of sale vis-a-vis agreements and subsequently enter into valid business propositions.
2. Recognize and differentiate between condition and warranty.
3. Describe the rules relating to transfer of property.
4. Comprehend the provisions relating to performance of contract and delivery of goods.
5. Analyse who is an unpaid seller and his rights.

SYLLABUS OF BAC: Discipline (CLCG) - A4

Unit 1: Nature and Formation of Contract of Sale (9 hours)

Contract of Sale- meaning, features, difference between sale and agreement to sell, definition of goods, price ascertainment

Unit 2: Condition and Warranty (9 hours)

Meaning and difference between of conditions and warranties, implied and express condition and warranty, doctrine of caveat emptor

Unit 3: Rules regarding Transfer of Ownership (9 hours)

Rules regarding transfer of ownership, risk passes with ownership, sale by non-owners

Unit 4: Performance of Contract of Sale (9 hours)

Meaning of delivery of goods, modes of delivery, rules relating to delivery of goods

Unit 5: Unpaid Seller (9 hours)

Unpaid seller – meaning, rights of an unpaid seller against the goods viz., right of lien, right of stoppage of goods in transit, right of resale, right of an unpaid seller against buyer personally

Exercises

The learners are required to:

1. Enlist real life examples to differentiate between sale and an agreement to sell.
2. Give day-to-day experiences of sale contracts entered.
3. A. Enumerate types of implied conditions available under different situations.
   B. Prepare a list of situations from our environment where rule of *'caveat emptor'* is not applicable.
4. Observe and list out from your environment the general rules relating to transfer of ownership.
5. List out the examples of actual and symbolic delivery from the contracts daily entered into.
6. Prepare a list of rights of an unpaid seller based on observations from day-to-day experiences.

Suggested Readings

- Jagota, R. (2021). *Business laws*. Delhi, India: Taxmann.
- Sharma, J. P. (2019). *Business law* (1st ed.). Delhi, India: Bharat Law House Pvt.
- Singh, A. (2008). *Principles of mercantile law* (8th ed.). Delhi, India: Eastern Book.
- Tulsian P.C. (2017). *Business law*. Delhi, India: Tata McGraw Hill.

Additional Resources

- Kuchhal, M C. (2021). *Business Laws*. Uttar Pradesh, India: Vikas Publishing House.
- Arora, S. (2021). *Business Laws* (8th ed.) Delhi, India: Taxmann.
- Sharma, J.P., & Kanojia S. (2015). *Vyavsayik Sanniyam*, Delhi University Hindi Cell. (For Hindi)

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
BAC: Discipline (TPP) – A4: Fundamentals of Corporate Tax Planning (Non-Major/Minor)	4	3	1	0	Pass in Class XII	Studied Fundamentals of Personal Tax Planning (BAC: Discipline (TPP) – A3)
BAC: DSC-4 Principles of Management (Major)	4	3	1	0	Pass in Class XII	NIL

BAC: Discipline (TTP) – A4: Fundamentals of Corporate Tax Planning (Non-Major/Minor)

Learning Objectives

This paper aims to provide basic knowledge of corporate tax in India and its effectiveness in tax planning.

Learning Outcomes

After completion of the course, learners will be able to:

1. Recognise the concept of tax planning, tax management and tax avoidance.
2. Interpret the application of minimum alternate tax.
3. Explore the benefits and incentives available to companies to start a new business.
4. Recognise the implications of tax provisions for a company with respect to capital structure decisions
5. Identify the need for tax planning with respect to specific management decisions.

SYLLABUS OF BAC: Discipline (TTP) – A4

Unit 1: Tax Planning Concepts and Types of Companies (5 hours)
Tax planning, tax management, tax evasion and tax avoidance; types of companies; residential status of companies and tax incidence.

Unit 2: Assessment of Companies (13 hours)
Carry forward and set off of losses in case of certain companies; deductions available to corporate assesses, Computation of total income and tax liability of companies and minimum alternate tax.

Unit 3: Tax Planning with reference to setting up of a new business (9 hours)
Location of business; nature of business and form of ownership: firm/LLP vs company;

Unit 4: Tax Planning with reference to financial management decision (9 hours)
Tax planning with reference to capital structures and bonus shares.

Unit 5: Tax Planning with reference to specific management decisions (9 hours)
Tax planning with reference to purchase vs. lease of an asset and make vs. buy.

Exercises

The learners are required to:

1. Discuss case studies on tax evasion and tax avoidance.
2. Prepare a report for a hypothetical company which is non-resident in India and represent the incidence of tax for the case.
3. Discuss provisions on minimum alternate tax as per the recent budget.
4. Specify the benefits available to a start-up company opting for operations in Northeast India.
5. Develop a tax saving plan for a newly incorporated company for raising capital.
6. Prepare a case study indicating the impact of managerial decisions on the tax liability of the company.
7. Compare the choice of a company to purchase a plant or to lease the same from a tax savings point of view.

Suggested Readings

- Ahuja, G., & Gupta, R. (2019). *Simplified approach to corporate tax planning & management*. Delhi, India: Wolters Kluwer India Pvt. Ltd.
- Singhania, V.K., & Singhania, M. (2022). *Corporate tax planning & business tax procedures*. Delhi, India: Taxmann Publications.

Additional Resources

- Income-tax Act 1961
- www.incometaxindia.gov.in

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

B.A. Programmes with Commerce (MODERN OFFICE MANAGEMENT)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
BAC: Discipline (MOM) – A4: Stenography (English)-II (Non-Major/Minor)	4	3	1	0	Pass in Class XII	Studied Stenography (English)-I (BAC: Discipline (MOM) – A3)
BAC: DSC-4 Principles of Management (Major)	4	3	1	0	Pass in Class XII	NIL

BAC: Discipline (MOM) – A4: Stenography (English)-II (Non-Major/Major)

Learning Objectives

This course is well structured and sequenced learning of Stenography (English). This art of writing, based on phonetics sounds has been adopted throughout the world in the day to day working in organizations. With the help of the given chapters the students would be able to learn to make the outlines with proper pronunciation of words. In this way they will learn stenography and strengthen their English pronunciation also. Soon after the completion of this course, the student will be able to write\scribble accurately and once the accuracy is achieved, the same could be retained provided there is regular practice.

Learning Outcomes

After completion of the course, learners will be able to:

1. Demonstrate the basic rules of The Shun Hook and The Aspirate.
2. Analyse the basic concepts of R, L, SH consonant and Compound Consonants.
3. Interpret the basics of Halving Principals and Vowel Indications.
4. Apply Doubling principals and Diaphonic.

5. Summarize the Prefixes and Suffixes.

SYLLABUS OF BAC: Discipline (MOM) - A4

Unit 1: Circle, Loops, Shun Hooks (9 hours)

Large Final Hooks 'Shun Hook': use of Shun Hook with straight and curved strokes, medial use of Shun Hook, Use of Shun Hook after Circle 'S' and 'NS', Use of shun Hooks in phraseography. Use of circles and loops to final hooks, strokes are followed by NS, S, Ses, St, Str. "The Aspirate" H, with full detailed analyses.

Unit 2: Upward Downward R, L,SH & Compound Consonants (9 hours)

General rules for Vowel preceding and following with R, Upward and downward R, Medially use of R.

Upward, Downward L, SH with preceding or following curves n, ing and circles, medial L, and KW\GW\KY\GY, compound consonants.

Unit 3: Vowel Indication and Halving Principles (9 hours)

Vowel Indication: Initial and final Vowel Implied, Initial and final Consonant Implied.

Halving principle: vocalizing of half length forms, halving for T of D, circle following half length forms, half length H, situations where halving principle not used. Halving and thickening of the strokes, M, N, L, R. The signs for RT and LT. Joining of strokes of unequal length. Use of halving principle for past-tense, halving principle in phraseography.

Unit 4: Doubling Principle (9 hours)

The general rule for doubling, doubling of straight strokes and the strokes MP and NG, alternative forms of MPR, MBR, NG-GR. Doubling of stroke L, circle S and double length strokes, use of doubling principal in phraseography.

Diphonic or two vowel signs, Use of Diphones, Medial Semi-Circle, Left Semi-Circle, Right Semi-circle.

Unit 5: Prefixes and Suffixes (9 hours)

Prefixes: expression of the prefixes, initial common-, medial com, accom-, intro- etc. Logograms as prefixes. Negative words etc.

Suffixes: Suffixes and Terminations – The doting, expressingality, -logically, mentality, -ship, figures and contractions, etc.

xercises

The learners are required to:

1. Apply the Basics of Shun Hook.
2. Practice the concept of R, L, SH and compound consonant.
3. Interpret the basics of Halving Principals and Vowel Indications.
4. Practice Diaphones, semi circles and Doubling Principles.
5. Use Prefixes, Suffixes, and Terminations.

Suggested Readings:

- Pitman, I. (2017). *Pitman shorthand instructor and key*. India: Pearson Education Ltd.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

B.A. Programme with Commerce (Commerce as Non-Major/Minor)

BAC: DSC-4: Principles of Management (Non-Major/Minor)

Learning Objectives

The course aims to equip learners with essential management related knowledge and skills and their applicability in the real world.

Learning Outcomes

After completion of the course, learners will be able to:

1. Discuss evolution of management and its significance.
2. Analyse applicability of managerial functions.
3. Assess the significance of planning and organising in business.
4. Interpret the role of directing in business.
5. Analyse the importance of controlling function and discuss contemporary issues in management.

SYLLABUS OF BAC: DSC-4

Unit 1: Introduction to Management (9 hours)

Principles of management - concept, nature and significance; Evolution of Management thought: Classical (Fayol's principles of management; Taylor's scientific management), Neoclassical (Hawthorne Experiments), Modern approach (Systems Approach; Contingency Approach).

Unit 2: Functions of Management (7 hours)

Management functions and their relationship- planning, organizing, staffing, directing and controlling; Coordination - concept, characteristics and importance; Functional areas of management – an overview.

Unit 3: Planning and Organizing (11 hours)

Planning- meaning, strategic and operations planning; Decision-making- concept, importance and bounded rationality; Organizing- division of labor & specialization; Organisational structures- traditional and modern; Factors affecting organisational design.

Unit 4: Directing (11 hours)

Concept and theories of Motivation- Maslow's need hierarchy, Herzber's two-factor theory, Theory X&Y; Leadership-meaning and importance, leadership styles, Transactional and transformational leadership; Communication- meaning and importance.

Unit 5: Controlling and Contemporary Issues in Management (7 hours)

Principles of Controlling, performing controlling function; Management challenges of the 21st Century; Century; Factors reshaping and redesigning management purpose, performance and reward perceptions- Internationalization; Digitalization; Entrepreneurship & innovation; Workplace Diversity

Exercises:

The learners are required to:

1. Assess the applicability of managerial theories in today's corporate world.

2. Demonstrate the use of managerial functions in organizing an event.
3. Prepare a comparative analysis of organization structures of various companies.
4. Demonstrate various types of leadership styles in form of role play and identify the motivation techniques used by leaders.
5. Discuss the impact of emerging issues in management.

Suggested Readings:

- Drucker, P. F. (1954). *The Practice of management*. New York, United States: Harper & Row.
- Drucker, P. F. (1999). *Management challenges for the 21st Century*. New York, United States: HarperCollins Publishers Inc.
- Griffin, R.W. (2011). *Management principles and application*. Massachusetts, Unites States: Cengage.
- Koontz, H., & Weihrich, H. (2012). *Essentials of management: An international and leadership perspective*. New York, United States: McGraw Hill Publications.
- Kumar, P. (2019). *Management: principles and applications*. Delhi: JSR Publication House LLP.
- Laasch, O. (2022). *Principles of management*. California, United States: Sage Textbook.
- Mahajan, J.P., Mahajan, A., & Dewan, D. (2017). *Management principles and applications*. Uttar Pradesh, India: Vikas Publications.
- Rao, V.S.P. (2017). *Management Principles and Applications*. Delhi, India: Taxmann Publications.
- Vasishth, N., & Rajput, N. (2016). *Principles of management*. Delhi: Kitab Mahal.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

Semester- V

B.A. Commerce based Papers

B.A. Programme with Commerce (Entrepreneurship and Small Business)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Practical Aspects of Entrepreneurship BAC: Discipline (ESB) – A5 (Non-major/Minor)	4	3	1	0	Pass in Class XII	Studied Launching a New Venture (BAC: Discipline (ESB) – A4)
Cost Accounting BAC: DSC-5 (Major)	4	3	1	0	Pass in Class XII	NIL
Management of Small Business Enterprises BAC: DSE (ESB) - 5.1 (Major)	4	3	1	0	Pass in Class XII	NIL
Evolution of Policy & Institutional Framework BAC: DSE (ESB) - 5.2 (Major)	4	3	1	0	Pass in Class XII	NIL
Social Entrepreneurship BAC: DSE (ESB) - 5.3 (Major)	4	3	1	0	Pass in Class XII	NIL

BAC: Discipline (ESB) - A5: Practical Aspects of Entrepreneurship (Non-Major/Minor)

Learning Objectives

To acquaint the students about the practical aspects of entrepreneurship

Learning Outcomes

After completion of the course, learners will be able to:

1. Analyse entrepreneurial business environment.
2. Identify entrepreneurial organizational assistance offered to start ups.
3. Analyse and evaluate the public and private financing ecosystem for promoting entrepreneurship.
4. Prepare business plans and project reports.
5. Analyse different kinds of digital disruptions.

SYLLABUS OF BAC: Discipline (ESB) – A5

Unit 1: Assessing Entrepreneurial Business Environment (9 hours)

Introduction to entrepreneurship, Dimensions of Entrepreneurship, Entrepreneurial Mindset, startup culture growth and developments with special reference to India (case studies), environmental analysis, success stories of entrepreneurs - Indian and international, family business culture in India, succession planning, Relevant case studies

Unit 2: Organisation Assistance (9 hours)

Emerging forms of organising startups,- OPC, LLP, e-commerce model, network organisation, co- working space, overview of Industrial Park, Special Economic Zone ,Khadi and Village Industries Commission (KVIC), MSME, startup Environmental Clearance, prerequisite clearances for startups, Quality Standards with special reference to Indian and international standards specifications, over view of incentives , facilities and reliefs for startups (excise, income tax etc.), Modernisation assistance to small scale unit, Incentives and facilities to exports entrepreneurs

Unit 3: Entrepreneurial financing (Private and Public) (9 hours)

Private support system- angel investing, Venture capital, Private equity, crowd funding, bootstrapping, Business incubators, Financial assistance by Government agencies, - NSIC, SIDO, MSME, SIDBI, SFC, DST, Governmental Start-up schemes- Make in India, Startup India, Standup India, Non-Governmental Financial institutes- ICICI, EDI, SME chamber of India, ICSE, Understanding basics of financial statements (balance sheet and income statement and cash flow analysis)

Unit 4: Preparing Business plans and Project Report (13 hours)

Idea generation and Feasibility analysis, Building a business plan and effectively communicate and "sell" new business concepts to investors, Mock business plan w.r.t different products and services, Aspects of a Project, Phases of a Project, Project Report,

Contents of a Project Reports, Proforma of a Suggested Project Report for a manufacturing and service Organization

Unit 5: Adapting digital developments and Disruptions (5 hours)

Digital disruptions, threats of mega alliances, strategies to sustain new business, challenges of takeovers and acquisitions, Emerging new business forays- opportunities, dimensions and challenges, regulations.

Exercises

The learners are required to:

1. Analyse business environment for any start up.
2. Identify entrepreneurial organizational assistance offered to various startups.
3. Analyse and evaluate the public and private financing ecosystem for promoting entrepreneurship in the Indian market.
4. Prepare a hypothetical business plan and project report for any start up idea.
5. Analyse the recent digital disruptions in the Indian market.

Suggested Case studies

- Case study on the Indian Unicorn - Zomato, Mobikwik, Policy bazaar, Pharmacy.
- Readings about some leading venture capitalist- Tiger capital, Softbank, Sequoia capital.
- Case studies - Alibaba, Facebook, Nirma, Fab India.

Suggested Readings

- Belsky, S. (2018). *The Messy Middle: Finding Your Way Through the Hardest and Most Crucial Part of Any Bold Venture*. Penguin.
- Baron, R. A., & Hmieleski, K. M. (2018). *Essentials of entrepreneurship second edition: Changing the world, one idea at a time*. Glos, United Kingdom: Edward Elgar Publishing.
- Burns, P. (2016). *Entrepreneurship and Small Business: Start-Up, Growth and Maturity*. Bloomsbury Publishing.
- Jain, V. (2022). *Entrepreneurship*. Delhi, India: Singhal Publications.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

BAC: DSC-5 Cost Accounting (Major)

Learning Objectives

The course aims to develop understanding among learners about contemporary cost concepts and rational approach towards cost systems and cost ascertainment. The course also aims to provide knowledge about various methods of cost determination under specific situations and to acquire the ability to use information determined through cost accounting for decision making purposes.

Learning Outcomes

After completion of the course, learners will be able to:

1. Compute unit cost and total cost of production and prepare cost statement.
2. Compute employee cost, employee productivity and employee turnover
3. Classify and estimate overheads.
4. Determine cost under job costing, process costing, contract costing and service costing.
5. Compute the break-even point of a product and firm.

SYLLABUS OF DSC-5

Unit 1: Introduction (9 hours)

Meaning, scope, objectives and advantages of cost accounting; Difference between financial and cost accounting. Cost concepts and classifications, Overview of elements of cost and preparation of Cost Sheet. Role of a cost accountant in an organisation.

Unit 2: Elements of Cost : Material and Employee Cost (9 hours)

(a) Materials: Accounting and control of materials: Concept of material cost and control, accounting and control of purchases, storage and issue of materials. Inventory systems, Methods of pricing of materials issues — FIFO, LIFO, and Weighted Average, Physical Verification, Fixation of stock levels, determination of economic order quantity, ABC analysis. Accounting treatment and control of losses — Wastage, scrap, spoilage and defectives

(b) Employee Cost: Accounting and Control of employee cost; time keeping and time booking; Concept and treatment of idle time, over time and employee turnover

Unit 3: Elements of Cost: Overheads (9 hours)

Classification, allocation, apportionment and absorption of overheads, Treatment of under and over-absorption.

Unit 4: Methods of Costing (9 hours)

Job costing, Contract costing, Process costing (excluding treatment of work-in- progress, joint and by- products). Service costing (only transport).

Unit 5: Cost-Volume-Profit Analysis (9 hours)

Concept of cost-volume-profit analysis, marginal cost and marginal cost equation, profit-volume ratio, break-even analysis, cost break- even point, composite break- even point, margin of safety, simple break-even chart, Identification of key factor and determination of profitability.

Notes :

1. Treatment of various items of cost should be as per the relevant cost Accounting Standards (CAS) issued by Institute of Cost Accountant of India.
2. Use only simple numerical problems in all the above units to explain the various concepts, methods and techniques given therein.
3. Use of spreadsheet software should be encouraged for the basic calculation.

Exercises:

The learners are required to:

1. Prepare a cost statement for manufacturing and/ or service organisation.
2. Visit industries to understand process costing and prepare a cost statement for any process industry.
3. Visit a factory and compute the employee cost of the firm.
4. Analyse the role of overhead costs in the production process of any firm.
5. Analyse case studies on job costing, process costing, contract costing and service costing.
6. Design a hypothetical business plan for a firm selling financial products. Estimate the break-even point for different products.

Suggested Readings

- Arora, M.N. (2021). *Cost Accounting-principles and practice*. Delhi, India: Vikas Publishing House.
- Goel, R. K., & Goel, I. (2019). *Concept Building Approach to Cost Accounting for B.Com (Hons.)/B.Com.* Delhi, India: Cengage Publications.
- Gupta, S., Reeta, & Rao, R.P. (2021*). Cost Accounting for B.Com*. Delhi, India: Sultan Chand.
- Maheshwari, S. N., & Mittal, S. N. (2020). *Cost Accounting. Theory and Problems*. Delhi, India: Shri Mahaveer Book Depot.
- Maheshwari, S. N., Mittal S. K., & Mittal, S.N. (2021). *Cost Accounting: Principles & Practice*. Delhi, India: Shree Mahaveer Book.
- Mitra, J. K. (2021). *Cost and Management Accounting*. Delhi, India: Oxford University Press.
- Nigam, B. M. L., & Jain, I. C. (2023). *Cost Accounting: Principles and Practice*. Delhi, India: PHI Learning.
- Singh, S. (2019). *Fundamentals of Cost Accounting*. Allahabad, India: Kitab Mahal.
- Tulsian, P.C. (2020). *Cost Accounting*. Delhi, India: S.Chand.

Additional Resources

- Drury, C. (2018). *Management and Cost Accounting*. China: Cengage.
- Horngren, C. T., Foster, G., & Dattar, S. M. (2017).*Cost Accounting: A Managerial Emphasis*. Delhi, India: Prentice Hall of India Ltd.
- Jain, S.P., & Narang, K.L. (2021). *Cost Accounting: Principles and Methods*.

Jalandhar, India: Kalyani Publishers.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

BAC: DSE (ESB) - 5.1: Management of Small Business Enterprises (Major)

Learning Objectives

The purpose of this course is to acquaint the students with the basic knowledge of managing a small enterprise.

Learning Outcomes

After completion of the course, learners will be able to:

1. Discuss managerial issues in small enterprises.
2. Analyse the significance of having appropriate capital structure mix in the organisation.
3. Interpret and construct an influential marketing plan.
4. Analyse and realize the significance of having right mix of employees in the organisation.
5. Demonstrate the process of planning for management succession.

SYLLABUS OF BAC: DSE (ESB) - 5.1

Unit I: Managerial Issues concerning Small Enterprises (9 hours)

Entrepreneurial style of management; Sole proprietorship and partnership, limited liability, partnership; Registration process; Government tax pattern (brief overview); Strategic management & entrepreneur- enterprise age and managerial strategies; Building competitive advantage.

Unit II: Managing the Capital Structure (9 hours)

Funding-own savings, family/friends & relatives; Banks/lending institutions; Banking habits- crossing of cheques, utility of overdraft facility etc.; Equity vs. Debt- financing-venture capital, angel funds; Capital mix-short term and long term capital sources; Factors determining efficient capital structure.

Unit III: Building a Powerful Marketing Plan (9 hours)

Building a guerrilla marketing plan, pin pointing the target market, plotting a guerrilla marketing strategy; Building a competitive edge; E-Commerce and entrepreneur.

Unit IV: Leading the Growing Enterprise (9 hours)

Leadership in the new economy, hiring the right employees; Building right organisational culture and structure; Challenge of motivating workers.

Unit V: Planning for Management Succession. (9 hours)

Planning the management/leadership succession in the enterprise (Case studies of management style of efficient institutions).

Note: Case studies may be used in teaching various units.

Exercises

The learners are required to:

1. Discuss important managerial issues for any small enterprise.
2. Study the capital structure mix of any organisation. Critically evaluate the same.
3. Design a marketing plan for any hypothetical start up.
4. Study the human resource mix of any organisation. Critically evaluate the same.
5. Discuss case studies management succession.

Suggested Readings

- Berger, B. (Ed.). (1991). *The culture of entrepreneurship* (pp. 1-12). San Francisco, United States: Ics Press.
- Chhabra, T. N. (2009). *Entrepreneurship development*. Delhi, India: Sun India.
- Prasad, L.M. (2004). *Business Policy: Strategic Management*. Delhi, India: Sultan Chand & Sons.

Additional Resources

- Kaplan, J. M., & Warren, A. C. (2003). *Patterns of entrepreneurship*. Hoboken, United States: John Wiley & Sons, Incorporated.
- Zimmerer, T. W. & Scarborough, N. M. (2005). *Essentials of Entrepreneurship and Small Business Management*. United States: Pearson.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

BAC: DSE (ESB) - 5.2: Evolution of Policy & Institutional Framework (Major)

Learning Objectives

The purpose of this course is to make the learners aware of the evolution of the policies and institutional framework for the promotion of entrepreneurship in the country.

Learning Outcomes

After completion of the course, learners will be able to:

1. Recognise the evolution of government policy for small enterprise sector.
2. Interpret the legal framework of entrepreneurship and small business.
3. Describe the available institutional support system for promoting small-scale sector.
4. Describe the policy framework for entrepreneurship and small business.
5. Analyse and review the Non-Governmental Initiatives for Entrepreneurial Promotion.

SYLLABUS OF BAC: DSE (ESB) - 5.1

Unit I: Evolution of Small-Scale Sector Policy (9 hours)

Genesis and the evolution of the Government of India's Small-scale sector policy; Gandhian philosophy towards small enterprises and the recommendations of the Ford Foundation team.

Unit II: Legal Framework of Entrepreneurship and Small Business (9 hours)

Industrial Policy Resolutions 1956, 1977; New Economic Policy 1991; Reports of various committees on Industrial and business activities particularly relating to the development of entrepreneurship and small business; Report on entrepreneurship by Knowledge Commission.

Unit III: Institutional Support for Entrepreneurship and Small Business (9 hours)

National-level financial and non-financial institutions for entrepreneurship and small business development and their roles, functions and schemes- Small Industries Development Bank of India (SIDBI), National Small Industries Corporation (NSIC), National Institute of Small Industries and Entrepreneurship Development (NIESBUD), Entrepreneurship Development Institute of India (EDII), NI-MSME, Export Promotion Council (emphasis on their objectives, activities and schemes).

Unit IV: Policy Framework for Entrepreneurship and Small Business (9 hours)

State level policies and institutions situated in NCR, Delhi-their roles, functions and promotional measures; Schemes under Directorate of Industries, Institutes of Entrepreneurship Development (IEDs), State Finance Corporations (SFCs), State Industrial Development Corporation (SIDC), Small Industries Service Institutes (SISI), Technical Consultancy Organisations, DICs.

Unit V: Non-Governmental Initiative in Entrepreneurial Promotion (9 hours)

Role of FICCI and other nodal trade associations on entrepreneurship initiatives in private sector; Private-public collaboration on entrepreneurship; Role of industries/entrepreneurs' associations and self-help groups.

Exercises

The learners are required to:

1. Analyse the evolution of government policy for small enterprise sector in India.
2. Analyse the legal framework of entrepreneurship and small business in India.
3. Critically assess the available institutional support system for promoting small-scale sector in India.
4. Discuss and analyse the policy framework for entrepreneurship and small business in India.
5. Analyse and review the Non-Governmental Initiatives for entrepreneurial promotion in India.

Suggested Readings

- Nanda, K.C. (1999). *Credit and Banking: What Every Small Entrepreneur (and Banker) Must Know*. Delhi, India: Response Books.
- Verma, J. C., & Singh, G. (2002). *Small Business and Industry: A Handbook for Entrepreneurs*. Delhi, India: Sage Publications.

Additional Resources

- Awasthi, D. N., & Sebastin, J. (1996). *Evaluation of Entrepreneurship Development Programmes*. Delhi, India: Sage Publications Private Limited.
- Juneja, J.S. (2002). *Small and Medium Enterprises*. Delhi, India: Deep & Deep Publications Pvt. Ltd.

Journals, Periodicals, and Report:

- Laghu Udyog Samachar (Hindi and English)
- SEDME

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

BAC: DSE (ESB) - 5.3: Social Entrepreneurship (Major)

Learning Objectives

The purpose of this course is to acquaint the students with desirability, processes and feasibility of social entrepreneurship in the social framework of India and to enable them to find social entrepreneurship as an alternative occupational choice.

Learning Outcomes

After completion of the course, learners will be able to:

1. Recognise the symbiotic relationship between entrepreneurship and economic development.
2. Discuss the fundamentals of social entrepreneurship.
3. Identify opportunities in the social sector.
4. Discuss social dimensions to entrepreneurship.
5. Discuss success stories on social entrepreneurship in India.

SYLLABUS OF BAC: DSE (ESB) - 5.3

Unit I: The Entrepreneurial Society (9 hours)

The symbiotic relationship between entrepreneurship and economic development; Social entrepreneurship in global context vis-à-vis India; Growth of social entrepreneurship-impetus for entrepreneurship-push and pull factors.

Unit II: Fundamentals of Social Entrepreneurship (9 hours)

Meaning, forms and need for social entrepreneurship in contemporary societies; Corporate Social Responsibility (CSR) and social entrepreneurship-linkages; Cases of corporate promotion of social entrepreneurship in India; Governmental and non-governmental efforts in the promotion of social entrepreneurship; Future prospects of social entrepreneurship.

Unit III: Developing a Framework for Opportunity Identification in Social Sector (9 hours)

Factors that create opportunity; Hobbies, work experience, internet, service sector; Market gap analysis of emerging social arena; Opportunity identification process- project feasibility study of social enterprises, sequence of analysis of project feasibility.

Unit IV: Social Dimension to Entrepreneurship (9 hours)

Role of mentors, role models, tolerance for failure; Family support for initiating formation of social sector enterprises; Start ups in the social concept; Role of government in contributing to growth of 1stgeneration social entrepreneurs.

Unit V: Indian Experiences (9 hours)

Success stories on social entrepreneurship- case studies of Indian social entrepreneurs; Entrepreneurial failures and coping with it; Case studies of entrepreneurial failures in social sector; Cultural support for failures (some cases of entrepreneurial success and failures and lesson learnt- with recent examples, recent start ups in social sector).

Exercises

The learners are required to:

1. Analyse the symbiotic relationship between entrepreneurship and economic development in India.
2. Discuss and analyse the fundamentals of social entrepreneurship, and evaluate certain related case studies.
3. Identify the possible opportunities in the Indian social sector.
4. Discuss case studies on social dimensions to entrepreneurship.
5. Discuss case studies on certain success stories on social entrepreneurship in India.

Suggested Readings

- Bansal, R. (2011). *I Have a Dream-The inspiring Stories of 20 social entrepreneurs who found new ways to solve old problems*. Ahmedabad, India: Westland Books
- Berger, B. (1992). *The Culture of Entrepreneurship*. Delhi, India: Tata-McGraw Hill Publishing Company Ltd.
- Bornstein, D. (2007). *How to change the world: Social entrepreneurs and the power of new ideas*. Oxford, United Kingdom: Oxford University Press.
- Yunus, M. (2011). *Building Social Business: The New Kind of Capitalism that Serves Humanity's most pressing Needs*. New York, United States: BBS, Public Affairs.
- Kaplan, J. M. (2003). *Patterns of Entrepreneurship.* Hoboken, United States: John Wiley & Sons Inc.
- Scarborough, N. M. (2016). *Essentials of entrepreneurship and small business management*. United States: Pearson.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

B.A. Programme with Commerce (Accounting and Finance)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Financial Markets BAC: Discipline (A&F) – A5 (Non-major/Minor)	4	3	1	0	Pass in Class XII	NIL
Cost Accounting BAC: DSC-5 (Major)	4	3	1	0	Pass in Class XII	NIL
Investing in Stock markets BAC: DSE(A&F)-5.1 (Major)	4	3	1	0	Pass in Class XII	NIL
Computer Application in Accounting BAC: DSE (A&F) - 5.2 (Major)	4	2	0	2	Pass in Class XII	NIL

BAC: Discipline (A&F) – A5: Financial Markets (Non-Major/Minor)

Learning Objectives

The course aims to provide the learners an overview of the financial markets.

Learning Outcomes

After completion of the course, learners will be able to:

1. Recognise the function and role of financial markets.
2. Evaluate the working of money market and the role of RBI.
3. Analyse functioning of capital market and various capital market instruments.
4. Evaluate the role of stock exchanges in India.
5. Explain the role of SEBI in the capital market.

SYLLABUS OF BAC: Discipline (A&F) – A5

Unit 1 Introduction to Financial Markets (7 hours)
Concept, significance and Functions of financial markets. Structure/Components of Financial markets – Money market, Capital market -Primary & Secondary; Debt & Equity; Derivative; Forex and commodity market; An overview of Indian and International Financial Markets.

Unit 2 Money Market (9 hours)
Concept and Importance of Money market, Functions of Money market, Participants in the Money Market, Structure/classification of Money market; Money market instruments; RBI and Money Market.

Unit 3 Capital Market- I (9 hours)

Introduction to Capital Market - Concept, significance and functions of Capital market; Capital Market instruments; Participants in the Capital market; Structure/classification of Capital market; Debt and Equity markets; Recent developments in Capital market.

Unit 4 Capital Market - II (13 hours)
Primary Market (NIM) – Concept, importance and functions of Primary market; Methods of flotation; Secondary Market - Concept, importance and Role of Secondary Market; Difference between Primary and Secondary Markets; Stock exchanges in India – NSE and BSE; Demutualisation of Stock Exchanges in India; Stock Index- Concept and importance; Major Stock Indices - SENSEX, NIFTY.

Unit 5 SEBI and Investor Protection (7 hours)
Concept, structure and objectives of SEBI; Functions of SEBI; Role of SEBI in primary and Secondary markets; Investor protection.

Exercises

The learners are required to:

1. Prepare a report on the role of financial markets in developing countries.
2. Analyse the role of RBI in India.
3. Analyse the benefit of investing in various capital market instruments.
4. Critically assess the role of stock exchanges in developing the Indian economy.
5. Assess and comment on the role of SEBI in the Indian capital market.

Suggested Readings

- Balachandran, V. (2023). Securities Market & Regulations. Delhi, India: Sultan Chand & Sons.
- Khan M.Y. (2019*). Indian Financial System*. Delhi, India: Tata McGraw Hill.
- Pathak, B. V. (2019). *Indian Financial System: Markets, Institutions and Services*. Delhi, India: Pearson Education.
- Frederic S. M., & Eakins, S. G. (2019). *Financial Markets and Institutions*. Delhi,

India: Pearson Education.
- Saunders, A., & Milton, C. M. (2007). *Financial Markets and Institutions*. Delhi, India: Tata McGraw Hill.
- Bhole, L. M. (2019). *Financial Markets and Institutions*. Delhi, India: Tata McGraw Hill Publishing Company.
- Kumar, V., Gupta, K., & Kaur, M. (2021). *Financial Markets, Institutions and Financial Services*. Delhi, India: Taxmann's Publications.

Additional Readings

- RBI Functions and Working – Reserve Bank of India
- RBI Annual Reports
- www.sebi.gov.in
- www.rbi.org.in
- https://www.bseindia.com/bseindia.com
- http://www.nseindia.com/nseindia.com

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

BAC: DSE(A&F)- 5.1: Investing in Stock markets (Major)

Learning Objectives

The course aims to familiarize the students with the skills required to operate in the stock market. They can learn the trading mechanism of the stock exchanges.

Learning Outcomes

After completion of the course, learners will be able to:

1. Recognise the basic principles of investing in stock market.
2. Analyse stocks under the Economy, Industry, Company (EIC) framework.
3. Apply Technical Analysis tools to take investment decisions.
4. Analyse the working of Indian stock market.
5. Analyse the different types of mutual fund schemes.

SYLLABUS OF BAC: DSE(A&F)- 5.1

Unit 1: Basics of Investing (9 hours)

Basics of Investment & Investment Environment. Concept of Risk and Return, Risk and Return trade-off, Types of Investing and Investors. Avenues of Investments - Equity shares, Preference shares, Bonds & Debentures, Insurance Schemes, Mutual Funds, Index Funds, ETF. Security Markets - Primary Market, Secondary Market and Derivative Market. Responsible Investment.

Unit 2: Fundamental Analysis (9 hours)

Top-down and bottom-up approaches, Analysis of international & domestic economic scenario, Industry analysis, Company analysis (Quality of management, financial analysis: Both Annual and Quarterly, Income statement analysis, position statement analysis including key financial ratios, Cash flow statement analysis, EBIT, Capital gearing ratio, Return on Investment, Return on Equity, EPS and DPS analysis, Industry market ratios: Operating Profit Ratio, Net Profit Ratio, PE, PEG, Price over sales, Price over book value, Dividend Yield, Earning Yield, Debt-Equity Ratio, EVA). Understanding the Shareholding pattern of the company.

Unit 3: Technical Analysis (9 hours)

Trading rules (credit balance theory, confidence index, filter rules, market breadth, advances vs declines) and charting (use of historic prices, simple moving average and MACD, basic and advanced interactive charts). Do’s & Don't s of investing in markets.

Unit 4: Indian Stock Market (9 hours)

Primary Markets (Initial Public Offering, Follow on Public Offering, Private placement, offload Promoters' shares), Secondary Markets (cash market and derivative market: Futures and Options), Market Participants: Stock Broker, Investor, Depositories, Clearing House, Stock Exchanges. Role of stock exchanges, Stock exchanges in India- BSE, NSE and MCX. Security Market Indices: Nifty, Sensex and Sectoral indices, Sources of financial information. Trading in securities: DEMAT trading, types of orders, using brokerage and analyst recommendations.

Unit 5: Investing in Mutual Funds (9 hours)

Concept and background on Mutual Funds: Advantages, Disadvantages of investing in Mutual Funds, Types of Mutual funds:- Open-ended, close-ended, equity, debt, hybrid, index funds,

Exchange Traded Funds and money market funds. Factors affecting the choice of mutual funds. CRISIL mutual fund ranking and its usage, calculation and use of Net Asset Value.

Exercises

The learners are required to:

1. Recognise the basic principles of investing in stock market and assess the risk and return of stocks under SENSEX.
2. Choose any company in India and perform EIC analysis to evaluate its stock.
3. Make an investment decision for any stock using tools of technical analysis.
4. Analyse the working of Indian stock market.
5. Evaluate the performance of different mutual fund schemes.

Suggested Readings

- Chandra, P. (2021). *Investment Analysis and Portfolio Management*. Delhi, India: Tata McGraw Hill Education.
- Kevin, S. (2019). *Security Analysis and Portfolio Management*. Delhi, India: PHI Learning.
- Kumar V., Kumar N., & Sethi R. (2019). *Investing in Stock Markets*. Delhi, India: Ane Books.
- Pandian, P. (2020). *Security Analysis and Portfolio Management*. Delhi, India: Vikas Publishing House.
- Ranganatham, M., & Madhumathi, R. (2019). *Security Analysis and Portfolio Management.* Delhi, India: Pearson Education.
- Singh J.K., & Singh A.K. (2019). *Investing in Stock Markets*. Delhi, India: A K Publications.
- Tripath V., & Pawar N. (2023). *Investing in Stock Markets*. Delhi, India: Taxmann Publications.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

BAC: DSE (A&F) - 5.2: Computer Application in Accounting (Major)

Learning Objectives

This course aims to impart the skills needed for recording business transactions and producing final accounts by a non-commerce student using computerised accounting software.

Learning Outcomes

After completion of the course, learners will be able to:

1. Recognise the features of manual and computerised accounting system environments.
2. Record business transactions and prepare financial statements.
3. Explain structure of a computerised accounting system for a business firm.
4. Create masters and vouchers entry.
5. Examine necessary adjustments for Goods and Service Tax (GST) while recording business transactions.

Unit-1: Introduction to Accounting (3 hours)
Accounting – meaning, importance and need, its objectives and relevance to business establishments and other organisations, and individuals. accounting information: meaning, users and utilities, sources of accounting information. some basic terms –transaction, account, asset, liability, capital, expenditure & expense, income, revenue, gain, profit, surplus, loss, deficit. debit, credit, accounting year, financial year, financial accounting principles.

Unit-2: Recording of business transactions and preparation of financial statements (7 hours)
Features of recordable transactions and events; types of accounts: personal account, real account and nominal account; rules for debit and credit; double entry bookkeeping system, journal transactions; preparation of ledgers; fundamental accounting equation; preparation of Trial Balance; concept of revenue and capital; preparation of Trading and Profit & Loss Account and Balance Sheet manually.

Unit-3: Computerised Accounting System (4 hours)
Basics of computerised accounting systems; difference between manual and computerized accounting systems; overview of available software packages for computerized accounting; factors affecting selection of suitable Computerised accounting software; procurement and installation of computerised accounting software.
Using any popular accounting software: create, select, shut, and delete a Company; setting security features of company; date and period features; configure and features settings; backup and restore data of a company.

Unit-4: Creating Masters and voucher entry (12 hours)
Creating Accounting Ledgers and Groups: Single create vs. multiple create, creating ledger under a group and entering opening balances
Creating Stock Items and Groups: Creating unit of measurement, creating stock groups using single or multiple create feature under an existing group, creating Stock items using single or multiple feature under an existing group,
Voucher Entry: Types of vouchers, selection of voucher type for transactions, vouchers entry, voucher number and date settings, voucher entry with more than one debit or credit accounts, editing and deleting a voucher and printing of voucher.

Unit-5: Taxation and Generating Reports (4 hours)
Taxation: Accounting for Goods and Service Tax
Generating Reports: Cash Book, ledger accounts, Trial Balance, Profit and Loss Account, Balance Sheet, Funds Flow Statement and Cash Flow Statement.

Note: The General Purpose Software referred in this course will be notified by the University Departments every three years. If the specific features, referred to in the detailed course above, is not available in that software, to that extent it will be deemed to have been modified.

Practical Exercises

The learners are required to:

1. Compare and contrast the manual and computerised accounting system of any firm.
2. Record business transactions and prepare financial statements for any hypothetical firm.

3. Analyse the structure of a computerised accounting system for a business firm.
4. Evaluate the relevance of recent innovations happened in computerised accounting system.
5. Collect the voucher data of a firm and prepare it in computerised system.
6. Analyse tax amount of select firms listed on BSE and correlate their financial performance and expenditure with taxes.

Suggested Readings

- Charles, T H., Sundem, G. L., Elliot, J. A., & Philbrick, D. R. (2017). *Introduction to Financial Accounting*. Delhi, India: Pearson.
- Goyal, B. K., & Tiwari, H.N. (2022). *Financial Accounting*. Delhi, India: Taxmann
- Kumar, A. (2021). *Financial Accounting*. Delhi, India: Singhal Publication.
- Lal, J., Srivastava, S., & Shivani. A. (2020). *Financial Accounting Text and problems*. Delhi, India: Himalaya Publishing House.
- Leonardo, A. R., Qanis, J. R., & Alderman, C. W. (1990). *Accounting Information Systems: A cycle Approach*. London, United Kingdom: Wiley.
- Lt. Bhupinder. (2021). *Financial Accounting – Concepts and Applications*. Delhi, India: Cengage.
- Monga, J. R., & Bahadur, R. (2022). *Financial Accounting: Concept and Applications.* Delhi, India: Scholar Tech Press.
- Robert, L. H. (2008). *Accounting Information Systems: Basic Concepts and Current Issues*. London, United Kingdom: McGraw Hill.
- Sehgal, A., & Sehgal, D. (2019). *Fundamentals of Financial Accounting*. Delhi, India: Taxmann.

Additional sources

- Tally ERP 9 book advanced user. Publisher: Swayam Publication (www.tallyerp9book.com)
- Tulsian, P. C., Tulsian, B., & Tulisan, T. (2023). *Financial Accounting*. Delhi, India: S. Chand.
- Tally ERP 9 Training Guide – 4th Edition. Ashok K Nadhani. Publisher: BPB Publications
- **Web resource:** http://tallyerp9book.com/TallyERP9-Book-Content.html

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

B.A. Programme with Commerce (Banking and Insurance)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Insurance and Risk Management BAC: Discipline (B&I) – A5 (Non-Major/Minor)	4	3	1	0	Pass in Class XII	NIL
Cost Accounting BAC: DSC-5 (Major)	4	3	1	0	Pass in Class XII	NIL
Life Insurance-I (BAC: DSE(B&I)-5.1) (Major)	4	3	1	0	Pass in Class XII	NIL
Marketing Services of Insurance Product (BAC: DSE (B&I) - 5.2) (Major)	4	3	1	0	Pass in Class XII	NIL

GENERIC ELECTIVE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Operational Aspects of Insurance (BAC: GE(B&I)-5.1)	4	3	1	0	Pass in Class XII	NIL

BAC: Discipline (B&I) -A5: Insurance and Risk Management (Non-Major/Minor)

Learning Objectives

The course aims to give students an in-depth knowledge about risk management and insurance.

Learning Outcomes

After completion of the course, learners will be able to:

1. Recognise basics of the risk management.
2. Describe the basic concept and principles of insurance.
3. Analyse different types of life insurance policies.
4. Analyse different types of general insurance policies.
5. Recognise the regulatory aspect of insurance in India.

SYLLABUS OF BAC: Discipline (B&I) – A5

Unit I: Concept of Risk and Risk Management (7 hours)

Risk- Meaning, Types of Risk, Sources and Measurement of Risk, Risk Retention and Transfer. Objectives of risk management, Risk management process, Identifying and evaluating potential losses, selecting appropriate technique for treating loss exposure, Risk financing, Implementing and administering risk management program, Personal risk management. Concept of Disaster Risk Management. Meaning of Actuary and Actuarial Science.

Unit II: Introduction to Insurance (16 hours)

Concept and Nature of Insurance Contract, law of large numbers, Characteristics of insurance

Principles of insurance contract: utmost good faith, insurable interest, proximity cause, contribution & subrogation, and indemnity. Legal Aspects of Insurance Contract. Globalization of Insurance Sector, Reinsurance, Co-insurance, Assignment, Endowment, Types of Insurance: Life insurance, General Insurance.

Unit III: Life Insurance (9 hours)

Meaning of Life Insurance, Features-classification of policies, Types of life insurance policies: Term insurance, Whole life insurance and its variants, Endowment insurance and its variants, Annuities. Surrender value. Policy Process: Application, and acceptance, prospectus, proposal forms and other related documents, Age proof, Special reports, Assignments, Nomination. Claim Settlements: Loans, surrender, Foreclosure Policy, Maturity claims survival benefit, Payments death claims, Waiver of evidence of title-Early claims, Claim concession, Presumption of death, Accident and disability benefits.

Unit IV: General Insurance (9 hours)

Types of general insurance: Fire and Motor Insurance, Health Insurance, Marine Insurance, Automobile Insurance, Burglary and personal accident Insurance in India, Liability insurance, Miscellaneous insurance, Claims settlement.

Unit V: Regulation of Insurance in India (4 hours)

Control of Malpractices, Negligence, Loss Assessment and Loss Control, Exclusion of perils, Regulatory Framework of Insurance: Role, Power, and Functions of IRDA, Composition of IRDA, IRDA Act 1999.

Exercises

The learners are required to:

1. Identify the various kinds of risks they are exposed to.
2. Discuss the concept and principles of insurance.
3. Compare the terms different life insurance policies offered in the market.
4. Compare the terms of different general insurance policies offered in the market.
5. Discuss different aspects of the regulatory framework of insurance in India.

Suggested Readings

- Dorfman, M. S. (2015). *Introduction to Risk Management and Insurance*. (10th ed.) Pearson.
- Rejda, G.E. (2014). *Principles of Risk Management and Insurance*. Essex, United Kingdom: Pearson Education.
- Gupta. P.K. (2020). *Insurance and Risk Management*. Delhi, India: Himalaya Publishing House.
- Kumar, S. (2019). *Essential of Insurance and Risk Management*. Delhi, India: JSR Publishers.
- Mishra, M. N. (2020). *Principles and Practices of Insurance*. Delhi, India: Sultan Chand and Sons.
- Farooqui, A. (2019). *Principles and Practices of Insurance*. Wisdom Publications.

Additional Resources

- Black, K., & Skipper, H.D. (2012). *Life and Health insurance*. Pearson Education.
- Crane, F. (2014). *Insurance Principles and Practices*. New York, United States: John Wiley and Sons.
- Vaughan, E. J., & T. Vaughan. (2016). *Fundamentals of Risk and Insurance*. Hoboken, United States: Wiley & Sons

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

BAC: DSE(B&I)- 5.1: Life Insurance-I (Major)

Learning Objectives

The course aims to make the students acquainted with various aspects of life insurance and issues related to insurance products in terms of pricing, underwriting and necessary documentation.

Learning Outcomes

After completion of the course, learners will be able to:

1. Describe the basic concepts related to life insurance.
2. Examine a life insurance plan depending upon the need of the insurer.
3. Illustrate various aspects related to pricing of insurance products.
4. Demonstrate the underwriting process and requisite documentation.
5. Interpret the vital regulations with special reference to LIC.

SYLLABUS OF BAC: DSE (B&I) -5.1

Unit 1: Introduction to Life Insurance (5 hours)

Purpose and Need of Life Insurance, Important Terminologies: Premium, Sum Assured Insured, Proposer, Nominee, Survivor, Assignee, Assignment, Riders etc., Essential features of Life Assurance, Advantages of Life Assurance, Principles of Life Insurance, Importance of Life Insurance

Unit 2: Types of Life Insurance Plans (11 hours)

Whole-life Plans, Endowment Insurance Plans, Term Insurance Plans, Whole-life and Endowment Plans: Comparison, Couple Life Insurance Policy, Female Insurance Plans, Children Plans, Plans for Handicapped Dependents, Plans for High Worth Individuals, Money Back Plans, Micro Insurance Plans, Group Insurance Schemes, Social Security Schemes, Pension/ Annuity Plans, Unit Plans

Unit 3: Insurance Pricing (11 hours)

Pricing Objectives, Life Insurance Pricing Elements, Insurance Rating Methods, Calculation of Premium, Payment of Premium, Classification of Expenses, Surrender Value, Sum Assured Value and Paid up Value

Unit 4: Underwriting and Policy Documents (11 hours)

Underwriting Process, Methods of Rate Determination, Types of Underwriters, Rate of Agents in Underwriting, Policy Bonds, Proposal Form, Certification of Insurance

Unit 5: Life Insurance Act, 1956 (7 hours)

Important Definitions, Establishment and Incorporation of Life Insurance Corporation of India, Constitution and Functions of LIC, Constitution of Tribunal, Management of LIC.

Exercises

The learners are required to:

1. Discuss basic concepts and importance of life insurance.
2. Evaluate different life insurance plans taken by their family members.
3. Compare premiums of different life insurance plans.
4. Discuss case studies that explore the underwriting process and necessary policy documentation.
5. Discuss and interpret legal cases related to LIC Act,1956.

Suggested Readings

- Mishra M.N., & Mishra, S.B. (2015). *Insurance Principles and Practice*. Delhi, India: S.Chand.
- Chaturvedi, D.D., & Mittal, A. (2016). *Banking and Insurance*. Delhi, India: Scholar Tech Press.
- Sethi, J., & Bhatia, N. (2017). *Elements of Banking and Insurance*, Delhi, India: PHI Learning Private Limited.
- Gupta, A. (2019). *Banking and Insurance*. Delhi, India: A K Publications.
- Farooqi, A.W. (2019). *Principles and Practice of Insurance*. Delhi, India: Wisdom Publications.
- Mittal, A., & Gupta, S. L. (2020). *Principles of Insurance and Risk Management*. Delhi, India: Sultan Chand & Sons.
- Kumar, S. (2019). *Fundamentals of Insurance and Risk Management*. Delhi, India: JSR Publication.

Additional Resources

- Imam, A. (2017). *Principles and Practice of Life Insurance in India*. Delhi, India: Anmol Publications Pvt. Ltd.
- Singh, I., & Katyal, R. (2019). *Insurance Principles and Practice*. Delhi, India: Kalyani Publishers.
- Loomba, J. (2018). *Risk Management and Insurance Planning*. Delhi, India: PHI Learning Private Limited.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

BAC: DSE (B&I) - 5.2: Marketing Services of Insurance Product (DSE2) (Major)

Learning Objectives

The main objective of this paper is to acquaint the learners about various marketing services and policies available to life and non-insurance in India.

Learning outcomes

After completion of the course, learners will be able to:

1. Compare different life insurance policies in India.
2. Discuss non-life insurance policies in India.
3. Recognise basics of fire insurance.
4. Discuss miscellaneous insurance policies.
5. Evaluate the impact of privatisation of the insurance sector in India.

SYLLABUS OF BAC: DSE (B&I)-5.2

Unit 1: Life Insurance Policies in India (7 hours)

Classification of Life Insurance Policies on the basis of duration of Policy, Payment of Premium, Participation in Profits, Number of Lives Insured, Non - Conventional Policies, Accidental Benefit, Disability Benefit, Double Accident Benefit, Policies of Private Sector Companies (Birla Sunlife Term Plan, Allianz Bajaj Cash care, SBI Life, ICICI Prudential Life etc.), Marketing Strategies of Various Life Insurance Policies.

Unit 2: Non-Life Insurance Policies in India (9 hours)

Nationalization of General Insurance; Non-life Insurance- Marine Insurance, Fire Insurance, Miscellaneous Insurance, kinds of Marine Policies, Clauses in a Marine Insurance Policy, Marine Losses, Payment of Claims under Marine Insurance; Marketing Strategies of Marine Insurance.

Unit 3: Elements of Fire Insurance Contract (9 hours)

Procedure of Fire Insurance, Kinds of Fire Insurance Policies, Payment of Claim under Fire Insurance, Motor Insurance Policies, Settlement of Claims in Motor Insurance.

Unit 4: Miscellaneous Insurance Policies (9 hours)

Burglary Insurance Policies, Claim Procedure, Personal Accident Policies, Various Health Insurance Policies available in the market in Post COVID-19 period, Relevance and new trends in Health Insurance, Rural Insurance Policies, Contractors All Risk Insurance Policies.

Unit 5: Privatisation of Insurance Sector in India (11 hours)

Historical background, Progress of General Insurance Sector Post Nationalization, Need for Reforms in Insurance Sector, Reform Measures in Insurance Sector, Arguments Against Privatization of Insurance Sector, Rationale for Privatizing Insurance Business, Marketing Strategies for Betterment after Privatization.

Exercises:

The learners are required to:

1. Perform a comparative analysis of different life insurance policies in India.
2. Perform a comparative analysis of different non- life insurance policies in India.
3. Describe features of various fire insurance policies offered in India.
4. Enlist the features of miscellaneous insurance policies purchased by your family members.
5. Critically analyse the impact of privatisation of the insurance sector in India.

Suggested Readings

- Aggarwal, P. & Ratti, M. (2019). *Banking and Insurance Operations*. Delhi, India: Kalyan Publishers.
- Sethi, J., & Bhatia, N. (2018). *Elements of Banking and Insurance*. Delhi, India: PHI Learning Private Ltd.
- Mishra, M.N., & Mishra, S.B. (2017). *Insurance Principles and Practice*. Delhi, India: S. Chand and Company Pvt. Ltd.
- Kumar, S. (2017). *Fundamentals of Insurance and Risk Management*. Delhi, India: JSR Publication.

Additional Resources

- Loomba, J. (2017). *Risk Management and Insurance Planning*. Delhi, India: PHI Learning Private Ltd.
- Sharma, R.K., & Gupta, S. K. (2018). *Banking and Insurance*. Delhi, India: Kalyan Publishers.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

BAC: GE(B&I)- 5.1: Operational Aspects of Insurance

Learning Objectives

The course aims to familiarize the students with the basics of banking and insurance aspect along with developing an insight about the different operational aspects of banking and insurance.

Learning Outcomes

After completion of the course, learners will be able to:

1. Describe the basic concept of banking.
2. Analyse the role of banks in the Indian economic development.
3. Discuss the contemporary and recent trends in Banking.
4. Describe the basic concept and principles of insurance.
5. Discuss contemporary trends in insurance.

SYLLABUS OF BAC: GE (B&I)- 5.1

Unit 1: Concept of Banking (7 hours)

Meaning and types of Banks in India (Private, Public, RRBs, Foreign, Payment Bank) — Function of Banking, Universal Banking.

Unit 2: Role of Banks in Economic Development of India (9 hours)

Role of Banks in Economic Development, Branch Expansion, Amalgamations and Mergers, Priority Sector Lending – Recent Government policies: Banking reforms

Unit 3: Contemporary and Recent Trends in Banking (11 hours)

Types of Bank Accounts, Procedure for opening bank account, Recent Trends: Digital Banking, Virtual Banking, E-banking, Social Banking, Green Banking, Community Banking. Different Modes of e-payment/fund transfer. Financial Inclusion (Jan Dhan Yojana).

Unit 4: Introduction to Insurance (11 hours)

Meaning & Definition of Risk, Risk Transfer. Concept of Insurance, Principles of Insurance, Types of Insurance (Health, Fire, Marine and Motor) and their different policy, Importance of Life & General Insurance. Role of Insurance Regulatory Development Authority (IRDA).

Unit 5: Contemporary Trends in Insurance (7 hours)

Pre-economic and post-economic reforms in Insurance sector, Digital Insurance – Bancassurance.

Exercises

The learners are required to:

1. Discuss the role of different types of banks in India.
2. Evaluate the role of banks in Indian economic development using empirical data.
3. Assess the role of different schemes of financial inclusion in India.

4. Discuss features of different types of insurance policies purchased by their family members.
5. Examine contemporary trends in insurance.

Suggested Readings

- Panda, G. & Mahajan, M. (2018). *Principles & Practices of Insurance.* Delhi, India: Kalyani Publishers.
- Mishra, M.N., & Mishra, S.B. (2016). *Insurance- Principles & Practice*. Delhi, India: Sultan Chand & Co. Pvt. Ltd.
- Sethi, J., & Bhatia, N. (2016). *Elements of Banking and Insurance*. Delhi, India: PHI Learning Pvt. Ltd.
- Kumar, S. (2019). *Banking and Insurance*. Delhi, India: JSR Publications.
- Agarwal, O.P. (2016). *Banking and Insurance*. Delhi, India: Himalaya Publishing House.
- Suneja, H.R. (2020). *Practical and Law of Banking*. Delhi, India: Himalaya Publishing House.

Additional Resources

- RBI & IRDA reports.
- Vaughan, E.J., & Vaughan, T. (2017). *Fundamentals of Risk and Insurance*. Hoboken, United States: Wiley & Sons.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

B.A. Programme with Commerce (Advertising, Sales Promotion and Sales Management)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Sustainability Marketing (BAC: Discipline (ASPSM) – A5) (Non-Major/Minor)	4	3	1	0	Pass in Class XII	NIL
Cost Accounting BAC: DSC-5 (Major)	4	3	1	0	Pass in Class XII	NIL
Brand Management (BAC: DSE(ASPSM)- 5.1) (Major)	4	3	1	0	Pass in Class XII	NIL
Retail management (BAC: DSE (ASPSM) - 5.2) (Major)	4	3	1	0	Pass in Class XII	NIL

GENERIC ELECTIVE
CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Marketing for Beginners (BAC: GE(ASPSM) -5.1)	**4**	**3**	**1**	**0**	**Pass in Class XII**	**NIL**

BAC: Discipline (ASPSM) – A5: Sustainability Marketing (Non-Major/Minor)

Learning Objectives

This course aims to familiarize the students with the concept and process of sustainable marketing.

Learning Outcomes

After completion of the course, learners will be able to:

1. Describe the need for sustainable marketing in view of environmental, legal and ethical aspects.
2. Explore opportunities for sustainable marketing strategies.
3. Identify the consumer behaviour for sustainable marketing
4. Demonstrate how sustainable marketing can be applied to marketing mix strategies.
5. Recognise the importance of legal framework for sustainable marketing.

SYLLABUS OF BAC: Discipline (ASPSM) – A5

Unit 1: Introduction (9 hours)

Sustainability- Concept, Issues, SDG Goals. Sustainability Marketing- Concept, Rationale, Evolution, Pillars of Sustainability Marketing, Linkage with SDGs. Sustainability and Ethical Decision Making. Challenges of Practising SM- Sustainability and Profitability. Triple Bottom Line- An Overview.

Unit 2: Sustainability Marketing Opportunities (9 hours)

Sustainability Opportunities- Marketing Environment; Segmentation, Targeting and Positioning; Creating Value through Sustainability- Designing the Marketing Mix, Holistic

Approach to Sustainability.

Unit 3: Consumer Behaviour and Sustainability Marketing (9 hours)

Unsustainable Lifestyles, Dimensions of Sustainable Consumer Behaviour. Motives of adapting Sustainable Consumer Behaviour, Attitude-Behaviour Inconsistency in Sustainable Buying Decisions, Environmental Consciousness; Sustainable Consumption- Beliefs, Social Norms, Values, Cases of Mindful Consumption and Responsible Consumption.

Unit 4: Sustainability and Marketing Mix Decisions (9 hours)

Developing and Reinforcing Behaviour through 3 R's- Recycle, Reuse and Reduce. Sustainable Products, Sustainable Branding and Packaging. Sustainable Pricing Decisions, Sustainable Marketing Communication, Sustainability and Promotion Mix Decision, Marketing Channels and Sustainable Supply Chain.

Unit 5: Sustainability Legal Framework and its Implementation in India (9 hours)

An Overview of Legal Framework- Leading Cases and Developments. Role of Sustainable Marketing in Global Network.

Exercises

The learners are required to:

1. Analyse the need for sustainable marketing in the Indian market, in view of environmental, legal and ethical aspects.
2. Explore opportunities for sustainable marketing strategies in a group discussion.
3. Conduct primary survey to identify the consumer behaviour for sustainable marketing.
4. Through a role play, demonstrate how sustainable marketing can be applied to marketing mix strategies.
5. Analyse case studies on legal framework for sustainable marketing.

Suggested Readings

- Kotler, P. (2012). *Rethinking Marketing: Sustainable Marketing Enterprise in Asia*. Delhi, India: Pearson.
- Gittell, R., Magnusson, M., & Merenda, M. (2012). *The Sustainable Business Case Book*. United States: Saylor Foundation.
- Frank-Martin, B., & Ken, P. (2012). *Sustainability Marketing: A Global Perspective*. Delhi, India: Wiley publication.
- Richardson, N. (2020). *Sustainable Marketing Planning.* Delhi, India: Routledge, Taylor and Francis Group.
- Peterson, M. (2021). *Sustainable Marketing: A holistic Approach*. Delhi, India: Sage Publication Ltd.
- Carvil, M., Butler, G., & Evans, G. (2021). *Sustainable Marketing: How to Drive Profits with Purpose*. United Kingdom: Bloomsbury Business.
- Fuller, D.A. (1999). *Sustainable Marketing: Managerial-Ecological Issues. Markets and Market Development*. United Kingdom: Sage Publications Inc.

Additional Resources

- https://moef.gov.in/wp-content/uploads/wssd/doc2/ch2.html
- https://www.oecd.org/env/outreach/37838061.pdf
- http://www.sacep.org/pdf/Reports-Technical/2002-UNEP-SACEP-Law-Handbook-India.pdf
- https://open.umn.edu/opentextbooks/textbooks?term=sustainable+development&commit=Go

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

BAC: DSE(ASPSM)- 5.1: Brand Management (Major)

Learning Objectives

The course aims to make student aware of brands, their evolution, extensions, brand Management strategies and its practical implications for business. The course shall focus on developing skills to devise strategies for brand positioning and equity in the market.

Learning Outcomes

After completion of the course, learners will be able to:

1. Recognise the conceptual framework of brands.
2. Observe the importance of brand positioning.
3. Design marketing programmes.
4. Describe the importance of brand equity.
5. Discuss recent issues in branding.

SYLLABUS OF BAC: DSE- 5.1

Unit 1: Introduction (9 hours)

Introduction to Brands and Brand Management, Concept of a Brand, evolution of a Brand, Challenges and Opportunities, Brand Identity, Brands and Consumers, IMC: Evolution and Growth.

Unit 2: Brand Positioning (9 hours)

Brand Building, Identifying and Establishing Brand Positioning and values, Brand Repositioning, Life stages of a Brand, Brand Personality, Brand Image.

Unit 3: Designing Marketing Program (11 hours)

Strategic Brand Management Process, Designing and implementing brand strategies, Contemporary Strategies: storytelling, Internet and Social Media, Brand Extensions, Brand reinforcement strategies, Brand Portfolio Management, Integrating Advertising with Brand Management.

Unit 5: Brand Equity (11 hours)

Customer based Brand Equity, Measuring and Interpreting Brand Performance: brand equity Management System, New Media Environment: Brands amplifiers, Growing and Sustaining Brand Equity.

Unit V: Recent Issues in Branding (5 hours)

Managing Strong Brands, Brand Ladder, Country Branding, Global Brand Strategy, Managing Brands over time, Brand Audits, Managing Brands in Digital Era. Legal and Ethical aspects in Brand Management.

Note: Case Studies may be discussed in every unit, where ever possible to supplement the subject matter.

Exercises

The learners are required to:

1. Discuss the evolution of any popular brand.
2. Analyse the brand positioning strategy of any popular brand.
3. Design marketing programmes for any hypothetical firm.
4. Discuss the brand equity of any popular product/service.
5. Analyse case studies on emerging issues in branding.

Note: These are indicative in nature and scope.

Suggested Readings

- Aaker, D. (2009). *Brand Leadership (UK Ed.).* United Kingdom: Simon & Schuster.
- Beverland, M. (2018). *Brand Management: Co-creating Meaningful Brands*. London, United Kingdom: SAGE Publications.
- Chernev, A. (2015). *Strategic Brand Management*. Illinois, United States: Cerebellum Press.
- Cowley, D. (1991). *Understanding Brands*. Delhi, India: Kogan Page Ltd.
- John, D. R. (2017). *Strategic Brand Management: Lessons for Winning Brands in Globalized Markets*. Delhi, India: Oxford University Press.
- Keller, K. L., Swaminathan V., Parameswaran, A. M G., & Jacob, I. C. (2019). *Strategic Brand Management: Building, Measuring and Managing Brand Equity*. (5th ed.) Harlow, United Kingdom: Pearson Education.
- Miller, D. (2017). *Building a Story Brand: Clarify Your Message So Customers Will Listen*. India: HarperCollins Publishers.
- Temporal, P. (2011). *Advanced Brand Management*. Singapore: John Wiley and Sons.
- Parameshwaran, M.G. (2006). *Building Brand Value*. Delhi, India: McGraw Hill Education.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

BAC: DSE (ASPSM) - 5.2: Retail management (Major)

Learning Objectives

The course aims to provide a comprehensive understanding of the theoretical and applied aspects of Retail Management.

Learning Outcomes

After completion of the course, learners will be able to:

1. Recognise the concept of retailing and its formats.
2. Describe the dynamics of retail store location, its design and visual display.
3. Describe and analyze the marketing mix strategies used by the retailers/e-tailers to interact with their customers.
4. Analyse human resource management practices in retailing for sustainable relationship building with the customers as enticed in the concept of Customer Relationship Management.
5. Interpret the legal and ethical issues and the role of ICT in Retail Management.

SYLLABUS OF BAC: DSE- 5.2

Unit 1: Introduction (9 hours)

Retailing: Nature, Scope and Importance of Retailing, Formats of Retailing: Store-based and Non-Store based including E-tailing, Emerging Trends in Retailing in India, Career Options in Retailing.

Unit 2: Retail Planning (9 hours)

Understanding Retail Consumer, Selecting Target Market and Retail Location, Store Design and Layout, Visual Merchandising and Displays.

Unit 3: Retail Marketing Mix (11 hours)

Merchandising and Inventory Decisions, Merchandise Pricing Decisions, Retail Distribution Decisions and Retail Promotion Decisions with special emphasis on Retail Selling Skills.

Unit 4: Managing Human Resources and Customer Relationships in Retailing (9 hours)

HRM process in Retail: an overview, Customer Relationship Management: Concept and Types of CRM in Retailing.

Unit 5: Contemporary Issues in Retail Management (7 hours)

Role of Information Technology in Retailing, Legal and Ethical Issues in Retailing and Mall Management.

Exercises

The learners are required to:

1. Prepare an experiential report on the use of vending machines in a retail format of your choice.
2. Prepare a case study on the promotional strategy used in a mall in your vicinity.
3. Conduct the following study:
   Haats are popular not only in rural India, but in urban areas too. Conduct a study on the effectiveness of their location and visual merchandising display strategy that

they have adopted.
4. Study the layout, merchandising and display of any store-based retail format.
5. Analyze any element of retail marketing mix strategy in detail of any store-based retail format.
6. Perform role play as customer and retailer with respect to different product categories to effectively demonstrate the ability to close the sale.
7. Conduct personal interviews of the sales staff in a retail store to identify what motivates them more- monetary or non-monetary incentives.
8. Study the customer relationship management practices followed at a retail store.
9. Analyse the legal and ethical issues and the role of ICT in Retail Management.

Suggested Readings

- Bajaj, C., Tuli, R., & Srivastava, N. V. (2010). *Retail management*, Oxford, United Kingdom: Oxford University Press.
- Berman, B. R., & Evans, J. R. (1995). *Retail Management: A Strategic Approach.* Englewood Cliffs, United States: Prentice Hall.
- Levy, M., Weitz, B. A., & Ajay, P. (2009). *Retailing Management*. Delhi, India: Tata McGraw- Hills Publication Co. Ltd.
- Newman, A.J., & Cullen, P. (2002). *Retailing Environment; Operations*. Delhi, India: Cengage Learning India Private Limited.
- Vedamani, G. G. (2008). *Retail management*. Delhi, India: Jaico Publishing House.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

BAC: GE(ASPSM) - 5.1: Marketing for Beginners

Learning Objectives

The structure of this course is to provide basic understanding of concepts, principles, tools and techniques of marketing and to provide knowledge about various developments in the marketing scenario in India.

Learning Outcomes

After completion of the course, learners will be able to:

1. Analyse the marketing environment.
2. Evaluate the dynamics of consumer behavior and the basic product decisions.
3. Analyze the process of value creation through product decisions.
4. Analyze the process of value creation through pricing and distribution decisions.
5. Assess marketing decisions involving product promotion.

SYLLABUS OF BAC: G.E.- 5.1

Unit 1: Introduction to Marketing (9 hours)

Concept, Scope and Importance; Marketing Philosophies; Marketing Mix for goods and services.

Marketing Environment
Need for studying marketing environment; Micro environment-company, suppliers, marketing intermediaries, customers, competitors, publics; Macro environment- demographic, economic, natural technological, politico-legal and socio-cultural factors.

Unit 2: Consumer Behaviour(9 hours)
Need for studying consumer behavior; Stages in consumer buying decision process, Factors influencing consumer's buying decisions.
Market Selection;Market segmentation-concept and bases of segmenting consumer markets; Market Targeting; Product Positioning- concept and bases.

Unit 3: Product Decisions (9 hours)
Concept and classification; Product mix; Branding; Packaging; Labeling; Product support services; Product life cycle.

Unit 4:Pricing Decisions (9 hours)
Objectives; Factors affecting price of a product; Pricing strategies for new products-penetration pricing and skimming pricing.
Distribution Decisions
Channels of Distribution**:** types and functions; Wholesaling and retailing; Distribution Logistics Decisions.

Unit 5:Promotion Decisions(9 hours)
Communication process; Importance of promotion; Promotion tools: advertising, personal selling, sales promotion, public relations, publicity and direct marketing.
Developments in Marketing
Sustainable Marketing, Rural marketing, Social marketing, Digital marketing – an overview.

Exercises

The learners are required to:

1. Scan the marketing environment of any product/ service on the basis of its demographic and socio-cultural environment affecting it. Make a presentation on the basis of the report.
2. Study the impact of the factors affecting Consumer Behaviour of a company marketing health products in the Indian market.
3. Choose any two products and discuss the reasons for choosing different bases for segmentation.
4. Identify 20 brand names of real-life products of your choice and justify as to why they are good brand names.
5. Identify 5 real-life products each that have been using penetration pricing and market-skimming pricing.
6. Prepare a report on promotion mix tools used to sell an Online educational course.
7. Prepare a case study of the rural marketing mix of any consumer product.

Suggested Readings

- Etzel, M. J., Walker, B. J., Stanton, W. J., & Pandit, A. (2010). *Marketing (14th ed.)*. Delhi, India: McGraw Hill.
- Kapoor, N. (2021). *Principles of Marketing*. Delhi, India: Prentice Hall of India.

- Kotler, P., Armstrong, G., & Agnihotri, P. (2018). *Principles of Marketing (17th Edition)*. Delhi, India: Pearson Education.
- Sharma, K., & Swati Aggarwal. (2021). *Principles of Marketing*. Delhi, India: Taxmann Publications.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

B.A. Programme with Commerce (Human Resource Management)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Training & Development (BAC: Discipline (HRM) – A5) (Non-Major/Minor)	4	3	1	0	Pass in Class XII	Studied Performance Management (BAC: Discipline (HRM) – A4)
Cost Accounting BAC: DSC-5 (Major)	4	3	1	0	Pass in Class XII	NIL
Managerial Communication (BAC: DSE(HRM)- 5.1) (Major)	4	3	1	0	Pass in Class XII	NIL
Compensation Management (BAC: DSE (HRM) - 5.2) (Major)	4	3	1	0	Pass in Class XII	NIL

GENERIC ELECTIVE
CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Work Environment for Human Resource Management (BAC: GE(HRM) - 5.1)	4	3	1	0	Pass in Class XII	NIL

BAC: Discipline (HRM) – A5: Training & Development (Non-Major/Minor)

Learning Objectives

The course aims at equipping the learners with the concept and practice of training and development in the modern organisational setting through the pedagogy of case study, group discussions and recent experiences.

Learning Outcomes

After completion of the course, learners will be able to:

1. Analyse the training and development strategies adopted by various organisations.
2. Identify training needs of an individual by conducting training need analysis.
3. Design training and development programme.
4. Analyse various training and development methodologies.
5. Evaluate and assess the cost and benefits of a training and development programme.

SYLLABUS OF BAC: Discipline (HRM) – A5

Unit 1: Introduction (9 hours)

Concepts and rationale of training and development; overview of training and development systems; training and development policies; difference between training and development, linking training and development to company's strategy; requisites of effective training and development programme.

Unit 2: Learning and Training Need Analysis (TNA) (9 hours)

Logic and process of learning; principles of learning; individual differences in learning, learning process, learning management system; Meaning and purpose of TNA, TNA at different levels, approaches for TNA, output of TNA, methods used in TNA.

Unit 3: Designing Training & Development Programme (9 hours)

Organisation of training and development programmes, training design, kinds of training and development programme-competence based and role-based training; orientation and socialization of new employees, diversity training, e-learning environment; flexible learning modules; self development; training process outsourcing.

Unit 4: Training and Development Methodologies (13 hours)
Training and Development Methodologies:-On the job and off the job training methods; apprenticeship training, informal learning, lectures and seminars using digital technologies, behaviour modeling, vestibule training, e-learning, simulation employee training, group discussion and activities; On the job and off the job development methods:- coaching/under study, experience learning, brainstorming, simulation, counselling, e-learning, knowledge based learning, experiential learning, case studies, position rotation, and sensitivity training.

Unit 5: Evaluation of Training and Development (5 hours)
Reasons for evaluating training and development programmes, problems in evaluation; evaluation planning, obtaining feedback of trainees; evaluating of training and development and its impact on organisational performance.

Exercises

The learners are required to:

1. Analyse the training and development strategies adopted by various organisations through case studies.
2. Participate in simulation exercise in classroom to conduct TNA on oneself and thereby identify their needs. Learners may be assigned the task of preparation of questionnaire for TNA.
3. Select the training strategies on the basis of TNA conducted in the previous exercise.
4. Develop a training and development module on the basis of selected strategies in the previous exercise.
5. Analyse various training and development methodologies used in different organisations.
6. Prepare an evaluation report to assess benefits of the training module prepared in the previous exercise and its impact on organisational performance.

Suggested Readings

- Blanchard, N. P., & Thacker, J. W. (2012). *Effective Training: Systems, Strategies and Practices (4th Ed.).* New York, United States: Pearson Education.
- Noe, R. A., & Kodwani, A. D. (2018). *Employee Training and Development (7th Ed.).* New York, United States: McGraw Hill Education.
- Lynton, R. P., & Pareek, U. (2011). *Training for Development*. Delhi, United States: SAGE India.
- Phillips, J. J., & Phillips, P. P. (2016). *Handbook of Training Evaluation and Measurement Methods*. Houston, United States: Gulf Publishing Co.
- Prior, J. (1991). *Handbook of Training and Development*. Mumbai, India: Jaico Publishing House.
- Sharma, D., & Kaushik, S. (2019). *Training & Development*. Delhi, India: JSR Publishing House.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

BAC: DSE(HRM)- 5.1: Managerial Communication (Major)

Learning Objectives

The course aims to train students to enhance written as well as oral communication in management. This course will help students in understanding the principles and techniques of communication. Also, to understand the use of electronic media for communication.

Learning Outcomes

After completion of the course, learners will be able to:

1. Recognise the basics of communication in management.
2. Interpret need for effective listening.
3. Discuss basics of written and spoken communication.
4. Demonstrate role of group discussion and interviews.
5. Interpret business reports and proposals.

SYLLABUS OF BAC: DSE (HRM) – 5.1

Unit 1: Introduction to Communications (9 hours)

Meaning and Objectives of Communication. Process of Communication. Forms of communication: formal and informal; upward, downward, diagonal and lateral. Role of a Manager. Barriers to effective Communication and Overcoming them. Effectiveness in Managerial Communication. Make use of grapevine. Role of verbal and non-verbal communication; interpreting non-verbal communication.

Unit 2: Listening (9 hours)

Meaning and objectives of Listening. Features of a good listener. Analysing poor listening. Effective listening skills and barriers to effective listening.

Unit 3: Spoken communication (9 hours)

Oral Presentation: Planning, structuring and delivering presentation. Handling queries. Challenges and etiquettes associated with Telephonic, web-conferencing and Teleconferencing communication.

Written communication: Principles and steps of effective writing. Seven Cs of Letter writing. Business Letters: inquiries, placing orders, sales letters. Job applications and resumes. Memos.

Unit 4: Group Discussion (9 hours)

Nature, forms and classification of Groups. Role of managers in Group Discussions. Effective Group Decision Making. Group Conflict.

Interviews: Interviewing, Nature and types of Interviewing Questions. Verbal and Non-Verbal aspects of interviewing. Types of Interviews: structured and unstructured; group and depth.

Unit 5: Meetings (9 hours)

Planning and conducting meetings. Meeting Process. Ways to Effectively lead a meeting. Evaluating meeting and drafting minutes of a meeting.

E-mail, Business Reports and Proposals: E-mail Etiquettes, smartness and presentation. Business Reports and proposals: Writing, purpose and sections/parts.

Exercises

The learners are required to:

1. Identify different forms of communication in their institution.
2. Identify barriers to effective listening in their institution.
3. Host web conferences.
4. Draft their resume.
5. participate in Group discussions and mock interviews.
6. Write a business proposal for a hypothetical business plan.

Suggested Readings

- Bell, R. & Martin, J. (2018). *Managerial Communication*. New York, United States: Business Expert Press.
- Lesikar, R.V., & Flatley, M.E. (2018). *Basic Business Communication Skills for Empowering the Internet Generation*. Delhi, India: Tata McGraw Hill Publishing Company Ltd.
- Ludlow, R., & Panton, F. (2019). *The Essence of Effective Communications*. Delhi, India: Prentice Hall of India Pvt. Ltd.
- Owen, H., David, D., & Dennis, T. (2016). *Communication in Management*. Gower Publishing, Ltd.
- Bhatia, R.C. (2019). *Business Communication*. Delhi, India: Ane Books Pvt. Ltd.
- Scot, O. (2018). *Contemporary Business Communication*. Delhi, India: Biztantra.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

BAC: DSE (HRM) - 5.2: Compensation Management (Major)

Learning Objectives

The course aims to familiarize students about concepts of compensation management and how to use them to face the challenges of attracting, retaining and motivating employees to high performance.

Learning Outcomes

After completion of the course, learners will be able to:

1. Recognise the basics of compensation management.
2. Analyse various aspects of job evaluation.
3. Discuss basics of social security.
4. Discuss contemporary issues in compensation management.
5. Review recent trends in compensation management.

SYLLABUS OF BAC: DSE (HRM) – 5.2

Unit 1: Introduction to Compensation Management (11 hours)

Nature and Objectives of Compensation, Factors affecting Compensation Policy, Concept of Wages and Salary, Wage Determination, Pay Grades, Wage Surveys, Minimum Wages, Fair Wages and Living Wages. Understanding Elements of Compensation Structure - Fixed Pay, Variable Pay, Cash Benefits, Incentives, Executive Compensation, Stock Options,

Understanding Salary Slip, Company Wage Policy: Wage Components.

Unit 2: Job Evaluation (11 hours)
Methods of Job Evaluation; Incentive plans for production employees and for other professionals, developing effective incentive plans, pay for performance; Supplementary pay benefits, insurance benefits, retirement benefits, employee services benefits, Benefits & Incentive practices in Indian industry.

Unit 3: Understanding the Basics of Social Security (9 hours)

Concept of Social Security, Laws relating to Social Security -Introduction to Provident Fund, Employees State Insurance, Gratuity, Superannuation, Bonus, Reward Systems, Retirement, VRS / Golden Handshake

Unit 4: Contemporary Issues of Compensation Management (7 hours)
Contemporary issues of Compensation Management, International Compensation, Global convergence of compensation practices - Pay for performance for global employees - practices in different industries.

Unit 5: Recent Trends of Compensation Management (7 hours)
Employee benefits around the world - CEO pay in a global context - Beyond compensation. Modern trends in compensation - from wage and salary to cost to company concept, Comparable worth, broad banding, competency based pay.

Exercises

The learners are required to:

1. Discuss case studies on compensation management.
2. Analyse different methods of job evaluation used in any organisation.
3. Discuss various social security benefits in India.
4. Discuss contemporary issues in compensation management.
5. Analyse the recent trends in compensation management in India.

Suggested Readings

- Bhattacharyya, D.K. (2018). *Performance Management systems and strategies*. Delhi, India: Pearson Education.
- Dessler, G. (2019). *Human Resource Management. (12th ed.).* Delhi, India: Prentice Hall.
- Milkovich, G., & Newman, J. (2018). *Compensation. (12th ed.).* New York, United States: McGraw Hill.
- Henderson, R. (2019). *Compensation Management in a Knowledge Based World (10th ed.).* Delhi, India: Prentice Hall.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

BAC: GE(HRM) - 5.1: Work Environment for Human Resource Management

Learning Objectives

The course aims to enable the learners to understand and apply the important concepts of HRM including HRD, understanding workplace environment, ethical practices in the workplace, TQM.

Learning Outcomes

After completion of the course, learners will be able to:

1. Discuss the evolution of HRM.
2. Examine the workplace environment.
3. Recognize the importance of TQM practices in organisations.
4. Analyze the quality of working life (QWL) and quality circles (QC).
5. Recognise ethical concerns in an organisation.

SYLLABUS OF BAC: GE (HRM) – 5.1

Unit 1: Human resource management (HRM): An Overview (9 hours)

HRM- concept, need, evolution and functions, Difference between human resource management and human resource development

Unit 2: Workplace Environment (9 hours)

Workplace conflict: an overview, causes, and solutions; managing workforce diversity; flexible work arrangements; Health and safety measures at workplace.

Unit 3: Total Quality Management (TQM) (9 hours)

TQM- Concept, components and its implementation strategies; Knowledge management and learning organisation.

Unit 4: Quality of Working Life (QWL) AND Quality Circles (QC) (9 hours)

Meaning, importance, approaches for enhancing QWL, and conditions for QWL success; Meaning, objectives, and importance of QC.

Unit 5: Ethical Issues in HRM (9 hours)

Ethics at work: Meaning, Importance, and significance, Factors Affecting Ethical Behaviour at Work, and Ethical Issues in HR

Exercises

The learners are required to:

1. Discuss the evolution of HRM over the recent years.
2. Visit an industrial unit to recognise the workplace environment after interacting with the trade union leaders, workers, and HR managers. Prepare a report of this visit.
3. Participate in role play activity for a situation where a group has a conflicting situation. Devise ways of dealing with the situation as the manager.
4. Discuss TQM practices in various organisations.
5. Prepare a questionnaire to assess the quality of work life of employees in a particular segment of an organisation.
6. Design a strategy for the wellness of employees in the organisation.
7. Discuss ethical practices of different organisations.

Suggested Readings

- Chabbra,T.N. (2016). *Human Resource Management: Concepts and Issues*. Delhi, India: Dhanpat Rai and Co. Publications.
- Durai, P. (2016). *Human Resource Management (2nd ed.).* Delhi, India: Pearson Education.
- Mondy, R.W., & Martocchio, J. J. (2019). *Human Resource Management (14th Ed.).* Delhi, India: Pearson Education Publications.
- Rao, V. (2016). *Human Resource Management*. Delhi, India: Taxmann Publications Pvt. Ltd.
- Verma, R.B.S., & Singh, A.P. (2009). *Manav Sansadhan Vikas Aevam Prabandhan Ki Ruprekha (Hindi).* Lucknow, India: New Royal Book Company.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

B.A. Programme with Commerce (Commercial Laws and Corporate Governance)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Social Security Laws (BAC: Discipline (CLCG) – A5) (Non-Major/Minor)	4	3	1	0	Pass in Class XII	Studied Sale of Goods Act: Cases and Application (BAC: Discipline (CLCG) – A4)
Cost Accounting BAC: DSC-5 (Major)	4	3	1	0	Pass in Class XII	NIL
Dematerialization of Securities: Laws and Processes (BAC: DSE(CLCG)- 5.1) (Major)	4	3	1	0	Pass in Class XII	NIL
Wage Laws (BAC: DSE (CLCG) - 5.2) (Major)	4	3	1	0	Pass in Class XII	NIL

Generic Elective

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Corporate Governance (BAC: GE(CLCG) - 5.1)	4	3	1	0	Pass in Class XII	NIL

BAC: Discipline (CLCG) – A5: Social Security Laws (Non-Major/Minor)

Learning Objectives

The course aims to familiarize the students with the understanding and provisions of social security laws. Case studies and issues involved in social security laws are required to be discussed.

Learning Outcomes

After completion of the course, learners will be able to:

1. Analyse the legal framework provided for social security.
2. Describe the calculation and payment of employee's compensation.
3. Analyse various labour benefit schemes.
4. Discuss the benefits available for defined set of employees.
5. Interpret the framework of gratuity.

SYLLABUS OF BAC: Discipline (CLCG) – A5

Unit 1: Introduction (5 hours)

Meaning of social security; Development of social security in India, Legal framework of social security in India.

Unit 2: Employees Compensation (9 hours)

Definitions under the legislation[#]; Partial and total disablement; injury; Employer's liability for compensation; Amount of compensation; Contracting.

Unit 3: Employees Provident Fund (11 hours)

Definitions under the legislation[#]; EPF Schemes– Employees' Provident Fund Scheme; Employees' Pension Scheme; Employees' Deposit linked Insurance Scheme.

Unit 4: Employees State Insurance (11 hours)

Definitions under the legislation[#]; Partial and Permanent Disablement; ESI Corporation; Contributions; Benefits available under Employees' State Insurance**.**

Unit 5: Payment of Gratuity (9 hours)

Definitions under the legislation; Continuous service; Payment of gratuity; Forfeiture of gratuity; Determination of amount of gratuity.

Exercises

The learners are required to:

1. Discuss the need for social security laws.
2. Analyse the relation between compensation and 'relevant factor'.
3. Discuss various schemes within the ambit of employees' provident fund.
4. Visit nearby ESI hospitals or dispensaries and enlist the services available for employees covered under the legislation.
5. Identify scenarios wherein employees' gratuity can be forfeited.

Suggested Readings

- Malik, K. L. (2021). *Industrial Laws and Labour Laws*. Lucknow, India: Eastern Book Company.
- Sharma, J. P. (2018). *Simplified Approach to Labour Laws*. Delhi, India: Bharat Law House Pvt. Ltd.
- Singh, Avtar. (2021). *Introduction to Labour and Industrial Laws.* Nagpur, India: Wadhwa and Company.

Additional Resources

- Arora S. & Arora R. (2018). *Industrial Laws*. Delhi, India: Taxmann Pvt Ltd.
- Srivastava, S. C. (2020). *Industrial Relations & Labour Laws*. Delhi, India: Vikas Publishing House (P) Ltd.

[#] ***From the date of implementation of Social Security Code, this syllabus shall be disseminated accordingly.***

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

BAC: DSE(CLCG)- 5.1: Dematerialization of Securities: Laws and Processes (Major)

Learning Objectives

The course aims to make learners acquaint about the eco system of securities market, issue of shares, trading, issue of shares, dematerialisation of securities, regulations relating there to.

Learning Outcomes

After completion of the course, learners will be able to:

1. Recognise different kinds of securities in the market.

2. Discuss the process of opening and closure and regulatory framework of DEMAT account.

3. Describe the salient features of the Securities Contracts (Regulation) Act, 1956

4. Discuss the salient features of the Depositories Act, 1996 and interpret the rules regarding operation of DEMAT account.
5. Discuss the concept of demutualisation, transfer of shares and delisting of companies.
6. Analyse the impact of credit ratings and listing on the value of securities.

SYLLABUS OF BAC: DSE (CLCG) – 5.1

Unit I: Introduction to Securities (7 hours)
Introduction to Indian capital markets, Definition of shares, bonds, debentures, derivatives, mutual funds. Types of securities, IPO, FPO, Offer for Sale, sale through intermediaries, Buy Back, ESOPs, Bonus shares, rights issue, preferential allotment, private placement.

Unit II: Process of Dematerialization of Shares (11 hours)
Definition of dematerialisation, why is dematerialization needed, benefits of dematerialisation, introduction to Dematerialisation account – opening of dematerialisation account with commercial banks and stock brokers, required time taken to dematerialise the shares, closing of demat account.

Unit III: Securities Contracts (Regulation) Act, 1956 (14 hours)
Stock Exchange - functions and advantages of stock exchange, process of listing of securities as per the provisions of Securities and Exchange Board of India (Listing Obligations and Disclosure Requirements) Regulations, 2015 and Securities and Exchange Board of India (Issue of Capital and Disclosure Requirements) Regulations, 2018, applications in respect of new issues or offer for sale or book building, futures and options in securities, underwriting,placing and preliminary arrangements, listing conditions and requirements, securities issued on preferential

Unit IV: Depositories Act, 1996 (9 hours)
Definitions, Depository Participants, basics and benefits of depositories, how does a depository work, functions of depository, Indian stock markets before depositories, functioning of NSDL and CDSL, difference between NSDL and CDSL, Rules regarding operation of Demat account, ISIN number, registrar and transfer agent.

Unit V: Miscellaneous Provisions (4 hours)
Corporatization, demutualization, Process of transfer and transmission of shares, rematerialisation of shares, opening of multiple demat account, delisting of shares, concept of credit rating.

Exercises
The learners are required to:
1. Differentiate between various kinds of shares listed on moneycontrol.com
2. Open a DEMAT account and understand the rules regarding use of DEMAT account.
3. Identify different terminologies used in the Securities and Exchange Board of India (Listing Obligations and Disclosure Requirements) Regulations, 2015 and Securities

and Exchange Board of India (Issue of Capital and Disclosure Requirements) Regulations, 2018, as amended up to date.

4. Make presentations on different terminologies used in Depositories Act, 1996.
5. Discuss case studies related to Dematerialisation, Demutualisation, transfer of shares, delisting of companies.
6. Analyse the impact of credit ratings and listing on the value of securities.

Suggested Readings

- Securities and Exchange Board of India Act, 1992 – Bare Act
- Securities Contracts (Regulation) Act, 1956 – Bare Act
- Depositories Act, 1996 – Bare Act
- Securities and Exchange Board of India (Listing Obligations and Disclosure Requirements) Regulations, 2015 – as amended up to date.
- Securities and Exchange Board of India (Issue of Capital and Disclosure Requirements) Regulations, 2018 – as amended up to date.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

BAC: DSE (CLCG) - 5.2: Wage Laws (Major)

Learning Objectives

The course aims to equip the students with the understanding of concept of wages, wage laws and their applicability.

Learning Outcomes

After completion of the course, learners will be able to:

1. Discuss the concept of wages and their types.
2. Recognise the concept of administration and control of minimum wages.
3. Identify the basic framework of payment of wages.
4. Interpret the calculation of bonus and eligibility to receive a bonus as per legislation.
5. Discuss the provisions of set on and set off allocable surplus.

SYLLABUS OF BAC: DSE (CLCG) – 5.2

Unit 1: Introduction (7 hours)

Concept and types of wages – living wages, minimum wages and fair wages; Factors influencing wages; Prohibition of gender-based discrimination in payment of wages.

Unit 2: Minimum Wages Legislation (11 hours)

Definitions under Minimum Wages legislation[#]; Payment of minimum rates of wages; Fixing of minimum rates of wages; Procedure for fixing and revising minimum wages; Wages for two or more classes of work; Time rate wages for piece work; Overtime; Central advisory board, Contracting out; Exemption of employer from liability in certain cases; Protection against attachment of assets of employer.

Unit 3: Payment of Wages (9 hours)

Definitions under Payment of Wages legislation[#]; Fixation of Wage Period; Time of Payment of Wages; Mode of Payment; Deductions from Wages and Fines.

Unit 4: Payment of Bonus – I (9 hours)

Definitions under the Payment of Bonus legislation, Allocable surplus; Available surplus; Determination of bonus; Calculation of bonus; Eligibility for bonus; Disqualifications for bonus.

Unit 5: Payment of Bonus – II (9 hours)

Payment of minimum and maximum bonus; Set on and set off of allocable surplus; Deductions of certain amounts from bonus payable; Time limit for payment of bonus.

Exercises

The learners are required to:

1. Conduct a questionnaire-based survey on wage parity.
2. Examine the significance of 'contracting out' being void.
3. Enlist authorized deductions from wages.
4. Discuss the relevant case laws pertaining to disqualifications of bonus.
5. Identify practices of dissemination of bonus paid by business units.

Suggested Readings

- Malik, K. L.(2021). *Industrial Laws and Labour Laws*. Lucknow, India: Eastern Book Company.
- Sharma, J. P. (2018). *Simplified Approach to Labour Laws*. Delhi, India: Bharat Law House Pvt. Ltd.
- Singh, A. (2016). *Introduction to Labour and Industrial Laws*. Nagpur, India: Wadhwa and Company.

Additional Resources

- Arora S. & Arora R. (2018). *Industrial Laws*. Delhi, India: Taxmann Pvt. Ltd.
- Srivastava, S. C. (2020). *Industrial Relations & Labour Laws*. Delhi, India: Vikas Publishing House (P) Ltd.

#From the date of implementation of Code on Wages, this syllabus shall be disseminated as per the same.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

BAC: GE(CLCG) - 5.1: Corporate Governance

Learning Objectives

The course aims to provide knowledge of corporate governance, procedures, and techniques in accordance with current legal requirements and professional standards.

Learning Outcomes

After completion of the course, learners will be able to:

1. Discuss the significance of corporate governance in a business setup and the role of board of directors.
2. Explain the important dimensions in corporate governance.
3. Analyse global corporate failures and interpret International Codes.
4. Describe corporate governance regulatory framework in India.
5. Analyse and assess the problems in corporate governance in India.

SYLLABUS OF BAC: GE (CLCG) – 5.1

Unit 1: Conceptual Framework of Corporate Governance (9 hours)

Corporate Governance: Meaning, significance and principles; Management and corporate governance; Theories of Corporate Governance: Agency Theory, Stewardship theory, Stakeholders' Theory; One Tier and Two Tier Boards

Unit 2: Corporate Governance and Role of Stakeholders (9 hours)

Board composition: Executive directors, Non-executive directors and Independent director; Role of Board and board committees; Insider Trading; Shareholder activism; Class action suits; Whistleblowing Mechanism, CSR and Corporate Governance

Unit 3: Global Corporate Failures and International Codes (9 hours)

Maxwell (UK), Enron (USA); Sir Adrian Cadbury Committee Report 1992, SOX Act 2002, OECD Principles of Corporate Governance.

Unit 4: Corporate Governance Regulatory Framework in India (9 hours)

Kumar Mangalam Birla Committee (1999), NR Narayana Murthy Committee (2005) and Uday Kotak Committee (2017); Regulatory framework: Relevant provisions of Companies Act, 2013, SEBI: Listing Obligations and Disclosure Requirements Regulations (LODR), 2015.

Unit 5: Corporate Failures in India (9 hours)

Satyam Computer Services Ltd, Kingfisher Airlines, PNB Heist; ICICI Bank; Common Governance Problems in various Corporate Failures in India and abroad.

Exercises

The learners are required to:

1. Identify and analyse corporate governance models followed by companies incorporated in India and abroad.
2. Analyse Board composition and Board committees of different companies; Analyse cases on the topic of Whistle blowing/ Shareholder activism/ Insider trading.

3. Critically analyse global corporate governance failures and identify corporate governance issues therein.
4. Identify corporate governance issues and concerns raised in context of Indian companies and their implications (from published sources newspapers or websites).
5. Critically analyse major corporate governance failures to suggest common governance problems in the Indian context.

Suggested Readings

- Tricker, Bob. (2015). *Corporate Governance-Principles, Policies, and Practice (Indian Edition)*. Delhi, India: Oxford University Press.
- Sharma, J.P. (2015). *Corporate Governance, Business Ethics, and CSR*. Delhi, India: Ane Books Pvt. Ltd.
- Kumar, A., Gupta L. & Arora, R.J. (2022). *Auditing and Corporate Governance*. Delhi, India: Taxmann Pvt Ltd.

Additional Resources

- Rani, G. D., & Mishra, R.K. (2008). *Corporate Governance- Theory and Practice*. Delhi, India: Excel Books.
- Mallin, C. A. (2018). *Corporate Governance (Indian Edition).* Delhi, India: Oxford University Press.

Note: Latest amendments to the regulations shall be referred

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

B.A. Programme with Commerce (Tax Procedures & Practices)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Fundamentals of GST BAC: Discipline (TPP) – A5 (Non-Major/Minor)	4	3	1	0	Pass in Class XII	Studied Fundamentals of Corporate Tax Planning (BAC: Discipline (TPP) – A4)
Cost Accounting BAC: DSC-5 (Major)	4	3	1	0	Pass in Class XII	NIL
Personal Tax Planning: Specific Provisions (BAC: DSE(TPP)-5.1) (Major)	4	3	1	0	Pass in Class XII	NIL

Generic Elective

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Income Tax: E-Filing BAC: GE (TPP)- 5.1	4	2	0	2	Pass in Class XII	NIL

BAC: Discipline (TTP) -A5: Fundamentals of GST (Non-Major/Minor)

Learning Objectives

This paper aims to provide the basic fundamental knowledge of principles and provisions of Central Goods and Services Tax Act, 2017 and Integrated Goods and Services Tax Act, 2017.

Learning Outcomes

After completion of the course, learners will be able to:

1. Recognise the concept of integrated, central and state GST.
2. Identify the category of persons eligible to apply for registration under GST.
3. Discuss the relevance of time, value and place of supply.
4. Demonstrate their understanding of the composition levy scheme.
5. Recognise the category of goods and services exempted from GST.
6. Review the concept of an input tax credit.

SYLLABUS OF BAC: Discipline (TTP) – A5

Unit 1: Basic Concepts and Structure (9 hours)

Constitutional framework of indirect taxes before GST (taxation powers of union & state Government); Rationale for GST; Structure of GST (SGST, CGST, UTGST & IGST); GST Council; GST Network; State compensation mechanism.

Unit 2: Registration (9 hours)

Types of registration and Procedure for registration.

Unit 3: Levy and Collection of GST (9 hours)

Scope of 'Supply'; Nature of Supply: Inter-State and Intra-State; Place of supply; Time of supply; Value of Supply.

Unit 4: Exemptions from GST (9 hours)

Exemption from GST: Small supplies & composition scheme; List of goods and services exempted; Classification of goods and services: Composite & mixed supplies.

Unit 5: Basics of Input Tax Credit (9 hours)

Basic concept of the input tax credit; Simple illustrations on the calculation of GST and input tax credit; Order of adjustment of an input tax credit against output CGST, SGST and IGST.

Exercises

The learners are required to:

1. Differentiate between the concept of integrated, central, and state GST.
2. Identify the taxpayers who have not applied for GST registration and educate them about the benefits of registration under GST. You can take the help of GST Suvidha Kendra for the same.
3. Explain the relevance of time, value and place of supply with reference to GST.
4. Prepare the report of those persons who are registered under the composition levy scheme and identify the major advantages and challenges faced by them.
5. Enlist the category of consumable goods exempted from GST.
6. Explore various products and services offered as per the definition of composite supply and the taxability for the same.
7. Depict the process of availing input tax credit.

Suggested Readings

- Ahuja, G., & Gupta, R. (2023). *Systematic approach to GST*. Delhi, India: Commercial Law Publishers (India) Pvt. Ltd.
- Babbar, S., Kaur, R., & Khurana, K. (2018). *Goods and Service Tax (GST) and Customs Law*. Delhi, India: Scholar Tech Press.
- Balachandran, V. (2023). *Indirect taxation. Goods and service tax and customs law.* (19th ed.). Delhi, India: Sultan Chand & Sons.
- Balachandran, V. (2023). *Textbook of GST & customs law.* (2nd ed.). Delhi, India: Sultan Chand & Sons.
- Bansal, K. M. (2022). *GST & Customs Law*. Delhi, India: Taxmann Publication.
- Mittal, N. (2022). *Goods & Services Tax and Customs Law*. Delhi, India: Cengage Learning India Pvt. Ltd.
- Sahi, S. (2022). *Concept Building Approach to Goods and Services Tax (GST), & Customs Law.* Delhi, India: Cengage Learning India Pvt. Ltd.
- Singhania, V. K. (2022). *GST & Customs Law.* Delhi, India: Taxmann Publication.

Additional Resources

- Gupta, S.S. (2022). *GST- How to meet your obligations*. Delhi, India: Taxmann Publications.
- Gupta, S.S. (2022). *Vastu and Sevakar*. Delhi, India: Taxmann Publications.
- The Constitution (One hundred and First Amendment) Act, 2016
- The Central Goods and Services Tax Act, 2017
- The Integrated Goods and Services Tax Act, 2017
- The Union Territory Goods and Services Tax Act, 2017
- The Goods and Services Tax (Compensation to States) Act, 2017

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

AC: DSE(TPP)- 5.1: Personal Tax Planning: Specific Provisions (Major)

Learning Objectives

This paper aims to provide comprehensive knowledge for the tax planning of Individuals, Hindu undivided family and partnership firm. It explains the relevance of tax planning and how systematically planned investments can lower the tax liability of an assessee in each case.

Learning Outcomes

After completion of the course, learners will be able to:

1. Review the tax planning framework for non-residents.
2. Describe varied provisions for the tax treatment of agricultural income.
3. Describe the provisions for tax planning of income from business or profession.
4. Identify the viability of various short-term and long-term capital gain decisions.
5. Discuss tax planning with respect to the treatment of gifts.

SYLLABUS OF BAC: DSE (TTP) – 5.1

Unit 1: Tax planning for non-residents (7 hours)

Special provisions for computation of total income and tax liability of non-residents; Tax planning of non-residents.

Unit 2: Tax Planning with reference to agricultural income (4 hours)

Agricultural income and partial integration.

Unit 3: Tax Planning with reference to business and profession decisions (9 hours)

Tax planning for business and profession; simplified scheme of computing business income under sections 44AD, 44ADA and 44AE.

Unit 4: Tax Planning with reference to capital gains (14 hours)

Tax planning for capital gains: short-term versus long-term capital gains; capital gains on immovable property, shares, bonds/debentures, units of mutual funds, gold deposits, gold bonds; exemption under section 54, 54B, 54EC, 54F; carry forward and set off of capital losses.

Unit 5: Tax Planning with reference to other sources (11 hours)

Tax planning for gifts, interest income on deposits and units of various mutual funds under the head other sources.

Exercises

The learners are required to:

1. Review the tax planning framework for non-residents.
2. Present a case study detailing the partial agricultural income integration.
3. Enlist the benefits available under head PGBP for CA/CS/Profesionals.

4. Prepare a report on the computation of a hypothetical assessee (Mr. X) assuming his tax liability under the head capital gains and specifically explain the relevance of sections 54, and 54B.
5. Depict the treatment for gifts received from multiple sources.

Suggested Readings

- Ahuja, G., & Gupta, R. (2022). *Simplified Approach to Income Tax*. Delhi, India: Flair Publications Pvt. Ltd.
- Singhania, V. K., & Singhania, M. (2022). *Student's Guide to Income Tax.* Delhi, India: Taxmann Publications Pvt. Ltd.

Additional Resources

- Income tax Act 1961
- www.incometaxindia.gov.in

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

C: GE (TPP)- 5.1: Income Tax: E-Filing

Learning Objectives

This paper provides hands-on experience in filing the income tax returns for an Individual.

Learning Outcomes

After completion of the course, learners will be able to :

1. Recognise the relevance of the PAN cards in filing the return.
2. Identify the different returns applicable in the case of various assesses.
3. Describe the meaning and procedure for FORM 26AS.

SYLLABUS OF BAC: GE (TTP) – 5.1

Unit 1: Basic Concepts (12 hours)

Types of return: revised return, defective return; PAN; self-assessment, scrutiny assessment, best judgement assessment; rectification of returns; time limit; annual income statement, returns and assessment.

Unit 2: E-filing of Return (18 hours)

Form 26AS; case studies on e-filing of return using online/ offline utility software, especially for ITR 1, ITR 2 and ITR 3.

Practical Exercises

The learners are required to:

1. Prepare a project showing how PAN is generated and interpreted.
2. Prepare a case on income statement of X and file ITR for the same.
3. Check an ITR and see how income is reported in form 26 AS.

Suggested Readings

- Ahuja, G. & Gupta, R. (2022). *Simplified Approach to Income Tax*. Delhi, India: Flair Publications Pvt. Ltd.
- Mittal, N. (2022). *Concept Building Approach to Income Tax Law & Practice*. Delhi, India: Cengage Learning India Pvt. Ltd.
- Singhania, V. K., & Singhania, M. (2022). *Student's Guide to Income Tax*. Delhi, India: Taxmann Publications Pvt. Ltd.

Additional Resources

- Income tax Act 1961
- www.incometaxindia.gov.in

Note: Practical examination shall be conducted in the college.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

B.A. Programme with Commerce (Modern Office Management)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Computer Applications (BAC: Discipline (MOM) – A5) (Non-Major/Minor)	4	2	0	2	Pass in Class XII	Studied Stenography (English)-II (BAC: Discipline (MOM) – A4)
Cost Accounting BAC: DSC-5 (Major)	4	3	1	0	Pass in Class XII	NIL
Practical Stenography and e-Typewriting-I (BAC: DSE(MOM)-5.1) (Major)	4	2	0	2	Pass in Class XII	NIL
Strategic Office Management (BAC: DSE (MOM)- 5.2) (Major)	4	3	1	0	Pass in Class XII	NIL

BAC: Discipline (MOM) – A5: Computer Applications (Non-Major/Minor)

Learning Objectives

To provide computer skills and knowledge to the students about the usefulness of information technology tools for business operations.

Learning Outcomes

After completion of the course, learners will be able to:

1. Discuss the various concepts associated with computers.
2. Discuss the basic terminologies used in computer networks and internet.
3. Describe word document creation for report making and communication.
4. Design good presentations.
5. Make spreadsheets for basic calculations and for making charts.

SYLLABUS OF BAC: Discipline (MOM) – A5

Unit1: Basic knowledge of computers (6 hours)

Computers: meaning, history, generations, characteristics, advantages, limitations and functions of computers; Classification of computers based on size, and digital vs analogue computers; input-output devices; software, hardware, firmware and liveware; types of software: system software and application software; Computing Interfaces: Graphical User Interface (GUI), Command Line Interface (CLI), Touch Interface, Natural Language Interface (NLI); role of CPU in data processing; applications of computers in business.

Unit 2: Basics of Networking and Internet (6 hours)

Computer Networks: Meaning of computer network; objectives/ needs for networking; Applications of networking; Basic Network Terminology; Types of Networks; Network Topologies; Wireless Networking; Securing Networks: firewall.

Basic Internet Terminology: I.P. Address, Modem, Bandwidth, Routers, Gateways, Internet Service Provider (ISP), World Wide Web (www), Browsers, Search Engines, Proxy Server, Intranet and Extranet; Basic Internet Services; Internet Protocols: TCP/IP, FTP, HTTP(s), Uses of Internet to Society; Cyber Security: Cryptography, digital signature.

Unit 3: Word Processing (6 hours)

Introduction to word Processing, Word processing concepts, Use of Templates and styles, Working with word document: Editing text, Find and replace text, Formatting, spell check, Autocorrect, Auto-text; Bullets and numbering, Tabs, Paragraph Formatting, Indent, Page Formatting, Header and footer, page break; Tables: Inserting, filling and formatting a table; Inserting Pictures and Video; Mail Merge; Printing documents; Citations, references and Footnotes.

Unit 4: Preparing Presentations (5 hours)
Basics of presentations: Slides, Fonts, Drawing, Editing; Inserting: Tables, Images, texts, Symbols, hyperlinking, Media; Design; Transition; Animation; and Slideshow, exporting presentations as pdf handouts and videos.

Unit 5: Spreadsheet basics (7 hours)
Spreadsheet concepts: Managing worksheets; Formatting, Entering data, Editing, and Printing and Protecting worksheets; controlling worksheet views; graphical presentation of data using bar chart and pie chart; use of simple formulas in spreadsheets; cell referencing: absolute, relative and mixed cell referencing; Functions: logical functions, financial functions, statistical and mathematical functions.

Note:
1. The General Purpose Software referred in this course will be notified by the University Departments every three years. If the specific features, referred to in the detailed course above, is not available in that software, to that extent it will be deemed to have been modified.

Practical Exercises
The learners are required to:
1. Discuss classification of computers.
2. Enlist the functions of internet in present times.
3. Create a report on MS-Word using all relevant formatting features.
4. Design presentations using all relevant formatting features.
5. Create spreadsheets on MS-Excel using all relevant functions.

Suggestive Readings

- Jain, H. C., & Tiwari, H. N. (2021). *Computer Applications in Business*. Delhi, India: Taxmann.
- Madan, S. (2020). *Computer Applications in Business*. Delhi, India: Scholar Tech Press.
- Mathur, S., & Jain, P. (2016). *Computer Applications in Business*. Noida, India: Galgotia Publishing Company.
- Sharma, S. K., & Bansal, M. (2017). *Computer Applications in Business*. Delhi, India: Taxmann.
- Walkenbach, J. (2016). *MS Excel 2016, Bible*. United States: John Wiley & Sons.

Note: The General Purpose Software referred in this course will be notified by the University Departments every three years. If the specific features, referred to in the detailed course above, is not available in that software, to that extent it will be deemed to have been modified.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

BAC: DSE(MOM)- 5.1: Practical Stenography and e-Typewriting-I (Major)

Learning Objectives

The course aims to orient the students to understand the need of writing rapidly and accurately in this speed age. In order to make them a good writer, it is necessary for them to master the fascinating art of good writing. After learning the basic principles of Stenography, it is essential that the students build up speed writing by practicing exercises and learning stenography transcription from Pitman Shorthand Instructor.

Learning Outcomes

After completion of the course, learners will be able to:

1. Analyse the basic concepts of English transcription.
2. Interpret the shorthand basic shortcut concepts.
3. Demonstrate the shorthand speed.
4. Demonstrate the typewriting speed.
5. Demonstrate the typewriting of letters/documents with proper formatting.

SYLLABUS OF BAC: DSE (MOM) – 5.1

Unit I: Figures and Essential Vowels (3 hours)
Figures, transcriptions and Essential Vowels.

Unit II: Stenography – its speed & practical concepts (9 hours)
Contractions & Special Contractions (Section 1 to 5 with exercises), Advanced Phraseography, Intersections.

Unit III: Stenography – Practical (6 hours)

i. Daily practice of seen passages from Pitman Shorthand from the Exercises 111-144 from 'Pitman Shorthand Instructor & Key' in a graded manner up to the speed of 60 words per minute and transcription on computer.

ii. Daily practice of unseen passages from 'Graded Dictation Exercises on Shorthand made easy' in a grader manner up to the speed of 40 words per minute and transcription on computer.

Unit IV: e-Typewriting – Practical (6 hours)
E-typewriting: meaning & importance, advantages and disadvantages. Practice of on and off of computer system.
Keyboard: Meaning & Importance, advantages & disadvantages, types of keyboard, keyboarding - setting of fingers on home keys, guide keys on Computer and their functions.
Touch and Sight methods of typewriting.
Maximum use of shortcut keys on keyboard instead of using mouse.
Typewriting speed and accuracy—use of spacing and punctuation marks, errors and penalty, Calculation of running and accurate speed (gross and net).
E-typewriting speed @30 words per minute.

Unit V: Word Processing – letters/documents preparation (6 hours)
Word Processing (MS Office): working with documents, use of different views, navigation through documents, text manipulation, formatting of documents. Hyperlink, book mark, mail merge.

Document Preparation: Structure and layout of letter, different parts of the letter, different styles of Business letters, preparation of letters in word processor, generate notice, agenda and minutes of the meeting, office orders, circulars, memorandums, resumes, CV & portfolio. Merging of letters through mail merge and printing the same.
The size of papers: National and International.

Practical Exercises

The learners are required to:

1. Learn the basic general English Stenography vocabulary.
2. Learn, understand & practice all types of short cuts for implementation of stenography and typewriting.
3. Practice the shorthand passages to get the speed @60/40 words per minute.
4. Practice the typewriting passages to get the speed @ 30 words per minute.
5. Learn all types of document preparations.

Suggested Readings

- Bhatia, D. P., & Sangal, S. S. (1996). *Principles of Typewriting*. Delhi, India: Pitman S.S.Publications.
- Shiva, G. (2017). *Typing Lessons for Beginners: Quick Way to learn English Typing*: (Kindle Edition). Delhi, India: GS Publication.
- Himsagar, Z.Y. (2021). *Computer Keyboard Shortcut Keys for MS Office*. India: Bluerose Publishers. www.bluerosepublishers.com.
- Jain, H.C., & Tiwari, H.N. (2021). *Computer Applications in Business*. Delhi, India: Taxman Publications Private Limited.
- Kuthiala, O. P. (1998). *Graded Dictation Exercises on Shorthand Made Easy*. Delhi, India: Pitman S.S.Publications.
- Madan, S. (2021). *Computer Applications in Business*. Delhi, India: Scholar Tech Press.
- Microsoft Word Keyboard Shortcuts for Windows. (2016). CreateSpace Independent Publishing Platform.
- Pitman, I. (2022). *Pitman Shorthand Instructor and Key*. Delhi, India: Pearson Education Ltd. and Dorling Kindersley Publishing, Inc.
- Online Typing Master Software for e-typewriting.

Note: Latest edition of software may be used.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

BAC: DSE (MOM)- 5.2: Strategic Office Management (Major)

Learning Objectives

The course aims to understand about the Strategic Office Management which is crucial to perform official functions effectively with the applications of principles of management at all levels in the Business. Effective Office Management play a significant role for success in the Business World.

Learning Outcomes

After completion of the course, learners will be able to:

1. Describe the concept of office management and its structure.
2. Recognise the systems and processes of office management.
3. Recognise the role of group dynamics in an organisation.
4. Discuss various concepts related to business finance and marketing management.
5. Discuss various strategic management dynamics.

SYLLABUS OF BAC: DSE (MOM) – 5.2

Unit 1: Office Management and Its Importance (9 hours)

Objectives of Office Management: Purpose, Environment, Means, Personnel, Scope of Office Management, Principles of Office Organization, Formal and Informal Organization, Types and Systems of Organizations, Organization Chart, Types of Organization Charts, Relation of Office with other Departments, Office Manuals, Authority and Responsibility, Centralization and Decentralization, Information Management, Scientific Office Management, Aims of Scientific Management.

Unit 2: Office Management Systems and Processes (9 hours)

Scope of Office Management, Objectives of Office Management, Functions of Office Management, Planning Office Activity: objectives, policies, programmes and procedures, Organising of Office Activity: staffing, motivating, coordination, direction and controlling, The Job and Position of Manager, Functions, Duties and Responsibilities of Office Manager, Qualities of Office Manager, Administrative Office Management, Office System, Characteristics of sound office System, Principles of Office Systems, Office Routines, Importance of Office Systems.

Unit 3: Organizational Structure, Delegation of Powers and Group Dynamics (9 hours)

Nature of Organization Structure, Role of Functional Manager, Network Organization Structure, Advantages and Disadvantages, Features of Authority, Administrative and Financial Powers, Delegation of Powers and Authority, Formation of Groups and Teams, Formal and Informal Groups, Group Dynamics: Group Norms and Role, Group Cohesiveness, Groups: Behaviour, Tasks, Processes and Effectiveness.

Unit 4: Business Finance and Marketing Management (9 hours)

Concept, Role and Objectives of Financial Management, Financial Planning and its Importance, Capital Structure, Fixed and Working Capital, Financial Markets: Concept, Functions and Types, Money Market and its Instruments, Capital Market, Stock Exchange Functions and Trading Procedure, Objectives and Functions of SEBI, Market Management,

Functions of Marketing, Marketing Mix: People, Product, Price, Process, Physical Distribution, Physical Evidence and Promotion.

Unit 5: Strategic Management Dynamics: Leadership, Motivation and Control (9 hours)
Leadership: Features, Importance, Qualities and Styles of Leadership. Determinants of Leadership Styles, The Managerial Grid, Situational Leadership, Traits of Leadership, and Motivational Theories: Maslow's Need Hierarchy Theory, Herzberg's Two Factor Theory, McGregor's X and Y Theory, Ouchi's Theory "Z", Comparison between Theory 'X' and Theory 'Y', Work Measurement, Techniques of Work Measurement, Standards of Performance, Measurement of Efficiency of Office Staff, Effective Control System, Process of Control: Setting Standards, Measurement of Performance, Comparing the Actual Performance with Standards and Taking Corrective Action.

Exercises

The learners are required to:

1. Identify the nature and importance of the profession of office management, function of office jobs and experience it while paying the visit to the educational, financial or other manufacturing/marketing institutions.
2. Observe the business systems, procedures and practices significant for effective functioning of office management, while visiting industries.
3. Discuss case studies on group dynamics in organisations.
4. Analyse case studies to understand financial management and marketing management practices of firms.
5. Analyse the leadership styles and motivation methods adopted by various organisations.

Suggested Readings

- Bhatia, R. C. (2005). *Principles of office management*. Delhi, India: Lotus Press.
- Chopra, R. K., & Bhatia, A. (2010). *Office Management*. Delhi, India: Himalaya Publishing House.
- Kavita, S. (2015). *Organizational behaviour: Text and cases*. Delhi, India: Vikas Publishing House.
- Koontz, H., O'Donnell, C., & Weihrich, H. (1986). *Essentials of management (Vol. 18).* New York, United States: McGraw-Hill.
- Koontz, H., O'Donnell, C., & Weihrich, H. (1986). *Essentials of management An International Perspective (Vol. 18).* New York, United States: McGraw-Hill.
- Kumar, N., & Mittal, R. (2001). *Office Management*. Delhi, India: Anmol Publications.
- Quible, Z. K. (2014). *Administrative Office Management*. Delhi, India: Pearson.
- Thukaram Rao, M. E. (2009). *Office Organization and Management*. Delhi, India: Atlantic Publishers and Distributors.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

B.A. Programme with Commerce (Commerce as Non-Major/Minor)

BAC: DSC-5 Cost Accounting (Non-Major/Minor)

Learning Objectives

The course aims to develop understanding among learners about contemporary cost concepts and rational approach towards cost systems and cost ascertainment. The course also aims to provide knowledge about various methods of cost determination under specific situations and to acquire the ability to use information determined through cost accounting for decision making purposes.

Learning Outcomes

After completion of the course, learners will be able to:

1. Compute unit cost and total cost of production and prepare cost statement.
2. Compute employee cost, employee productivity and employee turnover
3. Classify and estimate overheads.
4. Determine cost under job costing, process costing, contract costing and service costing
5. Compute the break-even point of a product and firm.

SYLLABUS OF DSC-5

Unit 1: Introduction (9 hours)

Meaning, scope, objectives and advantages of cost accounting; Difference between financial and cost accounting. Cost concepts and classifications, Overview of elements of cost and preparation of Cost Sheet. Role of a cost accountant in an organisation.

Unit 2: Elements of Cost : Material and Employee Cost (9 hours)

(c) Materials: Accounting and control of materials: Concept of material cost and control, accounting and control of purchases, storage and issue of materials. Inventory systems, Methods of pricing of materials issues — FIFO, LIFO, and Weighted Average, Physical Verification, Fixation of stock levels, determination of economic order quantity, ABC analysis. Accounting treatment and control of losses — Wastage, scrap, spoilage and defectives

(d) Employee Cost: Accounting and Control of employee cost; time keeping and time booking; Concept and treatment of idle time, over time and employee turnover

Unit 3: Elements of Cost: Overheads (9 hours)

Classification, allocation, apportionment and absorption of overheads, Treatment of under and over-absorption.

Unit 4: Methods of Costing (9 hours)

Job costing, Contract costing, Process costing (excluding treatment of work-in- progress, joint and by- products). Service costing (only transport).

Unit 5: Cost-Volume-Profit Analysis (9 hours)

Concept of cost-volume-profit analysis, marginal cost and marginal cost equation, profit-volume ratio, break-even analysis, cost break- even point, composite break- even point, margin of safety, simple break-even chart, Identification of key factor and determination of profitability.

Notes :

1. Treatment of various items of cost should be as per the relevant cost Accounting Standards (CAS) issued by Institute of Cost Accountant of India.
2. Use only simple numerical problems in all the above units to explain the various concepts, methods and techniques given therein.
3. Use of spreadsheet software should be encouraged for the basic calculation.

Exercises:

The learners are required to:

1. Prepare a cost statement for manufacturing and/ or service organisation.
2. Visit industries to understand process costing and prepare a cost statement for any process industry.
3. Visit a factory and compute the employee cost of the firm.
4. Analyse the role of overhead costs in the production process of any firm.
5. Analyse case studies on job costing, process costing, contract costing and service costing.
6. Design a hypothetical business plan for a firm selling financial products. Estimate the break-even point for different products.

Suggested Readings

- Arora, M.N. (2021). *Cost Accounting-principles and practice*. Delhi, India: Vikas Publishing House.
- Goel, R. K., & Goel, I. (2019). *Concept Building Approach to Cost Accounting for B.Com (Hons.)/B.Com.* Delhi, India: Cengage Publications.
- Gupta, S., Reeta, & Rao, R.P. (2021*). Cost Accounting for B.Com*. Delhi, India: Sultan Chand.
- Maheshwari, S. N., & Mittal, S. N. (2020). *Cost Accounting. Theory and Problems*. Delhi, India: Shri Mahaveer Book Depot.
- Maheshwari, S. N., Mittal S. K., & Mittal, S.N. (2021). *Cost Accounting: Principles & Practice*. Delhi, India: Shree Mahaveer Book.
- Mitra, J. K. (2021). *Cost and Management Accounting*. Delhi, India: Oxford University Press.
- Nigam, B. M. L., & Jain, I. C. (2023). *Cost Accounting: Principles and Practice*. Delhi, India: PHI Learning.
- Singh, S. (2019). *Fundamentals of Cost Accounting*. Allahabad, India: Kitab Mahal.
- Tulsian, P.C. (2020). *Cost Accounting*. Delhi, India: S.Chand.

Additional Resources

- Drury, C. (2018). *Management and Cost Accounting*. China: Cengage.
- Horngren, C. T., Foster, G., & Dattar, S. M. (2017).*Cost Accounting: A Managerial Emphasis*. Delhi, India: Prentice Hall of India Ltd.
- Jain, S.P., & Narang, K.L. (2021). *Cost Accounting: Principles and Methods*. Jalandhar, India: Kalyani Publishers.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

Semester- VI
B.A. Commerce based Papers

B.A. Programme with Commerce (Entrepreneurship and Small Business)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Managerial and marketing aspects of Small Business BAC: Discipline (ESB) – A6 (Non-Major/Minor)	4	3	1	0	Pass in Class XII	Studied Practical Aspects of Entrepreneurship (BAC: Discipline (ESB) – A5)
Company Law BAC: DSC-6 (Major)	4	3	1	0	Pass in Class XII	NIL
Feasibility study and business plan BAC: DSE (ESB) – 6.1 (Major)	4	3	1	0	Pass in Class XII	NIL
Accounting for entrepreneurship BAC: DSE (ESB) – 6.2 (Major)	4	3	1	0	Pass in Class XII	NIL
People Management in Entrepreneurship BAC: DSE (ESB) – 6.3 (Major)	4	3	1	0	Pass in Class XII	NIL

BAC: Discipline (ESB) - A6: Managerial and Marketing Aspects of Small Business (Non-major/Minor)

Learning Objectives

To acquaint the students with managerial and marketing aspects of business.

Learning Outcomes

After completion of the course, learners will be able to:

1. Recognise different components of the managerial aspects in small businesses.
2. Identify managerial techniques of small business in the contemporary environment.
3. Interpret the theoretical and practical tools of human resource, finance, marketing, and operational division of small business.
4. Describe the important aspects and constraints of marketing for small business.
5. Demonstrate the need and application of recent changes in marketing technology.

SYLLABUS OF BAC: Discipline (ESB) - A6

UNIT 1: Understanding Managerial Aspects of Small Business (9 hours)
Components of the managerial aspects of small business. Managerial roles and functions in a small business. Entrepreneur as the manager of his business. Need for and extent of technical, professional skills for management of small business.

UNIT 2: Managerial Techniques of Small Business in Contemporary Environment (9 hours)
Identification and Classification of the different aspects of small business such as - finance, Human Capital, production & operation, Market & Industry, Technical and Technological, Legal and banking, International business, Social & Environmental, and economic aspects

UNIT 3: Measurement and Management of Managerial Aspects (9 hours)
Measurement and Management of the quantitative and/or qualitative value of financial, operation, Market, Technical, Environmental, and economic aspects of small business. Benchmark parameters of successful small business with focus on financial and market aspects.

UNIT 4: Technological Advancement and Marketing of Small Business (9 hours)
Concepts and Components of Marketing. Gap identification for marketing of new and established product & services. Competition measurement and its management. Quality-Quantity-price trade off in marketing decision. Role of Marketing Manager in promotion and expansion of product in the economic system. Advertising & publicity. Sales & distribution Management. Issues in small business marketing. Idea of consortium marketing. Competitive bidding, E-Tender, E-Marketing, GeM (Government E-Marketing), CPPP participation. Tender marketing.

UNIT 5: Changing Face of ICT based Digital Marketing (9 hours)
Introduction to Web Marketing and SEO, The Significance of Web Marketing, Internal Measures for SEO. Do and Dont's for Web Content, Link Building, Introduction to Web Marketing Tools. Online Advertising and Search Engines, AdWords overview, Creating and Managing Campaigns. Unit3: Display Network, Advertising on Display Networks, Image Advertising, Mobile Advertising, Video Advertising, YouTube Advertising, Advanced AdWords, Keyword Planner, Product List Ads. Social Media Advertising, Creating Effective Content, Do and Dont's for Social Media. Analyzing Target Audience, E-Mail Marketing, Creating E-mail Campaigns, Effective strategies for E-mail Marketing.

Exercises

The learners are required to:

1. Analyse different components of the managerial aspects in any small business.
2. Discuss managerial techniques of any small business in the contemporary business environment.
3. Analyse the benchmark parameters of any recently established small business.
4. Identify the constraints of marketing for any recently established small business.
5. Analyse the recent changes in marketing technology.

Suggested Readings

- Bhasker, B. (2006). *Electronic commerce: framework, technologies and applications.* (4th ed.). Delhi, India: Tata McGraw-Hill.
- Whiteley, D. (2000). *E-commerce: strategy, technologies and applications*. India: McGraw Hill.
- Gupta, C. B., & Khanka, S. S. (2003). *Entrepreneurship and small business management*. Delhi, India: Sultan Chand & Sons.
- Kuratko, D. F., & Rao, T. V. (2012). *Entrepreneurship: a south-asian perspective.* (1st ed.). India: Cengage Learning.
- Laudon, K. C., & Traver, C. G. (2013). *E-Commerce.* (15th ed.). Pearson Education.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

BAC: DSC-6 Company Law (Major)

Learning Objectives

The course aims to develop and comprehend business and its processes in accordance with the provisions of the Companies Act, 2013 while analysing case laws.

Learning Outcomes

After completion of the course, learners will be able to:

1. Recognise the different types of companies.
2. Discuss the fundamentals of incorporating the company.
3. Make the memorandum and articles of association.
4. Discuss the difference between different types of prospectus.
5. Recognise the process of calling and conducting company meetings.

SYLLABUS OF BAC: DSC-6

Unit I: Introduction (11 hours)

Characteristics of a company; Lifting of corporate veil; Types of companies including one person company, small company, associate company, dormant company, producer company; Association not for profit; Illegal association.

Unit II: Formation of a company (7 hours)

Formation of company, promoters, functions and their legal position, pre- incorporation contracts, steps in incorporation, and process of on-line registration of a company.

Unit III: Memorandum and Articles of Association (7 hours)
Memorandum of association definition, clauses and its alteration, doctrine of ultra vires, articles of association, contents and its alteration, doctrine of constructive notice and indoor management.

Unit IV: Share Capital (11 hours)
Prospectus, shelf and red herring prospectus, mis-statement in prospectus; issue, allotment and forfeiture of share, calls on shares; issue of sweat equity; employee stock option; issue of bonus shares; right shares, transfer and transmission of shares, buyback; demat system.

UNIT V: Company Meetings (9 hours)
Meetings of shareholders; types of meeting, convening and conduct of meetings, requisites of a valid meeting- notice, agenda, chairman, quorum, proxy, resolutions, minutes; postal ballot, e-voting.

Exercises
The learners are required to:
1. Identify and classify types of companies by taking real-life examples.
2. Fill dummy spice form for incorporation of a company.
3. Read the memorandum and articles of association of a particular company.
4. Enlist steps in the book-building process and examine a red herring prospectus of a latest IPO from SEBI website.
5. Prepare a list of businesses conducted by ordinary resolution.

Suggested Readings

- Chadha R. & Chadha, S. (2018). *Company laws*. Delhi, India: Scholar Tech Press.
- Gower, L. C. (1981). *Principles of modern company law.* (4th ed.). London, United Kingdom: Stevens & Sons.
- Kumar, A. (2022). *Corporate laws.* (11th ed., Vol. 1). Delhi, India: Taxmann Publications Private Limited.
- Sharma, J. P. (2020). *Easy approach to corporate laws.* (4th ed.). Delhi, India: Ane Books Pvt.

Additional Resources

- Hannigan, B. (2021). *Company law*. Oxford, United Kingdom: Oxford University Press.
- Kannal, S., & Sowrirajan, V.S. (2019). *Company law Procedure*. Delhi, India: Taxman's Allied Services (P) Ltd.

BAC: DSE (ESB) – 6.1: Feasibility Study and Business Plan (Major)

Learning Objectives

The aim of this course is to acquaint the students with techniques of environmental screening and how to conduct feasibility studies for any business plan.

Learning Outcomes

After completion of the course, learners will be able to:

1. Demonstrate how a business idea is generated by analysing all the interplaying factors.
2. Identify and assess entrepreneurial opportunities.
3. Interpret the know-how of conducting a feasibility study.
4. Discuss the process of project planning and management.
5. Describe the concept and implementation of a business plan.

SYLLABUS OF BAC: DSE (ESB) – 6.1

Unit I: Environmental Screening and Idea Generation (9 hours)

Analysis of economic, socio-cultural, technological, and political-legal environment; Sources of business ideas; Role of personal observation, creativity and business research; Collection of data-primary and secondary; Situational Analysis.

Unit II: Scanning Entrepreneurial Opportunities (9 hours)

Entrepreneurial opportunities in contemporary business environment, opportunities in network-marketing, social media, franchising, business process outsourcing; Small business as seedbed of entrepreneurship; Pre-feasibility study.

Unit III: Feasibility Study (9 hours)

Preliminary screening of business ideas; Aspects of the technical and economic feasibility-commercial, financial and administrative feasibility; Preparation of feasibility report; Technical feasibility, estimation of costs, demand analysis and commercial viability, risk analysis, collaboration arrangements; Financial planning; Estimation of fund requirements, sources of funds; Loan syndication for the projects; Tax considerations in project preparation and legal aspects.

Unit IV: Project Planning and Management (9 hours)

Project- definition and types; Project manager; Project charter; Project context- political, economic, social, technical, legal, environment, sustainability; Project sponsor; Project management plan- methods and procedures; Project success criteria- key performance indicators.

Unit V: Business Plan (9 hours)

Business plan- meaning and significance; Elements (major headings and brief discussion) and presentation; Implementation- prototype development and test marketing

Exercises

The learners are required to:

1. Scan the business environment to generate a business idea.
2. Identify opportunities in network marketing, social media, franchising and business process outsourcing.
3. Conduct a feasibility study for a hypothetical plan.
4. Discuss case studies on project management plans.
5. Develop a business plan for a hypothetical idea.

Suggested Readings

- Abrams, R., & Doer, J. (2010). *Successful business plan: secrets & strategies.* (5th ed.). United States: Planning Shop.
- Feasibility Study Preparation and Analysis (2007). (1st ed.). New York, United States: Publishers Clearing House.

Additional Resources

- Karis, C. (2017). *Feasibility study: startup and sustainability*. CreateSpace Independent Publishing platform.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

BAC: DSE (ESB) – 6.2: Accounting for Entrepreneurship (Major)

Learning Objectives

The course aims to help learners coming from non-commerce background to acquire basic knowledge on financial accounting and to impart preliminary skills for recording various kinds of financial transactions.

Learning Outcomes

After the completion of the course, the learners will be able to:

1. Recognise the basic concept of accounting.
2. Demonstrate the accounting entries and prepare cash book and other accounts necessary while running a business.
3. Describe and prepare profit and loss account and balance sheet.
4. Interpret and prepare accounts based on accounting software.
5. Analyse information from company's annual report.

SYLLABUS OF BAC: DSE (ESB) – 6.2

Unit 1: Introduction to Accounting (5 hours)

Accounting – Meaning, Importance and Need, Its objectives and relevance to business establishments and other organisations, and individuals. Accounting information: meaning, users and utilities, sources of accounting information. Some Basic Terms, Transaction, Account, Asset, Liability, Capital, Expenditure & Expense, Income, Revenue, Gain, Profit, Surplus, Loss, Deficit. Debit, Credit, Accounting Year, Financial Year.

Unit 2: Transactions and recording of transactions (9 hours)

Features of recordable transactions and events, Basis of recording – vouchers and another basis. Recording of transactions: Personal account, Real Account and Nominal Account; Rules for Debit and Credit; Double Entry System, journalizing transactions; Preparation of Ledger, Cash Book including bank transactions and Bank Reconciliation Statement.

Unit 3: Preparation of Financial Statements (13 hours)

Fundamental Accounting Equation; Preparation of Trial Balance; Concept of revenue and Capital; Preparation of Trading and Profit & Loss Account, Balance Sheet and Cash Flow Statement manually and using appropriate software.

Unit 4: Computerized Accounting Systems (11 hours)

Computerized Accounting Systems: Computerized Accounts by using any popular accounting software: Creating a Company; Configure and Features settings; Creating Accounting Ledgers and Groups; Creating Stock Items and Groups; Vouchers Entry; Generating Reports - Cash Book, Ledger Accounts, Trial Balance, Profit and Loss Account, Balance Sheet, Cash Flow Statement. Selecting and shutting a Company; Backup and Restore data of a Company.

Unit 5: Company Accounts (7 hours)

Explanation of certain terms – Public Limited Company, Private Limited Company, Share, Share Capital, Shareholder, Board of Directors, Stock Exchange, Listed Company, Share Price, Sensex - BSE, NSE; Annual report, etc. Contents and disclosures in Annual Report, Company Balance Sheet and Statement of Profit and Loss. Content Analysis based on annual report including textual analysis.

Exercises

The learners are required to:

1. Evaluate the importance of accounting for any newly established start up.
2. Prepare bank reconciliation statement from the individual pass books.
3. Prepare Trading and Profit & Loss Account, Balance Sheet, and Cash Flow Statement collecting necessary data from any small business firms.
4. Prepare financial statements using appropriate software for any small business firm.
5. Download annual reports of business organisations from the websites and analyse its contents. Present salient features of the annual report using certain relevant ratios and content analysis including textual analysis.

Suggested Readings

- Gupta, R. L., & Radhaswamy, M. (2014). *Financial accounting*. Delhi, India: S. Chand Publishing.
- Hatfield, L. (2019). *Accounting basics*. Amazon Digital Services LLC.
- Horngren, C. T., Sundem, G. L., Elliott, J. A., & Philbrick, D. (2017). *Introduction to financial accounting.* (11th ed.). London, United Kingdom: Pearson Education.
- Lal, J., & Srivastava, S. (2012). *Financial accounting text & problems*. Mumbai, India: Himalaya Publishing House.
- Monga, J. R. (2017). *Financial accounting: concepts and applications.* (34th ed.). Delhi, India: Mayur Paperback Publishing.
- Goyal, B. K., & Tiwari, H. N. (2021). *Financial accounting.* (9th ed.). Delhi, India: Taxmann Publication.
- Maheshwari, S. N., Maheshwari, S. K., & Maheshwari, S. K. (2018). *Financial accounting*. Delhi, India: Vikas Publishing House Pvt. Ltd.
- Mukharji, A., & Hanif, M. (2017). *Financial accounting.* (2nd ed.). Delhi, India: Tata McGraw Hill Publishing Co. Ltd.
- Mukherjee, S., & Mukherjee, A. K. (2021). *Financial accounting.* (10th ed.). Oxford, United kingdom: Oxford University Press.
- Jain, S. P., & Narang, K. L. (2014). *Financial accounting*. Delhi, India: Kalyani Publishers.
- Siddiqui, S. A. (2008). *Book keeping & accountancy*. Delhi, India: Laxmi Publications Pvt. Ltd.
- Sehgal, D. (2014). *Financial accounting*. Delhi, India: Vikas Publishing House Pvt. Ltd.

- Tulsian, P. C. (2007). *Financial accounting.* Delhi, India: Tata McGraw Hill Publishing Co. Ltd.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

BAC: DSE (ESB) - 6.3: People Management in Entrepreneurship (Major)

Learning Objectives

The course aims to provide an overview to the learners of what it means to be an effective people manager. The programme is designed in such a manner so that the learners can develop leadership and communication skills and manage people in an Organisation effectively.

Learning Outcomes

After completion of the course, learners will be able to:

1. Demonstrate meditation techniques (Brain stilling exercise) for mind management.
2. Recognise the concept of people management.
3. Recognise the importance of team building and establishing peer networks.
4. Describe performance appraisal methods.
5. Demonstrate skills to resolve conflicts in an Organisation and lead teams.

SYLLABUS OF BAC: DSE (ESB) – 6.3

Unit 1: Managing and Evaluating Oneself (9 hours)

Mind Management, Time Management, Tackling Time Robbers, Planning workload, Active Listening, Decision Making - steps, Managing your Manager, Evaluating and building a personal development plan for oneself.

Unit 2: Managing and Motivating Others (9 hours)

Basics of People Management and its significance, Difference between People Management and Human Resource Management; impact of individual and Organisational factors on people management, Motivating Others - Employee First Strategy: Employee First Customer Second. Developing Intrinsic Motivation amongst People - People First Strategy: Emerging cases.

Unit 3: Building Team and Peer Networks (9 hours)

Team Building Process, Managing Diversity in Teams, Competency mapping, Team Roles, Team Identity, Team Charter, Team Performance, Managing Behaviour of people in groups, 360 Degree Feedback as a Development tool. Group Dynamics, Challenges of getting work done; Significance of prioritization and assigning work to team members, Importance of peer networks in an Organisation.

Unit 4: Managing Evaluation and Assessment (9 hours)

Managing Performance, Appraisal methods, Role Reviews and performance management, Dealing with Poor Performers, Agreeing Performance Targets, Negative Feedback, Performance Management System, 360 Degree Feedback as a Performance Appraisal Tool.

Unit 5: Leading People & Resolving Conflicts (9 hours)
Leading people to achieve the vision and mission of the Organisation. Leadership for high performance culture, Leadership Styles for creating conducive Organisational climate and culture of excellence. Managing different types of conflicts in an Organisation, Problem solving and quality improvement process.

Exercises

The learners are required to:

1. Practice of meditation techniques (brain stilling exercise) for mind management.
2. Build a Personal Development Plan for themselves.
3. Prepare Time Management framework for themselves.
4. Participate in role play for developing intrinsic motivation amongst other people.
5. Discuss case study of HCL on Employee First Customer Second by Vinit Nayar.
6. Discuss case studies of Organisations where People first strategy is being used.
7. Participate in simulation activity wherein learners are divided into groups with one leader in each group. Each team should be assigned the responsibility of planning and executing a business activity that shows the team work and leadership qualities.
8. Discuss ways to manage diversity in teams.
9. Perform a role play on 360-degree feedback and suggest tips for development amongst the learners of the class.
10. Discuss case studies on conflict management.

Suggested Readings

- Wellington, P. (2011). *Effective people management: improve performance delegate more effectively*. London, United kingdom: Kogan Page Publishers.
- Thomas, M. (2007). *Mastering people management*. London, United kingdom: Thorogood Publishing.
- Randall, J., & Sim, A. J. (2013). *Managing people at work*. Abingdon, United Kingdom: Routledge.
- Thomson, R., & Thomson, A. (2012). *Managing people*. Abingdon, United Kingdom: Routledge.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

B.A. Programme with Commerce (Accounting and Finance)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Financial Institutions BAC: Discipline (A&F) – A6 (Non-Major/Minor)	4	3	1	0	Pass in Class XII	NIL
Company Law BAC: DSC-6 (Major)	4	3	1	0	Pass in Class XII	NIL
Personal Financial Planning BAC: DSE (A&F) – 6.1 (Major)	4	3	1	0	Pass in Class XII	NIL

BAC: Discipline (A&F) – A6: Financial Institutions (Non-Major/Minor)

Learning Objectives

The course aims to provide the students a theoretical and conceptual understanding of the financial institutions.

Learning Outcomes

After completion of the course, learners will be able to:

1. Evaluate the scope of financial institutions.
2. Recognise the role of the Central bank in the financial system.
3. Analyse the recent developments in Insurance sector.
4. Evaluate different types and benefits of Mutual Funds.
5. Examine the role of non-banking financial companies in the Indian financial system.

Unit 1: Introduction to Financial Institutions (7 hours)

Introduction to Financial system - Concept, Role and Importance of Financial institutions; Classification of Financial institutions viz., Banking and Non-banking, Specialised and non-specialised, Intermediary and non-intermediary institutions; An overview of financial institutions in India; Role of Development Financial Institutions (DFIs).

Unit 2: Central bank and banking institutions (13 hours)
Concept and importance of Central Bank, Role of central bank; RBI – Functions and Role; Banks – Concept and Classification of banks; Commercial Banks- Functions, role and recent developments; Role of technology in the banking sector; Concept of Non-Performing Assets (NPAs); Financial inclusion.

Unit 3: Insurance - Life and Non-Life Insurance Institutions (9 hours)
Concept and Importance of insurance, Principles of Insurance, Types of insurance – Life and Non-life; LIC and GIC Re; IRDA and its role; Recent reforms in Insurance sector.

Unit 4: Mutual Funds and Pension Funds (9 hours)
Concept and role of Mutual Funds, Structure of Mutual Funds; Types of Mutual Fund schemes; SEBI guidelines for Mutual Funds; Pension Funds – Meaning and importance; Types of Pension funds, Role of PFRDA.

Unit 5: Non-Banking Financial Companies (NBFCs) (7 hours)
Concept of NBFCs, Difference between a bank and NBFC; Classification of NBFCs; Role of NBFCs in promoting inclusive growth; RBI guidelines for NBFCs

Exercises

The learners are required to:

1. Analyse the scope and role of financial institutions in India.
2. Evaluate the role and functions of RBI for the smooth functioning of Indian financial market.
3. Critically evaluate the recent reforms in Indian Insurance sector.
4. Assess the performance of different types of mutual fund schemes offered in the Indian market.
5. Analyse the role of NBFCs in promoting inclusive growth in the Indian economy.

Suggested Readings

- Khan M.Y. (2019). *Indian financial system.* (11th ed.). Delhi, India: Tata McGraw Hill.
- Pathak, B. V. (2019). *Indian financial system: markets, institutions and services.* (5th ed.). Delhi, India: Pearson Education.
- Frederic S. M., & Eakins, S. G. (2019). *Financial markets and institutions.* (8th ed.). Delhi, India: Pearson Education.
- Saunders, A., & Milton, C. M. (2007). *Financial markets and institutions*. (5th ed.). Delhi, India: Tata McGraw Hill.
- Bhole, L. M. (2019). *Financial markets and institutions.* (6th ed.). Delhi, India: Tata McGraw Hill Publishing Company.
- Kumar, V., Gupta, K., & Kaur, M. (2021). *Financial markets, institutions and financial services.* (2nd ed.). Delhi, India: Taxmann's Publications.

Additional Readings

- RBI Functions and Working – Reserve Bank of India

- RBI Annual Reports
- Annual Reports of various Financial Institutions in India.
- RBI Report on Currency and Finance- various issues

- **Websites:**
- **www.sebi.gov.in**
- **www.rbi.org.in**
- **http://www.irdai.gov.in**
- **http://www.pfrda.org.in/pfrda.org.in**

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

BAC: DSE (A&F) – 6.1: Personal Financial Planning (Major)

Learning Objectives

The course aims to familiarize learners with different aspects of personal financial planning like savings, investment, taxation, insurance, and retirement planning and to develop the necessary knowledge and skills for effective financial planning.

Learning Outcomes

After completion of the course, learners will be able to:

1. Recognise the relevance of financial planning.
2. Analyse the performance of various instruments in the process of investment planning.
3. Analyse the scope and ways for planning personal taxes.
4. Recognise the need for insurance planning and analyse various insurance products offered in the market.
5. Create a financial plan fulfilling requirements after retirement.

SYLLABUS OF DSE (A&F) – 6.1

Unit 1: Introduction to Financial Planning (9 hours)

Financial goals, Steps in financial planning, Budgeting Incomes and Payments, Time value of money. Introduction to savings, benefits of savings, management of spending & financial discipline, Setting Alerts and Maintaining sufficient funds for fixed commitments (Credit Cards Repayments, EMI, Insurance Premium, Mutual Fund SIPs etc), Maintaining High CIBIL Score, personal finance/loans, education loan, car loan & home loan schemes. Net banking and UPI, digital wallets, security and precautions against Ponzi schemes and online frauds such as phishing, credit card cloning, skimming.

Unit 2: Investment planning (9 hours)

Process and objectives of investment, Concept and measurement of return & risk for various asset classes, Measurement of portfolio risk and return, Diversification & Portfolio formation. Gold Bond; Real estate; Investment in Greenfield and brownfield Projects; Investment in fixed income instruments, financial derivatives & Commodity market in India. Mutual fund schemes; International investment avenues. Currency derivatives and Digital Currency.

Unit 3: Personal Tax Planning (9 hours)

Tax Structure in India for personal taxation, Scope of Personal tax planning, Exemptions and deductions available to individuals under different heads of income and gross total income. Comparison of benefits - Special provision u/s 115 BAC vis-à-vis General provisions of the Income-tax Act, 1961, tax avoidance versus tax evasion.

Unit 4: Insurance Planning (9 hours)

Need for Protection planning. Life Insurance, Health Insurance, Property Insurance, Credit Life Insurance and Professional Liability Insurance. Deductions available under the Income-tax Act for the premium paid for different policies.

.

Unit 5: Retirement Benefits Planning (9 hours)

Retirement Planning Goals, Process of retirement planning, Pension plans available in India, Reverse mortgage, Planning for distribution of money and property among legal heirs, New Pension Scheme. Exemptions available under the Income-tax Act, 1961 for retirement benefits.

Exercises

The learners are required to:

1. Create a financial plan for a hypothetical individual and evaluate its importance.
2. Evaluate the performance of various financial assets to create an investment plan.
3. Examine tax structure and make a tax planning scheme for a salaried individual by taking a hypothetical case.
4. Evaluate the benefits offered by different life insurance policies and general insurance policies.
5. Evaluate different financial products offered in the Indian market for retirement planning.

Suggested Readings

- Halan, M. (2018). *Let's talk money: you've worked hard for it, now make it work for you.* (1st ed.). New York, United States: HarperCollins Publishers.
- Keown A.J. (2017). *Personal finance.* (8th ed.). New York, United States: Pearson.
- Pandit, A. (2019). *The only financial planning book that you will ever need*. Mumbai, India: Network 18 Publications Ltd.
- Sinha, M. (2019). *Financial planning: a ready reckoner.* (2nd ed). India: McGraw Hill Education.
- Tripathi, V. (2023). *Fundamentals of investment.* (5th ed.). Delhi, India: Taxmann Publication.
- Indian Institute of Banking & Finance. (2017). *Introduction to financial planning.* (4th ed.). Delhi, India: Taxmann Publication.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

B.A. Programme with Commerce (Banking and Insurance)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre- requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Banking Products and Services (BAC: Discipline (B&I) –A6) (Non-Major/Minor)	4	3	1	0	Pass in Class XII	NIL
Company Law BAC: DSC-6 (Major)	4	3	1	0	Pass in Class XII	NIL
Technology in Banking BAC: DSE (B&I) – 6.1 (Major)	4	3	1	0	Pass in Class XII	NIL
Bank Marketing BAC: DSE (B&I) – 6.2 (Major)	4	3	1	0	Pass in Class XII	NIL

BAC: Discipline (B&I) – A6: Banking Products and Services (Non-Major/Minor)

Learning Objectives

The course aims to create awareness about the various Banking Products and Payment Services.

Learning Outcomes

After completion of the course, learners will be able to:

1. Assess different banking products.
2. Recognise the process of different banking payment services.
3. Discuss different digital banking products and services offered.
4. Discuss various products for priority sector lending.

5. Recognise various allied products and services offered by banks.

SYLLABUS OF Discipline (B&I) – A6

Unit 1: Banking Products (11 hours)

Types of Bank Accounts, Types of deposits, National Pension System (NPS), Gold Monetisation Scheme, Locker Facility, Sovereign Gold Bonds, Types of Small Saving Schemes, Various Forms of Retail Loans - Education Loan, Personal Loan, Automobile Loan & Home Loan, Corporate Banking – overview.

Unit 2: Banking Payment Services (9 hours)

Real Time Gross Settlement (RTGS), National Electronic Funds Transfer (NEFT), Immediate Payment Service (IMPS), Unified Payments Interface (UPI), Enabled Payment, Society for Worldwide Inter-bank Financial Telecommunications (SWIFT), Prepaid Cards, Gift Cards, World Currency Cards, Debit Cards, Credit Cards.

Unit 3: Digital Banking Products and Services (7 hours)

Digital Banking Products, Mobile Banking, Cards, Cash Deposit Machines- CDRs, Branchless Banking, Automated Teller Machines, Point of Sale (POS) Terminals, Internet Banking.

Unit 4: Lending to MSME & Agri Sector (Priority Sector) (11 hours)

Definition of MSME, Prerequisites for Availing Loan for MSME, Mudra Loan, Kisan Credit Cards (KCC), Loans for Allied Activities of Poultry, Dairy, Horticulture, Farm Credit, Loans to Weaker Section.

Unit 5: Third Party Products (TPD)/Bancassurance Business by Banks (7 hours)

Cross-Selling of Third-Party Products of Life Insurance Policies and General Insurance products, Mutual Funds, Systematic Investment Plan (SIP), Unit Linked Insurance Plan (ULIP).

Exercises

The learners are required to:

1. Compare the return offered by different banking products in India
2. Evaluate the role of UPI in India.
3. Perform a comparative analysis of different digital banking products and services in India.
4. Enlist features of different products available for priority sector lending.
5. Analyse the growth of bancassurance market in India.

Suggested Readings

- *Retail Banking and Wealth Management*. (2023). Indian institute of banking and finance. (1st ed.). Macmillan Publishers India Limited.
- Gupta, D.P., & Gupta, R.K. (2018). *Modern banking in India*. India: Asian Books.
- Suneja, H.R. (2017). *Practical and law of banking*. Himalaya Publishing House.
- Choudhury, M., & Singh, R. (2019). *Bancassurance business in India - an exploration*. Notion Press.
- Rashidm M.A., & Ahmed, J.U. (2019). *Financing micro and small enterprises in India: diagnosis and directions.* India: Abhijeet Publications.

Additional Resources.

- Toor, N.S. (2019). *Handbook of banking information.* (48th ed.). *India:* Skylark Publications.
- Garg, K. (2020). *Bharat's handbook on MSMEs (Micro, Small & Medium Enterprises).* India: Bharat Law House Pvt. Ltd.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

BAC: DSE (B&I) – 6.1: Technology in Banking (Major)

Learning Objectives

The course aims to make the students conversant with different aspects of technology used in banking and issues related to banking products in terms of delivery, security and controls with reference to India.

Learning Outcomes

After completion of the course, learners will be able to:

1. Describe the basic concepts of electronic banking.
2. Analyze the various electronic payment systems available.
3. Discuss the Electronic Fund Transfer system.
4. Recognise different types of security threats in Indian Banking.
5. Recognise E-Banking Regulations in India and discuss the concept of cloud computing.

SYLLABUS OF DSE (B&I) – 6.1

Unit 1: E-Banking (7 hours)

E-Banking: Definition, need for e-banking, types of e-banking, services offered, comparison between e-banking and internet banking.

Unit 2: Electronic Payment System (9 hours)

Overview of Electronic Payment System: Automated Teller Machine (ATM), Mobile Banking (Using Smart phones and traditional phones), Unified Payments Interface (UPI), GPay, Paytm, PhonePe, Amazon Pay, MobiKwik, Bharat Interface for Money (BHIM). Payment Gateways: PayPal, PayUMoney, CCAvenue, etc. Card Technologies, MICR electronic clearing. Credit Card and Debit Card (Features, Verification Process, Advantages, Disadvantages), and other modern methods of electronic payments.

Unit 3: Electronic Fund Transfer System (11 hours)

Electronic Credit and Debit Clearing: NEFT, RTGS, DNS, ECS (Credit/Debit), IMPS, VSAT, SWIFT Code. Features, advantages and limitations of E-money, Electronic purse, Digital Cash

Unit 4: Security Threats (11 hours)

Security Threats in e-banking Environment: Viruses, Worms, Malwares, Software Bombs, Phishing, Spoofing, Spamming, Denial of Service Attacks, Application based Digital Frauds. Technology Solutions: Digital Signature, Encryption, Protection, Multiple Step Verification.

Unit 5: E-Banking Regulations and Cloud Computing (7 hours)

Legal and regulatory issues of e-banking in India. Definition of Cloud Computing. Significance and Challenges of Cloud Computing.

Exercises

The learners are required to:

1. Compare different types of e banking services offered in India.
2. Compare various electronic payments systems in India.
3. Evaluate the Electronic Fund Transfer system in India.
4. Discuss case studies on security breaches in case of e-banking.
5. Discuss the regulatory issues in e-banking in India.
6. Evaluate the growth of cloud computing in recent times.

Suggested Readings

- Kaptan, S.S., & Choubey, N.S. (2017). *Indian banking in electronic era*. India: Sarup & Sons.
- Deva, V. (2018). *E-banking*. Delhi, India: Common Wealth Publishers.
- Uppal, R.K. (2018). *Banking with technology.* (1st ed.). Delhi, India: New Century Publications.
- Uppal, R.K., & Jatana, R. (2020). *E-banking in India*. Delhi, India: New Century Publications.

Additional Resources

- Khan, M.Y. (2017). *Indian financial system*. Delhi, India: Tata McGraw Hill Publishing Company Ltd.
- Desai, V. (2015). *Indian banking-nature and problems.* (2nd ed.). Mumbai, India: Himalaya Publishing House.
- Uppal, R.K., & Pooja (2016). *Transformation in Indian banks-search for better tomorrow.* Delhi, India: Sarup Book Publishers Private Ltd.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

BAC: DSE (B&I) – 6.2: Bank Marketing (Major)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Learning Objectives

The course aims to make students conversant with different marketing concepts and strategies relevant to banking industry.

Learning Outcomes

After completion of the course, learners will be able to:

1. Describe the basic concepts of bank marketing.
2. Recognise the importance of customer behaviour in banking.
3. Analyze the product and pricing strategies of banks.
4. Evaluate various promotion strategies used by the banks.
5. Analyze various digital marketing strategies adopted by the banks.

SYLLABUS OF DSE (B&I) – 6.2

Unit 1: Introduction to Bank Marketing (9 hours)

Definition of Market and Marketing, Elements in Marketing Mix, Concept of Bank Marketing, need for Practicing Marketing in Banks, Distinguishing Bank Marketing with Product Marketing, Bank Marketing Mix, The Art of Customer Service as Applied to Banking.

Unit 2: Customer Behaviour in Banking (7 hours)

Marketing Research in Banking, Uses of Marketing Research, Behavioural Profile of Bank Customers, Banking Customer and Market Segmentation, Customer Relationship Marketing in Banking, Competitive Analysis in Banking.

Unit 3: Product and Pricing Strategy of Banks (9 hours)

Difference between Product and Service, Concept of Product/Service Delivery in Banking, Pricing Strategies and its Applications in Banking, Comparison of Product and Pricing Strategies of Public Sector Banks and Private Banks.

Unit 4: Banking Promotion Strategy (9 hours)

The Communication Process, Goals of Communication, Steps in Developing Effective Communication, Selling to Corporate Clients: Meaning of Corporate Clients, Relationship and Transaction Banking, Bank Organisation for Large Corporate Clients, Comparison of Promotion Strategies of Public Sector Banks and Private Banks.

Unit 5: Digital Marketing in Banks (11 hours)

Digital Products in Banking, Concept of Digital Marketing, Need, Role and Importance of Digital Marketing in Banks; Digital Marketing Strategies Adopted by Banks, Effectiveness of Digital Marketing Strategies for Banks, Comparison of Digital Marketing Strategies of Public Sector Banks and Private Banks.

Exercises

The learners are required to:

1. Discuss the basic concepts of bank marketing through case studies.
2. Analyze the customer behaviour in banking by visiting a bank and interacting with bank

staff and customers.

3. Evaluate the product and pricing strategies of Public Sector Banks and Private Banks through relevant case studies.
4. Assess the promotion strategies of Public Sector Banks and Private Banks through focused group discussions.
5. Evaluate digital marketing strategies used by different banks through case studies.

Suggested Readings

- Jha, S.M. (2016). *Bank marketing*. Mumbai, India: Himalaya Publishing House.
- Sandhu, N., & Singh, D. (2017). *Bank marketing strategies an Indian perspective.* (1st ed.). India: LAP LAMBERT Academic Publishing.
- Meidan, A. (2016). *Bank marketing management*. Basingstoke, United kingdom: Palgrave Macmillian.
- Chacko, O., Grewal, R., & Satish, P. (2017). *Marketing of banking services*. The Indian Institute of Bankers.

Additional Resources

- Sherlekar, S.A., Krishnamoorthy, R, Bose, K. S., & Rao, K.V.V.M.S. (2018). *Marketing management- concepts and cases*. Mumbai, India: Himalaya Publishing House Pvt. Ltd.
- Ramaswamy, V.S., & Namakumari, S. (2009). *Marketing management: global perspective, Indian context.* (4th ed.). India: Om Books.
- Rao, K. R. M. (2018). *Services marketing.* (2nd ed.). Delhi, India: Pearson Education.
- Kaptan S.S., & Choubey N.S. (2019). *Indian banking in electronic era*. India: Sarup & Sons.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

B.A. Programme with Commerce (Advertising, Sales Promotion and Sales Management)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Consumer Affairs & Sovereignty BAC: Discipline (ASPSM) – A6 (Non-Major/Minor)	4	3	1	0	Pass in Class XII	NIL
Company Law BAC: DSC-6 (Major)	4	3	1	0	Pass in Class XII	NIL
Digital Marketing BAC: DSE (ASPSM) – 6.1 (Major)	4	3	1	0	Pass in Class XII	NIL
Distribution Logistic Management BAC: DSE (ASPSM) - 6.2 (Major)	4	3	1	0	Pass in Class XII	NIL

Generic Elective

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Personal Selling BAC: GE (ASPSM) - 6.1	4	3	1	0	Pass in Class XII	NIL
Consumer Affairs and Sovereignty BAC: GE (ASPSM)- 6.2	4	3	1	0	Pass in Class XII	NIL

BAC: Discipline (ASPSM) – A6: Consumer Affairs & Sovereignty (Non-Major/Minor)

Learning Objectives

This course seeks to familiarize the learners with their rights and responsibilities of a consumer and the procedure to redress their complaints. The learner should be able to comprehend the business firms' interface with consumers and the related regulatory and business environment.

Learning Outcomes

After completion of the course, learners will be able to:

1. Describe the concept of consumer and post-purchase voicing of consumer grievances.
2. Demonstrate how to exercise the consumer rights provided under Consumer Protection Act, 2019.
3. Discuss the filing, hearings, and appeal provisions.
4. Identify the role of industry regulators in consumer protection.
5. Discuss the recent developments in consumer protection in India.

SYLLABUS OF BAC: Discipline (ASPSM) – A6

Unit 1: Introduction (9 hours)

Concept of Consumer, Consumer Buying Process, Post-Purchase Behaviour, Factors affecting voicing of consumer grievances, Alternatives available to dissatisfied consumers: Private Action and Public Action.

Nature of markets: Liberalization and Globalisation of the Indian Consumer Market, online and offline markets; Organized and unorganized market, Grey market Concept of price in retail and wholesale, MRP, Fair price, labelling and packaging: legal aspects.

Unit 2: The Consumer Protection Act, 2019 (11 hours)

Genesis of the Consumer Protection law in India; Basic concepts: Consumer, goods, service, defect in goods, deficiency in service, spurious goods, unfair trade practice, restrictive trade practice, unfair contract, product liability, consumer rights.

Organizational Set up under the CPA, 2019: Advisory bodies: Consumer Protection Councils at the Central, State, and District level: Composition and role. Central Consumer Protection Authority: Composition and Powers; Adjudicatory bodies: District Commission, State Commission, and National Commission: Composition and Jurisdiction (Territorial and Pecuniary). Role of Supreme Court under the CPA with relevant case laws. Consumer Mediation Cell.

Unit 3: Grievance Redress Mechanism under the CPA, 2019 (9 hours)

Who can File a Complaint? Grounds of Filing a Complaint, Limitation Period, Procedure for Filing and Hearing of Complaint, Reliefs provided, Appeal, Enforcement of Order, Offences and Penalties.

Leading cases decided by the National Commission/Supreme Court under the CPA in: Medical service, Banking, Insurance, Housing Construction, Education, defective product, Unfair Trade Practices.

UNIT 4: Role of Industry Regulators in Consumer Protection (9 hours)
Banking: Banking Ombudsman Scheme
Insurance: Insurance Ombudsman
Food Products: FSSAI
Advertising: ASCI
Housing Construction: RERA

Unit 5: **Developments in Consumer Protection in India(7 hours)**
Consumer Movement in India; Voluntary Consumer Organisations (VCOs); National Consumer Helpline, GAMA, CONFONET, e-daakhil,
Quality and Standardization: AGMARK, ISI mark, Hallmarking, Consumer Grievance Redressal under the BIS Act, 2016.

Exercises

The learners are required to:

1. Talk to people in their community and find out what they do when they are dissatisfied with a product or service.
2. Share personal experiences with respect to unfair trade practices and infringement of any of the consumer rights.
3. Visit the www.ncdrc.nic.in and pick any two case judgments on deficiency in services. Examine who was the complainant, ground of complaint, appeal filed, and where filed and final order passed by the concerned Consumer Commission.
4. Observe the advertisements given by builders and verify whether they are registered under the RERA.
5. Visit the website of ASCI and find out the nature of complaints received and what action was taken by ASCI.
6. Identify products which is using ISI mark. Check whether it is genuine or fake
7. Identify the product categories for which standards are mandatory under the BIS.
8. Discuss case studies on recent developments in consumer protection in India.

Suggested Readings

- Aggarwal, V. K. (2021). *Law of consumer protection.* (4th ed.). Delhi, India: Bharat Law House.
- Khanna, S.R., & Hanspal, S. (2020). *Consumer affairs & customer care.* (1st ed.). Delhi, India: Prowess Publishing.
- Kapoor, S. (2021). *Consumer affairs and customer care.* (1st ed.). Delhi, India: Scholar Tech Press.
- Rao, R. (2022). *Consumer is king.* (3rd ed.). Delhi, India: Universal Law Publishing Company.
- Patil, A. R. (2022). *Landmark judgments on consumer protection and law: 2008-2020*. Delhi, India: Ministry of Consumer Affairs, Food & Public Distribution, Government of India, e-book, www.consumeraffairs.nic.in.
- The Bureau of Indian Standards, 2016

- The Consumer Protection Act, 2019
- Real Estate (Regulation and Development) Act, 2016

Web Resources

- www.consumeraffairs.nic.in
- www.bis.org
- https://fssai.gov.in
- https://irdai.gov.in
- https://rbi.org.in/Scripts/Complaints.aspx
- www.confonet.nic.in
- www.ncdrc.nic.in
- https://ascionline.in

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

BAC: DSE (ASPSM) – 6.1: Digital Marketing (Major)

Learning Objectives

The course aims to provide knowledge regarding the concepts, tools, techniques and relevance of digital marketing in the current scenario. It also enables the learners to learn the practical application of the Digital Marketing tools and the ethical and legal issues involved therein.

Learning Outcomes

After completion of Course, learners will be able to:

1. Discuss the importance and scope of digital marketing.
2. Apply digital marketing management strategies.
3. Assess the importance of presence of digital marketing in present times.
4. Discuss the significance of digital marketing tools, such as, SEO, Social media platforms, online advertising, Blogging etc.
5. Analyse the ethical considerations and the regulatory framework of digital marketing in India.

SYLLABUS OF BAC: DSE- 6.1

Unit 1: Introduction (9 hours)

Concept, Scope and Importance of Digital Marketing, Traditional Marketing vs Digital Marketing, Challenges and opportunities for Digital Marketers, Digital Marketing landscape: an overview of Indian Markets

Unit 2: Digital Marketing Management (9 hours)

Digital marketing-mix, Segmentation, Targeting, Differentiation and Positioning: Concept, Levels, and strategies in digital environment, Digital Technology and Customer Relationship Management, Digital Consumers and their Buying Decision process.

Unit 3: Digital Marketing Presence (9 hours)
Concept and role of Internet in Marketing, Online marketing Domains, The P.O.E.S.M. Framework, Website design and domain name branding, Search Engine Optimization stages, Types of traffic, Online Advertising: Types, formats, requisites of a good online advertisement, Email marketing: types and strategies

Unit 4: Interactive Marketing (9 hours)
Interactive Marketing: Concept and options, Social media marketing: concept and tools, Online Communities and Social networks, Blogging: types and role, Video marketing: tools and techniques, Mobile marketing tools, PPC marketing, Payment options and Gateways

Unit 5: Ethical and Legal Issues (9 hours)
Ethical Issues and Legal Challenges in digital marketing, Regulatory framework for digital marketing in India

Exercises

The learners are required to:

1. Assess the significance of digital marketing in present times.
2. Discuss marketing strategies of Companies who have succeeded in marketing their products through online platforms.
3. Create a hypothetical online venture and discuss its marketing and advertising strategies.
4. Analyse the importance of presence of digital marketing in present times.
5. Design a hypothetical advertising campaign for various social media handles such as Facebook, Instagram, Twitter, LinkedIn, SnapChat etc.
6. Implement various tools using free software available online, such as, Google Adword, Google Analytics etc.
7. Design e-mail marketing campaigns using mail chimp or other free software available online.
8. Discuss case studies on ethical and legal challenges in digital marketing.

Suggested Readings

- Chaffey, D., Chadwick, F.E., Johnson, K., & Mayer, R. (2008). *Internet Marketing: Strategy, implementation and practice.* (3rd ed.). New Jersey, United States: Pearson Hall.
- Charlesworth, A. (2018). *Digital marketing: a practical approach.* (3rd ed.). Abingdon, United Kingdom: Routledge.
- Frost, R. D., Fox, A., & Strauss, J. (2018). *E-marketing.* (8th ed.). Abingdon, United Kingdom: Routledge.
- Gay, R., Charlesworth, A., & Esen, R. (2007). *Online marketing: a customer led approach.* (illustrated ed.). India: OUP Oxford.

- Gupta, S. (2018). *Digital marketing.* (standard ed.). Delhi, India: Tata McGraw Hill Education.
- Kapoor, N. (2021). *Concept building approach to digital marketing.* (2nd ed.). Delhi, India: Cengage Learning India Pvt. Ltd.
- Kotler, P., Kartajaya, H., & Setiawan, I. (2017). *Digital marketing: 4.0 moving from traditional to digital.* (1st ed.). New Jersey, United States: John Wiley & Sons.
- Ryan, D., & Calvin, J. (2016). *Understanding digital marketing: marketing strategies for engaging the digital generation*. London, United Kingdom: Kogan Page. Oxford University Press.
- Tasner, M. (2015). *Marketing in the moment: the digital marketing guide to generating more sales and reaching your customers first.* (2nd ed.). London, United Kingdom: Pearson Education.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

BAC: DSE (ASPSM) -6.2: Distribution Logistic Management (Major)

Learning Objectives

The course aims to acquaint the student with the concept, tools and importance of Distribution logistics in Marketing.

Learning Outcomes

After completion of the course, learners will be able to:

1. Analyze the concept of Logistics management.
2. Discuss the concept of inventory management and recognise the tools for operational efficiency.
3. Evaluate the various channels of distribution.
4. Assess various modes of transportation for distribution.
5. Evaluate the use of advanced technology in distribution logistics.

SYLLABUS OF BAC: DSE- 6.2

Unit 1: Introduction to Logistics (7 hours)

Concept, Evolution, Components and Process. Dimensions of Logistics – Micro and Macro; inbound, outbound, Functional applications-HR, Marketing, Operations, Finance and IT, Role and importance of Logistics.

Unit 2: **Inventory and Material management (9 hours)**

Procurement, Inventory management: methods and tools of operational efficiency. EOQ, JIT, 3PL, and 4PL

Unit 3:Distribution (11 hours)

Meaning, Marketing channels: nature and importance, conventional and emerging channels, role of online sales and supply chain; Designing strategic distribution network; Factors influencing distribution network.

Unit 4: Transportation and Warehousing Decision (11 hours)
Role and importance. Factors influencing transportation and warehousing decision. Importance of Multimodal Transport and containerization. Cost effectiveness of various modes of transport and types of warehouses.

Unit 5: Technology in Logistics (7 hours)
Overview of AI in Logistics, Robotics, Block Chain, Reverse Logistics, Re-engineering the supply chain, RFID, EDI, Bar coding.

Exercises

The learners are required to:

1. Analyse case studies on logistic management.
2. Analyse the inventory management policy of any firm.
3. Compare distribution channels used in different industries.
4. Analyse the cost of transportation modes used by various firms.
5. Evaluate operational efficiency tools for cost reduction in any firm.
6. Prepare an evaluative report on the performance of any Warehouse.
7. Prepare a report on IT tools used in logistics by any company.

Suggested Readings

- Bloomberg, D.J,. & Lemay, S. (2015). *Logistics.* (8th ed.). India: Pearson Education India.
- Bozarth, C.C., & Handfield, R. B. (2015). *Introduction to operations and supply chain management.* (5th ed.). Pearson Education.
- Chopra, S., & Meindl, P. (2007). *Supply chain management: strategy, planning and operation.* (6th ed.). India: Pearson Education.
- Hult, T., Closs, D., & Frayer, D. (2014). *Global supply chain management: leveraging processes, measurements, and tools for strategic corporate advantage*. United States: McGraw Hill Ltd.
- Shapiro, J.F. (2007). *Modelling the supply chain*. India: Cengage India Pvt. Ltd.
- Simchi-Levi, D., Kaminsky, P., Simchi-Levi, E., & Shankar, R. (2019). *Designing and managing the supply chain.* (3rd ed.). India: Tata McGraw-Hill Education.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

BAC: GE (ASPSM) - 6.1: Personal Selling

Learning Objectives

The course aims to familiarize the students with the concept and process of personal selling

Learning Outcomes

After completion of the course, learners will be able to:

1. Describe the theoretical and practical aspect of personal selling.
2. Analyse buying motives of consumers.
3. Recognise the selling process and prepare sales report.
4. Identify career opportunities in selling.

SYLLABUS OF BAC: GE- 6.1

Unit 1: Introduction to Personal selling (11 hours)

Concept and Nature of personal selling: Importance of personal selling; Role of personal selling in marketing; Types of selling situations; Ethical aspect of selling

Unit 2: Buying Motives and Theories of Selling (11 hours)

Concept of motivation; Dynamic nature of motivation; Buying motives and their uses in personal selling. AIDAS model of selling; Traditional and Modern sales approach

Unit 3: Selling Process and Sales Report (16 hours)

Prospecting and qualifying; Pre-approach; Approach; Presentation and Demonstration; Handling objections- Acknowledging the objections, types of objection, overcoming objections. Closing the sales and follow upsSales Reports – Meaning and significance of Sales report.

Unit 4: Career in Selling (7 hours)

Characteristics of salesperson; Types of salesperson; Career opportunities in selling; Measures for making selling an attractive career.

Exercises

The learners are required to:

1. Analyse practical aspects of personal selling.
2. Conduct a primary survey to analyse buying motives of customers.
3. Make sales report for a hypothetical firm.
4. Hold mock sessions on objection handling, query handling, complaints handling, etc.
5. Identify and analyse the advantages of career opportunities in selling.

Suggested Readings

- Gupta C. B. (2020). *Personal selling and salesmanship.* (3rd ed.). India: Scholar tech press.
- Kapoor, N. (2014). *Advertising and personal selling*. India: Pinnacle learning.
- Kotler, P., & Keller, K.L. (2021). *A framework for marketing management.* (6th ed.). India: Pearson.
-
- Marks, R. B. (2004). *Personal selling: a relationship approach.* (6th ed.). India: Pearson Education/Prentice Hall.
- Weitz, B. A., Pederson, C. A., & Wright, M. D. (1987). *Selling: principles and methods*. United States: Richard d Irwin Inc.

Note*

- The specific emphasis for syllabus execution inside the class shall be as per guidelines prescribed by the 'syllabus execution committee' of department of commerce, from time to time, that shall not be more than 2-years' old.
- Special emphasis shall be on developing skills and hands-on experience in specific business and economic circumstances.
- Syllabus shall be carried with latest editions of reference materials interspersed with live/ real-life examples.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

BAC: GE (ASPSM)- 6.2: Consumer Affairs and Sovereignty

Learning Objectives

This course seeks to familiarize the learners with their rights and responsibilities of a consumer and the procedure to redress their complaints. The learner should be able to comprehend the business firms' interface with consumers and the related regulatory and business environment.

Learning Outcomes

After completion of the course, learners will be able to:

1. Describe the concept of consumer and post-purchase voicing of consumer grievances.
2. Demonstrate how to exercise the consumer rights provided under Consumer Protection Act, 2019.
3. Discuss the filing, hearings, and appeal provisions.
4. Identify the role of industry regulators in consumer protection.
5. Discuss the recent developments in consumer protection in India.

SYLLABUS OF BAC: GE- 6.2

Unit 1: Introduction (9 hours)

Concept of Consumer, Consumer Buying Process, Post-Purchase Behaviour, Factors affecting voicing of consumer grievances, Alternatives available to dissatisfied consumers: Private Action

and Public Action. Complaint handing process : ISO 10000 suite

Nature of markets: Liberalization and Globalisation of the Indian Consumer Market, Socio Economic Classification of Indian Consumers, online and offline markets; Organized and unorganized market, Grey market Concept of price in retail and wholesale, MRP, Fair price, labelling and packaging: legal aspects.

Unit 2: The Consumer Protection Act, 2019 (11 hours)

Genesis of the Consumer Protection law in India; Basic concepts: Consumer, goods, service, defect in goods, deficiency in service, spurious goods, unfair trade practice, restrictive trade practice, unfair contract, product liability, consumer rights.

Organisational Set up under the CPA, 2019: Advisory bodies: Consumer Protection Councils at the Central, State, and District level: Composition and role. Central Consumer Protection Authority: Composition and Powers; Adjudicatory bodies: District Commission, State Commission, and National Commission: Composition and Jurisdiction (Territorial and Pecuniary). Role of Supreme Court under the CPA with relevant case laws. Consumer Mediation Cell.

Unit 3: Grievance Redress Mechanism under the CPA, 2019 (9 hours)

Who can File a Complaint? Grounds of Filing a Complaint, Limitation Period, Procedure for Filing and Hearing of Complaint, Reliefs provided, Appeal, Enforcement of Order, Offences and Penalties.

Leading cases decided by the National Commission/Supreme Court under the CPA in: Medical service, Banking, Insurance, Housing Construction, Education, defective product, Unfair Trade Practices.

Unit 4: Role of Industry Regulators in Consumer Protection (9 hours)

Banking: Banking Ombudsman Scheme

Insurance: Insurance Ombudsman

Food Products: FSSAI

Advertising: ASCI

Housing Construction: RERA

Telecom: Role of TRAI.

Role of. Central Consumers Protection Authority (CCPA): under CPA, 2019

Unit 5: Developments in Consumer Protection in India (7 hours)

Consumer Movement in India; Voluntary Consumer Organisations (VCOs); National Consumer Helpline, GAMA, CONFONET, e-daakhil, Comparative Product Testing

Quality and Standardisation: AGMARK, ISI mark, Hallmarking, Consumer Grievance Redressal under the BIS Act, 2016. Role of Energy Rating and Energy standards, Role of ISO and international Standards.

Exercises

The learners are required to:

1. Talk to people in their community and find out what they do when they are dissatisfied with a product or service.
2. Share personal experiences with respect to unfair trade practices and infringement

of any of the consumer rights.

3. Visit the www.ncdrc.nic.in and pick any two case judgments on deficiency in services. Examine who was the complainant, ground of complaint, appeal filed, and where filed and final order passed by the concerned Consumer Commission.
4. Observe the advertisements given by builders and verify whether they are registered under the RERA.
5. Visit the website of ASCI and find out the nature of complaints received and what action was taken by ASCI.
6. Identify products which is using ISI mark. Check whether it is genuine or fake
7. Identify the product categories for which standards are mandatory under the BIS.
8. Discuss case studies on recent developments in consumer protection in India.

Suggested Readings

- Aggarwal, V. K. (2021). *Law of consumer protection.* (4th ed.). Delhi, India: Bharat Law House.
- Khanna, S. R., & Hanspal, S. (2020). *Consumer affairs & customer care.* (1st ed.). Delhi, India: Prowess Publishing.
- Kapoor, S. (2021). *Consumer affairs and customer care.* (1st ed.). Delhi, India: Scholar Tech Press.
- Rao, R. (2022). *Consumer is king.* (3rd ed.). Delhi, India: Universal Law Publishing Company.
- Patil, A. R. (2022). *Landmark judgments on consumer protection and law: 2008-2020.* Delhi, India: Ministry of Consumer Affairs, Food & Public Distribution, Government of India, e-book, www.consumeraffairs.nic.in.
- The Bureau of Indian Standards, 2016
- The Consumer Protection Act, 2019
- Real Estate (Regulation and Development) Act, 2016

Additional Resources

- www.consumeraffairs.nic.in
- www.bis.org
- https://fssai.gov.in
- https://irdai.gov.in
- https://rbi.org.in/Scripts/Complaints.aspx
- www.confonet.nic.in

B.A. Programme with Commerce (Human Resource Management)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Industrial Relations BAC: Discipline (HRM) – A6 (Non-Major/Minor)	4	3	1	0	Pass in Class XII	Studied Training & Development (BAC: Discipline (HRM) – A5)
Company Law BAC: DSC-6 (Major)	4	3	1	0	Pass in Class XII	NIL
Diversity Management BAC: DSE (HRM) – 6.1 (Major)	4	3	1	0	Pass in Class XII	NIL
Leadership and Motivation BAC: DSE (HRM) – 6.2 (Major)	4	3	1	0	Pass in Class XII	NIL

Generic Elective

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Emotional Intelligence BAC: GE(HRM) - 6.1	4	3	1	0	Pass in Class XII	NIL

BAC: Discipline (HRM) – A6: Industrial Relations (Non-Major/Minor)

Learning Objectives

The course enables the learners to understand and apply the important concepts of industrial relations including trade unions, workers participation in management, collective bargaining, industrial disputes, grievance handling and various labour enactments through the pedagogy of case discussions and the practices of Indian Organisations in this context.

Learning Outcomes

After completion of the course, learners will be able to:

1. Examine industrial relations in changing environment.
2. Recognise the theoretical and legal framework of trade unions.
3. Discuss the role of workers' participation in management and the concept of collective bargaining.
4. Discuss the concept of industrial disputes and grievance redressal machinery in India.
5. Recognise various legal enactments related to Industrial relations.

SYLLABUS OF Discipline (HRM) – A6

Unit1: Industrial Relations: Introduction (7 hours)
Industrial Relations: Concept, Nature, Objectives, Importance, Factors influencing Industrial Relations in changing Environment, Approaches to Industrial Relations.

Unit 2: Trade Union: Theoretical and Legal Framework (7 hours)
Theories of Trade Union Movement, Definition, Objectives, Registration of trade unions and Recognitions, Rights, Duties and Liabilities of registered trade union, problems of trade unions, dissolution of trade union, Factors influencing the growth of trade unions.

Unit 3: Workers' Participation and Collective Bargaining (9 hours)
Worker's participation: concept, principles, levels, objectives and importance; Strategies to make participative management more successful, Collective Bargaining: concepts, nature, Negotiations Techniques and Skills.

Unit 4: Industrial Disputes and Grievance Redressal (9 hours)
Industrial Disputes: concept, essentials of industrial dispute, classification, impact and causes. Grievance Handlings in industries: concept, meaning and nature of employees' grievance, Grievance redressal machinery in India- Preventive Machinery, Settlement Machinery: conciliation, arbitration and adjudication.

Unit 5: Other Labour Enactments (13 hours)
The Industrial Disputes Act, 1947: Important Definitions; various Authorities, Procedure, Powers and Duties of Authorities; The Factories Act, 1948: Provisions relating to Health, Safety, Welfare facilities, working hours, Employment of young persons, The Code on Wages, 2019, Minimum Wages Act 1948, Payment of Wages Act 1948 (Cover salient features only).

Note: Case studies are compulsory to develop the concept and evaluation of the students.

Exercises

The learners are required to:

1. Evaluate industrial relations in changing environment in India.
2. Prepare a report on the legal framework of trade unions in India.
3. Perform a role play on a hypothetical situation of collective bargaining.
4. Analyse the grievance redressal machinery in India through case studies.
5. Discuss provisions under various legal enactments related to Industrial relations.

Suggested Readings

- Sahoo, D.P. (2019). *Employee relations management - texts and cases.* (1st ed.). India: SAGE Publications Pvt. Ltd.
- Mamoria, C.B., Mamoria, S.,& Rao, P.S. (2010). *Dynamics of industrial relations.* Delhi, India: Himalaya Publishing House.
- Monappa, A. (2012). *Industrial relations and labor laws*. Delhi, India: Tata McGraw Hill Edition.
- Monappa, A., Nambudiri, R., & Selvaraj P. (2012). *Industrial relations and labour laws*. Delhi, India: Tata McGraw Hill Education.
- Padhi, P. K. (2019). *Industrial relations and labour law*. Delhi, India: PHI Learning.
- Sharma, J. P. (2018). *Simplified approach to labour laws*. Bharat Law House.
- Sinha, P.R.N., Sinha, I. B., & Shekhar, S.P. (2017). *Industrial relations, trade unions and labour legislation.* (3rd ed.). Delhi, India: Pearson Education.
- Srivastava, S. C. (2012). *Industrial relations and labour laws.* (6th ed.). Delhi, India: Vikas Publishing House.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

BAC: DSE (HRM) – 6.1: Diversity Management (Major)

Learning Objectives

The course aims to provide up-to-date knowledge about the new realities of the workforce and understanding of impact of diversity on various human resource functions and dynamics of team diversity, ability to critically examine organisational culture and its various aspects so as to get a better understanding of individual differences in the organisation and knowledge of various strategies through which diversity can be managed so as to increase the effectiveness of the organisations.

Learning Outcomes

After completion of the course, learners will be able to:

1. Analyse the diversity issues and challenges in present times.
2. Recognise the significance of workplace diversity.
3. Identify cultural diversity in organisations.
4. Analyse approaches to diversity management.
5. Recognise recent trends and developments in diversity management.

SYLLABUS OF BAC: DSE (HRM) – 6.1

Unit 1: Diversity- An Overview (6 hours)

Diversity-concept & meaning, Types & Dimensions of Diversity, concept & significance of Diversity management, Drivers for diversity management, Diversity issues & challenges.

Unit 2: Workplace Diversity (12 hours)
Meaning & significance, Diversity & inclusion at workplace, Impact of Workforce diversity on HR functions, Workforce Diversity – Key to Organizational Performance, Role of Diversity as a Determinant of Sustainable Competitive Advantage, Diversity in interpersonal relationships and cross-cultural communication, Team Diversity.
a
Unit 3: Cultural Diversity (9 hours)
Organisational Culture: meaning & significance, values and ethics of global work culture- task related, individual & interpersonal values, Diversity in Organisational Culture, Culture as a multi-level dynamic construct, Complexity & challenges in global Organisations.

Unit 4: Managing workplace Diversity (12 hours)
Diversity Management, Approaches to Diversity management- Colour-blind approach, multicultural approach, All- inclusive multiculturalism, Organizational Strategies for Managing Workplace Diversity – Workplace Inclusion, Strategies through Corporate Leadership, Diversity Training and Mentoring, Employee Resource Groups, corporate social responsibility & initiatives Flexible work programs.

Unit 5: Recent Trends and Developments (6 hours)
Diversity & multiculturalism Global Workplace Diversity management, Recent trends of workplace diversity: Role of Technology in managing diversity, Diversity and innovation. Ethical & Legal issues in managing diversity.

Exercises

The learners are required to:

1. Analyse various diversity issues and challenges faced by organisations in India.
2. Identify the diverse composition of workforce of organisations in situated in India.
3. Discuss case studies on significance of workplace diversity in various Multinational organisations.
4. Evaluate the cultural diversity in various organisations in India.
5. Identify the practices adopted by organisations in India to manage their diverse workforce.
6. Examine the inclusive strategies adopted by Indian organisations to manage their diverse workforce.
7. Assess the role of technology in diversity management in present times.

Suggested Readings

- De Anca, C., & Vega, A. V. (2016). *Managing diversity in the global organization: creating new business values.* Springer.
- Kirton, G., & Greene, A. M. (2021). *The dynamics of managing diversity and inclusion: a critical approach.* (4th ed.). Routledge.
- Klarsfeld, A., Booysen, L. A., Ng, E., Tatli, A., & Roper, I. (2014). *International handbook on diversity management at work: country perspectives on diversity and equal treatment*. Edward Elgar Publishing.
- Konrad, A. M., Prasad, P., & Pringle, J. (2005). *Handbook of workplace diversity*. Sage.
- Machado, C., & Davim, J. P. (2017). *Managing organizational diversity*. Springer International Publishing.
- Moss, G. (2012). *Lessons on profiting from diversity. In Lessons on profiting from diversity.* (pp. 1-18). London, United Kingdom: Palgrave Macmillan.

- Nkomo, S. M. (1997). *Managing diversity: human resource strategies for transforming the workplace.* (1st ed.). Wiley.
- Schwabenland, C. (2012). *Metaphor and dialectic in managing diversity*. Palgrave Macmillan.
- Triana, M. (2017). *Managing diversity in organizations: a global perspective.* (1st ed.). Routledge.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

BAC: DSE (HRM) – 6.2: Leadership and Motivation (Major)

Learning Objectives

The course aims to create an understanding of the various leadership theories among the upcoming leaders in order to decide as to which style of leadership should they follow in numerous situations that they might encounter in their careers or personal lives.

Learning Outcomes

After completion of the course, learners will be able to:

1. Recognise various leadership styles.
2. Discuss various theories of leadership.
3. Discuss various theories of motivation.
4. Recognise the concept and importance of e leadership.
5. Assess traits of contemporary leaders.

SYLLABUS OF BAC: DSE (HRM) – 6.2

Unit 1: Introduction (9 hours)

Meaning of Leadership, definitions of leadership, significance of leadership, difference between leadership and management, basic styles of leadership – autocratic, democratic, laissez faire (meaning, features, advantages, disadvantages and suitability), Rensis Likert styles of management, Tanenbaum and Schmidt Model

Unit 2: Theories of Leadership: Traditional Theories (13 hours)

Great Man Theory, Trait Theory, **Behavioural Theories**- Ohio Studies, Michigan Studies, Managerial Grid, **Contingency theories-** Fiedler's Theory, Hersey and Blanchard Situational Model, Path Goal Theory, Transformational Leadership, Transactional Leadership, Charismatic Leadership, Servant Leadership, Ethical Leadership

Unit 3: **Theories of motivation (9 hours)**

Maslow's need hierarchy theory, theory x, theory y, Mc Clelland's Theory of Motivation, Alderfer's ERG Theory, Herzberg Theory, Reinforcement theory, equity theory, Vroom's expectance theory

Unit 4: E Leadership (5 hours)

Meaning, definition, need and significance especially pre covid, during covid and post covid, social media and leadership, use of whatsapp, emails, facebook, LinkedIn, twitter, Instagram, google meet, MS Teams, zoom for electronically connecting the team and the leaders, using collaborative tools like google drive (docs, forms etc.) online

Unit 5: Contemporary Leaders (9 hours)
Cases on contemporary leaders like Narendra Modi, Indra Nooyi, Ratan Tata, Narayan Murthy

Exercises

The learners are required to:

1. Identify a leader of their choice, prepare and present a report highlighting her/his leadership style and leadership traits. (This activity should be done in a team)
2. Administer Fidler's Least Preferred Co-worker scale in the class on all the students to make sure that they understand the theory well.
3. Administer Managerial Grid questionnaire in order to help students assess their style of leadership.
4. Administering Theory X & Theory Y questionnaire in class to understand the motivation of students.
5. Discuss the role of e leadership post pandemic.
6. Discuss case studies on leadership traits of contemporary leaders.
7. Arrange movie screening for movies such as, Mission Mangal, Lagan, Chak De, Rock On, Lakshay, Super 30 etc. Keep an open house for discussing the movie and prepare a report/ presentation on the lessons learnt from the movie.

Suggested Readings

- Chhabra, T.N. (2021). *Business organization and management.* (2nd revised ed.). India: Sun India Publications.
- Day, D. V. (2014). *The oxford handbook of leadership and organizations.* (1st ed.). Oxford University Press.
- Hughes, R. L., Ginnett, R., & Gordon, C. (2019). *Leadership: enhancing the lessons of experience.* (9th ed.). Mcgraw Hill Education.
- Gupta, C.B. (2017). *Business organization & management*. Delhi, India: Sun India Publication.
- Koontz, H., & Weihrich, H. (2012). *Essentials of management: an international and leadership perspective.* (9th ed.). Paperback.
- Mittal, R. (2015). *Leadership: personal effectiveness and team building.* (2nd ed.). Uttar Pradesh, India: Vikas Publishing House Pvt. Ltd.
- Nooyi, I. K. (2021). *My life in full: work, family, and our future*. Penguin.
- Northouse, P. (2018). *Leadership: theory and practice.* (8th ed.). California, United States: SAGE Publications Inc.
- Prasad, L. M. (2021). *Organizational behavior.* (5th ed.). India: Sultan Chand and Sons.
- Robbins, S. P., Judge, T. A., & Vohra , N. (2018). *Organizational behavior.* (18th ed.). India: Pearson.
- Willink, J. (2020). *Leadership strategy and tactics: field manual.* New York, United States: Macmillan Publishers.

Note: The students are advised to read the articles regularly from HBR and other news items related to Leadership for class discussions and in order to be up to date with the contemporary industry practices.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

BAC: GE(HRM) - 6.1: Emotional Intelligence

Learning Objectives

The course aims to create a positive mindset of the future leaders (students) in order to make them ready to face any challenges that the world might throw at them. Further, the course will also help the students to become emotionally intelligent human beings.

Learning Outcomes

After completion of the course, learners will be able to:

1. Recognise different kinds of emotions and the concept of emotional intelligence.
2. Recognise the need for self-awareness and self-management.
3. Assess the importance of relationship management.
4. Analyse techniques and strategies to improve emotional intelligence.
5. Apply emotional intelligence at workplace and in personal lives.

SYLLABUS OF BAC: GE (HRM) – 6.1

Unit 1: Introduction (5 hours)

The Nature, characteristics of Emotions and types/ kinds of emotions, mood, and feelings, factors affecting emotions, difference between thoughts, emotions, and actions, meaning and components of emotional intelligence, Evolution from IQ to EQ.

Unit 2: Self Awareness & Self-Management (11 hours)

Meaning of self-awareness, role of consciousness in self-awareness, self-motivation, knowing your strengths and weaknesses, meaning of self-management, appreciative inquiry, time management, urgent- important matrix, self-control and assertiveness, Johari Window.

Unit 3: Social Awareness & Relationship Management (11 hours)

Elements of social skills such as empathy, social connect, body language, listening actively, law of energy & positive vibrations, gratitude, celebrate life- spending quality time with family, friends and colleagues in order to build trust and team spirit, Transactional Analysis.

Unit 4: Techniques and strategies to improve emotional intelligence (11 hours)

Show you care, keep your word, law of patience, life positions (I am ok, you are ok), stress management, role of emotional intelligence in success and happiness, strategies to improve emotional intelligence.

Unit 5: Application of Emotional Intelligence (7 hours)

Application of Emotional Intelligence at the work and personal life with the help of case studies and role plays, emotional intelligence and mental well-being of the human beings, role of emotional intelligence in conflict management.

Exercises

The learners are required to:

1. Identify different kinds of emotions in oneself.
2. Make a standardised scale/ questionnaire to know the emotional quotient of classmates.
3. Maintain a daily reflection journal to understand her/his feelings and the causes behind those feelings.

4. ‘Count their Blessings’. They should write down all the good things she/he has in her/his life. It can be anything like a roof over the head, a smartphone, loving parents, etc. Exchange the list with a partner and read her/his list.
5. Perform breathing, meditation and positive affirmation exercise. The students should engage in breathing, meditation and positive affirmation exercises to live in the present moment and enjoy the present.
6. Perform ‘Let us Acknowledge Exercise’ to appreciate and acknowledge the work of people around them. Build a culture in the class where every small and big positive act of students is appreciated and acknowledged by using the words ‘let us acknowledge’ followed by a big round of applause.
7. Make gratitude notes for all people whom they wish to thank. Write what they feel for them and how grateful they are to them.
8. Discuss case studies on the application of emotional intelligence at workplace.

Suggested Readings

- Covey, S.R. (2013). *The 7 habits of highly effective people*. Pocket Books.
- Goleman, D. (2005). *Emotional intelligence*. New York, United States: Bantam Book.
- Goleman, D. (2020). *Emotional intelligence: why it can matter more than IQ*. Bloomsbury Publishing.
- Harris, T. A. (1995). *I' M Ok You're Ok*. United Kingdom: Arrow.
- Johnston, E., & Olson, L. (2015). *The feeling brain: the biology and psychology of emotions.* (illustrated ed.) . w.w. norton & company.
- Mangal, S.K., & Mangal, S. (2015). *Emotional intelligence: managing emotions to win in life.* (1st ed.). PHI Learning Private Limited.
- Mersino, A. C. (2013). *Emotional intelligence for project managers: the people skills you need to achieve outstanding results*. AMACOM.
- Payne, R., & Cooper, C. L. (2001). *Emotions at work: theory, research, and applications in management.* (1st ed.). Wiley.
- Robbins, S. P., Judge, T. A., & Vohra , N. (2018). *Organizational behavior.* (18th ed.). Pearson.
- Singh, D. (2015). *Emotional intelligence at work.* (4th ed.). Delhi, India: Sage Response.
- Stein, S., & Book, H. E. (2011). *The EQ edge emotional intelligence and your success.* (3rd ed.). Jossey-Bass.
- Strongman, K. T. (2007). *The psychology of emotion: from everyday life to theory.* (5th ed.). John Wiley & Sons Inc.

B.A. Programme with Commerce (Commercial Laws and Corporate Governance)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Company Management and Administration BAC: Discipline (CLCG) – A6 (Non-Major/Minor)	4	3	1	0	Pass in Class XII	Studied Social Security Laws (BAC: Discipline (CLCG) – A5)
Company Law BAC: DSC-6 (Major)	4	3	1	0	Pass in Class XII	NIL
Corporate Governance BAC: DSE (CLCG) – 6.1 (Major)	4	3	1	0	Pass in Class XII	NIL
Listing Compliances of Companies BAC: DSE (CLCG) -6.2	4	3	1	0	Pass in Class XII	NIL

Generic Elective

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre- requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Company Secretarial Practices BAC: GE (CLCG) -6.1	4	3	1	0	Pass in Class XII	NIL

BAC: Discipline (CLCG) – A6: Company Management and Administration (Non-Major/Minor)

Learning Objectives

The course aims to make learners comprehend the Indian Companies Act, 2013 regarding Management of the companies. It seeks to help assess the aspects of appointments, duties and liabilities of Directors, KMP, and Auditors.

Learning Outcomes

After completion of the course, learners will be able to:

1. Interpret the Company Management Provisions.
2. Describe the formation of mandatory committees of the Board.
3. Recognise the role of auditors in company management and compliances.
4. Interpret legal provisions regarding dividend.
5. Analyse the conditions for winding up of the company.

SYLLABUS OF BAC: Discipline (CLCG) – A6

Unit 1: Company Management (16 hours)

Introduction, Directors: Definition, Legal Position of Directors, Types of Director, Qualifications, Disqualifications, Director Identification Number, Appointment, Vacation & Removal of Directors, Powers, Restriction on powers, Duties, Liabilities, Prohibition on Insider Trading, Provisions regarding Board Meetings, Meetings of Directors through Video Conferencing or other Audio- Visual Means.

Unit 2: Board committees (11 hours)

Board Committees and its type. Vigil Mechanism, Whistle Blower Protection Policy; Key Managerial Personnel

Unit 3: Audit and auditors (4 hours)

Appointment, Rotation, Removal and Resignation of Auditors, Qualifications and Disqualifications of Auditors, Ceiling on Audit, Remuneration of Auditors, Rights and Duties, Liabilities of Auditors, Audit report, Secretarial Standards and Secretarial Audit.

Unit 4: Dividends (3 hours)

Meaning, Legal Provisions regarding Dividend, The Companies (Declaration and Payment of Dividend) Rules, 2014; Interim Dividend. Unpaid or Unclaimed Dividends; Investor Education and Protection Fund.

Unit 5: Winding up (11 hours)

Meaning of Winding Up, winding up vs. Dissolution, Modes of winding up, Winding up by the Tribunal Under Insolvency and Bankruptcy Code, 2016. Grounds for winding up by the Tribunal. Case Laws may be discussed to enhance the comprehension of specific topics.

Exercises

The learners are required to:

1. Interpret and analyse Company Management Provisions
2. Make presentations about company Boards of the Indian Corporate world.
3. Exhibit the mandatory committees of Indian companies citing example cases.
4. Perform role play on ‘Board Committees’.
5. Discuss case studies related to insider trading, disqualification of auditors, unclaimed dividend, and insolvency.

6. Discuss and analyse legal provisions regarding dividend.
7. Have a debate on provisions of winding up.

Suggested Readings

- Majumdar, A.K., & Kapoor, G.K. (2022). *Company law and practice.* (26th ed.). Delhi, India: Taxmann.
- Ramaiya. A. (2020). *Guide to companies act*. Generic Book.
- Sharma, J.P. (2020). *An easy approach to corporate laws.* (4th ed.). Delhi, India: Ane Books Pvt. Ltd.

Additional Readings

- Gowar, L.C. B. (2012). *Principles of modern company law.* (4th revised ed.). London, United Kingdom: Stevens & Sons.
- Hanningan, B. (2021). *Company law.* (6th ed.). United Kingdom.: Oxford University Press.
- Hicks, A., & Goo, S.H. (2008). *Cases and material on company law.* (6th ed.). Oxford University Press.
- Kannal, S., & Sowrirajan, V.S. (2021). *Company law procedure*. Delhi, India: Taxman's Allied Services (P) Ltd.
- Singh, H. (2001). *Indian company law*. Delhi, India: Galgotia Publishing.
- The Depositories Act, 1996.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

BAC: DSE (CLCG) – 6.1: Corporate Governance (Major)

Learning Objectives

The course aims to provide knowledge of corporate governance, procedures, and techniques in accordance with current legal requirements and professional standards.

Learning Outcomes

After completion of the course, learners will be able to:

1. Recognise the concept and significance of corporate governance in a business setup and the role of the board of directors.
2. Discuss the crucial dimensions of corporate governance.
3. Analyse global corporate failures and interpret International Codes.
4. Describe the corporate governance regulatory framework in India.
5. Assess and analyse the problems in corporate governance in India.

SYLLABUS OF BAC: DSE (CLCG) – 6.1

Unit 1: Conceptual Framework of Corporate Governance (9 hours)

Corporate Governance: Meaning, significance, and principles; Management and corporate governance; Theories of Corporate Governance: Agency Theory, Stewardship theory, Stakeholders' Theory; One Tier and Two Tier Boards

Unit 2: Corporate Governance and Role of Stakeholders (9 hours)

Board composition: Executive directors, non-executive directors and Independent director; Role of Board and board committees; Insider Trading; Shareholder activism; Class action suits; Whistle blowing Mechanism, CSR and Corporate Governance

Unit 3: Global Corporate Failures and International Codes (9 hours)
Maxwell (United Kingdom), Enron (United States); Sir Adrian Cadbury Committee Report 1992, SOX Act 2002, OECD Principles of Corporate Governance.

Unit 4: Corporate Governance Regulatory Framework in India (9 hours)
Kumar Mangalam Birla Committee (1999), NR Narayana Murthy Committee (2005) and Uday Kotak Committee (2017); Regulatory framework: Relevant provisions of Companies Act, 2013, SEBI: Listing Obligations and Disclosure Requirements Regulations (LODR), 2015.

Unit 5: Corporate Failures in India (9 hours)
Satyam Computer Services Ltd, Kingfisher Airlines, PNB Heist; ICICI Bank; Common Governance Problems in various Corporate Failures in India and abroad.

Exercises

The learners are required to:

1. Identify and analyse corporate governance models followed by companies incorporated in India and abroad.
2. Analyse Board composition and Board committees of different companies; Analyse cases on the topic of Whistle blowing/ Shareholder activism/ Insider trading.
3. Critically analyse global corporate governance failure and identify corporate governance issues therein.
4. Identify corporate governance issues and concerns raised in context of Indian companies and their implications (from published sources newspapers or websites).
5. Critically analyse major corporate governance failures to suggest common governance problems in Indian context.

Suggested Readings

- Kumar, A. Gupta, L., & Arora, R.J. (2022). *Auditing and corporate governance.* (3rd ed.). India:
  Taxmann Pvt Ltd.
- Sharma, J.P. (2018). *Corporate governance, business ethics, and CSR*. Delhi, India: Ane Books
  Pvt Ltd.
- Tricker, B. (2015). *Corporate governance-principles, policies, and practice.* (Indian 2nd ed.). Delhi, India: Oxford University Press.

Additional Resources

- Rani, G. D., & Mishra, R.K. (2008). *Corporate governance- theory and practice*. Delhi, India:
  Excel Books.
- Mallin, C. A. (2018). *Corporate governance.* (Indian Edition). Delhi, India: Oxford University Press.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

BAC: DSE (CLCG) -6.2: Listing Compliances of Companies (Major)

Learning Objectives

To provide expert knowledge regarding SEBI regulations governing the entities listed on the stock exchanges.

Learning Outcomes

After completion of the course, learners will be able to:

1. Discuss the framework of SEBI.
2. Illustrate various conditions and procedures for raising funds from public.
3. Discuss time and event-based compliances and disclosure requirements prescribed under the SEBI (LODR) regulations, 2015.
4. Recognise various penalties imposed by the SEBI.
5. Discuss the procedure for appeals.

SYLLABUS OF BAC: DSE (CLCG) – 6.2

Unit 1: Introduction (5 hours)

Objective of SEBI; Composition of SEBI; Functions and Powers of SEBI; Registration of Intermediaries.

Unit 2: SEBI (Issue of Capital and Disclosure Requirements) Regulations, 2018 (13 hours)

Background, listing of company on stock exchange and IPO application process; Meaning of draft offer document; Letter of offer and red herring prospectus; Eligibility requirements and general conditions for IPO; Filing of offer document; Allotment procedure; Lock-in requirements; Minimum offer to public and reservations; Additional disclosure requirements for loss making companies.

Unit 3: SEBI (Listing Obligations and Disclosure Requirements) Regulations, 2015 (13 hours)

Applicability, obligations of listed entities; Compliances under SEBI listing regulations: One-time, Quarterly, Half Yearly, Yearly, Event Based; Corporate governance provisions; Exceptions, Board Committees under the SEBI Listing Regulations; Vigil mechanism; Related party transactions - Policy on materiality; Audit Committee and shareholder's approval with its exception; Secretarial Audit and Secretarial Compliance Report; In-principle approval of recognized stock exchange(s).

Unit 4: Prohibitions and Penalties (5 hours)

Prohibition of manipulative and deceptive devices; Insider trading; Penalties for failure; Penalties for adjudication.

Unit 5: Appeals (9 hours)

Establishment, composition, qualification for appointment, tenure of office, salary, allowances, terms, conditions, filling up of vacancies, resignation and removal of Presiding Officer and Members; procedure, powers, appeal against the order of Securities Appellate Tribunal; appeal to the Central Government.

Exercises

The learners are required to:

1. Prepare a list of existing SEBI officials and study their profiles.
2. Identify the areas where the Listing Agreement needs modification to align with the regulatory requirements arising out of the dynamic changes in the capital market.
3. Compare and contrast corporate governance provisions under SEBI LODR and other existing Acts.
4. Identify prominent cases on insider trading in India.
5. Enlist 5 latest SAT orders passed.

Suggested Readings

- Aggarwal, S. (2000). *Guide to Indian capital market.* (1st ed.). Bharat Law House.
- Khan, M.Y. (2019). *Indian financial systems*. Tata McGraw Hill.
- Kumar S., & Verma A. (2021). *Guide to capital market and securities law*. Thomson Reuters.
- Suryanarayanan, S., & Varadarajan, V. (2021). *SEBI – law, practice & procedure*. Commercial Law Publishers (India) Pvt. Ltd.

Additional Resources

- Chandratre, K. R. (2022). *SEBI listing obligations and disclosure requirements - A handbook*. Bloomsbury Publishing.
- Taxmann: SEBI Manual – Set of 3 Volumes.

Note: Latest amendment should be discussed

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

BAC: GE (CLCG) - 6.1: Company Secretarial Practices

Learning Objectives

The course aims to impart working knowledge of company secretarial practices to learners and make them familiar with drafting and documentation.

Learning Outcomes

After completion of the course, learners will be able to:

1. Describe the role of the company secretary.
2. Demonstrate the skills for drafting and conveyancing.
3. Discuss intricacies in the preparation of documents like MoA and AoA.
4. Prepare documents related to the board meeting and annual general meeting.
5. Discuss the concepts of secretarial audit and auditor.

SYLLABUS OF BAC: GE (CLCG) – 6.1

Unit 1: An Introduction to Company Secretary (9 hours)

Company Secretary – Meaning, Qualifications, Appointment, Role and Responsibilities, Statutory Duties and Liabilities, Removal, Company Sec[retary as a Key Managerial Personnel; Functions of Company Secretary.

Unit 2: Principles of Drafting (11 hours)

Meaning of Drafting and Conveyancing, General Principles of Drafting, Guidelines for use of Particular Words and Phrases for Drafting and Conveyancing, Do's and Don'ts of drafting, Use of Appropriate Words and Expressions, Kinds and clauses of deeds.

Unit 3: Preparation of Company Documents-I (9 hours)
Memorandum of Association-Meaning, Clauses & Specimen, Articles of Association- Meaning, Content & Draft specimen, Specimen of contracts of appointment of Company Secretaries.

Unit 4: Preparation of Company Documents-II (9 hours)
Drafting of notices, points to be remembered while drafting notice of Board Meeting, Specimen Notice of Board Meeting & Annual General Meeting; Resolution meaning, types and passing authorities. Practical aspects of drafting resolutions.

Unit 5: Secretarial Audit & Auditor (7 hours)
Meaning, Object, Scope, Need of Secretarial Audit, Provisions related to Appointment of Secretarial Auditor. Difference between secretarial audit and statutory audit.

Exercises

The learners are required to:

1. Interview a few CS in practice and ask about the steps and functions she/he performs in the organization.
2. Prepare a list of expressions that may be considered desirable while drafting of documents.
3. Draft a specimen of contract of appointment of a company secretary in a company.
4. Prepare specimens of ordinary and special resolutions
5. Enlist the steps involved in secretarial audit.

Suggested Readings

1. Chadha, R. & Chadha, S. (2018). *Company laws.* Delhi, India: Scholar Tech Press.
2. Chaturvedi, R.N. (2018). *Pleadings, drafting & conveyancing*. Central Law Publications.
3. Jagota, R. (2023). *Company law.* (2nd ed.). Delhi, India: Taxmann Pvt. Ltd.
4. Kolhatkar, M. (2015). *Drafting, pleading and conveyancing*. LexisNexis.
5. Kumar, A. (2019). *Corporate laws.* (10th ed.). Delhi, India: Taxmann Pvt. Ltd.
6. Sharma, J.P. (2018). *An easy approach to corporate laws.* (4th ed.). Delhi, India: Ane Books Pvt. Ltd.

Additional Resources

1. Drafting, Pleadings and Appearances, Professional Programme, Module 1, Paper 3, The Institute of Company Secretaries of India.
2. Jain, D.K. (2022). *Company law ready reckoner.* (25th ed.). Delhi, India: Bharat Law House.
3. Company Law, Executive Programme, Module1, Paper 2, The Institute of Company Secretaries of India.

Web Resources:

1. www.mca.gov.in
2. www.icsi.edu

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

B.A. Programme with Commerce (Tax Procedures & Practices)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Customs Law BAC: Discipline (TPP) – A6 (Non-Major/Minor)	4	3	1	0	Pass in Class XII	Studied Fundamentals of GST (BAC: Discipline (TPP) – A5)
Company Law BAC: DSC-6 (Major)	4	3	1	0	Pass in Class XII	NIL
Corporate Tax Planning: Specific Management Decisions BAC: DSE (TPP) – 6.1	4	3	1	0	Pass in Class XII	NIL

BAC: Discipline (TPP) – A6: Customs Law (Non-Major/Minor)

Learning Objectives

This paper focuses on providing a detailed understanding of customs law and procedures applicable in India.

Learning Outcomes

After completion of the course, learners will be able to:

1. Discuss the basic concepts of Customs Act.
2. Recognise various types of customs duties prevailing in India.
3. Describe varied provisions for the valuation of goods under import/export.
4. Identify different types of penalties for varied offences under customs law.
5. Recognise the customs procedure for imports and exports.
6. Review the exemptions available under customs duty.

SYLLABUS OF BAC: Discipline (TTP) – A6

Unit 1: Basic Concepts (9 hours)

Basic terms under the Customs Act; Import export route; Charging section; Taxable event for import and exports of goods; Reimportation of goods.

Unit 2: Types of Customs Duty (9 hours)

Basic customs duty, additional duty, protective duty, countervailing duty, anti-dumping duty, safeguard duty; GST compensation cess; effective rate of duty-procedure and provisions, types of import.

Unit 3: Value of Goods (13 hours)

Valuation of goods under imports and exports; landing charge, Free on Board (FOB), Cost, Insurance and Freight (CIF); penalties and prosecutions.

Unit 4: Customs Procedure (7 hours)

Customs procedure for imports and exports; in transit and transhipment; bill of entry.

Unit 5: Baggage Rules and Exemptions (7 hours)

Baggage rules; exemptions under customs duty; export promotion schemes.

Exercises

The learners are required to:

1. Discuss basic concepts of Customs Act.
2. prepare a list of customs duties applicable in case of import of assets.
3. compute the value of goods (assessable value) in the case of exports.
4. Discuss case studies on different types of penalties for varied offences under customs law.
5. Prepare a case study for a taxpayer mentioning the procedure she/he has to undertake for customs clearance in case of imports.
6. Enlist various exemptions under customs duty.
7. Prepare a list of export promotion schemes available to an assessee.

Suggested Readings

- Ahuja, G., & Gupta, R. (2022). *GST & customs law*. Delhi, India: Flair Publications Pvt. Ltd.
- Babbar, S., Kaur, R., & Khurana, K. (2022). *Goods and service tax (GST) and customs law.* (5th ed.). Delhi, India: Scholar Tech Press.
- Bansal, K. M. (2022). *GST & customs law.* (8th ed.). Delhi, India: Taxmann Publication.
- Mittal, N. (2022). *Goods & services tax and customs law*. Delhi, India: Cengage Learning India Pvt. Ltd.
- Sahi, S. (2022). *Concept building approach to goods and services tax (gst), & customs law*. Delhi, India: Cengage Learning India Pvt. Ltd.
- Singhania V. K. (2022). *GST & customs law.* (10th ed.). Delhi, India: Taxmann Publication.

Additional Resources

- The Customs Act, 1962
- The Customs Tariff Act, 1975.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

BAC: DSE (TPP) – 6.1: Corporate Tax Planning: Specific Management (Major)

Learning Objectives

This paper aims to provide an advanced module of corporate taxes in India and its effectiveness in various specific management decisions.

Learning Outcomes

After completion of the course, learners will be able to:

1. Assess tax planning with respect to employee remuneration.
2. Analyse cases of tax planning.
3. Use specific provisions to compute the income of non-residents in specific cases.
4. Discuss the framework of double taxation relief.
5. Analyse ramifications of business restructuring from the viewpoint of tax planning.

SYLLABUS OF BAC: DSE (TTP) – 6.1

Unit 1: Tax Planning with respect to employee remuneration (9 hours)

Tax planning with reference to remuneration of employees from an employee as well as employers' perspective.

Unit 2: Some Specific Cases of Tax Planning (9 hours)

Tax planning with reference to receipt of insurance compensation and tax planning with reference to the distribution of assets in case of liquidation of a company.

Unit 3: Tax Planning with reference to non-resident companies (9 hours)

Computation of income of non-residents from shipping business, foreign companies engaged in the business of civil construction, transfer pricing: computation of arm's length price, and advance ruling.

Unit 4: Tax Planning with reference to double taxation (9 hours)

Double Taxation Avoidance Agreements (DTAA) and Double taxation relief.

Unit 5: Tax Planning with reference to business restructuring (9 hours)

Amalgamation, demerger, slump sale and conversion of sole proprietary concern/ firm into a company.

Exercises

The learners are required to:

1. Design an appropriate pay package for the employee so as to reduce his tax liability and also to make sure that the employer gets maximum benefit.
2. Explain the concept of tax planning with reference to insurance compensation and distribution of assets in case of liquidation of a company, with specific cases.
3. Prepare documentation for the computation of income in case of non-resident.
4. Present a case study on the applicability of transfer pricing rules.
5. Prepare a presentation on double taxation relief.
6. Prepare a report for a sole proprietary concern converting into a firm with reference to tax implications.

Suggested Readings

- Ahuja, G., & Gupta, R. (2022). *Simplified approach to income tax*. Delhi, India: Flair Publications Pvt. Ltd.
- Ahuja, G., & Gupta, R. (2019). *Simplified approach to corporate tax planning & management.* (21st ed.). Delhi, India: Wolters Kluwer India Pvt Ltd.
- Singhania, V. K., & Singhania, M. (2022). *Student's guide to income tax.* (68th ed.). Delhi, India: Taxmann Publications Pvt. Ltd.
- Singhania, V.K., & Singhania, M. (2022). *Corporate tax planning & business tax procedures.* (25th ed.). Delhi, India: Taxmann Publications.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

B.A. Programme with Commerce (Modern Office Management)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Office Automation BAC: Discipline (MOM) – A6 (Non-Major/Minor)	4	2	0	2	Pass in Class XII	Studied Computer Applications (BAC: Discipline (MOM) – A5)
Company Law BAC: DSC-6 (Major)	4	3	1	0	Pass in Class XII	NIL
Practical Stenography and e-Typewriting-II BAC: DSE (MOM) – 6.1 (Major)	4	0	0	4	Pass in Class XII	NIL
Human Resource Management BAC: DSE (MOM) – 6.2 (Major)	4	3	1	0	Pass in Class XII	NIL

BAC: Discipline (MOM) – A6: Office Automation (Non-Major/Minor)

Learning Objectives

The course aims to inculcate the understanding about changing technologies and a revolution towards a paperless environment. It highlights the strategies that can be adopted towards automation and also different challenges that arise with E-Governance.

Learning Outcomes

After completion of the course, learners will be able to:

1. Recognise appropriate technology tools for communication.

2. Analyze the documents in e-offices.
3. Use e file management to move towards a paperless work environment.
4. Adapt to online tour management, online leave management and e tenders.
5. Assess the role of ERP and applications of IoT in offices.

SYLLABUS OF BAC: Discipline (MOM) – A6

Unit I: Online Communication Tools (3 hours)
Importance of online communication, Online Communication Systems Internet, e-mail, video conferencing, VoIP, IVRS, Team Collaboration, Skype, Microsoft Teams, Google Teams, Zoom, Facebook, TinyLetter, Drop Box, Flowdock, HipChat, Go to Meeting and ProofHub.

Unit II: E-Office, Online PIMS, Sparrows and KMS (6 hours)
Meaning and Nature of e-Office, Benefits of e-Office, Features of e-Office.
Online PIMS, Online Service Book, Efficient retrieval system, Online form submission, MIS Reports, Role based Access.
SPARROW: Electronic APARs processing, Centralized Database and Decentralized Administration, Electronic Signing of APARs, Delegation for Manual Processing, APARs Integrated with eService Book.
KMS: Create and Upload documents, Integrated workflow on documents, document security, versioning of documents, Role based access to document folders.

Unit III: E-File Management (8 hours)
Online Diarising of Letters, File Processing, Dashboard view with Alerts, Enhanced Scope Based Search, MIS Reports for Monitoring and Analysis, Multilingual support, Added Data security with DSC and e-Sign, Interdepartmental File Movements, Records Management System, Citizen Interface.

Unit IV: Online Tour Management, Online Leave Management and e-Tender (8 hours)
Online Tour Approval Workflow, Status of Tour Requests, Tours conducted by employees, online settlement of Tour Claims.
Online leave Applications, Online Leave Approvals, Joining Reports, Leave History, Leave in Credit and Work load of office staff.

Unit V: Internet of Things (IoT) and Enterprise Resource Planning (ERP) (5 hours)
Significance and applications of (IoT); Meaning, benefits, and limitations of (ERP); components of ERP; ERP softwares: ERP Tally, Oracle- Data Base Management System and Systems-Applications-and-Products-Software (SAP), Public Financial Management System (PFMS), Implementation of ERP Softwares.

Online Procurement, e-Tenders: Government e-Market place (GeM), E-Publish Date, Bid Submission Closing Date, Tender Opening Date, Tender ID, reference and Date, Name of Department/Organization.

Practical Exercises:

The learners are required to:

1. Assess the role of various technology tools for communication in present times.
2. Analyze the documents in e-offices.
3. Discuss case studies on e file management.
4. Discuss case studies on online tour management, online leave management and e tenders.

5. Evaluate the role of ERP and applications of IoT in offices through case studies.

Suggestive Readings

- Curran, S., & Mitchell, H. (1982). *Office automation: an essential management strategy*. California, United States:The Macmillan Press Ltd.
- Department of Education, Government of Kerala. (2016). *Computerised office management*. Kerala: State Council of Educational Research and Training (SCERT).
- Ismail, Y. (Ed.). (2019). *Internet of things (IoT) for automated and smart applications*. IntechOpen. https://doi.org/10.5772/intechopen.77404
- IDC Technologies. (2012). *Industrial automation*. The IDC Engineers & bookboon.com
- Kumar, A. (2010). *Computer basics with office automation*. I. K. International Publishing House Pvt. Ltd.
- Li, P. (Ed.). (2019). *New trends in industrial automation*. intechOpen. https://doi.org/10.5772/intechopen.75341

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

BAC: DSE (MOM) – 6.1: Practical Stenography and e-Typewriting-II

Learning Objectives

The course aims to orient the students to attain the higher speed in Stenography as well as Typewriting. After completing the practical sessions the students will be prepared to get the job as Executive Secretary/Office Manager/Personal Secretary/Personal Assistant/Stenographer etc. The students will also be ready to type the project report/dissertation themselves.

Learning Outcomes

After completion of the course, learners will be able to:

1. Apply dictation and transcription on seen passages.
2. Apply dictation and transcription on unseen passages.
3. Analyze the different rules of phraseography.
4. Demonstrate e typewriting speed.
5. Prepare documents on MS-Word.

SYLLABUS OF BAC: DSE (MOM) – 6.1

Unit I: Dictation & Transcription – Seen Passages

Daily practice of seen passages of the Exercises 145-191 from 'Pitman Shorthand Instructor & Key' in a graded manner up to the speed of 80 words per minute and transcription on computer.

Unit II: – Dictation & Transcription – Unseen Passages

Daily practice of unseen passages from 'monthly magazines of shorthand ' in a graded manner up to the speed of 60 words per minute and transcription on computer. Practice in different settings (classrooms/interviews for Social/Business Research Survey). Using voice activated word processing in PC and Mobile Applications.

Unit III: Advanced Phraseography

List of Phrases: Advanced Phraseography (Section 1 to 7), Intersection, Business Phrases.

Unit IV: e-Typewriting – Practical
Maximum use of shortcut keys on Keyboard instead of using mouse.
Typewriting speed and accuracy - use of spacing and punctuation marks, errors and penalty, Calculation of running and accurate speed (gross and net).
E-typewriting speed @30 words per minute.

Unit V: Word Processing – Project
Word Processing (MS Office) - Use of style sheets, smart art, inserting table of contents, Insert Object (Picture, Video, Sheet, Power Point Slide). Update table, Insert footnote and endnote, and insert citation. Manage Sources, Index and managing Bibliography/references. Insert caption, insert table of figures, cross reference. Track changes. Convert text to table.
Document Preparation: A resume - on one page.

Practical Exercises

The learners are required to:

1. Practice the shorthand seen passages to get the speed @80 words per minute.
2. Practice the shorthand unseen passages to get the speed @60 words per minute.
3. Learn, understand & practice all types of advanced phraseography for implementation.
4. Practice the typewriting passages to get the speed @40 words per minute.
5. Prepare documents on MS-Word.

Suggested Readings

- Bhatia, D. P., & Sangal, S. S. (1996). *Principles of typewriting*. Delhi, India: Pitman S.S.Publications.
- Bhatia, R.C. (1993). *An advance course in practical typewriting*. Delhi, India: Arya Book Depot.
- Fry, E. (2010). *Dr. Fry's computer keyboarding for beiginners*. United States: Revised by Teacher Created Resources.
- G, S. (2017). *Typing lessons for beginners: quick way to learn english typing*. CreateSpace Independent Publishing Platform.
- Jain, H.C., & Tiwari, H.N. (2021). *Computer applications in business* (6th ed.). Delhi, India: Taxman Publications Private Limited.
- Madan, S. (2021). *Computer applications in business*. Delhi, India: Scholar Tech Press.
- Pitman, I. (2022). *Pitman shorthand instructor and key*. Delhi, India: Pearson Education Ltd. and Dorling Kinderley Publishing, Inc.
- Thrope, E. (1998). *2000 Common words reading and dictation exercises*. Delhi, India: Pitman S.S.Publications.
- Thrope, E. (1992). *A handbook of commercial phraseography*. Delhi, India: Pitman S.S.Publications.
- Typing Master Software for e-Typewriting

Note: Latest edition of software may be used.

- **Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.**

BAC: DSE (MOM) – 6.2: Human Resource Management

Learning Objectives

The aim of the paper is to familiarize students with the concepts of human resource management, hiring and managing people, employee pay and compensation, employee morale and welfare schemes and key challenges of HR Managers.

Learning Outcomes

After completion of the course, learners will be able to:

1. Recognise the role of personnel management and human resource development.
2. Analyze the process of human resource planning.
3. Discuss various employee compensation and benefit schemes.
4. Recognise the concept of employee morale, development and employee welfare schemes.
5. Discuss emerging horizons and key challenges in HRM.

SYLLABUS OF BAC: DSE (MOM) – 6.2

Unit 1: Human Resource Management - Introduction (9 hours)

Role of Personnel Management, Human Resource Development and Human Resource Management, Characteristics of the workforce, Importance of Human Resources, HRM Practices, Human Capital, Functions of HRM.

Unit 2: Managing People (9 hours)

Human Resource Planning, Process of Recruitment and Hiring Talent, Online Selection and Placement, Types of Selection Methods, Job Design, Job Description, Job Specification, Employee Engagement, Job Evaluation, Transfer and Job Satisfaction, Training and Development, Employee Development, Create Learning Environment, Management Support, Training Methods, Socialization and Orientation, Employee Counselling, Job Change, Job Transfers, Job Promotion, Employee Retention, Strategic Role of Team Leader, Performance Appraisal, Designing of HR Portals.

Unit 3: Sound Compensation and Employee Benefits (9 hours)

Equity Theory and Fairness, Developing Pay Levels, Job Structure, Pay Structure, Minimum Wage and Compensation, Overtime and Prevailing Wage Laws, High Motivation Compensation System, Recognition of Employee Contributions, Reinforcement Theory, Expectancy Theory, Agency Theory, Career Planning, Competency Based Compensation, Talent Management: Group Incentives, Team Awards, Balance Scorecard, Employee Benefits, Employee Empowerment, Employee Counselling.

Unit 4: Employee Morale, Employee Development and Employee Welfare Schemes (9 hours)

Morale and Productivity, Employee Counselling, Work Stress, Coping of Stress, Emotional Intelligence, Employee Wellbeing, Employee Health and Welfare Programs: Safety Measures, Medical Benefits, Staff Canteen, Housing and Transportation, Credit Societies, Leave Encashment, Social Security-Pension and Gratuity, Group Insurance.

Unit 5: Emerging Horizons and Challenges in HRM (9 hours)

Workforce Diversity, Cross-cultural HRM, Building a Multi-Cultural Organization, Cross Border Merger, Acquisition and Repatriation, Current Challenges in Outsources of human resources, Downsizing, e-HRM, Green HRM, Ethics in HRM, Employee Resilience, Innovations and Creativity at Work.

Exercises

The learners are required to:

1. Evaluate the personnel management process of various organisations.
2. Assess the human resource planning process of different organisations.
3. Compare employee compensation and benefit schemes of competing organisations.
4. Compare employee welfare schemes of different organistions.
5. Evaluate emerging horizons and key challenges of HRM.

Suggested Readings

- Bernardin, H. J., & Russell, J. E. (2006). *Human resource management.* (p. 736). New York, United States: Tata McGraw-Hill.
- Bhatia, S. K. (2007). *Strategic human resource management: winning through people*. Delhi, India: Deep and Deep Publications.
- Chadha, N. K. (2005). *Human resource management issues: Case studies and experimental exercises*. Delhi, India: Sai Printographers.
- Kavita, S. (2015). *Organizational behaviour: Text and cases.* (3rd ed.). Noida, India: Vikas Publishing House.
- Koontz, H., O'Donnell, C., & Weihrich, H. (1986). *Essentials of management.* (4th ed., Vol. 18). New York, United States: McGraw-Hill.
- Raymond, A., Hollenbeck, J. R., Gerhart, B. A. R. R. Y., & Wright, P. M. (2003). *Human resource management: gaining a competitive advantage.* (8th ed.). Irwin/McGraw-Hill.
- Regis, R. (2012). *Strategic human resource management and development.* (1st ed.). Delhi, India: Excel Books.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

B.A. Programme with Commerce (Commerce as Non-Major/Minor)

BAC: DSC-6 Company Law (Non-Major/Minor)

Learning Objectives

The course aims to develop and comprehend business and its processes in accordance with the provisions of the Companies Act, 2013 while analysing case laws.

Learning Outcomes

After completion of the course, learners will be able to:

1. Recognise the different types of companies.
2. Discuss the fundamentals of incorporating the company.
3. Make the memorandum and articles of association.
4. Discuss the difference between different types of prospectus.
5. Recognise the process of calling and conducting company meetings.

SYLLABUS OF BAC: DSC-6

Unit I: Introduction (11 hours)
Characteristics of a company; Lifting of corporate veil; Types of companies including one person company, small company, associate company, dormant company, producer company; Association not for profit; Illegal association.

Unit II: Formation of a company (7 hours)
Formation of company, promoters, functions and their legal position, pre- incorporation contracts, steps in incorporation, and process of on-line registration of a company.

Unit III: Memorandum and Articles of Association (7 hours)
Memorandum of association definition, clauses and its alteration, doctrine of ultra vires, articles of association, contents and its alteration, doctrine of constructive notice and indoor management.

Unit IV: Share Capital (11 hours)
Prospectus, shelf and red herring prospectus, mis-statement in prospectus; issue, allotment and forfeiture of share, calls on shares; issue of sweat equity; employee stock option; issue of bonus shares; right shares, transfer and transmission of shares, buyback; demat system.

UNIT V: Company Meetings (9 hours)
Meetings of shareholders; types of meeting, convening and conduct of meetings, requisites of a valid meeting- notice, agenda, chairman, quorum, proxy, resolutions, minutes; postal ballot, e-voting.

Exercises

The learners are required to:

1. Identify and classify types of companies by taking real-life examples.
2. Fill dummy spice form for incorporation of a company.
3. Read the memorandum and articles of association of a particular company.
4. Enlist steps in the book-building process and examine a red herring prospectus of a latest IPO from SEBI website.
5. Prepare a list of businesses conducted by ordinary resolution.

Suggested Readings

- Chadha R. & Chadha, S. (2018). *Company laws*. Delhi, India: Scholar Tech Press.
- Gower, L. C. (1981). *Principles of modern company law.* (4th ed.). London, United Kingdom: Stevens & Sons.
- Kumar, A. (2022). *Corporate laws.* (11th ed., Vol. 1). Delhi, India: Taxmann Publications Private Limited.
- Sharma, J. P. (2020). *Easy approach to corporate laws.* (4th ed.). Delhi, India: Ane Books Pvt.

Additional Resources

- Hannigan, B. (2021). *Company law*. Oxford, United Kingdom: Oxford University Press.
- Kannal, S., & Sowrirajan, V.S. (2019). *Company law Procedure*. Delhi, India: Taxman's Allied Services (P) Ltd.

ANNEXURE - 36

Sub: Amendment to Ordinance V

[E.C Resolution No. 14/ (14-1-9) dated 09.06.2023]

Following addition be made to Appendix-II-A to the Ordinance V (2-A) of the Ordinances of the University;

Add the following:

Syllabi of Semester-IV, V and VI of the Department of Finance & Business Economics under Faculty of Applied Social Sciences & Humanities based on Under Graduate Curriculum Framework -2022 implemented from the Academic Year 2022-23.

SEMESTER -IV

B.A. (Honours) Business Economics

DISCIPLINE SPECIFIC CORE COURSE – 10 (DSC-10): MACROECONOMICS - II

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Macroeconomics-II (DSC 10)	4	3	1	0	Class 12	Mathematics at Class 12

Learning Objectives

This course aims at inculcating an understanding:
(i) of macroeconomic outcomes arising from assumptions of individual behaviour
(ii) of equilibrium under different assumptions on aggregate demand and supply.
(iii) of the relation between wages, prices, unemployment under different models
(iv) of an economy that trades with others and how it determines the balance of payments and different types of exchange rates.

Learning outcomes

By studying this course, the students will be able to:

- Understand basics of consumption function and different hypotheses regarding aggregate consumption behavior.
- Derive wage setting, price setting relations and labour market equilibrium.
- Derive aggregate demand and aggregate supply and economy's equilibrium conditions in medium run and understand the interaction between the two.
- Understand the relationship between inflation, unemployment and output and role of expectation on policy and their effectiveness.

SYLLABUS OF DSC-10

UNIT–I: Microeconomics foundation of Macroeconomics (9 hours)
Consumption: Keynesian consumption function; Fisher's theory of optimal intertemporal choice; life cycle and permanent income hypothesis; rational expectations and random walk of consumption expenditure, Investment: determinants of business fixed investment; residential investment and inventory investment

UNIT – II: Aggregate Demand and Aggregate Supply (6 hours)
Derivation of aggregate supply curve; Interaction of aggregate demand and supply to determine equilibrium output, price level and employment, The aggregate supply curve and the price adjustment mechanism.

UNIT – III:Labour markets, Employment and Prices (18 hours)
The labour market: - determination of wages, prices, unemployment, Natural rate of unemployment and NAIRU, stagflation, expected inflation. Philips curve, inflation-expectations augmented Phillips curve, the wage-unemployment relationship: Sticky wages; from Phillips curve to the aggregate supply curve; the costs of unemployment and inflation, inflation and indexation: inflation-proofing the economy; Theory of Expectations, Inflation, unemployment and expectations, Phillips curve and adaptive and rational expectations; Dynamics of Inflation and Unemployment: Inflation, expectation and the aggregate supply curve, short and long runaggregate supply curves, dynamic aggregate demand curve; Inflation and output, the adjustment process, dynamic adjustment, interest rate and inflation: the Fishers Equation.

UNIT – IV:Open Economy Macroeconomics (12 hours)
Balance of Payments, Kinds of exchange rate, Nominal and Real Exchange rate, fixed and flexible exchange rate, Marshall Lerner condition & J curve, Mundell Fleming model, Exchange rate determination: Purchasing power parity, asset market approach and monetary approach to Balance of Payments (BoP)

Essential/recommended readings

1. Dornbusch, R., Fischer, S. and Startz, R., 2014. Macroeconomics. 11th edition, New York, McGraw-Hill Education.
2. Dornbusch, R. and Fischer, S. (2000) Macroeconomics. 6th Edition. McGraw-Hill Education.
3. Blanchard, O. (2006). Macroeconomics, 4th ed. Pearson Education.
4. C.L.F. Attfield, D. Demery and N.W. Duck, (1991) Rational expectations in macroeconomics: An introduction to theory and evidence (2nd Ed.)

5. Carlin, W and D Soskice (2007), Macroeconomics: Imperfections, Institutions and Policies, Indian Edition, OUP.
6. David C. Colander (2017) Macroeconomics (9th edition), McGraw Hill

Suggested readings

1. Bradley R. Schiller and Karen Gebhardt (2019) Macro economy Today (14th edition), McGraw Hill
2. Richard T. Froyen (2013). Macroeconomics: Theories and Policies (10th ed.), Pearson.
3. Government of India (GOI) (Latest Year), Economic Survey, Ministry of Finance New Delhi.
4. Government of India (GOI) (Latest Year), Handbook of Indian Economy, RBI Publication New Delhi.
5. N. Gregory Mankiw, Macroeconomics, Worth Publishers.
6. Chugh, S. (2015) Modern Macroeconomics, MIT Press.
7. D'Souza, E, Macroeconomics, Pearson Education
8. D. N.Dwivedi (2015), Macroeconomics- Theory and Policy, McGraw-Hill.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 11 (DSC-11): Statistics for Business Economics-II

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Statistics for Business Economics - II (DSC 11)	4	3	0	1	Class 12	Mathematics at Class 12 level

Learning Objectives

This course aims to develop an understanding of:

- Theories of probability distribution.
- Sampling techniques and types of sampling.
- Methods of estimation
- Testing of Hypothesis.

Learning outcomes

By studying this course, the students will be able to:

- Understand the formulation of complex decision-making problems in an uncertain environment using different statistical techniques.

- Study various research designs and appropriate sampling techniques.
- Analyze and apply some basic stochastic processes for solving real life situations and to execute statistical analyses with professional software.
- Draw conclusion about the population using hypotheses testing.

. .

SYLLABUS OF DSC-11

UNIT – I: Theoretical Probability Distributions (15 hours)
Discrete: Binomial and Poisson. Continuous: Normal. Mean and variance. Applications. Bivariate distributions: covariance and correlation.

UNIT – II:Sampling (9hours)
Random sampling; sampling methods; statistics and their distributions; central limit theorem, distribution of linear combination of random variables.

UNIT – III:Estimation (12 hours)
Point estimators and properties. Methods of point estimation. Sampling distributions: t, chi square and F. Interval estimation for mean, proportion and variance.

UNIT – IV: Testing of Hypothesis (9 hours)
Null and alternative hypotheses. Types of errors. Testing for the population mean, proportion and variance. One and two tail tests. P-values. Testing for difference in means and proportions; comparing variances.

Practical component (30 hours) –Practicals to be based on aspreadsheet software (Microsoft Excel or equivalent) to enable students to execute all the measures and tests taken up in the theory classes in the course.

Essential/recommended readings

1. Devore, Jay L., (2012). Probability and Statistics for Engineering and the sciences.8th Edition, Cengage Learning.

Suggestive readings

1. *Miller, Irwin and Marylees Miller*. John E. Freund's Mathematical Statistics with Applications, Eighth Edition, Pearson Education.
2. Nagar, A.L., and R.K. Das. Basic Statistics, Second Edition, Oxford University Press
3. Gupta, S.C., Fundamentals of Mathematical Statistics, Himalaya Publishing House

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – (DSC-12): MARKETING MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Essentials of Marketing Management (DSC 12)	4	3	1	0	Class 12	None

Learning Objectives

The course aims to develop an understanding of

- Firm's internal and external marketing environment.
- Segmentation and defining the target market for a selected product or service.
- Product decisions and use of pricing strategies.
- Relevance of distribution and promotional strategies in supporting marketing strategies.

Learning outcomes

By studying this course, students will be able to:

· Understand the business environment including the economic, social, political, legal, and technological forces.

· Develop key strategies for developing brands including brand equity, brand identity and brand and line extensions.

· Recognise different pricing strategies and understand issues related to distribution.

· Understand the elements of promotion- advertising, sales promotion, events, public relations and publicity, direct marketing, interactive marketing, word of mouth and public selling.

SYLLABUS OF DSC-12

UNIT – I: Introduction and Environment (9hours)

Importance and Scope of Marketing; Core Marketing Concepts; Company Orientations. Marketing Environment, an Economic Perspective: Economic, Demographic, Socio- Cultural, Technological, Political and Legal. Influence of Current Economic Situation on Marketing Functions. Michael Porter's Model of Competitive Analysis

Unit 2: Segmentation, Targeting & Positioning (9 hours)

Market Segmentation - Bases for Segmenting Consumer Market.Market Targeting- Evaluating and Selecting Market Segments. Positioning- Positioning Statement, POP and POD

Unit 3: Product & Pricing (12 hours)

Product Life Cycle- Concept and Strategic Implications; Product Mix and Line Decisions- Product Line Length, Modernisation, Line Pruning and Filling; Cannibalisation; BCG Matrix, ANSOFF Matrix; Branding- Brand Identity, Brand Equity, Brand Name Decisions. Services- Characteristics of Services. Pricing Strategies (Geographical Pricing, Price Discounts & Allowances, Promotional Pricing Tactics, Psychological Pricing, Price Discrimination)

Unit 4: Distribution & Promotion (15hours)

Channels Functions and Flows; Channel Levels.Retailing- Marketing Decisions in Retailing. Promotion: Promotion Mix; Concept Of Integrated Marketing Communication.
Advertising- Advertising Objectives, Advertising Budget, Message Generation, Media (Types, Reach Frequency, Impact); Measurement; Sales Promotion (Objectives, Major Decisions in Sales Promotion, brand dilution); Personal Selling; Events and Experiences; Public Relations and Publicity; Direct Marketing; Interactive Marketing (Introduction to Online Marketing).Word Of Mouth and Word of Web.

Essential/recommended readings

1. Kotler, P. & Keller, K. L. Marketing Management. Pearson Publications.
2. Kotler P, Armstrong G., Agnihotri P.Y &UlHaq, E. Principles of Marketing - A South Asian Perspective. Pearson Publications.
3. Ramaswamy V.S, Namakumari S. Marketing Management: Global Perspective Indian Context. Macmillan Publishers.

Suggestive readings

1. Dawn Iacobucci. Marketing Management. Cengage Learning.
2. Etzel M. J, Walker B.J, Stanton W.J and Pandit A. Marketing. Tata McGraw Hill.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE 2 (DSE-2): PUBLIC FINANCE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Public Finance (DSE2)	4	3	1	0	Class 12	None

Learning Objectives

The course aims to develop an understanding of

- Fundamental concepts of Public Finance.
- Economics of government expenditure and taxation
- Efficiency and equity aspect of taxation of centre and state government.
- Different types of canons in taxation.

Learning outcomes

By studying this course, the students will be able to:

- Apply tools of basic microeconomics to key policy issues relating to the spending, taxing and financing activities of the Government.
- Understand difference in impact of direct and indirect taxation.
- Understand the recent developments and issues in Indian Public Finance.

SYLLABUS OF DSE-2

Unit 1: Theory of Public Finance (12 hours)

Public finance: Meaning, nature, scope and importance, difference between private and public finance. Principle of maximum social advantage.Role of state in public finance. Elementary theory of product and factor taxation.
Sources of revenue: taxes, loans, grants and aid – meaning and types, Principle of public expenditure. Public finance and the economic system.

Unit 2: Current Issues in Indian Tax System (12hours)

Direct and Indirect Tax Reform in India, Different forms of direct tax in India,
Changing regime of taxation-direct to indirect taxation.
Introduction of GST and its implication for state finances and fiscal federalism in India,
Latest finance commission and its recommendation for fiscal devolution.

Unit 3: Center State Financial Relations (9hours)

Center state fiscal relations, horizontal and vertical tax devolution in India,

State and local finance in India.
Performance and Equity debate in fiscal devolution in India.
Report of finance commission in post liberalisation period.

Unit 4: Principles of Taxation (12 hours)

Canons of taxation, Meaning of Canons of Taxation -Types of Canons of Taxation-Canon of equality or equity, Canon of certainty, Canon of economy, Canon of productivity, Canon of Diversity, Canon of convenience, Canon of elasticity, Canon of simplicity, Canon of diversity, Characteristics of Canons of Taxation.

Essential/recommended readings

1Musgrave, R. A. and Musgrave, P.B., Public Finance in Theory and Practice (1989), 5th edition. McGraw Hill Education.

2. Bagchi, Amaresh. Reading in Public Finance, Oxford University Press.
3. Bhatia H.L.. Public Finance. Vikas Publishing House;
4. Shankar Acharya, Thirty years of Tax Reforms in India, EPW, May 2005
5. Rao, M. Govinda, "Central transfers to states in India: rewarding performance while ensuring equity." Final report submitted to NITI Aayog (2017) (pages 1 to 18).
6. Government of India, Fifteenth Finance Commission Report 2021-26, Chapter 6

Suggestive readings

1. Report of Finance commission of India, Various years.
2. Economic Survey, GoI, Various year
3. State Finances: - A Study of Budget, RBI, Latest report

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE 4 (DSE-4): ADVERTISING MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Advertising Management (DSE 4)	4	3	1	0	Class 12	None

Learning Objectives

To provide students with an understanding of:

- Fundamentals of advertising.
- Planning advertisements to target audience needs using product benefits and product characteristics.
- Crafting an effective creative brief to direct the approach to an advertising campaign.
- Various types of advertising media.

Learning outcomes

By studying this course, the students will be able to:

· Understand the role played by advertising agencies.

· Recognise and identify the facet model objectives in any advertisement.

· Conduct situation analysis and consumer insight mining.

· Learn creative execution strategies including application of appeals, layouts and creative copywriting.

· Understand and conduct appropriate media mix selection.

SYLLABUS OF DSE-4

Unit 1: Foundations of Advertising **(12 hours)**

Concept of advertising, Types of advertising, Concept of IMC, Role and functions of Advertising, the key players, functions of advertising agencies, Organisation of agency, Advertising appropriateness- factors influencing advertising budgets, methods of setting advertising budgets.

Unit 2: Planning and Strategy **(12hours)**

Planning Framework-marketing and advertising plan, Facet model of objectives (Perception, Cognition, Affect, Association, Action), DAGMAR, Marketing strategy and situation analysis, consumer insight mining, big idea, positioning for advertising campaigns.

Unit 3: Effective Advertising Execution **(12hours)**

The creative and message strategy, creative brief, themes and appeals, execution styles, message format, message tone, copywriting creativity, body copy, visual layouts, evaluation of effectiveness, pre-testing, post-testing.

Unit 4: Effective Advertising Media (9hours)

Types of media, newer media options, media objectives, developing a media plan, media Plan budget, media mix selection.

Essential/recommended readings

1. Belch,G.E., Michael, A., Keyoor, Purani. Advertising and Promotion-An Integrated Maketing Communications. 12th edition. Tata McGraw Hill Education. 2021.
2. William Wells, Sandra Moriarty, and John Burnett. Advertising: Principles and Practice. Prenctice Hall of India. 2007.
3. Jethwaney, Jaishri., Jain, Shruti. Advertising Management. Oxford University press.
4. Shah, Kruti. Advertising and Integrated Marketing Communications. McGraw Hill Education India. 2014.
5. Aaker, David A., Batra, Rajeev., Myers, John G. Advertising Management. Pearson Education. 2006.
6. Shimp, T.A. .Advertising and Promotion: An IMC Approach. Cengage. 2013.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE 4 (DSE-4): INTERNATIONAL FINANCIAL MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
International Financial Management (DSE 6)	4	3	1	0	Class XII	None

Learning Objectives

This course aims at inculcating an understanding of:

- Key features of international finance and foreign exchange markets.
- Theories of International finance that link exchange rates with interest rates and inflation rates in different countries.
- Evolution of exchange rate system in the international financial markets.
- Determination of exchange rate, types of foreign exchange risks and risk management strategies.

Learning outcomes

By studying this course, the students will be able to:

- Gain substantive knowledge of International Financial Management.
- Understand the principles of trading in foreign exchange markets, different instruments traded, risks involved and how to carry out hedging of currency risks.
- Learn how to compute forward rates using cross rates, computation of synthetic quotes and apply rules to determine existence of arbitrage amongst currencies traded.
- Understand how the international markets have evolved and the alternate exchange rate systems world has seen over the years

SYLLABUS OF DSE-6

Unit 1: Introduction To Currency Markets (12 hours)

Spot &Forex market: Introduction and Features, Participants, & their method of communication in forex markets, SWIFT and CHIPS. Currency Quotes and types, Calculation of forward rates using spot rates, Discount/Premium on spot rate, Swap Points and Outright Forward Rates, Forward Rate vs. Expected Future spot rates, Spot rate with and without transaction costs, Payoff Profiles on Forward Exchange, Currency futures and

Pay of Profiles, Mark to Market, Cross Rates & Synthetic quotes. Arbitrage: one point, two point and three point (triangular) arbitrage.

Unit 2: Parity Conditions in Currency Markets (12 hours)
Purchasing Power Parity (both absolute and relative versions), Interest Rate Parity (explanation of borrowing and lending criteria, diagrammatic presentation) , covered interest rate parity, International Fischer Effect. The linkages between parity conditions.

Unit 3: Alternate Exchange Rate Systems and Payment Terms (9 hours)

Gold Standard and Gold Exchange Standard System with price adjustment mechanism , EMS and its price adjustment, Hybrid systems , Fixed vs Flexible System, Overview on Brettonwoods System, IMF, SDR, Triffon Paradox & Smithsonian Agreement. Payment Terms and Methods of Financing International Trade (Letter of Credit, Forfaiting, Factoring, Credit Lines)

Unit 4: Exchange Rate Determination and Exposures (12 hours)

Currency Demand and Supply Curves, Stability of exchange rates and 'J' Curve Effect, Factors Affecting Exchange Rate, Foreign Exchange Exposure: Nature, Definition, Exposure Line and Interpretating Exposure, Statistical Measurement of Exposure, Types of Exposure (Meaning): Transaction, Economic and Translation Exposure, Hedging Strategies to Manage Transaction Exposures. Currency Swaps.

Essential/recommended readings

1. Apte, P G., Multinational Financial Management.Tata-McGraw Hill. New Delhi.
2. Levi, Maurice. International Finance. McGraw Hill Inc. New York.
3. Madura, Jeff. International Financial Management.South Western Cengage Learning.
4. Seth, A.K., International Financial Management. Galgotia Publishing Company. New Delhi.
5. Shapiro, Allen C., Multinational Financial Management. Prentice Hall India Pvt Ltd. New Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVE COURSES OFFERED BY THE DEPARTMENTS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

GENERIC ELECTIVES (GE-2): INTRODUCTION TO DIGITAL MARKETING

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Introduction to Digital Marketing (GE - 2)	4	3	1	0	Class 12	None

Learning Objectives

This course aims to acquaint the students with:

- Key marketing principles and terminology.
- Evolving digital landscape and the strategic role of digital marketing processes and tools in designing the overall Marketing strategy.
- Methodologies, tools and technologies involved in digital marketing.
- Importance of search engines and their role in digital marketing ecosystem.

Learning outcomes

By studying this course, students will be able to:

- Understand the concept of digital marketing and its integration with traditional marketing.
- Understand customer value journey in digital context and behaviour of online consumers.
- Learn email, content and social media marketing and apply the learnings to create digital media campaigns.
- Examine various tactics for enhancing a website's position and ranking with search engines and search advertising.

SYLLABUS OF GE-2

Unit 1: Fundamentals of Marketing **(6hours)**

Importance of marketing; Core marketing Concepts; Company Orientations; Concept of Segmentation, Targeting-Positioning; 7 P's Framework; Product Life cycle; Pricing strategies, Types of distribution channels; Promotion Mix.

Unit 2: Marketing in the Digital World **(9 hours)**

Digital marketing: Concept, Features, Difference between traditional and digital marketing, Moving from traditional to digital Marketing; Digital Marketing Channels: Intent Based- SEO, Search Advertising; Brand Based- Display Advertising; Community Based-SMM; Others- Affiliate, Email, Content, Mobile; Customer Value Journey: 5As Framework; The Ozone O_3 Concept Key; Traits of online consumer.

Unit 3: Content, Email and Social Media Marketing (15 hours)

Content Marketing: Developing a content marketing strategy; Email Marketing: Types of Emails in email marketing, Email Marketing best practices; Social Media Marketing: Building Successful Social Media strategy; Social Media Marketing Channels; Facebook, LinkedIn, YouTube (Concepts and strategies)

Unit 4: Search Marketing (15 hours)

Introduction of SEM: Working of Search Engine; SERP Positioning; Search Engine Optimization: Overview of SEO Process; Goal Setting-Types

On-Page Optimization: Keyword Research, SEO Process -Site Structure, Content, Technical Mechanics, Headings, Image & Alt text, Social Sharing, Sitemaps, Technical Aspects-Compatibility, Structured Data Markup.

Off Page Optimization: Link Formats, Link Building, Content Marketing, Social Sharing; Black and White Hat Techniques

Search Advertising: Overview of PPC Process; Benefits of Paid Search; Basis of Ranking; Goal Setting-Objectives; Account Setting-Creation of Google Ads, Campaign architecture, Campaign setup, Targeting, Bid Strategy, Delivery, Ad Scheduling, Ad Rotation, Keyword Selection; Ad Copy composition, Ad Extension

Overview of Display Advertising: Working of Display Advertising; Benefits and challenges.

Essential/recommended readings

1. Dodson, I. (2016). The art of digital marketing: the definitive guide to creating strategic, targeted, and measurable online campaigns. John Wiley & Sons.
2. Kartajaya, H., Kotler, P., &Setiawan, I. (2016). Marketing 4.0: moving from traditional to digital. John Wiley & Sons.
3. Ryan, Damien. Understanding Digital Marketing - Marketing Strategies for Engaging the Digital Generation. Kogan Page Limited.

Additional References:

1. Kotler, P. (2009). Marketing management: A South Asian perspective. Pearson Education, India.
2. Maity, Moutusy. Internet Marketing: A practical approach in the Indian Context. Oxford Publishing.
3. Gupta, Seema. Digital Marketing. McGraw Hill
4. Ultimate guide to digital Marketing. Digital Marketer

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-4): STATISTICS FOR BUSINESS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Statistics for Business (GE-4)	4	3	0	1	Class 12	Mathematics at Class 12

Learning Objectives

The objective of this course is to enable students to:

- Describe data using summary statistics.
- Develop detailed understanding of discrete and continuous distributions.
- Develop skills in statistical computing, statistical reasoning and inferential methods.
- Comprehend and analyse real data like real indices.

Learning outcomes

By studying this course, students will be able to:

- Learn tools and concepts of statistical analysis and interpretation.
- Comprehend fundamentals of probability theory.
- conduct statistical computing, statistical reasoning and use inferential methods.
- Comprehend and analyse real data like real indices.

SYLLABUS OF GE-4

Unit 1: Descriptive Statistics and Exploratory Data Analysis (12hours)

Types of Variables (Quantitative, Qualitative, discrete, continuous), Scales of Data Measurement (nominal, ordinal, Interval & Ratio), Variable-; Primary & secondary Data.

Frequency distributions, Relative Frequency, Cumulative Distributions, Percentiles, Quartiles; Graphical representation of data- bar charts, pie, histograms, box plots.

Univariate Measures Mean, median, mode, Geometric Mean, Harmonic Mean, Weighted Mean & their properties. Selection of a measure of central tendency. Range, inter-quartile range, quartile deviation, mean deviation, standard deviation, variance, coefficient of variance, properties of standard deviation, merits & demerits. Skewness and Kurtosis: Meaning, measures- Karl Pearson, Bowley, Kelly's, Kurtosis- meaning, Moments, Kurtosis

Bivariate Analysis: Cross-tabulations and Scatter diagram; Correlation, Association and linear regressions

Unit 2: Probability and Distributions (12 hours)

Axioms of probability; Review of counting rules, experiments, sample space, simple and complex events; Addition and multiplication rules; Concepts of Mutually exclusive events, independent events; Concepts of Joint, marginal and conditional probability; Permutation and Combinations

Concept of Discrete and continuous Random Variables; Expected value and variance; Examples of Theoretical Discrete and Continuous Probability Distributions – Binomial, Poisson and Normal distributions.

Unit 3: Sampling, Estimation and Hypotheses (15 hours)

Sample Statistics versus population parameters; Definition and Statistical properties of a Random Sample; Point and Interval Estimation and Small Sample Properties of Estimators (unbiasedness, efficiency); Central Limit Theorem. (Interval estimation for mean for large samples)

Basic concepts of Hypotheses Testing: Formulation of Null and Alternate Hypotheses; One-tailed and two-tailed Tests about population Mean; Concepts of Type I and Type II errors. (Hypothesis testing for mean and difference between mean for large samples only)

Unit 4: Index Numbers (6hours)

Index Numbers: Use and construction of Laspeyres and Paasche indexes; Fixed and chain base index numbers; Construction of real indexes: Consumer Price Index and BSE index.

Practical component (30 hours) - Practicals to be based on a spreadsheet package (Microsoft Excel or equivalent) to enable students to execute all the measures and tests taken up in the theory classes in the course.

Essential/recommended readings

1. Spiegel, M.R.(2003). Theory & Problems of Statistics, Schaum's outline series, McGraw Hill.
2. Levin, Richard I. and Rubin, David (1998). Statistics for Management (7th Edition), Pearson.
3. Gupta, S.C. (2018). Fundamentals of Statistics, Himalaya Publishing House
4. Spiegel, M. and Stephens, Larry (2017). Statistics (Schaum's Outline Series), Tata-Mcgraw-Hill, New Delhi

Suggestive readings

1. Nagar, A. L. and Das. R. K.. Basic Statistics (2nd Edition), Oxford University Press
2. Karmel, P. H. and Polasek, M. (1978). Applied Statistics for Economists (4th edition), Pitman.
3. Larsen, Richard J. and Marx, Morris L. (2011). An Introduction to Mathematical Statistics and its Applications. Prentice Hall.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-6): INTRODUCTION TO FINANCE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Introduction to Finance (GE-6)	4	3	1	0	Class 12	None

Learning Objectives

This course aims at providing a comprehensive introduction to:

- Financial system and its primary constituents.
- Sources of finance and time value of money.
- Basics of Investment and various asset classes.
- Key concepts of international financial management.

Learning outcomes

By studying this course, students will be able to:

- Understand the meaning, scope and sources of Finance
- Estimate the present and future values of assets
- Examine the relationship between risk and return, and the nature and sources of risk in a stock market context
- Analyse the currency exchange market to deal exchange rate risk.

SYLLABUS OF GE-6

UNIT – I: A Primer on Financial Markets & Institutions (9hours)

An overview of financial system: characteristics & requirements. Components & functions of financial system. Financial markets: characteristics & types. Types & role of Financial Institutions. An overview of the 2007–2008 Financial Crisis.

Unit 2: Corporate Finance: An Overview (12hours)

Nature, scope and objectives of Finance, Emerging role of Finance Managers in India and Agency problem.Concept & Meaning of Financial Management, goals of financial management, the three financial decisions- Investing, Financing & Dividend.

Sources of Finance: Equity & Preference Capital, Retained earnings, Debt, Bonds, Long term loans, Short term advances from banks, public deposits & advances from customers and trade creditors.

Concept of Time Value of Money, Compound Value, Present Value, Annuity and Perpetuity.

Unit 3: Investment Management: Basics & Process (15 hours)

An overview of investment- Investment process, Types of assets- real & financial.Types of investors, types of financial securities & attributes of a good investment.

Concept of Risk & Return (Single asset), risk-return trade off, types of risk- systematic & unsystematic, types of return-holding period return, expected return, actual return.
Examining four broad asset classes: equity, bonds, mutual funds & derivatives.
Equity- three schools of thought on equity valuation- a brief discussion on fundamental analysis, technical analysis and efficient market hypothesis.
Bonds- types, fundamentals, relationship between interest rates & bond prices& yield curve.
Mutual Funds– meaning, importance, structure, mutual fund schemes, Systematic Investment Plan (SIP), Systematic Withdrawal Plan (SWP), Exchange Traded Fund (ETF), Equity Linked Savings Scheme (ELSS) and NAV of Fund.
Derivatives – Meaning and Types of Derivative Instruments (Forwards, Futures, Options and Swaps).
Concept of diversification & portfolios. Portfolio Risk &Return(two security only).

Unit 4: A Beginners' Guide to International Finance (9hours)
International Monetary System- development of international finance and how the international monetary system evolved. Currency exchange markets and rates- currency exchange markets, exchange rate quotations, currency exchange rate appreciation and, depreciation, factors that affect currency exchange rates and arbitrage. Conducting business internationally. Concept of exchange rate risk.

Essential/recommended readings

1. Bodie, Zvi., Kane, Alex and Marcus, Alan J.. Investments. McGraw Hill.
2. Chandra, P.. Security Analysis and Portfolio Management. Tata McGraw Hill.
3. Pathak, Bharati. Indian Financial System. Pearson.
4. Ronald, W. Melicher and Norton, Edgar A.. Introduction to Finance: Financial Markets, Investment, and Financial Management. Wiley Publishing House. 2012.
5. Rustagi, R.P., Fundamentals of Financial Management. Taxmann.

Suggestive readings

1. Khan, M. Y & Jain P. K., Financial Management: Text and Problems. Tata McGraw Hill. New Delhi.
2. Kohn, Meir. Financial Institutions and Markets. Oxford University Press.
3. Kidwell, David S., Backwell, David W., Whidbee, David A. and Sias, Richard W. Financial Institutions, Markets and Money. Wiley Publications.
4. Madura, Jeff. Financial Markets and Institutions. South Western Cengage Learning.
5. Reilly, Frank K, and Brown, Keith C. Investment Analysis and Portfolio Management. Cengage Learning.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-8): ENVIRONMENTAL ECONOMICS AND

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Environmental Economics and Climate Change (GE-8)	4	3	1	0	Class 12	None

Learning Objectives

This course aims at inculcating an understanding of:

- How economic activities are affecting the environment.
- Social value of environmental resources.
- Climate change and its consequences.
- Efficient and effective policy measures for protecting the environment.

Learning outcomes

By studying this course, students will be able to:

. · Understand the linkage between environment and economics.

· Learn the basic theories of environmental economics.

· Understand the basic terminologies related to environment and Climate change.

· Analyse the effects of climate change on India and its future plan for environmental protection and mitigation.

SYLLABUS OF GE-8

UNIT – I: Introduction **(8 hours)**

Introduction to Environmental Economics, Material Balance model- economy environmental interactions, reasons for environmental degradation (population, technology, GDP), balance between environment and growth.

Unit 2: Economic Growth and Environmental Degradation **(10 hours)**

Theories of relationship between economic growth and environmental degradation: The environmental Kuznets curve hypothesis, The Brundtland Curve hypothesis, The environment Daly Curve hypothesis.

Unit 3: Climate Change and its Challenges **(15 hours)**

Introduction to the Climate Change, Drivers of Climate Change, Global impacts of Climate Change: Anthropogenic, Global warming, ozone hole, biodiversity loss, ecosystem services, natural capital and resources. Effect of Climate Change on India: Agriculture, Biodiversity, vulnerability of Coastal Belt, Rural Livelihoods and Food Security in India.

Unit 4: Actions Taken and Policy Framework (12 hours)

Global Level: Adaptation and Mitigation, Governmental and Intergovernmental Actions to Combat Climate Change: The Role of the Intergovernmental Panel on Climate Change (IPCC), United Nations Framework Convention on Climate Change, The Kyoto Protocol, Paris Agreement etc. The global carbon market (CDM, JI, ET).India's Position on International Climate Negotiations, India's National Action Plan on Climate Change.

Essential/recommended readings

1. Callen,Thomas (2007). Environmental Economics, Thomson Learning Inc. Indian Edition.
2. Dubash, Navroz (2012). Handbook of Climate Change and India: Development, Politics and Governance, Earthscan
3. Bhattacharya, R. N. (ed.) (2001). Environmental Economics, An Indian Perspective, Oxford University Press.

Suggestive readings

1. Romm, J.J. 2018. Climate change: What Everyone Needs to Know. Oxford University Press
2. Dash. S.K. 2008. Climate Change, Cambridge University Press

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER -V

B.A. (Hons) BUSINESS ECONOMICS

DISCIPLINE SPECIFIC CORE COURSE – 13 (DSC-13): BASIC ECONOMETRICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Basic Econometrics (DSC 13)	4	3	0	1	Class 12	Maths at Class XII level

Learning Objectives

The course aims to:

- To introduce classical and functional forms of linear Regression Model.
- To make statements or hypothesis that are mostly qualitative in nature in multi regression model
- To understand interaction between quantitative and qualitative variables and Use of dummy variables.
- To apply multicollinearity, heteroscedasticity, autocorrelation and specification errors, its detection and corrective measures.

Learning outcomes

By studying this course, the students will be able to:

. To explain key econometric concepts.

· Formulate simple econometric models

· Interpret the regression results obtained from software packages.

· Identify the errors in regression models and rectify the same.

· Analyse the suitability of the data for solving the problem at hand

SYLLABUS OF DSC-13

UNIT–I: The Classical Linear Regression Model [18hours]

Types of Data: Time Series, Cross Section and Panel Data. Concept of Population Regression Function and Sample Regression Function, Assumptions of the model, Derivation of Coefficients of Regression in a two-variable model, Estimation of the SRF using OLS, Analysis of variance and R squared.

Expectation and standard errors of the regression coefficients and the error term. Gauss Markov Theorem. Interval estimation and tests on population regression coefficients, variance of population disturbance term and forecasts. Testing the significance of the model as a whole. Testing the normality assumption.
Extensions of the Two Variable Linear Regression Model: Regressions through the origin, Scaling of Variables and Regression on Standardized Variables. Functional forms of Linear Regression Models: The double log, semi-log, reciprocal, log- reciprocal models with applications.

Unit 2: Multiple Regression Model [12hours]

Coefficients of regression in a multi variable model and their properties. Interval estimation, tests on population regression coefficients and model significance. Correlations, Goodness of fit and the Adjusted R square. Hypothesis testing for significance of the contribution of a variable, structural stability, restricted least squares.

Unit 3: Dummy Variable Regression Models [6hours]

Intercept, Slope Dummy variables. Interaction between qualitative variables. Interaction between quantitative and qualitative variables. Use of dummy variables in testing for structural change and for seasonal indices.

Unit 4: Relaxing the Assumptions [9hours]

Introduction to multicollinearity, heteroscedasticity, autocorrelation and specification errors. The nature of the problem, its detection and corrective measures.

Practical Component (30 hours) : Practicals to be based on an econometric software (e.g., Gretl/SPSS/PSPP). The student is expected to implement using the software, all the regressions and tests noted in the syllabus. An econometric project to be taken up ans assessed as part of the practical internal assessment.

Essential/recommended readings

1. Gujarati, D. and Sangeetha, N. (2007) Basic Econometrics. Fourth Edition, Tata McGraw-Hill, New Delhi
2. Dougherty, Christopher. (2011). "Introduction to Econometrics," Oxford University Press,
3. Wooldridge, J. M. (2006). Introductory Econometrics: A modern approach. Mason, OH: Thomson/South-Western.

Suggested readings

1. Asteriou, D., & Hall, S. G. (2011). Applied econometrics. Palgrave Macmillan.
2. Brooks. Chris.(2008) Introductory Econometrics for Finance, Second Edition Cambridge University Press

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 14 (DSC-14): ORGANISATIONAL BEHAVIOUR

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Organisational Behaviour (DSC 14)	4	3	1	0	Class 12	None

Learning Objectives

This course aims at:

- To explain core concepts of organizational behaviour
- To apply motivation theories and analysis of interpersonal relationships
- To apply leadership theories to understand leadership traits and issues
- To manage conflict and enhance well being at workplace

Learning outcomes

By studying this course, the students will able to:

· Understand the importance of organizational behaviour as a field of study.

· Understand the role of perception, personality and learning in explaining Individual behaviour and to Apply different motivational theories and leadership styles to increase the productivity and job satisfaction of employees.

· Understand the foundations of group behaviour and the framework for organizational change and development.

· Identify methods to enhance individual and Organizational wellbeing and resolve organizational problems.

SYLLABUS OF DSC-14

UNIT – I: Core Concepts in Organisational Behaviour (12hours)

Conceptual Foundations and Importance of organizational behaviour. Perception and Attribution: Concept, Factors affecting Perception, Attribution theory, Perceptual Organization and Errors in Perception. Personality: Concept, Factors affecting personality and Theories. Learning: Concept and Theories of Learning, Concept of Reinforcement, Schedules of Reinforcement.

Unit 2: Motivation, Interpersonal Relations and Change Management(12hours)

Motivation: Concepts and their application, Content theories (Maslow, McClelland and Herzberg's Theories); Process theories (Expectancy theory, Equity theory). Analysis of

Interpersonal Relationship: Transactional Analysis, Johari Window. Organisational Change: Concept, Resistance to change, managing resistance to change, Kurt Lewin Theory of Change.

Unit 3: Leadership and Group Processes (9 hours)

Leadership: Trait Approach, Behavioural theories (Ohio and Michigan State Studies, and Blake & Mouton's Managerial grid), and Contingency theories (Fiedler's Contingency Model, Hersey & Blanchard's Situational Leadership Model) Contemporary Leadership issues: Charismatic, Transactional and Transformational Leadership. Groups and Teams: Definition, Stages of Group Development, Group Processes-Group Cohesiveness, Group Think, Group Shift.

Unit 4: Managing Conflict and Enhancing Wellbeing (12 hours)

Organisational Power and Politics: Concept, Sources of Power, Tactics to gain power in Organizations. Nature of organisational politics. Conflict: Concept, Sources, Types, Stages of conflict, Management of conflict. Well-being at Work: Importance and Impact of employee emotions and emotional intelligence in organisations. Work stress and its management.

Essential/recommended readings

1. Stephen P. Robbins, T. A. Organisational Behavior. Pearson.
2. Aswathappa, K., & Reddy, G. S. Organisational behaviour (Vol. 20). Mumbai: Himalaya Publishing House.
3. Luthans, Fred, Organisational Behaviour, Tata Mc Graw Hill.
4. Singh, Kavita, Organisational Behaviour, Pearson.
5. Greenberg Jerald and Baron Robert, A. Behavior in Organisations: Understanding and Managing Human side of work. Prentice Hall of India

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 15 (DSC-15): INDUSTRIAL ECONOMICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Industrial Economics (DSC 15)	4	3	1	0	Class 12	None

Learning Objectives

The course aims to:

- To understand basics of industrial economics and its scope
- To understand concept and theories of market structure.
- To analyse issues related to market conduct like Entry and Exit Barriers, Pricing Behavior, Research and Innovation, Mergers and Acquisitions and Legal Tactics.
- To explore the role of public policy in Indian industries

Learning outcomes

By studying this course, students will be able to:

· Enable the student to understand how the Industries Function in the real world

· Understand what is market concentration and how does it affect market power

· Know how different strategies are used, under the structure-conduct-performance paradigm, by the firms to maximize their market power.

· Know the importance of regulatory public policy in oligopolistic market, in order to ensure maximum consumer welfare.

SYLLABUS OF DSC-9

UNIT – I: Structure- Conduct- Performance Paradigm (12 weeks)

Basic understanding of Industrial Economics, Scope of Industrial Economics, Structure-Conduct- Performance Model, Different School of Thoughts, Theory of Firm and basic conditions of Demand and Cost.

Unit 2: Market Structure and Concentration (12hours)

What is Market Concentration, Theories of Measurement of Concentration, Deterministic and Stochastic Approach, Lerner and Herfindahl Index, Product Differentiation, Horizontal, Vertical and Conglomerate Mergers, Vertical Integration.

Unit 3: Market Conduct (12hours)

Entry and Exit Barriers, Pricing Behavior, Advertising, Product Strategy, Research and Innovation, Mergers and Acquisitions, Legal Tactics.

Unit 4: Public Policy and Indian Industries (9hours)

Role and Importance of Industry Regulation, Regulation of Natural Monopoly, Antitrust Legislations and Indian Industries, Social Concerns and Advertising.

Essential/recommended readings

1. Cabral Luis M.B. (2017). Introduction to Industrial Organization. 2ndEdn. Cambridge, MA: MIT Press
2. Carlton, D.W. and J. M. Perloff. (2005). Modern Industrial Organization. Pearson
3. Shy, Oz. (1996). Industrial Organization: Theory and Applications. The MIT Press.
4. Waldman D.E. and E. J. Jensen. (2019). Industrial Organization: Theory and Practice.

Suggestive readings

1. Tremblay, Victor J., and Carol Horton Tremblay. (2012), "New Perspectives on Industrial Organization", New York: Springer.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE 1 (DSE-1): INCOME TAX LAW AND PRACTICE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Income Tax Law and Practice (DSE1)	4	3	1	0	Class 12	None

Learning Objectives

The course aims at

- Introducing basic definitions in Income Tax Act
- Computing taxable income under the heads Salaries and House Property
- Calculate Profits and Gains of Business or Profession, Capital Gains and Income from other sources
- Understand deductions from gross taxable income and filling of returns.

Learning outcomes

By studying this course, the students will be able to:

- Understand the Process of determination of taxable income
- Apply the deductions to taxable income as per the latest provisions of Income-tax Act, 1961
- Acquire the skill of Filling Basic Returns of Income Tax

SYLLABUS OF DSE-1

Unit 1: Introductory Concepts (3 hours)

Permanent Account Number (PAN), Assessment Year, Previous Year, Person, Assessee, Gross Total Income, Total income and its computation, Tax Rates, Residential status; Relationship between Residential Status and Incidence of Tax. Incomes Exempted under section 10.

Unit 2: Computation for "Salaries" and "Income from House Property" (15 hours)

Income under the head "Salaries": Meaning of Salary, basis of charge, Allowances, Perquisites, permissible deductions from salary income, Deduction under Section 80 C.

Income under the head "Income from House Property": Basis of charge, income from let out house property, income from self-occupied property.

Unit 3: Computation for 'Profits and Gains of Business or Profession', 'Capital Gains' and 'Income from other sources' (15 hours)

Profits and gains of business or profession: Basis of charge, important rules regarding assessment of PGBP, computation of Profits from Business or Profession, deductions expressly allowed, expenses expressly disallowed.

Capital gains: basis of charge, meaning of capital asset, cost of acquisition, improvement and indexation, exemptions for capital gains arising from transfer of Capital Assets, calculation of tax on short-term and long-term capital gains.

Income from other sources: basis of charge, dividend, winnings from lotteries, crossword puzzles, etc., interest on securities, advance money received for transfer of a capital asset, permissible deductions.

Unit 4: Computation of Total Income and Tax Liability (12 hours)

Computation of total income; Deductions from gross total income under section 80 C to 80 U; Rebates and reliefs; Set-off and carry forward of losses (Concept only), Concept of advance payment of Tax and Deduction of Tax at Source. Computation of Taxable Income and liability of Tax. e-Filing of Returns: ITR-1 (SAHAJ) and ITR-2

Essential/recommended readings

1. Ahuja, G. and Gupta, R. Simplified Approach to Income Tax. Flair Publications (P) Ltd.
2. Singhania, V.K. and Singhania, M. Students Guide to Income Tax. Taxmann Publications (P) Ltd.

Software which will be used for teaching are

1. 'Excel Utility' available at incometaxindiaefiling.gov.in
2. Vinod Kumar Singhania, e-filing of Income Tax Returns and Computation of Tax Taxmann Publication (P) Ltd, New Delhi. (Latest version)

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE 3 (DSE-3): ENTREPRENEURSHIP

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Entrepreneurship (DSE 3)	4	3	1	0	Class 12	None

Learning Objectives

The course aims at:

- To introduce the concept of entrepreneurship and its role in the economy
- To launch an Entrepreneurial Venture and writing a business plan
- To identify and explore legal and financial requirements of a business
- To understand the role and creativity in sustainable Business

Learning outcomes

By studying this course, the students will be able to:

· Develop critical thinking, problem solving skills and entrepreneurial mind-set in students.

· Enhance the understanding of the entrepreneurial process from idea generation, to concept development and creation of the venture.

· Enable the understanding of the business models, legal aspects of enterprise and writing a business plan.

· Apprise students with ways to finance and scale up the business.

SYLLABUS OF DSE-2

Unit 1: Introduction to Entrepreneurship (9 hours)

Concept of Entrepreneurship; Attributes of Entrepreneur; Distinction between entrepreneur and manager; Concept of corporate entrepreneurship/ intrapreneurship; Concept of social entrepreneurship; Role of entrepreneurship for an economy; Understanding business model strategy; Legal forms of enterprise; case study discussion on entrepreneurs, intrapreneurs, business models

Unit 2: Launching Entrepreneurial Venture (12 hours)

Identification of opportunities and Idea generation and screening methods- Brainstorming, mind-mapping, story-telling, SCAMPER, attribute listing, focus group interviews, customer

feedback; Feasibility studies- Marketing, Financial, Technical, Socio-economic Feasibility; Writing Business Plan

Unit 3: Legal and Financial Aspects (12 hours)

Legal requirements of business (Basic concept and relevance of patents, copyrights, and trademark); Financing- Start-up phase financing, growth stage financing, Maturity-phase financing; angel investment and venture capital, other forms of external financing; case study discussion on financing a venture

Unit 4: Sustaining and Scaling Up (12 hours)

Keeping the entrepreneurial spirit alive- Challenges and remedies, Role of creativity and innovation, Barriers to entrepreneurship, Concept of sustainability, Ethical Perspectives; Introducing Shared Innovation into the Business Model; Evolution of CSR from Compliance to Sustainable Entrepreneurship; How to Design CSR Strategies that Optimize Impact for Business and Society

Essential/recommended readings

1. Harvard Business Review Entrepreneur's Handbook: Everything You Need to Launch and Grow Your New Business
2. Hisrich, R. D. International entrepreneurship: starting, developing, and managing a global venture. Sage Publications.
3. Sharma, S., Starik, M., & Wuebker, R. Sustainability, innovation and entrepreneurship: introduction to the volume.

Additional References:

1. Blank, S., Andreessen, M., Hoffman, R., & Sahlman, W. A. (2018). HBR's 10 Must Reads on Entrepreneurship and Startups (featuring Bonus Article "Why the Lean Startup Changes Everything" by Steve Blank). Harvard Business Press.
2. Drucker, P. (2014). Innovation and entrepreneurship. Routledge.
3. Hisrich, R.D., Manimala, M.J., Peters, M.P., Shepherd, D.A.: Entrepreneurship, Tata McGraw Hill.
4. Kuratko, D.F., and Rao, T. V., Entrepreneurship: A South-Asian Perspective, Cengage.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE 5 (DSE-5):
Investment and Portfolio Optimization

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Investment and Portfolio Optimization (DSE 5)	4	3	1	0	Class 12	None

Learning Objectives

This course aims at:

- Provides a broad overview of investment and risk associated with it
- Measurement and analysis of return and risk of an equity on the basis of fundamental and technical analysis
- Understand bond fundamentals and interest rate theories
- Construction, analysis and evaluation of a portfolio of securities.

Learning outcomes

By studying this course, the students will be able to:

· Provide a theoretical and practical background of investments valuation

· Do valuation of equity and debt instruments

· Analyse and manage the bond as well as equity portfolios in the real word.

· Understand how to measure the portfolio performances

SYLLABUS OF DSE-5

Unit 1: Basics of Investment (6 hours)

Investment alternatives and objectives, investment, gambling, speculation, introduction to risk – return trade off: types of risks, sources of risks, measures, analysis, determinants of required rates of return and relationship between risk and return. Types of returns: Holding Period Return (HPR) & Compound Annual Growth Rate (CAGR). Attributes of a good investment. Types of assets: Real Assets versus Financial Assets. Investment Process.

Unit 2: Analysis of Equity (12hours)

Measurement of return and risk of equity shares. Approaches to equity analysis, Fundamental Analysis- Economy, Industry, Company Analysis (EIC framework); Equity Valuation Models (DDM, P/E Ratio model and Free Cash Flow Valuation approach). Valuation based on other ratios-P/B ratio, Price to Sales ratio and Price to Cash flow ratio. Technical Analysis – Concept, market indicators and specific stock indicators.

Random Walk Theory & Efficient Market Hypothesis (EMH): Forms, empirical evidence and tests.

Unit 3: Analysis of Bonds (12hours)

Bond fundamentals, types of bonds & risks in bonds. Valuation of bonds. Bond yields-current yield and Yield-to-maturity (YTM). Bond price-yield relationship, analysis of risks in bonds-duration and modified duration. Theories of term structure-Expectations theory, Segmented markets theory and Liquidity Preference theory. Yield curve.

Unit 4: Portfolio Construction, Management and Evaluation (15hours)

Modern Portfolio theory: Diversification & portfolio risk, Harry Markowitz model, measurement of portfolio risk and return, measurement of co-movements in security returns, calculation of portfolio risk, efficient frontier and optimal risky portfolio. Riskless lending & borrowing and capital market line.
Capital Asset Pricing Model: Development of the CAPM, assumptions, beta and security market line. Sharpe's Single Index Model. Portfolio performance evaluation- Sharpe's index, Treynor's Index, Jensen's alpha, and Information ratio.
Note: Some case studies related to above topics are required to be discussed.

Essential/recommended readings

1. Bodie, Zvi., Kane Alex and Alan J. Marcus. Investments. McGraw Hill.
2. Chandra, P. Security Analysis and Portfolio Management. Tata McGraw Hill.
3. Francis. J.C. & Taylor, R.W. Theory and Problems of Investments. Schaum's Outline Series. TMH. New Delhi,
4. Fischer, Donald E. and Ronald J. Jordan. Security Analysis and Portfolio Management. PHI Learning.
5. Pandian, Punithavathy. Security Analysis and Portfolio Management. 2nd Edition. Vikas Publishing House. New Delhi
6. Reilly, Frank K, and Brown, Keith C. Investment Analysis and Portfolio Management. Cengage Learning.
7. Rustagi, R.P. Investment Management. Sultan Chand & Sons.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE 7 (DSE-7): Monetary Economics

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Monetary Economics (DSE 7)	4	3	1	0	Class 12	None

Learning Objectives

This course provides the student the knowledge of:
1. Forms of money and its measures and associated theories
2. Money and capital markets, Financial products, institutions and crises
3. Interest rates, their determination and associated theories
4. Structure and role of the banking system and its reforms
5. Monetary theory, monetary policy, its goals and current practice in India

Learning outcomes

By studying this course, the students will be able to:

- Develop a critical understanding of functioning of financial institutions, markets and instruments and how growth of the real economy is interspersed with financial innovation and crisis.
- Learn an important learning outcome relates to aspects with regard to banks and capital markets as they constitute significant components of a financial system.
- Develop an understanding of theory of monetary policy and how it is conducted in India by Reserve Bank of India.
- Develop some basic understanding of few current issues including demonetization, cryptocurrency and problems faced by the banking sector in their appropriate contexts.

SYLLABUS OF DSE-7

Unit 1: **(8 hours)**

Concept, functions and measurement, and Theories of Money Supply Determination, Demonetization and Cryptocurrency.

Unit 2: **(15 hours)**

Financial Institutions, Markets. Instruments and Financial innovation.
Role of Financial Markets and Institutions; problems of asymmetric information, adverse selection and moral hazard, financial crisis. Money and Capital Markets, Organization, Structure and Reforms in India: Role of Financial Derivatives and other Innovations.

Unit 3: **(8 hours)**
Interest rates Determination, Sources of interest rate differentials, Theories of Term Structure of Interest rates, Interest rates in India.

Unit 4: **(8 hours)**
Banking System, Balance Sheet and Portfolio Management, Indian Banking System, Changing role and Structure, Banking Sector Reforms.

Unit 5: **(6 hours)**
Central Banking and Monetary Policy, Functions, Balance Sheet, Goals, Targets (operating, intermediate and final), Indicators and instruments of monetary control, Tinbergen's theorem, Inflation targeting, monetary management, current monetary policy in India**.**

Essential/recommended readings

1. Fabozzi F Jet al(2009): Foundations of Financial Markets and Institutions, Pearson
2. MishkinF S , Eakins S G,Jayakumar T , Pattnaik R K (2017): Financial Markets and Institutions, Pearson.
3. Dua, P(2020), "Monetary Policy Framework in India", Indian Economic Review, Vol. 55, Issue 1, June 2020
4. Jadhav,Narender: Monetary Policy,Financial stability and Central Banking in India Macmillan,New Delhi,India
5. Kaul,Vivek(2020) Bad money: inside the NPA Mess and how does it threaten the Indian Banking System, Harper Collin Publisher India
6. Ghate, C., & Kletzer, K. M. (Eds.). (2016). Monetary policy in India: A modern macroeconomic perspective. Springer
7. Chibber, Ajay, Salman, Soz, Anees(2021) India's Financial Sector: A Whodunnit
8. EDs in Unshackling India. Haper Collins Publishers India.
9. Report of the Working Group: Money Supply Analytics and Methodology of Compilation, 1998 Annual Report; Master Circular - Prudential Norms on Capital Adequacy - Basel I Framework – 2011; RBI Bulletin; Report of Currency and Finance (latest).
10. Various publications of RBI and other agencies / institutions
11. Raghuram_Rajan_Committee_on_Financial_Sector_Reforms

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE 9 (DSE-9): International Economics

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
International Economics (DSE 9)	4	3	1	0	Class 12	None

Learning Objectives

The course aims at:

- To explain ancient view of International trade and production and consumption gains from trade
- To analyse the working of H-O theory and new trade theory
- To understand the international trade policies and its impact on trade
- To Understand the functioning of WTO and its implications for India.

Learning outcomes

By studying this course, the students will be able to:

- Understand basic theories of International Trade and the terms used therein.
- Understand trade policies and instruments used to control international trade.
- Understand what is WTO and how does it affect international trade?
- Understand various concepts related to Regionalism and Integration and their importance.

SYLLABUS OF DSE-9

Unit 1: International Trade Theories (12 hours)

International trade as an Engine of Growth, Ancient view of International Trade, Theory of Mercantilism, Absolute Advantage theory, Comparative Advantage Theory, Opportunity cost theory of trade, Autarky Equilibrium, Production and Consumption Gains from Trade.

Unit 2: Modern Theories of Trade (12 hours)

Introduction, H-O theory- Assumptions, General Equilibrium framework, the working of H-O theory, Factor price equilibrium theorem, Income Distribution effects of H-O theory, Empirical implications of H-O theory, Leontief Paradox, Factor Intensity Reversal, New trade theories (Difference in technology, Economies of Scale and Monopolistic Competition and Trade)

Unit 3: International Trade Policies and Practices (12 hours)

Trade Policy Instruments, Tariffs Barriers, Import Tariff- It's effect and measurement, Non-Tariff Barriers- Import Quotas, Voluntary Export Restraints, Anti-Dumping, Economic Integrations, Regional groups – EU, NAFTA and SAARC/ ASEAN, Theory of Customs Union - Impact of customs union on trade- trade creation and diversion. Import Substitution and Export Promotion.

Unit 4: WTO and Trade (9 hours)

What is WTO, Objectives, Principles, Areas of Function of WTO, Role of WTO in trade, Foreign Trade Policy of India, The Sanitary and Phyto SanitaryAgreement (SPS) of WTO and Its Implications for India, India & World Trade Organization (WTO): WTO Agreement on Agriculture.

Essential/recommended readings

1. Salvatore, D. (Edition 2008) , International Economics, Pearson Education : New Delhi
2. Krugman Paul R. & Obstfeld M. (2013) : International Economics:- Theory and Policy (IXth Edition), Pearson Education , New Delhi.
3. Cherunilam Francis (1998) :International Economics (Vth Edition), McGraw Hill Education (India) Pvt Ltd.
4. WTO and its implications on Indian Agriculture, National Institute of Agricultural Extension Management (MANAGE), Hyderabad.

Additional References:

1. Appleyard Dennis R.; Cobb Steven; Field Alfred J. (2010). International Economics (Vth Edition), McGraw Hill Education (India) Pvt Ltd.
2. Thompson, Henry(2010): International Economics – Global markets and competition 2nd Edition Singapore; Hachensack, N.J: World Scientific.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE 11 (DSE-11): Understanding Consumers

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Understanding Consumers (DSE 11)	4	3	1	0	Class 12	None

Learning Objectives

The course aims at:

- To understand psyche of a consumer and his personality traits
- To apply theories to learn and predict consumer behaviour
- To learn culture role and dynamics of Family and Consumer socialization
- To analyse consumer decision making process and diffusion of innovation

Learning outcomes

By studying this course, the students will be able to:

- Understand personality theories and their applications to consumer psychology.
- Analyse consumer perception in advertising through psychology based theories of perception.
- Understand behavioural learning theories and consumer attitude formation in the context of advertisements.
- Understand the role of opinion leaders, family and culture in consumer decisions.
- Identify the use of consumer behaviour concepts in prevalent advertisements.

SYLLABUS OF DSE-11

Unit 1: Personality, Perception and Positioning (12 hours)

Freudian Theory, Neo-Freudian theory of personality; Personality traits; Anthropomorphism; Self-Perception; Sensory information, Absolute and differential thresholds; Perceptual Selection, Perceptual Organisation, Interpretation of cues and imagery, Risk perception; Positioning and Repositioning (including use of perceptual mapping).

Unit 2. Consumer Learning and Attitude (12hours)

Elements, Behavioural learning theories (Classical, Instrumental, Observational); Information processing; Cognitive learning theory, Consumer involvement and hemispheric lateralisation; Recognition and recall measures. Consumer attitude formation; Tri-

component attitude model; Attitudes motivational functions; Elaboration Likelihood Model; Cognitive dissonance and conflict resolution; Causality and attribution theory.

Unit 3. Persuasion, Social Setting and Culture (9hours)

Broadcasted versus Addressable messages, message structure, persuasive appeals; Credibility and persuasive power of reference groups, Opinion leaders (influencers), Word-of-mouth strategic applications
Family and consumer Socialization; family decision making and members' roles; Culture's role and dynamics; Learning Cultural Values; Measuring values; Core values.

Unit 4. Consumer Decision-Making and Diffusion of Innovations (12 hours)

Consumer decision making: need recognition, decision spectrum, pre-purchase search, evaluation, decision rules, rules and marketing strategy, incomplete information, post-purchase evaluation- brand loyalty, disconfirmation of expectations; Consumer gifting behaviour; Diffusion, Types of innovation, Features affecting adoption, Adoption process.

Essential/recommended readings

1. Schiffman, Leon G., Kanuk, Leslie Lazar.,Kumar, S. Ramesh. Consumer Behaviour. 12th ed. Pearson Publications.

Additional References:

1. Hawkins, Roger J., Best, Kenneth A., Coney. Consumer Behaviour: Building Marketing Startegy. Tata McgrawHill.
2. Solomon, Michael. Consumer Behaviour: Buying, Having and Being. 12th ed. Pearson Publications.
3. Nair, Suja. Consumer Behaviour in Indian Perspective. Himalaya Publications.
4. Kumar, S Ramesh. Conceptual Issues in Consumer Behaviour. Pearson Publication.
5. Sheth, Jagdish N., Mittal, Banwari. Customer Behaviour: A Managerial Perspective. Thomson Publication.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES OFFERED BY THE DEPARTMENTS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

GENERIC ELECTIVES (GE-1): PRINCIPLES OF ECONOMICS

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Principles of Economics (GE 1)	4	3	1	0	Class 12	None

Learning Objectives

This course aims

- To offer basic understanding of the basic principles of micro economics like problem of scarcity and choice, demand and supply, elasticity.
- To introduce students with basic consumer theory,
- To introduce students with production and cost concept
- to expose the student to the basic principles and concepts in Macroeconomic variables -- GDP, consumption, savings, investment, money and credit etc.
- To learn measurement of national income and related aggregates; nominal and real income
- To determine actual and potential GDP
- To understand the functioning of money market

Learning outcomes

By studying this course, students will be able to:

- Understand the principles of economics of the modern economy.
- Understand the consumer theory, production, and costs etc.
- Understand the basic principles of macroeconomics, national income accounting and determination of GDP.
- Understand the functioning of the money market.

SYLLABUS OF GE-1

Unit 1: Introduction **(6 hours)**

Problem of scarcity and choice: scarcity, choice and opportunity cost; production possibility frontier; economic systems.

Demand and supply: law of demand, determinants of demand, shifts of demand versus movements along a demand curve, market demand, law of supply, determinants of supply, shifts of supply versus movements along a supply curve, market supply, market equilibrium.

Applications of demand and supply: price rationing, price floors, consumer surplus, producer surplus.

Elasticity: price elasticity of demand, calculating elasticity, determinants of price elasticity, other elasticities.

Unit 2: Consumer Theory (9 hours)

Budget constraint, concept of utility, diminishing marginal utility, Diamond-water paradox, income and substitution effects; consumer choice: indifference curves, derivation of demand curve from indifference curve and budget constraint.

Unit 3: Production and Costs (9 hours)

Production: behaviour of profit maximising firms, production process, production functions, law of variable proportions, choice of technology, isoquant and isocost lines, cost minimizing equilibrium condition.

Costs: costs in the short run, costs in the long run, revenue and profit maximizations, minimizing losses, short run industry supply curve, economies and diseconomies of scale, long run adjustments.

Unit 4: Introduction to Macroeconomics (6 hours)

What is macroeconomics, Macroeconomic issues in an economy.

Unit 5: National Income Accounting (6 hours)

Concepts of GDP Aggregates and National Income; measurement of national income and related aggregates; nominal and real income; GDP and welfare and the limitations of the GDP concept.

Unit 6: Determination of GDP (6 hours)

Actual and potential GDP; aggregate expenditure; consumption function; investment function; equilibrium GDP; concepts of MPS, APS, MPC, APC; autonomous expenditure; Concept of multiplier.

Unit 7: **Money and Credit (3 hours)**

Money in a Modern Economy: Concept of money in a modern economy; monetary aggregates; demand for money; quantity theory of money; liquidity preference and rate of interest; money supply and credit creation; monetary policy

Essential/recommended readings

1. Case, K.E., Fair, R. C., and Oster, S. E. (2017). Principles of Economics (12th Ed.). Pearson.
2. Dornbusch, R., Fischer, S. and Startz. R. Macroeconomics (11th Edition). McGraw-Hill.
3. Mankiw, N.G. (2021). Principles of Economics, (9th Edition). Cengage Learning.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-3): LEGAL ENVIRONMENT OF BUSINESS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Legal Environment of Business (GE 3)	4	3	1	0	Class 12	None

Learning Objectives

The course intends:

- To familiarize the student with the concept and essentials of Indian Contract act which govern business for its efficient conduct and to apply them in real life situations.
- To explain the meaning, nature and incorporation of a company.
- To make students understand and apply the provisions of Sale of Goods Act and Consumer Protection Act.
- To recognize and articulate legal principles related to Limited Liability Partnership and Information Technology Act.

Learning outcomes

By studying this course, students will be able to:

- Understand the basic rules and provisions of Contract and Agreements.
- Know the provisions to Formation and functioning of company and LLP.
- Understand the significance and role of law of sale of goods act
- Apply the law correctly to different facts and in different contexts

SYLLABUS OF GE-3

Unit 1: Indian Contract Act **(12 hours)**

Meaning and Essentials of a Contract; Valid, Void and Voidable Contract; Offer and Acceptance; Consideration; Capacity of Parties; Free Consent; Discharge of Contract and Remedies for Breach of a Contract.

Unit 2: Companies Act **(12 hours)**

Meaning and Nature of Company; Promotion and Incorporation of a Company; Memorandum of Association; Articles of Association; Misleading Prospectus and remedies available to the parties; Board of Directors and their qualification, duties, powers. Company Meetings and Resolutions.

Unit 3: Sale of Goods Act and Consumer Protection Act (12 hours)

Essentials of a Contract of Sale; Sale and Agreement to Sell, Conditions and Warranties; Transfer of Title by Non-Owners; Doctrine of Caveat Emptor; Rights of Unpaid Seller. Consumer Protection Act 2009: Scope and Applicability of the Act. Rights of consumer. Procedure for complaints. Duties and power of Central Consumer Protection Authority.

Unit 4: Limited Liability Partnership Act and IT Act (9 hours)

Meaning and nature of LLP; LLP and Company; LLP Agreement, Partners and Designated Partners, Incorporation of LLP; Partners and their Relations, Extent and limitation of liability of LLP.

Information Technology Act 2000: Concept and role; Digital signature, Electronic governance, Attribution, Acknowledgement and dispatch of electronic records, Regulation of certifying authorities, Digital signatures certificates, Duties of subscribers, Penalties and adjudication, Appellate Tribunal, Offences.

Essential/recommended readings

1. Bansal, V & Arora, A. Corporate Laws. Vikas Publishing, House (P) Ltd. New Delhi.
2. Kuchhal M.C & Vivek K. Business Legislation for Management. VIKAS Publishing House (P) Ltd.
3. Kumar, A. Corporate Laws. International Book House (P) Ltd.
4. Bare Acts relating to the laws.

Suggestive readings

1. Chadha, R,. Chadha, S. Corporate Laws. Mayur Paperbacks. New Delhi.
2. Maheshwari & Maheshwari. Business Law. National Publishing House. New Delhi.
3. Singh, Avtar. The Principles of Mercantile Law. Eastern Book Company. Lucknow.
4. Tulsian, P.C. Business Law. Tata McGraw Hill. New Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-5): OUANTITATIVE TECHNIOUES IN MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Total Hours of Teaching	Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice			
Quantitative Techniques in Management (GE 5)	4	3	1	0	45	Class 12	None

Learning Objectives

To apprise students:

- To understand the concepts, formulation and interpretation of linear programming methods and its application in diverse problems.
- To formulate and solve Transportation and Assignment problems
- To understand basic concept, construction of the Network diagram and Critical Path Analysis
- To introduce game theory and network analysis forms part of the course.

Learning outcomes

By studying this course, students will be able to:

- Identify and develop operational research models from the verbal description of the real system.
- Understand the mathematical tools that are needed to solve optimization problems.
- Develop critical thinking and use PERT and CPM techniques to improve decision making.

SYLLABUS OF GE-5

UNIT – I: Introduction - Operations Research, Linear Programming (15 hours)

(i) Introduction to Operations Research, characteristics, Phases, Methodology, Applications and scope

(ii) Formulation of Linear Programming problems, Graphical Solutions (Special cases: Multiple optimal solution, infeasibility, unbounded solution); Simplex Method, Special cases, Big-M method and Two-phase method; Duality (emphasis on formulation & economic interpretation); Sensitivity Analysis. (Excel Solver application)

UNIT – II: Transportation and Assignment Problem (12 hours)

(i) Transportation Problem: Formulation, Solution by N.W. Corner Rule, Least Cost method, Vogel's Approximation Method (VAM), Modified Distribution Method; Special cases: Multiple Solutions, Maximization case, unbalanced case, prohibited routes.

(ii) Assignment Problem: Hungarian Method, Special cases: Multiple Solutions, Maximization case, Unbalanced case, Restrictions on assignment.

UNIT – III: Network Analysis (9 hours)

Basic Concept, Construction of the Network diagram, Critical Path Analysis, float and slack analysis (Total float, free float, independent float), probability consideration in PERT (Interface with Project Management open-source software)

UNIT – IV: Decision Theory: (9 hours)

Decision making environment, Construction of Pay off Table, Opportunity Loss Table, Decision under uncertainty. Decision under Conflict: Game Theory, Two-person Zero-Sum games, Maximin Minimax Principle, Games without Saddle point - Mixed strategy, Dominance Rule.

Essential/recommended readings

1. Vohra, N.D., Quantitative Techniques in Management (5th ed.). Tata McGraw Hill
2. Swarup, K., Gupta, P.K. and Mohan, Man, Introduction to Management Science Operations Research (19th ed.). Sultan Chand & Sons.
3. Sharma, J.K., Operations Research: Theory and Applications (6th ed.). Trinity.
4. Taha, H.A., Operations Research: An Introduction (9th ed.). Pearson.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-7): ECONOMICS OF STARTUPS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Economics of Startups (GE 7)	4	3	1	0	Class 12	None

Learning Objectives

To apprise students:

- To give an overview of startups and its types that would help students to understand basics of starting up new ventures.
- To build and create a successful Business Plan
- To understand various Business models and learn startups
- To familiarize with central and state level institutions supporting small business entreprises.

Learning outcomes

By studying this course, students will be able to:

. · Understand the process and working of a startup.

· Identify the different ways in which entrepreneurs manifest in start-ups.

· Know how to create one's own business venture and the various factors that influence successful set-up and sustainable operations.

· Explore the funding and other institutions supporting small business units.

SYLLABUS OF GE-7

UNIT – I: Startup, Generation & Experimentation (9 hours)

Concept of Startup, Role of digital technologies, Startup ecosystems, the startup movement in India; Generating a value proposition, how valuable are new ideas, Design thinking principles; Experimenting with the prototype, Introduction to lean start-ups, Lean startup principles, Learning and failing fast.

UNIT – II: Building the Business Plan (15 hours)

Beginning Considerations: Building a competitive advantage. The strategic management processes. Conducting a feasibility analysis. Forms of Business ownership. Franchising and entrepreneurship. Buying an existing business, marketing and financial considerations: Building a powerful marketing plan. E-commerce and Entrepreneur. Pricing strategies. Creating a successful financial plan. Choosing the right location and layout.

UNIT – III: Crafting business models and Lean Start-ups (12 hours)

Introduction to business models; Creating value propositions-conventional industry logic, value innovation logic; customer focused innovation; building and analysing business models; Business model canvas, Business Pitching.

UNIT – IV: Institutions Supporting Small Business Enterprises and Ethics (9 hours)
Central level institutions. State level institutions. Other agencies. Industry Associations. Class exercise- discussions on current government schemes supporting entrepreneurship and finding out which scheme will most suit the business plan devised by the student. Importance of Ethical Entrepreneurship, value of ethics to an entrepreneur.

Essential/recommended readings

1. Scarborough, N. M., Cornwall, J. R., & Zimmerer, T. (2016). Essentials of entrepreneurship and small business management. Boston. Pearson Publications.
2. Hisrich, R.D., Manimala, M.J., Peters, M.P., Shepherd, D.A., Entrepreneurship, Tata McGraw Hill.
3. Shukla, M.B., Entrepreneurship and Small Business Management. Kitab Mahal Publishers.

Suggestive readings

1. Hishrich, R.D. and Peters, M. Entrepreneurship. Irwin Publications.
2. Barringer, B.R. and Ireland, R. Duane. Entrepreneurship: Successfully launching new ventures. (6th Edition) Pearson
3. Kuratko, D.F., and Rao, T.V., Entrepreneurship: A South-Asian Perspective. Cengage Publications.
4. Shankar, R., Entrepreneurship: Theory and Practice. Tata McGraw Hill.
5. Kathleen, R Allen. Launching New Ventures: An Entrepreneurial Approach. Cengage Learning.
6. Fisher, Steve and Duane, Ja-Nae. The Startup Equation - A Visual Guidebook for Building Your Startup. Mc Graw Hill Education India Pvt. Ltd.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-9): INTERNATIONAL ECONOMICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
International Economics (GE9)	**4**	**3**	**1**	**0**	**Class XII**	**NA**

Learning Objectives

This course aims at inculcating:

- Basic understanding of fundamentals of international Trade
- An overview of theories of international trade
- Understand the meaning of Balance of Payment and explore the reasons of disequilibrium.
- Determine exchange rates and understand global capital market

Learning outcomes

By studying this course, students will be able to:

- To understand basic concept and origin of International economics through the prism of classical and new classical trade theories
- To understand different terms of trade and their applicability
- To differentiate between Modern and Classical Trade theories.
- To gain knowledge about the foreign exchange markets and its working
- To learn about global capital market

SYLLABUS OF GE-9

UNIT – I: Introduction to International Trade [12hours]

Globalization and its growing importance in the world economy; Impact of globalization; International business contrasted with domestic businesses; Cost and benefit analysis of tariff, Effective rate of protection and welfare arguments of tariff and developing countries. Foreign direct investment (FDI) in world economy: Trends, Direction, and flow of FDI; Theories of FDI; Political ideology and FDI.

Unit 2: International Trade Theory [15hours]

World Trade: An overview; Theories of international trade – Mercantilism; Absolute advantage theory, Comparative advantage theory, Factory proportion theory and Leontief paradox, Product life cycle theory, New trade theory, National competitive advantage:

Porter's diamond. International Business Environment: Economic, Demographic, Cultural and Political-legal environment.

Unit 3: Balance of Payment (BoP) [6hours]

Balance of Payment: Meaning, Components (Current, Capital and Official reserve), Reasons for disequilibrium in BoP, Measures to correct disequilibrium, Understanding India's BoP and comparing it with markets like USA and China.

Unit 4: Foreign Exchange and Global Capital Market [12hours]

Exchange Rate Determination: Currency Demand and Supply Curves, Factors Affecting Exchange Rate, Global Capital Market: Introduction, Benefits of global capital market, Growth of global capital market, Global capital market risk, Eurocurrency market, Global bond market, Global equity market, Exchange rate risk, Managing exchange rate risk, Methods of Financing International Trade.

Essential/recommended readings

1. Hill, C. (2021). International business: Competing in the global market place (13th Edition). *Strategic Direction*.

2. Krugman, P. R., & Obstfeld, M. (2009). International economics: Theory and policy. Pearson Education.

3. Levi, M.D. (2009). *International Finance* (5th Edition), Taylor and Francis Ltd.

4. Madura, J. (2020). *International financial management*. Cengage Learning.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-11): ECONOMIC POLICY FRAMEWORK

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Economic Policy Framework (GE11)	4	3	1	0	Class 12	None

Learning Objectives

This course will help students

- to understand the importance, meaning and objective of macroeconomic policies
- to understand role and effect of fiscal policy and government expenditure
- to explore role of monetary policy and banking sector in India
- to analyse efficacy of fiscal/monetary policy under fixed and flexible exchange rate

Learning outcomes

By studying this course, students will be able to:

. · Learn the basic concept of macroeconomics

· Understand how different parameters of macroeconomics work under Indian economy.

· Understand how monetary and fiscal policy works.

· Know different exchange rate regimes.

SYLLABUS OF GE-11

UNIT – I: Meaning and objectives of economic policy (8 hours)

Tools and goals (objectives and instruments of policy) Circular flow of income (start with a two sector model and go up to a five sector model); National Income aggregates and the related concepts of national income; input-output table to calculate national income using the income, expenditure and the value added methods.

Unit 2: Fiscal policy (15 hours)

Objectives and meaning; effect of fiscal policy - role of tax policy (T) and government expenditure (G), Aggregate Demand, Meaning of the multiplier. Government expenditure multiplier and balanced budget multiplier Budget –meaning and purpose – example of India's latest Budget (and various heads). Meaning of fiscal, revenue and primary deficits.

Unit 3: Monetary policy (12 hours)

Meaning and objectives; money and credit – credit creation and instruments of credit control; Inflation targeting, Banking in India – structure, recent developments; issues of NPAs and how to resolve it.

Unit 4: Exchange rate policy **(10 hours)**

Structure of BOP; meaning of current account deficit and trade deficit; exchange rate definition (real and nominal); fixed vs flexible exchange rate, efficacy of fiscal/monetary policy under fixed and flexible exchange rate , effect of a change in exchange rate on the current account (imports and exports); structure of capital account and role of capital outflows and inflows.

Essential/recommended readings

1Gupta G.S (2016), Macroeconomics - Theory and Applications (4th edition). McGraw Hill,

2. Shapiro, Edward (1982), Macroeconomic Theory, 5th edition

3. Mankiw, Gregory N. (2010), Macroeconomics (7th edition), Worth Publishers.

4. Sikdar, Soumyen (2011), Principles of Macroeconomics, Oxford University Press

5. Krugman, P.R., Obstfeld, M. and Melitz, M. (2015). International Economics: Theory and Policy, Pearson Education Limited.

6. Dua, P. (2020). Monetary Policy Framework in India, Indian Economic Review, 55(1), June 2020, pp. 117-154.

9. http://www.inclusivejournal.in/about.html.

10. Sengupta, R. and Vardhan, H., Non-Performing Assets in Indian Banks, Economic and Political Weekly, 52(12) March 25, 2017, Money, Banking and Finance Special.

11. Economic Survey, India, latest issue

12. Union Budget Statement, India, Latest issue

Suggestive readings

1Abel, Andrew, Bernanke, Ben and Croushore, Dean (2011). Macroeconomics (7th edition). Pearson

2. Ghate, C., & Kletzer, K. M. (eds.) (2016). Monetary policy in India: A modern macroeconomic perspective. Springer.

3. Kaul, Vivek (2020) Bad Money: Inside the NPA Mess and how it threatens the Indian Banking System, Harper Collins Publisher India.

4. Chhibber, Ajay and Anees, Salman Soz (2021) India's Financial Sector: A Whodunnit. In Unshackling India. Haper Collins Publishers India.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER VI
B.A. (HONOURS) BUSINESS ECONOMICS

DISCIPLINE SPECIFIC CORE COURSE – 16 (DSC-16): OPERATIONS RESEARCH

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical		
Operations Research (DSC 16)	4	3	0	1	Class 12	None

Learning Objectives

The course intends to develop an understanding of:
(i) linear programming problems and their methods of solution
(ii) transportation and assignment problems, theory for solution and software methods
(iii) network analysis, Markov chains and applications
(iii) a decision making environment and theory of games

Learning outcomes

By studying this course, the students will be able to:

- Identify and develop operational research models from the verbal description of the real system.
- Understand the mathematical tools that are needed to solve optimization problems.
- Use mathematical software to solve the proposed models
- Develop critical thinking and use PERT and CPM techniques to improve decision making.

SYLLABUS OF DSC-16

UNIT–I: Introduction - Operations Research, Linear Programming, Integer Programming (15 hours)

(i) Introduction to Operations Research, characteristics, Phases, Methodology, Applications and scope
(ii) Formulation of Linear Programming problems, Graphical Solutions (Special cases: Multiple optimal solution, infeasibility, unbounded solution); Simplex Method, Special cases, Big-M method and Two-phase method; Duality (emphasis on formulation & economic interpretation); Sensitivity Analysis. (Excel Solver application)
(iii) Integer programming problem: Formulation, Solution through Gomory's Cut Method, managerial applications.

Unit 2: Transportation and Assignment Problem (9 hours)

(i) Transportation Problem: Formulation, Solution by N.W. Corner Rule, Least Cost method, Vogel's Approximation Method (VAM), Modified Distribution Method; Special cases: Multiple Solutions, Maximization case, unbalanced case, prohibited routes. (Excel Solver application)
(ii) Assignment Problem: Hungarian Method, Special cases: Multiple Solutions, Maximization case, Unbalanced case, Restrictions on assignment. (Excel solver application)

Unit 3: Network and Markov Analysis (12 hours)

(i) Network Analysis: Basic Concept, Construction of the Network diagram, Critical Path Analysis, float and slack analysis (Total float, free float, independent float), probability consideration in PERT (Interface with Project Management open-source software)
(ii) Markov Analysis: Assumptions of Markov analysis, construction of matrix of transition probabilities, brand switching analysis, vector of state probabilities, prediction of future market share, equilibrium conditions.

Unit 4: Decision Theory: (9 hours)

(i) Decision making environment, Construction of Pay off Table, Opportunity Loss Table, Decision under uncertainty, Decision under Risk: EMV, EOL, EVPI.
(ii) Decision under Conflict: Game Theory, Two-person Zero-Sum games, Maximin Minimax Principle, Games without Saddle point- Mixed strategy, Dominance Rule; Reduction of m x n game. (Application of Excel Solver)

Practical Component (30 Hours) : Practicals based on spreadsheet package (Microsoft Excel or equivalent) to enable students to apply all the concepts taken up in the theory classes in the course.

Essential/recommended readings

1. Vohra, N.D, Quantitative Techniques in Management, 5th ed., Tata McGraw Hill.
2. Gupta ManMohan, SwarupKanti, Introduction to Management Science Operations Research, 19th ed. Sultan Chand & Sons.
3. Sharma J.K., Operations Research: Theory and Applications, 6th ed. Trinity.
4. TahahamdyA.,Operations Research: An Introduction, 9th ed., Pearson.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 17 (DSC-17): Business Legislation in India

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite for the course
		Lecture	Tutorial	Practical	Class 12	None
Business Legislation in India (DSC 17)	4	3	1	0		

Learning Objectives

The course intends to inform and develop an understanding of:
1. The Indian Contract Act, 1872
2. The Sale of Goods Act, 1930
3. The Companies Act, 2013
4. The Intellectual Property Act, Competition Act and Consumer Protection Act

Learning outcomes

By studying this course, the students will able to:

- Understand the fundamentals of the various legislations for conducting business.
- Able to understand and appreciate the need for different legislations and the amendments thereof.
- Enable the student to initiate their own ventures in the form of entrepreneurs, and Company.
- Relate the legal framework with recent cases in the business world so as to have better understanding of their interpretations.

SYLLABUS OF DSC-17

UNIT – I: Indian Contract Act 1872 **(15 hours)**

Definition: Essential elements and Kinds of Contracts. Offer and Acceptance: legal rules, lapse and revocation. Consideration: Definition, Essentials and Exceptions. Capacity of Parties: Minor's agreements, Persons of unsound mind and Disqualified persons. Free Consent: Coercion, Undue Influence, Misrepresentation, fraud and Mistake. Discharge of a Contract and its various ways.Kinds of Remedies for Breach of a Contract.

Unit 2: The Sale of Goods Act 1930 **(8 hours)**

Contract of Sale of Good: Definition and Essentials: Sale and agreement to sell distinguished: Kinds of Goods and concept of price. Conditions and Warranties.Doctrine of caveat emptor and exceptions. Transfer of Property: Concept and Rules. Rights of Unpaid Seller against the goods and buyer.

Unit 3: The Companies Act 2013 **(15 hours)**

The Company: Definition and Characteristics. Kinds of Companies: On the basis of incorporation and liability of Members. Concept of One Person Company.Difference between Public and Private Company.Formation of a company–promotion, incorporation, on-line registration, commencement of business.Memorandum of Association.Articles of Association. Prospectus: Definition, Issue and Contents. Misleading prospectus and its consequences including remedies. Company Management: Definition of Directors, Legal Position of Directors, Number of Directors and Directorship, Qualification and Disqualification, Appointment and Removal, Powers and Duties of Directors.

Meetings and Resolutions: Types: AGM and EGM, Legal provisions, Requisites of a valid meeting, Voting, Proxy, Resolutions and its types, Minutes. Winding up of a Company – Meaning, Winding up and Dissolution distinguished, Modes and Consequences of Winding Up.

Unit 4: Laws of Intellectual Property, Competition and Consumer Protection (7 hours)

Intellectual Property Act: Patent Act, 1970: Meaning and Types. Patentable and Non- Patentable Inventions.Procedure for obtaining a patent. Trade Marks Act, 1999: Essentials and Definition. Conditions for Registration of Trade Marks. Design Act, 2000: Concept and Registration of Designs. Copyright in Registered Designs.General Provisions relating to design under the Act.
Competition Act 2002: Scope and applicability of the Act. Prohibition of Anti- Competitive agreement and abuse of dominant position. Regulation of Combinations. Duties, Powers and Functions of Competition Commission of India
Consumer Protection Act 2009: Scope and Applicability of the Act. Rights of consumer.Procedure for complaints.Duties and power of Central Consumer Protection Authority.

Essential/recommended readings

1Bansal V and Arora, A. Corporate Laws. Vikas Publishing, House (P) Ltd. New Delhi.

2. Chadha, R. Chadha, S. Corporate Laws. Mayur Paperbacks. New Delhi.
3. Kuchhal M.C &Vivek K. Business Legislation for Management. VIKAS Publishing House (P) Ltd.
4. Kumar, A. Corporate Laws. International Book House (P) Ltd.
5. Bare Acts relating to the laws.

Suggestive readings

1 Arora, S. Business Laws. New Delhi. Vikas Publishing House.

2. Gulsan, S.S. Business Laws. Excel Books.
3. Singh, Avtar. The Principles of Mercantile Law. Eastern Book Company. Lucknow.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – (DSC-18): ENVIRONMENTAL ECONOMICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Environmental Economics (DSC 18)	**4**	**3**	**1**	**0**	**Class 12**	**None**

Learning Objectives

The course intends to develop an understanding of:
(i) the concept of sustainability and economy-environment interaction
(ii) public policies to control environmental damage and pollution
(iii) the use of risk and cost-benefit analysis for environmental conservation
(iv) global environmental concerns and their protocols

Learning outcomes

By studying this course, students will be able to:

- Provide the basic understanding interaction between environment and economic activities
- Understand sustainability
- Analyse different tools of environmental policies
- Understand global policies for environment

SYLLABUS OF DSC-18

UNIT – I: Environment and Sustainability (9 hours)

An Introduction to Environmental Economics; Economy–Environment interdependence, materials balance model of economy–environment interactions, the drivers of environmental Impact, Environmental Kuznets Curve Hypothesis. Concepts of sustainability: The Hartwick rule, Weak and strong sustainability, Resilience.

Unit 2: Environmental Policies (12 hours)

Conventional Policy: Environmental Standards, Efficiency of Environmental Standards, Command and Control Approach. Market Based Policy - Pollution Charges and Environmental Subsidies. Deposit Refund System. Pollution Permit Trading Systems.

Unit 3: Environmental Planning & Analytical Tools (12 hours)

Environmental Risk Analysis - Concept of Risk. Risk Assessment and Risk Management
Assessing Benefits for Environmental Decision Making - Environmental Benefits - Conceptual Issues. Approaches to Measuring Environmental Benefits - Physical Linkage Approach, Behavioral Linkage Approach -Direct and Indirect Estimation Methods, Benefit -Cost Analysis

Unit 4: Global Environmental Management and Regulations (12hours)

Ozone depletion, Climate change, International collaborations for environment, Montreal and Kyoto protocol, Paris agreement

Essential/recommended readings

1. Perman Roger, MaYue, McGilvray James and Common Michael. (2003) Natural Resource and Environmental Economics. Financial Times/ Prentice Hall.
2. Thomas Janet M., Callan Scott J.. (2012) Environmental Economics and Management: Theory, Policy, and Applications. South-Western College Publishing.
3. Kolstad Charles. (2012). Intermediate Environmental Economics.Oxford University Press
4. Hanley Nick, Shogren Jason F.and White Ben. (2006). Environmental Economics in Theory and Practice.Palgrave Macmillan

Suggestive readings

1. Henley, Nick and Roberts, Colin Ed. (2002). Issues in Environmental Economics. Wiley-Blackwell
2. Lenschow, Andrea and Lenschow Ed. (2001). Environmental Policy Integration.Routledge.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE 2 (DSE-2): PUBLIC FINANCE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Public Finance (DSE2)	**4**	**3**	**1**	**0**	**Class 12**	**None**

Learning Objectives

The course intends to develop and understanding of:
(i) scope and importance of public finance, its sources and expenditures
(ii) Evolution of the Indian tax system and current debates
(iii) Finance Commissions and their changing role
(iv) Canons of taxation and relevance to public revenues

Learning outcomes

By studying this course, the students will be able to:

- Apply tools of basic microeconomics to key policy issues relating to the spending, taxing and financing activities of the Government.
- Understand difference in impact of direct and indirect taxation.
- Understand the recent developments and issues in Indian Public Finance.

SYLLABUS OF DSE-2

Unit 1: Theory of Public Finance (12 hours)

Public finance: Meaning, nature, scope and importance, difference between private and public finance. Principle of maximum social advantage. Role of state in public finance.
Elementary theory of product and factor taxation
Sources of revenue: taxes, loans, grants and aid – meaning and types, Principle of public expenditure.
Public finance and the economic system.

Unit 2: Current Issues in India Tax System (12hours)

Direct and Indirect Tax Reform in India, Different forms of direct tax in India,
Changing regime of taxation-direct to indirect taxation,
Introduction of GST and its implication for state finances and fiscal federalism in India, Latest finance commission and its recommendation for fiscal devolution.

Unit 3: Center State Financial Relations (9hours)

Center state fiscal relations, horizontal and vertical tax devolution in India,
State and local finance in India
Performance and Equity debate in fiscal devolution in India
Report of finance commission in post liberalisation period

Unit 4: Principles of Taxation (12 hours)

Canons of taxation, Meaning of Canons of Taxation -Types of Canons of Taxation-Canon of equality or equity, Canon of certainty, Canon of economy, Canon of productivity, Canon of Diversity, Canon of convenience, Canon of elasticity, Canon of simplicity, Canon of diversity, Characteristics of Canons of Taxation.

Essential/recommended readings

1 Musgrave, R. A. and Musgrave, P.B., Public Finance in Theory and Practice (1989), 5th edition. McGraw Hill Education.

2. Bagchi, Amaresh. Reading in Public Finance, Oxford University Press.

3. Bhatia H.L.. Public Finance. Vikas Publishing House;

4. Shankar Acharya, Thirty years of Tax Reforms in India, EPW, May 2005

5. Rao, M. Govinda, "Central transfers to states in India: rewarding performance while ensuring equity." Final report submitted to NITI Aayog (2017) (pages 1 to 18).

6. Government of India, Fifteenth Finance Commission Report 2021-26, Chapter 6

Suggestive readings

1. Report of Finance commission of India, Various years.

2. Economic Survey, GoI, Various year

3. State Finances: - A Study of Budget, RBI, Latest report

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE 4 (DSE-4): ADVERTISING MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Advertising Management (DSE 4)	**4**	**3**	**1**	**0**	**Class 12**	**None**

Learning Objectives

The course attempts to develop an understanding of :
(i) Advertising, its role, functions, agencies and budgets
(ii) Marketing and advertising plans in a firm's strategy
(iii) Execution of advertising plan and assessing its effectiveness
(iv) Different Media, their cost and options available for effective outcomes

Learning outcomes

By studying this course, the students will be able to:

- Understand the role played by advertising agencies.
- Recognise and identify the facet model objectives in any advertisement.
- Conduct situation analysis and consumer insight mining.
- Learn creative execution strategies including application of appeals, layouts and creative copywriting.
- Understand and conduct appropriate media mix selection.

SYLLABUS OF DSE-4

Unit 1: Foundations of Advertising **(10 hours)**

Concept of advertising, Types of advertising, Concept of IMC, Role and functions of Advertising, the key players, functions of advertising agencies, Organisation of agency, Advertising appropriateness-factors influencing advertising budgets, methods of setting advertising budgets.

Unit 2: Planning and Strategy **(13 hours)**

Planning Framework-marketing and advertising plan, Facet model of objectives (Perception, Cognition, Affect, Association, Action), DAGMAR, Marketing strategy and situation analysis, consumer insight mining, big idea, positioning for advertising campaigns.

Unit 3: Effective Advertising Execution **(12hours)**

The creative and message strategy, creative brief, themes and appeals, execution styles, message format, message tone, copywriting creativity, body copy, visual layouts, evaluation of effectiveness, pre-testing, post-testing.

Unit 4: Effective Advertising Media **(10 hours)**

Types of media, newer media options, media objectives, developing a media plan, media Plan budget, media mix selection.

Essential/recommended readings

1. Belch,G.E., Michael, A., Keyoor, Purani. Advertising and Promotion-An Integrated Maketing Communications. 12th edition. Tata McGraw Hill Education. 2021.
2. William Wells, Sandra Moriarty, and John Burnett. Advertising: Principles and Practice. Prenctice Hall of India. 2007.
3. Jethwaney, Jaishri., Jain, Shruti. Advertising Management. Oxford University press.
4. Shah, Kruti. Advertising and Integrated Marketing Communications. McGraw Hill Education India. 2014.
5. Aaker, David A., Batra, Rajeev., Myers, John G. Advertising Management. Pearson Education. 2006.
6. Shimp, T.A. .Advertising and Promotion: An IMC Approach. Cengage. 2013.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE 6 (DSE-6): INTERNATIONAL FINANCIAL MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
International Financial Management (DSE 6)	**4**	**3**	**1**	**0**	**Class 12**	**None**

Learning Objectives

The course aims to give substantive knowledge about:
(i) key features of foreign exchange markets and development over the years
(ii) parity conditions in markets for foreign exchange
(iii) evolution of exchange rate systems from the gold standard to the present
(iv) its operations and hedging of risks in these markets.

Learning outcomes

By studying this course, the students will be able to:

- Gain substantive knowledge of International Financial Management.
- Understand the principles of trading in foreign exchange markets, different instruments traded, risks involved and how to carry out hedging of currency risks.
- Learn how to compute forward rates using cross rates, computation of synthetic quotes and apply rules to determine existence of arbitrage amongst currencies traded.
- Understand how the international markets have evolved and the alternate exchange rate systems world has seen over the years

SYLLABUS OF DSE-6

Unit 1: Introduction To Currency Markets (12 hours)

Spot & Forex market: Introduction and Features, Participants, & their method of communication in forex markets, SWIFT and CHIPS. Currency Quotes and types, Calculation of forward rates using spot rates, Discount/Premium on spot rate, Swap Points and Outright Forward Rates, Forward Rate vs. Expected Future spot rates, Spot rate with and without transaction costs, Payoff Profiles on Forward Exchange, Currency futures and Pay of Profiles, Mark to Market, Cross Rates & Synthetic quotes. Arbitrage: one point, two point and three point (triangular) arbitrage.

Unit 2: Parity Conditions in Currency Markets (12 hours)

Purchasing Power Parity (both absolute and relative versions), Interest Rate Parity (explanation of borrowing and lending criteria, diagrammatic presentation) , covered interest rate parity, International Fischer Effect. The linkages between parity conditions.

Unit 3: Alternate Exchange Rate Systems and Payment Terms (9 hours)

Gold Standard and Gold Exchange Standard System with price adjustment mechanism , EMS and its price adjustment, Hybrid systems , Fixed vs Flexible System, Overview on Brettonwoods System,

IMF, SDR, Triffon Paradox & Smithsonian Agreement. Payment Terms and Methods of Financing International Trade (Letter of Credit, Forfaiting, Factoring, Credit Lines)

Unit 4: Exchange Rate Determination and Exposures (12 hours)

Currency Demand and Supply Curves, Stability of exchange rates and 'J' Curve Effect, Factors Affecting Exchange Rate, Foreign Exchange Exposure: Nature, Definition, Exposure Line and Interpretating Exposure, Statistical Measurement of Exposure, Types of Exposure (Meaning): Transaction, Economic and Translation Exposure, Hedging Strategies to Manage Transaction Exposures. Currency Swaps.

Essential/recommended readings

1. Apte, P G., Multinational Financial Management.Tata-McGraw Hill. New Delhi.
2. Levi, Maurice. International Finance. McGraw Hill Inc. New York.
3. Madura, Jeff. International Financial Management.South Western Cengage Learning.
4. Seth, A.K., International Financial Management. Galgotia Publishing Company. New Delhi.
5. Shapiro, Allen C., Multinational Financial Management. Prentice Hall India Pvt Ltd. New Delhi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE 8 (DSE-8): BEHAVIOURAL ECONOMICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Behavioural Economics (DSE 8)	**4**	**3**	**1**	**0**	**Class 12**	**None**

Learning Objectives

The course attempts to impart an understanding of:
(i) the evolution and growing importance of behavioural economics
(ii) the question of choices when outcomes are known
(iii) formulation of choice under conditions of uncertainty
(iv) the theory of games and Nash equilibria under select circumstances

Learning outcomes

By studying this course, the students will be able to:

- To understand the departures from traditional theory by first explaining the decision-making process in a theoretical framework and then using empirical and experimental findings.
- To build a better understanding of consumer choices and behaviours to enhance his/her decision-making and he/she will be able to differentiate between economic and psychological approaches to human decisions. Understands how behavioural economies incorporates psychological factors such as altruism, fairness trust into standard theories to analyse human choices and also have the knowledge of predictive power of economic theories.
- To understand the main normative and descriptive approaches to know principles of decision making under risks
- To apply behavioural theory to interpretation of real decisions and public policy.

SYLLABUS OF DSE-8

Unit 1: Introduction **(9 hours)**

Introduction to behavioural economics: history, evolution, objective, scope, methods and concepts in behavioural economics.

Unit 2: Choice under certainty **(12 hours)**

Preferences, rationality, utility, menu dependence, decoy effect, endowment effect, heuristics and biases.

Unit 3: Choice under uncertainty **(12 hours)**

Probability, Bayes' Rule, Expected value, Confirmation Bias, Expected Utility, Bundling, Allais Problem.

Unit 4: Strategic Actions **(12 hours)**

Game Theory, Nash Equilibrium, Altruism, Fairness, Justice, Trust, Welfare Economics, Nudge Agenda and behavioural finance.

Essential/recommended readings

1. Angner, Erik (2016), A course in behavioral economics, (Second edition,), Palgrave, London
2. Colin F. Camerer, George Lowenstein & Matthew Rabin (Ed.) (2004), Advances in Behavioral Economics, Princeton University Press.
3. Wilkinson, Nick and Matthias, Klaes (2012), An introduction to Behavioral Economics, 2nd edition, Palgrave Macmillan.
4. Abdukadirov, Sherzod (ed.). Nudge Theory in Action: Behavioral Design in Policy and Markets

Suggestive readings

1. Andrikopoulos, Panagiotis. Modern Finance vs. Behavioural Finance: An Overview of Key Concepts and Major Arguments (June 2005). http://dx.doi.org/10.2139/ssrn.746204
2. Andreoni, James, Justin M. Rao, and Hannah Trachtman. "Avoiding the ask: A field experiment on altruism, empathy, and charitable giving." Journal of political Economy 125, no. 3 (2017): 625-653
3. Fama, Eugene F. "Market efficiency, long-term returns, and behavioral finance." Journal of financial economics 49, no. 3 (1998): 283-306.
4. Falk, Armin, and Christian Zehnder. "A city-wide experiment on trust discrimination." Journal of Public Economics 100 (2013): 15-27.
5. Kahneman, Daniel, Jack L. Knetsch, and Richard H. Thaler. "Experimental tests of the endowment effect and the Coase theorem." Journal of political Economy 98, no. 6 (1990): 1325-1348.
6. Samson, Alain. "An introduction to behavioral economics." The behavioral economics guide (2014): 1-12.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE 10 (DSE-10): INDIAN ECONOMY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Indian Economy (DSE 10)	4	3	1	0	Class 12	None

Learning Objectives

The course is aimed at developing an understanding of:
(i) the different policy regimes in India since Independence: growth and development
(ii) Demographic trends, human development and state policies
(iii) Fiscal and monetary policies and laws related to labour
(iv) Sectoral growth and changes: agriculture, manufacturing and services

Learning outcomes

By studying this course, the students will be able to:

- Understand major issues and challenges facing the Indian Economy.
- Gain skills to analyze key economic issues and policy documents.
- Relate theoretical frameworks of macroeconomics and microeconomics to the Indian context.

SYLLABUS OF DSE-10

Unit 1: Economic Development since Independence (12 hours)

Major Features of the economy at independence; growth and development under different policy regimes—goals, constraints, institutions and policy framework; an assessment of performance—sustainability and regional contrasts; structural change, savings and investment.

Unit 2: Demographic Trends and policies (12hours)
Population and Human Development Demographic trends and issues; education; health and malnutrition. Policies in poverty; inequality and unemployment.

Unit 3: Macroeconomic Policies and Their Impact (9 hours)

Fiscal Policy; trade and investment policy; financial and monetary policies; labour laws.

Unit 4: Sectoral Growth & Development (12 hours)

Agriculture Growth; productivity; agrarian structure and technology; capital formation; trade; pricing and procurements. Industry: Growth; productivity; diversification; small scale industries; public sector; competition policy; foreign investment. Trends and issues in Service Sector.

Essential/recommended readings

1. Drèze, J., &Sen, A. (2013). An Uncertain Glory.Princeton University Press.

2. Balakrishnan, P. (2007). The Recovery of India: Economic Growth in the Nehru Era. Economic and Political Weekly, 42(45/46), 52–66.

3. Mohan, R. (2008). Growth Record of the Indian Economy, 1950-2008: A Story of Sustained Savings and Investment. Economic and Political Weekly, 43(19), 61–71.

4. Vaidyanathan, A., & Krishna, K. L. (2007). Institutions and markets in India's development. Oxford University Press.

5. T. Dyson, 2008, India 's Demographic Transition and its Consequences for Development in Uma Kapila, Indian Economy Since Independence, 19th edition, Academic Foundation.

6. Shankar Acharya, 2010, Macroeconomic Performance and Policies 2000-08, in Shankar Acharya and Rakesh Mohan, editors, India's Economy: Performances and Challenges: Development and Participation, Oxford University Press.

7. Rakesh Mohan, 2010, India 's Financial Sector and Monetary Policy Reforms, in Shankar Acharya and Rakesh Mohan, editors, India's Economy: Performances and Challenges: Development and Participation, Oxford University Press.

8. PulapreBalakrishnan, Ramesh Golait and Pankaj Kumar, 2008, Agricultural Growth in India Since 1991, RBI DEAP Study no. 27.

9. B.N. Goldar and S.C. Aggarwal, 2005, Trade Liberalisation and Price-Cost Margin in Indian Industries, The Developing Economics, September.

10. P. Goldberg, A. Khandelwal, N. Pavcnik and P. Topalova, 2009, Trade Liberalisation and New Imported Inputs, American Economic Review, Papers and Proceedings, May.

11. KunalSen, 2010, Trade, Foreign Direct Investment and Industrial Transformation in India, ïnPremachandraAthukorala, editor, The Rise of Asia, Routledge.

12. A. Ahsan, C. Pages and T. Roy, 2008, —Legislation, Enforcement and Adjudication in Indian Labour Markets: Origins, Consequences and the Way Forward, in D. Mazumdar and S. Sarkar, editors, Globalization, Labour Markets and Inequality in India, Routledge.

13. DipakMazumdar and SandeepSarkar, 2009, —The Employment Problem in India and the Phenomenon of the Missing Middle, Indian Journal of Labour Economics.

14. J. Dennis Rajakumar, 2011, Size and Growth of Private Corporate Sector in Indian Manufacturing, Economic and Political Weekly, April.

15. Ramesh Chand, 2010, Understanding the Nature and Causes of Food Inflation.Economic and Political Weekly, February.

16. BishwanathGoldar, 2011, Organised Manufacturing Employment: Continuing the Debate. Economic and Political Weekly, April.

17. Basu, K., &Maertens, A. (2012). The new Oxford companion to economics in India.New Delhi Oxford University Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE 12 (DSE-12): RESEARCH METHODOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Research Methodology (DSE 12)	**4**	**3**	**0**	**1**	**Class 12**	**None**

Learning Objectives

The course provide an understanding of the methods of conducting research through:
(i) introducing students to basic concepts of quantitative and qualitative research methods.
(ii) scientific methods of collecting reliable data and appreciating primary and secondary data
(iii) parametric and non parametric tests and interpretation of the results
(iv) publishing of research and issues of ethics in data collection and use.

Learning outcomes

By studying this course, the students will be able to:

- Assess the roles of the researcher and the informant in the research process and be in a position to apply qualitative and quantitative research methodology.
- Perform literature reviews using print and online databases
- Learn about the various formats for citations of materials
- Describe sampling methods, measurement scales and instruments, and their appropriate uses
- Learn the rationale for research ethics
- Provide understanding of appropriate statistical techniques for summarizing and displaying business and economic data.
- Perform the basic qualitative and quantitative data analysis in a clear concise and understandable manner with an in-depth, faster and accurate univariate, bivariate and multivariate data analysis.

SYLLABUS OF DSE-12

Unit 1: Elements of Research (15 hours)

Research- Definition, characteristics, Objectives. Types of Research- Quantitative Vs Qualitative; Descriptive, Exploratory and Causal. Research Methodology- Research Process, Formulating the Research Problem, Research Questions. Hypothesis-Formulation of Hypothesis, Role of Hypothesis, tests of Hypothesis and Errors in hypothesis testing. Research Design - importance and types, features for a good research design. Concept of Population and Sample, Sampling Design- Probability and non-probability Sampling techniques, Sample Size and sampling Error.

Unit 2: Understanding Data and its Collection (15 hours)

Data types - Nominal, Ordinal, Interval and Scale
Primary and Secondary Data- advantages and disadvantages. Primary Data Collection: Observation method, Interview method, Questionnaires-prerequisites and designing, Case Study method Scales-Understanding, Construction and Application (Graphic Rating, Likert scale, paired comparison, ranking, constant sum, semantic differential scale). Secondary sources of data- previous empirical studies, NSSO, CSO, RBI, World Bank.

Unit 3: Processing and Analysis of Data (10 hours)

Data recording, conducting univariate and bi-variate analysis-using-descriptives, Cross-tabs-chi-square tests of independence, goodness of fit, One Sample t-test, Independent Sample t-test, Paired Sample t-test, (Assumptions Testing and Inferential Analysis ANOVA, Repeated measure ANOVA, MANOVA.
PCA, Cluster analysis, Factor Analysis, Discriminant analysis.

Unit 4: Additional Topics in Research (5 hours)

Review of Literature-techniques, do's and don'ts of conducting literature survey, citation, referencing styles, ethics in research.

Practical Component (30 hours) : Practicals to be based on use of a statistical software to enable to student to implement all the concepts and tools taken up in the theory classes in the course.

Essential/recommended readings

1. Donald R Cooper & Pamela S Schindler, "Business Research Methods", McGraw Hill
2. Business Research Methods – Alan Bryman& Emma Bell, Oxford University Press.
3. Ranjit Kumar, "Research Methodology: A Step-by- Step Guide for Beginners" Sage
4. Joseph F. Hair, Jr. William C. Black, Barry J. Babin, Rolph E. Anderson," Multivariate Data Analysis, Seventh Edition-Pearson's New International Edition

Suggestive readings

1. Amir D Aczel, "Complete Business Statistics", McGraw Hill Education.
2. Naresh K. Malhotra, "Marketing Research: An Applied Orientation" PHI
3. Field, Andy, "Discovering Statistics using IBM SPSS Statistics", 5th Edition, SAGE.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-2): INTRODUCTION TO DIGITAL MARKETING

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES OFFERED BY THE DEPARTMENTS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Introduction to Digital Marketing (GE 2)	**4**	**3**	**1**	**0**	**Class 12**	**None**

Learning Objectives

This course aims to acquaint the students with:

- Key marketing principles and terminology.
- Evolving digital landscape and the strategic role of digital marketing processes and tools in designing the overall Marketing strategy.
- Methodologies, tools and technologies involved in digital marketing.
- Importance of search engines and their role in digital marketing ecosystem.

Learning outcomes

By studying this course, students will be able to:

- Understand the concept of digital marketing and its integration with traditional marketing.
- Understand customer value journey in digital context and behaviour of online consumers.
- learn email, content and social media marketing and apply the learnings to create digital media campaigns.
- Examine various tactics for enhancing a website's position and ranking with search engines and search advertising.

SYLLABUS OF GE-2

Unit 1: Fundamentals of Marketing **(6hours)**

Importance of marketing; Core marketing Concepts; Company Orientations; Concept of Segmentation, Targeting-Positioning; 7 P's Framework; Product Life cycle; Pricing strategies, Types of distribution channels; Promotion Mix.

Unit 2: Marketing in the Digital World **(9 hours)**

Digital marketing: Concept, Features, Difference between traditional and digital marketing, Moving from traditional to digital Marketing; Digital Marketing Channels: Intent Based- SEO, Search

Advertising; Brand Based- Display Advertising; Community Based-SMM; Others- Affiliate, Email, Content, Mobile; Customer Value Journey: 5As Framework; The Ozone O_3 Concept Key; Traits of online consumer.

Unit 3: Content, Email and Social Media Marketing (15 hours)

Content Marketing: Developing a content marketing strategy; Email Marketing: Types of Emails in email marketing, Email Marketing best practices; Social Media Marketing: Building Successful Social Media strategy; Social Media Marketing Channels; Facebook, LinkedIn, YouTube (Concepts and strategies)

Unit 4: Search Marketing (15 hours)

Introduction of SEM: Working of Search Engine; SERP Positioning; Search Engine Optimization: Overview of SEO Process; Goal Setting-Types

On-Page Optimization: Keyword Research, SEO Process -Site Structure, Content, Technical Mechanics, Headings, Image & Alt text, Social Sharing, Sitemaps, Technical Aspects-Compatibility, Structured Data Markup.

Off Page Optimization: Link Formats, Link Building, Content Marketing, Social Sharing; Black and White Hat Techniques

Search Advertising: Overview of PPC Process; Benefits of Paid Search; Basis of Ranking; Goal Setting-Objectives; Account Setting-Creation of Google Ads, Campaign architecture, Campaign setup, Targeting, Bid Strategy, Delivery, Ad Scheduling, Ad Rotation, Keyword Selection; Ad Copy composition, Ad Extension

Overview of Display Advertising: Working of Display Advertising; Benefits and challenges.

Essential/recommended readings

1. Dodson, I. (2016). The art of digital marketing: the definitive guide to creating strategic, targeted, and measurable online campaigns. John Wiley & Sons.
2. Kartajaya, H., Kotler, P., &Setiawan, I. (2016). Marketing 4.0: moving from traditional to digital. John Wiley & Sons.
3. Ryan, Damien. Understanding Digital Marketing - Marketing Strategies for Engaging the Digital Generation. Kogan Page Limited.

Additional References:

1. Kotler, P. (2009). Marketing management: A south asian perspective. Pearson Education, India.
2. Maity, Moutusy. Internet Marketing: A practical approach in the Indian Context. Oxford Publishing.
3. Gupta, Seema. Digital Marketing. McGraw Hill
4. Ultimate guide to digital Marketing. Digital Marketer

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-4): STATISTICS FOR BUSINESS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Statistics for Business (GE4)	**4**	**3**	**0**	**1**	**Class 12**	**Mathematics at Class 12 level**

Learning Objectives

The objective of this course is to enable students to:

- Describe data using summary statistics.
- Develop detailed understanding of discrete and continuous distributions.
- Develop skills in statistical computing, statistical reasoning and inferential methods.
- Comprehend and analyse real data like real indices.

Learning outcomes

By studying this course, students will be able to:

- Learn tools and concepts of statistical analysis and interpretation.
- Comprehend fundamentals of probability theory.
- Develop skills in statistical computing, statistical reasoning and inferential methods.
- Comprehend and analyse real data like real indices.

SYLLABUS OF GE-4

Unit 1: Descriptive Statistics and Exploratory Data Analysis (15 hours)

Types of Variables (Quantitative, Qualitative, discrete, continuous), Scales of Data Measurement (nominal, ordinal, Interval & Ratio), Variable-; Primary & secondary Data.

Frequency distributions, Relative Frequency, Cumulative Distributions, Percentiles, Quartiles; Graphical representation of data- bar charts, pie, histograms, box plots.

Measures of central tendency: Mean, median, mode, Geometric Mean, Harmonic Mean, Weighted Mean & their properties. Selection of a measure of central tendency.

Measures of Dispersion: Range, inter-quartile range, quartile deviation, mean deviation, standard deviation, variance, coefficient of variance, properties of standard deviation, merits & demerits.

Skewness and Kurtosis: Meaning, measures- Karl Pearson, Bowley, Kelly's, Kurtosis- meaning, Moments, Kurtosis

Bivariate Analysis: Cross-tabulations and Scatter diagram; Correlation, Association and Simple Regression.

Unit 2: Probability (12 hours)

Axioms of probability; Review of counting rules, experiments, sample space, simple and complex events; Addition and multiplication rules; Concepts of Mutually exclusive events, independent events; Concepts of Joint, marginal and conditional probability; Permutation and Combinations

Concept of Discrete and continuous Random Variables; Expected value and variance; Examples of Theoretical Discrete and Continuous Probability Distributions – Binomial, Poisson and Normal distributions.

Unit 3: Sampling, Estimation and Hypotheses (15 hours)

Population versus Sample; Sample Statistics versus population parameters; Definition and Statistical properties of a Random Sample; Point and Interval Estimation and Small Sample Properties of Estimators (unbiasedness, efficiency); Central Limit Theorem. (Interval estimation for mean for large samples)

Basic concepts of Hypotheses Testing: Formulation of Null and Alternate Hypotheses; One-tailed and two-tailed Tests about population Mean; Concepts of Type I and Type II errors. (Hypothesis testing for mean and difference between mean for large samples only)

Unit 4: Index Numbers (6 hours)

Index Numbers: Use and construction of Laspeyres and Paasche index numbers; Fixed and chain base index numbers; Base shifting, splicing and deflating. Construction of real indexes: Consumer Price Index and BSE index.

Practical Component (30 hours) : Practicals to be based on a spreadsheet package (Microsoft Excel or equivalent) to enable the student to execute all the measures and tests taken up in the theory classes in the course.

Essential/recommended readings

1. Spiegel, M.R.(2003). Theory & Problems of Statistics, Schaum's outline series, McGraw Hill.
2. Levin, Richard I. and Rubin, David (1998). Statistics for Management (7th Edition), Pearson.
3. Gupta, S.C. (2018). Fundamentals of Statistics, Himalaya Publishing House
4. Spiegel, M. and Stephens, Larry (2017). Statistics (Schaum's Outline Series), Tata-Mcgraw-Hill, New Delhi

Suggestive readings

1 Nagar, A. L. and Das. R. K.. Basic Statistics (2nd Edition), Oxford University Press

2. Karmel, P. H. and Polasek, M. (1978). Applied Statistics for Economists (4th edition), Pitman.
3. Larsen, Richard J. and Marx, Morris L. (2011). An Introduction to Mathematical Statistics and its Applications. Prentice Hall.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-6): INTRODUCTION TO FINANCE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Introduction to Finance (GE6)	**4**	**3**	**1**	**0**	**Class 12**	**None**

Learning Objectives

This course aims at providing a comprehensive introduction to:

- Financial system and its primary constituents.
- Sources of finance and time value of money.
- Basics of Investment and various asset classes.
- Key concepts of international financial management.

Learning outcomes

By studying this course, students will be able to:

Understand the meaning, scope and sources of Finance

· Estimate the present and future values of assets

· Examine the relationship between risk and return, and the nature and sources of risk in a stock market context

· Analyse the currency exchange market to deal exchange rate risk.

SYLLABUS OF GE-6

UNIT – I: A Primer on Financial Markets & Institutions (9 hours)
An overview of financial system: characteristics & requirements. Components & functions of financial system. Financial markets: characteristics & types. Types & role of Financial Institutions.An overview of the 2007–2008 Financial Crisis.

Unit 2: Corporate Finance: An Overview (12 hours)
Nature, scope and objectives of Finance, Emerging role of Finance Managers in India and Agency problem.Concept & Meaning of Financial Management, goals of financial management, the three financial decisions- Investing, Financing & Dividend.
Sources of Finance: Equity & Preference Capital, Retained earnings, Debt, Bonds, Long term loans, Short term advances from banks, public deposits & advances from customers and trade creditors.
Concept of Time Value of Money, Compound Value, Present Value, Annuity and Perpetuity.

Unit 3: Investment Management: Basics & Process (15 hours)
An overview of investment- Investment process, Types of assets- real & financial.Types of investors, types of financial securities & attributes of a good investment.
Concept of Risk & Return (Single asset), risk-return trade off, types of risk- systematic & unsystematic, types of return-holding period return, expected return, actual return.
Examining four broad asset classes: equity, bonds, mutual funds & derivatives.
Equity- three schools of thought on equity valuation- a brief discussion on fundamental analysis, technical analysis and efficient market hypothesis.

Bonds- types, fundamentals, relationship between interest rates & bond prices& yield curve.
Mutual Funds– meaning, importance, structure, mutual fund schemes, Systematic Investment Plan (SIP), Systematic Withdrawal Plan (SWP), Exchange Traded Fund (ETF), Equity Linked Savings Scheme (ELSS) and NAV of Fund.
Derivatives – Meaning and Types of Derivative Instruments (Forwards, Futures, Options and Swaps).
Concept of diversification & portfolios.Portfolio Risk & Return(two security only).

Unit 4: A Beginners' Guide to International Finance (9hours)
International Monetary System- development of international finance and how the international monetary system evolved. Currency exchange markets and rates- currency exchange markets, exchange rate quotations, currency exchange rate appreciation and, depreciation, factors that affect currency exchange rates and arbitrage. Conducting business internationally. Concept of exchange rate risk.

Essential/recommended readings

1. Bodie, Zvi., Kane, Alex and Marcus, Alan J.. Investments. McGraw Hill.
2. Chandra, P.. Security Analysis and Portfolio Management. Tata McGraw Hill.
3. Pathak, Bharati. Indian Financial System. Pearson.
4. Ronald, W. Melicher and Norton, Edgar A.. Introduction to Finance: Financial Markets, Investment, and Financial Management. Wiley Publishing House. 2012.
5. Rustagi, R.P., Fundamentals of Financial Management. Taxmann.

Suggestive readings

1. Khan, M. Y & Jain P. K., Financial Management: Text and Problems. Tata McGraw Hill. New Delhi.
2. Kohn, Meir. Financial Institutions and Markets. Oxford University Press.
3. Kidwell, David S., Backwell, David W., Whidbee, David A. and Sias, Richard W. Financial Institutions, Markets and Money. Wiley Publications.
4. Madura, Jeff. Financial Markets and Institutions. South Western Cengage Learning.
5. Reilly, Frank K, and Brown, Keith C. Investment Analysis and Portfolio Management. Cengage Learning.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-8): ENVIRONMENTAL ECONOMICS AND

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Environmental Economics and Climate Change (GE8)	**4**	**3**	**1**	**0**	**Class 12**	**None**

Learning Objectives

This course aims at inculcating an understanding of:

- How economic activities are affecting the environment.
- Social value of environmental resources.
- Climate change and its consequences.
- Efficient and effective policy measures for protecting the environment.

Learning outcomes

By studying this course, students will be able to:

. · Understand the linkage between environment and economics.

· Learn the basic theories of environmental economics.

· Understand the basic terminologies related to environment and Climate change.

· Analyse the effects of climate change on India and its future plan for environmental protection and mitigation.

SYLLABUS OF GE-8

UNIT – I: Introduction (8 hours)
Introduction to Environmental Economics, Material Balance model- economy environmental interactions, reasons for environmental degradation (population, technology, GDP), balance between environment and growth.

Unit 2: Economic Growth and Environmental Degradation (12 hours)
Theories of relationship between economic growth and environmental degradation: The environmental Kuznets curve hypothesis, The Brundtland Curve hypothesis, The environment Daly Curve hypothesis.

Unit 3: Climate Change and its Challenges (12 hours)
Introduction to the Climate Change, Drivers of Climate Change, Global impacts of Climate Change: Anthropogenic, Global warming, ozone hole, biodiversity loss, ecosystem services, natural capital and resources. Effect of Climate Change on India: Agriculture, Biodiversity, vulnerability of Coastal Belt, Rural Livelihoods and Food Security in India.

Unit 4: Actions Taken and Policy Framework (13 hours)
Global Level: Adaptation and Mitigation, Governmental and Intergovernmental Actions to Combat Climate Change: The Role of the Intergovernmental Panel on Climate Change (IPCC), United Nations Framework Convention on Climate Change, The Kyoto Protocol, Paris Agreement etc. The global

carbon market (CDM, JI, ET).India's Position on International Climate Negotiations, India's National Action Plan on Climate Change.

Essential/recommended readings

1. Callen,Thomas (2007). Environmental Economics, Thomson Learning Inc. Indian Edition.
2. Dubash, Navroz (2012). Handbook of Climate Change and India: Development, Politics and Governance, Earthscan
3. Bhattacharya, R. N. (ed.) (2001). Environmental Economics, An Indian Perspective, Oxford University Press.

Suggestive readings

1. Romm, J.J. 2018. Climate change: What Everyone Needs to Know. Oxford University Press
2. Dash. S.K. 2008. Climate Change, Cambridge University Press

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-10): INDIAN FINANCIAL SYSTEM

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Indian Financial System (GE10)	**4**	**3**	**1**	**0**	**Class 12**	**None**

Learning Objectives

The course attempts to develop an understanding of:
(i) the history and role of the Indian Financial System in economic development
(ii) the role and importance of financial markets; capital, equity and money markets
(iii) commercial banks, development banks, NBFCs - risk and NPAs; role of ARCs.
(iv) role of financial services in credit market

Learning outcomes

By studying this course, students will be able to:

. Analyse the financial market processes and their factors, and make successful financial decisions at an individual as well as company level.

· Evaluate various ways of raising funds from the financial markets domestically or internationally for the company.

· Study the considerations of banking and other financial institutions in real life.

· Evaluate various financial services offered under financial system of India.

SYLLABUS OF GE-10

UNIT – I: Financial System: An Introduction (6 hours)

Financial System: meaning, characteristics, significance and components; tracing the history of the Indian financial system and its contribution to Economic Development; markets, regulators and participants in the Indian financial system; financial instruments, direct and indirect finance, scams in Indian Financial System.

Unit 2: Financial Markets (18 hours)

Financial Markets – meaning, types, role, importance, and securities traded; linkages between financial markets and economy. Capital market – meaning, functions, organisation; Equity market – primary and secondary market, ways of raising funds, private equity, venture capital, introduction to debt market. Money market – meaning, functions, organisation, participants, instruments, trading mechanism, role of central bank.

Unit 3: Financial Institutions (9 hours)

Commercial Banking, Nationalisation of Commercial Banks, Structure of Commercial Banks in India, Depository and Non-Depository Institutions, Universal Banking, Payments Bank, Development Banks (IFCI, IDBI, NABARD and NHB), NBFCs, Risk Management in Banks, ARCs Problem of NPAs.

Unit 4: Financial Services (12 hours)

Credit Rating – Meaning, Process, Rating Methodology, Rating Symbols and Rating Agencies.
Insurance – Meaning, Importance, Types, Seven Principles and Regulation.
Leasing – Meaning, Features and Types of Leasing; Concept of Hire Purchase, Difference between Hire Purchase and Leasing; Factoring – Meaning, Functions, Types and Procedure; Forfaiting – Meaning, Process, Characteristics, Types, Advantages, Difference between Forfaiting and Factoring; Investment Banking – Meaning, Importance and Services Offered by Investment Bankers.

Essential/recommended readings

1 Khan, M.Y. Indian Financial System. Tata McGraw Hill.

2. Bhole, L.M. Financial Institutions and Markets. Tata McGraw Hill.

3. Varshney, P.N. and Mittal, D.K. Indian Financial System. Sultan Chand & Sons.

4. Pathak, Bharati. Indian Financial System. Pearson Publications.

5. Shahani, Rakesh. Financial Markets in India: A Research Initiative. Anamica Publishing Co.

Suggestive readings

1. Gordon, E. &Natarajan, K. Financial Markets and Services. Himalaya Publishing House.

2. Gupta, Shashi, Aggarwal, Nisha and Gupta, Neeti. Indian Financial System.Kalyani Publishers.

3. Kumar, Vinod., Gupta, Atul. andKaur, Manmeet. Financial Markets, Institutions and Services, Taxmann Publications.

4. Madura, Jeff. Financial Markets and Institutions. South Western Cengage Learning.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-12): BASIC ECONOMETRICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Basic Econometrics (GE12)	**4**	**3**	**0**	**1**	**Class 12**	**Knowledge of Inferential and descriptive Statistics**

Learning Objectives

The course intends to explain to the student:
(i) the classical linear regression model, OLS, its assumptions, testing and functional forms
(ii) the k-variable linear regression model, testing coefficients and ANOVA, and Restricted Least Squares
(iii) treatment of regressions involving qualitative regressors
(iv) the implications, detection and remedies in case of violation of classical assumptions

Learning outcomes

By studying this course, students will be able to:

. · Explain Key econometric concepts.

· Formulate simple econometric models

· Interpret the regression results obtained from software packages.

· Identify the errors in regression models and rectify the same.

· Analyse the suitability of the data for solving the problem at hand

SYLLABUS OF GE-12

UNIT – I: The Classical Linear Regression Model (12 hours)
Types of Data: Time Series, Cross Section and Panel Data. Concept of Population Regression Function and Sample Regression Function, Assumptions of the model, Derivation of Coefficients of Regression in a two-variable model, Estimation of the SRF using OLS, Analysis of variance and R squared.
Expectation and standard errors of the regression coefficients and the error term. Gauss Markov Theorem. Interval estimation and tests on population regression coefficients, variance of population disturbance term and forecasts. Testing the significance of the model as a whole. Testing the normality assumption.
Extensions of the Two Variable Linear Regression Model: Regressions through the origin, Scaling of Variables and Regression on Standardized Variables. Functional forms of Linear Regression Models: The double log, semi-log, reciprocal, log- reciprocal models with applications.

Unit 2: Multiple Regression Model (15 hours)

Coefficients of regression in a multi variable model and their properties. Interval estimation, tests on population regression coefficients and model significance. Correlations, Goodness of fit and the Adjusted R square. Hypothesis testing for significance of the contribution of a variable, structural stability, restricted least squares.

Unit 3: Dummy Variable Regression Models (6 hours)

Intercept, Slope Dummy variables. Interaction between qualitative variables.Interaction between quantitative and qualitative variables.Use of dummy variables in testing for structural change and for seasonal indices.

Unit 4: Relaxing the Assumptions (12 hours)
Introduction to multicollinearity, heteroscedasticity, autocorrelation and specification errors.The nature of the problem, its detection and corrective measures.
Practical Component (30 hours) **:** Practicals to be based on an econometric software (e.g. Gretl/SPSS/Stata/Eviews/PSPP). The student is expected to implement using the software all the regressions and tests noted in the syllabus.

Essential/recommended readings

1 Gujarati, D. and Sangeetha, N. (2007) Basic Econometrics. Fourth Edition, Tata McGraw-Hill, New Delhi

2. Dougherty, Christopher. (2011). "Introduction to Econometrics," Oxford University Press,

3. Wooldridge, J. M. (2006). Introductory econometrics: A modern approach. Mason, OH: Thomson/South-Western.

4. Manual of the relevant software

Suggestive readings

1. Asteriou, D., & Hall, S.G. (2011). Applied econometrics. Palgrave Macmillan.

2. Brooks, Chris (2008). Introductory Econometrics for Finance (2nd edition). Cambridge University Press

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER-IV
Bachelor in Management Studies (BMS)

DISCIPLINE SPECIFIC CORE COURSE – 10: QUANTITATIVE TECHNIQUES FOR MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Quantitative Techniques for Management (DSC 10)	4	3	1	0	XII Class	Basic knowledge of Statistics and Mathematics

Learning Objectives

- To apprise learners with the construction of mathematical models for managerial decision situations and to use spreadsheets or computer software packages to obtain a solution of real business problems.
- To acquaint learners with the techniques of Operational Research for understanding, formulating, solving and interpreting the real-world scenarios.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand the basic concepts, principles, and terminology of linear programming, optimization, post optimality analysis, Game theory, Transportation problem, Assignment problem and Network analysis.
- Solve and interpret the results of linear programming, Transportation and Assignment problems, Network Analysis and Game Theory.
- Construct optimization models, linear programming problems, and decision-making frameworks based on given problem statements and real-world scenarios.
- Develop critical thinking and use Optimization techniques to improve decision making.

SYLLABUS OF DSC 10

Unit I: Introduction to Linear Programming Problem (12 hours)

Formulation of linear programming problems, graphical solutions (special cases: multiple optimal solution, infeasibility, unbounded solution), applications of linear programming to marketing, finance, operations management, Data Envelopment Analysis etc.,Simplex Method, Special cases, Big-M method and Two-phase method.

Unit II: Post Optimality Analysis and Game Theory (9 hours)

Duality: primal-dual relationship, shadow price, economic interpretation of dual, duality and simplex method, post optimality analysis: consequences of changes in cost coefficients and resource vector on the optimal solution.

Game theory, two-person zero-sum games, maximin & minimax principle, games without saddle point: mixed strategy, dominance rule, solution of 2 x s, and r x 2 games by graphical method, formulate and solve mixed-strategy m x n games using linear programming technique.

Unit III: Transportation and Assignment Problem (12 hours)

Transportation Problem: Formulation, Solution by N.W. Corner Rule, Least Cost method, Vogel's Approximation Method (VAM), Modified Distribution Method; Special cases: Multiple Solutions, Maximization case, Unbalanced case, Prohibited routes.

Assignment Problem: Hungarian Method, Special cases: Multiple Solutions, Maximization case, Unbalanced case, Restrictions on assignment.

Unit IV: Network Analysis (12 hours)

Basic Concept, Construction of AOA Network diagram, Critical Path Analysis, float and slack analysis (Total float, free float, independent float), probability consideration in PERT, Time-Cost optimization in Project.

Essential/recommended Readings (latest edition of readings to be used)

1. Taha, H. A. (2019). *Operations Research: An Introduction*. Pearson Education, India.
2. Taylor, B. W. (2016). *Introduction to management science*. Pearson Education, India.
3. Hillier, F. S. & Lieberman G. J. (2021) *Introduction to Operations Research.* McGraw Hill, India.
4. Render, B., & Stair Jr, R. M. (2016). *Quantitative Analysis for Management*, 12th ed. Pearson Education, India.
5. Vohra, N. D. (2006). Quantitative Techniques in Management, 5th ed. Tata McGraw Hill, India.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 11: FINANCIAL MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Financial Management (DSC 11)	4	3	1	0	Class XII	Basic knowledge of Accounting

Learning Objectives

- To provide an understanding of the essential elements of the financial environment in which the business firm operates.
- To acquaint learners with the techniques of financial management and their applications for business decision making.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand the concept of time value of money and its application in investment, financing and dividend decisions.
- Understand the process of making investments, raising finance for investment in fixed and current assets and distribution of surplus from business operations.
- Evaluate the investment opportunities available, the various financing mix that can be used to derive the maximum value from the investment opportunities, the optimal dividend payout and monitor the current asset requirements.
- Analyse the evaluation outcomes to choose the best investment opportunity at the lowest cost of financing and adopt the optimal dividend payout along with the optimal level of liquidity through the working capital route to derive maximum wealth.
- Create a portfolio of investments at the best possible financing and dividend mix with the most appropriate working capital composition that will create maximum wealth under the given constraints.

SYLLABUS OF DSC 11:

Unit 1: Introduction to Financial Management (6 Hours)

Nature of Financial Management: Finance and related disciplines; Scope of Financial Management; Profit Maximization vs Wealth Maximization. Types of financial decisions – Finance, Investment , Dividend; Risk-Return Trade-off in Finance Functions. Organisation of finance function; Concept of Time Value of Money – present value, future value.

Unit 2: Strategic Investment Decisions and Cost of Capital (15 Hours)

Strategic Investment Decisions: Capital Budgeting - Nature and meaning of capital budgeting; Principles and Process; Estimation of relevant cash flows and terminal value; Evaluation techniques – Payback and Discounted Payback Period, Net Present Value (NPV), Profitably Index Method, Internal Rate of Return (IRR) & Modified IRR, NPV vs. IRR, Net Terminal Value. Cost of Capital: Meaning and concept, Measurement of cost of capital – Cost of debt; Cost of Equity Share; Cost of Preference Share; Cost of Retained Earning; Computation of overall cost of capital based on Historical and Market weights (WACC).

Unit 3 Strategic Financing & Dividend Decisions (12 Hours)

Strategic Financing Decisions – Capital Structure, Theories and Value of the firm – Net Income approach, Net Operating Income approach, Traditional approach. Determining the optimal capital structure. Leverage analysis and EBIT-EPS Analysis: Concept of leverage, Types of leverage: Operating leverage, Financial leverage, Combined leverage; EBIT-EPS Analysis. Dividend Decisions: Factors determining dividend policy. Theories of dividend – Gordon model, Walter model, MM Hypothesis, Signalling Theory. Forms of dividend – Cash dividend, Bonus shares, Stock split.

Unit 4: Working Capital Management (12 Hours)

Working Capital Management: Determination of Working Capital. Determining financing mix of working capital. Receivables Management – Objectives; Credit Policy, Cash Discount, Debtors Outstanding and Ageing Analysis; Costs – Collection Cost, Capital Cost, Default Cost, Delinquency Cost. Management of Cash (Theory only) – Need for Cash, Cash Management Techniques (Lock box, Concentration Banking). Inventory Management (Theory only) – ABC Analysis; Minimum Level; Maximum Level; Reorder Level; Safety Stock; EOQ (Basic Model).

Essential/recommended Readings (Latest editions of the readings to be used)

1. Brealey, R.R., Myers.S., Allen, F.,& Mohanty, P. *Principles of Corporate Finance*. (13th Edition Tata Mc-Graw Hill.
2. Horne, James CV. And John M. Wachowicz, Jr. *"Fundamentals of Financial Management.*(13th ed, Pearson Education.
3. Pandey, I.M. (2016), *Financial Management*, 11th ed., Vikas Publication.
4. Khan, M.Y. and Jain, P.K.(2017). *Financial Management: Text Problem and Cases*, 7th ed. Tata McGraw Hill Education.
5. Singh, S. and Kaur, R. (2020). *Fundamentals of Financial Management: with Excel application s*upplement,, Mayur Paperbacks.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 12: HUMAN RESOURCE MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Human Resource Management (DSC 12)	4	3	1	0	Class XII	Basics of Organizational Behaviour and Management

Learning Objectives

- To help the learners to develop an understanding of the concept & and essential functions of human resource management.
- To focus on Human resource management in context of Indian experiences, approaches and cases.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand the concept, functions and role of human resource management and explore the recent trends of human resource management.
- Develop an understanding of human resource management functions of planning, recruitment and selection.
- Apply the concepts of HRM to develop training and development programs for employees.
- Enhance awareness of certain important issues in industrial relations.

SYLLABUS OF DSC 12

Unit 1: Introduction to Human Resource (9 Hours)

Human Resource Management: Concept and Functions; HRD – Definition, goals and challenges; The changing environment of HRM– globalization, cultural environment, technological advances, workforce diversity, corporate downsizing, changing skill requirement, HRM support for improvement programs, Work life balance.

Unit 2: Human Resource Planning, Recruitment and Selection (12 Hours)

Human Resource Planning: Process, Forecasting demand & supply, Skill inventories, Succession planning; Human Resource Information System (HRIS); Job analysis – Uses, methods, Job description & Job specifications; Recruitment: internal & external sources, Selection process, Tests in selection, concept of reliability and validity in selection; Orientation: Concept and process.

Unit 3: Training and Development (12 Hours)

Training: Concept, Training Process, Methods of training. Management Development: Concept & Methods. Performance Management System: concept, uses of performance appraisal, performance management methods, factors that distort appraisal. Career Planning: career life stages, career anchors. Compensation: Steps in determining compensation, job evaluation, components of pay

structure, factors influencing compensation levels, Trends in Compensation. Incentives: Importance and types; Benefits - Types, Brief introduction to social security, health, retirement & other benefits.

Unit 4: Industrial Relations (12 Hours)

Industrial Relations: Introduction to Industrial Relations; Trade unions role, types, functions, problems. Industrial disputes – concept, causes & machinery for settlement of disputes. Employee Grievances – concept, causes & grievance redressal procedure. Discipline – concept, aspects of discipline & disciplinary procedure. Collective bargaining: concept, types, process, problems, essentials of effective collective bargaining.

Essential/recommended Readings (latest edition of readings to be used)

1. Dessler, G., & Varrkey, B. (2005). *Human Resource Management, 15e*. Pearson
2. DeCenzo, D. A., Robbins, S. P., & Verhulst, S. L. (2016). *Fundamentals of human resource management.* John Wiley & Sons.
3. Chhabra, T.N. (2009). *Human Resource Management Concept & Issues*. Dhanpat Rai and company.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE - MARKETING (DSE-4)

DSE 4: INTEGRATED MARKETING COMMUNICATION

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Integrated Marketing Communication (DSE 4)	4	3	1	0	Class XII	Basics of Marketing

Learning Objectives

- To equip the learners with knowledge on the nature, purpose and complex construction in the planning and execution of an effective Integrated Marketing Communications (IMC) program.
- Develop understanding of various tools of IMC and the importance of coordinating them for an effective marketing communications program.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand the purpose and importance of IMC and Social and ethical aspects of IMC.
- Develop an understanding of the creative aspects of advertising and media strategy.
- Analyse the concepts of the choice of different elements of IMC.
- Evaluate the effectiveness of the promotional program, social and cultural consequences and economic effects of advertising.

SYLLABUS OF DSE 4

Unit 1: Introduction to IMC and the Communications Process (9 Hours)

Evolution of IMC and reasons for its growth, promotional tools for IMC, IMC Planning Process, Role of IMC in Marketing Process, Communication Process; Traditional & Alternative Response Hierarchy models. Setting objectives for the IMC Program, Establishing and Allocation of Promotional budget. Social and ethical aspects of IMC.

Unit 2: Creative and Media Strategy (12 Hours)

The Creative Process, Inputs to the Creative Process, Advertising Appeals, Media planning and scheduling; Key factors influencing media planning; Media decisions: media class, media vehicle & media option; introduction to broadcast, print, support media; Digital and Social media marketing.

Unit 3: Others Tools of IMC (12 Hours)

Evaluating Sales Promotion, Direct Marketing, Interactive Marketing, Public Relations & Personal

Selling: Objectives and Types of Direct Marketing, Advantages and Disadvantages of Direct Marketing, Objectives of Interactive Media Marketing, Measures of Effectiveness on Internet, Advantages and Disadvantages of Internet, Growth of Sales Promotions, Types of Sales Promotions: Consumer and Trade Promotions, Process, Advantages and Disadvantages of Public Relations, Publicity: Advantages and Disadvantages, Nature, Advantages and Disadvantages of Personal Selling.

Unit 4: Measuring Effectiveness of the Promotional Program & Evaluating Social, Ethical and Economic Aspects (12 Hour)

Measuring Effectiveness: Arguments for and against, Advertising Research – What, When, Where & How, Testing Process. Advertising and Promotion Ethics, Advertising and Children, Social and Cultural Consequences – Stereotypes, Economic Effects of Advertising.

Essential/recommended Readings (latest edition of readings to be used)

1. Belch, G. E., Belch, M. A., & Purani, K. (2021). *SIE Advertising and promotion : an integrated marketing communications perspective.* (12th ed). McGraw-Hill Education
2. Batra, R., Myers, J.G., Aaker, & D.A. (2002). *Advertising Management*. (5th ed). Prentice Hall India.
3. Moriarty, S., Mitchell, N, Wells, W. D., & Wood, C.(2021). *Advertising & IMC- Principles & Practice*. (11th ed). Prentice Hall.
4. Kazmi, H.H., Batra, & S. K. (2008). *Advertising and Sales Promotion*. (3rd ed). Excel books.

Suggestive Readings (latest edition of readings to be used)

1. Russel, R., Lane, J., & Thomas. W. (2002). *Kleppner's Advertising Procedure.* 15th edition. Pearson Custom Publishing.
2. Clow, K. E., & Baack, D. (2017). *Integrated Advertising, Promotion and Marketing Communication*. 8th edition. Prentice Hall.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC ELECTIVE - MARKETING (DSE-5)

DSE 5: BRAND MANAGEMENT

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Brand Management (DSE 5)	4	3	1	0	Class XII	Basics of marketing

Learning Objective

- To attain a comprehensive knowledge on the subject of brands, brand equity and brand management
- Develop understanding of design and implementation of marketing programs to build and manage brand equity.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand the process and importance of brand management
- Define the main concepts and explain the purpose of branding
- Develop brand elements and brand associations to build brand equity.
- Design effective branding strategies for products/services.

SYLLABUS OF DSE 5

Unit 1: Introduction to Brand Management (12 Hours)

Brand –Meaning, Definition, Evolution of Brands, Functions of Brand for a consumer, Role of Brand-Advantages of a Brand, Brand Versus Product, Branding- Meaning, Creation of Brands through goods, services, people, organization, retail stores, places, online, entertainment, ideas. Branding Challenges and Opportunities, Brand Management – Meaning & Definition. Strategic Brand Management Process – Steps in Brand Management Process.

Unit 2: Developing Brand Equity (9 Hours)

Customer Based Brand Equity, Brand Equity: Meaning and Sources, Steps in Building Brands, Brand building blocks-Resonance, Judgments, Feelings, performance, imagery, salience- Brand Building Implications. Positioning, Dimensions of brand identity, Brand identity prism, Brand positioning – Meaning, Point of parity & Point of difference, Positioning guidelines Brand Value: Definition, Core Brand values, Brand mantras, Internal branding.

Unit 3: Developing Brand Elements (12 Hours)

Choosing Brand Elements to Build Brand Equity: Criteria for choosing brand elements, options & tactics for brand elements - Brand name, Naming guidelines, Naming procedure, Awareness, Brand

Associations, Logos & Symbols & their benefits, Characters & Benefits, Slogans & jingles, Packaging. Designing Marketing Programs to build Brand Equity: New perspectives on Marketing, Product Strategy, Pricing Strategy and Channel Strategy. Leveraging Secondary Brand Associations to build Brand Equity: Conceptualising the leveraging Concept, Company, Country of Origin, Channels of Distribution, Co-Branding, Licensing, Celebrity Endorsements, Sporting, Cultural and Other Events.

Unit 4: Managing Brand Overtime (12 Hours)

Brand Extension: Meaning, Types, Needs, Advantages & Disadvantages. Consumer – brand relationships Understanding how consumers evaluate brand extensions, evaluating brand extension opportunities. Strategic alliances, brand portfolios, global branding: Geographic extension, sources of opportunities for global brand, single name to global brand, consumers & globalization, condition and brand repositioning/revitalization.

Essential/recommended Readings (latest edition of readings to be used)

1. Keller, K.L., Parameswaran, Ambi M.G., & Jacob, I. (2016). *Strategic Brand Management, Building, Measuring & Managing Brand Equity*. 4th edition. Pearson.
2. Verma, H. V. (2007). *Brand Management: Text and Cases*. 2nd edition. Excel Books India.
3. Sengupta, S. (2004). *Brand Positioning: Strategies for Competitive Advantage*. 2nd edition. McGrawHill Higher Education.

Suggestive Readings (latest edition of books to be used)

1. Kapferer, J. (2012). *The New Strategic Brand Management: Advanced Insights and Strategic Thinking*. 5th edition. Kogan Page Publishers

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE - MARKETING (DSE-6)

DSE 6: SALES AND DISTRIBUTION MANAGEMENT

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Sales and Distribution Management (DSE 6)	4	3	1	0	Class XII	Basics of Marketing

Learning Objectives

- To understand the evolution of sales management and its importance in modern day business.
- To understand the overall sales management process and various theories of selling.
- To understand actual means of distribution and it's management
- To understand and analyze the Logistics management

Learning Outcomes

On successful completion of the course the learner will be able to:

- Differentiate and implement different types of personal selling and selling skills.
- Explain the sales management process and its various stages.
- Design a customer-oriented distribution channel.
- Manage channel member behavior and resolve channel conflict

SYLLABUS OF DSE 6

Unit 1 **(9 Hours)**

Introduction to Sales Management: Evolution of sales management. Nature, role and importance. Types of personal selling. Types of selling, Selling skills and situations. Modern day sales activity. Emerging trends in sales management. Theories of Selling: AIDAS theory of selling, Right set of circumstances theory of selling, buying formula theory of selling, Behavioral equation theory of selling.

Unit 2 **(12 Hours)**

Sales management process (Selling process), Buyer seller dyads, Management of Sales Territory & Sales Quotas: Introduction, Sales territory, size of sales territory, allocation of sales territory, designing of sales territory. Introduction to sales quotas, procedures of setting quotas, types of sales quotas, methods and problems in setting sales quotas, sales control and analysis.

Unit 3 **(12 Hours)**

Distribution Management: Introduction, Distribution channels: why are they required, activities that a typical distribution channel performs, valuation enhancement through the distribution function, distribution channel strategy, distribution channel management. Designing customer-oriented channels, capturing customer requirements, conducting cost analysis, Case study.

Unit 4 **(12 Hours)**

Customer-Oriented Logistics Management – Managing channel member behaviour: Introduction, objectives of logistics, logistics planning, transportation decisions. Channel relationships, channel control, channel power, channel positioning, channel influence strategies, channel conflict, Case study.

Essential/recommended Readings (latest edition of readings to be used)

1. Panda, T. K., & Sahadev, S. (2019). *Sales and distribution management.* Oxford University Press.
2. Still, R. R., Cundiff, E. W., Govoni, N. A. P. (2015). *Sales management.* Prentice Hall of India.

Suggestive Readings (latest edition of readings to be used)

1. Gupta, S. L. (2018). *Sales and distribution management.* Excel Books.
2. Anderson, W. T. (2011). *Professional sales management*. Tata McGraw-Hill Education.
3. Berman, B. (2012). *Retail management*. Prentice Hall.
4. Dutta, B. (2015). *Sales and distribution management.* I K International Publishing House Pvt. Ltd.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE – HUMAN RESOURCE MANAGEMENT (DSE-2)

DSE 2: RECRUITMENT AND SELECTION MANAGEMENT

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Recruitment and Selection Management (DSE 2)	4	3	1	0	Class XII	Basics of Management

Learning Objectives

- To equip the learners with knowledge of the role of HR in workforce planning and assessment, sources of recruitment and selection process.
- To familiarize learners with topics like the development of a qualified pool of candidates, contemporary trends, international recruitment and selection.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand the theory, practice, principles and concepts of work, role of HR in workforce planning and assessment, sources and factors affecting recruitment.
- Understand the selection process, different types of tests in selection, types of interviews, biases in selection and negotiations during job offer.
- Analyse the fundamentals of international recruitment.
- Evaluate the contemporary issues in recruitment and selection like legal compliance and ethical considerations, e-recruitment and e-selection.

SYLLABUS OF DSE 2

Unit 1: Introduction to Recruitment (12 hours)

Work: Meaning, Evolution of Work Structure, Organizing and Logistics, Strategic Job Redesign, Role of HR in workforce planning and assessment, Recruitment: Concept, internal & external sources

with benefits and limitations, Factors affecting recruitment, Designing external job posting.

Unit 2: Introduction to Selection (12 Hours)

Selection process, Types of tests in selection, concept of reliability and validity in selection tests Types of Interviews, Biases in selection of employees, Negotiations during Job Offer.

Unit 3: International approach to Recruitment and Selection (12 Hours)

International Recruitment; International staffing choice, different approaches to multinational staffing decisions; Types of international assignments; Selection criteria and techniques; Successful expatriation, Causes of expatriate failure, female expatriation, Compensation of Expatriates.

Unit 4: Contemporary, Legal and Ethical Issues (9 Hours)

Contemporary issues in Recruitment and Selection, Legal Compliance and Ethical Considerations, Retention Strategies, E-recruitment and E-selection

Essential/recommended Readings (latest edition of readings to be used)

1. O'Meara, B., & Petzall, S. (2013). *Handbook of Strategic Recruitment and Selection: A Systems Approach.* Emerald Group Publishing.
2. Picardi, C. A. (2019). *Recruitment and Selection: Strategies for Workforce Planning & Assessment*. Sage Publications.
3. Nilanjan, S. & Bhattacharya, M. (2010). *International Human Resource Management.* Excel Books.
4. Dowling, P. J., Festing, M., & Engle, A. D. (2017). *International Human Resource Management*. Cengage Learning.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE – HUMAN RESOURCE MANAGEMENT (DSE-3)

DSE 3: WORKFORCE DIVERSITY

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Workforce Diversity (DSE 3)	4	3	1	0	Class XII	Basics of Organisational Behaviour

Learning Objectives

- To explore the concepts of workforce diversity and to enable learners to recognise its critical issues.
- To familiarize learners with strategies to manage diversity, relation between workforce diversity and human resource management.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand the core concepts of workforce diversity and its significance.
- Understand how to develop strategies to manage diversity through training and mentoring and other programs.
- Analyze the fundamentals of global workforce diversity and ethical and legal issues in managing diversity.
- Evaluate the relationship between workforce diversity and various functions of human resource management.

SYLLABUS OF DSE 3

Unit 1: Introduction of Workforce Diversity (12 hours)

Workforce diversity – Meaning, features, significance; Workforce diversity potential pros & cons, Managing Diversity, Reverse Discrimination, Raising cross cultural consciousness.

Unit 2: Strategies to Manage Diversity (9 hours)

Workplace Inclusion, Diversity through training and mentoring, Role of technology in Diversity, Diversity management programs, Leadership's role in leveraging diversity.

Unit 3: Global Workforce Diversity (12 hours)

Diversity and Multiculturalism, Leveraging diversity in global virtual teams, Developing global leaders: Utilising the intercultural effectiveness competencies model; Ethical and legal issues in managing diversity.

Unit 4: Workforce Diversity and HRM Functions (12 hours)

Recruitment and retaining diverse workforce, Diversity and performance management, Diversity and Work-life balance, Workforce diversity as a determinant of sustainable competitive advantage.

Essential/recommended Readings (latest edition of readings to be used)

1. Dessler, G. (2013). *Fundamentals of Human Resource Management.* Pearson.
2. Scott, C. L., & Byrd, M. Y. (2012). *Handbook of Research on Workforce Diversity in a Global Society: Technologies and Concepts.* Business Science Reference/IGI Global.
3. Kossek, E. E., & Lobel, A. (1996). *Managing diversity.* Cambridge, Massachusetts: Blackwell Publishers.
4. Kossek, E. E., Lobel, S. A., & Brown, J. (2006). *Human resource strategies to manage workforce diversity.* Handbook of workplace diversity, 53-74.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE – HUMAN RESOURCE MANAGEMENT (DSE-4)

DSE 3: NEGOTIATIONS

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Negotiations (DSE 4)	4	3	1	0	Class XII	Basics of of Organisational Behaviour

Learning Objectives

- To provide insight into how to negotiate effectively by applying appropriate strategies and tactics to different negotiation situations.
- To facilitate the understanding of the numerous dynamics involved in the process of negotiation.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand the nature, process, types and tactics of negotiation.
- Understand and practice the communication skills and persuasion tactics necessary for effective negotiation, finding and using power in negotiation.
- Apply negotiation strategies to achieve goals without jeopardizing relationships.
- Apply negotiation concepts to build competence in handling multiparty negotiation, third-party negotiation and resolving impasse in negotiations.

SYLLABUS OF DSE 4

Unit 1: Negotiation Meaning and Styles (12 Hours)

Introduction; Nature and Scope; Foundations of Negotiation: Conflict and Its Management, Conflict Management through Negotiation, Fundamentals of Negotiation Preparations for Negotiation; Negotiation Process and Planning: Four Stages of Negotiation, PRAM Model of Negotiation, Key Steps in Planning for Negotiation; Distributive Negotiation: Bargaining situation, Positions Taken during Negotiation, Closing the Deal, Integrative Negotiation: Overview, Process, Factors for Successful Integrative Negotiation; Negotiation Tactics and Counter Tactics.

Unit 2: Negotiation Styles and Skills (12 Hours)

Negotiation Styles: Meaning, Types, Developing Effective Negotiating Style; Communication in Negotiation: Defining Communication, Kinesthetic Communication, Decoding Communication for Negotiation; Persuasion in Negotiations: Theory and Tactics; Perception and Cognition: Perceptual Distortion, Cognitive Biases in Negotiation, Managing misperception and cognitive biases in negotiation; Finding and Using Power in Negotiation: Importance, Definition, Sources of Power; Negotiation Ethics.

Unit 3: Relationships in Negotiation **(12 Hours)**

Challenges, Role of Trust, Reputation and Justice in managing Negotiation within Relationships; Repairing a Relationship; Influence of Culture and Gender on Negotiations: Meaning of Culture, Norms and Values, Negotiation Issues Sensitive to Culture, Culturally Responsive Negotiation Strategies; Gender Differences in Negotiation; Negotiation Via Information Technology: Place – Time Model of Social Interaction, Effects on Social Behavior, Strategies for enhancing Technology – Mediated Negotiations.

Unit 4: Multiple Parties, Groups and Teams in Negotiation **(9 Hours)**

Analysing Multiparty Negotiation, Coalitions, Principal-Agent Negotiations, Constituent Relationships, Team Negotiation, Intergroup Negotiation; Third-party Negotiation: Conciliation, Mediation, Arbitration, Collective Bargaining, Qualities of a Mediator; Resolving Impasse in Negotiations: Barriers in Negotiation, Causes and Sources of Impasses, Overcoming Barriers, Overcoming Impasses, Alternative Dispute Resolution (ADR).

Essential/recommended Readings (latest edition of readings to be used)

1. Lewicki, R. J., Barry, B., & Saunders, D. M. (2016). *Essentials of negotiation.* New York: McGraw-Hill Education.
2. Rai, H. (2018). *Negotiation.* McGraw Hill Education.
3. Thompson, L. L. (2012). *The mind and heart of the negotiator.* Pearson.
4. Korobkin, R. (2014). *Negotiation Theory and Strategy,* Aspen Publishing.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE -FINANCE (DSE-4)

DSE 4: MERGERS, ACQUISITIONS AND CORPORATE RESTRUCTURING

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Mergers Acquisitions and Corporate Restructuring (DSE 4)	4	3	1	0	Class XII	Basics of Accounting and finance

Learning Objectives

- To provide an understanding of the corporate restructuring, mergers and acquisitions.
- To acquaint the learners with the basic methods of valuation, methods of payment and financing options available at the global level.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand the concept and importance of corporate restructuring for growth.
- Recognize opportunities for creating value through Mergers and Acquisitions.
- Illustrate and apply methods used in the valuation of a firm for M&A analysis.
- Understand the legal and the regulatory framework for Mergers and Acquisitions.

SYLLABUS OF DSE 4

Unit 1: Corporate Restructuring – An Overview (11 Hours)

Concept and importance of corporate restructuring, various forms of restructuring: joint ventures (types), Strategic alliance (types), Merger (types), Acquisition (types), Consolidation, Divestiture, Demerger (Spin-off, Split-up, Split-off), Equity carve-out, Management buyout, Leveraged buyout, Buyback of securities, ESOP.

Unit 2: Merger & Acquisition (12 Hour)

Motives behind M&A, theories of M&A, process of M&A. Fast track merger. Cross border M&A concept, benefits & difficulties. Due diligence process. Methods of payment and financing options in M&A. Takeover defense tactics. Reasons for failure of M&A.

Unit 3: Deal Valuation and Evaluation (11 Hour)

Methods of valuation; cash flow approaches, economic value added (EVA) (with numerical), sensitivity analysis (with numerical), Valuation for slump sale, valuation of synergy (with numerical), cost-benefit analysis and swap ratio determination (with numerical).

Unit 4: Legal and Regulatory Framework of M&A (11 Hour)

Provisions of Companies Act 2013, SEBI Takeover Code 2011, Provisions of Competition Act 2002.

Essential/recommended Readings (latest edition of readings to be used)

1. Weston, F., Chung, Kwang S. and Siu, Jon A. (1998). *Takeovers, Restructuring and Corporate Governance*. Pearson Education.
2. Gupta, M. (2010). *Contemporary Issues in Mergers and Acquisitions*. Himalaya Publishing.
3. Sundarsanam. (2006). *Creating Value from Mergers and Acquisitions* (1st edition). Pearson Education.
4. Ramanujan. S. (1999). *Mergers: The New Dimensions for Corporate Restructuring*. McGraw Hill.
5. Narayankar, R. (2013). *Merger and Acquisitions Corporate Restructuring, Strategy and Practices* (2nd edition). International Book House Pvt. Ltd.

Note: Examination scheme and mode shall be as prescribed by Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC ELECTIVE -FINANCE (DSE-5)

DSE 5: INVESTMENT BANKING AND FINANCIAL SERVICES

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Investment Banking and Financial Services (DSE 5)	4	3	1	0	Class XII	Basic knowledge of finance

Learning Objectives

- To provide understanding of different aspects of Investment banking and financial services.
- To acquaint the learners about Issue Management of stocks in primary market and role of secondary market and it process
- To acquaint the learners with the basic concept of Leasing, Hire Purchase, Factoring and Forfaiting, Insurance, Credit Rating, Securitization and Venture Capital Financing, Mergers and acquisition
- To know the guidelines of regulatory bodies like IRDA,SEBI on issue management and insurance.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand the importance and relevance of Investment Bankers in any Financial System.
- Evaluate the entire process of raising funds from primary markets along with the concerned regulations applicable in India.
- Remember and use the various financial services available in financial markets particularly in India along with the latest innovations and technological integration in the field of finance.
- Apply the role and functions of Investment bankers present under the legal framework of SEBI.

SYLLABUS OF DSE 5

Unit 1: Introduction to Investment Banking (11 Hours)

Introduction: An Overview of Indian Financial System, Investment Banking in India, Recent Developments and Challenges ahead, Institutional structure and Functions of Investment Banking; SEBI guidelines for Merchant Bankers, Registration, obligations and responsibilities of Lead Managers.

Unit 2: Issue Management (11 Hours)

Issue Management: Public Issue, classification of companies, eligibility, issue pricing, promoter's contribution, minimum public offer, prospectus, allotment, preferential allotment, private placement, Book Building process; Green Shoe Option; Right Issue: promoter's contribution, minimum

subscription, Bought out Deals, Post issue work & obligations, Investor protection, Broker, sub broker and underwriters.

Unit 3: Financial Services 1 (12 Hours)

Leasing: Concepts of leasing, types of leasing, financial & operating lease, direct lease and sales & lease back, advantages and limitations of leasing, Lease rental determination; Finance lease evaluation problems from Lessee's angle. Hire Purchase: Interest & Instalment, difference between Hire Purchase & Leasing, Choice criteria between Leasing and Hire Purchase, numerical problems on of Hire purchase for decision making. Factoring and Forfaiting and its arrangement, Housing Finance: Meaning and rise of housing finance in India, floating vs. fixed rate.

Unit 4: Financial Services 2 (11 Hours)

Venture Capital: Concept, history and evolution of VC, the venture investment process, various steps in venture financing, incubation financing. Securitization: Concept and Process, Credit Enhancement parties to a Securitization Transaction, Instruments of Securitization, Types of Securities, Securitization in India. Credit Rating Agencies: Role and Mechanism, Private Equity.

Mergers and Acquisitions – Introduction of mergers and acquisitions, benefits of mergers, Role of Investment bankers in merger, procedure and theories of mergers, acquisitions and takeovers in India, anti-takeover strategies.

Essential/recommended Readings (latest edition of readings to be used)

1. Khan, M. Y. (2013). *Financial services* (7th ed). McGraw-Hill Education.
2. Machiraju, H. R. (2002). *Indian financial system*. Vikas Publication House.

Suggestive Readings (latest edition of readings to be used)

1. Verma, J. C. (1996). *Bharat's manual of merchant banking: Concept, practices and procedures with SEBI clarifications*. Bharat Law House.
2. Sriram, K. *Hand book of leasing, hire purchase and factoring*. ICFAI.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC ELECTIVE -FINANCE (DSE-6)

DSE 6: EARNINGS MANAGEMENT

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Earnings Management (DSE 6)	4	3	1	0	Class XII	Basic knowledge Accounting

Learning Objectives

To equip the learners with the analytical skills, and competencies to address earnings management issues in organisations.

To acquaint the learners with the core concepts of accounting analytics and via hands-on exercises, build skills and competencies around the management, analysis and representation of data.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Remember the analysis of a company to identify the sources of its competitive advantage (or red flags of potential trouble), and then use that information to forecast its future financial statements.
- Understand the process of earnings management and get a more accurate picture of earnings, so that they can catch the culprits of manipulated financial reporting.
- Apply the knowledge of a very strong tool that will help to red flag the financial statements that may have been manipulated by the managers.
- Understand and Analyze Non-Financial Metrics to set performance targets for optimal financial performance.

SYLLABUS OF DSE 6

Unit 1: Ratios and Forecasting (11 Hours)

Review financial statements and sources of financial statement information. The company's strategy and business model. Ratio analysis – short term solvency ratios, long term solvency ratios, turnover ratios and profitability ratios (Historical ratio analysis of real companies using Excel). Du-Pont analysis. How to use all the ratios, to forecast future financial statements? Accounting based valuation.

Unit 2: Earnings Management (12 Hours)

Overview of earnings management: Means, motive, opportunity, how managers actually make their earnings look better, their incentives for manipulating earnings, and how they get away with it. Revenue recognition red flags: revenue before cash collection. Revenue recognition red flags: revenue

after cash collection. Expense recognition red flags: capitalizing vs. expensing. Expense recognition red flags: Reserve Accounts and write-offs.

Unit 3: Big Data and Prediction Models (11 Hours)

Overview: Big Data and Prediction Models. Discretionary Accruals Models: Model the Non-Cash portion of Earnings or Accruals. Discretionary expenditure Models: Model the Cash Portion of Earnings. Fraud Prediction Models and Benford's Law.

Unit 4: Non-Financial Metrics and Financial Performance (11 Hours)

Introduction**:** Connecting numbers to non-financial performance measures. Linking non-financial metrics to financial performance: Overview and steps. Targets setting, incorporation of analysis results in financial models and how to use analytics to choose action plans.

Essential/recommended Readings (latest edition of readings to be used)

1. Diri, M.E. (2017). *Introduction to Earnings Management.* Springer.
2. Richardson, V.J., Teeter, R.A., Terrel, K.L. and Mohapatra, P.S. (2020). *Data Analytics for Accounting.* 2nd Edition, McGraw Hill..
3. Prince, J.T. and Bose, A. (2020). *Predictive Analytics for Business Strategy – Reasoning from Data to Actionable Knowledge*. 1st Ed., McGraw Hill

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC ELECTIVE - GLOBAL BUSINESS MANAGEMENT (DSE-4)

DSE 4: INDIA AND THE WORLD ECONOMY

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
India and the World Economy (DSE 4)	4	3	1	0	Class XII	None

Learning Objectives

- Provide an overview of economic policies and business environment in the domestic and world arena. Learner insight into the stylized economic facts on the main dimensions of the domestic and global economy.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand the evolving development paradigm adopted in India, liberalised and globalised world order, domestic and globalization processes, their main characteristics and their dynamic impact on the economy.
- Comprehend the regulatory structures in India, analyse industrial policy in different sectors, and gauge policies on FDI.
- Appraise major economies of the world, analyse the free trade vs. restrictive trade policies, both from a theoretical perspective and in policy terms.
- Synthesise intellectually on current global economic events and trends.

SYLLABUS FOR DSE 4

Unit 1: Overview of the Indian Economy (9 Hours)

Planning and Reforms, Pre-Independence Period, National Development Council, Five Year Plans, Land Reforms, Green Revolution, Evolution of Public Sector in India, Economic Reforms-Liberalisation of economic system, Indian Economy during Post-Planning Period-Role of Niti Aayog, Shift in Economic Policies: Privatisation: Problems and Prospects, Fiscal Policy, Union Budget and Taxation, Monetary Policy and Banking Sector Reforms. Technology and business environment in India.

Unit 2: Regulatory Structures in India (12 Hours)

Industrial Policy, Industry Analysis: Textiles, Electronics and Automobiles, Industry Analysis—FMCG, Chemicals and Pharmaceutical Sectors. Industrial Policy Statement, 1991, Objectives, Features, Micro, Small and Medium Industries and Policies, India's Industrial Progress After 1991,

Performance of Small and Medium Enterprises (SME) Sector, Review of Economic Environment in Industrial Sector, Policies on Foreign Direct Investment in India, Foreign Exchange Regulation Act, Recent Industrial Policy Outlook.

Unit 3: World Economy (12 Hours)

An overview of the world economy; Major economies of the world, Income and Income Growth of World Economy during the last decades. Linkages in the Major Economies- Trade, Investment and Capital Flows. Development and Underdevelopment in the Developing World, The Historical Development of Capitalism, Resources and Environment, International Trade Patterns, Transportation and Communications, Regional Trading Arrangements, Trade Policies for the Developing Nations, Exchange-Rate Systems and Currency Crises, Macroeconomic Policy in an Open Economy, Nontariff Trade Barriers. International Factor Movements and Multinational Enterprises.

Unit 4: Global Operating Environment (12 Hours)

Trade and Climate Change, Trade and Food Security, Trade and Finance, Trade and Geopolitics. Global Recession and New Business Environment, WTO: Agreements and Current Issues; Trade Policy External Sector—BoP, Currency Convertibility issues, Global Outsourcing; Multinational Companies and Foreign Direct Investment. Trends in Global Trade and Economic Integration, Direction of World Trade, Multilateralism and the Multilateral Trading System, Levels of Economic Integration, Contemporary Perspectives: Global Economic Scenario, Public Policy, Business ethics and Corporate Social Responsibility, Consumerism, Major Trade partners, Growth and Poverty, Sustainable Development issues.

Essential/recommended Readings (latest edition of readings to be used)

1. Ahmed, F., & Alam, M.A. (2017). *Business Environment: Indian and Global Perspective*. PHI Learning.
2. Paul, J. (2017). *Business Environment, Text And Cases*. PHI Learning.
3. Stutz, F. P. & Warf, B. (2021) *World Economy, The Geography, Business, Development.* Pearson.
4. Carbaugh, R. J. (2017) *Global Economics*. Cengage Learning.

Suggestive Readings (latest edition of readings to be used)

1. World Bank (2019). *World Development Report*. Oxford. Various Issues.
2. United Nations Development Programme (2014). *Human Development Report*. UNDP, Various issues.
3. UNCTAD (2022). *Trade and Development Report*, UNCTAD, Various issues.
4. Rosser, J. B. & Rosser M.V. (2018).*Comparative Economics in a Transforming World Economy*. Prentice Hall.
5. Daniels, J.P. & David D.V. (2018). *Global Economic Issues and Policies*. Routledge, New York.
6. Yarbrough, B.V. & Yarbrough R.M. (1997). *The World Economy, Trade and Finance*. Cengage Learning.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE - GLOBAL BUSINESS MANAGEMENT (DSE-5)

DSE 5: MULTINATIONAL BUSINESS FINANCE

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Multinational Business Finance (DSE 5)	4	3	1	0	Class XII	Basic knowledge of Finance

Learning Objective

The course will help the learner to:

- Understand the international monetary system and role of financial institutions.
- Recognize different aspects of foreign exchange markets and their functioning.
- Analyse and appraise financial Management of a multinational firm.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand MNCs operations and finances.
- Explain functioning of Multilateral Agencies and their role in global economic development.
- Analyse different aspects of the foreign exchange markets.
- Apply financial management concepts and tools for foreign Investment analysis
- Understand International Payment system and investment strategies

SYLLABUS FOR DSE 5

Unit 1: Introduction (12 Hours)

Multinational Business Finance – MNCs (Multinational Corporations) and transnational corporations, Difference between domestic and International financial management, Motivations for International finance. International Monetary System - The Gold standard, The Bretton Woods system, the flexible exchange, alternative exchange rate system, the European monetary system, Euro and its implications for Indian banking, International Financial Institutions – International Monetary Fund (IMF), Asian Development Bank (ADB), International Bank for Reconstruction and Development (IBRD), Bank for International Settlement (BIS) and Organization for Economic Cooperation and Development (OECD).

References:

Unit 2: Forex Markets (9 Hours)

The Foreign Exchange Markets: Introduction, types: Global and Domestic market, spot market and forward market; rates: direct and indirect quotations, bid-ask spread; Functions of the Foreign

Exchange Markets; determination of forward premiums and discounts, interest arbitrage – covered interest arbitrage and interest parity theory – forecasting of foreign exchange rates.

Unit 3: Financial Management of Multinational Firms (12 Hours)

Financial management of the Multinational Firm – Cost of Capital and Capital Structure of a Multinational Firm – determining capital structure components, Cost of capital for MNCs (Multinational Corporations) and Domestic Firms, Multinational capital budgeting – Problems and issues in foreign investment analysis.

Unit 4: Role of FDI, FII and Payment Systems (12 Hours)

Payment Systems: Payment terms and financing international trade, international flow of funds and portfolio investment in India, FDI (Foreign Direct Investment) vs. FIIs (Foreign Institutional Investors), investment strategies of FIIs in India, FIIs and volatility, impact of FIIs investment on stock markets and public policy. Netting (with numerical), pooling, leading and lagging as international payment settlement.

Essential/ recommended Readings (latest editions of readings to be used)

1. Eiteman, David K., Stonehill, Arthur I., and Moffett, Michael H (2021). *Multinational Business Finance*. Pearson.
2. Alan C. Shapiro, P. H. (2019). *Multinational Financial Management*. Wiley.

Suggestive Readings (latest editions should be referred to)

1. Levi, M. D. (2009). *International Finance*. Taylor & Francis.
2. Madura, J. (2018). *International Financial Management.* Cengage Learning.
3. Buckley, A(2004). *Multinational Finance.* Pearson Education.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE - GLOBAL BUSINESS MANAGEMENT (DSE-6)

DSE 6: TRANSNATIONAL HUMAN RESOURCE MANAGEMENT

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Transnational Human Resource Management (DSE 6)	4	3	1	0	Class XII	Basic knowledge Management and Organisational Behavior

Learning Objectives:

- To explore the concepts and techniques of the essential elements of International HRM and to enable the learners to recognise its critical issues.
- To improve understanding of HRM concerns in the cross-cultural scenario.

Learning Outcomes:

On successful completion of the course the learner will be able to:

- Understand the relevance and impact of culture on HRM for global business operations and how HR practices differs across cultures and countries and apply these to deal with complications that come with handling cross cultural issues.
- Develop an understanding of the fundamentals of staffing for global operations.
- Understand the key elements of performance appraisal for global employees.
- Understand the functional role of HRM in the context of training and industrial relations.
- Apply concepts into practice in multinational organizations.

SYLLABUS FOR DSE 6

Unit 1: Cross-Cultural issues in HRM (12 Hours)

Introduction to HRM for multinational companies. Introduction to concepts of differences due to language; culture, religion and employee and country; Impact of these on the operations of non-domestic companies; Hofstede's approach; cross cultural differences at the workplace; Managing workforce diversity; Diversity management programs; International Human Resource Management: Difference between HRM for domestic and global companies. Integration of HRM with strategies for global operations. Pros and Cons of Internationally diverse HRM practices and their assimilation by global businesses.

Unit 2: Staffing for Global Operations (12 Hours)

International Workforce planning and staffing: Issues in supply of international human resources; Low-cost labour and global staffing; International Recruitment; International staffing choices, Multinational staffing decisions; Types of international assignments; Selection criteria and techniques; Training employees for international assignments; Successful expatriation, Causes of expatriate

failure, female expatriation. Repatriation management. Ethical and legal issues in use of low-cost labour. Regulations relevant to the use of low-cost labour from outside the country. Challenges in transferring culturally sensitive business practices across borders. Issues pertinent to hiring local employees for international operations. Strategic fitment for international assignments and operations. Challenges in managing global teams.

Unit 3: Performance Appraisal for Global Employees (12 Hours)

Performance appraisal: Criteria for performance appraisal, challenges of appraising employees from different cultural backgrounds; Biases affecting performance appraisal amongst a global workforce; Variables influencing expatriate performance appraisal. Issues and challenges in international performance management; Compensation: Objectives of expatriate compensation plan, Factors affecting international compensation, Approaches to expatriate compensation: COLA; Hardship allowances; Going rate approach, Balance sheet approach, Cultural impact on compensation policy. Strategic questions related to LOC for international assignments. Elements of taxation relevant to compensation for expatriates: tax equalization, tax protection, currency fluctuations

Unit 4: Global Context of Training and Industrial Relations (9 Hours)

Training & development of international staff: Areas of global training, cross cultural training, Diversity training. Cross cultural team building; Cross border Mergers and Acquisitions: HRM perspective; International IR: Key Players, Labour unions, Employee relations. Approaches in IR for global operations; changes in IR landscape across different countries. Strategic decision making for IHRM issues. Control issues in IHRM in global companies - head office vs. local office. Impact of legislation and free trade agreements on HRM issues across national borders.

Essential/ recommended Readings (latest edition of readings to be used)

1. Dowling, P.J., Festing, M. & Engle Sr, A.D. (2013). *International Human Resource Management.* Wiley
2. Nilanjan, S. & Bhattacharya, M. (2010). *International Human Resource Management.* Excel Books.
3. Briscoe, D., Briscoe, D.R., Schuler, R.S., & Claus, L. (2008). *International Human Resource Management: Policies and practices for multinational enterprises*. Routledge.
4. Tayeb, M. (2005). *International human resource management: A multinational company perspective.* Oxford University Press.

Suggestive Readings (latest edition of readings to be used)

1. Dowling, P.J. and Welch, D.E. (2017). *International Human Resource Management.* Cengage Learning
2. Bhattacharyya, D. K. (2010). *Cross-cultural management.* PHI Learning Pvt. Ltd.
3. Edwards, T., & Rees, C. (2006). *International human resource management: Globalization, national systems and multinational companies.* Pearson Education.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

GENERIC ELECTIVES (GE-7): FAMILY BUSINESS MANAGEMENT

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Family Business and Management (GE 7)	4	3	1	0	Class XII	None	Management Studies

Learning Objectives

- To understand the nature and unique characteristics of family-owned businesses, and its role in the global economy.
- To develop a comprehensive understanding of the classic systems of family-owned enterprises.
- To understand the importance of governance structures in family-owned businesses.
- To utilize various tools and models, to diagnose family entanglements and improve family communication and dynamics.
- To develop a comprehensive understanding of succession planning in family-owned businesses.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand the nature, importance, and uniqueness of family-owned businesses and their classic systems. (Knowledge and Comprehension)
- Apply the systems approach to family interaction and identify the different governance systems necessary for the successful operation of a family enterprise. (Application)
- Analyze family dynamics using genograms and family messages, and identify family scripts and themes. (Analysis)
- Evaluate the readiness of the family, the business, and the social and cultural context for succession planning. (Evaluation)
- Synthesize the advice and frameworks presented for succession planning in family-owned businesses and develop a plan for continuity and culture change. (Synthesis)
- Create and propose strategies for building trust and commitment in great families in business, taking into account the emotional intelligence of the family members and the family cohesion and flexibility. (Creation)

SYLLABUS OF GE-7

Unit 1: Family-Owned Business (12 Hours)

Define family-owned business, nature, importance, and uniqueness of family business. Classic systems of a family enterprise (the family system, the ownership system, the enterprise system). Governance systems (enterprise governance, family governance - family council, owner governance - ownership form); creating a governance structure. Systems approach to family interaction (triangle, scapegoat, homeostasis, boundaries). Great families in business: building trust and commitment.

Unit 2: Diagnosing Family Entanglements (12 Hours)

Family genogram. Developing Business family's genogram, the role of genograms and family messages to understand the family system. Using the Genogram to identify family scripts and themes. Family emotional intelligence - The ECI-U Model. Circumplex model of marriage and family systems (understanding family cohesion and family flexibility), Application of circumplex model, clinical rating scale and developing circumplex model.

Unit 3: Family-Owned Business and Readiness (12 Hours)

Personal Readiness (Identity, Change in Capacity, Temperament, Health), System Readiness – Family (Spouse, Children, Extended Family), System Readiness – Business (Enterprise Itself, Owners, Successors), System Readiness – Social and Cultural Context (Community and Cultural Norms).

Unit 4: Succession Planning in Family-Owned Business (9 Hours)

Succession Planning. Advice to successes and successor. Moores and Barrett's 4L framework of family business leadership. the future of family business: new leaders of the evolution - three states of evolution - continuity and culture - changing the culture - commitment planning - organic competencies and business's future - thriving through competition - institutionalizing the change.

Essential/recommended Readings (latest edition of readings to be used)

1. Leach, P. (2011). Family Business: The Essentials. Profile Books Ltd.
2. Dutta, S. (1997). Family Business in India. Sage Publications.

Suggestive Readings (latest edition of readings to be used)

1. DeVries, M. F. K., & Carlock, R. S. (2010). *Family Business on the Couch: A Psychological Perspective*. John Wiley & Sons.
2. Hall, A. (2012). *Family business dynamics: a role and identity-based perspective*. Edward Elgar Publishing.
3. Gimeno, A., Bualenas, G. and Coma-Cros, J. (2014). *Family Business Models*. Palgrave Macmillan.
4. De Pontet, S. B. (2017). *Transitioning from the Top: Personal Continuity Planning for the Retiring Family Business Leader*. Springer.
5. Liebowitz, B. (2011). *The family in business: The dynamics of the family-owned firm. Business* Expert Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-8): FINANCIAL PLANNING FOR INDIVIDUALS

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Financial Planning for Individuals(GE 8)	4	3	1	0	Class XII	None	Management Studies

Learning Objectives

- To equip learners with the knowledge and practical understanding of important dimensions of managing one's personal finance.
- To enable learners' understand and plan their tax liabilities, investments, insurance coverage, and retirement.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand the fundamentals of Personal Financial Planning.
- Learn the basics of managing personal tax liabilities.
- Learn the basic concepts and underlying principles for Retirement Planning.
- Ascertain and choose appropriate insurance policies for managing personal risks.
- Evaluate various asset classes on the basis of risk-return and personal investment goals
- Create, maintain and grow personal investment portfolio

SYLLABUS OF GE-8

Unit 1: Basics of Personal Finance and Tax Planning (12 Hours)

Understanding Personal Finance. Rewards of Sound Financial Planning. Personal Financial Planning Process. Personal Financial Planning Life Cycle. Making Plans to Achieve Your Financial Goals. Common Misconceptions about Financial Planning. Personal Tax Planning –Fundamental Objectives of Tax Planning, Tax Structure in India for Individuals, Common Tax Planning Strategies – Maximizing Deductions, Income Shifting, Tax-Free and Tax- Deferred Income.

Unit 2: Managing Insurance Needs (12 Hours)

Insuring Life – Benefits of Life Insurance, Evaluating need for Life Insurance, Determining the Right Amount of Life Insurance. Choosing the Right Life Insurance Policy – Term Life Insurance, Whole Life Insurance, Universal Life Insurance, Variable Life Insurance, Group Life Insurance, Other Special Purpose Life Policies. Buying Life Insurance – Compare Costs and Features, Select an Insurance Company, and Choose an Agent. Life Insurance Contract Features. Insuring Health – Importance of Health Insurance Coverage. Making Health Insurance Decision – Evaluate Your Health Care Cost Risk, Determine Available Coverage and Resources, Choose a Health Insurance

Plan. Types of Medical Expense Coverage. Policy Provisions of Medical Expense Plans. Property Insurance – Basic Principles, Types of Exposure, Principle of Indemnity, and Coinsurance.

Unit 3: Managing Investments (12 Hours)

Role of Investing in Personal Financial Planning, Identifying the Investment Objectives, Different Investment Choices. The Risks of Investing, The Returns from Investing, The Risk- Return Trade-off. Managing Your Investment Holdings – Building a Portfolio of Securities, Asset Allocation and Portfolio Management, Keeping Track of Investments. Investing in Equity – Common Considerations, Key Measures of Performance, Types of Equity Stock, Market Globalization and Foreign Stock, Making the Investment Decision. Investing in Bonds – Benefits of Investing in Bonds, Bonds Versus Stocks, Basic Issue Characteristics, The Bond Market, Bond Ratings. Investing in Mutual Funds and Exchange Traded Funds (ETFs) – Concept of Mutual Funds and ETFs, Benefits of Investing in Mutual Funds or ETFs, Some Important Cost Considerations, Services Offered by Mutual Funds, Selecting appropriate Mutual Fund and ETF investments, Evaluating the performance of Mutual Funds and ETF.

Unit 4: Investing in Real Estate and Retirement Planning (9 Hours)

Investing in Real Estate – Some Basic Considerations. Modes of Real Estate Investment – Raw Land, Commercial Properties, Residential Properties, Real Estate Investment Trusts (REITs).
Planning for Retirement – Role of Retirement Planning in Personal Financial Planning, Pitfalls to Sound Retirement Planning, Estimating Income Needs, Sources of Retirement Income

Essential/recommended readings (latest edition of readings will be used)

1. Billingsley R., Gitman L., & Joehnk M. (2017). *Personal Financial Planning*. Cengage Learning.
2. Tillery S., & Thomas N. Tillery. (2017). *Essentials of Personal Financial Planning*. Association of International Certified Professional Accountants.

Suggestive readings (latest edition of readings to be used)

1. Indian Institute of Banking & Finance. (2017). *Introduction to Financial Planning* (4th ed.).
2. Sinha, M. (2017). *Financial Planning: A Ready Reckoner*. Mc Graw Hill.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-9) INTRODUCTION TO INTERNATIONAL BUSINESS

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Introduction to International Business (GE 9)	4	3	1	0	Class XII	Concepts of Marketing	Management Studies

Learning Objectives

- This course would introduce learners to international business and marketing environment
- Create awareness about emerging issues such as international expansion, outsourcing and sustainable development in the context of international business.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Interpret the processes of globalization and their impact on growth of international business.
- Inspect the changing dynamics of the diverse international business environment.
- Question the theoretical dimensions of international trade as well as the intervention measures adopted.
- Illustrate the forms of foreign direct investment and analyse benefits and costs of FDI.
- Reproduce awareness about emerging issues in international business such as outsourcing and sustainable development.

SYLLABUS OF GE 9

Unit 1: Introduction to International Business (9 Hours)

Globalization – concept, significance and impact on international business; international business contrasted with domestic business; complexities of international business; internationalization stages and orientations; modes of entry into international businesses.

Unit 2: International Trade (12 Hours)

Theories of international trade – Theory of Absolute Advantage theory, Theory of Comparative Advantage, Factory Proportions theory and Leontief paradox, Product Life Cycle theory, Theory of National Competitive Advantage; Instruments of trade control.

Unit 3: International Business Environment (12 Hours)

Role of political and legal systems in international business; cultural environment of international business; implications of economic environment for international business. International Economic

Organisations: WTO- functions, structure and scope; World Bank and IMF.

Unit 4: International Finance and Contemporary Issues (12 Hours)

Types of FDI - Greenfield investment, Mergers & Acquisition, strategic alliances; benefits and drawbacks of FDI. Overview of Exchange Rate systems. Contemporary issues in international business: Outsourcing and its potential for India; international business and sustainable development.

Essential/recommended readings (latest edition of readings to be used)

1. Bennett, R. (2006). *International Business.* (1st edition). Pearson.
2. Cavusgil, T., Knight, G. and Riesenberger, J. (2007). *International Business: Strategy, Management and the New Realities.* (1st edition). Pearson India.
3. Hill, C.W.L and Jain, A.K. (2011). *International Business.* (1st edition). Tata McGraw Hill.

Suggestive readings (latest edition of readings to be used)

1. Salwan, P., Daniels, J.D., Radenbaugh, L.H. and Sullivan, D.P. (2016). *International Business.* (15th edition). Pearson Education.
2. Griffin, R.W. and Pustay, M.W. (2018). *International Business: A Managerial Perspective.* (4th edition). Prentice Hall.
3. Menipaz, E., Menipaz A. and Tripathi S.S. (2011). *International Business: Theory and Practice.* (1st edition). Sage Publications India Pvt. Ltd.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

GENERIC ELECTIVES (GE-10) PERSONAL SELLING

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Personal Selling (GE 10)	4	3	1	0	Class XII	None	Management Studies

Learning Objectives

- To familiarize the learners with the concept and practice of personal selling process, techniques and methods in the modern organizational setting.
- To equip learners with theories of selling, selling process and sales territory.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand the concept, importance and role of personal selling.
- Develop an in-depth understanding of various theories of selling.

- Analyse the concepts of the tools and techniques of the selling process.
- Enhance the awareness of the concept of Sales territory and procedures for setting up sales territory.

SYLLABUS OF GE-10

Unit 1: Personal Selling (12 Hours)

An overview of personal selling; functions of a sales person, characteristics of a sales person, Sales as a career. Importance and role of Personal Selling, Building trust and Sales Ethics.

Unit 2: Theories of Selling (9 Hours)

Personal Selling situations; Theories: AIDAS, Right set of circumstances theory, buying formula theory, Behavioural Equation Theory.

Unit 3: Selling Process (15 Hours)

Prospecting: Need and Methods; Pre approach: Sales Knowledge; Sales presentation: methods, elements, the approach; Handling Objections: categories and techniques; Closing the sale: techniques; Post sale follow up, Communication for Relationship Building.

Unit 4: Sales Territory (9 Hours)

Sales territory concept, reasons for establishing sales territories, procedure for setting up sales territories.

Essential/recommended Readings (latest edition of readings to be used)

1. Futrell,M.C.(2013). *Fundamentals of Selling.* (13th Ed). McGraw Hill.
2. Still,R.R.,Cundiff,W.E., & Govani,AP.N.(2008). *Sales Management*. (5th Ed). Prentice Hall of India.
3. Futrell,M.C.(2012). *ABC's of Relationship Selling through Service*. (12th Ed). McGraw Hill Publications.

Suggestive Readings (latest edition of readings to be used)

1. Anderson,R.E.(1995) *Essentials of personal selling: the new professionalism*, Prentice Hall.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-11) BASICS OF HUMAN RESOURCE MANAGEMENT

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical / Practice			
Basics of Human Resource Management (GE 11)	4	3	1	0	Class XII	None	Management Studies

Learning Objectives

- To help the learners to develop an understanding of the concept and functions of human resource management.
- To explore the recent practices and trends in human resource management.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand the concept, functions and role of human resource management and explore the recent trends of human resource management.
- Develop an understanding of human resource management functions of recruitment and selection.
- Apply the concepts of HRM to develop training and development programs for employees.
- Enhance awareness of certain important issues in industrial relations.

SYLLABUS OF GE-11

Unit 1: Introduction to Human Resource Management (9 hours)

Introduction, Concept and Importance of Human Resource Management, Functions and Role of Human Resource Management; Globalization and its Impact on HR trends of Human Resource in India; Work life balance; Human Resource Information Systems; Overview of International HRM polycentric geocentric ethnocentric approaches.

Unit 2: Recruitment and Selection (12 hours)

Human Resource Planning, Need and process, HR Forecasting Techniques Skill inventories; Job analysis-Uses, methods, Job description & Job specifications; Recruitment: Factors affecting recruitment, internal & external sources; Selection process; Orientation: Concept and process.

Unit 3: Training and Development (12 hours)

Training: Concept, Training Process, Methods of training; Management development: Concept & Methods; Performance Management System: Concept, uses of performance appraisal, performance management methods; Career planning: Importance and stages. Compensation: Components of

pay, factors influencing compensation, steps in determining compensation, job evaluation; Incentives: Importance and types; Benefits: Need, types of benefits.

Unit 4: Industrial Relations (12 hours)

Introduction to Industrial Relations; Industrial disputes: concept, causes & machinery for settlement of disputes; Employee Grievances- concept, causes, grievance redressal procedure; Discipline- concept, aspects of discipline & disciplinary procedure; Collective bargaining: concept, process, problems, essentials of effective collective bargaining.

Practical component (if any) - NIL

Essential/recommended Readings (latest edition of readings to be used)

1. Dessler, G., & Varrkey, B. (2005). *Human Resource Management, 15e*. Pearson Education India.
2. DeCenzo, D. A., Robbins, S. P., & Verhulst, S. L. (2016). *Fundamentals of human resource management.* John Wiley & Sons.
3. Chhabra, T.N. (2009). *Human Resource Management Concept & Issues*. Dhanpat Rai and company.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

GENERIC ELECTIVES (GE-12) ETHICS AND GOVERNANCE IN BUSINESS

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Ethics and Governance in Business (GE 12)	4	3	1	0	Class XII	None	Management Studies

Learning Objectives

- The objective of this paper is to develop skills for recognizing and analyzing ethical issues in business and to equip learners with moral reasoning for ethical decision making.
- The course aims to acquaint the learners with the concept and compliance framework of corporate governance.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand the importance of ethics in day-to-day working of organizations.

- Discover the ethical issues and their management in various functional areas of business.
- Understand the significance of corporate governance in maintaining the ethical operation of organizations.
- Learn the regulatory and compliance framework of corporate governance.

SYLLABUS OF GE-12

Unit 1: Business Ethics (9 hours)

Introduction, meaning of ethics, moral and ethics, types of business ethical issues, why ethical problems occur in business, ethical dilemmas in business; Normative theories – Egoism, Utilitarianism, Ethics of duty, Ethics of rights and justice, Virtue ethics and ethics of care; Gandhian Ethics and its relationship with normative theories.

Unit 2: Ethical Issues in Functional Areas of Business (15 hours)

Finance: ethical issues in accounting, finance, banking, takeovers; Whistle blowing: kinds of whistle blowing, whistle blowing as morally prohibited, permitted and required, corporate disclosure; Insider trading.

HRM: Discrimination, affirmative action and reverse discrimination; Inclusion and preferential hiring; Sexual harassment.

Marketing: Green marketing; Product recalls; Ethics and Advertising.

Production: Safety and acceptable risk;, Product safety and corporate liability; Green production..

Information technology : Cyber-crime; Privacy and internet ethics

Unit 3: Corporate Governance (12 hours)

Concept, need to improve corporate governance standards, pillars of good governance; Role played by the Government as a regulator to improve corporate governance with reference to provisions introduced in the Companies Act. 2013; Board of Directors and their role in governance; Duties and responsibilities of auditors; Rights and privileges of shareholders, investor's problem and protection; Corporate governance rating process and parameters.

Unit 4: Corporate Governance Models and Committees (9 hours)

Models of corporate governance; Committees on Corporate Governance: UK scenario (Cadbury Committee), US scenario (Sarbanes Oxley Act), OECD principles; Indian experience: An overview of recommendations of corporate governance committees in India - CII Code of Best Practices, Kumar Mangalam Birla Committee, Naresh Chandra Committee, Narayan Murthy Committee, Kotak Committee, SEBI (Listing Obligations and Disclosure Requirements) Regulations, 2015 with reference to composition and role of Board of Directors, and Role of independent directors

Essential/recommended Readings (latest edition of readings to be used)

1. Fernando, A.C. (2010). *Business Ethics and Corporate Governance* (1st ed.). Pearson Education India. (Chapter 1, 2)
2. Velasquez, M. G. (2020). *Business Ethics- Concepts and Case* (8th ed.). Prentice Hall India. (Chapter 1, 2)
3. Fernando, A. C., & Muralidheeran, K. P. (2019). *Business Ethics: An Indian Perspective* (3rd ed.). Pearson Education India. (Chapter 1 to, 4; 9 to 12, 14,15,18))

4. Crane, A. & Matten, D. (2019) *Business Ethics* (5th ed.). Oxford. (Chapter 1, 7, 8)
5. Ghosh, B. N. (2017). *Business Ethics and Corporate Governance* (1st ed.). McGraw Hill. (Chapter 8, 9, 11)
6. DeGeorge, R. T. (2011) *Business Ethics* (7th ed.). Pearson. (Chapter 3, 4, 13 to 16)
7. Sharma, J. P. (2011). *Corporate Governance, Business Ethics and CSR: (with Case Studies and Major Corporate Scandals)*. India: Ane Books.
8. Stanwick, P., & Stanwick, S. (2015). *Understanding Business Ethics* (3rd ed.). Sage Publications. (Chapter 10)
9. Arnold, D. G., Beauchamp, T. L., & Bowie, N. E. (2014). *Ethical Theory and Business* (9th ed.). Pearson Education (Chapter 7)

Suggestive Readings (latest edition of readings to be used)

1. Davies, A. (2012). *Best Practices in Corporate Governance* (1st ed.). Gower.
2. Fernando, A.C., Satheesh E.K., & Muraleedharan, K. P. (2018). *Corporate Governance :Principles, Policies, and Practices* (3rd ed.). Pearson Education.
3. Muraleedharan, K. P., & Satheesh E.K. (2021). *Fernando's Business Ethics and Corporate Governance* (3rd ed.). Pearson Education.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

SEMESTER-V
BACHELOR OF MANAGEMENT STUDIES

DISCIPLINE SPECIFIC CORE COURSE -13 (DSC-13) – : BUSINESS ETHICS AND GOVERNANCE

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Business Ethics and Governance (DSC 13)	4	3	1	0	XII Class	None

Learning Objectives

- The objective of this paper is to develop skills for recognizing and analyzing ethical issues in business and to equip learners with moral reasoning for ethical decision making.
- The course aims to acquaint the learners with the concept and compliance framework of corporate governance.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand the importance of ethics in day-to-day working of organizations.
- Discover the ethical issues and their management in various functional areas of business.
- Understand the significance of corporate governance in maintaining the ethical operation of organizations.
- Learn the regulatory and compliance framework of corporate governance.

SYLLABUS OF DSC 13

Unit 1: Business Ethics (9 hours)

Introduction, meaning of ethics, moral and ethics, types of business ethical issues, why ethical problems occur in business, ethical dilemmas in business; Normative theories – Egoism, Utilitarianism, Ethics of duty, Ethics of rights and justice, Virtue ethics and ethics of care; Gandhian Ethics and its relationship with normative theories.

Unit 2: Ethical Issues in Functional Areas of Business (15 hours)

Finance: ethical issues in accounting, finance, banking, takeovers; Whistle blowing: kinds of whistle blowing, whistle blowing is morally prohibited, permitted and required, corporate disclosure; Insider trading.

HRM: Discrimination, affirmative action and reverse discrimination; Inclusion and preferential hiring; Sexual harassment.

Marketing: Green marketing; Product recalls; Ethics and Advertising.

Production: Safety and acceptable risk;, Product safety and corporate liability; Green production. Information technology : Cyber-crime; Privacy and internet ethics

Unit 3: Corporate Governance (12 hours)

Concept, need to improve corporate governance standards, pillars of good governance; Role played by the Government as a regulator to improve corporate governance with reference to provisions introduced in the Companies Act. 2013; Board of Directors and their role in governance; Duties and responsibilities of auditors; Rights and privileges of shareholders, investor's problem and protection; Corporate governance rating process and parameters.

Unit 4: Corporate Governance Models and Committees (9 hours)

Models of corporate governance; Committees on Corporate Governance: UK scenario (Cadbury Committee), US scenario (Sarbanes Oxley Act), OECD principles; Indian experience: An overview of recommendations of corporate governance committees in India - CII Code of Best Practices, Kumar Mangalam Birla Committee, Naresh Chandra Committee, Narayan Murthy Committee, Kotak Committee, SEBI (Listing Obligations and Disclosure Requirements) Regulations, 2015 with reference to composition and role of Board of Directors, and Role of independent directors.

Essential/recommended Readings (latest edition of readings to be used)

1. Fernando, A.C. (2010). *Business Ethics and Corporate Governance* (1st ed.). Pearson Education India. (Chapter 1, 2)
2. Velasquez, M. G. (2020). *Business Ethics- Concepts and Case* (8th ed.). Prentice Hall India. (Chapter 1, 2)
3. Fernando, A. C., & Muralidheeran, K. P. (2019). *Business Ethics: An Indian Perspective* (3rd ed.). Pearson Education India. (Chapter 1 to, 4; 9 to 12, 14,15,18))
4. Crane, A. & Matten, D. (2019) *Business Ethics* (5th ed.). Oxford. (Chapter 1, 7, 8)
5. Ghosh, B. N. (2017). *Business Ethics and Corporate Governance* (1st ed.). McGraw Hill. (Chapter 8, 9, 11)
6. DeGeorge, R. T. (2011) *Business Ethics* (7th ed.). Pearson. (Chapter 3, 4, 13 to 16)
7. Sharma, J. P. (2011). *Corporate Governance, Business Ethics and CSR: (with Case Studies and Major Corporate Scandals)*. India: Ane Books.
8. Stanwick, P., & Stanwick, S. (2015). *Understanding Business Ethics* (3rd ed.). Sage Publications. (Chapter 10)
9. Arnold, D. G., Beauchamp, T. L., & Bowie, N. E. (2014). *Ethical Theory and Business* (9th ed.). Pearson Education (Chapter 7)

Suggestive Readings (latest edition of readings to be used)

1. Davies, A. (2012). *Best Practices in Corporate Governance* (1st ed.). Gower.
2. Fernando, A.C., Satheesh E.K., & Muraleedharan, K. P. (2018). *Corporate Governance :Principles, Policies, and Practices* (3rd ed.). Pearson Education.
3. Muraleedharan, K. P., & Satheesh E.K. (2021). *Fernando's Business Ethics and Corporate Governance* (3rd ed.). Pearson Education.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 14 (DSC-14): LEGAL ASPECTS OF BUSINESS

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Legal Aspects of Business (DSC 14)	4	3	1	0	XII Class	None

Learning Objectives

- To gain knowledge of the branches of law which relate to business transactions, certain corporate bodies and related matters.
- To understand the applications of these laws to practical commercial situations.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Know rights and duties under various legal Acts for business.
- Understand consequences of applicability of various laws on business situations.
- Develop critical thinking through the use of law cases
- Applying the various concepts of law to practical situations.

SYLLABUS OF DSC 14

Unit 1: Introduction of Indian Contract Act (18 Hours)

Meaning and Essentials of contract; Kinds of contract based on validity, formation & performance; law relating to offer and acceptance, consideration, competency to contract, free consent, void agreements, performance of contracts, discharge of contracts, breach of contracts and quasi contract; Special contracts: contract of indemnity and guarantee, bailment and pledge, and agency.

Unit 2: Sales of Goods Act and Negotiable Instruments Act (9 Hours)

Sale of Goods Act 1930: Sale and agreement to sell, implied conditions and warranties, sale by non owners, rights of unpaid seller. Negotiable Instruments Act 1881: Meaning of negotiable instruments, type of negotiable instruments, promissory note, bill of exchange, cheque.

Unit 3: The Companies Act and The Limited Liability Partnership Act (9 Hours)

The Companies Act 2013: Meaning and types, Incorporation, Memorandum & Articles of association, Prospectus, role of directors, share qualification, company meetings. The Limited Liability Partnership Act 2008: Meaning and nature of limited partnership, formation, partners & their relations, extent and limitation of liability.

Unit 4: Consumer Protection Act, RTI Act, and IT Act (9 Hours)

Consumer Protection Act 2019: Objectives and machinery for consumer protection, defects and deficiency removal, rights of consumers. The Right to Information Act 2005: Salient features and coverage of the act, definition of terms information, right, record, public authority; obligations of public authorities, requesting information and functions of PIO. Information Technology Act 2000: The rationale behind the act, Digital signature and Electronic signature, Electronic Governance.

Essential/recommended Readings (latest editions of readings to be used)

1. Kucchal M. C. *Business Law*. Vikas Publishing House (P) Ltd.
2. Kucchal M. C. & Kucchal V., *Business Legislation for Management*, Vikas Publishing House (P) Ltd.
3. Kapoor G. K. & Dhamija S.,*Company Law and Practice-A Comprehensive Textbook on Companies Act 2013*, Taxmann Publications.

DISCIPLINE SPECIFIC CORE COURSE– 15 (DSC-15): NEW AGE MARKETING

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
New Age Marketing (DSC 15)	4	3	1	0	Class XII	Basics of Marketing

Learning Objectives

- To gain an understanding of the various elements of marketing communication and their role in the marketing process.
- To understand the importance of brand management, including brand identity, equity, positioning, and extension.
- To develop an understanding of traditional and e-enabled marketing, including e-commerce models, digital marketing, and global marketing issues.
- To gain knowledge of customer relationship management (CRM) and its importance in the service economy, including the global orientation of services.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand the role of integrated marketing communication in the marketing process and how it impacts brand management.
- Analyze the various tools of IMC, including sales promotion, direct marketing, interactive marketing, public relations, and personal selling.

- Gain knowledge of e-enabled marketing, including e-commerce models, technology in e-commerce, SEO, social media marketing tools, and legal and ethical issues.
- Understand global marketing issues, including protectionism, Ghemawat's CAGE framework, and strategic alliances.

SYLLABUS OF DSC 15

Unit 1: Integrated Marketing Communication (9 Hours)

Role of IMC in Marketing Process, Tools of IMC - Sales Promotion, Direct Marketing, Interactive Marketing, Public Relations & Personal Selling; Evolution, Functions and Role of Brands, Brand Equity, brand identity, brand positioning, Co-Branding, Brand Extension, global branding; Personal Selling – meaning, role and process.

Unit 2: Brick and Mortar Marketing (12 hours)

An Introduction to Product Management, STP, Competitor Analysis, Product Strategy, Adapting product strategy over the PLC; Introduction to Retailing: Definition, Characteristics, emerging trends in retailing, Retail Formats; Introduction to Sales Management, Types of selling, managing distribution transportation, inventory, warehousing and logistics.

Unit 3: E-enabled Marketing (12 hours)

E-Commerce: Meaning, Concept and models- B2B, B2C, C2C, C2B, G2C, D2C; Traditional vs e retailing; Technology in e-Commerce - e-payment systems, e- entertainment; Search Engine Optimization (SEO); social media marketing tools; privacy, legal and ethical issues. Digital Marketing: Introduction, Moving from Traditional to Digital Marketing, Analytics and Social Media, data mining, Enhancing Digital Experiences via email marketing, mobile apps and mobile marketing.

Unit 4: Services & Customer Management with a Global Orientation (12 hours)

Emergence of The Service Economy, Service Quality Benchmarking; CRM Definition, Need and Importance, The Value Pyramid, Effective Customer Relation Management, Customer lifetime value and life cycle, e-CRM; Globalisation, stages of international expansion, Impact on doing business (Distance, Power, Decision Making, People Management, Delegation, Corruption, Quality Benchmarks, Culture Etc.), Protectionism and its impact on international trade, Ghemawat's CAGE framework, Selling to and in emerging markets, Strategic (and global) Alliances.

Essential/recommended Readings (latest edition of readings to be used)

1. Belch, G. E. (2014). *Advertising and Promotion – An Integrated Marketing Communications Perspective.* Tata McGraw Hill.
2. Keller, K. L., Parameswaran, A. M. G., & Jacob, I. (2019). *Strategic Brand Management, Building, Measuring & Managing Brand Equity*. Prentice Hall of India.
3. Lehmann, D. R., & Winer, R. S. (2015). *Product Management*. McGraw Hill Irwin.
4. Panda, T. K., & Sahadev, S. (2014). *Sales and Distribution Management.* Oxford Publications.
5. Laudon, K. C. (2020). *E-Commerce - Business, Technology, Society.* Pearson.

6. Dodson, I. (2018). *The Art of Digital Marketing – The Definitive Guide to Creating Strategic, Targeted, and Measurable Online Campaigns.* Wiley.
7. Zeithaml, V. A., Bitner, M. J., Gremler, D. D., & Pandit, A. (2013). *Services Marketing.* McGraw Hill.
8. Sheth, J. N., Parvatiyar, A., & Shainesh, G. (2017). *Customer Relationship Management: Emerging Concepts, Tools and Applications*. McGraw Hill.
9. Cateora, P. R., & Graham, J. L. (2019). *International Marketing.* Tata McGraw Hill. .

Suggested Readings (latest edition of readings to be used)

1. Kazmi, S. H. H., & Batra, S. K. (2011). *Advertising and sales promotion.* Excel books.
2. Verma, H. V. (2016). *Brand management: Text and cases.* Excel Books.
3. Berman, B., & Evans, J. R. (2010). *Retail management.* Prentice Hall.
4. Bajaj, C., Tuli, S., & Srivastava, S. (2015). *Retail management.* Oxford University Press.
5. Pandey, U. S., & Shukla, S. (2015). *E-commerce and mobile commerce technologies.* S. Chand.
6. Bhatia, P. S. (2016). *Fundamentals of digital marketing.* Pearson.
7. Gupta, S. (2018). *Driving digital strategy.* Harvard Business Review Press.
8. Joshi, R. M. (2018). *International marketing.* Oxford University Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE – MARKETING (DSE-1)

DSE 1: RETAIL MANAGEMENT

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Retail Management (DSE 1)	4	3	1	0	Class XII	Basics of marketing

Learning Objectives

- Understand the concept and characteristics of retailing, emerging trends, and the evolution of the Indian retail industry.
- Gain knowledge about store location selection and store planning, including trading area analysis, site selection, store design and layout, and effective retail space management.
- Develop an understanding of retail marketing and merchandising, including retail marketing mix, advertising and sales promotion, CRM, buying organization formats and processes, merchandise planning, and pricing strategies.
- Acquire knowledge about the various elements/components of retail store operation, store administration, inventory management, customer service, store maintenance, and store security.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Describe the concept and characteristics of retailing and explain the emerging trends and evolution of the Indian retail industry.
- Analyze the characteristics of trading areas and evaluate different types of store locations based on the trading area analysis.
- Develop a retail marketing plan that includes the retail marketing mix, advertising and sales promotion strategies, store positioning, and CRM strategies.
- Formulate pricing objectives, strategies, and types of pricing based on external factors that impact a retail price strategy.
- Recognize and understand the operations-oriented policies, methods, and procedures used by successful retailers in today's global economy.

SYLLABUS OF DSE 1

Unit 1: Introduction to Retailing and Retail Formats (12 hours)

Introduction to Retailing: Definition, Characteristics, emerging trends in retailing, Evolution of

retailing in India, Factors behind the change of Indian retail industry. Retail Formats: Retail institutions by ownership, Retail institutions by Store-Based Strategy Mix, Web, Non-store based, and other forms of Non-traditional Retailing.

Unit 2: Choosing a Store Location and Store Planning (12 hours)

Choosing a Store Location: Trading-Area analysis, characteristics of trading areas, Site selection, Types of locations, location and site evaluation. Store Planning: Design & Layout, Retail Image Mix, effective retail space management, floor space management.

Unit 3: Retail Marketing (12 hours)

Retail Marketing: Retail Marketing Mix, Advertising & Sales Promotion, Store Positioning, CRM. Retail Merchandising: Buying Organization Formats and Processes, Devising Merchandise Plans, Shrinkage in retail merchandise management, Markup & Markdown in merchandise management.

Unit 4: Merchandise Pricing and Retail Operations (9 hours)

Merchandise Pricing: Concept of Merchandise Pricing, Pricing Objectives, External factors affecting a retail price strategy, Pricing Strategies, Types of Pricing. Retail Operation: Elements/Components of Retail Store Operation, Store Administration, Store Manager – Responsibilities, Inventory Management, Customer Service, Management of Retail Outlet/Store, Store Maintenance, Store Security.

Essential/recommended Readings (latest edition of readings to be used)

- Berman, B., & Evans, J. R. (2012). *Retail management.* Pearson Education.
- Vedamani, G. G. (2010). *Retail management: Functional principles & practices*. Jaico Publishing House.

Suggested Readings (latest edition of readings to be used)

- Cullen, P., & Newman, A. (2014). *Retailing: Environment & operations.* Cengage Learning EMEA.
- Bajaj, K., Tuli, G., & Srivastava, R. K. (2017). *Retail management.* Oxford University Press.
- Singh, H. (2017). *Retail management.* S. Chand Publishing.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC ELECTIVE – MARKETING (DSE-2)

DSE 2: MARKETING OF SERVICES

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Marketing of Services (DSE 2)	4	3	1	0	Class XII	Basics of Marketing

Learning Objectives

- Understand the emerging service environment in India and the world. It emphasises the distinctive aspects of Services Marketing.
- Aims at equipping learners with concepts and techniques that help in taking decisions relating to various services marketing situations.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand the Concept and Importance of Services.
- Discuss the relevance of the services in the Indian economy.
- Examine the characteristics of the services in various industries.
- Analyse the role and relevance of Quality in Services.

SYLLABUS OF DSE 2

Unit 1: Introduction to Services Marketing (9 hours)

Defining a Service; Increasing Importance of Services; Nature of Services; Intangibility; Distinguishing Features of a Service; Managing Services; The Service Product; Relationship of Services and the organization; Services as an Opportunity; Service Industry across the world.

Unit 2: Relevance of Services (12 hours)

Emergence of The Service Economy; Outsourcing and Services; Overview of The Indian Economy; Services Sector in The Indian Economy, (Major players, Major services offered, Major centres; Circumstances that contributed to the Services boom in the Indian economy; Role and relevance of Services to the Indian economy; Classification of Services; Variety of Services offered by Indian organizations, Intangible and Tangible Services.

Unit 3: Differentiating Services (12 hours)

Distinguishing Features; The service; Promotion; Price; Place; People; Physical evidence; Process; Elements of Positioning; Service Differentiation; How Indian companies have been at the forefront of the Services industry; What do Indian companies offer to companies seeking Services support; Services as a source of competitive advantage; Increasing integration of Services with organizational plans and activities; Internal Services and External Services, Features, Relevance, Examples; Services Trainings and Hiring; Motivation and Employee Management in the Services sector; Factors affecting attempts of Services Differentiation.

Unit 4: Quality and Strategies (12 hours)

Defining Service Quality; Researching Service Quality; Service Quality Benchmarking (Servqual, TUV, ISO etc.); Setting Quality Standards; Managing the Marketing Mix for Quality; Organizing and Implementing Service Quality; Factors affecting Service Quality Management; Customer and Customer Value Proposition and Value Creation n Services; Managing the Service Encounter; Blueprinting; Managing Customer Demand, Frequency, Quality, Training, Content and Context; Developing Relationships with Customers; Distribution Strategy; Pricing of Services; Promoting Services;. Competitors of the Indian Services Industry; Future of Services Industry in India and elsewhere; Near-shoring and Reshoring; Services and the Gig Economy; Growth potential of the Services Industry.

Essential/recommended Readings (latest edition of readings to be used)

1. Zeithaml Valerie A, & Bitner Mary Jo., Gremler Dwayne D., Pandit Ajay. (2010). *Services Marketing* (5 edition). McGraw Hill.
2. Wirtz Jochen, Lovelock Christopher H, Chatterjee Jayanta., *Services Marketing*, (8e Edition), Pearson.

Suggested Readings (latest editions of readings to be used)

1. Woodruffe, Helen. (1998). *Service Marketing*. MacMillan India.
2. Zeithaml Valerie A, & Bitner Mary Jo., Gremler Dwayne D., Pandit Ajay. (2010). *Services Marketing* (5 edition). McGraw Hill.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE – MARKETING (DSE-3)

DSE 3: E COMMERCE

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
E-Commerce (DSE 3)	4	3	1	0	Class XII	Basics of Marketing

Learning Objectives

- To understand how electronic commerce is affecting business enterprises, governments, consumers and people in general.
- To understand the working of different types of e-commerce models
- To understand the transition of e-commerce in India
- To evaluate enabling technologies for e-commerce such as the internet, networks, search engines, software agents, and e-payment systems.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand traditional vs e-retailing and different models of e-retailing.
- Evaluate enabling technologies for e-commerce such as the internet, networks, search engines, software agents, and e-payment systems.
- Analyze website design, its role in B2C e-commerce, strategies, and goals.
- Analyze the security risks associated with e-commerce and discuss legal and ethical issues.

SYLLABUS OF DSE 3

Unit 1: Introduction to E-Commerce: Business Models and Concepts (12 Hours)

E-Commerce: Meaning and Concept of e-Commerce, Brief history; Transition of e-Commerce in India; Advantages and Disadvantages of e-Commerce; IT act, 2000. E-Commerce models: B2B, B2C, C2C, C2B, G2C; Traditional vs e-retailing, Models of e-retailing; e-Services: Categories of e-services, Web-enabled services, matchmaking services.

Unit 2: Enabling Technologies for E-Commerce (9 Hours)

Technology in e-Commerce, The internet today and future, Networks and internets: communication switching, Internet protocol suite, IPv6, Search engines, software agents, Internet service provider, ISP policy in India, e-payment systems. Information selling on the web, E-entertainment

Unit 3: Basic Techniques for E-Commerce (12 hours)

Web Hosting: Webhost-types, VPS-Domain for a website, DNS Information. Webhost: Bandwidth Control Panels- Statistics- uptime-Ecommerce. Website Design: Introduction, Role of Website in B2C Ecommerce, Website strategies and Goals. Search Engine Optimization (SEO): Introduction, Importance of SEO, History of Search Engines, How search Engines Operate, Crawling Techniques. Basic types of Search Tools, How People use search engines and portals, Page rank, Anatomy of Hyperlink, Keywords and Queries, How to conduct Keyword Research, Why site structure is important.

Unit 4: E-Marketing **(12 Hours)**

Concept, traditional marketing vs e-marketing, Browsing behaviour model, advantages of e-marketing, e-marketing strategies: permission-marketing, affiliate marketing, viral marketing, social media marketing, content marketing, m-commerce, e-commerce security risks, legal and ethical issues.

Essential/recommended Readings (latest editions of readings to be used)

1. Laudon, Kenneth C.: *E-Commerce : Business, Technology, Society,* 4th Edition, Pearson.
2. Joseph, S.J.: *E-Commerce: an Indian perspective,* Prentice-Hall of India.
3. Awad, Elias, *M.: Electronic Commerce,* Prentice-Hall of India.
4. Pandey, U.S. and Shukla, Saurabh: *E-Commerce and Mobile commerce Technologies,* S. Chand.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE – MARKETING (DSE-7)

DSE 7: CONSUMER BEHAVIOR

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Consumer Behaviour (DSE 7)	4	3	1	0	Class XII	Basics of Marketing

Learning Objectives

- To equip learners with basic knowledge about issues and dimensions of consumer behavior.
- Develop understanding of analysing consumer information to create consumer-oriented marketing strategies.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand importance of consumer behaviour
- Understand different consumer behavior influences and their impact on consumer choices.
- Demonstrate how knowledge of consumer behavior influences can be applied to marketing decisions.
- Understand the consumer decision making process.
- Design effective marketing strategies to influence consumer behavior.

SYLLABUS OF DSE 7

Unit 1: Introduction to Consumer Behavior (6 Hours)

Consumer Behaviour: Nature, scope & application: Importance of consumer behaviour in marketing decisions, characteristics of consumer behaviour, role of consumer research, consumer behaviour- interdisciplinary approach. Introduction to 'Industrial Buying Behaviour'. Market Segmentation: VALS 2 segmentation profile.

Unit 2: Internal Influences on Consumer Behavior (15 Hours)

Consumer Needs & Motivation: Characteristics of motivation, arousal of motives, theories of needs & motivation: Maslow's hierarchy of needs, McLelland's APA theory, Murray's list of psychogenic needs, Bayton's classification of motives, self-concept & its importance, types of involvement. Personality & Consumer Behaviour: Importance of personality, theories of personality- Freudian theory, Jungian theory, Neo-Freudian theory, Trait theory: Theory of self-images; Role of self- consciousness.

Consumer Perception: Concept of absolute threshold limit, differential threshold limit & subliminal perception: Perceptual Process: selection, organisation & interpretation. Learning & Consumer Involvement: Importance of learning on consumer behaviour, learning theories: classical conditioning, instrumental conditioning, cognitive learning & involvement theory. Consumer Attitudes: Formation of attitudes, functions performed by attitudes, models of attitudes: Tri-component model, multi-attribute model, attitude towards advertisement model: attribution theory.

Unit 3: External Influences on Consumer Behavior (12 Hours)

Group Dynamics & consumer reference groups: Different types of reference groups, factors affecting reference group influence, reference group influence on products & brands, application of reference groups.

Family & Consumer Behaviour: Consumer socialisation process, consumer roles within a family, purchase influences and role played by children, family life cycle. Social Class & Consumer behaviour: Determinants of social class, measuring & characteristics of social class.

Culture & Consumer Behaviour: Characteristics of culture, core values held by society & their influence on consumer behaviour, introduction to sub-cultural & cross-cultural influences.

Opinion Leadership Process: Characteristics & needs of opinion leaders & opinion receivers, interpersonal flow of communication.

Unit 4: Consumer Decision Making Process (12 Hours)

Diffusion of Innovation: Definition of innovation, product characteristics influencing diffusion, resistance to innovation, adoption process.

Consumer Decision making process: Process-problem recognition, pre-purchase search influences, information evaluation, purchase decision (compensatory decision rule, conjunctive decision, rule, Lexicographic rule, affect referral, disjunctive rule), post-purchase evaluation; Situational Influences.

Models of Consumer Decision making: Nicosia Model, Howard-Sheth Model, Howard- Sheth Family Decision Making Model, Engel, Kollat & Blackwell Model, Sheth Newman Gross Model of Consumer Values.

NOTE: Cases & application to marketing will be taught with respect to each topic.

Essential/recommended Readings (latest edition of books will be used)

1. Schiffman, L. G., Wisenblit, J., & Kumar, S.R. (2018).Consumer Behaviour. 12th edition. Pearson Education.
2. Solomon, M. R., & Panda, T. K. (2020). *Consumer Behavior: Buying, Having, and Being*. 13th edition. Pearson Education.
3. Blackwell, R. D., Miniard, P. W., & Engel, J. F. (2016). *Consumer Behavior*. Cengage Learning.

Suggestive Readings (latest edition of books will be used)

1. Hawkins, D. I., Best, R. J., & Coney, K. A. (2003). *Consumer Behavior: Building Marketing Strategy*. McGraw-Hill/Irwin.
2. Hawkins, D. I., Mothersbaugh, D., & Mookerjee, A. (2010). *Consumer Behaviour – Building Marketing Strategy*. 11th edition. McGraw Hill Education.
3. Kotler, P., & Keller, K. L. (2015). *Marketing Management. 15th edition.* Pearson Education India.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE – MARKETING (DSE-8)

DSE 8: DIGITAL MARKETING

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Digital Marketing (DSE 8)	4	3	1	0	Class XII	Basics of Marketing

Learning Objectives

- This course aims to familiarize learners with the concept of digital marketing and its current and future evolutions.
- Equip learners with the ability to understand and subsequently create strategic and targeted campaigns using digital media tools.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand the concept of digital marketing and its real-world iterations.
- Analyze the innovative insights of digital marketing enabling a competitive edge.
- Understand the concept of mobile marketing.
- Identify and utilise various tools of digital marketing.

SYLLABUS OF DSE 8

Unit 1: Introduction to Digital Marketing (9 Hours)

Digital Marketing: Introduction, Moving from Traditional to Digital Marketing, Integrating Traditional and Digital Marketing, Reasons for Growth. Need for a comprehensive Digital Marketing Strategy. Concepts: Search Engine Optimization (SEO); Concept of Pay Per Click.

Unit 2: Social Media Marketing (12 Hours)

Social Media Marketing: Introduction, Process - Goals, Channels, Implementation, Analyze. Tools: Google and the Search Engine, Facebook, Twitter, YouTube and LinkedIn. Issues: Credibility, Fake News, Paid Influencers; Social Media and Hate/ Phobic campaigns. Analytics and linkage with Social Media. The Social Community.

Unit 3: Email and Mobile Marketing (12 Hours)

Email Marketing: Introduction, email marketing process, design and content, delivery, discovery. Mobile Marketing: Introduction and concept, Process of mobile marketing: goals, setup, monitor, analyze; Enhancing Digital Experiences with Mobile Apps. Pros and Cons; Targeted advertising.

Issues: Data Collection, Privacy, Data Mining, Money and Apps, Security, Spam. Growth Areas.

Unit 4: Managing Digital Marketing **(12 Hours)**

Content Production; Video based marketing; Credibility and Digital Marketing; IoT; User Experience; Future of Digital Marketing.

Essential/recommended Readings (latest editions of readings to be used)

1. Dodson, Ian. (2016). *The Art of Digital Marketing - The Definitive Guide to Creating Strategic, Targeted, and Measurable Online Campaigns*. Wiley.
2. Ryan, Damien.(2008). *Understanding Digital Marketing - Marketing Strategies for Engaging the Digital Generation*. Kogan Page Limited.

Suggestive Readings (latest editions of readings to be used)

1. Gupta, Sunil. (2018). *Driving Digital Strategy*. Harvard Business Review Press.
2. Tuten, Tracy L. and Solomon, Michael R. (2020). *Social Media Marketing*. (3 edition). Sage.
3. Bhatia, Puneet S. (2019). *Fundamentals of Digital Marketing.* (2 edition). Pearson.
4. Kotler, Philip. (2017). *Marketing 4.0: Moving from Traditional to Digital*. (1 edition). Wiley.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC ELECTIVE – MARKETING (DSE-9)

DSE 9: CUSTOMER RELATIONSHIP MANAGEMENT

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Customer Relationship Management (DSE 9)	4	3	1	0	Class XII	Basics of Marketing

Learning Objectives

- To explore the concept of Customer Relationship Management (CRM), the benefits delivered by CRM, the contexts in which it is used, the technologies that are deployed.
- To familiarize the concept of CRM as a Business Strategy.
- To equip the learners with CRM practices and technologies that enhance the achievement of marketing objectives.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand the concept of CRM, the benefits delivered by CRM to achieve marketing objectives, CRM strategies and obstacles.
- Develop an understanding of the CRM through Customer Knowledge Management , the value pyramid, CRM solutions map, CRM myths.
- Analyse tools for CRM and various tools for data mining and also successful implementation of CRM in the organisation.
- Create an understanding of the CRM in service industry in India, the Past Present and Future of CRM.

SYLLABUS OF DSE 9

Unit 1: Introduction to Customer Relation Management (CRM) (12 Hours)

CRM Definition, Need and Importance : Conceptual Framework of Customer Relationship Management ; The Value Pyramid , Customer Interaction Cycle , Customer Profiling and Total Customer Experience, Goals of a CRM Strategy and Obstacles, CRM Solutions Map, Discussing People, Processes and Technology, CRM myths.

Unit 2: CRM as a Business Strategy (12 Hours)

CRM – Issues and Strategies; Winning Markets through Effective CRM; CRM as a business strategy, CRM Process, Effective Customer Relation Management through Customer Knowledge Management; Customer Interaction Management, Call Centre management in CRM. Customer Centricity in CRM-Concept of Customer centricity, Customer touch points, Customer Service, Measuring Customer life time value-. Customer life cycle Management.

Unit 3: Technological Tools for CRM and Implementation (12 Hours)

Data Mining for CRM – Some Relevant Issues ; Changing Patterns of e-CRM Solutions in the Future; Structuring a Customer Focused IT Organization to Support CRM; Organizational Framework for Deploying Customer Relationship; measuring profitability CRM implementation – step by step process.

Unit 4: CRM in Services (9 Hours)

Status of Customer Relationship Management in service industry in India; Relevance of CRM for Hospital Services; Customer Relationship Management in Banking and Financial Services; CRM in Insurance Sector, Supply-Demand Mismatches and their impact on CRM; The Past, Presen Future of CRM.

Essential/recommended Readings (latest edition of readings to be used)

1. Sheth, N.J., Atul,P & Shainesh, G,. (2017). *Customer Relationship Management: Emerging Concepts, Tools and Applications.* (Standard ed). Tata McGraw Hill.

Suggestive Readings (latest edition of readings to be used)

1. Kincaid,W.J., (2003). *Customer Relationship Management Getting it Right*, Prentice Hall Professional..
2. Mohamed,P.H. & Sagadevan,A.,(2021). *Customer Relationship Management*, A Step-by-Step

Approach, Vikas Publishing House.
3. Fader,P.,(2012). *Customer Centricity –Focus on right customer for strategic advantage*, (2nd ed) Wharton Digital Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC ELECTIVE – HUMAN RESOURCE MANAGEMENT (DSE-1)

DSE 1: INDUSTRIAL RELATIONS

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Industrial Relations (DSE 1)	4	3	1	0	Class XII	None

Learning Objectives

- To acquaint learners with concepts of industrial relations and related acts in Indian context.
- To familiarise the learners with the implications of law in the industrial environment.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Acquire theoretical and practical perspective on different aspects of industrial relations.
- Understand the key participants, institutions, relationships, and processes in industrial relations.
- Understand employer and employee relations and its management.
- Analyse the rights of labour class in the industrial environment

SYLLABUS OF DSE 1

Unit 1: Industrial Relations (12 hours)

Concept, Objectives of industrial relations, Parties in industrial relations, Aspects of industrial relations. Trade unions: Objectives, Historical perspective of unionism in India, functions, why workers join unions, importance, problems of trade unions, structure of trade unions, Trade union act 1926, Immunity granted to register trade unions, recognition of trade unions.

Unit 2: Industrial Disputes (9 hours)

Concept, Types of industrial disputes, Causes of industrial disputes, Machinery for settlement of industrial disputes, Industrial disputes act 1947. The industrial employment (standing orders act1946, coverage, modification, interpretation).

Unit 3: Labour Turnover **(12 hours)**

Concept, Rate of labour turnover, Costs of labour turnover, Causes of labour turnover, controlling labour turnover. Absenteeism: Concept, Rate of absenteeism, Causes of absenteeism, Effects of absenteeism, Measures to control absenteeism.

Unit 4: Collective Bargaining **(12 hours)**

Concept, Essentials of collective bargaining, Problems of collective bargaining, Collective bargaining procedure. Workers' participation in Management: Modes of participation, Measures for successful workers' participation.

Essential/recommended Readings (latest edition of readings to be used)

1. Srivastav S. *Industrial relations and Labour laws*. Vikas Publishing House.
2. Mallik P. *Handbook of Industrial and Labour laws*. Eastern Book Company.
3. Saharay H.K. *Industrial and Labour Laws of India*. Prentice Hall International.
4. Chhabra T. *Industrial Relations and Labour Laws*. Dhanpat Rai Publishing House.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC ELECTIVE – HUMAN RESOURCE MANAGEMENT (DSE-5)

DSE 5: TRAINING AND MANAGEMENT DEVELOPMENT

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Training and Management Development (DSE 5)	4	3	1	0	Class XII	Basics of Human Resource Management

Learning Objectives

- To familiarize the learners with the concept and practice of training and management development.
- To equip learners with the knowledge of applying training and development concepts in the modern organizational setting through text and cases.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand the need and process of training need analysis in organizations.

- Understand the process of designing a training programme and its evaluation.
- Apply the various training methods and analyse their applicability in different organizational situations.
- Apply the concepts of management development to design development programs in the organizations.

SYLLABUS OF DSE 5

Unit 1: Training in Organizations and Training Need Analysis (9 hours)
An overview of training; role of training and development in HRD; opportunities and challenges for training; training and organizational development; setting training objectives; Spiral model of training. Need to conduct Training Need Analysis (TNA), TNA Model, need assessment process: organizational analysis, person analysis, task analysis; output of TNA, approaches to TNA: Proactive TNA, Reactive TNA.

Unit 2: Training Design and Evaluation (12 hours) Designing training programs: Organizational constraints, training objectives, facilitation of learning, facilitation of transfer; Post training: Training evaluation, Training impact on individuals and organizations, Evaluating Programmes, Participants, Objectives.

Unit 3: Training Methods (12 hours)
Training methods: Lectures and demonstrations; Games and Simulations: Equipment simulators, business games, In-basket technique. Case studies, role play, behaviour modelling, Job instruction technique, apprenticeship, coaching, mentoring, experiential training, vestibule training; Computer based training methods.

Unit 4: Management Development (12 hours)
Management development: concept, Strategies and management characteristics, management development implications, Types of management development programs, Development methods: Action learning, job rotation, executive development programs, special job assignments, team building, coaching, and mentoring.

Essential/recommended Readings (latest edition of readings to be used)

1. Blanchard, P. N. & Thacker J. (2012). *Effective Training: Systems, Strategies and Practices, (5th ed).* Upper Saddle River, NJ: Pearson Education, Inc.
2. Bhatia, S.K. (2005). *Training & Development Concepts and Practices.* Deep & Deep Publishers.
3. Lynton, R. & Pareek U. (2011). *Training & Development.* Prentice Hall.
4. Noe, R. (2018). *Employee Training & Development.* McGraw-Hill Education.
5. Rishipal. (2011). *Training & Development Methods.* S. Chand Publishing.
6. Ross, S. C. (2018). *Training and development in organizations: An essential guide for trainers.* Routledge.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC ELECTIVE – HUMAN RESOURCE MANAGEMENT (DSE-6)

DSE 6: PERFORMANCE MANAGEMENT

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Performance Management (DSE 6)	4	3	1	0	Class XII	None

Learning Objectives

- To identify the knowledge and skills required for effective employee performance and team performance management
- Designing and implementing performance management systems to measure and align individual performance with strategic objectives of the firm.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand the concept and dynamics of performance appraisal and performance management.
- Appreciate the significance of implementing an on-going and thorough performance
- management system.
- To develop an understanding of various approaches to performance management.
- To be able to develop criteria and standards for performance management.
- To create and develop skills required for effective performance management.

SYLLABUS OF DSE 6

Unit 1: Basis of Performance Management (9 hours)

Introduction: Concept, Philosophy, History from performance appraisal to performance development; Objectives of performance management system; Aligning Performance Management with Organizational Strategy, Values, and Goals.

Unit 2: Performance Management Practice (15 hours)

Performance planning, Process and Documentation of Performance appraisal; The balanced Scorecard, Analyzing and assessing performance; Managing underperformance – problems and

approaches; Providing feedback – nature, effectiveness and guidelines, 360 -degree feedback and the feed-forward interview, Use of technology and e-PMS; Coaching – process, approach and techniques.

Unit 3: Applications of Performance Management (15 hours)

Managing organizational performance – process and strategic approach, business performance management systems, organizational capability, human capital management, developing a high performance culture; Managing team performance - team competencies, measures and processes for team performance management, performance of individual team members; Performance management and employee engagement – concept, significance and enablers; Performance management and reward – financial and non-financial; International performance management – subsidiaries of multi-national organizations, expatriates performance management.

Unit 4: Performance Management – Reality and Reinvention (6 hours)

Correcting the wrongs in the performance management process – reasons for failure; reinventing performance management – the way forward.

Essential/recommended Readings (latest edition of readings to be used)

1. Michael A., *Armstrong's Handbook of Performance Management: An Evidence - Based Guide to Delivering High Performance*. Kogan Page. (6th ed.)
2. D. Gary. *Human Resource Management*. Prentice Hall. (12th ed.)
3. Bhattacharyya, D.K. *Performance Management systems and strategies*, Pearson Education
4. Rao, T. V. (2016). *Performance management: toward organizational excellence*. Sage Publications India.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC ELECTIVE – HUMAN RESOURCE MANAGEMENT (DSE-7)

DSE 7: HUMAN RESOURCE PLANNING

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Human Resource Planning (DSE 7)	4	3	1	0	Class XII	Basics of Human Resource Management

Learning Objectives

- To equip the learners to understand the fundamentals of human resource function of workforce planning through application of tools, techniques and various concepts related to human resource planning.
- To familiarise the learners with HR information system, strategic HR planning.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand the meaning, need and importance of HRP, various techniques and effective HR planning.
- Understand the meaning objectives HRIS, steps in designing HRIS, trends in HRIS.
- Analyse the HRP Management process HRP evaluation.
- Evaluate the Strategic HRP, Mergers and Acquisition and its impact on HRP, Outsourcing and its impact on HRPs

SYLLABUS OF DSE 7

Unit 1: Fundamentals of Human Resource Planning (12 Hours)

Overview of Human Resource Planning (HRP): Human Resource Planning – Meaning, Nature, Need and Importance; Process of HRP – Steps in HRP; HR Demand Forecasting – Factors, Techniques – Managerial Judgement, Ratio Trend Analysis, Regression Analysis, Work Study Technique, Delphi Technique; HR Supply Forecasting – Factors, Techniques –Skills Inventories, Succession Plans, Replacement Charts, Staffing Tables; Barriers in Effective Implementation of HRP and Ways to Overcome; Requirements for Effective HR Planning.

Unit 2: Human Resource Information System (12 Hours)

Data Information Needs for HR Manager – Contents and Usage of Data; HRIS – Meaning, Features, Evolution, Objectives, Essentials, Components, Functions, Steps in Designing of HRIS, HRIS Subsystems, Mechanisms of HRIS, Benefits, Limitations, Barriers in Effective Implementation of HRIS. Security Issues in Human Resource Information Systems; HRIS for HRP; Trends in HRIS; Job analysis – Uses, methods, Job description & Job specifications.

Unit 3: HRP Practitioner and Evaluation (12 Hours)

HRP Practitioner: Meaning, Role; HRP Management Process; HRP as a Tool to Enhance Organisational Productivity Impact of Globalisation on HRP; Aspects of HRP: Performance Management, Career Management, Management Training and Development, Multi Skill Development; Return on Investment in HRP – Meaning and Importance; HRP Evaluation Meaning, Need, Process, Issues to be considered during HRP Evaluation.

Unit 4: Strategic Human Resource Planning (9 Hours)

Strategic Human Resource Planning – Meaning and Objectives; Link between Strategic Planning and HRP through People, Finance and Technology; Selected Strategic Options and HRP Implications: Restructuring and its Impact on HRP, Mergers and Acquisitions and its Impact on

HRP, Outsourcing and its Impact on HRP.

Essential/recommended Readings (latest edition of readings to be used)

1. Dressler,G. & Varkey,B. (2017).*Human Resource Management.* New Delhi. Pearson Education.
2. Krishnamoorthy,R., Kamat,N. & Kamat,N.C. (2017). *Human Resource planning and Information system (with case studies)*. Himalaya Publishing House
3. Aswathappa A. (2018). *Human Resource Management, Text and Cases.* New Delhi. Tata McGraw-Hill.
4. Flippo,B.E., (2018). *Principles of Personnel Management*. New Delhi. McGraw-Hill Publications.
5. Bohlander,G. & Snell,S., (2008). *Human Resource Management.* New Delhi. Cengage Learning Private Limited.
6. Rao,S.,(2014). *Essentials of Human Resource Management and Industrial Relations.* Himalaya Publishing House.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE – HUMAN RESOURCE MANAGEMENT (DSE-8)

DSE 8: TALENT AND COMPETENCY MANAGEMENT

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Talent & Competency Management (DSE 8)	4	3	1	0	Class XII	Basics of Human Resource Management

Learning Objectives

- To equip the learners to the role of HR in the Talent Management System.
- To familiarize the learners with the Talent Management System and strategies.
- Enable the learners to develop, map and design competency models.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand the concept of Talent Management , Talent Gap Approaches to fill gap, role of building Sustainable Competitive Advantage.

- Apply the potential and appropriateness of talent development strategies, policies,

approaches and methods with reference to relevant contextual factors.

- Analyse concept, types benefits models of Competencies
- Create the understanding of the Competency Development, Competency Mapping, Competency based HR applications.

SYLLABUS OF DSE 8

Unit 1: Introduction to Talent Management (9 Hours)

Meaning, Evolution, Scope, Significance, Benefits and Limitations of Talent Management, Principles of Talent Management, Sources of Talent Management, Attracting and Retaining Talent, Talent Management Grid, Talent Gap: Meaning and Approaches to Fill Gaps, Talent Value Chain, Role of HR in Talent Management, Role of Talent Management in Building Sustainable Competitive Advantage.

Unit 2: Talent Management System (TMS) and Strategies (12 Hours)

Meaning, Key Elements of TMS, Creation of TMS and Building Blocks for TMS, Life Cycle of Talent Management: Meaning and Process, Talent Management Process: Steps, Significance and Prerequisites, Approaches to Talent Management, Talent Management Strategies: Meaning and Development, Mapping Business Strategies and Talent Management Strategies, Talent and Succession Planning: Identifying key managerial positions, development of capabilities, lateral hiring in case of discontinuity in the succession plans.

Unit 3: Introduction to Competency (12 Hours)

Competence and Competency: Concept, Types of Competencies, Benefits and Limitations of Implementing Competencies, Competency Model: Concept, Significance and Development of Competency Model, Personal Competency Framework, Iceberg Model, Lancaster Model of Competency, Transcultural Managerial Competencies, Validation of Competency Models.

Unit 4: Competency Management (12 Hours)

Meaning, Features, Objectives, Benefits and Challenges, Competency Development: Meaning and Process, Competency Mapping: Concept, Features and Significance, Approaches to Mapping, Competency Mapping Procedures and Steps, Use of Assessment Centres in Competency Mapping, Types of Exercises, Competency based HR applications.

Essential/recommended Readings (latest edition of readings to be used)

1. Spencer, L. M., & Spencer, S. M. (1993). *Competence at work: Models for superior performance*. John Wiley.
2. Rao, T.V. (2011). *Hurconomics for Talent Management: Making the HRD Missionary Business driven.* Pearson Education.
3. Padoshi, S. (2018). *Talent and Competency Management.* Himalaya Publishing House.
4. Berger, L.A. & Berger, D.R. (2018). *The Talent Management Hand Book*. Tata McGraw Hill.
5. Sanghi, S. (2007). *The Handbook of Competency Mapping: Understanding, Designing and Implementing Competency Models in Organizations*. Sage Books.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE – FINANCE (DSE-1)

DSE 1: PROJECT APPRAISAL, FINANCING AND CONTROL

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Project Appraisal, Financing and Control (DSE 1)	4	3	1	0	Class XII	Basics of Accounting and Finance

Learning Objectives

- To familiarize learners about identification of a project and feasibility analysis,
- To equip them to apply project appraisal, control & management Techniques,
- To understand and appraise project risk analysis and financing

Learning Outcomes

On successful completion of his course, the learners will be able to:

- Understand the process of screening of ideas and carry out appraisal for Projects.
- Use Investment Evaluation Techniques for selection of Projects.
- Carry out Risk Analysis for business projects and identify alternative sources of financing.
- Understand the concept and application of Social Cost benefit Analysis
- Apply project control and management techniques for project success.

SYLLABUS OF DSE 1

Unit 1: Introduction to Projects and their Appraisal **(9 hours)**

Project Definition, Project Identification, Project Life Cycle, Project Stakeholder Analysis, Feasibility study. Types of Project Appraisal (Brief Overview): Market and Demand Analysis, Technical Appraisal, Financial Appraisal, Economic Appraisal, Managerial Appraisal, and Social Appraisal.

Unit 2: Financial Appraisal **(9 hours)**

Components of Project Cost, Investment Evaluation Techniques: Non-Discounting Methods (Payback Period, Accounting Rate of Return), Discounting Methods (Net Present Value, Profitability Index, Internal Rate of Return (IRR), Modified Internal Rate of Return (MIRR)). Comparative analysis of Investment Evaluation Techniques, Investment Evaluation in Practice.

Unit 3: Project Risk Analysis and Project Financing **(15 hours)**

Risk Analysis and Management: Sources and Measures of Risk. Methods of Assessing Risk – Sensitivity Analysis, Scenario Analysis, Break-Even Analysis, Simulation Analysis, Decision Tree Analysis. Strategies for Risk Management.
Sources of Financing – Internal Accruals, Equity Capital, Preference Capital, Debentures (or Bonds), Term Loans, Venture Capital, Private Equity, Venture Capital Vs Private Equity, Loan syndication.

Unit 4: Social Appraisal and Aspects of Project Management (12 hours)
Social Appraisal: Rationale for Social Cost Benefit Analysis (SCBA), Approaches of SCBA (UNIDO and Little-Mirrlees Approach Approach), Environment Impact Assessment (EIA) and Social Impact Assessment (SIA) of Projects. Relevant Case Studies. Network Techniques for Project Cost and Time Management (PERT & CPM) (theory only). Pre-Requisites for Successful Project Implementation. Essentials of a Project Report.

Essential/recommended readings (latest edition of readings to be used)

1. Chandra, Prasanna (2019). *Projects – Planning, Analysis, Selection, Financing, Implementation, and Review*. McGraw Hill Education.
2. Agrawal, R., & Mehra, Y. S. (2021).*Project Appraisal and Management*. Taxmann Publications.

Suggestive Readings (latest edition of readings to be used)

1. Goodpasture, J. C. (2003). *Quantitative methods in project management*. J. Ross Publishing.
2. Project Management Institute. (2021). *A guide to the Project Management Body of Knowledge (PMBOK guide)*. Project Management Institute.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time time

DISCIPLINE SPECIFIC ELECTIVE – FINANCE (DSE-2)

DSE 2: INSURANCE

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Insurance (DSE 2)	4	3	1	0	Class XII	None

Learning Objectives

- To equip the learners with the basic characteristics of insurance, different kinds of insurance, and benefits and costs of insurance to society.
- To acquaint the learners with the core concepts of risk management and its objectives.
- To get deep insight into the regulatory environment of IRDA
- To examining the regulatory environment for insurance

Learning Outcomes

On successful completion of his course, the learners will be able to:

- Evaluate the different types of Risks and learn the concept and principles of Insurance.
- Understand Risk Management and learn the concept, principles and technical components of Insurance contracts.
- Comprehend the functioning of Insurance company operations.
- Learn various important and strategic aspects of management of Insurance business.

SYLLABUS OF DSE 2

Unit 1: Insurance and Risk (9 hours)

Risk – Definitions of Risk, Chance of Loss, Peril and Hazard, Classification of Risk, Major Personal Risks and Commercial Risks, Burden of Risk on Economy and Society.

Insurance – Definition of Insurance, Basic Characteristics of Insurance, Law of Large Numbers, Characteristics of an Ideally Insurable Risk, Benefits and Costs of Insurance to Society. Insurance Kinds (briefly) – Life and General Insurance, Difference between Life and General insurance.

Unit 2: Insurance Principles & Risk Management (12 hours)

Risk Management – Meaning of Risk Management, Objectives of Risk Management, Steps in the Risk Management Process, Techniques for Managing Risk, Benefits of Risk Management. Personal Risk Management. Enterprise Risk Management (briefly) – Concept & Benefits. Case Studies on Management of different Personal and Business Risk to be discussed. Fundamental Legal Principles – Principle of Indemnity, Principle of Insurable Interest, Principle of Subrogation, Principle of Utmost Good Faith. Requirements of an Insurance Contract.

Unit 3: Insurance Company Operations (12 hours)

Requirements of an Insurance Contract, Distinct Legal Characteristics of Insurance Contracts. Components of Insurance Contracts – Declarations, Definitions, Insuring agreement, Exclusions, Conditions, and Miscellaneous provisions. Underwriting – Underwriting Policy, Underwriting Principles, Sources of Underwriting Information. Sales and Marketing activities of Insurers. Claims Settlement – Basic Objective, Parties Involved & Steps in Settlement Process. Endorsements and Riders. Deductibles – Concepts and Purpose of Deductibles. Regulatory Framework of Insurance in India (briefly) – Insurance Legislation and IRDA.

Unit 4: Important Aspects of Insurance Business Management (12 hours)

Reinsurance – Definitions, Reasons for Reinsurance, Types of Reinsurance – Facultative & Treaty

Reinsurance, Methods of Sharing Losses (Numerical Qs). Alternatives to Traditional Reinsurance – Securitization of Risk and Catastrophe Bonds. Insurance and Investments – Life Insurance Investments, Property and Casualty Insurance Investments. Rate Making – Concept, Objectives, Rate Making Methods (Numerical Qs) – Judgement, Class and Merit Rating Method. Coinsurance – Nature, Purpose and Problems. Other Important Provisions – Pro Rata liability, Contribution by Equal Shares, and Primary and Excess Insurance.

Essential/recommended Readings (latest edition of readings to be used)

1. Rejda, G. E., McNamara, M. J., & Rabel, W. H. (2022). *Principles of risk management and insurance* (14th ed). Pearson Education.
2. Mishra, M. N., & Mishra, S. B. (2019). *Insurance principles and practice. S. Chand and company*.

Suggested Readings (latest edition of readings to be used)

1. Gupta, P. K. (2021). *Insurance and risk management*. Himalaya Publishing House.
2. Institute of Chartered Accountants of India, *Insurance and Risk Management.* https://resource.cdn.icai.org/59895clcmodule-6.pdf

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE – FINANCE (DSE-3)

DSE 3: FINANCIAL PLANNING

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Financial Planning (DSE 3)	4	3	1	0	Class XII	Basics of Finance

Learning Objectives

- To equip learners with the knowledge and practical understanding of important dimensions of managing one's personal finance.
- To provide understanding and planning abilities for their tax liabilities, investments, insurance coverage, and retirement.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand the fundamentals of Personal Financial Planning
- Learn the basics of managing personal tax liabilities
- Learn the basic concepts and underlying principles for Retirement Planning.
- Ascertain and choose appropriate insurance policies for managing personal risks.
- Evaluate various asset classes on the basis of risk-return and personal investment goals
- Create, maintain and grow personal investment portfolio

SYLLABUS OF DSE 3

Unit 1: Basics of Personal Finance and Tax Planning (12 hours)

Understanding Personal Finance. Rewards of Sound Financial Planning. Personal Financial Planning Process. Personal Financial Planning Life Cycle. Making Plans to Achieve Your Financial Goals. Common Misconceptions about Financial Planning. Personal Tax Planning –Fundamental Objectives of Tax Planning, Tax Structure in India for Individuals, Common Tax Planning Strategies – Maximizing Deductions, Income Shifting, Tax-Free and Tax-Deferred Income.

Unit 2: Managing Insurance Need (12 hours)

Insuring Life – Benefits of Life Insurance, Evaluating need for Life Insurance, Determining the Right Amount of Life Insurance. Choosing the Right Life Insurance Policy – Term Life Insurance, Whole Life Insurance, Universal Life Insurance, Variable Life Insurance, Group Life Insurance, Other Special Purpose Life Policies. Buying Life Insurance – Compare Costs and Features, Select an Insurance Company, and Choose an Agent. Life Insurance Contract Features. Insuring Health – Importance of Health Insurance Coverage. Making Health Insurance Decision – Evaluate Your Health Care Cost Risk, Determine Available Coverage and Resources, Choose a Health Insurance Plan. Types of Medical Expense Coverage. Policy Provisions of Medical Expense Plans. Property Insurance – Basic Principles, Types of Exposure, Principle of Indemnity, and Coinsurance.

Unit 3: Managing Investments (12 hours)

Role of Investing in Personal Financial Planning, Identifying the Investment Objectives, Different Investment Choices. The Risks of Investing, The Returns from Investing, The Risk-Return Trade-off. Managing Your Investment Holdings – Building a Portfolio of Securities, Asset Allocation and Portfolio Management, Keeping Track of Investments. Investing in Equity – Common Considerations, Key Measures of Performance, Types of Equity Stocks, Market Globalization and Foreign Stock, Making the Investment Decision. Investing in Bonds – Benefits of Investing in Bonds, Bonds Versus Stocks, Basic Issue Characteristics, The Bond Market, Bond Ratings. Investing in Mutual Funds and Exchange Traded Funds (ETFs) – Concept of Mutual Funds and ETFs, Benefits of Investing in Mutual Funds or ETFs, Some Important Cost Considerations, Services Offered by Mutual Funds, Selecting appropriate Mutual Fund and ETF investments, Evaluating the performance of Mutual Funds and ETF.

Unit 4: Investing in Real Estate and Retirement Planning. (9 hours)

Investing in Real Estate – Some Basic Considerations. Modes of Real Estate Investment – Raw Land, Commercial Properties, Residential Properties, Real Estate Investment Trusts (REITs).

Planning for Retirement – Role of Retirement Planning in Personal Financial Planning, Pitfalls to Sound Retirement Planning, Estimating Income Needs, Sources of Retirement Income.

Essential/recommended Readings (latest edition of readings to be used)

1. Billingsley R., Gitman L., & Joehnk M. (2017). *Personal Financial Planning*. Cengage Learning.
2. Tillery S., & Thomas N. Tillery. (2017). *Essentials of Personal Financial Planning*. Association of International Certified Professional Accountants.

Suggested Readings (latest edition of readings to be used)

1. Indian Institute of Banking & Finance. (2017). *Introduction to Financial Planning* (4th ed.).
2. Sinha, M. (2017). *Financial Planning: A Ready Reckoner*. Mc Graw Hill.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE – FINANCE (DSE-7)

DSE 7: SECURITY ANALYSIS & PORTFOLIO MANAGEMENT

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Security Analysis and Portfolio Management (DSE 7)	4	3	1	0	Class XII	Basics of Financial Management and Statistics

Learning Objectives

- To provide a conceptual framework for analysis from an investor's perspective of maximizing return on investment
- To provide a sound theoretical base with examples and references related to the Indian financial system.
- To emphasize on understanding of the forces that influence the risk and return of financial assets and related models and theories.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Remember the concepts of risk and return, bonds and their valuation, technical and fundamental analysis, asset pricing and risk return of portfolio.
- Understand the process of calculating risk and return, pricing of bonds along with duration, valuation of shares along with trading strategies and portfolio risk and return, pricing research reports and advice of financial firms and brokers.
- Evaluate the best measures of risk and return, bond prices and sensitivity based on other variables, share valuation models and techniques of arriving at portfolio risk and return.
- Analyse the outcomes of evaluation to choose the best return risk asset, change in bond price based on changes in interest rate etc., execute buy and sell transactions based on fundamentals and trends in the respective asset and compare the risk return ratios of various assets and portfolios so as to choose the optimal portfolio.
- Create trading and investment strategies for maximising returns in the financial markets and also create a portfolio of investments to achieve the best risk return trade-off.

SYLLABUS DSE 7

Unit 1: Risk–Return Analysis, Bond Valuation & Fundamental Analysis (11 Hours)

Basics of risk and return: concept of returns, application of standard deviation, coefficient of variation, beta, alpha. Bonds: present value of a bond, yield to maturity, yield to call, yield to put, systematic risk, price risk, interest rate risk, default risk. Fundamental analysis: EIC framework; Economic analysis: Leading lagging & coincident macro-economic indicators, Expected direction of movement of stock prices with macroeconomic variables in the Indian context; Industry analysis: stages of life cycle, SWOT analysis, Company analysis.

Unit 2: Share Valuation & Technical Analysis (11 Hours)

Share valuation: Dividend discount models – no growth, constant growth, and two stage growth model. Relative valuation models using P/E ratio, other ratios. Technical analysis: meaning, assumptions, difference between technical and fundamental analysis; Price indicators – Dow theory, advances and declines, new highs and lows, circuit filters. Volume indicators – Dow Theory, small investor volumes. Other indicators – institutional activity, Trends: resistance, support. Technical charts & patterns. Indicators: moving averages.

Unit 3: Portfolio Analysis and Management (12 Hours)

Portfolio analysis: portfolio risk and return, Markowitz portfolio model: risk and return for 2 and 3 asset portfolios, concept of efficient frontier & optimum portfolio. Market Model: concept of beta, systematic and unsystematic risk. Investor risk and return preferences: Indifference curves and the efficient frontier, Traditional portfolio management for individuals: Objectives, constraints, time horizon, current wealth, tax considerations, liquidity requirements, and anticipated inflation. Asset allocation: Asset allocation pyramid, investor life cycle approach. Portfolio management services: Passive – Index funds, systematic investment plans. Active – market timing, style investing.

Unit 4 – Asset Pricing Models and Mutual Funds **(11 Hours)**

Capital asset pricing model (CAPM): Efficient frontier with a combination of risky and risk-free assets. Assumptions of single period classical CAPM model. Expected return, required return, overvalued and undervalued assets as per CAPM. Multiple factor models: Arbitrage Pricing Theory (APT), APT vs CAPM. Mutual Funds: Introduction, classification of mutual fund schemes by structure and objective, advantages and disadvantages of investing through mutual funds. Performance Evaluation of Managed Funds using Sharpe's, Treynor's and Jensen's measures.

Essential/recommended Readings (latest edition of readings to be used)

1. Reilly, F. K. & Brown, K.C. (2012) *Analysis of Investments and Management of Portfolios,* (12th edition), Cengage India Pvt. Ltd.
2. Singh, Rohini (2017): *Security Analysis and Portfolio Management,* (2nd Edition). Excel Books.

Suggestive Readings (latest edition of readings to be used)

1. Fischer, D.E. & Jordan, R.J. (2006) *Security Analysis & Portfolio Management,* (6th edition), Pearson Education.
2. Ranganathan, M., & Madhumathi, R. (2006). *Investment Analysis and Portfolio Management*. Pearson Education.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE – FINANCE (DSE-8)

DSE 8: DIGITAL FINANCE

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Digital Finance (DSE 8)	4	3	1	0	Class XII	Basics of Finance

Learning Objectives

- To familiarize learners with the fundamentals of digital finance
- To develop awareness about varied kinds of payments system
- To learn about the emergence of cryptocurrency and blockchain

- To learn about the opportunities, challenges and risk management in fintech business

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand the nature of the digital revolution in finance
- Develop an insight about the emergence of digital business models, products and services in the ecosystem
- Develop an insight about the functioning of crypto asset and blockchain
- Analyze the key areas of concern in the operation of fintech business models

SYLLABUS OF DSE 8

Unit 1: Digital Transformation of Finance (11 Hours)

A Brief History of Financial Innovation, Digitization of Financial Services, Introduction to FinTech & Funds, FinTech Transformation, FinTech Typology, Collaboration between Financial Institutions and Start-ups. Introduction to Regulation and future of RegTech.

Crowdfunding – Types and functioning of crowdfunding markets, Differences between traditional funding models and crowdfunding markets, Informational problems in the crowdfunding model.

Unit 2: Payment Systems (11 Hours)

Digitalization of the payment system, The historical evolution of the payment system. Attributes of a well-functioning payment system, Banks as guarantors of the payment system. New entrants and new payment models: risks for the banking system. FinTech applications in Banking & Non-Banking Financial Companies (NBFCs); Insurance; Payments; Lending; Audit; and Compliance. Electronic Clearing Service (ECS), Real Time Gross Settlement (RTGS), National Electronic Funds Transfer (NEFT), Immediate Payment Service (IMPS), Unified Payments Interface (UPI), Growth of Digital Payments in India, RBI guidelines on Digital Payments.

Unit 3: Crypto Assets and Blockchains (12 Hours)

Introduction: Crypto an asset for trade and Crypto-currency, Problems with issuers credibility, Fin Tech & Securities Trading; Cryptocurrencies and its future as currency, blockchain as a registration mechanism, Functioning of the block chain system. The integration of digital currency and blockchain and issuers incentive problems; Proptech: FinTech of Real Estate; Possible alternative uses of blockchain technology in the economy and difficulties in its implementation. Use of bitcoin in money laundering. The regulatory debate. Introduction of Central Bank Digital Currency (CBDC). Other Emerging Financial Technologies: Internet of things (IOT) & AR/VR applications.

Unit 4: FinTech, Big Data Analytics and New Financial Business Models (11 Hour)

The use of data in traditional credit decisions, the combination of big data and machine learning to improve financing decisions. Smart accounts, customized financial products, risk management and fraud prevention. High frequency trading: opportunities and risks. Digital security, Challenge of confidentiality, integrity and availability. Digital securities as systemic risk in economy. Regulations on cybersecurity. Latest developments in field of Digital Finance.

Essential/ recommended Readings (latest edition of readings to be used)

1. Lynn, T., Mooney, J. G., Rosati, P., & Cummins, M. (2019). Disrupting finance: FinTech and strategy in the 21st century. New Delhi: Springer Nature.
2. Beaumont, P. H. (2019). Digital Finance: Big Data, Start-ups, and the Future of Financial Services. New Delhi: Routledge.

Additional Readings (latest edition of readings to be used)

1. RBI Guidelines on Payment Systems, Crypto Asset and Fintech Business Model
2. Phadke, S. (2020). FinTech Future: The Digital DNA of Finance. New Delhi: Sage Publications.
3. Maese, V. A., Avery, A. W., Naftalis, B. A., Wink, S. P., & Valdez, Y. D. (2016). Cryptocurrency: A primer.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE - GLOBAL BUSINESS MANAGEMENT (DSE 1)

GLOBAL MARKETING

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Global Marketing (DSE 1)	4	3	1	0	Class XII	Basics of Marketing

Learning Objectives

- This course aims to bring to the fore various cultural and regional variables and their impact on businesses in the short-term and long-term future.
- It further aims to explore the nuances of international marketing related activities such as advertising, pricing, supply chain management, market entry, branding and customization etc. while attempting to bring practical elements into study.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Develop the basic understanding of the factors related to global marketing
- Articulate the various deciding factors at international level which have a significant impact on international trade and business.
- Identify the Fundamentals of sustainable (profitable) business growth with focus on international expansion, operating in multiple markets, new business opportunities and market analysis.
- Comprehend the critical roles of (international pricing, advertising and promotions, policies for export and international trade, global marketing strategies etc.) in developing a sound International business relations.

SYLLABUS FOR DSE 1

Unit 1: Introduction (9 Hours)

Reasons behind international expansion; types of MNCs; Expatriates and Inpatriates; Stages of International Exposure; Global Marketing, Using Social Media tools.

Unit 2: International Variables (12 Hours)

National-level variables, regional trading blocs; Physical variables, Geographic distance, Grouping of industries in specific areas/regions, Environment specific impacts, Distribution of Natural Resources; Cultural Variables, Impact on doing business (Distance, Power, Decision Making, People Management, Delegation, Corruption, Quality Benchmarks Etc.), Gender biases, Festivals, Buying Behaviour; PESTEL; Porter's Diamond Model; Positioning; Protectionism and its impact on international trade.

Unit 3; International Expansion (12 Hours)

Porter's Five Forces Model; Ghemawat's CAGE framework; Globalisation; Demographics and Segmentation; Assessing Market Potential, How markets behave, Selling in specific markets (Developed, Developing, Post-Communist); "Right" Market to enter and "Right" Time to enter; What (mis-selling, outdated products), Where, Why, and How are we selling; Customer needs (of the new/foreign market); Location of manufacturing facilities; Labelling and Packaging (Export and Retail); Selling to and in emerging markets; Concerns and issues with available market analysis tools.

Unit 4: International Business (12 Hours)

Strategic (and global) Alliances; Global level of competition; Product Development; E- Commerce and Changing International Marketing Paradigms; Supply Chain as a source of International Advantages; Managing International Sales (Channels and Logistics); International Advertising and Promotions; Pricing for international markets, Pricing wars (War Chests), Approaches – Full-cost v/s Variable, Skimming v/s Penetration (non-numeric), factors influencing pricing; Implementing a Global Marketing Strategy; Support Mechanisms for Exports and International Trade, Export Infrastructure and Assistance in India, ITPO; International Payment Methods, Finance and Raising Funds, Taxation and Tax Havens, Marine and Cargo Insurance. Managing Risks in International Trade.

Essential/recommended Readings (latest editions of readings to be used)

1. Cateora, R. P., & Graham, L. John (2019). *International Marketing*. Tata McGraw Hill.
2. Joshi, R. M. (2014). *International marketing*. Oxford University Press.

Suggestive Readings (latest editions of readings to be used)

1. Keegan, W. J. (2017). *Global marketing management*. Pearson Education India.
2. Muhlbacher, Hans. *International Marketing-A Global Perspective*. Cengage Learning.
3. Bhattacharya, B. and Varshney, R.L. (2022). *International Marketing Management*. Sultan Chand & Sons.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC ELECTIVE - GLOBAL BUSINESS MANAGEMENT (DSE 2)

GEOPOLITICS AND INTERNATIONAL TRADE

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Geopolitics and International Trade (DSE 2)	4	3	1	0	Class XII	Basics of Marketing

Learning Objectives

- This paper aims at providing the learners with a greater understanding of geopolitics, how it works, and how it can be used to assess the existing capabilities and building of new plans in terms of foreign policy orientations focusing the deeper trading relations.
- The course covers the key concepts and ideas of geopolitics and engages with the current dynamics of building new trade partners and trade networks. It enhances the ability to use geopolitics for the analysis of the social, political and economic dimensions of international trade.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Recognise the concept of Geopolitics, Geostrategic and Geopolitical theories, various theories and their implications for and contemporary applications in the field of International Relations and trade.
- Interpret the linkages among International Relations, Political Science, National Security policies, History, Political, Geography and Economy.
- Recall some of the major geopolitical actors and activities in the global political and economic arena and analyse their impact in the distribution of power and wealth.
- Inspect, analyze and understand the political economy of trade and economic cooperation.

SYLLABUS FOR DSE 2

Unit 1: Introducing Geopolitics (9 Hours)

Introduction to roots and theories, Geopolitical theories of land (Mackinder), sea (Mahan), air (deSeversky) and their contemporary applications, Geopolitical Agency-The concept of Geopolitics codes, Territorial Geopolitics –Shaky Foundations of the World Political Map, Global Geopolitical structure-Framing Agency, International Political Economy-Economics Geography and Globalisation.

Network Geopolitics-Social Movements and Armed conflicts, Link between Geopolitics, economics and investments, Measuring Geopolitical risk.

Unit 2: Geopolitics and International Economic Cooperation (12 Hours)

Building a New World Order, IMF and WTO-Are Geopolitical tools?, Free Trade and WTO, Criticism of Free Trade Agreements, Economic Diplomacy as a Mean to Foster Growth, Globalisation- growth and inequality. IMF-Compliance, defiance, and the dependency trap: International Monetary Fund program interruptions and their impact on capital markets.

Unit 3: India & South Asia (12 Hours)

Untapped regional trade integration, political economy of trade. Fall of Kabul – Regional reset, Potential impact on India's future plan to reach Central Asian markets, Geopolitical importance of Iran for India, Trade Potential of Chabaar (Iran) port for India. Shifting trade focus from West to East-India's Look East Policy and Geopolitical Gravity in the Indo-Pacific region. India's Geopolitical ties with major trade partners-UAE, USA, Saudi Arabia. India and China-From armed conflict to $100 billion trade.

Unit 4: Geopolitics of trade routes (12 Hours)

The Ancient Silk Roads: Historical Perspectives, The Revival of the New Silk Roads by Modern China, Indo-Pacific and the Maritime Silk Road, China's Arctic Policy and Polar Silk Road, Geopolitical and Geo-Economic Patterns of the BRI's Implementation. Global Paradigm Shift: Towards a World-Land Bridge. South China Sea and its geostrategic importance for trade.

Essential/recommended Readings (latest editions of readings to be used)

1. Flint, Colin. (2016). *Introduction to Geopolitics.* (3rd edition). Routledge
2. Ahmed, Faisal & Lambert, Alexandre. (2021). *The Belt and Road Initiative: Geopolitical and Geoeconomics Aspects.* (1st edition). Routledge.

Suggestive Readings (latest edition of readings to be used)

1. Mi Park (2018). *The IMF and WTO: How does Geopolitics influence Global Finance and International Trade?*. (1st edition). Coal Harbour Publishing
2. Klement, Joachim. (2021). *Geo-Economics: The Interplay between Geopolitics, Economics, and Investments*. (1st edition). CFA Institute Research Foundation / Monograph.
3. Kumar, R. (2020). South Asia: Multilateral Trade Agreements and untapped regional trade integration. *International Journal of Finance & Economics*, 26(2), 2891–2903. doi:10.1002/ijfe.1941
4. Kumar, R. (2019). India & South Asia: Geopolitics, regional trade and economic growth spillovers. The Journal of International Trade & Economic Development, 29(1), 69–88. doi:10.1080/09638199.2019.1636121

5. Kumar, R. (2019b). India–china: Changing Bilateral Trade and its effect on economic growth. The Singapore Economic Review, 67(02), 567–586. doi:10.1142/s021759081950005x
6. Frandi, Nico. (2019). Paper prepared for the Istituto Affari Internazionali (IAI), May 2019. "WTO and geopolitical changes. Multilateralism and coalitions of members between crisis, adaptation to change and rebirth", published in September 2018.
7. Reinsberg, B., Stubbs, T. & Kentikelenis, A. (2021). Compliance, Defiance, and the dependency trap: International monetary fund program interruptions and their impact on Capital Markets. Regulation & Governance, 16(4), 1022–1041. doi:10.1111/rego.12422
8. Iwanek, K. (2021, September). India Poised to Lose Influence in Afghanistan. The Diplomat. Retrieved from https://thediplomat.com/2021/09/india-poised-to-lose-influence-in-afghanistan/
9. Jamal, Umair. (2021, May). Treacherous Triangle: Afghanistan, India, and Pakistan After US Withdrawal. The Diplomat. Retrieved from https://thediplomat.com/2021/05/treacherous-triangle-afghanistan-india-and-pakistan-after-us-withdrawal/
10. Sood, Rakesh. (2021, November). Redefining India's role in Afghanistan. ORF. Retreived from https://www.orfonline.org/research/redefining-indias-role-in-afghanistan/
11. Chatterji, S. K. (2020, March 3). Afghanistan geo-strategically important for India; could be tapped for defence exportsS. Financial Express. Retrieved from https://www.financialexpress.com/defence/afghanistan-geo-strategically-important-for-india-could-be-tapped-for-defence-exports/1887297/
12. Kothari, Raj Kumar. (2020). India's Strategic Interests In Central Asia. World Affairs: The Journal of International Issues, Vol. 24, No. 1 , pp. 100-117.
13. Rowden, Rick. (2020, December 18). India's Strategic Interests in Central Asia and Afghanistan: Go through Iran. New Lines Institute. Retrieved from https://newlinesinstitute.org/iran/indias-strategic-interests-in-central-asia-and-afghanistan-go-through-iran/
14. Pant, H.V. and Deb, A. (2017). India-ASEAN Partnership at 25. Observer Research Foundation (ORF) Issue Brief, Issue No. 189. New Delhi, India

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC ELECTIVE - GLOBAL BUSINESS MANAGEMENT (DSE-3)

INTERNATIONAL TRADE AND DOCUMENTATION

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
International Trade and Documentation (DSE 3)	4	3	1	0	Class XII	Understanding of international trade

Learning Objective

- The objective of this course is to acquaint the learners with the basic concepts of international trade, India‘s foreign trade policies, export assistance and promotion measures and various aspects of importing.

Learning Outcomes

On successful completion of the course the learner will be able to:

1. Understand the various theories of international trade, role of government in exchange control and tariff measures.
2. Comprehend the current composition and direction of India’s foreign trade.
3. Evaluate the different measures of export promotion adopted and various schemes launched by the government of India.
4. Demonstrate the documentation process under international trade as well use of information technology in international business.

SYLLABUS FOR DSE 3

Unit 1: Introduction to International Trade (9 Hours)

Theories of International Trade- Absolute and comparative Advantage theories- Heckscher- Ohlin theory- terms of trade- theory of international trade in services, Tariffs- Quotas- dumping- Antidumping/ countervailing- duties- technical standards- exchange control and other non tariff measures

Unit 2: India’s Foreign Trade (12 Hours)

Composition and direction of India’s foreign trade- India‘s foreign trade policy- export promotion infrastructure and institutional set up – deemed exports- rupee convertibility- policy on foreign collaborations and counter trade arrangements- India‘s joint ventures abroad- project and consulting exports; Balance of Payments.

Unit 3: Export Assistance in India (12 Hours)

Export assistance and promotion measures- ECGC- import facility- duty drawback- duty exemption schemes- tax concessions- MAI-MDA-100 percent EOUs SEZs, Export Promotion Councils (EPCS), Vishesh Krishi and Gram Udyog Yojana (Special Agriculture and Village Industry Scheme (VYGUY), Focus Market Schemes, Advance Authorisation scheme.

Unit 4: International Documentation (12 Hours)

Processing of an export order – methods of payment- negotiations of export bills- pre and post shipment export credit – Bank guarantees- types and characteristics of export documents, Procedure for procurement through imports- Import financing-customs clearance of imports- managing risks involved in importing, Information Technology in International Business - e procurement, e-marketing, e- logistics

Essential/recommendation Readings (latest editions of readings to be used)

1. Cherunilam, F. International Trade and Export Management. Himalaya Publishing House
2. Agarwal, O.P. & Chaudhuri, B.K. Foreign Trade and Foreign Exchange. Himalaya Publishing House.

Suggestive Readings (latest editions of readings to be used)

1. Rao, M.B. and Guru, Manjula: WTO and International Trade. Vikas Publishing House
2. Mahajan, V.S.: India's Foreign Trade and Balance of Payments. Deep & Deep Publications
3. Jeevanandam, C.: Foreign Exchange and Risk Management. Sultan Chand & Sons

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC ELECTIVE - GLOBAL BUSINESS MANAGEMENT (DSE 7)

GLOBAL TRADE MANAGEMENT (BARRIERS AND BLOCS)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Global Trade Management (Barriers and Blocs) (DSE 7)	4	3	1	0	Class XII	Basics of Management and Marketing

Learning Objectives

- This course aims to enrich the understanding of learners about the globalization of business in the setting of new opportunities and threats to governments, firms, and individuals.
- This course attempts to introduce elements of strategy in the way of business in the global marketplace as it exists today, with an outlook of the future growth and expansion.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Recognise how the economic, political/legal, and financial environments affect international business operations.
- Interpret international trade theories, international investments, trends toward economic integration around the world; and how government and business decisions influence international trade.
- Illustrate the effects of current regional trade agreements and economic integration on developing countries.
- Judge and implement strategies that will help provide a competitively advantageous position and differentiate between smaller firms and multinational corporations.

SYLLABUS FOR DSE 7

Unit 1: Global Business Environment (9 Hours)

Theories of international business – Mercantilism, Absolute Advantage, Comparative Advantage, Factor Endowment, Competitive Advantage. National Differences, National Differences under PESTEL: Culture, Bureaucracy, CSR, Environmental Consciousness and Sustainability. Porter's Diamond model of National Competitiveness. Doing business globally; supply chain management; currency management; raising capital; making payments for internationally traded goods and services; ease of doing business; marketing across cultures; pricing; costing for internally traded goods and

services; dispersed manufacturing; import-export. Introduction to Analytics for global business operations. Trade hubs. Key regions, companies and countries impacting global trade.
Various businesses and industries operating globally. Global movement of knowledge and unskilled workers.

Unit 2: Globalization and Free Trade (12 Hours)

Globalization: Meaning, Definition, Features, Advantages and Disadvantages. Challenges to global operations: Socio–Cultural, Political, Legal and Economic Implications. Globalization and India: GATT, WTO, Intellectual Property Rights, Industrial promotion schemes such as SEZs and Atmanirbhar Bharat, TRIPS Agreements, India's Trade Policy. Globalisation of Indian Businesses.
Concept of global free trade: role of global bodies such as WTO, IMF; ethical issues; biases and restrictions; global climate agreements; enforcement of global trade pacts and regulations; trade sanctions; preferential and non-preferential treatments
Trade Blocs and Trade Agreements; introduction, need and relevance; pros and cons. Overview of major agreements such as NAFTA, TPP, EU, MERCOSUR, OPEC etc. Impact of such blocs and agreements on strategies for global expansion and global business activities.
Regional Trade Blocks, Preferential Trade Agreements, Free Trade Area, Custom Union, Economic Union. Entering Developed and Emerging Markets.

Unit 3: International Business Management (9 Hours)

Modes of creating an International Business: Global Strategic Management and Multinational Enterprises, International business analysis; modes of entry: exporting (direct and indirect), licensing, franchising, contract manufacturing, management contracts, turnkey projects, Joint ventures, Mergers and Acquisitions, Foreign direct investment; Comparison amongst different modes of entry.
Emerging markets as a unique segment of international business opportunities; bottom of the pyramid; need for innovation; unique operational challenges and circumstances.
Challenges to international business operations and trade barriers.

Unit 4: Protectionism and Trade Barriers (12 weeks)

Introduction to Protectionism: history; stages; current scenario. Various types of protectionist measures: import quotas, tariffs; anti-dumping; bans etc. Protectionist measures since 1945: banana wars, Japanese companies entering USA and Western Europe; anti-dumping and China; political issues affecting imports; trade agreements; export restrictions. Barriers affecting the movement of goods, intellectual property, services and people.
Export driven economies: UK, Germany, USA, Japan, Asian Tigers, Mexico, India, China + Rise of global manufacturing and outsourcing hubs like Mexico, China, Bangladesh, India, Vietnam, parts of Eastern Europe - and their experience with trade barriers - solutions and present scenario
Rise of globally relevant trade agreements: relevance, impact on strategies of international business operations.

Current scenario of trade barriers and protectionism.

Essential/recommendation Readings (latest editions of readings to be used)

1. Peters, Margaret E. (2017). *Trading Barriers:Immigration and the Remaking of Globalization.* (1st edition). Princeton University Press
2. Bhagwati, Jagdish N. (1990). *Protectionism*. (1st edition). MIT Press
3. Heron, Tony. (2012). *Global Political Economy of Trade Protectionism and Liberalization.* (1st edition). Routledge
4. Hill, C.W..L, Hult, G.T.M. & Mehtani, R. (2018). *International Business: Competing in the Global Marketplace*. (11th edition). McGraw Hill

Suggestive Readings (latest edition of readings to be used)

1. Hahn, Balthasar & Jaeger, Carl. (2010). *Trade Liberalization & Protectionism.* (1st edition). Nova Science Publishers
2. Kahanmoui, Farrokh. (2008). *Effects of Trade Barriers on Growth.* (1st edition). VDM Verlag
3. Liu, Fang & Peters, Bill. (2011). *Green Trade Barriers.* (1st edition). Lambert Academic Publishing
4. Winters, L. Alan. (2011). *Non-tariff Barriers, Regionalism And Poverty.* (1st edition). World Scientific Publishing Co.
5. Salvatore, Dominick. (1993). *Protectionism and World Welfare.* (1st edition). Cambridge University Press
6. Cherunilam, Francis. (2020). *International Business.* (1st edition). PHI Learning
7. Justin, Paul. (2013). *International Business.* (1st edition). PHI Learning
8. USTR, 2021 National Trade Estimate Report on Foreign Trade Barriers. USTR. (Available at https://ustr.gov/sites/default/files/files/reports/2021/2021NTE.pdf)

Note: Examination scheme and mode shall be as prescribed by the Examination BranchUniversity of Delhi, from time to time

DISCIPLINE SPECIFIC ELECTIVE - GLOBAL MANAGEMENT (DSE 8)

GLOBAL SUPPLY CHAIN MANAGEMENT

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Global Supply Chain Management (DSE 8)	4	3	1	0	Class XII	Basics of Marketing and Operations

Learning Objective

- To provide a balanced and integrated perspective of both the foundational principles and pragmatic, business-oriented functions of SCM.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Define supply chain and its role in organisation.
- Analyse the significance of supply chain strategy in overall business.
- Explain the role of Marketing, Operations, Sourcing and Logistics in supply chain management.
- Evaluate different methods of forecasting and demand planning and maintaining inventory management.
- Analyse the importance of quality control through six-sigma and identify how it affects the sustainability in SCM.

SYLLABUS FOR DSE 8

Unit 1: SCM Strategies and Systems (12 Hours)

Introduction To Global Supply Chain Management: Characteristics of a Competitive Supply Chain, Trends in SCM,; Examples from Different Industries, Services & Continents; Supply Chain Strategy: Achieving a Competitive Advantage, Building Blocks of Supply Chain Strategy, Supply Chain Strategic Design, Strategic Considerations, Productivity as a Measure of Competitiveness; Network and System Design: The Supply Chain System, Designing Supply Chain Networks. Special relevance of SCM for global operations.

Unit 2: Operations, Sourcing And Logistics (12 Hours)

Customer-Driven Supply Chains, Delivering Value to Customers, Global channels of Distribution; International operations Management: Product Design, International Process Design, Facility Layout, Process Automation; International Sourcing: Sourcing and SCM, Measuring Sourcing Performance;

Global Logistics: Transportation, Warehousing, Third-Party Logistics (3PL) Providers. Challenges and advantages of global sourcing.

Unit 3: Forecasting and demand planning (12 Hours)

Role of Forecasting and Demand Planning in SCM: Collaborative Forecasting and Demand Planning, Bull-whip effect. Role of Inventory Management in SCM: Basics of Inventory Management, Inventory Systems, Managing Supply Chain Inventory. Lean Systems and Six-Sigma Quality: Lean Production, Total Quality Management (TQM), Statistical Quality Control (SQC), Six Sigma Quality, The Lean Six Sigma Supply Chain. Variables affecting globally long supply chains.

Unit 4: Sustainable Supply Chain Management (9 Hours)

Supply Chain Relationship Management: Supplier-Retailer Relationships, The Role of Trust. Global Supply Chain Management: Global Market Challenges, Global Infrastructure Design, Cost Considerations, Political and Economic issues. Sustainable Supply Chain Management: Growing trend in sustainable supply chain operations; Evaluating Sustainability in SCM, Sustainability in Practice. Role of IT in SCM: Enterprise Resource Planning (ERP), Tracking; RFID, Digitally networked planning.

Essential/recommended Readings (latest editions of readings to be used)

1. Sanders, N.R. (2017). Supply Chain Management: A Global Perspective. Wiley.
2. Ivanov, D., Tsipoulanidis, A., & Schönberger, J. (2021). Global Supply Chain and Operations Management. Springer.

Suggestive Readings (latest editions of readings to be used)

1. Mentzer, J.T., Byers, M.B., & Stank, T.P. (Eds.). (2006). Handbook of Global Supply Chain Management. Sage.
2. Blanchard, D. (2010). Supply Chain Management Best Practices. Wiley.
3. Branch, A.E. (2017). Global Supply Chain Management and International Logistics. Routledge.
4. Chopra, S. & Kalra, D.V. (2019). Supply Chain Management: Strategy, Planning and Operation. Pearson.
5. Handfield, R.B., Monczka, R.M., Giunipero, L.C. & Patterson, J.L. (2011). Sourcing and Supply Chain Management. Cengage Learning.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC ELECTIVE - GLOBAL BUSINESS MANAGEMENT (DSE-9)

INTERNATIONAL EXPANSION STRATEGIES

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
International Expansion Strategies (DSE 9)	4	3	1	0	Class XII	Concepts of International Marketing

Learning Objectives

- This course aims to help learners identify and understand the various strategies that companies can adopt while opting for international expansion.
- This course should also enable the learners to understand the nuances of marketing to a diverse audience and how to adapt to local operating challenges and local variables like culture and governance.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Reproduce factors that impact international expansion.
- Interpret and have a deeper understanding of the various strategies companies can adopt while expanding abroad.
- Organise their knowledge to develop a better understanding of the various challenges that a company faces in international operations.
- Recognize and articulate strategies and actions to help manage international expansion challenges and risks.

SYLLABUS FOR DSE 9

Unit 1: Introduction (6 Hours)

Reasons behind international expansion; types of MNCs; basic factors to consider while expanding abroad; Market Analysis tool: Porter's Five Forces, PESTEL, Porter's Diamond Model.

Unit 2: International Expansion Choices (15 Hours)

Assessing market potential: Demographics, Segmentation, Market behaviour and operational challenges.

Tools for assessing market attractiveness: Ghemawat's CAGE framework, Ghemawat's AAA Framework, Ease of Doing Business.

Selling in specific markets: Developed, Developing/ Emerging, Post-Communist; "Right" Market to enter and "Right" Time to enter;
Product and Market Fit: Who, What, Where, Why, and How are we selling; Customer needs (of the new/foreign market); own capabilities in product development and IP capabilities; Positioning; Market realities.
Market Entry planning: Operational needs and challenges; Location of manufacturing facilities; Location of IP development and management facilities; Labelling and Packaging (Export and Retail); Inport and Export laws and taxes, local business customs and processes, cultural variables and their impact on doing business locally, business risks.
Balance between local and international operations: Which parts to bring in from abroad and what to manufacture locally, IP development centres, level of independence of local operations; managing globally dispersed operations and activities; identifying and adapting to cultural and operational differences amongst home country and non-home country operations and markets.

Unit 3: International Expansion Strategies (15 Hours)
Strategies: Distributor model; Licencing; Franchising; Joint Ventures; Strategic Alliances; Own Operations: Mergers, Acquisitions, Green-field and Brown-field expansion.
Challenges: regulatory environment, sops, staffing, export-import regulations and restrictions, currency conversion, national level variables and advantages, supply chain, infrastructure, financing and funding, new product development; long-term business risks.

Unit 4: Realities of International Operations (9 Hours)
Global competition: Product Development, E- Commerce, Pricing.
Competition from local players: Protectionism, market understanding, tactics used by local players to protect their markets, role and relevance of local partners for specific business activities, amount of resources (raw materials, infrastructure, distribution networks) available in the market, advantages possessed by local players as compared to international companies.
Sources of competitive advantage for international companies (from outside the new market): Supply chain, manufacturing facilities; raising resources and finances; operational excellence and practices, quality partners and vendors.
Managing Risks in International Business operations.

Essential/recommended Readings (latest editions of readings to be used)

1. Wild, J.J. and Wild, K.L. (2021). *International Business: The Challenges of Globalization*. (9th edition). Pearson.
2. Bartlett, Christopher, A. (2013). *Transnational Management: Text and Cases in Cross Border Management.* (7th edition). McGraw-Hill.
3. Hopkins, Raymond A. (2017). *Grow Your Global Markets.* (1st edition). Apress.

4. Cateora, P.R. & Graham, J.L. (2010). *International Marketing.* (15th edition). Tata McGraw Hill.

Suggestive Readings (latest editions of readings to be used)

1. Salwan, P., Daniels, J.D., Radenbaugh, L.H. and Sullivan, D.P. (2016). *International Business.* (15th edition). Pearson Education.
2. Peng, M.W. & Srivastava, D.K. (2019). *Global Business.* (1st edition). Cengage Learning.
3. Keega, W.J.& Green, M.C. (2014). *Global Marketing Management.* (1st edition). Prentice Hall India.
4. Muhlbacher, H., Dahringer, L. & Leihs, H. (1999). *International Marketing: A Global Perspective.* (2nd edition). Cengage Learning.
5. Joshi, Rakesh M. (2014). *International Marketing.* (2nd edition). Oxford University Press.
6. Varshney, R.L & Bhattacharya, B. (2015). *International Marketing Management: An Indian Perspective.* (1st edition). Sultan Chand & Sons.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

GENERIC ELECTIVES (GE-1): MANAGEMENT WISDOM FROM INDIA

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Management Wisdom From India (GE 1)	4	3	1	0	Class XII	Concepts of management	Management Studies

Learning Objectives

- This course aims to bring management education and research in India in line with its needs to tackle contemporary challenges
- The course helps learners develop management models that are rooted in India's spiritual and cultural ethos.
- This course attempts to highlight innovative uses of Indian Management thought in the VUCA world of today.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Interpret the various theories, concepts and ideas that constitute 'received knowledge' of Indian Management.
- Learn how to compare and contrast Indian management thought with Western concepts.
- Illustrate ways of how to apply Indian management thought more effectively in an organisation setting.
- Judge how Indian thoughts help enable growth and development of the self, organisations, society and environment in the present as well as future context.

SYLLABUS OF GE-1

UNIT- 1: Indian Wisdom (9 hours)

Understand the principles of materialism (abhyudhaya), spiritualism (nisreyasa), nivṛtti (spiritual contemplation), pravṛtti (worldly duties), coexistence (loka sagraham), cohesion (samanva), arkashastra (Analysis, Reasoning, Argumentation), Diversity Management (Anekanthavada). Relevance of Gurukul concepts in modern corporate world - shadowing, mentoring and coaching; Roots of Indian wisdom - welfare-oriented economy based on moral values. Using Indian wisdom to solve modern management problems.

UNIT- 2: Management Paradigms from Ancient Texts (12 hours)

Relevant concepts: Spiritual dimensions, Karma, Organisation tension, Positive thinking, Integrity, Leadership, Work Ethic. Management learnings from the Bhagavad Gita. Interpersonal Relations in Ramayana and Mahabharata. Pauranic Jagruti and Tourism Management. Management principles from the Guru Granth Sahib. Management learning and Organisational Policies from the Thirukural. Government administration from Kautilya's Arthasastra. Learnings from a study of Manusmriti.

UNIT- 3: Indian Management Practices (15 hours)

Uniquely Indian business scenarios – population density, crowd behaviour, role of the unorganised sector in trade and commerce, or cultural issues in business, infrastructure development, public private partnerships and regulation, how taxation drives business behaviour, logistics management, saving habits of Indians. Indian business practices- Community-based Business Management (Chettiars in Tamil Nadu, Marwaris of Rajasthan, Angadias of Gujarat), Indian family business management, community level success stories- Gupta empire, Gujarati, Marwari, Punjabi traders. Studying Indian business success stories such as Dabbawallas, Amul, Swachh Bharat, Atmanirbhar Bharat, PLI scheme initiatives, Indian corporates working abroad, success of Indians as individuals abroad in domains such as IT, Merchant Navy, Higher Education, Medicine.

UNIT-4: Future for Indian Management Thoughts (9 hours)

Indian models like OSHA, Theory K and Corporate Rishi Model. Management education should be based on four Ds (decision, direction, determination and dedication) and four Es (explore, experience, enjoy and excel) in learners. Indian perspectives on sustainability, creativity, interpersonal skills, business ethics, environment friendly.

Essential/recommended Readings (latest edition of readings to be used)

1. Srinivasan, V. (2006). *New Age Management Philosophy from Ancient India.* (1st edition). Lotus.
2. Peetham, Sri Sharada. (2016). *Ancient Wisdom for Modern Management.* (1st edition). Springer.
3. Bansal, Ipshita. (2003). *Management Concepts In Ancient Indian Psycho-Philosophic Thought.* (1st edition). Popular Book Depot.
4. Sharma, Subhash. (2020). *Indian Management.* (1st edition). New Age International.
5. Swami Ranganathananda. (2001). *Universal Message of the Bhagavad Gita.* (1st edition). Advaita Ashrama, Kolkata.
6. Swami Dayananda Saraswati, (2007). *The value of values.* (1st edition). Arsha Vidya Research & Publication Trust, Chennai.

Suggestive Readings (latest edition of readings to be used)

1. Mahadevan, B. (2019). *Writings on Gita & Management.* (1st edition). Kindle edition.

(http://www.iimb.ernet.in/webpage/b-mahadevan/bhagavad-gita-amp-management)
2. Swami Chinmayananda, (2000). *Holy Geeta.* (1st edition). Chinmaya Prakashan.
3. Bhattathiri, M.P. (2004). Retrieved from http://vaikhari.org/downloads/Bhagavad%20Gita%20and%20Management.pdf
4. Houston, D.J. and Cartwright K.E. (2007). *Spirituality and Public Service.* Public Administration Review, Jan. – Feb., 2007, 88 – 102.
5. Poole, E. (2007). *Organisational Spirituality – A literature review.* Journal of Business Ethics, 84, pp. 577 – 588.
6. Mahadevan, B., (2013). *Inspirational Leadership: Perspectives from Gītā.* Chapter 13 in Sanskrit and Development of World Thought, Kutumba Sastry V. (Ed.), D K Print World, New Delhi, pp 199 - 210.
7. Ehrenfeld, J.R. (2005). *The Roots of Sustainability.* MIT Sloan Management Review, 46 (2), pp. 23-25.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-2:) FUNDAMENTALS OF ORGANISATION BEHAVIOR

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Fundamentals of Organisational Behaviour (GE 2)	4	3	1	0	Class XII	None	Management Studies

Learning Objectives

- Explain the concepts in organisational behaviour and discuss how individual differences—such as personalities, perceptions, and learning affect employee behaviour and performance.
- Gain practical insight into individual and interpersonal issues facing organizations by understanding theories and apply the underlying concepts in managing behaviour.
- Develop an understanding of group behaviour, group dynamics and leadership styles. Devise strategies for effective group management and leadership development.
- Apply the conceptual understanding of organizational level variables which impact behaviour in organizations in understanding as well as initiating change in organizations.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Comprehend the meaning and nature of organizational behaviour. Understand influences and factors impacting individual behaviour in organizations.
- Enhance understanding of various organizational and interpersonal processes like motivation, interpersonal transactions, level of trust etc. Compare and contrast various theories to develop an understanding of their relevance in different organizational situations. Develop and shape organizational strategies to manage these interpersonal processes.
- Analyse and develop greater insight into the behaviour of individuals in groups/teams in organizations and handle group behaviour and leadership issues in organizations.
- Apply the understanding of organizational dynamics in terms of power; conflict etc. in managing interpersonal behaviour. Evaluate organizational requirements and create interventions

SYLLABUS OF GE-2

UNIT- 1: Fundamental Concepts in OB (12 hours)

Importance and Key concepts in OB. Perception, Factors affecting Perception, Perceptual Process, and Errors in Perception. Personality: Concept and Factors affecting personality. Learning: Concept and Theories of Learning, Concept of Reinforcement.

UNIT- 2: Motivation and Interpersonal Relations (12 hours)

Motivation: Concepts and their application, Content theories (Maslow and Herzberg's Theories); Process theories (Expectancy theory). Managing Interpersonal Relationships; Transactional Analysis; Ego states, Types of Transactions, Importance of Transactional Analysis. Johari window.

UNIT- 3: Group Processes and Leadership at Work (12 hours)

Leadership: Trait Approach, Behavioural theories (Ohio and Michigan State Studies, and Blake & Mouton's Managerial grid), and Concept of Situational/Contingency approach to Leadership. Groups: Definition Stages of Group Development, Group Processes-Group Cohesiveness.

UNIT-4: Organisational Dynamics of Politics, Conflict and Change (9 hours)

Organisational Power: Concept, Sources of Power, Tactics to gain power in Organizations. Conflict: Concept, Sources, Types, Stages of conflict, Management of conflict. Organisational Change: Concept, Resistance to change, managing resistance to change, Implementing Change.

Essential/recommended readings (latest edition of readings to be used)

1. Robbins, S. P., Judge, T. A. and Vohra N. (2019). *Organisational Behavior* (18th Edition). Pearson
2. Luthans, F., Luthans, K. W., & Luthans, B. C. (2015). *Organizational Behavior: An Evidence- based Approach* (13th Edition) Charlotte, North Carolina: Information Age

3. Mcshane, S.L., Von Glinow, M.A., and Sharma, R.R. (2009). *Organizational Behaviour*. New Delhi. McGraw-Hill (Special Indian Education).
4. Singh. K. (2010). *Organizational Behaviour-Text and Cases*. (3rd Edition) New Delhi. Pearson Education
5. Aswathappa, K. (2005). *Organizational Behaviour*.Himalaya Publishing House, Mumbai.
6. Moorhead, G. and Griffin, R.W. (2009). Organizational Behaviour-Managing People and Organizations (4th Edition). Houghton Miffin Company-New York.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

GENERIC ELECTIVES (GE-3): FINANCE FOR NON FINANCE EXECUTIVES

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Finance for Non-Finance Executives (GE 3)	4	3	1	0	Class XII	None	Management Studies

Learning Objective

- To familiarise non finance executives with the essentials of finance and investments.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand Investment Environment and concept of Return & Risk.
- Analyse bond valuation & role of credit rating agencies.
- Examine equity analysis approaches.
- Understand two securities portfolios using the Harry Markowitz model and understand CAPM.
- Familiarise with Investors' protection framework.

SYLLABUS OF GE-3

Unit 1: Introduction to Finance (10 hours)

Introduction to Financial Management: Concept and Importance of Finance Function, Objectives of

Financial Management, Financial Decisions and their Risk-Return Trade-off. Time Value of Money – Concept and Rationale, Compounding & Discounting to obtain Future and Present values. Types of Risks and Returns. Sources of Finance.

Unit 2: Investment Decisions (12 hours)

Concept and Importance of Capital Budgeting, Objectives and Problems in Capital Budgeting, Types of Investment Projects and kinds of Investment Decisions, Capital Budgeting Process. Investment Evaluation Techniques: Payback Period, Discounted Payback Period, Net Present Value, Profitability Index, Internal Rate of Return. Selection of suitable evaluation techniques.

Unit 3: Financing Decisions (12 hours)

Cost of Capital: Concept, Cost of Debt Capital, Cost of Preference Share Capital, Cost of Equity Share Capital, Weighted Average Cost of Capital (WACC). Leverage Analysis: Meaning of Leverage; Operating Leverage, Financial Leverage, and Combined Leverage. Capital Structure (Theory only): Concept, Factors affecting Capital Structure, Capital Structure Theories: Net Income Approach, Net Operating Income Approach, and Traditional Approach.

Unit 4: Dividend Decisions and Working Capital Management (11 hours)

Dividend Decisions: Concept, Relevance of Dividend Decisions: Walter's Model and Gordon's Model. Types of Dividends, Dividend Policies and factors determining the Dividend policy. Working Capital Management (Theory only): Concept and need for Working Capital, Types of Working Capital and factors affecting Working Capital requirements.

Essential/recommended Readings (latest edition of readings to be used)

1. Singh, S. & Kaur, R. (2020). *Fundamentals of Financial Management* (7th ed.). Scholar Tech Press.
2. Bhargav, B. K. (2022). *Finance For Non-Finance Managers.* Jaiko Publishing House.
3. Chandra, P. (2017). *Finance Sense: Finance For Non-Finance Executives* (5th ed.). Tata McGraw Hill.
4. Tripathi, V. (2021). *Basic Financial Management* (3rd ed.). Taxmann.

Suggestive Readings (latest edition of readings to be used)

1. Chandra, P. (2022). *Financial Management – Theory and Practice*. (11th ed.). Tata McGraw Hill.
2. Tripathi, V. (2023). *Fundamentals of Investments* (6th ed.). Taxmann.
3. Hawawini, G., & Viallet, C. (2008). *Finance for Non-Finance Managers*. Cengage Learning.
4. Siciliano, G. (2014). *Finance for Nonfinancial Managers*, 2nd ed. (Briefcase Books Series) . McGraw-Hill.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-4): WEALTH MANAGEMENT

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Wealth Management (GE 4)	4	3	1	0	Class XII	None	Management Studies

Learning Objective

- To familiarise learners with the essential concepts and fundamentals of financial investments. The course will enable them to understand and make informed choice about the various available financial investment alternatives.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Provide an overview of various aspects related to wealth management.
- Understand the fundamentals of financial investments and the investment decision process.
- Able to compute various measures of risk and return, and understand their role for evaluating investments.
- Understand and carry out security analysis using different approaches.
- Learn basic approaches to managing portfolios.

SYLLABUS OF GE-4

Unit 1: Basics of Wealth Management and Investments (9 hours)

Introduction to Wealth Management, Need for Wealth Management, Components of Wealth Management, Process of Wealth Management. Concept of Investment, Financial Investment Vs. Real Investment, Investment Vs. Speculation, Objectives or Features of Investment, Risk Return Trade Off, Investment Environment – Overview of Securities Market and Different Types of Financial Investment. Investment Decision Process, Direct Investing Vs Indirect Investing, Approaches to Investing – Active Vs Passive.

Unit 2: Risk – Return Analysis (12 hours)

Concepts of Return and Risk, Types of Return (their calculation & utility): Absolute Return, Average

Return, Expected Return, Holding Period Return, Effective Annualised Return, Portfolio Return, Risk-Adjusted Return. Causes (or Sources) and Types of Risk – Systematic and Unsystematic Risk, Components of Systematic and Unsystematic Risk. Calculation of Total, Systematic and Unsystematic Risk. Impact of Taxes and Inflation on Investment – Computation of Post Tax and Real Returns.

Unit 3: Security Analysis (12 hours)

Approaches to Security Analysis – Fundamental Analysis, Technical Analysis, and Efficient Market Hypothesis (EMH). Fundamental Analysis – EIC Framework, Economic Analysis, Industry Analysis, and Company Analysis. Technical Analysis – Basic Tenets of Technical Analysis, Tool of Technical Analysis – Charts, and Technical Indicators, Limitations of Technical Analysis. Difference between Fundamental Analysis and Technical Analysis.

Unit 4: Portfolio Management & Estate Planning (12 hours)

Traditional portfolio management for individuals: Objectives, constraints, time horizon, current wealth, tax considerations, liquidity requirements, and anticipated inflation. Asset allocation: Asset allocation pyramid, investor life cycle approach. Portfolio management services: Passive – Index funds, systematic investment plans. Active – market timing, style investing. Portfolio Analysis – Portfolio Risk and Portfolio Return. Estate Planning – Fundamentals of Estate Planning, Impact of Property Ownership and Beneficiary Designations, Estate Planning Documents, and Executing Basic Estate Planning.

Essential/recommended Readings (latest edition of readings to be used)

1. Tripathi, V. (2019). *Security Analysis and Portfolio Management: Text and Cases*. Taxmann Publications
2. Chandra, P. (2021). *Investment Analysis and Portfolio Management.* (6th ed.). McGraw Hill Education.

Suggestive Readings (latest edition of readings to be used)

1. Billingsley, R., Gitman, L. J., & Joehnk, M. D. (2020). *Personal Financial Planning*. (15th ed.). Cengage Learning.
2. Tillery, S., & Tillery, T. (2018). *Essentials of Personal Financial Planning* (1st ed.). Wiley.
3. Singh, R. (2017). *Security Analysis and Portfolio Management* (2nd ed.). Excel Books.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-5): FUNDAMENTALS OF MARKETING MANAGEMENT

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Fundamentals of Marketing Management (GE 5)	4	3	1	0	Class XII	None	Management Studies

Learning Objectives

- To introduce the nature, scope, and importance of marketing and its evolution over time.
- To explain the core marketing concepts and the various company orientations.
- To explain the various product decisions, including the product life cycle, product classification, product line decision, product mix decision, branding decisions, packaging and labeling.
- To understand the various pricing methods and determinants of price, as well as promotion decisions and marketing channel decisions.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Learners will be able to understand the nature, scope, and importance of marketing and its evolution over time.
- Learners will be able to explain the core marketing concepts and the various company orientations.
- Learners will be able to identify and analyze the various factors affecting the marketing environment in the Indian context.
- Learners will be able to apply the concepts of segmentation, targeting, and positioning to develop effective marketing strategies.
- Learners will be able to make informed decisions regarding product decisions, including the product life cycle, product classification, product line decision, product mix decision, branding decisions, packaging and labeling.
- Learners will be able to analyze the various pricing methods and determinants of price, as well as promotion decisions and marketing channel decisions, to develop effective marketing strategies.
- Learners will be able to develop marketing strategies for service firms based on an understanding of the unique characteristics of services.

SYLLABUS OF GE-5

Unit 1: Introduction and Marketing Environment (12 hours)

Introduction: Nature, Scope and Importance of Marketing, Evolution of Marketing; Core marketing concepts; Company orientation - Production concept, Product concept, Selling concept, Marketing

concept, Holistic marketing concept. Marketing Environment: Demographic, Economic, Political, Legal, Socio cultural, Technological environment (Indian context); Portfolio approach – Boston Consulting Group (BCG) matrix.

Unit 2: Segmentation, Targeting and Positioning and Product Decisions (12 hours)
Segmentation, Targeting and Positioning: Concept; Levels of Market Segmentation, Basis for Segmenting Consumer Markets; Product decisions: Concept of Product Life Cycle (PLC), PLC marketing strategies, Product Classification, Product Line Decision, Product Mix Decision, Branding Decisions, Packaging & Labelling.

Unit 3: Pricing, Promotion and Marketing Channel Decisions (12 hours)
Pricing Decisions: Determinants of Price, Pricing Methods (Non-mathematical treatment), Adapting Price. Promotion Decisions: Factors determining promotion mix, Promotional Tools – Fundamentals of advertisement, Sales Promotion, Public Relations & Publicity and Personal Selling. Marketing Channel Decision: Channel functions, Channel Levels, Types of Intermediaries: Wholesalers and Retailers.

Unit 4: Marketing of Services (9 hours)
Marketing of Services: unique characteristics of services, marketing strategies for service firms – 7Ps.

Essential/recommended Readings (latest edition of readings to be used)

- Kotler, P., Armstrong, G., Agnihotri, P. Y., & Ul Haq, E. (2019). *Principles of marketing: A South Asian perspective.* Pearson.
- Kotler, P., & Keller, K. L. (2015). *Marketing management (15th ed.).* Pearson.

Suggestive Readings (latest edition of readings to be used)

- Ramaswamy, V.S. & Namakumari, S.: *Marketing Management: Global Perspective – Indian Context*, Macmillan Publishers India Limited.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-6): DYNAMICS OF START UPS

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Dynamics of Start Ups (GE 6)	4	3	1	0	Class XII	None	Management Studies

Learning Objectives

- Understand the concept of entrepreneurship, its different types, and the qualities required to become a successful entrepreneur.

- Explore the significance of innovation, creativity, and the role they play in the development and growth of new ventures, particularly in the Indian context.
- Identify and evaluate business opportunities, employing various techniques such as idea generation, selection, and implementation.
- Conduct feasibility analysis, encompassing marketing, technical, and financial aspects, to determine the viability of a new venture.
- Gain knowledge of resource mobilization strategies, including different types of resources and various sources of financing, for successful entrepreneurship. Additionally, comprehend the government initiatives and support available for entrepreneurs in India, along with the mechanisms for scaling up and exiting a business.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand the concept of entrepreneurship and differentiate between different types of entrepreneurs. (Knowledge)
- Apply innovative and creative thinking to identify and evaluate business opportunities for start-ups. (Application)
- Assess the feasibility of a new venture through comprehensive analysis of marketing, technical, and financial factors. (Analysis)
- Develop strategies for resource mobilization and financing options for entrepreneurship. (Synthesis)
- Evaluate the challenges, government initiatives, and support systems associated with scaling up and exiting a business. (Evaluation)

SYLLABUS OF GE-6

Unit 1: Entrepreneurship Journey (9 hours)

Meaning of entrepreneur, types of entrepreneurs, making of an entrepreneur, role of innovation and creativity for start-ups, start-up opportunities, creativity: role of creative thinking in development and growth of new venture in India. Challenges in starting start-ups.

Unit 2: Business Setup (12 hours)

Characteristics of opportunity, where to look for opportunities, from identification to evaluation, forms of ownership and suitability, different modes of generating ideas**,** identification of opportunities: idea generation, selection and implementation, search for new ideas: techniques for generating ideas: scamper, brainstorming, mind mapping, storyboarding, role playing. Entry strategies: new product, franchising, buying an existing firm.

Unit 3: Feasibility and Resource Mobilisation (15 hours)

Feasibility analysis: marketing, technical and financial feasibility analysis, industry and competition analysis, assessing new venture, economic environment and socio-economic feasibility of the venture. Resource mobilization for entrepreneurship: what is resource, resources mobilization, types of resources, process of resource mobilization, sources of financing.

Unit 4: Scaling-up of Business and Entrepreneurship Ecosystem (9 hours)

Scaling ventures – preparing for change, harvesting mechanism and exit strategies, managing growth, reasons for new venture failures, the entrepreneurial ecosystem, business incubators, entrepreneurship in India. Government initiatives, government grant and subsidies.

Essential/recommended Readings (latest edition of readings to be used)

1. Hisrich, R. D., Peters, M. P., & Shepherd, D. A. (2021). *Entrepreneurship* (11th ed.). McGraw-Hill Education.
2. Kuratko, D. F., & Hodgetts, R. M. (2020). *Entrepreneurship: Theory, process, and practice* (11th ed.). Cengage Learning.
3. Barringer, B. R., & Ireland, R. D. (2019). *Entrepreneurship: Successfully launching new ventures* (6th ed.). Pearson.
4. Spinelli, S., Adams, R. J., & Timmons, J. A. (2018). *New venture creation: Entrepreneurship for the 21st century* (11th ed.). McGraw-Hill Education.
5. Zimmerer, T. W., Scarborough, N. M., & Wilson, D. (2018). *Essentials of entrepreneurship and small business management* (9th ed.). Pearson.

Suggestive Readings (latest edition of readings to be used)

1. Barringer, B. R., & Ireland, R. D. (2019). *Entrepreneurship: Successfully Launching New Ventures* (6th ed.). Pearson.
2. Hisrich, R. D., Peters, M. P., & Shepherd, D. A. (2020). *Entrepreneurship* (11th ed.). McGraw-Hill Education.
3. Kuratko, D. F., & Hodgetts, R. M. (2017). *Entrepreneurship: Theory, Process, and Practice* (10th ed.). Cengage Learning.
4. Morris, M. H., Kuratko, D. F., & Covin, J. G. (2019). *Corporate Entrepreneurship & Innovation* (4th ed.). Cengage Learning.
5. Timmons, J. A., Spinelli, S., & Zacharakis, A. (2018). *New Venture Creation: Entrepreneurship for the 21st Century* (11th ed.). McGraw-Hill Education.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER-VI
BACHELOR IN MANAGEMENT STUDIES

DISCIPLINE SPECIFIC CORE COURSE – 16: BUSINESS STRATEGIES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Business Strategies (DSC 16)	4	3	1	0	Class XII	Concepts of management and functional areas of management

Learning Objectives

- Familiarising learners with concepts of strategy formulation and implementation.
- Develop skills for strategic thinking and analysis, leadership, communication, teamwork, and cross functional integration.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Recognize the nature and dynamics of strategy formulation and implementation processes at corporate and business level.
- Inspect the internal and external environments in which businesses operate and assess their significance for strategic planning.
- Use their understanding of different strategic options to tackle business situations
- Predict strategic issues and design appropriate courses of action.

SYLLABUS OF DSC 16

Unit 1: Introduction to Business Policy and Strategy (3 hours)

Nature & importance of business policy & strategy; Introduction to the strategic management process and related concepts; Characteristics of corporate, business & functional level strategic management decisions; Company's vision and mission.

Unit 2: Environmental Analysis & Diagnosis (12 hours)

Analysis of company's external environment; Michael E. Porter's 5 Forces model; Internal analysis, Importance of organisation capabilities, competitive advantage and core competence; Michael E. Porter's Value Chain Analysis, Porter's Diamond Theory of National Advantage.

Unit 3: Formulation of Competitive Strategies (15 hours)

Porter's generic competitive strategies, implementing competitive strategies - offensive & defensive moves; formulating Corporate Strategies – Introduction to strategies of growth, stability and renewal, types of growth strategies – concentrated growth, product development, integration, diversification, international expansion (multi domestic approach, franchising, licensing and joint

ventures), CAGE distance framework, Types of renewal strategies – retrenchment and turnaround. Introduction to Merger & Acquisitions.

Unit 4: Strategic Analysis and Choice (15 hours)

Strategic gap analyses; portfolio analyses – BCG, GE, product market evolution matrix, experience curve, life cycle portfolio matrix, grand strategy selection matrix; behavioural considerations affecting choice of strategy; impact of structure, culture & leadership on strategy implementation; functional strategies & their link with business level strategies; introduction to strategic control & evaluation.

Essential/recommended Readings (latest edition of readings to be used)

1. Pearce, J.A., & Robinson, R.B. (2017). *Strategic Management: Formulation Implementation and Control*. (12th edition). McGraw Hill Education.
2. Kazmi, A., & Kazmi, A. (2020). *Strategic Management and Business Policy.* (5th edition). McGraw Hill Education.
3. Thompson, A.A., & Strickland, A.J. (2001). *Strategic Management: Concepts and Cases.* Irwin/McGraw-Hill.

Suggestive Readings (latest edition of readings to be used)

1. Thompson, A.A., Strickland, A. J., & Gamble, J. E. (2005). *Crafting and Executing Strategy: The Quest for Competitive Advantage: Concepts and Cases*. (no edition). Irwin/McGraw-Hill.
2. Porter, M.E. (2004). *Competitive Advantage: Creating and Sustaining Superior Performance.* (Export edition). The Free Press.
3. Rao, P.S. (2017). *Business Policy and Strategic Management.* (2nd edition). Himalaya Publishing House.
4. Wheelen, T.L., Hunger, J.D., Hoffman, A.N., & Bamford, C.E. (2017). *Concepts in Strategic Management and Business Policy: Globalization, Innovation and Sustainability.* (Global Edition). Pearson Higher Ed.
5. Kachru, U. (2017). *Strategic Management.* (2nd edition). McGraw Hill Education
6. Kim, W. C., & Mauborgne, R. (2005). *Blue Ocean Strategy: From Theory to Practice.* California Management Review, 47(3), 105–121. https://doi.org/10.2307/41166308
7. Prahalad, C.K., & Hamel, G. (1999). *The Core Competence of the Corporation.* In Elsevier eBooks (pp. 41–59). https://doi.org/10.1016/b978-0-7506-7088-3.50006-1
8. Ghemawat, P., & Rivkin, J. W. (2006). *Creating competitive advantage*. (1st edition) Harvard Business School Pub.
9. Clark, T., & Porter, M.W. (1991). *The Competitive Advantage of Nations*. Journal of Marketing, 55(4), 118. https://doi.org/10.2307/1251962
10. Ghemawat, P. (1986). *Sustainable Advantage.* (1st edition). Harvard Business Review.
11. Ghemawat, P. (2001). *Distance still matters. The hard reality of global expansion.* PubMed, 79(8), 137–7, 162. Retrieved from https://pubmed.ncbi.nlm.nih.gov/11550630

12. Prahalad, C.K., & Hart, S.L. (2010). *The fortune at the bottom of the pyramid.* Revista Eletrônica De Estratégia E Negócios, 1(2), 1. https://doi.org/10.19177/reen.v1e220081-23
13. Levitt, T. (1983). *The Globalization of Markets.* Harvard Business Review, 61(3), 92–102. Retrieved from http://academic.udayton.edu/JohnSparks/tools/readings/globalization%20of%20markets.pdf

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 17: FINANCIAL INSTITUTIONS AND MARKETS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Financial Institutions and Markets (DSC 17)	4	3	1	0	Class XII	None

Learning Objectives

- To apprise the learners about identification and understand the structure and functioning of the Indian financial system and major institutions, such as RBI, SEBI, IRDA.
- To provide a conceptual framework of different types of financial markets in India, such as money market, capital market, and foreign exchange market.
- To provide the key concepts and ideas of capital markets in India, including demutualization of stock exchanges, trading of securities, and construction of Indian stock indices.
- To enrich the understanding of learners about the money market and capital market instruments.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Structure of the Indian financial system and describe major reforms, such as payment banks, GST, innovative remittance services, and insolvency and bankruptcy code.
- Compare and contrast various regulatory institutions in India, including their roles and functions.
- Analyse the role of commercial banks, non-banking financial companies (NBFCs), and core banking solution (CBS) in the Indian financial system.
- Evaluate the importance of financial markets in India, including their types, linkages with the economy, and integration with global financial markets.
- Remember the role of money and debt markets in India, including segments, participants, and different types of securities.

SYLLABUS OF DSC 17

Unit 1: Indian Financial System and major Institutions (12 hours)

Structure of Indian Financial System: An overview of the Indian financial system, major reforms in the last decade: Payment banks, GST, innovative remittance services, Insolvency and Bankruptcy code. Regulatory Institutions in India: RBI, SEBI, IRDA, PFRDA. Commercial Banking: Role of Banks, NPA, Risk Management in Banks. Universal Banking: need and importance, Core banking solution (CBS), NBFCs and its types; comparison between Banks and NBFCs.

Unit 2: Financial Markets in India (9 hours)

Introduction to Financial Markets in India: Role and Importance of Financial Markets, Types of Financial Markets: Money Market; Capital Market; Linkages Between Economy and Financial Markets, Integration of Indian Financial Markets with Global Financial Markets, Primary Market: Instruments, book building process (numerical). Merchant Bank: role and types, Mutual Fund: types of Mutual Funds and different types of schemes. Corporate Listings: Listing and Delisting of Corporate Stocks, Foreign Exchange Market: Introductory, only Conceptual.

Unit 3: Capital Market in India (12 hours)

Introduction to Stock Markets, Regional and Modern Stock Exchanges, International Stock Exchanges, Demutualization of exchanges, Indian Stock Indices and their construction. Major Instruments traded in stock markets: Equity Shares, Debentures,

Exchange Traded Funds. Trading of securities on a stock exchange; Selection of broker, capital and margin requirements of a broker, MTM and VAR Margins (with numerical), kinds of brokers, opening of an account to trade in securities, DEMAT System, placing an order for purchase/sale of shares, contract note and settlement of contracts, Commodity Markets – Structure.

Unit 4: Money Markets & Debt Markets in India (12 hours)

Money Market: Meaning, role and participants in money markets, Segments of money markets, Call Money Markets, Repos and reverse Repo concepts, Treasury Bill Markets, Certificate of Deposit and Commercial Paper (with numerical). Debt Market: Introduction and meaning, Primary Market for Corporate Securities in India: Issue of Corporate Securities, Secondary market for government/debt securities (NDS-OM), Auction process (with Numerical), Corporate Bonds vs. Government Bonds. Retail Participation in Money and Debt Market-RBI Retail Direct platform.

Essential/recommended Readings (latest edition of readings to be used)

1. Saunders, A., & Cornett, M. M. (2007). *Financial markets andInstitutions*. Tata McGraw Hill.
2. Khan, M. Y.*Financial services*(10th ed). McGraw-Hill Education.

Suggestive Readings (latest edition of readings to be used)

1. Madura, J. (2008). *Financial Institutions and markets, Cengage learning EMEA*.
2. Kohn, M. G. (2004). *Financial Institutions and markets*. Oxford University Press.
3. Fabozzi, F. J., Modigliani, Franco, & Capital Markets. (2005). *Institutions and markets, prentice hall of India, New Delhi* (3rd ed)

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 18: OPERATIONS MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Operations Management (DSC 18)	4	3	1	0	Class XII	None

Learning Objectives

- To familiarize learners with the fundamentals of Operations Management and develop awareness about its interface with other managerial functions.
- Enable learners to learn about production processes and associated quantitative techniques instrumental in the management of operations.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand the importance of Operations Management to develop organizational competitiveness and processes.
- Appreciate the role of forecasting in the setting up of operations.
- Study about the factors that help to decide about the location and capacity of a production/service facility.
- Analyze the impact of changes in demand, lead time, order quantity on inventory levels
- Develop a forecasting model to cater to the unique requirement of an organization
- Develop an insight about the various options in relation to a production/service layout plan and techniques used therein.

SYLLABUS OF DSC 18

Unit 1: Introduction to Operations Management (12 hours)

Definition, need, key decisions in OM, Operations as key functional area in an organization; Operations Strategies: Definition, relevance and Process of strategy formulation. Lean production: Definition of lean production, Lean demand, Pull logic, waste in operations, 2-card Kanban Production Control system.

Unit 2: Forecasting and Inventory Management (12 hours)

Forecasting: Meaning, Significance and Limitations, types, qualitative (grass roots, market research and Delphi method) and quantitative approach (simple moving average method, weighted moving average and single exponential smoothing method), forecast error, MAD, Forecasting in relation to services. Inventory: Introduction, Types of Inventories, Costs Associated with Inventory, Selective Inventory control Techniques- ABC, VED, FNSD, XYZ; Inventory Model: Deterministic Models – Finite and Infinite Replenishment, Price Break Quantity Discount Models.

Unit 3: Scheduling and Layout Planning (12 hours)

Process Selection: Definition, Characteristics that influence the choice of alternative processes (volume and variety), Type of processes- job shop, batch, mass and continuous processes. Scheduling: Operation scheduling, Goals of short-term scheduling, Job sequencing (FCFS, SPT, EDD, LPT, CR) & Johnson's rule on two machines, Gantt charts, Processing n jobs through 3 machines, Processing n jobs through k machines. Layout planning, Benefits of good layout, importance, different types of layouts (Process, Product, Group technology and Fixed position layout). Assembly line balancing by using LOT rule.

Unit 4: Location and Capacity Planning (9 hours)

Facility Location: Objective, factors that influence location decision, Location evaluation methods – factor rating method, centre of gravity method, Analytical Hierarchical Process. Capacity planning: Definition, input and output measures of capacity; types of capacity planning over time horizon; Decision trees analysis for capacity planning.

Essential/recommended Readings (latest edition of readings to be used)

1. Mahadevan, B. (2015). *Operations management: Theory and practice*. Pearson Education India.
2. Jay, H. and Barry, R. (2017). *Operations Management: Sustainability and Supply Chain Management*, 12th ed. Pearson Education India.
3. Jacobs, F.R., Chase, R.B. & Ravi Shankar. (2018). *Operations and Supply Chain Management*, 14th ed. McGraw Hill Education India.
4. Swarup, K., Gupta, P. K. & Manmohan. (2010). *Operations Research*, 19th ed. Sultan Chand & Sons.
5. Kapoor, V.K. (2020). *Operations Research: Quantitative Techniques for Management*, 9th ed. Sultan Chand & Sons.
6. Sharma, J.K. (2017). *Operations Research: Theory and Applications*, 6th ed. Trinity
7. Russell, R. S., & Taylor, B. W. (2019). *Operations and supply chain management*, 10th ed. John Wiley & Sons.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE - MARKETING (DSE-4)

DSE 4: INTEGRATED MARKETING COMMUNICATION

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Integrated Marketing Communication (DSE 4)	4	3	1	0	Class XII	Basics of marketing

Learning Objectives

- To equip the learners with knowledge about the nature, purpose and complex construction in the planning and execution of an effective Integrated Marketing Communications (IMC) program.
- To explore the learners about various tools of IMC and the importance of coordinating them for an effective marketing communications program.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand the purpose and importance of IMC and Social and ethical aspects of IMC.
- Develop the creative aspects of advertising and media strategy.
- Analyse the concepts of the choice of different elements of IMC
- Evaluate the effectiveness of the promotional program, Social and Cultural consequences, Economic effects of advertising.

SYLLABUS OF DSE 4

Unit 1: Introduction to IMC and the Communications Process (9 Hours)

Evolution of IMC and reasons for its growth, promotional tools for IMC, IMC Planning Process, Role of IMC in Marketing Process, Communication Process; Traditional & Alternative Response Hierarchy models. Setting objectives for the IMC Program, Establishing and Allocation of Promotional budget. Social and ethical aspects of IMC.

Unit 2: Creative and Media Strategy (12 Hours)

The Creative Process, Inputs to the Creative Process, Advertising Appeals, Media planning and scheduling; Key factors influencing media planning; Media decisions: media class, media vehicle & media option; introduction to broadcast, print, support media; Digital and Social media marketing.

Unit 3: Others Tools of IMC (12 Hours)

Evaluating Sales Promotion, Direct Marketing, Interactive Marketing, Public Relations & Personal

Selling: Objectives and Types of Direct Marketing, Advantages and Disadvantages of Direct Marketing, Objectives of Interactive Media Marketing, Measures of Effectiveness on Internet, Advantages and Disadvantages of Internet, Growth of Sales Promotions, Types of Sales Promotions: Consumer and Trade Promotions, Process, Advantages and Disadvantages of Public Relations, Publicity: Advantages and Disadvantages, Nature, Advantages and Disadvantages of Personal Selling.

Unit 4: Measuring Effectiveness of the Promotional Program & Evaluating Social, Ethical and Economic Aspects (12 Hour)

Measuring Effectiveness: Arguments for and against, Advertising Research – What, When, Where & How, Testing Process. Advertising and Promotion Ethics, Advertising and Children, Social and Cultural Consequences – Stereotypes, Economic Effects of Advertising.

Essential/recommended Readings (latest edition of readings to be used)

1. Belch, G. E., Belch, M. A., & Purani, K. (2021). SIE Advertising and promotion : an integrated marketing communications perspective, (12th ed). *McGraw-Hill Education*
2. Batra, R., Myers, J.G., & Aaker, D.A. (2002). *Advertising Management*. (5th ed). Prentice Hall India.
3. Moriarty, S., Mitchell, N, Wells, W. D., & Wood, C.(2021). *Advertising & IMC-Principles & Practice*.(11th ed). Prentice Hall.
4. Kazmi, H.H.& Batra, S. K. (2008). *Advertising and Sales Promotion*. (3rd ed). Excel books.

Suggestive Readings (latest edition of readings to be used)

1. Russel, R., Lane, J., & Thomas. W. (2002). *Kleppner's Advertising Procedure.* (15th ed). Pearson Custom Publishing.
2. Clow, K. E., & Baack, D. (2017). *Integrated Advertising, Promotion and Marketing Communication*. (8th ed). Prentice Hall.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE - MARKETING (DSE-5)

DSE 5: BRAND MANAGEMENT

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Brand Management (DSE 5)	4	3	1	0	Class XII	Basics of marketing

Learning Objectives

- To attain a comprehensive knowledge on the subject of brands, brand equity and brand management
- Develop understanding of design and implementation of marketing programs to build and manage brand equity.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand the process and importance of brand management
- Define the main concepts and explain the purpose of branding
- Develop brand elements and brand associations to build brand equity.
- Design effective branding strategies for products/services.

SYLLABUS OF DSE 5

Unit 1: Introduction to Brand Management (12 Hours)

Brand –Meaning, Definition, Evolution of Brands, Functions of Brand for a consumer, Role of Brand- Advantages of a Brand, Brand Versus Product, Branding- Meaning, Creation of Brands through goods, services, people, organization, retail stores, places, online, entertainment, ideas. Branding Challenges and Opportunities, Brand Management – Meaning & Definition. Strategic Brand Management Process – Steps in Brand Management Process.

Unit 2: Developing Brand Equity (9 Hours)

Customer Based Brand Equity, Brand Equity: Meaning and Sources, Steps in Building Brands, Brand building blocks-Resonance, Judgments, Feelings, performance, imagery, salience- Brand Building Implications. Positioning, Dimensions of brand identity, Brand identity prism, Brand positioning – Meaning, Point of parity & Point of difference, Positioning guidelines Brand Value: Definition, Core Brand values, Brand mantras, Internal branding.

Unit 3: Developing Brand Elements (9 Hours)

Choosing Brand Elements to Build Brand Equity: Criteria for choosing brand elements, options & tactics for brand elements - Brand name, Naming guidelines, Naming procedure, Awareness, Brand Associations, Logos & Symbols & their benefits, Characters & Benefits, Slogans & jingles, Packaging. Designing Marketing Programs to build Brand Equity: New perspectives on Marketing, Product Strategy, Pricing Strategy and Channel Strategy. Leveraging Secondary Brand Associations to build Brand Equity: Conceptualising the leveraging Concept, Company, Country of Origin, Channels of Distribution, Co-Branding, Licensing, Celebrity Endorsements, Sporting, Cultural and Other Events.

Unit 4: Managing Brand Overtime (12 Hours)

Brand Extension: Meaning, Types, Needs, Advantages & Disadvantages. Consumer – brand relationships Understanding how consumers evaluate brand extensions, evaluating brand extension opportunities. Strategic alliances, brand portfolios, global branding: Geographic extension, sources of opportunities for global brand, single name to global brand, consumers & globalization, condition and brand repositioning/revitalization.

Essential/recommended Readings (latest edition of readings to be used)

1. Keller, K.L., Parameswaran, Ambi M.G., & Jacob, I. (2016). *Strategic Brand Management, Building, Measuring & Managing Brand Equity*. 4th edition. Pearson.
2. Verma, H. V. (2007). *Brand Management: Text and Cases*. 2nd edition. Excel Books India.
3. Kapferer, J.N. *The New Strategic Brand Management –Advanced Insights and StrategicThinking.* (5th ed.). London: Kogan Page.
4. Sengupta, S. (2004). *Brand Positioning: Strategies for Competitive Advantage*. 2nd edition. McGrawHill Higher Education.

Suggestive Readings (latest edition of readings to be used)

1. Kapferer, J. (2012). *The New Strategic Brand Management: Advanced Insights and Strategic Thinking*. 5th edition. Kogan Page Publishers

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE - MARKETING (DSE-6)

DSE 6: SALES AND DISTRIBUTION MANAGEMENT

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Sales and Distribution Management (DSE 6)	4	3	1	0	Class XII	Basics of marketing

Learning Objective

- To understand the evolution of sales management and its importance in modern day business.
- To understand the overall sales management process and various theories of selling.
- To understand actual means of distribution and it's management
- To understand and analyze the Logistics management

Learning Outcomes

On successful completion of the course the learner will be able to:

- Differentiate and implement different types of personal selling and selling skills.
- Explain the sales management process and its various stages.
- Design a customer-oriented distribution channel.
- Manage channel member behavior and resolve channel conflict

SYLLABUS OF DSE 6

Unit 1 **(9 Hours)**

Introduction to Sales Management: Evolution of sales management. Nature, role and importance. Types of personal selling. Types of selling, Selling skills and situations. Modern day sales activity. Emerging trends in sales management. Theories of Selling: AIDAS theory of selling, Right set of circumstances theory of selling, buying formula theory of selling, Behavioral equation theory of selling.

Unit 2 **(12 Hours)**

Sales management process (Selling process), Buyer seller dyads, Management of Sales Territory & Sales Quotas: Introduction, Sales territory, size of sales territory, allocation of sales territory, designing of sales territory. Introduction to sales quotas, procedures of setting quotas, types of sales quotas, methods and problems in setting sales quotas, sales control and analysis.

Unit 3 **(12 Hours)**

Distribution Management: Introduction, Distribution channels: why are they required, activities that a typical distribution channel performs, valuation enhancement through the distribution function, distribution channel strategy, distribution channel management. Designing customer-oriented channel, capturing customer requirement, conducting cost analysis, Case study.

Unit 4 **(9 Hours)**

Customer-Oriented Logistics Management – Managing channel member behaviour: Introduction, objectives of logistics, logistics planning, transportation decisions. Channel relationships, channel control, channel power, channel positioning, channel influence strategies, channel conflict, Case study.

Essential/recommended Readings (latest edition of readings to be used)

1. Panda, T. K., & Sahadev, S. (2019). *Sales and distribution management.* Oxford University Press.
2. Still, R. R., Cundiff, E. W., Govoni, N. A. P. (2015). *Sales management.* Prentice Hall of India.

Suggestive Readings (latest edition of readings to be used)

1. Gupta, S. L. (2018). *Sales and distribution management.* Excel Books.
2. Anderson, W. T. (2011). *Professional sales management*. Tata McGraw-Hill Education.
3. Berman, B. (2012). *Retail management*. Prentice Hall.
4. Dutta, B. (2015). *Sales and distribution management.* I K International Publishing House Pvt. Ltd.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE - MARKETING (DSE-10)

DSE 10: INTERNATIONAL MARKETING

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
International Marketing (DSE 10)	4	3	1	0	Class XII	Basics of Marketing

Learning Objectives

- Identify and understand the various cultural and regional variables (and their degree of impact) and how they impact businesses in the short-term and long-term future; what companies can do to utilise these variables and mitigate their impact.
- Understand the nuances of international marketing related activities such as advertising, pricing, supply chain management, market entry, branding and customization etc.
- Anticipate changes in the operating environment of a business on a global level.
- Read, understand, relate and be able to utilise/implement the ideas of great thinkers and researchers in the field of global business, marketing and management.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Identify the key skills that a (good) business (international) manager should have.
- Articulate factors that promote business and business environments.
- Implement various tools and actions for a beneficial situation within a given operating (business) environment.
- Fundamentals of sustainable (profitable) business growth with focus on international expansion, operating in multiple markets, new business opportunities and market analysis.
- Articulate the various support systems that a business can use and access (governmental interventions and policies; operating market level advantages such as access to capital, quality and quantity of labour available; availability of land; size, purchasing power and buying behaviour of the target market; MNC level advantages; etc.)

SYLLABUS OF DSE 10

Unit 1 **(9 Hours)**

Introduction; Reasons behind international expansion; types of MNCs; Expatriates and Inpatriates; Stages of International Exposure; Global Marketing, Using Social Media tools.

Unit 2 **(12 Hours)**

National-level variables, regional trading blocs; Physical variables, Geographic distance, Grouping of industries in specific areas/regions, Environment specific impacts, Distribution of Natural Resources; Cultural Variables, Impact on doing business (Distance, Power, Decision Making, People Management, Delegation, Corruption, Quality Benchmarks Etc.), Gender biases, Festivals, Buying Behaviour; PESTEL; Porter's Diamond Model; Positioning; Protectionism and its impact on international trade.

Unit 3 **(12 Hours)**

Porter's Five Forces Model; Ghemawat's CAGE framework; Globalisation; Demographics and Segmentation; Assessing Market Potential, How markets behave, Selling in specific markets (Developed, Developing, Post-Communist); "Right" Market to enter and "Right" Time to enter; What (mis-selling, outdated products), Where, Why, and How are we selling; Customer needs (of the new/foreign market); Location of manufacturing facilities; Labelling and Packaging (Export and Retail); Selling to and in emerging markets; Concerns and issues

with available market analysis tools.

Unit 4 **(12 Hours)**

Strategic (and global) Alliances; Global level of competition; Product Development; E-Commerce and Changing International Marketing Paradigms; Supply Chain as a source of International Advantages; Managing International Sales (Channels and Logistics); International Advertising and Promotions; Pricing for international markets, Pricing wars (War Chests), Approaches – Full-cost v/s Variable, Skimming v/s Penetration (non-numeric), factors influencing pricing; Implementing a Global Marketing Strategy; Support Mechanisms for Exports and International Trade, Export Infrastructure and Assistance in India, ITPO; International Payment Methods, Finance and Raising Funds, Taxation and Tax Havens, Marine and Cargo Insurance. Managing Risks in International Trade.

Essential/recommended Readings (latest editions of readings to be used)

1. Cateora, Philip R. & Graham, John L.: International Marketing, Tata McGraw Hill.
2. Joshi, Rakesh Mohan: International Marketing, Oxford University Press.

Suggested Readings (latest editions of readings to be used)

1. Keega, Warren J. (2010). *Global Marketing Management*. (15 edition). Prentice Hall India.
2. Muhlbache, Hans. (1999). *International Marketing-A Global Perspective*. (2 edition). Cengage Learning.
3. Varshney & Bhattacharya. (2015). *International Marketing Management*. Sultan Chand & Sons.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE - MARKETING (DSE-11)

DSE 11: SUPPLY CHAIN MANAGEMENT

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Supply Chain Management (DSE 11)	4	3	1	0	Class XII	Basics of Marketing

Learning Objectives

- Explain the primary differences between logistics and supply chain management.
- Describe the key processes involved in supply chain management and their

interrelationships within individual companies and across the supply chain.

- Evaluate the management components of supply chain management, including procurement, production, transportation, and warehousing.
- Identify and analyze the tools and techniques useful in implementing supply chain management, such as demand forecasting, inventory management, and supplier relationship management.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Define supply chain management and its key activities.
- Define the competitive and supply chain strategies.
- Explain the role of supply chain in business operations and how to deal with challenges in it.
- Assess the effectiveness of different strategies for addressing supply chain challenges.
- Analyse the factors that influence supply chain performance.
- Develop a plan to integrate different components of supply chain.

SYLLABUS OF DSE 11

Unit 1: Introduction to Supply Chain Management. (9 Hours)

Basic concept, Transportations, Inventory, Warehousing, Managing logistics, Challenges in supply chain management, Trends in supply chain management, Impact of business environment on supply chain management.

Unit 2: Supply Chain Strategies (12 Hours)

Concepts and importance of a Supply Chain (SC), Key issues of Supply Chain Management, Competitive and SC strategies, achieving strategic fit.

Unit 3: Supply Chain Integration (12 Hours)

Dynamics of supply chain: Supply Chain Integration, Push-based, Pull-based and Push-Pull based supply chain, Demand Forecasting in a Supply Chain (CPFR Model), SCORE Model, Quality Control, Managing inventory in SC environment: Transportation in SC environment.

Unit 4: Strategic Alliances (12 Hours)

Strategic Alliances, Third party and fourth party logistics, Reverse Logistics, Retailer- Supplier partnerships (RSP),Contract Sharing, Supplier evaluation and selection, Use of best practices and Information Technology (IT) in Supply Chain Management.

Essential/recommended Readings (latest edition of readings to be used)

1. Ballou, R. H., & Srivastava, S. K. (2007). *Business Logistics/supply Chain Management: Planning, Organizing, and Controlling the Supply Chain*. Pearson Education India.
2. Chopra, S., & Meindl, P. (2016). *Supply Chain Management: Strategy, Planning, and Operation*.
3. Simchi-Levi, D., Kaminsky, P, Simchi-Levi, E., & Shankar, R.(2008). *Designing and Managing the Supply Chain.* Tata McGraw Hill, New Delhi.

4. Sahay, B.S. (2006), *International Journal of Physical Distribution & Logistics Management*, Vol. 36 No. 9.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE - MARKETING (DSE-12)

DSE 12: PRODUCT MANAGEMENT

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Product Management (DSE 12)	4	3	1	0	Class XII	Basics of marketing

Learning Objectives

- Develop competencies required for managing products.
- Understanding of methods and iterative processes to build and deliver superior value to target users.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understanding marketing orientation of a firm, category environmental analysis, global factors affecting product management.
- Analyze the financial, competitive, and growth prospects for a sector.
- Gather and utilize customer insights to develop a thorough product strategy.
- Develop skills to lead product teams and inspire stakeholders.

SYLLABUS OF DSE 12

Unit 1: Introduction to Product Management (12 Hours)

Marketing organization - Product focused, Market focused, functionally focused; Global factors affecting product management and adapting marketing organizations. The Marketing planning process -Steps and components. Defining the competitive set, levels of market competition – form, category, generic, budget; Methods for determining competition. Category environmental analysis – Porter's five forces and PESTEL.

Unit 2: Competitor Analysis, Customer Analysis and Sales Forecasting (12 Hours)

Competitor Analysis – Various sources of information, creating a product features mix, assessing competitor's objectives and strategies, Competitor marketing strategy and differential advantage analysis; Customer analysis – understanding customers and segmentation analysis; Market Potential and Sales Forecasting – Overview, Methods of Estimating Market and Sales Potential,

Sales forecasting methods - Level of Accuracy Needed, Judgment-Based Methods, Customer-Based Methods, Sales Extrapolation Methods, Model Based Methods: Using Regression Models for Forecasting, Developing Regression Models.

Unit 3: Product Strategy, Positioning, and Pricing (12 Hours)

Developing the Product Strategy – Overview, elements, objectives and selection of product alternatives, Positioning – process and product core benefit recognition and communication; Adapting product strategy over the PLC; New Products; Pricing – Role of Marketing Strategy in Pricing, psychological aspects of pricing, Factors affecting price, Pricing tactics.

Unit 4: Integrated Marketing Communication and Marketing Metrics (9 Hours)

Integrated marketing communication – Objectives, budgets and evaluation; Channel Management – selection, types and monitoring; Marketing Metrics – Overview, Framework for Marketing Metrics, Measurement – Customer-Based Metrics, Product-Market Metrics, Financial Metrics, Marketing Mix Metric.

Essential/recommended Readings (latest edition of readings to be used)

1. Lehmann, D. R., Winer, R.S. Product Management. McGraw Hill Irwin.

Suggestive Readings (latest edition of readings to be used)

1. LeMay, M. Product management in practice: a real-world guide to the key connective role of the 21st century. O'Reilly Media, Inc.
2. Kotler, P. & Keller, K. L. Marketing Management, Pearson.
3. Kotler P, Armstrong G., Agnihotri P.Y & Ul Haq, E. Principles of Marketing - A South Asian Perspective, Pearson.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE – HUMAN RESOURCE MANAGEMENT (DSE-2)

DSE 2: RECRUITMENT AND SELECTION MANAGEMENT

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Recruitment and Selection Management (DSE 2)	4	3	1	0	Class XII	Basics of Management

Learning Objectives

- To equip the learners with knowledge of the role of HR in workforce planning and assessment, sources of recruitment and selection process.
- To familiarize learners with topics like the development of a qualified pool of candidates, contemporary trends, international recruitment and selection.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand the theory, practice, principles and concepts of work, role of HR in workforce planning and assessment, sources and factors affecting recruitment.
- Understand the selection process, different types of tests in selection, types of interviews, biases in selection and negotiations during job offer.
- Analyse the fundamentals of international recruitment.
- Evaluate the contemporary issues in recruitment and selection like legal compliance and ethical considerations, e-recruitment and e-selection.

SYLLABUS OF DSE 2

Unit 1: Introduction to Recruitment (12 hours)

Work: Meaning, Evolution of Work Structure, Organizing and Logistics, Strategic Job Redesign, Role of HR in workforce planning and assessment, Recruitment: Concept, internal & external sources with benefits and limitations, Factors affecting recruitment, Designing external job posting.

Unit 2: Introduction to Selection (12 Hours)

Selection process, Types of tests in selection, concept of reliability and validity in selection tests Types of Interviews, Biases in selection of employees, Negotiations during Job Offer.

Unit 3: International approach to Recruitment and Selection (12 Hours)

International Recruitment; International staffing choice, different approaches to multinational staffing decisions; Types of international assignments; Selection criteria and techniques;

Successful expatriation, Causes of expatriate failure, female expatriation, Compensation of Expatriates.

Unit 4: Contemporary, Legal and Ethical Issues (9 Hours)

Contemporary issues in Recruitment and Selection, Legal Compliance and Ethical Considerations, Retention Strategies, E-recruitment and E-selection

Essential/recommended Readings (latest edition of readings to be used)

1. O'Meara, B., & Petzall, S. (2013). *Handbook of Strategic Recruitment and Selection: A Systems Approach.* Emerald Group Publishing.
2. Picardi, C. A. (2019). *Recruitment and Selection: Strategies for Workforce Planning & Assessment*. Sage Publications.
3. Nilanjan, S. & Bhattacharya, M. (2010). *International Human Resource Management.* Excel Books.
4. Dowling, P. J., Festing, M., & Engle, A. D. (2017). *International Human Resource Management*. Cengage Learning.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE – HUMAN RESOURCE MANAGEMENT (DSE-3)

DSE 3: WORKFORCE DIVERSITY

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Workforce Diversity (DSE 3)	4	3	1	0	Class X11	Basics of Organisational Behaviour

Learning Objective

- To explore the concepts of workforce diversity and to enable learners to recognise its critical issues.
- To familiarize learners with strategies to manage diversity, relation between workforce diversity and human resource management.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand the core concepts of workforce diversity and its significance.
- Understand how to develop strategies to manage diversity through training and mentoring and other programs.

- Analyze the fundamentals of global workforce diversity and ethical and legal issues in managing diversity.
- Evaluate the relationship between workforce diversity and various functions of human resource management.

SYLLABUS OF DSE 3

Unit 1: Introduction of Workforce Diversity (12 hours)

Workforce diversity – Meaning, features, significance; Workforce diversity potential pros & cons, Managing Diversity, Reverse Discrimination, Raising cross cultural consciousness.

Unit 2: Strategies to Manage Diversity (9 hours)

Workplace Inclusion, Diversity through training and mentoring, Role of technology in Diversity, Diversity management programs, Leadership's role in leveraging diversity.

Unit 3: Global Workforce Diversity (12 hours)

Diversity and Multiculturalism, Leveraging diversity in global virtual teams, Developing global leaders: Utilising the intercultural effectiveness competencies model; Ethical and legal issues in managing diversity.

Unit 4: Workforce Diversity and HRM Functions (12 hours)

Recruitment and retaining diverse workforce, Diversity and performance management, Diversity and Work-life balance, Workforce diversity as a determinant of sustainable competitive advantage.

Essential/recommended Readings (latest edition of readings to be used)

1. Dessler, G. (2013). *Fundamentals of Human Resource Management.* Pearson.
2. Scott, C. L., & Byrd, M. Y. (2012). *Handbook of Research on Workforce Diversity in a Global Society: Technologies and Concepts.* Business Science Reference/IGI Global.
3. Kossek, E. E., & Lobel, A. (1996). *Managing diversity.* Cambridge, Massachusetts: Blackwell Publishers.
4. Kossek, E. E., Lobel, S. A., & Brown, J. (2006). *Human resource strategies to manage workforce diversity.* Handbook of workplace diversity, 53-74.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE – HUMAN RESOURCE MANAGEMENT (DSE-4)

DSE 4: NEGOTIATIONS

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Negotiations (DSE 4)	4	3	1	0	Class X11	Basics of Organisational Behaviour

Learning Objective

- To provide insight into how to negotiate effectively by applying appropriate strategies and tactics to different negotiation situations.
- To facilitate the understanding of the numerous dynamics involved in the process of negotiation.

Learning Outcomes:

On successful completion of the course the learner will be able to:

- Understand the nature, process, types and tactics of negotiation.
- Understand and practice the communication skills and persuasion tactics necessary for effective negotiation, finding and using power in negotiation.
- Apply negotiation strategies to achieve goals without jeopardizing relationships.
- Apply negotiation concepts to build competence in handling multiparty negotiation, third-party negotiation and resolving impasse in negotiations.

SYLLABUS OF DSE 4

Unit 1: Negotiation Meaning and Styles (12 Hours)

Introduction; Nature and Scope; Foundations of Negotiation: Conflict and Its Management, Conflict Management through Negotiation, Fundamentals of Negotiation Preparations for Negotiation; Negotiation Process and Planning: Four Stages of Negotiation, PRAM Model of Negotiation, Key Steps in Planning for Negotiation; Distributive Negotiation: Bargaining situation, Positions Taken during Negotiation, Closing the Deal, Integrative Negotiation: Overview, Process, Factors for Successful Integrative Negotiation; Negotiation Tactics and Counter Tactics.

Unit 2: Negotiation Styles and Skills (12 Hours)

Negotiation Styles: Meaning, Types, Developing Effective Negotiating Style; Communication in Negotiation: Defining Communication, Kinesthetic Communication, Decoding Communication for Negotiation; Persuasion in Negotiations: Theory and Tactics; Perception and Cognition: Perceptual Distortion, Cognitive Biases in Negotiation, Managing misperception and cognitive

biases in negotiation; Finding and Using Power in Negotiation: Importance, Definition, Sources of Power; Negotiation Ethics.

Unit 3: Relationships in Negotiation (12 Hours)

Challenges, Role of Trust, Reputation and Justice in managing Negotiation within Relationships; Repairing a Relationship; Influence of Culture and Gender on Negotiations: Meaning of Culture, Norms and Values, Negotiation Issues Sensitive to Culture, Culturally Responsive Negotiation Strategies; Gender Differences in Negotiation; Negotiation Via Information Technology: Place – Time Model of Social Interaction, Effects on Social Behavior, Strategies for enhancing Technology– Mediated Negotiations.

Unit 4: Multiple Parties, Groups and Teams in Negotiation (9 Hours)

Analysing Multiparty Negotiation, Coalitions, Principal-Agent Negotiations, Constituent Relationships, Team Negotiation, Intergroup Negotiation; Third-party Negotiation: Conciliation, Mediation, Arbitration, Collective Bargaining, Qualities of a Mediator; Resolving Impasse in Negotiations: Barriers in Negotiation, Causes and Sources of Impasses, Overcoming Barriers, Overcoming Impasses, Alternative Dispute Resolution (ADR).

Essential/recommended Readings (latest edition of readings to be used)

1. Lewicki, R. J., Barry, B., & Saunders, D. M. (2016). *Essentials of negotiation.* New York: McGraw-Hill Education.
2. Rai, H. (2018). *Negotiation.* McGraw Hill Education.
3. Thompson, L. L. (2012). *The mind and heart of the negotiator.* Pearson.
4. Korobkin, R. (2014). *Negotiation Theory and Strategy,* Aspen Publishing.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE – HUMAN RESOURCE MANAGEMENT (DSE-9)

DSE 9: INTERNATIONAL HUMAN RESOURCE MANAGEMENT

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
International Human Resource Management (DSE 9)	4	3	1	0	Class X11	Basics of Human Resource Management

Learning Objectives

- To explore the concepts and techniques of the essential elements of International HRM and to enable the learners to recognise its critical issues.

- To analyze HRM concerns in the cross-cultural scenario.

Learning Outcomes:
On successful completion of the course the learner will be able to:

- Understand the impact of culture on Human Resource Management,how HRM differs across cultures and comprehend issues and challenges pertaining to International HRM.
- Understand how International HR managers can develop competencies in dealing with cross-cultural issues.
- Analyse the fundamentals of International HRM planning and staffing.
- Analyse the key elements of International HR performance appraisal and selection.
- Evaluate the functional role of HRM in International HR training and development and industrial relations.

SYLLABUS DSE 9

Unit 1: Cultural issues in International HRM (9 Hours)

Introduction to concepts of Culture and Nationality; Impact of culture on International Business Environment; Hofstede's approach; cross cultural differences at work; strategies to managing workforce diversity; Diversity management programme; International Human Resource Management: Difference between domestic and international HRM.

Unit 2: International HRM Planning and Staffing (12 Hours)

International Workforce planning and staffing: Issues in supply of international human resources; International Recruitment; International staffing choice, different approaches to multinational staffing decisions; Types of international assignments; Selection criteria and techniques; Successful expatriation, Causes of expatriate failure, female expatriation.

Unit 3: International HR Performance Appraisal and Selection (12 Hours)

Performance appraisal: Criteria for performance appraisal, Variables that influence expatriate performance appraisal. Issues and challenges in international performance management; Compensation: Objectives of expatriate compensation plan, Factors affecting international compensation, Approaches to expatriate compensation: Going rate approach, Balance sheet approach, Cultural impact on compensation policy.

Unit 4: International HR Training and Development and Industrial Relations (12 Hours)

Training & development of international staff: Areas of global training, cross cultural training, Diversity training. Cross cultural team building; Repatriation: Process, Problems of repatriation; Cross border Mergers and Acquisitions: HRM perspective; International industrial relations: Key Players in industrial relations, Labour unions and MNCs, Employee relations in MNCs, Response of labour unions to MNCs.

Essential/recommended Reading (latest edition of readings to be used)

1. Nilanjan, S. & Bhattacharya, M. (2010). *International Human Resource Management.* Excel Books.
2. Dowling, P. J., Festing, M., & Engle, A. D. (2017). *International Human Resource*

Management. Cengage Learning.
3. Bhattacharyya, D. K. (2010). *Cross-cultural management.* PHI Learning Pvt. Ltd.
4. Briscoe, D., Briscoe, D.R., Schuler, R.S., & Claus, L. (2008). *International Human Resource Management: Policies and practices for multinational enterprises*. Routledge.
5. Edwards, T., & Rees, C. (2006). *International human resource management: Globalization, national systems and multinational companies.* Pearson Education.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE – HUMAN RESOURCE MANAGEMENT (DSE-10)

DSE 10: COMPENSATION MANAGEMENT

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Compensation Management (DSE 10)	4	3	1	0	Class X11	NO

Learning Objectives

- To familiarize learners about concepts of compensation management
- To use these concepts in attracting, retaining and motivating employees for higher performance.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Comprehend the components of executive compensation and understand how jobs are priced to establish compensation levels.
- Understand incentive systems and non-economic rewards.
- Understand International aspects of Compensation
- Evaluate the implications of components of compensation on performance of the employees.

SYLLABUS DSE 10

Unit 1 **(12 hours)**

Conceptual dimensions of Wage, Compensation, and Rewards; Labour Market, Intra-Inter Industry differences in wages and compensation; Job Evaluation: Methods and Techniques, Forms of Pay, Pay models, surveying market pay and compensation practices, designing the survey, sources of third party data, Job pricing, Determining the pay structure, determining rates

of pay; Individual and Group Incentive, team-based pay: kinds of teams, skills, knowledge and competency based pay, sales incentive plans: salary plus commission, special sales incentives plan.

Unit 2 **(12 hours)**

Company Wage Policy: Wage Components, Wage Determination, Pay Grades, Wage Surveys, Modern trends in compensation - from wage and salary to cost to company concept. Wages in India: Minimum wage, fair wage and living wage; Methods of state regulation of wages; Wage differentials & national wage policy, Regulating payment of wages, wage boards, Pay commissions, dearness allowances, linking wages with productivity.

Unit 3 **(12 hours)**

Benefits and Services: Benefit Administration , Employee Benefits and Employee Services, Funding Benefits through VEBA, Costing benefits, Flexible Compensation Benefits/Benefits plan, Pay Delivery Administration: Budget process, administration of pay, other administrative issues, due process, statutory benefits including occupational health care, employee welfare and retirement benefits; executive compensation: executive golden parachutes, International compensation managing variations, Expatriate Pay.

Unit 4 **(9 hours)**

Employee Benefits: Discretionary and Statutory; Legal aspects of wage and benefits; Role of Trade Union and Collective Bargaining; Recent trends in rewards, benefits, and services: Equity Stock Options, Investment advisory, Tax planning, Insurance, Wellness, Short and long term incentives: premium and differentials, qualified deferred compensation arrangements: social security, pension plans, profit sharing, Employee Recognition and Motivation.

Essential/recommended Readings (latest edition of readings to be used)

1. Malkovich & Newman, *Compensation*. McGraw Hill. (12 ed.)
2. Dessler G., *Human Resource Management*. Prentice Hall.(12 ed.)
3. Henderson R., *Compensation Management in a Knowledge Based World*. Prentice Hall. (10 ed.)
4. Bergman T., *Compensation Decision Making*, Thompson Learning
5. Chhabra T. & Rastogi S. *Compensation Management*. Sun India Publications

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE – HUMAN RESOURCE MANAGEMENT (DSE-11)

DSE 11: HRD SYSTEMS AND STRATEGIES

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
HRD : Systems and Strategies (DSE 11)	4	3	1	0	Class X11	Basics of Human Resource Management

Learning Objectives

- To equip learners with knowledge of HRD and HRD practices which can develop and improve an Organization's systems and strategies leading to an effective HRD climate.
- To familiarize learners with topics like the HRD process, various approaches to HRD and career management and development.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand the relationship between HRM and HRD, areas of training, education and development.
- Develop an understanding of the HRD interventions and HRD diversity management.
- Apply the various approaches for motivation in HRD.
- Analyse the high work performance work system, balanced score cards and integrating HRD with technology.

SYLLABUS OF DSE 11

Unit 1: Human Resource Development (HRD) (12 hours)

Concept; Relationship between human resource management and human resource development; Roles and competencies of HRD professionals; HRD Matrix; HRD as a Total System; HRD areas of Training, Education and Development.

Unit 2: HRD Process (12 hours)

Assessing need for HRD; Designing and developing effective HRD programs; Implementing HRD programs; Evaluating HRD programs; HRD interventions: Integrated Human Resource Development systems, Staffing for HRD; HRD Audit; HRD and diversity management; HRD Climate.

Unit 3: Approaches to HRD (12 hours)

Leadership development; Action learning; Assessment Centers; Motivation approaches for HRD; Industrial relations and HRD: role of Trade Unions.

Unit 4: Career Management and Development (9 hours)

Coaching and mentoring; Employee coaching, mentoring and counselling; Competency mapping;

High Performance Work Systems; Balanced Scorecard; Integrating HRD with technology.

Essential/recommended Readings (latest edition of readings to be used)

1. Udai,P. & Rao T.V, (2015). *Designing and Managing Human Resource System,* (3rd ed) Oxford IBH.
2. Rao T.V & Nair M.R.R, *Excellence through Human Resource Management*, Tata Mcgraw.
3. Leonard,N.,*Corporate Human Resource Development,* Van Nostrand Reinhold/ASTD New York.
4. Werner,M.J.,& Desimone,L.R (2011). *Human Resource Development,* (6th ed) Oxford IBH Pub.
5. Swanson,A.R.,& Holton,F.E.,(2009) *Human Resource Development*, (2nd ed) Berrett Koehler Pub.
6. Thomas,G., Guire,D.& Dooley,M,L. (2011). *Fundamentals of Human Resource Development,* Sage Pub.
7. Mankin, D, (2009). *Human resource development*, Oxford University Press India.
8. Haldar, U. K, (2009). *Human resource development*, Oxford University Press India.

Note: Latest edition of the readings may be used.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE – HUMAN RESOURCE MANAGEMENT (DSE-12)

DSE 12: ORGANISATIONAL CHANGE AND DEVELOPMENT

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Organisational Change and Development (DSE 12)	4	3	1	0	Class XII	Basics of Organizational Behaviour and Human Resource Management

Learning Objectives

- To familiarize the learners with fundamentals of organisational change and change processes.
- To acquaint learners with concepts of organisational development and various

interventions for an effective organisational development process.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand the Management of Organizational Change, types of change, resistance to change, various models of change.
- Apply the concept of OD, relevance of OD for managers.
- Analyse the process of OD and comprehensive OD interventions.
- Evaluate the types and methods of evaluating OD intervention, emerging trends in OD.

SYLLABUS OF DSE 12

Unit 1: Change Process and Models (12 hours)

Overview of Organisational Change, Strategies for change Types of Changes: internal and external, Model of Change Levin's change model, Action research model, Positive model, Systems model, Action Research as a Process, Resistance to Change, Overcoming resistance to change.

Unit 2: Organisational Development (12 hours)

Organisational Development (OD): Introduction, Meaning and Definition, History of OD, Relevance of Organisational Development for managers, Assumptions of OD.

Unit 3: Process of OD and OD Interventions (15 hours)

Process of OD, Components of OD program, OD program phases, Making an Entry, Developing Contract, Launch, Situational Evaluation, Closure. OD Interventions: An overview; Classification of OD Interventions: Team Interventions, Inter group and third-party peacemaking interventions, Comprehensive OD interventions, Structural Interventions.

Unit 4: Evaluating OD Interventions (6 hours)

Evaluation, Types of Evaluation, Methods of Evaluating Interventions. Future of OD: Organisational Development and Globalization, Emerging Trends in OD.

Essential/recommended Readings (latest edition of readings to be used)

1. French, W.L., Bell, C.H. & Vohra V,(2017) *Organization Development: Behavioral Science Interventions for Organization Improvement*, (Revised 6th Ed). Pearson.
2. Hackman, J.R. & Suttle, J.L.,(1977) *Improving Life at Work: Behavioural science approach to organisational change*, Goodyear, California.
3. Harvey, D.F. & Brown, D.R. (2006) *An experimental approach to Organization Development*, (7th Ed). Prentice-Hall, Englewood Cliffs, N.J.
4. Anderson,D.L., (2011). *Organizational Development: The process of leading organizational change,* (4" Ed)., Sage Publications.
5. Rothwell,W. J., Stavros,J.M. & Sullivan R.L. (2015). *Practicing Organization Development: Leading Transformation and Change.* (4th Ed). Wiley

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE -FINANCE (DSE-4)

DSE 4: MERGERS, ACQUISITIONS AND CORPORATE RESTRUCTURING

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Mergers Acquisitions and Corporate Restructuring (DSE 4)	4	3	1	0	1st year Undergraduate	Basics of Accounting and Analysis

Learning Objectives

- This course is designed to provide an understanding of the corporate restructuring, mergers and acquisitions with the basic methods of valuation, methods of payment and financing options at global level.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand the concept and importance of corporate restructuring for growth.
- Recognize opportunities for creating value through Mergers and Acquisitions.
- Illustrate and apply methods used in the valuation of a firm for M&A analysis.
- Understand the legal and regulatory framework for Mergers and Acquisitions.

SYLLABUS OF DSE 4

Unit I: Corporate Restructuring – An Overview (11 Hours)

Concept and importance of corporate restructuring, various forms of restructuring: joint ventures (types), Strategic alliance (types), Merger (types), Acquisition (types), Consolidation, Divestiture, Demerger (Spin-off, Split-up, Split-off), Equity carve-out, Management buyout, Leveraged buyout, Buyback of securities, ESOP.

Unit II: Merger & Acquisition (12 Hour)

Motives behind M&A, theories of M&A, process of M&A. Fast track merger. Cross border M&A concept, benefits & difficulties. Due diligence process. Methods of payment and financing options in M&A. Takeover defense tactics. Reasons for failure of M&A.

Unit III: Deal Valuation and Evaluation (11 Hour)

Methods of valuation; cash flow approaches, economic value added (EVA) (with numerical), sensitivity analysis (with numerical), Valuation for slump sale, valuation of synergy (with numerical), cost-benefit analysis and swap ratio determination (with numerical).

Unit IV: Legal and Regulatory Framework of M&A (11 Hour)

Provisions of Companies Act 2013, SEBI Takeover Code 2011, Provisions of Competition Act 2002.

Essential/recommended Readings (latest edition of the readings to be used)

1. Weston, F., Chung, Kwang S. and Siu, Jon A. (1998): *Takeovers, Restructuring and Corporate Governance*. Pearson Education.
2. Gupta, M. (2010). *Contemporary Issues in Mergers and Acquisitions*. Himalaya Publishing.
3. Sundarsanam. (2006). *Creating Value from Mergers and Acquisitions* (1st edition). Pearson Education.
4. Ramanujan. S. (1999). *Mergers: The New Dimensions for Corporate Restructuring*. McGraw Hill.
5. Narayankar, R. (2013). *Merger and Acquisitions Corporate Restructuring, Strategy and Practices* (2nd edition). International Book House Pvt. Ltd.

Note: Examination scheme and mode shall be as prescribed by Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC ELECTIVE -FINANCE (DSE-5)

DSE 5: INVESTMENT BANKING AND FINANCIAL SERVICES

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Investment Banking and Financial Services (DSE 5)	4	3	1	0	Class XII	Basics of Accounting and Finance

Learning Objectives

- To understand the different aspects of Investment banking and financial services.
- To acquaint the learners about Issue Management of stocks in primary market and role of secondary market and it process
- To Understand the concept of Leasing, Hire Purchase, Factoring and Forfaiting, Insurance, Credit Rating, Securitization and Venture Capital Financing, Mergers and acquisition
- To know the guidelines of regulatory bodies like IRDA,SEBI on issue management and insurance.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand the importance and relevance of Investment Bankers in any Financial System.
- Evaluate the entire process of raising funds from primary markets along with the concerned regulations applicable in India.
- Remember and use the various financial services available in financial markets particularly in India along with the latest innovations and technological integration in the field of finance.
- Apply the role and functions of Investment bankers present under the legal framework of SEBI.

SYLLABUS OF DSE 5

Unit I: Introduction to Investment Banking (11 Hours)

Introduction: An Overview of Indian Financial System, Investment Banking in India, Recent Developments and Challenges ahead, Institutional structure and Functions of Investment Banking; SEBI guidelines for Merchant Bankers, Registration, obligations and responsibilities of Lead Managers.

Unit II: Issue Management (11 Hours)

Issue Management: Public Issue, classification of companies, eligibility, issue pricing, promoter's contribution, minimum public offer, prospectus, allotment, preferential allotment, private placement, Book Building process; Green Shoe Option; Right Issue: promoter's contribution, minimum subscription, Bought out Deals, Post issue work & obligations, Investor protection, Broker, sub broker and underwriters.

Unit III: Financial Services 1 (12 Hours)

Leasing: Concepts of leasing, types of leasing, financial & operating lease, direct lease and sales & lease back, advantages and limitations of leasing, Lease rental determination; Finance lease evaluation problems from Lessee's angle. Hire Purchase: Interest & Instalment, difference between Hire Purchase & Leasing, Choice criteria between Leasing and Hire Purchase, numerical problems on of Hire purchase for decision making. Factoring and Forfaiting and its arrangement, Housing Finance: Meaning and rise of housing finance in India, floating vs. fixed rate.

Unit IV: Financial Services 2 (11 Hours)

Venture Capital: Concept, history and evolution of VC, the venture investment process, various steps in venture financing, incubation financing. Securitization: Concept and Process, Credit Enhancement parties to a Securitization Transaction, Instruments of Securitization, Types of Securities, Securitization in India. Credit Rating Agencies: Role and Mechanism, Private Equity. Mergers and Acquisitions – Introduction of mergers and acquisitions, benefits of mergers, Role of Investment bankers in merger, procedure and theories of mergers, acquisitions and takeovers in India, anti-takeover strategies.

Essential/recommended Readings (latest edition of readings to be used)

1. Khan, M. Y. (2013). *Financial services* (7th ed). McGraw-Hill Education.

2. Machiraju, H. R. (2002). *Indian financial system*. Vikas Publication House.

Suggestive Readings (latest edition of readings to be used)

1. Verma, J. C. (1996). *Bharat's manual of merchant banking: Concept, practices and procedures with SEBI clarifications*. Bharat Law House.
2. Sriram, K. *Hand book of leasing, hire purchase and factoring*. ICFAI.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC ELECTIVE -FINANCE (DSE-6)

DSE 6: EARNINGS MANAGEMENT

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Earnings Management (DSE 6)	4	3	1	0	Class XII	Basics of Accounting

Learning Objectives

To equip the learners with the analytical skills, and competencies to address earnings management issues in organisations.

To acquaint the learners with the core concepts of accounting analytics and via hands-on exercises, build skills and competencies around the management, analysis and representation of data.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Remember the analysis of a company to identify the sources of its competitive advantage (or red flags of potential trouble), and then use that information to forecast its future financial statements.
- Understand the process of earnings management and get a more accurate picture of earnings, so that they can catch the culprits of manipulated financial reporting.
- Apply the knowledge of a very strong tool that will help to red flag the financial statements that may have been manipulated by the managers.
- Understand and Analyze Non-Financial Metrics to set performance targets for optimal financial performance.

SYLLABUS OF DSE 6

Unit I: Ratios and Forecasting (11 Hours)

Review financial statements and sources of financial statement information. The company's strategy and business model. Ratio analysis – short term solvency ratios, long term solvency ratios, turnover ratios and profitability ratios (Historical ratio analysis of real companies using Excel). Du-Pont analysis. How to use all the ratios, to forecast future financial statements? Accounting based valuation.

Unit II: Earnings Management (12 Hours)

Overview of earnings management: Means, motive, opportunity, how managers actually make their earnings look better, their incentives for manipulating earnings, and how they get away with it. Revenue recognition red flags: revenue before cash collection. Revenue recognition red flags: revenue after cash collection. Expense recognition red flags: capitalizing vs. expensing. Expense recognition red flags: Reserve Accounts and write-offs.

Unit III: Big Data and Prediction Models (11 Hours)

Overview: Big Data and Prediction Models. Discretionary Accruals Models: Model the Non-Cash portion of Earnings or Accruals. Discretionary expenditure Models: Model the Cash Portion of Earnings. Fraud Prediction Models and Benford's Law.

Unit IV: Non-Financial Metrics and Financial Performance (11 Hours)

Introduction**:** Connecting numbers to non-financial performance measures. Linking non-financial metrics to financial performance: Overview and steps. Targets setting, incorporation of analysis results in financial models and how to use analytics to choose action plans.

Essential/recommended Readings (latest edition of readings will be used)

1. Diri, M.E. (2017). *Introduction to Earnings Management.* Springer.
2. Richardson, V.J., Teeter, R.A., Terrel, K.L. and Mohapatra, P.S. (2020). *Data Analytics for Accounting.* 2nd Edition, McGraw Hill..
3. Prince, J.T. and Bose, A. (2020). *Predictive Analytics for Business Strategy – Reasoning from Data to Actionable Knowledge*. 1st Ed., McGraw Hill

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC ELECTIVE -FINANCE (DSE-9)

DSE 9: BUSINESS ANALYSIS AND VALUATION

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Business Analysis and Valuation (DSE 9)	4	3	1	0	Class XII	Basic knowledge of accounting and Finance

Learning Objectives

- This Paper will enable the learners to analyze the health of a company through their annual reports, through management quality analysis, and will equip them to understand what an asset is worth and what determines that value.
- Learners will understand the issues and challenges faced during the valuation of assets especially in conditions of uncertainties.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Remember the various elements of the Income statement and Balance sheet.
- Understand the importance and relevance of the Annual Report of a Company.
- Apply both qualitative (beyond balance sheet) and quantitative information available in the annual reports for determining the financial health of the company, Banks and NBFC.
- Analyze the various methods of Equity and Firm valuations both in certain and risky conditions.
- Evaluate the practical application of different valuation models in valuing equity and firm through modelling of these methods using excel.

SYLLABUS DSE 9

Unit 1: Analysis of Corporate Financial Statements (11 Hours)

Income statements and Balance sheets analysis through Ratio, Du-Pont analysis. How to read the Annual report of a company to evaluate the financial soundness of the company? Financial statements analysis of manufacturing, service sector (Using Excel). Beyond Balance Sheet Analysis: What does the company do? Who are its promoters? What are their backgrounds? What do they manufacture (in case of service company which services they offer)? Who are the company's clients or end- users? Who are their competitors? Who are the major shareholders of the company? Do they plan to launch any new products/service? Do they plan to expand to different countries? What is the revenue mix? Which product sells the most? Do they operate under a heavy regulatory environment?

Unit 2: Introduction and Approaches of Valuation (11 Hours)

Introduction to Valuation: Philosophical Basis for Valuation, Generalities about Valuation, Role of Valuation. Approaches to Valuation: Discounted Cash Flow Valuation – basis for DCF, categorization of DCF models, Applicability and Limitations of DCF models. Relative Valuation – basis for approach, categorization of relative valuation models, applicability and limitations of multiples.

Unit 3: Dividend Discount Model and Discounted Cash Flow Valuations (12 Hours)

Estimating Discount Rates – Cost of Equity and Cost of Capital. Betas: Historical Market Betas, Fundamental Betas, Bottom-Up Betas, Accounting Betas, Unlevered Beta and Levered Beta. Dividend Discount Models (DDM): Two-Stage and Three Stage Dividend Discount Model.

Issues in using the Dividend Discount Model. Free Cash Flow to Equity (FCFE) Discount Models: Free Cash Flows to Equity, FCFE Valuation Models – Constant Growth, Two Stage FCFE Model. FCFE Valuation Vs. Dividend Discount Model Valuation. Firm Valuation: Free Cash Flow to the Firm (FCFF), Firm Valuation Approaches: The Cost of Capital Approach, The Adjusted Present Value (APV) Approach, Cost of Capital Vs. APV Valuation. Applied Valuation of a Company using Excel.

Unit 4: Relative Valuation and Multiples (11 Hours)

Relative Valuation: Concept, Reasons for popularity and potential pitfalls. Standardized Values and Multiples (brief overview) – Earnings Multiples, Book Value Multiples, Revenue Multiples, and Sector-specific Multiples. Basic Steps to using Multiples. Select Multiples – Price-Earnings (PE) Ratio, PEG Ratio, Price to Book Ratio, Enterprise Value to EBITDA Multiple, Enterprise Value/Sales, Enterprise Value/Book Value, Tobin's Q. Reconciling Relative and Discounted Cash Flow Valuation.

Essential/recommended Readings (Latest editions of readings to be used)

1. Foster, George Financial Statement Analysis, Pearson Education Pvt Ltd.
2. Damodaran, A. Damodaran on Valuation, Security Analysis for investment and Corporate Finance (2nd ed.). Wiley India Pvt. Ltd.
3. Damodaran, Investment Valuation, Tools and Techniques for determining the value of any asset, 3rd Edition, Wiley India Pvt. Ltd.

Suggestive Readings (latest edition of readings to be used)

1. K. G., CA, & Sehrawat, N. K (2018). Handbook on Valuation- Concept & Cases. New Delhi, Bharat Law House Pvt. Ltd,
2. Damodaran, Corporate Finance (2000) – Theory and Practical, 2nd Edition, Wiley India Pvt. Ltd.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE -FINANCE (DSE-10)

DSE 10: ADVANCE DERIVATIVES

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Advance Derivatives (DSE 10)	4	3	1	0	Class XII	Basics of options, swaps, interest rates and cryptocurrencies

Learning Objectives

The course will help the learner to:

- Learn how to calculate and apply different options Greeks (delta, gamma, rho, theta, and Vega) for stocks and currencies, and how to use Delta and Gamma hedging techniques.
- Understand the concept of swaps, interest rate futures, and credit default swaps, their valuation, and their use in managing risk.
- Get acquainted with exotic options and their various types, such as gap options, barrier options, and Asian options, among others.
- Explore cryptocurrencies, including Bitcoin, Ethereum, EOS, Litecoin, and Ripple, and their futures and options contract specifications, as well as SWAP contracts.
- Gain knowledge of cryptography and its role in cryptocurrencies, and learn how to calculate and apply BTC and ETH options.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Analyze and evaluate the risk characteristics of various financial instruments, including stock options, currency options, swaps, interest rate futures, and exotic options.
- Apply knowledge of Greeks (delta, gamma, rho, theta, and Vega) to make informed decisions on option pricing, hedging, and portfolio management.
- Create and implement strategies for delta hedging, gamma hedging, and making a portfolio delta/gamma neutral.
- Evaluate the value and risk of nonstandard American options, gap options, forward start options, cliquet options, compound options, chooser options, barrier options, binary options, lookback options, shout options, Asian options, options to exchange one asset for another, and basket options.
- Analyze and evaluate the risks and benefits of investing in cryptocurrencies, including Bitcoin, Ethereum, EOS, Litecoin, Bitcoin Cash, and Ripple, and apply knowledge of crypto futures and options to make informed decisions.

SYLLABUS OF DSE 10

Unit 1: Greeks (11 Hours)

Calculation of delta, gamma, rho, theta and Vega for stock options (with and without dividend) and currency options. Relationship and comparison among stock Greeks. Delta Hedging, Gamma Hedging. Making a portfolio Delta Neutral, Gamma Neutral, Delta positive Gamma Neutral and Delta positive Gamma Neutral.

Unit 2: Swaps & Interest Rate Futures (11 Hours)

Introduction to Swaps, Interest rate swaps, currency swaps, cross-currency swaps. Understanding Credit default swaps (CDS), Valuation of CDS. CDS: Forwards and Options. Interest rate Futures, Interest rate cap and floor, FRA.

Unit 3: Exotic Options (11 Hours)

Nonstandard American options, Gap options, Forward start options, Cliquet options, Compound options, Chooser options, Barrier options, Binary options, Lookback options, Shout options, Asian options, Options to exchange one asset for another, Basket options.

Unit 4: Cryptocurrencies **(12 Hours)**

Introduction to cryptography & crypto currencies. Introduction of Bitcoin (BTC), Ethereum coin (ETH), Electro-Optical System coin (EOS), Litecoin (LTC), Bitcoin Cash (BCH), Ripple (XRP). Futures Contract Specification: BTC, ETH, EOS, LTC, BCH, XRP. Understanding of these coins with USDT. SWAP contract of BTC & ETH. Introduction and calculation of BTC & ETH options.

Essential/recommended Readings (latest edition of readings to be used)

1. Hull, J. C. (2018). Options, futures, and other derivatives. Pearson Education Limited.
2. Fabozzi, F. J. (Ed.). (2016). Handbook of finance, financial markets and instruments. John Wiley & Sons.
3. Haferkorn, M., Zimmermann, K. F., & Grothe, O. (2018). Value drivers of cryptocurrency: Evidence from bitcoin. Economics Letters, 163, 6-8.
4. Wystup, U. (2016). FX options and structured products. John Wiley & Sons.

Suggestive Readings (latest edition of readings to be used)

1. Cryptocurrency Prices | Cryptocurrency List | Market Cap | OKX
2. Buy/Sell Bitcoin, Ether and Altcoins | Cryptocurrency Exchange | Binance
3. Bitcoin and Cryptocurrency Exchange | Huobi Global
4. Jurgen Franke, Wolfgang Hardle and Christian Hafner. Introduction to Statistics of Financial Markets.
5. R. Madhumathi, M. Ranganatham. Derivatives and risk management (1st ed.) Redhead,K.
6. Financial Derivatives – An introduction to futures, forwards, options, swaps. Prentice Hall of India
7. McDonald, Derivatives Markets, (latest ed.), Pearson.
8. Robert Reitano, 2010, Introduction to Quantitative Finance, MIT Press.
9. Chance, 2003, Analysis of Derivatives for the CFA Program.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE -FINANCE (DSE-11)

DSE 11: FINANCIAL ECONOMETRICS

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		

Financial Econometrics DSE-11	**4**	**3**	**1**	**0**	**Class XII**	**Basic knowledge of statistics**

Learning Objectives

- Understand the statistical properties of financial returns, including their distribution, time dependency, and linear dependency across asset returns.
- Develop knowledge of univariate time series analysis, including the Lag operator, ARMA processes, and the Box-Jenkins approach.
- Gain proficiency in modeling volatility using conditional heteroscedastic models, such as ARCH and GARCH models, and forecasting with GARCH models.
- Learn multivariate GARCH models, including the VECH model, diagonal VECH model, and BEKK model, and estimation of a multivariate model.
- Acquire knowledge of vector autoregressive models, Granger causality tests, and Johansen cointegration tests and their hypothesis testing methods.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Analyze the statistical properties of financial returns and evaluate their distribution, time dependency, and linear dependency across assets using knowledge and comprehension skills.
- Create and apply univariate time series models, including AR, MA, and ARMA processes, using synthesis and evaluation skills to forecast financial returns.
- Develop and estimate conditional heteroscedastic models, such as ARCH and GARCH models, using analysis and evaluation skills to model and forecast volatility.
- Construct and evaluate multivariate GARCH models, including VECH, Diagonal VECH, and BEKK models, using synthesis and evaluation skills to model volatility and correlations.
- Evaluate and apply advanced econometric techniques, including VAR, GCT, and JCT, using analysis and evaluation skills to test hypotheses and model complex relationships in financial time series data.

SYLLABUS OF DSE 11

Unit 1: Statistical Properties of Financial Returns & Univariate Time Series and Applications to Finance (15 hours)

Introduction Asset Returns, Calculation of Asset Returns (Continuous and discreate both), Compare Continuous return with non-Continuous return and explain its benefits. Facts about Financial Returns, Distribution of Asset Returns, Time Dependency, Linear Dependency across Asset Returns.

Introduction to Univariate Time Series, The Lag Operator, Properties of AR Processes, Properties of Moving Average Processes, Autoregressive Moving Average (ARMA) Processes, The Box-Jenkins Approach.

Unit 2: Modelling Volatility – Conditional Heteroscedastic Models (9 hours)

Introduction to Modelling Volatility, ARCH Models, GARCH Models, Estimation of GARCH Models, Forecasting with GARCH Model.

Unit 3: Modelling Volatility and Correlations – Multivariate GARCH Models (9 hours)
Introduction to Modelling Volatility and Correlations, Multivariate GARCH Models, The VECH Model, The Diagonal VECH Model, The BEKK Model, Estimation of a Multivariate Model

Unit 4: Vector Autoregressive Models (VAR), Granger Causality Test (GCT) and Johansen Cointegration Test (JCT) (12 hours)
Introduction to VAR, Deep understanding of VAR, Issues in VAR, Hypothesis Testing in VAR. Introduction to GCT, Deep understanding of GCT, Issues in GCT, Hypothesis Testing in GCT Introduction to JCT, Deep understanding of JCT, Issues in JCT, Hypothesis Testing in JCT.

Essential/ recommended Readings

1. Brooks, C. (2014). Introductory econometrics for finance (3rd ed.). Cambridge University Press.
2. Tsay, R. S. (2010). Analysis of financial time series (3rd ed.). Wiley.
3. Bollerslev, T. (2008). Glossary to ARCH (GARCH). Journal of Economic Perspectives, 15(4), 171-174. doi: 10.1257/jep.15.4.171
4. Engle, R. F., & Kroner, K. F. (1995). Multivariate simultaneous generalized ARCH. Econometric Theory, 11(1), 122-150. doi: 10.1017/S0266466600009063

Suggestive Readings

1. Chris, Brooks (2019). Introductory Econometrics for Finance. Cambridge University Press.
2. Pindyck, Robert S. and Daniel L. Rubinfeld Econometric Models and Economic Forecasts. Singapore: McGraw Hill.
3. Ramanathan, Ramu (2002). Introductory Econometrics with Applications (5th ed.). Thomson South Western

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE - GLOBAL BUSINESS MANAGEMENT (DSE-4)

DSE 4: INDIA AND THE WORLD ECONOMY

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
India and the World Economy (DSE 4)	4	3	1	0	1st Year Undergraduate	None

Learning Objectives:

The paper aims at providing an overview of economic policies and business environment in the domestic and world arena. learners get deep insight into the stylized economic facts on the main dimensions of the domestic and global economy.

Learning Outcomes:

On successful completion of the course the learner will be able to:

- Understand the evolving development paradigm adopted in India, liberalised and globalised world order, domestic and globalization processes, their main characteristics and their dynamic impact on the economy.
- Comprehend the regulatory structures in India, analyse industrial policy in different sectors, and gauge policies on FDI.
- Appraise major economies of the world, analyse the free trade vs. restrictive trade policies, both from a theoretical perspective and in policy terms.
- Synthesise intellectually on current global economic events and trends.

.

SYLLABUS FOR DSE 4

Unit 1: Overview of the Indian Economy (9 Hours)

Planning and Reforms, Pre-Independence Period, National Development Council, Five Year Plans, Land Reforms, Green Revolution, Evolution of Public Sector in India, Economic Reforms-Liberalisation of economic system, Indian Economy during Post-Planning Period-Role of Niti Aayog, Shift in Economic Policies: Privatisation: Problems and Prospects, Fiscal Policy, Union Budget and Taxation, Monetary Policy and Banking Sector Reforms. Technology and business environment in India.

Unit 2: Regulatory Structures in India (12 Hours)

Industrial Policy, Industry Analysis: Textiles, Electronics and Automobiles, Industry Analysis—FMCG, Chemicals and Pharmaceutical Sectors. Industrial Policy Statement, 1991, Objectives, Features, Micro, Small and Medium Industries and Policies, India's Industrial Progress After 1991, Performance of Small and Medium Enterprises (SME) Sector, Review of Economic Environment in Industrial Sector, Policies on Foreign Direct Investment in India, Foreign Exchange Regulation Act, Recent Industrial Policy Outlook.

Unit 3. World Economy **(12 Hours)**

An overview of the world economy; Major economies of the world, Income and Income Growth of World Economy during the last decades. Linkages in the Major Economies- Trade, Investment and Capital Flows. Development and Underdevelopment in the Developing World, The Historical Development of Capitalism, Resources and Environment, International Trade Patterns, Transportation and Communications, Regional Trading Arrangements, Trade Policies for the Developing Nations, Exchange-Rate Systems and Currency Crises, Macroeconomic Policy in an Open Economy, Nontariff Trade Barriers. International Factor Movements and Multinational Enterprises.

Unit 4: Global Operating Environment **(12 Hours)**

Trade and Climate Change, Trade and Food Security, Trade and Finance, Trade and Geopolitics. Global Recession and New Business Environment, WTO: Agreements and Current Issues; Trade Policy External Sector—BoP, Currency Convertibility issues, Global Outsourcing; Multinational Companies and Foreign Direct Investment. Trends in Global Trade and Economic Integration, Direction of World Trade, Multilateralism and the Multilateral Trading System, Levels of Economic Integration, Contemporary Perspectives: Global Economic Scenario, Public Policy, Business ethics and Corporate Social Responsibility, Consumerism, Major Trade partners, Growth and Poverty, Sustainable Development issues.

Essential/recommended Readings (latest editions of readings should be referred to)

1. Ahmed, F., & Alam, M.A. (2017). *Business Environment: Indian and Global Perspective*. PHI Learning.
2. Paul, J. (2017). *Business Environment, Text And Cases*. PHI Learning.
3. Stutz, F. P. & Warf, B. (2021) *World Economy, The Geography, Business, Development.* Pearson.
4. Carbaugh, R. J. (2017) *Global Economics*. Cengage Learning.

Suggestive Readings (latest editions of readings should be referred to)

1. World Bank (2019). *World Development Report*. Oxford. Various Issues.
2. United Nations Development Programme (2014). *Human Development Report*. UNDP, Various issues.
3. UNCTAD (2022). *Trade and Development Report*, UNCTAD, Various issues.
4. Rosser, J. B. & Rosser M.V. (2018).*Comparative Economics in a Transforming World Economy*. Prentice Hall.
5. Daniels, J.P. & David D.V. (2018). *Global Economic Issues and Policies*. Routledge, New York.
6. Yarbrough, B.V. & Yarbrough R.M. (1997). *The World Economy, Trade and Finance*. Cengage Learning.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE - GLOBAL BUSINESS MANAGEMENT (DSE-5)

DSE 5: MULTINATIONAL BUSINESS FINANCE

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Multinational Business Finance (DSE 5)	4	3	1	0	1st Year Undergraduate	Basics of Accounting

Learning Objectives

The course will help the learner to:

- Understand the international monetary system and role of financial institutions.
- Recognize different aspects of foreign exchange markets and their functioning
- Analyze and appraise financial Management of a multinational firm

Learning Outcomes

On successful completion of the course the learner will be able to:

- Understand MNCs operations and finances.
- Explain functioning of Multilateral Agencies and their role in global economic development.
- Analyze different aspects of the foreign exchange markets.
- Apply financial Management concepts and tools for foreign Investment analysis
- Understand International Payment system and investment strategies

SYLLABUS FOR DSE 5

Unit 1: Introduction (12 Hours)

Multinational Business Finance – MNCs (Multinational Corporations) and transnational corporations, Difference between domestic and International financial management, Motivations for International finance. International Monetary System - The Gold standard, The Bretton Woods system, the flexible exchange, alternative exchange rate system, the European monetary system, Euro and its implications for Indian banking, International Financial Institutions – International Monetary Fund (IMF), Asian Development Bank (ADB), International Bank for Reconstruction and Development (IBRD), Bank for International Settlement (BIS) and Organization for Economic Cooperation and Development (OECD).

Unit 2: Forex Markets (9 Hours)

The Foreign Exchange Markets: Introduction, types: Global and Domestic market, spot market and forward market; rates: direct and indirect quotations, bid-ask spread; Functions of the Foreign Exchange Markets; determination of forward premiums and discounts, interest arbitrage – covered interest arbitrage and interest parity theory – forecasting of foreign exchange rates.

Unit 3: Financial Management of Multinational Firms **(12 Hours)**

Financial management of the Multinational Firm – Cost of Capital and Capital Structure of a Multinational Firm – determining capital structure components, Cost of capital for MNCs (Multinational Corporations) and Domestic Firms, Multinational capital budgeting – Problems and issues in foreign investment analysis.

Unit 4: Role of FDI, FII and Payment Systems **(12 Hours)**

Payment Systems: Payment terms and financing international trade, international flow of funds and portfolio investment in India, FDI (Foreign Direct Investment) vs. FIIs (Foreign Institutional Investors), investment strategies of FIIs in India, FIIs and volatility, impact of FIIs investment on stock markets and public policy. Netting (with numerical), pooling, leading and lagging as international payment settlement.

Essential/ recommended Readings (latest editions should be referred to)

1. Eiteman, David K., Stonehill, Arthur I., and Moffett, Michael H (2021). *Multinational Business Finance*.(15th Ed.). Pearson.
2. Alan C. Shapiro, P. H. (2019). *Multinational Financial Management*. (11th, Ed.) Wiley.

Suggestive Readings (latest editions should be referred to)

1. Levi, M. D. (2009). *International Finance*. Taylor & Francis.
2. Madura, J. (2018). *International Financial Management.* (13th, Ed.) Cengage Learning.
3. Buckley, A(2004). *Multinational Finance.* (5th, Ed.). Pearson Education.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE - GLOBAL BUSINESS MANAGEMENT (DSE-6)

DSE 6: TRANSNATIONAL HUMAN RESOURCE MANAGEMENT

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Transnational Human Resource Management (DSE 6)	4	3	1	0	1st Year Undergraduate	Fundamentals of Management and Organisational Behavior

Learning Objectives:

- To explore the concepts and techniques of the essential elements of International HRM and to enable the learners to recognise its critical issues.

- To improve understanding of HRM concerns in the cross-cultural scenario.

Learning Outcomes:

Upon completion of the course a learner will be able to:

- Understand the relevance and impact of culture on HRM for global business operations and how HR practices differs across cultures and countries and apply these to deal with complications that come with handling cross cultural issues.
- Develop an understanding of the fundamentals of staffing for global operations.
- Understand the key elements of performance appraisal for global employees.
- Understand the functional role of HRM in the context of training and industrial relations.
- Apply concepts into practice in multinational organizations.

SYLLABUS FOR DSE 6

Unit I: Cross-Cultural issues in HRM (12 Hours)

Introduction to HRM for multinational companies. Introduction to concepts of differences due to language; culture, religion and employee and country; Impact of these on the operations of non-domestic companies; Hofstede's approach; cross cultural differences at the workplace; Managing workforce diversity; Diversity management programs; International Human Resource Management: Difference between HRM for domestic and global companies. Integration of HRM with strategies for global operations. Pros and Cons of Internationally diverse HRM practices and their assimilation by global businesses.

Unit II: Staffing for Global Operations (12 Hours)

International Workforce planning and staffing: Issues in supply of international human resources; Low-cost labour and global staffing; International Recruitment; International staffing choices, Multinational staffing decisions; Types of international assignments; Selection criteria and techniques; Training employees for international assignments; Successful expatriation, Causes of expatriate failure, female expatriation. Repatriation management. Ethical and legal issues in use of low-cost labour. Regulations relevant to the use of low-cost labour from outside the country. Challenges in transferring culturally sensitive business practices across borders. Issues pertinent to hiring local employees for international operations. Strategic fitment for international assignments and operations. Challenges in managing global teams.

Unit III: Performance Appraisal for Global Employees (12 Hours)

Performance appraisal: Criteria for performance appraisal, challenges of appraising employees from different cultural backgrounds; Biases affecting performance appraisal amongst a global workforce; Variables influencing expatriate performance appraisal. Issues and challenges in international performance management; Compensation: Objectives of expatriate compensation plan, Factors affecting international compensation, Approaches to expatriate compensation: COLA; Hardship allowances; Going rate approach, Balance sheet approach, Cultural impact on compensation policy. Strategic questions related to LOC for international assignments. Elements of taxation relevant to compensation for expatriates: tax equalization, tax protection, currency fluctuations

Unit IV: Global Context of Training and Industrial Relations (9 Hours)

Training & development of international staff: Areas of global training, cross cultural training, Diversity training. Cross cultural team building; Cross border Mergers and Acquisitions: HRM perspective; International IR: Key Players, Labour unions, Employee relations. Approaches in IR for global operations; changes in IR landscape across different countries. Strategic decision making for IHRM issues. Control issues in IHRM in global companies - head office vs. local office. Impact of legislation and free trade agreements on HRM issues across national borders.

Essential/ recommended Readings (latest edition of readings to be used)

1. Dowling, P.J., Festing, M. & Engle Sr, A.D. (2013). *International Human Resource Management.* Wiley
2. Nilanjan, S. & Bhattacharya, M. (2010). *International Human Resource Management.* Excel Books.
3. Briscoe, D., Briscoe, D.R., Schuler, R.S., & Claus, L. (2008). *International Human Resource Management: Policies and practices for multinational enterprises*. Routledge.
4. Tayeb, M. (2005). *International human resource management: A multinational company perspective.* Oxford University Press.

Suggestive Readings

1. Dowling, P.J. and Welch, D.E. (2017). *International Human Resource Management.* Cengage Learning
2. Bhattacharyya, D. K. (2010). *Cross-cultural management.* PHI Learning Pvt. Ltd.
3. Edwards, T., & Rees, C. (2006). *International human resource management: Globalization, national systems and multinational companies.* Pearson Education.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE - GLOBAL BUSINESS MANAGEMENT (DSE-10)

DSE 10: CORPORATE TAXATION AND GLOBAL COMPANIES

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Corporate Taxation and Global Companies (DSE 10)	4	3	1	0	2nd Year Undergraduate	Basics of Finance and Accounting

Learning Objective

- The objective of this course is to acquaint learners with the international corporate taxation structure and its implications on companies.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Explain the concepts of International taxation.
- Describe the treaties and conventions governing the international taxation.
- Apply the knowledge, improve their understanding of international taxation and identify and evaluate the impact of different tax planning scenarios.
- Prepare for work within an international tax environment in a multinational firm

SYLLABUS FOR DSE 10

Unit 1: Introduction to Corporate Taxation (12 Hours)

Definition of corporate, types of companies: domestic company and foreign company, tax rate and additional benefits, corporation not seeking any incentives / exemption; corporation seeking incentives / exemptions and new manufacturing companies.

Sources of Income of a company: Profits earned from the business, Capital gains, Income from renting property, Income from other sources like dividend, interest etc.

Corporate tax rate for domestic companies and foreign companies, tax rates, Section 115BA, 115BAA, 115 BAB. Surcharge, cess, MAT.

Overview of Transfer Pricing; specified domestic transactions; Generally Accepted Cost Accounting Principles; Arm's Length Pricing; Advance Pricing Agreement; Safe Harbour Rules.

Jurisdiction for Corporate Taxation in international operations.

Unit 2: International Tax Conventions and Treaties (9 Hours)

Overview of Model Tax Conventions

OECD model tax convention, UN model tax convention, US Model tax convention.

Tax treaties, Application and Interpretation: Features of tax treaties, Overview of tax information exchange agreements, commentaries and their importance, role of Vienna convention in application and interpretation of tax treaties.

Overview of tax regimes. Overview of tax harmonization.

Unit 3: Tax Management and Planning for Corporates (12 Hours)

Double taxation: concept, capital export neutrality, capital import neutrality, method of avoiding double taxation.

Double Taxation Avoidance Agreement: Meaning, objectives; types of income included under the DTAA (Services originated and provided within India; Salary from India; income from property within India; Capital gains from India; FD and Savings Account in India),

Double taxation relief: Concept, types of relief, Double taxation provisions under the Income tax Act 1961, concept of permanent establishment, taxation of business process outsourcing units in India.

Unit 4: Taxation Aspects for Global Business (12 Hours)

Tax Planning with reference to business restructuring- Amalgamation, Demerger, Slump Sale, Transfer between holding and subsidiary companies. Taxation aspects of managerial decisions for international expansion. Tax avoidance, tax havens, tax management strategies for international companies. Overview of taxation implications for expatriates and repatriated employees. Planning and Restructuring Foreign Operations. Foreign Currency management for global business operations.

Essential/recommended Readings (latest edition of readings to be used)

1, Bittker, B. I., & Lokken, L. (2018). *Fundamentals of international taxation*. Thomson Reuters.

1. Herzfeld, M. (2023). *International Taxation in a Nutshell*. (13th ed.). West Academic.
2. Peroni, R. J., Gustafson, C. H., & Pugh, R. C. (Eds.). (2022-23). *International Income Taxation: Code and Regulations, Selected Sections*. CCH Wolters Kluwer
3. Singhhania, V. K., & Singhania, M. (2019). *Corporate Tax Planning Business Tax Procedures* (23rd ed). Taxmann
4. Ahuja, G. & Gupta R. (2023). *Simplified Approach to Corporate Tax Planning and Management*. (2023). Bharat Law House private limited.

Suggestive Readings (latest editions of readings to be used)

1. Isenbergh, J., and Wells, B. (2019). *International Taxation*. Foundation Press
2. Scholes, M. S., Wolfson, M. A., Erickson, M., Maydew, E., & Shevlin, T. (2014). *Taxes & business strategy*. Upper Saddle River, NJ: Prentice Hall.
3. Singhania, V. K., & Singhania, M. (2015). 2016. *Students' guide to income tax*. Taxmann
4. Ahuja, G. & Gupta, R. (2020). *Direct Tax Laws*. (39th ed). CCH Wolters Kluwer
5. OECD on International Taxation (https://www.oecd.org/g20/topics/international-taxation/)
6. OECD Transfer Pricing Guidelines for Multinational Enterprises and Tax Administrations 2022 (https://www.oecd.org/tax/transfer-pricing/oecd-transfer-pricing-guidelines-for-multinational-enterprises-and-tax-administrations-20769717.htm)
7. IMF on Corporate Taxation in the Global Economy (https://www.imf.org/en/Publications/Policy-Papers/Issues/2019/03/08/Corporate-Taxation-in-the-Global-Economy-46650)

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE - GLOBAL BUSINESS MANAGEMENT (DSE-11)

DSE 11: LEGAL AND FINANCIAL ASPECTS OF INTERNATIONAL TRADE

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Legal and Financial Aspects of International Trade (DSE 11)	4	3	1	0	2nd Year Undergraduate	Legal aspects of Business

Learning Objectives

- This course aims at familiarizing learners with the legal framework of International trade. It covers various aspects such as law on International sale of goods, patent regulations, trademarks, arbitration and conciliation regulations, FEMA and Cyber Laws.

Learning Outcomes

On successful completion of the course the learner will be able to:

- Develop an understanding of various laws impacting the trade at the international level.
- Understand the working of patents and the associated laws.
- Understand the financial aspects of International trade.
- Learn the process of arbitration at the international level and the associated laws

SYLLABUS FOR DSE 11

Unit 1: Laws impacting International Trade (12 Hours)

Uniform Law on International Sale of goods- obligations of the seller – obligations of the buyer, common provisions- rules concerning damages-provisions of passing of risk in international sale contracts. Foreign Trade (Development and Regulations) Act 1992- objectives- Powers of Central Govt. Import/ Export License Application Procedure- Refusal, Suspension of License; Role of DGFT- Exemptions from FTDRAct. Acquisition and transfer of property in and outside India- establishment of branch in India; Enforcement/ penalties under the Act; Cyber Laws- need and significance.

Unit 2: Regulation of International Trade and Patents (12 Hours)

The Patents (Amendment) Act 2005, Patents regulations: Patents- Meaning- varieties- provisions of patent applications procedure- procedures after filling applications – patenting- patents of plant and seeds, Drugs- Life of patents and Rights of patentee. Working of patent- Infringement of patent- surrender and revocation of patent. Provisions related to secrecy direction for patents out of India- Protection for security of India- patent regime under WTO. Trade and merchandise marks regulations: registration- procedure opposing registration- effect of registration- prohibition of registration. Indian Trademarks Act 1999, Foreign Trade Mark- Privileges to nationals and non-

nationals- Licensing of trademark- registered user provisions- violation of trade mark rights- remedies.

Unit 3: Financial Aspects of International Trade (12 Hours)

FEMA Regulations- objectives- Need. Functions of RBI under FEMA, regulations over transactions in foreign exchange and securities – Restriction on capital account and current account transactions- control over realization of Foreign Exchange; Regulations of receipts and payments to resident outside India; Rule of Foreign Exchange possession and retention, realization, repatriation and surrender; provisions regulating export of goods and services- borrowing and lending in Foreign Exchange

Unit 4: International Arbitration (9 Hours)

Arbitration and conciliation regulations- purpose of Arbitration- difficulties in India. Domestic Arbitration- agreement- Tribunal- Arbitral proceedings- Arbitral 83 award- Intervention by Court. Conciliation-enforcement if foreign awards- International Arbitration.

Essential/recommended Readings (latest editions should be referred to)

1. Shaw, M. N. (2017). *International law.* Cambridge university press.
2. Bhala, R. (2019). *International trade law: a comprehensive textbook*. Carolina Academic Press.
3. Subedi, S. P. (2012). *Textbook International Trade and business law.* The People's Public Security Publishing House.

Suggestive Readings (latest editions should be referred to)

1. Verkey, E and Isaac, J.S. *Intellectual Property*. Eastern Book Company
2. Wadhera, B.L. (2016). *Law Relating To Intellectual Property*. Universal Law Publishing
3. Datey, V. S. *Economic laws & practice.* Taxmann Allied Services.
4. Bare Acts: Govt. of India
5. USTR 2021 Trade Policy Agenda and 2020 Annual Report (https://ustr.gov/sites/default/files/files/reports/2021/2021%20Trade%20Agenda/Online%20PDF%202021%20Trade%20Policy%20Agenda%20and%202020%20Annual%20Report.pdf)

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE - GLOBAL BUSINESS MANAGEMENT (DSE-12)

DSE 12: MULTINATIONAL OPERATIONS

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Multinational Operations (DSE 12)	4	3	1	0	2nd Year Undergraduate	None

Learning Objectives

This course provides learners with a solid foundation in international supply chain, logistics, and foreign currency exchange. The first half of the course reviews critical roles that supply chain management, sourcing, logistics, and transportation play in contemporary global business. In the second half, the focus shifts to foreign currency exchange risks and methods for mitigating those risks, both financial and non-financial.

Learning Outcomes

On successful completion of the course the learner will be able to:

1. Develop the fundamentals of international business and management of global operations.
2. Comprehend the importance of global supply chains, sourcing, and operations management in the execution of global businesses.
3. Compare and select between logistics intermediaries available to assist with the movement of goods and services between nations and across borders.
4. Evaluate foreign currency exchange risks in international transactions and identify means to mitigate those risks.

SYLLABUS FOR DSE 12

Unit 1: Introduction to International Operations (12 Hours)

International Business : Concepts and Organisations, International Business Environment, Multinational Enterprise: Evolution and Rise of Multinational Corporation The Process of Overseas Expansion by Multinationals- Exporting, Overseas Production, Licensing, Trade-offs Between Alternative Modes of Overseas Expansion, Strategic Business Alliances, Managing Global Operations: The Global Manager, Risk and Crisis Management, Managing Subsidiaries, Agents and Associates, Multinational Business Strategy- Developing Competitive Strategies for International Competition, Technology collaborations and Transfer.

Unit 2: Global Supply Chain and Sourcing (9 Hours)

Basics of Supply Chain and Operations Management, Examples of Operations and Supply Chains in different industries, Global Operation and Supply Chain strategies: Value Added and Costs, Strategic Fit; Supply Chain Coordination: BullWhip Effect, Vendor Managed Inventory,

Collaborative Planning, Forecasting and Replenishment, Supply Chain Contracting, Global Sourcing : Sourcing Process and Principles, Sourcing Strategies, Supplier Relationship Management.

Unit 3: Global Logistics and Transportation (12 Hours)

Facility Location Planning and Network Design: Global Supply Chain Design, Regional Facility Location, Factor-Ranking Analysis; Generic Transport Network Structures, Economies of Scale in Transportation, Trade-Off-Based Transportation Network Design, Capacity Allocation in a Many-to-Many Network- The Transportation Problem, Decision Model, Finding the First Feasible Model Solution, Optimality Check, Solution Improvement, Distribution Network Design- Types of distribution Network, Transportation Modes.

Unit 4: Forex Markets and Hedging (12 Hours)

Foreign Exchange Market- Organisation, The Spot and Forward Market, Foreign Exchange Risk and Economic Exposure, The Economic Consequences of Exchange Rate Changes, Identifying Economic Exposure, An Operational Measure of Exchange Risk, Alternative Measures and Management of Foreign Exchange Exposure- Translation, Transaction and Operating Exposure, Designing a Hedging Strategy- Forex hedging techniques. non-financial hedging methods such as cash flow netting, as well as financial hedging methods including forwards, swaps, futures, and options.

Essential/recommended Readings (latest editions should be referred to)

1. Shapiro, A. C., & Hanouna, P. (2019). *Multinational financial management*. (11th ed). John Wiley & Sons.
2. Ivanov, D., Tsipoulanidis, A., & Schönberger, J. (2021). *Global supply chain and operations management*. Springer International Publishing.

Suggestive Readings (latest editions should be referred to)

1. Wolfgang, L. (2017). *The global supply chain: How technology and circular thinking transform our future*. Springer
2. Caniato, F., Caridi, M., Crippa, L., & Moretto, A. (2012). *Environmental sustainability in fashion supply chains: An exploratory case based research.* International journal of production economics, 135(2), 659-670.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

POOL OF GENERIC ELECTIVE

The Pool of Generic Electives offered in Semester-IV will also be open for Semester-VI.

Bachelor of Business Administration (Financial Investment Analysis) - BBA (FIA)

SEMESTER-IV

DISCIPLINE SPECIFIC CORE (DSC) COURSES

DSC 10: BASICS OF ECONOMETRICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Basics of Econometrics DSC-10	4	3	1	0	Class XII	Basic knowledge of statistics

Course Objective:

- The primary objective of econometrics is to apply statistical methods to economic data.
- To learn estimation and diagnostic testing of simple, multiple regression models, panel data models, and dummy variable regression with qualitative response regression models.
- Students will learn various econometric techniques such as regression analysis, panel data analysis, and instrumental variable estimation.
- They will also gain basic knowledge in using statistical software packages like Stata, R, or Python to perform econometric analysis.

Learning Outcomes:

After studying this course, the student will be able to:

- Understanding the fundamental concepts of econometrics:
- Understanding the assumptions and limitations of regression analysis:
- Understand basic econometrics and its assumptions and impact of violations of classical assumptions. They should be able to assess the violation of these assumptions and understand the implications for the validity of the results.
- Students should be able to interpret regression results accurately. They should also understand how to assess model fit, using measures like R-squared and adjusted R-squared.
- Understand models using dummy variable and qualitative response regression models.

Unit 1: **(12 hours)**

Introduction to Econometrics and an overview of its applications; Simple Regression with Classical Assumptions; Least Square Estimation and BLUE, Properties of estimators, Multiple Regression Model and Hypothesis Testing Related to Parameters – Simple and Joint. Functional forms of regression models.

Unit 2: **(12 hours)**

Violations of Classical Assumptions: multicollinearity, heteroscedasticity, autocorrelation and model specification errors, their identification, their impact on parameters; tests related to parameters and impact on the reliability and the validity of inferences in case of violations of Assumptions; methods to take care of violations of assumptions.

Unit 3: **(9 hours)**

What is goodness of fit? Test/Statistics used for the goodness of fit. Understanding of R Square, Adjusted R Square, Standard Error of the model, AIC, BIC and SIC. Calculation and comparison of AIC, BIC, SIC. Explain the model selection process.

Unit 4: **(12 hours)**

Dummy variables: Intercept dummy variables, slope dummy variables, Interactive dummy variables, Use of Dummy Variables to model qualitative/Binary/Structural changes, Other Functional Forms, Qualitative Response Regression Models

Recommended Computer Package to be Used: Use of software like E Views, R and STATA solving real life problems and checking assumptions and taking care of assumptions violations and testing goodness of fit.

Essential Readings:

1. Dougherty, C. (n.d.). Introduction to Econometrics. Oxford University Press.
2. Gujarati, N. D. (n.d.). Basic Econometrics. New Delhi: McGraw Hill.
3. Gujarati, N. D. (n.d.). Econometrics by Examples. New Delhi: McGraw Hill.

Additional Readings:

1. Pindyck, R. S., & Rubinfeld, D. L. (n.d.). Econometric Models and Economic Forecasts. Singapore: McGraw Hill.
2. Ramanathan, R. (2002). Introductory Econometrics with Applications. Thomson South Western.

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

DSC 11: INVESTMENT ANALYSIS & PORTFOLIO MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Investment Analysis and Portfolio Management DSC-11	4	3	1	0	Class XII	Financial Management and Statistics

Course Objectives

- To provide a conceptual framework for analysis from an investor's perspective of maximizing return on investment
- To provide a sound theoretical base with examples and references related to the Indian financial system.
- To emphasize on understanding of the forces that influence the risk and return of financial assets and related models and theories.

Learning Outcomes

Upon completion of the course a learner shall be competent to:

- Understand the concepts of risk and return, bonds and their valuation, technical and fundamental analysis, asset pricing and risk return of portfolio.
- Understand the process of calculating risk and return, pricing of bonds along with duration, valuation of shares along with trading strategies and portfolio risk and return, pricing research reports and advice of financial firms and brokers.
- Evaluate the best measures of risk and return, bond prices and sensitivity based on other variables, share valuation models and techniques of arriving at portfolio risk and return.
- Analyse the outcomes of evaluation to choose the best return risk asset, change in bond price based on changes in interest rate etc., execute buy and sell transactions based on fundamentals and trends in the respective asset and compare the risk return ratios of various assets and portfolios so as to choose the optimal portfolio.
- Create trading and investment strategies for maximising returns in the financial markets and also create a portfolio of investments to achieve the best risk return trade-off.

Course Contents:

Unit 1: Risk–Return Analysis, Bond Valuation & Fundamental Analysis (12 hours)

Basics of risk and return: concept of returns, application of standard deviation, coefficient of variation, beta, alpha. Bonds: present value of a bond, yield to maturity, yield to call, yield to put, systematic risk, price risk, interest rate risk, default risk. Fundamental analysis: EIC framework; Economic analysis: Leading lagging & coincident macro-economic indicators,

Expected direction of movement of stock prices with macroeconomic variables in the Indian context; Industry analysis: stages of life cycle, SWOT analysis, Company analysis.

Unit 2: Share Valuation & Technical Analysis (12 hours)

Share valuation: Dividend discount models – no growth, constant growth, and two stage growth model. Relative valuation models using P/E ratio, other ratios. Technical analysis: meaning, assumptions, difference between technical and fundamental analysis; Price indicators – Dow theory, advances and declines, new highs and lows, circuit filters. Volume indicators – Dow Theory, small investor volumes. Other indicators – institutional activity, Trends: resistance, support. Technical charts & patterns. Indicators: moving averages.

Unit 3: Portfolio Analysis and Management (12 hours)

Portfolio analysis: portfolio risk and return, Markowitz portfolio model: risk and return for 2 and 3 asset portfolios, concept of efficient frontier & optimum portfolio. Market Model: concept of beta, systematic and unsystematic risk. Investor risk and return preferences: Indifference curves and the efficient frontier, Traditional portfolio management for individuals: Objectives, constraints, time horizon, current wealth, tax considerations, liquidity requirements, and anticipated inflation. Asset allocation: Asset allocation pyramid, investor life cycle approach. Portfolio management services: Passive – Index funds, systematic investment plans. Active – market timing, style investing.

Unit 4: Asset Pricing Models and Mutual Funds (9 hours)

Capital asset pricing model (CAPM): Efficient frontier with a combination of risky and risk-free assets. Assumptions of single period classical CAPM model. Expected return, required return, overvalued and undervalued assets as per CAPM. Multiple factor models: Arbitrage Pricing Theory (APT), APT vs CAPM. Mutual Funds: Introduction, classification of mutual fund schemes by structure and objective, advantages and disadvantages of investing through mutual funds. Performance Evaluation of Managed Funds using Sharpe's, Treynor's and Jensen's measures.

Essential/recommended Readings

1. Reilly, F. K. & Brown, K.C. (2012) *Analysis of Investments and Management of Portfolios,* (12th edition), Cengage India Pvt. Ltd.
2. Singh, R (2017): *Security Analysis and Portfolio Management,* (2nd Edition). Excel Books.
3. Kane, A., Marcus, A., & Bodie, Z. (2014). *Investments Global Edition*. Pearson.

Suggestive Readings

1. Fischer, D.E. & Jordan, R.J. (2006) *Security Analysis & Portfolio Management,* (6th edition), Pearson Education.
2. Ranganathan, M., & Madhumathi, R. (2006). *Investment Analysis and Portfolio Management*. Pearson Education.

Note: Latest edition of the readings may be used.

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

DSC 12: INCOME TAX LAW & PRACTICE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Income Tax Law & Practice DSC-12	4	3	0	1	Class XII	NA

Course Contents:

Unit 1: Basic Concepts (12 hours)

Origin of Tax System in India; Taxation – Voluntary practice to involuntary system, Kautilya's philosophy of Taxation;

Income, person, assessee, assessment year, previous year, gross total income, total income. Residential status of individual person and its effect on tax incidence.

Unit 2: Computation of Income (21 hours)

Salaries, Income from house property, Profits and gains of business or profession (Only theory), Capital gain, Income from other sources.

Unit 3: Clubbing, Setoff and Deductions (6 hours)

Clubbing of income (Only theory), set-off and carry forward of losses (Only theory), Deductions under Chapter VI-A, rebates and reliefs,

Unit 4: Total Income & Tax Liability (6 hours)

Computation of total income and tax liability of individuals. E filing of income tax by individuals (Practical).

Essential Readings:

- Singhania V. and Singhania, M., *Students Guide to Income Tax*, Taxman Publications.
- Ahuja, G. and Gupta, R., *Systematic Approach to Income Tax*: Bharat Law House.
- Chandra, M. and Shukla, D.C., *Income Tax Law and Practice*: Pragati Publications.

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

DISCIPLINE SPECIFIC ELECTIVE (DSE) COURSES

DSE 1: STRATEGIC CORPORATE FINANCE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Strategic Corporate Finance DSE-1	4	3	1	0	Class XII	Basic of Finance

Course Objectives:

- To know the details of corporate finance and the strategies involved in the corporate decisions.
- To enable the students to steer the corporate strategies issues and challenges in better manner.
- To provide the key concepts and ideas of decision tree analysis and the Black-Scholes model in the valuation of real options.
- To assess the considerations and strategies involved in company disposals, including non-core subsidiary sales, valuation, timing, and tax planning.

Learning Outcomes:

After studying this course the learners will be able to:

- Understand the role of strategy and planning in financial decisions
- Understand the importance and components of a Value Added Statement.
- Identify different types of strategic costing and their relevance.
- Discuss strategic cost reduction techniques.
- Determine the feasibility of a management buy-out.
- Develop a business plan and financial forecasts for submission to potential funders.
- Define bankruptcy and Identify factors leading to bankruptcy.
- Understand the process of reorganizing distressed firms and liquidation process of firms
- Gain an overview of company valuation.
- Analyze the substitutability of capital structure.

Course Contents:

Unit 1 **(12 hours)**

Introduction to strategic corporate finance: Strategy Vs Planning, significance of strategy in financial decisions, Different types of financial strategy for Shareholders Wealth Maximization, Economic Value Addition, Value added statement. Strategic Cost Management:

Traditional costing Vs Strategic Costing, Relevant costs Vs Irrelevant costs, Different types of strategic costing and their relevance- Target Costing, Activity based Costing, Life Cycle Costing, Quality Costing, Zero Based Budgeting, Strategic cost reduction techniques and value chain analysis.

Unit 2 **(12 hours)**

Management Buy-outs: Establishing feasibility of the buy-out, Negotiating the main terms of the transaction with the vendor including price and structure, Developing the business plan and financial forecasts in conjunction with the buy-out team for submission to potential funders.
Management Buy-ins: Management Buy-in/Buy-outs ("BIMBOs"), Vendor-initiated buyouts/buy-ins.
Real options: Financial and real options compared, various types of real options, the Black Scholes model, Decision tree analysis, application of Real options, Drawbacks of Real options.

Unit 3 **(12 hours)**

Financial Distress and restructuring: Meaning of Bankruptcy, Factors leading to bankruptcy, symptoms and predictions of bankruptcy, reorganization of distressed firms, liquidation of firms.
Company disposals: sale of a non-core subsidiary, Exit strategy, valuation, timing of sale and tax planning opportunities and calculation of the various tax implications.
Fundraising: identification of different sources of development capital, determination of capital structure and factors affecting the capital structure, cost of capital and cost saving strategy.

Unit 4 **(9 hours)**

Company Valuation: an overview of valuation, valuation principles and practices, the impact of "what if" scenarios. Other strategic issues: managing credit ratings, dividend and share repurchase policy. Strategic risk management, substitutability of capital structure, risk management choices, financial, physical and operational hedging.

Essential Readings:

1. Pettit, J., *Strategic Corporate Finance Applications in Valuation and Capital Structure,* John willey & sons, Inc.
2. Damodaran, A, *Corporate finance theory and practice*, John willey & sons.

Additional Readings:

1. Jakhotia, *Strategic Financial Management*, Vikas Publication.
2. Damodaran, A., *Applied Corporate Finance*, John willey & sons.

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

DSE 2: CORPORATE ANALYSIS & VALUATION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Corporate Analysis & Valuation DSE-2	4	3	1	0	Class XII	Basic of accounting

Objective:

- To enable the learners to analyse the health of a company through their annual reports and will equip them to understand how to determines its value.

Learning Outcomes:

After studying this course the learner will be able to understand:

- The financial health of a company through qualitative and quantitative analysis.
- The basic of valuation and Cash Flows Forecasting.
- The various valuation techniques for company's valuation and their application.

Course Contents

Unit 1: Analysis of Corporate Financial Statements (12 hours)

Analysis of Corporate Financial Statements: Income statements and Balance sheets through ratio analysis and analysing the Chairman's statement, Directors' report, management discussion & analysis, report on corporate governance, auditor's report to evaluate the financial soundness of the company. Understanding financial statements of manufacturing and service organisations. Common size analysis and relevant ratios (Study from the Annual Reports of the companies).

Unit 2: Introduction to Valuation Techniques & Cash Flows Forecasting (12 hours)

Introduction to Valuation: Value and price, Balance sheet-based methods, Income statement-based methods. Cash flow discounting-based methods. Deciding the appropriate cash flow for discounting, The free cash flow to the firm, free cash flow to equity. Forecasting Cash flows: simple model for forecasting income and cashflows. Earnings, Tax effect, Reinvestment needs, dividend.

Unit 3. DCF Valuation, Discount Rates & Beta (12 hours)

Discounted Cash flow Valuation: Valuation of a company with no growth, constant growth, variable growth and infinite life. Estimating Discount Rates – cost of equity, cost of debt, tax shield, weighted average cost of capital. Calculation of beta, instability of beta, adjusted beta, levered and unlevered beta.

Unit 4: Relative Valuation & Other Applications (9 hours)

Relative Valuation: standard multiples, comparable companies, potential pitfalls; estimating multiples using regression. Valuation of brands and intellectual capital. Interest rates and company valuation. Impact of inflation on valuation. Reconciling relative and discounted cash flow valuation. Case studies in valuation.

Essential Readings:

1. Damodaran, A. (2016). Damodaran on Valuation: Security Analysis for Investment and Corporate Finance. John Wiley & Sons.

2. Chandra, P. (2019). Corporate Valuation and Value Creation. Tata McGraw-Hill. Education.

Additional Readings:

1. Foster, G. (1986). Financial Statement Analysis. Prentice Hall.

Latest Editions of the Readings may be used.

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

DSE 10: ENTREPRENEURIAL FINANCE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Entrepreneurial Finance DSE-10	**4**	**3**	**1**	**0**	**Class XII**	**Basic understanding of concepts related Entrepreneurship**

Course Objectives:

The Learning Objectives of this course are as follows:

- To develop an understanding of the principles of entrepreneurial finance and the role of finance in the successful venture life cycle.
- To identify and analyze the key elements of a business plan and choose an appropriate form of business organization for the venture.
- To apply short-term and long-term financial planning techniques to forecast sales, estimate sustainable growth rates, and determine additional financing needs to support growth.
- To analyze different valuation methods, including discounted cash flow and venture capital valuation, and apply them to value early-stage ventures and venture capital investments.
- To evaluate different financing alternatives, including professional venture capital, business incubators, seed accelerators, and foreign investor funding sources, and design appropriate security structures for growing ventures, such as common stock, preferred stock, convertible debt, and warrants/options.

Learning Outcomes:

Upon completion of the course the learner will be competent to:

- Apply the principles of entrepreneurial finance and understand the role it plays in the successful venture life cycle, including the key elements of a business plan and forms of business organizations.
- Develop short-term and long-term financial plans using systematic forecasting techniques and estimate sustainable sales growth rates and additional financing needed to support growth.
- Evaluate early-stage ventures using different valuation methods, including present value, discounted cash flow, and venture capital valuation techniques.
- Compare and analyze different financing alternatives, including professional venture capital, business incubators, seed accelerators, and foreign investor funding sources, and design appropriate security structures for growing ventures.

Adopt a life cycle approach for entrepreneurial finance and understand financial bootstrapping and business angel funding as alternative financing options for the different stages of the venture life cycle.

Course Contents

Unit I: Introduction to Finance for Entrepreneurs (9 hours)
Principles of Entrepreneurial Finance, Role of Entrepreneurial Finance. The Successful Venture Life Cycle. Key Elements of a Business Plan. Forms of Business Organisations and Choosing the Appropriated Organization. Financing through the Venture Life Cycle, Financial Bootstrapping and Business Angel Funding. Life Cycle Approach for Entrepreneurial Finance.

Unit 2: Financial Planning for Enterprises (12 hours)
Short Term Financial Planning: Short Term Cash Planning Tools, Cash Planning from a Projected Monthly Balance Sheet. Long Term Financial Planning: Systematic Forecasting – Forecasting Sales for Seasoned Firms, Forecasting Sales for Early-Stage Ventures. Estimating Sustainable Sales Growth Rates. Estimating Additional Financing needed to support Growth.

Unit 3: Valuing Ventures (12 hours)
Valuing Early-Stage Ventures: Concept, Basic Mechanics of Valuation – Present Value Concept, Estimates and Discounted Cash Flow. Just in Time Equity Valuation. Venture Capital Valuation Methods: Review of Basic Cash Flow Based Equity Valuations, Basic Venture Capital Valuation – Using Present Values and Future Values. Earning Multipliers and Discounted Dividends.

Unit 4: Structuring Financing for Growing Venture (12 hours)
Professional Venture Capital – History and Overview, Professional Venture Investing Cycle. Other Financing Alternatives – Business Incubators and Seed Accelerators; Intermediaries, Facilitators and Consultants; Business Crowdsourcing and Crowdfunding; Commercial and Venture Bank Lending, Foreign Investor Funding Sources. Designing Security Structures – Common Stock, Preferred Stock, Convertible Debt, Warrants and Options, Other Concerns.

Essential Readings

1. Leach, C. J., Melicher, R. W. (2017). Entrepreneurial finance. Cengage Learning.
2. Stancill, J. M. (2016). Entrepreneurial finance: A casebook. Thomson.
3. Shepherd, D. A., & Zacharakis, A. (2014). Entrepreneurial finance: Strategy, valuation, and deal structure. Academic Press.

Additional Readings:

1. Hornsby, J. S., Kuratko, D. F., & Zahra, S. A. (2002). Middle managers' perception of the internal environment for corporate entrepreneurship: assessing a measurement scale. Journal of business venturing, 17(3), 253-273.
2. Sahlman, W. A. (1990). The structure and governance of venture-capital organizations. Journal of financial economics, 27(2), 473-521.

3. Hsu, D. H. (2004). What do entrepreneurs pay for venture capital affiliation? Journal of finance, 59(4), 1805-1844.

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

DSE 12: WEALTH MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Wealth Management DSE-12	4	3	1	0	Class XII	NA

Course Objectives:

- To equip students with the knowledge and practical understanding of important dimensions of wealth management.
- To understand and do planning for their tax liabilities, investments, insurance coverage, retirement and estate needs.

Learning Outcomes:

After the completion of this course the student will be able:

- To provide an overview of various aspects related to wealth management.
- To acquaint the learners with issues related to taxation in wealth management.
- To study the relevance and importance of insurance in wealth management.
- To understand the importance and process of choosing right investments.
- To understand various components of retirement and estate planning.

Course Contents

Unit I: Basics of Wealth Management and Tax Planning (12 hours)

Introduction to Wealth Management, Need for Wealth Management, Components of Wealth Management, Process of Wealth Management, Code of Ethics for Wealth Managers, Wealth Management in India. Tax Planning – Tax Avoidance versus Tax Evasion, Fundamental Objectives of Tax Planning, Tax Structure in India for Individuals, Common Tax Planning Strategies – Maximizing Deductions, Income Shifting, Tax-Free and Tax-Deferred Income.

Unit 2: Managing Insurance Needs (12 hours)

Basics Concepts – Risks, Risk Management and Underwriting. Insuring Life – Benefits of Life Insurance, evaluating need for Life Insurance, Determining the Right Amount of Life Insurance. Choosing the Right Life Insurance Policy – Term Life Insurance, Whole Life Insurance, Universal Life Insurance, Variable Life Insurance, Group Life Insurance, Other Special Purpose Life Policies. Buying Life Insurance – Compare Costs and Features, Select an Insurance Company, and Choose an Agent. Life Insurance Contract Features. Insuring Health – Importance of Health Insurance Coverage. Making Health Insurance Decision – Evaluate Your Health Care Cost Risk, Determine Available Coverage and Resources, Choose a Health Insurance Plan. Types of Medical Expense Coverage. Policy Provisions of Medical Expense

Plans. Property Insurance – Basic Principles, Types of Exposure, Principle of Indemnity, and Coinsurance.

Unit 3: Managing Investments (12 hours)

Role of Investing in Personal Financial Planning, Identifying the Investment Objectives, Different Investment Choices. The Risks of Investing, The Returns from Investing, The Risk-Return Trade-off. Managing Your Investment Holdings – Building a Portfolio of Securities, Asset Allocation and Portfolio Management, Keeping Track of Investments. Investing in Equity – Common Considerations, Key Measures of Performance, Types of Equity Stocks, Market Globalization and Foreign Stock, Making the Investment Decision. Investing in Bonds – Benefits of Investing in Bonds, Bonds Versus Stocks, Basic Issue Characteristics, The Bond Market, Bond Ratings. Investing in Mutual Funds and Exchange Traded Funds (ETFs) – Concept of Mutual Funds and ETFs, Benefits of Investing in Mutual Funds or ETFs, Some Important Cost Considerations, Services Offered by Mutual Funds, Selecting appropriate Mutual Fund and ETF investments, Evaluating the performance of Mutual Funds and ETF.

Unit 4: Retirement Planning and Estate Planning (9 hours)

Retirement Planning – Role of Retirement Planning in Personal Financial Planning, Pitfalls to Sound Retirement Planning, Estimating Income Needs, Sources of Retirement Income. Estate Planning – Fundamentals of Estate Planning, Impact of Property Ownership and Beneficiary Designations, Estate Planning Documents, and Executing Basic Estate Planning.

Essential Readings:

1. Randall S. Billingsley, Lawrence J. Gitman, and Michael D. Joehnk (2017): *Personal Financial Planning*. Cengage Learning.
2. Susan M. Tillery, and Thomas N. Tillery: *Essentials of Personal Financial Planning*. Association of International Certified Professional Accountants.

Additional Readings:

1. Indian Institute of Banking & Finance. (2017). Introduction to Financial Planning (4th Edition).
2. Sinha, M. *Financial Planning: A Ready Reckoner*. July 2017. Mc Graw Hill.

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

GENERIC ELECTIVE (GE) COURSES

GE 2: FINANCIAL MANAGEMENT OF FAMILY BUSINESS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Financial Management of Family Business GE-2	4	3	1	0	Class XII	NA

Course Objectives:

- To familiarize students with various financial and quantitative techniques of analysis required at different stages for management of family business.
- To acquaint the students with qualitative aspects related to starting a new venture and various options for financing.

Learning Outcomes:

On successful completion of his course, the learner will be able to:

- Understand the process of screening of ideas and carrying out appraisal of new venture
- Learn various quantitative methods for demand forecasting and financial projections
- Evaluate projects using capital budgeting techniques
- Evaluate risk for business projects and identify alternative sources of financing

Course Contents

Unit 1: Capital Investments & Starting a Venture (9 hours)

Capital investments importance and difficulties, types of capital investments, phases of capital budgeting, levels of decision making, facets of project analysis, key issues in major investment decisions. Generation of ideas, monitoring the environment, corporate appraisal, tools for identifying investment opportunities, scouting for project ideas, preliminary screening, project rating index, sources of positive net present value.

Unit 2: Demand Forecasting & Financial Projections (12 hours)

Methods of demand forecasting: qualitative methods – jury of executive and Delphi method. Time series projection methods: trend projection, exponential smoothing and moving average method. Causal methods: chain ratio, consumption level, end use, bass diffusion, leading indicator and econometric method. Uncertainties in demand forecasting, improving forecasts, coping with uncertainties.

Financial estimates and projections: cost of project, estimates of sales and production, cost of production, working capital requirement and its financing, profitability projections, projected cash flow statement, projected balance sheet and multi-year projections.

Unit 3: Capital Budgeting & Project Selection (12 hours)

Project appraisal: market appraisal, technical appraisal, financial appraisal, economic appraisal, and managerial appraisal. Project cash flows: components of cash flow, basic principles of cash flow estimation, cash flows for a replacement project. Biases in cash flow estimation: overestimation and underestimation of profitability. Time value of money: concept, present and future value of a single amount, present and future value of an annuity. Investment evaluation criteria: payback period, accounting rate of return, net present value, profitability index, internal rate of return (IRR), modified internal rate of return (MIRR). Assessment of various methods, investment evaluation in practice.

Unit 4: Risk Analysis and Financing (12 hours)

Risk Analysis: sources and measures of risk. methods of assessing risk: sensitivity analysis, scenario analysis, break-even analysis, simulation analysis, decision tree analysis. Managing risk. Project selection under risk – judgmental evaluation, payback period requirement, risk adjusted discount rate method, certainty equivalent method. Risk analysis in practice.

Financing: capital structure, choices of financing, internal accruals, equity capital, preference capital, debentures (or bonds), term loans, raising capital in international markets, venture capital, private equity, venture capital vs private equity. Credit rating and appraisal by financial institutions – what information they want and how they appraise.

Essential Readings:

1. Chandra, P, *Projects – Planning, Analysis, Selection, Financing, Implementation, and Review*. 2019 Edition. McGraw Hill Education.
2. Agrawal, R., & Mehra, Y. S. (2017). *Project Appraisal and Management*. Taxmann Publications.

Essential Readings:

1. Chandra, P. (2019). *Projects: planning, analysis, selection, financing, implementation, and review.* Mcgraw Hill Education (India) Private Limited.
2. Agarwal, R, & Mehra, Y. (2021). *Project Appraisal and Management*. Taxmann Publications.

Additional Readings:

1. Goodpasture, C. J (2004): *Quantitative Methods in Project Management*. J. Ross Publishing.
2. Chandra, P. (2019). *Financial management : theory and practice.* Tata Mcgraw-Hill Pub.

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

GE4: FUNDAMENTALS OF ECONOMETRICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Fundamentals of Econometrics GE-4	4	3	1	0	Class XII	Basics of statistics

Course Objectives:

- Understanding the role of econometrics: Students should grasp the link between economic theory, data, and econometric methods.
- Understanding and addressing regression assumptions.
- Introduction to econometric modelling.
- Students would be introduced to use of statistical software packages like Stata, R, or Python to perform econometric analysis.

Learning Outcomes:

The course will help the student to**:**

- Students should be able to demonstrate a clear understanding of key concepts in econometrics, such as causality, heteroscedasticity, autocorrelation, and multicollinearity.
- Students should be able to assess the violation of these assumptions and understand the implications for the validity of the results.
- Students should be able to interpret regression results accurately. They should also understand how to assess model fit, using measures like R-squared and adjusted R-squared.
- Analysing and interpreting dummy variables and interaction terms: Students should be able to incorporate categorical variables, including binary variables (dummy variables) and interaction terms, into regression models.

Unit 1 **(9 Hours)**

Introduction to Econometrics and an overview of its applications; Simple Regression with Classical Assumptions; Least Square Estimation and BLUE, Properties of estimators, Multiple Regression Model and Hypothesis Testing Related to Parameters – Simple and Joint. Functional forms of regression models.

Unit 2 **(12 Hours)**

Violations of Classical Assumptions: multicollinearity, heteroscedasticity, autocorrelation, and model specification errors, their identification, their impact on parameters; tests related to parameters and impact on the reliability and the validity of inferences in case of violations of Assumptions; methods to take care of violations of assumptions.

Unit 3 **(12 Hours)**

Understanding the impact of change in scale of variables on output. Understanding and calculation of information criteria for model selection: AIC, BIC, and HQC. Understanding and calculation of R Square and adjusted R Square. Understanding of outliers and their impact on the model's output.

Unit 4 **(12 Hours)**

Dummy variables: Intercept dummy variables, slope dummy variables, Interactive dummy variables, Use of Dummy Variables to model qualitative/Binary/Structural changes, Other Functional Forms, Qualitative Response Regression Models.

Recommendation Computer Package to be Used: Use of softwares like E-Views, R, and STATA to solve real-life problems and check assumptions, taking care of assumption violations, and test goodness of fit.

Essential Readings:

1. Dougherty, C. (n.d.). *Introduction to Econometrics*. Oxford University Press.
2. Gujarati, N. D. (n.d.). *Basic Econometrics*. New Delhi: McGraw Hill.
3. Gujarati, N. D. (n.d.). *Econometrics by Examples*. New Delhi: McGraw Hill.

Additional Reading

1. Pindyck, R. S., & Rubinfeld, D. L. (n.d.). *Econometric Models and Economic Forecasts*. Singapore: McGraw Hill.
2. Ramanathan, R. (2002). *Introductory Econometrics with Applications*. Thomson South Western.

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

GE 6: PERSONAL FINANCE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Personal Finance GE-6	4	3	1	0	Class XII	NA

Course Objectives:

- To equip students with the knowledge and practical understanding of important dimensions of managing one's personal finance.
- To understand and plan for their tax liabilities, investments, insurance coverage, and retirement.

Learning Outcomes:

On successful completion of his course, the students will be able to:

- Understand the fundamentals of Personal Financial Planning
- Learn the basics of managing personal tax liabilities
- Learn the basic concepts and underlying principles for Retirement Planning.
- Ascertain and choose appropriate insurance policies for managing personal risks.
- Evaluate various asset classes on the basis of risk-return and personal investment goals
- Create, maintain and grow personal investment portfolio

Course Contents

Unit 1: Basics of Personal Finance and Tax Planning (12 Hours)

Understanding Personal Finance. Rewards of Sound Financial Planning. Personal Financial Planning Process. Personal Financial Planning Life Cycle. Making Plans to Achieve Your Financial Goals. Common Misconceptions about Financial Planning. Financial Planning as a career choice. The Financial Planning Environment. Personal Tax Planning – Tax Avoidance versus Tax Evasion, Fundamental Objectives of Tax Planning, Tax Structure in India for Individuals, Common Tax Planning Strategies – Maximizing Deductions, Income Shifting, Tax-Free and Tax-Deferred Income.

Unit 2: Managing Insurance Needs **(12 Hours)**

Basics Concepts – Risks, Risk Management and Underwriting. Insuring Life – Benefits of Life Insurance, evaluating need for Life Insurance, Determining the Right Amount of Life Insurance. Choosing the Right Life Insurance Policy – Term Life Insurance, Whole Life Insurance, Universal Life Insurance, Variable Life Insurance, Group Life Insurance, Other Special Purpose Life Policies. Buying Life Insurance – Compare Costs and Features, Select an Insurance Company, and Choose an Agent. Life Insurance Contract Features. Insuring Health – Importance of Health Insurance Coverage. Making Health Insurance Decision – Evaluate Your Health Care Cost Risk, Determine Available Coverage and Resources, Choose a Health Insurance Plan. Types of Medical Expense Coverage. Policy Provisions of Medical Expense Plans. Property Insurance – Basic Principles, Types of Exposure, Principle of Indemnity, and Coinsurance.

Unit 3: Managing Investments **(12 Hours)**

Role of Investing in Personal Financial Planning, Identifying the Investment Objectives, Different Investment Choices. The Risks of Investing, The Returns from Investing, The Risk-Return Trade-off. Managing Your Investment Holdings – Building a Portfolio of Securities, Asset Allocation and Portfolio Management, Keeping Track of Investments. Investing in Equity – Common Considerations, Key Measures of Performance, Types of Equity Stocks, Market Globalization and Foreign Stock, Making the Investment Decision. Investing in Bonds – Benefits of Investing in Bonds, Bonds Versus Stocks, Basic Issue Characteristics, The Bond Market, Bond Ratings. Investing in Mutual Funds and Exchange Traded Funds (ETFs) – Concept of Mutual Funds and ETFs, Benefits of Investing in Mutual Funds or ETFs, Some Important Cost Considerations, Services Offered by Mutual Funds, Selecting appropriate Mutual Fund and ETF investments, Evaluating the performance of Mutual Funds and ETF.

Unit 4: Investing in Real Estate and Retirement Planning **(9 Hours)**

Investing in Real Estate – Some Basic Considerations. Modes of Real Estate Investment – Raw Land, Commercial Properties, Residential Properties, Real Estate Investment Trusts (REITs). Planning for Retirement – Role of Retirement Planning in Personal Financial Planning, Pitfalls to Sound Retirement Planning, Estimating Income Needs, Sources of Retirement Income.

Essential Readings:

1. Billingsley R., Gitman L., & Joehnk M. (2017). *Personal Financial Planning*. Cengage Learning.

2. Tillery S., & Thomas N. Tillery. (2017). *Essentials of Personal Financial Planning*. Association of International Certified Professional Accountants.

Additional Readings:

1. Indian Institute of Banking & Finance. (2017). *Introduction to Financial Planning* (4th ed.).

2. Sinha, M. (2017). *Financial Planning: A Ready Reckoner*. Mc Graw Hill.

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

GE 8: WORKING CAPITAL MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Working Capital Management GE-8	4	3	1	0	Class XII	NA

Course Objective(s):

- To provide understanding of the concept and importance of sound working capital strategies of a firm.
- To have an understanding of the impact of working capital policies relating to Cash management, inventory and receivables management on firm's profitability.

Learning Outcomes:

On successful completion of his course, the students will be able to:

- understand the concept and scope of working capital, assess and compute the working capital requirement, and evaluate the techniques for effective management of working capital.
- analyze the importance of cash management, evaluate the motives for holding cash and marketable securities, and apply the strategies and techniques of cash management.
- develop and apply effective receivables management policies to optimize credit policy, analyze creditworthiness, and minimize costs associated with managing accounts receivable.
- analyze and apply different techniques of inventory management, including EOQ, minimum order quantity, ABC analysis, and JIT, to minimize inventory costs while ensuring adequate stock levels.

Course Contents:

Unit 1: Working Capital Management – Introduction (15 Hours)

Concept and Scope of Working Capital, Types of working Capital, Determinants of working capital, Working Capital Cycle, Assessment and Computation of Working Capital Requirement, Profitability–Liquidity trade-off, Working Capital Policies. Brief about working capital financing.

Unit 2: Management of Cash & Marketable Securities (12 Hours)

Meaning of Cash, Motives for holding cash, objectives of cash management, factors determining cash needs, Cash Management: basic strategies, techniques, Lock Box system and

concentration banking. Marketable Securities: Concept, types, reasons for holding marketable securities.

Unit 3: Management of Receivables (9 Hours)

Concept & cost of maintaining receivables, objectives of receivables management, factors affecting size of receivables, policies for managing accounts receivables, analysis for optimum credit policy including credit analysis, credit standards, credit period, credit terms, etc.

Unit 4: Inventory Management (9 Hours)

Inventory: Need for monitoring & control of inventories, objectives of inventory management, Benefits of holding inventory, risks and costs associated with inventories, Techniques of Inventory Management – EOQ, Minimum order quantity, ABC Analysis, JIT etc.

Essential Readings:

1. Bhattacharya, H. (2016). *Working Capital Management: Strategies and Techniques* (4th ed.). PHI.
2. Rustagi, R.P. (2021). *Working Capital Management* (Reprint ed.). Taxmann..
3. Bhalla, V.K. (2011). *Working Capital Management: Text And Cases.* (13th ed.). Anmol Publishing.
4. Periasamy, P. (2012). *Working Capital Management: Theory & Practice*. 2nd Edition. Himalaya Publishing House.

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

SEMESTER-V

BBA (FIA)

DISCIPLINE SPECIFIC CORE (DSC) COURSES

DSC 13: FINANCIAL DERIVATIVES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Financial Derivatives DSC-13	**4**	**3**	**1**	**0**	**Class XII**	**Basic understanding of financial market**

Course Objectives:

The course will help the learner to:

- Understand the basics of spot, forwards, and futures markets, including their history and participants, and learn about the different types of margins and valuation methods.
- Gain knowledge of currency markets and learn how to calculate bid and ask in cross-currency pairs, and how to hedge with futures and forwards.
- Develop an understanding of options trading strategies, including spreads and combinations, and learn how to calculate P/L in option trades.
- Learn about the factors that affect option prices and how to calculate upper and lower bounds of call and put options with and without dividends, as well as the put-call parity theorem.
- Study option valuation models such as the Binomial and Black-Scholes models for stocks and currencies with and without dividends.

Learning Outcomes:

The course will help the learner to:

- Analyze the different types of derivatives and their features, including margins, valuations, and convergence of spot and futures.

- Evaluate the currency market and the strategies involved in hedging using futures and forwards.
- Synthesize the knowledge of options and their trading strategies, including spreads and combinations.
- Apply the binomial and Black-Scholes models to value options with and without dividends.
- Understand the factors affecting option prices and the put-call parity theorem.

Unit 1: Spot, Forwards and Futures **(12 hours)**

Introduction of Spot Market. History of derivatives and origin of derivatives in India. Margins: VaR Margin, ELM, Maintenance margin, Delivery Margin, SPAN Margin. Convergence of Spot and Futures. Participants of Derivatives Markets. Valuation of Forwards and Futures. Contango and Backwardation. Hedging: Long security-sell futures, Speculation: With and Without derivative market, Arbitrage: Buy spot-sell futures & Sell Spot-Buy futures.

Unit 2: Currency Market **(12 hours)**

Currency futures: understand and valuation, Quotations- direct, indirect. Calculation of Bid & Ask in cross currency Pair. Hedging with futures: Concept of Basis & impact of change in basis on Payment/receivables. Hedging with Forwards: Early Delivery, Early Cancelation, Early Extension, Maturity Cancelation and Maturity Extension.
https://www.bseindia.com/downloads/Training/file/NISM-Series-I%20Currency%20Derivatives%20(new%20workbook%20effective%2021-Feb-2012).pdf

Unit 3: Options and Trading Strategies **(9 hours)**

Options: Type – Call and Put &American and European, Payoffs. Calculation of P/L in Option Trade. Factors affecting option Prices. Upper Bound and Lower Bound of Call and Put option with and without dividend. Put - call parity theorem. Spreads (Bull, Bear, Box, Butterfly and Calendar Spread), combinations (Straddle, Strangle, Strip, Straps).

Unit 4: Option Valuation **(12 hours)**

Binomial model: One Period, Two Period and multiple Period. Black-Scholes option model (For stock and currency both) with and without dividend.

Essential Readings:

- NISM. (2012). Currency Derivatives (New Workbook Effective 21-Feb-2012). BSE Institute Limited. https://www.bseindia.com/downloads/Training/file/NISM-Series-I%20Currency%20Derivatives%20(new%20workbook%20effective%2021-Feb-2012).pdf
- Hull, J. C. (2018). *Options, Futures, and Other Derivatives* (10th ed.). Pearson.
- Tuckman, B., & Serrat, A. (2011). *Fixed Income Securities: Tools for Today's Markets* (3rd ed.). John Wiley & Sons.

- McDonald, R. L. (2014). *Derivatives Markets* (3rd ed.). Pearson.

Additional Readings:

- Bhalla, V. K., & Singh, N. (2015). Currency derivatives: A beginner's module. National Stock Exchange of India Limited. https://www.nseindia.com/content/ncfm/ncfm_modules.htm
- Lipton, A. (2015). Mathematical methods for foreign exchange: A financial engineer's approach. World Scientific Publishing Co. Pte. Ltd

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

DSC 14: CORPORATE RESTRUCTURING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Corporate Restructuring DSC-14	4	3	1	0	Class XII	NA

Course Objective(s):

To provide an understanding of the corporate restructuring, mergers and acquisitions with the basic methods of valuation in methods of payment and financing options at global level.

Learning Outcomes:

After studying this course, the student will be able to:

- Understand the concept and importance of corporate restructuring for growth.
- Recognise opportunities for creating value through Mergers and Acquisitions.
- Illustrate and apply leading methods used in the valuation of a firm for M&A analysis.
- Learn the legal and regulatory framework of Mergers and Acquisitions.

Unit 1: Corporate Restructuring – An Overview (12 hours)

Concept and importance of corporate restructuring, various forms of restructuring: joint ventures (types), Strategic alliance (types), Merger(types), Acquisition(types), Consolidation, Divestiture, Demerger (Spin-off, Split-up, Split-off), Equity carve-out, Management buyout, Leveraged buyout, Buyback of securities, ESOP.

Unit 2: Merger & Acquisition (12 hours)

Motives behind M&A, theories of M&A, process of M&A. Fast track merger. Cross border M&A – concept, benefits & difficulties. Due diligence process.Methods of payment and financing options in M&A.Takeover defence tactics. Reasons for failure of M&A.

Unit 3: Deal Valuation and Evaluation (15 hours)

Methods of valuation; cash flow approaches, economic value added (EVA) (with numerical), sensitivity analysis (with numerical), Valuation for slump sale, valuation of synergy (with numerical), cost-benefit analysis and swap ratio determination (with numerical).

Unit 4: Legal and Regulatory Framework of M&A (6 hours)

Provisions of Companies Act 2013, SEBI Takeover Code 2011, Provisions of Competition Act 2002.

Essential Readings:

1. Weston, F., Chung, K. S., & Siu, J. A. (n.d.). *Takeovers, Restructuring, and Corporate Governance*. Pearson Education.
2. Gupta, M. (2010). *Contemporary Issues in Mergers and Acquisitions*. Himalaya Publishing.
3. Sundarsanam (2006). *Creating Value from Mergers and Acquisitions* (1st ed.). Pearson Education.

Additional Readings:

1. Ramanujan, S. (1999). Mergers: The New Dimensions for Corporate Restructuring. McGraw Hill.
2. Narayankar, R. (2013). Merger and Acquisitions: Corporate Restructuring, Strategy, and Practices (2nd ed.). International Book House Pvt. Ltd.

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

DSC 15: BUSINESS ENVIRONMENT AND POLICY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Business Environment and Policy DSC-15	4	3	1	0	Class XII	NA

Course Objective(s):

- To evolve a clear understanding of impact of various macroeconomic variables (both internal and external) on business.
- To discuss the various government policies and its impact on the business outcomes.
- To focus on the importance of economic environment and policy in decision making.

Learning Outcomes:

After studying the course the student will be able to

- Become aware and sensitive towards the overall Business environment within country and at global level. Students will be able to:
- Understand and critically evaluate the factors affecting business environment.
- Identify business opportunities both in the country and abroad.
- Understand Economic Survey and its implications for Indian Business Environment.
- Critically evaluate the government policies related to business environment.

Unit 1 Introduction & Macroeconomic Indicators of Indian Economy:

Learning Outcomes:

- Recall the key concepts and definitions related to business environment, macroeconomic indicators, and Sustainable Development Goals.
- Describe the types of business environment, interaction between internal and external environments, nature and structure of the economy.
- Analyze macroeconomic indicators and assess their impact on business operations.
- Evaluate the effectiveness of government policies in addressing economic challenges.
- Evaluate the impact of technology transfers on business operations.
- Develop strategies for businesses to operate in different types of business environments.

(12 hours)

Content:

Introduction: Concept, Significance and Nature of Business Environment, Types of environment, Interaction between Internal and External environments, Nature and Structure of Economy, Techniques for Environment Analysis, Approaches and Significance of Environment Forecasting. Social Responsibility of Business. Technological environment – nature of technology, interface between technology and business, Management of technology transfers. Availability of natural resources and demographic conditions in India.

Macroeconomic Indicators of Indian Economy: Inflation, interest rates, Yield on 91 days Treasury Bills and 10 years Government Securities, changes in exchange rates, Fiscal Deficit, Current account balance (deficit/Surplus) of India's Balance of Payments. India's achievements vis-a vis Sustainable Development Goals (SDG).

Unit 2 Government Policies related to Businesses

Learning Outcomes:

- Recall the key policies related to industrial development, trade, and finance.
- Describe the benefits of digitization and unification of payment systems.
- Apply the concept of ease of doing business to identify strategies to improve business environment in India.
- Analyze the impact of "Make in India" and "Atmanirbhar Bharat" policies on various sectors of the Indian economy.
- Evaluate the impact of digitization and unification of payment systems on the Indian economy.
- Develop strategies to address the challenges faced by businesses in doing business in India.

Content: **(12 hours)**

Industrial Policies; EXIM Policies; Monetary Transmission- Bank's credit to Non- Agriculture sectors; Digitization and Unification of Payment system – UPI; Ease of Doing Business – Concept, Parameters and their measurement, issues and challenges in 'Doing Business'; Disinvestment in Public Sector Units; Understanding of "Make in India" and "Atmanirbhar Bharat" and its impact on Indian Economy.

Unit 3 Relationship between Business and Government

Learning Outcomes:

- Recall the relationship between business and government.
- Understand recent changes in fiscal and monetary policies and their implications for businesses.
- Apply knowledge of government policies to identify opportunities and challenges for businesses.
- Analyze the impact of government policies on the Indian business environment.
- Evaluate the performance of the Indian economy based on the latest Economic Survey.
- Create proposals for new policies to improve the Indian business environment.

(12 hours)

Content:

Relationship between Business and Government; Union Budget as an instrument of growth and its Impact on Business; Recent Changes in Fiscal and Monetary Policies; Impact of Government Policies on Indian Business Environment; Analysis of latest Indian Economic Survey with respect to the performance Indicators and changes from the previous year.

Unit 4 Global Business Environment

Learning Outcomes:

- Understand foreign direct investment (FDI), foreign institutional investment (FII), and their impact on the global business environment
- Understand the role of WTO in regulating international trade and its implications for India.
- Apply knowledge of economic indicators to compare and contrast the performance of India and China.
- Analyze the relative performance of India as a member of BRICS and BIMSTEC.
- Evaluate the attractiveness of specific markets for FDI and FII.
- Develop strategies for attracting FDI and FII to specific markets.
- Create proposals for improving India's comparative performance with China on key economic indicators.

Content: **(9 hours)**

Global Business Environment: Foreign Direct Investment, Foreign Institutional Investment, WTO and India: an overview, Regulation of Foreign Trade; Relative performance of India as a member of BRICS and BIMSTEC; Comparative analysis of India Vs China on major economic indicators.

Essential Reading:

1. Latest Economic Survey of India
2. Latest Union Budget
3. Business Environment by A. C. Fernando, Pearson India, ISBN: 9788131731581.

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

DISCIPLINE SPECIFIC ELECTIVE (DSE) COURSES

DSE 3: PROJECT APPRAISAL AND FINANCING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Project Appraisal and Financing DSE-3	4	3	1	0	Class XII	NA

Course Objectives:

- To provide an understanding to the students about identification of a project, feasibility analysis, alternative project appraisal techniques, Project financing.

Learning Outcomes:

On successful completion of this course, the students will be able to:

- Apply various methods of project Appraisal.
- Use Capital Budgeting techniques for financial evaluation and selection of Projects.
- Understand the concept and application of Social Cost and Benefit Analysis.
- Carry out Risk Analysis for business projects and identify alternative sources of financing.
- Apply appraisal techniques for evaluating live projects.

Course Contents

Unit 1: Introduction to Projects and their Appraisal (9 hours)

Project Definition, Project Identification, Project Life Cycle, Project Stakeholder Analysis, Feasibility study. Types of Project Appraisal (Brief Overview): Market and Demand Analysis, Technical Appraisal, Financial Appraisal, Economic Appraisal, Managerial Appraisal, and Social Appraisal.

Unit 2: Financial and Social Appraisal (15 hours)

Project Cost and its components, Investment Evaluation Methods (Non-Discounting and Discounting Methods): Payback Period, Accounting Rate of Return, Discounted Payback Period, Net Present Value, Profitability Index, Internal Rate of Return (IRR), Modified Internal Rate of Return (MIRR). Suitability of Methods to different Projects, Investment Evaluation in Practice. Social Appraisal: Rationale for Social Cost Benefit Analysis, Approaches of SCBA (UNIDO and Little-Mirrlees Approach), Environment Impact Assessment (EIA) and Social Impact Assessment (SIA) of Projects. Relevant Case Studies.

Unit 3: Project Risk Analysis (12 hours)

Risk Analysis and Management: Sources and Measures of Risk. Methods of Assessing Risk – Sensitivity Analysis, Scenario Analysis, Break-Even Analysis, Simulation Analysis, Decision Tree Analysis, Project Selection under Risk – Judgmental Evaluation, Payback Period, Risk Adjusted Discount Rate Method, Certainty Equivalent Method, Strategies for Risk Management.

Unit 4: Project Financing (9 hours)

Capital Structure; Choices of Financing; Sources of Financing – Internal Accruals, Equity Capital, Preference Capital, Debentures (or Bonds), Term Loans, Venture Capital, Private Equity, Venture Capital Vs Private Equity, Loan Syndication, Consortium Financing, Public Private Partnership (PPP), Securitization, Crowd Funding; Raising Capital from International Markets: Foreign Issue, Foreign Direct Investment (FDI), External Commercial Borrowings (ECB).

Essential Readings:

1. Chandra, P: *Projects – Planning, Analysis, Selection, Financing, Implementation, and Review*. 2019 Edition. McGraw Hill Education.

2. Agrawal, R., & Mehra, Y. S. (2017). *Project Appraisal and Management*. Taxman Publications.

Additional Readings:

1. Goodpasture, C.J *Quantitative Methods in Project Management*. J. Ross Publishing.
2. Chandra, P, *Financial Management: Theory and Practice*, McGraw Hill Publishing.

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

DSE 5: DIGITAL FINANCE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Digital Finance DSE-5	4	3	1	0	Class XII	NA

Course Objective(s):

- To get the students acquainted with the dramatic changes in the financial sector generated by the digital revolution.

Learning Outcomes:

After studying this course the student will get the:

- Understanding of the nature of digital revolution in finance.
- Knowledge of key digital technologies and products, and state reaction to the digital revolution.
- Knowledge of FinTech, big data analytics and new financial business models.

Course Contents:

Unit 1: Digital Transformation of Finance (8 Hours)

Learning Outcomes:

By the end of the unit, students will be able to:

- Recall the major milestones in the history of financial innovation.
- Understand the process of digitization in financial services and its impact on the industry.
- Apply the concepts of FinTech to assess their potential for transforming the financial industry.
- Analyze the different types of FinTech and their specific applications in the financial industry.
- Critically evaluate the impact of different types of FinTech on traditional financial services.
- Propose innovative ideas for further advancing the digitization of financial services.

Content:

A Brief History of Financial Innovation, Digitization of Financial Services, Introduction to FinTech & Funds, FinTech Transformation, FinTech Typology, Collaboration between Financial Institutions and Start-ups. Introduction to Regulation and future of RegTech.

Crowdfunding- Role of finance in economy, the role of financial intermediaries, Types and functioning of crowdfunding markets, Differences between traditional funding models and crowdfunding markets, Informational problems in the crowdfunding model.

Unit 2: Payment Systems **(12 Hours)**

Learning Outcomes:

By the end of the unit, students will be able to:

- Recall the process of digitalization in the payment system.
- Understand the attributes that contribute to a well-functioning payment system.
- Apply understanding of electronic payment systems to assess their suitability for different transaction types.
- Assess the risks and benefits associated with new entrants and payment models for the banking system.
- Evaluate the impact of the growth of digital payments in India on financial inclusion and economic development.
- Develop comprehensive guidelines and policies for digital payments that align with the evolving financial landscape and regulatory requirements.

Content:

Digitalization of the payment system. The historical evolution of the payment system., Attributes of a well-functioning payment system., Banks as guarantors of the payment system, new entrants, and new payment models: risks for the banking system. FinTech applications in Banking & Non-Banking Financial Companies (NBFCs); Insurance; payments; Lending; Audit; and Compliance. Electronic Clearing Service (ECS), Real Time Gross Settlement (RTGS), National Electronic Funds Transfer (NEFT), Immediate Payment Service (IMPS), Unified Payments Interface (UPI), Growth of Digital Payments in India, RBI guidelines on Digital Payments.

Unit 3: Crypto Assets and Blockchains **(20 Hours)**

Learning Outcomes:

By the end of the unit, students will be able to:

- Define crypto assets, cryptocurrencies, and blockchain.
- Summarize the future prospects of cryptocurrencies as a form of currency.
- Apply knowledge of Proptech to evaluate its applications in the real estate industry.
- Evaluate the regulatory debate surrounding cryptocurrencies and blockchain.
- Compare and contrast different blockchain systems and their functioning.
- Propose innovative use cases of Internet of Things (IoT) and Augmented/Virtual Reality (AR/VR) in the financial industry to enhance customer experience and efficiency.

Content:

Introduction: Crypto an asset for trade and Crypto-currency, Problems with issuers credibility, Fin Tech & Securities Trading; Cryptocurrencies and its future as currency, blockchain as a

registration mechanism, Functioning of the block chain system. The integration of digital currency and blockchain and issuers incentive problems; Proptech: FinTech of Real Estate; Possible alternative uses of blockchain technology in the economy and difficulties in its implementation. Use of bitcoin in money laundering., The regulatory debate. Introduction of Central Bank Digital Currency (CBDC). Other Emerging Financial Technologies: Internet of things (IOT) & AR/VR applications.

Unit 4: FinTech, Big Data Analytics, and new Financial Business Models (20 Hours)

Learning Outcomes:

By the end of the unit, students will be able to:

- Recognize the characteristics and features of smart accounts and customized financial products.
- Comprehend the relationship between big data, machine learning, and improved financing decisions.
- Utilize big data and machine learning techniques to improve financing decisions.
- Analyze the risks associated with high-frequency trading and propose mitigation strategies.
- Critically evaluate the role of digital securities as a new systemic risk in the economy.
- Design innovative approaches to leverage big data and machine learning for financing decisions.

Content:

The use of data in traditional credit decisions, the combination of big data and machine learning to improve financing decisions., Smart accounts, customized financial products, risk management and fraud prevention., High frequency trading: opportunities and risks.

Digital security, Challenge of confidentiality, integrity and availability, Digital securities as a new systemic risk in the economy. Regulations on cybersecurity. Latest development in the field of Digital Finance.

Essential Readings:

1. Lynn, T., Mooney, J. G., Rosati, P., & Cummins, M. (2019). *Disrupting finance: FinTech and strategy in the 21st century*. Springer Nature.
2. Beaumont, P. H. (2019). *Digital Finance: Big Data, Start-ups, and the Future of Financial Services*. Routledge.

Additional Readings:

1. Phadke, S. (2020). *FinTech Future: The Digital DNA of Finance*. Sage Publications.
2. Maese, V. A., Avery, A. W., Naftalis, B. A., Wink, S. P., & Valdez, Y. D. (2016). *Cryptocurrency: A primer*. Banking LJ, 133, 468.

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi..

DSE 6: MICROFINANCE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Microfinance DSE-6	4	3	1	0	Class XII	NA

Course Objective: The course is aimed at evolving clear understanding of role of Microfinance and Insurance in addressing the problem of poverty and income generating activities to the poor people. The participants will be equipped with Microfinance concepts, functions, products and strategies that will help in pertinent policy making in their respective departments/organizations. Participants should concentrate more on the latest publications on various online sites and concerned reports.

Learning Outcomes:

Students after reading this course will become aware and sensitive towards the people at the bottom of the pyramid. They will be able to understand:

- Facts and figures regarding Poverty in India.
- The need and relevance of Microfinance.
- The role of Micro Finance Institutions for financial Inclusions.
- The Role of NGOs in implementing the Governments welfare policies.

Course Contents

Unit 1: Introduction to Microfinance (9 hours)

Learning Outcomes:

By the end of the unit, students will be able to:

- Identify the emerging trends in microfinance.
- Understand the Human Development Index and the Hunger Index.
- Apply the knowledge of the Human Development Index and the Hunger Index to evaluate and compare countries.
- Critically evaluate India's position on the poverty index.
- Evaluate the strengths and weaknesses of different poverty indices.
- Propose strategies for improving India's position on the poverty index.

Content:

Background, evolution, and Overview; Emerging trends in Micro finance; Poverty: Sources and Consequences of Poverty, Understanding the construct of Poverty Indices - The Human Poverty Index (HPI) developed by UN and Global Multidimensional Poverty Index (MPI),

critical evaluation of India's position on the Poverty Index; Understanding of Human Development Index and Hunger Index.

Unit 2: Microfinance Models (12 hours)

Learning Outcomes:

By the end of the unit, students will be able to:

- Identify and describe different models in microfinance.
- Understand the objectives and operations of the different models in microfinance.
- Apply the principles and practices of the models to design and implement microfinance initiatives.
- Analyze the strengths and weaknesses of the models and their impact on rural development.
- Evaluate the success and limitations of the various models in meeting the financial needs of micro-entrepreneurs and assess their scalability.
- Propose innovative microfinance initiatives based on the lessons learned from case studies, considering local context and challenges.

Content:

NABARD model, SIDBI model, SGSY model, Grameen Banking model, NMDFC model, Associations model, Community Banking Model, Credit unions etc. Strategic Issues in Microfinance: Significance of NGOs: their role and responsibilities; case studies.

Unit 3: Microfinance Institutions (12 hours)

Learning Outcomes:

By the end of the unit, students will be able to:

- Recall the different types of MFIs.
- Understand the issues and challenges involved in pricing micro-loans.
- Apply risk management techniques and tools in the context of microfinance operations.
- Assess the commercial viability of MFIs based on financial and operational indicators.
- Evaluate the strengths and limitations of different MFI models and their suitability for different target populations.
- Design innovative MFI models that combine commercial viability with social impact to maximize financial inclusion.

Content:

Eligibility, Regulations, types, Commercial Microfinance: Investing in Microfinance, Viability of MFIs, Risk management in Micro finance; Pricing of Micro-loans: issues and challenges; Strategic Issues in Microfinance, Role of RBI in Financial Inclusion.

Unit 4: Social Rating, Credit Rating of MFIs (12 hours)

Learning Outcomes:

By the end of the unit, students will be able to:

- Recall the concepts of social rating, credit rating and their importance in evaluating the performance of MFIs.

- Understand the significance of impact assessment in evaluating the effectiveness and outcomes of microfinance initiatives.
- Apply the principles and guidelines of the MUDRA Yojana to facilitate access to finance for microenterprises.
- Analyze the challenges and opportunities in implementing microinsurance in the context of microfinance.
- Evaluate the impact and outcomes of different Government welfare schemes in achieving financial inclusion.
- Generate new case studies highlighting successful approaches and lessons learned from government welfare schemes for financial and social inclusion.

Content:

Social Rating, Credit Rating of MFIs and Impact assessment in Micro finance; Micro insurance: issues and challenges; MUDRA Yojana; PMJDY. Government's welfare schemes for financial and social inclusions like Deendayal antyodaya yojana, Pradhan Mantri Garib Kalyan Yojana (PMGKY) (Case Studies).

Essential Readings:

1. Panda, D. K. (2009). *Understanding Microfinance*. Wiley
2. Indian Institutes of Banking and Finance. (2008). *Micro-finance Perspectives and Operations*. MacMillan India Ltd.
3. Armendariz, B., & Morduch, J. (2005). *The Economics of Microfinance*. Prentice-Hall of India Pvt. Ltd. Delhi.

Additional Readings:

1. Ledgerwood, J. (1998). *Microfinance Handbook: An Institutional and Financial Perspective*. The World Bank, Washington, D.C.
2. Harper, M. (2003). *Practical Microfinance: Training Guide for South Asia*. Vistaar Publication, New Delhi.

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

DSE 7: MANAGEMENT OF FINANCIAL INSTITUTIONS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Management of Financial Institutions DSE-7	4	3	1	0	Class XII	NA

Course Objective(s):

- This course aims at enabling the students to understand and to contribute to the strategic operational policies and risk management practices of financial institutions in a competitive environment.

Learning Outcomes:

After studying this course the student will be able:

- Understand the functioning of a financial institution.
- Understand the entire process of operating a bank and other financial institutions with respects to the rules and regulations prescribed by the regulators.
- Understand the problems faced by the banks like that of NPA or of liquidity challenge etc. and tools and techniques to manage them.

Course Contents:

Unit 1: Foundation and Key Concepts (9 hours)

Financial Intermediation: Types of Financial Services-Depository Institutions, Finance Companies, Security Firms and Investment Banks, Mutual Funds and Hedge Fund Companies, Insurance Companies. An Overview of the Indian Financial System; Regulation of Banks, NBFCs & FIs, Capital Adequacy: Capital adequacy norms; Basel agreement-II&III, CRR & SLR management.

Unit 2: Financial Statement Analysis of Banks (12 hours)

Statement of Financial Sector: Statements of Financial Institutions: Analysing Bank's Financial Statement: The balance sheet; income statement; Cash Flow Statement; profitability, liquidity and solvency analysis; Sources and Uses of Banks Funds, Performance Analysis of banks: CAMELS Risk system; Key Performance Indicators; Data Envelopment Analysis, Asset Liability Management: RBI guidelines on asset liability management.

Unit 3: Measuring and Managing Risk Part 1 (12 hours)

Institutional Risk Management: Interest Rate Risk: Level and Movement of Interest Rates, Term Structure of Interest Rates, Interest Rate Risk Management: Measurement of Interest Rate Risk; Duration and its kinds; Convexity. Managing Interest Rate Risk: Repricing Gap Model, Duration Gap Model, Cash Flow Matching Model; Convexity Adjustments. Credit Risk: Individual Loan Risk, Return on Loans , Measurement of Credit Risk- Models of Credit Risk Measurement and Pricing, Qualitative and Quantitative Models, Loan Portfolio and Concentration Risk, Moody's Analytics Portfolio Manager Model, Loan Volume–Based Models, Loan Loss Ratio–Based Models, Regulatory Models. NPA & its types, Management of NPA Market Risk; Liquidity Risk, Operational Risk.

Unit 4: Measuring and Managing Risk Part 2 (12 hours)

Liquidity Risk Management: Measurement of Liquidity Risk; Measures of Liquidity Exposure; Causes of Liquidity risk: Asset-Side and Liability-Side; Managing Liquidity Risk: Purchased Liquidity management and Stored Liquidity management; Liquidity Planning; Deposit Insurance; Discount Window. Market risk; Banking Book and Trading Book, The Riskmetrics Model, The Historic (Back Simulation) Model, The Monte Carlo Simulation Approach, Regulatory Models: The Bis Standardized Framework, Off- Balance Sheet Risk: Off-Balance-Sheet Activities, Returns and Risk of Off-Balance-Sheet Activities; Technology and Other Operational Risk, Securitization.

Essential Readings:

1. Saunders & Cornett – *"Financial Institutions Management – A risk management approach"* Tata McGraw Hill.
2. Paul, J & Suresh, P -" *Management of Banking and Financial Services*" Pearson.

Additional Readings:

1. Resti & Sironi – *"Risk management and shareholders" value in banking".* John Wiley.
2. RBI Master Circulars and other Regulatory documents applicable at the time of teaching the course.

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

DSE 9: INSURANCE MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Insurance Management DSE-9	4	3	1	0	Class XII	NA

Course Objectives: To enable students to identify and manage different types of risks. They will be able to understand the concepts, types and principles of Insurance. Further, they will know the important aspects and technical components of management of Insurance business.

Learning Outcomes:

On successful completion of his course, the students will be able to:

- identify and analyze various types of risks faced by individuals and businesses, evaluate the role and importance of insurance in mitigating these risks, and differentiate between different types of insurance
- understand the principles of risk management, techniques for managing risks, and legal principles governing insurance contracts, and develop an understanding of real-world risk management scenarios.
- understand the legal Characteristics and components of insurance contracts, underwriting principles, claims settlement process, and the regulatory framework of the insurance industry in India.
- comprehend the different aspects of insurance business management, including reinsurance, alternative risk transfer, investments, rate-making, coinsurance, and important provisions of insurance policies.

Course Contents

Unit 1: Insurance and Risk (12 hours)

Risk – Definitions of Risk, Chance of Loss, Peril and Hazard, Classification of Risk, Major Personal Risks and Commercial Risks, Burden of Risk on Economy and Society. Insurance – Definition of Insurance, Basic Characteristics of Insurance, Law of Large Numbers, Characteristics of an Ideally Insurable Risk, Benefits and Costs of Insurance to Society. Life and General Insurance: Types, Difference between Life and General insurance.

Unit 2: Insurance Principles & Risk Management (12 hours)

Risk Management – Meaning of Risk Management, Objectives of Risk Management, Steps in the Risk Management Process, Techniques for Managing Risk, Benefits of Risk Management. Personal Risk Management. Enterprise Risk Management (briefly) – Concept & Benefits. Case

Studies on Management of different Personal and Business Risk to be discussed. Fundamental Legal Principles – Principle of Indemnity, Principle of Insurable Interest, Principle of Subrogation, Principle of Utmost Good Faith. Requirements of an Insurance Contract.

Unit 3: Insurance Company Operations (12 hours)

Requirements of an Insurance Contract, Distinct Legal Characteristics of Insurance Contracts. Components of Insurance Contracts – Declarations, Definitions, Insuring agreement, Exclusions, Conditions, and Miscellaneous provisions. Underwriting – Underwriting Policy, Underwriting Principles, Sources of Underwriting Information. Sales and Marketing activities of Insurers. Claims Settlement – Basic Objective, Parties Involved & Steps in Settlement Process. Endorsements and Riders. Deductibles – Concepts and Purpose of Deductibles. Regulatory Framework of Insurance in India (briefly) – Insurance Legislation and IRDA.

Unit 4: Important Aspects of Insurance Business Management (9 hours)

Reinsurance – Definitions, Reasons for Reinsurance, Types of Reinsurance – Facultative & Treaty Reinsurance, Methods of Sharing Losses (Numerical Qs). Alternatives to Traditional Reinsurance – Securitization of Risk and Catastrophe Bonds. Insurance and Investments – Life Insurance Investments, Property and Casualty Insurance Investments. Rate Making – Concept, Objectives, Rate Making Methods (Numerical Qs) – Judgement, Class and Merit Rating Method. Coinsurance – Nature, Purpose and Problems. Other Important Provisions – Pro Rata liability, Contribution by Equal Shares, and Primary and Excess Insurance.

Essential Readings:

1. Rejda, G. E., McNamara, M. J., & Rabel, W. H. (2021). *Principles of Risk Management and Insurance*. (14th ed.). Pearson Education.
2. Mishra, M. N., & Mishra, S. B. (2016). *Insurance Principles and Practice*. (14th ed.). S. Chand and Company.

Additional Readings:

1. Gupta, P. K. (2022). *Insurance and Risk Management* (2nd ed.). Himalaya Publishing House.
2. Institute of Chartered Accountants of India. (2021). *Diploma in Insurance and Risk Management* [Course modules].

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

DSE 11: INTERNATIONAL FINANCIAL ARCHITECTURE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
International Financial Architecture DSE-11	4	3	1	0	Class XII	NA

Course Objective:

- To acquaint students with the latest developments in the international business relationships and agencies funding for country's development.

Learning Outcomes:

After completion of this paper:

- Students shall be aware of the latest development in the international business relationships which will enable them to make better decisions related to international business.
- Students shall have the knowledge of different international investment avenues and opportunities available.
- Students shall be aware of various regional trading blocks, international institutions and funding agencies.

Course Contents:

Unit 1 **(12 hours)**

Review of Economic Theory on International Trade: Basis for international trade; gains from trade; distributional issues, policy instruments and their impact, political economy. Importance, nature and scope of international relation, modes of entry into international business, internationalization process and managerial implications. Domestic, foreign and global environments and their impact on international business decision; Growing concern for green trades.

Unit 2 **(12 hours)**

International economic & trading environment: Regional integration and trade blocks, regionalism v/s. multilateralism, European Union. Integration of developing countries – BRICS, ASEAN, SAARC, SAFTA, NAFTA, G-20. World trade in goods and services – Major trends and developments; World trade and protectionism – Tariff and non-tariff barriers; Counter trade, UNCTAD, WTO, GATT, GATS, TRIM, TRIPS; India's role in facilitating trade relations under BRICS, SAARC, SAFTA, ASEAN and to WTO.

Unit 3 **(9 hours)**

International investment: Types and significance of foreign investments, factors affecting international investment, growth and dispersion of FDI, Cross border mergers and acquisition, foreign investment in India-Impact of reforms on competitiveness of the Indian Firms, EURO/ADR issues, ECBs; current economic crises in US/Europe/Asia and its impact on economic growth in India.

Unit 4 **(12 hours)**

Economic institutions – International Monetary Funds (IMF), World Bank (IBRD, IDA, IFC), Asian Development Bank, BRICS Development Bank, European Bank for Reconstruction and Development, Bilateral funding arrangements with special reference to Japan International Cooperation Agencies (JICA), agencies of USA; Case studies on Bilateral financing arrangements of Indian projects like Delhi Metro, Dedicated Freight corridor, Nuclear Power Plant etc.

Essential Readings:

1. Radebaugh, L.H., Sullivan, D.P., Salwan, P., & Daniels, J.D. (n.d.). International Business Environments and Operations (15th ed). Pearson.
2. Hill, W. L., Charles, & Jain, A.K. (2008). International Business (6th ed). India: McGraw Hill.

Additional Readings:

1. Bennet, R. (1999). International Business. Financial Times. London: Pitman Publishing.

2. Vyuptakesh, S. (2003). International Business (2nd ed). India: Pearson Education.

3. Krueger, A. O. (2002). Economic Policy Reforms and the Indian Economy. OUP.

4. Velasquez, M. G. (2012). Business Ethics Concepts and Cases (7th ed.). New Delhi: PHI.

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

GENERIC ELECTIVE (GE) COURSES

GE 1: FUNDAMENTALS OF FINANCIAL MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Fundamentals of Financial Management GE-1	**4**	**3**	**1**	**0**	**Class XII**	**Basic knowledge of financial accounting, cost and management accounting and corporate accounting**

Course Objectives:

- To provide an understanding of the essential elements of the financial environment in which the business firm operates.
- To acquaint students with the techniques of financial management and their applications for business decision making.

Learning Outcome:

Upon completion of the course a learner shall be competent to:

- Understand the concept of time value of money, process of capital budgeting, concepts of cost of capital and other aspects of financing, dividend and working capital decisions
- Understand the process of making investments, raising finance for investment in fixed and current assets and distribution of surplus from business operations.
- Apply the techniques of time value of money in real life situations, techniques of capital budgeting in investment decisions, process to calculate the cost of capital and share price based on dividends along with the estimation of working capital and its components.
- Evaluate the investment opportunities available, the various financing mix that can be used to derive the maximum value from the investment opportunities, the optimal dividend payout and monitor the current asset requirements.
- Analyse the evaluation outcomes to choose the best investment opportunity at the lowest cost of financing and adopt the optimal dividend pay-out along with the optimal level of liquidity through the working capital route to derive maximum wealth.

- Create a portfolio of investments at the best possible financing and dividend mix with the most appropriate working capital composition that will create maximum wealth under the given constraints.

Course Contents:

Unit 1 **(9 hours)**

Nature of Financial Management: Finance and related disciplines; Scope of Financial Management; Functions of finance – Finance Decision, Investment Decision, Dividend Decision; Objectives of Financial Management; Organisation of finance function; Concept of Time Value of Money – present value, future value, annuity.

Unit 2 **(15 hours)**

Strategic Investment Decisions: Capital Budgeting -; Nature and meaning of capital budgeting; Principles and Process; Estimation of relevant cash flows and terminal value; Evaluation techniques– Payback period, Accounting Rate of Return, Net Present Value, Internal Rate of Return, Net Terminal Value, Profitability Index Method.

Cost of Capital: Meaning and concept, Measurement of cost of capital – Cost of debt, Cost of Equity Share; Cost of Preference Share; Cost of Retained Earning; Computation of over-all cost of capital based on Historical and Market weights (WACC).

Unit 3 **(12 hours)**

Strategic Financing Decisions - Capital Structure, Theories and Value of the firm – Net Income approach, Net Operating Income approach, Traditional approach, Modigliani Miller (MM) model. Leverage analysis and EBIT-EPS Analysis: Concept of leverage, Types of leverage: Operating leverage, Financial leverage, Combined leverage; EBIT-EPS Analysis. Guidelines for capital structure planning, Link between capital structure and capital budgeting. Dividend Decisions: Factors determining dividend policy, Theories of dividend- Gordon model, Walter model, MM Hypothesis. Dividend policies in practice.

Unit 4 **(9 hours)**

Working Capital Management: Determination of Working Capital. Determining financing mix of working capital. Receivables Management – Objectives; Credit Policy, Cash Discount, Debtors Outstanding and Ageing Analysis; Costs – Collection Cost, Capital Cost, Default Cost, Delinquency Cost. Management of Cash (Theory only) – Need for Cash, Cash Management Techniques (Lock box, Concentration Banking). Inventory Management (Theory only) – ABC Analysis; Minimum Level; Maximum Level; Reorder Level; Safety Stock; EOQ (Basic Model).

Essential Readings:

1. Berk, J., & DeMarzo, P. (n.d.). Corporate Finance (5th ed.). Pearson - Prentice Hall.
2. Horne, J. C. V., & Wachowicz, J. M. (n.d.). Fundamentals of Financial Management (13th ed.). FT Prentice Hall, Pearson Education.
3. Pandey, I. M. (n.d.). Financial Management. Pearson.

Additional Readings:

1. Khan, M. Y., & Jain, P. K. (n.d.). Financial Management Text, Problems, and Cases. Tata McGraw Hill Publishing Co. Ltd.
2. Brealey, R. R., Myers, S., Allen, F., & Mohanty, P. (n.d.). Principles of Corporate Finance. New Delhi: Tata Mc-Graw Hill.

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

GE 3: FUNDAMENTALS OF STOCK TRADING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Fundamentals of Stock Trading GE-3	**4**	**3**	**1**	**0**	**Class XII**	**Basic understanding of financial concepts and terminology**

Course Objectives:

The course will help the learner to:

- Understand the fundamentals of investment, investment environment, and the principles of sound investment.
- Gain knowledge of the Indian securities market, including primary and secondary markets, IPOs, stock exchanges, and stock indices.
- Learn about online security trading, including trading mechanisms, settlement processes, and different types of orders.
- Understand mutual funds, their structure, advantages, and limitations, as well as different types of schemes and plans.
- Gain knowledge of how to evaluate investment alternatives, including criteria for evaluating mutual funds, and performance evaluation of mutual funds.

Learning Outcomes:

The course will help the learner to:

- Understand the fundamentals of investment, investment environment and principles of sound investment, and evaluate different investment alternatives based on criteria such as risk and return.

- Analyze the Indian securities market, differentiate between capital and money markets, primary and secondary markets, and comprehend the role of market participants such as issuers, investors, and intermediaries.
- Explain the trading mechanism on exchanges, online trading mechanisms, and the types of orders and conditions associated with it.
- Evaluate mutual fund schemes, their structures, advantages, and limitations, and comprehend the factors affecting the choice of mutual funds.
- Analyze the performance evaluation of mutual funds and comprehend the ranking methodology used by CRISIL for mutual funds.

Course Contents

Unit 1: Basics of Investment & Investment Environment (9 Hours)

Fundamentals of Investment, Features of Investment, Investment Environment. Principles of sound Investment. The Investment Decision Process. Modes of Investment – Direct Investing and Indirect Investing, Approaches to Investing – Active Investing and Passive Investing. Risk Return Trade Off. Types of Securities – Equity Shares, Bonds and Debentures, and Government Securities. Alternative Investments (Briefly) – Mutual Funds, Derivatives, Unit Linked Insurance Policy (ULIP), Exchange-traded funds (ETFs), Collective Investment Schemes (CIS), Real Estate Investment Trusts (REITs). Criteria for Evaluation of Investment Alternatives.

Unit 2: Indian Securities Market (12 Hours)

Securities Market – Capital Market and Money Market, Difference between Capital and Money Market, Primary and Secondary Market, Difference between Primary and Secondary Market. Over the Counter (OTC) and Exchange Traded market. Modes of offering Equity Shares – Initial Public Offering (IPO), Follow-on Public Offering (FPO), Difference between IPO and FPO, Difference between Offer for sale (OFS) and Public offer (IPO/FPO). Methods of IPO Pricing – Fixed Price Method and Book Building Method, The Book Building Process, Fixed Price method v/s Book building Method. Market Participants – Issuer of Securities, Investors, and Intermediaries. Role of Stock Exchange. Stock Exchanges in India. Securities (Stock) Indices – Broad Market Indices, Sectoral Indices and Thematic Indices.

Unit 3: Online Security Trading (12 Hours)

Trading Mechanism on Exchanges, Trading and Settlement at NSE – National Securities Clearing Corporation Limited (NSCCL), Clearing Mechanism, Clearing & Settlement (Equities).

Online Trading – Introduction, Online Trading Mechanism. Online Real Time Price Quotations – Bid Price, Ask Price, Bid-Ask Spread, Tick Size, LTP, ATP. Circuit Breakers – Upper

Circuit, Lower Circuit, NSE rules regarding Circuit Breaks. Price Bands, Rules regarding Price Bands on NSE. Electronic Order Book. Types of Orders – Market Order, Limit Order, Stop Loss Order, Stop Loss (Limit) Order, Stop Loss (Market) Order, After Market Order (AMO). Order Conditions – Price related conditions, Time related conditions, Quantity related conditions. Placing an Order, View/Modify/Cancel an Order.

Unit 4: Investing in Mutual Funds (12 Hours)

Concept of Mutual Funds, Mutual Funds are an Indirect Mode of Investment, Evolution of Mutual Funds in India, Structure of Mutual Funds (Sponsor, Board of Trustees, AMC and Custodian). Advantages of Investing in Mutual Funds, Limitations of Investing in Mutual Funds. Types of Mutual Fund Schemes – Open ended, Close ended, and Interval funds; Domestic Funds and Off-Shore funds; Growth funds, Income funds and Balanced funds; Equity Fund schemes, Debt fund schemes, Gilt Funds, Money Market Funds, Tax Saving or Equity Linked Savings Scheme (ELSS), Index schemes, Sectoral Funds, Ethical Funds, Load and No-Load Fund, Fund of Funds, Systematic Investment Plans (SIP), Systematic Withdrawal Plans (SWP), Systematic Transfer Plans (STP), and Exchange Traded Funds. Net Asset Value, Cost incurred and Return from Mutual funds, Types of Loads. Performance Evaluation of Mutual Funds. Factors affecting choice of Mutual funds. Mutual funds in India. CRISIL and their Rankings for mutual funds – Ranking Methodology and Usage of Mutual Fund Rankings.

Essential Readings:

- Bhalla, V.K. (2018). Investment Management: Security Analysis and Portfolio Management. S. Chand Publishing.
- Varshney, R.L., & Bhalla, V.K. (2017). Indian Financial System: Theory and Practice. S. Chand Publishing.
- Krishnan, R. (2016). Mutual Fund Industry in India: A Study of Investment Behaviour. Springer.
- Joshi, P.C. (2017). Online Trading: How to Trade Online for Beginners. Createspace Independent Publishing Platform.

Additional Readings:

- Bodie, Z., Kane, A., & Marcus, A. J. (2018). Investments. McGraw-Hill Education.
- Fabozzi, F. J., Neave, E. H., & Zhou, G. (2019). Investments: analysis and behavior. Cengage Learning.
- Kapoor, J. R., Dlabay, L. R., & Hughes, R. J. (2017). Personal finance. McGraw-Hill Education

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi

GE 5: ESSENTIALS OF FINANCIAL INVESTMENTS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Essentials of Financial Investments GE-5	4	3	1	0	Class XII	NA

Course Objectives:

- To familiarize students with the essential concepts and fundamentals of financial investments.
- To enable students to understand and make informed choice about thevarious available financial investment alternatives.

Learning Outcomes:

On successful completion of his course, the students will be able to:

- Understand the fundamentals of financial investments and the investment decision process.
- Able to compute various measures of risk and return, and understand their role for evaluating investments.
- Understand and carry out security analysis using different approaches.
- Understand basic approaches to valuation of securities and carry out portfolio analysis.

Course Contents

Unit 1: Investments – An Overview (9 Hours)

Concept of Investment, Financial Investment Vs. Real Investment, Investment Vs Speculation, Objectives or Features of Investment, Risk Return Trade Off, Investment Environment – Overview of Securities Market and Different Types of Financial Investment. Investment Decision Process, Direct Investing Vs Indirect Investing, Approaches to Investing – Active Vs Passive. Diversification, Hedging and Arbitrage.

Unit 2: Risk – Return Analysis (12 Hours)

Concepts of Return and Risk, Types of Return - their Calculation & Utility: Absolute Return, Average Return, Expected Return, Portfolio Return, Holding Period Return, Effective Annualized Return, Risk-Adjusted Return. Causes (or Sources) and Types of Risk – Systematic and Unsystematic Risk, Components of Systematic and Unsystematic Risk, Calculation of Total, Systematic and Unsystematic Risk. Impact of Taxes and Inflation on Investment – Computation of Post Tax and Real Returns.

Unit 3: Security Analysis (12 Hours)

Approaches to Security Analysis – Fundamental Analysis, Technical Analysis, and Efficient Market Hypothesis (EMH). Fundamental Analysis – EIC Framework, Economic Analysis, Industry Analysis, and Company Analysis. Technical Analysis – Basic Tenets of Technical Analysis, Tool of Technical Analysis – Charts, and Technical Indicators, Limitations of Technical Analysis. Difference between Fundamental Analysis and Technical Analysis. Efficient Market Theory (EMH) – Concept, Forms of Market Efficiency, Weak Form Hypothesis, Semi Strong Form, and Strong Form of Market Efficiency. Implications of EMH.

Unit 4: Fundamentals of Valuation and Portfolio Analysis (12 Hours)

Valuation of Equity Shares – Peculiar features of Equity Shares, Dividend Discount Model, Earning Multiplier or Price-Earnings (P/E) Model, and Capital Asset Pricing Model (CAPM). Valuation of Fixed Income Securities – Bond Fundamentals, Types of Bonds, Bond Valuation. Portfolio Analysis – Portfolio Management Process, Portfolio Analysis – Markowitz Model, Portfolio Risk, Portfolio Return.

Essential Readings:

1. Tripathi, V. (n.d.). Security Analysis and Portfolio Management. Taxmann Publications.

2. Chandra, P. (n.d.). Investment Analysis and Portfolio Management. McGraw Hill Education.

Additional Readings:

1. Rustagi, R. P. (n.d.). Investment Management. Sultan Chand Publications.
2. Reilly, F. K., & Brown, K. C. (n.d.). Analysis of Investments and Management of Portfolios. Cengage India Pvt. Ltd.

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

GE 7: EMERGING BANKING AND FINANCIAL SERVICES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Emerging Banking and Financial Services GE-7	4	3	1	0	Class XII	NA

Course Objective:

- To familiarize students with banking reforms in the last decade, concept of neo banks, rising issue of non-performing asset and its impact on day-to-day functioning.
- To make students learn about financial services such as Leasing, Hire Purchase, Credit Rating, Securitization and Venture Capital Financing.

Learning Outcomes:

On successful completion of his course, the students will be able to:

- Understand the Indian banking system and latest developments in this sector.
- Analyse the implications of non-performing assets in the banking sector on the economy.
- Evaluate the implications of mergers and acquisitions in the banking system and appreciate the need for the same.
- Understanding various financial services and using the same in personal banking and non-banking activities.

Course Contents:

Unit 1 **(12 Hours)**

An overview of the Indian Banking system; Major Banking Reforms in the last decade: Payment banks, Monetary Policy Committee, MCLR Based Lending, Innovative Remittance Services; Issues in financial reforms and restructuring; Future agenda of reforms: Assessing Non- Performing Assets in Indian Banking, Previous methodologies for recovery, Impact of Gross NPAs on a bank's bottom line – burning need for bad banks, Functioning of Bad Banks, Government backingfor bad banks - National Asset Reconstruction Company Ltd. (NARCL).

Unit 2 **(12 Hours)**

Introduction to neobanks, Functions of neobanks, Operating Model of neobanks, Regulatory requirements for setting up and running neobanks, Emerging need for neobanks, neo banks vs traditional banks. Merger & Acquisition: Introduction, Benefits of mergers, Synergies accruing

out ofmergers, Regulatory mechanisms surrounding M&A in banking, Case-studies of recent banking mergers and related outcomes.

Unit 3 **(12 Hours)**

Leasing and Hire Purchase: Concepts of leasing, types of leasing – financial & operating lease, direct lease and sales & lease back, advantages and limitations of leasing, Lease rental determination; Financelease evaluation problems Lessee's angle (PV and IRR methods) and Lessor's perspective, Hire Purchase interest &Instalment, difference between Hire Purchase & Leasing, Choice criteria between Leasing and Hire Purchase, mathematics of HP.

Unit 4 **(9 Hours)**

Venture Capital: Concept, history and evolution of VC, the venture investment process, various steps in venture financing, incubation financing. Credit Ratings: Introduction, types of credit rating, advantages and disadvantages of credit ratings, Credit rating agencies and their methodology, International credit rating practices. Securitization: Concept and Process, Credit Enhancement parties to a Securitization Transaction, Instruments of Securitization, Types of Securities, Securitization in India.

Essential Readings:

1. Pathak, B. (2018). *Indian Financial System*. Pearson Publication. (5th ed).
2. Khan, M. Y. (2017). *Financial services*. McGraw Hill Education. (6th ed).
3. Machiraju, H. R. (2002). *Indian Financial System*. Vikas Publication House. (5th ed).

Additional Readings:

1. Verma, J. (1996). *Bharat's manual of merchant banking: Concept, practices and procedures with SEBI clarifications, guidelines, rules and regulations.* Bharat Law House.
2. Sriram K. *Hand Book of Leasing, Hire Purchase & Factoring*. Institute of Chartered Financial Analysts of India.
3. Wright M., Watkins T. & Ennew C. (2016). *Marketing of Financial Services*. Routledge

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

GE 9: ECONOMIC LEGISLATION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Economic Legislation GE-9	4	3	1	0	Class XII	NA

Course Objective(s):

- To familiarise students with various legislations in the areas of foreign trade, competition, bankruptcy and economic offences.
- To provide an overview of detailed provisions of various economic legislation.
- To enable students to understand the legal implications of unlawful practices and legal recourse available.

Learning Outcomes:

On successful completion of his course, the students will be able to:

- Understand the legal framework relating to foreign exchange, competition, insolvency and fugitive economic offenders.
- Recognise the legal issues in any business transaction and understand lawful way of conduct of economic activities.
- Analyse the legal implications of any economic decision.
- Evaluate legal remedies available in case of bankruptcy or any wrongdoing.

Course Contents:

Unit 1: Competition Act and Fugitive Economic Offenders Act (15 Hours)

The Competition Act, 2002: Introduction, Prohibition of certain agreements, abuse of dominant position and regulation of combinations, Competition Commission of India, Duties, Powers and Functions of Commission, Penalties, Appellate Tribunal.

The Fugitive Economic Offenders Act: Scope and applicability of Act, Confiscation of property, Powers of Directors, Power of Survey, Search and Seizure, notice, procedure for hearing application, Declaration of Fugitive Economic Offender, Power to disallow civil claims, Management of properties confiscated under this Act, Rules of evidence, Appeals.

Unit 2: The Insolvency and Bankruptcy Code (9 Hours)

The Insolvency and Bankruptcy Code, 2016: Introduction of Insolvency and bankruptcy code, Corporate Insolvency Resolution Process, Liquidation Process, Fast Track Insolvency Resolution for Corporate Persons, Voluntary Liquidation of Corporate Persons, Adjudicating Authority for Corporate Persons, Offences and Penalties, Insolvency resolution and bankruptcy

for individuals and partnership firms, Regulation of Insolvency professionals, agencies and information utilities.

Unit 3: The Prevention of Money Laundering Act (12 Hours)

The prevention of money laundering Act, 2002: Introduction and definitions, Punishment for the offence of Money Laundering, Attachment, Adjudication and Confiscation, Obligation of Banking Companies, Financial Institutions and Intermediaries, Summons, Searches And Seizures, Appellate Tribunal and Special Courts, Recovery of fine or penalty.

Unit 4: The Foreign Exchange Management Act (9 Hours)

The Foreign Exchange Management Act, 1999: Introduction of FEMA, Difference between FERA and FEMA, Application and Commencement of FEMA, Regulation and Management of Foreign Exchange, Authorised Person, Contraventions and Penalties, Compounding of Offences, Adjudication and Appeal, Directorate of Enforcement.

Essential Readings:

1. Maheshwari & Maheshwari. *Principle of Business Law.* Himalaya Publishing House

2. Aggarwal R. (2014). *Mercantile & Commercial Law*. Taxmann Publications
3. Kucchal M. & Kuchhal V. (2018). *Mercantile Law*. Vikas Publishing House (P) Ltd.

4. Kapoor N. D. (2018). *Elements of Mercantile Law*. Sultan Chand Publications

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

Semester-VI

BBA(FIA)

DSC 16: INTERNATIONAL FINANCE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
International Finance DSC-16	4	3	1	0	Class XII	NA

Course Objective(s):

- To equip the students with the techniques that can help them in managing the financial issues in international environment.
- To help them to manage MNCs in more effective manner.

Learning Outcomes:

By the end of the course, students will be able to

- Understand foreign exchange market.
- Understand country's position in International trade through Balance of Payments.
- Identify risk relating to exchange rate fluctuations and develop strategies to deal with them.
- Understand the various types of exposures and will develop the strategy to handle them.
- Express well considered opinion on issues relating to international financial management.

Course Contents:

Unit 1: International Trade and International Financial Systems (6 hours)

Learning Outcomes:

By the end of the unit, students will be able to:

- Recall the major theories of international trade.
- Understand the components and structure of the Balance of Payments (BoP) and its role in measuring a country's economic relationships with the rest of the world.
- Analyze the strengths and weaknesses of different exchange rate mechanisms and their impact on international trade and financial stability.
- Analyze the components of the Balance of Payments (BoP) and assess their implications for a country's economic performance and external position.
- Assess the effectiveness and limitations of the Balance of Payments (BoP) as a tool for monitoring and managing a country's external transactions.
- Propose strategies to improve the Balance of Payments (BoP) position of a country, considering its economic objectives and external challenges.

Content:
Concept of International Trade, Theories of International Trade. Balance of Payments (BoP) of India. International Monetary System: Different types of Exchange Rate Mechanisms – the Classical Gold Standard, the Gold Exchange Standard, The Bretton Woods System, Current Monetary System.

Unit 2: Forex Market and Forecasting Exchange Rate (15 hours)
Learning Outcomes:
By the end of the unit, students will be able to:

- Recall the concepts of forward rates, swaps, discounts, and premiums in the forward market.
- Understand the concept of currency arbitrage and how it can be utilized in spot markets.
- Apply the models of exchange rate forecasting to predict future exchange rate movements based on relevant economic indicators.
- Analyze the various factors affecting exchange rates and their relative importance in determining currency values.
- Assess the impact of economic, political, and market factors on exchange rates and their potential implications for financial decision-making.
- Develop innovative approaches to minimize the costs and risks associated with forward rates, swaps, discounts, and premiums in the forward market.

Content:
Foreign Exchange Management: Forex Market – Spot and Forward market, Quotations – Direct, Indirect and Cross currency; Types of Transactions and their Settlement Dates. Forward rates, Swaps. Discounts and Premiums in Forward Market. Currency Arbitrage in Spot Markets. Exchange Rate Determination and Forecasting: Models of Exchange Rate Forecasting, Purchasing Power Parity, The Fisher Effect, The International Fisher Effect, Interest Rate Parity Theory, Forward Rate as an Unbiased Predictor. Factors affecting Exchange Rates.

Unit 3: Managing Foreign Exchange Exposures (12 hours)
Learning Outcomes:
By the end of the unit, students will be able to:

- Recall three types of foreign exchange exposures: translation exposure, economic exposure, and transaction exposure.
- Understand the methods for measuring foreign exchange exposures.
- Apply knowledge of different hedging techniques to select and implement the most suitable hedge strategy.
- Analyze the advantages and disadvantages of different hedging techniques.
- Assess the potential economic exposures faced by multinational companies and evaluate strategies to manage and mitigate those exposures.
- Create a hedging strategy that effectively manages transaction exposure in a multinational company.

Content:
Foreign Exchange Exposures – Translation Exposure, Economic Exposure, and Transaction Exposure. Management of Translation Exposure – Alternative Currency Translation Methods. Management of Economic Exposure – Measuring Economic Exposure, Managing Operating Exposure. Management of Transaction Exposure – Forward Market Hedge, Money Market Hedge, and Options Market Hedge.

Unit 4: Multinational Financial Management (12 hours)
Learning Outcomes:
By the end of the unit, students will be able to:

- Recall the concept of international project appraisal and the use of the Adjusted Present Value (APV) method.
- Explain the concept of multinational working capital management and the significance of cash management through bilateral and multilateral netting.
- Apply risk measurement and management techniques to mitigate political risk in international financial management.
- Analyze the advantages and disadvantages of different methods of raising funds from abroad and evaluate their suitability for multinational companies.
- Assess the effectiveness of multinational working capital management strategies in optimizing cash flows and reducing financial risks.
- Create an optimal international portfolio investment strategy that balances risks and returns based on specific investment objectives and market conditions.

Content:
International Project Appraisal – APV method. Multinational Working Capital Management: Multinational Cash Management (Bilateral and Multilateral Netting). Measuring and Managing Political Risk. International Investment Management: International Portfolio Investment – The Risks and Benefits of International Equity Investing, International Diversification, International Bond Investing, Optimal International Asset Allocation, Measuring Returns from Foreign Portfolio Investment. Raising Funds from abroad – GDR, ADR, Euro bonds, and Global bonds.

Essential Readings:
1. Apte, P. G. (2020). *International Financial Management*. Tata McGraw Hill.
2. Shapiro, A. C. (2019). *Multinational Financial Management*. Prentice Hall.

Additional Readings:
1. Eun, C. S., & Resnick, B. G. (2021). *International Financial Management*. McGraw Hill.
2. Levi, M. D. (2009). *International Finance. Routledge*, Taylor & Francis Group.
Latest editions of references may be used.
Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

DSC 17: CORPORATE ETHICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Corporate Ethics DSC-17	4	3	1	0	Class XII	NA

Course Objective:

- To provide a detailed insight into issues and practices of corporate ethics, corporate governance and CSR to encourage moral practices and sensitivity towards the ethical dimension of managerial problems.
- To highlight the role of business in sustainable development and current regulation in this field.
- To enable students to handle ethical dilemmas in decision making

Learning Outcomes:

After studying the course the student will be able to:

- Understand the role of ethics, governance and CSR as an organization practice.
- Understand various aspects of corporate governance and apply the same in their role as future managers and directors of various business enterprises.
- Understand the corporate sustainability and its reporting requirements.
- Evaluate ethical aspects of any decision
- Create ethically and socially responsible businesses

Course Contents:

Unit 1: Corporate Ethics (9 hours)

Meaning, role and importance, theories of ethics: utilitarianism: weighing social cost and benefits, virtue ethics, teleological theories, egoism, rights and duties, justice and fairness, ethics of care. Worker's and employee's rights and responsibilities. Ethics in compliance, Ethics in finance, Ethics in human resources: gender ethics, sexual harassment and discrimination, ethics in marketing. Ethical dilemma.

Unit 2: Corporate Governance (12 hours)

Need and Importance, Role of Board of Directors, Code of Ethics, Code of Conduct, Model Code of Business Conduct & Ethics and Corporate Governance Committees: International and Indian Experience, Whistle Blower Policy and Whistle Mechanism. Anti-Corruption Policy and integrity training.

Unit 3: Sustainable Development (12 hours)

Role of business in sustainable development, corporate sustainability. Sustainability reporting: government role in improving sustainability reporting, triple bottom line (TBL). Global Reporting Initiative (GRI), UN global compact, sustainability indices, sustainability reporting framework in India, challenges in sustainability reporting. Contemporary developments:

integrated reporting, integrated reporting by listed entities in India. Relation between integrated reporting and sustainability reporting.

Unit 4: Corporate Social Responsibility (12 hours)

Corporate Social Responsibility (CSR): Meaning and definitions of CSR, CSR and philanthropy, factors influencing CSR, CSR in India. Corporate Social Responsibility Voluntary Guidelines, 2009. CSR under the Companies Act, 2013.Corporate citizenship – beyond the mandate of law, CSR audit, profit maximization vs. social responsibility.

References:

- Fernando A. C.: Business Ethics–An Indian Perspective. (Chapter 9)
- Ghosh B N: Business Ethics & Corporate Governance, Mc Graw Hill (Chapter 17)
- Andrew & Matten Dirk: Business Ethics, Oxford. (Chapter1, 2, 7)
- Crane Andrew & Matten Dirk: Business Ethics, Oxford. (Chapter11)
- Sharma J P: Corporate Governance, Business Ethics & CSR, Ane Books.(Chapter12)

Essential Readings:

1. Velasquez, M. G. *Business Ethics: Concepts and Cases*. Pearson Education
2. Fernando A.C. *Business Ethics*. Pearson Education.
3. Luthans F., Hodgetts R., & Thompson K. *Social issues in Business*, Macmillan Publishers
4. Gibson K., *Ethics and Business: An Introduction (Cambridge Applied Ethics)*. Cambridge University Press.

Additional Readings:

1. Fernando A.C. *Corporate Governance: Principles, Policies, and Practices*. Pearson Education.
2. Adrian D. *Strategic Approach to Corporate Governance*. Gower Publishing Ltd.
3. Gopalswamy N. *Corporate governance: A new paradigm*. A H Wheeler Publishing Co Ltd.
4. Marianne J. *Cases in Business Ethics*. Indian South Western College Publishing.
5. Bhanumurthy K. *Ethics and Social Responsibility of Business*. Pearson Education India.

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

DSC 18: FINANCIAL SERVICES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Financial Services DSC-18	4	3	1	0	Class XII	NA

Course Objective:

- To arm students with the key concepts, evaluative tools and techniques necessitated by today's dynamic banking environment to work cross-functionally within retail and institutional clients across an extensive range of financial services.

Learning Outcomes:

After studying the course the student will be able to:

- Understand the various financial services available in financial markets particularly in India along with the latest innovations and technological integration in the field of finance.

Course Contents:

Unit 1: Introduction to Financial Services (9 hours)

Introduction to Financial Services: Constituents of the Financial Sector – Institutional Structure (Banking, Insurance, Mutual Funds, Pension Funds, Foreign Institutional Investors) – Financial Markets (Money, Equity, Debt, G-Sec, Forex & Commodities)) – Financial Sector and the Pandemic, Basel Accords and Banking Regulation, Emergence of Digital Finance and AI Based Asset Managers, Discount Broking v/s Full-service Broking.

Unit 2: Merchant Banking (12 hours)

Merchant Banking –meaning, nature and function; merchant banking in India, role in issue management; Book building process, green shoe option. Mutual Fund: types of Mutual Funds and different types of schemes, concept of NAV, Credit Rating Agencies: Role and mechanism. Depository services- meaning, role of depository and their services, Depository in India- NSDL & CDSL.

Unit 3: Leasing and Hire Purchase (15 hours)

Leasing and Hire Purchase :Concepts of leasing, types of leasing – financial & operating lease, direct lease and sales & lease back, advantages and limitations of leasing, Lease rental determination; Finance lease evaluation problems, Hire Purchase interest & Installment, difference between Hire Purchase & Leasing, Choice criteria between Leasing and Hire

Purchase mathematics of HP, Factoring, forfaiting and its arrangement, Housing Finance : Meaning and rise of housing finance in India, Fixing the amount of loan, repricing of a loan, floating vs. fixed rate, Practical problems on housing finance.

Unit 4: Venture Capital (9 hours)

Alternative Investments: Venture Capital: Concept, history and evolution of VC, the venture investment process, various steps in venture financing, incubation financing, buy-outs. Real Estate, Private Equities, Commodities: Concepts, Classification, history Insurance: concept, classification, principles of insurance, IRDA and different regulatory norms, operation of General Insurance, Health Insurance, Life Insurance. Securitization: concept, securitization as a funding mechanism, Traditional and non-traditional mortgages, Graduated-payment mortgages (GPMs), Pledged-Account Mortgages (PAMs), Centralized Mortgage obligations (CMOs), Securitization of non-mortgage assets, Securitization in India. US 2008 sub-prime mortgage crisis. Cases of Bear Stearn, Lehman Brothers.

Essential Readings:

1. Khan, M. Y., *Financial Services*, Tata McGraw –Hill.
2. Machiraju, *Indian Financial System*, Vikas Publishing House.

Additional Readings:

1. Verma, J. C., *A Manual of Merchant Banking*, Bharath Publishing House.
2. Sriram, K, *Hand Book of Leasing, Hire Purchase & Factoring*, ICFAI, Hyderabad.
3. Ennew. C., Watkins, T & Wright, M. *Marketing of Financial Services*, Heinemann Professional.

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

DISCIPLINE SPECIFIC ELECTIVE (DSE) COURSES

DSE 1: STRATEGIC CORPORATE FINANCE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Strategic Corporate Finance DSE-1	4	3	1	0	Class XII	Basic of Finance

Course Objectives:

- To know the details of corporate finance and the strategies involved in the corporate decisions.
- To enable the students to steer the corporate strategies issues and challenges in better manner.
- To provide the key concepts and ideas of decision tree analysis and the Black-Scholes model in the valuation of real options.
- To assess the considerations and strategies involved in company disposals, including non-core subsidiary sales, valuation, timing, and tax planning.

Learning Outcomes:

After studying this course the learners will be able:

- Understand the role of strategy and planning in financial decisions
- Understand the importance and components of a Value Added Statement.
- Identify different types of strategic costing and their relevance.
- Discuss strategic cost reduction techniques.
- Determine the feasibility of a management buy-out.
- Develop a business plan and financial forecasts for submission to potential funders.
- Define bankruptcy and Identify factors leading to bankruptcy.
- Understand the process of reorganizing distressed firms and liquidation process of firms
- Gain an overview of company valuation.
- Analyze the substitutability of capital structure.

Course Contents:

Unit 1 **(12 hours)**

Introduction to strategic corporate finance: Strategy Vs Planning, significance of strategy in financial decisions, Different types of financial strategy for Shareholders Wealth Maximization, Economic Value Addition, Value added statement. Strategic Cost Management:

Traditional costing Vs Strategic Costing, Relevant costs Vs Irrelevant costs, Different types of strategic costing and their relevance- Target Costing, Activity based Costing, Life Cycle Costing, Quality Costing, Zero Based Budgeting, Strategic cost reduction techniques and value chain analysis.

Unit 2 **(12 hours)**

Management Buy-outs: Establishing feasibility of the buy-out, Negotiating the main terms of the transaction with the vendor including price and structure, Developing the business plan and financial forecasts in conjunction with the buy-out team for submission to potential funders.
Management Buy-ins: Management Buy-in/Buy-outs ("BIMBOs"), Vendor-initiated buyouts/buy-ins.
Real options: Financial and real options compared, various types of real options, the Black Scholes model, Decision tree analysis, application of Real options, Drawbacks of Real options.

Unit 3 **(12 hours)**

Financial Distress and restructuring: Meaning of Bankruptcy, Factors leading to bankruptcy, symptoms and predictions of bankruptcy, reorganization of distressed firms, liquidation of firms.
Company disposals: sale of a non-core subsidiary, Exit strategy, valuation, timing of sale and tax planning opportunities and calculation of the various tax implications.
Fundraising: identification of different sources of development capital, determination of capital structure and factors affecting the capital structure, cost of capital and cost saving strategy.

Unit 4

(9 hours)

Company Valuation: an overview of valuation, valuation principles and practices, the impact of "what if" scenarios. Other strategic issues: managing credit ratings, dividend and share repurchase policy. Strategic risk management, substitutability of capital structure, risk management choices, financial, physical and operational hedging.

Essential Readings:

1. Pettit, J., *Strategic Corporate Finance Applications in Valuation and Capital Structure*, John willey & sons, Inc.
2. Damodaran, A., *Corporate finance theory and practice*; John willey & sons.

Additional Readings:

3. Jakhotia, *Strategic Financial Management*, Vikas Publication.
4. Damodaran, A., *Applied Corporate Finance*, John willey & Sons.

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

DSE 2: CORPORATE ANALYSIS & VALUATION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Corporate Analysis & Valuation DSE-2	4	3	1	0	Class XII	Basic of Accounting and finance

Objective:

- To enable the learners to analyse the health of a company through their annual reports and will equip them to understand how to determines its value.

Learning Outcomes:

After studying this course the learner will be able to understand:

- The financial health of a company through qualitative and quantitative analysis.
- The basic of valuation and Cash Flows Forecasting.
- The various valuation techniques for company's valuation and their application

Course Contents

Unit 1: Analysis of Corporate Financial Statements (12 hours)

Analysis of Corporate Financial Statements: Income statements and Balance sheets through ratio analysis and analysing the Chairman's statement, Directors' report, management discussion & analysis, report on corporate governance, auditor's report to evaluate the financial soundness of the company. Understanding financial statements of manufacturing and service organisations. Common size analysis and relevant ratios (Study from the Annual Reports of the companies).

Unit 2: Introduction to Valuation Techniques & Cash Flows Forecasting (12 hours)

Introduction to Valuation: Value and price, Balance sheet-based methods, Income statement-based methods. Cash flow discounting-based methods. Deciding the appropriate cash flow for discounting, The free cash flow to the firm, free cash flow to equity. Forecasting Cash flows: simple model for forecasting income and cashflows. Earnings, Tax effect, Reinvestment needs, dividend.

Unit 3. DCF Valuation, Discount Rates & Beta (12 hours)

Discounted Cash flow Valuation: Valuation of a company with no growth, constant growth, variable growth and infinite life. Estimating Discount Rates – cost of equity, cost of debt, tax

shield, weighted average cost of capital. Calculation of beta, instability of beta, adjusted beta, levered and unlevered beta.

Unit 4: Relative Valuation & Other Applications (9 hours)

Relative Valuation: standard multiples, comparable companies, potential pitfalls; estimating multiples using regression. Valuation of brands and intellectual capital. Interest rates and company valuation. Impact of inflation on valuation. Reconciling relative and discounted cash flow valuation. Case studies in valuation.

Essential Readings:

1. Damodaran, A. (2016). Damodaran on Valuation: Security Analysis for Investment and Corporate Finance. John Wiley & Sons.

2. Chandra, P. (2019). Corporate Valuation and Value Creation. Tata McGraw-Hill. Education.

Additional Readings:

1. Foster, G. (1986). Financial Statement Analysis. Prentice Hall.

Latest Editions of the Readings may be used.

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

DSE 4: FINANCIAL ECONOMETRICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Financial Econometrics DSE-4	**4**	**3**	**1**	**0**	**Class XII**	**Basic understanding of statistics and time series analysis**

Learning Objectives

The course will help the learner to:

- Understand the statistical properties of financial returns, including their distribution, time dependency, and linear dependency across asset returns.
- Develop knowledge of univariate time series analysis, including the Lag operator, ARMA processes, and the Box-Jenkins approach.
- Gain proficiency in modeling volatility using conditional heteroscedastic models, such as ARCH and GARCH models, and forecasting with GARCH models.
- Learn multivariate GARCH models, including the VECH model, diagonal VECH model, and BEKK model, and estimation of a multivariate model.
- Acquire knowledge of vector autoregressive models, Granger causality tests, and Johansen cointegration tests and their hypothesis testing methods.

Learning Outcomes:

The course will help the learner to:

- Analyze the statistical properties of financial returns and evaluate their distribution, time dependency, and linear dependency across assets using knowledge and comprehension skills.
- Create and apply univariate time series models, including AR, MA, and ARMA processes, using synthesis and evaluation skills to forecast financial returns.
- Develop and estimate conditional heteroscedastic models, such as ARCH and GARCH models, using analysis and evaluation skills to model and forecast volatility.

- Construct and evaluate multivariate GARCH models, including VECH, Diagonal VECH, and BEKK models, using synthesis and evaluation skills to model volatility and correlations.
- Evaluate and apply advanced econometric techniques, including VAR, GCT, and JCT, using analysis and evaluation skills to test hypotheses and model complex relationships in financial time series data.

Course Contents:

Unit 1: Statistical Properties of Financial Returns & Univariate Time Series and Applications to Finance (15 hours)

Introduction Asset Returns, Calculation of Asset Returns (Continuous and discreate both), Compare Continuous return with non-Continuous return and explain its benefits. Facts about Financial Returns, Distribution of Asset Returns, Time Dependency, Linear Dependency across Asset Returns.

Introduction to Univariate Time Series, The Lag Operator, Properties of AR Processes, Properties of Moving Average Processes, Autoregressive Moving Average (ARMA) Processes, The Box-Jenkins Approach.

Unit 2: Modelling Volatility – Conditional Heteroscedastic Models (9 hours)

Introduction to Modelling Volatility, ARCH Models, GARCH Models, Estimation of GARCH Models, Forecasting with GARCH Model, Asymmetric GARCH Models, The GARCH-in-Mean Model

Unit 3: Modelling Volatility and Correlations – Multivariate GARCH Models (9 hours)

Introduction to Modelling Volatility and Correlations, Multivariate GARCH Models, The VECH Model, The Diagonal VECH Model, The BEKK Model, The Constant Correlation Model, The Dynamic Correlation Model, Estimation of a Multivariate Model

Unit 4: Vector Autoregressive Models (VAR), Granger Causality Test (GCT) and Johansen Cointegration Test (JCT) (12 hours)

Introduction to VAR, Deep understanding of VAR, Issues in VAR, Hypothesis Testing in VAR.
Introduction to GCT, Deep understanding of GCT, Issues in GCT, Hypothesis Testing in GCT
Introduction to JCT, Deep understanding of JCT, Issues in JCT, Hypothesis Testing in JCT.

Essential Essential/ recommended Readings

- Brooks, C. (2014). Introductory econometrics for finance (3rd ed.). Cambridge University Press.
- Tsay, R. S. (2010). *Analysis of financial time series* (3rd ed.). Wiley.

- Bollerslev, T. (2008). Glossary to ARCH (GARCH). *Journal of Economic Perspectives*, 15(4), 171-174. doi: 10.1257/jep.15.4.171
- Engle, R. F., & Kroner, K. F. (1995). *Multivariate simultaneous generalized ARCH. Econometric Theory*, 11(1), 122-150. doi: 10.1017/S0266466600009063

Suggestive Readings

- Brooks, C (2019). *Introductory Econometrics for Finance*. Cambridge University Press.
- Pindyck, R.S. and Rubinfeld, D.L, *Econometric Models and Economic Forecasts.* Singapore: McGraw Hill.
- Ramu, R (2002). *Introductory Econometrics with Applications* (5th ed.). Thomson South-Western:

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

DSE 8: MARKETING OF FINANCIAL SERVICES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Marketing of Financial Services DSE-8	4	3	1	0	Class XII	NA

Course Objective:

- To introduce students to the marketing of financial services. All financial institutions, including consumer banks and corporate finance services, practice some form of marketing. Some firms market themselves better than others, as evidenced in the competitive value of their brands. This course also operationalizes several marketing concepts such as segmentation, targeting, and positioning.

Learning Outcomes:

After studying this course the student will be able to:

- Explain and illustrate some of the frameworks and approaches that are helpful in marketing financial services**.**
- Outline how to efficiently manage multiple product or brand portfolios across multiple customer segments, and how to develop an effective marketing strategy in modern financial service organizations.

Course Contents:

Unit 1: Introduction to Marketing of Services (12 hours)

Growth of the Service Sector – The Concept of Service – Characteristics of Services, Classification of Services, Service Marketing Mix (Additional Dimensions in Services Marketing – People, Physical Evidence and Process). Internal Marketing of a Service - External versus Internal Orientation of Service Strategy, Service Encounter, Service Failure and Service Recovery, learning from customer feedback.

Unit 2: Marketing Strategy (12 hours)

Planning, organizing and implementing marketing operations; marketing as a management function. Market Research – Establishing a marketing information system; the marketing research process. Market segmentation – Target marketing; Market segmentation, targeting and positioning the financial services organization in the market place.

Unit 3: Banking and Insurance Services (12 hours)

Retail Financial Services: Retail banking, meaning of banking business, introduction to various bank products, selling bank products. Concept of cross selling, Impact of technology on bank marketing (Internet banking, mobile banking and UPI). Insurance – Meaning, advantages

various types of insurance, financial planning process. Risk Management – Strategy to cover risk, introduction to IRDAI, selling of insurance plans. Bancassurance – Bank as a distribution channel for insurance services**.**

Unit 4: Regulations Governing Financial Services Marketing (9 hours)

Ethical issue in the marketing of financial services, Ethics in relation to the individual and society as a whole. Mutual Fund Structure, sales and distribution channels. Distribution channels; the impact of technology; online marketing, The dimension of customer care; services quality and services recovery; global marketing.

Essential Readings:

1. Zeithaml, V. A., Bitner, M. J., Gremler, D. D., & Pandit, A. (n.d.). *Services Marketing*. McGraw Hill.

2. Avdhani, V. A. (n.d.). *Marketing of Financial Services*. HPH.

3. Gupta, P. K. (n.d.). *Insurance and Risk Management*. HPH.

4. Estelami, H. (n.d.). *Marketing Financial Services*.

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

DSE 10: ENTREPRENEURIAL FINANCE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Entrepreneurial Finance DSE-10	4	3	1	0	Class XII	Basic understanding of concepts related Entrepreneurship

Course Objectives:

The Learning Objectives of this course are as follows:

- To develop an understanding of the principles of entrepreneurial finance and the role of finance in the successful venture life cycle.
- To identify and analyze the key elements of a business plan and choose an appropriate form of business organization for the venture.
- To apply short-term and long-term financial planning techniques to forecast sales, estimate sustainable growth rates, and determine additional financing needs to support growth.
- To analyze different valuation methods, including discounted cash flow and venture capital valuation, and apply them to value early-stage ventures and venture capital investments.
- To evaluate different financing alternatives, including professional venture capital, business incubators, seed accelerators, and foreign investor funding sources, and design appropriate security structures for growing ventures, such as common stock, preferred stock, convertible debt, and warrants/options.

Learning Outcomes:

Upon completion of the course the learner will be competent to:

- Apply the principles of entrepreneurial finance and understand the role it plays in the successful venture life cycle, including the key elements of a business plan and forms of business organizations.
- Develop short-term and long-term financial plans using systematic forecasting techniques and estimate sustainable sales growth rates and additional financing needed to support growth.
- Evaluate early-stage ventures using different valuation methods, including present value, discounted cash flow, and venture capital valuation techniques.

- Compare and analyze different financing alternatives, including professional venture capital, business incubators, seed accelerators, and foreign investor funding sources, and design appropriate security structures for growing ventures.
- Adopt a life cycle approach for entrepreneurial finance and understand financial bootstrapping and business angel funding as alternative financing options for the different stages of the venture life cycle.

Course Contents

Unit I: Introduction to Finance for Entrepreneurs (9 hours)
Principles of Entrepreneurial Finance, Role of Entrepreneurial Finance. The Successful Venture Life Cycle. Key Elements of a Business Plan. Forms of Business Organisations and Choosing the Appropriated Organization. Financing through the Venture Life Cycle, Financial Bootstrapping and Business Angel Funding. Life Cycle Approach for Entrepreneurial Finance.

Unit 2: Financial Planning for Enterprises (12 hours)
Short Term Financial Planning: Short Term Cash Planning Tools, Cash Planning from a Projected Monthly Balance Sheet. Long Term Financial Planning: Systematic Forecasting – Forecasting Sales for Seasoned Firms, Forecasting Sales for Early-Stage Ventures. Estimating Sustainable Sales Growth Rates. Estimating Additional Financing needed to support Growth.

Unit 3: Valuing Ventures (12 hours)
Valuing Early-Stage Ventures: Concept, Basic Mechanics of Valuation – Present Value Concept, Estimates and Discounted Cash Flow. Just in Time Equity Valuation. Venture Capital Valuation Methods: Review of Basic Cash Flow Based Equity Valuations, Basic Venture Capital Valuation – Using Present Values and Future Values. Earning Multipliers and Discounted Dividends.

Unit 4: Structuring Financing for Growing Venture (12 hours)
Professional Venture Capital – History and Overview, Professional Venture Investing Cycle. Other Financing Alternatives – Business Incubators and Seed Accelerators; Intermediaries, Facilitators and Consultants; Business Crowdsourcing and Crowdfunding; Commercial and Venture Bank Lending, Foreign Investor Funding Sources. Designing Security Structures – Common Stock, Preferred Stock, Convertible Debt, Warrants and Options, Other Concerns.

Essential Readings

4. Leach, C. J., Melicher, R. W. (2017). *Entrepreneurial finance*. Cengage Learning.
5. Stancill, J. M. (2016). *Entrepreneurial finance: A casebook*. Thomson.
6. Shepherd, D. A., & Zacharakis, A. (2014). *Entrepreneurial finance: Strategy, valuation, and deal structure*. Academic Press.

Additional Readings:

4. Hornsby, J. S., Kuratko, D. F., & Zahra, S. A. (2002). Middle managers' perception of the internal environment for corporate entrepreneurship: assessing a measurement scale. Journal of business venturing, 17(3), 253-273.
5. Sahlman, W. A. (1990). The structure and governance of venture-capital organizations. Journal of financial economics, 27(2), 473-521.
6. Hsu, D. H. (2004). What do entrepreneurs pay for venture capital affiliation? Journal of finance, 59(4), 1805-1844.

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

DSE 12: WEALTH MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Wealth Management DSE-12	4	3	1	0	Class XII	NA

Course Objectives:

- To equip students with the knowledge and practical understanding of important dimensions of wealth management.
- To understand and do planning for their tax liabilities, investments, insurance coverage, retirement and estate needs.

Learning Outcomes:

After the completion of this course the student will be able:

- To provide an overview of various aspects related to wealth management.
- To acquaint the learners with issues related to taxation in wealth management.
- To study the relevance and importance of insurance in wealth management.
- To understand the importance and process of choosing right investments.
- To understand various components of retirement and estate planning.

Course Contents

Unit I: Basics of Wealth Management and Tax Planning (12 hours)

Introduction to Wealth Management, Need for Wealth Management, Components of Wealth Management, Process of Wealth Management, Code of Ethics for Wealth Managers, Wealth Management in India. Tax Planning – Tax Avoidance versus Tax Evasion, Fundamental Objectives of Tax Planning, Tax Structure in India for Individuals, Common Tax Planning Strategies – Maximizing Deductions, Income Shifting, Tax-Free and Tax-Deferred Income.

Unit 2: Managing Insurance Needs (12 hours)

Basics Concepts – Risks, Risk Management and Underwriting. Insuring Life – Benefits of Life Insurance, evaluating need for Life Insurance, Determining the Right Amount of Life Insurance. Choosing the Right Life Insurance Policy – Term Life Insurance, Whole Life Insurance, Universal Life Insurance, Variable Life Insurance, Group Life Insurance, Other Special Purpose Life Policies. Buying Life Insurance – Compare Costs and Features, Select an Insurance Company, and Choose an Agent. Life Insurance Contract Features. Insuring Health – Importance of Health Insurance Coverage. Making Health Insurance Decision – Evaluate Your Health Care Cost Risk, Determine Available Coverage and Resources, Choose a Health Insurance Plan. Types of Medical Expense Coverage. Policy Provisions of Medical Expense Plans. Property Insurance – Basic Principles, Types of Exposure, Principle of Indemnity, and Coinsurance.

Unit 3: Managing Investments (12 hours)

Role of Investing in Personal Financial Planning, Identifying the Investment Objectives, Different Investment Choices. The Risks of Investing, The Returns from Investing, The Risk-Return Trade-off. Managing Your Investment Holdings – Building a Portfolio of Securities, Asset Allocation and Portfolio Management, Keeping Track of Investments. Investing in Equity – Common Considerations, Key Measures of Performance, Types of Equity Stocks, Market Globalization and Foreign Stock, Making the Investment Decision. Investing in Bonds – Benefits of Investing in Bonds, Bonds Versus Stocks, Basic Issue Characteristics, The Bond Market, Bond Ratings. Investing in Mutual Funds and Exchange Traded Funds (ETFs) – Concept of Mutual Funds and ETFs, Benefits of Investing in Mutual Funds or ETFs, Some Important Cost Considerations, Services Offered by Mutual Funds, Selecting appropriate Mutual Fund and ETF investments, Evaluating the performance of Mutual Funds and ETF.

Unit 4: Retirement Planning and Estate Planning (9 hours)

Retirement Planning – Role of Retirement Planning in Personal Financial Planning, Pitfalls to Sound Retirement Planning, Estimating Income Needs, Sources of Retirement Income. Estate Planning – Fundamentals of Estate Planning, Impact of Property Ownership and Beneficiary Designations, Estate Planning Documents, and Executing Basic Estate Planning.

Essential Readings:

1. Billingsley, R. S., Gitman, L. J., & Joehnk, M. D. (2017). Personal Financial Planning. Cengage Learning.
2. Tillery, S. M., & Tillery, T. N. (n.d.). Essentials of Personal Financial Planning. Association of International Certified Professional Accountants.

Additional Readings:

1. Indian Institute of Banking & Finance. (2017). Introduction to Financial Planning (4th Edition).

2. Sinha, M. (2017). Financial Planning: A Ready Reckoner. Mc Graw Hill.

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

POOL OF GENERIC ELECTIVE

The Pool of Generic Electives offered in Semester-IV will also be open for Semester-VI

ANNEXURE - 37

Sub: Amendment to Ordinance V

[E.C Resolution No. 14-1/-(14-1-1/-) dated 09.06.2023 and 27-1-6/- dated 25.08.2023]

Following addition be made to Appendix-II-A to the Ordinance V (2-A) of the Ordinances of the University;

Add the following:

Syllabi of Semester-IV, V and VI of the following departments under Faculty of Arts based on Under Graduate Curriculum Framework -2022 implemented from the Academic Year 2022-23:

(i) Department of Punjabi

(ii) Department of Hindi

(iii) Department of Hindi (Journalism)

Department of Punjabi

Semester-IV

Category I

Discipline Specific Courses offered by Department of Punjabi for the UG Programme with Punjabi as the Single Core Discipline

[UG Programme for Bachelor in **Punjabi (Honours)** degree in three years]

DISCIPLINE SPECIFIC CORE COURSE- 10 (DSC-10)

Adhunik Punjabi Vartak

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Adhunik Punjabi Vartak (DSC-10)	4	3	1	0	Class 12th pass in any subject	Studied Punjabi up to 10th Standard or *Working knowledge of Punjabi language and DSC-04*

Learning Objectives:

- To introduce the students to the modernity and its relation to Punjabi Prose.
- To comprehend them with the development of various trends in Modern Punjabi Prose.
- To view Modern Punjabi Prose in its socio-cultural and political contexts.
- To understand the theme, structure and style in various genres of Modern Punjabi prose.

Learning Outcomes:

- Students would have got exposure to various features and forms of Modern Punjabi Prose.
- They would gain insight into the growth and development of Modern Punjabi prose and its context.
- Students would have understood the socio-political context of Punjab through various genres of Punjabi prose.
- They will demonstrate an understanding of literary terms, themes, strategies, and issues through the close reading of Modern Punjabi prose.

Unit- I: ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਵਾਰਤਕ: ਸਿਧਾਂਤਕ ਪਰਿਪੇਖ (Adhunik Punjabi Vartak: Sidhantak Paripekh)

(12 hours)

- ਵਾਰਤਕ: ਪਰਿਭਾਸ਼ਾ, ਪ੍ਰਕਿਰਤੀ ਤੇ ਲੱਛਣ

  Vartak: Paribhasha, Prakirti te Lachhan
- ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਵਾਰਤਕ ਦਾ ਆਰੰਭ ਤੇ ਵਿਕਾਸ

  Adhunik Punjabi Vartak da Arambh te Vikas
- ਆਧੁਨਿਕ ਵਾਰਤਕ ਦੇ ਪ੍ਰਮੁੱਖ ਰੂਪਾਕਾਰਾਂ ਨਾਲ ਮੁੱਢਲੀ ਜਾਣ-ਪਛਾਣ

  Adhunik Vartak de Pramukh Roopakaran Naal Mudhli Jaan-Pachhan
- ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਵਾਰਤਕ ਦੇ ਨਵੇਂ ਰੁਝਾਨ

  Adhunik Punjabi Vartak de Nave Rujhan

Unit- II: ਸਵੈ-ਜੀਵਨੀ ਅੰਸ਼ (Swai-Jeevni Ansh) (11 hours)

- ਸਵੈ-ਜੀਵਨੀ ਰੂਪਾਕਾਰ ਨਾਲ ਜਾਣ-ਪਛਾਣ

  Swai-Jeevni Roopakar Naal Jaan-Pachhan
- ਨਾਨਕ ਸਿੰਘ: ਬੰਦ ਕਰੋ ਲਹੂ ਨਾਲ ਧੋਣਾ, ਪ੍ਰਿੰ. ਤੇਜਾ ਸਿੰਘ: ਮਹਿੰਦਰਾ ਕਾਲਜ ਪਟਿਆਲਾ

  Nanak Singh: Band Karo Lahoo Naal Dhona, Principal Teja Singh: Mahindra College Patiala
- ਗੁਰਬਖ਼ਸ਼ ਸਿੰਘ: ਉਹ ਬਰਕਤ ਜਿਹੜੀ ਆਈ ਆਫ਼ਤ ਦੇ ਰੂਪ ਵਿਚ, ਕਰਤਾਰ ਸਿੰਘ ਦੁੱਗਲ: ਕਿਸੁ ਪਹਿ ਖੋਲਉ ਗੰਠੜੀ

  Gurbaksh Singh: Oh Barkat Jehrhi Aai Aafat de Roop Vich, Kartar Singh Duggal: kis Peh Kholo Ganthrhi
- ਅੰਮ੍ਰਿਤਾ ਪ੍ਰੀਤਮ: ਮੇਰਾ ਸੋਲ੍ਹਵਾਂ ਵਰ੍ਹਾ, ਹਰਿਭਜਨ ਸਿੰਘ: ਆਪ ਨੂੰ ਪਛਾਣ ਬੰਦੇ

  Amrita Pritam: Mera Sohlvan Vara, Harbhajan Singh: Aap Nu Pachhan Bande

Unit-III: ਨਿਬੰਧ (Nibandh) (11 hours)

- ਨਿਬੰਧ ਰੂਪਾਕਾਰ ਨਾਲ ਜਾਣ-ਪਛਾਣ

  Nibandh Roopakar Naal Jaan-Pachhan
- ਪੂਰਨ ਸਿੰਘ: ਆਰਟ, ਤੇਜਾ ਸਿੰਘ: ਘਰ ਦਾ ਪਿਆਰ

  Pooran Singh: Art, Teja Singh: Ghar da Pyar
- ਸੁਜਾਨ ਸਿੰਘ: ਖੀਸੇ ਵਿਚ ਅਕਲ, ਬਾਵਾ ਬਲਵੰਤ: ਸ਼ਾਮ ਦੀ ਚਾਹ

  Sujan Singh: Kheese Vich Akal, Bawa Balwant: Sham di Chah
- ਈਸ਼ਵਰ ਚਿਤ੍ਰਕਾਰ: ਗੁੱਡੀਆਂ ਪਤੰਗਾਂ, ਨਰਿੰਦਰ ਸਿੰਘ ਕਪੂਰ: ਨਿਰਾਸ਼ ਹੋਣਾ ਮਨ੍ਹਾ ਹੈ

  Ishwar Chitarkar: Guddiyan Patangan, Narinder Singh Kapoor: Nirash Hona Mana Hai

Unit- IV: ਸਫ਼ਰਨਾਮਾ ਅੰਸ਼ (Safarnama Ansh) (11 hours)

- ਸਫ਼ਰਨਾਮਾ ਰੂਪਾਕਾਰ ਨਾਲ ਜਾਣ-ਪਛਾਣ

  Safarnama Roopakar Naal Jaan-Pachhan
- ਲਾਲ ਸਿੰਘ ਕਮਲਾ ਅਕਾਲੀ: ਲੰਦਨ ਦੀ ਸਵੇਰ ਤੇ ਸ਼ਾਮ, ਬਲਵੰਤ ਗਾਰਗੀ: ਮਨੁੱਖ ਤੇ ਮਸ਼ੀਨ

  Laal Singh Kamla Akali: London di Swer te Sham, Balwant Gargi: Manukh te Masheen
- ਸ. ਸ. ਅਮੋਲ: ਪੈਰਿਸ ਵਿਚ ਭਾਰਤੀ ਦਾ ਦੂਜਾ ਦਿਨ, ਹਰਿਭਜਨ ਸਿੰਘ: ਮਾਸਕੋ ਦੀਆਂ ਸੜਕਾਂ 'ਤੇ

  S.S. Amol: Paris vich Bharti da Dooja Din, Harbhajan Singh: Moscow Diyan Sarhkan 'te
- ਪਰਤਾਪ ਸਿੰਘ: ਇਕ ਅਦੁੱਤੀ ਦੇਸ਼ ਸਵਿਟਜ਼ਰਲੈਂਡ, ਹਰਨੇਕ ਸਿੰਘ ਘੱਟੂਆਂ: ਅਸੀਂ ਆਪੇ ਲਾਈਆਂ ਵੇ

Partap Singh: Ikk Adutti Desh Switzerland, Harnek Singh Gharhooan: Asi Aape Laaian Ve

Essential Readings:

- Kang, Kulbir Singh (Ed.) (1998) **Chonvin Punjabi Rachnaatmak Vaartak**, National Book Trust, Delhi.
- Kulvir (ed.) (2012) **Duniya Rang Birangi**, Aarsi Publishers, Delhi.
- Manjit Singh (ed.) (2011) **Punjabi Sawae-Jeevani Ansh**, Manpreet Parkashan, Delhi.

Suggested Readings:

- Brar, Rajinder Pal Singh (2009) **Adhunik Punjabi Sahit Roopakar: Sidhant ate Roopantran**, Punjabi University, Patiala.
- Dil, Balbir Singh (1991) **Punjabi Nibandh : Saroop, Sidhant ate Vikaas**, Punjabi University, Patiala.
- Harbhajan Singh (1974) **Paargaami,** Navchetan Publishers, Amritsar.
- Harcharan Kaur (Ed.) (1992) **Aadhunik Punjabi Sahit: Punar-Vichar**, Punjabi Academy, Delhi.
- Jaggi, Ratan Singh (1994) **Sahit Kosh**, Punjabi University, Patiala.
- Kang, Kulbir Singh (1998) **Madhkali Punjabi Vaartak**, Patiala, Punjabi University.
- Kirpal Singh (1987) **Janamsakhi Parmpara,** Punjabi University, Patiala.
- Manjit Singh (2003) **Sahit-Sanrachna: System ate Parvachan**, Arsee Publishers, Delhi.
- Manjit Singh (2005) **Janamsakhi/Myth-Vigyaan (second edition),** Arsee Publishers, Delhi.
- Satinder Singh (2006) **Adhunik Punjabi Vaartak da Itihaas**, Punjabi Academy, Delhi.
- Singal, Dharam Pal (1987) **Punjabi Jivani: Saroop**, **Sidhant ate Vikaas**, Punjabi University, Patiala.

Magazines/Journals

- Khoj Patrika, **Aadhunik Vaartak Ank (Ank 22)**, Punjabi University, Patiala.

Internet Resourses:

- **https://www.youtube.com/watch?v=38kkI-tZeA8**
- **https://apnaorg.com/**
- **https://shodhganga.inflibnet.ac.in/**

***(Note: Teachers are free to recommend additional related standard source books, if required so.)**

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE -11 (DSC-11)

Parvasi Punjabi Sahit

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Parvasi Punjabi Sahit (DSC-11)	4	3	1	0	Class 12th pass in any subject	Studied Punjabi up to 10th Standard or *Working knowledge of Punjabi language and DSC-04*

Learning Objectives:

- Students will understand the concept of migration, especially the migration of Punjabi Community to the first world.
- Students are expected to learn the process of migration and its other aspects through a reading of Punjabi diasporic literature.
- They will explore the traces of Punjabi Migration by reading and understanding the concepts like Nostalgia, like generation-gap, identity crisis and inter-cultural conflict etc.

Learning Outcomes:

- Students will be able to examine the vastness of Punjabi Literature available across the borders.
- They will understand the psyche of Punjabi mind towards migration.
- They will examine the social, economic and political issues discussed in Punjabi diasporic literature.

Unit-I: ਪਰਵਾਸੀ ਪੰਜਾਬੀ ਸਾਹਿਤ: ਸਿਧਾਂਤਕ ਪਰਿਪੇਖ (Parvasi Punjabi Sahit: Sidhantak Paripekh) (12 hours)

- ਆਵਾਸ, ਪਰਵਾਸ ਤੇ ਡਾਇਸਪੋਰਾ ਨਾਲ ਮੁੱਢਲੀ ਜਾਣ-ਪਛਾਣ

  Aawas, Parvas te Diaspora Naal Mudhli Jaan-Pachhan
- ਪਰਵਾਸ ਦੇ ਆਰਥਿਕ, ਸਮਾਜਕ ਤੇ ਰਾਜਨੀਤਕ ਪਹਿਲੂ

  Parvas de Aarthik, Samajak te Rajnitak Pehloo
- ਪੰਜਾਬੀਆਂ ਦੇ ਪਰਵਾਸ ਦੇ ਵਿਭਿੰਨ ਪੜਾਅ

Punjabian de parvas de Vibhin Parha

- ਪਰਵਾਸ ਤੇ ਪੰਜਾਬੀ ਸਾਹਿਤ: ਅੰਤਰ-ਸੰਬੰਧ

  Parvas te Punjabi Sahit: Antar-Sambandh

Unit- II: ਗ਼ਦਰ ਲਹਿਰ ਦਾ ਸਾਹਿਤ (Gadar Lehar da Sahit) (11 hours)

- ਗ਼ਦਰ ਲਹਿਰ ਬਾਰੇ ਸੰਖੇਪ ਜਾਣ-ਪਛਾਣ

  Gadar Lehar Bare Sankhep Jaan-Pachhan
- ਗ਼ਦਰ ਸਾਹਿਤ ਦੇ ਮੂਲ ਸਰੋਕਾਰ

  Gadar Sahit de Mool Sarokar
- ਗ਼ਦਰ ਦੀ ਕਵਿਤਾ: ਹਿੰਦ ਦੇ ਸਪੁੱਤਰੋ ਕਰੋ ਧਿਆਨ ਜੀ, ਹਿੰਦੋਸਤਾਨੀਓ ਜ਼ਰਾ ਹੁਸ਼ਿਆਰ ਹੋ ਪੋ, ਹਿੰਦੀ ਸ਼ਹੀਦਾਂ ਦਾ ਆਖ਼ਰੀ ਸੰਦੇਸ਼ਾ

  Gadar Di Kavita: Hind de Saputtaro Karo Dhyan Ji, Hindostanion Zara Hushiyar ho po, Hindi Shaheedan da Aakhri Sandesha
- ਗ਼ਦਰ ਦੀ ਵਾਰਤਕ: ਅਖ਼ਬਾਰ ਸੁਦੇਸ਼ ਸੇਵਕ ਕੱਢਣ ਦਾ ਉਦੇਸ਼ (ਬਾਬੂ ਹਰਨਾਮ ਸਿੰਘ ਕਾਹਰੀ ਸਾਹਰੀ), ਆਪਣੇ ਪਿਆਰੇ ਹਿੰਦੋਸਤਾਨੀ ਭਾਈਆਂ ਦੇ ਨਾਂ (ਭਾਈ ਗੁਰਦਿੱਤ ਸਿੰਘ)

  Gadar di Vartak: Akhbar Sudesh Sewak Kaddhan da Udesh (Babu Harnam Singh Kahri Sahri), Apne Pyare Hindostani Bhaaiyan de Naa (Bhai Gurdit Singh)

Unit- III: ਪਰਵਾਸੀ ਪੰਜਾਬੀ ਕਵਿਤਾ (Parvasi Punjabi Kavita) (11 hours)

- ਪਰਵਾਸੀ ਪੰਜਾਬੀ ਕਵਿਤਾ ਦੇ ਮੂਲ ਸਰੋਕਾਰ

  Parvasi Punjabi Kavita de Mool Sarokar
- ਬਰਤਾਨੀਆ - ਅਵਤਾਰ ਜੰਡਿਆਲਵੀ: ਮੇਰੇ ਪਰਤ ਆਉਣ ਤੱਕ, ਜਗਤਾਰ ਢਾਅ: ਵਰਤਮਾਨ ਤੋਂ ਸੱਖਣੇ, ਭੁਪਿੰਦਰ ਪੁਰੇਵਾਲ: ਜਦੋਂ ਦੇਸ ਪਰਤਾਂਗਾ

  Bartania- Avtar Jandialvi: Mere Parat Aaunn Tak, Jagtar Dhah: Vartman ton Sakkhne, Bhupinder Purewal: Jadon Des Partanga
- ਕੈਨੇਡਾ - ਅਜਮੇਰ ਰੋਡੇ: ਦੁਚਿੱਤੀਆਂ, ਇਕਬਾਲ ਰਾਮੂਵਾਲੀਆ: ਘਰ, ਗੁਰਚਰਨ ਰਾਮਪੁਰੀ: ਪਰਦੇਸੀ

  Canada- Ajmer Rode: Duchittian, Iqbal Ramoowalia: Ghar, Gurcharan Rampuri: Pardesi
- ਸਵਿਟਜ਼ਰਲੈਂਡ - ਦੇਵ: ਪਰਵਾਸ, ਨੀਦਰਲੈਂਡ - ਅਮਰ ਜਿਉਤੀ: ਨੈਣਾਂ ਦੀ ਰੜਕ, ਅਫਰੀਕਾ - ਸੋਹਨ ਸਿੰਘ ਜੋਸ਼: ਮਹਿਕ ਖਿਡਾਉਂਦਾ ਹਾਂ

  Switzerland- Dev: Parvas, Netherland- Amar Jyoti: Naina di Rarhak, Africa- Sohan Singh Josh: Mehek Khidaunda Haan

Unit- IV: ਪਰਵਾਸੀ ਪੰਜਾਬੀ ਕਹਾਣੀ (Parvasi Punjabi Kahani) (11 hours)

- ਪਰਵਾਸੀ ਪੰਜਾਬੀ ਕਹਾਣੀ ਦੇ ਮੂਲ ਸਰੋਕਾਰ

  Parvasi Punjabi Kahani de Mool Sarokar
- ਬਰਤਾਨੀਆ - ਹਰਜੀਤ ਅਟਵਾਲ: ਆਪਣਾ ਖੂਹ, ਦਰਸ਼ਨ ਧੀਰ: ਫਿਟਿਆ ਦੁੱਧ

  Bartania- Harjeet Atwal: Aapna Khooh, Darshan Dheer: Fittya Dudh
- ਕੈਨੇਡਾ - ਜਰਨੈਲ ਸਿੰਘ: ਪਾਣੀ, ਹਰਪ੍ਰੀਤ ਸੇਖਾ: ਉਹ ਰਾਤ

  Canada- Jarnail Singh: Panni, Harpreet Sekha: Oh Raat

- ਅਮਰੀਕਾ - ਹਰਭਜਨ ਸਿੰਘ : ਗਰਾਉਂਡ ਜ਼ੀਰੋ, ਸੁਰਿੰਦਰ ਸੋਹਲ: ਸ਼ੀਸ਼ੇ 'ਤੇ ਜੰਮੀ ਬਰਫ਼

  America- Harbhajan Singh: Ground Zero, Surinder Sohal: Sheeshe te Jammi Barf

Essential Readings:

- Dhanwant Kaur (ed.) (2023) **Parvas di Parvaz**, National Book Trust, Delhi.
- Raghbir Singh (2014) **Ghadr Party Lehar: Sankhep Itihas**, (ed.) Balbir Madhopuri, Publication Division, New Delhi.
- Surinderpal Singh (Dr.), Bedi, Harchand Singh (Dr.) (eds.) (1996), **Parvasi Punjabi Kavita**, Ravi Sahit Parkashan, Amritsar.

Suggested Readings:

- Bedi, Harchand Singh (1998) **Parvasi Punjabi Kahani**, Guru Nanak Dev University Amritsar.
- Bedi, Harchand Singh (2004) **Parvasi Punjabi Sahit de Masle**, Ravi Sahit Parkashan, Amritsar.
- Bedi, Harchand Singh (2004) **Parvasi Punjabi Sahit Sandarbh Kosh**, Guru Nanak Dev University, Amritsar.
- Brar, Rajinder Pal Singh (Ed.) (2009) **Punjabi Diaspora: Sahit ate Sabhyachar**, Punjabi University, Patiala.
- Brar, Rajinder Pal Singh (Ed.) (2011) **Punjabi Diaspora: Adhyan ate Adhiyapan**, Punjabi University, Patiala.
- Kasel, Singh Kirpal (ed.) (2008) **Gadar Lehar di Vartak, (compiled by Giani Kesar Singh)**, Publication Bureau, Punjabi University, Patiala, pp. 63-65, 159-163.
- Sainsara, G.S. et al (1961) **Gadar Party da Itihas**, Desh Bhagat Yaadgaar Committee, Jalandhar.
- Surinderpal Singh (Ed.) (1990), **Parvasi Punjabi Sahit**, Punjabi Adhyan School, Guru Nanak Dev University, Amritsar.

Internet Resources:

- **https://www.punjabi-kavita.com/**
- **https://apnaorg.com/**
- **https://shodhganga.inflibnet.ac.in/**

***(Note: Teachers are free to recommend additional related standard source books, if required so.)**

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE -12 (DSC-12)

Pakistani Punjabi Sahit

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Pakistani Punjabi Sahit (DSC-12)	4	3	1	0	Class 12th pass in any subject	Studied Punjabi up to 10th Standard or *Working knowledge of Punjabi language and DSC-04*

Learning Objectives:

- To learn the issues and concerns depicted in the Punjabi literature written in west Punjab.
- To understand the similarities and differences in the literatures of East and West Punjab.
- To explain how and when some important events happened in the history of Pakistani Punjabi Literature.
- To learn the socio-political contexts of west Punjab through literary writings.

Learning Outcomes:

- Students will demonstrate knowledge of the chronology, narrative, major events, personalities and turning points in the history of Pakistani Punjabi literature.
- They will be able to explain the cultural diversity and the similarities of human experience reflected in the literature of East and West Punjab.
- They will examine western Punjab through multiple frames of reference, including the perception of others..

Unit-I ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਸਹਿਤ: ਸਿਧਾਂਤਕ ਪਰਿਪੇਖ (Pakistani Punjabi Sahit: Sidhantak Paripekh) (12 hours)

- ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਸਾਹਿਤ: ਮੁਢਲੀ ਜਾਣ-ਪਛਾਣ

  Pakistani Punjabi Sahit: Mudhli Jaan-Pachhan
- ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਮੁੱਖ ਸਰੋਕਾਰ

  Pakistani Punjabi Sahit de Mukh Sarokar
- ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਸਾਹਿਤ ਤੇ ਭਾਰਤੀ ਪੰਜਾਬੀ ਸਾਹਿਤ: ਸਮਾਨਤਾਵਾਂ ਤੇ ਵਖਰੇਵੇਂ

Pakistani Punjabi Sahit te Bharti Punjabi Sahit: Smantavan te Vakhreven

- ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਸਾਹਿਤ ਵਿਚ ਪ੍ਰਤੀਕਾਤਮਕਤਾ

  Pakistani Punjabi Sahit vich Prateekatmakta

Unit- II ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਕਵਿਤਾ (Pakistani Punjabi Kavita) (11 hours)

- ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਕਵਿਤਾ ਨਾਲ ਸੰਖੇਪ ਜਾਣ-ਪਛਾਣ

  Pakistani Punjabi Kavita Naal Sankhep Jaan-Pachhan)
- ਉਸਤਾਦ ਦਾਮਨ: ਇਸ ਮੁਲਕ ਦੀ ਵੰਡ ਕੋਲੋਂ ਯਾਰੋ, ਉਰਦੂ ਦਾ ਮੈਂ ਦੋਖੀ ਨਾਹੀਂ, ਤੇਰਾ ਇਕ ਦਿਲ ਏ ਜਾਂ ਦੋ

  Ustad Daman: Is Mulk di Vandd Kolon Yaaron, Urdu da Main Dokhi Naahin, Tera Ikk Dil Ae Jan do
- ਬਾਬਾ ਨਜ਼ਮੀ: ਅੱਖਰਾਂ ਵਿਚ ਸਮੁੰਦਰ ਰੱਖਾਂ ਮੈਂ ਇਕਬਾਲ ਪੰਜਾਬੀ ਦਾ, ਸ਼ੀਸ਼ੇ ਉਤੇ ਧੂੜਾਂ ਜੰਮੀਆਂ ਕੰਧਾਂ ਝਾੜੀ ਜਾਂਦੇ ਨੇ, ਮਸਜਦ ਮੇਰੀ ਤੂੰ ਕਿਉਂ ਢਾਵੇਂ ਮੈਂ ਕਿਉਂ ਤੋੜਾਂ ਮੰਦਰ ਨੂੰ

  Baba Nazmi: Akhran Vich Samundar Rakhan Main Iqbal Punjabi da, Sheeshe Utte Dhoorhan Jammiyan Kandhan Jhaarhi Jaande Ne, Masjad Meri Tu Kyon Dhaawen Main Kyon Torhan Mandar nu
- ਅਫ਼ਜ਼ਲ ਸਾਹਿਰ: ਇਸ ਜੀਵਨ ਤੋਂ ਰੱਜੇ, ਮੈਂ ਜਾਣੂੰ ਅਨਜਾਣ, ਸਾਡੇ ਬਾਬੇ ਲੀਕਾਂ ਚੁੰਮੀਆਂ

  Afzal Sahir: Is Jeevan ton Rajje, Main Jaanoo Anjan, Sadde Babe Leekan Chummian

Unit- III ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਕਹਾਣੀ (Pakistani Punjabi Kahani) (11 hours)

- ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਕਹਾਣੀ ਨਾਲ ਸੰਖੇਪ ਜਾਣ-ਪਛਾਣ

  Pakistani Punjabi Kahani Naal Sankhep Jaan-Pachhan
- ਅਫ਼ਜ਼ਲ ਅਹਿਸਨ ਰੰਧਾਵਾ: ਬੰਨੇ ਚੰਨੇ ਦੇ ਭਰਾ, ਬੇੜੀਆਂ

  Afzal Ahsan Randhawa: Banne Channe de Bhra, Bediyan
- ਅਫ਼ਜ਼ਲ ਤੌਸੀਫ਼: ਕਹਾਣੀਆਂ ਦੀਆਂ ਕਿਰਚਾਂ, ਦਿਲਗੀਰ ਸਿੰਘ

  Afzal Toseef: Kahaniyan diyan Kirchan, Dilgeer Singh
- ਅਸ਼ਰਫ਼ ਸੁਹੇਲ: ਜ਼ਬਾਨ ਦਾ ਕਤਲ, ਧਰਤੀ ਵੀਰਾਂ ਵਾਲੀ

  Ashraf Suhail: Zuban da Qatal, Dharti Veeran Wali

Unit- IV ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਨਾਟਕ (Pakistani Punjabi Natak) (11 hours)

- ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਨਾਟਕ ਨਾਲ ਸੰਖੇਪ ਜਾਣ-ਪਛਾਣ

  Pakistani Punjabi Natak Naal Sankhep Jaan-Pachhan
- ਬੁੱਲ੍ਹਾ (ਸ਼ਾਹਿਦ ਨਦੀਮ): ਇਤਿਹਾਸਕ ਤੇ ਰਾਜਨੀਤਕ ਪੱਖ

  Bullah (Shahid Nadeem): Itihasak te Rajnitak Pakkh
- ਬੁੱਲ੍ਹਾ (ਸ਼ਾਹਿਦ ਨਦੀਮ): ਸਮਾਜਕ-ਸਭਿਆਚਾਰਕ ਪੱਖ

  Bullah (Shahid Nadeem): Smajak-Sabhyacharak Pakkh
- ਬੁੱਲ੍ਹਾ (ਸ਼ਾਹਿਦ ਨਦੀਮ): ਰੰਗਮੰਚੀ ਦ੍ਰਿਸ਼ਟੀ

Bullah (Shahid Nadeem): Rangmanchi Drishti

Essential Readings:

- Nadeem, Shahid (2004) **Bullah**, Chetna Parkashan, Ludhiana.
- https://www.punjabi-kavita.com/

Suggested Readings:

- Atar Singh (1975) **Samdarshan**, Raghbir Rachna Parkashan, Amritsar.
- Atar Singh (Dr.) Jagtar (Dr.) (eds.) (2007) **Dukh Dariyaon Paar De**, Lokgeet Parkashan, Chandigarh.
- Dhiman, Harbans Singh (1998) **Pakistani Punjabi Sahit: Nikaas ate Vikaas**, Gagan Prakashan, Rajpura.
- Jatinderpal Singh (2001) **Pakistani Punjabi Galap**, Nanak Singh Pustak Mala, Amritsar.
- Mehta, Gurcharan Singh (1998) **Pakistani Punjabi Sahit: Ik Parichya, Ik Jaiza**, Sahit Parkashan, Amritsar.
- Malik, Shaheen (1988) **Pakistani Punjabi Kahaani**, Punjabi University, Patiala.
- Noor, S.S., Rawail Singh (Eds) (2001) **Pakistani Punjabi Sahit**, Punjabi Academy, Delhi.
- Syed, Najm Hussian (1968) **Recurrent Patterns in Punjabi Poetry**, Majilis Shah Hussian, Lahore.

Internet Recourses:

- https://www.punjabikahani.punjabi-kavita.com/PunjabiStories.php
- https://www.youtube.com/watch?v=Be_XNN9kjU8
- https://www.youtube.com/watch?v=oetNnDzcu8Y
- https://apnaorg.com/
- https://shodhganga.inflibnet.ac.in/

*(Note: Teachers are free to recommend additional related standard source books, if required so.)

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

Category II

(Discipline Specific Core Courses for Undergraduate Programme of study with Punjabi as one of the Core Disciplines)

(B.A. Programmes with Punjabi as Major discipline)

DISCIPLINE SPECIFIC CORE COURSE – 7(DSC-7)
SUFI KAAV

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
SUFI KAAV (DSC-7)	4	3	1	0	Class 12th pass in any subject	**Studied Punjabi up to 8th Standard or** ***Basic knowledge of Punjabi language***

LEARNING OBJECTIVES:

- To learn the origin of Sufism, philosophy of Sufis and relevance of that philosophy in the contemporary scenario.
- To understand the ideological and philosophical background of Sufi Poetry.
- It will help the students to understand how the Sufis changed socio-religious structure of Punjab through their spiritual experiences.
- To analyse dialogue of Sufi poetry with dominated thought systems.
- To interpret literary texts from various perspectives by using close readings supported by textual evidence, and informed by critical theory.

LEARNING OUTCOMES:

- Students will be able to understand the ideology and philosophy of Sufi poetry.
- Students will learn to evaluate existing criticism available in the subject.
- Students will be able to interpret Sufi poetry within a historical and social context
- They will be able to learn about Sufi mysticism, different school of Sufism and Islamic philosophy.
- They will develop the sense of awareness about the environment and they will realize the inter-relationship between man and environment by a close reading of Sufi poetry.

Unit I: ਪੰਜਾਬੀ ਸੂਫ਼ੀ ਕਵਿਤਾ: ਸਿਧਾਂਤਕ ਪਰਿਪੇਖ (Punjabi Sufi Kavita: Sidhantak Paripekh)

(12 hours)

- ਸੂਫ਼ੀਮਤ ਅਤੇ ਇਸਲਾਮ : ਸੰਖੇਪ ਜਾਣ-ਪਛਾਣ

  Sufimat ate Islam: Sankhep Jaan-Pachhan
- ਪ੍ਰਮੁੱਖ ਸਿਲਸਿਲੇ : ਚਿਸ਼ਤੀ, ਕਾਦਰੀ, ਸੁਹਰਾਵਰਦੀ ਤੇ ਮਲਾਮਤੀ

  Pramukh Silsile: Chishti, Kadri, Suhravardi te Malamati
- ਪੰਜਾਬੀ ਸੂਫ਼ੀ ਕਾਵਿ : ਨਿਕਾਸ, ਵਿਕਾਸ ਅਤੇ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ

  Punjabi Sufi Kaav: Nikas, Vikas ate Visheshtavan
- ਪੰਜਾਬੀ ਸੂਫ਼ੀ ਕਾਵਿ : ਮੂਲ ਸਰੋਕਾਰ

  Punjabi Sufi Kaav: Mool Sarokar

Unit II: ਕਲਾਮ: ਬਾਬਾ ਸ਼ੇਖ ਫਰੀਦ (Kalam: Baba Sheikh Farid) (11 hours)

- ਬਾਬਾ ਸ਼ੇਖ ਫਰੀਦ : ਜੀਵਨ ਅਤੇ ਰਚਨਾ

  Baba Sheikh Farid : Jeevan ate Rachna
- ਵਿਚਾਰਧਾਰਾ ਅਤੇ ਨੈਤਿਕ ਪੱਖ

  Vichardhara ate Naitik Pakkh
- ਨਾਸ਼ਮਾਨਤਾ ਦਾ ਸੰਕਲਪ

  Nashmanta Da Sankalp
- ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ

  Prasang Sahit Vyakhya

Unit III: ਕਲਾਮ: ਸ਼ਾਹ ਹੁਸੈਨ (Kalam: Shah Hussain) (11 hours)

- ਸ਼ਾਹ ਹੁਸੈਨ : ਜੀਵਨ ਅਤੇ ਰਚਨਾ

  Shah Hussain : Jeevan ate Rachna
- ਵਿਚਾਰਧਾਰਾ ਅਤੇ ਨੈਤਿਕ ਪੱਖ

  Vichardhara ate Naitik Pakkh
- ਬਿਰਹਾ ਦਾ ਸੰਕਲਪ

  Birha da Sankalp
- ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ

  Prasang Sahit Vyakhya

Unit IV: ਕਲਾਮ: ਬੁੱਲ੍ਹੇ ਸ਼ਾਹ (Kalam: Bullhe Shah) (11 hours)

- ਬੁੱਲ੍ਹੇ ਸ਼ਾਹ: ਜੀਵਨ ਅਤੇ ਰਚਨਾ

  Bullhe Shah : Jeevan ate Rachna
- ਵਿਚਾਰਧਾਰਾ ਅਤੇ ਨੈਤਿਕ ਪੱਖ

  Vichardhara ate Naitik Pakkh
- ਇਸ਼ਕ ਦਾ ਸੰਕਲਪ

Ishq da Sankalp

- ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ

  Prasang Sahit Vyakhya

ESSENTIAL READINGS

- Ghuman, Bikram Singh (1999) **Sufi Mat Ate Punjabi Sufi Kav**, Waris Shah Foundation, Amritsar.
- Manjit Singh (Dr.) (ed.) (2012**) Punjabi Sufi-Kaav Suraan**, Manpreet Prakashan, Delhi.

SUGGESTED READINGS:

- Attarjit Singh and Gurcharan Singh (eds.) (2009) **Bullhe Shah**, Arsee Publishers, Delhi.
- Baddan, Baldev Singh (Dr.), Singhal, Dharmpal (Dr.) (2017) **Sheikh Farid, Shah Hussain, Bullhe Shah Jeevan Te Rachna,** Lakshya Publications, Delhi.
- Bedi, Kala Singh (Dr.) (2011) **Bullhe Shah: Alochnatmak Adhyan**, Publication Bureau, Punjabi University, Patiala.
- Gurdev Singh (2005) **Punjabi Sufi Kav Da Itihas**, Punjabi Academy, Delhi.
- Gurmukh Singh (Dr.) (ed.) (1997) **Sufiwad** By Gurmeet Singh (Prof.), Lokgeet Parkashan, Chandigarh.
- Jaggi, Gursharan Kaur (Dr.) (ed.) (2009) **Sheikh Farid : Jiwan Chintan Ate Bani** By Dr. Rattan Singh Jaggi, Arsee Publishers, Delhi.
- Noor, Satinder Singh (ed.) (1997) **Punjabi Sufi Kaav,** Sahit Academy, New Delhi.
- Sahib Singh (1977) **Salok Te Shabad Farid Ji Steek**, Singh Brothers, Bazar Mai Seva, Amritsar.
- Sheetal, Jeet Singh (Dr.) (1978) **Shah Hussain Jeevan Te Rachna**, Publication Bureau, Punjabi University, Patiala.
- Sheetal, Jeet Singh (Dr.) (1970) **Bullhe Shah Jeevan Te Rachna**, Publication Bureau, Punjabi University, Patiala.
- Sukhdev Singh (Dr.) (ed. & trans.) (2011) **Punjabi Sufi Kav (1460-1900),** Dr. Lajwanti Rama Krishana, Lokgeet Parkashan, Chandigarh.
- Talwara, Gurcharan Singh (Prof.) (2012) **Sufi Mat Vichardhara, Vikas Ate Silsale**, Waris Shah Foundation, Amritsar.

MAGAZINES/JOURNALS

- Alochana, **Bharti Sufi Sahit Vishesh Ank**, Ank 222, October 2009-March 2010, Punjabi Sahit Academy, Delhi.
- Punjabi Duniya (1964) **Sufi Sahit Ank**, Bhasha Vibhag Punjab, Patiala.
- Khoj Patrika, Jaggi, **Sufi Kav Ank 33,** March 1989 Publication Bureau, Punjabi University, Patiala.
- Khoj Darpan, **Punjabi Sufi Kav Vishesh Ank**, July 1998, Guru Nanak Dev University, Amritsar.
- Samdarshi, **Sufi Vishesh Ank**, Punjabi Academy, Delhi.

DICTIONARIES

- Jaggi, Gursharan Kaur (Dr.) (ed.) (2015) **Punjabi Sufi Kav Kosh**, Gracious Book, Patiala.
- Talwara, Gurcharan Singh (Prof.) (2016) **Sufi Mat Sankalp Kosh**, Waris Shah Foundation, Amritsar.

***(Note: Teachers are free to recommend additional related standard source books, if required so.)**

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 8 (DSC-8)
QISSA KAAV

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
QISSA KAAV (DSC-8)	4	3	1	0	Class 12th pass in any subject	**Studied Punjabi up to 8th Standard or** ***Basic knowledge of Punjabi language***

LEARNING OBJECTIVES:

- To analyse the narratives of Medieval Punjabi poetry especially in Qissa Kaav.
- To analyse the ways in which language and literature are related to culture, ethnicity, gender and history during medieval period in Qissa Kaav.
- To interpret Qissa poetry by using close readings supported by textual evidence and informed by critical theory.
- To develop the sense of awareness among the students about the environment through close reading of Qissa kaav and to help them in realizing the inter-relationship between man and environment and help to protect the nature and natural resources.
- Ethical values mentioned in Qissa Kaav will be discussed among the students.

LEARNING OUTCOMES:

- Students will be able to learn the ideological and cultural dimensions of Qissa Kaav.
- Students will be able to understand and evaluate existing criticism on the subject.
- Students will be able to interpret medieval Punjabi narrative poetry specially in Qissa Kaav.
- They will be able to demonstrate their knowledge of major literary movements, figures and works in Qissa kaav.

- Students will be able to analyze famous Qissa poets, their works and representation of the human experiences.
- Students will be able to interpret Qissa Literature within its historical and social contexts.

Unit I: ਕਿੱਸਾ ਕਾਵਿ : ਸਿਧਾਂਤਕ ਪਰਿਪੇਖ (Qissa Kaav: Sidhantak Paripekh)

(12 hours)

- ਕਿੱਸਾ ਕਾਵਿ : ਪਰਿਭਾਸ਼ਾ, ਸਰੂਪ ਅਤੇ ਤੱਤ

  Qissa Kaav: Paribhasha, Saroop ate Tatt
- ਪੰਜਾਬੀ ਕਿੱਸਾ ਕਾਵਿ : ਨਿਕਾਸ, ਵਿਕਾਸ ਅਤੇ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ

  Punjabi Qissa Kaav : Nikas, Vikas ate Visheshtavan
- ਪੰਜਾਬੀ ਕਿੱਸਾ ਕਾਵਿ : ਵਰਗੀਕਰਣ

  Punjabi Qissa Kaav : Vargikaran
- ਪੰਜਾਬੀ ਕਿੱਸਾ ਕਾਵਿ : ਮੂਲ ਸਰੋਕਾਰ

  Punjabi Qissa Kaav : Mool Sarokar

Unit II: ਮਿਰਜ਼ਾ ਸਾਹਿਬਾਂ: ਪੀਲੂ (Mirza Sahiba: Peelu) (11 hours)

- ਪੀਲੂ : ਜੀਵਨ ਅਤੇ ਰਚਨਾ

  Peelu: Jeevan ate Rachna
- ਵਿਸ਼ਾ ਅਤੇ ਕਲਾ ਪੱਖ

  Visha ate Kala Pakkh
- ਸਮਾਜ ਸਭਿਆਚਾਰਕ ਪੱਖ

  Samaj Sabhyacharak Pakkh
- ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ

  Prasang Sahit Vyakhya

Unit III: ਕਿੱਸਾ ਹੀਰ: ਵਾਰਿਸ ਸ਼ਾਹ (Qissa Heer: Waris Shah) (11 hours)

- ਵਾਰਿਸ ਸ਼ਾਹ : ਜੀਵਨ ਅਤੇ ਰਚਨਾ

  Waris Shah : Jeevan ate Rachna
- ਵਿਸ਼ਾ ਅਤੇ ਕਲਾ ਪੱਖ

  Visha ate Kala Pakkh
- ਇਸ਼ਕ ਦਾ ਸੰਕਲਪ

  Ishq Da Sankalp

- ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ

  Prasang Sahit Vyakhya

Unit IV: ਕਿੱਸਾ ਪੂਰਨ ਭਗਤ: ਕਾਦਰਯਾਰ (Qissa Puran Bhagat: Kadaryaar) (11 hours)

- ਕਾਦਰਯਾਰ : ਜੀਵਨ ਅਤੇ ਰਚਨਾ

Kadaryaar: Jeevan ate Rachna

- ਵਿਸ਼ਾ ਅਤੇ ਕਲਾ ਪੱਖ

  Visha ate Kala Pakkh
- ਸਮਾਜ ਸਭਿਆਚਾਰਕ ਪੱਖ

  Samaj Sabhyacharak Pakkh
- ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ

  Prasang Sahit Vyakhya

ESSENTIAL READINGS:

- Jaggi, Rattan Singh (Dr.) (2003), **Sahit De Roop**, Publication Bureau, Punjabi University, Patiala.
- Ravinder Singh (Dr.) (ed.) (2015), **Madhkali Birtantak Kaav**, Manpreet Prakashan, Delhi.

SUGGESTED READINGS:

- Harbhajan Singh (1972) **Qissa Sansaar**, National Book Trust, India, Delhi.
- Harbans Singh (1994) **Puran Bhagat Krit Kadar Yar**, Lahore Book Shop, Ludhiana.
- Harjodh Singh (Dr.) (2010) **Peelu: Jeevan Te Rachna**, Publication Bureau, Punjabi University, Patiala.
- Ghuman, Bikram Singh (Dr.) (ed.) (1998) **Punjabi Qissa Kav: Sidhant, Sarup Te Vikas**, Waris Shah Foundation, Amritsar.
- Kang, Amarjit Singh (Dr.) (1985) **Qissa Sansar**, Nanak Singh Pustakmala, Amritsar.
- Kang, Kulbir Singh (2005) **Punjabi Qissa Kav Da Itihas**, Punjabi Academy, Delhi.
- Kasel, Kirpal Singh, Parmindar Singh (eds.) (2002), **Punjabi Sahit di Utpatti te Vikas**, Lahore Book Shop, Ludhiana.
- Kulwant Kaur (1981), **Punjabi Qissa-Kav Ik Adhyan**, Raj Publishers, Jalandhar.
- Satinder Singh (Dr.) (ed.) (1991) **Punjabi Qissa Kav De Badlade Paripekh**, Punjabi Academy, New Delhi.
- Sekhon, Sant Singh (ed.) (2012) **Heer Waris Shah**, Sahitya Akademi, New Delhi.

MAGAZINE/JOURNAL:

- Punjabi Dunia, **Qissa-Kav Vishesh Ank**, Bhasa Vibhag, Punjab.

***(Note: Teachers are free to recommend additional related standard source books, if required so.)**

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category III

Discipline Specific Core Courses for Undergraduate Programme of study with Punjabi as one of the Core Disciplines

(B.A. Programmes with Punjabi as non-Major or Minor discipline)

DISCIPLINE SPECIFIC CORE COURSE – 7(DSC-7)
SUFI KAAV

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
SUFI KAAV (DSC-7)	4	3	1	0	Class 12th pass in any subject	**Studied Punjabi up to 8th Standard or** ***Basic knowledge of Punjabi language***

Total No. Credits	Distribution of total credits			No. of Hours of Lectures	No. of Hours of Tutorials	No. of Hours of Practicals	Total Hours of Teaching
	Lecture (Credits)	Tutorial (Credits)	Practical (Credits)				
4	3	1	0	45	15	0	60

LEARNING OBJECTIVES:

- To learn the origin of Sufism, philosophy of Sufis and relevance of that philosophy in the contemporary scenario.
- To understand the ideological and philosophical background of Sufi Poetry.
- It will help the students to understand how the Sufis changed socio-religious structure of Punjab through their spiritual experiences.

- To analyse dialogue of Sufi poetry with dominated thought systems.
- To interpret literary texts from various perspectives by using close readings supported by textual evidence, and informed by critical theory.

LEARNING OUTCOMES:

- Students will be able to understand the ideology and philosophy of Sufi poetry.
- Students will learn to evaluate existing criticism available in the subject.
- Students will be able to interpret Sufi poetry within a historical and social context
- They will be able to learn about Sufi mysticism, different school of Sufism and Islamic philosophy.
- They will develop the sense of awareness about the environment and they will realize the inter-relationship between man and environment by a close reading of Sufi poetry.

Unit I: ਪੰਜਾਬੀ ਸੂਫ਼ੀ ਕਵਿਤਾ: ਸਿਧਾਂਤਕ ਪਰਿਪੇਖ (Punjabi Sufi Kavita: Sidhantak Paripekh) (12 hours)

- ਸੂਫ਼ੀਮਤ ਅਤੇ ਇਸਲਾਮ : ਸੰਖੇਪ ਜਾਣ-ਪਛਾਣ

  Sufimat ate Islam: Sankhep Jaan-Pachhan
- ਪ੍ਰਮੁੱਖ ਸਿਲਸਿਲੇ : ਚਿਸ਼ਤੀ, ਕਾਦਰੀ, ਸੁਹਰਾਵਰਦੀ ਤੇ ਮਲਾਮਤੀ

  Pramukh Silsile: Chishti, Kadri, Suhravardi te Malamati
- ਪੰਜਾਬੀ ਸੂਫ਼ੀ ਕਾਵਿ : ਨਿਕਾਸ, ਵਿਕਾਸ ਅਤੇ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ

  Punjabi Sufi Kaav: Nikas, Vikas ate Visheshtavan
- ਪੰਜਾਬੀ ਸੂਫ਼ੀ ਕਾਵਿ : ਮੂਲ ਸਰੋਕਾਰ

  Punjabi Sufi Kaav: Mool Sarokar

Unit II: ਕਲਾਮ: ਬਾਬਾ ਸ਼ੇਖ ਫਰੀਦ (Kalam: Baba Sheikh Farid) (11 hours)

- ਬਾਬਾ ਸ਼ੇਖ ਫਰੀਦ : ਜੀਵਨ ਅਤੇ ਰਚਨਾ

  Baba Sheikh Farid : Jeevan ate Rachna
- ਵਿਚਾਰਧਾਰਾ ਅਤੇ ਨੈਤਿਕ ਪੱਖ

  Vichardhara ate Naitik Pakkh
- ਨਾਸ਼ਮਾਨਤਾ ਦਾ ਸੰਕਲਪ

  Nashmanta da Sankalp
- ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ

  Prasang Sahit Vyakhya

Unit III: ਕਲਾਮ: ਸ਼ਾਹ ਹੁਸੈਨ (Kalam: Shah Hussain) (11 hours)

- ਸ਼ਾਹ ਹੁਸੈਨ : ਜੀਵਨ ਅਤੇ ਰਚਨਾ

  Shah Hussain : Jeevan ate Rachna

- ਵਿਚਾਰਧਾਰਾ ਅਤੇ ਨੈਤਿਕ ਪੱਖ

  Vichardhara ate Naitik Pakkh

- ਬਿਰਹਾ ਦਾ ਸੰਕਲਪ

  Birha Da Sankalp
- ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ

  Prasang Sahit Vyakhya

Unit IV: ਕਲਾਮ: ਬੁੱਲ੍ਹੇ ਸ਼ਾਹ (Kalam: Bullhe Shah) (11 hours)

- ਬੁੱਲ੍ਹੇ ਸ਼ਾਹ: ਜੀਵਨ ਅਤੇ ਰਚਨਾ

  Bullhe Shah: Jeevan ate Rachna
- ਵਿਚਾਰਧਾਰਾ ਅਤੇ ਨੈਤਿਕ ਪੱਖ

  Vichardhara ate Naitik Pakkh
- ਇਸ਼ਕ ਦਾ ਸੰਕਲਪ

  Ishq Da Sankalp
- ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ

  Prasang Sahit Vyakhya

ESSENTIAL READINGS

- Ghuman, Bikram Singh (1999) **Sufi Mat Ate Punjabi Sufi Kav**, Waris Shah Foundation, Amritsar.
- Manjit Singh (Dr.) (ed.) (2012**) Punjabi Sufi-Kaav Suraan**, Manpreet Prakashan, Delhi.

SUGGESTED READINGS:

- Attarjit Singh and Gurcharan Singh (eds.) (2009) **Bullhe Shah**, Arsee Publishers, Delhi.
- Baddan, Baldev Singh (Dr.), Singhal, Dharmpal (Dr.) (2017) **Sheikh Farid, Shah Hussain, Bullhe Shah Jeevan Te Rachna,** Lakshya Publications, Delhi.
- Bedi, Kala Singh (Dr.) (2011) **Bullhe Shah: Alochnatmak Adhyan**, Publication Bureau, Punjabi University, Patiala.
- Gurdev Singh (2005) **Punjabi Sufi Kav Da Itihas**, Punjabi Academy, Delhi.
- Gurmukh Singh (Dr.) (ed.) (1997) **Sufiwad** By Gurmeet Singh (Prof.), Lokgeet Parkashan, Chandigarh.
- Jaggi, Gursharan Kaur (Dr.) (ed.) (2009) **Sheikh Farid : Jiwan Chintan Ate Bani** By Dr. Rattan Singh Jaggi, Arsee Publishers, Delhi.
- Noor, Sutinder Singh (ed.) (1997) **Punjabi Sufi Kaav,** Sahit Academy, New Delhi.
- Sahib Singh (1977) **Salok Te Shabad Farid Ji Steek**, Singh Brothers, Bazar Mai Seva, Amritsar.
- Sheetal, Jeet Singh (Dr.) (1978) **Shah Hussain Jeevan Te Rachna**, Publication Bureau, Punjabi University, Patiala.
- Sheetal, Jeet Singh (Dr.) (1970) **Bullhe Shah Jeevan Te Rachna**, Publication Bureau, Punjabi University, Patiala.

- Sukhdev Singh (Dr.) (ed. & trans.) (2011) **Punjabi Sufi Kav (1460-1900),** Dr. Lajwanti Rama Krishana, Lokgeet Parkashan, Chandigarh.
- Talwara, Gurcharan Singh (Prof.) (2012) **Sufi Mat Vichardhara, Vikas Ate Silsale**, Waris Shah Foundation, Amritsar.

MAGAZINES/JOURNALS

- Alochana, **Bharti Sufi Sahit Vishesh Ank**, Ank 222, October 2009-March 2010, Punjabi Sahit Academy, Delhi.
- Punjabi Duniya (1964) **Sufi Sahit Ank**, Bhasha Vibhag Punjab, Patiala.
- Khoj Patrika, Jaggi, **Sufi Kav Ank** 33, March 1989 Publication Bureau, Punjabi University, Patiala.
- Khoj Darpan, **Punjabi Sufi Kav Vishesh Ank**, July 1998, Guru Nanak Dev University, Amritsar.
- Samdarshi, **Sufi Vishesh Ank**, Punjabi Academy, Delhi.

DICTIONARIES

- Jaggi, Gursharan Kaur (Dr.) (ed.) (2015) **Punjabi Sufi Kav Kosh**,Gracious Book, Patiala.
- Talwara, Gurcharan Singh (Prof.) (2016) **Sufi Mat Sankalp Kosh**, Waris Shah Foundation, Amritsar.

***(Note: Teachers are free to recommend additional related standard source books, if required so.)**

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF Discipline Specific Elective COURSES (DSE) OFFERED BY THE DEPARTMENT OF PUNJABI

DISCIPLINE SPECIFIC ELECTIVE (DSE-5)
HAAS RAS DA PUNJABI SAHIT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Haas Ras da Punjabi Sahit (DSE-5)	4	3	1	0	Class 12th pass in any subject	**Studied Punjabi up to 8th Standard or *Working knowledge of Punjabi language***

LEARNING OBJECTIVE:

- To define literary terms related to satire and recognize satiric forms, structures, modes, and related devices.
- To explain the forms, structures, and common characteristics of verse satire, satiric drama, and fiction
- To craft formal literary analyses of a variety of texts, using satire theory as the method of analysis.

LEARNING OUTCOMES:

- The students will be able to describe the classical origins and evolution of satire in Punjabi literature.
- They will understand the satire as a literary genre.
- They will understand form, style, characteristics of the satire Literature.

Unit-I: ਹਾਸ ਰਸ ਦਾ ਪੰਜਾਬੀ ਸਾਹਿਤ: ਸਿਧਾਂਤਕ ਪਰਿਪੇਖ (Haas Ras Da Punjabi Sahit: Sidhantak Paripekh) (12 hours)

- ਹਾਸ ਰਸ ਦੀ ਪਰਿਭਾਸ਼ਾ

  Haas Ras di Paribhasha
- ਹਾਸ ਰਸ ਇਕ ਸਾਹਿਤਕ ਰੂਪ ਵਜੋਂ

  Haas Ras ik Sahitak Roop Vajon
- ਹਾਸ ਰਸ ਦੇ ਪੰਜਾਬੀ ਸਾਹਿਤ ਨਾਲ ਮੁਢਲੀ ਜਾਣ-ਪਛਾਣ

Haas Ras de Punjabi Sahit Naal Mudhali Jaan-Pachhan

- ਹਾਸ ਰਸ ਦੇ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੀ ਸਾਰਥਕਤਾ

  Haas Ras de Punjabi Sahit di Sarthakta

Unit-II: ਹਾਸ ਰਸ ਦੀ ਪੰਜਾਬੀ ਕਵਿਤਾ (Haas Ras di Punjabi Kavita) (11 hours)

- ਚਰਨ ਸਿੰਘ ਸ਼ਹੀਦ: ਪਹਿਲ, ਸ਼ਾਂਤੀ ਦਾ ਇਮਤਿਹਾਨ

  Charan Singh Shaheed: Pahal, Shanti da Imtihaan
- ਵਿਧਾਤਾ ਸਿੰਘ ਤੀਰ: ਗੋਗੜ ਮਲ, ਦੋਹਾਂ ਦੇ ਵਿਚ ਤੀਜਾ ਰਲਿਆ ਤਾਂ ਝੁੱਗਾ ਗਲਿਆ

  Vidhata Singh Teer: Gogarh Mal, Doha de vich Teeja Raleya Taan Jhugga Galeya
- ਭਾਈਆ ਈਸ਼ਰ ਸਿੰਘ: ਹੱਥ ਪੁਰਾਣੇ ਖੋਸੜੇ ਬਸੰਤੇ ਹੋਰੀਂ ਆਏ, ਲੀਡਰ

  Bhayia Ishar Singh: Hath Purane Khosre Basante Hori Aaye, Leader
- ਹਰਮੋਹਿੰਦਰ ਸਿੰਘ ਹਰਜੀ: ਮਾਰੂਤੀ, ਬਾਪੂ ਦਾ ਟਰੰਕ

  Harmohinder Singh Harji: Maruti, Baapu da Trunk

Unit-III: ਹਾਸ ਰਸ ਦੇ ਲੋਕ ਰੰਗ (Haas Ras de Lok Rang) (11 hours)

- **ਕਸਬੀ ਲੋਕ**: ਹਕੀਮ, ਵੈਦ, ਡਾਕਟਰ, ਮੰਗਤੇ, ਚੋਰ-ਚਕਾਰ, ਕਬਾੜੀ, **ਸਕੂਲ ਹਾਸੇ**: ਅਧਿਆਪਕ ਤੇ ਵਿਦਿਆਰਥੀ, ਵਿਦਿਆਰਥੀ ਤੇ ਵਿਦਿਆਰਥੀ, ਪੜ੍ਹਿਆ- ਅਨਪੜ੍ਹਿਆ

  Kasbi Lok: Hakeem, Vaid**,** Doctor**,** Mangte, Chor-Chakaar, Kabaarhi, **School Haase**: Adhyapak te Videyarthi, Videyarthi te Videyarthi, Padhiya-Anpadheya
- **ਜ਼ਿੰਦਗੀ ਦੇ ਮੀਲ-ਪੱਥਰ**: ਵਿਆਹ-ਸ਼ਾਦੀ, ਸ਼ਾਦੀ ਵਾਲਾ ਘਰ, ਜੰਞ ਤੇ ਜਾਂਞੀ, ਛੰਦ, ਡੋਲੀ ਤੁਰਨੀ, ਅਕਾਲ ਚਲਾਣਾ, ਅਗਲੇ ਜਹਾਨ ਵਿਚ

  Zindagi De Meel-Patthar: Viah-Shadi, Shadi Wala Ghar, Janjh te Jaanjhi, Chhand, Doli Turni, Akaal Chalaana, Agle Jahaan Vich
- **ਰਿਸ਼ਤੇ-ਨਾਤੇ**: ਕੁੜੀ ਦਾ ਸਹੁਰਾ ਪਰਿਵਾਰ, ਸੱਸ, ਸਹੁਰਾ, ਨਣਦ-ਭਰਜਾਈ, ਦਿਓਰ-ਭਰਜਾਈ, ਜੇਠ-ਜਠਾਣੀ, ਛੜੇ- ਛਾਂਗ, ਗੁਆਂਢੀ, ਮਾਲ ਡੰਗਰ

  Rishte-Naate: Kudi da Sohra Parivar, Sass, Sohara, Nannad-Bharjai, Deor-Bharjai, Jaith-Jathani, Charhe-Chhaang, Guaandi, Maal Dangar
- **ਲੋਕ ਅਸਥਾਨ**: ਮੇਲਾ, ਕਚਹਿਰੀ, **ਹਾਸ ਮਾਹਲਾਂ**: ਸ਼ਟੱਲੀ, ਸੁਥਰਾ, ਸ਼ੇਖ ਚਿੱਲੀ, ਰਾਜਾ ਭੋਜ, ਬੂਝ ਬੁਝੱਕੜ, **ਗੱਪ ਗਿਆਨ**: ਗੱਪ, ਗੱਪ-ਬਾਜੀ

  Lok Asthaan: Mela, Kachaheri, **Haas Maahlaan**: Shattli, Suthra, Sheikh Chilli, Raja Bhoj, Boojh Bujhkkad, **Gapp Gian**: Gapp, Gapp-Baazi

Unit-IV: ਹਾਸ ਰਸ ਦੀ ਪੰਜਾਬੀ ਵਾਰਤਕ (Haas Ras Di Punjabi Vartak) (11 hours)

- ਜਸਵੰਤ ਸਿੰਘ ਵਿਰਦੀ: ਅਖ਼ਬਾਰ ਵਿਚਾਰੀ ਕੀ ਕਰੇ

  Jaswant Singh Virdi: Akhbaar Vichaari ki Kare
- ਪ੍ਰੀਤਮ ਸਿੱਧੂ: ਭਾਈਆ ਦੌਲਤੀ ਦੀ ਵਲੈਤੀ ਲੇਖਕ ਨਾਲ ਗੋਸ਼ਟੀ

  Pritam Sidhu: Bhaaia Daulti di Walaiti Lekhak Naal Goshti
- ਸ਼ੇਰ ਜੰਗ ਜਾਂਗਲੀ: ਕਿੱਸਾ ਇਕਬਾਲ ਦੀ ਸਾਈਕਲ ਦਾ

Sher Jang Jaangli: Qissa Iqbal di Cycle da

- ਕੇ.ਐਲ. ਗਰਗ: ਦੌੜਦਾ ਹੋਇਆ ਦੇਸ਼

  K.L. Garg: Daurda Hoeya Desh

ESSENTIAL READINGS:

- Garg, K.L. (Ed.) (2017) **Khoonday Walay Babbay (Satirical Poems)**, National Book Shop, Delhi.
- Garg, K.L. (Ed.) (1996) **Vyang-Tarang (collected Essays of the Humour & Satire)**, Punjabi Sahit Academy, Chandigarh and National Book Shop, Delhi.
- Kuljind, Mangat (2020) **Has Vyang Dey Sidhant**, Arsee Publishers, New Delhi.
- Neki, Jaswant Singh (2011) **Punjabi Hass Vilas**, National Book Trust, India, New Delhi.

SUGGESTED READINGS:

- Sarabjeet Singh (2015) **Haas Viyung: Sidhantak te Viharak Paripekh (Smalochna)**, Gracious Books, Patiala.
- Humrahi, Atam (Dr.) (1989) **Loknayanik Viyangkari**, Punjabi University, Patiala
- Bhupal, Dalip Singh (1991) **Punjabi Vartak Vich Haas Viyang**, Naveen Prakashan, Amritsar
- Prem Narayan Tondon (ed.) (1996) **Hindi Sahitya Main Haasya Aur Viyang**, Hindi Sahitya, Lucknow
- Southerland, James (1958) **English Satire**, Cambridge, University Press, Harvard.

INTERNET RESOURCES:

https://www.punjabi-kavita.com/PunjabiHumorousPoems,

*(Note: Teachers are free to recommend additional related standard resource books, if required so.)

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE (DSE-6)
PUNJABI MINI KAHANI

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Punjabi Mini Kahani (DSE-6)	4	3	1	0	Class 12th pass in any subject	**Studied Punjabi up to 10th Standard** **or** ***Basic knowledge of Punjabi language***

Total No. Credits	Distribution of total credits			No. of Hours of Lectures	No. of Hours of Tutorials	No. of Hours of Practicals	Total Hours of Teaching
	Lecture (Credits)	Tutorial (Credits)	Practical (Credits)				
4	3	1	0	45	15	0	60

LEARNING OBJECTIVES:

- The course is designed to analyse Punjabi Mini stories and understand their significance to Punjabi culture.
- The course will develop an attribute towards the narrative style of the author.
- It will encourage the students to appreciate the significance of stylistic and rhetorical features of the text.
- It will help them to explain and analyse the thematic aspects of mini story.

LEARNING OUTCOMES:

- The students will able to compose Mini stories of their own.
- They will be able to recognize formal characteristics of Punjabi Mini story.
- They will perceive and appreciate the significance of the historical and cultural context of Punjab depicted in Mini stories.

Unit-I: ਪੰਜਾਬੀ ਮਿੰਨੀ ਕਹਾਣੀ: ਸਿਧਾਂਤਕ ਪਰਿਪੇਖ (Punjabi Mini Kahani: Sidhantak Paripekh) (12 hours)

- ਮਿੰਨੀ ਕਹਾਣੀ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਸਰੂਪ

  Mini Kahani : Paribhasha ate Saroop
- ਨਿੱਕੀ ਕਹਾਣੀ ਅਤੇ ਮਿੰਨੀ ਕਹਾਣੀ: ਅੰਤਰ ਸੰਵਾਦ

  Nikki Kahani ate Mini Kahani: Antar Samvad
- ਮਿੰਨੀ ਕਹਾਣੀ ਦੀ ਹੋਰ ਵਿਧਾਵਾਂ ਨਾਲੋਂ ਵੱਖਰਤਾ

  Mini Kahani di Hor Vidhavan Naalo Vakkharta
- ਪੰਜਾਬੀ ਮਿੰਨੀ ਕਹਾਣੀ ਦਾ ਨਿਕਾਸ ਅਤੇ ਵਿਕਾਸ

  Punjabi Mini Kahani da Nikas ate Vikas

Unit-II: ਪੰਜਾਬੀ ਮਿੰਨੀ ਕਹਾਣੀ: ਵਿਸ਼ਾ ਪੱਖ, ਕਲਾ ਪੱਖ, ਮੂਲ ਸਰੋਕਾਰ, ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ

(Punjabi Mini Kahani : Visha Pakkh, Kala Pakkh, Mool Sarokar, Alochnatmak Adhyan) (11 hours)

- ਹਰਭਜਨ ਸਿੰਘ ਖੇਮਕਰਨੀ: ਪਹਿਲਾ ਕਦਮ, ਸੁਰਿੰਦਰ ਕੈਲੇ: ਕਿਰਾਏ ਦਾ ਮਕਾਨ, ਪ੍ਰਿੰ. ਸੁਲੱਖਣ ਮੀਤ: ਰਿਸ਼ਤਾ

  Harbhajan Singh Khemkarni: Pehla Kadam, Surinder Kaile: Kiraye da Makan, Principal Sulakkhan Meet: Rishta
- ਸ਼ਿਆਮ ਸੁੰਦਰ ਅਗਰਵਾਲ: ਟੁੱਟੀ ਹੋਈ ਟ੍ਰਏ, ਜਸਬੀਰ ਢੰਡ: ਜਵਾਬ, ਕਰਮਵੀਰ ਸਿੰਘ ਸੂਰੀ: ਸੰਤਰੇ

  Shyam Sunder Agarwal: Tutti Hoi Tray, Jasbir Dhand: Jawab, Karamveer Singh Suri: Santre
- ਨਿਰੰਜਨ ਬੋਹਾ: ਨਵੇਂ ਦਿਸਹਦੇ, ਡਾ. ਸ਼ਾਮ ਸੁੰਦਰ ਦੀਪਤੀ: ਗੈਰ ਹਾਜ਼ਰ ਰਿਸ਼ਤਾ, ਹਰਪ੍ਰੀਤ ਰਾਣਾ: ਪੁੱਤਰ-ਜਵਾਈ

  Niranjan Boha: Naven Disahade, Dr. Shyam Sunder Deepti: Gair Hazar Rishta, Harpreet Rana: Puttar-Javai
- ਨਾਇਬ ਸਿੰਘ ਮੰਡੇਰ: ਵੰਡ, ਡਾ. ਬਲਦੇਵ ਸਿੰਘ ਖਾਹਰਾ: ਪੀੜ੍ਹੀ ਅੰਤਰ, ਡਾ. ਕਰਮਜੀਤ ਸਿੰਘ ਨਡਾਲਾ: ਪਰਾਲੀ ਦਾ ਸੇਕ

  Naib Singh Mander: Wand, Dr. Baldev Singh Khahra: Peerhi Antar, Dr. Karamjit Singh Nadala: Paraali Da Sek

Unit-III: ਪੰਜਾਬੀ ਮਿੰਨੀ ਕਹਾਣੀ: ਵਿਸ਼ਾ ਪੱਖ, ਕਲਾ ਪੱਖ, ਮੂਲ ਸਰੋਕਾਰ, ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ

(Punjabi Mini Kahani: Visha Pakkh, Kala Pakkh, Mool Sarokar, Alochnatmak Adhyan) (11 hours)

- ਬਿਕਰਮਜੀਤ ਸਿੰਘ ਨੂਰ: ਕਾਲਾ ਕੋਟ ਲਾਲ ਫਰਾਕ, ਜਗਦੀਸ਼ ਰਾਏ ਕੁਲਰੀਆਂ: ਰਿਸ਼ਤਿਆਂ ਦੀ ਨੀਂਹ, ਕੁਲਵਿੰਦਰ ਕੌਸ਼ਲ: ਯੋਧਾ

  Bikramjit Singh Noor: Kala Coat Lal Farak, Jagdish Rai Kulrian: Rishtian Di Neenh, Kulwinder Kaushal: Yodha

- ਹਰਜਿੰਦਰਪਾਲ ਕੌਰ ਕੰਗ: ਗੈਸਟ ਰੂਮ, ਵਿਵੇਕ:ਪ੍ਰਸ਼ਨ-ਚਿੰਨ੍ਹ, ਡਾ. ਹਰਨੇਕ ਸਿੰਘ ਕੈਲੇ: ਰਾਸ਼ਨ ਕਾਰਡ

  Harjinderpal Kaur Kang: Guest Room, Vivek: Prashan-Chinh, Dr. Harnek Singh Kailey: Rashan Card
- ਬਲਬੀਰ ਪਰਵਾਨਾ: ਮਜਬੂਰੀ, ਦਰਸ਼ਨ ਸਿੰਘ ਬਰੇਟਾ: ਅਕ੍ਰਿਤਘਣ, ਪਰਦੀਪ ਕੌੜਾ: ਵੀਹਾਂ ਦਾ ਨੋਟ

  Balbir Parvana: Majboori, Darshan Singh Bareta: Akritghan, Pardeep Kauda: Veehan da Note
- ਤ੍ਰਿਪਤ ਭੱਟੀ: ਛੇਕ, ਨੂਰ ਸੰਤੋਖਪੁਰੀ: ਆਪਣੇ ਹਿੱਸੇ ਦਾ ਸੋਗ, ਮਨਪ੍ਰੀਤ ਕੌਰ ਭਾਟੀਆ: ਕਮਾਈ

  Tripat Bhatti: Chhek, Noor Santokhpuri: Aapne Hisse Da Sog, Manpreet Kaur Bhatia: Kamai

Unit-IV: ਪੰਜਾਬੀ ਮਿੰਨੀ ਕਹਾਣੀ: ਵਿਸ਼ਾ ਪੱਖ, ਕਲਾ ਪੱਖ, ਮੂਲ ਸਰੋਕਾਰ, ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ

(Punjabi Mini Kahani: Visha Pakkh, Kala Pakkh, Mool Sarokar, Alochnatmak Adhyan) (11 hours)

- ਪ੍ਰੀਤ ਨੀਤਪੁਰ: ਦਾੜੀ 'ਚ ਗੁਆਚੇ ਹੰਝੂ, ਸਤਿਪਾਲ ਖੁੱਲਰ: ਰਿਸ਼ਤੇ, ਬਲਰਾਜ ਕੁਹਾੜਾ: ਬੁੱਕਲ ਦਾ ਨਿੱਘ

  Preet Nitpur: Daarhi ch Guache Hanjhu, Satpal Khullar: Rishte, Balraj Kuhada: Bukal Da Nigh
- ਰਣਜੀਤ ਆਜ਼ਾਦ ਕਾਂਝਲਾ: ਕੰਜਕ, ਇੰਜ. ਡੀ.ਐਮ.ਸਿੰਘ: ਸਮਰਥ ਬਾਊ ਜੀ, ਦਰਸ਼ਨ ਧੰਜਲ: ਆਪਣੇ-ਆਪਣੇ ਭਾਗ

  Ranjit Azad Kanjhla: Kanjak, Er. D. M. Singh: Samrath Baau Ji, Darshan Dhanjal: Aapne-Aapne Bhaag
- ਬੋਹੜ ਸਿੰਘ ਮੱਲਣ: ਪਾਣੀ ਦਾ ਘੁਟ, ਪ੍ਰਗਟ ਸਿੰਘ ਜੰਬਰ: ਵਾਪਸੀ, ਮੱਖਣ ਸਿੰਘ ਚੌਹਾਨ: ਮਾਂ ਦਾ ਫੈਸਲਾ

  Bohar Singh Malan: Paani Da Ghutt, Pragat Singh Jambar: Wapsi, Makkhan Singh Chauhan: Maa Da Faisala
- ਹਰਿੰਦਰ ਸਿੰਘ ਗੋਗਨਾ: ਰੋਜੀ ਰੋਟੀ, ਵੀਨਾ ਅਰੋੜਾ: ਮਿਹਨਤਾਨਾ, ਬਲਵਿੰਦਰ ਸਿੰਘ ਮਕੜੌਨਾ: ਕਿਲਕਾਰੀਆਂ

  Harinder Singh Gogna: Roji Roti, Veena Arora: Mehantana, Balwinder Singh Makrhauna: Kilkarian

ESSENTIAL READINGS:

- Kalley, Surinder (2013) **Anu Kahanian (Mini Stories)**, Anu Manch, Ludhiana.
- Sohal, Sarbjeet Kaur (Dr.) (Ed.), (2017) **Kujje vich Samunder (A Collection of Mini Stories)**, Unistar Books Pvt. Ltd. S.A.S. Nagar Mohali, Chandigarh.
- Suri, Karamvir Singh (2019) **Mini Kahani: Sarup, Sidhant te Vikas (Punjabi)**, Punjabi University, Patiala.

SUGGESTED READINGS:

- Dhaliwal, Baldev Singh (2017) **Punjabi Kahaani da Itihaas**, Punjabi Academy, Delhi.
- Harbhajan Singh (Dr.) (2010) **Rachna Sanrachna**, Guru Nanak Dev University, Amritsar.
- Jagbir Singh. (1999) **Punjabi Galap Sansar**, Wellwish Publishers, New Delhi.
- Karanjit Singh (Ed.) (2010) **Punjabi Galap Adhyan De Badalde Paripekh**, Sahit Akademi, New Delhi.

- Piara Singh (Prof.) (2004) **Punjabi Galap: Sidhant, Itihas te Pravirtian**, New Book Company, Mai Hiran Gate, Jalandhar.
- Uppal, Savinder Singh, **Punjabi Kahani: Saroop, Sidhant ate Vikas**, Punjabi University, Patiala.

MAGAZINES/RESEARCH JOURNALS:

- Karamjit Kaur (Main Ed.) Punjabi Duniya (October-December 2020, Ank: 10-12), Director, Bhasha Vibhag, Punjab

INTERNET RESOURCES:

- **http://www.christianfort.com/chhinn/index.html,**
- https://shodhganga.inflibnet.ac.in/handle/10603/381703,

***(Note: Teachers are free to recommend additional related standard source books, if required so.)**

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE (DSE-7)
PUNJABI KHED SAHIT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Punjabi Khed Sahit (DSE-7)	4	3	1	0	Class 12th pass in any subject	**Studied Punjabi up to 8th Standard or *Working knowledge of Punjabi language***

Total No. Credits	Distribution of total credits			No. of Hours of Lectures	No. of Hours of Tutorials	No. of Hours of Practicals	Total Hours of Teaching
	Lecture (Credits)	Tutorial (Credits)	Practical (Credits)				
4	3	1	0	45	15	0	60

LEARNING OBJECTIVE:

- To understand the vexed and unique relationship between sports and literature;
- To analyse the various meanings of sports articulated and amplified in literature;
- To appreciate the key theoretical concepts (e.g., spectacle, habitus, nostalgia) which aid in understanding the literature of sport.

LEARNING OUTCOMES:

- The students will identify the varied meanings of sports, which proliferate in the accompanying literatures.
- They will be able to articulate original interpretations of sports literature and culture in a scholarly essay.
- They will develop an interest in sports and physical activities.

Unit-I: ਪੰਜਾਬੀ ਖੇਡ ਸਾਹਿਤ: ਸਿਧਾਂਤਕ ਪਰਿਪੇਖ (Punjabi Khed Sahit: Sidhantak Paripekh) (12 hours)

- ਖੇਡ ਸਾਹਿਤ: ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਸਰੂਪ

Khed Sahit: Paribhasha ate Saroop

- ਖੇਡਾਂ ਅਤੇ ਸਾਹਿਤ: ਅੰਤਰ ਸੰਵਾਦ

  Khedan ate Sahit: Antar Samvad
- ਖੇਡਾਂ ਦੀ ਜੀਵਨ ਵਿਚ ਸਾਰਥਕਤਾ

  Khedan di Jeevan Vich Sarthakta
- ਪੰਜਾਬੀ ਖੇਡ ਸਾਹਿਤ ਦਾ ਇਤਿਹਾਸ

  Punjabi Khed Sahit da Itihas

Unit-II: ਪੰਜਾਬੀ ਖੇਡ ਸਾਹਿਤ ਨਾਲ ਸੰਬੰਧਤ ਰੇਖਾ ਚਿੱਤਰ (Punjabi Khed Sahit Naal Sambandhat Rekha Chittar) (11 hours)

- ਪੰਜਾਬ ਦਾ ਪੇਲੇ ਜਰਨੈਲ ਸਿੰਘ ਪਨਾਮ

  Punjab da Pele Jarnail Singh Panaam
- ਫਲਾਇੰਗ ਸਿੱਖ ਮਿਲਖਾ ਸਿੰਘ

  Flying Sikh Milkha Singh
- ਹਾਕੀ ਦਾ ਗੋਲ ਕਿੰਗ ਬਲਬੀਰ ਸਿੰਘ

  Hockey da Goal King Balbir Singh
- ਕਿਆਂ ਬਾਤਾਂ ਬਾਬਾ ਫੌਜਾ ਸਿੰਘ ਦੀਆਂ

  Kiya Bataan Baba Fauja Singh Dian

Unit-III: ਪੰਜਾਬੀ ਖੇਡ ਸਾਹਿਤ ਨਾਲ ਸੰਬੰਧਤ ਕਹਾਣੀਆਂ (Punjabi Khed Sahit Naal Sambandhat Kahaniyan) (11 hours)

- ਕਰਤਾਰ ਸਿੰਘ ਦੁੱਗਲ: ਜਦੋਂ ਢੋਲ ਵੱਜਦਾ ਹੈ

  Kartar Singh Duggal: Jadon Dhol Vajda Hai
- ਬਲਵੰਤ ਗਾਰਗੀ: ਸੌ ਮੀਲ ਦੀ ਦੌੜ

  Balwant Gargi: Sau Meel di Daur
- ਭਗਵੰਤ ਰਸੂਲਪੁਰੀ: ਰਵੀ ਡਿਫੈਂਡਰ

  Bhagwant Rasulpuri: Ravi Defender
- ਪ੍ਰਿੰ. ਸਰਵਨ ਸਿੰਘ: ਆਖਰੀ ਕਬੱਡੀ

  Principal Sarwan Singh: Aakhri Kabaddi

Unit-IV: ਪੰਜਾਬੀ ਖੇਡ ਸਾਹਿਤ ਨਾਲ ਸੰਬੰਧਤ ਨਾਵਲ: ਗੋਲਡਨ ਪੰਚ (Punjabi Khed Sahit Naal Sambandhat Novel: Golden Punch) (11 hours)

- ਗੋਲਡਨ ਪੰਚ ਦਾ ਵਿਸ਼ਾ ਪੱਖ

  Golden Punch da Visha Pakkh
- ਗੋਲਡਨ ਪੰਚ ਦਾ ਕਲਾ ਪੱਖ

  Golden Punch da Kala Pakkh

- ਗੋਲਡਨ ਪੰਚ ਦੀ ਪਾਤਰ ਉਸਾਰੀ

Golden Punch di Patar Usari

- ਗੋਲਡਨ ਪੰਚ ਦਾ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ

  Golden Punch da Alochnatmak Adhyan

ESSENTIAL READING:

- Sarwan Singh (Prin.) (2020) **Khed Khidari**, Sangam Publication, Samana.
- Sandhu, Balwant Singh (ed.) (2023) **Chonavian Khed Kahanian**, Manpreet Prakashan, Delhi.
- Sandhu, Balwant Singh (ed.) (2022) **Golden Punch**, Chetna Prakashan, Ludhiana.

SUGGESTED READING:

- Sarwan Singh (1982) **Khed Khidari**, Publication Bureau, Punjabi University, Patiala
- Sarwan Singh (Prin.) (2020) **Khed Sahit de Moti**, Sangam Publication, Samana
- Gill, Navdeep Singh (2021) **Udana Baaz Olympian**, Gurbachan Singh Randhawa, Unistar Books Private Limited, Chandigarh
- Karam Singh (Prof.) (2007) **Mallan Dian Gallan**, Acursia Printographia, Patiala.

INTERNET RESOURCES:

https://punjabtimesusa.com/news/?cat=20,
https://youtu.be/gEKSt_TNGnk
https://bigbaat.com/%E0%A8%B2%E0%A9%87%E0%A8%96-%E0%A8%AA%E0%A9%B0%E0%A8%9C%E0%A8%BE%E0%A8%AC-%E0%A8%A6%E0%A9%80%E0%A8%86%E0%A8%82-%E0%A8%B2%E0%A9%8B%E0%A8%95-%E0%A8%96%E0%A9%87%E0%A8%A1%E0%A8%BE%E0%A8%82/,
https://pa.wikipedia.org/wiki/%E0%A8%AA%E0%A9%B0%E0%A8%9C%E0%A8%BE%E0%A8%AC_%E0%A8%A6%E0%A9%80%E0%A8%86%E0%A8%82_%E0%A8%B5%E0%A8%BF%E0%A8%B0%E0%A8%BE%E0%A8%B8%E0%A8%A4%E0%A9%80_%E0%A8%96%E0%A9%87%E0%A8%A1%E0%A8%BE%E0%A8%82,

*(Note: Teachers are free to recommend additional related standard resource books, if required so.)

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE (DSE-8)
PRERNA DAYAK PUNJABI VARTAK

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Prerna Dayak Punjabi Vartak (DSE-8)	4	3	1	0	Class 12th pass in any subject	**Studied Punjabi up to 8th Standard or *Working knowledge of Punjabi language***

Total No. Credits	Distribution of total credits			No. of Hours of Lectures	No. of Hours of Tutorials	No. of Hours of Practicals	Total Hours of Teaching
	Lecture (Credits)	Tutorial (Credits)	Practical (Credits)				
4	3	1	0	45	15	0	60

LEARNING OBJECTIVE:

- To create motivational appeal towards human values through literature.
- To nurture moral and social Values and Loyalty among the students.
- To create awareness on about the specially abled people.

LEARNING OUTCOMES:

- The students will identify and analyse how authors motivate readers through their writings.
- They will articulate what makes a particular course of action ethically defensible in the given situation.
- They will apply the resolutions of the motivational writings in their academic settings, including focused and interdisciplinary research

Unit-I: ਪ੍ਰੇਰਨਾਦਾਇਕ ਸਾਹਿਤ: ਸਿਧਾਂਤਕ ਪਰਿਪੇਖ (Prernadayak Sahit: Sidhantak Paripekh) (12 hours)

- ਪ੍ਰੇਰਨਾਦਾਇਕ ਸਾਹਿਤ: ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਸਰੂਪ

  Prernadayak Sahit: Paribhasha ate Saroop
- ਪ੍ਰੇਰਨਾਦਾਇਕ ਸਾਹਿਤ ਪ੍ਰੇਰਨਾ ਦੇ ਸਰੋਤ ਵਜੋਂ

Prernadayak Sahit Prerna de Sarot Vajon

- ਪ੍ਰੇਰਨਾਦਾਇਕ ਸਾਹਿਤ ਦੀ ਸਾਰਥਕਤਾ

  Prernadayak Sahit di Sarthakta
- ਪ੍ਰੇਰਨਾਦਾਇਕ ਪੰਜਾਬੀ ਵਾਰਤਕ: ਮੁੱਢਲੀ ਜਾਣ-ਪਛਾਣ

  Prernadayak Punjabi Vartak: Mudhali Jaan-Pachhan

Unit-II: ਦਿਵਿਆਂਗ ਜੀਵਨੀਮੂਲਕ ਅੰਸ਼ (Divyang Jivanimulak Ansh) (11 hours)

- ਅਣ ਛਿਪਿਆ ਸੂਰਜ: ਸਟੀਫਨ ਹਾੱਕਿੰਗ

  Ann Chipeya Suraj: Stephen Hawking
- ਪੀੜਾਂ ਪਰੁੰਨੇ ਫਲਸਫੇ ਦੀ ਗਰਜ਼: ਹੈਲਨ ਐਡਮਜ ਕੈਲਰ

  Peerha Parunne Falsaphe di Garz: Helen Adams Keller
- ਕਾਢਾਂ ਦਾ ਬਾਦਸ਼ਾਹ: ਥੋਮਸ ਅੱਲਵਾ ਐਡੀਸਨ

  Kaadhan da Badshah: Thomas Alva Edison
- ਪਰਬਤ ਜੇਡਾ ਜੇਰਾ: ਅਰੁਨਿਮਾ ਸਿਨਹਾ

  Parbat Jedda Jera: Arunima Sinha

Unit-III: ਪ੍ਰੇਰਨਾਦਾਇਕ ਪੰਜਾਬੀ ਨਿਬੰਧ (Prernadayak Punjabi Nibandh) (11 hours)

- ਗੁਰਬਖ਼ਸ਼ ਸਿੰਘ: ਕੰਮ ਦੀ ਚੋਣ

  Gurbaksh Singh: Kamm di Chonn
- ਨਰਿੰਦਰ ਸਿੰਘ ਕਪੂਰ: ਜੀਵਨ ਮਨੋਰਥ ਦੀ ਉਸਾਰੀ

  Narinder Singh Kapoor: Jeevan Manorath di Usari
- ਨਿੰਦਰ ਘੁਗਿਆਣਵੀ: ਜਰੂਰ ਹੋ ਸਕਦਾ ਹੈ ਇੰਝ!

  Ninder Ghugianvi: Zaroor Ho Sakda Hai Injh!
- ਅਮਰ ਕੋਮਲ: ਸਵੈ ਦੀ ਪਹਿਚਾਣ

  Amar Komal: Swai di Pehchan

Unit-IV: ਸਵੈ-ਜੀਵਨੀ: ਗਲੀਏ ਚਿਕੜ ਦੂਰਿ ਘਰੁ (Swai-Jeevani: Galiye Chikkad Door Ghar) (11 hours)

- ਵਣਜਾਰਾ ਬੇਦੀ: ਜੀਵਨ ਤੇ ਰਚਨਾ

  Vanjara Bedi: Jeevan te Rachna
- ਗਲੀਏ ਚਿਕੜ ਦੂਰਿ ਘਰੁ: ਵਿਸ਼ਾ ਪੱਖ

  Galiye Chikkad Door Ghar: Visha Pakkh
- ਗਲੀਏ ਚਿਕੜ ਦੂਰ ਘਰੁ: ਪ੍ਰੇਰਨਾ ਦੇ ਸਰੋਤ ਵਜੋਂ

  Galiye Chikkad Door Ghar: Prerna de Sarot Vajon
- ਗਲੀਏ ਚਿਕੜ ਦੂਰ ਘਰੁ: ਕਲਾ ਪੱਖ

  Galiye Chikkad Door Ghar: Kala Pakkh

ESSENTIAL READINGS:

- Baure, Gurmail Singh (ed.) (2015) **Dhur Tare**, Tarak Bharti Prakshan, Barnala.
- Gurbaksh Singh (1996) **Sveh Pooranta di Lagan**, Navyug Publishers, New Delhi.
- Kapoor, Narinder Singh (2002) **Raah-Raste**, Lokgeet Parkashan, Chandigarh.
- Vedi, S.S. Vanjara, (1985) **Galiye Chikad Door Ghar**, Navyug Publishers, Delhi.

SUGGESTED READINGS:

- A.P.J. Abdul Kalam (Trans. Bhullar, Narinder, Samar Jasveer) (2003) **Udar Mann**, Lokgeet Parkashan, Chandigarh.
- Baddan, Baldev Singh (Ed.) (2022) **Dr. Amar Komal de Chonnve Nibandh,** Lakshya Publications, Delhi.
- Goel, Jang Bahadur (2022) **Sahit Sanjeevani**, Singh Brothers, Amritsar
- Brar, Amarjit (2012) **Zindagi Da Teeja Netar**, Duaab Prakashan , Jalandhar
- Brar, Basant Singh (2021) **Vade Lokan Dian Chupiyan Gallan**, Chetna Prakashan, Ludhiana
- Frankl, Viktor E (2004) **Man's Search for Meaning**, Ebury Random House Group Company, Rider, Londan.
- Lala Hardayal M.A. (Prof. Acchru Singh) (Trans.) (2012) **Swei-Vikas da Marg**, Lokgeet Parkashan, Chandigarh.

INTERNET RESOURCES:

*(Note: Teachers are free to recommend additional related standard resource books, if required so.)

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF PUNJABI

FIFTH SEMESTER

Category I

Discipline Specific Courses offered by Department of Punjabi for the UG Programme with Punjabi as the Single Core Discipline

[UG Programme for Bachelor in **Punjabi (Honours)** degree in three years]

DISCIPLINE SPECIFIC CORE COURSE- 13 (DSC-13)

MADHKALI PUNJABI SAHIT DA ITIHAS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Madhkali Punjabi Sahit da Itihas (DSC-13)	4	3	1	0	Class 12th pass in any subject	Studied Punjabi up to 10th Standard or *Working knowledge of Punjabi language*

Learning Objectives:

- The course is structured to provide students with a comprehensive idea about the development of medieval Punjabi literature and language over the ages.
- The course will trace the trajectory of the growth of Punjabi literature from the period of its inception, dating back to the 12th century to the 19th Nine century.
- The course is also designed to help the students to develop an understanding of the structural development of the Punjabi language and literature and also to inform them about the various external linguistic influences that have contributed to the making of the language as we now know it to be.

Learning Outcomes:

- The course will offer extensive insight into the history of medieval Punjabi literature, while laying special emphasis on various literary movements, genres and writers that are held to be the representatives of their times.
- The students will be able to evaluate the ways, socio-cultural and historical phenomena influence the literary production of a particular period.

- By familiarizing students with the socio-cultural ambience and the discursive frameworks of various ages, the course helps them to develop a nuanced appreciation of the literary stalwarts of those times.
- The students are also offered an in-depth understanding on the growth of the Punjabi language under the influence of various other languages including Sanskrit and Persian.

Unit- I: ਪੰਜਾਬੀ ਸਾਹਿਤ ਦਾ ਮੁਢਲਾ ਦੌਰ (Punjabi Sahit da Mudhla Daur) (12 hours)

- ਮੱਧਕਾਲ ਬਾਰੇ ਸੰਖੇਪ ਜਾਣ-ਪਛਾਣ

  Madhkaal Bare Sankhep Jaan-Pachhan
- ਮੱਧਕਾਲ ਦੇ ਸਮਾਜਕ-ਰਾਜਨੀਤਕ ਮਸਲੇ

  Madhkaal de Smajak-Rajnitak Masle
- ਨਾਥ ਜੋਗੀਆਂ ਦਾ ਸਾਹਿਤ

  Naath Jogiyan da Sahit
- ਲੋਕ ਵਾਰਾਂ

  Lok Varan

Unit-II: ਗੁਰਮਤਿ ਕਾਵਿ ਧਾਰਾ (Gurmat Kaav Dhara) (11 hours)

- ਗੁਰੂ ਬਾਣੀਕਾਰਾਂ ਨਾਲ ਸੰਖੇਪ ਜਾਣ-ਪਛਾਣ

  Guru Banikaran Naal Sankhep Jaan-Pachhan
- ਗੁਰਮਤਿ ਕਾਵਿ ਦੇ ਪ੍ਰਮੁੱਖ ਰੂਪਾਕਾਰ (ਸ਼ਬਦ, ਸਲੋਕ, ਪਦ, ਬਾਰਾਂਮਾਂਹ)

  Gurmat Kaav de Parmukh Roopakar (Shabad, Salok, Pad, BarahManh)
- ਗੁਰਮਤਿ ਕਾਵਿ ਦਾ ਸਮਾਜਕ-ਸਭਿਆਚਾਰਕ ਪੱਖ

  Gurmat Kaav da Samajak-Sabhyacharak Pakh
- ਗੁਰੂ ਗ੍ਰੰਥ ਸਾਹਿਬ ਦੀ ਸੰਪਾਦਨ ਕਲਾ

  Guru Granth Sahib di Sampadan Kala

Unit-III: ਸੂਫ਼ੀ ਤੇ ਕਿੱਸਾ ਕਾਵਿ ਧਾਰਾ (Sufi te Qissa Kaav Dhara) (11 hours)

- ਪ੍ਰਮੁੱਖ ਸੂਫ਼ੀ ਕਵੀਆਂ ਨਾਲ ਸੰਖੇਪ ਜਾਣ-ਪਛਾਣ

  Pramukh Sufi Kaviyan Naal Sankhep Jaan-Pachhan
- ਸੂਫ਼ੀ ਕਾਵਿ ਦੇ ਪ੍ਰਮੁੱਖ ਰੂਪਾਕਾਰ (ਕਾਫ਼ੀ, ਅਠਵਾਰਾ, ਗੰਢਾਂ, ਡਿਉਢਾਂ)

  Sufi Kaav de Pramukh Roopakar (Kafi, Athvara, Gandhan, Diodhan)
- ਪ੍ਰਮੁੱਖ ਕਿੱਸਾ ਕਵੀਆਂ ਨਾਲ ਸੰਖੇਪ ਜਾਣ-ਪਛਾਣ

  Pramukh Qissa Kavian Naal Sankhep Jaan-Pachhan
- ਕਿੱਸਾ ਕਾਵਿ ਦਾ ਸਮਾਜਕ-ਸਭਿਆਚਾਰਕ ਪੱਖ

  Qissa Kaav da Samajak-Sabhyacharak Pakh

Unit- IV: ਬੀਰ ਕਾਵਿ ਤੇ ਮੱਧਕਾਲੀ ਵਾਰਤਕ (Bir Kaav te Madhkali Vartak) (11 hours)

- ਵਾਰ ਕਾਵਿ: ਨਿਕਾਸ ਤੇ ਵਿਕਾਸ

  Vaar Kaav: Nikas te Vikas
- ਜੰਗਨਾਮਾ ਕਾਵਿ: ਨਿਕਾਸ ਤੇ ਵਿਕਾਸ

  Jangnama Kaav: Nikas te Vikas
- ਸਾਖੀ ਤੇ ਜਨਮਸਾਖੀ ਪਰੰਪਰਾ: ਨਿਕਾਸ ਤੇ ਵਿਕਾਸ

  Sakhi te Janamsakhi Parampara: Nikas te Vikas
- ਗੋਸਟਿ, ਟੀਕਾ, ਨਾਮਾ ਸਾਹਿਤ: ਨਿਕਾਸ ਤੇ ਵਿਕਾਸ

  Gosht, Teeka, Nama Sahit: Nikas te Vikas

Essential Readings:

- Kasel, Kirpal Singh, Parminder Singh Lamba, Gobind Singh (2002) **Punjabi Sahit di Utpati ate Vikas**, Lahore Book Shop, Ludhiana.
- Parminder Singh (Dr.) (2014) **Punjabi Sahit da Itihas: Aad Kaal to 1700 tak**, Punjabi University, Patiala.

Suggested Readings:

- Gurdev Singh (2005) **Punjabi Sufi Kaav Da Itihaas**, Punjabi Academy, Delhi.
- Jagbir Singh (2004) **Gurmat Kaav da Itihaas**, Punjabi Academy, Delhi.
- Jaggi, Ratan Singh (2014) **Punjabi Sahit da Itihas: 1700 Isvi to 1900 Isvi**, Punjabi University, Patiala.
- Kang, Kulbir Singh (2005) **Punjabi Kissa Kaav da Itihaas**, Punjabi Academy, Delhi.
- Narinder Singh (2002) **Punjabi Sahit di Itihaskari: Ik Drishti**, National Book Shop, Delhi.
- Noor, Sutinder Singh (2005) **Punjabi Vaar-Kaav Da Itihaas**, Punjabi Academy, Delhi.

Internet Resources:

- **https://apnaorg.com/**
- **http://www.panjabdigilib.org/webuser/searches/displayPage.jsp?ID=5150&page=1&CategoryID=1&Searched=**
- **https://pa.wikipedia.org/wiki/%E0%A8%AA%E0%A9%B0%E0%A8%9C%E0%A8%BE%E0%A8%AC%E0%A9%80_%E0%A8%B8%E0%A8%BE%E0%A8%B9%E0%A8%BF%E0%A8%A4_%E0%A8%A6%E0%A8%BE_%E0%A8%87%E0%A8%A4%E0%A8%BF%E0%A8%B9%E0%A8%BE%E0%A8%B8**
- **https://pa.wikipedia.org/wiki/%E0%A8%B8%E0%A8%BC%E0%A9%8D%E0%A8%B0%E0%A9%87%E0%A8%A3%E0%A9%80:%E0%A8%AA%E0%A9%B0%E0%A8%9C%E0%A8%BE%E0%A8%AC%E0%A9%80_%E0%A8%B8%E0%A8%BE%E0%A8%B9%E0%A8%BF%E0%A8%A4_%E0%A8%A6%E0%A8%BE_%E0%A8%87%E0%A8%A4%E0%A8%BF%E0%A8%B9%E0%A8%BE%E0%A8%B8**
- **https://shodhganga.inflibnet.ac.in/**

*(Note: Teachers are free to recommend additional related standard source books, if required so.)

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC CORE COURSE -14 (DSC-14)

GURMAT SAHIT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Gurmat Sahit (DSC-14)	4	3	1	0	Class 12th pass in any subject	Studied Punjabi up to 10th Standard or *Working knowledge of Punjabi language*

Learning Objectives:

- The course is designed to help the students to understand the socio-cultural and religious conditions of the medieval period.
- The course will help to analyse the ways Guru poets responded to the socio-political hierarchy of their times.
- It will develop an understanding about the socio-political and poetical aspects of the Gurmat Kaav.

Learning Outcomes:

- Students will be able to analyse the times of Gurus, and their representations of the human experiences.
- Students will learn about ethical values, and ecological concerns depicted in the Gurmat Kaav.
- They will develop an understanding of the various literary genres used by the Gurus to depict their ideas.

Unit-I ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਜੀ (Guru Nanak Dev Ji) (12 hours)

- ਗੁਰੂ ਨਾਨਕ: ਜੀਵਨ ਤੇ ਰਚਨਾ

  Guru Nanak: Jeevan te Rachna
- ਸ਼ਬਦ: ਗਗਨ ਮੈ ਥਾਲੁ, ਮੋਤੀ ਤ ਮੰਦਰ ਉਸਰਹਿ, ਅਰਬਦ ਨਰਬਦ ਧੁੰਦੂਕਾਰਾ

  Shabad: Gagan Mai Thaal, Moti ta Mandar Usreh, Arbad Narbad Dhundhukara

- ਸਲੋਕ: ਭੈ ਵਿਚਿ ਪਵਣੁ ਵਹੈ ਸਦਵਾਉ, ਭੰਡਿ ਜੰਮੀਐ ਭੰਡਿ ਨਿੰਮੀਐ, ਦਇਆ ਕਪਾਹ ਸੰਤੋਖੁ ਸੂਤੁ, ਦੀਵਾ ਬਲੈ ਅੰਧੇਰਾ ਜਾਇ

  Salok: Bhae Vich Pawan Vahai Sadvaao, Bhand Jammiye Bhand Nimmiye, Daya Kapah Santokh Soot, Deewa Bale Andhera Jaaye
- ਬਾਰਹ ਮਾਹਾ: ਚੇਤ, ਆਸਾੜੁ, ਸਾਵਣਿ, ਮਾਘਿ

  Barah Maha: Chet, Aasarh, Sawan, Magh

Unit- II: ਗੁਰੂ ਅਮਰ ਦਾਸ ਜੀ (Guru Amar Das Ji) (11 hours)

- ਗੁਰੂ ਅਮਰ ਦਾਸ: ਜੀਵਨ ਤੇ ਰਚਨਾ

  Guru Amar Das: Jeevan te Rachna
- ਸ਼ਬਦ: ਏ ਮਨ ਪਿਆਰਿਆ, ਗਾਵਹੁ ਸਚੀ ਬਾਣੀ, ਜਾਤਿ ਕਾ ਗਰਬੁ ਨ ਕਰੀਅਹੁ ਕੋਈ

  Shabad: Ae Man Pyariya, Gaawoh Sacchi Bani, Jaat ka Garb na Kareoh Koi
- ਸਲੋਕ: ਪੜਿ ਪੜਿ ਪੰਡਿਤ ਬੇਦ ਵਖਾਣਹਿ, ਸਤਿਗੁਰ ਸੇਵਿ ਸੁਖੁ ਪਾਇਆ, ਆਤਮਾ ਦੇਉ ਪੂਜੀਐ, ਅੰਤਰਿ ਕਪਟੁ ਭਗਉਤੀ ਕਹਾਏ

  Salok: Parh Parh Pandit Bed Vakhaneh, Satguru Sew Sukh Paya, Aatma deyo Poojeeye, Antar kapat Bhagauti Kahaye
- ਛੰਤ: ਮਿਲੁ ਮੇਰੇ ਪ੍ਰੀਤਮਾ ਜੀਉ, ਮਨ ਤੂੰ ਜੋਤਿ ਸਰੂਪੁ ਹੈ, ਭਗਤ ਜਨਾ ਕੀ ਹਰਿ ਜੀਉ ਰਾਖੈ

  Chhant: Mil Mere Preetma Jeeo, Man tu Jot Saroop Hai, Bhagat Jana Kee Har Jeeyo Raakhe

Unit- III: ਗੁਰੂ ਅਰਜਨ ਦੇਵ ਜੀ (Guru Arjun Dev Ji) (11 hours)

- ਗੁਰੂ ਅਰਜਨ ਦੇਵ: ਜੀਵਨ ਤੇ ਰਚਨਾ

  Guru Arjun Dev: Jeevan te Rachna
- ਸੁਖਮਨੀ ਸਾਹਿਬ: ਪਹਿਲੀਆਂ ਤਿੰਨ ਅਸ਼ਟਪਦੀਆਂ

  Sukhmani Sahib: Pehliyan Tinn Ashtpadiyan
- ਸ਼ਬਦ: ਮੇਰਾ ਮਨੁ ਲੋਚੈ, ਤੂੰ ਮੇਰਾ ਪਿਤਾ, ਦੁਖ ਭੰਜਨੁ ਤੇਰਾ ਨਾਮੁ ਜੀ

  Shabad: Mera Man Loche, Tu Mera Pita, Dukh Bhanjan Tera Naam Ji
- ਬਾਰਹ ਮਾਹਾ: ਕਿਰਤਿ ਕਰਮ ਕੇ ਵੀਛੁੜੇ, ਚੇਤਿ ਗੋਵਿੰਦੁ ਅਰਾਧੀਐ, ਸਾਵਣਿ ਸਰਸੀ ਕਾਮਣੀ, ਮੰਘਿਰਿ ਮਾਹਿ ਸੋਹੰਦੀਆ

  Barah Maha: Kirt Karam ke Vichhrhe, Chet Govind Aradhiye, Sawan Sarsi Kamni, Manghar Maah Sohandiya

Unit-III: ਗੁਰੂ ਅੰਗਦ ਦੇਵ ਜੀ, ਗੁਰੂ ਰਾਮ ਦਾਸ ਜੀ, ਗੁਰੂ ਤੇਗ ਬਹਾਦਰ ਜੀ (Guru Angad Dev Ji, Guru Ram Das Ji, Guru Tegh Bahadur Ji) (11 hours)

- ਗੁਰੂ ਅੰਗਦ ਦੇਵ, ਗੁਰੂ ਰਾਮ ਦਾਸ, ਗੁਰੂ ਤੇਗ ਬਹਾਦਰ: ਜੀਵਨ ਤੇ ਰਚਨਾ

  Guru Angad Dev, Guru Ram Das, Guru Tegh Bahadur: Jeevan te Rachna
- ਗੁਰੂ ਅੰਗਦ ਦੇਵ: ਅਠੀ ਪਹਰੀ ਅਠ ਖੰਡ, ਜੇ ਸਉ ਚੰਦਾ ਉਗਵਹਿ, ਇਹੁ ਜਗੁ ਸਚੈ ਕੀ ਹੈ ਕੋਠੜੀ, ਨਾਨਕ ਚਿੰਤਾ ਮਤਿ ਕਰਹੁ

  Guru Angad Dev: Athi Pehri Ath Khand, Je Sau Chanda Ugwe, Eh Jag Sache Kee Hai Kothrhi, Nanak Chinta Mat Karhau

- ਗੁਰੂ ਰਾਮ ਦਾਸ: ਆਪੇ ਕੰਡਾ ਆਪਿ ਤਰਾਜੀ, ਤੇਰੇ ਕਵਨ ਕਵਨ ਗੁਣ ਕਹਿ ਕਹਿ ਗਾਵਾ, ਕੋਈ ਆਣਿ ਮਿਲਾਵੈ ਮੇਰਾ ਪ੍ਰੀਤਮੁ ਪਿਆਰਾ

  Guru Ram Das: Aape Kanda Aap Traaji, Tere kawan Kawan Gunn Keh Keh Gaawa, Koi Aan Milawe Mera Preetam Pyara
- ਗੁਰੂ ਤੇਗ ਬਹਾਦਰ: ਸਾਧੋ ਮਨ ਕਾ ਮਾਨੁ ਤਿਆਗਉ, ਜਗਤ ਮੈ ਝੂਠੀ ਦੇਖੀ ਪ੍ਰੀਤਿ, ਜੋ ਨਰੁ ਦੁਖ ਮੈ ਦੁਖੁ ਨਹੀ ਮਾਨੈ

  Guru Tegh Bahadur: Sadho Man ka Maan Tyago, Jagat Mai Jhoothi Dekhi Preet, Jo Nar Dukh Mai Dukh Nahi Maane

Essential Readings:

- Jagbir Singh (2004), Gurmat Kaav da Itihaas, Punjabi Academy, Delhi.
- **https://www.punjabi-kavita.com/**

Suggested Readings:

- Arshi, Gurcharan Singh (1989) **Punjabi Sahit Da Vichardharak Paripekh**, Punjabi Academy, Delhi.
- Jagbir Singh (1989) **Madhkali Shabad Sabhiyachar**, Ravinder Parkashan, Delhi.
- Jagbir Singh (1997) **Gurbani Vishav-Drishti ate Vichardhara**, Wellwish Publishers, Delhi.
- Harbhajan Singh (2002) **Patranjali**, Guru Nanak Dev University, Amritsar.
- Harbhajan Singh (2002) **Sahit Adhyan**, Guru Nanak Dev University, Amritsar.
- Harbhajan Singh. (2002) **Adhyan ate Adhiyapan**, Guru Nanak Dev University.
- Sahib Singh (2015) **Gurbani Vyakaran**, Singh Brothers, Amritsar.

Magazines/Journals

- Khoj Patrika (2003) **Bani Kaav Roop Vishesh Ank**, Punjabi University, Patiala.
- Khoj Patrika **Banikaar Vishesh Ank**, Punjabi University, Patiala.

Internet Resources:

- https://pa.wikipedia.org/wiki/%E0%A8%97%E0%A9%81%E0%A8%B0%E0%A8%AE%E0%A8%A4%E0%A8%BF_%E0%A8%95%E0%A8%BE%E0%A8%B5%E0%A8%BF_%E0%A8%A7%E0%A8%BE%E0%A8%B0%E0%A8%BE
- https://www.searchgurbani.com/guru-granth-sahib/ang-by-ang
- https://www.srigranth.org/servlet/gurbani.gurbani?S=y
- https://apnaorg.com/
- https://shodhganga.inflibnet.ac.in/

*(Note: Teachers are free to recommend additional related standard source books, if required so.)

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE -15 (DSC-15)

PUNJABI SUFI KAAV

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Punjabi Sufi Kaav (DSC-14)	4	3	1	0	Class 12th pass in any subject	Studied Punjabi up to 10th Standard or *Working knowledge of Punjabi language*

Learning Objectives:

- The course is designed to learn the origin of Sufism, philosophy of Sufis and relevance of that philosophy in the contemporary scenario.
- The course will help the students to understand how the Sufis changed socio-religious structure of Punjab through their spiritual experiences.
- To analyse the thematic patterns of Punjabi Sufi Poetry and various literary genres used in Sufi poetry.

Learning Outcomes:

- Students will be able to examine the religious diversity and reflection of human experiences of shared spaces in Punjabi society.
- They will examine Punjabi religion and culture through poetic texts written by Sufis.
- They will develop the sense of awareness about the environment and they will realize the inter-relationship between man and environment by a close reading of Sufi poetry.

Unit-I: ਸ਼ੇਖ ਫਰੀਦ (Shekh Farid) (11 hours)

- ਸ਼ੇਖ ਫਰੀਦ: ਜੀਵਨ ਅਤੇ ਰਚਨਾ

  Shekh Farid: Jeevan ate Rachna
- ਸ਼ਬਦ: ਦਿਲਹੁ ਮੁਹਬਤਿ ਜਿੰਨ੍ਹ ਸੇਈ ਸਚਿਆ, ਬੋਲੈ ਸੇਖ ਫਰੀਦੁ ਪਿਆਰੇ ਅਲਹ ਲਗੇ, ਬੇੜਾ ਬੰਧਿ ਨ ਸਕਿਓ ਬੰਧਨ ਕੀ ਵੇਲਾ

Shabad: Dilho Muhabbat Jinn Seyi Saccheya, Bole Shekh Farid Pyare Allah Lage, Berha Bandh Na Sakeyo Bandhan Kee Wela

- ਸਲੋਕ: ੧ ਤੋਂ ੨੦ (ਗੁਰੂ ਗ੍ਰੰਥ ਸਾਹਿਬ ਦੇ ਕ੍ਰਮ ਅਨੁਸਾਰ)

  Salok: 1 to 20 (Guru Granth Sahib de Kram Anusar)
- ਸਲੋਕ: ੨੧ ਤੋਂ ੪੦ (ਗੁਰੂ ਗ੍ਰੰਥ ਸਾਹਿਬ ਦੇ ਕ੍ਰਮ ਅਨੁਸਾਰ)

  Salok 21 to 40 (Guru Granth Sahib de Kram Anusar)

Unit- II: ਸ਼ਾਹ ਹੁਸੈਨ (Shah Hussain) (11 hours)

- ਸ਼ਾਹ ਹੁਸੈਨ: ਜੀਵਨ ਅਤੇ ਰਚਨਾ

  Shah Hussain: Jeevan ate Rachna
- ਕਾਫ਼ੀਆਂ: ਆਉ ਕੁੜੇ ਰਲਿ ਝੂੰਮਰ ਪਾਉ ਨੀਂ, ਆਪ ਨੂੰ ਪਛਾਣ ਬੰਦੈ, ਇਕ ਦਿਨ ਤੈਨੂੰ ਸੁਪਨਾ ਥੀਸਨਿ

  Kafiyan: Aao Kurhe Ral Jhoomar Paao Ni, Aap Nu Pachhan Bande, Ik Din Tainu Supna Theesan
- ਕਾਫ਼ੀਆਂ: ਆਸ਼ਕ ਹੋਵੈ ਤਾਂ ਇਸ਼ਕ ਕਮਾਵੈ, ਅਸਾਂ ਬਹੁੜਿ ਨਾ ਦੁਨੀਆਂ ਆਵਣਾ, ਮੈਂ ਭੀ ਝੋਕ ਰਾਂਝਣ ਦੀ ਜਾਣਾ

  Kafiyan: Aashak Howe Tan Ishq Kamave, Asaan Bahurh Na Duniyan Aawna, Main Bhi Jhok Ranjhan Di Jana
- ਕਾਫ਼ੀਆਂ: ਬੰਦੇ ਆਪ ਨੂੰ ਪਛਾਣ, ਦਰਦ ਵਿਛੋੜੇ ਦਾ ਹਾਲ, ਘੁੰਮ ਚਰਖੜਿਆ ਘੁੰਮ

  Kafiyan: Bande Aap Nu Pachhan, Dard Vichhorhe da Haal, Ghumm Charkharhya Ghumm

Unit- III: ਸੁਲਤਾਨ ਬਾਹੂ (Sultan Bahu) (11 hours)

- ਸੁਲਤਾਨ ਬਾਹੂ: ਜੀਵਨ ਅਤੇ ਰਚਨਾ

  Sultan Bahu: Jeevan ate Rachna
- ਅਲਿਫ਼- ਅੱਲਾ ਚੰਬੇ ਦੀ ਬੂਟੀ, ਅਲਿਫ਼- ਈਮਾਨ ਸਲਾਮਤ ਹਰ ਕੋਈ ਮੰਗੇ, ਅਲਿਫ਼- ਇਹ ਤਨ ਮੇਰਾ ਚਸ਼ਮਾ ਹੋਵੇ

  Alif-Allah Chambe Di Booti, Alif- Iman Salamat Har koi Mange, Alif- Eh Tann Mera Chashma Howe
- ਐਨ- ਇਸ਼ਕ ਜਿਨ੍ਹਾਂ ਦੇ ਹੱਡੀ ਰਚਿਆ, ਬੇ- ਬਗ਼ਦਾਦ ਸ਼ਹਿਰ ਦੀ ਕਿਆ ਨਿਸ਼ਾਨੀ, ਚੇ- ਚੜ੍ਹ ਚੰਨਾਂ ਤੇ ਕਰ ਰੁਸ਼ਨਾਈ

  Ain- Ishq Jihna de Haddi Rachya, Be- Baghdad Shehar di kya Nishani, Che- Charh Channan Te Kar Rushnai
- ਦਾਲ- ਦਰਦਮੰਦਾਂ ਦਾ ਖ਼ੂਨ ਜੋ ਪੀਂਦੇ, ਦਾਲ- ਦਿਲ ਦਰਿਆ ਸਮੁੰਦਰੋਂ ਡੂੰਘੇ, ਜੀਮ- ਜੇ ਰੱਬ ਮਿਲਦਾ ਨ੍ਹਾਤਿਆਂ ਧੋਤਿਆਂ

  Daal- Dardmandan Da Khoon Jo Peende, Daal- Dil Darya Samundaron Doonghe, Jeem- Je Rabb Milda Naatiyan Dhotiyan

Unit-III: ਬੁੱਲ੍ਹੇ ਸ਼ਾਹ (Bulleh Shah) (12 hours)

- ਬੁੱਲ੍ਹੇ ਸ਼ਾਹ: ਜੀਵਨ ਅਤੇ ਰਚਨਾ

  Bulleh Shah: Jeevan ate Rachna

- ਕਾਫ਼ੀਆਂ- ਆਓ ਸਈਓ ਰਲ ਦਿਉ ਨੀ ਵਧਾਈ, ਬੁੱਲ੍ਹਾ ਕੀ ਜਾਣਾ ਮੈਂ ਕੌਣ, ਬੁੱਲ੍ਹੇ ਨੂੰ ਸਮਝਾਵਣ ਆਈਆਂ ਭੈਣਾਂ ਤੇ ਭਰਜਾਈਆਂ
- Kaafiyan- Aao Saiyo Ral Dayo Ni Wadhai, Bullah Ki Jana Main Kaun, Bulleh Nu Samjhawan Aaiyan Bhaina te Bharjaiyan
- ਕਾਫ਼ੀਆਂ- ਹਾਜੀ ਲੋਕ ਮੱਕੇ ਨੂੰ ਜਾਂਦੇ, ਇਕ ਅਲਫ਼ ਪੜ੍ਹੇਂ ਛੁੱਟਕਾਰਾ ਏ, ਇਸ਼ਕ ਦੀ ਨਵੀਓਂ ਨਵੀਂ ਬਹਾਰ

  Kaafiyan- Haji Lok Makke Nu Jande, Ikk Alaf Parhen Chhutkara Ae, Ishq Di Naviyon Navi Bahar
- ਅਠਵਾਰਾ- ਸੋਮਵਾਰ, ਬੁੱਧਵਾਰ, ਜੁੰਮੇਰਾਤ, ਜੁੰਮਾ

  Athvara- Somvar, Budhvar, Jummerat, Jumma)

Essential Readings:

- Gurdev Singh (2005), Punjabi Sufi Kaav Da Itihaas, Punjabi Academy, Delhi.
- **https://www.punjabi-kavita.com/Punjabi-Sufi-Poetry-U.php**

Suggested Readings:

- Atarjit Singh and Gurcharan Singh (Eds.) (2009) **Bulle Shah**, Arsee Publishers, Delhi.
- Bir, Sohinder (Dr.) (2005) **Bulle Shah Da Sufi Anubhav**, Waris Shah Foundation, Amritsar.
- Ghuman, Bikram Singh (Ed.) (1999) **Sufimat ate Punjabi Sufi Kaav**, Waris Shah Foundation, Amritsar.
- Gurmukh Singh (Ed.) (1997) **Sufiwaad,** Lokgeet Parkashan, Chandigarh.
- Jaggi, Gursharan Kaur (Dr.) (Ed.) (2009) **Sheikh Farid: Jiwan, Chintan ate Bani**, Arsee Publishers, Delhi.
- Jagjit Singh (Dr.) (2005) **Sheikh Farid Da Kaav Parvachan**, Waris Shah Foundation, Amritsar.
- Randhawa, Satinder Kaur (2013) **Punjabi Sufi Kaav: Ik Vishleshann**, Ravi Sahit Parkashan, Amritsar.
- Shahi, Udham Singh (Dr.) (2003), **Punjabi Sufi Kaav: Roop Vigiyanik Adhyan**, Ravi Sahit Parkashan, Amritsar.
- Talwara, Gurcharan Singh (Prof.) (2005), **Sufimat ate Ruhaniat,** Waris Shah Foundation, Amritsar.

Magazines/Journals

- Sukhdev Singh (Ed) **Alochna (Ank: 272, October 2009 - March 2010)**, Punjabi Sahit Academy, Ludhiana.

Internet Resources:

- https://sufinama.org/poets/punjabi-sufi-poet
- https://apnaorg.com/
- https://shodhganga.inflibnet.ac.in/

*(Note: Teachers are free to recommend additional related standard source books, if required so.)

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

Category II

(Discipline Specific Core Courses for Undergraduate Programme of study with Punjabi as one of the Core Disciplines)

(B.A. Programmes with Punjabi as Major discipline)

DISCIPLINE SPECIFIC CORE COURSE – 9 (DSC-9)
ADHUNIK PUNJABI KAAV

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
ADHUNIK PUNJABI KAAV (DSC- 9)	4	3	1	0	Class 12th pass in any subject	**Studied Punjabi up to 8th Standard or** ***Basic knowledge of Punjabi language***

LEARNING OBJECTIVES:

- To introduce the students to the modernity and its relation to Punjabi Poetry.
- To understand philosophical and ideological background of Punjabi poetry.
- To comprehend them with the development of various trends in Modern Punjabi Poetry.
- To view Modern Punjabi Poetry in its socio-cultural and political contexts.
- To understand the theme, structure and style in various genres of Modern Punjabi poetry.
- To recognize and identify different formal rhythmic properties of poems and of language as a whole.
- To evaluate the creative and analytical sensibility of the students.

LEARNING OUTCOMES:

- The students will be able to analyse various elements of poetry such as diction, tone, form, genre, imagery, figures of speech, symbolism, theme, etc.
- They will be able to identify various forms and genres of poetry such as Nazam, Ghazal, Rubai and Free Verse etc.
- The course will facilitate them to understand the socio-cultural, economic and political concerns of Punjabi society reflected in Punjabi poetry.
- It will broaden their vocabulary and develop an appreciation of language and its connotations and denotations.
- They will develop a feeling of sensitivity depicted in poetry.
- Students will learn to do practical analysis of poetry with the help of different approaches.

Unit I: ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਵਿਤਾ: ਸਿਧਾਂਤਕ ਪਰਿਪੇਖ (Adhunik Punjabi Kavita: Sidhantak Paripekh) (12 hours)

- ਕਵਿਤਾ: ਪਰਿਭਾਸ਼ਾ, ਪ੍ਰਕਿਰਤੀ ਅਤੇ ਤੱਤ

  Kavita : Paribhasha, Prakirti ate Tatt
- ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਵਿਤਾ: ਨਿਕਾਸ, ਵਿਕਾਸ ਅਤੇ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ

  Adhunik Punjabi Kavita : Nikas, Vikas ate Visheshtavan
- ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਵਿਤਾ: ਪ੍ਰਮੁੱਖ ਪ੍ਰਵਿਰਤੀਆਂ

  Adhunik Punjabi Kavita : Pramukh Praviratian
- ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਵਿਤਾ: ਪ੍ਰਮੁੱਖ ਸਰੋਕਾਰ

  Adhunik Punjabi Kavita: Pramukh Sarokar

Unit II: ਆਧੁਨਿਕ ਕਾਵਿ ਰੂਪਾਕਾਰ: ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਲੱਛਣ (Adhunik Kaav Roopakar: Paribhasha ate Lachhan) (11 hours)

- ਨਜ਼ਮ

  Nazam
- ਗ਼ਜ਼ਲ, ਗੀਤ

  Ghazal, Geet
- ਰੁਬਾਈ, ਹਾਇਕੂ

  Rubai, Haiku
- ਖੁੱਲ੍ਹ। ਕਵਿਤਾ

  Khulli Kavita

Unit III: ਭਾਰਤੀ ਪੰਜਾਬੀ ਕਵੀਆਂ ਦੀਆਂ ਕਵਿਤਾਵਾਂ (Bharti Punjabi Kavian Dian Kavitavan) (11 hours)

- ਅੰਮ੍ਰਿਤਾ ਪ੍ਰੀਤਮ : ਅੱਜ ਆਖਾਂ ਵਾਰਿਸ ਸ਼ਾਹ ਨੂੰ, ਅੰਨਦਾਤਾ

  Amrita Pritam: Ajj Aakhan Waris Shah Nu, Anndata
- ਸ਼ਿਵ ਕੁਮਾਰ ਬਟਾਲਵੀ: ਅਸਾਂ ਤਾਂ ਜੋਬਨ ਰੁੱਤੇ ਮਰਨਾ, ਇਸ਼ਤਿਹਾਰ

  Shiv Kumar Batalvi: Asan Tan Joban Rutte Marna, Ishtihaar
- ਸੁਰਜੀਤ ਪਾਤਰ: ਆਇਆ ਨੰਦ ਕਿਸ਼ੋਰ, ਮਰ ਰਹੀ ਹੈ ਮੇਰੀ ਭਾਸ਼ਾ

  Surjit Patar: Aya Nand Kishore, Mar Rahi Hai Meri Bhasha
- ਮਨਮੋਹਨ: ਸੁਭਾਅ,ਡਰ

  Manmohan: Subhah, Darr

Unit IV: ਪਰਵਾਸੀ ਪੰਜਾਬੀ ਕਵੀਆਂ ਦੀਆਂ ਕਵਿਤਾਵਾਂ (Parvasi Punjabi Kavian Dian Kavitavan) (11 hours)

- ਅਮਰਜੀਤ ਚੰਦਨ (ਯੂ.ਕੇ.): ਦੋਹੜੇ, ਤੋਤਾ ਘੋੜਾ ਤੇ ਬੰਦਾ

Amarjit Chandan (U.K.) : Dohreh, Tota Ghoda te Banda

- ਰਣਧੀਰ ਸਿੰਘ (ਅਮਰੀਕਾ): ਲਾ ਜੀ ਆਪਣੀ ਮੋਹਰ ਸਮੇਂ ਨੂੰ, ਮਸਤੀ ਮੁਹੱਬਤ

  Randhir Singh (America): La Ji Apni Mohar Samay nu, Masti Muhabbat
- ਸੁਰਜੀਤ ਕਲਸੀ (ਕੈਨੇਡਾ): ਔਰਤ ਦੇ ਹੱਥ, ਘਰ

  Surjit Kalsi (Canada): Aurat De Hath, Ghar
- ਰਾਜਵਿੰਦਰ (ਜਰਮਨੀ): ਜੀਵਨ-ਜੁਗਤ, ਸ਼ਬਦ ਸ਼ੀਸ਼ਾ ਤੇ ਮੈਂ

  Rajvinder (Germany): Jeevan-Jugat, Shabad Shisha te Mae

ESSENTIAL READINGS

- Jaggi, Rattan Singh (Dr.) (2003) **Sahit De Roop**, Publication Bureau, Punjabi University, Patiala.
- Jaswinder Singh (2011) **Adhunik Punjabi Kav (1950-2010),** Sahitya Akademi, Delhi.
- Noor, Sutinder Singh (ed.) (2006) **Vihveen Sadi Da Punjabi Kaav**, Sahitya Akademi, Delhi.
- Manmohan Singh (2008) **Neelkanth**, Chetna Parkashan, Ludhiana.

SUGGESTED READINGS:

- Brar, Rajinder Pal Singh (Dr.) (2006) **Adhunik Punjabi Kavita Da Itihas**, Punjabi Academy, Delhi.
- Jaswinder Singh (Dr.), Man Singh Dhindsa (Dr.) (2014) **Punjabi Sahit Da Itihas,** Punjabi University, Patiala.
- Piara Singh (Prof.) (2004) **Adhunik Punjabi Kavita: Sidhant, Itihas Te Pravirtian**, New Book Company, Jalandhar.
- Kasel, Kirpal Singh, Parminder Singh (ed.) (2002**) Punjabi Sahit Di Utpatti Te Vikas**, Lahore Book Shop, Ludhiana.
- Satinder Singh (Dr.) (1980) **Adhunik Punjabi Kaav Roop Adhyan**, Guru Nanak Dev University, Amritsar.

INTERNET RESOURCES

- www.punjabi-kavita.com
- **https://www.punjabi-kavita.com/Lammian-Vatan-Amrita-Pritam.php#Lammian1**
- **https://www.punjabi-kavita.com/Patthar-Geete-Amrita-Pritam.php#Patthar4**
- **https://www.punjabi-kavita.com/IshtiharShivKumarBatalvi.php**
- **https://www.punjabi-kavita.com/AsanTaanJobanRutteMarnaShivKumarBatalvi.php**
- **https://www.punjabi-kavita.com/PunjabiPoetrySurjitPatar.php#Patar152**
- **https://www.punjabi-kavita.com/PunjabiPoetrySurjitPatar.php#Patar166**
- **https://www.punjabi-kavita.com/PunjabiPoetryAmarjitChandan.php#Chandan4**

***(Note: Teachers are free to recommend additional related standard source books, if required so.)**

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE –10 (DSC-10)
ADHUNIK PUNJABI GALAP

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
ADHUNIK PUNJABI GALAP (DSC-10)	4	3	1	0	Class 12th pass in any subject	**Studied Punjabi up to 8th Standard or *Basic knowledge of Punjabi language***

LEARNING OBJECTIVES:

- To gain an appreciation of different literary styles, voices and approaches depicted in Punjabi Galap (Novel and Story).
- To develop ethical values, social concerns and awareness about the current issues of society among the students.
- It will give an outline of various development phases of Punjabi Galap (Novel and Story).
- To develop a better understanding about the correlation between life and literature.
- To nurture ethical values, social concerns and awareness among the students.
- It will help the students to develop a creative aspect and sensitize them towards society.

LEARNING OUTCOMES:

- Students will develop an ability to identify, analyse, interpret and describe the critical ideas, values, and themes appeared in the prescribed Novel and Stories.
- They will be able to understand the ways how various ideas, values and themes are depicted in Punjabi Novel and Story and impact cultures and societies.
- They will gain an appreciation of different literary styles, voices and approaches in Punjabi Galap (Novel and Story).
- It will develop ethical values, social concerns and awareness about the current issues of society among the students.

Unit I: ਪੰਜਾਬੀ ਗਲਪ: ਸਿਧਾਂਤਕ ਪਰਿਪੇਖ (Punjabi Galap: Sidhantak Paripekh)

(12 hours)

- ਗਲਪ : ਪਰਿਭਾਸ਼ਾ, ਪ੍ਰਕਿਰਤੀ ਅਤੇ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ

  Galap: Paribhasha, Prakirti ate Visheshtavan

- ਗਲਪ ਦੇ ਰੂਪ: ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਤੱਤ

  Galap de Roop : Paribhasha ate Tatt
- ਪੰਜਾਬੀ ਨਾਵਲ: ਨਿਕਾਸ ਅਤੇ ਵਿਕਾਸ

  Punjabi Novel: Nikas ate Vikas
- ਪੰਜਾਬੀ ਕਹਾਣੀ: ਨਿਕਾਸ ਅਤੇ ਵਿਕਾਸ

  Punjabi Kahani: Nikas ate Vikas

Unit II: ਪੰਜਾਬੀ ਗਲਪ: ਪ੍ਰਵਿਰਤੀਆਂ ਅਤੇ ਬਿਰਤਾਂਤਕ ਜੁਗਤਾਂ (Punjabi Galap: Pravirtian ate Birtantak Jugtan) (11 hours)

- ਪੰਜਾਬੀ ਨਾਵਲ: ਪ੍ਰਮੁੱਖ ਪ੍ਰਵਿਰਤੀਆਂ

  Punjabi Novel: Pramukh Pravirtian
- ਪੰਜਾਬੀ ਕਹਾਣੀ : ਪ੍ਰਮੁੱਖ ਪ੍ਰਵਿਰਤੀਆਂ

  Punjabi Kahani: Pramukh Pravirtian
- ਪੰਜਾਬੀ ਨਾਵਲ ਦੀਆਂ ਬਿਰਤਾਂਤਕ ਜੁਗਤਾਂ

  Punjabi Novel dian Birtantak Jugtan
- ਪੰਜਾਬੀ ਕਹਾਣੀ ਦੀਆਂ ਬਿਰਤਾਂਤਕ ਜੁਗਤਾਂ

  Punjabi Kahani dian Birtantak Jugtan

Unit III: ਸਲੋਅ ਡਾਊਨ: ਨਛੱਤਰ (Slow Down: Nachhatar) (11 hours)

- ਨਛੱਤਰ : ਜੀਵਨ ਅਤੇ ਰਚਨਾ

  Nachhatar: Jeevan ate Rachna
- ਵਿਸ਼ਾ ਪੱਖ ਅਤੇ ਮੂਲ ਸਰੋਕਾਰ

  Visha Pakh ate Mool Sarokar
- ਪਾਤਰ ਉਸਾਰੀ

  Patar Usari
- ਨਾਵਲ ਕਲਾ

  Novel Kala

Unit IV: ਪੰਜਾਬੀ ਦੀਆਂ ਚੋਣਵੀਆਂ ਕਹਾਣੀਆਂ: ਵਿਸ਼ਾ ਅਤੇ ਕਲਾ ਪੱਖ (Punjabi Dian Chonvian Kahanian: Visha ate Kala Pakh) (11 hours)

- ਭੂਆ: ਨਾਨਕ ਸਿੰਘ

  Bhua: Nanak Singh
- ਸ਼ੇਰਨੀਆਂ: ਕੁਲਵੰਤ ਸਿੰਘ ਵਿਰਕ

  Shernian: Kulwant Singh Virk
- ਕਰਾਮਾਤ: ਕਰਤਾਰ ਸਿਘ ਦੁੱਗਲ

  Karamat: Kartar Singh Duggal
- ਇਨਸਾਨੀਅਤ ਦਾ ਸਿਪਾਹੀ: ਮਹਿੰਦਰ ਸਿੰਘ ਸਰਨਾ

  Insaniyat Da Sipahi: Mohinder Singh Sarna

ESSENTIAL READINGS

- Jaggi, Rattan Singh (Dr.) (2003) **Sahit de Roop**, Publication Bureau, Punjabi University, Patiala
- Nachhatar (2012) **Slow Down**, Chetna Parkashan, Ludhiana.
- Sarna, Mohinder Singh, (1993) **Meria Chonveya Kahania,** Navyug Publishers, Delhi.

SUGGESTED READINGS:

- Brahm Jagdish Singh (Prof.) (2012) **Punjabi Novel: Sidhant, Itihas Ate Pravirtian**, Waris Shah Foundation, Amritsar.
- Dhaliwal, Baldev Singh (2017) **Punjabi Kahani da Itihas**, Punjabi Academy, Delhi.
- Harbhajan Singh (Dr.) (ed.) (2016) **Katha Punjab**, National Book Trust, Delhi
- Harbhajan Singh, Jagdish Kaushal, Tara Singh Anjan (eds.) (2001) **Katha Kahani,** Punjabi Academy, Delhi.
- Karanjit Singh (ed.) (2010) **Punjabi Galap Adhyan De Badlade Pripekh**, Sahitya Akademi, Delhi.
- Jaswinder Singh (Dr.), Man Singh Dhindsa (2006) **Punjabi Sahit da Itihas (Adhunik Kal 1901-1995)**, Punjabi University, Patiala.
- Piara Singh (Prof.) (2004) **Punjabi Galap: Sidhant, Itihas te Pravirtian**, New Book Company, Mai Hiran Gate, Jalandhar.
- Singal, Dharampal, Gurlal Singh (1988), **Punjabi Kahani, Naveen Pravirtian**, Guru Nanak Dev University, Amritsar.
- Sandhu, Gurpal Singh (2005) **Punjabi Novel da Itihas**, Punjabi Academy, Delhi.

MAGAZINES/RESEARCH JOURNALS:

- Khoj Patrika (1999) **Veehvi Sadi da Punjabi Galap**, Vishesh Ank, Punjabi University, Patiala.

INTERNET RESOURCES:

- www.kathapunjab.org
- **https://www.punjabikahani.punjabi-kavita.com/PunjabiNovels.php**
- **https://www.punjabikahani.punjabi-kavita.com/BhuaNanakSingh.php**
- **https://www.punjabikahani.punjabi-kavita.com/ShernianKulwantSinghVirk.php**
- **https://www.punjabikahani.punjabi-kavita.com/KaramatKartarSinghDuggal.php**

***(Note: Teachers are free to recommend additional related standard source books, if required so.)**

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category III

Discipline Specific Core Courses for Undergraduate Programme of study with Punjabi as one of the Core Disciplines

(B.A. Programmes with Punjabi as non-Major or Minor discipline)

DISCIPLINE SPECIFIC CORE COURSE – 9 (DSC-9)
ADHUNIK PUNJABI KAAV

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
ADHUNIK PUNJABI KAAV (DSC- 9)	4	3	1	0	Class 12th pass in any subject	**Studied Punjabi up to 8th Standard or** ***Basic knowledge of Punjabi language***

LEARNING OBJECTIVES:

- To introduce the students to the modernity and its relation to Punjabi Poetry.
- To understand philosophical and ideological background of Punjabi poetry.
- To comprehend them with the development of various trends in Modern Punjabi Poetry.
- To view Modern Punjabi Poetry in its socio-cultural and political contexts.
- To understand the theme, structure and style in various genres of Modern Punjabi poetry.
- To recognize and identify different formal rhythmic properties of poems and of language as a whole.
- To evaluate the creative and analytical sensibility of the students.

LEARNING OUTCOMES:

- The students will be able to analyse various elements of poetry such as diction, tone, form, genre, imagery, figures of speech, symbolism, theme, etc.
- They will be able to identify various forms and genres of poetry such as Nazam, Ghazal, Rubai and Free Verse etc.
- The course will facilitate them to understand the socio-cultural, economic and political concerns of Punjabi society reflected in Punjabi poetry.
- It will broaden their vocabulary and develop an appreciation of language and its connotations and denotations.
- They will develop a feeling of sensitivity depicted in poetry.
- Students will learn to do practical analysis of poetry with the help of different approaches.

Unit I: ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਵਿਤਾ: ਸਿਧਾਂਤਕ ਪਰਿਪੇਖ (Adhunik Punjabi Kavita: Sidhantak Paripekh) (12 hours)

- ਕਵਿਤਾ : ਪਰਿਭਾਸ਼ਾ, ਪ੍ਰਕਿਰਤੀ ਅਤੇ ਤੱਤ

  Kavita : Paribhasha, Prakirti ate Tatt
- ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਵਿਤਾ : ਨਿਕਾਸ, ਵਿਕਾਸ ਅਤੇ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ

  Adhunik Punjabi Kavita : Nikas, Vikas ate Visheshtavan
- ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਵਿਤਾ: ਪ੍ਰਮੁੱਖ ਪ੍ਰਵਿਰਤੀਆਂ

  Adhunik Punjabi Kavita : Pramukh Praviratian
- ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਵਿਤਾ : ਪ੍ਰਮੁੱਖ ਸਰੋਕਾਰ

  Adhunik Punjabi Kavita : Pramukh Sarokar

Unit II: ਆਧੁਨਿਕ ਕਾਵਿ ਰੂਪਾਕਾਰ: ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਲੱਛਣ (Adhunik Kaav Roopakar: Paribhasha ate Lachhan) (11 hours)

- ਨਜ਼ਮ

  Nazam
- ਗ਼ਜ਼ਲ, ਗੀਤ

  Ghazal, Geet
- ਰੁਬਾਈ, ਹਾਇਕੂ

  Rubai, Haiku
- ਖੁੱਲਮ। ਕਵਿਤਾ

  Khulli Kavita

Unit III: ਭਾਰਤੀ ਪੰਜਾਬੀ ਕਵੀਆਂ ਦੀਆਂ ਕਵਿਤਾਵਾਂ (Bharti Punjabi Kavian Dian Kavitavan) (11 hours)

- ਅੰਮ੍ਰਿਤਾ ਪ੍ਰੀਤਮ : ਅੱਜ ਆਖਾਂ ਵਾਰਿਸ ਸ਼ਾਹ ਨੂੰ, ਅੰਨਦਾਤਾ

  Amrita Pritam : Ajj Akhan Waris Shah Nu, Anndata
- ਸ਼ਿਵ ਕੁਮਾਰ ਬਟਾਲਵੀ: ਅਸਾਂ ਤਾਂ ਜੋਬਨ ਰੁੱਤੇ ਮਰਨਾ, ਇਸ਼ਤਿਹਾਰ

  Shiv Kumar Batalvi: Asan Tan Joban Rutte Marna, Ishtihaar
- ਸੁਰਜੀਤ ਪਾਤਰ: ਆਇਆ ਨੰਦ ਕਿਸ਼ੋਰ, ਮਰ ਰਹੀ ਹੈ ਮੇਰੀ ਭਾਸ਼ਾ

  Surjit Patar: Aya Nand Kishore, Mar Rahi Hai Meri Bhasha
- ਮਨਮੋਹਨ : ਸੁਭਾਅ, ਡਰ

  Manmohan : Subhah, Darr

Unit IV: ਪਰਵਾਸੀ ਪੰਜਾਬੀ ਕਵੀਆਂ ਦੀਆਂ ਕਵਿਤਾਵਾਂ (Parvasi Punjabi Kavian Dian Kavitavan) (11 hours)

- ਅਮਰਜੀਤ ਚੰਦਨ (ਯੂ.ਕੇ.) : ਦੋਹੜੇ, ਤੋਤਾ ਘੋੜਾ ਤੇ ਬੰਦਾ

Amarjit Chandan (U.K.) : Dohreh, Tota Ghoda te Banda

- ਰਣਧੀਰ ਸਿੰਘ (ਅਮਰੀਕਾ) :ਲਾ ਜੀ ਆਪਣੀ ਮੋਹਰ ਸਮੇਂ ਨੂੰ, ਮਸਤੀ ਮੁਹੱਬਤ

  Randhir Singh (America): La Ji Apni Mohar Samay nu, Masti Muhabbat
- ਸੁਰਜੀਤ ਕਲਸੀ (ਕੈਨੇਡਾ): ਔਰਤ ਦੇ ਹੱਥ, ਘਰ

  Surjit Kalsi (Canada): Aurat De Hath, Ghar
- ਰਾਜਵਿੰਦਰ (ਜਰਮਨੀ) : ਜੀਵਨ-ਜੁਗਤ, ਸ਼ਬਦ ਸ਼ੀਸ਼ਾ ਤੇ ਮੈਂ

  Rajvinder (Germany): Jeevan-Jugat, Shabad Shisha te Main

ESSENTIAL READINGS

- Jaggi, Rattan Singh (Dr.) (2003) **Sahit De Roop**, Publication Bureau, Punjabi University, Patiala.
- Jaswinder Singh (2011) **Adhunik Punjabi Kav (1950-2010),** Sahitya Akademi, Delhi.
- Noor, Sutinder Singh (ed.) (2006) **Vihveen Sadi Da Punjabi Kaav**, Sahitya Akademi, Delhi.
- Manmohan Singh (2008) **Neelkanth**, Chetna Parkashan, Ludhiana.

SUGGESTED READINGS:

- Brar, Rajinder Pal Singh (Dr.) (2006) **Adhunik Punjabi Kavita Da Itihas**, Punjabi Academy, Delhi.
- Jaswinder Singh (Dr.), Man Singh Dhindsa (Dr.) (2014), **Punjabi Sahit Da Itihas,** Punjabi University, Patiala.
- Piara Singh (Prof.) (2004) **Adhunik Punjabi Kavita: Sidhant, Itihas Te Pravirtian**, New Book Company, Jalandhar.
- Kasel, Kirpal Singh, Parminder Singh (ed.) (2002**) Punjabi Sahit Di Utpatti Te Vikas**, Lahore Book Shop, Ludhiana.
- Satinder Singh (Dr.) (1980) **Adhunik Punjabi Kaav Roop Adhyan**, Guru Nanak Dev University, Amritsar.

INTERNET RESOURCES

- www.punjabi-kavita.com
- **https://www.punjabi-kavita.com/Lammian-Vatan-Amrita-Pritam.php#Lammian1**
- **https://www.punjabi-kavita.com/Patthar-Geete-Amrita-Pritam.php#Patthar4**
- **https://www.punjabi-kavita.com/IshtiharShivKumarBatalvi.php**
- **https://www.punjabi-kavita.com/AsanTaanJobanRutteMarnaShivKumarBatalvi.php**
- **https://www.punjabi-kavita.com/PunjabiPoetrySurjitPatar.php#Patar152**
- **https://www.punjabi-kavita.com/PunjabiPoetrySurjitPatar.php#Patar166**
- **https://www.punjabi-kavita.com/PunjabiPoetryAmarjitChandan.php#Chandan4**

***(Note: Teachers are free to recommend additional related standard source books, if required so.)**

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category IV

COMMON POOL OF Discipline Specific Elective COURSES (DSE)
OFFERED BY THE DEPARTMENT OF PUNJABI

DISCIPLINE SPECIFIC ELECTIVE (DSE-9)
DELHI DA PUNJABI SAHIT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Delhi da Punjabi Sahit (DSE-9)	4	3	1	0	Class 12th pass in any subject	**Studied Punjabi up to 10th Standard** **or** ***Basic knowledge of Punjabi language***

Learning Objectives:

- The course is structured to provide students with a comprehensive idea about the development of Punjabi literature in Delhi.
- The course will trace the trajectory of the growth of Punjabi literature from the period of Partition when most of the Punjabi authors settled in Delhi.
- The course is also designed to inform the students about the various dialects' influences on the Punjabi literature written in the National capital.

Learning Outcomes:

- The students will come to know about various literary movements, genres and writers that are held to be the representatives of their times.
- The students will be able to evaluate the ways, socio-cultural and historical phenomena influence the literary production of a particular period.
- They will understand the importance of cosmopolitan consciousness through a deep reading of the Punjabi literature written in the National capital.

Unit-I: ਦਿੱਲੀ ਦਾ ਪੰਜਾਬੀ ਸਾਹਿਤ: ਸਿਧਾਂਤਕ ਤੇ ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ (Delhi da Punjabi Sahit: Sidhantak te Itihasak Paripekh) (12 hours)

- ਸਾਹਿਤ ਵਿਚ ਮਹਾਂਨਗਰੀ ਚੇਤਨਾ
  Sahit Vich Mahanagri Chetna
- ਮਹਾਂਨਗਰੀ ਸਾਹਿਤ ਦੇ ਮੂਲ ਸਰੋਕਾਰ

Mahanagri Sahit de Mool Sarokar

- ਦਿੱਲੀ ਦੇ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦਾ ਸੰਖੇਪ ਇਤਿਹਾਸ

  Delhi de Punjabi Sahit de Roopakar
- ਦਿੱਲੀ ਦੇ ਪ੍ਰਮੁੱਖ ਪੰਜਾਬੀ ਸਾਹਿਤਕਾਰਾਂ ਨਾਲ ਜਾਣ-ਪਛਾਣ

  Delhi de Pramukh Punjabi Sahitkara Naal Jaan-Pacchan

Unit-II: ਦਿੱਲੀ ਦੀ ਪੰਜਾਬੀ ਕਵਿਤਾ (Delhi di Punjabi Kavita) (11 hours)

- ਦਵਿੰਦਰ ਸਤਿਆਰਥੀ: ਮੁੜ੍ਹਕਾ, ਹਜ਼ਾਰਾ ਸਿੰਘ ਗੁਰਦਾਸਪੁਰੀ: ਦਿੱਲੀ, ਅੰਮ੍ਰਿਤਾ ਪ੍ਰੀਤਮ: ਮੇਰਾ ਸ਼ਹਿਰ, ਬਾਵਾ ਬਲਵੰਤ: ਦੁਨੀਆਂ

  Davinder Satiyarthi: Mudka, Hazara Singh Gurdaspuri: Delhi, Amrita Pritam: Mera Shehar, Bawa Balwant: Duniya,
- ਹਰਿਭਜਨ ਸਿੰਘ: ਤੇਰੇ ਹਜ਼ੂਰ ਮੇਰੀ ਹਾਜਰੀ ਦੀ ਦਾਸਤਾਨ, ਪ੍ਰੀਤਮ ਸਿੰਘ ਸਫ਼ੀਰ: ਪਾਂਧੀ ਦੂਰ ਦਿਆ, ਤਾਰਾ ਸਿੰਘ: ਕੀ ਕੋਈ ਮਾਣ ਕਰੇ ਜੀਵਨ ਤੇ, ਕੀ ਕੋਈ ਗੱਲ ਲਮਕਾਵੇ, ਜਸਵੰਤ ਸਿੰਘ ਨੇਕੀ: ਮੇਰੀਆਂ ਸ਼ਰਮਸਾਰ ਰੁੱਤਾਂ ਦੀ ਛਾਵੇਂ

  Harbhjan Singh: Tere Hazur Meri Haazri di Dastan, Pritam Singh Safeer: Pandhi Dur Dia, Tara Singh: Ki Koi Maan Kare Jeevan te, Ki Koi Gall Lamkave, Jaswant Singh Neki: Merian Sharamsar Ruttan di Chhaven
- ਪਿਆਰਾ ਸਿੰਘ ਸਹਿਰਾਈ: ਆਈਂ ਸਾਡੇ ਵਿਹੜੇ ਰੂਪ ਵੇ, ਹਰਨਾਮ: ਇਕੱਤੀ ਫਰਵਰੀ, ਮੋਹਨਜੀਤ: 1984, ਵਨੀਤਾ: ਮਹਾਂਨਗਰੀ

  Piara Singh Sehrai: Aayi Saade Vehade Roop Ve, Harnam: Ikatti Farvari, Mohanjit: 1984, Vanita: Mahanagri,
- ਮਨਮੋਹਨ: ਬੀਤੀ ਰਾਤ... , ਅੰਮੀਆ ਕੁੰਵਰ: ਦਿਲ ਦੀ ਦਿੱਲੀ, ਬਲਜਿੰਦਰ ਚੌਹਾਨ: ਹਾਰ ਕੇ ਬਾਜ਼ੀ ਜੇ ਹੁਣੇ ਪਰਤੇ ਗਰਾਂ ਨੂੰ , ਬਲਬੀਰ ਮਾਧੋਪੁਰੀ: ਇਹ ਕੈਸੀ ਹੋਣੀ, ਗੁਰਚਰਨ: ਦਿੱਲੀ

  Manmohan: Beeti Raat…, Amia Kunwar: Dil di Delhi, Baljinder Chauhan: Haar ke Baazi Je Hune Parte Gran nu, Balbir Madhopuri: Eh Kaisi Honi, Gurcharan: Delhi

Unit-III: ਦਿੱਲੀ ਦੀ ਪੰਜਾਬੀ ਕਹਾਣੀ (Delhi di Punjabi Kahani) (11 hours)

- ਕਰਤਾਰ ਸਿੰਘ ਦੁੱਗਲ: ਸਰਾਪੇ ਹੋਏ ਲੋਕ, ਮਹਿੰਦਰ ਸਿੰਘ ਸਰਨਾ: ਦੋ ਚੰਡੀਗੜ੍ਹ

  Kartar Singh Duggal: Sarape Hoye Lok , Mahinder Singh Sarna: Do Chandigarh
- ਮਨਮੋਹਨ ਬਾਵਾ: ਵੀਰ ਚੱਕਰ, ਅਜੀਤ ਕੌਰ: ਨਹੀਂ: ਸਾਨੂੰ ਕੋਈ ਤਕਲੀਫ ਨਹੀਂ

  Manmohan Bava: Veer Chakra, Ajit Kaur: Nahin: Sanu Koi Taklif Nahin
- ਗੁਰਬਚਨ ਭੁੱਲਰ: ਇੱਕਵੀਂ ਸਦੀ, ਜਗਦੀਸ਼ ਕੌਸ਼ਲ: ਹੁਣ ਮੈਂ ਚੌੜ ਨਹੀਂ ਕਰਦਾ,

  Gurbachan Bhullar: Ikkvin Sadi, Jagdish Kaushal: Hun Main Chaurh Nahin Karda
- ਨਛੱਤਰ: ਲਾਸ਼, ਬਲਵਿੰਦਰ ਬਰਾੜ: ਪੁਰਾਣਾ ਸਾਲ ਨਵਾਂ ਸਾਲ

  Nachhattar: Lash, Balwinder Brar: Purana Saal Nawan Saal

Unit-IV: ਦਿੱਲੀ ਦੀ ਪੰਜਾਬੀ ਵਾਰਤਕ ਦੇ ਜੀਵਨੀ ਮੂਲਕ ਅਤੇ ਸਵੈ-ਜੀਵਨੀ ਮੂਲਕ ਅੰਸ਼ (Delhi Di

Punjabi Vartak De Jeevani Moolak Ate Swai-Jeevani Moolak Ansh)

(11 hours)

- ਗੁਰਬਚਨ ਸਿੰਘ ਭੁੱਲਰ: ਤਿਲ-ਤਿਲ ਜੋੜ ਕੇ ਬਣੀ ਸਾਹਿਤਕ ਤਿਲੋਤਮਾ ਦੇ ਸਿਰਜਕ ਦੇਵਿੰਦਰ ਸਤਿਆਰਥੀ

  Gurbachan Singh Bhullar: Til-Til Jod ke Bane Sahitak Tilotama de Sirjak Davinder Satyarthi
- ਅੰਮ੍ਰਿਤਾ ਪ੍ਰੀਤਮ: ਮੇਰਾ ਸੋਲ੍ਹਵਾਂ ਵਰ੍ਹਾ

  Amrita Pritam: Mera Sohlvan Varha
- ਜਸਵੰਤ ਸਿੰਘ ਨੇਕੀ: ਉਪਨਾਮ ਨੇਕੀ; ਕ੍ਰੋਧ ਵੀ ਮਹਾਨ ਤੇ ਖਿਮਾ ਵੀ ਮਹਾਨ; ਰੱਬ ਨਾਲ ਮੇਲ

  Jaswant Singh Neki: Upnaam Neki; Krodh vi Mahan te Khima vi Mahan; Rabb naal mel
- ਬਚਿੰਤ ਕੌਰ: ਮੁਹੱਬਤ ਇਕ ਹਾਦਸਾ

  Bachint Kaur: Mohabbat Ik Hadasa

ESSENTIAL READINGS:

- Manjit Singh (2011) **Punjabi Sawae-Jeevani Ansh,** Manpreet Parkashan, Delhi.
- **https://www.punjabi-kavita.com/, https://www.punjabikahani.punjabi-kavita.com/GurbachanSinghBhullar.php**

SUGGESTED READINGS:

- Brar, Rajinderpal Singh (2006) **Adhunik Punjabi Kavita da Itihas**, Punjabi Academy, Delhi.
- Brar, Rajinder Pal Singh (2009) **Aadhunik Punjabi Sahit Roopakar: Sidhant ate Roopantrann**, Punjabi University, Paitala.
- Dhaliwal, Baldev Singh (2017) **Punjabi Kahaani da Itihaas**, Punjabi Academy, Delhi.
- Grewal, Amarjeet (2012) **Mohabat di Rajneeti**, Chetna Parkashan, Ludhiana.
- Krantipal (2002) **Punjabi Kahaani: Ik Samvaad**, National Book Shop, Delhi.
- Noor, Sutinder Singh (2002) **Kavita di Bhumika**, Shilalekh Books, Delhi.
- Satinder Singh (2006) **Aadhunik Punjabi Vaartak da Itihaas**, Punjabi Academy, Delhi.
- Vanita (Dr.) (2010) **Kavita dian Partan**, Chetna Parkashan, Ludhiana.

INTERNET RESOURCES:

- https://shodhganga.inflibnet.ac.in/handle/10603/104290

*(Note: Teachers are free to recommend additional related standard resource books, if required so.)

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE (DSE-10)
KISANI JEEVAN DI PUNJABI KAHANI

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Kisani Jeevan di Punjabi Kahani (DSE-10)	4	3	1	0	Class 12th pass in any subject	**Studied Punjabi up to 8th Standard or** ***Working knowledge of Punjabi language***

LEARNING OBJECTIVES:

- To develop skills in literary analysis, including comprehension of the narrative fundamentals of character, point of view, theme and action (plot).
- To gain an appreciation of different literary styles, voices and approaches in Punjabi short stories depicting the life of peasantry.
- To develop ethical values, social concerns and awareness about the current issues of society among the students.

LEARNING OUTCOMES:

- Students will have the ability to apply critical and theoretical approaches to the reading and analysis of concerned literary texts of short-story.
- Students will be able to identify, analyse, interpret and describe the critical ideas, values, and themes that appear in the prescribed texts and to understand the ways these ideas, values, and themes inform and impact cultures and societies.
- They will develop a sensitivity for the agrarian issues.

Unit-I: ਕਿਸਾਨੀ ਜੀਵਨ ਦੀ ਪੰਜਾਬੀ ਕਹਾਣੀ: ਸਿਧਾਂਤਕ ਪਰਿਪੇਖ (Kisani Jeevan di Punjabi Kahani: Sidhantak Paripekh) (12 hours)

- ਪੰਜਾਬ ਦੇ ਕਿਸਾਨੀ ਸੰਕਟ ਬਾਰੇ ਮੁਢਲੀ ਜਾਣ-ਪਛਾਣ

  Punjab de Kisani Sankat Bare Mudhali Jaan-Pachhan
- ਪੰਜਾਬੀ ਸਾਹਿਤ ਵਿਚ ਪੰਜਾਬ ਦਾ ਕਿਸਾਨੀ ਸੰਕਟ

  Punjabi Sahit vich Punjab da Kisani Sankat
- ਪੰਜਾਬੀ ਕਹਾਣੀ : ਕਿਸਾਨੀ ਸੰਕਟ ਦੀ ਰਾਜਸੀ ਚੇਤਨਾ

  Punjabi Kahani: Kisani Sankat di Rajasi Chetna
- ਕਿਸਾਨੀ ਸੰਕਟ ਦੀ ਕਹਾਣੀ ਵਿਚ ਬਦਲਦੇ ਮਾਨਵੀ ਰਿਸ਼ਤੇ

  Kisani Sankat di Kahani vich Badalde Manvi Rishte

Unit-II: ਕਿਸਾਨੀ ਜੀਵਨ ਦੀ ਪੰਜਾਬੀ ਕਹਾਣੀ: ਵਿਸ਼ਾ ਪੱਖ, ਕਲਾ ਪੱਖ, ਮੂਲ ਸਰੋਕਾਰ, ਪਾਤਰ-ਉਸਾਰੀ, ਕਿਸਾਨੀ ਸੰਕਟ, ਵਿਚਾਰਧਾਰਾ, ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ (Kisani Jeevan Di

Punjabi Kahani: Visha Pakh, Kala Pakkh, Mool Sarokar, Patar-Usari, Kisani Sankat, Vichardhara, Alochanatmak Adhyan)

(11 hours)

- **ਨੌਰੰਗ ਸਿੰਘ: ਮੁਰਕੀਆਂ**

  Naurang Singh: Murkiyan
- **ਸੰਤ ਸਿੰਘ ਸੇਖੋਂ: ਹਲ ਵਾਹ**

  Sant Singh Sekhon: Hal Vah
- **ਸੰਤੋਖ ਸਿੰਘ ਧੀਰ: ਸਵੇਰ ਹੋਣ ਤੱਕ**

  Santokh Singh Dheer: Saver Hon Tak
- **ਪ੍ਰੇਮ ਪ੍ਰਕਾਸ਼: ਬਾਪੂ**

  Prem Prakash: Bapu

Unit-III: ਕਿਸਾਨੀ ਜੀਵਨ ਦੀ ਪੰਜਾਬੀ ਕਹਾਣੀ: ਵਿਸ਼ਾ ਪੱਖ, ਕਲਾ ਪੱਖ, ਮੂਲ ਸਰੋਕਾਰ, ਪਾਤਰ-ਉਸਾਰੀ, ਕਿਸਾਨੀ ਸੰਕਟ, ਵਿਚਾਰਧਾਰਾ, ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ (Kisani Jeevan di Punjabi Kahani: Visha Pakh, Kala Pakh, Mool Sarokar, Patar- Usari, Kisani Sankat, Vichardhara, Alochanatmak Adhyan)

(11 hours)

- **ਰਾਮ ਸਰੂਪ ਅਣਖੀ: ਧਰਮਾਤਮਾ**

  Ram Saroop Ankhi: Dharmatma
- **ਗੁਰਦਿਆਲ ਸਿੰਘ:ਸਾਂਝੀ ਖੇਤੀ**

  Gurdial Singh: Sanjhi Kheti
- **ਗੁਰਬਚਨ ਭੁੱਲਰ: ਥਕੇਵਾਂ**

  Gurbachan Bhullar: Thakevan
- **ਬਲਦੇਵ ਸਿੰਘ: ਸਿਉਂਕ**

  Baldev Singh: Sionk

Unit-IV: ਕਿਸਾਨੀ ਜੀਵਨ ਦੀ ਪੰਜਾਬੀ ਕਹਾਣੀ: ਵਿਸ਼ਾ ਪੱਖ, ਕਲਾ ਪੱਖ, ਮੂਲ ਸਰੋਕਾਰ, ਪਾਤਰ-ਉਸਾਰੀ, ਕਿਸਾਨੀ ਸੰਕਟ, ਵਿਚਾਰਧਾਰਾ, ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ (Kisani Jeevan di Punjabi Kahani: Visha Pakh, Kala Pakh, Mool Sarokar, Patar Usari, Kisani Sankat, Vichardhara, Alochanatmak Adhyan) (11 hours)

- **ਜੋਗਿੰਦਰ ਸਿੰਘ ਨਿਰਾਲਾ: ਸਲਫ਼ਾਸ**

  Joginder Singh Nirala: Salfas
- **ਦਰਸ਼ਨ ਜੋਗਾ: ਟੰਡਲੀ ਅਜੇ ਵੀ ਸਾਹਮਣੇ ਖੜ੍ਹੀ ਐ**

  Darshan Joga: Tandli Aje Vi Sahmane Khadhi Ae
- **ਭੋਲਾ ਸਿੰਘ ਸੰਘੇੜਾ: ਸੰਭਾਲ ਲੈ ਮੈਨੂੰ**

  Bhola Singh Sangheda: Sambhaal Lai Mainu
- **ਬਲਦੇਵ ਸਿੰਘ ਧਾਲੀਵਾਲ: ਕਾਰਗਿਲ**

  Baldev Singh Dhaliwal: Kargil

ESSENTIAL READINGS:

- Kamboj, Rajinder Singh (Dr.) (2006) **Punjabi Kahani: Kisani de Hondmoolk Sarokar (Hra Inqlab, Vishvikaran ate Kisani da Dukhant Bodh)**, Lokgeet Parkashan, Chandigarh.
- Ravi, Ravinder (Dr.) (2014) **Kissani Jeevan di Punjabi Kahani**, National Book Trust, India, New Delhi.

SUGGESTED READINGS:

- Arshi, Gurcharan Singh (Ed.) (1989) **Punjabi Sahit da Vichardharai Paripekh**, Punjabi Academy, Delhi.
- Dhaliwal, Baldev Singh (2017) **Punjabi Kahaani da Itihaas**, Punjabi Academy, Delhi.
- Dhanwant Kaur (2003) **Punjabi Kahaani Shaster**, Chetna Parkashan, Ludhiana.
- Frank, G.S. (1988) **Nikki Kahaani ate Punjabi Nikki Kahaani**, Punjabi Writers Cooperative Society Ltd, Ludhiana.
- Harbhajan Singh (2002) **Adhyan ate Adhyapan**, Guru Nanak Dev University Amritsar.
- Kohli, Mohinder Pal (1992) **The Influence of West on Punjabi Literature**, Lyall Book Depot, Ludhiana.
- Krantipal (2002) **Punjabi Kahaani: Ik Samvaad,** National Book Shop, Delhi.
- Lubbock Percy. (1995) **Craft of Fiction,** Scribner, New York.

INTERNET RESOURCES:

- **https://shodhganga.inflibnet.ac.in/handle/10603/350371,**

*(Note: Teachers are free to recommend additional related standard resource books, if required so.)

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE (DSE-11)
VIHARAK PUNJABI

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE

COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Viharak Punjabi (DSE-11)	4	3	1	0	Class 12th pass in any subject	**Studied Punjabi up to 10th Standard or *Basic knowledge of Punjabi language***

LEARNING OBJECTIVE:

- The course is committed to continue its pioneering work in defining new literary paradigms and fostering new directions for exploration of Punjabi Language including such areas as the relationship between translation and transnationalism.
- To develop a deeper appreciation of cultural diversity by introducing the technique Punjabi Language and translation studies.
- To develop the creativity of the students and enhance their writing skills

LEARNING OUTCOMES:

- Students will have an understanding of major approaches to the study of translation.
- They will be able to identify, analyse, interpret and describe the critical ideas, values, and themes that appear in literary texts and to understand the ways these ideas, values, and themes, inform and impact cultures and societies both in source language and its translated version.
- They will be able to improve their skill of translation.

Unit-I: ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦਾ ਵਾਕ ਸਰੂਪ (Punjabi Bhasha da Vaak Saroop) (12 hours)

- ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੇ ਵਾਕ ਸਰੂਪ ਬਾਰੇ ਮੁਢਲੀ ਜਾਣ-ਪਛਾਣ

  Punjabi Bhasha de Vaak Saroop Bare Mudhali Jaan-Pachhan
- ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੇ ਸਧਾਰਨ, ਸੰਯੁਕਤ ਅਤੇ ਮਿਸ਼ਰਿਤ ਵਾਕਾਂ ਦਾ ਲੇਖਣ ਅਭਿਆਸ

  Punjabi Bhasha de Sadharan, Sanyukt ate Mishrit Vaakan da Lekhan Abhyas
- ਵਾਕ ਵਟਾਂਦਰਾ ਅਤੇ ਸ਼ੁੱਧ ਵਾਕ ਲੇਖਣ ਦਾ ਅਭਿਆਸ

  Vaak Vatandra ate Shuddh Vaak Lekhan da Abhyas
- ਵਿਸ਼ਰਾਮ ਚਿੰਨ੍ਹਾਂ ਦੀ ਵਾਕਾਂ ਵਿਚ ਸਹੀ ਵਰਤੋਂ ਦਾ ਅਭਿਆਸ

  Vishram Chinnhan di Vaakan Vich Sahi Varton da Abhyas

Unit-II: ਚਿੱਠੀ ਪੱਤਰ ਅਤੇ ਲੇਖ ਰਚਨਾ ਦਾ ਅਭਿਆਸ (Chithi Pattar ate Lekh Rachna da Abhyas) (11 hours)

- ਚਿੱਠੀ ਪੱਤਰ ਅਤੇ ਲੇਖ ਰਚਨਾ ਬਾਰੇ ਸੰਖੇਪ ਜਾਣ-ਪਛਾਣ

Chithi Pattar ate Lekh Rachna Bare Sankhep Jaan-Pachhan

- ਸੰਪਾਦਕੀ ਖ਼ਤ ਲਿਖਣ ਦਾ ਅਭਿਆਸ

  Sampadaki Khat Likhan da Abhyas
- ਰਸਮੀ ਚਿੱਠੀ ਅਤੇ ਗੈਰ ਰਸਮੀ ਪੱਤਰ ਲਿਖਣ ਦਾ ਅਭਿਆਸ

  Rasmi Chitthi ate Gair Rasmi Pattar Likhan da Abhyas
- ਇਤਿਹਾਸਕ, ਸਮਾਜਕ ਅਤੇ ਵਾਤਾਵਰਨ ਚੁਣੌਤੀਆਂ ਉਪਰ ਲੇਖ ਲਿਖਣ ਦਾ ਅਭਿਆਸ

  Itihasak, Samajak ate Vatavaran Chunautian Upper Lekh Likhan da Abhiyas

Unit-III: ਅਨੁਵਾਦ ਲੇਖਣ ਅਭਿਆਸ (Anuvad Lekhan Abhyas) (11 hours)

- ਅਨੁਵਾਦ ਦੀਆਂ ਮੂਲ ਸਮੱਸਿਆਵਾਂ

  Anuvad Dian Mool Samasyavan
- ਕਿਸੇ ਸਾਹਿਤਕ ਰਚਨਾ ਦਾ ਅਨੁਵਾਦ (ਹਿੰਦੀ/ਅੰਗਰੇਜ਼ੀ ਤੋਂ ਪੰਜਾਬੀ ਵਿਚ)

  Kise Sahitak Rachna da Anuvad (Hindi/Angrezi ton Punjabi vich)
- ਕਿਸੇ ਖ਼ਬਰ ਦਾ ਅਨੁਵਾਦ (ਹਿੰਦੀ/ਅੰਗਰੇਜ਼ੀ ਤੋਂ ਪੰਜਾਬੀ ਵਿਚ)

  Kise Khabar da Anuvad (Hindi/Angrezi Ton Punjabi vich)
- ਕਿਸੇ ਇਸ਼ਤਿਹਾਰ /ਨੋਟਿਸ ਦਾ ਅਨੁਵਾਦ (ਹਿੰਦੀ/ਅੰਗਰੇਜ਼ੀ ਤੋਂ ਪੰਜਾਬੀ ਵਿਚ)

  Kise Ishtihaar /Notice da Anuvad (Hindi/Angrezi Ton Punjabi vich)

Unit-IV: ਰੀਵਿਊ ਲੇਖਣ ਅਭਿਆਸ (Review Lekhan Abhyas) (11 hours)

- ਰੀਵਿਊ ਲੇਖਣ ਤੋਂ ਕੀ ਭਾਵ ਹੈ?

  Review Lekhan ton ki Bhaav hai?
- ਕਿਸੇ ਸਾਹਿਤਕ ਰਚਨਾ ਦਾ ਰੀਵਿਊ ਲੇਖਣ

  Kise Sahitak Rachna da Review Lekhan
- ਕਿਸੇ ਸਾਹਿਤਕ ਰਸਾਲੇ ਦਾ ਰੀਵਿਊ ਲੇਖਣ

  Kise Sahitak Rasaale da Review Lekhan
- ਕਿਸੇ ਫਿਲਮ ਦਾ ਰੀਵਿਊ ਲੇਖਣ

  Kise Film da Review Lekhan

ESSENTIAL READINGS

- **Adhunik Punjabi Viakaran ate Lekh Rachna (2019)** Punjab School Sikhia Board, Sahibzada Ajeet Singh Nagar.
- Duggal, Narinder Singh (Dr.) (2000) **Punjabi Viakaran te Rachnavali**, New Book Company, Jalandhar.

SUGGESTED READINGS:

- Brar, Boota Singh (2018) **Punjabi Viakaran Sidhant ate Vihar (Fourth Edition)**, Chetna Parkashan, Ludhiana.
- Duni Chandar (1987) **Punjabi Bhasha te Viyakaran**, Panjab University, Chandigarh.
- Harkirat Singh, Giani Lal Singh (1999) **Punjabi Viakaran,** Punjab State University Text Book Borad, Chandigarh.
- Jaspal Kaur (Dr.) 2013 **Anuvad te Maukhik Anuvad Kala**, Manpreet

Parkashan, Delhi.
- Ram Chander Verma **Anuvad Kala**, Ashok Prakashan, Delhi.
- Sushil Kumar (2003) **Anuvad da Samvaad**, Udaan Publication, Mansa.
- Teja Singh (1947) **Punjabi Kiven Likhiye (Second Edition)**, Hind Publishers Limited, Jalandhar.
- Thapar, Prithvi Raj (2012) **Sanchar, Takneek Te Multimedia**, Manpreet Parkashan, Delhi.
- Tiwari, Bhola Nath. (1972) **Anuvad Vigiyan**, Shabadkar, Delhi.

INTERNET RESOURCES:

- https://shodhganga.inflibnet.ac.in/handle/10603/356084,
- https://pa.wikipedia.org/wiki/%E0%A8%85%E0%A8%A8%E0%A9%81%E0%A8%B5%E0%A8%BE%E0%A8%A6,

*(Note: Teachers are free to recommend additional related standard resource books, if required so.)

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE (DSE-12)
PUNJABI NARI SAHIT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

ourse title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite ofthe course (if any)
		Lecture	Tutorial	Practical/ Practice		
Punjabi Nari Sahit (DSE-12)	4	3	1	0	Class 12th pass in any subject	**Studied Punjabi up to 10th Standard or** ***Basic knowledgeof Punjabi language***

LEARNING OBJECTIVES:

- To gain an appreciation of different literary styles, voices and approaches in Punjabi Feminist writings.
- To develop ethical values, social concerns and awareness about the feminist issues of society among the students.
- To develop skills in literary analysis, including comprehension of the different fundamentals of character, point of view, theme and action (plot).

LEARNING OUTCOMES:

- Students will have the ability to apply critical and theoretical approaches to the reading and analysis of concerned literary texts.
- They will be able to identify, analyse, interpret and describe the critical ideas, values, and themes that appear in the Punjabi feminist texts and to understand the ways these ideas, values, and themes inform and impact cultures and societies, both during the past and the present of feminist.

Unit-I: ਪੰਜਾਬੀ ਨਾਰੀ ਸਾਹਿਤ: ਸਿਧਾਂਤਕ ਪਰਿਪੇਖ (Punjabi Nari Sahit: Sidhantak Paripekh) (12 hours)

- ਸਾਹਿਤ ਤੇ ਸਮਾਜ: ਅੰਤਰ ਸੰਵਾਦ (ਸੰਖੇਪ ਜਾਣ-ਪਛਾਣ)

  Sahit te Samaj: Antar Samvad (Sankhep Jaan-Pachhan)
- ਨਾਰੀਵਾਦ ਸੰਖੇਪ ਜਾਣ-ਪਛਾਣ

  Narivaad Sankhep Jaan-Pachhan
- ਸਾਹਿਤ ਵਿਚ ਨਾਰੀ ਦੀ ਪੇਸ਼ਕਾਰੀ

  Sahit vich Nari di Peshkari
- ਸਾਹਿਤ ਵਿਚ ਨਾਰੀ ਚੇਤਨਾ

  Sahit vich Nari Chetna

Unit-II: ਪੰਜਾਬੀ ਨਾਰੀ ਕਵਿਤਾ (Punjabi Nari Kavita) (11 hours)

- ਅੰਮ੍ਰਿਤਾ ਪ੍ਰੀਤਮ: ਸੁਪਨੇ, ਰਾਹ, ਇਕਰਾਰਾਂ ਵਾਲੀ ਰਾਤ

  Amrita Pritam: Supne, Rah, Ikraran Vali Raat
- ਪਾਲ ਕੌਰ: ਖੱਬਲ, ਹਾਸਿਲ, ਫ਼ੋਕਸ

  Pal Kaur: Khabbal, Hasil, Focus
- ਸੁਖਵਿੰਦਰ ਅੰਮ੍ਰਿਤ: ਹੁਣ ਮਾਂ, ਸਬਕ, ਮਾਂ ਤੇ ਧੀਆਂ

  Sukhwinder Amrit: Hunn Maa, Sabak, Maan te Dhian
- ਸੁਰਜੀਤ (ਟਰਾਂਟੋ) : ਦਾਜ ਦਾ ਸੰਦੂਕ, ਪੂਰਣ ਵਿਰਾਮ, ਸਾਡੀ ਪ੍ਰਯੋਗਸ਼ਾਲਾ

  Surjit (Toronto): Daaj da Sanduk, Pooran Viram, Saadi Prayogshala

Unit-III: ਪੰਜਾਬੀ ਨਾਰੀ ਕਹਾਣੀ (Punjabi Nari Kahani) (11 hours)

- ਅਜੀਤ ਕੌਰ: ਗੁਲਬਾਨੋ

  Ajit Kaur: Gulbano
- ਬਚਿੰਤ ਕੌਰ: ਕੌੜੇ ਰਿਸ਼ਤੇ

  Bachint Kaur: Kaurhe Rishte
- ਸੁਖਵੰਤ ਕੌਰ ਮਾਨ: ਜਿਊਣ ਜੋਗੇ

  Sukhwant Kaur Maan: Jioon Joge
- ਦੀਪਤੀ ਬਬੂਟਾ: ਅਸਤ ਹੋਣ ਤੋਂ ਪਹਿਲਾਂ

  Deepti Baboota: Ast Hon Ton Pehlan

Unit-IV: ਦਲੀਪ ਕੌਰ ਟਿਵਾਣਾ ਦਾ ਨਾਵਲ: ਏਹੁ ਹਮਾਰਾ ਜੀਵਣਾ (Dalip Kaur Tiwana Da Novel: Eh Humara Jeevana) (11 hours)

- ਏਹੁ ਹਮਾਰਾ ਜੀਵਣਾ ਦਾ ਵਿਸ਼ਾ ਪੱਖ

  Eh Humara Jeevana da Visha Pakkh
- ਏਹੁ ਹਮਾਰਾ ਜੀਵਣਾ ਦਾ ਪਾਤਰ ਚਿਤਰਨ

  Eh Humara Jeevana da Patar Chitran
- ਏਹੁ ਹਮਾਰਾ ਜੀਵਣਾ ਦਾ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ

  Eh Humara Jeevana da Alochnatmak Adhyan
- ਏਹੁ ਹਮਾਰਾ ਜੀਵਣਾ ਦਾ ਕਲਾ ਪੱਖ

  Eh Humara Jeevana da Kala Pakkh

ESSENTIAL READING:

- Tiwana, Dalip Kaur (2021) **Ehu Hamara Jeevana**, Arsee Publishers, New Delhi.
- **https://www.punjabi-kavita.com/,https://www.punjabikahani.punjabi-kavita.com/DalipKaurTiwana.php,**

SUGGESTED READING:

- Ajit Kaur (1973) **Gulbano**, Raj Pakt Books, Delhi.
- Amarjit Kaur (1999) **Punjabi Nikki Kahani te Vikas**, Ruhi Prakashan, Amritsar.

- Charanjit Kaur (1999) **Nari Chetna**, Lokgeet Prakashan, Chandigarh.
- Dhaliwal, Baldev Singh (2017) **Punjabi Kahaani da Itihaas**, Punjabi Academy, Delhi.
- Dhanwant Kaur (Dr.) (2016) **Adhunik Punjabi Kahani Birtant Shastri Adhyan**, Arsee Publishers, New Delhi.
- Inderjit Kaur (2005) **Narivadi Samvedna ate Dalip Kaur Tiwana da Galap**, Lokgeet Prakashan, Chandigarh.
- Sandeep Kaur (2016) **Aurat Da Azadi Sangram**, Unistar Books, Mohali.
  Sharma, Sunita (2013) **Samkali Punjabi Kavita Nari Paripekh**, Lokgeet Prakashan, Chandigarh.
- Uppal, Savinder Singh (1995) **Punjabi Kahani Saroop: Sidhant te Vikas**, Punjabi University, Patiala.
- Vanita (Dr.) (2000) **Narivadi te Sahit**, Ajanta Book International, Delhi.

MAGAZINES/JOURNALS:

- Kairon, Joginder (ed.) (January-1997) **Ajoke Shilalekh (Nari Vishesh Ank)**, Amritsar.

INTERNET RESOURCES:

- **https://shodhganga.inflibnet.ac.in/handle/10603/350591,**
- **https://www.punjabi-kavita.com/,https://www.punjabikahani.punjabi-kavita.com/DalipKaurTiwana.php,**
- https://shodhganga.inflibnet.ac.in/handle/10603/325713,
- https://shodhganga.inflibnet.ac.in/handle/10603/271185,
- https://shodhganga.inflibnet.ac.in/handle/10603/104298,
- https://shodhganga.inflibnet.ac.in/handle/10603/104290,
- https://shodhganga.inflibnet.ac.in/handle/10603/104191,

***(Note: Teachers are free to recommend additional related standard source books, if required so.)**

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER -VI

DEPARTMENT OF PUNJABI

Category I

Discipline Specific Courses offered by Department of Punjabi for the UG Programme with Punjabi as the Single Core Discipline

[UG Programme for Bachelor in **Punjabi (Honours)** degree in three years]

SPECIFIC CORE COURSE -16 (DSC-16)

BHAGTI SAHIT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Bhagti Sahit (DSC-16)	4	3	1	0	Class 12th pass in any subject	Studied Punjabi up to 10th Standard or *Working knowledge of Punjabi language and DSC-13*

Learning Objectives:

- To evaluate texts related to Bhagti Kaav that reflect diverse genres, time periods, and cultures.
- To analyse the ways in which language and literature are related to class, culture, ethnicity, gender, histories, race, and sexuality during medieval period.
- To interpret Bhagti poetry by using close readings supported by textual evidence, and informed by critical theory.
- To develop the sense of awareness among the students about the environment through close reading of Bhagti poets and to help them in realizing the inter-relationship between man and environment and help to protect the nature and natural resources.

Learning Outcomes:

- Students will be able to analyze major Medieval Bhagat poets, their works and representation of the human experiences.
- Students will be able to interpret Medieval Bhagati Literature within its historical and social contexts.
- They will be able to demonstrate the major literary movements, figures and works depicted in Medieval Bhagati Literature.

Unit-I: ਭਗਤੀ ਕਾਵਿ: ਸਿਧਾਂਤਕ ਤੇ ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ (Bhagti Kaav: Sidhantak te Itihasak Paripekh) (12 hours)

- ਭਗਤੀ ਲਹਿਰ: ਮੁਢਲੀ ਜਾਣ-ਪਛਾਣ

  Bhagti Leher: Mudhli Jaan-Pachhan
- ਗੁਰੂ ਗ੍ਰੰਥ ਸਾਹਿਬ ਵਿਚ ਸ਼ਾਮਲ ਭਗਤਾਂ ਨਾਲ ਸੰਖੇਪ ਜਾਣ-ਪਛਾਣ

  Guru Granth Sahib vich Shamil Bhagtan Naal Sankhep Jaan-Pachhan
- ਭਗਤੀ ਕਾਵਿ ਦਾ ਦਾਰਸ਼ਨਿਕ ਪੱਖ

  Bhagti Kaav Da Darshnik Pakkh
- ਭਗਤੀ ਕਾਵਿ ਦਾ ਸਮਾਜਕ-ਰਾਜਨੀਤਕ ਪੱਖ

  Bhagti Kaav Da Smajak-Rajnitak Pakkh

Unit- II: ਭਗਤ ਕਬੀਰ (Bhagat Kabir) (11 hours)

- ਭਗਤ ਕਬੀਰ: ਜੀਵਨ ਅਤੇ ਰਚਨਾ

  Bhagat Kabir: Jeevan ate Rachna
- ਸ਼ਬਦ: ਅਵਲਿ ਅਲਹ ਨੂਰੁ ਉਪਾਇਆ, ਗਰਭ ਵਾਸ ਮਹਿ ਕੁਲੁ ਨਹੀ ਜਾਤੀ, ਬੇਦ ਕਤੇਬ ਇਫਤਰਾ ਭਾਈ ਦਿਲ ਕਾ ਫਿਕਰੁ ਨ ਜਾਇ

  Shabad: Awal Allah Noor Upaya, Garabh Vaas Meh Kul Nahi Jaati, Bed Kateb Iftra Bhai Dil Ka Fikar Na Jaai
- ਸ਼ਬਦ: ਭੂਖੇ ਭਗਤਿ ਨ ਕੀਜੈ, ਮਾਥੇ ਤਿਲਕੁ ਹਥਿ ਮਾਲਾ ਬਾਨਾਂ, ਕਿਆ ਪੜੀਐ ਕਿਆ ਗੁਨੀਐ

  Shabad: Bhookhe Bhagat Na Keeje, Maathe Tilak Hath Maala Baana, Kya Parhiye Kya Guneeye
- ਸਲੋਕ: ੧ ਤੋਂ ੨੫ (ਗੁਰੂ ਗ੍ਰੰਥ ਸਾਹਿਬ ਦੇ ਕ੍ਰਮ ਅਨੁਸਾਰ)

  Salok: 1 to 25 (Guru Granth Sahib de Kram Anusar)

Unit- III: ਭਗਤ ਰਵਿਦਾਸ (Bhagat Ravidas) (11 hours)

- ਭਗਤ ਰਵਿਦਾਸ: ਜੀਵਨ ਅਤੇ ਰਚਨਾ

  Bhagat Ravidas: Jeevan ate Rachna
- ਸ਼ਬਦ- ਬੇਗ਼ਮਪੁਰਾ ਸਹਰ ਕੋ ਨਾਉ, ਮਾਟੀ ਕੋ ਪੁਤਰਾ ਕੈਸੇ ਨਚਤੁ ਹੈ, ਤੋਹੀ ਮੋਹੀ ਮੋਹੀ ਤੋਹੀ ਅੰਤਰੁ ਕੈਸਾ

  Shabad- Begampura Sehar ko Nao, Maati ko Putraa Kaise Nachat Hai, Tohi Mohi Mohi Tohi Antar Kaisa

- ਸ਼ਬਦ- ਜਉ ਤੁਮ ਗਿਰਿਵਰ ਤਉ ਹਮ ਮੋਰਾ, ਜਲ ਕੀ ਭੀਤਿ ਪਵਨ ਕਾ ਥੰਭਾ ਰਕਤ ਬੂੰਦ ਕਾ ਗਾਰਾ, ਜਉ ਹਮ ਬਾਂਧੇ ਮੋਹ ਫਾਸ

  Shabad- Jau Tum Girvar Tau Hum Mora, Jal Ki Bheet Pawan Ka Thambha Rakt Boond ka Gaara, Jau hum Bandhe Moh Faas
- ਪਦ- ਪ੍ਰਭੁ ਜੀ ਤੁਮ ਚੰਦਨ ਹਮ ਪਾਨੀ, ਆਜ ਦਿਵਸ ਲੇਊਂ ਬਲਿਹਾਰਾ, ਕਹਿ ਮਨ ਰਾਮ ਨਾਮ ਸੰਭਾਰਿ

  Pad- Prabhu Jee Tum Chandan Hum Pani, Aaj Diwas Leon Balihara, Keh Man Ram Naam Sambhaar

Unit-III: ਭਗਤ ਨਾਮਦੇਵ, ਭਗਤ ਧੰਨਾ, ਭਗਤ ਤ੍ਰਿਲੋਚਨ (Bhagat Namdev, Bhagat Dhanna, Bhagat Trilochan) (11 hours)

- ਭਗਤ ਨਾਮਦੇਵ, ਭਗਤ ਧੰਨਾ, ਭਗਤ ਤ੍ਰਿਲੋਚਨ: ਜੀਵਨ ਅਤੇ ਰਚਨਾ

  Bhagat Namdev, Bhagat Dhanna, Bhagat Trilochan: Jeevan ate Rachna
- ਭਗਤ ਨਾਮਦੇਵ: ਸਭੈ ਘਟ ਰਾਮੁ ਬੋਲੈ ਰਾਮਾ ਬੋਲੈ, ਮੈ ਅੰਧੁਲੇ ਕੀ ਟੇਕ ਤੇਰਾ ਨਾਮੁ ਖੁੰਦਕਾਰਾ, ਆਜੁ ਨਾਮੇ ਬੀਠਲੁ ਦੇਖਿਆ ਮੂਰਖ ਕੋ ਸਮਝਾਊ ਰੇ

  Bhagat Namdev: Sabhai Ghat Ram Bole, Mai Andhule ki Tek Tera Naam Khundkara, Aaj Naame Beethal Dekheya Murakh ko Samjhaoo Re
- ਭਗਤ ਧੰਨਾ: ਭ੍ਰਮਤ ਫਿਰਤ ਬਹੁ ਜਨਮ ਬਿਲਾਨੇ ਤਨੁ ਮਨੁ ਧਨੁ ਨਹੀ ਧੀਰੇ, ਰੇ ਚਿਤ ਚੇਤਸਿ ਕੀ ਨ ਦਯਾਲ, ਗੋਪਾਲ ਤੇਰਾ ਆਰਤਾ

  Bhagat Dhanna: Bhramat Firat Bahu Janam Bilaane Tan Man Dhan Nahi Dheere, Re Chitt Chetas kee Na Dayal, Gopal Tera Aarta
- ਭਗਤ ਤ੍ਰਿਲੋਚਨ: ਮਾਇਆ ਮੋਹੁ ਮਨਿ ਆਗਲੜਾ ਪ੍ਰਾਣੀ, ਅੰਤਰੁ ਮਲਿ ਨਿਰਮਲੁ ਨਹੀ ਕੀਨਾ ਬਾਹਰਿ ਭੇਖ ਉਦਾਸੀ, ਅੰਤਿ ਕਾਲਿ ਜੋ ਲਛਮੀ ਸਿਮਰੈ ਐਸੀ ਚਿੰਤਾ ਮਹਿ ਜੇ ਮਰੈ

  Bhagat Trilochan: Maya Moh Man Aaglarha Prani, Antar Mal Nirmal Nahi Keena Bahar Bhekh Udasi, Ant Kaal Jo Lacchmi Simrai Aisi Chinta Meh Je Mare

Essential Readings:

- Zafar, Jaswant Singh. (2016) **Bhagat Satguru Hamara**, Chetna Parkashan, Ludhiana.
- **https://www.punjabi-kavita.com/**

Suggested Readings:

- Aggarwal, Purshotam (2007) **Kabir: Saakhi or Sabad**, National Book Trust, India.
- Badan, Baldev Singh (Dr.) (2013) **Guru Ravidas Bani Vichar**, Navyug Publication, New Dehli.
- Jagbir Singh (2001) **Shabad ate Samvad**, Manpreet Parkashan, Delhi.
- Jagbir Singh (1989) **Madhkali Shabad Sabhyachar**, Ravinder Parkashan, Delhi.
- Kang, Gulzar Singh (Ed.) (2011) **Bhagtan de Jeevan Charitar**, Lokgeet Parkashan, Chandigarh.
- Pandyay, Nityanand (2003) **Sant Kabir Adhunik Sandrabh** Kendriya Hindi Sansthan, Agra.
- Puri, J.R, Sethi, V.K, Sangari T.R. (Dr.) (2009) **Sant Namdev,** Radhaswami Satsang, Beas.
- Raghuvansh (Dr) (2009) **Kabir: Ek Nai Darishti**, Lokbharti Parkashan, Allahabad.
- Upadhyay, Kashinath (2008) **Param Paras Guru Ravidas**, Radhaswami Satsang, Beas.

Internet Resources:

- https://pa.wikipedia.org/wiki/%E0%A8%AD%E0%A8%97%E0%A8%A4%E0%A9%80_%E0%A8%B2%E0%A8%B9%E0%A8%BF%E0%A8%B0
- https://egyankosh.ac.in/bitstream/123456789/27791/1/Unit-3.pdf
- https://shodhganga.inflibnet.ac.in/

*(Note: Teachers are free to recommend additional related standard source books, if required so.)

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC CORE COURSE -17 (DSC-17)

MADHKALI BIRTANTAK KAAV ATE VARTAK

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Madhkali Birtantak Kaav ate Vartak (DSC-17)	4	3	1	0	Class 12th pass in any subject	Studied Punjabi up to 10th Standard or *Working knowledge of Punjabi language and DSC-13*

Learning Objectives:

- To analyse and evaluate texts that reflect diverse genres of medieval Punjabi literature.
- To interpret the ways in which language and literature are related to culture, ethnicity, gender, history and sexuality during medieval period.
- To understand the discourse of medieval literature through various literary tools.
- To impart ethical values among the students by close reading of medieval Punjabi literature.

Learning Outcomes:

- Students will be able to analyse major Medieval authors, their works and representations of human experiences.
- Students will be able to interpret Medieval narrative poetry within a historical and social context.
- They will contextualize the Medieval Punjabi literature to the times it represents.
- They will be able to demonstrate their knowledge of the major literary movements, figures and works in medieval Punjabi Literature.

Unit-I: ਮੱਧਕਾਲੀ ਬਿਰਤਾਂਤਕ ਕਾਵਿ ਅਤੇ ਵਾਰਤਕ: ਸਿਧਾਂਤਕ ਪਰਿਪੇਖ (Madhkali Birtantak Kaav ate Vartak: Sidhantak Paripekh) (12 hours)

- ਕਿੱਸਾ ਕਾਵਿ ਰੂਪਾਕਾਰ ਨਾਲ ਸੰਖੇਪ ਜਾਣ-ਪਛਾਣ

  Qissa Kaav Roopakar Naal Sankhep Jaan-Pachhan
- ਵਾਰ ਅਤੇ ਜੰਗਨਾਮਾ ਕਾਵਿ ਰੂਪਾਕਾਰਾਂ ਨਾਲ ਸੰਖੇਪ ਜਾਣ-ਪਛਾਣ

  Vaar ate Jangnama Kaav Roopakaran Naal Sankhep Jaan-Pachhan
- ਕਿੱਸਾ, ਵਾਰ ਅਤੇ ਜੰਗਨਾਮਾ ਕਾਵਿ ਰੂਪਾਕਾਰਾਂ ਵਿਚਲਾ ਅੰਤਰ

Qissa, Vaar ate Jangnama Kaav Roopakaran Vichla Antar

- ਮੱਧਕਾਲੀ ਵਾਰਤਕ ਰੂਪਾਕਾਰਾਂ ਨਾਲ ਸੰਖੇਪ ਜਾਣ-ਪਛਾਣ

  Madhkali Vartak Roopakaran Naal Sankhep Jaan-Pachhan

Unit- II: ਕਿੱਸਾ ਕਾਵਿ (Qissa Kaav) (11 hours)

- ਮਿਰਜ਼ਾ ਸਾਹਿਬਾਂ (ਪੀਲੂ)- ਘਰ ਖੀਵੇ ਦੇ ਸਾਹਿਬਾਂ ਜੰਮੀ ਮੰਗਲਵਾਰ, ਕੱਢ ਕਲੇਜਾ ਲੈ ਗਈ ਖ਼ਾਨ ਖੀਵੇ ਦੀ ਧੀ, ਮੰਦਾ ਕੀਤਾ ਸੁਣ ਸਾਹਿਬਾਂ

  Mirza Sahiba (Peelu)- Ghar Kheeve de Sahiba Jammi Mangalvar, Kadh kaleja Lai Gai Khan Kheeve Di Dhee, Manda Keeta Sun Sahiba
- ਹੀਰ ਰਾਂਝਾ (ਵਾਰਿਸ ਸ਼ਾਹ) - ਕੇਹੀ ਤਖ਼ਤ ਹਜ਼ਾਰੇ ਦੀ ਸਿਫ਼ਤ ਕੀਜੇ, ਕੂਕੇ ਮਾਰ ਹੀ ਮਾਰ ਤੇ ਪਕੜ ਛਮਕਾਂ, ਹੋਕਾ ਫਿਰੇ ਦਿੰਦਾ ਪਿੰਡਾਂ ਵਿੱਚ ਸਾਰੇ

  Heer Ranjha (Waris Shah)- Kehi Takhat Hazare Di Sifat Keeje, Kooke Maar Hi Maar Te Pakarh Chhamkan, Hoka Fire Dinda Pinddan Vich Saare
- ਸੱਸੀ ਪੁਨੂੰ (ਹਾਸ਼ਮ ਸ਼ਾਹ) - ਪਾਇ ਸੰਦੂਕ ਰੁੜ੍ਹਾਈ ਸੱਸੀ, ਤੁਰਸਾਂ ਮੂਲ ਨਾ ਮੁੜਸਾਂ ਰਾਹੋਂ, ਨਾਜ਼ੁਕ ਪੈਰ ਮਲੂਕ ਸੱਸੀ ਦੇ

  Sassi Punnu (Hasham Shah)- Paaye Sandook Rurhaayi Sassi, Tursan Mool Na Murhsan Rahon, Nazuk Pair Malook Sassi de
- ਸੋਹਣੀ ਮਹੀਂਵਾਲ (ਫ਼ਜ਼ਲ ਸ਼ਾਹ) – ਯਾਰਾਂ ਵੱਲੋਂ ਕਿੱਸਾ ਲਿਖਣ ਦੀ ਫ਼ਰਮਾਇਸ਼, ਸੋਹਣੀ ਦੀ ਪੈਦਾਇਸ਼, ਸੋਹਣੀ ਦੀ ਲਾਸ਼ ਦਾ ਮਹੀਂਵਾਲ ਵੱਲ ਸੁਨੇਹਾ

  Sohni Mahiwal (Fazal Shah)- Yaaran Valon Qissa Likhan di Farmaish, Sohni di Paidaish, Sohni Di Lash Da Mahiwal Vall Suneha

Unit-III: ਵਾਰ ਤੇ ਜੰਗਨਾਮਾ ਕਾਵਿ (Vaar Te Jangnama Kaav) (11 hours)

- ਚੰਡੀ ਦੀ ਵਾਰ (ਗੁਰੂ ਗੋਬਿੰਦ ਸਿੰਘ) – ਖੰਡਾ ਪ੍ਰਿਥਮੈ ਸਾਜਿਕੈ (ਪਉੜੀ ੨), ਸੱਟ ਪਈ ਜਮਧਾਣੀ ਦਲਾਂ ਮੁਕਾਬਲਾ (ਪਉੜੀ ੧੯), ਸੁੰਭ ਨਿਸੁੰਭ ਪਠਾਇਆ ਜਮ ਦੇ ਧਾਮ ਨੋ (ਪਉੜੀ ੫੫)

  Chandi di Vaar (Guru Gobind Singh)- Khanda Prithmai Saajke (Paurhi 2), Satt Pai Jamdhani Dalaan Mukabla (Paurhi 19), Sumbh Nisumbh Pathaaiya Jam De Dham No (Paurhi 55)
- ਨਾਦਰਸ਼ਾਹ ਦੀ ਵਾਰ (ਨਜਾਬਤ) – ਉਸ ਵੇਲੇ ਦੇ ਹਾਲਾਤ, ਕਲ ਤੇ ਨਾਰਦ ਦੀ ਲੜਾਈ, ਯੁੱਧ ਦਾ ਹਾਲ

  Nadarshah di Vaar (Najabat)- Us Vele de Halaat, Kal Te Nadar di Larhai, Yudh da Haal
- ਚੱਠਿਆਂ ਦੀ ਵਾਰ (ਪੀਰ ਮੁਹੰਮਦ) – ਸਿੰਘ ਨੂੰ ਲਿਖ ਕਰ ਘਲਿਆ ਖ਼ਤ ਰਹਿਮਤ ਖਾਂ ਨੇ, ਲਸ਼ਕਰ ਮਹਾਂ ਸਿੰਘ ਦਾ ਦਰਿਆਈ ਕਾਂਗਾਂ, ਖਾ ਗੁੱਸਾ ਉਹ ਸ਼ੇਰ ਪੈ ਗਿਆ ਕੱਢ ਤੇਗ ਮਿਆਨੋਂ

  Chathyan di Var (Peer Muhammad)- Singh Nu Likh Kar Ghaleya Khat Rehmat Khan Ne, Lashkar Maha Singh da Daryaai Kangan, Kha Gussa Oh Sher Pai Gaya Kadh Tegh Mayanon
- ਜੰਗਨਾਮਾ ਸਿੰਘਾਂ ਤੇ ਫ਼ਰੰਗੀਆਂ (ਸ਼ਾਹ ਮੁਹੰਮਦ) – ਮਹਾਂਬਲੀ ਰਣਜੀਤ ਸਿੰਘ ਹੋਇਆ ਪੈਦਾ, ਹੁਕਮ ਲਾਟ ਕੀਤਾ ਲਸ਼ਕਰ ਆਪਣੇ ਨੂੰ, ਆਈਆਂ ਪੜਤਲਾਂ ਬੀੜ ਕੇ ਤੋਪਖਾਨੇ

  Jangnama Singhan te Frangiyan (Shah Muhammad)- Mahabali Ranjeet Singh Hoiya Paida, Hukam Laat Keeta Lashkar Apne Nu, Aayian Parhtalan Beerh ke Topkhane)

Unit- IV: ਪੁਰਾਤਨ ਜਨਮਸਾਖੀ (Puratan Janamsakhi) (11 hours)

- ਪੁਰਾਤਨ ਜਨਮਸਾਖੀ: ਇਤਿਹਾਸਕ ਪਿਛੋਕੜ ਅਤੇ ਸੰਪਾਦਨ

  Puratan Janamsakhi: Itihasak Pichhokarh ate Sampadan

- ਅਵਤਾਰ, ਬਾਲਪਨ ਅਤੇ ਕਾਜ਼ੀ ਚਰਚਾ, ਨਮਾਜ਼, ਮੋਦੀ ਦੀ ਕਾਰ ਤਿਆਗੀ

  Avtar, Baalpan ate Kazi Charcha, Namaz, Modi di Kaar Tyagi
- ਸੱਜਣ ਠੱਗ ਅਤੇ ਮਾਤਾ ਪਿਤਾ ਜੀ ਨਾਲ ਮੇਲ

  Sajjan Thagg ate Mata Pita Ji Naal Mel
- ਸ੍ਰੀ ਗੁਰੂ ਅੰਗਦ ਦੇਵ ਜੀ ਨੂੰ ਗੁਰਿਆਈ ਅਤੇ ਜੋਤੀ ਜੋਤਿ ਸਮਾਉਣਾ

  Sri Guru Angad Dev Jee Nu Guryai ate Joti Jot Samauna

Essential Readings:

- Bhai Vir Singh (ed.) (2022) **Puratan Janam Sakhi: Sri Guru Nanak Dev Ji**, Bhai Vir Singh Sahitya Sadan, Delhi.
- Jaggi, Ratan Singh (Dr.) (2002) **Sahit de Roop**, Punjabi University, Patiala.
- https://www.punjabi-kavita.com/

Suggested Readings:

- Gurdev Singh (Dr.) (1995) **Jangnama: Sarup, Sidhant ate Vikaas**, Punjabi University, Paitala.
- Kang, Amarjit Singh. (2008) **Qissa Sansaa**r, Nanak Singh Pustakmala, Amritsar.
- Kang, Kulbir Singh (2005) **Punjabi Kissa Kaav da Itihaas**, Punjabi Academy, Delhi.
- Noor, Sutinder Singh (2005) **Punjabi Vaar-Kaav Da Itihaas**, Punjabi Academy, Delhi.
- Noor, Sutinder Singh. (2009) **Sahit: Sidhant ate Vihar**, Arsee Publishers, Delhi.
- Swaran Singh (2002) **Sabhiyachar ate Qissa Kaav**, Sedh Prakashan, Patiala.

Magazines/Journals:

- Khoj Patrika, **Qissa Kaav Vishesh Ank**, Publication Bureau, Punjabi University, Patiala.

Internet Recourses:

- https://www.punjabi-kavita.com/PunjabiVaaran.php
- https://www.punjabi-kavita.com/PunjabiKissaKaav.php
- https://apnaorg.com/
- https://shodhganga.inflibnet.ac.in/

*(Note: Teachers are free to recommend additional related standard source books, if required so.)

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE -18 (DSC-18)

PUNJABI SAHIT ALOCHNA

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Punjabi Sahit Alochna (DSC-18)	4	3	1	0	Class 12th pass in any subject	Studied Punjabi up to 10th Standard or *Working knowledge of Punjabi language and DSC-07*

Learning Objectives:

- The course is designed to engage students with literary and cultural texts, including consideration of the relationship between imaginative expression and the cultural and material circumstances in which that expression takes place and received.
- To impart knowledge of literary critical methodologies: close reading, textual analysis, ability to make a disciplinary argument based on disciplinary use of evidence.
- The course will help the students to understand relationship between literature and theory in the discipline of literary studies.
- It will enhance their understanding of the historical development of Punjabi literary criticism and the theoretical framework working behind it.

Learning Outcomes:

- Students will have an understanding of major approaches to the study of literature (theology, sociology, social ethics, philosophy, history).
- They will develop an understanding of the major methods and interpretive theories in the field of literary studies.
- Students will develop an ability to propose and engage with the primary and secondary sources from the historical period.

Unit-I: ਪੰਜਾਬੀ ਸਾਹਿਤ ਆਲੋਚਨਾ ਦਾ ਮੁਢਲਾ ਦੌਰ (Punjabi Sahit Alochna da Mudhla Daur) (12 hours)

- ਸਾਹਿਤ ਆਲੋਚਨਾ ਨਾਲ ਮੁਢਲੀ ਜਾਣ-ਪਛਾਣ

  Sahit Alochna Naal Mudhli Jaan-Pachhan
- ਪੰਜਾਬੀ ਸਾਹਿਤ ਆਲੋਚਨਾ ਦੇ ਆਰੰਭ ਬਾਰੇ ਵਿਭਿੰਨ ਮਤ

Punjabi Sahit Alochna de Aarambh Bare Vibhin Mat

- ਪੂਰਵ ਸੇਖੋਂ ਸਾਹਿਤ ਆਲੋਚਨਾ ਦੇ ਪ੍ਰਮੁੱਖ ਸਰੋਕਾਰ

  Poorav Sekhon Sahit Alochna de Pramukh Sarokar
- ਪੂਰਵ ਸੇਖੋਂ ਸਾਹਿਤ ਆਲੋਚਨਾ ਨਾਲ ਸੰਬੰਧਤ ਪ੍ਰਮੁੱਖ ਆਲੋਚਕ

  Poorav Sekhon Sahit Alochna Naal Sambandhat Pramukh Alochak

Unit- II: ਸੰਤ ਸਿੰਘ ਸੇਖੋਂ ਦੀ ਸਾਹਿਤ ਸਮੀਖਿਆ (Sant Singh Sekhon di Sahit Samikhya)

(11 hours)

- ਸੰਤ ਸਿੰਘ ਸੇਖੋਂ: ਜੀਵਨ ਤੇ ਰਚਨਾ

  Sant Singh Sekhon: Jeevan te Rachna
- ਸੰਤ ਸਿੰਘ ਸੇਖੋਂ ਦੀ ਆਲੋਚਨਾ ਦ੍ਰਿਸ਼ਟੀ

  Sant Singh Sekhon Di Alochna Drishti
- ਸੰਤ ਸਿੰਘ ਸੇਖੋਂ ਦੀਆਂ ਆਲੋਚਨਾ ਜੁਗਤਾਂ

  Sant Singh Sekhon Dian Alochna Jugtan
- ਸੰਤ ਸਿੰਘ ਸੇਖੋਂ ਦੀਆਂ ਪ੍ਰਮੁੱਖ ਸਥਾਪਨਾਵਾਂ

  Sant Singh Sekhon Dian Pramukh Sthapnavan

Unit- III: ਅਤਰ ਸਿੰਘ ਦੀ ਸਾਹਿਤ ਸਮੀਖਿਆ (Atar Singh Di Sahit Samikhya) (11 hours)

- ਅਤਰ ਸਿੰਘ: ਜੀਵਨ ਤੇ ਰਚਨਾ

  Atar Singh: Jeevan te Rachna
- ਅਤਰ ਸਿੰਘ ਦੀ ਆਲੋਚਨਾ ਦ੍ਰਿਸ਼ਟੀ

  Atar Singh Di Alochna Drishti
- ਅਤਰ ਸਿੰਘ ਦੀਆਂ ਆਲੋਚਨਾ ਜੁਗਤਾਂ

  Atar Singh Dian Alochna Jugtan
- ਅਤਰ ਸਿੰਘ ਦੀਆਂ ਪ੍ਰਮੁੱਖ ਸਥਾਪਨਾਵਾਂ

  Atar Singh Dian Pramukh Sthapnavan

Unit-IV: ਹਰਿਭਜਨ ਸਿੰਘ ਦੀ ਸਾਹਿਤ ਸਮੀਖਿਆ (Harbhajan Singh Di Sahit Samikhya)

(11 hours)

- ਹਰਿਭਜਨ ਸਿੰਘ: ਜੀਵਨ ਤੇ ਰਚਨਾ

  Harbhajan Singh: Jeevan te Rachna
- ਹਰਿਭਜਨ ਸਿੰਘ ਦੀ ਆਲੋਚਨਾ ਦ੍ਰਿਸ਼ਟੀ

  Harbhajan Singh Di Alochna Drishti
- ਹਰਿਭਜਨ ਸਿੰਘ ਦੀਆਂ ਆਲੋਚਨਾ ਜੁਗਤਾਂ

  Harbhajan Singh Dian Alochna Jugtan

- ਹਰਿਭਜਨ ਸਿੰਘ ਦੀਆਂ ਪ੍ਰਮੁੱਖ ਸਥਾਪਨਾਵਾਂ

  Harbhajan Singh Dian Pramukh Sthapnavan

Essential Readings:

- Bhatia, Harbhajan Singh (1988) **Punjabi Alochna: Sidhant te Vihar**, Guru Nanak Dev University, Amritsar.

- Bhatia, Harbhajan Singh (2013), **Punjabi Sahit Alochna da Itihas**, Punjabi Academy, Delhi.
- https://www.punjabi-kavita.com/Punjabi-Alochana.php

Suggested Readings:

- Ahluwalia, J.S. **Punjabi Alochna: Ik Parichaye**, Punjabi University, Patiala.
- Arshi, Gurcharan Singh (1998) **Samikhya Darishtian**, Arsee Publishers, Delhi.
- Bhatti, Surjit Singh (2011) **Vishavikaran ate Sahit Chintan**, Chetna Parkashan, Ludhiana.
- Harbhajan Singh (2002) **Rachna-Sanrachna**, Guru Nanak Dev University, Amritsar.
- Harbhajan Singh (2002) **Sahit-Vigian**, Guru Nanak Dev University, Amritsar.
- Parminder Singh **Punjabi Samalochna: Sidhant ate Saroop**, Punjabi University, Patiala.
- Saini, Hukam Singh, Amar Singh. (Undated), **Punjabi Sahit Alochna Pustak Suchi**, Punjabi University, Patiala.
- Thind, K.S. (Ed.) (2002) **Sahit Adhiyan-Parnalian**, Guru Nanak Dev University, Amritsar.

Magazines/Journals

- Khoj Patrika, **Sahitak Vaad Ank (Ank-31)**, Punjabi University, Patiala.
- Khoj Patrika, **Sahitak Vaad Ank (Ank-32)**, Punjabi University, Patiala.
- Khoj Patrika, **Punjabi Alochak Ank (Ank-69),** Punjabi University, Patiala.

Internet Resources:

- https://apnaorg.com/
- http://www.panjabialochana.com/
- https://shodhganga.inflibnet.ac.in/

***(Note: Teachers are free to recommend additional related standard source books, if required so.)**

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

Category II

(Discipline Specific Core Courses for Undergraduate Programme of study with Punjabi as one of the Core Disciplines)

(B.A. Programmes with Punjabi as Major discipline)

DISCIPLINE SPECIFIC CORE COURSE –11 (DSC-11)
PUNJABI VARTAK

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
PUNJABI VARTAK (DSC-11)	4	3	1	0	Class 12th pass in any subject	**Studied Punjabi up to 8th Standard or** ***Basic knowledge of Punjabi language***

LEARNING OBJECTIVES:

- To introduce the students to different forms of the Modern Punjabi Prose.
- To comprehend them with the development of various trends in Modern Punjabi Prose and its compare with the Medieval Punjabi Prose.
- To view Modern Punjabi Prose in its socio-cultural and political contexts.
- To understand the theme, structure and style in various genres of Modern Punjabi prose.
- To analyse various genres of Modern Punjabi Prose and understand their significance to culture.
- To learn about the concepts, forms and history of great personalities that helps in understanding the value of struggle and hard work to succeed.
- To develop a keen interest of the students in literature so that they can inspire their self to serve their surroundings and motivate others to live a better life.

LEARNING OUTCOMES:

- The students will able to compose and recognize various types of literary genres of Modern Punjabi Prose.
- They will perceive and appreciate the significance of the historical and cultural context of prose literature.
- Students would have got exposure to various features and forms of Modern Punjabi Prose.

- They would gain insight into the growth and development of Modern Punjabi prose and its context.
- Students would have understood the socio-political context of Punjab through various genres of Punjabi prose.
- They will demonstrate an understanding of literary terms, themes, strategies, and issues through the close reading of Modern Punjabi prose.

Unit I: ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਵਾਰਤਕ: ਸਿਧਾਂਤਕ ਪਰਿਪੇਖ (Adhunik Punjabi Vartak: Sidhantak Paripekh) (12 hours)

- ਵਾਰਤਕ: ਪਰਿਭਾਸ਼ਾ, ਪ੍ਰਕਿਰਤੀ ਤੇ ਲੱਛਣ

  Vartak : Paribhasha, Prakirti te Lachhan
- ਕਵਿਤਾ ਅਤੇ ਵਾਰਤਕ ਵਿਚਲਾ ਅੰਤਰ

  Kavita ate Vartak Vichla Antar
- ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਵਾਰਤਕ: ਨਿਕਾਸ, ਵਿਕਾਸ ਅਤੇ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ

  Adhunik Punjabi Vartak : Nikas, Vikas ate Visheshtavan
- ਮੱਧਕਾਲ ਅਤੇ ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਵਾਰਤਕ ਵਿਚਲਾ ਅੰਤਰ

  Madhkal ate Adhunik Punjabi Vartak Vichla Antar

Unit II: ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਵਾਰਤਕ ਰੂਪਾਕਾਰ: ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਤੱਤ (Adhunik Punjabi Vartak Roopakar: Paribhasha ate Tatt) (11 hours)

- ਨਿਬੰਧ, ਡਾਇਰੀ

  Nibandh, Diary
- ਜੀਵਨੀ, ਸਵੈ-ਜੀਵਨੀ

  Jeevani, Swai-Jeevani
- ਸਫ਼ਰਨਾਮਾ, ਸੰਸਮਰਣ

  Safarnama, Sansmaran
- ਰੇਖਾ-ਚਿੱਤਰ, ਮੁਲਾਕਾਤ/ਇੰਟਰਵਿਊ

  Rekha-Chittar, Mulakat/Interview

Unit III: ਜੀਵਨੀ ਸਾਹਿਤ (ਪੰਜਾਬ ਦੇ ਮਹਾਨ ਕਲਾਕਾਰ ਅਤੇ ਪ੍ਰਸਿੱਧ ਹਸਤੀਆਂ: ਡਾ. ਕਵਲਜੀਤ ਗਰੋਵਰ) Jeevani Sahit (Punjab De Mahan Kalakar ate Prasidh Hastian: Dr. Kawaljit Grover) (11 hours)

- ਭਾਈ ਵੀਰ ਸਿੰਘ

  Bhai Veer Singh
- ਭਗਤ ਪੂਰਨ ਸਿੰਘ

  Bhagat Puran Singh
- ਪ੍ਰਿਥਵੀ ਰਾਜ ਕਪੂਰ

  Prithvi Raj Kapoor
- ਅੰਮ੍ਰਿਤਾ ਸ਼ੇਰਗਿਲ

Amrita Shergill

Unit IV: ਜੀਵੇ ਜਵਾਨੀ: ਗੁਰਪ੍ਰੀਤ ਸਿੰਘ ਤੂਰ (Jive Jawani: Gurpreet Singh Toor)

(11 hourss)

- ਗੁਰਪ੍ਰੀਤ ਸਿੰਘ ਤੂਰ: ਜੀਵਨ ਅਤੇ ਰਚਨਾ

  Gurpreet Singh Toor: Jeevan ate Rachna
- ਵਿਸ਼ਾ ਅਤੇ ਕਲਾ ਪੱਖ

  Visha ate Kala Pakh
- ਸਮੱਸਿਆਵਾਂ ਅਤੇ ਸਮਾਧਾਨ

  Samasyavan ate Samadhan
- ਨੈਤਿਕ ਪੱਖ

  Naitik Pakh

ESSENTIAL READINGS

- Grover, Kawaljit (Dr.) (2007) **Punjabi de Mahan Kalakar ate Prasidh Hastiya**, Kasturi Lal & Sons, Amritsar.
- Jaggi, Rattan Singh (Dr.) (2003) **Sahit De Roop,** Publication Bureau, Punjabi University, Patiala.
- Toor, Gurpreet Singh (2013) **Jive Jawani**, Chetna Parkashan, Ludhiana.

SUGGESTED READINGS:

- Jaswinder Singh (Dr.), Mann Singh Dhindsa (Dr.) (2014) **Punjabi Sahit Da Itihas**, Publication Bureau, Punjabi University, Patiala.
- Kang, Amarjit Singh (Dr.), Tejinder Mann (Dr.) (ed.) (1996) **Vartaki-Madhkali ate Adhunik Punjabi Vartak**, Publication Bureau, Punjabi University, Patiala.
- Kang, Kulbir Singh. (1998) **Madhkali Punjabi Vaartak,** Punjabi University, Patiala.
- Rajbir Kaur (ed.) (2009) **Puratan ate Naveen Punjabi Vartak: Sidhant te Vihar**, Waris Shah Foundation, Amritsar.
- Satinder Singh (2006) **Adhunik Punjabi Vartak Da Itihas**, Punjabi Academy, Delhi.
- Singhal, Dharam Pal (1987) **Punjabi Jivani: Saroop, Sidhant ate Vikas**, Punjabi University, Patiala.

MAGAZINES/JOURNALS:

- Khoj Patrika, Adhunik Vaartak Ank (Ank 22), Punjabi University, Patiala.

INTERNET RESOURCES

- www.punjabipedia.org

***(Note: Teachers are free to recommend additional related standard source books, if required so.)**

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE –12 (DSC-12)
ADHUNIK PUNJABI NATAK

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
ADHUNIK PUNJABI NATAK (DSC-12)	4	3	1	0	Class 12th pass in any subject	**Studied Punjabi up to 8th Standard or** ***Basic knowledge of Punjabi language***

LEARNING OBJECTIVES:

- To theorize and conceptualize Drama as a literary genre.
- To understand philosophical and ideological background of Punjabi Drama.
- It will help them too aware about the relevance of Punjabi drama and theatre.
- It will educate them to understand the social and political concerns of society reflected in Punjabi Drama.
- To identify different trends emerged/emerging in Punjabi Drama.
- To be able to evaluate literary texts of Punjabi Drama.

LEARNING OUTCOMES:

- Students will understand the theoretical and philosophical debate about Drama.
- It will broaden their vocabulary and develop an appreciation of language and its connotations and denotations.
- Students will know about the problems faced during performing the play on stage and the course will help them to find their solutions.
- Students will demonstrate an understanding of terms, themes, strategies, and issues of Punjabi Drama.
- They can express their understanding of the relationship between Punjabi Drama and the historical/cultural contexts.
- They will be able to read and analyse various socio-political issues and concerns depicted in Punjabi Drama.

Unit I: ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਨਾਟਕ: ਸਿਧਾਂਤਕ ਪਰਿਪੇਖ (Adhunik Punjabi Natak: Sidhantak Paripekh) (12 hours)

- ਨਾਟਕ : ਪਰਿਭਾਸ਼ਾ, ਪ੍ਰਕਿਰਤੀ ਅਤੇ ਤੱਤ

  Natak: Paribhasha, Prakirti ate Tatt

- ਪੰਜਾਬੀ ਨਾਟਕ : ਨਿਕਾਸ ਅਤੇ ਵਿਕਾਸ

  Punjabi Natak: Nikas ate Vikas
- ਪੰਜਾਬੀ ਨਾਟਕ : ਪ੍ਰਮੁੱਖ ਪ੍ਰਵਿਰਤੀਆਂ

  Punjabi Natak: Pramukh Pravirtian
- ਰੰਗਮੰਚੀ ਚੁਣੌਤੀਆਂ ਅਤੇ ਸੰਭਾਵਨਾਵਾਂ

  Rangmanchi Chunautian ate Sambhavnavan

Unit II: ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਇਕਾਂਗੀ: ਸਿਧਾਂਤਕ ਪਰਿਪੇਖ (Adhunik Punjabi Ikangi : Sidhantak Paripekh) (11 hours)

- ਇਕਾਂਗੀ : ਪਰਿਭਾਸ਼ਾ, ਪ੍ਰਕਿਰਤੀ ਅਤੇ ਤੱਤ

  Ikangi : Paribhasha, Prakirti ate Tatt
- ਪੰਜਾਬੀ ਇਕਾਂਗੀ : ਨਿਕਾਸ ਅਤੇ ਵਿਕਾਸ

  Punjabi Ikangi : Nikas ate Vikas
- ਪੰਜਾਬੀ ਇਕਾਂਗੀ : ਪ੍ਰਮੁੱਖ ਪ੍ਰਵਿਰਤੀਆਂ

  Punjabi Ikangi : Pramukh Pravirtian
- ਇਕਾਂਗੀ ਅਤੇ ਨਾਟਕ ਵਿਚਲਾ ਅੰਤਰ

  Ikangi ate Natak Vichla Antar

Unit III: ਸੀਸ: ਕੇਵਲ ਧਾਲੀਵਾਲ (Sees: Kewal Dhaliwal) (11 hours)

- ਕੇਵਲ ਧਾਲੀਵਾਲ : ਜੀਵਨ ਅਤੇ ਰਚਨਾ

  Kewal Dhaliwal: Jeevan ate Rachna
- ਵਿਸ਼ਾ ਪੱਖ

  Visha Pakkh
- ਪਾਤਰ ਚਿਤਰਣ

  Patar Chitran

- ਨਾਟਕ ਕਲਾ

  Natak Kala

Unit IV: ਸੰਬੰਧਤ ਇਕਾਂਗੀਆਂ ਦਾ ਵਿਸ਼ਾ ਅਤੇ ਕਲਾ ਪੱਖ (Sambandhat Ikangian Da Visha ate Kala Pakkh) (11 hours.)

- ਸੁਹਾਗ : ਈਸ਼ਵਰ ਚੰਦਰ ਨੰਦਾ

  Suhag : Ishwar Chandar Nanda
- ਨਵਾਂ ਚਾਨਣ : ਹਰਚਰਨ ਸਿੰਘ

  Navan Chanan : Harcharan Singh
- ਅੰਨੇਮ ਨਿਸ਼ਾਨਚੀ : ਅਜਮੇਰ ਸਿੰਘ ਔਲਖ

  Anneh Nishanchi : Ajmer Singh Aulakh

- ਚਾਬੀਆਂ : ਆਤਮਜੀਤ

  Chabian : Atamjit

ESSENTIAL READINGS

- Dhaliwal, Kewal (2020) **Sees,** Chetna Parkashan, Ludhiana.
- Jaggi, Rattan Singh (Dr.) (2003) **Sahit de Roop**, Publication Bureau, Punjabi University, Patiala.
- Raminder Kaur (Dr.) (2019) **Chonven Punjabi Ikangi**, Kasturilal & Sons, Amritsar.

SUGGESTED READINGS:

- Jaswinder Singh (Dr.) & Man Singh Dhindsa (2006) **Punjabi Sahit da Itihas (Adhunik Kal 1901-1995)**, Publication Bureau, Punjabi University, Patiala.
- Kasel, Kirpal Singh, Parmindar Singh (eds.) (2002) **Punjabi Sahit di Utpatti te Vikas**, Lahore Book Shop, Ludhiana.
- Naresh (Dr.) **Ikangi Kala** (1978) Punjab State University Text Book Board, Chandigarh.
- Sagar, Sabinderjit Singh (1998**) Punjabi Natak Da Itihas**, Waris Shah Foundation, Amritsar.
- Phull, Gurdial Singh (1990) **Punjabi Ikangi: Saroop, Sidhant ate Vikas**, Punjabi University, Patiala.
- Phull, Gurdial Singh (2011) **Punjabi Natak: Saroop, Sidhant ate Vikas**, Punjabi University, Patiala.
- Uppal, Kamlesh (2004) **Punjabi Natak ate Rangmanch,** Punjabi University, Patiala.
- Verma, Satish Kumar (2005) **Punjabi Natak Da Itihas**, Punjabi Academy, Delhi.

MAGAZINE / JOURNAL:

- Khoj Patrika (1994) **Natak Vishesh Ank,** Punjabi University, Patiala.

***(Note: Teachers are free to recommend additional related standard source books, if required so.)**

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category III

Discipline Specific Core Courses for Undergraduate Programme of study with Punjabi as one of the Core Disciplines

(B.A. Programmes with Punjabi as non-Major or Minor discipline)

(B.A. Programmes with Punjabi as Major discipline)

DISCIPLINE SPECIFIC CORE COURSE –11 (DSC-11)
PUNJABI VARTAK

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
PUNJABI VARTAK (DSC-11)	4	3	1	0	Class 12th pass in any subject	**Studied Punjabi up to 8th Standard or** ***Basic knowledge of Punjabi language***

LEARNING OBJECTIVES:

- To introduce the students to different forms of the Modern Punjabi Prose.
- To comprehend them with the development of various trends in Modern Punjabi Prose and its compare with the Medieval Punjabi Prose.
- To view Modern Punjabi Prose in its socio-cultural and political contexts.
- To understand the theme, structure and style in various genres of Modern Punjabi prose.
- To analyse various genres of Modern Punjabi Prose and understand their significance to culture.
- To learn about the concepts, forms and history of great personalities that helps in understanding the value of struggle and hard work to succeed.
- To develop a keen interest of the students in literature so that they can inspire their self to serve their surroundings and motivate others to live a better life.

LEARNING OUTCOMES:

- The students will able to compose and recognize various types of literary genres of Modern Punjabi Prose.
- They will perceive and appreciate the significance of the historical and cultural context of prose literature.
- Students would have got exposure to various features and forms of Modern Punjabi Prose.

- They would gain insight into the growth and development of Modern Punjabi prose and its context.
- Students would have understood the socio-political context of Punjab through various genres of Punjabi prose.
- They will demonstrate an understanding of literary terms, themes, strategies, and issues through the close reading of Modern Punjabi prose.

Unit I: ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਵਾਰਤਕ: ਸਿਧਾਂਤਕ ਪਰਿਪੇਖ (Adhunik Punjabi Vartak: Sidhantak Paripekh) (12 hours)

- ਵਾਰਤਕ: ਪਰਿਭਾਸ਼ਾ, ਪ੍ਰਕਿਰਤੀ ਤੇ ਲੱਛਣ

  Vartak: Paribhasha, Prakirti te Lachhan
- ਕਵਿਤਾ ਅਤੇ ਵਾਰਤਕ ਵਿਚਲਾ ਅੰਤਰ

  Kavita ate Vartak Vichla Antar
- ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਵਾਰਤਕ: ਨਿਕਾਸ, ਵਿਕਾਸ ਅਤੇ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ

  Adhunik Punjabi Vartak: Nikas, Vikas ate Visheshtavan
- ਮੱਧਕਾਲ ਅਤੇ ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਵਾਰਤਕ ਵਿਚਲਾ ਅੰਤਰ

  Madhkal ate Adhunik Punjabi Vartak Vichla Antar

Unit II: ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਵਾਰਤਕ ਰੂਪਾਕਾਰ: ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਤੱਤ (Adhunik Punjabi Vartak Roopakar: Paribhasha ate Tatt) (11 hours)

- ਨਿਬੰਧ, ਡਾਇਰੀ

  Nibandh, Diary
- ਜੀਵਨੀ, ਸਵੈ-ਜੀਵਨੀ

  Jeevani, Swai-Jeevani
- ਸਫ਼ਰਨਾਮਾ, ਸੰਸਮਰਣ

  Safarnama, Sansmaran
- ਰੇਖਾ ਚਿੱਤਰ, ਮੁਲਾਕਾਤ/ਇੰਟਰਵਿਊ

  Rekha Chittar, Mulakat/Interview

Unit III: ਜੀਵਨੀ ਸਾਹਿਤ (ਪੰਜਾਬ ਦੇ ਮਹਾਨ ਕਲਾਕਾਰ ਅਤੇ ਪ੍ਰਸਿੱਧ ਹਸਤੀਆਂ: ਡਾ. ਕਵਲਜੀਤ ਗਰੋਵਰ) Jeevani Sahit (Punjab De Mahan Kalakar ate Prasidh Hastian: Dr. Kawaljit Grover) (11 hours)

- ਭਾਈ ਵੀਰ ਸਿੰਘ

  Bhai Veer Singh
- ਭਗਤ ਪੂਰਨ ਸਿੰਘ

  Bhagat Puran Singh
- ਪ੍ਰਿਥਵੀ ਰਾਜ ਕਪੂਰ

Prithvi Raj Kapoor

- ਅੰਮ੍ਰਿਤਾ ਸ਼ੇਰਗਿਲ

  Amrita Shergill

Unit IV: ਜੀਵੇ ਜਵਾਨੀ: ਗੁਰਪ੍ਰੀਤ ਸਿੰਘ ਤੂਰ (Jive Jawani: Gurpreet Singh Toor)

(11 hours)

- ਗੁਰਪ੍ਰੀਤ ਸਿੰਘ ਤੂਰ: ਜੀਵਨ ਅਤੇ ਰਚਨਾ

  Gurpreet Singh Toor: Jeevan ate Rachna
- ਵਿਸ਼ਾ ਅਤੇ ਕਲਾ ਪੱਖ

  Visha ate Kala Pakh
- ਸਮੱਸਿਆਵਾਂ ਅਤੇ ਸਮਾਧਾਨ

  Samasyavan ate Samadhan
- ਨੈਤਿਕ ਪੱਖ

  Naitik Pakh

ESSENTIAL READINGS:

- Grover, Kawaljit (Dr.) (2007) **Punjabi de Mahan Kalakar ate Prasidh Hastiya**, Kasturi Lal & Sons, Amritsar.
- Jaggi, Rattan Singh (Dr.) (2003) **Sahit De Roop,** Publication Bureau, Punjabi University, Patiala.
- Toor, Gurpreet Singh (2013) **Jive Jawani**, Chetna Parkashan, Ludhiana.

SUGGESTED READINGS:

- Jaswinder Singh (Dr.), Mann Singh Dhindsa (Dr.) (2014) **Punjabi Sahit Da Itihas**, Publication Bureau, Punjabi University, Patiala.
- Kang, Amarjit Singh (Dr.), Tejinder Mann (Dr.) (ed.) (1996) **Vartaki-Madhkali ate Adhunik Punjabi Vartak**, Publication Bureau, Punjabi University, Patiala.
- Kang, Kulbir Singh. (1998) **Madhkali Punjabi Vaartak,** Punjabi University, Patiala.
- Rajbir Kaur (ed.) (2009) **Puratan ate Naveen Punjabi Vartak: Sidhant te Vihar**, Waris Shah Foundation, Amritsar.
- Satinder Singh (2006) **Adhunik Punjabi Vartak Da Itihas**, Punjabi Academy, Delhi.
- Singhal, Dharam Pal (1987) **Punjabi Jivani: Saroop, Sidhant ate Vikas**, Punjabi University, Patiala.

MAGAZINES/JOURNALS:

- Khoj Patrika, **Adhunik Vaartak Ank (Ank 22),** Punjabi University, Patiala.

INTERNET RESOURCES

- www.punjabipedia.org

***(Note: Teachers are free to recommend additional related standard source books, if required so.)**

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category IV

COMMON POOL OF Discipline Specific Elective COURSES (DSE) OFFERED BY THE DEPARTMENT OF PUNJABI

DISCIPLINE SPECIFIC ELECTIVE (DSE-13)
VISHAV SAHIT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Vishav Sahit (DSE-13)	4	3	1	0	Class 12th pass in any subject	**Studied Punjabi up to 8th Standard or *Working knowledge of Punjabi language***

LEARNING OBJECTIVE:

- To learn the general course of human history in multiple literary texts of the world.
- To understand the world contextually, that is, to interpret human experiences and the meanings, people have given them in relationship to the place and time in which they occurred.
- To learn to explain how and when some important events happen in the history of World Literature and how different changes happened during different times.
- To learn the socio-political contexts of different continents through the readings of the texts of these continents.

LEARNING OUTCOMES:

- Students will demonstrate knowledge of the chronology, discourse, major events, personalities and turning points of the history of World Literature.
- They will be able to explain the diversity of cultures and the commonalities of human experience reflected in the literature of the world.
- They will examine oneself and one's culture through multiple frames of reference, including the perception of others from the whole world.

Unit-I: ਵਿਸ਼ਵ ਸਾਹਿਤ: ਸਿਧਾਂਤਕ ਪਰਿਪੇਖ (Vishav Sahit: Sidhantak Paripekh)

(12 hours)

- ਵਿਸ਼ਵ ਸਾਹਿਤ: ਮੁਢਲੀ ਜਾਣ-ਪਛਾਣ

  Vishav Sahit: Mudhali Jaan-Pachhan

- ਵਿਸ਼ਵ ਦੀ ਕਹਾਣੀ ਪਰੰਪਰਾ: ਸੰਖੇਪ ਜਾਣ-ਪਛਾਣ

  Vishav di Kahani Parampara: Sankhep Jaan-Pachhan
- ਵਿਸ਼ਵ ਦੀ ਨਾਵਲ ਪਰੰਪਰਾ: ਸੰਖੇਪ ਜਾਣ-ਪਛਾਣ

  Vishav di Novel Parampara: Sankhep Jaan-Pachhan
- ਵਿਸ਼ਵ ਦੀ ਵਾਰਤਕ ਪਰੰਪਰਾ: ਸੰਖੇਪ ਜਾਣ-ਪਛਾਣ

  Vishav di Vartak Parampara: Sankhep Jaan-Pachhan

Unit-II: ਵਿਸ਼ਵ ਦੀਆਂ ਚੋਣਵੀਆਂ ਕਹਾਣੀਆਂ (Vishav Dian Chonvian Kahanian)

(11 hours)

- ਅਨਾਤੋਲੇ: ਸ਼ਰੀਫਜ਼ਾਦੇ

  Anatole: Sharifzade
- ਜਾਨ ਗਾਲਸਵਰਦੀ: ਉਹ ਅਸਫਲਤਾਵਾਂ ਨਾਲ ਖੇਡਦਾ ਰਿਹਾ

  John Galsworthy: Oh Asfaltavan naal Khedda Riha
- ਈਵਾਨ ਇਲੇਕਸਯੇਵਿਚ ਬੂਨਿਨ: ਸੈਨਫਰਾਂਸਿਸਕੋ ਦੇ ਮਹਾਸੇ

  Evan Alekseyevich Bunin: Sanfrancisco de Mahase
- ਪਰਲ ਐਸ. ਬੱਕ: ਕਿਥੇ ਜਾਣਾ ਹੈ

  Pearl S. Buck: Kithe Jaana Hai

Unit-III: ਨਾਵਲ: ਬੁੱਢਾ ਤੇ ਸਮੁੰਦਰ (ਅਰਨੈਸਟ ਹੈਮਿੰਗਵੇ) Novel: Budha te Samundar (Ernest Hemingway) (11 hours)

- ਵਿਸ਼ਾ ਪੱਖ

  Visha Pakh
- ਕਲਾ ਪੱਖ

  Kala Pakh
- ਆਲੋਚਨਾਤਮਕ ਪੱਖ

  Alochnatmak Pakh
- ਪਾਤਰ ਚਿਤਰਨ

  Patar Chitran

Unit-IV: ਮੇਰਾ ਦਾਗ਼ਿਸਤਾਨ (ਭਾਗ-ਪਹਿਲਾ: ਰਸੂਲ ਹਮਜਾਤੋਵ) Mera Dagistan (Bhag- Pehla: Rasool Hamzatov) (11 hours)

- ਵਿਸ਼ਾ ਪੱਖ

  Visha Pakh
- ਸਭਿਆਚਾਰਕ ਪੱਖ

  Sabhyacharak Pakh
- ਇਕ ਵਾਰਤਕ ਵੰਨਗੀ ਵਜੋਂ

  Ik Vartak Vangi Vajon
- ਕਲਾ ਪੱਖ

  Kala Pakh

ESSENTIAL READINGS:

- Hamzatov, Rasool (Gurbakash Singh Frenk) (Trans.) (1974) **Mera Dagistan**, Pargati Parkashan, Soviat Union.
- Hamingway, Ernest (Baldev Singh Baddan) (Trans.) (2012) **Budha te Samunde**r, Navyug Publishers, New Delhi.
- Madaharh, Gurmail (Ed.) (2008) **Nobel Kahanian**, Punjabi Academy, Delhi.

SUGGESTED READINGS:

- Kohli, Mohinder Pal (1992) **The Influence of West on Punjabi Literature**, Lyall Book Depot, Ludhiana.
- Lubbock, Percy (1995) **Craft of Fiction**, Scribner, New York.
- Pritam, Amrita (undated) **Vishav Sahit da Itihas**, Nagmani Parkashan, New Delhi.
- Reid, Iain (1993) **The Short Story (Critical Idiom)**, Routledge, New York and London.
- Shaw, Valerie (1983) **The Short Story: A Critical Introduction**, Longman.

INTERNET RESOURCES:

- https://pa.wikipedia.org/wiki/%E0%A8%AC%E0%A9%81%E0%A9%B1%E0%A8%A2%E0%A8%BE_%E0%A8%85%E0%A8%A4%E0%A9%87_%E0%A8%B8%E0%A8%AE%E0%A9%81%E0%A9%B0%E0%A8%A6%E0%A8%B0,

*(Note: Teachers are free to recommend additional related standard resource books, if required so.)

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

DISCIPLINE SPECIFIC ELECTIVE (DSE-14)
ANUVADAT BHARTI KAHANI

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
ANUVADAT BHARTI KAHANI (DSE-14)	4	3	1	0	Class 12th pass in any subject	**Studied Punjabi up to 10th Standard** **or** ***Basic knowledge of Punjabi language***

LEARNING OBJECTIVE:

- To understand the Indian culture through Indian short stories.
- To interpret the concept of Nationalism and to interpret human experience and meaning reflected through National integration.
- To analyze the socio-political contexts of different regions through the readings of the prescribed texts.

LEARNING OUTCOMES:

- Students will be able to explain the diversity of cultures and the commonalties of human experience reflected in the Indian short stories.
- They will examine oneself and one's culture through various Indian short stories.
- They will learn ethic values through Indian literature.

Unit-I: ਅਨੁਵਾਦਤ ਭਾਰਤੀ ਕਹਾਣੀ: ਸਿਧਾਂਤਕ ਪਰਿਪੇਖ (Anuvadat Bharti Kahani: Sidhantak Paripekh) (12 hours)

- ਅਨੁਵਾਦ ਦੀ ਲੋੜ ਕਿਉਂ?

  Anuvad di Lorh Kyun?
- ਅਨੁਵਾਦਤ ਭਾਰਤੀ ਸਾਹਿਤ ਬਾਰੇ ਸੰਖੇਪ ਜਾਣ-ਪਛਾਣ

  Anuvadat Bharti Sahit Bare Sankhep Jaan-Pachhan
- ਅਨੁਵਾਦਤ ਭਾਰਤੀ ਕਹਾਣੀਆਂ ਦੇ ਮੂਲ ਸਰੋਕਾਰ

  Anuvadat Bharti Kahanian De Mool Sarokar

- ਅਨੁਵਾਦਤ ਭਾਰਤੀ ਕਹਾਣੀ ਦੇ ਵਿਚਾਰਧਾਰਈ ਅਧਾਰ

  Anuvadat Bharti Kahani de Vichardharai Adhar

Unit-II: ਉੱਤਰੀ ਭਾਰਤ ਦੀਆਂ ਅਨੁਵਾਦਤ ਕਹਾਣੀਆਂ: ਵਿਸ਼ਾ ਪੱਖ, ਕਲਾ ਪੱਖ, ਮੂਲ ਸਰੋਕਾਰ, ਵਿਚਾਰਧਾਰਾਈ / ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ (Uttari Bharat dian Anuvadat Kahanian:Visha Pakkh, Kala Pakkh, Mool Sarokar, Vichardharai / Alochanatmak Adhiyan) (11 hours)

- ਮਨੋਜ ਰੂਪੜਾ: ਲਾਇਫ ਲਾਇਨ (ਹਿੰਦੀ ਕਹਾਣੀ)

  Manoj Ruprah: Life Line (Hindi Kahani)
- ਰਤਨ ਤਲਾਸ਼ੀ:ਸਮਾਜ ਸੇਵਾ (ਕਸ਼ਮੀਰੀ ਕਹਾਣੀ)

  Rattan Talashi: Samaj Seva (Kashmiri Kahani)
- ਚਰਣ ਸਿੰਘ ਮਥਿਕ: ਹਲਾਲ (ਰਾਜਸਥਾਨੀ)

  Charan Singh Mathik: Halal (Rajasthani)
- ਵਾਸਦੇਵ ਮੋਹੀ:ਡੇਰ ਗਠ (ਸਿੰਧੀ ਕਹਾਣੀ)

  Vasdev Mohi: Derh Gath (Sindhi Kahani)

Unit-III: ਪੂਰਬੀ ਭਾਰਤ ਦੀਆਂ ਅਨੁਵਾਦਤ ਕਹਾਣੀਆਂ: ਵਿਸ਼ਾ ਪੱਖ, ਕਲਾ ਪੱਖ, ਮੂਲ ਸਰੋਕਾਰ, ਵਿਚਾਰਧਾਰਾਈ / ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ (Poorabi Bharat dian Anuvadat Kahanian: Visha Pakkh, Kala Pakkh, Mool Sarokar, Vichardharai/ Alochanatmak Adhiyan) (11 hours)

- ਸ਼ੀਰਸ਼ੇਂਦ੍ਰ ਮੁਖੋਪਾਧਿਯਾਏ: ਬਾਲਕੋਨੀ (ਬੰਗਲਾ ਕਹਾਣੀ)

  Shirshendra Mukhopadhiyae: Balcony (Bangla Kahani)
- ਪ੍ਰਤਿਭਾ ਰਾਏ: ਈਸਵਰ (ਉੜੀਆ)

  Pratibha Ray: Eesvar (Udia)
- ਰਾਜਕਮਲ ਚੌਧਰੀ: ਨਨਾਣ-ਭਰਜਾਈ (ਮੈਥਿਲੀ)

  Rajkamal Chaudhary: Nanan-Bharjai (Maithili)
- ਕੇਸ਼ਮ ਪ੍ਰੀਓਕੁਮਾਰ: ਇਕ ਰਾਤ (ਮਨੀਪੁਰੀ)

  Kesham Priokumar: Ek Raat (Manipuri)

Unit-IV: ਦੱਖਣੀ ਭਾਰਤ ਦੀਆਂ ਅਨੁਵਾਦਤ ਕਹਾਣੀਆਂ: ਵਿਸ਼ਾ ਪੱਖ, ਕਲਾ ਪੱਖ, ਮੂਲ ਸਰੋਕਾਰ, ਵਿਚਾਰਧਾਰਾਈ / ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ (Dakkhani Bharat dian Anuvadat Kahanian: Visha Pakh, Kala Pakh, Mool Sarokar, Vicharadharai/ Alochanatmak Adhiyan) (11 hours)

- ਸੁਬੋਧ ਜਾਵੜੇਕਰ: ਇਨਸਾਨੀਅਤ ਦਾ ਰਸਾਇਣ (ਮਰਾਠੀ)

Subodh Javadekar: Insaniyat da Rasain (Marathi)

- ਅਸ਼ੋਕ ਮਿਤਰਨ :ਚੂਹੇ (ਤਾਮਿਲ)

  Ashok Mitran : Chuhe (Tamil)
- ਡਾ. ਨਾ. ਮੋਗਸ਼ਾਲ: ਮਨ ਦੀ ਮਾਇਆ (ਕੰਨੜ)

  Dr. Na. Mogshal: Mann di Maya (Kannada)
- ਸੁਜੀਤ ਕਮਲ: ਮੌਤ ਤੋਂ ਬਾਅਦ (ਮਲਿਆਲਮ)

  Sujit Kamal: Maut Ton Baad (Malayalam)

ESSENTIAL READINGS:

- Jinder (Ed.) (2019) **Life Line**, Sangam Publication, Samana, Patiala.
- Shukla, Ramchandra (2016) **Hindi Sahitya Ka Itihaas**, Prabhat Parkashan, Delhi.

SUGGESTED READINGS:

- Choudhary, Indernath (1983) **Tulnatmik Sahitya ki Bhumika**, National Publishing House, New Delhi.
- Dhaliwal, Baldev Singh (2017) **Punjabi Kahaani da Itihaas**, Punjabi Academy, Delhi.
- Dhir, K.S. (1996) **Tulnatmak Sahit Sidhant ate Vihar**, Punjabi University, Patiala.
- Noor S.S. (1990) **Poorbi Vishav-Darishti ate Punjabi Sahit**, Punjabi Academy, Delhi.
- Ray, Mohit K. (Ed.) (2008) **Studies in Translation**, Atlantic Publishers, Delhi.
- Satinder Singh (Ed.) (1990) **Tulnatmak Bharti Sahit**, Guru Nanak Dev University, Amritsar.
- Shukal, Hanuman Prasad (2015) **Tulnatmik Sahitya Sidhantik Paripekh**, Rajkamal Prakashan, Delhi.
- Tripathi Vishwa. (2007) **Hindi Sahitya Ka Saral Itihaas**, Orient Black Swan.

INTERNET RESOURCES:

https://shodhganga.inflibnet.ac.in/handle/10603/134314,
https://pa.wikipedia.org/wiki/%E0%A8%85%E0%A8%A8%E0%A9%81%E0%A8%B5%E0%A8%BE%E0%A8%A6,

*(Note: Teachers are free to recommend additional related standard resource books, if required so.)

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE (DSE-15)
DALIT JEEVAN DI PUNJABI KAHANI

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Dalit Jeevan di Punjabi Kahani **(DSE-15)**	4	3	1	0	Class 12th pass in any subject	**Studied Punjabi up to 8th Standard or** ***Working knowledge of Punjabi language***

LEARNING OBJECTIVES:

- To introduce students with the political and cultural context of Dalit short stories.
- To understand and trace the changes occurred in Dalit Punjabi stories during different time periods.
- To train students in parallel aesthetics created by Dalit literature.

LEARNING OUTCOMES:

- Students will be able to form a distinct understanding of contemporary and historical understanding of the society created by Dalit stories.
- They will be able to create a timeline of Dalit stories in Indian and Punjabi literature.
- They will be able to analyse aesthetics and content of Punjabi Dalit stories.

Unit-I: ਦਲਿਤ ਜੀਵਨ ਦਾ ਪੰਜਾਬੀ ਸਾਹਿਤ: ਇਤਿਹਾਸਕ ਤੇ ਸਿਧਾਂਤਕ ਪਰਿਪੇਖ (Dalit Jeevan Da Punjabi Sahit: Itihasak te Sidhantak Paripekh) (12 hours)

- ਦਲਿਤ : ਪਰਿਭਾਸ਼ਾ ਤੇ ਸਰੂਪ

  Dalit: Paribhasha te Saroop
- ਸਾਹਿਤ ਵਿਚ ਦਲਿਤ ਚੇਤਨਾ

  Sahit Vich Dalit Chetna

- ਦਲਿਤ ਸਾਹਿਤ ਦੀ ਸਾਰਥਕਤਾ

  Dalit Sahit di Sarthakta
- ਪੰਜਾਬੀ ਦਲਿਤ ਸਾਹਿਤ ਨਾਲ ਜਾਣ-ਪਛਾਣ

  Punjabi Dalit Sahit Naal Jaan-Pachhan

Unit-II: ਦਲਿਤ ਜੀਵਨ ਦੀ ਪੰਜਾਬੀ ਕਹਾਣੀ: ਵਿਸ਼ਾ ਪੱਖ, ਕਲਾ ਪੱਖ, ਪਾਤਰ-ਉਸਾਰੀ, ਮੂਲ ਸਰੋਕਾਰ, ਵਿਚਾਰਧਾਰਾਈ ਅਤੇ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ (Dalit Jeevan Di Punjabi Kahani: Visha Pakkh, Kala Pakkh, Patar-Usari, Mool Sarokar, Vicharadharai ate Alochanatmak Adhiyan) (11 hours)

- ਸੁਜਾਨ ਸਿੰਘ: ਪ੍ਰਾਹੁਣਾ

  Sujan Singh: Prahuna
- ਪ੍ਰੇਮ ਪ੍ਰਕਾਸ਼: ਲਛਮੀ

  Prem Prakash: Lachhami
- ਮਨਮੋਹਨ ਬਾਵਾ: ਉਦਾਂਬਰਾ

  Manmohan Bawa: Udambara
- ਗੁਰਦਿਆਲ ਸਿੰਘ: ਗਧੀ ਵਾਲਾ

  Gurdial Singh: Gadhi Wala

Unit-III: ਦਲਿਤ ਜੀਵਨ ਦੀ ਪੰਜਾਬੀ ਕਹਾਣੀ: ਵਿਸ਼ਾ ਪੱਖ, ਕਲਾ ਪੱਖ, ਪਾਤਰ-ਉਸਾਰੀ, ਮੂਲ ਸਰੋਕਾਰ, ਵਿਚਾਰਧਾਰਾਈ ਅਤੇ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ (Dalit Jeevan Di Punjabi Kahani: Visha Pakkh, Kala Pakkh, Patar-Usari, Mool Sarokar, Vicharadharai ate Alochanatmak Adhiyan) (11 hours)

- ਬਲਦੇਵ ਸਿੰਘ: ਜਿਸ ਤਨ ਲਾਗੇ

  Baldev Singh: Jis tan Lage
- ਮੁਖਤਿਆਰ ਸਿੰਘ: ਬੂ

  Mukhtiar Singh: Boo
- ਨਛੱਤਰ: ਹਾਰ ਜਿੱਤ

  Nachhattar: Haar Jitt
- ਪ੍ਰੇਮ ਗੋਰਖੀ: ਲੇਹਾ

  Prem Gorkhi: Leha

Unit-IV: ਦਲਿਤ ਜੀਵਨ ਦੀ ਪੰਜਾਬੀ ਕਹਾਣੀ: ਵਿਸ਼ਾ ਪੱਖ, ਕਲਾ ਪੱਖ, ਪਾਤਰ-ਉਸਾਰੀ, ਮੂਲ ਸਰੋਕਾਰ, ਵਿਚਾਰਧਾਰਾਈ ਅਤੇ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ (Dalit Jeevan Di Punjabi Kahani: Visha Pakkh, Kala Pakkh, Patar-Usari, Mool Sarokar, Vicharadharai ate Alochanatmak Adhiyan) (11 hours)

- ਗੁਰਮੀਤ ਕੜਿਆਲਵੀ: ਆਤੂ ਖੋਜੀ

  Gurmeet Kadialvi: Aatu Khoji
- ਸਰਵਮੀਤ: ਕਲਾਣ

  Sarvmeet: Kalaan

- ਬੰਤ ਸਿੰਘ ਚੱਠਾ: ਪੱਕਾ ਘਰ

  Bant Singh Chatha: Pakka Ghar
- ਸਰੂਪ ਸਿਆਲਵੀ: ਉਪਰਲੀ ਅਦਾਲਤ

  Saroop Sialvi: Uparli Adalat

ESSENTIAL READING:

- Baddan, Baldev Singh (2014) **Punjabi Dalit Kahaniyan**, National Book Trust, India, New Delhi.
- Dhaliwal, Baldev Singh (2021) **Punjabi Dalit Kahani Sanghrah**, Sahitya Akademi, New Delhi.

SUGGESTED READING:

- Chaman Lal (2001) **Dalit aur Avshet Sahitya: Kujh Vichar**, Bhartiye Uchh Adhiyan Sansthan, Shimla.
- Dhaliwal, Baldev Singh (2017) **Punjabi Kahaani da Itihaas**, Punjabi Academy, Delhi.
- Ravinder Kumar (2005) **Aurat te Dalit: Hashiyangat Parvachan Itehasvaadi Parpekh**, Lokgeet Parkashan, Chandigarh.
- Rounki Ram (2012) **Dalit Pachhaan: Mukti ate Shaktikarn**, Publication Bureau, Punjabi University, Patiala.
- Ronki Ram, (2004) **Dalit Sahit: Sarot te Saroop**, Lokgeet Parkashan, Chandigarh.
- Sarabjeet Singh (Ed.) (2004) **Dalit Drishti**, Chetna Parkashan, Ludhiana.

MAGAZINES/JOURNALS:

- Amarjeet Singh (ed.) (2021) **Kaav-Shaster: Subaltern Studies Vishesh Ank 25-26,** Phagwara.

INTERNET RESOURCES:

- **https://shodhganga.inflibnet.ac.in/handle/10603/363340,**
- http://hdl.handle.net/10603/325643,
- https://shodhganga.inflibnet.ac.in/handle/10603/134983,

***(Note: Teachers are free to recommend additional related standard source books, if required so.)**

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE (DSE-16)
SAHIT ATE ALOCHNA NAAL SAMBANDHAT PRAMUKH SANKALP

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Sahit ate Alochna naal Sambandhat Pramukh Sankalp (DSE-16)	4	3	1	0	Class 12th pass in any subject	**Studied Punjabi up to 8th Standard or** ***Working knowledge of Punjabi language***

LEARNING OBJECTIVE:

- Sophisticated critical engagement with literary and cultural texts, including consideration of the relationship between imaginative expression and the cultural and material circumstances in which that expression takes place and is received.
- Knowledge of literary critical methodologies: close reading, textual analysis, ability to make a disciplinary argument based on disciplinary use of evidence.

LEARNING OUTCOMES:

- The students will get an understanding of the major methods and interpretive theories in the field of literary studies.
- Students will develop an ability to propose arguments that present, develop, and defend insightful claims about texts through formal analysis, engagement with existing criticism, and when appropriate, engagement with primary and secondary material from the historical period.
- They will develop a feeling of belongingness through the reading of literary theories in the Indian and western academics.

Unit-I: ਭਾਰਤੀ ਕਾਵਿ ਸ਼ਾਸਤਰ ਨਾਲ ਸੰਬੰਧਤ ਸੰਕਲਪਾਤਮਕ ਸ਼ਬਦਾਵਲੀ (Bharti Kaav Shastar Naal Sambandhat Sankalpatmak Shabdawali) (12 hours)

- ਸ਼ਬਦ ਸ਼ਕਤੀਆਂ: ਅਭਿਧਾ, ਲਖਸ਼ਣਾ, ਵਿਅੰਜਨਾ

  Shabad Shaktian: Abhidha, Lakhshna, Vianjana
- ਮਾਤਰਕ ਛੰਦ: ਕਬਿੱਤ,ਕੋਰੜਾ, ਚੋਪਈ, ਬੈਂਤ, ਸਵੱਯਾ

  Matrak Chand: Kabit, Korda, Chopai, Baint, Savayya
- ਰਸ: ਸਿੰਗਾਰ ਰਸ, ਕਰੁਣਾ ਰਸ, ਰੌਦਰ ਰਸ ਅਤੇ ਬੀਰ ਰਸ

  Ras: Singar Ras, Karuna Ras, Raudar Ras ate Beer Ras
- ਸ਼ਬਦ ਅਤੇ ਅਰਥ ਅੰਲਕਾਰ : ਅਨੁਪ੍ਰਾਸ, ਸਲੇਸ਼, ਉਪਮਾ, ਰੂਪਕ ਅਤੇ ਦ੍ਰਿਸ਼ਟਾਂਤ

Shabad ate Arth Alankaar: Anupras, Shlesh, Upma, Rupak ate Drishtant

Unit-II: ਪੱਛਮੀ ਅਤੇ ਪੰਜਾਬੀ ਕਾਵਿ ਸ਼ਾਸਤਰ ਨਾਲ ਸੰਬੰਧਤ ਸੰਕਲਪਾਤਮਕ ਸ਼ਬਦਾਵਲੀ (Pachhmi ate Punjabi Kaav Shastar Naal Sambandhat Sankalpatmak Shabdawali) (11 hours)

- ਕਲਾਸੀਕਲ ਪੱਛਮੀ ਕਾਵਿ: ਅਨੁਕਰਨ, ਤ੍ਰਾਸਦੀ, ਕਥਾਰਸਿਸ ਅਤੇ ਉਦਾਤ (ਸੰਖੇਪ ਜਾਣ-ਪਛਾਣ)

  Classical Pachhmi Kaav: Anukaran, Trasdi, Ktharsis ate Udaat (Sankhep Jaan-Pachhan)
- ਆਧੁਨਿਕ ਪੱਛਮੀ ਆਲੋਚਨਾ-I: ਰੁਮਾਂਸਵਾਦ, ਯਥਾਰਥਵਾਦ, ਅਸਤਿਤਵਵਾਦ, ਮਨੋਵਿਗਿਆਨ (ਸੰਖੇਪ ਜਾਣ-ਪਛਾਣ)

  Adhunik Pachhmi Alochana-I: Rumansvad, Yatharthvaad, Astitvavaad, Manovigian (Sankhep Jaan-Pachhan)
- ਆਧੁਨਿਕ ਪੱਛਮੀ ਆਲੋਚਨਾ-II: ਚਿਹਨ, ਚਿਹਨਿਕ, ਚਿਹਨਿਤ, ਅਗਰਭੂਮਣ, ਪ੍ਰਤੀਕਵਾਦ, ਪ੍ਰਵਚਨ, (ਸੰਖੇਪ ਜਾਣ-ਪਛਾਣ)

  Adhunik Pachhmi Alochana-II: Chihan, Chihnik, Chihnit, Agarbhuman, Prateekvaad, Pravachan (Sankhep Jaan-Pachhan)
- ਪੰਜਾਬੀ ਆਲੋਚਨਾ: ਪ੍ਰਗਤੀਵਾਦ, ਪ੍ਰਯੋਗਵਾਦ, ਜੁਝਾਰਵਾਦ, ਸੁਹਜਵਾਦ (ਸੰਖੇਪ ਜਾਣ-ਪਛਾਣ)

  Punjabi Alochana: Pragativad, Prayogvad, Jujharvad, Sohajvad (Sankhep Jaan-Pachhan)

Unit-III: ਕਾਵਿ ਦੀ ਸੰਕਲਪਾਤਮਕ ਸ਼ਬਦਾਵਲੀ (Kaav Di Sankalpatmak Shabdawali) (11 hours)

- ਗ਼ਜ਼ਲ: ਮਿਸਰਾ, ਮਤਲਾ, ਮਕਤਾਅ, ਕਾਫ਼ੀਆ, ਰਦੀਫ਼

  Ghazal: Misra, Matla, Maktaa, Kafia, Radeef
- ਕਾਵਿ ਪ੍ਰਬੋਧਕ, ਅਧਿਆਤਮਕ ਕਾਵਿ, ਕਾਵਿ ਰੀਤ, ਕਾਵਿ ਲਕਸ਼ਣ

  Kaav Prabodhak, Adhyatmak Kaav, Kaav Reet, Kaav Lakshan
- ਕਾਵਿ ਅਨੁਭੂਤੀ, ਕਾਵਿ ਸ਼ੈਲੀ, ਕਾਵਿ ਹੇਤੂ, ਕਾਵਿ ਕਲਾ

  Kaav Anubhuti, Kaav Shelly, Kaav Hetu, Kaav Kala,
- ਕਾਵਿ ਬਿੰਬ, ਕਾਵਿ ਭਾਸ਼ਾ, ਕਾਵਿ ਪ੍ਰਵਚਨ, ਕਾਵਿ ਪ੍ਰਯੋਜਨ

  Kaav Bimb, Kaav Bhasha, Kaav Pravachan, Kaav Prayojan

Unit-IV: ਗਲਪ ਅਤੇ ਨਾਟਕ ਦੀ ਸੰਕਲਪਾਤਮਕ ਸ਼ਬਦਾਵਲੀ (Galap ate Natak di Sankalpatmak Shabdawali) (11 hours)

- ਨਾਵਲ: ਐਪਿਕ ਨਾਵਲ, ਐਪਿਸੋਡਿਕ ਨਾਵਲ, ਐਪਿਸਟੋਲਰੀ ਨਾਵਲ, ਇਰਾੱਟਿਕ ਨਾਵਲ, ਗੁਪਤ ਨਾਵਲ , ਮਲਟੀ ਡੈਕੱਰ ਨਾਵਲ ਅਨੁਭਵ

  Novel: Epic Novel, Episodic Novel, Apistolary Novel, Erotic Novel, Gupt Novel, Multi Decker Novel Anubhav
- ਕਹਾਣੀ: ਕੋਲਾਜ, ਟਕਰਾਓ, ਕਥਾ, ਕਥਾਨਕ, ਬਿਰਤਾਂਤ ਅਤੇ ਬਿਰਤਾਂਤਕਾਰ, ਮੋਟਿਫ, ਮੋਟੀਵੇਸ਼ਨ, ਵਿਚਲਨ, ਪਿੱਛਲਝਾਤ, ਰੀਮ, ਥੀਮ

Kahani: Kolaj, Takrao, Katha, Kathanak, Birtant ate Birtantkar, Motif, Motivation, Vichlan, Pichhaljhaat, Ream, Theme

- ਨਾਟਕ: ਉਪੇਰਾ/ਸੰਗੀਤ ਨਾਟਕ, ਨਕਲ, ਅੰਕੀਆ ਨਾਟ, ਟੀ.ਵੀ ਨਾਟਕ, ਨੁੱਕੜ ਨਾਟਕ, ਆਂਚਲਿਕ ਨਾਟਕ, ਐਪਿਕ ਥੀਏਟਰ, ਐਬਸਰਡ ਥੀਏਟਰ, ਐਰੀਨਾ ਥੀਏਟਰ, ਐਲਿਜ਼ਾਬੇਥਨ ਥੀਏਟਰ

  Natak: Upera/Sangeet Natak, Nakal, Ankia Naat, T.V Natak, Nukkad Natak, Aanchlik Natak, Epic Theatre, Absurd Theatre, Arena Theatre, Elizabethan Theatre
- ਸਧਾਰਨੀਕਰਨ, ਸੂਤਰਧਾਰ, ਕੋਰਸ, ਦੁਖਾਂਤ, ਨਾਟ ਸ਼ੈਲੀ, ਨਾਟਕੀ ਜੁਗਤਾਂ, ਨਾਟ ਭਾਸ਼ਾ, ਪਾਤਰ, ਮੰਚ ਜੜਤ, ਮੰਚ ਭਾਸ਼ਾ, ਮਨਬਚਨੀ , ਰੰਗਮੰਚ

  Sadharnikaran, Sootardhar, Chorus, Dukhant, Naat Shelly, Nataki Jugtan, Naat Bhasha, Patar, Manch Jarhat, Manch Bhasha, Manbachni, Rangmanch

ESSENTIAL READINGS:

- Sethi, Uma (Dr.) (2015) **Punjabi Natak: Alochana Shabadawali Kosh**, Publication Bureau, Punjab University, Chandigarh.
- Jaggi, Rattan Singh (Dr.) (2011) **Sahit Kosh Paribhashik Shabadawali**, Publication Bureau, Punjabi University, Patiala.
- T.R.Vinod (Dr.) (1999) **Novel Alochana Shabadawali Kosh**, Publication Bureau, Punjabi University, Patiala.

SUGGESTED READINGS:

- Arshi, Gurcharan Singh (2003) **Astitvavaad**, Arsee Publishers, Delhi.
- Bhatia, H.S. (1988) **Punjabi Alochna: Sidhant ate Vihar**, Guru Nanak Dev University, Amritsar.
- Bhatti, Surjit Singh. (2011) **Vishavikaran ate Sahit Chintan**, Chetna Parkashan, Ludhiana.
- Culler, Jonathan (1973) **Structuralist Poetics**, Routledge and Kegan Paul.
- Forster. E.M (1963) **Aspects of the Novel**, Edward Arnold, London.
- Lenin V.I. (1967) **On Literature and Art**, Progress Publishers, Moscow.
- Lubbock Percy (1962) **The Craft of Fiction**, Jonathan Cape, London.

MAGAZINES/JOURNALS:

- Jaggi, Rattan Singh, (Dr.) (2019) **Khoj Patrika –Sahitik Vad Ank-31 (Part-I)**, Punjabi University Patiala.
- Jaggi, Rattan Singh, (Dr.) (2019) **Khoj Patrika –Sahitik Vad Ank-32 (Part-II)**, Punjabi University Patiala.

INTERNET RESOURCES:

- https://shodhganga.inflibnet.ac.in/handle/10603/312537, http://hdl.handle.net/10603/312537
- https://shodhganga.inflibnet.ac.in/handle/10603/286077,
- https://shodhganga.inflibnet.ac.in/handle/10603/245871,

*(Note: Teachers are free to recommend additional related standard resource books, if required so.)

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

हिंदी विभाग / DEPARTMENT OF HINDI

सेमेस्टर –IV

बी.ए.ऑनर्स (हिंदी)

भारतीय काव्यशास्त्र

Core Course – DSC10

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical		
भारतीय काव्यशास्त्र(DSC10)	4	3	1	0	हिंदी के साथ12वीं उत्तीर्ण	NIL

पाठ्यक्रम का उद्देश्य (Course Objective):

1. विद्यार्थियोंकोभारतीय काव्य-चिंतन की परंपरा का बोधकराना।
2. काव्य-चिंतन के विभिन्नसंप्रदायों से अवगतकराना।
3. काव्य के विभिन्न रूपों एवंछंदों की संरचना से परिचितकराना।

पाठ्यक्रम अध्ययन के परिणाम(Course Learning Outcomes):

1. भारतीय काव्यशास्त्र की चिंतनपरंपरा से अवगतहोसकेंगे।
2. काव्य समीक्षा की प्रद्धतियों का उपयोगकरसकेंगे।
3. पारंपरिकऔरआधुनिककाव्य-विवेक केनैरंतर्य की समझ समृद्धहोगी।

इकाई–1(12 घंटे)

- भारतीय काव्यशास्त्र की परंपरा(आचार्यभरतमुनि से पंडितराजजगन्नाथ तक)
- प्रमुख संप्रदायों का संक्षिप्तपरिचय (रस, अलंकार, रीति, ध्वनि, वक्रोक्ति, औचित्य)

इकाई–2(12 घंटे)

- काव्य लक्षण
- काव्य हेतु
- काव्य प्रयोजन

इकाई –3(12 घंटे)

- रसः स्वरूप, अवयवऔरभेद
- रसनिष्पत्ति
- साधारणीकरण

इकाई–4(9घंटे)

- **शब्द-शक्ति:**अभिधा, लक्षणा, व्यंजना
- **अलंकार:** शब्दालंकार–अनुप्रास, यमक, श्लेष, वक्रोक्ति
  अर्थालंकार–उपमा, रूपक, उत्प्रेक्षा, अतिशयोक्ति
- **छंद:**समवर्णिक–सवैया, घनाक्षरी
  सममात्रिक –चौपाई, हरिगीतिका
  अर्द्धसममात्रिक –बरवै, सोरठा
  विषमसममात्रिक –कुंडलिया, छप्पय

सहायकग्रंथ:

1. रस-मीमांसा–आचार्यरामचंद्र शुक्ल, काशीनागरी प्रचारिणी सभा, वाराणसी।
2. साहित्य-सहचर–आचार्यहजारीप्रसाद द्विवेदी, नैवेद्य निकेतन, वाराणसी।
3. रस-सिद्धांत–डॉ. नगेंद्र, नेशनलपब्लिशिंगहाउस, दिल्ली।
4. भारतीय काव्यशास्त्र की भूमिका (भाग2) –डॉ. नगेंद्र, ओरियंटलबुकडिपो।

सेमेस्टर –IV
आधुनिक हिंदी कविता (छायावाद तक)
Core Course–DSC11

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical		
आधुनिक हिंदी कविता (छायावाद तक) (DSC11)	4	3	1	0	हिंदी के साथ12वीं उत्तीर्ण	NIL

पाठ्यक्रम का उद्देश्य(Course Objective):

1. आधुनिक हिंदी कविता के उद्भव और विकास का परिचय कराना।
2. खड़ी बोली कविता के बनने और विकसित होने की रचना-प्रक्रिया से परिचित कराना।
3. छायावादी कविता संबंधी आलोचनात्मक बहस और परिचर्चाओं का परिचय देना।

पाठ्यक्रम अध्ययन के परिणाम(Course Learning Outcomes):

1. तदयुगीन परिस्थितियों के परिप्रेक्ष्य में आधुनिक हिंदी कविता की समझ विकसित हो सकेगी।
2. स्वाधीनता संग्राम के परिप्रेक्ष्य में हिंदीभाषा के भाव-बोध की निर्मिति से परिचित होंगे।
3. कविताओं के वाचन, लेखन, व्याख्या, विश्लेषण आदि की समझ विकसित हो सकेगी।

इकाई –1 (12 घंटे)

- भारतेंदु हरिश्चंद्र –नए जमाने की मुकरी (संपादन 1941)
- मैथिलीशरण गुप्त– 'भारत-भारती' के भविष्यत खंड (92-98)से कवि शिक्षा (106-111)
  (भारती-भारती, साहित्य सदन, चिरगाँव, झाँसी, संस्करण: 1984)

इकाई –2(12 घंटे)

- रामनरेश त्रिपाठी– पथिक: प्रथम सर्ग से – 'प्रति क्षण नूतन वेष बनाकर... परम सुंदर, अतिषय सुंदर है' तक(हिंदी मंदिर प्रकाशन प्रयाग)
- जयशंकर प्रसाद –पेशोला की प्रतिध्वनि, अब जागो जीवन के प्रभात
  (प्रसाद ग्रंथावली, खंड1,संपादक –रत्नशंकर प्रसाद, लोकभारती प्रकाशन)

इकाई –3 (12 घंटे)

- सूर्यकांत त्रिपाठी 'निराला' –स्नेह निर्झर, भिक्षुक
  (निराला रचनावली, खंड1, संपादक –नंदकिशोर नवल, राजकमल प्रकाशन, दिल्ली)
- सुमित्रानंदन पंत –द्रुत झरो जगत के जीर्ण पत्र, भारत माता ग्रामवासिनी
  (सुमित्रानंदन पंत रचना संचयन, संपादक – कुमार विमल, साहित्य अकादेमी, दिल्ली)

इकाई –4(9घंटे)

- महादेवी वर्मा – पूछता क्यों शेष कितनी रात, बीन भी हूँ मैं तुम्हारी रागिनी भी हूँ
  (महादेवी रचना संचयन, संपादक–विश्वनाथ प्रसाद तिवारी, साहित्य अकादेमी, दिल्ली)
- सुभद्रा कुमारी चौहान – वीरों का कैसा हो वसंत, ठुकरा दो या प्यार करो
  (स्वतंत्रता पुकारती, संपादक– नंद किशोर नवल, साहित्य अकादेमी, दिल्ली)

सहायकग्रंथ:

1. भारतेंदु रचना संचयन, संपादक–गिरीश रस्तोगी, साहित्य अकादेमी, नई दिल्ली।
2. भारतेंदु हरिश्चंद्र और हिंदीनवजागरण की समस्याएँ – रामविलास शर्मा, राजकमल प्रकाशन, नई दिल्ली।
3. मैथिलीशरण गुप्त: पुनर्मूल्यांकन – डॉ. नगेंद्र, प्रभात प्रकाशन, नई दिल्ली।
4. जयशंकर प्रसाद –नंददुलारे वाजपेयी, लोकभारती प्रकाशन, नई दिल्ली।
5. काव्य और कला तथा अन्य निबंध – जयशंकर प्रसाद, भारती भंडार, इलाहाबाद।
6. छायावाद: पुनर्मूल्यांकन – सुमित्रानंदन पंत, राजकमल प्रकाशन, नई दिल्ली।
7. पल्लव – सुमित्रानंदन पंत, राजकमल प्रकाशन, नई दिल्ली।
8. छायावाद – नामवर सिंह, राजकमल प्रकाशन, नई दिल्ली।
9. छायावाद की प्रासंगिकता – रमेशचंद्रशाह, वाग्देवी प्रकाशन, बीकानेर, राजस्थान।
10. प्रसाद का काव्य – प्रेमशंकर, राधाकृष्ण प्रकाशन, नई दिल्ली।
11. निराला की साहित्य साधना – रामविलास शर्मा, राजकमल प्रकाशन, नई दिल्ली।

सेमेस्टर –IV
हिंदी उपन्यास
Core Course–DSC12

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical		
हिंदी उपन्यास (DSC12)	4	3	1	0	हिंदी के साथ12वीं उत्तीर्ण	NIL

पाठ्यक्रम का उद्देश्य(Course Objective):

1. हिंदी उपन्यास के उद्भव और विकास की जानकारी देना।
2. प्रमुख उपन्यासकारों और उनके उपन्यासों की चर्चा करना।
3. कथा साहित्य के विश्लेषण के माध्यम से युगीन चेतना के विकास से परिचित कराना।

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

1. उपन्यास के विश्लेषण की पद्धति से अवगत हो सकेंगे।
2. हिंदी उपन्यास के उद्भव और विकास का ज्ञान प्राप्त होगा।
3. प्रमुख उपन्यासों के माध्यम से सामाजिक समस्याओं से अवगत हो सकेंगे।
4. उपन्यास के वाचन, लेखन, व्याख्या, विश्लेषण आदि की समझ विकसित हो सकेगी।

इकाई –1 (12 घंटे)

- उपन्यास: स्वरूप और संरचना
- हिंदी उपन्यास: उद्भव और विकास

इकाई –2(12 घंटे)

- प्रमुख उपन्यासकारों का योगदान–श्रीनिवासदास,प्रेमचंद, जैनेंद्र,अज्ञेय, फणीश्वरनाथ रेणु, श्रीलाल शुक्ल, धर्मवीर भारती, निर्मल वर्मा, मन्नू भण्डारी, मंजुल भगत,चित्रा मुद्गल।

इकाई –3 (12 घंटे)

- प्रेमचंद– कर्मभूमि

इकाई –4(9घंटे)

- श्रीलाल शुक्ल – रागदरबारी

सहायक ग्रंथ:

1. प्रेमचंद और उनका युग – रामविलास शर्मा, राजकमल प्रकाशन, नई दिल्ली।
2. आधुनिक हिंदी उपन्यास – (संपादक) भीष्म साहनी, भगवती प्रसाद निदारिया, राजकमल प्रकाशन, नई दिल्ली।
3. प्रेमचंद: एक विवेचन – इंद्रनाथ मदान, राजकमल प्रकाषन, नई दिल्ली।
4. कथा विवेचना और गद्य शिल्प – रामविलास शर्मा, वाणी प्रकाशन, नई दिल्ली।
5. आस्था और सौंदर्य – रामविलास शर्मा, राजकमल प्रकाशन, नई दिल्ली।
6. हिंदी उपन्यास –(संपादक) नामवर सिंह, राजकमल प्रकाशन, नई दिल्ली।

सेमेस्टर –IV
हिंदी लोकनाट्य
Elective Course –DSE4

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisiteof the course
		Lecture	Tutorial	Practical		
हिंदी लोकनाट्य(DSE 4)	4	3	1	0	हिंदी के साथ12वीं उत्तीर्ण	NIL

पाठ्यक्रम के उद्देश्य (Course Objective):

1. विद्यार्थियोंकोभारतीय लोकनाट्य साहित्य और लोक-परंपरा का अवलोकन कराना।
2. लोक-जीवन और लोक-संस्कृति की जानकारी देना।
3. हिंदी लोकनाट्य शैलियों के प्रति रुचि विकसित करना।

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

1. लोकनाट्य की समग्र भारतीय परंपरा का परिचय प्राप्त होगा।
2. विविध प्रादेशिक लोक-नाट्य रूपों के स्वरूप की जानकारी प्राप्त होगी।
3. आधुनिक हिंदी रंगमंच के संदर्भ में विविध लोकनाट्य रूपों के प्रयोगधर्मी स्वरूप की समझ विकसित होगी।

इकाई – 1 **(12घंटे)**

- लोकनाट्य : अवधारणा, स्वरूप और विकास
- परंपरागत एवं आधुनिक लोकनाट्य का इतिहास (भरतमुनि प्रणीत नाट्यशास्त्र के पूर्व से लेकर मध्यकालीन तथा आधुनिक मिश्रित प्रयोगधर्मी स्वरूप तक)

इकाई – 2(12घंटे)

- प्रमुख लोकनाट्य रूपों का संक्षिप्त परिचय: रासलीला, रामलीला, सांग, नौटंकी, ख्याल, माच, पंडवानी, बिदेसिया।

इकाई– 3: पाठपरक अध्ययन (12 घंटे)

- नलदमयंती – सांग (लखमीचंद)

इकाई– 4 : पाठपरक अध्ययन (9 घंटे)

- राजयोगी भरथरी – सिद्धेश्वर सेन

सहायक ग्रंथ:

1. हिंदी साहित्य का वृहत इतिहास – सोलहवां भाग, राहुल सांकृत्यायन, नागरी प्रचारिणी सभा, काशी।
2. भारतीय लोकनाट्य–वशिष्ठ नारायण त्रिपाठी, वाणी प्रकाशन, दिल्ली।
3. भारतीय लोक साहित्य : परंपरा और परिदृश्य–विद्या सिन्हा, प्रकाशन विभाग, नई दिल्ली।
4. लखमीचंद ग्रंथावली, हरियाणा साहित्य अकादमी।
5. लोक साहित्य : पाठ और परख–विद्या सिन्हा, आरुषि प्रकाशन, नोएडा।
6. भिखारी ठाकुर रचनावली– (संपादक) प्रो. वीरेंद्र नारायण यादव, बिहार राष्ट्रभाषा परिषद्, पटना।
7. परंपराशीलनाट्य–जगदीशचंद्रमाथुर, बिहार राष्ट्रभाषा परिषद,पटना।
8. हमारे लोकधर्मीनाट्य–श्याम परमार,लोकरंग, उयदयपुर, राजस्थान।
9. पारंपरिक भारतीय रंगमंच : अनंत धाराएँ–कपिला वात्स्यायन।

सेमेस्टर –IV
पर्यावरण और हिंदी साहित्य
Elective Course – DSE5

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisiteof the course
		Lecture	Tutorial	Practical		
पर्यावरण और हिंदी साहित्य(DSE5)	4	3	1	0	हिंदी के साथ12वीं उत्तीर्ण	NIL

पाठ्यक्रम के उद्देश्य (Course Objectives):

1. विद्यार्थियों में पर्यावरण - बोध का प्रसार करना।
2. हिंदी साहित्य में पर्यावरण - चेतना को बताना।
3. पर्यावरण और जीवन के अन्योन्याश्रय संबंधों को समझाना।

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

1. विद्यार्थी पर्यावरण के विभिन्न आयामों से परिचित होंगे।
2. हिंदी साहित्य में अभिव्यक्त पर्यावरण चेतना को जानेंगे।
3. पर्यावरण और जीव - जगत के अंतर्संबंधों को समझेंगे।

इकाई 1 : पर्यावरण-चिंतन : अवधारणा का विकास(12 घंटे)

- प्रकृति, पर्यावरण एवं पारिस्थितिकी : अवधारणा और महत्त्व
- विकास की अवधारणा
- विकास की गांधी-दृष्टि
- धारणीय (Sustainable) विकास की अवधारणा

इकाई 2 : हिंदी कविता में प्रकृति(12 घंटे)

- पृथ्वी-रोदन : हरिवंशराय बच्चन
- सतपुड़ा के घने जंगल : भवानी प्रसाद मिश्र

इकाई 3 :कथा साहित्य में प्रकृति और पर्यावरण (12 घंटे)

- परती परिकथा (निर्धारित अंश) :फणीश्वर नाथ रेणु
- बाबा बटेसर नाथ (निर्धारित अंश) : नागार्जुन
- कुइयाँ जान (अंश) : नासिरा शर्मा
- नया मन्वंतर (नाटक) – चिरंजीत

इकाई 4 : कथेतर में प्रकृति-चेतना(9घंटे)

- सुलगती टहनी : निर्मल वर्मा
- हल्दी - दूब और दधि – अक्षत : विद्यानिवास मिश्र
- आज भी खरे है तालाब (अंश) : अनुपम मिश्र

सहायक ग्रंथ:

1. राजस्थान की रजत बूँदें – अनुपम मिश्र, गांधी शांति प्रतिष्ठान, नई दिल्ली।
2. विकास और पर्यावरण – सुभाष शर्मा, प्रकाशन विभाग, सूचना प्रसारण मंत्रालय, नई दिल्ली।
3. जल, थल, मल – सोपान जोशी, राजकमल प्रकाशन, नई दिल्ली।
4. लोग क्यों करते हैं प्रतिरोध – सुभाष शर्मा, प्रकाशन विभाग, नई दिल्ली।
5. साफ माथे का समाज – अनुपम मिश्र, पेंग्विन इंडिया, नई दिल्ली।
6. विचार का कपड़ा – अनुपम मिश्र, राजकमल प्रकाशन, नई दिल्ली।
7. तालाब झारखंड – हेमंत, नई किताब प्रकाशन, नई दिल्ली।
8. अहिंसक अर्थव्यवस्था – नंदकिशोर आचार्य, प्राकृत भारती अकादमी, जयपुर।
9. गांधी हैं विकल्प – नंदकिशोर आचार्य, प्राकृत भारती अकादमी, जयपुर।

सेमेस्टर –IV
जनसंचार माध्यमऔर तकनीक
Elective Course – DSE6

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisiteof the course
		Lecture	Tutorial	Practical		
जनसंचार माध्यम और तकनीक (DSE6)	4	3	1	0	हिंदी के साथ12वीं उत्तीर्ण	NIL

पाठ्यक्रम के उद्देश्य (Course Objectives):

10. विद्यार्थियोंकोजनसंचार माध्यमों के विस्तृतक्षेत्रसेपरिचितकराना।
11. जनसंचार माध्यमों में प्रयुक्त तकनीक का ज्ञान देना।
12. जनसंचार माध्यम और तकनीकसे जुड़ी आचार संहिताओं काबोधकराना।

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

1. विद्यार्थी जनसंचार के विभिन्नमाध्यमोंकीपहुँचऔरप्रसारक्षमतासेपरिचितहोंगे।
2. जनसंचार माध्यमों में प्रयुक्त तकनीकी पक्ष को जान पायेंगे।
3. फेक न्यूज आदि से बचने के लिए इंटरनेट से जुड़ी आचार संहिताओं का सही ज्ञान होगा।

इकाई–1:जनसंचार : स्वरूपएवंअवधारणा (12 घंटे)

- जनसंचार: अर्थ, परिभाषाव स्वरूप
- जनसंचारकेउद्देश्य
- जनसंचारका प्रसार एवं महत्त्व
- जनसंचार के प्रकार

इकाई–2 : जनसंचार केमाध्यम (12 घंटे)

- प्रिंट ,रेडियोऔरटेलीविज़न
- डिजिटल माध्यम
- सोशलमीडिया–फेसबुक, ट्विटर, यूट्यूब, व्हाट्सएप, इंस्टाग्राम
- सोशलनेटवर्किंगसाइट्सतथा अन्यमाध्यम

इकाई–3 :जनसंचार :तकनीकी पक्ष(12घंटे)

- जनसंचार तथा सूचना तकनीक
- इंटरनेट पत्रकारिता
- ब्लॉग

- न्यू मीडिया

इकाई 4 : जनसंचार और लोकतंत्र (9 घंटे)

- जनसंचार माध्यमों का प्रयोग और नागरिक की ज़िम्मेदारी
- आपात स्थितियों में जनसंचार की भूमिका
- प्रेस कानून : सामान्य परिचय
- साइबर कानून :सामान्य परिचय

सहायकग्रंथ:

1. भूमंडलीकरण और मीडिया –कुमुदशर्मा।
2. जनसंचारमाध्यम : भाषाऔरसाहित्य–सुधीशपचौरी।
3. जनसंचार – हरीश अरोड़ा, युवा साहित्य चेतना मंडल, नई दिल्ली।
4. जनसंचार माध्यमों का राजनीतिक चरित्र – जवरीमल्ल पारख।
5. इंटरनेट पत्रकारिता –सुरेश कुमार।
6. सोशलनेटवर्किंग: नएसमयकासंवाद–(संपादक)संजयद्विवेदी।
7. वर्चुअलरिएलिटिऔरइंटरनेट- जगदीश्वरचतुर्वेदी।
8. सोशलमीडियाऔरब्लॉगलेखन–स्नेहलता।
9. नएमाध्यम, नईहिंदी–प्रो. हरिमोहन।
10. सोशल मीडिया–स्वर्ण सुमन।
11. मीडियाऔरबाज़ार – वर्तिकानंदा।
12. संचारक्रांतिऔरबदलतासामाजिकसौंदर्यबोध–कृष्णकुमाररत्तू।

सेमेस्टर –IV
ब्लॉग लेखन
GE Hindi Course – GE7

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisiteof the course
		Lecture	Tutorial	Practical		
ब्लॉग लेखन (GE7)	4	3	1	0	12वीं उत्तीर्ण	NIL

पाठ्यक्रमकाउद्देश्य (Course Objective):

1. ब्लॉगकेविकासकेसाथ-साथभाषा, समाजऔरसंस्कृतिकीजानकारी देना।
2. ब्लॉगलेखनकेविभिन्नप्रभावोंकाअध्ययनकरना।

पाठ्यक्रमअध्ययनकेपरिणाम (Course Learning Outcomes):

1. ब्लॉगलेखनऔरसमाजकेसंबंधकीव्यावहारिकजानकारी प्राप्त होगी।
2. ब्लॉगलेखनकेमाध्यमसेसामाजिक, सांस्कृतिकसमझविकसित होगी।

इकाई –1 : ब्लॉगलेखन: अवधारणा(12 घंटे)

- ब्लॉगकास्वरूप
- ब्लॉगलेखनकाविकास
- ब्लॉगलेखन: भाषा, समाजऔरसंस्कृति
- ब्लॉगलेखनकाप्रभाव

इकाई –2 : ब्लॉगलेखन : व्यक्तिऔरसमाज(12 घंटे)

- ब्लॉगलेखनऔरव्यक्तिरचनात्मकता
- ब्लॉगलेखनऔरसामाजिकरचनात्मकता
- ब्लॉगलेखनऔरजनभागीदारी
- ब्लॉगलेखनऔरसोशलमीडिया

इकाई –3 : ब्लॉगलेखनकेप्रकार(12 घंटे)

- साहित्यिक-सांस्कृतिक
- राजनीतिक-सामाजिक
- शिक्षा-मीडिया
- खेलकूदएवंअन्य

इकाई –4: ब्लॉगनिर्माण(9घंटे)

- भाषाएवंसंरचना
- ब्लॉगनिर्माणकीप्रक्रिया
- किसीविशिष्टविषयपरब्लॉगलेखन

सहायक ग्रंथ:

1. न्यू मीडिया और बदलता भारत–प्रांजलधर, कृष्णकांत,भारतीय ज्ञानपीठ, दिल्ली।
2. इंटरनेट जर्नलिज़म–विजय कुलश्रेष्ठ, साहिल प्रकाश, जयपुर।
3. सोशल मीडिया और सामाजिक सरोकार–कल्याण प्रसाद वर्मा, साहिल प्रकाशन,जयपुर।
4. ऑनलाइन मीडिया–सुरेश कुमार, पीयर्सन प्रकाशन,भारत।
5. हिंदी ब्लॉगिंग का इतिहास,रवींद्र प्रभात, हिंदी साहित्य निकेत, बिजनौर।

सेमेस्टर –IV

हिंदीभाषाऔरविज्ञापन

GE Hindi Course – GE8

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisiteof the course
		Lecture	Tutorial	Practical		
हिंदी भाषा और विज्ञापन (GE8)	4	3	1	0	12वीं उत्तीर्ण	NIL

पाठ्यक्रम के उद्देश्य (Course Objectives):

1. विद्यार्थियोंकोविज्ञापनकेविस्तृतक्षेत्रसेपरिचितकराना।
2. विज्ञापनभाषाकेस्वरूपऔरविशेषताओंकाबोधकराना।
3. विभिन्नमाध्यमोंकेलिएविज्ञापनकॉपीलेखनकाअभ्यासकराना।

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

1. विज्ञापनलेखनके मध्यम सेभाषा-दक्षताविकसित होगी ।
2. विज्ञापननिर्माणकीपूरीप्रक्रियाकोसमझ सकेंगे ।
3. विज्ञापनबाज़ारमेंविभिन्नमाध्यमोंकीपहुँचऔरप्रसारक्षमतासेपरिचितहोंगे ।
4. कॉपीलेखनके कार्य में सक्षम हो सकेंगे ।

इकाई– 1 : विज्ञापन : स्वरूपएवंअवधारणा (12 घंटे)

- विज्ञापन: अर्थ, परिभाषाऔरमहत्त्व
- विज्ञापनकेउद्देश्य: आर्थिक, सामाजिक, राजनीतिक
- विज्ञापनकेप्रमुखप्रकार
- विज्ञापनकेप्रभाव

इकाई–2 : विज्ञापनमाध्यम(12 घंटे)

- विज्ञापनमाध्यमचयनकेआधार
- प्रिंट, रेडियोऔरटेलीविज़नके लिए विज्ञापन
- डिजिटलविज्ञापनतथाआउटऑफ़होमविज्ञापन–होर्डिंग,पोस्टर, बैनर, साइनबोर्ड
- सोशलमीडियाविज्ञापन–फेसबुक, ट्विटर, यूट्यूब, सोशलनेटवर्किंगसाइट्स

इकाई–3 : विज्ञापनकीभाषा(12 घंटे)

- विज्ञापनकीभाषाकास्वरूपएवंविशेषताएँ
- विज्ञापनकीभाषा-शैलीकेविभिन्नपक्ष–सादृश्यविधान, अलंकरण, तुकांतता, समानान्तरता, विचलन, मुहावरे-लोकोक्तियाँ, भाषासंकर, भाव-भंगिमा (बॉडीलैंग्वेज)

- विज्ञापनस्लोगनएवंपंचलाइन

इकाई–4: विज्ञापन: कॉपीलेखन(9घंटे)

- विज्ञापनकॉपीकेअंग
- प्रिंटमाध्यम: लेआउटकेविविधप्रारूप
- वर्गीकृतएवंसजावटीविज्ञापन-निर्माण
- रेडियोजिंगललेखन
- टेलीविज़नविज्ञापनकेलिएकॉपीलेखन

सहायकग्रंथ:

1. जनसंपर्क, प्रचारऔरविज्ञापन–विजयकुलश्रेष्ठ, राजस्थान प्रकाशन,जयपुर।
2. जनसंचारमाध्यम : भाषाऔरसाहित्य–सुधीशपचौरी,नटराज प्रकाशन,नई दिल्ली।
3. डिजिटलयुगमेंविज्ञापन–सुधासिंह, जगदीश्वरचतुर्वेदी, अनामिका पब्लिकेशन, नई दिल्ली।
4. विज्ञापनकीदुनिया–कुमुदशर्मा, प्रभात प्रकाशन, नई दिल्ली।
5. विज्ञापन: भाषाऔरसंरचना–रेखासेठी, वाणी प्रकाशन, नई दिल्ली।
6. विज्ञापनऔरब्रांड – संजयसिंहबघेल,सस्ता साहित्य मंडल,नई दिल्ली।
7. मीडियाऔरबाज़ार – वर्तिकानंदा,सामयिक प्रकाशन,नई दिल्ली।

सेमेस्टर –IV

BA (Prog.)With Hindi as MAJOR

अन्य गद्य विधाएँ

Core Course – DSC7

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisiteof the course
		Lecture	Tutorial	Practical		
अन्य गद्य विधाएँ (DSC7)	4	3	1	0	12वीं उत्तीर्ण	NIL

पाठ्यक्रम के उद्देश्य (Course Objectives):

1. हिंदी के विभिन्न गद्य रूपों से परिचित कराना।
2. विभिन्न गद्य रूपों के विश्लेषण की समझ विकसित कराना।
3. प्रमुख गद्य रचनाओं के अध्ययन द्वारा उनकी प्रासंगिकता से परिचित कराना।

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

1. हिंदी गद्य रूपों का परिचय प्राप्त होगा।
2. विविध गद्य रचनाओं का महत्व और प्रासंगिकता से परिचित हो सकेंगे।
3. प्रमुख रचनाओं के विश्लेषण की समझ विकसित होगी।

इकाई – 1 (12 घंटे)

- लोभ और प्रीति (निबंध) – रामचंद्र शुक्ल
- बसंत आ गया है (निबंध) – हजारी प्रसाद द्विवेदी

इकाई –2 (12 घंटे)

- प्रेमचंद के साथ दो दिन (संस्मरण) – बनारसी दास चतुर्वेदी
- ठकुरी बाबा (संस्मरण) – महादेवी

इकाई –3(12 घंटे)

- वैष्णव जन (ध्वनि रूपक) – विष्णु प्रभाकर
- शायद (एकांकी) – मोहन राकेश

इकाई –4(9घंटे)

- अंगद का पाँव (व्यंग्य) – श्रीलाल शुक्ल
- ठेले पर हिमालय (यात्रावृत्त) – धर्मवीर भारती

सहायक ग्रंथ:

1. हिंदी का गद्य साहित्य–रामचंद्र तिवारी, विश्वविद्यालय प्रकाशन, गोरखपुर।
2. हिंदी साहित्य का दूसरा इतिहास–बच्चन सिंह, राधाकृष्ण प्रकाशन, नई दिल्ली।
3. हिंदी गद्य : विन्यास और विकास–रामस्वरूप चतुर्वेदी, लोकभारती प्रकाशन, इलाहाबाद।
4. कवि तथा नाटककार–रामकुमार वर्मा, वरुण प्रकाशन, दिल्ली।
5. हिंदी का ललित निबंध साहित्य और आचार्य हजारी प्रसाद द्विवेदी–विदुषी भारद्वाज, राधा पब्लिकेशन।
6. साहित्यिक विधाएँ : पुनर्विचार–हरिमोहन, वाणी प्रकाशन, नई दिल्ली।
7. प्रतिनिधि हिंदी निबंधकार–विभुराम मिश्र, ज्योतिश्वर मिश्र, लोकभारती प्रकाशन, नई दिल्ली।
8. हिंदी कहानी : अंतरंग पहचान– रामदरश मिश्र, वाणी प्रकाशन, नई दिल्ली।
9. हिंदी कहानी : प्रक्रिया और पाठ–सुरेंद्र चौधरी, राधाकृष्ण प्रकाशन, नई दिल्ली।

सेमेस्टर –IV
किसी एक साहित्यकार का अध्ययन: भारतेंदुहरिश्चंद्र
Core Course – DSC8-A

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisiteof the course
		Lecture	Tutorial	Practical		
किसी एक साहित्यकार का अध्ययन : भारतेंदु हरिश्चंद्र (DSC8-A)	4	3	1	0	12वीं उत्तीर्ण	NIL

पाठ्यक्रम का उद्देश्य (Course Objective):

1. प्रथम स्वाधीनता संग्राम के पश्चात उभरे साहित्यिक परिदृश्य की जानकारी देना।
2. भारतेंदु के साहित्य से विस्तार में परिचय देना।
3. भारतेंदु के कवि, नाटककार और गद्यकार के रूप को समझाना।

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

1. भारतेंदु के लेखन और रचना-दृष्टि की समझ विकसित होगी।
2. प्रथम स्वाधीनता संग्राम के पश्चातराष्ट्रीय-सांस्कृतिक परिदृश्य से परिचय होंगे।

इकाई – 1 : कविताएं (12 घंटे)

- कहां करुणानिधि केशव सोए
- बसंत होली
- नए जमाने की मुकरी – भीतर-भीतर सब रस चूसे, नई नई नित तान सुनावे, धन लेकर कुछ काम न आवै, तीन बुलाए तेरह आवैं

इकाई – 2: नाटक (12 घंटे)

- नीलदेवी

इकाई – 3: निबंध (12 घंटे)

- भारतवर्षोन्नति कैसे हो सकती है
- वैष्णवता और भारतवर्ष

इकाई – 4 : विविध (9 घंटे)

- एक अद्भुत अपूर्व स्वप्न

- एक कहानी – कुछ आपबीती, कुछ जगबीती

सहायक ग्रंथ:

1. नाटकार भारतेंदु की रंग परिकल्पना – सत्येंद्र तनेजा, राधाकृष्ण प्रकाशन, नई दिल्ली।
2. भारतेंदु हरिश्चंद्र और हिंदी नवजागरण की समस्याएं–रामविलास शर्मा, राजकमल प्रकाशन, नई दिल्ली।
3. भारतेंदुहरिश्चंद्र का रचना संसार: एक पुनर्मूल्यांकन–डॉ. वीरेंद्र सिंह यादव।
4. भारतेंदुहरिश्चंद्र–ब्रजरत्न दास, हिंदुस्तानी एकेडेमी, इलाहाबाद।
5. भारतेंदु युग और हिंदी भाषा की विकास परंपरा –रामविलास शर्मा, राजकमल प्रकाशन, नई दिल्ली।

सेमेस्टर –IV

किसी एक साहित्यकार का अध्ययन: जयशंकर प्रसाद

Core Course – DSC8-B

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisiteof the course
		Lecture	Tutorial	Practical		
किसी एक साहित्यकार का अध्ययन : भारतेंदु हरिश्चंद्र (DSC8-B)	4	3	1	0	12वीं उत्तीर्ण	NIL

पाठ्यक्रम का उद्देश्य (Course Objective):

1. छायावाद के प्रवर्तक कवि जयशंकर प्रसाद के साहित्य से विस्तार में परिचय।
2. जयशंकर प्रसाद के कवि, कथाकार, नाटककार और आलोचक रूप को समझना।
3. छायावादी कविता संबंधी आलोचनात्मक बहस और प्रसाद के साहित्य के विकास-क्रम का अध्ययन।

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

1. जयशंकर प्रसाद के लेखन-दृष्टि की गंभीर समझ विकसित होगी।
2. छायावाद और राष्ट्रीय आंदोलन के आपसी संबंधों का विश्लेषण कर सकेंगे।
3. कहानियों, नाटकों और उपन्यासों के आधार पर आदर्शवादी और यथार्थवादी साहित्यिक धारा का ज्ञान प्राप्त होगा।

इकाई – 1 (12 घंटे)

- कविताएँ – बीती विभावरी जाग री, हिमाद्रि तुंग शृंग से, अशोक की चिंता

इकाई –2(12 घंटे)

- कहानियाँ – आकाशदीप, ममता, पुरस्कार, गुंडा
  (प्रसाद ग्रंथावली, खंड4,संपादक– रत्नशंकर प्रसाद, लोकभारती प्रकाशन, इलाहाबाद)

इकाई–3(12 घंटे)

- नाटक – अजातशत्रु

इकाई–4 (9 घंटे)

- निबंध – यथार्थवाद, छायावाद (काव्य और कला तथा अन्य निबंध पुस्तक से)
  (प्रसाद ग्रंथावली, खंड4,संपादक– रत्नशंकर प्रसाद, लोकभारती प्रकाशन, इलाहाबाद)

सहायक ग्रंथ:

1. प्रसाद रचना संचयन – (संपादक) विष्णु प्रभाकर और रमेश चंद्र शाह, साहित्य अकादेमी, दिल्ली।
2. जयशंकर प्रसाद –नंददुलारे वाजपेयी।
3. काव्य और कला तथा अन्य निबंध – जयशंकर प्रसाद।
4. छायावाद: पुनर्मूल्यांकन –सुमित्रानन्दन पंत।
5. छायावाद – नामवर सिंह।
6. प्रसाद का काव्य – प्रेमशंकर।
7. छायावाद की प्रासंगिकता –रमेशचंद्र शाह।
8. जयशंकर प्रसाद: एक पुनर्मूल्यांकन – विनोद शाही।
9. छायावाद का पतन – डॉ. देवराज।
10. कामायनी: एक पुनर्विचार – गजानन माधव मुक्तिबोध।
11. छायावाद का पुनर्मूल्यांकन – रामस्वरूप चतुर्वेदी।
12. कामायनी: मूल्यांकन और मूल्यांकन – (संपादक) इंद्रनाथ मदान।
13. जयशंकर प्रसाद: महानता के आयाम – करुणा शंकर उपाध्याय।
14. कंथा (प्रसाद की जीवनी) – श्यामबिहारी श्यामल।

सेमेस्टर –IV

BA (Prog.)With Hindi as NON-MAJOR

अन्य गद्य विधाएँ

Core Course – DSC7

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisiteof the course
		Lecture	Tutorial	Practical		
अन्य गद्य विधाएँ (DSC7)	4	3	1	0	12वीं उत्तीर्ण	NIL

पाठ्यक्रम के उद्देश्य (Course Objectives):

1. हिंदी के विभिन्न गद्य रूपों से परिचित कराना।
2. विभिन्न गद्य रूपों के विश्लेषण की समझ विकसित कराना।
3. प्रमुख गद्य रचनाओं के अध्ययन द्वारा उनकी प्रासंगिकता से परिचित कराना।

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

1. हिंदी गद्य रूपों का परिचय प्राप्त होगा।
2. विविध गद्य रचनाओं का महत्व और प्रासंगिकता से परिचित हो सकेंगे।
3. प्रमुख रचनाओं के विश्लेषण की समझ विकसित होगी।

इकाई – 1 (12 घंटे)

- लोभ और प्रीति (निबंध) – रामचंद्र शुक्ल
- बसंत आ गया है (निबंध) – हजारी प्रसाद द्विवेदी

इकाई –2 (12 घंटे)

- प्रेमचंद के साथ दो दिन (संस्मरण) – बनारसी दास चतुर्वेदी
- ठकुरी बाबा (संस्मरण) – महादेवी

इकाई –3(12 घंटे)

- वैष्णव जन (ध्वनि रूपक) – विष्णु प्रभाकर
- शायद (एकांकी) – मोहन राकेश

इकाई –4(9घंटे)

- अंगद का पाँव (व्यंग्य) – श्रीलाल शुक्ल
- ठेले पर हिमालय (यात्रावृत्त) – धर्मवीर भारती

सहायक ग्रंथ:

1. हिंदी का गद्य साहित्य–रामचंद्र तिवारी, विश्वविद्यालय प्रकाशन, गोरखपुर।
2. हिंदी साहित्य का दूसरा इतिहास–बच्चन सिंह, राधाकृष्ण प्रकाशन, नई दिल्ली।
3. हिंदी गद्य : विन्यास और विकास–रामस्वरूप चतुर्वेदी, लोकभारती प्रकाशन, इलाहाबाद।
4. कवि तथा नाटककार–रामकुमार वर्मा, वरुण प्रकाशन, दिल्ली।
5. हिंदी का ललित निबंध साहित्य और आचार्य हजारी प्रसाद द्विवेदी–विदुषी भारद्वाज, राधा पब्लिकेशन।
6. साहित्यिक विधाएँ : पुनर्विचार–हरिमोहन, वाणी प्रकाशन, नई दिल्ली।
7. प्रतिनिधि हिंदी निबंधकार–विभुराम मिश्र, ज्योतिश्वर मिश्र, लोकभारती प्रकाशन, नई दिल्ली।
8. हिंदी कहानी : अंतरंग पहचान– रामदरश मिश्र, वाणी प्रकाशन, नई दिल्ली।
9. हिंदी कहानी : प्रक्रिया और पाठ–सुरेंद्र चौधरी, राधाकृष्ण प्रकाशन, नई दिल्ली।

DEPARTMENT OF HINDI

SEMESTER – V

BA (Hons) Hindi

Semester V : DSC-13

पाश्चात्य काव्यशास्त्र

Course Code & Title	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course (If any)
		Lecture	Tutorial	Practical/ Practice		
DSC-13 पाश्चात्य काव्यशास्त्र	4	3	1	0	Class 12th pass with Hindi	NIL

पाठ्यक्रम के उद्देश्य (Course Objectives):

- पाश्चात्य काव्यशास्त्र की समझ विकसित करना।
- चिंतन के नए आयामों की ओर आकृष्ट करना।
- साहित्यिकता की नई समझ की जानकारी देना।

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

- विद्यार्थियों में पश्चिमी काव्यशास्त्रीय चिंतन-धारा की समझ विकसित होगी।
- नई विचारधाराओं और साहित्यिकता का ज्ञान प्राप्त करेंगे।
- विद्यार्थी हिंदी साहित्य पर पाश्चात्य चिंतन के प्रभाव से परिचित होंगे।

इकाई 1 : **(12 घंटे)**

- अरस्तू : अनुकरण सिद्धांत, विरेचन सिद्धांत, त्रासदी का विवेचन
- लोंजाइनस : उदात्त सिद्धांत

इकाई 2 : **(12 घंटे)**

- वर्ड्सवर्थ और कॉलरिज : कविता और काव्यभाषा संबंधी मान्यताएँ, कॉलरिज का कल्पना सिद्धांत
- टी. एस. इलियट : परंपरा और वैयक्तिक प्रज्ञा, निर्वैयक्तिकता का सिद्धांत

इकाई 3 : **(9 घंटे)**

- स्वच्छंदतावाद, यथार्थवाद और संरचनावाद का सामान्य परिचय

इकाई 4 : **(12 घंटे)**

- काव्य के उपादान : बिम्ब, प्रतीक, विसंगति, विडंबना, मिथक, फैंटसी

सहायक ग्रंथों की सूची:

1. सिंह, बच्चन; हिंदी आलोचना के बीज शब्द, वाणी प्रकाशन, नई दिल्ली।
2. बाली, तरकनाथ; पाश्चात्य काव्यशास्त्र, वाणी प्रकाशन, नई दिल्ली।
3. तिवारी, रामपूजन; पाश्चात्य काव्यशास्त्र, राधाकृष्ण प्रकाशन, दिल्ली।
4. भारद्वाज, मैथिलीप्रसाद; पाश्चात्य काव्यशास्त्र के सिद्धांत, हरियाणा साहित्य अकादमी, चंडीगढ़।
5. मिश्र, रमेश चंद्र, पाश्चात्य समीक्षा सिद्धांत, अशोक प्रकाशन, दिल्ली।
6. मिश्र, सत्यदेव; पाश्चात्य समीक्षा : सिद्धांत और वाद, विनोद पुस्तक मंदिर, आगरा।
7. शर्मा, देवेंद्रनाथ; पाश्चात्य काव्यशास्त्र, नैशनल पब्लिशिंग हाउस, नई दिल्ली।
8. राय, अनिल; पाश्चात्य काव्यशास्त्र : कुछ सिद्धांत कुछ वाद, शिवालिक प्रकाशन, दिल्ली।

BA (Hons) Hindi
Semester V : DSC-14
आधुनिक हिंदी कविता (छायावादोत्तर)

Course Code & Title	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course (If any)
		Lecture	Tutorial	Practical/ Practice		
DSC-14 आधुनिक हिंदी कविता (छायावादोत्तर)	4	3	1	0	Class 12th pass with Hindi	—

पाठ्यक्रम के उद्देश्य (Course Objectives):

- छायावादोत्तर कविताओं के माध्यम से युग बोध के संदर्भ में विद्यार्थियों को काव्य सौंदर्य, काव्यानुभूति को समझने, परखने योग्य बनाना।
- कविता विशेष में निहित विचार विशेष से विद्यार्थियों में उदात्त भाव का संचरण कराना।
- छायावादोत्तर कविता के विभिन्न रचनात्मक सदर्भों को समझने में सक्षम बनाना।

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

- इस पाठ्यक्रम के माघ्यम से विद्यार्थीगण छायावादोत्तर हिंदी कविता के सन्दर्भ में गहन रूप से जानकारी प्राप्त कर सकेंगे।
- वैश्विक संदर्भों में स्वाधीनता आंदोलन के परिप्रेक्ष्य से परिचय प्राप्त करते हुए विद्यार्थी छायावादोत्तर कविता के विविध संदर्भों को समझ सकेंगे।

इकाई 1 : **(12 घंटे)**

- नागार्जुन : सिंदूर तिलकित भाल, उनको प्रणाम, दुखरन मास्टर (प्रतिनिधि कविताएँ, नागार्जुन)
- गिरिजा कुमार माथुर : 15 अगस्त, हम होंगे कामयाब एक दिन

इकाई 2 : **(12 घंटे)**

- अज्ञेय : यह दीप अकेला, कलगी बाजरे की, नदी के द्वीप
  (चुनी हुई कविताएँ, अज्ञेय, नेशनल पब्लिशिंग हाउस, दिल्ली)
- रघुवीर सहाय : रामदास, दयावती का कुनबा
  (रघुवीर सहाय रचनावली, खंड 1, संपादक : सुरेश शर्मा, राजकमल प्रकाशन, दिल्ली)

इकाई 3 : **(9 घंटे)**

- भवानी प्रसाद मिश्र : गीत फरोश ('गीत फरोश' संग्रह से), चकित है दुःख ('चकित है दुःख' संग्रह से), बुनी हुई रस्सी ('बुनी हुई रस्सी' संग्रह से)
- जगदीश गुप्त : सच हम नही सच तुम नहीं, वर्षा और भाषा, आस्था ('नाव के पांव' संग्रह से)

इकाई 4 : **(12 घंटे)**

- केदारनाथ सिंह : सुई और तागे के बीच में (यहाँ से देखो, केदारनाथ सिंह, राधाकृष्ण प्रकाशन, दिल्ली) पानी की प्रार्थना, अंत महज़ एक मुहावरा है (तालस्ताय और साइकिल, केदारनाथ सिंह, राजकमल प्रकाशन, दिल्ली)
- कुँवर नारायण : एक वृक्ष की हत्या, एक अज़ीब सी मुश्किल ('इन दिनों' संग्रह से), कविता की जरूरत ('कोई दूसरा नहीं' संग्रह से)

सहायक ग्रंथों की सूची:

1. सिंह, नामवर; कविता के नए प्रतिमान, राजकमल प्रकाशन, नई दिल्ली।
2. शर्मा, रामविलस; नयी कविता और अस्तित्ववाद, राजकमल प्रकाशन, नई दिल्ली।
3. तिवारी, विश्वनाथ प्रसाद; आधुनिक हिंदी कविता, लोकभारती प्रकाशन, प्रयागराज।
4. श्रीवास्तव, परमानंद; समकालीन कविता का यथार्थ, हरियाणा साहित्य अकादेमी, चंडीगढ़।
5. नवल, नंदकिशोर; समकालीन काव्य-यात्रा, राजकमल प्रकाशन, नई दिल्ली।
6. जोशी, राजेश; समकालीनता और साहित्य, राजकमल प्रकाशन, नई दिल्ली।
7. चतुर्वेदी, रामस्वरूप; आधुनिक कविता यात्रा, लोकभारती प्रकाशन, प्रयागराज।
8. वर्मा, लक्ष्मीकांत; नयी कविता के प्रतिमान, भारती प्रेस प्रकाशन, प्रयागराज।
9. साही, विजयदेव नारायण; छठवां दशक, हिंदुस्तानी एकेडेमी, प्रयागराज।
10. शर्मा, केदार; अज्ञेय साहित्य : प्रयोग और मूल्यांकन।
11. ऋषिकल्प, रमेश; अज्ञेय की कविता : परंपरा और प्रयोग, वाणी प्रकाशन, दिल्ली।
12. मिश्र, यतींद्र (संपादक); कुँवर नारायण : उपस्थिति, वाणी प्रकाशन, दिल्ली।
13. पालीवाल, डॉ. कृष्णदत्त; भवानीप्रसाद मिश्र का काव्य-संसार, वाणी प्रकाशन, दिल्ली।

BA (Hons) Hindi
Semester V : DSC-15
हिंदी आलोचना

Course Code & Title	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course (If any)
		Lecture	Tutorial	Practical/ Practice		
DSC-15 हिंदी आलोचना	**4**	**3**	**1**	**0**	**Class 12th pass with Hindi**	**—**

पाठ्यक्रम के उद्देश्य (Course Objectives):

- सांस्कृतिक चेतना के विकास में आलोचना की भूमिका की समझ विकसित करना।
- समग्र हिंदी आलोचना के विकास का युगीन परिप्रेक्ष्य में परिचय कराना।
- रचना के गुण-दोष विवेचन की क्षमता विकसित करना।
- रचना और जीवन के प्रति आलोचकीय विवेक विकसित करना।

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

- विद्यार्थियों में युगीन परिस्थितियों के विश्लेषण से सैद्धांतिक और व्यावहारिक समझ विकसित होगी।
- समग्र सामाजिक जीवन के परिप्रेक्ष्य में रचना के विश्लेषण की क्षमता विकसित होगी।
- विद्यार्थी अपने जीवन में किसी भी विषय के प्रति गुण-दोष का विवेचन करने योग्य बन सकेंगे।
- रचना और जीवन के प्रति आलोचकीय विवेक का विकास होगा।

इकाई 1 : **(9 घंटे)**

- हिंदी आलोचना के विकास के विविध चरण – मध्यकालीन, आधुनिक और समकालीन

इकाई 2 : **(12 घंटे)**

- भारतेन्दु : नाटक
- रामचंद्र शुक्ल : काव्य में लोकमंगल की साधनावस्था
- प्रेमचंद : साहित्य का उद्देश्य

इकाई 3 : **(12 घंटे)**

- हजारी प्रसाद द्विवेदी – आधुनिक साहित्य: नई मान्यताएँ

- रामविलास शर्मा – तुलसी साहित्य के सामंत-विरोधी मूल्य
- अज्ञेय – 'तार सप्तक' की भूमिका

इकाई 4 : **(12 घंटे)**

- नामवर सिंह – नयी कहानी: सफलता और सार्थकता
- निर्मल वर्मा – रेणु: समग्र मानवीय दृष्टि
- रामस्वरूप चतुर्वेदी – निराला ('प्रसाद, निराला, अज्ञेय' पुस्तक से)

सहायक ग्रंथों की सूची:

1. त्रिपाठी, विश्वनाथ; हिंदी आलोचना, राजकमल प्रकाशन, नई दिल्ली।
2. नवल, नंद किशोर; हिंदी आलोचना का विकास, राजकमल प्रकाशन, नई दिल्ली।
3. शर्मा, रामविलास; भारतेंदु युग और हिंदी भाषा की विकास परंपरा, राजकमल प्रकाशन, दिल्ली।
4. शर्मा, रामविलास; महावीरप्रसाद द्विवेदी और हिंदी नवजागरण, राजकमल प्रकाशन, दिल्ली।
5. शुक्ल, आचार्य रामचंद्र; चिंतामणि, लोकभारती प्रकाशन, इलाहाबाद।
6. शर्मा, रामविलास; परंपरा का मूल्यांकन, राजकमल प्रकाशन, दिल्ली।
7. अज्ञेय (संपादक); तार सप्तक, भारतीय ज्ञानपीठ प्रकाशन, नई दिल्ली।
8. मुक्तिबोध, गजानन माधव; नयी कविता का आत्मसंघर्ष तथा अन्य निबंध, राजकमल प्रकाशन, दिल्ली।
9. शुक्ल, आचार्य रामचंद्र; हिंदी साहित्य का इतिहास, प्रभात प्रकाशन, दिल्ली।
10. द्विवेदी, आचार्य हजारीप्रसाद; हिंदी साहित्य की भूमिका, राजकमल प्रकाशन, दिल्ली।
11. सिंह, नामवर; दूसरी परंपरा की खोज, राजकमल प्रकाशन, दिल्ली।
12. सिंह, नामवर; कहानी : नयी कहानी, लोकभारती प्रकाशन, इलाहाबाद।
13. वर्मा, निर्मल; शब्द और स्मृति, वाणी प्रकाशन, दिल्ली।
14. साही, विजय देव नारायण; छठयाँ दशक, हिंदुस्तानी एकेडेमी, इलाहाबाद।
15. शर्मा, कृष्णदत्त; मुक्तिबोध की आलोचना-दृष्टि, हिंदुस्तानी एकेडेमी, इलाहाबाद।
16. चतुर्वेदी, रामस्वरूप; प्रसाद, निराला, अज्ञेय, लोकभारती प्रकाशन, इलाहाबाद।

BA (Hons) Hindi
Semester V: DSE
भारतीय और पाश्चात्य रंगमंच

Course Code & Title	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course (If any)
		Lecture	Tutorial	Practical/ Practice		
DSE भारतीय और पाश्चात्य रंगमंच	4	3	1	0	Class 12th pass with Hindi	—

पाठ्यक्रम का उद्देश्य (Course Objective):

- भारतीय एवं पाश्चात्य रंग सिद्धांतों का स्वरूपगत विभेद तथा परंपरा का आद्यंत परिचय।
- भारतीय एवं पाश्चात्य विविध नाट्य रूपों के दार्शनिक चिंतन के अंतर की जानकारी।
- भारतीय तथा पाश्चात्य नाट्य रूपों की व्यावहारिक तथा प्रयोगात्मक जानकारी।

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

- भारतीय एवं पाश्चात्य रंग परंपराओं के भेद तथा प्रकारों का परिचय प्राप्त हो सकेगा।
- भारतीय एवं पाश्चात्य रंग परंपराओं के आदान-प्रदान से निर्मित आधुनिक नाट्य रूपों की जानकारी प्राप्त हो सकेगी।
- भारतीय एवं पाश्चात्य नाट्य रूपों की विविधता से परिचय के बाद समकालीन रंग परिदृश्य की बेहतर समझ विकसित होगी।

इकाई-1 : **(12 घंटे)**

- नाटक की भारतीय अवधारणाएं (उत्पत्ति तथा स्वरूप संबंधी मान्यताएं)
- नाटक की पाश्चात्य अवधारणाएं (उत्पत्ति तथा स्वरूप संबंधी मान्यताएं)

इकाई-2 : **(12 घंटे)**

- भारतीय नाट्यरूप : रूपक, उपरूपक, नाटक (प्रकार तथा भेद)
- आधुनिक भारतीय नाट्यरूप : काव्य नाटक, एकांकी, रेडियो नाटक, नुक्कड़ नाटक

इकाई-3 : **(9 घंटे)**

- अरस्तू : अनुकरण सिद्धांत
- अरस्तू : विरेचन सिद्धांत

इकाई-4 : **(12 घंटे)**

- पाश्चात्य नाट्यरूप : त्रासदी, ड्रामा
- पाश्चात्य नाट्यरूप : कामदी, मेलोड्रामा

सहायक ग्रंथों की सूची:

1. भरतमुनि; नाट्यशास्त्र
2. नगेंद्र, डॉ.; भारतीय नाट्य चिंतन
3. चेनी, शेल्डान; रंगमंच
4. ओझा, दशरथ; हिंदी नाटक : उद्भव और विकास
5. त्रिपाठी, राधावल्लभ; नाट्यशास्त्र विश्वकोश
6. गार्गी, बलवंत; रंगमंच
7. दीक्षित, सुरेंद्रनाथ; भरत और भारतीय नाट्यकला, मोतीलाल बनारसी दास, नई दिल्ली।
8. चातक, गोविंद; रंगमंच : कला और दृष्टि
9. चतुर्वेदी, सीताराम; भारतीय एवं पाश्चात्य रंगमंच, हिंदी समिति, सूचना विभाग, लखनऊ।
10. जैन, नेमिचंद्र; रंगदर्शन
11. लाल, लक्ष्मीनारायण; रंगमंच : देखना और जानना
12. त्रिपाठी, वशिष्ठ नारायण; नाटक के रंगमंचीय प्रतिमान
13. राय, डॉ. नर्वदेश्वर; हिंदी नाट्यशास्त्र का स्वरूप

BA (Hons) Hindi
Semester V: DSE
हिंदी सिनेमा : व्यावसायिक संदर्भ

Course Code & Title	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course (If any)
		Lecture	Tutorial	Practical/ Practice		
DSE हिंदी सिनेमा : व्यावसायिक संदर्भ	4	3	1	0	Class 12th pass with Hindi	—

पाठ्यक्रम का उद्देश्य (Course Objective):

- हिंदी सिनेमा का सैद्धांतिक एवं व्यावहारिक ज्ञान देना।
- हिंदी सिनेमा के विकास के विभिन्न चरणों से परिचय कराना।
- हिंदी सिनेमा के माध्यम से भारतीय समाज एवं संस्कृति का बोध कराना।
- हिंदी सिनेमा और उसके माध्यम से रोजगार की ओर अग्रसर होना।

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

- हिंदी सिनेमा की सैद्धांतिक एवं व्यावहारिक समझ विकसित होगी।
- हिंदी सिनेमा की विकास-यात्रा के विभिन्न चरणों से परिचित होंगे।
- हिंदी सिनेमा में निहित समाज एवं संस्कृति के अंतर्संबंधों के विश्लेषण में समर्थ होंगे।
- हिंदी सिनेमा और उसके माध्यम से रोजगार से परिचित होंगे।

इकाई 1 : हिंदी सिनेमा : सामान्य परिचय (11 घंटे)

- हिंदी सिनेमा का स्वरूप
- हिंदी सिनेमा के प्रमुख चरण – मूक सिनेमा, सवाक सिनेमा, रंगीन सिनेमा, ओटीटी सिनेमा
- सिनेमा के प्रकार – लोकप्रिय/व्यावसायिक सिनेमा, समानांतर/कला सिनेमा, क्षेत्रीय सिनेमा, विश्व सिनेमा

इकाई 2 : हिंदी सिनेमा का बाजार (11 घंटे)

- सिनेमा : कला अथवा उत्पाद
- तकनीक और ब्रांड का बाजार

- गीत और संगीत का बाजार
- विश्व बाजार में भारतीय सिनेमा

इकाई 3 : सिनेमा का बदलता स्वरूप **(11 घंटे)**

- स्वतंत्रतापूर्व हिंदी सिनेमा एवं मूल्यबोध
- स्वातंत्र्योत्तर हिंदी सिनेमा : सामाजिक-सांस्कृतिक, राष्ट्रीय और आर्थिक परिप्रेक्ष्य
- वैश्वीकरण और हिंदी सिनेमा – रीमेक सिनेमा, सौ करोड़ी सिनेमा, बायोपिक सिनेमा, सीक्वल सिनेमा
- क्षेत्रीय सिनेमा का वैश्विक बाजार

इकाई 4 : फिल्मों का (सामाजिक, राजनीतिक, आर्थिक, सांस्कृतिक आदि दृष्टियों से) **अध्ययन** **(12 घंटे)**

- पूरब और पश्चिम
- मेरा नाम जोकर
- जंजीर
- दिलवाले दुल्हनिया ले जाएंगे
- दंगल
- बॉर्डर

विशेष: उपरोक्त में से कुछ फिल्में तीन वर्ष के अंतराल पर अकादमिक परिषद की सहमति से बदलीं जा सकतीं हैं।

सहायक ग्रंथों की सूची:

1. मृत्युंजय; हिंदी सिनेमा के सौ बरस, शिल्पायन प्रकाशन, दिल्ली।
2. चड्ढा, मनमोहन; हिंदी सिनेमा का इतिहास, सचिन प्रकाशन, नई दिल्ली।
3. बिसारिया, डॉ. पुनीत; भारतीय सिनेमा का सफरनामा, अटलांटिक पब्लिशर्स एंड डिस्ट्रीब्यूटर्स, नई दिल्ली।
4. ब्रह्मात्मज, अजय; सिनेमा की सोच, वाणी प्रकाशन, दिल्ली।
5. दास, विनोद; भारतीय सिनेमा का अंतःकरण, मेधा बुक्स, शहादरा, दिल्ली।
6. ओझा, अनुपम; भारतीय सिने सिद्धांत, राधाकृष्ण प्रकाशन, दिल्ली।
7. राय, अजित; बॉलीवुड की बुनियाद, वाणी प्रकाशन, दिल्ली।
8. सिंह, जय; सिनेमा बीच बाजार, सामयिक प्रकाशन, दिल्ली।

BA (Hons) Hindi
Semester V : DSE
हिंदी यात्रा साहित्य

Course Code & Title	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course (If any)
		Lecture	Tutorial	Practical/ Practice		
DSE हिंदी यात्रा साहित्य	4	3	1	0	Class 12th pass with Hindi	—

पाठ्यक्रम के उद्देश्य (Course Objectives):

- विद्यार्थियों को यात्रा साहित्य के माध्यम से समाज एवं संस्कृति के विविध पहलुओं से परिचित कराना।
- विद्यार्थियों में राष्ट्रीयता के भाव-बोध को जागृत करना।
- विद्यार्थियों को यात्रा साहित्य के इतिहास की जानकारी देना।

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

- विद्यार्थी यात्रा साहित्य के लेखकों से परिचित होंगे।
- विद्यार्थी यात्रा वृत्तांत के साहित्यिक, सामाजिक और सांस्कृतिक महत्त्व से परिचित होंगे।
- यात्रा वृत्तांत के माध्यम से पर्यटन के प्रति रुचि विकसित होगी।

इकाई 1 : यात्रा साहित्य की अवधारणा और स्वरूप (12 घंटे)

- यात्रा साहित्य का अर्थ और स्वरूप
- यात्रा साहित्य का महत्त्व
- यात्रा साहित्य की विशेषताएँ

इकाई 2 : हिंदी यात्रा साहित्य का विकासात्मक परिचय (12 घंटे)

- स्वतंत्रता पूर्व हिंदी यात्रा साहित्य : सामान्य परिचय
- स्वातंत्र्योत्तर हिंदी यात्रा साहित्य : सामान्य परिचय
- यात्रा साहित्य का सामाजिक और सांस्कृतिक परिप्रेक्ष्य

इकाई 3 : पाठपरक अध्ययन – 1 (12 घंटे)

- किन्नर देश में – राहुल सांकृत्यायन

- अरे यायावर रहेगा याद – सच्चिदानंद हीरानंद वात्स्यायन 'अज्ञेय'

इकाई 4 : पाठपरक अध्ययन – 2 **(9 घंटे)**

- चीड़ों पर चाँदनी – निर्मल वर्मा (अनुक्रम के अनुसार केवल 9वां यात्रा संस्मरण 'चीड़ों पर चाँदनी')
- कामाख्या क्षेत्रे गुवाहाटी नगरे – सांवरमल सांगानेरिया (पुस्तक : ब्रह्मपुत्र के किनारे-किनारे)

सहायक ग्रंथों की सूची:

1. सांगानेरिया, सांवरमल; ब्रह्मपुत्र के किनारे-किनारे, भारतीय ज्ञानपीठ, नई दिल्ली।
2. सांकृत्यायन, राहुल; किन्नर देश में, किताब महल प्रकाशन, दरियागंज, नई दिल्ली।
3. अज्ञेय; अरे यायावर रहेगा याद, नेशनल पब्लिशिंग हाउस, नई दिल्ली।
4. वर्मा, निर्मल; चीड़ों पर चाँदनी, राजकमल प्रकाशन, नई दिल्ली।
5. उप्रेती, रेखा प्रवीण; हिंदी का यात्रा साहित्य, हिंदी बुक सेंटर, नई दिल्ली।
6. नगेंद्र, डॉ; साहित्य का समाजशास्त्र, नेशनल पब्लिशिंग हाउस, नई दिल्ली।
7. अग्रवाल, वासुदेव शरण; कला और संस्कृति, प्रभात प्रकाशन, नई दिल्ली।
8. दिनकर, रामधारी सिंह; संस्कृति के चार अध्याय, राजकमल प्रकाशन, नई दिल्ली।
9. शर्मा, मुरारीलाल; हिदी यात्रा साहित्य : स्वरूप और विकास, क्लासिकल पब्लिशिंग कंपनी, नई दिल्ली।

BA (Hons) Hindi
Semester V : GE
कंप्यूटर और हिंदी

Course Code & Title	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course (If any)
		Lecture	Tutorial	Practical/ Practice		
DSE कंप्यूटर और हिंदी	4	3	0	1	Class 12th pass with Hindi	—

पाठ्यक्रम का उद्देश्य (Course Objective):

- हिंदी के संदर्भ में कंप्यूटर की दुनिया से परिचित कराना।
- हिंदी के विभिन्न फ़ॉन्ट्स से परिचित कराना।
- हिंदी में कंप्यूटर संबंधी कौशल का विकास करना।

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

- कंप्यूटर से जुड़ी चुनौतियों और संभावनाओं का ज्ञान होगा।
- ई-लर्निंग और ई-शिक्षण में हिंदी का प्रयोग सीख सकेंगे।
- हिंदी में कंप्यूटर संबंधी कौशल का विकास होगा।

इकाई 1 : कंप्यूटर तकनीक का विकास और हिंदी **(12 घंटे)**

- कंप्यूटर : सामान्य परिचय और विकास
- हिंदी के विविध फॉन्ट्स
- कंप्यूटर में हिंदी की चुनौतियाँ और संभावनाएं

इकाई 2 : हिंदी भाषा और प्रौद्योगिकी **(9 घंटे)**

- इंटरनेट और हिंदी
- देवनागरी और यूनिकोड
- हिंदी भाषा और ब्लॉग निर्माण

इकाई 3 : हिंदी भाषा, कंप्यूटर और ई-शिक्षण **(12 घंटे)**

- हिंदी भाषा और ई-शिक्षण

- ई-लर्निंग और हिंदी
- हिंदी भाषा में ई-पुस्तकालय और ई-पाठशाला

इकाई 4 : हिंदी भाषा और कंप्यूटर : प्रायोगिक पक्ष (12 घंटे)

- इंटरनेट पर हिंदी पत्र-पत्रिकाओं का परिचय
- हिंदी में वेब पेज तैयार करना
- हिंदी में वीडियो मॉड्यूल और पॉडकास्ट तैयार करना

सहायक ग्रंथों की सूची:

1. हरिमोहन; कंप्यूटर और हिंदी, तक्षशिला प्रकाशन, दिल्ली।
2. हरिमोहन; आधुनिक जनसंचार और हिंदी, तक्षशिला प्रकाशन, दिल्ली।
3. मल्होत्रा, विजय कुमार; कंप्यूटर के भाषिक अनुप्रयोग, वाणी प्रकाशन, दिल्ली।
4. गोयल, संतोष; हिंदी भाषा और कंप्यूटर, श्री नटराज प्रकाशन, दिल्ली।
5. शर्मा, पी. के.; कंप्यूटर के डाटा प्रस्तुतिकरण और भाषा सिद्धांत, डायनेमिक पब्लिकेशन, दिल्ली।
6. द्विवेदी, संजय (संपादक); सोशल नेटवर्किंग : नए समय का संवाद, यश पब्लिकेशन, दिल्ली।
7. बिसारिया, यादव, कुशवाहा, पुनीत, बीरेंद्र सिंह, यतेंद्र सिंह; कार्यालयीय हिंदी और कंप्यूटर, प्रभात प्रकाशन, दिल्ली।
8. रंजन, राजेश; अपना कंप्यूटर अपनी भाषा में, सामयिक प्रकाशन, दिल्ली।

BA (Hons) Hindi
Semester V : GE
रंगमच और लोक-साहित्य

Course Code & Title	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course (If any)
		Lecture	Tutorial	Practical/ Practice		
DSE रंगमंच और लोक-साहित्य	4	3	1	0	Class 12th pass with Hindi	—

पाठ्यक्रम का उद्देश्य (Course Objective):

- लोकनाट्य रूपों की समग्र भारतीय परंपरा से परिचित कराना।
- भारतीय सांस्कृतिक-बोध के निर्माण में लोकनाट्य रूपों के योगदान के महत्व की समझ विकसित करना।

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

- लोकनाट्य की समग्र भारतीय परंपरा का परिचय प्राप्त हो सकेगा।
- विविध प्रादेशिक लोकनाट्य रूपों के स्वरूप की जानकारी प्राप्त हो सकेगी।
- आधुनिक हिंदी रंगमंच के संदर्भ में विविध लोकनाट्य रूपों के प्रयोगधर्मी स्वरूप की समझ बन सकेगी।

इकाई 1 : लोकनाट्य : स्वरूप एवं अवधारणा (9 घंटे)

- परंपरागत एवं आधुनिक लोकनाट्य का इतिहास (भरतमुनि प्रणीत नाट्यशास्त्र के पूर्व से लेकर, मध्यकालीन तथा आधुनिक मिश्रित प्रयोगधर्मी स्वरूप तक)

इकाई 2 : प्रमुख लोकनाट्य रूपों का संक्षिप्त परिचय (12 घंटे)

- रामलीला, रासलीला, सांग, नौटंकी, ख्याल, माच, नाचा, बिदेसिया, करियाला, भवई, तमाशा, जात्रा, अंकिया नाट, कुडियाट्टम, भागवत मेल।

इकाई 3 : पाठपरक अध्ययन – 1 (12 घंटे)

- लखमीचंद : सांग – 'नल दमयन्ती'
- भिखारी ठाकुर : 'बिदेसिया'

इकाई 4 : पाठपरक अध्ययन – 2 **(12 घंटे)**

- गिरीश कर्नाड : यक्षगान – 'हयवदन'
- सिद्धेश्वर सेन : माच – 'राजा भरथरी'

सहायक ग्रंथों की सूची:

1. सांकृत्यायन, पंडित राहुल; हिंदी साहित्य का वृहत इतिहास, 16वां भाग
2. सत्येन्द्र डॉ.; लोक साहित्य विज्ञान
3. मिश्र, विद्या; वाचिक कविता : भोजपुरी
4. परमार, श्याम; लोकधर्मी नाट्य परंपरा
5. सिन्हा, विद्या; भारतीय लोक साहित्य परंपरा और परिदृश्य
6. बंधु, हरिचंद्र; लक्ष्मीचंद का काव्य वैभव
7. हिंदी साहित्य को हरियाणा प्रदेश की देन, हरियाणा साहित्य अकादमी, पंचकूला
8. शर्मा, पूर्णचंद; हरियाणा की लोकधर्मी लोकनाट्य परंपरा
9. अग्रवाल, रामनारायण; सांगीत एक लोकनाट्य परंपरा
10. मालिक, कुसुमलता; स्वातंत्र्योत्तर पारंपरिक रंग प्रयोग, इंडियन पब्लिशर्स एंड डिस्ट्रीब्यूटर्स, दिल्ली।
11. शर्मा, यशपाल; दादा लखमी फिल्म
12. गौतम, रमेश (संपादक); हिंदी रंगमंच का लोक पक्ष
13. वात्स्यायन, कपिला; पारंपरिक भारतीय रंगमंच : अनंत धाराएं
14. Hansen, Kathryn; Ground for play: Nautanki Theatre of North Indian, University of California Press,1992
15. Kulkarni, Dr. P. D.; Dramatic World of Girish Karnad, Creative Publications, Nanded, Maharashtra

BA (Prog.) with Hindi as MAJOR
Semester V : DSC-9
हिंदी भाषा का व्यावहारिक व्याकरण

Course Code & Title	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course (If any)
		Lecture	Tutorial	Practical / Practice		
DSC-9 हिंदी भाषा का व्यावहारिक व्याकरण	4	3	1	0	12th Pass	—

पाठ्यक्रम के उद्देश्य (Course Objectives):

- विद्यार्थियों को भाषा के नियमों से परिचित कराना।
- हिंदी भाषा के व्याकरणिक नियमों की आधारभूत जानकारी देना।
- भाषा की विविध ध्वनियों के उच्चारण के नियमों का समुचित ज्ञान कराना।

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

- विद्यार्थी व्याकरणिक संरचना का ज्ञान प्राप्त करेंगे।
- मौखिक अभिव्यक्ति के मानक-अमानक रूपों से परिचित होंगे।
- हिंदी भाषा के सर्वमान्य रूपों की समझ विकसित होगी।

इकाई 1 : भाषा और व्याकरण **(12 घंटे)**

- भाषा की परिभाषा एवं विशेषताएँ
- व्याकरण की परिभाषा और महत्त्व
- भाषा और व्याकरण का अंतःसंबंध
- ध्वनि, वर्ण एवं मात्राएँ

इकाई 2 : शब्द परिचय **(12 घंटे)**

- शब्दों के भेद – तत्सम, तद्भव, देशज और विदेशी
- शब्दों की व्याकरणिक कोटियाँ – संज्ञा, सर्वनाम, क्रिया (केवल परिभाषा एवं भेद)

- शब्द निर्माण – उपसर्ग, प्रत्यय
- शब्द और पद में अंतर
- शब्दगत अशुद्धियाँ

इकाई 3 : व्याकरण व्यवहार **(12 घंटे)**

- लिंग, वचन, कारक
- संधि और समास
- मुहावरे और लोकोक्तियाँ

इकाई 4 : वाक्य-परिचय **(9 घंटे)**

- वाक्य के अंग, उद्देश्य और विधेय
- रचना के आधार पर वाक्य के भेद
- वाक्यगत अशुद्धियाँ

सहायक ग्रंथों की सूची:

1. गुरु, कामता प्रसाद; हिंदी व्याकरण, साहित्य सरोवर पब्लिकेशन, आगरा।
2. वाजपेयी, किशोरीदास; हिंदी शब्दानुशासन, नागरी प्रचारिणी सभा, काशी।
3. श्रीवास्तव, रवींद्रनाथ; हिंदी भाषा : संरचना के विविध आयाम, राजकमल प्रकाशन, दिल्ली।
4. वर्मा, धीरेंद्र; हिंदी भाषा का इतिहास, हिंदुस्तानी अकादमी, प्रयागराज।
5. पांडेय, डॉ. राजबलि; भारतीय पुरालिपि, लोकभारती प्रकाशन, प्रयागराज।
6. शुक्ल, डॉ. हनुमान प्रसाद; हिंदी भाषा : पहचान से प्रतिष्ठा तक, लोकभारती प्रकाशन, प्रयागराज।
7. प्रसाद, डॉ. वासुदेव नंदन; आधुनिक हिंदी व्याकरण और रचना, भारती भवन, मेरठ।
8. तिवारी, भोलानाथ; हिंदी भाषा की संरचना, साहित्य सहकार, दिल्ली।
9. तिवारी, भोलानाथ; हिंदी भाषा की आर्थी संरचना, साहित्य सहकार, दिल्ली।
10. तिवारी, भोलानाथ; भाषा विज्ञान, किताब महल, दिल्ली।

BA (Prog.) With Hindi as MAJOR

Semester V : DSC-10

राजभाषा और राष्ट्रभाषा के रूप में हिंदी

Course Code & Title	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course (If any)
		Lecture	Tutorial	Practical / Practice		
DSC-10 राजभाषा और राष्ट्रभाषा के रूप में हिंदी	4	3	1	0	12th Pass	—

पाठ्यक्रम के उद्देश्य (Course Objectives):

- विद्यार्थियों को राजभाषा की अवधारणा से परिचित कराना।
- राष्ट्रभाषा की अवधारणा से परिचित कराना।
- हिंदी भाषा की संवैधानिक स्थिति से परिचित कराना।

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

- विद्यार्थी राजभाषा की अवधारणा से परिचित होंगे।
- राष्ट्रभाषा की अवधारणा से परिचित होंगे।
- हिंदी भाषा की संवैधानिक स्थिति से अवगत हो सकेंगे।

इकाई 1 : हिंदी : संकल्पना और अनुप्रयोग **(12 घंटे)**

- हिंदी भाषा के विविध रूप – राजभाषा, राष्ट्रभाषा, संपर्क भाषा, मानक भाषा, साहित्यिक भाषा, संचार की भाषा

इकाई 2 : राजभाषा हिंदी **(12 घंटे)**

- राजभाषा : तात्पर्य और स्वरूप
- राजभाषा हिंदी संबंधी संवैधानिक प्रावधान
- राजभाषा आयोग तथा संसदीय समिति

इकाई 3 : राष्ट्रभाषा के रूप में हिंदी **(12 घंटे)**

- स्वाधीनता आंदोलन और राष्ट्रभाषा हिंदी की संकल्पना
- संविधान की आठवीं अनुसूची और हिंदी
- राजभाषा और राष्ट्रभाषा में अंतर

इकाई 4 : हिंदी का अनुप्रयोग **(9 घंटे)**

- राजभाषा संबंधी विशिष्ट शब्दावली (सूची विभाग द्वारा दी जाएगी)
- राजभाषा की कार्यालयी अभिव्यक्तियाँ (सूची विभाग द्वारा दी जाएगी)

सहायक ग्रंथों की सूची:

1. तिवारी, डॉ. भोलानाथ; राजभाषा हिंदी, प्रभात प्रकाशन, दिल्ली।
2. शर्मा, डॉ. देवेंद्रनाथ, राष्ट्रभाषा हिंदी : समस्याएँ एवं समाधान, लोकभारती प्रकाशन, प्रयागराज।
3. सिंह, शंकर दयाल; हिंदी : राजभाषा, राष्ट्रभाषा, जनभाषा, किताबघर प्रकाशन, दिल्ली।
4. सिंह, डॉ. राजवीर; राजभाषा हिंदी : विविध आयाम, हिंदी बुक सेंटर, दिल्ली।
5. गिरि, डॉ. राजीव रंजन; परस्पर : भाषा-साहित्य-आंदोलन, राजकमल प्रकाशन, दिल्ली।

BA (Prog.) With Hindi as NON-MAJOR

Semester V : DSC-9

हिंदी भाषा का व्यावहारिक व्याकरण

Course Code & Title	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course (If any)
		Lecture	Tutorial	Practical / Practice		
DSC-9 हिंदी भाषा का व्यावहारिक व्याकरण	4	3	1	0	12th Pass	—

पाठ्यक्रम के उद्देश्य (Course Objectives):

- विद्यार्थियों को भाषा के नियमों से परिचित कराना।
- हिंदी भाषा के व्याकरणिक नियमों की आधारभूत जानकारी देना।
- भाषा की विविध ध्वनियों के उच्चारण के नियमों का समुचित ज्ञान कराना।

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

- विद्यार्थी व्याकरणिक संरचना का ज्ञान प्राप्त करेंगे।
- मौखिक अभिव्यक्ति के मानक-अमानक रूपों से परिचित होंगे।
- हिंदी भाषा के सर्वमान्य रूपों की समझ विकसित होगी।

इकाई 1 : भाषा और व्याकरण **(12 घंटे)**

- भाषा की परिभाषा एवं विशेषताएँ
- व्याकरण की परिभाषा और महत्त्व
- भाषा और व्याकरण का अंतःसंबंध
- ध्वनि, वर्ण एवं मात्राएँ

इकाई 2 : शब्द परिचय **(12 घंटे)**

- शब्दों के भेद – तत्सम, तद्भव, देशज और विदेशी
- शब्दों की व्याकरणिक कोटियाँ – संज्ञा, सर्वनाम, क्रिया (केवल परिभाषा एवं भेद)

- शब्द निर्माण – उपसर्ग, प्रत्यय
- शब्द और पद में अंतर
- शब्दगत अशुद्धियाँ

इकाई 3 : व्याकरण व्यवहार **(12 घंटे)**

- लिंग, वचन, कारक
- संधि और समास
- मुहावरे और लोकोक्तियाँ

इकाई 4 : वाक्य-परिचय **(9 घंटे)**

- वाक्य के अंग, उद्देश्य और विधेय
- रचना के आधार पर वाक्य के भेद
- वाक्यगत अशुद्धियाँ

सहायक ग्रंथों की सूची:

1. गुरु, कामता प्रसाद; हिंदी व्याकरण, साहित्य सरोवर पब्लिकेशन, आगरा।
2. वाजपेयी, किशोरीदास; हिंदी शब्दानुशासन, नागरी प्रचारिणी सभा, काशी।
3. श्रीवास्तव, रवींद्रनाथ; हिंदी भाषा : संरचना के विविध आयाम, राजकमल प्रकाशन, दिल्ली।
4. वर्मा, धीरेंद्र; हिंदी भाषा का इतिहास, हिंदुस्तानी अकादमी, प्रयागराज।
5. पांडेय, डॉ. राजबलि; भारतीय पुरालिपि, लोकभारती प्रकाशन, प्रयागराज।
6. शुक्ल, डॉ. हनुमान प्रसाद; हिंदी भाषा : पहचान से प्रतिष्ठा तक, लोकभारती प्रकाशन, प्रयागराज।
7. प्रसाद, डॉ. वासुदेव नंदन; आधुनिक हिंदी व्याकरण और रचना, भारती भवन, मेरठ।
8. तिवारी, भोलानाथ; हिंदी भाषा की संरचना, साहित्य सहकार, दिल्ली।
9. तिवारी, भोलानाथ; हिंदी भाषा की आर्थी संरचना, साहित्य सहकार, दिल्ली।
10. तिवारी, भोलानाथ; भाषा विज्ञान, किताब महल, दिल्ली।

BA (Prog.) Hindi
Semester V : DSE
विभाजन-विभीषिका और हिंदी साहित्य

Course Code & title	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course (If any)
		Lecture	Tutorial	Practical / Practice		
DSE विभाजन-विभीषिका और हिंदी साहित्य	4	3	1	0	12th Pass	—

पाठ्यक्रम के उद्देश्य (Course Objectives):

- भारत के स्वाधीनता आंदोलन संबंधी इतिहास-बोध से परिचित कराना।
- भारत-विभाजन की त्रासदी के प्रति संवेदनशील बनाना।
- भारत-विभाजन संबंधी हिंदी साहित्य का परिचय देना।

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

- विद्यार्थियों में भारत के स्वाधीनता आंदोलन संबंधी इतिहास-बोध का विकास होगा।
- भारत-विभाजन की त्रासदी के प्रति संवेदनशील बनेंगे।
- भारत-विभाजन संबंधी हिंदी साहित्य को समझेंगे।

इकाई 1 : भारत-विभाजन और स्वाधीनता **(12 घंटे)**

- भारत-विभाजन की पृष्ठभूमि
- भारत-विभाजन के परिणाम
- स्वाधीनता आंदोलन : एक परिचय

इकाई 2 : भारत-विभाजन और हिंदी कविता **(12 घंटे)**

- शरणार्थी – अज्ञेय (11 कविताओं की शृंखला)
- देस-विभाजन (1-3) – हरिवंश राय 'बच्चन'

इकाई 3 : भारत-विभाजन और हिंदी कहानी **(12 घंटे)**

- सिक्का बदल गया – कृष्णा सोबती
- मलबे का मालिक – मोहन राकेश
- मैं जिंदा रहूँगा – विष्णु प्रभाकर

इकाई 4 : भारत-विभाजन और हिंदी उपन्यास **(9 घंटे)**

- जुलूस – फनीश्वरनाथ रेणु

सहायक ग्रंथों की सूची :

1. प्रसाद, डॉ. राजेंद्र; खंडित भारत, प्रभात प्रकाशन, दिल्ली।
2. सरीला, नरेंद्र सिंह; विभाजन की असली कहानी, राजकमल प्रकाशन, दिल्ली।
3. शेषाद्रि, हो. वे.; ...और देश बंट गया, सुरुचि प्रकाशन, दिल्ली।
4. लोहिया, राम मनोहर; भारत विभाजन के गुनहगार, लोकभारती प्रकाशन, प्रयागराज।
5. राय, रामबहादुर; भारतीय संविधान : अनकही कहानी, प्रभात प्रकाशन, नई दिल्ली।
6. सिंह, अनिता इंदर; भारत का विभाजन, राष्ट्रीय पुस्तक न्यास, भारत।
7. प्रियंवद; भारत विभाजन की अंतःकथा, पेंगुइन बुक्स इंडिया, नई दिल्ली।
8. दत्त, बलबीर; भारत विभाजन और पाकिस्तान के षड्यंत्र, प्रभात प्रकाशन, दिल्ली।
9. यादव, सुभाष चंद्र; भारत विभाजन और हिंदी उपन्यास, बिहार राष्ट्रभाषा परिषद, पटना।
10. मोहन, नरेंद्र; विभाजन की त्रासदी : भारतीय कथादृष्टि, भारतीय ज्ञानपीठ, नई दिल्ली।
11. राय, गोपाल; हिंदी कहानी का इतिहास, राजकमल प्रकाशन, दिल्ली।
12. राय, गोपाल; हिंदी उपन्यास का इतिहास, राजकमल प्रकाशन, दिल्ली।
13. मधुरेश; हिंदी कहानी का विकास, लोकभारती प्रकाशन, प्रयागराज।
14. मधुरेश; हिंदी उपन्यास का विकास, लोकभारती प्रकाशन, प्रयागराज।
15. Azad, Maulana Abul Kalam; India Wins Freedom, Orient Longman, Hyderabad, India.

BA (Prog.) Hindi

Semester V : DSE

व्यावसायिक संप्रेषण और हिंदी भाषा

Course Code & title	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course (If any)
		Lecture	Tutorial	Practical / Practice		
DSE व्यावसायिक संप्रेषण और हिंदी भाषा	4	3	1	0	12th Pass	—

पाठ्यक्रम के उद्देश्य (Course Objectives):

- व्यावसायिक संप्रेषण और हिंदी भाषा के स्वरूप से परिचित कराना
- हिंदी भाषा के प्रभावी संप्रेषण की क्षमता विकसित करना
- हिंदी भाषा को व्यावहारिक रूप से व्यावसायिक जगत से जोड़ना
- छात्रों को हिंदी से जुड़े रोजगार क्षेत्रों के लिए तैयार करना

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

- विद्यार्थी व्यावसायिक संप्रेषण की प्रक्रिया से अवगत होंगे
- व्यावसायिक क्षेत्र में हिंदी के व्यावहारिक ज्ञान से परिचित होंगे
- हिंदी के वैश्विक और व्यावसायिक अंतःसंबंधों को समझेंगे
- व्यावसायिक लेखन की प्रक्रिया से परिचित होंगे

इकाई 1: संप्रेषण का स्वरूप और महत्त्व **(12 घंटे)**

- संप्रेषण की परिभाषा एवं स्वरूप
- संप्रेषण का महत्त्व
- भूमंडलीकरण के युग में संप्रेषण की महत्ता
- संप्रेषण की बाधाएं

इकाई 2: व्यावसायिक संप्रेषण और हिंदी भाषा **(9 घंटे)**

- व्यावसायिक संप्रेषण का स्वरूप
- व्यावसायिक संप्रेषण के प्रकार
- तकनीकी व्यावसायिक संप्रेषण

इकाई 3: हिंदी जनसंचार और व्यावसायिक संप्रेषण **(12 घंटे)**

- संप्रेषण के विविध माध्यम – परंपरागत और आधुनिक
- प्रिंट मीडिया और व्यावसायिक संप्रेषण
- इलेक्ट्रॉनिक मीडिया और व्यावसायिक संप्रेषण
- हिंदी भाषा, सोशल मीडिया और व्यावसायिक संप्रेषण

इकाई 4: हिंदी में व्यावसायिक लेखन **(12 घंटे)**

- हिंदी में व्यावसायिक लेखन का महत्त्व
- हिंदी में व्यावसायिक लेखन के प्रकार (प्रतिवेदन लेखन, कार्यसूची, कार्यवृत्त का रूप निर्माण)
- व्यावसायिक पत्र और ईमेल का प्रारूप निर्माण
- स्ववृत्त-निर्माण और उसके विविध स्वरूप

सहायक ग्रंथों की सूची:

1. पाल एवं शर्मा, डॉ. हंसराज एवं डॉ. मंजुलता; व्यावसायिक संप्रेषण, हिंदी माध्यम कार्यान्वय निदेशालय, दिल्ली विश्वविद्यालय, दिल्ली।
2. झालटे, डॉ. दंगल; प्रयोजनमूलक हिंदी, वाणी प्रकाशन, दिल्ली।
3. तिवारी, डॉ. भोलानाथ; हिंदी भाषा की वाक्य संरचना, साहित्य सहकार प्रकाशन, दिल्ली।
4. पांडेय, कैलाशनाथ; प्रयोजनमूलक हिंदी की भूमिका, लोकभारती प्रकाशन, प्रयागराज।
5. गोस्वामी, कृष्ण कुमार; प्रयोजनमूलक भाषा और कार्यालयी हिंदी, कलिंगा प्रकाशन, दिल्ली।

BA (Prog.) Hindi

Semester V : DSE

हिंदी की प्रमुख संस्थाएँ एवं पत्र-पत्रिकाएँ

Course title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course (If any)
		Lecture	Tutorial	Practical / Practice		
DSE हिंदी की प्रमुख संस्थाएँ एवं पत्र-पत्रिकाएँ	**4**	**3**	**1**	**0**	**12th Pass**	**—**

पाठ्यक्रम के उद्देश्य (Course Objectives):

- विद्यार्थियों को हिंदी की प्रमुख संस्थाओं से परिचित कराना।
- हिंदी के विकास में पत्र-पत्रिकाओं की भूमिका से अवगत कराना।
- संस्थाओं और पत्र-पत्रिकाओं के माध्यम से हिंदी के प्रति विद्यार्थियों में अभिरुचि का विकास करना।

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

- विद्यार्थी हिंदी के विकास में विभिन्न साहित्यिक संस्थाओं के योगदान को समझ सकेंगे।
- प्रारंभिक हिंदी पत्र-पत्रिकाओं के विविध रूपों से परिचित हो सकेंगे।
- हिंदी साहित्य के इतिहास में विभिन्न संथाओं और पत्र-पत्रिकाओं की भूमिका को रेखांकित कर सकेंगे।

इकाई 1 : हिंदी की आरंभिक संस्थाएँ **(12 घंटे)**

- नागरी प्रचारिणी सभा, काशी
- हिंदी साहित्य सम्मेलन, प्रयागराज
- दक्षिण भारत हिंदी प्रचार सभा, मद्रास
- राष्ट्रभाषा प्रचार समिति, वर्धा

इकाई 2 : स्वातंत्र्योत्तर हिंदी संस्थाएँ **(12 घंटे)**

- केंद्रीय हिंदी निदेशालय, दिल्ली
- केंद्रीय हिंदी संस्थान, आगरा

- बिहार राष्ट्रभाषा परिषद, पटना
- हिंदुस्तानी अकादमी, प्रयागराज

इकाई 3 : हिंदी के विकास में पत्र-पत्रिकाओं का योगदान **(12 घंटे)**

- आरंभिक पत्र – उदन्त मार्तण्ड, बंगदूत, समाचार सुधा वर्षण
- साहित्यिक पत्रिकाएं – कविवचन सुधा, हिंदी प्रदीप, ब्राह्मण, सरस्वती
- हिंदी के विकास में प्रमुख पत्रकारों का योगदान – भारतेंदु हरिश्चंद्र, महावीर प्रसाद द्विवेदी, बाबू बालमुकुंद गुप्त।

इकाई 4 : स्वातंत्र्योत्तर हिंदी पत्र-पत्रिकाएं **(9 घंटे)**

- प्रमुख स्वातंत्र्योत्तर पत्र-पत्रिकाएं – धर्मयुग, दिनमान, साप्ताहिक हिंदुस्तान
- आपातकाल के दौर की पत्रकारिता और चुनौतियां
- समकालीन पत्र-पत्रिकाएं

सहायक ग्रंथों की सूची :

1. शुक्ल, आचार्य रामचंद्र; हिंदी साहित्य का इतिहास, राजकमल प्रकाशन, दिल्ली।
2. गुप्त, गणपतिचंद्र; हिंदी साहित्य का वैज्ञानिक इतिहास, लोकभारती प्रकाशन, प्रयागराज।
3. वैदिक, वेदप्रताप; हिंदी पत्रकारिता के विविध आयाम, हिंदी बुक सेंटर, दिल्ली।
4. पांडेय, डॉ. पृथ्वीनाथ, पत्रकारिता : परिवेश एवं प्रवृत्तियाँ, लोकभारती प्रकाशन, प्रयागराज।
5. शर्मा, रामविलास; महावीर प्रसाद द्विवेदी और हिंदी नवजागरण, राजकमल प्रकाशन, दिल्ली।
6. शर्मा, कुमुद; भूमंडलीकरण और मीडिया, प्रभात प्रकाशन, दिल्ली।
7. मिश्र, कृष्ण बिहारी; हिंदी पत्रकारिता, भारतीय ज्ञानपीठ, नई दिल्ली।
8. चतुर्वेदी, जगदीश प्रसाद; हिंदी पत्रकारिता का इतिहास, प्रभात प्रकाशन, दिल्ली।
9. श्रीधर, विजयदत्त; भारतीय पत्रकारिता कोश, वाणी प्रकाशन, दिल्ली।

BA (Prog.) Hindi
Semester V : GE
लोकप्रिय हिंदी साहित्य

Course Code & title	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course (If any)
		Lecture	Tutorial	Practical / Practice		
GE लोकप्रिय हिंदी साहित्य	4	3	1	0	12th Pass	—

पाठ्यक्रम का उद्देश्य (Course Objectives):

- लोकप्रिय संस्कृति की समझ विकसित करना।
- साहित्य की मुख्यधारा के समानांतर लोकप्रिय साहित्य का परिचय देना।
- लोकप्रिय हिंदी साहित्य की परंपरा का ज्ञान कराना।

पाठ्यक्रम-अध्ययन के परिणाम (Course Learning Outcomes):

- विद्यार्थी लोकप्रिय साहित्य की अवधारणा को समझ सकेंगे।
- साहित्य की मुख्यधारा के समानांतर लोकप्रिय साहित्य से परिचित होंगे।
- लोकप्रिय हिंदी साहित्य की परंपरा को समझ सकेंगे।

इकाई 1 : लोकप्रिय संस्कृति और साहित्य **(12 घंटे)**

- लोकप्रिय संस्कृति : अवधारणा और स्वरूप
- लोकप्रिय संस्कृति और कला के विविध आयाम
- लोकप्रिय संस्कृति और लोकप्रिय साहित्य

इकाई 2 : लोकप्रिय साहित्य **(12 घंटे)**

- लोकप्रिय साहित्य का संक्षिप्त इतिहास
- वैश्वीकृत दुनिया और हिंदी का लोकप्रिय साहित्य
- लोकप्रिय साहित्य का विधागत वैशिष्ट्य : कविता, कहानी, उपन्यास, नाटक।

इकाई 3 : लोकप्रिय कविता **(9 घंटे)**

- हरिवंश राय बच्चन – मधुशाला (भाग 1)
- कवि प्रदीप – दे दी हमें आजादी बिना खड्ग बिना ढाल
- शैलेंद्र – दुनिया बनाने वाले क्या तेरे मन में समाई
- गोपालदास नीरज – कारवाँ गुज़र गया

इकाई 4 : लोकप्रिय कथा साहित्य **(12 घंटे)**

- चंद्रकांता – देवकी नंदन खत्री
- गुप्त कथा – गोपाल राम गहमरी

सहायक ग्रंथों की सूची:

1. पचौरी, सुधीश; पापुलर कल्चर, राधाकृष्ण प्रकाशन, प्रयागराज।
2. रंजन, प्रभात; पॉपुलर हिंदी लुगदी हिंदी : हिंदी का लोकप्रिय साहित्य, जानकीपुल प्रकाशन, दिल्ली।
3. कृष्ण, संजय (संपादक); गोपालराम गहमरी की जासूसी कहानियाँ, प्रभात प्रकाशन, दिल्ली।
4. शुक्ल, वागीश; चंद्रकांता (संतति) का तिलिस्म, राजकमल प्रकाशन, दिल्ली।
5. सक्सेना, प्रदीप; तिलिस्मी साहित्य का साम्राज्यवाद चरित्र, शिल्पायन, दिल्ली।

BA (Prog.) Hindi
Semester V : GE
प्रवासी हिंदी साहित्य

Course title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course (If any)
		Lecture	Tutorial	Practical / Practice		
GE प्रवासी हिंदी साहित्य	4	3	1	0	12th Pass	—

पाठ्यक्रम के उद्देश्य (Course Objectives):

- विद्यार्थियों को प्रवासी भारतीयों द्वारा लिखे जा रहे हिंदी साहित्य से परिचित कराना।
- विविध प्रवासी साहित्यिक अभिव्यक्तियों की समझ विकसित कराना।
- हिंदी साहित्य के वैश्विक स्वरूप एवं उपस्थिति से परिचित कराना।

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

- विद्यार्थी प्रवासी साहित्य के इतिहास एवं उसके विकास की परंपरा से परिचित हो सकेंगे।
- प्रवासी साहित्य के माध्यम से प्रवासी जीवन संदर्भों को समझ सकेंगे।
- प्रवासी साहित्य की अवधारणा एवं उससे जुड़े विषयों को जान सकेंगे।

इकाई 1 : प्रवासी साहित्य का परिचय (12 घंटे)

- प्रवासी साहित्य की अवधारणा एवं स्वरूप
- प्रवासी हिंदी साहित्य लेखन का इतिहास
- प्रवासी हिंदी साहित्य लेखन की प्रवृत्तियां

इकाई 2 : प्रवासी कविताएं (12 घंटे)

- बदलाव – सुधा ओम ढींगरा
- अहंकार – अनीता वर्मा
- अपनी राह से – पुष्पिता अवस्थी
- क्या मैं परदेसी हूं – कमला प्रसाद मिश्र

इकाई 3 : प्रवासी कहानियां **(12 घंटे)**

- कब्र का मुनाफा – तेजेंद्र शर्मा
- श्यामली जीजी – रेखा राजवंशी
- थोड़ी देर और – शैलजा सक्सेना

इकाई 4 : प्रवासी उपन्यास **(9 घंटे)**

- लाल पसीना – अभिमन्यु अनत

सहायक ग्रंथों की सूची:

1. गोयनका, डॉ. कमल किशोर; हिंदी का प्रवासी साहित्य, अमित प्रकाशन, गाजियाबाद, उत्तर प्रदेश।
2. गोयनका, डॉ. कमल किशोर (प्रधान संपादक); प्रवासी साहित्य : जोहान्सबर्ग से आगे, विदेश मंत्रालय, भारत सरकार, नई दिल्ली।
3. आर्य एवं नावरिया, सुषमा एवं अजय (संपादक); प्रवासी हिंदी कहानी : एक अंतर्यात्रा, शिल्पायन प्रकाशन, दिल्ली।
4. पांडेय एवं पांडेय, डॉ. नूतन एवं डॉ. दीपक, प्रवासी साहित्य (विश्व के हिंदी साहित्यकारों से संवाद) खंड 1 एवं 2, स्वराज प्रकाशन, नई दिल्ली।
5. सक्सेना, उषा राजे; ब्रिटेन में हिंदी, मेधा बुक्स, दिल्ली।
6. जोशी, रामशरण (संपादक); भारतीय डायस्पोरा : विविध आयाम
7. Dubey, Ajay (ed.), 2003, *Indian Diaspora: Global Identity*. New Delhi: Kalin Publications.

DEPARTMENT OF HINDI

BA (Hons.) Hindi

Semester VI : DSC-16

हिंदी भाषा : स्वरूप, संरचना एवं इतिहास

Course title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
DSC – 16 हिंदी भाषा : स्वरूप, संरचना एवं इतिहास	4	3	1	0	Class 12th pass with Hindi	—

पाठ्यक्रम का उद्देश्य (Course Objective):

- हिंदी भाषा के उद्भव और विकास से परिचित कराना।
- हिंदी की विभिन्न बोलियों का ज्ञान प्रदान करना।
- हिंदी की भाषिक संरचना से परिचित कराना।

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

- हिंदी भाषा के ऐतिहासिक क्रम से परिचित होंगे।
- हिंदी की विभिन्न बोलियों का ज्ञान प्राप्त होगा।
- हिंदी की व्याकरणिक संरचना की समझ विकसित होगी।

इकाई 1 : हिंदी भाषा का उद्भव और विकास (9 घंटे)

- भारोपीय भाषा परिवार एवं आर्य भाषाएं
- आधुनिक भारतीय आर्य भाषाएं और हिंदी
- हिंदी भाषा की विकास यात्रा

इकाई 2 : हिंदी भाषा का स्वरूप (12 घंटे)

- बोली और भाषा
- हिंदी की बोलियां
- हिंदी का भौगोलिक क्षेत्र : स्थानीय, राष्ट्रीय और अंतरराष्ट्रीय

इकाई 3 : हिंदी भाषा की विविध भूमिकाएं (12 घंटे)

- संपर्क भाषा
- राष्ट्रभाषा
- राजभाषा
- ज्ञान-विज्ञान की माध्यम भाषा के रूप में हिंदी

इकाई 4 : हिंदी भाषा का नवीन स्वरूप (12 घंटे)

- प्रिंट मीडिया की भाषा
- इलेक्ट्रोनिक मीडिया की भाषा
- सोशल मीडिया की भाषा
- सिनेमा की भाषा

सहायक ग्रंथों की सूची:

1. तिवारी, डॉ. भोलानाथ; हिंदी भाषा की संरचना, रेख्ता प्रकाशन, दिल्ली।
2. श्रीवास्तव, रविंद्रनाथ; हिंदी भाषा : संरचना के विविध आयाम, राधाकृष्ण प्रकाशन, दिल्ली।
3. शर्मा, देवेंद्रनाथ; भाषा विज्ञान की भूमिका, वाणी प्रकाशन, दिल्ली।
4. टंडन, डॉ. प्रेम नारायण; भाषा अध्ययन के आधार, हिंदी साहित्य भंडार, लखनऊ।
5. तिवारी, डॉ. उदय नारायण; हिंदी भाषा उद्गम और विकास।
6. शर्मा, विकास; भूमंडलीकरण के दौर में हिंदी की विविध भूमिकाएं, नटराज प्रकाशन, दिल्ली।

BA (Hons.) Hindi
Semester VI : DSC-17
अस्मितामूलक हिंदी साहित्य
(दलित विमर्श, स्त्री विमर्श एवं आदिवासी विमर्श)

Course title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
DSC – 17 अस्मितमूलक हिंदी साहित्य (दलित विमर्श, स्त्री विमर्श एवं आदिवासी विमर्श)	4	3	1	0	Class 12th pass with Hindi	—

पाठ्यक्रम का उद्देश्य (Course Objective):

- अस्मिता का सैद्धांतिक और व्यावहारिक ज्ञान प्रदान करना।
- प्रमुख रचनाओं के अध्ययन के माध्यम से संवेदनशील बनाना।

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

- अस्मिता मूलक विमर्श की सैद्धांतिकी से परिचित होंगे।
- विभिन्न अस्मिताओं से संदर्भित सामाजिक परिवेश को समझ सकेंगे।
- अस्मितामूलक साहित्य के अध्ययन से संवेदनशील बनेंगे।

इकाई 1 : विमर्शों की सामाजिकी (9 घंटे)

- दलित विमर्श: अवधारणा एवं स्वरूप विकास
- स्त्री विमर्श: भारतीय एवं पाश्चात्य चिंतन
- आदिवासी विमर्श: अवधारणा एवं स्वरूप विकास

इकाई 2 : विमर्शमूलक कथा-साहित्य (12 घंटे)

- ओमप्रकाश बाल्मीकि – पच्चीस चौका डेढ़ सौ
- मन्नू भण्डारी – यही सच है
- एलिस एक्का – धरती लहलहायेगी... झालो नाचेगी... गाएगी

इकाई 3 : विमर्शमूलक कविता (12 घंटे)

- दलित कविता : माताप्रसाद – सोनवा का पिंजरा
- आदिवासी कविता : निर्मला पुतुल – कहां हो तुम माया ('नगाड़े की तरह बजते हैं शब्द' से)
- स्त्री कविता : नीलेश रघुवंशी – पानदान

इकाई 4 : विमर्शमूलक गद्य विधाएं **(12 घंटे)**

- महादेवी वर्मा – स्त्री के अर्थ-स्वातंत्र्य का प्रश्न
- डॉ. तुलसीराम – मुर्दहिया (अंतिम 50 पृष्ठ)
- सीता रत्नमाला – जंगल से आगे (पृष्ठ 57-70)

सहायक ग्रंथों की सूची:

1. अंबेडकर वांगमय (भाग-1), डॉ. अंबेडकर प्रतिष्ठान, नई दिल्ली।
2. वाल्मिकी, ओमप्रकाश; दलित साहित्य का सौंदर्यशास्त्र, राधाकृष्ण प्रकाशन, नई दिल्ली।
3. गुप्ता, रमणिका; आदिवासी अस्मिता का संकट, सामयिक प्रकाशन, नई दिल्ली।
4. टेटे, वंदना; आदिवासी दर्शन और साहित्य, नोशन प्रेस, दिल्ली।
5. नेगी, डॉ. स्नेहलता; आदिवासी समाज और साहित्य, अनुज्ञा प्रकाशन, दिल्ली।
6. मीणा, गंगा सहाय; आदिवासी चिंतन की भूमिका।
7. नेगी, डॉ. स्नेहलता; आदिवासी साहित्य का स्त्री पाठ, विकल्प प्रकाशन, दिल्ली।
8. खेतान, प्रभा; उपनिवेष में स्त्री, राजकमल प्रकाशन, नई दिल्ली।
9. बोउआर, सीमोन द; स्त्री उपेक्षिता, हिंद पॉकेट बुक्स, नई दिल्ली।
10. वर्मा, महादेवी; श्रृंखला की कड़ियां, राधाकृष्ण प्रकाशन, दिल्ली।
11. देसाई एवं ठक्कर, मीरा एवं उषा (धूसिया, डॉ. सुभी, अनुवादक); भारतीय समाज में महिलाएं
12. सिंह, सुधा; ज्ञान का स्त्रीवादी पाठ, ग्रंथ शिल्पी, दिल्ली।
13. सेठी, रेखा; स्त्री कविता: पक्ष और परिप्रेक्ष्य, राजकमल प्रकाशन, दिल्ली।
14. मालिक, प्रो. कुसुमलता; अंतिम जन तक, दोआबा प्रकाशन, दिल्ली।
15. बेचैन, डॉ. श्यौराज सिंह; मूकनायक के सौ साल और अस्मिता संघर्ष के सवाल, एकेडमिक पब्लिकेशन, दिल्ली।

BA (Hons.) Hindi
Semester VI : DSC-18
कथेतर गद्य साहित्य

Course title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
DSC – 18 कथेतर गद्य साहित्य	4	3	1	0	Class 12th pass with Hindi	—

पाठ्यक्रम का उद्देश्य (Course Objective):

- कथेतर गद्य साहित्य से परिचित कराना।
- गद्य साहित्य के अंतर्गत कथेतर गद्य साहित्य की स्थिति को समझाना।
- कथेतर गद्य साहित्य की विभिन्न विधाओं के महत्त्व से परिचित कराना।

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

- विद्यार्थियों में कथेतर गद्य साहित्य के अध्ययन के प्रति रुचि विकसित होगी।
- कथेतर गद्य साहित्य की विविध विधाओं के स्वरूप से परिचित होंगे।
- कथेतर गद्य साहित्य के लेखन की दिशा में प्रवृत्त हो सकेंगे।

इकाई 1 : कथेतर गद्य साहित्य का परिचय **(9 घंटे)**

- कथेतर गद्य साहित्य की परिभाषा और स्वरूप
- कथेतर गद्य साहित्य : उद्भव और विकास
- कथेतर गद्य साहित्य एवं कथा साहित्य का अंतर्संबंध

इकाई 2 : कथेतर गद्य साहित्य के प्रमुख प्रकार **(12 घंटे)**

- जीवनी, डायरी
- संस्मरण, रेखाचित्र
- रिपोर्ताज, पत्र-साहित्य

इकाई 3 : कथेतर गद्य साहित्य : पाठ-परक अध्ययन – 1 **(12 घंटे)**

- आवारा मसीहा (छात्र संस्करण के प्रारंभिक 100 पृष्ठ) (जीवनी) – विष्णु प्रभाकर

- दद्दा – मैथिलीशरण गुप्त, पथ के साथी (संस्मरण) – महादेवी वर्मा
- स्मृतिलेखा (रेखाचित्र) – अज्ञेय

इकाई 4 : **कथेतर गद्य साहित्य : पाठ-परक अध्ययन** – **2** **(12 घंटे)**

- अकेला मेला (डायरी) – रमेशचंद्र शाह
- बिदापत-नाच (रिपोर्ताज) – फणीश्वरनाथ रेणु
- निराला के पत्र (पत्र-साहित्य) – निराला रचनावली (खंड 8)

सहायक ग्रंथों की सूची:

1. नगेंद्र एवं हरदयाल, डॉ. एवं डॉ. (संपादक); हिंदी साहित्य का इतिहास, मयूर पेपर बैक्स, नोएडा।
2. तिवारी, डॉ. रामचंद्र; हिंदी का गद्य साहित्य, विश्वविद्यालय प्रकाशन, वाराणसी।
3. सिंह, डॉ. बच्चन; आधुनिक हिंदी आलोचना के बीज शब्द, वाणी प्रकाशन, दिल्ली।
4. सिंह, डॉ. बच्चन; आधुनिक हिंदी साहित्य का इतिहास, लोकभारती प्रकाशन, इलाहाबाद।
5. चतुर्वेदी, डॉ. राम स्वरूप; गद्य की सत्ता, मैकमिलन प्रकाशन, दिल्ली।
6. वाजपेयी, नंददुलारे; नया साहित्य – नए प्रश्न, विद्या मंदिर प्रकाशन, वाराणसी।
7. शर्मा, डॉ. रामविलास; निराला की साहित्य साधना, राजकमल प्रकाशन, दिल्ली।
8. शर्मा, नलिन विलोचन (संपादक); हिंदी गद्य की प्रवृत्तियाँ, राजकमल प्रकाशन, दिल्ली।

BA (Hons.) Hindi

Semester VI : DSE

हिंदी भाषा का व्यावहारिक व्याकरण

Course title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
DSE हिंदी भषा का व्यावहारिक व्याकरण	4	3	1	0	Class 12th pass with Hindi	—

पाठ्यक्रम का उद्देश्य (Course Objective):

- भाषा के स्वरूप और महत्त्व का परिचय कराना।
- भाषा के व्याकरणिक रूप का परिचय देना।
- हिंदी भाषा के विकारी रूपों की रचना को सिखाना।

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

- भाषा और व्याकरण के संबंध का परिचय प्राप्त होगा।
- हिंदी की ध्वनि व्यवस्था का परिचय प्राप्त होगा।
- हिंदी की वाक्य रचना, अर्थ रचना का परिचय प्राप्त होगा।

इकाई 1 : भाषा और व्याकरण **(9 घंटे)**

- भाषा की परिभाषा और विशेषताएं
- व्याकरण की परिभाषा और महत्त्व
- भाषा और व्याकरण का अंतःसंबंध
- हिंदी की ध्वनियों का वर्गीकरण: स्वर, व्यंजन और मात्राएं

इकाई 2 : शब्द एवं पद विचार **(12 घंटे)**

- शब्द की परिभाषा और उसके भेद : रचना एवं स्रोत के आधार पर
- शब्द-निर्माण : उपसर्ग, प्रत्यय, संधि, समास
- विकारी शब्दों की रूप-रचना : संज्ञा, सर्वनाम, विशेषण, क्रिया

इकाई 3: वाक्य-विचार **(12 घंटे)**

- वाक्य की परिभाषा और उसके अंग
- वाक्य के भेद : रचना एवं अर्थ के आधार पर
- वाक्य संरचना : पदक्रम, अन्विति और विराम-चिह्न

इकाई 4: अर्थ-विचार **(12 घंटे)**

- अर्थ की अवधारणा, शब्द-अर्थ संबंध
- अर्थ बोध के साधन
- अर्थ परिवर्तन के कारण और दिशाएं

सहायक ग्रंथों की सूची:

1. वर्मा, धीरेंद्र; हिंदी भाषा का इतिहास : हिंदुस्तानी एकेडमी, प्रयागराज।
2. पांडेय, डॉ. राजबलि; भारतीय पुरालिपि : लोकभारती प्रकाशन, प्रयागराज।
3. शुक्ल, डॉ. हनुमान प्रसाद; हिंदी भाषा : पहचान से प्रतिष्ठा तक, लोकभारती प्रकाशन, प्रयागराज।
4. श्रीवास्तव, रवींद्रनाथ; हिंदी भाषा : संरचना के विविध आयाम, राजकमल प्रकाशन, दिल्ली।
5. गुरू, कामताप्रसाद; हिंदी व्याकरण, साहित्यसरोवर पब्लिकेशन, आगरा।
6. प्रसाद, डॉ. वासुदेव नंदन; आधुनिक हिंदी व्याकरण और रचना, भारती भवन, मेरठ।
7. वाजपेयी, किशोरीदास; हिंदी शब्दानुशासन, नागरी प्रचारिणी सभा, काशी।
8. तिवारी, भोलानाथ; हिंदी भाषा की संरचना, साहित्य सहकार, दिल्ली।
9. तिवारी, भोलानाथ; हिंदी भाषा की आर्थी संरचना, साहित्य सहकार, दिल्ली।
10. तिवारी, भोलानाथ; भाषा विज्ञान, किताब महल, दिल्ली।

BA (Hons.) Hindi
Semester VI : DSE
भाषा दक्षता और तकनीक

Course title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
DSE भाषा दक्षता और तकनीक	4	3	1	0	Class 12th pass with Hindi	—

पाठ्यक्रम का उद्देश्य (Course Objective):

- भाषा दक्षता के महत्त्व, प्रयोग विस्तार, शैली, भाषिक संस्कृति और भाषिक कौशलों की समझ विकसित करना।
- तकनीक के साथ भाषा के संबंध की समझ विकसित करना।

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

- भाषा के शुद्ध उच्चारण, रचनात्मक लेखन, समीक्षा आदि पहलुओं को सीख सकेंगे।
- भाषा और तकनीक के सह-संबंध के माध्यम से भाषा के व्यावहारिक रूप को जान सकेंगे।

इकाई 1 : भाषा दक्षता का स्वरूप एवं महत्त्व (12 घंटे)

- भाषा दक्षता : तात्पर्य और महत्त्व
- भाषा दक्षता : श्रवण एवं वाचन
- भाषा दक्षता : पठन और लेखन

इकाई 2 : भाषा व्यवहार एवं प्रक्रिया (12 घंटे)

- भाषा व्यवहार : भाषा प्रयोग एवं शैली का महत्त्व
- भाषा को प्रभावित करने वाले कारक : आयु, वर्ग, लिंग, व्यवसाय, शिक्षा और संस्कृति
- भाषा दक्षता में श्रवण, उच्चारण, शुद्ध पठन और रचनात्मक लेखन की प्रक्रिया

इकाई 3 : भाषा दक्षता और तकनीक (12 घंटे)

- भाषा दक्षता में यूनिकोड का महत्त्व
- गूगल वॉयस सर्च और हिंदी दक्षता
- डिजिटल हिंदी और तकनीक का सह-संबंध

इकाई 4 : भाषा दक्षता : व्यावहारिक पक्ष ((9 घंटे)

- वाचन : भाषण, समूह चर्चा, वार्तालाप, किसी साहित्यिक कृति का पाठ
- लेखन : संक्षेपण,पल्लवन, समीक्षा, रिपोर्ट

संदर्भ ग्रंथों की सूची:

1. श्रीवास्तव, रवींद्रनाथ, सृजनात्मक साहित्य, राधाकृष्ण प्रकाशन, दिल्ली।
2. सिंह, दिलीप; भाषा,साहित्य और संस्कृति शिक्षण, वाणी प्रकाशन, दिल्ली।
3. सिंह, सावित्री; हिंदी शिक्षण, गया प्रसाद एंड संस, आगरा।
4. प्रकाश, डॉ. ओम; व्यावहारिक हिंदी शुद्ध प्रयोग, राजपाल एंड संस, दिल्ली।
5. मुकुल, डॉ. मंजु; संप्रेषण : चिंतन और दक्षता, शिवालिक प्रकाशन, दिल्ली।
6. शर्मा, शिवमूर्ति; हिंदी भाषा शिक्षण, नीलकमल प्रकाशन, हैदराबाद।
7. स्वयं अधिगम सामग्री, हिंदी शिक्षण प्रविधि, इग्नू, नई दिल्ली।
8. कुमार, निरंजन; माध्यमिक विद्यालयों मे हिंदी शिक्षण, राजस्थान ग्रंथ अकादमी, जयपुर।
9. श्रीवास्तव, रवींद्रनाथ; हिंदी भाषा का समाजशास्त्र, राधाकृष्ण प्रकाशन, दिल्ली।
10. गुप्ता, मनोरमा; भाषा शिक्षण : सिद्धांत और प्रविधि, केंद्रीय हिंदी संस्थान, आगरा।

BA (Hons.) Hindi
Semester VI : DSE
गांधी-दर्शन और हिंदी साहित्य

Course title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
DSE गांधी-दर्शन और हिंदी साहित्य	4	3	1	0	Class 12th pass with Hindi	—

पाठ्यक्रम के उद्देश्य (Course Objectives):

- विद्यार्थियों को महात्मा गांधी के शब्द और कर्म से परिचित कराना।
- महात्मा गांधी के चिंतन और हिंदी साहित्य के अंतर्संबंधों का ज्ञान देना।
- स्वाधीनता आंदोलन के मूल्यों से परिचित कराना।

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

- विद्यार्थी महात्मा गांधी के जीवन-दर्शन से परिचित होंगे।
- विद्यार्थी राष्ट्रीय आंदोलन में गांधी जी के नेतृत्व और उनकी लोकप्रियता के कारकों को समझेंगे।
- विद्यार्थी गांधी-दर्शन और हिंदी साहित्य के संबंधों को जानेंगे।

इकाई 1 : गांधी-दर्शन : अवधारणा और महत्त्व (12 घंटे)

- गांधी-दर्शन की अवधारणा
- गांधी-दर्शन का विकास
- सत्य और अहिंसा
- विश्व पटल पर गांधी-दर्शन

इकाई 2 : भारतीय साहित्यिक-सांस्कृतिक परंपरा और महात्मा गांधी (9 घंटे)

- गांधी का गीता भाष्य
- गांधी और रामराज
- गांधी और सनातन संस्कृति

इकाई 3 : हिंदी कविता में गांधी ((12 घंटे)

- जय गांधी – सोहनलाल द्विवेदी
- महात्मा जी के प्रति – सुमित्रानंदन पंत
- बापू (चार प्रारंभिक अंश) – रामधारी सिंह दिनकर
- तुम कागज पर लिखते हो – भवानी प्रसाद मिश्र

इकाई 4 : हिंदी गद्य में गांधी (12 घंटे)

- पहला गिरमिटिया (अंतिम 50 पृष्ठ) – गिरिराज किशोर
- दांडी यात्रा (पृष्ठ संख्या 30-67) – मधुकर उपाध्याय
- भारत का स्वराज और महात्मा गांधी (उपसंहार) – बनवारी
- रचनाकार गांधी – विद्यानिवास मिश्र

सहायक ग्रंथों की सूची:

1. गांधी, महात्मा; हिंद स्वराज, नवजीवन प्रकाशन, अहमदाबाद।
2. गांधी, महात्मा; सत्य के प्रयोग अथवा आत्मकथा, नवजीवन प्रकाशन, अहमदाबाद।
3. कृपलानी, कृष्ण; गांधी एक जीवनी, राष्ट्रीय पुस्तक न्यास, नई दिल्ली।
4. कृपलानी, जे. बी.; गांधी : जीवन और दर्शन, प्रकाशन विभाग, नई दिल्ली।
5. गिरि, राजीव रंजन; गांधीवाद रहे न रहे, अनन्य प्रकाशन, नई दिल्ली।
6. आचार्य, नंद किशोर; अहिंसा की संस्कृति, राजकलम प्रकाशन, नयी दिल्ली।
7. धर्माधिकारी, दादा; गांधी की दृष्टि, सर्व सेवा संघ प्रकाशन, वाराणसी।
8. मिश्र, श्री प्रकाश; अहिंसा का उत्तर आधुनिक परिप्रेक्ष्य, प्राकृत भारती अकादमी, जयपुर।
9. मिश्र, दयानिधि; गांधी और हिंदी सृजन संदर्भ, सस्ता साहित्य मंडल, नयी दिल्ली।
10. पारेख, भीखू; गांधी, ऑक्सफोर्ड यूनिवर्सिटी प्रेस, नयी दिल्ली।

BA (Hons.) Hindi
Semester VI : DSE
शोध प्रविधि

Course title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
DSE शोध-प्रविधि	4	3	1	0	Class 12th pass with Hindi	—

पाठ्यक्रम के उद्देश्य (Course Objectives):

- साहित्यिक शोध से परिचित कराना।
- शोध के नए आयामों का ज्ञान देना।

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

- विद्यार्थियों में साहित्यिक शोध के ज्ञान का विस्तार होगा।
- शोध के प्रतिमानों से परिचित होकर शोध-कार्य कर सकेंगे।

इकाई 1 : शोध की अवधारणा **(9 घंटे)**

- शोध : अवधारणा और स्वरूप
- शोध का क्षेत्र एवं शोध-प्रविधि
- शोध की प्रक्रिया

इकाई 2 : प्रमुख शोध पद्धतियाँ **(12 घंटे)**

- भाषा-वैज्ञानिक, समाजशास्त्रीय, मनोवैज्ञानिक, तुलनात्मक शोध, पाठालोचन

इकाई 3 : शोध प्रक्रिया के विविध चरण **(12 घंटे)**

- विषय चयन
- सामग्री संकलन
- तथ्य विश्लेषण
- रूपरेखा निर्माण
- शोध प्रबंध लेखन

इकाई 4 : शोध संबंधित अन्य पक्ष **(12 घंटे)**

- शोध संबंधी समस्याएं
- एक अच्छे शोधार्थी के गुण
- शोध के साधन और उपकरण
- संदर्भ सूची निर्माण

सहायक ग्रंथों की सूची:

1. सिन्हा, सावित्री; अनुसंधान का स्वरूप।
2. सिन्हा एवं स्नातक, सावित्री एवं विजयेन्द्र; अनुसंधान की प्रक्रिया।
3. शर्मा, विनयमोहन; शोध प्रविधि, नैशनल पब्लिशिंग हाउस, नई दिल्ली।
4. सिंह, सरनाम; शोध प्रक्रिया एवं विवरणिका, आत्माराम एंड संस, नई दिल्ली।
5. अरोड़ा, हरीश; शोध प्रविधि और प्रक्रिया, के. के. पब्लिकेशन्स, नई दिल्ली।
6. त्रिपाठी, विनायक; शोध प्रविधि : अवधारणा एवं तकनीक, ओमेगा पब्लिकेशन, नई दिल्ली।
7. पांडेय एवं पांडेय, गणेश एवं अरुण; राधा पब्लिकेशन, नई दिल्ली।
8. गणेशन, एस. एन.; अनुसंधान प्रविधि : सिद्धांत और प्रक्रिया, लोकभारती प्रकाशन, प्रयागराज।

BA (Hons.) Hindi
Semester VI : GE
भारतीय ज्ञान परंपरा

Course title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
GE भारतीय ज्ञान परंपरा	4	3	1	0	Class 12th pass with Hindi	—

पाठ्यक्रम का उद्देश्य (Course Objectives):

- भारतीय ज्ञान परंपरा का परिचय देना।
- भारत की गौरवशाली परंपरा का ज्ञान प्रदान करना।

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

- विद्यार्थी भारत की गौरवशाली परंपरा से परिचित होंगे।
- विद्यार्थी भारत की प्राचीन और आधुनिक शिक्षा पद्धति का विश्लेषण कर सकेंगे।
- विद्यार्थी भारतीय ज्ञान परंपरा के सूत्रों द्वारा आधुनिक जीवन की समस्याओं से मुक्ति का समाधान प्राप्त कर सकेंगे।

इकाई 1 : भारतीय ज्ञान परंपरा की अवधारणा **(12 घंटे)**

- भारतीय ज्ञान परंपरा : अवधारणा और आयाम
- भारतीय ज्ञान परंपरा का संक्षिप्त इतिहास
- भारतीय ज्ञान परंपरा की प्रासंगिकता

इकाई 2 : ज्ञान के रचनात्मक स्रोत : संक्षिप्त परिचय **(12 घंटे)**

- वेद और उपनिषद
- पुराण और इतिहास
- धर्म-शास्त्र और स्मृति ग्रंथ
- रामायण, महाभारत और रामचरित मानस

इकाई 3 : भारतीय ज्ञान परंपरा के प्राचीन अनुशासन **(9 घंटे)**

- प्राचीन शिक्षा पद्धति और विद्यापीठ

- पर्यावरणीय चेतना और भारतीय ज्ञान परंपरा
- प्राचीन योग पद्धति और आधुनिक जीवन शैली

इकाई 4 : भारतीय ज्ञान परंपरा के नव्य-दर्शन **(12 घंटे)**

- नव्य-दर्शन और आधुनिक भारत
- स्वामी विवेकानंद नव्य-वेदांत दर्शन और भारत
- पंडित दीनदयाल उपाध्याय का एकात्म मानव दर्शन
- श्री अरविंद का जीवन दर्शन और भारत-बोध

सहायक ग्रंथों की सूची:

- शुक्ल, रजनीश कुमार; भारतीय ज्ञान परंपरा और विचारक, प्रभात प्रकाशन, नई दिल्ली।
- अग्रवाल, वासुदेवशरण; कला और संस्कृति, प्रभात प्रकाशन, नई दिल्ली।
- द्विवेदी, संजय; भारतबोध का नया समय, यश प्रकाशन, नई दिल्ली।
- Mahadevan, Bhat and Pavana, B., Vinayak Rajat, Nagendra R.N.; Introduction to Indian Knowledge System : Concept and Applications, PHI Learning Private Limited
- गुप्ता, बजरंग लाल; पं. दीनदयाल उपाध्याय : व्यक्ति, विचार और समसामयिकता, किताब वाले, दिल्ली।
- दीक्षित, हृदयनारायण; पं. दीनदयाल उपाध्याय : द्रष्टा दृष्टि और दर्शन, अनामिका प्रकाशन, प्रयागराज।
- शेखर, हिमांशु; स्वामी विवेकानंद के सपनों का भारत, डायमंड पब्लिक बुक्स, नई दिल्ली।
- चौहान, लालबहादुर सिंह; योगसाधक महर्षि अरविंद, दृष्टि प्रकाशन, नई दिल्ली।

BA (Hons.) Hindi
Semester VI : GE

न्यू मीडिया

Course title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
GE न्यू मीडिया	4	3	1	0	Class 12th pass with Hindi	—

पाठ्यक्रम के उद्देश्य (Course Objectives):

VII. विद्यार्थियों को नए मीडिया माध्यमों से परिचित कराना।

VIII. नए मीडिया में प्रयुक्त तकनीक का ज्ञान देना।

IX. जनसंचार माध्यम और तकनीक से जुड़ी आचार संहिताओं का बोध कराना।

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

VIII. विद्यार्थी नए मीडिया की पहुँच और प्रसार क्षमता से परिचित होंगे।

IX. विद्यार्थी नए मीडिया माध्यमों में प्रयुक्त तकनीकी पक्ष को जान पायेंगे।

X. फेक न्यूज से बचने के लिए इंटरनेट से जुड़ी आचार संहिताओं का सही ज्ञान होगा।

इकाई 1 : न्यू मीडिया : स्वरूप एवं अवधारणा **(12 घंटे)**

- न्यू मीडिया : परिभाषा और स्वरूप
- न्यू मीडिया के विविध रूप
- न्यू मीडिया का प्रसार एवं महत्त्व
- न्यू मीडिया बनाम पारंपरिक मीडिया

इकाई 2 : न्यू मीडिया : नए रूप **(12 घंटे)**

- न्यू मीडिया तथा सूचना तकनीक
- नेटवर्किंग साइट्स तथा एप्स
- सोशल मीडिया
- डिजिटल आर्काइव

इकाई 3 : न्यू मीडिया: तकनीकी पक्ष **(9 घंटे)**

- इंटरनेट पत्रकारिता
- ब्लॉग
- वेबसाइट

- पॉडकास्ट

इकाई 4 : न्यू मीडिया: कानूनी पक्ष **(12 घंटे)**

- पाइरेसी तथा कॉपीराइट अधिकार
- न्यू मीडिया माध्यमों का प्रयोग और नागरिक की ज़िम्मेदारी
- साइबर कानून : सामान्य परिचय
- कृत्रिम मेधा

सहायक ग्रंथों की सूची:

1. कुमार, सुरेश; इंटरनेट पत्रकारिता, तक्षशिला प्रकाशन, दिल्ली।
2. द्विवेदी, संजय (संपादक); सोशल नेटवर्किंग : नए समय का संवाद, यश पब्लिकेशन, नई दिल्ली।
3. चतुर्वेदी, जगदीश्वर; वर्चुअल रियलिटी, साइबर संस्कृति और इंटरनेट, एकेडेमिक पब्लिकेशन, दिल्ली।
4. लता, डॉ. स्नेह; सोशल मीडिया और ब्लॉग लेखन, नटराज प्रकाशन, दिल्ली।
5. अरोड़ा, डॉ. हरीश (संपादक); पत्रकारिता का बदलता स्वरूप और न्यू मीडिया, साहित्य संचय प्रकाशन, दिल्ली।
6. हरिमोहन, प्रो.; नए माध्यम, नई हिंदी, तक्षशिला प्रकाशन, दिल्ली।
7. सुमन, स्वर्ण; सोशल मीडिया : संपर्क क्रांति का कल आज और कल, हार्पर, दिल्ली।
8. नंदा, वर्तिका; मीडिया और बाज़ार, सामयिक प्रकाशन, दिल्ली।

BA (Prog.) with Hindi as MAJOR
Semester VI : DSC-11
साहित्य चिंतन

Course Code & title	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
DSC-11 साहित्य चिंतन	4	3	1	0	12th pass	—

पाठ्यक्रम के उद्देश्य (Course Objectives):

- विद्यार्थियों को विभिन्न विधाओं से परिचित कराना।
- साहित्य के अवधारणात्मक पदों का समुचित ज्ञान कराना।

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

- विद्यार्थी साहित्य की आधुनिक विधाओं से परिचित हो सकेंगे।
- साहित्य के अवधारणामूलक पदावली का ज्ञान प्राप्त हो सकेगा।

इकाई 1 : काव्य की प्रमुख आधुनिक विधाओं का सामान्य परिचय (12 घंटे)

- आख्यानपरक कविता
- प्रगीतात्मक कविता
- मुक्तछंद, छंदमुक्त कविता
- नवगीत

इकाई 2 : गद्य की प्रमुख आधुनिक विधाओं का सामान्य परिचय (12 घंटे)

- उपन्यास
- कहानी
- नाटक
- निबंध
- अन्य गद्य विधाएँ – आत्मकथा, जीवनी, संस्मरण, रेखाचित्र, यात्रा वृतांत, डायरी।

इकाई 3 : आलोचना के अवधारणात्मक पदों का सामान्य परिचय – 1 **(12 घंटे)**

- लोकमंगल की अवधारणा
- पुनर्जागरण
- आधुनिकता और आधुनिकता बोध
- अनुभूति की प्रामाणिकता

इकाई 4 : आलोचना के अवधारणात्मक पदों का सामान्य परिचय – 2 **(9 घंटे)**

- बिंब, प्रतीक और मिथक
- विसंगति
- विडंबना

सहायक ग्रंथों की सूची:

1. अमरनाथ, डॉ.; हिंदी आलोचना की पारिभाषिक शब्दावली, राजकमल प्रकाशन, नई दिल्ली।
2. सिंह, डॉ. बच्चन; हिंदी आलोचना के बीज शब्द, वाणी प्रकाशन, नई दिल्ली।
3. सिंह, डॉ. नामवर; कविता के नए प्रतिमान, राजकमल प्रकाशन, नई दिल्ली।
4. शुक्ल, आचार्य रामचंद्र; चिंतामणि (भाग 1 एवं 2), लोकभारती प्रकाशन, प्रयागराज।
5. वर्मा, धीरेंद्र; हिंदी साहित्य कोश (भाग-1, पारिभाषिक शब्दावली), ज्ञानमंडल लिमिटेड, वाराणसी।
6. अवस्थी, मोहन; आधुनिक हिंदी काव्य-शिल्प, हिंदी परिषद प्रकाशन, प्रयागराज।

BA (Prog.) with Hindi as MAJOR
Semester VI : DSC-12
विमर्श की सामाजिकी और हिंदी साहित्य

Course Code & title	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
DSC-12 विमर्श की सामाजिकी और हिंदी साहित्य	4	3	1	0	12th pass	—

पाठ्यक्रम का उद्देश्य (Course Objective):

- विद्यार्थियों को अस्मिता का सैद्धांतिक और व्यावहारिक ज्ञान प्रदान करना।
- प्रमुख रचनाओं के अध्ययन के माध्यम से संवेदनशील बनाना।

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

- विद्यार्थी अस्मितामूलक विमर्श की सैद्धांतिकी से परिचित होंगे।
- विभिन्न अस्मिताओं से संदर्भित सामाजिक परिवेश को समझ सकेंगे।
- अस्मितामूलक साहित्य के अध्ययन से संवेदनशील बनेंगे।

इकाई 1 : विमर्शों की सामाजिकी **(12 घंटे)**

- विमर्श की सामाजिक अवधारणा एवं स्वरूप विकास
- दलित विमर्श, स्त्री विमर्श एवं आदिवासी विमर्श : अवधारणा एवं स्वरूप विकास

इकाई 2 : विमर्शमूलक कहानी **(12 घंटे)**

- अपना गाँव – मोहनदास नैमिशराय
- स्त्री सुबोधिनी – मन्नू भण्डारी
- बाबा, कौए और काला धुआँ – रणेंद्र

इकाई 3 : विमर्शमूलक कविता **(12 घंटे)**

- दलित कविता : अछूत की शिकायत – हीरा डोम, ठाकुर का कुआं – ओम प्रकाश बाल्मीकी
- आदिवासी कविता : गुलदस्ते की जगह बेसलरी की बोतलें, उतनी दूर मत ब्याहना बाबा! – निर्मला पुतुल
- स्त्री कविता : पानदान, हंडा – नीलेश रघुवंशी

इकाई 4 : विमर्शमूलक गद्य विधाएं **(9 घंटे)**

- घर-बाहर – महादेवी वर्मा
- पिजरे की मैना – चंद्रकिरण सोनरेक्सा (अंतिम 50 पृष्ठ)
- सीता रत्नमाला – जंगल से आगे (पृष्ठ 57-70)

सहायक ग्रंथों की सूची:

16. अंबेडकर वांगमय (भाग-1), डॉ. अंबेडकर प्रतिष्ठान, नई दिल्ली।
17. वाल्मिकी, ओमप्रकाश; दलित साहित्य का सौंदर्यशास्त्र, राधाकृष्ण प्रकाशन, नई दिल्ली।
18. गुप्ता, रमणिका; आदिवासी अस्मिता का संकट, सामयिक प्रकाशन, नई दिल्ली।
19. टेटे, वंदना; आदिवासी दर्शन और साहित्य, नोशन प्रेस, दिल्ली।
20. नेगी, डॉ. स्नेहलता; आदिवासी समाज और साहित्य, अनुज्ञा प्रकाशन, दिल्ली।
21. मीणा, गंगा सहाय; आदिवासी चिंतन की भूमिका।
22. नेगी, डॉ. स्नेहलता; आदिवासी साहित्य का स्त्री पाठ, विकल्प प्रकाशन, दिल्ली।
23. खेतान, प्रभा; उपनिवेष में स्त्री, राजकमल प्रकाशन, नई दिल्ली।
24. बोउआर, सीमोन द; स्त्री उपेक्षिता, हिंद पॉकेट बुक्स, नई दिल्ली।
25. वर्मा, महादेवी; श्रृंखला की कड़ियां, राधाकृष्ण प्रकाशन, दिल्ली।
26. देसाई एवं ठक्कर, मीरा एवं उषा (धूसिया, डॉ. सुभी, अनुवादक); भारतीय समाज में महिलाएं
27. सिंह, सुधा; ज्ञान का स्त्रीवादी पाठ, ग्रंथ शिल्पी, दिल्ली।
28. सेठी, रेखा; स्त्री कविता: पक्ष और परिप्रेक्ष्य, राजकमल प्रकाशन, दिल्ली।
29. मालिक, प्रो. कुसुमलता; अंतिम जन तक, दोआबा प्रकाशन, दिल्ली।
30. बेचैन, डॉ. श्यौराज सिंह; मूकनायक के सौ साल और अस्मिता संघर्ष के सवाल, एकेडमिक पब्लिकेशन, दिल्ली।

BA (Prog.) With Hindi as NON-MAJOR
Semester VI : DSC-11
साहित्य चिंतन

Course Code & title	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
DSC-11 साहित्य चिंतन	4	3	1	0	12th pass	—

पाठ्यक्रम के उद्देश्य (Course Objectives):

- विद्यार्थियों को विभिन्न विधाओं से परिचित कराना।
- साहित्य के अवधारणात्मक पदों का समुचित ज्ञान कराना।

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

- विद्यार्थी साहित्य की आधुनिक विधाओं से परिचित हो सकेंगे।
- साहित्य के अवधारणामूलक पदावली का ज्ञान प्राप्त हो सकेगा।

इकाई 1 : काव्य की प्रमुख आधुनिक विधाओं का सामान्य परिचय (12 घंटे)

- आख्यानपरक कविता
- प्रगीतात्मक कविता
- मुक्तछंद, छंदमुक्त कविता
- नवगीत

इकाई 2 : गद्य की प्रमुख आधुनिक विधाओं का सामान्य परिचय (12 घंटे)

- उपन्यास
- कहानी
- नाटक
- निबंध
- अन्य गद्य विधाएँ – आत्मकथा, जीवनी, संस्मरण, रेखाचित्र, यात्रा वृतांत, डायरी।

इकाई 3 : आलोचना के अवधारणात्मक पदों का सामान्य परिचय – 1 **(12 घंटे)**

- लोकमंगल की अवधारणा
- पुनर्जागरण
- आधुनिकता और आधुनिकता बोध
- अनुभूति की प्रामाणिकता

इकाई 4 : आलोचना के अवधारणात्मक पदों का सामान्य परिचय – 2 **(9 घंटे)**

- बिंब, प्रतीक और मिथक
- विसंगति
- विडंबना

सहायक ग्रंथों की सूची:

1. अमरनाथ, डॉ.; हिंदी आलोचना की पारिभाषिक शब्दावली, राजकमल प्रकाशन, नई दिल्ली।
2. सिंह, डॉ. बच्चन; हिंदी आलोचना के बीज शब्द, वाणी प्रकाशन, नई दिल्ली।
3. सिंह, डॉ. नामवर; कविता के नए प्रतिमान, राजकमल प्रकाशन, नई दिल्ली।
4. शुक्ल, आचार्य रामचंद्र; चिंतामणि (भाग 1 एवं 2), लोकभारती प्रकाशन, प्रयागराज।
5. वर्मा, धीरेंद्र; हिंदी साहित्य कोश (भाग-1, पारिभाषिक शब्दावली), ज्ञानमंडल लिमिटेड, वाराणसी।
6. अवस्थी, मोहन; आधुनिक हिंदी काव्य-शिल्प, हिंदी परिषद प्रकाशन, प्रयागराज।

BA (Prog.) Hindi
Semester VI : DSE
हिंदी नवजागरण

Course Code & Tittle	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE हिंदी नवजागरण	**4**	**3**	**1**	**0**	**12th pass**	**—**

पाठ्यक्रम के उद्देश्य (Course Objectives):

- विद्यार्थियों को नवजागरण संबंधी विभिन्न मान्यताओं से परिचित कराना।
- नवजागरणकालीन साहित्य का जानकारी देना।
- नवजागरण संबंधी चिंतन परंपरा से जुड़े पक्षों का बोध कराना।

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

- विद्यार्थी नवजागरण संबंधी धारणाओं से परिचित होंगे।
- नवजागरणकालीन साहित्यिक गतिविधियों को जानेंगे।
- नवजागरणकालीन चिंतकों के सरोकारों और गतिविधियों से परिचित होंगे।

इकाई 1 : पुनर्जागरण : अवधारणा एवं महत्त्व **(12 घंटे)**

- पुनरुत्थान एवं पुनर्जागरण की अवधारणा
- पुनर्जागरण व समाज सुधार
- पुनर्जागरण व राष्ट्रीय स्वाधीनता आंदोलन
- हिंदी पुनर्जागरण की पृष्ठभूमि

इकाई 2 : नवजागरणकालीन प्रमुख संस्थाएं **(12 घंटे)**

- ब्रह्म समाज
- प्रार्थना समाज
- आर्य समाज
- रामकृष्ण मिशन

इकाई 3 : नवजागरण और हिंदी पत्रकारिता **(12 घंटे)**

- कविवचन सुधा – भारतेंदु हरिश्चंद्र
- आनंद कादंबिनी – बदरी नारायण चौधरी 'प्रेमघन'
- हिंदी प्रदीप – बालकृष्ण भट्ट
- सरस्वती – महावीर प्रसाद द्विवेदी

इकाई 4 : हिंदी नवजागरण से संबंधित चयनित पाठ **(9 घंटे)**

- भारतवर्षोन्नति कैसे हो सकती है – भारतेंदु हरिश्चंद्र
- जातीयता के गुण – बालकृष्ण भट्ट
- भारत दुर्दशा – प्रताप नारायण मिश्र
- शिवशंभु के चिट्ठे – बालमुकुंद गुप्त

सहायक ग्रंथों की सूची:

1. द्विवेदी, हजारी प्रसाद; हिंदी साहित्य : उद्भव और विकास, राजकमल प्रकाशन, दिल्ली।
2. भट्ट, बालकृष्ण; निबंध संग्रह, उत्तर प्रदेश हिंदी संस्थान, लखनऊ।
3. शर्मा, रामविलास; भारतेंदु और हिंदी नवजागरण की समस्याएं, राजकमल प्रकाशन, दिल्ली।
4. शर्मा, रामविलास; महावीरप्रसाद द्विवेदी और हिंदी नवजागरण, राजकमल प्रकाशन, दिल्ली।
5. शर्मा, रामविलास शर्मा; परंपरा का मूल्यांकन, राजकमल प्रकाशन, दिल्ली।
6. चौहान, शिवदान सिंह; हिंदी साहित्य का अस्सी बरस, स्वराज प्रकाशन, दिल्ली।
7. मिश्र, कृष्ण बिहारी; हिंदी पत्रकारिता, भारतीय ज्ञानपीठ, दिल्ली।
8. दयानंद, स्वामी; सत्यार्थ प्रकाश, किरण प्रकाशन, दिल्ली।
9. शुक्ल, रामचंद्र; हिंदी साहित्य का इतिहास, वाणी प्रकाशन, दिल्ली।
10. शर्मा, रामविलास; भाषा, साहित्य और संस्कृति, ओरियंट ब्लैक स्वान, दिल्ली।

BA (Prog.) Hindi
Semester VI : DSE
हिंदी स्त्री-लेखन

Course Code & Tittle	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/Practice		
DSE हिंदी स्त्री-लेखन	4	3	1	0	12th pass	—

पाठ्यक्रम के उद्देश्य (Course Objectives):

- विद्यार्थियों को हिंदी स्त्री-लेखन की समृद्ध परंपरा से परिचित कराना।
- हिंदी स्त्री-लेखन विभिन्न पाठों एवं रचनाकारों से परिचित कराना।
- स्त्री संदर्भित सवालों के प्रति आलोचनात्मक दृष्टिकोण विकसित करना।

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

- विद्यार्थी स्त्री-लेखन की गंभीरता को समझेंगें।
- समाज में व्याप्त लैंगिक भेदभाव के प्रति जागरूक बनेगें।
- स्त्री-लेखन से संदर्भित प्रश्नों के प्रति आलोचनात्मक दृष्टिकोण विकसित होगी।

इकाई 1 : हिंदी स्त्री-लेखन : सामान्य परिचय **(12 घंटे)**

- स्त्री-लेखन : अवधारणा और स्वरूप
- हिंदी स्त्री-लेखन का प्रारंभ और विकास

इकाई 2 : आधुनिक हिंदी स्त्री-लेखन : कविता **(9 घंटे)**

- झांसी की रानी – सुभद्रा कुमारी चौहान
- नाम और पता – स्नेहमयी चौधरी
- उतनी दूर मत ब्याहना बाबा! – निर्मला पुतुल

इकाई 3 : आधुनिक हिंदी स्त्री-लेखन : कथा साहित्य **(12 घंटे)**

- दुलाई वाली – राजेंद्र बाला घोष

- स्त्री सुबोधीनी – मन्नू भंडारी
- वापसी – उषा प्रियंवदा
- ना ज़मी अपनी ना फलक अपना – मालती जोशी

इकाई 4 : हिंदी स्त्री-लेखन : अन्य गद्य विधाएं **(12 घंटे)**

- महादेवी वर्मा : जीने की कला
- शिवरानी देवी : प्रेमचंद घर में (अंश – बेटी की शादी)
- कृष्णा सोबती : बुद्ध का कमंडल 'लद्दाख'
- जूते चिढ़ गए हैं : सूर्यबाला

सहायक ग्रंथों की सूची :

1. सदायत, चंदा (संपादक); सुभद्रा कुमारी चौहान की श्रेष्ठ कविताएँ, राष्ट्रीय पुस्तक न्यास, भारत।
2. भंडारी, मन्नू; त्रिशंकु (कहानी संग्रह), राधाकृष्ण प्रकाशन, नई दिल्ली।
3. देवी, शिवरानी; प्रेमचंद घर में, रोशनाई प्रकाशन।
4. वर्मा, महादेवी; श्रृंखला की कड़ियाँ, लोकभारती प्रकाशन, प्रयागराज।
5. जोशी, मालती; ना ज़मी अपनी ना फलक अपना (कहानी संग्रह), साक्षी प्रकाशन, नई दिल्ली।
6. राजे, सुमन; हिंदी साहित्य का आधा इतिहास, भारतीय ज्ञानपीठ, दिल्ली।
7. माधव, नीरजा, हिंदी साहित्य का ओझल नारी इतिहास, सामायिक बुक्स, दिल्ली।
8. मालती, के. एम.; स्त्री विमर्श : भारतीय परिप्रेक्ष्य, वाणी प्रकाशन, दिल्ली।
9. कुमार, राधा; स्त्री संघर्ष का इतिहास, वाणी प्रकाशन, दिल्ली।
10. पांडेय, भवदेव; बंग महिला : नारी मुक्ति का संघर्ष, वाणी प्रकाशन, दिल्ली।

BA (Prog.) Hindi
Semester VI : DSE
भक्ति-आंदोलन और हिंदी साहित्य

Course Code & Tittle	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE भक्ति-आंदोलन और हिंदी साहित्य	4	3	1	0	12th pass	—

पाठ्यक्रम के उद्देश्य (Course Objectives):

- विद्यार्थियों को भक्ति एवं भक्ति आंदोलन के स्वरूप से परिचित कराना।
- भक्ति आंदोलन के उद्भव और विकास संबंधी अवधारणाओं की जानकारी देना।
- भक्ति-आंदोलन संबंधी हिंदी साहित्य की विभिन्न काव्याधाराओं का बोध कराना।

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

- विद्यार्थी भारतीय भक्ति परंपरा और भक्ति-आंदोलन से परिचित होंगे।
- भक्ति-आंदोलन के उद्भव और विकास संबंधी कारण और प्रभावों का सम्यक ज्ञान प्राप्त करेंगे।
- भक्ति-आंदोलन संबंधी हिंदी साहित्य की विविध काव्यधाराओं की समझ विकसित होगी।

इकाई 1 : भक्ति-आंदोलन : उद्भव और विकास **(9 घंटे)**

- भक्ति का स्वरूप
- भक्ति-आंदोलन की पृष्ठभूमि
- भक्ति-आंदोलन उद्भव संबंधी अवधारणाएँ
- भक्ति-आंदोलन की विकास-यात्रा

इकाई 2 : भक्ति-आंदोलन का दार्शनिक पक्ष **(12 घंटे)**

- उपनिषद्
- श्रीमद्भागवत पुराण और भगवद्गीता
- वेदांत दर्शन

- प्रमुख दार्शनिकों का संक्षिप्त परिचय – शंकराचार्य, मध्वाचार्य, रामानुजाचार्य, निम्बार्काचार्य, विष्णु स्वामी, वल्लभाचार्य, रामानंद।

इकाई 3 : भक्ति-आंदोलन और निर्गुण काव्यधारा **(12 घंटे)**

- निर्गुण भक्ति का स्वरूप
- संत काव्य और कबीर (सामाजिक चेतना)
- सूफ़ी काव्य और मलिक मुहम्मद जायसी (प्रेम एवं लोक जीवन)

इकाई 4 : भक्ति-आंदोलन और सगुण काव्यधारा **(12 घंटे)**

- सगुण भक्ति का स्वरूप
- राम भक्तिकाव्य और तुलसीदास (लोकमंगल एवं समन्वय)
- कृष्ण भक्तिकाव्य और सूरदास (वात्सल्य एवं प्रेम)

सहायक ग्रंथों की सूची:

1. शुक्ल, आचार्य रामचंद्र; हिंदी साहित्य का इतिहास, वाणी प्रकाशन, दिल्ली।
2. द्विवेदी, आचार्य हजारी प्रसाद; हिंदी साहित्य की भूमिका, राजकमल प्रकाशन, दिल्ली।
3. द्विवेदी, आचार्य हजारी प्रसाद; हिंदी साहित्य : उद्भव और विकास, राजकमल प्रकाशन, दिल्ली।
4. चतुर्वेदी, डॉ. रामस्वरूप; हिंदी साहित्य और संवेदना का विकास, लोकभारती प्रकाशन, प्रयागराज।
5. नगेंद्र, डॉ. (संपादक); हिंदी साहित्य का इतिहास, मयूर पेपरबैक्स, दिल्ली।
6. सिंह, डॉ. बच्चन; हिंदी साहित्य का दूसरा इतिहास, राधाकृष्ण प्रकाशन, दिल्ली।
7. वर्मा, डॉ. धीरेंद्र (संपादक); हिंदी साहित्य कोश (भाग1 और 2), ज्ञानमंडल, वाराणसी।
8. शर्मा, रामकिशोर (संपादक); कबीर ग्रंथावली, लोकभारती प्रकाशन, प्रयागराज।
9. तुलसीदास, गोस्वामी; दोहावली, गीता प्रेस, गोरखपुर।

BA (Prog.) Hindi
Semester VI : GE
हिंदी बाल साहित्य

Course title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE हिंदी बाल साहित्य	4	3	1	0	12th pass	—

पाठ्यक्रम के उद्देश्य (Course Objectives):

- विद्यार्थियों को बाल साहित्य से परिचित कराना।
- बाल साहित्यकारों से परिचय कराना।
- हिंदी साहित्य में बाल साहित्य की स्थिति का विश्लेषण करना।

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

- विद्यार्थियों में बाल साहित्य के अध्ययन के प्रति रुचि बढ़ेगी।
- बाल साहित्य के लेखन और प्रकाशन की दिशा में काम होगा जिससे बाल साहित्य समृद्ध होगा।
- बाल साहित्य के महत्व को समझ सकेंगे।

इकाई 1 : बाल साहित्य की अवधारणा एवं स्वरूप **(12 घंटे)**

- बाल साहित्य की अवधारणा एवं परिभाषा
- बाल साहित्य की आवश्यकता एवं महत्त्व
- बाल साहित्य लेखन की प्रक्रिया / प्रविधि
- बाल साहित्य के समक्ष चुनौतियाँ

इकाई 2 : प्रमुख बाल कविताएँ / गीत **(12 घंटे)**

- उठो लाल अब आँखें खोलो – अयोध्या सिंह उपाध्याय 'हरिऔध'
- चाँद का कुर्ता – रामधारी सिंह 'दिनकर'
- चंदा मामा आ – द्वारिका प्रसाद माहेश्वरी
- विश्वास – बाल कवि बैरागी

इकाई 3 : प्रमुख बाल कथाएँ **(12 घंटे)**

- अक्ल बड़ी या भैंस – अमृतलाल नागर
- दीप जले शंख बजे – जयप्रकाश भारती
- डाकू का बेटा – हरिकृष्ण देवसरे
- मंजिल – भगवती प्रसाद द्विवेदी

इकाई 4 : बाल पत्रिकाएँ (सामान्य परिचय एवं विशेषताएँ) **(9 घंटे)**

- पराग
- साइकिल
- चंपक
- बालभारती

सहायक ग्रंथों की सूची:

1. देवसरे, हरिकृष्ण (संपादक), भारतीय बाल साहित्य, साहित्य अकादमी, नई दिल्ली।
2. तिवारी, डॉ. सुरेंद्र नाथ; हिंदी बाल साहित्य : परंपरा, विकास एवं मूल्यांकन, कौशल प्रकाशन, दिल्ली।
3. सेवक, निरंकार देव; बालगीत साहित्य : इतिहास और समीक्षा, उत्तर प्रदेश हिंदी संस्थान, लखनऊ।
4. श्रीवास्तव, डॉ. रमाकांत (संपादक); भारतीय बाल साहित्य के विविध आयाम, उत्तर प्रदेश हिंदी संस्थान, लखनऊ।
5. पांडेय, अमिताभ; बाल काव्य के प्रमुख प्रणेता, शिल्पी प्रकाशन, लखनऊ।
6. भारती, जयप्रकाश; बाल पत्रकारिता : स्वर्गयुग की ओर, परमेश्वरी प्रकाशन, दिल्ली।
7. शुक्ल एवं राष्ट्रबंधु, डॉ. त्रिभुवन नाथ एवं डॉ.; भारतीय बाल साहित्य की भूमिका, अमन प्रकाशन, कानपुर।
8. श्रीप्रसाद, डॉ.; हिंदी बाल साहित्य की रूपरेखा, लोकभारती प्रकाशन, इलाहाबाद।
9. मूर्ति, सुधा; श्रेष्ठ बाल कहानियाँ, प्रभात प्रकाशन, दिल्ली।
10. मनु, प्रकाश; हिंदी बाल साहित्य : नई चुनौतियां और संभावनाएँ, कृतिका बुक्स, नई दिल्ली।

BA (Prog.) Hindi
Semester VI : GE
हिंदी साहित्य और भारतीय मूल्य-बोध

Course title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE हिंदी साहित्य और भारतीय मूल्य-बोध	**4**	**3**	**1**	**0**	**12th pass**	**—**

पाठ्यक्रम का उद्देश्य (Course Objectives):

- विद्यार्थियों को भारतीय मूल्य-बोध की परंपरा से परिचित कराना।
- हिंदी साहित्य में निहित सामाजिक, सांस्कृतिक, पारिवारिक, धार्मिक भारतीय मूल्य संपदा से परिचित कराना।
- हिंदी साहित्य में अनुस्यूत भारतीय मूल्यों के महत्त्व को समझाना।

पाठ्यक्रम अध्ययन के परिणाम (Course Learning Outcomes):

- विद्यार्थी प्राचीन भारतीय मूल्यों की जीवंत परंपरा से परिचित हो सकेंगे।
- हिंदी साहित्य में अनुस्यूत भारतीय मूल्य-बोध के स्वरूप की जानकारी प्राप्त कर सकेंगे।
- हिंदी साहित्य की विविध विधाओं में वर्णित भारतीय मूल्यों को आत्मसात कर सकेंगे।

इकाई 1 : भारतीय मूल्य-बोध का स्वरूप (9 घंटे)

- मूल्य-बोध की भारतीय अवधारणा
- सामाजिक मूल्य
- राष्ट्रीय-सांस्कृतिक मूल्य
- पारिवारिक मूल्य

इकाई 2 : हिंदी काव्य और भारतीय मूल्य-बोध (संक्षिप्त परिचय) (12 घंटे)

- 'रामचरित मानस' में उद्घाटित भारतीय सांस्कृतिक मूल्य
  (केवट प्रसंग, भरत मिलाप प्रसंग, राम-लक्ष्मण-परशुराम संवाद प्रसंगों के आधार पर)
- 'भारत भारती' और राष्ट्रीय सांस्कृतिक मूल्य

- 'रश्मिरथी' और भारतीय पारिवारिक और सामाजिक मूल्य

इकाई 3 : हिंदी की प्रमुख कहानियों में वर्णित भारतीय मूल्य **(12 घंटे)**

- आहुति – प्रेमचंद
- हार की जीत – सुदर्शन
- डिप्टी कलक्टरी – अमरकांत

इकाई 4 : हिंदी के प्रमुख निबंधों में वर्णित भारतीय मूल्य **(12 घंटे)**

- आचरण की सभ्यता – सरदार पूर्ण सिंह
- शिक्षा का उद्देश्य – डॉ. संपूर्णानंद
- रहिमन पानी राखिए – विद्यानिवास मिश्र

सहायक ग्रंथों की सूची:

1. भारती, डॉ. धर्मवीर; मानव-मूल्य और साहित्य, भारतीय ज्ञानपीठ।
2. अग्रवाल, वासुदेव शरण; कला और संस्कृति, लोक भारती प्रकाशन, प्रयागराज।
3. अग्रवाल, वासुदेव शरण; भारत की मौलिक एकता, राष्ट्रीय पुस्तक न्यास, भारत।
4. वर्मा, सुरेंद्र; भारतीय जीवन मूल्य, पार्श्वनाथ विद्यापीठ ग्रंथमाला, वाराणसी।
5. गुप्ता, डॉ. बजरंग लाल; भारतीय सांस्कृतिक मूल्य, प्रभात प्रकाशन, दिल्ली।
6. पांडेय, गोविंद चंद्र; मूल्य मीमांसा, राका प्रकाशन, प्रयागराज।
7. राय, गोपाल; हिंदी कहानी का इतिहास, राजकमल प्रकाशन, नई दिल्ली।

SEMESTER - 4

बी.ए.ऑनर्सहिन्दीपत्रकारिताएवंजनसंचार

Category I

(B.A. Honours in Hindi Journalism & Mass Communication)

DSC 10 न्यूमीडिया(4)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title& Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 10 न्यू मीडिया	**4**	**3**	0	**1**	12th Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

1. न्यूमीडियाकीअवधारणाएवंउसकेविभिन्नरूपोंकीजानकारीदेना।
2. इंटरनेटकेविविधप्रयोगोंसेपरिचितकराना।
3. सोशलमीडिया,डिजिटलीकरणकीप्रक्रियाकीजानकारीदेनाऔरभारतीयपरिप्रेक्ष्यमेंडिजिटलमीडिया कीजवाबदेहीकीआवश्यकतासे परिचित कराना।

Learning Outcomes

1. छात्र सोशलमीडियाकेविविधस्वरूपोंऔरउनकेप्रयोगकीजानकारीप्राप्तकरेंगे।
2. न्यूमीडिया लेखन के विविध रूपों में दक्षता प्राप्त करेंगे।
3. व्यवसायिकक्षेत्रमेंउपयोगीप्रशिक्षणमिलेगा।

1.न्यूमीडियाकीविकासयात्रा: 10घंटे

- न्यूमीडिया–अवधारणा और स्वरूप
- इंटरनेटकीविकासयात्रा,इंटरनेटकेविविधप्रयोग
- न्यूमीडियाऔरपारंपरिकमीडियामेंअंतर,सामाजिकपरिवर्तनकेउपकरणकेरूपमेंन्यूमीडियाकीभूमिका

2. न्यूमीडियाकेविविधरूप 10घंटे

- नईसंचारतकनीक औरडिजिटलमीडियाकास्वरूप
- सोशलनेटवर्किंगसाइट्स,फेसबुक,टिविटर,यू-ट्यूब,इंस्टाग्राम
- ओटीटीप्लेटफॉर्म,वेबपोर्टल्स,ऑनलाइनगेमिंग,म्यूजिकस्ट्रीमिंग

3. न्यूमीडियाऔरलेखन : 10घंटे

- न्यूमीडियामेंलेखन –कंटेन्टउत्पादन,वेबसाइटलेखन,पॉडकास्टलेखनडिजिटलविज्ञापन-लेखन,न्यूज़पोर्टल्सलेखन,सोशलमीडियामैनेजमेंट
- न्यूमीडियाऔरभाषाशैली
- ऑनलाइनपत्रकारिता–ऑनलाइनपत्र-पत्रिकाएँ,ऑनलाइनन्यूज़वेबपोर्टल्स,मोबाइलपत्रकारिता,साइबरजर्नलिस्ट

4. न्यूमीडिया प्रभावक्षेत्रऔरआचारसहिंता:15घंटे

- न्यूमीडियाकासामाजिकराजनीतिकआर्थिकप्रभाव
- सोशल मीडिया मैनेजमेंट
- न्यूमीडिया–स्वनियमनऔरआचारसहिंता

प्रायोगिककार्य 30घंटे

- किसीऑनलाइनसमाचारपत्र–पत्रिकाकेलिएलेखयाफ़ीचरलिखना।
- इन्टरनेटकेविविधप्रयोगोंकोदर्शातेहुएपीपीटीनिर्माणकरना।
- न्यूज़पोर्टलकेलिएसमाचारलेखन
- वेबसाइट्सकेलिएकंटेंटलेखन

संदर्भपुस्तकें :

1. भारतमेंइलेक्ट्रोनिकएवंन्यूमीडिया–डॉराकेशरयालसमयसाक्ष्यप्रकाशन
2. न्यूमीडियाऔरबदलताभारत–प्रांजलधर,कृष्णकांत,भारतीयज्ञानपीठदिल्ली
3. इन्टरनेटजर्नलिज़्म साहिलप्रकाशन- विजयकुलश्रेष्ठ -,जयपुर
4. सोशलमीडियासेसाइबरअपराध–शिवराज,एमएचजैदी–आलियालॉएजेंसी,लखनऊ
5. सोशलमीडियाऔरसामाजिकसरोकार–कल्याणप्रसादवर्मा - साहिलप्रकाशन,जयपुर
6. ऑनलाइनमीडिया–सुरेशकुमार–पियरसनप्रकाशन,भारत

DSC 11 टेलीविजन (4)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 11 टेलीविजन पत्रकारिता	**4**	**3**		**1**	12th Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

1. टेलीविज़न सम्बन्धी तकनीक की जानकारी देना।
2. टेलीविज़न कार्यक्रमों की स्क्रिप्ट लेखन का कौशल विकसित करना।
3. टेलीविज़न समाचारों के संकलन और स्रोतों की जानकारी प्रदान करना।

Course Learning Outcomes

1. विद्यार्थीटेलीविज़नतकनीककीजानकारीप्राप्तकरेंगे।
2. टेलीविजन कार्यक्रम निर्माण संबंधी दक्षता प्राप्त करेंगे।
3. स्क्रिप्टलेखनमेंदक्षताप्राप्तकरसकेंगे।
4. मीडिया संस्थानों में रोज़गारकेअवसरप्राप्तकरसकेंगे।

1. जनसंचार माध्यम के रूप में टेलीविजन 10घंटे

- भारत में टेलीविजन की विकास यात्रा (दूरदर्शन)
- निजी टेलीविजन चैनलों का प्रारंभ एवं विकास
- टेलीविजन माध्यम : विभिन्न प्रवृत्तियां(ट्रेंड्स) एवं सामाजिक प्रभाव

2. टेलीविजन कार्यक्रम निर्माण एवं तकनीक 10घंटे

- टेलीविजन कार्यक्रम के विभिन्न प्रकार – समाचार कार्यक्रम, समाचार आधारित कार्यक्रम,

साक्षात्कार, वृत्तचित्र/डॉक्यूमेंट्री, लघु फ़िल्म तथा टेलीफिल्म, धारावाहिक, टॉक/डिबेट शो, रियलिटी शो

- टेलीविजन कार्यक्रम निर्माण के विभिन्न चरण – प्री-प्रोडक्शन, प्रोडक्शन, पोस्ट प्रोडक्शन
- टेलीविजन कार्यक्रम निर्माण – तकनीकी पक्ष, कैमरा संचालन, शॉट्स, एंगल, मूवमेंट्स,विभिन्न सॉफ्टवेयर्स

3. टेलीविजन समाचार : संकलन एवं लेखन 10घंटे

- टेलीविजन समाचार संकलन के विभिन्न चरण – समाचार स्रोत, फील्ड रिपोर्टिंग, लाइव रिपोर्टिंग
- टेलीविजन समाचार लेखन : एंकर रीड, पैकेज, वॉइस-ओवर, पीस टू कैमरा, वॉक-थ्रू, टिकर, स्क्रॉल, ब्रेकिंगन्यूज़
- टेलीविजन रिपोर्टिंग के आधारभूत सिद्धांत : अपराध, राजनीतिक, संसदीय मामले, खेल, एवं आर्थिक रिपोर्टिंग आदि

4. टेलीविजन समाचार चैनल – संगठन एवं कार्यपद्धति 15घंटे

- समाचार चैनल का संगठन एवं संरचना : संपादकीय, विज्ञापन, प्रशासन, न्यूज़रूम, तकनीकी, इंजीनियर, सुरक्षा
- टेलीविजन स्टूडियो संरचना : स्टूडियो फ़्लोर, एंकर, न्यूज़रूम, प्रोडक्शन कंट्रोल रूम, सेंट्रल कंट्रोलरूम, ओबी वेन, लाइट, कैमरा कंट्रोल यूनिट, साउंड, मेकअप रूम, आदि
- समाचार न्यूज़रूम की संरचना : इनपुट, आउटपुट, असाइनमेंट डेस्क : कार्य एवं ज़िम्मेदारी, गेस्ट कॉर्डिनेशन

प्रायोगिक कार्य :30घंटे

- किन्हींदोराष्ट्रीयसमाचारचैनलोंकेसमाचारोंकातुलनात्मकअध्ययन ,तथ्यों) (भाषाएवंप्रस्तुतिकरणकीदृष्टिसे
- किसीसांस्कृतिकविषयपरटेलीविज़नधारावाहिककेलिए मिनटकादृश्यनिर्माण 5
- टेलीविज़नकेलिए मिनटकासमाचारबुलेटिनतैयारकरना 5
- टेलीविज़नस्टूडियोकाभ्रमणएवंकार्यरिपोर्टकीप्रस्तुति

सहायक पुस्तकें :

1. टेलीविज़न प्रोडक्शन – प्रो० देवव्रत सिंह,माखनलाल चतुर्वेदी राष्ट्रीय पत्रकारिता एवं संचार विश्वविद्यालय (भोपाल)

2. स्मार्ट रिपोर्टर – शैलेश कुमारअल्फा मीडिया ग्रुप, बनारस हिंदू विश्वविद्यालय
3. पत्रकारिता (जो मैंने देखा, जाना-समझा)संजय कुमार सिंह, प्रभात प्रकाशन, दिल्ली
4. भारत में प्रिंट, इलेक्ट्रॉनिक और न्यू मीडिया – संदीप कुलश्रेष्ठ, प्रभात प्रकाशन, दिल्ली
5. पत्रकारिता के विविध रूप – डॉ० रामचंद्र तिवारी, आलेख प्रकाशन
6. मीडिया की भाषा लीला – रविकांत, लोकचेतना प्रकाशन
7. समाचार संपादन – कमल दीक्षित और महेश दर्पण, माखनलाल चतुर्वेदी राष्ट्रीय पत्रकारिता एवं संचार विश्वविद्यालय (भोपाल)
8. भारतीय टेलीविज़न का इतिहास – डॉ० परमवीर सिंह- एड्यूक्रिएशन पब्लिशिंग

DSC 12विकास पत्रकारिता (4)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 12 विकास पत्रकारिता	4	3		1	12th Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

Course Objective

1. समावेशी विकास से अवगत कराना
2. छात्रों को विकास के मुद्दों से परिचित कराना।
3. विकास और मीडिया के अंतर्संबंधों की समझ प्रदान करना
4. ग्रामीण और क्षेत्रीय पत्रकारिता में रोजगार के अवसरोंकी जानकारी देना।

Course Learning Outcomes

1. छात्र समावेशी विकास से अवगत होंगे।
2. छात्रों में विकास और आपदा सम्बंधित समाचार लेखन का कौशल विकसित होगा।
3. विकास और मीडिया के अंतर्संबंधों की समझ विकसित होगी।
4. छात्रों को ग्रामीण और क्षेत्रीय पत्रकारिता में रोजगार के अवसर मिलेंगे।

1. विकासपत्रकारिताएकपरिचय10घंटे

- विकास की अवधारणा: अर्थ, स्वरूप और महत्व
- विकास के सिद्धांत और मॉडल
- मैकब्राइट कमीशन और मीडिया की भुमिका

2. ग्रामीणविकासऔरक्षेत्रीयपत्रकारिता10घंटे

- भारत का ग्रामीण परिदृश्य और क्षेत्रीय पत्रकारिता
- ग्रामीण विकास, सरकारी योजनाएं और स्वयं सेवी संगठनों की भूमिका

- पंचायती राज व्यवस्था व ग्रामीण मुद्दों की रिपोर्टिंग और चुनौतियां

3. स्वास्थ्य, शिक्षा और पर्यावरण क्षेत्र की पत्रकारिता10घंटे

- स्वास्थ्य और शिक्षा के क्षेत्र की पत्रकारिता और चुनौतियां
- पर्यावरण, प्राकृतिक संसाधन, आपदा प्रबंधन और मीडिया
- असंगठित क्षेत्र की पत्रकारिता, समस्याएँ और चुनौतियाँ

4.ग्रामीण प्रेस की आवश्यकता और चुनौतियां15घंटे

- ग्रामीण और स्थानीय समाचार पत्र - पत्रिकाओं की स्थिति और समस्याएं
- सामुदायिक रेडियो, ग्रामीण मुद्दें(वंचित समुदाय, ग़रीबी कुपोषण, आदि)
- मुख्यधारा की मीडिया में क्षेत्रीय विकास संबंधी कवरेज

प्रायोगिककार्य30घंटे

- विकास संबंधित मुद्दों पर रिपोर्ट लेखन।
- किसी एक समाचार पत्र में प्रकाशित एक सप्ताह की ग्रामीण विकास संबंधी कवरेज का अध्ययन एवं उसकी रिपोर्टिंग।
- विकास संबंधित सरकारी नीतियों का अध्ययन करना एवं समीक्षात्मक लेख तैयार करना।
- पर्यावरण पर फील्ड विजिट और साक्षात्का करना।
- मुख्यधारा की मीडिया एवं क्षेत्रीय मीडिया में वंचित समुदाय के मुद्दों पर समूह चर्चा
- ग्रामीण एवं विकास के मुद्दों से जुड़ी समस्याओं पर डाक्यूमेंट्री अथवा पीपीटी तैयार करना।

सहायक पुस्तकें :

1. भारतीयअर्थव्यवस्था, ईश्वरढींगरा, सुल्तानएंडसंस
2. मासकम्युनिकेशनइनजर्नलऑफनेशनलडेवलपमेंट, विश्वविधालयप्रकाशनवाराणसी
3. मासमीडियानेशनलडवलपमेंट,विल्बरश्रेम, स्टेनफोरयूनिवर्सिटीप्रकाशन
4. ग्रामीणविकासकीचुनौतियां, राजेंद्रआगाल, अक्सप्रकाशन,भोपाल
5. पत्रकारिताएवंविकाससंचार, अनिलकुमारउपाध्याय, भारतीप्रकाशन, वाराणसीपत्रकारिता एवं विकास संचार, प्रो अनिल कुमार उपाध्याय, भारती प्रकाशन, वाराणसी
6. कृषि एवं ग्रामीण विकास पत्रकारिता, डॉ अर्जुन तिवारी, संजय बुक सेंटर, वाराणसी
7. ग्रामीण पत्रकारिता चुनौतियां और संभावनाएं, सुशील भारती, वाणी प्रकाशन
8. आपदा प्रबंधन, शिव गोपाल मिश्र, प्रभात प्रकाशन

Pool of DSEs

DSE 2 नागरिक पत्रकारिता(क)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 2 नागरिक पत्रकारिता (क)	**4**	**3**		**1**	12th Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

1. नागरिक पत्रकारिता के स्वरूप एवं मुद्दों को समझाना।
2. नागरिक हितों के संरक्षण में पत्रकारिता की उपयोगिता से अवगत कराना।
3. नागरिक पत्रकारिता की नैतिकता का ज्ञान कराना।

Course Learning Outcomes

1. छात्र नागरिक पत्रकारिता के महत्व से अवगत होंगे।
2. लोकतंत्र, नागरिक हित एवं पत्रकारिता के आपसी संबंधों की जानकारी प्राप्त होगी।
3. नागरिक पत्रकारिता की नैतिकता के मुद्दों को जान पायेंगे।

1.नागरिक पत्रकारिता : परिचय एवं सिद्धान्त **10घंटे**

- नागरिक पत्रकारिता : अर्थ और महत्त्व
- नागरिक पत्रकारिता के तत्व और सिद्धांत
- नागरिक पत्रकारिता एवं सामाजिक सक्रियता

2.नागरिक पत्रकारिता –प्लेटफ़ार्म एवं टूल 10घंटे

- नागरिक पत्रकारिता के विविध उपकरण
- नागरिक पत्रकारिता की चुनौतियाँ
- नागरिक पत्रकारिता के मुद्दें

3.नागरिक पत्रकारिता एवं नैतिकता 10घंटे

- नागरिक पत्रकारिता की आचार संहिता की आवश्यकता
- नैतिकता एवं नागरिक पत्रकारिता
- प्रमुख नागरिक आंदोलन एवं नागरिक पत्रकारिता

4.नागरिक पत्रकारिता एवं सोशल मीडिया 15घंटे

- सोशल मीडिया : क्षेत्रीय मुद्दों की अभिव्यक्ति
- नागरिक पत्रकारिता में फ़ेक न्यूज़ के ख़तरे
- नागरिक पत्रकारिता की संभावनाएँ

प्रायोगिक कार्य : 30घंटे

- नागरिक हितों से जुड़ी स्टोरी की विषयवस्तु का तुलनात्मक विश्लेषण करना।
- जन आंदोलन में नागरिक पत्रकारिता की भूमिका का विश्लेषण करना।
- सोशल मीडिया में आने वाले नागरिक मुद्दों पर रिपोर्ट तैयार करना।
- सोशल मीडिया ट्रेंड में जनहितों के मुद्दों का लोगों पर प्रभाव का विश्लेषण करना।

सहायक पुस्तकें :

1. नागरिक पत्रकारिता समस्या एवं समाधान, राकेश नेम एवं प्रियंका वाधवा, अरिहंत प्रकाशन, दिल्ली
2. नागरिक पत्रकारिता, पवन मलिक, हिन्दी बुक सेंटर
3. ग्रामीण क्षेत्र की पत्रकारिता, डॉ रेणुका नय्यर, हरियाणा साहित्य अकादमी
4. आर टी आई पत्रकारिता (खबर, पड़ताल, असर) श्यामलाल यादव,
5. एथिक्स इन सिटीजन जर्नलिज्म, के डी मिश्र एवं एस कृष्णा स्वामी, इंटरनेशनल जर्नल ऑफ़ सोशल साइंस

DSE 2जीवनशैली पत्रकारिता (ख)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 2 जीवनशैली पत्रकारिता (ख)	4	3		1	12th Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

1. जीवनशैलीकेविविधआयामोंसेपरिचितकराना।
2. बदलतेवैश्विकदौरमेंभारतीयजीवनशैलीकामहत्त्व बताना।
3. स्वस्थजीवनशैलीऔरपत्रकारिताकेपरिपेक्षयमेंपत्रकारिताकीभूमिकासेअवगतकराना।
4. जीवनशैलीपत्रकारितामेंकौशलविकसितकरना।

Course Learning Outcomes

1. छात्रजीवनशैलीकेविविधआयामोंसेपरिचितहोंगे
2. बदलतेवैश्विकदौरमेंभारतीयजीवनशैलीकेप्रतिछात्रोंकारुझानबढ़ेगा
3. स्वस्थजीवनशैलीकेपरिप्रेक्ष्यमेंपत्रकारिताकीभूमिकासेअवगतहोंगे।
4. जीवनशैलीपत्रकारिता में रोजगारकी संभावनाओं से परिचितहोंगे।

1.जीवनशैली :अवधारणाएवंआयाम 10घंटे

- जीवनशैली :सामान्यपरिचय औरमहत्त्व
- पुरातनऔरआधुनिकजीवनशैलीमेंअंतर
- आधुनिकजीवनशैली : भारतीय समाज औरसंस्कृति पर प्रभाव

2.जीवन शैली पत्रकारिता : लक्ष्य एवं विविध रूप

- जीवन शैली पत्रकारिता का लक्ष्य
- जीवन शैली पत्रकारिता के विविध रूप ,फैशन पत्रकारिता ,पर्यटन पत्रकारिता ,खाद्य पत्रकारिता ,उपभोक्ता पत्रकारिता आदि
- विज्ञापन और जीवन शैली का अंतरसंबंध

3. जनसंचार के विविध माध्यम और जीवन शैली पत्रकारिता 10 घंटे

- प्रिंटमाध्यमोंमेंजीवन-शैलीपत्रकारिता का स्वरूप
- टेलेविज़नमाध्यममें जीवन शैली पत्रकारिता
- डीजिटल मीडिया में जीवन शैली पत्रकारिता

.4जीवनशैलीपत्रकारिताकेसामाजिकसांस्कृतिकप्रभाव 15घंटे

- ग्लोबलमीडियाकाभारतीयजीवन-शैलीएवंसंस्कृतिपर
- जीवन-शैलीपत्रकारिताकीचुनौतियाँएवंप्रबंधन
- जीवन-शैलीपत्रकारिता की प्रासंगिकताऔरसंभावनाएं

व्यावहारिककार्य30घंटे

- प्रिन्ट मीडिया के लिए जीवनशैलीआधारितसामग्री का निर्माण
- जीवनशैलीसंबंधीविज्ञापनोंएवंफिल्मोंकाअध्ययनऔरसामग्री निर्माण
- पत्र-पत्रिकाओंमेंप्रकाशितजीवनशैलीसम्बन्धीसामग्रीपरसामूहिकचर्चा
- पर्यावरण, फैशन, पर्यटन ,ग्लैमर, धर्मसेजुड़ेप्रमुखव्यक्तित्वसेभेंटवार्ताएवंसाक्षात्कार

सहायक पुस्तकें :

1. पत्रकारिता की विभिन्न विधाएँ, निशांत सिंह, राधा पब्लिकेशन्स, दिल्ली
2. भारतीय जीवन मूल्य, कामिनी कामायनी, ज्ञान गंगा, दिल्ली
3. आध्यात्म और जीवन शैली, पवित्र कुमार शर्मा, शिलालेख प्रकाशन, दिल्ली
4. जीवन-शैली स्वस्थ जीवन का आधार – डॉ फ़णि भूषण दास, सस्ता साहित्य मण्डल प्रकाशन, दिल्ली

DSE 2पाड्कास्ट निर्माण (ग)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 2पॉडकास्ट निर्माण (ग)	4	3		1	12th Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

1. रेडियो संचार के नए रूपों से परिचित कराना।
2. पॉडकास्ट के सिद्धांत और उसकी तकनीक से अवगत कराना।
3. पॉडकास्ट के विविध रूपों की जानकारी देना।

Course Learning Outcomes

1. विद्यार्थी पॉडकास्ट की तकनीक, और निर्माण प्रक्रिया सीखेंगे।
2. विविधऑडियो-वीडियो पॉडकास्ट बनाकर पॉडकास्ट प्लेटफ़ॉर्म पर अपलोड करना जानेगें।
3. पॉडकास्ट के क्षेत्र में रोज़गारपरक संभावनाओं से परिचित होंगे।

1.पॉडकास्ट : एक परिचय 10घंटे

- पॉडकास्ट: परिभाषा,स्वरूप औरविकास
- पॉडकास्टकेक्षेत्रऔरप्रकार
- हिन्दीऔरविदेशीपॉडकास्टप्लेटफार्मकापरिचय

2.हिन्दीपॉडकास्टकासामाजिक,आर्थिकऔरसांस्कृतिकपरिदृश्य10घंटे

- समाचार, सूचना, शिक्षाऔरमनोरंजनऔरपॉडकास्ट
- साहित्यिकसांस्कृतिकसंचारऔरपॉडकास्ट
- जीवनशैलीकेविविधरूपऔरपॉडकास्ट

3. हिन्दीपॉडकास्टनिर्माणप्रक्रिया10घंटे

- पॉडकास्ट :योजनाऔरविषयकाचुनाव

- पॉडकास्ट: इंट्रोऔर आउटरोतथाबैकग्राउंडम्युजिक
- पॉडकास्ट : भाषा एवं उपकरण

4. पॉडकास्ट पोस्ट प्रोडक्शन 15घंटे

- पॉडकास्ट :रिकॉर्डिंग, पॉडकास्टहोस्टिंग/अपलोडिंग
- पॉडकास्ट:प्लेटफॉर्मऔरउनकीआचारसंहिता,
- पॉडकास्टविज्ञापन,हिन्दीपॉडकास्टमोनिटाइजेशन,

व्यावहारिक कार्य 30घंटे

- किसीसामाजिकविषयपरऑडियोपॉडकास्टकीपटकथातैयारकरना ।
- किसीसमसामयिकमुद्देपरपॉडकास्टबनाना ।
- महत्वपूर्णसमाचारपरवीडियोपॉडकास्टबनाना ।
- समाचारबुलेटिनकावीडियोपॉडकास्टतैयारकरना

Essential/recommended readings

1. मीडिया व्यवसाय कोहली वी और खांडेकर ,सेज प्रकाशन ,दिल्ली,2013
2. पी फॉर पॉडकास्ट ,भार्गवी स्वामी,द राइट ऑर्डर प्रकाशन,बैंगलुरु,2021
3. पॉडकास्ट कैसे शुरू करें,वर्मा नीतीश,2021

GE (क)पटकथा लेखन(4)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE (क) पटकथालेखन	4	3		1	12th Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- विधाकेरूपमेंपटकथाकीजानकारीप्रदानकरना।
- पटकथालेखनकाव्यावहारिकज्ञानप्रदानकरना।
- पटकथालेखनकेअनेकआयामोंऔरशब्दावलियोंकीजानकारीदेना।
- पटकथालेखनकीतकनीकऔरव्यावसायिक संभावनाओंसेपरिचितकराना ।

Course Learning Outcomes

- विद्यार्थी पटकथा और सामान्य कथा के अंतर को स्पष्ट कर सकेंगे।
- विधा के रूप में पटकथा से संपूर्णता में परिचित होंगे।
- पटकथा लेखन में दक्षता हासिल करेंगे।
- पटकथा के विविध आयामों की व्यावसायिक संभावनाओं का उपयोग करना सीख सकेंगे।

1. पटकथापरिचय10घंटे

- विधाकेरूपमेंपटकथा, पटकथाऔरकहानी, नाटकऔरपटकथा
- पटकथाकेतत्व :प्लॉट, घटनाएं, दृश्य, द्वंद, स्वरूपएवंगुण
- पटकथाकेप्रकार :फीचरफिल्म, वृत्तचित्र, धारावाहिक, वीडियोगेम, एनिमेशन

2. पटकथालेखन: सिद्धांतएवंव्यवहार 10घंटे

- पटकथालेखनकेविविधसिद्धांत: तीनअंकीयसंरचना, नायकीययात्रा, सिडफ़ील्डप्रतिमान, सीक्वेंसअप्रोच, असंबद्धकथा (नॉनलीनियरकथानक)
- पटकथालेखनकीतकनीकऔरप्रक्रिया :कथा-पटकथा, दृश्ययोजना, चरित्रनिर्माण, कथाविभाजन (प्रस्तावना-संघर्ष-समाधान)

- पटकथाकीभाषा-शैली: शब्द, मौन, ध्वनि, आइकॉन, सिंबल, मेटाफ़र

3.साहित्य, संस्कृतिऔरतकनीक **10घंटे**

- साहित्यिककृतियाँएवंपटकथालेखन: चयनकाआधार, रूपान्तरण, मौलिकताऔरप्रयोग
- पौराणिकआख्यानऔरपटकथालेखन: कल्पनाकेलिएअवकाश, लोकमान्यता, कलात्मकछूटकासवाल, विचारधाराओंकाप्रभाव
- पटकथालेखनमेंकैमरा, प्रकाशऔरध्वनि, वीएफएक्सतकनीक, प्रमुखसॉफ्टवेयर

4.पटकथालेखन: शब्दावलीऔरउपादान **15घंटे**

- पटकथालेखन: शॉट-सीन-सीक्वेंस, दर्शकोंकीसमझ, दृश्यसंबंधीनिर्देश, दृश्यात्मकता, संवाद, नाटकीयता, ऑडियो-विज़ुअलइमेजिनेशन, उपादान: (मोंताज़, सीरीजऑफ़शॉट्स)
- हिंदीकेप्रमुखपटकथालेखकएवंसाहित्यिककृतियोंकाफिल्मांतरण
- पटकथालेखनकीचुनौतियां: व्यावसायिकता, दबावसमूह, आचारसंहिता

प्रायोगिककार्य : **30घंटे**

- हिंदीकेप्रमुखपटकथाकारोंऔरउनकेद्वारालिखीपटकथाओंकाअध्ययनकररिपोर्टप्रस्तुति
- हिंदीउपन्यासअथवाकिसीहिंदीकहानीपरबनीफिल्मकीपटकथापरसमूहचर्चा
- पटकथाकेव्यावहारिकलेखनपरपरियोजनाकार्य
- किसीपटकथालेखककासाक्षात्कार
- किसीसाहित्यिककृतिकापटकथामेंरूपांतरण

सहायकपुस्तकें :

1. भारतीयसिनेसिद्धांत, अनुपमओझा, राधाकृष्णप्रकाशन, नईदिल्ली
2. पटकथालेखन :एकपरिचय, मनोहरश्यामजोशी, राजकमलप्रकाशन,नईदिल्ली
3. कथा-पटकथा, मन्नूभंडारी, वाणीप्रकाशन, नईदिल्ली
4. व्यावहारिकनिर्देशिका - पटकथालेखन, असग़रवजाहत, राजकमलप्रकाशन,नईदिल्ली
5. पटकथातथासंवादलेखन, विपुलकुमार, श्रीनटराजप्रकाशन
6. टेलीविजनलेखन, असग़रवजाहत, प्रभातरंजन, राधाकृष्णप्रकाशन,नईदिल्ली
7. पटकथाकैसेलिखें, राजेंद्रपांडे, वाणीप्रकाशन, नईदिल्ली
8. सिनेमाकेबारेमें (जावेदअख़्तरसेनसरीनमुन्नीकबीरकीबातचीत), अनुवाद - असग़रवजाहत, राजकमलप्रकाशन, नईदिल्ली
9. कथा-पटकथासंवाद, हूबनाथ, अनभैप्रकाशन, मुंबई

GE (ख) संचार क्रांति और ग्लोबल मीडिया (4)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE (ख) संचार क्रांति और ग्लोबल मीडिया	4	3		1	12th Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- अंतरराष्ट्रीय मीडिया के कार्योंऔरभूमिका से अवगत कराना।
- सूचना की शक्ति का विस्तृत परिचय देना।
- ग्लोबलमीडिया की अवधारणा से परिचित कराना।
- प्रमुख ग्लोबल समाचार पत्र और इलेक्ट्रॉनिक मीडिया प्लेटफॉर्म से अवगत कराना

Course Learning Outcomes

- छात्रोंको अंतरराष्ट्रीय मीडिया के कार्यों और महत्व की जानकारी मिलेगी।
- छात्र ग्लोबल मीडिया की अवधारणा से परिचित होंगे।
- छात्रों में ग्लोबल मीडिया को विश्लेषित और मूल्यांकन करने का कौशल विकसित होगा।
- छात्रों में तीसरी दुनिया के देशों के पाठकों/दर्शकों/श्रोताओं को समझने की आलोचनात्मक सोच विकसित होगी।

1. **सूचनाक्रांतिऔरवैश्विकपरिदृश्य10घंटे**
    - डिजिटल क्रांतिऔरसूचनासमाज
    - अंतरराष्ट्रीयस्तरपरसूचनाप्रवाह
    - मीडियाकाबहुराष्ट्रीयकरण एवं एजेंडा सेटिंग

2.ग्लोबलमीडिया:सामान्यपरिचय 10घंटे

- ग्लोबलमीडियाकाअर्थऔरस्वरूप,
- प्रमुखग्लोबलसमाचारपत्रएवं समाचारसमितियां

- प्रमुखग्लोबलटेलीविजननेटवर्करेडियोऔर ,डिजिटल प्लेटफ़ॉर्म

3.नयीसूचनाव्यवस्थाऔरसंचार 10घंटे

- नई सूचना व्यवस्था में यूनेस्कोकीभूमिका
- ग्लोबलमीडियाकाअंतरराष्ट्रीयसंबंधोंपरप्रभाव,विकसितऔरविकासशीलदेशोंकेमध्यसूचनाअसंतुलन
- ग्लोबल मीडिया में भारत की छविएवं मुद्दे

4. ग्लोबलमीडियाव्यवस्था और भारतीय मीडिया 15घंटे

- पश्चिमी आधिपत्य एवं ग्लोबलमीडियास्वामित्व
- भारतमेंमीडियास्वामित्वकास्वरूप:क्रॉसमीडियाऑनरशिप, विदेशी निवेश
- भारतमेंसमाचारपत्र,समाचारचैनलऔरडिजिटलमीडियाकास्वामित्व,

प्रायोगिककार्य : 30घंटे

- ग्लोबलमीडियापररिपोर्टतैयारकरना।
- किसीमीडियासंस्थानकाभ्रमणऔरउसकीरिपोर्टतैयारकरना।
- भारतीयप्रेसटेलीविजनप्रसारणकेउद्भवविकासपरपोस्टरयापीपीटीतैयारकरना।/रेडियो/
- विभिन्नदेशोंकेअंतरराष्ट्रीयसमाचारपत्रपढ़ना
  अन्तराष्ट्रीयरेडियोप्रसारकोकेकार्यक्रमसुननाऔरउनकेविभिन्नपक्षों/अंतरराष्ट्रीयटीवीचैनलदेखना/ विषयसामग्री),कवरेज,नैतिकपरिप्रेक्ष्य (पररिपोर्टतैयारकरना।

सहायकपुस्तकें :

- भारतीयपत्रकारिताकोश,विजयदत्तश्रीधर,वाणीप्रकाशननयीदिल्ली ,
- भूमंडलीकरणकीचुनौतियां,सच्चिदानंदसिन्हा नयीदिल्ली ,वाणीप्रकाशन,
- प्रारंभिकभारतकापरिचय,रामशरणशर्माओरियंटब्लैकस्वान,
- हिंदीपत्रकारिताकेकीर्तिमान,जगदीशप्रसादचतुर्वेदी,साहित्यसंगम,इलाहाबाद
- मैन्युफैक्चरिंगकंसेंटदपॉलीटिकलइकोनामीऑफदमासमीडिया,हरमनएसएडवर्डएंडनोमचोम्स्कीवन)1995(आरएसयूआर
- इंडियासकम्युनिकेशनरिवॉल्यूशन:फ्रॉमबुलककार्ट्सटूसाइबरमार्टस रोगेर्ससेजपब्लिकेशन.अरविन्दसिंघलएंडएवेरेटऍम,

Community outreach (2)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Community outreach	**2**	**0**	0	**2**	12th Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

1समाजकेविभिन्नमुद्दोंकेप्रतिमीडियाछात्रोंकोजागरूक .करना।

2. छात्रोंमेंसामाजिकसरोकारकीसमझविकसितकरना।

3. समाज, संस्थानऔरमीडियाउद्योगमेंसमन्वयस्थापितकरना।

4. छात्रोंमेंमीडियाव्यवसायकीव्यावहारिकसमझविकसितकरना।

Course Learning Outcomes

1. समाजकेविभिन्नमुद्दोंकेप्रतिछात्रजागरूकहोंगे।

2. छात्रोंमेंसामाजिकसरोकारकीसमझविकसितहोगी।

3. मीडियाव्यावसायकाव्यवहारिककौशलविकसितहोगा।

4. समाज, संस्थानऔरमीडियाउद्योगमेंसमन्वयस्थापितहोगा।

Syllabus: 60घंटे

1. विविधसमुदायोंकेसाथमीडियाजागरूकतापरकार्यशाला।

2. विभिन्नमीडियाचैनलोंद्वाराआयोजितचर्चामेंहिस्सालेना।

3. मीडियासंस्थानोंकाभ्रमण)समाचार-पत्र,पत्रिका, रेडियोएवंटीवी(

4. विभिन्नसमसामयिकमुद्दोंपरचर्चाकीरिकॉर्डिंगतैयारकरना।

5.विश्वविद्यालयएवंकॉलेजोंकेविविधकार्यक्रमोंकीकवरेजकरना प्रिंट), रेडियो, वीडियो, लाइव(

6. भ्रमणएवंगतिविधियोंकीसाप्ताहिकरिपोर्टतैयारकरप्रकाशितकरना।

7.समाजकेविविधक्षेत्रोंउत्कृष्टकार्यकरनेवालेलोगोंकेसाक्षात्कारकरना।

8.संबंधितशिक्षकसेनियमितचर्चाएवंमार्गदर्शनमेंगतिविधियोंकोकार्यान्वितकरना।

9. स्थानीयमुद्दोंपररिपोर्टिंगऔरपरिचर्चाकाआयोजनकराना।

10.मीडियालैबमेंमीडियाकार्यक्रमतैयारकरना।

<u>फील्डवर्कसेमेस्टरमें:</u>

- सप्ताहमेंन्यूनतम4घंटेछात्रकोसमाजमेंदेनेहोंगे।कार्यकीजांच)1 घंटा) समुहमार्गदर्शन (1 घंटा(
- छात्रोंकीसामुदायिकभ्रमणमें प्रतिशतउपस्थितिअनिवार्यहोगी 80।
- छात्रोंकामीडियासंस्थानयासमाजमेंभ्रमणशिक्षकोंकेदेखरेखएवंनिर्देशनमेंहोगा।-

नोट

:हिंदीपत्रकारिताएवंजनसंचारपाठ्यक्रमकेलिएआधुनिकसुविधाओंसेलैसऑडियोवीडियोमीडियालैब अनिवार्यहै।छात्रोंकेप्रायोगिकप्रशिक्षणहेतुमहाविद्यालयमेंअपेक्षितमीडियाउपकरण, तकनीकीक्षमतारखनेवालेसहायककर्मी, उपयोगीसॉफ्टवेयरएवंकम्प्यूटरकेसाथप्रोजेक्टरऔरइंटरनेटकीसुविधाकीव्यवस्थाकीजाए।

DEPARTMENT OF HINDI

SEMESTER - 6

बी.ए. ऑनर्स हिन्दी पत्रकारिता एवं जनसंचार

Category I

बी.ए. ऑनर्स हिन्दी पत्रकारिता एवं जनसंचार **for Undergraduate Honours**

(B.A. Honours in Hindi Journalism & Mass Communication)

DSC 13 जनमाध्यम के सिद्धांत

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
जनमाध्यम के सिद्धांत	4	3		1	12th Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

1. छात्रों में जनमाध्यमों की समझ विकसित करना
2. छात्र को भारतीय संचार की अवधारणा से परिचित कराना
3. छात्रों को जनमाध्यम और समाज के बीच संबंध से अवगत कराना।
4. छात्रों को जनमाध्यम संदेशों पर व्यक्तिगत प्रतिक्रिया की पहचान कराना
5. जनसंचार के विविध प्रारूप और सिद्धांतों से परिचित कराना।

Learning Outcomes

1. जनमाध्यमों की समझ विकसित होगी।
2. संचार की भारतीय अवधारणा से परिचित होंगे।
3. जन माध्यमों के समाज पर प्रभाव का आकलन कर सकेंगे।
4. जनमाध्यमों के सिद्धांतों से परिचित होंगे।
5. जनमाध्यम के संदेशों से व्यक्तिगत प्रभाव का आकलन कर सकेंगे।

1. जनमाध्यम : परिचय **10 घंटे**

- जनमाध्यम: स्वरूप एवं प्रकार
- जन माध्यम: कार्यशैली एवं उद्देश्य
- जनमाध्यमों की जनमत निर्माण में भूमिका : एग्जिट पोल, ओपिनियन पोल

2. संचार के मॉडल **10 घंटे**

- संचार प्रारूप (मॉडल) के प्रकार : लीनियर, नॉन लीनियर एवं मिश्रित
- प्रमुख संचार प्रारूप: अरस्तु, शैनन एवं वीवर,ऑसगुड, लासवेल एवं विल्बर श्रैम
- आधुनिक संचार प्रारूप: न्यूकॉम्ब, गर्बनर, वेस्तले एवं मैकलीन, व्हाइट गेटकीपिंग

3. जनसंचार के सिद्धांत **10 घंटे**

- जनसंचार के समाजशास्त्रीय, मनोवैज्ञानिक सिद्धांत
- जनसंचार का नियामक सिद्धांत (प्रभुत्ववादी, उदारवादी, सामाजिक उत्तरदायित्व, साम्यवादी सिद्धांत, लोकतांत्रिक सहभागिता का सिद्धांत, मीडिया विकास का सिद्धांत)
- अन्य सिद्धांत: बुलेट सिद्धांत, गेटकीपिंग का सिद्धांत, क्लटीवेशनल सिद्धांत, जनसमाज सिद्धांत

4. माध्यम-प्रभाव अध्ययन **15 घंटे**

- जनमाध्यमों की प्रस्तुति की समीक्षा
- फीड बैक, फीड फ़ारवर्ड
- उपभोक्तावादी संस्कृति से मीडिया में आये बदलावों की समीक्षा

प्रायोगिक कार्य **30 घंटे**

- किसी एक चयनित संचार सिद्धांत की प्रासंगिकता का सर्वे और आपसी बातचीत के आधार पर पीपीटी तैयार करना
- किसी समसामयिक राष्ट्रीय और अंतरराष्ट्रीय समाचार की मीडिया प्रस्तुति की केस स्टडी तैयार करना
- किसी समसामयिक सामाजिक/ आर्थिक/ राजनीतिक/ तकनीकी मुद्दे पर भाषण तैयार कर उसकी प्रस्तुति करना
- किन्ही दो प्रिंट अथवा इलेक्ट्रॉनिक माध्यमों की समाचार प्रस्तुति का तुलनात्मक अध्ययन एवं प्रस्तुति
- जनमत निर्माण हेतु प्रश्नावली निर्माण और उसके आधार पर सर्वेक्षण की रिपोर्ट तैयार करना।

संदर्भ पुस्तकें :

1. भारत में जनसंचार, केवल जे कुमार, जैको पब्लिशिंग हाउस मुंबई
2. संचार के सिद्धांत, आशा हिंगड़, मधु जैन, सुशीला पारीक, राजस्थान हिंदी ग्रंथ अकादमी, जयपुर
3. संप्रेषण: प्रतिरूप एवं सिद्धांत, डॉ श्रीकांत सिंह, भारती पब्लिशर्स एंड डिस्ट्रीब्यूटर्स, फैजाबाद
4. संचार के मूल सिद्धांत, ओमप्रकाश सिंह, लोक भारती प्रकाशन
5. मास कम्युनिकेशन थ्योरी, डेनिस मैक्वेल, सेज पब्लिकेशन नई दिल्ली
6. कम्युनिकेशन मीडिया यस्टरडे टुडे एंड टुमारो, पीएन मल्हन, प्रकाशन विभाग नई दिल्ली
7. कम्युनिकेशन, सीएस रेडु, हिमालय पब्लिशिंग हाउस मुंबई
8. द प्रोसेस एंड इफ़ेक्ट ऑफ़ मास कम्युनिकेशन, श्रैम, डब्लू एंड रोबर्ट्स डीएफ

DSC 14 हाशिए का समाज और हिंदी मीडिया

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 14 हाशिए का समाज और हिंदी मीडिया	4	3		1	12th Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

1. हाशिए के समाज की अवधारणा से परिचित करवाना।
2. हाशिए के समाज की समस्याओं से अवगत करवाना।
3. हिंदी मीडिया में हाशिए के समाज की भूमिका बताना।
4. सामाजिक बदलाव के लिए छात्रों को तैयार करना।

Course Learning Outcomes

1. छात्र हाशिये के समाज के बारे में जानकारी प्राप्त करेंगे।
2. छात्र समाज का महत्त्व समझेंगे।
3. छात्र समाज परिवर्तन के लिए तैयार होंगे।

1. भारतीय सामाजिक व्यवस्था और हाशिए का समाज **10 घंटे**

- हाशिए का समाज – अर्थ और अवधारणा
- भारतीय सामाजिक व्यवस्था और समस्याएं
- सामाजिक विकास में हाशिए के समाज का योगदान

2. दलित- आदिवासी समाज और मीडिया **10 घंटे**

- दलित और आदिवासी वर्ग की समस्याएं
- मीडिया की मुख्यधारा दलित और आदिवासी समाज
- मीडिया की ख़बरें और समतामूलक समाज – निर्माण का उद्देश्य एवं सामाजिक समरसता

3. जेंडर समानता और अस्मिता विमर्श 10 घंटे

- स्त्री विमर्श की भारतीय अवधारणा
- मीडिया के जेंडर समानता के सवाल
- थर्ड जेंडर का मुद्दा और हिंदी मीडिया

4. अस्मिता विमर्श और माध्यम व्यवहार 15 घंटे

- लोक संस्कृति के पहलू और हाशिए का समाज
- जन माध्यमों का बाजार और हाशिए का जीवन
- सामाजिक न्याय और मीडिया

प्रायोगिक कार्य 30 घंटे

- महाविद्यालय में हाशिए के समाज सम्बन्धी कार्यक्रम की रिपोर्टिंग करवाना।
- किसी एक अख़बार की हाशिए के समाज सम्बन्धी ख़बरों का विश्लेषण।
- किसी एक चैनल की हाशिए के समाज सम्बन्धी ख़बरों का विश्लेषण।
- हाशिए के समाज के प्रमुख व्यक्तित्व से भेंटवार्ता और साक्षात्कार।

सहायक पुस्तकें :

1. मीडिया के सामाजिक सरोकार कालूराम परिहार, अनामिका पब्लिशर्स एन्ड डिस्ट्रीब्यूटर्स प्रा०लिमिटेड, नईदिल्ली
2. भारतीय समाज (अनुवाद:वंदना मिश्र) श्यामा चरण दुबे, नेशनल बुक ट्रस्ट, नई दिल्ली
3. समकालीन मीडिया- परिदृशय और अस्मिता मूलक विमर्श डा०मधु लोमेश, हेमाद्रि प्रकाशन, नईदिल्ली
4. आधुनिकता के आइने में दलित समाज, अभय कुमार दुबे, वाणी प्रकाशन प्रा०लि०, दिल्ली
5. स्त्रीवादी साहित्य विमर्श जगदीश्वर चतुर्वेदी, अनामिका पब्लिशर्स एन्डब्यूटर्स, दिल्ली

DSC 15 विज्ञापन

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 15 विज्ञापन	4	3	0	1	12th Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

Course Objective

1. छात्रों को मीडिया में विज्ञापन के महत्व से अवगत कराना।
2. छात्रों को विज्ञापन निर्माण का व्यवहारिक अभ्यास कराना।
3. छात्रों को विज्ञापन के भारतीय समाज पर पड़ने वाले प्रभाव की जानकारी देना।

Course Learning Outcomes

1. छात्र मीडिया के अर्थतंत्र को जान पायेंगे।
2. विज्ञापन के कॉपी निर्माण का व्यावहारिक ज्ञान होगा।
3. विज्ञापन में भाषा की रचनात्मकता का महत्व सीख सकेंगे ।
4. विज्ञापन की आचार संहिता को जान पायेंगे।

1. विज्ञापन : अर्थ एवं सिद्धांत **10 घंटे**

- विज्ञापन : अर्थ, प्रकार एवं उद्देश्य
- विज्ञापन के सिद्धांत : AIDA व DAGMAR
- ब्रांड की अवधारणा

2. माध्यमगत विज्ञापन **10 घंटे**

- प्रिंट एवं ई/डिजिटल विज्ञापन की विशेषता
- रेडियो विज्ञापन
- वीडियो/टेलीविजन विज्ञापन की विशेषता

3. विज्ञापन निर्माण एवं भाषा **10 घंटे**

- विज्ञापन कॉपी निर्माण एवं तत्व
- विज्ञापन में रचनात्मकता एवं भाषाई प्रयोग
- विज्ञापन अभियान एवं चरण

4. विज्ञापन एवं समाज **15 घंटे**

- विज्ञापन का समाज एवं संस्कृति पर प्रभाव
- विज्ञापन परिषद की आचार संहिता
- विज्ञापन एजेंसी की संगठन संरचना

प्रायोगिक कार्य : **30 घंटे**

- किसी एक विषय पर विज्ञापन की कॉपी तैयार करना।
- रेडियो जिंगल तैयार करना।
- सामाजिक जागरूकता हेतु वीडियो विज्ञापन तैयार करना।
- समाज पर विज्ञापन के प्रभाव का विश्लेषणात्मक अध्ययन करना।

सहायक पुस्तकें :

1. हिन्दी विज्ञापनों का पहला दौर, आशुतोष पार्थेश्वर, अद्वैत प्रकाशन
2. विज्ञापन व्यवसाय एवं कला, डॉ रामचंद्र तिवारी, अलेख प्रकाशन, नई दिल्ली
3. विज्ञापन तकनीक एवं संपादन, डॉ नरेंद्र यादव, राजस्थान हिन्दी ग्रंथ अकादमी, जयपुर
4. विज्ञापन की दुनिया, प्रो कुमुद शर्मा, प्रभात प्रकाशन, नई दिल्ली

DSE 3 हिंदी सिनेमा (क)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 3 हिंदी सिनेमा (क)	4	3		1	12th Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

Course Objectives

1. हिंदी सिनेमा के उद्भव और विकास यात्रा से अवगत करवाना।
2. हिंदी सिनेमा में प्रयुक्त तकनीकी दक्षता प्रदान करना।
3. हिंदी सिनेमा जगत के विविध आयामों से परिचित कराना।

Course Learning Outcomes

1. विद्यार्थी हिंदी सिनेमा विकास यात्रा की जानकारी प्राप्त करेंगे।
2. विद्यार्थी हिंदी सिनेमा निर्माण प्रक्रिया से अवगत होंगे।
3. विद्यार्थी हिंदी सिनेमा के विविध आयामों से परिचित होंगे।
4. सिनेमा के क्षेत्र में उत्पन्न रोज़गार के अवसरों का लाभ ले पायेंगे।

1. हिंदी सिनेमा : सामान्य परिचय **10 घंटे**

- हिंदी सिनेमा की विकास यात्रा
- सिनेमा के विषय : सामाजिक, धार्मिक, ऐतिहासिक, राजनैतिक, पारिवारिक, कॉमेडी, हॉरर
- हिंदी सिनेमा का वर्गीकरण : लोकप्रिय सिनेमा, समानांतर सिनेमा, क्षेत्रीय सिनेमा

2. हिंदी सिनेमा : तकनीक एवं प्रविधियाँ **10 घंटे**

- सिनेमा : तकनीकी एवं कौशल : पटकथा, अभिनय, संवाद, गीत, संगीत, नृत्य, निर्देशन, प्रस्तुतीकरण

- स्पेशल इफ़ेक्ट्स तकनीक
- सिनेमेटोग्राफ़ी

3. हिंदी सिनेमा : अर्थशास्त्र और प्रबंधन **10 घंटे**

- हिंदी सिनेमा का बाज़ार **:** राष्ट्रीय एवं अंतर्राष्ट्रीय
- हिंदी सिनेमा की मार्केटिंग तकनीक
- सिनेमा समीक्षा, सेंसर बोर्ड, सिनेमा संबंधी तकनीकी शब्दावली

4. हिंदी सिनेमा का समकालीन परिदृश्य **15 घंटे**

- हिंदी सिनेमा का बदलता स्वरूप : न्यू सिनेमा, ओटीटी प्लेटफॉर्म, शॉर्ट फ़िल्म्स
- हिंदी सिनेमा का समाजशास्त्र
- लोकप्रिय हिंदी फ़िल्मों का समीक्षात्मक अध्ययन : दो बीघा ज़मीन, मदर इंडिया, पूरब-पश्चिम, स्वदेश, तारे ज़मीन पर, चक दे इंडिया

प्रायोगिक कार्य **30 घंटे**

- किसी चर्चित फ़िल्म की समीक्षा
- किसी साहित्यिक कहानी का संवाद लेखन एवं दृश्य रूपांतरण करना
- समसामयिक विषयों पर 5 मिनट की लघुफ़िल्म का निर्माण
- समाचार पत्र के फ़िल्म आधारित परिशिष्ट पेज का अध्ययन कर रिपोर्ट तैयार करना

सहायक पुस्तकें :

9. सिनेमा का जादुई सफ़र : प्रताप सिंह, राजकमल प्रकाशन
10. फ़िल्म निर्माण के कारक तत्व : बालकृष्ण राव, राजमंगल प्रकाशन
11. हिंदी सिनेमा का इतिहास : मनमोहन चड्ढा, शशि प्रकाशन
12. Encyclopedia of Hindi Cinema, Govind nihlani, Gulzar, Saibal Chatterjee, Britannica Press
13. Great Movies 100 years of cinema, parragon Books
14. Reviewing Hindi Cinema since 1945, Suman Shakya, Notion Press

DSE 3 खोजी पत्रकारिता (ख)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Coursetitle & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisiteofthecourse (ifany)
		Lecture	Tutorial	Practical/ Practice		
DSE 2 खोजी पत्रकारिता (ख)	4	3	0	1	12th Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

Course Objective

4. स्टिंग पत्रकारिता के स्वरूप की जानकारी देना।
5. छात्रों को स्टिंग पत्रकारिता के महत्व से परिचित कराना।
6. स्टिंग पत्रकारिता क्षेत्र में रोजगारपरक संभावनाओं पर प्रकाश डालना।

Course Learning Outcomes

4. स्टिंग पत्रकारिता और उसके प्रयोग की जानकारी प्राप्त कर सकेंगे।
5. स्टिंग पत्रकारिता के महत्व को समझेंगे।
6. छात्रों को रोजगारपरक प्रशिक्षण प्राप्त होगा।

1. खोजी पत्रकारिता : अवधारणा एवं स्वरूप **10 घंटे**

- खोजी पत्रकारिता : अर्थ, परिभाषा एवं विभिन्न प्रकार
- सामान्य रिपोर्टिंग तथा खोजी पत्रकारिता में अंतर
- खोजी पत्रकारिता में मौलिकता का महत्व

2. खोजी रिपोर्ट एवं शोधपरक पड़ताल **10 घंटे**

- खोजपरक रिपोर्टिंग में शोध का महत्व एवं प्रयोग
- आंकड़ों का व्यवस्थित एवं प्रासंगिक अध्ययन
- आंकड़ों का तथ्यपरक एवं तुलनात्मक विश्लेषण

3. स्टिंग ऑपरेशन : सिद्धांत, तकनीक, उपकरण एवं प्रयोग **10 घंटे**

- स्टिंग ऑपरेशन : विधा की विशेषताएं एवं प्रशिक्षण
- स्टिंग ऑपरेशन : आवश्यक उपकरण एवं तकनीक
- स्टिंग ऑपरेशन : व्यावहारिक चुनौतियां एवं संभावित खतरे और क़ानूनी पहलू

4. खोजी पत्रकारिता तथा स्टिंग ऑपरेशन : सामाजिक प्रभाव एवं विश्वसनीयता **15 घंटे**

- खोजी पत्रकारिता : सामाजिक प्रभाव
- व्यवस्था परिवर्तन एवं खोजी पत्रकारिता : (बोफोर्स तथा टू जी घोटाले के उदाहरण)
- स्टिंग ऑपरेशन : विश्वसनीयता एवं नैतिकता के प्रश्न

प्रायोगिक कार्य **30 घंटे**

- प्रमुख 5 स्ट्रिंग ऑपरेशन का अध्ययन कर उनकी रिपोर्ट प्रस्तुति करना।
- स्टिंग ऑपरेशन प्रविधि का आकलन करते हुए एक खोजी रिपोर्ट तैयार करना।
- ऑफलाइन – ऑनलाइन स्टिंग ऑपरेशन से जुड़े विवादों पर एक आलोचनात्मक लेख तैयार करना।
- स्टिंग ऑपरेशन के प्रभावों की समीक्षा विषय पर समूह चर्चा।

सहायक पुस्तकें :

1. इलेक्ट्रॉनिक मीडिया और स्टिंग ऑपरेशन – सतीश शर्मा जाफराबादी, तक्षशिला प्रकाशन
2. स्टिंग ऑपरेशन का सच भूपेन पटेल, पेंगुइन
3. इन्टरनेट जर्नलिज़्म - विजय कुलश्रेष्ठ -साहिल प्रकाशन जयपुर
4. स्टिंग ऑपरेशन सिध्द्धांत एवं व्यवहार – डॉ एस श्रीकान्त ,श्री नटराज प्रकाशन

DSE 3 लोक संस्कृति और समाज (ग)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 3 **लोक संस्कृति और समाज (ग)**	4	3	0	1	12th Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

Course Objective

- लोक संस्कृति की जानकारी प्रदान करना।
- लोक साहित्य की विविध विधाओं की जानकारी देना।
- भूमंडलीकरण के दौर में लोक संस्कृति की जानकारी देना।
- सभ्यता-संस्कृति की समझ विकसित करना।

Course Learning Outcomes

- विद्यार्थी लोक संस्कृति से परिचित हो सकेंगे।
- लोक साहित्य की विविध विधाओं का अध्ययन कर अर्जित ज्ञान और अनुभव से शोध कार्य कर सकेंगे।
- भूमंडलीकरण के दौर में लोक संस्कृति की व्यवहारिक जीवन में उपयोग कर सकेंगे।
- सभ्यता और संस्कृति की समीक्षा कर सकेंगे।
- लोक संस्कृति की व्यवसायी संभावनाओं का उपयोग करना सीख सकेंगे।

1. लोक संस्कृति : परिचय **10 घंटे**

- लोक संस्कृति : अर्थ, अवधारणा, विशेषताएँ, सभ्यता और संस्कृति

- लोक संस्कृति और समाज का अंतर्संबंध
- लोक संस्कृति : महत्व, संकट और संभावनाएँ

2. लोक साहित्य,समाज एवं संस्कृति 10 घंटे

- लोक साहित्य के विविध रूप : लोकगीत, लोकनाट्य, लोक कथाएं, लोक साहित्य में प्रमुख ऐतिहासिक घटनाओं की उपस्थिति (1857 का स्वाधीनता संग्राम, स्वाधीनता आंदोलन, स्वतंत्र भारत में युद्ध)
- लोक साहित्य और भाषा का सामाजिक जीवन पर प्रभाव
- लोक संस्कृति और अभिजनवादी संस्कृति, लोक साहित्य एवं शिष्ट साहित्य

3. जनमाध्यम और लोक संस्कृति 10 घंटे

- जनमाध्यम में लोक संस्कृति की स्थिति (पत्र-पत्रिकाएँ, रेडियो, टेलीविजन, फिल्म, ओटीटी, सोशल मीडिया), कंटेंट और भाषा
- पॉपुलर कल्चर और लोक संस्कृति, मीडिया और संस्कृति का अंतर्संबंध
- जनमाध्यमों पर अभिव्यक्ति की चुनौतियाँ तथा लोक भाषा

4. विमर्श और लोक संस्कृति 15 घंटे

- आधुनिकता और लोक संस्कृति : इतिहास, विज्ञान, आख्यान, प्राच्यवाद
- लोक और विमर्श : आदिवासी, स्त्री, दलित, पर्यावरण,
- स्व और लोक संस्कृति, सांस्कृतिक वर्चस्व और लोक संस्कृति

प्रायोगिक कार्य : 30 घंटे

- लोकगीतों का अध्ययन कर रिपोर्ट प्रस्तुति करना
- हिंदी उपन्यास अथवा किसी हिंदी कहानी पर बनी फिल्म की पटकथा पर समूह चर्चा।
- लोक साहित्य लोक कथाओं का संकलन तथा अनुवाद करना।
- किसी लोक संस्कृतिकर्मी से भेंटवार्ता एवं साक्षात्कार करना।
- लोक संस्कृति के किसी रूप पर परियोजना कार्य (रामलीला, रासलीला, आल्हा)
- लोक संस्कृति की जानकारी के लिए किसी एक गाँव की सर्वे के आधार पर रिपोर्ट प्रस्तुत करना।

सहायक पुस्तकें :

1. लोक संस्कृति के विविध आयाम, महीपाल सिंह राठौड़, राष्ट्रीय पुस्तक न्यास, 2021
2. हिंदी प्रदेश के लोक गीत , डॉ. कृष्णदेव उपाध्याय, साहित्य भवन (प्रा) लिमिटेड
3. लोक साहित्य की भूमिका, डॉ. कृष्णदेव उपाध्याय, साहित्य भवन (प्रा) लिमिटेड
4. संस्कृति के चार अध्याय, रामधारी सिंह दिनकर, लोकभारती प्रकाशन
5. भारतीय संस्कृति, डॉ. देवराज, उत्तर प्रदेश हिंदी संस्थान, लखनऊ
6. संस्कृति की आंतरिक लय के स्रोत, वियोगी हरि, सस्ता साहित्य मण्डल प्रकाशन, प्रकाशन विभाग
7. वासुदेव शरण अग्रवाल रचना-संचयन, चयन एवं संपादन- कपिला वात्स्यायन, साहित्य अकादेमी
8. भारत की पहचान, चयन एवं संपादन- गिरीश्वर मिश्र, राष्ट्रीय पुस्तक न्यास, भारत
9. लोक संस्कृति की रूपरेखा, डॉ. कृष्णदेव उपाध्याय, लोकभारती प्रकाशन

GE मीडिया और मानवाधिकार (क)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisiteofthecourse (ifany)
		Lecture	Tutorial	Practical/ Practice		
GE (क) मीडिया और मानवाधिकार	4	3	0	1	12th Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

Course Objectives

1. मानवाधिकार के महत्व से परिचित कराना।
2. मानवाधिकारों की रक्षा में मीडिया की भूमिका से अवगत कराना।
3. मानवाधिकारों के साथ-साथ नागरिक कर्तव्यों के प्रति जागरूक करना।

Course Learning Outcomes

1. मानव अधिकार के महत्त्व से परिचित होंगे।
2. मानव अधिकार की रक्षा में मीडिया की भूमिका से अवगत होंगे।
3. मानव अधिकार के साथ-साथ नागरिक कर्तव्यों के प्रति जागरूक होंगे।

1. मानवाधिकार का परिचय **10 घंटे**

- मानवाधिकारों का स्वरूप और विकास
- मानव अधिकार का महत्व एवं प्रकार
- प्रथम एवं द्वितीय विश्व युद्ध और यूएनओ का मानव अधिकार चार्टर

2. राष्ट्रीय और अंतरराष्ट्रीय मानवाधिकार संगठन और मीडिया **10 घंटे**

- अंतर्राष्ट्रीय मानवाधिकार संगठनों (यूएनओ, ह्यूमन राइट कमीशन, ह्यूमन राइट वॉच, एमनेस्टी इंटरनेशनल आदि) की गतिविधियां एवं मीडिया।
- राष्ट्रीय एवं राज्य मानवाधिकार आयोग, केंद्र एवं राज्य सरकारें, नौकर शाही, न्याय-पालिका और पुलिस व्यवस्था की मीडिया में छवि एवं मानवाधिकार।
- निजी एवं गैर-सरकारी मानव अधिकार संगठनों की गतिविधियां और मीडिया में उनकी प्रस्तुति।

3. ज्वलंत एवं समसामयिक मानवाधिकार संबंधी मुद्दे और मीडिया **10 घंटे**

- युद्ध एवं हिंसा सम्बंधी ज्वलंत मुद्दे और मीडिया
- स्त्री सम्बंधी ज्वलंत मुद्दे और मीडिया
- बाल एवं वृद्ध मानवाधिकार संबंधी ज्वलंत मुद्दे और मीडिया

4. मीडिया और मानवाधिकार **15 घंटे**

- 'हेट-स्पीच', मानवाधिकार और मीडिया
- मीडिया में माफिया आतंक का महिमामंडन और मानवाधिकार
- मीडिया की प्रतिबद्धता और मानवाधिकार

प्रायोगिक कार्य **30 घंटे**

- मानवाधिकार संबंधी किसी फिल्म का समीक्षात्मक विश्लेषण
- किसी टीवी चैनल में प्रसारित समाचार में मानवाधिकार की प्रस्तुति का विश्लेषण
- मानवाधिकारों के उल्लंघन संबंधित केस स्टडी का अध्ययन कर रिपोर्ट तैयार करना।
- मानवाधिकार आयोग की वार्षिक रिपोर्ट पर समूह चर्चा
- किसी एक समाचार पत्र में प्रकाशित मानवाधिकार से जुड़ी खबरों का रिपोर्ट लेखन
- मानवाधिकारों के प्रति समाज जागरण हेतु पोस्टर निर्माण

संदर्भ पुस्तकें :

1. मानवाधिकार एक परिचय – डॉ. रणधीर कुमार, संकल्प प्रकाशन
2. मानवाधिकार और मीडिया - मुकुल श्रीवास्तव, एटलांटिक पब्लिशर्स एंड डिस्ट्रीब्यूटर्स
3. मानवाधिकार – डॉ. विजेंद्र सिंह बौद्ध, युवराज प्रकाशन, आगरा
4. मानव अधिकार और मौलिक स्वतंत्रता - जस्टिस गुलाब गुप्ता, मध्यप्रदेश हिंदी ग्रंथ अकादमी
5. मानवाधिकार और महिलाएं – डॉ. (श्रीमती) ममता चंद्रशेखर, मध्यप्रदेश हिंदी ग्रंथ अकादमी

GE वेब पत्रकारिता (ख)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE (ख) वेब पत्रकारिता	4	3	0	1	12th Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

Course Objective

- विद्यार्थियों को वेब पत्रकारिता के परिवर्तित स्वरूप से परिचित कराना।
- वेब लेखन तकनीक की जानकारी देना।
- वेब पत्रकारिता के नैतिक और कानूनी आयामों से अवगत कराना।

Course learning outcomes

- विद्यार्थी वेब समाचार,फीचर और लेखन तकनीक में दक्ष होंगे।
- वेब सामग्री का निर्माण और संपादन कार्य की जानकारी प्राप्त करेंगे।
- वेब सामग्री निर्माण के वैधानिक पक्ष की जानकारी से समृद्ध होंगे।

1. वेब पत्रकारिता **10 घंटे**

- वेब पत्रकारिता की परिभाषा महत्त्व और प्रकार
- वेब पत्रकारिता की उत्पत्ति और विकास
- वेब पत्रकारिता का सांस्कृतिक परिप्रेक्ष्य, बदलते समाज में वेब पत्रकारिता की भूमिका

2. वेब पत्रकारिता के रूप और प्रारूप **10 घंटे**

- वेब के लिए फोटो, वेब के लिए ऑडियो और वीडियो
- सूचना-ग्राफिक्स और डेटा विज़ुअलाइज़ेशन, मल्टीमीडिया पैकेज और मल्टी-मीडिया वृत्तचित्र
- वेब पत्रकारिता के रूप और उपकरण, वेब समाचार, वेब विज्ञापन, मार्केटिंग की पैकेजिंग और वितरण

3. वेब पत्रकारिता के लिए लेखन **10 घंटे**

- समाचार लेखन बनाम वेब के लिए लेखन

- वेब पत्रकारिता के लिए हेडलाइंस, हाइपरलिंक्स और सर्च इंजन अनुकूलित लेखन, सोशल नेटवर्किंग साइट्स में लेखन
- लिखने के लिए ग्राफिक्स और छवियों का उपयोग, वेब, वेब सामग्री लेखन और सर्च इंजन के साथ इसका संबंध

4. कन्वर्जेंट पत्रकारिता और वेब **15 घंटे**

- कन्वर्जेंट पत्रकारिता की परिभाषा, इसका विकास, प्रौद्योगिकी और अभिसरण (कन्वर्जेंस)
- कन्वर्जेंट पत्रकारिता का क्षेत्र, आभासी और वास्तविक कन्वर्जेंट पत्रकारिता के बीच अंतर, कम्युनिकेशन कन्वर्जेंस बिल 2001, प्रमुख भारतीय समाचार पोर्टलों का संक्षिप्त परिचय
- नेटवर्किंग वेबसाइटें, वेब 2.0 आदि की विशेषताएं एवं अनुप्रयोग

प्रायोगिक कार्य: **30 घंटे**

- किसी वेबसाइट के लिए फीचर तैयार करना।
- ब्लॉग बनाना और उसमें समसामयिक विषयों पर लेख लिखना।
- किसी न्यूज पोर्टल के लिए समाचार तैयार करना।
- अपने संस्थान की महत्वपूर्ण गतिविधियों की फोटोग्राफी करना, वीडियो रिपोर्ट और पॉडकास्ट बनाना।

सहायक पुस्तकें :

1. हर्षदेव, ऑनलाइन पत्रकारिता, समसामयिक प्रकाशन,नई दिल्ली
2. Tapas ray, online Journalism, Cambridge University press,2011
3. Jim Foust , Online Journalism -Principal and practice for the web, Routledge publisher
4. R G Rosales , The Elements of online Journalism,i Universe,UK
5. Stephen Quinn and Vincent Falk ,Convergent Journalism-An Introduction, focal Press

Community outreach (2)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Community outreach	2			2	12th Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

1. समाज के विभिन्न मुद्दों के प्रति मीडिया छात्रों को जागरूक करना।
2. छात्रों में सामाजिक सरोकार की समझ विकसित करना।
3. समाज, संस्थान और मीडिया उद्योग में समन्वय स्थापित करना।
4. छात्रों में मीडिया व्यवसाय की व्यावहारिक समझ विकसित करना।

Course Learning Outcomes

1. समाज के विभिन्न मुद्दों के प्रति छात्र जागरूक होंगे।
2. छात्रों में सामाजिक सरोकार की समझ विकसित होगी।
3. मीडिया व्यावसाय का व्यवहारिक कौशल विकसित होगा।
4. समाज, संस्थान और मीडिया उद्योग में समन्वय स्थापित होगा।

Syllabus : 120 घंटे

1. विविध समुदायों के साथ मीडिया जागरूकता पर कार्यशाला।
2. विभिन्न मीडिया चैनलों द्वारा आयोजित चर्चा में हिस्सा लेना।
3. मीडिया संस्थानों का भ्रमण (समाचार-पत्र, पत्रिका, रेडियो एवं टीवी)
4. विभिन्न समसामयिक मुद्दों पर चर्चा की रिकॉर्डिंग तैयार करना।
5. विश्वविद्यालय एवं कॉलेजों के विविध कार्यक्रमों की कवरेज करना (प्रिंट, रेडियो, वीडियो, लाइव)
6. भ्रमण एवं गतिविधियों की साप्ताहिक रिपोर्ट तैयार कर प्रकाशित करना।

7. समाज के विविध क्षेत्रों में उत्कृष्ट कार्य करने वाले लोगों के साक्षात्कार करना।
8. संबंधित शिक्षक से नियमित चर्चा एवं मार्गदर्शन में विभिन्न मीडिया गतिविधियों को कार्यान्वित करना।
9. स्थानीय मुद्दों पर रिपोर्टिंग और परिचर्चा का आयोजन कराना।
10. मीडिया लैब में मीडिया कार्यक्रम तैयार करना।

फील्ड वर्क सेमेस्टर में :

- सप्ताह में न्यूनतम 4 घंटे छात्र को समाज में देने होंगे। कार्य की जांच (1 घंटा) समूह मार्गदर्शन (1 घंटा)
- छात्रों की सामुदायिक भ्रमण में 80 प्रतिशत उपस्थिति अनिवार्य होगी।
- छात्रों का मीडिया संस्थान या समाज में भ्रमण शिक्षकों के देख-रेख एवं निर्देशन में होगा।

नोट : हिंदी पत्रकारिता एवं जनसंचार पाठ्यक्रम के लिए आधुनिक सुविधाओं से लैस ऑडियो-वीडियो मीडिया लैब अनिवार्य है। छात्रों के प्रायोगिक प्रशिक्षण हेतु महाविद्यालय में अपेक्षित मीडिया उपकरण, तकनीकी क्षमता रखने वाले सहायक कर्मी, उपयोगी सॉफ्टवेयर एवं कम्प्यूटर के साथ प्रोजेक्टर और इंटरनेट की सुविधा की व्यवस्था होनी चाहिए।

SEMESTER - 6

बी.ए. ऑनर्स हिन्दी पत्रकारिता एवं जनसंचार

Category I

बी.ए. ऑनर्स हिन्दी पत्रकारिता एवं जनसंचार **for Undergraduate Honours**

(B.A. Honours in Hindi Journalism & Mass Communication)

DSC 16 जनसम्पर्क

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 16 **जनसम्पर्क**	4	3		1	12th Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

1. जनसंपर्क की अवधारणा से परिचित कराना।
2. विभिन्न क्षेत्रों में जनसंपर्क के उपयोग से अवगत कराना।
3. जनसंपर्क की कार्यप्रणाली पर प्रकाश डालना।
4. जनसंपर्क में कौशल विकसित करना।

Learning Outcomes

1. जनसंपर्क की अवधारणा से परिचित होंगे।
2. विभिन्न क्षेत्रों में जनसंपर्क कर लाभान्वित होंगे।
3. जनसंपर्क की कार्यप्रणाली का ज्ञान अर्जित करेंगे।
4. जनसंपर्क के क्षेत्र में दक्ष बनेंगे।

1. जनसंपर्क: अवधारणा और विकास **10 घंटे**

- जनसंपर्क का अर्थ, परिभाषा और स्वरूप
- जनसंपर्क के विकास का भारतीय परिदृश्य, जनसंपर्क के विकास का वैश्विक परिदृश्य
- जनसंपर्क के सिद्धान्त और साधन

2 जनसंपर्क विभाग: संरचना और कार्य प्रक्रिया **10 घंटे**

- जनसंपर्क विभाग की संरचना और कार्य
- जनसंपर्क के क्षेत्र : सरकारी व निजी क्षेत्र का जनसंपर्क
- जनसंपर्क : आंतरिक एवं बाह्य

3 जनसंपर्क अभियान एवं जनमत निर्माण **10 घंटे**

- जनसंपर्क अभियान
- जनमत निर्माण में जनसंपर्क अधिकारी की भूमिका
- जनसंपर्क अधिकारी के गुण एवं दायित्व

4 जनसंपर्क के विविध आयाम **15 घंटे**

- आपदा प्रबंधन और जनसंपर्क
- जनसंपर्क, विज्ञापन, प्रचार और प्रोपेगेंडा
- जनसंपर्क उद्योग और जनमाध्यम

प्रायोगिक कार्य **30 घंटे**

- किसी एक सरकारी जनसंपर्क विभाग के संगठन और कार्य योजना पर रिपोर्ट लिखना।
- किसी जनसंपर्क अधिकारी का साक्षात्कार लेना।
- आपदा प्रबंधन में जनसंपर्क की भूमिका पर रिपोर्ट तैयार करना।
- किसी एक सामाजिक या स्वास्थ्य विषयक जनसंपर्क अभियान की रूपरेखा तैयार करना।

संदर्भ पुस्तकें :

1. जनसंपर्क प्रबंधन, डॉ कुमुद शर्मा, प्रभात प्रकाशन
2. जनसंपर्क सिद्धांत और व्यवहार, डॉ सुशील त्रिवेदी, शशि कांत शर्मा, मध्य प्रदेश हिंदी ग्रंथ अकादमी, भोपाल
3. जनसंपर्क अवधारणा एवं बदलता स्वरूप, कृ शि मेहता, किताब घर प्रकाशन
4. जनसंपर्क के विविध आयाम, पवित्र श्रीवस्तव सी के सक्सेना, राजकमल प्रकाशन
5. जनसंपर्क, विज्ञापन एवं प्रसार माध्यम, एन सी पंत, तक्षशिला प्रकाशन

DSC 17 डिजिटल संचार के नए आयाम

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 17 **डिजिटल संचार के नए आयाम**	4	3	0	1	12th Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

1. विद्यार्थियों को डिजिटल संचार के नए रूपों से परिचित कराना।
2. डिजिटल संचार लेखन में विद्यार्थियों को सक्षम बनाना ।
3. डिजिटल संचार लेखन के व्यावहारिक, नैतिक और वैधानिक आयामों से अवगत कराना।

Course Learning Outcomes

1. विद्यार्थी विभिन्न नए डिजिटल प्लेटफार्म की लेखन पद्धति सीखेंगे।
2. विद्यार्थियों को डिजिटल संचार के नए रूपों से परिचित होने और सीखने का अवसर प्राप्त होगा ।
3. डिजिटल संचार लेखन के विविध कानूनी और नैतिक आयामों की जानकारी प्राप्त कर सकेंगे।

1. डिजिटल संचार 10 घंटे

- डिजिटल संचार: स्वरूप और विकास
- डिजिटल संचार के प्रकार, विशेषताएं और सीमाएं
- डिजिटल संचार के उपकरण: इन्टरनेट, सोशल नेटवर्किंग साइट्स, वेबसाइट, न्यूज पोर्टल, ऐप्स, ओटीटी प्लेटफार्म, इन्टरनेट रेडियो, एचडीटीवी, ई मेल आदि।

2. डिजिटल संचार के नए आयाम **10 घंटे**

- वेब ट्रेफिक, गूगल ट्रेंड्स, FB पोस्ट, ट्वीट, ऑडियो बुक, वेब सीरिज
- लाइव चैट, चैट बॉट, चैट जीपीटी, वीडियो चैट, वेब कॉलिंग, लाइव स्ट्रीमिंग, सर्च इंजन मार्केटिंग
- डिजिटल विज्ञापन, शॉर्ट्स वीडियो, रील, मीम्स, ऑडियो वीडियो किस्सागोई, एसएमएस, इमोजी, स्टीकर

3. डिजिटल संचार, मार्केटिंग और जनसम्पर्क **10 घंटे**

- डिजिटल जनसम्पर्क के उपकरण, डिजिटल जनसम्पर्क में मार्केटिंग और ब्रांड प्रचार
- मिक्स मार्केटिंग में डिजिटल संचार का उपयोग और ब्रांड निर्माण में डिजिटल संचार का उपयोग, मार्केटिंग लक्ष्यों को प्राप्त करने के लिए डिजिटल मार्केटिंग और जनसम्पर्क के संबंध
- डिजिटल मार्केटिंग के लिए ऑनलाइन स्पॉन्सरशिप और ब्रांड प्रचार, डिजिटल संचार का उपयोग करने वाले ब्रांड्स की केस स्टडी

4. डिजिटल संचार की संस्कृति और सूचना युग **15 घंटे**

- मीडिया सामग्री बनाम डिजिटल मीडिया सामग्री और वर्तमान विचारधारा
- डिजिटल सामग्री और बौद्धिक संपदा, डिजिटल सामग्री के कार्यान्वयन का उपयोग, महत्व और क्षेत्र
- सोशल मीडिया पर डिजिटल सामग्री प्रबंधन का महत्त्व

प्रायोगिक कार्य: **30 घंटे**

- सोशल नेटवर्किंग साइट्स के लिए कंटेंट निर्माण करना।
- किसी सामाजिक मुद्दे पर ऑडियो निर्माण करना।
- किसी कॉलेज इवेंट के लिए शॉर्ट वीडियो का निर्माण करना।
- डिजिटल प्लेटफॉर्म के लिए विज्ञापन का निर्माण करना।
- ब्लॉग बनाकर उसमें फीचर और लेख लिखना।
- डिजिटल मार्केटिंग के लिए डिजिटल जनसंपर्क उपकरण का निर्माण करना।

सहायक पुस्तकें :

1. हर्षदेव, ऑनलाइन पत्रकारिता, समसामयिक प्रकाशन,नई दिल्ली
2. Tapas ray, online Journalism, Cambridge University press,2011
3. Jim Foust , Online Journalism -Principal and practice for the web, Routledge publisher
4. R G Rosales , The Elements of online Journalism,i Universe,UK
5. Stephen Quinn and Vincent Falk ,Convergent Journalism-An Introduction,focal Press
6. Itule & Andersson (2002),News writing and reporting for today's media, MecGraw Hill publication
7. Davidson Amber -Controversies in digital ethics, Bloomsbury pub.

DSC 18 मीडिया शोध

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 18 **मीडिया शोध**	4	3	0	1	12th Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

Course Objective

4. छात्रों को शोध के महत्व से अवगत कराना।
5. शोध की सामाजिक उपयोगिता की जानकारी देना।
6. मीडिया में शोध सर्वे एवं विषयवस्तु विश्लेषण का महत्व बताना।

Course Learning Outcomes

5. छात्र वैज्ञानिक अध्ययन का महत्व जान पायेंगे।
6. शोध के विविध चरणों की जानकारी से छात्रों की विश्लेषण क्षमता बढ़ेगी।
7. शोधकर्ता के उत्तरदायित्व को जान पायेंगे।
8. साहित्य चोरी एवं संदर्भ लेखन के महत्व का ज्ञान होगा।

1. शोध : अर्थ एवं सिद्धांत **10 घंटे**

- शोध : अर्थ, उपयोगिता एवं उद्देश्य
- शोध के विभिन्न प्रकार एवं चरण
- शोध की नैतिकता, शोधकर्ता के उत्तरदायित्व

2. शोध-प्रक्रिया **10 घंटे**

- शोध – समस्या का चयन, विषय निर्धारण, चर (वेरिएबल) प्रकार

- साहित्य अवलोकन, उद्देश्य एवं शोध परिकल्पना : अर्थ, प्रकार
- सैंपलिंग : अर्थ, प्रकार एवं आवश्यकता

3. शोध प्रविधि **10 घंटे**

- शोध में आँकड़ें : प्राथमिक एवं द्वितीयक
- शोध विधि : सर्वे -अनुसूची एवं प्रश्नावली, विषयवस्तु विश्लेषण, प्रयोगात्मक, केस स्टडी आदि
- प्रश्नावली के प्रकार एवं निर्माण

4. शोध परिणाम एवं साहित्य चोरी **15 घंटे**

- आँकड़ों का एकत्रीकरण, व्यवस्थिकरण एवं विश्लेषण
- शोध परिणाम : सामान्यकरण, समस्या, संभावनाएँ एवं उपयोगिता
- संदर्भ सूची: आवश्यकता एवं स्टाइल, साहित्य चोरी

प्रायोगिक कार्य : **30 घंटे**

- विभिन्न विषयों पर शोध प्रश्नावली तैयार करना एवं आकड़ें एकत्रित करना।
- सामाजिक महत्व के किसी विषय पर छात्रों में सर्वे करना।
- सर्वेक्षण से प्राप्त आँकड़ों का व्यवस्थिकरण एवं विश्लेषण करना।
- समाचार पत्रों की विषयवस्तु का विश्लेषण करना।
- ओपिनियन पोल जानने हेतु चुनावी सर्वे करना।

सहायक पुस्तकें :

5. शोध पद्वति, सी आर कोठारी, न्यू ऐज प्रकाशन, नई दिल्ली
6. अनुसंधान : प्रक्रिया और प्रविधि, साहित्य सरोवर प्रकाशन, नई दिल्ली
7. रिसर्च मैथडोलॉजी, लक्ष्मी नारायण कोहली, वायी के प्रकाशन, नई दिल्ली
8. रिसर्च मैथडोलॉजी : ए स्टेप बाय स्टेप गाइड फॉर बिग्नर्स, रणजीत कुमार, सेज पब्लिकेशन

DSE 3 मीडिया प्रबंधन (क)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 3 (क) मीडिया प्रबंधन	4	3	0	1	12th Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

1. विभिन्न मीडिया संस्थानों के प्रबंधन से परिचित करना।
2. प्रिंट एवं इलेक्ट्रॉनिक मीडिया प्रबंधन के स्वरुप एवं संगठन की जानकारी प्रदान करना।
3. मीडिया के अर्थशास्त्रीय प्रबंधन की समस्याओं एवं चुनौतियाँ से अवगत करना।

Course Learning Outcomes

1. विद्यार्थी विभिन्न मीडिया संस्थानों के प्रबंधन से परिचित होंगे।
2. विद्यार्थी प्रिंट एवं इलेक्ट्रॉनिक मीडिया प्रबंधन के स्वरुप संगठन की जानकारी प्राप्त करेंगे।
3. विद्यार्थी मीडिया अर्थशास्त्रीय यथार्थ से अवगत होंगे।

1 मीडिया प्रबंधन की अवधारणा **10 घंटे**

- मीडिया प्रबंधन : अर्थ और महत्त्व
- मीडिया प्रबंधन के सिद्धांत
- मीडिया प्रबंधन : प्रबंधन विभाग, नीतियाँ और क्रियान्वयन

2 मीडिया संस्थान : संरचना एवं प्रबंधन **10 घंटे**

- मीडिया स्वामित्व और प्रबंधन
- प्रबंधन नियंत्रण कौशल
- राजनीतिक और प्रशासनिक दवाब

3 मीडिया संस्थानों में प्रबंधन का स्वरुप **10 घंटे**

- प्रिंट मीडिया का प्रबंधन स्वरुप **:** (समाचार पत्र और पत्रिकाओं के संदर्भ में संपादकीय प्रबंधन, मुद्रण प्रबंधन एवं वितरण प्रबंधन)
- रेडियो की प्रबंधन प्रक्रिया : (ऑल इंडिया रेडियो और एफ़०एम० चैनल के संदर्भ में)
- टेलीविज़न की प्रबंधन प्रक्रिया : (प्रोडक्शन, प्रसारण, विज्ञापन, जनसंपर्क और केबल नेटवर्क प्रबंधन)

4 मीडिया प्रबंधन का आर्थिक पक्ष **15 घंटे**

- प्रबंधन और पूँजी नियोजन, मीडिया संस्थानों का अर्थशास्त्र
- विदेशी पूँजी निवेश, मीडिया का बदलता परिदृश्य
- मीडिया संस्थानों की आर्थिक समस्याएँ

प्रायोगिक कार्य **30 घंटे**

- किसी एक मीडिया हाउस के प्रबंधक का साक्षात्कार।
- इलेक्ट्रॉनिक मीडिया के किसी एक संस्थान का भ्रमण कर उसके प्रबंधन पर रिपोर्ट तैयार करना।
- किसी समाचार पत्र अथवा पत्रिका के प्रबंधन विभाग की जानकारी प्रस्तुत करना।
- किसी भी विषय पर जनसंपर्क अभियान की रूपरेखा तैयार करना।

सहायक पुस्तकें :

1. समाचार एवं प्रबंधन – गुलाब कोठारी – राधाकृष्ण प्रकाशन
2. आधुनिक मीडिया प्रबंधन – डॉ० भगवान देव पाण्डेय – मिथिलेश कुमार पाण्डेय - तक्षशिला प्रकाशन
3. मीडिया प्रबंधन के सांस्कृतिक आयाम – डॉ० टी०एस० 'आलोक' – वाणी प्रकाशन
4. मीडिया प्रबंधन 5 का मंत्र – विजय जोशी और श्री राजेंद्र सिंह – राजकमल प्रकाशन
5. मीडिया प्रबंधन – डॉ० ऋतु गोठी खत्री - लक्ष्य प्रकाशन
6. मानव संसाधन विकास एवं प्रबंधन की रूपरेखा – आर०बी०एस० वर्मा / अतुल प्रताप सिंह- न्यू रॉयल बुक कंपनी (NCBC)

DSE 2 शैक्षिक पत्रकारिता (ख)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 2 शैक्षिक **पत्रकारिता (ख)**	4	3	0	1	12th Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

1. शैक्षिक पत्रकारिता के महत्त्व से परिचित कराना।
2. शैक्षिक पत्रकारिता के विविध आयामों की जानकारी देना।
3. शिक्षा एवं शिक्षण के स्तर पर जानकारी विकसित करते हुए इस क्षेत्र में प्रशिक्षु पत्रकारों का रुझान पैदा करना।
4. शैक्षिक पत्रकारिता क्षेत्र में रोजगारपरक संभावनाओं से परिचित कराना।

Course Learning Outcomes

1. विद्यार्थी शैक्षिक पत्रकारिता से परिचित होंगे।
2. समाजहित में शैक्षिक पत्रकारिता की उपादेयता को समझेंगे।
3. शैक्षिक पत्रकारिता के महत्त्व से परिचित हो सकेंगे।
4. इस क्षेत्र में रोजगारपरक संभावनाओं से अवगत होंगे।

1 शैक्षिक पत्रकारिता : परिचय — 10 घंटे

- शैक्षिक पत्रकारिता: अवधारणा एवं उद्देश्य
- शैक्षिक पत्रकारिता की आवश्यकता और महत्त्व
- शैक्षिक पत्रकारिता का इतिहास

2 शैक्षिक पत्रकारिता: विविध रूप — 10 घंटे

- प्रिंट माध्यम और शैक्षिक पत्रकारिता
- इलेक्ट्रोनिक माध्यमों – रेडियो टेलीविज़न में शैक्षिक पत्रकारिता का स्वरूप
- सोशल मीडिया और शैक्षिक पत्रकारिता- (गूगल याहू क्योरा पॉडकास्ट ट्विटर ब्लॉग फेसबुक)

3 शैक्षिक पत्रकारिता : रिपोर्टिंग तकनीक **10 घंटे**

- शैक्षिक पत्रकारिता के स्रोत
- शैक्षिक पत्रकारिता–कवरेज क्षेत्र
- शैक्षिक रिपोर्टिंग और लेखन कौशल

4 शैक्षिक पत्रकारिता: विविध आयाम **15 घंटे**

- शैक्षिक पत्रकारिता और सामाजिक विकास
- व्यावसायिक दौर में शैक्षिक पत्रकारिता और नैतिक प्रश्न
- शैक्षिक पत्रकारिता चुनौतियाँ और संभावनाएं

प्रायोगिक कार्य : **30 घंटे**

- किसी समाचार पत्र के शैक्षिक परिशिष्ट अथवा एक सप्ताह की शैक्षिक खबरों का अध्ययन कर रिपोर्ट प्रस्तुति
- शिक्षा चैनल या रेडियो पर प्रसारित शिक्षा संबंधी कार्यक्रमों की समीक्षा
- शिक्षा संबंधी मुद्दों पर समूह चर्चा
- अपने विद्यालय अथवा महाविद्यालय परिसर में आयोजित शैक्षिक कार्यक्रमों पर रिपोर्ट लेखन\ साक्षात्कार \न्यूज़ रील\ पॉड कास्ट अथवा ब्लॉग लेखन

सहायक पुस्तकें :

1. शिक्षा, मीडिया और राजनीति (वैचारिकी)– तेजपाल सिंह 'तेज़'– बुक वन ग्राफिक्स, दिल्ली
2. हिन्दी पत्रकारिता का इतिहास- मीनाक्षी सिंह, ओमेगा पब्लिकेशन्स , दिल्ली
3. संचार दर्पण – रमेशचंद्र त्रिपाठी, न्यू रॉयल बुक कंपनी, लखनऊ
4. सामाजिक पत्रकारिता – भरत झुनझुनवाला , श्री नटराज प्रकाशन , दिल्ली
5. इलेक्ट्रोनिक पत्रकारिता – डॉ. अजय कुमार सिंह , लोकभारती प्रकाशन , नई दिल्ली

DSE 2 खेल पत्रकारिता (ग)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 2 खेल पत्रकारिता (ग)	4	3	0	1	12th Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

1. खेल पत्रकारिता के स्वरूप से परिचित करवाना।
2. खेल पत्रकारिता की विशेषताओं से अवगत कराना।
3. खेल पत्रकारिता में रोजगार की संभावनाओं पर प्रकाश डालना।

Course Learning Outcomes

1. विद्यार्थी खेल पत्रकारिता के स्वरूप से परिचित होंगे।
2. खेलों का जीवन में महत्व समझेंगे।
3. खेल पत्रकारिता में रोजगार के अवसर प्राप्त होंगें।

1. **खेल पत्रकारिता : सामान्य परिचय** **10 घंटे**
   - खेल पत्रकारिता की अवधारणा और विकास
   - प्रमुख खेल एवं प्रतियोगिताएं (ओलंपिक, पैरालम्पिक, राष्ट्रमंडल, एशियाई खेल, क्रिकेट विश्व कप फीफा विश्व कप, सुपर सीरीज, ग्रैंड स्लैम राष्ट्रीय खेल, लीग प्रतियोगिताएँ)
   - प्रमुख खेल संस्थाएं : भारतीय खेल प्राधिकरण, भारतीय ओलंपिक संघ, भारतीय खेल फेडरेशन एवं PEFI (फिजिकल एजुकेशन फाउंडेशन ऑफ़ इंडिया)

2. **प्रिंट मीडिया में खेल लेखन** **10 घंटे**
   - समाचार पत्र का खेल-पृष्ठ, मैच रिपोर्ट्स, रिव्यु और फॉलो-अप, रिपोर्टिंग
   - फीचर प्रोफाइल लेखन, कॉलम लेखन, इंटरव्यू, फोटो पत्रकारिता

- खेल पृष्ठ सम्पादन, खेल आंकड़ों और रिकॉर्ड का महत्त्व

3. खेल प्रसारण एवं लेखन 10 घंटे

- रेडियो, टीवी, सीधा प्रसारण, ओबी वैन प्रसारण व्यवस्था, रिकार्डेड प्रसारण, विशेष कार्यक्रम निर्मिति
- खेल बुलेटिन, खेल एंकर, कमेंटटेटर, मल्टीस्पोर्ट्स प्रसारण, खेल प्रोग्राम पैकेजिंग
- न्यू मीडिया एवं खेल : खेल केन्द्रित वेबसाईट, ब्लॉग, सोशल मीडिया,मोबाइल पत्रकारिता

4. खेल पत्रकारिता एवं समाज 15 घंटे

- खेल पत्रकारिता और अंतर्राष्ट्रीय सम्बन्ध
- खेल पत्रकारिता और आचार संहिता
- खेल पत्रकारिता और बाज़ार : खेल मार्केटिंग, खेल आयोजन और मीडिया का व्यवसायिक सम्बन्ध, मर्चेनडाइजिंग

प्रायोगिक कार्य 30 घंटे

- खेल विषयक 10 समाचारों का लेखन करना।
- किसी खिलाड़ी अथवा खेल पत्रकार का साक्षात्कार करना।
- खेल पृष्ठ निर्माण करना।
- केस स्टडी (खिलाड़ी/खेल/मुद्दे) पर करना।
- खेल देखकर मोबाइल कमेंट्री करना।
- खेल विषयक डॉक्युमेंट्री निर्माण करना।
- किसी एक खेल की पारिभाषिक शब्दावली का प्रयोग करते हुए रिपोर्ट लिखना।

संदर्भित पुस्तकें :

1. पदमपति शर्मा : खेल पत्रकारिता, प्रभात प्रकाशन, 2011
2. सुशील दोषी, सुरेश कौशिक : खेल पत्रकारिता, राधाकृष्ण प्रकाशन, 2006
3. डॉ. आशीष कुमार द्विवेदी : खेल पत्रकारिता के आयाम, हिंदी बुक सेण्टर, 2021
4. प्रो. अनिल कुमार उपाध्याय, डॉ. प्रभाशंकर मिश्र : खेल पत्रकारिता, भारती प्रकाशन, 2018
5. स्मिता मिश्र, सन्नी कुमार गोंड : भारतीय खेल : समकालीन विमर्श, सर्वभाषा प्रकाशन, 2022
6. स्मिता मिश्र, सुरेश कुमार लौ, सन्नी कुमार गोंड : ओलंपिक गाथा ईश्वरीय मिथक से मानवीय मिथक तक, इंडिया नेट्बूक्स, 2021
7. डा. अर्जुन तिवारी : आधुनिक पत्रकारिता, विश्वविद्यालय प्रकाशन, वाराणसी

8. रामचंद्र तिवारी : पत्रकारिता के विविध रूप : आलेख प्रकाशन
9. प्रवीण दीक्षित : जनमाध्यम और पत्रकारिता : सहयोगी साहित्य संस्थान,कानपुर
10. Sports Journalism: A Practical Introduction, Second Edition, Phil Andrews, SAGE Publications Ltd, 2014
11. Sports Journalism: An Introduction to Reporting and Writing, Kathryn T. Stofer and James R. Schaffer, Rowman & Littlefield Publishers, 2009

GE (क) वैकल्पिक मीडिया

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE (क) वैकल्पिक मीडिया	**4**	**3**	0	**1**	**12th Pass**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

1. वैकल्पिक मीडिया से परिचित कराना।
2. मुख्यधारा मीडिया और वैकल्पिक मीडिया की कार्य-संस्कृति की जानकारी देना।
3. लोकतंत्र में वैकल्पिक मीडिया का महत्व बताना।
4. वैकल्पिक मीडिया की व्यावसायिक संभावनाओं से परिचित कराना।

Course Learning Outcomes

1. विद्यार्थी वैकल्पिक मीडिया से परिचित हो सकेंगे।
2. मुख्यधारा मीडिया तथा वैकल्पिक मीडिया की कार्य-संस्कृति में दक्षता प्राप्त करेंगे।
3. लोकतंत्र में सरोकारपरक पत्रकारिता से परिचित होंगे।
4. वैकल्पिक मीडिया में व्यावसायिक संभावनाओं से अवगत होंगे।

1. वैकल्पिक मीडिया : परिचय **10 घंटे**

- वैकल्पिक मीडिया : अर्थ, अवधारणा, उद्देश्य

- वैकल्पिक मीडिया और मुख्यधारा मीडिया में अंतर (संगठन और कार्य-संस्कृति)
- वैकल्पिक मीडिया की आवश्यकता और इतिहास

2. वैकल्पिक मीडिया: स्वरूप और संरचना **10 घंटे**

- वैकल्पिक मीडिया के विविध रूप (पारंपरिक और आधुनिक)
- सूचना प्रौद्योगिकी और वैकल्पिक मीडिया
- वैकल्पिक मीडिया की विषयवस्तु और भाषा, रिपोर्टिंग का स्वरूप

3. वैकल्पिक मीडिया: विविध परिप्रेक्ष्य **10 घंटे**

- वैकल्पिक मीडिया का सामाजिक जीवन पर प्रभाव, वैकल्पिक पत्रकारिता (लघु पत्र-पत्रिकाएं, शार्ट फिल्म्स, ओटीटी, यूट्यूब, ब्लॉग)
- रोजगार के परिप्रेक्ष्य में वैकल्पिक मीडिया, अर्थ-स्रोत
- वैकल्पिक मीडिया की चुनौतियां और संभावनाएं, न्यू मीडिया और अभिव्यक्ति की स्वतंत्रता

4. वैकल्पिक मीडिया: समसामयिक विमर्श **15 घंटे**

- वैकल्पिक मीडिया में हाशिए का समाज, संस्कृति उद्योग और वैकल्पिक मीडिया
- वैकल्पिक मीडिया : विचारधारा, एजेंडा सेटिंग, सामाजिक आंदोलन
- वैकल्पिक मीडिया का वर्ग-चरित्र और नैरेटिव (तुलनात्मक परिप्रेक्ष्य)

प्रायोगिक कार्य : **30 घंटे**

- मुख्यधारा मीडिया तथा वैकल्पिक मीडिया के स्वरूप का अध्ययन कर रिपोर्ट प्रस्तुति
- वैकल्पिक मीडिया के विस्तार, विषय, कार्य-संस्कृति पर समूह चर्चा और वार्ता
- समसामयिक विमर्शों से संबद्ध व्यावहारिक परियोजना कार्य
- वैकल्पिक मीडिया में सामाजिक आंदोलनों की उपस्थिति पर केस स्टडी
- वैकल्पिक मीडिया में भारतीय संस्कृति से संबंधित कार्यक्रमों की उपस्थिति पर टिप्पणी लेखन
- सर्वे के आधार पर किसी एक वैकल्पिक मीडिया की कार्यशैली, टारगेट ऑडियंस तथा अर्थ-तंत्र पर रिपोर्ट प्रस्तुत करना

सहायक पुस्तकें :

1. मीडिया, शासन और बाजार, अरविन्द मोहन, वाग्देवी प्रकाशन, बीकानेर
2. वैकल्पिक मीडिया, लोकतंत्र और नॉम चॉम्स्की, सुधा सिंह, जगदीश्वर चतुर्वेदी
3. मीडिया विमर्श, रामशरण जोशी, सामयिक **प्रकाशन**
4. मीडिया और बाजारवाद, रामशरण जोशी, राधाकृष्ण प्रकाशन
5. पत्रकारिता के नए आयाम, सुधीश पचौरी, अचला शर्मा, राजकमल प्रकाशन

6. पत्रकारिता के नए आयाम, एस के दुबे, राजकमल प्रकाशन

7. भारत में प्रिंट इलेक्ट्रॉनिक और न्यू मीडिया, संदीप कुलश्रेष्ठ, प्रभात प्रकाशन

GE (ख) साइबर मीडिया

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE (ख) साइबर मीडिया	4	3	0	1	12th Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- जनसंचार में साइबर मीडिया का महत्व बताना।
- साइबर मीडिया के विविध आयामों की जानकारी देना।
- साइबर मीडिया के एप्लीकेशन्स से अवगत कराना।
- समाचार वेबसाइट, ब्लॉग और मोबाइल कम्युनिकेशन के लिए कंटेंट निर्माण का परिचय देना।
- साइबर कानून और उसमें नैतिकता के महत्व से अवगत कराना।

Course Learning Outcomes

- संचार प्रौद्योगिकी की समझ विकसित होगी।
- साइबर मीडिया का प्रभावशाली तरीके से प्रयोग करना सीखेंगे।
- ऑनलाइन समाचार मीडिया के लिए रिपोर्टिंग एवं लेखन का कौशल प्राप्त करेंगे।
- ऑनलाइन मीडिया के लिए विभिन्न प्लेटफॉर्म पर कंटेंट विकसित करने का ज्ञान प्राप्त करेंगे।
- साइबर कानून, साइबर अपराध और साइबर सुरक्षा संबंधी समझ विकसित होगी।

1 साइबर मीडिया: परिचय एवं अवधारणा 10 घंटे

- साइबर मीडिया: परिभाषा, महत्व और भारत में साइबर पत्रकारिता
- साइबर मीडिया तकनीक और विशेषताएं
- साइबर मीडिया और मीडिया के अन्य रूपों में अंतर, संचार माध्यम के रूप में साइबर मीडिया

2 ऑनलाइन मीडिया रिपोर्टिंग 10

- ऑनलाइन पत्रकारिता: उद्देश्य, प्रकार एवं विशेषताएं
- ऑनलाइन समाचार मीडिया के लिए रिपोर्टिंग: परंपरागत रिपोर्टिंग, मुक्त स्रोत (ओपन सोर्स) रिपोर्टिंग एवं वर्गीकृत रिपोर्टिंग
- ऑनलाइन पत्रकारिता के ट्रेंड्स एवं ऑनलाइन पत्रकार की विशेषताएं

3 ऑनलाइन मीडिया के लिए लेखन 10 घंटे

- ऑनलाइन लेखन : तत्व एवं विशेषताएं, कहानी एवं समाचार विकास के लिए डिजिटल मीडिया पर ग्राफ, इंफो ग्राफिक्स, मानचित्र, कार्टून, संकेतों और प्रतीकों का उपयोग
- ऑनलाइन लेखन के प्रकार: ब्रेकिंग न्यूज़, न्यूज़ स्टोरी , मल्टीमीडिया दृश्य स्टोरी लेखन, प्लेटफॉर्म आधारित ऑनलाइन मीडिया लेखन: न्यूज़ वेबसाइट और ब्लॉग, सोशल नेटवर्किंग साइट्स के लिए लेखन, अंतर्संबंध (इंटरएक्टिव) लेखन, एसईओ (SEO) आधारित ऑनलाइन मीडिया लेखन, फैक्ट चेकिंग
- ई-मेल लिखना, ट्विटर के लिए लेखन – ट्वीट, ट्वीट संबंधी लेखन दिशानिर्देश, ट्विटर टिप्स और उपकरण, फेसबुक पर लेखन, ब्लॉग लेखन, विषय-वस्तु का चुनाव करना, कहानियों का क्रम बनाना, पाठकों की संख्या बनाए रखना, चुनौतियाँ एवं ब्लॉग कमेंट

4 साइबर अपराध और कानून 15घंटे

- साइबर मीडिया और साइबर कानून, परिचय एवं आवश्यकता
- आईसीटी (ICT) 2000, 2008, 2021, बैंक और ई-रिकॉर्ड के रखरखाव संबंधी नीति
- हैकिंग: नैतिक और अनैतिक, स्थिति, साइबर अपराध एवं भारत में वेबसाइटों की निगरानी और ब्लॉक करने की शक्तियाँ

प्रायोगिक कार्य : 30 घंटे

- ब्लॉग निर्माण एवं लेखन।
- हिंदी के प्रमुख ब्लॉगों का स्वरूप और सामग्री की दृष्टि से अध्ययन और समीक्षा।
- किसी वेब पोर्टल की सामग्री का विश्लेषण और उसकी रिपोर्ट तैयार करना।

- ऑनलाइन मीडिया संबंधित केस स्टडी का अध्ययन और उसकी रिपोर्ट तैयार करना।
- मल्टीमीडिया के प्रयोग से विविध डिजिटल डिवाइस पर कंटेंट बनाना।
- सामाजिक संदेशों के लिए ट्विटर का प्रयोग और सामग्री पर ऑनलाइन मीडिया हेतु रिपोर्ट तैयार करना।
- वेबसाइट डिजाइन करना और कंटेंट बनाना।

सहायक पुस्तकें :

1. इंटरनेट पत्रकारिता, सुरेश कुमार, तक्षशिला प्रकाशन नई दिल्ली
2. ऑनलाइन पत्रकारिता, हर्ष देव, सम सामयिक प्रकाशन, नई दिल्ली
3. ऑनलाइन जर्नलिज्म, तपस रे, कैंब्रिज यूनिवर्सिटी प्रेस
4. ऑनलाइन जर्नलिज्म-प्रिंसिपल एंड प्रैक्टिस फॉर दि वेब, जिम फोस्ट, रुठलेस प्रकाशन
5. द एलिमेंट्स ऑफ ऑनलाइन जर्नलिज्म, आरजी रोजेल्स, यूनिवर्स प्रेस, यूके
6. साइबर क्राइम : इंपैक्ट इन द मिलेनियम, आरसी मिश्रा, ऑथर प्रेस
7. ब्लॉग्स : इमर्जिंग कम्युनिकेशन मीडिया, डी. सतीश एंड राजेश प्रभाकर कालिया, द आईसीएफएआई यूनिवर्सिटी प्रेस

Community outreach (2)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Community Outreach	2			2	12th Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

5. समाज के विभिन्न मुद्दों के प्रति मीडिया छात्रों को जागरूक करना।
6. छात्रों में सामाजिक सरोकार की समझ विकसित करना।
7. समाज, संस्थान और मीडिया उद्योग में समन्वय स्थापित करना।
8. छात्रों में मीडिया व्यवसाय की व्यावहारिक समझ विकसित करना।

Course Learning Outcomes

5. समाज के विभिन्न मुद्दों के प्रति छात्र जागरूक होंगे।
6. छात्रों में सामाजिक सरोकार की समझ विकसित होगी।
7. मीडिया व्यावसाय का व्यवहारिक कौशल विकसित होगा।
8. समाज, संस्थान और मीडिया उद्योग में समन्वय स्थापित होगा।

Syllabus : **120 घंटे**

11. विविध समुदायों के साथ मीडिया जागरूकता पर कार्यशाला।
12. विभिन्न मीडिया चैनलों द्वारा आयोजित चर्चा में हिस्सा लेना।
13. मीडिया संस्थानों का भ्रमण (समाचार-पत्र, पत्रिका, रेडियो एवं टीवी)
14. विभिन्न समसामयिक मुद्दों पर चर्चा की रिकॉर्डिंग तैयार करना।
15. विश्वविद्यालय एवं कॉलेजों के विविध कार्यक्रमों की कवरेज करना (प्रिंट, रेडियो, वीडियो, लाइव)
16. भ्रमण एवं गतिविधियों की साप्ताहिक रिपोर्ट तैयार कर प्रकाशित करना।

17. समाज के विविध क्षेत्रों में उत्कृष्ट कार्य करने वाले लोगों के साक्षात्कार करना।
18. संबंधित शिक्षक से नियमित चर्चा एवं मार्गदर्शन में विभिन्न मीडिया गतिविधियों को कार्यान्वित करना।
19. स्थानीय मुद्दों पर रिपोर्टिंग और परिचर्चा का आयोजन कराना।
20. मीडिया लैब में मीडिया कार्यक्रम तैयार करना।

फील्ड वर्क सेमेस्टर में :

- सप्ताह में न्यूनतम 4 घंटे छात्र को समाज में देने होंगे। कार्य की जांच (1 घंटा) समूह मार्गदर्शन (1 घंटा)
- छात्रों की सामुदायिक भ्रमण में 80 प्रतिशत उपस्थिति अनिवार्य होगी।
- छात्रों का मीडिया संस्थान या समाज में भ्रमण शिक्षकों के देख-रेख एवं निर्देशन में होगा।

नोट : हिंदी पत्रकारिता एवं जनसंचार पाठ्यक्रम केलिए आधुनिक सुविधाओं से लैस ऑडियो-वीडियो मीडिया लैब अनिवार्य है। छात्रों के प्रायोगिक प्रशिक्षण हेतु महाविद्यालय में अपेक्षित मीडिया उपकरण, तकनीकी क्षमता रखने वाले सहायक कर्मी, उपयोगी सॉफ्टवेयर एवं कम्प्यूटर केसाथ प्रोजेक्टर और इंटरनेट की सुविधा की व्यवस्था होनी चाहिए।

ANNEXURE - 38

Sub: Amendment to Ordinance V

[E.C Resolution No. 27/ (27-1-10) dated 25.08.2023]

Following addition be made to Appendix-II-A to the Ordinance V (2-A) of the Ordinances of the University;

Add the following:

Syllabi of following courses of the Department of Physical Education & Sports Sciences under Faculty of Interdisciplinary and Applied Sciences based on Under Graduate Curriculum Framework -2022 implemented from the Academic Year 2022-23:

1. **Semester-IV**
   - (i) BSc. (Hons.) Physical Education, Health Education & Sports – DSC
   - (ii) Pool of Discipline Specific Electives (DSEs)
   - (iii) Pool of Generic Electives

   (As per Annexure-1)

2. **Semester-IV, V & VI**
   - (i) BA (Prog.) Physical Education – DSC
   - (ii) Pool of Discipline Specific Electives
   - (iii) Pool of Generic Electives

   (As per Annexure-2)

Annexure-1

INDEX

Department of Physical Education

Semester-IV

Sl.No.	Content	Page No.
1	**BSc. (Hons.) Physical Education, Health Education and Sports – DSC** 1. Sports Sociology 2. Biomechanics 3. Exercise Prescription for Health & Fitness	2-8
2	**Pool of Discipline Specific Electives (DSEs) :** 1. Athletics 2. Badminton 3. Basketball 4. Cricket 5. Football 6. Gymnastics 7. Handball 8. Hockey 9. Judo 10. Kabaddi 11. Kho-Kho 12. Volley Ball **13.** Yoga	9-34
3	**Pool of Generic Electives (GEs)** 1. Yoga and Stress Management **2.** Injury Prevention and Rehabilitation in Athletics	35-40

SEMESTER- 4
BSc-PE-DSC-10(4) (DSC)
SPORTS SOCIOLOGY
DSC

SPORTS SOCIOLOGY

Sl. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite of the Course (if any)
			Lecture	Tutorial	Practical		
1.	SPORTS SOCIOLOGY	04	03	0	01	XII Pass	NIL

Objective:

To provide the knowledge and applications of Sports sociology as well as to familiarize the learners with the culture and sport, Socialization and sports, Gender and sports, Stratification as well as sports education with application point of view.

Learning Outcomes:

At the end of the course the student will be able to-

1. Acquire the knowledge of meaning and importance of sports sociology and inculcate the knowledge of various theories in order to apply in best suitable modern aspects.
2. Understand the concept of culture and sports along with its components to deal with cultural lag.
3. Recognize the basic differences between various feminist theories in sport in order to understand the development of women in sports at present day context.
4. Apply the knowledge and practices of social mobility and stratification in the emergence of commercial and professional sports.
5. Understand the importance and applications of sports sociology.
6. Articulate sociological perspectives with sports.
7. Inculcate the sports culture in their life & society.
8. Establish the relationship between society and sports.
9. Analyze gender inequality in sports and application of the same for equality.
10. Understand the significance of socialization through games and sports for the development of the society.

Theory Syllabus

UNIT I - Introduction (09 Hours)

1.1 Meaning and importance of sociology and sports sociology
1.2 Sports as social phenomenon
1.3 Functional theory and sports
1.4 Conflict theory and sports
1.5 Interaction theories and Sports

UNIT II - Culture and sports **(09 Hours)**

2.1 Concept of sports culture and its characteristic
2.2 Sports culture and its components
2.3 Sports club culture
2.4 Cultural lag and sports

UNIT III - Socialization and sports **(09 Hours)**

3.1 Concept of Socialization and Sports Socialization
3.2 Type of socialization
3.3 Agents of socialization
3.4 Importance of socialization

UNIT IV - Gender and Sports **(09 Hours)**

4.1 Meaning and Concept of Gender, Liberal feminist theory and sports, Radical feminist theory and sports.
4.2 Marxist feminist theory and sports
4.3 Third Gender (Transgender) and Sports
4.4. Development of Women in Sports in India

UNIT V - Stratification and sports **(09 Hours)**

5.1 Meaning and concept of stratification and sports
5.2 Types of sports stratification
5.3 Social mobility and sports
5.4 Emergence of commercial and professional sports

Practical **(30 Hours)**

1. Conduct a survey on the status of sports in society/ community of a given area of context.
2. Measurement of Group Dynamics.
3. Application of Methods and Scales for selection of Leader/ Captain in games & sports setup.
4. Measurement of Social Desirability.

References:

1. Bhusan, V. and Sachdeva, An Introduction to Sociology, Delhi: Kitab, 2003.
2. Coaplay, Joy. J., Sport In Society, Issues And Controversies, Mcgraw Hill International edition 1997
3. Dictionary of sociology, Penguine reference
4. Donald. W. Ball and John W. Joy,Sport and Social Order: Contributions to the Sociology of Sports, Addison Wesley Publishing company 1975
5. Freeman. S. and Boyes R., Sports beyond the iron curtain, London Protcus Publishing Company 1980
6. Gultmann, A., Sport Spectators, Colombia University, New York 1986

7. Hosue, J., Tomlinson, A., Whannel, G., Undertaking Sport – An Introduction To The Sociology And Cultural Analysis of Sport, Routbdge, New York 1999
8. IGNOU, The Study of Society - Understanding Sociology, Delhi - IGNOU, 2007.
9. Inkeles, A. Ed., What Is Sociology, New Delhi : Prentice Hall, 1997.
10. Jain, Rachna, Sports Sociology, New Delhi: Khel Sahitaya Kendra, 2005.
11. Knop,P.D., Engstrow, L.M., Sbisstadd, B., Uleiss, M.R., World Wide Trends In Youth Sport, Human Kinetics 1996
12. Learning Experience in Sociology of Sport by Lusan L. Greendoefor, C.A. Hasbroob, Human Kinetics Books Champaign, Illions U.S.A. 1991
13. Loy,J.W., Mc pherson , B.D., Kenyon, G., Sport And Social Systems, A Guide To The Analysis Problems Litreture, Addison wesley publishing company Messachuslls 1978
14. Maguire, J. and Young JAI, K., Theory, Sport and Society , Elsevier Ltd. 2005
15. Majuardar, B., and Morgan Reutledge, J. A., Sport in South Asian Society Past and Present edited, New York and London 2005
16. Mc Pherson, B.D., Curtis,J.E., and Loy, J.W., The Social Significance of Sport, Human Kinetics books Champaign Illinois U.S.A.1989
17. Mitchell, G.D. Ed., Dictionary of Sociology, U.K : Routledge, 1999.
18. Moping Sense of Sports, by Ellis Cashmore Routeedge, New York, 2000
19. Panomaryow, N.I., Sport and Society, Progress Publication Moscow-1981
20. Rawat, H.K. Sociology Basic concepts, Rawat Publication 2007
21. Redmond, G., Sport and Politics,. Human Kinetics publishers, In Champaign, Illinois 1986
22. Roulledge, M.Abrow, Sociology, The Basics London 2001
23. Sandhu, Kanwaljit Singh, Sport Sociology, New Delhi : Friends Pub., 2000.
24. Sege, G.H Power And Radiology In American Sport, A Critical Perspective, Human Kinetics 1998
25. Sharma, R. N, Urban Sociology, New Delhi : Surjeet Pub., 1993.
26. Shoebridge, M., Women in Sports, a selected biography, Mansell publishing Ltd. London and New York 1987
27. Singh, Bhupinder, Sports Sociology, New Delhi : Friends, 2004.
28. Singh, J.P., Samaajshastra Avdharanaaye Aur Sidhaant, Prentis Hall of India New Delhi 1999
29. Snyder, E.E. and Prentis Hall Jersey, Social aspect of Sport, 1978
30. Sports in Contemporary Society: An ethnology worth publications, New York-2001
31. Stanly eitzan and George H. Sage, Sociology of world American Sports, Bastow, M. A: W C B/Mcgraw Hill 1997
32. Kumar, Dharmander, Fundamentals of Sports Sociology, Writer choice,2022
33. Singh, Rajbir, Khel Samaj shastra (Part-1, 2, 3 and 4) Sports Publication,2010
34. Turner, B., Cambridge Dictionary of Sociology, U.K., Cambridge, U.N. Press., 2006

SEMESTER- 4
BSc-PE-DSC-11(4) (DSC)
BIOMECHANICS
DSC

Sl. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite of the Course (if any)
			Lecture	Tutorial	Practical/Practice		
2.	Biomechanics	04	3	0	1	XII Pass	NIL

Objective:
The objective of this course is to provide an understanding with practical skills to the learners about Sports Biomechanics and its applications to sports as well as to develop the foundation of sports biomechanics for performance analysis and improvement.

Learning Outcomes:
1. The learners will be able to understand the fundamental concepts and practices related to Sports Biomechanics.
2. The learners will be able to develop an understanding for practical applications of the fundamental structure of movement with related mechanics and its principles.
3. The learners will be able to analyze the sport movements and design movement-oriented exercise for improvement of performance.
4. The learners will be able to develop the program for improving performance as an innovative approach applying biomechanics.
5. The learners will be able to apply the knowledge and skills related to science of movement to create a strong foundation for better sports performance and research.

SYLLABUS

PART-A: THEORY

Unit – I Introduction to Sports Biomechanics (08 Hours)

- Meaning and Definition of Sports Biomechanics.
- Importance of Sports Biomechanics to Physical Education Teacher, Athletes and Sports Coaches.
- Terminology of Fundamental Movements
- Fundamental concepts of Centre of Gravity, Equilibrium, Line of Gravity

Unit – II Mechanical Concepts (10 Hours)

- Force - Meaning, definition, types and its application to sports activities
- Lever - Meaning, definition, types and its application to human body.
- Newton's Laws of Motion – Meaning, definition and its application to sports activities (linear and angular).
- Projectile – Factors influencing projectile trajectory.

Unit – III Kinematics of Human Movement (08 Hours)

- Linear Kinematics – Distance and Displacement, speed and velocity, Acceleration
- Angular kinematics – Angular Distance and Displacement, Angular Speed and velocity, Angular Acceleration.

Unit – IV Kinetics of Human Movement **(09 Hours)**

- Linear Kinetics – Inertia, Mass, Momentum, Friction.
- Angular Kinetics – Moment of Inertia, Couple, Stability.

Unit – V Biomechanical Principles **(10 Hours)**

- The Principle of the Optimum Path of Acceleration.
- The Principle of the Initial Force.
- The Principle of Reaction.
- The Principle of Conservation of Momentum.

PART-B: PRACTICALS **(30 Hours)**

1. Evaluation of Velocity- Time Graph.
2. Determination of Centre of Gravity by Reaction Board Method.
3. Determination of Centre of Gravity by Joint Point Method.
4. Determination of Centre of Gravity by Main Point Method.
5. Determination of Centre of Combined Gravity (Joint Point Method).
6. Demonstration of the Principle of Conservation of Angular Momentum.
7. Demonstration of the Principle of Action and Reaction.

Suggested Readings:

1. Shaw, D. (2003). Sports Biomechanics. Khel Sahitya Kendra.
2. Shaw, D. (2022). Biomechanics and Kinesiology of Human Motion. Khel Sahitya Kendra.
3. Shaw, D. (2007). Mechanical Basis of Bio-Mechanics. Sports Publication.
4. Shaw, D. (2018). Pedagogic Kinesiology. Sports Publication.
5. Shaw, D. & Kumar, G. (2022). Kinesiology of Exercises with Apparatus. Khel Sahitya Kendra.
6. Shaw, D. & Mathur, N. (2022). Kinesiology of Freehand Exercises. Sports Publication.
7. Bunn, J. W. (1972). Scientific Principles of Coaching. Englewood Cliffs, N.J.: Prentice Hall Inc.
8. Hay, J. G. & Reid, J. G. (1982). The Anatomical and Mechanical basis of Human Motion. Englewood Cliffs, N.J.: prentice Hall Inc.
9. Hay, J. G. & Reid, J. G. (1988). Anatomy, Mechanics and Human Motion. Englewood Cliffs, N.J.: prentice Hall Inc.
10. Hay, J. G. (1970). The Biomechanics of sports techniques. Englewood Cliffs, N.J.: Prentice Hall, Inc.
11. Simonian, C. (1911). Fundamentals of Sport Biomechanics. Englewood Cliffs, N.J.: Prentice Hall Inc.

SEMESTER- 4
BSc-PE-DSC-12(4) (DSC)
EXERCISE PRESCRIPTION FOR HEALTH AND FITNESS
DSC

Sl. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite of the Course (if any)
			Lecture	Tutorial	Practical		
3.	EXERCISE PRESCRIPTION FOR HEALTH AND FITNESS	04	03	0	01	XII Pass	NIL

Objective:
The objective of this course is to provide an understanding, skill and practices to the learners about exercise prescription for health and fitness.

Learning Outcomes:

At the end of the course the student will be able to-
1. Acquire the knowledge and practices of exercise prescription on the behalf of health status.
2. Deal with differentiation and relation between exercise & physical activity.
3. Understand and demonstrate the direct and indirect health benefits of the exercise
4. Get understanding and applications of acronyms FITT (Frequency, Intensity, Time (duration), type (Mode of Exercise) (Training principles for batter training)

Theory Syllabus

UNIT I - (09 Hours)

1.1 Background of exercise prescription to non-sports person, basis of exercise prescription and measurement of motivation for physical exercise/activity health status
1.2 Physical personality in relation to physique, attitude, interests.
1.3 Exercise for recreation, health, fitness, wellness and competition.

UNIT II - (09 Hours)

2.1 Meaning and definition of exercise & physical activity
2.1.1Differences between exercise & physical activity (chronic and acute effect for adaptation)
2.1.2 Relation between exercise & physical activity

UNIT III - (09 Hours)

3.1 Health benefits of exercise, exercise as pro-active health care.

3.2 Exercise for prevention of heart disease, osteoporosis, diabetes type-II, hypertension, obesity etc.

UNIT IV - (09 Hours)

4.1 Necessity of exercise prescription

4.1.1 Sedentary population

4.1.2 Different-population

4.1.3 Self-responsibilities and behaviour change stages for exercise regularity

UNIT V - (09 Hours)

5.1 Steps for exercise prescription.

5.2 Exercise, stress test, physical fitness test,

5.3 Understanding acronyms FITT (Frequency, Intensity, Time (duration), Type (Mode of Exercise).

5.4 Principles of fitness training

PART- B Practical Syllabus (30 Hours)

1. Assessment of fitness (At least three)
2. Assessment of physical activity readiness of a person
3. Measurement of health status
4. Prescribing exercise / Programme
5. Evaluation of an exercise Programme

References:

1. American College of Sports Medicine (2000). ACSM's Guidelines for Exercise Testing and Prescription. Lippincott Williams & Wilkines. Philadelphia. USA.

2. Corbin C G Welk W Corbin & K Welk (2005). Concepts of Fitness and Wellness. McGraw Hill Company. New York. USA.

3. Goldberg L and DL Elliot (2002). The Power of Exercise. National Health & Wellness Club. USA.

4. Hales D (2006). An Invitation to Health. Thomson Wadsworth. Belmont. California. USA.

5. Harrison GA, Weiner JS Tanner JM and. Barnicot NA (1984). Human Biology. Oxford University Press. Oxford. U.K.

6. Howley ET and BD Franks (2003). Health Fitness Instructors Handbook, Human Kinetics. Champaign. Illinois. USA

7. Kolecki JE and DQ Thomas (2007). Activities and Assessment Manual. Jones and Barlett Publishers. Sandburg. Massachusetts. USA.

8. Powers S and E Howley (2006). Exercise Physiology- Theory and Applications. McGraw Hill Co. New York. USA.

9. Thomas DQ and JE Kotecki (2007). Physical Activity and Health –An Interactive Approach. Jones and Bartlett Publishers. Sndbury. Masschusett. USA.

10. USDHHS (2000) Healthy People 2010: National Health Services (USDHHS). Washingtons D.C. USA.

Semester-IV

NOTE: Choose a maximum of two DSE papers (Games/ Sports), One DSE paper is compulsory, not repeating from semester I, II & III (DSC/ DSE).

BSc-PE-DSE-3 or 4 (4)-101:
ATHLETICS

Sr. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite ofthe Course (if any)
			Lecture	Tutorial	Practical/Practice		
1	Athletics	04	2	0	2	XII Pass	NIL

Objective: - The Students will acquire knowledge and understanding of a specific sport/ games in regard to practices, skills and practical in which an individual wish to excel.

Learning Outcome: -The students will attain knowledge, understanding, interpreting and analyzing proficiency in a game of one's choice.

After the Completion of First Month:

The student will be able to gain knowledge with respect to Historical Development, Organizational Structure and Playfield Technology of the respective sport/game.

After the Completion of Second Month:

A student will be able to understand, application and interpret the rules of game as well as game knowledge in the areas of psychological and physiological basis of Warming up and technical aspects of coaching.

After the Completion of Third Month:

A student will be able to learn and acquire various skills of sports / game, gain knowledge about different techniques of fitness and skills of evaluation as well as the evaluation of player's performance. The technical practice of sprint races, middle and long distance races, hurdles races, jumping event- long jump, throwing events- shot put, hammer throw.

After the Completion of Fourth Month:

A student will be learning about various fitness components and its forms. Further, the student will be able to practice and improve performance on the basis of knowledge and skill gained in understanding various fitness components. Track marking and marking of different arenas for selected events as in unit-III.

THEORY SYLLABUS (30 hrs lectures)

Unit-I **(08 hrs lectures)**

- Historical Development and Modern Trends (National and International Level)
- Organisational Structure (State, National and International Level)
- Playfield Technology – Marking and Construction of the playfields.

Unit-II **(08 hrs lectures)**

- Rules and their interpretation of the sport.
- Warming up and psychological as well as physiological basis of Warming up, Cooling down and its effect.
- Techniques of Coaching – Pep talk, Pre, during and Post match competition Coaching.

Unit-III **(07 hrs lectures)**

- Basic skills and techniques of the Sports/Game- – sprint races, middle and long distance races, hurdlesraces, jumping event- long jump, throwing events- shot put, hammer throw.
- Motor Fitness Components Testing
- Skill/Technique Evaluation
- Evaluation of Player's Performance.

Unit-IV **(07 hrs lectures)**

- Introduction to Physical and Motor Fitness components related to sport: Strength, Speed, Endurance, Coordinative Abilities and Flexibility.
- Track marking and marking of different arenas for selected events in unit-III.

Practical Syllabus - **(60 hrs.)**

1. Learning and demonstrating various skills/techniques of sports- sprint races, middle and longdistanceraces, hurdles races, jumping event- long jump, throwing events- shot put.
2. Learning to demonstrate various tests to evaluate motor components as listed in unit IV above.
3. Track marking and marking of different arenas for selected events in unit-III.

SUGGESTED READINGS:

- Chauhan VS (1999). Khel Jagat Mein Athletics. A.P. Pub, Jalandhar.
- Bompa O. Tudor and Halff G. Gregory. (2009) "Periodization Theory and Methodology of Training"Human kinetics. NY.
- Evans DA (1984). Teaching Athletics. Hodder, London.
- Fox EL (1998). Physiological Basis of Physical Education and Athletics Brown Pub.
- Gothi E (2004). Teaching & Coaching Athletics. Sport Pub., New Delhi.
- Gupta R. (2004). Layout & Marking of Track & Field. Friends Publications. India. New Delhi.
- Handbook-Rules and Regulation. International Athletic Federation (2010).
- Herb Amato, DA ATC et al (2002). Practical Exam Preparation Guide of Clinical Skills of AthleticTraining. Slack Incorporated. 1st ed., USA.
- Kumar, Pardeep. (2008). Historical Development of Track & Field. Friends Publication. New Delhi
- Maughan, R. and Gluson, M. (2004). The Biomechanical Basics of Athletic Performance. OxfordUniversity Press, U.K.
- Prentice, W. and Arnheim, D. (2005). Arnheim"s Principles of Athletic Training 12th Ed. McGrawHill. in place of Knight (1988).
- Renwick GR (2001). Play Better Athletics. Sports Pub, Delhi.
- Singh, Hardayal. (1919). Science of Sports Training. DVS Publication, N. Delhi.
- Vanaik A. (2017). Officiating and Coaching, Friends Publication. New Delhi.

Semester IV
BSc-PE-DSE-3 or 4 (4)-102:
BADMINTON

Sr. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite ofthe Course (if any)
			Lecture	Tutorial	Practical/Practice		
2	Badminton	04	2	0	2	XII Pass	NIL

Objective: - The Students will acquire knowledge and understanding of a specific sports / game in which an individualwishes to excel.

Learning Outcomes: -The student attains knowledge, understanding, interpreting and analyzing proficiency in agame of one‟s choice.

After the Completion of First Month:

A student will be able to gain knowledge with respect to Historical Development, Organisational Structure and Playfield Technology of a sport/game.

After the Completion of Second Month:

A student will be able to understand and interpret the rules of game as well as game knowledge in the areas of physiological basis of Warming up and technical aspects of coaching.

After the Completion of Third Month:

A student will be able to learn and acquire various skills of sports/game, gain knowledge about different techniques evaluation as well as the evaluation of player's performance.

After the Completion of Fourth Month:

A student will be learning about various fitness components and its forms. Further, the student will be able to practice and improve performance on the basis of knowledge gained in understanding various fitness components and its testing.

THEORY SYLLABUS **(30 hrs lectures)**

Unit-I **(08 hrs lectures)**

- Historical Development and Modern Trends (National and International Level)
- organizational Structure (State, National and International Level)
- Playfield Technology – Marking and Construction of the playfields.

Unit-II **(08 hrs lectures)**

- Rules and their interpretation.
- Warming up and physiological basis of Warming up and its effect on performance.
- Cooling down and its effect.
- Techniques of Coaching – Pep talk, Pre, during and Post match coaching.

Unit-III **(07 hrs lectures)**

- Basic skills and techniques of the Sports/Game.
- Skill/Technique Evaluation
- Evaluation of Player's Performance.

Unit-IV

(07 hrs lectures)

- Introduction to Physical and Motor Fitness components: Strength, Speed, Endurance, CoordinativeAbilities and Flexibility.
- Motor Fitness Components Testing of above components.

Practical Syllabus - **(60 hrs.)**

Learning and demonstrating various skills/techniques of sports.

Learning to demonstrate various tests to evaluate motor components as listed in unit IV above.

SUGGESTED READINGS:

1. Bloss, M.V. et al (2000). Badminton. McGraw Hill,USA.
2. Bompa O Tudor and Halff G. Gregory. (2009) "Periodization Theory and Methodology ofTraining" Human kinetics. NY.
3. Brahms Bernd-Voler. (2010). Badmnton Handbook. Mayer & Mayer Sports: UK.Unt-II, III &IV-p-9-14.
4. Daris Pal. (1988). Badminton-The complete practical guide. Dairs & Charles Inc.:USA. Unit-IIp-1-28 III- p-29-88, 109-152 & IV-p-97-108
5. Downey J (1990). How to Coach Badminton. Collins Pub.London.
6. Golds, M. (2002). Badminton: Skills of the Game. Growood Press,USA.
7. Grice, T. (2007). Badminton: Steps to Success. 2nd Ed. Human Kinetics,USA.
8. GuptaR.KumarP.andTyagiS.(2008).TextbookonTeachingSkillandProwess(Part- I&II). FriendsPublication. New Delhi.
9. Hoeger, W.W. Kand & Hoeger, S.A. (1997). Principles and Labs for physical fitness. (2nd Edi.).Morton Publishing Company. USA. Unit- II- p-127, 178-187,Unit- p-10-194.
10. Singh, Hardayal. (1991). Science of Sport Training. D.V.S Pub. Delhi.
11. Singh, MK. (2007). Comprehensive Badminton. Friends Pub. New Delhi.
12. Vanaik A. (2005). Playfield Manual, Friends Publication. New Delhi.
13. Vanaik A. (2017). Officiating and Coaching, Friends Publication. New Delhi.

Semester IV
BSc-PE-DSE-3 or 4 (4)--103:
BASKETBALL

Sr. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite ofthe Course (if any)
			Lecture	Tutorial	Practical/Practice		
3	Basketball	04	2	0	2	XII Pass	NIL

Objective: - The Students will acquire knowledge and understanding of a specific sport/game in which an individual wish to excel.
Learning Outcome: -The student attains knowledge, understanding, interpreting and analyzing proficiency in a game of one's choice.

After the Completion of First Month:

A student will be able to gain knowledge with respect to Historical Development, Organisational Structure and Playfield Technology of a sport/game.

After the Completion of Second Month:

A student will be able to understand and interpret the rules of game as well as game knowledge in the areas of physiological basis of Warming up and technical aspects of coaching.

After the Completion of Third Month:

A student will be able to learn and acquire various skills of sports/game, gain knowledge about different techniques evaluation as well as the evaluation of player's performance.

After the Completion of Fourth Month:

A student will be learning about various fitness components and its forms. Further, the student will be able to practice and improve performance on the basis of knowledge gained in understanding various fitness components and its testing.

THEORY SYLLABUS **(30 hrs lectures)**

Unit-I **(07 hrs lectures)**

- Historical Development and Modern Trends (National and International Level)
- Organisational Structure (State, National and International Level)
- Playfield Technology – Marking and Construction of the playfields.

Unit-II **(08 hrs lectures)**

- Rules and their interpretation.
- Warming up and physiological basis of Warming up and its effect on performance.
- Cooling down and its effect.
- Techniques of Coaching – Pep talk, Pre, during and Post match coaching.

Unit-III **(07 hrs lectures)**

- Basic skills and techniques of the Sports/Game.
- Skill/Technique Evaluation
- Evaluation of Player‟s Performance.

Unit-IV **(08 hrs lectures)**

- Introduction to Physical and Motor Fitness components: Strength, Speed, Endurance, Coordinative Abilities and Flexibility.
- Motor Fitness Components Testing of above components.

Practical Syllabus - **(60 hrs.)**

Learning and demonstrating various skills/techniques of sports.

Learning to demonstrate various tests to evaluate motor components as listed in unit IV above.

SUGGESTED READINGS

- Bompa O. Tudor and Halff G. Gregory. (2009) "Periodization Theory and Methodology of Training"Human kinetics. NY.
- Drewett, J. (2007). How to Improve at Basketball. Crabtree Publishing Co., USA.
- Goldstein, S. (1998). Basketball Fundamentals. 2nd Ed. Golden Aura Publishing,USA.
- Jain Naveen (2003). Play and Learn Basket Ball. Khel Sahitya Kendra. NewDelhi.
- Nat BB (1997). Conditioning Coaches Association. NBA Power Conditioning. Human Kinetics.
- Sharma OP (2003). Basket Ball Skills and Rules. Khel Sahitya Kendra, Delhi.
- Singh, Hardayal. (1919). Science of Sports Training. DVS Publication, N. Delhi.
- Wilmore & Costill (2004).Physiology of Sports &Exercise. Human Kinetics, US

Semester IV
BSc-PE-DSE-3 or 4 (4)--104:
CRICKET

Sr. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite ofthe Course (if any)
			Lecture	Tutorial	Practical/Practice		
4	Cricket	04	2	0	2	XII Pass	NIL

Objective: - The Students will acquire knowledge and understanding of a specific sport/game in which an individual wish to excel.

Learning Outcomes: -The student attains knowledge, understanding, interpreting and analyzing proficiency in a game of one's choice.

After the Completion of First Month:

A student will be able to gain knowledge with respect to Historical Development, Organisational Structure and Playfield Technology of a sport/game.

After the Completion of Second Month:

A student will be able to understand and interpret the rules of game as well as game knowledge in the areas of physiological basis of Warming up and technical aspects of coaching.

After the Completion of Third Month:

A student will be able to learn and acquire various skills of sports/game, gain knowledge about different techniques evaluation as well as the evaluation of player's performance.

After the Completion of Fourth Month:

A student will be learning about various fitness components and its forms. Further, the student will be able to practice and improve performance on the basis of knowledge gained in understanding various fitness components and its testing.

THEORY SYLLABUS

Unit-I **(07 hrs lectures)**

- Historical Development and Modern Trends (National and International Level)
- Organisational Structure (State, National and International Level)
- Playfield Technology – Marking and Construction of the playfields.

Unit-II **(08 hrs lectures)**

- Rules and their interpretation.
- Warming up and physiological basis of Warming up and it's effect on performance.
- Cooling down and its effect.

Unit-III
- Techniques of Coaching – Pep talk, Pre, during and Post match coaching. **(07 hrs lectures)**

- Basic skills and techniques of the Sports/Game.
- Skill/Technique Evaluation
- Evaluation of Player's Performance.

Unit-IV **(08 hrs lectures)**

- Introduction to Physical and Motor Fitness components: Strength, Speed, Endurance, Coordinative Abilities and Flexibility.
- Motor Fitness Components Testing of above components.

PRACTICAL SYLLABUS - **(60 hrs.)**

Learning and demonstrating various skills/techniques of sports.

Learning to demonstrate various tests to evaluate motor components as listed in unit IV above.

SUGGESTED READINGS

1. Amarnath M. (1996). Learn to Play Good Cricket. UBS Publishers. New Delhi.
2. Bompa O. Tudor and Halff G. Gregory. (2009) "Periodization Theory and Methodology of Training" Human kinetics. NY.
3. Boycott, G. (2010). Play Cricket the Right Way. Great Northern Books Limited, U.K.
4. Cricket (2008). Sports Skills: Cricket Fielding (Know the Game). A & C Black Publishers.
5. Gupta, K. (2006). How to Play Cricket. Goodwill Publishing House, New Delhi.
6. Hobls, J. (2008). The Game of Cricket As it should be played. Jepson Press, USA.
7. Jain R. (2003). Fielding Drills in Cricket. Khel Sahitya Kendra. New Delhi.
8. Rachna (2002). Coaching Successfully: Cricket. Khel Sahitya Kendra. New Delhi.
9. Singh, Hardayal. (1919). Science of Sports Training. DVS Publication, N. Delhi.
10. Sharma P. (2003). Cricket.Shyam Parkashan.Jaipur.
11. Vanaik A. (2017). Officiating and Coaching, Friends Publication. New Delhi

Semester IV
BSc-PE-DSE-3 or 4 (4)-105:
FOOTBALL

Sr. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite ofthe Course (if any)
			Lecture	Tutorial	Practical/Practice		
5	Football	04	2	0	2	XII Pass	NIL

Objective: - The Students will acquire knowledge and understanding of a specific sport in which an individual wish to excel.
Learning Outcomes: -The student attains knowledge, understanding, interpreting and analyzing proficiency in a game of one's choice.

After the Completion of First Month:

A student will be able to gain knowledge with respect to Historical Development, Organisational Structure and Playfield Technology of a sport/game.

After the Completion of Second Month:

A student will be able to understand and interpret the rules of game as well as game knowledge in the areas of physiological basis of Warming up and technical aspects of coaching.

After the Completion of Third Month:

A student will be able to learn and acquire various skills of sports/game, gain knowledge about different techniques evaluation as well as the evaluation of player's performance.

After the Completion of Fourth Month:

A student will be learning about various fitness components and its forms. Further, the student will be able to practice and improve performance on the basis of knowledge gained in understanding various fitness components and its testing.

THEORY SYLLABUS

Unit-I **(08 hrs lectures)**

- Historical Development and Modern Trends (National and International Level)
- Organisational Structure (State, National and International Level)
- Playfield Technology – Marking and Construction of the playfields.

Unit-II **(08 hrs lectures)**

- Rules and their interpretation.
- Warming up and physiological basis of Warming up and its effect on performance.
- Cooling down and its effect.

Unit-III

- Techniques of Coaching – Pep talk, Pre, during and Post match coaching. **(07 hrs lectures)**
- Basic skills and techniques of the Sports/Game.
- Skill/Technique Evaluation
- Evaluation of Player's Performance.

Unit-IV **(07 hrs lectures)**

- Introduction to Physical and Motor Fitness components: Strength, Speed, Endurance, Coordinative Abilities and Flexibility.
- Motor Fitness Components Testing of above components.

PRACTICAL SYLLABUS – **(60 hrs.)**

Learning and demonstrating various skills/techniques of sports.

Learning to demonstrate various tests to evaluate motor components as listed in unit IV above.

SUGGESTED READINGS

1. American Football Coaches Association (2002). The Football CoachingBible. 1st Ed., Human Kinetics, USA.
2. Bompa O. Tudor and Halff G. Gregory. (2009) "Periodization Theory and Methodologyof Training" Human kinetics. NY.
3. Carling, C., Williams, M. and Reilling, T. (2006). Handbook of Soccer Match Analysis: A Systematic Approach to Improving Performance. Routledge Publishers, USA.
4. Long, H. and Czarnecki, J. (2007). Football for Dummies. For Dummies Publisher, USA.
5. N Kumar (2003). Play and Learn Football. K.S.K. New Delhi.
6. Reilly, T. (2006). The Science Training Soccer: A Scientific Approach to Developing Strength, Speed and Endurance. Routledge Publisher, USA.
7. Reilly, T. and J.C.D. Arau (2008). Science and Football V: The Proceedingsof the 5th World Congress on Sports Science and Football, Volume5.
8. Singh, Hardayal. (1919). Science of Sports Training. DVS Publication, N. Delhi.
9. Sharma OP (2001). Teaching and Coaching –Football. Khel S.K.Delhi.
10. Vanaik A. (2017). Officiating and Coaching, Friends Publication. New Delhi

Semester IV
BSc-PE-DSE-3 or 4 (4)-106:
GYMNASTICS

Sr. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite ofthe Course (if any)
			Lecture	Tutorial	Practical/Practice		
6	Gymnastics	04	2	0	2	XII Pass	NIL

Objective: -The Students will acquire knowledge and understanding of a specific sport in which an individual wish to excel.

Learning Outcomes: -The student attains knowledge, understanding, interpreting and analyzing proficiency in a game of one's choice.

After the Completion of First Month:

A student will be able to gain knowledge with respect to Historical Development, Organisational Structure and Playfield Technology of a sport/game.

After the Completion of Second Month:

A student will be able to understand and interpret the rules of game as well as game knowledge in the areas of physiological basis of Warming up and technical aspects of coaching.

After the Completion of Third Month:

A student will be able to learn and acquire various skills of sports/game, gain knowledge about different techniques evaluation as well as the evaluation of player's performance.

After the Completion of Fourth Month:

A student will be learning about various fitness components and its forms. Further, the student will be able to practice and improve performance on the basis of knowledge gained in understanding various fitness components and its testing.

THEORY SYLLABUS

Unit-I **(07 hrs lectures)**

- Historical Development and Modern Trends (National and International Level)
- Organisational Structure (State, National and International Level)
- Playfield Technology – Marking and Construction of the playfields.

Unit-II **(08 hrs lectures)**

- Rules and their interpretation of the sport.
- Warming up and psychological basis of Warming up.
- Cooling down and its effect.

Unit-III
- Techniques of Coaching – Pep talk, Pre, during and Post match coaching. **(08 hrs lectures)**
- Basic skills and techniques of the Artistic Gymnastics, trampoline, parko and rhythmic
- Motor Fitness Components Testing
- Skill/Technique Evaluation
- Evaluation of Player's Performance.

Unit-IV **(07 hrs lectures)**

- Introduction to Physical and Motor Fitness components related to sport: Strength, Speed, Endurance, Coordinative Abilities and Flexibility.

PRACTICAL SYLLABUS - (60 hrs.)

- Learning and demonstrating various skills/techniques of Artistic Gymnastics, trampoline, parko and rhythmic.
- Learning to demonstrate various tests to evaluate motor components as listed in unit IV above.

SUGGESTED READINGS

1. Bompa O. Tudor and Halff G. Gregory. (2009) "Periodization Theory and Methodology of Training" Human kinetics. NY.
2. Brown (2009). How to Improve at Gymnastics. Crabtree Publishing Co., USA.
3. Chakraborty S and Sharma L (1995). Fundamental of Gymnastics. D.V.S. Pub. New Delhi.
4. Chakraborty S (1995). Fundamental of Gymnastics. DVS Pub. New Delhi.
5. Chakraborty S (1998). Women's Gymnastics. Friends Pub.Delhi.
6. Code of Points Trampoline Gymnastics (2005). Federation Int. DE Gymnastics
7. Federation International Gymnastics (2006). Federation Int. DE Gymnastics
8. Harvey FJ (1998). Physical Exercises & Gymnastics. Khel Sahitya. New Delhi.
9. Jain R (2005). Play and Learn Gymnastics. Khel SahitayaKendra
10. Mitchell, D., Davis, B. and Lopez, R. (2002). Teaching Fundamental GymnasticsSkills. Human Kinetics, USA.
11. Price, R.G. (2006). The Ultimate Guide to Weight Training for Gymnastics. 2nd Ed. Sportsworkout.com.
12. Schlegel, E. and Dunn, CR. (2001). The Gymnastics Book: The Young Performer"s Guide to Gymnastics. Firefly Books, USA.
13. Smither Graham (1980). Behing the Science of Gymnastics. London.
14. Singh, Hardayal. (1919). Science of Sports Training. DVS Publication, N. Delhi.
15. Stickland, L.R. (2008). Gender Gymnastics. Trans Pacific Press, Japan.
16. Vanaik A. (2017). Officiating and Coaching, Friends Publication. New Delhi

Semester IV
BSc-PE-DSE-3 or 4 (4)-107:
HANDBALL

Sr. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite ofthe Course (if any)
			Lecture	Tutorial	Practical/Practice		
7	Handball	04	2	0	2	XII Pass	NIL

Objective: - The Students will acquire knowledge and understanding of a specific sport in which an individual wish to excel.

Learning Outcomes: -The student attains knowledge, understanding, interpreting and analyzing proficiency in a game of one's choice.

After the Completion of First Month:

A student will be able to gain knowledge with respect to Historical Development, Organisational Structure and Playfield Technology of a sport/game.

After the Completion of Second Month:

A student will be able to understand and interpret the rules of game as well as game knowledge in the areas of physiological basis of Warming up and technical aspects of coaching.

After the Completion of Third Month:

A student will be able to learn and acquire various skills of sports/game, gain knowledge about different techniques evaluation as well as the evaluation of player's performance.

After the Completion of Fourth Month:

A student will be learning about various fitness components and its forms. Further, the student will be able to practice and improve performance on the basis of knowledge gained in understanding various fitness components and its testing.

THEORY SYLLABUS

Unit-I **(08 hrs lectures)**

- Historical Development and Modern Trends (National and International Level)
- Organisational Structure (State, National and International Level)
- Playfield Technology – Marking and Construction of the playfields.

Unit-II **(08 hrs lectures)**

- Rules and their interpretation.
- Warming up and physiological basis of Warming up and its effect on performance.
- Cooling down and its effect.
- Techniques of Coaching – Pep talk, Pre, during and Post match coaching.

Unit-III (07 hrs lectures)

- Basic skills and techniques of the Sports/Game.
- Skill/Technique Evaluation
- Evaluation of Player's Performance.

Unit-IV **(07 hrs lectures)**

- Introduction to Physical and Motor Fitness components: Strength, Speed, Endurance, Coordinative Abilities and Flexibility.
- Motor Fitness Components Testing of above components.

PRACTICAL SYLLABUS- (60 hrs.)

Learning and demonstrating various skills/techniques of sports.

Learning to demonstrate various tests to evaluate motor components as listed in unit IV above.

SUGGESTED READINGS

1. Bompa O. Tudor and Halff G. Gregory. (2009) "Periodization Theory and Methodology of Training" Human kinetics. NY.
2. Jain D (2003). Play & Learn Handball. Khel Sahitya Kendra. New Delhi.
3. Kleinman, I. (2009). Complete Physical Education Plans. 2nd Ed. Human Kinetics, USA.
4. Page, J. (2000). Ball Games. Lerner Sports Publisher, USA.
5. Phillips, B.E. (2009). Fundamental Handball. Kessinger Publishers, USA.
6. Schmottlach N Mcmanama J (1997). Physical Education Handbook. 9th Edition. Allyn & Bacon.London.
7. Schmottlach, N. and McManama (2005). Physical Education Activity Handbook. Benjamin Cummings, USA.
8. Singh, Hardayal. (1919). Science of Sports Training. DVS Publication, N. Delhi.
9. Surhone, L.M. et al (2010). Team Handball. Betascript Publishing,USA
10. Vanaik A. (2005). Playfield Manual, Friends Publication. New Delhi
11. Vanaik A. (2017). Officiating and Coaching, Friends Publication. New Delhi

Semester IV
BSc-PE-DSE-3 or 4 (4)-108:
HOCKEY

Sr. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite ofthe Course (if any)
			Lecture	Tutorial	Practical/Practice		
8	Hockey	04	2	0	2	XII Pass	NIL

Objective: - The Students will acquire knowledge and understanding of a specific sport in which an individual wish to excel.
Learning Outcomes:-The student attains knowledge, understanding, interpreting and analyzing proficiency in a game of one's choice.

After the Completion of First Month:

A student will be able to gain knowledge with respect to Historical Development, Organisational Structure and Playfield Technology of a sport/game.

After the Completion of Second Month:

A student will be able to understand and interpret the rules of game as well as game knowledge in the areas of physiological basis of Warming up and technical aspects of coaching.

After the Completion of Third Month:

A student will be able to learn and acquire various skills of sports/game, gain knowledge about different techniques evaluation as well as the evaluation of player's performance.

After the Completion of Fourth Month:

A student will be learning about various fitness components and its forms. Further, the student will be able to practice and improve performance on the basis of knowledge gained in understanding various fitness components and its testing.

THEORY SYLLABUS

Unit-I **(08 hrs lectures)**

- Historical Development and Modern Trends (National and International Level)
- Organisational Structure (State, National and International Level)
- Playfield Technology – Marking and Construction of the playfields.

Unit-II **(08 hrs lectures)**

- Rules and their interpretation.
- Warming up and physiological basis of Warming up and it's effect on performance.
- Cooling down and its effect.
- Techniques of Coaching – Pep talk, Pre, during and Post match coaching.

Unit-III (07 hrs lectures)

- Basic skills and techniques of the Sports/Game.
- Skill/Technique Evaluation
- Evaluation of Player's Performance.

Unit-IV **(07 hrs lectures)**

- Introduction to Physical and Motor Fitness components: Strength, Speed, Endurance, Coordinative Abilities and Flexibility.
- Motor Fitness Components Testing of above components.

PRACTICAL SYLLABUS- (60 hrs)

Learning and demonstrating various skills/techniques of sports.

Learning to demonstrate various tests to evaluate motor components as listed in unit IV above.

SUGGESTED READINGS

1. Bompa O. Tudor and Halff G. Gregory. (2009) "Periodization Theory and Methodology of Training" Human kinetics. NY.
2. International Hockey Federation, Rules of the Game of Hockey with Guidance forPlayers and Umpires. International Hockey Federation.
3. Jain D (2003). Hockey Skills & Rules. khel Sahitya Kendra . New Delhi.
4. Narang P (2003). Play & Learn Hockey. Khel Sahitya Kendra. New Delhi.
5. Pecknold, R. and Foeste, A. (2009). Hockey : Essential Skills. McGraw Hills,USA.
6. Rossiter, S. (2003). Hockey the NHL Way : Goaltending Illustrated Edition. Sterling Publishers,USA.
7. Singh, Hardayal. (1919). Science of Sports Training. DVS Publication, N. Delhi.
8. Walter, R. and Johnson, M. (2009). Hockey Plays and Strategies. Human Kinetics,USA.
9. Weekes, D. (2003). The Biggest Book of Hockey Trivia. Greystone Books,USA.
10. Wukovits, J.F. (2000). History of Hockey 1st Ed. Lucent Books,USA.
11. Vanaik A. (2005). Playfield Manual, Friends Publication. New Delhi
12. Vanaik A. (2017). Officiating and Coaching, Friends Publication. New Delhi

Semester IV
BSc-PE-DSE-3 or 4 (4)-109:
JUDO

Sr. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite ofthe Course (if any)
			Lecture	Tutorial	Practical/Practice		
9	Judo	04	2	0	2	XII Pass	NIL

Objective: - The Students will acquire knowledge and understanding of a specific sport in which an individual wish to excel.

Learning Outcomes: -The student will attain knowledge, understanding, interpreting and analyzing proficiency in a game of one's choice.

After the Completion of First Month:

A student will be able to gain knowledge with respect to Historical Development, Organisational Structure and Playfield Technology of a sport/game.

After the Completion of Second Month:

A student will be able to understand and interpret the rules of game as well as game knowledge in the areas of physiological basis of Warming up and technical aspects of coaching.

After the Completion of Third Month:

A student will be able to learn and acquire various skills of sports/game, gain knowledge about different techniques evaluation as well as the evaluation of player's performance.

After the Completion of Fourth Month:

A student will be learning about various fitness components and its forms. Further, the student will be able to practice and improve performance on the basis of knowledge gained in understanding various fitness components and its testing.

THEORY SYLLABUS

Unit-I **(08 hrs lectures)**

- Historical Development and Modern Trends (National and International Level)
- Organisational Structure (State, National and International Level)
- Playfield Technology – Marking and Construction of the playfields.

Unit-II **(08 hrs lectures)**

- Rules and their interpretation.
- Warming up and physiological basis of Warming up and it's effect on performance.
- Cooling down and its effect.

Unit-III

- Techniques of Coaching – Pep talk, Pre, During and Post match Coaching. **(07 hrs lectures)**
- Basic skills and techniques of the Sports/Game.
- Skill/Technique Evaluation
- Evaluation of Player's Performance.

Unit-IV **(07 hrs lectures)**

- Introduction to Physical and Motor Fitness components: Strength, Speed, Endurance, Coordinative Abilities and Flexibility.
- Motor Fitness Components Testing of above components.

PRACTICAL SYLLABUS- (60 hrs.)

Learning and demonstrating various skills/techniques of sports.

Learning to demonstrate various tests to evaluate motor components as listed in unit IV above.

SUGGESTED READINGS

1. Bompa O. Tudor and Halff G. Gregory. (2009) "Periodization Theory and Methodology of Training" Human kinetics. NY.
2. Diago, T. (2005). Kodokan Judo Throwing Techniques. Kodansha International Publishers,Japan.
3. Harrison EJ (2002). Coaching Successfully Judo. Sports.Delhi.
4. Jain D (2003). Play and Learn Judo. Khel Sahitaya Kendra. New Delhi.
5. Law, M. (2009). Falling Hard : A Journey into the World of Judo. Trumpeter Publisher,Japan.
6. Putin, V., Shestakov, V. ad Levitsky, A. (2004). Judo : History, Theory and Practice.Blue Snake Books, Moscow.
7. Singh, Hardayal. (1919). Science of Sports Training. DVS Publication, N. Delhi.
8. Takahashi, M. (2005). Mastering Judo. Human Kinetics,USA.

Semester IV
BSc-PE-DSE-3 or 4 (4)-110:
KABADDI

Sr. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite ofthe Course (if any)
			Lecture	Tutorial	Practical/Practice		
10	Kabaddi	04	2	0	2	XII Pass	NIL

Objective: - The Students will acquire knowledge and understanding of a specific sport in which an individual wish to excel.
Learning Outcomes: -The student will attain knowledge, understanding, interpreting and analyzing proficiency in a game of one's choice.

After the Completion of First Month:

A student will be able to gain knowledge with respect to Historical Development, Organisational Structure and Playfield Technology of a sport/game.

After the Completion of Second Month:

A student will be able to understand and interpret the rules of game as well as game knowledge in the areas of physiological basis of Warming up and technical aspects of coaching.

After the Completion of Third Month:

A student will be able to learn and acquire various skills of sports/game, gain knowledge about different techniques evaluation as well as the evaluation of player's performance.

After the Completion of Fourth Month:

A student will be learning about various fitness components and its forms. Further, the student will be able to practice and improve performance on the basis of knowledge gained in understanding various fitness components and its testing.

THEORY SYLLABUS

Unit-I

- Historical Development and Modern Trends (National and International Level) **(08 hrs lectures)**
- Organisational Structure (State, National and International Level)
- Playfield Technology – Marking and Construction of the playfields.

Unit-II

- Rules and their interpretation. **(08 hrs lectures)**
- Warming up and physiological basis of Warming up and it's effect on performance.
- Cooling down and its effect.
- Techniques of Coaching – Pep talk, Pre, During and Post match Coaching.

Unit-III

- Basic skills and techniques of the Sports/Game. **(07 hrs lectures)**
- Skill/Technique Evaluation
- Evaluation of Player's Performance.

Unit-IV (07 hrs lectures)

- Introduction to Physical and Motor Fitness components: Strength, Speed, Endurance, CoordinativeAbilities and Flexibility.
- Motor Fitness Components Testing of above components.

PRACTICAL SYLLABUS- **(60 hrs.)**

Learning and demonstrating various skills/techniques of sports.
Learning to demonstrate various tests to evaluate motor components as listed in unit IV above.

SUGGESTED READINGS

- Bompa O. Tudor and Halff G. Gregory. (2009) "Periodization Theory and Methodology of Training"Human kinetics. NY.
- Kumar, Dharmander. (2018). Kabaddi and It"s Playing Techniques. Writers Choice, New Delhi.
- Mishra , S.C. (2007). Teach Yourself Kabaddi. Sports Publications, New Delhi.
- Rao CV (1983). Kabaddi. Native Indian Sports. NSNIS. Patiala Publisher
- Rao EP (1994). Modern Coaching in Kabaddi.D.V.S.Pub
- Singh, Hardayal. (1919). Science of Sports Training. DVS Publication, N. Delhi.
- Syal, M. (2004). Kabaddi Teaching. Prerna Parkashan, New Delhi.
- Vanaik A. (2017). Officiating and Coaching, Friends Publication. New Delhi.

Semester IV
BSc-PE-DSE-3 or 4 (4)-111:
KHO-KHO

Sr. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite ofthe Course (if any)
			Lecture	Tutorial	Practical/Practice		
11	Kho-Kho	04	2	0	2	XII Pass	NIL

Objective: - The Students will acquire knowledge and understanding of a specific sport in which an individual wish to excel.

Learning Outcomes: -The student will attain knowledge, understanding, interpreting and analyzing proficiency in a game of one's choice.

After the Completion of First Month:

A student will be able to gain knowledge with respect to Historical Development, Organisational Structure and Playfield Technology of a sport/game.

After the Completion of Second Month:

A student will be able to understand and interpret the rules of game as well as game knowledge in the areas of physiological basis of Warming up and technical aspects of coaching.

After the Completion of Third Month:

A student will be able to learn and acquire various skills of sports/game, gain knowledge about different techniques evaluation as well as the evaluation of player's performance.

After the Completion of Fourth Month:

A student will be learning about various fitness components and its forms. Further, the student will be able to practice and improve performance on the basis of knowledge gained in understanding various fitness components and its testing.

THEORY SYLLABUS

Unit-I

- Historical Development and Modern Trends (National and International Level) **(08 hrs lectures)**
- Organisational Structure (State, National and International Level)
- Playfield Technology – Marking and Construction of the playfields.

Unit-II

- Rules and their interpretation. **(08 hrs lectures)**
- Warming up and physiological basis of Warming up and it's effect on performance.
- Cooling down and its effect.
- Techniques of Coaching – Pep talk, Pre, During and Post match Coaching.

Unit-III

- Basic skills and techniques of the Sports/Game. **(07 hrs lectures)**
- Skill/Technique Evaluation
- Evaluation of Player's Performance.

Unit-IV (07 **hrs** lectures)

- Introduction to Physical and Motor Fitness components: Strength, Speed, Endurance, CoordinativeAbilities and Flexibility.
- Motor Fitness Components Testing of above components.

PRACTICAL SYLLABUS- (60 hrs.)

Learning and demonstrating various skills/techniques of sports.

Learning to demonstrate various tests to evaluate motor components as listed in unit IV above.

SUGGESTED READINGS

1. Bompa O. Tudor and Halff G. Gregory. (2009) "Periodization Theory and Methodology of Training" Human kinetics. NY.
2. Chakrabarty G (2002). Kho - Kho Aveloken. Khel Sahitya Kendra.Delhi.
3. Panday L (1982). Kho - Kho Sarvaswa. Metropolitan. New Delhi
4. Singh, Hardayal. (1919). Science of Sports Training. DVS Publication, N. Delhi.
5. Vanaik A. (2005). Playfield Manual, Friends Publication. New Delhi
6. Vanaik A. (2017). Officiating and Coaching, Friends Publication. New Delhi

Semester IV
BSc-PE-DSE-3 or 4 (4)-112:
VOLLEYBALL

Sr. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite ofthe Course (if any)
			Lecture	Tutorial	Practical/Practice		
12	Volleyball	04	2	0	2	XII Pass	NIL

Objective: - The Students will acquire knowledge and understanding of a specific sport in which an individual wishes to excel.
Learning Outcomes: -The student will attain knowledge, understanding, interpreting and analyzing proficiency ina game of one‟s choice.

After the Completion of First Month:

A student will be able to gain knowledge with respect to Historical Development, Organisational Structure and Playfield Technology of a sport/game.

After the Completion of Second Month:

A student will be able to understand and interpret the rules of game as well as game knowledge in the areas of physiological basis of Warming up and technical aspects of coaching.

After the Completion of Third Month:

A student will be able to learn and acquire various skills of sports/game, gain knowledge about different techniques evaluation as well as the evaluation of player's performance.

After the Completion of Fourth Month:

A student will be learning about various fitness components and its forms. Further, the student will be able to practice and improve performance on the basis of knowledge gained in understanding various fitness components and its testing.

THEORY SYLLABUS

Unit-I

- Historical Development and Modern Trends (National and International Level) **(08 hrs lectures)**
- Organisational Structure (State, National and International Level)
- Playfield Technology – Marking and Construction of the playfields.

Unit-II

- Rules and their interpretation. **(08 hrs lectures)**
- Warming up and physiological basis of Warming up and it's effect on performance.
- Cooling down and its effect.
- Techniques of Coaching – Pep talk, Pre, During and Post match Coaching.

Unit-III (07 hrs lectures)

- Basic skills and techniques of the Sports/Game.
- Skill/Technique Evaluation
- Evaluation of Player's Performance.

Unit-IV (07 hrs lectures)

- Introduction to Physical and Motor Fitness components: Strength, Speed, Endurance, CoordinativeAbilities and Flexibility.
- Motor Fitness Components Testing of above components.

PRACTICAL SYLLABUS - (60 hrs.)

Learning and demonstrating various skills/techniques of sports.

Learning to demonstrate various tests to evaluate motor components as listed in unit IV above.

SUGGESTED READINGS

1. American Volleyball Coaches Association (2005). Volleyball : Skills & Drills. Human Kinetics,USA.
2. Bompa O. Tudor and Halff G. Gregory. (2009) "Periodization Theory and Methodology of Training" Human kinetics. NY.
3. FIVB (1996). Backcourt Spiking in Modern Volley Ball. FIVB.Chennai.
4. Kenny, B. and Gregory, C. (2006). Volleyball : Steps to Success. Human Kinetics,USA.
5. Saggar SK (1994). Cosco Skills Statics - Volley Ball. Sport Publication. Delhi.
6. Scates AE (1993). Winning Volley Ball. WC Brown.USA.
7. Scates, A. and Linn, M. (2002). Complete Conditioning for Volleyball. Human Kinetics,USA.
8. Shondell, D. and Reynaud, C. (2002). The Volleyball Coaching Bible. Human Kinetics,USA.
9. Singh, Hardayal. (1919). Science of Sports Training. DVS Publication, N. Delhi.
10. The National Alliance for Youth Sports (2009). Coaching Volleyball. For Dummies Publishers,USA.
11. Volleyball, USA (2009). Volleyball : Systems and Strategies. Human Kinetics,USA.
12. Vanaik A. (2017). Officiating and Coaching, Friends Publication. New Delhi

Semester IV
BSc-PE-DSE-3 or 4 (4)-113:
YOGA

Sr. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite ofthe Course (if any)
			Lecture	Tutorial	Practical/Practice		
13	Yoga	04	2	0	2	XII Pass	NIL

Objective: -The Students will acquire knowledge and understanding of a specific sport in which an individual wish to excel.
Learning Outcome: -The student will attain knowledge, understanding, interpreting and analyzing proficiency in a game of one's choice.

After the Completion of First Month:

The Students will develop the understanding and knowledge of Origin of yoga, definition and scope of yoga, limitations and misconceptions, importance of yoga in physical education and other fields, Yoga asana completion at: - State, National, International, SGFI, AIU etc. Philosophical aspects of Yoga. Pre-Vedic, Vedic period; Buddhism, Upanishad period, Jainism & tantra, qualifications, qualities and responsibilities of a coach, Duties/responsibilities of technical official, Scoring system and judgment criteria, Protocols for referees, judges and officials.

The student will learn about the prayer.

After the Completion of Second Month:

The Students will develop the understanding and knowledge of Meaning, techniques, precautions & effects of the following:-Asanas : padmasana, vajrasana, sidhasana, paschimottanasa, halasana, sarvangasana, shalabhasana, ardh-matsyendrasana, bhujangasana, tadasana, vrikshasana, matsyasana, gomukhasana, ushtrasana, shavasana, makarasana, vrishchikasana, dhanurasana, purna matsyendrasana, chakrasana, ek pad sikandasana, bakasana, mayurasana, shirshasanaPranayama : anulom-vilom, bhastrika, suryabhedhen pranayama, sheetali, sheetkari, bhramari, ujjayiShatkarma : neti, dhauti, nauli, basti, kunjal, kapal bhati, shankh prakshalanaBandhas : jalandhar, uddyana, mool bandha.

The student will be able to perform Asanas, pranayama, shatkarma, bandha.

After the Completion of Third Month:

The Students will gain knowledge of Disease wise treatment through yoga therapy- Asthma, high & lowB.P, diabetes, obesity, heart disease, insomania, arthritis, backache & female disease.

The student will learn Yoga-nidra/relaxation techniques

After the Completion of Fourth Month:

The Students will gain knowledge of Diet & constitution, components of nutrition, water, natural diet, balanced diet,fasting-its benefits, types & preparation. Importance of vegetarianism in yogic diet.

The student will learn Visit to yoga centers/institutes

THEORY SYLLABUS

UNIT-I **(07 hrs lectures)**

- Origin of yoga, definition and scope of yoga, limitations and misconceptions of Yoga
- Importance of yoga in physical education and other fields
- Yoga asana competition at: - State, National, International, SGFI, AIU etc.

UNIT-II **(07 hrs lectures)**

- Philosophical aspects of Yoga-Pre-Vedic, Vedic period; Buddhism, Upanishad period, Jainism & tantra
- Qualifications, qualities and responsibilities of a coach,
- Duties/responsibilities of technical official, Scoring system and judgment criteria,

- Protocols for referees, judges and officials.

UNIT-III **(09 hrs lectures)**

- Meaning, techniques, precautions & effects of the following:-
- Asanas : padmasana, vajrasana, sidhasana, paschimottanasa, halasana, sarvangasana, shalabhasana, ardh-matsyendrasana, bhujangasana, tadasana, vrikshasana, matsyasana, gomukhasana, ushtrasana, shavasana, makarasana, vrishchikasana, dhanurasana, purna matsyendrasana, chakrasana, ek pad sikandasana, bakasana, mayurasana, shirshasana
- Pranayama : anulom-vilom, bhastrika, suryabhedhen pranayama, sheetali, sheetkari, bhramari, ujjayi
- Shatkarma : neti, dhauti, nauli, basti, kunjal, kapal bhati, shankh prakshalana
- Bandhas : jalandhar, uddyana, mool bandha

UNIT-IV **(07 hrs lectures)**

- Disease wise treatment through yoga therapy- Asthma, high & low B.P, diabetes, obesity, heart disease, insomania, arthritis, backache & female disease
- Diet & Nutrition, components of nutrition, water, natural diet, balanced diet, fasting-its benefits, types & preparation, importance of vegetarianism in yogic diet.

PRACTICALS SYLLABUS (60 hrs.)

1. Prayer
2. Asanas, pranayama, shatkarma, bandha (as mentioned in theory)
3. Yoga-nidra/relaxation techniques
4. Visit to yoga centers/institutes

SUGGESTED READINGS

- Anand Omprarkash (2001). Yog Dawra Kaya Kalp, Kanpur. Sewasth Sahitya Perkashan
- Iyengar, B.K.S. (1995). Light on Yoga : The Bible of Modern Yoga. Schocken Publishers, USA.
- Kaminoff, L. et al (2007). Yoga Anatomy. Human Kinetics, USA.
- Kirk, M. (2005). The Hatha Yoga Illustrated. Human Kinetics, USA.
- Sharma JP and Ganesh S(2007). Yog Kala Ek Prichya. Friends Publication. New Delhi
- Sharma J. P. (2007). Manav jeevan evam yoga. Friends Publication. New Delhi.
- Sharma Jai Prakash And Sehgal Madhu(2006). Yog-Shiksha. Friends Publication. Delhi.
- Sharma Jai Prakash and Rathore Bhupender Singh (2007). Yoga Ke Tatva. Friends Publication. Delhi
- Mukerji, A.P. (2010). The Doctorine and Practice of Yoga. General Books, LLC, New Delhi.
- Norton, W.W. (2010). Yoga for Osteoporosis : The Complete Guide. W.W. Norton & Company, USA.
- Sarin N (2003). Yoga Dawara Rogoon Ka Upchhar. Khel Sahitya Kendra
- Sri Swami Rama, (2001). Breathing. Rishikesh Sadhana Mandir Trust.
- Swami Ram (2000). Yoga & Married Life. Rishikesh Sadhana Mandir Trust
- Swami Swatma Ram: Patanjali Yoga Sutra
- Swami Veda Bharti (2000). Yoga Polity. Economy and Family. Rishikesh Sadhana Mandir Trust
- Text Book Hath Yoga Pradipika
- Text Book Patanjali Yoga Sutra

SEMESTER- IV
BSc-PE-GE-4 (4)-304:
YOGA AND STRESS MANAGEMENT
GE

Sl. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite of the Course (if any)
			Lecture	Tutorial	Practical/Practice		
1	YOGA AND STRESS MANAGEMENT	04	3	0	1	XII Pass	NIL

Learning objective:

The objective of this course is to provide the understanding of Yoga and stress management through practical knowledge skill and practices with enough scope of creativity/Innovations.

Learning outcomes:

At the end of the syllabus the student will be able to-

1. Understand the concept of stress management through various practises like yoga.
2. Demonstrate different asanas to achieve healthy lifestyle.
3. Apply Pranayama and Shat karmas to reduce day to day stress in our life.
4. Management of Stress by using different yogic relaxation techniques.
5. Develop Physical Fitness Program to manage stress. Based on yoga

PART – A Theory Syllabus

SYLLABUS

Unit-1: INTRODUCTION (9 hrs. Lectures)

1.1 Meaning, Definition and Importance of Yoga.

1.2 Origin and Historical development of Yoga.

1.3 Concept of the importance of Yogic Diet.

Unit-II: YOGA-ASANAS (9 hrs. lectures)

2.1 Ashtanga Yoga (Maharishi Patanjali): Meaning and importance.

2.2 Supine Position Asanas (Ardh-Halasana, Sarvangasana, Pawanmuktasana); Prone Position Asanas (Bhujangasana, Salabhasana, Dhanurasana)

2.3 Sitting Asanas (Ardh Matsyendrasana, Paschimmotanasana, SuptaVajrasana); Standing Asanas (Utkatasana, , Trikonasana and Tadasana).

Unit-III: PRANAYAMAS AND SHAT KARMAS (9 hrs. lectures)

3.1 Meaning, Procedure, Precautions and Benefits of the following Pranayamas: Anulom-Vilom, Suryabheden, Bhrameri, Sheetali, Sheetkari Pranayamas.

3.2 Meaning, Procedure, Precautions and Benefits of the following Shatkarmas: Kapalbhati, Trataka and Neti (Jal and sutra).

3.3 Relevance of yoga for holistic health development in the society.

Unit-IV: STRESS MANAGEMENT (9 hrs. lectures)

3.1 Concept, Causes and Effects of Stress.

3.2 Non-communicable diseases (due to stress), Stress prevention and good health.

3.3 Stress Management through relaxation techniques (autogenic training and progressive muscle relaxation, deep breathing, meditation), and sports, recreational, adventure sports, physical activities and developing healthy relationships as coping strategies**.**

Unit V: HOLISTIC HEALTH DEVELOPMENT AND STRESS MANAGEMENT

(9 hrs. lectures)

5.1 Physiology of stress and mind.

5.2 Holistic well-being and dimensions of holistic health: physical, emotional, social, mental, spiritual, and environmental.

5.3 Planning and maintaining a Personal Fitness Program.

PART – B Practical Syllabus (30 Hours)

1. Suryanamaskar and any four asanas.
2. Pranayamas (any one).
3. Practice Meditation for 10-15 minutes.
4. Assessment of stress (Questionnaire-PSQ)

Suggested Readings:

1. Arora S., Agarwal M. (2022), **"Yoga & Stress Management",** Khel Sahitya Kendra ISBN: 978-93-90461-38-7.
2. Pawar,B., Gosain,N., Sharma,S.(2021), **"Yoga & Stress Management",** Friends Publications. New Delhi (India) ISBN-978-81-7216-579-6.

3. Saini, N. (2020). **"Yoga & Stress Management",** Friends Publications. New Delhi. ISBN: 978-93-88457-58-3
4. Arora S., Agarwal M. (2020), **"Yoga Skills"**, Khel Sahitya Kendra ISBN: 978-81-947808-4-7.
5. Pahuja M., Pahuja S., Panda S. (2020), ""**Yoga & Stress Management",** Friends Publications. New Delhi (India) ISBN-978-8195365593.
6. Gupta, B., Chakravortty,S.K., ., Chakravortty, Munesh.,(2019) **"Yoga & Stress Management",** Friends Publications. New Delhi (India) ISBN-978-81-7216-568-0.
7. **"Anger and Stress Management"**. God's Way. Calvary Press, USA.
8. Swate Y B (2009). **"Anger Management".** Sage Publication. New Delhi.
9. NCERT & CBSE publication and reading for stress management.
10. Davis M. et al (2008). **"The Relaxation and Stress Reduction"** workbook. Harbinger Publications, USA
11. Greenberg J.S. (2008). **"Comprehensive Stress Management".** McGraw Hill, USA
12. HippE. (2008). **"Fighting Invisible Tigers: Stress Management for Teens"**. Free Spirit Publishing, USA.
13. Petee F (2006). **"Anger Management"**. Pentagon. Press. New York. U.S.A.
14. Gupta Rashmi (2015), **"Yoga and Pranayam Exercise"**. Aryan Publication.
15. Gupta Rashmi (2016), **"Yogaasana and pranayama abhayas"**. Aryan Publication.
16. Shaw D. (2018) **"Fundamental Statistics in Physical Education and Sports Sciences"** Sports Publication, ISBN: 81-86190-57-0.
17. Shaw D. (2020) **"Physical Education Practical Manual for Class XI"** Prachi Publication, ISBN : 978-8193-7698-0-5.
18. Shaw D. (2020) **"Physical Education for Class XII"** Prachi Publication, ISBN : 978-81-7730-848-8.
19. Shaw D. (2020) **"Physical Education for Class XI"** Prachi Publication, ISBN : 978-81-7730-847-1.
20. Shaw D. (2020) **"Physical Education Practical Manual for Class XII"** Prachi Publication, ISBN : 978-81-937698-1-2.
21. Shaw D. (2020) **"Parable Global English Hindi Dictionary of Physical Education & Sports Sciences"** Khel Sahitya Kendra, ISBN : 978-93-90461-18-9.
22. Shaw D. (2020) **"Yoga Asanas and their Benefits"** Sports Publication, ISBN : 978-81-9436-11-9-0.

SEMESTER- IV
BSc-PE-GE- 4(4)-303:
INJURY PREVENTION AND REHABILITATION IN ATHLETICS

Sl. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite of the Course (if any)
			Lecture	Tutorial	Practical/ Practice		
2	**INJURY PREVENTION AND REHABILITATION IN ATHLETICS**	04	3	0	1	XII Pass	NIL

Learning objective:

The objective of this course is to provide the understanding, skill and practices related to injury prevention and rehabilitation in athletics along with enough scope of creativity/Innovations.

Learning outcomes:

At the end of the syllabus the student will be able to-

1. Understand the concept of injury prevention and rehabilitation in athletes.
2. Apply the principles of rehabilitation for fast and batter recovery in collaborative work of athlete, coaches and medical professionals.
3. Identify and classify the particular injury in order to deal or suggest to apply suitable exercise and other related aids.
4. Practice related modalities (e.g., heat therapy, cold therapy, electrical stimulation) used in rehabilitation.
5. Apply functional training and return-to-play criteria

PART – A Theory Syllabus

SYLLABUS

Unit-1: INTRODUCTION TO INJURY PREVENTION AND REHABILITATION **(9 hrs. Lectures)**

1.1 Overview of injury prevention and rehabilitation in athletes

1.2 Importance of injury prevention and rehabilitation in sports

1.3 Principles of injury prevention and rehabilitation

1.4 Role of athletes, coaches, and medical professionals in injury prevention and rehabilitation

Unit-II: COMMON SPORTS INJURIES **(9 hrs. lectures)**

2.1 Identification and classification of common sports injuries

2.2 Causes and risk factors associated with sports injuries

2.3 Understanding the mechanisms of injury

2.4 Assessment and diagnosis of sports injuries

2.5 Introduction to treatment modalities for different types of injuries

Unit-III: INJURY PREVENTION STRATEGIES **(9 hrs. lectures)**

3.1 Pre-season preparation and conditioning programs

3.2 Warm-up and cool-down protocols

3.3 Proper technique and form to minimize injury risk

3.4 Equipment selection and fitting for injury prevention

3.5 Nutritional considerations for injury prevention

Unit-IV: REHABILITATION TECHNIQUES **(9 hrs. lectures)**

4.1 Overview of the rehabilitation process

4.2 Goals of rehabilitation and its stages.

4.3 Rehabilitation exercises and techniques for specific injuries (e.g., sprains, strains, fractures)

4.4 Modalities used in rehabilitation (e.g., heat therapy, cold therapy, electrical stimulation)

4.6 Functional training and return-to-play criteria

Unit V: PSYCHOSOCIAL ASPECTS OF INJURY PREVENTION AND REHABILITATION

(9 hrs. lectures)

5.1 Psychological impact of sports injuries

5.2 Strategies for coping with injury and promoting mental resilience

5.3 Role of social support in the recovery process

5.4 Injury prevention and rehabilitation education for athletes, coaches, and parents

5.5 Ethical considerations in injury prevention and rehabilitation

PART – B Practical Syllabus **(30 Hours)**

1. Preparation of first aid box.
2. Application of PRICE and sports massage.
3. Demonstration of functional training.
4. Development of rehabilitation / Exercise Programme.
5. Preparation of warming up and cooling dawn exercise to prevent injury in general context.
6. Preparation of warming up and cooling dawn exercise to prevent injury in specific context.

Suggested Readings:

1. Brukner, P., & Khan, K. (2017). Clinical sports medicine. McGraw-Hill Education.
2. Sherry, M. A., & Best, T. M. (2004). A comparison of 2 rehabilitation programs in the treatment of acute hamstring strains. Journal of Orthopaedic & Sports Physical Therapy, 34(3), 116-125.
3. Myer, G. D., Faigenbaum, A. D., Chu, D. A., Falkel, J., & Ford, K. R. (2011). Integrative training for children and adolescents: Techniques and practices for reducing sports-related injuries and enhancing athletic performance. The Physician and Sportsmedicine, 39(1), 74-84.
4. Bahr, R., & Holme, I. (2003). Risk factors for sports injuries—a methodological approach. British Journal of Sports Medicine, 37(5), 384-392.
5. Lephart, S. M., Ferris, C. M., Riemann, B. L., & Myers, J. B. (2002). Gender differences in strength and lower extremity kinematics during landing. Clinical Orthopaedics and Related Research, 401, 162-169.
6. Myer, G. D., Ford, K. R., Brent, J. L., & Hewett, T. E. (2006). The effects of plyometric versus dynamic stabilization and balance training on lower extremity biomechanics. The American Journal of Sports Medicine, 34(3), 445-455.
7. Petersen, J., Thorborg, K., Nielsen, M. B., Budtz-Jørgensen, E., & Hölmich, P. (2011). Preventive effect of eccentric training on acute hamstring injuries in men's soccer: a cluster-randomized controlled trial. The American Journal of Sports Medicine, 39(11), 2296-2303.
8. Hewett, T. E., Myer, G. D., & Ford, K. R. (2004). Anterior cruciate ligament injuries in female athletes: Part 1, mechanisms and risk factors. The American Journal of Sports Medicine, 32(2), 396-408.
9. Hootman, J. M., & Dick, R. (2004). Agel J. Epidemiology of collegiate injuries for 15 sports: summary and recommendations for injury prevention initiatives. Journal of Athletic Training, 39(3), 311-319.
10. Shaw, D. (2021). Athletic Care and Rehabilitation (A Sports Medicine Prespective). Sports Publication.
11. Soligard, T., Steffen, K., Palmer, D., Alonso, J. M., Bahr, R., Lopes, A. D., ... & Engebretsen, L. (2016). Sports injury and illness incidence in the Rio de Janeiro 2016 Olympic Summer Games: A prospective study of 11274 athletes from 207 countries. British Journal of Sports Medicine, 51(17), 1265-1271.

Annexure-2

INDEX
Department of Physical Education
Semester- IV/V/VI

S.No.	Content	Page No.
1.	**SEMESTER-IV** **BA (Prog.) Physical Education** 1. Athletic Care and Rehabilitation – Non-Major 2. Correctives in Physical Education - Major	**2-7**
2	**SEMESTER-V** **BA (Prog.) Physical Education** 1. Sports Psychology – Non-Major 2. Sports Sociology – Major **Pool OF DSE** 1. Sports Training **2.** Strength and Conditioning **3.** Fitness for Senior Citizens **Pool of Generic Elective** 1. Yoga And Stress Management	**8-20**
3	**SEMESTER-VI** **BA (Prog.) Physical Education** 1. Kinesiology – Non-Major 2. Sports Kinanthropometry – Major **Pool of DSE** 1. Research Methods in Physical Education and Sports 2. Publication Ethics in Physical Education and Sports Sciences 3. Thesis writing in Physical Education and Sports **Pool of Generic Elective** 1. Obesity and Weight Management	**21-36**

SYLLABUS OF DISCIPLINE SPECIFIC CORE PAPERS (DSC)

SEMESTER-4

B.A.-PE-DSC-4 (MINOR)

ATHLETIC CARE AND REHABILITATION

DSC

Sl. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite of the Course (if any)
			Lecture	Tutorial	Practical		
1.	Athletic Care and Rehabilitation	04	3	0	1	XII Pass	NIL

Objective:

The objective of this course is to provide an understanding and practices to the learners about Athletic Care, Sports Injuries with their management and rehabilitation.

Learning Outcomes:

1. The learners will be able to understand the concept of Athletic Care and Sports Medicine.
2. The learners will be able to comprehend the prevention and safety measures to avoid injuries in sports.
3. The learners will be able to classify the types of injuries in sports with their causes.
4. The learners will be able to apply the skills of first aid and management of sports injuries.
5. The learners will be able to develop rehabilitation programmes for overcoming injuries in sports and also in general.
6. The learners will be able to learn the application of various therapeutic modalities in sports rehabilitation with creativity.

SYLLABUS

CREDITS: 4 [Theory-3, Practical-1]

Theory-45 hours

Practical-30 hours

PART-A: THEORY

Unit-1: Introduction to Athletic Care (10 hours)

1.1 Meaning, Definition, and Significance of Athletic Care and Sports Medicine

1.2 Principles of injury prevention, Concept of safety measures in games/ sports

1.3 Important aspects of Athletic Care- Nutrition, Supplements, Ergogenic Aids, Ethical Considerations, psychological support, etc.

Unit-2: Sports Injuries (8 hours)

2.1 Meaning and Definition of Sports Injuries, Causes of Sports Injuries

2.2 Classification of Injuries in Sports

2.3 Basic concept of Sports Injuries- Sprain, Strain, Fracture, Dislocation, Frozen Shoulder, Tennis Elbow, Golfers Elbow, Shin Splint, Blister, Abrasion, Laceration, Haematoma

Unit-3 Therapeutic Modalities **(8 hours)**

3.1 Concept and Significance of Physiotherapy and Therapeutic Modalities in Sports Rehabilitation

3.2 Introduction to various Therapeutic Modalities- Steam Bath, Contrast Bath, Wax Bath, Therapeutic Ultrasound, Infrared Lamp, Interferential Therapy Unit, T.E.N.S, Short Wave Diathermy, Hot Fomentation

3.3 Sports Massage, Types of Massage, Physiological Effect of Massage

Unit-4: First Aid and Management of Sports Injuries **(12 hours)**

4.1 Meaning and Significance of First Aid

4.2 Basic concepts and applications of PRICE, DRABC, CPR

4.3 Management of Sports Injuries- Immediate and Later Management (Sprain, Strain, Fractures, Dislocations, Frozen, Shoulder, Tennis Elbow, Golfers Elbow, Shin Splint, Blister, Abrasion, Laceration, Haematoma).

Unit-5: Rehabilitation **(7 hours)**

5.1 Meaning and Definition of Rehabilitation

5.2 Importance of Rehabilitation in Sports

5.3 Rehabilitation Techniques- Active (Concentric, Eccentric, and Static) and Passive Exercises (Relaxed, Forced, Passive- Stretching), Strengthening, and Conditioning Exercises.

PART-B: PRACTICALS: **(30 hours)**

1. Demonstrate Warming Up and Cooling Down Exercises- 5 exercises each
2. Visit any Physiotherapy Center and prepare a report
3. Demonstrate First Aid and PRICE in different Sports situations.
4. Demonstrate Muscle Strengthening Exercises.
5. Survey of safety measures for prevention of Sports Injury

SUGGESTED READINGS:

1. Agarwal M., Arora S. (2018), Gupta B **"Posture; Athletic Care and First Aid"**, Vivechan Publications (INDIA) ISBN: 978-9-38391-490-6
2. Bhandari, P. (2021) **"Athletics Care and Rehabilitation".** New Delhi: KSK Publishers.
3. **"Essentials of Strength Training and Conditioning"** (pp.73-90). Champaign, IL: Human Kinetics.
4. Karad, P.L, (2019) **"Prevention and Treatment of Sports Injuries".** New Delhi: KSK Publishers.
5. Kumari, Sheela S.; Rana, Amita; & Kaushik, Seema (2008), **"Fitness, Aerobics and Gym Operations"** (New Delhi: Khel Sahitya Kendra).
6. Meena, T.R. (2022) **"Sports Medicine, Physiotherapy and Rehabilitation".** New Delhi: KSK Publishers.
7. Pande, P.K. (1987), **"Outline of Sports Medicine"** (New Delhi: Jaypee Brothers)
8. Prentice, W. (2017). **"Principles of Athletic Training: A Competency-Based Approach"**. McGraw-Hill Education.
9. Sharma, Kavita et.al. (2014), **"Fitness, Aerobics and Gym Operations"** (New Delhi: Jyoti Enterprises)
10. Singh, Ajmer et.al. (2006), **"Essentials of Physical Education"** (Ludhiana: Kalyani Publishers)
11. उप्पल, ए.के.; पदयाल, अंजुम और लाल, राजेंदर (2022), **"अंग-विन्यास तथा खिलाड़ी की देखभाल"** (नई दिल्लीः फ्रेंड्स पब्लिकेशन)
12. कुमारी, शीला एस.; राणा, अमिता; और कौशिक, सीमा (2012), **"फिटनेस, एरोबिक्स व जिम ऑपरेशंस"** (नईदिल्ली: खेल साहित्य केंद्र)।
13. Sharma. R., Handbook of "**Exercise Therapy and Rehabilitation**", ISBN : 978-93-88269-54-4,Year 2019 published by Sports Publication , Daryaganj, New Delhi.

14. Shaw D. (2018). **"Pedagogic Kinesiology"** Sports Publication, ISBN: 978-93-86592-43-9.
15. Shaw D. (2018) **"Fundamental Statistics in Physical Education and Sports Sciences"** Sports Publication, ISBN: 81-86190-57-0.
16. Shaw D. (2019) **"Obesity Management"** Khel Sahitya Kendra, ISBN: 978-93-88159-93-7.
17. Shaw D. (2019) **"Kinesio Taping in Games and Sports"** Sports Publication, ISBN: 978-93-88269-33-9.
18. Shaw D. (2019) **"Sports Injuries: A Demographic Study on Indian Sports Person"** Khel Sahitya Khel Sahitya Kendra, ISBN: 978-93-88159-87-6.
19. Shaw D. (2020) **"Physical Education Practical Manual for Class XI"** Prachi Publication, ISBN : 978-8193-7698-0-5.
20. Shaw D. (2020) **"Physical Education for Class XII"** Prachi Publication, ISBN : 978-81-7730-848-8.
21. Shaw D. (2020) **"Physical Education for Class XI"** Prachi Publication, ISBN : 978-81-7730-847-1.
22. Shaw D. (2020) **"Physical Education Practical Manual for Class XII"** Prachi Publication, ISBN : 978-81-937698-1-2.
23. Shaw D. (2020) **"Yoga Asanas and their Benefits"** Sports Publication, ISBN : 978-81-9436-11-9-0.
24. Shaw D. (2020) **"Parable Global English Hindi Dictionary of Physical Education & Sports Sciences"** Khel Sahitya Kendra, ISBN : 978-93-90461-18-9.
25. Shaw D. (2021) **"Sports Training"** Sports Publication, ISBN : 978-81-943611-3-8.
26. Shaw D. (2021) **"Athletic Care and Rehabilitation"** Sports Publication, ISBN : 978-81-951044-9-9.
27. Shaw D. (2019) **"Encyclopaedia of Sports Injury"** Khel Sahitya Kendra, ISBN : 978-93-88159-87-6.
28. Shaw D. (2021) **"Lesson Planning & Teaching Methods"** Khel Sahitya Kendra, ISBN :978-81-7524-022-9.

SEMESTER-4

B.A.-PE-DSC-4 (MAJOR)

CORRECTIVES IN PHYSICAL EDUCATION

DSC

Sl. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite of the Course (if any)
			Lecture	Tutorial	Practical		
1.	Correctives in Physical Education	04	3	0	1	XII Pass	NIL

Objective:

The objective of this course is to provide an understanding and practical applications to the learners about the posture mechanics, anatomy and movement of the spine, common postural deformities with their corrective measures, strengthening exercises, and ergonomics application in sports.

Learning Outcomes:

1. The learners will be able to understand and analyze the concept of posture and its impact on overall health.
2. The learners will be able to comprehend and correlate the significance of good posture and the risks associated with poor posture.
3. The learners will be able to apply the knowledge of the anatomy of the spine and movement around the spine to avoid related problems.
4. The learners will be able to identify common postural deformities and apply the acquired knowledge of corrective exercises for posture improvement and management.
5. The learners will be able to demonstrate the strengthening and stretching exercises for better posture.
6. The learners will be able to better their posture in the workplace and in everyday life.

SYLLABUS

CREDITS: 4 [Theory-3, Practical-1]

Theory- 45 hours

Practical-30 hours

PART-A: THEORY

Unit-1: Introduction to Posture (9 hours)

1.1 Meaning of Posture, Significance of Good Posture

1.2 Factors affecting posture, Risks associated with Poor Posture.

1.3 Posture and Body Mechanics - sitting, standing, walking, sleeping, lifting

Unit-2: Anatomy and Movement of Spine (8 hours)

2.1 Structure and the Function of the Spine

2.2 Types of Spinal Movement

2.3 Role of the Spine in Maintaining Posture.

Unit-3: Common Postural Deformities (12 hours)

3.1 Types of Postural Deformities- Kyphosis, Lordosis, Scoliosis, Rounded Shoulder, Knock Knees, Bow Legs, Flat Foot, Duck Feet.

3.2 Causes of Postural Deformities, Prevention Methods for Postural Deformities

3.3 Corrective Exercises and Management of Postural Deformities-Kyphosis, Lordosis, Scoliosis, Rounded Shoulder, Knock Knees, Bow Legs, Flat Foot, Duck Feet.

Unit-4: Strengthening Exercises (8 hours)

4.1 Core Strengthening Exercises

4.2 Strengthening Exercises for Back and Neck Muscles

4.3 Stretching Exercises for Muscles Stiffness

Unit-5: Ergonomics in the Workplace, Everyday Life and Sports (8 hours)

5.1 Ergonomics of Workplace

5.2 Active Lifestyle for Corporates/occupations with long seating hours

5.3 Sports Ergonomics-Meaning, Importance, and Applications (shoes and apparel)

PART-B: PRACTICALS: (30 hours)

1. Demonstration of corrective exercises for Kyphosis, Scoliosis, Lordosis, Knock knees, Bow Legs, Flat Foot, and Duck Feet (2 exercises for each postural deformity)
2. Demonstrate strengthening exercises for Core, back, and neck (3 exercises each)
3. Demonstrate stretching exercises for improving range of motion (5 exercises)
4. Assessment of own posture and recommendation for improvement (if any)

SUGGESTED READINGS

1. Agarwal M., Arora S., Gupta B, (2018) **"Posture; Athletic Care and First Aid"**, Vivechan Publications (INDIA) ISBN: 978-9-38391-490-6.
2. Bhandari, P. (2021) **"Athletics Care and Rehabilitation"**. New Delhi: KSK Publishers.
3. **"Essentials of Strength Training and Conditioning"** (pp.73-90). Champaign, IL: Human Kinetics.
4. Karad, P.L, (2019) **"Prevention and Treatment of Sports Injuries"**. New Delhi: KSK Publishers.
5. Kumari, Sheela S.; Rana, Amita; & Kaushik, Seema (2008), **"Fitness, Aerobics and Gym Operations"** (New Delhi: Khel Sahitya Kendra).
6. Meena, T.R. (2022) **"Sports Medicine, Physiotherapy and Rehabilitation"**. New Delhi: KSK Publishers.
7. Pande, P.K. (1987), **"Outline of Sports Medicine"** (New Delhi: Jaypee Brothers)
8. Prentice, W. (2017). **"Principles of Athletic Training: A Competency-Based Approach"**. McGraw-Hill Education.
9. Sharma, Kavita et.al. (2014), **"Fitness, Aerobics and Gym Operations"** (New Delhi: Jyoti Enterprises)
10. Singh, Ajmer et.al. (2006), **"Essentials of Physical Education"** (Ludhiana: Kalyani Publishers)
11. उप्पल, ए.के.; पदयाल, अंजुम और लाल, राजेंदर (2022), **"अंग-विन्यास तथा खिलाड़ी की देखभाल"** (नई दिल्लीः फ्रेंड्स पब्लिकेशन)
12. कुमारी, शीला एस.; राणा, अमिता; और कौशिक, सीमा (2012), **"फिटनेस, एरोबिक्स व जिम ऑपरेशंस"** (नई दिल्ली: खेल साहित्य केंद्र)।
13. Shaw D. (2018). **"Pedagogic Kinesiology"** Sports Publication, ISBN: 978-93-86592-43-9.
14. Shaw D. (2018) **"Fundamental Statistics in Physical Education and Sports Sciences"** Sports Publication, ISBN: 81-86190-57-0.
15. Shaw D. (2019) **"Obesity Management"** Khel Sahitya Kendra, ISBN: 978-93-88159-93-7.
16. Shaw D. (2019) **"Kinesio Taping in Games and Sports"** Sports Publication, ISBN: 978-93-88269-33-9.
17. Shaw D. (2019) **"Sports Injuries: A Demographic Study on Indian Sports Person"** Khel Sahitya Khel Sahitya Kendra, ISBN: 978-93-88159-87-6.

18. Shaw D. (2020) **"Physical Education Practical Manual for Class XI"** Prachi Publication, ISBN : 978-8193-7698-0-5.
19. Shaw D. (2020) **"Physical Education for Class XII"** Prachi Publication, ISBN : 978-81-7730-848-8.
20. Shaw D. (2020) **"Physical Education for Class XI"** Prachi Publication, ISBN : 978-81-7730-847-1.
21. Shaw D. (2020) **"Physical Education Practical Manual for Class XII"** Prachi Publication, ISBN : 978-81-937698-1-2.
22. Shaw D. (2020) **"Yoga Asanas and their Benefits"** Sports Publication, ISBN : 978-81-9436-11-9-0.
23. Shaw D. (2020) **"Parable Global English Hindi Dictionary of Physical Education & Sports Sciences"** Khel Sahitya Kendra, ISBN : 978-93-90461-18-9.
24. Shaw D. (2021) **"Sports Training"** Sports Publication, ISBN : 978-81-943611-3-8.
25. Shaw D. (2021) **"Athletic Care and Rehabilitation"** Sports Publication, ISBN : 978-81-951044-9-9.
26. Shaw D. (2019) **"Encyclopaedia of Sports Injury"** Khel Sahitya Kendra, ISBN : 978-93-88159-87-6.
27. Shaw D. (2021) **"Lesson Planning & Teaching Methods"** Khel Sahitya Kendra, ISBN :978-81-7524-022-9.

SEMESTER-5

B.A.-PE-DSC-5 (MINOR)

SPORTS PSYCHOLOGY

DSC

Sl. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite of the Course (if any)
			Lecture	Tutorial	Practical		
1.	Sports Psychology	04	3	0	1	XII Pass	NIL

Objective:

The objective of this course is to provide an understanding and practices to the learners about psychology and sports psychology, growth and development, the concept of learning, personality, motivation, and psychological factors affecting sports performance.

Learning Outcomes:

1. The learners will be able to understand the concept and practices of sports psychology and its significance for sports performance.
2. The learners will be able to manage various psychological factors like stress, aggression etc.
3. The learners will be able to analyze the personality

SYLLABUS

CREDITS: 4 [Theory-3, Practical-1]

Theory- 45 hours

Practical-30 hours

PART-A: THEORY

Unit – 1: Psychology and Sports Psychology (9 hours)

1.1 Meaning, Definition, and Dimensions of Psychology.

1.2 Meaning, Definition, and Importance of Sports Psychology, Scope of Sports Psychology

1.3 Concepts of Sports psychology intervention

Unit – 2: Growth and Development (9 hours)

2.1 Meaning and Definition of Growth and Development, Difference between Growth and Development

2.2 Principles and Factors Affecting Growth and Development

2.3. Stages of Growth and Development -Infancy, Childhood, Adolescence, Adulthood

Unit – 3: Learning (9 hours)

3.1 Definition and Types of Learning

3.2 Theories of Learning (Trial and Error, Conditioned Response and Learning by Insight)

3.3 Laws of Learning (Law of readiness, Exercise, Effect), Transfer of Training, Learning Curve and its application in the field of Sports.

Unit –4: Personality (9 hours)

4.1 Meaning and Types of Personality, Factors Affecting Personality

4.2. Dimensions and Characteristics of Personality

4.3. Role of Physical Activity in the Development of Personality

Unit – 5: Motivation and Psychological Factors **(9 hours)**

5.1. Concept and Role of Motivation in Sports

5.2 Types and Techniques of Motivation in Sports

5.3 Psychological Factors Affecting Sports Performance — Stress, Anxiety, Tension, Aggression, Emotion, Leadership, Goal Setting, Mental Imagery.

PART-B: PRACTICALS: (30 hours)

1. Eysenck Personality Questionnaire (EPQ)
2. Sports Competitive Anxiety Test (SCAT)
3. Demonstrate the technique of Progressive Muscle Relaxation for stress management.
4. Practical Application of Autogenic Training for Relaxation.
5. Practical Application of Visualization in Games/ Sports.

SUGGESTED READINGS:

1. Arora S., Agarwal M., **"Sports Psychology"**, Khel Sahitya Kendra ISBN: 978-81-947808-8-5, (2020)
2. Cohen RJ and Swerdlik ME (2002). **Psychological Testing and Assessment: An Introduction to Tests and Measurement.** McGraw Hill. New York. U.S.A.
3. Cox RH (2002). **Sport Psychology**. McGraw Hill. London.
4. Liukkonen JED (2007). **Psychology for Physical Educators.** Human Kinetics. U.S.A. Martin GL (2003). Sports Psychology, Sports Science. Press. USA.
5. Sahni SP (2005). **Psychology and Its Application in Sports.** D.V.S. Delhi. Shaw D and Other (2005). Sport & Exercise Psychology. Bios. U.K.
6. Verma V (1999). **Sport Psychology & All Round Development.** Sports Pub. New Delhi.
7. Wann DL (1997). **Sport Psychology.** Prentice Hall. New Jersey.
8. Saini, N. (2020). **"Yoga & Stress Management"**, Friends Publications. New Delhi.
9. Saini,N., Suri M., (2020). **"Sports Psycho-Physiology"**, Friends Publications. New Delhi.
10. Luthra, A., Sharma, P., and Padyal, A. (2019), **Yoga and Stress Management.** Pinnacle Learning, New Delhi. ISBN: 978-93-83848-57-7
11. Sethi, P.K (2016) **"Yoga for stress Release"** Shree Publication, Darya Ganj, New Delhi. ISSN 978-81-8329-776-9.
12. Shaw D. (2020) **"Physical Education Practical Manual for Class XI"** Prachi Publication, ISBN : 978-8193-7698-0-5.
13. Shaw D. (2020) **"Physical Education for Class XII"** Prachi Publication, ISBN : 978-81-7730-848-8.
14. Shaw D. (2020) **"Physical Education for Class XI"** Prachi Publication, ISBN : 978-81-7730-847-1.
15. Shaw D. (2020) **"Physical Education Practical Manual for Class XII"** Prachi Publication, ISBN : 978-81-937698-1-2.
16. Shaw D. (2020) **"Parable Global English Hindi Dictionary of Physical Education & Sports Sciences"** Khel Sahitya Kendra, ISBN : 978-93-90461-18-9.

SEMESTER-5

B.A.-PE-DSC-5 (MAJOR)

SPORTS SOCIOLOGY

DSC

Sl. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite of the Course (if any)
			Lecture	Tutorial	Practical		
1.	Sports Sociology	04	3	0	1	XII Pass	NIL

Objective:

The objective of this course is to provide an understanding and practices to the learner about sports sociology, the interrelationship between society and sports, and also gender and socialization.

Learning Outcomes:

1. The learner will understand the importance and applications of sports sociology.
2. The learners will be able to articulate sociological perspectives with sports.
3. The learners will be able to inculcate the sports culture in their life & society.
4. The learner will be able to establish the relationship between society and sports.
5. The learner will be able to analyze gender inequality in sports.
6. The learner will be able to understand the significance of socialization through games and sports.

SYLLABUS

CREDITS: 4 [Theory-3, Practical-1]

Theory- 45 hours

Practical-30 hours

PART-A: THEORY

Unit – I: Sports Sociology (9 hours)

1.1 Meaning and Definition of Sociology and Sport Sociology

1.2 Nature and Scope of Sociology, Importance of Sports Sociology

1.3 Sociological Perspectives in Sports and Physical Education (Functionalism, conflict and Interactionism)

Unit-2: Culture and Sports (9 hours)

2.1 Meaning of Culture and Sports Sub Culture

2.2 Characteristics of Sports Culture, Elements of Culture in Relation to Sports

2.3 Club Culture and Sports

Unit-3: Sports and Society (9 hours)

3.1 Meaning and Structure of Society

3.2 Historical Development of Sports in different types of Societies.

3.3 Changes in Sports (Amateur, Professional, Commercial).

Unit-4: Gender and Sports **(9 hours)**

4.1 Gender Inequality in Sports
4.2 Women's Participation in Sports
4.3 Barriers to Women's Participation in Sports

Unit-5: Socialization and Sports **(9 hours)**

5.1 Meaning of Socialization and Sports Socialization
5.2 Agencies of Sports Socialization, Role of Family, School, College, and Peer Group in Sports Socialization
5.3 Socialization through games and sports, De-socialization, Violence, and Deviance in Sports.

PART-B: PRACTICALS: **(30 hours)**

1. Conduct a survey on the status of sports in society/ community.
2. Measurement of Group Dynamics.
3. Selection of Leader/ Captain in games & sports setup.
4. Measurement of Social Desirability.

SUGGESTED READINGS:

1. Bhupinder Singh (2004), **Sports Sociology-An Indian Perspective**. New Delhi: Friends Publications, ISBN 978-8172160852.
2. Brown, S.P. (2006). **Introduction to the Sociology of Sport.** Baltimore: Lippincott Williams & Wilkins.
3. Coaklay, J.J. (2009). **Sporting Sociology, Issues and controversies**, Mcgraw Hill International.
4. Coakley, J.J. (2015). **Sports in society: Issues and controversies.** New York: McGraw-Hill; Olympic Studies Centre. (2014).
5. Delaney, T. & Madigan, T. (2009). **The Sociology of Sport: An introduction.** USA: McFarland & Company.
6. Shaw D. (2020) **"Physical Education Practical Manual for Class XI"** Prachi Publication, ISBN : 978-8193-7698-0-5.
7. Shaw D. (2020) **"Physical Education for Class XII"** Prachi Publication, ISBN : 978-81-7730-848-8.
8. Shaw D. (2020) **"Physical Education for Class XI"** Prachi Publication, ISBN : 978-81-7730-847-1.
9. Shaw D. (2020) **"Physical Education Practical Manual for Class XII"** Prachi Publication, ISBN : 978-81-937698-1-2.
10. Shaw D. (2020) **"Parable Global English Hindi Dictionary of Physical Education & Sports Sciences"** Khel Sahitya Kendra, ISBN : 978-93-90461-18-9.

SYLLABUS OF GENERIC ELECTIVE PAPERS (DSE)
SEMESTER-V
B.A.-PE-DSE-(4)-1.1-
SPORTS TRAINING
DSE

Sl. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite of the Course (if any)
			Lecture	Tutorial	Practical/Practice		
1.	**SPORTS TRAINING**	04	3	0	1	XII Pass	NIL

Learning Objective:

The objective of this course is to provide the understanding through practical knowledge, skills and practices with enough scope of creativity/Innovations.

Learning Outcomes:

- The learner will be able to apply the concept of sports training for improvement of sports performance.
- The learner will be able to develop strength, endurance, speed, flexibility and coordination through various scientific methods and programme.
- The learner will be able to draw and prepare phases of technical and tactical training of sportsperson.
- The learner will be able to analyse the adjustment of load and intensity in different phases of training.
- The learner will be able to create sports training plan and develop methods for Talent Identification & Development.

Syllabus

CREDITS: 4 [Theory-3, Practical-1]
Theory-45 hours
Practical-30 hours

PART-A: THEORY

UNIT-I INTRODUCTION TO SPORTS TRAINING (9 Hours)

1.1 Meaning & Definition of Sports Training
1.2 Aim & Objective of Sports Training
1.3 Principles of sports Training
1.4 Systems of sports training-Basic, Good and high-performance training

UNIT- II FITNESS COMPONENTS (9 Hours)

2.1 Strength-Definition, types and methods of improving strength- Isometric, Isotonic and Isokinetic.

2.2 Endurance-Definition, Types and Methods to develop Endurance- Continuous Training, Interval Training and Fartlek Training

2.3 Speed-Definition, types and methods to develop different speed abilities.

2.4 Flexibility- Definition, Types and Methods to improve Flexibility (static and dynamic)

2.5 Coordinative Abilities-Definition, Types and methods of improvement of coordinative abilities.

UNIT – III Training Process **(9 Hours)**

3.1 Technical Training – Meaning, stages and Methods of Technique Training

3.2 Tactical Training – Meaning and Methods of Tactical Training

3.3 Circuit training and weight training

UNIT – IV Load Adaptation and Planning **(9 Hours)**

4.1 Training Load and recovery - Definition and Process

4.2 Principles of Intensity and Volume of stimulus

4.3 Planning-Training Session, Different types of training cycle (macro cycle, meso cycle, micro cycle, yearly cycle and Olympic Cycle)

UNIT -V TRAINING, PROGRAMMING & PLANNING **(9 Hours)**

5.1 Periodization-Meaning & Types of Periodization

5.2 Aims & Contents of Periods-Preparatory, Competition, Transitional

5.3 Talent Identification & Development

PART B- PRACTICALS **(30 Hours)**

1. Develop a training session.
2. Develop a micro cycle training program.
3. Develop a meso cycle training program.
4. Develop a macro cycle training program.
5. Develop a yearly training program.
6. Develop of Strength training program.
7. Develop of circuit training program.
8. Develop of weight training program.

Suggested Readings:

- Dick, W. F. (1980) **Sports Training Principles** London: Lepus Books.
- Harre, D. (1982) **Principles of Sports Training** Berlin: Sporulated.
- Jensen, R. C.& Fisher, A.G. (1979) **Scientific Basis of Athletic Conditioning.** Philadelphia: Lea and Fibiger, 2nd Edn.
- Matvyew, L.P. (1981) **Fundamental of Sports Training**. Moscow: Progress Publishers.
- Shaw, D. (2020) **Sports Training** Sports Publication.
- Shaw, D. (2021) **Athletic Care and Rehabilitation** Sports Publications.
- Singh, H. (1984) **Sports Training, General Theory and Methods**. Patiala: NSNIS.
- Uppal, A.K., (1999) **Sports Training** New Delhi: Friends Publication.

SYLLABUS OF DISCIPLINE SPECIFIC ELECTIVE PAPERS (DSE)
SEMESTER-V
B.A.-PE-DSE- (4)- 1.2
STRENGTH AND CONDITIONING

Sl. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite of the Course (if any)
			Lecture	Tutorial	Practical/Practice		
2	STRENGTH AND CONDITIONING	04	3	0	1	XII Pass	NIL

Objective:

The objective of this course is to provide an understanding, practices and practical skills to the learners about Strength and Conditioning, Load and Adaptation, Warming-Up and Limbering Down, Strength and Conditioning Programme Design.

Learning Outcomes:

1. The learners will be able to understand the concept and applications of Strength and Conditioning.
2. The learners will be able to understand the concept and applications of Load and Adaptations.
3. The learners will be able to understand and analyse the popular trends and updated research in the sports industry, specifically in the area of strength and conditioning.
4. The learners will be able to design strength and conditioning programme.

Syllabus

CREDITS: 4 [Theory-3, Practical-1]
Theory-45 hours
Practical-30 hours

PART-A: THEORY

UNIT-I Introduction to Strength and Conditioning (7 Hours)

1.1 Meaning and Concept of Strength and Conditioning.
1.2 Aim and Objectives of Strength and Conditioning.
1.3 General Principles of Strength and Conditioning.

UNIT-II Load and Adaptation (8 Hours)

2.1 Training Load- Definition and types of training load.
2.2 Principles of training load (Frequency, Intensity, Density, and Volume).
2.3 Relationship between load and adaptation. Over load and critical load.
2.4 Concept of load and factor affecting of load and adaption.

UNIT-III Strength Training (10 Hours)

3.1 Strength – Definition, types and their characteristics.

3.2 Types of muscular contraction.
3.3 Development of strength using own body weight and external resistance, field tests for measuring strength.
3.4 Core Strength and Functional training

UNIT-IV: Warming-Up and Limbering Down (10 Hours)

4.1 Concept of Warming-Up and Limbering Down
4.2 Importance of Warming-Up and Limbering Down
4.3 Types of Stretching- Static Stretching Techniques and Dynamic Stretching Techniques

UNIT-V: Strength and Conditioning Programme Design (10 Hours)

5.1 Exercise Selection, Training Frequency, Exercise Order, Training Load and Repetitions, Volume, Rest Periods.
5.2 Means and Methods of Training (Resistance Training)
5.3 Plyometric Training, Circuit Training, Free Weight Training Methods, Bodyweight Training Methods, Core Stability and Balance Training Methods

PART-B: PRACTICALS (30 hours)

1. Design a Warming Up Exercise Programme.
2. Design a Limbering Down Exercise Programme.
3. Prepare a Strength and Conditioning Programme for a specific games/sport.
4. Demonstrate Exercises for Core Stability and Balance (any five).

Suggested Readings:

- Arnheim, Danial D. & Arnheim, Helene (1987) **Essentials of Athletic Training Toronto** Times Mirror.
- Arnheim, Danial D. (1985) **Modern Principles of Athletic Training. Toronto** Time Mirror.
- Bunn, John W. (1955) **Scientific Principles of Coaching** Englewood Cliffs N. J. Prentice Hall, Inc.
- Dick, Frank W. (1980) **Sports Training Principles** London: Lepus Books.
- Haff, G.G. (2016) **Essentials of Strength Training and Conditioning** Human Kinetics.
- Hare, Dietrich (1982) **Principles Sports Training**, Berlin: Sportverlag.
- Jensen, Clayne R & Fisher, Garth A. (1979) **Scientific Basis of Athletic Conditioning** Philadelphia: Lea & Febiger
- Joan A. (1987) **Coaching – an Effective Behavioural Approach**, Toronto: Time Mirror
- Novich, Max M. & Taylor Buddy (1983) **Training and Conditioning of Athletes** Philadelphia: Lea & Febiger
- Sands, W.A., Wurth, J.J., Hewit, J.K. (2012) **Basics of Strength and Conditioning Manual** The National Strength and Conditioning Association.
- Shaw, D. (2020) **Sports Training** Sports Publication.
- Shaw, D. (2021) **Athletic Care and Rehabilitation** Sports Publications.
- Singh, Hardayal (1991) **Science of Sports Training** New Delhi: D.A.V. Publication
- Uppal A. K. (2010) **Principles of Sports Training** Friends Publications (India)
- Uppal A. K. (2013) **Science of Sports Training** Friends Publications (India)
- Uppal A. K. (2013) **Scientific basis of Sports Conditioning** Friends Publications (India)

SYLLABUS OF GENERIC ELECTIVE PAPERS (DSE)
SEMESTER-V
B.A.-PE-DSE-(4)-1.3-
FITNESS FOR SENIOR CITIZENS

Sl. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite of the Course (if any)
			Lecture	Tutorial	Practical/Practice		
3.	FITNESS FOR SENIOR CITIZENS	04	3	0	1	XII Pass	NIL

Learning Objectives:

This course will help the learner to understand the process of aging and develop the basic concepts of the physiological, psychological and social issues affecting the fitness levels of senior citizens in society. Also, learners will be able to test and design exercise programs for the Senior Citizen.

Learning Outcomes:

1. Learners will be able to identify the physical, psychological and social aspects of aging.
2. Learners will be able to understand aging adults' limitations, common medical conditions, aging process, and frequent fitness obstacles.
3. Learners will be able collect information regarding events organized by state, national and international sports federations to promote physical activity among the aged population.
4. Learners will be able to test and design exercise programs for the Senior Citizen.
5. Learners will be able to understand and demonstrate importance of fitness for senior citizens.
6. Learners will be able to evaluate fitness of senior citizen.
7. Learners will be able to improve the quality of life of senior citizen.

Syllabus

CREDITS: 4 [Theory-3, Practical-1]
Theory-45 hours
Practical-30 hours

PART-A: THEORY

UNIT- I Introduction – Ageing and Physical Activity (9 hours)

1.1 Meaning, Definition of ageing.
1.2 Countries and policies that are sensitive and caring for the ageing population
1.3 Scope of practice for Senior Fitness Specialists and understand their role in the healthcare industry

UNIT -II Physical and Physiological Considerations of Aging (9 hours)

2.1 Physical and Physiological changes that occur in the ageing population
2.2 Changes in the nervous system with relation to the aged.
2.3 Cardiorespiratory system and its changes according to age.

2.4 Effects of ageing on the musculoskeletal system
2.5 The physical effects of exercise and physical activity of aged people.

UNIT -III Psychological Considerations of Aging (9 hours)

3.1 Age-related influences on the quality of life,
3.2 Self-perception for the senior citizen.
3.3 Emotional well-being of aged populations
3.4 Psychosocial effects of exercise and physical activity of aged people.

UNIT-IV Fitness Assessments for the Active Older Adult (9 hours)

4.1 Functional fitness of older adults.
4.2 Health risks related to aged and physical activity.
4.3 Diet and Nutrition - caloric requirements, and nutrition guidelines for aged population
4.4 Chronic conditions and comorbidities associated with active senior citizens

UNIT-V Training the Senior Citizen (9 hours)

5.1 Cardiorespiratory Training for Active Senior Citizens
5.2 Resistance Training for Active Senior Citizens
5.3 Flexibility and Balance for Active Senior Citizens
5.4 Sports for Veterans and Active Senior Citizens

PART-B: PRACTICALS (30 hours)

1. Develop Cardiorespiratory Training Programme for Active Senior Citizens
2. Develop Resistance Training programme for Active Senior Citizens
3. Develop Flexibility exercises for Active Senior Citizens
4. Develop Balancing exercises for Active Senior Citizens
5. Physical Fitness Testing and Evaluation of Senior citizen (men and women)

Suggested Readings:

- Folan, Maureen (1995) **Exercise Machines for Older People** Physiotherapy, vol. 81, page 771. http://dx.doi.org/10.1016/s0031-9406(05)66612-6.
- Hollrock, Ardelle P. (2004) **Exercise and the Elderly** Fogler Library, University of Maine. http://www.library.umaine.edu/theses/pdf/HollrockAP2004.pdf.
- Rikli, Roberta E. & Jones, C. Jessie (2013) **Senior Fitness Test Manual** Human Kinetics.
- Skelton, D. A., and N. Beyer. (2003) **Exercise and Injury Prevention in Older People** Scandinavian Journal of Medicine & Science in Sports vol. 13, pp. 77–85. http://dx.doi.org/10.1034/j.1600-0838.2003.00300.x.
- Shaw, D., and Andrabi, S.M.H. (2021) **Fitness Reference of Senior Citizens** Khel Sahitya Kendra.
- Shaw D. (2020) **"Parable Global English Hindi Dictionary of Physical Education & Sports Sciences"** Khel Sahitya Kendra, ISBN : 978-93-90461-18-9.
- Shaw D. (2021) **"Sports Training"** Sports Publication, ISBN : 978-81-943611-3-8.
- Underhill, J. A. (1993) **Exercise for Older People with Dementia** Age and Ageing, vol. 22, P35—P36. http://dx.doi.org/10.1093/ageing/22.suppl_3.p35-c

SYLLABUS OF GENERIC ELECTIVE PAPERS (GE)

SEMESTER- V

B.A.-PE-GE- 5 (4)

YOGA AND STRESS MANAGEMENT

GE

Sl. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite of the Course (if any)
			Lecture	Tutorial	Practical/Practice		
1.	YOGA AND STRESS MANAGEMENT	04	3	0	1	XII Pass	NIL

GE-5 (4)-YOGA AND STRESS MANAGEMENT

Learning objective:

The objective of this course is to provide the understanding through practical knowledge and practices with enough scope of creativity/Innovations.

Learning outcomes:

1. Understand the concept of yoga.
2. Demonstrate different asanas to achieve healthy lifestyle.
3. Apply Pranayama and Shat karmas to reduce day to day stress in our life.
4. Management of Stress by using different yogic relaxation techniques.
5. Develop Physical Fitness Program.

SYLLABUS

No. of Credits: 04 (Lecture-03, Practical-1)
Theory: 45 hours, Practical: 30 hours.

Unit-1: INTRODUCTION (9 hrs. Lectures)

1.1 Meaning, Definition and Importance of Yoga.

1.2 Origin and Historical development of Yoga.

1.3 Concept of the importance of Yogic Diet.

Unit-II: YOGA-ASANAS (9 hrs. lectures)

2.1 Ashtanga Yoga (Maharishi Patanjali): Meaning and importance.

2.2 Supine Position Asanas (Ardh-Halasana, Sarvangasana, Pawanmuktasana); Prone Position Asanas (Bhujangasana, Salabhasana, Dhanurasana)

2.3 Sitting Asanas (Ardh Matsyendrasana, Paschimmotanasana, SuptaVajrasana); Standing Asanas (Utkatasana, , Trikonasana and Tadasana).

Unit-III: PRANAYAMAS AND SHAT KARMAS **(9 hrs. lectures)**

3.1 Meaning, Procedure, Precautions and Benefits of the following Pranayamas: Anulom-Vilom, Suryabheden, Bhrameri, Sheetali, Sheetkari Pranayamas.

3.2 Meaning, Procedure, Precautions and Benefits of the following Shatkarmas: Kapalbhati, Trataka and Neti (Jal and sutra).

3.3 Relevance of yoga for holistic health development in the society.

Unit-IV: STRESS MANAGEMENT **(9 hrs. lectures)**

3.1 Concept, Causes and Effects of Stress.

3.2 Non-communicable diseases (due to stress), Stress prevention and good health.

3.3 Stress Management through relaxation techniques (autogenic training and progressive muscle relaxation, deep breathing, meditation), and sports, recreational, adventure sports, physical activities and developing healthy relationships as coping strategies**.**

Unit V: HOLISTIC HEALTH DEVELOPMENT AND STRESS MANAGEMENT

(9 hrs. lectures)

5.1 Physiology of stress and mind.

5.2 Holistic well-being and dimensions of holistic health: physical, emotional, social, mental, spiritual, and environmental.

5.3 Planning and maintaining a Personal Fitness Program.

Practicals **(30 hrs.)**

1. Suryanamaskar and any four asanas.
2. Pranayams (any one).
3. Practice Meditation for 10-15 minutes.
4. Assessment of stress (Questionnaire-PSQ)

Suggested Readings:

1. Arora S., Agarwal M. (2022), **"Yoga & Stress Management",** Khel Sahitya Kendra ISBN: 978-93-90461-38-7.
2. Pawar,B., Gosain,N., Sharma,S.(2021), **"Yoga & Stress Management",** Friends Publications. New Delhi (India) ISBN-978-81-7216-579-6.
3. Saini, N. (2020). **"Yoga & Stress Management",** Friends Publications. New Delhi. ISBN: 978-93-88457-58-3
4. Arora S., Agarwal M. (2020), **"Yoga Skills"**, Khel Sahitya Kendra ISBN: 978-81-947808-4-7.
5. Pahuja M., Pahuja S., Panda S. (2020), ""**Yoga & Stress Management",** Friends Publications. New Delhi (India) ISBN-978-8195365593.
6. Gupta, B., Chakravortty,S.K., ., Chakravortty, Munesh.,(2019) **"Yoga & Stress Management",** Friends Publications. New Delhi (India) ISBN-978-81-7216-568-0.
7. **"Anger and Stress Management"**. God's Way. Calvary Press, USA.
8. Swate Y B (2009). **"Anger Management".** Sage Publication. New Delhi.
9. NCERT & CBSE publication and reading for stress management.
10. Davis M. et al (2008). **"The Relaxation and Stress Reduction"** workbook. Harbinger Publications, USA
11. Greenberg J.S. (2008). **"Comprehensive Stress Management".** McGraw Hill, USA
12. HippE. (2008). **"Fighting Invisible Tigers: Stress Management for Teens"**. Free Spirit Publishing, USA.
13. Petee F (2006). **"Anger Management"**. Pentagon. Press. New York. U.S.A.
14. Gupta Rashmi (2015), **"Yoga and Pranayam Exercise"**. Aryan Publication.
15. Gupta Rashmi (2016), **"Yogaasana and pranayama abhayas"**. Aryan Publication.
16. Shaw D. (2018) **"Fundamental Statistics in Physical Education and Sports Sciences"** Sports Publication, ISBN: 81-86190-57-0.
17. Shaw D. (2020) **"Physical Education Practical Manual for Class XI"** Prachi Publication, ISBN : 978-8193-7698-0-5.
18. Shaw D. (2020) **"Physical Education for Class XII"** Prachi Publication, ISBN : 978-81-7730-848-8.
19. Shaw D. (2020) **"Physical Education for Class XI"** Prachi Publication, ISBN : 978-81-7730-847-1.
20. Shaw D. (2020) **"Physical Education Practical Manual for Class XII"** Prachi Publication, ISBN : 978-81-937698-1-2.
21. Shaw D. (2020) **"Parable Global English Hindi Dictionary of Physical Education & Sports Sciences"** Khel Sahitya Kendra, ISBN : 978-93-90461-18-9.
22. Shaw D. (2020) **"Yoga Asanas and their Benefits"** Sports Publication, ISBN : 978-81-9436-11-9-0.

SEMESTER-6

B.A.-PE-DSC-6 (MINOR)

KINESIOLOGY

DSC

Sl. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite of the Course (if any)
			Lecture	Tutorial	Practical		
1.	Kinesiology	04	3	0	1	XII Pass	NIL

Objective:

The objective of this course is to provide an understanding and practices to the learners about Kinesiology and its application in sports and develop the foundation to learn sports biomechanics and performance analysis.

Learning Outcomes:

1. The learners will be able to understand the fundamental concepts and practical applications related to kinesiology.
2. The learners will be able to demonstrate and correlate different components of science of motion (human).
3. The learners will be able to analyze the sports/ exercise movements and design movement-oriented exercises.
4. The learners will be able to develop the exercise program for strengthening and stretching the muscles based on kinesiology (science of motion).
5. The learners will be able to apply the knowledge and skills related to the science of movement to create a strong foundation for better sports performance.

SYLLABUS

CREDITS: 4 [Theory-3, Practical-1]

Theory- 45 hours

Practical-30 hours

PART-A: THEORY

Unit-I: Introduction to Kinesiology (8 hours)

1.1 Meaning and Definition of Kinesiology,

1.2 Aim, Objectives, and Scope of Kinesiology for Physical Education and Sports

1.3 Importance of Kinesiology for Physical Education Teachers, Athletes, and Coaches

Unit-II: Anatomical Fundamental Concepts in Kinesiology (8 hours)

2.1 Fundamental Anatomical positions (Anterior, Posterior, Superior, Inferior, Lateral, Medial)

2.2 Fundamental Movements- Flexion, Extension, Abduction, Adduction, Rotation, Circumduction, Medial and Lateral rotation, Inversion, Eversion, Supination, Pronation

2.3 Fundamental Concepts- Centre of Gravity, Line of Gravity, Axis and Planes of motion.

Unit-III: Physiological Fundamentals Concept of Kinesiology (7 hours)

3.1 Classification of Joints and Muscles in Relation to Motion.

3.2 Types of Muscle Contractions (Isometric, Isotonic and Isokinetic)

3.3 Physiological Fundamental concepts- Angle of Pull, All or None Law, Reciprocal Innervation

Unit-IV: Location and Action of Muscles (10 hours)

4.1 Location and action of muscles at various joints: upper extremity: pectoralis major – pectoralis minor – deltoid – biceps brachii – triceps – teres major – latissimus dorsi – trapezius

4.2 Location and action of muscles at various joints: Lower extremity: rectus femoris – vastus group – Sartorius – biceps femoris – semi membranosus – semi tendinosus– gluteus – gastrocnemius muscles

Unit-V: Muscular and Movement Analysis (12 hours)

5.1 Muscular Analysis of fundamental movements – walking/ running, jumping and throwing.

5.2 Movement Qualities: Movement Rhythm, Movement precision, Movement Amplitude, Movement Coupling, Movement tempo, Movement Flow

5.3 Structure of motor action: cyclic – acyclic motor action – movement combination.

PART-B: PRACTICALS: (30 Hours)

1. Demonstration of planes and axes of a given movement.
2. Determination of the location of muscles at various joints.
3. Muscular analysis of any technique/exercise/skill of your choice.
4. Suggest any five exercises to stretch and strengthen the muscles of the shoulder and hip joint.

SUGGESTED READINGS:

1. Broer, M.R. **Efficiency of Human Movement** (Philadelphia : W.B. Saunders Co. 1969
2. Bunn, J. W. (1972).Scientific principles of coaching. Englewood Cliffs, N.J.: Prentice Hall Inc.
3. Dhanajoy.S., 2005**, "Pedagogic of Kinesiology"**, Sports Publication, Chennai.
4. Gerry Carr, Mechanics of Sport Human Kinetics, 199
5. Hay, J. G. & Reid, J. G.(1982).**The anatomical and mechanical basis of human motion.** Englewood Cliffs, N.J.: prentice Hall Inc.
6. Hay, J. G. & Reid, J. G.(1988).**Anatomy, mechanics and human motion.** Englewood Cliffs, N.J.: prentice Hall Inc.
7. Hay, J. G. (1970).**The biomechanics of sports techniques.** Englewood Cliffs, N.J.: Prentice Hall, Inc.
8. James G. Hay, **The Biomechanics of Sports Techniques.** Prentice hall International Inc, New Jerssy 1993.
9. Katharine, F. Luttgens Kathryn, **Kinesiology – Scientific Basis of Human motion Singapore** : Mc. Graw Will International Book Company, 1984)
10. Kathryn Lutgens et al. **Kinesiology (Scientific Basis of Human Motion),** Brown and Bench mark, 1992.
11. Rasch and Burke, **Kinesiology and applied Anatomy** (Philadelphia :Leaand Fiber, 1967)
12. Roger Bartlett, **Introduction to Sports Biomechanics.** E& FN Spon NewYork 1997
13. Simonian, C. (1911).**Fundamentals of sport biomechanics.** Englewood Cliffs, N.J.: Prentice Hall Inc.
14. Shaw D. (2018). **"Pedagogic Kinesiology"** Sports Publication, ISBN: 978-93-86592-43-9.
15. Shaw D. (2018) **"Fundamental Statistics in Physical Education and Sports Sciences"** Sports Publication, ISBN: 81-86190-57-0.
16. Shaw D. (2019) **"Obesity Management"** Khel Sahitya Kendra, ISBN: 978-93-88159-93-7.
17. Shaw D. (2019) **"Kinesio Taping in Games and Sports"** Sports Publication, ISBN: 978-93-88269-33-9.
18. Shaw D. (2019) **"Sports Injuries: A Demographic Study on Indian Sports Person"** Khel Sahitya Khel Sahitya Kendra, ISBN: 978-93-88159-87-6.
19. Shaw D. (2020) **"Physical Education Practical Manual for Class XI"** Prachi Publication, ISBN : 978-8193-7698-0-5.
20. Shaw D. (2020) **"Physical Education for Class XII"** Prachi Publication, ISBN : 978-81-7730-848-8.

21. Shaw D. (2020) **"Physical Education for Class XI"** Prachi Publication, ISBN : 978-81-7730-847-1.
22. Shaw D. (2020) **"Physical Education Practical Manual for Class XII"** Prachi Publication, ISBN : 978-81-937698-1-2.
23. Shaw D. (2020) **"Yoga Asanas and their Benefits"** Sports Publication, ISBN : 978-81-9436-11-9-0.
24. Shaw D. (2020) **"Parable Global English Hindi Dictionary of Physical Education & Sports Sciences"** Khel Sahitya Kendra, ISBN : 978-93-90461-18-9.
25. Shaw D. (2021) **"Sports Training"** Sports Publication, ISBN : 978-81-943611-3-8.
26. Shaw D. (2021) **"Athletic Care and Rehabilitation"** Sports Publication, ISBN : 978-81-951044-9-9.
27. Shaw D. (2019) **"Encyclopaedia of Sports Injury"** Khel Sahitya Kendra, ISBN : 978-93-88159-87-6.
28. Shaw D. (2021) **"Lesson Planning & Teaching Methods"** Khel Sahitya Kendra, ISBN :978-81-7524-022-9.

SEMESTER-6

B.A.-PE-DSC-6 (MAJOR)

SPORTS KINANTHROPOMETRY

DSC

Sl. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite of the Course (if any)
			Lecture	Tutorial	Practical		
1.	Sports Kinanthropometry	04	3	0	1	XII Pass	NIL

Objective:

The objective of this course is to provide an understanding and practices to the learners about the concepts in kinanthropometry, knowledge/skills of various methods of measuring body composition, physical and physiological considerations of kinanthropometry, and knowledge about norms and standards for kinanthropometric data for different applications.

Learning Outcomes:

1. The learners will have the knowledge and practices of Kinanthropometry.
2. The learners will be able to practically measure & evaluate different kinanthropometric measurements related to movement, kinesiology, health, fitness, growth & development including sports performance.
3. The learners will be able to safely and effectively use instrumentation and equipment to assess and record human anthropometry, physique and somatotype.
4. The learners will be able to acquire the knowledge/skills in regard to various methods of measuring body composition.

SYLLABUS

CREDITS: 4 [Theory-3, Practical-1]

Theory- 45 hours

Practical-30 hours

PART-A: THEORY

Unit-I: Introduction to Anthropometry and Kinanthropometry (8 Hours)

1.1 Meaning and Definition of Anthropometry, Kinanthropometry, sports kinanthropometry

1.2 History and development of Anthropometry and Kinanthropometry

1.3 Applications and Significance of kinanthropometric knowledge in sports promotion.

Unit-II: Physical and Physiological Considerations of Kinanthropometry (8 Hours)

2.1 Classification of Body Types- Kretchmer, Sheldon, and Heath Carter, Somatotype- Endomorphy, Mesomorphy, Ectomorphy

2.2 Relationship between kinanthropometric measurements and sports performance.

2.3 Kinanthropometric considerations of sports selection (players).

Unit-III: Kinanthropometric Landmarks and Tools (8 Hours)

3.1 Kinanthropometric Landmarks: Vertex, Acromiale, Subscapular, Supralliac, Trochanterion, Stylion, Sphyrion, Femoral Bicondylar, Humeral Bicondylar.

3.2 Anthropometric Instruments: Tools and Techniques (Skinfold Caliper, spreading caliper, anthropometer with rod and anthropometric tape)

Unit-IV: Body Composition (8 Hours)

4.1 Meaning and Definition of Body Composition, Importance of Body Composition in sports

4.2 Body Compositions for health and different games & sports.

4.3 Assessment of Fat mass, Assessment of Fat free mass and Assessment of Lean body mass

Unit-V: Body Measurement and Procedures (13 Hours)

5.1 Gross Body Measurements and Procedures- (i) Gross mass and size; (ii) Segment Lengths or heights of body parts; (iii) Skinfold measurements.

5.2 Kinanthropometric Measurements: Height, Sitting Height, Leg Length, Bi-acromian Diameter, Bi-iliocristal Diameter, Bitrochantaerian Diameter, Femoral Bicondylar, Humeral Bicondylar

5.3 Measurements for Body Composition: (a) Skinfold Measurements: Biceps, Triceps, Supra-iliac, Chest, Subscapular, Thigh, Calf; (b) Circumference Measurements: Chest, Upper Arm, Fore Arm, Abdominal, Hip, Thigh, Calf

PART-B: PRACTICALS: (30 Hours)

1. Measurement of Height and Weight for 10 individuals.
2. Calculation of BMI for 10 individuals with interpretation.
3. Calculation of Waist-Hip Ratio for 10 individuals with interpretation.
4. Identification of Kinanthropometric landmarks and marking of anatomical sites for five measurements.
5. Measurement of Segmental Lengths/ Circumference/ Skinfolds (Any five measurements) for 05 individuals with interpretation.

SUGGESTED READINGS:

1. **Genetic and Anthropological Studies of Olympic Athletes** by De Garray, Louis Levine & Cater, Academic Press, London
2. H.S. Sodhi: **Sports Anthropometry (A Kinanthropometric Approach),** Anova Publications
3. James A.P. Day: **Perspectives in Kinanthropometry,** Human Kinetics Publishers, Inc. Champaign, Illinois
4. Kansal, D. K. (2017) **A Textbook of Sports Science: Test, Evaluation, Accreditation Measurements and Standards.** K. K. Publications, New Delhi, In Press
5. **Kinanthropometry** by Roger Eston and Thomas Reilly, E & F.N. SPON, London.
6. **Kinanthropometry** by S.P. Singh and P. Malhotra, Luna Publication, Patiala.
7. L.S. Sidhu Et. Al: Sports Sciences – **Health, Fitness and Performance,** IASSPE 7. L.S. Sidhu Et. Al: Trends in Sports Sciences, IASSP
8. Ostym, Beunen and Simons: **Kinanthropometry II**, University Park Press, Baltimore
9. **Physique and Selection of Sportsmen** by H.S. Sodhi and L.S. Sidhu.
10. Singh, S. P. and P. Malhotra (1989). **Kinanthropometry.** Lunar Publications, Patiala, India
11. **Skeletal Maturity** by S.P. Singh, L.S. Sidhu, and J. Singh, Human Biology Publication Society, Punjabi University, Patiala.
12. **Sports Anthropometry** by H.S. Sodhi, ANOVA Publication.
13. Verma and Mokha: **Nutrition, Exercise and Weight Reduction, Exercise Science** Publication Society.
14. Shaw D. (2018). **"Pedagogic Kinesiology"** Sports Publication, ISBN: 978-93-86592-43-9.
15. Shaw D. (2018) **"Fundamental Statistics in Physical Education and Sports Sciences"** Sports Publication, ISBN: 81-86190-57-0.
16. Shaw D. (2019) **"Obesity Management"** Khel Sahitya Kendra, ISBN: 978-93-88159-93-7.
17. Shaw D. (2019) **"Kinesio Taping in Games and Sports"** Sports Publication, ISBN: 978-93-88269-33-9.
18. Shaw D. (2019) **"Sports Injuries: A Demographic Study on Indian Sports Person"** Khel Sahitya Khel Sahitya Kendra, ISBN: 978-93-88159-87-6.
19. Shaw D. (2020) **"Physical Education Practical Manual for Class XI"** Prachi Publication, ISBN : 978-8193-7698-0-5.
20. Shaw D. (2020) **"Physical Education for Class XII"** Prachi Publication, ISBN : 978-81-7730-848-8.
21. Shaw D. (2020) **"Physical Education for Class XI"** Prachi Publication, ISBN : 978-81-7730-847-1.

22. Shaw D. (2020) **"Physical Education Practical Manual for Class XII"** Prachi Publication, ISBN : 978-81-937698-1-2.
23. Shaw D. (2020) **"Yoga Asanas and their Benefits"** Sports Publication, ISBN : 978-81-9436-11-9-0.
24. Shaw D. (2020) **"Parable Global English Hindi Dictionary of Physical Education & Sports Sciences"** Khel Sahitya Kendra, ISBN : 978-93-90461-18-9.
25. Shaw D. (2021) **"Sports Training"** Sports Publication, ISBN : 978-81-943611-3-8.
26. Shaw D. (2021) **"Athletic Care and Rehabilitation"** Sports Publication, ISBN : 978-81-951044-9-9.
27. Shaw D. (2019) **"Encyclopaedia of Sports Injury"** Khel Sahitya Kendra, ISBN : 978-93-88159-87-6.
28. Shaw D. (2021) **"Lesson Planning & Teaching Methods"** Khel Sahitya Kendra, ISBN :978-81-7524-022-9.

SYLLABUS OF DISCIPLINE SPECIFIC ELECTIVE COURSE PAPER (DSE)
SEMESTER – VI
B.A P.E.DSE-(4)-2.1
Research Methods in Physical Education and Sports

Sl. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite of the Course (if any)
			Lecture	Tutorial	Practical/ Practice		
04	RESEARCH METHODS IN PHYSICAL EDUCATION AND SPORTS	04	3	0	1	XII Pass	NIL

Learning Objective:

The student will be able to use the knowledge of Research for analysis of data leading to logical conclusion on any field of investigation in physical education and sports.

Learning Outcomes:

1. The learner will be able to understand the concept and types of research for different applications.
2. The learner will be able to apply different sampling technique and tools in research.
3. The learner will be able to apply the criteria of selection of a problem.
4. The learner will be able to collect review of literature from different resources.
5. The learner will be able to develop a research proposal.
6. The learner will be able to develop the concept of writing a research paper/ article/ project/ dissertation.

Syllabus

CREDITS: 4 [Theory-3, Practical-1]
Theory-45 hours
Practical-30 hours

PART-A: THEORY

Unit I Introduction (7 Hours)

1.1. Definition and concept of Research, Need and importance of Research in Physical Education and sports.
1.2. Scope of Research in Physical Education and sports
1.3. Types of Research: Analytical, Descriptive, Experimental, Qualitative etc.

Unit II Sampling Techniques and Hypothesis (8 Hours)

2.1. Identification of Research Problem

2.2. Meaning, definition and importance of Hypothesis
2.3. Meaning, definition and importance of Sampling
2.4. Types of Sampling Techniques

Unit III Tools in Research (8 Hours)

3.1. Types of data, collection of data, data interpretation and result analysis.

3.2. Different types of tools of research: questionnaires, Interviews, observation, test and inventories

Unit IV Criteria of Selection of Research and Literature Search (11 Hours)

4.1 Criteria of Selection of Problem, Statement of a Research Problem, Limitations and Delimitations. Review of related literature

4.2 Reason for surveying related literature

4.3 Major literature resources- Documentation over-view, Library sources, Research reviews, Card catalogue indices – physical education indices, Abstracting material

Unit V Method of Writing Research Proposal/ Thesis/ Research articles (11 Hours)

5.1 Method of writing Research proposal

5.2 Method of writing Thesis

5.3 Method of writing abstract

5.4 Method of writing research paper for conference and journals

5.5 Method of Writing Footnote and Bibliography

5.6 Method of representing data through tables, graphs and illustrations

PART-B: PRACTICALS (30 hours)

1. Prepare ten footnotes and bibliography containing references from books, journals, dissertation, periodicals and websites etc.
2. Prepare a review of literature (any ten researches) related to any one topic of your choice.
3. Prepare a research proposal

Suggested Readings:

- Author`s Guide. (1991) **Research Methods applied to Health Physical and Recreation** Washington, D.C.
- Best John & Kahni, J.V. (1992) **Research in Education** New Delhi: Prentice Hall of India (Pvt.) Ltd.
- Bompa, T. O. & Haff, G. G. (2009) **Periodization: Theory and Methodology of Training**, 5th ed. Champaign, IL: Human Kinetics.
- Brown, L. E., &Ferrigno, V. A. (2005) **Training for Speed, Agility and Quickness** 2nd ed. Champaign, IL: Human Kinetics.
- Clark, H. H., & Clark, D. H. (1975) **Research Process in Physical Education** Englewood cliffs, New Jersey: Prentice Hall, Inc.
- Clarke, H.H. (1992) **The Application of Measurement in Health and Physical Education**.
- Garrett, H.E. (1981) **Statistics in Psychology and Education** New York: Vakils Feffer and Simon Ltd.
- Koul, L. (2002) **Methodology of Educational Research** Vikas Publishing House, New Delhi
- Oyster, C. K., Hanten, W. P., & Llorens, L. A. (1987) **Introduction to Research: A Guide for The Health Science Professional**. Landon: J.B. Lippincott Company.

- Rothstein, A.L. (1985) **Research Design and Statistics for Physical Education** Prentice Hall, New Jersey, U.S.A.
- Shaw, D. (2007) **Fundamental Statistics in Physical Education & Sports Sciences**, New Delhi: Sports Publication.
- Smith, R. Philosophy (2007) **Methodology and Educational Research** Wiley Black Well, USA.
- Swann, J. Pratt (2007) **Educational Research in Practice: Making Sense of Methodology** New Delhi: Viva.
- Thomas, J.R., & Nelson J.K. (2005). **Research Method in Physical Activity**. U.S.A: Champaign, IL: Human Kinetics Books.
- Thomas, J.R., Nelson, J.K. & Silverman, S.J. (2011) **Research Method in Physical Activity** U.S.A: Champaign, IL: Human Kinetics Books.

SYLLABUS OF GENERIC ELECTIVE PAPERS (DSE)

SEMESTER-VI

B.A.-PE-DSE-(4)-2.2-

PUBLICATION ETHICS IN PHYSICAL EDUCATION AND SPORTS SCIENCES

DSE

Sl. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite of the Course (if any)
			Lecture	Tutorial	Practical/ Practice		
5	PUBLICATION ETHICS IN PHYSICAL EDUCATION AND SPORTS SCIENCES	04	3	0	1	XII Pass	NIL

Learning Objective:

The objective of this course is to provide the understanding through practical knowledge and practices about publication ethics in physical education and sports sciences for enough scope of creativity/Innovations in the field of physical education.

Learning Outcomes:

1. The learner will be able to understand the concepts with practices and skills of research integrity and publication ethics.
2. The learner will be able to (Hands-on-sessions are designed) identify research misconduct and predatory publications, Indexing and citation databases, open access publications, research metrics (citations, h-index, Impact Factor, etc.) and plagiarism tools along with the contents of the theory and practical syllabus.

Syllabus

CREDITS: 4 [Theory-3, Practical-1]
Theory-45 hours
Practical-30 hours

PART-A: THEORY

UNIT-I Philosophy and Ethics (7 Hours)

1.1 Introduction to Philosophy: definition, nature and scope, content, branches
1.2 Ethics: definition, moral philosophy, nature of moral judgements and reactions

UNIT-II Ethics and Research (8 Hours)

2.1 Ethics with respect to science and research
2.2 Intellectual honesty and research integrity

UNIT-III Scientific Conduct (10 Hours)

3.1 Scientific misconducts: Falsification, Fabrication, and Plagiarism (FFP)
3.2 Redundant publications: duplicate and overlapping publications, salami slicing
3.3 Selective reporting and misrepresentation of data

UNIT-IV Publication Ethics (10 Hours)

4.1 Publication ethics: definition, introduction and importance
4.2 Best practices / standards setting initiatives and guidelines: COPE, WAME, etc.
4.3 Conflicts of interest

UNIT-V Publication Violations (10 Hours)

5.1 Publication misconduct: definition, concept, problems that lead to unethical behavior and vice versa, types
5.2 Violation of publication ethics, authorship and contributorship
5.3 Identification of publication misconduct, complaints and appeals
Predatory publishers and journals

PART: B- PRACTICALS (30 hours)

1. Open access publications and initiatives
2. SHERPA/RoMEO online resource to check publisher copyright & self-archivingpolicies
3. Software tool to identify predatory publications developed by SPPU
4. Journal finder/ journal suggestion tools viz. JANE, Elsevier Journal Finder, SpringerJournal Suggester, etc.
5. Group Discussions
   a. Subject specific ethical issues, FFP, authorship
   b. Conflicts of interest
   c. Complaints and appeals: examples and fraud from India and abroad

6. Software tools uses: Use of plagiarism software like Turnitin, Urkund and other open source software tools

7. Databases and Research Metrics
   a. Databases

b. Indexing databases
c. Citation databases: Web of Science, Scopus, etc.

8. Research Metrics
a. Impact Factor of journal as per Journal Citation Report, SNIP, SJR, IPP, CiteScore
b. Metrics: h-index, g index, ilO index, altmetrics

Suggested Readings:

- Bird, A. (2006) **Philosophy of Science** Routledge.
- MacIntyre, Alasdair (1967) **A Short History of Ethics**. London.
- P. Chaddah, (2018) **Ethics in Competitive Research: Do not get Scooped; do not get Plagiarized**, ISBN:978- 9387480865
- National Academy of Sciences, National Academy of Engineering and Institute of Medicine. (2009) **On Being a Scientist: A Guide to Responsible Conduct in Research: Third Edition.** National Academies Press.
- Resnik, D. B. (2011) What Is Ethics in Research & Why is It Important. ***National Institute of Environmental Health Sciences,*** 1-10. Retrieved from https://www.niehs.nih.gov/research/resources/bioethics/whatis /index.cfrn
- Beall, J. (2012) Predatory Publishers are Corrupting Open Access. **Nature**, 489(7415), 179-179. https://doi.org/10.1038/489179a
- Indian National Science Academy (INSA) (2019), **Ethics in Science Education, Research and Governance** ISBN:978-81-939482-l- 7 http://www.insaindia.res.in/pdf/Ethics_Book.pdf

SYLLABUS OF GENERIC ELECTIVE PAPERS (DSE)

SEMESTER-VI
B.A.-PE-DSE-(4)-2.3-
THESIS WRITING IN PHYSICAL EDUCATION AND SPORTS
DSE

Sl. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite of the Course (if any)
			Lecture	Tutorial	Practical/Practice		
6	THESIS WRITING IN PHYSICAL EDUCATION AND SPORTS	04	3	0	1	XII Pass	NIL

Learning Objective:

The objective of the course is to provide an understanding and practices to the learners about thesis writing mechanism, skill and practices in physical education and sports

Learning Outcomes:

1. Learners will be able to develop a synopsis/ research proposal.
2. Learners will be able to prepare abstract of a research article/ thesis/ project.
3. Learners will be able to cite references in different formats.
4. Learners will be able to write the dissertation/thesis.

Syllabus

CREDITS: 4 [Theory-3, Practical-1]
Theory-45 hours
Practical-30 hours

PART-A: THEORY

UNIT I Introduction to Scientific Writing (9 hours)

1.1 Thesis Writing
1.2 Dissertation
1.3 Project Report
1.4 Short Article
1.5 Long article

UNIT II Introduction to Research Proposal and Case Study (9 hours)

2.1 Synopsis
2.2 Research Proposal
2.3 Abstract and Short Abstract
2.4 Case Study

UNIT III Different Format of Thesis Writing (Basic Introduction) (12 hours)

3.1 APA- American Psychological Association
3.2 MLA - Modern Languages Association
3.3 MHRA- Modern Humanities Research Association
3.4 Turabian
3.5 IEEE- Institute for Electrical and Electronics Engineers
3.6 Chicago
3.7 Harvard System

UNIT IV Bibliography and References (7 hours)

4.1 Bibliography and Working Bibliography
4.2 References
4.3 Scientific Abstracting
4.4 Footnote/Citation

UNIT V General Thesis Format (8 hours)

5.1 Certifications and Preliminaries
5.2 Introduction

5.3 Review of Related Research
5.4 Procedure
5.5 Analysis of the Data and Findings of the Study
5.6 Summary, Conclusions and Recommendations
5.7 Appendix

PART-A: PRACTICALS **(30 hours)**

1. Prepare an abstract of a research article
2. Prepare bibliography of atleast 10 references from a topic
3. Prepare a research proposal of your choice

Suggested Readings:

- Author's Guide (1991) **Research Methods Applied to Health Physical and Recreation** Washington, D.C.
- Best John & Kahni, J.V. (1992) **Research in Education**, New Delhi. Prentice Hall of India (Pvt.) Ltd.
- Bompa, T. O. &Haff, G. G. (2009) **Periodization: Theory and Methodology of Training** 5th ed. Champaign, IL: Human Kinetics.
- Brown, L. E., &Ferrigno, V. A. (2005) **Training for Speed, Agility and Quickness** 2nd ed. Champaign, IL: Human Kinetics.
- Carl, E. K., & Daniel, D. A. (1969) **Modern Principles of Athletes Training** St. Louis: St. Louis's Mosby Company.
- Clark, H. H., & Clark, D. H. (1975) **Research Process in Physical Education** Englewood cliffs, New Jersey: Prentice Hall, Inc.
- Clarke, H.H. (1992). **The Application of Measurement in Health and Physical Education** Prentice Hall, New York.
- Garrett, H.E. (1981) **Statistics in Psychology and Education**. New York: Vakils Feffer and Simon Ltd.
- Koul, L. (2002) **Methodology of Educational Research**, Vikas Publishing House, New Delhi
- Oyster, C. K., Hanten, W. P., & Llorens, L. A. (1987). **Introduction to Research: A guide for the Health Science Professional**. London: J.B. Lippincott Company.
- Rothstein, A.L. (1985) **Research Design and Statistics for Physical Education** Prentice Hall, New Jersey, U.S.A.
- Shaw, Dhananjoy (2007) **Fundamental Statistics in Physical Education & Sports Sciences**, Sports Publication, Delhi.
- Smith, R. Philosophy (2007) **Methodology and Educational Research**, Wiley Black Well, USA.
- Swann, J. Pratt (2007) **Educational Research in Practice: Making Sense of Methodology**, Viva, New Delhi
- Thomas, J.R., & Nelson J.K. (2005) **Research Method in Physical Activity**. U.S.A: Champaign, IL: Human Kinetics Books.
- Thomas, J.R., Nelson, J.K. & Silverman, S.J. (2011) **Research Method in Physical Activity**. U.S.A: Champaign, IL: Human Kinetics Books.

SYLLABUS OF GENERIC ELECTIVE PAPERS (GE)

SEMESTER- VI

B.A.-PE-GE-6 (4)

OBESITY AND WEIGHT MANAGEMENT

GE

Sl. No.	Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-Requisite of the Course (if any)
			Lecture	Tutorial	Practical/Practice		
1.	Obesity and Weight Management	04	3	0	1	XII Pass	NIL

GE-6(4)-OBESITY AND WEIGHT MANAGEMENT

Learning Objective:

The objective of this course is to provide the understanding through practical knowledge and practices with enough scope of creativity/Innovations.

Learning Outcomes:

1. The learner will learn about the concept of obesity and its causes.
2. The learner will practice and manage the ways to prevent obesity.
3. The learner can assess the obesity (Basic methods).
4. The learner can practice and maintain healthy weight.
5. The learner can make behaviour modification to control weight through diet and physical activities.
6. The learner can design the balance diet chart for his/her own requirements.

SYLLABUS

No. of Credits: 04 (Lecture-03, Practical-1)
Theory: 45 hours, Practical: 30 hours.

Unit-I: OBESITY & IT'S ASSESSMENT (9 hrs. lectures)

1.1 Concept and Causes of Obesity.

1.2 Health Risks Associated with Obesity.

1.3 Assessment of Obesity-Body Mass Index (BMI), Waist-Hip Ratio, Waist-Height ratio, Skinfold Thickness (Abdomen, triceps, thigh, Suprailliac).

Unit-II: MANAGEMENT OF OBESITY THROUGH DIET (9 hrs. lectures)

2.1 Nutrition and Balanced Diet.

2.2 Dietary Aids and Gimmicks.

2.3 Obesity and weight management through diet.

Unit- III: WEIGHT MANAGEMENT (9 hrs. lectures)

3.1 Concept of weight, Importance of weight Management in Life.

3.2 Cultural and social aspect, Life style patterns in contemporary system.

3.3 Goal setting and goal accomplishment, Self-control skills for weight management.

Unit-IV: WEIGHT MANAGEMENT THROUGH PHYSICAL ACTIVITIES AND BEHAVIOUR MODIFICATION (9 hrs. lectures)

4.1 Importance of maintaining Healthy Weight; Weight Management and Energy Balance.

4.2 Principles of weight management; Aerobic & Anaerobic activities.

4.3 Behaviour Modification techniques for weight management.

Unit- V METABOLISM AND WEIGHT CONTROL (9 hrs. lectures)

5.1 Metabolism and factors affecting metabolism, Basal Metabolic Rate and Methods for Measuring BMR.

5.2 Strategies for weight control, concept of weight loss and fat loss

5.3 Weight control for special population.

Practical (30hrs.)

1. Use BMI to identify the actual body weight status and desirable body weight status of at least ten students.

2. Calculate Waist-Hip ratio, waist-height ratio of ten persons.

3. Suggested exercises for Obesity (Jogging, Running, Aerobics and calisthenics exercises)

4. Development of a Diet chart for a sportsperson

Suggested Reading

1. **Pawar,B., Joshi.A., Chaudhary,V.(2022), "Practical Manual for Physical Education",** Friends Publications. New Delhi (India) ISBN-978-93-95829-30-4.
2. Kumar, P (2022). **"Assessment & Management of Obesity"**. Friends Publication (India)
3. Saini N.,Suri.M., (2020) **" Sports Psycho-Physiology",** Friends Publication, New Delhi (India) ISBN-978-93-88457-58-3.
4. **"Sports Nutrition and Weight Management"**, ISBN : 978-93-88269-53-7, Year 2019, published by Sports Publication , DaryaGanj, New Delhi-110002
5. Anspaugh, D. J., Hamrick, M. H., &Rosato, F. D. (2006). **"Wellness: Concepts and applications"**. McGraw-Hill Companies.
6. Caliendo, M. A. (1981). **"Nutrition and preventive health care"**. Macmillan.
7. Hales, D. (2006). **"An invitation to health"**. Cengage Learning.
8. Hoeger, W. W. K., &Hoeger, S. A. (2007). **"Fitness & Wellness.Belmont"**, USA: Thomson Wadsworth
9. Howley, E. T., & Franks, B. D. (1986). **"Health/Fitness Instructor's Handbook"**. Human Kinetics Publishers, Inc., Marketing Director, Box 5076, Champaign,II.
10. Kansal D.K. (2012). **"Test Measurement and Evaluation"**. Sports Spiritual Sciences Publications, New Delhi.
11. Kumari, S. S., Rana, A., &Kaushik, S. (2008). **"Fitness, Acrobics & Gym Operations"**. New Delhi: KhelSahitya Kendra
12. Sharma K. et. al. (2014), "**Fitness Aerobics & Gym Operations"**, Jyoti Enterprises, Delhi.
13. Tiwari S. (1999). **"Excrcise Physiology"**, Sports Publications, Delhi.
14. Shaw D. (2018) **"Fundamental Statistics in Physical Education and Sports Sciences"** Sports Publication, ISBN: 81-86190-57-0.
15. Shaw D. (2020) **"Physical Education Practical Manual for Class XI"** Prachi Publication, ISBN : 978-8193-7698-0-5.
16. Shaw D. (2020) **"Physical Education for Class XII"** Prachi Publication, ISBN : 978-81-7730-848-8.
17. Shaw D. (2020) **"Physical Education for Class XI"** Prachi Publication, ISBN : 978-81-7730-847-1.
18. Shaw D. (2020) **"Physical Education Practical Manual for Class XII"** Prachi Publication, ISBN : 978-81-937698-1-2.
19. Shaw D. (2020) **"Parable Global English Hindi Dictionary of Physical Education & Sports Sciences"** Khel Sahitya Kendra, ISBN : 978-93-90461-18-9.
20. Shaw D. (2020) **"Yoga Asanas and their Benefits"** Sports Publication, ISBN : 978-81-9436-11-9-0.

ANNEXURE - 39

Sub: Amendment to Ordinance V

[E.C Resolution No. 14-1/-(14-1-5/-) dated 09.06.2023 and 27-1-8/ dated 25.08.2023]

Following addition be made to Appendix-II-A to the Ordinance V (2-A) of the Ordinances of the University;

Add the following:

Syllabi of Semester-IV, V and VI of the following courses of Department of Music under Faculty of Music & Fine Arts based on Under Graduate Curriculum Framework -2022 implemented from the Academic Year 2022-23 :

(i) BA (Hons.) Music – Hindustani Music (Vocal/ Instrumental – Sitar/ Sarod/ Guitar/ Violin/ Santoor)
(As per Annexure-1)

(ii) BA (Hons.) Karnataka Music (Vocal/ Veena/ Violin)
(As per Annexure-2)

(iii) BA (Hons.) Percussion Music (Tabla / Pakhawaj)
(As per Annexure-3)

(iv) BA (Prog.) Hindustani Music (Vocal/ Instrument)
(As per Annexure-4)

REGISTRAR

Annexure-1

INDEX

Department of Music

B. A. (Hons.) II Music - Hindustani Music (Vocal/Instrumental - Sitar/Sarod/Guitar/Violin/Santoor)

Semester- IV

S. No.	Contents	Page No.
1	DSCs- 1. LIFE AND CONTRIBUTION OF MUSICIANS - DSC- 10 2. Stage Performance (4) – DSC-11 3. Ragas, Talas and their Application (4) – DSC-12	2-9
2	Pool of Discipline Specific Electives (DSEs) 1. DSE- Khayal (4)	10-13

B.A. (Hons.) II Music - Hindustani Music
Vocal/Instrumental (Sitar/Sarod/Guitar/Violin/Santoor)

Syllabus for DSC Papers

SEMESTER - IV

DSC – 10: Life and contribution of musicians

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		L	T	P		
LIFE AND CONTRIBUTION OF MUSICIANS (401)	4	3	1	0	• Class XII Pass • Must have learnt for a minimum of 4 years at an established music institute or from a reputed artiste /guru	Must have studied the following papers – • General Theory (Sem I) • Theory of Indian Music (Sem II) • Ragas and talas of Sem I, II & III OR • Must have an understanding of the basic concepts such as Shruti, Svara, Raga, Tala etc and their associated components • Knowledge of the Bhatkhande and Paluskar notation systems • Knowledge of the 10 Thaatas • Knowledge of the Time Theory of ragas • Ragas and talas of Sem I, II & III

Learning Objectives:

- To discuss about the life and works of legendary musicians of Karnatak music
- To discuss the contribution of Hindustani musicians of the medieval and modern eras

Learning Outcomes:

- The student will come to know about the works of the Karnatak music composers, popularly
  known as Trinity
- The student will know about the life and contribution of legends like Amir Khusrau and Tansen,
  and how their works have shaped the present Hindustani music
- He will also study the contribution of various stalwarts belonging to the main gharanas of
  Hindustani music

Syllabus:

Unit I (9 hours)

Life and contribution of Karnatak musicians 'Trinity' –

- Thyagaraja
- Muthuswamy Dikshitar
- Shyama Sastri

Unit II (12 hours)

Life sketch and contributions of the medieval-era musicians -

- Jayadeva
- Amir Khusrau
- Raja Man Singh Tomar
- Tansen
- Sadarang-Adarang

Unit III (12 hours)

Life sketch and contribution of the modern-era vocalists -

- Alladiya Khan
- Abdul Karim Khan
- Faiyyaz Khan
- Bade Ghulam Ali Khan
- Amir Khan
- Omkarnath Thakur

Unit IV (6 hours)

Life sketch and contributions of the modern-era instrumentalists -

- Allauddin Khan
- Radhika Mohan Maitra
- Ravi Shankar
- Abdul Halim Jaffer Khan
- Vilayat Khan

Unit V (3 hours)

- Study of the following talas in detail – Tilwada & Jhoomra
- Study of the application of talas in musical forms
- Ability to write the notation of the talas in dugun, tigun and chaugun

Unit VI (3 hours)

- Study of the ragas of this semester – Bhairavi, Malkauns, Bageshri, Bhimpalasi, Hameer
- Comparative study of the ragas with each other
- Ability to write the notation of compositions in prescribed ragas

Suggestive reading:

- Shastri, Babulal Shukla (2009) Natya Shastra, Delhi, Chaukhamba Sanskrit Sansthan
- Kumar, Pushpendra (2010) Natya Shastra of Bharatamuni, Delhi, New Bharatiya Book Corporation
- Matang (1994) Brihaddeshi, Delhi,Indra Gandhi National Centre for the Arts
- Shringy, R.K. (1978) Sangita-Ratnakar of Sarangdeva, Varanasi, U.P. MotilalBanarsidass Indological Publisher
- Chaudhary, Subhadra (2009) Sangeet Ratnakar, New Delhi, Delhi, Radha Publication.
- Prajnanananda, Swami (1981) A Historical Study of Indian Music, Delhi, Delhi,Munsiram Monoharlal Publishers Pvt. Ltd.
- Singh, Thakur Jaidev (1905) Indian Music, Kolkata, West Bengal, Sangeet Research Academy
- Nigam, V.S. (1973) Sangeet Kaumudi, Allahabad, UP, Indian Press
- Chakravarty, Indrani (1988) Sangeet Manjusha, Delhi, Delhi, Mittal Publication

- Singh, Thakur Jaidev (1994) Bhartiya sangeet ka Itihas, Varanasi, UP, Sangeet Research Academy
- Kasliwal Suneera (2001) Classical musical Instruments, Delhi, Delhi, Rupa and CO.
- Paranjape, S.S. (1972) Sangeet Bodh, Bhopal, MP, Madhya Pradesh Hindi Academy

---

DSC – 11: Stage Performance (4)

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		L	T	P		
STAGE PERFORMANCE (4) (402)	4	0	0	4	• Class XII Pass • Must have learnt for a minimum of 4 years at an established music institute or from a reputed artiste /guru	Must have studied the following papers – • General Theory (Sem I) • Theory of Indian Music (Sem II) • Ragas and talas of Sem I, II & III OR • Must have an understanding of the basic concepts such as Shruti, Svara, Raga, Tala etc and their associated components • Knowledge of the Bhatkhande and Paluskar notation systems • Knowledge of the 10 Thaatas • Knowledge of the Time Theory of ragas • Ragas and talas of Sem I, II & III

Learning Objectives:

- To focus more on the Stage Performance of the student
- To encourage the student to attempt to improvise while singing/playing.
- To focus on his learning of newer talas

Learning Outcomes:

- The student will develop the confidence to perform a raga for a long duration of time.
- The student will be able to demonstrate the finer nuances of raga in a detailed performance.
- The student will have the opportunity to showcase his skill in semi-classical and folk genres of music

Syllabus:

Prescribed Ragas:

- *Bhairavi*
- *Malkauns*
- *Bageshri*
- *Bhimpalasi*
- *Hameer*

Unit I – Vocal Music (120 hours):

- A detailed performance of Vilambit and Drut Khayal with gayaki to be presented in any one raga
- Presentation of one semi classical, devotional or folk song

OR

Unit II – Instrumental Music (120 hours):

- A detailed performance of Maseetkhani and Razakhani gats with elaboration to be presented in any one raga
- Presentation of a dhun, devotional or light music composition

Note: Students of Vocal and Instrumental music will have to prepare according to the requirements of their respective Units.

Suggestive reading:

- Bhatkhande, V.N. (2000) Kramik Pustak Malika, Part I, Hathras, U.P., Sangeet Karyalya
- Bhatkhande, V.N. (2002) Kramik Pustak Malika, Part II, Hathras, U.P., Sangeet Karyalya

- Bhatkhande, V.N. (2002) Kramik Pustak Malika, Part III, Hathras, U.P., Sangeet Karyalya
- Bhatkhande, V.N. (1970) Kramik Pustak Malika, Part IV, Hathras, U.P., Sangeet Karyalya
- Patwardhan, V.R. (2001) Raga Vigyan, Part I, Pune, Maharashtra, Publisher - Dr. Madhusudhanan Patwardhan
- Patwardhan, V.R. (1996) Raga Vigyan, Part II, Pune, Maharashtra, Publisher - Dr. Madhusudhanan Patwardhan
- Patwardhan, V.R. (1991) Raga Vigyan, Part III, Pune, Maharashtra, Publisher - Dr. Madhusudhanan Patwardhan
- Patwardhan, V.R. (1959) Raga Vigyan, Part IV, Pune, Maharashtra, Publisher - Dr. Madhusudhanan Patwardhan
- Thakur, Omkar Nath (1977) Sangeetanjali, Part I, Bombay, Maharashtra, Pandit Omkar NathThakur Estate
- Thakur, Omkar Nath (1975) Sangeetanjali, Part II, Bombay, Maharashtra, Pandit Omkar NathThakur Estate
- Thakur, Omkar Nath (2005) Sangeetanjali, Part III, Bombay, Maharashtra, Pandit Omkar NathThakur Estate
- Thakur, Omkar Nath (2003) Sangeetanjali, Part IV, Bombay, Maharashtra, Pandit Omkar NathThakur Estate
- Mishra, Lalmani (1979) Tantrinada, Kanpur, U.P. Sahitya Ratnalaya
- Aggarwal, V.K. and Nagpal, Alka (2004) Sitar and its Compositions, Part I-II, Delhi, Sanjay Prakashan
- Mahajan, Anupam (2003) Compositions in Instrumental Music (Traditional and New Creation), Delhi, Sanjay Prakashan

---

DSC – 12: Ragas, talas and their applications (4)

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		L	T	P		
RAGAS, TALAS AND THEIR APPLICATIONS (4) (403)	4	0	0	4	• Class XII Pass • Must have learnt for a minimum of 4 years at an established music institute or from a reputed artiste /guru	Must have studied the following papers – • General Theory (Sem I) • Theory of Indian Music (Sem II) • Ragas and talas of Sem I, II & III OR • Must have an understanding of the basic concepts such as Shruti, Svara, Raga, Tala etc and their associated

						components • Knowledge of the Bhatkhande and Paluskar notation systems • Knowledge of the 10 Thaatas • Knowledge of the Time Theory of ragas • Ragas and talas of Sem I, II & III

Learning Objectives:

- To focus more on the Viva-Voce of the student.
- To teach new compositions based on various talas

Learning Outcomes:

- The student will be able to explain the grammatical rules of a raga in detail.
- He will develop the confidence to differentiate between similar ragas.
- The student will be able to sing new compositions in new talas

Syllabus:

Prescribed Ragas:

- *Bhairavi*
- *Malkauns*
- *Bageshri*
- *Bhimpalasi*
- *Hameer*

Unit I – Vocal Music (120 hours):

- Vilambit and Drut Khayal with gayaki in all the prescribed ragas mentioned above.
- Dhrupad-Dhamar or Sadra composition in each of the prescribed Ragas with Alap, Layakari & Upaj
- Knowledge and demonstration of the following talas – Tilwada & Jhoomra
- Ability to tune the Tanpura

OR

Unit II - Instrumental Music (120 hours):

- Maseetkhani and Razakhani Gats with elaboration in all the ragas
- Knowledge and demonstration of the following talas – Tilwada & Jhoomra
- Ability of the student to tune his respective instrument

Note: Students of Vocal and Instrumental music will have to prepare according to therequirements of their respective Units.

Suggestive reading:

- Bhatkhande, V.N. (2000) Kramik Pustak Malika, Part I, Hathras, U.P., Sangeet Karyalya
- Bhatkhande, V.N. (2002) Kramik Pustak Malika, Part II, Hathras, U.P., Sangeet Karyalya
- Bhatkhande, V.N. (2002) Kramik Pustak Malika, Part III, Hathras, U.P., Sangeet Karyalya
- Bhatkhande, V.N. (1970) Kramik Pustak Malika, Part IV, Hathras, U.P., Sangeet Karyalya
- Patwardhan, V.R. (2001) Raga Vigyan, Part I, Pune, Maharashtra, Publisher - Dr. Madhusudhanan Patwardhan
- Patwardhan, V.R. (1996) Raga Vigyan, Part II, Pune, Maharashtra, Publisher - Dr. Madhusudhanan Patwardhan
- Patwardhan, V.R. (1991) Raga Vigyan, Part III, Pune, Maharashtra, Publisher - Dr. Madhusudhanan Patwardhan
- Patwardhan, V.R. (1959) Raga Vigyan, Part IV, Pune, Maharashtra, Publisher - Dr. Madhusudhanan Patwardhan
- Thakur, Omkar Nath (1977) Sangeetanjali, Part I, Bombay, Maharashtra, Pandit Omkar NathThakur Estate
- Thakur, Omkar Nath (1975) Sangeetanjali, Part II, Bombay, Maharashtra, Pandit Omkar NathThakur Estate
- Thakur, Omkar Nath (2005) Sangeetanjali, Part III, Bombay, Maharashtra, Pandit Omkar NathThakur Estate
- Thakur, Omkar Nath (2003) Sangeetanjali, Part IV, Bombay, Maharashtra, Pandit Omkar NathThakur Estate
- Mishra, Lalmani (1979) Tantrinada, Kanpur, U.P. Sahitya Ratnalaya
- Aggarwal, V.K. and Nagpal, Alka (2004) Sitar and its Compositions, Part I-II, Delhi, Sanjay Prakashan
- Mahajan, Anupam (2003) Compositions in Instrumental Music (Traditional and New Creation), Delhi, Sanjay Prakashan

B.A. (Hons.) Music
Hindustani Music - Vocal/Instrument (Sitar/Sarod/Guitar/Violin/Santoor)

Syllabus for DSE - Khayal

SEMESTER – IV

DSE – Khayal (2)

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		L	T	P		
DSE – Khayal (2)	4	1	0	3	• Class XII Pass	Must have studied the following papers – • Theory topics in Sem III • Ragas and talas of Sem III OR • Must have an understanding of the basic concepts such as Shruti, Svara, Raga, Tala etc and their associated components • Knowledge of the Bhatkhande and Paluskar notation systems • Knowledge of the 10 Thaatas • Ragas and talas of Sem III

Learning Objectives:

- To initiate the student to the rich history of Indian music, through the study of ancient musical concepts.
- To teach him the concept of every raga being performed according to a specific time
- To make the student aware of the life and contribution of two legends – Pt. Bhatkhande and Pt. Paluskar, credited with the revival of Hindustani Classical Music
- To continue to focus on the basics of singing/playing.
- To encourage the student to attempt to improvise while singing/playing.
- To focus on his learning of newer talas.
- To further his training in performance, with other basic ragas as prescribed.

Learning Outcomes:

- The student will come to know how ragas were performed in ancient times.
- He will learn the principles governing the Time Theory of Ragas, in that every raga is tobe performed according to a designated time. This will enhance his understanding of theraga and their associated moods.
- The student will appreciate the pioneering work done by the aforementioned legends

of Hindustani music, and how the state of modern music is a direct result of their tireless efforts in reviving the dying art.

- The basics of the student will get further strengthened.
- The student will start to gain self-belief and make attempts to improvise while performing a raga.
- The student will begin to gain some command over increasingly complex talas.
- With other basic ragas, the student will understand how to use the flat and sharp notes in ragas with varied tonal phrases.
- He will gain confidence with the Tabla accompanying him in performances of larger time-duration

Syllabus:

Theory

Unit I (3 hours)

- Sthaya
- Kaku
- Gamak
- Alaptva-Bahutva
- Avirbhav-Tirobhav

Unit II (3 hours)

Time Theory of Ragas

- Sandhiprakash ragas
- Ragas of daytime
- Ragas of nighttime

Unit III (2 hours)

Life and contribution of the following:

- Pt. Vishnu Narayan Bhatkhande
- Pt. Vishnu Digambar Paluskar

Unit IV (3 hours)

Study of the ragas of this semester – Kafi, Khamaj & Bhupali

Unit V (2 hours)

Ability to write the notation of compositions in the prescribed ragas

Unit VI (2 hours)

- Study of the following talas in detail – Dadra & Kaharva
- Ability to write the notation of the talas in dugun, tigun and chaugun

Practical component

Prescribed ragas:

1. Kafi
2. Khamaj
3. Bhupali

Unit I (30 hours)

Five alankars to be presented in the prescribed ragas.

Unit II (10 hours)

One Sargam Geet each in the prescribed ragas

Unit III (10 hours)

One Lakshan Geet each in the prescribed ragas

Unit IV (15 hours)

Two Drut Khyals with elaborations in any of the prescribed ragas

Unit V (15 hours)

Knowledge and demonstration of the following talas with dugun, tigun and chaugun - Dadra & Kaharva

Unit VI (10 hours)

Basic knowledge of Tanpura and its tuning

Suggestive readings:

- Clements, E. (1912) Introduction to The Study of Indian Music, Allahabad, U.P., Kitab Mahal
- Vir, Ram Avtar (1980) Theory of Indian music, Delhi, Pankaj Publication
- Bhatkhande V.N. (1975) Bhatkhande Sangeet Shastra, Hathras, UP, Sangeet Karyalay
- Pathak, Jagdish Narayan (1969) Sangeet Shastra Praveen, Allahabad, U.P., Published

by Shri RatnakarPathak
- Nigam, V.S. (1973) Sangeet Kamudi, Part I, Allahabad, U.P. Indian Art Press
- Nigam, V.S. (1974) Sangeet Kamudi, Part II, Allahabad, U.P. Indian Art Press
- Sharma, Swatantra (1996) Bhartiya sangeet, Delhi, Pratibha Prakashan
- Chakravarty, Indrani (1988) Sangeet Manjusha, Delhi, Mittal Publication
- Sharma, Swatantra (2012) Paschatya Swarlipi Paddhati evam Bhartiya Sangeet,U.P., Anubhav Publication House
- Bhatkhande V.N. (1980) Bhatkhande Sangeet Shastra, Part II, Hathras, U.P., Sangeet Karyalaya
- Bhatkhande, V.N. (2000) Kramik Pustak Malika, Part-II, Hathras, U.P., Sangeet Karyalaya
- Bhatkhande, V.N. (2000) Kramik Pustak Malika, Part-III, Hathras, U.P., Sangeet Karyalaya
- Patwardhan, V.R., (2001) Raga Vigyan, Part-I, Pune, MH, Dr. Madhusudhan Patwardhan
- Patwardhan, V.R., (1999) Raga Vigyan, Part-II, Pune, MH Dr. Madhusudhan Patwardhan
- Patwardhan, V.R., (1967) Raga Vigyan, Part-III, Pune, MH, Dr. Madhusudhan Patwardhan
- Mishra, Lalmani, (1979) Tantrinada, Kanpur, U.P. Sahitya Ratnalaya
- Aggarwal, V.K. and Nagpal, Alka (2004) Sitar and its Compositions, Part-I-II, Delhi, Sanjay Prakashan
- Mahajan, Anupam (2003) Compositions in Instrumental Music (Traditional and New Creation), Delhi, Sanjay Prakashan

INDEX

Department of Music

B. A. (Hons.) III Music - Hindustani Music
(Vocal/Instrumental - Sitar/Sarod/Guitar/Violin/Santoor)

Semester- V

S. No.	Contents	Page No.
1	**DSCs-** 1. History of Indian Music - DSC- 13 2. Stage Performance (5) – DSC-14 3. Ragas, Talas and their Application – DSC-15	15-22
2	**Pool of Discipline Specific Electives (DSEs)** 1. DSE- Sitar (3) 2. DSE- Khayal (3)	23-30

Syllabus for DSC Papers

SEMESTER - V

DSC – 13: HISTORY OF INDIAN MUSIC

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		L	T	P		
HISTORY OF INDIAN MUSIC (501)	4	3	1	0	• Class XII Pass • Must have learnt for a minimum of 5 years at an established music institute or from a reputed artiste /guru	Must have studied the following papers – • General Theory (Sem I) • Theory of Indian Music (Sem II) • Historical Study of Indian Music (Sem III) • Ragas and talas of Sem I-IV OR • Must have an understanding of the basic concepts such as Shruti, Svara, Raga, Tala etc and their associated components • Knowledge of the Bhatkhande and Paluskar notation systems • Knowledge of the 10 Thaatas • Knowledge of the Time Theory of ragas • Knowledge of Grama, Moorchhana, Jati Gayan, Prabandha & Alapti • Ragas and talas of Sem I-IV

Learning Objectives:

- To teach the student about Indian music and its various aspects during the Vedic times
- To talk about musical references that are found in various ancient texts, such as the Ramayana, the Mahabharata and the Puran
- To discuss in detail how the ragas have been classified since the ancient times
- To talk about the works of the medieval authors

Learning Outcomes:

- The student will come to know about Indian music during the Vedic times. He/she will thus understand its progress and development from then to now. It will enhance his knowledgein the field of musicology, and also help him in the field of research in ancient Indian music.
- He/she will understand how music was sung and played during the times of the Ramayana and the Mahabharata.
- He/she will gain knowledge about the works of medieval authors, and understand how the svara systems and ragas have evolved to their modern-day avatars

Syllabus:

Unit I (9 hours)

Study of the Vedic music -

- Sama (Panchavidha and Saptavidha Sama) and Stobhaksharas
- Gramgeya Gana
- Aranyageya Gana
- Poorvarchika
- Uttararchika

Unit II (6 hours)

Study of the ancient svaras and scales –

- Vedic svaras
- Vedic and Loukik scales

Unit III (3 hours)

- Study of the Vedic instruments

Unit IV (9 hours)

Musical references in the following texts –

- The Ramayana
- The Mahabharata
- The Puran

Unit V (3 hours)

Classification of ragas

Unit VI (9 hours)

Works of the following authors –

- Ramamatya
- Somnath
- Ahobal
- Vyankatamakhi
- Lochan
- Bhavbhatt

Unit VII (3 hours)

- Study of the following talas in detail – Sooltala and Adachautala
- Study of the application of talas in musical forms

- Ability to write the notation of the talas in dugun, tigun and chaugun

Unit VIII (3 hours)

- Study of the ragas of this semester - Poorvi, Pooriyadhanashri, Kedar, Kamod, Jaijaiwanti, Patdeep
- Comparative study of the ragas with each other
- Ability to write the notation of compositions in prescribed ragas

Suggestive readings:

- Prajnanananda, Swami (2014) Historical Development of Indian Music, Gurgaon, Haryana,Shubhi Publication
- Paranjape, S.S. (1975) Bhartiya Sangeet ka Itihas, Varanasi, UP, Chaukhamba Vidya Bhawan
- Singh, Thakur Jaidev (1994) Bhartiya Sangeet ka Itihas, Varanasi, UP, Sangeet ResearchAcademy
- Prajnanananda, Swami (1963) History of Indian Music, Kolkata, West Bengal, Swami Adyananda Ramakrishna Math
- Ahobal (1971) Sangeet Parijat, Hathras, UP, Sangeet Karyalaya
- Bhatkhande, V.N. (1934) A Short Historical Survey the Music of Upper India, Malabar Hill Bombay, Published by B.S. Sukthankar
- Bhatkhande, V.N. (2004) A Comparative Study of the leading music system of the 15th ,16th, 17th and 18th centuries, Delhi, Low Price Publication

---

DSC – 14: Stage Performance (5)

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		L	T	P		
STAGE PERFORMANCE (5) (502)	4	0	0	4	• Class XII Pass • Must have learnt for a minimum of 5 years at an established music institute or from a reputed artiste /guru	Must have studied the following papers – • General Theory (Sem I) • Theory of Indian Music (Sem II) • Ragas and talas of Sem I-IV OR • Must have an understanding of the basic concepts such as Shruti, Svara, Raga, Tala etc and their associated components • Knowledge of the Bhatkhande and Paluskar notation systems • Knowledge of the 10 Thaatas • Knowledge of the Time Theory of ragas • Ragas and talas of Sem I-IV

Learning Objectives:

- To focus on the professionally performing ability of the student, in conjunction with hiscapability to understand the intricacies of various ragas, at a higher level
- To teach the students the proper way of doing Alap or tonal elaborations before the start of Dhrupad
- To encourage the students to think and perform like an artiste, with thoughtful and aesthetic improvisations.
- To differentiate between similar ragas like Kedar and Kamod.

Learning Outcomes:

- The student will gain self-belief in performing a raga, after practising its finer details
- He/she will also be able to demonstrate how to separate similar sounding ragas
- He/she will be able to sing Dhrupad and Dhamar with an in-depth knowledge of its style ofperformance.

Syllabus:

Prescribed Ragas:

1. Poorvi
2. Pooriyadhanashri
3. Kedar
4 Kamod
5. Jaijaiwanti
6. Patdeep

Unit I – Vocal Music (120 hours):

- A detailed performance of Vilambit and Drut Khayal with gayaki to be presented in anyone raga
- Presentation of one semi classical, devotional or folk song

OR

Unit II – Instrumental Music (120 hours):

- A detailed performance of Maseetkhani and Razakhani gats with elaboration to be presented in any one raga
- Presentation of a dhun, devotional or light music composition

Note: Students of Vocal and Instrumental music will have to prepare according to the requirements of their respective Units.

Suggestive readings:

- Bhatkhande, V.N. (2000) Kramik Pustak Malika, Part I, Hathras, U.P., Sangeet Karyalya
- Bhatkhande, V.N. (2002) Kramik Pustak Malika, Part II, Hathras, U.P., Sangeet Karyalya
- Bhatkhande, V.N. (2002) Kramik Pustak Malika, Part III, Hathras, U.P., Sangeet Karyalya
- Bhatkhande, V.N. (1970) Kramik Pustak Malika, Part IV, Hathras, U.P., Sangeet Karyalya
- Patwardhan, V.R. (2001) Raga Vigyan, Part I, Pune, Maharashtra, Publisher - Dr. Madhusudhanan Patwardhan
- Patwardhan, V.R. (1996) Raga Vigyan, Part II, Pune, Maharashtra, Publisher - Dr. Madhusudhanan Patwardhan
- Patwardhan, V.R. (1991) Raga Vigyan, Part III, Pune, Maharashtra, Publisher - Dr. Madhusudhanan Patwardhan
- Patwardhan, V.R. (1959) Raga Vigyan, Part IV, Pune, Maharashtra, Publisher - Dr. Madhusudhanan Patwardhan
- Thakur, Omkar Nath (1977) Sangeetanjali, Part I, Bombay, Maharashtra, Pandit Omkar NathThakur Estate
- Thakur, Omkar Nath (1975) Sangeetanjali, Part II, Bombay, Maharashtra, Pandit Omkar NathThakur Estate
- Thakur, Omkar Nath (2005) Sangeetanjali, Part III, Bombay, Maharashtra, Pandit Omkar NathThakur Estate
- Thakur, Omkar Nath (2003) Sangeetanjali, Part IV, Bombay, Maharashtra, Pandit Omkar NathThakur Estate
- Mishra, Lalmani (1979) Tantrinada, Kanpur, U.P. Sahitya Ratnalaya
- Aggarwal, V.K. and Nagpal, Alka (2004) Sitar and its Compositions, Part I-II, Delhi, Sanjay Prakashan
- Mahajan, Anupam (2003) Compositions in Instrumental Music (Traditional and New Creation), Delhi, Sanjay Prakashan

---

DSC – 15: Ragas, talas and their applications (5)

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		L	T	P		
RAGAS, TALAS & THEIR APPLICATIONS (5) (503)	4	0	0	4	• Class XII Pass • Must have learnt for a minimum of 5 years at an established music institute or from a reputed artiste /guru	Must have studied the following papers – • General Theory (Sem I) • Theory of Indian Music (Sem II) • Ragas and talas of Sem I-IV OR • Must have an understanding of the basic concepts such as Shruti, Svara, Raga, Tala etc and their associated components • Knowledge of the Bhatkhande and Paluskar notation systems • Knowledge of the 10 Thaatas • Knowledge of the Time Theory of ragas • Ragas and talas of Sem I-IV

Learning Objectives:

- To focus more on the Viva-Voce of the student.
- To teach new compositions based on various talas

Learning Outcomes:

- The student will be able to explain the grammatical rules of a raga in detail.
- He/she will develop the confidence to differentiate between similar ragas.
- The student will be able to sing new compositions in new talas

Syllabus:

Prescribed Ragas:

1. Poorvi
2. Pooriyadhanashri
3. Kedar
4 Kamod
5. Jaijaiwanti
6. Patdeep

Unit 1 – Vocal Music (120 hours):

- Vilambit and Drut Khayal with gayaki in all the prescribed ragas mentioned above
- Dhrupad-Dhamar or Sadra composition in each of the prescribed Ragas with Alap, Layakari & Upaj
- Knowledge and demonstration of the following talas – Sooltala & Adachautala
- The ability to tune the Tanpura

OR

Unit II – Instrumental Music (120 hours):

- Masitkhani and Razakhani Gats with elaboration to be presented in all the prescribed ragas mentioned above
- Gat with elaboration in any 3 of the following Talas - Dhamar, Ektala, Jhaptala, Adachautala
- Knowledge and demonstration of the following talas – Sooltala & Adachautala
- The ability of the student to tune his respective instrument

Note: Students of Vocal and Instrumental music will have to prepare according to the requirements of their respective Units.

Suggestive readings:

- Bhatkhande, V.N. (2000) Kramik Pustak Malika, Part I, Hathras, U.P., Sangeet Karyalya
- Bhatkhande, V.N. (2002) Kramik Pustak Malika, Part II, Hathras, U.P., Sangeet Karyalya
- Bhatkhande, V.N. (2002) Kramik Pustak Malika, Part III, Hathras, U.P., Sangeet Karyalya
- Bhatkhande, V.N. (1970) Kramik Pustak Malika, Part IV, Hathras, U.P., Sangeet Karyalya
- Patwardhan, V.R. (2001) Raga Vigyan, Part I, Pune, Maharashtra, Publisher - Dr. Madhusudhanan Patwardhan
- Patwardhan, V.R. (1996) Raga Vigyan, Part II, Pune, Maharashtra, Publisher - Dr. Madhusudhanan Patwardhan
- Patwardhan, V.R. (1991) Raga Vigyan, Part III, Pune, Maharashtra, Publisher – Dr. Madhusudhanan Patwardhan
- Patwardhan, V.R. (1959) Raga Vigyan, Part IV, Pune, Maharashtra, Publisher – Dr. Madhusudhanan Patwardhan
- Thakur, Omkar Nath (1977) Sangeetanjali, Part I, Bombay, Maharashtra, Pandit Omkar NathThakur Estate
- Thakur, Omkar Nath (1975) Sangeetanjali, Part II, Bombay, Maharashtra, Pandit Omkar NathThakur Estate
- Thakur, Omkar Nath (2005) Sangeetanjali, Part III, Bombay, Maharashtra, Pandit Omkar NathThakur Estate

- Thakur, Omkar Nath (2003) Sangeetanjali, Part IV, Bombay, Maharashtra, Pandit Omkar NathThakur Estate
- Mishra, Lalmani (1979) Tantrinada, Kanpur, U.P. Sahitya Ratnalaya
- Aggarwal, V.K. and Nagpal, Alka (2004) Sitar and its Compositions, Part I-II, Delhi, Sanjay Prakashan
- Mahajan, Anupam (2003) Compositions in Instrumental Music (Traditional and New Creation), Delhi, Sanjay Prakashan

Syllabus for DSE - Sitar

SEMESTER – V

DSE – Sitar (3)

Course Title & Code	redits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		L	T	P		
DSE – **Sitar** (3)	4	1	0	3	• Class XII Pass • Must have learnt **Sitar** for a minimum of 1 year at an established music institute or from a reputed artiste /guru	Must have studied the following papers – • Theory topics in Sem III & IV • Ragas and talas of Sem III & IV OR • Must have an understanding of the basic concepts such as Shruti, Svara, Raga, Tala etc and their associated components • Knowledge of the Bhatkhande and Paluskar notation systems • Knowledge of the 10 Thaatas • Understanding of theory topics covered in Sem III & IV • Ragas and talas of Sem III & IV

Learning Objectives:

- To develop the interest of the students in musicology by introducing them to the ancienttexts of music.
- To teach them about the various musical instruments from the ancient to the modern times.
- To focus on the ancient musical forms that were the precursor to the current musical forms.
- To discuss about the various musical forms of Karnatak music.
- To focus more on the Stage Performance of the student

- To encourage the student to attempt to improvise while singing/playing.
- To focus on his learning of newer talas

Learning Outcomes:

- The student will come to know about the origin of many current musical forms of Hindustani Instrumental music, such as Tantrakari and Gayaki style of playing. This knowledge is useful for further study of musicology as well as for purposes of research.
- He will understand how various musical instruments of India are made, and are categorized on the basis of solids, animal skin, wind and metallic strings. This will enhance his knowledge and will be beneficial in future research on musical instruments.
- He will gain valuable knowledge on the various musical forms, as they existed in ancientIndia, and how they gave rise to some of the musical forms that are played today, such as Dhrupad anga, , Khayal anga and Trantrakari anga .
- The student will gain parallel knowledge about the musical forms of Karnatak music, which will be useful not only while hearing a Karnatak concert, but also for the purposeof comparative research.

Syllabus:

Theory

Unit I (4 hours)

Detailed study of the ancient texts –

- Natya Shastra
- Sangeet Ratnakar

Unit II (2 hours)

Classification of Instruments

Unit III (2 hours)

- Grama
- Moorcchana
- Jati Gayan
- Prabandha

Unit IV (3 hours)

Study of the ragas of this semester – Jaunpuri, Des & Vrindavani Sarang

Unit V (2 hours)

Ability to write the notation of compositions in the prescribed ragas

Unit VI (2 hours)

- Study of the following talas in detail – Roopak & Jhaptala
- Ability to write the notation of the talas in dugun, tigun and chaugun

Practical component

Prescribed Ragas:

- Jaunpuri
- Des
- Vrindavani Sarang

Unit I (35 hours)

Maseetkhani and Razakhani Gats in all the prescribed ragas mentioned above.

Unit II (30 hours)

Knowledge of all the ragas

Unit III (15 hours)

Knowledge and demonstration of the following talas with dugun, tigun and chaugun – Roopak & Jhaptala

Unit IV (10 hours)

The ability to tune the Sitar.

Suggestive readings:

- Shastri, Babulal Shukla (2009) Natya Shastra, Delhi, Chaukhamba Sanskrit Sansthan
- Kumar, Pushpendra (2010) Natya Shastra of Bharatamuni, Delhi, New Bharatiya Book Corporation
- Matang (1994) Brihaddeshi, Delhi,Indra Gandhi National Centre for the Arts
- Shringy, R.K. (1978) Sangita-Ratnakar of Sarangdeva, Varanasi, U.P. Motilal Banarsidass Indological Publisher
- Chaudhary, Subhadra (2009) Sangeet Ratnakar, New Delhi, Delhi, Radha Publication.
- Prajnanananda, Swami (1981) A Historical Study of Indian Music, Delhi, Delhi, Munsiram Monoharlal Publishers Pvt. Ltd.
- Singh, Thakur Jaidev (1905) Indian Music, Kolkata, West Bengal, Sangeet Research Academy

- Nigam, V.S. (1973) Sangeet Kaumudi, Allahabad, UP, Indian Press
- Chakravarty, Indrani (1988) Sangeet Manjusha, Delhi, Delhi, Mittal Publication
- Singh, Thakur Jaidev (1994) Bhartiya sangeet ka Itihas, Varanasi, UP, Sangeet Research Academy
- Kasliwal Suneera (2001) Classical musical Instruments, Delhi, Delhi, Rupa and Co.
- Paranjape, S.S. (1972) Sangeet Bodh, Bhopal, MP, Madhya Pradesh Hindi Academy
- Bhatkhande, V.N. (2000) Kramik Pustak Malika, Part I, Hathras, U.P., Sangeet Karyalya.
- Bhatkhande, V.N. (2002) Kramik Pustak Malika, Part II, Hathras, U.P., Sangeet Karyalya
- Bhatkhande, V.N. (2002) Kramik Pustak Malika, Part III, Hathras, U.P., Sangeet Karyalya
- Bhatkhande, V.N. (1970) Kramik Pustak Malika, Part IV, Hathras, U.P., Sangeet Karyalya
- Patwardhan, V.R. (2001) Raga Vigyan, Part I, Pune, Maharashtra, Publisher - Dr. Madhusudhanan Patwardhan
- Patwardhan, V.R. (1996) Raga Vigyan, Part II, Pune, Maharashtra, Publisher - Dr. Madhusudhanan Patwardhan
- Patwardhan, V.R. (1991) Raga Vigyan, Part III, Pune, Maharashtra, Publisher - Dr. Madhusudhanan Patwardhan
- Patwardhan, V.R. (1959) Raga Vigyan, Part IV, Pune, Maharashtra, Publisher - Dr. Madhusudhanan Patwardhan
- Thakur, Omkar Nath (1977) Sangeetanjali, Part I, Bombay, Maharashtra, Pandit Omkar NathThakur Estate
- Thakur, Omkar Nath (1975) Sangeetanjali, Part II, Bombay, Maharashtra, Pandit Omkar NathThakur Estate
- Thakur, Omkar Nath (2005) Sangeetanjali, Part III, Bombay, Maharashtra, Pandit Omkar NathThakur Estate
- Thakur, Omkar Nath (2003) Sangeetanjali, Part IV, Bombay, Maharashtra, Pandit Omkar Nath Thakur Estate
- Mishra, Lalmani (1979) Tantrinada, Kanpur, U.P. Sahitya Ratnakar
- Aggarwal, V.K. and Nagpal, Alka (2004) Sitar and its Compositions, Part-I-II, Delhi, Sanjay Prakashan
- Mahajan, Anupam (2003) Compositions in Instrumental Music (Traditional and New Creation), Delhi, Sanjay Prakashan

---

Syllabus for DSE - Khayal

SEMESTER – V

DSE – Khayal (3)

Course Title & Code	redits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		L	T	P		
DSE – Khayal (3)	4	1	0	3	• Class XII Pass • Must have learnt Khayal for a minimum of 1 year at an established music institute or from a reputed artiste /guru	Must have studied the following papers – • Theory topics in Sem III & IV • Ragas and talas of Sem III & IV OR • Must have an understanding of the basic concepts such as Shruti, Svara, Raga, Tala etc and their associated components • Knowledge of the Bhatkhande and Paluskar notation systems • Knowledge of the 10 Thaatas • Understanding of theory topics covered in Sem III & IV • Ragas and talas of Sem III & IV

Learning Objectives:

- To develop the interest of the students in musicology by introducing them to the ancienttexts of music.
- To teach them about the various musical instruments from the ancient to the modern times.
- To focus on the ancient musical forms that were the precursor to the current musical forms.
- To focus more on the Stage Performance of the student
- To encourage the student to attempt to improvise while singing/playing.

- To focus on his learning of newer talas

Learning Outcomes:

- The student will come to know about the origin of many current musical forms of singingin Hindustani music, such as Khayal. This knowledge is useful forfurther study of musicology as well as for purposes of research.
- He/she will understand how various musical instruments of India are made, and are categorized on the basis of solids, animal skin, wind and metallic strings. This will enhance his knowledge and will be beneficial in future research on musical instruments.
- He/she will gain valuable knowledge on the ancient musical scale and form of singing, and how the latter gave rise to some of the musical forms that are sung today

Syllabus:

Theory

Unit I (4 hours)

Study of the ancient texts –

- Natya Shastra
- Sangeet Ratnakar

Unit II (2 hours)

Classification of Instruments

Unit III (2 hours)

- Grama
- Moorchchhana
- Jati Gayan
- Prabandha

Unit IV (3 hours)

Study of the ragas of this semester – Jaunpuri, Des and Vrindavani Sarang

Unit V (2 hours)

Ability to write the notation of compositions in the prescribed ragas

Unit VI (2 hours)

- Study of the following talas in detail – Roopak & Jhaptala
- Ability to write the notation of the talas in dugun, tigun and chaugun

Practical component

Prescribed Ragas:

- Jaunpuri
- Des
- Vrindavani Sarang

Unit I (35 hours)

Vilambit and Drut Khayal with gayaki in all the prescribed ragas mentioned above

Unit II (30 hours)

Knowledge of all the ragas

Unit III (15 hours)

Knowledge and demonstration of the following talas with dugun, tigun and chaugun – Roopak and Jhaptala

Unit IV (10 hours)

The ability to tune the Tanpura

Suggestive readings:

- Shastri, Babulal Shukla (2009) Natya Shastra, Delhi, Chaukhamba Sanskrit Sansthan
- Kumar, Pushpendra (2010) Natya Shastra of Bharatamuni, Delhi, New Bharatiya Book Corporation
- Matang (1994) Brihaddeshi, Delhi,Indra Gandhi National Centre for the Arts
- Shringy, R.K. (1978) Sangita-Ratnakar of Sarangdeva, Varanasi, U.P. Motilal Banarsidass Indological Publisher
- Chaudhary, Subhadra (2009) Sangeet Ratnakar, New Delhi, Delhi, Radha Publication.
- Prajnanananda, Swami (1981) A Historical Study of Indian Music, Delhi, Delhi, Munsiram Monoharlal Publishers Pvt. Ltd.
- Singh, Thakur Jaidev (1905) Indian Music, Kolkata, West Bengal, Sangeet Research Academy
- Nigam, V.S. (1973) Sangeet Kaumudi, Allahabad, UP, Indian Press
- Chakravarty, Indrani (1988) Sangeet Manjusha, Delhi, Delhi, Mittal Publication
- Singh, Thakur Jaidev (1994) Bhartiya sangeet ka Itihas, Varanasi, UP, Sangeet Research Academy

- Kasliwal Suneera (2001) Classical musical Instruments, Delhi, Delhi, Rupa and Co.
- Paranjape, S.S. (1972) Sangeet Bodh, Bhopal, MP, Madhya Pradesh Hindi Academy
- Bhatkhande, V.N. (2000) Kramik Pustak Malika, Part I, Hathras, U.P., Sangeet Karyalya.
- Bhatkhande, V.N. (2002) Kramik Pustak Malika, Part II, Hathras, U.P., Sangeet Karyalya
- Bhatkhande, V.N. (2002) Kramik Pustak Malika, Part III, Hathras, U.P., Sangeet Karyalya
- Bhatkhande, V.N. (1970) Kramik Pustak Malika, Part IV, Hathras, U.P., Sangeet Karyalya
- Patwardhan, V.R. (2001) Raga Vigyan, Part I, Pune, Maharashtra, Publisher - Dr. Madhusudhanan Patwardhan
- Patwardhan, V.R. (1996) Raga Vigyan, Part II, Pune, Maharashtra, Publisher - Dr. Madhusudhanan Patwardhan
- Patwardhan, V.R. (1991) Raga Vigyan, Part III, Pune, Maharashtra, Publisher - Dr. Madhusudhanan Patwardhan
- Patwardhan, V.R. (1959) Raga Vigyan, Part IV, Pune, Maharashtra, Publisher - Dr. Madhusudhanan Patwardhan
- Thakur, Omkar Nath (1977) Sangeetanjali, Part I, Bombay, Maharashtra, Pandit Omkar NathThakur Estate
- Thakur, Omkar Nath (1975) Sangeetanjali, Part II, Bombay, Maharashtra, Pandit Omkar NathThakur Estate
- Thakur, Omkar Nath (2005) Sangeetanjali, Part III, Bombay, Maharashtra, Pandit Omkar NathThakur Estate
- Thakur, Omkar Nath (2003) Sangeetanjali, Part IV, Bombay, Maharashtra, Pandit Omkar Nath Thakur Estate
- Mishra, Lalmani (1979) Tantrinada, Kanpur, U.P. Sahitya Ratnakar
- Aggarwal, V.K. and Nagpal, Alka (2004) Sitar and its Compositions, Part-I-II, Delhi, Sanjay Prakashan
- Mahajan, Anupam (2003) Compositions in Instrumental Music (Traditional and New Creation), Delhi, Sanjay Prakashan

INDEX

DEPARTMENT OF MUSIC

SEMESTER- VI

B.A. (Hons.) III Music - Hindustani Music
Vocal/Instrumental (Sitar/Sarod/Guitar/Violin/Santoor)

S.NO.	CONTENT	PAGE NO.
1	**B.A. (Hons.) III Music - Hindustani Music Vocal/Instrumental (Sitar/Sarod/Guitar/Violin/Santoor) - DSC** 1. APPLIED THEORY 2. STAGE PERFORMANCE 3. RAGAS, TALAS AND THEIR APPLICATIONS	32-41
2	**Pool of DSE** 1. Khayal 2. Sitar 3. Research Methodology	42-53

B.A. (Hons.) III Music - Hindustani Music
Vocal/Instrumental (Sitar/Sarod/Guitar/Violin/Santoor)

Syllabus for DSC Papers

SEMESTER - VI

DSC – 16: Applied Theory

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		L	T	P		
APPLIED THEORY (601)	4	3	1	0	• Class XII Pass • Must have learnt for a minimum of 5 years at an established music institute or from a reputed artiste /guru	Must have studied the following papers – • General Theory (Sem I) • Theory of Indian Music (Sem II) • Historical Study of Indian Music (Sem III) • History of Indian Music (Sem V) • Ragas and talas of Sem I-V OR • Must have an understanding of the basic concepts such as Shruti, Svara, Raga, Tala etc and their associated components • Knowledge of the Bhatkhande and Paluskar notation systems • Knowledge of the 10 Thaatas • Knowledge of the Time Theory of ragas • Knowledge of Grama, Moorchhana, Jati Gayan, Prabandha, Alapti • Ragas and talas of Sem I-V

Learning Objectives:

- To focus on the Gharana system, which gives every performing artiste his identity.
- To discuss about the various gharanas and styles in Instrumental music.
- To study about the salient features of the Bani system of Dhrupad
- To discuss about the various musical forms of Hindustani music

Learning Outcomes:

- The student will come to know about the salient features of the Gharana system, as also the specialities of prominent gharanas like Gwalior, Agra, Delhi gharanas etc.

- The student will gain knowledge about the various styles of playing instrumental music, that will help him to enjoy the concerts, and will also encourage him to carry out researchon the styles of various musical instruments of Hindustani music.
- The student will come to know about the various musical forms of vocal music, such asKhayal, Tarana and Thumri. This knowledge will help him to become a better stage performer of Hindustani music.
- He/she will complete his graduation in graduation with a complete knowledge of twenty-sixragas, spanning all the six semesters.

Syllabus:

Unit I (6 hours)

Study of the various schools of Dhrupad with regard to the following –

- Banis of Dhrupad
- The significant features regarding techniques of Dhrupad singing

Unit II (15 hours)

Study of the Gharana system of Khayal with respect to the following –

- The salient features of the term 'Gharana'
- Study of the following gharanas:

  # Gwalior gharana
  # Agra gharana
  # Jaipur gharana
  # Dilli gharana
  # Kirana gharana

Unit III (3 hours)

Study of the Gharanas of Instrumental music and their leading styles

Unit IV (15 hours)

Study of Hindustani musical forms:

- Dhrupad
- Dhamar
- Khayal
- Sadra
- Tarana
- Chaturang
- Trivat

- Tappa
- Thumri
- Dadra

Unit V (3 hours)

- Study of the following talas in detail – Teevra and Deepchandi
- Study of the application of talas in musical forms
- Ability to write the notation of the talas in dugun, tigun and chaugun

Unit VI (3 hours)

- Study of the ragas of this semester Miyan ki Todi, Multani, Gaud Sarang, Chhayanat, Ramkali & Vibhas
- Comparative study of the ragas with each other
- Ability to write the notation of compositions in prescribed ragas

Suggestive readings:

- Deshpande, V.H. (1987) Indian Musical Tradition, Bombay, Maharashtra, Popular Prakashan
- Dhrupad Annual, Edited by Premlata Sharma
- Aggarwal, V.K, and Aggarwal, Alka (1997) Indian Music Trends and traditions, Delhi, Indian Bibliographies Bureau
- Chaubey, S.K. (1984) Sangeet ke Gharano ki Charcha, Lucknow, UP, Uttar Pradesh Hindi Sansthan
- Khurana, Shanno (1995) Khayal Gayaki ke Vividh Gharane, Delhi, Siddharth Publication
- Guatam, M.R. (2001) Musical Heritage of India, Delhi, Munsihram Monoharlal Publishers Pvt. Ltd.
- Bhatkhande, V.N. (1975) Bhatkhande Sangeet Shastra, Part I, Hathras, UP. Sangeet Karyalaya
- Bhatkhande, V.N. (1980) Bhatkhande Sangeet Shastra, Part II, Hathras, UP. Sangeet Karyalaya
- Bhatkhande, V.N. (1968) Bhatkhande Sangeet Shastra, Part III, Hathras, UP. Sangeet Karyalaya
- Chandorkar, Vijaya (1993). Delhi University, Delhi
- Chandorkar, Vijaya (2014). Compositional Forms of Hindustani Music: A Journey, Munshiram Manoharlal Publishers Pvt. Ltd.
- Saxena, Madhubala (1985). Khayal Shaili ka vikas, Kurukshetra, Haryana, Vishal Publications
- Saxena, Madhubala. Prominent Musical Instruments: Technique and Tradition, Bhartiya Vidya Bhawan, New Delhi
- Saxena, Madhubala and Saxena, Rakesh Bala (2000). Sangeet Nikunj: Samskara Edition, Delhi, Radha Publications

- Bharali, Rabindra (2008) The Forgotten Forms of Hindustani Music, Delhi, Kanishka Publishing House
- Pathak, Sunanda. Hindustani Sangeet mein Raga ki Utpatti evam Vikas
- Goswami, Shailendra (2018). Hindustani Sangeet ke Mahaan Rachnakar Sadarang-Adarang, Delhi, Kanishka Publishers
- Brihaspati, Acharya Kailashchandradeva (1976). Dhruvapada aur uska vikas, Patna, Bihar, Bihar Rashtra Bhasha Parishad
- Devangan, Tulsiram (2020). Thumri Gayaki, Hathras, U.P., Sangeet Karyalaya
- Singh, Ojesh Pratap (2004). Hindustani Sangeet mein Sahitya, Delhi, Ishan Prakashan
- Nigam, Sarita (2021). Hindustani Sangeet mein Raga Vargikaran, Delhi, Kanishka Publishers
- Sharma, Premlata (Editor) (1987-1995). Dhrupad Annual, Varanasi, U.P., All India Kashiraj Trust

---

DSC – 17: Stage Performance (6)

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		L	T	P		
STAGE PERFORMANCE (6) (602)	4	0	0	4	• Class XII Pass • Must have learnt for a minimum of 5 years at an established music institute or from a reputed artiste /guru	Must have studied the following papers – • General Theory (Sem I) • Theory of Indian Music (Sem II) • Ragas and talas of Sem I-V OR • Must have an understanding of the basic concepts such as Shruti, Svara, Raga, Tala etc and their associated components • Knowledge of the Bhatkhande and Paluskar notation systems • Knowledge of the 10 Thaatas • Knowledge of the Time Theory of ragas • Ragas and talas of Sem I-V

Learning Objectives:

- To focus on revising all the ragas that the student has learnt in the previous semesters
- To enhance the difficulty level of the ragas, and teach the student complex ragas
- To be able to make a comparison of one raga with similar ragas of all the six semesters
- To assess the ability of the student to play his instrument on various talas

Learning Outcomes:

- He/she will have the knowledge of twenty-six ragas that he has learnt in all the six semesters combined
- He/she will be able to perform complex ragas with self-confidence.
- He/she will be able to differentiate between similar sounding ragas of all the semesters.
- The student will have thorough knowledge of all the talas that he has learnt in the last five semesters.

Syllabus:

Prescribed Ragas:

1. Miyan ki Todi
2. Multani

3. Gaud Sarang
4. Chhayanat
5. Ramkali
6. Vibhas

Unit I – Vocal Music (120 hours):

- A detailed performance of Vilambit and Drut Khayal with gayaki to be presented in anyone raga
- Presentation of one semi classical, devotional or folk song

OR

Unit II – Instrumental Music (120 hours):

- A detailed performance of Maseetkhani and Razakhani gats with elaboration to be presented in any one raga
- Presentation of a dhun, devotional or light music composition

Note: Students of Vocal and Instrumental music will have to prepare according to the requirements of their respective Units.

Suggestive readings:

- Bhatkhande, V.N. (2000) Kramik Pustak Malika, Part I, Hathras, U.P., Sangeet Karyalya
- Bhatkhande, V.N. (2002) Kramik Pustak Malika, Part II, Hathras, U.P., Sangeet Karyalya
- Bhatkhande, V.N. (2002) Kramik Pustak Malika, Part III, Hathras, U.P., Sangeet Karyalya
- Bhatkhande, V.N. (1970) Kramik Pustak Malika, Part IV, Hathras, U.P., Sangeet Karyalya
- Patwardhan, V.R. (2001) Raga Vigyan, Part I, Pune, Maharashtra, Publisher - Dr. Madhusudhanan Patwardhan
- Patwardhan, V.R. (1996) Raga Vigyan, Part II, Pune, Maharashtra, Publisher - Dr. Madhusudhanan Patwardhan
- Patwardhan, V.R. (1991) Raga Vigyan, Part III, Pune, Maharashtra, Publisher - Dr. Madhusudhanan Patwardhan
- Patwardhan, V.R. (1959) Raga Vigyan, Part IV, Pune, Maharashtra, Publisher - Dr. Madhusudhanan Patwardhan
- Thakur, Omkar Nath (1977) Sangeetanjali, Part I, Bombay, Maharashtra, Pandit Omkar NathThakur Estate
- Thakur, Omkar Nath (1975) Sangeetanjali, Part II, Bombay, Maharashtra, Pandit Omkar NathThakur Estate
- Thakur, Omkar Nath (2005) Sangeetanjali, Part III, Bombay, Maharashtra, Pandit Omkar NathThakur Estate

- Thakur, Omkar Nath (2003) Sangeetanjali, Part IV, Bombay, Maharashtra, Pandit Omkar NathThakur Estate
- Mishra, Lalmani (1979) Tantrinada, Kanpur, U.P. Sahitya Ratnalaya
- Aggarwal, V.K. and Nagpal, Alka (2004) Sitar and its Compositions, Part I-II, Delhi, Sanjay Prakashan
- Mahajan, Anupam (2003) Compositions in Instrumental Music (Traditional and New Creation), Delhi, Sanjay Prakashan

---

DSC – 18: Ragas, talas and their applications (6)

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		L	T	P		
RAGAS, TALAS AND THEIR APPLICATIONS (6) (603)	4	0	0	4	• Class XII Pass • Must have learnt for a minimum of 5 years at an established music institute or from a reputed artiste /guru	Must have studied the following papers – • General Theory (Sem I) • Theory of Indian Music (Sem II) • Ragas and talas of Sem I-V OR • Must have an understanding of the basic concepts such as Shruti, Svara, Raga, Tala etc and their associated components • Knowledge of the Bhatkhande and Paluskar notation systems • Knowledge of the 10 Thaatas • Knowledge of the Time Theory of ragas • Ragas and talas of Sem I-V

Learning Objectives:

- To focus more on the Viva-Voce of the student.
- To teach new compositions based on various talas

Learning Outcomes:

- The student will be able to explain the grammatical rules of a raga in detail.
- He/she will develop the confidence to differentiate between similar ragas.
- The student will be able to sing new compositions in new talas

Syllabus:

Prescribed Ragas:

1. Miyan ki Todi
2. Multani
3. Gaud Sarang
4. Chhayanat
5. Ramkali
6. Vibhas

Unit I – Vocal Music (120 hours):

- Vilambit and Drut Khayal with gayaki to be presented in all ragas prescribed above
- Dhrupad-Dhamar or Sadra composition in each of the prescribed ragas with Alap, Layakari & Upaj
- Knowledge and demonstration of the following talas – Teevra & Deepchandi
- Ability to make a comparative analysis of similar ragas from all the ragas prescribed in all the semesters
- Ability to tune the Tanpura

OR

Unit II – Instrumental Music (120 hours):

- Masitkhani and Razakhani gats with elaboration to be presented in all ragas prescribed above
- Gat with elaboration in any 3 of the following Talas - Dhamar, Ektal, Jhaptal & Adachautala
- Knowledge and demonstration of the following talas – Teevra & Deepchandi
- Ability to make a comparative analysis of similar ragas from all the ragas prescribed in all the semesters
- To demonstrate the ability to tune one's respective instrument

Note: Students of Vocal and Instrumental music will have to prepare according to the requirements of their respective Units.

Suggestive readings:

- Bhatkhande, V.N. (2000) Kramik Pustak Malika, Part I, Hathras, U.P., Sangeet Karyalya
- Bhatkhande, V.N. (2002) Kramik Pustak Malika, Part II, Hathras, U.P., Sangeet Karyalya
- Bhatkhande, V.N. (2002) Kramik Pustak Malika, Part III, Hathras, U.P., Sangeet Karyalya
- Bhatkhande, V.N. (1970) Kramik Pustak Malika, Part IV, Hathras, U.P., Sangeet Karyalya
- Patwardhan, V.R. (2001) Raga Vigyan, Part I, Pune, Maharashtra, Publisher - Dr. Madhusudhanan Patwardhan
- Patwardhan, V.R. (1996) Raga Vigyan, Part II, Pune, Maharashtra, Publisher - Dr. Madhusudhanan Patwardhan
- Patwardhan, V.R. (1991) Raga Vigyan, Part III, Pune, Maharashtra, Publisher - Dr. Madhusudhanan Patwardhan
- Patwardhan, V.R. (1959) Raga Vigyan, Part IV, Pune, Maharashtra, Publisher - Dr. Madhusudhanan Patwardhan

- Thakur, Omkar Nath (1977) Sangeetanjali, Part I, Bombay, Maharashtra, Pandit Omkar NathThakur Estate
- Thakur, Omkar Nath (1975) Sangeetanjali, Part II, Bombay, Maharashtra, Pandit Omkar NathThakur Estate
- Thakur, Omkar Nath (2005) Sangeetanjali, Part III, Bombay, Maharashtra, Pandit Omkar NathThakur Estate
- Thakur, Omkar Nath (2003) Sangeetanjali, Part IV, Bombay, Maharashtra, Pandit Omkar NathThakur Estate
- Mishra, Lalmani (1979) Tantrinada, Kanpur, U.P. Sahitya Ratnalaya
- Aggarwal, V.K. and Nagpal, Alka (2004) Sitar and its Compositions, Part I-II, Delhi, Sanjay Prakashan
- Mahajan, Anupam (2003) Compositions in Instrumental Music (Traditional and New Creation), Delhi, Sanjay Prakashan

B.A. (Hons.) Music
Hindustani Music - Vocal/Instrument (Sitar/Sarod/Guitar/Violin/Santoor)
Syllabus for DSE - Khayal

SEMESTER – VI

DSE – Khayal (4)

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		L	T	P		
DSE – Khayal (4)	4	1	0	3	• Class XII Pass • Must have learnt Khayal for a minimum of 1 year at an established music institute or from a reputed artiste /guru	Must have studied the following papers – • Theory topics in Sem III-V • Ragas and talas of Sem III-V OR • Must have an understanding of the basic concepts such as Shruti, Svara, Raga, Tala etc and their associated components • Knowledge of the Bhatkhande and Paluskar notation systems • Knowledge of the 10 Thaatas • Understanding of theory topics covered in Sem III-V • Ragas and talas of Sem III-V

Learning Objectives:

- To discuss the contribution of Hindustani musicians of the medieval and modern eras
- To focus more on the Stage Performance of the student
- To encourage the student to attempt to improvise while singing/playing.
- To focus on his learning of newer talas

Learning Outcomes:

- The student will know about the life and contribution of legends like Amir Khusrau and Tansen, and how their works have shaped the present Hindustani music
- The student will develop the confidence to perform a raga for a long duration of time.
- The student will be able to demonstrate the finer nuances of raga in a detailed performance.
- The student will have the opportunity to showcase his skill in semi-classical and folkgenres of music

Syllabus:

Theory

Unit I (2 hours)

Life sketch and contributions of the Medieval-era musicians -

- Amir Khusrau
- Tansen
- Sadarang-Adarang

Unit II (3 hours)

Life sketch and contribution of the Modern-era musicians (vocalists) -

- S.N. Ratanjankar
- Omkarnath Thakur
- Vilayat Hussain Khan

Unit III (3 hours)

Life sketch and contributions of the Modern-era musicians (instrumentalists) -

- Allauddin Khan
- Ravi Shankar
- Vilayat Khan

Unit IV (3 hours)

Study of the ragas of this semester – Ramkali, Bageshri and Bhimpalasi

Unit V (2 hours)

Ability to write the notation of compositions in the prescribed ragas

Unit VI (2 hours)

- Study of the following talas in detail – Tilwada and Jhoomra
- Ability to write the notation of the talas in dugun, tigun and chaugun

Practical component

Prescribed Ragas:

1. *Ramkali*
2. *Bageshri*
3. *Bhimpalasi*

Unit I (35 hours)

Vilambit and Drut Khayal with gayaki in all the prescribed ragas mentioned above

Unit II (30 hours)

Knowledge of all the ragas

Unit III (15 hours)

Knowledge and demonstration of the following talas with dugun, tigun and chaugun – Tilwada & Jhoomra

Unit IV (10 hours)

The ability to tune the Tanpura

Suggestive readings:

- Mishra, Sushila (1990) Some Immortals of Hindustani Music, Delhi, Harman Publishing House
- Chaturvedi, Narmadeshwar (1955) Sangeetagya Kaviyon ki Hindi Rachnayen, Allahabad, UP, Sahitya Bhawan Ltd
- Sharma, Amal Das (1993) Musician of India, Kolkata, West Bengal, Naya Prakash
- Divedi, Harihar Niwas (2010) Mansingh aur Mankutuhal, Gwalior, Vidyamandir Prakashan

- Brihaspati, Sulochana (1986) Khusro Tansen tatha anya kalakar, Delhi, Rajkamal Prakashan Pvt. Ltd.
- Bhatkhande, V.N. (2000) Kramik Pustak Malika, Part I, Hathras, U.P., Sangeet Karyalya
- Bhatkhande, V.N. (2002) Kramik Pustak Malika, Part II, Hathras, U.P., Sangeet Karyalya
- Bhatkhande, V.N. (2002) Kramik Pustak Malika, Part III, Hathras, U.P., Sangeet Karyalya
- Bhatkhande, V.N. (1970) Kramik Pustak Malika, Part IV, Hathras, U.P., Sangeet Karyalya
- Patwardhan, V.R. (2001) Raga Vigyan, Part I, Pune, Maharashtra, Publisher - Dr. Madhusudhanan Patwardhan
- Patwardhan, V.R. (1996) Raga Vigyan, Part II, Pune, Maharashtra, Publisher - Dr. Madhusudhanan Patwardhan
- Patwardhan, V.R. (1991) Raga Vigyan, Part III, Pune, Maharashtra, Publisher - Dr. Madhusudhanan Patwardhan
- Patwardhan, V.R. (1959) Raga Vigyan, Part IV, Pune, Maharashtra, Publisher - Dr. Madhusudhanan Patwardhan
- Thakur, Omkar Nath (1977) Sangeetanjali, Part I, Bombay, Maharashtra, Pandit Omkar NathThakur Estate
- Thakur, Omkar Nath (1975) Sangeetanjali, Part II, Bombay, Maharashtra, Pandit Omkar NathThakur Estate
- Thakur, Omkar Nath (2005) Sangeetanjali, Part III, Bombay, Maharashtra, Pandit Omkar NathThakur Estate
- Thakur, Omkar Nath (2003) Sangeetanjali, Part IV, Bombay, Maharashtra, Pandit Omkar NathThakur Estate
- Mishra, Lalmani (1979) Tantrinada, Kanpur, U.P. Sahitya Ratnalaya
- Aggarwal, V.K. and Nagpal, Alka (2004) Sitar and its Compositions, Part I-II, Delhi, Sanjay Prakashan
- Mahajan, Anupam (2003) Compositions in Instrumental Music (Traditional and New Creation), Delhi, Sanjay Prakashan

B.A. (Hons.) Music
Hindustani Music - Vocal/Instrument (Sitar/Sarod/Guitar/Violin/Santoor)

Syllabus for DSE - Sitar

SEMESTER – VI

DSE – Sitar (4)

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		L	T	P		
DSE – Sitar (4)	4	1	0	3	• Class XII Pass • Must have learnt Sitar for a minimum of 1 year at an established music institute or from a reputed artiste /guru	Must have studied the following papers – • Theory topics in Sem III-V • Ragas and talas of Sem III-V OR • Must have an understanding of the basic concepts such as Shruti, Svara, Raga, Tala etc and their associated components • Knowledge of the Bhatkhande and Paluskar notation systems • Knowledge of the 10 Thaatas • Understanding of theory topics covered in Sem III-V • Ragas and talas of Sem III-V

Learning Objectives:

- To discuss about the life and works of legendary musicians of Karnatak music
- To talk about the many works of famous Western music composers
- To discuss the contribution of Hindustani musicians of the medieval and modern eras

- To focus more on the Stage Performance of the student
- To encourage the student to attempt to improvise while singing/playing.
- To focus on his learning of newer talas

Learning Outcomes:

- The student will come to know about the works of the Karnatak music composers, popularly known as Trinity
- He will be able to comprehend the magnitude of the many works and compositions of thefamous Western composers like Beethoven and Mozart
- The student will know about the life and contribution of legends like Amir Khusrau andTansen, and how their works have shaped the present Hindustani music
- The student will develop the confidence to perform a raga for a long duration of time.
- The student will be able to demonstrate the finer nuances of raga in a detailed performance.
- The student will have the opportunity to showcase his skill in semi-classical and folkgenres of music

Syllabus:

Theory

Unit I (2 hours)

Life sketch and contributions of the Medieval-era musicians -

- Amir Khusrau
- Tansen
- Sadarang-Adarang

Unit II (3 hours)

Life sketch and contribution of the Modern-era musicians (vocalists) -

- S.N. Ratanjankar
- Omkarnath Thakur
- Vilayat Hussain Khan

Unit III (3 hours)

Life sketch and contributions of the Modern-era musicians (instrumentalists) -

- Allauddin Khan
- Ravi Shankar
- Vilayat Khan

Unit IV (3 hours)

Study of the ragas of this semester – Ramkali, Bageshri & Bhimpalasi

Unit V (2 hours)

Ability to write the notation of compositions in the prescribed ragas

Unit VI (2 hours)

- Study of the following talas in detail – Tilwada & Jhoomra
- Ability to write the notation of the talas in dugun, tigun and chaugun

Practical component

Prescribed Ragas:

4. Ramkali
5. Bageshri
6. Bhimpalasi

Unit I (35 hours)

Maseetkhani and Razakhani Gats with Toda and Taans in all the prescribed ragas mentioned above

Unit II (30 hours)

Knowledge of all the prescribed ragas

Unit III (15 hours)

Knowledge and demonstration of the following talas with dugun, tigun and chaugun – Tilwada & Jhoomra

Unit IV (10 hours)

The ability to tune the Sitar

Suggestive readings:

- Mishra, Sushila (1990) Some Immortals of Hindustani Music, Delhi, Harman Publishing House
- Chaturvedi, Narmadeshwar (1955) Sangeetagya Kaviyon ki Hindi Rachnayen, Allahabad, UP, Sahitya Bhawan Ltd
- Sharma, Amal Das (1993) Musician of India, Kolkata, West Bengal, Naya Prakash
- Divedi, Harihar Niwas (2010) Mansingh aur Mankutuhal, Gwalior, Vidyamandir Prakashan
- Brihaspati, Sulochana (1986) Khusro Tansen tatha anya kalakar, Delhi, Rajkamal Prakashan Pvt. Ltd.
- Bhatkhande, V.N. (2000) Kramik Pustak Malika, Part I, Hathras, U.P., Sangeet Karyalya
- Bhatkhande, V.N. (2002) Kramik Pustak Malika, Part II, Hathras, U.P., Sangeet Karyalya
- Bhatkhande, V.N. (2002) Kramik Pustak Malika, Part III, Hathras, U.P., Sangeet Karyalya
- Bhatkhande, V.N. (1970) Kramik Pustak Malika, Part IV, Hathras, U.P., Sangeet Karyalya
- Patwardhan, V.R. (2001) Raga Vigyan, Part I, Pune, Maharashtra, Publisher - Dr. Madhusudhanan Patwardhan
- Patwardhan, V.R. (1996) Raga Vigyan, Part II, Pune, Maharashtra, Publisher - Dr. Madhusudhanan Patwardhan
- Patwardhan, V.R. (1991) Raga Vigyan, Part III, Pune, Maharashtra, Publisher - Dr. Madhusudhanan Patwardhan
- Patwardhan, V.R. (1959) Raga Vigyan, Part IV, Pune, Maharashtra, Publisher - Dr. Madhusudhanan Patwardhan
- Thakur, Omkar Nath (1977) Sangeetanjali, Part I, Bombay, Maharashtra, Pandit Omkar NathThakur Estate
- Thakur, Omkar Nath (1975) Sangeetanjali, Part II, Bombay, Maharashtra, Pandit Omkar NathThakur Estate
- Thakur, Omkar Nath (2005) Sangeetanjali, Part III, Bombay, Maharashtra, Pandit Omkar NathThakur Estate
- Thakur, Omkar Nath (2003) Sangeetanjali, Part IV, Bombay, Maharashtra, Pandit Omkar NathThakur Estate
- Mishra, Lalmani (1979) Tantrinada, Kanpur, U.P. Sahitya Ratnalaya
- Aggarwal, V.K. and Nagpal, Alka (2004) Sitar and its Compositions, Part I-II, Delhi, Sanjay Prakashan
- Mahajan, Anupam (2003) Compositions in Instrumental Music (Traditional and New Creation), Delhi, Sanjay Prakashan

B.A. (Hons.) Music
Hindustani Music - Vocal/Instrument (Sitar/Sarod/Guitar/Violin/Santoor)

Syllabus for DSE – Research Methodology

SEMESTER – VI / VII

DSE – Research Methodology

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		L	T	P		
DSE – Research Methodology (1)	4	3	1	0	• Class XII Pass	Must have studied the following papers – • Theory topics in Sem III-V OR • Must have an understanding of the basic concepts such as Shruti, Svara, Raga, Tala etc and their associated components • Knowledge of the Bhatkhande and Paluskar notation systems • Knowledge of the 10 Thaatas • Understanding of theory topics covered in Sem III-V

Learning Objectives:

- To understand the concept of 'Research' and its various components
- To study the importance of selecting the correct research topic

- To understand the importance of preparing a Synopsis
- To focus on the various primary and secondary sources of information and how they are used in research
- To discuss the sources of information specifically related to research in Music
- To understand the various aspects of data collection such as Questionnaire, Interview etc.
- To study as to how to write a Report and understand the significance of aspects like References, Footnotes, Bibliography etc.

Learning Outcomes:

- The student shall be able to understand what Research is and its various related aspects
- He/she shall be able to understand the importance of a correct Research Topic, and later on, shall be able to do the same dissertation and thesis
- He/she will be able to demonstrate the ability to write a Synopsis on any given research topic
- The student will be able to understand the significance of the various sources of information in research and how they are to be applied in research on subjects related to Music
- To student shall be able to grasp the various methods of data collection that shall help him in his research later on
- He/she shall be able to understand the correct ways of giving References, Footnotes and other related aspects in his dissertation and thesis later on

Syllabus:

Unit I (10 hours)

Understanding Research and its components -

- Definition
- Aims and objectives
- Varieties
- Methodology
- Process.

Unit II (2 hours)

Selection of the research topic

Unit III (6 hours)

Understanding the importance of Synopsis in Research -

- Definition
- Importance
- Making a synopsis

Unit IV (9 hours)

Primary and Secondary sources of information and their importance in research -

- Manuscripts and Books
- Journals and Magazines
- Sculpture
- Paintings & Frescoes
- Archaeological findings
- Inscriptions
- Musical Pillars and Stones
- Museums
- Coins

Unit V (8 hours)

Study of the following sources of information related to Music:

- Musical compositions
- Oral traditions
- Music performances – live and recorded:
    - Gramophone records
    - Discs
    - Cassettes
    - On the internet
- Media - Print and electronic
- Academic councils.

Unit VI (5 hours)

Understanding methods of data collection:

- Questionnaire
- Interview
- Observation
- Case study
- Experimental Schedule

Unit VII (5 hours)

Report writing and its aspects -

- References
- Footnotes
- Bibliography
- Appendix
- Index

Suggestive readings:

- Survey Research Methods – Floyd. J.F., Sage Publications, New Delhi.
- Methods in Social Research- Goode C.V. & D.E. Scates, McGrawHill, 1954.
- The Art Heritage of India- Havell. E.B.; D.B Taraporevala Sons and Co. Pvt. Ltd. 1964.
- Ragamala Paintings, Kaus, Ebling, Kumar gallery, New Delhi, 1973.
- Research Methodology, Misra R.P, Concept publishing company, New York,1989.
- Exploring research, Salkind N.J., Prentice Hall, New Jersey, 1997.
- Advanced Research Methodology, Srivastava, G.N.P. Radha Publications, New Delhi, 1994.
- The Elements of Research, Whitney F.L., Prentice Hall, New York, 1950.
- Research Methods in Indian Music, Najma Perveen Ahmad, Manohar Publishersand Distributors, New Delhi.
- Research Methodology: Methods and techniques, C.R. Kothari, Wiley Eastern Ltd. NewDelhi,1985
- Sources of research in Indian Classical Music, ReenaGautam, Kanishka Publishers, New Delhi, 2002.
- Research Methodology, Madan Mohan Lavaniya, College Book House, Jaipur, 1985. (In Hindi)
- "Shodh Pravidhi" Vinaymohan Sharma, National Publishing House, Delhi, 1980 (In Hindi)
- Research Methodology, B.M. Jain, Research Publications, Jaipur, 1987 (In Hindi)

INDEX

Department of Music

B A (Hons.) II Music-Karnatak Music (Vocal/Veena/ Violin)

Semester- IV

S. No.	Contents	Page No.
1	**DSCs-** 1. Theory - Indian Music - DSC- 10 2. Stage Performance (4) – DSC-11 3. Ragas, Talas and their Application – DSC-12	2-8
2	**Pool of DSEs** 1. Fundamental Knowledge Of Karnatak Music 2. Stage Performance & Practical Assessment	9-11

B.A. (Hons.) Karnatak Music Vocal (Vocal/ Veena/Violin)
Syllabus for DSC Papers

SEMESTER – IV
DSC- 10: Theory - Indian Music

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		L	T	P		
Theory - Indian Music (401)	4	3	1	0	• Class XII Pass • Must have learnt for a minimum of 4 years at an established music institute or from a reputed guru	Must have studied the following papers • General Musicology (Sem- I) • Theory of Indian Music (Sem – II) • Historical Study of Indian Music (Sem- III) OR • Understanding of the basic concepts such as Shruti, Swara, Raga, Tala etc and their associated components • Knowledge of the notation system

Learning Objectives

- The main focus of this unit is to create an in-depth knowledge about the everlasting history of Indian Music, its technical terms, old texts and biographies.
- To study the notation of the compositions and imbibe the basic concepts of Indian notation system.

Learning outcomes

- Knowledge of various concepts and terminologies prevailed in ancient music of India.
- Awareness about the status and popularity of Karnatak Music in the society.
- Learning about the life and contributions of great Composers of yester years and modern period.

SYLLABUS

UNIT – I (5 hours)

Historical Study of the following:

- Tana
- Gandharava
- Marga,
- Desi
- Prabandha
- Alapa- Alapti

UNIT – II (8 hours)

- Raga classification From: Medieval to modern period.

UNIT – III (8 hours)

Patronage of Music in Post independent India

- Sangita Sabha
- Mass Media
- Government Organisations
- Corporate

UNIT – IV (4 hours)

Biographies -Vocal: -

- Gopal Nayak
- Mysore Vasudevachar
- Vinakuppier
- Chengalvaraya Shastri
- Kavi Kunjara Bharati
- Ghanam Krishna Iyer
- Subbaraya Shastri
- Papanasam Sivan

Biographies - Violin: -

- Dwaram Venkataswami Naidu
- Mysore Chowdiah and any Six biographies from the list given for Vocal.

Biographies -Veena: -

- Veena Seshanna
- Aatoor Krishna Pisharoti
- Kaaraikudi Sambasivayyar and any six biographies from the list given for Vocal.

UNIT – V (8 Hours)

- Notation of Ata tala Varnam in 2-degrees of speed.

UNIT – VI (06 Hours)

- Raga Lakshana of prescribed ragas.

UNIT – VII (06 Hours)

- Introduction to musical forms figuring in Abhyasa Ganam

Suggestive readings

- Prajnanananda, Swami, (1963), A Historical Study of Indian Music, Calcutta, Ramakrishna Vedanta Muth, Page No 5 to 73
- Bhagyalekshmy, Dr. S. (1999), LakshanaGranthas in Music, Madras, CBH Publications, Page 21 to 14
- Bhathkhande, V.N. (1984), Music Systems in India: A comparative Study of some of the leading Music Systems of the 15th, 16th, 17th and 18th Centuries, New Delhi, S.Lal and co. Page 13 to 101
- Sambamoorthy, P. Prof. (1959), Great Musicians, Madras, Indian Book Publishing House Page No. 1 to 20, 77 to 86
- Music Journals – Sangeet Natak Academy.
- Journal of Music Academy, Madras.

DSC- 11: Stage Performance(4)

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		L	T	P		
Stage Performance - 4 **(402)**	**4**	**0**	**0**	**4**	• Class XII Pass • Must have learnt for a minimum of 4 years at an established music institute or a reputed Guru	Must have studied the following papers •General Musicology (Sem- I) • Theory of Indian Music (Sem – II) • Ragas, Talas of Semester. -I,II & III OR •Understanding of the basic concepts such as Shruti, Swara, Raga, Tala etc and their associated components • Knowledge of notation systems • Knowledge of the 10 Mela And ragas

Learning Objectives

- The main focus of this course is to develop an aptitude towards the practical ability in singing the compositions of the prominent composers of Karnatak Music and develop an understanding about the concert pattern of it.

Learning outcomes

- Ability to demonstrate various musical forms and creative aspects of ragas from the prescribed syllabus

SYLLABUS

Prescribed Ragas

- **Todi**
- **Dhanyasi**
- **Varali**
- **Natakuranji**
- **Hindolam**
- **Darbar**
- **Nadhanamakriya**
- **Malayamarutam**
- **Athana**

UNIT – I (20 Hours)

- One Javali and One Tillana

UNIT – II (20 Hours)

- Two Advanced Varnam in Ata tala (in two degrees of speed)

UNIT – III (20 hours)

- 2 kritis of Muthuswamy Dikshitar (Including one Panchalinga Kriti)

UNIT - IV (20 Hours)

- One kriti each of Shyama Shastry, Subbraya Shastri, Papanasam Sivan, Gopala krishna Bharati, Patnam Subramanya Iyer and Swati Tirunal.

UNIT – V (20 Hours)

- 2 Tyagarajakritis (including one Pancharathnam)

UNIT – VI (20 hours)

- Brief Alapana of Bhairavi, Bilahari, Saveri , Kambhoji, Madhyamavati Suddha Dhanyasi ,Purvi Kalyani and Kalpana Swaras in two speeds.

Suggestive readings

- PanchapakesaIyer, A.S. (2002), Ganamrutha Varna Malika, Chennai, Karnatic Music Book Centre
- Kriti Mani Malai - T K Govinda Rao
- Kriti Mani Malai - Ranga Ramanuja Iyenkar

DSC- 12: Ragas, Talas and their Application – (4)

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		L	T	P		
Ragas, Talas and their Application-(4) **(403)**	**4**	**0**	**0**	**4**	• Class XII Pass • Must have learnt for a minimum of 4 years at an established music institute or a reputed Guru	Must have studied the following papers •General Musicology (Sem- I) • Theory of Indian Music (Sem – II) • Ragas, Talas of Sem.-I, II & III OR •Understanding of the basic concepts such as Shruti, Swara, Raga, Tala etc and their associated components • Knowledge of notation systems • Knowledge of the 10 Mela & ragas

Learning Objectives

- This course aims at practically elaborate and illustrate the compositions mentioned in the syllabus and orally demonstrate the creativity and know-how of the ragas and details about the compositions

Learning outcomes

- Ability to improvise and demonstrate characteristic features of ragas through various musical forms

SYLLABUS

Prescribed Ragas

- **Todi**
- **Dhanyasi**
- **Varali**
- **Natakuranji**
- **Hindolam**
- **Darbar**
- **Nadhanamakriya**
- **Malayamarutam**

- **Athana**

UNIT – I (20 Hours)

- One Javali and One Tillana

UNIT – II (20 Hours)

- Two Advanced Varnam in Ata tala (in two degrees of speed)

UNIT – III (20 hours)

- 2 kritis of Muthuswamy Dikshitar (Including one Panchalinga Kriti)

UNIT - IV (20 Hours)

- One kriti each of Shyama Shastry, Subbraya Shastri, Papanasam Sivan, Gopala krishna Bharati, Patnam Subramanya Iyer and Swati Tirunal.

UNIT – V (20 Hours)

- 2 Tyagaraja kritis (including one Pancharathnam)

UNIT – VI (20 hours)

- Brief Alapana of Bhairavi, Bilahari, Saveri , Kambhoji, Madhyamavati Suddha Dhanyasi, Purvi Kalyani and Kalpana Swaras in two speeds.

Suggestive readings

- Panchapakesalyer, A.S. (2002), Ganamrutha Varna Malika, Chennai, Karnatic Music Book Centre
- Kriti Mani Malai - T K Govinda Rao
- Kriti Mani Malai - Ranga Ramanuja Iyenkar

Course - III K V -409 DSE – II Fundamental Knowledge Of Karnatak Music

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical		
Fundamental Knowledge of Karnatak Music	**4**	**1**	**0**	**3**	**Class XII Pass**	**Basic understanding about Ragas, Talas and Musical Forms of Karnataka Music**

Course Objective

- The focus of the course is to establish a better understanding of basic theory of the Karnatak Music
- To study the basic concept of opted musical instrument's basic structure and tuning

Course Learning Outcome

- Gain knowledge of the basic terminologies of Karnatak music as well as tuning and structure of respective musical instrument.
- Ability to demonstrate elementary concepts of mela and raga classification
- The student understands the characteristics of selected Raga of the unit
- Gain basic knowledge of musical forms – Geetam, Varnam and kriti

Content

Unit 1 Knowledge about Swara (2 Hours)

- Nada and Its Varieties
- Sruti and its varieties
- Shodasa Swara

Unit 2 Elementary knowledge about terms (2 Hours)

- Raga Clasification
- Janya -Janaka
- Varjya - Vakra

Unit 3 Basic elements of Tala (3 Hours)

- Anga
- Shadanga
- Jati
- Sapta suladi talas

Unit 4 Basic knowledge about the musical forms (3 Hours)

- Geetam
- Varnam
- Kriti

Unit 5 Ragalakshana of Ragas prescribed in Elective-I (3 Hours)

- Kalyani
- Kambhoji
- Shuddha dhanyasi

Unit 6 Basic knowledge of parts structure of Tambura (2 Hours)

References

Sambamoorthy, P. Prof. (Vol 3, 1971), A dictionary of South Indian Music, Madras, Indian Music Publishing House

Sambamoorthy, P. Prof. (Vol. 1, 1983), South Indian Music, Madras, Indian Music Publishing House,

Sambamoorthy, P. Prof. (Vol. 2, 1982), South Indian Music, Madras, Indian Music Publishing House,

Sambamoorthy, P. Prof. (Vol. 3, 1964), South Indian Music, Madras, Indian Music Publishing House,

Bhagyalekshmy, Dr. S. (1990), Ragas in Carnatic Music, Trivandrum, CBH Publications

Kuppuswamy, Gowry Dr. (1990), Textbook of Comparative Music, Trivandrum, CBH publications

Course KV 410 DSE – II Stage Performance and Practical Assessment

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical		
KV 510 Stage Performance & Practical Assessment	**6**	**4**	**0**	**2**	**Class XII Pass**	**Basic understanding about Ragas, Talas and Musical Forms of Karnataka Music**

Learning Objective

- The main focus is to study the simple musical forms and Talas
- To study the concept of rendering /bowing musical exercises in various speed

Learning Outcome

- Ability to demonstrate the seven basic talas through Alankaras and geetams.
- Gain knowledge of ragas and structures of musical forms through kriti and varnam

Contents:

Unit 1: (20 Hours)

Alankaras in two speeds

- Dhruva
- Mathya
- Jhampa
- Ata

Unit 2: (20 Hours)

Alankaras (any two) to be rendered in the Ragas

- Mohana
- Kalyani

Unit 3: (20 Hours)

- Any 2 kritis

Unit 4: (20 Hours)

- One simple Varnam.

Unit 5: (10 Hours)

- Knowledge of Tuning Tambura

References

- Panchapakesa Iyer, A.S. (2002), Ganamrutha Bodhini , Chennai, Karnatic Music Book Centre
- Panchapakesa Iyer, A.S. (2002), Ganamrutha Varna Malika, Chennai, Karnatic Music Book Centre
- Kriti Mani Malai - T K Govinda Rao
- Kriti Mani Malai - Ranga Ramanuja Iyengar

INDEX

Department of Music

B A (Hons.) III Music-Karnatak Music (Vocal/Veena/ Violin)

Semester- V

S. No.	Contents	Page No.
1	**DSCs-** 1. Indian Music - DSC- 13 2. Stage Performance (5) – DSC-14 3. Ragas, Talas and their Application – DSC-15	13-18
2	**Pool of Discipline Specific Electives (DSEs)** 1. Fundamental Knowledge of Karnatak Music 2. Stage Performance & Practical Assessment	19-21

B.A. (Hons.) III
Karnatak Music Vocal/Instrumental (Veena/Violin)
Syllabus for DSC Papers

SEMESTER – V

DSC- 13: Course 501 (Theory-5): Indian Music

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (If any)
		L	T	P		
Indian Music)	4	3	1	0	• Class XII Pass • Must have learnt for a minimum of 4 years at an established music institute or from a reputed guru	Must have studied the following papers • General Musicology (Sem- I) • Theory of Indian Music (Sem – II) • Historical Study of Indian Music (Sem-III) • Theory of Indian Music II (Sem- IV) OR • Understanding of the basic concepts such as Shruti, Swara, Raga, Tala etc and their associated components • Knowledge of the notation system *Ragas and Composition covered in Sem- I, II, III, IV

Course Objective

- The main focus of this unit is to create an in-depth knowledge about the everlasting history of Indian Music, its technical terms, old texts and biographies. It also deals with notation of the compositions and imbibes the basic concepts of Indian notation system.

Course Learning Outcome

- Ability to apply the subject knowledge and build up the practical aspects.
- Gain knowledge of the characteristic features of prescribed ragas and Life and Contributions of composers of different streams of classical music.
- Develop the knowledge of construction and playing technique of Percussion Instruments.

Contents

Unit 1 (8 Hours)

- Notation of Kritis in Adi (Single Kalai) and Roopaka talas.

Unit 2 (4 Hours)

- Raga Lakshanas of the prescribed ragas.

Unit 3 (4 Hours)

- Musical forms figuring in Sabha Gana.

Unit 4 (8 Hours)

- Detailed study of forms in Manodharma Sangita

Unit 5 (8 Hours)

- Life and contribution of Bach, Beethoven, Mozart, Tirupati Narayana Swamy, Pattabhiramayya, Mysore Sadasiva Rao, Parur Sundaram Iyer, M A Kalyanakrishna Bhagavatar.

Unit 6 (8 Hours)

- Construction and playing technique of Mridangam & Playing techniques of Upa Pakka Vadya.

Unit 7(5 Hours)

- Kacheri Dharma

References

- Bhagya Lakshmi, Dr. S. (1990), Ragas in Carnatic Music, Trivandrum, CBH Publications, Page no. 82 to 365
- Subba Rao, B. (Vol 1, 1956) Raga Nidhi, Poona, Pandit Vinayakrao Patwardhan
- Subba Rao, B. (Vol 2, 1993) Raga Nidhi, Madras, The Music Academy
- Subba Rao, B. (Vol 3, 1993) Raga Nidhi, Madras, The Music Academy
- Subba Rao, B. (Vol 4, 1993) Raga Nidhi, Madras, The Music Academy
- South Indian Music Books-III- Prof. P. Samba Moorthy, Page no. 126 to 224
- South Indian Music, Book-IV , Prof. P. Samba Moorthy -Page NO. 1 to 65, 310 to 322.
- Great Musicians- Page 18 to 72
- Bharatheeya Sangeet Vadya- Dr. Lalmani Mishra Page 52-142
- An Introduction to Indian Music B.C. Deva 47 to 58

DSC- 14: Course- 502. (Practical- 9): Stage Performance (5)

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		L	T	P		
Stage Performance - 5 **(502)**	**4**	**0**	**0**	**4**	• Class XII Pass • Must have learnt for a minimum of 4 years at an established music institute or a reputed Guru	Must have studied the following papers •General Musicology (Sem- I) • Theory of Indian Music (Sem – II) • Ragas, Talas of Sem.-I, II, III & IV OR •Understanding of the basic concepts such as Shruti, Swara, Raga, Tala etc and their associated components • Knowledge of notation systems • Knowledge of the 10 Mela And ragas

Course Objective

- The main focus of this course is to develop an aptitude towards the practical ability in singing the compositions of the prominent composers of Karnatak Music and develop an understanding about the concert pattern of it.

Course Learning Outcome

- Ability to demonstrate the practical nuances inherent in compositions of prominent composers.
- Developing the competency at the performance level.

Contents

Unit -1 (24 Hours)

- 2 Pancharathnams,
- 2 kritis of Tyagaraja
- 2 Kritis of Muttuswamy Dikshitar
- 1 Kriti of Shyama Sastry
- 1 Kriti of Swati Tirunal
- 1 Kshetrajna Padam.

Unit -2 (24 Hours)

- Ragalapana – Niraval – and Kalpana Swaram for major kritis and ragas.

Unit- 3 (30 Hours)

- Ragam Tanam Pallavi in Adi, Khanta Triputa, Jhampa tala in the following ragas:
- Sankarabharanam
- Pantuvarali
- Bilahari
- Kalyani
- Mohanam
- Bhairavi

Unit - 4 (20 Hours)

- Practical understanding of playing techniques of Mridangam & Violin as accompanying instruments.

Unit 5 (22 Hours)

- Ragas to be covered for composition:
- Sourashtram
- Devagandhari
- Surati
- Kharaharapriya
- Sahana
- Nilambari
- Sindhubhairavi
- Desh
- Simhendra Madhyam
- Kaapi

References

- Panchapakesa Iyer, A.S. (2002), Ganamrutha Varna Malika, Chennai, Karnatic Music Book Centre • Kriti Mani Malai - T K Govinda Rao
- Kriti Mani Malai - Ranga Ramanuja Iyenkar

DSC- 15: Course -503, (Practical – 10)
Ragas, Talas and their Application

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		L	T	P		
Ragas, Talas and their Application **(503)**	**4**	**0**	**0**	**4**	• Class XII Pass • Must have learnt for a minimum of 4 years at an established music institute or a reputed Guru	Must have studied the following papers •General Musicology (Sem- I) • Theory of Indian Music (Sem – II) • Ragas, Talas of Sem.-I, II, III, IV OR •Understanding of the basic concepts such as Shruti, Swara, Raga, Tala etc and their associated components • Knowledge of notation systems • Knowledge of the 10 Mela & ragas

Course Objective

- The main focus of this course is to develop an aptitude towards the practical ability in singing the compositions of the prominent composers of Karnatak Music and develop an understanding about the concert pattern of it.

Course Learning Outcome

- Ability to demonstrate the practical nuances inherent in compositions of prominent composers.
- Developing the competency at the performance level.

Contents

Unit 1 (24 Hours)

- 2 Pancharathnams
- 2 kritis of Tyagaraja
- 2 Kritis of Muttuswamy Dikshitar
- 1 Kriti of Shyama Sastry
- 1 Kriti of Swati Tirunal
- 1 Kshetrajna Padam.

Unit 2 (24 Hours)

- Ragalapana – Niraval – and Kalpanasvaram for kritis in major ragas.

Unit 3 (30 Hours)

- Ragam Tanam Pallavi in Adi, Khanta triputa, Jhampa tala in the following ragas:
- Sankarabharanam
- Pantuvarali
- Bilahari
- Kalyani
- Mohanam
- Bhairavi

Unit 4 (20 Hours)

- Practical understanding of playing techniques of Mridangam & Violin as accompanying instruments.

Unit 5 (22 Hours)

- Ragas to be covered for composition:
- Sourashtram
- Devagandhari
- Surati
- Kharaharapriya
- Sahana
- Nilambari
- Sindhubhairavi
- Desh
- Simhendra Madhyam
- Kaapi

References

- Panchapakesa Iyer, A.S. (2002), Ganamrutha Varna Malika, Chennai, Karnatic Music Book Centre
- Kriti Mani Malai - T K Govinda Rao
- Kriti Mani Malai - Ranga Ramanuja Iyenkar

Semester -V - DSE -III
Course - KV -509 Theory - Fundamental Knowledge of Karnatak Music

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical		
K V -509 Fundamental Knowledge of Karnatak Music	4	1	0	3	Class XII Pass	Basic understanding about Ragas, Talas and Musical Forms of Karnatak Music

Course Objective

- Main Objective The main focus of the course is to establish a better understanding of the Karnatak Music to the students of other music disciplines. Therefore, the course is more practically inclined along with relevant theory for achieving better understanding. This helps the students of other disciplines to acquire theoretical and practical skills and idea about this stream from the foundation level, thus giving them a holistic approach in Karnatak Music Learning.
- The focus of the course is to establish a better understanding of basic theory of the Karnatak Music
- To study basic concept of Karnatak music notation Course
- To study the basic concept of the tala of Karnatak Music and musical forms

Course Outcome

- Students will gain knowledge of the basic terminologies of Karnatak music and its importance in the musical rendition
- Ability to demonstrate elementary concepts of mela and raga classification
- The student will understand the characteristics of selected Raga of the unit and to notate musical form Geetam
- Students will able to demonstrate the preliminary lessons of Karnatak Music
- The student will understand the simple talas through Alankaras and Geetams.

Syllabus

Unit: I -Technical Terms (3 Hours)

- Gamaka
- Sanchara
- Kalapramana
- Raga Alapana
- Kalpanaswara

Unit: -II Basic knowledge of Lakshana Granthas (3 Hours)

- Sangita Sara
- Swaramela Kalanidhi

Unit: III – Brief knowledge of Musical Forms (3 Hours)

- Tana Varnam

- Pada Varnam
- Daru Varnam

Unit: IV – Brief knowledge of 72 mela scheme (3 Hours)
- Katapayadi Scheme
- Bhuta Samkhya

Unit: V Brief life Sketch and contribution (3 Hours)
- Purandara dasa
- Annamacharya

References

- Sambamoorthy, P. Prof. (Vol 3, 1971), A dictionary of South Indian Music, Madras,
- Indian Music Publishing House
- Sambamoorthy, P. Prof. (Vol. 1, 1983), South Indian Music, Madras, Indian Music
- Publishing House,
- Sambamoorthy, P. Prof. (Vol. 2, 1982), South Indian Music, Madras, Indian Music
- Publishing House,
- Sambamoorthy, P. Prof. (Vol. 3, 1964), South Indian Music, Madras, Indian Music
- Publishing House,
- Bhagyalekshmy, Dr. S. (1990), Ragas in Carnatic Music, Trivandrum, CBH Publications
- Kuppuswamy, Gowry Dr. (1990), Textbook of Comparative Music, Trivandrum, CBH publications

Course KV- 510 DSE – III: Stage Performance and Practical Assessment

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical		
KV 510 Stage Performance & Practical Assessment	**4**	**0**	**0**	**4**	**Class XII Pass**	**Basic understanding about Ragas, Talas and Musical Forms of Karnataka Music**

Learning Objective
- The main focus is to study the simple musical forms and Talas
- To study the concept of rendering /bowing musical exercises in various speed

Learning Outcome
- Ability to demonstrate the seven basic talas through Alankaras and geetams.
- Gain knowledge of ragas and structures of musical forms through kriti and varnam

Contents

Unit : I **(20 Hours)**

- **Ability to sing Learnt Gitams in Three Speeds**

Unit : II **(20 Hours)**

- **One Purandara Dasa kriti**
- **One Annamacharya Keertana**

Unit : III **(20 Hours)**

- **Any one Tana Varnam**

Unit : IV **(20 Hours)**

- **Two Krities in any prescribed raga**

Unit : V **(10 Hours)**

- **Ability to Tune tambura**

Ragas Prescribed:

- **Hindolam**
- **Bilahari**
- **Hamsadwani**
- **Sriranjani**
- **Pantuvarali**

References

• Panchapakesa Iyer, A.S. (2002), Ganamrutha Bodhini , Chennai, Karnatic Music Book Centre
• Panchapakesa Iyer, A.S. (2002), Ganamrutha Varna Malika, Chennai, Karnatic Music Book Centre
• Kriti Mani Malai - T K Govinda Rao
• Kriti Mani Malai - Ranga Ramanuja Iyengar

INDEX

DEPARTMENT OF MUSIC

SEMESTER- VI

B.A. (Hons.) III

Karnatak Music Vocal/Instrumental (Veena/Violin)

S.NO.	CONTENT	PAGE NO.
1	**B.A. (Hons.) III** **Karnatak Music Vocal/Instrumental (Veena/Violin) - DSC** 1. Fundamental knowledge of Hindustani Music 2. Stage Performance 3. Ragas, Talas and their Application	23-28
2	**Pool of DSE** 1. **Fundamental Knowledge of Karnatak Music (4)**	29-31

SEMESTER – VI

DSC- 16: Course 601 (Theory-6): Fundamental Knowledge of Hindustani Music

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		L	T	P		
Fundamental knowledge of Hindustani Music 601	4	3	1	0	• Class XII Pass • Must have learnt for a minimum of 5 years at an established music institute or from a reputed guru	Must have studied the following papers • General Musicology (Sem- I) • Theory of Indian Music (Sem – II) • Historical Study of Indian Music (Sem-III) • Indian Music (Sem – V) OR • Understanding of the basic concepts such as Shruti, Swara, Raga, Tala etc and their associated components • Knowledge of the notation system *Ragas and Composition covered in Sem- I, II, III, IV and V

Learning Objectives:

- The main focus of this unit is to create an in-depth knowledge about the basic principles of Hindustani music its technical terms, old texts and biographies.
- It also deals with notation of the compositions and imbibes the basic concepts of Indian notation system.

Learning Outcomes:

- Understanding the important concepts, musical instruments and prominent composers of Hindustani music.

Syllabus:

Unit I (4 Hours)

- A short history of Hindustani Music

Unit II (4 Hours)

- The Swaras of Hindustani Music.

Unit III (4 Hours)

- The important “THAT‟s of Hindustani Music

Unit IV (8 Hours)

- Ten leading Ragas of Hindustani Music.

Unit V (5 Hours)

- Leading Talas of Hindustani Music

Unit VI (8 Hours)

- The important Musical forms of Hindustani Music

Unit VII (4 Hours)

- Leading concert Musical Instruments.

Unit VIII (8 Hours)

- Life and contribution of Swami Haridas, Tansen, Amir Khusrau, V N Bhatkhande, Gopal Naik, and Vishnu Digambar Paluskar.

Suggestive Readings:

• Bhatkhande, V.N. (1985), A short historical survey of Music of Upper India, Baroda, Indian Musicological Society, Pages 20 to 51
• Bhathkhande, V.N. (1984), Music Systems in India: A comparative Study of some of the leading Music Systems of the 15th, 16th, 17th and 18th Centuries, New Delhi, S. Lal and co. Complete Book
• Mishra, Lalmani Dr. (2002), Bhartheey Sangeet Vadya, Delhi, Bhartiya Gyaan Peeth (Hindi Version) Page 353 to 379
• Sharma, Swatantra Dr. (1996), Fundamentals of Hindustani Music, Delhi, Pratibha Prakashan, Page 16 to 307
• Ahmad, Najma Perveen (1984), Hindustani Music: A Study of its development in 17th and 18thCenturies, New Delhi, Manohar Publications Complete Book
• Gautam, M. R. (1980), Musical Heritage of India, New Delhi, Abhinav Publications Complete Book

DSC- 17: Course- 602. (Practical- 11): Stage Performance (6)

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		L	T	P		
Stage Performance **(602)**	**4**	**0**	**0**	**4**	• Class XII Pass • Must have learnt for a minimum of 5 years at an established music institute or a reputed Guru	Must have studied the following papers •General Musicology (Sem- I) • Theory of Indian Music (Sem – II) • History of Indian music (Sem – III) • Indian Music (Sem – V) OR •Understanding of the basic concepts such as Shruti, Swara, Raga, Tala etc and their associated components • Ragas, Talas of Sem.-I II, III, IV & V • Knowledge of notation systems • Knowledge of the 10 Mela And ragas

Learning Objectives:

- The main focus of this course is to develop an aptitude towards the practical ability in singing the compositions of the prominent composers of Karnatak Music and develop an understanding about the concert pattern of it.

Learning Outcomes:

• Ability to demonstrate the practical nuances inherent in compositions of prominent composers.
• Developing the competency at the performance level.

Syllabus:

Unit I (20 Hours)

- One Pancharatnam,
- One Padavarnam.
- Two Kritis of Tyagaraja,
- One Kriti of Muthuswamy Dikshitar,

- Two kritis of Swati Tirunal
- One Kriti of any other composer.

Unit II (30 Hours)

- Brief exposition of prescribed ragas from Unit 3.
- Ragalapana – Niraval-Kalpanaswaras in general.

Unit III (42 Hours)

- Ragam – Tanam-Pallavi in Adi, Khanda Triputa and Jhampa talas
- Ragas like Kalyani, Kharahara Priya, Shanmukhapriya and Mohanam.

Unit IV (28 Hours)

Ragas to be covered for Composition:

- Asaveri,
- Mayamalavagoula,
- Valaji,
- Poornachandrika,
- Yadukulakamboji,
- Revagupti,
- Poorvi Kalyani,
- Senchurutti,

Suggestive Readings:

• Panchapakesa Iyer, A.S. (2002), Ganamrutha Varna Malika, Chennai, Karnatic Music Book Centre
• Kriti Mani Malai - T K Govinda Rao
• Kriti Mani Malai - Ranga Ramanuja Iyenkar.

DSC- 18: Course -603, (Practical – 12)
Ragas, Talas and their Application

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		L	T	P		
Ragas, Talas and their Application **(603)**	**4**	**0**	**0**	**4**	• Class XII Pass • Must have learnt for a minimum of 5 years at an established music institute or a reputed Guru	Must have studied the following papers •General Musicology (Sem- I) • Theory of Indian Music (Sem – II) • Ragas, Talas of Sem.-I & Sem.- II OR •Understanding of the basic concepts such as Shruti, Swara, Raga, Tala etc and their associated components • Knowledge of notation systems • Knowledge of the 10 Mela & ragas

Learning Objectives:

- The main focus of this course is to develop an aptitude towards the practical ability in singing the compositions of the prominent composers of Karnatak Music and develop an understanding about the concert pattern of it.

Learning Outcomes:

• Ability to demonstrate the practical nuances inherent in compositions of prominent composers.
• Developing the competency at the performance level.

Content

Unit I (20 Hours)

- One Pancharatnam,
- One Padavarnam.
- Two Kritis of Tyagaraja,
- One Kriti of Muthuswamy Dikshitar,

- Two kritis of Swati Tirunal
- One Kriti of any other composer.

Unit II (30 Hours)

- Brief exposition of prescribed ragas from unit 3.
- Ragalapana – Niraval-Kalpanaswaras in general.

Unit III (48 Hours)

- Ragam – Tanam-Pallavi in Adi, Khanda Triputa and Jhampa talas
- Ragas like Kalyani, Kharahara Priya, Shanmukhapriya and Mohanam.

Unit IV (22 Hours)

Ragas to be covered for Composition:

- Asaveri,
- Mayamalavagoula,
- Valaji,
- Poornachandrika,
- Yadukulakamboji,
- Revagupti,
- Poorvi Kalyani,
- Senchurutti,

Suggestive Readings:

- Panchapakesa Iyer, A.S. (2002), Ganamruta Varna Malika, Chennai, Karnatic Music Book Centre
- Kriti Mani Malai - T K Govinda Rao
- Kriti Mani Malai - Ranga Ramanuja Iyenkar.

Semester -VI

DSE - IV - Fundamental Knowledge of Karnatak Music (4)

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical		
Fundamental Knowledge of Karnatak Music (4)	4	1	0	3	Class XII Pass	Basic understanding about Ragas, Talas and Musical Forms of Karnataka Music

Learning Objectives:

- The main focus of the course is to establish a better understanding of the Karnatak Music to the students of other music disciplines. Therefore, the course is more practically inclined along with relevant theory for achieving better understanding. This helps the students of other disciplines to acquire theoretical and practical skills and idea about this stream from the foundation level, thus giving them a holistic approach in Karnatak Music Learning.
- To study basic concept of Karnatak music notation Course
- To study the basic concept of the tala of Karnatak Music and musical forms
- The main focus is to study the simple musical forms and Talas
- To study the concept of rendering /bowing musical exercises in various speed

Learning Outcomes:

- Students will gain knowledge of the basic terminologies of Karnatak music and its importance in the musical rendition
- Ability to demonstrate elementary concepts of mela and raga classification
- The student will understand the characteristics of selected Raga of the unit and to notate musical form Geetam
- Students will able to demonstrate the preliminary lessons of Karnatak Music
- The student will understand the simple talas through Alankaras and Geetams.
- Ability to give a brief shade of ragas through musical forms- Geetam and Varnam
- Ability to demonstrate the seven basic talas through Alankaras and geetams.

- Gain knowledge of ragas and structures of musical forms through kriti and varnam

Syllabus

Unit : I Technical Terms (3 Hours)

- Manodharma Sangitam
- Raga Alapana
- Kalpanaswaram

Unit: II Basic knowledge of Lakshana Granthas (2 Hours)

- Chaturdanti Prakashika
- Sangita Sampradaya Pradarshini

Unit: III Brief knowledge of Musical Forms (3 Hours)

- Kriti - Keertana
- Padam
- Javali

Unit: IV Knowledge of Notation (2 Hours)

- Notate any Kriti
- Notate any Varnam

Unit: V Brief life Sketch and contribution of Trinity (3 Hours)

- Tyagaraja
- Shyama Shastri
- Muttuswamy Dikshitar

Unit: VI Ragalakshana of Prescribed ragas (2 Hours)

Suggestive Readings:

- Sambamoorthy, P. Prof. (Vol 3, 1971), A dictionary of South Indian Music, Madras,
- Indian Music Publishing House
- Sambamoorthy, P. Prof. (Vol. 1, 1983), South Indian Music, Madras, Indian Music
- Publishing House,
- Sambamoorthy, P. Prof. (Vol. 2, 1982), South Indian Music, Madras, Indian Music
- Publishing House,
- Sambamoorthy, P. Prof. (Vol. 3, 1964), South Indian Music, Madras, Indian Music
- Publishing House,
- Bhagyalekshmy, Dr. S. (1990), Ragas in Carnatic Music, Trivandrum, CBH Publications
- Kuppuswamy, Gowry Dr. (1990), Textbook of Comparative Music, Trivandrum, CBH publications

Syllabus:

Unit: I (15 Hours)

- **Ability to sing Varnam in Two Speeds**

Unit: II (25 Hours)

- **One kriti each composed by Tyagaraja, Shyama Shastri and Muttuswami Dikshitar**
- **One Simple Padam**

Unit: III (15 Hours)

- **One Javali**

Unit: IV (25 Hours)

- **Basic Understanding of Ragalapana and Swarakalpana**

Unit : V (10 Hours)

- **Ability to Tune tambura**

Ragas Prescribed:

- **Abhogi**
- **Khamas**
- **Vasantha**
- **Madhyamavati**
- **Bhairavi**

Suggestive Readings:

• Panchapakesa Iyer, A.S. (2002), Ganamrutha Bodhini , Chennai, Karnatic Music Book Centre

• Panchapakesa Iyer, A.S. (2002), Ganamrutha Varna Malika, Chennai, Karnatic Music Book Centre

• Kriti Mani Malai - T K Govinda Rao

• Kriti Mani Malai - Ranga Ramanuja Iyengar

Annexure-3

INDEX

Department of Music

B. A. (Hons.) Percussion Music Tabla/Pakhawaj

Semester- IV

S. No.	Contents	Page No.
1	**DSCs-** 1. History of Indian Tala System - DSC- 10 2. Stage Performance – DSC-11 3. PRACTICAL ASSESSMENT OF TALA – DSC-12	2-9
2	**Pool of Discipline Specific Electives (DSEs)** 1. Notation System 2. Stage Performance	10-14

Discipline Specific Core Course (DSC)

DSC – 10: HISTORY OF INDIAN TALA SYSTEM

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		L	T	P		
History of Indian Tala System (401)	4	3	1	0	• Class XII Pass • Must have learnt for a minimum of 3 years at an established music institute or from a reputed artiste /guru	Must have studied the following papers – • General Terminology (Sem I) • Biographies & Composers of Music (Sem II) • Talas and compositions of Sem I, II & III OR • Must have an understanding of the basic concepts such as Laya, playing techniques,Sound production on Tabla/Pakhawaj Tala & Basic compostions etc and their associated components • Knowledge of the Bhatkhande and Paluskar notation systems • Knowledge of the Kayada,Rela,Tukda,Paran • Knowledge of the Prachalit Tala. • Talas of Sem I, II & III

Course Objective

- Knowledge about the history of Indian Tala system and its findings in the leading Medieval texts.
- Enabling the students to read and write talas in Bhatkhande and Paluskar notation systems.

Course Learning Outcome

- The student studies about the history of Indian Music
- Student studies the texts of ancient scholars of Hindustani music
- Student studies of Tala Notations System
- Student learns to write the practical compositions according to the Notation system
- Student studies about the theoretical aspects of Talas

Theory Contents (45 Hours)

Unit 1 (7 Hours)

Brief history of Indian Tala system.

Unit 2 (7 Hours)

General Introduction of medieval leading texts of music with their references to tala system.

Unit 3 (4 Hours)

Importance of Tala in Hindustani music.

Unit 4 (8 Hours)

Detailed knowledge of Vishnu Narayan Bhatkhande Tala notation systems.

Unit 5 (8 Hours)

Study of Vishnu Digambar Palushkar Tala system.

Unit 6 (2 Hours)

Ability of writing different Layakari in notation system 5/4, 7/4.

Unit 7 (9 Hours)

- Practice of writing of Tabla & Pakhawaj compositions in Bhatkhande notation system in prescribed Talas.
- Notation of compositions in prescribed Talas.

Suggestive reading:

- Mishra Pt. Chhote Lal, Taal Prasoon, Kanishka Publishers, New Delhi.
- Kumar, Dr. Ajay (2010) Pakhawaj Ki Utpatti Vikash Ewam Vadan Shailiyan, Kanishka Publishers
- Chaudhary, Subhadra (2004) Bhartiye Sangeet me Nibaddha, Radha Publication, New Delhi
- Chaudhary, Subhadra (1984) Bhartiye Sangeet me Tala aur Roop Vidhan, Krishna Brothers, Ajmer, R.J
- Kumar, Dr. Ajay, Banaras Gharane Ke Pravartak Pandit Ram Sahai Ji Ki Tabla Vadan Parampra (2022) Kanshika Publishers, Delhi
- Sen, Dr. Arun Kumar, Bhartiye Taalon Ka Shastriye Vivechan, Madhya Pradesh Hindi Granth Academy, Bhopal
- Mishra, Dr. Lal Mani,Bhartiye Sangeet Vadya,Jnanpith, Delhi
- Das, Purushottam (1983), Mridangam Vadan, Sangeet Natak Academy, New Delhi
- Mishra, Pt. Chhote Lal (2004) Taal Prabandh, Kanishka Publications, New Delhi

- Mainkar, Pt.Sudhir, Kala Aur Shastra, Gandharv Mahavidyalaya, Mumbai
- Dandage Pt. Amod, Tabla ke Antarang, Nhairav Prakashan, Kolhapur.

DSC – 11: STAGE PERFORMANCE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		L	T	P		
Stage Performance (402)	4	0	0	4	• Class XII Pass Must have learnt for a minimum of 3 years at an established music institute or from a reputed artiste /guru	Must have studied the following papers – • All units of Stage Performance (Sem I) • All units of Stage Performance (Sem II) • Talas of Sem I, II & III OR • Must have an understanding of the basic concepts such as, Laya, Tala, Bols etc and their associated components • Knowledge of the Bhatkhande and Paluskar notation systems • Knowledge of the Kayadas, Rela, Tukda, Paran etc. • Knowledge of the prescribed talas of Sem I,II&III

Course Objective

- Advanced contents to enrich Solo presentation in Tabla/Pakhawaj performance
- Concept of Chakradar Tihais in Indian Tala system in prescribed Talas

Course Learning Outcome

The student is able to give a detailed practical demonstration of any Tala

Practical Contents (120 Hours)

TABLA

Unit 1 (5 Hours)

- **Prescribed Talas: Teentala, Jhaptal, Ektala, Chautala, Dhamar, Addha, Adachautala & Jata.**

Unit 2 (25 Hours)

- Solo recital of minimum 10 minutes in Teentala with followings: Uthan/Peshkar, Kayada, Baant, Rela, Gat,Tukra, Chakradar &Tihai.

Unit 3 (20 Hours)

- Solo Performance of minimum 10 minutes in Jhaptala with followings: Uthan/Peshkar, Kayada, Rela,Tukra, Chkradar &Tihai.

Unit 4 (10 Hours)

- Paraal ang ka Uthan.

Unit 5 (20 Hours)

- Two Kayada with six Paltas & Tihai.
- One Baant with six palta and Tihai.

Unit 6 (10 Hours)

- One Ada laya Kayada with six Palta &Tihai.

Unit 7 (10 Hours)

- Two Tukda, One Sadharan Chakradar and One Farmaishi Chakradar.

Unit 8 (20 Hours)

- Two Mukhda, Two SadharanTukdas& Two Tihai each in Ada Chautala ,Ektala and Teentala.
- Notation book to be submitted for internal assessment.

Practical Contents (120 Hours)

PAKHAWAJ

Unit 1A (5 Hours)

- **Prescribed Talas : Sultala, Dhamar, Tevra, Chautala, Adachautala, Gajajhampa**

Unit 2A (25 hours)

- Solo recital of minimum 10 mints. in Chautala with Uthan, Rela, Chakradar, Paran and Tihai.

Unit 3A (20 Hours)

- Solo Performance of minimum 10 mints. in Sooltala with Uthan, Rela, Chakradar, Paran and Tihai.

Unit 4A (10 Hours)

- Stuti Paran in Chautala.

Unit 5A (20 Hours)

- Two damdar, Two bedamdar & two simple Tihai in Dhamar Tala.

Unit 6A (10 Hours)

- Rela in Chautala.

Unit 7A (10 Hours)

- Dumkit ka baaj in Chautala.

Unit 8 A (20 Hours)

- Basic knowledge of Pakhawaj tuning.
- Notation book to be submitted for internal assessment.

Suggestive reading:

- Mishra, Pt. Chhote Lal (2006) Tabla Granth, Kanishka Publishers, New Delhi
- Das, Ram Shankar Pagal (1964)Tabla Kaumudi, Ramchandra S Publishers
- Mishra, Pt. Chhote Lal (2006) Taal Prabandh, Kanishka Publishers, New Delhi
- Kumar, Dr. Ajay, Banaras Gharane Ke Pravartak Pandit Ram Sahai Ji Ki Tabla Vadan Parampra (2022) Kanshika Publishers, Delhi
- Das, Ram Shankar Pagal (1976) Mridanga Tabla Prabhakar Bhag I,II, Sangeet Karyalaya, Hathras, U.P
- Mishra, Pt. Chhote Lal (2004) Taal Prasoon, Kanishka Publishers, New Delhi
- Mainkar Pt. Sudhir, Tabala vadan mein nihit Soundarya, Gandharva Mahavidyalaya, Mumbai
- Mainkar, Pt.Sudhir, Kala Aur Shastra, Gandharv Mahavidyalaya, Mumbai
- Dandage Pt. Amod, Tabla ke Antarang, Bhairav Prakashan, Kolhapur.
- Mulgaonkar Pt. Arvind, Tabla, Populer Prakashan, Mumbai
- Kumar, Dr. Ajay, Pakhawaj ki Utpatti, Vikash ewam Vadan Shaileyan (2010), Kanishka Publishers, Delhi

DSC – 12: PRACTICAL ASSESSMENT OF TALA

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		L	T	P		
Practical Assessment of Tala (403)	4	0	0	4	• Class XII Pass Must have learnt for a minimum of 3 years at an established music institute or from a reputed artiste /guru	Must have studied the following papers – • All units of Practical Assesment of Tala (Sem I,II,II) OR • Must have an understanding of the basic concepts such as, Laya, Tala, Bols etc and their associated components • Knowledge of the Bhatkhande and Paluskar notation systems • Knowledge of the Kayadas, Rela, Tukda, Paran etc. • Knowledge of the prescribed talas of Sem I,II&III

*Practical assessment is a viva paper.

Course Objective

- Enabling the students to face the technical and critical questions both in practical and theoretical aspects of Tabla and Pakhawaj
- Most importantly the accompanying aspect of the instrument while accompanying with Vocal and Instrumental compositions is rendered to the students

Course Learning Outcome

- The student is able to demonstrate various aspects of Talas

- Student is also able to differentiate between similar Talas, thereby making a comparative analysis

Practical Contents (120 Hours)

TABLA

Unit 1 (5 Hours)

- **Prescribed Talas: Teentala, Jhaptala, Pancham Sawari, Adachutala, Ektala, Roopak, Dhamar, Chautala, Jata, Tilwada, Keharwa & Dadra**

Unit 2 (30 Hours)

- Ability to perform in Teentala and Jhaptala with various compositions.

Unit 3 (10 Hours)

- Ability to recite padhant compositions in Tali-Khali.

Unit 4 (15 Hours)

- Demonstrate the prescribed Theka with hand beats in different layakari such as Dedhagun & Tigun.

Unit 5 (20 Hours)

- Ability to accompany with Vocal Music: Chhota Khayal, Tarana and Dadra.

Unit 6 (20 Hours)

- Knowledge of accompaniment with (Razakhani Gat and Dhun) Instrumental Music.

Unit 7 (20 Hours)

- Basic knowledge of Tabla tuning.
- Notation book to be submitted for internal assessment.

Practical Contents (120 Hours)

PAKHAWAJ

Unit 1A (5 Hours)

- **Prescribed Tala: Chautala, Dhamar, Sooltala,Tevra, Adachautala, Ektala, Jhaptala, Rupak, Keherwa and Dadra.**

Unit 2A (30 hours)

- Ability to perform in Chautala and Sooltala with various compositions.

Unit 3A (10 Hours)

- Ability to recite Padhant compositions in Tali Khali.

Unit 4A (20 Hours)

- Playing knowledge of Thah Dugun, Tigun & Chaugun laya of the following Talas: Chautala, Dhamar, Sooltala, Tevra, Adachautala, Ektala, Jhaptala, Roopak, Keherwa and Dadra.

Unit 5A (20 Hours)

- Ability to accompany with Dhrupad Dhamar style of Vocal Music.

Unit 6A (10 Hours)

- Accompaniment knowledge of Instrumental Music .

Unit 7A (10 Hours)

- Demonstration of theory units accordingly.

Unit 8A (15 hours)

- Basic knowledge of Pakhawaj tuning.
- Notation book to be submitted for internal assessment.

Note: Students of Percussion Music have to prepare according to the requirements of their respective Units.

Suggestive reading:

- Kumar, Dr. Ajay, Banaras Gharane Ke Pravartak Pandit Ram Sahai Ji Ki Tabla Vadan Parampra (2022) Kanshika Publishers, Delhi
- Singh, Thakur Jaidev (1994),Bhartiye Sangeet ka Itihaas, Sangeet Research Academy, Kolkata
- Karn, Dr. Nageshwar Lal (2001), Kathak Nritya me Tabla Sangati, Kanishka Publishers, New Delhi
- Mishra, Chhote Lal (2006), Tabla Grantha, Kanishka Publishers, New Delhi
- Kumar, Dr. Ajay, Pakhawaj ki Utpatti, Vikash ewam Vadan Shaileyan (2010), Kanishka Publishers, Delhi
- Das, Purushottam (1983), Mridanga Vaadan, Sangeet Natak Academy, New Delhi
- Mainkar Pt. Sudhir, Tabala vadan mein nihit Soundarya, Gandharva Mahavidyalaya, Mumbai
- Mainkar, Pt.Sudhir, Kala Aur Shastra, Gandharv Mahavidyalaya, Mumbai
- Dandage Pt. Amod, Tabla ke Antarang, Bhairav Prakashan, Kolhapur.
- Mulgaonkar Pt. Arvind, Tabla, Populer Prakashan, Mumbai

Syllabus for DSE TABLA

SEMESTER – IV

DSE – 2 : NOTATION SYSTEM

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		L	T	P		
DSE – 2 : Notation System	1	1	0	0	Class XII Pass	Student have studied the following papers – • Theory topics in Sem III • Talas and compostions of Sem III OR • Must have an understanding of the basic concepts such as Laya, Varna Nikas,Tala etc and their associated components • Knowledge of the Bhatkhande and Paluskar notation systems • Knowledge of the nilkas of various varnas. • Compositions and talas of Sem III

Course Objective

The students are taught primarily the techniques and art of playing Tabla in this course. Music being a primary form of Art, is a very specialized subject, which needs specialized training too, especially the Practical, i.e. Tabla playing. Different Talas, finger techniques and compositions are taught in an age-old 'Oral tradition', imbibing this vital element of teaching-learning from the traditional 'Guru-Shishya Parampara', wherein both the teacher and the students sit on the carpeted floor facing each other, and the students repeat all that the teacher plays/ demonstrates practically. The students are encouraged to improvise after learning the basic techniques, be it in the slow elaborations of different Thekas, or in the fast presentation of compositions. The students are taught to keep in mind the aesthetics of both the tala, playing style, clarity of bols and the overall performance in the mind at all times. The students, thus, get trained towards becoming young budding Solo performing artistes and accompanists as well.

Side by side, the theory about the Tabla instrument, different Talas, as also the study of Indian percussion music and its various aspects, in both the historical and the modern context, is also taught, for students to better understand the techniques and musical content that they are learning, and gradually develop a research-oriented mind tuned to asking questions related to any topic. The library of the Department, is well-equipped and there are books for a student to refer for supplementary information.

Course Learning Outcome

- The students of this course get the knowledge of playing the Theka of Jhaptala.
- Students learn about 'Te Te', 'Tirakit' compositions with variations, SadharanTukda, Paran and Tihai in Jhaptala.

- The students develop the ability to play Theka with Thah, Dugun, Tigun and Chougun in Rupak Tala Tala.
- The students learn about the accompaniment with Bhajan.

Course Objective

The students are taught primarily the techniques and art of playing Tabla in this course. Music being a primary form of Art, is a very specialized subject, which needs specialized training too, especially the Practical, i.e. Tabla playing. Different Talas, finger techniques and compositions are taught in an age-old 'Oral tradition', imbibing this vital element of teaching-learning from the traditional 'Guru-Shishya Parampara', wherein both the teacher and the students sit on the carpeted floor facing each other, and the students repeat all that the teacher plays/ demonstrates practically. The students are encouraged to improvise after learning the basic techniques, be it in the slow elaborations of different Thekas, or in the fast presentation of compositions. The students are taught to keep in mind the aesthetics of both the tala, playing style, clarity of bols and the overall performance in the mind at all times. The students, thus, get trained towards becoming young budding Solo performing artistes and accompanists as well.

Course Learning Outcome

- The students of this course get to know the Structure, Tuning, Syllables and playing techniques of Tabla.
- The students get the knowledge of the following technical terms- Laya, Taal, Matra, Theka, Tali, Khali, Vibhag, Sam, Avartan, ,Thah, Dugun, Tigun, Chaugun, Peshkaar, Uthaan, Kayada, Rela, Palta, Mukhda, Tukda, Paran, Tihai.
- The students learn about different talas like Teentala, Ektala, Choutala, Dhamar.
- Students get to learn the notation system given by Pt. V.N. Bhatkhande.
- Students develop the ability to write notations of Theka and composition in prescribed talas with Dugun, Tigun and Chaugun.

Theory Contents (15 Hours)

Unit 1 (2 Hours)

Detailed study of V.N. Bhatkhande Tala Notation System

Unit 2 (2 Hours)

Brief Knowledge of V.D. Palushkar Tala Notation System.

Unit 3 (3 Hours)

Knowledge of the following terms:-

- Thah
- Dugun
- Tigun
- Chaugun
- Peshkaar
- Uthaan

- Kayada
- Rela
- Palta
- Mukhda
- Tukda
- Paran
- Tihai

Unit 4 (4 Hours)

Ability to write the Theka of Teentala, Jhaptala, Ektala, Chautala, Keharva & Dadra with Tala Notation System in different laya.

Unit 5 (2 Hours)

Writing knowledge of Kayada, Palta, Tihai & Chakradar with Tala Notation System in Teentala.

Unit 6 (2 Hours)

- Notation book prepare for compositions writing.

Suggestive Reading :

- Mistry. Dr. Aban E, Pakhawaj our Tabla ke Gharane(2000), Pt. Keki S Jijina,Swar Sadhna Samiti, Mumbai
- Kumar, Dr. Ajay, Banaras Gharane Ke Pravartak Pandit Ram Sahai Ji Ki Tabla Vadan Parampra (2022) Kanshika Publishers, Delhi
- Mishra, Pt. Chhotel Lal,Taal Prasoon (2004) Kanishka Publisher, Delhi
- Shukla, Dr, Yogmaya, Tab'le Ka Udgam Vikas evam Vadan Shailiyan(1984) Delhi Vishwavidyalay Prakashan
- Mishra, Pt. Chhote Lal,Taal Prabandh(2002) Kanishka Publisher, Delhi
- Mishra, Pt. Chhote Lal, Playing Techniques of Tabla: Banaras Gharana Kanishka Publisher, Delhi

DSE – 2 : STAGE PERFORMANCE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		L	T	P		
DSE -2 : Stage Performance	3	0	0	3	Class XII Pass	Student have studied the following papers – • Practical contents in Sem II • Talas and compostions of Sem II OR • Must have an understanding of the basic concepts such as Laya, Varna Nikas,Tala etc and their associated components • Knowledge of the nikas of various varnas. • Knowledge of Kayada, Rela & Tukda • Compositions and talas of Sem III

Course Objective

The students are taught primarily the techniques and art of playing Tabla in this course. Music being a primary form of Art, is a very specialized subject, which needs specialized training too, especially the Practical, i.e. Tabla playing. Different Talas, finger techniques and compositions are taught in an age-old 'Oral tradition', imbibing this vital element of teaching-learning from the traditional 'Guru-Shishya Parampara', wherein both the teacher and the students sit on the carpeted floor facing each other, and the students repeat all that the teacher plays/ demonstrates practically. The students are encouraged to improvise after learning the basic techniques, be it in the slow elaborations of different Thekas, or in the fast presentation of compositions. The students are taught to keep in mind the aesthetics of both the tala, playing style, clarity of bols and the overall performance in the mind at all times. The students, thus, get trained towards becoming young budding Solo performing artistes and accompanists as well.

Side by side, the theory about the Tabla instrument, different Talas, as also the study of Indian percussion music and its various aspects, in both the historical and the modern context, is also taught, for students to better understand the techniques and musical content that they are learning, and gradually develop a research-oriented mind tuned to asking questions related to any topic. The library of the Department, is well-equipped and there are books for a student to refer for supplementary information.

Course Learning Outcome

- The students learn to carry out a research on the life and contribution of various musicians and musicologists and present the collected data and material in the form of a well prepared report/brief dissertation
- The students get to know the approach and process of research, beneficial in M.Phil. and Ph.D. programmes later.

Practical Contents (90 Hours)

Unit 1 (10 Hours)

Prescribed Talas : Teentala, Jhaptala, Ektala, Choutala, Addha, Jhumara, Keharwa & Dadra

Unit 2 (25 Hours)

Ability to Play four Kayada with Palta & Tihai in Teentala.

Unit 3 (15 Hours)

One Tirkita Rela with four Palta and Tihai in Teentala.

Unit 4 (10 Hours)

Two Sadharan Tukra, Two Chakradar Tukra, One Paran Two Tihai One Dumdar & One Bedumdar in Teentala.

Unit 5 (10 Hours)

One Kayada with four Palta and Tihai in Jhaptala.

Unit 6 (10 Hours)

Knowledge of playing the Theka of prescribed Talas in different laya.

Unit 7 (10 Hours)

Ability to play one laggi in Keharva and one in Dadra Tala.

Suggestive Reading :

- Mishra, Pt. Chhotel Lal,Taal Prasoon (2004) Kanishka Publisher, Delhi
- Kumar, Dr. Ajay, Banaras Gharane Ke Pravartak Pandit Ram Sahai Ji Ki Tabla Vadan Parampra (2022) Kanshika Publishers, Delhi
- Shukla, Dr, Yogmaya, Table Ka Udgam Vikas evam Vadan Shailiyan,Delhi Vishwavidyalay Prakashan
- Mishra, Pt. Chhote Lal,Taal Prabandh, Kanishka Publisher, Delhi
- Mishra, Pt. Chhote Lal, Playing Techniques of Tabla: Banaras Gharana, Kanishka Publisher, Delhi
- Das, Purushottam, Mridanga Vadan, Sangeet Natak Akademi, Delhi

INDEX

Department of Music

B. A. (Hons.) Percussion Music Tabla / Pakhawaj

Semester- V

S. No.	Contents	Page No.
1	**DSCs-** 1. GHARANA & STYLE OF PERCUSSION MUSIC - DSC-13 2. Stage Performance (5) – DSC-14 3. Practical Assessment of Tala – DSC-15	16-24
2	**Pool of Discipline Specific Electives (DSEs)** 1. History of Avanaddha Vadyas 2. Stage Performance	25-30

PERCUSSION MUSIC TABLA/PAKHAWAJ

SEMESTER V

DSC – 13: GHARANA & STYLE OF PERCUSSION MUSIC

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		L	T	P		
Gharana & Style of Percussion Music (501)	4	3	1	0	• Class XII Pass • Must have learnt for a minimum of 3 years at an established music institute or from a reputed artiste /guru	Must have studied the following papers – • General Terminology • Histroy of Avanaddha vadyas • Biographies & Composers of Music • Talas and compositions of Sem I, II, III & IV OR • Must have an understanding of the basic concepts such as Laya, playing techniques,Sound production on Tabla/Pakhawaj Tala & Basic compostions etc and their associated components • Knowledge of the Bhatkhande and Paluskar notation systems • Knowledge of the Kayada,Rela,Tukda,Paran • Knowledge of the Prachalit Tala. • Talas of Sem I, II III & IV

Course Objective

- Knowing about the Historical development and evolution of various Gharanas and Paramparas of Tabla/Pakhawaj .
- Knowing about the Contribution and the Biographies of various Stalwarts of Tabla/Pakhawaj .

Course Learning Outcome

- The students learn about the Gharana system of Hindustani music
- The students study development of various Gharana & Paramparas of Tabla & Pakhawaj
- The students learn to write the practical compositions according to the Notation system
- The students study about the theoretical aspects of Talas

Theory Contents (45 Hours)

Unit 1 (5 Hours)

History of Gharana system

Unit 2 (8 Hours)

Historical development of Gharanas of Tabla & Pakhawaj.

Unit 3 (7 Hours)

Playing techniques and their salient features of Gharana of Tabla.& Pakhawaj.

Unit 4 (5 Hours)

Historical development of various paramparas of Pakhawaj.

Unit 5 (5 Hours)

Contribution of Percussion Artists in the field of Percussion Music.

Unit 6 (5 Hours)

Brief study of aesthetics of Tabla/Pakhawaj Gharana system in Hindustani Music.

Unit 7 (5 Hours)

Study of Gharanedar Bandish.

Unit 8 (5 Hours)

- Notation of compositions in prescribed Talas.

Suggestive reading:

- Mishra, Pt. Chhote Lal,(2004) Taal Prabandh, Kanishka Publications, New Delhi
- Kumar, Dr. Ajay, Banaras Gharane Ke Pravartak Pandit Ram Sahai Ji Ki Tabla Vadan Parampra (2022) Kanshika Publishers, Delhi
- Singh, Dr. Prem Narayan (2004) Na Dhin Dhin Na KeJadugar : Pt. Anokhelal Mishra, Kanishka Publishers, New Delhi

- Kumar, Dr. Ajay (2010) Pakhawaj Ki Utpatti Vikash Ewam Vadan Shailiyan, Kanishka Publishers
- Gautam, M.R. (2001)Musical Heritage of India, Munshilal Manoharlal New Delhi
- Shrivastav, Shri Girish Chandra (1996) Taal Kosh, Allahabad Rubi Prakashan
- Chauby, S.K (1984) Sangeet Me Gharane Ki Charcha: Sangeet Gharana Anka : Uttar Pradesh Hindi Sansthan, Lucknow, U.P
- Sharma, Bhagwat Sharan (1959) Hathras Sangeet Karyalaya
- Mainkar Pt. Sudhir, Tabala vadan mein nihit Soundarya, Gandharva Mahavidyalaya, Mumbai
- Mainkar, Pt.Sudhir, Kala Aur Shastra, Gandharv Mahavidyalaya, Mumbai
- Dandage Pt. Amod, Tabla ke Antarang, Bhairav Prakashan, Kolhapur.
- Mulgaonkar Pt. Arvind, Tabla, Populer Prakashan, Mumbai

DSC – 14: STAGE PERFORMANCE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		L	T	P		
Stage Performance (502)	4	0	0	4	• Class XII Pass • Must have learnt for a minimum of 3 years at an established music institute or from a reputed artiste /guru	Must have studied the following papers – • General Terminology (Sem I) • Biographies & Composers of Music (Sem II) • Talas and compositions of Sem I, II, III & IV OR • Must have an understanding of the basic concepts such as Laya, playing techniques,Sound production on Tabla/Pakhawaj Tala & Basic compostions etc and their associated components • Knowledge of the Bhatkhande and Paluskar notation systems • Knowledge of the Kayada,Rela,Tukda,Paran • Knowledge of the Prachalit Tala. • Talas of Sem I, II III & IV

Course Objective

- Enabling the students to present the compact and effective Solo performance balancing both the Technical and Aesthetical aspects of Tabla/Pakhawaj playing.
- Advanced learning of aesthetical accompaniment with Classical and Semi Classical styles of Indian Vocal and Non-percussion Instruments.

Course Learning Outcome

- The students are able to give a practical demonstration of the prescribed Talas with various compositions.
- The students are able to demonstrate various aspects of Talas and their differentiation

Practical Contents (120 Hours)

TABLA

Unit 1 (10 Hours)

- **Prescribed Talas: Teentala,Jhaptal, Ektala, Rupak, Adachutala, Deepchandi, Jata, Tilwarda, Jhumara, Addha**

Unit 2 (25 Hours)

- Solo recital of 10 minutes in Teentala with Peshkar/Uthan, Kayada, Rela, Baant, Gat & Chakradars.

Unit 3 (15Hours)

- Solo performance in Rupak with Peshkar/ Uthan, Kayada, Rela, Tukra, Chakradar for at least 10 minutes.

Unit 4 (10 Hours)

- One Gharanedar Kayada in Teentala.

Unit 5 (10 Hours)

- One Farmaishi Chakradar in Teentala.

Unit 6 (10 Hours)

- One Kamali Chakradar in Teentala.

Unit 7 (10 Hours)

- Two Damdar & Bedamdar Tihai in Rupak.

Unit 8 (10 Hours)

- One Rela of Dhere Dhere in Rupak.

Unit 9 (10 Hours)

- Notation book to be submitted for internal assessment.

Unit 10 (10 Hours)

- Ability to tune own instrument.

Practical Contents (120 Hours)

PAKHAWAJ

Unit 1A (10 Hours)

- **Prescribed Talas: Chautala, Sultala, Dhamar, Tevra**

Unit 2A (40 Hours)

- Ability to perform solo recital in Chautala, Sultala & Dhamar.

Unit 3A (20 Hours)

- Solo performance of 10 minutes in Dhamar with Uthan, Rela, Paran & Chakradars.

Unit 4A (10 Hours)

- Ability to playing compositions (2 each) of different Gharanas in Chautala.

Unit 5A (15 Hours)

- Stuti Paran, improvisation of Theka, Rela and Chakradars in Dhamar.

Unit 6A (15 Hours)

- Ability to tune one's own instrument.

Unit 7A (10 Hours)

- Notation book to be submitted for internal assessment.

Note: Students of Percussion Music have to prepare according to the requirements of their respective Units.

Suggestive Reading :

- Kumar, Dr. Ajay, Pakhawaj ki Utpatti, Vikash ewam Vadan Shaileyan (2010), Kanishka Publishers, Delhi

- Gottlieb.Robert S,Solo Tabla Drumming of North India, Voll- II,(1993)Motilal Banarsi Das Publishers Private Limited, Delhi
- Kumar, Dr. Ajay, Banaras Gharane Ke Pravartak Pandit Ram Sahai Ji Ki Tabla Vadan Parampra (2022) Kanshika Publishers, Delhi
- Taal Anka, Sangeet Karyalya (1997) Hatrash, U.P
- Mishra, Pt. Chhote Lal, Tabla Grantaha(2006) Kanishka Publishers, Delhi
- Aprachalit Kayada, Sangeet Karyalya(1982) Hathras,U.P
- Mainkar Pt. Sudhir, Tabala vadan mein nihit Soundarya, Gandharva Mahavidyalaya, Mumbai
- Mainkar, Pt.Sudhir, Kala Aur Shastra, Gandharv Mahavidyalaya, Mumbai
- Dandage Pt. Amod, Tabla ke Antarang, Bhairav Prakashan, Kolhapur.
- Mulgaonkar Pt. Arvind, Tabla, Populer Prakashan, Mumbai

DSC – 15: PRACTICAL ASSESSMENT OF TALA

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		L	T	P		
Practical Assessment of Tala (503)	4	0	0	4	• Class XII Pass • Must have learnt for a minimum of 3 years at an established music institute or from a reputed artiste /guru	Must have studied the following papers – • General Terminology (Sem I) • Biographies & Composers of Music (Sem II) • Talas and compositions of Sem I, II, III & IV OR • Must have an understanding of the basic concepts such as Laya, playing techniques,Sound production on Tabla/Pakhawaj Tala & Basic compostions etc and their associated components • Knowledge of the Bhatkhande and Paluskar notation systems • Knowledge of the Kayada,Rela,Tukda,Paran • Knowledge of the Prachalit Tala. • Talas of Sem I, II III & IV

Course Objective

- Enabling the students to face the technical and critical questions both in practical and theoretical aspects of Tabla and Pakhawaj
- Most importantly the accompanying aspect of the instrument while accompanying with Vocal and Instrumental compositions is rendered to the students

Course Learning Outcome

- The student is able to demonstrate various aspects of Talas
- Student is also able to differentiate between similar Talas, thereby making a comparative analysis

Practical Contents (120 Hours)

TABLA

Unit 1 (10 Hours)

- **Prescribed Talas : Teentala, Jhaptala, Pancham Sawari, Adachartala, Ektala, Roopak, Dhamar, Chautala, Jata, Tilwada, Keharwa & Dadra**

Unit 2 (40 Hours)

- Ability to perform in Teentala, Jhaptala & Rupak with various compositions.

Unit 3 (10 Hours)

- Ability to padhant compositions in Tali-Khali.

Unit 4 (10 Hours)

- Demonstrate the prescribed Theka with hand beats in different layakaries such as Dedhagun & Tigun.

Unit 5 (10 Hours)

- Ability to accompany with Vocal Music : Chhota Khayal, Tarana, Bhajan & Dadra.

Unit 6 (10 Hours)

- Knowledge of accompaniment with Sitar & Violin.

Unit 7 (10 Hours)

- Accompaniment with light compositions with Laggi-Ladi.

Unit 8 (10 Hours)

- Basic knowledge of Tabla tuning.

Unit 9 (10 Hours)

- Notation book to be submitted for internal assessment.

Practical Contents (120 Hours)

PAKHAWAJ

Unit 1 (10 Hours)

- **Prescribed Tala : Chautala, Dhamar, Sooltala,Tevra, Adachautala, Ektala, Jhaptala, Rupak, Keherwa and Dadra.**

Unit 2 (30 Hours)

- Ability to perform in Chartala and Sooltala with various compositions.

Unit 3 (10 Hours)

- Ability to Padhant compositions in Tali Khali.

Unit 4 (10 Hours)

- Playing knowledge of Thah Dugun, Tigun & Chaugun laya of the following Talas: Chautala, Dhamar, Sooltala, Tevra, Adachautala, Ektala, Jhaptala, Roopak, Keherwa and Dadra.

Unit 5 (10 Hours)

- Ability to play and keep in the hand beats in prescribed Talas.

Unit 6 (10 Hours)

- Accompaniment with vocal compositions :Dhrupad Dhamar,

Unit 7 (10 Hours)

- Accompaniment with Instrumental Drut Gat and Jhala.

Unit 8 (10 Hours)

- Demonstrate theory units accordingly.

Unit 9 (10 Hours)

- Basic knowledge of Pakhawaj tuning.

Unit 10 (10 Hours)

- Notation book to be submitted for internal assessment.

Note : Students of Percussion Music have to prepare according to the requirements of their respective Units.

Suggestive Reading :

- Kumar, Dr. Ajay, Pakhawaj ki Utpatti, Vikash ewam Vadan Shaileyan (2010), Kanishka Publishers, Delhi
- Singh, Thakur Jaidev (1994),Bhartiye Sangeet ka Itihaas, Sangeet Research Academy, Kolkata
- Kumar, Dr. Ajay, Banaras Gharane Ke Pravartak Pandit Ram Sahai Ji Ki Tabla Vadan Parampra (2022) Kanshika Publishers, Delhi
- Karn, Dr. Nageshwar Lal (2001), Kathak Nritya me Tabla Sangati, Kanishka Publishers, New Delhi
- Mishra, Chhote Lal (2006), Tabla Grantha, Kanishka Publishers, New Delhi
- Das, Purushottam (1983), Mridanga Vaadan, Sangeet Natak Academy, New Delhi

PERCUSSION MUSIC TABLA/PAKHAWAJ

Syllabus for DSE TABLA

SEMESTER – V

DSE – 3 : HISTORY OF AVANADDHA VADYAS

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		L	T	P		
DSE-3 : History of Avanaddha Vadyas	1	1	0	0	Class XII Pass	Student have studied the following papers – • Theory topics in Sem III & IV • Talas and compostions of Sem III &IV OR • Must have an understanding of the basic concepts such as Laya, Varna Nikas,Tala etc and their associated components • Knowledge of the Bhatkhande and Paluskar notation systems • Knowledge of the nilkas of various varnas. • Compositions and talas of Sem IV

Course Objective

The students are taught primarily the techniques and art of playing Tabla in this course. Music being a primary form of Art, is a very specialized subject, which needs specialized training too, especially the Practical, i.e. Tabla playing. Different Talas, finger techniques and compositions are taught in an age-old 'Oral tradition', imbibing this vital element of teaching-learning from the traditional 'Guru-Shishya Parampara', wherein both the teacher and the students sit on the carpeted floor facing each other, and the students repeat all that the teacher plays/ demonstrates practically. The students are encouraged to improvise after learning the basic techniques, be it in the slow elaborations of different Thekas, or in the fast presentation of compositions. The students are taught to keep in mind the aesthetics of both the tala, playing style, clarity of bols and the overall performance in the mind at all times. The students, thus, get trained towards becoming young budding Solo performing artistes and accompanists as well.

Side by side, the theory about the Tabla instrument, different Talas, as also the study of Indian percussion music and its various aspects, in both the historical and the modern context, is also taught, for students to better understand the techniques and musical content that they are learning, and gradually develop a research-oriented mind tuned to asking questions related to any topic. The library of the Department, is well-equipped and there are books for a student to refer for supplementary information.

Course Learning Outcome

- The students of this course get the knowledge of playing the Theka of Jhaptala/Sultala.
- Students learn about 'Te Te', 'Tirakit'/'Dhumkit' compositions with variations, SadharanTukda, Paran and Tihai in Jhaptala/Sultala.
- The students develop the ability to play Theka with Thah, Dugun, Tigun and Chougun in Rupak Tala/Tevra Tala.
- The students learn about the accompaniment with Chhota Khayal/Dhrupad and Bhajan.

Course Objective

The students are taught primarily the techniques and art of playing Tabla in this course. Music being a primary form of Art, is a very specialized subject, which needs specialized training too, especially the Practical, i.e. Tabla playing. Different Talas, finger techniques and compositions are taught in an age-old 'Oral tradition', imbibing this vital element of teaching-learning from the traditional 'Guru-Shishya Parampara', wherein both the teacher and the students sit on the carpeted floor facing each other, and the students repeat all that the teacher plays/ demonstrates practically. The students are encouraged to improvise after learning the basic techniques, be it in the slow elaborations of different Thekas, or in the fast presentation of compositions. The students are taught to keep in mind the aesthetics of both the tala, playing style, clarity of bols and the overall performance in the mind at all times. The students, thus, get trained towards becoming young budding Solo performing artistes and accompanists as well.

Course Learning Outcome

- The students of this course get to know the Structure, Tuning, Syllables and playing techniques of Tabla.
- The students get the knowledge of the following technical terms- Laya, Taal, Matra, Theka, Tali, Khali, Vibhag, Sam, Avartan, ,Thah, Dugun, Tigun, Chaugun, Peshkaar, Uthaan, Kayada, Rela, Palta, Mukhda, Tukda, Paran, Tihai.
- The students learn about different talas like Teentala, Ektala, Choutala, Dhamar.
- Students get to learn the notation system given by Pt. V.N. Bhatkhande.
- Students develop the ability to write notations of Theka and composition in prescribed talas with Dugun, Tigun and Chaugun.

Theory Contents (15 Hours)

Unit 1 (2 Hours)

History of Avanaddha vadyas.

Unit 2 (2 Hours)

Origin & development of Tabla.

Unit 3 (2 Hours)

Study of Pushkar & Tripuskar vadya.

Unit 4 (2 Hours)

Study of Pakhawaj, Mridangam, Khol & Naal.

Unit 5 (3 Hours)

Study of following Avanaddha vadyas :-

- Bhumi Dundubhi
- Dundubhi
- Panava
- Dardur
- Karata
- Ghadas

Unit 6 (2 Hours)

Study of making puddi of Avanaddha vadyas.

Unit 7 (2 Hours)

- Notation book prepare for compositions writing.

Suggestive Reading :

- Kumar, Dr. Ajay, Banaras Gharane Ke Pravartak Pandit Ram Sahai Ji Ki Tabla Vadan Parampra (2022) Kanshika Publishers, Delhi
- Mistry. Dr. Aban E, Pakhawaj our Tabla ke Gharane(2000), Pt. Keki S Jijina,Swar Sadhna Samiti, Mumbai
- Mishra, Pt. Chhotel Lal,Taal Prasoon (2004) Kanishka Publisher, Delhi
- Shukla, Dr, Yogmaya, Tab'le Ka Udgam Vikas evam Vadan Shailiyan(1984) Delhi Vishwavidyalay Prakashan
- Mishra, Pt. Chhote Lal,Taal Prabandh(2002) Kanishka Publisher, Delhi
- Mishra, Pt. Chhote Lal, Playing Techniques of Tabla: Banaras Gharana Kanishka Publisher, Delhi

DSE – 3 : STAGE PERFORMANCE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		L	T	P		
DSE-3 : Stage Performance	3	0	0	3	Class XII Pass	Student have studied the following papers – • Practical contents in Sem III&IV • Talas and compostions of Sem III OR • Must have an understanding of the basic concepts such as Laya, Varna Nikas,Tala etc and their associated components • Knowledge of the nikas of various varnas. • Knowledge of Kayada, Rela & Tukda • Compositions and talas of Sem IV

Course Objective

The students are taught primarily the techniques and art of playing Tabla in this course. Music being a primary form of Art, is a very specialized subject, which needs specialized training too, especially the Practical, i.e. Tabla playing. Different Talas, finger techniques and compositions are taught in an age-old 'Oral tradition', imbibing this vital element of teaching-learning from the traditional 'Guru-Shishya Parampara', wherein both the teacher and the students sit on the carpeted floor facing each other, and the students repeat all that the teacher plays/ demonstrates practically. The students are encouraged to improvise after learning the basic techniques, be it in the slow elaborations of different Thekas, or in the fast presentation of compositions. The students are taught to keep in mind the aesthetics of both the tala, playing style, clarity of bols and the overall performance in the mind at all times. The students, thus, get trained towards becoming young budding Solo performing artistes and accompanists as well.

Side by side, the theory about the Tabla instrument, different Talas, as also the study of Indian percussion music and its various aspects, in both the historical and the modern context, is also taught, for students to better understand the techniques and musical content that they are learning, and gradually develop a research-oriented mind tuned to asking questions related to any topic. The library of the Department, is well-equipped and there are books for a student to refer for supplementary information.

Course Learning Outcome

- The students learn to carry out a research on the life and contribution of various musicians and musicologists and present the collected data and material in the form of a well prepared report/brief dissertation
- The students get to know the approach and process of research, beneficial in M.Phil. and Ph.D. programmes later.

Contents

Unit 1 (10 Hours)

Prescribed Talas : Teentala, Jhaptala, Ektala, Choutala, Addha, Jhumara, Dhamar, Keharwa & Dadra

Unit 2 (20 Hours)

Solo recital with following : Kayada, Rela, Tukra, Chakradar, Paran & Tihai in Teentala.

Unit 3 (10 Hours)

Two advance Kayada with four Palta and Tihai in Teentala.

Unit 4 (15 Hours)

One Uthan, Two Sadharan Tukra, Two Chakradar Tukra, One Paran Two Tihai One Dumdar & One Bedumdar in Teentala.

Unit 5 (10 Hours)

Two Kayada with four Palta and Tihai in Jhaptala.

Unit 6 (5 Hours)

One Dhere Dhere Rela with four Palta & Tihai in Jhaptala.

Unit 7 (10 Hours)

One Uthan, Two Sadharan Tukra, Two Chakradar Tukra, Two Tihai One Dumdar & One Bedumdar in Jhaptala.

Unit 8 (5 Hours)

Knowledge of playing the Theka of prescribed Talas in different laya.

Unit 9 (5 Hours)

Ability to accompaniment with Bhajan & Geet.

Suggestive Reading :

- Mishra, Pt. Chhotel Lal,Taal Prasoon (2004) Kanishka Publisher, Delhi
- Kumar, Dr. Ajay, Banaras Gharane Ke Pravartak Pandit Ram Sahai Ji Ki Tabla Vadan Parampra (2022) Kanshika Publishers, Delhi
- Shukla, Dr, Yogmaya, Table Ka Udgam Vikas evam Vadan Shailiyan, Delhi Vishwavidyalay Prakashan
- Mishra, Pt. Chhote Lal,Taal Prabandh, Kanishka Publisher, Delhi

- Mishra, Pt. Chhote Lal, Playing Techniques of Tabla: Banaras Gharana, Kanishka Publisher, Delhi
- Das, Purushottam, Mridanga Vadan, Sangeet Natak Akademi, Delhi

INDEX

DEPARTMENT OF MUSIC

SEMESTER- VI

B.A. (Hons.)

Percussion Music Vocal/Instrumental (Tabla/ Pakhawaj)

S.NO.	CONTENT	PAGE NO.
1	**B.A. (Hons.)** **Percussion Music Vocal/Instrumental (Tabla/ Pakhawaj) - DSC** 1. Study of Indian Tala System & Present Musical Forms 2. Stage Performance 3. Practicle Assessment of Tala 1.	32-40
2	**Pool of DSE** 1. DSE- PERCUSSION TABLA	41-43

PERCUSSION MUSIC TABLA/PAKHAWAJ

Discipline Specific Core Course (DSC)

SEMESTER VI

DSC – 16 : Study of Indian Tala System & Present Musical Forms

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		L	T	P		
Study of Indian Tala System & Present Musical Forms (601)	4	3	1	0	• Class XII Pass • Must have learnt for a minimum of 5 years at an established music institute or from a reputed artiste /guru	Must have studied the following papers – • General Terminology (Sem I) • Biographies & Composers of Music (Sem II) • Talas and compositions of Sem I, II, III & IV OR • Must have an understanding of the basic concepts such as Laya, playing techniques,Sound production on Tabla/Pakhawaj Tala & Basic compostions etc and their associated components • Knowledge of the Bhatkhande and Paluskar notation systems • Knowledge of the Kayada,Rela,Tukda,Paran • Knowledge of the Prachalit Tala. • Talas of Sem I, II III & IV

Learning Objective

- Student is introduced to ancient Margi Deshi tala system
- Critical study of their respective instruments mentioned in ancient texts

- To know how abouts of various popular classical and semiclassical vocal genres such as Dhrupad, Khayal, Hori, Thumri, Ghazal etc
- Elementary knowledge of western staff notation

Learning Outcome

- The student studies about the ancient Tala system
- He learns about the musical forms of Hindustani music
- He learns to write the practical compositions according to the Notation system
- He studies about the theoretical aspects of Talas

Components (45 Hours)

Unit 1 (6 Hours)

Brief introduction of Tala Ke Dus Pran.

Unit 2 (6 Hours)

Brief study of Margi and Deshi Tala Paddhati.

Unit 3 (6 Hours)

Merits and Demerits of Awanaddha Vadak according to ancient

Unit 4 (9 Hours)

Brief knowledge of Dhrupad, Dhamar, Khayal , Hori, Sadra, Thumri, Tappa, Bhajan , Ghazal and qauvali and also the Talas used to accompany these styles.

Unit 5 (6 Hours)

Elementary knowledge of staff notation system.

Unit 6 (6 Hours)

Basic principles of art of accompanying various instrumental and vocal styles.

Unit 7 (6 Hours)

Notation of compositions in prescribed Talas.

Suggestive Reading :

- Mishra, Chhote Lal (2006) Tala Prabandha, Kanishka Publishers, New Delhi
- Brihaspati, Aacharya (1989) Bharat Ka Sangeet Siddhant, Bhraspati Publishers
- Paranjape, Shridhar (1972) Sangeet Bodh, Madhya Pradesh Hindi Granth Academy, Bhopal. M.P

- Kumar, Dr. Ajay, Banaras Gharane Ke Pravartak Pandit Ram Sahai Ji Ki Tabla Vadan Parampra (2022) Kanshika Publishers, Delhi
- Veer, Ramatavar (1980) Theory of Indian Music, Pankaj Publishers, New Delhi
- Thakur, Jaidev Singh (1994) Bhartiya Sangeet ka Itihaas ,Sangeet Research Academy, Kolkata
- Rao, Manohar Bhalachandra Marahte (1991) Taal Vadya Shastra, Sharma Pustak Sadan , Patnkar Bazar, Gwalior
- Mainkar Pt. Sudhir, Tabala vadan mein nihit Soundarya, Gandharva Mahavidyalaya, Mumbai
- Mainkar, Pt.Sudhir, Kala Aur Shastra, Gandharv Mahavidyalaya, Mumbai
- Dandage Pt. Amod, Tabla ke Antarang, Bhairav Prakashan, Kolhapur.
- Mulgaonkar Pt. Arvind, Tabla, Populer Prakashan, Mumbai

DSC – 17 STAGE PERFORMANCE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		L	T	P		
Stage Performance (602)	4	0	0	4	• Class XII Pass • Must have learnt for a minimum of 5 years at an established music institute or from a reputed artiste /guru	Must have studied the following papers – • General Terminology • Biographies & Composers of Music • Talas and compositions of Sem I, II, III IV OR • Must have an understanding of the basic concepts such as Laya, playing techniques,Sound production on Tabla/Pakhawaj Tala & Basic compostions etc and their associated components • Knowledge of the Bhatkhande and Paluskar notation systems • Knowledge of the Kayada,Rela,Tukda,Paran • Knowledge of the Prachalit Tala.

						• Talas of Sem I, II III & IV

Learning Objective

A complete aesthetical tabla/Pakhawaj solo playing with the sound knowledge of different gharans/paramparas thus enabling the students to have a vast and deep view of the rich legacy of the instrument.

- Advanced learning in accompanying the Hindustani Vocal and Instrumental music.This enhances the students skill to face the challenges at his work place too.

Learning Outcome

- The student is able to give a practical demonstration of the prescribed Talas
- He is able to demonstrate various aspects of Talas and their differentiation.

Components (120 Hours)

TABLA

Unit 1 (20 Hours)

- **Prescribed Talas :Teentala, Jhaptala, Ektala, Chautala, Dhamar, Sooltala Deepchandi, Jata, Tilwarda, Jhumara & Tevra.**

Unit 2 (18 Hours)

- Complete aesthetical Tabla solo recital with different Gharanedar Compostions in Teentala for 10 minutes and in Jhaptala and Rupak for 10 minutes.

Unit 3 (18 Hours)

- Solo performance in Ektala with Uthan/Peshkar, Kayada, Rela, Tukra, Chakradar & Tihai.

Unit 4 (10 Hours)

- Darjje ki Gat in Teentala.

Unit 5 (8 Hours)

- Farda in Teentala.

Unit 6 (10 Hours)

- Gat kayada in Teentala.

Unit 6 (10 Hours)

- One Kayada of Takatirakitaka in Ektala.

Unit 7 (10 Hours)

- One Rela of Dhere Dhere in Ektala.

Unit 8 (10 Hours)

- One Farmaishi Chakradar in Ektala.

Unit 9 (8 Hours)

- Knowledge of Tuning of Tabla.

Unit 10 (8 Hours)

- Notation book to be submitted for internal assessment.

PAKHAWAJ

Unit 1 A (20 Hourse)

Prescribed Talas :Chautala, Sooltala, Dhamar, Ektala, Keharwa & Dadra

Unit 2 A (20 Hours)

Complete rendering of solo Pakhawaj for at least 15 minutes in Chautala and 10 minutes in Sooltala / Tevra with following: Uthan, Rela, Stuti & Paran etc.

Unit 3 A (20 Hours)

- Knowledge of accompaniment with Instrumental styles: Instrumental composition of Dhrupad – Dhamar styles.

Unit 4 A (12 Hours)

- Knowledge of accompaniment with vocal styles: Dhrupad, Dhamar.

Unit 5 A (12 Hours)

- Knowledge of talas of Tabla: Jhaptala, Ektala, Keharwa and Dadra.

Unit 6 A (12 Hours)

- Ability to play advance compositions in Chautala and Dhamar.

Unit 7 A (12 Hours)

- Knowledge of Tuning of Pakhawaj.

Unit 8 A (12 Hours)

- Notation book to be submitted for internal assessment.

Note: Students of Percussion Music have to prepare according to the requirements of their respective Units.

Suggestive Reading :

- Kumar, Dr. Ajay, Banaras Gharane Ke Pravartak Pandit Ram Sahai Ji Ki Tabla Vadan Parampra (2022) Kanshika Publishers, Delh
- Karn, Dr. Nageshwar Lal (2001) Kathak Nritya me Tabla Sangati, Kanishka Publishers
- Mishra, Pt. Chhote Lal (2006) Tabla Grantha, Kanishka Publishers, New Delhi
- Das, Purushottam, (1983) Mridanga Vaadan, Sangeet Natak Academy, New Delhi
- Thakur, Jaidev Singh (1994) Bhartiya Sangeet Ka Itihas, Sangeet Research Academy, Kolkata
- Taal Anka, (1997) Sangeet Karyalaya, Hathras
- Gopal, Shreejayanthi (2004), B.R. Rhythm, Delhi
- Mainkar Pt. Sudhir, Tabala vadan mein nihit Soundarya, Gandharva Mahavidyalaya, Mumbai
- Mainkar, Pt.Sudhir, Kala Aur Shastra, Gandharv Mahavidyalaya, Mumbai
- Dandage Pt. Amod, Tabla ke Antarang, Bhairav Prakashan, Kolhapur.
- Mulgaonkar Pt. Arvind, Tabla, Populer Prakashan, Mumbai

DSC –18 Practicle Assessment of Tala

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		L	T	P		
Practicle Assessment of Tala (603)	4	0	0	4	• Class XII Pass • Must have learnt for a minimum of 5 years at an established music institute or from a reputed artiste /guru	Must have studied the following papers – • General Terminology (Sem I) • Biographies & Composers of Music (Sem II) • Talas and compositions of Sem I, II, III & IV OR • Must have an understanding of the basic concepts such as Laya, playing techniques,Sound production on Tabla/Pakhawaj Tala & Basic compostions etc and their associated components • Knowledge of the Bhatkhande and Paluskar notation systems • Knowledge of the Kayada,Rela,Tukda,Paran • Knowledge of the Prachalit Tala. • Talas of Sem I, II III & IV

Learning Objective

- A complete aesthetical Tabla/Pakhawaj solo playing with the sound knowledge of different Gharans/Paramparas thus enabling the students to have a vast and deep view of the rich legacy of the instrument.
- Advanced learning in accompanying the Hindustani Vocal and Instrumental music. This enhances the students skill to face the challenges at his work place too.

Learning Outcome

- The student is able to give a practical demonstration of the prescribed Talas
- He is able to demonstrate various aspects of Talas and their differentiation.

Components (120 Hours)

TABLA

Unit 1 (20 Hours)

- Prescribed Talas :Teentala, Jhaptala, Ektala, Chautala, Dhamar, Sooltala Deepchandi, Jata, Tilwarda, Jhumara & Tevra.

Unit 2 (20 Hours)

- Complete aesthetical Tabla solo recital with different Gharanedar Compostions in Teentala for 10 minutes and in Jhaptala and Rupak for 10 minutes.

Unit 3 (20 Hours)

- Solo performance in Ektala with Uthan/Peshkar, Kayada, Rela, Tukra, Chakradar & Tihai.

Unit 4 (15 Hours)

- Knowledge of accompaniment in Instrumental styles. Masitkhani Gat, Thumri/Dhun.

Unit 5 (15 Hours)

- Knowledge of accompaniment with vocal styles i.e. Khayal (Bada & Chhota) Tarana, Thumri/Dadra with Laggi Ladi.

Unit 6 (10 Hours)

- Playing techniques of Talas of Pakhawaj: Chautala, Dhamar , Sooltala and Tevra.

Unit 7 (10 Hours)

- Knowledge of Tuning of Tabla.

Unit 8 (10 Hours)

- Notation book to be submitted for internal assessment.

PAKHAWAJ

Unit 1 A (20 Hours)

- Prescribed Talas :Chautala, Sooltala, Dhamar, Ektala, Deepchandi, Jata, Tilwarda, Jhumara & Dadra.

Unit 2 A (15 Hours)

- Complete rendering of solo Pakhawaj for at least 10 minutes in Chautala, Sultala, Dhamar.

Unit 3 A (15 Hours)

- Solo Performance 10 minutes in Gajjhampa with following: Uthan, Rela, Stuti & Paran etc.

Unit 4 A (15 Hours)

- Knowledge of accompaniment with Instrumental styles: Instrumental composition of Dhrupad – Dhamar styles.

Unit 5 A (10 Hours)

- Knowledge of accompaniment with vocal styles: Dhrupad, Dhamar.

Unit 6 A (15 Hours)

- Knowledge of talas of Tabla: Jhaptala, Ektala, Keharwa and Dadra.

Unit 7 A (10 Hours)

- Ability to play advance compositions in Chautala and Dhamar.

Unit 8 A (10 Hours)

- Knowledge of Tuning of Pakhawaj.

Unit 9 A (10 Hours)

- Notation book to be submitted for internal assessment.

Note: Students of Percussion Music have to prepare according to the requirements of their respective Units.

Suggestive Reading :

- Kumar, Dr. Ajay, Banaras Gharane Ke Pravartak Pandit Ram Sahai Ji Ki Tabla Vadan Parampra (2022) Kanshika Publishers, Delhi
- Karn, Dr. Nageshwar Lal (2001) Kathak Nritya me Tabla Sangati, Kanishka Publishers
- Mishra, Pt. Chhote Lal (2006) Tabla Grantha, Kanishka Publishers, New Delhi
- Das, Purushottam, (1983) Mridanga Vaadan, Sangeet Natak Academy, New Delhi
- Thakur, Jaidev Singh (1994) Bhartiya Sangeet Ka Itihas, Sangeet Research Academy, Kolkata
- Taal Anka, (1997) Sangeet Karyalaya, Hathras
- Gopal, Shreejayanthi (2004), B.R. Rhythm, Delhi
- Mainkar Pt. Sudhir, Tabala vadan mein nihit Soundarya, Gandharva Mahavidyalaya, Mumbai
- Mainkar, Pt.Sudhir, Kala Aur Shastra, Gandharv Mahavidyalaya, Mumbai
- Dandage Pt. Amod, Tabla ke Antarang, Bhairav Prakashan, Kolhapur.
- Mulgaonkar Pt. Arvind, Tabla, Populer Prakashan, Mumbai

PERCUSSION MUSIC TABLA/PAKHAWAJ

Syllabus for DSE TABLA

SEMESTER – VI

DSE – PERCUSSION TABLA (4)

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		L	T	P		
DSE- PERCUSSION TABLA (4)	4	1	0	3	Class XII Pass	Student have studied the following papers – • Theory topics in Sem III, IV& V • Talas and compostions of Sem III, IV&V • Must have an understanding of the basic concepts such as Laya, Varna Nikas,Tala etc and their associated components • Knowledge of the Bhatkhande and Paluskar notation systems • Knowledge of the nilkas of various varnas. • Compositions and talas of Sem V • Practical contents in Sem III, IV &V • Talas and compostions of Sem V • Must have an understanding of the basic concepts such as Laya, Varna Nikas,Tala etc and their associated components • Knowledge of the nikas of various varnas. • Knowledge of Kayada, Rela & Tukda • Compositions and talas of Sem V

Learning Objective

- The students are taught primarily the techniques and art of playing Tabla in this course. Music being a primary form of Art, is a very specialized subject, which needs specialized training too, especially the Practical,
- Different Talas, finger techniques and compositions are taught in an age-old 'Oral tradition', imbibing this vital element of teaching-learning from the traditional 'Guru-Shishya Parampara',
- The teacher and the students sit on the carpeted floor facing each other, and the students repeat all that the teacher plays/ demonstrates practically.
- The students are encouraged to improvise after learning the basic techniques, be it in the slow elaborations of different Thekas, or in the fast presentation of compositions.

- The students are taught to keep in mind the aesthetics of both the tala, playing style, clarity of bols and the overall performance in the mind at all times.
- The students, thus, get trained towards becoming young budding Solo performing artistes and accompanists as well.

Learning Outcome

- The students of this course get the knowledge of playing the Theka of Jhaptala/Sultala.
- Students learn about 'Te Te', 'Tirakit'/'Dhumkit' compositions with variations, SadharanTukda, Paran and Tihai in Jhaptala/Sultala.
- The students develop the ability to play Theka with Thah, Dugun, Tigun and Chougun in Rupak Tala/Tevra Tala.
- The students learn about the accompaniment with Chhota Khayal/Dhrupad and Bhajan.

Theory Component

Unit 1 (2 Hours)

History of Gharana System

Unit 2 (2 Hours)

Origin & development of various Gharanas of Tabla.

Unit 3 (2 Hours)

Various Gharanas of Pakhawaj

Unit 4 (2 Hours)

Specialties of the Gharana of Tabla.

Unit 5 (3 Hours)

Study of various Gharanedar Bandish

Unit 6 (2 Hours)

Biographies of the Gharanedar Legend artistes .

Unit 7 (2 Hours)

- Notation book prepare for compositions writing.

Practical Component

Unit 1 (5 Hours)

Prescribed Talas : Teentala, Jhaptala, Ektala, Choutala, Addha, Jhumara, Dhamar, Adachartala, Deepchandi, Keharwa & Dadra

Unit 2 (15 Hours)

Solo recital with following : Kayada, Rela, Tukra, Chakradar, Paran & Tihai in Teentala.

Unit 3 (10 Hours)

Solo recital with following Two advance Kayada, Rela, Tihai & Tukda etc in Jhaptala.

Unit 4 (10 Hours)

One Uthan, Two Sadharan Tukra, Two Chakradar Tukra, One Paran Two Tihai One Dumdar & One Bedumdar in Teentala.

Unit 5 (10 Hours) Two Kayada with four Palta and Tihai in Ektala.

Unit 6 (5 Hours)

One Dhere Dhere Rela with four Palta & Tihai in Jhaptala.

Unit 7 (15 Hours)

One Uthan, Two Sadharan Tukra, Two Chakradar Tukra, Two Tihai One Dumdar & One Bedumdar in Jhaptala.

Unit 8 (10 Hours)

Knowledge of playing the Theka of prescribed Talas in different laya.

Unit 9 (10 Hours)

Ability to accompaniment with Bhajan & Geet.

Suggestive Reading :

- Mishra, Pt. Chhotel Lal,Taal Prasoon (2004) Kanishka Publisher, Delhi
- Kumar, Dr. Ajay, Banaras Gharane Ke Pravartak Pandit Ram Sahai Ji Ki Tabla Vadan Parampra (2022) Kanshika Publishers, Delhi
- Shukla, Dr, Yogmaya, Table Ka Udgam Vikas evam Vadan Shailiyan, Delhi Vishwavidyalay Prakashan
- Mishra, Pt. Chhote Lal,Taal Prabandh, Kanishka Publisher, Delhi
- Mishra, Pt. Chhote Lal, Playing Techniques of Tabla: Banaras Gharana, Kanishka Publisher, Delhi
- Das, Purushottam, Mridanga Vadan, Sangeet Natak Akademi, Delhi

Annexure-4

INDEX

Department of Music

B.A. (PROG.) MUSIC – HINDUSTANI MUSIC (VOCAL/INSTRU.)

Semester- IV

S. No.	Contents	Page No.
1	**DSC-4 (A/B)** 1. Musicology of Indian music- Non-Major 2. Ancient and Medieval history of Indian Music (Major)	2-11
2	**Generic Electives (GEs)** 1. Rudimentary Elements of Hindustani Music GE-4	12-16

DSC-4(A/B): Musicology of Indian music

Course Title	Nature of the Course	Total Credits	Components			Eligibility Criteria/Prerequisite
			L	T	P	
Musicology of Indian music DSC-4	DSC-4(A/B) –CORE (NON MAJOR)	4	2	0	2	

Course: DSC 4 (A)

Paper Name: Musicology of Indian Music

Theory: Component-1

Credit: 2

Hours: 30

Learning Objectives

- The course is formulated with an objective to enhance the knowledge of the students through definitions, descriptions and explanations, with the teaching of-

- The theory of Indian Music with reference to terminologies, musical forms, Ragas and Talas and essays.
- The purpose of studying the Medieval Granthas is to impart the information of the development of music during this period.
- The aim behind the study of contributions of musicians and musicologists is to share their life and achievements with the students.

Learning Outcomes

- The indepth knowledge of the semi-classical forms like Thumri, Dadra, Tappa will be imparted.
- Elaborate knowledge of the popular Ragas- Bageshree, Bhupali ,Bhimpalasi and Des will be given.

- Students will be able to recite the Thekas and their Dugun, Tigun and Chaugun recitation of many Talas.
- The students shall attain knowledge of significant Granthas with special reference to their time period.

Content

Detailed study of the following:

Unit I-

- Thumri, Dadra, Tappa.

Unit II-

- Description of Raga Lakshnas and types.

Unit III-

- Time Theory of Ragas,
- Sandhiprakash Raga,
- Parmelapraveshak Raga.

Unit IV-

- Detailed study of the following Ragas:
- Bageshree, Bhupali, Bhimpalasi.

Unit V-

General study of following Granthas with special reference to their time period and contents :-

- Sangeet Parijat
- Chaturdandiprakashika.

Unit VI-

Writing of the following Talas, their Vibhags, Bols, Matras, Sam, Tali and Khali and their Dugun, Tigun & Chaugun :

- Ektala, Chautala, Jhaptala, Teentala and Kaharwa.

Unit VII -

Life & Contributions of the following musicians and musicologist:-

- Pt. Krishna Narayan Ratanjankar,

- Beethoven,
- Vilayat Khan,
- Muthuswami Dikshitar.

Unit VIII-

Comparative study between following ragas-

- Bhimpalasi- Bageshri.

Unit IX-

Writing of compositions in notation-

- Vilambit Khayal/ Drut Khayal/ Dhrupad/ Dhamar.(For Vocal Music students)
- Maseetkhani Gat/ Razakhani Gat (For Instrumental Music students)

Or

Only Visually challenged students have the option of attempting either notation or an essay on the following topics:

- Raga ka Samay Siddhant.
- Hindustani Sangeet mein Laya.
- Shastreeya Sangeet evam Sugam Sangeet.

References

- Bhatkhande, V. N. (Jan- 1982) Sangeet Paddhatiyon ka Tulanatmak Adhyayan, Hathras, U.P., Sangeet Karyalaya.
- Ahobal (3rd Edition: 1971) Sangeet Parijaat, Hathras, U.P., Sangeet Karyalaya.
- Ramamatya, (1979) Swarmela Kala Nidhi, Hathras, U.P., Sangeet Karyalaya.
- Shrivastava, Harish Chandra (1987) Taal Parichaya, Allahabad, U.P., Sangeet Sadan Prakashan.
- Mishra, Lalmani (4th Edition: 2011) Bhartiya Sangeet Vadya, Delhi, Bhartiya Gyanpeeth,
- Venkatamakhi (1970) Chaturdandiprakashika, Shantiniketan Vishwabharti
- Garg, Laxmi Narayan (2013) Bharat Ke Sangeetkar, Hathras, U.P., Sangeet Karyalaya.
- Saraf, Rama (1st Edition: 2003) Sangeet Sarita, Delhi, Vidyanidhi Prakashan.
- Garg, Laxmi Narayan (3rd Edition: 2003) Nibandh Sangeet, Hathras, U.P., Sangeet Karyalaya.
- Shrivastava, Harish Chandra (2003) Sangeet Nibandh Sangrah, Allahabad, U.P., Sangeet Sadan Prakashan.
- Singh, Tejpal (1st Edition: 2006) Vidhivat Sangeet Sikshan, Delhi, Pathak Publication.

- Rajan, Renu , Hindustani Sangeet mein Raga Lakshan,New Delhi Radha Publication.
- Kasliwal, S. (1st Edition: 2002) Sur Tara, New Delhi, Delhi, Kanishka Publishers.

DSC: 4 (A)

Practical: Component-2

Performance & Viva-Voce

Credit: 2

Hours: 60

Learning Objective

- The practical aspects are intended at increasing the degree of mastery in the subject through performance and viva-voce

Learning Outcomes

- The student will acquire proficiency in singing Vilambit and Drut Khayals, Dhrupad, Dhamar thereby elaborating them through Alaap, Taan and Layakari respectively.
- The students of instrumental music will skillfully play various Gat with Taan and Jhala.
- The students will understand the significance of the Raga.
- The students will get the understanding of folk music by singing Lokgeet or playing folk-dhun.
- The students will obtain the basic knowledge of Harmonium or any other instrument playing which will facilitate their musical learning process.

Content:

Prescribed Ragas – Bageshree, Bhoopali, Bhimpalasi.Des.

Prescribed Talas - Ektala,Chautala, Jhaptala, Teentala,Kaharwatala.

Vocal Music

- One Vilambit Khayal with Alaaps and Taans in any one of the prescribed Ragas.
  - Madhyalaya Khayal in all of the prescribed Ragas.
  - One Dhrupad or Dhamar with Dugun, Tigun and Chaugun .
  - One Raga based Bhajan/Lokgeet.

Instrumental Music

- Maseetkhani Gat with Alaaps and Tanas in any one of the prescribed Ragas.
- Razakhani Gat (Tanas and Jhala) in all of the prescribed Ragas.
- Gat in any Tala other than Teentala.
- Raga or Folk music based dhun.

Vocal & Instrumental

- Identifying Ragas and Talas of the prescribed syllabus while being sung or played.
- Ability to recite the Thekas of the following Talas with Tali and Khali , Dugun, Tigun and Chaugun- Ektala,Chautala,Jhaptala,Teentala,Kaharwatala.
- Practical file with details of Ragas, Notations of compositions & Talas with Dugun, Tigun and Chaugun.

References

- Bhatkhande, V.N. (2008) Kramik Pustak Malika (Part- II, III, IV) Hathras, U.P., Sangeet Karyalaya.
- Patwardhan, V.R. (1996), Rag Vigyan, Pune, MH, Publisher : Dr. Madhusudhanan Patwardhan.
- Bhatkhande, V.N., (6thEdition, I999), Bhatkhande Sargam Geet Sangrah, Hathras, U.P., Sangeet Karyalya.
- Mishra, Lalmani, (1st Edition: 1979) Tantri Naad Part-I, Kanpur, U.P., Sahitya Ratnawali.
- Ratanjankar, Krishna Narayan (1990) Abhinav Geet Manjari, Mumbai, Maharashtra, Acharya S. N. Ratanjankar Foundation.
- Jha, Ramashraya (2014) Abhinav Geetanjali, Allahabad, U.P., Sangeet Sadan Prakashan.
- Singh, Tejpal (1stEdition, 2015) Shastreeya Sangeet Shikshan, New Delhi, Delhi, Akanksha Publishing House.
- Shrivastava, Harish Chandra (June: 2002) Raga Parichaya, New Delhi, Delhi, Rubi Prakashan.
- Mishra, Chhotelal (1stEdition: 2006) Tala Prabandh, New Delhi, Kanishka Publishers.

DSC-4-C Ancient and Medieval history of Indian Music (Major)

Course Title	Nature of the Course	Total Credits	Components			Eligibility Criteria/Prerequisite
			L	T	P	
Ancient and Medieval history of Indian Music	DSC-4-C-CORE (MAJOR)	4	2	0	2	

Course: DSC 4 (C) MAJOR

Paper Name: Ancient and Medieval history of Indian Music

Theory: Component-1

Credit: 2

Hours:30

Learning Objectives:

- To develop the interest of the students in musicology by introducing them to the ancienttexts of music.
- To explain the Ragang-Rag Paddhati for classification of ragas
- To teach them about the various musical instruments from the ancient to the modern times.
- To focus on the ancient musical forms that were the precursor to the current musicalforms.

Learning Outcomes:

- The students will come to know about the Music found in ancient works like Puranas .This knowledge is useful for further study of musicology as well as for purposes of research.
- Students will be able to have an understanding of the Ragang-Raga Paddhati for classifying ragas.
- Students will come to know about various musical instruments found in Music

ancient Granth Natya Shastra.

- Students will gain valuable knowledge of Jati and its Lakshnas which are the root of present Raga system.

Contents:

Unit I

Music in Puranas-

- Harivansh Puran
- Vishnu Puran

Unit II

- Instruments in Natya shasta

Unit III

- Definition of Jati & its Lakshnas
- Names of Eighteen Jatis described in Natya Shasta

Unit IV

Raga- Ragini Vargikaran

Unit V

- Ragang- Paddhati

Unit VI

- Study of the following talas in detail – Chautala & Sooltala
- Ability to write the notation of the talas in dugun, tigun and chaugun

Unit VII

- Study of the ragas – Bageshwari , Bhimpalasi, Bhairavi
- Comparative study of the ragas with each other
- Ability to write the notation of compositions in prescribed ragas

References:

- Shastri, Babulal Shukla (2009) Natya Shastra, Delhi, Chaukhamba Sanskrit Sansthan

- Kumar, Pushpendra (2010) Natya Shastra of Bharatamuni, Delhi, New Bharatiya BookCorporation
- Prajnanananda, Swami (1981) A Historical Study of Indian Music, Delhi, Delhi,MunsiramMonoharlal Publishers Pvt. Ltd.
- Singh, Thakur Jaidev (1905) Indian Music, Kolkata, West Bengal, Sangeet ResearchAcademy
- Nigam, V.S. (1973) Sangeet Kaumudi, Allahabad, UP, Indian Press
- Chakravarty, Indrani (1988) Sangeet Manjusha, Delhi, Delhi, Mittal Publication
- Singh, Thakur Jaidev (1994) Bhartiya sangeet ka Itihas, Varanasi, UP, Sangeet ResearchAcademy
- Paranjape, S.S. (1972) Sangeet Bodh, Bhopal, MP, Madhya Pradesh Hindi Academy
- Rajan Renu (1st Edition: 2010) Bhartiya Shastriya Sangeet ke vividh ayaam, Delhi, Ankit Publication.

DSC:4 (C)
Practical: Component -2
Performance & Viva-Voce
Credit -2
Hours: 60

Learning Objectives:

- To focus more on the Stage Performance of the student
- To encourage the student to attempt to improvise while singing/playing.
- To focus on his learning of newer talas
- To focus more on the Viva-Voce of the student.

Learning Outcomes:

- Students will develop the confidence to perform a raga for a long duration of time.
- Students will be able to sing new compositions in new talas
- Students will be able to explain the grammatical rules of a raga in detail.
- Student will develop the confidence to differentiate between similar ragas.

Content:

Prescribed Ragas:

- Bageshwari
- Bheempalasi

- Bhairavi

Unit I – Vocal Music:

- A performance of Vilambit and Drut Khayal with gayaki to be presented in anyone raga
- Drut Khayal with gayaki in all the ragas
- Dhrupad or Dhamar composition in any one of the prescribed ragas with Layakari
- Knowledge and demonstration of the following talas – Chautala & Sooltala
- Ability to tune the Tanpura

Unit II – Instrumental Music:

- A performance of Maseetkhani and Razakhani Gats with elaboration to be presented in any one raga
- Presentation of a dhun other than Teentala
- Razakhani Gat with elaboration in all the ragas
- Knowledge and demonstration of the following talas – Chautala & Sooltala
- Ability to tune the Instrument -Sitar

Note**:** Students of Vocal and Instrumental music will have to prepare according to the requirements of their respective Units.

Refrences:

- Bhatkhande, V.N. (2000) Kramik Pustak Malika, Part I, Hathras, U.P., Sangeet Karyalya.
- Bhatkhande, V.N. (2002) Kramik Pustak Malika, Part II, Hathras, U.P., Sangeet Karyalya
- Bhatkhande, V.N. (2002) Kramik Pustak Malika, Part III, Hathras, U.P., Sangeet Karyalya
- Bhatkhande, V.N. (1970) Kramik Pustak Malika, Part IV, Hathras, U.P., Sangeet Karyalya
- Patwardhan, V.R. (2001) Raga Vigyan, Part I, Pune, Maharashtra, Publisher – Dr. Madhusudhanan Patwardhan
- Patwardhan, V.R. (1996) Raga Vigyan, Part II, Pune, Maharashtra, Publisher – Dr. Madhusudhanan Patwardhan
- Patwardhan, V.R. (1991) Raga Vigyan, Part III, Pune, Maharashtra, Publisher – Dr. Madhusudhanan Patwardhan
- Patwardhan, V.R. (1959) Raga Vigyan, Part IV, Pune, Maharashtra, Publisher – Dr. Madhusudhanan Patwardhan
- Thakur, Omkar Nath (1977) Sangeetanjali, Part I, Bombay, Maharashtra, Pandit Omkar Nath Thakur Estate
- Thakur, Omkar Nath (1975) Sangeetanjali, Part II, Bombay, Maharashtra, Pandit Omkar

Nath Thakur Estate
- Thakur, Omkar Nath (2005) Sangeetanjali, Part III, Bombay, Maharashtra, Pandit Omkar Nath Thakur Estate
- Thakur, Omkar Nath (2003) Sangeetanjali, Part IV, Bombay, Maharashtra, Pandit Omkar Nath Thakur Estate
- Mishra, Lalmani (1979) Tantrinada, Kanpur, U.P. Sahitya Ratnakar
- Aggarwal, V.K. and Nagpal, Alka (2004) Sitar and its Compositions, Part-I-II, Delhi, Sanjay Prakashan
- Mahajan, Anupam (2003) Compositions in Instrumental Music (Traditional and New Creation), Delhi, Sanjay Prakashan

GENERIC ELECTIVE

SEMESTER-4

B.A. Hindustani Music Vocal/Instrumental

GE- 4- Rudimenatry Elements of Hindustani Music

Course Title& Code	Credits	Credit distributions of the course			Eligibility Criteria	erprerequisite of the course (if any)	Deapartment offering the course
		Lecture	Tutorial	Practical/practical			
Rudimentary Elements of Hindustani Music GE-4	4	2	0	2			Music

SEMESTER-4

GE-4

Paper Name: Rudimentary Elements of Hindustani Music

Theory: Component -1

Credit: 2

Hours: 30

Learning Objectives

- The core aim of this course it to give an expansive gamut of the learning of various facets of Hindustani music,
- Such as the knowledge of the Time theory of the Ragas,
- The comparative study of the Hindustani and Karnatak systems,
- Writing notations of the Raga compositions and the Talas are intended to enrich the students understanding of the heritage bandishes, as well as documentation of the old transcripts.

- Project work on semi classical, light and folk music is envisioned to stimulate research culture.

Learning Outcomes

- The students have learned the structural details of instruments to understand them.
- By the knowledge of the Time theory of ragas, the students understand the significance and dogmatism of this principle.
- Essays on the prescribed topics give a wider and research oriented perspective to the students.
- Ability to recite Talas and its Layakaries give command over the rhythm.
- A comparative study of the two major music systems of Indian Music increases the knowledge about the rich heritage of Classical Music.
- A project work on other musical forms have been introduced for creating interest amongst the students.

Content

Unit 1

- Detailed study in prescribed Ragas: Jaunpuri, Bihag.

Unit 2

- Ability to write notation of Vilambit Khayal / Drut Khyal/Maseetkhani Gat/ Razakhani Gat with Tanas in prescribed Ragas.

Unit 3

- Structural details of Harmonium and Tabla with sketch.

Unit 4

- Writing an essay on the following topics :
- Devotional Music
- Music Therapy

Unit 5

- Elementary knowledge of Time theory of Ragas in Hindustani Music.

Unit 6

- Ability to write Teentala, Dhamar, Deepchandi with Thaah, Dugun and Chaugun

Unit 7

- Comparative study of Hindustani music and Karanatak music in brief.

Unit 8

- Project work: Semi Classical/ Light/ Folk music of any region.

References

- Bhatkhande, V.N. (Part-I 1st Edition: 1951, Part-II 3rd Edition: April- 1969, Part-III 2nd Edition: April- 1968, Part-IV 2nd Edition: March- 1970) Bhatkhande Sangeet Shastra, Hathras, U.P., Sangeet Karyalaya.
- Govardhan, Shanti. (1st Edition, Part-I 2005, Part-I 2004) Sangeet Shastra Darpan. Allahabad, U.P., Rantakar Pathak.
- Shrivastava, Harish Chandra (1st Edition: 1970) Sangeet Nibandh Sangrah, Allahabad, U.P., Sangeet Sadan Prakashan.
- Garg, Laxmi Narayan (3rd Edition: 2003) Nibandh Sangeet, Hathras, U.P., Sangeet Karyalaya,
- Mishra, Lalmani (4th Edition: 2011) Bhartiya Sangeet Vadya, Delhi, Bhartiya Gyanpeeth.
- Kasliwal, S.(2001),Classical Musical Instruments, New Delhi, Delhi, Rupa & co.
- Mishra, Chhotelal (1st Edition: 2006) Taal Prasoon, New Delhi, Delhi, Kanishka Publishers.
- Gautam, MR (1980) The Musical Heritage of India, New Delhi, Delhi, Abhinav Publications.
- Thakurdas, MB (1988) Raga Darshan, Part 2, Ajmer, Rajasthan, Krishna Brothers.

GE-4

Practical: Component-2

Performance &Viva –Voce

Credit: 2

Hours: 60

Learning Objectives

- The practical facet targets towards endowing the student with live performance skills in adeptly presenting a skillful demonstration in Vilimbat & Drut Khayals/Maseetkhani &Razakhni gats in Raga Jaunpuri and Bihag,
- They would also be performing a semi classical composition in Raga Kafi or Khamaj,
- Ably demonstrate Thekas on hand in prescribed talas such as Teental, Dhamar and Deepchandi,
- Discussions on International music, Semi Classical forms and Karnatak music are selected to give a wide perspective on the subjects.

Learning Outcomes

- The students have been given an opportunity to increase their calibre of performance by singing and playing compositions in varied Ragas.
- They have learned to gain command on various Talas, an important element of Indian Music.
- Guided listening sessions have been introduced where they have an opportunity to hear great artists and benefit from them.
- Learning the tuning of one's own instrument increases confidence amongst the students and helps them in performance.

Content

Unit 1

- Prescribed ragas: Jaunpuri, Bihag

Unit 2

- Ability to sing one Vilambit khayal and Drut khayal or play one Maseetkhani gat and one Razakhani Gat with tanas and Jhala in Raga Jaunpuri and Bihag.

Unit 3

- Ability to keep thekas of the following talas by hand beats in Teentala, Dhamar with Thaah & Dugun

Unit 4

- Ability to sing one Semi classical composition in Raga Kafi/ Khamaj(For vocal students)
- Ability to play one Razakhani or Madhya Laya Gat in other than Teentala

Unit 5

- Guided listening with discussions of Instrumental Music/ Semi Classical forms/ composition of Karnatak Music.

Unit 6

- Tuning of one's own instrument Tanpura/Sitar

Reference

- Bhatkhande, V.N. (2008) Kramik Pustak Malika (Part- II, III, IV), Hathras, U.P., Sangeet Karyalya.
- Patwardhan, V.R. (1996), Raga Vigyan, Pune, MH, Publisher: Dr. Madhusudhanan Patwardhan.
- Bhatkhande, V.N., (6th Edition, I999), Bhatkhande Sargam Geet Sangrah, Hathras, U.P., Sangeet Karyalya.
- Ratanjankar, Krishna Narayan (1990) Abhinav Geet Manjari, Mumbai, Maharashtra, Acharya S. N. Ratanjankar Foundation.
- Jha, Ramashraya (2014) Abhinav Geetanjali, Allahabad, U.P., Sangeet Sadan Prakashan.
- Singh, Tejpal (1st Edition, 2015) Shastreeya Sangeet Sikshan, New Delhi, Delhi, Akanksha Publishing House.
- Shrivastava , Harish Chandra (June:2002) Raga Parichaya, New Delhi, Delhi, Rubi Prakashan.
- Mishra, Lalmani, (1st Edition: 1979) Tantri Naad Part-I, Kanpur, U.P., Sahitya Ratnawali.
- Mishra, Chhotelal (1st Edition: 2006) Tala Prabhandh, New Delhi, Kanishka Publishers
- Edition: 1979) Tantri Naad Part-I, Kanpur, U.P., Sahitya Ratnawali.

INDEX

Department of Music

B.A. (PROG.) MUSIC – HINDUSTANI MUSIC (VOCAL/INSTRU.)

Semester- V

S. No.	Contents	Page No.
1	**DSC-4 (A/B)** 1. Study of Ancient Granthas and Ragas of Indian Music - Non-Major 2. Theoretical & Practical Aspects of Hindustani Music (Major)	18-27
2	**Generic Electives (GEs)** 1. Theory of Indian Music, Granthas and Ragas GE-4	28-32

DSC-5(A/B): Study of Ancient Granthas and Ragas of Indian music

Course Title	Nature of the Course	Total Credits	Components L	T	P	Eligibility Criteria/Prerequisite
Study of Ancient Granthas and Ragas of Indian Music	DSC-5(A/B) – CORE (NON MAJOR)	4	2	0	2	12 PASS

SEMESTER-5

Course: DSC 5 (A)

Paper Name: Study of Ancient Granthas and Ragas of Indian Music.

Theory:

Component-1

Credit : 2

Hours : 30

Learning Objectives:

- The study of ancient texts aims at providing the knowledge of the historical era and its reference to the subject.
- Discussions on different terminology to make the subject more comprehenciv and perceptive.
- The study of Ragas, Talas and compositions aim at crafting the theoretical aspect of presentation.
- Learning to write notation of compositions and the visually challenged students have an option of writing essays on the given topics.

Learning Outcomes:

- The students will learn about the musical references and instruments found in the epic Ramayan .
- Indepth study of ancient texts the students will gain a deep insight into the evolution of Indian music.
- The students will understand the concept of Margi and Desi Sangeet and will be able to demonstrate its significance in modern times.

- The students will gain the knowledge of theoretical aspects of prescribed Ragas and Talas which will enhance the quality of projects and their practical illustrations.
- Students will also learn to write Talas and compositions in notation with minute details.
- Comparative study of Talas having equal number of beats will further enhance their ability to understand the salient features of various Talas.
- The visually challenged students will be able to apply their minds to write essays on prescribed topics there by developing their expression and learning better utterance skills.

Contents

General discussion and study of the following:

Unit I

Musical references in the following text

- The Ramayan

Unit II

- General study of Brihaddeshi of Matang Muni
- Detailed study of Sangeet Ratnakar of Pt. Sharang Dev. ·

Unit III

Study of the following:-

- Dashvidh Raga Vargikaran
- Gaan: Nibaddha Gaan, Anibaddha Gaan
- Kaku
- Sthaya
- Margi and Desi Sangeet

Unit IV

Description of the following

- Vaggeyakar
- Avirbhav- Tirobhav

·Unit V

- Writing of Talas in notation with their Vibhags, Matras, Bols, Sam, Tali and Khali with Dugun, Tigun and Chaugun:

- TilwadaTala, Dhamar tala, Choutala, Jhaptala, Teentala,Ektala, Dadra.

Unit VI

- Comparative study of Talas:
- Ektala –Choutala
- Teentala - Tilwada

Unit VII

Comparative study of the following

- Dhrupad – Dhamar
- Thumri -Tappa

Unit VIII

Detailed study of the following Ragas :

- Kedar
- Jaunpuri
- Patdeep

Unit IX

Writing of compositions in notation:

- Vilambit Khayal, Dhrupad, Dhamar(For Vocal students),
- Maseetkhani Gat, Razakhani Gat (For Instrumental students).

Or

Only Visually challenged students have the option of attempting either notation or an essay on the following topics:

- Importance of Media in promotion of Music
- Significance of Music in human life
- Importance of music in Fine Arts

Reference

- Paranjapey, Sridhar Sharat Chandra (2nd Edition: 1985) Bhartiya Sangeet ka Itihas Madhya Pradesh, Hindi Granth Academy.
- Paranjpey, Sridhar Sharat Chandra (1972) Sangeet Bodh, Madhya Pradesh, Hindi Granth Academy.
- Kumar, Pushpendra,(2010), Natya Shastra of Bharatamuni, Delhi, New Bharatiya Book Corporation.
- Singh, Thakur Jaidev (1st Edition: 1995) Indian Music, Sangeet Research Academy.
- Mishra, Lalmani (4th Edition, 2011) Bhartiya Sangeet Vadya, Delhi, Bhartiya Gyanpeeth.

- Mishra, Chhotelal (1st Edition: 2006) Tala Prabandh, New Delhi, Delhi, Kanishka Publishers,
- Chandorkar Vijaya, Bhartiya Sangeet mein Nibaddha tatha Anibaddha Gaan, Delhi University, Hindi Madhyam karyanvaya Nideshalaya.
- Pathak Sunanda, Raga ki utpatti aur Vikas,
- Rajan, Renu (1996) Hindustani Sangeet Mein Raga Lakshan, New Delhi, Delhi, Radha Publications.
- Garg, Laxmi Narayan (3rd Edition: 2003) Nibandh Sangeet, Hathras, U.P., Sangeet Karyalaya.
- Shrivastava, Harish Chandra (4th Edition: 1974) Sangeet Nibandh Sangrah, Allahabad, U.P., Sangeet Sadan Prakashan.
- Sharma, Swatantra, (2012), Pashchatya swarlipi paddhati evam Bhartiya sangeet, Allhabad, U.P., Anubhav publication house.

DSC- 5 (A)

Practical : Component-2

Performance & Viva –Voce

Credit : 2

Hours : 60

Learning Objectives:

- The prime design of this course is to enable students to develop performance skills by learning to-
- Demonstrate various forms of music in different Ragas and Talas as a part of performance and Viva-Voce.
- To identify the Ragas and Talas.
- Sing or play one Light Dhun/Bhajan/Lokgeet based on Raga.

Learning Outcomes:

- A variety of musical forms in each Raga will be taught to the students, thus building their repertoire and preparing them for stage performance.
- The students will learn the customary and traditional Gayaki of Dhrupad-Dhamaar.
- ·The students will learn to identify different Ragas and Talas while being sung and played .
- Reciting the Thekas of the Talas and playing basic Talas will enable students to get acquainted with the rhythmic patterns.
- The knowledge of playing Harmonium will aid the students in understanding the placement of fingers and swaras on the instrument.
- The practical file with details of each topic covered in the syllabus will teach the students the method of systematic documentation and presentation.

Content:

Prescribed Ragas – Kedar, Jaunpuri, Patdeep

Prescribed Talas - Chautala, Jhaptala, Teentala,Tilwadatala,Dhamar tala, Ektala .

Vocal Music

- One Vilambit Khayal with Alaaps and Taans in any of the prescribed Ragas.
- Madhyalaya Khayal in all the prescribed Ragas.
- One Dhrupad with Dugun, Tigun and Chougun.

Or

- One Dhamar with Dugun, Tigun and Chougun.
- One Raga based Bhajan/Lok geet.

Instrumental Music

- Maseetkhani Gat in any one of the prescribed Ragas.
- Razakhani Gat in all the prescribed Ragas.
- Gat in any Tala other than Teentala

Vocal & Instrumental

- Identifying Ragas and Talas of the prescribed syllabus while being sung or played.
- Ability to recite the Thekas of the following Talas along-with Tali – Khali and with Dugun, Tigun, Chaugun :
- Tilwada tala, Dhamar tala,Chautala, Jhaptala, Teentala, Ektala, Dadra tala.
- Elementry knowledge of playing Harmonium.
- Practical file with details of Ragas, Notations of compositions & Talas with Dugun, Tigun and Chaugun.

References

- Bhatkhande, V.N. (Part I, Jan. 2000, Part-II Dec.2013), Kramik Pustak Malika, Hathras, U.P., Sangeet Karyalya.
- Patwardhan, V.R. (1996), Raga Vigyan, Pune, MH, Publisher: Dr. Madhusudhanan Patwardhan.
- Bhatkhande, V.N. (6th Edition, I999), Bhatkhande Sargam Geet Sangrah, Hathras, U.P., Sangeet Karyalya.
- Mishra, Lalmani, (1st Edition: 1979) Tantri Naad Part-I, Kanpur, U.P., Sahitya Ratnawali. Ratanjanka, Krishna Narayan (1990) Abhinav Geet Manjari, Mumbai, Maharashtra, Acharya S. N. Ratanjankar Foundation
- Jha, Ramashraya (2014) Abhinav Geetanjali, Allahabad, U.P., Sangeet Sadan Prakashan.
- Singh, Tejpal (1st Edition, 2015) Shastreeya Sangeet Sikshan, New Delhi, Delhi, Akanksha Publishing House.
- Shrivastava, Harish Chandra (June:2002) Raag Parichaya, New Delhi, Delhi, Rubi Prakashan,

DSC-5-C – Theoretical & Practical Aspects of Hindustani Music

Course Title	Nature of the Course	Total Credits	Components			Eligibility Criteria/Prerequisite
			L	T	P	
Theoretical & Practical Aspects of Hindustani Music	DSC-5-C-CORE (MAJOR)	4	2	0	2	12 PASS

Course: DSC 5 (C)

Paper Name: Theoretical & Practical Aspects of Hindustani Music

Theory: Component-1

Credit: 2

Hours: 30

Learning Objectives:

The focus of the course is:

- To study the text of medieval period to understand the music of that period.
- To have in depth understanding of Moorchchhana.
- To have in depth Knowledge of Geeti.
- To gain understanding of the 'That Paddhati' in Hindustani Music.
- To get the skill of writing notation of compositions
- To understand the significance of Alap in gradual unfoldment of Raga.
- To understand the characteristics of Pure and mixed Ragas and also gain the ability to compare the Ragas of similar notes.

Learning Outcomes:

- The study of medieval granthas will give a speculative insight to the students to understand classical Music of that period.
- The students will learn about the Moorchchhana Paddhati .
- The students will learn about the 'That system' and its importance for Raga classification.
- Students will also learn to write Talas and compositions in notation with minute details.
- Detailed study of the Ragas will enable students to attain proficiency in the subject.

Content:

Unit I

Study of the following texts:

- Rag Tarangini of Pt. Lochan
- Sangeet Damodar of Pt. Shubhankar

Unit II

Study of the following:

- ` Bhinna, Gaudi, Vesara, Sadharani

Unit III

- Description and development of 'That Paddhati' in Hindustani music

Unit IV

- Suddha, Chhayalag and Sankeern Ragas

Unit V

- Shadja Madhyam and Shadja Pancham Bhav in Hindustani Music

Unit VI

- Role of Alap in presentation of Rag (Prastuti karan) in present context
- Significance of string instruments as accompaniment in stage performance

Unit VII

Comparative study of Ragas studied in previous semester:

- Bhairav – Ramkali
- Bhupali – Deshkar
- Kedar – Kamod

Unit VIII

Writing of compositions in notation:

- Vilambit Khayal, Drut Khayal , Dhrupad, Dhamar(For Vocal students),
- Maseetkhani Gat, Razakhani Gat (For Instrumental students).
- Writing of Talas in notation - Chautala, Jhaptala, Teentala, Ektala, Dadra tala

Unit IX

Detailed study of the following Ragas :

- Kamod
- Pooriya Dhanashree

- Patdeep

References

- Bhatkhande, V.N. (Part I, Jan. 2000, Part-II Dec.2013), Kramik Pustak Malika, Hathras, U.P., Sangeet Karyalya.
- Patwardhan, V.R. (1996), Raga Vigyan, Pune, MH, Publisher : Dr. Madhusudhanan Patwardhan.
- Bhatkhande, V.N. (6th Edition, I999), Bhatkhande Sargam Geet Sangrah, Hathras, U.P., Sangeet Karyalya.
- Mishra, Lalmani, (1st Edition: 1979) Tantri Naad Part-I, Kanpur, U.P., Sahitya Ratnawali. Ratanjanka, Krishna Narayan (1990) Abhinav Geet Manjari, Mumbai, Maharashtra, Acharya S. N. Ratanjankar Foundation
- Jha, Ramashraya (2014) Abhinav Geetanjali, Allahabad, U.P., Sangeet Sadan Prakashan.
- Singh, Tejpal (1st Edition, 2015) Shastreeya Sangeet Sikshan, New Delhi, Delhi, Akanksha Publishing House.
- Shrivastava, Harish Chandra (June:2002) Raag Parichaya, New Delhi, Delhi, Rubi Prakashan,
- Choudhari, Subhadra (June 1989) Sangeet Sanchayan, Ajmer, Rajasthan, Krishna Brothers.
- Brihaspati, Aacharya, Sangeet Chintamani , New Delhi ,Brihapati Publication.
- Devangan ,Tulsiram, Bhartiya Sangeet Shastra, Bhopal, Madhya Pradesh,Hindi Grantha Academy.
- M. vijaya Lakshmi, (1st Edition 2006) Delhi, Sanjay Prakashan.

DSC-5-C

Practical: Component -2

Performance & Viva Voce

Credits: 2

Hours: 60

Learning Objectives:

- To focus on the professionally performing ability of the student, in conjunction with his capability to understand the intricacies of various ragas.
- To teach the students the proper way of doing Alap or tonal elaborations before the start of Dhrupad
- To encourage the students to perform with thoughtful and aesthetic improvisations.
- To differentiate between similar ragas like Kedar and Kamod.
- To focus more on the Viva-Voce of the student.
- To teach new compositions based on various talas

Learning Outcomes:

- The student will gain self-confidence in performing a raga, after practising its finer details
- He will also be able to demonstrate how to separate similar sounding ragas
- He will be able to sing Dhrupad and Dhamar with an in-depth knowledge of its style of performance.
- A detailed performance of Vilambit and Drut Khayal with gayaki to be presented .
- A detailed performance of Maseetkhani and Razakhani gats with elaboration to be presented.
- Presentation of a dhun, devotional or light music composition

Content:

Prescribed Ragas:

1. Pooriyadhanashri
2. Kamod
3. Patdeep

Vocal Music:

- Vilambit and Drut Khayal with gayaki inall the prescribed ragas mentioned above.
- Dhrupad Dhamar composition in each of the prescribed Ragas with Alap, Layakari & Upaj
- Knowledge and demonstrate of the following talas- Sooltala , Adachautala, Dhamar tala
- The ability to tune the Tanpura

Instrumental Music:

- Masitkhani and Razakhani Gats with elaboration to be presented in all the prescribed ragas mentioned above
- Gat with elaboration in any of the following Talas - Ektala, Jhaptala,
- Knowledge and demonstration of the following talas – Sooltala & Adachautala,Dhamar tala.
- The ability of the student to tune his respective instrument

Note: Students of Vocal and Instrumental music will have to prepare according to the requirements of their respective Units.

Reference:

- Bhatkhande, V.N. (2002) Kramik Pustak Malika, Part III, Hathras, U.P., Sangeet Karyalya
- • Bhatkhande, V.N. (1970) Kramik Pustak Malika, Part IV, Hathras, U.P., Sangeet Karyalya

- • Patwardhan, V.R. (2001) Raga Vigyan, Part I, Pune, Maharashtra, Publisher - Dr. Madhusudhanan Patwardhan
- • Patwardhan, V.R. (1996) Raga Vigyan, Part II, Pune, Maharashtra, Publisher - Dr. Madhusudhanan Patwardhan
- • Thakur, Omkar Nath (1977) Sangeetanjali, Part I, Bombay, Maharashtra, Pandit Omkar Nath Thakur Estate
- • Thakur, Omkar Nath (1975) Sangeetanjali, Part II, Bombay, Maharashtra, Pandit Omkar Nath Thakur Estate
- • Thakur, Omkar Nath (2005) Sangeetanjali, Part III, Bombay, Maharashtra, Pandit Omkar Nath Thakur Estate
- • Thakur, Omkar Nath (2003) Sangeetanjali, Part IV, Bombay, Maharashtra, Pandit Omkar Nath Thakur Estate
- • Mishra, Lalmani (1979) Tantrinada, Kanpur, U.P. Sahitya Ratnalaya
- • Aggarwal, V.K. and Nagpal, Alka (2004) Sitar and its Compositions, Part I-II, Delhi, Sanjay Prakashan
- • Mahajan, Anupam (2003) Compositions in Instrumental Music (Traditional and New Creation), Delhi, Sanjay Prakashan

GENERIC ELECTIVE

B.A. Hindustani Music Vocal/Instrumental

Course Title& Code	Credits	Credit distributions of the course			Eligibility Criteria	erprerequisite of the course (if any)	Deapartment offering the course
		Lecture	Tutorial	Practical/practical			
Theory of Indian Music, Granthas and Ragas	4	2	0	2	Class XII Pass	NIL	Music

SEMESTER-5

GE-5

Paper Name: Theory: Theory of Indian Music, Granthas and Ragas

Theory: Component -1

Credit: 2

Total – 30 Hrs

Learning Objective

- The study of the ancient text aims at providing the knowledge of the historical era and its reference to the subject.
- Discussions on different terminologies to make the subject more comprehensive and perceptive.
- The study of Ragas, Talas and compositions aim at crafting the theoretical aspect of their presentation.

Learning Outcome (CLO)

- The students have obtained wisdom and understood the musical references and instruments found in the epic Ramayan and its relevance to present time.
- With the indepth study of the ancient text, Sangeet Ratnakar by Pt. Sharangdev, the students gained a deep insight into the origin of Indian music.
- The general study of Matang Muni's Granth Brihaddeshi provided an axis to the students who are now able to communicate the result of studies undertaken on this ancient treatise.

- Students have understood the concept of Margi and Desi sangeet and are able to demonstrate its significance in modern times.

- The students have attained a detailed study of the theoretical aspects of the prescribed Ragas and Talas which enhance the quality of projects and their practical illustrations.
- They have also acquired skills in writing the notations of traditional compositions of Ragas with Dugun of given Talas.
- The comparative study of Talas bearing equal number of beats further enhances their ability to understand the salient features of various Talas.
- The students have developed skills in writing notatioins of traditional compositions in Khayal/ Dhrupad/ Dhamar/ Razakhani/ Maseetkhani Gats thereby getting empowered to learn authentic compositions independently by reading notations.
- Visually challenged students have commissioned their mind to write an essay on prescribed topics thereby developing their expression and learing better utterance skills.

Content

There will be three sections; candidates shall have to answer one question from each section & two from any of the three sections, thus five questions in all.

Unit I

Musical references & Instruments as found in Ramayana. (4 hrs.)

Unit II

Detailed study of Sangeet Ratnakar. (2 hrs.)

Unit III

Detailed study of the following as treated in Sharangdev's Sangeet Ratnakar- (4 hrs.)

- Nibaddha, Anibaddha, Kaku, Sthaya.

Unit IV

General study of Matang Muni's Granth Brihaddeshi. (2 hrs.)

Unit V

Margi evam Desi Sangeet. (2 hrs.)

Unit VI

Detailed study of the following Ragas: (2 hrs.)

- Todi, Kedar, Patdeep.

Unit VII

Notation Writing of Talas, these: (4 hrs.)

- Vibhags, Bols, Matras, Sam, Tali and Khali: Tilwada, Dhamar, Ektala, Choutala, Dadra, Keherwa, Teentala.

Unit VIII

Ability to write Dugun of the prescribed Talas. (2 hrs.)

Unit IX

Comparative study of the following Talas: (2 hrs.)

- Ektal-Choutal, Teental-Tilwada

Unit X

Writing of compositions in notation of: (2 hrs.)

- Vilambit Khayal, Dhrupad or Dhamar (For Vocal students)

Unit XI

Notation Writing of Maseetkhani Gat in Teentaal, Razakhani Gat in Teentala and Gat other than Teentaala. (For Instrumental students) Or Only Visually challenged students have the option of attempting either notation or an essay on the following topics: (4 hrs.)

- Importance of media in promotion of Music.
- Significance of Music in human life.
- Importance of Music in Fine Arts.

References

- Paranjpey, Shridhar Sharat Chandra (2nd Edition: 1985) Bharatiya Sangeet Ka Itihas, Bhopal, Madhya Pradesh,Hindi Granth Academy.
- Singh, Thakur Jaidev, Bharatiya Sangeet Ka Itihas, Kolkata, West Bengal, Sangeet Research Academy.
- Deva, B.C. (1st Edtion: 1974) History of Indian Music, Delhi, New Age International Publishers.
- Shrivastava, Girish Chandra (1987) Tala Parichaya, Allahabad, U.P., Sangeet Sadan Prakashan.
- Bharatmuni, Natyashastra, Varanasi, U.P., Chaukhamba Publications.
- Sharangdeva (1stEdition:1964) Sangeet Ratnakar-Vol.1, Hathras, U.P., Sangeet Karyalaya.
- Rajan, Renu (1st Edition: 2010) Bhartiya Shahstriya Sangeet Ke Vividh Ayam, Delhi, Ankit Publications.
- Garg, Laxmi Narayan (3rd Edition: 2003) Nibandh Sangeet, Hathras, U.P., Sangeet Karyalaya
- Shrivastava, Harish Chandra (2003) Sangeet Nibandh Sangrah, Allahabad, U.P.,Sangeet Sadan Prakashan.
- Kasliwal, S. (2001) Classical Musical Instruments, New Delhi, Delhi, Rupa & co.
- Mishra, Lalmani (4th Edition: 2011) Bhartiya Sangeet Vadya, Delhi, Bhartiya Gyanpeet

GE -5

Practical: Unit-2

Practical: Performance &Viva-Voce

Credit: 4
Total – 60 Hrs

Learning Objective

- The Objective behind the teaching of various forms of vocal and instruments is to take the students a step forward into the domains of Indian Classical Music.

Learning Outcome (CLO)

- The student is able to give a practical demonstration of the prescribed Ragas and Talas with improvisation and also learnt folk Music and Dhun.
- They have been taught the customary and traditional Gayaki of Dhrupad-Dhamaar.
- Reciting the Thekas of the Talas and playing basic Talas has enabled them to get acquainted with the rhythmic patterns.
- The practical file with details of each topic covered in the syllabus has taught the students the art of systematic documentation and presentation.

Content

- Prescribed Ragas – Kedar, Patdeep.

Vocal Music

One Vilambit Khayal with Alaaps and Tanas in any of the prescribed Ragas.

- Madhyalaya Khayal in the prescribed Ragas.
- Dhrupad with Dugun, Tigun and Chaugun. Or Dhamar with Dugun, Tigun and Chaugun.

Instrumental Music

- Maseetkhani Gat in any one of the prescribed Ragas.
- Razakhani Gat in the prescribed Ragas.
- Gat in any Tala other than Teentala.

Vocal & Instrumental

- Identifying Ragas and Talas of the prescribed syllabus while being played or sung.
- Ability to recite the Thekas of the following Talas with Tali and Khali: Tilwada, Dhamar, Ektala, Chautala, Dadra, Kaharwa, Teentala.
- Elementary knowledge of playing Harmonium.
- Practical file with details of Ragas, Notations of compositions & Talas with Dugun, Tigun and Chaugun.

References

- Bhatkhande, V.N. (2008) Kramik Pustak Malika (Part- II, III, IV) Hathras, U.P., Sangeet Karyalya.
- Patwardhan, V.R. (1996), Rag Vigyan, Pune, MH, Publisher: Dr. Madhusudhanan Patwardhan.
- Mishra, Lalmani, (1st Edition: 1979) Tantri Naad Part-I, Kanpur, U.P., Sahitya Ratnawali.
- Ratanjankar, Krishna Narayan (1990) Abhinav Geet Manjari, Mumbai, Maharashtra, Acharya S. N. Ratanjankar Foundation.
- Jha, Ramashraya (2014) Abhinav Geetanjali, Allahabad, U.P., Sangeet Sadan Prakashan.
- Singh, Tejpal (1st Edition, 2015) Shastreeya Sangeet Shikshan, New Delhi, Delhi, Akanksha Publishing House.
- Shrivastava, Harish Chandra (June: 2002) Raag Parichaya, New Delhi, Delhi, Rubi Prakashan.
- Mishra, Chhotelal (1st Edition: 2006) Tala Prabandh, New Delhi, Kanishka Publishers.

DEPARTMENT OF MUSIC

B.A. (PROG.) MUSIC – HINDUSTANI MUSIC (VOCAL/INSTRUMENTAL)

SEMESTER- VI

B.A. (PROG.) MUSIC – HINDUSTANI MUSIC (VOCAL/INSTRU.)

S.NO.	CONTENT	PAGE NO.
1	**B.A. (PROG.) MUSIC – HINDUSTANI MUSIC (VOCAL/INSTRU.) - DSC** 1. Musicology and study of ragas and Talas - Non/Major 2. Theoretical & Practical Aspects of Hindustani Music - Major	34-47
2	**Pool of GE** 1. Study of Ragas and Talas and Musicology	48-51
3	**Pool of DSE** **1.** DSE – Research Methodology	52-55

DSC-6 (A/B): Musicology and study of Ragas & Talas

Course Title	Nature of the Course	Total Credits	Components L T P	Eligibility Criteria/Prerequisite
Musicology and study of ragas and Talas	DSC-6(A/B) – CORE (NON MAJOR)	4	2 0 2	12 PASS

DSC-6-C – Theoretical & Practical Aspects of Hindustani Music

Course Title	Nature of the Course	Total Credits	Components			Eligibility Criteria/Prerequisite
			L	T	P	
Theoretical & Practical Aspects of Hindustani Music	DSC-6-C-CORE (MAJOR)	4	2	0	2	12 PASS

SEMESTER-6

Course: DSC 6 (A)

Paper Name: Musicology and study of Ragas and Talas.

Theory:

Component-1

Credit: 2

Hours: 30

Learning Objectives:

The main focus of the course is

- To provide a deep understanding of the historical text and its content which is of great significance in Indian Music.
- To establish better understanding about the musical forms and various elements of Raga and Tala.
- The detailed study of important and divers aspects would provide a grip on the subject.
- To make aware the students about The Gun- Avagun of a singer as told in old music Granthas.
- The writing of compositions and assays are intended to increase writing skill and develop research oriented knowledge of the student.
- The visually challenged students have an option of writing essays on the given topics.

Learning Outcomes:

- The students will acquire knowledge and understanding of the musical references found in the epic Mahabharata.
- The students will gain proficiency in the comparative study of the two major notation systems, which will provide them with virtual understanding of the two methods.
- The students will achieve discernment of the four fold classification of the musical instruments.
- The students will imbibe the importance of Gharanas and will be able to apply the same to better understand the evolution and presentation of Ragas.

- The students will understand the assets and flaws of performing musicians which they will employ to their advantage during performances.
- The study of the elements and forms of Indian music will open new horizons and create interest amongst the students for the subject.
- Students will also learn to write Talas and compositions in notation with minute details.
- The visually challenged students are given an option of attempting either writing of notation or an essay on a general topic.
- Detailed study of the Ragas will enable students to attain proficiency in the subject.

Content

General discussion and study of the following:-

Unit I

Musical references in the following text

- The Mahabharata

Unit II

- Comparative study of notation system of Pt. Vishnu Narayan Bhatkhande and Pt. Vishnu Digamber Paluskar.
- Harmony and Melody
- Gayak ke Gun- Avagun

Unit III

Study of the following musical forms:

- Tarana
- Chaturang
- Trivat
- Sadra

Unit IV

Classification of musical instruments:

- Tata Vadya

- Avanaddha Vadya
- Sushir Vadya
- Ghan Vadya

Unit V

Definition of Gharana and study of the following khyal Gharanas:

- Gwalior Gharana
- Dilli Gharana
- Kirana Gharana

·Unit VI

- Writing of Talas in notation with their Vibhags, Matras, Bols, Sam, Tali and Khali with Dugun, Tigun and Chaugun:
- TilwadaTala, Dhamar tala, Choutala, Jhaptala, Teentala,Ektala, Dadra.

Unit VII

Comparative study of Talas:

- Ektala –Choutala
- Teentala - Tilwada

·Unit VIII

Comparative study of the following Ragas:

- Kedar - Hameer
- Bageshree - Bhimpalasi

Unit IX

Detailed study of the following Ragas:

- Todi
- Jaijaivanti

- Hameer

Unit X

Writing of compositions in notation:

- Vilambit Khayal, Drut Khayal , Dhrupad, Dhamar(For Vocal students),
- Maseetkhani Gat, Razakhani Gat (For Instrumental students).

Or

Only Visually challenged students have the option of attempting either notation or an essay on the following topics:

- Bhartiya Sangeet ke vividh roop
- Vyaktitva nirman mein sangeet ki bhoomika
- Rashtriya ekta mein Sangeet ka yogdaan

References

- Paranjapey, Sridhar Sharat Chandra (2nd Edition: 1985) Bhartiya Sangeet ka Itihas Madhya Pradesh, Hindi Granth Academy.
- Paranjpey, Sridhar Sharat Chandra (1972) Sangeet Bodh, Madhya Pradesh, Hindi Granth Academy.
- Kumar, Pushpendra,(2010), Natya Shastra of Bharatamuni, Delhi, New Bharatiya Book Corporation.
- Singh, Thakur Jaidev (1st Edition: 1995) Indian Music, Sangeet Research Academy.
- Mishra, Lalmani (4th Edition, 2011) Bhartiya Sangeet Vadya, Delhi, Bhartiya Gyanpeeth.
- Mishra, Chhotelal (1st Edition: 2006) Tala Prabandh, New Delhi, Delhi, Kanishka Publishers,
- Rajan, Renu (1996) Hindustani Sangeet Mein Raga Lakshan, New Delhi, Delhi, Radha Publications.
- Garg, Laxmi Narayan (3rd Edition: 2003) Nibandh Sangeet, Hathras, U.P., Sangeet Karyalaya.
- Shrivastava, Harish Chandra (4th Edition: 1974) Sangeet Nibandh Sangrah, Allahabad, U.P., Sangeet Sadan Prakashan.
- Sharma, Swatantra, (2012), Pashchatya swarlipi paddhati evam Bhartiya sangeet, Allhabad, U.P., Anubhav publication house.
- Devangan, Tulsiram (1st Edition 1997) Bhopal, Madhya Pradesh ,Hindi Granth Academi.

- M. Vijayalakshmi (1st Edition 2006) Sangeet Nibandha Mala,New Delhi , Sanjay Prakashan
- Vasant, (27th Edition 2010) Sangeet Visharad , Hathras, Sangeet Karyalaya.

Course: DSC 6 (A/B)

Practical: Component-2

Performance & Viva –Voce

Credit: 2

Hours: 60

Learning Objectives:

The prime design of this course is to enable students to develop performance skills by learning to-

- Demonstrate various forms of music in different Ragas and Talas as a part of performance and Viva-Voce.
- To identify the Ragas and Talas.
- Sing or play one Light Dhun/Bhajan/Lokgeet based on Raga.

Learning Outcomes:

- A variety of musical forms in each Raga will be taught to the students, thus building their repertoire and preparing them for stage performance.
- The students will learn the customary and traditional Gayaki of Dhrupad-Dhamaar.
- ·The students will learn to identify different Ragas and Talas while being sung and played .
- Reciting the Thekas of the Talas and playing basic Talas will enable students to get acquainted with the rhythmic patterns.
- The knowledge of playing Harmonium will aid the students in understanding the placement of fingers and swaras on the instrument.
- The practical file with details of each topic covered in the syllabus will teach the students the method of systematic documentation and presentation.

Content:

Prescribed Ragas – Todi, Jaijaivanti, Hameer

Prescribed Talas - Chautala, Ektala,Jhaptala, Tilwada tala,Teentala, Dadra tala, Roopak tala, Keharwa tala.

Vocal Music

- One Vilambit Khayal with Alaaps and Taans in any of the prescribed Ragas.
- Madhyalaya Khayal in all the prescribed Ragas.
- One Dhrupad with Dugun, Tigun and Chougun.

Or

- One Dhamar with Dugun, Tigun and Chougun.
- One Raga based Bhajan/Lok geet.

Instrumental Music

- Maseetkhani Gat in any one of the prescribed Ragas.
- Razakhani Gat in all the prescribed Ragas.
- Gat in any Tala other than Teentala

Vocal & Instrumental

- Identifying Ragas and Talas of the prescribed syllabus while being sung or played.
- Ability to recite the Thekas of the following Talas along-with Tali – Khali and with Dugun, Tigun, Chaugun :
  Tilwada tala, Dhamar tala,Chautala, Jhaptala, Teentala, Ektala, Dadra tala,Roopak tala, Keharwa tala.
- Elementry knowledge of playing Harmonium.
- Practical file with details of Ragas, Notations of compositions & Talas with Dugun, Tigun and Chaugun.

References

- Bhatkhande, V.N. (Part I, Jan. 2000, Part-II Dec.2013), Kramik Pustak Malika, Hathras, U.P., Sangeet Karyalya.
- Patwardhan, V.R. (1996), Raga Vigyan, Pune, MH, Publisher : Dr. Madhusudhanan Patwardhan.
- Bhatkhande, V.N. (6th Edition, I999), Bhatkhande Sargam Geet Sangrah, Hathras, U.P., Sangeet Karyalya.
- Mishra, Lalmani, (1st Edition: 1979) Tantri Naad Part-I, Kanpur, U.P., Sahitya Ratnawali. Ratanjanka, Krishna Narayan (1990) Abhinav Geet Manjari, Mumbai, Maharashtra, Acharya S. N. Ratanjankar Foundation
- Jha, Ramashraya (2014) Abhinav Geetanjali, Allahabad, U.P., Sangeet Sadan Prakashan.

- Singh, Tejpal (1st Edition, 2015) Shastreeya Sangeet Sikshan, New Delhi, Delhi, Akanksha Publishing House.
- Shrivastava, Harish Chandra (June:2002) Raag Parichaya, New Delhi, Delhi, Rubi Prakashan,

Course: DSC 6 (C)

Paper Name: Theoretical & Practical Aspects of Hindustani Music

Theory: Component-1

Credit: 2

Hours: 30

Learning Objectives:

The focus of the course is:

- To understand the Texts of medieval period.
- To understand Guru-Shishya parampara & Gharana system in Indian Music.
- To understand of musical sound and vibrations.
- To get the skill of writing notation of compositions and the thekas of theTalas.
- To understand the significance of Swasthan Niyam.
- To gain the ability to compare the Ragas of similar notes.

Learning Outcomes:

- The study of medieval granthas will give a speculative insight to the students to understand about classical Music of that time**.**
- The students will learn about the old tradition of music learning: Guru-Shishya parampara & Gharana system.
- The students will learn about different vibrations of musical sound.

- Students will also learn to write Talas and compositions in notation with minute details.
- Detailed study of the Ragas will enable students to attain proficiency in the subject.
- Students will understand how to attain 22 shrutis in a Saptak through Srnna Chatustayi.

Content:

Unit I

Study of the following text :

- Swar Mela Kalanidhi of Pt. Ramamatya

Unit II

Guru Shishya Parampara and Gharanas in Indian Music. Study of the following Gharanas:

- Rampur Gharana
- Jaipur Gharana
- Agra Gharana
- Indore Gharana

Unit III

- Vibration
- Forced Vibration
- Free Vibration
- Equal tempered scale
- Just Intonation

Unit IV

- Swasthan Niyam

Unit V

- Sarna Chatustayi

Unit VI

Placement of Swaras on Veenas strings as described by Pt. Ahobal in Sangeet Parijaat and Pt. Shrinivasa in Rag Tatva Vibodh.

Unit VII

Comparative study of Ragas studied in previous semester:

- Kedar - Hameer
- Todi – Multani
- Bageshree - Bhimpalasi

Unit VIII

Writing of compositions in notation:

- Vilambit Khayal, Drut Khayal , Dhrupad, Dhamar(For Vocal students),
- Maseetkhani Gat, Razakhani Gat (For Instrumental students).
- Writing of Talas in notation - Chautala, Jhaptala, Teentala, Ektala, Adachautala,Jhoomra tala.

Unit IX

Detailed study of the following Ragas:

- Multani
- Gaud Sarang
- Jaijaivanti

References

- Bhatkhande, V.N. (Part I, Jan. 2000, Part-II Dec.2013), Kramik Pustak Malika, Hathras, U.P., Sangeet Karyalya.
- Patwardhan, V.R. (1996), Raga Vigyan, Pune, MH, Publisher: Dr. Madhusudhanan Patwardhan.
- Bhatkhande, V.N. (6th Edition, I999), Bhatkhande Sargam Geet Sangrah, Hathras, U.P., Sangeet Karyalya.
- Mishra, Lalmani, (1st Edition: 1979) Tantri Naad Part-I, Kanpur, U.P., Sahitya Ratnawali. Ratanjanka, Krishna Narayan (1990) Abhinav Geet Manjari, Mumbai, Maharashtra, Acharya S. N. Ratanjankar Foundation
- Jha, Ramashraya (2014) Abhinav Geetanjali, Allahabad, U.P., Sangeet Sadan Prakashan.
- Singh, Tejpal (1st Edition, 2015) Shastreeya Sangeet Sikshan, New Delhi, Delhi, Akanksha Publishing House.
- Shrivastava, Harish Chandra (June:2002) Raag Parichaya, New Delhi, Delhi, Rubi Prakashan,
- Choudhari, Subhadra (June 1989) Sangeet Sanchayan, Ajmer, Rajasthan, Krishna Brothers.
- Dwivedi, Ramakant (1st Edition 2004) Sangeet Swarit, Kanpur, Sahitya Ratnalya.
- M. Vijayalakshmi (1st Edition 2006) Sangeet Nibandha Mala,New Delhi , Sanjay Prakashan.
- Devangan, Tulsiram (1st Edition 1997)Bhopal, Madhya Pradesh ,Hindi Granth Academi.
- Choube, Shusheel Kumar Sangeet mein Gharano ke Charcha

DSC-6-C

Practical: Component -2

Performance & Viva Voce

Credits: 2

Hours: 60

Course Objectives:

• To focus on the professionally performing ability of the student, in conjunction with his capability to understand the intricacies of various ragas.

• To teach the students the proper way of doing Alap or tonal elaborations before the start of Dhrupad
• To encourage the students to perform with thoughtful and aesthetic improvisations.
• To differentiate between similar ragas like Kedar and Kamod.
- To focus more on the Viva-Voce of the student.
• To teach new compositions based on various talas

Course Outcomes:
• The student will gain self-confidence in performing a raga, after practicing its finer details
• He will also be able to demonstrate how to separate similar sounding ragas
• He will be able to sing Dhrupad and Dhamar with an in-depth knowledge of its style of performance.
• A detailed performance of Vilambit and Drut Khayal with gayaki to be presented.
• A detailed performance of Maseetkhani and Razakhani gats with elaboration to be presented.
• Presentation of a dhun, devotional or light music composition

Content:

Prescribed Ragas:

1. Multani

2. Gaud Sarang

3. Jaijaivanti

Vocal Music:

- Vilambit and Drut Khayal with gayaki inall the prescribed ragas mentioned above.
- Dhrupad Dhamar composition in each of the prescribed Ragas with Alap, Layakari & Upaj
- Knowledge and demonstrate of the following talas- Sooltala & Adachautala.
- The ability to tune the Tanpura

Instrumental Music:

- Masitkhani and Razakhani Gats with elaboration to be presented in all the prescribed ragas mentioned above
- Gat with elaboration in any 3 of the following Talas - Ektala, Jhaptala,
- Knowledge and demonstration of the following talas – Sooltala & Adachautala
- The ability of the student to tune his respective instrument

Note: Students of Vocal and Instrumental music will have to prepare according to the requirements of their respective Units.

References:

Bhatkhande, V.N. (2002) Kramik Pustak Malika, Part III, Hathras, U.P., Sangeet Karyalya

• Bhatkhande, V.N. (1970) Kramik Pustak Malika, Part IV, Hathras, U.P., Sangeet Karyalya

• Patwardhan, V.R. (2001) Raga Vigyan, Part I, Pune, Maharashtra, Publisher - Dr. Madhusudhanan Patwardhan
• Patwardhan, V.R. (1996) Raga Vigyan, Part II, Pune, Maharashtra, Publisher - Dr. Madhusudhanan Patwardhan
• Thakur, Omkar Nath (1977) Sangeetanjali, Part I, Bombay, Maharashtra, Pandit Omkar Nath Thakur Estate
• Thakur, Omkar Nath (1975) Sangeetanjali, Part II, Bombay, Maharashtra, Pandit Omkar Nath Thakur Estate
• Thakur, Omkar Nath (2005) Sangeetanjali, Part III, Bombay, Maharashtra, Pandit Omkar Nath Thakur Estate
• Thakur, Omkar Nath (2003) Sangeetanjali, Part IV, Bombay, Maharashtra, Pandit Omkar Nath Thakur Estate
• Mishra, Lalmani (1979) Tantrinada, Kanpur, U.P. Sahitya Ratnalaya
• Aggarwal, V.K. and Nagpal, Alka (2004) Sitar and its Compositions, Part I-II, Delhi, Sanjay Prakashan
• Mahajan, Anupam (2003) Compositions in Instrumental Music (Traditional and New Creation), Delhi, Sanjay Prakashan

GENERIC ELECTIVE
SEMESTER-6

B.A. Hindustani Music Vocal/Instrumental

Course Title& Code	Credits	Credit distributions of the course			Eligibility Criteria	erprerequisite of the course (if any)	Deapartment offering the course
		Lecture	Tutorial	Practical/practical			
Study of Ragas and Talas and Musicology	4	2	0	2	Class XII Pass	NIL	Music

SEMESTER-6
GE-6
Course: Theory: Study of Ragas and Talas and Musicology
Credit: 2
Total – 30 Hrs

Learing Objective

- The course has been precisely structured to provide a deep understanding of the historical texts and their content which are of great significance in Indian Music.
- The in detail study of the important and diverse elements would provide a grip on the subject.
- The writing of compositions and essays are intended to increase an appropriate and research oriented knowledge of the students.

Course Learning Outcome (CLO)

- Students have acquired knowledge and understood the musical references found in the epic Mahabharata.
- Gained proficiency in the comparative study of the two major notation systems, which has provided them with virtual understanding of the two methods.
- Achieved discernment on the classification of instruments – such as a) String instruments, b) Drum instruments, c) Wind instruments, and d) Percussion instruments.
- Imbibed erudition of the importance of Raga Lakshanas and are able to apply the same to the definition of Ragas.
- They have understood the assets and flaws of the performing musicians which they employ to their advantage during performances.
- Acquried cognition of writing notations of traditional compositions and further developing their skills to independently read and learn authentic compositions on their own.
- Visually challanged students have engaged their mind to writing on prescribed topics, thereby developing their expression and learning better skills for declaration.

Content

- There will be three sections; candidates shall have to answer one question from each section & two from any of the three sections, thus five questions in all.

Unit I - Musical references as found in Mahabharata. (2 hrs.)

Unit II - Comparative study of notation system (4 hrs.)

- Pt.Vishnu Narayana Bhatkhande and Pt.Vishnu Digambar Paluskar.

Unit III - Classification of Musical Instruments: (2 hrs.)

- TataVadya, Avanaddha Vadya, Sushir Vadya, Ghan Vadya.

Unit IV - Gayak ke Gun-Avgun. (2 hrs.)

Unit V - Raga Lakshan. (2 hrs.)

Unit VI - Detailed study of the following Ragas: (2 hrs.)

- Puriyadhanashri, Hamir

Unit VII - Writings of Talas with their Vibhags, Bols, Matras, Sam, Tali
Khali of the following: (2 hrs.)

- Ektala, Jhaptala, Teentala, Tilwada, Roopak, Kaharwa, Dhamar, Chautala, Dadra.

Unit VIII - Ability to write Dugun, Tigun and Chaugun of the prescribed Talas. (2 hrs.)

Unit IX - Detailed study of the following musical forms: (2 hrs.)

- Sadra, Trivat, Chaturang, Tarana.

Unit X - General study of western instruments adapted in Indian Classical Music – (2 hrs.)

- Violin, Guitar.

Unit XI - General understanding of Harmony or Melody. (2 hrs.)

Unit XII - Writing of compositions in Notation of Vilambit Khyal, Dhrupad/ Dhamar. (2 hrs.)
(For Vocal students)

Unit XIII - Notation writing of Maseetkhani Gat, Razakhani Gat in Teentala and Gat in other than Teentala. Or Only Visually challenged students have the option of attempting either notation or an essay on the following topics: (4 hrs.)

- Bhartiya Sangeet Ke Vividh Roop.
- Vyaktitva nirman mein Sangeet ki bhoomika.
- Rashtreeya Ekta mein Sangeet ka yogdan.

References

- Sharangdeva (1st Edition: 1964) Sangeet Ratnakar, Hathras, U.P., Sangeet Karyalaya.

- Chandorkar, Vijaya (1993) Bhartiya Sangeet Mein Nibaddha Tatha Anibaddha Gaan, Delhi University, Delhi, Hindi Madhyam Karyanvayan Nideshalya.
- Kasliwal, S. (2001), Classical Musical Instruments, New Delhi, Delhi, Rupa & co.
- Rajan, Renu (1st Edition: 2010) Bhartiya Shastriya Sangeet Ke Vividh ayam, Delhi, Ankit Publications.
- Mishra, Chhotelal (1st Edition: 2006) Taal Prabandh, New Delhi, Delhi, Kanishka Punlishers.
- Deva, B.C. (1st Edtion: 1974) History of Indian Music, Delhi, New Age International Publishers.
- Garg, Laxmi Narayan (3rd Edition: 2003) Nibandh Sangeet, Hathras, U.P., Sangeet Karyalaya.
- Shrivastava, Harish Chandra (1st Edition: 1970) Sangeet Nibandh Sangrah, Allahabad, U.P., Sangeet Sadan Prakashan.
- Sharma, Premlata, Sangeet Mein Nibaddha aur Anibaddha.
- Mishra, Lalmani (4th Edition: 2011) Bhartiya Sangeet Vadya, Delhi, Bhartiya Gyanpeeth.

GE-6
Practical: Component-2

Practical: Performance &Viva –Voce
Credit: 2
Hours: 60

Course Objective

- The performance and viva voce aim at enhancing the understanding and propensity of the students to take this subject as a part of their higher study.

Course Learning Outcome (CLO)

- The students have gained competence in demonstrating the Vilambit & Madhyalaya Khayals/ Maseetkhani and Razakhani Gats, their Alaps, Taans, variations in the traditional compositions of the prescribed Ragas, thereby developing performance skills.
- They accomplish erudition and ability of performing Dhrupad/ Dhamar and demonstrating their Dugun, Tigun and Chaugun.
- The students are able to skillfully display their understanding of the prescribed Talas different Laya.
- They have acquired the judgement of desciphering the various Ragas and Talas by listening and observing.
- Having learnt the basic technique of playing the Harmonium, the students exhibit a vivid view of sound and placement of notes. This has empowered them to independently play and learn songs and compositions.

Content

- Prescribed Ragas – Puriyadhanashri, Hameer.

Vocal Music

- One Vilambit Khayal with Alaaps and Tanas in any of the prescribed Ragas.
- Madhyalaya Khayal in the prescribed Ragas.
- One Dhrupad with dugun, tigun, chougun. Or One Dhamar with Dugun, Tigun and Chaugun.

Instrumental Music

- Maseetkhani Gat in any one of the prescribed Ragas.
- Razakhani Gat in the prescribed Ragas.
- Gat in any Tala other than Teentala or a Dhun.

Vocal & Instrumental

- Identifying Ragas and Talas of the prescribed syllabus while being played or sung.
- Ability to recite the Thekas of the following Talas along-with Tali and Khali: Ektala, Jhaptala, Teentala, Tilwada, Roopak, Keherwa, Dhamar, Chautala, Dadra.
- Ability to recite Dugun and Chaugun of any two of the prescribed Talas.
- Elementary knowledge of playing Harmonium.
- Practical file with details of Ragas, Notations of compositions & Talas with Dugun, Tigun and Chaugun.

Reference

- Bhatkhande, V.N. (2008) Kramik Pustak Malika (Part- II, III, IV) Hathras, U.P., Sangeet Karyalya.
- Patwardhan, V.R. (1996), Rag Vigyan, Pune, MH, Publisher: Dr. Madhusudhanan Patwardhan.
- Bhatkhande, V.N., (6th Edition, I999), Bhatkhande Sargam Geet Sangrah, Hathras, U.P., Sangeet Karyalya.
- Mishra, Lalmani, (1st Edition: 1979) Tantri Nada Part-I, Kanpur, U.P., Sahitya Ratnawali.
- Ratanjankar, Krishna Narayan (1990) Abhinav Geet Manjari, Bambai, Maharashtra, Acharya S. N. Ratanjankar Foundation.
- Jha, Ramashraya (2014) Abhinav Geetanjali, Allahabad, U.P., Sangeet Sadan Prakashan.
- Singh, Tejpal (1st Edition, 2015) Shastreeya Sangeet Shikshan, New Delhi, Delhi, Akanksha Publishing House.
- Shrivastava, Harish Chandra (June:2002) Raga Parichaya, New Delhi, Delhi, Rubi Prakashan.
- Mishra, Chhotelal (1st Edition: 2006) Tala Prabhandh, New Delhi, Kanishka Publishers.

B.A. (Prog.) Music
Hindustani Music - Vocal/Instrument (Sitar)

Syllabus for DSE – Research Methodology

SEMESTER – VI / VII
DSE – Research Methodology

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course
		L	T	P		
DSE – Research Methodology (1)	4	3	1	0	• Class XII Pass	Must have studied the following papers – • Theory topics in Sem III-V OR • Must have an understanding of the basic concepts such as Shruti, Svara, Raga, Tala etc and their associated components • Knowledge of the Bhatkhande and Paluskar notation systems • Knowledge of the 10 Thaatas • Understanding of theory topics covered in Sem III-V

Learning Objectives:

- To understand the concept of 'Research' and its various components
- To study the importance of selecting the correct research topic
- To understand the importance of preparing a Synopsis
- To focus on the various primary and secondary sources of information and how they are used in research
- To discuss the sources of information specifically related to research in Music

- To understand the various aspects of data collection such as Questionnaire, Interview etc.
- To study as to how to write a Report and understand the significance of aspects like References, Footnotes, Bibliography etc.

Learning Outcomes:

- The student shall be able to understand what Research is and its various related aspects
- He/she shall be able to understand the importance of a correct Research Topic, and later on, shall be able to do the same dissertation and thesis
- He/she will be able to demonstrate the ability to write a Synopsis on any given research topic
- The student will be able to understand the significance of the various sources of information in research and how they are to be applied in research on subjects related to Music
- To student shall be able to grasp the various methods of data collection that shall help him in his research later on
- He/she shall be able to understand the correct ways of giving References, Footnotes and other related aspects in his dissertation and thesis later on

Syllabus:

Unit I (10 hours)

Understanding Research and its components -

- Definition
- Aims and objectives
- Varieties
- Methodology
- Process.

Unit II (2 hours)

Selection of the research topic

Unit III (6 hours)

Understanding the importance of Synopsis in Research -

- Definition
- Importance
- Making a synopsis

Unit IV (9 hours)

Primary and Secondary sources of information and their importance in research -

- Manuscripts and Books
- Journals and Magazines
- Sculpture
- Paintings & Frescoes
- Archaeological findings
- Inscriptions
- Musical Pillars and Stones
- Museums
- Coins

Unit V (8 hours)

Study of the following sources of information related to Music:

- Musical compositions
- Oral traditions
- Music performances – live and recorded:
    - Gramophone records
    - Discs
    - Cassettes
    - On the internet
- Media - Print and electronic
- Academic councils.

Unit VI (5 hours)

Understanding methods of data collection:

- Questionnaire
- Interview
- Observation
- Case study
- Experimental Schedule

Unit VII (5 hours)

Report writing and its aspects -

- References
- Footnotes
- Bibliography
- Appendix
- Index

Suggestive readings:

- Survey Research Methods – Floyd. J.F., Sage Publications, New Delhi.
- Methods in Social Research- Goode C.V. & D.E. Scates, McGrawHill, 1954.
- The Art Heritage of India- Havell. E.B.; D.B Taraporevala Sons and Co. Pvt. Ltd. 1964.
- Ragamala Paintings, Kaus, Ebling, Kumar gallery, New Delhi, 1973.
- Research Methodology, Misra R.P, Concept publishing company, New York,1989.
- Exploring research, Salkind N.J., Prentice Hall, New Jersey, 1997.
- Advanced Research Methodology, Srivastava, G.N.P. Radha Publications, New Delhi, 1994.
- The Elements of Research, Whitney F.L., Prentice Hall, New York, 1950.
- Research Methods in Indian Music, Najma Perveen Ahmad, Manohar Publishers and Distributors, New Delhi.
- Research Methodology: Methods and techniques, C.R. Kothari, Wiley Eastern Ltd. NewDelhi,1985
- Sources of research in Indian Classical Music, ReenaGautam,Kanishka Publishers, New Delhi, 2002.
- Research Methodology, Madan Mohan Lavaniya, College Book House, Jaipur, 1985. (In Hindi)
- “Shodh Pravidhi” Vinaymohan Sharma, National Publishing House, Delhi, 1980 (In Hindi)
- Research Methodology, B.M. Jain, Research Publications, Jaipur, 1987 (In Hindi)

ANNEXURE-40

Sub: Amendment to Ordinance V

Following addition be made to Appendix-II-A to the Ordinance V (2-A) of the Ordinances of the University;

Add the following:

Following Value Addition Course (VAC) has been added to the Pool of Value Addition Courses based on Undergraduate Curriculum Framework -2022 implemented from the Academic Year 2022-23 :

1. VAC : National Cadet Corps – IV

   (Details are as per Annexure-I)

REGISTRAR

Annexure - 1

VAC : NATIONAL CADET CORPS – IV

Credit distribution, eligibility criteria and pre-requisites of the course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/Practice		
National Cadet Corps -IV	2	1	0	1	Pass in Class 12th	Enrolled as NCC Cadet and in semester four.

Learning Objectives:

The course aims to:

- Develop a sense of time management and social skills.
- Understand the life history and leadership qualities of personalities who have contributed in Nation Building.
- Develop awareness about various types of Natural and Manmade disasters.
- Understand importance of Environmental Awareness & Conservation.

Learning Outcomes:

After completing this course, the cadets will be able to:-

- Effectively manage time.
- Develop the qualities of social skills.
- Imbibe leadership qualities.
- Effectively contribute in managing disaster relief tasks.
- Contribute in environmental awareness and conservation activities.

SYLLABUS OF NATIONAL CADET CORPS-IV

Unit I: Personality Development (5 Weeks)

Group Discussion-

- Social Skills- Types of etiquettes, Improving Social Skills
- Time Management-Principles

Unit II: Leadership (4 Weeks)

- Case Studies- Ratan Tata, Rabindra Nath Tagore, Jhansi ki Rani

Unit III: Disaster Management (4 Weeks)

- Do's and Don'ts
- Natural Disasters
- Man Made Disasters

Unit IV: Environmental Awareness (2Weeks)

- Water Conservation-Ways to conserve water
- Energy Conservation-Energy conservation measures

Practical Component: (15 Weeks)

- Drill
- Map Reading/Aero Modelling/Naval Communication, Seamanship, Ship & Boat Modelling
- Weapon Training
- Field Craft & Battle Craft
- Social Service & Community Development
- Health & Hygiene

Suggested Readings:

- DGNCC Cadet's Hand Book - Common Subjects -All Wings (in English)
- DGNCC Cadet's Hand Book - Common Subjects -All Wings(in Hindi)
- DGNCC Cadet's Hand Book — Specialised Subjects —Army, Navy and Air Wing

Examination scheme and mode: Subject to directions from the Examination Branch, University of Delhi from time to time.

A N NEXURE - 41

Sub: Amendment to Ordinance V

Following addition be made to Appendix-II-A to the Ordinance V (2-A) of the Ordinances of the University;

Add the following:

Syllabi of Semester-IV of BA (Vocational Studies) under the College of Vocational Studies based on UGCF-2022 implemented from academic year 2022-2023

SEMESTER-IV

1. B.A(VS) Small and Medium Enterprises (SME) – Annexure-1
2. B.A(VS) Insurance Management - Annexure-2
3. B.A(VS) Modern Office Management - Annexure-3
4. B.A(VS) Human Resource Management - Annexure-4
5. B.A(VS) Marketing Management and Retail Business - Annexure-5
6. B.A(VS) Materials Management - Annexure-6
7. B.A(VS) Tourism Management - Annexure-7

ANNEXURE-1

INDEX

B.A. (Vocational Studies)

B.A. (VS) Small and Medium Enterprise

Semester-IV

S.No.	Content	Page No.
1	**Semester -IV - DSC** **1.** Marketing Management in MSMEs **2.** Cost Accounting **3.** Workers, Markets and the future of Work	**2-10**

SEMESTER- IV

B.A. (VS) Small and Medium Enterprises

DISCIPLINE SPECIFIC CORE COURSE -4.1 (DSC-4.1)

Marketing Management in MSMEs

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Marketing Management in MSMEs (DSC-4.1)	**4**	**3**	**1**	**-**	**12th Pass**	**Nil**

Learning Objectives: The objectives of the paper are to:

1. understand the concept of marketing and learn how the scope of marketing has changed over the time.
2. have deep insights into various stages of product life cycle i.e. Introduction, Growth, Maturity and Decline and framing strategies for each product life-cycle stage.
3. learn the different pricing strategies and application of these strategies under different situations.
4. inculcate skills to develop an appropriate promotion mix by incorporating advertising and its media; publicity and its effects; and sales promotion and its types.
5. familiarize the students with the channels of distribution, their levels, types and factors affecting the choices of channels of distribution.

Learning Outcomes: After completion of the course, learners will be able to:

1. explain the concept of marketing and the scope of marketing that has changed over the time.
2. demonstrate stages of product life cycle i.e. Introduction, Growth, Maturity and Decline and framing strategies for each stage.
3. analyse different pricing strategies, also will be able to apply these strategies under different situation.
4. apply skills to develop an appropriate promotion mix by understanding advertising and its media; publicity and its effects; and sales promotion and its types.
5. develop an ability to choose effective channels of distribution, their levels and types. They will also be able to analyse the factors affecting the choices.

Unit 1: Small Business Marketing **10 Hours**

Concept of Marketing, Scope of Marketing, Evolution of Marketing, Types of Marketing, Marketing Information System, E-marketing, Marketing Research: Its objectives and significance, Assessment of Demand, Market Segmentation, Target and Positioning.

Unit 2: Product and Product Life Cycle **7 Hours**

Meaning and Nature of Product, Product Planning and New Product Development, Product Mix, Product Life Cycle: Introduction Stage Strategies, Growth Stage Strategies, Maturity Stage Strategies, Decline Stage Strategies.

Unit 3: Pricing **9 Hours**

Concept, Need, Importance, Factors Affecting Price, and Pricing Methods and Strategies.

Unit 4: Sales Promotion **9 Hours**

Advertising and Publicity, Personal Selling, Packaging Strategies, Branding Strategies, Managing Brand Systems.

Unit 5: Place **10 Hours**

Concept, Objectives & Importance of Channels of Distribution of Consumer Goods, Types of Channels of Distribution, Factors Affecting Choice of Distribution Channels, Role of Middlemen, and Distribution Strategies, Logistics: Meaning, Importance, Objectives, Marketing Logistics Task, Approaches of Logistics (Total Cost & Total System Approach).

Exercises:

The learners are required to:

1. discuss the concept of marketing and prepare a detailed report that how the scope of marketing has changed over the time. (Unit I)
2. identify the various stages of product life cycle of mobile phone, music system, apparels, computers, TVs etc. and frame marketing strategies for each stage. (Unit IV)
3. list the different pricing strategies and explain application of these different pricing strategies under different situation. (Unit II)
4. develop an appropriate promotion mix under different market conditions for different product categories. (Unit III)
5. find out the available channels of distribution, their levels, types and factors affecting the choices. Students may be asked to study the channels of distribution strategies of Amazon, Flipkart, FMCG companies etc. (Unit V)

Suggested Readings:

- Kotler, P., Keller, K. L., Koshy, A., &Jha, M. (2018). *Marketing Management*. Pearson Education. (Units I to V)
- Kotler, P., Keller, K. L., Chernev, A., Sneth, J. N., &Shainesh, G. (2022). *Marketing Management*. Pearson India. (Units I to V)

- Kumar, S. (2017). *Principles of Marketing.* Book Age Publication. (Units I to V)
- Ramaswami, V. S., &Namakumari, S. (2018). *Marketing Management.* Sage Publications. (Units I to V)
- Sharma, K., & Aggarwal, S. (2021). *Principles of Marketing.* Taxmann Publications. (Units I to V)
- Sherlekar, S. A., &Krishnamoorthy, R. (2018). *Marketing Management*. Himalaya Publishing House. (Units I to V)

Notes:

1. **Suggested readings shall be updated and uploaded on the college website from time to time.**
2. **Examination scheme and mode as prescribed by the Examination Branch, University of Delhi, from time to time.**

B.A. (VS) Small and Medium Enterprises
Semester IV
DISCIPLINE SPECIFIC CORE COURSE -4.2 (DSC-4.2)
Cost Accounting

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Cost Accounting (DSC-4.2)	**4**	**3**	**1**	**-**	**12th Pass**	**Nil**

Learning Objectives: The objectives of the paper are to:

1. understand different cost concepts and enable the students to compute unit cost and total cost by preparing a cost statement;
2. learn various material costing techniques;
3. enable the learners to compute labour cost, productivity and employee turnover;
4. know overhead costs and their allocation;
5. familiarize the learners with various costing techniques and methods.

Learning Outcomes: After completion of the course, students will be able to:

1. explain the cost concept, components of cost of production and the preparation of statement of cost;
2. compare and contrast the material costing techniques;
3. analyse labour cost, productivity and employee turnover of **MSMEs**;
4. explain and allot overhead costs to different activities and products;
5. ascertain costs using various costing techniques and methods.

Unit 1: Introduction **9 Hours**

Meaning, scope, objectives and advantages of cost accounting; Difference between financial and cost accounting; Role of a cost accountant in an **MSME**. Cost concepts and classifications, Different components of cost and preparation of Cost Sheet.

Unit 2: Accounting and Control of Material Cost **9 Hours**

Concept of Material Cost and Control, Accounting and Control of Purchases, Storage and Issue of Materials. Inventory Systems, Methods of Pricing of Materials Issues — FIFO, LIFO, Simple and Weighted Average, Techniques of Inventory Controls: Inventory Systems, EOQ, Stock Levels, FSN Analysis, ABC Analysis, JIT Etc. Accounting Treatment and Control of Losses — Wastage, Scrap, Spoilage and Defectives

Unit 3: Accounting and Control of Employee (Labour) Cost 7 Hours

Employees Cost: Definition and Scope, Time-Keeping and Time-Booking. Employee Turnover: Meaning, Measurement and Accounting Treatment. Concept, Treatment and Control of Idle Time and Overtime. Methods of Wage Payment and Incentive Schemes- Halsey, Rowan, Taylor's Differential Piece Wage.

Unit 4: Accounting and Control of Overheads 9 Hours

Overhead: Concept, Classification, Allocation, Apportionment and Absorption, Machine Hour Rate, Treatment Of Over and Under-Absorption, Treatments of Certain Items in Cost Accounts Like Interest and Research and Development Cost, Packing Expenses and Bad Debts.

Unit 5: Methods of Costing 11 Hours

Job Costing, Contract Costing, Process Costing (Including Process Losses, Valuation of Work-In-Progress), Service Costing (Transport and Hospitality Industry)

Practical Exercises:

The learners are required to:

1. prepare a cost statement for an manufacturing or service **MSME** on and identify the items to be included and excluded in the cost system. (Unit 1)
2. prepare various documents used in purchase, storage of materials and do practical exercise on different inventory control techniques for any **MSME**. (Unit 2)
3. compute the employee cost of an **MSME**. (Unit 3)
4. compute of overheads absorption rate and practical exercise on over and under absorption of overheads.(Unit 4)
5. ascertain of cost in different industries using suitable methods of costing. (Unit 5)

Suggested Readings:

- Arora, M. N. (2021). *Cost Accounting- Principles and Practice.* New Delhi: Vikas Publishing House. (Units I to V)
- Maheshwari, S. N., & Mittal, S. N. (2021). *Cost Accounting- Theory and Problems.* New Delhi: Shri Mahavir Book Depot. (Units I to V)
- Singh, S. (2023). *Elements of Cost Accounting.* Allahabad/New Delhi: Kitab Mahal. (Units I to V)
- Tulsian, P. C. (2020). *Cost Accounting.* New Delhi: S. Chand. (Units I to V)

Notes:

1. **Suggested readings shall be updated and uploaded on the college website from time to time.**
2. **Examination scheme and mode as prescribed by the Examination Branch, University of Delhi, from time to time.**

B.A. (VS) Small and Medium Enterprises

Semester IV
DISCIPLINE SPECIFIC CORE COURSE – 5.2 (DSE-5.2)
Workers, markets, and the future of work

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE, REQUISITES OF THE COURSE

Course Title & Code	Total Credits	Lectures	Tutorial	Practical	Eligibility criteria	Pre-requisite of the course
Workers, Markets and the future of Work **DSE – 5.2**	4	3	1	-	**12th Pass**	**Nil**

Learning Objectives: The course aims to familiarize students with the concepts of workers demand, supply and the determination of market wage. It provides basic understanding of the recent developments in markets for workers in India. It discusses the role of international agencies in safe guarding workers interests and defining decent work.

Learning Outcomes:

After completion of the course, learners will be able to:

1. explain the idea of the labour market and its working, the determination of equilibrium wage and the reasons why people choose to work or withdraw from the market.
2. compare the characteristics of various segments of labour markets in India and examine various trends related to wages and employment.
3. explain the concept of global value chains and Special economic Zones (SEZs) and examine their impact on workers, labour markets and the future of work.
4. appraise the role of International agencies in promoting decent work agenda and maintaining labour standards.

Unit 1: Economics of Labour Market and Wage Determination 11 hours

Supply of individual Worker and Workforce: Workers' preferences and Budget constraints, changes in budget constraints due to changes in non-labour income or wages; the labour supply curve of an individual worker and the Supply curve of workers in an Economy.

Policy applications: Welfare programs and work incentives; Labour supply over the life cycle; the decline in work attachment among older workers.

Demand for Workers: Production function of a firm, profit maximization, short- run and long-run decision making of the firm; Overview of labour Market equilibrium.

Policy application: New Labour Codes and the employment effects of minimum wages.

Unit 2: Labour Markets at Work in India **12 hours**

Employment and Unemployment: Concepts of labour-force, workforce, participation rate, universal basic income and other concepts related to unemployment, measurement and trends in employment and wages, phenomena of jobless growth and unemployment in India, changing dynamics of occupational structure.

Facets of Informalisation and Segmentation of Labour Markets in India: Trends and characteristics of informalisation and contractualization, nature of rural labour markets, the growth of non-farm sector and impact of MGNREGA, internal migration in India, gig employment and its impact on platform workers.

Women in the workforce: feminization and low participation.

Unit 3: **Offshoring, Outsourcing and Global Value Chains** (GVCs) **11hours**

Workers in GVC - India and other Developing Countries, impact on employment in India, Labour Standards in India- Case study, Special Economic Zones in India.

Future of work, *Artificial Intelligence and Future of Labour*: Disruptive technology and adjustment in Workers markets

Unit 4: International agencies and Labour Standards **11 hours**

Role and Structure of ILO, ILO Conventions and Recommendations, Decent work and ILO programmes in India, World Trade Organization and workers.

Practical Exercises: The learners are required to:

1. discuss and practice numerical and graphical exercises based on application of demand and supply of labour and changes in equilibrium wage (Unit1)
2. identify and collect information from Internet on various case studies of employment types and engage in group discussions (Unit2)
3. design a questionnaire for primary data collection from the neighbourhood labour markets, collect data and make a group project based on the analyses of the data collected. (Unit2)
4. locate and discuss in class case studies of gig workers such as delivery workers form Zomato, Big Basket, Amazon and other such platforms. (Unit 3)
5. make a group presentation on implementation of ILO activities and programmes in India (Unit4)

Suggested Readings

- *Application of International Labour Standards in times of crisis: the importance of international labour standards and effective and authoritative supervision in the context of the COVID-19 pandemic*, Extracts of the General Report, ILO, 2020. (unit 4)

- Banga, K. (2016). Impact of global Value Chains on Employment in India, *Journal of economic Integration*. (unit 3b)
- Basu, A. K. & Chau, N. H. (2022). Offshoring and labour markets in developing countries. IZA, *World of Labour*. (Unit 3a)
- Borjas, G. J. (2016). *Labour Economics,* New York*:*McGraw-Hill. (Unit 1)
- Chaudhary, R. & Mitra, S. (2019). Labour Practices in the Emerging Gig Economy in India: A case Study of Urban Clap, Formalisation, Informalisation and the Labour Process Workshop. *CeMIS*, Goettingen. https://wwage.org. (unit 2.2e)
- Ghosh, A. K. (2016). *India Employment Report, 2016- Challenges and the Imperative of Manufacturing- Led growth*, New Delhi: Institute of Human Development and OUP. (Executive summary) (unit 2.1a)
- Giri, A. K. & Singh, S.P. (2016). Labour Standards in Global Value Chains in India: the case of hand-knotted carpet manufacturing cluster. *Asian Journal of Business Ethics*. (unit 3c)
- Hollweg, C. H. (2019). Global value chains and employment in developing economies. *Technological Innovation, Supply Chain Trade, and Workers in a Globalized World, Global Value Chain Development Report*, World Bank Group, ch. 3. (unit 3b)
- *India: Decent Work Country Programme for 2018-2022*, ILO, November 2018.
- Jha, P. (2016). *Labour in Contemporary India.*, Short Introduction Series, Oxford India. (unit 2.2a)
- Kapila, U. (2022-23). *Indian Economy: Performance and Policies*, New Delhi: Academic Foundation. (unit 2 & 4).
- Kapila, U. (2022). *Indian Economy since Independence*, New Delhi: Academic Foundation. (unit 2 & 4)
- Koti, J. & Janaki, D. (2016). ILO, WTO & Indian Industrial Relations. *IJIR*. (unit 4)
- Kumar, S. R. (2008). SEZs in India: Concepts, objectives and strategies. paper presented in *National Seminar on Special Economic Zones.* (unit 3d)
- Mondal, B., Ghosh J., Chakraborty S. & Mitra S. (2018). Women Workers in India: Labour Force Trends, Occupational Diversification and Wage Gaps. *State of Working India*, Centre for Sustainable Employment. (Unit 2.2f)
- *Overview of Internal Migration in India*, UNICEF report, https://www.shram.org. 2012. (unit 2.2c)
- Saha, P. & Shervick (2016). State of Rural Labour Markets in India. ILO Asia- Pacific Working Paper Series, May. (unit 2.2b)
- Shervick. (2014). Women's Labour Force Participation in India: Why is it low?. https://www.ilo.org, ILO. (unit 2.2f)
- Shetty, G. (2022). *Growing Gig Economy in India: Is More the Merrier? EPW*, 57 (10), March 5. (unit 2.2e)
- Universal Basic Income: A Conversation With and Within the Mahatma, Economic Survey, 2016-17.

Additional Readings

- Banga, K. (2017). Impact of linking into global value chains on Indian employment. *CEP Working paper*.

- Calvão, F. & Thara, K. (2019). Working Futures: The ILO, Automation and Digital Work in India. *Brill*.
- Caro, L. P., O'Higgins, N. & Berg, J. (2021). Young People and the Gig Economy, https://www.ilo.org.
- Case, K. E. & Fair R. (2008). *Principles of Economics*, Prentice Hall, 9th edition.
- Chaudhary R. (2021). India's Emerging Gig economy: Shaping the Future of Work for Women. https://repository.library.georgetown.edu.
- Ghose, A. K. & Kumar, A. (2021). India's Deepening Employment Crisis in the Time of Rapid Economic Growth, *Institute of Human Development.* Working Paper.
- India's Booming Gig and Platform economy - Perspectives and Recommendations on the future of work, *Niti Aayog.* (2022). June.

Notes:

- **Suggested readings shall be updated and uploaded on the college website from time to time.**
- **Examination scheme and mode shall be prescribed by the Examination branch, University of Delhi from time to time.**

ANNEXURE-2

INDEX

B.A. (Vocational Studies)

B.A.(VS) INSURANCE MANAGEMENT

Semester-IV

S.No.	Content	Page No.
1	**Semester -IV - DSC** 1. Principles of Life Insurance 2. Indian Financial System 3. Workers, Markets and the future of Work	**2-11**

B.A. (VS) Insurance Management
Semester IV
DISCIPLINE SPECIFIC CORE COURSE (DSC-4.1)

Principles of Life Insurance

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Total Credits	Lectures	Tutorial	Practical	Eligibility criteria	Pre-requisite of the course
Principles of Life Insurance DSC – 4.1	**4**	**3**	**1**	**-**	**Pass in class 12th**	**-**

Learning Objectives: The course aims to familiarize the students with the concept of life insurance, its principles, types of life insurance contracts, conventional and new age policies, annuities and special need policies.

Learning Outcomes:
After completion of the course, learners will be able to:

1. explain the need and concept of life insurance.
2. describe the major reforms and growth of the Indian life insurance sector
3. compare the implications of the different terms used & explain why life insurance is not a contract of indemnity.
4. appraise the different types of life insurance and annuity contracts.
5. critique and suggest a suitable life insurance policy after assessment of the prospect's need and amount of life insurance required.

Unit 1: Life Insurance **11 hours**

Concept, purpose, and scope; Major Reforms in Indian Insurance sector; Financial needs and role of life insurance in financial planning; Human life value approach; Evaluating life insurance needs: different methods, Stages in human life in relation to the amount of insurance required; Re-evaluating need for life insurance; Rider benefits.

Unit 2: Policy Form **12 hours**

Life insurance contract: definition, and special features; Types of the life insurance contract; Tax benefits; Parties to a life insurance contract;
Contents of a typical life insurance policy, Conditions and privileges: free look period, payment of premium, grace days, loading charges, auto cover, forfeiture, proof of age, suicide, revival of lapsed policy, non-forfeiture regulations, indisputable policy, assignment and trade in policies, nomination, travel, residence and occupation, and other restrictive conditions; Policy as property: attachable or not.

Unit 3: Conventional and new age policies **11 hours**

Types of Life insurance plans, Term Vs Traditional Plan, Whole life plan, Endowment plan, and Money back plan; the concept of Joint life policy and Partnership plan; Special policies for Women and Children, Retirement plans; Single versus regular premium policies.

Unit 4: ULIPs and special policies **11 hours**

Unit linked insurance policies: concept, features, merits, demerits; Types (purpose and death benefit); riders/add on to a policy: requirement for, suitable riders; Different types of ULIP charges, ULIP vs Traditional plan; Variable life policies: concept, pros, and cons; Special Policies: children, women, differently abled persons, etc.

Exercises:

The learners are required to:

1. engage in a group project that gathers primary data from policy buyers regarding
    1. their reason for buying a life insurance policy (Unit1) and
    2. the type of policy purchased (Unit 3)
2. make a group and study the trends in growth of life insurance (public &private companies) and reasons for growth from the annual reports issued by IRDAI. (Unit1)
   Link for data:
   https://irdai.gov.in/annual-reports
3. participate in a classroom discussion comparing direct (online) buying with fee-based (advice) buying through a registered investment advisor (RIA) (Unit3)
4. gather primary data from relatives and neighbours about the understanding of policyholders regarding loading charges, grace days, forfeiture clause, and special policies. (Unit2 &4)
5. make a presentation on the merits and demerits of a comprehensive plan vis-a-vis exclusive rider(s) attached to a no-frills policy. (Unit4)
6. compare and contrast the life insurance policies offered by different companies (Unit 4)

Readings

- Black, K. Jr. & Skipper, H. D., & Black, K. (2013). *Life Insurance*, CBS publication.
- Heo, W. (2020). *The demand for life insurance*. Springer.
- Mishra, K. (2016). *Fundamentals of Life Insurance Theories and Applications*. PHI Learning Pvt. Ltd.
- Mishra, K.C. & Kumar, C. S. (2009). *Life Insurance- Principles and Practice*, Cenage Learning India Pvt. Ltd.
- Murthy, H. S. N. & Sarma. K.V.S. (2019). *Modern Law of Insurance in India*. Delhi: Universal Book Traders.
- Sadhak. H. (2009). *Life Insurance in India*, New Delhi: Response Books.
- Shashidharan K. (2008). *Managing Life Insurance*, Prentice- Hall of India Pvt. Ltd.
- Sethi, J., & Bhatia, N. (2023). *Elements of Banking and Insurance*. PHI Learning Pvt. Ltd.

Additional Readings:

Publications of Insurance Institute of India, Mumbai

1. IC-02 Practice of Life Insurance
2. IC- 23- Application of Life Insurance
3. IC- 24- Legal Aspects of Life Insurance
4. IC- 33- Life Insurance

Notes:

1. Suggested readings shall be updated and uploaded on the college website from time to time.

2. Examination scheme and mode shall be prescribed by the Examination branch, University of Delhi from time to time.

B.A. (VS) Insurance Management
Semester IV
DISCIPLINE SPECIFIC CORE COURSE (DSC 4.2)

Indian Financial System

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Total Credits	Lectures	Tutorial	Practical	Eligibility criteria	Pre-requisite of the course
Indian Financial System **DSC – 4.2**	4	3	1	-	**Pass in class 12th**	-

Objective: The course aims to provide a conceptual understanding of the overall Indian financial system. It also familiarises the student about the role, types and important functions of the different constituent parts.

Learning Outcomes: After completion of the course, learners will be able to:

1. explain the structure of the Indian financial system and differentiate its components.
2. discuss the linkage between the financial system and economic development.
3. describe and differentiate the functioning of the money and capital markets and the roles of the respective regulators.
4. appraise the recent developments in the banking sector.
5. critique the recent reforms in the Indian financial system.
6. examine the concept of financial stability with respect to the Indian and global financial systems.

Unit 1: Introduction **9 hours**

Functions of the financial system, structure: markets, institutions, instruments, services; Role of financial intermediaries and regulators; inter-linkage between the financial system and economic development; Overview of the evolution of the Indian financial system.

Unit 2: Money and Capital Markets **13 hours**

Money market: functions, participants; money market instruments; role of the central bank (Reserve Bank of India) in the Indian money market.

Capital Market (primary and secondary): functions, participants (including the role of stock exchanges in India (NSE, BSE, MSCI,), depositories (NSDL, CDSL), roles of merchant banking and credit rating; instruments (shares, debentures, bonds, GDRs, ADRs); listing of securities and stock indices; role of SEBI and investor protection.

Unit 3: Commercial banking, MFs and NBFCs and Pension funds **13 hours**

Commercial Banking: classification, functions, nonperforming assets (causes & resolution); recent developments in banking including adoption of technology, financial inclusion, and Mudra financing;

Mutual Funds: structure, types of mutual fund schemes (open ended vs close ended, equity, debt, hybrid schemes and Exchange Traded Funds (ETFs) gold, passive funds, liquid, etc.; factors affecting choice of mutual funds; role in financial system;
Non-banking Financial Companies (NBFCs) & Pension funds: role, function, and types.

Unit 4: Reforms and financial stability 10 hours

Reforms in the Indian financial system: need. reforms since 1990s, impact, future challenges; Financial stability: need; global financial crisis (2008), roles of the Basel Committee on Banking Supervision, Bank of International Settlement, and Financial Stability Board; Challenges to financial stability.

Practical Exercises:

The learners are required to:

1. make a flowchart of the Indian financial system with names of markets, institutions, instruments and services (Unit1)
2. compare the indicators of economic development and the financial systems in India and other countries (Unit1)
3. make a presentation in class highlighting the roles of the regulators based on information displayed on the RBI and SEBI websites (Unit 2)
4. make a group presentation on investor protection based on the recent notifications by SEBI (Unit2)
5. engage in a group project by gathering primary data on financial inclusion, mudra scheme, and the growth of digital banking/wallet/ UPI. (Unit3)
6. make a group project covering the activities of any one NBFC of your choice (Unit3)
7. engage in a classroom discussion on the reforms implemented in the Indian financial system since 2001 (Unit4)
8. make a group presentation on the financial crises caused by Lehman Bros or Yes bank or SVB or any other case of financial bankruptcy (Unit4)

Suggested Readings:

- Acharya, V. V., (2020). *Quest for restoring financial stability in India*. Sage Publications India Pvt. Ltd.
- Bhole, L. M. & Mahakud, J. (2020). *Financial Markets and Institutions*. Tata McGraw Hill Publishing Company.
- Khan, M.Y. (2019). *Indian Financial System* Tata McGraw Hill; 11th edition.
- Saha, S. S. (2020). *Indian Financial System: Financial Markets, Institutions and Services*, Tata McGraw Hill Publishing Company.
- Mishkin, S. F. & Eakins S. G. (2017). *Financial Markets and Institutions*, Pearson Education, New Delhi; 7th edition.
- Pathak, B. V. (2018). *Indian Financial System: Markets, Institutions and Services*, Pearson Education, New Delhi; 5th edition.
- Saunders, A., Cornett, M. & Jain A. (2020). *Financial Markets and Institutions,* Tata McGraw Hill.
- Tomar, A., Agnihotri, S. (2022). Project Finance, A K Publications New Delhi.

Notes:

1. Suggested readings shall be updated and uploaded on the college website from time to time.

2. Examination scheme and mode shall be prescribed by the Examination branch, University of Delhi from time to time.

B.A. (VS) Insurance Management
Semester IV
DISCIPLINE SPECIFIC CORE COURSE (DSE- 5.2)
Workers, Markets, And the Future of Work

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE, REQUISITES OF THE COURSE

Course Title & Code	Total Credits	Lectures	Tutorial	Practical	Eligibility criteria	Pre-requisite of the course
Workers, Markets and the future of Work (DSE – 5.2)	4	3	1	-	**Pass in class 12th**	-

Learning Objectives: The course aims to familiarize students with the concepts of workers demand, supply and the determination of market wage. It provides basic understanding of the recent developments in markets for workers in India. It discusses the role of international agencies in safe guarding workers interests and defining decent work.

Learning Outcomes:

After completion of the course, learners will be able to:

1. explain the idea of the labour market and its working, the determination of equilibrium wage and the reasons why people choose to work or withdraw from the market.
2. compare the characteristics of various segments of labour markets in India and examine various trends related to wages and employment.
3. explain the concept of global value chains and Special economic Zones (SEZs) and examine their impact on workers, labour markets and the future of work.
4. appraise the role of International agencies in promoting decent work agenda and maintaining labour standards.

Unit 1: Economics of Labour Market and Wage Determination 11 hours

Supply of individual Worker and Workforce: Workers' preferences and Budget constraints, changes in budget constraints due to changes in non-labour income or wages; the labour supply curve of an individual worker and the Supply curve of workers in an Economy.

Policy applications: Welfare programs and work incentives; Labour supply over the life cycle; the decline in work attachment among older workers.

Demand for Workers: Production function of a firm, profit maximization, short- run and long- run decision making of the firm; Overview of labour Market equilibrium.

Policy application: New Labour Codes and the employment effects of minimum wages.

Unit 2: Labour Markets at Work in India **12 hours**

Employment and Unemployment: Concepts of labour-force, workforce, participation rate, universal basic income and other concepts related to unemployment, measurement and trends in employment and wages, phenomena of jobless growth and unemployment in India, changing dynamics of occupational structure.

Facets of Informalisation and Segmentation of Labour Markets in India: Trends and characteristics of informalisation and contractualization, nature of rural labour markets, the growth of non-farm sector and impact of MGNREGA, internal migration in India, gig employment and its impact on platform workers.

Women in the workforce: feminization and low participation.

Unit 3: **Offshoring, Outsourcing and Global Value Chains** (GVCs) **11hours**

Workers in GVC - India and other Developing Countries, impact on employment in India, Labour Standards in India- Case study, Special Economic Zones in India.

Future of work, *Artificial Intelligence and Future of Labour*: Disruptive technology and adjustment in Workers markets

Unit 4: International agencies and Labour Standards **11 hours**

Role and Structure of ILO, ILO Conventions and Recommendations, Decent work and ILO programmes in India, World Trade Organization and workers.

Practical Exercises: The learners are required to:

1. discuss and practice numerical and graphical exercises based on application of demand and supply of labour and changes in equilibrium wage (Unit1)
2. identify and collect information from Internet on various case studies of employment types and engage in group discussions (Unit2)
3. design a questionnaire for primary data collection from the neighbourhood labour markets, collect data and make a group project based on the analyses of the data collected. (Unit2)
4. locate and discuss in class case studies of gig workers such as delivery workers form Zomato, Big Basket, Amazon and other such platforms. (Unit 3)
5. make a group presentation on implementation of ILO activities and programmes in India (Unit4)

Suggested Readings

- *Application of International Labour Standards in times of crisis: the importance of international labour standards and effective and authoritative supervision in the context of the COVID-19 pandemic*, Extracts of the General Report, ILO, 2020. (unit 4)
- Banga, K. (2016). Impact of global Value Chains on Employment in India, *Journal of economic Integration*. (unit 3b)
- Basu, A. K. & Chau, N. H. (2022). Offshoring and labour markets in developing countries. IZA, *World of Labour*. (Unit 3a)

- Borjas, G. J. (2016). *Labour Economics*, New York:McGraw-Hill. (Unit 1)
- Chaudhary, R. & Mitra, S. (2019). Labour Practices in the Emerging Gig Economy in India: A case Study of Urban Clap, Formalisation, Informalisation and the Labour Process Workshop. *CeMIS*, Goettingen. https://wwage.org. (unit 2.2e)
- Ghosh, A. K. (2016). *India Employment Report, 2016- Challenges and the Imperative of Manufacturing- Led growth*, New Delhi: Institute of Human Development and OUP. (Executive summary) (unit 2.1a)
- Giri, A. K. & Singh, S.P. (2016). Labour Standards in Global Value Chains in India: the case of hand-knotted carpet manufacturing cluster. *Asian Journal of Business Ethics*. (unit 3c)
- Hollweg, C. H. (2019). Global value chains and employment in developing economies. *Technological Innovation, Supply Chain Trade, and Workers in a Globalized World, Global Value Chain Development Report*, World Bank Group, ch. 3. (unit 3b)
- *India: Decent Work Country Programme for 2018-2022*, ILO, November 2018.
- Jha, P. (2016). *Labour in Contemporary India.*, Short Introduction Series, Oxford India. (unit 2.2a)
- Kapila, U. (2022-23). *Indian Economy: Performance and Policies*, New Delhi: Academic Foundation. (unit 2 & 4).
- Kapila, U. (2022). *Indian Economy since Independence*, New Delhi: Academic Foundation. (unit 2 & 4)
- Koti, J. & Janaki, D. (2016). ILO, WTO & Indian Industrial Relations. *IJIR*. (unit 4)
- Kumar, S. R. (2008). SEZs in India: Concepts, objectives and strategies. paper presented in *National Seminar on Special Economic Zones.* (unit 3d)
- Mondal, B., Ghosh J., Chakraborty S. & Mitra S. (2018). Women Workers in India: Labour Force Trends, Occupational Diversification and Wage Gaps. *State of Working India*, Centre for Sustainable Employment. (Unit 2.2f)
- *Overview of Internal Migration in India*, UNICEF report, https://www.shram.org. 2012. (unit 2.2c)
- Saha, P. & Shervick (2016). State of Rural Labour Markets in India. ILO Asia- Pacific Working Paper Series, May. (unit 2.2b)
- Shervick. (2014). Women's Labour Force Participation in India: Why is it low?. https://www.ilo.org, ILO. (unit 2.2f)
- Shetty, G. (2022). *Growing Gig Economy in India: Is More the Merrier? EPW*, 57 (10), March 5. (unit 2.2e)
- Universal Basic Income: A Conversation With and Within the Mahatma, Economic Survey, 2016-17.

Additional Readings

- Banga, K. (2017). Impact of linking into global value chains on Indian employment. *CEP Working paper*.
- Calvão, F. & Thara, K. (2019). Working Futures: The ILO, Automation and Digital Work in India. *Brill*.
- Caro, L. P., O'Higgins, N. & Berg, J. (2021). Young People and the Gig Economy, https://www.ilo.org.
- Case, K. E. & Fair R. (2008). *Principles of Economics*, Prentice Hall, 9th edition.
- Chaudhary R. (2021). India's Emerging Gig economy: Shaping the Future of Work for Women. https://repository.library.georgetown.edu.

- Ghose, A. K. & Kumar, A. (2021). India's Deepening Employment Crisis in the Time of Rapid Economic Growth, *Institute of Human Development.* Working Paper.
- India's Booming Gig and Platform economy - Perspectives and Recommendations on the future of work, *Niti Aayog.* (2022). June.

Notes:

1. **Suggested readings shall be updated and uploaded on the college website from time to time.**
2. **Examination scheme and mode shall be prescribed by the Examination branch, University of Delhi from time to time.**

ANNEXURE-3

INDEX

B.A. (Vocational Studies)

B.A. (VS) Modern Office Management

Semester-IV

S.No.	Content	Page No.
1	**Semester -IV - DSC** 1. Advanced Phonography- I 2. Company Law 3. Office Automation	**2-8**

SEMESTER-IV

B.A. (VS) Modern Office Management

Semester IV
DISCIPLINE SPECIFIC CORE COURSE – 4.1 (DSC-4.1)
Advanced Phonography- I
CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Advanced Phonography- I (DSC-4.1)	**4**	**-**	**-**	**4**	**12th Pass**	**Knowledge of Basic Phonography**

Learning Objective: The aim of this course is to advance and strengthen the knowledge of phonography rules and help in gaining speed in writing by practicing exercises and learning Grammalogues, Special Contractions and Advanced Phraseography from Pitman Shorthand Instructor. The speedy and accurate transcription of the shorthand notes is the ultimate aim of learning phonographic communication.

Learning Outcomes: After completion of the course, the learners will be able to:

1. demonstrate the techniques of note taking and transcription.
2. create, revise and write the outlines of Grammalogues, Phrases and Special Contractions.
3. articulate, revise and write the outlines of Advanced Phrases.
4. take dictation of seen and unseen passages and transcribe the same on computers.

Unit 1:

Note taking: Techniques of Note Taking, points to be kept in mind while taking down dictation. Transcription: Guidelines for transcription. Revision of Grammalogues, Phrases and Special Contractions (Section 1 to Section 5 of Pitman Shorthand Instructor- Old Course Book).

Unit 2:

Advanced Phraseography (Section 1 to Section 7 of Pitman Shorthand Instructor- Old Course Book)

Unit 3:

Practice of seen dictation exercises (from Exercise No. 121 to 183 of Pitman Shorthand Instructor- Old Course Book) at the speed of 80 words per minute.

Unit 4:

Practice of unseen dictation exercises from other Shorthand books and Shorthand magazines at the speed of 60 words per minute.

Practical Exercises:

The learners are required to:

1. Have someone read aloud a passage or series of phrases related to intersections, business, legal, political, or banking contexts. Take dictation by writing down what is being spoken in real-time. Focus on maintaining accuracy, speed, and proper formatting.
2. Find written materials such as articles, reports, or speeches that cover intersections, business, legal, political, or banking subjects. Read through the content and practice taking concise and organized notes.
3. Choose a short audio or video clip related to intersections, business, legal, political, or banking topics. Play the recording at a faster speed and challenge yourself to take notes quickly while maintaining comprehension and accuracy. Gradually increase the playback speed to improve your note-taking efficiency.
4. Obtain a transcription of a recorded conversation, interview, or speech related to intersections, business, legal, political, or banking subjects. Review the transcription and identify any errors, inconsistencies, or inaccuracies.

Suggested Readings:

- Kuthiala, *Pitman Shorthand Instructor*- Old Course Book. Pearson.
- Pitman, Isaac. (1975). *Pitman Shorthand Instructor- Old Course Book*, Indian Reprint, A. H. Wheeler Publishing Co. Ltd., New Delhi
- Kuthiala, O.P.(2020) *Way to High-Speed Writing,* Pitman S.S. Publications, New Delhi.
- Thorpe, Edgar E. (2020) *Principles of Modern Phraseography*, Pitman S.S. Publications, New Delhi.
- Kuthiala, O.P.(2020), *Phono Phrase Book,* Pitman S.S. Publications, New Delhi.
- Murty, Krishna N.V. *(2020,). Modern Phrase Book,* Pitman S.S. Publications, New Delhi
- Shorthand Magazines available in the market.

Notes:

1. **Suggested readings shall be updated and uploaded on the college website from time to time.**
2. **Examination scheme and mode as prescribed by the Examination Branch, University of Delhi, from time to time.**

B.A. (VS) Modern Office Management
Semester IV
DISCIPLINE SPECIFIC CORE COURSE – 4.2 (DSC-4.2)
COMPANY LAW

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Company Law (DSC-4.2)	**4**	**3**	**1**	**-**	**12th Pass**	**Nil**

Learning Objectives: The course aims to develop and comprehend business and its processes in accordance with the provisions of the Companies Act, 2013 while analysing case laws.

Learning Outcomes: After completion of the course, learners will be able to:

1. analyse the regulatory aspects and the broader procedural aspects involved in different types of companies covering the Companies Act, 2013 and Rules.
2. prepare the basic legal documents required for formation of a company.
3. analyse the process and prepare the documents required for raising capital for the company.
4. analyse the managerial composition of companies and examine the process of company meetings.
5. develop a plan for winding up and the insolvency resolution of a company, considering the interests of the creditors and the company's assets.

Unit 1: Introduction **9 hours**

Meaning and characteristics of a company; Lifting of corporate veil; Overview of administration of Company Law; Types of companies including private and public company, government company, foreign company, one person company, small company, associate company, dormant company and producer company; Association not for profit; Illegal association.

Unit 2: Formation and Incorporation documents **9 hours**

Formation of company, promoters, their legal position and pre-incorporation contracts; Online registration of a company. Memorandum of Association and its alteration, Articles of Association and its alteration, Doctrine of constructive notice, Doctrine of ultra vires and indoor management.

Unit 3: Share Capital **9 hours**

Prospectus, Shelf and Red herring prospectus, misstatement in prospectus; Book building. Allotment and Forfeiture of share, Sweat Equity, ESOPs, Bonus issue, and Further issue of

shares, buyback, split of sharers and provisions regarding buyback; Transfer and transmission of shares; Demat system.

Unit 4: Management and Meetings 9 hours

Directors: Legal position, Disqualifications, Director Identification Number (DIN); Classification of directors, Additional, Alternate and Casual directors, Women directors, Independent director, small shareholder's director; Appointment, Removal of directors; Powers and Duties; Key managerial personnel (KMP); Board Meetings; Shareholders' meetings: AGM and EGM. Convening and conduct of meetings: Requisites of a valid meeting; Resolutions (Virtual meetings); Postal ballot; e-voting.

Unit 5: Dividends, Audit and Winding up 9 hours

Provisions relating to payment of Dividend. Company Audit: auditor's qualification and disqualifications, Auditor's appointment, rotation and removal, Secretarial Audit. Winding Up: Concept and Modes of Winding Up; Provisions of winding up under Insolvency and Bankruptcy Code 2016.

Practical Exercises: The learners are required to:

1. identify the type of company based on information available on NSE/BSE website and then analyse the regulatory and procedural aspects covering the Companies Act, 2013.
2. fill dummy SPICe+ form for incorporation of a company.
3. write about the timeline and details of the book building process of an actual IPO/FPO.
4. identify the actual composition of the Board of Directors and examine the minutes of AGM/EGM of listed companies.
5. develop a plan for winding up and the insolvency resolution process of a company, considering the interests of the creditors and the company's assets.

Suggested Readings:

- Dagar, I., & Agnihotri, A. (2023). *Company Law*. S. Chand New Delhi.
- Jagota, R. (2021). *Corporate Laws*. Taxman Pvt Ltd New Delhi.
- Kapoor, N. D. (2022). *Corporate Laws*. Sultan Chand New Delhi.
- Kaur, H. (2022). *Company Law*. Kitab Mahal New Delhi
- Kuchhal, M. C., & Kuchhal, A. (2013). *Company Law*. Mahavir Publications New Delhi.
- Kumar, A. (2021). *Corporate Laws*. Taxman Pvt. Ltd New Delhi.
- Maheshwari, S. N., & Maheshwari, S. K. (2019). Company Law. Himalaya Publishing House Pvt. Ltd New Delhi.
- Ramaiya, A. (2020). A Guide to Companies Act: LexisNexis.

Notes:

1. **Suggested readings shall be updated and uploaded on the college website from time to time.**
2. **Examination scheme and mode as prescribed by the Examination Branch, University of Delhi, from time to time.**

B.A. (VS) Modern Office Management
Semester IV
DISCIPLINE SPECIFIC CORE COURSE – 4.3 (DSC-4.3) –:
OFFICE AUTOMATION
CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Office Automation (DSC-4.3)	**4**	**3**	**1**	**-**	**12th Pass**	**Nil**

Learning Objective: The objective of this course is to impart knowledge to students for learning and understanding the evolving technologies and the transition to a paperless workplace. It elucidates the various approaches to automation that can be used in modern offices.

Learning Outcomes: After completion of the course, learners will be able to:

1. efficiently manage modern offices with paperless environment
2. facilitate smooth communication using appropriate technological tools
3. handle e-documents in e-offices
4. implement online workflows and settlements
5. apply the functions and applications of ERP in the workplace.

Unit I: Introduction **5 hours**

Meaning, importance of office automation, objectives and use of office automation tools – desktop/personal computers, printers, scanner, photocopier, mobile phones, CCTV Camera, biometric attendance machines and other digital tools. Emerging trends and challenges in office automation

Unit II: Online Communication Tools **10 hours**

Importance of online communication, Online Communication Systems: Internet, e-mail, video conferencing, VoIP, IVRS, Team Collaboration, Skype, Microsoft Teams, Google Teams, Zoom, Facebook, TinyLetter, Drop Box, Flowdock, Chat Services: Google Chat, ChatGPT, Go to Meeting, ProofHub etc.

Unit III: E-Office **10 hours**

Meaning and Nature of e-Office, Benefits of e-Office, Features of e-Office, Collaborative Working e-office, working etiquettes and ethical practices. Legal and ethical considerations associated with using office automation tools. Ensuring compliance with legal and ethical standards in office automation. Introduction to Key Management Services: Online Tour Approval and settlement of Claims. Online leave Applications, Online Leave Approvals, Joining Reports, Leave History, Leave in Credit and Workload of office staff.

Unit IV: E-File Management **10 hours**

Online Diary of Letters, File Processing, Dashboard view with Alerts, Enhanced Scope Based Search, MIS Reports for Monitoring and Analysis, Multilingual support, Added Data security with DSC and e-Sign. Interdepartmental File Movements, Records Management System, Citizen Interface, concept of Public Financial Management System (PFMS).

Unit V: Enterprise Resource Planning (ERP) **10 hours**

Meaning, benefits, and limitations of ERP; components of ERP; Evolution of ERP; Various Modules of ERP; softwares, applications of ERP; ERP and Business – value creation, ERP implementation life cycle, recent trends

Exercises:

The learners are required to:

1. Use different devices such as computers, mobiles, printers, etc, for data input, processing or output. Now design a workflow using office automation tools. For example, create a scenario where you receive a document via email, save it to your computer, edit it using a word processor, print a copy, and then scan it back into digital format for archiving.
2. Compose and send professional emails to peers or instructors, focusing on clarity, conciseness, and appropriate tone and respond to simulated email scenarios, demonstrating effective communication skills in various professional contexts.
3. Form small groups and assign a collaborative document creation task. For example, create a proposal, report, or presentation using online collaborative tools like Google Docs or Microsoft SharePoint.
4. Simulate virtual meetings using video conferencing tools and demonstrate proper meeting etiquette, such as joining on time, muting/unmuting audio, using video appropriately, and utilizing virtual meeting features like screen sharing and chat.
5. Analyze a real-world case study of an organization that implemented an ERP system. Explore the challenges faced, the objectives achieved, and the overall impact on the organization's operations and processes.
   Identify the components of the ERP system implemented, such as modules for finance, human resources, supply chain management, or customer relationship management.

Suggestive Readings:

- Ahmed, P. Rizwan. (2016). *Office Automation*, Margham Publications
- Blokdyk, Garardus. (2020) *Office Automation A Complete Guide*, 5STARCooks
- Curran, S., & Mitchell, H. (1982). *"Office Automation: An Essential Management Strategy*". The Macmillan Press Ltd
- Deepalakshmi, R., (2019). *Computer Fundamentals and Office Automation*. Charulatha Publications Private Limited
- Kuthiala. (2020). Pitman Shorthand Instructor- Old Course Book
- Department of Education, Government of Kerala. (2016). "Computerised Office Management". Kerala: State Council of Educational Research and Training (SCERT).

- Gupta, Swati. (2020) *Office Automation System*, LAP LAMBERT Academic Publishing
- IDC Technologies. (2012). "*Industrial Automation*". The IDC Engineers & bookboon.com
- Kumar, Archana. (2019). "*Computer Basics with Office Automation*". I. K. International Publishing House Pvt. Ltd.
- Li, P., (2019). "*New Trends in Industrial Automation*". IntechOpen. https://doi.org/10.5772/intechopen.75341

Notes:

1. **Suggested readings shall be updated and uploaded on the college website from time to time.**
2. **Examination scheme and mode as prescribed by the Examination Branch, University of Delhi, from time to time.**

ANNEXURE-4

INDEX

B.A. (Vocational Studies)

HUMAN RESOURCE MANAGEMENT

Semester-IV

S.No.	Content	Page No.
1	**Semester -IV - DSC** 1. Human Resource Development 2. Company Law 3. Workers, Markets and the future of Work	**2-11**

B.A. (VS) Human Resource Management
Semester IV
DISCIPLINE SPECIFIC CORE COURSE (DSC- 4.1)
Human Resource Development

Credit Distribution, Eligibility and Pre-Requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Human Resource Development (DSC- 4.1)	4	3	1	-	Pass in class 12th	Nil

Learning objective: This course aims to enable learners to understand the concept, components, and evolution of HRD, differentiate between HRM and HRD and explore strategic perspectives in HRD.

Learning Outcomes: After completion of the course, learners will be able to:

1. interpret the concept of HRD and examine its evolution.
2. comprehend and apply HRD theory to real-world situations and organizational contexts.
3. compare and contrast the different HRD strategies in organisations and analyse pros and cons of each.
4. review the learning process in an organization starting with training needs, analysis, assessment and evaluation process.
5. assess the different training methods used in industry for their best suitability depending on the job type.

Unit 1: Introduction **9 hours**

Human Resource Development (HRD)- concept, components, evolution, need and significance, difference between human resource management and human resource development, Role of HR manager, HRD culture and climate, contemporary issues in HRD.

Unit 2: The Theory of HRD **9 hours**

The Discipline of HRD, Psychology and the Discipline of HRD – Contributions and limitations, HRD Core Beliefs, HRD Paradigms, Economics – Human Capital Theory and Human Resource Development, System theory as foundation for HRD.

Unit 3: Strategic Perspectives in HRD **9 hours**

Concept of Strategic HRD, HRD Interventions-Performance Appraisal, Potential Appraisal, Performance Coaching and Feedback, Career Planning, Training, Systems Development, Rewards, Employee Welfare and Work Life balance, Roles of HR Developer, Physical and Financial Resources for HRD, HR Accounting, HRD Audit.

Unit 4: Learning Technology for HRD **9 hours**

Learning and HRD, Models and Curriculum, Principles of Learning, Individual and Group Learning, Assessment Centre, Transactional Analysis, Behaviour Modelling and Self-Directed Learning, Evaluating the HRD.

Unit 5: Human Resource Training and Development (T&D) **9 hours**

Concept and Importance, Assessing Training Needs, Designing and Evaluating Training & Development Programmes, Role, Responsibilities and challenges to Training Managers, Strategies of Training Program, Review on T&D Programmes in India.

Exercises:

The learners are required to:

1. Form groups in class & engage in active class discussion to gain a comprehensive understanding of the concept of HRD and evolution of Human Resource Development. For this, students will be required to interview HR professionals who have been working in the field for a significant period. Students can ask questions about the changes they have witnessed in HRD practices throughout their careers, the challenges faced during different stages, and the impact of technological advancements on HRD
2. Prepare class presentation by selecting a real or fictional case study that involves HRD challenges or initiatives. Students should analyze the cases, apply the theory of HRD to understand the underlying issues, and propose suitable solutions or interventions. This exercise allows students to critically assess the contributions and limitations of HRD theory in addressing practical HRD issues.
3. Assign students the task of developing an HRD strategic plan for a hypothetical organization. They should review and document the organization's goals, assess the HRD needs, and create a comprehensive plan aligned with the overall strategic objectives. Students will state and discuss the range of rewards and employee welfare schemes that the companies provide.
4. Select different learning materials, such as textbooks, online courses, or instructional videos from a particular module/course/topic. Students should critically analyze and evaluate the effectiveness of the materials based on principles of learning. They can assess factors like clarity of content, engagement level, use of multimedia, and alignment with learning objectives and engage in classroom discussion.
5. Assess and select an appropriate training program for a specific job role or department within an organization. They should consider the learning objectives, content, delivery methods, evaluation strategies, and resources required for effective training

Suggested Readings:

- Collins, J. C. (2022). *The Palgrave Handbook of Critical Human Resource Development*. Switzerland AG: Palgrave Macmillan Cham.
- Chabbra, T.N. & Chabbra, M. (2016). *Essentials of human resource management*. New Delhi, India: Sun India Publications.
- Sombala. N, Singh Teena (2018). *People Management in 21st Century*. Chennai, India: McGraw Hill Education India Private Ltd.

- Swanson, R. A. (2022). *Foundations of human resource development (3rd Ed).* Texas, US: Berrett-Koehler Publishers.
- Werner, J. M. (2021). *Human Resource Development: Talent Development (8th ed.).* Boston, MA: Cengage Learning.
- Yorks, L., Abel, A. L., & Rotatori, D. (2022). *Strategic Human Resource Development in Practice. Management for Professionals.* New York: Springer.

Notes:

1. Suggested readings shall be updated and uploaded on the college website from time to time.

2. Examination scheme and mode shall be as prescribed by the Examination branch, University of Delhi from time to time.

B.A. (VS) Human Resource Management
Semester IV
DISCIPLINE SPECIFIC CORE COURSE (DSC- 4.2)

Company Law

Credit Distribution, Eligibility and Pre, Requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (If any)
		Lecture	Tutorial	Practical/ Practice		
Company Law (DSC: 4.2)	4	3	1	-	**Pass in class 12th**	NIL

Learning Objectives

The course aims to develop and comprehend business and its processes in accordance with the provisions of the Companies Act, 2013 while analysing case laws.

Learning Outcomes

After completion of the course, learners will be able to:

1. understand and analyse the regulatory aspects and the broader procedural aspects involved in different types of companies covering the Companies Act, 2013 and Rules.
2. prepare the basic legal documents required for formation of a company.
3. analyse the process and prepare the documents required for raising capital for the company.
4. analyse the managerial composition of companies and examine the process of company meetings.
5. develop a plan for winding up and the insolvency resolution of a company, considering the interests of the creditors and the company's assets.

Unit 1: Introduction **9 hours**

Meaning and characteristics of a company; Lifting of corporate veil; Overview of administration of Company Law; Types of companies including private and public company, government company, foreign company, one person company, small company, associate company, dormant company and producer company; Association not for profit; Illegal association.

Unit 2: Formation and Incorporation documents **9 hours**

Formation of company, promoters, their legal position and pre-incorporation contracts; Online registration of a company. Memorandum of Association and its alteration, Articles of Association and its alteration, Doctrine of constructive notice, Doctrine of ultra vires and indoor management.

Unit 3: Share Capital **9 hours**

Prospectus, Shelf and Red herring prospectus, misstatement in prospectus; Book building. Allotment and Forfeiture of share, Sweat Equity, ESOPs, Bonus issue, and Further issue of shares, buyback, split of sharers and provisions regarding buyback; Transfer and transmission of shares; Demat system.

Unit 4: Management and Meetings **9 hours**

Directors: Legal position, Disqualifications, Director Identification Number (DIN); Classification of directors, Additional, Alternate and Casual directors, Women directors, Independent director, small shareholder's director; Appointment, Removal of directors; Powers and Duties; Key managerial personnel (KMP); Board Meetings; Shareholders' meetings: AGM and EGM. Convening and conduct of meetings: Requisites of a valid meeting; Resolutions (Virtual meetings); Postal ballot; e-voting.

Unit 5: Dividends, Audit and Winding up **9 hours**

Provisions relating to payment of Dividend. Company Audit: auditor's qualification and disqualifications, Auditor's appointment, rotation and removal, Secretarial Audit. Winding Up: Concept and Modes of Winding Up; Provisions of winding up under Insolvency and Bankruptcy Code 2016.

Practical Exercises

The learners are required to:

1. Identify the type of company based on information available on NSE/BSE website and then analyse the regulatory and procedural aspects covering the Companies Act, 2013.
2. Create small groups effectively and collaborate to fill out a dummy Spice+ form for the incorporation of a sample company, gaining hands-on experience and understanding the necessary steps and requirements involved in the process.
3. Create small groups & collect data on the timeline and details of the book building process of an actual IPO/FPO.
4. Engage in classroom discussion to identify the actual composition of the Board of Directors and examine the minutes of AGM/EGM of listed companies.
5. Make a project on developing a plan for winding up and the insolvency resolution process of a company, considering the interests of the creditors and the company's assets.

Suggested Readings

- Bhushan, B., Kapoor N.D., Rajni Abbi, Kapoor Rajiv, (2022). N.*D. Kapoor's Corporate Laws*. Sultan Chand New Delhi.
- Dagar, I., & Agnihotri, A. (2023). *Company Law*. S. Chand New Delhi.
- Jagota, R. (2021). *Corporate Laws*. Taxman Pvt Ltd New Delhi.
- Kaur, H. (2022). *Company Law*. Kitab Mahal New Delhi
- Kuchhal, M. C., & Kuchhal, A. (2013). *Company Law*. Mahavir Publications New Delhi.
- Kumar, A. (2021). *Corporate Laws*. Taxman Pvt. Ltd New Delhi.
- Maheshwari, S. N., & Maheshwari, S. K. (2019). Company Law. Himalaya Publishing House Pvt. Ltd New Delhi.

- Ramaiya, A. (2020). *A Guide to Companies Act*: LexisNexis.

Notes:

1. Suggested readings shall be updated and uploaded on the college website from time to time.

2. Examination scheme and mode shall be as prescribed by the Examination branch, University of Delhi from time to time.

B.A. (VS) Human Resource Management
Semester IV
DISCIPLINE SPECIFIC CORE COURSE
Workers, Markets, and the Future Of Work

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE, REQUISITES OF THE COURSE

Course Title & Code	Total Credits	Lectures	Tutorial	Practical	Eligibility criteria	Pre-requisite of the course
Workers, Markets and the future of Work	4	3	1	-	**Pass in Class 12th**	**Nil**

Learning Objectives: The course aims to familiarize students with the concepts of workers demand, supply and the determination of market wage. It provides basic understanding of the recent developments in markets for workers in India. It discusses the role of international agencies in safe guarding workers interests and defining decent work.

Learning Outcomes:

After completion of the course, learners will be able to:

1. explain the idea of the labour market and its working, the determination of equilibrium wage and the reasons why people choose to work or withdraw from the market.
2. compare the characteristics of various segments of labour markets in India and examine various trends related to wages and employment.
3. explain the concept of global value chains and Special economic Zones (SEZs) and examine their impact on workers, labour markets and the future of work.
4. appraise the role of International agencies in promoting decent work agenda and maintaining labour standards.

Unit 1: Economics of Labour Market and Wage Determination 11 hours

Supply of individual Worker and Workforce: Workers' preferences and Budget constraints, changes in budget constraints due to changes in non-labour income or wages; the labour supply curve of an individual worker and the Supply curve of workers in an Economy.

Policy applications: Welfare programs and work incentives; Labour supply over the life cycle; the decline in work attachment among older workers.

Demand for Workers: Production function of a firm, profit maximization, short- run and long- run decision making of the firm; Overview of labour Market equilibrium.

Policy application: New Labour Codes and the employment effects of minimum wages.

Unit 2: Labour Markets at Work in India 12 hours

Employment and Unemployment: Concepts of labour-force, workforce, participation rate, universal basic income and other concepts related to unemployment, measurement and trends in employment and wages, phenomena of jobless growth and unemployment in India, changing dynamics of occupational structure.

Facets of Informalisation and Segmentation of Labour Markets in India: Trends and characteristics of informalisation and contractualization, nature of rural labour markets, the growth of non-farm sector and impact of MGNREGA, internal migration in India, gig employment and its impact on platform workers.

Women in the workforce: feminization and low participation.

Unit 3: **Offshoring, Outsourcing and Global Value Chains** (GVCs) **11hours**

Workers in GVC - India and other Developing Countries, impact on employment in India, Labour Standards in India- Case study, Special Economic Zones in India.

Future of work, *Artificial Intelligence and Future of Labour*: Disruptive technology and adjustment in Workers markets

Unit 4: International agencies and Labour Standards 11 hours

Role and Structure of ILO, ILO Conventions and Recommendations, Decent work and ILO programmes in India, World Trade Organization and workers.

Exercises: The learners are required to:

1. discuss and practice numerical and graphical exercises based on application of demand and supply of labour and changes in equilibrium wage (Unit1)
2. identify and collect information from Internet on various case studies of employment types and engage in group discussions (Unit2)
3. design a questionnaire for primary data collection from the neighbourhood labour markets, collect data and make a group project based on the analyses of the data collected. (Unit2)
4. locate and discuss in class case studies of gig workers such as delivery workers form Zomato, Big Basket, Amazon and other such platforms. (Unit 3)
5. make a group presentation on implementation of ILO activities and programmes in India (Unit4)

Suggested Readings

- *Application of International Labour Standards in times of crisis: the importance of international labour standards and effective and authoritative supervision in the context of the COVID-19 pandemic*, Extracts of the General Report, ILO, 2020. (unit 4)
- Banga, K. (2016). Impact of global Value Chains on Employment in India, *Journal of economic Integration*. (unit 3b)
- Basu, A. K. & Chau, N. H. (2022). Offshoring and labour markets in developing countries. IZA, *World of Labour*. (Unit 3a)
- Borjas, G. J. (2016). *Labour Economics*, New York*:*McGraw-Hill. (Unit 1)

- Chaudhary, R. & Mitra, S. (2019). Labour Practices in the Emerging Gig Economy in India: A case Study of Urban Clap, Formalisation, Informalisation and the Labour Process Workshop. *CeMIS*, Goettingen. https://wwage.org. (unit 2.2e)
- Ghosh, A. K. (2016). *India Employment Report, 2016- Challenges and the Imperative of Manufacturing- Led growth*, New Delhi: Institute of Human Development and OUP. (Executive summary) (unit 2.1a)
- Giri, A. K. & Singh, S.P. (2016). Labour Standards in Global Value Chains in India: the case of hand-knotted carpet manufacturing cluster. *Asian Journal of Business Ethics*. (unit 3c)
- Hollweg, C. H. (2019). Global value chains and employment in developing economies. *Technological Innovation, Supply Chain Trade, and Workers in a Globalized World, Global Value Chain Development Report*, World Bank Group, ch. 3. (unit 3b)
- *India: Decent Work Country Programme for 2018-2022*, ILO, November 2018.
- Jha, P. (2016). *Labour in Contemporary India.*, Short Introduction Series, Oxford India. (unit 2.2a)
- Kapila, U. (2022-23). *Indian Economy: Performance and Policies*, New Delhi: Academic Foundation. (unit 2 & 4).
- Kapila, U. (2022). *Indian Economy since Independence*, New Delhi: Academic Foundation. (unit 2 & 4)
- Koti, J. & Janaki, D. (2016). ILO, WTO & Indian Industrial Relations. *IJIR*. (unit 4)
- Kumar, S. R. (2008). SEZs in India: Concepts, objectives and strategies. paper presented in *National Seminar on Special Economic Zones.* (unit 3d)
- Mondal, B., Ghosh J., Chakraborty S. & Mitra S. (2018). Women Workers in India: Labour Force Trends, Occupational Diversification and Wage Gaps. *State of Working India*, Centre for Sustainable Employment. (Unit 2.2f)
- *Overview of Internal Migration in India*, UNICEF report, https://www.shram.org. 2012. (unit 2.2c)
- Saha, P. & Shervick (2016). State of Rural Labour Markets in India. ILO Asia- Pacific Working Paper Series, May. (unit 2.2b)
- Shervick. (2014). Women's Labour Force Participation in India: Why is it low?. https://www.ilo.org, ILO. (unit 2.2f)
- Shetty, G. (2022). *Growing Gig Economy in India: Is More the Merrier? EPW*, 57 (10), March 5. (unit 2.2e)
- Universal Basic Income: A Conversation With and Within the Mahatma, Economic Survey, 2016-17.

Additional Readings

- Banga, K. (2017). Impact of linking into global value chains on Indian employment. *CEP Working paper*.
- Calvão, F. & Thara, K. (2019). Working Futures: The ILO, Automation and Digital Work in India. *Brill*.
- Caro, L. P., O'Higgins, N. & Berg, J. (2021). Young People and the Gig Economy, https://www.ilo.org.
- Case, K. E. & Fair R. (2008). *Principles of Economics*, Prentice Hall, 9th edition.
- Chaudhary R. (2021). India's Emerging Gig economy: Shaping the Future of Work for Women. https://repository.library.georgetown.edu.
- Ghose, A. K. & Kumar, A. (2021). India's Deepening Employment Crisis in the Time of Rapid Economic Growth, *Institute of Human Development.* Working Paper.

- India's Booming Gig and Platform economy - Perspectives and Recommendations on the future of work, *Niti Aayog.* (2022). June.

Notes:

- **Suggested readings shall be updated and uploaded on the college website from time to time.**
- **Examination scheme and mode shall be prescribed by the Examination branch, University of Delhi from time to time.**

ANNEXURE-5

INDEX

B.A. (Vocational Studies)

B.A. (VS) MARKETING MANAGEMENT AND RETAIL BUSINESS

Semester-IV

S.No.	Content	Page No.
1	**Semester -IV - DSC** 1. Consumer Behaviour 2. Company Law 3. Workers, Markets and the future of Work	**2-10**

SEMESTER-IV

B.A. (VS) Marketing Management and Retail Business

DISCIPLINE SPECIFIC CORE COURSE (DSC-4.1)

Consumer Behavior

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Consumer Behaviour (DSC: 4.1)	**4**	**3**	**1**	**-**	**Pass in Class XII**	**-**

Learning Objectives: The course aims to equip learners with essential management-related knowledge and skills and their applicability in the real world.

Learning Outcomes: After completion of the course, learners will be able to:

1. identify characteristics of consumer behaviour and how to use market segmentation techniques.
2. examine the influence of internal dynamics on consumer behaviour.
3. explain external factors that influence consumer behaviour.
4. appraise consumption pattern and influences that exert during these processes.

Unit 1: Introduction to Consumer Behaviour ` 9 Hours

Nature, scope & application; Importance of consumer behaviour in marketing decisions; characteristics of consumer behaviour; distinguish between customer and consumer; the role of consumer research; Market Segmentation, VALS 2 segmentation profile.

Unit 2: Internal Influences on Consumer Behaviour 15 Hours

Consumer Needs & Motivation: Characteristics of motivation, arousal of motives; theories of needs & motivation-Maslow's hierarchy of needs, McClelland's APA theory; Consumer Personality- theories of personality- Freudian theory, Neo- Freudian theory, Trait theory; Consumer Perception: Concept of absolute threshold limit, differential threshold limit & subliminal perception; Consumer Attitudes: Formation of attitudes; functions performed by attitudes; models of attitudes.

Unit 3: External Influences on Consumer Behaviour 12 Hours

Group Dynamics & consumer reference groups: Different types of reference groups; factors affecting reference group influence. Family & Consumer Behaviour: Consumer socialization

process; consumer roles within a family; purchase influences and role played by children; family life cycle. Characteristics of culture; core values held by society & their influence on consumer behaviour

Unit 4: Customer Decision Making **9 Hours**

Customer Decision-making process: problem recognition; pre-purchase search influences; information evaluation; purchase decision- compensatory decision rule, conjunctive decision, rule, Lexicographic rule, affect referral, disjunctive rule; post-purchase evaluation. Contemporary issues in consumer behavior- Social media marketing, digital marketing, Influencer marketing etc.

Exercises:

1. Construct separate advertising executions for a cosmetics product that targets the Believer, Achiever, Experiencer and Maker VALs segment types. (Unit 1)
2. You are a member of an advertising team assembled to develop a promotional campaign for a new digital camera. Develop three headlines for this campaign, each based on one of the levels in Maslow's need hierarchy. (Unit 2)
3. Think of a recent major purchase your family has made. Analyze the roles performed by the various family members in terms of the following consumption roles; influencers, gatekeepers, deciders, buyers, preparers, users, maintainers and disposers. (Unit 3)
4. Select a newspaper or magazine advertisement that attempt (a) to provide the consumer with a strategy to follow in making a purchase decision or (b) to reduce the perceived risk associated with a purchase. Evaluate the effectiveness of the ad. (Unit 4)

Suggested Readings:

- Gupta, S. L., & Pal, S. (2021). *Consumer behaviour*, New Delhi, India: Sultan Chand and Sons
- Schiffman, L. G., & Kanuk, L. L. (2020). *Consumer behaviour*. Prentice Hall Publication.
- Solomon, M. R. (2022). *Consumer behaviour: Buying, having, and being*, India: PHI Learning Private Limited.
- Blackwell, R. D., Miniard, P. W., & Engel, J. F. (1995). *Consumer behaviour*. New Delhi: Cengage India Private Limited.

Notes:

1. **Suggested readings shall be updated and uploaded on the college website from time to time.**
2. **Examination scheme and mode shall be prescribed by the Examination branch, University of Delhi from time to time.**

B.A. (VS) Marketing Management and Retail Business
Semester IV
DISCIPLINE SPECIFIC CORE COURSE (DSC-4.2)
COMPANY LAW
Credit Distribution, Eligibility and Pre, Requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (If any)
		Lecture	Tutorial	Practical/ Practice		
Company Law (DSC: 4.2)	4	3	1	-	**Pass in Class XII**	-

Learning Objectives

The course aims to develop and comprehend business and its processes in accordance with the provisions of the Companies Act, 2013 while analysing case laws.

Learning Outcomes

After completion of the course, learners will be able to:

1. understand and analyse the regulatory aspects and the broader procedural aspects involved in different types of companies covering the Companies Act, 2013 and Rules.
2. prepare the basic legal documents required for formation of a company.
3. analyse the process and prepare the documents required for raising capital for the company.
4. analyse the managerial composition of companies and examine the process of company meetings.
5. develop a plan for winding up and the insolvency resolution of a company, considering the interests of the creditors and the company's assets.

Unit 1: Introduction **9 hours**

Meaning and characteristics of a company; Lifting of corporate veil; Overview of administration of Company Law; Types of companies including private and public company, government company, foreign company, one person company, small company, associate company, dormant company and producer company; Association not for profit; Illegal association.

Unit 2: Formation and Incorporation documents **9 hours**

Formation of company, promoters, their legal position and pre-incorporation contracts; Online registration of a company. Memorandum of Association and its alteration, Articles of

Association and its alteration, Doctrine of constructive notice, Doctrine of ultra vires and indoor management.

Unit 3: Share Capital **9 hours**

Prospectus, Shelf and Red herring prospectus, misstatement in prospectus; Book building. Allotment and Forfeiture of share, Sweat Equity, ESOPs, Bonus issue, and Further issue of shares, buyback, split of sharers and provisions regarding buyback; Transfer and transmission of shares; Demat system.

Unit 4: Management and Meetings **9 hours**

Directors: Legal position, Disqualifications, Director Identification Number (DIN); Classification of directors, Additional, Alternate and Casual directors, Women directors, Independent director, small shareholder's director; Appointment, Removal of directors; Powers and Duties; Key managerial personnel (KMP); Board Meetings; Shareholders' meetings: AGM and EGM. Convening and conduct of meetings: Requisites of a valid meeting; Resolutions (Virtual meetings); Postal ballot; e-voting.

Unit 5: Dividends, Audit and Winding up **9 hours**

Provisions relating to payment of Dividend. Company Audit: auditor's qualification and disqualifications, Auditor's appointment, rotation and removal, Secretarial Audit. Winding Up: Concept and Modes of Winding Up; Provisions of winding up under Insolvency and Bankruptcy Code 2016.

Practical Exercises

The learners are required to:

1. Identify the type of company based on information available on NSE/BSE website and then analyse the regulatory and procedural aspects covering the Companies Act, 2013.
2. Create small groups effectively and collaborate to fill out a dummy Spice+ form for the incorporation of a sample company, gaining hands-on experience and understanding the necessary steps and requirements involved in the process.
3. Create small groups & collect data on the timeline and details of the book building process of an actual IPO/FPO.
4. Engage in classroom discussion to identify the actual composition of the Board of Directors and examine the minutes of AGM/EGM of listed companies.
5. Make a project on developing a plan for winding up and the insolvency resolution process of a company, considering the interests of the creditors and the company's assets.

Suggested Readings

- Bhushan, B., Kapoor N.D., Rajni Abbi, Kapoor Rajiv, (2022). N.*D. Kapoor's Corporate Laws*. Sultan Chand New Delhi.
- Dagar, I., & Agnihotri, A. (2023). *Company Law*. S. Chand New Delhi.

- Jagota, R. (2021). *Corporate Laws*. Taxman Pvt Ltd New Delhi.
- Kaur, H. (2022). *Company Law*. Kitab Mahal New Delhi
- Kuchhal, M. C., & Kuchhal, A. (2013). *Company Law*. Mahavir Publications New Delhi.
- Kumar, A. (2021). *Corporate Laws*. Taxman Pvt. Ltd New Delhi.
- Maheshwari, S. N., & Maheshwari, S. K. (2019). Company Law. Himalaya Publishing House Pvt. Ltd New Delhi.
- Ramaiya, A. (2020). *A Guide to Companies Act*: LexisNexis.

Notes:

1. Suggested readings shall be updated and uploaded on the college website from time to time.

2. Examination scheme and mode shall be as prescribed by the Examination branch, University of Delhi from time to time.

B.A. (VS) Marketing Management and Retail Business

Semester IV
DISCIPLINE SPECIFIC CORE COURSE (DSC)

Workers, Markets and Future of Work

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE, REQUISITES OF THE COURSE

Course Title & Code	Total Credits	Lectures	Tutorial	Practical	Eligibility criteria	Pre-requisite of the course
Workers, Markets and the future of Work (DSC – 5.2)	4	3	1	-	**Pass in Class XII**	-

Learning Objectives: The course aims to familiarize students with the concepts of workers demand, supply and the determination of market wage. It provides basic understanding of the recent developments in markets for workers in India. It discusses the role of international agencies in safe guarding workers interests and defining decent work.

Learning Outcomes:

After completion of the course, learners will be able to:

1. explain the idea of the labour market and its working, the determination of equilibrium wage and the reasons why people choose to work or withdraw from the market.
2. compare the characteristics of various segments of labour markets in India and examine various trends related to wages and employment.
3. explain the concept of global value chains and Special economic Zones (SEZs) and examine their impact on workers, labour markets and the future of work.
4. appraise the role of International agencies in promoting decent work agenda and maintaining labour standards.

Unit 1: Economics of Labour Market and Wage Determination 11 hours

Supply of individual Worker and Workforce: Workers' preferences and Budget constraints, changes in budget constraints due to changes in non-labour income or wages; the labour supply curve of an individual worker and the Supply curve of workers in an Economy.

Policy applications: Welfare programs and work incentives; Labour supply over the life cycle; the decline in work attachment among older workers.

Demand for Workers: Production function of a firm, profit maximization, short- run and long- run decision making of the firm; Overview of labour Market equilibrium.

Policy application: New Labour Codes and the employment effects of minimum wages.

Unit 2: Labour Markets at Work in India 12 hours

Employment and Unemployment: Concepts of labour-force, workforce, participation rate, universal basic income and other concepts related to unemployment, measurement and trends in employment and wages, phenomena of jobless growth and unemployment in India, changing dynamics of occupational structure.

Facets of Informalisation and Segmentation of Labour Markets in India: Trends and characteristics of informalisation and contractualization, nature of rural labour markets, the growth of non-farm sector and impact of MGNREGA, internal migration in India, gig employment and its impact on platform workers.

Women in the workforce: feminization and low participation.

Unit 3: **Offshoring, Outsourcing and Global Value Chains** (GVCs) **11hours**

Workers in GVC - India and other Developing Countries, impact on employment in India, Labour Standards in India- Case study, Special Economic Zones in India.

Future of work, *Artificial Intelligence and Future of Labour*: Disruptive technology and adjustment in Workers markets

Unit 4: International agencies and Labour Standards 11 hours

Role and Structure of ILO, ILO Conventions and Recommendations, Decent work and ILO programmes in India, World Trade Organization and workers.

Practical Exercises:

The learners are required to:

1. discuss and practice numerical and graphical exercises based on application of demand and supply of labour and changes in equilibrium wage (Unit1)
2. identify and collect information from Internet on various case studies of employment types and engage in group discussions (Unit2)
3. design a questionnaire for primary data collection from the neighbourhood labour markets, collect data and make a group project based on the analyses of the data collected. (Unit2)
4. locate and discuss in class case studies of gig workers such as delivery workers form Zomato, Big Basket, Amazon and other such platforms. (Unit 3)
5. make a group presentation on implementation of ILO activities and programmes in India (Unit4)

Suggested Readings

- *Application of International Labour Standards in times of crisis: the importance of international labour standards and effective and authoritative supervision in the context of the COVID-19 pandemic*, Extracts of the General Report, ILO, 2020. (unit 4)
- Banga, K. (2016). Impact of global Value Chains on Employment in India, *Journal of economic Integration*. (unit 3b)

- Basu, A. K. & Chau, N. H. (2022). Offshoring and labour markets in developing countries. IZA, *World of Labour*. (Unit 3a)
- Borjas, G. J. (2016). *Labour Economics*, New York:McGraw-Hill. (Unit 1)
- Chaudhary, R. & Mitra, S. (2019). Labour Practices in the Emerging Gig Economy in India: A case Study of Urban Clap, Formalisation, Informalisation and the Labour Process Workshop. *CeMIS*, Goettingen. https://wwage.org. (unit 2.2e)
- Ghosh, A. K. (2016). *India Employment Report, 2016- Challenges and the Imperative of Manufacturing- Led growth*, New Delhi: Institute of Human Development and OUP. (Executive summary) (unit 2.1a)
- Giri, A. K. & Singh, S.P. (2016). Labour Standards in Global Value Chains in India: the case of hand-knotted carpet manufacturing cluster.*Asian Journal of Business Ethics*. (unit 3c)
- Hollweg, C. H. (2019). Global value chains and employment in developing economies. *Technological Innovation, Supply Chain Trade, and Workers in a Globalized World*, *Global Value Chain Development Report*, World Bank Group, ch. 3. (unit 3b)
- *India: Decent Work Country Programme for 2018-2022*, ILO, November 2018.
- Jha, P. (2016). *Labour in Contemporary India.*, Short Introduction Series, Oxford India. (unit 2.2a)
- Kapila, U. (2022-23). *Indian Economy: Performance and Policies*, New Delhi: Academic Foundation. (unit 2 & 4).
- Kapila, U. (2022). *Indian Economy since Independence*, New Delhi: Academic Foundation. (unit 2 & 4)
- Koti, J. & Janaki, D. (2016). ILO, WTO & Indian Industrial Relations. *IJIR*. (unit 4)
- Kumar, S. R. (2008). SEZs in India: Concepts, objectives and strategies. paper presented in *National Seminar on Special Economic Zones.* (unit 3d)
- Mondal, B., Ghosh J., Chakraborty S. & Mitra S.(2018).Women Workers in India: Labour Force Trends, Occupational Diversification and Wage Gaps. *State of Working India*, Centre for Sustainable Employment. (Unit 2.2f)
- *Overview of Internal Migration in India*, UNICEF report, https://www.shram.org. 2012. (unit 2.2c)
- Saha, P. & Shervick (2016). State of Rural Labour Markets in India. ILO Asia- Pacific Working Paper Series, May. (unit 2.2b)
- Shervick. (2014). Women's Labour Force Participation in India: Why is it low?. https://www.ilo.org, ILO. (unit 2.2f)
- Shetty, G. (2022). *Growing Gig Economy in India: Is More the Merrier?EPW*, 57 (10), March 5. (unit 2.2e)
- Universal Basic Income: A Conversation With and Within the Mahatma, Economic Survey, 2016-17.

Additional Readings

- Banga, K. (2017). Impact of linking into global value chains on Indian employment. *CEP Working paper*.
- Calvão, F. & Thara, K. (2019). Working Futures: The ILO, Automation and Digital Work in India. *Brill*.
- Caro, L. P., O'Higgins, N. & Berg, J. (2021). Young People and the Gig Economy, https://www.ilo.org.
- Case, K. E. & Fair R. (2008). *Principles of Economics*, Prentice Hall, 9th edition.

- Chaudhary R. (2021). India's Emerging Gig economy: Shaping the Future of Work for Women. https://repository.library.georgetown.edu.
- Ghose, A. K. & Kumar, A. (2021). India's Deepening Employment Crisis in the Time of Rapid Economic Growth, *Institute of Human Development.* Working Paper.
- India's Booming Gig and Platform economy - Perspectives and Recommendations on the future of work, *Niti Aayog.* (2022). June.

Notes:

- **Suggested readings shall be updated and uploaded on the college website from time to time.**
- **Examination scheme and mode shall be prescribed by the Examination branch, University of Delhi from time to time.**

ANNEXURE-6

INDEX

B.A. (Vocational Studies)

B.A. (VS) MATERIALS MANAGEMENT

Semester-IV

S.No.	Content	Page No.
1	**Semester -IV - DSC** 1. Transportation and Logistics Planning 2. Company Law 3. Workers, Markets and the future of Work	**2-12**

SEMESTER- IV

B.A. (VS) MATERIALS MANAGEMENT

DSC 4.1: Transportation and Logistics Planning

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Transportation and Logistics Planning **DSC: 4.1**	4	3	1	-	Pass in Class XII	NIL

Learning Objectives

The course aims to enhance the understanding of the students to with the concept of multimodal transport and logistics planning. It will enable the student to comprehend the nuances in multimodal operations and logistics planning. It will help students to understand the legal aspects of multimodal transport and logistics network at the international level.

Learning Outcomes

After completion of this course, the learners will be able to:

1. identify and analyze the factors that make shippers prefer multimodal transportation over other modes, such as cost savings, time efficiency, and reduced environmental impact.
2. develop a transportation plan for a business, including the selection of the most suitable mode and route based on cost, time, and other factors affecting the shipment.
3. describe the requirements for the transportation of perishable goods and the regulations governing their transport, including temperature control and packaging.
4. construct a logistics and transport environment analysis, including a SWOT analysis and PESTEL analysis, to identify opportunities and challenges in the logistics and transport industry.
5. analyse the challenges of managing an international logistics network, including cultural differences, regulatory compliance, and technology integration.

Unit 1: Introduction to Transportation **9 hours**

Definition and Importance of Transportation and Logistics, Transportation Modes and Services, Transportation Planning Principles, Route Planning and Optimization, Transportation Modes and Services, Multimodal Trade Routes, Evolution, Basic Intermodal System, Modal Interface, Factors outlining why shipper prefer Multimodal, Multi-Modalism Strategy, Components. Role of multimodal transport in international logistics

Unit 2: Logistics and Transport Planning **9 hours**

Different Types of Logistics and Transport Organizational Structures. Logistics and Transport planning –controlling decision, making. Logistics and Transport Environment Analysis, Legal and Ethical framework. Container corporation of India: Function and role.

Unit 3: Physical Multimodal Operations **9 hours**

Liners, Trams, Specialized Vessels, Terms, Road transport vehicle – Road Transport Weight and Measurement, Rail Transport Vehicle and Equipment – Air Transport, Ports, LCL, FCL, NVOCC, Freight forwarders, Consolidator, ICD, CFS, Free Trade Area, SEZ, Water ways, Factors affecting mode and route choice.

Unit 4: Conventions Relating to Multimodal Transport **9 hours**

Cargo Liability Convention: International Conventions relating to Bill of Lading (The Hague and Hague/Visby Rules (Appendix 8), Hamburg Rule, Convention relating to Through Transport operation by Land, Rail, Air – Conventions relation to Dangerous Cargo, Carriage of Perishable Goods, International Convention for safe containers 1972 (CSC), Baltic index

Unit 5: International Logistics Networks **9 hours**

Continuous Improvement in Transportation and Logistics Systems, Key Performance Indicators, Lean Logistics and Six Sigma, Characteristics of international logistics networks, networks owned by international corporations, leadership network partnership network, management of international logistics network

Exercises

1. You are a logistics manager of a manufacturing company located in Country A, and you have been tasked to transport a shipment of goods to a warehouse in Country B. The shipment consists of 1000 cartons of electronic items, and the total weight is 20 tons. You need to develop a multi-modal transport plan that ensures the safe and efficient movement of goods from the factory to the warehouse. Prepare a suitable transport plan for exporter and manufacturer from North India.
2. A business needs to transport a large quantity of raw materials from its suppliers in South America to its manufacturing facility in Europe. The company has multiple options for

transportation modes, including air, sea, rail, and truck. Develop a transportation plan for the company, considering the cost, time, and other factors that could affect the shipment. Create a presentation to present your transportation plan to the company's executive team.

3. You are a logistics manager for a company that specializes in the transportation of fresh produce. The company needs to transport a large shipment of strawberries from a farm in California to a supermarket in New York. Develop a transportation plan that outlines the requirements for the transportation of perishable goods and the regulations governing their transport. Consider the temperature control and packaging needed to ensure the strawberries arrive at their destination in excellent condition. Present your plan in a written report and justify your decisions.
4. You are a logistics manager for a company that is expanding its operations overseas. The company needs to choose an organizational structure that will support its international logistics and transport needs. Develop a comparative analysis of the different types of logistics and transport organizational structures, including functional, matrix, and network structures. Consider the advantages and disadvantages of each structure and present your findings in a written report. Recommend the best organizational structure for the company based on its specific needs.
5. You are the logistics manager of an international corporation that has recently expanded its business to multiple countries. Your task is to design an international logistics network for your company that is efficient and cost-effective. Develop a plan that includes the following:
    a. Identify the different modes of transportation that can be used in the logistics network.
    b. Analyze the benefits and drawbacks of each mode of transportation.
    c. Determine the best mode of transportation for each leg of the journey.
    d. Create a plan for managing the logistics network, including the use of technology and personnel.
    e. Explain how you will maintain ethical and legal compliance in the logistics network.

Suggested Readings

- Agrawal, D. K. (2018). *Textbook of Logistics and Supply Chain Management*. Macmillan.
- Branch, A. E., & Robarts, M. (2014). *Branch's Elements of Shipping*, 9th Edition. Routledge.
- Christopher, M. (2015). *Logistics & Supply Chain Management*. Pearson Education.
- Hyldager, C. (2012). *Logistics and Multimodal Transport*. Institute of Chartered Shipbrokers.
- Lane, C. K., & Buckley, J. J. (2016). *The Business of Shipping*. Cornell Maritime Press.
- Rushton, A., Croucher, P., & Baker, P. (2014). *The Handbook of Logistics and Distribution Management*. Kogan Page.

Notes:

- **Suggested readings shall be updated and uploaded on the college website from time to time.**
- **Examination scheme and mode shall be prescribed by the Examination branch, University of Delhi from time to time.**

B.A. (VS) MATERIALS MANAGEMENT

DSC 4.2: Company Law

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE, REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (If any)
		Lecture	Tutorial	Practical/ Practice		
Company Law **DSC: 4.2**	4	3	1	-	Pass in Class XII	NIL

Learning Objectives

The course aims to develop and comprehend business and its processes in accordance with the provisions of the Companies Act, 2013 while analyzing case laws.

Learning Outcomes

After completion of the course, learners will be able to:

1. analyse the regulatory aspects and the broader procedural aspects involved in different types of companies covering the Companies Act, 2013 and Rules.
2. prepare the basic legal documents required for formation of a company.
3. analyse the process and prepare the documents required for raising capital for the company.
4. analyse the managerial composition of companies and examine the process of company meetings.
5. develop a plan for winding up and the insolvency resolution of a company, considering the interests of the creditors and the company's assets.

Unit 1: Introduction **9 hours**

Meaning and characteristics of a company; Lifting of corporate veil; Overview of administration of Company Law; Types of companies including private and public company, government company, foreign company, one person company, small company, associate company, dormant company and producer company; Association not for profit; Illegal association.

Unit 2: Formation and Incorporation documents **9 hours**

Formation of company, promoters, their legal position and pre-incorporation contracts; Online registration of a company. Memorandum of Association and its alteration, Articles of Association and its alteration, Doctrine of constructive notice, Doctrine of ultra vires and indoor management.

Unit 3: Share Capital **9 hours**

Prospectus, Shelf and Red herring prospectus, misstatement in prospectus; Book building. Allotment and Forfeiture of share, Sweat Equity, ESOPs, Bonus issue, and Further issue of shares, buyback, split of sharers and provisions regarding buyback; Transfer and transmission of shares; Demat system.

Unit 4: Management and Meetings **9 hours**

Directors: Legal position, Disqualifications, Director Identification Number (DIN); Classification of directors, Additional, Alternate and Casual directors, Women directors, Independent director, small shareholder's director; Appointment, Removal of directors; Powers and Duties; Key managerial personnel (KMP); Board Meetings; Shareholders' meetings: AGM and EGM. Convening and conduct of meetings: Requisites of a valid meeting; Resolutions (Virtual meetings); Postal ballot; e-voting.

Unit 5: Dividends, Audit and Winding up **9 hours**

Provisions relating to payment of Dividend. Company Audit: auditor's qualification and disqualifications, Auditor's appointment, rotation and removal, Secretarial Audit. Winding Up: Concept and Modes of Winding Up; Provisions of winding up under Insolvency and Bankruptcy Code 2016.

Exercises

The learners are required to:

1. identify the type of company based on information available on NSE/BSE website and then analyse the regulatory and procedural aspects covering the Companies Act, 2013.
2. fill dummy SPICe+ form for incorporation of a company.
3. write about the timeline and details of the book building process of an actual IPO/FPO.
4. identify the actual composition of the Board of Directors and examine the minutes of AGM/EGM of listed companies.
5. develop a plan for winding up and the insolvency resolution process of a company, considering the interests of the creditors and the company's assets.

Suggested Readings

- Bhushan, B., Kapoor N.D., Abbi, R. Kapoor, Rajiv. (2023). *N.D. Kapoor's Corporate Laws*. Sultan Chand New Delhi.
- Dagar, I., & Agnihotri, A. (2023). *Company Law*. S. Chand New Delhi.
- Jagota, R. (2021). *Corporate Laws*. Taxman Pvt Ltd New Delhi.
- Kaur, H. (2022). *Company Law*. Kitab Mahal New Delhi
- Kuchhal, M. C., & Kuchhal, A. (2022). *Company Law*. Mahavir Publications New Delhi.
- Kumar, A. (2021). *Corporate Laws*. Taxman Pvt. Ltd New Delhi.
- Maheshwari, S. N., & Maheshwari, S. K. (2019). Company Law. Himalaya Publishing House Pvt. Ltd New Delhi.
- Ramaiya, A. (2020). A Guide to Companies Act: LexisNexis.

Notes:

- **Suggested readings shall be updated and uploaded on the college website from time to time.**
- **Examination scheme and mode shall be prescribed by the Examination branch, University of Delhi from time to time.**

B.A. (VS) MATERIALS MANAGEMENT

Discipline Specific Core

DSC- 5.2: Workers, markets, and the future of work

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE, REQUISITES OF THE COURSE

Course Title & Code	Total Credits	Lectures	Tutorial	Practical	Eligibility criteria	Pre-requisite of the course
Workers, Markets and the future of Work **DSC**	4	3	1	-	**Class XII**	**Nil**

Learning Objectives: The course aims to familiarize students with the concepts of workers demand, supply and the determination of market wage. It provides basic understanding of the recent developments in markets for workers in India. It discusses the role of international agencies in safe guarding workers interests and defining decent work.

Learning Outcomes:

After completion of the course, learners will be able to:

1. explain the idea of the labour market and its working, the determination of equilibrium wage and the reasons why people choose to work or withdraw from the market.
2. compare the characteristics of various segments of labour markets in India and examine various trends related to wages and employment.
3. explain the concept of global value chains and Special economic Zones (SEZs) and examine their impact on workers, labour markets and the future of work.
4. appraise the role of International agencies in promoting decent work agenda and maintaining labour standards.

Unit 1: Economics of Labour Market and Wage Determination 11 hours

Supply of individual Worker and Workforce: Workers' preferences and Budget constraints, changes in budget constraints due to changes in non-labour income or wages; the labour supply curve of an individual worker and the Supply curve of workers in an Economy.

Policy applications: Welfare programs and work incentives; Labour supply over the life cycle; the decline in work attachment among older workers.

Demand for Workers: Production function of a firm, profit maximization, short- run and long-run decision making of the firm; Overview of labour Market equilibrium.

Policy application: New Labour Codes and the employment effects of minimum wages.

Unit 2: Labour Markets at Work in India **12 hours**

Employment and Unemployment: Concepts of labour-force, workforce, participation rate, universal basic income and other concepts related to unemployment, measurement and trends in employment and wages, phenomena of jobless growth and unemployment in India, changing dynamics of occupational structure.

Facets of Informalisation and Segmentation of Labour Markets in India: Trends and characteristics of informalisation and contractualization, nature of rural labour markets, the growth of non-farm sector and impact of MGNREGA, internal migration in India, gig employment and its impact on platform workers.

Women in the workforce: feminization and low participation.

Unit 3: **Offshoring, Outsourcing and Global Value Chains** (GVCs) **11hours**

Workers in GVC - India and other Developing Countries, impact on employment in India, Labour Standards in India- Case study, Special Economic Zones in India.

Future of work, *Artificial Intelligence and Future of Labour*: Disruptive technology and adjustment in Workers markets

Unit 4: International agencies and Labour Standards **11 hours**

Role and Structure of ILO, ILO Conventions and Recommendations, Decent work and ILO programmes in India, World Trade Organization and workers.

Practical Exercises: The learners are required to:

1. discuss and practice numerical and graphical exercises based on application of demand and supply of labour and changes in equilibrium wage (Unit1)
2. identify and collect information from Internet on various case studies of employment types and engage in group discussions (Unit2)
3. design a questionnaire for primary data collection from the neighbourhood labour markets, collect data and make a group project based on the analyses of the data collected. (Unit2)
4. locate and discuss in class case studies of gig workers such as delivery workers form Zomato, Big Basket, Amazon and other such platforms. (Unit 3)
5. make a group presentation on implementation of ILO activities and programmes in India (Unit4)

Suggested Readings

- *Application of International Labour Standards in times of crisis: the importance of international labour standards and effective and authoritative supervision in the context of the COVID-19 pandemic*, Extracts of the General Report, ILO, 2020. (unit 4)

- Banga, K. (2016). Impact of global Value Chains on Employment in India, *Journal of economic Integration*. (unit 3b)
- Basu, A. K. & Chau, N. H. (2022). Offshoring and labour markets in developing countries. IZA, *World of Labour*. (Unit 3a)
- Borjas, G. J. (2016). *Labour Economics*, New York:McGraw-Hill. (Unit 1)
- Chaudhary, R. & Mitra, S. (2019). Labour Practices in the Emerging Gig Economy in India: A case Study of Urban Clap, Formalisation, Informalisation and the Labour Process Workshop. *CeMIS*, Goettingen. https://wwage.org. (unit 2.2e)
- Ghosh, A. K. (2016). *India Employment Report, 2016- Challenges and the Imperative of Manufacturing- Led growth*, New Delhi: Institute of Human Development and OUP. (Executive summary) (unit 2.1a)
- Giri, A. K. & Singh, S.P. (2016). Labour Standards in Global Value Chains in India: the case of hand-knotted carpet manufacturing cluster. *Asian Journal of Business Ethics*. (unit 3c)
- Hollweg, C. H. (2019). Global value chains and employment in developing economies. *Technological Innovation, Supply Chain Trade, and Workers in a Globalized World, Global Value Chain Development Report*, World Bank Group, ch. 3. (unit 3b)
- *India: Decent Work Country Programme for 2018-2022*, ILO, November 2018.
- Jha, P. (2016). *Labour in Contemporary India.*, Short Introduction Series, Oxford India. (unit 2.2a)
- Kapila, U. (2022-23). *Indian Economy: Performance and Policies*, New Delhi: Academic Foundation. (unit 2 & 4).
- Kapila, U. (2022). *Indian Economy since Independence*, New Delhi: Academic Foundation. (unit 2 & 4)
- Koti, J. & Janaki, D. (2016). ILO, WTO & Indian Industrial Relations. *IJIR*. (unit 4)
- Kumar, S. R. (2008). SEZs in India: Concepts, objectives and strategies. paper presented in *National Seminar on Special Economic Zones.* (unit 3d)
- Mondal, B., Ghosh J., Chakraborty S. & Mitra S. (2018). Women Workers in India: Labour Force Trends, Occupational Diversification and Wage Gaps. *State of Working India*, Centre for Sustainable Employment. (Unit 2.2f)
- *Overview of Internal Migration in India*, UNICEF report, https://www.shram.org. 2012. (unit 2.2c)
- Saha, P. & Shervick (2016). State of Rural Labour Markets in India. ILO Asia- Pacific Working Paper Series, May. (unit 2.2b)
- Shervick. (2014). Women's Labour Force Participation in India: Why is it low?. https://www.ilo.org, ILO. (unit 2.2f)
- Shetty, G. (2022). *Growing Gig Economy in India: Is More the Merrier? EPW*, 57 (10), March 5. (unit 2.2e)
- Universal Basic Income: A Conversation With and Within the Mahatma, Economic Survey, 2016-17.

Additional Readings

- Banga, K. (2017). Impact of linking into global value chains on Indian employment. *CEP Working paper*.

- Calvão, F. & Thara, K. (2019). Working Futures: The ILO, Automation and Digital Work in India. *Brill*.
- Caro, L. P., O'Higgins, N. & Berg, J. (2021). Young People and the Gig Economy, https://www.ilo.org.
- Case, K. E. & Fair R. (2008). *Principles of Economics*, Prentice Hall, 9th edition.
- Chaudhary R. (2021). India's Emerging Gig economy: Shaping the Future of Work for Women. https://repository.library.georgetown.edu.
- Ghose, A. K. & Kumar, A. (2021). India's Deepening Employment Crisis in the Time of Rapid Economic Growth, *Institute of Human Development.* Working Paper.
- India's Booming Gig and Platform economy - Perspectives and Recommendations on the future of work, *Niti Aayog.* (2022). June.

Notes:

- **Suggested readings shall be updated and uploaded on the college website from time to time.**
- **Examination scheme and mode shall be prescribed by the Examination branch, University of Delhi from time to time.**

ANNEXURE-7

INDEX

B.A. (Vocational Studies)

B.A. (VS) Tourism Management

Semester-IV

S.No.	Content	Page No.
1	**Semester -IV - DSC** 1. Contemporary Trends in Tourism 2. Adventure Tourism 3. Globalization and Indian Tourism	**2-11**

SEMESTER- IV

B.A. (VS) Tourism Management
Semester IV
DISCIPLINE SPECIFIC CORE COURSE (DSC- 4.1)

Contemporary Trends in Tourism

Credit Distribution, Eligibility and Pre-Requisite of the Course

Course Title and Code	Course Code	No. of credits	Components of the course			Eligibility Criteria	Pre-requisites of the course
			Lecture	Tutorial	Practical		
Contemporary Trends in Tourism (DSC 4.1)	DSC 4.1	4	3	1	-	Pass in Class 12th	-

Learning Objectives

The aim of this course is to give the students a wide knowledge of the existing and emerging trends. The course also aims at developing an insight on the strongly emerging types and forms of tourism so that the students are able to perceive the scope of Tourism development at a given 'Destination'/'Destination Region. The course intends to help the students to acquire and develop skills for rational decision making in the discipline of tourism management.

Learning Outcomes

After completing this course, the learners would be able to:

1. evaluate contemporary trends in international tourism and interpret global tourist traffic and tourism receipt patterns. Further, students will be able to categorize emerging tourist demand patterns and factors affecting international tourism.
2. illustrate segmentation of potential tourism market of India on the basis of Geographic, Demographic and Psychographic Segmentation and analyze India's Performance in International Tourism.
3. develop an understanding about new age tourism like new age tourists, space tourism, short haul tourism, accessible tourism, Island tourism, Pro-poor tourism etc.
4. appraise the use of social media, artificial intelligence, virtual reality and information and communication technology (ICT) in tourism industry. Further, students will be able to develop an insight into the characteristics and patterns of India's major domestic tourism markets and international tourism markets.

Unit-1

Contemporary Trends in International Tourism **12 Hours**

Contemporary Trends in International Tourism – Global Tourist Traffic and Tourism Receipt Patterns, Emerging Tourist Demand Patterns –Eco, Ethnic, Adventure, MICE, Medical and Well-being Tourism, Factors Affecting International Tourism and Need for Effective Crisis Management.

Unit-2

Contemporary Trends in Indian Tourism **10 Hours**

Geographic, Demographic and Psychographic Segmentation of Effective and Potential Tourism Markets of India, India's Performance in International Tourism – A Critical Assessments, Regional Gap in Indian Tourism and the Dynamically Changing Market-Destination Trends

Unit-3

New Age Tourism **12 Hours**

New age tourists, Space tourism, Short haul tourism, Accessible tourism, Island tourism, Pro-poor tourism, Solo tourism, Food tourism, Modern tourism trends, Special Interest Areas, Winter tourism

Unit – 4

Emerging Trends and New Thrust Areas of Tourism **11 Hours**

Digital Tourism- Use of ICT in tourism, Role of social media, Artificial Intelligence and Virtual Reality in tourism, Characteristics of Indian outbound tourism, Characteristics & patterns of India's major international markets, Domestic tourism in India, Patterns & characteristics, & major tourist generating states, Future prospects of tourism in India.

Exercises

The learners are required to:

1. explain contemporary trends in international tourism by way of class presentation. Group discussion on the scope of medical and well-being tourism in India.
2. make a power point presentation on the segmentation of India's potential tourism market on the basis of Geographic, Demographic and Psychographic Segmentation.
3. assess the understanding of new age tourism like space tourism, short haul tourism, accessible tourism, Island tourism, Pro-poor tourism, Solo tourism, by objective and subjective assessment (Class test, assignments, MCQs, Fill in the blanks and quiz).
4. visit nearby hotels, conference/convention center and find out the latest ICT used by them in order to provide services to the guests. Make a detailed report. Further students can make an assignment on domestic tourism patterns and characteristics.

Suggested Readings:

- Aima, A., Chauhan, V., & Bhasin, J. (2014). *Contemporary Trends in Tourism and Hospitality Management,* New Delhi, Primus Book.
- Burkart, A. J. & Medlik, S (2008). *Tourism: Past, Present and Future*. London: Heinemann Publishers.
- Dahiya, A., Dhiman, M. C., & Kumar, S.(2015). *International Tourism and Hospitality in the Digital Age*. United States: IGI Global**.**
- Morrison, M.A., & Buhalis, D., (2023) *Routledge Handbook of Trends and Issues in Global Tourism Supply and Demand,* Routledge Taylor & Francis Group, London, UK.
- Novelli, M., Dolezal, C., Milano, C., …… & Adam, J. (2022). *Handbook of Niche Tourism*. United Kingdom: Edward Elgar Publishing.
- Rontos, K. et al, (2020). *Modeling and New Trends in Tourism,* New York, Nova Science Publishers.
- Sharma, A., & Hassan. (2020). *The Emerald Handbook of ICT in Tourism and Hospitality*. United Kingdom: Emerald Publishing Limited.
- Swanson, J. R., Edgell, D. L. (2018). *Tourism Policy and Planning: Yesterday, Today, and Tomorrow.* United Kingdom: Routledge.

Notes:

1. **Suggested Readings will be updated and uploaded on college website from time to time.**
2. **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

B.A. (VS) Tourism Management
Semester IV
DISCIPLINE SPECIFIC CORE COURSE (DSC- 4.2)

Adventure Tourism

Credit Distribution, Eligibility and Pre-requisites of the Course

Course Title & Code	Credits	Components of the course			Eligibility criteria	Pre-requisites of the course
		Lecture	Tutorial	Practical		
Adventure Tourism **DSC 4.2**	**4**	**3**	**1**	**-**	**Pass in class 12th**	**-**

Learning Objectives:

The course aims to familiarize the students with a comprehensive understanding of concepts, activities, current trends and benefits and challenges of adventure tourism. The learners will know about the popular adventure tourism destinations, their sustainable practices and associated adventure activities.
This course focuses on risk management principles and safety protocols to ensure participant safety during adventure activities. This course equips the students with the knowledge of designing and planning adventure tours and expeditions considering logistical, financial, and sustainability aspects.
The learners will learn about the marketing strategies and promotional techniques suitable for adventure tourism products.

Learning Outcomes:

After completing this course, the learners would be able to:

1. demonstrate a comprehensive understanding of adventure tourism concepts, activities, and current trends.
2. analyze the benefits and challenges of adventure tourism.
3. evaluate popular adventure tourism destinations worldwide and their management and sustainability considerations.
4. analyze the typology of adventure tourism activities (land-based, air-based and water-based adventure) their safety measures, equipment, and associated technical skills.
5. apply risk management principles and safety protocols to ensure participant safety during adventure activities.
6. demonstrate the knowledge of designing and planning adventure tours and expeditions considering logistical, financial, and sustainability aspects.
7. evaluate the marketing strategies and promotional materials specific to adventure tourism.

Unit-1

Adventure Tourism - An Overview **10 Hours**

The concept, scope, and importance of adventure tourism, Adventure activities and associated characteristics, Current trends in adventure tourism, Benefits and challenges of adventure tourism, job opportunities in adventure tourism.

Unit-2

Adventure Tourism Destinations and Adventure Activities **12 Hours**

Identify and evaluate popular adventure tourism destinations worldwide, Analyze the natural and cultural attributes that make a destination suitable for adventure tourism, Management and sustainability considerations for adventure tourism destinations. Types of adventure tourism activities (land-based, air-based and water-based adventure), Equipment, Safety measures, and technical skills associated with different adventure activities.

Unit-3

Risk Management and Safety in Adventure Tourism Operations **15 Hours**

The principles of risk management in adventure tourism, Identify potential risks and hazards associated with adventure activities, Strategies for assessing, mitigating, and managing risks to ensure participant safety, Planning and organization of adventure tours and expeditions, Develop skills in itinerary development, budgeting, and resource management for adventure tourism operations.

Unit-4

Marketing and Promotion of Adventure Tourism **8 Hours**

Marketing strategies specific to adventure tourism, target market analysis and customer behavior in adventure tourism, Promotional materials, and digital marketing campaigns, Certificate programs for adventure tourism.

Exercises

The learners are required to:

1. conduct a risk assessment for a specific adventure activity and develop a safety plan.
2. design an adventure tour itinerary considering logistical factors and budget constraints.
3. develop a marketing campaign for an adventure tourism destination or activity.
4. create digital promotional materials, such as brochures or social media content, for an adventure tour.
5. conduct a field trip to an adventure tourism destination and assess its sustainability

practices.

6. lead a guided adventure activity and demonstrate proper guiding and instructional techniques.
7. participate in a simulated emergency response exercise and practice crisis management skills.

Suggested Readings:

- Ball, S. (2007). *Encyclopedia of Tourism Resources in India*, B/H.
- Buckley R. (2014). Adventure tourism as a research tool in non-tourism disciplines. *Tourism Recreation Research*, 39(1), 39-49.
- Buckley, R. (2012). *Adventure Tourism*. London: CABI.
- Buckley R. (2010). *Adventure tourism management*. Oxford: Elsevier.
- Fennell, D. A. (2015). *Adventure Tourism: Meanings, Experience and Learning*. London: Routledge.
- Huddart, D., Stott, T. (2019). *Adventure Tourism: Environmental Impacts and Management,* New York: Palgrave Macmillan.
- Hall, M., & Timothy, D. (2006). *Safety and Security in Tourism*, Jaico Publishing House.
- Hudson, S. (2012). *Sport and Adventure Tourism*. United States: Taylor & Francis.
- Jenkins, I. (2019). *Adventure Tourism and Outdoor Activities Management: A 21st Century Toolkit,* Oxfordshire, U.K. CABI Publication,
- John, L. (2022). *Creating Space Tourism Desire Strategy*. Stellar Publications.
- Leckie, S., Pomfret, G., Beard, C., Swarbrooke, J. (2012). *AdventureTourism*. London: Taylor & Francis.
- *National Strategy for Adventure Tourism 2022, Ministry of Tourism Government of India,* (2022).pdfhttps://tourism.gov.in/sites/default/files/202209/National%20Strategy%20for%20Adventure%20Tourism%202022.pdf
- Negi, J. (2001). *Adventure Tourism and Sports,* New Delhi: Kanishka Publishers Distributors.
- Page, S. J., & Dowling, R. K. (Eds.). (2020). *Adventure Tourism: The New Frontier*. London: Routledge.
- Plummer R. (2009). *Outdoor recreation: An introduction*. New York: Routledge.
- Van, P. M. (2019). *Space Tourism Adventure in Earth Orbit and Beyond,* New York: Springer
- Swarbrooke, J., & Horner, S. (2012). *Consumer Behaviour in Tourism (2nd ed.).* London: Routledge
- Weiler, B., & Smith, K. A. (2019). *Adventure Tourism Management (2nd ed.).* Bristol: Channel View Publications.

Notes:

1. **Suggested Readings will be updated and uploaded on college website from time to time.**
2. **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

B.A. (VS) Tourism Management
Semester IV
DISCIPLINE SPECIFIC CORE COURSE (DSC- 4.3)

Globalization and Indian Tourism

Credit Distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (If any)
		Lecture	Tutorial	Practical/ Practice		
Globalization and Indian Tourism DSC 4.3	4	3	1	-	Pass in class 12th	-

Learning objective:

Through this course students will learn about Indian tourism in a comparative perspective, and the advantages and issues of operating in a globalized world. This course is designed to help students get acquainted with various aspects of the economy and the factors that impact the tourism industry. It will help to understand the two-way relationship between tourism and development. The course studies the impact of foreign trade and capital on tourism and its inter-linkages with other sectors of the economy. It includes case studies of specific success stories such as Himachal Pradesh, North eastern states, Kerala and Rajasthan tourism. It also examines the ecological aspects and the special case of hill tourism.

Learning outcomes

After completion of the course, learners would be able to:

1. recall a brief overview of India's economic development and the role of tourism in a globalized environment.
2. explain the inter sectoral linkages and the two-way relationship between tourism and development.
3. examine and appraise the important contribution that tourism makes to economic and social outcomes and the building up of foreign exchange reserves.
4. critically evaluate the recent developments in various sectors, including infrastructure, services and their impact on tourism and vice versa.
5. appraise the impact of tourism on the overall development and suggest policy measures for promoting tourism.

UNIT- 1 **12 hours**

India today – development indicators and comparisons

Redefining development - changing ideas on growth and development- concept of human development, measuring human development – the Human Development Index (HDI), the HDI ranking of India, gender related development index, (GDI) and Gender Inequality Index (GII) measurement, and India's performance on these indicators. Understanding the concept of the circular economy and sustainability in the context of sustainable development goals (SDGs) specifically for the tourism sector.

Indian economy today- size, population, Gross Domestic product (GDP), Per capita income, rate of growth, structure of GDP and the challenges of unemployment, poverty and inequality and how tourism can be an instrument in addressing these challenges.

UNIT- 2 **11 Hours**

Brief overview of India's economic development experience post 2000, focusing on the Trends in Travel and Tourism industry

Indian Tourism in a comparative perspective, a comparison with South Asia, BRICS countries and the other poorest countries in the world (excluding Africa)'. Economic reforms in India; privatization, liberalisation and globalization- the performance of the economy focusing specifically on the 2003 to 2008 period of high growth and the role of tourism and the subsequent slowdown after 2012 and its impact on Tourism industry. A brief appraisal of economic reforms – issues of poverty, growth without employment, regional and other inequalities and the tourism as an instrument of change.

UNIT-3 **11 Hours**

Tourism and development- synergies and concerns

India's share in global tourism, the role of tourism in India's economy, potential for growth, the tourism multiplier and the inter-sectoral linkages.

Case studies of Kerala, Rajasthan, Himachal Pradesh and North-Eastern states, examples of successful strategies that illustrate the linkages, the role of Government, the success of the Incredible India campaign, Kerala's branding as 'God's own Country' and Rajasthan's success in Heritage and cultural tourism. Recent developments that caution us to the hazards of over exposure, particularly in the case of Kerala. Branding of North-east, attractions and circuits in North eastern

India. The special case of hill tourism- fine balance between development and ecological concerns – examples of Ladakh, Uttarakhand, Himachal and other hill states. State-wise trends in Indian /global tourists and the GDP generated through tourism in the post reform period.

UNIT- 4 **11 Hours**

Linkages of Tourism with the global economy: Foreign trade, foreign capital, and servicification.

The role of foreign trade and foreign capital in tourism industry of India; advantages and disadvantages of Foreign Direct Investment (FDI) for tourism Industry. The special case of the hospitality sector and the tourism industry- the enabling role of digitization, servicification and technology on the sector.

Exercises:

1. Watch a few films on tourism in class such as 'Kashmir ki kali', 'Everest' 'Cycling around the world' or any other suitable film followed by thematic discussion on tourism. (Unit 1)
2. Students may be asked to collect data and material from one specific state of India and prepare presentation on the 'Circular economy and tourism in India'. (Unit 1)
3. A study tour to a tourist destination may be organized by the teacher for experiential learning of the issues and the linkages of tourism with other sectors of the economy. Students may be asked to submit project report after that. Students may also be encouraged to plan the trip. (Unit 3)
4. Students may be asked to prepare group projects on multinational corporations (MNC) such as Amazon, Apple, Google or any other and their impact on tourism industry worldwide. (Unit 4)
5. Make a group project based on field work. Identify a transport service, Parlour or a eatery in the neighborhood, prepare questionnaire and study its working and role in promoting travel and tourism. This will a part of experiential learning about the role of small businesses in promoting travel and tourism in India. (Unit 4)
6. Class room discussions on the comparative tourism and the tourism potential of India may be organized, where experiences of different countries such as the United Kingdom, France, Thailand, etc. are discussed. (Unit 4)

Suggested Readings:

- Mercer-Blackman, V., & Christine, A., (2018). 'The Servicification of Manufacturing in Asia: Redefining the Sources of Labour Productivity', ADBI working paper, 902, Tokyo:Asian Development Bank Institute. (Unit 4)
- Drèze, J., & Sen, A. (2013). *An Uncertain Glory: India and its Contradictions.* Princeton University press. Ch: 2 & 3. (Units 1, 2)
- Einarsson S., and Sorin, F., (2020). *Circular Economy in Travel and Tourism: A Conceptual Framework for a Sustainable, Resilient and Future Proof Industry Transition,* CE360 Alliance.

https://circulareconomy.europa.eu/platform/sites/default/files/circular-economy-in-travel-and-tourism.pdf (Unit 1)

- Gambhir, D., Khalid, A. M., & Sharma, S., (2021). 'Religious Tourism and Sustainable Development: Perspectives from Hill States in India' In Lubowiecki-Vikuk. A. et al., (Eds.), *Handbook of Sustainable Development and Leisure Services* (pp. 273–287). Springer International Publishing. https://doi.org/10.1007/978-3-030-59820-4_18 (Unit 3 iii)
- Goering, P. G., (2010). *The Response to Tourism in Ladakh. Cultural Survival.* https://www.culturalsurvival.org/publications/cultural-survival-quarterly/response-tourism-ladakh (Unit 3)
- Human Development Reports, hdr.undp.org. (Unit 1)
- Joshi, V. (2016). *India's Long Road: The Search for Prosperity*. Penguin/Allen Lane. (*Ch.: 2)* (Unit 2.)
- Kapila, U., (2021). *Indian Economy: Performance and Policies* (22nd edition, 2021–22). AF Press/Academic Foundation.
- Khajuria, A. et al., (2022). *Accelerating circular economy solutions to achieve the 2030 agenda for sustainable development goals. Circular Economy*, *1*(1), 100001. https://doi.org/10.1016/j.cec.2022.100001 (Unit1)
- Ministry of Tourism, Government of India (2020). *20 Year Perspective Plan for Tourism in Rajasthan.* https://tourism.gov.in/sites/default/files/2020-04/rajasthan.pdf (Unit 3)
- Puri, V. K., & Misra, S. K. (2021.). *Indian Economy* (Vol. 39). Himalaya Publishing House. (Unit 2)
- Swain, S. K., & Mishra, J. M. (2012). *Tourism: Principles and Practices*. Oxford Univ. Press. (Unit 3)
- Thimm, T. (2017). *The Kerala Tourism Model - An Indian State on the Road to Sustainable Development: Sustainable Tourism in Kerala*. *Sustainable Development*, *25*(1), 77–91. https://doi.org/10.1002/sd.1643 Unit 3)
- UN World Trade Organization (n.d.) *Integrating Circular Economy Principles in Tourism.* https://www.unwto.org/sustainable-development/circular-economy. (Unit1)
- Van Kruchten, S. & van Eijk, F (2020). *Circular Economy & SDGs: How circular economy practices help to achieve the Sustainable Development Goals*. Netherlands Enterprise Agency and Holland Circular Hotspot. https://circulareconomy.europa.eu/platform/sites/default/files/3228_brochure_sdg_-_hch_cmyk_a4_portrait_-_0520-012.pdf (Unit 1)

Notes:

1. **Suggested Readings will be updated and uploaded on college website from time to time.**
2. **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

ANNEXURE-42

Sub: Amendment to Ordinance V

Following addition be made to Appendix-II-A to the Ordinance V (2-A) of the Ordinances of the University;

Add the following:

Syllabi of following programmes of Semester-IV, V and VI of the Department of Geography under Faculty of Social Sciences based on Under Graduate Curriculum Framework -2022 implemented from the Academic Year 2022-23 :

(i) BA (Prog.) with Geography as Major/ Non-Major – Semester-IV

(ii) BA (Prog.) with Geography as Major/ Non-Major – Semester-V

(iii) BA (Prog.) with Geography as Major/ Non-Major – Semester-VI

The credit distribution and the course content of the syllabi is as per ***Annexure-1***

ANNEXURE-1

DEPARTMENT OF GEOGRAPHY
SEMESTER IV
Category II
Geography Courses for Undergraduate Programme of study with Geography as one of the Core Disciplines
(B.A. Programmes with Geography as Major discipline)
DSC-07

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit Distribution of the course			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
OCEANOGRAPHY	4	3	1	0	Class 12th	NIL

Learning Objectives:

The Learning Objectives of this course are as follows:

- To enable the learner to understand the basics of oceanography.
- To enable the learner to explain the configuration of the ocean bottom
- To enable the learner to discuss ocean water and its unique ecosystem
- To equip the learner to appreciate and elaborate the problems and policies for sustainable oceans
-

Learning Outcomes:

The Learning Outcomes of this course are as follows:

- The students would be able to comprehend and establish the relationship between human action and global ocean conditions. They would be able to explain the ocean as a regulator of global climate.
- Illustrate the dynamic ocean bottom topography and appreciate the circulation of cold and warm Ocean currents.
- Discuss the salinity and temperature distribution of ocean water on a three-dimensional spatial perspective.
- Elaborate the marine ecosystems as well as explain the problems and address the policies to resolve them.

Course Outline:

UNIT 1: Introduction to Oceanography: (8 hrs)

- Significance of Oceanography, Human actions and the Oceans, Challenges to Sustainability of Marine Ecosystems, Role ofSea surface Temperature (SST) as Global Climate Regulator

UNIT 2: Geomorphological Oceanography: (8 hrs)

- Ocean Bottom Topography – Relief ofOcean Floor with Global examples

UNIT 3: Physical and Chemical Oceanography: (9 hrs)

- Properties of Ocean Water: Salinityand Temperature (Horizontal and Vertical Distribution); Oceanic currents

UNIT 4: Biological Oceanography: (10 hrs)

- Marine Ecosystems: Coral Reef, Mangrove, Openand Deep Sea

UNIT 5: Sustainability of Oceans- Problems and Policies: (10 hrs)

- Marine Challenges andManagement, Marine Policy: Integrated Coastal Zone Management (ICZM) with reference to India and SDG 14; Life Below Water

Readings

- Basu S.K. (2003). Hand Book of Oceanography. Global Vision, Delhi.
- Davis, R. J.A. (1996). Oceanography: An Introduction to the Marine Environment. Brown Co, Lowa.
- Garrison, T. (2016). Oceanography: An Invitation to Marine Science. 9th ed, Cengage Learning, Boston.
- Lal. D.S. (2003) Oceanography. Sharada Pustak Bhavan, Allahabad.
- Pinet, P.R. (2014). Invitation to Oceanography. 7th ed, Jones and Barlett Publishers, Burlington.
- Sharma, R. C. and Vatal, M. (2018) Oceanography for Geographers. Surjeet Publications, Delhi.
- Singh, S. (2015). Oceanography. Pravalika Publication, Allahabad,
- Sverdrup K. A. and Armrest, E. V. (2008). An Introduction to the World Ocean. McGraw Hill, Boston.

Readings (Hindi)

- Gautam, A. (2005) Jalwayu Evam Samudra Vigyan. Rastogi Publication, Meeruth.
- Kulshrestha, K.P. (2004). Samudra Vigyan. Kitab Ghar, Kanpur.
- Singh, S. (2015). Samudra Vigyan. Pravalika Publication, Allahabad.
- Tiwari, R. K. (2016). Bhautik Bhugol. Rajsthan Hindi Granth Academy, Jaipur.

DISCIPLINE SPECIFIC CORE COURSE – ECONOMIC GEOGRAPHY (DSC 8)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit Distribution of the course			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
ECONOMIC GEOGRAPHY	4	3	1	0	Class 12th	NIL

Learning Objectives:

- To evolve an understanding about the significance of space and time as attributes of human economic activities.
- To comprehend the role of geographical factors in determining the transformation of human economic activities.
- To develop an understanding of historical progression of trends and transformation of Primary, Secondary and Tertiary economic activities.

Learning Outcomes:

- To enable the learner to appreciate the role of geographical parameters in determining various economic activities and to understand the scope of economic geography, differentiating it from classification of economic activities.
- To enable the learner to assess and analyse the role of space and location in pursuit of economic activities.
- To enable the learner to develop the capability of analyzing transformation of economic activities with reference to space, time and diffusion of technology.

Course Outline

UNIT 1: Introduction: **(10 hrs)**

- Nature, scope and concepts and Approaches to EconomicGeography; Classification of Economic activities.

UNIT 2: Locational Factors of Economic Activities: **(9 hrs)**

- Factors affecting location of economic activities in agriculture industry and services; Weber's Theory of IndustrialLocation.

UNIT 3: Transitions and emerging trends in primary and secondary economic activities: **(9 hrs)**

- contemporary agriculture, Agro based Industry; SEZ and Technology Parks.; Pharmaceutical Industry

UNIT 4: Progressions in Tertiary Activities: **(9 hrs)**

- Case study approach to Knowledge basedindustries; IT enabled Services industry; Wellness industry

UNIT 5: Globalization of Economic activities: **(8 hrs)**

- globalization, liberalization, Ecommerce, gig economy (selected case studies)

Readings

- Alexander J. W., 1963: Economic Geography, Prentice-Hall Inc., Englewood Cliffs, New Jersey.
- Coe N. M., Kelly P. F. and Yeung H. W., 2007: Economic Geography: A Contemporary Introduction,Wiley-Blackwell.
- Roy, Prithwish, 2014, Economic Geography, New Central Book Agency.
- Combes P., Mayer T. and Thisse J. F., 2008: Economic Geography: The Integration of Regions and Nations, Princeton University Press.
- Wheeler J. O., 1998: Economic Geography, Wiley..
- Maurya, S. D., 2018, Economic Geography, Pravalika Publication, Allahabad.
- Bagchi-Sen S. and Smith H. L., 2006: Economic Geography: Past, Present and Future, Taylor and Francis.
- Singh, S. and Saroha, J., 2021, Human and Economic Geography, Pearson.
- MacKinnon, D, and Cumbers A., 2007, An Introduction to Economic Geography: Globalization, Uneven Development and Place, Harlow: Pearson Education.
- Mamoria, C. and Joshi, R., 2019, Aarthik Bhugol (Economic Geography), Sahitya Bhawan Publication, Agra. (Hindi Edition).

Category III

B.A. Programmes with Geography as non-Major or Minor discipline

DISCIPLINE SPECIFIC CORE COURSE – ECONOMIC GEOGRAPHY (DSC 4)

DISCIPLINE SPECIFIC CORE COURSE – ECONOMIC GEOGRAPHY (DSC 11)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit Distribution of the course			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
ECONOMIC GEOGRAPHY	4	3	1	0	Class 12th	NIL

Learning Objectives:

- To evolve an understanding about the significance of space and time as attributes of human economic activities.
- To comprehend the role of geographical factors in determining the transformation of human economic activities.
- To develop an understanding of historical progression of trends and transformation of Primary, Secondary and Tertiary economic activities.

Learning Outcomes:

- To enable the learner to appreciate the role of geographical parameters in determining various economic activities and to understand the scope of economic geography, differentiating it from classification of economic activities.
- To enable the learner to assess and analyse the role of space and location in pursuit of economic activities.
- To enable the learner to develop the capability of analyzing transformation of economic activities with reference to space, time and diffusion of technology.

Course Outline

UNIT 1: Introduction: (10 hrs)

- Nature, scope and concepts and Approaches to EconomicGeography; Classification of Economic activities.

UNIT 2: Locational Factors of Economic Activities: (9 hrs)

- Factors affecting location of economic activities in agriculture industry and services; Weber's Theory of IndustrialLocation.

UNIT 3: Transitions and emerging trends in primary and secondary economic activities: **(9 hrs)**

- contemporary agriculture, Agro based Industry; SEZ and Technology Parks.; Pharmaceutical Industry

UNIT 4: Progressions in Tertiary Activities: **(9 hrs)**

- Case study approach to Knowledge basedindustries; IT enabled Services industry; Wellness industry

UNIT 5: Globalization of Economic activities: **(8 hrs)**

- globalization, liberalization, Ecommerce, gig economy (selected case studies)

Readings

- Alexander J. W., 1963: Economic Geography, Prentice-Hall Inc., Englewood Cliffs, New Jersey.
- Coe N. M., Kelly P. F. and Yeung H. W., 2007: Economic Geography: A Contemporary Introduction,Wiley-Blackwell.
- Roy, Prithwish, 2014, Economic Geography, New Central Book Agency.
- Combes P., Mayer T. and Thisse J. F., 2008: Economic Geography: The Integration of Regions and Nations, Princeton University Press.
- Wheeler J. O., 1998: Economic Geography, Wiley..
- Maurya, S. D., 2018, Economic Geography, Pravalika Publication, Allahabad.
- Bagchi-Sen S. and Smith H. L., 2006: Economic Geography: Past, Present and Future, Taylor and Francis.
- Singh, S. and Saroha, J., 2021, Human and Economic Geography, Pearson.
- MacKinnon, D, and Cumbers A., 2007, An Introduction to Economic Geography: Globalization, Uneven Development and Place, Harlow: Pearson Education.
- Mamoria, C. and Joshi, R., 2019, Aarthik Bhugol (Economic Geography), Sahitya Bhawan Publication, Agra. (Hindi Edition).

DEPARTMENT OF GEOGRAPHY
SEMESTER-V
Category II
Geography Courses for Undergraduate Programme of study with Geography as one of the Core Disciplines
(B.A. Programmes with Geography as Major discipline)
CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

DISCIPLINE SPECIFIC CORE COURSE – ENVIRONMENT AND ECOLOGY (DSC 9)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit Distribution of the course			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
ENVIRONMENT AND ECOLOGY	4	3	1	0	Class 12th	NIL

Learning Objectives:

1. Various dimensions of ecology and ecosystems, their spatial distribution.
2. To learn about the global environmental challenges and management
3. To know about regional environmental challenges.
4. Understanding of environmental governance.

Learning Outcomes:

1. Detailed exposure to the concept of ecology, ecosystem, processes, theories and concepts.
2. In-depth knowledge of anthropogenic interventions and impacts, conservation strategies and planning.
3. Understanding the environmental concerns at global and regional level.
4. Evaluation and achievement of different environmental programs, policies and legislations.

Course Outline:

Unit-1 Introduction: (7 hrs)

- Concept of Environment, Ecology and Ecosystem; Types of Ecology; Concepts of Ecosystem Services; Ecological and Material Footprint; Global Planetary Boundaries.

Unit-2 Ecology and Ecosystem: (9 hrs)

- Species Interactions; Ecological Limiting Factors; Ecosystem: Structure and Functions; Human Adaptation

Unit-3 Global Environmental Challenges and Management: (11 hrs)

- Climate Change,Biodiversity loss, Land degradation and Human health issues

Unit-4 Regional Ecological Issues and Management: (11 hrs)

- Coastal and Marine Ecology: Loss of mangroves and corals, Garbage Patches; Urban Ecology: Waste disposal and Pollution

Unit-5 Programmes and Policies: (7 hrs)

- Environmental Impact Assessment; Global andNational Environment Policy of India

Readings:

- Brewster, E. N. 2010. Climate Change Adaptation: Steps for a Vulnerable Planet, New York, Nova Science.
- Cain, M.L., Bowman, W.D. and Hacker S.D. (2011). Ecology, 2nd Edition, Sinauer Associates Inc.
- Chandna R. C., 2002: *Environmental Geography*, Kalyani, Ludhiana.
- Chapman, J.L.& M.J. Reiss. (1998). Ecology: Principles and Applications. Cambridge Univ. press.
- Cunninghum W. P. and Cunninghum M. A., 2004: *Principals of Environmental Science: Inquiry and Applications*, Tata Macgraw Hill, New Delhi.
- Das, R. C., 1998. The Environmental Divide: The Dilemma of Developing Countries, A.P.H. Pub., New Delhi.
- Freedman, Bill. 1995. Environmental Ecology: The Ecological Effects of Pollution, Disturbance, and Other Stresses, Academic Press. London.
- Global Environment Monitoring UNEP, https://wesr.unep.org/article/global-environment-monitoring
- Global Environmental Outlook Reports UNEP https://www.unep.org/geo/ Intergovernmental Panel on Climate Change IPCC Reports(2021-23) https://www.ipcc.ch/report/ar6/wg2/

DISCIPLINE SPECIFIC CORE COURSE – AGRICULTURAL GEOGRAPHY ANDFOOD SECURITY (DSC 10)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit Distribution of the course			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
AGRICULTURAL GEOGRAPHY AND FOOD SECURITY	4	3	1	0	Class 12th	NIL

Learning Objectives:

- To understand the nature and scope of agricultural geography.
- To provide a detailed analysis of landuse- landcover classification by NRSA.
- To enable the learners to appreciate the geographical factors affecting agriculture
- To enable the learner to identify and understand modern agricultural practices.
- To enable the learner to identify and understand the concept and dimensions of food security.

Learning Outcomes:

- A detailed insight into the subfield of agricultural geography.
- An in-depth knowledge of geographical factors affecting agriculture.
- An understanding of models and regionalization of agriculture.
- Knowledge of concepts and dimensions of food security.
- An understanding of challenges, programme and policies related to sustainable agriculture.

Course Outline

UNIT 1: **Concept of Agricultural Geography**: **(7 hrs)**

- Nature and Scope, concept andclassification of landuse- landcover (twenty two fold NRSA).

Unit 2: Geographical Factors affecting Agriculture: (10 hrs)

- Physical, Economic, Technological,Institutional and socio-cultural.

Unit 3: Models, Theories and Regionalization: (10 hrs)

- Whittlesey's classification of Agricultural regions; Agro ecological regions of India

Unit 4: Agricultural Development: (11 hrs)

- Concept and relevance of Sustainable Agriculture, Modern Agricultural Practices (Green Revolution, Organic farming, Precision Agriculture: role of Remote Sensing and GIS modelling, role of Artificial Intelligence)

Unit 5: Food Security: (7 hrs)

- Concept and dimensions, Food security in India: Challenges, Programmes and Policy.

Readings:

- Gregor, H.P.: Geography of Agriculture. Prentice Hall, New York, 1970.
- Grigg, D. (1984): 'An Introduction to Agricultural Geography', Hutchinson Publication, London
- Hussain, M., 2000, Agricultural Geography, Rawat Publications
- Modgal, Suresh, 2017, Food Security of India, National Book Trust, 81-237-7131-2
- Ramaswamy, S. and Surulivel, L., 2017, Food Security in India, MJP Publishers, ISBN: 9788180943386, 8180943380
- Singh, J. and Dhillon, S.S. (1988), "Agricultural Geography", 2nd edition, Tata McGraw-Hill, NewDelhi
- Swaminathan, M.S., 2016, Combating Hunger and Achieving Food Security, Cambridge University Press, 9781107123113
- Symons, L. (1972): 'Agricultural Geography', Bell and Sons, London.
- Tarrant, J.R.(1974): Agricultural Geography, Problems in Modern Geography Series, John Wiley and Sons
- माजिद हुसैन, 2000, कृषि भूगोल, Rawat Publications, 9788170335658

Category III

B.A. Programmes with Geography as non-Major or Minor discipline

SEMESTER-V

DISCIPLINE SPECIFIC CORE COURSE – ENVIRONMENT AND ECOLOGY (DSC 5)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit Distribution of the course			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
ENVIRONMENT AND ECOLOGY	4	3	1	0	Class 12th	NIL

Learning Objectives:

5. Various dimensions of ecology and ecosystems, their spatial distribution.
6. To learn about the global environmental challenges and management
7. To know about regional environmental challenges.
8. Understanding of environmental governance.

Learning Outcomes:

5. Detailed exposure to the concept of ecology, ecosystem, processes, theories and concepts.
6. In-depth knowledge of anthropogenic interventions and impacts, conservation strategies and planning.
7. Understanding the environmental concerns at global and regional level.
8. Evaluation and achievement of different environmental programs, policies and legislations.
9.

Course Outline:

Unit-1 Introduction: (7 hrs)

- Concept of Environment, Ecology and Ecosystem; Types of Ecology; Concepts of Ecosystem Services; Ecological and Material Footprint; Global Planetary Boundaries.

Unit-2 Ecology and Ecosystem: (9 hrs)

- Species Interactions; Ecological Limiting Factors; Ecosystem: Structure and Functions; Human Adaptation

Unit-3 Global Environmental Challenges and Management: (11 hrs)

- Climate Change,Biodiversity loss, Land degradation and Human health issues

Unit-4 Regional Ecological Issues and Management: (11 hrs)

- Coastal and Marine Ecology: Loss of mangroves and corals, Garbage Patches; Urban Ecology: Waste disposal and Pollution

Unit-5 Programmes and Policies: (7 hrs)

- Environmental Impact Assessment; Global andNational Environment Policy of India

Readings:

- Brewster, E. N. 2010. Climate Change Adaptation: Steps for a Vulnerable Planet, New York, Nova Science.
- Cain, M.L., Bowman, W.D. and Hacker S.D. (2011). Ecology, 2nd Edition, Sinauer Associates Inc.
- Chandna R. C., 2002: *Environmental Geography*, Kalyani, Ludhiana.
- Chapman, J.L.& M.J. Reiss. (1998). Ecology: Principles and Applications. Cambridge Univ. press.
- Cunninghum W. P. and Cunninghum M. A., 2004: *Principals of Environmental Science: Inquiry and Applications*, Tata Macgraw Hill, New Delhi.
- Das, R. C., 1998. The Environmental Divide: The Dilemma of Developing Countries, A.P.H. Pub., New Delhi.
- Freedman, Bill. 1995. Environmental Ecology: The Ecological Effects of Pollution, Disturbance, and Other Stresses, Academic Press. London.
- Global Environment Monitoring UNEP, https://wesr.unep.org/article/global-environment-monitoring
- Global Environmental Outlook Reports UNEP https://www.unep.org/geo/ Intergovernmental Panel on Climate Change IPCC Reports(2021-23) https://www.ipcc.ch/report/ar6/wg2/

SEMESTER-VI
Category II
Geography Courses for Undergraduate Programme of study with Geography as one of the Core Disciplines
(B.A. Programmes with Geography as Major discipline)
CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

DISCIPLINE SPECIFIC CORE COURSE – REGIONAL GEOGRAPHY OF INDIA (DSC 11)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title& Code	Credits	Credit Distribution of the course			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
REGIONAL GEOGRAPHYOF INDIA	4	3	1	0	Class 12th	NIL

Learning Objectives:

a. To introduce the regional dimensions of physiography, climate, soils and vegetation of India

b. To show variations in resource base and population dynamics

c. To understand the regionalization of India on the basis of different geographical parameters

Learning Outcomes:

d. After completing this course students will be able to understand the regional diversity of India in terms of physiography, climate, resources and demography

e. Students will be able to understand the basis of regionalization of India based on physiographic, economic and socio-cultural factors.

Course Outline

UNIT 1: Physical Setting: (9 hrs)

- Major Physiographic Divisions, Climate, Drainage Basins (Peninsular and ExtraPeninsular).

UNIT 2: Natural Resources: (9 hrs)

- Soil, Natural Vegetation, Mineral (Iron Ore), and Renewable Energy Resources.

UNIT 3: Population: (9 hrs)

- Growth, Distribution and Density, Population Composition(Sex, Age and Literacy).

UNIT 4: Economy: (9 hrs)

- Agriculture (Rice and Wheat); Industries (Automobile industry and Information Technology), Development of diversified transport network.

UNIT 5: Regionalisation of India: (9 hrs)

- Physiographic (R.L. Singh), Social-cultural (Sopher)and Economic (P.Sen Gupta)

Teaching Plan

Unit 1: 9 hours

Unit 2: 9 hours

Unit 3: 9 hours

Unit 4: 9 hours

Unit 5: 9 hours

Total : 45 hours

Essential Readings

- Singh, R.L. (ed.) (1971) India: A Regional Geography, National Geographical Society ofIndia, Varanasi.
- Sopher, David E. (1980) An Exploration of India: Geographical Perspectives on Societyand Culture, Cornell University Press, Ithaca, New York.
- Gupta, P.Sen and Galina Sdasyuk (1967) Economic Regionalisation of India: Problemsand Approaches, Census of India (1961); Monography Series – 1(8).

Suggested Readings

- Saroha, J and Singh, S. (2022) Geography of India, Pearson India Education Services, Noida.
- Sharma, T.C. (2013) Economic Geography of India, Rawat Publication, Jaipur.
- Majid, H. (2020) Geography of India, McGraw Hill Education (India) Private Ltd.
- Tiwari, R. C. (2019) Geography of India. Pravalika Publication, Allahabad.
- Khullar, D.R. (2020) India – A Comprehensive Geography, Kalyani Publishers, Ludhiana.
- Gopal Krishan (2017) The Vitality of India: A Regional Perspective, Rawat

Publication,Jaipur.

- Singh, Gopal (2010) Geography of India, Atma Ram and Sons.

Hindi

- Tiwari, R. C. (2019) *Bharat ka Bhugol*, Pravalika Publication, Allahabad.
- Singh, S. and Saroha, J. (2019) *Bharat ka Bhugol*, CL Media (P) Ltd, New Delhi.
- Mamoria, C. B. and Mishra, J. P. (2021) *Bharat ka Bhugol,* Sahitya Bhawan Publication,Agra.

DISCIPLINE SPECIFIC CORE COURSE – EVOLUTION OF GEOGRAPHICAL THOUGHT (DSC 12)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit Distribution of the course			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
EVOLUTION OF GEOGRAPHICAL THOUGHT	4	3	1	0	Class 12th	NIL

Learning Objectives:

- The course aims to present an overview of the evolution of the discipline.
- The course will introduce students to the multi paradigmic nature of geography as adiscipline, key debates and emergence of modern geography

Learning Outcomes:

- On transacting this core course the students will be able to grasp the uniquedisciplinary focus of Geography
- Students will be able to identify the key debates that have shaped the subject
- Students will be well acquainted with the changing paradigms in Geography and theemergence of modern geography

Course Outline

Unit-1: Pre-Modern: Foundations of Geography: (9 hrs)

- Greek and Roman School, Arab School, Contributions of Chinese travellers, Age of Discovery and its Impact.

Unit 2: Paradigms in Geography: (9 hrs)

- Definition of 'Paradigm', major paradigms in geography – Determinism, Possibilism, Areal differentiation, Spatial Organization

Unit-3: Key Debates and Developments in Geography: (9 hrs)

- Geography as idiographic & Nomothetic, Systematic and Particular, General and Regional, Quantitative Revolution, Schaefer-Hartshorne Debate, impact of Darwin's theory

Unit-4: Theories and Models in Geography: **9 hrs)**

- Systems Approach and its relevance in Geography, concepts of place, space, environment, interconnection, scale

Unit -5: Emergence of Modern Geography: (9 hrs)

- Emergence of Radical, Behavioral and Feminist Geography, Evolution of Geographical Thinking and Disciplinary Trends in Germany, France and USA, India

Teaching Plan

Unit 1: 9 hours

Unit 2: 9 hours

Unit 3: 9 hours

Unit 4: 9 hours

Unit 5: 9 hours

Total: 45 hours

Essential Readings

- Holt-Jenson, A. (2011), *Geography: History and Concepts*: *A Students Guide*, Sage.
- Couper, P. (2015). *A Student's Introduction to Geographical Thought: Theories, Philosophies, Methodologies*. SAGE Publications.
- Nayak, Anoop, and Alex Jeffrey (2013). *Geographical thought: An introduction to ideas in human geography*. Routledge, 2013.

Suggested Readings

- Cresswell, Tim. (2013). *Geographic thought : a critical introduction*. Chichester, West Sussex, UK :Wiley-Blackwell
- Arentsen M.,Stam R. and Thuijis R.(2000), *Post-Modern Approaches to Space*, e-book

- Kapur, A. (2002) Indian Geography: Voice of Concern, New Delhi: Concept Publishing Company.
- Dickinson, R.E. (1969), *The Makers of Modern Geography*, Routledge & Kegan Paul,London.
- Dikshit, R.D. (1997), *Geographical Thought: A Contextual History of Ideas*, Prentice Hallof India.
- James, P.E. & G.J. Martin (1981) *All Possible Worlds: A History of Geographical Ideas*,Third Edition, John Wiley and Sons, New York.
- Johnston, R.J. (1997, 2004), *Geography and Geographers: Anglo-American Human Geography Since 1945*, 5th and 6th Ed., Edward Arnold, London.
- Peet, R. (1998), *Modern Geographical Thought*, Blackwell.
- Soja, E.W. (1997), Postmodern Geographies: The Reassertion of Space in Critical Social Theory, Rawat Publishers, Jaipur and New Delhi

Category III

B.A. Programmes with Geography as Non-Major or Minor discipline

SEMESTER-VI

DISCIPLINE SPECIFIC CORE COURSE – REGIONAL GEOGRAPHY OF INDIA (DSC 6)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title& Code	Credits	Credit Distribution of the course			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
REGIONAL GEOGRAPHYOF INDIA	4	3	1	0	Class 12th	NIL

Learning Objectives:

f. To introduce the regional dimensions of physiography, climate, soils and vegetation of India

g. To show variations in resource base and population dynamics

h. To understand the regionalization of India on the basis of different geographical parameters

Learning Outcomes:

i. After completing this course students will be able to understand the regional diversity of India in terms of physiography, climate, resources and demography

j. Students will be able to understand the basis of regionalization of India based on physiographic, economic and socio cultural factors

Course Outline

UNIT 1: Physical Setting: (9 hrs)

- Major Physiographic Divisions, Climate, Drainage Basins(Peninsular and Extra Peninsular).

UNIT 2: Natural Resources: (9 hrs)

- Soil, Natural Vegetation, Mineral (Iron Ore), and Renewable Energy Resources.

UNIT 3: Population: (9 hrs)

- Growth, Distribution and Density, Population Composition(Sex, Age

and Literacy).

UNIT 4: Economy: (9 hrs)

- Agriculture (Rice and Wheat); Industries (Automobile industry and Information Technology), Development of diversified transport network.

UNIT 5: Regionalisation of India: (9 hrs)

- Physiographic (R.L. Singh), Social-cultural (Sopher)and Economic (P.Sen Gupta)

Teaching Plan

Unit 1: 9 hours

Unit 2: 9 hours

Unit 3: 9 hours

Unit 4: 9 hours

Unit 5: 9 hours

Total : 45 hours

Essential Readings

- Singh, R.L. (ed.) (1971) India: A Regional Geography, National Geographical Society ofIndia, Varanasi.
- Sopher, David E. (1980) An Exploration of India: Geographical Perspectives on Societyand Culture, Cornell University Press, Ithaca, New York.
- Gupta, P.Sen and Galina Sdasyuk (1967) Economic Regionalisation of India: Problemsand Approaches, Census of India (1961); Monography Series – 1(8).

Suggested Readings

- Saroha, J and Singh, S. (2022) Geography of India, Pearson India Education Services,Noida.
- Sharma, T.C. (2013) Economic Geography of India, Rawat Publication, Jaipur.
- Majid, H. (2020) Geography of India, McGraw Hill Education (India) Private Ltd.
- Tiwari, R. C. (2019) Geography of India. Pravalika Publication, Allahabad.
- Khullar, D.R. (2020) India – A Comprehensive Geography, Kalyani Publishers, Ludhiana.
- Gopal Krishan (2017) The Vitality of India: A Regional Perspective, Rawat Publication,Jaipur.
- Singh, Gopal (2010) Geography of India, Atma Ram and Sons.

Hindi

- Tiwari, R. C. (2019) *Bharat ka Bhugol*, Pravalika Publication, Allahabad.
- Singh, S. and Saroha, J. (2019) *Bharat ka Bhugol*, CL Media (P) Ltd, New Delhi.
- Mamoria, C. B. and Mishra, J. P. (2021) *Bharat ka Bhugol,* Sahitya Bhawan Publication,Agra.

ANNEXURE-43

Sub: Amendments to Ordinances

The following Amendments to the Ordinances and Appendices to the Ordinances of the University approved by the Executive Council at its meeting held on 9th June, 2023 are notified for information of all concerned:

1. Amendment to Ordinance XX. Colleges and Institutions Maintained by the University. (E.C Res. No. 14-2 dated 9th June, 2023**)**

Ordinance XX (Y)

Centre for Independence and Partition Studies

The Centre for Independence and Partition Studies (CIPS) shall be constituted under Ordinance XX (Y) of the Ordinances of the University. The Centre for Independence and Partition Studies, as a multi-disciplinary centre, shall focus on different facets of the struggle for freedom and the reasons and impact of Partition and emerge, in due course of time, as a specialized resource centre to facilitate such studies. For the purpose of launching academic programmes, designing curriculum, research programmes etc., the Centre for Independence and Partition Studies (CIPS) shall be constituent of the Faculty of Social Sciences.

1. Objectives

The major objectives of the Centre would include, inter alia, the following:

(i) To promote the study of those people and events that are mostly disregarded and forgotten or have received a biased and prejudiced treatment in history-writing, and thereby highlight such stories, including in Indian languages (under the 8th Schedule of the Constitution of India) and local dialects, that seldom find space in mainstream historical narratives. This should include the role played by unsung tribal heroes, leaders of marginal groups and women in the freedom struggle.

(ii) To facilitate a full investigation of the intense politics surrounding Partition.

(iii) To study and research the invasions, and consequent sufferings and slavery that occurred in the past 1300 years.

(iv) To undertake an exercise to map the location and other details of Partition victims including their routes of migration and to include narratives about their sorrows, challenges and triumphs.

(v) To revisit the lives of these victims by conducting interviews and creating a repository of oral history transcripts.

(vi) To collect and preserve the private papers of individual leaders, academics and diplomats who have left behind valuable and related writings. To include institutional papers wherever relevant.

(vii) To undertake research, collaboration and develop linkages including MoUs with similarly placed or related research centres and academic institutions.

(viii) To set up a comprehensive library dedicated to the study on the subject.

(ix) To create a strong digital and electronic database, and make it open-source wherever feasible, for larger dissemination of knowledge in the field.

(x) To carry out publications of reports, books and journals in the relevant area matching high professional standards.

2. Governing Structure

The governance of the Centre shall be carried out through the following bodies functioning under the overall control of the Executive Council of the University.

(i) Governing Body

(ii) Research Committee

2.1. There shall be a Governing Body, functioning under the overall control of the Executive Council of the University, and in accordance with the Statutes and Ordinances of the University. Its composition would be as follows:

(i) Vice-Chancellor or his Nominee: Chairperson

(ii) Pro-Vice-Chancellor (Ex-officio)

(iii) Director, South Delhi Campus (Ex-officio)

(iv) Dean of Colleges (Ex-officio)

(v) Dean, Faculty of Social Sciences (Ex-officio)

(vi) Dean, Faculty of Arts (Ex-officio)

(vii) Three Expert members from outside the University to be nominated by the Vice-Chancellor
(viii) Three scholars from the University and its colleges to be nominated by the Vice-Chancellor
(ix) The Director of the Centre, Member Secretary

2.1.1 Except for the ex-officio members, all other members of the Governing Body shall have a term of three years.

2.1.2 The Governing Body should meet at least twice in one academic year. The quorum in such meetings should be 50 percent of the total membership.

2.1.3 The Governing Body shall exercise the following functions:

(i) Provide overall supervision and guidance to the centre
(ii) Shall approve all appointments recommended by the Research Committee
(iii) Shall approve academic proposals, programmes and courses leading to certificates, diplomas and degrees.
(iv) Shall consider proposals of staff requirements and approve them.
(v) Shall consider major requirements related to infrastructure.
(vi) Shall consider and approve annual report of the centre.
(vii) Shall consider budetary and additional financial requirement and send them to the University for approval.
(viii) Shall consider and approve annual financial statement of the centre.
(ix) Shall consider and approve the recommendations of the Research Committee for major and long term collaborations with other institutions and/or bodies to facilitate the objectives of the centre.

2.2 There shall be a Research Committee, functioning under the overall control of the Governing Body of the centre, to guide research and other academic activities of the centre. Its composition would be as follows:

(i) Director of the centre- ex-officio Chairperson
(ii) Joint Director
(iii) Three members of the Governing Body who have been nominated by the Vice-C hancellor from amongst the teachers of the University and its colleges.
(iv) Three members who are experts in the field to be nominated by the Vice-Chancellor from within the University system or outside, and who are ordinarily resident in the NCR region.

(v) Two representatives of the Fellows or Scholars associated with the centre to be decided by the Research Committee in its initial meeting.

2.2.1 Except for the ex-officio members, all other members of the Research Committee shall have a term of three years.

2.2.2 The Research Committee should meet as and when required, but not less than twice in one academic year. The quorum in such meetings should be 50 percent of the total membership.

2.2.3 Subject to the overall control of the Governing Body of the centre, the Research Committee shall exercise the following functions:

(i) Periodically monitor and assess various academic and research activities in operation and consider fresh proposals.

(ii) Consider proposal for starting new academic and research programmes and courses, for approval of the Governing Body of the centre.

(iii) Formulate guidelines for further consideration of the Governing Body regarding involving faculty members and students of the University and its colleges for association with the centre in various capacities like Fellows, Interns, Associates, Visiting Faculty, Adjunct Faculty etc.

(iv) Evaluate the performance of fellows/interns and other academic members/faculties and research scholars associated with the centre.

(v) Consider and approve proposals for holding major seminars and conferences.

(vi) Formulate major guidelines for further consideration of the Governing Body regarding creation of respositories and such other significant research and academic activities of the centre.

(vii) Consider proposals from departments, colleges and other centres of the University, as well as from academic/research/strategic institutions from outside for collaboration or starting sub-units. It may also consider reaching out to the such departments, colleges, centres and outside institutions for furthering the objectives of the centre. Proposals with major financial implications or those with outside institutions shall be forwarded to the Governing Body for its approval.

(viii) Shall ensure holding Syama Prasad Mookerjee and Sardar Vallabhbhai Patel memorial lectures by eminent individuals every academic year and shall satisfy that proper documentation with regard to such lectures is maintained (including videos and oral transcripts). Memorial lectures can also be organized in the names of other prominent

individuals and leaders who suffered partition but went on to shape the destiny of Independent India.

(ix) It shall exercise such other functions which the Vice-Chancellor or the Governing Body of the centre may from time to time decide.

3 **Office bearers**

3.1 Director

(i) There shall be a Director of the centre to be appointed by the Vice-Chancellor from amongst the Professors of the University for a term of three years or till he/she attains the age of 65 years, whichever is earlier. This assignment would be in addition to his/her existing responsibilities in the Department. He/she shall be eligible for re-appointment for another term of three years.

(ii) He/she shall be responsible for efficient management and supervision of the centre including diligent handling of its finances, in accordance with the Act, Statutes, Ordinances, rules and regulations of the University.

(iii) The Director shall coordinate various academic and research activities of the centre.

(iv) The Director shall act as ex-officio Member Secretary of the Governing Body, and ex-officio Chairman of the Research Committee.

3.2 Joint Director

(i) There shall be a Joint Director of the Centre to be appointed by the Vice-Chancellor from among the Professors/Associate Professors of the University and its Colleges, for a term of three years, or till he/she attains the age of 65 years. He/she be eligible for re-appointment for another term of three years. This assignment would be in addition to his/her existing responsibilities in the University/College.

(ii) He/she would generally assist the Director in all his academic and administrative responsibilities, and in the absense of the Director perform all such functions and discharge all such responsibilities which are vested with the Director under this Ordinance.

4. Faculty Members

(i) Visiting and Adjunct Professors

Scholars with proven academic credentials and relevant work in the field can be associated with the Centre as Visiting/Adjunct Professors on the recommendation of the Research Committee and with the approval of the Governing Body or the Vice-Chancellor. The terms

and conditions of such association can be decided by the Research Committee generally and in individual cases with the approval of Governing Body or the Vice-Chancellor.

(ii) Fellows and Associates

Full time faculty members of the University and its Colleges with relevant experience and research interest may be appointed as Fellows for a period of three years. Research Scholars of the University can be appointed as Associates on similar terms and conditions. This engagement would run concurrently with the Fellow's existing responsibilities in the University or its Colleges. Appointment of Fellows and other terms and conditions necessary for the smooth operation of Fellowship may be decided by the Research Committee with the approval of Governing Body or the Vice-Chancellor.

(iii) Post-Doctoral Fellows: In specific cases, the Research Committee of the Centre may consider the request of individual scholars for carrying out their Post-Doctoral Fellowships at the centre with financial assistance from government/non-government sponsoring agencies. This research should be of relevance to the specified objectives of the Centre.

5. Finances

(i) All expenditures of the Centre such as those on the conduct of seminars, research projects, teaching, publications, administration, equipments and other support activities shall be made in accordance with the allocation, and in accordance with GFR and other prevailing rules and regulations.

(ii) Additional financial support can be sought from various government agencies, or through collaborations with national and international agencies as per the requirements.

6. General Conditions

(i) Subject to the provisions of the Act and Statutes, the issues not covered in this Ordinance, or in the event of the differences of interpretation, the Vice-Chancellor may take a final decision.

(ii) No financial and/or administrative responsibility in the Centre shall be given to any person beyond the age of 65 years.

Ordinance XX (Z)
Centre for Tribal Studies (CTS)

The Centre for Tribal Studies (CTS) shall be a constituent of Faculty of Social Sciences as a multi-disciplinary centre, to facilitate studies on different tribes of India.

1. Objectives

The major objectives of the Centre shall include, inter alia, the following:

(i) To understand the term "Tribe" from India-Centric perspective including study of their social, cultural, linguistic, religious, economic, environmental diversity and commonalities.

(ii) To study the role and contribution of tribal leaders in various eras of Indian history.

(iii) To highlight role and significance of tribal leaders in India's struggle for freedom, and bring out to prominence the unsung heroes among them.

(iv) To study and document various *Lok* traditions of India's tribes including their indigenous/traditional knowledge and work to disseminate such information to the public in general and to academia and students in particular.

(v) To identify special problems and needs of Denotified and Nomadic tribes and Particularly Vulnerable Tribal Groups (PVTGs) with special reference to conservation, development and special health needs.

(vi) To study the significance of forest-tribe relationship with special reference to stability of forest ecosystems and livelihood issues.

(vii) To study contemporary issues relevant to the tribal communities which has a significant bearing on their present well-being and future progression in terms of overall developmental perspective.

2. Governing Structure: The governance of the Centre shall be carried out through the following bodies which shall function under the overall control of the Executive Council of the University.

(i) Governing Body

(ii) Research Committee

2.1. **Governing Body**: There shall be a Governing Body which shall function under the overall control of the Executive Council of the University, and in accordance with the Act, Statutes and Ordinances of the University.

Composition:

(i) Vice-Chancellor or his Nominee - Chairperson
(ii) Pro-Vice-Chancellor (Ex-officio member)
(iii) Director, South Delhi Campus (Ex-officio member)
(iv) Dean of Colleges (Ex-officio member)
(v) Dean, Faculty of Science (Ex-officio member)
(vi) Dean, Faculty of Social Sciences (Ex-officio member)
(vii) Dean, Faculty of Arts (Ex-officio member)
(viii) Two External Expert members to be nominated by the Vice-Chancellor
(ix) Three distinguished academicians from the University and its colleges to be nominated by the Vice-Chancellor
(x) The Director of the Centre - Member Secretary

2.1.1 Except for the ex-officio members, all other members of the Governing Body shall have a term of three years.

2.1.2 The Governing Body shall meet at least twice in one academic year. The quorum in such meetings shall be half of the total approved strength of the Governing Body.

2.1.3 **Powers of the Governing Body:** The Governing Body shall exercise the following powers:

(i) Provide overall supervision and guidance to the Centre.
(ii) Make all the appointments of the Centre except those to be done by the University.
(iii) Consider academic proposals, programmes and courses leading to certificates, diplomas and degrees.
(iv) Consider proposals of staff requirements and approve them.
(v) Consider major requirements related to infrastructure of the Centre.
(vi) Consider and approve annual report of the Centre.
(vii) Consider budgetary and additional financial requirement and forward them to the University for approval.
(viii) Consider and approve annual financial statement of the Centre.

(ix) Consider and approve the recommendations of the Research Committee for major and long-term collaborations with other institutions and/or bodies to facilitate the objectives of the Centre.

2.2 **Research Committee:** There shall be a Research Committee, functioning under the overall control of the Governing Body of the centre, to guide research and other academic activities of the Centre.

Composition:

(i) Director of the Centre - Chairperson
(ii) Three distinguished academicians who shall be nominated by the Vice-Chancellor from among the teachers of the University and its colleges.
(iii) Three members who are experts in the field to be nominated by the Vice-Chancellor from within or outside the University system.
(iv) Two representatives from among the Fellows associated with the Centre to be decided by the Research Committee.
(v) Joint Director - Secretary

2.2.1 Except for the ex-officio members, all other members of the Research Committee shall have a term of three years.

2.2.2 The Research Committee should meet as and when required, but not less than twice in one academic year. The quorum in such meetings should be half of the total approved strength of the Research Committee.

2.2.3 **Functions of the Research Committee:** Subject to the overall control of the Governing Body of the Centre, the Research Committee shall exercise the following functions:

(i) Periodically monitor and assess various academic and research activities in operation and consider fresh proposals.
(ii) Consider proposals for starting new academic and research programmes and courses, for approval of the Governing Body of the Centre.
(iii) Formulate guidelines for further consideration of the Governing Body regarding involving faculty members and students of the University and its colleges for association with the Centre in various capacities like Fellows, Interns, Associates & Visiting Faculty.

(iv) Evaluate the performance of Fellows/Interns and other academic members/faculties and research scholars associated with the Centre.

(v) Consider and approve proposals for holding major seminars and conferences.

(vi) Formulate major guidelines for further consideration of the Governing Body regarding creation of repositories and such other significant research and academic activities of the Centre.

(vii) Consider proposals from departments, colleges and other centres of the University, as well as from academic/research/strategic institutions from outside, for collaboration or starting sub-units. It may also consider reaching out to such departments, colleges, centres and outside institutions for furthering the objectives of the Centre. Proposals with major financial implications, or those with the outside institutions, shall be forwarded to the Governing Body for its approval.

(viii) Shall ensure holding memorial lectures in the names of prominent tribal heroes by eminent individuals every academic year and shall maintain proper documentation of such lectures.

(ix) It shall exercise such other functions which the Vice-Chancellor or the Governing Body of the Centre may decide from time to time.

3 **Office bearers**

3.1 **Director**

(i) There shall be a Director of the Centre to be appointed by the Vice-Chancellor from among the Professors of the University for a term of three years or till he/she attains the age of 65 years, whichever is earlier. This assignment would be in addition to his/her existing responsibilities in the Department. He/she shall be eligible for re-appointment for another term of three years.

(ii) He/she shall be responsible for efficient management and supervision of the Centre including diligent handling of its finances, in accordance with the Act, Statutes, Ordinances, rules and regulations of the University.

(iii) The Director shall coordinate various academic and research activities of the Centre.

(iv) The Director shall act as ex-officio Member Secretary of the Governing Body, and ex-officio Chairman of the Research Committee.

3.2 **Joint Director**

(i) There shall be a Joint Director of the Centre to be appointed by the Vice-Chancellor from among the Professors/Associate Professors of the University and its Colleges, for a term of

three years, or till he/she attains the age of 65 years, whichever is earlier. He/she be eligible for re-appointment for another term of three years. This assignment would be in addition to his/her existing responsibilities in the University/College.

(ii) He/she would generally assist the Director in all his academic and administrative responsibilities, and in the absence of the Director perform all such functions and discharge all such responsibilities which are vested with the Director under this Ordinance.

(iii) The Joint Director shall act as ex-officio Secretary of the Research Committee.

4. Faculty

All Fellows and Associates would constitute the Faculty of the Centre.

(i) **Visiting and Adjunct Professors:** Scholars with proven academic credentials and relevant work in the field can be associated with the Centre as Visiting/Adjunct Professors on the recommendation of the Research Committee and with the approval of the Governing Body or the Vice-Chancellor. The terms and conditions of such association can be decided by the Research Committee generally and in individual cases with the approval of Governing Body or the Vice-Chancellor.

(ii) **Fellows and Associates:** Full time faculty members of the University and its Colleges with relevant experience and research interest may be appointed as Fellows for a period of three years. Research Scholars of the University can be appointed as Associates on similar terms and conditions. This engagement would run concurrently with the Fellow's existing responsibilities in the University or its Colleges. Appointment of Fellows and other terms and conditions necessary for the smooth operation of Fellowship may be decided by the Research Committee with the approval of Governing Body or the Vice-Chancellor.

(iii) **Post-Doctoral Fellows**: In specific cases, the Research Committee of the Centre may consider the request of individual scholars for carrying out their Post-Doctoral Fellowships at the Centre with financial assistance from government/non-government sponsoring agencies. This research should be of relevance to the specified objectives of the Centre.

5. Finance:

(i) All expenditures of the Centre such as those on the conduct of seminars, research projects, teaching, publications, administration, equipment and other support activities shall be made in accordance with the allocation, and in accordance with GFR and other rules and regulations as applicable from time to time.

(ii) Additional financial support can be sought from various government agencies, or through collaborations with national and international agencies as per the requirements from time to time.

6. General Conditions:

(i) Subject to the provisions of the Act and Statutes, the issues not covered in this Ordinance, or in the event of requirement of interpretation, the decision of the Vice-Chancellor shall be final.

(ii) No administrative and/or financial responsibility in the Centre shall be given to any one beyond the age of 65 years.

ORDINANCE XX (AA)

Centre for Hindu Studies (CHS)

The Centre for Hindu Studies (CHS) shall be constituted under Ordinance XX (AA) of the Ordinances of the University, as a multi-disciplinary centre, to focus on various facets of the Hindu civilization, its multiple dynamics, history, philosophy, worldview, and emerge as a major resource and reference centre in due course of time.

The Centre for Hindu Studies shall be a constituent of the Faculty of Arts in order to facilitate the curriculum design and implementation of the academic programmes as well as enrolment of the students for the doctoral studies.

1. Objectives

The major objectives of the proposed centre, inter alia, may include the following:

i. To initially offer Postgraduate and Doctoral programmes in Hindu Studies followed by certificate, diploma and other such programmes depending upon operational feasibility of the Centre.

ii. To offer, as part of the Postgraduate programme, Minor courses with Hindu Studies as Major in the knowledge domains of Computer Science, Data Analytics, Artificial Intelligence, Graphic Design & Animation, Management and Commerce.

iii. To involve all the stakeholders including the enrolled students to think critically as well as analytically and evolve a Bharat centric perspective beyond theoretical explanation.

iv. To create a dedicated rich repository of ancient and contemporary reference materials concerned with enhancing the values and knowledge of the Hindu way of life, culture, traditions and worldview.

v. To engage in comparative study with other belief systems, spiritual values and cultural traditions with a focus on Hindu spirit and ethos.

vi. To study inter-connectedness existing among different Hindu sects, philosophical practices, historical issues, statecraft, law, arts, architecture, literature, musical and dance traditions.

vii. To trace the evolution of reformist movements and practices, evolving nationalist ideas, and study their multiple dynamics.

viii. To publish in due course of time a journal dedicated to deep research on topics related to Hindu Studies.

ix. To coordinate with institutions in the same knowledge domain for better academic enrichment and research propagation.

2. Governing Structure: The governance of the Centre shall be carried out through the following bodies which shall function under the overall control of the Executive Council of the University.

(i) Governing Body

(ii) Research Committee

2.1. **Governing Body**: There shall be a Governing Body which shall function under the overall control of the Executive Council of the University, and in accordance with the Act, Statutes and Ordinances of the University.

Composition:

(i) Vice-Chancellor or his Nominee - Chairperson

(ii) Pro-Vice-Chancellor (Ex-officio member)

(iii) Director, South Delhi Campus (Ex-officio member)

(iv) Dean of Colleges (Ex-officio member)

(v) Dean, Faculty of Social Sciences (Ex-officio member)

(vi) Dean, Faculty of Arts (Ex-officio member)

(vii) Two External Expert members to be nominated by the Vice-Chancellor

(viii) Three distinguished academicians from the University and its colleges to be nominated by the Vice-Chancellor

(ix) The Director of the Centre - Member Secretary

2.1.1 Except for the ex-officio members, all other members of the Governing Body shall have a term of three years.

2.1.2 The Governing Body shall meet at least twice in one academic year. The quorum in such meetings shall be half of the total approved strength of the Governing Body.

2.1.3 **Powers of the Governing Body:** The Governing Body shall exercise the following powers:

(i) Provide overall supervision and guidance to the Centre.

(ii) Make all the appointments of the Centre except those to be done by the University.

(iii) Consider academic proposals, programmes and courses leading to certificates, diplomas and degrees.

(iv) Consider proposals of staff requirements and approve them.

(v) Consider major requirements related to infrastructure of the Centre.

(vi) Consider and approve annual report of the Centre.

(vii) Consider budgetary and additional financial requirement and forward them to the University for approval.

(viii) Consider and approve annual financial statement of the Centre.

(ix) Consider and approve the recommendations of the Research Committee for major and long-term collaborations with other institutions and/or bodies to facilitate the objectives of the Centre.

2.2 **Research Committee:** There shall be a Research Committee, functioning under the overall control of the Governing Body of the centre, to guide research and other academic activities of the Centre.

Composition:

(i) Director of the Centre - Chairperson

(ii) Three distinguished academicians who shall be nominated by the Vice-Chancellor from among the teachers of the University and its colleges.

(iii) Three members who are experts in the field to be nominated by the Vice-Chancellor.

(iv) Two representatives from among the Fellows associated with the Centre to be decided by the Research Committee.

(v) Joint Director - Secretary

2.2.1 Except for the ex-officio members, all other members of the Research Committee shall have a term of three years.

2.2.2 The Research Committee should meet as and when required, but not less than twice in one academic year. The quorum in such meetings should be half of the total approved strength of the Research Committee.

2.2.3 **Functions of the Research Committee:** Subject to the overall control of the Governing Body of the Centre, the Research Committee shall exercise the following functions:

(i) Periodically monitor and assess various academic and research activities in operation and consider fresh proposals.

(ii) Consider proposals for starting new academic and research programmes and courses, for approval of the Governing Body of the Centre.

(iii) Formulate guidelines for further consideration of the Governing Body regarding involving faculty members and students of the University and its colleges for association with the Centre in various capacities like Fellows, Interns, Associates, Visiting Faculty, Adjunct Faculty etc.

(iv) Evaluate the performance of Fellows/Interns and other academic members/faculties and research scholars associated with the Centre.

(v) Consider and approve proposals for holding major seminars and conferences.

(vi) Formulate major guidelines for further consideration of the Governing Body regarding creation of repositories and such other significant research and academic activities of the Centre.

(vii) Consider proposals from departments, colleges and other centres of the University, as well as from academic/research/strategic institutions from outside, for collaboration or starting sub-units. It may also consider reaching out to such departments, colleges, centres and outside institutions for furthering the objectives of the Centre. Proposals with major financial implications, or those with the outside institutions, shall be forwarded to the Governing Body for its approval.

(viii) It shall exercise such other functions which the Vice-Chancellor or the Governing Body of the Centre may decide from time to time.

3 **Office bearers**

3.1 **Director**

(i) There shall be a Director of the Centre to be appointed by the Vice-Chancellor from among the Professors of the University for a term of three years or till he/she attains the age of 65 years, whichever is earlier. This assignment would be in addition to his/her existing responsibilities in the Department. He/she shall be eligible for re-appointment for another term of three years.

(ii) He/she shall be responsible for efficient management and supervision of the Centre including diligent handling of its finances, in accordance with the Act, Statutes, Ordinances, rules and regulations of the University.
(iii) The Director shall coordinate various academic and research activities of the Centre.
(iv) The Director shall act as ex-officio Member Secretary of the Governing Body, and ex-officio Chairman of the Research Committee.

3.2 **Joint Director**

(i) There shall be a Joint Director of the Centre to be appointed by the Vice-Chancellor from among the Professors/Associate Professors of the University and its Colleges, for a term of three years, or till he/she attains the age of 65 years, whichever is earlier. He/she be eligible for re-appointment for another term of three years. This assignment would be in addition to his/her existing responsibilities in the University/College.
(ii) He/she would generally assist the Director in all his academic and administrative responsibilities, and in the absence of the Director perform all such functions and discharge all such responsibilities which are vested with the Director under this Ordinance.
(iii) The Joint Director shall act as ex-officio Secretary of the Research Committee.

4. Faculty

All Fellows and Associates would constitute the Faculty of the Centre.
(i) **Visiting and Adjunct Professors:** Scholars with proven academic credentials and relevant work in the field can be associated with the Centre as Visiting/Adjunct Professors on the recommendation of the Research Committee and with the approval of the Governing Body or the Vice-Chancellor. The terms and conditions of such association can be decided by the Research Committee generally and in individual cases with the approval of the Vice-Chancellor.
(ii) **Fellows and Associates:** Full time faculty members of the University and its Colleges with relevant experience and research interest may be appointed as Fellows for a period of three years. Research Scholars of the University can be appointed as Associates on similar terms and conditions. This engagement would run concurrently with the Fellow's existing responsibilities in the University or its Colleges. Appointment of Fellows and other terms and conditions necessary for the smooth operation of Fellowship may be decided by the Research Committee with the approval of Governing Body or the Vice-Chancellor.

(iii) **Post-Doctoral Fellows**: In specific cases, the Research Committee of the Centre may consider the request of individual scholars for carrying out their Post-Doctoral Fellowships at the Centre with financial assistance from government/non-government sponsoring agencies. This research should be of relevance to the specified objectives of the Centre.

5. Conduct of Teaching-Learning and Research

(i) Arrangement for teaching-learning and research facilities shall be made, as far as possible, by pooling the internal human resources of the University and its colleges. In special cases and subject to the availability of financial resources, the Governing Body with the approval of the Vice-Chancellor may, on the recommendation of the Research Committee, appoint scholars from outside the University system for a fixed tenure and on such terms and conditions as may be decided in specific cases.

(ii) Faculty members of the departments and colleges of the University, with proven credentials in the field, may be invited to be associated with the Centre as Adjunct Faculty. In such cases, their workload at the Centre shall count towards their overall workload in the parent department/college.

(iii) Fellows of the Centre may also be engaged in teaching. In such cases, their direct teaching hours shall count towards their overall workload in the parent department/college.

(iv) Fellows, Associates, Post-Doctoral Fellows, Research Scholars and others, associated with the Centre shall also assist in various works connected with smooth conduct of the academic and research programmes of the Centre.

(v) The University will make efforts to have sanctioned posts of Professor, Associate Professor and Assistant Professor for sustained teaching-learning and research in the Centre. Efforts will be made to maintain the ratio of 1:2:4 while requesting for these posts by the University.

6. Sanctioned strength of students

The centre will enrol sixty (60) students for Postgraduate studies with choice of various Minor courses alongwith Hindu Studies which will be the Major course as part of the Postgraduate programme in the centre. However, atleast 10 students will be required for running Minor courses under the Centre.

- Department of Hindi
- Department of English

Departments under the Faculty of Social Sciences:

- Department of History
- Department of Political Science
- Department of Sociology

Note: Other Departments may also be co-opted by the Centre for teaching-learning and research in relevant areas of knowledge pertaining to the respective departments under various faculties of the University.

8. Finance:

(i) All expenditures of the Centre such as those on the conduct of seminars, research projects, teaching, publications, administration, equipment and other support activities shall be made in accordance with the allocation, and in accordance with GFR and other rules and regulations as applicable from time to time.

(ii) Additional financial support can be sought from various government agencies, or through collaborations with national and international agencies as per the requirements from time to time.

9. General Conditions:

(i) Subject to the provisions of the Act and Statutes, the issues not covered in this Ordinance, or in the event of requirement of interpretation, the decision of the Vice-Chancellor shall be final.

(ii) No administrative and/or financial responsibility in the Centre shall be given to any one beyond the age of 65 years.

ANNEXURE-44

Sub: Amendment to Ordinance V

Amendment to Appendix-II to Ordinance V.2 & VII of the Ordinances of the University [E.C Resolution No. 14-3/- dated 09.06.2023] regarding introduction of Master of Arts in Hindu Studies, as approved by the Executive Council at its meeting held on 09.06.2023, is notified for information and necessary action, if any, to all the concerned :

Course Structure – Master of Arts in Hindu Studies

Semester	DSC (4 Credits)	DSE (4 Credits)	Minor (4 Credits)	SEC (2 Credits)	Total Credits
I	DSC-1 DSC-2 DSC-3	0	Mi-1	SEC-1 SEC-2	20
II	DSC-4 DSC-5 DSC-6	0	Mi-2A	SEC-3+ SEC-4 Or SEC of Mi-2B	20
III	DSC-7 DSC-8	DSE-1*	Mi-3 Mi-4	0	20
IV	DSC-9 DSC-10	DSE-2* (of Major or Minor)	Mi-5 Mi-6	0	20
Credits	40	08	24	08	80

* Note : Instead of Studying DSE-1 and DSE-2, a student can choose to write a Dissertation on a topic of the major discipline i.e Hindu Studies.

Minimum no. of credits of Major Discipline i.e Hindu Studies = 44 (max. is 48)
Minimum no. of credits of Minor Discipline = 24 (max. is 30)
DSC – Discipline Specific Course (Hindu Studies)
DSE – Discipline Specific Electives (Hindu Studies)
Mi- Minor Discipline which can be chosen from range of disciplines such as Computer Science, Languages etc.
SEC- Skill Enhancement Course which is provided by the University as a Pool

The syllabi of the Programme is at ***Annexure-I.***

Annexure-I

ज्ञान-विज्ञान विमुक्तये

UNIVERSITY GRANTS COMMISSION
NET BUREAU

NET SYLLABUS

SUBJECT : HINDU STUDIES CODE NO. : -102

UNIT 1: TATTVA VIMARŚA

1. Understanding the term "Hindu" (its historicity, and its geographic and *jīvana-dṛṣṭi* aspects)
2. Enumeration of *Aṣṭādaśa vidyās* and *Upāṅgas* with their respective *ācāryas*
3. *Padārtha/tattva/ātmā* across traditions and underlying unifying themes
4. Position of feminine in Bharata: Parallel sovereignty principles
   a. Self-definitions: *Vāk-Sūkta, Devya-atharva-śīrṣa sūkta* and Bhagavadgītā (10.20-40)
   b. *Ardhanārīśwara* concept, Bṛhadāraṇyaka Upaniṣad (1.4.3)
5. *Śakti* and *Prakṛti* principles
6. Position of feminine in Jaina-*darśana*, Bauddha-*darśana*, and Śrī Guru Granth Sahibji
7. The principle of Oneness in Vedānta and interconnectedness in Jaina, Bauddha, Nyāya & Vaiśeṣika darśana, and Śrī Guru Granth Sahib ji, and the consequential idea of all-inclusiveness
8. Understanding distinctions between *varṇa, jāti*, and caste (Bṛhadāraṇyaka Upaniṣad (1.4.10-15), Bhagavadgītā (18.41-45).
9. Enumeration of *ṛṣīs* and *saints* from different social backgrounds

UNIT 2: DHARMA, and KARMA VIMARŚA

1. Dharma: Definitions and meanings (Mahābhārata, Manusmṛti, Vaiśeṣika Sūtra, Bhagavadgītā - Śānkarabhāṣya- upodghāta, definitions in Śramaṇa traditions)
2. Distinctions between *dharma* and religion (*pantha, mazahab*)
3. Types of dharmas: pravṛttimūlaka, and nivṛttimūlaka
4. Dharma as the organizing principle for Vaidika and Śramaṇa traditions and in Śrī Guru Granth Sahib ji
5. Varṇāśrama dharma and choice
6. *Rāja-dharma, Āpaddharma, Samāja-dharma*, and *Swadharma*
7. *Karma, vikarma*, and *akarma* (Bagavadgītā 4.16, and corresponding Śānkarabhāṣya)
8. Six *karmas: Kāmya, nitya, niśiddha, naimittika, prāyaśchitta*, and *upāsanā*
9. *Niṣkāma* (Brahma/Sarvam as the real doer) and *sakāma karma*
10. Karma- *phala, prārabdha*, and *saṅskāra*

UNITS 3: PUNARJANMA-BANDHAN-MOKṢA VIMARŚA

1. Concept of Jīva
2. Definitions of *bandhana* (*prākṛtika, vaikṛtika, dākṣanika* from *Sāmkhyakārika* 44 with *Sāmkya-tattva-kaumudī*)
3. The root-cause and process of *bandhana*: Bhagavadgītā 3.37 – 3.41, Bhagavadgītā 2.62-66, Pratītya-samutpādasiddhānta
4. The principle of *punarjanma*: an enabler of *Dharma*
5. Conceptions of *mokṣa* and *nirvāṇa*
6. Multiple pathways for *mokṣa* (Yoga): *abhyāsa, karma, bhakti, jñāna*

UNIT 4: PRAMĀṆA SIDDHĀNTA

1. Definition of *pramāṇa*
2. Indian model of analysis of text: *pramātā, pramāṇa, prameya,* and *pramā*
3. Nature, definition, method, and limits of different types of *pramāṇas* : *Pratyakṣa, Anumāna, Upamāna, Śabda, Anuplabdhi, Arthāpatti*
4. *Śabda-śakti: abhidhā, lakṣaṇā, vyañjanā,* and *tātparya*
5. *Swatah-prāmaṇya,* and *paratah-prāmāṇya*
6. Applications of *pramāṇa* in contemporary texts

UNIT 5: *VĀDA-PARAMPARĀ*

1. *Vāda-Paramparā*: The method of *Śastrārtha* and the concept of *adhikaraṇa*
2. From doubt to determination: *Sanśaya to Nirṇaya*
3. *Kathā* (nature and types of *kathā*): Vāda, Jalpa, vitaṇdā
4. Embarking on knowledge discovery: *Anubandha-chatuṣṭaya (adhikārī, viṣaya, sambandha, prayojana)*
5. Organization of knowledge: *Sūtra, bhāṣya, vārtika, vṛtti, tīkā, tippaṇī* and *saṅgraha*
6. Analysing "*tātparya*" of knowledge through *śravaṇa vidhi*: *Upakrama, upasamhāra, abhyāsa, apūrvatā, phala, arthawāda, upapatti*
7. Analysing "*tātparya*" of knowledge through six-fold process (*ṣadvidha tātparya nirṇāyaka liṅga*) *śruti, liṅga, vākya, prakaraṇa, sthāna, sāmākhyā*
8. *Tantrayukti*: "Research methodology" in context of natural sciences

UNIT 6: APPLICABILITY OF WESTERN METHODS FOR UNDERSTANDING INDIAN TEXTS

1. Western restrictions on free inquiry
2. Western descriptions of Bharat and traditional literary theories
3. Hindus and Bharat as understood through the Marxist perspective, and The Critical Theory
    a. Intention of author versus that of the reader
    b. History, purpose of The Critical Theory, and stereotyping of images and conceptions
4. Hegemony (Gramsci)
5. Structuralism and portrayal of Bharat
6. Orientalism – theorizing Bharat in the Western experience
7. Use of psycho-analytical approaches in Bharatiya context
8. Descriptions of Bharat through lenses of post-modernism and deconstruction
9. Neutral inquiry and New-Historicism and portrayal of Bharat

UNIT 7: RĀMĀYAṆA

1. Types of Rāmāyaṇas – Traditional texts with divine origins/(Valmiki Ramayana) reverential texts, texts deviating from the core story
2. The popularity and relevance of traditional Rāmāyaṇa.
3. Rāmāyaṇa as one of the two source-books (*Upajīvya*) for much of Indian literature, and arts (folk, classical, and contemporary arts)
4. *Maryādā Puruṣottama* Rāma
5. Relationships between humans, and social-reconstruction (e.g. Niṣādarja, jatāyu, etc.), and between human and nature
6. *Strī-vimarśa*: Anasūyā, Ahilyā, Kaikeyī, Kauśalya, Mandodarī, Sītā, Swayamprabhā, Tārā, Trijaṭā, Urmilā, Sabari
7. Rāma-Rājya
8. The role of *ṛṣi* in a society
9. Data on Geography, flora and fauna in India

UNIT 8: MAHĀBHĀRATA

1. The period of Mahābhārata: Textual and traditional sources, as well as modern data
    a. Calendars (samvat) of Yudhiṣhṭhira (yugābda), Kṛṣna, and Vikrama
2. The core story of Mahābhārata.
3. *Dharma* and *samsāra*: 10 stories about 10 *Lakṣaṇas* of dharma: *dhṛtI* (Gaṅgāvataran), *kṣamā* (Vasiṣṭha and Viśwāmitra), *dama* (Yayāti and Puru), *asteya* (Yudhiṣhṭhira- Yakṣa samvāda), *śauca* (the tale of golden mongoose), *indriyanigraha* (dharma vyādha's upadeśa), *dhīh* (Savitri), *vidyā* (tale of man-tiger-snake-elephant from Strī Parva), *satyam* (Hariścandra/Satyakāma), *akrodha* (the story of Parīkṣita and his insult to Ṛiṣi Śamika)
4. Mahābhārata as one of the two source-*books* (*Upjīvya*) for much of Indian literature, and arts (folk, classical, and contemporary arts)
5. Viduranīti and Bhagavadgīta
6. *Rājdharma*, and *rajanīti* : Śāntiparva
7. Geography of Bhārata-varṣa
8. Strī-vimarśa in Mahābhārata: Draupadī, Gāndhārī, Hidimbā, Jāmbavati, Kuntī, Mādrī, Rukmaṇī, Satyabhāmā, Satyavatī, Śikhaṇḍī, Sulocanā, Ulūpi, Uttarā

UNIT 9: SANSKRIT PARICHAYA

1. संस्कृतवर्णमालापरिचयः - चतुर्दश माहेश्वरसूत्राणि।
स्वरः, व्यञ्जनम्, संयुक्तवर्णाः, अनुस्वारः, अनुनासिकम्, विसर्ग, वर्णविन्यासः, वर्णसंयोगः, उच्चारणस्थानम्, लेखन-प्रक्रिया, शब्दपदयोर्मध्ये अन्तरम् ।

2- शब्दरूपम् (दैनिकप्रयोगदृष्ट्या आधारभूता शब्दरूपप्रक्रिया),विभक्तिः, कारकम्(अर्थसहितः सामान्यपरिचयः) -
2.1 शब्दरूपम् (संज्ञात्मकम्) - अन्तिमवर्णदृष्ट्या, लिङ्गदृष्ट्या वचनदृष्ट्या च वर्गीकरणम्।

शब्दाः (अजन्ताः/स्वरान्ताः)						
	अकारान्तः	इकारान्तः	उकारान्तः	ऋकारान्तः	आकारान्तः	ईकारान्तः
पुल्लिंगम्	देव, राम	कवि, हरि, पति	गुरु	पितृ, दातृ	-	-
स्त्रीलिंगम्	-	मति	धेनु	मातृ	लता	नदी
नपुंसकलिंगम्	फल	वारि	वस्तु	-	-	-

2.2 शब्दरूपम् (हलन्तम्/व्यञ्जनान्तम्)-

शब्दाः (हलन्ताः/व्यञ्जनान्ताः)	
पुल्लिंगम्	भिषज् (भिषक्), महत्, सुहृद्, राजन्, विद्यार्थिन्, पथिन्, गच्छत्, मरुत्, आत्मन्, ब्रह्मन्, विद्वस्।
स्त्रीलिंगम्	वाच्, सरित्, दिश्, परिषद्, आशिष्, स्त्री, लक्ष्मी, श्री।
नपुंसकलिंगम्	जगत्, नामन्, कर्मन्, चक्षुष्, मनस्, हविष्, ब्रह्मन्, धनुष्, पयस्, दधि।
एतत्सदृशानाम् अन्येषाञ्च रूपाणाम् अभ्यासः।	

2.3 सर्वनाम- अस्मद्, युष्मद्, तद्, एतद्, यद्, भवत्, किम्, इदम्, अदस्, सर्व (त्रिषु लिङ्गेषु)।

3- धातुरूपम् (क्रियारूपम्)-
3.1 धातूनां गणपरिचयः, आत्मनेपदम्, परस्मैपदम्।
3.2 लकारदृशा - लट्लकारः (वर्तमानकालः), लुटलकारः (भविष्यत्कालः), लङ्लकारः (भूतकालः)
लोट्लकारः (आज्ञार्थकः), विधिलिङ्लकारः (सम्भावनायाम्)।
पुरुषदृशा - प्रथमपुरुषः, मध्यमपुरुषः, उत्तमपुरुषः।
वचनदृशा - एकवचनम्, द्विवचनम्, बहुवचनम्।
3.3 धातवः- पंचलकारेषु धातुरूपाणि -
परस्मैपदिनः- पठ्, लिख्, चल्, गम्, नम्, खाद्, वद्, हस्, गै, कृ, क्री, ज्ञा, घ्रा, नी, दृश्, धृ, पत्, पा(पिब्), स्मृ, क्रुध्, शक्, पृच्छ्, इष (इच्छ्), दा, जीव्, त्यज्, धाव्, पच्, रक्ष्, सृ, रुद्, भी, नश्, स्निह्, आप्, क्षिप्, जप्, विश्, मिल्, ग्रह्, चिन्त्, पालु, रच्, क्षल्।
आत्मनेपदिनः- लभ्, मुद्, क्षम्, वृध्, सह्, सेव्, ईक्ष्, ऊह्, कम्प्, भाष्, यत्, रम्, वन्द्, याच्, शीङ्।
सत्तात्मकौ - अस्, भू।

4. सन्धिः - स्वरसन्धिः- यण्, अयादि, गुण, वृद्धि, दीर्घ, पूर्वरूप, पररूप, प्रकृतिभाव ।
व्यञ्जनसन्धिः- परसवर्णः, अनुनासिकः, श्चुत्वम्, ष्टुत्वम्, जश्त्वम्, चर्त्वम्, णत्व-षत्वविधिः।
विसर्गसन्धिः - विसर्गलोपः, विसर्गस्थाने ओ, र्, स्, श्, ष्।
अनुस्वारः, 'र्' 'लोपः, 'त्' स्थाने 'ल्' अनुनासिकम्।

5. समासः - केवलः, अव्ययीभावः, तत्पुरुषः, कर्मधारयः, द्विगुः, बहुव्रीहिः, द्वन्द्वः।

6. कारकम् - कर्ता, कर्म, करण, सम्प्रदान, अपादान (सम्बन्ध), अधिकरण, सम्बोधन ।

7- उपपदविभक्तिः -

- अधि, अनु, उप, उभयतः, परितः, निकषा, प्रति, धिक्, विना.....योगे द्वितीया।
- अलम्, विना, हीनम्, सह, साकम्, सार्धम्, समम्.....योगे तृतीया।
- नमः, रुच्, दा, स्पृहा, अलम् (सामर्थ्यार्थे).....चतुर्थी।
- विना, बहिः, परम्, पूर्वम्.....योगे पञ्चमी।
- अग्रतः, पुरतः, पृष्ठतः, वामतः, दक्षिणेतः, उत्तरतः.....योगे षष्ठी।
- स्निह्, विश्वस्.....योगे सप्तमी।

8. वाच्यम्- कर्तृवाच्यम्, कर्मवाच्यम्, भाववाच्यम्।

9. प्रत्ययः- (क) कृत्प्रत्ययः - क्त, क्तवतु क्त्वा, ल्यप्, तुमुन्, शतृ, शानच्, ण्वुल्, क्तिन्, ल्युट्, तव्यत्, अनीयर्, ण्वुल्, तृच्, घञ्।
(ख) तद्धितप्रत्ययः- मतुप्, वतुप्, इन्, ठक् (इक्), घञ्, त्व, तल्, अण्, ष्यञ्।
(ग) स्त्रीप्रत्ययः- ङीप्, ङीष्, टाप्।

10- अव्ययम्- (स्थानवाचि)-अत्र, तत्र, यत्र, सर्वत्र, अन्यत्र, कुत्र, एकत्र,यतः, ततः।
(समयवाचि)- यदा, तदा, सदा, सर्वदा, कदा, अद्य, श्वः, ह्यः,परश्वः,परह्यः,वारम्,आरभ्य,निश्चयेन, ।
(समुच्चयवाचि)- च, अपि, एव।
(अवस्थावाचि)- आम्, किम्, धन्यवादः, आवश्यकम्।
(दिशावाचि)- उपरतः, पृष्ठतः, वामतः, दक्षिणतः, अभितः, परितः।
(पूर्णतावाचि)- पर्याप्तम्, अत्यन्तम्, अलम्, इति।
(सम्भावनावाचि)- किन्तु, प्रायशः, अपेक्षया, अतः, यत्-तत्।
सादृश्यवाची अव्यय- इव, नु, वा, चित्।
अव्यय- क्त्वातोसुन्कसुनः, कृन्मेजन्तः, तद्धितश्चासर्वविभक्तिः
11. उपसर्गः - आ, उत्, अनु, वि, प्र, परि, अव, उप, सम्, अप।
12 संख्या - सङ्ख्यावाचि- शब्दरूपाणि एकः, द्वौ, त्रयः, चत्वारः (त्रिषु लिङ्गेषु)।
संख्याः - 5 - 100

UNIT 10 – OTHER ALLIED TOPICS

1. Challenges in translations and understanding distinctions between original and translation: *dharma, sampradāya, ātmā, darśana, Iśwara, bhagawāna, prabhu, mana, buddhi, prāmāṇika, śiṣya, devatā, smṛti, mandira, adhyātma, prema, asura, daitya, rākṣasa, śarīra, padārtha, dravya, rāṣtra, varṇa, jāti, śāstra, śānti, ṛṣi, muni, guru, kalā, śāstrīya-saṅgīta, paṇdita, māya, strī, mahillā, nārī, nyāya, indriya, mokṣa, nirvāṇa, prāṇa*
2. Important *mandiras, śaktipītha, maṭha, jyotirliṅga, dhāmas*
3. Sant-paramparā: Brief knowledge of Chaitanya Mahaprabhu, Sankara Deb, Thiruvallavur, Basavanna, Namdev, Kabira, Ravidasa, Narsi Mehta, Guru Nanak, Tukaram, Tulsidas, Surdas, Mirabai, Andal, Jhulelal, Gyaneshwar, Vidyapati, Narayan Guru
4. *Nāṭya*: ten types, *tattvas: rasa, abhinaya, kathāvastu, pātra*
5. *Kāvya*: Type (*gadya, padya, champū*), *chandas* (*anuṣṭupa, upajāti, Indravajrā, upendravajrā, vasanta-tilakā, śikhariṇī, mandākrāntā, āryā, gāthā, dohā, chaupāī, soraṭhā*)
6. Some *kavis*: Bhasa, Kalidas, Ashvaghoṣ, Somdev Suri, Hala, Kalhan, Chandabaradai
7. Some kings and dynasties: Maurya, Lalitaditya, Chakradhwaj Singh, Chola, Harihar and Bukka, Bappa Rawal, Harshawardhan, Bhoj, Dahir-sen, Marthanda Verma, Rana Pratap, Shivaji
8. Concept of Iśwara in - Jaintia, Adi, Galo, Tagin, Apatani, Idu Mishmi, Miju Mishmi, Digaru Mishmi tribes of N. E. India

ANNEXURE-45

Sub: Amendment to Ordinance V

[E.C Resolution No. 14-1/-(14-1-13/-) dated 09.06.2023]

Following addition be made to Appendix-II-A to the Ordinance V (2-A) of the Ordinances of the University;

Add the following:

Syllabi alongwith course credit distribution of Semester-I & Semester-II of Bachelor of Technology (B.Tech.) in Computer Engineering, Electronics and Communication Engineering and Electrical Engineering under Faculty of Technology in respect of Department of Computer Engineering, Department of Electronics and Communication Engineering and Department of Electrical Engineering respectively under UGCF to be implemented from academic session 2023-24

Semester-I

Sr. No.	Course Domain	Course Title	Hours per week			Total Course Hrs. per week	Credits
			L	T	P		
1.	DSC-1	Mathematics-I	3	1	0	4	4
2.	DSC-2/ DSC-5*	Physics OR Introduction to Electrical and Electronics Engineering	3	0	2	5	4
3.	DSC-3	Fundamentals of Computer Programming	3	0	2	5	4
4.	GE	Select a course from the specified list of GEs					4
5.	AEC	Select a course from the specified list of AECs					2
6.	SEC	Select a course from the specified list of SECs					2
7.	VAC	Select a course from the specified list of VACs					2
Total Credits							**22**

NOTE:

***1. Half of the students enrolled will take up Physics and half of the students will take up Introduction to Electrical & Electronics Engineering in the Semester I and vice versa in the Semester II.**

Semester-II

Sr. No.	Course Domain	Course Title	Hours per week			Total Contact Hrs. per week	Credits
			L	T	P		
1.	DSC-4	Mathematics-II	3	1	0	4	4
2.	DSC-5/ DSC-2*	Introduction to Electrical and Electronics Engineering OR Physics	3	0	2	5	4
3.	DSC-6	Data Structures	3	0	2	5	4
4.	GE	Select a course from the specified list of Ges					4
5.	AEC	Select a course from the specified list of AECs					2
6.	SEC	Select a course from the specified list of SECs					2
7.	VAC	Select a course from the specified list of VACs					2
Total Credits							**22**

NOTE:
***1. Half of the students enrolled will take up Physics and half of the students will take up Introduction to Electronics & Electrical Engineering in the Semester I and vice versa in the Semester II.**

LIST OF SKILL ENHANCEMENT COURSES (SECs)

1. Computer Workshop (Course Credit: 0L-0T-2P, Course Hours: 0L+0T+4P)
2. Electronics Workshop (Course Credit: 0L-0T-2P, Course Hours: 0L+0T+4P)
3. Electrical Workshop (Course Credit: 0L-0T-2P , Course Hours: 0L+0T+4P)

LIST OF GENERIC ELECTIVES (Ges)

The students will be offered a list of Generic Electives as decided by the university from time to time.

LIST OF ABILITY ENHANCEMENT COURSES (AECs)

The students will be required to choose these courses from a pool of courses offered by the University as per UGCF-2022

LIST OF VALUE ADDITION COURSES (VACs)

The students will be required to choose these courses from a pool of courses offered by the University as per UGCF-2022

PROGRAM OUTCOMES

Engineering Graduates will be able to:

1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and □odelling to complex engineering activities with an understanding of the limitations.

6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Assessment & Scheme of examination:

As per University of Delhi rules as applicable from time to time.

MATHEMATICS-I (DSC-1)
CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Mathematics-I	4	3L	1T	0P	Class XII with Physics, Chemistry and Mathematics	NIL

Course Hours: L: 03 T: 01 P: 00

Course Objectives:

To teach students concepts of Linear Algebra, Vectors and Calculus and apply them for problem solving.

Course Outcomes:

After completing the course, the students should be able to:

1. Develop a basic understanding of the linear algebra, vectors and calculus use in engineering
2. Solve mathematical problems of vector spaces and matrices
3. Derive calculus theorems and use these to solve some integral problems.
4. Apply calculus to solve suitable engineering applications

Unit-I

Matrices: Matrices, Vectors: addition and scalar multiplication, Matrix multiplication, Linear systems of equations, Linear Independence, Rank of a matrix, Determinants, Cramer's Rule, Inverse of a matrix, Gauss elimination and Gauss-Jordan elimination.

Unit-II

Vector spaces I: Vector Space, Linear dependence of vectors, Basis, Dimension,Range and kernal, Rank and nullity, Inverse of a linear transformation, Rank nullity theorem,

Unit-III

Vector spaces II: Eigenvalues, Eigenvectors, Symmetric, Skew-symmetric and Orthogonal Matrices, Eigenbases, Diagonalization, Inner product spaces, Gram-Schmidt orthogonalization.

Unit-IV

Calculus: Indeterminate forms and L'Hospital'srule, Rolle's Theorem, Mean value theorems, Taylor's and Maclaurin theorems, Evaluation of definite and improper integrals, Applications of definite integrals to evaluate surface areas and volumes of revolutions, Beta and Gamma functions and their properties.

Suggested Readings*:

1. G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, Pearson Education.

2. Erwin Kreyszig, Advanced Engineering Mathematics, John Wiley & Sons.

3. D. Poole, Linear Algebra: A Modern Introduction, Brooks Cole.

4. Ramana B.V., Higher Engineering Mathematics, Tata McGraw-Hill Publishing Company Limited.

5. N.P. Bali and Manish Goyal, A text book of Engineering Mathematics, Laxmi Publications.

6. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers.

7. V. Krishnamurthy, V.P. Mainra and J. L. Arora, An introduction to Linear Algebra, Affiliated East– West Press Private limited

*Latest Edition of the books to be followed.

PHYSICS (DSC-2)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Physics	4	3L	0T	1P	Class XII with Physics, Chemistry and Mathematics	NIL

Course Hours: L: 03 T: 00 P: 02

Course Objectives:

To teach students basic concepts of atomic structures, mechanics, electron theory, semiconductors and investigate their characteristics and applicability.

Course Outcomes:

After completing the course, the students should be able to:

1. Develop a basic understanding of concepts of atomic structures, electron theory and semiconductors.
2. Correlate mechanics and electron theory with engineering applications.
3. Apply concepts of semiconductor junctions and operations for device operations.
4. Plot characteristics of the studied devices, measure their characteristics and use these for some practical applications.

UNIT – I

Review of Atomic Structure and Statistical Mechanics: - Ideas on Atomic Structure, Quantum Mechanics, The Schrodinger Wave Equation, Statistical Mechanics, Bonding of atoms, Crystalline state

Free electron theory, Density of states and energy band diagrams, Kronig-Penny model (to introduce origin of band gap), Energy bands in solids, E-k diagram, Direct and indirect band gaps, Types of electronic materials: metals, semiconductors, and insulators, Density of states, Occupation probability, Fermi level, Effective mass, Phonons.

UNIT – II

Elemental and compound semiconductors, Intrinsic and extrinsic semiconductors, Dependence of Fermi level on carrier-concentration and temperature (equilibrium carrier statistics), Carrier generation and recombination, Carrier transport: diffusion and drift, The Hall Effect, Einstein Relations, Excess carriers in semiconductors p-n junction, Excess carriers and Quasi-Fermi Levels, Basic equations for semiconductor device operation, Solution of carrier transport equation.

UNIT – III

P-N Junctions: - The abrupt junction (Electric field, potential, capacitance), V-I characteristic of an ideal diode, a real diode. Metal-semiconductor junction (Ohmic and Schottky), Semiconductor materials of interest for optoelectronic devices

Optical transitions in bulk semiconductors: absorption, spontaneous emission, and stimulated emission; Joint density of states, Density of states for photons, Transition rates (Fermi's golden rule), Optical loss and gain; Photovoltaic effect, Exciton, Drude model.

UNIT – IV

Four-point probe and measurements for carrier density, resistivity, and hall mobility; Hot-point probe measurement, capacitance-voltage measurements, parameter extraction from diode I-V characteristics, DLTS, band gap by UV-VIS spectroscopy, absorption/transmission.

Density of states in 2D, 1D and 0D (qualitatively). Practical examples of low-dimensional systems such as quantum wells, wires, and dots: design, fabrication, and characterization techniques. Heterojunctions and associated band- diagram.

Practical Component :

Note: Course coordinator will prepare a list of experiments and lab manual for the Practicals covering the whole syllabus.

Suggested Readings*:

1. Pierret, Semiconductor Device Fundamental,
2. P. Bhattacharya, Semiconductor Optoelectronic Devices, Pearson Education
3. J. Singh, Semiconductor Optoelectronics: Physics and Technology, McGraw-Hill Inc.
4. B.E.A. Saleh and M.C. Teich, Fundamentals of Photonics, John Wiley & Sons, Inc.
5. S. M. Sze, Semiconductor Devices: Physics and Technology, Wiley
6. A. Yariv and P. Yeh, Photonics: Optical Electronics in Modern Communications, Oxford University Press, New York.
7. Online course: “Semiconductor Optoelectronics” by M R Shenoy on NPTEL
8. Online course: "Optoelectronic Materials and Devices" by Monica Katiyar, Deepak Gupta on NPTEL.

*Latest Edition of the books to be followed.

INTRODUCTION TO ELECTRICAL AND ELECTRONICS ENGINEERING (DSC-5)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Introduction to Electrical and Electronics Engineering	4	3L	0T	1P	Class XII with Physics, Chemistry and Mathematics	NIL

Course Hours: L: 03 T: 00 P: 02

Course Objectives:

To solve electric circuits, to characterize motors, bipolar devices, and multi stage amplifiers

Course Outcomes:

After completing the course, the students should be able to:

1. Solve various DC & AC circuits using applicable theorems.
2. Demonstrate the working of electric motors using different laws and principles
3. Characterize and measure properties of bipolar devices
4. Conceptualize multi stage amplifiers and apply these for engineering applications.

Unit I: D.C. and A.C. Circuits:

Introduction to circuit elements, uncontrolled energy sources, Kirchhoff's laws, Superposition, Thevenin's, Norton's and maximum power transfer Theorems, AC Fundamentals: Sinusoidal a.c. quantities, instantaneous, maximum, average and effective values, Phasor representation, Steady state response of series and parallel R-L, R-C and R-L-C circuits, Concept of impedance and admittance, J-method, Active, Reactive and Apparent Power.

Unit II: Transformers and Electric Motors:

Electromagnetism: Simple magnetic circuits, Electric Circuit analogy. Electromagnetically induced EMF and Induced Force on a conductor. Faraday's Law, Lenz's Law Concept of Self and Mutual Inductance, Transformers: Construction and operation of single phase transformer, EMF equation, Losses, Efficiency and applications of transformers, Electrical Motors: Constructional details of D.C. Motor, Equations, operating characteristics and applications of shunt, series and Compound Motors, Construction, operation and application of different types of single phase induction motors, Measuring Instruments: Moving coil and moving iron Voltmeters and ammeters and extension of range, Dynamometer type wattmeter.

Unit III: Devices and Circuits:

PN Junction diode and its use in Rectifier circuits, Capacitive and Inductive filters, Operation and application of special diodes: Zener diode, photodiode, and light emitting diode (LED), Construction and operation of Bi-polar junction transistors, Characteristics under CB, CE, CC configurations, Voltage and current gains, input and output resistances, Biasing of transistors, load line and operating point, Transistor as a switch, Introduction to FET, UJT SCR, Traic and Diac, their characteristics and applications.

Unit IV: Multi Stage Amplifiers:

R-C coupled amplifier and its frequency response, concept of Bandwidth, Push pull amplifiers, Feedback amplifiers: Classification of feedback amplifiers, Gain, input & output resistance of feedback amplifiers, Advantage of negative feedback, Measuring Instruments: Digital voltmeters, Digital multimeters, CRO and its applications. DSO and oscilloscope probes.

Practical Component :

Note: Course coordinator will prepare a list of experiments and lab manual for the Practicals covering the whole syllabus.

Suggested Readings*:

1. Electrical and Electronics Technology by Hughes Revised by John H. Ley, Et al, Pearson
2. Principles of Electrical Engineering by Del-Toro. Pearson.
3. S.N. Singh, Basic Electrical Engineering, S.N. Singh,PHI Learning Private Limited.
4. Boylestad, R.L. and Nashelsky, L. Electronic Devices and Circuit Theory. Pearson Education.
5. Millman, J. and Grabel, A. Microelectronics. McGraw-Hill, Incl.
6. Malvino, A. and Bates, D. Electronic Principles, with Simulation CD,McGraw-Hill, Inc.

*Latest Edition of the books to be followed.

FUNDAMENTALS OF COMPUTER PROGRAMMING (DSC-3)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Fundamentals of Computer Programming	4	3L	0T	1P	Class XII with Physics, Chemistry and Mathematics	NIL

Course Hours: L: 03 T: 00 P: 02

Course Objectives:
To teach students computer fundamentals and do programming using C for problem solving.

Course Outcomes:

After completing the course, the students should be able to:

1. Explain the use of software and programming for problem solving.
2. Develop programming using simple concepts of input, output and control statements.
3. Apply arrays, functions, strings, structures, and pointers for problem solving.
4. Design and implement solutions for data handling with permanent storage using modular programming and files

Unit I
Programming Fundamentals & Control Statements: Block Diagram of Computer, Hardware vs software, concept of operating system and compiler,

Introduction to C programming, basic programming using input and output operators and expressions, programming using if and if-else, Programming using looping-for, while, do-while; use of switch and break.

Unit II

Arrays based Programming: Defining and processing 1-D and 2-D Arrays for Problem solving, string as array of char and its processing

Unit III

Modular programming using Functions: Structured Programming, storage classes defining and calling a function, modular programming using functions, passing arguments and arrays to functions, functions of void and returning values. Recursion, file handling

Unit IV

Programming using pointers, structures and unions: Pointers in C: Pointer declaration, Passing Pointer to functions, pointers vs arrays, dynamic memory allocation. Structures and Unions, Programming Using Array of Structures and Unions, Memory Requirements for Unions.

Practical Component :

Note: The programming language to be used for teaching and implementation will be C. The Course coordinator will prepare a list of experiments and lab manual for the Practicals covering the whole syllabus.

Suggested Readings*:

1. Byron S. Gottfried, Programming with C Language, Schaum Series, Tata McGraw Hill.
2. E Balaguruswamy, Programming with C, Tata McGraw Hill.
3. Kernighan & Richie, C Programming, Prentice Hall of India.

*Latest Edition of the books to be followed.

MATHEMATICS-II (DSC-4)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Mathematics-II	4	3L	1T	0P	Class XII with Physics, Chemistry and Mathematics	NIL

Course Hours: L: 03 T: 01 P: 00

Course Objectives:

To teach students process of doing Laplace and Fourier transformation, apply probability distributions over random variables, and statistical techniques for data processing.

Course Outcomes:

After completing the course, the students should be able to:

1. Develop a basic understanding of the Laplace and Fourier transformations
2. Apply random variable and probability distributions for different stochastic processes.
3. Evaluate data characteristics using statistical measures and techniques.
4. Compare and contrast different statistical tests for data evaluation.

Unit-I

Laplace and Fourier Transform: Laplace transformation and its properties, Unit – step, Impulse and Periodic functions; Fourier Transform, Fourier Sine and

Cosine Transform, Finite Sine and Cosine transform, Convolution theorem. Application of Fourier transform.

Unit-II

Random variables and probability distributions: Conditional probability, Probability spaces, Discrete random variables, Independent random variables, Expectation of discrete random variables, Sums of independent random variables, Moments, Variance of a sum, Correlation coefficient, Chebyshev's Inequality, The multinomial distribution, Poisson approximation to the binomial distribution, Infinite sequences of Bernoulli trials, Continuous random variables and their properties, Distribution functions and densities, Normal, Exponential and Gamma densities, Conditional densities, Bayes' rule.

Unit-III

Basic Statistics: Measures of Central tendency: Moments, Skewness and Kurtosis - Probability distributions: Binomial, Poisson and Normal - evaluation of statistical parameters for these three distributions; Correlation and regression – Rank correlation; Curve fitting by the method of least squares- fitting of straight lines, second degree parabolas and more general curves.

Unit-IV

Applied Statistics: Test of significance: Large sample test for single proportion, difference of proportions, single mean, difference of means, and difference of standard deviations; Small samples: Test for single mean, difference of means and correlation coefficients; Test for ratio of variances - Chisquare test for goodness of fit and independence of attributes; T-test, Anova Test, F-Test.

Suggested Readings*:

1. Erwin Kreyszig, Advanced Engineering Mathematics, John Wiley & Sons.
2. P. G. Hoel, S. C. Port and C. J. Stone, Introduction to Probability Theory, Universal Book Stall.
3. S. Ross, A First Course in Probability, Pearson Education.
4. W. Feller, An Introduction to Probability Theory and its Applications, Wiley.
5. N.P. Bali and Manish Goyal, A text book of Engineering Mathematics, Laxmi Publications.
6. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers.
7. Veerarajan T., Engineering Mathematics (for semester III), Tata McGraw-Hill Publishing Company Limited.

*Latest Edition of the books to be followed.

DATA STRUCTURES (DSC-6)

FUNDAMENTALS OF COMPUTER PROGRAMMING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Data Structures	4	3L	0T	1P	Class XII with Physics, Chemistry and Mathematics	NIL

Course Hours: L: 03 T: 00 P: 02

Course Objectives:

To understand and efficiently apply various data structures such as stacks, queues, linked lists, trees and graphs for solving various computing problems using C programming language.

Course Outcomes:

After completing the course, the students should be able to:

1. Develop skills to identify and determine the usage of various data structures, operations, associated algorithms and implement their applications.
2. Implement trees and graphs, and explain its applications.
3. Design and implement algorithms for searching and sorting.
4. Analyze efficiency of different algorithms using time and space complexity.

Unit-I

Simple Data Structures: Arrays based Linear Data Structures: Array storage, sparse arrays; Transpose and addition of sparse matrices, Stacks and Queues and their applications, multiple stacks, and queues in an array.

Unit-II

Searching and Sorting: Searching techniques: Linear and Binary, Sorting techniques: Selection, Bubble, Insertion, Merge sort, Quicksort; Complexity analysis; revision of Pointers and Dynamic Memory,

Unit-III

Linked Data Structures: Singly, Doubly & Circular Linked Lists; representation, operations and applications, linked stacks and queues, linked lists based polynomial addition.

Unit-IV

Advanced Data Structures: Trees, Basic concepts and definitions of a tree and binary tree and associated terminology, Binary tree traversal techniques, some more operations on binary trees, Heaps, and heapsort; Graphs: Terminology and Representations, Directed Graphs, Representation of graphs and their Transversal.

Practical Component :

Note: The programming language to be used for teaching and implementation will be C. Course coordinator will prepare a list of experiments and lab manual for the Practicals covering the whole syllabus. Course coordinator will also prepare some mini projects to be done by the students utilizing various aspects of the subject & syllabus.

Suggested Readings*:

1. E Horowitz and S. Sahni: Fundamentals of Data Structures in C, Second Edition, Universities Press.
2. R.L. Kruse: Data Structures & Program Design in C, PHI.
3. D.F. Knuth: The Art of Computer Programming Vol-1, Narosa Publications.
4. Byron S. Gottfried: Theory and Problems of Programming with C Language, Schaum's Outlines Series, TMH.

*Latest Edition of the books to be followed.

COMPUTER WORKSHOP (SEC-1)

Semester-I & II [Common to all branches]

Course Name – Computer Workshop

Course Credits: 0L-0T-2P

Course Hours: 0L+0T+4P

Pre-requisite: Nil

Course objectives: Students of Computer Engineering are to work with various hardware and software not only in academia but also in the company. Thus, students should get familiar with various hardware, software, operating systems, and networking. This course will provide students a much-needed knowledge of computer hardware and networking, enabling them to identify and rectify onboard computer hardware, software, and network-related problems. With the help of this course, the student will be able to understand the hardware specifications that are required to run an operating system and various application programs.

Course outcomes: After completing their training in Computer Workshop, students will be able to

CO1. Describe the procedure for installation of software on different systems and identify the various components of hardware systems.

CO2. Identify and demonstrate components of computer and operating system and their troubleshooting.

CO3. Describe the basics of Internet and web design

CO4. Perform the process of software installation

Job 1. Assembly/Disassembly of Computers

Hardware peripherals like RAM, ROM, input devices, output devices, processors, etc. Processors and processor core counts and frequency etc. motherboards, internal and external connectors. Types of data cables. LAN, Audio, and Video. The physical set-up of Printers- Scanner set-up, Webcam, Bluetooth device, Memory card reader, etc. Working of SMPS. Connection of different types of devices to the ports (CPU), Single board computer: Raspberry Pi.

Job 2. Assembly/Dis-assembly of Laptop

Mounting of processor. Fixing of the motherboard in the tower case. Connection to the power supply. Installation of drivers. Connection of cables. Mount the memory modules. Install the internal cards. Connection of the external devices and power.

Job 3. Computer Network Setup

Networking components, devices, and tools; Preparing the network cables, network setup, configuration and management commands, Installation and configuration of network interface card and identification of MAC address. Sharing of resources

Job 4. Software Installations

Installation of Windows Operating System, Types of software and their installations, some useful software (MS office, Adobe Acrobat, Google Chrome, VLC Media Player, LibreOffice, Win Rar)

Job 5. PC Maintenance

POST (Power on Self-Test), identifying problems by Beep codes errors, checking power supply using Multi-meter, Replacement of components etc.

Job 6. Introduction to MS office

Introduction to MS office - MS Word, MS PPT, MS Excel, Working with MS Word. MS Excel - Introduction to MS Excel, Basic computations, and calculations. Creation of slides including hyperlink, video, audio, and textual content.

Job 7. Tools for Online Teaching and Meetings

Setting & troubleshooting of online meetings and video conferencing like google meet, zoom, Microsoft teams, Webex etc; use of google classroom and google forms for teaching, feedback, and evaluation.

Job 8. Internet and Basic Webpage Design

Searching the Internet, checking the speed of Internet connection, usage of E-Commerce, Creating webpage using HTML, CSS with static text, images, tables, audio, video etc and dynamic contents, animation usage and tools for webpages

Job 9. AI & ML Applications:

Case studies using module (Blackbox based) integration for AI & ML and its applications

Practical Component :

Note: Workshop incharge may make additions or deletions in respect of above mentioned jobs as per the situation at any point of time.

Electronics Workshop (SEC-2)

Semester-I & II [Common to all branches]

Course Name-Electronics Workshop

Course Credits: 0L-0T-2P

Course Hours: 0L+0T+4P

Pre-requisite: Nil

Pre-requisite: Nil

Course objectives: To impart practical knowledge to the students about electronic components, circuits, and electronic instruments. This course on Electronic Workshop will enable students to get a good opportunity for beginning their professional career even at the end of first year.

Course outcomes: After completing the course, the students should be able to:

CO1: Identify and troubleshoot various electronic components and instruments.

CO2: Differentiate between various ICs and PCBs

CO3: Disassemble a computer and identify various peripherals and internal circuit component.

CO4. Design and fabricate a product by building an actual power supply.

Job1. Basic components used in the Electronics circuits

- Identification of various components being used in any electronic circuit such as resistor, capacitor, various diodes (p-n junction, Zenner, LED), transistors (BJT, MOSFET, FET), breadboard, potentiometer.
- Learn graphical symbols used to represent the various components.
- Find the value of resistance, capacitance by its color code and value mentioned on the component.

Job2. Instruments for measurement and analysis of Electronics circuits

- Study the various controls on the panel of a typical CRO, Multimeter.
- Testing of components such as resistor, capacitor and transistor as PNP or NPN, Gain value of transistor, ensure the connectivity of their leads using multimeter.

- Perform small jobs as given by your instructor by using some of the above components and instruments.

Job3. Instruments for generating the signals for the electronic circuits

- Study the various controls on the panel of a function generator and DC power supply.
- Using CRO and function generator perform jobs such as waveform analysis, Voltage measurement, frequency measurement, phase difference measurement etc.

Job4. Integrated circuits and (IC) tester

- Study the pin configuration of a given IC number.
- Study the function of IC tester.
- Testing of IC on the IC tester.
- Verify the truth table of various logic gates by assembling them on the breadboard.
- Draw the Pin configuration of various logic gates in your file and record the observations of the truth table of these logic gates.

Job5. Transformer and soldering iron

- Study the transformers used in the electronic circuits.
- Learn the precautions while using a soldering iron.
- Perform small jobs using soldering iron.

Job6. Printed circuit board

- Learn to make a layout of electronic circuit using any PCB design software (OrCAD/TINA/ KiCAD/ DesignSpark PCB/ any other available software).
- Use of electronic components in the layout.
- Perform small jobs such as making a circuit on the PCB and learn soldering of components on PCB.
- Analysis of the designed circuit using CRO, Multimeter and signal generator.

Job7. Identification of various peripheral devices of computer

- Learn to find complete specification of the given computer.
- Identify various peripheral devices including a keyboard, mouse, printer, and flash drive of a computer.

Job8. Assembling and disassembling of computer

- Learn the precautions while disassembling of computer.

- Study of motherboard.
- Identification of various hardware peripherals like RAM, ROM and Processor.
- Study of various ports in a computer for interfacing with external hardware components.

Job9. Product Development (Part 1)

- Study the basic circuit of variable DC power supply.
- Procure all the components required to build a DC supply like transformer, diodes, capacitor, resistance, potentiometer, on/off switch etc. for given specifications of DC power supply.
- Test each component.
- Assemble it on breadboard and test its functionality.

Job10. Product Development (Part 2)

- Design a PCB for variable DC power supply designed in Job 9.
- Fabricate the variable DC power supply by assembling all the components on PCB and perform soldering.
- Test the fabricated variable DC Power supply.

Practical Component :

Note: Workshop Incharge may make additions or deletions in respect of above-mentioned jobs as per the situation at any point of time.

ELECTRICAL WORKSHOP (SEC-3)

Semester-I & II [Common to all branches]

Course Name: Electrical Workshop

Course Credits: 0L-0T-2P

Course Hours: 0L+0T+4P

Pre-requisite: **Nil**

Course objectives: In view of the multi exit facility to be provided to the students leaving after first year, this course on Electrical Workshop will enable such to get a good opportunity for beginning their professional career even at the end of first year.

Course Outcomes: After completing their training in Electrical Workshop, students will be able to

CO1. Differentiate the tools, recall their names and develop skill of using each one of these tools. They will also be able to describe the material and components used in House Wiring, get apprised of their names and use in the process of wiring.

CO2. Design various types of wirings and do actual wiring with his/her own hands. Students will also be able to explain the Energy Meter functions and make connections of energy meter and MCBs.

CO 3. Discuss the constructional details of DC and one type of single phase AC motor and maintain such items. Students will also be able to repair few house hold gadgets.

CO4. Design and fabricate the product by building an actual battery charger.

Job 1. Tools in the field of Electrical Engineering:

- Gain awareness about various tools used in the field of Electrical Engineering and to learn the operation of each tool. Like: Vice, drill machine, hand grinder, combination pliers, screw driver set, wire striper, tester, test lamp, multimeter, hammer, lug crimper, Soldering iron, hacksaw, different types of files.
- Perform small jobs as given by your instructor by using some of the above tools.

Job 2. House Wiring Materials:

- Make a study of various components and material used in house wiring. Like: Aluminum and Copper wires of different specifications used in house wiring. Wooden boards and Bakelite sheets, wall mounted switch boxes and wiring plates, 2 pin, 3 pin, 5 pin wall sockets, power sockets, 2 pin, 3 pin & power plugs, iron and PVC conduits, bends, casing capping, junction boxes, Gang boxes, baton holder, pendant holder, bracket holder, angle holder, incandescent bulbs, LEDs, tube light strips, CFL, Indicator lamps. One way, 2 way and power switches. Isolators, MCBs, ELCBs and other materials.
- Practice fixing of switches and sockets in gang box.

Job 3. Performing, House wiring:

- Study various types of house wiring techniques: Baton wiring, casing capping wiring, surface conduit wiring and concealed conduit wiring.
- Perform surface conduit wiring to accomplish stair case lighting.
- Prepare an extension board with following: Two 6A sockets with individual switches and individual indicators on an appropriate gang box.

Job 4. Electronic Energy Meter

- Study the connections of Electronic Energy Meter. Assemble an MCB main board with a double pole MCB/isolator and 2 single pole MCBs and make connection with energy meter on one side and two load circuits on the other. Show operations of MCBs one by one.

Job 5. House hold Gadgets

- Study the construction and operation of a heater, heat convector, Electric iron, kitchen Mixer, soldering iron (depending upon time and availability this list can be modified).
- Assemble a heater from the available components. Operate it and measure its current, Voltage and Power.

Job 6. DC and Single phase AC Motors

- Observe the given D.C. and single phase A.C. motors. Run them by connecting appropriate supply.
- Open the given D.C. Motor, observe its construction, do its servicing, clean its bearings and commutator. Reassemble and rut it.
- Open the given A.C. motor, study its construction. Clean its bearing. Assemble it back and operate it. Measure it’s no load current.

Job 7. Ceiling Fans

Study the construction and operation of a ceiling fan, Dis-mental the given ceiling fan. Observe all its parts. Clean its bearings and other parts. Check the continuity of running and starting windings. Test the capacitor for its functionality. Assemble the fan back. Operate it by connecting to supply.

Reverse the direction of rotation by changing connection at the capacitor. Connect an electronic regulator and control its speed.

Job 8. Product Development (Part-1)

- Study the circuit of a battery charger.
- Procure all the components required to build a charges like: Transformer, diodes, capacitor, voltmeter, ammeter, indicator, rotary switch, on/off switch, box connecting load. Test each component separately. (specification of charger will be given)
- Assemble bridge rectifier using 4 diodes.

Job 9. Product Development (Part-2)

- Complete the testing of components procured in job 8.
- Fabricate the battery charger by assembling all the components procured and tested in job no. 8 (product development part-I) and wire it..
- Test the fabricated charger.

Job 10. Experience of Electronic Devices

- Identify resistors, capacitors of various types and specifications
- Identify the given solid state devices like: diodes and transistors, SCR, Triac, Diac, few ICS of various specifications.
- Study the circuit of a solid state low rating voltage regulator.
- Assemble a voltage regulator and test it on fan and incandescent bulb. Or assemble a timer circuit using 555 IC.

Practical Component:

Note: Workshop incharge may make additions or deletions in respect of above mentioned jobs as per the situation at any point of time.

ANNEXURE - 46

SUB: AMENDMENT TO ORDINANCES

[E.C Resolution No. 60-1-14/- dated 03.02.2023]

The Following amendments to Ordinance of the University has been approved by the Executive Council at its meeting held on 03.02.2023 and are hereby notified for information and necessary action, by all the concerned:

1. **Amendment to Appendix II to Ordinance V (2) & VII. [E.C Res. No. 60-1-14 dated 03.02.2023]** regarding introduction of MBA (Business Analytics) Programme (2 years course) from academic year 2023-2024 under Faculty of Commerce & Business. ***(As per Annexure-I).***

Annexure-I

UNIVERSITY OF DELHI

MASTER OF BUSINESS ADMINISTRATION

(BUSINESS ANALYTICS)

MBA (BA)

(Effective from Academic Year 2023-24)

PROGRAMME BROCHURE

CONTENTS

		Page
	Preamble	1
I.	About the Department	2
II.	Introduction to CBCS	3
	Scope	
	Definitions	
	Programme Objectives (POs)	
	Programme Specific Outcomes (PSOs)	
III.	MBA (BA) Programme Details	5
	Programme Structure	
	Eligibility for Admissions	
	Assessment of Students' Performance and Scheme of Examination	
	Pass Percentage & Promotion Criteria:	
	Semester to Semester Progression	
	Conversion of Marks into Grades	
	Grade Points	
	CGPA Calculation	
	Division of Degree into Classes	
	Attendance Requirement	
	Span Period	
	Guidelines for the Award of Internal Assessment Marks	
	MBA (BA) Programme (Semester Wise)	
IV.	Course Wise Content Details for MBA (BA) Programme	14

Preamble

The objective of any programme at a Higher Education Institution is to create for its students a sound foundation for their character development which directly contributes to the well-being of a nation. The University of Delhi envisions all its programmes in the spirit of its ―motto‖ which is to inspire the youth to show steadfastness and devotion in a fearless pursuit of truth. The MBA (BA) aims at preparing young minds for constructive and productive development by honing their creative and analytical skills for their own betterment as well as for the greater good of the society.

The University of Delhi, a premier seat of teaching, learning, and research in higher education, acclaimed nationally and internationally, has nurtured the quest for reaching the peak in every sphere of education, in its true sense, in the process of its contribution to nation-building. Being a Central University, mandated to act as the torchbearer in expanding the horizons of human resource development through expansion of higher education, it has always paid adequate premium towards constructive and meaningful innovation as a regular feature in its undergraduate curriculum development over the years.

The focus of MBA (BA) is aimed at improving the students 'abilities in data analysis and helping them to become a competent decision maker and business leader who can contribute to nation building. Management education is not related only with knowing how to organize and apply skills related to business, trade, commerce, industry, and economy, but it further accelerates the process of thinking in a pragmatic manner about nation building through effective utilization of skills, resources, manpower, and one's abilities.

One essential aspect of MBA (BA) is to develop a commerce graduate who can meet the present and the future requirements of industry and economy. MBA (BA) emphasizes on developing the competent persons who can work as the contemporary and future leaders of the industry and business. The education system in the emerging scenario demands to enrich the personality of the students so as to develop a holistic personality. Therefore, the focus of MBA (BA) is based on the four pillars of education which are learning to know, learning to do, learning to live together, and learning to be.

The present situation of business education requires total over-hauling and restructuring in the light of the changed socio-economic scenario of the global economy in the context of Industry 4.0. The dynamic nature of global business demands a pool of competent human capital for which relevant education is essential in terms of timeliness, speed, flexibility, and dynamism. There is a need to provide students with appropriate skills and knowledge inputs which would make them globally competent and empower them to work in the changing business environment. Therefore, the focus of the MBA (BA) is to introduce a globally acknowledged choice-based credit system which will offer numerous opportunities to learn various core subjects and also explore additional avenues of learning beyond the routine and standardized framework. The sole purpose of this exercise is to provide opportunities for holistic development of the students.

Thus, the MBA (BA) can help in bringing uniformity in curricula on the one hand and empower the student on the other hand to choose the career options making it more relevant and globally acceptable which would create new benchmark in the world.

I. About the Department

The Department of Commerce was formally set up as a separate entity in the year 1967. Department of Commerce located in the premises of Delhi School of Economics, popularly known as DSE, has always kept the pace with changing times and explored the new frontiers of knowledge and innovation in academics and kept pace with, DSE tradition. In its history spanning over three decades, it has redefined commerce education in the country. The Department has the legitimate claim and pride of being the premier institution in India for course curriculum development, teaching and researches in Commerce discipline. *In 2017, as per Times Higher Education Ranking Department of Commerce was placed at 1st position in India and at 85th position in Asia. In 2018, Department of Commerce was placed at 2nd position in India and at 91st position in Asia.*

The Department of Commerce takes pride to pioneer the two specialized programmes, (MBA (IB) and MBA (HRD) erstwhile known as namely MIB and MHROD. Both programmes have been well received by the industry since 1995 till date. The courses were designed in a manner so that the students gain an in-depth knowledge and analytical skills which will enable them to efficiently and effectively carry out various HR, OD, marketing, finance and international business operations of an organization in the emerging globalized environment.

The Master of Business Administration (Business Analytics) programme of the Department of Commerce has been designed to cater to the growing needs of industry and business for professionally qualified young men and women in the area of Business Analytics. In liberalized framework of the Indian economy, corporate experts in the areas of Business Analytics will be amongst the key resource personnel needed for corporate strategic planning and control. The objective of Master of Business Administration (Business Analytics) –MBA(BA) is to develop research orientation, impart analytical skills and strengthen academic and analytical rigor of highly motivated, bright young men and women so that they can provide ethical, holistic and inclusive professional expertise to business and industry in the area of Business Analytics.

II. Introduction to CBCS (Choice Based Credit System)

Choice Based Credit System:

The CBCS provides an opportunity for the students to choose courses from the prescribed courses comprising core, elective/minor or skill-based courses. The courses can be evaluated following the grading system, which is considered to be better than the conventional marks system. Grading system provides uniformity in the evaluation and computation of the Cumulative Grade Point Average (CGPA) based on student's performance in examinations which enables the student to move across institutions of higher learning. The uniformity in evaluation system also enables the potential employers in assessing the performance of the candidates.

Definitions:

i) Academic Programme means an entire course of study comprising its programme structure, course details, evaluation schemes etc. designed to be taught and evaluated in a teaching Department/Centre or jointly under more than one such Department/ Centre.

ii) Course means a segment of a subject that is part of an Academic Programme.

iii) Programme Structure means a list of courses (Core, Elective, Open Elective) that makes up an Academic Programme, specifying the syllabus, Credits, hours of teaching, evaluation and examination schemes, minimum number of credits required for successful completion of the programme etc. prepared in conformity to University Rules, eligibility criteria for admission

iv) Core Course means a course that a student admitted to a particular programme must successfully complete to receive the degree and which cannot be substituted by any other course.

v) Elective Course means an optional course to be selected by a student out of such courses offered in the same or any other Department/Centre.

vi) Open Elective means an elective course which is available for students of all programmes, including students of same department. Students of other Department will opt these courses subject to fulfilling of eligibility of criteria as laid down by the Department offering the course.

vii) Credit means the value assigned to a course which indicates the level of instruction; One-hour lecture per week equals 1 Credit, 2 hours practical class per week equals 1 credit. Credit for a practical could be proposed as part of a course or as a separate practical course.

viii) SGPA means Semester Grade Point Average calculated for individual semester.

ix) CGPA is Cumulative Grade Points Average calculated for all courses completed by the students at any point of time. CGPA is calculated each year for both the semesters clubbed together.

x) Grand CGPA is calculated in the last year of the course by clubbing together of CGPA of two years, i.e., four semesters. Grand CGPA is being given in Transcript form. To benefit the student a formula for conversion of Grand CGPA into %age marks is given in the Transcript.

III. MBA (BA) Programme Details:

Programme Objectives (POs):

With the vision —*to nurture the young brains, to make them better employable and socially responsible citizens by encapsulating them with the right set of knowledge for a better tomorrow*, Department of Commerce focuses on building conviction with impartiality and modesty, create an enabling environment for innovative thought processes and nurture open- mindedness, equitability and perseverance. In the backdrop of Department vision and mission, MBA (BA) programme aims to:

- Provide a conducive environment that holistically engages students through an all– encompassing knowledge impartation and comprehensive practical applications.
- Mold them into future visionaries, and management leaders that are benevolent yet efficacious, versed in the leading business and human resource practices of the world and equipped to the hilt to implement themselves and adapt to the mutable global business environment.
- Develop an analytical mindset and skills to organize, analyse, interpret and communicate data to solve operational and strategic business problems.
- Develop managerial knowledge and strategic agility, providing students with a broader skill set and a fresh perspective and encouraging them to seek out bold, innovative solutions for today's business and societal challenges.

The concept of open electives has been incorporated as per the University's guideline. To better facilitate the self- study of the course by the student, the suggestive readings are provided for each unit of the concerned course. In addition, the course has been designed in line with outcome-based approach which requires specification of Course Outcomes and Course Learning Outcomes.

The following objectives of NEP are kept in perspective while framing MBA (BA) programme objectives:

1. to promote each student's holistic development in both academic and non-academic spheres;
2. to provide flexibility to students so that learners have the ability to choose

their learning trajectories and programmes, and thereby choose their paths in life according to their talents and interests;

3. to eliminate harmful hierarchies among disciplines/fields of study and silos between different areas of learning;
4. multidisciplinary and holistic education to ensure the unity and integrity of all knowledge;
5. to promote creativity and critical thinking and to encourage logical decision-making and innovation;
6. to promote ethics and human & Constitutional values;
7. to promote multilingualism and the power of language in learning and teaching;
8. to impart life skills such as communication, cooperation, teamwork, and resilience;
9. to promote outstanding research as a corequisite for outstanding education and development.

Programme Specific Outcomes (PSOs):

MBA (BA) Programme is mainly oriented towards professional augmentation in business analytics taking place in the global as well as domestic business analytics arena and the curriculum thus intends to reduce the gap between industry and academia, with the right blend of theory and practice, furthering students to nurture their talent for becoming good leaders and assets for an organization. Students shall gain an in-depth knowledge and analytical skills which will enable them to effectively and efficiently carry out various Trade and Marketing operations of an organization in the emerging globalized environment.

Programme Development Process:

Department of Commerce followed the consultative process in the development of MBA (BA) Programme, the following were the stages of development:

a. Proposal with concept note was sent to university for in-principal approval.
b. In-principal approval was received from Hon'ble Vice Chancellor.
c. A working group was formed.
d. Benchmarking of leading institutions in the domain of business analytics was done.
e. Draft curriculum was framed and e-mail was sent to all the stakeholders including corporate houses.
f. Feedback was received and incorporated as per suitability of the programme.
g. Approval by Statutory Committees including Committee of Courses, Faculty of Commerce and Business, Academic Council and Executive Council.

Programme Structure:

The MBA(BA) programme is a two-year course divided into four-semester. The course is of 112 Credits and for the award of degree a student will be required to complete the credits as per the University norm.

		Semester	***Semester***
Part - I	First Year	Semester I	Semester II
Part - II	Second Year	Semester III	Semester IV

Course Credit Scheme

Semester	**Core Courses**			**Elective Courses**			**Open Elective Courses**			**Total Credits**
	No. of papers	Credits (L+T/P)	**Total Credits**	No. of papers	Credits (L+T/P)	**Total Credits**	No. of papers	Credits (L+T/P)	**Total Credits**	
I	8	4	**28#**	-	-	-	-	-	-	28
II	8	4	**28#**	-	-	-	-	-	-	28
III	7	4	**24#**	-	-	-	1	4	4	28
IV	6	4	**24#**	1	4	4	-	-	-	28
Total Credits for the Course			**104**			**4**			**4**	**112**

#2 courses of 2 credits each are covered
*For each Core and Elective Course there will be 4 lecture hours of teaching per week.
* Duration of examination of each paper shall be 3 hours.
* Each paper will be of 100 marks out of which 70 marks shall be allocated for semester examination and 30 marks for internal assessment.
* Open-source software wherever required may be used for pedagogy purpose and for internal examination

Semester Wise Details of MBA (Business Analytics) Course

	Semester I			
Number of core Courses			**Credits in each core course**	
Course Code	**Paper Title**	**Lecture**	**Practical**	**Credit**

MBABACC101	Management and Organisational Behaviour	3	1	4
MBABACC102	Marketing Management	3	1	4
MBABACC103	Accounting for Managers	3	1	4
MBABACC104	Economics for Managers	4	0	4
MBABACC105	Business Statistics and Research Methods	3	1	4
MBABACC106	Introduction to Analytics	3	1	4
MBABACC107	Data Visualisation	1	1	2
MBABACC108	Indian Knowledge System	2	0	2
	Total credits in Semester I: 28			

	Semester II			
Number of core Courses			**Credits in each core course**	
Course Code	**Paper Title**	**Lecture**	**Practical**	**Credit**
MBABACC201	Corporate Finance	3	1	4
MBABACC202	Human Resource Management	3	1	4
MBABACC203	Big Data and Cloud Computing	3	1	4
MBABACC204	Using R for Analytics	2	2	4
MBABACC205	Operations Management	3	1	4
MBABACC206	Management Science	3	1	4
MBABACC207	Data Warehousing and Data Mining	1	1	2
MBABACC208	Life Skills and Communication	2	0	2
	Total credits in Semester II: 28			

	Semester III			
Number of core Courses			**Credits in each core course**	
Course Code	**Paper Title**	**Lecture**	**Practical**	**Credit**
MBABACC301	Corporate Governance, Ethics and Sustainability	4	0	4
MBABACC302	Using Python for Analytics	1	1	2
MBABACC303	Artificial Intelligence and Machine Learning	3	1	4
MBABACC304	HR Analytics	3	1	4
MBABACC305	Marketing Analytics	3	1	4
MBABACC306	Financial Analytics	3	1	4
MBABACC307	Summer Internship Project Report			2
	Open Electives (Any one from list)			

COMOE	Open Elective Course	*	*	4
	Total credits in Semester III: 28			

Please note that the combination of lecture and practical depends upon the subject opted by the student in Elective Course.

	Semester IV			
Number of core Courses			**Credits in each core course**	
Course Code	**Paper Title**	**Lecture**	**Practical**	**Credit**
MBABACC401	Entrepreneurship and New Venture Planning	3	1	4
MBABACC402	Strategic Management	4	0	4
MBABACC403	Supply Chain Analytics	3	1	4
MBABACC404	Healthcare Analytics	3	1	4
MBABACC405	Social Media Analytics	1	1	2
MBABACC406	Cyber Threats and Security	3	1	4
MBABACC407	Indian Ethos and Leadership	2	0	2
	Electives Courses (Select any one from list)			
MBABAEC	Elective Course	#	#	4
	Total credits in Semester IV: 28			

Please note that the combination of lecture and practical depends upon the subject opted by the student in the Elective Course.

#List of Open Elective Course (Select any one)

S. No.	Paper Code	Title of the Paper	Lecture	Practical	Credit
1.	COMOE03	Skills and Techniques of Accounting	3	1	4
2.	COMOE04	Business Analysis using Financial Statements	3	1	4
3.	COMOE08	Financial Markets and Institutions	4	0	4
4.	COMOE09	Planning for Personal Finance	3	1	4
5.	COMOE10	Investment Management	3	1	4
6.	COMOE11	Project Management Professional-1	3	1	4
7.	COMOE12	International Financial Management	3	1	4
8.	COMOE13	Startup-1	3	1	4
9.	COMOE14	Enterprise Risk Management	4	0	4
10.	COMOE15	World Law Prospects	3	1	4

*List of Elective Course (Select any one)

S. No.	Paper Code	Title of the Paper	Lecture	Practical	Credit
1.	MBABAEC01	Project Management Professional-2**	3	1	4
2.	MBABAEC02	Startup-2#	3	1	4
3.	MBABAEC03	Internet of Things	3	1	4
4.	MBABAEC04	Compensation Management	3	1	4
5.	MBABAEC05	Learning and Development	3	1	4
6.	MBABAEC06	Digital Marketing Analytics	2	2	4
7.	MBABAEC07	Financial Modeling using Excel	0	4	4
8.	MBABAEC08	Knowledge Management	3	1	4
9.	MBABAEC09	Human Resource Information System	3	1	4
10.	MBABAEC10	Advanced Machine Learning	3	1	4
11.	MBABAEC11	Time Series Analytics	3	1	4
12.	MBABAEC12	Predictive Analytics	2	2	4
13.	MBABAEC13	Enterprise Performance Management	3	1	4
14.	MBABAEC14	Robotic Process Automation in Business	3	1	4

**Only those who have studied Project Management Professional-1 may opt for Project Management Professional-2.
##Only those who have studied Startup-1 may opt for Startup-2.

Selection of Open Elective Courses:

h. Options for Open Elective Courses will be floated according to availability of faculty and minimum number of students. The minimum number to be reviewed in the due course of time which may vary programme-wise.

i. Open Elective Courses as placed in semester III would be announced at the beginning of the Semester II and accordingly students will be asked to select any one option at that time.

j. At least 10% of the proposed seats in open elective courses should be open to students from outside the discipline subject to fulfilling eligibility criteria.

k. Students opting for Finance area as a Major or Minor Elective in M. Com cannot opt the Open Elective Courses i.e. Financial Markets and Institutions (Paper No. „COMOE08" of MBA (IB) and MBA (HRD) and Planning for Personal Finance (Paper No. „COMOE09 ") of MBA (IB).

Eligibility Criteria for Open Elective Courses:

Eligibility Criteria for Open Elective Courses will be announced at the time of floating of courses as approved by Committee of Courses in due course of time.

Teaching:

The faculty of the Department is primarily responsible for organizing lecture work for MBA (BA). Faculty from some other Departments, constituent colleges and Industry are also associated with the teaching of the courses in the Department. There shall be 90 instructional days excluding examination in a semester. A student opting for dissertation project as elective course will be allotted a faculty as supervisor in the beginning of Semester III.

Eligibility for Admissions: Seats:

The Number of seats for MBA (BA) Programme is 60 (General -22, OBC – 15, SC – 8, ST – 4, EWS-5, PwD-3 and FS-3). As per University rules, the seats for PWD CW, and foreign students (FS) categories are supernumerary. Further, Bulletin of Information may be referred for relevant details.

Selection Procedure

The admission to MBA (BA) programme is done through three layered process including CAT percentile, matriculation and 10+2 marks; Group discussion, extempore; and Interview score. This is done with a view to identify and process the interpersonal skills in addition to the overall knowledge of the students. Bulletin of Information may be referred for further relevant details.

Reservations/Relaxations

There will be reservation for SC, ST, PWD, OBC, CW and FS categories as per University of Delhi rules.

Assessment of Students' Performance and Scheme of Examinations:

1. English shall be the medium of instruction and examination.

2. Assessment of students' performance shall consist of:

   (i) Each paper shall carry 100 marks of which 30 marks shall be reserved for internal assessment based on class room participation, seminar, term papers, study reports, tests, viva-voce and attendance. The weightage given to each of these factors shall be decided and announced at the beginning of the Semester.

   (ii) The remaining 70 marks in each paper shall be awarded on the basis of a written examination at the end of each semester. The duration of the written examination of each paper shall be three hours.

Pass Percentage & Promotion Criteria:

(i) The minimum marks for passing the examination shall be 45% in each paper and 50% in the aggregate of the semester. If a student fails to secure 45 percent marks in any of the papers, he/she can reappear in those paper/papers in the subsequent semesters. If a candidate admitted to the examination in any semester secures the minimum marks to pass in each paper but fails to secure the minimum marks to pass in the aggregate, he/she may appear in any of

the paper/s of the Semester concerned according to his/her choice in order to be able to secure the minimum marks prescribed to pass in the aggregate in each semester.

(ii) Only those candidates who have secured at least 45 per cent in each paper and 50 percent in aggregate in each of the semesters of the MBA (BA) programme shall be eligible for the award of the Degree. Successful candidates will be classified on the basis of the combined results of Part – I and Part – II examination as follows:
Candidates securing 60% and above: I Division
All others: II Division

(iii) The conditions of passing the programme shall not be deemed to have been satisfied unless a student undergoes practical training under the supervision of the Department in approved organizations for at least two months. Summer training is not an evaluative course but will be mandatory for students to undergo summer training and certificate of completion will be issued after submission of training report.

(iv) A candidate must qualify for the award of the Degree within four years of his/her admission to the MBA (BA) programme.

Part I to Part II Progression:

(i) Admission to Part-II of MBA (BA) Programme shall be open to those who have cleared successfully at least 10 papers out of 14 papers offered for the MBA (BA) Part –I programme comprising of Semesters I and II taken together. However, he/she would have to clear the remaining papers while studying in MBA (BA) Part – II in the second year.

(ii) If a student fails to appear in any of the papers in MBA (BA) Semester – I of Part-I of the University examination, he/she will be allowed to take examination in that paper/papers along with second semester examination of Part – I.

(iii) If a student fails or fails to appear in any of the papers in third semester examination of Part-II, he/she will be allowed to take the examination in the subjects along with examination in the subjects of fourth semester of Part-II Examination.

(iv) Candidates who fail or failed to appear the MBA (BA) examination after pursuing a regular programme may be allowed to reappear at the examination on being enrolled as an ex-student as per the rules of the University. The old programme will remain in force for ex-student only for a period of three years from the year in which the revised programme introduced.

(v) No candidate shall be considered to have pursued a regular course of study unless he/she is certified by the Department to have attended at least three-fourth of the total number of lectures, tutorials, special lectures and seminars conducted in each semester during his course of study. Provided that he/she fulfills other conditions, the Department may permit a student to proceed to the next semester who falls short of the required percentage of attendance by not more than 10% lectures, tutorials, special lectures and seminars conducted during the whole of that semester of the course but a student so permitted shall not be deemed to have completed a regular course of study in the next succeeding semester unless he/she makes up the shortage so condoned.

(vi) No revaluation of answer books is permitted as per the rules of the University applicable to the professional courses.

Conversion of Marks into Grades:

As per University Examination rule.

Grade Points:

Grade point table as per University Examination rule.

CGPA Calculation:

As per University Examination rule.

SGPA Calculation:

As per University Examination rule.

Grand SGPA Calculation:

As per University Examination rule.

Conversion of Grand CGPA into Marks:

As per University Examination rule.

Division of Degree into Classes:

Post Graduate degree to be classified based on CGPA obtained into various classes as notified into Examination policy.

Attendance Requirement:

10 marks are allocated for attendance in the class. The marks for attendance shall be as follows:

(i) 75% or more but less than 77.5% = 1
(ii) 77.5% or more but less than 80% = 2
(iii) 80% or more but less than 82.5% = 3
(iv) 82.5% or more but less than 85% = 4
(v) 85% or more but less than 87.5% = 5
(vi) 87.5% or more but less than 90% = 6
(vii) 90% or more but less than 92.5% = 7
(viii) 92.5% or more but less than 95% = 8
(ix) 95% or more but less than 97.5% = 9
(x) 97.5% and above = 10

Span Period:

No student shall be admitted as a candidate for the examination for any of the Parts/Semesters after the lapse of four years from the date of admission to the Part-I/Semester-I of the MBA (BA) Programme.

Guidelines for the Award of Internal Assessment Marks MBA (BA) Programme (Semester Wise)

(i) For each core and elective course there are 30 marks allocated for internal examination and 70 marks for the Semester- End Examination. Out of 30 marks allocated for internal assessment for each course:

- 10 marks are assigned for class test / written assignment or any other method and will be evaluated by the concerned faculty as part of their continuous evaluation.

- 10 marks are assigned for class presentation / project work

- 10 marks are assigned for attendance in the class. The marks for attendance will be assigned as mentioned under the heading "Attendance Requirement".

(ii) For open elective course there are 30 marks allocated for internal examination and 70 marks for the Semester- End Examination. Out of 30 marks allocated for internal assessment for each course:

- 10 marks are assigned for project.
- 20 marks are assigned for class test.

(iii) Open-source software wherever required may be used for pedagogy purpose and for internal examination.

Master of Business Administration (Business Analytics) MBA (BA)
Semester I

Marks: 100 **Duration: 60 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Management And Organisational Behaviour MBABACC101	**4**	**3**	**0**	**1**	**Pass in Graduation**	**NIL**

Learning Objectives: To develop an understanding of basic concepts of management and its functions and to familiarize them with different components of organizational behaviour.

Learning Outcomes:

After completion of the course, learners will be able to:

1. understand the basics of management theory, its functions and practice.
2. interpret the functions of management.
3. evaluate individual, group and organizational components of organizational behaviour.
4. develop skills related to working for motivation and leadership.
5. analyse the importance of conflict and change and develop an attitude to manage them in a changing work environment better.

Syllabus:

Unit I: Management Concept (12 Hours)

Evolution of management thoughts; Approaches to management practice; Nature of management; Managerial roles; Functional areas of management.

Unit II: Management Functions (12 Hours)

Basic functions of management, planning, organizing, directing, staffing, controlling and coordinating the human effort, organisation structure.

Unit III: Foundations of Organizational Behavior (12 Hours)

Management and organizational behaviour, individual behaviour characteristics, personality, Emotional Intelligence, perception, attitude and learning; Interpersonal behaviour, communication and transactional analysis and Johari window; OB Models; Foundations of group behaviour, formation of groups, groups versus teams, group dynamics.

Unit IV: Motivation and Leadership (12 Hours)

Work motivation, need theories, Theory X – Theory Y, Two Factor Theory, Ouchi's theory Z, Alderfer's ERG theory, McClelland's theory, Vroom's expectancy theory, Adams equity theory, contemporary issues in the practice of motivation; Leadership concept; Leadership styles; Theories - trait theory, Fielder's contingency theory; leadership continuum, managerial grid; contemporary issues in leadership development, power and politics; Spiritual leadership.

Unit V: Management of Organizational Behavior (12 Hours)

Organizational culture, managing conflict, work stress and its management, work-life balance; Managing change- nature, forces, resistance and resolution.

Practical Exercises:

The learners are required to:

1. analyse and interpret case studies on various organisations.

2. visit an organisation and analyse the functions of the management.

3. participate in simulation exercises in the classroom on work-life balance, thereby identifying their needs. Students may be assigned to draft an organisational policy to combat work-life issues assuming themselves as an HR manager and as employees of the organisation.

4. conduct an event and try to understand the dynamics that go on in the group.

5. develop a set of structured questions, so students can interact with employees in the organisation and observe leadership personality traits.

6. Students can meet the organisational leader and observe the management of subordinates under his supervision.

7. Evaluate the leadership skills of select famous leaders.

8. Analyse a case study on conflict and change management.

Essential/ Recommended readings

Suggested Reading:

- Warren, Bennis (1992). *Leaders on Leadership-Interviews with top executives*. HBR Press.
- Rodrigues, Carl A. (2001). Fayol‟s 14 principles of management then and now: a framework for managing today‟s organizations effectively, *Management Decision*, 39(10), 880-889.
- George, C.S. (1996). *The History of Management Thought*. Englewood Cliffs, NJ: Prentice-Hall.
- Ghoshal, S. (2005). Bad Management Theories destroying good management practices. *Academy of Management Learning and Education*, 4(1) 75-01.
- Herzberg, F. (2003). One more time: how do you motivate employees. *Harvard Business Review*, 46 (1), 53-62.
- Kotter, J.P. (2007). Leading change: Why transformation efforts fail. *Harvard Business Review,*
  - 73(2): 59–67.
- Lane, Henry W., Martha, L. Maznevski, Joseph, J. DiStefano & Joerg, Dietz (2010). *International Management Behaviour – Leading with a global mindset*. Wiley.
- Luthans, Fred (2016). *Organizational Behaviour*. McGraw-Hill, Indian Edition.
- Paul, R. Lawrence (1987). Historical Development in OB in Chapter 1, Handbook of OB by Jaw W Lorsch (ed) Englewood Cliffs, NJ : Prentice-Hall, 1-10.
- Peters, Tom & Waterman, R.H. (2006). In Search of Excellence: Lessons from America‟s Best-run Companies. *New York: Harper & Row.*
- Pierce & Gardner (2001). *Management and Organizational Behavior*. Thomson.

Additional Readings

- Avolio, Walumbwa & Weber (2009). Leadership: Current Theories, Research, and Future Directions.
- *Annual Review of Psychology*. 60, 421-449.
- Bartlett & Ghoshal (1992). What is a global manager? *HBR* Sept Oct 1992, 124-131.
- Hofstede, Geert (1993). Cultural Constraints in Management Theories. *Academy of Management Executive*, 7(1), 81-94.

Note: Readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Master of Business Administration (Business Analytics)

MBA (BA)
Semester I

Marks: 100 **Duration: 60 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Marketing Management MBABACC102	**4**	**3**	**0**	**1**	**Pass in Graduation**	**NIL**

Learning Objective:

To enable students to learn the basic concepts and principles of marketing and understand tools that they can use for managing a firm's marketing operations.

Learning Outcomes:

After completion of the course, learners will be able to:

1. understand the importance and nature of marketing, evolution of major marketing philosophies, marketing management tasks and process, meaning and impact of marketing environment on marketing decision making and nature, buying process of household and institutional customers.
2. analyse target market selection and positioning process.
3. discuss issues and processes involved with product planning and price determination.
4. evaluate the processes involved with promotion planning and distribution strategy.
5. identify and describe developments and contemporary issues in marketing.

Syllabus:

Unit I: Introduction (10 Hours)

Nature, functions and scope of marketing; Core marketing concepts; Evolution of marketing concept; Holistic Marketing and its key components; Marketing management-Major tasks and process.

Marketing Environment: Meaning and significance; Micro and macro marketing environments and their impact on marketing decisions

Consumer Behaviour- Nature and importance, Consumer Decision Making- Process, Types and Influencing Factors.

Household and Institutional Buying Behaviour- Nature and Importance

Unit II: Market Segmentation, Targeting and Positioning (12 Hours)

Segmenting markets – meaning and bases; Market segmentation and product differentiation; Target market selection- positioning-meaning, importance and process.

Unit III: Product Planning and Development (16 Hours)

Product - Meaning and types, product layer concept, major product decisions; Product life cycle –concept and types, New product development process; Innovation diffusion and consumer adoption process.

Pricing Decisions and Strategies: Factors affecting price determination; Procedure for setting price; Pricing policies and strategies, Initiating and responding to price changes.

Ethical issues related to product and pricing decisions

Unit IV: Promotion Decisions (14 Hours)

Promotion-Its meaning and importance; Communication process and flows; Promotion mix decision- major promotion tools and their characteristics; Integrated Marketing Communication- Concept and importance, Ethical issues related to promotion decision

Distribution Decisions: Distribution- Meaning and nature; Channels of distribution- concept, importance and types; Retailing- meaning and major types of store and non-store-based retailing; Wholesaling - meaning and major types of wholesaling; Distribution channel planning- issues and process; Physical distribution/logistics- meaning and major logistic decisions.

Unit V: Contemporary Development and Issues in marketing (8 Hours)

Internal marketing, Green marketing, Social marketing, Sustainability marketing, Digital marketing, Influencer marketing- Concept, need and issues, legal aspects of marketing.

Practical Exercises:

The learners are required to:

1. analyze the marketing mix strategy of a durable goods/ non-durable goods/ service/ ideas/ event/ organization/ people.
2. select any product and analyse its segmentation strategy in comparison to its immediate competitive product.
3. examine the marketing strategies followed by companies to prolong the maturity stage and defer its decline.
4. suggest an appropriate distribution strategy of a product of your choice.
5. study the promotional strategies followed by companies selling products through digital mode.

Essential/ Recommended readings

Suggested Reading:

- Etzel, Michael J., Walker, BruceJ., Staton, William J., & AjayPandit (2010). *Marketing Concepts and Cases*.Tata McGraw Hill (Special Indian Edition).

- Kotler, P., Chernev, A., Keller, K. L. (2022). Marketing Management. United Kingdom: Pearson Education.
- Levy, M., Grewal, D. (2022). Marketing. United States: McGraw-Hill Education.
- Sharma, K., Aggarwal S. (2021). Principles of Marketing. Taxmann Publications.
- Kotler, P., Armstrong, G., Agnihotri, P. (2018). Principles of Marketing. Pearson Education. Indian edition.
- Kotler, Philip, Keller, Kevin Lane, Koshy, Abraham,&Mithileshwar Jha(2012).
- *MarketingManagement: ASouth AsianPerspective*. Pearson.
- Kotler,Philip&Keller,Kevin Lane(2012).*MarketingManagement*. Pearson.
- Czinkota, Michael R. & Kotabe, Masaaki (2010). *Marketing Management*. Thomson Learning.
- Lamb, Charles W., Hair, Joseph, F. & McDaniel, Carl (2012). *Marketing.* Cengage Learning.
- Perrault, Willim, D., Cannon, Joseph, P. & McCarthy, E. Jerome (2012). *Essentials of Marketing: AMarketingStrategy Planning Approach*, McGraw-Hilllrwin.
- Pride,William M. , & Ferrell,O.C. (2014).*Marketing*.South-WesternCengageLearning.

Note: Readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Master of Business Administration (Business Analytics) MBA (BA)
Semester I

Marks: 100 **Duration: 60 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Accounting for Managers **MBABACC103**	**4**	**3**	**0**	**1**	**Pass in Graduation**	**NIL**

Learning Objective

To familiarise the learner to acquire knowledge and skills relating to the application of accounting concepts and techniques for business decisions, short-term and long- term/strategic decision-making models, cost management ideas along with budgeting and associated performance measurement practices.

Learning Outcomes

After completion of the course, learners will be able to:

- apply the Generally accepted accounting principles while recording transactions and preparing financial statements.
- analyze and interpret the qualitative and quantitative features of information provided in the Financial Statements of a company
- conduct cost, volume, and profit analysis of companies, and solve short run decision making problems by applying marginal costing and Break- Even technique.
- prepare various budgets and measure the performance of the business firm by applying budgetary control measures.
- analyze the fundamentals and significance of Sustainability Reporting, Forensic Accounting, Human Resource Accounting, and Integrated Reporting.

Syllabus:

Unit I: **Financial Accounting (12 Hours)**

Meaning of financial accounting; Accounting as an information system; Accounting concepts and principles; Accounting equation; Emerging Issues in Financial Accounting and Reporting Systems Capital and revenue items; Inventory Valuation; Property, Plant and Equipment Accounting; Generally accepted accounting

principles, accounting standards and International Financial Reporting Standards (IFRS); IndAS.

Accounting process using accounting software: Journals; Ledger accounts, trial balance; Financial statements of corporate entities.

Unit II: **Financial Statement Analysis (12 Hours)**

Analyzing financial statements through ratios: Liquidity analysis ratios, Profitability analysis ratios; Activity analysis ratios; Coverage ratios; limitations of Ratio Analysis; Analytical comparative statement; Cash flow statement; Du-Pont Analysis.

Unit III: **Introduction to Cost Accounting (12 Hours)**

Meaning, objectives and importance of cost accounting; Comparative implications of Financial Accounting and Cost Accounting; Elements of cost; Classification of cost including cost for managerial decision making; Cost centre; Cost unit; Cost allocation, Cost apportionment and ascertainment; Cost sheet analysis; Methods of costing; Cost control and Cost reduction.

Costing and Control of Materials: Introduction control of material, cost of inventory a costing methods, Just in time Inventory.

Unit IV: **Cost Volume Profit Analysis and Budgetary Control (12 Hours)**

Marginal cost statement/equation; P/V ratio; Break Even Point (BEP), Break even chart; Margin of safety; Decisions relating to key factor, Price fixation, Export order, Make or buy, Deletion or addition to product/Services, Sell or process further, Continue or shut down, etc.

Budgetary Control: Basic concepts of budgeting; Preparation of functional budgets and Fixed budget and flexible budgets.

Unit V – Recent Developments in Accounting (12 Hours)

Sustainability Reporting; Forensic Accounting; Human Resource Accounting; Integrated Reporting

Note: Case-based analysis and relevant software will be used for pedagogical purposes. Evaluation of practical exercise using software will be part of internal assessment.

Practical Exercises:

The learners are required to:

1. prepare Trading and Profit & Loss Account and Balance Sheet after collecting necessary data for small business firms.
2. download 'Framework for the Preparation and Presentation of Financial Statements' from the websites of the Institute of Chartered Accountants of India (ICAI). Analyze the qualitative characteristics of accounting information provided therein.
3. prepare a cost statement for manufacturing and/ or service organization.
4. compute Break Even Sales for small shops like Grocery (Kirana) store, pharmacy, etc. by finding out monthly sales volume, variable expenses, and fixed expenses.
5. prepare a monthly cash budget, expense budget, activity budget, for a small retail shop, club, learner association, college. Also, prepare a purchase/production/sales budget for a small factory. Additionally, prepare a time budget for specific jobs or functions.
6. analyze the modus operandi of any international/national accounting fraud(s).

Essential/ Recommended readings

Suggested Reading:

- Atkinson, Anthony A., Banker, Rajiv, D., Kaplan, Robert &Young, S. Mark (2001). *Management Accounting.* Prentice Hall.

- Bologna, Jack and Lindquist, Robert J. (1995). Fraud Auditing and Forensic Accounting. Wiley.
- Chakraborty, S.K. (1976). *Human Asset Accounting: The Indian Context in Topics in Accounting and Finance.* Oxford University Press
- Colin, Drury (2001). *Management and Cost Accounting.* Thomas learning.
- Flamholtz, Eric G. (1999). *Human Resource Accounting: Advances in Concepts, Methods and Applications.* London, San Francisco: Jossey Eass Publishers.
- Garison, R.H. & Noreen, E.W. (2000). *Managerial Accounting*. McGraw Hill Education.
- Goldwin, Alderman & Sanyal (2016). *Financial Accounting.* Cengage Learning.
- Horngren, Charles T. (1998). *Introduction to Management Accounting.* Prentice Hall of India.
- Horngren (2013). *Introduction to Financial Accounting.* Pearson Accounting.
- Lal, Jawahar (2016). *Advanced Management Accounting, Text and Cases*. S. Chand & Company,New Delhi.
- Manning, George A. (2019). *Financial Investigation and Forensic Accounting.* CRC Press: Taylor & Francis Group.
- Marry, Buffett & Clark, David (2011). *Interpretation of Financial Statement – Companies with durable Competitive Advantage.*

Note: Readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Master of Business Administration (Business Analytics)

MBA (BA)
Semester I

Marks: 100 **Duration: 60 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Economics for Managers **MBABACC104**	**4**	**4**	**0**	**0**	**Pass in Graduation**	**NIL**

Objective: The objective of this course is to acquaint the students with the economic concepts and principles and to enable them to use them to address business problems in a globalized economic environment.

Learning Outcomes:

After completion of the course, learners will be able to:

1. understand the nature and scope of managerial economics, demand analysis and firm & its organization.
2. analyse the techniques of production function, cost analysis and forms of market.
3. apply the pricing techniques to determine the price of factors of production.
4. evaluate the knowledge of national income accounting, inflation and monetary and fiscal policies in real world situations.
5. describe the trade cycles in the open economy and exchange rate determination**.**

Syllabus :

Section A: Firm and Market

Unit I: Demand and The Firm (12 Hours)

Nature and scope of managerial economics, principles of managerial economics, demand function; Determinants of demand; Elasticity of demand – Price, income and cross elasticity, demand estimation, demand forecasting; Supply function; Firm and its organization: Nature of the firm and types of organizations; The Corporation: Ownership and control.

Unit II: Production, Cost and Market Forms (12 Hours)

Production function; Concept of productivity and technology; Production with one variable input, Returns to scale; Production with two variable inputs; Isoquants, ridge lines, Isoclines; Producer‟s Equilibrium.
Cost function- Classification of costs, short run cost functions; Relationship between return to scale and return to a factor; Long-run cost functions.
Market Forms- Shapes of AR, MR curve and their relationship in different market forms, perfect competition; Market Imperfections–monopoly, monopolistic, collusive oligopoly and price discrimination.

Unit III: Pricing (12 Hours)

Pricing practices; Commodity Pricing: Economics of advertisement costs; Types of pricing practices; Factor Pricing: demand and supply of factor of production; Collective bargaining; Concept of rent, profit, interest- Rate of return and interest rates; Real vs. Nominal interest rates; Basic capital theory–Interest rate and return on capital; Measurement of profit.

Section B: Macroeconomic environment
Unit IV: National Income Accounting and Macro-Economic Markets (12 Hours)

National income accounting; Measuring the cost of living; unemployment and inflation; Product market and financial market.

Unit V: Trade Cycles and the Open Economy (12 Hours)

Economic fluctuations and business cycle; Open economy macroeconomics; Determination of exchange rate; Purchasing power parity; Fixed and flexible exchange rate.

Practical Exercises:

The learners are required to:

1. conduct a demand and supply survey
2. make a production and cost analysis of a product
3. analyse the pricing policy of the select manufacturing firm
4. evaluate national income of India based on reports of Ministry of Finance
5. compute and compare flexible exchange rate of India and USA

Essential/ Recommended readings

Suggested Reading:

- Dominick, S. (2014). *Managerial Economics a Global Economy*. McGraw Hill Inc., Princeton.
- Dornbusch, R. & Stanley, Fisher (2012). *Macroeconomics*. McGraw Hill, New York.
- Koutsoyiannis, A. (2008). *Modem Micro Economics*. Macmillian Press Ltd.
- Mankiw, N. Gregory (2016). *Macro Economics.* Macmillan.
- Paul. A. Samuelson & William, D. Nordhaus (2010). *Economics, (Indian adaptation by SudipChaudhuriand AnindyaSen)*. Tata McGraw Hill.

Note: Latest edition of the readings may be used.
Latest and relevant case studies to be used.

Note: Readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Master of Business Administration (Business Analytics)

MBA (BA)
Semester I

Marks: 100 **Duration: 60 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Business Statistics and Research Methods **MBABA105**	4	3	0	1	**Pass in Graduation**	**NIL**

Learning Objectives

The objective of the course is to provide a conceptual understanding of statistics and its applications.

The objective of the course is to introduce the concepts and practices of research and to show how research tools, skills and understanding can be applied in solving management problems. The focus of the course is applied.

Learning outcomes

After completion of the course, learners will be able to:

1. apply statistical techniques and tools
2. demonstrate Managerial applications of Statistics
3. extrapolate from data the important trends in order to forecast
4. calculate and interpret numerous statistical values and apply it for decision making
5. carry out a sample survey, qualitative interviews and analyze and present the results and findings.

SYLLABUS

Unit I: Introduction and Forecasting Techniques (8 hours)

Statistics and Role of Statistics in Research, Uni- variate, bivariate and multivariate data. Frequency distributions; Dot plot, histogram, ogive, pie chart. Measures of Central Tendency and Dispersion. Introduction to Skewness and Kurtosis. Correlation, Scatter diagram Method, Karl Pearson's Coefficient of Correlation Spearman's Rank Correlation. Simple Linear Regression Model, Least squares Method, Coefficient of Determination, Interpreting computer output of solution. Components of Time Series, Smoothing Methods, Trend-Seasonal Analysis.

Unit II: Statistical Inference (16 hours)

Sampling and Sampling Distribution, Estimation: Point Estimates, Interval estimation for Mean and Proportion. Determining the sample size in estimation. Testing Hypotheses: Developing Null and Alternative Hypothesis. Type I and Type II errors. One Sample Tests for Mean and Proportion. Two Sample Tests for Mean and Proportion and Inferences about population variances. Tests of Goodness of Fit and Independence. Analysis of Variance and Experimental design.

Unit III: Fundamentals of Research (12 hours)

Definitions and types of research; Research Strategies, Relationship of epistemology and ontology to business research; Planning a research project and formulating research questions, writing research proposal. Reviewing and evaluating the existing literature and looking for business information, The Research Process; Problem Identification, Research Objectives and Research Ethics

Unit IV: Designs and Gathering and Collecting Accurate Data (16 hours)

Exploratory Designs: In-Depth Interviews and Focus Groups; Descriptive Research Designs: Survey Methods and Errors; Observation Techniques, Experiments, and Test Markets; Experimental Designs: Validity and Reliability Concerns with Experimental Research Designs, Improving the Internal and External Validity of Experimental Designs. Types of Experimental Research Designs- Pre-experimental Designs, True Experimental Designs and Quasi-experimental Designs.

Sampling: Theory, Designs, and Issues in Research – Sampling Terminology, Determining Appropriate Sample Sizes, Probability and Nonprobability Sampling, Steps in Developing a Sampling Plan. Overview of Measurement: Construct Development - Abstractness of the Construct, Determining Dimensionality of the Construct, Construct Validity. Scale Measurement - The Nature of Scale Measurement, Properties of Scale Measurements, Four Basic Levels of Scales - Nominal Scales, Ordinal Scales, Interval Scales, Ratio Scales, Attitude Scale Measurements Used in Survey Research. Questionnaire Design and Issues

Unit V: Data Preparation and Analysis (8 hours)

Coding, Editing, and Preparing Data for Analysis, Cross Tabs in SPSS, Interpretation of SPSS outputs of - tests appropriate for nominal data - χ^2 test, Contingent Relationship in Cross Tabs and related indices in Cross-Tabs, tests appropriate for ordinal data - Kolmogorov-Smirnov One Sample Test, Mann-Whitney U Test, Kruskal Wallis Test, Friedman Test, Regression Analysis: Model, Least squares method, Coefficient of determination, Testing for significance (F, t and multicollinearity), Dummy Variable, Residual Analysis, Logistic Regression, Stepwise Regression, Advance Multivariate analysis - Factor Analysis for Data Reduction, Cluster Analysis for identifying Segments, Discriminant Analysis.

Practical Exercises:

The learners are required to

1. demonstrate their understanding of 'research methodology' section of a research paper (related to a topic of student's interest) in the form of class presentation.
2. demonstrate their understanding of 'result and findings' section of a research paper (related to a topic of student's interest) in the form of class presentation.
3. collect survey data on a particular topic, apply relevant statistical technique and present its findings in class.
4. conduct qualitative interviews, apply relevant statistical technique and present its findings in class.
5. solve case study-based problems for applying concepts learned.

Essential/ Recommended readings

- Levin, R. & Rubin, D. (2017). Statistics for Management. Pearson Education, Eight Edition.
- Kothari, C.R. & Garg, G. (2019). Research Methodology: Methods and Techniques. New Age International Publishers, Fourth Edition.
- Levine, Stephen, Krihbiel, Berenson (2008). Statistics for Managers: Using Microsoft Excel. Pearson Education.
- Dangi, H.K., & Dewen, S. (2016). Business Research Methods. Cengage Learning.
- Saunders, M., Lewis, P. and Thornhill, A. (2019). Research Methods for Business Students. Pearson Education.
- Recent Research papers in the area of interest of the student.

Note: Readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Master of Business Administration (Business Analytics)

MBA (BA)
Semester I

Marks: 100 **Duration: 60 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Introduction to Analytics **MBABACC106**	**4**	**3**	**0**	**1**	**Pass in Graduation**	**NIL**

Learning Objectives

The objective of the course is to provide know-how to evaluate various alternatives by gaining insight from past performance in the essence of business analytics. Business analytics focuses on how business performance can be improved by changing the course of actions and using various tools to perform informed decision making.

Learning outcomes

After completion of the course, learners will be able to:

- Understand the need for effective business analytics within an organization.
- Analyze complex problems using advanced analytics tools.
- Learn descriptive, predictive and prescriptive business analytics.
- Interpret data for better decision-making

SYLLABUS

Unit I: Introduction to Analytics (10 Hours)

Foundations of Business Analytics, Decision making, Introduction to Business Analytics, Models in Business Analytics, Problem solving with analytics, Big data, Stages of analytics (descriptive, predictive, prescriptive).

Unit II: Descriptive Analytics (10 Hours)

Descriptive Statistical Measures: measures of location, dispersion, shape and association. Visualizing and Exploring Data: Overview, Tables, Charts, Advanced data visualization, data dashboards.

Unit III: Predictive Analytics (14 Hours)

Trendlines and Regression Analysis, Forecasting Techniques, Introduction to Data Mining, Spreadsheet Modeling and Analysis, Monte Carlo Simulation and Risk Analysis.

Unit IV: Predictive Analytics (14 Hours)

Linear Optimization, Applications of Linear Optimization, Integer Optimization, Decision Analysis.

Unit V: Business Analytics Applications (12 Hours)

Application of Analytics in Finance, Marketing, Human Resource Management, Supply Chain, Healthcare, Social Media and Cyber Space.

Practical Exercises:

1. Descriptive Statistical Measures.
2. Visualizing and Exploring Data.
3. Trendlines and Regression Analysis.
4. Spreadsheet Modeling and Analysis.

Essential/ Recommended readings

Text Books:

- James, E.R. (2017). Business Analytics. UK: Pearson Education Limited.
- Camm, J.D., Cochran, J.J., Fry, M.J., Ohlmann, J.W., Anderson, D.R. (2015),
- Essentials of Business Analytics, Cengage Learning, Second Edition. Prasad, R. N., Acharya, S. (2011), Fundamentals of Business Analytics, Wiley.
- Schniederjans, M.J., Schniederjans, D.G., Starkey, C.M. (2014), Business Analytics: Principles, Concepts and Applications, Pearson.

Reference Books:

- Liebowitz, J. (2013), Business Analytics: An Introduction, Auerbach Publications.
- Hardoon, D.R., and Shmueli, G. (2016), Getting Started with Business Analytics, CRC Press, Taylor & Francis.
- Rao, P.H. (2014), Business Analytics: An Application Focus, Prentice Hall India.
- Sharma, J.K., Khatua, P.K. (2012), Business Statistics, Pearson.

Suggested Reading:

- Pinsky, M.A., Karlin, S. (2010), An Introduction to Stochastic Modeling, Academic Press, Fourth Edition.
- Provost, F. & Fawcett, T. (2013), Data Science for Business: What you need to know about data mining and data-analytic thinking, O'Reilly Media.

Note: Readings will be updated by the Department of Commerce and uploaded on the Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Master of Business Administration (Business Analytics)

MBA (BA)
Semester I

Marks: 50 **Duration: 30 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Data Visualisation **MBABACC 107**	**2**	**1**	**0**	**1**	**Pass in Graduation**	**NIL**

Learning Objectives

To enable the students to understand, analyze, and develop insights from the data represented through graphs, charts and maps etc. The course is designed to introduce students to the theory and practical methods to create visual representations of data sets. The data visualizations are beneficial for multiple purposes such as dashboards, annual reports, sales and marketing materials and investor slide decks etc. This course aims to familiarize the students with the top data visualization tools and its utility in business and research.

Learning outcomes

After completion of the course, learners will be able to:

- evaluate skills in building visualizations, organize data, and design charts and dashboards.
- understand data visualization features of Tableau and Power BI
- create charts, work with filters, parameters, and sets.
- evaluate metadata and its usage.
- discuss the tools of Power BI.

SYLLABUS

Unit I: Tableau: (5 hours)

Getting Started with Tableau, Dimensions vs. Measures, Discrete vs Continuous, Application of Discrete and Continuous Fields, Aggregation in Tableau.

Unit II: Tableau: (7 hours)

Working with Metadata, Filters in Tableau, Applying Analytics to the worksheet, Dashboard in Tableau, Modifications to Data Connections, Edit Data Source, Unions, Joins Data blending.

Unit III: Power BI : (18 hours)

Introduction to PowerBI – Working with data – Importing from flat files, excel files, other Sources, Data Sources in Power BI Desktop, Loading Data in Power BI Desktop, Views in Power BI Desktop, Query Editor in Power BI, Transform, Clean, Shape, and Model Data Manage Data Relationship, editing a Relationship, Cross Filter Direction, Saving Workfile Measures. Data Analysis Expressions – Introduction to Power Query – Introduction to Power View – Power View visualizations – Power View filtering options – Introduction to Power Map – Preparing geospatial data – Publish from Power BI desktop – Publish Dashboard to Web.

Practical Exercises:

The learners are required to:

1. apply Discrete and Continuous Fields, Aggregation in Tableau.
2. demonstrate Analytics to the worksheet.
3. create a Dashboard in Tableau.
4. load Data, Query Editor in Power BI, Transform, Clean, Shape, and Model Data Manage Data Relationship, editing a Relationship.
5. publish from Power BI desktop – Publish Dashboard to Web

Essential/ Recommended readings:

- Joshi, P. M., & Mahalle, P. N. (2022). *Data Storytelling and Visualization with Tableau: A Hands-on Approach*. CRC Press.
- Gupta, S., Pinto, S., Savale, S., Gillet, J., & Cherven, K. (2022). *The Tableau Workshop: A practical guide to the art of data visualization with Tableau*. Packt Publishing Pvt. Ltd
- O'Connor, E. (2018). *Microsoft Power BI Dashboards Step by Step*. Microsoft Press.
- Grey, J. (2020). *Power BI: Give Life to Your Data With the Complete and Fastest Crash Course on Data Visualization.*
- Knight, D., Knight, B., Pearson, M., & Quintana, M. (2018). *Microsoft Power BI Quick Start Guide: Build dashboards and visualizations to make your data come to life*. Packt Publishing Ltd.
- Knight, D., Ostrowsky, E., Pearson, M., & Schacht, B. (2022). *Microsoft Power BI Quick Start*

Guide: The ultimate beginner's guide to data modeling, visualization, digital storytelling, and more. Packt Publishing Ltd.

https://www.tableau.com/learn/articles/dashboards/what-is

https://www.tableau.com/learn/articles

https://www.tableau.com/about/newsroom

Note: Readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Master of Business Administration (Business Analytics)
MBA (BA)
Semester I

Marks: 50 **Duration-30 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/Practice		
INDIAN KNOWLEDGE SYSTEM	2	2	0	0	**Pass in Graduation**	**NIL**

Learning Objectives

To facilitate the students with the concept of Indian traditional knowledge and to make them understand the importance of roots of knowledge system. Further to make the students understand the traditional knowledge and analyse it and apply it to their day to day life.

Learning outcomes

After completion of the course, learners will be able to:

- Identify the concept and importance of traditional knowledge system and its framework
- Understand the significance of Yoga, Ayurveda on health, wellness, mind and soul
- Understand the traditional governance system and apply the management principles from the epics and compare them with the current practices

Unit I: Bhartiya Gyan Parampara (Indian Knowledge System) – An Overview and its framework (12 Hours)

Importance of Ancient Knowledge; Defining Indian Knowledge System; the Indian Knowledge System Corpus- a Classification Framework; Some unique aspects of Indian Knowledge System: Nuances of an Oral Tradition. History of Traditional Indian Trade and commerce: Silk, cotton, sugar, spices etc., silk route; currency and transportation; Traditional mercantile system, the Concept of Dharma; Tarka: The Indian Art of Debate- The Knowledge Triangle; Knowledge Management; Types of Knowledge Management, Knowledge Barriers, Knowledge Retention.

Unit II: Health, Wellness and Psychology (8 Hours)

Impact of Yoga Way of life on Emotional Intelligence of Managers; Ayurveda- Definition of Health; Tri-dosas – Relationship to Health; The Body- Mind- Intellect- Consciousness Complex; Consciousness- The True Nature of an Individual; Five layered Consciousness of an Individual (Panchkoshas); Chakra System (Energy centres). Consciousness: Management by consciousness, Levels of Individual and Organizational consciousness, Self-consciousness, beyond self- consciousness.

Unit III: Governance and Public Administration (10 Hours)

Ramayana on Great Attributes, Dos, and Don'ts of a King; Arthasastra-Governance; Relevance of Arthasastra; Kautilyan State; Vidura- niti – Advice to a King- TheAmatya, Settlements andLand Use (Janapada),FortifiedCapital city (Durga),Treasury and State Economy (Kosa), Law & Order and Security (Danda), Foreign Policy and Allies (Mitra). Public Administration- Perspectives from the Epics. Indigenous banking system: Methods of the Indigenous banking system; Promissory note, Dastavez, Rahan, Functions of the indigenous banking system;

Practical Exercises:

- Visit a Gurukul/ Ashram and have own experience (anubhooti) of the Indian ancient knowledge system.
- Discuss Case studies relating to
  - ❖ Mathematics of Madhava, Nilakantha Somayaji
  - ❖ Foundational aspect of Ayurveda
  - ❖ Foundational aspect of Ashtanga yoga
  - ❖ Foundational aspects of Sangeeta
  - ❖ Foundational aspect of traditional Bharat trade and commerce
- Practical sessions relating to Ayurveda with reference to self – exploration can be planned (Ayurveda Personality Test).
- Practise of meditation on Panchkoshas and Chakras.Muktchintan (brainstorming) on the perspectives from the epics and the real-life scenario of their applicability in the policies and schemes of the Government of India like Foreign policy, Defence policy, Innovation and Start-up Policy, Global Initiatives like One Sun One World One Grid: India's Initiative; Vaccine Diplomacy, International Yoga Day.

Essential/ Recommended readings

- Aurobindo, S. (2021). The Foundations of Indian Culture. India: Sri Aurobindo Ashram.
- Dharampal. (1995). The Beautiful Tree: Indigenous Indian Education in the Eighteenth Century.Rashtrotthana Sahitya. ISBN-10:8175310952
- Indian Knowledge Systems. (2005). India: Indian Institute of Advanced Study.
- Mahadevan, B., Bhat, V. R., & Pavana, N. (2022) Introduction to Indian Knowledge SystemConcepts and Applications. PHI Learning

- Parthasarathy, S. (2014). Vedanta for Modern World. Sri Siim Research Press.
- Pe, D. (2005). Hidden dangers of meditation and yoga. Payal Books
- Simpson, A. (2019). Leadership Lessons from the Bhagavad Gita. India: SAGE Publications.
- The Arthashastra. (2000). India: Penguin Books Limited.
- Vivekananda, S. (2021). Patanjali Yoga Sutra. Srishti Publishers & Distributors. ISBN- 10:9390441137

Suggestive Readings

- Attree, A. K., Kumar, V., and Singh, A. K. (2020) Developing and validating the individual andorganisational consciousness scale, International Journal of Work Organisation and Emotion, Vol. 11, No. 2, 154-177

https://iksindia.org/index.php

- https://indianculture.gov.in/indian-culture-repository
- https://vedicheritage.gov.in/
- https://www.rarebooksocietyofindia.org/
- https://management.cessedu.org/
- https://indica.in/
- https://www.bhratiyakritisampada.nic.in

Note: Readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University ofDelhi, from time to time.

Master of Business Administration (Business Analytics)

MBA (BA)
Semester II

Marks: 100 **Duration: 60 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Corporate Finance **MBABA CC201**	**4**	**3**	**0**	**1**	**Pass in Graduation**	**NIL**

Learning Objectives

To make students analyse various issues involved in financial management of a company and equip them with advanced analytical tools and techniques which can enhance their logical ability for making sound financial decisions and policies in a company.

Learning outcomes

After completion of the course, learners will be able to:

- understand the present and future value of cash flows associated with financial decisions using analytical tools
- analyse capital budgeting decisions using appropriate techniques/tools
- evaluate the capital structure of firms, and analyse the agency problems between different stakeholders
- discuss the dividend decisions and working capital policy of firms
- evaluate contemporary issues in Financial Management, and evaluate different forms of corporate restructuring

SYLLABUS

Unit I: Introduction to Financial Management (8 Hours)

Nature, scope and objectives of financial management; Measurement of shareholders' wealth; Finance as a strategic function; Role of a finance manager; Concepts of Risk, Return and Time value of money; Discounted Cash Flows (DCF); Financial decision making and types of financial decisions; Risk-return trade off in financial decisions; Annuity calculators; Introduction to expert systems for financial analysis.

Unit II: Capital Budgeting Decisions (14 Hours)

Nature, significance and types of capital budgeting decisions; Capital budgeting process; Principles of cash flow estimation; Estimation of cash flows; Capital budgeting techniques- ARR, Payback period, Discounted Payback Period (DPB), Net Present value (NPV), Equivalent Annual NPV, and Internal rate of return (IRR), Incremental IRR, Modified IRR and Profitability index; Fisher's rate of intersection; Capital budgeting decision under inflation, capital rationing and multi period budget constraints; Capital budgeting decision under risk and uncertainty; Techniques for incorporating risk and uncertainty in capital budgeting decisions- Risk Adjusted Discount Rate Method (RADR), Certainty Equivalent method, DCF Break Even Analysis, Simulation method, Probability distribution method, Decision tree analysis, Backward induction method, Sensitivity analysis and Scenario analysis.

Unit III: Cost of Capital and Capital Structure Decisions (12 Hours)

Specific costs of capital, weighted average cost of capital, weighted marginal cost of capital; Theories of capital structure- Net Income theory, Net Operating Income theory, Traditional theory, MM Hypothesis without and with corporate taxes, Merton Miller argument with corporate and personal taxes, Trade off theory, Pecking order theory, Market timing theory; Signaling theory and effect of information asymmetry on capital structure; The concept of present value of interest tax shield; Agency Problems and Agency Costs; Financial leverage and evaluation of financial plans (EBIT-EPS analysis); Determination of beta of levered firm and optimal capital structure; Factors affecting choice of Capital structure in practice.

Unit IV: Dividend Decisions and Working Capital Management (18 Hours)

Dividend Decisions

Issues in dividend decision; Dividend rate and dividend yield; Theories of relevance and irrelevance of dividend in firm valuation -Pure residual theory, Walter's model, Gordon's Model, MM Hypothesis, Bird-in-hand theory and Dividend signaling theory; Relevance of dividend under market imperfections; Traditional and Radical position on dividend; Types of dividend polices in practice-Pure residual policy, constant rupee dividend policy, constant dividend payout policy and smooth stream dividend policy; Determinants of dividend policy in practice; Lintner's Model of corporate dividend behavior.

Working Capital Management

Concept and types of working capital; Operating cycle and cash cycle; Estimation of working capital requirement; Approaches of working capital financing; Determinants of working capital; Components of working capital

management; Cash management- Baumol's Model and Miller-Orr Model of managing cash; Receivables management- dimensions of credit policy, credit analysis and evaluation of credit policies; Inventory management.

Unit V: Corporate Restructuring and Contemporary Issues in Financial Management (8 Hours)

Corporate restructuring and its various forms; Mergers and Acquisitions (M&A)- types, motives, benefits, valuation and financing; Leveraged buyouts; Management buyouts; Demerger, split up, Spin offs; Divestiture; Bases for calculation of Share exchange ratio; Determination of minimum and maximum exchange ratio; Contemporary issues in financial management.

Note: Relevant software will be used for pedagogical purposes. Evaluation of practical exercise (if any) using software will be part of internal assessment.

Practical Exercises:

The learners are required to:

1. compute income from various investment alternatives using annuity calculators.
2. estimate cash flows from a hypothetical project. Using appropriate software, evaluate the project's profitability by employing capital budgeting evaluation techniques.
3. extract data from financial statements of different firms/financial databases and estimate the cost of capital using appropriate software.
4. evaluate dividend policies of different firms.
5. estimate the working capital requirements for a firm using relevant software.
6. evaluate any recent Merger or Acquisition. Estimate the firm's value using appropriate software.

Suggested Readings:

- Brealey, R. A. & Myers S. C. (2020). *Principles of Corporate Finance*. McGraw Hill.
- Chandra, P. (2017). *Financial Management-Theory and Practice*. Tata McGraw Hill.
- Damodaran, A. (2007). *Corporate Finance: Theory and Practice.* John Wiley & Sons.
- Ehrhardt, M. C. & Brigham, E. F. (2003). *Corporate Finance*. Cengage Learning
- Hillier, D., Grinblatt, M. & Titman, S. (2011). *Financial Markets and Corporate Strategy.*McGraw Hill
- Khan, M. Y. and Jain, P. K. (2017). *Financial Management: Text, Problems and Cases*. Tata McGraw Hill.
- Pandey, I. M. (2021). *Financial Management.* Vikas Publishing.
- Ross, S. A. and Westerfield, R. W. (2020). *Corporate Finance.* McGraw Hill.
- Van, Horne and Dhamija (2011). *Financial Management and Policy.* Pearson

Note: Latest edition of the readings may be used.

Note: Relevant software will be used for pedagogical purpose. Evaluation of practical exercise using software will be part of internal assessment. Further, case studies related to above topics are required to be discussed.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

Master of Business Administration (Business Analytics)

MBA (BA)
Semester II

Marks: 100 **Duration- 60 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Human Resource Management **MBABACC202**	**4**	**3**	**0**	**1**	**Graduation**	**No**

Learning Objective: To familiarize the students with the different aspects of managing people in organizations from the stage of acquisition to development and retention.

Learning Outcomes:

After completion of the course, learners will be able to:

- understand HRM and the role of HRM in effective business administration.
- analyse the role that HRM has to play in manpower planning, job analysis and forecasting the human resource requirements.
- apply the recruitment and selection process in relation to the organization's business and HRM objectives.
- evaluate job-based compensation schemes and performance management systems and appraisals.
- recognise the emerging horizons of HRM and also enduring international HRM, e-HRM, and HRIS.

Syllabus:

Unit I- Introduction: (12 Hours)

Conceptual foundations; Human aspect of management; Human resource management- concept, scope and importance; Competencies of HR manager- employer branding and competency mapping; Changing role of HRM- workforce diversity, technological change, restructuring and rightsizing, empowerment, downsizing, VRS, work-life balance.; TQM; Management of ethics.

Unit II- Human Resource Planning, Job Analysis, and Job Design: (12 Hours)

Assessing human resource requirements; Human resource forecasting- concept, scope and importance; Workload analysis; Job analysis; Job description and specifications; Job design; Job characteristic approach to job design, HR policies

Unit III- Recruitment, Selection, Training, and Development: (10 Hours)

Factors affecting recruitment; Sources of recruitment (internal and external); Basic selection model; Psychological tests for selection; Interviewing; Placement, induction and socialization; Job changes- Transfers, Promotions, and Separations; An overview of training and development-concept and importance; Role specific and competency-based training; Responsibilities and challenges to Training Managers; Emerging trends in recruitment, selection, and development.

Unit IV- Compensation Management, Performance Appraisal, and Audit: (14 Hours)

Compensation management- Job evaluation, base compensation and supplementary compensation; Innovations in compensation management- Pay band system, ESOP; Performance appraisal-concept, traditional and modern methods- MBO, 360-degree appraisal, 720-degree appraisal, behaviourally anchored rating scale, balanced scorecard; Potential appraisal, employee counselling, Job changes - Transfers and promotions, HR Audit – meaning, objectives and areas, approaches, frequency of audit

Unit V- Emerging Horizons of HRM: (12 Hours)

International HRM, challenges of international HR managers; Green HRM; E-HRM; HRIS (Human Resource Information System); Contemporary issues in human resource management-moonlighting phenomenon, employee engagement, flexitiming, psychological contract, managing protean career, layoffs, emerging job opportunities; Remote learning – Virtual team building – Upskilling; ethics in HRM

Case Studies: Some cases of the real business world to supplement learning from the course.

Practical Exercises:

The learners are required to

1. Analyse and interpret case studies on various organisations.

2. Participate in simulation exercises in the classroom on work-life balance and thereby identify their needs.

3. Participate in simulation exercises and role play on human resource planning. Learners may be assigned to draft an HR policy to combat issues assuming themselves as an HR manager.

4. To interview HR managers and develop in-depth knowledge of practical applications of HR concepts.

5. To visit a company and identify the training methods adopted in various functional areas.

6. Develop a case study on the applicability and use of different kinds of training and development strategies by various companies in real-life scenarios. Learners may be assigned to draft a training and development module on the basis of selected strategies.

7. Conduct a job analysis for any two positions in a select organisation and present the report of the same.

8. Draft virtual team building schemes for different job roles in their organisation.

Essential/ Recommended readings

- D' Cenzo, David A., Stephen P. Robbins & Susan L. Verhulst (2012). *Human Resource Management.*
- New Delhi: John Wiley and Sons.

- Dessler, Garry (2012). *Human Resource Management*. Prentice Hall of India.
- Dowling, Peter J., Festing M., & Engle A.D. (2013). *International Human Resource Management*. Cengage Learning.
- Gooderham, P. N., Nordhaug, O. & Ringdal, K. (1999). Institutional and rational determinants of organizational practices: Human resource management in European firms. *Administrative Science Quarterly*, 44(3), 507-531.
- Ian, Beardwell, Len, Holden & Tim Claydon (2004). *Human Resource Management: A Contemporary Approach*. Prentice Hall.
- Jiang, K., Lepak, D. P., Hu, J. & Baer, J. C. (2012). How does human resource management influence organizational outcomes? A meta-analytic investigation of mediating mechanisms. *Academy of Management Journal*, 55(6), 1264-1294.
- Noe, R. A., Hollenbeck, J. R., Gerhart, B. & Wright, P. M. (2016). *Fundamentals of human resources management*.
- Oldroyd, J. B. & Morris, S. S. (2012). Catching falling stars: A human resource response to social capital's detrimental effect of information overload on star employees. *Academy of Management Review*, 37(3), 396-418.
- Rao, V. S. P. (2010). *Human resource management: Text and cases.* Excel Books.
- Root, L. S. & Young Jr, A. A. (2011). Workplace flexibility and worker agency: Finding short-term flexibility within a highly structured workplace. *The Annals of the American Academy of Political and Social Science*, 638(1), 86-102.
- Tilcsik, A. (2014). Imprint–environment fit and performance: How organizational munificence at the time of hire affects subsequent job performance. *Administrative Science Quarterly*, 59(4), 639-668.

Note: Readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Master of Business Administration (Business Analytics)

MBA (BA)
Semester II

Marks: 100 **Hours: 60**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Big Data and Cloud Computing **MBABACC203**	4	3	0	1	**Pass in Graduation**	**NIL**

Learning Objectives

The course aims to aid the learner in applying problem-solving skills and the knowledge of Big Data & Cloud Computing to solve real-world problems. It would focus on providing the learners with the foundation knowledge and understanding of Big Data, distributed computing systems, and applications, especially in the context of Cloud. It will enable analysis of untapped data for business intelligence and analytics. The objective of the course is to learn tools and techniques to apply analytics on such data which would point to various business benefits.

Learning outcomes

After completion of the course, learners will be able to:

- Acquire comprehensive knowledge and understanding of Big data & Cloud computing
- Understand the challenges of Big data.
- Learn to apply skills and tools to analyze and manage Big data.
- Understand the impact of making Big data decisions on business growth and strategy.
- Perform Big data analysis in cloud

SYLLABUS

Unit I: Introduction to Big Data (12 Hours)

Analytics – Nuances of big data – Value – Issues – Case for Big data – Big data options Team challenge – Big data sources – Acquisition – Nuts and Bolts of Big data. Features of Big Data - Security, Compliance, auditing and protection - Evolution of Big data – Best Practices for Big data Analytics -

Big data characteristics - Volume, Veracity, Velocity, Variety – Data Appliance and Integration tools – Greenplum – Informatica, Big vs Thick data.

Unit II: Data Analysis (10 Hours)

Evolution of analytic scalability – Convergence – parallel processing systems – Cloud computing – grid computing – map reduce – enterprise analytic sand box – analytic data sets – Analytic methods – analytic tools – Cognos – Microstrategy - Pentaho. Analysis approaches – Statistical significance – business approaches – Analytic innovation – Traditional approaches – Iterative

Unit III: Fundamentals of Cloud Computing and Stream Computing (14 Hours)

Introduction to Cloud Computing - History of cloud computing- Understanding the roots and essential characteristics of cloud computing - Understanding basic concepts and terminologies, benefits and limitations of Cloud computing- Introduction to Streams Concepts – Stream data model and architecture - Stream Computing, Sampling data in a stream – Filtering streams – Counting distinct elements in a stream – Estimating moments – Counting oneness in a window – Decaying window - Realtime Analytics Platform(RTAP) applications IBM Infosphere – Big data at rest – Infosphere streams – Data stage – Statistical analysis – Intelligent scheduler – Infosphere Streams.

Unit IV: Predictive Analytics and Visualization (12 Hours)

Predictive Analytics – Supervised – Unsupervised learning – Neural networks – Kohonen models – Normal – Deviations from normal patterns – Normal behaviours – Expert options – Variable entry - Mining Frequent itemsets - Market basket model – Apriori Algorithm – Handling large data sets in Main memory – Limited Pass algorithm – Counting frequent itemsets in a stream – Clustering Techniques – Hierarchical – K- Means – Clustering high dimensional data Visualizations - Visual data analysis techniques, interaction techniques; Systems and applications.

Unit V: Frameworks and Applications (12 Hours)

IBM for Big Data – Map Reduce Framework - Hadoop – Hive - – Sharding – NoSQL Databases - S3 - Hadoop Distributed file systems – Hbase – Impala – Analyzing big data with twitter – Big data for ECommerce – Big data for blogs.

Practical Exercises:

The learners are required to

1. Access HDFS using JAVA API
2. Access HDFS Using COMMAND-LINE INTERFACE Setup Hadoop cluster
3. Run Hadoop sample jobs
4. Perform Workflow Diagram Oozie workflow application
5. Create your First PIG Program

Essential/ Recommended readings

- Ohlhorst, F.J. (2013), Big Data Analytics: Turning Big Data into Big Money, Wiley and SAS Business Series.

- Franks, B. (2012), Taming the Big Data Tidal Wave: Finding Opportunities in Huge Data Streams with Advanced Analytics, Wiley and SAS Business Series.

- Rajaraman, A. & Ullman, J.D. (2014), Mining of Massive Datasets, Cambridge University Press.

- Kudyba, S. (2014), Big Data, Mining, and Analytics: Components of Strategic Decision Making, Auerbach Publications.

- Prajapati, V. (2013), Big Data Analytics with R and Hadoop, Packt Publishing.

- Minelli, M., Chambers, M., Dhiraj, M. (2013), Big Data, Big Analytics: Emerging Business Intelligence and Analytic Trends for Today's Businesses, Wiley Publications.

- Mayer-Schonberger&Cukier, K. (2013), Big Data: A Revolution That Will Transform How We Live, Work and Think, Hodder And Stoughton

- Kulkarni, P., Joshi, S. & Brown M.S. (2016), Big Data Analytics, PHI Learning.

- Acharya, S. &Chellappan, S. (2015), Big Data and Analytics, Wiley.

- Bart Baesens, Analytics in a Big Data World: The Essential Guide to Data Science and its Applications, Wiley, 2014

- Murugesan, S., & Bojanova, I. (Eds.). (2016). Encyclopedia of cloud computing. John Wiley & Sons.

- Srinivasan, A. (2014). Cloud Computing: A practical approach for learning and implementation. Pearson Education India.

- Buyya, R. (2013). Mastering Cloud Computing. Tata McGraw-Hill Education.

- Sosinsky, B. (2010). Cloud computing bible. John Wiley & Sons.

- Rungta, K. (2016), LearnHadoop in 1 Day: Master Big Data with this complete Guide, Amazon Digital.

- Meir-Huber, M. (2015), Kick Start: Hadoop: Learn Hadoop in Hours!, Amazon Digital.

Notes:

1. **Latest edition of the readings may be used.**
2. **Relevant software will be used for pedagogical purpose. Evaluation of practical exercise using software will be part of internal assessment. Further, case studies related to above topics are required to be discussed.**
3. **Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.**

Master of Business Administration (Business Analytics)

MBA (BA)
Semester II

Marks: 100 **Hours: 60**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Using R for Analytics **MBABACC204**	4	2	0	2	**Pass in Graduation**	**NIL**

Learning Objectives

The course aims to train students in R programming language and its applications in the business world as well as to provide hands-on-training to use various tools and packages of R for advanced data analytics with real and simulated datasets to analyze and solve real and complex analytics problems including data visualization and machine learning.

Learning outcomes:

After completion of the course, learners will be able to:

1. learn R Programming language and data wrangling in R,
2. visualize the Business Data using R for key insights,
3. analyze statistical models and estimate future prospects for Business,
4. leverage data mining techniques using R to solve real life problems,
5. apply machine learning techniques to solve Business Analytics Problems.

SYLLABUS

Unit I: Introduction to R & R Environment and Exploratory Data Analysis (12 Hours)
Overview of R Language, Installation of R and RStudio, Scripts, Data Types in R, Data Structure in R, Loading Packages, Operators and functions in R, Data Extraction and Wrangling, Exporting Data from R. Pre-processing of data, Exploratory Data Analysis.

Unit II: Data Visualization for insights using R (6 Hours)
Perceptual mapping through Advanced R packages: ggplot2, Lattice, highcharter, RColorBrewer, Plotly, etc. Charts, Graphs, and Maps.

Unit III: Inferential Statistics (10 Hours)

Testing assumptions, Parametric and non-parametric tests, Correlation, Regression: Linear & Logistic, Dimensionality Reduction techniques: EFA & PCA, Multidimensional Scaling, ANOVA, Time Series Analysis: Stationarity, AR, MA, ARMA and ARIMA, Forecasting

Unit IV: Cluster Analysis and Classification (12 Hours)

Introduction to Cluster Analysis, Clustering models and Analysis, Hierarchical Clustering, Non-Hierarchical Clustering, K means Clustering, C means Clustering, KNN Classification, Decision Tree and Random Forests,

Unit V: Data Mining and Machine Learning using R (20 Hours)

Text Mining, Text Mining Algorithms, Sentiment Analysis, Supervised and Unsupervised Machine Learning Algorithms, R-packages for Machine Learning: caret, e1071, xgboost, randomForest, data.table.

Note: All the classes will be held in the computer lab. Latest versions and packages of R programming will be used to provide hands-on training / demonstration in the class. One Capstone Project as an assignment must be made compulsorily.

Practical Exercises:

The learners are required to:

1. conduct an exploratory study on real data..
2. apply R and obtain the results from a data set regarding data visualisation.
3. evaluate the survey results of a pilot study related to primary data.
4. analyse the results related to the Decision Tree by taking primary data.
5. collect a stock market data set and apply data mining tools.

Essential/ Recommended readings

- Gardener, M. (2012). *Beginning R: the statistical programming language*. John Wiley & Sons.
- Wickham, H., & Grolemund, G. (2016). *R for data science: import, tidy, transform, visualize, and model data*. " O'Reilly Media, Inc.".
- Field, A., Miles, J., & Field, Z. (2012). Discovering statistics using R (2012). *Great Britain: Sage Publications, Ltd*, *958*.
- Kumar, M. (2022). *Business Analytics using R.* Excellence Brings Success
- Cornillon, P. A., Guyader, A., Husson, F., Jegou, N., Josse, J., Kloareg, M., ... & Rouvière, L. (2012). *R for Statistics*. CRC press.

Master of Business Administration (Business Analytics)

MBA (BA)
Semester II

Marks: 100 **Hours: 60**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Operations Management **MBABA206**	4	3	1	0	**Pass in Graduation**	**NIL**

Learning Objectives

The course aims to familiarize the learner with the formulation of business problems using mathematical modelling techniques. To provide an understanding of the applications of Operational Research and how to use Excel to solve these problems

Learning outcomes

After completion of the course, learners will be able to:

- Understand the role of operations in both manufacturing and service organizations and the significance of operations strategy in the overall business.
- Understand the importance of facilities location and layout
- Understanding aggregate planning strategies
- Learn different quality tools and the tools of statistical process control for analyzing a process in terms of quality and also develop an understanding of six sigma quality.
- Learn the process of Just in time and lean production system

Syllabus

Unit I: Nature, Evolution and Scope of Operations Management (12 Hours)

Nature, Evolution and Scope of Operations Management. Emerging trends in Operations Management. Operations Strategy: Linkage with Competitive Strategy and formulation of Operations Strategy.

Unit II: Facilities location and Layout (12 Hours)

Site Selection and its methods, factors affecting location decisions, location planning methods, Types of layout, Production process

Unit III: Planning (12 Hours)

Aggregate Production Planning (APP), Master production schedule (MPS), Materials requirements planning (MRP).

Unit IV: Quality: (12 Hours)

Quality Management, Statistical Process Control (SPC), Process capability and Six Sigma.

Unit V: Methods (12 Hours)

Just-in-time, Lean operations and Toyota Production System Theory of Constraints, Role of technology in Operations Management

Essential/ Recommended readings

- Stevenson, W.J., (2018). Operations Management (12th ed.). McGraw Hill, Chennai..
- Krajewski, L.J., Malhotra, M.K., and Ritzman, L.P. (2016).Operations Management: Processes and Supply Chains (11th ed.), Pearson Education, Delhi.
- Mahadevan, B. (2015). Operations Management (3rd ed.). Pearson Education, Delhi
- Chase, R. B., Shankar, R., and Jacobs, R. F. (2019). Operations and Supply Chain Management (15th Ed.) Mc Graw Hill, Chennai.

Note: Readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Master of Business Administration (Business Analytics)

MBA (BA)
Semester II

Marks: 100 **Hours: 60 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Management Science **MBABACC206**	4	2	0	2	**Pass in Graduation**	**NIL**

Learning Objective:

The course aims to develop the knowledge of quantitative tools for decision making and to prepare for application of their tools in application of these tools in different organizational settings.

Learning Outcomes:

After completion of the course, learners will be able to:

- understand different decision making situations in business and the role of different quantitative approaches in solving them.
- evaluate the quantitative approaches to problem solving in different business situations constrained by availability of resources and alternatives.
- create prudent and cost effective decision making transportation, assignment and transshipment problems.
- evaluate various models of EOQ by using simulated situations to solve the problems related to inventory and queuing management.
- apply Markov Chains decision process and Theory of Games to the decision situations requiring prediction about outcomes.

Syllabus:

Unit I– Fundamental of decision making: **(10 Hours)**

Types of decisions; Steps in decision making; Quantitative analysis and decision making; Different types of models and their uses; Model building steps.

Unit II- Linear Programming: (10 Hours)
Basic concepts; Mathematical formulation and applications; Solution of LP problem using graphic and simplex method; Sensitivity analysis and interpretation of solution; Duality in linear programming – formulation and solution, integer linear programming - solution.

Unit III– Transportation, Assignment and Trans-shipment: (10 Hours)

Formulation; Solving transportation and assignment problems; Dealing with special cases of transportation and assignment problems.

Unit IV- Simulation and Queuing Management: (10 Hours)

Concepts of heuristics; Simulation: Monte Carlo Simulation, Application of simulation in business scenario. Queuing models: Elements of a queuing system; Models with Poisson arrival and Exponential services rates- single server and infinite and finite population; Cost behaviour analysis. Stochastic analysis and Utility function.

Unit V– Project Scheduling: (20 Hours)

Concepts of PERT & CPM techniques and their applications; Network analysis- Scheduling activities, determining critical path, calculation of floats; Time-cost trade-off, resource allocation & resource levelling. Use of Software for Project Management. Markov Chains- decision processes; Market share analysis; Game Theory- Pure strategy games; Mixed strategy games; Value of the game; Rules of Dominance, Graphical methods. Algebraic methods and LPP for solving games. Orientation to Optimization package for Games and Markov analysis.

Note: List of cases to be discussed shall be announced at the beginning of the semester.

Practical Exercises:

The learners are required to:

1. solve a manufacturing problem based on LPP model.
2. evaluate transportation scenario in supply chain management .
3. apply Monte Carlo simulation in service industry.
4. conduct network analysis in IT Industry.
5. conduct a game theory simulation.

Essential/ Recommended readings

Suggested Reading:

- Hendriks, T.H.B. (2007). *Decision Science: Theory and Applications*. Wageningen Academic Publishers.
- Hillier, F.S., Lieberman, G.J., Nag , B. Basu, P. (2017*). Introduction to Operations Research.*
- McGraw Hill Education.
- Powell, S.G, & Baker, K.R. (2017). *Management Science - The Art of Modeling with Spreadsheets*. Wiley.
- Taha,H.A.(2014.*) Operations Research : An Introduction*. Pearson Publication.

Additional Readings

Winston, W.L. (1994*). Operations Research: Applications and Algorithms.* Duxbury Press.

Master of Business Administration (Business Analytics)

MBA (BA)
Semester II

Marks: 50 **Duration-30 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Data Warehousing and Data Mining MBABACC207	2	1	0	1	**Pass in Graduation**	**NIL**

Course Objectives:

To mine interesting and useful patterns from the explosive volume of data by application of analytical techniques. The course is designed to extract new and valuable information by learning core concepts of data mining, which when properly implemented can yield to business solutions and profitable enterprises.

Learning Outcomes:

After completion of the course, learners will be able to:

SYLLABUS:

Unit I: Introduction to data mining (8 Hours)
Why data mining? What is data mining? Kinds of data, kinds of patterns, technologies, Kinds of applications, Major issues in data mining.

Data exploration and preprocessing
Data objects and attribute types, basic statistical descriptions of data, data visualization, measuring data similarity & dissimilarity, Data preprocessing: Overview, data cleaning, data integration, data reduction, data transformation & data discretization

Unit II: Data Warehousing & Online Analytical Processing (12 Hours)
Data Warehouse: Basic Concepts, Data warehouse modeling: Data cube & OLAP, Data warehouse design & usage, data warehouse implementation, data generalization by attribute-oriented induction

Clustering: Basic concepts & Methods
Cluster Analysis, Partitioning methods, hierarchical methods, density-based methods, grid-based methods, evaluation of clustering

Unit III: Data Mining Trends & Research Frontiers (10 Hours)

Mining complex data types, other methodologies of data mining, data mining applications, data mining & society, data mining trends

Mining Unstructured Data: Text mining

What is unstructured data? Importance of text mining, characteristics of text mining, steps in text mining: Representation of text documents, preprocessing techniques, feature selection, constructing a vector space model, predicting and validating the text classifier

Practical Exercises:

The learners are required to:

1. solve a manufacturing problem based on a data mining model.
2. evaluate data warehousing and analytical processes in supply chain management .
3. apply text mining in observing trends on social media.

Essential/ Recommended readings

Text Books

- Han, J., Kamber, M., Pei, J. (2011), Data Mining: Concepts & Techniques, Morgan Kauffmann, Third Edition.
- Malhotra, R. (2016), Empirical Research in Software Engineering: Concepts, Analysis & Applications, CRC press.

Reference Books

- Bramer, M. (2007), Principles of Data Mining, Springer-Verlag.
- Hand D., Mannila H. and Smyth P. (2001), Principles of Data Mining, MIT Press.
- Dunham, D.H. (2006), Data Mining: Introductory and Advanced Topics, Pearson Education, First Edition.
- Pudi, V. &Radha Krishna, P. (2009), Data Mining: Concepts and Techniques, Oxford University Press.

Suggested Readings

- Larose, D.T. & Larose, C.D. (2016), Data Mining and Predictive Analytics, Wiley.
- Dean, J. (2014), Big Data, Data Mining and Machine Learning: Value Creation for Business Leaders and Practitioners, Wiley.

Master of Business Administration (Business Analytics)
MBA (BA)
Semester II

Marks: 50 **Duration-30 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Life Skills and Communication MBABA208	2	2	0	0	**Pass in Graduation**	**NIL**

Learning Objectives: To build understanding and perspective about life beyond profession.

Learning Outcomes:

After completion of the course, learners will be able to:

- understand the meaning, grand narrative of life and the concept of leverage psychological capital.
- analyse the role of society and technology in life.
- explore nuances of communication and the role of life skills in various aspects.

Syllabus:

Unit I-Introduction (10 Hours)

Ontological perspective of life; Meaningfulness and mindfulness; Understanding personal and organizational outcomes of meaningfulness and mindfulness; Notion of time; Understanding psychological capital - Hope, efficacy, resilience and optimism; Developing strengths and living well; Happiness and pleasure dialogue.

Unit II- Society Technology Interface (10 hours)

Role of technology in shaping present day society; Role of Digital Literacy in professional life; Trends and opportunities in using digital technology in workplace; Social interaction and changing paradigm of physical, digital and biological world.

Unit III-Effective Communication and Life Skills (10 hours)

Principles of effective communication; Verbal, non- verbal and listening skills; Learning Team skills and Career skills; Creating persuasive communication and avoiding common mistakes in communication at personal,

interpersonal and organizational level; Understanding role of life skills for increasing employability and entrepreneurship, meaning and significance of good work; Case Studies of Successful Entrepreneurs

Practical Exercises

The learners are required to:

1. Group discussion on personal and organizational outcomes of meaningfulness and mindfulness
2. Participate in simulation exercises in the classroom on focus and self-control and critical thinking.
3. Participate in simulation exercise and role play on Learning Team, reverse mentoring and engaged leaning. Learners may be assigned to draft an HR policy to combat work life issues assuming themselves as an HR manager.
4. Brainstorming session on how to strengthen cognitive impairments through therapeutic interventions.
5. Practical hands on exercise/sessions on happiness and pleasure dialogue to find out positive outcome towards life.
6. Conduct survey on role of technology and its impact on society.
7. Various role plays relating to verbal and non-verbal communication can be planned.
8. Brainstorming exercises can be conducted and case studies of successful entrepreneurs to be presented.

Essential/ Recommended readings

Readings

- Cappelli, Peter (2012). Why Good People Can't Get Jobs: The Skills Gap and What Companies Can Do About It.Wharton Digital Press.
- Klaus,Schwab(2017). The Fourth Industrial Revolution.World Economic Forum.
- Lopez, Pedrotti & Synder (2015). Positive Psychology – the scientific and practical explorations of human strengths.Sage Publications.
- Louis, Narens (2001).Theories of Meaningfulness.Psychology Press. Taylor & Francis.
- Schein, Edgar H. (2013). Humble Inquiry – The Gentle Art of Asking Instead of Telling. Berrett Koehler Publishers.
- Steven, Monson (2017). Mapping Society and Technology.University of Minnesota Publications.
- Vygotsky, L. S. (1978). Mind in Society – The development of higher psychological processes. Harvard UnivPress.

Master of Business Administration (Business Analytics)

MBA (BA)
Semester III

Marks: 100 **Duration-60 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Corporate Governance , Ethics And Sustainability **MBABACC301**	**4**	**4**	**0**	**0**	**Pass in Graduation**	**NIL**

Learning Objectives

The course aims to develop the understanding about the role of corporations in society and boards‟ role in keeping oversight on the functioning of the company, global developments in Governance and Corporate Citizenship. The course will also provide necessary knowledge and skills for building professional boards, stakeholder engagement and shareholder activism.

Learning outcomes

After completion of the course, learners will be able to:

- Create a framework for effective corporate governance by understanding the role and responsibility of different stakeholders in large corporates and how their interplay results in alternate governance structures in different countries.
- Appreciate the accountability of corporations towards its stakeholders and society and to create an integrated value framework for sustainability.
- Serve as an effective board member, build professional boards and as senior managers contribute in strengthening board performance.
- Know about rights and responsibilities of shareholders.
- Build and monitor systems that have strong internal controls to prevent corporate frauds.

SYLLABUS

Unit I- Concepts and Framework: (10 Hours)

Understanding Corporate governance, Shareholders, Stakeholders; Type of directors: Insider and outsider, executive and non-executive, Independent, Nominee; Ownership and Control; Theories and development of corporate governance; Models: Types and basis of adoption; Principles of corporate governance;

Unit II- Boards and Directors: (16 Hours)

Role of board; Board composition, independence, and committees; Board leadership: Splitting chairman and CEO, CEO succession, lead director; Board processes and meetings, Building professional Boards – Directors' selection, compensation and stock options, directors‟ training and competence, board diversity, board evaluation; Boards oversight of CEO.

Unit III- Stakeholders and Shareholder: (14 Hours)

Shareholders rights and responsibilities; Differential voting rights; Voting mechanism; Class action suit; Rights of minority shareholders; Activism – Exit or voice, shareholder proposals, institutional activism, stewardship code, foreign institutional investors, proxy advisory firms; Family controlled firms: Stages, convergence of ownership and control, Family governance, Family splits and succession planning, Insider Trading; Whistle Blowing;

Unit IV - Financial Oversight, Risk Management and Corporate Scams: (10 Hours)

Internal control; Reliability of financial statements; Audit and auditors: Selection, rotation and role; Audit committee: Composition and role; Risk management; Related party transactions. Corporate Scams across countries and their implications.

UNIT V-Ethics, Sustainability and Responsible Investment: (10 Hours)

Ethical theories and business decisions; Business ethics; Code of ethics, Sustainable development goals, role of company in Sustainable development, Sustainable reporting, Integrated reporting, Sustainability index, Sustainability impact matrix-ESG methodology, carbon estimate models. Climate Governance. Corporate social responsibility- Meaning and models; CSR and strategy, CSR in India.

Practical Exercises:

The learners are required to

1. Analyze the cases- Poly Peck International, UK, 1991, Maxwell Corporation, UK, 1991, Bank of Credit and Commerce International, UK, 1991-92, World.com, US, 2001, Vivendi, France, 2002, Kingfisher, India, 2012 to under governance concerns that led to the governance movement

2. Analyze Case - Enron, US, 2001 to examine the importance of effective board and independent directors. The ICICI~Videocon Ltd and Chandra Kochhar, India, 2018 to be evaluated to understand Conflict of interest/ Quid-pro-quo.

3. Tata Group and Cyrus Mistry, India, 2016 Case to be analysed to assess governance issues in family owned firms. Critically analyse DHFL fiasco. Analyse case Rajat Gupta, USA, 2010-12 to understand the concept of insider trading.

4. Analyze Nick Leeson and Barings Bank, UK, 1991-93, Punjab National Bank and Nirav Modi, India, 2018 to develop Internal Control systems. Scrutinize the case - Satyam Computers, India, 2008 to understand the need for financial oversight, role of audit committee and need for audit effectiveness.

5. Examine corporate governance report and responsibility reports of different companies, examine

components of CSR reports of different companies.

Essential/ Recommended readings

- Companies Act, (2013), Parliament of India.
- *Robert, A. G. Monks & Nell, Minow (2011). Corporate Governance.* John, Wiley & Sons.
- Satheesh, Kumar T.N. (2010). Oxford Governance.
- SEBI (2015), Chapter IV, Listing Obligations and Disclosure Requirements Regulations.
- Sharma, J.P. (2016). Corporate Governance, Business Ethics and CSR.
- Tricker, B. (2012). *Corporate Governance*. Oxford.

Additional Readings

- Financial Aspects of Corporate Governance Report, 1992, UK.
- OECD Principles of CG 2015, retrieved from http://www.oecd.org/daf/ca/Corporate-Governance- Principles-ENG.
- Sarbanes-Oxley Act of 2002, USA.
- SEBI, Prohibition of Insider Trading Regulations, 2015.

Master of Business Administration (Business Analytics)

MBA (BA)
Semester III

Marks: 50 **Duration-30 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Using Python for Analytics **MBABACC302**	2	1	0	1	**Pass in Graduation**	**NIL**

Learning Objectives

The course aims to impart knowledge about python programming language and its applications in the business world and to provide hands-on-training to use various tools and libraries of Python for advanced data analytics with real and simulated datasets to solve real and complex business analytics problems including predictive analytics, data mining and machine learning.

Learning outcomes

The Learning Outcomes of this course are as follows:

1. understand the main features of Python and its applications for Analytics,
2. learn & use tools and techniques of Python to explore, analyze and solve the real business world problems,
3. analyze and solve various real-life problems of Finance, HR and Marketing,
4. present business data through specialized visualization tools,
5. learn basics of data mining techniques using Python
6. learn basics of machine learning techniques using Python

Unit I: The Python Fundamental and Descriptive Statistics using Python (12 Hours)

Anaconda, IDEs-Jupyter, Pycharm; GIT- Configuration with IDEs, Creating and Managing Analytics Projects, Basic Data Structures, Programming Constructs, Libraries-Numpy, Pandas, Matplotlib, Data Wrangling, Managing Missing values, Outliers Detection, Various types of Joins, merge, Partitioning data into train and test set, Scaling of data, Descriptive Statistics: measures of central tendency, measures of dispersion.

Unit II: Graphical Representation of Data (4 Hours)

Selection of Graph, Basic Graphs- histogram, Bar Plot, boxplot, pie etc., Libraries- Matplotlib, seaborn, plotline; Advanced Graphs, Exploratory visualization and Explanatory visualization, Exporting Graphs.

Unit III: Predictive Statistical Modeling (14 Hours)

Hypothesis Testing, Correlation, Linear Regression, Logistic Regression, ANOVA, Exploratory Factor Analysis, Principal Component Analysis, Time Series Analysis- ARMA & ARIMA models, Forecasting.

Note: The main focus will be the demonstration and hands-on training exercise classes which will be held in the computer lab on the latest and relevant libraries of Python. Latest versions and libraries of the Python programming language will be used to provide hands-on training / demonstration in the class.

Practical Exercises:

The learners are required to:

1. analyse the data with the help of descriptive statistics.

2. evaluate the data by applying exploratory visualisation.
3. compute output of secondary/primary data with the help of predictive statistical modelling.

Essential/ Recommended readings

1. Pilgrim, M., & Willison, S. (2009). *Dive into python 3* (Vol. 2). New York, NY, USA: Apress.
2. Raschka, S. (2020). *Python machine learning*. Packt publishing ltd.
3. Mitchell, T. M., & Mitchell, T. M. (1997). *Machine learning* (Vol. 1, No. 9). New York: McGraw-hill.
4. Joshi, P., Hearty, J., Sjardin, B., Massaron, L., & Boschetti, A. (2016). *Python: Real world machine learning*. Packt Publishing Ltd.
5. Kumar, M. (2022). *Business Analytics using Python.* Excellence Brings Success
6. Liu, Y. H. (2020). *Python Machine Learning By Example: Build intelligent systems using Python, TensorFlow 2, PyTorch, and scikit-learn*. Packt Publishing Ltd.
7. Massaron, L., & Boschetti, A. (2016). *Regression analysis with Python*. Packt Publishing Ltd.

Master of Business Administration (Business Analytics)

MBA (BA)
Semester III

Marks: 100 **Duration-60 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Artificial Intelligence and Machine Learning **MBABACC303**	4	3	0	1	**Pass in Graduation**	**NIL**

Learning Objectives

To provide solutions to hard and unsolvable problems using a reasonable amount of time, by exploiting the knowledge of the problem domain. In view of the significance of knowledge in AI, in this course, a number of knowledge representation formalisms are introduced. Currently these two fields i.e. Artificial Intelligence and Machine Learning are in high demand, the course will help the learners to build the understanding of these fields.

Learning outcomes

After completion of the course, learners will be able to:

- Recognising if a particular problem can be viewed as a Machine Learning problem.
- Breaking down standard Machine Learning problems into more fundamental problems using tools from Calculus, Linear Algebra, Probability and Optimisation.
- Recognising relationships between equation solving, projection onto a subspace, and the supervised learning problem of linear least squares regression.
- Using, identifying failure modes, programming and debugging simple gradient descent methods for solving unconstrained optimisation problems.
- Demonstrating understanding of machine learning algorithms - model, objective or loss function, optimization algorithm and evaluation criteria.

SYLLABUS

Unit-I Introduction and Foundation (12 Hours)

What is AI - Examples of AI systems, Approaches to AI, Brief history of AI, Comparison Between Artificial intelligence, Machine Learning, and Deep Learning , Intelligent Agent. : stimulus response agents. components of intelligence.

Introduction to machine learning - Calculus, Linear Algebra - Least Squares Regression, Linear Algebra - Eigenvalues and eigenvectors, Linear Algebra - Symmetric matrices, Linear Algebra - Singular value decomposition, Principal Component Analysis in Image Processing, Unconstrained Optimisation , Convex sets, functions, and optimisation problems, Constrained Optimisation and Lagrange Multipliers. Logistic regression as an optimization problem, Examples of probabilistic models in machine learning problems, Exponential Family of distributions, Parameter estimation. Expectation Maximization.

Unit – II AI – Search (12 Hours)

Problem Solving using Search - Single agent search : Introduction to State Space Search, Statement of Search problems:, state space graphs , Searching explicit state spaces. Feature based state spaces. Problem types, examples (puzzle problem, n-queen, the road map) Two agent search : Adversarial search: Two agent games(alpha-beta pruning). MinMax Search.

Uninformed and Informed Search –Uninformed Search: Formulating the state space, iterative deepening, bidirectional search. Informed Search Strategies : Using evaluation functions. A* & AO* , admissibility of A* , Iterative deepening A*, recursive best first search.

Unit-III AI - Knowledge Representation (8 Hours)

First Order Logic – First Order Logic : Motivation, Syntax, Interpretations, semantics of quantifiers, Entailment in FOL, Interpretation ,Inference in FOL : First Order resolution. Conversion to clausal form. Unification. Most general unifier. Resolution with variables Proving validity.

Rule based Systems and other formalism - Rule Based Systems : Forward chaining. Backward chaining. Conflict resolution. Semantic nets, Frames, Scripts.

Probabilistic Reasoning - Reasoning with uncertain information Review of Probability Theory, Introduction to Bayesian Theory, Baye's Networks, Probabilistic Inference, Basic idea of inferencing with Bayes networks. Other paradigms of uncertain reasoning. Dempster-Scheffer Theory

Unit IV – ML Methods (Supervised Learning) (14 Hours)

Introduction to Machine Learning Methods – Introduction to Machine Learning, Techniques of Machine Learning, Reinforcement Learning and algorithms, Deep Learning and its Algorithms, Ensemble Methods.

Classification – Understanding of Supervised Learning, Introduction to Classification, Classification Algorithms: Naïve Bayes, K-NN, Decision Trees, Logistic Regression, Support Vector Machines.

Regression – Introduction to Regression , Regression algorithm Linear Regression and Polynomial Regression, Support Vector Regression

Unit V – ML Methods (Unsupervised Learning) (14 Hours)

Feature selection and Extraction - Introduction to Feature Selection and Extraction, Dimensionality Reduction, Principal Component Analysis, Linear Discriminant Analysis, Singular Value Decomposition.

Association Rules – Introduction to Pattern search and its algorithms :Apriori Algorithms. And its variants, FP Tree Growth, Pincer Search.

Clustering – Introduction to Clustering, Types of Clustering, Partition Based , Hierarchical Based, Density Based Clustering Techniques, Clustering algorithms : K means, Agglomerative and Divisive, DBSCAN, Introduction to Fuzzy Clustering.

Neural Networks and Deep Learning : Overview of Artificial Neural Networks, Multilayer Feedforward Neural networks with Sigmoid activation functions; Back propagation Algorithm; Representational abilities of feed forward networks, Feed forward networks for Classification and Regression, Deep Learning

Essential/ Recommended readings

Text Book

Peter Norvig, Stuart Russell (2022) Artificial Intelligence A Modern Approach

Hastie, T., Tibshirani, R., and Friedman, J. (2021), Introduction to Statistical Learning, Springer. (Free Access) (https://www.statlearning.com/)

Suggested Reading

- Aston Zhang, Zachary C. Lipton, Mu Li, and Alexander J. Smol (2021), Dive into Deep Learning, (Free Access) (https://d2l.ai/)
- David G. Stork, Peter E. Hart, and Richard O. Duda, Pattern Classification
- Christopher M. Bishop, Pattern Recognition and Machine Learning
- Trevor Hastie, Robert Tibshirani, and Jerome Friedman, The Elements of Statistical Learning: Data Mining, Inference, and Prediction

Master of Business Administration (Business Analytics)

MBA (BA)
Semester III

Marks: 100 **Duration-60 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
HR Analytics MBABACC304	4	3	0	1	**Pass in Graduate**	

Learning Objectives

To develop data driven skills in students. The course will enable students to apply analytical tools in understanding employees' behavior.

Learning outcomes

After completion of the course, learners will be able to:

- understand role of analytics in human resource management.
- develop knowledge about HR metrics and types of analytics in HR.
- critically analyse the HR effectiveness and its impact on employee life cycle & experience.
- analyse data driven insights out of HR analytics.
- help in implementation of predictive modelling and dashboards in HR

SYLLABUS

Unit I- Introduction to HR Analytics (5 Hours): Evolution of HR analytics, challenges with HR Analytics, strategic focus on HR Analytics; Common pitfalls of HR Analytics; HR analytics process and skill-set needed in HR analytics team.

Unit II- Approaches to Data Analytics (15 Hours): Current approaches to measuring HR; Strategic HR metrics versus Bench marking; HR scorecards & workforce scorecards; Types of analytics in HR- descriptive, predictive and prescriptive; HR analytics framework.

Unit III- Dynamics of HR Metric (10 Hours): People analytics cycle, employee lifecycles and employee experiences, performance- and succession management; Agile framework; HR value chain; Metrics to measure HR effectiveness; Factors driving employee turnover, link between engagement and performance; Competitive edge and HR analytics.

Unit IV- Data Mining Techniques (15 Hours): Data analysis, data visualization techniques and effective utilization using tools; Common pitfalls associated with data visualization; Driving insights out of HR analytics.

Unit V- Decision Making Based on Analytics (15 Hours): Data driven culture in an organization;

Implementation of predictive modelling; Importance of predictability in fulfilling strategic objectives; Effective HR dashboards.

Practical Exercises:

1. Data analysis, data visualization techniques and effective utilization using tools.
2. Common pitfalls associated with data visualization.
3. Driving insights out of HR analytics.
4. Data driven culture in an organization;
5. Implementation of predictive modelling; Importance of predictability in fulfilling strategic objectives;
6. Effective HR dashboards.

Essential/ Recommended readings

Reading List (Unit wise)

- Edwards, M. & Kirsten Edwards, K. (2016). *Predictive HR Analytics: Mastering the HR Metric.* Kogan Page.
- Isson, J.P. Harriott & J.S. (2016). *People Analytics in the Era of Big Data: Changing the Way You Attract, Acquire, Develop, and Retain Talent.* John Wiley & Sons.
- James, E.R. (2017). *Business Analytics*. UK: Pearson Education Limited.
- Van, Wieren S. (2017). *Quantifiably Better: Delivering Human Resource (HR) Analytics from Start to Finish.* Technics Publications LLC

Note: Readings will be updated by the Department of Commerce and uploaded on Department's website.

Master of Business Administration (Business Analytics)

MBA (BA)
Semester III

Marks: 100 **Duration-60 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Marketing Analytics **MBABACC 305**	4	3	0	1	**Pass in Graduation**	**NIL**

Learning Objectives

The course will provide learners a strong foundation in marketing analytics in order to handle diversified marketing data, build advanced analytical models and deliver effective visualization product and comprehensive reports.

Learning outcomes

After completion of the course, learners will be able to:

- Comprehend the concept of marketing analytics and various analytical modelling.
- Understand the marketing segmentation and various business strategy.
- Understand the dynamics of product, service and price analytics.
- Evaluate the promotion budget and allocation.
- Understand the analytics in action.

SYLLABUS

Unit I: Concept and Marketing Insight (12 Hours)

Concept of marketing analytics, analytical modelling and metrics in marketing, Marketing Insight: sources of market data, market sizing, porter five forces analysis, STEEPLE model.

Unit II: Market Segmentation and Business Strategy (12 Hours)

Market segmentation: market segmentation, target market, marketing positioning. Business strategy: strategic scenarios and strategic decision models, business forecasting, predictive analytics in marketing, data mining, balanced scorecard, critical success factors.

Unit III: Product, Service and Price Analytics (12 Hours)

Product and Service Analytics: Conjoint analysis, portfolio resource allocation, decision tree models, product and service metrics, attribute preference testing. Price analytics: pricing techniques and assessments, price metrics, profitable pricing, price discrimination.

Unit IV: Promotion and Distribution Analytics (12 Hours)

Promotion Analytics: Promotion budget estimation and allocation, promotion metrics for traditional and social media marketing. Distribution Analytics: Designing distribution channel, channel evaluation and selection, managing conflicts and control in channels.

Unit V: Sales Analytics and Analytics in Action (12 Hours)

Sales Analytics: Consumer sales process, e-commerce sales model, prescriptive marketing sales metrics, profitability metrics, support metrics. Analytics in Action: Rapid decision models, metrics in marketing campaigns, excel excellence, data driven presentations.

Practical Exercises:

The learners are required to

1. Identify a company and evaluate its STEEPLE model.
2. Prepare a comparative analysis of companies based on market segmentation, their target market and their marketing positioning
3. Discuss various types of price discrimination techniques adopted in different industries.
4. Discuss the impact of promotion and distribution Analytics.
5. Apply predictive and prescriptive analytics to solve marketing problems.

Essential/ Recommended readings

- Sorger, S. (2013), Marketing Analytics: Strategic Models and Metrics, Admiral Press.
- Winston, W.L. (2014), Marketing Analytics: Data-Driven Techniques with Microsoft Excel, Wiley, First Edition.
- Etzel, M. J., Walker, B. J., Stanton, W. J., & Pandit, A. (2010). Marketing (14th ed.). Mc Graw Hill.
- Grewal, D., & Levy, M. (2022). Marketing (8th ed.). McGraw-Hill Education.
- Kapoor, N. (2021) Principles of Marketing, Prentice Hall of India.
- Kotler, P., Keller, K L., & Chernev, A. (2022). Marketing Management (16th Edition).
- Pearson Education.
- Kotler, P., Armstrong, G. & Agnihotri, P. (2018). Principles of Marketing (17th
- Edition), Pearson Education. Indian edition.
- Sharma, K., & Swati Aggarwal. (2021). Principles of Marketing. Taxmann Publications.

Notes:

1. Latest edition of the readings may be used.
2. Relevant software will be used for pedagogical purpose. Evaluation of practical exercise using software will be part of internal assessment. Further, case studies related to above topics are required to be discussed.
3. Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

Master of Business Administration (Business Analytics)

MBA (BA)
Semester III

Marks: 100 **Duration-60 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Financial Analytics MBABACC306	4	3	0	1	**Pass in Graduation**	**NIL**

Learning Objectives

The objective of this course is to develop financial data analytical skills in students. The course will enable students to arrive at diversified and optimum financial decisions analytically.

Learning outcomes

After completion of the course, learners will be able to:

1. understand role of analytics in finance.
2. develop knowledge about business valuation and types of methods used in valuation.
3. apply predictive modelling techniques in analyzing financial data for decision making.
4. understand derivative pricing and role of real options in business decisions.
5. develop a sound investment strategy considering market and credit risk.

SYLLABUS

Unit-I - Introduction to Financial Analytics (5 hours): Definition, relevance and scope financial Analytics, recent trends in financial analytics, Concept of Primary Data and Secondary Data, Concept of Supervised and Unsupervised learning.

Unit-II - Business Valuation Analytics (15 hours): Financial and Cost Modelling using Spreadsheets, Company Business Model Analysis, Company Profitability Analysis, Product Profitability Analysis, Financial Statements and Projections - Discounted Cash Flow Analysis, Comparable Company Analysis, Precedent Transactions Analysis etc.

Unit-III - Predictive Analysis in Finance (10 hours): Simple linear regression: coefficient of determination, significance tests, residual analysis, confidence and prediction intervals. Multiple linear regression: coefficient of multiple coefficients of determination, interpretation of regression coefficients, categorical variables, heteroscedasticity, multi-collinearity, outliers, autoregression and transformation of variables, stock prices forecasting models using machine learning

Unit-IV - Derivative Pricing (15 hours): Issues regarding derivative markets, Brownian motion, Black-Sholes model, Monte-Carlo simulation. Use of real options for better financial decisions- Growth (or expansion) options, Abandonment options, Investment timing options and flexibility (input/output) options.

Unit-V - Portfolio Analytics (15 hours): Modelling Volatility and Risk: Characteristics of volatility. Modelling volatility using ARCH/GARCH models. Measuring and modelling risk. application of Value at Risk (VaR), building an optimum portfolio. develop a sound investment strategy considering market and credit risk. Credit Risk Modelling-Firm wide Risk, Business Risk, Non-Business Risk, building blocks of making a credit default model, Statistical Models in Credit Risk Measurement.

Practical Exercises:

1. Financial and Cost Modelling using Spreadsheets
2. Multiple linear regression
3. Use of real options for better financial decisions
4. Modelling Volatility and Risk.
5. Modelling volatility using ARCH/GARCH models.
6. Apply predictive and prescriptive analytics to solve financial problems.

Essential/ Recommended readings

- Liu, S., & Sathye, M (2021). Financial Statistics and Data Analytics, (Eds.)
- https://doi.org/10.3390/books978-3-03943-976-8
- James, E.R. (2017). Business Analytics. UK: Pearson Education Limited.
- Hull, J. C., & Basu, S. (2022). *Options futures and other derivatives*. 11th Edition Pearson Education India.
- Brigham, E. F., & Houston, J. F. (2021). *Fundamentals of financial management*. 16th Edition Cengage Learning.
- Gujarati, D., Porter, D., & Gunasekar, S., *Basic Econometrics* 5th Ed, McGraw Hill Education
- Brooks, C., *Introductory Econometrics for Finance* 3rd Ed, Cambridge University Press
- Wooldridge, J., *Introductory Econometrics – A Modern Approach* 5th Ed, South Western Publication

Note: Readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Master of Business Administration (Business Analytics)

MBA (BA)
Semester III

Course MBABACC307: SUMMER INTERNSHIP PROJECT REPORT

Marks: 50 Duration-30 Hrs.

OPEN ELECTIVE COURSES

Master of Business Administration (Business Analytics)

MBA (BA)
Semester III

Marks: 100 **Duration-60 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Skills and Techniques of Accounting **COMOE03**	**4**	**3**	**0**	**1**	**Pass in Graduation**	**NIL**

Learning Objectives

To impart skills of maintaining and recording various kinds of business transactions and accounting information using computerized accounting software.

Learning Outcomes

After completion of the course, learners will be able to:

- Evaluate the application of relevant accounting standards and Ind AS in the preparation of financial statements.
- Analyze the manual and computerized accounting system environment.
- Generate financial statements using Tally.
- Generate Bank Reconciliation Statements using Tally.
- Analyze the concept and applications of payroll accounting in managerial decision making.

Unit I: Introduction to Accounting Standards (10 Hours)

Relevance of accounting standards and Ind AS in the preparation of financial statements with special emphasis on Inventories; Property, Plant and Equipment; Leases; Statement of Cash Flows.

Unit II: Computerized Accounting System (10 Hours)

Introduction to accounting; Concept of computerized accounting system, advantages and disadvantages of computerized accounting system.

Unit III: Accounting in Tally (20 Hours)

Introduction, company creation, vouchers creation, transactions recording, outstanding report of customers and suppliers.

Maintaining inventory details, creation of price list, godowns detail, warn on negative stock and cash balance, maintaining bill wise details.

Generating various financial statements and reports- balance sheet, profit and loss account, funds flow statement, cash flow statement, day book, account book, inventory books, trial balance, exception reports.

Basics of GST in Tally- purchase and sales of goods entry for GST purpose; Single and multiple tax rate entries; Service tax entry; Use of GST classification; Entries related to reverse charge mechanism; GST on packing charge and discount in sales purchase entry; Entry for cess based on value and quantity; Application of GST for selling single item at different prices; Entry for ineligible ITC.

Unit IV: Bank Reconciliation Statement (10 Hours)

Concept of bank reconciliation statement, need of bank reconciliation statement; Bank Reconciliation Statements using tally.

Unit V: Payroll Accounting (10 Hours)

Concept and uses of payroll accounting; Payroll accounting using tally.

Note: Case-based analysis and relevant software will be used for pedagogical purposes. Evaluation of practical exercise using software will be part of internal assessment.

Practical Exercise:

The learners are required to:

1. Download the financial statements of any publicly listed company. Evaluate the application of relevant accounting standards and Ind As in the preparation of these financial statements.

2. Compare and contrast the computerized accounting system of any 2 firms operating in different industries.

3. For any hypothetical firm, make appropriate entries and generate financial statements using Tally.

4. For any hypothetical firm, make appropriate entries and generate bank reconciliation statements using Tally.

5. Create a hypothetical payroll solutions system for any firm.

Suggested Readings:

- Goyal, V. K. & Goyal, R. (2013). *Financial Accounting*. PHI Learning Pvt. Ltd.
- Tally Education Private Limited: Computerized Accounting Using Tally.ERP9
- Schroeder, Richard G., Clark, Myrtle W. & Cathey, Jack M. (2005). *Financial Accounting Theory and Analysis, Text Readings and Cases*. John Wiley and Sons.
- Tally Education Private Limited: GST using Tally ERP 9

Note: Readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Master of Business Administration (Business Analytics)

MBA (BA)
Semester III

Marks: 100 **Duration-60 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Business Analysis Using Financial Statements **COMOE04**	**4**	**3**	**0**	**1**	**Pass in Graduation**	**NIL**

Learning Objectives

To enable students, through analysis of financial statements, to identify the imperfections in the financial statements and frame strategic action and to gain knowledge of the application of valuation principles and techniques in business environment.

Learning Outcomes

After completion of the course, learners will be able to:

- Analyze and interpret the quantitative information provided in the Financial Statements of a company.
- Evaluate the firm's performance and position by analyzing the cash flow statement and earnings quality.
- Compute and analyze accounting ratios of a company;
- Apply different business valuation models
- Apply valuation principles and techniques in the business environment to make valuation estimates.

Syllabus:

Unit I: The Framework for doing Business Analysis using Financial Statements (10 Hours)

The analysis of the statement of shareholders' equity- the analyst's checklist, reformulating the statement of owners' equity, comprehensive income reporting, financial analysis – ratio analysis and report writing.

Unit II: The Analysis of the Balance Sheet and Income Statement (10 Hours)

The analyst's checklist, reformulation of the balance sheet, reformulation of the income statement- tax allocation, issues in reformulating income statements, comparative analysis of the balance sheet and income statement (common size analysis, trend analysis), the analysis of cash flow statement and quality of earnings.

Unit III: The Analysis of Profitability (10 Hours)

Du Point analysis, cutting to the core of operations (the analysis of profitability); Analysis of changes in profitability and sustainable earnings.

Unit IV: Business Valuation Basics (15 Hours)

Principles and techniques of valuation – DCF, multiple methods, accounting based valuation, asset valuation; Earning valuation; Cash flow valuation; Other valuation basis, forms of intellectual property and methods of valuation, human resource accounting.

Unit V: Valuation of Assets and Liabilities (15 Hours)

Valuation of fixed assets, valuation of inventories, valuation of investments, valuation of share, valuation of goodwill, patents and copyrights, valuation of real estate, valuation of liabilities.

Note: Case-based analysis and relevant software will be used for pedagogical purposes. Evaluation of practical exercise using software will be part of internal assessment.

Practical Exercise:

The learners are required to:

1. Download annual reports of reputed companies from the websites and analyze the information contained in the financial statements.
2. Prepare cash flow statement from the information available in the financial statements.
3. Select any 5 companies. From their financial statements compute accounting ratios to examine operating efficiency, profitability, liquidity, and solvency of the company.
4. Estimate the value of any company by employing different valuation methods.
5. Select any company. Estimate the value of its tangible/intangible assets and liabilities from the information available in its financial statements.

Suggested Readings:

- Barker, Richard (2001). *Determining value: Valuation Models and Financial Statements*. Financial Times/Prentice Hall.
- Damodaran, Aswath (2008). *Damodaran on Valuation: Security Analysis for Investment and Corporate Finance*. Wiley.
- Fridson, Martin S. & Alvarez, Fernando (2011). *Financial Statement Analysis: A Practitioner's Guide*
- (Wiley Finance Book 597)
- Palepu (2015). *Healy Business Analysis using financial statements*. Cengage Learning.
- Penman, Stephen H. (2017). *Financial Statement Analysis and Security Valuation*. McGraw Higher Ed.
- Wahlen, J., Baginski, S. & Bradshaw, M. (2015). *Financial Reporting, Financial Statement Analysis, and Valuation: A Strategic Perspective*. Cengage Learning.
- White, Gerald I., Sondhi, Ashinpaul C. & Fried, Dov. (2003). *The Analysis and Use of Financial Statement.* Wiley.

Note: Readings will be updated by the Department of Commerce and uploaded on the Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Master of Business Administration (Business Analytics)

MBA (BA)
Semester III

Marks: 100 **Duration: 60Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Financial Markets and Institutions COMOE08	**4**	**4**	**0**	**0**	**Pass in Graduation**	**NIL**

Learning Objectives

The course aims to provide students a critical overview of the financial system to help them understand the role of financial institutions and financial markets in the global context with special emphasis on financial stability.

Learning Outcomes

After completion of the course, learners will be able to:

1. Examine the meaning, components and functions of a financial system.
2. Analyze the impact of different factors on interest rate; the shape and relevance of the yield curve.
3. Analyze the functioning of money and capital markets and the challenges associated with their regulation.
4. Examine the role and relevance of different types of non depository institutions like mutual funds, pension funds, insurance, venture capital, private equity, hedge funds and their regulation.
5. Assess the functioning of banks, analyze their balance sheets and off balance sheet activities and critically examine banking regulation.

Syllabus

Unit I : Introduction (8 Hours)

Overview of financial markets and financial instruments, role of financial institutions, depository and non-depository institutions, consolidation & competition among financial institutions, financial conglomerates.

Overview of the Indian financial system including financial sector reforms; Other contemporary issues in finance.

Unit II: Interest Rate (12 Hours)

Loanable funds theory; Economic forces affecting interest rates; Factors affecting yield differentials of debt instruments; Term structure of interest rates- pure expectations theory, liquidity premium theory, segmented markets theory & preferred habitat theory, yield curve. Monetary policy and its transmission.

Unit III: Financial Markets (12 Hours)

Money markets-organization, economic role, instruments & regulation; Capital markets- primary & secondary markets and their organization; Different types of market structures, short selling and its implications, buying on margin; Stock market indicators, their methods of computation and implications of the same; Security market regulation and stability.

Unit IV: Non Depository Institutions (13 Hours)

Mutual funds- types of mutual funds schemes, ETFs, expenses associated with mutual funds; An overview of Indian mutual funds industry; Hedge funds, venture capital funds, private equity funds;Fintech; Regulation.

Pension Funds- issues in saving for retirement & role of the financial system; Defined benefit & defined contribution pension plans, pension funds as financial intermediaries and their regulation; An overview of Indian pension fund industry including national pension system.

Insurance- Incentive problems in insurance-moral hazard & adverse selection, pure premium, premium smoothing etc. reinsurance, catastrophe insurance, captive insurance; Regulation; An overview of the Indian insurance industry.

Unit V: Banking (15 Hours)

An overview of the banking industry, balance sheet of a bank, sources & uses of funds of banks, fee based & off balance sheet activities; Securitization; Bank earnings & bank performance, investment banking; Bank failure & regulation; Reasons for banks being heavily regulated, bank run, deposit insurance, capital adequacy regulation, bank examination etc. A critique of the Basel norms, The problem of moral hazard & too big to fail institutions; RBI and its policy evolution.

Practical Exercise –

The learners are required to –

1. Identify one Indian and one global financial conglomerate and examine their genesis and evolution.
2. Compare the yield curve of India, another developing country and a developed country. Analyze the reasons for similarities and differences.
3. Pick three leading stock market indices in the world, analyse their method of computation, reasons behind the differences and their implications.
4. Analyze the global reinsurance industry, its main players and recent trends.
5. Identify one global systemically important financial institution (G-SIFI), and one domestic systemically important financial institution (D- SIFI) and compare their functioning through their balance sheets and other information.

Suggested Readings:

- *Annual Report*. Insurance Regulatory and Development Authority.
- *Annual Report*. Pension Fund Regulatory and Development Authority.

- *Annual Report*. Securities and Exchange Board of India.
- Fabozzi, F., Modigliani, F. & Jones, F. (2013). *Foundations of Financial Markets and Institutions*. Pearson.
- Kidwell, D., Blackwell, D., Whidbee, D. & Sias, R. (2016). *Financial Institutions Markets and Money*. Wiley
- Kohn, M. (2004). *Financial Institutions and Markets.* Oxford University Press.
- Madura, J. (2014). *Financial Markets and Institutions*. Cengage.
- Mishkin, F.S. (2015). *The Economics of Money Banking and Financial Markets*. Pearson.
- Mohan, R. & Ray, P. (2017). *Indian Financial Sector: Structure, Trends and Turns*. IMF Working Papers.
- Patil, R.H. (2006). *Current State of the Indian Capital Market*. Economic and Political Weekly.
- *Report on Trend and Progress of Banking in India.* Reserve Bank of India Speeches, Reserve Bank of India.

Note: Readings will be updated by the Department of Commerce and uploaded on the Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

MBA (BA)
Semester III

Marks: 100 **Duration-60 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Planning For Personal Finance **COMOE09**	**4**	**3**	**0**	**1**	**Pass in Graduation**	**NIL**

Learning Objectives

To enable critical thinking in students with respect to analysis and application of innovative solutions to varied financial problems.

Learning outcomes

After completion of the course, learners will be able to:

- Evaluate the premise of financial planning and identify financial goals.
- Critically evaluate the investment instruments suitable for different financial goals in different time spans.
- Analyze the investment process in the primary market.
- Evaluate different avenues for credit planning, retirement planning as well as estate planning.
- Evaluate different investment alternatives and create financial plans.

SYLLABUS:

Unit I: Financial Planning & Investment Environment (14 Hours)

Financial planning process and life cycle approach, ascertainment of financial goals; Application of investment alternatives in financial plans – including Mutual Funds, Index Funds, ETF, Real Estate Investment Trusts (Reits),Infrastructure Investment Trust (Invits), SIP/SWP/STP, Management of Direct Investments in all instruments

Unit II: Diversity in Financial Planning: **(16 Hours)**

Planning for life insurance and health insurance; Primary clauses in life and healthcare insurance agreement; Application of Compounding and Indexing; Critical Analysis of instruments based on CAGR of return,

Identification of Common Stocks with Uncommon Profits; Identification of Competitive Durable Advantage of Equity; Equity with Moat; Principles and variables of Value investing system, Balancing Debt and Equity.

Unit III: Investment in Primary Market: (8 Hours)

Concept of Initial Public Offer (IPO), FPO, Offer for sale, Private Placement; IPO Process; Evaluating IPO for investment or listing gains, Categories of IPO: Traditional and Contemporary. Debt instruments.

Unit IV: Credit & Retirement Planning: (10 Hours)

Assessment of credit; Consumer and housing finance; EMI : Calculations & Long term Impact, Rent or buy decisions of house property, Optimal use of education loan, Credit card management; Overdraft protection, Credit history, Retirement solutions, Analysis of retirement planning, pension plans including taxes and inflation, Reverse mortgage ; Estate planning- Objectives of will, creating a valid will; Power of attorney.

Unit V: Building Financial Plans: (12 Hours)

Critical analysis of investments; Insurance and Tax saving Instruments; Risk assessment of individual; Building financial plans using spreadsheets; Evaluation of financial plan.

Note: Relevant software will be used for pedagogical purposes. Evaluation of practical exercise (if any) using software will be part of internal assessment.

Practical Exercises:

The learners are required to-

1. Collect newspaper articles to observe the latest and trending investment alternatives preferred by the investors and identify the reasons thereof.
2. Visit a bank of their choice. Prepare a presentation on various investment alternatives and services provided by that bank and suitability of these alternatives with respect to financial goals.
3. Prepare a report on changes that took place in health and life insurance policies post COVID 19.
4. Discuss the functions of an investment banker in the IPO process in a group discussion.
5. Build financial plans for your family members post retirement. Identify different financial instruments that they should invest in for meeting their financial needs after retirement.
6. Based on your financial goals, prepare a hypothetical financial plan using various investment alternatives.

Suggested Readings:

- Buffet. Marry and Clark. David. (2011).*Warren Buffett and the Interpretation of Financial Statement.*
- Fisher. A. Philip. (2010). *Common Stocks and Uncommon Profits*. Wiley.
- Graham, Benjamin. (2017).*The Intelligent Investor*, 6th Edition.
- Keown, A J. (2017). *Personal Finance – Turning money into wealth*. Pearson Publication.
- Khurshed, Arif. (2016). *„Initial Public Offerings: The mechanics and performance of IPOs'*, Harriman House Publishing.

- Madura, Jeff. (2016).*Personal Finance*, 6th Edition. Pearson.
- Soota, Ashok and Gopalan, S.R. (2012). *„Entrepreneurship Simplified: From Idea to IPO'*. Penguin Random House India.
- Spier Guy. (2014).*The Education of Value Investor*.Palgrave.

Additional Resources:

www.marketsmojo.com
www.moneycontrol.com
www.valueresearch.com
www.yahoofinance.com

Note: Case studies on the above topics are required to be discussed.

Note: Readings will be updated by the Department of Commerce and uploaded on the Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

MBA (BA)
Semester III

Marks: 100 **Duration-60 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Investment Management **COMOE10**	4	3	0	1	**Pass in Graduation**	**NIL**

Learning Objectives

To equip the students with essential tools, techniques, models, and investment theory necessary to analyze securities and portfolios so as to make sound investment decisions and optimal portfolio choice.

Learning outcomes

After completion of the course, learners will be able to:

- Analyze the investment environment and assess risk-return trade off in case of financial investments
- Evaluate the risk and yields of bonds and perform bond valuation.
- Analyze equity stocks using different approaches and models.
- Construct, analyze, select, and evaluate portfolios along with a deep understanding of capital
- market theory and associated models.
- Analyze futures and options, use various options trading strategies and critically examine various
- innovations in the derivatives market.

SYLLABUS

Unit I: Introduction (8 Hours)

The investment environment, various investment alternatives and risk return trade off; Investment decision process; Risk aversion; Types of investors; Risk-return analysis and impact of taxes and inflation; Types and sources of returns and risks and their measurement; Diversification and hedging; Socially responsible investing, ethical investing and other contemporary issues in investment management.

Unit II: Bond Analysis (10 Hours)

Bond fundamentals; Types of bonds; Innovations in bond market; Valuation of bonds; Bond yields (yield to maturity, yield to call, realized annual yield); Bond price- yield relationship; Bond convexity; Risks in bonds.

Unit III: Equity Analysis (12 Hours)

Approaches to security valuation; Fundamental analysis- Economy, Industry, Company Analysis (EIC framework); Equity valuation models (DDM, P/E Ratio model and free cash flow valuation approach); Technical analysis – basic premise and Dow theory; Types of charts and chart patterns; Moving average analysis; Market indicators and stock specific indicators including Bollinger bands; Odd lot theory; Efficient Market Hypothesis (EMH); Forms of market efficiency and their implications.

Unit IV:Portfolio Analysis, Selection and Management (16 Hours)

The concept and significance of portfolio; Types of Portfolio; Calculation of portfolio return and risk; Risk aversion; Optimal Portfolio Selection and Construction: Markowitz portfolio selection model, Sharpe's single index model and optimal portfolio construction, Capital Market Theory (including Separation Theorem), Capital Asset Pricing Model (CAPM); Stock market anomalies (size effect, value effect, seasonality effect, prior return effect, overreaction effect); Active and passive portfolio management; Investment strategies- value investing, momentum and contrarian strategies.

Unit V: Financial Derivatives (14 Hours)

Futures- features, types and payoffs; Pricing of financial futures (cost of carry model); Options- features, types, styles, payoffs and valuation (Black- Scholes option pricing model).Options trading strategies- bull spread, bear spread, straddle and butterfly spread; Exotic options and other innovations in derivatives market including swaps.

Note: Relevant software will be used for pedagogical purposes. Evaluation of practical exercise (if any) using software will be part of internal assessment.

Practical Exercises:

The learners are required to:

1. Extract historical data on daily/monthly/annual prices for stocks in an index from a financial database. Evaluate them in terms of risk and return using an appropriate software.
2. Participate in a group discussion on 'Verifying the existence of Bond price – yield relationship in today's times with real life examples'.
3. Estimate the Yield-to-Maturity, Duration, and Convexity of a corporate bond using relevant software.
4. Apply moving average analysis on the stock price of any company. Evaluate whether to buy, sell or hold the stock for one month using spreadsheets. Further, learners are also required to assess their decision after one month of decision making.
5. a) Draft a case study to devise an investment strategy for yourself in the short term, based on your risk aversion level.
   b) Prepare a presentation to demonstrate real-life examples of stock market anomalies.
6. Select any 5 companies of your choice. Using appropriate models, forecast their future cash flows, growth rate and cost of capital. Estimate the intrinsic value of stocks of these companies using relevant software.

7. Select any 5 stocks of your choice. Extract past data on their prices and volumes from a financial database. Make investment decisions using appropriate technical analysis tools and techniques. Use any technical analysis software for this purpose.
8. Construct portfolios based on any firm attribute using past data on NSE 500 stocks. Assess the profitability of this investment strategy. Evaluate if the returns on this strategy are explained by standard risk models such as CAPM and F-F Model. Use relevant software for your estimations.
9. Build and analyze option strategies for Index and Stock options using any option building analytical tool.

Suggested Readings:

- Bodie, et al. (2020). *Investments.* McGraw Hill.
- Chandra, P. (2021). *Investment Analysis and Portfolio Management*. Tata McGraw Hill.
- Elton, E. & Gruber (2014). *Modern Portfolio Theory and Investment Analysis*. John Wiley and Sons.
- Fischer, Donald E. & Ronald J. Jordan (2018). *Security Analysis and Portfolio Management*. PHI Learning.
- Hull, J.C. & Basu (2016). *Options*, *Futures and Other Derivatives*. Pearson.
- Mayo, Herbert B. (2006). *Investments*. Thomson South Western.
- Reilly, Frank K. & Brown, Keith C. (2012). *Investment Analysis and Portfolio Management*. Cengage Learning.
- Sharpe, William F. & Alexander, Gordon J. (2002). *Investments*. PHI Learning.
- Tripathi, V. (2019). *Security Analysis and Portfolio Management.* Taxmann.

Additional Resources:

Videos of Eugene Fama on the Topic "The History of the Efficient Market Hypothesis" (from American Finance Association‟s website www.afajof.org)

Note: Readings will be updated by the Department of Commerce and uploaded on the Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Master of Business Administration (Business Analytics)

MBA (BA)

Semester III

Marks: 100 **Duration-60 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Project Management (PM)-I COMOE11	4	3	1	0	**Pass in Graduation**	**NIL**

Learning Objective

The objective of the course is that students will be able to approach project management in the right perspective and understand all the essential concepts from both a theoretical and applied point of view.

Learning outcomes

After completion of the course, learners will be able to:

- Identify the elements of the PM life cycle, including plan, control, and organize and allocate resources.
- Analyze PM processes, Comprehend and become familiar with the use of basic tools and techniques to plan, organize, and manage a project
- Develop PM plan and managing project changes
- Establish appropriate project governance structure and how to deal with issues linked to PM.
- Discuss the various management issues in project governance

Syllabus

Unit I: Understanding Project Management (10 Hours)

Defining Project and Project Management: The project manager's role; Internal and external environment; Project structures; Project and product life cycles and PM processes

Unit II: Plan and manage project compliance (12 Hours)

Confirm project compliance requirements (e.g., security, health and safety, regulatory compliance) , Classify compliance categories , Determine potential threats to compliance

Analyze the consequences of noncompliance, Determine necessary approach and action to address compliance needs (e.g., risk, legal) The Project Management Office Rationale, Mission, goals and strategy, Financial analysis (Projections)

Evaluate project benefits and value

Investigate that benefits identified, Evaluate delivery options to demonstrate value and appraise stakeholders of value gain progress, Evaluate and address external business environment changes for impact on scope Survey changes to external business environment (e.g., regulations, technology, geopolitical, market), Assess and prioritize impact on project scope/backlog based on changes in external business environment

Unit III: Project Plan and Manage Project Change (13 Hours)

Preparation of PM Plan, Charter, Project justification, specifications nd constraints, limits, technical requirements, statement of work & Priority matrix, Work-Breakdown Structure, Graphical Vs outline format, work packages, log frame structure, learning of Log-framework structure on Open software.

Managing Project change in terms of scope, Executing change management strategy, Develop and determine change response to move forward.

Unit IV: Cost Estimation, Stakeholder engagement and Determining milestones (13 Hours)

Top-down and Bottom-up approach, parametric estimation, budget & contingencies, Stakeholder Engagement, identify stakeholders, manage stakeholders expectations, communication tools required.

Estimate project tasks (milestones, dependencies, story points), prepare schedule based on methodology, determine quality of products/ deliverables, identify quality gaps and mitigate them.

Unit V: Establish project governance structure (12 Hours)

Determine appropriate governance for a project (e.g., replicate organizational governance)
Define escalation paths and thresholds. Manage project issues. Recognize when a risk becomes an issue. Attack the issue with the optimal action to achieve project success. Collaborate with relevant stakeholders on the approach to resolve the issues. Plan and manage project/phase closure or transitions. Determine criteria to successfully close the project or phase. Validate readiness for transition (e.g., to operations team or next phase). Conclude activities to close out project or phase (e.g., final lessons learned, retrospective, procurement, financials, and resources)

Practical Exercises

The learners are required to:

1. Identify the stages of the project lifecycle and the different tools and techniques used in each stage
2. Develop and evaluate project plans on the basis of timing, cost and risk
3. Explore the project management process and how this is applied in the workplace.
4. Explain the criteria to successfully close the project or phase
5. Highlight the appropriate governance for a project through a case study

Suggested Readings

- Berkun, S. (2005). *The art of project management* (pp. I-XII). O'reilly.
- Larson, E., & Gray, C. (2014). *Project Management: The Managerial Process 6e*. McGraw Hill.
- Pinto, J. K. (2013). *Project management: achieving competitive advantage* (No. s 57). Boston, MA: Pearson.
- Horine, G. (2013). *Project management: Absolute beginner's guide*. Pearson Education.
- Wysocki, R. K. (2011). *Effective project management: traditional, agile, extreme*. John Wiley & Sons.

Master of Business Administration (Business Analytics)

MBA (BA)
Semester III

Marks: 100 **Duration-60 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
International Financial Management **COMOE12**	4	3	1	0	**Graduation in any field**	**NIL**

Course Objective:

To equip students with an understanding of the international financial system, its evolution and growing importance as well as challenges thrown up by increasing globalization of finance.

Learning Outcomes:

After completion of the course, learners will be able to:

- understand the relevance and implications of global imbalances.
- evaluate the factors affecting exchange rates and the inter linkages among them.
- analyse the evolution of the international monetary system both in terms of historical construct and its implications for the contemporary system.
- discuss the evolution and spread of international financial markets and the implications of globalized finance.
- evaluate the causes and consequences of financial crises in both developing and developed countries, the similarities and differences between the crises and implications of different ways of handling the crisis.

Syllabus:

Unit I-Introduction: (12 Hours)
Globalization and the multinational enterprise (MNE); Environment of International Financial Management; Complexities and issues in financial decision making of MNEs; Decisions in a global setting; Foreign Exchange Market- Spot and Forward market; Participants in foreign exchange market; Arbitrage, hedging and speculation; Covered interest rate arbitrage; Contemporary issues in international financial management.

Unit II-Cross-Border Investment Decision: (12 Hours)
Types of and issues in cross border investment decision; Green field investment vs. cross border M&As; Estimation of cash flows from cross border investment projects; Valuation techniques including adjusted present value method; Risks in cross border investment decision-currency risk, political risk, country risk, inflation risk etc; Techniques for incorporating risks in cross border investment decision.

Unit III-Working Capital Management in MNEs: (12 Hours)
International Cash management, International Inventory management and International receivables management;

International capital structure and cost of capital; Determinants of capital structure of MNEs; Dividend decision and policies of MNEs; International transfer pricing.

Unit IV-Managing currency Risk and Interest Rate Risk: (12 Hours)
Types of risk exposure - Transaction exposure, Economic exposure and Translation exposure; Measurement of risk exposure; Management of currency risk using currency forwards and futures, currency options and currency swaps; Assessment of interest rate risk; Management of interest rate risk using Interest rate futures, interest rate swaps and other financial swaps.

Unit V-International Diversification and Portfolio Investment: (12 Hours)
Global markets for equities; Risk factors in international investing; International diversification-risk and return aspects; International CAPM assuming no differences in consumption and no barriers to investment as well as assuming such differences; Identification of optimum portfolio; International Capital Market.

Practical Exercises:

The learners are required to:

1. trace the evolution of international financial markets by collecting historical data.
2. test the presence of efficient market hypothesis in the exchange market.
3. evaluate the exchange rate India with US dollar and British pound with the help of fixed exchange rate.
4. create a portfolio of four international bonds and four international stock and compute the portfolio return and risk.
5. make a comparative analysis of the Basel Norms issued till date for baking regulation and operations.

Essential/ Recommended readings

Readings

- Eun, C. & Resnick, B. (2017). *International Financial Management.* McGraw Hill/Irwin Series in Finance Insurance and Real Estate.
- Krugman, P., Obstfeld, M., Melitz, M. (2017). *International Economics-Theory and Policy*. Pearson.
- Madura, J. (2017). *International Financial Management.* Cengage.
- Mishkin, F.S. (2015). *The Economics of Money Banking and Financial Markets.* Pearson.

Note: Readings will be updated by the Department of Commerce and uploaded on the Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Master of Business Administration (Business Analytics)

MBA (BA)
Semester III

Marks: 100 **Duration-60 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (If any)
		Lecture	Tutorial	Practical/ Practice		
Start UP-1 **COMOE13**	**4**	**3**	**0**	**1**	**Pass in Graduation**	**NIL**

Learning Objectives

To understand new venture creation opportunities, its resources, and requirements for Enterprise Start-up.

Learning outcomes

After completion of the course, learners will be able to:

- develop a start-up Enterprise with Big Idea Generation.
- evaluate the requisite start-up capital requirements within the prevailing entrepreneurial eco-system.
- undertake feasibility Analysis of available funding sources.
- strategize growth of business at every stage of venture operation and scaling up.
- manage financial stability and carry plan on expansion possibilities

SYLLABUS

Unit I: Start-up opportunities: (10 Hours)

The New Industrial Revolution – The Big Idea- Generate Ideas with Brainstorming- Business Start-up - Ideation- Pitching your business and yourself;
Venture Choices - The Rise of the startup Economy - The Six Forces of Change- The Start-up Equation – The Entrepreneurial Ecosystem – Entrepreneurship in India. Government Initiatives: Ease of Doing Business (EOD), Atmanirbhar Bharat and Make in India (In the Context of Startup facilitation).

Unit II: Startup Operations: (10 Hours)

Launching a startup: Pre-requisites to start. Factors to be considered before launching a startup; Identifying Startup capital Sources; estimating Startup cash requirements; Developing a financial model; Constructing a Process Map; - Positioning the venture in the value chain; Analyzing the Risk-benefits tradeoff, Drawing a startup life cycle.

Unit III: Management of Starting up Finances: (12 Hours)

Feasibility Analysis of various sources - The cost and process of raising capital – Unique funding issues of a high-tech ventures - Funding with Equity – Financing with Debt- Funding startups with bootstrapping- crowd funding- strategic alliances with sources such as Angel capital. Venture capital and seed capital providers; Financial ecosystem in the country: various MSME dedicated schemes, (discussion on types of start-ups in the last two decades)

Unit IV: Start-up Survival and Growth: (14 Hours)

Stages of growth in a new venture- Growing with the market - Growing within the industry- Venture life patterns with sustainable strategies at various stages of life-growth cycle- Reasons for new venture failures- Scaling Ventures – preparing for change - Leadership succession. Institutional support mechanisms- private and public for growth and survival of the venture.

Unit V: Planning for Harvest and Exit: (14 Hours)

Managing Failure for sustenance; Recouping strategies: Bankruptcy, Exit Strategies- Selling the business - Cashing out but staying in-being acquired- Going Public (IPO) – Liquidation. (Discussion on the real-life examples of failed start-ups and their poor valuation- case study of Paytm, Ola, Meesho etc.)

Practical Exercise:

The learners are required to:

1) to understand how to create a financial model for a startup business
2) to leverage financial modeling to make better business decisions and create a business plan for a business idea
3) Working on a real business case, we will be implementing the theory to develop the go to market strategy, using collaborative online templates in real time.
4) To evaluate the managerial problems of new enterprises: production, financing and labour and marketing problems
5) Analyse the economic costs and benefits of startups
6) Evaluate the process of becoming a start-up with current trends and Regulatory environment

Essential/ Recommended readings

Suggested Readings:

- Kathleen R Allen, Launching New Ventures, An Entrepreneurial Approach, Cengage Learning, 2016.
- Anjan Rai Chaudhuri, Managing New Ventures Concepts and Cases, Prentice Hall International, 2010.
- S. R. Bhowmik& M. Bhowmik, Entrepreneurship, New Age International, 2007.

- Steven Fisher, Ja-nae' Duane, The Startup Equation -A Visual Guidebook for Building Your Startup, Indian Edition, Mc Graw Hill Education India Pvt. Ltd, 2016.
- Donald F Kuratko, Jeffrey S. Hornsby, New Venture Management: The Entrepreneur's Road Map, 2e, Routledge, 2017.
- Vijay Sathe, Corporate Entrepreneurship, 1e, Cambridge, 2009

Note: Readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Master of Business Administration (Business Analytics)

MBA (BA)

Semester III

Marks: 100 **Duration-60 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Enterprise Risk Management COMOE14	**4**	**4**	**0**	**0**	**Pass in Graduation**	**NIL**

Learning Objectives

The course aims to familiarize the learner with comprehensive and all-inclusive risk management framework that can stop corporates disasters, save reputation, provide competitive advantages and yield intangibles benefits.

Learning outcomes

After completion of the course, learners will be able to:

- Analyze various types of risks that exist across the entire enterprise;
- Evaluate the key stages in the risk management process
- Discuss the impact of risks on operations and mission/goals
- Outline the key characteristics of the COSO ERM framework
- Evaluate and develop responses of various mitigation plans;
- Analyze the approaches for monitoring & scanning of emerging risks, and importance of insurance.

SYLLABUS

Unit I: Introduction to risk & ERM (8 Hours)

Different approaches to define risk; Impact of risk; Components of enterprise risk management; Principles and aims of risk management; Benefits of ERM; Current issues and emerging best practices in enterprise risk management, case study of business failure

Unit II: Implementing ERM (16 Hours)

General risk management standards; Alternative risk management approaches; Stages in the risk management process; Characteristics of the COSO ERM framework; ERM implementation best practices; Challenges of ERM;

Unit III: Risk assessment (12 Hours)

Introduction and importance of risk identification; Techniques of Risk assessment & comparison of different techniques; Classification of risk; life cycle of risk; tools for identifying and managing risk;

Unit IV: Risk analysis and evaluation (16 Hours)

Introduction to risk analysis; Risk likelihood and its impact; Risk tolerance Vs. Strategic goals; Loss control; Alternative approaches to define the upside of risk application of these approaches for strategies, projects and operations

Unit V: Mitigation of risk (8 Hours)

Introduction to risk treatment and risk response; The 4Ts of response mechanism; Risk control techniques (PCDD); Control of crucial operational & financial risks; Monitoring and reviewing the risk management process; Importance of insurance for the transfer of risk; Business continuity planning.

Practical Exercises:

The learners are required to:

1. Prepare a comparative risk profile for different types of industries.
2. Prepare a COSO cube diagram for any company of your choice.
3. Creating a heat map of risks and identifying unacceptable risks for any company of your choice.
4. Demonstrate various types of responses that are suitable for different types of risk for any two Industries of your choice and make a comparison.
5. Development of a risk assessment tool for a start-up.

Essential/ Recommended readings

References

- Jean-Paul Louisot &Christopher H. Ketcham (2014) *ERM - Enterprise Risk Management: Issues and Cases*, Wiley

- David L Olson, Desheng Dash Wu (2020), *Enterprise Risk Management*, World Scientific; Second Edition

- Lam J, *Enterprise Risk Management, - From Incentives to Controls*, Wiley & Sons Inc; Second Edition

· Douglas W. Hubbard, *The Failure of Risk Management*, Wiley; Second edition

· Paul Hopkin (2018), Fundamentals *of Risk Management*, Kogan Page

· George E Rejda (2019), *Principles of Risk Management and Insurance*, Pearson; 14th edition

Master in Business Analytics
MBA(BA)
Semester-III

Marks: 100 **Duration-60 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
World Law Prospects **COMOE15**	4	3	0	1	**Pass in Graduation**	**NIL**

Learning Objectives

The course aims to familiarize the learner with the philosophy and practice of international law and emerging world legal systems, including the arc toward systems approaching constitutional World Parliament and global self-government through principles of world federal republic. The course looks at the historical foundations of law, and distinguishes between international law and world law.

Learning outcomes

After completion of this course the learner will be able to:

- explain the basic philosophies of government, including particularly principles of self-government.
- apply theories and concepts of the course to analyze and write about contemporary legal principles within international law and world law.
- describe the distinctions between international law and world law and illustrate the progression toward constitutionally limited democratic world parliament.
- evaluate the prospects for worldwide self-governing systems and give constructive commentaries on shared writings.
- develop a case study (term paper) suitable for presentation to a world federal organisation, to a non- governmental organisation or to an international organisation.

Syllabus

Unit-I: Introduction, Philosophy of Law and International Law: Preamble and articles 1 through 4 of A Constitution for the Federation of Earth, available in The Earth Constitution, Editor G. Martin, in World Revolution through World Law, Editor G. Martin.

Introduction, and chapters 17, 18, and 29 of Leviathan by Thomas Hobbes. Excerpts to Anatomy of Peace by Emery Reves. Critical reactions to our global neighbourhood.

Unit-II: The United Nations System , The Rome Statute Family of International Law and World Law :

The United Nations Charter, White paper, The World Court Order, Distinctions between International law and world law. Submit discussion questions.

Unit-III: Distinctions Between International Law and World Law, The World Constituent Assemblies and the World Constitutions and Integrative Systems under the Earth Constitution: Sustainability, Prosperity, Family Planning, Human Rights, Peace and Disarmament:

Understanding A Constitution for the World" (1947), Protocols (1902) attributed to Sergei Nilus, among others, and Procedure for the World Constituent Assembly.

Articles 11 through 16 of the Earth Constitution.

Unit-IV: World Legislation and World Parliament, World Election Laws, Referendum and Initiative and Overview of Form and Style for World Legislative Drafting and Legislative Amendment

Articles 5 through 10, 17 and 19 of the Earth Constitution. Review Earth Constitution Article Sections 8.3. and 17.1. Design and Action for a New World. World Legislative Acts numbers 47. World Diplomatic Integration Act; 53.

Unit-V: Transfer, Reconstitution and Integration of the United Nations System, World Federal Organizational Relations and Prospects for Democratic World Federal Republic

Transition Process; 59, Truth and Reconciliation Act; 64. United Nations Merger; and 65. Global Sustainability Directorate. Assigned excerpts from Annotated Bibliography for a Graduate School of World Problems, E. Almand (on-line). A World Parliament by Jo Leinen and Andreas Bummel. Discussions on international organizations, non-governmental organisations, the relation, if any, between Earth Federation and international organizations.

Practical Exercises:

The learners are required to:

1. submit written proposal for Case Study Presentation, One page, double spaced. Start reading the United Nations Charter, Preamble through Chapter Nine.
2. present the case study related The United Nations Charter.
3. Make at least one paragraph constructive commentary on each posted case study presentation draft, up to twenty (or class size limit) commentaries.
4. Make at least one paragraph constructive commentary on each posted case study presentation not already commented upon.
5. review of selected chapters (Intro & Conclusion) of A World Parliament by Jo Leinen and Andreas Bummel.

Essential/ Recommended readings

Readings:

- Essay "Perpetual Peace" of Immanuel Kant
- Readings from Thomas Hobbes, John Locke, Emery Reves.
- United Nations Charter
- Read Harris in Harris, Errol E. & Yunker, James A., (Eds.). (1999) Toward Genuine Global Governance: Critical Reactions to Our Global Neighborhood. Westport, CT: Praeger.
- "A Bill of Particulars (on United Nations)", H. Philip Isely.
- The Earth Constitution, Editor G. Martin
- World Revolution through World Law, Editor G. Martin
- Toward Genuine Global Governance: Critical Reactions to Our Global Neighborhood. Westport, CT: Praeger. Harris, Errol
- E. & Yunker, James A., (Eds.). (1999)
- The Rome Statute of the International Criminal Court, A. Koroma, D. Thiam, J. Crawford et al.
- World Legislative Act #20 Criminal Case Bench Legislative Memorandum Summary
- Emerging World Law, Editors E. Almand & G. Martin
- A World Parliament: Governance and Democracy in the 21st Century, Jo Leinen & Andreas Bummel.
- Annotated Bibliography for a Graduate School of World Problems, E. Almand (on-line)
- Reviews of various websites
- "A Constitution for the World", by the Chicago Committee to Draft a World Constitution. 1947.
- (This is for critical discussion.)
- The Protocols. Attributed to Sergei Nilus, among others. 1902. (This is for critical discussion.)

Note: Readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Master of Business Administration (Business Analytics)

MBA (BA)
Semester IV

Marks: 100 **Duration-60 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (If any)
		Lecture	Tutorial	Practical/ Practice		
Entrepreneurship and New Venture Planning **MBABACC401**	4	3	0	1	**Graduation Pass**	**Nil**

Learning Objectives

This course aims to provide necessary inputs for entrepreneurial effort and planning to start a new venture and to enable them to investigate, understand and internalize the process of setting up a business.

Learning outcomes

After completion of the course, learners will be able to:

- be familiarised with the fundamentals of entrepreneurship and its role in economic development and to motivate them towards entrepreneurial activities.
- understand the concept of entrepreneurial leadership and stimulate them to think and innovative as entrepreneurs.
- be able to write effective business plans for establishing and managing any business venture.
- know how to raise the funding for the business from different sources for a startup venture.
- form a business entity in the light of the legal and regulatory framework in India.

SYLLABUS

Unit I: Introduction: (12 Hours)

Concept of Entrepreneurship; Role of entrepreneurship in economic development; Understanding the entrepreneurial history of India: Pre-Independence and post-Independence Period; Factors impacting emergence of entrepreneurship; Managerial vs. entrepreneurial approach; Types of entrepreneurs;

Characteristic of successful entrepreneurs; Entrepreneurship process; Women entrepreneurs; Social entrepreneurship; Entrepreneurial challenges.

Unit II: Entrepreneurship Development and Leadership: (12 Hours)
Types of startups; Entrepreneurial class theories; Entrepreneurial training; EDP programmes; Characteristics of entrepreneurial leadership, Components of entrepreneurial leadership; International entrepreneurship- Opportunities and challenges; Entrepreneurial challenges; Source of innovative ideas; Entrepreneurship and creativity; Techniques for generating ideas, Impediments to creativity.

Unit III: New Venture Planning: (12 Hours)
Methods to initiate ventures; Acquisition- Advantages of acquiring an ongoing venture and examination of key issues; Franchising- how a franchise works, franchising law, evaluating of franchising opportunities; Developing a marketing plan- customer analysis, sales analysis and competition analysis, steps in marketing research; Marketing mix; Business plan-benefits of drivers, perspectives in business plan preparation, elements of a business plan; Feasibility analysis of a business Plan; Business plan failures.

Unit IV: Financing Venture: (12 Hours)
Financing stages; Sources of finance; Venture capital; Criteria for evaluating new venture proposals; Evaluating venture capital- process; Sources of financing for Indian entrepreneurs (including angel funds, Seed capital fund).

Unit V: Special Issues for Entrepreneurs: (12 Hours)
Legal issues – Forming business entity, considerations and criteria, requirements for formation of a Private/Public Limited Company, intellectual property protection- patents, trademarks and copyrights – importance for start-ups, legal acts governing business in India; Opportunities and challenges; Intrapreneurship.

Essential/ Recommended readings

Suggested Readings:

- Arya, K. (2016). *Entrepreneurship: Creating and Leading an Entrepreneurial Organization.* Pearson. *Unit(s) - I, II, III, IV and V*
- Hisrich, R. D., Shepherd, D. A. & Peters, M. P. (2016). *Entrepreneurship.* McGraw Hill Education. *Unit(s) - I, II and III*

Additional Readings

- Galindo, C. R. (2018). The Entrepreneur's Guide to Winning: 7 Arts You Need To Master To Win The Game Of Business. CreateSpace Independent Publishing.
- Ramachandran, K. (2014). Entrepreneurship Development: Indian cases on Change Agents. Tata McGraw Hill.
- Robinson, P. J. (2017). A Guide for Writing Your Business Plan. Independently published.

Note: Readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Master of Business Administration (Business Analytics)

MBA (BA)
Semester IV

Marks: 100 **Duration-60 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (If any)
		Lecture	Tutorial	Practical/ Practice		
Strategic Management **MBABACC402**	4	4	0	0	**Pass in Graduation**	**NIL**

Course Objective:

To develop the knowledge about the strategy making process that is informed, integrative and responsive to rapid changes in the organization environment and also about tasks implemented in a global market.

Learning Outcomes*:*

After completion of the course, learners will be able to:

- understand the role of Strategic Management.
- describe various levels at which Strategy exists namely Corporate, Business and Functional level.
- develope strategic management models.
- analyse how organizations make decisions in response to rapid changes that occur due to environmental changes.
- apply how firms make entry into global markets and implement and evaluate strategy at an international level.

Syllabus:

Unit I: Introduction (12 Hours)

Role and concept of strategy; Strategic management process; Approaches to strategic decision making; Components of business policy; Strategic role of board of directors & top management. Strategic intent

Unit II: Environmental Analysis (12 Hours)

Analysis of broad environment: Environmental profile; Constructing scenarios; Environmental scanning techniques- ETOP, PEST and SWOT (TOWS) Matrix; Michael Porter‘s Diamond framework; Analysis of operating environment - Michael Porters model of industry analysis; Strategic group analysis; Analysis of internal environment– Resource audit; Resource Based View

(RBV); Core and distinctive competencies; Sustainable competitive advantage and transient competitive advantage.

Unit III: Strategic Choices (12 Hours)

Strategic options at corporate level: Growth, stability and retrenchment strategies; Corporate restructuring; Strategic options at business level- Michael porters' competitive strategies and cooperative strategies. Evaluation of strategic alternatives – Product portfolio models (BCG matrix, GE Matrix, etc.)

Unit IV: Situation Specific Strategies (12 Hours)

Strategies for situation like competing in emerging industries, maturing and declining industries, fragmented industries, hyper –competitive industries and turbulent industries; Strategies for industry leaders, runner -up firms and weak businesses.

Unit V: Strategic Issues and Alternatives in Globally Competitive Markets (12 Hours)

Why & how firms internationalize; International entry options; Outsourcing strategies; Strategy implementation and control: Interdependence of formulation and implementation of strategy; Issues in strategy implementation- Planning and allocating resources; Organization structure and design; Budgets and support system commitment; culture and leadership. Strategy evaluation and control.

Essential/ Recommended readings

Suggested Reading:

- **Davidson, W. H. (2013). *Global Strategic Management.* John Wiley, New York.**
- Frynas, J. G. & K., Mellahi (2014). *Global Strategic Management*. Oxford University Press.
- Ghemawat*, P. (2017). Strategy and the Business landscape.* Pearson Publishers
- Hill, Charles W. L. & Jones, R. G. (2012). *Strategic Management: An Integrated Approach.* Cengage Learning, India.
- Hitt, Michael A., Ireland, R. D., Hoskisson, Robert,E. & S., Manikutty (2016). *Strategic Management: A South- Asian Perspective.* Cengage Learning, India
- Thompson, Arthur A. & A., J. Strickland (2012). *Strategic Management.* McGraw Hill, New York.
- Wheelen, Thomas L., Hunger, J. David, Hoffman, Alan N. & Charles, E. Bamford (2017). *Strategic Management and Business Policy: Globalization, Innovation and Sustainability*. Prentice Hall, New Jersey.

Additional Readings:

- Harnel & Prahlad. *Strategic Intent.* Harvard Business Review. May June 1989,63-76
- Porter, Michael E. *How Competitive Forces Shape Strategy*. Harvard Business Review. Nov-Dec 1996,61-78
- Porter, Michael E. *What is Strategy.* Harvard Business Review. May June,1989,63-76

Note: Readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Master of Business Administration (Business Analytics)

MBA (BA)
Semester IV

Marks: 100 **Duration-60 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Supply Chain Analytics **MBABACC 403**	4	3	0	1	**Pass in Graduation**	**NIL**

Learning Objectives

To develop analytical skills for supply-chain in order to address real-world problems. The focus will be to familiarize and educate students to strategically manage the issues related to design and management of logistic and operations networks. The benefit of integration of marketing and corporate strategy into logistics and operations is also evaluated.

Learning outcomes

After completion of the course, learners will be able to:

- Learn the basic framework of supply chain management.
- Evaluate Demand Forecasting.
- Test and analyse the Stationary Time series.
- Examine Forecasting Models.
- Develop coordination in a supply chain.

SYLLABUS

Unit I: Introduction

Forecasting for Supply Chain Planning and Management: Introduction to forecasting, same case studies, time series data, Some simple forecasting methods. The forecaster's toolbox: Time series graphics, seasonal or cyclic? Autocorrelation, forecast residuals, white noise, evaluating forecast accuracy. Introduction to Multiple Regression and Stepwise Selection of Predictive Variables, Model Overfitting, the Parsimony Principle and Model Cross-Validation, Selection of Variates in Linear Regression:

Forward, Backward and Best Subset Selection, Model Shrinkage Methods and Selection of Variates in Linear Regression: The Lasso, Using Cross-Validation for Model Selection in The Lasso.

Unit II: Demand Forecasting

Introduction to Demand Forecasting Simple Exponential Smoothing Model FPP, Holt's Model and Holt-Winters Model FPP, State-Space Approach to Exponential Smoothing.

Unit III: ARIMA Models

Introduction to ARIMA Models Differencing and Rescaling Time Series, Backshift Notation and Non-seasonal ARIMA Models FPP, Seasonal ARIMA Models.

Unit IV: Forecasting Models

Hierarchical Forecasting Models Top-Down, Bottom-Up, and Middle-Out Approaches to Forecasting, Modelling Interventions: Model Selection and Calibration, Modelling Interventions: Forecasting.

Unit V: Managing Cross-Functional Drivers in Supply Chain

Sourcing decisions in a supply chain, pricing and revenue management in a supply chain, information technology in a supply chain, coordination in a supply chain.

Practical Exercises:

The learners are required to:

1. Examine the stationarity of the time series using appropriate software.
2. Demand Forecasting using appropriate software.
3. Examine ARIMA Models using appropriate software.
4. Analyse Forecasting Models using appropriate software.
5. Examine coordination in a supply chain using appropriate software

Essential/ Recommended readings

Suggested Reading:

- Hyndman, R. J., & Athanasopoulos, G. (2014). Forecasting: principles and practice, Online Open Access Textbooks.
- James, G., Witten, D., Hastie, T., &Tibshirani, R. (2013). An introduction to statistical learning: with application in R, Springer, New York.
- Makridakis, S., Wheelwright, S. C., & Hyndman, R. J. (1997). Forecasting methods and applications. John Wiley & Sons. Third Edition.
- Nahmias, S. (2008). Production and operations analysis, McGraw-Hill/Irwin, Sixth Edition.

Reference Books

- Simchi-Levi, D., Kaminsky, P., &Simchi-Levi, E. (2004). Managing the supply chain: the definitive guide for the business professional. McGraw-Hill.
- Chopra, S., &Meindl, P. (2012). Supply Chain Management Strategy, Planning and Operation, Prentice Hall, Fifth Edition.
- Mathirajan, M., Rajendran, C., Sadagopan, S., Ravindran, A. &Balasubramanian, P. (2015), Analytics in Operations/Supply Chain Management, I.K. International Publishing.
- Watson, M., Lewis, S., Cacioppi, P. &JayaRaman, J. (2012), Supply Chain Network Design, Pearson FT Press, First Edition.

Suggested Reading

- Nagurney, A., Yu, M., Masoumi, A.H. &Nagurney, L.S. (2013)), Networks Against Time: Supply Chain Analytics for Perishable Products, Springer.
- Jacobs, F.R. (), Supply Chain Analytics: A Multipart Case in Sourcing, Logistics, Warehouse Location, and Inventory Planning, Lawerence Hill & Company.

Note: Latest edition of the readings may be used.

Note: Relevant software will be used for pedagogical purpose. Evaluation of practical exercise using software will be part of internal assessment. Further, case studies related to above topics are required to be discussed.

Note: Readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Master of Business Administration (Business Analytics)

MBA (BA)
Semester IV

Marks: 100 **Duration-60 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Healthcare Analytics	4	3		1	Pass in Graduation	NIL

Learning Objectives

In an environment where complexity is growing, decision makers in healthcare systems need to use data to make pertinent and accurate decisions. Their practices and policies should be supported and strengthened by data. Tools of analytics provide the capability to identify patterns in data and to implement this knowledge in developing strategies and improving performance. The objectives of this course are to enable the participants to develop an understanding of basic principles of data analysis and familiarize them with key tools and techniques that would enable them to take data driven decisions in a hospital/healthcare delivery setting.

Learning outcomes

After completion of the course, learners will be able to:

1. Identify sources of data, suggest methods for collecting, sharing and analyzing data.
2. Understanding the issues involved in data quality and their management.
3. Discuss the difference between descriptive, predictive and prescriptive analytics.
4. Able to use basic data presentation and visualization tools and manipulate simple data- sets.
5. Discuss the basics of big-data, machine learning and artificial intelligence.
6. Able to identify decision problems amenable for analytics-based solutions. Understand how data analytics can provide potential solutions to improve quality and lower cost • Able to lead team comprising of data scientists

Syllabus

Unit I: Health Care Data (10 Hours): Data as an asset for health care organization; Data, information, knowledge and wisdom hierarchy; Types and sources of healthcare data; Data governance, methods for effective use of data analytics; Ethics, data ownership and privacy

Unit II: Working with Data (15 Hours): Common data analytics terms, Steps of data analytics; Enterprise data architecture as seen in health care organizations; Common data types; Selection, aggregation, querying and transformation of data; Descriptive and visual analytics; Common patterns or distributions in data.

Unit III: Healthcare analytics tools-1 (10 Hours): Predictive analytics tools, classification, regression; Introduction to text mining, contextual analysis, social media analytics; Text mining, social media analytics.

Unit IV: Healthcare analytics tools-2 (10 Hours): Basics of image Analysis; analysis of multimedia Data, big data Analysis.

Unit V: Decision analysis (15 Hours): Decision tree; Simulation in Decision Analysis; Select prescriptive analytics applications in health care operations management (scheduling, resource allocation, project management, waiting line management etc).

Practical Exercises:

The learners are required to:

1. perform querying and transformation of data.
2. conduct descriptive and visual analytics.
3. obtain the results from Social media analytics; Text mining.
4. apply simulation in Decision Analysis.

Essential/ Recommended readings

Text Books:

1. Anderson, D., Sweeney, D., Williams, T., Martin, R.K. (2012). An introduction to management science: quantitative approaches to decision making (13th edition). Cengag Learning, India.
2. Davenport, T. H., Harris, J. G., & Morison, R. (2010). Analytics at work: Smarter decisions, better results. Harvard Business Press.
3. Madsen, L. B. (2015). Data-driven healthcare: how analytics and BI are transforming the industry. Wiley India Private Limited.
4. Meier, Kenneth J., Jeffrey L. Brudney, and John Bohte. (2015) Applied Statistics for Public and Non-profit Administration, 9th Edition, Cengage.
5. McLaughlin, Daniel B. and Hays Julie M. (2008) Healthcare Operations Management. Health Administration Press.
6. McNeill, D., & Davenport, T. H. (2013). Analytics in Healthcare and the Life Sciences: Strategies, Implementation Methods, and Best Practices. Pearson Education.
7. Reddy, C. K., & Aggarwal, C. C. (Editors.). (2015). Healthcare data analytics (Vol. 36). CRC Press.
8. Strome, T. L., & Liefer, A. (2013). Healthcare analytics for quality and performance improvement. Hoboken, NJ, USA: Wiley.
9. Veney, James E., John F. Kros, and David A. Rosenthal. (2009) Statistics for Health Care Professionals: Working with Excel, 2nd Edition, Jossey-bass.

Note: Readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Master of Business Administration (Business Analytics)

MBA (BA)
Semester IV

Marks: 50 **Duration: 30 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Social Media Analytics **MBABACC405**	**2**	**1**	**0**	**1**	**Pass in Graduation**	**NIL**

Learning Objectives

The aim of the course is to make learners understand about the increasing world connectivity using social network analysis. This course will also help the learners in examining the creation of various networks be it technological, economic or social and how they affect our behavior and attitudes.

Learning outcomes

After completion of the course, learners will be able to:

- Understand the concept of social networks
- Learn models to interpret the structure of Web graph and its spread of information.
- Perform social network analysis to understand and identify social media network properties, its actors and sub-groups.
- Identify the groups within the social networks
- Understand the concept of similarity and equivalence in social roles and positions.

Syllabus

Unit I: Introduction (10 Hours)

Introduction: What's different about social network data? Nodes, Relations, Scales of measurement, statistics and social network data. Introduction to formal methods, efficiency, using computers, seeing patterns. Using graphs to represent social relations: Introduction, graphs and sociograms, kinds of graphs. Working with NetDraw to visualize graphs: Introduction, node attributes, relation properties, location, highlighting parts of the network.

Unit II: Web Analytics & Social Connection Analysis (10 Hours)

World of web analytics, optimal strategy for choosing web analytics soul mate, Clickstream analysis: metrics and practical solutions. Making connections: Link analysis. Random graphs and network evolution. Social contexts: Affiliation and identity. Connection: Search, collapse, robustness Social movements and diffusion of innovation.

Ego Networks, Centrality and Power

Ego Networks: Introduction, Ego network data, ego network density, structural holes, brokerage. Centrality, centralization, and power: Introduction, Degree centrality, closeness centrality, betweenness centrality. Embedding: Introduction, Density, Reciprocity, Transitivity, Clustering, Group-external and group-internal ties, Krackhardt's graph theoretical dimensions of hierarchy.

Unit III: Cliques and Subgroups, Positions and Roles

Cliques and groups: Introduction, Bottom-up approaches, top-down approaches. Homophily and social segregation.

Measures of Similarity and Structural, Automorphic and Regular Equivalence

Equivalence: Positions and Social Roles. Introduction, Measuring similarity/dissimilarity, visualizing similarity and distance, describing structural equivalence sets. Automorphic Equivalence: Definition, uses of concept, finding equivalence sets. Regular equivalence: Definition, uses of concept, finding equivalence sets.

Practical Exercises:

The learners are required to

1. Apply qualitative and quantitative methods for analyzing web traffic.
2. Recognize the groups in any social media platform.
3. Identify the similarities/dissimilarities amongst social structures of social media groups

Essential/ Recommended readings

Text Books

- Hanneman, R. and Riddle, M. (2005), Introduction to Social Network Methods, Riverside.
- Kaushik A. (2009), Web Analytics 2.0: The Art of Online Accountability, Wiley Publishing.

Reference Books

- Easley, D. & Kleinberg, J. (2010). Networks, Crowds, and Markets: Reasoning About a Highly Connected World, Cambridge University Press.
- Monge, P. R. & Contractor, N. S. (2003). Theories of communication networks, Oxford University Press, New York.
- Duncan J.W. (2003), Six Degrees: The Science of a Connected Age. New York: W.W. Norton and Company.
- Sponder, M. (2014), Social Media Analytics: Effective Tools for Building, Interpreting, and Using Metrics. McGraw Hill.

Suggested Reading

- Clifton, B. (2012), Advanced Web Metrics with Google Analytics, John Wiley & Sons, Third edition.
- Ganis, M. &Kohirkar, A. (2015), Social Media Analytics: Techniques and Insights for Extracting Business value out of Social media, IBM Press, First Edition.

Notes:

1. Latest edition of the readings may be used.
2. Relevant software will be used for pedagogical purpose. Evaluation of practical exercise using software will be part of internal assessment. Further, case studies related to above topics are required to be discussed.
3. Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

Master of Business Administration (Business Analytics)

MBA (BA)
Semester IV

Marks: 100 **Duration: 60 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Cyber Threats and Security MBABACC406	**4**	**3**	**0**	**1**	**Pass in Graduation**	**NIL**

Learning Objectives:

To enable the student to comprehend different business scenarios operative on digital platform with the legitimacy of managerial process and actions.

Learning Outcomes:

After completion of the course, learners will be able to:

- To be equipped with a vision to formulate legitimate business process, product and policies on digital platforms.
- To work in the vertical of maintenance and compliance in E-business.
- To be able to be an entrepreneur to start and manage business on virtual platforms.
- To possess acumen to avoid traps of cyber threats in varied business and process thereof while operating in regular banking, e-commerce, retail, consultancies or other business intermediary.
- To equip with judicial pronouncement of banks, e-commerce business platforms, manufacturing companies, social media platforms and other similar platforms, intermediaries or APPs, BPO's and KPO's.

Syllabus

Unit I: **Cyber Space, E-Business and Social Media (10 Hours)**

Significance, limitations and framework of e-business; Models of e-business based on relationship of transacting parties; Virtual payment platforms- application of cyber laws in different digital payments including pre-paid instruments; Precautions in using electronic payments, zero liability and limited liability protections by RBI, Bitcoin and Block Chain crimes. Social Media & Cyber Menace.

Unit II: **Legislative Framework (10 Hours)**

Under Section 2 of the Information Technology Act and its application in creating business products and policies- e-contract, e-forms, encryption, data security, access, computer, computer network, computer resource, computer system, data, digital signature, electronic record, information, intermediary, originator, public key, secure system, as defined in the Information Technology Act, 2000; Privacy of data; Access to user data.

Unit III: **Authentication of Electronic Records (12 Hours)**

Business scenario and cases; Legal recognition of electronic records and digital signatures- cases and judicial

pronouncements; Use of electronic records and digital signatures in government and its agencies; Retention of electronic records- synthesis for business data; Acknowledgement and dispatch of electronic records- cases of management submissions and contracts.

Unit IV: Penalties and Adjudications (14 Hours)

Cases and judicial pronouncement of banks, e-commerce business platforms, manufacturing companies, social media platforms, intermediaries or apps, BPO's and KPO's, human resource consultancies; Offences: analysis of business process leading to offences in business organizations including banks, digital marketing platforms, digital information platforms, blogging websites, matrimonial or jobs portals.

Unit V: Judicial Pronouncements and Synthesis for Business Decisions (14 Hours)

- Umashankar Sivasubramanian v ICICI Bank (2462/2010),
- 'Diebold System Pvt Ltd. v The Commissioner of Commercial Taxes, (2006), 144STC,
- 'State v Mohd. Afzal and others (2003),
- 'Syed Asifuddin and Ors.vThe State of Andhra Pradesh &Anr. 2006 (1) ALD Cri 96,
- 'SMC Pneumatics (India) Pvt.Ltd v JogeshKwatra", No. 1279, 2001,
- 'R v Graham Waddon., Southwark [Crown Court, 30/6/1999,
- 'National Association of Software and Service Companies (NAASCOM) v Ajay Sood. (2005)

F.S.R. 38

- Hammontree Vs State, 283 Ga App736, 642 SE 2d 412(2007)
- US vs Tank, 200F.3 d 627, 53 Fed R Evid Serv 830
- Laughner vs State, 769 N E 2d 1147 (Int Ct.App 2002)
- Groff vs America Online, Inc, 1998 WL 307001
- P R T Agancy vs Union of India, AII23, 2006 (1)

Essential/ Recommended readings

Suggested Reading:

- Chaffey, Dave (2011). *E-business and E-commerce Management.* Pearson Education.
- Efraim Turban, Jae Lee, King, David & H.M., Chung (2002). *Electronic Commerce-A managerial Perspective.* Pearson
- Rattan, Jyoti (2017). *Cyber Laws & Information Technology*. Bharat Law House Pvt Ltd.
- Sharma, J. P. & Kanojia, S. (2018). *E Business and Cyber Laws.* Bharat Law House.

Additional Readings

- Brian, Craig (2012). *Cyber Law: The Law of the Internet and Information Technology.* Pearson Education
- Dietel, H. M. (2001). *E-business and E-commerce for managers.* Pearson Education
- Joseph, P.T. (2015). *E-Commerce-An Indian Perspective*. PHI

Note: Readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Master of Business Administration (Business Analytics)
MBA (BA)
Semester IV

Marks: 50 **Duration: 30 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	re-requisiteof the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Indian ethos and leadership	2	2	0	0	Pass in Graduation	NIL

Learning Objective:

To build an understanding and perspective of Indian Ethos and leadership. It helps appreciating Indian way of leading different organizations.

Learning Outcomes:

- After completion of the course, learners will be able to:
- Understand the relevance of Indian Ethos, Ethical Codes and management lessons from scriptures.
- Analyse the Approaches to leadership through Indian Tradition and develop different approaches of leadership and contemporary Indian leadership practices.

Syllabus

Unit I-Indian Ethos and Perspectives on Ethics (10 Hours)

History & relevance of Indian tradition of understanding physical and metaphysical world; Appreciating scripturesand their role in shaping cognition and social interactions; Role of Indian Ethos in Managerial Practices; Gender Ethics; Ethos and ethics; Relevance of Values in Management, Morality, ethics and values; Indian values, ethical dilemmas in different business areas of finance, marketing, Management Lessons from Vedas, Mahabharata; Ethics v/s Ethos.

Unit II-Ethos–Leadership Interface (10 Hours)

Perspectives on leadership through ancient values and Indian traditions; leadership -in relevance to time, space, narratives and eternity; Moral principles for leadership based on Indian ethos; Social Values and Political Environment, Target (goal) vis-à-vis process orientation; Leadership through storytelling.

Unit III- Great Indian Thought on Leadership (10 hours)

Leadership lessons from sacred Indian texts as well as non-text sources; Gandhian thoughts on leadership; Vivekananda's thinking on leadership; Studies of S.K. Chakraborty & C.K. Prahlad on Indian leadership; Personal character of a leader; Understanding relevance of leadership in contemporary times, role of Indian leadership model and its relevance in bringing world order; Contemporary Leadership Challenges; Cases on Indian leadership practices.

Practical Exercise

Learners are required to:

1. Visit to some traditional/historical places to grab the knowledge of Indian scriptures and philosophy
2. Brain storming sessions on different ethical dilemmas for effective management lessons
3. Group discussion on Role of Indian Ethos in fostering the ethical environment
4. Industrial visits/interview with position holders to understand the relevance of leadership
5. Evalute the leadership skills of selected famous leaders in the real world
6. Stimulate lessons from various kinds of leadership in ethical perspective
7. Analyse case studies on Indian leadership practices.
8. Participate in simulation exercise in classroom Ethical codes of various organisations.

Readings

- Balasubramanian, S. (2007). *The Art of Business Leadership: Indian Experiences.* Response Books. Sage.
- Cappelli, Peter, Harbir, Singh, Jitendra, V. Singh & Michael, Useem (2010). Leadership Lessons fromIndia *Harvard Business Review* (March), 1-9.
- Chakraborty, S. K. (1995). *Ethics in Management-Vedantic Approach*, New Delhi, Oxford India Ltd.
- Chatterjee, D. (2012). *Timeless Leadership – 18 Leadership Sutras*. Wiley.
- Chaturvedi, B. (2006). *The Mahabharata: An Inquiry in the Human Condition*, Orient Longman.
- Das, G. (2009). *The Difficulty of Being Good, On the Subtle Art of Dharma*, Penguin Books, India.
- Kautilya's Arthasastra (2016), *King, Governance, and Law in Ancient India*, Oxford University Press.
- Krishna, G. R. (1999). *Indian Ethos for Modern Management*, UBS Publishers Distributors Ltd.*I*
- Kumarasamy, A. (2006). *Gandhi on Personal Leadership*, Jaico Publishing House.
- Nair, K. (1997). *A Higher Standard of Leadership: Lessons from the Life of Gandhi*, Berrett-KoehlerPublishers, San Francico

ELECTIVE COURSES

Master of Business Administration (Business Analytics)

MBA (BA)
Semester IV

Marks: 100 **Duration: 60 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Project Management Professional-2 **MBABAEC01**	4	3	0	1	**Graduation in any field**	**Project Management Professional-1** **COMOE11**

Learning Objective

This course aims to help learners to know how to manage a team and its performance at the workplace. This course also highlights the various strategies to deal with different conflicts among the team members.

Learning outcomes

After completion of the course, learners will be able to:

1. Analyze various sources of conflicts and identify appropriate conflict resolution solutions.
2. Appraise performance of team members.
3. Determine impediments for the team and identify ways to manage them.
4. Engage in virtual teams.
5. Enhance team performance through the application of emotional intelligence

Syllabus

Unit I: **Managing conflicts (8 Hours)**

Interpret the source and stage of the conflict, Analyze the context for the conflict

Evaluate/recommend/reconcile the appropriate conflict resolution solution

Lead a team

Set a clear vision and mission, Support diversity and inclusion (e.g., behavior types, thought process), Determine an appropriate leadership style (e.g., directive, collaborative),

Inspire,motivate, and influence team members/stakeholders (e.g., team contract, social contract, reward system), Analyze team members and stakeholders' influence

Unit II: Support team performance (12 Hours)

Appraise team member performance against key performance indicators, Support and recognize team

member growth and development, Determine appropriate feedback approach , Organize around team strengths Support team task accountability, Evaluate demonstration of task accountability

Determine required competencies and elements of training, Determine training options based on training needs, Allocate resources for training, Measure training outcomes, Continuously assess and refresh team skills to meet project needs, Maintain team and knowledge transfer

Unit III: Address and remove impediments, obstacles, and blockers for the team (18 Hours)

Determine critical impediments, obstacles, and blockers for the team, Prioritize critical impediments, obstacles, and blockers for the team, Use network to implement solutions to remove impediments, obstacles, and blockers for the team

Negotiate project agreements

Analyze the bounds of the negotiations for agreement, Assess priorities and determine ultimate objective(s), Verify objective(s) of the project agreement is met, Participate in agreement negotiations, Determine a negotiation strategy

Build shared understanding

Break down situation to identify the root cause of a misunderstanding, Survey all necessary parties to reach consensus, Support outcome of parties' agreement, Investigate potential misunderstanding

Unit IV: **Engage and support virtual teams (14 Hours)**

Examine virtual team member needs (e.g., environment, geography, culture, global, etc.), Investigate alternatives (e.g., communication tools, colocation) for virtual team member engagement, Implement options for virtual team member engagement, continually evaluate effectiveness of virtual team member engagement

Communicate organizational principles with team and external stakeholders, Establish an environment that fosters adherence to the ground rules, Manage and rectify ground rule violations

Unit V: Promote team performance through the application of emotional intelligence (8 Hours)

Assess behavior through the use of personality indicators, Analyze personality indicators and adjust to the emotional needs of key project stakeholders

Leading in an intercultural environment

Gender issues in leadership, Emotional intelligence Team communication and socialization

Managing changes due to project impact

Best practices in project leadership—techniques to win over team members

Practical Exercises

The learners are required to:

1. Prepare the appropriate conflict resolution solutions for different situations.
2. Assess various key performance indicators for performance appraisal.
3. Analyze different impediments faced by any team and identify ways to manage them.
4. Participate in virtual team exercises.
5. Evaluate the role of emotional intelligence in enhancing team performance.

Suggested Readings:

- Berkun, S. (2005). *The art of project management* (pp. I-XII). O'reilly.
- Ellis, C. D. (2019). *The Project Book: The Complete Guide to Consistently Delivering Great Projects*. John Wiley & Sons.
- Larson, E., & Gray, C. (2014). *Project Management: The Managerial Process 6e*. McGraw Hill.
- Pinto, J. K. (2013). *Project management: achieving competitive advantage* (No. s 57). Boston, MA: Pearson.
- Horine, G. (2013). *Project management: Absolute beginner's guide*. Pearson Education.
- Wysocki, R. K. (2011). *Effective project management: traditional, agile, extreme*. John Wiley & Sons.

Note: This course to be taught through Role play and lots of Cases and case studies to effectively learn project management.

Note: Readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Master of Business Administration (Business Analytics)

MBA (BA)
Semester IV

Marks: 100 **Duration: 60 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Start Up – 2 **MBABAEC02**	4	3	0	1	**Graduation Pass**	**Start UP-1** **COMOE13**

Learning Objectives

The goal of this program is to take the students from the MVP (Minimum Viable Product) stage to the Business Model stage, i.e., the students will acquire the skills required to transform their MVP into a business model. In this course, they will start building their teams by finding co-founders and perhaps even hiring. They will transform their business idea into the Business Model Canvas and will use it to further refine their MVP. They will also set up a digital presence and learn to use promotional channels and distribution channels to engage and serve their customers. Additionally, they will get started with various legal and operational aspects as well as initial funding concepts such as bootstrapping. The knowledge acquired through the earlier semester on the experimentation undertaken on developing new business ideas in a simulated environment can be extended to practice at the end of this course.

Learning outcomes

After completion of the course, learners will be able to:

- Form a team and recognise the importance of teamwork
- Prepare a business model/plan
- Analyze the importance and diversity of business models
- Analyze the concept of product/market fit
- Assess the customer validation process

Syllabus:

Unit I: Team (6 Hours)

Finding your team, art of team formation, teamwork planning, chief mentor/ founder & Co founders, team formation, and delegation of work, Establishing linkage with possible future external collaborator(s).

Unit II: Preparation of Business model/Plan (10 Hours)

Meaning and significance of a business plan, components of a business plan, and feasibility study, Iterating the MVP, Digital Presence for Ventures, Detailing the value proposition, Guidelines for writing BP: pre- requisites from the perspective of investor.

Unit III: Business Model (10 Hours)

The importance and diversity of business model, how business model emerge, potential fatal flaws of business models, components of an effective business model, core strategy, strategic resources, Competency of partnership and their network, Detailing potential product/service-customer interface.

Unit IV: Product/ Market Fit (16 Hours)

Understanding basics of unit economics, cost and profitability, Break-even analysis, Refining the product/service, Establishing the success and operational matrix, Starting Operations. Addressing basic start-up problems. (Case analysis presentation of renowned Indian and International startups through group assignment as part of class room presentation).

Unit V: Customer Validation (18 Hours)

Evaluate the efficiency with which customers can be captured and kept, Early insights on cost of customer acquisition, Other Stakeholder Validation, Customer Development and Experience. Detailing differentiation of proposed product/service with the existing competitors. (Various case studies on various level of funding as an indicator of startup validation/sustainability)

Practical Exercise:

The learners are required to:

1. Participate in a team and frame a plan for a potential start up.
2. Prepare a detailed business plan for the potential start up discussed in the previous exercise.
3. Evaluate the core strategy of their business plan.
4. Perform a break-even analysis for their proposed business plan.
5. Assess the customer validation process of the proposed business plan.

Suggested Readings:

- Singer, S. & Senor, D. (2009). *Start-up Nation: The Story of Israel's Economic Miracle*. Italy: Grand Central Publishing.
- Vaidyanathan, N. (2016). *Start Up, Stand Up*. India: Jaico Publishing House.
- Casnocha, B. & Hoffman, R. (2012). *The Start-up of You: Adapt to the Future, Invest in Yourself, and Transform Your Career*. United Kingdom: Random House.
- Love, H. (2016). *The Start-Up J Curve: The Six Steps to Entrepreneurial Success.* United States: Greenleaf Book Group Press.
- Kalra, U. & Shubhankar, S. (2021). *Startup Compass: How Iconic Entrepreneurs Got It Right.* India: HarperCollins.
- Nielsen, N. H. (2017). *The Startup Funding Book*. Denmark: NHN Ventures Aps.
- Casnocha, B. & Hoffman, R. (2012). *The Start-up of You: Adapt to the Future, Invest in Yourself, and Transform Your Career*. United Kingdom: Random House.
- Hvidkjaer, K. (2022). *How to F*ck Up Your Startup: The Science Behind Why 90% of*

Companies Fail--and How You Can Avoid It. United Kingdom: BenBella Books.

- Winners Never Cheat: Even In Difficult Times. (2009). India: Pearson Education.

Note: Readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Master of Business Administration (Business Analytics)

MBA (BA)

Marks: 100 **Duration-60 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/Practice		
Internet of Thing **MBABAEC03**	**4**	**3**	**0**	**1**	**Pass in Graduation**	**NIL**

Learning Objectives

This course provides an overview of the working of Internet of things and aims to make the students understand the IoT market perspective, its architecture and knowledge and data management of IoT in use of technology.

Learning Outcomes

After completion of the course, learners will be able to:

- Describe the fundamentals of data communication, network and internet of things (IOT).
- Develop the knowledge of IOT architecture and models
- Recognise the process of IOT device management and evaluate design constraints.
- Demonstrate the various IOT market perspectives in the global scenario.
- Demonstrate the concept of automation and its application

Syllabus:

Unit I: Fundamentals of Computer Network and Internet of Things (IoT) (10 Hours)

Introduction, Fundamentals of Computer Network, M2M and IoT; Networking Devices and gateways, Local and wide area networking, Data management, Business processes in IoT, Everything as a Service(XaaS), M2M and IoT Analytics, Knowledge Management. Global Context and Cases

Unit II: IoT Architecture (12 Hours)

State of the IoT Architecture – Introduction-Reference Model and architecture, IoT reference Model.

Unit III: IoT Reference Architecture and Design Constraints (13 Hours)

Functional View, Information View, Deployment and Operational View, Other Relevant architectural views. Real-World Design Constraints- Introduction, Technical Design constraints-hardware is popular again, Data representation and visualization, Interaction and remote control.

Unit IV: Market perspective and Architectural Overview (15 Hours)

M2M to IoT – A Market Perspective– Introduction, Some Definitions, M2M Value Chains, IoT Value Chains, An emerging industrial structure for IoT, The international driven global value chain and global information monopolies. M2M to IoT-An Architectural Overview– Building an architecture, Main design principles and needed capabilities, An IoT architecture outline, standards considerations.

Unit V: Industrial Automation and Commercial Building Automation (10 Hours)

Industrial Automation- Service-oriented architecture-based device integration, SOCRADES: realizing the enterprise integrated Web of Things, IMC-AESOP: from the Web of Things to the Cloud of Things, Commercial Building Automation- Introduction, Case study: phase one-commercial building automation today, Case study: phase two- commercial building automation in the future.

Practical Exercise:
The learners are required to:

1. Participate in a team and discuss various networking devices and gateways.
2. Prepare a detailed reference model in context to IoT Architecture
3. Evaluate the different views of IoT reference Architecture .
4. Design IoT value chain with the help of any particular industry.
5. Analyze a case study on the concept of automation and its application.

Suggested Readings:

· DaCosta, F. (2013). *Rethinking the Internet of Things: A Scalable Approach to Connecting Everything*. Apress Publications.

·GreenGard, S. (2015). *The Internet of Things: Essential Knowledge*. MIT Press.

·Holler, J., Tsiatsis, V., Mulligan, C., Avesand, S., Karnouskos, S. & Boyle, D. (2014). F*rom Machine-to-Machine to the Internet of Things: Introduction to a New Age of Intelligence*. Academic Press.

·Madisetti, V. & Bahga, A. (2014). *Internet of Things (A Hands-on-Approach).* VPT.

·Mcewen, A. & Cassimally, H. (2015). Designing the Internet of Things. Wiley.

·Pfister, C. (2011). *Getting Started with the Internet of Things, Employees Training and Development*. O'Reilly Publication.

Note: Readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Master of Business Administration (Business Analytics)

MBA (BA)
Semester IV

Marks: 100 **Duration-60 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Compensation Management **MBABAEC04**	**4**	**3**	**0**	**1**	**Graduation**	**No**

Learning Objective

The course is designed to promote understanding of issues related to compensation management in the corporate sector and public services and to impart skill in designing compensation management system, policies and strategies, apart from promoting understanding of legal issues in the administration of compensation, welfare and social security.

Learning Outcomes

After completion of the course, learners will be able to:

- Acquaint themselves with the basic legal framework envisaged under the statutes for compensation and welfare of employees in different modes.
- Recognise the principles involved and the premise of the grant of bonus, wages, and minimum wages to workers.
- Work in the maintenance and compliance vertical of the compensation structuring department.
- Handle organizational scenarios having large-scale variations of minimum wages- both within the country and internationally.
- Recognise the employment benefits for women envisaged under the compensation laws of India.

Syllabus:

Unit I: Compensation Management (10 Hours)

Compensation management process, forms of pay, financial and non-financial compensation; Compensation strategies, assessing job values & relativities; Pay structures; Designing pay levels, mix and pay structures, construction of optimal pay structure; Paying for performance, skills and competence; National differences in compensation, International pay systems- comparing costs and systems; Expatriate pay; Concept and rationale of employee welfare.

Unit II: The Payment of Bonus Act, 1965 (15 Hours)

Objects, scope and application; Definitions; Calculation of amount payable as bonus; Eligibility and disqualifications for bonus; Minimum & maximum bonus; Set on & Set off of allocable surplus; Application of Act in the establishment in the public sector; Bonus linked with production or productivity, The Payment of Bonus (Amendment) Act, 2015.

Unit III: The Payment of Wages Act, 1936 (15 Hours)

Objects; Application; Responsibility for payment of wages; Fixation of wage periods; Time-limits; Deduction from

wages; Remedies available to the worker; Powers of authorities, penalty for offences; Payment of Wages (Amendment) Act, 2017

Unit IV: The Minimum Wages Act, 1948 (10 Hours)

Objects; Application; Minimum fair and living wages; Determination of minimum wage; Taxation of minimum wage; Advisory board; Remedy to the worker for non-payment of minimum wages.

Unit V: The Maternity Benefit Act, 1961 (10 Hours)

Definitions, Object, Applicability, employment of, or work by, women prohibited during certain periods, right to payment of maternity benefits, notice of claim of maternity benefit and payment thereof, leaves, dismissal in absence during pregnancy, forfeiture of maternity benefits. The Maternity Benefits (Amendment) Act, 2017; Impact of the Maternity Benefit (Amendment) Act, 2017 on employability.

Case laws in respect of recent trends and administration of the Acts are required to be done in all units.

Practical Exercises:

The learners are required to:

1. Analyze the compensation system of an organization and identify opportunities for improvement of those systems
2. Visit different companies and identify the variation of the minimum wages.
3. Summarize some similarities and differences between financial and non-financial benefits for the employees.
4. Discuss the compensation and benefits practices that contribute to attracting and retaining high-quality employees. Learners may be assigned to evaluate the compensation and benefits practices.
5. Analyze, integrate and apply the knowledge to solve compensation-related problems in the organization.
6. Design performance pay and indirect pay plans necessary to attract, retain and motivate the workforce.
7. Apply various tools for decision-making in complex, compensation-related environments, as well as design, develop, and implement compensation strategies that achieve value-added results, thereby enabling organizations to more effectively and efficiently achieve their goals.
8. Analyze and interpret case studies on maternity benefits in various organizations.

Essential/ Recommended readings

Suggested Readings:

Armstrong, M. & Murlis, H. *(*1988). *Reward Management: A Handbook of Salary administration.* London: Kegan Paul

Belchor, David W. (1988). *Compensation Administration.* Prentice Hall, Englewood Cliffs. NT

Malik, P.L. (2017). *Handbook of Labourer and Industrial Law*. Eastern Book Company.

Milkovich, G., Newman, J. & Ratnam, C.S.V. (2009). *Compensation.* Tata Mc Graw Hill, Special Indian Edition

Sharma, J.P. (2018). *An Easy Approach To Company And Compensation Laws.* New Delhi: Ane Books Pvt Ltd.

Additional Resources:

Government of India Report of the National Commission on Labour Ministry of Labour and Employment, New Delhi. (Latest)

Henderson, R.I. (2006). *Compensation Management in a Knowledge Based World.* New Delhi: Pearson Education

Note: Readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Master of Business Administration (Business Analytics)

MBA (BA)
Semester IV

Course MBABAEC05: LEARNING AND DEVELOPMENT

Marks: 100 **Duration-60 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Learning and development **MBABAEC05**	**4**	**3**	**0**	**1**	**Graduation**	**No**

Learning Objective:

To explore the learner to the concept and practice of learning and development in the modern organizational setting through the pedagogy of case discussions, practical, experiential learning, and recent experiences.

Learning Outcomes:

After completion of the course, learners will be able to:

- Link learning and development to the company's strategy effectively and assess the training needs of the people working in the organization.
- Apply various methods of learning and development in real-life situations.
- Design, develop, and conduct learning and development programmes.
- Evaluate the effectiveness of training and development programmes as well as learning outcomes.
- Recognise the emerging trends in the field of learning and development.

Syllabus:

Unit I: Introduction (10 Hours)

Fundamentals of learning and development; Difference between training & development and learning & development; Linking learning and development to company's strategy; Learning theories, strategies and constructivist approach to learning, learning in a digital world; Training Needs Assessment (TNA)- meaning and purpose of TNA, TNA at different levels, approaches for TNA, output of TNA, methods used in TNA.

Unit II: Learning and Development Methodologies (15 Hours)

Overview- logic and process of learning; Principles of learning; Individual differences in learning; Learning curve; Learning management system; Criteria for method selection; Skills of an effective trainer; Development techniques for enhancing decision–making and interpersonal skills, case-study, in-basket exercise, special projects, action learning, syndicate work, games, action maze, role play, experiential learning discovery learning, brainstorming, position rotation, team building, and sensitivity training; new learning methodologies using modern technologies.

Unit III: Designing Learning and Development Programmes (15 Hours)

Organization of learning and development programmes, design, kinds, choice of learning and development methods, preparation of trainers; Developing training materials; E-learning environment; technologies convergence and multimedia environment; Flexible learning modules; Self- development; Training process outsourcing.

Unit IV: Evaluation of Learning and Development (10 Hours)

Reasons for evaluation; Evaluation planning and data collection; Different evaluation frameworks; Value of learning research-RAM Model; the implication of learning evaluation, Problems of measurement and evaluation; Methods of evaluating the effectiveness of L & D efforts; Issues resulting from the external environment and internal needs of the company.

Unit V: Emerging Trends in Learning and Development (10 Hours)

Gamification, team building and six sigma training; Electronic enabled learning systems- its up scalability and follow up activities.
Learning and development initiatives of some selected companies from private and public sectors and MNCs; Upskilling & Reskilling; Adaptive Learning; Social Learning; Microlearning, Knowledge - sharing Ecosystem.

Case Studies: Some cases of the real business world supplement learning from the course.

Practical Exercises:

The learners are required to:

1. Analyze and interpret the learning and development strategies of various Indian organizations.

2. Participate in simulation exercises in the classroom to conduct learning and development techniques for enhancing decisions.

3. Develop a case study on different kinds of Learning and Development strategies by various companies in real-life scenarios. Learners may be assigned to compare different kinds of Learning and Development strategies by various companies.

4. Interview HR managers and develop a learning module on practical applications of Learning and Development concepts.

5. Visit a company and identify the different evaluation frameworks adopted in various functional areas.

6. Compare new Learning and development initiatives of some selected companies from private, and public sectors and MNCs.

Essential/ Recommended readings

Suggested Readings:

Dirksen , Julie (2011). *Design For How People Learn (Voices That Matter).* New Riders.

Emerson, Trish & Stewart, Mary (2011). *The Learning and Development Book: Change the way you think about L&D.* ASTD Press.

Noe, Raymond (2006). *Employee Training & Development.* McGraw-Hill Education.

Phillips, Jack & Stone, Ron (2002). *How to Measure Training Results: A Practical Guide to Tracking the Six Key Indicators.* McGraw-Hill Education.

Wick, Calhoun W. & Pollock, Roy V.H. (2015). *The Six Disciplines of Breakthrough Learning: How to Turn Training and Development into Business Results.* Pfeiffer.

Additional Resources:

Beitler, Michael (2005). *Strategic Organizational Learning.*

Blanchard, P., Nick, James W. Thacker & V. Anand Ram. *Effective Training: Systems, Strategies, and Practices*. Dorling Kindersley (India) Pvt. Ltd.

Garner, James. *Training Interventions in Job Skill Development*. Addison-Wesley.

Jack J. Phillips. *Hand book of Training Evaluation and Measurement Methods*. Routledge.

Kapp, Karl M. (2011). *The Gamification of Learning and Instruction: Game-based Methods and Strategies for Training and Education.*

Kirkpatrick, Donald L. & Kirkpatrick, James D. (2005) *Transferring Learning to Behavior: Using the Four Levels to Improve Performance*

Prior, John. *Handbook of Training and Development*. Bombay: Jaico Publishing House. Rolf, P. & Udai Pareek.

Training for Development. Sage Publications Pvt. Ltd.

Warren, M.W. *Training for Results*. Massachusetts, Addison-Wesley.

Note: Readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Master of Business Administration (Business Analytics)

MBA (BA)
Semester IV

Marks: 100 **Duration-60 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Digital Marketing Analytics **MBABAEC06**	**4**	**2**	**0**	**2**	**Pass in Graduation**	**NIL**

Learning Objectives

This course provides the knowledge base for understanding and practicing of the data analytics in Marketing. The primary objective is to help students in familiarizing and learning essential contrivances for steering business transactions through the various resources of information technology along with concept related contemporary case studies. The course provides thorough knowledge on various functions of data analytics in Marketing.

Learning outcomes
After completion of the course, learners will be able to:

- Recognise the concept of digital analytics and its role in marketing.
- Improve the visibility of a website on search engines and increase traffic with help of SEO and dive deep into different facets of SEO like on-page optimization and off-page optimization, keyword research, and SEO performance measurement.
- Analyze the process of Social Media Optimisation.
- Identify different kinds of marketing.
- Improve Return on Investment for any digital marketing program

Syllabus

Unit I: Introduction to Marketing & Digital Marketing Perspective (10 Hours)
Role of Marketing, Consumers and Consumption Segmentation, Targeting and Positioning, Designing Products and Services, Pricing and Channels, Using Communication to Engage Customers.
Introduction to Digital Marketing Basics Digital vs. Traditional Marketing, Why Care About Digital Marketing? Revisiting Marketing Mix: Digital Perspective with Case Study , Opportunities in Digital Marketing in India.
Personas in Digital Marketing Developing, Using and Refining Personas , The Personas and User Journeys, Consumer Journey Mapping Frameworks, Digital Marketing Mix and Digital Models, Case-based Discussions

Unit II: Search Engine Optimization (SEO) (13 Hours)

What is SEO and how do Search Engines Work?, Understanding On-page and Of-page SEO In Details, Keyword research techniques, Technical SEO, Mobile SEO, and Schema Markups, Link building – Blogger Outreach and Other Techniques, Social SEO, Local SEO, and International SEO, SEO Audits, SEO Tools – SEMrush, Ahrefs, etc., How to Rank #1 on Google? , Google AdWords , Set Up, Manage and Optimise a Google Ad Campaign , Google Analytics , Pay Per Click: An online internet model

Unit III: Social Media Optimization (SMO) (12 Hours)
Social Media Optimization, its Benefits, Different Platforms
Affiliate Tracking on a Website, How to Handle Affiliates?, Handling Fraudulent Transactions, Tips and Tricks

Unit IV: Kinds of Marketing (10 Hours)
Content Marketing, Email Marketing , Video Marketing, Paid Marketing , Affiliate Marketing, Influencer Marketing, Mobile Marketing

Unit V: Digital Marketing Analytics & ROI Measurement (15 Hours)
Descriptive, Predictive and Prescriptive Analytics , Market Basket Analysis , Sentiment Analysis, Understanding Google Analytics and Visitors' Traffic Matrices, Understanding Visitor Behaviour using Multiple Metrics, Slicing and Dicing Data, Understanding Growth Patterns, How to Build a Marketing Strategy by Seeing Traffic Patterns?, Channel Performance, Setting Goals, and Creating Reports and Dashboards, Measuring ROI as an Integrated Approach and Strategy Creation

Practical Exercise:
The learners are required to:

1. Discuss case studies on digital analytics and its role in marketing.
2. Participate in role play exercises to evaluate and choose appropriate web analytics tools and techniques.
3. Examine the important tools to collect data using today's most important online techniques: performing bulk downloads, tapping APIs, and scraping web pages.
4. Understand approaches to visualizing data effectively.
5. Evaluate different kinds of marketing.
6. Utilise Predictive and Prescriptive Analytics techniques to supplement decision making and policy formulation.
7. Recognize Key Performance Indicators tied to any digital marketing program

Suggested Readings:

1. Sponder, M. & Khan, G. F. (2017). *Digital Analytics for Marketing*. United Kingdom: Taylor & Francis.
2. Hemann, C. & Burbary, K. (2013). *Digital Marketing Analytics: Making Sense of Consumer Data in a Digital World.* United Kingdom: Pearson Education.
3. Hartman, K. (2020). *Digital Marketing Analytics: In Theory and In Practice* (Black & White Print Version). (n.p.): Independently Published.
4. Hemann, C. & Burbary, K. (2018). *Digital Marketing Analytics: Making Sense of Consumer Data in a Digital World*. United Kingdom: Pearson Education, Incorporated.
5. Kotler, P., Kartajaya, H & Setiawan,I. (2017). *Marketing 4.0: Moving from Traditional to Digital*. Wiley.
6. Winston, W.L. (2016). *Marketing Analytics: Data-Driven Techniques with Microsoft Excel*. Wiley.
7. Ian, Dodson I. (2016). *The Art of Digital Marketing: The Definitive Guide to Creating Strategic, Targeted, and Measurable Online Campaigns*. Wiley.

Note: Readings will be updated by the Department of Commerce and uploaded on Department's website.
Note: Relevant software will be used for pedagogical purpose. Evaluation of practical exercise using software will be part of internal assessment. Further, case studies related to above topics are required to be discussed.

Master of Business Administration (Business Analytics)

MBA (BA)
Semester IV

Marks: 100 **Duration-60 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Financial Modeling using Excel **MBABAEC07**	4	0	0	4	**Pass in Graduation**	**NIL**

Learning Objectives

To provide hands-on learning on financial modelling using spreadsheets for Business Analysis and financial decisions.

Learning outcomes

After completion of the course, learners will be able to:

- Evaluate the basics of financial modelling using spreadsheets.
- Build financial models for business analysis, CVP analysis, forecasting and to make projected financial statements
- Analyze models for making capital budgeting decisions and evaluate capital structure for the business.
- Apply modelling tools and techniques for pricing bonds, securities, portfolios and options.
- Examine different automation techniques for financial models.

Syllabus

Unit I: Modeling Overview and Core Concepts (10 Hours)

Financial modeling and application, tools for modeling, skills for financial modeling, steps of modeling, Structure and Challenges, Spreadsheet environment and its application, designing the spreadsheet model, using formulae in

modeling, Financial Modeling standards

Unit II: Modeling for Business Analysis (12 Hours)

Building a financial statement model, trend analysis, common-size analysis, working capital schedule, amortization schedule, Construction of pyramid of ratios Is something missing here, Financial analysis of company, Developing a financial model for Cost-Volume-Profit Analysis – Break-Even-Point, and Risk Analysis in Cost-Volume-Profit Analysis Integration and linking of financial statements; Lag and lead indicators; Forecasting techniques; Forecasting turnover, expenses, current and non-current assets, liabilities; Adjusting for seasonality, projected financial statements

Unit III: Modeling for Capital Budgeting Decisions (13 Hours)

Applying modeling tools and functions for basic functions of time value of money-FV & PV; Annuity; Loan Amortization; Connecting Loan structure with Taxation, projected discounted cash flows, DCF valuation, Pay Back Period, NPV and IRR; Necessary Projections, Data Tables, Sensitivity Analysis and Scenario Analysis, Expected NPV and associated Variance – Complete Model for capital budgeting decisions, Modeling Financial Leverage, capital structure and weighted average cost of capital

Unit IV: Financial Modeling for Securities (13 Hours)

Modeling Price and Yield for different types of bonds; modeling dynamics of bonds, interest rate risk modeling and prediction of prices – duration and convexity, developing models to determine and analyze security risk and return; Portfolio Risk and Return; and Efficient Frontier, Developing financial models for pricing Binomial Options and Black–Scholes model.

Unit V: Automation of Models (12 Hours)

Building a dynamic Dashboard for assisting the management to make necessary financial decision, Introduction to VBA and Macros, Building user-defined Functions, Macros for Automation, Automation of the Financial Models

Evaluation will be done through a practical exam.

Practical Exercises:

The learners are required to:

1. Find out the different tools and features of a spreadsheet
2. Extract historical data from financial statements of companies to forecast company earnings. Compare the performance of any two companies of your choice in an industry using ratios.
3. Select any 5 companies of your choice. Using appropriate models, forecast their future cash flows, growth rate and cost of capital. Estimate the intrinsic value of stocks of these companies by building a financial model.
4. Extract historical data for 5 companies and compare their capital structure. Also, estimate their

value if more debt is incorporated as part of their capital structure.

5. Construct portfolios based on any firm attribute using past data. Assess the profitability of this investment strategy. Evaluate if the returns on this strategy are explained by standard risk models such as CAPM and F-F Model. Use excel for your estimations.

6. Construct macro using VBA for any new financial function not existing in the Excel like Pay back period, Cumulative Cash Flows etc.

Suggested Readings:

- Beninga, Simon (2014). *Financial Modeling*. MIT press.
- Day, Alastair L. (2012). *Mastering Financial Modeling*. Pearson Education.
- Moschella, John (2017). *Financial Modeling for Equity Research: A Step-by-Step Guide to Earnings Modeling*. Guternberg Research publishing.
- Proctor, K. Scott (2004). *Building Financial Models with Microsoft Excel*. John Wiley and Sons.
- Sengupta, Chandan (2004). *Financial Modeling using Excel and VBA.* John Wiley & Sons.
- Tija, John S. (2009). *Building Financial Models.* McGraw Hill.

Note: Latest edition of the readings may be used.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

Master of Business Administration (Business Analytics)

MBA (BA)
Semester IV

Marks: 100 **Duration-60 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Knowledge Management **MBABAEC08**	**4**	**3**	**0**	**1**	**Pass in Graduation**	**NIL**

Learning Objective:

To prepare the students to participate in the organizational knowledge management efforts and how the three aspects, strategy, technology, and HRM need to be aligned together to facilitate management of knowledge.

Learning Outcomes:

After completion of the course, learners will be able to:

-
- Explain the evolution of knowledge management and its relevance in a competitive environment.
- Describe the entire process of KM & knowledge creation.
- Develop knowledge leadership capabilities.
- Apply knowledge management systems and tools.
- Analyze knowledge as a strategic resource using enabling technologies and evaluate knowledge strategies.

Syllabus:

Unit I: Introduction (10 Hours)

Definition, need and objectives of knowledge management; Organizational benefits of KM; The drivers of knowledge management; Challenges of KM implementation; Knowledge hierarchy; Structural and process perspective of knowledge; Context and relevance of KM in competitive environment and knowledge economy.

Unit II: KM Process & Knowledge Creation (12 Hours)

Knowledge identification; Knowledge capture; Knowledge acquisition; Knowledge creation; Knowledge codification; Knowledge linking and building; Knowledge transfer & dissemination; Knowledge storage; Knowledge sharing; Knowledge application; Nonaka's model of knowledge creation-SECI model, Ba model.

Unit III: Knowledge Management Soft Support System (13 Hours)

Developing knowledge leadership capabilities; Recruiting and selecting knowledge leaders; Strategic knowledge leaders; Developing a knowledge culture; Knowledge culture enablers; Developing and

maintaining knowledge motivators, and other managerial and social infrastructure; Knowledge community.

Unit IV: KM Systems and Tools (13 Hours)

Knowledge management systems; Knowledge system design and architecture; Knowledge maps, implementation and challenges of KM system; ICT and groupware technology; Knowledge technology; Data warehouse and data mining; Search engines; Expert systems; Knowledge portal; Intelligent agents.

Unit V: Knowledge Strategies (12 Hours)

Knowledge as strategic resource; Knowledge strategies and its evaluation; Benchmarking; Knowledge audit; Introduction of enabling technologies of KM- big data, cloud computing, AI, etc.; Sustainable knowledge management; Top management challenges and emerging perspective ahead.

Practical Exercises:

The learners are required to:

1. Discuss the evolution of knowledge management and its relevance in the present competitive environment.
2. Analyze the entire process of KM & knowledge creation.
3. Assess the qualities of knowledge leaders in different organizations.
4. Apply knowledge management systems and tools.
5. Evaluate knowledge of different organizations.

Learning experiences from real life case studies.

Suggested Readings:

- Awad, Elias M. & Ghaziri, Hassan M. (2004). *Knowledge Management.* Pearson Education Inc., Prentice Hall.
- Davenport, T. H. & Prusak, L. (1998). *Working knowledge: How organizations manage what they know.* Harvard Business Press.
- Debowski, S. (2006). *Knowledge Management*. John Wiley & Sons Australia Ltd.
- Hislop, D. (2013). *Knowledge Management in Organizations: A Critical Introduction*. Oxford University Press.
- Liebowitz, J., & Beckman, T. J. (1998). *Knowledge organizations: What every manager should know.*
- CRC Press.
- Nonaka, I., & Takeuchi, H. (1995). *The knowledge-creating company: How Japanese companies create the dynamics of innovation.* Oxford University Press.
- Newell, S., Robertson, M., Scarbrough, H. & Swan, J. (2009). *Managing knowledge work and innovation.* Palgrave Macmillan.
- Tiwana, A. (2003). *Knowledge Management Toolkit, The: Orchestrating IT, Strategy, and Knowledge Platforms*. Prentice Hall.

Note: Readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Master of Business Administration (Business Analytics)

MBA (BA)
Semester IV

Marks: 100 **Duration-60 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Human Resource Information System **MBABAEC09**	4	3	0	1	**Pass in Graduate**	**NIL**

Learning Objectives

The objective of the course is to acquaint the students about the concept of information systems, internet, World Wide Web, HRIS and their application in Human Resource Development.

Learning outcomes

After completion of the course, learners will be able to:

- Describe the role of information technology and information systems in business and with respect to different management levels.
- Recognise the relevance of information in decision making. Identify and evaluate hardware and software requirements for information systems.
- Develop an understanding of the System Development Life Cycle in detail and analyze the MIS applications in different industries.
- Discuss how Human Resources Information Systems (HRIS) are bought/developed and implemented for various levels in an organization.
- Explore the use of some common Information Systems development tools

Syllabus

Unit I: Introduction (12 Hours)

Introduction to Management Information Systems, history of MIS, impact of MIS, role and importance of MIS in organization; Role of MIS at management levels; MIS growth and development; Artificial intelligence, Decision Support System (DSS), Executive Information System (EIS); Applications of MIS.

Unit II: Information Concepts and Information Technology (12 Hours)

Data and information; Relevance of information to decision making; Source, quality and types of information; Relevance of information in MIS; Assessing information needs of the organization; Use of information for competitive advantage; Trends in Information Technology- hardware and software, data-communication concepts; Decision making with communication technology; Multimedia approach to information processing; Decision of appropriate information technology for proper MIS.

Unit III: System Development and Applications of MIS (13 Hours)

Systems definition-types of systems:

open, closed, deterministic, probabilistic, etc; Relevance of choice of system in MIS; Integration of organization systems and information systems; System Development Life Cycle (SDLC); Alternative system building approaches, prototyping, rapid development tools, case tools, object-oriented systems; MIS applications in HRD & O.D. in manufacturing, R&D, public transport, hospitals, hotels and service industries.

Unit IV: HRIS Development (13 Hours)

HRIS life cycle/HR responsibility in each phase of HRIS development; Pre implementation stage of HRIS; HRIS planning; HRIS expectation, productivity through HRIS; HRIS cost-benefit value analysis; Getting management support for HRIS; Limitations of computerization of HRIS.

Unit V: Emerging Trends in HRIS (10 Hours)

Implementation of HRIS- tools in HRIS development, cases

and exercises; Human Resources Information Systems in large and small organizations- cases & exercises, packaged Human Resources Information Systems/ business process, re-engineering, enterprise resource planning systems, emerging trends in HRIS, networking, internet, intranet, technology implications, etc.

Practical Exercises:

The learners are required to:

1. Analyze the role of information technology and information systems in various organizations with respect to different management levels.
2. Identify and evaluate hardware and software requirements for information systems.
3. Evaluate the role of MIS applications in different industries.
4. Perform HRIS cost-benefit value analysis.
5. Compare Human Resources Information Systems in large and small organizations.
6. Explore and evaluate some common Information Systems development tools.

Suggested Readings:

Badgi (2012). *Practical Guide to Human Resource Information Systems*. New Delhi: PHI Learning Pvt. Ltd.

Brien, James A. O. (2011). *Management Information System*. New Delhi: Tata McGraw Hill

Gordon, B. Davis. & Olson, Margreth H. (2001). *Management Information System*. New Delhi: McGraw Hill.

Jawadekar, W. S. (2015). *Management Information System*. New Delhi: Tata McGraw Hill

Kavanagh, M. J., Thite, M. & Johnson, R. D. (2011). *Human Resource Information Systems: Basics, Applications, and Future Directions*. South Asia: SAGE Publications.

Richard D. (2011). *Human Resource Information Systems: Basics, Applications, and Future Directions.* South Asia: SAGE Publications.

Laudon. (2017). *Management Information System*. India: Pearson.

Murdick, R. G., Ross, Joel. E. & Clugett, J. R. (2010). *Information System for Modern Management*. New Delhi: Prentice Hall of India.

Note: Readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Master of Business Administration (Business Analytics)

MBA (BA)
Semester IV

Marks: 100 **Duration-60 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Advanced Machine Learning **MBABAEC10**	4	3	0	1	**Pass in Graduation**	**NIL**

Learning Objectives

The course aims to familiarize the learners with machine learning methods for various problems where human expertise is not present, or where humans are unable to identify the reason behind their expertise, or where problem size is too huge for humans to comprehend solutions or where solutions are context specific. The course will introduce topics which include Bayesian statistics, Markov modeling, graphical model structure learning, deep learning and Gaussian processes.

Learning outcomes

After completion of the course, learners will be able to:

1. Describe the role of machine learning in solving complex and large scale problems.
2. Analyze Bayesian Statistics and decision theory.
3. Analyze Markov and Hidden Markov Models.
4. Analyze Additive models, Tree based methods and Boosting methods.
5. Evaluate graphical methods.
6. Recognize the concept of Deep learning and analyze the Gaussian Process.

Syllabus

Unit I: Unsupervised Learning (8 Hours)

Introduction, Association rules, Cluster analysis, Self-organizing maps, Principal components, curves and surfaces, non-negative matrix factorization, independent component analysis, multidimensional scaling, nonlinear dimension reduction, the google Pagerank algorithm.

Unit II: Bayesian Statistics (12 Hours)

Introduction, Summarizing posterior distributions, Bayesian model selection, Priors, Hierarchical Bayes, Empirical Bayes, Bayesian decision theory.

Unit III: Markov and Hidden Markov Models (8 Hours)

Introduction, Markov models, Hidden Markov models, Inference in HMMs, Learning from HMMs, Generalizations of HMMs.

Unit IV: Additive Models, Trees and Boosting (12 Hours)

Generalized Additive Models, Tree based methods, PRIM: Bump hunting, MARS, Hierarchical mixture of experts, missing data, computational considerations. Boosting methods, boosting fits an additive model, forward stagewise additive modeling, exponential loss and adaboost, why exponential loss, loss functions and robustness, off the shelf procedures for data mining, boosting trees, right sized trees, regularization, interpretation.

Unit V: Graphical Model Structure Learning (20 Hours)

Introduction, Learning tree structures, learning DAG structures, Learning DAG structures with latent variables, learning casual DAG's, learning undirected Gaussian graphical methods, learning undirected discrete graphical methods.

Deep learning and Gaussian Process

Deep learning: Introduction, Deep generative models, Deep neural networks, applications of deep networks. Gaussian Processes: Introduction, GPs for regression, GPs meet GLMs, Connection with other methods, GP latent variable model.

Practical Exercises:

The learners are required to: learn to analyse using appropriate softwares:

1. Analyze the role of machine learning in solving complex and large scale problems.
2. Analyze Bayesian Statistics and decision theory.
3. Analyze Markov and Hidden Markov models using appropriate software.
4. Analyze Additive models, Tree based methods and Boosting methods using appropriate software.
5. Evaluate graphical methods.
6. Evaluate applications of deep networks.

Essential/ Recommended readings

Suggested Readings:

· Aston Zhang, Zachary C. Lipton, Mu Li, and Alexander J. Smol (2021). *Dive into Deep Learning* (Free Access) (https://d2l.ai/)

·Barber, D. (2012). *Bayesian Reasoning and Machine Learning*. Cambridge University Press.

· Bishop, C.M. (2007). *Pattern Recognition and Machine Learning*. Springer.

· Cover, T.M. & Thomas, J.A. (2006). *Elements of Information Theory*. Wiley

· Hastie, T., Tibshirani, R., and Friedman, J. (2011). *The Elements of Statistical Learning*.Springer.

· Hastie, T., Tibshirani, R., and Friedman, J. (2021). *Introduction to Statistical Learning*. Springer. (Free Access) (https://www.statlearning.com/)

· Hearty, J (2016). *Advanced Machine Learning with Python*. Packt publishing.

· MacKay J.C.D. (2005). I*nformation Theory, Inference and Learning Algorithms*. Cambridge University Press.

· Murphy, K.P. (2022). *Probabilistic Machine Learning: An introduction*. MIT press. (Free Access) (https://mitpress.mit.edu/9780262046824/probabilistic-machine-learning/) (https://probml.github.io/pml-book/)

· Nocedal J. & Wright, S.J. (1999). *Numerical Optimization* Springer.

· Rasmussen, C.E. & Williams, C.K.I. (2005). *Gaussian processes for Machine Learning*, MIT Press.

· **Note: Readings will be updated by the Department of Commerce and uploaded on Department's website.**

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Master of Business Administration (Business Analytics)

MBA (BA)
Semester IV

Marks: 100 **Duration-60 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Time Series Analytics **MBABAEC 11**	4	3	0	1	**Pass in Graduation**	**NIL**

Learning Objectives

To make students model, analyse and forecast the behaviour of time series data. To make them analyse various issues involved in Time series Econometrics. The course is designed to equip them with advanced analytical tools and techniques which can enhance their logical ability for forecasting in business.

Learning outcomes

After completion of the course, learners will be able to:

- Discuss the basics of Time Series Data.
- Evaluate Stationary Time Series Models.
- Test and analyze the Stationary Time series.
- Model volatility using Time series.
- Examine cointegration and error correction among time series data.
- Analyze, Model and Forecast using time series data.

SYLLABUS

Unit I: Difference Equations (10 Hours)

Time series models, Difference equations and their solutions, solution by iteration, an alternative solution methodology, the cobweb model, solving homogeneous difference equations, particular solutions for deterministic processes, the method of undetermined coefficients, lag operators.

Unit II: Stationary Time Series Models (12 Hours)

Stochastic difference equation models, ARMA models, stationary restrictions for ARMA(p,q) model, autocorrelation function, partial autocorrelation function, sample autocorrelations of stationary series, box-jerkins model selection, properties of forecasts, model of interest rate spread, seasonality, parameter instability and structural change.

Unit III: Models with Trend (12 Hours)

Deterministic and Stochastic trends, removing the trend, unit roots and regression residuals, Monte- Carlo method, Dickey-Fuller tests: examples and extensions, structural change, power and the deterministic regressors, test with more power, panel unit root tests, trends and univariate decompositions.

Unit IV: Modelling Volatility (13 Hours)

Economic time series: the stylized facts, ARCH processes, ARCH and GARCH estimates of inflation, examples of GARCH models, A GARCH model of risk, ARCH-M model, additional properties of GARCH processes, maximum likelihood estimation of GARCH models, other models of conditional variance, Multivariate GARCH.

Unit V: Multi-equation Time Series Models (13 Hours)

Intervention Analysis, Transfer function analysis, estimating a transfer function, limits to a structural multivariate estimation, VAR analysis, estimation and identification, Impulse response function, testing hypothesis, Example of Simple VAR, structural VARs, examples, Granger Causality Test, Variance decomposition. Co-integration and Error Correction Models.

Practical Exercises:

The learners are required to:

1. Analyze time series data.
2. Examine the stationarity of the time series using appropriate software.
3. Model volatility of time series using appropriate software.
4. Examine cointegration among time series using appropriate software.
5. Analyze and examine error correction between time series using appropriate software.
6. Examine causality between time series using appropriate software.
7. Analyze, Model and Forecast using time series data.

Essential/ Recommended readings

Suggested Readings:

- Anderson (2011). *The Statistical Analysis of Time Series*. Wiley.
- Brockwell, P.J. & Davis, R.A. (2016). *Introduction to Time Series and Forecasting*. Springer, Third Edition.
- Chatfield, C. (2003). *The Analysis of Time Series: An Introduction*. Chapman & Hall, Sixth Edition.

- Enders W. (2014). *Applied Econometric Time Series*. John Wiley & Sons, Inc., Fourth Edition.
- Hamilton, J.D. (2012). *Time Series Analysis*. Princeton University Press.
- Mills, T.C. & Markellos, R.N. (2008). *The Econometric Modelling of Financial Time Series*. Cambridge University Press, Third Edition.
- Shumway, R.H. & Stoffer, D.S. (2013). *Time Series Analysis and Its Applications: With R Examples*. Springer.
- Tsay, R.S. (2014). *Analysis of Financial Time Series*. Wiley, Third Edition

Note: Latest edition of the readings may be used.

Note: Relevant software will be used for pedagogical purpose. Evaluation of practical exercise using software will be part of internal assessment. Further, case studies related to above topics are required to be discussed.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

Master of Business Administration (Business Analytics)

MBA (BA)
Semester IV

Marks: 100 **Duration-60 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Predictive Analytics MBABAEC12	4	2	0	2	**Pass in Graduate**	**NIL**

Learning Objectives

The objective of the course is to make one understand the correct framework of predictive modeling process which involves data preparation, model development, hypothesis testing and model evaluation. The course also focuses on various concerns in model prediction such as overfitting, model tuning and class imbalance.

Learning outcomes

After completion of the course, learners will be able to:

1. Gain skills in understanding predictive models.
2. Analyze metric data and get an overview of statistical tests
3. Gain skills in building predictive models.
4. Recognise the process of hypothesis testing and model evaluation.
5. Use Linear and Logistic Regression for Model Estimation.
6. Apply predictive models to solve business problems.

SYLLABUS

Unit I: Introduction (5 Hours)

Classification & prediction, Key ingredients of predictive models, Goals of a regression analysis. Regression models, Data in a regression analysis.

Unit II: Data Preparation & Statistical Tests (10 Hours)

Analyzing the metric data: Measures of central tendency, measures of dispersion, data distribution, histogram analysis, outlier analysis, correlation analysis. Attribute Reduction Methods: Univariate Analysis, Correlation-based Feature Selection, Attribute Extraction: Principal Component Analysis. Overview of statistical tests: Categories, one-tail and two-tail, Type I and Type II errors, interpreting significance results.

Unit III: Model Development (10 Hours)

Model Development: Data partition, Attribute reduction, model construction, model validation, hypothesis testing, results interpretation, cross-validation.

Unit IV: Hypothesis Testing & Model Evaluation (10 Hours)

Steps in Hypothesis Testing, Statistical testing, model-comparison tests. Performance measures for categorical and continuous dependent variables, ROC analysis.

Unit V: Linear and Logistic Regression Model Estimation (25 Hours)

Simple Linear Regression, Multiple Regression, Logistic Regression Overfitting, Model Tuning & Class Imbalance.

Applying Predictive analytics

Applying Predictive analytics across various industries (Banking, Healthcare, Human resources (HR), Marketing and sales, Supply chain) for different business problems and making informed decisions within real-world situations.

Practical Exercises:

The learners are required to:

1. Interpret key ingredients of predictive models.
2. Apply statistical tests and interpret the significance of their results.
3. Build predictive models
4. Apply Statistical testing techniques and model-comparison tests
5. Use Linear and Logistic Regression Models on real life situations.
6. Apply predictive analytics to solve business problems.

Essential/ Recommended readings

Suggested Readings:

- Chatterjee, S. & Hadi, A. (2012). *Regression Analysis by Example,* John Wiley, Fifth Edition.
- Frees, E. E, Derrig, E. W. & Meyers, G. (2014). *Predictive Modeling Techniques in Actuarial Science, Vol. I: Predictive Modeling Techniques*. Cambridge University Press.
- Kuhn, M. and Johnson, K. (2013). *Applied Predictive Modelling*, Springer Verlag.
- Larose, D.T. & Larose, C.D. (2016). *Data Mining and Predictive Analytics*. Wiley.
- Malhotra, R. (2016). Empirical Research in Software Engineering: Concepts, Analysis & Applications, CRC press.
- Mayor, E. (2015). *Learning Predictive Analytics with R*, Packt Publishing.

- Sarma, K.S. (2013). *Predictive Modeling with SAS Enterprise Miner: Practical Solutions for Business Applications*, SAS Institute, Second Edition.
- Strickland, J. (2014). *Predictive Modeling and Analytics*, Lulu.com.
- Weisberg, S. (2014). *Applied Linear Regression*, Wiley, Fourth Edition.

Note: Readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

Master of Business Administration (Business Analytics)

MBA (BA)
Semester IV

Marks: 100 **Duration: 60 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Enterprise Performance Management **MBABAEC13**	**4**	**3**	**0**	**1**	**Pass in Graduation**	**NIL**

Learning Objectives:
This course aims to discuss the major aspects of technological change and the kind of human resource management strategies and steps which may equip the organization and its human resources to adequately cope with such changes. It also examines the importance of an effective performance management system in helping organizations define and achieve short and long term goals.

Learning Outcomes: After completion of the course, learners will be able to:

1. Discuss the role of HR management in effective business administration.
2. Recognise the role of changing technology and leadership skills in the management of an enterprise.
3. Evaluate and analyze the need for performance management and provide solutions that align with strategic goals as well as maximizing productivity.
4. Develop knowledge of the concept of auditing and its applicability as a performance management tool.
5. Analyze HR scorecard, stochastic models and future trends in Business Analytics.

Syllabus:

Unit I: Manpower Management (10 Hours)

HR Management in the 21st Century; Environmental Context of Human Resource Management; The Emerging Profile of Human Resources; Special Features of New Technology; Concept and Process of Technological Innovation; Organizational and Human Resource Implications of Technological Change.

Unit II: Globalization, Technology and Human Resource Issues (12 Hours)
Technology and Culture, Technology Management, Changing Technology and New Leadership Skills, Economic Theory of Choice and Employee Benefits.

Unit III: Performance Management (13 Hours)

Concepts and issues, definition, performance, principles, role of performance management in the organization; Management Control and Operational Control; Framework and key factors to successful performance system.

Unit IV: Evaluating HR function (12 Hours)
Overview of evaluation - scope - strategic impact - level of analysis - Criteria - Level of Constituents - ethical dimensions. Approaches to evaluation, - audit approach, - analytical approach, - quantitative and qualitative measures - outcome and process criteria, Balanced Scorecard perspective, Benchmarking, Accounting for HRM.

Unit V: HR Scorecard and Stochastic Models (13 Hours)
Creating an HR Scorecard, Measuring HR alignment -2 dimensions of alignment - assessing internal and external alignment - Systems alignment Map. 7-step Model for implementing HR's strategic role. New issues in Manpower Training and Career Development; Introduction to stochastic models, Markov models, Poisson process with applications, Markov decision process in sequential decision-making, future trends in Business Analytics.

Practical Exercises:
The learners are required to:

1. Analyze and interpret case studies related to HR Management.
2. Discuss the role of changing technology and leadership skills in the management of an enterprise.
3. Participate in simulation exercises in the classroom on Leadership Skills and thereby identify their needs in performance management.
4. Participate in simulation exercises and role play on performance management. Learners may be assigned to draft solutions that align with strategic goals as well as maximize productivity.
5. Interview HR managers and develop in-depth knowledge on practical applications of evaluation of HR functions.
6. Visit a company and identify the manpower training and career development methods adopted in various functional areas.
7. Create an HR Scorecard in a select organization and present the report of the same.

Essential/ Recommended readings

Suggested Readings:

- Aguinis, H. (2008). *Performance management* (2nd edition). USA: John Wiley.
- Agunis, H. (2013). *Performance Management* (3rd edition). Pearson Education.
- Ashdown, L. (2014). *Performance Management*. Kogan Page
- Michael, Armstrong (1999). *Performance Management*. Kogan Page.
- Robert Bacal. (2012). *Performance Management* (2nd edition). McGrawHill.
- Kohli, A.S. & Deb, T. (2013). *Performance Management*. New Delhi: Oxford University Press.
- Zeytinoglu, I. U. (2009). *Effects flexibility in workplace on workers: Work environment and the unions*. Geneva: International Labour Office.

Note: Readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Master of Business Administration (Business Analytics)

MBA (BA)
Semester IV

Marks: 100 **Duration-60 Hrs.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Robotic Process Automation in Business **MBABAEC14**	**4**	**3**	**0**	**1**	**Pass in Graduation**	**NIL**

Learning Objectives

The objective of the course is to acquaint the students with the concept of information systems, internet, World Wide Web, HRIS and their application in Human Resource Development.

Learning outcomes

After completion of the course, learners will be able to:

- Explain the concept and relevance of robotic process automation
- Discuss the working process of robotic process automation
- Evaluate application areas of robotic process automation for business
- Create different robotic process automation models of business
- Develop a business model using robotic process automation

Syllabus:

Unit I: Introduction (10 Hours)

Overview of robotic process automation. Robotic process automation: Concept and Introduction, features, merits, demerits, role and importance of Robotic Process Automation.

Unit II: Application area of robotic process automation with examples (12 Hours)
Automation: Meaning and types. differentiate between process automation and robotic process automation, Software automation and its importance.

Unit III: Various robotic process automation models of business (13 Hours)
SWOT analysis for robotic process automation, Application areas of robotic process automation. Opportunities and challenges of adoption and application of robotic process automation in business, study of various models of robotic process automation in business.

Unit IV: Study of various existing models of robotic process & Hands on hands practice on the existing robotic process models automation (13 Hours)

Practice on specific models of robotic process automation i.e. attendance tracking, performance tracking, performance evaluation etc. business models using robotic process automation.

Unit V: Development of business models using robotic process automation (12 Hours)
Development of models in various areas of finance and accounting, sales and marketing, HR, Production and operations and service sector.

Practical Exercises:

The learners are required to:

1. Discuss the relevance of robotic process automation in present times.
2. Analyze the working process of robotic process automation.
3. Identify and evaluate different application areas of robotic process automation in any industry.
4. Create and assess different robotic process automation models of business.
5. Develop and evaluate a business model using robotic process automation.

Essential/ Recommended readings

- "Robotics" by R C Gonzalez and C S G Lee
- "Robotics for Engineers" by Y Koren
- "Introduction to Robotics" by J J Craig
- "Robotics: Everything You Need to Know About Robotics from Beginner to Expert" by Peter Mckinnon
- "Robotics: A Reference Guide to the New Technology" by Joseph A Angelo Jr
- "Introduction To Robotics : Analysis, Control, Applications" by Saeed B Niku
- "Programming Robots with ROS" by Brian Gerkey and William D Smart
- "Arduino Robotics" by Harald Molle
- "Robotics: Science and Systems" by Wolfram Burgard Dieter Fox
- "Applied Robotics: An Introduction" by Edwin Wise
- "The Coming Robot Revolution: Expectations and Fears About Emerging Intelligent, Humanlike Machines" by Yoseph Bar-Cohen and David Hanson
- "Visual Control of Wheeled Mobile Robots (Springer Tracts in Advanced Robotics)" by Héctor M Becerra and Carlos Sagüés
- "Rescue Robotics: DDT Project on Robots and Systems for Urban Search and Rescue" by Satoshi Tadokoro
- "Modeling and Simulation of Logistics Flows 1: Theory and Fundamentals (Systems and Industrial Engineering – Robotics)" by Jean–Michel Réveillac

Note: Readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Use cases to supplement learning from the course.

Note: Relevant software will be used for pedagogical purpose. Evaluation of practical exercise (if any) using software will be part of internal assessment.

Updated on 21.03.2023

ANNEXURE-47

Addition to Ordinance VIII

[EC Resolution No. 60-1/ (60-1-13) dated 03.02.2023]

Following addition be made to the Ordinance VIII (VIII-F) of the Ordinances of the University:

Add the Following:

Assessment pattern of Courses based on Under Graduate Curriculum Framework – 2022 to be implemented from the Academic Year 2022-2023.

1. The assessment pattern that shall be adopted for the purpose of assessment of courses that have been approved by the Competent Authorities under the UGCF 2022 shall be as follows:

   (a) In any course where 01 credit is attributed to 'Tutorial', an objective assessment process has to be developed as a credit earned by a student in a course will eventually lead to its deposition in the Academic Bank of Credit of such student. Therefore, it is imperative that each credit earned by a student is adequately assessed and recorded accordingly.

   (b) In view of the above, the components of Tutorial have been listed so that at least some of these activities (listed at point no. 3 below) may be picked up by a student, in consultation with the teacher, as per rules devised for this purpose. The activities conducted shall be assessed through continuous assessment.

      (i) Some of the activities that may be done as component of tutorials are as follows:
      - Literature review
      - Book review
      - Movie review
      - Project activity (group)
      - Research cum presentation
      - Creative Writing/Paper writing
      - Group discussion
      - Problem Solving exercises
      - Any creative production (may be done in a group)

- Innovative Project
- Any other scholastic work related to application of conceptual understanding of the subject.

(ii) Further, out of forty marks allocated for Continuous Assessment of tutorial, five marks shall be for attendance, which shall be distributed as follows:

a. 67% attendance or more but less than 70% attendance (67% ≤ to < 70%) – 1 mark
b. 70% attendance or more but less than 75% attendance (70% ≤ to <75%) – 2 marks
c. 75% attendance or more but less than 80 % attendance (75% ≤ to < 80%) – 3 marks
d. 80% attendance or more but less than 85% attendance (80% ≤ to 85%) – 4 marks
e. 85 % attendance or more (85% ≤) – 5 marks

There shall **not** be marks for attendance in Continuous Assessments for practical.

2. (i) Internal Assessment (IA) shall consist of marks secured in class tests, assignments/ presentations and attendance. For instance, for an Internal Assessment of 25 marks, Class tests shall comprise of 10 marks, Assignments/Presentations shall comprise of 10 marks and attendance shall be for 5 marks. Similarly, for IA of 30 marks, 6 marks shall be for attendance, 12 marks for class test and 12 marks for Assignments/Presentations.

(ii) Six marks for attendance shall be distributed as follows:

(a) 67% attendance or more but less than 70% attendance (67% ≤ to < 70%) – 1.2 mark
(b) 70% attendance or more but less than 75% attendance (70% ≤ to <75%) – 2.4 marks
(c) 75% attendance or more but less than 80 % attendance (75% ≤ to < 80%) – 3.6 marks
(d) 80% attendance or more but less than 85% attendance (80% ≤ to 85%) – 4.8 marks
(e) 85 % attendance or more (85% ≤) – 6.0 marks

3. (i) To make Internal Assessment and Continuous Assessment fair and reasonable, it is necessary to strengthen the Monitoring Committee for Internal Assessment in every College, constituted as per clause 5 (ii) of Ordinance VIII-E of the Ordinances of the University. This Committee shall be responsible for the entire process of Internal Assessment in the College, including redressal of grievances, if any. The same Committee shall also look into the process of Continuous Assessment and redress grievances, if any.

(ii) A student who is discontent with the decision taken by the Monitoring Committee for Internal Assessment of the College, with respect to the

grievance submitted by him/her relating to Internal Assessment/Continuous Assessment, may file an appeal before an appellate body consisting of the Principal of the College, the Teacher-in-charge of the department/senior faculty member, the concerned teacher who has assessed the aggrieved student and shall be chaired by the Nominee of Dean of Colleges or Director South Delhi Campus, under whose jurisdiction the concerned College falls.

4. The theory examination and internal assessment shall be a cumulative assessment of the teaching-learning done in the theory as well as tutorial classes.

5. The assessment pattern for courses of different credit distributions is provided in **Table – 1**.

6. Practical marks for courses of total four credits, shall comprise of

   (i) continuous evaluation (25%),
   (ii) end term practical examination (50%) and
   (iii) viva-voce (25%).

   Practical marks for courses of total two credits shall comprise of

   (i) continuous evaluation (25%),
   (ii) end term practical /written exam (50%) and
   (iii) viva-voce (25%)

7. The variance of the total marks in various combinations of LTP structure shall be aligned with the help of "weighted average" calculated through an appropriately devised formula for conversion of marks to grades.

8. "The attendance requirement for continuous mode of assessment shall be as per Ordinance VII of the Ordinances of the University".

9. To enable students to improve their grades, the following may be adopted:

Grade obtained in the course/paper	**Grade obtained in Theory**	**Grade obtained in Practical/ Tutorial**	**Re-register**	**Course of action to improve the Grade**
F	Not Satisfied*	Satisfied	No	To appear in end term theory exam of that course/paper for Essential Repeat
More than F	Not Satisfied*	Satisfied	No	To appear in end term theory exam of that course/paper for improvement
More than F	Not Satisfied (IA marks satisfied)	Satisfied	No	To appear in end term theory exam of that course/paper for improvement
More than F	Not Satisfied including IA	Satisfied	Yes	To attend the course and appear for IA and end term theory examination for improvement
More than F	Satisfied	Not Satisfied*	Yes	To attend the course and appear in both theory and practical

				examinations, along with their CA and IA for improvement.
F	Satisfied	Not Satisfied*	Yes	To attend the course and appear in both theory and practical examinations, along with their CA and IA for Essential Repeat.
F	Not Satisfied*	Not Satisfied*	Yes	Attend the course and appear in both theory and practical examinations, along with their CA and IA for Essential Repeat.

*Not satisfied indicates Grade below the passing marks prescribed for theory/practical.

10. The final percentage of marks (%) for the students graduating from 2022-2023 shall be calculated as Grand CGPA (Cumulative Grade Point Average) multiplied by a factor of 10.

TABLE-1

Total Credits	L	T	P	End term Theory Exam marks	Internal Assessment (IA) marks	Total of theory exam and IA	Duration of theory exam	Tutorial	Practical marks				Grand Total marks
								CA	CA	End term practical/ written exam	Viva-voce	Total	
4	3	1	0	90	30	120	3 hours	40	0	0	0	0	160
4	3	0	1	90	30	120	3 hours	0	10	20	10	40	160
4	0	0	4	0	0	0	NA	0	40	80#	40	160	160
4	1	0	3	30	10	40	1 hour	0	30	60	30	120	160
4	2	0	2	60	20	80	2 hours	0	20	40	20	80	160
2	1	0	1	30	10	40	1 hour	0	10	20**	10	40	80
2	0	0	2	0	0	0	NA	0	20	40**	20	80	80
2	2	0	0	60	20	80	2 hours	0	0	0	0	0	80

#In case there is no end term Practical examination for any 4 credit course, which has only Practical component, this mark shall be added to Continuous Assessment of the Practical and the total of the CA for Practical shall be 120.

****In case of courses of two credits which have practical component, either there shall be end term Practical Examination or end term written examination.**

CA - Continuous Assessment
IA - Internal Assessment

ANNEXURE-48

Sub: Amendment to Ordinances

[E.C Resolution No. 38-1-18, 47/- and 51-2/- dated 08.12.2022]

The Following amendments to Ordinances of the University has been approved by the Executive Council at its meeting held on 08.12.2022 are hereby notified for information and necessary action, by all the concerned:

1. Amendment to Appendix-II to Ordinance V (2) & VII. **[EC Res. No. 38-1-18 dated 08.12.2022]** regarding 2-year MCA curriculum in the Department of Computer Science from the academic session 2022-23 **(As per Annnexure-1).**

2. Amendment to Ordinance XXIV. **[EC Res. No. 47/- dated 08.12.2022]** as follows:

EXISTING	AMENDED
CAREER ADVANCEMENT SCHEME – 2018 (CAS-2018) **Clause (vi) (c)** (c) x-x-x-x-x	CAREER ADVANCEMENT SCHEME – 2018 (CAS-2018) **Clause (vi) (c)** (c) - No Change - ***Add the following: -*** ***Note:*** *Date of rejection shall imply date of eligibility.*
Clause (4.) (ii) 4. SCREENING CUM EVALUATION COMMITTEE: (Applicable for both CAS-2010 and CAS-2018) (i) x-x-x-x-x-x-x-x (ii) x-x-x-x-x-x-x-x	**Clause (4.) (ii)** 4. SCREENING CUM EVALUATION COMMITTEE: (Applicable for both CAS-2010 and CAS-2018) (i) - No Change (ii) - No Change ***Add the following: -*** ***Note:*** *Date of rejection shall imply date of eligibility.*

3. Amendment to Ordinance -IV. **[EC Res. No. 51-2/- dated 08.12.2022]** regarding re-admission with effect from academic session 2022-2023 as follows:

Clause	Existing	Amended
5 (a)	A student of the University failed to pass any examination of the University will be registered as an Ex-Student for re-appearing in the said examination subject to the conditions laid down under the Regulations of the University relating to Conditions of Admission to University Examinations	A student of the University having failed to pass any examination of the University will be registered as an Ex-student for re-appearing in the said examination subject to the conditions laid down under the Regulations of the University relating to Conditions of Admission to University Examinations. Provided that a student, having failed to pass any practical examination(s) of the University through Continuous Evaluation System will be eligible to seek re-admission, only for the purpose of re-appearing in the said practical examination(s) through Continuous Evaluation System.

Annexure-I

UNIVERSITY OF DELHI

MASTER OF COMPUTER APPLICATIONS

(MCA)

CONTENTS

I.	About the Department	1
II.	Introduction to CBCS-LOCF	1
	Scope	1
	Definitions	1
III.	MCA Programme Details	2
	Programme Objectives (POs)	2
	Programme Specific Outcomes (PSOs)	2
	Programme Structure	3
	Eligibility and Mode of Admissions	8
	Assessment of Students' Performance and Scheme of Examination	8
	Pass Percentage & Promotion Criteria	8
	Semester to Semester Progression	8
	Conversion of Marks into Grades	9
	Grade Points	9
	CGPA Calculation	9
	Division of Degree into Classes	9
	Attendance Requirement	9
	Span Period	9
	Guidelines for the Award of Internal Assessment Marks	9
IV.	Course Wise Content Details for MCA Programme	10

I. About the Department

Department of Computer Science was established at the University of Delhi in 1981 with the objective of imparting quality education in the field of computer science. With rapidly evolving technology and a continuous need for innovation, the department has been producing quality professionals, currently holding important positions in the information technology industry both in India and abroad.

The Department started the Master of Computer Applications (MCA) programme in the year 1982, which was among the first such programmes in India. The MCA programme focuses on providing a sound theoretical background as well as good practical exposure to students in the relevant areas. It is intended to provide a modern, industry-oriented education in applied computer science. It aims at producing trained professionals who can successfully meet the demands of the IT industry. They obtain skills and experience in up-to-date approaches to analysis, design, implementation, validation, and documentation of computer software and hardware.

The Department started M.Sc. Computer Science course in the year 2004 with the aim to develop core competence in Computer Science and to prepare the students to take up challenges of research and development. The students develop the ability to apply a high level of theoretical expertise and innovation to complex problems and application of new technologies. M.Sc. programme has been designed to teach the mathematical principles of specification, design and efficient implementation of both software and hardware.

The Department also offers a Doctor of Philosophy (Ph.D.) programme, aimed at producing quality researchers in several diverse branches of Computer Science. The Department also coordinates B.Sc. (H) Computer Science, B.Sc. Physical Science (Computer Science) and other courses taught at constituent colleges of University of Delhi.

II. Introduction to CBCS-LOCF (Choice Based Credit System-Learning based Curriculum Framework)

Scope:

The CBCS-LOCF provides an opportunity for the students to choose courses from the prescribed courses comprising core, elective/minor or skill-based courses. The courses will be evaluated following the grading system, which is considered to be better than the conventional marks system. Grading system provides uniformity in the evaluation and computation of the Cumulative Grade Point Average (CGPA) based on a student's performance in examinations which enables the student to move across institutions of higher learning. The uniformity in evaluation system also enables the potential employers in assessing the performance of the candidates.

Definitions:

(i) 'Academic Programme' means an entire course of study comprising its programme structure, course details, evaluation schemes etc. designed to be taught and evaluated in a teaching Department/Centre or jointly under more than one such Department/ Centre

(ii) 'Course' means a segment of a subject that is part of an Academic Programme

(iii) 'Programme Structure' means a list of courses (Core, Elective, Open Elective) that makes up an Academic Programme, specifying the syllabus, Credits, hours of teaching, evaluation and examination schemes, minimum number of credits required for successful completion of the programme etc. prepared in conformity to University Rules, eligibility criteria for admission

(iv) 'Core Course' means a course that a student admitted to a particular programme must successfully complete to receive the degree and which cannot be substituted by any other course

(v) 'Elective Course' means an optional course to be selected by a student out of such courses offered in the same or any other Department/Centre

(vi) 'Open Elective' means an elective course which is available for students of all programmes, including students of the same department. Students of other departments will opt these courses subject to fulfilling of eligibility of criteria as laid down by the Department offering the course.

(vii) 'Credit' means the value assigned to a course which indicates the level of instruction; One-hour lecture per week equals 1 Credit, 2 hours practical class per week equals 1 credit. Credit for a practical could be proposed as part of a course or as a separate practical course

(viii) 'SGPA' means Semester Grade Point Average calculated for an individual semester.

(ix) 'CGPA' is Cumulative Grade Points Average calculated for all courses completed by the students at any point of time. CGPA is calculated each year for both the semesters clubbed together.

(x) 'Grand CGPA' is calculated in the last year of the course by clubbing together a CGPA of two years, i.e., four semesters. Grand CGPA is being given in Transcript form. To benefit the student a formula for conversion of Grand CGPA into %age marks is given in the Transcript.

III. MCA Programme Details:

Programme Objectives (POs):

Master of Computer Applications (MCA) is a full-time, four-semester course that includes one semester of project work in the fourth semester. The objective of the MCA programme is to impart quality education in computer science and its applications, so that students are well prepared to face the challenges of the highly competitive IT industry. The course structure ensures overall development of the student, while concentrating on imparting technical skills required for an IT profession. No wonder, today after forty years of its existence, its alumni are holding important positions in the IT industry and academia in India and abroad.

Programme Specific Outcomes (PSOs):

The programme is designed to:

PSO1: enable the students to apply the computing and soft skills acquired in the MCA program for designing and developing innovative applications for the betterment of the society.

PSO2: provide exposure to techniques that would enable the students to design, implement, and evaluate IT solutions.

PSO3: To enable the students to meet the challenges of computer science and applications.

Programme Structure:

The MCA programme is a two-year course divided into four semesters. A student is required to complete 100 credits for the completion of the course and the award of degree.

		Semester	*Semester*
Part – I	First Year	Semester I	Semester II

Part – II	Second Year	Semester III	Semester IV

Course Credit Scheme

Semester	Core Courses			Elective Course			Open Elective Course			Total Credits
	No. of papers	Credits (Th+P+T)	**Total Credits**	No. of papers	Credits (Th+P+T)	**Total Credits**	No. of papers	Credits (Th+P+T)	**Total Credits**	
I	5	20+5+0	**25**	0	0	**0**	0	0	**0**	**25**
II	5	20+5+0	**25**	0	0	**0**	0	0	**0**	**25**
III	2	8+2+0	**10**	2	8+2+0	10	1	4+X+X	**5**	**25**
IV	Project	0	**25**	0	0	**0**	0	0	**0**	**25**
Total Credits for the Course			**85**			**10**			**5**	**100**

* For each core and elective course there will be 4 lecture hours of teaching per week.
* Open electives to the maximum total of 8 credits.
* Duration of examination for each course shall be 3 hours.
* Each course will be of 100 marks out of which 70 marks shall be allocated for semester examination and 30 marks for internal assessment.
* Each student shall carry out a project in the fourth semester. The projects will be carried out under the supervision of teachers of the department. When the project is carried out in an external organization (academic institution/ industry), a supervisor will also be appointed from the external organization. The project work will be evaluated jointly by the internal supervisor and an examiner to be appointed by the department in consultation with the internal supervisor. The project shall carry 500 marks distributed as follows:
  Dissertation: 50% weightage
  Viva-voce: 50% weightage
* To be eligible to pass a course and earn credits for it, a student must satisfy the criteria laid down by the University.
* Examination for courses specified in the odd (even) semesters shall be conducted only in the respective odd (even) semesters.
* Promotion Criteria: As laid down by the University.
* Award of degree: In order to be eligible for the award of the Master of Computer Applications (MCA) degree, a student must earn all the credits (100) as per the structure of the course, specified in the above table.

Semester wise Details of MCA Course

Semester I

Semester I					
	Number of core courses	5			
Course Code	**Course Title**	**Credits in each core course**			
		Theory	Practical	Tutorial	**Total**
MCAC101	Object Oriented Programming	4	1	0	**5**
MCAC102	Computer Systems Architecture	4	1	0	**5**
MCAC103	Data Structures	4	1	0	**5**
MCAC104	Database Systems	4	1	0	**5**
MCAC105	Mathematical Foundations of Computer Applications	4	1	0	**5**
	Total credits in core course	25			
	Number of elective courses	0			
	Total credits in elective course	0			
	Number of open electives	0			
	Total credits in elective course	0			
	Total credits in Semester I	**25**			

Semester II

Semester II					
	Number of core courses	5			
Course Code	**Course Title**	**Credits in each core course**			
		Theory	Practical	Tutorial	**Total**
MCAC201	Design and Analysis of Algorithms	4	1	0	**5**
MCAC202	Data Communication and Computer Networks	4	1	0	**5**
MCAC203	Operating Systems	4	1	0	**5**
MCAC204	Data Analysis and Visualization	4	1	0	**5**
MCAC205	Web Technologies	4	1	0	**5**
	Total credits in core course	25			
	Number of elective courses	0			
	Total credits in elective courses	0			
	Number of open electives	0			
	Credits in each open elective	0			
	Total credits in open elective	0			
	Total credits in Semester II	25			

Semester III

Semester III					
	Number of core courses	2			
Course Code	**Course Title**	**Credits in each core course**			
		Theory	Practical	Tutorial	**Total**
MCAC301	Cyber Security	4	1	0	**5**
MCAC302	Software Engineering	4	1	0	**5**
	Total credits in core course				**10**
	Number of elective courses	2			
	Credits in each elective	Theory	Practical	Tutorial	**Total**
	Elective course 1	4	1	0	**5**
	Elective course 2	4	1	0	**5**
	Total credits in elective courses				**10**
	Number of open elective	1			
	Credits in each open elective	Theory	Practical	Tutorial	**Total**
	Open Elective I	4	1	0	**5**
	Total credits in open elective courses				**5**
	Total credits in Semester III				**25**

List of Elective Courses for Semester III		
Course Code	**Course Title**	**Th-P-T**
MCAE301	Compiler Design	4-1-0
MCAE302	Artificial Intelligence	4-1-0
MCAE303	Information Security	4-1-0
MCAE304	Network Science	4-1-0
MCAE305	Deep Learning	4-1-0
MCAE306	Interpretable Learning	4-1-0

MCAE307	Natural Language Processing	4-1-0
MCAE308	Graph Theory	4-1-0
MCAE309	Text Analytics	4-1-0
MCAE310	Automata Theory	4-1-0
MCAE311	Combinatorial Optimization	4-1-0
MCAE312	Digital Watermarking and Steganography	4-1-0
MCAE313	Quantum Computing	4-1-0
MCAE314	Computer Graphics	4-1-0
MCAE315	Parallel and Distributed Computing	4-1-0
MCAE316	Data Mining	4-1-0
MCAE317	GPU Programming	4-1-0
MCAE318	Neural Networks	4-1-0
MCAE319	Machine Learning Applications	4-1-0
MCAE320	Digital Image Processing	4-1-0
MCAE321	Internet of Things	4-1-0

List of Open Elective Courses for Semester III		
Course Code	**Course Title**	**Th-P-T**
MCAO301	Java Programming	4-1-0
MCAO302	Data Mining for Business Applications (for other departments)	4-1-0
MCAO303	Data Science	4-1-0

Semester IV

Semester IV		
	Number of core courses	1
Course Code	**Course Title**	
MCAC401	Project work	25

	Number of elective courses	0
	Total credits in elective courses	0
	Number of open electives	0
	Total credits in open elective	0
	Total credits in Semester VI	**25**

Total Credits = 25 +25 + 25 + 25 =100

Selection of Elective Courses:

The students may select the elective courses out of the list of courses which are offered in a semester.

Eligibility and Mode of Admissions for the MCA Programme:

To be decided by the University in every academic year.

Number of seats in the MCA programme: 58

The candidates who are appearing in the final year examinations of the Bachelor's degree on the basis of which admission is sought are eligible to apply in all categories mentioned above.

1. ***Relaxation will be given to the candidates belonging to SC, ST and OBC category as per the University rules***
2. ***For preparing the final merit list, 85% weightage will be given to the score in the Entrance Exam and 15% weightage will be given to the score in the Interview.***

Assessment of Students' Performance and Scheme of Examinations:

A. English shall be the medium of instruction and examination.
B. Examinations shall be conducted at the end of each semester as per the academic calendar notified by the University of Delhi.
C. Assessment of students' performance and scheme of evaluation shall be as per University rules.

Pass Percentage and Promotion Criteria

As per University rules.

Conversion of Marks into Grades

A. Grade Points: Grade point table as per University Examination rules.
B. CGPA Calculation

   As per University Examination rules.
C. SGPA Calculation

   As per University Examination rules.

D. Grand CGPA Calculation

As per University Examination rules.

E. Conversion of Grand CGPA into Marks

As per University Examination rules.

F. As notified by competent authority the formula for conversion of Grand CGPA into marks is:

Final %age of marks = CGPA based on all four semesters × 9.5

Division of Degree into Classes

Post Graduate degree to be classified based on CGPA obtained into various classes as notified into Examination policy.

Attendance Requirement

As per University rule.

Span Period

As per University rule.

Guidelines for the Award of Internal Assessment Marks for the MCA Programme

The performance of the students will be evaluated based on a comprehensive system of continuous evaluation. For each course, there shall be a minor test, assignments/ laboratory work. There shall be a monitoring committee to be constituted at the beginning of each semester to monitor the internal assessment.

IV. Content Details for MCA Programme

SEMESTER – I

MCAC101: OBJECT ORIENTED PROGRAMMING [4-1-0]

Course Objectives: The course aims to develop the student's problem-solving skills. The course also focuses on debugging skills. The student learns to develop modular well documented code.

Course Learning Outcomes:

On completing this course, the student will be able to:

CO1: apply object-oriented paradigm for problem-solving.

CO2: select a suitable programming construct and in-built data structure for the given problem.

CO3: design, develop, document, and debug modular programs.

CO4: use recursion as a programming paradigm for problem-solving.

Syllabus:

Unit-I Introduction: Notion of class, object, identifier, keyword, and literal; basic data types: int, float, string, Boolean; basic operators (arithmetic, relational, logical, assignment), standard libraries.

Unit-II Program Development: Modular program development, input and output statements, control statements: branching, looping, exit function, break, continue, and switch-break; use of mutable and immutable structures. strings, lists, sets, tuples and dictionary, and associated operations testing and debugging a program.

Unit-III Recursion: Use of recursion as a programming paradigm for problem-solving.

Unit-IV Object Oriented Programming: Use of classes, inheritance, and operator overloading in problem-solving..

Unit-V Visualization using 2D and 3D graphics: Visualization using graphical objects like point, line, histogram, 3D objects, animation.

Unit-VI Exception Handling and File Handling: Reading and writing text and structured files, errors and exceptions.

Readings:

1. R. G. Dromey, **How to Solve it by Computer,** Pearson, 2006.
2. J.V. Guttag, **Introduction to Computation and Programming Using Python: With Application to Understanding Data**, MIT Press, 2016.
3. S. Taneja, N. Kumar, **Python Programming: A Modular Approach,** With Graphics Database, Mobile, and Web Applications, Pearson Education, 2017.
4. C. S. Horstmann, **Core Java- Volume I, Fundamentals**. Pearson Education, 2016.
5. K. Arnold and J. Gosling, **The Java™ Programming Language**, Addisson Wesley, 2005.
6. Bjarne Stroustrup, **The C++ Programming Language (4th Edition)** Addison-Wesley, 2013

MCAC102: COMPUTER SYSTEMS ARCHITECTURE [4-1-0]

Course Objectives: The course is designed to introduce basic building blocks of digital electronics, design and architecture of computer systems. This course aims to develop the skill to architect a digital computer system using a simulator.

Course Learning Outcomes:

On completing this course, the student will be able to:

CO1: describe the basic organization of computer hardware.

CO2: represent and manipulate data – number systems, conversion between different number systems, perform binary arithmetic.

CO3: design simple combinational and sequential logic circuits - flip-flops, counters, shift registers, adders, subtractor, multiplexer, demultiplexer, and Arithmetic/Logic unit.

CO4: design a CPU simple computer / microprocessor: instruction format, instruction set, addressing modes, bus structure, input/output architecture, memory unit, Arithmetic/Logic and control unit, data, instruction and address flow.

Syllabus:

Unit-I Basic Building Blocks: Boolean logic and Boolean algebra, tri-state logic; flip-flops, counters, shift registers, adders, subtractors, encoders, decoders, multiplexers, demultiplexers.

Unit-II Register Transfer and Micro Operations: Bus and memory transfers, arithmetic, logic shift micro-operations; basic computer organization: common bus system, instruction formats, instruction cycle, interrupt cycle, input/output configuration, CPU organization, register organization, stack organization, microprogrammed control unit, RISC architecture; microprocessor architecture, modern computing architectures.

Unit-III Memory Unit: Primary memory, secondary memory, associative memory, sequential access, direct access storage devices.

Unit-IV Input-Output Architecture: Input/Output devices; data transfer schemes - programmed I/O and DMA transfer; data transfer schemes for microprocessors.

Readings:

1. M. Morris Mano, **Computer System Architecture,** Revised 3rd Edition, Pearson, 2018.
2. W. Stallings, **Computer Organization and Architecture: Designing for Performance**, 9th Edition, Pearson Education, 2012.
3. A.S. Tanenbaum, **Structured Computer Organization**, 6th Edition, Prentice-Hall of India, 2012.
4. J.P. Hayes, **Computer System Architecture & Organization**, 3rd Edition, McGraw-Hill Education, 2017.

MCAC103: DATA STRUCTURES [4-1-0]

Course Objectives: The course is designed to develop the student's ability to develop algorithms for creating and manipulating basic data structures. The students also learn to compare and contrast different data structures for the problem.

Course Learning Outcomes:

On completing this course, the student will be able to:

CO1: develop programs using basic data structures: sets, lists, stacks, queues, trees, graphs and advanced data structures like balanced trees and skip lists.

CO2: apply data structures like Tries, Prefix- and Suffix-trees to different applications.

CO3: identify the best-suited data structure for the problem at hand.

CO4: identify the programming constructs to optimize the performance of the data structure in different scenarios.

Syllabus:

Unit-I Basic data Structures: Primitive Data Types, Abstract Data Types, Arrays - Static and Dynamic, 2D Arrays, Linked Lists - Single, Doubly-linked, Circular; Stacks and Queues using arrays and linked lists; operations, their analysis; Applications to searching & sorting.

Unit-II Trees: Binary Tree, Binary Search Tree, Height Balanced Trees: AVL/RB Tree, 2-3 Trees, B and B+ Trees, Splay Trees, Heaps, Priority Queues, Mergeable heaps, Tries, Prefix and Suffix Trees, Skip Lists; operations, their analysis, applications to searching.

Unit-III Sets: Sets, Multisets, Maps, Hash Tables, Dictionaries.

Unit-IV Graphs: Representation of Graphs, Searching in Graphs – BFS and its applications, DFS and its applications.

Readings:

1. Goodrich, M., Tamassia, R. and Mount D, **Data Structures and Algorithms in C++/Java**, 2nd Edition, 2016, Wiley.

2. Elliot B. Koffman, Paul A.T. Wolfgang, **Objects, Abstraction, Data Structures and Design Using C++/Java**, 1st Edition, 2005, Wiley Global Education.

3. T.H. Cormen, C.E. Leiserson, R.L. Rivest and C. Stein, **Introduction to Algorithms**, 3rd Edition, 2010, Prentice-Hall of India Learning Pvt. Ltd.

MCAC104: DATABASE SYSTEMS [4-1-0]

Course Objectives: This course aims to achieve competency to design and develop databases for different applications keeping in view their constraints. The students learn to apply database design techniques to design a database and answer the user's queries.

Course Learning Outcomes:

On completion of this course, the student will be able to:

CO1: apply basic database concepts, including the structure and operation of the relational data model.

CO2: apply logical database design principles, including data normalization and E-R/EE-R diagrams to an application,

CO3: apply the integrity constraints to the application at hand.

CO4: answer database queries using Structured Query Language (SQL).

CO5: enumerate the concurrency control issues and identify their resolution strategies.

CO6: design and implement database projects.

Syllabus:

Unit-I Basic Concepts: Data modelling for a database, abstraction and data integration, three-level DBMS architecture.

Unit-II Database Design: Entity-Relationship model, Extended Entity-Relationship model.

Unit-III Relational Model & Relational Data Manipulations: Relation, conversion of ER diagrams to relations, integrity constraints, relational algebra, relational domain & tuple calculus.

Unit-IV Structured Query Language: DDL, DML, Views, Embedded SQL.

Unit-V Relational Database Design Concepts: Functional dependencies, determining keys, normalization-, lossless join and dependency preserving decomposition.

Unit-VI Transaction Management: ACID properties, Concurrency Control in databases, transaction recovery.

Unit-VII Introduction to NoSQL databases, XML

databases. Readings:

1. A. Silberschatz, H. Korth and S. Sudarshan, **Database System Concepts,** 6th Edition, McGraw Hill, 2014.

2. R. Elmasri and S. B. Navathe, **Fundamentals of Database Systems**, 7th Edition, Pearson, 2016.

3. R. Ramakrishnan and J. Gehrke, **Database Management Systems,** 3rd Edition, McGraw Hill, 2014.

4. Philip Lewis, Arthur Berstein and Michael Kifer, **Databases and Transaction Processing-An application oriented approach**, Prentice Hall, 2003

MCAC105: MATHEMATICAL FOUNDATIONS OF COMPUTER APPLICATIONS [4-1-0]

Course Objectives: The course is designed to introduce fundamental concepts of linear algebra and probability theory from a computational perspective. This course aims to build the foundation for advanced courses in later semesters.

Course Learning Outcomes:

On completing this course, the student will be able to:

CO1: perform operations on vectors; represent vectors geometrically; apply vector algebra to solve problems in sub-disciplines of computer science.
CO2: perform operations on matrices and sparse matrices; compute the determinant, rank and eigenvalues of a matrix; apply matrix algebra to solve problems in sub-disciplines of computer science.
CO3: perform data analysis in a probabilistic framework.

CO4: visualize and model the given problem using mathematical concepts covered in the course.

Syllabus:

Unit-I Linear Algebra: Vector Spaces: Introduction, Subspace, Linear Independence and Dependence, Basis and Dimensions, Convex set, Rank of a matrix, System of linear equations, Application in text analytics.
Inner product Space and Orthogonality: Orthogonal bases, Projection, Gram-Schmidt orthogonality process.
Linear Mapping: Introduction, Kernel and Image space of a linear map, Matrix associated with linear map, Eigenvalues and Eigenvectors, PCA, SVD, Application to Image Processing.

Unit-II Probability and Statistics: Introduction, Conditional Probability, Independent events, Bayes' theorem
Introduction to Descriptive and Inferential Statistics, Describing Data as Frequency tables, Relative frequency tables and graphs, Scatter diagram, Grouped data, Histograms, Ogives, Percentiles, Box Plot, Coefficient of variation, Skewness, Kurtosis

Unit-III Random variable: Introduction, Discrete (Bernoulli, Binomial, Multinomial, Poisson, Geometric, Negative Binomial), Continuous (Uniform, Exponential, Normal, Gamma), Expectation, variance, Conditional probability and conditional expectation, Central Limit Theorem, Markov and Chebyshev's inequality.

Readings:

1. Kishor S. Trivedi, Probability and Statistics with Reliability, Queuing and Computer Science Applications, John Wiley, 2016.
2. Sheldon M. Ross, Probability Models for Computer Science, Academic Press, 2001.
3. Linear Algebra and Probability for Computer Science Applications, Ernest Davis, CRC Press 2012. https://cs.nyu.edu/davise/MathTechniques/index.html
4. From Algorithms to Z-Scores: Probabilistic and Statistical Modeling in Computer Science Norm Matloff, University of California, Davis (Creative Common Licence) http://heather.cs.ucdavis.edu/~matloff/132/PLN/probstatbook/ProbStatBook.pdf

SEMESTER – II

MCAC201: DESIGN AND ANALYSIS OF ALGORITHMS [4-1-0]

Course Objectives: The course introduces the techniques for algorithm design and analysis of the asymptotic performance of these algorithms. This course aims to achieve competence in designing efficient algorithms using different data structures for real-world problems.

Course Learning Outcomes:

On completing this course, the student will be able to:

CO1: describe various algorithm design techniques, including iteration, divide and conquer, dynamic programming, and greedy approach algorithms.

CO2: analyze the strengths and weaknesses of each technique.

CO3: identify and apply technique(s) suitable for simple applications.

CO4: demonstrate the correctness of algorithms and analyze their time complexity theoretically and practically.

CO5: model simple problems as graphs and solve them using Graph Algorithms.

CO6: analyze algorithms in the probabilistic framework.

CO7: appreciate that certain problems are too hard to admit fast solutions

Syllabus:

Unit-I Review of Growth of Functions

Unit-II Iterative Algorithms: Searching and Sorting Techniques - Linear search, Binary search, insertion sort – time complexity and proof of correctness.

Unit-III Divide and Conquer: Recurrence Relation, Master's Theorem, Recursion Trees; Binary Search, Merge sort and Quick sort – time complexity and proof of correctness.

Unit-IV Lower bounding techniques: Decision Trees.

Unit-V Linear Sorting: Count Sort, Radix Sort, Bucket Sort.

Unit-VI More on Divide and Conquer: Integer Multiplication, Convolution and Fast-Fourier Transform.

Unit-VII Greedy Algorithms: Interval Scheduling, Minimum Spanning Trees – Prim's algorithm, Kruskal Algorithm, Shortest Path Problem – Djikstra's algorithm.

Unit-VIII Dynamic Programming: Weighted Interval Scheduling, Segmented Least Square problem, Knapsack problem, Shortest Paths.

Unit-IX String Processing: Finite Automata method, KMP.

Unit-X Randomized algorithms: Introduction to random numbers, randomized Qsort, randomly built BST.

Unit-XI Introduction to Complexity Classes: P, NP, NP-Hard, NP-Complete.

Readings:

1. J. Kleinberg and E.Tardos, **Algorithm Design**, 1st Edition 2013., Pearson Education India,
2. T.H. Cormen, C.E. Leiserson, R.L. Rivest and C. Stein, **Introduction to Algorithms**, 3rd Edition, 2010, Prentice-Hall of India Learning Pvt. Ltd.
3. Sara Baase, Allen Van Gelder, **Computer Algorithm – Introduction to Design and Analysis**, 3rd edition , 2002, Pearson Education.
4. Sanjoy Dasgupta, Christos Papadimitriou and Umesh Vazirani, **Algorithms**, 1st Edition, 2017, Tata McGraw Hill.
5. Richard Johnsonbaugh and Marcus Schaefer, **Algorithms**, 2014, Pearson Education India.

MCAC202: DATA COMMUNICATION AND COMPUTER NETWORKS [4-1-0]

Course Objectives: The course aims to introduce the basic concepts of data communication techniques, which would serve as a foundation for the computer network concepts, various protocols and their applications. It also aims to develop practical skills for interworking between computer networks and switching components in telecommunication systems.

Course Learning Outcomes:

On completing this course, the student will be able to:

CO1: apply data communication techniques in real-life experiments like telemetry and develop some basic skills to modify the existing ones to better suit them in different situations.

CO2: develop skills to apply services of various computer networks in various technical and professional fields.

CO3: reduce the overheads of different Reference models and optimize their performances.

CO4: develop basic skills to apply, modify and develop new protocols in different layers of existing protocol stacks to suit customized requirements.

CO5: use various network applications to avail network services efficiently and develop basic skills to design new applications to open new services.

Syllabus:

Unit-I Data Communication Techniques: Theoretical basis of data communication, analog and digital signals, time domain and frequency domain analysis, frequency spectrum and bandwidth, asynchronous and synchronous transmission, data encoding and modulation techniques, baseband and broadband transmission, pulse code modulation, baud rate and bitrate of a channel, multiplexing- FDM & TDM, transmission medium, transmission errors – error detection techniques.

Unit-II Network Classification and Network services: Local Area Networks, Metropolitan Area Networks, Wide Area Network, wireless networks, internetworking and Internet, business and home applications, mobile user services.

Unit-III Network Architecture and Reference Models: Layered network architectures, protocol hierarchies, interface and services, ISO-OSI reference model, TCP/IP reference model, Internet protocol stack.

Unit-IV Data Link Layer Functions and Protocols: Framing, flow-control, error recovery protocols, Data link layer of internet-PPP protocol.

Unit-V Medium Access Sublayer: CSMA/CD protocol and Ethernet, hubs and switches, fast Ethernet, gigabit Ethernet, CSMA/CA protocol and WLAN.

Unit-VI Network and transport layers functions and protocols: Network switching mechanisms- Circuit switching, packet switching, routing and congestion control, TCP/IP protocol architecture.

Unit-VII Network Applications: File transfer protocol, electronic mail, World Wide Web.

Readings:

1. A S Tanenbaum, **Computer Networks**, 5th Edition, Pearson Education India, 2013
2. Behrouz A Forouzan, **Data Communications and Networking**, 5th Edition, McGraw Hill Education, 2017.

MCAC203: OPERATING SYSTEMS [4-1-0]

Course Objectives: This course aims to provide a functional perspective of the operating systems and develop skills to experiment with different components, tasks and services, including job scheduling, memory management, device management, process management and file management.

Course Learning Outcomes:

On completing this course, the student will be able to:

CO1: describe the basic functions of an Operating System.

CO2: distinguish between different types of operating systems to use each of them most efficiently in the respective application areas.

CO3: describe different techniques for managing computer resources like CPU, memory, file and devices.

CO4: implement algorithms for managing computer resources.

CO5: experiment with different components, tasks and services of the operating system.

Syllabus:

Unit-I Introduction: Operating System as a resource manager, operating systems services, system calls, operating system classifications, operating systems architectures.

Unit-II Processor Management: Process overview, process states and state transition, multi-programming, multi-tasking, levels of schedulers and scheduling algorithms. Process Synchronization-Critical section and mutual exclusion problem, classical process synchronization problems, deadlock prevention. Multithreading.

Unit-III Memory Management: absolute and relative code, address translation, memory management techniques- partition, paging, segmentation, virtual memory. Static and dynamic memory management.

Unit-IV Device Management: Goals of I/O software, Design of device drivers- interrupt service routines, upper half of kernel software, lower half of kernel software.

Unit-V File Management: Overview of file management system, disk space management, directory structures, file sharing and protection, access control lists, protection models.

Readings:

1. Silberschatz, Galvin,and Gagne, **Operating Systems concepts** , Wiley ,2009.
2. Gary Nutt, Nabendu Chaki, Sarmistha Neogy, **Operating Systems: A Modern Approach (3rd ed.)**, Addison Wesley, 2009.
3. D.M. Dhamdhere, **Operating Systems: A Concept Based Approach (2nd ed.)**, Tata McGraw- Hill, 2007.

MCAC204: DATA ANALYSIS AND VISUALIZATION [4-1-0]

Course Objectives: The course develops students' competence in cleaning and analyzing data related to a chosen application. It also aims to develop skills in using various tools for data visualization and choosing the right tool for given data.

Course Learning Outcomes:

On completing the course, the students will be able to :

CO1: use data analysis tools with ease.
CO2: load, clean, transform, merge, and reshape data.
CO3: create informative visualisations and summarise data sets.
CO4: analyse and manipulate time series data.

CO5: solve real world data analysis problems.

Syllabus

Unit 1 Introduction: Introduction to Data Science, Exploratory Data Analysis and Data Science Process. Motivation for using Python for Data Analysis, Introduction of Python shell iPython and Jupyter Notebook. Essential Python Libraries: NumPy, pandas, matplotlib, SciPy, scikit-learn, statsmodels

Unit 2 Getting Started with Pandas: Arrays and vectorized computation, Introduction to pandas Data Structures, Essential Functionality, Summarizing and Computing Descriptive Statistics. Data Loading, Storage and File Formats. Reading and Writing Data in Text Format, Web Scraping, Binary Data Formats, Interacting with Web APIs, Interacting with Databases
Data Cleaning and Preparation. Handling Missing Data, Data Transformation, String Manipulation

Unit 3 Data Wrangling: Hierarchical Indexing, Combining and Merging Data Sets Reshaping and Pivoting. Data Visualization matplotlib: Basics of matplotlib, plotting with pandas and seaborn, other python visualization tools

Unit 4 Data Aggregation and Group operations: Data grouping, Data aggregation, General split-apply-combine, Pivot tables and cross tabulation

Unit 5 Time Series Data Analysis: Date and Time Data Types and Tools, Time series Basics, Frequencies and Shifting, Time Zone Handling, Periods and Periods Arithmetic, Resampling and Frequency conversion, Moving Window Functions.

Readings

1. McKinney, W.(2017). Python for Data Analysis: Data Wrangling with Pandas, NumPy and IPython. 2nd edition. O'Reilly Media.
2. O'Neil, C., & Schutt, R. (2013). Doing Data Science: Straight Talk from the Frontline, O'Reilly Media.

MCAC205: WEB TECHNOLOGIES [4-1-0]

Course Objectives: The course aims to develop skills for static and dynamic web development, including the use of front-end designing tools and client-side and server-side programming. It also sensitizes and prepares the student to apply security and privacy concerns in an application.

Course Learning Outcomes:

On completing this course, the student will be able to:

CO1: describe Internet, World Wide Web, client-server architecture and communication protocols.

CO2: design multi-platform web applications.

CO3: apply various client-side web technologies for front-end development.

CO4: work with server-side web technologies.

CO5: apply web technologies for retrieval of information.

Syllabus:

Unit-I Introduction: Introduction to Networking, TCP/IP, DNS, Internet and its Evolution, World Wide Web, Web 2.0, Web 3.0, network communication protocols (HTTP/HTTPS, SMTP,

IMAP, POP, FTP), client-server architecture, web applications architecture, application and web servers, web clients.

Unit-II Front-end Development: Introduction to HTML5, HTML elements, HTML tags, lists, tables, frames, forms, basics of XHTML, CSS style sheets, DOM, XML, XSLT

Unit-III Client-Side Programming: JavaScript basic syntax, variables and data types, literals, functions, objects, arrays, built-in objects, event handling, modifying element style, document trees.

Unit-IV Server-Side Programming: Creation of dynamic content, server-side programming using Java Servlets, Web Services, session management, introduction to server-side scripting, accessing database from the front-end.

Unit-V Web Security, Cookies and Authentication: Security threats, Security risks of a website, Web attacks and their prevention, Web security model, Setting, accessing and destroying cookies, Anonymous Access, Authentication by IP address and Domain, Integrated Windows Authentication, Digital signatures, Digital certificates, Firewalls.

Readings:

1. Jeffery C. Jackson, **Web Technologies: A Computer Science Perspective**, Pearson Education India, 2007.
2. Achyut Godbole and Atul Kahate, **Web Technologies: TCP/IP, Web/Java Programming, and Cloud Computing** (3rd ed.), McGraw-Hill Education, 2013.
3. Roger S Pressman and David Lowe, **Web Engineering: A Practitioner's Approach,** TMH, 2017.
4. Mark Pilgrim, **HTML5: Up and Running**, O'Reilly | Google Press, 2010 .
5. Jim Keogh, **J2EE: The Complete Reference**, McGraw Hill Education, 2017.

SEMESTER – III

MCAC301: CYBER SECURITY [4-1-0]

Course Objectives: The course aims to expose students to cyber security and threat landscape concerns. The student learns to develop skills to help them plan, implement, and monitor cyber security mechanisms to protect information technology assets.

Course Learning Outcomes:

On completing this course, the student will be able to:

CO1: state the need and scope for cyber laws.

CO2: enumerate various network attacks, and describe their sources and mechanisms of prevention

CO3: describe the genesis of SCADA policies and their implementation framework

CO4: Carry out malware analysis using simulations.

Syllabus:

Unit-I Introduction: Cyberspace, Internet, Internet of things, Cyber Crimes, cybercriminals, Cyber Security, Cyber Security Threats, Cyber laws and legislation, Law Enforcement Roles and

Responses.

Unit-II Network Attacks: Network Threat Vectors, MITM, OWAPS, ARP Spoofing, IP & MAC Spoofing, DNS Attacks, SYN Flooding attacks, UDP ping-pong and Fraggle attacks, TCP port scanning and reflection attacks, DoS, DDOS. Network Penetration Testing Threat assessment, Penetration testing tools, Penetration testing, Vulnerability Analysis, Threat matrices, Firewall and IDS/IPS, Wireless networks, Wireless Fidelity (Wi-Fi), Wireless network security protocols, Nmap, Network fingerprinting, BackTrack, Metasploit.

Unit-III Introduction to SCADA (supervisory control and data acquisition) Understanding SCADA security policies, SCADA Physical and Logical Security, Understanding differences between physical and logical security, Define perimeter controls and terms, Define various security zones, Understand communication cyber threats, Understand firewall, architectures.

Unit-IV Introduction to Malware, Malware Analysis: Static Analysis, Code Review, Dynamic Analysis, Behavioral analysis of malicious executable, Sandbox Technologies, Reverse-engineering malware, Defeat anti-reverse engineering technique, automated analysis, intercepting network connections, Network flow analysis, Malicious Code Analysis, Network analysis, Anti-disassembling techniques, Identifying assembly logic structures with a disassembler.Malware Handling: Malicious Documents and Memory Forensics - Reverse engineering of malicious executable using memory forensic techniques, Analyze malicious Microsoft Office (Word, Excel, PowerPoint) and Adobe PDF documents, Analyzing memory to assess malware characteristics and reconstruct infection artifacts. Using memory forensics to analyze rootkit infections, Legal & Ethical Issues - Reinforce understanding and the application of discipline specific legal and ethical issues, Reverse Engineering Malware (REM) Methodology.

Readings:

1. Peter W. Singer and Allan Friedman, **Cybersecurity and Cyberwar**, Oxford University Press, 2014
2. Jonathan Clough, **Principles of Cybercrime**, Cambridge University Press, 24-Sep-2015
3. Jie Wang, Zachary A. Kissel, **Introduction to Network Security: Theory and Practice**, Wiely 2016.
4. Michael Bazzell , **Open Source Intelligence Techniques: Resources for Searching and Analyzing Online Information**, 2nd edition, CreateSpace Independent Publishing Platform, 2014.
5. Robert Radvanovsky, Jacob Brodsky, **Handbook of SCADA/Control Systems Security**, CRC Press, 2013.
6. Ed Skoudis, Lenny Zeltser, **Malware: Fighting Malicious Code**, Prentice Hall Series in Computer Networking and Distributed, 2003
7. Michael Sikorski, Andrew Honig, **Practical Malware Analysis: The Hands-On Guide to Dissecting Malicious Software** 2012, No Starch Press, San Francisco.

MCAC302: SOFTWARE ENGINEERING [4-1-0]

Course Objectives: The course targets developing skills that would enable the students to construct high-quality software by applying the established software design practices for analysis, design, implementation, testing and maintenance.

Course Learning Outcomes:

On completing this course, the student will be able to:

CO1: demonstrate an understanding of software engineering layered technology and software

process models that provide a basis for the software development lifecycle.

CO2: apply agile development methods for developing software.

CO3: describe software/system requirements and understand the processes involved in the discovery and documentation of these requirements.

CO4: practice system modelling techniques and object-oriented design for software development.

CO5: test software using verification and validation, static analysis, reviews, inspections, and audits.

CO6: appreciate software project management that includes project planning, project estimation techniques, risk management, quality management, and configuration management.

CO7: Work individually and/or in a team to develop and deliver quality software.

Syllabus:

Unit-I Software Engineering: The software crisis, software engineering principles, programming-in-the-small vs programming-in-the-large.

Unit-II Software process: The software lifecycle, the waterfall model and variations, risk-driven approaches, introduction to evolutionary and prototyping approaches, agile process models, and system classifications.

Unit-III Project management: Relationship to lifecycle, project planning, project control, project organization, risk management, cost models, configuration management, version control, quality assurance, metrics.

Unit-IV Software requirements: Requirements analysis, functional and non-functional requirements elicitation, analysis tools, requirements definition, requirements specification, static and dynamic specifications, requirements review.

Unit-V Software design: Design for reuse, design for change, design notations, design evaluation and validation.

Unit-VI Implementation and Maintenance: Programming standards and procedures, modularity, data abstraction, static analysis, unit testing, integration testing, regression testing, verification and validation, tools for testing, fault tolerance, The maintenance problem, the nature of maintenance, planning for maintenance.

Readings:

1. R.S. Pressman, **Software Engineering: A Practitioner's Approach** (7th ed.), McGraw-Hill, 2010.

2. I. Sommerville, **Software Engineering** (10th ed.), Pearson Education, 2015.

3. R. Mall, **Fundamentals of Software Engineering** (4th ed.), Prentice-Hall of India, 2014.

4. K.K. Aggarwal and Y. Singh, **Software Engineering** (3rd ed.), New Age International Publishers, 2008.

5. P. Jalote, **An Integrated Approach to Software Engineering** (3rd ed.), Narosa Publishing House, 2005.

6. N.S. Godbole, **Software Quality Assurance: Principles and Practice for Students**, Alpha Science International Limited, 2004.

MCAE 301: COMPILER DESIGN [4-1-0]

Course Objectives: The course aims to develop the ability to design, develop, and test a functional compiler/ interpreter for a subset of a popular programming language.

Course Learning Outcomes:

On completing this course, the student will be able to:

CO1: describe how different phases of a compiler work.

CO2: implement top-down and bottom-up parsing algorithms.

CO3: use tools like Lex and Yacc to implement syntax-directed translation.

Syllabus:

Unit- I Lexical and Syntactic Analysis: Review of regular languages, design of a lexical analyzer generator, context-free grammars, syntactic analysis: top-down parsing: recursive descent and predictive parsing, LL(k) parsing; bottom-up parsing: LR parsing, handling ambiguous in bottom-up parsers.

Unit-II Syntax directed translation: Top-down and bottom-up approaches, data types, mixed mode expression; subscripted variables, sequencing statement, subroutines and functions: parameters calling, subroutines with side effects.

Unit-III Code generation, machine dependent and machine-independent optimization techniques.

Readings:

1. Alfred V. Aho, Ravi Sethi, D. Jeffrey Ullman, Monica S. Lam, **Principles, Techniques and Tools**, Pearson Education India, 2nd edition,, 2013.
2. A.V. Aho, M. S. Lam, R. Sethi and J. D. Ullman, **Compilers,** Pearson, 2016.
3. Dick Grune, Kees van Reeuwijk, Henri E .Bal, Ceriel J.H. Jacobs, K Langendoen, **Modern Compiler Design,** Springer, 2012.

MCAE302: ARTIFICIAL INTELLIGENCE [4-1-0]

Course Objectives: The course aims to introduce the student to intelligent systems and agents, formalization of knowledge, reasoning with and without uncertainty at a basic level. The student develops skills to apply the concepts, methods, and theories of search, heuristics, games, knowledge representation, and planning in different applications.

Course Learning Outcomes:

On completing this course, the student will be able to:

CO1: describe various approaches to Artificial Intelligence.

CO2: design intelligent agents.

CO3: distinguish between Utility-based agents and Goal-based agents.

CO4: describe and apply concepts, methods, and theories of search, heuristics, games, knowledge representation, and planning.

CO5: acquire basic knowledge of Natural language processing.

CO6: understand the limitations of Artificial Intelligence techniques.

Syllabus:

Unit-I Introduction: Introduction to Artificial Intelligence, various definitions of AI, AI Applications and Techniques, Turing Test and Reasoning - forward & backward chaining.

Unit-III Intelligent Agents: Introduction to Intelligent Agents, Rational Agent, their structure, , reflex, model-based, goal-based, and utility-based agents, behavior and environment in which a particular agent operates.

Unit-IV Problem Solving and Search Techniques: Problem Characteristics, Production Systems, Control Strategies, Breadth First Search, Depth First Search, iterative deepening,

uniform cost search, Hill climbing and its Variations, simulated annealing, genetic algorithm search.

Heuristics Search Techniques: Best First Search, A* algorithm, AO* algorithm, Minmax & game trees, refining minmax, Alpha – Beta pruning, Constraint Satisfaction Problem, Means-End Analysis.

Unit-V Knowledge Representation: Introduction to First Order Predicate Calculus, Resolution Principle, Unification, Semantic Nets, Conceptual Dependencies, semantic networks, Frames system, Production Rules, Conceptual Graphs, Ontologies.

Unit-VI Planning: Basic representation for planning, symbolic-centralized vs reactive-distributed, partial order planning algorithm.

Unit-VII Reasoning with Uncertain Knowledge: Different types of uncertainty - degree of belief and degree of truth, various probability constructs - prior probability, conditional probability, probability axioms, probability distributions, and joint probability distributions, Bayes' rule, other approaches to modelling uncertainty such as Dempster-Shafer theory and fuzzy sets/logic.

Unit-VIII Understanding Natural Languages: Components and steps of communication, contrast between formal and natural languages in the context of grammar, parsing, and semantics, Parsing Techniques, Context-Free and Transformational Grammars.

Readings:

1. S. Russell and P. Norvig, **Artificial Intelligence: A Modern Approach, 3rd edition**, Pearson Education, 2015. Elaine Rich and Kelvin Knight, Artificial Intelligence, 3rd edition, Tata McGraw Hill , 2017.

2. DAN.W. Patterson, **Introduction to A.I. and Expert Systems** – PHI, 2007.

3. Michael Wooldridge, **An Introduction to MultiAgent Systems**, 2nd edition, John Wiley & Sons, 2009..

4. Fabio Luigi Bellifemine, Giovanni Caire, Dominic Greenwood, **Developing Multi-Agent Systems with JADE**, Wiley Series in Agent Technology, John Wiley & Sons, 2007.

5. W.F. Clocksin and C.S. Mellish, **Programming in PROLOG**, , 5th edition, Springer, 2003.

6. Saroj Kaushik, **Logic and Prolog Programming**, New Age International Publisher, 2012.

7. Ivan Bratko, **Prolog Programming for Artificial Intelligence**, Addison-Wesley, Pearson Education, 4th edition, 2011.

MCAE303: INFORMATION SECURITY [4-1-0]

Course Objectives: The course aims to train the students to maintain the confidentiality, integrity and availability of data. The student learns various data encryption protocols for transmitting data over unsecured channels in a network.

Course Learning Outcomes:

On completing this course, the student will be able to:

CO1: describe various security issues.

CO2: implement symmetric and asymmetric cryptographic methods.

CO3: describe the role and implementation of digital signatures.

CO4: describe security mechanisms like intrusion detection, auditing and logging.

Syllabus:

Unit-I Overview of Security: Protection versus security; aspects of security– confidentiality, data integrity, availability, privacy; user authentication, access controls, Orange Book Standard.

Unit-II Security Threats: Program threats, worms, viruses, Trojan horse, trap door, stack and buffer overflow; system threats- intruders; communication threats- tapping and piracy.

Unit-III Cryptography: Substitution, transposition ciphers, symmetric-key algorithms: Data Encryption Standard, Advanced Encryption Standard, IDEA, Block cipher Operation, Stream Ciphers: RC-4. Public key encryption: RSA, ElGamal. Diffie-Hellman key exchange. Elliptic Curve, EC cryptography, Message Authentication code (MAC), Cryptographic hash function.

Unit-IV Digital signatures: ElGamal digital signature scheme, Elliptic Curve digital signature scheme, NISTdigital signature scheme.

Unit-V Key Management and Distribution: Symmetric Key Distribution, X.509 Certificate public key infrastructures.

Unit-VI Intrusion detection and

prevention. Readings:

1. W. Stalling, **Cryptography and Network Security Principles and Practices** (7th ed.), Pearson Education of India, 2018.

2. A.J. Elbirt, **Understanding and Applying Cryptography and Data Security**, CRC Press, Taylor Francis Group, New York, 2015.

3. C. Pfleeger and SL Pfleeger, Jonathan Margulies, **Security in Computing** (5th ed.), Prentice-Hall of India, 2015.

MCAE304: NETWORK SCIENCE [4-1-0]

Course Objectives: The course aims to acquaint the students with the graph theory concepts relevant for network science. The students learn dynamics of and on networks in the context of applications from disciplines like biology, sociology, and economics

Course Learning Outcomes:

On completing this course, the student will be able to:

CO1: appreciate the ubiquity of graph data models.

CO2: Understand a network's structural features and their impact on network functions.

CO3: identify community structures in networks

CO4: solve real-world problems modelled as complex networks

Syllabus:

Unit-I Introduction: Introduction to complex systems and networks, modeling of complex systems, review of graph theory.

Unit-II Network properties: Local and global properties like clustering coefficient, eccentricity; centrality measures for directed and undirected networks.

Unit-III Graph models: Random graph model, Small world network model, Barabasi-Albert (preferential attachment) network model.

Unit-IV Community structure in networks: Communities and community detection in networks, Hierarchical algorithms for community detection, Modularity based community detection algorithms, Label Propagation algorithm.

Readings:

1. Mohammed J. Zaki, Wagner Meira Jr.; **Data Mining and Analysis: Fundamental Concepts and Algorithms**, Cambridge University Press, 2014.

2. Albert Barabasi, **Network Science** , Cambridge University Press, 2016.

3. David Easley and Jon Kleinberg, **Networks, Crowds, and Markets: Reasoning About a Highly Connected World**, Cambridge University Press, 2010.

MCAE305: DEEP LEARNING[4-1-0]

Course Objectives: The student learns various state-of-the-art deep learning algorithms and their applications to solve real-world problems. The student develops skills to design neural network architectures and training procedures using various deep learning platforms and software libraries.

Course Learning Outcomes:

On completing this course, the student will be able to:

CO1: describe the feedforward and deep networks.

CO2:design single and multi-layer feed-forward deep networks and tune various hyper-parameters.

CO3: analyze the performance of deep networks.

Syllabus:

Unit-I Introduction: Historical context and motivation for deep learning; basic supervised classification task, optimizing logistic classifier using gradient descent, stochastic gradient descent, momentum, and adaptive subgradient method.

Unit-II Neural Networks: Feedforward neural networks, deep networks, regularizing a deep network, model exploration, and hyperparameter tuning.

Unit-III Convolution Neural Networks: Introduction to convolution neural networks: stacking, striding and pooling, applications like image, and text classification.

Unit-IV Sequence Modeling: Recurrent Nets: Unfolding computational graphs, recurrent neural networks (RNNs), bidirectional RNNs, encoder-decoder sequence to sequence architectures, deep recurrent networks.

Unit-V Autoencoders: Undercomplete autoencoders, regularized autoencoders, sparse autoencoders, denoising autoencoders, representational power, layer, size, and depth of autoencoders, stochastic encoders and decoders.

Unit-VI Structuring Machine Learning Projects: Orthogonalization, evaluation metrics, train/dev/test distributions, size of the dev and test sets, cleaning up incorrectly labelled data, bias and variance with mismatched data distributions, transfer learning, multi-task learning.

Readings:

1. Ian Goodfellow, **Deep Learning**, MIT Press, 2016.
2. Jeff Heaton, **Deep Learning and Neural Networks**, Heaton Research Inc, 2015.
3. Mindy L Hall, Deep Learning, VDM Verlag, 2011.
4. Li Deng (Author), Dong Yu, **Deep Learning: Methods and Applications (Foundations and Trends in Signal Processing)**, Now Publishers Inc, 2009.

MCAE 306: Interpretable Learning [4-1-0]

Course Objectives: The course introduces the students to the need and methods for interpretability of machine learning algorithms and the related societal concerns. The students will develop skills to apply different explanation techniques for various real-world applications.

Course Learning Outcomes:

On completing this course, the student will be able to:

CO1: distinguish between local and global explanations.

CO2: choose a type of explanation method for a given situation.

CO3: provide mathematical reasoning behind different explanation methods.

CO4: to conduct what-if-analysis of a machine learning model by generating counterfactuals.

CO5: use programming tools for generating explanations of machine learning models.

Unit-I Introduction to Interpretability: Motivation of interpretability; taxonomy of interpretability methods; scope of interpretability- local explanation vs global explanation; properties of explanation methods and individual explanations; model agnosticity: model-specific vs model-agnostic; dataset type- image, textual, speech, tabular, and graph-based; type of explanations.

Unit-II Inherently Explainable Models: Linear regression, logistic regression, Generalized Linear Models (GLM), Generalized Additive Models (GAM), decision tree, rule-based classifier, naive Bayes classifier, k-nearest neighbours.

Unit-III Model-Agnostic Post-hoc Methods: Global model-agnostic methods: Partial Dependence Plot (PDP), Accumulated Local Effect Plot (ALE), feature interaction, functional decomposition, permutation feature importance; local model-agnostic methods: SHAP (SHapley Additive exPlanations), LIME (Local Interpretable Model-Agnostic Explanations),

Counter-Factual Explanations.

Unit-IV Model-Specific Post-hoc Methods: Gradient, gradient*input, smooth-gradient, guided backpropagation, Layerwise Relevance Propagation (LRP), Layerwise Relevance Propagation-Epsilon (LRP-ε), deep Taylor, integrated gradient, DeepLIFT (Deep Learning Important FeaTures), deconvolution, Class Activation Mapping (CAM), Gradient-weighted Class Activation Mapping (Grad-CAM), Guided Gradient-weighted Class Activation Mapping (Guided Grad-CAM).

Unit-V Limitations of Explainable Methods: Faithfulness/fidelity, fragility, stability, usefulness in practice

Unit-VI Future of Machine Learning and Explainability: Open issues: Modelling uncertainty, generating stable explanations, issue of over-trust on model's explanations by domain experts and end-users, data leakage exposing sensitive information from the dataset, usefulness of the explanations in real-world.

Readings:

1. Molnar, Christoph. **Interpretable machine learning. A Guide for Making Black Box Models Explainable**, 2019, Lulu.com, https://christophm.github.io/interpretable-ml-book/.
2. Rothman, Denis, **Hands-On Explainable AI (XAI) with Python: Interpret, visualize, explain, and integrate reliable AI for fair, secure, and trustworthy AI apps**, Packt Publishing Ltd, 2020.

MCAE 307: NATURAL LANGUAGE PROCESSING [4-1-0]

Course Objectives: The course provides a rigorous introduction to the essential components of a Natural Language Processing (NLP) system. The students will learn various statistical, machine learning, and deep learning techniques in NLP and apply them to solve machine translation and conversation problems.

Course Learning Outcomes:

On completing this course, the student will be able to:

CO1 : Understand and describe the evaluation of NLP systems.

CO2 : Understand deep learning techniques in NLP and apply them to solve machine translation and conversation problems.

CO3 : Learn about major NLP issues and identify possible future areas of NLP research.

Syllabus:

UNIT I Introduction: Natural Language Processing (NLP), History of NLP, Neural Networks for NLP, Applications - Sentiment Analysis, Spam Detection, Resume Mining, Conversation Modeling, Chat-bots, dialog agents, Question Processing

UNIT II Language Modeling and Part of Speech Tagging: Unigram Language Model, Bigram, Trigram, N-gram, Advanced smoothing for language modeling, Empirical Comparison of Smoothing Techniques, Applications of Language Modeling, Natural Language Generation, Parts of Speech Tagging, Morphology, Named Entity Recognition

UNIT III Words and Word Forms: Bag of words, skip-gram, Continuous Bag-Of-Words, Embedding representations for words Lexical Semantics, Word Sense Disambiguation, Knowledge Based and Supervised Word Sense Disambiguation

UNIT IV Text Analysis, Summarization and Extraction: Sentiment Mining, Text Classification, Text Summarization, Information Extraction, Named Entity Recognition, Relation Extraction, Question Answering in Multilingual Setting; NLP in Information Retrieval, Cross-Lingual IR

UNIT V Machine Translation: Need of MT, Problems of Machine Translation, MT Approaches, Direct Machine Translations, Rule-Based Machine Translation, Knowledge Based MT System, Statistical Machine Translation (SMT), Parameter learning in SMT (IBM models) using EM), Encoder-decoder architecture, Neural Machine Translation

Readings:

1. Speech and Language Processing. Dan Jurafsky and James H. Martin. Pearson (2009).
2. Introduction to Natural Language Processing. Jacob Eisenstein. The MIT Press (2019).
3. Neural Network Methods for Natural Language Processing. Yoav Goldberg. Morgan and Claypool Publisher (2017).
4. Deep Learning for Natural Language Processing: Develop Deep Learning Models for Natural Language in Python. Jason Brownlee. Machine Learning Mastery (2019).
5. Natural Language Processing with Python: Analyzing Text with the Natural Language Toolkit. Steven Bird, Ewan Klein and Edward Loper. O'Reilly (2009).

MCAE 308: GRAPH THEORY [4-0-1]

Course Objectives: This course will thoroughly introduce the basic concepts of graphs theory, graph properties and formulations of typical graph problems. The student will learn to model real-life problems such as graph coloring and connectivity as graph problems.

Course Learning Outcomes:

On completing this course, the student will be able to:

CO1: model problems using different types of basic graphs like trees, bipartite graphs and planar graphs.

CO2: understand and identify special graphs like Euler graphs and Hamiltonian

graphs. **CO3:** have increased ability to understand various forms of connectedness

in a graph **CO4:** appreciate different graph-coloring problems and their solutions.

CO5: to model simple problems from real life as graph-coloring problems.

Syllabus:

Unit-I Fundamental Concepts: Definitions, examples of problems in graph theory, adjacency and incidence matrices, isomorphisms, paths, walks, cycles, components, cut-edges, cut-vertices, bipartite graphs, eulerian graphs, vertex degrees, reconstruction conjecture, extremal problems, degree sequences, directed graphs, de Bruijn cycles, Orientations and tournaments.

Unit-II Trees: Trees and forests, characterizations of trees, spanning trees, radius and diameter, enumeration of trees, Cayley's formula, Prüfer code, counting spanning trees, deletion-contraction, the matrix tree theorem, graceful labeling, minimum spanning trees (Kruskal's algorithm), shortest paths (Dijkstra's algorithm).

Unit-III Matching and Covers: Matchings, maximal and maximum matchings, M-augmenting paths, Hall's theorem and consequences, Min-max theorems, maximum matchings and vertex covers, independent sets and edge covers,Connectivity, vertex cuts, Edge-connectivity.

Unit-IV Connectivity and Paths: Blocks, k-connected graphs, Menger's theorem, line graphs, network flow problems, flows and source/sink cuts, Ford-Fulkerson algorithm, Max-flow min-cut theorem.

Unit-V Graph Coloring: Vertex colorings, bounds on chromatic numbers, Chromatic numbers of graphs constructed from smaller graphs, chromatic polynomials, properties of the chromatic polynomial, the deletion-contraction recurrence.

Unit-VI Planar Graphs: Planar graphs, Euler's formula, Kuratowski's theorem, five and four color theorems.

Readings:

1. Douglas B West, **Introduction to Graph Theory**, II Edition, 2017, Pearson.

2. Gary Chartrand and Ping Zhang, **Introduction to Graph Theory**, 2017, Tata McGraw Hill.

3. Jonathan L. Gross and Jay Yellen, **Graph Theory and Its Applications**, 2nd Edition, 2005, Chapman Hall (CRC).

MCAE 309: TEXT ANALYTICS [4-1-0]

Course Objectives: This course aims to provide an introduction to the basics of text analytics theory and practice. The student will learn to apply the text analytics tools including clustering and classification tools to various real-world problems.

Course Learning Outcomes:

On completion of the course, the student will be able to

CO1: identify relevance of text to the information needs of diverse individuals, communities and organizations.

CO2: select appropriate technique to automatically process the text.

CO3: use open source text analytic tools to perform various text processing and analysis

tasks. CO4: develop simple text analysis tools and solve real world problems.

Syllabus:

Unit-I Introduction : Introduction to Natural Language Processing (NLP) and Text Analytics, Tokenization, Part-of-speech tagging, Stemming and lemmatization, NLP toolkits, Indexing text using inverted file index, Posting lists , Information retrieval, Authorship attribution, Sentiment analysis, Named-entity recognition, Document summarization.

Unit-II Document representation and Language models : Representation of the unstructured text

documents, Heaps' and Zipf's Laws, Boolean vector representation, Bag-of-words model, tf-idf model, Term weighting, Scoring and ranking, Vector space model, Visualization techniques, Unigrams, bi-grams and n-grams, language models.

Unit-III Text categorization: Supervised text categorization algorithms, Naive Bayes, k Nearest Neighbor (kNN), Logistic Regression.

Unit-IV Text clustering: Clustering structure of a corpus of text documents, Hierarchical clustering, Centroid-based clustering. Topic Modeling- Latent Semantic Indexing (LSI).

Readings:

1. Ricardo Baeza – Yates, Berthier Ribeiro – Neto, **Modern Information Retrieval: The concepts and Technology behind Search**, (ACM Press Books), Second Edition, 2011.

2. Christopher D. Manning, Prabhakar Raghavan, Hinrich Schutze, **Introduction to Information Retrieval**, Cambridge University Press, First South Asian Edition, 2008.

3. Steven Struhl, **Practical Text Analytics: Interpreting Text and Unstructured Data for Business Intelligence**, Kogan Page, 2015.

4. Matthew A. Russell, **Mining the Social Web**, O'Reilly Media, 2013.

MCAE310: AUTOMATA THEORY [4-0-1]

Course Objectives: The course introduces the theoretical models of computation and their limitations. The students will develop skills to analyze automata and their computational power to recognize languages. The students will learn to apply the knowledge of Automata Theory, Grammar, and Turing machines for solving problems in language translation.

Course Learning Outcomes:

On completion of this course, the student will be able to:

CO1: describe the mathematical model of machines.

CO2: describe the concept of formal language and the corresponding automaton.

CO3: identify ambiguity in grammar

CO4: construct a parse tree for the given grammar.

Syllabus:

Unit-I Introduction: Alphabets, strings, and languages.

Unit-II Finite Automata and Regular Languages: Deterministic and non-deterministic finite automata, regular expressions, regular languages and their relationship with finite automata, pumping lemma and closure properties of regular languages.

Unit-III Context Free Grammars and Pushdown Automata: Context free grammars (CFG), parse trees, ambiguities in grammars and languages, pushdown automaton (PDA) and the language accepted by PDA, deterministic PDA, Non- deterministic PDA, properties of context free languages; normal forms, pumping lemma, closure properties, decision properties.

Unit-IV Turing Machines: Turing machine as a model of computation, programming with a Turing machine, variants of Turing machine and their equivalence.

Unit-V Undecidability: Recursively enumerable and recursive languages, undecidable problems about Turing machines: halting problem, Post Correspondence Problem, and undecidability problems about CFGs.

Readings:

1. J. E. Hopcroft, R. Motwani, and J. D. Ullman, **Introduction to Automata Theory, languages, and computation**, 2016.

2. H.R. Lewis, C.H. Papadimitriou, C. Papadimitriou, **Elements of the Theory of Computation** (2nd ed.), Pearson Education, 2015

3. P. Linz, **Introduction to Automata Theory, Languages, and Computation**, Jones & Bartlett, 2016.

MCAE 311: COMBINATORIAL OPTIMIZATION [4-1-0]

Course Objectives: This course aims to introduce the mathematical tools for solving and analyzing combinatorial optimization problems. The course develops skills for the formulation of problems in different computing and data science domains as combinatorial optimization problems.

Course Learning Outcomes:

On completion of this course, the student will be able to:

CO1: differentiate between the computational complexities of LP and IP.

CO2: Develop knowledge and skills in linear and integer programming (LP;IP) and their applications.

CO3: apply polyhedral analysis to develop algorithms.

CO4: use the concept of duality to design exact and approximate algorithms.

CO5: explain the mathematical theory forming the basis of algorithms for combinatorial optimization (particularly graph theoretic).

Syllabus:

Unit-I Introduction: Optimization problems, neighborhoods, local and global optima, convex sets and functions, simplex method, degeneracy; duality and dual simplex algorithm, computational considerations for the simplex and dual simplex algorithms-Dantzig-Wolfe algorithms.

Unit-II Integer Linear Programming: Cutting plane algorithms, branch and bound technique and approximation algorithms for traveling salesman problem.

Unit-III Graph Algorithms: Primal-Dual algorithm and its application to shortest path (Dijkstra's algorithm, Floyd-Warshall algorithms), max-flow problem (Ford and Fulkerson labeling algorithms), matching problems (bipartite matching algorithm, non-bipartite matching algorithms, bipartite weighted matching-hungarian method for the assignment problem, non-bipartite weighted matching problem), efficient spanning tree algorithms.

Unit-IV Matroids: Independence Systems and Matroids, Duality, Matroid Intersection.

Readings:

1. Bernhard Korte and Jens Vygen, **Combinatorial Optimization: Theory and Algorithms (Algorithms and Combinatorics)**, 6th edition, 2018, Springer.

2. Matousek and Gartner, **Understanding and Using Linear Programming**, 2007, Springer.

3. C.H. Papadimitriou and K.Steiglitz, **Combinatorial Optimization: Algorithms and complexity**, 1998, Dover Publications.

4. Mokhtar S.Bazaraa, John J. Jarvis and Hanif D. Sherali, **Linear Programming and Network Flows**, 4th Edition, 2010, Wiley-Blackwell.

5. H.A. Taha, **Operations Research An Introduction**, 8th edition, 2014, Pearson Education India.

MCSE 312: DIGITAL WATERMARKING AND STEGANOGRAPHY [4-1-0]

Course Objectives: The students will learn about the need and various approaches of information hiding, steganography, watermarking models and message coding, watermark security and authentication. The students will develop skills to implement the same in different real-world scenarios.

Course Learning Outcomes:

On completion of this course, the student will be able to:

CO1: implement algorithms for steganography and watermarking operations.

CO2: evaluate steganography and watermarking algorithms for robustness.

CO3: describe various fingerprinting techniques.

Syllabus:

Unit-I Information hiding: Introduction, Background, and Applications of Information hiding: Data hiding, applications of data hiding.

Unit-II Steganography: Frameworks of secret communication, Security of steganography systems, Information hiding in noisy data, Adaptive and non-adaptive algorithms, Active and malicious attackers, Information hiding in written text, Invisible communication.

Unit-III Data hiding in still images: LSB encoding, BPCS steganography, Lossless data hiding, Data hiding by quantification, Patchwork, Transform domain methods, Robust data hiding in JPEG images, frequency domain watermarking Detecting malicious tempering, Robust wavelet-based watermarking, Kundur-Hatzinakos watermarking, Data hiding in binary images, Zhao-koch method, Wu-Lee method, CPT method, TP method, Data hiding in fax images.

Unit-IV Watermarking: Introduction, Watermarking principals, Applications, Requirements and algorithmic design issues, Evaluation and standards of watermarking.

Unit-V Fingerprinting: Introduction, Terminology and requirements, Classifications, Research history, fingerprinting schemes, Statistical fingerprinting, and Collusion-secure fingerprinting.

Readings:

1. I.J.Cox, M.L.Miller, J.A.Bloom, J.Fridrich, T.Kalker, Digital Watermarking and Stegonagraphy, Morgan Kaufman 2008.

2. F.Y.Shih, Digital Watermarking and Stegonagraphy Fundamentals and Techniques, CRC press 2008.

3. Stefon Katzeubeisser, F.A.Petitolos, Information Hiding Techniques for Stegonagraphy and digital watermarking, Aatech House London 2008.

MCAE 313: QUANTUM COMPUTING [4-1-0]

Course Objectives: The course introduces students to the fundamentals of quantum computing. The aim is to help students in imparting concepts of quantum computing including quantum systems, quantum Turing machines and various algorithms on quantum computing.

Course Learning Outcomes:

On completion of this course, the student will be able to:

CO1: describe the architecture of a quantum system.

CO2: describe a quantum Turing machine and compare it with the standard Turing Machine.

CO3: distinguish between probabilistic and quantum algorithms.

CO4: describe the notion of error correction in quantum systems.

CO5: implement quantum algorithms like kickback algorithm, Deutsch-Jozsa algorithm, Simon's algorithm, fast factorization algorithms, quantum Fourier transform, Shor's Algorithm, Grover's search algorithm.

Syllabus:

Unit-I Introduction & Background: A brief history of computing including 'Turing Machines', Probabilistic systems, Quantum Systems.

Unit-II QUBITS and Framework of Quantum Systems: The State of a Quantum System, Quantum Bits, Quantum Registers, Quantum information, Quantum Turing Machine.

Unit-III Quantum Circuits: Boolean Circuits, Reversible Circuits, Quantum Circuit Model, Quantum Gates, Universal Sets of Quantum Gates, Efficiency in approximating unitary transformation, Implementing measurements with Quantum Gates.

Unit-IV Introduction to Quantum Algorithm: Probabilistic versus Quantum Algorithm, Phase Kick- Back Algorithm, The Deutsch Algorithm, The Deutsch-Jozsa Algorithm, Simon's Algorithm.

Unit-V Fast Factorization & Search Algorithms: Quantum Fourier Transform, Shor's Algorithm, The Correctness Probability. Grover's Search Algorithm.

Unit-VI Computational lower bound complexity for quantum circuits: General ideas, Polynomial representations, Quantum Circuit Lower Bound.

Unit-VII Introduction to quantum error Correction: Classical Error correction, Fault tolerance, Quantum Error Correction, Fault Tolerance Quantum computation.

Readings:

1. S Arora and B.Barak, **Computational complexity, A Modern approach**; Cambridge ,Cambridge University Press, 2009
2. Michael A. Nielsen, Isaac L. Chuang, **Quantum Computation and Quantum Information**: 10th Anniversary Edition, Cambridge University Press, 2011
3. Mika Hirvensalo, **Quantum Computing**, Springer, 2001.

4. P Kaye, R Laflamme, and M Mosca, **An Introduction to Quantum Computing,** Oxford University Press, 2007.

MCAE 314: COMPUTER GRAPHICS [4-1-0]

Course Objectives: The course is designed to introduce students to the basic concepts and theory of computer graphics. The aim is to introduce students regarding various object rendering algorithms, projections, and latest concepts related to virtual reality.

Course Learning Outcomes:

On completing this course, the student will be able to:

CO1: acquire familiarity with the concepts and relevant mathematics of computer graphics.
CO2: ability to implement various algorithms to scan, convert the basic geometrical primitives, transformations, area filling, clipping.
CO3: describe the importance of viewing and projections.
CO4: ability to design basic graphics application programs.
CO5: familiarize with fundamentals of animation and Virtual reality technologies.
CO6: be able to design applications that display graphic images to given specifications.
CO7: to understand a typical graphics pipeline.

Syllabus:

UNIT I. Application Areas of Computer Graphics: Overview of Graphics Systems and Devices. Points and Lines, Line Drawing Algorithms, Mid-Point Circle and Ellipse Algorithms. Filled Area Primitives, Polygon Filling Algorithms. Curve Generation: Bezier and B-Spline Curves.

UNIT II 2-D Geometrical Transforms: Translation, Scaling, Rotation, Reflection and Shear Transformations Composite Transforms, Transformations between Coordinate Systems. 2-D Viewing: The Viewing Pipeline, Viewing Coordinate Reference Frame, Window to Viewport Coordinate Transformation, Viewing Functions.

UNIT III Line Clipping Algorithms: Cohen-Sutherland and Cyrus Beck Line Clipping Algorithms, Sutherland–Hodgeman Polygon Clipping Algorithm. 3-D Object Representation: Polygon Surfaces, Quadric Surfaces, Spline Representation

UNIT IV 3-D Geometric Transformations: Translation, Rotation, Scaling, Reflection and Shear Transformations, Composite Transformations, 3-D Viewing: Viewing Pipeline, Viewing Coordinates, View Volume, General Projection Transforms and Clipping.

UNIT V Visible Surface Detection Methods: Classification, Back-Face Detection, Depth-Buffer, Scanline, Depth Sorting, BSP-Tree Methods, Area Sub-Division and Octree Methods Illumination Models and Surface Rendering Methods: Basic Illumination Models, Polygon Rendering Methods Computer Animation: Design of Animation Sequence, General Computer Animation Functions Key Frame Animation, Animation Sequence, Motion Control Methods, Morphing, Warping (Only Mesh Warping)

UNIT VI Virtual Reality: Basic Concepts, Classical Components of VR System, Types of VR Systems, Three-Dimensional Position Trackers, Navigation and Manipulation Interfaces, Gesture Interfaces. Input Devices, Graphical Rendering Pipeline, Haptic Rendering Pipeline, Open GL Rendering Pipeline. Applications of Virtual Reality.

Readings:

1. Donald Hearn and M. Pauline Baker, "Computer Graphics with Open GL", Prentice Hall.
2. R. K Maurya, "Computer Graphics with Virtual Reality", Wiley

MCAE 315: PARALLEL AND DISTRIBUTED COMPUTING [4-1-0]

Course Objectives: In this course, the objective is to describe the parallel and distributed computing environments. The course also covers the process of communication, naming and coordination followed by the issues such as consistency, fault tolerance, and security in distributed systems.

Course Learning Outcomes:

On completion of this course, the student will be able to:

CO1: describe architectures for parallel and distributed systems.

CO2: develop elementary parallel algorithms.

CO3: develop an application involving synchronization of communicating distributed process.

Syllabus:

Unit-I Parallel Computing: Trends in microprocessor architectures, memory system performance, dichotomy of parallel computing platforms, physical organization of parallel platforms, communication costs in parallel machines, SIMD versus MIMD architectures, global versus distributed memory, the PRAM shared-memory model, distributed-memory or graph models, basic algorithms for some simple architectures: linear array, binary tree, 2D mesh with shared variables.

Unit II Distributed Computing Architectures: Characteristics and goals of distributed computing, architectural styles: centralized, decentralized, and hybrid architectures, layered, object-based and service oriented, resource-based, publish-subscribe architectures, middleware organization: wrappers, interceptors, and modifiable middleware, system architecture, example architectures: network file system and web.

Unit-III Distributed Processes and Communication in Distributed Systems: Threads in distributed systems, principle of virtualization, clients: network user interfaces and client-side software for distribution transparency; servers: design issues, object servers, server clusters; code migration; Layered protocols, remote procedure call: RPC operation, parameter passing; message- oriented communication: transient messaging with sockets, message-oriented persistent communication; multicast communication: application-level tree-based multicasting, flooding-based multicasting, gossip-based data dissemination.

Unit IV Naming and Coordination in Distributed Systems: Names, identifiers, and addresses, flat naming, Structured naming, and attribute-based naming; coordination: clock synchronization, logical clocks, mutual exclusion: centralized, distributed, token-ring, and decentralized algorithms; election algorithms, location systems, distributed event matching, gossip-based coordination.

Unit-V Consistency and replication, Fault Tolerance, and Security: Introduction to consistency models and protocols, fault tolerance, and security issues in distributed systems.

Readings:

1. Ananth Grama, Anshul Gupta, George Karypis, Vipin Kumar, Introduction to Parallel Computing, 2nd edition, 2003, Addison-Wesley.
2. B. Parhami, Introduction to Parallel Processing: Algorithms and Architectures, Plenum, 1999, Springer.
3. M. van Steen, A. S. Tanenbaum, Distributed Systems, CreateSpace Independent

Publishing Platform, 2017.

MCAE316: DATA MINING [4-1-0]

Course Objectives: In this course, the objective is to introduce the concept of data mining. The course should enable students to translate real-world problems into data hypotheses. Data cleaning and visualization followed by classification and clustering of data points are other intents of the course. The course also covers mining frequent itemsets from the transactional data.

Course Learning Outcomes:

On completion of this course, the student will be able to:

CO1: experiment with basic data exploration methods to develop an understanding of given data.

CO2: identify a suitable pre-processing method for the given problem.

CO3: implement and apply appropriate data mining algorithms for the given problem.

CO4: use programming tools (Weka/Python/R) for solving data mining problems.

Syllabus:

Unit-I Overview: The process of knowledge discovery in databases, predictive and descriptive data mining techniques, supervised and unsupervised learning techniques.

Unit-II Data preprocessing: Data cleaning, Data transformation, Data reduction, Discretization.

Unit-III Classification: Supervised learning/mining tasks, Decision trees, Decision rules, Bayesian classification, Instance-based methods, evaluation and Validation methods.

Unit-IV Clustering: Basic issues in clustering, k-means clustering, expectation maximization, Hierarchical clustering, Density-based methods, Cluster Validation methods and metrics.

Unit-V Association Rule Mining: Frequent item sets, closed and maximal item sets, Apriori algorithm for association rule mining.

Readings:

1. P. Tan, M. Steinbach and V. Kumar, **Introduction to Data Mining**, Addison Wesley, 2016.
2. Jiawei Han and Micheline Kamber, **Data Mining: Concepts and Techniques** (3nd ed.), Morgan Kaufmann, 2011.
3. Charu C Agrawal, **Data Mining: The Textbook**, Springer, 2015.
4. Luis Torgo, **Data Mining with R Learning with Case Studies,** Second Edition, CRC Press, 2017.
5. Robert Layton, **Learning Data Mining with Python**, Second Edition,

MCAE 317: GPU PROGRAMMING[4-1-0]

Course Objectives: The objective of this course is to introduce the architecture of the graphic processing unit (GPU) followed by the construction of models developed through parallel programming. The fundamental GPU algorithms – reduce, scan, and histogram will also be introduced in this course. Problems such as matrix multiplication in the CUDA environment by parallelizing tasks is another

objective of this course.

Course Learning Outcomes:

On completion of this course, the student will be able to:

CO1: describe GPU architecture and parallel programming models.

CO2: implement fundamental GPU Algorithms – reduce, scan, and histogram.

CO3: analyze, and figure out the portion of programs being parallelizable.

CO4: write an efficient parallel algorithm to solve a given problem.

CO5: optimize GPU programs.

Syllabus:

Unit-I Introduction: Introduction to heterogeneous computing, overview of CUDA C/Python, and kernel-based parallel programming.

Unit-II Performance Issues: Memory model for locality, tiling for conserving memory bandwidth, handling boundary conditions, and performance considerations, simple matrix-matrix multiplication in CUDA environment.

Unit-III Introduction to OpenCL, operations such as vector addition using streams.

Unit-IV Applications: Parallel convolution pattern, parallel scan pattern, parallel histogram pattern and atomic operations, data transfer and task parallelism.

Readings:

1. Shane Cook, **CUDA Programming: A Developer's Guide to Parallel Computing with GPUs**, Elsevier; 2014.

2. Norman Matloff, **Parallel Computing for Data Science: With Examples in R, C++ and CUDA**, Chapman & Hall/CRC, 2015.

MCAE 318: Neural Networks [4-1-0]

Course Objectives: The objective of this course is to introduce the basics of neural networks. The concepts of single and multi-layer feed-forward neural networks and their engineering applications of artificial intelligence with respect to neural networks will also be covered in the course.

Course Learning Outcomes:

On completion of this course, the student will be able to:

CO1: describe the role of neural networks in engineering, artificial intelligence, and cognitive modeling.

CO2: design single and multi-layer feed-forward neural networks for practical applications,

CO3: analyze the performance of neural networks and tune various hyper-parameters.

Syllabus

Unit-I Introduction: Neuron as basic unit of neurobiology, McCulloch-Pitts model, Hebbian Hypothesis; limitations of single-layered neural networks.

Unit-II Supervised Learning: Single-layered neural networks, perceptron rule, review of gradient-descent algorithms; multi-layered neural networks: first order methods, backpropagation algorithm, second order methods, modeling sequences using recurrent neural networks, Hopfield networks, Boltzmann machines, restricted Boltzmann machines.

Unit-III Kernel methods and support vector machines: soft margin techniques.

Readings:

1. C. M. Bishop, **Pattern Recognition and Machine Learning**, Springer, 2010.

2. Simon O. Haykin, **Neural Networks and Learning Machines,** Pearson Education, 2016

MCAE319: MACHINE LEARNING APPLICATIONS [4-1-0]

Course Objectives: In this course, the objective is to study machine learning (ML) techniques. The course covers the basics of supervised and unsupervised ML techniques followed by their hands-on applications in solving real-world problems. The course also covers the different ways to evaluate developed ML models in different domains.

Course Learning Outcomes:

On completion of this course, the student will be able to:

CO1: appreciate fundamental issues and challenges of supervised and unsupervised learning techniques.

CO2: design and implement supervised and unsupervised machine learning algorithms for real-world applications while understanding the strengths and weaknesses.

CO3: appreciate the underlying mathematical relationships within and across Machine Learning algorithms.

CO4: fine tune machine learning algorithms and evaluate models generated from data.

Syllabus:

Unit-I Introduction: Learning theory, Hypothesis and target class, Inductive bias and bias-variance tradeoff, Occam's razor, Limitations of inference machines, Approximation and estimation errors, Curse of dimensionality, dimensionality reduction, feature scaling, feature selection methods.

Unit-II Regression: Linear regression with one variable, Linear regression with multiple variables, Gradient Descent, Logistic Regression, Polynomial regression, over-fitting, regularization. performance evaluation metrics, validation methods.

Unit-III Classification: Decision trees, Naive Bayes classifier, k-nearest neighbor classifier, Perceptron, multilayer perceptron, Neural network, back-propagation Algorithm, Support Vector Machine, Kernel functions.

Unit IV Evaluation: Performance evaluation metrics, ROC Curves, Validation methods, Bias-variance decomposition, Model complexity.

Unit-V Unsupervised learning: Clustering, distance metrics, Mixture models, Expectation Maximization, Cluster validation methods.

Readings:

1. Alpaydin, Ethem, **Introduction to machine learning,** MIT press, 2014.

2. Christopher, M. Bishop, **Pattern Recognition And Machine Learning**, Springer-Verlag, 2016.

3. Shai Shalev-Shwartz, Shai Ben-David, **Understanding Machine Learning: From Theory to Algorithms,** Cambridge Press, 2014.

4. Michalski, Ryszard S., Jaime G. Carbonell, and Tom M. Mitchell, eds. **Machine learning: An artificial intelligence approach**, Springer Science & Business Media, 2013.

MCAE320: DIGITAL IMAGE PROCESSING [4-1-0]

Course Objectives: The objective of this course is to study the concept of digital image processing. The course should also cover the image enhancement in the spatial and frequency domain followed by the image morphological operations such as dilation, erosion, and hit-or-miss transformations. The course also covers image segmentation and image compression.

Course Learning Outcomes:

On completion of this course, the student will be able to:

CO1: enhance the quality of an image using various transformations.

CO2: transform an image in spatial domain to frequency domain, and DWT domain.

CO3: apply required morphological operations to an image.

CO4: segment an image using various approaches.

Syllabus:

Unit-I Introduction: Applications of digital image processing, steps in digital image processing: image acquisition, image sampling and quantization, basic relationships between pixel.

Unit-II Image enhancement in the spatial domain and frequency domain: Gray level transformations, histogram processing, local enhancement, image subtraction, image averaging, spatial filtering: smoothing and sharpening filters, Discrete Fourier transformation, filtering in the frequency domain: smoothening and sharpening filters, image restoration in spatial and frequency domains.

Unit-III Morphological image processing: erosion and dilation, opening and closing, hit-or-miss transformation, some basic morphological algorithms.

Unit-IV Image segmentation: Point, line and edge detection, gradient operator, edge linking and boundary detection, thresholding, region-based segmentation, representation schemes like chain codes, polygonal approximations, boundary segments, skeleton of a region, boundary descriptor, regional descriptor.

Unit-V Introduction to Image Compression: Image compression models, Error free compression techniques, lossy compression techniques, JPEG, MPEG.

Readings:

1. Rafael C. Gonzalez and Richard E.Woods, **Digital Image Processing** (3rd edition), Prentice–Hall of India, 2016.

2. Bernd Jahne, **Digital Image Processing**, (6th edition), Springer, 2005.

3. S. Annadurai and R. Shanmugalakshmi, **Fundamentals of Digital Image Processing**, Pearson Education, 2007.

4. M.A. Joshi, **Digital Image Processing: An Algorithmic Approach** (2nd edition), Prentice-Hall of India.

5. B. Chandra and D.D. Majumder, **Digital Image Processing and Analysis**, Prentice-Hall of India, 2011.

MCAE321: INTERNET OF THINGS [4-1-0]

Course Objectives: The objective of this course is to introduce the concept of the Internet of Things (IoT) and its working. The course should also cover the microcontroller and interfacing of IoT devices, the security policies and issues related to IoT devices followed by some real-life applications of IoT.

Course Learning Outcomes:

On completion of the course, the student is expected to:

CO1 : describe the basics of IoT and how it works.

CO2 : understand the key components that make up an IoT system

CO3 : recognise the factors that contributed to the emergence of IoT

CO4: use real IoT protocols for communication

Syllabus:

Unit I Basics of IoT: Introduction to Internet of things, characteristics, architecture, Various sensors and sensing techniques. Technological trends in IoT, Impact of IoT on society, Application scenarios, vision, scalability, current solutions, issues.

Unit II – Microcontroller and Interfacing Techniques for IoT Devices

Introduction to IoT and architecture layers, IoT smart devices, Typical embedded computing systems, Introduction to ARM architecture and programming method, Embedded system development: a case study, Introduction to interfacing techniques.

Unit III – IoT Protocols & Security

Networking and basic networking hardware. Networking protocols, Interaction between software and hardware in an IoT device. IoT components and technologies to secure systems and devices.

Various security issues related to the IoT and security architectures. Hardware security threats and security vulnerabilities; protecting physical hardware

Unit IV – Location Tracking

Introduction to device localization and tracking; different types of localization techniques: time-of-arrival (TOA) based, time-difference-of-arrival (TDOA) based, angle-of-arrival (AOA) based, received signal strength (RSS) based, Radio-Frequency IDentification (RFID) based and fingerprinting based; Monte-Carlo tracking; Kalman filter based tracking; Cramer-Rao lower bound (CRLB) for device location estimator; Device diversity/heterogeneity issue in IoT networks.

Unit VI - IoT Applications: Application of IoT in Agriculture, Healthcare, Activity Monitoring.

Readings:

1. The Internet of Things: Enabling Technologies, Platforms, and Use Cases", by Pethuru Raj and Anupama C. Raman (CRC Press)

2. "Internet of Things: A Hands-on Approach", by Arshdeep Bahga and Vijay Madisetti (Universities Press)

MCAO301: JAVA PROGRAMMING [3-1-0]

Course Objectives: The objective of this course is to study object-oriented concepts of Java programming. The course should also cover the reading and writing files followed by exception handling. The graphical user interface (GUI) using Swings is another objective.

Course Learning Outcomes:

On completing this course, the student will be able to:

CO1: understand the object-oriented concepts – Classes, Objects, Inheritance, Polymorphism– for problem solving.

CO2: handle program exceptions.

CO3: design, implement, document, test, and debug a Java application consisting of multiple classes.

CO4 : handle input/output through files.

CO5 : create Java applications with graphical user interface (GUI).

Syllabus:

Unit-I Introductory Concepts: program, identifiers, variables, constants, primitive data types, expressions, control statements, structured data types, arrays, functions.

Unit-II Object Oriented Concepts: Abstraction, encapsulation, objects, classes, methods, constructors, inheritance, polymorphism, static and dynamic binding, overloading, Abstract classes, Interfaces and Packages.

Unit-III File Handling: Byte Stream, Character Stream, File I/O Basics, File Operations, Serialization.

Unit-IV Exception handling: Throw and Exception, Throw, try and catch Blocks, Multiple Catch Blocks, Finally Clause, Throwable Class, Types of Exceptions, java.lang Exceptions, Built-In Exceptions.

Unit-V GUI Design: GUI based I/O, Input and Message Dialog boxes, Swing components, Displaying text and images in window.

Readings:

1. James Gosling, Bill Joy, Guy L. Steele Jr, Gilad Bracha, Alex Buckley, **The Java Language Specification, Java SE 7 Edition**, Addison-Wesley, 2013.

2. Cay S. Horstmann, Core Java - Vol. I – Fundamentals, 10th Edition, Pearson, 2017.

3. Deitel & Deitel, **Java-How to Program** (9th ed.), Pearson Education, 2012.

4. Richard Johnson, An Introduction to Java Programming and Object-Oriented Application Development, **Thomson Learning,** 2006.

5. Herbert Schildt, Java: The Complete Reference, 10th Edition, McGraw-Hill Education, 2018.

MCAO 302: DATA MINING FOR BUSINESS APPLICATIONS (4+1)

Course Objectives: In this course, the objective is to explore the applications of data mining for business. The course should enable students to translate business problems into data hypotheses. Data wrangling and visualization followed by classification and clustering of data points are other intents of the course. The course also covers mining frequent itemsets from transactional data.

Course Learning Outcomes:

On completion of this course, the student will be able to:

CO1: Visualize data from a business perspective
CO2: Carry out data wrangling tasks, like handling missing data and data transformation
CO3: Map a business problem to data mining tasks like classification, clustering, and rule mining, and apply a suitable technique to it.
CO4: Use programming tools for the application of data mining tasks.

Syllabus:

Unit-I Handling Business Data: Translate business problems into data hypotheses, Exploring and describing datasets, Predictive and descriptive data mining techniques, use of visualizations to generate hypotheses

Unit-II Data Wrangling: Prepare and clean data for analysis, identify solutions for managing missing data, Data transformation, Data reduction, Discretization

Unit-III Data Visualization: Generate insight with graphs, Design visualizations to express data clearly

Unit-IV Linear Regression: Identify relationships between variables, Explain the parts of a linear model

Unit-V Classification: Logistic Regression, Decision Trees, Naïve Bayes, Voting, confusion matrix, interpreting results, select a model to guide decisions

Unit-VI Clustering: Clustering methods: centroid-based clustering, expectation maximization, hierarchical clustering, density-based methods, cluster validation methods, and metrics.

Unit-VII Association Rule Mining: Frequent item sets, closed and maximal item sets, Apriori algorithm for association rule mining.

Readings:

1. P. Tan, M. Steinbach and V. Kumar, **Introduction to Data Mining**, Addison Wesley, 2016.
2. J Zaki Mohammed and Wagner Meira, **Data Mining and Analysis: Fundamental Concepts and Algorithms,** Cambridge University Press, 2014.
3. Jiawei Han and Micheline Kamber, **Data Mining: Concepts and Techniques** (3nd ed.), Morgan Kaufmann, 2011.
4. Robert Layton, **Learning Data Mining with Python**, Second Edition.

MCAO 303: DATA SCIENCE [4-1-0]

Course Objectives: The objective of this course is to analyze the data statistically and discover valuable insights from it. The course gives hands-on practice on predictive and descriptive modeling of the preprocessed data. In addition, the student also learns to apply mining association rules from the transactional data and mining text from the document will also be covered during the course.

Course Learning Outcomes:

On completion of this course, the student will be able to:

CO1: demonstrate proficiency with statistical analysis of data.
CO2: develop the ability to build and assess data-based models.
CO3: execute statistical analyses and interpret outcomes.
CO4: apply data science concepts and methods to solve problems in real-world contexts and will communicate these solutions effectively.

Syllabus:

Unit-I Introduction: Introduction data acquisition, data preprocessing techniques including data cleaning, selection, integration, transformation, and reduction, data mining, interpretation.

Unit-II Statistical data modeling: Review of basic probability theory and distributions, correlation coefficient, linear regression, statistical inference, exploratory data analysis, and visualization.

Unit-III Predictive modeling: Introduction to predictive modeling, decision tree, nearest neighbor classifier, and naïve Bayes classifier, classification performance evaluation, and model selection.

Unit-IV Descriptive Modeling: Introduction to clustering, partitional, hierarchical, and density based clustering (k-means, agglomerative, and DBSCAN), outlier detection, clustering performance evaluation.

Unit-V Association Rule Mining: Introduction to frequent pattern mining and association rule mining, Apriori algorithm, measures for evaluating the association patterns.

Unit-VI Text Mining: Introduction of the vector space model for document representation, term frequency-inverse document frequency (tf-idf) approach for term weighting, proximity measures for document comparison, document clustering, and text classification.

Readings:

1. W. McKinney, Python for Data Analysis: Data Wrangling with Pandas, NumPy and iPython, 2nd Ed., O'Reilly, 2017.
2. P. Tan, M. Steinbach, A Karpatne, and V. Kumar, Introduction to Data Mining, 2nd Edition, Pearson Education, 2018.
3. G. Grolemund, H. Wickham, R for Data Science, 1st Ed., O'Reilly, 2017.

ANNEXURE-49

Sub: Amendment to Ordinances

[E.C Resolution No. 38-1/ (38-1-17) dated 08.12.2022]

The Following amendments to Ordinances of the University has been approved by the Executive Council at its meeting held on 08.12.2022 are hereby notified for information and necessary action, by all the concerned:

1. Minor modifications in Course Credit Scheme of Open Elective papers under PG LOCF.
   (i) M.A. Psychology ***(As per Annexure-1)***.
   (ii) M.A. Applied Psychology ***(As per Annexure-2)***.

2. Adding options on Indian Languages in the Open Elective Course in Semester-III and Semester-IV for syllabus for M.A Comparative Indian Literature (CIL) under the Department of Modern Indian Languages and Literary Studies ***(As per Annexure-3)***.

3. Minor change in course structure of M.A Programme in Linguistics for Semester-III and Semester-IV under the Department of Linguistics ***(As per Annexure-4)***.

4. Minor modifications/ introduction in the syllabi under the Department of Slavonic & Finno-Ugrian Studies.

   (i) M.A Russian ***(As per Annexure-5).***
   (ii) Full time Intensive Advance Diploma in Russian ***(As per Annexure-6)***.
   (iii) Part-time Certificate/ Diploma/ Advance Diploma Courses in Russian ***(As per Annexure-7)***.

5. Change of nomenclature of GE Papers in B.A (H) French/ German/ Spanish/ Italian for Semester-I, II,III and IV of CBCS-LOCF Syllabus under the Department of Germanic & Romance Studies as follows :

Existing	**Amended**	**Semester**
Introduction to French	Basic - French– I	Semester-I of UG Courses
Introduction to German	Basic - German– I	

Introduction to Italian	Basic - Italian– I	
Introduction to Spanish	Basic - Spanish – I	
Introduction to Portuguese	Basic - Portuguese – I	
Introduction to French	Basic - French– II	Semester-II of UG Courses
Introduction to German	Basic - German– II	
Introduction to Italian	Basic - Italian– II	
Introduction to Spanish	Basic - Spanish – II	
Introduction to Portuguese	Basic - Portuguese – II	
Introduction to French	Intermediate - French– I	Semester-III of UG Courses
Introduction to German	Intermediate - German – I	
Introduction to Italian	Intermediate - Italian– I	
Introduction to Spanish	Intermediate - Spanish – I	
Introduction to Portuguese	Intermediate - Portuguese – I	
Introduction to French	Intermediate - French– II	Semester-IV of UG Courses
Introduction to German	Intermediate - German – II	
Introduction to Italian	Intermediate - Italian– II	
Introduction to Spanish	Intermediate - Spanish – II	
Introduction to Portuguese	Intermediate - Portuguese– II	

Annexure-1
Resolution No. 38 {38-1 [38-1-17(1)]}

UNIVERSITY OF DELHI

MASTER OF ARTS

M. A. Psychology

Effective from the Year 2021-2022

Revised Syllabus as per Choice Based Credit System (C.B.C.S.)

Department of Psychology, University of Delhi, Delhi

COURSE CREDIT SCHEME- M.A. PSYCHOLOGY

Semester	Core Course			Elective Course			Open Elective Course			Total Credits
	No. of papers		Total	No. of papers		Total	No. of papers			
I	4+1 (prac)	4	20	-	-	-	-	-	-	20
II	2+1 (prac)	4	12	2	4	8	-	-	-	20
III	**1 (Field Training)**	**4**	**4**	**3 +1 (prac)**	**4**	**16**	**1**	**4**	**4**	**24**
IV	**1(Dissertation)**	**8**	**8**	**3+1 (prac)**	**4**	**16**	**1**	**4**	**4**	**28**
Total credits for the course										**92**

***For each Core and Elective Course there will be 4 lecture hours of teaching per week.**
***Open Electives to the maximum total of 4 credits.**
***Duration of examination of each paper shall be 3 hours.**
***Each paper will be of 100 marks out of which 70 marks shall be allocated for semester examination and 30 marks for Internal Assessment.**

***Credit points for tutorial forms the component of the internal assessment.**

Semester -I:

Semester 1 shall consist of 4 core papers which will be compulsory for all students. Each core paper will be for 4 credits. 4 credits will be provided for the Practicum that will be compulsory for all students. Total credit points for this Semester shall be 20.

Semester I				
Core Courses	Credits in each course			
	Theory	Practical	Tutorial	Credits
PSY 101: Human Cognition: Theory & Research	4	-	*	4
PSY 102: Research Method and Statistics	4	-	*	4
PSY 103: Social Psychology	4	-	*	4
PSY 104: A Conceptual History of Psychology	4	-	*	4
PSY 105: Practicum based on 101, 102, 103 and 104	-	4	-	4

*Credit points for tutorial forms the component of the internal assessment

Semester II:

Semester 2 shall consist of 2 core papers (4 credit points per paper) and one compulsory Practicum (4 credits). There will be **six** specializations offered to the students out of which students will have to opt for 1 specialization: **Applied Developmental Psychology (A), Organizational Behaviour/HR(B), Clinical/Neuropsychology (C), Indian and Transpersonal Psychology (D), Health and Culture (E) and Social Psychology (F)** Each elective paper will be for 4 credit points.Total Credit points for this semester shall be 20.

Semester -II				
Core Courses	**Credits in each course**			
	Theory	**Practical**	**Tutorial**	**Credits**
PSY 201: Psychometrics	4	-	*	4
PSY 202: Qualitative Research Methods	4	-	*	4
	Credits in each course			
	Theory	**Practical**	**Tutorial**	**Credits**
PSY 203A: Applied Developmental Psychology: Theory, Research and Practice	4	-	*	4
PSY 204A: Socio-emotional Development in Children	4	-	*	4
PSY 203B: Organizational Psychology and Indian Context	4	-	*	4
PSY 204B: Cultural Processes and Leadership	4	-	*	4
PSY 203C: Philosophy of Clinical Psychology	4	-	*	4
PSY204C: Understanding Psychological Disorders	4	-	*	4
PSY 203D: Philosophical and Historical Foundations of Indian Thought	4	-	*	4
PSY204D: Notion of Knowledge in Indian Intellectual Tradition	4	-	*	4
PSY 203E: Health and Well-Being	4	-	*	4
PSY204E: Psychology of Vulnerability	4	-	*	4
PSY 203F:Intergroup Relations in Indian Society	4	-	*	4
PSY204F: Conflict Resolution and Peace Psychology	4	-	*	4
PSY 205: Practicum based on paper 201, 202, 203 and 204.	-	4	-	4

Semester III:

- **Semester III** shall consist of **3 elective papers** from each of the six specializations. **4 credit** points shall be given for each of these elective papers. The students can opt for **1 open elective** from this semester. **4 credit** points shall be given for the open elective paper which shall consist of **4 units** of theory (**4** hours/week classes).
- There will be a mandatory paper on Field Training Work that the students will have to undertake which shall be for **4 credit** points. Total credits for this semester shall be **28 credits.**
- The floating of Elective and Open Elective Papers shall be dependent on the availability of the faculty.

Semester-III				
Elective Courses	**Credits in each course**			
	Theory	**Practical**	**Tutorial**	**Credits**
PSY301A: Contemporary Perspectives and Issues in Applied Developmental Psychology	4	-	*	4
PSY302A: Cognitive Development: Mind, Brain and Education	4	-	*	4
PSY 303A: Developmental Disorders	4	-	*	4
PSY 301B: Organizational Change and Development **(Currently Offered)**	4	-	*	4
PSY 302B: Interpersonal Process and Team Building **(Currently Offered)**	4	-	*	4
PSY 303B: Power and Politics in	4	-	*	4

Organization **(Currently Offered)**				
PSY 301C: Psychotherapeutic Interventions **(Currently Offered)**	4	-	*	4
PSY 302C: Community Mental Health **(Currently Offered)**	4	-	*	4
PSY 303C: Clinical Assessment and Diagnosis **(Currently Offered)**	4	-	*	4
PSY 301D: Self and Personality: Indian Perspective **(Currently Offered)**	4	-	*	4
PSY 302D: Aspects and Practical Implications of Yoga **(Currently Offered)**	4	-	*	4
PSY 303D: Emotions and the transformation of personhood in Indian Psychology **(Currently Offered)**	4	-	*	4

PSY 301E: Positive Psychology	4	-	*	4
PSY 302E: Diversity, Culture and Health	4	-	*	4
PSY 303E: Emotions and Well Being	4	-	*	4
PSY 301F: Psychology of Intimacy	4	-	*	4
PSY 302F: Environmental Psychology	4	-	*	4
PSY 303F: Vulnerabilities of Contemporary Indian Society	4	-	*	4
PSY 304: **Practicum based on 301, 302 and 303**	-	4	-	**4**
Total (Elective + Practicum)				**16**

Open Elective Courses	**Credits in each course**	
	Theory	**Credits**
PSY 305: Gender and Psychology	4	**4**
PSY 306: Theory and Practice of Persuasion	4	**4**
PSY 307: Development of Theory of Mind	4	**4**
PSY 308: Children and Narratives	4	**4**
PSY 309: Play and Child Development	4	**4**
PSY 310: Psychology of Disability	4	**4**
PSY 311: Psychological Assessment and Behavioral Skills **(Currently Offered)**	4	**4**
PSY 312: Psychology and the Virtual World	4	**4**
PSY 313: Psychological Understanding of texts and films **(Currently Offered)**	4	**4**

PSY 314: Introduction to Analytical Psychology **(Currently Offered)**	4	**4**
PSY 315: Archetypes and the Collective Unconscious (Currently Offered)	4	**4**
PSY 316: Field Training (Compulsory for all)	**4**	
Total Credits	**24**	

Semester -IV:

- Semester 4 shall consist of 3 elective papers each from 6 specializations. There will be one compulsory Practicum paper.
- Students will have to opt 1 elective papers from this semester. The total credit points for this semester shall be 32 points.

Semester IV				
Elective Courses	**Credits in each course**			
	Theory	**Practical**	**Tutorial**	**Credits**
PSY401A: Adolescence and Young Adulthood	4	-	*	4
PSY402A: Ageing: Growth and Development during Late Adulthood	4	-	*	4
PSY403A: Counselling Children and Adolescents	4	-	*	4
PSY401B: Coaching and Mentoring at Workplace	4	-	*	4
PSY402B: Human Resource Management	4	-	*	4
PSY403B: Negotiation and Bargaining Skills	4	-	*	4
PSY401C: Behavioural Medicine	4	-	*	4
PSY402C: Clinical Neuropsychology	4	-	*	4
PSY403C:Childhood Disorders	4	-	*	4
PSY 401D: Introduction to Transpersonal Psychology	4	-	*	
PSY402D: Transpersonal Phenomena-Transformation, Healing and Wellness	4	-	*	4
PSY403D: Introduction to Buddhist Psychology	4	-	*	4
PSY401E: Cultural Psychology of Health in Indian Context	4	-	*	4
PSY402E: Psychology of Happiness and Peace	4	-	*	4
PSY403E: Stress and Health	4	-	-	4
PSY 401F: Self, Globalization and Society	4	-	*	4
PSY 402F: Challenges of Societal	4	-	*	4

Development				
PSY 403F: Social Psychology and Education	4	-	*	4
PSY 404: Practicum based on papers 401, 402 and 403	-	4	*	4
Open Elective Courses	**Credits in each course**			
	Theory Credits			
PSY 405: Executive Function: Assessment and Intervention	4			
PSY 406: Developmental Assessment	4			
PSY 407: Emotions in everyday life	4			
PSY 408: Experiential Enquiry into Selfhood	4			
PSY 409: Institutions and Entrepreneurship	4			
PSY 410: **Psychological Principles in Advertising**	4			
PSY 411: The Gifted Child	4			
PSY 412: Developmental Psychology in Education	4			
PSY 413: Carl Jung and Mystical Traditions	4			
PSY 414: Dream Interpretation: Jungian Perspective	4			
PSY 415: Training and Consulting in Organizations	4			
PSY 416: Dissertation (Compulsory for all students)	8			

UNIVERSITY OF DELHI

MASTER OF ARTS

M. A. Applied Psychology

Effective from the Year 2021-2022

Revised Syllabus as per Choice Based Credit System (C.B.C.S.)

Department of Psychology, University of Delhi, Delhi

Designing of the Course

1. These courses were designed and developed by smaller groups of faculty members. At least two faculty members were assigned the task of designing the Core and Elective papers.
2. The courses were designed to be commensurate with the credit system, which requires a minimum of 40-50 hours of active engagement over asemester.
3. It was envisaged to provide learning possibilities with a high degree of specialization and in-depth knowledge in at least one area/domain of the discipline, or more than one. Nonetheless, developing and retaining appropriate level of skills to enhance employment opportunities in different domains was decided to be a concurrent priority while designing the courses. It is to be remembered that a significant number of students enroll in the Graduation Program after having done Psychology in grade XII. Larger number of students, however, has previous study exposure from other streams of sciences, arts and commerce. Therefore, one of the principles that was kept in mind was that the transition be made smooth both from content as well as process orientation ofteaching.

Programme Structure

The M. A. Applied Psychology Programme is a two years programme consisting of 4 semesters, 2 in each year

Semester	Core Course			Elective Course			Open Elective Course			Total Credits
	No. of papers	Credits	Total	No.of papers	Credits	Total	No.of papers	Credits	Total	
I	4+1(Practicum)	4	20	-	-	-	-	-	-	20
II	2+1 (Practicum)	4	12	2	4	8	-	-	-	20
III	1(Field Training) + 1 (Practicum)	4	8	3	4	12	1	4	4	24
IV	1 Practicum + 1 Dissertation	4+8	12	3(Elective papers)	4	12	1	4	4	28
Total credits forthecourse										92

Course Credit Scheme

The structure of papers prescribed for various semesters shall be as follows:

Semester I

Semester 1 shall consist of 4 core papers, which will be compulsory for all students. Each core paper will be for 4 credits. 4 credits will be provided for the Practicum that will be compulsory for all students.

Paper Code	Nature	Title	Maximum marks	Credit Points
AP/10001	Core paper	Introduction to Applied Psychology	100	4
AP/10002	Core paper	Community Psychology	100	4
AP/10003	Core paper	Quantitative Research Methods	100	4
AP/10004	Core paper	Applied Cognitive Psychology	100	4
AP/10005	Compulsory	Practicum	100	4

7

Semester II

Semester 2 shall consist of 2 core papers (4 credit points per paper.There will be three specializations offered to the students out of which students will have to opt for 1 specialization: Clinical Psychology (A), Organizational Behaviour (B) and Counseling Psychology (C). Students have to take two elective papers from that chosen specialization. Each elective paper will be for 4 credit point

Paper Code	Nature	Title	Maximum Marks	Credit Points
AP/20001	Core paper	Applied Psychometrics	100	4
AP/20002	Core paper	Qualitative Research methods	100	4
AP/20003A	Elective	Psychopathology	100	4
AP/20004A	Elective	Psychotherapeutic Processes	100	4
AP/20003B	Elective	Basics of Organizational Behaviour	100	4
AP/20004B	Elective	Applied Industrial/Organizational Psychology	100	4
AP/20003C	Elective	Psychology of Group Dynamics	100	4
AP/20004C	Elective	Self and Personal Growth	100	4
AP/20005	Compulsory	Practicum	100	4

Semester III

Semester 3 shall consist of 3 elective papers from each of the three specializations. 4 credit points shall be given for each of these elective papers.

There will be a mandatory paper on Field Training Work that the students will have to undertake which shall be for 4 credit points. Students will have to opt for one Open elective paper which shall be of 4 credits.
One practicum paper will be compulsory for all students.

8

Paper No:	Nature of Paper	Title	Maximum Marks	Credit Points
AP/30001A	Elective	Forensic Psychology	100	4
AP/30002A	Elective	Childhood Psychopathology	100	4
AP/30003A	Elective	Neuropsychology	100	4
AP/30001B	Elective	Organizational Change and Development	100	4
AP/30002B	Elective	Training and Consulting in Organizations	100	4
AP/30003B	Elective	Managing Across Cultures	100	4
AP/30001C	Elective	Critical Psychology	100	4
AP/30002C	Elective	Counselling and socio-cultural context	100	4
AP/30003C	Elective	Psychology of Relationships	100	4
AP/30004	Compulsory	Practicum	100	4
AP/30005	Open Elective	Health Psychology	100	4
AP/30006	Open Elective	Psychological Testing and Applications	100	4
AP/30007	Open Elective	Applications of Social - Psychological Principles	100	4
AP/30008	Theory-Practice Integration	Field Training/Internship	100	4

Semester IV:

Semester 4 shall consist of 3 elective papers each from 3 specializations, there will be one compulsory Practicum paper. Students will have to opt for one open elective papers from this semester. There shall be a Dissertation paper that will be compulsory for all students. The dissertation shall be for 8 credit points.

Paper No:	Nature of paper	Title	Maximum Marks	Credit points
AP/40001A	Elective	Neuropsychological Rehabilitation	100	4
AP/40002A	Elective	Cognitive Behavioral Interventions	100	4
AP/40003A	Elective	Applied Psychophysiology and Biofeedback	100	4
AP/40001B	Elective	Organizational Culture and Climate	100	4
AP/40002B	Elective	Leadership processes in Organizations	100	4
AP/40003B	Elective	Cross-Cultural Communication	100	4
AP/40001C	Elective	Psychology of Gender and Power	100	4
AP/40002C	Elective	Psychoanalytic and Cognitive-Behavioral Approaches to Counseling	100	4
AP/40003C	Elective	Humanistic and Feminist Approaches to Counseling	100	4
AP/40004C	Compulsory	Practicum	100	4
AP/40005	Open Elective	Psychology of Peace and Happiness	100	4
AP/40006	Open Elective	Correctional Psychology	100	4
AP/40007	Open Elective	Hypnotherapy	100	4
AP/40008	Open Elective	Sports Psychology	100	4
AP/40009	Compulsory	Dissertation	200	8

Notes:

1. Students can earn a maximum of 8 credit points from the Open Electivepapers (including Semester 3 and4)
2. Open Elective and Specialization Papers shall be offered depending upon the availability of thefaculty.
3. In order to claim/earn a Specialization; students are required to take at least Six Elective papers in thatSpecialization.
4. In each semester the students can opt for only one specializationarea.
5. No practical examination or Viva-voceshall be conducted for the openelectives.

Annexure-3
Resolution No. 38 {38-1 [38-1-17(2)]}

OPEN ELECTIVE COURSE

CILOE 305(iii)

INTRODUCTION TO AN INDIAN LANGUAGE (I)

(ASSAMESE)

COURSE – I

SEMESTER-III

Marks: 70+30= 100 Credits: 04

Objective: This course aims to introduce students to Assamese, one of the Modern Indian languages. Since this course of study is offered to students who don't have prior knowledge of Assamese language hence, to give a basic overview of Assamese language is the main objective of this course. This course will introduce students to the letters and sounds of Assamese language. They will also be taught to frame Assamese words and different types of sentences. In this process, students will learn how to read, write, speak and listen in the language.

Course learning outcomes: This course of study will introduce students to a language other than their mother tongue and simultaneously improves their multilingual abilities. Moreover, this course will lead the students to study Assamese language in detail in future which will ultimately help them in their professional and technical life.

Course Units:

I. Introduction to Assamese language (10 marks)
- Origin of Assamese language
- Different stages of development of Modern Assamese language

II. Introduction to sounds and letters, Framing words and sentences (20 marks)
- Vowels, Consonants, Consonant Clusters
- Framing words
- Framing simple sentences

III. Basic Grammar (20 marks)
- Parts of speech
- Verb
- Tense

IV. Formation of different kinds of Sentences (20 marks)

- Simple, Compound and Complex Sentence
- Assertive (Affirmative, Negative), Interrogative, Exclamatory Sentence

Teaching Plan: Lecture- 40 Hrs., discussions-10 Hrs., Assignments/Presentations

Unit I : 2 week

Unit II : 4 weeks

Unit III : 4 weeks

Unit IV : 4 weeks

Suggested Readings:

Das Gupta, Bindu Bhusan. *Assamese Self-Taught*. Kolkata: Das Gupta Prakashan. 1956.

Dutta Barua, Lohit. *Learning Assamese Language: A Brief Handbook*. Guwahati: Spandan Prakash. 2021

Dutta Baruah, P.N. *An Intensive Course in Assamese*. Mysore: CIIL. 1996

Dutta Baruah, P.N. *Languages of North East: Assamese, Khasi, Manipuri, Mising, Rabha*. Mysore: CIIL. 1999

Dictionary

Deka, Pranav Jyoti. *Jyoti-Divashik Abhidhan*. Guwahati: Assam Book Dipot. 2011**.**

Sharma, Suresh. Advanced Comprehensive Anglo-Assamese Dictionary. Guwahati: Jyoti Prakashan. 2008

https://dsal.uchicago.edu/dictionaries/candrakanta/

www.xobdo.org

OPEN ELECTIVE COURSE

CILOE 405(iii)

INTRODUCTION TO AN INDIAN LANGUAGE (II)

(ASSAMESE)

COURSE – II

SEMESTER-IV

Marks: 70+30= 100 Credits: 04

Objective: The purpose of this course is to introduce the language in a more detailed manner to students who have gained a basic understanding of the Assamese language in the previous semester. This course will focus on the salient features and grammatical rules of the Assamese language as well as give a brief understanding on writing skills and developing contents in Assamese languages.

Course learning outcomes: The course is expected to add working knowledge about Assamese language and its grammar, which will eventually lead them to produce oral and written contents in Assamese language correctly. It is expected that it will help the students in the future in professional and technical fields related to Assam or Assamese language.

Course Units

I. Assamese Phrases and Proverbs (10 marks)

II. Assamese Grammar (20 marks)
- Number
- Gender
- Salient features of Assamese language

III. Writing skills and Content development (20 marks)
- Language Vocabulary
- Use of Dictionary
- Role of Translation

IV. Comprehension and Paragraph writing (20 marks)

Teaching Plan: Lecture- 40 Hrs., discussions-10 Hrs., Assignments/Presentations

Unit I : 2 week

Unit II : 4 weeks
Unit III : 4 weeks
Unit IV : 4 weeks

Suggested Readings:

Baruah, Tultul (ed). *Asamiya Rachana Sankalan*, Guwahati: Students Stores. 2013

Das Gupta, Bindu Bhusan. *Assamese Self-Taught*. Kolkata: Das Gupta Prakashan. 1956.

Dutta Barua, Lohit. Learninh Assamese Language: A Brief Handbook. Guwahati: Spandan Prakash. 2021

Dutta Baruah, P.N. *An Intensive Course in Assamese*. Mysore: CIIL. 1996

Dutta Baruah, P.N. *Languages of North East: Assamese, Khasi, Manipuri, Mising, Rabha*. Mysore: CIIL. 1999

Neog, Dr Maheswar. *Nika Asamiya Bhasa*, Guwahati: Layers' Book Stall. 1994

Dictionary

Deka, Pranav Jyoti. *Jyoti-Divashik Abhidhan*. Guwahati: Assam Book Dipot. 2011**.**

Sharma, Suresh. Advanced Comprehensive Anglo-Assamese Dictionary. Guwahati: Jyoti Prakashan. 2008

https://dsal.uchicago.edu/dictionaries/candrakanta/

www.xobdo.org

OPEN ELECTIVE COURSE
CILOE 305(iv)
INTRODUCTION TO AN INDIAN LANGUAGE (I)

(BENGALI)

COURSE – I

SEMESTER-III

Marks: 70+30= 100 Credits: 04

Course Objective:

This course is aimed at teaching basic language skills in Bengali. It will introduce the student to the basic skills of the Bengali Language: its alphabet, essential words and simple sentence construction method along with the history of its origin and development. The course intends to facilitate students acquiring primary skills of reading, writing and speaking Bengali alongside building up an elementary vocabulary.

Course Learning Outcome:

The course will enable the students to obtain the basic skills of reading, writing and speaking in Bengali along with building up a primary vocabulary. After the completion of the course they can read and write simple Bengali sentences, can figure out words having conjunct characters, and can have a basic everyday conversation.

Unit I (25 Marks)
Introduction to Bengali language
Introduction to Bengali Vowel & Consonant sounds along with the sound-images
Introduction to vowel allographs
Introduction to Bengali Consonant Conjuncts

Unit II (25 Marks)
Introduction to Bengali Pronoun
Introduction to Bengali Noun, Numbers & subjunctive
Introduction to Verb & Time/Tense
Conjugation of different verbs
Bengali qualifiers/adjectives
Bengali postpositions
Conjunctions and its usage

Unit III (20 Marks)
Making simple sentences in Bengali (basic syntactical rules)
Making Negative sentences in Bengali
Making Interrogative sentences in Bengali

Teaching Learning Process: Lecture-40 Hrs. Discussions 5Hrs. Assignments / Presentation-5 Hrs

Unit-I Two weeks

Unit-II Six weeks

Unit-III Six weeks

Assessment Methods: Monthly Test., Internal Exam, Semester Exam.

Keywords:

OPEN ELECTIVE COURSE

CILOE 305(iv)
INTRODUCTION TO AN INDIAN LANGUAGE (II)

(BENGALI)

COURSE – II

SEMESTER-IV

Marks: 70+30= 100 Credits: 04

Course Objective:

This course is designed for students who have prior knowledge of the Bengali language and can make and figure out simple Bengali sentences. The course aimed at enabling them to figure out and construct compound and complex sentences in Bengali. Furthermore, the course will enable the students to achieve skills to comprehend small passages, write short paragraphs, and have better conversational skills. The course will also introduce them to the basic history of the Bengali literary culture and the basic rules of translation as well.

Course Learning Outcome:

The course will facilitate the students to understand the nuances of the language by empowering them with better reading, writing and conversational skills. It will also enable them to translate from Bengali to English and vice versa.

Unit I (15 Marks)
Compound verbs
Transitive and intransitive verbs
Making compound sentences in Bengali using conjunction
Making complex sentences in Bengali

Unit II (15 Marks)
Reading comprehension

Unit III (15 Marks)
Writing Skills and Content Development

Unit IV (15 Marks)
Translation from another language to Bengali
Translation from Bengali to another language

Teaching Learning Process: Lecture-40 Hrs. Discussions 5Hrs. Assignments / Presentation-5 Hrs

Unit-I Four weeks

Unit-II Three weeks

Unit-III Three weeks

Unit-IV Four Week

Assessment Methods: Monthly Test., Internal Exam, Semester Exam.

Keywords:

OPEN ELECTIVE COURSE

CILOE 305(v)

INTRODUCTION TO AN INDIAN LANGUAGE (I)

(GUJARATI)

COURSE – I

SEMESTER-III

Marks: 70+30= 100 Credits: 04

Objective: This course aims to introduce students to Language, one of the Modern Indian languages. Since this course of study is offered to students who don't have prior knowledge of Language. Hence, to give a basic over view of Language is the main objective of this course. This course will introduce students to the letters and sounds of Language. They will also be taught to frame words and simple sentences. In this process, students will learn how to read, write, speak and listen to the Gujarati language.

Course learning outcomes: This course of study will introduce students to Gujarati language other than their mother tongue and simultaneously improves their multilingual abilities. Moreover, this course will lead the students to study Language in detail in future which will ultimately help them in their professional and technical life.

Course Units:

I. **Introduction:** Gujarati language and its silent features.

II. sounds and letters, Framing the words and sentences (25 marks)

- Vowels, consonants, Consonant Clusters
- Framing the words
- Framing the simple sentences
- Pre and Post-positions, Verb adjuncts

III. Basic Grammar (25 marks)

- Parts of speech
- Verb
- Types of sentences

IV. Writing skills and content development (20 marks)

Writing for different platforms/media
(Blog, articles, reviews, reports, speeches, advertisements and copy writing,

Reports, scripts, etc.)

30 marks for internal examination/course papers/assignments/project-field works And presence etc.

Teaching Plan: Lecture- 40 Hrs., discussions and demonstration -10 Hrs., Assignments/Presentations

Unit I : 2 week

Unit II : 4 weeks

Unit III : 4 weeks

Unit IV : 4 weeks

Suggested Readings:

1. Christian, Sonal, *Gujarati-English/English-Gujarati Dictionary & Phrasebook (Hippocrene Dictionary & Phrasebook),*hippocrene book,ney york, 2006

2. Clair Tisdall, William St., *A Simplified Grammar of the Gujarati Language together With a Short Reading Book and Vocabulary,* Forgotten Books and kegun paul, London, 2017

OPEN ELECTIVE COURSE

CILOE 405(v)

INTRODUCTION TO AN INDIAN LANGUAGE (II)

(GUJARATI)

COURSE – II

SEMESTER-IV

Marks: 70+30= 100 Credits: 04

Objective: The purpose of this course is to introduce the language in a more detailed manner to students who have gained a basic understanding of the Language in the previous semester. This course will focus on the salient features and grammatical rules of the Language as well as give a brief understanding of translation between Indian languages.

Course learning outcomes: The course is expected to add working knowledge about Language and its grammar, which will eventually lead them to produce oral and written contents in Language correctly. It is expected that it will help the students in the future in professional and technical fields related to the Language

Course Units

I. Gujarati Language: Phrases, Proverbs, idioms, dialect etc. (10 marks)

II. Gujarati Grammar (20 marks)
- Numbers
- Gender
- Types of verbs: dative, experiencer, transitive, intransitive etc.

III. Writing skills and content development (20 marks)
- Language Vocabulary
- Use of Dictionary and lexicon resources
- Technical glossaries

IV. Comprehension (20 marks)

30 marks for internal examination/course papers/assignments/project-field works And presence etc.

Teaching Plan: Lecture- 40 Hrs., discussions-10 Hrs., Assignments/Presentations

Unit I : 2 week
Unit II : 4 weeks
Unit III : 4 weeks
Unit IV : 4 weeks

Suggested Readings:

1.Dwyer, y Rachel Dwyer, *Get Started in Gujarati Absolute Beginner Course: The essential introduction to reading, writing, speaking and understanding a new language.*NTC publishing group, 2013

2. Jhaveri, Krishnalal M., *Milestones in Gujarati Literature,* Manohar Publishers & Distributors, 2021

Open source file:

A Brief Outline of Gujarati Parts-of-Speech by Babu Suthar

Pub. By South Asia Regional Studies, University of Pennsylvania, Philadelphia PA 19104

http://ccat.sas.upenn.edu/plc/gujarati/gujaratiwords.pdf

https://studylib.net/doc/8688007/a-brief-outline-of-gujarati-parts-of-speech

OPEN ELECTIVE COURSE

CILOE 305(vi)

INTRODUCTION TO AN INDIAN LANGUAGE (I)

(SINDHI)

COURSE – I

SEMESTER-III

Course Objectives: This course aims to teach Sindhi primary language speaking skills. It will introduce basic Sindhi language skills: its alphabet, essential words and simple sentence construction methods. The course intends to facilitate students in acquiring foundational skills of reading, writing and speaking Sindhi, along with synonyms to expand vocabulary.

Course Learning Outcome: The course will enable the students to obtain the basic skills of reading, writing and speaking in Sindhi, along with building a primary vocabulary. After completing the course, they can read and construct simple Sindhi sentences, figure out words with conjunct characters, and learn functional, everyday conversation.

Maximum Marks 70+30 (4 Credits)

Unit I

I. A brief introduction to the Sindhi language

II. Introduction to sounds and letters, Framing the words and sentences (25 marks)

- Vowels, consonants, Consonant Clusters
- Framing the words
- Framing the simple sentences
- (Syntax and other grammar components can be added)

III. Basic Grammar (25 marks)

- Parts of speech
- Verb
- Types of sentences

IV. Writing skills and content development (20 marks)

(For electronic and print media, blogs, advertisements, reports, scripts etc.)

Teaching Plan: Lecture- 40 Hrs., discussions and demonstration -10 Hrs., Assignments/Presentations

Unit I : 2 week

Unit II : 4 weeks

Unit III : 4 weeks

Unit IV : 4 weeks

Assessment Methods: Monthly Test., Internal Exam, Semester Exam.

Keywords: Sindhi as Second Language, Alphabets, Simple Sentence, Elementary Vocabulary.

Suggested Readings:

Jetley MK, *Sindhi Bhasha Vyakaran Avam Prayog,* Sindhi Academy, Delhi

Lekhwani K.P, *An intensive course in Sindhi,* Central Institute of Indian Languages, Mysore

OPEN ELECTIVE COURSE

CILOE 405(vi)

INTRODUCTION TO AN INDIAN LANGUAGE (II)

(SINDHI)

COURSE – II

SEMESTER-1V

Course Objectives: This course has been designed for students who have prior knowledge of the Sindhi language and can make and figure out simple sentences. The course aims to enable them to figure out and construct compound and complex sentences in Sindhi. Furthermore, the course aims to enable the students to acquire skills to comprehend small passages, write short paragraphs, and have better conversational skills. The course will teach them the basic rules of translation as well.

Course Learning Outcome: The course will enable the students to understand the nuances of the language by empowering them with better reading, writing and conversational skills. It will also enable them to translate from Sindhi to English and vice versa.

Maximum Marks 70+30 (4 Credits)

Course Units

I. Language: Phrases, Proverbs, idioms etc. (10 marks)

II. Language: Grammar (20 marks)
- Number
- Gender
- Salient features of Sindhi Language

III. Writing skills and content development (20 marks)
- Language Vocabulary
- Use of Dictionary and lexicon resources
- Technical glossaries

IV. Comprehension (20 marks)

Teaching Plan: Lecture- 40 Hrs., discussions-10 Hrs., Assignments/Presentations

Unit I : 2 week
Unit II : 4 weeks
Unit III : 4 weeks
Unit IV : 4 weeks

Assessment Methods: Monthly Test., Internal Exam, Semester Exam.

Keywords: Sindhi as Second Language, Alphabets, Simple Sentence, Elementary Vocabulary.

Suggested Readings:

Jetley MK, *Sindhi Bhasha Vyakaran Avam Prayog,* Sindhi Academy, Delhi

Lekhwani K.P, *An intensive course in Sindhi,* Central Institute of Indian Languages, Mysore

OPEN ELECTIVE COURSE

CILOE 305(vii)

INTRODUCTION TO AN INDIAN LANGUAGE (I)

(TAMIL)

COURSE – I

SEMESTER-III

Marks: 70+30= 100 Credits: 04

Objectives: The main aim of the course is to introduce Tamil – a distinctive modern language of India which is also a classical language of the world – to students of other lingua franca, who don't have prior knowledge of the said language. This course will introduce vowels, consonants, vowel consonants and their phonology, phonemes, morphology, morphemes, syntax, etc., to students. This will also make the students familiar with nouns, pronouns, verbs, adverbs, adjectives, etc., and their meanings, besides making them familiar with the construction of Tamil sentences and some proverbs, idioms and phrases in passages.

Outcomes: This course will enable non-Tamil students to know the alphabet and its categories, sounds and pronunciations. The students will be familiar with important nouns, basic verbs, kinds of verbs and tenses, adverbs, adjectives, and their meanings, and style of sentence construction in Tamil language. In addition, they will be aware of certain proverbs, idioms and phrases and their contextual meanings in given passages. Further, the language proficiency of speaking, writing, and reading Tamil may be helpful for their academic and professional life.

Course Units:

I. Brief history of Tamil language and literature and its literary genres.

II. Introduction of vowels, consonants, vowel consonants, nouns, pronouns, verbs, adverbs, adjectives, and construction of sentences and idioms and phrases. (25 Marks)

- Vowels, consonants, vowel consonants and their morphology, phonology, phonemes and morphemes.
- Kinds of Words – Nouns, Pronouns, Adverbs and Adjectives.
- Kinds of Verbs – Past tense, Present tense, Future tense, and Continuous tense of past, present and future.

- Construction of simple and combined sentences.

III. Elucidation of the basic grammar of Tamil language. (25 Marks)

- Parts of Speech
- Kinds of nouns
- Kinds of Verbs
- Kinds of Tenses
- Types of Sentences

IV. Writing skill and content development (20 Marks)
(For Cyber and Print Media, Blogs, Advertisements, Reports, Scripts, etc.)

Teaching Plan: Lecture – 40 Hrs., Discussions – 05 Hrs., Assignment/Presentation – 05 Hrs.

Unit I: 2 weeks

Unit II: 4 weeks

Unit III: 4 weeks

Unit IV: 4 weeks

Suggested Readings:

A Programmed Course in Tamil. 2012. G. Sankaranarayanan. Mysore: Central Institute of Indian Languages.

Learn Tamil in 30 Days through English. 2009. Krishna Gopal Vikal *et al*. Okhla Industrial Area, New Delhi: Diamond Books.

Tamil Text Books (*First-Second-Third Standards*). 2010. Text Book Committee. Chennai: Tamil Nadu Text Book Society.

Tamil Grammar in easy English / Thamil Paadanool (Draft Version). 2004. Elango Cheran. Source: http://www.unc.edu.echeran/paadanool

OPEN ELECTIVE COURSE

CILOE 405(vii)

INTRODUCTION TO AN INDIAN LANGUAGE (II)

(TELUGU)

COURSE – II

SEMESTER-IV

Marks: 70+30= 100 Credits: 04

Objectives: The course aims at introducing the Tamil language to students of other lingua franca, who gained essential knowledge of the said language in the previous semester. This course will deliberate elaborately in detail about the phonology, morphology and syntax of the Tamil language, its basic grammatical rules, kinds of tenses and a standard spoken language. It will make the students a clear understanding of the construction of Tamil sentences, and a basic knowledge of the art of translation between Indian languages.

Outcomes: This course will enable non-Tamil students to acquire the essential knowledge of the Tamil language and its grammatical rules. The students will gain the required language skill to speak with common Tamils and produce literary content in Tamil. Further, the students will have the desired aptitude of the art of translation, a forte for their professional or career-oriented life.

Course Units

I. Language: Proverbs, Idioms, Phrases, etc. (10 Marks)

II. Language: Grammar (20 Marks)

- Numbers
- Genders
- Tenses
- Other features of the Tamil language

III. Writing skill of contents (20 Marks)

- Gaining Tamil vocabulary
- Using Dictionary and Lexicons
- Acquiring Tamil Technical glossaries

IV. Comprehension (20 Marks)

Teaching Plan: Lecture – 40 Hrs., Discussions – 05 Hrs., Assignment/Presentation – 05 Hrs.

Unit I: 2 weeks

Unit II: 4 weeks

Unit III: 4 weeks

Unit IV: 4 weeks

Suggested Readings:

An Intensive Course in Tamil. 2000. S. Rajaram. Mysore: Central Institute of Indian Languages.

Colloquial Tamil. 2002. R.E. Asher and E. Annamalai. London: Routledge.

Tamil Text Books (*Fourth-Fifth-Sixth Standards*). 2010. Text Book Committee. Chennai: Tamil Nadu Text Book Society.

Winslow's English – Tamil Dictionary. 1996. C. Appasamy Pillai. New Delhi: Asian Educational Services.

OPEN ELECTIVE COURSE

CILOE 305(viii)

INTRODUCTION TO AN INDIAN LANGUAGE (I)

(TELUGU)

COURSE – I

SEMESTER-III

Course Objectives: This course aims to teach Telugu primary language speaking skills. It will introduce basic Telugu language skills: its alphabet, essential words and simple sentence construction methods. The course intends to facilitate students in acquiring foundational skills of reading, writing and speaking Telugu, along with synonyms to expand vocabulary.

Course Learning Outcome: The course will enable the students to obtain the basic skills of reading, writing and speaking in Telugu, along with building a primary vocabulary. After completing the course, they can read and construct simple Telugu sentences, figure out words with conjunct characters, and learn functional, everyday conversation.

Marks: 70+30= 100 Credits: 04

Unit I

I. A brief introduction to the Telugu language

II. Introduction to sounds and letters, Framing the words and sentences (25 marks)

- Vowels, consonants, Consonant Clusters
- Framing the words
- Framing the simple sentences
- (Syntax and other grammar components can be added)

III. Basic Grammar (25 marks)

- Parts of speech
- Verb
- Types of sentences

IV. Writing skills and content development (20 marks)

(For electronic and print media, blogs, advertisements, reports, scripts etc.)

Teaching Plan: Lecture- 40 Hrs., discussions and demonstration -10 Hrs., Assignments/Presentations

Assessment Methods: Monthly Test., Internal Exam, Semester Exam.

Keywords: Telugu as Second Language, Alphabets, Simple Sentence, Elementary Vocabulary.

Unit I : 2 week

Unit II : 4 weeks

Unit III : 4 weeks

Unit IV : 4 weeks

Suggested Readings:

Arden, A H., 1905, *A progressive grammar of the Telugu language.* 2nd ed. Madras: Society for promoting Christian knowledge.

Krishnamurti, B. and Gwynn, J. P. L. 1986, *A Grammar of Modern Telugu.* USA: Oxford University Press,.

Parandhama Reddy, M. and Venkateswara Shastri,J. 1997. *Telugu Velugu- I.* . Mysore: Central Institute of Indian Languages.

Ramanarasimham, Parimi. 1985, *An Intensive Course in Telugu.* Mysore: Central Institute of Indian Languages,

Sanjay, D., 2019, *Spoken Telugu for Absolute Beginners*. _____: _____.

Venkatavadhani, Divakarla. 2017, *Telugu in Thirty Days.* Hyderabad. Andhra Pradesh Sahitya academy,.

OPEN ELECTIVE COURSE

CILOE 405(viii)

INTRODUCTION TO AN INDIAN LANGUAGE (II)

(TELUGU)

COURSE – II

SEMESTER-1V

Course Objectives: This course has been designed for students who have prior knowledge of the Telugu language and can make and figure out simple sentences. The course aims to enable them to figure out and construct compound and complex sentences in Telugu. Furthermore, the course aims to enable the students to acquire skills to comprehend small passages, write short paragraphs, and have better conversational skills. The course will teach them the basic rules of translation as well.

Course Learning Outcome: The course will enable the students to understand the nuances of the language by empowering them with better reading, writing and conversational skills. It will also enable them to translate from Telugu to English and vice versa.

Marks: 70+30= 100 Credits: 04

Course Units

I. Language: Phrases, Proverbs, idioms etc. (10 marks)

II. Language: Grammar (20 marks)
- Number
- Gender
- Salient features of Telugu Language

III. Writing skills and content development (20 marks)
- Language Vocabulary
- Use of Dictionary and lexicon resources
- Technical glossaries

IV. Comprehension (20 marks)

Teaching Plan: Lecture- 40 Hrs., discussions-10 Hrs., Assignments/Presentations

Unit I : 2 week
Unit II : 4 weeks
Unit III : 4 weeks
Unit IV : 4 weeks

Suggested Readings:

Arden, A H. *A progressive grammar of the Telugu language.* 2nd ed. Madras: Society for promoting Christian knowledge, 1905.

Krishnamurti, B. and Gwynn, J. P. L. *A Grammar of Modern Telugu.* USA: Oxford University Press, 1986.

Parandhama Reddy, M. and Venkateswara Shastri,J. *Telugu Velugu- I.* . Mysore: Central Institute of Indian Languages, 1997.

Ramanarasimham, Parimi. An Intensive Course in Telugu. Mysore: Central Institute of Indian Languages, 1985.

Ramanarasimham, Parimi. Telugu Velugu -III. Mysore: Central Institute of Indian Languages, 1974.

Reddy G.N. and Matson D.M. *Glossaries for graded readings in newspaper Telugu and modern literary Telugu*: USA: U.S. Department of health, education & welfare, 1966.

Sanjay, D. *Spoken Telugu for Absolute Beginners*. _____: _____, 2019.

Annexure-4
Resolution No. 38 {38-1 [38-1-17(3)]}

Summary of changes

EXISTING

Course Credit Scheme

Semester III

Core Courses		Elective Course		Open Elective Course	
No. of Papers	Credit	No. of Papers	Credit	No. of Papers	Credit
		3 (At least one course each from Group C-I and C-II)	5	1 (Workshop I or Open Elective Course I)	5

Total Credit for the Semester-20

Semester IV

Core Courses		Elective Course		Open Elective Course	
No. of Papers	Credit	No. of Papers	Credit	No. of Papers	Credit
		3 (Three courses from Group D)	5	1 (Workshop II or Open Elective Course II)	5

Total Credit for the Semester-20

Semester-wise details of MA in Linguistics Course

Semester III

Core Courses		Elective Course		Open Elective Course	
S. No.	Code	Title of Course	Credit Hrs/Week	No. of Credit	Core/Elective/Open Elective
1	Workshop I		5	5	Open Elective
2	Open Elective I		5	5	Open Elective

Total Credit for the Semester-20

Course Credit Scheme

Semester-IV

Core Courses		Elective Course		Open Elective Course	
S. No.	Code	Title of Course	Credit Hrs/Week	No. of Credit	Core/Elective/Open Elective
1	Workshop II		5	5	Open Elective
2	Open Elective II		5	5	Open Elective

Total Credit for the Semester-20

AMENDED

Course Credit Scheme

Semester III

Core Courses		Elective Course		Open Elective Course	
No. of Papers	Credit	No. of Papers	Credit	No. of Papers	Credit
		4 (At least one course each from Group C-I and C-II)	5	1 (Open Elective Course I)	4

Total Credit for the Semester-24

Semester IV

Core Courses		Elective Course		Open Elective Course	
No. of Papers	Credit	No. of Papers	Credit	No. of Papers	Credit
		4 (Four courses from Group D)	5	1 (Open Elective Course II)	4

Total Credit for the Semester-24

Semester-wise details of MA in Linguistics Course

Semester III

Core Courses		Elective Course		Open Elective Course	
S. No.	Code	Title of Course	Credit Hrs/Week	No. of Credit	Core/Elective/Open Elective
1	Workshop I		5	5	Core/Elective (in Group C-II)
2	Open Elective I		4	4	Open Elective

Total Credit for the Semester-24

Course Credit Scheme

Semester-IV

Core Courses		Elective Course		Open Elective Course	
S. No.	Code	Title of Course	Credit Hrs/Week	No. of Credit	Core/Elective/Open Elective
1	Research Based Dissertation		5	5	Core/Elective (in Group D)
2	Open Elective II		4	4	Open Elective

Total Credit for the Semester-24

Updated Cover Page of Programme Brochure

UNIVERSITY OF DELHI

MASTER OF ARTS IN LINGUISTICS

(M.A. in Linguistics)

(Effective from Academic Year 2019-20)

PROGRAMME BROCHURE

Revised Syllabus as approved by Academic Council and

Executive Council in 2019

Amendments Proposed

A minor correction/amendment is proposed to rectify the anomaly arising out of the incorrect number of credits (inadvertently) shown against the two Open Elective and two Workshop courses in the recently AC/EC approved syllabus. This has been corrected to 4 credits for the Open Elective courses and 5 credits for the Workshop courses which are now included in Core/Elective courses as indicated on Pages 9-14 and as per the rules of the University.

Updated sections of Programme Brochure (Changes on Pages 9-14)

Programme Structure:

The M.A. in Linguistics programme is a two-year course divided into four-semesters. A student is required to complete 88 credits for the completion of course and award of degree.

		Semester	***Semester***
Part – I	First Year	Semester I	Semester II
Part – II	Second Year	Semester III	Semester IV

Course Credit Scheme

Semester	**Core Courses**			**Elective Course**			**Open Elective Course**			**Total Credits**
	No. of papers	Credits (L+T/P)	**Total Credits**	No. of papers	Credits (L+T/P)	**Total Credits**	No. of papers	Credits (L+T/P)	**Total Credits**	
I	4 (First 4 Courses from Group (A))	5	20	-	-	-	-	-	-	**20**
II	1 (course no. 5 from Group (A) and 3 courses from Group (B))	5	20	-	-	-	-	-	-	**20**
III	-			4 (At least one course each from Group [C-1] and [C-2])	5	**20**	1	4	**4**	**24**
IV	-			4 (four courses from Group [D])	5	**20**	1	4	**4**	**24**
Total Credits for				**Total**						**88**

the Course										

Note. Courses in Semester –III and Semester-IV will be offered as Core/Elective courses to ensure adequate exposure and training in 3 to 4 areas across the entire M.A. in Linguistics programme.

* For each Core and Elective Course there will be 4 lecture hours of teaching per week.
* Duration of examination of each paper shall be 3 hours.
* In general, each paper will be of 100 marks out of which 70 marks shall be allocated for semester examination and 30 marks for internal assessment.
*In Seminar courses, the semester examination can be replaced by a term paper.

Semester wise Details of M.A. in Linguistics Course

Semester-I

S.No.	Code	Title of the Course	Credit Hrs/Week	No. of Credits	Core/Elective/Open Elective
1	L-1	Phonetics-I	5	5	Core
2	L-2	Phonology-I	5	5	Core
3	L-3	Morphology-I	5	5	Core
4	L-4	Syntax-I	5	5	Core
		Total		**20**	

Semester-II

S.No.	Code	Title of the Course	Credit Hrs/Week	No. of Credits	Core/Elective/Open Elective
1	L-5	Sociolinguistics-I	5	5	Core
2	**Three from Group (B)** L-6 Semantics-I L-7 Historical Linguistics-I L-8 Computational Linguistics-I		5	5	Core
3	L-9 Psycholinguistics-I L-10 Neurolinguistics-I L-11 Sign Language-I L-12 Language Change-I		5	5	Core
4	L-13 Second Language Learning and Acquisition-I L-14 First Language Acquisition-I L-15 Open Course-I		5	5	Core
		Total		**20**	

Semester-III

S.No.	Code	Title of the Course	Credit Hrs/Week	No. of Credits	Core/Elective/Open Elective
1-4	**Four courses and at least one course each from (C-I) and (C-**		4x5	4x5	Core/Elective

	II) **Group (C-I)** 16. Phonetics-II 17. Phonology-II 18. Morphology-II 19. Syntax-II 20. Semantics-II **Group (C-II)** 21. Sociolinguistics-II 22. Historical Linguistics-II 23. Computational Linguistics-II 24. Second Language Learning and Acquisition-II 25. First Language Acquisition-II 26. Open Course- II 27. Workshop -I			
5	Open Elective Course-I	4	4	Open Elective
	Total		**24**	

Semester-IV

S.No.	Code	Title of the Course	Credit Hrs/Week	No. of Credits	Core/Elective/Open Elective
1-4	**Any Four courses** 28. Phonetics- Seminar-I 29. Phonology-Seminar-I 30. Morphology-Seminar-I 31. Syntax- Seminar-1 32. Sociolinguistics- Seminar-I 33. Computational Linguistics-Seminar -I 34. Semantics- Seminar-I 35. Open Linguistics Seminar-I 36. Phonetics- Seminar-II 37. Phonology-Seminar- II 38. Morphology-Seminar- II 39. Syntax- Seminar- II 40. Sociolinguistics- Seminar- II 41. Computational Linguistics-Seminar - II 42. Semantics- Seminar- II 43. Open Linguistics Seminar-II 44. Research Based Dissertation		4x5	4x5	Core/Elective
5	Open Elective Course-II		4	4	Open Elective
	Total			**24**	

List of Elective Courses

Group (C)

(C-1)

16. Phonetics-II
17. Phonology-II
18. Morphology-II
19. Syntax-II
20. Semantics-II

(C-II)

21. Sociolinguistics-II
22. Historical Linguistics-II
23. Computational Linguistics-II
24. Second Language Learning and Acquisition-II
25. First Language Acquisition-II
26. Open Course- II
27. Workshop-I

Group (D)

28. Phonetics- Seminar-I
29. Phonology-Seminar-I
30. Morphology-Seminar-I
31. Syntax- Seminar-1
32. Sociolinguistics- Seminar-I
33. Computational Linguistics-Seminar -I
34. Semantics- Seminar-I
35. Open Linguistics Seminar-I
36. Phonetics- Seminar-II
37. Phonology-Seminar- II
38. Morphology-Seminar- II
39. Syntax- Seminar- II
40. Sociolinguistics- Seminar- II
41. Computational Linguistics-Seminar - II
42. Semantics- Seminar- II
43. Open Linguistics Seminar-II
44. Research Based Dissertation

Open Elective Courses

Open Elective I and II are offered at the discretion of the Department

Department policy for selection of elective courses: The department has provided a large number of courses to be offered as elective courses. The primary objective of offering these courses is to ensure adequate exposure in three to four areas across the entire MA programme. Accordingly, selection of the Elective Courses will be guided by the criteria set up by the Department

(from time to time) keeping in view adequate exposure and training in three to four areas across the entire MA programme for each of its students.

Group (C)

Note. Depending on the availability of a suitable faculty and availability of choices, four of these will be offered as compulsory/elective courses in the third semester. If adequate number of faculty is available, students will have the liberty to choose according to the criteria set by the Department. Students will have to choose at least one course each from (C-1) and (C-II).

Group (D)

Note. Depending on the availability of a suitable faculty and availability of choices, four of these will be offered as compulsory/elective courses in the fourth semester. If adequate number of faculty is available, students will have the liberty to choose according to the criteria set by the Department (to ensure adequate exposure and training in three to four areas across the entire MA programme).

Teaching:

The faculty of the Department is primarily responsible for organizing teaching for M.A. in Linguistics. The tutorials/labs, if possible, will be provided by engaging the research scholars under the overall guidance of the Department. Teaching comprises lectures, demonstration, field /Lab projects, data oriented analytical exercises.
There shall be 90 instructional days excluding examination in a semester.

Projects/Dissertation:

Students have the option to choose Research Based Dissertation in Semester 4 at the M.A. level as part of Group D courses. In addition, there are ample opportunities for carrying out research projects and producing research reports/ term papers as part of the teaching practices of the department. Students are encouraged to participate in Faculty research projects to enhance their methodological and analytical abilities.

Annexure-5
Resolution No. 38 {38-1 [38-1-17(4)]}

TEMPLATE

Course Structure
[M.A. in Russian Studies]

Semester	Core Courses			Elective Course			Open Elective Course			Total Credits
	No. of papers	Credits (L+T/P)	**Total Credits**	No. of papers	Credits (L+T/P)	**Total Credits**	No. of papers	Credits (L+T/P)	**Total Credits**	
I	4	5	**20**	1	5	**5**	0	0	**0**	**25**
II	4	5	**20**	1	5	**5**	0	0	**0**	**25**
III	3	5	**15**	1	5	**5**	1	4	**4**	**24**
IV	3	5	**15**	1	5	**5**	1	4	**4**	**24**
Total Credits for the Course	14	5	**70**	4	5	**20**	2	8	**8**	**98**

Semester- wise Course Details

Semester I			
Number of Core Courses	4		
Credits in each core course	Theory	Tutorial	Total
RUCC101: Literary Movements, Trends and Genres (Mid 8th Century up to 1st Quarter of 19th Century)	4	1	5
RUCC102: Modern Russian: Phonetics and Word Formation	4	1	5
RUCC103: **Advance Russian Oral**	4	1	5
RUCC104: **Advance Russian Written**	4	1	5
Total credits in Core Course			20
Number of Elective Courses	1		
Total Credits in Elective Course			
RUEC101: Reading & Appreciation of the Literary Text (Mid 18th Century up to 1st quarter of 19th Century)	4	1	5
Total credits in Elective Courses			5
Number of Open Elective Courses	Nil		
Total credits in Open Elective Courses			0
Total credits in Semester I			**25**

Semester II			
Number of Core Courses	4		
Credits in each core course	Theory	Tutorial	Total
RUCC201: Literary Movements, Trends & Genres (early 19th century – up to end 19th century)	4	1	5
RUCC202: Modern Russian: Lexicology	4	1	5
RUCC203: **General Linguistics**	4	1	5
RUCC204: **Theory & Practice of Translation**	4	1	5
Total credits in Core Course			20
Number of Elective Courses	1		
Credits in each elective course			
RUEC201: Reading & Appreciation of the Literary Text. (Early 19th Century to the End of the 19th Century)	4	1	5
Total credits in Elective Courses			5
Number of Open Electives Courses	Nil		
Credits in each Open Elective course	Theory	Tutorial	Total
Total credits in Elective Courses			4
Total credits in Semester II			**25**

Semester III			
Number of Core Courses	3		
Credits in each core course	Theory	Tutorial	Total
RUCC301: Literary Movements, Trends and Genres (Beginning of 20th century to the mid 20th century)	4	1	5
RUCC302: Modern Russian: Morphology	4	1	5
RUCC303: **Theory and practice of Interpretation**	4	1	5
Total credits in core course			15
Number of elective courses	1		
Credits in each Elective Course	Theory	Tutorial	Total
RUEC301: Reading and Appreciation of the Literary Text. (Beginning of 20th Century to the mid 20th century)	4	1	5
Total credits in Elective Courses			5
Number of Open Elective Courses	1		
RUOE201: Introduction to Russian Culture	4	-	4
Total credits in Open Elective Courses			4
Total credits in Semester III			24

Semester IV			
Number of Core Courses	3		
Credits in each core course	Theory	Tutorial	Total
RUCC401: Literary Movements, Trends and Genres (Mid 20th to end of 20th century)	4	1	5
RUCC402: Modern Russian: Syntax	4	1	5
RUCC403: Dissertation	4	1	5
Total credits in Core Course			15
Number of Elective Courses	2		
Credits in each elective course	Theory	Tutorial	Total
RUEC401: Reading and Appreciation of the Literary Text (From Mid-20th century to End of 20thCentury) **or** **RUEC402:** **Methodology of Teaching Russian as a Foreign Language**	4	1	5
Total credits in Elective Courses **(any one)**			5
Number of Open Electives	1		
Credits in each open elective	Theory	Tutorial	Total
RUOE401: Russian Folklore	4	-	4
Total credits in Open Elective			4
Total credits in Semester IV			24

Annexure-6
Resolution No. 38 {38-1 [38-1-17(4)]}

Minor modification of Full-time Intensive Advance Diploma in Russian Syllabus as approved in Faculty of Arts meeting held on 31st October, 2022.

<table>
<tr><th>Existing</th><th>Modified</th><th>Remarks</th></tr>
<tr>
<td>

Full-time Intensive Advance Diploma in Russian

Course	Paper No.	Paper Title	Marks
	I	Grammar	100
	II	Practical Russian (Written)	100
	III	Practical Russian (Spoken)	100
	IV	Translation (Russian into English & English into Russian)	100
	V	Introduction to Grammatical concepts	50
	VI	Introduction to Literary Concepts	50
Total	**6**		500

</td>
<td>

Full-time Intensive Advance Diploma in Russian

Course	Paper No.	Paper Title	Marks
IADR	I	Grammar	100
IADR	II	Practical Russian (Written)	100
IADR	III	Practical Russian (Spoken)	100
IADR	IV	Translation (Russian into English & English into Russian)	100
IADR	V	Introduction to Grammatical concepts	50
IADR	VI	Introduction to Literary Concepts	50
Total	**6**		500

</td>
<td>

1. No changes in paper structure but Updated the syllabus of Paper-IV & Paper-VI

2. Course title proposed as IADR

</td>
</tr>
</table>

Intensive Advanced Diploma in Russian
PAPER: **RUSSIAN GRAMMAR**
Max. Marks: 100
Total Number of Hours: 180

Aims & Objectives: The aim of the course is to introduce basic grammatical structures of Russian.
The objective is to achieve competence in correct usage of grammatical structures in communicative speech situations. Students will be encouraged to use computer-aided learning programs on Russian language, Students would also be able to develop their knowledge of Lexical system of Russian.

UNITS	Number of hours	Marks
UNIT 1) **WORD FORMATION** a. Word formation of nouns, b. Word formation of adjectives, c. Word formation of adverbs, d. Word formation of verbs	30	10
UNIT 2) **MORPHOLOGY**	100	60

I. Nouns
   i. Animate & Inanimate Nouns
   ii. Gender & Number of Nouns
   iii. Case System of Nouns
   iv. Case forms: meaning & usage
      1. Nominative case
      2. Genitive case
      3. Dative case
      4. Accusative case
      5. Instrumental case
      6. Prepositional case

II. Pronouns
   i. Personal pronouns
   ii. Reflexive pronouns
   iii. Demonstrative pronouns
   iv. Negative pronouns
   v. Interrogative pronouns
   vi. Indefinite pronouns

III. Adjectives
   i. Declension of adjectives
   ii. Comparative degree of adjectives
   iii. Superlative degree of adjectives

IV. Verbs
   i. Reflexive verbs
   ii. Aspects of verbs
   iii. Imperative form of verbs
   iv. Case governance of verbs
   v. Transitive & Intransitive verbs

vi. Verbs of motion: with & without prefixes
vii. Participles
viii. Verbal Adverbs

V. Numerals
i. Cardinal numerals
ii. Use of numerals with nouns & adjectives
iii. Collective Numerals
iv. Fractional numerals

VI. Adverbs: Comparative Degree of Adverbs

VII. Other parts of speech:
i. Prepositions: Simple & Derived
ii. Conjunctions & conjunctive words
iii. Particles
v. Ordinal numerals & their declension

UNIT 3) **SYNTAX** 50 30

a. Types of Simple sentences
i. Narrative, Interrogative & Conditional sentences
ii. Affirmative & Negative sentences
iii. Mono-Nuclear sentences
iv. Two-member sentences
b. Subject & Predicate, their expression & combination
c. Direct & Indirect speech
d. Word order in a sentence
e. Types of complex sentences
f. Types of Subordinate clauses

Recommended textbooks:

1) Ovsienko Yu.G. *Russian*. Textbook I & II. RLC, Moscow, 2004.

2) Khavronina S.A., Shirochenskaya A.E.. *Russian in Exercises*. "Russkiy yazyk", Moscow, 2004.

3) Laskaryova E.R. Chistaya Grammatika, Saint-Petersburg, 2008.

4) Maurya, Abhai. Essential Russian. Confluence International. Softcover. New 2nd Edition.

5) Wagner V. N. Russian for English-Speaking Learners Hardcover – June, 1983

6) Dr. Girish Munjal, «RUSSIAN CASE SYSTEM» с CD-ROM, Пособие по падежной системе русского языка. Langers International Pvt. Ltd., New Delhi, India, ISBN 978-93-80809-77-9

****

Intensive Advanced Diploma in Russian
Paper II: PRACTICAL RUSSIAN (WRITTEN)
Maximum Marks: 100
Total number of hours – 180

Aims & Objectives: The aim of the course is to develop reading comprehension & writing competence in Russian. The objective is to achieve excellent writing skills in Russian. The Students will be encouraged to use computer-aided learning programs, Audio-visual & multimedia material on Russian language.

UNITS	Hours per Unit	Number of texts	Marks
I. **Reading comprehension** (Reading & Summarizing in written form)	**70**		**40**
a) At Beginners & Middle level (100 words) - Understanding the essence of a text & Defining the topic of the text;		a) 20-30 texts	
b) At Advanced level (150-250 words) - Full, exact and deep understanding of the information given in the text		b) 20 texts	
c) Précis writing		c) 20 texts	
II. **Listening comprehension** (listening & summarizing in written form)	**40**		**25**
a) At Beginners & Middle level (100 words) - Understanding the essence of a text & Defining the topic of the text;		a) 20-30 texts	
b) At Advanced level (150-250 words) - Full, exact and deep understanding of the information given in the text		b) 20 texts	
III. Letter-Writing (formal & informal)	**20**	10 topics	**15**
IV. **Essay writing on topics** (Family, Friends, Hobby, Education, Job, Country, City, Culture, Art, Science, TV & Media, Nature & Environment, Society and others): a) Elementary level – 50-75 words b) Intermediate level – 75-150 words c) Advanced level – 150-300 words	**50**	25 topics	**20**

Books recommended:

Textbooks for comprehension and reading/listening of texts from mass media:

1. Novosti iz Rossii (News from Russia). Bogomolov A. Russian Language in Mass Media. Russkiy Yazyk. Moscow. 2006.
2. V gazetakh pishut...(Newspapers report...). Deryagina S.I. Russkiy Yazyk. Moscow. 2005.
3. V mire novostei (World of News). Moskvitina L.I. Zlatoust. St.-Petersburg. 2005.

Textbooks for reading & comprehension of literary texts:

1. Russian Fairy-tales. A Russian Reader with explanatory notes in English. Moscow "Russkiy Yazyk" 1984.
2. "Ustnyie rasskazy". A texbook for Listening comprehension. Kuzmin I.P. Moscow. FLINTA. NAUKA. 2000.
3. Khrestomatiya po Russkoi literature XIX veka. Russian Reader with Explanatory notes in English. Moscow. Russkiy Yazyk. 1986.
4. "READING POETRY & PROSE IN RUSSIAN", (with CD): Understanding Literary Texts, Institute of Russian Language, Russian Centre of Science and Culture, New Delhi, 2007. 80 p. ISBN 81-901388-4-7
5. Nepropavshiye siuzhety. A Russian Reader. Aleksandrova A.C. Moscow. Russkiy Yazyk. 2006.
6. Diesit' Rasskazov. A Russian Reader. Zhukova N.N. Moscow. Russkiy Yazyk. 2006.
7. Speshite delat' dobrye dela. Fyodorova I.V. A Russian Reader. Flinta. Nauka. Moscow. 2003.

Textbooks/multimedia courses for general spoken topics:

1. Одинцова И. В. Что вы сказали? Книга по развитию навыков аудирования и устной речи для изучающих русский язык. – СПб.: Златоуст, 2007.
2. Как спросить, как сказать. Издательство: Русский язык. Курсы, Москва, 2006,
3. Golden Russian 2000. CD-ROM. Russian Language Multimedia Course. Moscow. 2003.
4. Pogovorim. Popova T. & Yurkov E. Zlatoust. St.-Petersburg. 1999.
5. Slushaite, sprashivaite, otvechaite. Belyaeva G.B. Russkiy Yazyk. Moscow. 2004.
6. A kak ob etom skazat'? Specific Spoken Expressions. Volodina G.I. Russkiy Yazyk. Moscow 2005.
7. Shkatulka. Texts. Edited by Chubarovaya O.E. Russkiy Yazyk. Moscow. 2006.
8. Dialogy na yazyke druzhby. Moscow. RUDN. 2010.
9. Pochitaem? Vremya uchit'russkiy. MGU. CMO. Moscow. 2005.
10. Vesyoliye istorii v kartinkakh. Gadalina I.I. Russkiy Yazyk. Moscow. 2008.
11. Vpereyod. A textbook on spoken Russian. Golovko O.V. Russkiy Yazyk. Moscow. 2006.

****

Intensive Advanced Diploma in Russian
Paper III: PRACTICAL RUSSIAN (SPOKEN)
Maximum Marks: 100
Total number of hours – 180

Aims & Objectives: The aim of the course is to introduce basic phonetics & pronunciation rules; develop Reading & Listening competence & communicative skills in Russian. The objective is to achieve excellent spoken & communication skills in Russian. The Students will be encouraged to use computer-aided learning programs, Audio-visual material on Russian language

UNITS	Hours per Unit	Number of texts	Marks
I. **Introductory Russian Phonetics,** Specific Rules of pronunciation	**40**	**-**	**10**
II. **The Word Stress & Intonation** (Intonation constructions 1-7); Logical Stress of a sentence			
III. **Reading comprehension** (100-250 words) a) At Beginners & Middle level (100 words) - Understanding the essence of a text & Defining the topic of the text; b) At Advanced level (150-250 words) - Full, exact and deep understanding of the information given in the text	**40**	**a) 20-30 texts** **b) 20 texts**	**25**
IV. Listening comprehension a. Comprehension of a monologue – 75-120 words; b. Comprehension of a dialogue – 60-100 words	**40**	**a) 20-30 monologues** **b) 20-30 dialogues**	**25**
V. **Spoken Reproduction of text** & **Spoken Expression of one's opinion on a topical issue 'for or against'**: a) monologue – 15 sentences; b) dialogue – 5-10 min.	**30**	**25 texts**	**20**
VI. **Spoken Expression on topics** (Family, Friends, Hobby, Education, Job, Country, City, Culture, Art, Science, TV & Media, Nature & Environment, Society and others)	**30**	**25 topics**	**20**

Books recommended:

Textbooks for comprehension and reading/listening of texts from mass media:

1. Novosti iz Rossii (News from Russia). Bogomolov A. Russian Language in Mass Media. Russkiy Yazyk. Moscow. 2006.
2. V gazetakh pishut...(Newspapers report...). Deryagina S.I. Russkiy Yazyk. Moscow. 2005.
3. V mire novostei (World of News). Moskvitina L.I. Zlatoust. St.-Petersburg. 2005.

Textbooks for reading & comprehension of literary texts:

1. Russian Fairy-tales. A Russian Reader with explanatory notes in English. Moscow "Russkiy Yazyk" 1984.
2. "Ustnyie rasskazy". A texbook for Listening comprehension. Kuzmin I.P. Moscow. FLINTA. NAUKA. 2000.
3. Khrestomatiya po Russkoi literature XIX veka. Russian Reader with Explanatory notes in English. Moscow. Russkiy Yazyk. 1986.
4. "READING POETRY & PROSE IN RUSSIAN", (with CD): Understanding Literary Texts, Institute of Russian Language, Russian Centre of Science and Culture, New Delhi, 2007. 80 p. ISBN 81-901388-4-7
5. Nepropavshiye siuzhety. A Russian Reader. Aleksandrova A.C. Moscow. Russkiy Yazyk. 2006.
6. Diesit' Rasskazov. A Russian Reader. Zhukova N.N. Moscow. Russkiy Yazyk. 2006.
7. Speshite delat' dobrye dela. Fyodorova I.V. A Russian Reader. Flinta. Nauka. Moscow. 2003.

Textbooks/multimedia courses for general spoken topics:

1. Одинцова И. В. Что вы сказали? Книга по развитию навыков аудирования и устной речи для изучающих русский язык. – СПб.: Златоуст, 2007.
2. Как спросить, как сказать. Издательство: Русский язык. Курсы, Москва, 2006,
3. Golden Russian 2000. CD-ROM. Russian Language Multimedia Course. Moscow. 2003.
4. Pogovorim. Popova T. & Yurkov E. Zlatoust. St.-Petersburg. 1999.
5. Slushaite, sprashivaite, otvechaite. Belyaeva G.B. Russkiy Yazyk. Moscow. 2004.
6. A kak ob etom skazat'? Specific Spoken Expressions. Volodina G.I. Russkiy Yazyk. Moscow 2005.
7. Shkatulka. Texts. Edited by Chubarovaya O.E. Russkiy Yazyk. Moscow. 2006.
8. Dialogy na yazyke druzhby. Moscow. RUDN. 2010.
9. Pochitaem? Vremya uchit'russkiy. MGU. CMO. Moscow. 2005.
10. Vesyoliye istorii v kartinkakh. Gadalina I.I. Russkiy Yazyk. Moscow. 2008.
11. Vpereyod. A textbook on spoken Russian. Golovko O.V. Russkiy Yazyk. Moscow. 2006.

****

Intensive Advanced Diploma in Russian
Paper-IV
Translation
Total Number of Hours: 180
Maximum Marks: 100

Aims: To develop the translation competence by understanding the reconstruction of grammatical structure and its meaning from source-language to target-language.

Objective:

1. To acquire the knowledge of translation competence by sample practice of sentences and texts
2. Build-up of self-efficacy for learners to recognize the grammatical systems and its translation
3. To develop translation skills on unit related grammatical structure.
4. To understand the specificity of word order in the phrases and sentences.

Units

Unit 1: Short Introduction:

Translation & its role in intercultural communication; Types & Forms of translation; (Formal types: Written - Oral (consecutive - synchronic) – Mixed; Levels in translation:Word level, Phrase level, Clause or sentence level, Paragraph level, Text level, Aims of translation; Professional requirements and responsibilities of a translator; General mistakes in translation; Equivalence in translation: types & levels of equivalence; Ways to achieve equivalence; Non-Equivalent units, Loses in translation**,** Lexical and Grammatical Transformations in the Process of Translation.

Unit 2:

Translation of words, word combinations, simple and complex sentences

Unit 3:

Translation of Grammatical structures based on cases, aspect of verbs, verbs of motion etc.

Translation of various parts of speech and their use

Unit 4:

Translation of Texts from Russian to English (from textbook Y. G. Ovsiyenko, Russian for beginners)

A) Beginner and intermediate levels. Size of the texts 50 -75 words

B) Advance level. Size of the texts 150-200 words

Unit 5:

Translation of Texts from English to Russian (from textbook Y. G. Ovsiyenko, Russian for beginners)

A) Beginner and intermediate levels. Size of the texts 50 -75 words

B) Advance level. Size of the texts 150-200 words

Unit 6:

Translation of texts belonging to different styles: Official-business texts, Scientific-technical texts, Literary texts, Newspaper texts etc.

Recommended Books:

1. Y. G. Ovsiyenko, *Russian for beginners*, Moscow, 2006
2. Terence Wade, *Using Russian Vocabulary*, Cambridge University Press, UK, 2009
3. S. A. Khavronina, A. I. Shirochenskaya, Russian in Exercises, New Delhi, 2009
4. Dr. Girish Munjal. *Carousel – 2: Translating into Russian*, Institute of Russian Language, Russian Centre of Science and Culture, New Delhi, 2003
5. V. S. Slepovich, *Translation course – English-Russian-English*, Minsk, 2008
6. V. S. Slepovich, *Translation handbook from Russian to English*, Minsk, 2006
7. Федоров А.В. Искусство перевода и жизнь культуры. Л.,1983.
8. Чуковский К.И. Высокое искусство. М., 1968.
9. Федоров А. В. Основы общей теории перевода (лингвистические проблемы). М, 2002

****

Intensive Advanced Diploma in Russian
Paper V: Introduction to Grammatical Concepts
Max. Marks: 50
3 hours per week
Total Number of Hours - 90

Aims and Objectives: The aim of the course is to introduce the grammatical concepts in Russian.

This broad aim will be achieved by:

- Introducing and explaining lexical and grammatical (phonetic, morphemic, morphological, syntax) concepts in parallel to the lexical and grammar aspects taught in the applied Russian grammar.
- Making the students compare the grammatical concepts in Russian, English & with that of their mother tongue.
- Involving students in projects work

Unit	**Content**	Number of hours	Marks Total-50
1	Phonetics: a) Phonetic units: sounds, syllable, phonetic word, phonetic sentence, stress, intonation. b) Vowel sounds in Russian (а, о, у, э, ы, и); Classification of vowels, Vowel sound changes. c) Consonant sounds: Classification of consonants, consonant sound changes. d) Syllable, type of syllables, word stress. e) Intonation, types of intonation	16	10
1.1	Practical and project works: a) Phonetic analysis of words b) Phonetic transcription. c) Glossary on phonetic concepts	04	
2	Morphemics and word formation a) Root morpheme, b) Affixal morphemes: prefix, suffix, postfix, interfix, flexion (ending). c) word stem	06	6
2.1	Practical and Project works: a) Morphemic analysis of words. b) Glossary on morphemic concepts	04	
3	Lexicology a) Lexical meaning and grammatical meaning of the word.		

	b) Polysemy and monosemy. c) Lexical homonyms, Lexical synonyms, Lexical antonyms d) Phraseology	04	04
3.1	Practical and Project works: a) Lexical analysis of words. b) Glossary on morphemic concepts	02	
4	**Morphology** a) Classification of Parts of Speech. Basis of morphological classification of words. Main parts of speech , auxiliary parts of speech and interjections.	04	
4.1	Main parts of speech: a) Noun: meaning, morphological features, syntactic role, types. b) Adjectives: meaning, morphological features, syntactic role, types. c) Numerals: meaning, morphological features, syntactic role, types. d) Pronoun: meaning, morphological features, syntactic role, types. e) Adverb: meaning, morphological features, syntactic role, types. f) Verbs: meaning, morphological features, syntactic role, types.	18	16
4.2	Auxiliary parts of speech a) Preposition: types and functions b) Conjunction c) Particles Interjections as specific parts of Speech.	06	
4.3	Practical and Project works: a) Morphological analysis of words. b) Glossary on morphological concepts	4	
5	Syntax: Units of syntax a) Word combination: types, components, kinds of syntactic relationships b) Simple Sentence: classification, members of sentences. c) Compound sentence: independent clauses d) Complex sentence: independent clauses, dependent clause	16	14
5.1	Practical and Project works: a) Syntactic analysis of sentences. b) Glossary on syntax concepts	6	

Books recommended:

1) Ch. Balupuri, Yu. Kovalyov: Phonetika russkovo yazika, New Delhi – 1984. 148p
2) I. E. Savko: Russkiy yazik. Minsk "Harvest", 2005.-480 p.
3) I.E. Savko: Russkiy yazik. Minsk "Harvest", 2005.-258p
4) M.M.Ignatyeva : Morphemniyi slovoobrozovatelniy analyz slova. Universitet Druzhbi Narodov, Moscow, 1982. 100 p
5) L A.Novikov, V.V. Ivanov, E.I. Kedaytene, A.H. Tikhonov: Sovremenniy russkiy yazik. Teoreticheskiy kurs. Leksikologiya. Moscow, "Russkiy yazik". – 160 p.
6) Russkaya grammatika. Tom I: Moscow, "Nauka"-1982. – 690 p.
7) Russkaya Grammatika. Tom II: Moscow, "Nauka"-1982. – 710 p.
8) Е.М. Галкина - Федорук, К.В. Горшкова, Н.М. Шанский. Современный Русский Языка. Москва, "URSS"-2015.
9) П.А. Леканта. Современный Русский Языка. Москва, "Юрайт"-2017.
10) Д.Э. Розенталь, И.Б. Голуб, М.А. Теленкова. Современный Русский Языка. Москва, "АЙРИС ПРЕСС "-2017.
11) Л.А. Новыков. Современный Русский Языка. Москва, "РУССКИЙ ЯЗЫК"-1987.

****

Intensive Advanced Diploma in Russian
Paper: Introduction to Literary Concepts & Russian Literature
Max. Marks: 50
Three hours per week

Aims & Objectives: The aim of the course is to introduce the theory of literature and history of Russian literature to the students. The task is also to make them understand the concept of literature, History of Russian literature and literary terms.
Since this is the basic course introduction to theory would be done with the help of creating an understanding about the origins of Russian people, history of Russia and history of Russian literature.

These broad aims will be achieved by:
- Introducing topics from Russian history along with references to the main works of Russian literature through the ages;
- Familiarizing the students with the unique characteristics of Russian culture, history and society with the help of literature;
- With this aim a glossary of word meanings (Russian to English) will also be prepared for the students;
- Initial methodology would involve participation of students through project work;
- Use of visual material towards maximization of the learning process.

Units
Unit 1: Theory of Literature
Literature, its significance in society; Literature & Folklore; Types and Genres of Literature: Epic, Lyrical, Drama, Lyrical-Epic genres

Unit 2:
Historical & Literary process (short definitions & salient features)
Classicism
Sentimentalism
Romanticism
Realism
Modernism
Post-Modernism (Modern, Latest)

Unit 3:
Idea of a Literary work: Plot, Conflict, Composition etc.
Stages of Development of action in a creative work: Author, Character, typical character etc.
Language of a creative work: tropes
Writing poetry: rhyme, rhythm and sense

Unit 4:
Short Historical background from ancient to modern times Russia
History of Russian Literature

Ancient Russian Literature: Slovo o polku Igoryeve (The Tale about Igor's campaign)
Afanasy Nikitin's "A Journey beyond three seas"
(Short biographies & representative works)
Literature of 18th century: D.I. Fonvizin, G.R.Derzhavin (Odes and selected poetry)
Literature of first half of 19th century: A.S.Pushkin (Eugene Onegin), M.Yu.Lermontov (A Hero of our times), N.V.Gogol (The Overcoat)
Literature of second half of 19th century: I.S.Turgenev (Father & Sons), L.N.Tolstoy (War & Peace), F.M.Dostoevsky (Crime & Punishment), A.P.Chekhov (selected stories, Play "The Cherry Orchard")
Literature of the end of 19th – beginning of 20th century: I.A.Bunin (A Mister from San-Francisco), Maxim Gorky (Mother), Selected poetry of A.A.Blok & A.Akhmatova, M.A.Sholokhov (The Fate of a Man), A.I. Solzhenitsyn (Matryonin dvor)
Modern day Russian literature; an overview

Recommended books:

1. Titarenko E.A., Khadyko E.F. Literature in diagrams & tables, Eksmo, Moscow, 2014.
2. Irina Borisova, Theory of literature, Flinta, Moscow, 2021.
3. Khalizev V.I. Teoriya Literaturi. Moscow. 1999.
4. Pospelova G. N. (Ed.) Vedeniye v literaturovedeniye. Moscow. 1992
5. Gulyayev N. A. Teoriya literatury. Moscow. 1985.
6. Mescheryakova M. Literatura v tablitsakh. Moscow. 2008.

****

Annexure-7
Resolution No. 38 {38-1 [38-1-17(4)]}

Minor modification of Part-time Courses in Russian Syllabus as approved in the Faculty of Arts meeting held on 31st October, 2022.

<table>
<tr><th>Existing</th><th>Modified</th><th>Remarks</th></tr>
<tr>
<td>

Certificate in Russian

Course	Paper No.	Paper Title	Marks
	I	Grammar	100
	II	Translation	100
	III	Oral	100
Total	**3**		300

Diploma in Russian

Course	Paper No.	Paper Title	Marks
	I	Grammar	100
	II	Translation	100
	III	Oral	100
Total	**3**		300

Advance Diploma in Russian

Course	Paper No.	Paper Title	Marks
	I	Grammar	100
	II	Translation	100
	III	Oral	100
Total	**3**		300

</td>
<td>

Certificate in Russian

Course	Paper No.	Paper Title	Marks
CR	I	Grammar	100
CR	II	Translation	100
CR	III	Oral	100
Total	**3**		300

Diploma in Russian

Course	Paper No.	Paper Title	Marks
DR	I	Grammar	100
DR	II	Translation	100
DR	III	Oral	100
Total	**3**		300

Advance Diploma in Russian

Course	Paper No.	Paper Title	Marks
ADR	I	Grammar	100
ADR	II	Translation	100
ADR	III	Oral	100
Total	**3**		300

</td>
<td>1. No changes in paper structure but Updated the syllabus with detail topics for certificate, Diploma & Advance Diploma in Russian.

2. Course title proposed as Certificate CR; Diploma DR & Advance diploma - ADR</td>
</tr>
</table>

DEPARTMENT OF SLAVONIC & FINNO - UGRAIN STUDIES

Tutorial Building (First Floor), North Campus,

University of Delhi, Delhi - 110007

Revised syllabus, Effective from Academic Year 2022-2023

CERTIFICATE COURSE IN RUSSIAN

No. of Seats:100 (Section A 50 and Section B 50)

Duration: One academic year

Total Number of hours-200

Mode of Evaluation: Annual Mode

Classes are held alternate three days a week from 8.00 a.m. to 9.30 a.m.

Minimum Eligibility:

Candidates who have passed the Senior Secondary School Certificate examination (10+2) of the Central Board of Secondary Education, New Delhi or an examination recognized as equivalent thereto with a minimum aggregate of 45% are eligible to apply. Admission will be made in order of merit based on the degree/certificate in each of the following categories.

- Post - graduate and above
- Graduate
- 10+2

a) In order to be considered in all categories, the candidate must submit copies of all the certificate/degree/ mark-sheets of the examination passed.

Objective: Communication in familiar, everyday situations, reading and listening comprehension of the core message of texts involving topics and requirements of everyday life and familiar situations, writing simple texts about familiar topics and personal interests.

Listening Comprehension: The candidate can understand what is said clearly, slowly and directly in simple everyday conversation. The candidate can understand phrases, words and expressions related to areas of most immediate priority (e.g. very basic personal and family information, shopping, local area, employment).

Spoken: The candidate is familiar with greetings, requests, apologies in the language being taught and can describe oneself, ones' family and other people. The candidate can describe one's home, profession, nationality, weather, time and surroundings and give short, basic descriptions of events. The candidate knows basic information about the country and culture in Hindi or English.

Writing: The candidate can write in simple sentences personal information and about aspects of everyday life in simple phrases and sentences (people, places, job, school, family, hobby).They can write short, simple notes and messages. The candidate can write a short letter using simple expression of greeting, addressing, asking or thanking somebody.

Paper no.	Title	Marks
I	Grammar	100
II	Translation	100
III	Oral	100

Paper I:

1. **Introductory Phonetics**.
2. **Grammar**

i. Gender and number of nouns;
ii. The nominative, prepositional and accusative (only inanimate) cases in singular and plural;
iii. Possessive, demonstrative, and interrogative pronouns and their declension;
iv. Adjectives and their declension;
v. Conjugation of verb in present tense;
vi. The u menya construction;
vii. The objective clause;
viii. Expression of day, time;

Paper II:

Translation

i. Translation of an unseen Russian text into English (70 marks)
ii. Translation from English to Russian (30 marks)

Paper III:

Oral Practice

i. Greetings, requests, apologies;
ii. Uses of basic phrases;
iii. Dialogue and monolog (on particular topic);
iv. Daily life conversations;

Recommended Books:

i. Ovsienko, Y.G. Russian for beginners. Part I. Moscow: "Ruski Yazik" 2013. (Chapters 1 – 11).
ii. Wagner, V.N. and Ovsienko, Y.G. Russian. Moscow 2008. (Chapters 6 – 17).
iii. Khavronina, S.A., Shirochenskaya, A.I. Russian in Exercises. Moscow: Progress. 2007.

DEPARTMENT OF SLAVONIC & FINNO - UGRAIN STUDIES

Tutorial Building (First Floor), North Campus,

University of Delhi, Delhi - 110007

Revised syllabus, Effective from Academic Year 2022-2023

DIPLOMA COURSE IN RUSSIAN

Duration: One academic year

Total Number of hours-200

Mode of Evaluation: Annual Mode

Classes are held alternate three days a week from 8.00 a.m. to 9.30 a.m.

Minimum Eligibility:

Candidates who have passed Certificate examination in the corresponding language course from University of Delhi.

Candidates who have passed their Certificate examination or an equivalent course in the corresponding language will be required to appear for an admission test to be conducted by the Department.

Candidates with a gap year or more will be required to appear for an admission test to be conducted by the Department.

Objective: Development of reading and listening strategies for enhanced comprehension of advanced texts on concrete and abstract topics, boosting vocabulary for clear, adequate action and reaction in writing and spoken communication on a board range of subjects.

Listening Comprehension: The candidate can follow clearly articulated speech of everyday conversation. The candidate can generally follow the main points of discussions, can listen to a short narrative and can understand the main points of radio news bulletins and any simple recorded material on topics of personal interest delivered relatively slowly and clearly.

Spoken: The candidate can start, maintain and close simple face -to- face conversation on topics that are familiar or of personal interest. The candidate can deal with the most situations likely to arise when making travel arrangements through an agent or when actually travelling. The candidates can express and respond to the feelings such as surprise, happiness, sadness, interest etc.

Writing: The candidate can write in simple, complex and compound sentences. They can write on anything familiar with everyday life as paragraphs, notes and messages. The candidate can write any formal/official or informal letter using expression of greeting, addressing, asking or thanking somebody.

Paper no.	Title	Marks
I	Grammar	100
II	Translation	100
III	Oral	100

Paper I:

1. **Introductory Phonetics**.

2. **Grammar**

i. The accusative(animate), genitive, dative, instrumental singular and plural;
ii. Conjugation of verbs in past and future tense;
iii. Verbs with sys;
iv. Imperative mood;
v. Verbs of motion;
vi. Comparative degree of adjectives and adverbs;
vii. Declension of nouns, pronouns, adjectives in different case grammar;
viii. Short form of adjectives;
ix. Impersonal sentences;
x. Expression of day, year, date and age.

Paper II:

Translation

i. Translation of an unseen Russian text into English (70 marks)
ii. Translation from English to Russian (30 marks)

Paper III:

Oral Practice

i. Daily life conversation;
ii. Express feeling, emotions, anger, interest, happiness, sadness etc.;
iii. Dialogue and monolog (on particular topic);
iv. Uses of complex and compound sentences;

Recommended Books:

i. Ovsienko, Y.G. Russian for beginners. Part I. Moscow: "RuskiYazik" 2013. (Chapters 12-21)
ii. Wagner, V.N. and Ovsienko, Y.G. Russian. Moscow 2008. (Chapter 18 – 28)
iii. Khavronina, S.A., Shirochenskaya, A.I. Russian in Exercises. Moscow: Progress. 2007.
iv. Розенталь, Д.Э. Говорите и пишите по-русски правильно. Москва: АЙРИС ПРЕСС.2016.

DEPARTMENT OF SLAVONIC & FINNO - UGRAIN STUDIES

Tutorial Building (First Floor), North Campus,

University of Delhi, Delhi - 110007

Revised syllabus, Effective from Academic Year 2022-2023

ADVANCE DIPLOMA COURSE IN RUSSIAN

Duration: One academic year

Total Number of hours-200

Mode of Evaluation: Annual Mode

Classes are held alternate three days a week from 8.00 a.m. to 9.30 a.m.

Minimum Eligibility:

Candidates who have passed Diploma examination in the corresponding language course from University of Delhi.

Candidates who have passed their Diploma examination or an equivalent course in the corresponding language will be required to appear for an admission test to be conducted by the Department.

Candidates with a gap year or more will be required to appear for an admission test to be conducted by the Department.

Objective: Development of reading and listening strategies for enhanced comprehension of advanced texts on concrete and abstract topics, boosting vocabulary for clear, adequate action and reaction in writing and spoken communication on a board range of subjects.

Listening Comprehension: The candidate can follow clearly articulated speech of everyday conversation. The candidate can generally follow the main points of discussions, can listen to a short narrative and can understand the main points of radio news bulletins and any simple recorded material on topics of personal interest delivered relatively slowly and clearly.

Spoken: The candidate can start, maintain and close simple face -to- face conversation on topics that are familiar or of personal interest. The candidate can deal with the most situations likely to arise when making travel arrangements through an agent or when actually travelling. The candidates can express and respond to the feelings such as surprise, happiness, sadness, interest etc.

Writing: The candidate can write in simple, complex and compound sentences. They can write on anything familiar with everyday life as paragraphs, notes and messages. The candidate can write any formal/official or informal letter using expression of greeting, addressing, asking or thanking somebody.

Paper no.	**Title**	**Marks**
I	Grammar	100
II	Translation	100
III	Oral	100

Paper I:

1. **Introductory Phonetics**.

2. **Grammar**

i. The genitive (animate), genitive, dative, instrumental singular and plural;
ii. Conjugation of verbs in past and future tense;
iii. Verbs with particle -ся;
iv. Imperative mood;
v. Verbs of motion;
vi. Comparative and superlative degree of adjectives and adverbs;
vii. Declension of nouns, pronouns, adjectives, numerals in different case grammar;
viii. Verbal adverbs;
ix. Direct & Indirect speech;
x. Active, Passive constructions;
xi. Participles & Complex sentences.

Paper II:

Translation

i. Translation of an unseen Russian text into English (70 marks)
ii. Translation from English to Russian (30 marks)

Paper III:

Oral Practice

i. Compiling dialogues on topics from the textbook;
ii. Express feeling, emotions, anger, interest, happiness, sadness etc.;
iii. Dialogue and monolog (on particular topic);
iv. Uses of complex and compound sentences;

Recommended Books:

i. Ovsienko, Y.G. Russian for beginners. Part I. Moscow: "RuskiYazik" 2013. (Chapters 22 -33)
ii. Wagner, V.N. and Ovsienko, Y.G. Russian. Moscow 2008. (Chapters 18 – 28)
iii. Khavronina, S.A., Shirochenskaya, A.I. Russian in Exercises. Moscow: Progress. 2007.
iv. Розенталь, Д.Э. Говорите и пишите по - русски правильно. Москва : АЙРИС ПРЕСС.2016.

ANNEXURE-50

Sub: Amendment to Ordinances

[E.C Resolution No. 49/- dated 08.12.2022]

The Following amendments to Regulations of the University, approved by the Executive Council at its meeting held on 08.12.2022, are hereby notified for necessary action by all concerned:

1. **Amendment to Regulation 16 (ii). [EC resolution No. 49] regarding order of precedence.**

Existing	Amended
Regulation-Convocation 16 (ii) Order of Precedence (a) The following order of precedence shall be observed at the time of Convocations and on other ceremonial occasions: 1. Chancellor 2. Pro-Chancellor 3. Vice-Chancellor 4. Pro-Vice-Chancellor 5. Chief Rector 6. Patrons 7. Rectors 8. Treasurer 9. Registrar 10. Dean of the Faculty of Arts 11. Dean of the Faculty of Science 12. Dean of the Faculty of Law 13. Dean of the Faculty of Medical Sciences 14. Dean of the Faculty of Education 15. Dean of the Faculty of Agriculture and Forestry 16. Dean of the Faculty of Technology 17. Dean of the Faculty of Social Sciences 18. Dean of the Faculty of Music & Fine Arts 19. Proctor	Regulation-Convocation 16 (ii) Order of Precedence (a) The following order of precedence shall be observed at the time of Convocations and on other ceremonial occasions: 1. Chancellor 2. Pro-Chancellor 3. Chief Rector 4. Vice-Chancellor 5. Pro-Vice-Chancellor 6. Dean of Colleges 7. Director South Delhi Campus 8. Director, Campus of Open Learning 9. Treasurer 10. Registrar 11. Dean (Examinations) 12. Controller of Examinations 13. Dean of the Faculties: i. Arts ii. Science iii. Law iv. Medical Sciences v. Education vi. Technology vii. Social Sciences viii. Music and Fine Arts ix. Mathematical Sciences

20. Librarian 21. Members of the Executive Council in the order as indicated in Statute 5. Elected members to be in the order of seniority as determined by the number of votes secured by each at the time of election. Nominated members in the order of nomination by the Visitor 22. Heads of University Departments-Faculty-wise 23. Principals of Colleges (seniority to be determined according to the date of opening of a College). 24. Professors 25. Members of the Court 26. Members of the Academic Council 27. Readers 28. Lecturers and Teachers of the University 29. Doctors 30. Masters 31. Bachelors 32. University Scholars 33. Under-Graduates (Faculty-Wise) (b) The precedence of persons falling under the same head in the table of precedence will be determined by the order in which their names are enrolled in the University Books. (c) The first ex-officers of the University shall rank immediately below the present incumbents of those offices. (d) The Vice-Chancellor shall determine from time to time as to the persons who will form the procession at the Convocation. Any dispute arising as to the seniority shall be decided by the Vice-Chancellor whose decision shall be final.	x. Management Studies xi. Ayurveda and Unani Medicines xii. Interdisciplinary and Applied Sciences xiii. Applied Social Sciences and Humanities xiv. Commerce and Business Studies xv. Homeopathic Medicine 14. Finance Officer 15. Proctor 16. Librarian 17. The Deans and other equivalent officers who are appointed by the University from time to time to discharge various special functions, e.g. Dean Student Welfare, Dean-Academic Affairs, Dean-Research, Dean-International Relations, CEO-IoE etc. 18. Members of the Executive Council in the order as indicated in Statute 5. i. Three Principals ii. Elected Members (a. Court; b. Teachers representatives) iii. Visitors Nominee iv. Chancellors Nominee 19. Heads of University Departments-Faculty-wise 20. Principals of Colleges (seniority to be determined according to the date of opening of a College). 21. Professors 22. Members of the Court 23. Members of the Academic Council 24. Associate Professors 25. Assistant Professor of the University 26. Ph.D. Doctors 27. Masters 28. Bachelors 29. Under-Graduates (Faculty-Wise)

	Note: The Registrar of the University would lead the convocation, and at the conclusion of the convocation, the order would be reversed. Apart from the Chief Guest/Guest of Honour, Chancellor, Pro-Chancellor, the following officials of the University shall be seated on the dais: Vice Chancellor, Pro Vice Chancellor, Dean of Colleges, Director of South Campus, Director, Campus of Open Learning, Registrar and Dean Examination. Honourable Vice Chancellor may invite additional persons. (b) The precedence of persons falling under the same head in the table of precedence will be determined by the order in which their names are enrolled in the University Books. (c) The first ex-officers of the University shall rank immediately below the present incumbents of those offices. (d) The Vice-Chancellor shall determine from time to time as to the persons who will form the procession at the Convocation. Any dispute arising as to the seniority shall be decided by the Vice-Chancellor whose decision shall be final.

2. Amendment to Regulation 16 (iii). [EC resolution No. 49] regarding Academic Costumes.

Replace the existing Regulation 16 (iii) Page 721-722 of University Calendar, Volume-II– 'Academic Costumes' with the following:

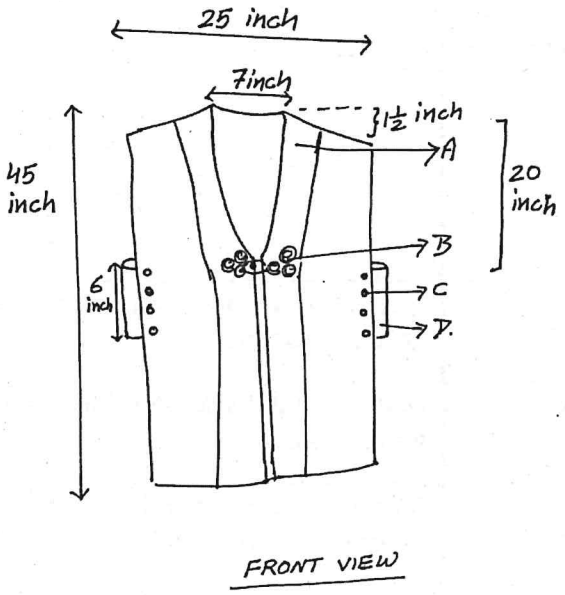
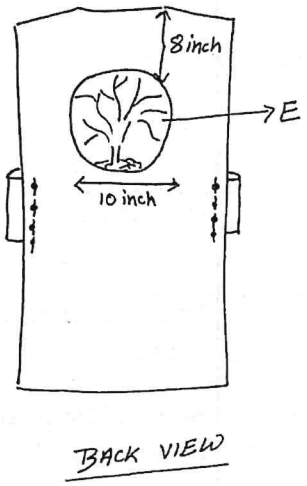
S.NO.		(*) SPECIFICATION OF COSTUMES
1.	Chancellor	Purple khadi silk with 4-inch gold lace and tree of life motif embroidered in zardozi at the back.
2.	Pro-Chancellor	Purple khadi silk with 3-inch gold lace and tree of life motif embroidered in zardozi at the back.
3.	Vice-Chancellor	Purple khadi silk with 2.75-inch gold lace and tree of life motif embroidered in zardozi at the back.

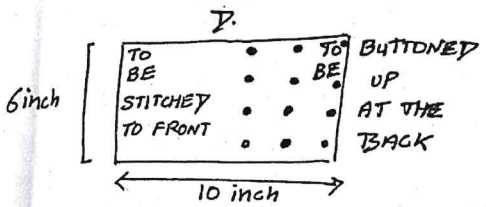
4.	Pro-Vice-Chancellor	Purple khadi silk with 2.5-inch gold lace and tree of life motif embroidered in zardoziat the back.
5.	Dean of Colleges	Purple khadi silk with 2.5 -inch gold lace and tree of life motif embroidered in zardozi at the back.
6.	Director, South Delhi Campus	Purple khadi silk with 2.5 -inch gold lace and tree of life motif embroidered in zardozi at the back.
7.	Proctor	Purple khadi silk with 2.5 -inch gold lace and tree of life motif embroidered in zardozi at the back.
8.	Dean Students' Welfare	Purple khadi silk with 2.5 -inch gold lace and tree of life motif embroidered in zardozi at the back
9.	Director of Campus of Open Learning	Purple khadi silk with 2.5 -inch gold lace and tree of life motif embroidered in zardozi at the back
10.	Dean (Examinations)	Purple khadi silk with 2.5-inch gold lace and tree of life motif embroidered in zardozi at the back
11.	Treasurer	Purple khadi silk with 2.5-inch gold lace and tree of life motif embroidered in zardozi at the back
12	Chief Rector (**LG**)	Purple khadi silk with 2-inch gold lace and tree of life motif embroidered in zardozi at the back.
13.	Registrar	Purple khadi silk with 2-inch gold lace and tree of life motif embroidered in zardozi at the back
14.	Rectors	Purple khadi silk with 1.5 -inch gold lace and tree of life motif embroidered in zardozi at the back.
15.	Patrons	Purple khadi silk with 1.5-inch gold lace and tree of life motif embroidered in zardozi at the back.
16.	Finance Officer	Maroon khadi silk with 2-inch border in golden brocade
17.	Controller of Examinations	Maroon khadi silk with 2-inch border in golden brocade
18.	Deans of the Faculties	Maroon khadi silk with 2-inch border in golden brocade

19.	The Deans and other equivalent officers who are appointed by the University from time to time to discharge various special functions, e.g. Dean (Academic Affairs), Dean (Research), Dean (International Relations) etc.	Maroon khadi silk with 2-inch border in golden brocade
20	Librarian	Maroon khadi silk with 1-inch border in golden brocade
21	Members of the Executive Council	Maroon khadi silk with 1-inch border in golden brocade
22.	Heads of University Departments-Faculty wise	Maroon khadi silk with 1-inch border in golden brocade
23.	Principals of the Colleges	Maroon khadi silk with 1-inch border in golden brocade
24.	Members of the Academic Council	Maroon silk with 1-inch border in golden brocade
25.	**For P.G. students** Turquoise stole with gold woven borders in handloom fabric stole with the University and centenary logo on either side.	
26.	**For U.G. Students:** Yellow stole with gold woven borders in handloom fabric with the University and centenary logo on either side	
27.	**For Ph.D., D.M., M.Ch. Students:** Red handloom stole with gold woven borders and the University centenary logo on either side	

CONVOCATION ROBES FOR THE DIGNITARIES ON THE DIAS

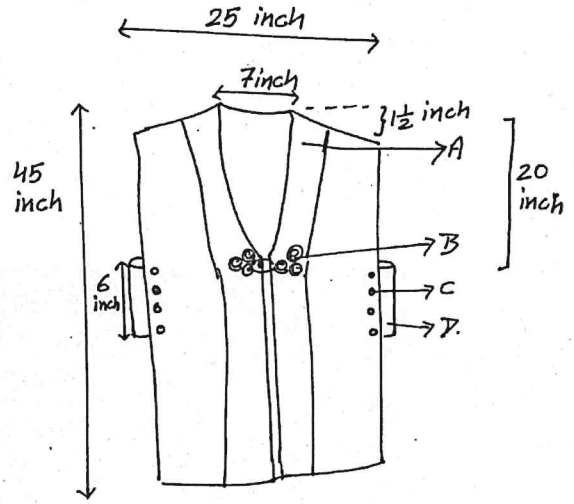
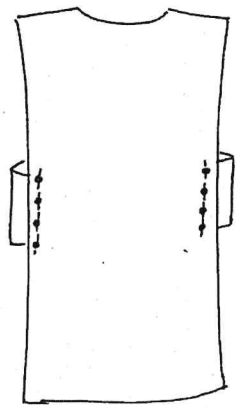
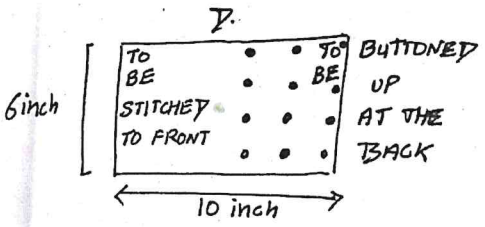
Specification sheet

1.	Name	Convocation robe for dignitaries
2.		
3.	Fabric details	Purple Khadi silk Silk weight -65 gms/m^2 or above
4.	Supplies and ornamentation required per piece	• One Golden frog button • Golden borders on velvet • 16 golden metal buttons • Tree of life motif embroidered at the back
5.	Ornamentation details as per the sketch	
	A. Borders	Borders are golden in colour made on velvet fabric. Width of borders and no. of pieces to be made for each width is as per specification mentioned in point 7.
	B. Frog button	One golden frog button is to be attached 21 inch down from shoulder point in front
	C. Buttons	Golden metal buttons. Decorative in front and functional at the back. Back panel would have buttonholes for the buttons.
	D. Belt	Front and back panels are to be attached only through the belt made in same purple silk fabric. 6-inch-wide belt stiffened with interlining is to be stitched with the front panel. Belt would have three sets of buttons for adjustment as per the wearer waist size. Buttonholes are to be made on the back panel side edge.

		
	E. Embroidered motif at the back	Tree of life motif is to be embroidered at the back side. Diameter of the motif is 10 inches. Zardozi embroidery is to be done mainly in gold colour with hints of other colors as per the picture.
6.	**Construction Details**	Robe has been made without lining. Front and back panels are stitched together only at the shoulder. Sides are attached only through belt. All edges of the panels need to be neatly finished.

CONVOCATION ROBES FOR THE OTHERS IN PROCESSION

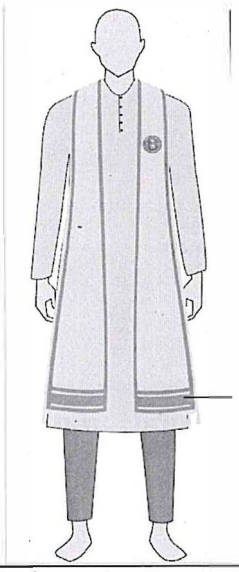
Specification sheet

1.	Name	Convocation robe for Others
2.	 FRONT VIEW	 **Back View**
3.	Fabric details	Maroon Khadi silk Silk weight -65 gms/m^2 or above
4.	Supplies and ornamentation required per piece	• One Golden frog button • Golden borders on velvet • 16 golden metal buttons
5.	Ornamentation details as per the sketch	
	A. Borders	Borders are of golden brocade fabric. Width of borders and no. of pieces to be made for each width is as per specification mentioned in point 7.
	B. Frog button	One golden frog button is to be attached 21 inch down from shoulder point in front
	C. Buttons	Golden metal buttons. Decorative in front and functional at the back. Back panel would have buttonholes for the buttons.
	D. Belt	Front and back panels are to be attached only through the belt made in same purple silk fabric. 6-inch-wide belt stiffened with interlining is to be stitched with the front panel. Belt would have three sets of buttons for adjustment as per the wearer waist size. Buttonholes are to be made on the back panel side edge. 

6.	**Construction Details**	Robe has been made without lining. Front and back panels are stitched together only at the shoulder. Sides are attached only through belt. All edges of the panels need to be neatly finished.

STOLES FOR THE STUDENTS

Specification Sheet

1.	**Name**	**Stoles for the students**
2.	Fabric details	Cotton Handloom Fabric Fabric GSM: 160-200
3.	Size specifications	Length: 2.5 meters Width: 28 inches
4.	Borders	1-inch-wide woven golden border
5.	Finishing at the ends	Tassels at both the ends of the stole
6.	Embroidered University logo	Delhi University logo is to be embroidered on the stoles as per the colors given in the picture. Size of the logo is 4 inch in diameter.
6.	Placement of the logo	12 inches down from the center on left side of the stole as shown in illustration 

ANNEXURE–51

Sub: Amendment to Ordinances

[E.C Resolution No. 38-2/- dated 08.12.2022]

The Following amendments to Ordinance of the University has been approved by the Executive Council at its meeting held on 08.12.2022 and are hereby notified for information and necessary action, by all the concerned:

1. **Amendment to Ordinance XX-K regarding Cluster Innovation Centre**

   Add the following :

Existing	Amended
There shall be a Cluster Innovation Centre (CIC) in the University of Delhi with the following objectives to : 1 to 7 : xx –xx--xx	There shall be a Cluster Innovation Centre (CIC) in the University of Delhi under the Faculty of Technology with the following objectives to : 1 to 7 : No change 8. Affiliate the degree programmes of Cluster Innovation Centre under the Faculty of Technology. The affiliation shall be restricted to the academic programmes only.

2. **The Composition of DRC for the Cluster Innovation Centre shall be as follows:**

   (a) Head of the Department/ Centre – Chairperson
   (b) One Professor – a nominee of the Vice Chancellor
   (c) Four Professors
   (d) Two Associate Professors
   (e) Two Assistant Professors

3. Amendment in Ordinance-VI regarding composition of Board of Research Studies (BRS), Faculty of Technology.

Sr. No.	Existing	Amended
a)	Dean of the Faculty – Chairperson.	No Change
b)	One Professor (nominee of the Vice-Chancellor).	No Change
c)	All Heads of the Department/ All Directors of the Schools.	All Heads of the Department/ All Directors of the Schools/Director, Cluster Innovation Centre
d)	One Professor from each Department/ One Professor from each School of the IoE or its participating Departments to be nominated by the Vice-Chancellor.	One Professor from each Department/ One Professor from each School of the IoE or its participating Departments/One Professor from Cluster Innovation Centre to be nominated by the Vice-Chancellor.
e)	One Associate Professor from each Department/ One Associate Professor from each School of the IoE or its participating Departments to be nominated by the Vice-Chancellor.	One Associate Professor from each Department/ One Associate Professor from each School of the IoE or its participating Departments/ One Associate Professor from Cluster Innovation Centre to be nominated by the Vice-Chancellor.
f)	One Assistant Professor from each Department/ One Assistant Professor from each School of the IoE or its participating Departments to be nominated by the Vice-Chancellor.	One Assistant Professor from each Department/ One Assistant Professor from each School of the IoE or its participating Departments/One Assistant Professor from Cluster Innovation Centre to be nominated by the Vice-Chancellor.
g)	Dean, Post-Graduate Studies	No Change

A N NEXURE-52

Sub: Amendment to Ordinance V

(EC Resolution No. 14-1-1/ dated 09.06.2023 and 27-1-6/ dated 25.08.2023)

Following addition be made to Appendix-II-A to the Ordinance V (2-A) of the Ordinances of the University;

Add the following:

Syllabi of Semester-IV, V and VI of following courses under the Department of Germanic & Romance Studies based on UGCF-2022 implemented from academic year 2022-2023:

1. BA (Hons.) French/ BA (Prog.) with French as Major or Non-Major / Pool of Discipline Specific Electives (DSEs)/ Pool of Generic Electives (***As per Annexure-1***)
2. BA (Hons.) German/ BA (Prog.) with German as Major or Non-Major/ Pool of Discipline Specific Electives (DSEs) (***As per Annexure-2***)
3. BA (Hons.) Spanish / BA (Prog.) with Spanish as Major or Non-Major/ Pool of Discipline Specific Electives (DSEs) (***As per Annexure-3***)
4. BA (Hons.) Italian / Pool of Discipline Specific Electives (DSEs) (***As per Annexure-4***)

SEMESTER-IV
BA (Hons) FRENCH

DEPARTMENT OF GERMANIC AND ROMANCE STUDIES

Category I

(B.A. Honours in French in three years)

DISCIPLINE SPECIFIC CORE COURSE – 10:

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Language in Context: Intermediate Reading and Writing Skills (2)	**4**	**3**	**1**	**0**	**XII Passed**	**Should have studied Language in Context: Intermediate Reading and writing skills (1)**

Learning Objectives

In semester 4, students will learn to

- Describe a place of tourist interest
- Write a blog about different types of tourism
- Describe a country or a region
- Reserve a lodging/a hotel room
- Describe a hotel
- Enrol in an activity
- Write a note announcing a marriage, a birth, a death
- Write a recipe
- Design a menu for a restaurant
- Write short notices about a power cut, reduced water supply
- Describe a convocation
- Propose a service
- Describe his first professional experience

Course Learning Outcomes

At the end of Semester 4, students will be able to

- read simple texts and answer questions on them.
- write on subjects pertaining to their immediate environment as well as professional environment
- complete Level A 2 of reading and writing skills as prescribed in the Common European Framework

SYLLABUS OF DSC-10[1]

Unit 1 [Unité 7: (Lessons 1-4 + Project)] (6 hours)

Reading Comprehension: Reading and understanding tourist blogs, brochures, descriptions of hotels and answering questions on them.

Writing : Write a blog, answer a blog, describe an animal, write recommendations for visitors to a particular country or a wildlife park, write a brochure on activities offered by a town to its tourists, write about the advantages and disadvantages of a sea cruise,complete a hotel form, give one's opinion on a hotel and its facilities, prepare an itinerary for a trip.

Grammar: Prepositions of place, the relative pronoun *où*, pronoun *,* adverbs of place

Vocabulary: Words and stgructures related to travel and tourism, means of transport, flora and fauna, camping, hotel industry.

Intercultural: Tips and tipping procedures in different francophone countries, ecotourism.

Practical component (if any) – NIL

Unit 2 [Unité 8: (Lessons 1-4 + Project)] (6 hours)

Reading Comprehension: Read short texts about family and family matters, family businesses, family activities, film critic, announcements of birth, death and mariage and answer simple questions on them.

Writing: Simple texts and emails on family activities and hobbies, crtic of a film you have seen, announcements of death, birth and mariage.

Grammar: Expression of cause, articulators (*mais, alors, encore, en plus*),

Vocabulary: family, family activities, sentiments, emotions and impressions, daily life and major life events.

Intercultural: Typical family in your country, family matters

Practical component (if any) – NIL

Unit 3: [Unité 9: (Lessons 1-4 + Project)] (6 hours)

Reading Comprehension: Read short texts describing food habits, a restaurant, gastronomy in francophone countries, delivery of food at home., recipes

Writing: Short texts about a restaurant of your choice, a food speciality, a recipe, a menu, dietary tips

Grammar: Imperative of pronominal verbs,indefinite adjective *tout,* pronoun *en.*

Vocabulary : Food and health, utensils, menu

Intercultural : restaurant, recipies,menu, different dietary habits

[1]A text book contains 6-8 modules/units called *unité*. Each unite comprises 4 lessons. Therefore the syllabus is given in terms of the text book unit being covered along with the content of the 4 lessons with a total duration of the number of hours needed to cover a *unité* of 4 lessons. Unit 1 refers to the syllabus requirement, unit 7 etc to the corresponding unit in the text book

Practical component (if any) – NIL

Unit 4 [Unité 10: (Lessons 1-4 + Project)] (9 hours)

Reading Comprehension: Read short texts describing an appartment, a house, concerning neighbours, community life, short notes announcing water cuts, power cuts and answer questions on them.

Writing: Write short texts describing a room in one's house, one's relations with neighbours, community life, justifying one's change of profession, preparing posters/short messages announcing a power/water cut.

Grammar: Use of the expression "c*hez*", expression of duration (*pendant*), use of "on" in different contexts, expression of opposition (*mais, en revanche, par contre*).

Vocabulaire : The house, its different rooms, furniture and equipment in each room, relations with various social groups (family, neighbours neighbourhood communities).

Intercultural: Types of dwelling**,** relations withing different social groups, professional reconversion.

Practical component (if any) – NIL

Unit 5 [Unité 11: (Lessons 1-4 + Project)] (9 hours)

Reading Comprehension: Reading texts on school and the education system, about well known educationists, coeducational institutions, university life in different francophone countries, an exceptional career trajectory, examination system, exam notifications.

Writing: Write short texts to present the education system in your country, an argumentative text on coeducational institutions, on studying and working to give advice to students leaving for education in a francophone country, professional projects prepare a virtual card to wish someone goodluck, an examination notification.

Grammar: Possessive pronouns, expression of objectives (*Pour/afin de + infinitif*) verbes followed by the preposition *à or de.*

Vocabulaire : education system, training, studies, professional projects, examination.

Intercultural: Comparative study of education system in France, certain francophone countries and your own country, university convocation.

Practical component (if any) – NIL

Unit 6 [Unité 12: (Lessons 1-4 + Project)] (9 hours)

Reading Comprehension: Read short texts on co working, description of different professions, collaboration at work, shared interests, explaining work culture at the office.

Writing: Write about your first working experience, Present a laboratory for innovations an email to talk about one's interests.

Grammar: demonstrative pronouns, noun formation,Indifinite pronouns (*plusieurs, quelques-uns, certains*)

Vocabulaire : professions, domains of work, digitalisation, associations in the work place, environment, ecology, a company.

Intercultural: office life, co working, first work experience, lunch break at work, centres of interest.

Practical component (if any) – NIL

Essential/recommended readings

Any of the textbooks given below may be prescribed.

1. A Bredelet, M.Bufferne, B Megre, W.M. Rodrigues:"*Odysée A2, Méthode de français"*, CLÉ International, France, 2021, Unités 7-12.
2. Nathalie Hirschsprung, Tony Tricot, Anne Veillon (sons de francais), Emilie Pardo (exercer), Nelly Mous (DELF) : « *Cosmopolite, Méthode de français A2,* » Hachette-TV 5 Monde, 2017, France, Dossiers 5-8.
3. Sophie Bruzy Todd, Cedric Vial : « *La Classe A 2, Méthode de français* »,CLÉ International, 2018, Unités 4-6.
4. Marie-Noelle Cocton (coordination pédagogique), Emilie Marolleau Emilie Pommier, Delphine Ripaud, Marie Rabin (DELF) : *« L'Atelier A2, Méthode de français »*, Les Éditions DIDIER, France, 2019, Unités 5-8.
5. Pascal Biras, Monique Denyer, Audrey Gloanec, Stephanie Witta, Geneviève Briet, Valérie Collige-Neunschwander (capsules de phonétique), Raphaëlle Fouillet (précis de grammaire) : « *Défi –2 Méthode de français* », Éditions Maison des Langues, 2018, Unités 5-8
6. Clemence Fafa, Florence Gajdosova, Alexandrin Horquin, Airelle pasquet, Marion Perrard, Violette Petitmengin, Caroline Sperandio,Marlene Dodin (DELF),Julie Veldeman -Abry : « *Edito- A2 Méthode de français (2e édition)* », Editions DIDIER FLE, 2022, Unités 7-12.
7. L. Cheniac-Knight : "*Odysée A 2, Cahier d'activités"*, CLÉ International, France, 2021, Unités 7-12.
8. Anais Dorey –Mater,Emilie Mathieu-Benoit, Nelly Mous, « *Cosmopolite* , *Cahier d'activités A2,* »Hachette TV 5 Monde,2017, France Dossiers 5-8.
9. Claire Sanchez : « *La Classe A 2, Cahier d'activités* », CLÉ International, 2018, Unités 4-6.
10. Marie Noelle Cocton (coordination pédagogique), Emilie Marolleau Emilie Pommier, Delphine Ripaud : *« L'Atelier A2, Cahier d'activités»*, Les Éditions DIDIER, France, 2019, Unités 5-8.

11. Pascal Biras, Monique Denyer, Audrey Gloanec, Stephanie Witta, Camille de Rongé (phonétique), Nancy Verhulst (phonétique), Alexandrin Horquin (DELF) : « *Défi – 2 Cahier d'activités*», Éditions Maison des Langues, 2018, Unités 5-8
12. Roxane Amoravain, Valerie Blasco, Marie Gatin,Marie-Laure,Lions Olivéri,LucieMensdorff-Pouilly, Eugénie Mottironi, Magosha Frequelin et MarieGouelleu (DELF) Julie Veldman-Abry (phonétique) : *« Edito A2, Cahier d'activités »*, DIDIER FLE, 2022 Unités 7-12.

Additional material may be provided by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 11

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Language in Context: Intermediate Listening and Speaking Skills (2)	**4**	**3**	**1**	**0**	**XII Passed**	**Should have studied Language in Context; Intermediate Listening and Speaking Skills (1)**

Learning Objectives

In semester 4, students will learn to

- Ask for and give information about a place of tourist interest
- Speak of different modes of transport
- Lodge a complaint
- Explain one's choices
- Express one's satisfaction, dissatisfaction
- Announce good/bad news
- Order in a restaurant
- Give one's opinion
- Give a warning
- Talk about one's interests
- Encourage others
- Express one's hopes and desires

- Speak of one's work environment
- Speak of one's first professional experience
- Express one's intentions.

Course Learning Outcomes

At the end of Semester 4, students will be able to

- Listen to different types of texts and answer questions on them.
- speak on subjects pertaining to their immediate environment as well as professional environment.
- complete Level A 2 of reading and writing skills as prescribed in the Common European Framework.

SYLLABUS OF DSC-11[2]

Unit 1:[Unité 7: (Lessons 1-4 + Project)] (6 hours)

Listening Comprehension: Listen to and understand information about a place of tourist interest, about an expedition, a sea cruise, description of a hotel and its facilities.

Speaking: Situate one's country on a world map, defend one's choice of a holiday destination, speak about different activities available for tourists, role play at a tourism bureau, speak about a sea cruise, present a boat/ship, role play between a client and the hotel receptionist, tipping procedures in one's country.

Phonetics: sound/œ/ and/ø/

Vocabulary: Words and structures related to travel and tourism, means of transport, flora and fauna, camping, hotel industry.

Intercultural: Tips and tipping procedures in different francophone countries, ecotourism.

Unit 2:[Unité 8: (Lessons 1-4 + Project)] (6 hours)

Listening comprehension: Listen to songs, short testimonials, short texts on family activities, discussions, radio interviews and answer questions on them

Speaking: Debate on living with one's parents, talk about different games and sports played in your country, how one spends a Sunday with the family, role play between parents and children.

Phonetics: sound /j/

Vocabulary: family, family activities, sentiments, emotions and impressions, daily life and major life events.

Intercultural: Typical family in your country, family matters, family activities.

[2]A text book contains 6-8 modules/units called *unité*. Each unite comprises 4 lessons. Therefore the syllabus is given in terms of the text book unit being covered along with the content of the 4 lessons with a total duration of the number of hours needed to cover a *unité* of 4 lessons.

Unit 3:[Unité 9: (Lessons 1-4 + Project)] **(6 hours)**

Listening Comprehension: Listen to short texts about different types of diets, dialogues in a restaurant and answer questions on them

Speaking: Speak about one's dietary habits, explain to a freind the specialities in a restaurant, present a recipe of your region or country, debate on food delivery at home.

Phonetics: sounds /r/ and /l/ liaison with the pronoun *en.*

Vocabulary : Food and health, utensils, menu

Intercultural : restaurant, recipies,menu, different dietary habits

Unit 4:[Unité 10: (Lessons 1-4 + Project)] **(9 hours)**

Listening Comprehension: Listen to short texts describing a house and its different rooms, songs, village events, problems with neighbours and answer questions on them.

Speaking: Describe your house, roleplay between an interior decorator and his client**,** between two friends discussing house repairs, between an optimist and a pessimist, between your neighbour and you.

Phonetics: Letters/c/ and /g/

Vocabulaire : The house, its different rooms, furniture and equipment in each room, relations with various social groups (family, neighbours, neighbourhood communities).

Intercultural: Types of dwelling**,** relations within different social groups, professional reconversion.

Unit 5:[Unité 11: (Lessons 1-4 + Project)] **(9 hours)**

Listening Comprehension: Listen to and understand texts on education system, present and explain reasons for moving out of one's hometown for studies, discussion between young people on their future and future projects, simulation of an oral exam and answer questions onn them

Speaking: Present your school/university to a francophone friend, present the education system in your country to a francophone friend, debate on the advantages and disadvantages of MOOC, role play between a counsellor and a student on which courses to choose, discuss your future projects (after school/university) with a friend, give advice to foreign student on how to write an exam, present a convocation.

Phonetics: Accentuating a sentence.

Vocabulaire : education system, training, studies, professional projects, examination.

Intercultural: Comparative study of education system in France, certain francophone countries and your own country, university convocation.

Unit 6: [Unité 12: (Lessons 1-4 + Project)] **(9 hours)**

Listening Comprehension: Listen to and understand texts on coworking, job interviews, innovation labs, songs, discussion between friends about their centers of interest, dialogue between two colleagues on how to use the coffee machine and answer questions on them

Speaking: Present your classroom,describe your working environement, present an ideal working environment, describe an association to which you belong, present a project to create a garden in your city, discuss your hobbies and free time activities, discuss solutions for work place problems.

Phonetics: sound/w/

Vocabulaire : professions, domians of work, digitalisation, associations in the work place, environment, ecology, a company.

Intercultural: office life, co working, first work experience, lunch break at work, centres of interest.

Essential/recommended readings

Any of the textbooks given below may be prescribed.

1. A Bredelet, M.Bufferne, B Megre, W.M. Rodrigues:"*Odysée A2, Méthode de français"*, CLÉ International, France, 2021, Unités 7-12.
2. Nathalie Hirschsprung, Tony Tricot, Anne Veillon (sons de francais), Emilie Pardo (exercer), Nelly Mous (DELF) : « *Cosmopolite, Méthode de français A2,* » Hachette-TV 5 Monde, 2017, France, Dossiers 5-8.
3. Sophie Bruzy Todd, Cedric Vial : « *La Classe A 2, Méthode de français* »,CLÉ International, 2018, Unités 4-6.
4. Marie-Noelle Cocton (coordination pédagogique), Emilie Marolleau Emilie Pommier, Delphine Ripaud, Marie Rabin (DELF) : *« L'Atelier A2, Méthode de français »*, Les Éditions DIDIER, France, 2019, Unités 5-8.
5. Pascal Biras, Monique Denyer, Audrey Gloanec, Stephanie Witta, Geneviève Briet, Valérie Collige-Neunschwander (capsules de phonétique), Raphaëlle Fouillet (précis de grammaire) : « *Défi –2 Méthode de français* », Éditions Maison des Langues, 2018, Unités 5-8
6. Clemence Fafa, Florence Gajdosova, Alexandrin Horquin, Airelle pasquet, Marion Perrard, Violette Petitmengin, Caroline Sperandio,Marlene Dodin (DELF),Julie Veldeman -Abry : « *Edito- A2 Méthode de français (2e édition)* », Editions DIDIER FLE, 2022, Unités 7-12.
7. L. Cheniac-Knight : "*Odysée A 2, Cahier d'activités"*, CLÉ International, France, 2021, Unités 7-12.

8. Anais Dorey –Mater,Emilie Mathieu-Benoit, Nelly Mous, « *Cosmopolite* , *Cahier d'activites A2*, »Hachette TV 5 Monde,2017 ,France Dossiers 5-8.

9. Claire Sanchez : « *La Classe A 2, Cahier d'activités* », CLÉ International, 2018, Unités 4-6.
10. Marie Noelle Cocton (coordination pédagogique), Emilie Marolleau Emilie Pommier, Delphine Ripaud : *« L'Atelier A2, Cahier d'activités »*, Les Éditions DIDIER, France, 2019, Unités 5-8.
11. Pascal Biras, Monique Denyer, Audrey Gloanec, Stephanie Witta, Camille de Rongé (phonétique), Nancy Verhulst (phonétique), Alexandrin Horquin (DELF) : « *Défi – 2 Cahier d'activités*», Éditions Maison des Langues, 2018, Unités 5-8
12. Roxane Amoravain, Valerie Blasco, Marie Gatin, Marie-Laure,Lions Olivéri,LucieMensdorff-Pouilly, Eugénie Mottironi, Magosha Frequelin et MarieGouelleu (DELF) Julie Veldman-Abry (phonétique) : *« Edito A2, Cahier d'activités »*, DIDIER FLE, 2022 Unités 7-12.

Additional material may be provided by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 12:

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
Engaging with Literary Texts (2)	**4**	**3**	**1**	**0**	**XII Passed**	**Should have studied Engaging with Literary texts (1)**

Learning Objectives:

- Imparting tools to critically engage with literary texts written in French with focus on the major cultural and intellectual movements of the XX and XXI century.
- Developing skills to analyse various genres such as drama, novel, travel writing etc. written by French and Francophone authors
- Developing an in depth understanding of the major XX and XXI century writers and the themes/questions they engage with

Course Learning Outcomes :

At the end of Semester 4, students will

- Develop interpretive strategies to critically engaging with XX and XXI century literary texts written in French
- Be able to demonstrate their analytical skills by identifying key literary devices and themes present in drama, novel, travel writing etc. written by French and Francophone authors
- Be able to formulate an argument based on a literary text.

SYLLABUS OF DSC-12

Unit 1 **(15 hours)**

Dramatic texts written by XX and XXI century writers: Study of dramatic devices and specificity of the dramatic forms, Study of various components of dramatic texts such as characters and their characterization, setting, scenic indications, construction of the plot, etc., study of the socio-cultural context that has shaped such texts.

Unit 2: **(15 hours)**

Novels written by XX and XXI century writers: Study of novelistic devices and the specificity of the novel form such as character, setting, plot, event, point of view, temporality, narrators and narrative conventions of various fictional genres such as existential novel, epistolary novel, new novel, historical novel etc, study of the socio-cultural context that has shaped such texts.

Unit 3: **(15 hours)**

Travel writings by the XX and XXI century writers: Study of the features and travel writings, undertanding the discourse of travel writing and the beginnings of 'Orientalism' – the 'imperial gaze', the binary of 'the self and the other', study of the socio-cultural context that has shaped such texts.

Practical component (if any) - NIL

Essential/recommended readings

F. Allouache, N. Blondeau, *Littérature progressive de la francophonie - Niveau débutant*, F Clé International, Paris, 2016

Jean-Louis Joubert, *Litterature Francophone Anthologie*, Cideb, 1997

Michel Brix, *Histoire de la Littérature française*, De Boeck, Bruxelles, Paris, 2014

Nicole Blondeau, Marie-Françoise Né., Ferroudja Allouache, *Littérature progressive du Français - Niveau intermédiaire*, Clé International, Paris, 2016

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE (DSE -2)

DSE 2: Option 1: Studying Different Text types

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Studying Different Text Types (Option 1)	**4**	**3**	**1**	**0**	**XII Passed**	**NIL**

Learning Objectives:

- Introduction to discursive specificities and patterns of language across texts and the functions of texts in their social, literary and cultural contexts.
- Familiarise students with various types of texts so that they can identify how the texts resemble or differ from each other in terms of vocabulary, grammar, cohesion and stylistic features.
  Iincrease awareness of linguistic and stylistic features of text types and the reasons for the variation between them. Such an awareness will be useful in further work with text, for example in writing, reading, analysing and interpreting them.

Learning Outcomes:

- Develops skills to study different text types in order to familiarize oneself with different kinds of language usages in literary and semi-literary texts.
- Enables learners to develop relevant analytical skills to critically evaluate the form and content of these texts.
- Helps learnres to identify different language registers, rhetoric and other compositional specificities of the texts.

Syllabus for DSE 2: Option 1: Studying Different Text types

Unit 1 **(15 hours)**

Prose: Introduction and analytical study of both form and content of a variety of texts written in simple prose form such as shorter and longer Narrative genres, (Eg. short story, fable, chronicle, myth, novella, tales, anecdote, autobiography, biography, novel etc.).

Unit 2 **(15 hours)**

Poetry : Introduction and analytical study of both form and content of various types of poetic texts, songs, slams etc, written in a simple and accessible language.

Unit 3 **(15 hours)**

Intermedial and semi-literary texts: Introduction and analytical study of both form and content of comic strips, graphic novels, or semi literary forms such as essay, commentary, informative/descriptive texts on history, geography, economy, culture that are not too complex.

Essential/recommended Readings

A selection of texts can be made from the following reference materials.

1. Catherine Carlo, Mariella Causa, *Civilisation progressive du français – Niveau Intermédiaire*, Clé International, Paris, 2016
2. Jackson Noutchié-Njiké *Civilisation progressive de la francophonie - Niveau Intermédiaire*, , Clé International, Paris, 2016
3. Nicole Blondeau, Marie-Françoise Né., Ferroudja Allouache,*Littérature progressive du Français - Niveau Intermédiaire*, Clé International, Paris, 2016
4. F. Allouache, N. Blondeau,*Littérature progressive de la francophonie - Niveau Intermédiaire*, Clé International, Paris, 2016
5.Les textes types et prototypes, Jean-Michel Adam, Armand Colin, Paris, 2017 in La Linguistique textuelle, Jean-Michel Adam, Armand Colin, Paris, 2015
6. Corinne Kober-Kleinert, Marie-Louise Parizet, *ABC DELF B1*, Clé International, Paris.

Additional material may be made available by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DSE 2: Option 2: Introduction to the History of France and the Francophone World (2)
Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Introduction to the History of France and the Francophone World (2) (Option 2)	**4**	**3**	**1**	**0**	**XII Passed**	**Should have studied Introduction to the History of France and Francophone World (1)**

Learning Objectives:

- Develop an understanding about major historical events that have shaped France from the medieval to contemporary period.
- Critically engage with French Colonialism and its aftermath in relation to the period of decolonisation and its aftermath.
- Familiarize students with techniques and startegies to analyse historical documents as evidences of historical events.

Learning Outcomes:

- Familiarize students with the major social, political and cultural events from the medieval to contemporary period.
- Develop a critical perspective of the colonial past of France and its realtions to its colonies.
- Provide a good understanding of Contemporary France and its relations with the French speaking world including its policy towards immigration.
- Develop the skill to analyse very short historical texts in order to examine documentary evidence of hostical events.

Syllabus for DSE-2 Option 2: Introduction to the History of France and the Francophone World (2)

Unit 1 **(12 hours)**

1.1The Gauls and the Franks.
1.2 The making of the Kingdom of France (987-1453) and Consolidation of the French Monarchy.
1.3. Renaissance and Guerre de Religions
1.4. Beginning of colonialism

Unit 2 **(12 hours)**

2.1 French Revolution and the Napoleonic era.
2.2 Rise of Republican thought in the 19th century and the 3rd Republic with special emphasis on its policy towards education.
2.3 France and its colonies.

Unit 3 **(12 hours)**

1.1 The Belle époque
1.2 The First World War
1.3 France between the Wars
1.4 The second World War and Decolonisation
1.5 Major developments of the Vth Republic

Unit 4 **(9 hours)**

4.1 Contemporary France and its relations with the French speaking world, including its policy towards immigration.
4.2 European Union

Essential/recommended Readings

1. Jean Thoraval *et al*, *Les Grandes Etapes De La Civilisation Française*, Bordas (1967).
2. Jean Meyer, Jean Tarrade, Annie Rey-Goldzeiguer, *Histoire de la France coloniale, en trois volumes*, Armand Colin, coll. Agora (1991).
3. Marc Ferro, *Histoire des colonisations. Des conquêtes aux indépendances. 13e au 20e siècle*, Seuil, 1996.
4. Pascal Blanchard, *La France noire : Présences et migrations des Afriques. des Amériques et de l'océan indien en France*, Editions de la Découverte(2012).
5. Guillaume Devin and Guillaume Courty, *La construction européenne*, La Découverte, coll. Repères(2010).

Additional material may be provided by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DSE -2: Option 3: Life in French Speaking Countries
Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Life in French Speaking countries (Option 3)	**4**	**3**	**1**	**0**	**XII Passed**	**NIL**

Learning Objectives

- The course initiates learners to the culture and civilization of France and French speaking countries.
- Provides knowledge about education systems, home, family, leisure activities, festivals, politics, tourism, physical geography of France and the Francophone countries.
- Introduces the students to the great thinkers of France and other Francophone countries in the areas of literature, cinema, art, etc.
- Enables students to understand and analyse cultural aspects of the French and Francophone Countries and develops intercultural competence amongst students.

Learning Outcomes:

- Understand historical, political, economic, cultural and social specificities of various French Speaking Countries
- Analyse various civilisational aspects of the French speaking countries such as their education systems, home, family, leisure activities, festivals, politics, food, cultural and literary movements etc.
- Develop intercultural competence to engage with French Speaking Countries.

SYLLABUS DSE 2: Option 3: Life in French Speaking Countries

Unit 1 **(15 hours)**

Basic knowledge of various cultural and civilisational aspects of France and Francophone countries, such as, daily lives and routines of an average person, education systems, home, family, leisure activities, festivals, politics, tourism, physical geography etc. in the areas of literature, cinema, art, etc.

Unit 2 **(15 hours)**

Great thinkers of France and other Francophone countries.

Unit 3 **(15 hours)**

Introduction to literature, cinema, art of France and other Francophone countries.

Essential/recommended Readings

1.Belhabib, Assia (2008) *Langues, littératures, civilisations des pays francophones*. Ponts/Ponti 7 : Présences du mythe. Le français à l'université.
2 .Jeffroy, Géraldine et Unter, *Bulles De France, Les stéréotypes et l'interculturel en BD*, FLE, Mauchamp, Nelly , *La France De Toujours – Civilisation*, CLE International, Paris, 2014.
3.Noutchié Njiké, Jackson, *Civilisation progressive de la Francophonie* : Avec 350 activités, Niveau avancé, CLE International, Paris, 2005

4.Silva Ochoa, Haydée, *Langues, littératures, civilisations des pays francophones*, Ponts/Ponti 5 : Enfances. Le français à l'université, 2007.

Additional material will be made available by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DSE 2: Option 4: Debating and Presentation Techniques
Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Debating and Presentation Techniques (Option 4)	**4**	**3**	**1**	**0**	**XII Passed**	**NIL**

Learning Objectives

- Improve critical thinking and argumentative skills
- Develop skills to structure thoughts
- Impart skills to present structured thought in a coherent and rational manner
- Teach necessary lexical, discursive and grammatical tools of argumentative speech

Learning Outcomes

- Present and explain information, findings, and supporting evidence, conveying clear and distinct arguments on simple topics related to their immediate environment
- Justify one's point of view with proper line of reasoning and examples
- Develop the skills to formulate, organize, prove arguments with the help of examples, data, tables, charts, illustrations or other graphic supports.
- Develop the capacity to formulate and present counter-arguments
- Acquire lexical, discursive, grammatical tools of argumentative speech
- Develop awareness about ICT enabled tools and non-verbal elements of an effective presentation such as, voice modulation, eye contact, use of space etc.

Unit 1 **(12 hours)**
Components and structure of augmentative speech: Introduction, development, conclusion, claims, proofs and evidences, distinction between speaking and demonstrating

Unit 2 **(12 hours)**
Exercises on coherence and coherence with the help of connectors, Introduction of lexical, discursive and grammatical tools required to effectively present and justify concrete arguments.

Unit 3 **(12 hours)**
Components and structure of debate: How to start and end a debate, how to present counter-arguments etc.

Unit 4 **(9 hours)**

Gathering information, data, evidences through research and structured presentation of all these elements by utilizing verbal, non-verbal and ICT tools.

Essential/Recommended Readings

1.Lambert Jean, (2022), *Tout sur l'expression orale-Plus de 40 fiches d'exercices et corrigés et commentés pour réussir sa prise de parole en public*, Paris : Bloc-notes-ellipses

2.Michele Barfety, Patricia Beaujohn, (2018), *Expression Orale : Niveau 2*, Paris : CLE International

Additional material will be made available by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COURSES OFFERED BY DEPARTMENT OF
Germanic & Romance Studies
SEMESTER-IV

Category III

Courses for Undergraduate Programme of study with discipline as one of the Core Disciplines

B.A. Programme with French

(For e.g. courses for B.A. Programmes with_____ (discipline's name) as non-Major or Minor discipline)

DISCIPLINE SPECIFIC CORE COURSE (DSC-4): French in Context: Intermediate Level – 2

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
French in Context: Intermediate Level – 2	4	3	1	Nil	Passed Class XII	None

Learning Objectives: (Reading, Writing, Listening and Speaking):

In Semester 4, the student will learn to

- read and understand relevant information in everyday material, such as letters, brochures, etc. in order to recognise significant points and line of argument in the treatment of the issue presented
- write personal letters describing experiences, feelings and events in some detail
- write a short story/anecdote and writing about feelings/impressions

- understand the main points of short radio or TV programmes on current affairs or topics of personal or professional interest when the delivery is relatively slow and clear
- exchange, check and confirm accumulated factual information on familiar routine and non-routine matters within one's field with some confidence
- discuss topics moving out of the immediate environment of the students such as discussing film/book/advertisement, TV radio programmes, current issues, preparing and coping with less routine situations in shops, post office, bank, e.g. returning an unsatisfactory purchase, making a complaint

Learning outcomes: (Reading, Writing, Listening and Speaking):

At the end of Semester 4, a student will be able to

- acquire intermediate level of language skills related to familiar routine and non-routine matters.
- Complete Level A2 Level of the Common European Framework (CEF).

SYLLABUS OF DSC-4[1]

UNIT	CONTENT	HOURS

[1] A text book contains 6-8 modules/units called *dossier* Each dossier comprises of 6 lessons. Therefore, the syllabus is given in terms of the text book unit being covered along with the content of the 6 lessons with a total duration of the number of weeks needed to cover a dossier of 6 lessons. In Semester 4, last 4 units of the text book will be covered i.e from Unit 5-8.

Dossier 5 (Lessons 1-6 + Project)	**Reading Comprehension:** Read content of an online newpaper article, online website of a university , a poster announcing council meeting of a neighbourhood and answer questions based on them. **Writing:** Write characterstics of French people, write details of three exercices of the oral expression exam of DELF A2, make a list of major cultural differences between the French people and the people of your country, make an infographic illustrating these differences, write a short desciption of your activities in line with the association. **Grammar:** structure *c'est/ce sont* + noun or indefinite pronoun + relative clause to characterise people, indirect speech in present tense to report , relative pronouns *où* and *dont* for giving details, demonstrative pronouns (*celui, celle, ceux, celles)* to indicate and give precisions, continuous present to talk about an ongoing action , *futur proche* tense and *recent past* tense(revision). **Listening comprehension:** Listen to a interview on Skype, a conversation on social networking website, interview on radio, travel diary. **Speaking:** Characterise a person, report a speech, express disagreement, speak about relations between people,convince someone, speak about one's state of mind. **Phonetics:** The sounds [f], [v] and [b], consonantal linking, expressive intonation used to convince. **Vocabulary:** Words to characterise a person, words related to french studies and french diploma, express one's agreement and disagreement, structures to ask for and give advices related to relation between prople, convince someone, words to reassure someone, to express your perceptions and related to travel writing. **Cultural:** People's café	11 hours

Dossier 6 (Lessons 1-6 + Project)	**Reading Comprehension:** Read contents of an internet page of French cookery school, read a recipe, observe a magazine cover , read article of a magazine, observe the title of a prorgam, a discussion forum, observe an page of an online journal and answer questions based on them. **Writing:** Write a recipe, present an original place in your city, present a product of your country and propose it to Chamber of Commerce and Industry of your city or country, create a new disscusion on an internet forum, imagine life of an object and write its autobiography. **Grammar:** Conjugation of verbes *–ger, -cer, -yer, -ayer* , prepositionel verbs (*essayer de,éviter de, réussir à, penser à,*etc.) for giving instructions, *si* + *imparfait* for making a proposition or to incite someone to do something, indefinite pronouns (*quelqu'un, personne, nulle part,* etc.) to indicate a person, a thing or a place, agreement of the past partciple with the verbe *avoir,* possessive pronouns (*le mien, le tien, le sien,* etc.) to express possession, indicate chronology in a series of events (*avant de* + infinitif + *après* +infinitif passé), the indicators of time- 2 (*la même année, à l'âge de ,* etc.). **Listening comprehension:** Listen to and understand a radio show, forum on beauty, press report, a conversation on an internet website, to a conversation related to a kitchen recipe. **Speaking:** Understand tasks and instructions, write a recipe, understand a mode of operation, talk about success, speak about cleaning and cosmetic products. **Phonetics:** sounds [y], [ɥ] and [u] **,** rhythm and intonation of a hypothetical question(*si* + *imparfait)* to incite someone to do something , the sounds [ʃ]and [ʒ] **Vocabulary:** verbs related to cooking, words related to daily objects and daily tasks, words related to a recipe (utensils,ingredients, etc.), certain daily objects, words related to mode of operation of an association, to talk about commercial success, to cleaning and cosmetic products, to historical account of a shop. **Cultural:** Made in France: Did you say vintage ?	11 hours

Dossier 7 (Lessons 1-6 + Project)	**Reading Comprehension:** Read contents of an internet page, article of a magine and newspaper, an ad insert, a page on an online forum and answer questions based on them. **Writing:** Present a French author, narrate a memory of learning french language and explain how learning of this language contributed to your progress, write about a chilhood memory, your academic journey etc., present an association and its activities, prepare and present your campaign for protection of the environment, present activities for francophone people in your city. **Grammar:** passé composé, imparfait and plus-que-parfait to create a story in past tense, few structures which indicate a precise moment (*à partir du moment où, le jour où* etc.) and a duration (*pendant, jusqu'à présent*), prepositions et indicators of time in order to locate in time(summary), expressions of cause and consequence to justify an association (*grâce à, c'est pour ça que, comme, alors, donc, c'est pourquoi* etc.), prepositions *à* and de to link an adjective to its complement, *de plus en plus/de moins en moins* to indicate progression. **Listening comprehension:** Listen to a radio interview, a conversation on an internet website, online forum or on a webzine. **Speaking:** Understand a story or narration, narrate a memory, present a series of events, defend a cause, formulate a review and propose solutions,ask for and give advice. **Phonetics:** Sounds [u], [/o/], [k],[g] and [ʒ], expressive intonation in an exclamatory sentence. **Vocabulary:** describe one's link to the language, present a francophone writer, words related to professionel world, to memories and, to community work, to protection of environment , expression to give advice, words related to associations and living together. **Cultural:** Future: why to engage oneself in community work ? What do the French think about it?	11 hours

Dossier 8 (Lessons 1-6 + Project)	**Reading Comprehension:** Read and understand contents of an online article and identify its theme, observe an advertisement, messages on online forum, column of a newspaper. **Writing:** Present a current affairs news item, write about an unusual news item, make a list of themes of news items which incite you to react, give suggestions on a topic, make a list of your wishes for a better world, describe the story, author and style of writing of a book about francophone current affairs **Grammar:** Passive voice to put emphasis on an element, nominalization to highlight an information, *gérondif* to give details, conditional(2)and few structures for giving suggestions (*suggérer de, proposer de)*, subjonctif (2) for expressing wishes and few structures for expressing hope. **Listening comprehension:** Listen to a radio show, radio news about miscellaneous news items , debate on radio show (letters to the editor), street interview. **Speaking:** Talk about current affairs, understand informations in the press, take action and give details , give suggestions, express wishes and hopes, talk about news related to literature **Phonetics:** sounds [ø], [œ], *liasison* or *enchaînement* , pronunciation of verbs in subjunctive mood. **Vocabulary:** terms related to news and information, to miscellaneous news items, few structures related to how to take action and incite someone to do something, to behaviours and attitudes (in context of dependance on mobile phones), to protection of environment, to news related to literature and talk about a book that one likes. **Cultural:** Presenting news differently.	12 hours

Practical component (if any) - NIL

Essential/recommended readings: Any of the text books given below may be prescribed:

1. Mater Anaïs, Mathieu-Benoit Émilie, Hirschsprung Nathalie, Mous Nelly, Tricot Tony : *« Cosmopolite- A2 Méthode de français »,* Hachette Français langue etrangere, 2017 Dossiers 5-8.

2. Cocton Marie-Noëlle, Marolleau Émilie, Pommier Émilie, Ripaud Delphine : *« L'Atelier- A2, Méthode de français »*, Les Éditions DIDIER, France, 2019, Unités 5-8.
3. Biras Pascal, Denyer Monique, Gloanec Audrey, Witta Stéphanie, Briet Geneviève, Collige-Neueschwander Valérie (capsules de phonétique), Fouillet Raphaëlle (précis de grammaire) : « *Défi- 2 Méthode de français* », Éditions Maison des Langues, 2018, Unités 5-8.
4. Bredelet A., Bufferne M., Mègre B., Rodrigues W. M. : « *Odyssée- A2, Méthode de français »*, CLÉ International, France, 2021, Unités 7-12.
5. Fafa Clémence, Gajdosova Florence, Horquin Alexandra, Pasquet Airelle, Perrard Marion, Petitmengin Violette, Sperandio Caroline, Dodin Marlène (DELF), Veldeman-Abry Julie (phonétique) : « *Edito-A2 Méthode de français (2^{e} édition)* », Editions DIDIER FLE, 2022, Unités 7-12.
6. Cocton Marie-Noëlle, Marolleau Émilie, Pommier Émilie, Ripaud Delphine: *« Cosmopolite- A2 Cahier d'activites »* , Hachettte Français langue etrangere, 2017 Dossiers 5-8.
7. Cocton Marie-Noëlle (coordination pédagogique), Pommier Émilie, Ripaud Delphine, Rabin Marie : *« L'Atelier- A2, Cahier d'activités »,* Les Éditions DIDIER, France, 2019, Unités 5-8.
8. Biras Pascal, Denyer Monique, Gloanec Audrey, Witta Stéphanie, de Rongé Camille (phonétique), Verhulst Nancy (phonétique), Horquin Alexandra (DELF) : « *Défi- 2 Cahier d'exercices* », Éditions Maison des Langues, 2018, Unités 5-8.
9. Chanéac-Knight Laëtitia : « *Odysée- A2, Cahier d'activités »*, CLÉ International, France, 2021, Unités 7-12.
10. Amoravain Roxane, Blasco Valérie, Gatin Marie, Lions-Olivieri Marie-Laure : « *Edito- A2 Cahier d'activités »*, Les Éditions DIDIER FLE, 2022, Unités 7-12.

Additional material may be used.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER-V
BA (Hons) FRENCH

DEPARTMENT OF GERMANIC AND ROMANCE STUDIES

Category I

(B.A. Honours in French in three years)
STRUCTURE OF FIFTH SEMESTER

DISCIPLINE SPECIFIC CORE COURSE – 13:

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Language in context: Advanced Reading and Writing skills (1)	**4**	**3**	**1**	**0**	**XII Passed**	**NIL**

Learning Objectives

In semester 5, students will learn to

- Describe a person
- Write a biography
- Criticize/appreciate someone
- Give and justify one's opinion
- Write a short narrative text
- Describe behaviours and habits
- Describe interpersonal relations
- Ask for and give information on everyday habits
- Present a project
- Give explanations and precisions
- Ask for and give news about someone

Course Learning Outcomes

At the end of Semester 5, students will be able to

- read different types of texts and answer questions on them.
- write on subjects pertaining to their immediate environment as well as professional environment
- complete partially Level B1 of reading and writing skills as prescribed in the Common European Framework.

SYLLABUS OF DSC-13[1]

Unit 1: [Unité 1: (Lessons 1-4 + Project)] (6 hours)

Reading Comprehension: Read and understand short texts on beauty, famous personalities, colleagues at work, friendship between senior citizens, a mariage toast and answer questions on them.

Writing : An email to a friend describing how to disguise himself, describe a person's facial features, make a list of a friend's qualities, write a message to a friend about friends of parents, an email to your superior describing the ideal assistant.

Grammar: Expression of cause (*car, comme, puisque*), Negation *(ne…que, ni…ni,ne…aucun)*

Vocabulaire: Physical descriptions, indicators of time, qualities and defects of a person, behavior at the workplace, disputes, friendship.

Intercultural: beauty, friendship between seniors.

Practical component (if any) – NIL

Unit 2:[Unité 2: (Lessons 1-4 + Project)] (6 hours)

Reading Comprehension: Read and understand flyers form travel agencies, short texts on tourism, ecology, shortstories and legends airport instructions and answer questions on them.

Writing: Summary of a trip proposed by an tourist agency, defend one's choice of a tourist destination, an email to a friend describing ecotourism, prepare an itinerary.

Grammar: Indicators of space, prepositions (*par, en*), adverbs(*ailleurs, partout, autour*), adverbs of manner, pronouns *en* and *y,* adverbs of quantity, past tenses (*Passé compose, imparfait*)

Vocabulaire: Departures, holidays, types of holiday stays, eco-tourism, cultural tourism, airport, preparations for a journey.

Intercultural: Different ytpes of tourism, holiday stays, myths, legends,

Practical component (if any) – NIL

Unit 3:[Unité 3: (Lessons 1-4 + Project)] (6 hours)

Reading Comprehension: Read and understand short texts on mariage, live-in relarionships and divorce,education of teenagers in France and francophone countries, friendship,family celebrations.

Writing: A blog on changing societal norms, describe the generation you belong to, write an invitation for a family celebration, write an email to a friend with whom you are angry to express your displeasure.

[1]A text book contains 6-8 modules/units called *unité*. Each unite comprises 4 lessons. Therefore the syllabus is given in terms of the text book unit being covered along with the content of the 4 lessons with a total duration of the number of hours needed to cover a *unité* of 4 lessons.

Grammar: *Plus-que-parfait***,** agreement of the past participle, indirect speech, *infinitif passé*

Vocabulaire : family relations, education, generation and generation gap, friendship, human relations, reunuins, agreements and disagreements.

Intercultural : Education in French and francophone countries, family ties and celebrations.

Practical component (if any) – NIL

Unit 4: [Unité 4: (Lessons 1-4 + Project)] (9 hours)

Reading Comprehension: Read and understand short texts on do it yourself jobs, yoga, mountain treks, kickboxing and other physical activities and answer questions on them.

Writing: Write an email to a friend about do it yourself activities, about the advantages of yoga, to invite a freind to try out adventure sports, to complain against your sports coach, fill in a questionnaire about your habits.

Grammar: The structure *Si +imparfait***,** present conditional, subjuntive after verbs of necessity.

Vocabulaire : Do it yourself activities, gardening, creative hobbies, yoga, society games, video games, adventure sports, sport records.

Intercultural: Do it yourself activities, yoga, adventure sports.

Practical component (if any) – NIL

Unit 5 [Unité 5: (Lessons 1-4 + Project)] (9 hours)

Reading Comprehension: read and understand texts on university life, university campus, jobs in digital, marketing and finance, work meetings and one minute presentations and speed interviews.

Writing: Write an email to your friend on your impressions of a summer course in a French university, make a list of your professional ambitions and explain what influenced them, describe different professions, write a letter of motivation and a CV describe a product.

Grammar: Structures *ce qui, ce que*, place of adverbs in past tenses.

Vocabulaire : studies, training, work and professional experience,work meetings.

Intercultural: Job interview, letter of motivation, work from home

Practical component (if any) – NIL

Unit 6: [Unité 6: (Lessons 1-4 + Project)] (9 hours)

Reading Comprehension: Read and understand texts on physical activity and health, doctor serials on television, use of robots in hospital, allergies and their causes, influence of consumption habits on health,health care and insurance.

Writing: Reply to health queries on a blog or forum, write an email to a friend describing the healthsystem in your country.

Grammar: Structure *si + present/future*, markers of time,place of pronouns in an imperative sentence, conditional present.

Vocabulaire : Body, diseases, visit to a doctor, allergies, food,health measures.

Intercultural: health system in your country, doctor serials on TV, robots in medecine

Practical component (if any) – NIL

Essential/recommended readings

Any of the textbooks given below may be prescribed.

1. A Bredelet, B Megre, W.M. Rodrigues:"*Odysée B1, Méthode de français"*, CLÉ International, France, 2022, Unités 1-6.
2. Nathalie Hirschsprung, Tony Tricot, Mathias van der Meulen, Emmanuelle Garcia, « *Cosmopolite B1, Méthode de français* » Hachette, 2018, Dossiers 1-4.
3. Sophie Bruzy Todd, Delphine Jégou, Cedric Vial : « *La Classe B1, Méthode de français* »,CLÉ International, 2018, Unités 1-3.
4. Marie Noelle Cocton (Coordination pédagogique), Julien Kohlmann, Delphine Ripaud, Marie Rabin : *« L'Atelier B1, Méthode de français »*, Les Éditions DIDIER, France, 2020, Unités 1-5.
5. Pascal Biras, Anna Chevrier, Stephanie Witta, Raphaëlle Fouillet (précis de grammaire), Christain Ollivier (stratégies de lecture et d'écoute), Agustin Garmendia (Conseil pédagogique et révision) : « *Défi –3 Méthode de français* », Éditions Maison des Langues, 2019, Unités 1-4.
6. Marion Dufour, Julie Mainguet, Eugenie Mottironi, Serguei Opatski, Marion Perrard,Ghislaine Tabareau: « *Edito-B1, Méthode de français (2e édition)* », Editions DIDIER FLE, 2022, Unités 1-6.
7. Amelie Brito, Emilie Bucher : "*Odysée B1, Cahier d'activités"*, CLÉ International, France, 2022, Unités 1-6.
8. Anais Dorey-Mater,Emilie, Mathieu-Benoit,Nellie Briet-Peslin, *Cosmopolite B1, Methode de français* » Hachette, 2018, Dossiers 1-4.
9. Claire Sanchez : « *La Classe B-1 Cahier d'activités* », CLÉ International, 2018, Unités 1-3.
10. Marie Noelle Cocton (Coordination pédagogique), Camille Dereeper, Julien Kohlmann, Delphine Ripaud, : *« L'Atelier B1, Méthode de français »*, Les Éditions DIDIER, France, 2020, Unités 1-5.
11. Pascal Biras, Anna Chevrier, Charlotte Jade, Stephanie Witta, Araceli Rodriguez Tomp(phonétique), Alexandra Horquin (DELF) : « *Défi –3 Cahier d'exercices*», Éditions Maison des Langues, 2019, Unités 1-4.

12. Elodie Heu-Boulhat, Julie Mainguet, Eugenie Mottironi, Serguei Opatski, Marion Perrard, : *« Edito B1, Cahier d'activités »*, DIDIER FLE, 2022 Unités 1-6.

Additional material may be provided by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – (DSC-14)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Language in context: Advanced Listening and Speaking skills(1)	**4**	**3**	**1**	**0**	**XII Passed**	**NIL**

Learning Objectives

In semester 5, students will learn to

- Give and ask for information
- Narrate past events
- Give a speech
- Make choices and justify preferences
- Make suggestions and react to suggestions by others
- Give and defend one's opinion
- Identify causes
- Give a testimonial
- Give information

Course Learning Outcomes

At the end of Semester 5, students will be able to

- Listen to different types of texts and answer questions on them.
- speak on subjects pertaining to their immediate environment as well as professional environment.
- complete partially Level B1 of reading and writing skills as prescribed in the Common European Framework.

SYLLABUS OF DSC-14[2]

Unit 1: [Unité 1: (Lessons 1-4 + Project)] (6 hours)

Listening Comprehension: Listen to and understand short texts describing people, a conversation between a hairdresser and her client,betrween two colleagues at work, between different people discussing issues which often lead to disputes, a mariage toast and answer questions on them.

Speaking: talk about your favorite rock group, debate on the pros and cons of cosmetic surgery, advice to a friend who is going to work abroad, describe pictures, describe your favorite actor/actress, narrate a dispute with a friend, talk about a colleague with your friend.

Phonetics: vowel /e/

Vocabulary: Physical descriptions, indicators of time, qualities and defects of a person, behavior at the workplace, disputes, friendship.

Intercultural: beauty, friendship between seniors.

Unit 2:[Unité 2: (Lessons 1-4 + Project)] (6 hours)

Listening comprehension: Listen to and understand short texts on sea side resorts, friends making holiday plans, creative tourism, dialogue between a guide and tourists, airport announcements and asnwer questions on them.

Speaking: Role play beween an employee in a travel agency and a client, debate on the pros and cons of tourism in big groups**,** discuss your holiday plans with a friend, present a trip you have undertaken, present a creative tourism project,

Phonetics: Abbreviations

Vocabulary: Departures, holidays, types of holiday stays, eco-tourism, cultural tourism, airport, preparations for a journey.

Intercultural: Different types of tourism, holiday stays, myths, legends,

Unit 3: [Unité 3: (Lessons 1-4 + Project)] (6 hours)

Listening Comprehension: Listen to and understand a telephone conversation between friends discussing future plans, short texts on children's education, middle age, how to make more friends on social networking sites, a dispute between friends and answer questions on them.

Speaking: Describe a film poster, debate on various topics, on the competition to make more friends on social networking sites, give your definition of friendship, watch a video on

[2]A text book contains 6-8 modules/units called *unité*. Each unite comprises 4 lessons. Therefore the syllabus is given in terms of the text book unit being covered along with the content of the 4 lessons with a total duration of the number of hours needed to cover a *unité* of 4 lessons.

friendship, give advice to a friend for her first date, talk about family celebrations, narrate a dispute between friends.

Phonetics: Oral versus written forms

Vocabulary : family relations, education, generation and generation gap, friendship, human relations, reunuins, agreements and disagreements.

Intercultural : Education in French and francophone countries, family ties and celebrations.

Unit 4: [Unité 4: (Lessons 1-4 + Project)] (9 hours)

Listening Comprehension: Listen to and understand a dialogue between a couple debating whether to repair something themselves or call a professional, a discussion on upcycling**,** on holidays, short texts on the exceptional trajectory of a video game player.

Speaking: Give your opinion on do it yourself activities, debate on whether do it your self activities are principally for men only, on the pros and cons of video games, whether taking risks also gives pleasure, pros and cons of using a sports app to work out at home, choose an object and give ideas on how to recycle it,convince your friend on the advantages of doing yoga, talk about the importance of overcoming one's fear, present the exceptional trajectory of a sports person.

Phonetics: Short forms of a word.

Vocabulaire : Do it yourself activities, gardening, creative hobbies, yoga, society games, video games, adventure sports, sport records.

Intercultural: Do it yourself activities, yoga, adventure sports.

Unit 5: [Unité 5: (Lessons 1-4 + Project)] (9 hours)

Listening Comprehension: Listen to and understand a conversation between a student and a career counsellor, an interview for the post of community manager, a short text on working from home, on a work meeting and answer questions on them.

Speaking: Talk about your first experience at universtiy, give your opinion on cheating in the exams, look for job opportunities on the Internet and justify why you chose to apply for one of them, prepare an oram summary on a topic of your choice, debate on the pros and cons on the liberty of choosing one's profession, discuss how work meetings happen in your place of work, present your project to a patron of arts and ask for finaqncing of the project.

Phonetics: Different pronunciations of "*plus*"

Vocabulaire : education system, training, studies, professional projects, examination.

Intercultural: Comparative study of education system in France, certain francophone countries and your own country, university convocation.

Unit 6: [Unité 6: (Lessons 1-4 + Project) (9 hours)

Listening Comprehension: Listen to and understand a short text on hip-hop, on the daily routine of a doctor, on teleconsultation, a song on health, a conversation on the health system in France, a pateint describing his symptoms to a doctor and answer questions on them.

Speaking: Discuss the importance of physical activity with your friend, tell your friend the plot of a doctor series on TV, debate the pros and cons of teleconsultation, present the different media used to talk about health in your country, an article of your choice on the use of artificail intelligence (robots) in medecine, describe any allergies or food allergies that you have.

Phonetics: distinction between the *imparfait and the conditionnel.*

Vocabulaire : Body, diseases, visit to a doctor, allergies, food,health measures.

Intercultural: health system in your country, doctor serials on TV, robots in medecine

Practical component (if any) – NIL

Essential/recommended readings

Any of the textbooks given below may be prescribed.

1. A Bredelet, B Megre, W.M. Rodrigues:"*Odysée B1, Méthode de français"*, CLÉ International, France, 2022, Unités 1-6.
2. Nathalie Hirschsprung, Tony Tricot, Mathias van der Meulen, Emmanuelle Garcia, « *Cosmopolite B1, Méthode de français* » Hachette, 2018, Dossiers 1-4.
3. Sophie Brezy Todd, Delphine Jégou, Cedric Vial : « *La Classe B1, Méthode de français* », CLÉ International, 2018, Unités 1-3.
4. Marie Noelle Cocton (Coordination pédagogique), Julien Kohlmann, Marie Rabin Delphine Ripaud, : *« L'Atelier B1, Méthode de français »*, Les Éditions DIDIER, France, 2020, Unités 1-5.
5. Pascal Biras, Anna Chevrier, Stephanie Witta, Raphaëlle Fouillet (précis de grammaire), Christian Ollivier (stratégies de lecture et d'écoute), Agustin Garmendia (Conseil pedagogique et revision) : « *Défi –3 Méthode de français* », Éditions Maison des Langues, 2019, Unités 1-4
6. Marion Dufour, Julie Mainguet, Eugenie Mottironi, Serguei Opatski, Marion Perrard,Ghislaine Tabareau: « *Edito-B1, Méthode de français (2e édition)* », Editions DIDIER FLE, 2022, Unités 1-6.
7. Amelie Brito, Emilie Bucher : "*Odysée B-1, Cahier d'activités"*, CLÉ International, France, 2022, Unités 1-6.
8. Anais Dorey-Mater,Emilie, Mathieu-Benoit,Nellie Briet-Peslin, *Cosmopolite B1, Methode de français* » Hachette, 2018, Dossiers 1-4.

9. Claire Sanchez : « *La Classe B1, Cahier d'activités* », CLÉ International, 2018, Unités 1-3.
10. Marie Noelle Cocton (Coordination pédagogique), Camille Dereeper, Julien Kohlmann, Delphine Ripaud, : *« L'Atelier B1, Cahier d'activites »*, Les Éditions DIDIER, France, 2020, Unités 1-5.
11. Pascal Biras, Anna Chevrier, Charlotte Jade, Stephanie Witta, Araceli Rodriguez Tomp(phonétique), Alexandra Horquin (DELF) : « *Défi –3 Méthode de français* », Éditions Maison des Langues, 2019, Unités 1-4.
12. Roxane Amoravain, Valerie Blasco, Marie Gatin,Marie-Laure,Lions Olivéri,LucieMensdorff-Pouilly, Eugénie Mottironi, Magosha Frequelin et MarieGouelleu (DELF) Julie Veldman-Abry (phonétique) : *« Edito B1, Cahier d'activités »*, DIDIER FLE, 2022 Unités 1-5.

Additional material may be provided by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE– 15 (DSC-15)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
History of French and Francophone Literature-(1)	**4**	**3**	**1**	**0**	**XII Passed**	**NIL**

DSC-15 **History of French and Francophone Literature-(1)**
Learning Objectives: • Familiarize students with literary texts written in French with focus on the major cultural and intellectual movements from the Medieval Period to the XVIII century. • Introduction to major writers and their works from the Medieval Period to the XVIII century along with the themes/questions they engage with

- Developing a critical overview of literary and cultural evolution in France and the Francophone world from the medieval period to the Enlightenment

Learning Outcomes:

The Learning Outcomes of this course are as follows:

- Familiarize students with the origins and evolution of various literary techniques, devices, styles and literary themes from the Medieval Period to the eighteenth century.
- Develop skills to identify and analyse how various genres such as poetry, plays, shorter and longer narrative texts, autobiography etc. evolved through various historical periods.
- Equip students with necessary tools to identify and critically engage with various literary movements and their core characteristics

Syllabus:

UNIT I	**9 hours**
A selection of literary texts with focus on the major cultural and intellectual movements from the Medieval Period to the 14th Century with special focus on Chanson de geste, lais, narrative ballads, rondeau, Arthurian Romance, Roman de Renart, farce and fabliaux etc.	
UNIT II	**12 hours**
A selection of literary texts of the French Renaissance with special focus on the Humanist writers such as Rabelais, Montaigne etc. and poets of Pléiade such as Ronsard, Du Bellay etc.	
UNIT III	**12 hours**
A selection of literary texts of the XVII century Baroque and Classical writers such as Agrippa d'Aubigné, Edmond Rostand, Racine, Corneille, Molière, Jean de La Fontaine, Charles Perrault etc. along with the texts of women writers of Mouvement de la Préciosité, such as Madeleine de Scudéry, Madame de Lafayette etc.	
UNIT IV	**12 hours**
A selection of literary texts of the XVIII century writers of the Lumières such as Rousseau, Voltaire, Montesquieu, Diderot etc. with special focus on new literary genres that emerged in this century such as moral and philosophical Conte, autobiography, encyclopaedia as well as epistolary novels	

Practical component (if any) – NIL

References

D. Renée and B. Lecherbonnier, (1986) *Littérature, textes et documents*, , Du Moyen Age au 20e siecle, 5 volumes, collection dirigée par Henri Mitterand, Paris : Nathan.

Du Moyen-âge au XVIIIe siècle, 3 volumes, (1988) *Itinéraires littératires*, collection dirigée par G. Décole, Paris : Hatier.

Ferroudja Allouache, Nicole Blondeau, (2019), *Littérature progressive du français - Niveau avancé*, Paris : CLE International

Françoise Ploquin, Laurent Hermeline, Dominique Rolland, (2000), *Littérature française : les textes essentiels*, Paris : Hachette

Jean-Louis Joubert, (1997), *Litterature Francophone Anthologie*, Paris : Cideb.

Michel Laurin, (2012), *Anthologie Littéraire du Moyen Âge Au XIXe Siècle 3ème édition*, Québec : Beauchemin.

Valette, Giovaacchini et al, (1993) *Anthologie de la littérature française et européenne*, Paris : F. Nathan.

Additional material may be provided by the Department.

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC ELECTIVE (DSE -3)

DSE – 3: Option 1: Introduction to Translation
Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Introduction to Translation (Option 1)	4	3	1	0	XII Passed	NIL

Learning Objectives

- Familiarise students with language for specific purposes.
- Familiarise students to the techniques of translation.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Enable students to do scientific and technical translation, and translation of canonical texts.
- Help students to make word glossaries in above fields.
- Enable students to read parallel literature on texts chosen for translation.
- Sensitise students towards machine translation and its limitations.
- Develop awareness about ethics and accountability in translation.

SYLLABUS OF DSE-3: Option 1: Introduction to Translation

Unit I **(9 hours)**

Study of language used in industries such as hospitality, tourism, banking, business sectors and translation of texts in the chosen areas (including birth, educational qualification, marriage, birth and death certificates, mark sheets).

Unit II **(9 hours)**

Scientific and technical translation.Translation of canonical texts.

Unit III **(9 hours)**

Introducing the students to the techniques of translation.

Making of word glossaries in above fields.

Unit IV **(9 hours)**

Machine translation and its limitations.

Ethics and accountability in translation.

Unit V **(9 hours)**

Reading of parallel literature on texts chosen for translation.
Role of Translation in Multimedia contexts.

Essential/Recommended Readings

- Bassnett, S. (2002). *Translation Studies.* New York: Routledge.
- Gile, Daniel. (2009). *Basic Concepts and Models for Interpreter and Translator Training.* Amsterdam: John Benjamins Publishing.
- Munday, Jeremy. (2012). *Introducing Translation Studies, Theories and Applications.* New York: Routledge.
- Malmkjaer, Kirsten, et al. (2011). *The Oxford Handbook of Translation Studies*. Oxford: OUP.
- Baker, Mona. (2011).*In Other Words. A Course Book in Translation*. New York: Routledge.
- Jones, Michele H. (2014). *The Beginning Translator's Workbook. New York. Toronto: University Press of America.*
- Roger, Valentine Watson. (2004). *Apprendre à traduire: Cahier d'exercices pour l'apprentissage de la traduction français-anglais anglais-français*. Toronto. Ontario: Canadian Scholar's Press Inc.

Additional material will be provided by the Department.
Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DSE – 3: Option 2: Techniques of Written Expression

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Techniques of Written Expression (Option 2)	4	3	1	0	XII Passed	NIL

Course Learning Objectives : At the end of the Course, a student will learn

- To write different types of formal letters
- To analyse and prepare different types of advertisements.
- To write minutes of a meeting
- To summarise a text.
- To carry out correspondance related to banking and post office services.

Course Learning Outcomes : At the end of the course a student will be able to

- To write different types of formal letters
- To analyse and prepare different types of advertisements.
- To write minutes of a meeting
- To summarise a text.
- To carry out correspondance related to banking and post office services.

SYLLABUS DSE 3: Option 2: Techniques of Written expression

Unit 1 **(12 hours)**

Different types of Letters: Letters to ask for information, services. Letters of reclamation. Letters to protest against certain social issues.

Unit 2 **(12 hours)**

Analyse and write different types of advertisement: Classified advertisments in newspapers, advertisement to sell a product, advertisements to propose a service, advertisements of NGO.

Unit 4 **(12 hours)**

Summarise 2-3 texts on the same subject into a single text.

Unit 5 **(9 hours)**

Minutes of a meeting

Essential/Recommended Readings:

1. Claude Le Goff, *Le Nouveau French for Business: Le français des affaires,* Les éditions Didier, Paris, 1994.
2. RENN, H. et G. Tempesta, *Le français de l'hôtellerie et de la restauration,* CLE international, 1992.
3. WATTIER, Stéphane, *Production écrite DELF B2,* Commun Français, 2017.
4. BARIL, Denis, *Techniques de l'expression écrite et orale,* Editions Sirey, Paris, 2008.

Additional material will be provided by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DSE – 3: Option 3: Study of European Art

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Study of European Art (Option 3)	4	3	1	0	XII Passed	NIL

Study of European Art	
Learning Objectives: • To introduce students to the various major Art Movements in Europe from the Renaissance to the Contemporary Period. • To study artworks of painter's representative of the Major Art Movements in Europe.	
Learning Outcomes: • Provide an overview of important European Art Movements, representative painters, and their artworks: Spanish Baroque, Flemish School, French Impressionists, Spanish Surrealists, Barocco Italiano etc. • Develop an understanding of structures and Perspectives of Everyday life as seen by painters. • Equip with tools to analyse artworks.	
Syllabus:	
UNIT I	**6 hours**
How to analyse an artwork?: Introduction to the elements and components of Art	
UNIT II	**6 hours**
• Introduction to Renaissance art movements with special focus on Humanism and mannerism • Innovative techniques introduced by the Renaissance artists • The idea of Europe. Structures and Perspectives of Everyday life as seen by Renaissance painters.	
UNIT III	**6 hours**
Major art movements of the XVII century: Baroque and Classicism	
UNIT IV	**6 hours**
Major art movements of the XVIII century: Rococo and Neo-Classicism	
UNIT V	**9 hours**
Major art movements of the XIX century: Romanticism, Realism, Symbolism, Impressionism, Expressionism	
UNIT VI	**12 hours**
Major art movements of the XX century: Cubism, Fauvism, Surrealism, Futurism, Art Deco, Modern Art, Abstract Art, Postmodern Art, Neo-Realism	
Essential/Recommended Readings: Any of the textbooks given below may be prescribed:	

- Adams, Laurie Schneider, (1996), *The Methodologies of Art: An Introduction*, NY: Westview Press.
- Arnason, H. H. (2003), *History of Modern Art: Painting, Sculpture, Architecture, Photography*, New York: Prentice Hall.
- Boime, Albert (1990) *A Social History of Modern Art*, Volumes 5, Chicago: University of Chicago Press,
- Burckhardt, Jacob. (2004). *The Civilization of the Renaissance in Italy* (1855), New York: Penguin
- Guitemie Maldonado, Marie-Pauline Martin, Natacha Pernac, Rowley Neville, (2019), *Bescherelle - Chronologie de l'histoire de l'art: de la Renaissance à nos jours,* Paris : Hatier.
- Hopkins, David, (2000), *After Modern Art 1945-2000 (Oxford History of Art*), NY: OUP.
- Patrick Weber, (2017), *Histoire de l'art et des styles: Architecture, peinture, sculpture, de l'Antiquité à nos jours Poche*, Paris : Librio.
- Read, Herbert (1984), *Meaning of Art*, London: Faber & Faber.
- Xavier Barral, I. Altet, (2013), *Histoire de l'art*, Paris : PUF

Additional material may be provided by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DSE – 3: Option 4: Children and Adolescent Literature

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Children and Adolescent Literature (Option 4)	4	3	1	0	XII Passed	NIL

Course Learning Objectives:

- Introduce students to the changing conceptions of children's literature.
- Help students in analyzing various genres meant for young children and adolsecnts.
- Sensitize students about the role of children's literature in transmitting values.

Course Learning Outcomes :

- Students will become familiar with the changing conceptions of children's literature.
- Students will be able to analyse various genres meant for young children and adolescents.
- Students will be aware of the role of children's literature in transmitting values.

SYLLABUS DSE 3: Option 4

Unit 1 **(15 hours)**

1.1 Changing conceptions of children's literature
1.2 Literature for children and /or adult readers?

Unit 2 **(15 hours)**

2.1 Folklore for young children
2.2 Fables for young children

Unit 3: **(15 hours)**

3.1 Fairy tales for young children
3.2 Theatre for children
3.3 Children's literature and transmission of values.

Essential/Recommended Readings

1. Jean-Paul Gourévitch, *Abcdaire illustré de la Littérature Jeunesse*, Le Puy-en-Velay, L'atelier du poisson soluble (2013).
2. Christian Chelebourg et Francis Marcoin, *La Littérature de jeunesse*, Paris, Armand Colin, "128" (2006).
3. Marc Soriano, *Guide de la littérature pour la jeunesse*, Paris, Hachette, 1974. Rééd. Delagrave (2002).
4. Myriam Tsimbidy, *Enseigner la littérature de jeunesse*, Toulouse, Presses Universitaires du Mirail (2008).
5. Nathalie Prince, *La Littérature de jeunesse*, Armand Colin, Paris, 2010.
6. Isabelle Nières-Chevrel, *Introduction à la littérature de jeunesse*, Didier jeunesse, « Passeurs d'histoires », Paris 2009

DSE – 3: Option 5 Life Writing

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Life writing (Option 5)	4	3	1	0	XII Passed	NIL

Course Learning Objectives

- Familiarise students with the genre of biography, autobiography.
- Familiarise students to understand the difference with other genres of writing.

Learning outcomes

- Help to analyse the characteristics of Autobiographical and biographical texts
- Familiarize students with Diaries and Letters
- Equip students to analyze and write about Travel experiences

SYLLABUS OF DSE-4: Option 5: Life writing

Unit I **(15 hours)**
Reading, writing and analysing Autobiographies, Confessions, Memoirs. Fictional Autobiographies, Autobiographical Songs

Unit II **(15 hours)**
Reading, writing and analysing Diaries and Letters

Unit III: (15 hours)
Reading, writing and analysing Travelogues, travel logues and other forms of travel narratives

Essential/recommended readings

- Geertz, Clifford. *The Interpretation of Cultures*. New York: Basic Books (1973).
- Geertz, Clifford. *Local Knowledge*. New York: Basic Books (1983).
- Geertz, Clifford. *Works and Lives: The Anthropologist as Author*. Stanford: Stanford University Press (1989).
- Alain De Botton, *The Art of Trave*l, Vintage; Reprint edition (May 11, 2004) Marc Augé, Jean-Paul Colleyn*, L'anthropologie*, PUF, Coll. Que sais-je ? (2009).
- Philippe Lejeune, *Je est un autre : L'autobiographie*, de la littérature aux médias, Seuil, (1980)
- Vincent Colonna, *Autofiction et autres mythomanies littéraires*, Tristram (2004).

Primary Texts:

- Simone de Beauvoir, *Mémoires d'une jeune fille rangée*
- Leonora Miano, *Afropean Soul et autres nouvelles*, Flammarion (2008).
- Bernard B. Dadie, *Climbié,* Nouvelles editions africaines (2003).

Additional material will be provided by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER – V

COURSES OFFERED BY DEPARTMENT OF

Germanic & Romance Studies

Category III

Courses for Undergraduate Programme of study with discipline as one of the Core Disciplines

B.A. Programme with French

(For e.g. courses for B.A. Programmes with_____ (discipline's name) as non-Major or Minor discipline)

DISCIPLINE SPECIFIC CORE COURSE (DSC-5): French in Context: Advanced Level – 1

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
French in Context: Advanced Level - 1	4	3	1	Nil	Passed Class XII	None

Learning Objectives: (Reading, Writing, Listening and Speaking):

In Semester 5, the student will learn to

- read and understand longer texts related to socio-cultural issues in order to extract key information and conclusions of the text.
- answer questions in one's own words on tests related to socio-cultural issues.

- write detailed descriptions
- write straightforward connected texts on a range of familiar subjects within one's field of interest, by linking a series of shorter discrete elements into a linear sequence.
- listen and to understand radio and TV programs.
- answer questions on programmes recorded across various audio-visual media.
- express one's opinion and give one's point of view in a structured manner.

Learning outcomes: (Reading, Writing, Listening and Speaking):

At the end of Semester 5, a student will be able:

- to follow much of what is said around him/her on general topics provided interlocutors avoid very idiomatic usage and articulate clearly
- to acquire basic debating and presentation skills
- read and understand longer texts related to socio-cultural issues and answer questions based on them.
- Complete partially Level B1 of CEF.

SYLLABUS OF DSC-5[1]

UNIT	CONTENT	DURATION
Dossier 1 (Lessons 1-6 + Project)	**Reading Comprehension:** Read content of webpage, online forum , an email , newspaper article, testimonials on an online forum, the summary of a novel, online webpage of a blog and answer questions based on it. **Writing:** Make a list prefered criterias for choosing cities of expatriation, choose a city and a mode of expatriation, describe your ideal accomodation in your city, express your opinion on the city where you are studying french and give suggestions to improve the city, write a small passage about your arrival in a foreign city, if you were to expatriate to a new city where would you prefer to stay and what type of accomodation would you choose.	11 hours

[1] A text book contains 6-8 modules/units called *dossier* Each dossier comprises of 6 lessons. Therefore, the syllabus is given in terms of the text book unit being covered along with the content of the 6 lessons with a total duration of the number of weeks needed to cover a dossier of 6 lessons. In Semester 5, initial 4 units of the text book will be covered i.e from Unit 1-4.

	Grammar: Few prepositional verbs to talk about expatriation, express an intent , an ambition, conditional present to formulate a polite demand or a wish,place of adjective,conditional present to give advices, to describe a hypothetical situation, to make propositions, pronoun *où* and *dont* for giving details about a place, identify criteria, give a report a ranking, give warning. **Listening comprehension:** Listen to an audioguide. **Phonetics:** *liaison* et *enchaînement consonantique*,the pointers of informal french in spoken form. **Vocabulary:** the criteria for choice of a city, report on ranking, warn about a societal phenomenon, give information on accomodation, communicate uselful information on telephone, describe a lively place,express sentiments in relation to a city,describe one's arrival in a foreign city.	
Dossier 2 (Lessons 1-6 + Project)	**Reading Comprehension:** Read and understand contents of an online forum,cover of of a magazine, complaint letter, recept of registered letter, a webpage , an online article,online discussion forum, cover page of a book and answer questions based on it. **Writing:** Present a problematic situations related to daily life that you encountered in foreign country, make an aide-mémoire to better manage a health situation in France, create an advice sheet to manage steps of moving in a francophone country, prepare an observation checklist to help discover a place**.** **Grammar:** *subjonctif* to express sentiments,structures for writing a letter of complaint,express a consequence, imperatif mood and personal pronouns for giving instructions, indirect speech for reporting a communication or ideas,negation for qualifying one's tastes and preferences. **Listening comprehension:** Listen to a conversation, radio show. **Speaking:** Express sentiments, understand a complaint, resolve a problem,anticipate and manage a health problem,inform oneself about health insurance,understand formalities, ask for help,understand an administrative document, qualify one's tastesand interests,describe similarities and differences. **Phonetics:** expression of discontentment, give importance to insistance, nasal vowels	11 hours

	Vocabulary: express sentiments related to daily life, solve a problemwith internet,describe the symptoms of an illness,understand the functioning of a medical assurance, succeed in administrative process, ask for help in order manage a problem, qualify one's tastesnd interests, enhance city life.	
Dossier 3 (Lessons 1-6 + Project)	**Reading Comprehension:** Read and understand contents of homepage of a tourism website, an email, a webpage, summary of a novel, observe an infographic , a family photo, video report and answer questions based on it. **Writing:** propose an group outing for your class and give suggestions to make it a success,choose a team building activity to do in your city and send mails that clearly mention the name of activity etc., write a small presentation describing cultural codes to be adhered to in a family function in your country, plan and present an original francophonie festival **Grammar:** Expressions to give advice, expressions to higlight something, expressions of purpose in order to convince, few prepositional verbs to inform about an event, pronouns *en* and *y* to replace a place, a thing and an idea, negation(2) to express restriction, expressions of opposition and contrast, demonstrative and indefinite pronouns to describe behaviours. **Listening comprehension:** Listen to a conversation, radio show, audio visual extract of a sociological study. **Speaking:** Talk about outings, give advice, suggest an outing, choose a group outing. **Phonetics:** Hesition and interrogation, change of tone and melody. **Vocabulary:** Interpret quantified data, express agreement and disagreement, group activity in professional environment, express a doubt, members of a family, describe a marriage ceremony, describe behaviours among friends.	11 hours
Dossier 4 (Lessons 1-6 + Project)	**Reading Comprehension:** Read and observe the framework of sustainable development, read an online article on a webpage and answer questions based on it. **Writing:** Present different types of accomodation and your experience with any, your initiatives regarding food wastage, present your mini-enterprise and talk about the challenges present an eco-friendly gesture that you would do and you would never do.	12 hours

	Grammar: Adjectives and indefinite pronouns to express or moderate quantity, present participle to precise an action, adverbs of manner for giving details, adverbs of quantity and intensity to qualify one's advice, few prepositioal verbs to express the objective of an action,infinitif and subjunctive mood to express the objective of an action, incite someone to act. **Listening comprehension:** Listen to an audio record on radio broadcast, video (comic book page **Speaking:** account of an experience, express support and doubt, offer solutions, debate over controversial topics, identify a project for local sustainable development, to incite someone to act, identify eco friendly gestures, convince someone to do something. **Phonetics:** sounds [y], [ɥ] and [u], tonality while persuading someone. **Vocabulary:** desrcibe neighbourly relations, express support and doubt, debate over controversial topics, talk about food wastage, words to talk about social micro-credit, loan and savings, to express onself in informal french,describe a comic strip.	

Practical component (if any) - NIL

Essential/recommended readings: Any of the text books given below may be prescribed:

1. Hirschsprung Nathalie, Mous Nelly, Tricot Tony, Mathieu-Benoit Émilie, Van der Meulen Mathias, Antier Marine, Veillon Leroux Anne, Mous Nelly: *« Cosmopolite- B1 Méthode de français »,* Hachette Français langue etrangere, 2018 Dossiers 1-4.
2. Cocton Marie-Noëlle, Kohlmann Julien, Rabin Marie, Ripaud Delphine : *« L'Atelier-B1, Méthode de français »*, Les Éditions DIDIER, France, 2020, Unités 1-5.
3. Biras Pascal, Chevrier Anna, Witta Stéphanie, Fouillet Raphaële: « *Défi- 3 Méthode de français* », Éditions Maison des Langues, 201, Unités 1-4.
4. Bredelet A., Mègre B., Rodrigues W. M. : « *Odyssée-B1, Méthode de français »*, CLÉ International, France, 2018, Unités 1-6.
5. Dufour Marion, Mainguet Julie, Mottironi Eugénie, Opatski Sergueï, Perrard Marion, Tabareau Ghislaine: « *Edito-B1 Méthode de français (2e édition)* », Editions DIDIER FLE, 2022, Unités 1-6.

6. Mater Anaïs, Mathieu-Benoi Émilie t: *« Cosmopolite- B1 Cahier d'activites »* , Hachettte Français langue etrangere, 2018 Dossiers 1-4.
7. Cocton Marie-Noëlle (coordination pédagogique), Dereeper Camille, Kohlmann Julien, Ripaud Delphine : *« L'Atelier- B1, Cahier d'activités »,* Les Éditions DIDIER, France, 2020, Unités 1-5.
8. Biras Pascal, Chevrier Anna, Jade Charlotte, Wita Stéphanie: « *Défi- 3 Cahier d'exercices* », Éditions Maison des Langues, 2019, Unités 1-4.
9. Brito Amélie, Bucher Emilie: « *Odysée- B1, Cahier d'activités »*, CLÉ International, France, 2021, Unités 1-6.
10. Heu Elodie, Mainguet Julie, Mottironi Eugénie, Opatski Sergueï, Perrard Marion : « *Edito- B1 Cahier d'activités »*, Les Éditions DIDIER FLE, 2018, Unités 1-6.

Additional material may be used.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

BA (Hons) FRENCH

COURSES OFFERED BY DEPARTMENT OF GERMANIC AND ROMANCE STUDIES

Category I

Undergraduate Programme of study with BA (Hons) French as a Single Core Discipline

(B.A. Honours in French in three years)

STRUCTURE OF SIXTH SEMESTER

DISCIPLINE SPECIFIC CORE COURSE – 16:

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Language in context: Advanced Reading and Writing skills (2)	**4**	**3**	**1**	**0**	**XII Passed**	**Should have studied Language in context: Advanced Reading and Writing skills (1)**

Learning Objectives

In semester 6, students will learn to

- Describe dressing styles
- Prepare a budget
- Write a resume of a text
- Write a critic of a film or a book
- Describe an art event

Course Learning Outcomes

At the end of Semester 5, students will be able to

- read different types of texts and answer questions on them.
- write on subjects pertaining to their immediate environment as well as professional environment
- complete Level B1 of reading and writing skills as prescribed in the Common European Framework.

SYLLABUS OF DSC-16[1]

Unit 1: (Unité 7:Lessons 1-4 + Project) (6 hours)

Reading Comprehension: Read and understand short texts on different dressing styles, how to prevent clothing wastage, a model's lifestyle, freedom to dress, youth and fashion, fashion week and answer questions on them.

Writing : Look for a dressing style on Internet and describe it, what type of clothes would you wear if you were 15 years younger, describe beauty norms in your culture, watch a fashion show and describe one of the clothes worn by a model, present the latest fashion trends in a country of your choice.

Grammar: structure *si+imparfait+ conditionnel present,* subjonctif after *je ne pense/crois pas que,* after verbs of wishing and wanting and sentiments,

Vocabulary: Dressing styles, clothes, clothing material, recycling clothes, beauty norms, critic and appreciation, models, fashion shows.

Intercultural: French fashion designers, models and fashion shows, beauty norms, fashion trends.

Practical component (if any) – NIL

Unit 2: (Unité 8:Lessons 1-4 + Project) (6 hours)

Reading Comprehension: Read and understand short texts on different types of media, headlines of newspapers on line, news briefs, an interview with a freelance journalist, fake news, invitation to a debate, different roles in a debate and answer questions on them on them.

Writing: On an online forum write about your media preferences and the type of articles you usually read, react to news briefs, prepare questions for an interview, short text on the danger of fake news.

Grammar: Formation of nouns, formation of passive,indicators of time,

Vocabulary: Media, news briefs, interviews, fake news, debates.

Intercultural: TV news, press, fake news, debates.

Practical component (if any) – NIL

Unit 3: (Unité 9: Lessons 1-4 + Project) (6 hours)

Reading Comprehension: Read and understand texts on banking, credit, good money management, saving money while shopping, buying local produce, second hand clothing, budget for a company seminar, Lydia an online payment app and answer questions on them

[1]A text book contains 6-8 modules/units called *unité*. Each unite comprises 4 lessons. Therefore the syllabus is given in terms of the text book unit being covered along with the content of the 4 lessons with a total duration of the number of hours needed to cover a *unité* of 4 lessons.

Writing: write an email to a bank asking for information on how to open a bank account corresponding to your needs, a short text to describe your saving habits, use of Lydia an online paying app,

Grammar: Placement of double pronouns, expression of consequence, indefinite pronouns *plusieurs, quelques-uns, certains.*

Vocabulary : Banking services, savings, inheritances, consumption, budget and payments.

Intercultural : food distributors, secondhand clothing payment apps.

Practical component (if any) – NIL

Unit 4 : (Unité 10:Lessons 1-4 + Project) (9 hours)

Reading Comprehension: Read and understand short texts on floating islands,poaching, protection of endangered species, tropical forests, animal hospitals,consumption of polluting products posters, and answer questions on them.

Writing: Prepare a poster for an association, write a short text to give your opinion on poaching, on protection of endangered species, write an email to WWF proposing your participation in one of its projects, write a summary of a given text.

Grammar: Expression of obejctive**.** Expression of opposition**,**

Vocabulaire : ecology, endangered species. Nature, pollution.

Intercultural: Humanitarian associations, ecology, endangered species and measures to protect them.

Practical component (if any) – NIL

Unit 5: (Unité 11: Lessons 1-4 + Project) (9 hours)

Reading Comprehension: Read and understand critic of a book, short texts reading digitalised texts, comic books, films, film reviews, cinema halls and cultural centres and answer questions on them.

Writing: Write about a book you have read, a film of your choice, a description of a museum dedicated to books and/or comics a short text on the need for film theatres, a film director of your choice.

Grammar: Gerondif (*en* + *Present participle*), indirect speech (past tense) compound relative pronouns (*auquel, duquel*…),

Vocabulaire : literature, comic books, cinema,

Intercultural: Literary prizes, comic books, literature, museums on literature or films.

Practical component (if any) – NIL

Unit 6: (Unité 12:Lessons 1-4 + Project) (9 hours)

Reading Comprehension: Read and understand texts on contemporary art, street art, art museums, art by artificial intelligence, humor and imagination in art, visit to an art expo, movements in painting.

Writing: A short text on street art**,** to give your opinion on art created by AI, to explain what is art created by IA, describe a recent art movement.

Grammar: Relative pronoun *dont,* expression of concession*, (bien que, pourtant, cependant)*

Vocabulaire : Street art, Market for art, sculpture, painting, opening of an exhibition.

Intercultural: Street art, art and AI, different movements in painting

Practical component (if any) – NIL

Essential/recommended readings

Any of the textbooks given below may be prescribed.

1. A Bredelet, B Megre, W.M. Rodrigues:"*Odysée B1, Méthode de français"*, CLÉ International, France, 2022, Unités 7-12.
2. Nathalie Hirschsprung, Tony Tricot, Mathias van der Meulen, Emmanuelle Garcia, « *Cosmopolite B1, Méthode de français* » Hachette, 2018, Dossiers 5-8.
3. Sophie Bruzy Todd, Delphine Jégou, Cedric Vial : « *La Classe B1, Méthode de français* »,CLÉ International, 2018, Unités 4-6.
4. Marie Noelle Cocton (Coordination pédagogique), Camille Dereeper, Julien Kohlmann, Delphine Ripaud, : *« L'Atelier B1, Méthode de français »*, Les Éditions DIDIER, France, 2020, Unités 6-10.
5. Pascal Biras, Anna Chevrier, Stephanie Witta, Raphaëlle Fouillet (précis de grammaire), Christain Ollivier (stratégies de lecture et d'écoute), Agustin Garmendia (Conseil pédagogique et révision) : « *Défi –3 Méthode de français* », Éditions Maison des Langues, 2019, Unités 5-9.
6. Marion Dufour, Julie Mainguet, Eugenie Mainguet, Sergei Opatski, Marion Perrard, Ghislaine Tabareau « *Edito-B1 Méthode de français (2e édition)* », Editions DIDIER FLE, 2018, Unités 6-12.
7. Amelie Brito, Emilie Bucher : "*Odysée B1, Cahier d'activités"*, CLÉ International, France, 2022, Unités 7-12.
8. Anais Dorey-Mater,Emilie, Mathieu-Benoit,Nellie Briet-Peslin, *Cosmopolite B1, Méthode de français* » Hachette, 2018, Dossiers 5-8.
9. Claire Sanchez : « *La Classe B1, Cahier d'activités* », CLÉ International, 2018, Unités 4-6.

10. Marie Noelle Cocton (Coordination pédagogique), Camille Dereeper, Julien Kohlmann, Delphine Ripaud, : *« L'Atelier B1,* Cahier d'activites», Les Éditions DIDIER, France, 2020, Unités 6-10.

11. Pascal Biras, Anna Chevrier, Charlotte Jade, Stephanie Witta, Araceli Rodriguez Tomp(phonétique), Alexandra Horquin (DELF) : « *Défi –3 Méthode de français* », Éditions Maison des Langues, 2019, Unités 5-9.

12. Elodie Heu-Boulhat, Julie Mainguet, Eugénie Mottironi Sergei Opatski, Marion Perrard: *« Edito B1, Cahier d'activités »*, DIDIER FLE, 2022 Unités 6-12

.

Additional material may be provided by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 17

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Language in context: Advanced Listening and Speaking skills(2)	**4**	**3**	**1**	**0**	**XII Passed**	**Should have studied Language in context: Advanced Listening and Speaking skills(1)**

Learning Objectives

In semester 6, students will learn to

- Describe different dressing styles
- Give a positive or negative opinion
- Propose one's services
- Speak about media and one's media habits
- Narrate a news brief
- Explain causes

- Carry out an interview
- Start and end a discussion
- Introduce a new idea/subject
- To give and ask for information
- Participate in a discussion
- Carry out a telephone conversation
- Justify one's choices
- Narrate the plot of a book/film
- Speak of ones likes and dislikes
- Present a topic
- Speak about one's preferences
- Describe an artistic activity

Course Learning Outcomes

At the end of Semester 6, students will be able to

- Listen to different types of texts and answer questions on them.
- speak on subjects pertaining to their immediate environment as well as professional environment.
- complete Level B1 of listening and speaking skills as prescribed in the Common European Framework.

SYLLABUS OF DSC-17[2]

Unit 1: (Unité 7:Lessons 1-4 + Project) (6 hours)

Listening Comprehension: Listen to and understand short texts on description of different dressing styles, clothes collections for men and women an interview with the fashion designer J.P. Gaultier, to a song on fashion trends, comments on a fashion show and answer questions on them.

Speaking: Explain why you give more importance to certain clothes and not others, discuss whether fashion trends are accessible to people who have money, state the objectives of groups such as "body positive", give a positive or negative opinion on various topics, state reasons for which certain clothes are considered exclusively masculine or feminine, debate on whether fashion trends influence ways of thinking, discuss criteria for choosing models in your country, state how you become asware of the latest fashion trends, choose 2-3 clothes from a fashion show and comment on them,

Phonetics: semi vowels [j], [ɥ], [w]

Vocabulary: Dressing styles, clothes, clothing material, recycling clothes, beauty norms, critic and apprecaition, models, fashion shows.

Intercultural: French fashion designers, models and fashion shows, beauty norms, fashion trends.

[2]A text book contains 6-8 modules/units called *unité*. Each unite comprises 4 lessons. Therefore the syllabus is given in terms of the text book unit being covered along with the content of the 4 lessons with a total duration of the number of hours needed to cover a *unité* of 4 lessons.

Unit 2: (Unité 8:Lessons 1-4 + Project) (6 hours)

Listening comprehension: Observe the headlines on French television and class them aaccording to their subject, give your opinion of newsbriefs, listen to the critic of TV news, listen to the description of a fake news site, listen to news briefs and answer questions on them.

Speaking: Speak about how you keep yourself informed on latest events, which are the columns of a newspaper which interest you the most, associate a dialogue with the corresponding news brief, prepare an interview, ask your neighbour about the media he/she has the most confidence in, express you opinion on whether social media should be controlled, debate on various topics.

Phonetics: written and oral forms of /f/

Vocabulary: Media, news briefs, interviews, fake news, debates.

Intercultural: TV news, press, fake news, debates.

Unit 3: (Unité 9:Lessons 1-4 + Project) (6 hours)

Listening Comprehension: Listen to a conversation between a student wanting to open a bank account and a bank employee, listen to a short text on renting instead of buying furniture, on how to prepare a budget and answer questions on them.

Speaking: Explain which bank you would choose and why, give advise to a friend who wants to open a bank account in France, discuss the reasons for which certain person are in debt at the end of the month, a conversation between your financial consultant and you to discuss a banking issue, discuss various ways of saving money, expalin to a freidn the notion of coupons, what are the new consumption tendancies in your country, describe online payment options available in your country, how do you manage your budget or your family's budget when you are on holiday.

Phonetics: Nasal vowels [ɑ̃], [ɛ̃], [ɔ̃]

Vocabulary : Banking services, savings, inheritances, consumption, budget and payments.

Intercultural : food distributors, secondhand clothing payment apps.

Unit 4 : (Unité 10 :Lessons 1-4 + Project) (9 hours)

Listening Comprehension: Look at the video on the Dzanga-sangha sanctuary in Central Africa, look at the video on the whale beached in Paris, listen to a song on the environment, listen to a short text describing an animal hospital, look at the video on the waste polluting oceans and answer questions on them.

Speaking: Present a project for a floating island, describe your relations with your neighbours, choose which association or social cause you would like to work for and justify, explain to a friend the importance of fighting against poaching, narrate to a friend the story of a whale beached in Paris, express you reaction on various subjects related to the environment, state what you would give up to save the planet.

Phonetics: Sounds [u], [y].

Vocabulaire : ecology, endangered species. Nature, pollution.

Intercultural: Humanitarian associations, ecology, endangered species and measures to protect them.

Unit 5 :(Unité 11:Lessons 1-4 + Project) (9 hours)

Listening Comprehension: Listen to an author talk about his book, listen to a text on a mobile app allowing to read books online, watch the video on the Museum of Comics, watch the trailer of a film on the internet, listen to a discussion on OTT platforms, listen to a guided tour of cineama halls in Paris,

Speaking: do you prefer reading hard copies of books or books online, justify your choice, present your reading habits, give your opinion about comic books, present the last film that you have seen, present your preferences for films, TV series and justify them, debate on the pros and cons on watching a film with or without subtitles, ask for the way to a cinema hall, debate on the pros and cons of preserving cinema halls, present a cultural centre.

Phonetics: groups of consonants /pr/, /br/, /tr/

Vocabulaire : literature, comic books, cinema,

Intercultural: Literary prizes, comic books, literature, museums on literature or films.

Unit 6: (Unité 12:Lessons 1-4 + Project) (9 hours)

Listening Comprehension: Listen to a short text on street art, listen to the description of a portrait created by AI, watch a video on the Cat sculptures on Champs elysees, listen to persons discussing at the opening of a art exhibition,

Speaking: Describe a piece of street art in your city, give your opinion on street art, give your opinion on street exhibitions, advise a friend who wants to learn painting, discuss the pros and cons of learning how to paint and draw at home or on Internet.

Phonetics: sounds [e] and [ɛ]

Vocabulaire : Street art, Market for art, sculpture, painting, opening of an exhibition.

Intercultural: Street art, art and AI, different movements in painting

Practical component (if any) – NIL

Essential/recommended readings

Any of the textbooks given below may be prescribed.

1. A Bredelet, B Megre, W.M. Rodrigues:"*Odysée B1, Méthode de français"*, CLÉ International, France, 2022, Unités 7-12.
2. Nathalie Hirschsprung, Tony Tricot, Mathias van der Meulen, Emmanuelle Garcia, « *Cosmopolite B1, Méthode de français* » Hachette, 2018, Dossiers 5-8.
3. Sophie Bruzy Todd, Delphine Jégou, Cédric Vial : « *La Classe B1, Méthode de français* »,CLÉ International, 2018, Unités 4-6.
4. Marie Noelle Cocton (Coordination pédagogique), Julien Kohlmann, Delphine Ripaud, Marie Rabin : *« L'Atelier B1, Méthode de français »*, Les Éditions DIDIER, France, 2020, Unités 6-10.
5. Pascal Biras, Anna Chevrier, Stephanie Witta, Raphaëlle Fouillet (précis de grammaire), Christain Ollivier (stratégies de lecture et d'écoute), Agustin Garmendia (Conseil pédagogique et révision) : « *Défi –3 Méthode de français* », Éditions Maison des Langues, 2019, Unités 5-9.
6. Marion Dufour, Julie Mainguet, Eugenie Mainguet, Sergei Opatski, Marion Perrard, Ghislaine Tabareau « *Edito-B1 Méthode de français (2^{e} édition)* », Editions DIDIER FLE, 2018, Unités 6-12.
7. Amelie Brito, Emilie Bucher : "*Odysée B-1, Cahier d'activités"*, CLÉ International, France, 2022, Unités 7-12.
8. Anais Dorey-Mater,Emilie, Mathieu-Benoit,Nellie Briet-Peslin, *Cosmopolite B1, Methode de français* » Hachette, 2018, Dossiers 5-8.
9. Claire Sanchez : « *La Classe B1, Cahier d'activités* », CLÉ International, 2018, Unités 4-6.
10. Marie Noelle Cocton (Coordination pédagogique), Camille Dereeper, Julien Kohlmann, Delphine Ripaud, : *« L'Atelier B1,* Cahier d'activites», Les Éditions DIDIER, France, 2020, Unités 6-10.
11. Pascal Biras, Anna Chevrier, Charlotte Jade, Stephanie Witta, Araceli Rodriguez Tomp(phonétique), Alexandra Horquin (DELF) : « *Défi –3, Cahier d'exercices* », Éditions Maison des Langues, 2019, Unités 5-9.

12. Elodie Heu-Boulhat, Julie Mainguet, Eugénie Mottironi Sergei Opatski, Marion Perrard: *« Edito B1, Cahier d'activités »*, DIDIER FLE, 2022, Unités 6-12.

Additional material may be provided by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 18:

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
History of French & Francophone Literature-(2)	**4**	**3**	**1**	**0**	**XII Passed**	**Should have studied History of French & Francophone Literature (1)**

DSC-18 **History of French & Francophone Literature-(2)**	
Learning Objectives: • To introduce the learners to different cultural and intellectual movements in French and Francophone Literature from the 19th century up to the present (21st century). • Introduction to major Franch and Francophone writers and their works from the 19th century up to the contemporary period (21st century) along with the themes/questions they engage with. • Developing a critical overview of literary and cultural evolution in France and the Francophone world from 19th century up to the contemporary period (21st century).	
Learning Outcomes: The Learning Outcomes of this course are as follows: • Read, understand and analyse French and Francophone literary texts representing major cultural and intellectual movements from the 19th century to the present (21st century) • Develop skills to identify and analyse specific themes and questions dealt by writers, writing across various continents representing colonial and postcolonial experiences. • Equip students with necessary tools to identify and critically engage with various literary movements and their core characteristics that emerged during this period.	
Syllabus:	
UNIT I	**15 hours**
A selection of literary texts with focus on the major cultural and intellectual movements of the 19th Century, such as Romanticism, Realism, Symbolism, Naturalism. The selection can be made from the works of the following writers: Chateaubriand, Alphonse de Lamartine, Alfred de Vigny, Victor Hugo, Prosper Merimée, Honoré de Balzac, Stendhal, George Sand, Gustave Flaubert, Guy de Maupassant, Emile Zola etc.	
UNIT II	**15 hours**
A selection of literary texts with focus on the major cultural and intellectual	

movements of the 20th Century, such as Dadaism, Surrealism, Existentialism, Absurd theatre, New Novel, OULIPO, Postmodernism, Neo-Realism etc. The selection can be made from the works of the following writers: Marcel Proust, Guillaume Apollinaire, André Breton, Louis Aragon, Paul Eluard, Jean-Paul Sartre, Albert Camus, Jacques Prévert, Eugène Ionesco, Samuel Becket, Marguerite Duras, Marguerite Yourcenar, Simone de Beauvoir, Nathalie Sarraute, Michel Tournier, Alain Robbe Grillet, Marcel Aymé, Georges Perec, Raymond Queneau, Patrcik Modiano, Annie Ernaux, Anna Gavalda, Jean-Marie Gustave Le Clézio etc.	
UNIT III	**15 hours**
A selection of literary texts written by major Francophone writers from the XIX century up to the contemporary Period, such as Maurice Maeterlinck, Amélie Nothomb, Blaise Cendrars, Charles Ferdinand Ramuz, Aimé Césaire, Leopold Sédar senghor, René Maran, Ahmadou Kourouma, Mongo Béti, Assia Djébar, Tahar Ben Jelloun, Mariama Bâ, Maryse Condé, Patrick Chamoiseau, Edouard Glissant, Ananda Dévi, Natacha Appanah, Shenaz Patel, Jean-Joseph Rabearivelo, Jean-Luc Raharimanana, Alain Mabanckou, Azouz Bégag, Dany Lafarrière, Monique Proulx, Jacques Godbout etc.	
A selection will be made from the following list:	
Practical component (if any) – NIL	

References

- D. Renée and B. Lecherbonnier, (1986) *Littérature, textes et documents*, , Du Moyen Age au 20e siecle, 5 volumes, collection dirigée par Henri Mitterand, Paris : Nathan.
- *Du Moyen-âge au XVIIIe siècle, 3 volumes*, (1988) *Itinéraires littératires*, collection dirigée par G. Décole, Paris : Hatier.
- Ferroudja Allouache, Nicole Blondeau, (2019), *Littérature progressive du français - Niveau avancé*, Paris : CLE International
- Ferroudja Allouache, Nicole Blondeau, (2020) *Littérature progressive de la francophonie*, Paris : CLE International.
- Françoise Ploquin, Laurent Hermeline, Dominique Rolland, (2000), *Littérature française :*
- *les textes essentiels*, Paris : Hachette
- Jean-Louis Joubert, (1997), *Litterature Francophone Anthologie*, Paris : Cideb.
- Michel Laurin, Laurin, Marie-Elaine Philippe, (2013), *Anthologie littéraire de 1800 à aujourd'hui 3ème édition*, Québec : Beauchemin.
- Valette, Giovaacchini et al, (1993) *Anthologie de la littérature française et européenne*, Paris : F. Nathan.

Additional material may be provided by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVES (DSE-4)

DSE 4: Option 1: Research Methodology and Academic Writing

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Research Methodology and Academic Writing (Option 1)	4	3	1	0	XII Passed	Should have Semester

Research Methodology and Academic Writing	
The Learning Objectives of this course are as follows; • **To introduce the learner to the basics of the research process and argumentation.** • **To familiarize the learner with the process and stylistics of various forms of academic writing such as research papers, monographs, conference presentations, academic essays, book review, literature review, dissertation and thesis.** • **To develop in the learner an independent point of view and critical thinking.**	
The Learning Outcomes of this course are as follows: The learner will be able • **to identify research gaps and construct hypothesis and arguments.** • **To choose, access and effectively engage with primary, secondary and tertiary courses.** • **To produce a coherent academic paper/text.**	
Syllabus:	
UNIT I	**9 hours**
• Identifying the student's area of interest, a research gap and a research problem. • Training students on how to choose and narrow down a topic. • Building a research hypothesis. • Basic types and components of a research question.	
UNIT II	**9 hours**
• Identifying and evaluating different kinds of sources like primary vs secondary vs tertiary sources, as well as journal articles, books, dissertations etc. • Identifying and choosing relevant and reliable sources for research, as well as basic knowledge on different websites, portals and journals for accessing said sources. • Constructing an annotated Bibliography.	

• Familiarizing students with the different kinds of research: quantitative and qualitative research (e.g. Surveys, questionnaires etc. In case of foreign language teaching) and qualitative research (e.g. Different literary and cultural theories in case of research in literature).	
UNIT III	**9 hours**
• Basic knowledge on what an argument is and its components and structure. • Identifying simple and complex arguments, as well as validity and soundness of an argument, • Knowledge of logical fallacies. • Engaging with and evaluating sources by identifying underlying arguments, their structures, validity and soundness.	
UNIT IV	**9 hours**
• Effective note-taking and summarizing academic/scientific texts. • Constructing arguments and counter arguments. Quoting, paraphrasing and summarising from the source texts to construct the argument(s).	
UNIT V	**9 hours**
• Planning and structuring a draft. Familiarization with stylistic conventions, using different citation styles and making footnotes. • Familiarizing students with the ethics of research and plagiarism. • Perfecting a final draft based on coherence and cohesion.	
Essential/Recommended Reading: Any of the textbooks given below may be prescribed: Jacques Garneau, (2016), *Pour réussir un texte argumentatif*, Montréal : Trécarré Pierre Mongeau, (2009) *Réaliser son mémoire ou sa thèse*, Québec : Presses de l'Université du Québec Pierre N'Da, (2016), *Initiation aux méthodes de recherche, aux méthodes critiques d'analyse des textes, et aux méthodes de rédaction en lettres, littératures et sciences humaines et sociales,* Paris : Connaissances et Savoirs, Sylvie Garnier, Alan D. Savage, (2011), *Rédiger un texte académique en français*, Canada : Editions Ophrys	
Additional material may be provided by the Department. **Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**	

DSE 4: Option 2: Introduction to Foreign Language Teaching
Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Introduction to Foreign Language Teaching (Option 2)	4	3	1	0	XII Passed	NIL

Course Learning Objectives:

- Create basic awareness about a foreign language classroom and textbook.
- Establish a theoretical basis and introduce students to basic practical aspects of Foreign Language Teaching.
- Familiarisation with the theories in the fields of language, interaction and communication and their implications for Foreign language teaching programmes.

Course Learning Outcomes:

- Understand the basic principles in which the teaching of a foreign language is based
- Reflect upon the teaching and learning process of a foreign language
- Understand the role of mother tongue in Foreign language learning
- By using latest tools of Information technology and learning apps the students will be expected to create teaching materials.

Syllabus DSE 4: Option 2: Introduction to Foreign Language Teaching

Unit 1 **(15 hours)**
What is a classroom? Models of learning/teaching. Learning/acquisition different learning styles

Unit 2 **(15 hours)**
Different methods/approaches to teaching a foreign language. Introduction to the four skills

Unit 3 **(15 hours)**
Evaluation.
What is a text book? Issues in material production. Self-Instruction Material
.

Essential/Recommended Readings:

1.Pierre Martinez, *La didactique des langues,* Presses Universitaires de France (2014).
2.Dominique Maingueneau, *Initiation aux methodes de l'analyse du discours. Problemes et perspectives*, Hachette (1979).
3.Moirand S.: *Enseigner à communiquer en langue étrangère*, Ed; Hachette, Paris,1982.
4.Germain C.: *Evolution de l'enseignement des langues: 5000 ans d'histoire*, CLE International, Paris 1993

Additional material will be made available by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DSE 4: Option 3: Introduction to Translation

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Introduction to Translation (Option 3)	4	3	1	0	XII Passed	NIL

Learning Objectives

- Familiarise students with language for specific purposes.
- Familiarise students to the techniques of translation.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Enable students to do scientific and technical translation, and translation of canonical texts.
- Help students to make word glossaries in above fields.
- Enable students to read parallel literature on texts chosen for translation.
- Sensitise students towards machine translation and its limitations.
- Develop awareness about ethics and accountability in translation.

SYLLABUS OF DSE-4: Option 3: Introduction to Translation

Unit I **(9 hours)**

Study of language used in industries such as hospitality, tourism, banking, business sectors and translation of texts in the chosen areas (including birth, educational qualification, marriage, birth and death certificates, mark sheets).

Unit II **(9 hours)**

Scientific and technical translation.Translation of canonical texts.

Unit III **(9 hours)**

Introducing the students to the techniques of translation.
Making of word glossaries in above fields.

Unit IV **(9 hours)**

Machine translation and its limitations.
Ethics and accountability in translation.

Unit V **(9 hours)**

Reading of parallel literature on texts chosen for translation.
Role of Translation in Multimedia contexts.

Essential/Recommended Readings

- Bassnett, S. (2002). *Translation Studies.* New York: Routledge.
- Gile, Daniel. (2009). *Basic Concepts and Models for Interpreter and Translator Training.* Amsterdam: John Benjamins Publishing.
- Munday, Jeremy. (2012). *Introducing Translation Studies, Theories and Applications.* New York: Routledge.
- Malmkjaer, Kirsten, et al. (2011). *The Oxford Handbook of Translation Studies*. Oxford: OUP.
- Baker, Mona. (2011).*In Other Words. A Course Book in Translation*. New York: Routledge.
- Jones, Michele H. (2014). *The Beginning Translator's Workbook. New York. Toronto: University Press of America.*
- Roger, Valentine Watson. (2004). *Apprendre à traduire: Cahier d'exercices pour l'apprentissage de la traduction français-anglais anglais-français*. Toronto. Ontario: Canadian Scholar's Press Inc.

Additional material will be provided by the Department.
Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DSE 4: Option 4: Techniques of Written Expression

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Techniques of Written Expression (Option 4)	**4**	**3**	**1**	**0**	**XII Passed**	**NIL**

Course Learning Objectives : At the end of the Course, a student will learn

- To write different types of formal letters
- To analyse and prepare different types of advertisements.
- To write minutes of a meeting
- To summarise a text.
- To carry out correspondance related to banking and post office services.

Course Learning Outcomes : At the end of the course a student will be able to

- To write different types of formal letters
- To analyse and prepare different types of advertisements.
- To write minutes of a meeting

- To summarise a text.
- To carry out correspondance related to banking and post office services.

SYLLABUS DSE 4: Option 4 Techniques of Written expression

Unit 1 **(12 hours)**

Different types of Letters: Letters to ask for information, services. Letters of reclamation. Letters to protest against certain social issues.

Unit 2 **(12 hours)**

Analyse and write different types of advertisement: Classified advertisemnts in newspapers, advertisement to sell a product, advertisements to propose a service, advertisements of NGO.

Unit 3 **(12 hours)**

Summarise 2-3 texts on the same subject into a single text.

Unit 5 **(9 hours)**

Minutes of a meeting

Essential/Recommended Readings:

1. Claude Le Goff, *Le Nouveau French for Business: Le français des affaires,* Les éditions Didier, Paris, 1994.
2. RENN, H. et G. Tempesta, *Le français de l'hôtellerie et de la restauration,* CLE international, 1992.
3. WATTIER, Stéphane, *Production écrite DELF B2,* Commun Français, 2017.
4. BARIL, Denis, *Techniques de l'expression écrite et orale,* Editions Sirey, Paris, 2008.

Additional material will be provided by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DSE 4: Option 5: Study of European Art

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Study of European Art (Option 5)	**4**	**3**	**1**	**0**	**XII Passed**	**NIL**

Study of European Art
Learning Objectives: • To introduce students to the various major Art Movements in Europe from the Renaissance to the Contemporary Period. • To study artworks of painter's representative of the Major Art Movements in Europe.
Learning Outcomes: • Provide an overview of important European Art Movements, representative painters, and their artworks: Spanish Baroque, Flemish School, French Impressionists, Spanish Surrealists, Barocco Italiano etc. • Develop an understanding of structures and Perspectives of Everyday life as seen by painters.

• Equip with tools to analyse artworks.	
Syllabus:	
UNIT I	**6 hours**
How to analyse an artwork?: Introduction to the elements and components of Art	
UNIT II	**6 hours**
• Introduction to Renaissance art movements with special focus on Humanism and mannerism • Innovative techniques introduced by the Renaissance artists • The idea of Europe. Structures and Perspectives of Everyday life as seen by Renaissance painters.	
UNIT III	**6 hours**
Major art movements of the XVII century: Baroque and Classicism	
UNIT IV	**6 hours**
Major art movements of the XVIII century: Rococo and Neo-Classicism	
UNIT V	**9 hours**
Major art movements of the XIX century: Romanticism, Realism, Symbolism, Impressionism, Expressionism	
UNIT VI	**12 hours**
Major art movements of the XX century: Cubism, Fauvism, Surrealism, Futurism, Art Deco, Modern Art, Abstract Art, Postmodern Art, Neo-Realism	

Essential/Recommended Readings: Any of the textbooks given below may be prescribed:

- Adams, Laurie Schneider, (1996), *The Methodologies of Art: An Introduction*, NY: Westview Press.
- Arnason, H. H. (2003), *History of Modern Art: Painting, Sculpture, Architecture, Photography*, New York: Prentice Hall.
- Boime, Albert (1990) *A Social History of Modern Art*, Volumes 5, Chicago: University of Chicago Press,
- Burckhardt, Jacob. (2004). *The Civilization of the Renaissance in Italy* (1855), New York: Penguin
- Guitemie Maldonado, Marie-Pauline Martin, Natacha Pernac, Rowley Neville, (2019), *Bescherelle - Chronologie de l'histoire de l'art: de la Renaissance à nos jours,* Paris : Hatier.
- Hopkins, David, (2000), *After Modern Art 1945-2000 (Oxford History of Art*), NY: OUP.
- Patrick Weber, (2017), *Histoire de l'art et des styles: Architecture, peinture, sculpture, de l'Antiquité à nos jours Poche*, Paris : Librio.
- Read, Herbert (1984), *Meaning of Art*, London: Faber & Faber.
- Xavier Barral, I. Altet, (2013), *Histoire de l'art*, Paris : PUF

Additional material may be provided by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DSE 4: Option 6: Children and Adolescent Literature

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Children and Adolescent Literature (Option 6)	**4**	**3**	**1**	**0**	**XII Passed**	**NIL**

Children and adolescent literature can be distinguished from mere books written for children as literature implies genre and literary tropes, premeditated contexts and settings and often a conscious attempt at portraying history and multiculturalism. In addition, adolescent literature written by adults is an institutional discourse that helps teenage readers understand their environment and society through the issues that present themselves in texts. Through novels, poems and theatre, we examine the values transmitted to children and how literature can influence moral and social decisions that adolescents are faced with.

Course Learning Objectives:

- Introduce students to the changing conceptions of children's literature.
- Help students in analyzing various genres meant for young children and adolsecnts.
- Sensitize students about the role of children's literature in transmitting values.

Course Learning Outcomes :

- Students will become familiar with the changing conceptions of children's literature.
- Students will be able to analyse various genres meant for young children and adolescents.
- Students will be aware of the role of children's literature in transmitting values.

SYLLABUS DSE 4 : Option 6: Children and Adolescent Literature

Unit 1 **(15 hours)**

1.1 Changing conceptions of children's literature
1.2 Literature for children and /or adult readers?

Unit 2 **(15 hours)**

2.1 Folklore for young children
2.2 Fables for young children

Unit 3 **(15 hours)**

3.1 Fairy tales for young children

3.2 Theatre for children
3.3 Children's literature and transmission of values.

Essential/Recommended Readings

1. Jean-Paul Gourévitch, *Abcdaire illustré de la Littérature Jeunesse*, Le Puy-en-Velay, L'atelier du poisson soluble (2013).
2. Christian Chelebourg et Francis Marcoin, *La Littérature de jeunesse*, Paris, Armand Colin, "128" (2006).
3. Marc Soriano, *Guide de la littérature pour la jeunesse*, Paris, Hachette, 1974. Rééd. Delagrave (2002).
4. Myriam Tsimbidy, *Enseigner la littérature de jeunesse*, Toulouse, Presses Universitaires du Mirail (2008).
5. Nathalie Prince, *La Littérature de jeunesse*, Armand Colin, Paris, 2010.
6. Isabelle Nières-Chevrel, *Introduction à la littérature de jeunesse*, Didier jeunesse, « Passeurs d'histoires », Paris 2009

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DSE 4: Option 7: Life Writing

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Life Writing (Option 7)	4	3	1	0	XII Passed	NIL

Course Learning Objectives

- Familiarise students with the genre of biography, autobiography.
- Familiarise students to understand the difference with other genres of writing.

Learning outcomes

- Help to analyse the characteristics of Autobiographical and biographical texts
- Familiarize students with Diaries and Letters
- Equip students to analyze and write about Travel experiences

SYLLABUS OF DSE-4: Option 7: Life writing

Unit I **(15 hours)**

Reading, writing and analysing Autobiographies, Confessions, Memoirs. Fictional Autobiographies, Autobiographical Songs

Unit II **(15 hours)**
Reading, writing and analysing Diaries and Letters

Unit III **(15 hours)**
Reading, writing and analysing Travelogues, travel logues and other forms of travel narratives

Essential/recommended readings

- Geertz, Clifford. *The Interpretation of Cultures*. New York: Basic Books (1973).
- Geertz, Clifford. *Local Knowledge*. New York: Basic Books (1983).
- Geertz, Clifford. *Works and Lives: The Anthropologist as Author*. Stanford: Stanford University Press (1989).
- Alain De Botton, *The Art of Trave*l, Vintage; Reprint edition (May 11, 2004) Marc Augé, Jean-Paul Colleyn*, L'anthropologie*, PUF, Coll. Que sais-je ? (2009).
- Philippe Lejeune, *Je est un autre : L'autobiographie*, de la littérature aux médias, Seuil, (1980)
- Vincent Colonna, *Autofiction et autres mythomanies littéraires*, Tristram (2004).

Primary Texts:

- Simone de Beauvoir, *Mémoires d'une jeune fille rangée*
- Leonora Miano, *Afropean Soul et autres nouvelles*, Flammarion (2008).
- Bernard B. Dadie, *Climbié,* Nouvelles editions africaines (2003).

Additional material will be provided by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COURSES OFFERED BY DEPARTMENT OF
Germanic & Romance Studies

SEMESTER - VI

Category III

Courses for Undergraduate Programme of study with discipline as one of the Core Disciplines

B.A. Programme with French

(For e.g. courses for B.A. Programmes with_____ (discipline's name) as non-Major or Minor discipline)

DISCIPLINE SPECIFIC CORE COURSE (DSC-6): French in Context: Advanced Level – 2

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
French in Context: Advanced Level – 2	4	3	1	Nil	Passed Class XII	None

Learning Objectives: (Reading, Writing, Listening and Speaking):

In Semester 6, the student will learn to

- Understand and summarise the main ideas of complex texts
- Write formal and informal letters conveying degrees of emotion and highlighting the personal significance of events and experiences
- Write argumentative texts on a wide range of topics by expanding and supporting his/her main points with relevant supporting details and examples

- Understand the content and line of argument of short documentaries TV reports, news reports, on a wide range of cultural, social, academic, professional topics, live interviews, talk shows, plays, the majority of films in standard dialect
- Engage in extended conversation on most general topics
- Debate and present on various issues of importance by sustaining a chain of reasoned argument /Commentary on audio-visual material

Learning outcomes: (Reading, Writing, Listening and Speaking):

At the end of Semester 6, a student will be able to

- To read and understand argumentative texts related to contemporary issues.
- To write a text on contemporary issues presenting and defending one's point of view.
- To listen and to understand radio and TV programs of long duration related to contemporary social issues.
- To express one's opinion, give and defend one's point of view on a wide range of contemporary social issues in a structured manner
- complete Level B1 of the CEF.

SYLLABUS OF DSC-6[1]

Content

UNIT	CONTENT	DURATION
Dossier 5 (Lessons 1-6 + Project)	**Reading Comprehension:** Read content of internet page, letter of motivation, online article, observe a photo from a television show, book presentation and answer questions based on IT. **Writing:** present your professional journey, give advices to present and highlight your competencies, make a list of your work experience(job, internship, summer job etc.) , make a mini record of your personal and professional journey, present tasks and competencies necessary for your studies and job , make a list of tasks that you complete in a day. **Grammar:** Situate the different stages of one's careerin time, articulators to structure a cover letter, structures forunderstanding and giving advices,	11 hours

[1] A text book contains 6-8 modules/units called *dossier* Each dossier comprises of 6 lessons. Therefore, the syllabus is given in terms of the text book unit being covered along with the content of the 6 lessons with a total duration of the number of weeks needed to cover a dossier of 6 lessons. In Semester 6, last 4 units of the text book will be covered i.e from Unit 5-8.

	pronoun *où* to give details about date and time, *gérondif* to express simultaneity, differentiate between *gérondif* and *participe présent*. **Listening comprehension:** Listen to a radio show(testimonials), video and answer questions based on them. **Speaking:** Communicate on one's career, express one's motivation and present one's project,understand the tool "professional portfolio", understand and give advice for a job or interview, take risks , value your experience, understand one's job profile, describe the start of a working day. **Phonetics:** Differentiate between pronunciations of past perfect, imperfect and conditionnal , higlighting certain events, **Vocabulary:** Words used to designate courses and diploma degree, different parts of a professional portfolio, words to indicate professional skills, give your impressions, do a personal and professional assessment, words that indicates skills of a customer care representative.	
Dossier 6 (Lessons 1-6 + Project)	**Reading Comprehension:** Read content of a pictogram , infographic,news column, front page of a magazine online forum, webpage, extracts from an internet page, comic book, observe images from a video of a television show, answer questions based on them. **Writing:** Present your journey and precise the time of events and talk about people who were important during this journey, choose a fake news, analyse and present why it is false, prepare and stage a performance. **Grammar:** Expression of contrast to discuss a subject- passive voice to insist on consequence of an action, agreement of past participle, indicators of time to specify thr time of speaking, prepositional verbs to talk about information and misinformation, higlighting processes to capture attention. **Listening comprehension:** Listen to a radio show(online forum, interview, online press article), video (comic strip) and anser questions based on it. **Speaking:** Analyse front page of a magazine, compare traditional media and social media, report an event structure a press article, report past events, spot fake news, analyse fake news, capture attention of an audience, explain and argue. **Phonetics:** Sounds [o] and [œ] and trunction and level of language. **Vocabulary:** Analyse the cover of a magazine, journalistic writing style, traditional / active media	11 hours

	terms, words to express information and misinformation, higlighting processes to capure attention**.**	
Dossier 7 (Lessons 1-6 + Project)	**Reading Comprehension:** Read contents of an internet page, sidebar, newsflash, article , photo observe an identity card, cover page of a magazine and answer questions based on them. **Writing:** Present an innovation in your country, write an article on simplification of a scientific discovery , write an opinion note. **Grammar:** Compound relative pronouns to avoid repetitions, structures to explain the usefulness and founctioning of an operation, establish a chronological progression in an argument, expression of doubt and certainity. **Listening comprehension:** Listen to a radio show(online press article), video amd answer questions based on it. **Speaking:** Understand a program that presents a scientific innovation, discover young French speaking talents and their achievements, explain a scientific discovery in simple manner, present a technological innovation, make an innovative concept understood, express one's opinion, imagine future, consider positive and negative consequences of an innovation. **Phonetics:** Sounds[r] and [|] and pronouncing or not [e]. **Vocabulary:** Introduce a topic in a program/report(1), few activities to play sports and relax , share a scientific discovery, introduce a topic in a program/report(2), talking about the economics of innovation, explaining something to someone, identifying characteristics of opinion paper,personify an object, express concern.	11 hours
Dossier 8 (Lessons 1-6 + Project)	**Reading Comprehension:** Read content of adverstising strip of an internet website, article, a program schedule, film review, extract of an article observe a poster, an advertisement and answer questions based on it, **Writing:** Present an interesting work of art, present the career of a live show artist, give your opinion on a film, make a profile card of readers in your class. **Grammar:** Expressing manner and simmilarity, superlative degree to express enthusiasm, time of infinitive to understand chronolgy, double pronoun	12 hours

	to avoid repetition, interrogation to structure your thoughts. **Listening comprehension:** Listen to a radio show(online press article, announcement, movie review), interview, video **Speaking:** Give positive review of a cultural event, present a piece of work, express enthusiasm, talk about live shows, find out about an artist's career, understanding prize list, review a film, react to a review, find francophone books, ask yourself the importance of reading. **Phonetics:** Expression of enthusiasm, complusory *liaison* and optional *liaison.* **Vocabulary:** Express a positive or negative judgement, words for talking about live shows, for rewarding and congratulating, for talking about books and book stores.	

Practical component (if any) - NIL

Essential/recommended readings: Any of the text books given below may be prescribed:

1. Hirschsprung Nathalie, Mous Nelly, Tricot Tony, Mathieu-Benoit Émilie, Van der Meulen Mathias, Antier Marine, Veillon Leroux Anne, Mous Nelly: *« Cosmopolite- B1 Méthode de français »,* Hachette Français langue etrange2018 Dossiers 5-8.
2. Cocton Marie-Noëlle, Kohlmann Julien, Rabin Marie, Ripaud Delphine : *« L'Atelier- B1, Méthode de français »*, Les Éditions DIDIER, France, 2020, Unités 6-10.
3. Biras Pascal, Chevrier Anna, Witta Stéphanie, Fouillet Raphaële: « *Défi- 3 Méthode de français* », Éditions Maison des Langues, 201, Unités 5-9.
4. Bredelet A., Mègre B., Rodrigues W. M. : « *Odyssée-B1, Méthode de français »*, CLÉ International, France, 2018, Unités 7-12.
5. Dufour Marion, Mainguet Julie, Mottironi Eugénie, Opatski Sergueï, Perrard Marion, Tabareau Ghislaine: « *Edito-B1 Méthode de français (2e édition)* », Editions DIDIER FLE, 2022, Unités 7-12.
6. Mater Anaïs, Mathieu-Benoi Émilie t: *« Cosmopolite- 3 Cahier d'activites »* , Hachettte Français langue etrangere, 2018 Dossiers 5-8.
7. Cocton Marie-Noëlle (coordination pédagogique), Dereeper Camille, Kohlmann Julien, Ripaud Delphine : *« L'Atelier- B1, Cahier d'activités »,* Les Éditions DIDIER, France, 2020, Unités 6-10.

8. Biras Pascal, Chevrier Anna, Jade Charlotte, Wita Stéphanie: « *Défi- 3 Cahier d'exercices* », Éditions Maison des Langues, 2019, Unités 5-9.
9. Brito Amélie, Bucher Emilie: « *Odysée- A2, Cahier d'activités* », CLÉ International, France, 2021, Unités 7-12.
10. Heu Elodie, Mainguet Julie, Mottironi Eugénie, Opatski Sergueï, Perrard Marion : « *Edito- B1 Cahier d'activités* », Les Éditions DIDIER FLE, 2018, Unités 7-12.

Additional material may be used.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

ANNEXURE-2

SEMESTER-IV
DEPARTMENT OF GERMANIC AND ROMANCE STUDIES
Category I

[UG Programme for Bachelor in GERMAN (Honours) degree in three years]

DISCIPLINE SPECIFIC CORE COURSE -10 (DSC-10)
Language in Context: Intermediate Reading and Writing Skills (2)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Language in Context: Intermediate Reading and Writing Skills (2)	**4**	**3**	**1**	**0**	**XII passed**	**Should have studied "Language in Context: Intermediate Reading and Writing Skills (1)"**

Learning Objectives

Enable student to

- read texts and answer questions on them;
- be able to write texts, about subjects pertaining to his/her immediate environment;
- attain Level A2.2 of the Common European Framework (CEF).

Learning outcomes

- Enable students to fully attain A2.2 Level of reading and writing skills in the concerned language.
- Reading advanced texts and answering questions on them.
- Equip students to write about subjects pertaining to his/her immediate environment.

SYLLABUS OF DSC-10

Unit I **(9 hours)**

Read and understand texts about "problems while learning"

Understand advices and give advices to others

Understand reports about professional routine

Make a small presentation

- Subordinate clause with "denn, and "weil"
- Conjunctive 2 Sollten

- Use of Genetive: Name + -S
- Temporal prepositions „bis“, „Über“+Accusative, „Ab“ +Dative

Unit II **(9 hours)**

Read texts about hope, excitement and disappointment
Read fans’ comments
Write comment as fan
Understand reports about pick nick
Describe a sightseeing

- Usage of “deshalb”, “trotzdem”, etc.
- Verbs with accusative and dative

Unit III **(9 hours)**

Read texts about complaints

To excuse and to request

Write a story

- Conjunctive II: use of Könnten
- Subordinate sentences with als and wenn

Unit IV **(9 hours)**

Read texts about the style of music

- Interrogative articles was für ein (e) ....?
- Pronouns with man/ jemand/ Niemand
- Pronouns with alles/ etwas/ nichts
- Relative sentences in nominative case

Unit V **(9 hours)**

Read and understand conversation

Plan something together

Write a story

Understand information about other cultures

- Use of Conjunctive II (Wishes and advices)
- Verbs with prepositions
- W- Questions with prepositions: Auf wen? Worauf?
- Use of “damit” and “um … zu“
- Relative sentences in accusative

Practical component (if any) - NIL

Essential/recommended readings

1. Dengler, S., Rusch, P., Schmitz, H. (2013). *Netzwerk A2.2: Deutsch als Fremdsprache. Kurs- und Arbeitsbuch mit DVD und 2 Audio--CDs.* Klett Verlag.
2. Dengler, Stefanie; Tanja Mayr-Sieber, Paul Rusch, Helen Schmitz. *Netzwerk neu A2.2: Deutsch als Fremdsprache. Kurs- und Übungsbuch mit Audios und Videos.* Klett Verlag
3. Evans, S., Pude, A., Specht, F. (2021). *Momente A2: Kurs- und Arbeitsbuch.* Hueber Verlag.
4. Evans, S., Pude, A., Specht, F. (2020). *Menschen A2: Kurs- und Arbeitsbuch.* Max Hueber Verlag
5. Höldrich, B. (2010). – *Lesen & Schreiben A2: Buch (Deutsch üben) Taschenbuch*. München: Hueber Verlag.
6. Rusch, P., Schmitz, H. *Einfach Grammatik Deutsch A1 Bis B1.* Berlin: Langenscheidt.
7. Sander, I., Braun, B., Fügert, N., Kotas, O. (2016). *DaF kompakt neu A2: Deutsch als Fremdsprache für Erwachsene. Kurs- und Übungsbuch.* Klett Verlag.
8. Von, Rosa-Maria Dallapiazza, et al. (2011). *Tangram aktuell A2: Kurs- und Arbeitsbuch*. Hueber Verlag.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 11 (DSC-11)
Language in Context: Intermediate Listening and Speaking Skills (2)

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Language in Context: Intermediate Listening and Speaking Skills (2)	4	3	1	0	XII passed	Should have studied "Language in Context: Intermediate Listening and Speaking Skills (1)"

Learning Objectives

Enable student to

- read advanced texts and answer questions on them;
- be able to express on different topics, about subjects pertaining to his/her advanced environment;
- attain complete Level A2.2 of the Common European Framework (CEF).

Learning Outcomes

- Enable students to fully attain A2.2 Level of listening and speaking skills in the concerned language.
- Express ideas on audios listened and answering questions on them.
- Equip students to speak about subjects pertaining to his/her advanced environment

SYLLABUS OF DSC-11

Unit I **(9 hours)**
Talk about regarding problems in learning
Understand conversations about advices and suggestions
Talk about professional routine

Unit II **(9 hours)**
Understand fans' comments
Give advices and react
Learn to make an appointment

Unit III **(9 hours)**

Express to complain, to excuse
Express to request for something
Report about past
Talk about pets

Unit IV **(9 hours)**
Talk about music styles
Learn to buy concert ticket
Introduce a band or a musician
Understand information about paintings

Unit V **(9 hours)**
Talk about desires and express wishes
Understand a conversation
Exchange information
Understand information about other cultures
Express about behavior
Talk about cliché

Practical component (if any) - NIL

Essential/recommended readings

1. Dengler, S., Rusch, P., Schmitz, H. (2021). *Netzwerk neu A2.2: Deutsch als Fremdsprache. Kurs- und Arbeitsbuch mit DVD und 2 Audio--CDs.* Klett Verlag.
2. Dengler, Stefanie; Tanja Mayr-Sieber, Paul Rusch, Helen Schmitz. *Netzwerk neu A2.2: Deutsch als Fremdsprache. Kurs- und Übungsbuch mit Audios und Videos.* Klett Verlag
3. Evans, S., Pude, A., Specht, F. (2021). *Momente A2: Kurs- und Arbeitsbuch.* Hueber Verlag.
4. Evans, S., Pude, A., Specht, F. (2020). *Menschen A2: Kurs- und Arbeitsbuch.* Max Hueber Verlag
5. Höldrich, B. (2010). – *Lesen & Schreiben A2: Buch (Deutsch üben) Taschenbuch*. München: Hueber Verlag.
6. Rusch, P., Schmitz, H. *Einfach Grammatik Deutsch A1 Bis B1.* Berlin: Langenscheidt.
7. Sander, I., Braun, B., Fügert, N., Kotas, O. (2016). *DaF kompakt neu A2: Deutsch als Fremdsprache für Erwachsene. Kurs- und Übungsbuch.* Klett Verlag.
8. Von, Rosa-Maria Dallapiazza, et al. (2011). *Tangram aktuell A2: Kurs- und Arbeitsbuch*. Hueber Verlag.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE– 12 (DSC-12)
Engaging with Literary Texts (2)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Engaging with Literary Texts (2)	**4**	**3**	**1**	**0**	**XII passed**	**Should have studied "Engaging with Literary Texts (1)"**

Learning Objectives

Enable students to read, understand and analyse short literary texts (prose, poetry, films, songs etc.) adapted for students of level A2 and to answer questions on the same.

Learning outcomes

Enable to students to read and analyse short literary texts independently.

SYLLABUS OF DSC-12

UNIT – I **(9 hours)**

The students will read short stories of level A2, and literary texts adapted/abridged to A2 level and learn to summarise the content as well as answer basic comprehension questions on it.

UNIT – II **(9 hours)**

Advanced study of various components of literary analysis like narrator, character, tone etc. as well as various forms of short prose. The students will learn to answer more analytical questions.

UNIT – III **(9 hours)**

Analysis of poetry using the knowledge of poetic devices.

UNIT – IV **(9 hours)**

Analysis of various German songs using the knowledge of poetic devices on the song texts, and the function of intonation, melody, rhythm etc.

UNIT – V **(9 hours)**

The students will learn to comprehend and do an advanced analysis of short visual texts like shorts films, advertisements, skits etc.

Practical component (if any) - NIL

Suggestive readings

Learning / Teaching Material: To be compiled and provided by the Department.

1. Rosmarie Thee Morewedge. (2008). Mitlesen - Mitteilen Literarische Texte zum Lesen, Sprechen, Schreiben und Hören. Boston: Thomson Heinle. 4th Edition.
2. Adalbert Stifter (Bearbeitet von Achim Seiffarth). (2010). Brigitta. Cideb.
3. Specht, Franz (nach Motiven aus dem Nibelungenlied). (2009). Siegfrieds Tod. Hueber.
4. Tschiesche, Jaqueline. (2009). Till Eulenspiegel. Cideb.
5. List of Films

https://www.goethe.de/ins/pl/de/spr/unt/kum/dfj/fil.html

6. List of Songs

https://www.goethe.de/prj/stg/de/mat/mmu.html

Additional material may be provided by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

POOL OF DSE

DISCIPLINE SPECIFIC ELECTIVE COURSE – 2 (DSE-2):
Introduction to the History of Germany and the German-speaking World.

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Introduction to the History of Germany and the German Speaking World	**4**	**3**	**1**	**0**	**XII passed**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce students to major social, political and cultural events in Germany and German-speaking countries.
- To study the impact of these social, political and cultural events in the German-speaking world and in Europe.

Learning outcomes

The Learning Outcomes of this course are as follows:

- To familiarise students with the major social, political and cultural events from the medieval to contemporary period.
- To provide a good understanding of contemporary Germany and German-speaking countries and their standing in the world.

SYLLABUS OF DSE-2

UNIT – I **(9 hours)**
Reformation and Counter-Reformation.
Thirty Years' War
Enlightenment

UNIT – II **(9 hours)**
1848 Revolution
Unification of Germany under Bismarck.
Weimar Republic

UNIT – III **(9 hours)**
Habsburg Empire
World War I.
Division of Germany

UNIT – IV **(9 hours)**
Basic Law, Economic Miracle
1968 student revolt

UNIT – V **(9 hours)**
Fall of the Berlin Wall in 1989, Reunification
Germany in the European Union

Practical component (if any) - NIL

Essential/recommended readings

1. Herbert, Ulrich. (2014). *Geschichte Deutschlands im 20. Jahrhundert.* München: C.H. Beck Verlag.
2. Hein, Dieter (2016). *Deutsche Geschichte im 19. Jahrhundert*. München: C. H. Beck Verlag.
3. Stollberg-Rilinger, Barbara. (2013). *Das Heilige Römische Reich Deutscher Nation: Vom Ende des Mittelalters bis 1806*. München: C. H. Beck.
4. Brechtken, Magnus. (2012). *Die nationalsozialistische Herrschaft 1933-1939.* Darmstadt: Wissenschaftliche Buchgesellschaft.
5. Stern, C., Winkler, H.A. (Hrsg.). (1994). *Wendepunkte deutscher Geschichte 1848-1990.* Frankfurt am Main: Fischer-Verlag.

Additional material will be provided by the Department.

Suggestive readings

DISCIPLINE SPECIFIC ELECTIVE COURSE – 2 (DSE-2):
Life in German speaking Countries.

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Life in German-Speaking Countries	4	3	1	0	XII passed	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce the learner to various aspects of contemporary culture (films, art, education system etc.) in Germany and German-speaking countries.

Learning outcomes

The Learning Outcomes of this course are as follows:

- To initiate learners to the culture and civilization of Germany and German-speaking countries.
- To provide knowledge about education systems, home, family, leisure activities, festivals, politics, tourism, physical geography of Germany and German-speaking countries.
- To introduce the students to the great thinkers of Germany and German-speaking countries in the areas of literature, cinema, art etc.
- To enable students to understand and analyse cultural aspects of Germany and German-speaking countries and develop an intercultural competence among students.

SYLLABUS OF DSE-2

UNIT – I **(9 hours)**
Detailed contents
Basic knowledge of various cultural and civilisational aspects of Germany and German-speaking countries, such as daily lives and routines of an average person, home, family, leisure activities, festivals etc.

UNIT – II **(9 hours)**
Basic knowledge of education systems, politics etc.

UNIT – III **(9 hours)**
Basic knowledge of tourism, physical geography etc.

UNIT – IV **(9 hours)**
Great thinkers of Germany and other German speaking countries.

UNIT – V **(9 hours)**
Introduction to literature, cinema, art of Germany and other German speaking countries.

Practical component (if any) - NIL

Essential/recommended readings

1. Williams, J., (2011). *Weimar Culture Revisited.* London: Palgrave Macmillan.
2. Schräder, B., Schebera, J. (1987). *Die „goldenen" zwanziger Jahre. Kunst und Kultur der Weimarer Republik.* Köln: Hermann Bohlaus.
3. Kolb, E., Schumann, D. (2012). *Die Weimarer Republik. 8. erw. Aufl.* München/Wien: Oldenbourg.
4. Schräder, B., Schebera, J. (2010). *Deutschland nach der Wiedervereinigung. Deutsche Einheit. Bundeszentrale für politische Bildung.* APUZ 30-31.
5. Koch, Gertrud (ed.). (1999). *Bruchlinien. Tendenzen der Holocaustforschung*. Köln: Böhlau Verlag.
6. Heimrod, Ute (ed.). (1999). *Der Denkmalstreit – das Denkmal? Die Debatte um das "Denkmal für die ermordeten Juden Europas".* Berlin/Wien: Philo.
7. Rumpler, H., Urbanitsch, P. (eds.). (2006). *Die Habsburgermonarchie 1846-1918. Politische Öffentlichkeit und Zivilgesellschaft* . Wien: VÖAW.
8. Caduff, C., Sorg, R. (eds.). (2004). *Nationale Literaturen heute – ein Fantom ? Tradition und Imagination des Schweizerischen als Problem*. München: Fink Wilhelm GmbH + CoKG.
9. Pautz, H. (2005). *Die deutsche Leitkultur. Eine Identitätsdebatte.* Stuttgart: ibidem.
10. Ohlert, M. (2014). *Zwischen « Multikulturalismus » und « Leitkultur ».* Berlin: Springer VS.

Additional material will be provided by the Department.

Suggestive readings

DISCIPLINE SPECIFIC ELECTIVE COURSE – 2 (DSE-2):
Different Text Types

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Different Text Types	4	3	1	0	XII passed	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce and familiarise the learner to different types of literary and non-literary texts.
- To identify the linguistic, discursive and formal specificities of literary and non-literary texts
- To analyse the form and content of literary and non-literary texts.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Develops skills to study different text types in order to familiarise oneself with different kinds of language usages in literary and semi-literary texts.
- Enables learners to develop relevant analytical skills to critically evaluate the form and content of these texts
- Helps learners to identify different language registers, rhetoric and other compositional specificities of the texts.

SYLLABUS OF DSE-2

UNIT – I **(9 hours)**

Prose: Introduction and analytical study of both form and content of a variety of texts written in simple shorter narrative genres, (Ex. short story, fable, chronicle, myth, tales, anecdote etc.)

UNIT – II **(9 hours)**

Prose: Introduction and analytical study of both form and content of a variety of texts written in simple longer narrative genres, (Ex. novella, autobiography, biography, novel, play etc.)

UNIT – III **(9 hours)**

Poetry: Introduction and analytical study of both form and content of various types of poetic texts, songs, slams etc. written in a simple and accessible language.

UNIT – IV **(9 hours)**

Intermedial and semi-literary texts: Introduction and analytical study of both form and content of comic strips, graphic novels etc.

UNIT – V **(9 hours)**

Intermedial and semi-literary texts: Introduction and analytical study of both form and content of semi literary forms such as essay, commentary, informative/descriptive texts on history, geography, economy, culture that are not too complex.

Practical component (if any) - NIL

Essential/recommended readings

Any of the following textbooks may be prescribed and will be partially completed.

- Thoma L. (2009). *Das Idealpaar Jugendbuch / Kurzgeschichten / Leichte Lesetexte (A1).* München: Hueber Vlg.
- Specht, F. (2010). *Rumpelstilzchen Jugendbuch; Leichte Lesetexte (A1).* München Hueber.
- Thomas, S. (2008). *Vera, Heidelberg Jugendbuch Leichte Lesetexte (A2).* München Hueber.
- Urs, L. (2010). *Fräulein Else Jugendbuch/Leichte Lesetexte (A2).* München Hueber.

Additional texts will be provided by the Department.

Suggestive readings

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 2 (DSE-2):
Debating and Presentation Techniques

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Debating and Presentation Techniques	**4**	**3**	**1**	**0**	**XII passed**	**NIL**

SEMESTER -IV

COURSES OFFERED BY DEPARTMENT OF
Germanic & Romance Studies

Category III

Courses for Undergraduate Programme of study with discipline as one of the Core Disciplines

B.A. Programme with German

(For e.g. courses for B.A. Programmes with_____ (discipline's name) as non-Major or Minor discipline)

DISCIPLINE SPECIFIC CORE COURSE (DSC-1): German in Context: Intermediate Level – 1

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
German in Context: Intermediate Level – 1	4	3	1	Nil	Semester-2 pass	German Basic Level- 2

Learning Objectives

The Learning Objectives of this course are as follows:
At the end of semester 3, a student will

- be able to read long texts and answer questions on them.
- be able to write short texts about one's own feelings and one's immediate environment.
- Be able to express own opinion and feeling, be able to comment and make suggestions
- To understand and conduct telephonic conversation.
- attain Level A 2.1 of the Common European Framework (CEF).

Learning outcomes

The Learning Outcomes of this course are as follows:

- Enable students to attain A 2.1 Level of listening, speaking, reading and writing skills in the concerned language.
- Reading long and difficult texts and answering questions on them.
- Equip students to write about subjects pertaining to his/her immediate environment.

SYLLABUS OF DSC-3

Content

Listening: Understanding words and phrases about persons, professions and far away places, long and difficult. formal/informal conversation, questions, instructions and suggestions, description of places.

Speaking:
Describing and presenting someone's professional life. Taking part in a conversation and interaction. Asking for/ giving information on topics or matters related to travel, Films and profession. Seeking information through telephonic conversation.

Reading: Reading long and difficult texts related to one's immediate and far away environment such as brochures, advertisements, posters, fliers, responding to emails.

Writing: Guided writing will include activities such as describing a city, tourist destinations, travelling experiences, a journey, professional routine, a film

Morphosyntax and Vocabulary: Complex grammatical structures and vocabulary used to describe oneself and others, describe one's local surroundings, cities, professions and journies etc.

UNIT I **3 weeks**
To compare and talk about advantages and disadvantages, talk about films and make comments about films, to express one's opinion, to conduct an interview, talk about feelings, congratulate, thank, express happiness and regret.

UNIT II **3 weeks**
To talk about an event, incident, understand and write a blog, ask about things, understand talks related to banking, make a polite request, describe a city and follow city tours.

UNIT III **3 weeks**
To talk at with travel ticket counter, talk about holiday offers, describe dream profession, preparing conversation via telephone, pass on information out of a text, asking for information, understanding and describing the way to a destination, using the public transport system

UNIT IV **3 weeks**
describing advantages and disadvantages, expressing one's own experience, describing graphics, describing experiences during train journey, story writing, understanding problems in learning, understanding and making suggestions, understanding reports about professions,

UNIT V **3 weeks**
Understanding an interview, preparing a small presentation, expressing hope, despair and admiration during sports, understanding and writing comments, express consequences and contradictions, giving suggestions and reacting, to fix an appointment, understand difficult texts, presenting a tourist destination.

Practical component (if any) - NIL

Essential/recommended readings

Any of the following textbooks may be prescribed and will be partially completed.

1. Dengler, S., Rusch, P., Schmitz, H., Sieber, T. (2020). *Netzwerk neu A 2.2: Deutsch als Fremdsprache. Kurs- und Übungsbuch mit DVD und 2 Audio--CDs.* Klett Verlag.
2. Dengler,Stefanie; Tanja Mayr-Sieber, Paul Rusch, Helen Schmitz. *Netzwerk neu A1.1 and A 2.1: Deutsch als Fremdsprache. Kurs- und Übungsbuch mit Audios und Videos.* Klett Verlag
3. Evans, S., Pude, A., Specht, F. (2021). *Momente A1.1 to 2.1 Kurs- und Arbeitsbuch.* Hueber Verlag.
4. Evans, S., Pude, A., Specht, F. (2020). *Menschen A 1.1 to 2.1. Kurs- und Arbeitsbuch.* Max Hueber Verlag
5. Höldrich, B. (2010). – *Lesen & Schreiben A1 to A2: Buch (Deutsch üben) Taschenbuch*. München: Hueber Verlag.
6. Rusch, P., Schmitz, H. *Einfach Grammatik Deutsch A1 Bis B1.* Berlin: Langenscheidt.
7. Sander, I., Braun, B., Fügert, N., Kotas, O. (2016). *DaF kompakt neu A1 to B1 Deutsch als Fremdsprache für Erwachsene. Kurs- und Übungsbuch.* Klett Verlag.
8. Von, Rosa-Maria Dallapiazza, et al. (2011). *Tangram aktuell A1 to B2. Kurs- und Arbeitsbuch*. Hueber Verlag.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER-V
DEPARTMENT OF GERMANIC AND ROMANCE STUDIES
Category I

[UG Programme for Bachelor in GERMAN (Honours) degree in three years]

DISCIPLINE SPECIFIC CORE COURSE -13 (DSC-13)
Language in Context: Advanced Reading and Writing Skills 1

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Language in Context: Advanced Reading and Writing Skills (1)	**4**	**3**	**1**	**0**	**XII passed**	**NIL**

Learning Objectives

Enable student to

- read texts and answer questions on them;
- be able to write texts, about subjects pertaining to his/her immediate environment;
- attain Level B1.1 of the Common European Framework (CEF).

Learning outcomes

- Enable students to fully attain B1.1 Level of reading and writing skills in the concerned language.
- Reading advanced texts and answering questions on them.
- Equip students to write about subjects pertaining to his/her immediate environment.

SYLLABUS OF DSC-13

Unit I **(9 hours)**

Read and understand texts pertaining to travel destinations.
Write a creative text on your vacation.
Read and write a blog entry.

- Infinitive clauses with “zu”
- Subordinate clause with “da”, “weil” and “obwohl”

Unit II **(9 hours)**

Read texts about customer’s complaints.
Note down the reasons for the complaints.
Read texts on new technological developments.

Compare and write opinion on different advertisements.

- Different uses of the verb “lassen”
- Usage of “darum, “deshalb”, “deswegen”, etc.
- Genitive prepositions “wegen” and “trotz”

Unit III **(9 hours)**

Read the life stories of different people.
Write down a story taking a cue from a given title.
Read texts about what is considered good behaviour and write one’s opinion about the same.

- Forms of past tense “Präteritum” and “Partizip Perfekt”
- Temporal prepositions with dative and genitive

Unit IV **(9 hours)**

Read an interview and guess what is the person’s profession.
Read different job postings.
Write a job application.

- Subjunctive mood
- Pronouns and pronominal adverbs
- Verbs with fixed prepositions in subordinate clause
- Comparative and superlative forms of adjective

Unit V **(9 hours)**

Read texts related to environment.
Write tips on saving the environment.
Read texts on various business ideas to save environment and answer the questions related to the texts.
Write a text on environment issues in India.

- Use of “damit” and “um … zu“
- Future tense
- Nouns which take „n-declension”
- Relative clause

Essential/recommended readings

1. Dengler, S., Rusch, P., Schmitz, H. (2013). *Netzwerk neu B1.1: Deutsch als Fremdsprache. Kurs- und Arbeitsbuch mit DVD und 2 Audio--CDs.* Klett Verlag.
2. Dengler, Stefanie; Tanja Mayr-Sieber, Paul Rusch, Helen Schmitz. *Netzwerk neu B1.1: Deutsch als Fremdsprache. Kurs- und Übungsbuch mit Audios und Videos.* Klett Verlag
3. Evans, S., Pude, A., Specht, F. (2021). *Momente B1: Kurs- und Arbeitsbuch.* Hueber Verlag.
4. Evans, S., Pude, A., Specht, F. (2020). *Menschen B1: Kurs- und Arbeitsbuch.* Max Hueber Verlag
5. Höldrich, B. (2010). – *Lesen & Schreiben B1: Buch (Deutsch üben) Taschenbuch*. München: Hueber Verlag.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 14 (DSC-14)
Language in Context: Advanced Listening and Speaking Skills (1)

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Language in Context: Advanced Listening and Speaking Skills (1)	4	3	1	0	XII passed	NIL

Learning Objectives

Enable student to

- read advanced texts and answer questions on them;
- be able to express on different topics, about subjects pertaining to his/her advanced environment;
- attain complete Level B1.1 of the Common European Framework (CEF).

Learning Outcomes

- Enable students to fully attain B1.1 Level of listening and speaking skills in the concerned language.
- Express ideas on audios listened and answering questions on them.
- Equip students to speak about subjects pertaining to his/her advanced environment

SYLLABUS OF DSC-14

Unit I **(9 hours)**

Talk about likes and dislikes
Understand conversations related to travel plans and
Talk about travel plans
Understand announcements

Unit II **(9 hours)**

Talk about one's shopping preferences

Listen to a radio programme on shopping preferences
Call a service centre to complain about a defect
Express your opinion on different advertisements

Unit III **(9 hours)**

Look at pictures depicting changes in various spheres of life (school, medicine, work etc.) and discuss them.
Talk about one's experiences in the recent past.
Listen to a radio programme about people's lives.
Describe an object or an event.

Unit IV **(9 hours)**

Look at pictures portraying different professions and discuss the same.
Listen to an interview and talk about the person's profession.
Have a conversation at one's place of work.
Listen to a job interview and simulate it.

Unit V **(9 hours)**

Listen to a survey about the future.
Listen to a radio programme and talk about why resolutions for the future don't always get implemented.
Talk about one's future plans.
Listen to weather reports.

Essential/recommended readings

1. Dengler, S., Rusch, P., Schmitz, H. (2021). *Netzwerk neu B1.1: Deutsch als Fremdsprache. Kurs- und Arbeitsbuch mit DVD und 2 Audio--CDs.* Klett Verlag.
2. Dengler, Stefanie; Tanja Mayr-Sieber, Paul Rusch, Helen Schmitz. *Netzwerk neu B1.1: Deutsch als Fremdsprache. Kurs- und Übungsbuch mit Audios und Videos.* Klett Verlag
3. Evans, S., Pude, A., Specht, F. (2021). *Momente B1: Kurs- und Arbeitsbuch.* Hueber Verlag.
4. Evans, S., Pude, A., Specht, F. (2020). *Menschen B1: Kurs- und Arbeitsbuch.* Max Hueber Verlag.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE– 15 (DSC-15)
History of German Literature (1)

Credit distribution, Eligibility and Pre-requisites of the Course

	Credits	Credit distribution of the course		

Course title & Code		Lecture	Tutorial	Practical/ Practice	Eligibility criteria	Pre-requisite of the course (if any)
History of German Literature (1)	**4**	**3**	**1**	**0**	**XII passed**	**NIL**

Learning Objectives

- To introduce the learner to different literary movements and genres in literature from Germany and German-speaking contexts in the 20th and 21st centuries.
- To read and analyse German literary texts representing movements and genres of the 20th and 21st centuries.

Learning outcomes

- Enable students to understand and identify characteristics of literary texts from Germany and German-speaking contexts produced in the 20th and 21st centuries.
- Familiarise students with literary movements, genres and literary conventions of this period.
- Train students to analyse new literary genres that emerged in this period.

SYLLABUS OF DSC-15

UNIT – I **(9 hours)**

Study of literary texts of 20th and 21st centuries in order to analyse form and content of these works in a critical manner.

UNIT – II **(9 hours)**

Familiarise students with various literary movements of this period along with the representative writers who contributed in shaping these movements.

UNIT – III **(9 hours)**

Analysing new literary genres that emerged during this period.

UNIT – IV **(9 hours)**

Understanding macroanalysis

UNIT – V **(9 hours)**

Understanding microanalysis

Practical component (if any) - NIL

Suggestive readings

Learning / Teaching Material: To be compiled and provided by the Department.

Novels, Novellas:
- Kafka, F. (1912, 2017). Die Verwandlung. Value Classics Reprints.
- Kehlmann, D. (2010). Ruhm: Ein Roman in neun Geschichten. Berlin: Rowohlt Taschenbuch Verlag.
- Frank, A. (2013). Tagebuch der Anne Frank (1942-1944).Berlin: Fischer Verlag.

Plays:
- Brecht, B. (1939, 1991). Mutter Courage und ihre Kinder. Berlin: Suhrkamp Verlag.
  Frisch, M. (1961, 1998). Andorra. Stuttgart: Reclam.

Short stories and poems:
- Rilke, R.M. (1902). Der Panther. Retrieved from http://rainer-mariarilke.de/080027panther.html
- Brecht, B. (2012). Die Geschichten von Herrn Keuner. Berlin: Suhrkamp Verlag.
- Brecht, B. (1939, 1990). Die unwürdige Greisin: Und andere Geschichten.Berlin: Suhrkamp Verlag.
- Borchert, W. (1947, 1991). Draußen vor der Tür und ausgewählte Ezählungen. Berlin: Rowohlt Taschenbuch Verlag.
- Böll, H. (1956, 2007). Es wird etwas geschehen.School Scout. Reinig, C. (1968).
- Skorpion. Retrieved from http://www.teachsam.de/deutsch/d_literatur/d_aut/rein/rein_skorpion%20XXX.htm

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 3 (DSE-3):
Introduction to Translation

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Introduction to Translation	**4**	**3**	**1**	**0**	**XII passed**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- Familiarise students with language for specific purposes.
- Familiarise students to the techniques of translation.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Enable students to do scientific and technical translation, and translation of canonical texts.
- Help students to make word glossaries in above fields.
- Enable students to read parallel literature on texts chosen for translation.
- Sensitise students towards machine translation and its limitations.
- Develop awareness about ethics and accountability in translation.

SYLLABUS OF DSE-1

Unit I **(9 hours)**
Study of language used in industries such as hospitality, tourism, banking, business sectors and translation of texts in the chosen areas (including birth, educational qualification, marriage, birth and death certificates, mark sheets).

Unit II **(9 hours)**
Scientific and technical translation. Translation of canonical texts.

Unit III **(9 hours)**
Introducing the students to the techniques of translation.
Making of word glossaries in above fields.

Unit IV **(9 hours)**
Machine translation and its limitations.
Ethics and accountability in translation.

Unit V **(9 hours)**
Reading of parallel literature on texts chosen for translation.
Role of Translation in Multimedia contexts.

Practical component (if any) - NIL

Essential/recommended readings

- Bassnett, S. (2002). *Translation Studies.* New York: Routledge.
- Gile, Daniel. (2009). *Basic Concepts and Models for Interpreter and Translator Training.* Amsterdam: John Benjamins Publishing.
- Munday, Jeremy. (2012). *Introducing Translation Studies, Theories and Applications.* New York: Routledge.
- Malmkjaer, Kirsten, et al. (2011). *The Oxford Handbook of Translation Studies*. Oxford: OUP.
- Baker, Mona. (2011). *In Other Words. A Course Book in Translation*. New York: Routledge.
- Humphery, R. (2010). *Uni-Wissen, Grundkurs Übersetzen Deutsch-Englisch* . Berlin: Klett.
- Gallagher, John Desmond. (1982). *German-English Translation*. München, Wien: Oldenbourg.

Additional material will be provided by the Department.

Suggestive readings

DISCIPLINE SPECIFIC ELECTIVE COURSE – 3 (DSE-3):
Techniques of Written Expression.

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Techniques of Written Expression	**4**	**3**	**1**	**0**	**XII passed**	**NIL**

The Learning Objectives of this course are as follows:

- Familiarise students with different writing styles.
- Familiarise students with the techniques of different writing styles.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Enable students to create fictional texts like short stories and poems.
- Enable students to write different types of non-fictional texts.
- Enable students to understand and use appropriate structure for different types of texts.

SYLLABUS OF DSE-1

UNIT – I **(9 hours)**

Letters and Emails: personal and official

UNIT – II **(9 hours)**

Expository: How-to articles; textbooks; news articles (except for opinion and editorial articles); business, technical, or scientific writing

UNIT – III **(9 hours)**

Persuasive writing: Letters of recommendation; cover letters; Op-Eds and Editorial newspaper articles

UNIT – IV **(9 hours)**

Descriptive: Poetry; fictional novels or plays; memoirs or first-hand accounts of events

UNIT – V **(9 hours)**
Narrative Writing: Short stories; poetry; novels; historical accounts

Practical component (if any) - NIL

Essential/recommended readings

Additional material will be provided by the Department.

Suggestive readings

• Fix, Martin. (2008). Texte Schreiben. Schreibprozesse im Deutschunterricht. Ferdinand Schöningh.
• Grimm, Sonja. Gerstenmaier, Wiebke. (2015). Lerntheke Deutsch 5/6 Schreiben. Cornelsen.
• Biermann, Heinrich (Hsg.). Texte, Themen und Strukturen Deutschbuch für die Oberstufe. Cornelsen.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 3 (DSE-3):
Study of European Art.

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Study of European Art	4	3	1	0	XII passed	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce students to the various major art movements in Europe from the Renaissance to the Contemporary Period.
- To study artworks of painters representative of the major art movements in Europe.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Develop an understanding of structures and perspectives of everyday life as seen by painters.
- Equip with tools to analyse artworks.

SYLLABUS OF DSE-3

UNIT – I **(9 hours)**

Introduction to the Civilization of Europe in the Renaissance. (Paintings on 'Europa'; Durer, (1495) Titian (1559) The Rape of Europa Sebastian (1588) Queen Europa.

UNIT – II **(9 hours)**

Maps of Europe. The idea of Europe. Structures and perspectives of everyday life as seen by painters.

UNIT – III **(9 hours)**

Understanding of structures and perspectives of everyday life as seen by painters.

UNIT – IV **(9 hours)**

Overview of important European Art Movements, representative artists and their artworks: Spanish Baroque, Italian Renaissance, Flemish School, German Romanticists etc.

UNIT – V **(9 hours)**

Overview of important European Art Movements, representative artists and their artworks (contd.): French Impressionists, German Expressionists, Spanish Surrealists etc.

Practical component (if any) - NIL

Essential/recommended readings

- Burckhardt, Jacob. (2004). *The Civilization of the Renaissance in Italy (1855).* New York: Penguin.
- Secrest, Meryle. (1986). *Salvador Dalí The Surrealist Jester.* London: Paladin.
- Hughes, Robert. (2006). *Goya.* New York: Alfred Knopf.
- Huffington, A. (1988). *Picasso Creator and Destroyer.* London: Pan Books.
- Godwin, S. People of Color in European Art History. Retrieved from https://www.pinterest.com/pin/345651340124401985/.
- Adams, L. (1996). *The Methodologies of Art: An Introduction*. NY: Westview Press.
- Arnason, H. H. (2003). *History of Modern Art: Painting, Sculpture, Architecture, Photography.* New York: Prentice Hall.
- Boime, Albert. (1990). *A Social History of Modern Art, Volumes 5.* Chicago: University of Chicago Press.
- Hopkins, David. (2000). *After Modern Art 1945-2000 (Oxford History of Art).* NY: OUP.
- Read, Herbert. (1984). *Meaning of Art.* London: Faber & Faber.
- Sander, J. (2013). *Albert Dürer: His Art in Context.* Frankfurt: Prestel.
- Grave, Johannes. (2012). *Caspar David Friedrich.* Frankfurt: Prestel.

Additional material will be provided by the Department.

Suggestive readings

DISCIPLINE SPECIFIC ELECTIVE COURSE – 3 (DSE-3):
Children and Adolescent Literature.

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Children and Adolescent Literature	**4**	**3**	**1**	**0**	**XII passed**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- To define what is Children's Literature and distinguish it from literature for adults.
- To introduce the learner to different genres of children and adolescent literature.
- To read and understand children and adolescent literature texts.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Introduce students to the changing conceptions of children's literature.
- Help students in analysing various genres meant for young children and adolescents.
- Sensitise students about the role of children's literature in transmitting values.

SYLLABUS OF DSE-1

UNIT – I **(9 hours)**
Changing conceptions of children's literature: Literature for children and /or adult readers?

UNIT – II **(9 hours)**
Folklore, fables and fairy tales for young children.

UNIT – III **(9 hours)**

Theatre for children.

UNIT – IV **(9 hours)**
Comic books and songs for children.

UNIT – V **(9 hours)**
Children's literature and transmission of values.

Practical component (if any) - NIL

Essential/recommended readings

- Bettelheim, Bruno. (1975). *The Uses of Enchantment: The Meaning and Importance of Fairy Tales*. New York: Vintage.
- Propp, Vladimir. (1988). *Morphology of the Folk Tale.* Texas: University of Texas Press.
- Nodelman, Perry. (2008). *The Hidden Adult: Defining Children's Literature.* Baltimore: John Hopkins University Press.
- Brüder Grimm. (2001). *Kinder- und Hausmärchen*. Ditzingen: Reclam
- von Arnim, Achim, Brentano, C. (2001). *Des Knaben Wunderhorn*. Ostfildern: Artemis & Winkler.
- Busch, W. (2013). *Max und Moritz*. Köln: Schwager & Steinlein.
- Kästner, E. (2001). *Emil und die Detektive.* Hamburg: Dressler Verlag GmbH.
- Richter, H. P. (1987). *Damals war es Friedrich*. München: Deutscher Taschenbuch Verlag.

Additional material will be provided by the Department.

Suggestive readings

DISCIPLINE SPECIFIC ELECTIVE COURSE – 3 (DSE-3):
Life Writing.

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Life Writing	4	3	1	0	XII passed	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- Help to analyse the characteristics of autobiographical and biographical texts.
- Familiarise students with diaries and letters.
- Equip students to analyse and write about travel experiences.

Learning outcomes

The Learning Outcomes of this course are as follows:

- The students are able to identify the various kinds of life writings.

SYLLABUS OF DSE-3

UNIT – I **(9 hours)**
Reading, writing and analysing autobiographies, confessions, memoirs.

UNIT – II **(9 hours)**
Reading, writing and analysing fictional autobiographies.

UNIT – III **(9 hours)**
Reading, writing and analysing autobiographical songs.

UNIT – IV **(9 hours)**
Reading, writing and analysing diaries and letters.

UNIT – V **(9 hours)**
Reading, writing and analysing travelogues and other forms of travel narratives.

Practical component (if any) - NIL

Essential/recommended readings

- Geertz, Clifford. (1973). *The Interpretation of Cultures*. New York: Basic Books.
- Geertz, Clifford. (1983). *Local Knowledge*. New York: Basic Books.
- Geertz, Clifford. (1989). *Works and Lives: The Anthropologist as Author*. Stanford: Stanford University Press.
- Derrida, Jacques. (1988). *The Ear of the Other Otobiography, Transference, Translation*. Nebraska: University of Nebraska Press.
- Heckmann, Herbert (ed.). (1984). *Literatur aus dem Leben. Autobiographische Tendenzen in der deutschsprachingen Gegenwartsdichtung*. München, Wien: Hanser.

Primary Texts: Excerpts from *Tagebuch von Anna Frank*, Günter Grass: *Beim Häuten der Zwiebel*, Elias Canetti: *Die gerettete Zunge*, Hermann Hesse: *Aus Indien.*

Additional material will be provided by the Department.

Suggestive readings

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COURSES OFFERED BY DEPARTMENT OF
Germanic & Romance Studies
SEMESTER -V

Category III

Courses for Undergraduate Programme of study with discipline as one of the Core Disciplines
B.A. Programme with German
(For e.g. courses for B.A. Programmes with_____ (discipline's name) as non-Major or Minor discipline)

DISCIPLINE SPECIFIC CORE COURSE (DSC- 1): German in Context: Advanced Level – 1

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
German in Context: Advanced Level – 1	4	3	1	Nil	Semester-4 pass	German in Context: Intermediate Level – 2

Learning Objectives

The Learning Objectives of this course are as follows:
At the end of semester 5, a student will

- be able to read long texts and answer questions on them.
- be able to write short texts about one's own feelings and one's immediate environment.
- Be able to express own opinion and feeling, be able to comment and make suggestions
- To understand and conduct telephonic conversation.
- attain Level B 1.2 of the Common European Framework (CEF).

Learning outcomes

The Learning Outcomes of this course are as follows:

- Enable students to attain B 1.2 Level of listening, speaking, reading and writing skills in the concerned language.
- Teaches students to read long and difficult texts and answering questions on them.
- Equip students to write about subjects pertaining to his/her immediate environment.

SYLLABUS OF DSC-5

Content

Listening: Understanding words and phrases about persons, professions and far away places, long and difficult. formal/informal conversation, questions, instructions and suggestions, description of places.

Speaking:
Describing and presenting someone's professional life. Taking part in a conversation and interaction. Asking for/ giving information on topics or matters related to travel, Films and profession. Seeking information through telephonic conversation.

Reading: Reading long and difficult texts related to one's immediate and far away environment such as brochures, advertisements, posters, fliers, responding to emails.

Writing: Guided writing will include activities such as describing a city, tourist destinations, travelling experiences, a journey, professional routine, a film

Morphosyntax and Vocabulary: Complex grammatical structures and vocabulary used to describe oneself and others, describe one's local surroundings, cities, professions and journies etc.

UNIT I **3 weeks**
To compare and talk about advantages and disadvantages, talk about films and make comments about films, to express one's opinion, to conduct an interview, talk about feelings, congratulate, thank, express happiness and regret.

UNIT II **3 weeks**
To talk about an event, incident, understand and write a blog, ask about things, understand talks related to banking, make a polite request, describe a city and follow city tours.

UNIT III **3 weeks**
To talk at with travel ticket counter, talk about holiday offers, describe dream profession, preparing conversation via telephone, pass on information out of a text, asking for information, understanding and describing the way to a destination, using the public transport system

UNIT IV **3 weeks**
describing advantages and disadvantages, expressing one's own experience, describing graphics, describing experiences during train journey, story writing, understanding problems in learning, understanding and making suggestions, understanding reports about professions,

UNIT V **3 weeks**
Understanding an interview, preparing a small presentation, expressing hope, despair and admiration during sports, understanding and writing comments, express consequences and contradictions, giving suggestions and reacting, to fix an appointment, understand difficult texts, presenting a tourist destination.

Practical component (if any) - NIL

Essential/recommended readings

Any of the following textbooks may be prescribed and will be partially completed.

1. Dengler, S., Rusch, P., Schmitz, H., Sieber, T. (2020). *Netzwerk neu B1.2 : Deutsch als Fremdsprache. Kurs- und Übungsbuch mit DVD und 2 Audio--CDs.* Klett Verlag.
2. Dengler,Stefanie; Tanja Mayr-Sieber, Paul Rusch, Helen Schmitz. *Netzwerk neu A1.1 and A 2.1: Deutsch als Fremdsprache. Kurs- und Übungsbuch mit Audios und Videos.* Klett Verlag
3. Evans, S., Pude, A., Specht, F. (2021). *Momente A1.1 to 2.1 Kurs- und Arbeitsbuch.* Hueber Verlag.
4. Evans, S., Pude, A., Specht, F. (2020). *Menschen A 1.1 to 2.1. Kurs- und Arbeitsbuch.* Max Hueber Verlag
5. Höldrich, B. (2010). – *Lesen & Schreiben A1 to A2: Buch (Deutsch üben) Taschenbuch*. München: Hueber Verlag.
6. Rusch, P., Schmitz, H. *Einfach Grammatik Deutsch A1 Bis B1.* Berlin: Langenscheidt.
7. Sander, I., Braun, B., Fügert, N., Kotas, O. (2016). *DaF kompakt neu A1 to B1 Deutsch als Fremdsprache für Erwachsene. Kurs- und Übungsbuch.* Klett Verlag.
8. Von, Rosa-Maria Dallapiazza, et al. (2011). *Tangram aktuell A1 to B2. Kurs- und Arbeitsbuch*. Hueber Verlag.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GERMAN

COURSES OFFERED BY DEPARTMENT OF GERMANIC AND ROMANCE STUDIES

Category I

(B.A. Honours in German in three years)

SEMESTER-VI

Category I

[UG Programme for Bachelor in GERMAN (Honours) degree in three years]

DISCIPLINE SPECIFIC CORE COURSE -16 (DSC-16)
Language in Context: Advanced Reading and Writing Skills (2)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Language in Context: Advanced Reading and Writing Skills (2)	**4**	**3**	**1**	**0**	**XII passed**	**Should have studied "Language in Context: Advanced Reading and Writing Skills (1)"**

Learning Objectives

Enable student to

- read texts and answer questions on them;
- be able to write texts, about subjects pertaining to his/her advanced environment;
- attain Level B1.2 of the Common European Framework (CEF).

Learning outcomes

- Enable students to fully attain B1.2 Level of reading and writing skills in the concerned language.
- Reading advanced texts and answering questions on them.
- Equip students to write about subjects pertaining to his/her advanced environment.

SYLLABUS OF DSC-16

Unit I **(9 hours)**

Read texts on relationships (friends, family, acquaintances).
Write what is important for one in each relationship.
Write an e-mail to a friend about an event that one had attended.
Read a fable and answer questions related to it.
Write a fable.

- Past tense "Plusquamperfekt"
- Temporal conjunctions "nachdem", "bevor", "bis" etc.

Unit II **(9 hours)**

Read and answer a survey on healthy living.
Read a text on music and emotions.
Write an e-mail and apologise for not being able to attend an event.

- Two-part conjunctions
- Reflexive pronouns in akkusative and dative

Unit III **(9 hours)**

Read short texts on art and culture.
Write about what one likes about particular art objects.
Read chats and respond.
Read different texts on voluntary social service.

- Position of "nicht" in a sentence
- Adjective ending with article
- Passive voice with and without modals

Unit IV **(9 hours)**

Read comments in a forum about life in a city and in a village.
Read a text on what makes a city attractive and compare this city with one's own city.
Write a text on what makes one's city particularly liveable.
Learn to write a formal letter.

- Use of articles as pronouns
- Use of adjectives as nouns
- Relative clause with "was" and "wo"

Unit V **(9 hours)**

Look at given pictures and write a story.
Read a historical text on banking.
Read a text on barter system and write one's opinion about that.
Read a text on globalisation and write the pros and cons of the same.

- Sentences with "je … desto/umso"
- Use of verbs to make adjectives in present and past tense "Partizip 1" and "Partizip 2"

Practical component (if any) - NIL

Essential/recommended readings

1. Dengler, S., Rusch, P., Schmitz, H. (2013). *Netzwerk neu B1.2: Deutsch als Fremdsprache. Kurs- und Arbeitsbuch mit DVD und 2 Audio--CDs.* Klett Verlag.
2. Dengler, Stefanie; Tanja Mayr-Sieber, Paul Rusch, Helen Schmitz. *Netzwerk neu B1.2: Deutsch als Fremdsprache. Kurs- und Übungsbuch mit Audios und Videos.* Klett Verlag
3. Evans, S., Pude, A., Specht, F. (2021). *Momente B1: Kurs- und Arbeitsbuch.* Hueber Verlag.
4. Evans, S., Pude, A., Specht, F. (2020). *Menschen B1: Kurs- und Arbeitsbuch.* Max Hueber Verlag
5. Höldrich, B. (2010). – *Lesen & Schreiben B1: Buch (Deutsch üben) Taschenbuch*. München: Hueber Verlag.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 17 (DSC-17)
Language in Context: Advanced Listening and Speaking Skills (2)

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Language in Context: Advanced Listening and Speaking Skills (2)	**4**	**3**	**1**	**0**	**XII passed**	**Should have studied "Language in Context: Advanced Listening and Speaking Skills (1)"**

Learning Objectives

Enable student to

- read advanced texts and answer questions on them;
- be able to express on different topics, about subjects pertaining to his/her advanced environment;
- attain complete Level B1.2 of the Common European Framework (CEF).

Learning Outcomes

- Enable students to fully attain B1.2 Level of listening and speaking skills in the concerned language.
- Express ideas on audios listened and answering questions on them.
- Equip students to speak about subjects pertaining to his/her advanced environment

Unit I **(9 hours)**

Listen to a text describing a conflict situation.
Talk about reasons for conflicts.
Listen to conversations and talk about the situations portrayed there.
Carry out a conversation with the help of given expressions (Topic: Conflict)

Unit II **(9 hours)**

Chose a situation related to hospital and carry out a conversation.
Listen to a conversation between a doctor and a patient and discuss the problems.
Discuss what kind of music does one listen to in which particular situation.
Listen to some songs and talk about which experience one could relate with the particular songs.

Unit III **(9 hours)**

Listen to conversation about different works of art.
Use different expressions for likes and dislikes.
Give a structured presentation on a given topic.
Hold a discussion on which values are important for a society.

Unit IV **(9 hours)**

Look at the pictures and discuss what is applicable for a city or a village.
Discuss about one's favourite city.
Listen to a text and find out who likes which city.
Discuss how one can improve one's city.

Unit V **(9 hours)**

Look at the pictures and discuss for what purpose one would be spending the money.
Listen to and simulate a conversation in a bank.
Discuss the role of money in life.
Listen to a conversation about globalisation.

Practical component (if any) - NIL

Essential/recommended readings

1. Dengler, S., Rusch, P., Schmitz, H. (2021). *Netzwerk neu B1.2: Deutsch als Fremdsprache. Kurs- und Arbeitsbuch mit DVD und 2 Audio--CDs.* Klett Verlag.
2. Dengler, Stefanie; Tanja Mayr-Sieber, Paul Rusch, Helen Schmitz. *Netzwerk neu B1.2: Deutsch als Fremdsprache. Kurs- und Übungsbuch mit Audios und Videos.* Klett Verlag
3. Evans, S., Pude, A., Specht, F. (2021). *Momente B1: Kurs- und Arbeitsbuch.* Hueber Verlag.
4. Evans, S., Pude, A., Specht, F. (2020). *Menschen B1: Kurs- und Arbeitsbuch.* Max Hueber Verlag

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE– 18 (DSC-18)
History of German Literature (2)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
History of German Literature (2)	**4**	**3**	**1**	**0**	**XII passed**	**Should have studied "History of German Literature (1)"**

Learning Objectives

- To introduce the learner to different literary movements and genres in literature from Germany and German-speaking contexts in the 19th century.
- To read and analyse German literary texts representing movements and genres of the 19th century.

Learning outcomes

- Enable students to understand and identify characteristics of German literary texts produced in 19th century.
- Familiarise students with literary movements, genres and literary conventions of this period.
- Train students to analyse literary genres that emerged in this period.

SYLLABUS OF DSC-18

UNIT – I **(9 hours)**

Study of literary texts of the 19th century in order to analyse form and content of these works in a critical manner.

UNIT – II **(9 hours)**

Familiarise students with various literary movements of this period along with the representative writers who contributed in shaping these movements.

UNIT – III **(9 hours)**

Analysing new literary genres, devices and conventions that emerged during this period.

UNIT – IV **(9 hours)**

Understanding macroanalysis

UNIT – V **(9 hours)**

Understanding microanalysis

Practical component (if any) - NIL

Suggestive readings

Learning / Teaching Material: To be compiled and provided by the Department.

Novels and Novellas:

- von Goethe, J.W. (1774, 2012). Die Leiden des jungen Werthers. Stuttgart: Reclam.
- Hoffmann, ETA. (1816, 2018). Der Sandmann. Stuttgart: Reclam.
- Keller, G. (1874, 1960). Kleider machen Leute. Hamburg: Hamburger Lesetexte.

Plays:

- Lessing, G. (1779, 1981). Nathan der Weise. Stuttgart: Reclam.
- Hebbel, F. (1843, 1986). Maria Magdalena. Stuttgart: Reclam.
- Büchner, G. (1879, 1999). Woyzeck. Stuttgart: Reclam.
- Schnitzler, A. (1897, 2002). Reigen. Stuttgart: Reclam.

Short stories and poems:

- von Arnim, A., Brentano, C. (2003). Des Knaben Wunderhorn (1805 -1808). Leipzig:Insel Verlag.
- von Goethe, J. (1782). Erlkönig. Retrieved from https://germanstories.vcu.edu/goethe/erl_dual.html
- von, Goethe, J. (1822). Wanderers Nachtlied. Retrieved from https://www.oxfordlieder.co.uk/song/713
- Heine, H. (1822). Loreley. Retrieved from http://www.aphilia.de/literatur-heinrichheine-02-loreley.html
- Heine, H. (1845, 2001). Die schlesischen Weber. Retrieved from https://www.deutschelyrik.de/die-schlesischen-weber.407.html

Additional material may be provided by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 4 (DSE-4):
Research Methodology and Academic Writing.

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Research Methodology and Academic Writing	4	3	1	0	XII passed	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce the learner to the basics of research process and argumentation.
- To familiarize the learner with the process and stylistics of academic writing.
- To develop in the learner an independent point of view and critical thinking.

Learning outcomes

The Learning Outcomes of this course are as follows:

- The learner will be able to identify research gaps and construct hypotheses and arguments.
- The learner will be able to choose, access and effectively engage with primary, secondary and tertiary sources.
- The learner will be able to write an academic paper/text.

SYLLABUS OF DSE-4

UNIT – I **(9 hours)**

Identifying the student's area of interest, a research gap and a research problem.
Training students on how to choose and narrow down a topic. Building a research hypothesis.
Basic types and components of a research question.

UNIT – II **(9 hours)**

Identifying and evaluating different kinds of sources like primary vs secondary vs tertiary sources, as well as journal articles, books, dissertations etc.
Identifying and choosing relevant and reliable sources for research, as well as basic knowledge on different websites, portals and journals for accessing said sources.

Constructing an annotated Bibliography.
Familiarizing students with the different kinds of research: quantitative research (e.g., surveys, questionnaires etc. in case of foreign language teaching) and qualitative research (e.g., different literary and cultural theories in case of research in literature).

UNIT – III **(9 hours)**
Basic knowledge on what an argument is and its components and structure. Identifying simple and complex arguments, as well as validity and soundness of an argument.
Knowledge of logical fallacies.
Engaging with and evaluating sources by identifying underlying arguments, their structures, validity and soundness.

UNIT – IV **(9 hours)**
Effective note-taking, and summarizing academic/scientific texts.
Constructing arguments and counter-arguments. Quoting, paraphrasing and summarizing from the source texts to construct the argument(s).

UNIT – V **(9 hours)**
Planning and structuring a draft. Familiarization with stylistic conventions, using different citation styles and making footnotes.
Familiarizing with the ethics of research and plagiarism.
Perfecting a final draft based on coherence, connection and flow in writing.

Practical component (if any) - NIL

Essential/recommended readings

1. Brian Paltridge and Sue Starfield. Thesis and Dissertation Writing in a Second Language, Routledge, 2007
2. Brian Paltridge and Sue Starfield. Getting Published in Academic Journals, University of Michigan Press. 2016
3. Brian Paltridge et. al. Teaching Academic Writing University of Michigan Press. 2009
4. Umberto Eco, Walter Schick (Übersetzer). Wie man eine wissenschaftliche abschlussarbeit schreibt. UTB GmbH; 13th edition (20 Jun. 2010)
5. Helga Esselborn-Krumbiegel. Richtig wissenschaftlich schreiben: Wissenschaftssprache in Regeln und Übungen. UTB GmbH; 7. Aufl. edition (17 Jan. 2022)
6. Helga Esselborn-Krumbiegel. Von der Idee zum Text. Eine Anleitung zum wissenschafltichen Schreiben. UTB GmbH; 6. aktual. Aufl. edition (14 Feb. 2022)
7. Wayne C. Booth. Gregory G. Colomb et al. The Craft of Research. University of Chicago Press; 4. edition (18 Oct. 2016)

Suggestive readings

DISCIPLINE SPECIFIC ELECTIVE COURSE – 4 (DSE-4):
Introduction to Foreign Language Teaching.

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course	Eligibility criteria	Pre-requisite of the course

		Lecture	Tutorial	Practical/ Practice		(if any)
Introduction to Foreign Language Teaching	**4**	**3**	**1**	**0**	**XII passed**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- To create basic awareness about a foreign language classroom and textbook.
- To establish a theoretical basis and introduce students to basic practical aspects of Foreign Language Teaching.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Successfully creating basic awareness about a foreign language classroom and textbook.
- Establishing a theoretical basis and introduce students to basic practical aspects of Foreign Language Teaching.

SYLLABUS OF DSE-1

UNIT – I **(9 hours)**
What is a classroom? Models of learning and teaching.

UNIT – II **(9 hours)**
Different methods and approaches to teaching a foreign language.

UNIT – III **(9 hours)**
Introduction to the four skills. Evaluation

UNIT – IV **(9 hours)**
What is a text book? Issues in material production, Self-Instruction Material.

UNIT – V **(9 hours)**
Ludic function of language: Teaching through games.

Practical component (if any) - NIL

Essential/recommended readings

- Ziebell, B. (2002). *Unterrichtsbeobachtung und Lehrerverhalten*. Berlin: Langenscheidt.

- Bachmeyer, G. (1993). *Deutsch als Fremd- und Zweitsprache. Didaktische Modelle des Erwerbs der deutschen Sprache bei Erwachsenen*. Frankfurt am Main: Peter Lang Verlag.

Additional material will be provided by the Department.

Suggestive readings

DISCIPLINE SPECIFIC ELECTIVE COURSE – 4 (DSE-4):
Introduction to Translation

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Introduction to Translation	**4**	**3**	**1**	**0**	**XII passed**	**NIL**

Learning Objectives

The Learning Objectives of this course are as follows:

- Familiarise students with language for specific purposes.
- Familiarise students to the techniques of translation.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Enable students to do scientific and technical translation, and translation of canonical texts.
- Help students to make word glossaries in above fields.
- Enable students to read parallel literature on texts chosen for translation.
- Sensitise students towards machine translation and its limitations.
- Develop awareness about ethics and accountability in translation.

SYLLABUS OF DSE-1

Unit I **(9 hours)**

Study of language used in industries such as hospitality, tourism, banking, business sectors and translation of texts in the chosen areas (including birth, educational qualification, marriage, birth and death certificates, mark sheets).

Unit II **(9 hours)**
Scientific and technical translation. Translation of canonical texts.

Unit III **(9 hours)**
Introducing the students to the techniques of translation.
Making of word glossaries in above fields.

Unit IV **(9 hours)**
Machine translation and its limitations.
Ethics and accountability in translation.

Unit V **(9 hours)**
Reading of parallel literature on texts chosen for translation.
Role of Translation in Multimedia contexts.

Practical component (if any) - NIL

Essential/recommended readings

- Bassnett, S. (2002). *Translation Studies.* New York: Routledge.
- Gile, Daniel. (2009). *Basic Concepts and Models for Interpreter and Translator Training.* Amsterdam: John Benjamins Publishing.
- Munday, Jeremy. (2012). *Introducing Translation Studies, Theories and Applications.* New York: Routledge.
- Malmkjaer, Kirsten, et al. (2011). *The Oxford Handbook of Translation Studies*. Oxford: OUP.
- Baker, Mona. (2011). *In Other Words. A Course Book in Translation*. New York: Routledge.
- Humphery, R. (2010). *Uni-Wissen, Grundkurs Übersetzen Deutsch-Englisch* . Berlin: Klett.
- Gallagher, John Desmond. (1982). *German-English Translation*. München, Wien: Oldenbourg.

Additional material will be provided by the Department.

Suggestive readings

DISCIPLINE SPECIFIC ELECTIVE COURSE – 4 (DSE-4):
Techniques of Written Expression.

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		

Techniques of Written Expression	**4**	**3**	**1**	**0**	**XII passed**	**NIL**

The Learning Objectives of this course are as follows:

- Familiarise students with different writing styles.
- Familiarise students with the techniques of different writing styles.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Enable students to create fictional texts like short stories and poems.
- Enable students to write different types of non-fictional texts.
- Enable students to understand and use appropriate structure for different types of texts.

SYLLABUS OF DSE-1

UNIT – I **(9 hours)**

Letters and Emails: personal and official

UNIT – II **(9 hours)**

Expository: How-to articles; textbooks; news articles (except for opinion and editorial articles); business, technical, or scientific writing

UNIT – III **(9 hours)**

Persuasive writing: Letters of recommendation; cover letters; Op-Eds and Editorial newspaper articles

UNIT – IV **(9 hours)**

Descriptive: Poetry; fictional novels or plays; memoirs or first-hand accounts of events

UNIT – V **(9 hours)**
Narrative Writing: Short stories; poetry; novels; historical accounts

Practical component (if any) - NIL

Essential/recommended readings

Additional material will be provided by the Department.

Suggestive readings

• Fix, Martin. (2008). Texte Schreiben. Schreibprozesse im Deutschunterricht. Ferdinand Schöningh.
• Grimm, Sonja. Gerstenmaier, Wiebke. (2015). Lerntheke Deutsch 5/6 Schreiben. Cornelsen.
• Biermann, Heinrich (Hsg.). Texte, Themen und Strukturen Deutschbuch für die Oberstufe. Cornelsen.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 4 (DSE-4):
Study of European Art.

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Study of European Art	4	3	1	0	XII passed	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce students to the various major art movements in Europe from the Renaissance to the Contemporary Period.
- To study artworks of painters representative of the major art movements in Europe.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Develop an understanding of structures and perspectives of everyday life as seen by painters.
- Equip with tools to analyse artworks.

SYLLABUS OF DSE-3

UNIT – I **(9 hours)**
Introduction to the Civilization of Europe in the Renaissance. (Paintings on 'Europa'; Durer, (1495) Titian (1559) The Rape of Europa Sebastian (1588) Queen Europa.

UNIT – II **(9 hours)**
Maps of Europe. The idea of Europe. Structures and perspectives of everyday life as seen by painters.

UNIT – III **(9 hours)**
Understanding of structures and perspectives of everyday life as seen by painters.

UNIT – IV **(9 hours)**
Overview of important European Art Movements, representative artists and their artworks: Spanish Baroque, Italian Renaissance, Flemish School, German Romanticists etc.

UNIT – V **(9 hours)**

Overview of important European Art Movements, representative artists and their artworks (contd.): French Impressionists, German Expressionists, Spanish Surrealists etc.

Practical component (if any) - NIL

Essential/recommended readings

- Burckhardt, Jacob. (2004). *The Civilization of the Renaissance in Italy (1855).* New York: Penguin.
- Secrest, Meryle. (1986). *Salvador Dalí The Surrealist Jester.* London: Paladin.
- Hughes, Robert. (2006). *Goya.* New York: Alfred Knopf.
- Huffington, A. (1988). *Picasso Creator and Destroyer.* London: Pan Books.
- Godwin, S. People of Color in European Art History. Retrieved from https://www.pinterest.com/pin/345651340124401985/.
- Adams, L. (1996). *The Methodologies of Art: An Introduction*. NY: Westview Press.
- Arnason, H. H. (2003). *History of Modern Art: Painting, Sculpture, Architecture, Photography.* New York: Prentice Hall.
- Boime, Albert. (1990). *A Social History of Modern Art, Volumes 5.* Chicago: University of Chicago Press.
- Hopkins, David. (2000). *After Modern Art 1945-2000 (Oxford History of Art).* NY: OUP.
- Read, Herbert. (1984). *Meaning of Art.* London: Faber & Faber.
- Sander, J. (2013). *Albert Dürer: His Art in Context.* Frankfurt: Prestel.
- Grave, Johannes. (2012). *Caspar David Friedrich.* Frankfurt: Prestel.

Additional material will be provided by the Department.

Suggestive readings

DISCIPLINE SPECIFIC ELECTIVE COURSE – 4 (DSE-4):
Children and Adolescent Literature.

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		

Children and Adolescent Literature	**4**	**3**	**1**	**0**	**XII passed**	**NIL**

Course Description

Children and adolescent literature can be distinguished from mere books written for children as literature implies genre and literary tropes, premeditated contexts and settings and often a conscious attempt at portraying history and multiculturalism. In addition, adolescent literature written by adults is an institutional discourse that helps teenage readers understand their environment and society through the issues that present themselves in texts. Through novels, poems and theater, we examine the values transmitted to children and how literature can influence moral and social decisions that adolescents are faced with.

Learning Objectives

The Learning Objectives of this course are as follows:

- To define what is Children's Literature and distinguish it from literature for adults.
- To introduce the learner to different genres of children and adolescent literature.
- To read and understand children and adolescent literature texts.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Introduce students to the changing conceptions of children's literature.
- Help students in analysing various genres meant for young children and adolescents.
- Sensitise students about the role of children's literature in transmitting values.

SYLLABUS OF DSE-1

UNIT – I **(9 hours)**
Changing conceptions of children's literature: Literature for children and /or adult readers?

UNIT – II **(9 hours)**
Folklore, fables and fairy tales for young children.

UNIT – III **(9 hours)**
Theatre for children.

UNIT – IV **(9 hours)**
Comic books and songs for children.

UNIT – V **(9 hours)**
Children's literature and transmission of values.

Practical component (if any) - NIL

Essential/recommended readings

- Bettelheim, Bruno. (1975). *The Uses of Enchantment: The Meaning and Importance of Fairy Tales*. New York: Vintage.
- Propp, Vladimir. (1988). *Morphology of the Folk Tale.* Texas: University of Texas Press.
- Nodelman, Perry. (2008). *The Hidden Adult: Defining Children's Literature*. Baltimore: John Hopkins University Press.
- Brüder Grimm. (2001). *Kinder- und Hausmärchen*. Ditzingen: Reclam
- von Arnim, Achim, Brentano, C. (2001). *Des Knaben Wunderhorn*. Ostfildern: Artemis & Winkler.
- Busch, W. (2013). *Max und Moritz*. Köln: Schwager & Steinlein.
- Kästner, E. (2001). *Emil und die Detektive.* Hamburg: Dressler Verlag GmbH.
- Richter, H. P. (1987). *Damals war es Friedrich*. München: Deutscher Taschenbuch Verlag.

Additional material will be provided by the Department.

Suggestive readings

DISCIPLINE SPECIFIC ELECTIVE COURSE – 4 (DSE-4):
Life Writing.

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Life Writing	4	3	1	0	XII passed	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- Help to analyse the characteristics of autobiographical and biographical texts.
- Familiarise students with diaries and letters.
- Equip students to analyse and write about travel experiences.

Learning outcomes

The Learning Outcomes of this course are as follows:

- The students are able to identify the various kinds of life writings.

SYLLABUS OF DSE-3

UNIT – I **(9 hours)**
Reading, writing and analysing autobiographies, confessions, memoirs.

UNIT – II **(9 hours)**
Reading, writing and analysing fictional autobiographies.

UNIT – III **(9 hours)**
Reading, writing and analysing autobiographical songs.

UNIT – IV **(9 hours)**
Reading, writing and analysing diaries and letters.

UNIT – V **(9 hours)**
Reading, writing and analysing travelogues and other forms of travel narratives.

Practical component (if any) - NIL

Essential/recommended readings

- Geertz, Clifford. (1973). *The Interpretation of Cultures*. New York: Basic Books.
- Geertz, Clifford. (1983). *Local Knowledge*. New York: Basic Books.
- Geertz, Clifford. (1989). *Works and Lives: The Anthropologist as Author*. Stanford: Stanford University Press.
- Derrida, Jacques. (1988). *The Ear of the Other Otobiography, Transference, Translation*. Nebraska: University of Nebraska Press.
- Heckmann, Herbert (ed.). (1984). *Literatur aus dem Leben. Autobiographische Tendenzen in der deutschsprachingen Gegenwartsdichtung*. München, Wien: Hanser.

Primary Texts: Excerpts from *Tagebuch von Anna Frank*, Günter Grass: *Beim Häuten der Zwiebel*, Elias Canetti: *Die gerettete Zunge*, Hermann Hesse: *Aus Indien.*

Additional material will be provided by the Department.

Suggestive readings

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COURSES OFFERED BY DEPARTMENT OF
Germanic & Romance Studies

Category III

Courses for Undergraduate Programme of study with discipline as one of the Core Disciplines
B.A. Programme with German as Non-Major

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
German in Context: Advanced Level – 2	4	3	1	Nil	Semester-5 pass	German in Context: Advanced Level – 1

Learning Objectives

The Learning Objectives of this course are as follows:
At the end of semester 6, a student will

- be able to read long texts and answer questions on them.
- be able to write short texts about one's own feelings and one's immediate environment.
- Be able to express own opinion and feeling, be able to comment and make suggestions
- attain Level B 1.2 of the Common European Framework (CEF).

Learning outcomes

The Learning Outcomes of this course are as follows:

- Enable students to attain B 1.2 Level of listening, speaking, reading and writing skills in the concerned language.
- Enable the students to read long and difficult texts and answering questions on them.
- Equip students to write about subjects pertaining to his/her immediate environment.

SYLLABUS OF DSC-6

Content	Description
Listening	Understanding words and phrases about persons, professions and far away places, long and difficult. formal/informal conversation, questions, instructions and suggestions, description of places.
Speaking	Describing and presenting someone's professional life. Taking part in a conversation and interaction. Asking for/ giving information on topics or matters related to travel, Films and profession. Seeking information through telephonic conversation.
Reading	Reading long and difficult texts related to one's immediate and far away environment such as brochures, advertisements, posters, fliers, responding to emails.
Writing	Guided writing will include activities such as describing a city, tourist destinations, travelling experiences, a journey, professional routine, a film.
Morphosyntax & Vocabulary	Complex grammatical structures and vocabulary used to describe oneself and others, describe one's local surroundings, cities, professions and journies etc.

UNIT	Content	Duration
UNIT – I	To understand and discuss relationships and stories of Friendship and conflicts by citing popular figures, discuss and narrate fables, learn to offer, decline or ask for help, warn someone, talk about habits, understand an informative text, talk about music and feelings.	9 Hours
UNIT – II	To find and reproduce important information out of a newspaper article, understand radio discussion, give learn tips, describe a special place like a hospital, discuss pictures, enquire, answer in the negative, understand a course programme, describe persons and objects exactly, introducing impro-theatre, discuss singing and folk songs.	9 Hours
UNIT III	To describe an event, discuss social work, understand an article about social project and write about one such project, talk about institutions in the city, understand EU, make a small presentation.	9 Hours
UNIT – IV	To talk about life in a city, understanding a magazine article, write a report, discuss cities with good living standards, describing something closely, understanding a blog about a city, portrayal of a city, plan a city visit.	9 Hours
UNIT V	To understand talks inside banks, understand information on a website, ask about activities, understand and express arguments, describing persons, things and situations related to banking, understand and write text related to money.	9 Hours

Practical component (if any) - NIL

Essential/recommended readings

Any of the following textbooks may be prescribed and will be partially completed.

1. Dengler, S., Rusch, P., Schmitz, H., Sieber, T. (2020). *Netzwe neu B 1.2: Deutsch als Fremdsprache. Kurs- und Übungsbuch mit DVD und 2 Audio-- CDs.* Klett Verlag.
2. Dengler,Stefanie; Tanja Mayr-Sieber, Paul Rusch, Helen Schmitz. *Netzwerk neu A1.1 and B1.2: Deutsch als Fremdsprache. Kurs- und Übungsbuch mit Audios und Videos.* Klett Verlag
3. Evans, S., Pude, A., Specht, F. (2021). *Momente A1.1 to 2.1 Kurs- und Arbeitsbuch.* Hueber Verlag.
4. Evans, S., Pude, A., Specht, F. (2020). *Menschen A 1.1 to 2.1. Kurs- und Arbeitsbuch.* Max Hueber Verlag
5. Höldrich, B. (2010). – *Lesen & Schreiben A1 to A2: Buch (Deutsch üben) Taschenbuch*. München: Hueber Verlag.
6. Rusch, P., Schmitz, H. *Einfach Grammatik Deutsch A1 Bis B1.* Berlin: Langenscheidt.
7. Sander, I., Braun, B., Fügert, N., Kotas, O. (2016). *DaF kompakt neu A1 to B1 Deutsch als Fremdsprache für Erwachsene. Kurs- und Übungsbuch.* Klett Verlag.
8. Von, Rosa-Maria Dallapiazza, et al. (2011). *Tangram aktuell A1 to B2. Kurs- und Arbeitsbuch*. Hueber Verlag.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COURSES OFFERED BY DEPARTMENT OF
Germanic & Romance Studies
Category III

Pool of DSE
B.A. Programme with German

DISCIPLINE SPECIFIC ELECTIVE (DSE-1): Children & Adolescent Literature

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Children & Adolescent Literature	4	3	1	Nil	Semester-5 pass	German in Context: Advanced Level – 1

Children and adolescent literature can be distinguished from mere books written for children as literature implies genre and literary tropes, premeditated contexts and settings and often a conscious attempt at portraying history and multiculturalism. In addition, adolescent literature written by adults is an institutional discourse that helps teenage readers understand their environment and society through the issues that present themselves in texts. Through novels, poems and theatre one can examine the values transmitted to children and how literature can influence moral and social decisions that adolescents are faced with.

Learning Objectives

The Learning Objectives of this course are as follows:
At the end of semester 6 a student will

- Be famaliar with some popular German short stories, folk tales and novela etc.
- Have an insight into socio/political/historical background of the introduced literary texts .
- Be able to analyze long texts and make notes about the same.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Helps students gain some insight into some popular German short stories, folk tales and novela etc.
- Enables the students to find answers to the questions based on the texts.

SYLLABUS OF SEMESTER VI DSE- 1 <CHILDREN & ADOLESCENT LITERATURE>

Content	Description
Reading	Reading and analyzing short stories, folk tales and novella such as <Der Makkaronifresser> <Kleider machen Leute> <Die Bremer Stadtmusikanten> <Die unwürdige Greisin> <Brief aus Amerika> <Küchenuhr> <Die rote Katze> <Frieden für Anna> <Anekdote zur Senkung der Arbeitsmoral> or Any other text belonging to the genre.

UNIT	Content	Duration
UNIT – I	Reading and discussion of any two selected stories.	9 Hours
UNIT – II	Reading and discussion of any two selected stories.	9 Hours
UNIT III	Reading and discussion of any two selected stories.	9 Hours
UNIT – IV	Reading and discussion of a part of any selected novela.	9 Hours
UNIT V	Reading and discussion of a part of any selected novela. Finding answers to definite questions related to the novela in question.	9 Hours

Practical component (if any) - NIL

Essential/recommended readings

Any of the following text may be prescribed and discussed

, ,

1. Gottfried Keller. (1874). Kleider Machen Leute. Ditzingen: Reclam.
2. Brüder Grimm: Die Bremer Stadtmusikanten
3. Bertolt Brecht: die unwürdige Greisin (1939)
4. Johannes Bobrowski: Brief aus Amerika (1963)
5. Wolfgang Borchert : die Küchenuhr,(1947)
6. Luise Rinser : die rote Katze (1948)
7. Gudrun Pausewang : Der Makkaronifresser (1987)
8. Heinrich Böll: Anekdote zur Senkung der Arbeitsmoral by (1963)

Or any other text belonging to the genre.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DSE-2
B.A. Programme with German

DISCIPLINE SPECIFIC ELECTIVE (DSE-2): German through Audio-visual Means

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
German through Audio-visual Means	4	3	1	Nil	Semester-5 pass	German in Context: Advanced Level – 1

Learning Objectives

The Learning Objectives of this course are as follows:
At the end of semester 6 a student will

- Be famaliar with some popular German songs and films etc.
- Have an insight into socio/political/historical background of the introduced songs and films .
- Be able discuss the introduced songs and films.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Improving Oral comprehension and expression through German Cinema
- Enabling the students gain some insight into some popular German songs and films etc.
- Using films to discover cultural and historical aspects of German speaking countries.
- Acquainting students with conversational German and the wide variations of pronunciation and intonation in the German speaking world.
- Providing basic tools to analyse film.

SYLLABUS OF DSE- 6 (German through Audio-visual Means)

Content	Description
	Closely observing the screening of selected songs/rhymes and films such as Das fliegende Klassenzimmer by Tomy Wiegand (2002) Emil und die Detektive by Franziska Buch (2001) Netto by Robert Thalheim (2006) Sophie Scholl- die letzten Tage by Marc Rothemund (2004)

	Die weiße Rose (1982) Momo (1986) Das Leben der Anderen "The Lives of Others" (2006) Das Experiment "The Experiment" (2001) Goodbye Lenin (2003) Ein Baby zum Verlieben (2004) Unter dem Sand- das Versprechen der Freiheit (2015) Susanne –made by BBC and Goethe Institute <Backe, backe Kuchen> <Wie schön, dass du Geboren bist> <Der Herbst ist da> <99 Luftballons> <Alle vögel sind schon da> <eine kleine Chinesin> <Auf der Mauer, auf der Lauer> <Heile, heile Segen> <Hänschen klein> or Any other selected song/rhyme or film.

UNIT	Content	Duration
UNIT – I	Listening/viewing and discussion of any six selected songs/rhymes.	9 Hours
UNIT – II	Viewing and discussion of any one film. Finding answers to definite questions related to the film in question.	9 Hours
UNIT III	Viewing and discussion of any one film. Finding answers to definite questions related to the film in question.	9 Hours
UNIT – IV	Viewing and discussion of any one film. Finding answers to definite questions related to the film in question.	9 Hours
UNIT V	Viewing and discussion of any one film. Finding answers to definite questions related to the film in question.	9 Hours

Practical component (if any) - NIL

Essential/recommended readings

Any of the following songs/rhymes or films may be viewed and discussed

1. Das fliegende Klassenzimmer by Tomy Wiegand (2002)
2. Emil und die Detektive by Franziska Buch (2001)
3. Netto by Robert Thalheim (2006)
4. Sophie Scholl- die letzten Tage by Marc Rothemund (2004)
5. Die weiße Rose (1982)
6. Momo (1986)
7. Das Leben der Anderen "The Lives of Others" (2006)
8. Das Experiment "The Experiment" (2001)
9. Goodbye Lenin (2003)
10. Ein Baby zum Verlieben (2004)

11. Unter dem Sand- das Versprechen der Freiheit (2015) Susanne –made by BBC and Goethe Institute
12. <Backe, backe Kuchen>
13. <Wie schön, dass du Geboren bist>
14. <Der Herbst ist da>
15. <99 Luftballons>
16. <Alle vögel sind schon da>
17. <eine kleine Chinesin>
18. <Auf der Mauer, auf der Lauer>
19. <Heile, heile Segen>
20. <Hänschen klein>

or any other selected song/rhyme or film.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COURSES OFFERED BY DEPARTMENT OF
Germanic & Romance Studies
SEMESTER -VI

Category III

Courses for Undergraduate Programme of study with discipline as one of the Core Disciplines
B.A. Programme with German
(For e.g. courses for B.A. Programmes with_____ (discipline's name) as non-Major or Minor discipline)

DISCIPLINE SPECIFIC CORE COURSE (DSC-1): German in Context: Advanced Level – 2

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
German in Context: Advanced Level – 2	4	3	1	Nil	Semester-5 pass	German in Context: Advanced Level – 1

Learning Objectives

The Learning Objectives of this course are as follows:
At the end of semester 6, a student will

- be able to read long texts and answer questions on them.
- be able to write short texts about one's own feelings and one's immediate environment.
- Be able to express own opinion and feeling, be able to comment and make suggestions
- attain Level B 1.2 of the Common European Framework (CEF).

Learning outcomes

The Learning Outcomes of this course are as follows:

- Enable students to attain B 1.2 Level of listening, speaking, reading and writing skills in the concerned language.
- Enable the students to read long and difficult texts and answering questions on them.
- Equip students to write about subjects pertaining to his/her immediate environment.

SYLLABUS OF DSC-6

Content

Listening: Understanding words and phrases about persons, professions and far away places, long and difficult. formal/informal conversation, questions, instructions and suggestions, description of places.

Speaking:
Describing and presenting someone's professional life. Taking part in a conversation and interaction. Asking for/ giving information on topics or matters related to travel, Films and profession. Seeking information through telephonic conversation.

Reading: Reading long and difficult texts related to one's immediate and far away environment such as brochures, advertisements, posters, fliers, responding to emails.

Writing: Guided writing will include activities such as describing a city, tourist destinations, travelling experiences, a journey, professional routine, a film

Morphosyntax and Vocabulary: Complex grammatical structures and vocabulary used to describe oneself and others, describe one's local surroundings, cities, professions and journies etc.

UNIT I **3 weeks**
To understand and discuss relationships and stories of Friendship and conflicts by citing popular figures, discuss and narrate fables, learn to offer, decline or ask for help, warn someone, talk about habits, understand an informative text, talk about music and feelings.

UNIT II **3 weeks**
To find and reproduce important information out of a newspaper article, understand radio discussion, give learn tips, describe a special place like a hospital, discuss pictures, enquire, answer in the negative, understand a course programme, describe persons and objects exactly, introducing impro-theatre, discuss singing and folk songs

UNIT III **3 weeks**
To describe an event, discuss social work, understand an article about social project and write about one such project, talk about institutions in the city, understand EU, make a small presentation

UNIT IV **3 weeks**
To talk about life in a city, understanding a magazine article, write a report, discuss cities with good living standards, describing something closely, understanding a blog about a city, portrayal of a city, plan a city visit

UNIT V **3 weeks**
To understand talks inside banks, understand information on a website, ask about activities, understand and express arguments, describing persons, things and situations related to banking, understand and write text related to money.

Practical component (if any) - NIL

Essential/recommended readings

Any of the following textbooks may be prescribed and will be partially completed.

1. Dengler, S., Rusch, P., Schmitz, H., Sieber, T. (2020). *Netzwe neu B 1.2: Deutsch als Fremdsprache. Kurs- und Übungsbuch mit DVD und 2 Audio-- CDs.* Klett Verlag.
2. Dengler,Stefanie; Tanja Mayr-Sieber, Paul Rusch, Helen Schmitz. *Netzwerk neu A1.1 and B1.2: Deutsch als Fremdsprache. Kurs- und Übungsbuch mit Audios und Videos.* Klett Verlag
3. Evans, S., Pude, A., Specht, F. (2021). *Momente A1.1 to 2.1 Kurs- und Arbeitsbuch.* Hueber Verlag.
4. Evans, S., Pude, A., Specht, F. (2020). *Menschen A 1.1 to 2.1. Kurs- und Arbeitsbuch.* Max Hueber Verlag
5. Höldrich, B. (2010). – *Lesen & Schreiben A1 to A2: Buch (Deutsch üben) Taschenbuch*. München: Hueber Verlag.
6. Rusch, P., Schmitz, H. *Einfach Grammatik Deutsch A1 Bis B1.* Berlin: Langenscheidt.
7. Sander, I., Braun, B., Fügert, N., Kotas, O. (2016). *DaF kompakt neu A1 to B1 Deutsch als Fremdsprache für Erwachsene. Kurs- und Übungsbuch.* Klett Verlag.
8. Von, Rosa-Maria Dallapiazza, et al. (2011). *Tangram aktuell A1 to B2. Kurs- und Arbeitsbuch*. Hueber Verlag.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

ANNEXURE-3

SEMESTER-IV
GERMANIC AND ROMANCE STUDIES
B.A.(Hons.) Spanish

DISCIPLINE SPECIFIC CORE COURSE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC–10 (4) Language in Context: Intermediate Reading and Writing skills (2)	**4**	**3**	**1**	**0**	**XII passed**	**Should have studied Language in Context: Intermediate Reading and Writing Skills (1)**

Learning Objectives

Enable student to

- read complex texts and answer questions on them;
- be able to write complex texts, about subjects pertaining to his/her immediate environment;
- attain Level A 2.2 of the Common European Framework (CEF).

Learning Outcomes

- Enable students to fully attain A2.2 Level of reading and writing skills in the concerned language.
- Reading complex texts and answering questions on them.
- Equip students to write about subjects pertaining to his/her immediate environment.

Content:

Reading: Read and understand standard documents, texts, emails containing personal information, cultural aspect of the language, gastronomy, free time activities, movie review, writing a biography, talk about experiences, give suggestions etc.

Writing: Guided writing activities. Making suggestions to improve Spanish, writing on a movie/ biography, email describing what did you do, writing about past activities, food choices, and writing

recipes, writing on free time, invitations, make excuses, activities related to write about preferences and choices etc.

Morphosyntax and Vocabulary: standard grammatical structures and vocabulary used to write past experiences, travelling vocabulary, imperative to write recipes, vocabulary related to social interaction, house, movie review, biography, vocabulary related to preferences and choices, invitations, make excuses etc.

Intercultural and cocultural: Introduction to Hispanic movies, relating to past, design a house, social contacts, plan a weekend, prepare food for the party, hispanic authors and personalities, movies, hispanic places to visit etc.

SYLLABUS OF DSC-10

UNIT – I **(7 hours)**

Read a text related to expression of desire, preferences, etc.
Write about your experiences and how you value them in your life.
Write about different people and things that matter to you.
Read a text related to the topic.
Write a questionnaire to know how your classmates value people and things around them.
Write an article on interesting things where you reside.

UNIT – II **(8 hours)**

Read a text based on discussion of problems and giving suggestions thereof.
Write about the problems which your classmates face.
Write solutions for their problems by using Imperatives.
Read a text related to the topic.
Write about your problems and ask for suggestions in the class.

UNIT – III **(7 hours))**

Read a text comprising narration of history, events involving lifestyle, culture, etc.
Write about the interesting part that you like in the history of your country.
Read a text related to the topic.
Write about habits, culture, and life of the people in the past and of the women in particular.
Read a text related to the topic.
Write about the habits and culture in the past and compare it in the present scenario.

UNIT – IV **(8 hours)**

Read a text based on narration of personal anecdotes, practice of past tense.
Write personal anecdotes, important events and happenings.
Read a text related to the topic.
Write about how you felt in a particular situation in the past.
Regular and irregular forms of the verbs in the simple past tense.
Write a report on sports or cultural events, on a tour to historical place.

UNIT –V **(7 hours)**

Read a text based on significance of technology, technical terms of daily use, etc.
Write about the role of technology in your day-to-day life.
Write about how you learn efficiently and in a better way by using technology.

UNIT VI **(8 hours)**

Read a text comprising discussion on eco-friendly practices.
Write about the reuse of waste products.
Read a text related to a topic.
Write about recycling, reuse of the waste products in the past and various ways to recycle the waste products now.

Essential/recommended readings
Essential/recommended readings/Suggestive readings

Learning/Teaching Material: Any of the textbooks given below may be prescribed.

1. Sanz, N. (2017). Aula Internacional 2. Barcelona. Barcelona: Editorial Difusión

2. Alondo, Elcina. Corpas, Jaime. (2018). Diverso A2 Libro de alumno. Madrid, Madrid: SGEL.

3. Alvarez Martinez, María Angeles. Canales, Ana Blanco. et al. (2017). Sueña 2 Libro de alumno. Salamanca. Salamanca: Grupo Anaya.

4. Baulenas, Neus Sans. Peris, Ernesto Martín. et al. (2016). Bítacora 2 Libro de alumno. Barcelona, Barcelona: Editorial Difusión.

5. Campo, Cristina, Cuadrado, Charo et.al. (2017) Protagonistas A2- Libro de alumno. Madrid, Madrid: Ediciones SM.

6. Martís Peris, E., Sans, N. (2016). Gente 2 Libro del alumno. Barcelona:Editorial Difusión.

Additional material may be provided by the Department.Additional material may be provided by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 11

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC–11 (4) Language in context: Intermediate Listening and Speaking skills (2)	**4**	**3**	**1**		**XII passed**	**Should have studied Language in Context: Listening and Speaking Skills (1)**

Learning Objectives

Enable student to

- read simple texts and answer questions on them;
- be able to express on different topics, about subjects pertaining to his/her immediate environment;
- attain complete Level A 2.2 of the Common European Framework (CEF).

Learning Outcomes

- Enable students to fully attain A2.2 Level of listening and speaking skills in the concerned language.
- Express ideas on audios listened and answering questions on them.
- Equip students to speak about subjects pertaining to his/her immediate environment.

SYLLABUS OF DSC- 11

UNIT – I **(7 hours)**

Listen to an audio/a video activity related to expression of desire, preferences, etc.
Talk about your experiences and how value them in your life.
Express your ideas about people and things and how you value them.
Listen to an audio/video activity about the places of your interest and their cultural value.
Discuss a questionnaire with your classmates about how people value their near and dear ones and how they value things around them.
Make a presentation on the information received through the survey.

UNIT – II **(8 hours)**

Listen to an audio based on discussion of problems and giving suggestions thereof.
Share your views with your classmates on the problems that a student face.

Exchange ideas on the solutions for the problems which your classmates face in the class.
Use of Imperatives in giving solutions.
Speak about your problems and ask for suggestions in the class.

UNIT – III **(7 hours)**

Listen to an audio comprising narration of history, events involving lifestyle, culture, etc.
Talk about an interesting part that you like in the history of your country.
Exchange your thoughts on the habits, culture and life of the people in the past and of the women in particular.
Express your opinion on the habits and culture in the past and compare it with the present.
Share your experiences about a journey, a job taken or any unforgettable moment with your classmates.

UNIT – IV **(8 hours)**

Listen to an audio/video based on narration of personal anecdotes, practice of past tense.
Share your personal anecdotes in the class.
Talk about how you felt in a particular situation in the past.
Regular and irregular forms of the verbs in the simple past tense.

UNIT –V **(7 hours)**

Listen to an audio/video based on significance of technology, technical terms of daily use, etc.
Express your thoughts on the role of technology in your day-to-day life.
Watch a short movie related to the topic.
Speak on how you learn efficiently and in a better way by using technology.

UNIT VI **(8 hours)**

Listen to an audio comprising discussion on eco-friendly practices.
Share your ideas on the reuse of waste products and how you follow them.
Listen to an audio/video activity related to a topic.
Talk about the value of recycling, reuse of the waste products in the past and various ways to recycle the waste products now.

Essential/recommended readings
Essential/recommended readings/Suggestive readings

Learning/Teaching Material: Any of the textbooks given below may be prescribed.

1. Sanz, N. (2016). Aula Internacional 2. Barcelona. Barcelona: Editorial Difusión

2. Alondo, Elcina. Corpas, Jaime. (2018). Diverso A1 Libro de alumno. Madrid, Madrid: SGEL.

3. Alvarez Martinez, María Angeles. Canales, Ana Blanco. et al. (2017). Sueña 2 Libro de alumno. Salamanca. Salamanca: Grupo Anaya.

4. Baulenas, Neus Sans. Peris, Ernesto Martín. et al. (2016). Bítacora 2 Libro de alumno. Barcelona, Barcelona: Editorial Difusión.

5. Campo, Cristina, Cuadrado, Charo et.al. (2017) Protagonistas A2- Libro de alumno. Madrid, Madrid: Ediciones SM.

6. Martís Peris, E., Sans, N. (2016). Gente 2 Libro del alumno. Barcelona: Editorial Difusión.

Additional material may be provided by the Department.Additional material may be provided by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 12

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	**Credits**	**Credit distribution of the course**			**Eligibility criteria**	**Pre-requisite of the course** (if any)
		Lecture	**Tutorial**	**Practical/ Practice**		
DSC–12 (4) Engaging with Literary Texts (2)	**4**	**3**	**1**		**XII passed**	**Should have studied Engaging with Literary Texts (1)**

Learning Objectives

Learning Objectives: Enable students to read and understand a short literary/journalistic/ad/song text adapted for students of level A2.2 and to answer questions on the same.

Learning Outcomes

- Enable students to fully attain A2.2 Level skills in the concerned language.
- Understand ideas on audios listened and answering questions on them.
- Equip students to learn about subjects pertaining to his/her immediate environment.

UNIT I Literary Texts **(9 hours)**

(A selection will be made from the list below. Extra material will be distributed by the teacher.)
Otro Zoo de Rodrigo Rey Rosa
Cuentos y leyendas, todoele.net
Excerpts from Sanz N. (2017). Aula Internacional 2. Barcelona. Barcelona: Editorial Difusión:
Pepa Villa, Taxista en Barcelona
El sueño de Cristóbal, Edelsa
Las nuevas caras del cine español
Un Yankee en Buenos Aires de Paco Ardit
Rinconete y Cortadillo, Miguel de Cervantes

Moros y cristianos, Dolores Soler-Espiauba
Espacios naturales
Denominación de origen
Un nuevo caso: Netflix puede esperar *Lola Lago & asociados Las nuevas aventuras de Lola Lago* de N. Sans y L. Miquel
Los hackers nunca duermen, Lola Lago & asociados Las nuevas aventuras de Lola Lago de N. Sans y L. Miquel
Un poco de tranquilidad, solo un poco Lola Lago & asociados Las nuevas aventuras de Lola Lago de N. Sans y L. Miquel
Fin de escapada Lola Lago & asociados Las nuevas aventuras de Lola Lago de N. Sans y L. Miquel
El misterio hombre de la gabardina Lola Lago & asociados Las nuevas aventuras de Lola Lago de N. Sans y L. Miquel
Todas las voces. Curso de cultura y civilización de N. Murillo

UNIT II Journalistic Texts **(9 hours)**

(A selection will be made from the list below)
Auténticos de la revista de ELE « Punto y Coma » nivel A2
Energía eólica
Dime qué color eres y te diré qué color necesitas
La civilización Inca, Entre el pasado y el presente
El ceviche : de Perú al mundo
Navidades con sabor latino
Entrevista a Rosa Montero
Hoy en clase de Campus Difusión
Los espejuelos de Lennon -- Cuba de Dolores Soler-Espiauba
Con Frida en el altiplano -- Bolivia de Dolores Soler-Espiauba
Guantanameras – Cuba de Dolores Soler-Espiauba
Ojalá que te vaya bonito – México de Dolores Soler-Espiauba
Los espejuelos de Lennon – Cuba de Dolores Soler-Espiauba
Dos semanas con los ticos – Costa Rica de Dolores Soler-Espiauba

UNIT III poems **(9 hours)**
Poemas de Alex Pausibes
Poemas de Antonio Colinas
Poemas de Alfonsina Storni
Poemas de Federico García Lorca
Poemas de Pablo Neruda
Poemas de Unamuno
Poemas de Gabriela Mistral
Poemas de Rosalia de Castro
Poemas de Francisco de Quevedo
Poemas de Jóse Agustín Goytosolo
Poemas de Rafael Alberti
Poemas de Ana Castillo
Poemas de Antonio Machado
Poemas de Gloria Fuertes

(A selection as per language level will be made from the list below. Any extra material will be provided by the Department)

UNIT IV Audio / Visual Texts/Songs **(9 hours)**

(A selection will be made from the list below)
Songs (A2)
Gloria Estefan: Tu fotografía
Manu Chao: Clandestino
Ricky Martin: La bomba
Juanes: La Historia de Juan
Jarabe de Palo: ¡Qué bueno! ¡Qué bueno!
Joaquín Sabina: Y nos dieron las diez
Rebeca Lane: Flores rojas
Vivir Quintana: Canción sin miedo
Jimena Barón y Miss Bolivia: Se quema

Documentaries
Patio 29-historias de Silencio
México: desaparecidos por el narcotráfico
Tierra de Cárteles
Guatemala: Corazón del mundo Maya
Historia del Arte en 10 minutos
Historia del imperio musulmán en 10 minutos

UNIT V Advertisement **(9 hours)**

Suggestive readings
Learning / Teaching Material: To be compiled and provided by the Department.

1. Murillo, N. (2010). Todas las voces. Curso de cultura y civilización. Barcelona: Editorial
2. Difusión (cap. 4 Literatura: novelas, cuentos y leyendas, poesía, leer)
3. Sans, N., Miquel, L. Lola Lago (2003). Detective: Lejos de casa (A2). Barcelona: Editorial Difusión.
4. Sans, N., Miquel, L. Lola Lago (2003). Detective: una nota falsa (A2). Barcelona: Editorial
5. Difusión.
6. Formesp.rediris.es
7. Cervantes, Cuentos.
8. Dolores Soler-Espiauba, Moros y cristianos, difusi
9. Soler-Espiauba, D. (2002). Con Frida en el altiplano (A1-A2). España: Editorial
10. Difusión.
11. Edelsa.
12. Rey Rosa, *Otro zoo,* Seix Barral, 2007
13. Soler-Espiauba, D. (2008). Dos semanas con los ticos (A1-A2). Costa Rica: CEGAL.
14. Soler-Espiauba, D. (2014). Los espejuelos de Lennon (A1). Cuba: CEGAL.
15. Soler-Espiauba, D. (2012). Guantanameras (A1-A2). Cuba: Editorial Difusión.
16. Soler-Espiauba, D. (2015). Ojalá que te vaya bonito(A1-A2). México: Editorial Difusíon.
17. Hoy en clase. Campus Difusión. https://campus.difusion.com/dashboard
18. Historia del Arte en 10 Minutos, https://www.youtube.com/watch?v=rUHxLrZwSIY
19. Historia del imperio musulmán en 10 minutos, https://www.youtube.com/watch?v=N4Ljm78end4

20. 100 Anuncios Publicitarios con Eslogan
21. http://archive.org/details/editions_mariquita_hotmail_201309
22. México: desapercidos por el narcotráfico @ YouTube: Arte.tvDocumental
23. http://tv.apple.com/ar/movie/tierra-de-carteles/umc.cmc.52194k2r7j1
24. Guatemala, corazón del Mundo Maya YouTube-Julio Carvajal.
25. Origen y evolución del imperio islámico en la Edad Media http://youtube.com

Additional material may be provided by the Department.

Suggestive readings
Learning / Teaching Material: To be compiled and provided by the Department.

DISCIPLINE SPECIFIC ELECTIVE COURSE – 2 (DSE-2):
Introduction to the History of Spain and the Spanish speaking World.

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Introduction to the History of Spain and the Spanish Speaking World	**4**	**3**	**1**	**0**	**XII passed**	Nil

DSE–2 (4)

Introduction to the History of Spain and the Spanish speaking world (2)

Learning Objectives

- To familiarize students with the major social, political and cultural events from the medieval to contemporary period

Learning Outcomes

- To provide a good understanding of Contemporary Spain and contemporary Latin America and their standing in the world

Unit 1 **(9 hours)**
Arab contributions to Spanish culture (711-1492).
Unit 2 **(9 hours)**
The Catholic kings, discovery of America and the Spanish empire.
Unit 3 **(9 hours)**
XIX century Spanish American Independence movements
Unit 4 **(9 hours)**
XX century: Spanish Civil War, Latin American dictatorships
Unit 5 **(9 hours)**
Contemporary Spain and Latin America

References

- Fernandez Alvarez, Manuel. (2008). *Pequeña historia de España* Madrid: Espasa Libros SLU.
- Fernández Álvarez, Manuel. (2011) *España, biografía de una nación.* Madrid: Espasa Libros SLU.
- Hernández, Guillermo. (2008). *De la edad media a la actualidad*. Madrid: SGEL.
- Quintana, M. (2007). *Historia de América Latina* Madrid: Edinumen.
- Vazquez, German and Martinez Diaz, Nelson, et al. (1998). *Historia de América Latina*, Madrid: SGEL.

Additional material will be provided by the Department

Teaching Learning Process

- Interactive teaching with lectures, presentations, discussions and debates with the help of audio-visual teaching aids.
- The learners are encouraged to collaborate with their peers to complete specific projects, assignments, term papers assigned to them.
- By using latest tools of Information technology the learners will be expected to explore and investigate about the topics introduced in the class in order to develop a critical perspective on the issues concerned.

Keywords

Spain, Latin America, Democracy, Dictatorship, Freedom Movement, Immigration, History

DISCIPLINE SPECIFIC ELECTIVE COURSE – 2 (DSE-2):
Life in Spanish speaking Countries.

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	**Credits**	**Credit distribution of the course**			**Eligibility criteria**	**Pre-requisite of the course** (if any)
		Lecture	**Tutorial**	**Practical/ Practice**		
Life in Spanish-Speaking Countries	**4**	**3**	**1**	**0**	**XII passed**	Nil

learning Objectives

- To introduce the learner to various aspects of contemporary culture (films, art, education system, etc.) in Spain and Latin America.

Learning Outcomes

- To initiate learners to the culture and civilization of Spain and Latin American countries
- To provide knowledge about education systems, home, family, leisure activities, festivals, politics, tourism, physical geography of Spain and Latin American countries.
- To introduce the students to the great thinkers of Spain and Latin America in the areas of literature, cinema, art, etc.
- To Enable students to understand and analyse cultural aspects of Spain and Latin American Countries and develop an intercultural competence among students

Unit 1 **(9 hours)**

The 19th century phenomenon of the caudillo and cacique in Spain and Latin America. 20th century dictatorships (Franco - Spain, Trujillo - Dominican Republic, Pinochet - Chile, etc.) Banana republics. Guerrilla warfare. Revolutions (Mexico, Cuba).

Unit 2 **(9 hours)**

Transition to Democracy in Spain and Latin America. Spain and the European Union. NAFTA.

Unit 3 **(9 hours)**

Separatism, terrorism and regional nationalism in Spain. Grassroots people's movements in Latin America.

Unit 4 **(9 hours)**

Distant Neighbours: Latin America and the United States. Monroe Doctrine. Good Neighbour Policy. Operation Condor. Spain: Multiculturalism and Immigration.

Unit 5 **(9 hours)**

Cultural forms and National Identity: Flamenco (Spain) Merengue (Dominican Republic) Tango (Argentina)

Cultures of resistance: La movida madrileña, New Song Movement, Narcocorridos.

References

Excerpts from

- Chasteen, John Charles. (2001). *Born in Blood and Fire, A Concise History of Latin America*. New York: Norton.
- Florencia Garramuño. (2011). *Primitive Modernities: Tango, Samba and Nation* Trans. Anna Kazumi Stahl. Stanford: Stanford University Press.
- Grandin, Greg. (2006). *Empire's Workshop. Latin America, the United States and the Rise of the New Imperialism*. New York: Henry Holt.
- Pérez, Edmundo. (2012). *Que me entierren con narcocorridos*. Mexico: Grijalbo.
- Films: Dirs. Pedro Almodovar, Carlos Saura (Spain), Guillermo de Toro (Mexico) among others
- Music: Carlos Gardel (Tango) Mercedes Sosa (Folk) among others

Additional material will be provided by the Department

Teaching Learning Process

- Interactive teaching with lectures, presentations, discussions and debates with the help of audio-visual teaching aids.
- The learners are encouraged to collaborate with their peers to complete specific projects, assignments, term papers assigned to them.
- By using latest tools of Information technology the learners will be expected to explore and investigate about the topics introduced in the class in order to develop a critical perspective on the issues concerned
- Keywords

  Culture, civilisation, Intercultural Competence, Spain, Latin America

DISCIPLINE SPECIFIC ELECTIVE COURSE – 2 (DSE-2):
Different Text Types

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Different Text Types	**4**	**3**	**1**	**0**	**XII passed**	Nil

Learning Objectives

- To study in- depth different types of literary and non-literary texts.
- To critically evaluate the form and content of literary and non-literary texts

Learning Outcomes

- Develops skills to do an in-depth study of different text types in order to familiarize oneself with different kinds of writing styles, themes and issues treated in the text.
- Enables learners to develop relevant analytical skills to critically evaluate the form and content of these texts.
- Trains learners to understand the context in which the texts were written and the literary/discursive/generic devices that shape them.

Unit 1 **(15 hours)**

Prose: In-depth study of both form and content of a variety of texts literary texts written in prose form such as shorter and longer Narrative genres, (Eg. short story, conte, fable, chronicle, myth, novella, tales, anecdote, autobiography, biography, novel etc.), play etc.

Unit 2 **(15 hours)**

Poetry: In-depth study of both form and content of various types of poetic texts, songs, slams etc.

Unit 3 **(15 hours)**

Intermedial and semi-literary texts: In-depth study of both form and content of comic strips, graphic novels, or semi literary forms such as essay, commentary, informative/descriptive texts on history, geography, economy, culture.

References

Any of the following textbooks may be prescribed and will be partially completed.

- Merino, José María. (1998). *Cien años de cuentos* (1989-1998) Madrid, Madrid: Alfaguara
- Peinado, Juan Carlos ed. (2002) *Cuentos hispanoamericanos del siglo XX*, Salamanca, Salamanca: Anaya.

Additional texts by representative authors will be provided by the department.

Teaching Learning Process

- Interactive teaching with presentations, discussions and debates.
- The learners are encouraged to collaborate with their peers to complete specific projects, assignments, book reviews assigned to them.
- By using latest tools of Information technology the learners will be expected to explore and investigate about the topics and texts introduced in the class.

Keywords
In-depth study, Prose, poetry, intermedial and semi-literary texts, literary/discursive/ generic devices

DISCIPLINE SPECIFIC ELECTIVE COURSE – 2 (DSE-2):
Debating and Presentation Techniques

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Debating and Presentation Techniques	**4**	**3**	**1**	**0**	**XII passed**	**Nil**

COURSES OFFERED BY DEPARTMENT OF
Germanic & Romance Studies

Category III

SEMESTER-IV

Courses for Undergraduate Programme of study with discipline as one of the Core Disciplines
B.A. Programme with Spanish
(For e.g. courses for B.A. Programmes with_____ (discipline's name) as non-Major or Minor discipline)

DISCIPLINE SPECIFIC CORE COURSE (DSC-4): Spanish in Context: Intermediate Level – 2

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Spanish in Context: Intermediate Level – 2	4	3	1	Nil	Pass in B.A. (Prog.) Sem. III	none

Learning Objectives

The Learning Objectives of this course are as follows:
At the end of Semester 4, a student will be able to:

- Read texts on various topics and answer questions on them.
- Write texts on a range of familiar subjects.
- Complete Level A2 and partially attain Level B1 of the Common European Framework (CEF).

Learning Outcomes

The Learning Outcomes of this course are as follows:

- Enable students to attain A2 Level of listening, speaking, reading and writing skills in the concerned language and partially attain Level B1.
- Reading texts and answering questions on them.
- Equip students to write texts on a range of familiar subjects.

SYLLABUS OF DSC – 4

Content	Description
Listening	Listen to and understand texts on various topics like migration, art, technology, diversity, tradition, etc.
Speaking, which includes:	

1.Monologue	Present orally one's views on various topics like migration, art, technology, diversity, tradition, etc.
2.Dialogue	Engage in conversations on various topics like migration, art, technology, diversity, tradition, etc.
Reading	Read and understand texts, emails, blogs on various topics like migration, art, technology, diversity, tradition, etc.
Writing	Guided writing activities. Writing a text, an email, instructions for someone, etc.
Morphosyntax & Vocabulary	Grammatical structures and vocabulary used to talk and write on various topics like migration, art, technology, diversity, tradition, etc.
Intercultural and co-cultural	Introduction to Spanish-speaking regions/countries, celebrities from Spanish speaking countries, fashion, cinema, comic strips, etc.

Unit	Content	Duration
Unit 1	Migration and its influence on different cultures. Discussing multiculturalism. A brief overview of some important events in world history. Use of "presente histórico". Use of roman numbers. Learning how to refer to different periods of time using "a principios de, hoy en día, en las 'últimas décadas, etc.". Reading about the different periods in the formation of the Spanish language. Cultures which have had an influence on the Spanish language and on our language. Learning "el pretérito imperfecto". Reading about how certain cities and localities were earlier and how they are now and discussing what has changed and what is the same. Use of "ya no/todavía". "Marcadores temporales del pasado y del presente – de joven, cuando…hoy en día, actualmente." Talking about special memories of one's childhood. Use of "recordar" and "acordarse de algo o alguien". Talking about the different periods of life – childhood, adolescence, youth, etc.	9 hours
Unit 2	Art and its importance. Describing works of art and discussing the messages different art works transmit. Discussing what art means to different students. Discussing the different art forms like painting, sculpture, dance, architecture, etc. Expressing prohibition and permission. Knowing what different signs mean in a museum or an art gallery so as to know what is prohibited and what is permitted. Reading a blog related to literature. "Contraste pretérito indefinido/pretérito imperfecto". Reading the synopsis of novels and stories. Writing a synopsis of a book of one's liking. Completing a poem with the given expressions. Talking about the importance of music in our lives and the different music genres like classical, pop, jazz, etc. Reading a text on how the type of music we like tells us about our personality. Having a discussion on this topic. Use of quantifiers like "casi todo/a, todos/as, ningún, ninguno, etc.". "Pronombres y adverbios interrogativos y exclamativos – qué, quién, cómo, cuánto, etc.".	9 hours

Unit 3	Technology and its importance in our lives. Vocabulary related to technology and inventions. Reading and having a discussion on some inventions which changed our lives. Discussing the role of technology in education. Vocabulary related to computers and informatics. Discussing the pros and cons of using technology in the class. Revision of "el pretérito perfecto, el pretérito indefinido, el pretérito imperfecto". Using them together. Study of "el imperativo" and using it to give advice and instructions. "Colocación de los pronombres con imperativos." Using the imperative in advertisements for giving instructions as to how to use a certain product. Making an advertisement for promoting a product. Discussing science fiction movies and the cybernetic technology. Reading and discussing a blog on robots. Imagine the presence of a robot in one's life and have a discussion on this topic.	9 hours
Unit 4	Talking of diversity. Discussing the differences and similarities amongst different persons. How diversity begins with the physical aspect of a person. "El adjetivo y los modificadores – muy, demasiado, un poco gordo, guapo, etc." "La descripción física – tiene ojos grandes, lleva barba, etc.". "los artículos indeterminados y determinados". "Los sustantivos masculinos y femeninos según sus terminaciones". Discussing how and when our nationality is an important part of our personality. Reading about and having a discussion on habits and how good habits can improve the quality of our life. Revision of "el presente de indicativo; los verbos reflexivos". Showing preference using "preferir", "gustar", "interesar". Using "antes de/después de + infinitivo". Expressing how frequently one does something using "siempre, normalmente, nunca, etc.". Talking about the different styles of learning and what makes each student learn better. "Cuantificadores – cada, cualquier, todo el, toda la, etc." Discussing what empathy means. Vocabulary related to the process of learning.	9 hours
Unit 5	Talking about tradition. Discussing customs and traditions. Discussion on vintage clothes, cars, furniture, etc. "Perifrasis verbales con gerundio – estar + gerundio, seguir + gerundio, llevar + gerundio." "Perifrasis verbales con infinitivo – empezar a/comenzar a + infinitivo, volver a + infinitivo, estar a punto de + infinitivo. Reading and discussing an Instagram post on the topic of vintage fashion. "Expresar duración - desde + tiempo, desde que + verbo, desde hace, hace…que, etc." Discussion on stereotypes and vocabulary related to the same. "Se sin sujeto agente - se + verbo". Discussing time management and the important factors involved in it. "Cuantificadores – demasiado, mucho, bastante, poco, algún, ningún, la mayoría, etc.". "Pronombres posesivos." Vocabulary related to celebrations, customs and traditions. Discussing customs and celebrations of one's country and of Spanish speaking countries.	9 hours

References:
Any of the following textbooks may be prescribed and will be partially completed.

- Alonso Encina, et al. (2021). *Nuevo Diverso Básico A1-A2.* Madrid: SGEL.
- Alonso Encina, et al. (2021) *Nuevo diverso ESPAÑOL B*. Madrid:SGEL.
- Corpas J., et al. (2017). *Aula Internacional 2.* Barcelona: Editorial Difusión
- Campo C., et al. (2017). *Protagonistas A2.* Madrid: SM Español para extranjeros.
- Baulenas Neus Sans, et al. (2017). *Bítacora 2.* Barcelona: Editorial Difusión.
- Martinez María Angeles Alvarez, et al. (2017). *Sueña 2.* Madrid: Grupo Anaya.
  Additional material can be also used.

SEMESTER-V
GERMANIC AND ROMANCE STUDIES (SPANISH)
(B.A. Honours in Spanish in four years)

DISCIPLINE SPECIFIC CORE COURSES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC–13 (4) Language in context: Advanced Reading and Writing skills (1)	**4**	**3**	**2**		**XII passed**	**Nil**

Learning Objectives

Enable student to

- read complex texts and answer questions on them;
- be able to write complex texts, about subjects pertaining to his/her immediate environment;
- attain Level B 1 of the Common European Framework (CEF).

Learning Outcomes

- Enable students to fully attain B 1 Level of reading and writing skills in the concerned language.
- Reading complex texts and answering questions on them.
- Equip students to write about subjects pertaining to his/her immediate environment.

Content:

Reading: Read and understand standard documents, texts, emails containing personal information, cultural aspect of the language, gastronomy, free time activities, movie review, writing a biography, talk about experiences, give suggestions etc.

Writing: Guided writing activities. Making suggestions to improve Spanish, writing on a movie/ biography, email describing what did you do, writing about past activities, food choices, and writing recipes, writing on free time, write formal letters, anecdotes, activities related to write about personal experiences etc.

Morphosyntax and Vocabulary: advance grammatical structures and vocabulary used to write past experiences, travelling vocabulary, vocabulary related to social interaction, habits and cultural life of people in the past, their houses, means of entertainments, life of famous people, vocabulary related to preferences and choices etc.

Intercultural and cocultural: Introduction to Hispanic movies, visit to historiccal places, write a report, social contacts, make surveys, hispanic authors and rapperteuring an event, virtual tour of hispanic places to visit etc.

SYLLABUS OF DSC-13

UNIT – I **(8 hours)**
Read a text related to experiences and happenings of the past.
Write about your present habits and relate them to the past experiences.
Share your ideas on how to begin and continue to do an activity.
Write a note on your achievements and happenings in the life.

UNIT – II **(7 hours)**
Read a text based on future plans and actions.
Write on how your life will be after some years.
Write about your plans for the future.
Write a few lines in the future tense on the pictures.
Write on the possibilities in the future in certain conditions.

UNIT – III **(7 hours)**
Read a text comprising of impersonal sentences, habits, manners, DO's and DON'Ts, etc.
Write on what are things or manners prohibited in your house.
Write about the habits of your family members and relate it to social habits.
Write about social habits in public/public places, what is prohibited and what is permitted.
Understand the use of using *SE* Impersonal
Write a few sentences using *SE* impersonal in your library.

UNIT – IV **(8 hours)**
Read a text consisting of telling a tale, experience, recalling experiences, etc.
Write a note on a story/news recently read.
Write a narrative of a movie shown /novel read in the class.
Convert a dialogue in the narrative form.
.

UNIT –V **(7 hours)**
Read a text based on description of pictures
Write your suggestions on the topic discussed.
Write on a series of pictures.

UNIT VI **(8 hours)**
Read a text comprising of formal and informal correspondence.
Write a formal letter to the authority about the problem that people of your locality are facing.
Write an open letter to the municipality of your area regarding some problem and suggesting remedies.

Essential/recommended readings
Essential/recommended readings/Suggestive readings

Learning/Teaching Material: Any of the textbooks given below may be prescribed.

1. Alondo, Elcina. Corpas, Jaime. (2018). Diverso B 1 Libro de alumno. Madrid, Madrid: SGEL.

2. Alvarez Martinez, María Angeles. Canales, Ana Blanco. et al. (2017). Sueña 3 Libro de alumno. Salamanca. Salamanca: Grupo Anaya.

3. Baulenas, Neus Sans. Peris, Ernesto Martín. et al. (2017). Bítacora 3 Libro de alumno. Barcelona, Barcelona: Editorial Difusión.

4. Maria Buendia Cambronero Raquel Ezquerra Martinez (2017) Protagonistas B1- Libro de alumno, Madrid, Madrid: Ediciones SM.

5. Sanz, N. (2017). Aula Internacional 3. Barcelona. Barcelona: Editorial Difusión

6. Martís Peris, E., Sans, N. (2016). Gente 2 Libro del alumno. Barcelona:Editorial Difusión.

Additional material may be provided by the Department.Additional material may be provided by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Suggestive readings

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 14

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC–14 (4) Language in context: Advanced Listening and Speaking skills (1)	**4**	**3**	**1**		**XII passed**	**Nil**

Learning Objectives

Learning Objectives

Enable student to

- read simple texts and answer questions on them;
- be able to express on different topics, about subjects pertaining to his/her immediate environment;
- attain complete Level B 1 of the Common European Framework (CEF).

Learning Outcomes

- Enable students to fully attain B 1 Level of listening and speaking skills in the concerned language.
- Express ideas on audios listened and answering questions on them.
- Equip students to speak about subjects pertaining to his/her immediate environment.

SYLLABUS OF DSC- 14

UNIT – I **(8 hours)**

Listen to audio/video activity related to the topic.
Talk about your present habits and relate them to the past experiences.
Share your ideas on how to begin and continue to do an activity.
Watch a short movie related to the topic.
Present a note on your achievements and happenings in the life.

UNIT – II **(7 hours)**

Listen to audio/video based on future plans and actions.

Talk about how your life will be after some years.
Discuss among classmates about plans for the future.
Speak on the possibilities in the future in certain conditions.

UNIT – III **(8 hours)**

Listen to audio/video activity comprising of impersonal sentences, habits, manners, DO's and DON'Ts.
Talk about the bad habits prohibited in your house.
Express the good habits of your family members.
Exchange your views on social habits in public/public places.
Understand the use of using *SE* Impersonal
Speak some habits that one should follow (using *SE* impersonal) in your University library.

UNIT – IV **(7 hours)**

Listen to audio/video activity consisting of telling a tale, experience, recalling experiences, etc.
Talk about a story/news recently read.
Read a text related to the topic.
Write a narrative of a movie /novel shown or read in the class.
Convert a dialogue in the narrative form.
.

UNIT –V **(7 hours)**

Listen to audio/video activity based on description of pictures, interpretation of various video clips.
Express your suggestions on the topic discussed.
Talk on a series of pictures.

UNIT VI **(8 hours)**

Listen to audio/video comprising of formal and informal interactions in different contexts.
Talk about the problems that people of your locality are facing and discuss points to put in the complaining letter.
Present an open letter regarding some problem and suggesting remedies in the class.

Essential/recommended readings
Essential/recommended readings/Suggestive readings

Learning/Teaching Material: Any of the textbooks given below may be prescribed.

1.Alondo, Elcina. Corpas, Jaime. (2018). Diverso B 1 Libro de alumno. Madrid, Madrid: SGEL.

2. Alvarez Martinez, María Angeles. Canales, Ana Blanco. et al. (2017). Sueña 3 Libro de alumno. Salamanca. Salamanca: Grupo Anaya.

3. Baulenas, Neus Sans. Peris, Ernesto Martín. et al. (2017). Bítacora 3 Libro de alumno. Barcelona, Barcelona: Editorial Difusión.

4. Maria Buendia Cambronero Raquel Ezquerra Martinez (2017) Protagonistas B1- Libro de alumno, Madrid, Madrid: Ediciones SM.

5. Sanz, N. (2017). Aula Internacional 3. Barcelona. Barcelona: Editorial Difusión

6. Martís Peris, E., Sans, N. (2016). Gente 2 Libro del alumno. Barcelona:Editorial Difusión.

Additional material may be provided by the Department.Additional material may be provided by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Suggestive readings

DISCIPLINE SPECIFIC CORE COURSE – 15:

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course(if any)
		Lecture	Tutorial	Practical/ Practice		
DSC–15 (4) History of Hispanic Literature (1)		**3**	**1**		**XII Passed**	**Nil**

earning Objectives

Learning Objectives

- To introduce the learner to different cultural and intellectual movements in Spanish and Latin American Literature from its origins to the 18th century.
- To read both Spanish and Latin American literary texts representing major cultural and intellectual movements from the beginning to the 18th century.

Learning Outcomes

- Familiarize students with literary texts written in Spanish with focus on the major cultural and intellectual movements from the origins to the eighteenth century.
- Develop skills to identify and analyse how various genres such as poetry, plays, shorter and longer narrative texts, autobiography etc. evolved through various historical periods.

Unit 1
Develop an understanding of writings from the medieval period till the Renaissance, such as medieval romances, farces, etc.
Unit 2
Understanding and analysing major literary movements such as Baroque and Neoclassicism
Unit 3
Major cultural and intellectual movements from the origins to the eighteenth century
References
Selection of literary texts to be provided by the Department

- Correa, Pedro, (1985). *Historia de la literatura española, Colección «Temas de Cultura Española»* Michigan: University of Michigan.
- Deyermond, Alan D. et. al, (1984) *Historia de la literatura española, Vols. 1-6*, Madrid: Ariel.
- Olea, Rafael y Weinberg, Liliana. (2011). *Literatura hispanoamericana*, México: SER.
- Oviedo, José Miguel. (2002). *Historia de la literatura hispanoamericana, Vols 1-4,* Madrid: Alianza Editorial.

Additional material will be provided by the Department.

Teaching Learning Process

- Interactive teaching with lectures, presentations, discussions and debates with the help of audio-visual teaching aids.
- The learners are encouraged to collaborate with their peers to complete specific projects, assignments, term papers assigned to them.
- By using latest tools of Information technology the learners will be expected to explore and investigate about the topics introduced in the class in order to develop a critical perspective on the issues concerned

Keywords

Literary, cultural and intellectual movements, Medieval period till French Enlightenment

DISCIPLINE SPECIFIC ELECTIVE COURSE – 3 (DSE-3 (4):
Introduction to Translation

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Introduction to Translation	**4**	**3**	**1**	**0**	**XII Passed**	**Nil**

Learning Objectives

- Familiarizes students with language for specific purposes
- Familiarize students to the techniques of translation;

Learning Outcomes

- Enable students to do Scientific and Technical translation, and translation of sacred texts.
- Help students to make word glossaries in above fields.
- Enable students to read parallel literature on texts chosen for translation.
- Sensitize student towards Machine translation and its limitations
- Develop awareness about Ethics and accountability in translation.

Unit 1 (11 hours)
Study of language used in industries such as hospitality, tourism, banking, business sectors and translation of texts in the chosen areas (including birth, educational qualification, marriage, death, certificates, mark sheets). Scientific and Technical translation. Translation of sacred texts.
Unit 2(11 hours)
Introducing the student to the techniques of translation
Making of word glossaries in above fields.
Unit 3 (11 hours)
Machine translation and its limitations
Ethics and accountability in translation.
Unit 4 (12 hours)
Reading of parallel literature on texts chosen for translation
Role of Translation in Multimedia contexts.

References

- Baker, Mona. (2011). *In Other Words. A Course Book in Translation*. London, New York: Routledge.
- Bassnett McGuire, Susan. (1980, 2013). *Translation Studies.* London, NY: Routledge.

- Child, Jack. (2009). *Introduction to Spanish Translation* Lanham, Maryland: UPA.
- Gile, Daniel. (2009). *Basic Concepts and Models for Interpreter and Translator Training*. Amsterdam, Philadelphia: John Benjamin Publishing.
- Haywood, Louise. (2009). *Thinking Spanish Translation: A Course in Spanish Translation, Spanish to English* London, New York: Routledge.
- López Guix, Juan Gabriel. (2012). *Manual de Traducción Inglés – Castellano*, Madrid: Gedisa.
- Lunn, Patricia et al. (2013). *En otras palabras: perfeccionamiento del español por medio de la traducción.* Washington: Georgetown University Press.
- Malmkaer Kirsten, Windle, Kevin. (2011). *The Oxford Handbook of Translation Studies* Oxford: OUP
- Munday, Jeremy. (2012). *Introducing Translation Studies, Theories and Applications,* London, New York: Routledge.

Additional material will be provided by the Department

Teaching Learning Process

- Interactive teaching with lectures, presentations, discussions and debates with the help of audio-visual teaching aids.
- The learners are encouraged to collaborate with their peers to complete specific projects, assignments, term papers, translations assigned to them.
- By using latest tools of Information technology the learners will be expected to explore and investigate about the topics introduced in the class in order to develop a critical perspective on the issues concerned

Keywords

Techniques of Translation, scientific, technical, commercial translation, Word glossary, machine translation

DISCIPLINE SPECIFIC ELECTIVE COURSE – 3 (DSE-3):
Techniques of Written Expression.

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Techniques of Written Expression	**4**	**3**	**1**	**0**	**XII Passed**	**Nil**

Learning Objectives

- To introduce the learner to commonly used figures of speech.
- To define the commonly used figures of speech
- To identify the commonly used figures of speech in both literary and non-literary texts
- To introduce the learner to literary tropes
- To present the historical origin of commonly used idioms and proverbs.
- To teach the learner how to write a critical essay and a commentary

Learning Outcomes

- Introduce students to common figures of speech, Familiarize students with Literary Tropes
- Develop understanding of Idioms and Proverbs with their historical origin. Develop knowledge about different literary genres:

Unit 1 (12 hours)
Definition and study with examples of Common figures of speech: Metaphors, Similes, Metonyms, Hyperboles, Personification, Alliteration, Oxymoron and Synecdoche.
Unit 2 (11 hours)
Literary Tropes: Humour and Irony, Puns, Tautology, Allegories, Allusions, Apologia, Cliches, Euphemism, Climax and Anticlimax, Paradox, Analogies.
Unit 3 (11 hours)
Idioms and Proverbs with their historical origin.
Unit 4 (11 hours)
Different literary genres: Myths, Epics, Chivalric romances, Picaresque novel, Comedy, Tragicomedy and Farce, Satires, Biography, Autobiography and Memoirs, Essays and Epistles, Social Realism., Travel Literature

References

- Azaustre, Galiana Antonio y Juan Casas Rigall. (1994). *Introducción al análisis retórico, tropas, figures y sintaxis del estilo.* Santiago de Compostela: Universidad de Santiago de Compostela.
- Beckson, Karl and Ganz, Arthur. (1960, 1991). *Literary Terms, A Dictionary*. Delhi: Rupa.
- Delgado, Josefina. (2002). *Qué leer y Cómo* Buenos Aires: El Ateneo.
- Romera, Angel. Manual de Retórica y Recursos Estilísticos, Diario del Endriago, http://diariodelendriago.blogspot.com

Additional materials will be provided by the department

Teaching Learning Process

- Interactive teaching with lectures, presentations, discussions and debates with the help of audio-visual teaching aids.
- The learners are encouraged to collaborate with their peers to complete specific projects, assignments, term papers assigned to them.
- By using latest tools of Information technology the learners will be expected to explore and investigate about the topics introduced in the class in order to develop a critical perspective on the issues concerned

Keywords
Figures of Speech, Literary Tropes, Idioms, Proverbs, Literary Genres

DISCIPLINE SPECIFIC ELECTIVE COURSE – 3 (DSE-3):
Study of European Art.

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Study of European Art	**4**	**3**	**1**	**0**	**XII Passed**	**Nil**

Learning Objectives

- To introduce students to the various major Art Movements in Europe from the renaissance to the Contemporary Period
- To study artworks of painters representative of the major Art Movements in Europe

Learning Outcomes

- Develop an understanding of structures and Perspectives of Everyday life as seen by painters.
- Equip with tools to analyze artworks

Unit 1 (15 hours)
Introduction to the Civilization of Europe in the Renaissance. (Paintings on 'Europa'; Durer, (1495) Titian (1559) The Rape of Europa Sebastian (1588) Queen Europa. Maps of Europe. The idea of Europe. Structures and Perspectives of Everyday life as seen by painters.
Unit 2 (15 hours)
Understanding of structures and Perspectives of Everyday life as seen by painters.
Unit 3 (15 hours)
Overview of important European Art Movements, representative artists and their artworks : Spanish Baroque, Italian Renaissance, Flemish School, French Impressionists, Spanish Surrealists etc.

References

- Adams, Laurie Schneider (1996). *The Methodologies of Art: An Introduction*, NY: Westview Press
- Arnason, H. H. (2003). *History of Modern Art: Painting, Sculpture, Architecture, Photography*, New York: Prentice Hall.
- Boime, Albert (1990). *A Social History of Modern Art, Volumes 5*, Chicago: University of Chicago Press.
- Burckhardt, Jacob. (1855, 2004). *The Civilization of the Renaissance in Italy.* New York: Penguin.
- Hopkins, David. (2000). *After Modern Art 1945-2000 (Oxford History of Art)*, NY: OUP.
- Hughes, Robert. (2006). *Goya* New York: Alfred Knopf.
- Read, Herbert. (1984). *Meaning of Art*. London: Faber & Faber.
- Secrest, Meryle. (1986). *Salvador Dalí : the Surrealist Jester*. London: Paladin.

- Stassinopoulos Huffington, Arianna. (1988). *Picasso Creator and Destroyer.* London: Pan Books.
- Blog by Shatarriah Godwin, People of Color in European Art History.

Additional material will be provided by the Department

Teaching Learning Process

- Interactive teaching with lectures, presentations, discussions and debates with the help of audio-visual teaching aids.
- The learners are encouraged to collaborate with their peers to complete specific projects, assignments, ter papers assigned to them.
- By using latest tools of Information technology, the learners will be expected to explore and investigate about the topics introduced in the class in order to develop a critical perspective on the issues concerned

Keywords
European Art Movements, Painters, Artworks, Tools to analyse Artworks

DISCIPLINE SPECIFIC ELECTIVE COURSE – 3 (DSE-3):
Children and Adolescent Literature.

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Children and Adolescent Literature	**4**	**3**	**1**	**0**	**XII Passed**	**Nil**

Learning Objectives

- To define what is Children's Literature and distinguish it from Literature for Adults.
- To introduce the learner to different genres of children and adolescent literature.
- To read and understand Children and adolescent literature texts.

Learning Outcomes

- Introduce students to the changing conceptions of children's literature:
- Help students in analyzing various genres meant for young children and adolescents.
- Sensitize students about the role of children's literature in transmitting values.

Unit 1 **(15 hours)**

Changing conceptions of children's literature: Literature for children and /or adult readers?

Unit 2 **(15 hours)**

Folklore, fables and fairy tales for young children Theater for children

Unit 3 **(15 hours)**

Children's literature and transmission of values

References
Selection to be made from the following texts:

- Allende, Isabel. (2014). *El juego de Ripper*. Barcelona: Plaza y Janes.
- Andruetto, María Teresa. (2005). *El país de Juan*. Salamanca: Anaya.
- Arboleda Rodríguez, Diego y Sagospe, Raúl. (2014), *Prohibido leer a Lewis Caroll*. Salamanca: Anaya & Mario Muchnik.
- Conde, Carmen. (1994), *Aladino*, Madrid: Hesperia.
- Conde, Carmen. (1953) *Auto de Navidad*, Madrid: Enag.
- De Santis, Pablo. (2007) *El enigma de París*. Madrid: Planeta
- Ferrari, Andrea. (2004). *Café solo*. Barcelona: Ediciones SM.
- Fuertes, Gloria. (2017). *El libro de Gloria Fuertes para niñas y niños.* Barcelona: Blackie Books.
- García Lorca, Federico. Ramón Jimenez ; Alberti, Rafael. (2004). *Mi primer libro de poemas* Salamanca: Anaya.
- García Lorca, Federico. (1919, 1999). *El maleficio de la mariposa.* Madrid: Cátedra.
- Gómez Cerda, Alfredo. (1994). *Sin billete de vuelta*, Barcelona: Alfaguara.
- Gopeguí, Belén. (2008). *El balonazo*, Barcelona: Ediciones SM.
- Ramón Jiménez, Juan. (1914, 2014). *Platero y yo*. Madrid: Cátedra (2014).
- Ruescas, Javier. (2012). *Play*. Barcelona: Montena.
- Ruescas, Javier. (2013). *Pulsaciones*. Barcelona: Ediciones SM.
- Sierra, Jordi. (2013) *Cuatro días de enero*, Barcelona: DeBolsillo.

Additional material will be provided by the Department
Additional Resources

- Bettelheim, Bruno. (1975). *The Uses of Enchantment: The Meaning and Importance of Fairy Tales*. New York: Vintage.
- Cervera, Juan. (1991). *Teoría de la literatura infantil*. Bilbao: Mensajero.
- Garalón, Ana. (2001). *Historia Portátil de la Literatura infantil*. Madrid: Anaya.
- Lage Fernández, Juan José. (2010). *Diccionario histórico de autores de la literatura infantil y juvenil contemporánea*.Granada: Editorial Octaedro Andalucía.
- Nodelman, Perry. (2008). *The Hidden Adult: Defining Children's Literature.* Baltimore: John Hopkins University Press.
- Propp, Vladimir. (1988). *Morphology of the Folk Tale*, Austin: University of Texas Press.
- Velia, Bosch. (2000). *Clásicos de la literatura infantil-juvenil de América Latina y el Caribe*, Caracas: Biblioteca Ayacucho.

Teaching Learning Process

- Interactive teaching with lectures, presentations, discussions and debates with the help of audio-visual teaching aids.

- The learners are encouraged to collaborate with their peers to complete specific projects, assignments, term papers assigned to them.
- By using latest tools of Information technology the learners will be expected to explore and investigate about the topics introduced in the class in order to develop a critical perspective on the issues concerned

Keywords
Literature for young children and adolescents, transmitting values

DISCIPLINE SPECIFIC ELECTIVE COURSE – 3 (DSE-3):
Life Writing.

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Life Writing	**4**	**3**	**1**	**0**	**XII Passed**	**Nil**

Life Writing: Autobiography/Biography/Travelogue

Learning Objectives

- Help to analyse the characteristics of Autobiographical and biographical texts
- Familiarize students with Diaries and Letters
- Equip students to analyse and write about Travel experiences

Learning Outcomes

- The students are able to identify the various kinds of life writings.

Unit 1 (15 hours)
Reading, writing and analysing Autobiographies, Confessions, Memoirs. Fictional Autobiographies, Autobiographical Songs
Unit 2 (15 hours)
Reading, writing and analysing Diaries and Letters
Unit 3 (15 hours)
Reading, writing and analysing Travelogues, travelogues and other forms of travel narratives

References
Extracts from

- Anónimo. (1554, 2013). *Lazarillo de Tormes*. Madrid: Gredos.
- Atxaga, Bernardo. (1991). *Memorias de una vaca* Madrid: Ediciones SM.

- Burgos-Debray, Elizabeth. (1983). Me llamo Rigoberta Menchu y así me nació la conciencia. México: Siglo XXI.
- Calderón de la Barca, Fanny. (1843, 1977). *La vida en México.* México: Biblioteca Porrúa
- Cela, Camilo J. (1942, 1946). *La familia de Pascual Duarte*. Barceolona: Ediciones del Zodiáco.
- Guevara, Che. (1993). Notas del viaje por América Latina (Diarios de motocicleta) Madrid: Planeta.
- Jamis, Rauda. (1988). *Biografía de Frida Kahlo*. Barcelona: Circe ediciones.
- Mendoza, Eduardo. (1991). *Sin noticias de Gurb* Barcelona: Seix Barral.
- Neruda, Pablo. (1974). *Confieso que he vivido*. Barcelona: Seix Barral.
- Roca, Paco. (2011). *Memorias de un hombre en pijamas*. Bilbao: Astiberri
- Rosencof, Mauricio. (2002). *Las cartas que no llegaron.* Montevideo: Ediciones Santillana.
- Sender, Ramón J. (1962). *La tesis de Nancy*, Barcelona: Ed. Casals

Additional materials will be provided by the department

Additional Resources

- Alberca, Manuel. (2007) *El pacto ambiguo: de la autobiografía a la autoficción*, Madrid: Biblioteca Nueva.
- De Botton, Alain. (2004). *The Art of Travel*, New York: Vintage.
- Derrida, Jacques. (1985). *The Ear of the Other Otobiography, Transference*, *Translation* Lincoln: University of Nebraska Press.
- Geertz, Clifford. (1973). *The Interpretation of Cultures.* New York: Basic Books.
- Geertz, Clifford. (1983). *Local Knowledge.* New York: Basic Books.
- Geertz, Clifford. (1989). *Works and Lives: The Anthropologist as Author*. Stanford: Stanford University Press.
- Tacca, Oscar. (1975). *Las voces de la novela.* Madrid: Gredos.

Teaching Learning Process

- Interactive teaching with lectures, presentations, discussions and debates with the help of audio-visual teaching aids.
- The learners are encouraged to collaborate with their peers to complete specific projects, assignments, term papers assigned to them.
- By using latest tools of Information technology the learners will be expected to explore and investigate about the topics introduced in the class in order to develop a critical perspective on the issues concerned

Keywords

Biography, Autobiography, Memoir, Diary

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COURSES OFFERED BY DEPARTMENT OF
Germanic & Romance Studies
Category III

Courses for Undergraduate Programme of study with discipline as one of the Core Disciplines
SEMESTER-V
B.A. Programme with Spanish
(For e.g. courses for B.A. Programmes with_____ (discipline's name) as non-Major or Minor discipline)

DISCIPLINE SPECIFIC CORE COURSE (DSC-5): Spanish in Context: Advanced Level – 1

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Spanish in Context: Advanced Level - 1	4	3	1	Nil	Pass in B.A. (Prog.) Sem. IV	none

Learning Objectives

The Learning Objectives of this course are as follows:
At the end of Semester 5, a student will be able to:

- Read texts on various topics and answer questions on them.
- Write texts on a range of familiar subjects.
- Complete Level B1 and partially attain Level B2 of the Common European Framework (CEF).

Learning Outcomes

The Learning Outcomes of this course are as follows:

- Enable students to attain B1 Level of listening, speaking, reading and writing skills in the concerned language and partially attain Level B2.
- Reading texts and answering questions on them.
- Equip students to write texts on a range of familiar subjects.

SYLLABUS OF DSC – 5

Content	Description
Listening	Listen to and understand texts on various topics like change, co-existence, sources of information, well-being, science, etc.
Speaking, which includes:	

1.Monologue	Present orally one's views on various topics like change, co-existence, sources of information, well-being, science, etc.
2.Dialogue	Engage in conversations on various topics like change, co-existence, sources of information, well-being, science, etc.
Reading	Read and understand texts, emails, blogs on various topics like change, co-existence, sources of information, well-being, science, etc.
Writing	Guided writing activities. Writing a text, a biography, a blog, an article, an email, instructions for someone, etc.
Morphosyntax & Vocabulary	Grammatical structures and vocabulary used to talk and write on various topics like change, co-existence, sources of information, well-being, science, etc.
Intercultural and co-cultural	Introduction to Spanish-speaking regions/countries, celebrities from Spanish speaking countries, fashion, cinema, comic strips, etc.

Unit	Content	Duration
Unit 1	Talking of change in various spheres – in the education field, in the workplace, etc. Discussing social and economic changes in our country over the last few years. Reading and answering questions on the recent changes in the workplace in Europe. Vocabulary related to work and society. Revision of "pretérito perfecto, pretérito imperfecto, pretérito indefinido." Reading and discussing about the changes which come about in a person after joining a job. Each student to tell how he or she has changed in the last year. Using the following expressions when talking of change – "volverse, hacerse, engordar/adelgazar, transformar, crecer, etc.". Talking to one's grandparents to know how the school was in their time. Defining and discussing resilience. Vocabulary related to different attitudes. Discussing how the situation of the women has changed over the last 100 years. Talking about some achievements of women. Discussing how the situation of women is different in different countries. Reading about some young persons who have brought changes in the world. Writing a biography about a person who has done something important to bring change in the world.	9 hours
Unit 2	Talking of co-existence. Discussing what co-existing in a new culture involves and reasons why people leave their country of origin and the positive and negative experiences they have or have had. "El pretérito pluscuamperfecto". Revision of past tenses. Important factors in translation and interpretation. Talking about the conflicts which are generated between family members when living together in the same house. Discussing the norms which should be followed to co-exist together harmoniously at home and in class. "Causa y consecuencia – conectores: como, porque, es que, por eso, así que, etc.". "La exclamación". "Interjecciones". Discussing various aspects related to immigration. Reading a portion of a book about the Spanish people who went to Latin American countries during the civil war in Spain.	9 hours

	Answering questions on the same. Translating part of a poem. Reading a text on Latin American people who live in Spain. "Expresar aprobación y desaprobación – me parece bien/mal, etc." "Conectores para relatar – cuando, entonces, al final, pero, de repente, etc.". "Contraste de pasados – pretérito imperfecto, pretérito indefinido, pretérito perfecto y pretérito pluscuamperfecto".	
Unit 3	Talking about the different sources of information. Discussing the importance of publicity and the social networks in our life. Discussing as to which source of information we give more importance to in our daily lives. Vocabulary related to publicity. Discussing what the purpose of publicity is and imagining life without it. Advertisements as an important source of communication and publicity. Slogans of different advertisements. "El imperativo afirmativo y negativo." Use of imperative in advertisements. Comparing advertisements and seeing which each student likes the best. Factors involved in research work. Discussing how we are trapped in the digital world – how much time we spend on the mobile, on the internet. etc. Use of social networks for spreading government and other campaigns. "Los pronombres de objeto directo (OD) e indirecto (OI). Identifying the direct and indirect object pronouns in different campaigns. Writing a blog on your view about a video that has gone viral. Discussing how a person can be known by seeing who he or she follows on Twitter.	9 hours
Unit 4	Talking about one's well-being and the factors involved in maintaining one's well-being. Discussing the well-being of the country – its economy, education, social services, etc. Participating in a conference – "Dar una conferencia – saludo…presentación…conclusión, etc.". "El presente de subjuntivo". "Es Bueno/malo/mejor/necesario/importante/recomendable que + presente de subjuntivo." "Te aconsejo/recomiendo/sugiero que + presente de subjuntivo." Discussing what stress is and who suffers the most from it – the youth or the adults. Vocabulary related to the different states of mind. Discussing what situations of life lead to more stress. Reading about students who are facing problems related to stress and giving each one some advice. "Verbos irregulars en presente de subjuntivo". Discussing the activities one does during free time. Reading a blog on the benefits of doing exercises and having a discussion on this topic. Writing an article on mental or physical health. "Adjetivos con ser y estar – es inteligente, estoy preocupado, etc."	9 hours
Unit 5	Talking about science and its role in society. Discussing sustainability science of the planet. Vocabulary related to sustainability. "El futuro simple – verbos regulares e irregulares". "Futuro+si+presente", "si+presente+futuro". Write about what each one does to protect the environment where one lives. Each student to write about his/her future as a student and what profession each one wants to take up in	9 hours

	the future. Vocabulary related to the different professions. Read a blog on what it means to be scientific. Vocabulary related to the role of a scientist. "Cuando + presente de subjuntivo". "Construcciones para expresar probabilidad – a lo mejor+indicativo." "Posiblemente, seguramente, probablemente, quizás/tal vez+ indicativo/subjuntivo." "Expresar hipótesis." Each student to imagine and write about how his life will be after 15 years. Importance of science in one's daily life. Discussion on the positive and negative aspects of science. Reading about certain projects devised by adolescents. "Extranjerismos innecesarios y necesarios".	

References:
Any of the following textbooks may be prescribed and will be partially completed.

- Alonso Encina, et al. (2021). Nuevo *Diverso ESPAÑOL B.* Madrid: SGEL.
- Campo C., et al. (2017). *Protagonistas B1.* Madrid: SM Español para extranjeros.
- Sanchez, Lobato, et al. (2014). *Español sin fronteras 2.* Madrid: SGEL.
- Corpas J., et al. (2017). *Aula Internacional 3.* Barcelona: Editorial Difusión
- Baulenas Neus Sans, et al. (2017). *Bítacora 2.* Barcelona: Editorial Difusión.
- Martinez María Angeles Alvarez, et al. (2017). *Sueña 2.* Madrid: Grupo Anaya.
- Bautista, Coto, et al. (2011). *Tema a Tema B1.* Madrid: Editorial Edelsa.

Additional material can be also used.

SPANISH

COURSES OFFERED BY DEPARTMENT OF GERMANIC AND ROMANCE STUDIES

STRUCTURE OF SIXTH SEMESTER

DISCIPLINE SPECIFIC CORE COURSE -16 (DSC-16)
Language in Context: Advanced Reading and Writing Skills (2)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Language in Context: Advanced Reading and Writing Skills (2)	**4**	**3**	**1**	**0**	**XII Passed**	**Should have studied Language in Context: Advanced Reading and Writing Skills (1)**

Learning Objectives

- To read and understand a number of specialized texts dealing with the same subject. Related or not related to the learner's field of interest.
- To summarize the main points of the read texts in writing in one's own words
- To present a written synthesis of the texts read in a structured manner.
- To write texts on a wide range of topics whether they are related or not to the learner's field of interest
- To attain partially Level B2 of the CEF.

Learning Outcomes

- Enable learners to partially attain B2 Level of reading and writing skills in the concerned language.
- Develop required skill to understand specialized articles within and outside his/her field with the help of dictionary.
- Develop required skills to prepare specialized written documents/reports/term papers for academic and professional needs.

Unit 1 **(12 hours)**

Reading : Reading, analysing and synthesizing information, ideas and opinions from highly specialised sources within his/her field/understanding specialised articles outside his/her field, provided he/she can use a dictionary/understanding lengthy, complex instructions in his/her field, including details on conditions and warnings, provided he/she can reread difficult sections/scanning longer texts in order to

locate desired information, and gather information from different parts of a text, or from different texts in order to fulfil a specific task.

Unit 2 **(11 hours)**

Writing: Writing term papers on various topics/project reports/Preparing news reports/blog writing/writing applications/wall magazines/editorials/brochures/newsletters etc.

Unit 3 **(11 hours)**

Lexical, Morphosyntactic and Phonological Competences:

Developing a good range of vocabulary for expressing one's views on matters connected to professional, academic, social and cultural domains.

Appropriate control of tenses and temporal notions, moods, voices, complex syntactical structures and logical connectors to produce clearly structured speech in a coherent and cohesive manner.

Developing clear, natural, pronunciation and intonation in Spanish

Unit 4 **(11 hours)**

Co-cultural and Inter Cultural Competence: Developing the capacity to him- or herself confidently, clearly and politely in a formal or informal register, appropriate to the situation and person(s) concerned.

Advanced knowledge of history, society, culture, gastronomy, geography, political, economic and educational systems of Spain and Latin America.

References

Any of the following textbooks may be prescribed and will be partially completed.

- Aranda, Jose Carlos. (2010) *Manual de Ortografía y Redacción*. Madrid: Ed. Berenice.
- Cervera, Angel. (1999). *El comentario de textos*. Madrid: Espasa.
- Cassany, Daniel. (1995). *La cocina de la escritura*. Madrid: Anagrama.
- Garmendía, Agusin. (2017) *Aula International 4*, Barcelona: Editorial Difusion.
- Garmendía, Agusin. (2017) *Aula International 5*, Barcelona: Editorial Difusion.
- Hermoso, Ana. (2013). *Nuevo Prisma Fusion B1 + B2*. Madrid: Editorial Edinumen.
- Jimenez Fernandez, Rafael et al, (2012). *Como mejorar la expresion escrita*: *Manual de redaccion para el ámbito universitario*, Granada: Grupo Editorial Universitario.
- Martin Peris, Ernesto. *Gente hoy 3*. Barcelona: Editorial Difusion.
- Posner, Richard. (2013). *El pequeno libro del plagio*. Madrid: El hombre del tres.
- Prat Ferrer, Juan Jose and Angel Pena Delgado. (2015). *Manual de escritura academica*. Madrid: Ediciones Paraninfo.
- Vicente, David. (2017). *Arte de escribir: Manual de escritura creativa*, Cordoba: Bernice Editorial.

Additional material will be provided by the Department

Teaching Learning Process

- Task Based Learning modules that integrate real life situations within the context of the classroom. Learners are expected to perform certain tasks in day to day life situations in groups.
- The learners are encouraged to collaborate with their peers to complete specific projects assigned to them based on specific linguistic, communicative, analytical, enquiry based, co-cultural, problem-solving and other skills that they need to acquire.
- The learners will be encouraged to evaluate their own learning process through regular self-assessment sheets.
- By using latest tools of Information technology and social media, the learners will be given an opportunity to put in practice reading and writing skills in real life environment while communicating with their peers beyond classrooms.
- Following flipped class model, the learners will be expected to take greater responsibility of learning an exploring even beyond the classroom and use the classroom primarily for interactive, task-based activities.

Keywords
Understand specialised documents, writing specialised texts, Wide range of topic

DISCIPLINE SPECIFIC CORE COURSE – 17 (DSC-17)
Language in Context: Advanced Listening and Speaking Skills (2)

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Language in Context: Advanced Listening and Speaking Skills (2)	**4**	**3**	**1**	**0**	**XII passed**	**Should have studied Language in Context: Advanced Listening and Speaking Skills (1)**

Learning Objectives

- To listen to and understand long texts on a wide range of topics whether related to or not related to the learner's field of interest.
- To discuss with little or no preparation a wide variety of topics related or not related to the learner's field of interest.
- To debate in depth on a wide range of issues related or not related to the learner's field of interest.

Learning Outcomes

- Enable learners to partially attain B2 Level of listening and speaking skills in the concerned language.
- Impart required skill to understand specialised audio-visual material within and outside his/her field
- Develop the capacity to give a clear, systematically developed presentation, with highlighting of significant points, and relevant supporting detail.
- Develops the capacity to present in a spontaneous manner without referring to a prepared text and demonstrate an adequate degree of fluency and ease of expression

Unit 1

Listening: Understanding recordings in standard dialect likely to be encountered in social, professional or academic life and identifying speaker's viewpoints and attitudes as well as the informational content.

(12 hours)

Unit 2

Speaking: More spontaneous oral communication skills both formal and informal through the discussion of a wide range of wide range of general, academic, vocational or leisure topics/contemporary socio-political issues, marking clearly the relationships between ideas. related to the Hispanic World/ Production of audio-video clips/ Making detailed oral presentations/ Drama and songs. **(11 hours)**

Unit 3

Developing a good range of vocabulary for expressing one's views on matters connected to professional, academic, social and cultural domains.

Appropriate control of tenses and temporal notions, moods, voices, complex syntactical structures and logical connectors to produce clearly structured speech in a coherent and cohesive manner.

Developing clear, natural, pronunciation and intonation in Spanish **(11 hours)**

Unit 4

Co-cultural Competence: Developing the capacity to him- or herself confidently, clearly and politely in a formal or informal register, appropriate to the situation and person(s) concerned.

Advanced knowledge of history, society, culture, gastronomy, geography, political, economic and educational systems of Spain and Latin America. **(11 hours)**

References

Any of the following textbooks may be prescribed and will be partially completed.

- www.veintemundos.com
- Garmendía Agusín. (2017). *Aula internacional 5*. Barcelona: Editorial Difusión.
- Hermoso, Ana. et al. (2013) *Nuevo Prisma Fusion B1 + B2*. Madrid: Editorial Edinumen
- Martin Peris, Ernesto. (2013). *Gente hoy 3*. Barcelona: Editorial Difusión.

Additional material will be provided by the Department

DISCIPLINE SPECIFIC CORE COURSE– 18 (DSC-18)
History of Hispanic Literature (2)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	**Credits**	**Credit distribution of the course**			**Eligibility criteria**	**Pre-requisite of the course** (if any)
		Lecture	**Tutorial**	**Practical/ Practice**		
History of Hispanic Literature (2)	**4**	**3**	**1**	**0**	**XII pass**	Should have studied **History of Hispanic Literature (1)**

Learning Objectives

- To introduce the learner to different cultural and intellectual movements in Spanish and Latin American Literature in the XIX century and up to the present (XXI century)
- To read both Spanish and Latin American literary texts representing major cultural and intellectual movements from the XIX century to the present (XXI century)

Learning Outcomes

- Familiarize students with literary texts written in Spanish with focus on the major cultural and intellectual movements from the XIX Century till the Contemporary Period
- Develop skills to identify and analyse how various genres such as poetry, plays, shorter and longer narrative texts, autobiography etc. evolved through various historical periods.

Unit 1 **(15 hours)**

A selection of literary texts with focus on the major cultural and intellectual movements from the XIX Century till the Contemporary Period, such as Romanticism, Realism, Symbolism, Naturalism, Surrealism, Existentialism, New Novel, Neo-Realism etc.

Unit 2 **(15 hours)**

Debate on civilization and barbarism in Latin America

Unit 3 **(15 hours)**

The first fifty years of the XX century: extracts from the post Spanish civil war novel and the Latin American regionalist novel.

References

Selection of literary texts to be provided by the Department

- Correa, Pedro, (1985). *Historia de la literatura española, Colección «Temas de Cultura Española»* Michigan: University of Michigan.
- Deyermond, Alan D. et. al, (1984) *Historia de la literatura española, Vols. 1-6*, Madrid: Ariel.
- Olea, Rafael y Weinberg, Liliana. (2011). *Literatura hispanoamericana*, México: SER..
- Oviedo, José Miguel. (2002). *Historia de la literatura hispanoamericana, Vols 1-4,* Madrid: Alianza Editorial.

Additional material will be provided by the Department

Teaching Learning Process

- Interactive teaching with lectures, presentations, discussions and debates with the help of audio-visual teaching aids.
- The learners are encouraged to collaborate with their peers to complete specific projects, assignments, term papers assigned to them.
- By using latest tools of Information technology the learners will be expected to explore and investigate about the topics introduced in the class in order to develop a critical perspective on the issues concerned

Keywords

Literary, Cultural and Intellectual movements, XIX Century, Contemporary Period, Spanish Writers, Latin American Writers

Pool of DSE

DISCIPLINE SPECIFIC ELECTIVE COURSE – 4 (DSE-4):
Research Methodology and Academic Writing.

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Research Methodology and Academic Writing	4	3	1	0	XII Passed	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce the learner to the basics of research process and argumentation.
- To familiarize the learner with the process and stylistics of academic writing.
- To develop in the learner an independent point of view and critical thinking.

Learning outcomes

The Learning Outcomes of this course are as follows:

- The learner will be able to identify research gaps and construct hypotheses and arguments.
- The learner will be able to choose, access and effectively engage with primary, secondary and tertiary sources.
- The learner will be able to write an academic paper/text.

SYLLABUS OF DSE-4

UNIT – I **(9 hours)**

Identifying the student's area of interest, a research gap and a research problem. Training students on how to choose and narrow down a topic. Building a research hypothesis. Basic types and components of a research question.

.

UNIT – II **(9 hours)**

Identifying and evaluating different kinds of sources like primary vs secondary vs tertiary sources, as well as journal articles, books, dissertations etc.

Identifying and choosing relevant and reliable sources for research, as well as basic knowledge on different websites, portals and journals for accessing said sources.
Constructing an annotated Bibliography.
Familiarizing students with the different kinds of research: quantitative research (eg. different literary and cultural theories in case of research in literature.

UNIT – III **(9 hours)**

Basic knowledge on what an argument and its basic components and structure are. Identifying simple and complex arguments, as well as validity and soundness of an argument. Basic knowledge of logical fallacies.
Engaging with and evaluating sources by identifying underlying arguments, their structures, validity and soundness.

UNIT – IV **(9 hours)**

Effective note-taking, and summarizing academic/scientific texts.
Constructing arguments and counter-arguments. Quoting, paraphrasing and summarizing from the source texts to construct the argument(s).

UNIT – V **(9 hours)**

Planning and structuring a draft. Familiarization with stylistic conventions, using different citation styles and making footnotes.
Familiarizing with the ethics of research and plagiarism.
Perfecting a final draft based on coherence, connection and flow in writing.

Practical component (if any) - NIL

Essential/recommended readings

Suggestive readings

Learning/Teaching Material: any of the textbooks given below may be suggested.

- Brian Paltridge and Sue Starfield, Thesis and Dissertation Writing in a Second Language, Routledge, 2007.
- Umberto Eco: Cómo se hace una tésis
- Brian Paltridge et.al. Teaching Academic Writing of Michigan Press.
- Brian Paltridge and Sue Starfield Getting Published in Academic Journals, University of Michigan Press. 2016
- Cómo escribir y presenter su tésis y disertación by S. Joseph Levine, Michigan State University, English, French and Italian versions available.

http://amanecemetropolis.net/wp=/-content/uploads/2014/10como-escribir-y0presentar-tesis-disertacion-joseph-levine.pdf

1. Helga Esselborn-Krumbiegel. Richtig wissenschaftlich schreiben: Wissenschaftssprache in Regeln und Übungen. UTB GmbH; 7. Aufl. edition (17 Jan. 2022)
2. Helga Esselborn-Krumbiegel. Von der Idee zum Text. Eine Anleitung zum wissenschafltichen Schreiben. UTB GmbH; 6. aktual. Aufl. edition (14 Feb. 2022)
3. Wayne C. Booth. Gregory G. Colomb et al. The Craft of Research. University of Chicago Press; 4. edition (18 Oct. 2016)

DISCIPLINE SPECIFIC ELECTIVE COURSE – 4 (DSE-4):
Introduction to Foreign Language Teaching.

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Introduction to Foreign Language Teaching	**4**	**3**	**1**	**0**	**XII passed**	**Nil**

Learning Objectives

- To create basic awareness about a foreign language classroom and textbook.
- To establish a theoretical basis and introduce students to basic practical aspects of Foreign Language Teaching

Learning Outcomes

- Successfully creating basic awareness about a foreign language classroom and textbook
- Establishing a theoretical basis and introduce students to basic practical aspects of Foreign Language Teaching

Unit 1 **(15 hours)**
What is a classroom? Models of learning/teaching. Different methods/approaches to teaching a foreign language. Introduction to the four skills. Evaluation.
Unit 2 **(15 hours)**
What is a text book? Issues in material production, Self-Instruction Material
Unit 3 **(15 hours)**
Ludic function of language: Teaching through games.

References

- Baralo, M. (1998). "Teorías de adquisición de lenguas extranjeras y su aplicación a la enseñanza del español" *Experto en Enseñanza del Español como Lengua Extranjera*, Madrid: Fundación Antonio Nebrija.

- Richards J. and Rogers, T. (2001). *Approaches and Methods in Language Teaching*. Cambridge: Cambridge University Press.
- Littlewood, T. (1998). *La enseñanza comunicativa del idioma: Introducción al enfoque comunicativo*, Cambridge, Madrid: Cambridge University Press.
- Lloráis González, S. (2008). *Entender y utilizar el Marco Común europeo de referencias desde el punto de vista de profesor de lenguas*. Madrid: Santilla Ed.
- Moreno Fernández, F, (2002). *Producción, expresión e interacción oral*. Madrid, Madrid: Arco Libros.
- Peris, Martín. (1988). La enseñanza de los idiomas modernos: de los procesos a los contenidos en revista. *Cable n• 1*.
- Sánchez Pérez, A. (1992). *Historia de la enseñanza de español,* Madrid: SGEL, Madrid.

Additional material will be provided by the Department

Teaching Learning Process

- Interactive teaching with lectures, presentations and hands on experience of classroom observation ant module based practice teaching
- The learners are encouraged to collaborate with their peers to complete specific projects, assignments, term papers assigned to them.
- By using latest tools of Information technology and learning apps the learners will be expected to create teaching materials.

Keywords

Classroom, Textbooks, Four Skills, methods and approaches of teaching foreign language

DISCIPLINE SPECIFIC ELECTIVE COURSE – 4 (DSE-4):
Introduction to Translation

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Introduction to Translation	**4**	**3**	**1**	**0**	**XII Passed**	**Nil**

Learning Objectives

- Familiarizes students with language for specific purposes
- Familiarize students to the techniques of translation;

Learning Outcomes

- Enable students to do Scientific and Technical translation, and translation of sacred texts.
- Help students to make word glossaries in above fields.
- Enable students to read parallel literature on texts chosen for translation.
- Sensitize student towards Machine translation and its limitations
- Develop awareness about Ethics and accountability in translation.

Unit 1 **(12 hours)**

Study of language used in industries such as hospitality, tourism, banking, business sectors and translation of texts in the chosen areas (including birth, educational qualification, marriage, death, certificates, mark sheets). Scientific and Technical translation. Translation of sacred texts.

Unit 2 **(11 hours)**

Introducing the student to the techniques of translation
Making of word glossaries in above fields.

Unit 3 **(11 hours)**

Machine translation and its limitations
Ethics and accountability in translation.

Unit 4 **(11 hours)**

Reading of parallel literature on texts chosen for translation
Role of Translation in Multimedia contexts.

References

- Baker, Mona. (2011). *In Other Words. A Course Book in Translation*. London, New York: Routledge.
- Bassnett McGuire, Susan. (1980, 2013). *Translation Studies.* London, NY: Routledge.
- Child, Jack. (2009). *Introduction to Spanish Translation* Lanham, Maryland: UPA.

- Gile, Daniel. (2009). *Basic Concepts and Models for Interpreter and Translator Training*. Amsterdam, Philadelphia: John Benjamin Publishing.
- Haywood, Louise. (2009). *Thinking Spanish Translation: A Course in Spanish Translation, Spanish to English* London, New York: Routledge.
- López Guix, Juan Gabriel. (2012). *Manual de Traducción Inglés – Castellano*, Madrid: Gedisa.
- Lunn, Patricia et al. (2013). *En otras palabras: perfeccionamiento del español por medio de la traducción.* Washington: Georgetown University Press.
- Malmkaer Kirsten, Windle, Kevin. (2011). *The Oxford Handbook of Translation Studies* Oxford: OUP
- Munday, Jeremy. (2012). *Introducing Translation Studies, Theories and Applications,* London, New York: Routledge.

Additional material will be provided by the Department

Teaching Learning Process

- Interactive teaching with lectures, presentations, discussions and debates with the help of audio-visual teaching aids.
- The learners are encouraged to collaborate with their peers to complete specific projects, assignments, term papers, translations assigned to them.
- By using latest tools of Information technology the learners will be expected to explore and investigate about the topics introduced in the class in order to develop a critical perspective on the issues concerned

Keywords

Techniques of Translation, scientific, technical, commercial translation, Word glossary, machine translation

DISCIPLINE SPECIFIC ELECTIVE COURSE – 4 (DSE-4):
Techniques of Written Expression.

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	**Credits**	**Credit distribution of the course**			**Eligibility criteria**	**Pre-requisite of the course** (if any)
		Lecture	**Tutorial**	**Practical/ Practice**		
Techniques of Written Expression	**4**	**3**	**1**	**0**	**XII Passed**	**Nil**

Learning Objectives

- To introduce the learner to commonly used figures of speech.

- To define the commonly used figures of speech
- To identify the commonly used figures of speech in both literary and non-literary texts
- To introduce the learner to literary tropes
- To present the historical origin of commonly used idioms and proverbs.
- To teach the learner how to write a critical essay and a commentary

Learning Outcomes

- Introduce students to common figures of speech, Familiarize students with Literary Tropes
- Develop understanding of Idioms and Proverbs with their historical origin. Develop knowledge about different literary genres:

Unit 1 **(11 hours)**

Definition and study with examples of Common figures of speech: Metaphors, Similes, Metonyms, Hyperboles, Personification, Alliteration, Oxymoron and Synecdoche.

Unit 2 **(11 hours)**

Literary Tropes: Humour and Irony, Puns, Tautology, Allegories, Allusions, Apologia, Cliches, Euphemism, Climax and Anticlimax, Paradox, Analogies.

Unit 3 **(11 hours)**

Idioms and Proverbs with their historical origin.

Unit 4 **(12 hours)**

Different literary genres: Myths, Epics, Chivalric romances, Picaresque novel, Comedy, Tragicomedy and Farce, Satires, Biography, Autobiography and Memoirs, Essays and Epistles, Social Realism., Travel Literature

References

- Azaustre, Galiana Antonio y Juan Casas Rigall. (1994). *Introducción al análisis retórico, tropas, figures y sintaxis del estilo.* Santiago de Compostela: Universidad de Santiago de Compostela.
- Beckson, Karl and Ganz, Arthur. (1960, 1991). *Literary Terms, A Dictionary*. Delhi: Rupa.
- Delgado, Josefina. (2002). *Qué leer y Cómo* Buenos Aires: El Ateneo.
- Romera, Angel. Manual de Retórica y Recursos Estilísticos, Diario del Endriago, http://diariodelendriago.blogspot.com

Additional materials will be provided by the department

Teaching Learning Process

- Interactive teaching with lectures, presentations, discussions and debates with the help of audio-visual teaching aids.
- The learners are encouraged to collaborate with their peers to complete specific projects, assignments, term papers assigned to them.
- By using latest tools of Information technology the learners will be expected to explore and investigate about the topics introduced in the class in order to develop a critical perspective on the issues concerned

Keywords

Figures of Speech, Literary Tropes, Idioms, Proverbs, Literary Genres

DISCIPLINE SPECIFIC ELECTIVE COURSE – 4 (DSE-4):
Study of European Art.

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Study of European Art	**4**	**3**	**1**	**0**	**XII Passed**	**Nil**

Learning Objectives

- To introduce students to the various major Art Movements in Europe from the Renaissance to the Contemporary Period
- To study artworks of painters representative of the major Art Movements in Europe

Learning Outcomes

- Develop an understanding of structures and perspectives of everyday life as seen by painters.
- Equip with tools to analyze artworks

Unit 1 **(15 hours)**

Introduction to the Civilization of Europe in the Renaissance. (Paintings on 'Europa'; Durer, (1495) Titian (1559) The Rape of Europa Sebastian (1588) Queen Europa. Maps of Europe. The idea of Europe. Structures and Perspectives of Everyday life as seen by painters.

Unit 2 **(15 hours)**

Understanding of structures and perspectives of everyday life as seen by painters.

Unit 3 **(15 hours)**

Overview of important European Art Movements, representative artists and their artworks : Spanish Baroque, Italian Renaissance, Flemish School, French Impressionists, Spanish Surrealists etc.

References

- Adams, Laurie Schneider (1996). *The Methodologies of Art: An Introduction*, NY: Westview Press
- Arnason, H. H. (2003). *History of Modern Art: Painting, Sculpture, Architecture, Photography*, New York: Prentice Hall.
- Boime, Albert (1990). *A Social History of Modern Art, Volumes 5*, Chicago: University of Chicago Press.
- Burckhardt, Jacob. (1855, 2004). *The Civilization of the Renaissance in Italy.* New York: Penguin.
- Hopkins, David. (2000). *After Modern Art 1945-2000 (Oxford History of Art)*, NY: OUP.
- Hughes, Robert. (2006). *Goya* New York: Alfred Knopf.
- Read, Herbert. (1984). *Meaning of Art*. London: Faber & Faber.
- Secrest, Meryle. (1986). *Salvador Dalí The Surrealist Jester* London: Paladin.

- Stassinopoulos Huffington, Arianna. (1988). *Picasso Creator and Destroyer.* London: Pan Books.
- Blog by Shatarriah Godwin, People of Color in European Art History.

Additional material will be provided by the Department

Teaching Learning Process

- Interactive teaching with lectures, presentations, discussions and debates with the help of audio-visual teaching aids.
- The learners are encouraged to collaborate with their peers to complete specific projects, assignments, term papers assigned to them.
- By using latest tools of information technology the learners will be expected to explore and investigate about the topics introduced in the class in order to develop a critical perspective on the issues concerned

Keywords
European Art Movements, Painters, Artworks, Tools to analyse Artworks

DISCIPLINE SPECIFIC ELECTIVE COURSE – 4 (DSE-4):
Children and Adolescent Literature.

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Children and Adolescent Literature	**4**	**3**	**1**	**0**	**XII Passed**	**Nil**

Children and Adolescent Literature
Children and adolescent literature can be distinguished from mere books written for children as literature implies genre and literary tropes, premeditated contexts and settings and often a conscious attempt at portraying history and multiculturalism. In addition, adolescent literature written by adults is an institutional discourse that helps teenage readers understand their environment and society through the issues that present themselves in texts. Through novels, poems and theater, we examine the values transmitted to children and how literature can influence moral and social decisions that adolescents are faced with.

Learning Objectives

- To define what is Children's Literature and distinguish it from Literature for Adults.
- To introduce the learner to different genres of children and adolescent literature.

- To read and understand Children and adolescent literature texts.

Learning Outcomes

- Introduce students to the changing conceptions of children's literature:
- Help students in analyzing various genres meant for young children and adolescents.
- Sensitize students about the role of children's literature in transmitting values.

Unit 1 **(15 hours)**

Changing conceptions of children's literature: Literature for children and /or adult readers?

Unit 2 **(15 hours)**

Folklore, fables and fairy tales for young children,theater for children

Unit 3 **(15 hours)**

Children's literature and transmission of values

References
Selection to be made from the following texts:

- Allende, Isabel. (2014). *El juego de Ripper*. Barcelona: Plaza y Janes.
- Andruetto, María Teresa. (2005). *El país de Juan*. Salamanca: Anaya.
- Arboleda Rodríguez, Diego y Sagospe, Raúl. (2014), *Prohibido leer a Lewis Caroll*. Salamanca: Anaya & Mario Muchnik.
- Conde, Carmen. (1994), *Aladino*, Madrid: Hesperia.
- Conde, Carmen. (1953) *Auto de Navidad*, Madrid: Enag.
- De Santis, Pablo. (2007) *El enigma de París*. Madrid: Planeta
- Ferrari, Andrea. (2004). *Café solo*. Barcelona: Ediciones SM.
- Fuertes, Gloria. (2017). *El libro de Gloria Fuertes para niñas y niños.* Barcelona: Blackie Books.
- García Lorca, Federico. Ramón Jimenez; Alberti, Rafael. (2004). *Mi primer libro de poemas* Salamanca: Anaya.
- García Lorca, Federico. (1919, 1999). *El maleficio de la mariposa.* Madrid: Cátedra.
- Gómez Cerda, Alfredo. (1994). *Sin billete de vuelta*, Barcelona: Alfaguara.
- Gopeguí, Belén. (2008). *El balonazo*, Barcelona: Ediciones SM.
- Ramón Jiménez, Juan. (1914, 2014). *Platero y yo*. Madrid: Cátedra (2014).
- Ruescas, Javier. (2012). *Play*. Barcelona: Montena.
- Ruescas, Javier. (2013). *Pulsaciones*. Barcelona: Ediciones SM.
- Sierra, Jordi. (2013) *Cuatro días de enero*, Barcelona: DeBolsillo.

Additional material will be provided by the Department
Additional Resources

- Bettelheim, Bruno. (1975). *The Uses of Enchantment: The Meaning and Importance of Fairy Tales*. New York: Vintage.
- Cervera, Juan. (1991). *Teoría de la literatura infantil*. Bilbao: Mensajero.
- Garalón, Ana. (2001). *Historia Portátil de la Literatura infantil*. Madrid: Anaya.
- Lage Fernández, Juan José. (2010). *Diccionario histórico de autores de la literatura infantil y juvenil contemporánea*.Granada: Editorial Octaedro Andalucía.
- Nodelman, Perry. (2008). *The Hidden Adult: Defining Children's Literature.* Baltimore: John Hopkins University Press.

- Propp, Vladimir. (1988). *Morphology of the Folk Tale*, Austin: University of Texas Press.
- Velia, Bosch. (2000). *Clásicos de la literatura infantil-juvenil de América Latina y el Caribe*, Caracas: Biblioteca Ayacucho.

Teaching Learning Process

- Interactive teaching with lectures, presentations, discussions and debates with the help of audio-visual teaching aids.
- The learners are encouraged to collaborate with their peers to complete specific projects, assignments, term papers assigned to them.
- By using latest tools of Information technology the learners will be expected to explore and investigate about the topics introduced in the class in order to develop a critical perspective on the issues concerned

Keywords
Literature for young children and adolescents, transmitting values

DISCIPLINE SPECIFIC ELECTIVE COURSE – 4 (DSE-4):
Life Writing.

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Life Writing	**4**	**3**	**1**	**0**	**XII Passed**	**Nil**

Life Writing

Learning Objectives

- Help to analyse the characteristics of autobiographical and biographical texts
- Familiarize students with Diaries and Letters
- Equip students to analyse and write about Travel experiences

Learning Outcomes

- The students are able to identify the various kinds of life writings.

Unit 1 **(15 hours)**
Reading, writing and analysing Autobiographies, Confessions, Memoirs. Fictional Autobiographies, Autobiographical Songs
Unit 2 **(15 hours)**
Reading, writing and analysing diaries and letters
Unit 3 **(15 hours)**

Reading, writing and analysing travelogues and other forms of travel narratives

References

Extracts from

- Anónimo. (1554, 2013). *Lazarillo de Tormes*. Madrid: Gredos.
- Atxaga, Bernardo. (1991). *Memorias de una vaca* Madrid: Ediciones SM.
- Burgos-Debray, Elizabeth. (1983). Me llamo Rigoberta Menchu y así me nació la conciencia. México: Siglo XXI.
- Calderón de la Barca, Fanny. (1843, 1977). *La vida en México.* México: Biblioteca Porrúa
- Cela, Camilo J. (1942, 1946). *La familia de Pascual Duarte*. Barceolona: Ediciones del Zodiáco.
- Guevara, Che. (1993). Notas del viaje por América Latina (Diarios de motocicleta) Madrid: Planeta.
- Jamis, Rauda. (1988). *Biografía de Frida Kahlo*. Barcelona: Circe ediciones.
- Mendoza, Eduardo. (1991). *Sin noticias de Gurb* Barcelona: Seix Barral.
- Neruda, Pablo. (1974). *Confieso que he vivido*. Barcelona: Seix Barral.
- Roca, Paco. (2011). *Memorias de un hombre en pijamas*. Bilbao: Astiberri
- Rosencof, Mauricio. (2002). *Las cartas que no llegaron.* Montevideo: Ediciones Santillana.
- Sender, Ramón J. (1962). *La tesis de Nancy*, Barcelona: Ed. Casals

Additional materials will be provided by the department

Additional Resources

- Alberca, Manuel. (2007) *El pacto ambiguo: de la autobiografía a la autoficción*, Madrid: Biblioteca Nueva.
- De Botton, Alain. (2004).*The Art of Travel*, New York: Vintage.
- Derrida, Jacques. (1985). *The Ear of the Other Otobiography, Transference*, *Translation* Lincoln: University of Nebraska Press.
- Geertz, Clifford. (1973).*The Interpretation of Cultures.* New York: Basic Books.
- Geertz, Clifford. (1983). *Local Knowledge.* New York: Basic Books.
- Geertz, Clifford. (1989). *Works and Lives: The Anthropologist as Author*. Stanford: Stanford University Press.
- Tacca, Oscar. (1975). *Las voces de la novela* Madrid: Gredos.

Teaching Learning Process

- Interactive teaching with lectures, presentations, discussions and debates with the help of audio-visual teaching aids.
- The learners are encouraged to collaborate with their peers to complete specific projects, assignments, term papers assigned to them.
- By using latest tools of Information technology the learners will be expected to explore and investigate about the topics introduced in the class in order to develop a critical perspective on the issues concerned

Keywords

Biography, Autobiography, Memoir, Diary

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category III

B.A. Programme with Spanish as Non-Major

DISCIPLINE SPECIFIC CORE COURSE (DSC-6): Spanish in Context: Advanced Level – 2

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Spanish in Context: Advanced Level - 2	**4**	**3**	**1**	**Nil**	**Pass in B.A. (Prog.) Sem. V**	**none**

Learning Objectives

The Learning Objectives of this course are as follows:
At the end of Semester 6, a student will be able to:

- Read texts on various topics and answer questions on them.
- Write texts on a range of familiar subjects.
- Partially attain Level B2 of the Common European Framework (CEF).

Learning Outcomes

The Learning Outcomes of this course are as follows:

- Enable students to partially attain B2 Level of listening, speaking, reading and writing skills in the concerned language.
- Reading texts and answering questions on them.
- Equip students to write texts on a range of familiar subjects.

SYLLABUS OF DSC – 6

Content	Description
Listening	Listen to and understand texts on various topics like love, friendship, solidarity, triumph, talent, festivals, hypothetical situations, etc.
Speaking, which includes:	
1.Monologue	Present orally one's views on various topics like love, friendship, solidarity, triumph, talent, festivals, hypothetical situations, etc.
2.Dialogue	Engage in conversations on various topics like love, friendship, solidarity, triumph, talent, festivals, hypothetical situations, etc.
Reading	Read and understand texts, emails, blogs on various topics like love, friendship, solidarity, triumph, talent, festivals, hypothetical situations, etc.

Writing	Guided writing activities. Writing a text, an informal letter and e-mail, an article, a formal letter, etc.
Morphosyntax & Vocabulary	Grammatical structures and vocabulary used to talk and write on various topics like love, friendship, solidarity, triumph, talent, festivals, hypothetical situations, etc.
Intercultural and co-cultural	Introduction to Spanish-speaking regions/countries, celebrities from Spanish speaking countries, fashion, cinema, comic strips, etc.

Unit	Content	Duration
Unit 1	Talking of love and friendship. Meaning of love and the various associated sentiments, both positive and negative. Reading and discussing fragments of poems on love. Vocabulary related to various sentiments. "Verbos valorativos – me molesta + infinitivo, me molesta(n) + sustantivo, me molesta + que + presente de subjuntivo." Answering questions on different aspects of love. Writing about what love means to each student. Expectations from the persons one loves. What expectation each one has from his/her best friend. "Expresar deseos – querer, esperar, pedir, etc." "Ojalá/ojalá que + subjuntivo." "La escucha activa." "Mayúsculas y minúsculas." Reading and having a discussion on "Valentine's day". "Para que + subjuntivo." Reading a text on true friendship - agreeing or disagreeing with the author. Learning how to write an informal letter and an e-mail and writing one of them to one's friend telling him or her about one's experiences of a summer vacation.	9 hours
Unit 2	Solidarity and what it means to be supportive, caring, humanitarian. Discussing what bullying is. Read about a news item about a victim of school bullying. Vocabulary related to bullying. "El condicional". "Aconsejar o sugerir – debería(s) + infinitivo, podría(s) + infinitivo, yo que tú/yo en tu lugar+condicional." "Deseos – me gustaría+infinitivo." "El aprendizaje colaborativo". Disabilities and civic responsibility. Vocabulary related to disabilities. "Estilo indirecto - transmitir mensajes – me ha dicho que…, me ha felicitado por…, me ha preguntado si…etc."; transmitir peticiones, consejos, recomendaciones, órdenes o sugerencias – Dice que seas…, me ha pedido que le ayude, sugieren que votemos, etc." Imagine that you have spoken to different persons and write what they have said to you. Read a text on how we can be good citizens. Vocabulary related to non-governmental organizations. Students to share their experiences and views on being a volunteer in some NGO. Imagine that one opens an NGO – what cause would he/she support, what activities would be done, etc. "El pretérito imperfecto de subjuntivo." "Expresar condiciones poco probables – si pudiera …. crearía…" Learn how to write a formal letter.	9 hours

Unit 3	Reading a text on the triumph of a Spanish football team – "La selección, el triunfo en equipo". Discussing what each student thinks is the key to success as a team. Expressing happiness and satisfaction after winning. "El pretérito perfecto de subjuntivo." "Expresar alegría y satisfacción – "que bien que/ es estupendo que/hacer ilusión que + subjuntivo; pretérito perfecto de subjuntivo." Reading the text "Todo es posible" (Everything is posible). "El futuro compuesto." "El condicional compuesto". "Expresar hipótesis sobre el pasado – futuro compuesto, condicional simple y compuesto". "Estilo directo a indirecto usando dijo/comentó, etc. que… (Presente a imperfecto, pretérito perfecto a pluscuamperfecto, imperfecto a imperfecto, indefinido a indefinido o pluscuamperfecto, futuro a condicional). Read about recipes which have had success. Write a recipe of one's own. "Expresar modo – como + subjuntivo; gerundio (como prefieras; el arroz se hace mejor cociéndolo…)." Reading a text on talent - ¿Tiene usted talento?" "Pedir valoración y valorar – ¿qué te parece lo de + infinitivo/que + subjuntivo? – es una suerte/pena que + subjuntivo". "Expresar deseos poco probables – ojalá + imperfecto de subjuntivo; condicional simple."	9 hours
Unit 4	Reading the text – "Días para comemorar". Having a discussion on the favourite festival of each student. "Proponer y sugerir – habría que/estaría bien + infinitivo, estaría bien que + subjuntivo." "Expresar deseos sobre el presente, el futuro y el pasado – me gustaría/habría gustado que + imperfecto de subjuntivo." "Expresar tristeza y aflicción 1 – sentir, lamentar que/ser una pena, lástima….que + subjuntivo." "Expresar condiciones hipotéticas y sus consecuencias en presente y futuro – si + imperfecto de subjuntivo, condicional simple." Reading about the movie "Te doy mis ojos." Having a discussion on the same. "Expresar empatía – sentir que + subjuntivo, te entiendo, sé cómo te sientes." "Expresar desconocimiento – no sabía que + imperfecto de subjuntivo." Read "Querido vecino" – a comic strip of a neighbourhood. Describe and discuss the same. Read about a contest – ¿Y qué hago? – concurso del mes: ¡El mejor consejo que te han dado nunca!". "Transmitir sugerencias – estilo directo a indirecto (Imperativo al imperfecto de subjuntivo usando sugirió/aconsejó/recomendó, etc. que…."	9 hours
Unit 5	Read about and participate in a forum entitled "Hogar, dulce hogar" (Home, sweet home) and share one's memories of childhood. "El pluscuamperfecto de subjuntivo". "Expresar deseos y esperanzas sobre el pasado – ojalá + pluscuamperfecto de subjuntivo – me hubiera gustado + infinitivo. Read the text "Condiciones hipotéticas" (hypothetical situations) "Expresar condiciones hipotéticas – si +	9 hours

	pluscuamperfecto de subjuntivo, condicional compuesto/simple". Imagine past situations which each student would have liked to have happened and discuss what would have been the consequences of the same – "si hubiera aprendido español , habría ido a España." Read and discuss the text "Bebés y trabajo" (Babies and work) dealing with issues of working mothers, father's role, etc. "Expresar anterioridad en el futuro – cuando/antes de que + subjuntivo, futuro compuesto – "cuando nazca el bebé, ya habremos comprado todo lo necesario". Talk about all the things each student will have done before the end of the day, the week and the year.	

References:
Any of the following textbooks may be prescribed and will be partially completed.

- Alonso Encina, et al. (2021). Nuevo *Diverso ESPAÑOL B.* Madrid: SGEL.
- Campo C., et al. (2017). *Protagonistas B1.* Madrid: SM Español para extranjeros.
- Campo C., et al. (2017). *Protagonistas B2.* Madrid: SM Español para extranjeros.
- Sanchez Lobato, et al. (2005). *Español sin fronteras 3.* Madrid: SGEL.
- Baulenas Neus Sans, et al. (2017). *Bítacora 3.* Barcelona: Editorial Difusión.
- Martinez María Angeles Alvarez, et al. (2017). *Sueña 3.* Madrid: Grupo Anaya.
- Bautista, Coto, et al. (2011). *Tema a Tema B2.* Madrid: Editorial Edelsa.

Additional material can be also used.

Department of Germanic & Romance Studies

Category III

SEMESTER - VI

Courses for Undergraduate Programme of study with discipline as one of the Core Disciplines

B.A. Programme with Spanish

(For e.g. courses for B.A. Programmes with_____ (discipline's name) as non-Major or Minor discipline)

DISCIPLINE SPECIFIC CORE COURSE (DSC-6): Spanish in Context: Advanced Level – 2

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Spanish in Context: Advanced Level - 2	4	3	1	Nil	Pass in B.A. (Prog.) Sem. V	none

Learning Objectives

The Learning Objectives of this course are as follows:
At the end of Semester 6, a student will be able to:

- Read texts on various topics and answer questions on them.
- Write texts on a range of familiar subjects.
- Partially attain Level B2 of the Common European Framework (CEF).

Learning Outcomes

The Learning Outcomes of this course are as follows:

- Enable students to partially attain B2 Level of listening, speaking, reading and writing skills in the concerned language.
- Reading texts and answering questions on them.
- Equip students to write texts on a range of familiar subjects.

SYLLABUS OF DSC – 6

Content	Description
Listening	Listen to and understand texts on various topics like love, friendship, solidarity, triumph, talent, festivals, hypothetical situations, etc.
Speaking, which includes:	
1.Monologue	Present orally one's views on various topics like love, friendship, solidarity, triumph, talent, festivals, hypothetical situations, etc.
2.Dialogue	Engage in conversations on various topics like love, friendship, solidarity, triumph, talent, festivals, hypothetical situations, etc.

Reading	Read and understand texts, emails, blogs on various topics like love, friendship, solidarity, triumph, talent, festivals, hypothetical situations, etc.
Writing	Guided writing activities. Writing a text, an informal letter and e-mail, an article, a formal letter, etc.
Morphosyntax & Vocabulary	Grammatical structures and vocabulary used to talk and write on various topics like love, friendship, solidarity, triumph, talent, festivals, hypothetical situations, etc.
Intercultural and co-cultural	Introduction to Spanish-speaking regions/countries, celebrities from Spanish speaking countries, fashion, cinema, comic strips, etc.

Unit	Content	Duration
Unit 1	Talking of love and friendship. Meaning of love and the various associated sentiments, both positive and negative. Reading and discussing fragments of poems on love. Vocabulary related to various sentiments. "Verbos valorativos – me molesta + infinitivo, me molesta(n) + sustantivo, me molesta + que + presente de subjuntivo." Answering questions on different aspects of love. Writing about what love means to each student. Expectations from the persons one loves. What expectation each one has from his/her best friend. "Expresar deseos – querer, esperar, pedir, etc." "Ojalá/ojalá que + subjuntivo." "La escucha activa." "Mayúsculas y minúsculas." Reading and having a discussion on "Valentine's day". "Para que + subjuntivo." Reading a text on true friendship - agreeing or disagreeing with the author. Learning how to write an informal letter and an e-mail and writing one of them to one's friend telling him or her about one's experiences of a summer vacation.	9 hours
Unit 2	Solidarity and what it means to be supportive, caring, humanitarian. Discussing what bullying is. Read about a news item about a victim of school bullying. Vocabulary related to bullying. "El condicional". "Aconsejar o sugerir – debería(s) + infinitivo, podría(s) + infinitivo, yo que tú/yo en tu lugar+condicional." "Deseos – me gustaría+infinitivo." "El aprendizaje colaborativo". Disabilities and civic responsibility. Vocabulary related to disabilities. "Estilo indirecto - transmitir mensajes – me ha dicho que…, me ha felicitado por…, me ha preguntado si…etc."; transmitir peticiones, consejos, recomendaciones, órdenes o sugerencias – Dice que seas…, me ha pedido que le ayude, sugieren que votemos, etc." Imagine that you have spoken to different persons and write what they have said to you. Read a text on how we can be good citizens. Vocabulary related to non-governmental organizations. Students to share their experiences and views on being a volunteer in some NGO. Imagine that one opens an NGO – what cause would he/she support, what activities would be done, etc. "El pretérito imperfecto de subjuntivo." "Expresar condiciones poco probables – si pudiera …. crearía…" Learn how to write a formal letter.	9 hours

Unit 3	Reading a text on the triumph of a Spanish football team – "La selección, el triunfo en equipo". Discussing what each student thinks is the key to success as a team. Expressing happiness and satisfaction after winning. "El pretérito perfecto de subjuntivo." "Expresar alegría y satisfacción – "que bien que/ es estupendo que/hacer ilusión que + subjuntivo; pretérito perfecto de subjuntivo." Reading the text "Todo es posible" (Everything is posible). "El futuro compuesto." "El condicional compuesto". "Expresar hipótesis sobre el pasado – futuro compuesto, condicional simple y compuesto". "Estilo directo a indirecto usando dijo/comentó, etc. que… (Presente a imperfecto, pretérito perfecto a pluscuamperfecto, imperfecto a imperfecto, indefinido a indefinido o pluscuamperfecto, futuro a condicional). Read about recipes which have had success. Write a recipe of one's own. "Expresar modo – como + subjuntivo; gerundio (como prefieras; el arroz se hace mejor cociéndolo…)." Reading a text on talent - ¿Tiene usted talento?" "Pedir valoración y valorar – ¿qué te parece lo de + infinitivo/que + subjuntivo? – es una suerte/pena que + subjuntivo". "Expresar deseos poco probables – ojalá + imperfecto de subjuntivo; condicional simple."	9 hours
Unit 4	Reading the text – "Días para comemorar". Having a discussion on the favourite festival of each student. "Proponer y sugerir – habría que/estaría bien + infinitivo, estaría bien que + subjuntivo." "Expresar deseos sobre el presente, el futuro y el pasado – me gustaría/habría gustado que + imperfecto de subjuntivo." "Expresar tristeza y aflicción 1 – sentir, lamentar que/ser una pena, lástima….que + subjuntivo." "Expresar condiciones hipotéticas y sus consecuencias en presente y futuro – si + imperfecto de subjuntivo, condicional simple." Reading about the movie "Te doy mis ojos." Having a discussion on the same. "Expresar empatía – sentir que + subjuntivo, te entiendo, sé cómo te sientes." "Expresar desconocimiento – no sabía que + imperfecto de subjuntivo." Read "Querido vecino" – a comic strip of a neighbourhood. Describe and discuss the same. Read about a contest – ¿Y qué hago? – concurso del mes: ¡El mejor consejo que te han dado nunca!". "Transmitir sugerencias – estilo directo a indirecto (Imperativo al imperfecto de subjuntivo usando sugirió/aconsejó/recomendó, etc. que…."	9 hours
Unit 5	Read about and participate in a forum entitled "Hogar, dulce hogar" (Home, sweet home) and share one's memories of childhood. "El pluscuamperfecto de subjuntivo". "Expresar deseos y esperanzas sobre el pasado – ojalá + pluscuamperfecto de subjuntivo – me hubiera gustado + infinitivo. Read the text "Condiciones hipotéticas" (hypothetical situations) "Expresar condiciones hipotéticas – si + pluscuamperfecto de subjuntivo, condicional compuesto/simple". Imagine past situations which each student would have liked to have happened and discuss what would have been the consequences of the	9 hours

	same – “si hubiera aprendido español , habría ido a España.” Read and discuss the text “Bebés y trabajo” (Babies and work) dealing with issues of working mothers, father’s role, etc. “Expresar anterioridad en el futuro – cuando/antes de que + subjuntivo, futuro compuesto – “cuando nazca el bebé, ya habremos comprado todo lo necesario”. Talk about all the things each student will have done before the end of the day, the week and the year.	

References:
Any of the following textbooks may be prescribed and will be partially completed.

- Alonso Encina, et al. (2021). Nuevo *Diverso ESPAÑOL B.* Madrid: SGEL.
- Campo C., et al. (2017). *Protagonistas B1.* Madrid: SM Español para extranjeros.
- Campo C., et al. (2017). *Protagonistas B2.* Madrid: SM Español para extranjeros.
- Sanchez Lobato, et al. (2005). *Español sin fronteras 3.* Madrid: SGEL.
- Baulenas Neus Sans, et al. (2017). *Bítacora 3.* Barcelona: Editorial Difusión.
- Martinez María Angeles Alvarez, et al. (2017). *Sueña 3.* Madrid: Grupo Anaya.
- Bautista, Coto, et al. (2011). *Tema a Tema B2.* Madrid: Editorial Edelsa.

Additional material can be also used.

ANNEXURE-4

SEMESTER-IV
BA (H) ITALIAN

GERMANIC AND ROMANCE STUDIES
Category I

(B.A. Honours in Italian in three years)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

DISCIPLINE SPECIFIC CORE COURSE - 10 (DSC-10)
Language in Context: Intermediate Reading and Writing Skills (2)

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Language in Context: Intermediate Reading and Writing Skills (2)	**4**	**3**	**1**	**0**	**Passed XII Class**	**Should have studied "Language in Context: Intermediate Reading and Writing Skills (1)"**

DSC-10 **Language in Context: Intermediate Reading and Writing Skills (1)**	
Learning Objectives: Enable student to • To read and understand longer texts related to socio-cultural issues. • To answer questions in one's own words on tests related to socio-cultural issues. • To write detailed descriptions. • To attain A2 level of the CEF.	
Learning Outcomes: • Enables learner to attain A2 Level of reading and writing skills in the concerned language • Equip learners to read longer texts on socio-cultural issues in order to extract key information and conclusions of the text. • Gives training to write straightforward connected texts on a range of familiar subjects within one's field of interest.	
Syllabus:	
UNIT I	**9 Hours**
Reading	

• Reading longer texts in order to locate desired information, and gather information from different parts of a text, or from different texts in order to fulfil a specific task, identifying the main conclusions in clearly signalled argumentative texts, • Understanding clearly written, straightforward instructions for a piece of equipment. • Reading, analysing, and summarizing texts/articles on different social issues or current affairs.	
UNIT II	**9 Hours**
Writing • Writing detailed descriptions on a range of familiar subjects within one's field of interest. • Writing accounts of experiences. • Describing feelings and reactions in simple connected text • Writing a description of an event, a recent trip - real or imagined • Describing and comparing education systems.	
UNIT III	**9 Hours**
Writing • Writing an open letter to the authorities. • Writing a petition. • Describing and analysing cultural representations. • Writing a short story. • Writing blogs. • Writing short, simple essays on topics of interest. etc.	
UNIT IV	**9 Hours**
Lexical, Morphosyntactic and Phonological Competences • Developing a repertoire of sufficient vocabulary to express him/herself on most topics of personal/professional/ interests and familiar topics related to culture and civilization. • Grammatical structures required to describe events, feelings, impressions, opinions in past, present, and future in a more coherent and sequenced manner, more detailed knowledge and usage of connectors, developed sense of various moods, tenses and voices etc. • Developing sufficient understanding of phonological specificity and intonations of Italian to help learners articulate more clearly and read more independently predicting pronunciation of unknown words.	
UNIT V	**9 Hours**
Co-cultural and Inter-cultural Competence • Awareness of the most significant differences between the customs, usages, attitudes, values, and beliefs prevalent in the community concerned and those of his or her own in order to perform and respond to a wide range of social functions selecting the appropriate register. • Awareness of the salient politeness conventions and acting and responding appropriately.	
Learning / Teaching Material: Any of the textbooks given below may be prescribed: • Corno, Dario. (2002). *Scrivere e comunicare*. Milano: Bruno Mondadori. • De Giuli, Alessandra. Guastalla, Carlo. Naddeo, Ciro Massimo. (2011). *Nuovo Magari*. Firenze: Alma Edizioni. • Frattegiani, M. Teresa. Gigliarelli, Valentina. (2011). *Vivere in Italia: Corso di lingua italiana per studenti stranieri di livello B1*, Perugia: Guerra Edizioni. • Guastalla, Carlo. Naddeo, Ciro Massimo. (2011). Domani 3. Firenze: Alma Edizioni. • Marin, Telis. (2008). *Nuovo Progetto Italiano 3*. Roma: Edilingua.	

• Mattedi, Cristina. (2012). *Voci di autori italiani*: *Interviste e brani scelti*. Perugia: Guerra Edizioni.
Additional material may be provided by the Department. **Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC CORE COURSE – 11 (DSC-11)
Language in Context: Intermediate Listening and Speaking Skills (2)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Language in Context: Intermediate Listening and Speaking Skills (2)	**4**	**3**	**1**	**0**	**Passed XII Class**	**Should have studied "Language in Context: Intermediate Listening and Speaking Skills (1)"**

Total No. of Credits	Distribution of Total Credits			No. of Hours of Lectures	No. of Hours of Tutorials	No. of Hours of Practical	Total Hours of Teaching
	Lecture (Credits)	Tutorial (Credits)	Practical (Credits)				
4	**3**	**1**	**0**	**45**	**15**	**0**	**60**

DSC-11 **Language in Context: Intermediate Listening and Speaking Skills (2)**	
Learning Objectives: Enable student to • To listen and to understand radio and TV programs. • To answer questions on programmes recorded across various audio-visual media. • To express one's opinion and give one's point of view in a structured manner. • To attain Level A2 of CEF	
Learning Outcomes: • Enable learners to attain A2 Level of listening and speaking skills in the concerned language • Equip learners to follow much of what is said around him/her on general topics provided interlocutors avoid very idiomatic usage and articulate clearly • Provide learners with basic debating and presentation skills	
Syllabus:	
UNIT I	**9 Hours**
Listening	

• Understanding main points presented in a talk/lecture/radio commentary/TV program on topics of personal interest such as interviews, short lectures, and news reports when the delivery is relatively slow and clear. • Understanding films in which visuals and action carry much of the story line, and which are delivered clearly in straightforward language.	
UNIT II	**9 Hours**
Speaking	
• Giving detailed accounts of experiences, feelings and reactions. • Relating details of unpredictable occurrences, e.g., an accident. • Relating the plot of a book or film and describing his/her reactions. • Describing dreams, hopes, ambitions, events, real or imagined. • Preparing, conducting, and presenting results of opinion polls on various social issues. • Preparing and presenting skits.	
UNIT III	**9 Hours**
Speaking • Debating and/or making oral presentations on various social issues. • Narrating one's experiences of foreign language learning. • Explaining why something is a problem. • Making brief comments on the views of others. • Comparing and contrasting alternatives. • Discussing what to do, where to go, who or what to choose.	
UNIT IV	**9 Hours**
Lexical, Morphosyntactic and Phonological Competences • Developing a repertoire of sufficient vocabulary to express him/herself on most topics of personal/professional/ interests and familiar topics related to culture and civilization. • Grammatical structures required to describe events, feelings, impressions, opinions in past, present, and future in a more coherent and sequenced manner, more detailed knowledge and usage of connectors, developed sense of various moods, tenses and voices etc. • Developing sufficient understanding of phonological specificity and intonations of Italian to help learners articulate more clearly and read more independently predicting pronunciation of unknown words.	
UNIT V	**9 Hours**
Co-cultural and Inter-cultural Competence	
• Awareness of the most significant differences between the customs, usages, attitudes, values, and beliefs prevalent in the community concerned and those of his or her own in order to perform and respond to a wide range of social functions selecting the appropriate register. • Awareness of the salient politeness conventions and acting and responding appropriately.	
Learning / Teaching Material: Any of the textbooks given below may be prescribed: • Antonelli, G. (2007). *L'italiano nella società della comunicazione*. Bologna: Mulino. • De Giuli, Alessandra. Guastalla, Carlo. Naddeo, Ciro Massimo. (2011). *Nuovo Magari*. Firenze: Alma Edizioni. • Frattegiani, M. Teresa. Gigliarelli, Valentina. (2011). *Vivere in Italia: Corso di lingua italiana per studenti stranieri di livello B1*. Perugia: Guerra Edizioni.	

• Mattedi, Cristina. (2012). *Voci di autori italiani*: *Interviste e brani scelti*. Perugia: Guerra Edizioni. • Merin, Telis. (2008). Nuovo Progetto Italiano 3. Roma: Edilingua.
Additional material may be provided by the Department. **Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC CORE COURSE– 12 (DSC-12)
Engaging with Literary Texts (2)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Engaging with Literary Texts (2)	**4**	**3**	**1**	**0**	**Passed XII Class**	**Should have studied, "Engaging with Literary Texts (1)"**

Total No. of Credits	Distribution of Total Credits			No. of Hours of Lectures	No. of Hours of Tutorials	No. of Hours of Practical	Total Hours of Teaching
	Lecture (Credits)	Tutorial (Credits)	Practical (Credits)				
4	**3**	**1**	**0**	**45**	**15**	**0**	**60**

DSC-12 **Engaging with Literary Texts (2)**	
Learning Objectives: At the end of Semester 4, a student will • be able to read and understand intermediate level texts (literary/semi-literary/audio-visual/advertisements etc.) adapted for the students of A2 Level, and answer questions on them; • be able to analyse, express their underlying meaning and answer questions based on them; • enables learner to attain A2 Level of the Common European Framework (CEF). • Partially able to evaluate the form and content of literary and non-literary texts.	
Learning Outcomes: The Learning Outcomes of this course are as follows: • Enable students to attain A2 Level of reading, understanding, analysing and writing skills in the concerned language. • Reading and understanding intermediate level texts and answering questions on them. • Equip students to analyse, express their underlying meaning and answer questions based on them; • Enables learners to develop relevant analytical skills to critically evaluate the form and content of these texts.	
Syllabus:	
UNIT I	**12 Hours**

Literary Texts (Prose)	
A selection will be made from the following list:	
4-5 texts will be introduced and analysed in the class.	
UNIT II	**9 Hours**
Literary Texts (Poetry)	
A selection will be made from the following list:	
4-5 texts will be introduced and analysed in the class.	
UNIT III	**9 Hours**
Intermediate and Semi-literary Texts	
A selection will be made from the following list:	
4-5 texts will be introduced and analysed in the class.	
UNIT IV	**9 Hours**
Audio / Visual Texts – Films / Video Clips	
A selection will be made from the following list:	
4-5 texts will be introduced and analysed in the class.	
UNIT V	**6 Hours**
Advertisements – Print / Electronic	
A selection will be made from the following list:	
Various ads from newspapers, social media, YouTube etc.	
Practical component (if any) – NIL	

Learning / Teaching Material: Any of the textbooks given below may be prescribed:

- Corno, Dario. (2002). *Scrivere e comunicare*. Bruno Mondadori, Milano.
- Guastella, Carlo. (2002). *Giocare con la letteratura*. Firenze: Alma Edizioni.
- Mengaldo, Pier Vincenzo. (2008). *Attraverso la prosa Italiana: analisi di testi esemplari*. Roma, Carocci editore.
- Mengaldo, Pier Vincenzo. (2008). *Attraverso la poesia Italiana: analisi di testi esemplari*. Roma, Carocci editore.
- Menzel, Rosangela Verri. (1989). *La bottega dell'italiano*: *antologia di scrittori italiani del Novecento*. Roma: Bonacci Editore.
- Pichiassi, Mauro. Zagnanelli, Giovanna. (2003). *Contesti italiani*, Perugia: Guerra Edizioni.
- Roberts, Nick (ed.). (1999). New Penguin Parallel Text: *Short stories in Italian*. Penguin Books.

Additional material may be provided by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF DISCIPLINE SPECIFIC ELECTIVE (DSE) COURSES OFFERED BY THE DEPARTMENTS

DISCIPLINE SPECIFIC ELECTIVE (DSE-2)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Introduction to the History of Italy (2)	4	3	1	0	Passed Class XII	Should have studied, "Introduction to the History of Italy (1)"

Total No. of Credits	Distribution of Total Credits			No. of Hours of Lectures	No. of Hours of Tutorials	No. of Hours of Practical	Total Hours of Teaching
	Lecture (Credits)	Tutorial (Credits)	Practical (Credits)				
4	3	1	0	45	15	0	60

Introduction to the History of Italy (2)	
Learning Objectives: • To introduce students to major social, political, and cultural events in Italy and Italophone countries. • To study the impact of these social, political, and cultural events in the Italophone world and in Europe.	
Learning Outcomes: • Familiarize students with the major social, political, and cultural events from the medieval to contemporary period. • Provide a good understanding of Contemporary Italy and its relations with the Italian speaking world including its policy towards immigration.	
Syllabus:	
UNIT I	**15 Hours**
• The Gaul's and the Franks. • The making of the Kingdom of Italy (987-1453) and Consolidation of the Italian Monarchy.	
UNIT II	**15 Hours**
• Italian Revolution and the Napoleonic era. • Rise of Republican thought in the 19th century and the Third Republic with special emphasis on its policy towards education. • Italy and its colonies.	
UNIT III	**15 Hours**

• Contemporary Italy and its relations with the Italian speaking world / European Union, including its policy towards immigration.	

Learning/Teaching Material: Any of the textbooks given below may be prescribed:

- Cantarella, Eva. Guidorizzi, Giulio. (2010). *Dall'impero romano alla crisi del Trecento*. Milano: Einaudi Scuola.
- Del Boca, Angelo. (1992). *L'Africa nella coscienza degli Italiani*. Roma-Bari: Laterza.
- Pallotti, Gabriele. Cavadi, Giorgio. (2014). *Che Storia: la storia italiana raccontata in modo semplice*. Roma: Bonacci.
- Prosperi, Adriano. Viola, Paolo. (2004). 1. *Dalla peste del Trecento al Concilio di Trento. 2. Dalle guerre di religionealla guerra dei Trent'anni. 3. Dall'assolutismo alla rivoluzione francese. 4. Dal Congresso di Vienna al trionfo del capitalismo. 5. Dal 1870 alla seconda guerra mondiale*. Milano: Einaudi scuola.

Additional material may be provided by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Life in Italy	**4**	**3**	**1**	**0**	**Passed Class XII**	**Nil**

Total No. of Credits	Distribution of Total Credits			No. of Hours of Lectures	No. of Hours of Tutorials	No. of Hours of Practical	Total Hours of Teaching
	Lecture (Credits)	Tutorial (Credits)	Practical (Credits)				
4	**3**	**1**	**0**	**45**	**15**	**0**	**60**

Life in Italy	
Learning Objectives: • To introduce the learner to various aspects of contemporary culture (films, art, education system...) in Italy and Italophone countries.	
Learning Outcomes: • Initiate learners to the culture and civilization of Italy and Italian speaking countries. • Provide knowledge about education systems, home, family, leisure activities, festivals, politics, tourism, physical geography of Italy and the Italophone countries. • Introduce the students to the great thinkers of Italy and other Italophone countries in the areas of literature, cinema, art, etc. • Enable students to understand and analyse cultural aspects of the Italian and Italophone Countries and develops intercultural competence amongst students	
Syllabus:	
UNIT I	**15 Hours**
• Basic knowledge of various cultural and civilisational aspects of Italy and Italophone countries, such as, daily lives and routines of an average person, education systems, home, family, leisure activities,	

festivals, politics, tourism, physical geography etc. in the areas of literature, cinema, art, etc.	
UNIT II	**15 Hours**
• Great thinkers of Italy and other Italophone countries	
UNIT III	**15 Hours**
• Introduction to literature, cinema, art of Italy and other Italophone countries	

Learning/Teaching Material: Any of the textbooks given below may be prescribed:

- Caprara, Mario. Semprini, Gianluca. (2012). *Neri! La storia mai raccontata della destra radicale, eversiva e terrorista*. Rome: Newton Compton Editori.
- Caprara, Mario. Semprini, Gianluca. (2007). *Destra estrema e criminale*. Rome: Newton Compton Editori.
- De Lutiis, Giuseppe. (1984). *Storia dei servizi segreti in Italia*. Roma: Editori Riuniti.
- De Rosa, Gabriele. et al. (2003). *L'Italia repubblicana nella crisi degli anni Settanta: Sistema politico e istituzioni*. Soveria Mannelli: Rubbettino Editore.
- Ferraresi, Franco. (1995). *Minacce alla democrazia. La destra radicale e la strategia della tensione in Italia nel dopoguerra*. Milano: Feltrinelli.
- http://www.istat.it/it/archivio/129854
- ISTAT. (15 June 2015). "Cittadini Stranieri. Popolazione residente e bilancio demografico al 31 dicembre 2014". Rome: ISTAT.
- Rao, Nicola. (2009). *Il piombo e la celtica: Storie di terrorismo nero dalla Guerra di strada allo spontaneismo armato*. Milano: Sperling & Kupfer.
- Viale, Guido. (1978). *Il Sessantotto: tra rivoluzione e restaurazione*. Rimini: NdA Press.
- Weinberg, Leonard. (1995). "Italian Neo-Fascist Terrorism: A comparative Perspective in Terror form extreme right" in Bjørgo, Tore. (1995). *Terror from the Extreme Right*. London: Routledge.

Additional material may be provided by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Different Text Types	**4**	**3**	**1**	**0**	**Passed Class XII**	**Nil**

Total No. of Credits	Distribution of Total Credits			No. of Hours of Lectures	No. of Hours of Tutorials	No. of Hours of Practical	Total Hours of Teaching
	Lecture (Credits)	Tutorial (Credits)	Practical (Credits)				
4	**3**	**1**	**0**	**45**	**15**	**0**	**60**

Different Text Types
Learning Objectives: • To introduce and familiarize the learner to different types of literary and non-literary texts. • To identify the linguistic, discursive and formal specificity of literary and non-literary texts

- To analyze the form and content of literary and non-literary texts

Learning Outcomes:

- Develop skills to study different text types in order to familiarize oneself with different kinds of language usages in literary and non-literary texts.
- Enable learners to develop relevant analytical skills to critically evaluate the form and content of these texts.
- Help learners to identify different language registers, rhetoric and other compositional specificities of the texts.

Syllabus:

UNIT I	**15 Hours**
Prose	
Introduction and analytical study of both form and content of a variety of texts written in simple prose form such as shorter and longer Narrative genres: short story fable chronicle myth novella tales anecdote autobiography biography novel play	
UNIT II	**15 Hours**
Poetry	
Introduction and analytical study of both form and content of various types of poetic texts, songs, slams etc., written in a simple and accessible language.	
UNIT III	**15 Hours**
Intermediate and Semi-Literary Texts	
Introduction and analytical study of both form and content of comic strips, graphic novels, or semi literary forms such as essay, commentary, informative/descriptive texts on history, geography, economy, culture that are not too complex.	

Learning/Teaching Material: Any of the textbooks given below may be prescribed:

- Biagi, Enzo. (2004). *La nuova storia d'Italia a fumetti: dall'impero romano ai giorni nostri*. Milano: Mondadori.
- De Giuli, Alessandra. Guastalla, Carlo. Naddeo, Ciro Massimo. (2011). *Nuovo Magari*. Firenze: Alma Edizioni.
- Guastalla, Carlo. Naddeo, Ciro Massimo. (2011) *Domani 3.* Firenze: Alma Edizioni.
- Guastella, Carlo. (2002). *Giocare con la letteratura.* Firenze: Alma Edizioni.
- Mengaldo, Pier Vincenzo. (2008). *Attraverso la poesia Italiana: analisi di testi esemplari.* Roma: Carocci editore.
- Mengaldo, Pier Vincenzo. (2008). *Attraverso la prosa Italiana: analisi di testi esemplari.* Roma: Carocci editore.
- Menzel, Rosangela Verri. (1989). *La bottega dell'italiano: antologia di scrittori italiani del Novecento.* Roma: Bonacci Editore.
- Pichiassi, Mauro. Zagnanelli, Giovanna. (2003) *Contesti italiani*. Perugia: Guerra Edizioni.

Additional material may be provided by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Debating and Presentation Techniques	4	3	1	0	Passed Class XII	Nil

Total No. of Credits	Distribution of Total Credits			No. of Hours of Lectures	No. of Hours of Tutorials	No. of Hours of Practical	Total Hours of Teaching
	Lecture (Credits)	Tutorial (Credits)	Practical (Credits)				
4	3	1	0	45	15	0	60

Debating and Presentation Techniques	
Learning Objectives: • The course focuses on developing communicative competence building on the language skills acquired by students in the previous two semesters and will teach intermediate level of communicative transactions such as to give small instructions and simple opinions, to make plans and programs, build adequate lexicon on various topics, carry out small meaningful conversations, etc., among other things. By the end of this semester the students will attain A2 level of CEF.	
Learning Outcomes: • Enable students to attain A2 Level of reading and writing skills in the concerned language • Enable students to attain A2 Level of listening and speaking skills in the concerned language • Equip students to read and write about opinions, plans, instructions related to one's immediate environment. • Prepare learners to carry out small meaningful conversations to fulfil the needs of everyday life.	
Syllabus:	
UNIT I	**9 Hours**
Listening	
Identifying the main points in short, clear, simple messages and announcements.	
UNIT II	**12 Hours**
Reading	
Reading very short, simple texts to find specific, predictable information in simple everyday material such as advertisements, prospectuses, menus, timetables, classified advertisements, Internet forums etc.	
UNIT III	**15 Hours**
Speaking	
• Monologue: Can describe in simple terms aspects of his/her background/relevant environment and matters in areas of immediate need such as narrating past, present and future events, plans, programs. • Dialogue: Communicating in simple and routine tasks requiring a simple, short and direct exchange of information on familiar and routine	

matters such as asking for and giving instructions, discussing what to do in the evening/at the weekend etc.	
UNIT IV	**9 Hours**
Writing	
Describing past, present and future events, writing short, simple notes and messages relating to matters in areas of immediate need.	
Learning/Teaching Material: Any of the textbooks given below may be prescribed: • Bailini, Sonia. Consonno, Silvia. (2002). *Ricette per parlare*. Firenze: Alma edizioni. • Carlo Guastalla, Ciro Massimo Naddeo, *Domani 1*, Alma Edizioni, Firenze (2010). • Frattegiani, M. Teresa. Gigliarelli, Valentina. (2011). *Vivere in Italia: Corso di lingua italiana per studenti stranieri di livello B1*. Perugia: Guerra Edizioni. • Guastalla, Carlo, Naddeo. Ciro Massimo. (2011). *Domani 2*. Firenze: Alma Edizioni. • Luciana Ziglio, Giovanna Rizzo, *Espresso 1*, Alma Edizioni, Firenze and Goyal Publishers and Distributors Pvt. Ltd., Delhi, 2012. • Mariateresa Serafini, *Nuovo l'italiano: grammatica e scrittura*, Fabbri, Milano, 2009. • Susanna Nocchi, *Grammatica pratica della lingua italiana*, Alma edizioni, Firenze. • Tettamanti, Vittoria. Talini, Stefania. (2003). *Foto parlanti.* Roma: Bonacci editore.	
Additional material may be provided by the Department. **Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**	

SEMESTER-V
BA (H) ITALIAN
GERMANIC AND ROMANCE STUDIES
Category I

(B.A. Honours in Italian in three years)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

DISCIPLINE SPECIFIC CORE COURSE - 13 (DSC-13)
Language in Context: Advanced Reading and Writing Skills (1)

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Language in Context: Advanced Reading and Writing Skills (1)	**4**	**3**	**1**	**0**	**Passed XII Class**	**Nil**

DSC-13 **Language in Context: Advanced Reading and Writing Skills (1)**	
Learning Objectives: Enable student to • To read and understand argumentative texts related to contemporary issues. • To identify and summarize the main arguments in texts related to contemporary issues in one's own words. • To write a text on contemporary issues presenting and defending one's point of view. • To partially attain level B1 of the CEF.	
Learning Outcomes: • Enable learners to partially attain B1 Level of reading and writing skills in the concerned language. • Develop skills to read and identify the content of news items, articles, and reports on a wide range of cultural, social, academic, professional topics, deciding whether closer study is worthwhile. • Train learners to formulate structured and coherent texts (formal/informal) on a wide range of topics by clearly articulating one's viewpoints with concrete details and examples	
Syllabus:	
UNIT I	**12 Hours**
Reading • Understanding and summarizing the main ideas of complex texts, on both concrete and abstract topics, including technical discussions in his/her field of specialization, articles and reports concerned with	

contemporary problems in which the writers adopt positions or viewpoints.	
UNIT II	**12 Hours**
Writing • Writing formal and informal letters conveying degrees of emotion and highlighting the personal significance of events and experiences and commenting on the correspondent's news and views. • Writing argumentative texts on a wide range of topics by expanding and supporting his/her main points with relevant supporting details and examples. • Conducting surveys and preparing questionnaires using Internet resources. • Preparing bibliographies/reading indexes/formatting projects/composing.	
UNIT III	**12 Hours**
Lexical, Morphosyntactic and Phonological Competences • Developing a good range of vocabulary for matters connected to one's field of interest and most general topics, issues and problems related to society, culture, economy, politics, environment both in Indian as well as Italian and Italophone contexts. • Grammatical structures required for complex usages of moods, tenses and voices, detailed usages of prepositions, complex pronouns, and connectors to compose complex sentences and structured texts in a coherent and cohesive manner. • Developing good understanding of phonological specificity and intonations of Italian to help learners articulate more clearly and confidently by varying one's intonation according to the relevant context of communication.	
UNIT IV	**9 Hours**
Co-cultural and Inter-cultural Competence • Interacting more confidently with peers and native speakers by demonstrating the capacity to select appropriate language register, Formulations and reformulations depending on the communicative contexts. • Considerable awareness of socio-cultural conventions, beliefs, values, attitudes of Italian and Italophone communities.	
Learning / Teaching Material: Any of the textbooks given below may be prescribed: • Corno, Dario. (2012). *Scrivere e comunicare. La scrittura in lingua italiana in teoria e in pratica*. Milano: Mondadori. • Cotugno, A. Malagnini, F. (ed.). (2013). *Manuale di scrittura e comunicazione*. Bologna: Zanichelli. • Degl'Innocenti, Elisabetta. (2002). *Il manuale della scrittura*. Torino: Paravia. • Fratte Giani, M. Teresa. Gigliarelli, Valentina. Marinelli, Beatrice. (2015). *Conoscere l'Italia: Corso di lingua italiana per studenti stranieri di livello B2-B2+*. Perugia: Guerra Edizioni. • Garavelli, Bice Mortara. (2003). *Prontuario di punteggiatura*. Bari: Editori Laterza.	

- Mengaldo, Pier Vincenzo. (2008). *Attraverso la prosa italiana: analisi di testi esemplari*. Roma: Carocci editore.
- Roncoroni, Angelo. (2009). *Manuale di scrittura*. *Teoria e pratica dello scrivere in italiano*. Milano: Carlo Signorelli Editore.
- Serafini, Maria Teresa. (2009). *Nuovo l'italiano*: *grammatica e scrittura*. Milano: Fabbri.
- Serafini, Maria Teresa. Arcidiacono, Luciana. (2006). *Comunicare con l'italiano*: *Testi e scritture*. Milano: Fabbri.

Additional material may be provided by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 14 (DSC-14)
Language in Context: Advanced Listening and Speaking Skills (1)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Language in Context: Advanced Listening and Speaking Skills (1)	**4**	**3**	**1**	**0**	**Passed XII Class**	**Nil**

DSC-14
Language in Context: Advanced Listening and Speaking Skills (1)

Learning Objectives:

Enable student to

- To listen and to understand radio and TV programs of long duration related to contemporary social issues.
- To identify and summarize the main arguments of programmes recorded across various audio-visual media in a structured manner.
- To express one's opinion, give and defend one's point of view on a wide range of contemporary social issues in a structured manner.
- To partially attain Level B1 of the CEF.

Learning Outcomes:

- Enable learners to partially attain B1 Level of listening and speaking skills in the concerned language.
- Develop skills to identify the content by listening to news items, TV reports, short documentaries on a wide range of cultural, social, academic, professional topics.
- Train learners to sustain a chain of reasoned argument while debating and presenting on a wide range of topics by clearly articulating one's viewpoints with concrete details and examples

Syllabus:

UNIT I	12 Hours
Listening • Understanding the content and line of argument of short documentaries TV reports, news reports, on a wide range of cultural, social, academic, professional topics, live interviews, talk shows, plays, the majority of films in standard dialect.	
UNIT II	**12 Hours**
Speaking • Engaging in extended conversation on most general topics in a clearly participatory fashion. • Debating and presenting on various issues of importance by sustaining a chain of reasoned argument. • Taking notes. • Preparing minutes. • Commentary on audio-visual material.	
UNIT III	**12 Hours**
Lexical, Morphosyntactic and Phonological Competences • Developing a good range of vocabulary for matters connected to one's field of interest and most general topics, issues and problems related to society, culture, economy, politics, environment both in Indian as well as Italian and Italophone contexts. • Grammatical structures required for complex usages of moods, tenses and voices, detailed usages of prepositions, complex pronouns, and connectors to compose complex sentences and structured texts in a coherent and cohesive manner. • Developing good understanding of phonological specificity and intonations of Italian to help learners articulate more clearly and confidently by varying one's intonation according to the relevant context of communication	
UNIT IV	**9 Hours**
Co-cultural and Inter-cultural Competence • Interacting more confidently with peers and native speakers by demonstrating the capacity to select appropriate language register, formulations depending on the communicative contexts. • Considerable awareness of socio-cultural conventions, beliefs, values, attitudes of Italian and Italophone communities	
Learning / Teaching Material: Any of the textbooks given below may be prescribed: • Antonelli, G. (2007). *L'italiano nella società della comunicazione*. Bologna: il Mulino. • Cortese, Antonella. (2011). *Ascoltare per studiare: cittadinanza e costituzione* (B1). Perugia: Guerra Edizioni. • De Giuli, Alessandra. Guastalla, Carlo. Naddeo, Ciro Massimo. (2011). *Nuovo Magari*. Firenze: Alma Edizioni. • Fratte Giani, M. Teresa. Gigliarelli, Valentina. Marinelli, Beatrice. (2015). Conoscere l'Italia: *Corso di lingua italiana per studenti stranieri di livello B2- B2+*. Perugia: Guerra Edizioni. • Marin, Telis. (2008). *Nuovo Progetto Italiano 3*. Roma: Edilingua.	
Additional material may be provided by the Department.	

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE– 15 (DSC-15)
History of Italian Literature-(1)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
History of Italian Literature-(1)	**4**	**3**	**1**	**0**	**Passed XII Class**	**Nil**

DSC-15
History of Italian Literature-(1)

Learning Objectives:

- To introduce the learner to different cultural and intellectual movements in Italian and Italophone Literature from its origins to the 18th century.
- To read both Italian and Italophone literary texts representing major cultural and intellectual movements from the beginning to the 18th century

Learning Outcomes:

The Learning Outcomes of this course are as follows:

- Familiarize students with literary texts written in Italian with focus on the major cultural and intellectual movements from the origins to the eighteenth century.
- Develop skills to identify and analyse how various genres such as poetry, plays, shorter and longer narrative texts, autobiography etc. evolved through various historical periods.

Syllabus:

UNIT I	**15 Hours**
• Develop understanding of writings from the medieval period till the Renaissance, such as medieval romances, farces, fabliaux etc.	
UNIT II	**15 Hours**
• Understanding and analysing major literary movements after renaissance till Italian Enlightenment, such as classicism, baroque etc.	
UNIT III	**15 Hours**
• Reflections on Italian encounter with otherness by introducing excerpts from the works of Italophone writers.	

Practical component (if any) – NIL

Suggested Readings

Novels

- Foscolo, Ugo. *Le ultime lettere di Jacopo Ortis*, in Foscolo, Ugo. (1974). Opere. Milano-Napoli: Ricciardi Editore.

Plays

- Goldoni, Carlo. *La locandiera* and *Il ventaglio*. in Ortolani, Giuseppe. (1940). Tutte le opere di Carlo Goldoni. Milano: Mondadori Editore.
- Macchiavelli, Niccolò. *La mandragola*. ed. Stoppelli, Pasquale. (2016). Milano:
- Macchiavelli, Niccolò. *La mandragola*. ed. Stoppelli, Pasquale. (2016). Milano: Mondadori.

Short texts and Poetry

- Alighieri, Dante. *La divina commedia* in Borzi, I. (2015). *Tutte le opere di Dante Alighieri*. Rome: Newton Compton Editori.
- Ariosto, Ludovico. (1992). *L'orlando furioso*. 2 voll. Torino: Giulio Einaudi editore.
- Boccaccio, Giovanni. *Decameron*. ed. Branca, Vittore. (1956). Torino: Utet. (http://www.letteraturaitaliana.net/pdf/Volume_2/t318.pdf)
- Petrarca, Francesco. *Il canzoniere*. ed. Contini, Giancarlo. (1964). Torino: Einaudi. (http://www.letteraturaitaliana.net/pdf/Volume_2/t319.pdf)
- Sacchetti, Franco. (1946). *Il Trecento novelle*. ed. Pernicone, Vincenzo. Firenze: Sansoni.
- Tasso, Torquato. (1961). *Gerusalemme liberata*. Milano: Feltrinelli. [e-text available online, edited by Carini, Anna Maria.
- (https://www.liberliber.it/mediateca/libri/t/tasso/gerusalemme_liberata/pdf/gerusa_p.pdf)

Additional material may be provided by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF DISCIPLINE SPECIFIC ELECTIVE (DSE) COURSES OFFERED BY THE DEPARTMENTS

DISCIPLINE SPECIFIC ELECTIVE (DSE-3)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Introduction to Translation.	**4**	**3**	**1**	**0**	**Passed Class XII**	**Nil**

Introduction to Translation.	
Learning Objectives: • To introduce and define different types of translation and basic concepts of translation. • To acquaint and teach learners the basic translation techniques. • To translate simple non- literary texts.	
Learning Outcomes: • Familiarizes students with language for specific purposes. • Familiarize students to the techniques of translation. • Enable students to do Scientific and Technical translation, and translation of sacred texts. • Help students to make word glossaries in above fields. • Enable students to read parallel literature on texts chosen for translation. • Sensitizes students towards Machine translation and its limitations. • Develops awareness about ethics and accountability in translation.	
Syllabus:	
UNIT I	**15 Hours**
• Study of language used in industries such as hospitality, tourism, banking, business sectors and translation of texts in the chosen areas (including birth, educational qualification, marriage, death, certificates, mark sheets). • Scientific and Technical translation.	
UNIT II	**12 Hours**
• Introducing the student to the techniques of translation • Making of word glossaries in above fields.	
UNIT III	**9 Hours**
• Machine translation and its limitations. • Ethics and accountability in translation.	
UNIT IV	**9 Hours**

• Reading of parallel literature on texts chosen for translation. • Role of Translation in Multimedia contexts.	
Learning/Teaching Material: Any of the textbooks given below may be prescribed: • Baker, Mona. (2011). *In Other Words: A Course Book in Translation*. New York: Routledge. • Basnett-McGuire, Susan. (1980, 2013). *Translation Studies*. London: Routledge. • Gile, Daniel. (2009). *Basic Concepts and Models for Interpreter and Translator Training*. Amsterdam Philadelphia: John Benjamin Publishing. • Munday, Jeremy. (2012), *Introducing Translation Studies, Theories and Applications*, New York: Routledge. • Malmkjær, Kirsten. Windle, Kevin. (2011), *The Oxford Handbook of Translation Studies*, Oxford: OUP	
Additional material may be provided by the Department. **Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**	

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Techniques of Written Expression	**4**	**3**	**1**	**0**	**Passed Class XII**	**Nil**

Techniques of Written Expression	
Learning Objectives: • To introduce and define different types of texts and basic concepts of a text. • To acquaint and teach learners the basic writing techniques. • To enhance the understanding of a text in terms of logic order.	
Learning Outcomes: • Familiarize students with writing techniques. • Familiarize students to the deep and logical meaning of a text. • Enable students to do Scientific and logical order of a text. • Help students to use advanced level terminology.	
Syllabus:	
UNIT I	**15 Hours**
• Structuring an argument. Understanding the exigencies of academic writing in literary and cultural studies, translation: theory and practice; foreign language learning and teaching.	
UNIT II	**15 Hours**
• Introduction to various kind of techniques to check plagiarism in a text. • Plagiarism and its importance in academics.	
UNIT III	**15 Hours**

• Coherence in formulation of an argument, conducting surveys and making questionnaires, using Internet resources, making bibliographies, reading indexes, making citations, formatting projects.	

Learning/Teaching Material: Any of the textbooks given below may be prescribed:

- Elisabetta Degl'Innocenti, *Il manuale della scrittura*, Paravia, Torino, 2002.
- Angelo Roncoroni, *Manuale di scrittura. Teoria e pratica dello scrivere in italiano*, Carlo Signorelli Editore, Milano, 2009.
- Mariateresa Serafini, *Nuovo l'italiano: grammatica e scrittura*, Fabbri, Milano, 2009.
- Mariateresa Serafini; Luciana Arcidiacono, *Comunicare con l'italiano. Testi e scritture*, Fabbri, Milano, 2006.
- A. Cotugno; F. Malagnini (ed.), *Manuale di scrittura e comunicazione*, Zanichelli, Bologna, 2013.
- Dario Corno, Scrivere e comunicare. *La scrittura in lingua italiana in teoria e in pratica*, Mondadori, Milano, 2012.

Additional material may be provided by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Study of European Art	**4**	**3**	**1**	**0**	**Passed Class XII**	**Nil**

Study of European Art	
Learning Objectives: • To introduce students to the various major Art Movements in Europe from the Renaissance to the Contemporary Period. • To study artworks of painter's representative of the Major Art Movements in Europe.	
Learning Outcomes: • Provide an overview of important European Art Movements, representative painters, and their artworks: Spanish Baroque, Flemish School, French Impressionists, Spanish Surrealists, Barocco Italiano etc. • Develop an understanding of structures and Perspectives of Everyday life as seen by painters. • Equip with tools to analyse artworks.	
Syllabus:	
UNIT I	**15 Hours**
• Introduction to the Civilization of Europe in the Renaissance. (Paintings on 'Europa'; Dürer, (1495) Titian (1559) The Rape of Europa Sebastian (1588) Queen Europa. • Maps of Europe. • The idea of Europe. Structures and Perspectives of Everyday life as seen by painters.	
UNIT II	**15 Hours**

• Understanding of structures and Perspectives of Everyday life as seen by painters	
UNIT III	**15 Hours**
• Overview of important European Art Movements, representative artists and their artworks: Spanish Baroque, Italian Renaissance, Flemish School, Italian Impressionists, Spanish Surrealists etc.	
Learning/Teaching Material: Any of the textbooks given below may be prescribed: • Argan, Giulio Carlo. (1978). *Storia dell'arte italiana 1 2 3 4 5 volumi*. Firenze: Sansoni. • Grave, Johannes. (2012). *Caspar David Friedrich*. Munich: Prestel Publishing. • Sander, Joachim. (2013). *Albrecht Dürer: His Art in Context*. Munich: Prestel Verlag	
Additional material may be provided by the Department. **Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**	

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Children and Adolescent Literature.	**4**	**3**	**1**	**0**	**Passed Class XII**	**Nil**

Children and Adolescent Literature	
Learning Objectives: • To define what is Children's Literature and distinguish it from Literature for Adults. • To introduce the learner to different genres of children and adolescent literature. • To read, understand and analyse Children and adolescent literature texts.	
Learning Outcomes: • Introduce students to the changing conceptions of children's literature. • Help students in analysing various genres meant for young children and adolescents. • Sensitize students about the role of children's literature in transmitting values.	
Syllabus:	
UNIT I	**15 Hours**
• Changing conceptions of children's literature: Literature for children and /or adult readers?	
UNIT II	**15 Hours**
• Folklore, fables and fairy tales for young children • Theatre for children	
UNIT III	**15 Hours**
• Children's literature and transmission of values.	
Learning/Teaching Material: Any of the textbooks given below may be prescribed: • Avanzini, Alessandra. (2013). *Linee europee di letteratura per l'infanzia*, Vol. I: Danimarca, Francia, Italia, Portogallo, Regno Unito. Milano: FrancoAngeli. • Bruno, Bettelheim. (1975). *The Uses of Enchantment: The Meaning and Importance of Fairy Tales*. New York: Vintage. • Collodi, Carlo. (2012). *Le avventure di Pinocchio*. Milano: Mondadori.	

- Marazzi, Elisa. (2014). *Libri per diventare italiani*. L'editoria per la scuola a Milano nel secondo Ottocento. Milano: Franco Angeli.
- Myers, Lindsay. (2012). *Making the Italians. Poetics and Politics of Italian Children's Fantasy*. Oxford: Peter Lang.
- Nodel man, Perry. (2008). *The Hidden Adult*: *Defining Children's Literature*. Baltimore: John Hopkins University Press.
- Paruolo, Elena. (Ed.). (2014). *Le letterature per l'infanzia*. Prefazione di Antonella Cagnolati. Roma: Aracne.
- Propp, Vladimir. (1988). *Morphology of the Folk Tale.* Texas: University of Texas Press.
- Rodari, Gianni. (1962). *Favole al telefono*. Torino: Einaudi.
- Salgari, Emilio. (2009). *Il corsaro nero*. Milano: Mondadori.
- Sciascia, Leonardo. (1973). *Il mare colore del vino*. Torino: Einaudi.

Additional material may be provided by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Life writing.	**4**	**3**	**1**	**0**	**Passed Class XII**	**Nil**

Life writing.	
Learning Objectives: • To define and identify the characteristics of an autobiography, a biography, and a travelogue. • To distinguish between an autobiography, a biography, and a travelogue. • To read and analyse an autobiography, a biography, and a travelogue.	
Learning Outcomes: • Help to analyse the characteristics of Autobiographical and biographical texts. • Familiarize students with Diaries and Letters. • Equip students to analyse and write about Travel experiences.	
Syllabus:	
UNIT I	**15 Hours**
Reading, writing, and analysing	
• Autobiographies, Confessions, Memoirs. • Fictional Autobiographies. • Autobiographical Songs	
UNIT II	**15 Hours**
• Reading, writing and analysing Diaries and Letters	
UNIT III	**15 Hours**
• Reading, writing and analysing Travelogues, travelogues and other forms of travel narratives	
Learning/Teaching Material: Any of the textbooks given below may be prescribed: • Caputo, Rino. Monaco, Matteo. (1997). *Scrivere la propria vita*: *l'autobiografia come problema critico e teorico*. Roma: Bulzoni. • Cavarero, Adriana. (2001). *Tu che mi guardi, tu che mi racconti, Filosofia della narrazione*. Milano: Feltrinelli.	

- De Botton, Alain. (May 11, 2004). *The Art of Travel*. New York: Vintage Books, A Division of Random House, Inc.
- Demetrio, Duccio. (1995). *Raccontarsi. L'autobiografia come cura di sé*. Milano: Raffaello Cortina.
- Derrida, Jacques. (1988). *The Ear of the Other Autobiography, Transference, Translation*. Lincoln: University of Nebraska Press (UNP).
- Fallaci, Oriana. (1997). *Lettera a un bambino mai nato*. Milano: Biblioteca Universale Rizzoli.
- Formenti, Laura. (1998). *La formazione autobiografica*. Milano: Guerini e associati.
- Geertz, Clifford. (1973). *The Interpretation of Cultures*. New York: Basic Books.
- Geertz, Clifford. (1983). *Local Knowledge*. New York: Basic Books.
- Geertz, Clifford. (1989). *Works and Lives*: *The Anthropologist as Author*. Stanford: Stanford University Press.
- Grisi, Cesare. (2011). *Il romanzo autobiografico. Un genere tra opera e autore*. Roma: Carocci.
- Guglielminetti, Marziano. "*Biografia e autobiografia*". in Rosa, Alberto Asor. (1986). Letteratura Italiana Einaudi, vol. 5: Le questioni. Torino: Einaudi, pp. 829–86.
- Ricoeur, Paul. (1993). *Sé come un altro*. Milano: Jaca Book.
- Segre, Cesare. (1985). *Avviamento allo studio del testo letterario*. Torino: Einaudi.
- Terzani, Tiziano. (2002). *Lettera contro la guerra*. Milano: Tascabili degli Editori Associati.

Additional material may be provided by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

BA (H) ITALIAN

Category I

(B.A. Honours in Italian in three years)

SEMESTER - VI

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

DISCIPLINE SPECIFIC CORE COURSE - 16 (DSC-16)
Language in Context: Advanced Reading and Writing Skills (2)

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Language in Context: Advanced Reading and Writing Skills (2)	4	3	1	0	Passed XII Class	Should have studied, "Language in Context: Advanced Reading and Writing Skills (1)"

Total No. of Credits	Distribution of Total Credits			No. of Hours of Lectures	No. of Hours of Tutorials	No. of Hours of Practical	Total Hours of Teaching
	Lecture (Credits)	Tutorial (Credits)	Practical (Credits)				
4	3	1	0	45	15	0	60

DSC-16
Language in Context: Advanced Reading and Writing Skills (2)

Learning Objectives:

Enable student

- To read and understand a few specialized texts dealing with the same subject. Related or not related to the learner's field of interest.
- To summarize the main points of the read texts in writing in one's own words.
- To present a written synthesis of the texts read in a structured manner.
- To write texts on a wide range of topics whether they are related or not to the learner's field of interest.
- To attain B1 Level B1 of the CEF.

Learning Outcomes:

- Enable learners
- To attain B1 Level of reading and writing skills in the concerned language.
- Develop required skill to understand specialized articles within and outside his/her field with the help of dictionary.
- Develop required skills to prepare specialized written documents/reports/term

papers for academic and professional needs.	
Syllabus:	
UNIT I	**12 Hours**
Reading	
• analysing and synthesizing information, ideas and opinions from highly specialized sources within his/her field/understanding specialized articles outside his/her field, provided he/she can use a dictionary • Understanding lengthy, complex instructions in his/her field, including details on conditions and warnings, provided he/she can reread difficult sections • Scanning longer texts in order to locate desired information, and gather information from different parts of a text, or from different texts in order to fulfil a specific task.	
UNIT II	**12 Hours**
Writing	
• Writing term papers on various topics/project reports • Preparing news reports / blog writing / writing applications / wall magazines / editorials / brochures / newsletters etc.	
UNIT III	**12 Hours**
Lexical, Morphosyntactic and Phonological Competences	
• Developing a good range of vocabulary for expressing one's views on matters connected to professional, academic, social, and cultural domains. • Appropriate control of tenses and temporal notions, moods, voices, complex syntactical structures and logical connectors to produce clearly structured speech in a coherent and cohesive manner. • Developing clear, natural, pronunciation and intonation in Italian.	
UNIT IV	**9 Hours**
Co-cultural and Inter-cultural Competence	
• Developing the capacity to him- or herself confidently, clearly, and politely in a formal or informal register, appropriate to the situation and person(s) concerned. • Advanced knowledge of history, society, culture, gastronomy, geography, political, economic and educational systems of Italy and Italophone countries.	
Learning / Teaching Material: Any of the textbooks given below may be prescribed: • Antonelli, G. (2007). *L'italiano nella società della comunicazione*. Bologna: il Mulino. • Bettoni, Camilla. Vicentini, Giosi. (1997). *Passeggiate italiane: lezioni di italiano: Livello avanzato*. Roma: Bonacci editore. • De Giuli, Alessandra. Guastalla, Carlo. Naddeo, Ciro Massimo. (2011). *Nuovo Magari*. Firenze: Alma Edizioni. • Fratte giani, M. Teresa. Gigliarelli, Valentina. Marinelli, Beatrice. (2015). *Conoscere l'Italia: Corso di lingua italiana per studenti stranieri di livello B2-B2+*. Perugia: Guerra Edizioni. • Marin, Telis. (2008). *Nuovo Progetto Italiano 3*. Roma: Edilingua. • Mengaldo, Pier Vincenzo, (2008). *Attraverso la prosa Italiana: analisi di testi esemplari*. Roma: Carocciedi tore.	

Additional material may be provided by the Department. **Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC CORE COURSE – 17 (DSC-17)
Language in Context: Advanced Listening and Speaking Skills (2)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Language in Context: Advanced Listening and Speaking Skills (2)	4	3	1	0	Passed XII Class	Should have studied, "Language in Context: Advanced Listening and Speaking Skills (1)"

Total No. of Credits	Distribution of Total Credits			No. of Hours of Lectures	No. of Hours of Tutorials	No. of Hours of Practical	Total Hours of Teaching
	Lecture (Credits)	Tutorial (Credits)	Practical (Credits)				
4	3	1	0	45	15	0	60

DSC-17
Language in Context: Advanced Listening and Speaking Skills (2)

Learning Objectives:

Enable student

- To listen to and understand long texts on a wide range of topics whether related to or not related to the learner's field of interest.
- To discuss with little or no preparation a wide variety of topics related or not related to the learner's field of interest.
- To debate in depth on a wide range of issues related or not related to the learner's field of interest.
- To attain B1 Level of the CEF.

Learning Outcomes:

Enable learners to

- To attain B1 Level of listening and speaking skills in the concerned language.
- Impart required skill to understand specialized audio-visual material within and outside his/her field
- Develop the capacity to give a clear, systematically developed presentation, with highlighting of significant points, and relevant supporting detail.
- Develop the capacity to present in a spontaneous manner without referring to a prepared text and demonstrate an adequate degree of fluency and ease of expression.

Syllabus:

UNIT I	12 Hours
Listening • Understanding recordings in standard dialect likely to be encountered in social, professional, or academic life. • Identifying speaker's viewpoints and attitudes as well as the informational content.	
UNIT II	**12 Hours**
Speaking • More spontaneous oral communication skills both formal and informal through the discussion of a wide range of general, academic, vocational or leisure topics. • Contemporary socio-political issues marking clearly the relationships between ideas related to the francophone World. • Production of audio-video clips. • Making detailed oral presentations. • Drama and songs	
UNIT III	**12 Hours**
Lexical, Morphosyntactic and Phonological Competences • Developing a good range of vocabulary for expressing one's views on matters connected to professional, academic, social, and cultural domains. • Good knowledge of tenses and temporal notions, moods, voices, complex syntactical structures and logical connectors to produce clearly structured speech in a coherent and cohesive manner. • Developing clear, natural, pronunciation and intonation in Italian.	
UNIT IV	**9 Hours**
Co-cultural and Inter-cultural Competence • Developing the capacity to him- or herself confidently, clearly, and politely in a formal or informal register, appropriate to the situation and person(s) concerned. • Advanced knowledge of history, society, culture, gastronomy, geography, political, economic and educational systems of Italy and Italophone countries.	
Learning / Teaching Material: Any of the textbooks given below may be prescribed: • Costamagna, Lidia. (1990). Cantare l'italiano: Audiocassetta con esercizi di fonetica. Perugia: Guerra Edizioni. • Costamagna, Lidia. Marasco, M. Valentina. Sant'Eusanio, Nicoletta. (2010). L'Italiano con le canzoni. Perugia: Guerra Edizioni. • Fratte giani, M. Teresa. Gigliarelli, Valentina. Marinelli, Beatrice. (2015). Conoscere l'Italia: Corso di lingua italiana per studenti stranieri di livello B2- B2+. Perugia: Guerra Edizioni. • Marin, Telis. (2008). Nuovo Progetto Italiano 3. Roma: Edilingua. • Trama, Giuliana. Naddeo, Ciro Massimo. (2001). Canta che ti passa. Firenze: Alma Edizioni.	
Additional material may be provided by the Department. **Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**	

DISCIPLINE SPECIFIC CORE COURSE– 18 (DSC-18)
History of Italian Literature-(2)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
History of Italian Literature(2)	4	3	1	0	Passed XII Class	Should have studied, "History of Italian Literature(1)"

Total No. of Credits	Distribution of Total Credits			No. of Hours of Lectures	No. of Hours of Tutorials	No. of Hours of Practical	Total Hours of Teaching
	Lecture (Credits)	Tutorial (Credits)	Practical (Credits)				
4	3	1	0	45	15	0	60

DSC-18
History of Italian Literature(2)

Learning Objectives:

- To introduce the learner to different cultural and intellectual movements in Italian and Italophone Literature in the 19th century and up to the present (21st century)
- To read both Italian and Italophone literary texts representing major cultural and intellectual movements from the 19th century to the present (21st century)

Learning Outcomes:

The Learning Outcomes of this course are as follows:

- Familiarize students with literary texts written in Italian with focus on the major cultural and intellectual movements from the 19th Century till the Contemporary Period
- Develop skills to identify and analyse how various genres such as poetry, plays, shorter and longer narrative texts, autobiography etc. evolved through various historical periods

Syllabus:

UNIT I	**15 Hours**
• A selection of literary texts with focus on the major cultural and intellectual movements from the 19th Century till the Contemporary Period, such as Romanticism, Realism, Symbolism, Naturalism, Surrealism, Existentialism, New Novel, Neo-Realism etc.	
UNIT II	**15 Hours**
• Exotic, travel and colonial writing will raise questions on Italian encounter with otherness.	
UNIT III	**15 Hours**
Texts of major Italophone writers	

A selection will be made from the following list:	
Practical component (if any) – NIL	
References • Pazzaglia, Mario. (1993). *Letteratura italiana 1 Dal medioevo all'umanesimo: testi e critica con lineamenti di storia letteratura*. Bologna: Zanichelli. • Pazzaglia, Mario. (1993). *Letteratura italiana 2 Dal rinascimento all'illuminismo: testi e critica con lineamenti di storia letteratura*. Bologna: Zanichelli. • Pazzaglia, Mario. (1993). *Letteratura italiana 3 L'Ottocento: testi e critica con lineamenti di storia letteratura*. Bologna: Zanichelli. • Prosciutti, Ottavio. (1980). *Lineamenti di letteratura italiana*. Perugia: Grafica. • Silvestrini, M. Bura, C. (2000). *L'italiano e l'Italia*. Vol. 1: Grammatica. Vol. 2: Esercizi. Perugia: Guerra.	
Additional material may be provided by the Department. **Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**	

COMMON POOL OF DISCIPLINE SPECIFIC ELECTIVE (DSE) COURSES OFFERED BY THE DEPARTMENTS

DISCIPLINE SPECIFIC ELECTIVE (DSE-4)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Research Methodology and Academic Writing	**4**	**3**	**1**	**0**	**Passed Class XII**	**Nil**

Total No. of Credits	Distribution of Total Credits			No. of Hours of Lectures	No. of Hours of Tutorials	No. of Hours of Practical	Total Hours of Teaching
	Lecture (Credits)	Tutorial (Credits)	Practical (Credits)				
4	**3**	**1**	**0**	**45**	**15**	**0**	**60**

Research Methodology and Academic Writing	
The Learning Objectives of this course are as follows: • **To introduce the learner to the basics of the research process and argumentation.** • **To familiarize the learner with the process and stylistics of various forms of academic writing such as research papers, monographs, conference presentations, academic essays, book review, literature review, dissertation and thesis.** • **To develop in the learner an independent point of view and critical thinking.**	
The Learning Outcomes of this course are as follows: ** **The learner will be able • **To identify research gaps and construct hypothesis and arguments.** • **To choose, access and effectively engage with primary, secondary and tertiary courses.** • **To produce a coherent academic paper/text.**	
Syllabus:	
UNIT I	**9 Hours**
• Identifying the student's area of interest, a research gap and a research problem. • Training students on how to choose and narrow down a topic. • Building a research hypothesis. • Basic types and components of a research question.	
UNIT II	**9 Hours**
• Identifying and evaluating different kinds of sources like primary vs secondary vs tertiary sources, as well as journal articles, books, dissertations etc.	

• Identifying and choosing relevant and reliable sources for research, as well as basic knowledge on different websites, portals and journals for accessing said sources. • Constructing an annotated Bibliography. • Familiarizing students with the different kinds of research: quantitative and qualitative research (e.g. Surveys, questionnaires etc. In case of foreign language teaching) and qualitative research (e.g. Different literary and cultural theories in case of research in literature).	
UNIT III	**9 Hours**
• Basic knowledge on what an argument is and its components and structure. • Identifying simple and complex arguments, as well as validity and soundness of an argument, • Knowledge of logical fallacies. • Engaging with and evaluating sources by identifying underlying arguments, their structures, validity and soundness.	
UNIT IV	**9 Hours**
• Effective note-taking and summarizing academic/scientific texts. • Constructing arguments and counter arguments. Quoting, paraphrasing and summarising from the source texts to construct the argument(s).	
UNIT V	**9 Hours**
• Planning and structuring a draft. Familiarization with stylistic conventions, using different citation styles and making footnotes. • Familiarizing students with the ethics of research and plagiarism. • Perfecting a final draft based on coherence and cohesion.	
Learning/Teaching Material: Any of the textbooks given below may be prescribed: • Brian Paltridge and Sue Starfield, *Thesis and Dissertation Writing in a Second Language*, Routledge, 2007. • Umberto Eco: *Come si fa una tesi di laurea*, • SEGRE, Cesare: Avviamento all'Analisi del Testo Letterario, Einaudi, • Torino,1985. • Raman Selden, Peter Widdowson Peter Brooker, *A Reader's Guide to Contemporary Literary Theory*, Pearson Education Limited, 2005 (fifth edition). • Topolski J. , *Narrare la storia. Nuovi principi di metodologia storica*, Milano, 1997 Bruno Mondadori. • DOMENICHELLI, Mario, *Lo scriba e l'oblio: Letteratura e storia: teoria e critica delle rappresentazioni nell'epoca borghese*, Edizione ETS, Pisa, 2011. • Dario Antiseri, *Introduzione alla metodologia della ricerca*, Rubbettino Editore 2005. • Patton M.Q., *Qualitative research & evaluation methods* (3rd edition),thousand oaks, California: (2002), Sage Publications. • Creswell J.,*Research design: qualitative, quantitative, and mixed methods approaches*, thousand oaks, California, (2003), Sage Publications.	
Additional material may be provided by the Department. **Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**	

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Introduction to Foreign Language Teaching.	**4**	**3**	**1**	**0**	**Passed Class XII**	**Nil**

Total No. of Credits	Distribution of Total Credits			No. of Hours of Lectures	No. of Hours of Tutorials	No. of Hours of Practical	Total Hours of Teaching
	Lecture (Credits)	Tutorial (Credits)	Practical (Credits)				
4	**3**	**1**	**0**	**45**	**15**	**0**	**60**

Introduction to Foreign Language Teaching.

Learning Objectives:

- To introduce and define basic notions related to Foreign Language teaching.
- To familiarize students with the evolution in foreign language teaching methods

Learning Outcomes:

- Create basic awareness about a foreign language classroom and textbook.
- Establish a theoretical basis and introduce students to basic practical aspects of Foreign Language Teaching

Syllabus:

UNIT I	**15 Hours**
• What is a classroom? • Models of learning/teaching. • Different methods/approaches to teaching a foreign language. • Introduction to the four skills. • Evaluation.	
UNIT II	**15 Hours**
• What is a text book? • Issues in material production. • Self-Instruction Material	
UNIT III	**15 Hours**
• Ludic function of language: Teaching through games.	

Learning/Teaching Material: Any of the textbooks given below may be prescribed:

- Andorno, Cecilia. (1999). *Dalla grammatica alla linguistica: Basi per uno studio dell'italiano*. Torino: Paravia Scriptorium.
- Andorno, Cecilia. Bosc, Franca. Ribotta, Paola. (2003). *Grammatica, Insegnarla e impararla*. Perugia: Guerra Edizioni.
- Bonvino, Elisabetta Bonvino et al. (1998). *C'era una volta il metodo: Tendenze attuali della didattica delle lingue straniere*. (ed.) Borneto, Carlo Serra. Roma: Carocci.
- Chini, Marina. (2005). *Che cos'è la linguistica acquisizionale*. Roma: Carocci.
- Richards, J.. Rogers, T.. (2001). *Approaches and Methods in Language Teaching*. Cambridge: Cambridge University Press.
- Serianni, Luca. (1998). *Lezioni di grammatica storica italiana*. Roma: Bulzoni.

Additional material may be provided by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Introduction to Translation.	**4**	**3**	**1**	**0**	**Passed Class XII**	**Nil**

Total No. of Credits	Distribution of Total Credits			No. of Hours of Lectures	No. of Hours of Tutorials	No. of Hours of Practical	Total Hours of Teaching
	Lecture (Credits)	Tutorial (Credits)	Practical (Credits)				
4	**3**	**1**	**0**	**45**	**15**	**0**	**60**

Introduction to Translation.

Learning Objectives:

- To introduce and define different types of translation and basic concepts of translation.
- To acquaint and teach learners the basic translation techniques.
- To translate simple non- literary texts.

Learning Outcomes:

- Familiarizes students with language for specific purposes.
- Familiarize students to the techniques of translation.
- Enable students to do Scientific and Technical translation, and translation of sacred texts.
- Help students to make word glossaries in above fields.
- Enable students to read parallel literature on texts chosen for translation.
- Sensitizes students towards Machine translation and its limitations.
- Develops awareness about ethics and accountability in translation.

Syllabus:

UNIT I	**12 Hours**
• Study of language used in industries such as hospitality, tourism, banking, business sectors and translation of texts in the chosen areas (including birth, educational qualification, marriage, death, certificates, mark sheets). • Scientific and Technical translation.	
UNIT II	**12 Hours**
• Introducing the student to the techniques of translation • Making of word glossaries in above fields.	
UNIT III	**12 Hours**
• Machine translation and its limitations. • Ethics and accountability in translation.	
UNIT IV	**9 Hours**
• Reading of parallel literature on texts chosen for translation. • Role of Translation in Multimedia contexts.	

Learning/Teaching Material: Any of the textbooks given below may be prescribed:

- Baker, Mona. (2011). *In Other Words: A Course Book in Translation*. New York: Routledge.
- Basnett-McGuire, Susan. (1980, 2013). *Translation Studies*. London: Routledge.
- Gile, Daniel. (2009). *Basic Concepts and Models for Interpreter and Translator Training*. Amsterdam Philadelphia: John Benjamin Publishing.
- Munday, Jeremy. (2012), *Introducing Translation Studies, Theories and Applications*, New York: Routledge.

• Malmkjær, Kirsten. Windle, Kevin. (2011), *The Oxford Handbook of Translation Studies*, Oxford: OUP
Additional material may be provided by the Department. **Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Techniques of Written Expression	**4**	**3**	**1**	**0**	**Passed Class XII**	**Nil**

Total No. of Credits	Distribution of Total Credits			No. of Hours of Lectures	No. of Hours of Tutorials	No. of Hours of Practical	Total Hours of Teaching
	Lecture (Credits)	Tutorial (Credits)	Practical (Credits)				
4	**3**	**1**	**0**	**45**	**15**	**0**	**60**

Techniques of Written Expression

Learning Objectives:

- To introduce and define different types of texts and basic concepts of a text.
- To acquaint and teach learners the basic writing techniques.
- To enhance the understanding of a text in terms of logic order.

Learning Outcomes:

- Familiarize students with writing techniques.
- Familiarize students to the deep and logical meaning of a text.
- Enable students to do Scientific and logical order of a text.
- Help students to use advanced level terminology.

Syllabus:

UNIT I	**15 Hours**
• Structuring an argument. Understanding the exigencies of academic writing in literary and cultural studies, translation: theory and practice; foreign language learning and teaching.	
UNIT II	**15 Hours**
• Introduction to various kind of techniques to check plagiarism in a text. • Plagiarism and its importance in academics.	
UNIT III	**15 Hours**
• Coherence in formulation of an argument, conducting surveys and making questionnaires, using Internet resources, making bibliographies, reading indexes, making citations, formatting projects.	

Learning/Teaching Material: Any of the textbooks given below may be prescribed:

- Elisabetta Degl'Innocenti, *Il manuale della scrittura*, Paravia, Torino, 2002.
- Angelo Roncoroni, *Manuale di scrittura. Teoria e pratica dello scrivere in italiano*, Carlo Signorelli Editore, Milano, 2009.
- Mariateresa Serafini, *Nuovo l'italiano: grammatica e scrittura*, Fabbri, Milano, 2009.
- Mariateresa Serafini; Luciana Arcidiacono, *Comunicare con l'italiano. Testi e scritture*, Fabbri, Milano, 2006.
- A. Cotugno; F. Malagnini (ed.), *Manuale di scrittura e comunicazione*, Zanichelli, Bologna, 2013.
- Dario Corno, *Scrivere e comunicare. La scrittura in lingua italiana in teoria e in pratica*, Mondadori, Milano, 2012.

Additional material may be provided by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Study of European Art	**4**	**3**	**1**	**0**	**Passed Class XII**	**Nil**

Total No. of Credits	Distribution of Total Credits			No. of Hours of Lectures	No. of Hours of Tutorials	No. of Hours of Practical	Total Hours of Teaching
	Lecture (Credits)	Tutorial (Credits)	Practical (Credits)				
4	**3**	**1**	**0**	**45**	**15**	**0**	**60**

Study of European Art

Learning Objectives:

- To introduce students to the various major Art Movements in Europe from the Renaissance to the Contemporary Period.
- To study artworks of painter's representative of the Major Art Movements in Europe.

Learning Outcomes:

- Provide an overview of important European Art Movements, representative painters, and their artworks: Spanish Baroque, Flemish School, French Impressionists, Spanish Surrealists, BaroccoItaliano etc.
- Develop an understanding of structures and Perspectives of Everyday life as seen by painters.
- Equip with tools to analyse artworks.

Syllabus:

UNIT I	**15 Hours**
• Introduction to the Civilization of Europe in the Renaissance. (Paintings on 'Europa'; Dürer, (1495) Titian (1559) The Rape of Europa Sebastian (1588) Queen Europa. • Maps of Europe. • The idea of Europe. Structures and Perspectives of Everyday life as seen by painters.	
UNIT II	**15 Hours**
• Understanding of structures and Perspectives of Everyday life as seen by painters. • Introduction to Renaissance art movements with special focus on Humanism and mannerism • Innovative techniques introduced by the Renaissance artists	
UNIT III	**15 Hours**
• Overview of important European Art Movements, • representative artists and their artworks: Spanish Baroque, • Italian Renaissance, Flemish School, Italian Impressionists, Spanish Surrealists etc.	

Learning/Teaching Material: Any of the textbooks given below may be prescribed:

- Argan, Giulio Carlo. (1978). *Storia dell'arte italiana 1 2 3 4 5 volumi*. Firenze: Sansoni.
- Grave, Johannes. (2012). *Caspar David Friedrich*. Munich: Prestel Publishing.
- Sander, Joachim. (2013). *Albrecht Dürer: His Art in Context*. Munich: Prestel Verlag
- Adams, Laurie Schneider, (1996), *The Methodologies of Art: An Introduction*, NY: Westview Press.
- Arnason, H. H. (2003), *History of Modern Art: Painting, Sculpture, Architecture,*

Photography, New York: Prentice Hall.
- Boime, Albert (1990) *A Social History of Modern Art*, Volumes 5, Chicago: University of Chicago Press,
- Burckhardt, Jacob. (2004). *The Civilization of the Renaissance in Italy* (1855), New York: Penguin

Additional material may be provided by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Children and Adolescent Literature	**4**	**3**	**1**	**0**	**Passed Class XII**	**Nil**

Total No. of Credits	Distribution of Total Credits			No. of Hours of Lectures	No. of Hours of Tutorials	No. of Hours of Practical	Total Hours of Teaching
	Lecture (Credits)	Tutorial (Credits)	Practical (Credits)				
4	**3**	**1**	**0**	**45**	**15**	**0**	**60**

Children and Adolescent Literature

Children and adolescent literature can be distinguished from mere books written for children as literature implies genre and literary tropes, premeditated contexts and settings and often a conscious attempt at portraying history and multiculturalism. In addition, adolescent literature written by adults is an institutional discourse that helps teenage readers understand their environment and society through the issues that present themselves in texts. Through novels, poems and theatre, we examine the values transmitted to children and how literature can influence moral and social decisions that adolescents are faced with.

Learning Objectives:

- To define what is Children's Literature and distinguish it from Literature for Adults.
- To introduce the learner to different genres of children and adolescent literature.
- To read, understand and analyse Children and adolescent literature texts.

Learning Outcomes:

- Introduce students to the changing conceptions of children's literature.
- Help students in analysing various genres meant for young children and adolescents.
- Sensitize students about the role of children's literature in transmitting values.

Syllabus:

UNIT I	**15 Hours**
• Changing conceptions of children's literature: Literature for children and /or adult readers?	
UNIT II	**15 Hours**
• Folklore, fables and fairy tales for young children • Theatre for children	
UNIT III	**15 Hours**
• Children's literature and transmission of values.	

Learning/Teaching Material: Any of the textbooks given below may be prescribed:

- Avanzini, Alessandra. (2013). *Linee europee di letteratura per l'infanzia, Vol. I: Danimarca, Francia, Italia, Portogallo*, Regno Unito. Milano: FrancoAngeli.
- Bruno, Bettelheim. (1975). *The Uses of Enchantment: The Meaning and Importance of Fairy Tales*. New York: Vintage.
- Collodi, Carlo. (2012). *Le avventure di Pinocchio*. Milano: Mondadori.
- Marazzi, Elisa. (2014). *Libri per diventare italiani. L'editoria per la scuola a Milano nel secondo Ottocento*. Milano: Franco Angeli.
- Myers, Lindsay. (2012). *Making the Italians. Poetics and Politics of Italian Children's Fantasy*. Oxford: Peter Lang.

- Nodel man, Perry. (2008). *The Hidden Adult: Defining Children's Literature*. Baltimore: John Hopkins University Press.
- Paruolo, Elena. (Ed.). (2014). *Le letterature per l'infanzia. Prefazione di Antonella Cagnolati*. Roma: Aracne.
- Propp, Vladimir. (1988). *Morphology of the Folk Tale*. Texas: University of Texas Press.
- Rodari, Gianni. (1962). *Favole al telefono*. Torino: Einaudi.
- Salgari, Emilio. (2009). *Il corsaro nero*. Milano: Mondadori.
- Sciascia, Leonardo. (1973). *Il mare colore del vino*. Torino: Einaudi.

Additional material may be provided by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Life writing	**4**	**3**	**1**	**0**	**Passed Class XII**	**Nil**

Total No. of Credits	Distribution of Total Credits			No. of Hours of Lectures	No. of Hours of Tutorials	No. of Hours of Practical	Total Hours of Teaching
	Lecture (Credits)	Tutorial (Credits)	Practical (Credits)				
4	**3**	**1**	**0**	**45**	**15**	**0**	**60**

Life writing.

Learning Objectives:

- To define and identify the characteristics of an autobiography, a biography, and a travelogue.
- To distinguish between an autobiography, a biography, and a travelogue.
- To read and analyse an autobiography, a biography, and a travelogue.

Learning Outcomes:

- Help to analyse the characteristics of Autobiographical and biographical texts.
- Familiarize students with Diaries and Letters.
- Equip students to analyse and write about Travel experiences.

Syllabus:

UNIT I	**15 Hours**
Reading, writing, and analysing	
• Autobiographies, Confessions, Memoirs. • Fictional Autobiographies. • Autobiographical Songs	
UNIT II	**15 Hours**
• Reading, writing and analysing Diaries and Letters	
UNIT III	**15 Hours**
• Reading, writing and analysing Travelogues, travelogues and other forms of travel narratives	

Learning/Teaching Material: Any of the textbooks given below may be prescribed:

- Caputo, Rino. Monaco, Matteo. (1997). *Scrivere la propria vita: l'autobiografia come problema critico e teorico*. Roma: Bulzoni.
- Cavarero, Adriana. (2001). *Tu che mi guardi, tu che mi racconti, Filosofia della*

narrazione. Milano: Feltrinelli.
- De Botton, Alain. (May 11, 2004). *The Art of Travel*. New York: Vintage Books, A Division of Random House, Inc.
- Demetrio, Duccio. (1995). *Raccontarsi. L'autobiografia come cura di sé*. Milano: Raffaello Cortina.
- Derrida, Jacques. (1988). *The Ear of the Other Autobiography, Transference, Translation*. Lincoln: University of Nebraska Press (UNP).
- Fallaci, Oriana. (1997). *Lettera a un bambino mai nato*. Milano: Biblioteca Universale Rizzoli.
- Formenti, Laura. (1998). *La formazione autobiografica*. Milano: Guerini e associati.
- Geertz, Clifford. (1973). *The Interpretation of Cultures*. New York: Basic Books.
- Geertz, Clifford. (1983). *Local Knowledge*. New York: Basic Books.
- Geertz, Clifford. (1989). *Works and Lives: The Anthropologist as Author*. Stanford: Stanford University Press.
- Grisi, Cesare. (2011). *Il romanzo autobiografico. Un genere tra opera e autore*. Roma: Carocci.
- Guglielminetti, Marziano. "*Biografia e autobiografia"*. in Rosa, Alberto Asor. (1986). Letteratura Italiana Einaudi, vol. 5: Le questioni. Torino: Einaudi, pp. 829–86.
- Ricoeur, Paul. (1993). *Sé come un altro*. Milano: Jaca Book.
- Segre, Cesare. (1985). *Avviamento allo studio del testo letterario*. Torino: Einaudi.
- Terzani, Tiziano. (2002). *Lettera contro la guerra*. Milano: Tascabili degli Editori Associati.

Additional material may be provided by the Department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

ANNEXURE-53

ओ

Sub: Amendment to Ordinance V

[E.C Resolution No. 27-1-6/- dated 25.08.2023]

Following addition be made to Appendix-II-A to the Ordinance V (2-A) of the Ordinances of the University;

Add the following:

Syllabi of following programmes of Semester-IV, V and VI of the Department of MIL&LS (Bengali) under Faculty of Arts based on Under Graduate Curriculum Framework -2022 implemented from the Academic Year 2022-23:

(i) BA (Hons.) Bengali

(ii) BA (Prog.) Bengali

(iii) Pool of Discipline Specific Electives (DSEs)

(iv) Common Pool of Generic Electives (GEs)

The credit structure and the course content of the syllabi is as per **Annexure-1.**

ANNEXURE-1

INDEX
Department of MILLS (Bengali)
Semester-IV/V/VI

S.No.	Content	Page No.
1	**BA (Hons.) Bengali - Semester -IV - DSC** 1. Bangla Sahityer Itihas: Adhunik Jug -2 2. Prachya Sahityatatwa 3. Rabindrasahitya-2 **Pool of DSE** 1. Bangla Janapriya Sahitya – 2 2. Loksahitya	**1-10**
2	**BA (Hons.) Bengali - Semester -V - DSC** 1. Bangla Sahityer Itihas: Adhunik Jug -3 2. Bangla Natak Tattwe O Manche 3. Bangla Prabandha **Pool of DSE** 1. Biswasahitya – 1 2. Naribadi Sahitya – 1	**11-20**
3	**BA (Hons.) Bengali - Semester -VI - DSC** 1. Bangla Natak Path 2. Bangla Chanda O Alamkar 3. Paschatya Sahityatatwa **Pool of DSE** 1. Naribadi Sahitya – 2 2. Jibanisahitya O Smritikatha	**21-30**
4.	**BA (Prog.) Bengali – Sem-IV** 1. Uponibesh Porber Bangla Sahitya – II - Major 2. Kabita, Chanda O Alankar – Major/Minor	**31-34**
5	**BA (Prog.) Bengali – Sem-V** 1. Bangla Uponyas - Major 2. Bangla Kathasahitya O Prabandha Sahitya – Major/Minor	**35-38**
6	**BA (Prog.) Bengali – Sem-VI** 1. Prachin Bharatiya Kavyatattwa O Paschatya kavyatattwa – Major **2.** Bangla Rangamancha O Natok – Major/Minor	**39-42**
7	**Common Pool of Generic Electives** 1. Advance Bengali -I **2.** Advance Bengali -II	**43-45**

Department of Bengali

STRUCTURE, COURSES & SYLLABI OF SEMESTER -IV

Category I

[UG Programme for Bachelor in Bengali (Honours) degree in three years]

For those who have studied Bangla Sahityer Itihas(Prachin, Madhya & first part of Adhunik Jug)

DISCIPLINE SPECIFIC CORE COURSE -10 (DSC-10) – : Bangla Sahityer Itihas: Adhunik Jug -2

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Bangla Sahityer Itihas: Adhunik Jug -2	4	3	1	NIL	Class 12th pass in any subject	Studied Bengali Up to 10th & Above

Bangla Sahityer Itihas: Adhunik Jug -2

বাংলা সাহিত্যের ইতিহাস : আধুনিক যুগ–২

Learning Objectives: Bengali Literature in the 19th and 20th Century had seen a scintillating outburst of various genres like poetry, drama, Novel, Essays etc. Emergence of Bengali prose took a much matured turn in the early 19th century. Farces and Plays on social issues were being written. Greatest of the Fiction and non-

fiction Writers, Playwrights etc became evident. The objective of introducing this paper is to get our students acquainted with the main features of the literature of this century

Learning Outcomes: While studying this paper, the students will be knowing the social and political history of Bengal during this period which led to the creation of a whole bunch of literary works. They will also be acquainted to the main writers and poets and their works. Like the previous history of Literature paper, this one also will draw an outline of the literature in the 19th and 20th century.

.

UNIT I (22 Hours)

সাময়িক পত্র: সংবাদ প্রভাকর, তত্ত্ববোধিনী, বঙ্গদর্শন, ভারতী, বামাবোধিনী, সবুজপত্র, কল্লোল-কালিকলম-প্রগতি, পরিচয়, কবিতা, শনিবারের চিঠি, কৃত্তিবাস

UNIT II (23 Hours)

নাটক ও প্রহসন: মধুসূদন দত্ত, দীনবন্ধু মিত্র, অমৃতলাল বসু, গিরিশচন্দ্র ঘোষ, রবীন্দ্রনাথ ঠাকুর, দ্বিজেন্দ্রলাল রায়, শম্ভু মিত্র, বিজন ভট্টাচার্য, বাদল সরকার, উৎপল দত্ত

Essential/Recommended Readings

অসিতকুমার বন্দ্যোপাধ্যায়, ২০০৪-২০০৫, *বাংলা সাহিত্যের সম্পূর্ণ ইতিবৃত্ত,* মডার্ণ বুক এজেন্সী, কলকাতা

ক্ষেত্র গুপ্ত, ২০০২, *বাংলা সাহিত্যের সমগ্র ইতিহাস,* গ্রন্থনিলয়, কলকাতা

Suggestive readings

অসিতকুমার বন্দ্যোপাধ্যায়, ১৯৯২, *বাংলা সাহিত্যের ইতিবৃত্ত,* সপ্তম খণ্ড, মডার্ণ বুক এজেন্সী, কলকাতা

অসিতকুমার বন্দ্যোপাধ্যায়, ২০০৭, *বাংলা সাহিত্যের ইতিবৃত্ত,* ষষ্ঠ খণ্ড, মডার্ণ বুক এজেন্সী, কলকাতা

অসিতকুমার বন্দ্যোপাধ্যায়, ২০০৭, *বাংলা সাহিত্যের ইতিবৃত্ত,* অষ্টম খণ্ড, মডার্ণ বুক এজেন্সী, কলকাতা

অসিতকুমার বন্দ্যোপাধ্যায়, ২০০৯-২০১০, *বাংলা সাহিত্যের ইতিবৃত্ত,* পঞ্চম খণ্ড, মডার্ণ বুক এজেন্সী, কলকাতা

অরুণকুমার মুখোপাধ্যায়, ২০০০, *বাংলা গদ্যরীতির ইতিহাস,* দে'জ পাবলিশিং, কলকাতা

ব্রজেন্দ্রনাথ বন্দ্যোপাধ্যায়, ২০১৩, *বাংলা সাময়িক-পত্র*, করুণা প্রকাশনী, কলকাতা

সন্দীপ দত্ত, ২০১৪, *বাংলা সাময়িকপত্রের ইতিবৃত্ত : ১৮১৮-১৮৯৯*, গাঙচিল, কলকাতা

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 11 (DSC-11): Prachya Sahityatatwa

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Prachya Sahityatatwa	4	3	1	NIL	Class 12th pass in any subject	Studied Bengali Up to 10th & Above

Prachya Sahityatatwa

প্রাচ্য সাহিত্যতত্ত্ব

Learning Objectives: This paper is a special one which must be studied by every student of Indian Literature because this paper talks about the Indian theory of

Literature based on early Indian Poetry. The principles and methods we use in literature, are told by theorists of literature. Theories like Alamkara, Riti, Dhvani, Rasa etc. can guide one towards what is literature and what is not.

Learning Outcomes: After studying this paper, students will be equipped with the theories of Literature that grew in India in ancient times. They will learn about the 'Vachyarth' and 'Vyangyarth' in poetry. The students will then become able to judge a bad or a good poetry by applying these theories on their reading materials which is very necessary. Students will find it interesting after being acquainted with the metre and rhetorics used in Bangla from time to time.

UNIT I (25 Hours)

অতুলচন্দ্র গুপ্ত – কাব্যজিজ্ঞাসা

UNIT II (20 Hours)

রবীন্দ্রনাথ ঠাকুর – সাহিত্যের পথে (ভূমিকা, সাহিত্যের স্বরূপ)

জীবনানন্দ দাশ – কবিতার কথা (কবিতার কথা)

Essential/Recommended readings:

অতুলচন্দ্র গুপ্ত, ১৪২১ বঙ্গাব্দ, *কাব্যজিজ্ঞাসা,* বিশ্বভারতী গ্রন্থনবিভাগ, কলকাতা

রবীন্দ্রনাথ ঠাকুর, ১৩৬৫ বঙ্গাব্দ, সাহিত্যের পথে, বিশ্বভারতী, কলকাতা

জীবনানন্দ দাশ, ১৪১৩ বঙ্গাব্দ, কবিতার কথা, সিগনেট প্রেস, কলকাতা

Suggestive readings:

করুণাসিন্ধু দাস, ২০০৭, *কাব্যজিজ্ঞাসার রূপরেখা,* রত্নাবলী, কলকাতা

দুর্গাশঙ্কর মুখোপাধ্যায়, ২০০১, *কাব্যতত্ত্ব-বিচার,* মডার্ণ বুক এজেন্সী, কলকাতা

সুধীরকুমার দাশগুপ্ত, ২০১২, *কাব্যালোক,* দে'জ পাবলিশিং, কলকাতা

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

DISCIPLINE SPECIFIC CORE COURSE – 12 (DSC-12): Rabindrasahitya-2

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Rabindrasahitya-2	4	3	1	NIL	Class 12th pass in any subject	Studied Bengali Up to 10th & Above

Rabindrasahitya-2

রবীন্দ্রসাহিত্য-২

Learning Objective: Rabindranath Tagore, the first Nobel-laureate in Literature (1913) from Asia, has contributed innumerable literary works in Bangla. No branch of literature exists where we do not get his works. His importance in Bangla Sahitya is

beyond question. So, a full paper containing his literature has been added in this syllabus.

Learning Outcomes: Students will get the scope to know Rabindra-sahitya-2 (along with his life) better as earlier they have studied only one or two of his short poems or stories in the school syllabus. Here they will be working upon his Poems, Novels and see his overflowing philosophy through all these works.

UNIT I (20 Hours)

ছোটোগল্প

পোস্টমাষ্টার, কঙ্কাল, খাতা, স্ত্রীরপত্র, ছুটি

UNIT II (25 Hours)

নাটক ও প্রবন্ধ

রথের রশি

কাব্যের উপেক্ষিতা

রূদ্ধগৃহ

Essential/Recommended readings:

রবীন্দ্রনাথ ঠাকুর, ১৩২৪ বঙ্গাব্দ, *গল্পগুচ্ছ,* অখণ্ড, বিশ্বভারতী, কলকাতা

রবীন্দ্রনাথ ঠাকুর, ১৩৭৮ বঙ্গাব্দ, কালের যাত্রা, বিশ্বভারতী, কলকাতা

রবীন্দ্রনাথ ঠাকুর, ১৪২৬ বঙ্গাব্দ, প্রাচীন সাহিত্য, বিশ্বভারতী, কলকাতা

রবীন্দ্রনাথ ঠাকুর, ১৯২৭, বিচিত্র প্রবন্ধ, বিশ্বভারতী, কলকাতা

Suggestive readings:

অশোক সেন, ২০০০, *রবীন্দ্রনাট্য-পরিক্রমা,* এ মুখার্জী, কলিকাতা

অশোককুমার মিশ্র, ২০১১, *রবীন্দ্রনাট্যে রূপ : অরূপ,* দে'জ পাবলিশিং, কলকাতা

তপোব্রত ঘোষ, ২০১৬, *রবীন্দ্র-ছোটগল্পের শিল্পরূপ*, দে'জ পাবলিশিং, কলকাতা

প্রমথনাথ বিশী, ১৩৬৮ বঙ্গাব্দ, *রবীন্দ্রসাহিত্য বিচিত্রা*, ওরিয়েন্ট বুক কোম্পানি, কলকাতা

বুদ্ধদেব বসু, ১৯৮৩, *রবীন্দ্রনাথ : কথাসাহিত্য*, নিউ এজ পাবলিশার্স, কলিকাতা

Credit distribution, Eligibility and Pre-requisites of the Course

DISCIPLINE SPECIFIC ELECTIVE COURSE– 2 (DSE-2): Bangla Janapriya Sahitya - 2

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Bangla Janapriya Sahitya - 2	4	3	1	NIL	Class 12th pass in any subject	Studied Bengali Up to 10th & Above

Bangla Janapriya Sahitya - 2

বাংলা জনপ্রিয় সাহিত্য - ২

Learning Objectives: Another brilliant genre is the Children's Literature or Juvenile Literature in Bengali. This literature has been a part of Folk-literature at times but later on it has been written and nurtured by many writers and poets. Nowadays, it is studied as a totally different genre.

Learning Outcomes: Students will be guided to read and discuss the features of children's or Juvenile Literature and study the literature as a genre. They will enjoy studying some interesting texts written in Bangla starting from 19th century.

UNIT - I (23 Hours)

গোয়েন্দা সাহিত্য ও কল্পবিজ্ঞান

- শরদিন্দু বন্দ্যোপাধ্যায় — চিড়িয়াখানা
- সত্যজিৎ রায় — আশ্চর্জন্তু

UNIT - II (22 Hours)

রোমাঞ্চসাহিত্য ও ভূতের গল্প

- বিভূতিভূষণ বন্দ্যোপাধ্যায় — চাঁদের পাহাড়
- লীলা মজুমদার – অশরীরী

Essential/Recommended Readings:

অনীশ দেব (সম্পা.), ২০১৪, *সেরা কল্পবিজ্ঞান,* আনন্দ, কলকাতা

শরদিন্দু বন্দ্যোপাধ্যায়, ২০১৩, *ব্যোমকেশ সমগ্র,* আনন্দ, কলকাতা

বিভূতিভূষণ বন্দ্যোপাধ্যায়, ১৪১৬ বঙ্গাব্দ, *উপন্যাস সমগ্র,* দ্বিতীয় খণ্ড, মিত্র ও ঘোষ পাবলিশার্স, কলকাতা

লীলা মজুমদার, ২০১২, সব ভুতুড়ে, আনন্দ, কলকাতা

Suggestive readings:

Strinati, Dominic, 2004, An Introduction to Theories of Popular Culture, Routledge, London.

OR/অথবা

DISCIPLINE SPECIFIC ELECTIVE COURSE– 2 (DSE-2): Loksahitya

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Loksahitya	4	3	1	NIL	Class 12th pass in any subject	Studied Bengali Up to 10th & Above

Loksahitya

লোকসাহিত্য

Learning Objectives: Bengali folk Literature is an important component of Bengali Literature. All those myths, fables, folk-tales, ballads, proverbs and riddles etc. were told and passed down verbally from generations to generations by the members of rural Bengal through ages. Folk literature has been collected in Bengal since 19th century and now it is being studied as a genre. In the following paper we would like our students to study this literature and know the richness of our culture.

Learning Outcomes: Students will find it interesting to know and study this literature of Rural Bengal from where their roots had spread out wide. They will also know how some writings like folk-tales and fables, whose authors are not known, have preserved the cultural history of rural Bengal.

Unit I (25 Hours)

লোককথা : সংজ্ঞা ও উদাহরণ, প্রকার — রূপকথা, পশুকথা, ব্রতকথা

দক্ষিণারঞ্জন মিত্রমজুমদার — লালকমল ও নীলকমল, কলাবতী রাজকন্যা (রূপকথা), শিয়ালপণ্ডিত(পশুকথা), পুণ্যিপুকুর ব্রত, শিবরাত্রি ব্রত, কোজাগরী লক্ষ্মী পূজার কথা(ব্রতকথা)

Unit II (20 Hours)

লোকগান ও লোকনৃত্য : সংজ্ঞা ও উদাহরণ, বাউল, ভাওয়াইয়া, ভাটিয়ালী, ভাদু, ঝুমুর, টুসু, ছৌ

Compulsory Reading:

প্রবীর ঘোষ (সম্পা.), ২০০৯, *দক্ষিণারঞ্জণ রচনাসমগ্র : ঠাকুমার ঝুলি*, মিত্র ও ঘোষ প্রকাশন, কলকাতা

আশুতোষ মজুমদার, মেয়েদের ব্রতকথা, দেব সাহিত্য কুটির, কলকাতা

Additional Resources:

অবনীন্দ্রনাথ ঠাকুর, ১৪১২ বঙ্গাব্দ, *বাংলার ব্রত*, বিশ্বভারতী, কলকাতা

অবনীন্দ্রনাথ ঠাকুর, ২০১২, *বাংলার ব্রত ও অন্যান্য ব্রতকথা*, দীপায়ন, কলকাতা

অমিত ভট্টাচার্য (সম্পা.), ২০১৬, *মেয়েদের ব্রতকথা*, আশুতোষ মুখোপাধ্যায়, পারুল, কলকাতা

আশুতোষ ভট্টাচার্য, ১৯৬২, *বাংলার লোক–সাহিত্য*, ক্যালকাটা বুক হাউস, কলিকাতা

আসরাফ সিদ্দিকী, ১৯৯৪, *লোকসাহিত্য*, প্রথম খণ্ড, গতিধারা, ঢাকা

আসরাফ সিদ্দিকী, ১৯৯৫, *লোকসাহিত্য*, দ্বিতীয় খণ্ড, গতিধারা, ঢাকা

উপেন্দ্রনাথ ভট্টাচার্য, ২০১৫, *বাংলার বাউল ও বাউলগান*, ওরিয়েন্ট বুক কোম্পানি, কলকাতা

ওয়াকিল আহমদ, ১৯৯৭, *বাংলা লোকসংগীত : ভাটিয়ালী গান*, বাংলাদেশ শিল্পকলা একাডেমী, ঢাকা

ওয়াকিল আহমদ, ২০০০, *বাউল গান*, বাংলাদেশ শিল্পকলা একাডেমী, ঢাকা

ওয়াকিল আহমেদ, ২০১৪, *লোককলা তত্ত্ব ও মতবাদ*, বইপত্র, ঢাকা

STRUCTURE, COURSES & SYLLABI OF SEMESTER - V

Category I

[UG Programme for Bachelor in Bengali (Honours) degree in three years]

For those who have studied Bangla Sahityer Itihas(Prachin Madhyajug & Adhunik jug 2nd part)

DISCIPLINE SPECIFIC CORE COURSE -13 (DSC-13) – : Bangla Sahityer Itihas: Adhunik Jug -3

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Bangla Sahityer Itihas: Adhunik Jug -3	4	3	1	NIL	Class 12th pass in any subject	Studied Bengali Up to 10th & Above

Bangla Sahityer Itihas: Adhunik Jug -3

বাংলা সাহিত্যের ইতিহাস : আধুনিক যুগ – ৩

Learning Objectives: Bengali Literature in the 19th and 20th Century had seen a scintillating outburst of various genres like poetry, drama, Novel, Essays etc. Emergence of Bengali prose took a much matured turn in the early 19th century. Farces and Plays on social issues were being written. Greatest of the Fiction and non-fiction Writers, Playwrights etc became evident. The objective of introducing this paper is to get our students acquainted with the main features of the literature of this century

Learning Outcomes: While studying this paper, the students will be knowing the social and political history of Bengal during this period which led to the creation of a whole bunch of literary works. They will also be acquainted to the main writers and poets and their works. Like the previous history of Literature paper, this one also will draw an outline of the literature in the 19th and 20th century.

Unit – I (23 Hours)

কাব্য কবিতা : ঈশ্বরচন্দ্র গুপ্ত, হেমচন্দ্র বন্দ্যোপাধায়, মধুসূদন দত্ত, বিহারীলাল চক্রবর্তী, গিরীন্দ্রমোহিনী দাসী, রবীন্দ্রনাথ ঠাকুর, যতীন্দ্রনাথ সেনগুপ্ত, সত্যেন্দ্রনাথ দত্ত, মোহিতলাল মজুমদার, নজরুল ইসলাম, জীবনানন্দ দাশ, সুধীন্দ্রনাথ দত্ত, বুদ্ধদেব বসু।

Unit- II (22 Hours)

কথা সাহিত্য : প্যারীচাঁদ মিত্র, কালীপ্রসন্ন সিংহ, বঙ্কিমচন্দ্র চট্টোপাধ্যায়, স্বর্ণকুমারী দেবী, রবীন্দ্রনাথ ঠাকুর, শরৎচন্দ্র চট্টোপাধ্যায়, বিভূতিভূষণ বন্দ্যোপাধ্যায়, তারাশঙ্কর বন্দ্যোপাধ্যায়, মানিক বন্দ্যোপাধ্যায়, আশাপূর্ণা দেবী, সতীনাথ ভাদুড়ী, মহাশ্বেতা দেবী ।

Essential/ Recommended Readings:

অসিতকুমার বন্দ্যোপাধ্যায়, ২০০৪-২০০৫, *বাংলা সাহিত্যের সম্পূর্ণ ইতিবৃত্ত,* মডার্ণ বুক এজেন্সী, কলকাতা

ক্ষেত্র গুপ্ত, ২০০২, বাংলা সাহিত্যের ইতিহাস, গ্রন্থনিলয়, কলকাতা

Suggestive Readings:

অধীর দে, ২০১০, আধুনিক বাংলা প্রবন্ধ- সাহিত্যের ধারা, প্রথম খন্ড, উজ্জ্বল সাহিত্য মন্দির, কলিকাতা

অধীর দে, ২০১০, আধুনিক বাংলা প্রবন্ধ- সাহিত্যের ধারা, দ্বিতীয় খন্ড, উজ্জ্বল সাহিত্য মন্দির, কলিকাতা

অলোকরঞ্জন দাশগুপ্ত ও দেবীপ্রসাদ বন্দ্যোপাধ্যায় (সম্পা.), ২০১১, আধুনিক কবিতার ইতিহাস, দে'জ পাবলিশিং, কলিকাতা

আজাহার ইসলাম, ২০১৫, বাংলা সাহিত্যের ইতিহাস, আধুনিক যুগ, অনন্যা, ঢাকা

গোপাল হালদার, ১৪১২ বঙ্গাব্দ, বাঙলা সাহিত্যের রূপরেখা, দ্বিতীয় খন্ড, অরুণা প্রকাশনী, কলকাতা

দেবেশ কুমার আচার্য্য ২০০৭, বাংলা সাহিত্যুএর ইতিহাস, আধুনিক যুগ, ইউনাইটেড বুক এজেন্সী, কলকাতা

শ্রীব্রজেন্দ্রনাথ বন্দ্যোপাধ্যায়, ১৩৪৬ বঙ্গাব্দ, বঙ্গীয় নাট্যশালার ইতিহাস : ১৭৯৫-১৮৭৬, বঙ্গীয় সাহিত্য পরিষদ্ মন্দির, কলিকাতা

শ্রীকুমার বন্দ্যোপাধ্যায়, ২০১০-২০১১, বঙ্গসাহিত্যে উপন্যাসের ধারা, মর্ডাণ বুক এজেন্সী, কলকাতা

সুকুমার সেন, ২০০৯, বাঙ্গালা সাহিত্যের ইতিহাস, পঞ্চম খন্ড, আনন্দ, কলকাতা

DISCIPLINE SPECIFIC CORE COURSE -14 (DSC-14) – : Bangla Natak Tattwe O Manche

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		

Bangla Natak Tattwe O Manche	4	3	1	NIL	Class 12th pass in any subject	Studied Bengali Up to 10th & Above

Bangla Natak Tattwe O Manche

বাংলা নাটক : তত্ত্বে ও মঞ্চে

Learning Objectives: Bengali stage came into being much before British came to India but the 19th century saw an all-round development of Bengali Theatre. 19th century Bengal had seen great social changes due to the change in political scenario which led to the evolution of a very big number of farces based on social issues and a number of Plays. This continued in the following centuries too. Plays had a great influence in the Bengali society and culture. In the following paper we would let the students know about some of the masterpieces of Plays and Farces, starting from the 19th century.

Learning Outcomes: After going through this paper, the students will be knowing the evolution of Bengali Stage, its development, the people who were related in the progress and expansion of Bengali Theatre. They will be familiar with some of the greatest dramatic works of both 19th and 20th Century Bengal.

Unit-I (10 Hours)

নাটক : সংজ্ঞা, গঠন ও শ্রেণিবিভাগ

Unit-II (35 Hours)

বাংলা রঙ্গমঞ্চের ইতিহাস

বিদেশী রঙ্গালয়, (সখের নাট্যশালাঃ হিঁদু থিয়েটার, শ্যামবাজারের নবীন বাবুর নাট্যশালা, ওরিয়েন্টাল থিয়েটার, জোড়াসাঁকো থিয়েটার, বিদ্যোৎসাহিনী রঙ্গমঞ্চ, বেলগাছিয়া নাট্যশালা, পাথুরিয়াঘাটা বঙ্গনাট্যালয়, ঠাকুরবাড়ির জোড়াসাঁকো নাট্যশালা, বহুবাজার নাট্যশালা, বঙ্গনাট্যালয়, বাগবাজার) , সাধারণ রঙ্গালয় বাগবাজার এমেচার থিয়েটার- শ্যামবাজার নাট্যশালা (১৮৬৮-১৮৭২), ন্যাশনাল থিয়েটার, বেঙ্গল থিয়েটার, স্টার থিয়েটার, মিনার্ভা থিয়েটার।

Suggestive Readings:

অজিতকুমার ঘোষ, ২০১৬, বাংলা নাটকের ইতিহাস, দে'জ পাবলিশিং, কলিকাতা

অজিতকুমার ঘোষ, ২০১৬, বাংলা নাট্যতত্ত্ব ও নাট্যমঞ্চ, দে'জ পাবলিশিং, কলিকাতা

পুলিন দাস, ১৪০৩ বঙ্গাব্দ, বঙ্গ রঙ্গমঞ্চ ও বাংলা নাটক, এম. সি. সরকার, কলিকাতা

ব্রজেন্দ্রনাথ বন্দ্যোপাধ্যায়, ১৩৪০ বঙ্গাব্দ, বঙ্গীয় নাট্যশালার ইতিহাস, বঙ্গীয় সাহিত্য পরিষদ-মন্দির, কলকাতা

আশুতোষ ভট্টাচার্য, ১৯৬০, বাংলা নাট্য সাহিত্যের ইতিহাস, প্রথম ও দ্বিতীয় খন্ড, এ. মুখার্জী, কলিকাতা

দর্শন চৌধরী, ১৯৮৫, উনিশ শতকের নাট্যবিষয়, পুস্তক বিপণি, কলিকাতা

DISCIPLINE SPECIFIC CORE COURSE -15 (DSC-15) – : Bangla Prabandha

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Bangla Prabandha	4	3	1	NIL	Class 12th pass in any subject	Studied Bengali Up to 10th & Above

Bangla Prabandha

বাংলা প্রবন্ধ

Learning Objectives: Bengali Non-fictional Prose, though emerged in the 17th and 18th centuries, it flourished in the 19th century, mostly because of arguments surrounding social issues. New ideas were taken from the western world by the newly visible elites,

opinions were debated in the periodicals and a strong prose came into being. In this paper we have introduced some of the famous non-fiction prose and essays for the students, from the previous two centuries.

Learning Outcomes: Students will study and know the various forms of prose: polemical prose, Sketches, Letters, journals, biographies etc. They will be acquainted with some of the most interesting and famous essays and sketches of 19th and 20th Century.

Unit-I (15 Hours)

বঙ্কিমচন্দ্র চট্টোপাধ্যায়- পতঙ্গ

কালীপ্রসন্ন সিংহ – চড়ক পার্ব্বন

স্বর্ণকুমারী দেবী – আমাদের গৃহের অন্তঃপুর শিক্ষা ও তাহার সংস্কার

Unit-II (30 Hours)

বলেন্দ্রনাথ ঠাকুর – নিমন্ত্রণ সভা

কল্যাণী দত্ত – ভেতর বাড়ি

বেগম রোকেয়া সাখাওয়াত হোসেন – অলংকার, না 'badges of slavery'

শিশিরকুমার দাশ – জনপ্রিয়তা ও উপন্যাস

অন্নদাশঙ্কর রায় – হিন্দু-মুসলমান

Essential/ Recommended Readings:

অন্নদাশঙ্কর রায়, ১৯৫৯, অন্নদাশঙ্কর রায়ের শ্রেষ্ঠ প্রবন্ধ, নবার্ক, কলকাতা

অলোক রায় প্রমুখ (সম্পা.) ২০০২, দুশ বছরের বাংলা প্রবন্ধসাহিত্য, প্রথম ও দ্বিতীয় খন্ড, সাহিত্য অকাদেমি, নতুন দিল্লি,

কল্যাণী দত্ত, ১৯৯৫, থোড় বড়ি খাড়া, থীমা, কলকাতা

শিশিরকুমার দাশ, ২০২২, শিশিরকুমার দাশ : প্রবন্ধসংগ্রহ, দেজ পাবলিশিং, কলকাতা

সুতপা ভট্টাচার্য, (সংক. ও সম্পা.), ২০১১, বাঙালি মেয়ের ভাবনামূলক গদ্য, সাহিত্য অকাদেমি, নতুন দিল্লি

Suggestive Readings:

অধীর দে, ২০১২ , আধুনিক বাংলা প্রবন্ধ- সাহিত্যের ধারা, প্রথম খন্ড, উজ্জ্বল সাহিত্য মন্দির, কলকাতা

অধীর দে, ২০১০, আধুনিক বাংলা প্রবন্ধ- সাহিত্যের ধারা, দ্বিতীয় খন্ড, উজ্জ্বল সাহিত্য মন্দির, কলকাতা

অধীর দে, ২০১২ , আধুনিক বাংলা প্রবন্ধ- সাহিত্যের ধারা, তৃতীয় খন্ড, উজ্জ্বল সাহিত্য মন্দির, কলকাতা

অরুণ নাগ (সম্পা.) ২০১৬, সটীক হুতোম প্যাঁচার নকশা, আনন্দ, কলকাতা

আনোয়ার হোসেন, ২০০৬, বেগম রোকেয়াঃ নারী জাগরণের অগ্রদূত, প্রগ্রেসিভ পাবলিশার্স, কলকাতা

চিত্রা দেব, ২০০৬, ঠাকুরবাড়ির অন্দরমহল, আনন্দ, কলকাতা

দিলীপকুমার রায়, (সম্পা.) ২০০৭, বঙ্কিমচন্দ্র চট্টোপাধ্যায় রচিত কমলাকান্তের দপ্তর, পুনশ্চ, কলকাতা

তপোধীর ভট্টাচার্য, ২০০৭, প্রবন্ধের ভুবনঃ ব্যক্তি ও সৃষ্টি, বঙ্গীয় সাহিত্য সংসদ, কলকাতা

শিশির কুমার দাশ, ১৩৯২ বঙ্গাব্দ, গদ্য ও পদ্যের দ্বন্দ্ব, দে'জ পাবলিশিং, কলকাতা

DISCIPLINE SPECIFIC ELECTIVE COURSE– 3 (DSE-3): Biswasahitya - 1

Biswasahitya - 1

বিশ্বসাহিত্য- ১

Learning Objectives: In an age of cross-discipline studies, no student of Literature can limit him/herself within the sphere of a literature written in a particular language. One literature must be studied in the broader canvas of world literature. Also, this has been a practice of the Bengali Litterateurs that from 19th century onwards, after emergence of British, poets and writers have studied world Literature a lot (sometimes through English and otherwise also) and were influenced by their works. A

student of Bangla must read World Literature to know his/her own literature much better

Learning Outcomes: This paper will not only make the students acquainted with some wonderful texts of World Literature but also improve their understanding of their own Literature.

UNIT - I

কবিতা ও নাটক (20 Hours)

- বিষ্ণু দে- ফাঁপা মানুষ (এলিয়ট)
- বুদ্ধদেব বসু – দুরদৃষ্ট (বোদলেয়ার)
- শিশিরকুমার দাশ – আন্তিগোনে

UNIT - II (25 Hours)

কথাসাহিত্য

- চিনুয়া আচেবে - সবকিছু ভেঙে-চুরে যায়
- মপাসাঁ – নেকলেস
- নিকোলাই গোগল – ওভারকোট

Essential/Recommended Readings:

কবির চৌধুরী (অনু), ২০১২, সবকিছু ভেঙে-চুরে যায়, সময় প্রকাশন, ঢাকা

বুদ্ধদেব বসু (অনু), ১৩৬৭ বঙ্গাব্দ, শার্ল বোদলেয়ার : তাঁর কবিতা, দেজ পাবলিশিং, কলকাতা

শিশিরকুমার দাশ (অনু.), ১৯৯১, *সাহিত্য সংসদ গ্রন্থমালা-৩*, আন্তিগোনে:সোফোক্লেস, প্রমা প্রকাশনী, কলকাতা

সুধাংশুরঞ্জন ঘোষ(অনুবাদ), ১৯৮৯, মপাসাঁ রচনাবলীঃ প্রথম খণ্ড, তুলি-কলম, কলকাতা

শহিদুল আলম(সম্পা), ২০১২, নিকোলাই গোগলের শ্রেষ্ঠ গল্প, বিশ্বসাহিত্য কেন্দ্র, ঢাকা

Suggestive Readings:

দেবব্রত চট্টোপাধ্যায় (সম্পা.), ২০১৩, *পরিকথা:বিশ্বসাহিত্য,* পঞ্চদশ বর্ষ, দ্বিতীয় সংখ্যা, সাউথ গড়িয়া, দক্ষিণ ২৪ পরগণা।

OR/অথবা

DISCIPLINE SPECIFIC ELECTIVE COURSE– 3 (DSE-3): Naribadi Sahitya - 1

নারীবাদী সাহিত্য – ১

Naribadi Sahitya – 1

Learning Objectives: Literature written by women in Bengali (like other languages in and outside India) has not been treated as equal to the Literature written by their male-counterparts since long but the feminist movements all over the world demanded the literature written by women to be studied with care to discover issues very different from other texts. There is a new trend (particularly after 60-s) to study these texts intensely and work upon the language used, the issues discussed, the fear of male gaze etc. Our main objective is to make the students study these kinds of Texts.

Learning Outcomes: While reading these Texts the students will find the arguments interesting, substantial and strong which will lead them to understand the issues of feminist writings and its importance. A bunch of grand literary Texts by women will be a gift to kindle their rational thinking.

UNIT - I (25 Hours)

উপন্যাস

- আশাপূর্ণা দেবী – প্রথম প্রতিশ্রুতি

UNIT - II (20 Hours)

কবিতা

- অপরাজিতা দেবী — গৃহিণী
- কবিতা সিংহ — ঈশ্বরকে ইভ
- মল্লিকা সেনগুপ্ত – দ্রৌপদী জন্ম
- মন্দাক্রান্তা সেন – অর্জুন কৃষ্ণচূড়ার কথা

Essential/Recommended Readings:

আশাপূর্ণা দেবী ১৪১৪ বঙ্গাব্দ, *প্রথম প্রতিশ্রুতি,* মিত্র ও ঘোষ পাবলিশার্স, কলকাতা

নবনীতা দেবসেন (সম্পা), ১৯৮৪, অপরাজিতা দেবীর শ্রেষ্ঠ কবিতা, করুণা প্রকাশনী, কলকাতা

মল্লিকা সেনগুপ্ত, ১৯৯৯, হৃদয় অবাধ্য মেয়ে, আনন্দ পাবলিশার্স, কলকাতা

ব্রজেন্দ্রনাথ বন্দ্যোপাধ্যায়, ১৩৪০ বঙ্গাব্দ, বঙ্গীয় নাট্যশালার ইতিহাস, কলকাতা

সুধাংশুশেখর দে (প্রকাশক), ২০০৯, *কবিতা সিংহের শ্রেষ্ঠ কবিতা,* দে'জ পাবলিশিং, কলকাতা

সুধাংশুশেখর দে (প্রকাশক), ২০১২, *মল্লিকা সেনগুপ্তের শ্রেষ্ঠ কবিতা,* দে'জ পাবলিশিং, কলকাতা

Suggestive Readings:

অপু দাস, ২০০৬, *নারীবাদী পাঠ,* বাণীশিল্প, কলকাতা

ঊর্মি রহমান, ১৯৯৬, *পাশ্চাত্যে নারী আন্দোলন,* নয়া উদ্যোগ, কলকাতা

সুদক্ষিণা ঘোষ, ২০০৮, মেয়েদের উপন্যাসে মেয়েদের কথা, দে'জ পাবলিশিং, কলকাতা

Structure, courses & Syllabi of Semester-VI

Category I

[UG Programme for Bachelor in Bengali (Honours) degree in three years]

DISCIPLINE SPECIFIC CORE COURSE -16 (DSC-16) – : Bangla Natak Path

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Bangla Natak Path	4	3	1	NIL	Class 12th pass in any subject	Studied Bengali Up to 10th & Above

বাংলা নাটক পাঠ

Bangla Natak Path

Learning Objectives: Bengali stage came into being much before British came to India but the 19th century saw an all-round development of Bengali theatre. 19th century Bengal had undergone great social changes due to the change in the political scenario which led to the evolution of a farces based on social issues and in number of plays. This continued in the following centuries too. Plays had a great influence in the Bengali society and culture. This paper would let the students know about some of the dramatic masterpieces, starting from the 19th century.

Learning Outcomes: After going through this paper, the students will know about the evolution of Bengali stage, its development, personalities, who contributed in the progress of

Bengali theatre. They will be familiar with some of the greatest dramatic works of both 19th and 20th century Bengal.

Unit I (22 Hours)

মাইকেল মধুসূদন দত্ত - একেই কি বলে সভ্যতা?

দীনবন্ধু মিত্র - নীলদর্পণ

Unit II (23 Hours)

বিজন ভট্টাচার্য – নবান্ন

বুদ্ধদেব বসু – প্রথম পার্থ

Essential/Recommended Readings:

ক্ষেত্রগুপ্ত (সম্পাদিত), ২০১২, মধুসূদন রচনাবলী, সাহিত্য সংসদ, কলিকাতা

জগন্নাথ ঘোষ (সম্পাদিত),২০০২, দীনবন্ধু মিত্রের নীলদর্পণ, সাহিত্য সঙ্গী, কলকাতা

বিজন ভট্টাচার্য, ১৯৮৮, নবান্ন, প্রমা, কলকাতা

বুদ্ধদেব বসু, ১৪১৮ বঙ্গাব্দ, অনামী অঙ্গনা ও প্রথম পার্থ, দেজ পাবলিশিং, কলকাতা

Suggestive Readings:

অজিতকুমার ঘোষ, বাংলা নাটকের ইতিহাস, দে'জ পাবলিশিং, কলকাতা

আশুতোষ ভট্টাচার্য, ১৯০৭, বাংলা নাট্য সাহিত্যের ইতিহাস, প্রথম খন্ড, এ. মুখার্জি, কলিকাতা

আশুতোষ ভট্টাচার্য, ১৯৬১, বাংলা নাট্য সাহিত্যের ইতিহাস, দ্বিতীয় খন্ড, এ. মুখার্জি, কলিকাতা

গোলাম মুর্শিদ মসজিদ, ১৯৮৪, সমাজ সংস্কার আন্দোলন ও বাংলা নাটক, বাংলা একাডেমি, ঢাকা

দর্শন চৌধুরী, ১৯৮৫, উনিশ শতকের নাট্য-বিষয়, পুস্তক বিপণি, কলিকাতা

রথীন্দ্রনাথ রায়, ১৯৬০, দ্বিজেন্দ্রলাল: কবি ও নাট্যকার, সুপ্রকাশ, কলকাতা

মিহির কুমার দাশ, ১৯৬৮, দীনবন্ধু মিত্র: কবি ও নাট্যকার, বুকল্যাণ্ড, কলকাতা

DISCIPLINE SPECIFIC CORE COURSE -17 (DSC-17) – : Bangla Chanda O Alamkar

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Bangla Chanda O Alamkar	4	3	1	NIL	Class 12th pass in any subject	Studied Bengali Up to 10th & Above

বাংলা ছন্দ ও অলংকার

Bangla Chanda O Alamkar

Learning Objectives: This paper is a special one which must be studied by every student of Indian literature. Because this paper talks about the Indian theory of literature and its branches based on poetry. The principles And methods used in literature were defined by the theorists of literature. Theories like Rhetoric and Prosody. This can guide one towards a concrete, comprehensive understanding of poetry and its style and structure.

Learning Outcomes: After studying this paper, students will be equipped with the theories regarding the style, method and structure of Bengali as well as Indian literature. They will learn about the style and structure of poetry. Then the students will become able to judge Prosody and Rhetoric. Students will find it interesting after being acquainted with the metre and Rhetorics used in Bangla from time to time.

Unit I (10 Hours)

কবিতার রূপ ও রীতি

Unit II (35 Hours)

বাংলা ছন্দ ও অলংকার

ছন্দ : স্বরবৃত্ত ছন্দ, মাত্রাবৃত্ত ছন্দ, অক্ষরবৃত্ত ছন্দ

অলংকার : শব্দালংকার ও অর্থালংকার(উপমা, রূপক, উৎপ্রেক্ষা, সমাসোক্তি, অতিশয়োক্তি, বিরোধাভাস, ব্যাজস্তুতি)

Suggestive Readings:

উজ্জ্বলকুমার মজুমদার, ২০১৬, সাহিত্য ও সমালোচনার রূপ-রীতি, দেজ পাবলিশিং, কলকাতা

অমূল্যধন মুখোপাধ্যায়, ১৯৯৭, বাংলা ছন্দের মূলসূত্র, কলিকাতা বিশ্ববিদ্যালয়, কলিকাতা

আব্দুল মান্নান সৈয়দ, ২০১৬, ছন্দ, অবসর, ঢাকা

উত্তম দাশ, ২০০১, বাংলা ছন্দের অন্তপ্রকৃতি, মহাদিগন্ত, কলকাতা

কালিদাস রায়, ২০০৬, ছন্দের কথা, অপর্ণা বুক ডিস্ট্রিবিউটারস, কলকাতা

জীবেন্দ্র সিংহ রায়, ১৯৬৪, বাংলা অলংকার, মডার্ন বুক এজেন্সি, কলিকাতা

নীলরতন সেন, ১৯৮৪, বাংলা ছন্দ পরিচয়, পুথিপত্র, কলিকাতা

প্রবোধচন্দ্র সেন, ২০০২, নূতন ছন্দ-পরিক্রমা, আনন্দ,কলকাতা

মিহির চৌধুরী কামিল্যা, ২০০৫, বাংলা ছন্দ : রূপ ও রীতি, সন্দীপ, কলকাতা

শুদ্ধসত্ত্ব বসু, ১৯৬২, অলংকার-জিজ্ঞাসা, সুপ্রকাশ, কলিকাতা

শ্যামাপদ চক্রবর্তী, ২০১৫, অলংকার-চন্দ্রিকা, কৃতাঞ্জলি, কলকাতা

ক্ষুদিরাম দাশ, ১৯৬০, বাংলা কাব্যের রূপ ও রীতি, ওরিএন্ট বুক কোম্পানি, কলকাতা

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

DISCIPLINE SPECIFIC CORE COURSE -18 (DSC-18) – : Paschatya Sahityatatwa

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Paschatya Sahityatatwa	4	3	1	NIL	Class 12th pass in any subject	Studied Bengali Up to 10th & Above

পাশ্চাত্য সাহিত্যতত্ত্ব

Paschatya Sahityatatwa

Course Objectives: Literature can't be understood without aesthetics. This course contains Western theory. This will help us to understand the basics of literature according to western literary theory. Western theories like Mimesis, Epic, Tragedy, Comedy, Classicism, Romanticism, Modernism, Marxism, Colonialism, etc. it will help to realise contemporary literature. Overall, this course will help to understand literature and literary movements.

Course Learning Outcomes: This course will help students to understand the basics of western literary theory and will enable them to get accustomed with the key ideas of western literary criticism. As a result, it will enable students to read texts critically by using these key ideas.

Unit I (20 Hours)

মাইমেসিস, ট্র্যাজেডি, মহাকাব্য, কমেডি

Unit II (25 Hours)

ক্ল্যাসিসিজম, রোম্যান্টিসিজম, আধুনিকতাবাদ, মার্কসবাদ, উপনিবেশবাদ

Suggestive Readings:

শিশিরকুমার দাশ, ১৯৫৭, কাব্যতত্ত্ব: আরিস্টটল, আশা প্রকাশনী, কলকাতা

সাধনকুমার ভট্টাচার্য, ১৩৬৩ বঙ্গাব্দ, এরিস্টটলের পোয়েটিক্স ও কাব্যতত্ত্ব, জাতীয় সাহিত্য

সুধীর চক্রবর্তী (সম্পা.) ২০১৪, বুদ্ধিজীবীর নোট বই, নবযুগ, কলকাতা

হীরেন চট্টোপাধ্যায়, ১৪১৯ বঙ্গাব্দ, সাহিত্য প্রকরণ, বঙ্গীয় সাহিত্য সংসদ, কলকাতা

তপোধীর ভট্টাচার্য, ২০১১, প্রতীচ্যের সাহিত্যতত্ত্ব, দে'জ পাবলিশিং, কলকাতা

উজ্জ্বলকুমার মজুমদার, ২০১৬, সাহিত্য সমালোচনার রূপ ও রীতি, দে'জ পাবলিশিং, কলকাতা

নবেন্দু সেন (সম্পা.), ২০০৯, পাশ্চাত্য সাহিত্য তত্ত্ব ও সাহিত্য ভাবনা, রত্নাবলী কলকাতা

DISCIPLINE SPECIFIC ELECTIVE COURSE– 4 (DSE-4): Naribadi Sahitya - 2

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Naribadi Sahitya - 2	4	3	1	NIL	Class 12th pass in any subject	Studied Bengali Up to 10th & Above

নারীবাদী সাহিত্য – ২

Naribadi Sahitya – 2

Learning Objectives: Literature written by women in Bengali (like other languages in and outside India) has not been treated as equal to the Literature written by their male-counterparts since long but the feminist movements all over the world demanded the literature written by women to be studied with care to discover issues very

different from other texts. There is a new trend (particularly after 1960-s) to study these texts intensely and work upon the language used, the issues discussed, the problem of male gaze etc. Our main objective is to make the students study these kinds of Texts.

Learning Outcomes: While reading these Texts the students will find the arguments interesting, substantial and strong which will lead them to understand the issues of feminist writings and its importance. A bunch of grand literary Texts by women will be a gift to kindle their rational thinking.

UNIT - I (15 Hours)

আত্মজীবনী

- রাসসুন্দরী দেবী — আমার জীবন

UNIT - II (30 Hours)

গল্প ও প্রবন্ধ

- জগদীশ গুপ্ত – চন্দ্র-সূর্য যতোদিন
- মহাশ্বেতা দেবী — চোলি কী পিছে
- গিরীন্দ্রমোহিনী দাসী — বিষম সমস্যা
- তসলিমা নাসরিন — আর রেখো না আঁধারে আমায় দেখতে দাও

Essential/Recommended Readings:

রাসসুন্দরী দেবী, ১৯৫৯, আমার জীবন, দে বুক স্টোর, কলকাতা

সুবীর রায়চৌধুরী(সম্পা), ১৩৫০ বঙ্গাব্দ, জগদীশ গুপ্তর গল্প, ইষ্টার্ণ পাবলিশার্স, কলকাতা

সুতপা ভট্টাচার্য (সংক. ও সম্পা.), ২০১১, *বাঙালি মেয়ের ভাবনামূলক গদ্য*, সাহিত্য অকাদেমি, নতুন দিল্লি

Suggestive Readings:

অপু দাস, ২০০৬, *নারীবাদী পাঠ*, বাণীশিল্প, কলকাতা

ঊর্মি রহমান, ১৯৯৬, *পাশ্চাত্যে নারী আন্দোলন*, নয়া উদ্যোগ, কলকাতা

গোলাম মুরশিদ, ২০০২, *আধুনিকতার অভিঘাতে বঙ্গরমণী*, নয়া উদ্যোগ, কলকাতা

জহর সেনমজুমদার, ২০০১, *উপন্যাসের ঘরবাড়ি*, পুস্তক বিপণি, কলকাতা

তপোধীর ভট্টাচার্য, ২০০৭, *নারীচেতনা : মননে ও সাহিত্যে*, পুস্তক বিপণি, কলকাতা

তপোধীর ভট্টাচার্য (সম্পা.), ২০০৭, *আশাপূর্ণা : নারী পরিসর*, পুস্তক বিপণি, কলকাতা

ভারতী রায় (সম্পা.), ২০০২, *নারী ও পরিবার : বামাবোধিনী পত্রিকা : ১২৭০-১৩২৯ বঙ্গাব্দ*, আনন্দ পাবলিশার্স, কলকাতা

মল্লিকা সেনগুপ্ত, ২০১৪, *স্ত্রীলিঙ্গ নির্মাণ*, আনন্দ পাবলিশার্স, কলকাতা

রাজশ্রী বসু ও বাসবী চক্রবর্তী, ২০০৮, *প্রসঙ্গ : মানবীবিদ্যা*, উর্বী প্রকাশন, কলকাতা

সম্বুদ্ধ চক্রবর্তী, ১৯৯৮, *অন্দরে- অন্তরে : উনিশ শতকে বাঙালি ভদ্রমহিলা*, স্ত্রী, কলকাতা

সুদক্ষিণা ঘোষ, ২০০৮, *মেয়েদের উপন্যাসে মেয়েদের কথা*, দে'জ পাবলিশিং, কলকাতা

অথবা / OR

DISCIPLINE SPECIFIC ELECTIVE COURSE– 4 (DSE-4): Jibanisahitya O Smritikatha

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Jibanisahitya O Smritikatha	4	3	1	NIL	Class 12th pass in any subject	Studied Bengali Up to 10th & Above

জীবনীসাহিত্য ও স্মৃতিকথা

Jibanisahitya O Smritikatha

Learning Objectives: This paper aims at making the students aware of Life-writing tradition of Bengal. Life writing has emerged as a discipline nowadays. The paper is called 'Jibani Sahitya O Smritikatha' which includes biography and memoirs We have chosen three texts from different walks of life. Thus, biography of Shri. Ishwarchandra Vidyasagar, the pioneering spirit of women education in Bengal and women emancipation in India. Memoir will be from Shri. Rabindranath Tagore, the first Nobel Laureate of India. The third text is from a famous author of Juvenile Literature: Leela Majumdar.

Learning Outcomes: After studying the paper, the students will be acquainted with the tradition of life-writing, various approaches of life-writing, their unalike linguistic opulence and they will also know these authors much better.

UNIT - I (15 Hours)

ইন্দ্র মিত্র - করুণাসাগর বিদ্যাসাগর (নয় পরিচ্ছেদ: ১৮১-২০৩, তেরো পরিচ্ছেদ: ২৭৯-৩০২) নির্বাচিত অংশ)

UNIT – II (30 Hours)

রবীন্দ্রনাথ ঠাকুর – ছেলেবেলা

লীলা মজুমদার- পাকদণ্ডী

Essential/Recommended readings:

রবীন্দ্রনাথ ঠাকুর, ১৩৪৭ বঙ্গাব্দ, ছেলেবেলা, বিশ্বভারতী, কলকাতা

ইন্দ্র মিত্র, ১৯৯২, করুণাসাগর বিদ্যাসাগর, আনন্দ, কলকাতা

লীলা মজুমদার, ২০০৭, পাকদণ্ডী, আনন্দ, কলকাতা

Suggestive Readings:

তাপস ভৌমিক, বইমেলা ২০১৪, কোরক সাহিত্য পত্রিকা : বাংলা আত্মজীবনী, স্মৃতিকথা, রঘুনাথপুর, কলকাতা

দেবীপদ ভট্টাচার্য, ১৩৫৯ বঙ্গাব্দ, বাংলা চরিত সাহিত্য, দে'জ পাবলিশিং, কলকাতা

Sukla. A.C.(Ed), Vol 44, Number 4, Winter 2021, Journal of Comparative Literature and Aesthetics, A Vishwanatha Kaviraja Institute Publication, Cuttack.

Novarr, David, 2000, The Lines of Life: Theories of Biography, 1880-1970, USA

SEMESTER IV

Category II

(B.A. Programme Courses for Undergraduate Programme of study with Bengali discipline as one of the Core Disciplines)

DISCIPLINE SPECIFIC CORE COURSE- 7 (DSC-7): Uponibesh Porber Bangla Sahitya – II

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Uponibesh Porber Bangla Sahitya – II	4	3	1	NIL	Class 12th pass in any subject	Studied Bengali up to 10th standard Or Working knowledge of Bengali language

Learning Objectives

To give the students a detail idea about Colonial Bengali Literature.

Learning outcomes

The course will enlighten the students about different types of Colonial Bengali Literature, its characteristics and features. It will also introduce students about their socio – cultural background of Colonial Bengal through literature.

SYLLABUS OF DSC-7

UNIT – I (4 WEEKS)

বাংলা কাব্য-কবিতার ইতিহাস – ঈশ্বরগুপ্ত, মধুসূদন দত্ত, বিহারীলাল চক্রবর্তী, রবীন্দ্রনাথ ঠাকুর

UNIT – II (5 WEEKS)

বাংলা কথাসাহিত্যের ইতিহাস – বঙ্কিমচন্দ্র চট্টোপাধ্যায়, স্বর্ণকুমারী দেবী, প্রভাতকুমার মুখোপাধ্যায়, শরৎচন্দ্র চট্টোপাধ্যায়, রবীন্দ্রনাথ ঠাকুর

UNIT – III (3 WEEKS)

বাংলা নাট্যসাহিত্যের ইতিহাসঃ মধুসূদন দত্ত, দীনবন্ধু মিত্র, গিরিশচন্দ্র ঘোষ, দ্বিজেন্দ্রলাল রায়

Practical component (if any) - NIL

Essential/recommended readings:

অসিতকুমার বন্দ্যোপাধ্যায়, ২০০৪-২০০৫, বাংলা সাহিত্যর সম্পূর্ণ ইতিবৃত্ত, মডার্ন বুক এজেন্সী, কলকাতা

ক্ষেত্র গুপ্ত, ২০০২, বাংলা সাহিত্যের সমগ্র ইতিহাস, গ্রন্থনিলয়, কলকাতা

Suggestive readings:

অসিত কুমার বন্দ্যোপাধ্যায়, (১৩৭৪), উনিশ বিশ, কলিকাতা : মণ্ডল বুক হাউস

গোপাল হালদার, (১৪১৯), বাংলা সাহিত্যের রূপরেখা (দ্বিতীয় খন্ড), কলকাতা : অরুণা প্রকাশনী

দেবেশ কুমার আচার্য, (২০১০), বাংলা সাহিত্যের ইতিহাস (আধুনিক যুগ), কলকাতা : ইউনাইটেড বুক এজেন্সী

সজনীকান্ত দাশ, (১৯৮৮), বাংলা গদ্য সাহিত্যের ইতিহাস, প্রথম সংস্করণ, কলিকাতা : দেজ

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category III

B. A. Programme Courses for Undergraduate Programme of study with discipline as one of the Core Disciplines

(For e.g. courses for B.A. Programmes with Bengali as Major & minor discipline)

DISCIPLINE SPECIFIC CORE COURSE- 8 (DSC-8): Kabita, Chanda O Alankar

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Kabita, Chanda O Alankar	4	3	1	NIL	Class 12th pass in any subject	Studied Bengali up to 10th standard Or Working knowledge of Bengali language

Learning Objectives

Bengali Poetry has a history of more than one thousand years. Started from charyapad, this genre is still continuing. In the present course we have included eight powerful poems of twentieth century's eight different well-known poets.

This course will also give the students an idea of Bengali Prosody as well as Bengali Rhetoric.

Learning outcomes

This course will definitely help students to understand the features and essence of Bengali Poems. This will also enable students to realize the reciprocal relation of literature and society.

The course will also help students to understand prosody and rhetoric of Bengali Poetry.

SYLLABUS OF DSC- 8

Unit I (10 Hours)

ছন্দ – (উদাহরণ সহ সংজ্ঞা) – দলবৃত্ত, কলাবৃত্ত, অক্ষরবৃত্ত

Unit II (10 Hours)

নির্বাচিত অলঙ্কার সমূহ –

অনুপ্রাস, যমক, শ্লেষ, বক্রোক্তি, উপমা, রূপক

Unit – III (25 Hours)

কবিতা

১) বাঁশি – রবীন্দ্রনাথ ঠাকুর

২) সুখবাদী – যতীন্দ্রনাথ সেনগুপ্ত

৩) রামগরুড়ের ছানা – সুকুমার রায়

৪) শিকল-পরার গান – নজরুল ইসলাম

৫) বনলতা সেন – জীবনানন্দ দাশ

৬) বড়বাবুর কাছে নিবেদন – অমিয় চক্রবর্তী

৭) একটি মোরগের কাহিনী – সুকান্ত ভট্টাচার্য

৮) অবনী বাড়ি আছো – শক্তি চট্টোপাধ্যায়

Primary Resources:

জীবেন্দু সিংহ রায় (১৯৬৪), বাংলা অলঙ্কার, কলকাতা : মর্ডান বুক এজেন্সী

শ্যামাপদ চক্রবর্তী (১৯৫৬), অলঙ্কার চন্দ্রিকা, কলকাতা : প্রজ্ঞাবিকাশ

প্রবোধচন্দ্র সেন (১৯৬৫), ছন্দ পরিক্রমা, কলকাতা : জিজ্ঞাসা

প্রবোধচন্দ্র সেন (১৯৮০), আধুনিক বাংলা ছন্দসাহিত্য, কলকাতা : অনিমা প্রকাশনী

বুদ্ধদেব বসু (সম্পাদনা, ১৯৯৮), আধুনিক বাংলা কবিতা, কলকাতা : এম সি সরকার এন্ড সন্স প্রাইভেট লিমিটেড

Additional Resources:

অলোকরঞ্জন দাশগুপ্ত, দেবীপ্রসাদ বন্দ্যোপাধ্যায়, (১৯৬৬) আধুনিক কবিতার ইতিহাস, কলকাতা : দে'জ পাবলিশিং

অশ্রুকুমার সিকদার, (১৯৭৫) আধুনিক কবিতার দিগ্বলয়, কলকাতা : অরুণা প্রকাশনী

অশোক কুমার মিশ্র, (২০১৩), আধুনিক বাংলা কবিতার রূপরেখা(১৯০১-২০০৮), তৃতীয় সংস্করণ, কলকাতা : দে'জ পাবলিশিং

দীপ্তি ত্রিপাঠী, (১৯৭৪), আধুনিক বাংলা কাব্য পরিচয়, প্রথম সংস্করণ, কলকাতা : দে'জ পাবলিশিং

বাসন্তীকুমার মুখোপাধ্যায়, (২০১২), আধুনিক বাংলা কবিতার রূপরেখা, অষ্টম সংস্করণ, কলকাতা : প্রকাশ ভবন

সুব্রত রায়চৌধুরী, (২০১২) উনিশের কবি কবিতার ভোর, কলকাতা : প্রজ্ঞা বিকাশ

সরোজ বন্দ্যোপাধ্যায়, (২০০৮), বাংলা কবিতার কালান্তর, দ্বিতীয় সংস্করণ, কলকাতা : দে'জ পাবলিশিং

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**

SEMESTER V

Category II

(B.A. Programme Courses for Undergraduate Programme of study with Bengali discipline as one of the Core Disciplines)

DISCIPLINE SPECIFIC CORE COURSE- 9 (DSC-9): Bangla Uponyas

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Bangla Uponyas	4	3	1	NIL	Class 12th pass in any subject	Studied Bengali up to 10th standard Or Working knowledge of Bengali language

Learning Objectives

To introduce the generic features of Novel and important texts of Bengali novel.

Learning outcomes

This course will enable students to understand the generic features of Bengali Novel and the artistic achievement of Bengali writings in this genre.

SYLLABUS OF DSC-9

UNIT – I (15 Hours)

মহাশ্বেতা দেবী – হাজার চুরাশির মা

UNIT – II (15 Hours)

সৈয়দ ওয়ালীউল্লাহ্ – চাঁদের অমাবস্যা

UNIT – III (15 Hours)

নবারুণ ভট্টাচার্য – হারবার্ট

Practical component (if any) - NIL

Essential/recommended readings:

নবারুণ ভট্টাচার্য,২০১৫, হারবার্ট, কলকাতাঃ দেজ পাবলিশিং

মহাশ্বেতা দেবী,২০১৯, হাজার চুরাশির মা, কলকাতা ঃ করুণা প্রকাশনী

সৈয়দ ওয়ালীউল্লাহ্, ২০১৭, চাঁদের অমাবস্যা, ঢাকাঃ মতিগন্ধা

Suggestive readings:

ডঃ অভিজিৎ চৌধুরী, ২০১০, মহাশ্বেতার মহাবিশ্ব, কলকাতা ঃ করুণা প্রকাশনী

মহম্মদ রফিক, সম্পা মণ্ডল(সম্পা), ২০১৩, বাংলা কথা সাহিত্য কলমের টানে সময়ের ওম, কলকাতা ঃ বুকস স্পেস

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category III

B. A. Programme Courses for Undergraduate Programme of study with discipline as one of the Core Disciplines

(For e.g. courses for B.A. Programmes with Bengali as Major & minor discipline)

DISCIPLINE SPECIFIC CORE COURSE- 10(DSC-10): Bangla Kathasahitya O Prabandha Sahitya

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Bangla Kathasahitya O Prabandha Sahitya	4	3	1	NIL	Class 12th pass in any subject	Studied Bengali up to 10th standard Or Working knowledge of Bengali language

Learning Objectives

To make the students aware of various Bengali literary forms, such as fictional and non-fictional writings.

In the way of learning Bengali Novel, short stories and prose, the students will get to know about the general idea of present Bengali literary trends.

Learning outcomes

The course will enable students understand the contribution of selected authors in their respective genre along with understanding of overall 19th – 20th century Bengali literature.

SYLLABUS OF DSC- 10

Unit I (15 Hours)

গল্প -

১) বিভূতিভূষণ বন্দ্যোপাধ্যায় – কিন্নরদল

২) রমেশচন্দ্র সেন – ডোমের চিতা

৩) তারাশংকর বন্দ্যোপাধ্যায় – বেদেনী

৪) সুবোধ ঘোষ – সুন্দরম্

৫) অন্নদাশঙ্কর রায় – হাসন সখী

Unit II (15 Hours)

উপন্যাস

মানিক বন্দ্যোপাধ্যায় –পদ্মানদীর মাঝি

Unit – III (15 Hours)

প্রবন্ধ

সৈয়দ মুজতবা আলী – চাচা কাহিনী (নির্বাচিত চারটি প্রবন্ধ – কর্নেল, বিধবা-বিবাহ, রাক্ষসী, পুনশ্চ)

Primary Resources:

সুনীল গঙ্গোপাধ্যায় (সম্পাদনা-২০০৬), বাংলা গল্প সংকলন, ভলিউম – ৪, নিউ দিল্লি : সাহিত্য অকাদেমি

মানিক বন্দ্যোপাধ্যায়, (ভাদ্র ১৪১৫ – ঊনচল্লিশতম মুদ্রণ), পদ্মানদীর মাঝি, কলিকাতা ঃ বেঙ্গল পাবলিশার্স প্রাইভেট লিমিটেড

সৈয়দ মুজতবা আলী (১৩৫৯), চাচা কাহিনী, কলকাতা : নিউ এজ পাবলিশার্স প্রাঃ লিঃ

Additional Resources:

অধীর দে (২০১২), আধুনিক বাংলা প্রবন্ধ সাহিত্যের ধারা, কলিকাতা : উজ্জল সাহিত্য মন্দির

অরুণ কুমার মুখোপাধ্যায়, (১৩৭৮) বাংলা গদ্যরীতির ইতিহাস, কলকাতা, ক্লাসিক প্রেস

সুকুমার সেন (১৯৯৮), বাঙ্গালা সাহিত্যে গদ্য, কলকাতা : আনন্দ

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER VI

Category II

(B.A. Programme Courses for Undergraduate Programme of study with Bengali discipline as one of the Core Disciplines)

DISCIPLINE SPECIFIC CORE COURSE- 11 (DSC-11): Prachin Bharatiya Kavyatattwa O Paschatya kavyatattwa O Sahityer Sanrup

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Prachin Bharatiya Kavyatattwa O Paschatya kavyatattwa	4	3	1	NIL	Class 12th pass in any subject	Studied Bengali up to 10th standard Or Working knowledge of Bengali language

Learning Objectives

Literature can't be understood without aesthetics. This course contains ancient Indian aesthetics, western aesthetics as well as literary genre study of Dhani and Rasa. This will help us to understand the basics of literature according to Indian aesthetics. Contemporary western theories like feminism, gender studies, neo-historicism, post colonialism etc. will help to realise contemporary literature. Literary genre will also help students to mark a particular literature within characteristics. Overall, this course will help to understand both western and Indian literature as well.

Learning outcomes

The course will help students to understand the basics of world literature. This will also enable students to realize the relation of aesthetic literary genre across languages.

SYLLABUS OF DSC-11

UNIT – I (4 weeks)

প্রাচীন ভারতীয় কাব্যতত্ত্ব

ধ্বনি ও রস

UNIT – II (8 weeks)

পাশ্চাত্য কাব্যতত্ত্ব

অনুকরণবাদ, নারীবাদ ও লিঙ্গ রাজনীতি, নব্য ইতিহাসবাদ, মার্ক্সবাদ,কথনতত্ত্ব, উত্তর উপনিবেশবাদ, জনপ্রিয় সাহিত্যতত্ত্ব, জাদু বাস্তবতা, অভিবাসী সাহিত্য, অন্তর্বয়ন

Practical component (if any) - NIL

Essential/recommended readings:

অতুলচন্দ্র গুপ্ত (১৩৩৫ বঙ্গাব্দ), কাব্যজিজ্ঞাসা, কলকাতা : বিশ্বভারতী গ্রন্থনবিভাগ

উজ্জ্বল কুমার মজুমদার (২০১৪, চতুর্থ সংস্করণ), সাহিত্য ও সমালোচনার রূপরীতি, কলকাতা : দে'জ পাবলিকেশান

তপোধীর ভট্টাচার্য (২০১১), প্রতীচ্যের সাহিত্যতত্ত্ব, কলকাতা : দে'জ পাবলিশিং

সুধীর চক্রবর্তী (২০১৪, তৃতীয় মুদ্রণ), বুদ্ধিজীবীর নোটবই, কলকাতা : অক্ষর বিন্যাস

হীরেন চট্টোপাধ্যায় (২০১২), সাহিত্য প্রকরণ, কলকাতা : বঙ্গীয় সাহিত্য সংসদ

Suggestive readings:

বিষ্ণুপদ ভট্টাচার্য, (১৯৫৩),প্রাচীন অলংকার শাস্ত্রের ভূমিকা, কলিকাতা, চলন্তিকা প্রেস

নরেন বিশ্বাস (২০১২, চতুর্থ মুদ্রণ), কাব্যতত্ত্ব অন্বেষা, বাংলাদেশ : অনন্যা

জাহ্নবীকুমার চক্রবর্তী (২৫ বৈশাখ ১৩৬৭), প্রাচীন ভারতীয় সাহিত্য ও বাঙালির উত্তরাধিকার, কলকাতা : ডি এম লাইব্রেরি

নবেন্দু সেন (সম্পা), ২০০৯, পাশ্চাত্য সাহিত্যতত্ত্ব ও সাহিত্যভাবনা, কলকাতা, রত্নাবলী

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category III

B. A. Programme Courses for Undergraduate Programme of study with discipline as one of the Core Disciplines

(For e.g. courses for B.A. Programmes with Bengali as Major & minor discipline)

DISCIPLINE SPECIFIC CORE COURSE- 12 (DSC-12): Bangla Rangamancha O Natok

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Bangla Rangamancha O Natok	4	3	1	NIL	Class 12th pass in any subject	Studied Bengali up to 10th standard Or Working knowledge of Bengali language

Learning Objectives

To give the students an idea about Bengali Drama and its history. It also offers a general idea of the trend of Bengali drama.

Learning outcomes

The course will enlighten the students about the Bengali Drama.

SYLLABUS OF DSC- 12

Unit I (15 Hours)

রঙ্গমঞ্চ –

বাগবাজার অ্যামেচার থিয়েটার, শ্যামবাজার থিয়েটার, ন্যাশনাল থিয়েটার, বেঙ্গল থিয়েটার

Unit II (30 Hours)

নাটক –

একেই কি বলে সভ্যতা – মধুসূদন দত্ত

বিজন ভট্টাচার্য - নবান্ন

বাদল সরকার – এবং ইন্দ্রজিৎ

Primary Resources:

অশোককুমার মিশ্র, ১৯৯৮, বাংলা রঙ্গমঞ্চের রূপরেখা, কলকাতা ঃ বঙ্গীয় সাহিত্য সংসদ

দর্শন চৌধুরী, ১৯৯৫, বাংলা থিয়েটারের ইতিহাস, কলকাতা ঃ পুস্তক বিপনি

বিজন ভট্টাচার্য, ১৯৬২, নবান্ন, কলকাতাঃ দেজ পাবলিশিং

পুষ্পেন্দুশেখর গিরি (সম্পাদনা, ২০০৭), মাইকেল মধুসূদন দত্তের একেই কি বলে সভ্যতা? : সভ্যতার দুই মুখ, কলকাতা : করুণা প্রকাশনী

বাদল সরকার, ১৩৭৫, এবং ইন্দ্রজিৎ, কলকাতাঃ কথাশিল্প

Additional Resources:

অজিত কুমার ঘোষ,(২০১০), বাংলা নাটকের ইতিহাস, দ্বিতীয় সংস্করণ, কলকাতা : দে'জ পাবলিশিং

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

GENERIC ELECTIVES (GE-1): Advance Bengali -I

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Advance Bengali – I	4	3	1	Nil	Class 12th pass in any subject except Bengali	None	Bengali

Learning Objectives:

This course aspires to develop the students' language skills through Bengali popular texts enabling them to have a better grip over its nuance and helping them to expand their vocabulary. Along with higher reading, writing and conversational skills, the course will demonstrate the essentials of translation complex sentences. Through prescribed texts and additional readings, the course also aims to make the students aware about the distinction between the contemporary standard usage and the historical variant prevalent in nineteenth and early twentieth century known as Sadhu Bhasa.

Learning outcomes:

The course will enable the students to deal with the complexities of Bengali language. Along with an advanced reading, writing and conversational competence, it will equip them as better translators as well.

Unit – I

Reading Practice

Text : Satyajit Ray- Sonar Kella

Unit – II

Difference between Sadhu and Chalit Bangla

Unit – III

Complex Sentences Translation (Bengali-English-Bengali)

Unit – IV
Paragraph and Letter Writing

Unit – V
Conversation Practice

Practical component (if any): NIL

Essential/recommended readings:

Chattapadhyay, Sunitikumar, 2011, Saral Bhasaprakash Bangla Byakaran, Prakash Bhawan, Kolkata
Gangapadhyay,Taraknath. 1988, Prabandha Bichitra, vol I&II, Granthabharati, Kolkata
Mahapatra, Tushar Kanti. (1999), Bengali for Benginners, Shishu Sahitya Samsad, Kolkata.
Ray, Satyajit. Sonar Kella,1995, Ananda Publishers, Kolkata

Suggestive readings:

Sen, Sukumar, 2001, Bhasar Itibrittwa, Ananda Publishers, Kolkata
Sohidullah, Muhammad. 2012, Bangla Bhashar Itibrittwa, Maoula Brothers, Dhaka
Study Materials will be provided by the respective department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-2): Advance Bengali -II

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Advance Bengali – II	4	3	1	Nil	Class 12th pass in any subject except Bengali	None	Bengali

Learning Objectives:

This is an advance course in Bengali. The primary objective of this course is to make the students fluent in reading, writing and conversation. The course also aspires to make them a well-equipped translator.

Learning outcomes:
The course will enable a student to be a fluent speaker, an advance level reader and writer.

Unit I
Introduction to Bengali Culture

Unit II
Paragraph Translation (Bengali-English-Bengali)

Unit – III
Reading practice
Text : Satyajit Ray's Jay Baba Felunath

Unit – IV
Paragraph Writing

Practical component (if any): NIL

Essential/recommended readings:
Chattapadhyay, Sunitikumar, 2011, Saral Bhasaprakash Bangla Byakaran, Prakash Bhawan, Kolkata
Gangapadhyay,Taraknath. 1988, Prabandha Bichitra, vol I&II, Granthabharati, Kolkata
Ray, Satyajit. Joy Baba Felunath, 2013, Ananda Publishers, Kolkata

Suggestive readings:
Sen, Sukumar, 2001, Bhasar Itibrittwa, Ananda Publishers, Kolkata
Sohidullah, Muhammad. 2012, Bangla Bhashar Itibrittwa, Maoula Brothers, Dhaka
Study Materials will be provided by the respective department.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

ANNEXURE-54

Sub: Amendment to Ordinance V

(EC Resolution No. 14-1-1/ dated 09.06.2023 and 27-1-6/ dated 25.08.2023)

Following addition be made to Appendix-II-A to the Ordinance V (2-A) of the Ordinances of the University;

Add the following:

Syllabi of Semester-IV, V and VI of following courses under the Department of Modern Indian Languages & Literary Studies (MIL&LS) based on UGCF-2022 implemented from academic year 2022-2023:

1. BA (Prog.) Telugu as Major/ Non-Major/ Pool of Generic Electives – Semester-IV & Semester -V (***As per Annexure-1***)
2. BA (Prog.) Tamil as Major/ Non-Major/ Pool of Generic Electives – Semester-IV, Semester -V and Semester-VI (***As per Annexure-2***)

Annexure-1

SEMESTER-IV DEPARTMENT OF MIL&LS

Sl.No.	Subject	Page No.
1	**BA (Prog.) with Telugu as Major** 1. History of Telugu Literature (16th to 18th Century) 2. Telugu Travelogues	2-5
2	**BA (Prog.) with Telugu as Non-Major** 1. History of Telugu Literature (16th to 18th Century)	6-7
3	**Pool of Generic Electives** 1. Study of literary texts: Telugu Short Stories 2. Advance Telugu	8-11

SEMESTER -IV

DEPARTMENT OF MODERN INDIAN LANGUAGES AND LITERARY STUDIES

BA (Prog.) with Telugu Discipline as Major

Category I

[UG Programme for Bachelor in B.A. (Programme) degree in three years]

SEMESTER-IV
CORE (DSC)

(DSC - 7)

History of Telugu Literature (16th to 18th Century)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title& Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
History of Telugu Literature (16th to 18th Century)	4	03	01	0	Students who have studied Telugu up to 8th Standard	NIL

Learning Objectives

This course gives an outline of Telugu literature. Telugu literature has over a thousand years of history and is one of India's classical languages. The course provides students with a substantive understanding of literature and the history of Telugu. The main aim of the course is to introduce the essential poets and their wrings to Telugu students from the 16th century to the 18th Century.

Learning outcomes

After completing the course, students will understand the History and evaluation of Telugu literature from the 16th to 18th century.

SYLLABUS OF DSC

Unit-I **15 hours**

(i) Features of Prabhanda

(ii) Prabandha poets (1500-1600) or Asta Diggaja poets: An Introduction

Unit-II **15 hours**

(i) Dakshinandra Yugam (1600-1775) – Raghunatha Nayaka, Vijayaraghava nayaka, Chemakura Venkatakavi and others

Unit-III **15 hours**

(i) Ksheena Yugam (1775-1875) – Kankanti paparaju, Enugu Lakshmanakavi, Kuchimanchi Timmakavi and others

Essential/recommended readings

1. Arudra, *Samagrandhra Sahityam,* Hyderabad:Telugu Academi, 2002.
2. Lakshmikantam, Pingali. *Andhra SahityaCharitra.* Hyderabad: Andhra Pradesh Sahitya Academy, 1974.
3. Nageswararao, Kasinathuni. _____: *Andhra Vangmaya Charitramu*, Madras: Andhra Granthamala, _____.
4. Shastri, Dva.Na., *Telugu Sahitya Charitra,* Hyderabad: Pragati Publishers, 2007.
5. Simmanna, Velamala., *Telugu Sahitya Charitra*. Vishakapatnam: Dalita Sahitya Peetham, 2011.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

CORE (DSC)
(DSC - 8)

TELUGU TRAVELOGUES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title& Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Telugu Travelogues	4	03	01	0	Students who have studied Telugu up to 10th Standard	NIL

Learning Objectives

Travel writings in Telugu have a history of nearly two centuries. In recent times, a large number of travel writings have been published. In Telugu newspapers, some pages are specially allotted for travel writing and published it. In recent times, the history of travel writings has continued to be an essential process in Telugu literature. In this course,students will read select parts of the travel writings of some known Telugu travel writers. Students will be able to understand what travel writing is, the unique characteristics of travel writing and traveller, the different classification of travel writing, etc.

Learning outcomes:

This course will give an idea about travel writings in Telugu, and students can write about their personal travel experiences. Students will also understand different typesof writing methods and techniques in this course.

SYLLABUS OF DSC

Unit-1.

Travelogue: An Introduction
India – ancient Foreign travellers

15Hours

Unit-2.
History of Telugu Travelogue **10** Hours

Unit-3.
Prescribed Text: **20** Hours

From Teluguvaari Prayanaalu .

Vennalakanti Subbarao- *Kashtalu Ennivachinnaa Kashiki Vellalinde!*

Enugula Veera Swami-*Vandamandi Parivaramto Kalinadakana Kashiyatra.*

Gurajada Apparao- *Velagada Kondameeda Viharam*

Vuppala Lakhmanarao- *Londanlo Pravarakhydu.*

Kaloji Narayana rao- Parsu Kotteshina Prithviraj Kapoor

Edidam Satyavati- *Priyatamudi Pranalakosam*

Tirumala Ramachandra- *Mohanjadharo-Harappa Nagarala Prayanam*

Sanjeevdev- *Himalayallo Prayanam*

Amarednra- Dharmashalalo Dalailama

Tanguturi Prakasham- *Jeevitanni Marchina Hanumannta Naidu*

M Adinarayana- Swedan lo American Koyila

Essential/recommended readings

1. Adinarayana, M. Teluguvaari Prayanaalu, Emesco, Vijayawada, 2016.
2. Haridasu, Maccha. *Telugulo Yatracharitralu*, Karimnagar: Indu Prachuranalu, 1992.
3. Veeraswamayya, Enugula, Digavalli Venkata Sivarao. Kasiyatra charitra, Bezawada, 1941 (1838).

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF MODERN INDIAN LANGUAGES AND LITERARY STUDIES
UNIVERSITY OF DELHI, DELHI-110007
BA (Prog.) with Telugu Discipline as Non-Major

(DSC - 7)

History of Telugu Literature (16th to 18th Century)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title& Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
History of Telugu Literature (16th to 18th Century)	4	03	01	0	Students who have studied Telugu up to 8th Standard	NIL

Learning Objectives

This course gives an outline of Telugu literature. Telugu literature has over a thousand years of history and is one of India's classical languages. The course provides students with a substantive understanding of literature and the history of Telugu. The main aim of the course is to introduce the essential poets and their wrings to Telugu students from the 16thcentury to the 18th Century.

Learning outcomes

After completing the course, students will understand the History and evaluation of Telugu literature from the 16thto 18th century.

SYLLABUS OF DSC

Unit-I **15 hours**

(iii) Features of Prabhanda
(iv) Prabandha poets (1500-1600) or Asta Diggaja poets: An Introduction

Unit-II **15 hours**

(ii) Dakshinandra Yugam (1600-1775) – Raghunatha Nayaka, Vijayaraghava nayaka, Chemakura Venkatakavi and others

Unit-III **15 hours**

(ii) Ksheena Yugam (1775-1875) – Kankanti paparaju, Enugu Lakshmanakavi, Kuchimanchi Timmakavi and others

Essential/recommended readings

6. Arudra, *Samagrandhra Sahityam,* Hyderabad:Telugu Academi, 2002.
7. Lakshmikantam, Pingali. *Andhra SahityaCharitra.* Hyderabad: Andhra Pradesh Sahitya Academy, 1974.
8. Nageswararao, Kasinathuni. _____: *Andhra Vangmaya Charitramu*, Madras: Andhra Granthamala, _____.
9. Shastri, Dva.Na., *Telugu Sahitya Charitra,* Hyderabad: Pragati Publishers, 2007.
10. Simmanna, Velamala., *Telugu Sahitya Charitra*. Vishakapatnam: Dalita Sahitya Peetham, 2011.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Study of literary texts: Telugu Short Stories

Generic Elective
(GE-A)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title& Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Study of literary texts: Telugu Short Stories	4	03	01	0	Students who have not studied Telugu up to 8th Standard	NIL

Learning Objectives

Short stories became one of the popular literary genres in Telugu literature. The course's main aim is to introduce European thoughts' influence on Telugu literature. This course will also discuss the Telugu literary heritage of storytelling - socio-political issues in Telugu short stories and contemporary trends and approaches in Telugu short story writing.

Learning outcomes

Students will be able to understand the history of Telugu short stories and their unique features. Students will get knowledge of important short story writers in Telugu. Students will be able to analyse the texts critically

SYLLABUS OF GE

Unit I **15**Hours

origin and Development of the Telugu short story

Unit II **15**Hours

Features of Telugu short story

Unit III **15**Hours

Select short stories

i. *Mee Peremiti* by Gurajada Appa Rao
ii. *Bharya* by Gudipati Venkata Chalam
iii. *Galivana* by Palagummi Padma Raju
iv. *Vendi Kancham* by Munimanikyam Narasimha Rao
v. *Moksham* by Ravi Sastry
vi. *Sampenga Puvvu* by Gopichand
vii. *Uri Chivara Illu* by Devarakonda Balagangadhara Tilak
viii. *Arti* by Olga
ix. *Supermom Syndrome* by P. Satyavati
x. *Kappadalu* by Toleti Jaganmohan rao

Essential/recommended readings

1. Dakshinamurti, Poranki. Kathanika Swarupa Swabhavalu, Hyderabad:_____, 1977.
2. Jampala Chaudari & A.K. Prabhakar.Rendu Dashabdalalu Telugu Katha 1990-2009, Secunderabad: Katha Sahiti, 2010.
3. Pandu Rangarao, Vakati, & Vedagiri Rambabu, Bangaru Kathalu, New Delhi: Sahitya Akademi, 2001.
4. Venkata Subbaiah, Vallampati. Katha Shilpam, Hyderabad: Visalandhra Publishing House, 1995.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVE
(GE-B)

Advance Telugu

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title& Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Advance Telugu	4	03	01	0	Students who have studied Intermediate Telugu	NIL

Learning Objectives

This is an advanced course in Telugu. The primary objective of this course is to make the students fluent in reading, writing and conversation. The course also aspires to make them well-equipped as translators.

Learning outcomes

The course will enable a student to be a fluent speaker, advanced reader and writer.

SYLLABUS OF GE

Unit I **9**Hours

Introduction to Telugu Culture

Unit II **9**Hours

Paragraph translation (Telugu-English-Telugu)

Unit III **9**Hours

Reading Practice

Text: Text: Select lessons from Telugu Vachakam 5th Class published by Telugu Akademi

Unit IV **9** Hours

Paragraph Writing

Unit V **9** Hours

Conversation writing

Essential/recommended readings

1. Arden, A H., *A progressive grammar of the Telugu language.* 2nd ed. Madras: Society for promoting Christian knowledge, 1905.
2. Krishnamurti, B. and Gwynn, J. P. L., *A Grammar of Modern Telugu.* USA:Oxford University Press, 1986.
3. Parandhama Reddy, M. and Venkateswara Shastri,J. *Telugu Velugu- I.* . Mysore: Central Institute of Indian Languages, 1997.
4. *Ramanarasimham, Parimi.An Intensive Course in Telugu.* Mysore: Central Institute of Indian Languages, 1985.
5. Sanjay, D., *Spoken Telugu for Absolute Beginners*. _____: _____, 2019.
6. Venkatavadhani, Divakarla. *Telugu in Thirty Days.* Hyderabad. Andhra Pradesh Sahitya Academy, 2017.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER-V
DEPARTMENT OF MIL&LS

SL.NO.	SUBJECT	PAGE NO.
1	**BA (Prog.) with Telugu as Major** 1. Literary Criticism in Telugu 2. Study of Telugu Folklore	2-5
2	**BA (Prog.) with Telugu as Non-Major** 1. Literary Criticism in Telugu	6-7
3	**Pool of Generic Electives** 1. Language in Films 2. Specific Literary Terms	8-11

SEMESTER -V

BA (PROG.) WITH TELUGU DISCIPLINE AS MAJOR

SEMESTER-V
CORE (DSC)

(DSC - 9)

Literary criticism in Telugu

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Literary Criticism in Telugu	4	03	01	0	Students who have studied Telugu up to 8th Standard	NIL

Learning Objectives

Literary criticism is very important tool to understand literary texts. Telugu critics havefollowed ancient Sanskrit literary theories in their writings in the beginning and after Englisheducation; critics have applied western literary theories in their literary writing. In this coursestudents are going to study both Indian and western literary theories in Telugu.

Learning outcomes

After learning this course student will understand about the ancient Indian literary theories in Telugu and influence of modern western literary theories in Telugu literature.

SYLLABUS OF DSC

Unit-I **15 hours**

Definition of criticism, Features of literary critic, Definition of Kavya, Features of kavya, Causes of poetry.

Unit-II **15 hours**

Indian literary theories: Alankara, Reeti, Dhvani,, Vakrokti, Rasa Guna, Auchitya Traditions.

Unit-III **15 hours**

Modern literary theories in Telugu. Kalpanika , Hetuvada, Abhyudaya, Digambara, chetanavartana, Viplava, Streevada, Dalitavada, Minority vada Sahitya Vimarasha.

Essential/recommended readings

1. Enoch, Kolakaluri., 1999, Principle of modern literary criticism, Anantapur: Jyoti granthmala.
2. Sriramachandrudu, Pullela., 1999, Alankara Shastramu-Adhunika Sahityamu, Hyderabad: Samskruta Bhasha Prachara Samiti.
3. Venkatavadhani, Divakarla., 1978, Sahitya Sopanamulu, Hyderabad: Andhra Saraswata Parishattu.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER-V
CORE (DSC)
(DSC - 10)

STUDY OF TELUGU FOLKLORE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Study of Telugu Folklore	4	03	01	0	Students who have studied Telugu up to 10th Standard	NIL

Learning Objectives

The aim of the course is to teach Telugu folklore and culture. In this course, students will read, discuss and write about folk studies and cultural studies since colonial times. Students would find out the relation between folklore and culture and context through Literature. This course also intends students to discuss the influence and impact of the folk literature on Telugu literary forms. The course focuses on themes such as Oral Telugu literature, Material culture, Festivals etc. Students will also understand the necessity of collection, preservation and printing of folklore in the modern age.

Learning outcomes:

By reading select prescribed texts, students would develop an understanding of the characteristics and purpose of folklore and culture. Students would also understand ancient culture and traditions preserved in Telugu folklore and develop faculties of critical observation and analysis.

SYLLABUS OF DSC

Unit-1. **15** Hours

(i) Meaning and definition of Folklore and Culture; Origin, Development, uses and distinct forms of Folklore.
(ii) Oral folk literature in Telugu: Folk songs and their features

Unit-2. **10** Hours.

(i) Telugu folklore and Material culture: food and beverages, clothes. Festival

Unit-3. **20** Hours

(i) Tradition and Custom in Telugu folklore.
(ii) Festivals in Telugu folklore.

Essential/recommended readings

1. Ramaraju, Birudaraju (Krishna Kumari, Nayani. (Tran.)) 2001, *Sampradayalu - Acharalu and Pandugalu-Jataralu* (pp. 34-87) in Andhra Pradesh Janapada Sahityamu, Samskruti, Delhi: National Book Trust, India.
2. Sundaram, R.V.S. 1983, Praveshika (pp. 1-21), Maukhika Janapada Vignanamu, (pp. 43-50) & Vastu samskruti (pp. 363-388) in Andhrula Janapada Vignanam, , Hyderabad: Andhra Pradesh Sahitya Academy.
3. Krishna Kumari, Nayani, 1977, *Telugu Janapadageya gathalu*. Hyderabad: Andhra Saraswata Parishattu.
4. _____. 2000, *Telugu janapada vignanamu : samajam sanskruti-sahityam*, Hyderabad: Potti Sreeramulu Telugu University.
5. Ramacharyulu. B., 1990, *Shishtasahityamlojanapadadhoranulu*. Hyderabad:_____.
6. Mohan. G.S., 1993, *Prasiddajanapadavignanavettalu*, Mayayanuru: Shrinivasa publications.
7. _____ . 2001, *Janapadavignanadyayanam*. Bangalore.: Shrinivasa publications.
8. Ramaraju, B., 1998,*Telugu Janapadageyasahityam*, Hyderabad:Janapdavijanapracuranalu.
9. Ruknuddin, K., 1989, *Janapdasahityamloalankaravidhanam*, Hyderabad:Kalavakurthi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

BA (PROG.) WITH TELUGU DISCIPLINE AS NON-MAJOR

CORE (DSC)

(DSC - 9)

Literary criticism in Telugu

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Literary Criticism in Telugu	4	03	01	0	Students who have studied Telugu up to 8th Standard	NIL

Learning Objectives

Literary criticism is very important tool to understand literary texts. Telugu critics havefollowed ancient Sanskrit literary theories in their writings in the beginning and after Englisheducation; critics have applied western literary theories in their literary writing. In this coursestudents are going to study both Indian and western literary theories in Telugu.

Learning outcomes

After learning this course student will understand about the ancient Indian literary theories in Telugu and influence of modern western literary theories in Telugu literature.

SYLLABUS OF DSC

Unit-I **15 hours**

Definition of criticism, Features of literary critic, Definition of Kavya, Features of kavya, Causes of poetry.

Unit-II **15 hours**

Indian literary theories: Alankara, Reeti, Dhvani,, Vakrokti, Rasa Guna, Auchitya Traditions.

Unit-III **15 hours**

Modern literary theories in Telugu. Kalpanika , Hetuvada, Abhyudaya, Digambara, chetanavartana, Viplava, Streevada, Dalitavada, Minority vada Sahitya Vimarasha.

Essential/recommended readings

1. Enoch, Kolakaluri., 1999, Principle of modern literary criticism, Anantapur: Jyoti granthmala.
2. Sriramachandrudu, Pullela., 1999, Alankara Shastramu-Adhunika Sahityamu, Hyderabad: Samskruta Bhasha Prachara Samiti.
3. Venkatavadhani, Divakarla., 1978, Sahitya Sopanamulu, Hyderabad: Andhra Saraswata Parishattu.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

POOL OF GENERIC ELECTIVES
(GE-A)

LANGUAGE IN FILMS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Language in Films	4	03	01	0	Students who have studied Telugu up to 8th Standard	NIL

Course objectives

The course will examine the use of Telugu language in select films and focuses on a multitude of changes in course of time. Students would be trained to critically examine available movie scripts and look at the screen adaptations of novels and short stories. This is purposed to understand and identify the refined use of language to initiate successful expression of aesthetic emotions on screen and how the culture and society influence its various manifestations.

Course Learning Outcomes:

This course will be enable students to understand the Telugu language in films from beginning to till the date and dialect of Andhra, Rayalaseema and Telangana in the Telugu films and poetics in Telugu film songs.

SYLLABUS OF GE

Unit-I **7 hours**

(i) Introduction to Telugu Language in films.

Unit-II **7 hours**

(i) Chronicling language variations.

Unit-III **7 hours**

(i) Representation of Andhra, Rayalaseema and Telangana dialects.

Unit-IV **8 hours**

(i) A linguistic purview of recent films.

Unit-V **8 hours**

(i) Character and Dialogue writing.

Unit-VI **8 hours**

i. Film Song: Poetic use of language in films.

Essential/recommended readings

1. Gopalakrishna, Paruchuri .,2003,*TeluguCinema Sahityam: Kathakathanam - Silpam* , Hyderabad : V -Tech Publication.
2. Jaganmohan, T.S . 2011, *Devadasu Cinema Navala*, Hyderabad :Creative Links.
3. KondalaRao, Raavi . *MayabazarCinema Navala*, Hyderabad: R . K. Books.
4. KoteswaraRao, Chittiboyina ., 2012, Cinema Patalalo Sahityapu Viluvalu (1936 - 1986), Visakhapatnam :_____.
5. KutumbaRao, Kodavatiganti. 2000, Cinema Vyasalu (Vols.1 & 2), Visakhapatnam:
6. Viplava Rachayitala Sangham.
7. Manjulatha, Avula ., 2008, *Telugu Cinema Bhasha: Vyasavali* , Hyderabad : PS Telugu
8. Viswavidyalayam,
9. Paidipala, 1992, *Telugu Cinema Paata*, Vijayawada: Navodaya Publishers,
10. Raghavaiah, Vedantam . (Dir), 1953, *Devadasu. 191 min,* Vinoda Pictures.
11. Venkata Reddy, Kadiri(Dir.), *Mayabazar. 184 Min*, VijayaVahini Studios. Telugu.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF MODERN INDIAN LANGUAGES AND LITERARY STUDIES
UNIVERSITY OF DELHI, DELHI-110007

SEMESTER-V
GENERIC ELECTIVE
(GE-B)

SPECIFIC LITERARY TERMS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Specific Literary Terms	4	03	01	0	Students who have not studied Telugu up to 10th Standard	NIL

Learning Objectives

This course offers a glimpse into the exciting world of literary terms, critical theories and points of view that are commonly used in East and West to classify, analyze, interpret, and write the history of works of literature.

Learning outcomes

The purpose of the study is to help students identify and absorb the essential terms and devices used by authors to gain a thorough understanding of the works and to keep them current with the rapid and incessant changes in the literary and critical scene and, to take into account new publications in literature, criticism, and scholarship.

SYLLABUS OF GE

Unit-I **15 hours**

Essential Terms: Metaphor, Simile, Analogy, Hyperbole, Allusion, Euphemism, Paradox, Oxymoron, Satire, Onomatopoeia, Alliteration, Allegory and Irony.

Unit-II **15 hours**

Critical Theories and Perspectives: Introduction to aesthetic theories of Rasa, Auchitya and Anumana; Critical perspectives of Feminism, Marxism and Psychoanalysis.

Unit-III **15 hours**

Literary Forms: Poetry, Novel, Short Story, Drama, Essay, Biography, Autobiography and Travelogue.

Essential/recommended readings

1. Lakshmikantam, Pingali, 1978: *SahityaSilpaSameeksha*, Madhavi Book Centre, Sultan Bazar, Hyderabad – 500 027.
2. Gopalakrishna, Paruchuri, 2003, *Telugu Cinema Sahityam, Kathaakathanam, Silpam*, Hyderabad: V-Tech Publications.
3. NagabhushanaSarma, Modali, 2008, *NatakaSilpam*, Hyderabad: Visalandhra Publishing House.
4. Narasimham, KVR., 1973, *Sahityadarsanamu*, Visakhapatnam: K. Haranath& Brothers.
5. Ramakrishnamacharya, Nanduri., 1995, *PadyaSilpam*, Vijayawada: Visalandhra Publishers.
6. Venkatasubbaiah, Vallampati., 1989, *NavalaSilpamu*, Hyderabad: Visalandhra Publishing House.
7. Venkatasubbaiah, Vallampati., 1995, *Katha Silpamu*, Hyderabad: Visalandhra Publishing House.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

ANNEXURE-2

SEMESTER -IV

DEPARTMENT OF MIL&LS (Category II)

(*B.A (Prog.) Courses* for Undergraduate Programme of study with *Tamil Discipline* as one of the Core Disciplines)

DISCIPLINE SPECIFIC CORE COURSE (DSC): Culture Behaviour of Tamils)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Cultural Behaviour of Tamils	**04**	**03**	**01**	**-**	**Class 12th pass**	**Students who have studied the Tamil language up to Class XII**

Course Objectives:

The aim of the course is to acquaint the students with the meaning of culture and the various manifestations of culture such as social customs, clan traditions, family customs, rituals, festivals, belief on comen etc. The study will enable the students to understand the social, religious and cultural significance of the history and behavioral patterns exhibited by the people in the society, based on cultural beliefs.

Learning Outcomes:

The study will enable the students to know the evolution of culture and to understand the various cultural issues facing the present society.

SYLLABUS OF DSC

Total Hours of Teaching: 60 Hrs
(Lecture-45 Hrs, Tutorials -15 Hrs)

Unit-I (L-09 Hrs, T-03Hrs)

- Meaning and definition of Culture

Unit -II (L-09 Hrs, T-03 Hrs)

- Behavioral Pattern of Society

Unit -III (L-09 Hrs, T-03 Hrs)

- Cultural Issues

Unit -IV (L-09 Hrs, T-03 Hrs)

- Festivals and Rituals

Unit -V (L-09 Hrs, T-03 Hrs)

- History of Culture

Essential/recommended Readings:

1. Dakshinamoorthy.A.1999.Tamilar Nagarikamum Panpadum,Chennai : Yazh Veliyeedu.
2. Paramasivan, T., 2001, *Paṇbāṭṭu Asaivugaḷ*, Nagercoil: Kalachuvadu Padippagam.

Suggestive Readings (if any):

1. Saktivel, S., 2016, *Nāṭṭuppuṟaviyal Āyvu*, (Chapters 8-13 only), Chennai: Manivasagar Padippagam.
2. Somale. 1981. *Taminattu Makkalin Marabum Panpadum*. New Delhi: NBT
3. Venkatachalapathy. A.R. 2006. In Those Days There was No Coffee: Writings in Cultural History, New Delhi: Yoda Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE (DSC): Study of Tamil Short Stories

(This course is Common in B.A (Programme) with Tamil as Major Discipline)

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Study of Tamil Short Stories	**04**	**03**	**01**	**-**	**Class 12th pass**	**For students who have studied the Tamil language up to Class Xth & above.**

Learning Objectives:

Introduction of European thoughts in Tamil land - impact of missionaries and European administration - introduction of print medium and modern education - emergence of modernity in Tamil - development of new literary genres: prose, non-fiction, novel, short story and modern poetry - development of novel as narratives in Tamil.

Learning Outcomes:

The study will motivate the students to develop their Tamil literary heritage of storytelling - socio-political issues in fiction writings - emergence of various genres in short stories - representation of short stories from the first Tamil short story to contemporary novels - trends and various approaches in fiction writing.

SYLLABUS OF DSC

Total Hours of Teaching: 60 Hrs
(Lecture-45 Hrs, Tutorials -15 Hrs)

Unit-I (L-09 Hrs, T-03Hrs)

- Introduction to Tamil Fiction

Unit-II (L-09 Hrs, T-03Hrs)

- Role of Fiction in TamilLiterature

Unit –III (L-09 Hrs, T-03Hrs)

- Folk Elements & Language in short story

Unit -IV (L-09 Hrs, T-03Hrs)

- Characterization and short story

Unit -V (L-09 Hrs, T-03Hrs)

- History and Culture of Tamils Reflected in Short story

References:

Compulsory Readings:

1. Aaravinth Swaminathan, 2022. Booloka Rahasiyam, Coimbatore: Pavithra Pathippakam.
2. Singaravelan (Edr.)2017. Mann Manakkum Kathaikal, Trichy: Saratha Publishers.

Additional Resources:

1. Varadarajan, M., 1972, *Tamiḻ Ilakkiya Varalāṟu*, New Delhi: Sahitya Akademi
2. Sivathambi Karthikesu, 1980, Thamizhil Sirukathaiyin Thotramum Valarchiyum, Chennai, Thamizh Puthakalayam.
3. G.Devaneyap Paavanar, Thamizh Ilakkiya Varalaru, Ilankumaran Pathippakam, Chennai: 2017.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category III

(*B.A (Prog.)* with *Tamil Discipline* as Non-Major

DISCIPLINE SPECIFIC CORE COURSE (DSC): Study of Tamil Short Stories

(This course is Common in B.A (Programme) with Tamil as Major Discipline)

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Study of Tamil Short Stories	**04**	**03**	**01**	**-**	**Class 12th pass**	**For students who have studied the Tamil language up to Class Xth & above.**

Learning Objectives:

Introduction of European thoughts in Tamil land - impact of missionaries and European administration - introduction of print medium and modern education - emergence of modernity in Tamil - development of new literary genres: prose, non-fiction, novel, short story and modern poetry - development of novel as narratives in Tamil.

Learning Outcomes:

The study will motivate the students to develop their Tamil literary heritage of storytelling - socio-political issues in fiction writings - emergence of various genres in short stories - representation of short stories from the first Tamil short story to contemporary novels - trends and various approaches in fiction writing.

SYLLABUS OF DSC

Total Hours of Teaching: 60 Hrs

(Lecture-45 Hrs, Tutorials -15 Hrs)

Unit-I (L-09 Hrs, T-03Hrs)

- Introduction to Tamil Fiction

Unit-II (L-09 Hrs, T-03Hrs)

- Role of Fiction in TamilLiterature

Unit –III (L-09 Hrs, T-03Hrs)

- Folk Elements & Language in short story

Unit -IV (L-09 Hrs, T-03Hrs)

- Characterization and short story

Unit -V (L-09 Hrs, T-03Hrs)

- History and Culture of Tamils Reflected in Short story

References:

Compulsory Readings:

3. Aaravinth Swaminathan, 2022. Booloka Rahasiyam, Coimbatore: Pavithra Pathippakam.
4. Singaravelan (Edr.)2017. Mann Manakkum Kathaikal, Trichy: Saratha Publishers.

Additional Resources:

4. Varadarajan, M., 1972, *Tamiḻ Ilakkiya Varalāṟu*, New Delhi: Sahitya Akademi
5. Sivathambi Karthikesu, 1980, Thamizhil Sirukathaiyin Thotramum Valarchiyum, Chennai, Thamizh Puthakalayam.
6. G.Devaneyap Paavanar, Thamizh Ilakkiya Varalaru, Ilankumaran Pathippakam, Chennai: 2017.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

GENERIC ELECTIVES (GE-4): Advance Tamil

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Advance Tamil	04	03	01	-	Class 12th pass	For students who have not studied the Tamil language	Department of Modern Indian Languages-Tamil

Learning Objectives:

This semester course aims at creating an awareness of Dynamics of Tamil words and introducing classification weak & strong verbs- Infinitive forms of Verbs Auxiliaries and Tamil script learning.

Learning Outcomes:

The course will enable the students to obtain the skills of reading, writing and speaking in Tamil along with building up a vocabulary. After the course they can read and write Tamil sentences, can figure out words having conjunct character, and can have everyday conversation.

SYLLABUS OF GE

Total Hours of Teaching: 60 Hrs
(Lecture-45 Hrs, Tutorials -15 Hrs)

Tense and Negative formations:

Unit -I (L-09 Hrs, T-03Hrs)

- **Creating writing of News**

Unit -II (L-09 Hrs, T-03Hrs)

- Reading News items

Unit -III (L-09 Hrs, T-03Hrs)

- Writing small captions

Unit -IV (L-09 Hrs, T-03Hrs)

- **News reading & Preparation of News captions**

Unit -V (L-09 Hrs, T-03Hrs)

Practicals: Listening Radio News -Reading News item-Writing Synopsis & Headlines for the News

Reading list:

1. *Asher, R.E. Colloquial Tamil, Routledge (Lesson 1), London. 2002.*
2. *Rajaram, S. An Intensive Course in Tamil (Unit. 4), CIIL, Mysore, 1987.*
3. *Arokianathan, S. Spoken Tamil for Foreigners, (Lesson 1-5) A-team Info Media Publishers Pvt. Ltd, Chennai. 2012.*
4. *Hart, Kausalya. Tamil for Beginners Part I & II, (Lesson 1- 5 & 10) Centre for South and South East Asia, University of California at Berkeley, 1992.*
5. *Karunakaran, K. & Balakrishnan.R. Elementry Tamil (Introductory Course), Sabanayagam Printers, Chidambaram, 2001.*
6. Nuhman, M.A, 2010, Adippadait Tamil Ilakkanam, Puthanatham, Adaiyalam Publications.
7. *Thamizhannal, 1989, Ungal Tamizhai Therinthu kollungal, Madurai, Meenakshi Puththaka Nilayam.*

Suggestive readings: NIL

GENERIC ELECTIVES (GE-4: Essay writing in Tamil

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Essay Writing in Tamil	**04**	**03**	**01**	**-**	**Class 12th pass**	**For students who have studied the Tamil language up to 10th standard and above.**	**Department of Modern Indian Languages-Tamil**

Learning Objectives:

The purpose of the course is to train students to write a good essay with a focused subject of discussion in eminently readable Tamil.

Learning Outcomes:

The course would enlighten the students fashioning a coherent set of ideas into an argument, analyzing the facts and figures collected, raising counter arguments and preparing a conclusion which are intended to be explained through some of the best writings of celebrated essayists.

SYLLABUS OF GE
Total Hours of Teaching: 60 Hrs
(Lecture-45 Hrs, Tutorials -15 Hrs)

Unit I (L-09 Hrs, T-03Hrs)

Writing Essay:

- Developing an argument that encapsulates the response to the question –
- Creating a logical sequence of ideas – introducing the subject – providing
- Supporting evidence for the main body of the essay – summarizing the
- Ideas – editing the draft and preparing the final copy.

Unit II(L-09 Hrs, T-03Hrs)

Types of Essays:

- Expository, Persuasive, Analytical and Argumentative

Unit III (L-09 Hrs, T-03Hrs)

- Academic and Professional Writing:
- Critical Essay and Research Article

Unit-IV (L-09 Hrs, T-03Hrs)

- The Art of Essay Writing: Technical Aspects

Unit V (L-09 Hrs, T-03Hrs)

- Practice of Essay Writing

Essential/recommended Readings:

1. Poornachandran, K., 2006, *Aṟiviyal Kaṭṭuraigaḷ*, Chennai: Arivu Padippagam.
2. Nannan, M., 2006, *Nalla Urainaḍai Eḻuda Vēṇḍumā?*, Chennai: Egam Padippagam

Suggestive Readings:

1. Paranthamanar, A.K., 1972, *Nalla Tamiḻ Eḻuda Veṇḍuma*? Chennai: Pari Nilaiyam.
2. Alexi Tolstoy, 2016. Eḻudum Kalai, Chennai: NCBH
3. 2. Shanmugam. S.V. 2013. Pēccum Eḻuttum, Chennai: NCBH.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category II

SEMESTER-V

(*B.A (Prog.)* with *Tamil Discipline* as Minor

DISCIPLINE SPECIFIC CORE COURSE (DSC-5): Study of Selected Tamil Modern Poetry

(This course is Common in B.A (Programme) with Tamil as Major Discipline)

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Study of Selected Texts: Modern Tamil Poetry	04	03	01	-	Class 12th pass	For students who have studied the Tamil language up to Class Xth & above.

Learning Objectives:

The aim of the course is to enable the students to analyze the Emergence of modernity in Tamil - development of new literary genres - prose, non-fiction, and modern poetry - emergence and development of modern poetry - earlier attempts and various schools of modern poetry - major poets and their contribution - contemporary developments.

Learning Outcomes:

The study will motivate the students to develop their Tamil literary heritage - Socio-Political issues - emergence of various genres - representation of poetry - trends and various approaches in poetry writing - reading and analysis of modern poetry.

SYLLABUS OF DSC-5

Total Hours of Teaching: 60 Hrs

(Lecture-45 Hrs, Tutorials -15 Hrs)

Unit-I (L-09 Hrs, T-03Hrs)

- History of Modern Poetry

Unit-II (L-09 Hrs, T-03Hrs)

- Emergence of new literary genres

Unit –III (L-09 Hrs, T-03Hrs)

- Depiction of Women in Modern Tamil Poetry

Unit -IV (L-09 Hrs, T-03Hrs)

- Characterization in Modern Poetry

Unit -V (L-09 Hrs, T-03Hrs)

- History and Culture of Tamils Reflected in Modern Poetry

References:

Compulsory Readings:

1. Barathidasan, 1962. ***Thamizhachchiyin Kaththi,*** Chennai: Vanathi Pathippakam. .
2. Thamizh Oli.2017.***Veeraayi*****,** Chennai: Pukazh Puthakalayam.

Additional Resources:

1. G.Devaneyap Paavanar, Thamizh Ilakkiya Varalaru, Ilankumaran Pathippakam, Chennai: 2017.
2. Mannar Mannan, 1985, Karuppuk Kuyilin̲ Neruppuk Kural, Viluppuram: Muthu Padippagam.
3. Arunan.2009. Mupperug Kavingarkal, Madurai: Vasantham Veliyeettakam.
4. Ananthan.A.2014.Bharathidasan Tamil Adaiy¬¬alam, Chennai: Kavya.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category II

(*B.A (Prog.) Courses* for Undergraduate Programme of study with *Tamil Discipline-Major* as one of the Core Disciplines)

DISCIPLINE SPECIFIC CORE COURSE (DSC-5): Study of Selected Tamil Classical Poetry

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Study of Selected Texts : Classical Tamil Poetry	04	03	01	-	Class 12th pass	Students who have studied the Tamil language up to Class XII

Course Objectives:

The aim of the course is to enable the students to analyze the work of an author intensively so that the students can have a deep insight into the period in which the work was written, the life styles of the people, historical information such as kings, forts and palaces, description of nature, knowledge of fauna and flora, various forms of love and above all the message of the author as embodied in the work.

Learning Outcomes:

The study will motivate the students to develop their literary interests, tastes and creative abilities.

SYLLABUS OF DSC
Total Hours of Teaching: 60 Hrs
(Lecture-45 Hrs, Tutorials -15 Hrs)

Unit-I (L-09 Hrs, T-03Hrs)

- Concept of *Akam* and *Puṟam*

Unit -II (L-09 Hrs, T-03 Hrs)

- Hero-Heroine of the Poem

Unit -III (L-09 Hrs, T-03 Hrs)

- Emotional Expression of Characters

Unit -IV (L-09 Hrs, T-03 Hrs)

- Festivals and Rituals

Unit -V (L-09 Hrs, T-03 Hrs)

- Culture & Customs of the Text

Essential/recommended Readings:

1. Saminathaiyar, Dr. U.Ve., (Ed.), 1961, ***Neḍunalvāḍai*** (Pattuppāṭṭu Mūlamum Nachinārkkiṉi-yar Uraiyum), Chennai: Kabir Accagam.
2. Mankudi Maruthanaar, ***Mathurai Kanchi***, 1961. (Pattuppāṭṭu Mūlamum Nachinārkkiṉi-yar Uraiyum), Chennai: Kabir Accagam.

Suggestive Readings (if any):

1. Dandayutham, 1978, *Sanga Ilakkiyam (Pattuppāṭṭu)*, Chennai: Tamiḻp Puttagalayam.
2. Yazh Chandra, 2008, *Neḍunalvāḍai Viḷakkamum Nayavuraiyum*, Madurai: Chellappa Pathippagam.
3. Varadarajan.M., 1969, *Pattuppāṭṭu*c *Corpoḻivugaḷ - Neḍunalvāḍai*, Chennai: Kilakku Veliyidu.
4. Rasamanikkanar.M. 2012. Paththuppaattu Aaraichi, Chennai : Sakithya Akademi.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

GENERIC ELECTIVES (GE-5): Advance Tamil -II

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Advance Tamil -II	04	03	01	-	Class 12th pass	For students who have not studied the Tamil language	Department of Modern Indian Languages-Tamil

Learning Objectives:

The primary objective of this Paper is introducing Perfect tense formation-Continuous tense formation -Comparative Clause etc.

Learning Outcomes:

The course will enable the students to obtain the skills of reading, writing and speaking in Tamil along with building up a vocabulary. After the course they can read and write Tamil sentences, can figure out words having conjunct character, and can have everyday conversation.

SYLLABUS OF GE

Total Hours of Teaching: 60 Hrs
(Lecture-45 Hrs, Tutorials -15 Hrs)

Unit -I (L-09 Hrs, T-03Hrs)

- Listening Radio News

Unit -II (L-09 Hrs, T-03Hrs)

- Reading News items

Unit -III (L-09 Hrs, T-03Hrs)

- Writing Synopsis & Headlines for the News

Unit -IV (L-09 Hrs, T-03Hrs)

- News reading & Preparation of News captions

Unit -V (L-09 Hrs, T-03Hrs)

Practicals: Listening Radio News -Reading News item-Writing Synopsis & Headlines for the News

Reading list:

1. *Asher, R.E.* ***Colloquial Tamil****, Routledge* ***(Lesson 1),*** *London. 2002.*
2. *Rajaram, S.* ***An Intensive Course in Tamil (Unit. 4),*** *CIIL, Mysore, 1987.*
3. *Arokianathan, S.* ***Spoken Tamil for Foreigners, (Lesson 1-5****) A-team Info Media Publishers Pvt. Ltd, Chennai. 2012.*
4. *Hart, Kausalya.* ***Tamil for Beginners Part I & II, (Lesson 1- 5 & 10****) Centre for South and South East Asia, University of California at Berkeley, 1992.*
5. *Karunakaran, K. & Balakrishnan.R.* ***Elementry Tamil (Introductory Course),*** *Sabanayagam Printers, Chidambaram, 2001.*
6. Nuhman, M.A, 2010, ***Adippadait Tamil Ilakkanam***, Puthanatham, Adaiyalam Publications.
7. *Thamizhannal, 1989,* ***Ungal Tamizhai Therinthu kollungal****, Madurai, Meenakshi Puththaka Nilayam.*

Suggestive readings: NIL

GENERIC ELECTIVES (GE-5: Specific Literary Terms (Tamil)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Specific Literary Terms (Tamil)	04	03	01	-	Class 12th pass	For students who have studied the Tamil language up to 10th standard and above.	Department of Modern Indian Languages- Tamil

Learning Objectives:

This course offers a glimpse into the exciting world of literary terms, critical theories and points of view that are commonly used in East and West to classify, analyze, interpret, and write the history of works of literature.

Learning Outcomes:

This purpose of the study is to help students identify and absorb the essential terms and devices used by authors to gain a thorough understanding of the works and to keep them current with the rapid and incessant changes in the literary and critical scene and to take into account new publications in literature, criticism and scholarship.

SYLLABUS OF GE

Total Hours of Teaching: 60 Hrs

(Lecture-45 Hrs, Tutorials -15 Hrs)

Unit I (L-09 Hrs, T-03Hrs) :

- Definition, Identification and Usage of Literary Techniques in Tamil Literture

Unit II(L-09 Hrs, T-03Hrs)

- Comparison of Literary Techniques with East and West

Unit III (L-09 Hrs, T-03Hrs)

- Essential Terms: Metaphor, Simile, Analogy, Hyperbole, Allusion, Satire, and Irony

Unit-IV (L-09 Hrs, T-03Hrs)

- Critical Theories and Perspectives:Introduction to aesthetic theories of *Meyppāḍu* and critical Perspectives of Feminism and Marxism

Unit V (L-09 Hrs, T-03Hrs)

- Literary Forms: Sangam Literature, Modern Poetry, Novel, Short Story and Drama

Essential/recommended Readings:

1. Tamilannal, 1986, ***Ilakkiyak Koḷgaigaḷ – Uḷḷuṟai***, Madurai: Meenakshi Puttaga Nilaiyam,
2. Sivalinganar, A, 1985, ***Tolkāppiyam Kūṟum Uḷḷuṟaiyum Iṟaiccyumi*****,** Chennai: Ulagattamiḻk Kalvikkaḻagam.
3. Sachidanandan, V., 1983, ***Mēlai Ilakkiyac Collagarādi***, Madras: Macmillan India Ltd.

Suggestive Readings: **NIL**

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

SEMESTER-VI

Category II

(*B.A (Prog.)* with *Tamil Discipline* as Minor

DISCIPLINE SPECIFIC CORE COURSE (DSC-6): Study of Selected Plays

(This course is Common in B.A (Programme) with Tamil as Major Discipline)

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Study of Selected Plays- Tamil	04	03	01	-	Class 12th pass	Students who have studied the Tamil language up to Class XII

Course Objectives:

Emergence of modernity in Tamil - development of new literary genres - non-fiction, novel, short story , modern poetry & Play - emergence and development of modern play - earlier attempts and various schools of modern Drama, play - major play Directors and their contribution - contemporary developments.

Learning Outcomes:

This study will enable the students to understand the Ancient forms of Tamil Drama – *Kūttu*, a traditional Tamil theatre - Tamil theatre tradition - European drama and Tamil dramatists - emergence of new theatre performance - dramatic works in modern period - post independent Tamil drama - emergence of new theatre movements - reading and analysis of modern plays.

SYLLABUS OF DSC-6
Total Hours of Teaching: 60 Hrs
(Lecture-45 Hrs, Tutorials -15 Hrs)

Unit-I (L-09 Hrs, T-03Hrs)

- Outline of Modern Street Play

Unit -II (L-09 Hrs, T-03 Hrs)

- Language in Tamil Drama

Unit -III (L-09 Hrs, T-03 Hrs)

- Characters in Tamil Plays

Unit -IV (L-09 Hrs, T-03 Hrs)

- Social issues in Tamil Drama

Unit -V (L-09 Hrs, T-03 Hrs)

- Technical part of Tamil plays.

Essential/recommended Readings:

3. Neythal Krishnan & Satheeswaran (Edrs.). 2019. ***Kuthirai Muttai***, Nagercoil: Kalachchuvadu.
4. Gunasekaran.K.A. 2021. ***Saththiya Sothanai*****,** Chennai ; NCBH

Suggestive Readings (if any):

5. M. Ramaswamy, 1996, Tamiḻil Navīṉa Nāḍagangaḷ, Chennai: IITS.
6. Rangarajan, 1998, Taṟkālat Tamiḻ Nāḍagangaḷ, Chennai: Kaavya.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category II

(*B.A (Prog.) Courses* for Undergraduate Programme of study with *Tamil Discipline-Major* as one of the Core Disciplines)

DISCIPLINE SPECIFIC CORE COURSE (DSC-6): Study of Important Author

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Study of Important Author-Tamil	04	03	01	-	Class 12th pass	For students who have studied the Tamil language up to Class Xth & above.

Learning Objectives:

The study of an important author will enable the students to understand the significant contribution made by the author to the society, the impact of his philosophy and writings on the society and the far reaching changes brought out by his path breaking and revolutionary ideas.

Learning Outcomes:

This course will enable the students to critically examine his life and works in a focused manner and to understand the underlying forces that shaped his life and philosophy and such an analysis will be a source of inspiration for the students.

SYLLABUS OF DSC-6

Total Hours of Teaching: 60 Hrs
(Lecture-45 Hrs, Tutorials -15 Hrs)

Unit-I (L-09 Hrs, T-03Hrs)

- . Narration and Narrator

Unit-II (L-09 Hrs, T-03Hrs)

- Life and Letters of Author

Unit –III (L-09 Hrs, T-03Hrs)

- Creative Style of Author

Unit -IV (L-09 Hrs, T-03Hrs)

- Art and Ideology of Author

Unit -V (L-09 Hrs, T-03Hrs)

- Social Awareness of Author

References:

Compulsory Readings:

3. Thamizhannal, 2020. ***Avvaiyar*****,** New Delhi : Sahitya Akademi
4. Prakash Chandra Gupta, 1970. ***Ramanujar,*** New Delhi : Sahitya Akademi

Additional Resources:

1. Nachimuthu, K., 2007, Tamiḻ Tanda Cāṉṟōrgaḷ, Coimbatore: Ki. Nachimuthu Mozhi Panpattu Ayvu Niruvanam.
2. Su, Ka.Na. 1985, Ilakkiyac Cindaṉaiyāḷargaḷ, Chidambaram: Manivasagar Padippagam.
3. Rajapandiyan, Mugilai, 2001, Aruntamiḻ Kāṭṭa Aṟuvar, Chennai: Kovan Padippagam.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES

GENERIC ELECTIVES (GE-6): Free Creative Wring in Tamil Medium

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Free Creative Writing in Tamil Medium	04	03	01	-	Class 12th pass	For students who have not studied the Tamil language	Department of Modern Indian Languages-Tamil

Learning Objectives:

The purpose of the course is to train students to write a good script with a focused subject of discussion in eminently readable Tamil. Fashioning a coherent set of ideas into an argument, analyzing the facts and figures collected, raising counterarguments and preparing a conclusion are intended to be explained through some of the best writings of celebrated Book, Academician, Politician, Industrialist Journalist etc.

Learning Outcomes:

This paper tries to Introducing brief History of Journalism & Mass Communication in the Tamil and Tamil speaking world-Different Language styles used for different programs such as News Reading, Interviews, Drama & sports news etc to improve creative writing skills.

SYLLABUS OF AEC

Total Hours of Teaching: 45

(Lecture-15 Hrs, Practical / Practice -30 Hrs)

Unit -I (L-03 Hrs, Practical/Practice -06Hrs)

- Viewing films & Drama

Unit -II (L-03 Hrs, Practical/Practice -06Hrs)

- Listening Radio Programs.

Unit –III (L-03 Hrs, Practical/Practice -06Hrs)

- Writing scripts-Drama Scripts- News items

Unit –IV (L-03 Hrs. Practical/Practice -06Hrs)

- Report an incident

Unit -V (L-03 Hrs, Practical/Practice -06Hrs)

- Interview Persons (Academician, Sports Person, Politician, Industrialist, Entrepreneur etc.)

Reading list:

1. Arokianathan, S. ***Spoken Tamil for Foreigners***, A-Team Info Media Publishers Pvt.Ltd, Chennai. 2012.
2. Karunakaran.K. & Balakrishnan.R. ***Elementry Tamil (Introductory Course),*** Sabanayagam Printers, Chidambaram. 2001.
3. Kothandaraman, P. A. ***Course in Modern Standard Tamil Laboratory Manual: Text and Exercise***, IITS, Madras. 1975.
4. Lehmann, Thomas. ***A Grammar of Modern Tamil***, Pondicherry Institute of Linguistics & Culture (PILC), Pondicherry. 1989.
5. Rajaram, S. ***An Intensive Course in Tamil***, Central Institute of Indian Languages (CIL), Mysore. 1987.
6. Sankaranarayanan,G. ***A Programmed Course in Tamil***, Central Institute of Indian Languages (CIL), Mysore. 1994.
7. Upadhyay, U.P. ***Conversational Tamil,*** Prism Books, Chennai.2010.

Suggestive readings:

1. Arangarajan, Marudur, 2004, Tavarinri-t-Tamil Elutha, Chennai: Ainthinai Pathippagam.
2. Nuhman, M.A., 2010, Adippadai-t-Tamil Ilakkanam, Buddhanaththam: Adaiyalam.
3. Pattabiraman.K, 2005*, Mozhi-p-Payanpaadu*, Chennai: NCBH.
4. Thamizhannal, 2008, Ungal Tamilai-t- Therindukollungal, Madurai: Meenakshi Puththaga Nilaiyam.
5. Vivekananthan, S. 2010. Payanpattu Ilakkanam, Kaavya, Chennai.

****

GENERIC ELECTIVES (GE-5-6: Autobiography- Tamil

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Autobiography- Tamil	04	03	01	-	Class 12th pass	For students who have studied the Tamil language up to 10th standard and above.	Department of Modern Indian Languages- Tamil

Learning Objectives:

The aim of the course is to enable the students to know the history of the author, his struggles and significant achievements, the conditions and various forces of his period that shaped him and his everlasting contribution to the society. As the author portrays his life truthfully with an emotional and personal appeal, the study will enable the students to establish a personal rapport with the life and philosophy of the author as reflected in the autobiographical work.

Learning Outcomes:

The study of autobiographical works will guide the students to appreciate the higher ideals that need to be followed and the pitfalls that need to be avoided in their own lives.

SYLLABUS OF GE
Total Hours of Teaching: 60 Hrs
(Lecture-45 Hrs, Tutorials -15 Hrs)

Unit I (L-09 Hrs, T-03Hrs) :

- History and Definition of Autobiography

Unit II(L-09 Hrs, T-03Hrs)

- History and Background of Author

Unit III (L-09 Hrs, T-03Hrs)

- Language and Literary Works

Unit-IV (L-09 Hrs, T-03Hrs)

- Issues in Social challenges

Unit V (L-09 Hrs, T-03Hrs)

- Journey of Self-experience

Essential/recommended Readings:

1. Kannadasan, 1988, ***Vaṉavāsam***, Chennai: Vanathi Padippagam.

Suggestive Readings:

1. Arumugam, A., 1994, *Vāḻkkai Ilakkiyam*, Tiruchy: Pavendar Padippagam.

2. Arokkiya Jeyasili, A., 2015, *Peṇ Taṉvaralāṟṟup Padivugaḷ*, Chennai: NCBH

3. Pillai, V. Ramalingam, 2010, *Eṉ Kadai*, Chennai: Paḻaniyappa Brothers.

4. Kalaivani, 2009, *Oru Pāliyal Toḻilāḷiyiṉ Kadai*, Chennai: Kilakku Padippagam.

5. Salini Ilantiraiyan, 2002, *Vāḻkkai Varalāṟṟu Ilakkiyam*, Chidambaram: Meyyappan Padippagam.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.